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SAR TEST REPORT

The following samples were submitted and identified on behalf of the client as:

Equipment Under Test PDA Phone

Brand Name Sony

Type No. PM-0874-BV

Company Name Sony Mobile Communications AB

Nya Vattentornet 22188 Lund/Sweden **Company Address**

Standards IEEE /ANSI C95.1, C95.3, IEEE 1528, KDB447498D01v05r02,

KDB248227D01v02r01,KDB941225D01v03,

KDB941225D05v02r03,KDB941225D06v02,KDB865664D01v

01r03, KDB865664D02v01r01, KDB648474D04v01r02.

FCC ID PY7-PM0874

Date of Receipt Apr. 23, 2015

Date of Test(s) May. 07, 2015 ~ Jun. 09, 2015

Date of Issue Jul. 06, 2015

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on six samples, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory or testing done by SGS Taiwan Electronic & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory in

Signed on behalf of SGS

Sr. Engineer

Supervisor

Kevin Li

Date: Jul. 06, 2015

Ricky Huang

Date: Jul. 06, 2015

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SGS Taiwan Ltd.

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Vicky Wrang



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Version

| Report Number | Revision | Description | Issue Date |
|---------------|----------|------------------------------|---------------|
| E5/2015/60005 | 00 | Initial Version | Jun. 24, 2015 |
| E5/2015/60005 | 01 | 1 st modification | Jul. 06, 2015 |
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This test report contains a reference to the previous version test report that it replaces.

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1. General Information

1.1 Testing Laboratory

| SGS Taiwan Ltd. Electronics & Communication Laboratory | | | | |
|--|------------------------|--|--|--|
| No.134, Wu Kung Road, New Taipei Industrial Park | | | | |
| Wuku District, New Taipei City, Taiwan | | | | |
| Tel | +886-2-2299-3279 | | | |
| Fax +886-2-2298-0488 | | | | |
| Internet | http://www.tw.sgs.com/ | | | |

1.2 Details of Applicant

| Company Name | Sony Mobile Communications AB |
|-----------------|------------------------------------|
| Company Address | Nya Vattentornet 22188 Lund/Sweden |

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1.3 Description of EUT

| 1.3 Description of EU | | | | | |
|-----------------------|--------------------------------------|---|--|--|--|
| EUT Name | PDA Phone | | | | |
| Brand Name | Sony | | | | |
| Type No. | PM-0874-BV | | | | |
| HW Version | A | | | | |
| SW Version | 30.0.A.0.20 | | | | |
| | 2G/3G: YT91130650/YT9114HRTB | | | | |
| Serial No. | WLAN: YT9113064Z/YT9114HRJ4 | | | | |
| | LTE: YT91130650/ YT9114HRTB | | | | |
| | 2G/3G: 004402454410352/0044024 | 454877683 | | | |
| IMEI Code | WLAN: 004402454410394/0044024 | 154877675 | | | |
| | LTE: 004402454410360/004402454 | 4877683 | | | |
| FCC ID | PY7-PM0874 | | | | |
| | ⊠GSM ⊠GPRS ⊠EDGE ⊠WCDMA ⊠HSDPA | | | | |
| Mode of Operation | ⊠HSUPA ⊠HSPA+ ⊠LTE FDD | | | | |
| | ⊠WLAN802.11a/b/g/n(20M/40M) | ⊠Bluetooth | | | |
| | GSM | 1/8.3 | | | |
| | GPRS (support multi class 12 max) | 1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP) | | | |
| Duty Cycle | EDGE (support multi class 12 max) | 1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP) | | | |
| | WCDMA | 1 | | | |
| | LTE | 1 | | | |
| | WLAN 802.11 a/b/g/n(20M/40M) | 1 | | | |
| | Bluetooth | 1 | | | |
| | | | | | |

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| | CCMOFO | 004.0 | | 0.40.0 |
|--------------------------|-------------------------|--------|---|--------|
| | GSM850 | 824.2 | | 848.8 |
| | GSM1900 | 1850.2 | | 1909.8 |
| | WCDMA Band II | 1852.4 | | 1907.6 |
| | WCDMA Band V | 826.4 | | 846.6 |
| | LTE FDD Band V | 824 | | 849 |
| | LTE FDD Band VII | 2500 | | 2570 |
| | WLAN 802.11 b/g/n(20M) | 2412 | | 2462 |
| | WLAN802.11 n (40M) | 2422 | _ | 2452 |
| | WLAN802.11 a 5.2G | 5180 | _ | 5240 |
| TV Face Decree | WLAN802.11 a 5.3G | 5260 | _ | 5320 |
| TX Frequency Range (MHz) | WLAN802.11 a 5.5G | 5500 | _ | 5700 |
| (1411 12) | WLAN802.11 a 5.8G | 5745 | _ | 5825 |
| | WLAN802.11 n (20M) 5.2G | 5180 | _ | 5240 |
| | WLAN802.11 n (20M) 5.3G | 5260 | _ | 5320 |
| | WLAN802.11 n (20M) 5.5G | 5500 | _ | 5700 |
| | WLAN802.11 n (20M) 5.8G | 5745 | _ | 5825 |
| | WLAN802.11 n (40M) 5.2G | 5190 | _ | 5230 |
| | WLAN802.11 n (40M) 5.3G | 5270 | _ | 5310 |
| | WLAN802.11 n (40M) 5.5G | 5510 | | 5670 |
| | WLAN802.11 n (40M) 5.8G | 5755 | | 5795 |
| | Bluetooth | 2402 | | 2480 |

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| | GSM850 | 128 | | 251 |
|-------------------------|-------------------------|-------|---|-------|
| | GSM1900 | 512 | | 810 |
| | WCDMA Band II | 9262 | | 9538 |
| | WCDMA Band V | 4132 | | 4233 |
| | LTE FDD Band V | 20415 | | 20643 |
| | LTE FDD Band VII | 20775 | | 21425 |
| | WLAN 802.11 b/g/n(20M) | 1 | | 11 |
| | WLAN802.11 n (40M) | 3 | | 9 |
| | WLAN802.11 a 5.2G | 36 | | 48 |
| | WLAN802.11 a 5.3G | 52 | | 64 |
| Channel Number (ARFCN). | WLAN802.11 a 5.5G | 100 | | 140 |
| (vita ort). | WLAN802.11 a 5.8G | 149 | | 165 |
| | WLAN802.11 n (20M) 5.2G | 36 | | 48 |
| | WLAN802.11 n (20M) 5.3G | 52 | | 64 |
| | WLAN802.11 n (20M) 5.5G | 100 | | 140 |
| | WLAN802.11 n (20M) 5.8G | 149 | | 165 |
| | WLAN802.11 n (40M) 5.2G | 38 | | 46 |
| | WLAN802.11 n (40M) 5.3G | 54 | | 62 |
| | WLAN802.11 n (40M) 5.5G | 102 | _ | 134 |
| | WLAN802.11 n (40M) 5.8G | 151 | _ | 159 |
| | Bluetooth | 0 | | 78 |

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| Max. SAR (1 g) (Unit: W/Kg) | | | | | |
|-----------------------------|------------------|----------|----------|--|--|
| Mode | Band | Measured | Reported | Position / Channel | |
| Head | GSM 850 | 0.123 | 0.138 | ☐Left ⊠Right ☑Cheek ☐Tilt 128 Channel | |
| | GSM 1900 | 0.121 | 0.124 | | |
| | WCDMA Band II | 0.286 | 0.287 | | |
| | WCDMA Band V | 0.116 | 0.127 | ☐Left ☐Right ☐Cheek ☐TiltChannel | |
| | LTE FDD Band V | 0.144 | 0.153 | ☐Left ⊠Right ☑Cheek ☐Tilt | |
| | LTE FDD Band VII | 0.182 | 0.185 | □Left ⊠Right ⊠Cheek □Tilt <u>20850</u> Channel | |

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| Max. SAR (1 g) (Unit: W/Kg) | | | | | |
|-----------------------------|-------------------|----------|----------|---|--|
| Mode | Band | Measured | Reported | Position / Channel | |
| Head | WLAN802.11 b | 0.320 | 0.321 | ☐Left ☐Right ☐Cheek ☐Tilt 6 Channel | |
| | WLAN802.11 a 5.2G | 0.165 | 0.169 | ☐Left ☐Right ☐Cheek ☐Tilt ☐ Channel | |
| | WLAN802.11 a 5.3G | 0.306 | 0.308 | ☐Left ☐Right ☐Cheek ☐Tilt ☐ 56 ☐Channel | |
| | WLAN802.11 a 5.6G | 0.094 | 0.095 | ☐Left ☐Right ☐Cheek ☐Tilt ☐ 140 ☐ Channel | |
| | WLAN802.11 a 5.8G | 0.269 | 0.270 | □Left ⊠Right ⊠Cheek □Tilt 165 Channel | |

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| Max. SAR (1 g) (Unit: W/Kg) | | | | | | |
|-----------------------------|-------------------|----------|----------|-----------------------------------|--|--|
| Mode | Band | Measured | Reported | Position / Channel | | |
| | GSM 850 | 0.159 | 0.178 | ☐Front ⊠Back 128 Channel | | |
| | GSM 1900 | 0.319 | 0.319 | | | |
| | WCDMA Band II | 0.551 | 0.569 | ☐Front ⊠Back 9538 Channel | | |
| | WCDMA Band V | 0.149 | 0.163 | ☐Front ⊠Back 4132 Channel | | |
| Body worn | LTE FDD Band V | 0.128 | 0.132 | ☐Front ⊠Back 20600 Channel | | |
| (speech mode) | LTE FDD Band VII | 0.530 | 0.602 | ☐Front ⊠Back 20850 Channel | | |
| | WLAN802.11 a 5.2G | 0.189 | 0.193 | ☐Front ⊠Back <u>36</u> Channel | | |
| | WLAN802.11 a 5.3G | 0.225 | 0.227 | ☐Front ⊠Back <u>56</u> Channel | | |
| | WLAN802.11 a 5.6G | 0.0362 | 0.037 | ☐Front ☐Back 140 Channel | | |
| | WLAN802.11 a 5.8G | 0.139 | 0.139 | ☐Front ⊠Back 165Channel | | |

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| | Max. SAR (1 g) (Unit: W/Kg) | | | | |
|-----------------|-----------------------------|----------|----------|--|--|
| Mode | Band | Measured | Reported | Position / Channel | |
| | GPRS 850 1Dn4UP | 0.462 | 0.473 | ☐ Front ☐ Back ☐ Bottom ☐ Right ☐ Left ☐ 128 Channel | |
| | GPRS 1900 1Dn4UP | 1.160 | 1.187 | | |
| | WCDMA Band II | 1.350 | 1.394 | ☐Front ☐Back ☐Bottom ☐Right ☐Left 9538 Channel | |
| Hotspot mode | WCDMA Band V | 0.354 | 0.394 | ☐Front ☐Back ☐Bottom ☐Right ☐Left 4233 Channel | |
| | LTE FDD Band V | 0.323 | 0.334 | ☐Front ☐Back ☐Bottom ☐Right ☐Left | |
| | LTE FDD Band VII | 1.260 | 1.280 | ☐Front ☐Back ☐Bottom ☐Right ☐Left | |
| | WLAN802.11 b | 0.442 | 0.444 | ☐Front ☐Back ☐Top ☐Right ☐Left <u>6</u> Channel | |

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Type No. Difference: The difference between Type No.: PM-0873-BV (Dual SIM) and Type No.:

PM-0874-BV (Single SIM) is only in the shape of SIM tray. (please refer to Fig. 20)

PM-0874-BV: Single SIM. PM-0873-BV: Dual SIM.

Measurement: The verified SAR results of Type No.: PM-0874-BV were within +10%~ -20% of the

worst cases of Type No.: PM-0873-BV.

Type No.: PM-0874-BV (Single SIM) verified the worst cases of Type No.: PM-0873-BV (Dual SIM)

| Max. SAR (1 g) (Unit: W/Kg) | | | | | |
|-----------------------------|-------------------|----------|----------|---|--|
| Mode | Band | Measured | Reported | Position / Channel | |
| Head | GSM 850 | 0.121 | 0.133 | ☐Left ☐Right ☐Cheek ☐Tilt ☐ 128 ☐ Channel ☐ | |
| | GSM 1900 | 0.116 | 0.116 | | |
| | WCDMA Band II | 0.254 | 0.282 | | |
| | WCDMA Band V | 0.114 | 0.115 | | |
| | LTE FDD Band V | 0.158 | 0.165 | ☐Left ☐Right ☐Cheek ☐TiltChannel | |
| | LTE FDD Band VII | 0.165 | 0.172 | ☐Left ☐Right ☐Cheek ☐TiltChannel | |
| | WLAN802.11 b | 0.299 | 0.300 | ☐Left ☐Right ☐Cheek ☐Tilt 6 Channel | |
| | WLAN802.11 a 5.3G | 0.281 | 0.304 | ☐Left ☐Right ☐Cheek ☐Tilt ☐ 56 ☐Channel | |

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| Type No.: PM-0874-BV (S | ingle SIM) verified the wors Max. SAR (1 g) (1 | | | PM-0873-BV (Dual SIM) |
|-------------------------|---|----------|----------|---|
| Mode | Band | Measured | Reported | Position / Channel |
| Body-worn | WLAN802.11 a 5.3G | 0.204 | 0.221 | ☐Front ⊠Back <u>56</u> Channe |
| | GSM 850 1Dn4UP | 0.427 | 0.447 | ☐Front ☐Back ☐Bottom ☐Right ☐Left <u>128</u> Channel |
| | GSM 1900 1Dn4UP | 0.939 | 0.983 | <pre></pre> |
| | WCDMA Band II | 1.120 | 1.274 | ☐Front ☐Back ☐Bottom ☐Right ☐Left <u>9538</u> Channel |
| Hotspot mode | WCDMA Band V | 0.349 | 0.355 | ☐Front ☐Back☐Bottom☐Right☐Left Channel |
| | LTE FDD Band V | 0.325 | 0.332 | ☐Front ☐Back☐Bottom☐Right☐Left 20600Channel |
| | LTE FDD Band VII | 1.24 | 1.295 | ☐Front ☐Back☐Bottom☐Right☐LeftChannel |
| | WLAN802.11 b | 0.428 | 0.430 | ☐Front ☐Back ☐Bottom ☐Right ☐Left 6 Channel |

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#. GSM/GPRS/EDGE conducted power table:

| EUT mode | Frequency (MHz) | СН | Max. Rated Avg. Power + Max. | Burst average power | Source -based time average | | |
|------------------|--------------------|----------------|---------------------------------------|---------------------------|----------------------------|--|--|
| | | | Tolerance | Avg. (dBm) | Avg. (dBm) | | |
| 0014050 | 824.2 | 128 | 33.5 | 33 | 23.97 | | |
| GSM850 (GMSK) | 836.6 | 190 | 33.5 | 33 | 23.97 | | |
| (GWISIK) | 848.8 | 251 | 33.5 | 33 | 23.97 | | |
| The | division factor | or compared | to the number | er of TX time | slot | | |
| | Divisio | 1 TX time slot | | | | | |
| | טואוטו | TIACIOI | | -9.03 | | | |

| | | Burs | st average po | wer | | |
|-------------------|------------------|-----------------|----------------|----------------|----------------|----------------|
| Max. Rated Avg | . Power + Max. 7 | Folerance (dBm) | 33.5 | 30 | 28.5 | 28 |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP |
| EUT mode | Frequency CH | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) |
| ODDCOFO | 824.2 | 128 | 33 | 29.7 | 28.5 | 27.9 |
| GPRS850 (GMSK) | 836.6 | 190 | 33 | 29.6 | 28.4 | 27.8 |
| (Gillort) | 848.8 | 251 | 33 | 29.6 | 28.4 | 27.8 |
| | | Source-bas | sed time aver | age power | | |
| 0000000 | 824.2 | 128 | 23.97 | 23.68 | 24.24 | 24.89 |
| GPRS850 (GMSK) | 836.6 | 190 | 23.97 | 23.58 | 24.14 | 24.79 |
| (GWISIT) | 848.8 | 251 | 23.97 | 23.58 | 24.14 | 24.79 |
| | The division | n factor com | pared to the | number of T | X time slot | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot |
| ' | חואואוטו ושכוטו | I | -9.03 | -6.02 | -4.26 | -3.01 |

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| | | Burs | st average po | ower | | |
|-------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| Max. Rated Avg | . Power + Max. | Tolerance (dBm) | 33.5 | 30 | 28.5 | 28 |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP |
| EUT mode | Frequency CH | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) |
| FDOFOEO | 824.2 | 128 | 33 | 29.6 | 28.4 | 27.8 |
| EDGE850 (MCS4) | 836.6 | 190 | 33 | 29.5 | 28.3 | 27.8 |
| (111001) | 848.8 | 251 | 33 | 29.6 | 28.3 | 27.9 |
| | | Source-bas | sed time aver | age power | | |
| ED 05050 | 824.2 | 128 | 23.97 | 23.58 | 24.14 | 24.79 |
| EDGE850 (MCS4) | 836.6 | 190 | 23.97 | 23.48 | 24.04 | 24.79 |
| (111001) | 848.8 | 251 | 23.97 | 23.58 | 24.04 | 24.89 |
| | The division | n factor com | pared to the | number of T | X time slot | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot |
| | חוטוצועוט ומכנט | I | -9.03 | -6.02 | -4.26 | -3.01 |

| | | Burs | st average po | wer | | |
|-------------------|------------------|-----------------|---------------|----------------|----------------|----------------|
| Max. Rated Avg | . Power + Max. | Folerance (dBm) | 27 | 26 | 26 | 25 |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP |
| EUT mode | ode Frequency CH | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) |
| FDOFOEO | 824.2 | 128 | 26.8 | 25.7 | 25.5 | 24.6 |
| EDGE850 (MCS5) | 836.6 | 190 | 26.9 | 25.9 | 25.6 | 24.6 |
| (111000) | 848.8 | 251 | 27 | 26 | 25.9 | 24.8 |
| | | Source-bas | sed time aver | age power | | |
| ED 05050 | 824.2 | 128 | 17.77 | 19.68 | 21.24 | 21.59 |
| EDGE850 (MCS5) | 836.6 | 190 | 17.87 | 19.88 | 21.34 | 21.59 |
| (111000) | 848.8 | 251 | 17.97 | 19.98 | 21.64 | 21.79 |
| | The division | n factor com | pared to the | number of T | X time slot | |
| | Division forton | | | 2 TX time slot | 3 TX time slot | 4 TX time slot |
| | Division facto | I | -9.03 | -6.02 | -4.26 | -3.01 |

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| | Burst average power | | | | | | | | | | | |
|-------------------|---------------------|-----------------|----------------|----------------|----------------|----------------|--|--|--|--|--|--|
| Max. Rated Avg | . Power + Max. | Tolerance (dBm) | 27 | 26 | 26 | 25 | | | | | | |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP | | | | | | |
| EUT mode | Frequency CH (MHz) | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | | | | | | |
| FDOFOEO | 824.2 | 128 | 26.8 | 25.7 | 25.5 | 24.6 | | | | | | |
| EDGE850 (MCS9) | 836.6 | 190 | 26.9 | 25.9 | 25.6 | 24.6 | | | | | | |
| (111007) | 848.8 | 251 | 27.2 | 26 | 25.9 | 24.8 | | | | | | |
| | | Source-bas | sed time aver | age power | | | | | | | | |
| ED 05050 | 824.2 | 128 | 17.77 | 19.68 | 21.24 | 21.59 | | | | | | |
| EDGE850 (MCS9) | 836.6 | 190 | 17.87 | 19.88 | 21.34 | 21.59 | | | | | | |
| (111007) | 848.8 | 251 | 18.17 | 19.98 | 21.64 | 21.79 | | | | | | |
| | The division | n factor com | pared to the | number of T | X time slot | | | | | | | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot | | | | | | |
| ' | חוטוצוויום ומכוטו | I | -9.03 | -6.02 | -4.26 | -3.01 | | | | | | |

| EUT mode | Frequency (MHz) | СН | Max. Rated Avg. Power + Max. | Burst average power | Source -based time average | | |
|-------------------|--------------------|-------------|---------------------------------------|---------------------------|----------------------------------|--|--|
| | , , | | Tolerance | Avg. (dBm) | Avg. (dBm) | | |
| | 1850.2 512 | | 30.5 | 30.4 | 21.37 | | |
| GSM1900 (GMSK) | 1800 661 | | 30.5 | 30.4 | 21.37 | | |
| (Giviorty | 1909.8 | 810 | 30.5 | 30.5 | 21.47 | | |
| The | division fact | or compared | to the number | er of TX time | slot | | |
| | Divisio | | 1 TX time slot | | | | |
| | וטוצועום | Tactol | | -9.03 | | | |

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| | Burst average power | | | | | | | | | | | |
|--------------------|---------------------|-----------------|----------------|----------------|----------------|----------------|--|--|--|--|--|--|
| Max. Rated Avg | . Power + Max. | Tolerance (dBm) | 30.5 | 29 | 28 | 27.5 | | | | | | |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP | | | | | | |
| EUT mode | Frequency CH | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | | | | | | |
| 00001000 | 1850.2 | 512 | 30.4 | 28.7 | 27.6 | 27.1 | | | | | | |
| GPRS1900 (GMSK) | 1800 | 661 | 30.4 | 28.6 | 27.6 | 27.1 | | | | | | |
| (GWISIT) | 1909.8 | 810 | 30.5 | 28.9 | 27.9 | 27.4 | | | | | | |
| | | Source-bas | sed time aver | age power | | | | | | | | |
| 00001000 | 1850.2 | 512 | 21.37 | 22.68 | 23.34 | 24.09 | | | | | | |
| GPRS1900 (GMSK) | 1800 | 661 | 21.37 | 22.58 | 23.34 | 24.09 | | | | | | |
| (GWISIT) | 1909.8 | 810 | 21.47 | 22.88 | 23.64 | 24.39 | | | | | | |
| | The division | n factor com | pared to the | number of T | X time slot | | | | | | | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot | | | | | | |
| , | חואואוטוו ושכנטוע | I | -9.03 | -6.02 | -4.26 | -3.01 | | | | | | |

| | | Burs | st average po | wer | | |
|--------------------|----------------|-----------------|----------------|----------------|----------------|----------------|
| Max. Rated Avg | . Power + Max. | Tolerance (dBm) | 30.5 | 29 | 28 | 27.5 |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP |
| EUT mode | Frequency CH | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) |
| ED0E4000 | 1850.2 | 512 | 30.4 | 28.7 | 27.6 | 27.1 |
| EDGE1900 (MCS4) | 1800 | 661 | 30.4 | 28.6 | 27.6 | 27.1 |
| (111001) | 1909.8 | 810 | 30.5 | 28.9 | 27.8 | 27.3 |
| | | Source-bas | sed time aver | age power | | |
| ED0E4000 | 1850.2 | 512 | 21.37 | 22.68 | 23.34 | 24.09 |
| EDGE1900 (MCS4) | 1800 | 661 | 21.37 | 22.58 | 23.34 | 24.09 |
| (111001) | 1909.8 | 810 | 21.47 | 22.88 | 23.54 | 24.29 |
| | The division | n factor com | pared to the | number of T | X time slot | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot |
| | DIVISION TACIO | I | -9.03 | -6.02 | -4.26 | -3.01 |

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| | | Burs | st average po | wer | | |
|--------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| Max. Rated Avg | . Power + Max. | Tolerance (dBm) | 26 | 26 | 26 | 25 |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP |
| EUT mode | Frequency CH | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) |
| ED0E4000 | 1850.2 | 512 | 26 | 25.7 | 25.5 | 24.8 |
| EDGE1900 (MCS5) | 1800 | 661 | 25.9 | 25.6 | 25.4 | 24.7 |
| (111000) | 1909.8 | 810 | 25.8 | 25.6 | 25.3 | 24.6 |
| | | Source-bas | sed time aver | age power | | |
| ED 054000 | 1850.2 | 512 | 16.97 | 19.68 | 21.24 | 21.79 |
| EDGE1900 (MCS5) | 1800 | 661 | 16.87 | 19.58 | 21.14 | 21.69 |
| (111000) | 1909.8 | 810 | 16.77 | 19.58 | 21.04 | 21.59 |
| | The division | n factor com | pared to the | number of T | X time slot | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot |
| | חשבו ווטופועוכי | I | -9.03 | -6.02 | -4.26 | -3.01 |

| | | Burs | st average po | wer | | |
|--------------------|-------------------------|-----------------|----------------|----------------|----------------|----------------|
| Max. Rated Avg | . Power + Max. | Folerance (dBm) | 26 | 26 | 26 | 25 |
| | | | 1Dn1UP | 1Dn2UP | 1Dn3UP | 1Dn4UP |
| EUT mode | mode Frequency CH (MHz) | | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) | Avg. (dBm) |
| FD0F4000 | 1850.2 | 512 | 25.9 | 25.7 | 25.4 | 24.8 |
| EDGE1900 (MCS9) | 1800 | 661 | 25.8 | 25.6 | 25.4 | 24.6 |
| (111007) | 1909.8 | 810 | 25.8 | 25.5 | 25.2 | 24.6 |
| | | Source-bas | sed time aver | age power | | |
| ED0E4000 | 1850.2 | 512 | 16.87 | 19.68 | 21.14 | 21.79 |
| EDGE1900 (MCS9) | 1800 | 661 | 16.77 | 19.58 | 21.14 | 21.59 |
| (111007) | 1909.8 | 810 | 16.77 | 19.48 | 20.94 | 21.59 |
| | The division | n factor com | pared to the | number of T | X time slot | |
| | Division facto | r | 1 TX time slot | 2 TX time slot | 3 TX time slot | 4 TX time slot |
| | טואואוו ווטואוענט | I | -9.03 | -6.02 | -4.26 | -3.01 |

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#. WCDMA Band II / Band V / HSDPA / HSUPA/ HSPA+_conducted power table:

| Band CH Max. Rated Avg. Power + Max. Tolerance (dBm) | Rated Avg. | Rel99 | HSDPA mode AV(dBm) | | | | HSUPA mode AV(dBm) | | | | | HSPA+ mode AV(dBm) | | | | | |
|--|------------|-------|--------------------|-------|-------|-------|--------------------|-------|-------|-------|-------|--------------------|-------|-------|-------|-------|-------|
| | AV(dBm) | SUB-1 | SUB-2 | SUB-3 | SUB-4 | SUB-1 | SUB-2 | SUB-3 | SUB-4 | SUB-5 | SUB-1 | SUB-2 | SUB-3 | SUB-4 | SUB-5 | | |
| MCDMA | 9262 | 24 | 23.89 | 22.61 | 22.32 | 22.22 | 22.27 | 22.05 | 21.41 | 21.89 | 21.46 | 22.09 | 23.66 | 21.72 | 22.70 | 21.77 | 23.52 |
| WCDMA Band II | 9400 | 24 | 23.98 | 22.77 | 22.37 | 22.36 | 22.40 | 22.21 | 21.49 | 21.97 | 21.55 | 22.24 | 23.81 | 21.89 | 22.87 | 21.95 | 23.64 |
| Danu II | 9538 | 24 | 23.86 | 22.67 | 22.23 | 22.49 | 22.55 | 22.08 | 21.32 | 21.86 | 21.40 | 22.13 | 23.94 | 21.98 | 23.02 | 22.06 | 23.83 |
| MCDMA | 4132 | 24 | 23.61 | 22.53 | 22.04 | 21.94 | 21.99 | 21.97 | 21.13 | 21.61 | 21.18 | 22.04 | 23.38 | 21.44 | 22.42 | 21.49 | 23.24 |
| WCDMA Band V | 4183 | 24 | 23.58 | 22.58 | 22.47 | 21.96 | 22.00 | 21.91 | 21.09 | 21.57 | 21.15 | 21.95 | 23.41 | 21.49 | 22.47 | 21.55 | 23.24 |
| Dailu V | 4233 | 24 | 23.54 | 22.57 | 22.41 | 22.17 | 22.23 | 21.86 | 21.00 | 21.54 | 21.08 | 21.98 | 23.62 | 21.66 | 22.70 | 21.74 | 23.51 |

HSDPA

| SUB-TEST | eta_{c} | β_{d} | β _d (SF) | β_{c}/β_{d} | β _{HS} (<i>Note1, Note 2</i>) | CM (dB) <i>(Note 3)</i> | MPR (dB) (Note 3) |
|----------|-----------|-------------|------------------------|-----------------------|---|----------------------------|----------------------|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0.0 |
| 2 | 12/15 | 15/15 | 64 | 12/15 | 24/15 | 1.0 | 0.0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

HSUPA

| 113017 | | | | | | | | | | | | | |
|----------|-----------|--------------|------------------------|-------------------|----------------------------|------------|--|-------------------------|----------------------------|---------------------------|-------------------|----------------------------|--------|
| SUB-TEST | eta_{c} | $eta_{	t d}$ | β _d (SF) | β_c/β_d | β _{HS} (Note1) | eta_{ec} | β _{ed} (Note 5) (Note 6) | β _{ed} (SF) | β _{ed} (Codes) | CM (dB) (Note 2) | MPR (dB) (Note 2) | AG Index (Note 6) | E-TFCI |
| 1 | 11/15 | 15/15 | 64 | 11/15 | 22/15 | 209/225 | 1309/225 | 4 | 1 | 1.0 | 0.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | β _{ed} 1: 47/15 β _{ed} 2: 47/15 | 4 | 2 | 2.0 | 1.0 | 15 | 92 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 | 56/75 | 4 | 1 | 3.0 | 2.0 | 17 | 71 |
| 5 | 15/15 | 15/15 | 64 | 15/15 | 30/15 | 24/15 | 134/15 | 4 | 1 | 1.0 | 0.0 | 21 | 81 |

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LTE FDD Band V/ Band VII power table:

| | | | | FDD Band ! | 5 | | | |
|---------|------------|---------|-----------|--------------------|---------|-----------------------|-------------------------------------|--------------------------------|
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Target Power + Max. Tolerance (dRm) | MPR Allowed per 3GPP(dB) |
| | | | | 829 | 20450 | 23.86 | 24 | 0 |
| | | | 0 | 836.5 | 20525 | 23.70 | 24 | 0 |
| | | | | 844 | 20600 | 23.85 | 24 | 0 |
| | | | | 829 | 20450 | 23.95 | 24 | 0 |
| | | 1 RB | 25 | 836.5 | 20525 | 23.67 | 24 | 0 |
| | | | 844 | 20600 | 23.86 | 24 | 0 | |
| | | | | 829 | 20450 | 23.88 | 24 | 0 |
| | | | 49 | 836.5 | 20525 | 23.75 | 24 | 0 |
| | | | | 844 | 20600 | 23.80 | 24 | 0 |
| | | | 0 | 829 | 20450 | 23.17 | 23.5 | 0-1 |
| | QPSK | | | 836.5 | 20525 | 23.14 | 23.5 | 0-1 |
| | | | | 844 | 20600 | 23.18 | 23.5 | 0-1 |
| | | | | 829 | 20450 | 23.16 | 23.5 | 0-1 |
| | | 25 RB | 12 | 836.5 | 20525 | 23.16 | 23.5 | 0-1 |
| | | | | 844 | 20600 | 23.15 | 23.5 | 0-1 |
| | | | 0- | 829 | 20450 | 23.22 | 23.5 | 0-1 |
| | | | 25 | 836.5 | 20525 | 23.17 | 23.5 | 0-1 |
| | | | | 844 | 20600 | 23.21 | 23.5 | 0-1 |
| | | | | 829 | 20450 | 22.91 | 23 | 0-1 |
| | | 50RB | | 836.5 | 20525 | 22.85 | 23 | 0-1 |
| 10 | | | | 844 | 20600 | 22.96 | 23 | 0-1 |
| 10 | | | | 829 | 20450 | 23.09 | 23.5 | 0-1 |
| | | | 0 | 836.5 | 20525 | 23.43 | 23.5 | 0-1 |
| | | | | 844 | 20600 | 22.85 | 23.5 | 0-1 |
| | | | | 829 | 20450 | 22.99 | 23.5 | 0-1 |
| | | 1 RB | 25 | 836.5 | 20525 | 23.02 | 23.5 | 0-1 |
| | | | | 844 | 20600 | 22.87 | 23.5 | 0-1 |
| | | | | 829 | 20450 | 22.93 | 23.5 | 0-1 |
| | | | 49 | 836.5 | 20525 | 23.08 | 23.5 | 0-1 |
| | | | | 844 | 20600 | 23.12 | 23.5 | 0-1 |
| | | | | 829 | 20450 | 21.94 | 22.5 | 0-2 |
| | 16-QAM | | 0 | 836.5 | 20525 | 21.96 | 22.5 | 0-2 |
| | | | | 844 | 20600 | 22.02 | 22.5 | 0-2 |
| | | 05.55 | 4.0 | 829 | 20450 | 21.89 | 22.5 | 0-2 |
| | 25 RB | 25 RB | 12 | 836.5 | 20525 | 21.95 | 22.5 | 0-2 |
| | | | 844 | 20600 | 21.94 | 22.5 | 0-2 | |
| | | 25 | 829 | 20450 | 21.90 | 22.5 | 0-2 | |
| | | | 25 | 836.5 | 20525 | 21.98 | 22.5 | 0-2 |
| | | | | 844 | 20600 | 22.05 | 22.5 | 0-2 |
| | | _ | ODD | 829 | 20450 | 21.90 | 22.2 | 0-2 |
| | | 5 | 0RB | 836.5 | 20525 | 21.93 | 22.2 | 0-2 |
| | | ļ | | 844 | 20600 | 22.05 | 22.2 | 0-2 |

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| FDD Band 5 | | | | | | | | | | |
|------------|------------|---------|-----------|--------------------|---------|-----------------------------|-------------------------------------|--------------------------------|--|--|
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Target Power + Max. Tolerance (dRm) | MPR Allowed per 3GPP(dB) | | |
| | | | | 826.5 | 20425 | 23.73 | 24 | 0 | | |
| | | | 0 | 836.5 | 20525 | 23.71 | 24 | 0 | | |
| | | | | 846.5 | 20625 | 23.88 | 24 | 0 | | |
| | | | | 826.5 | 20425 | 23.77 | 24 | 0 | | |
| | | 1 RB | 12 | 836.5 | 20525 | 23.71 | 24 | 0 | | |
| | | | | 846.5 | 20625 | 23.72 | 24 | 0 | | |
| | | | | 826.5 | 20425 | 23.74 | 24 | 0 | | |
| | | | 24 | 836.5 | 20525 | 23.78 | 24 | 0 | | |
| | | | | 846.5 | 20625 | 23.82 | 24 | 0 | | |
| | | | | 826.5 | 20425 | 22.96 | 23 | 0-1 | | |
| | QPSK | | 0 | 836.5 | 20525 | 22.83 | 23 | 0-1 | | |
| | | | | 846.5 | 20625 | 22.95 | 23 | 0-1 | | |
| | | | | 826.5 | 20425 | 22.93 | 23 | 0-1 | | |
| | | 12 RB | 6 | 836.5 | 20525 | 22.81 | 23 | 0-1 | | |
| | | | | 846.5 | 20625 | 22.93 | 23 | 0-1 | | |
| | | | | 826.5 | 20425 | 22.88 | 23 | 0-1 | | |
| | | | 13 | 836.5 | 20525 | 22.82 | 23 | 0-1 | | |
| | | | | 846.5 | 20625 | 22.97 | 23 | 0-1 | | |
| | | | | 826.5 | 20425 | 22.90 | 23 | 0-1 | | |
| | | 25RB | | 836.5 | 20525 | 22.69 | 23 | 0-1 | | |
| 5 | | | | 846.5 | 20625 | 22.91 | 23 | 0-1 | | |
| 3 | | | | 826.5 | 20425 | 23.11 | 24 | 0-1 | | |
| | | | 0 | 836.5 | 20525 | 23.03 | 24 | 0-1 | | |
| | | | | 846.5 | 20625 | 23.50 | 24 | 0-1 | | |
| | | | | 826.5 | 20425 | 23.55 | 24 | 0-1 | | |
| | | 1 RB | 12 | 836.5 | 20525 | 23.33 | 24 | 0-1 | | |
| | | | | 846.5 | 20625 | 23.47 | 24 | 0-1 | | |
| | | | | 826.5 | 20425 | 23.05 | 24 | 0-1 | | |
| | | | 24 | 836.5 | 20525 | 23.37 | 24 | 0-1 | | |
| | | | | 846.5 | 20625 | 23.01 | 24 | 0-1 | | |
| 1 | | | | 826.5 | 20425 | 22.05 | 22.5 | 0-2 | | |
| | 16-QAM | | 0 | 836.5 | 20525 | 21.87 | 22.5 | 0-2 | | |
| | | | | 846.5 | 20625 | 22.10 | 22.5 | 0-2 | | |
| | | | | 826.5 | 20425 | 21.91 | 22.5 | 0-2 | | |
| | | 12 RB | 6 | 836.5 | 20525 | 21.78 | 22.5 | 0-2 | | |
| | | | | 846.5 | 20625 | 21.93 | 22.5 | 0-2 | | |
| | | | | 826.5 | 20425 | 22.06 | 22.5 | 0-2 | | |
| | | | 13 | 836.5 | 20525 | 21.98 | 22.5 | 0-2 | | |
| | | | 846.5 | 20625 | 22.08 | 22.5 | 0-2 | | | |
| | | | | 826.5 | 20425 | 21.94 | 22 | 0-2 | | |
| | | 2 | 5RB | 836.5 | 20525 | 21.81 | 22 | 0-2 | | |
| | | | | 846.5 | 20625 | 21.91 | 22 | 0-2 | | |

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| FDD Band 5 | | | | | | | | | | |
|------------|------------|---------|-----------|--------------------|---------|-----------------------|-------------------------------------|--------------------------------|--|--|
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Target Power + Max. Tolerance (dBm) | MPR Allowed per 3GPP(dB) | | |
| | | | | 825.5 | 20415 | 23.85 | 24 | 0 | | |
| | | | 0 | 836.5 | 20525 | 23.69 | 24 | 0 | | |
| | | | | 847.5 | 20635 | 23.75 | 24 | 0 | | |
| | | | | 825.5 | 20415 | 23.80 | 24 | 0 | | |
| | | 1 RB | 7 | 836.5 | 20525 | 23.74 | 24 | 0 | | |
| | | | | 847.5 | 20635 | 23.76 | 24 | 0 | | |
| | | | | 825.5 | 20415 | 23.69 | 24 | 0 | | |
| | | | 14 | 836.5 | 20525 | 23.68 | 24 | 0 | | |
| | | | | 847.5 | 20635 | 23.67 | 24 | 0 | | |
| | | ODCK | | 825.5 | 20415 | 22.96 | 23 | 0-1 | | |
| | QPSK | | 0 | 836.5 | 20525 | 22.81 | 23 | 0-1 | | |
| | | | | 847.5 | 20635 | 22.87 | 23 | 0-1 | | |
| | | | | 825.5 | 20415 | 22.91 | 23 | 0-1 | | |
| | 8 RB | 4 | 836.5 | 20525 | 22.79 | 23 | 0-1 | | | |
| | | | | 847.5 | 20635 | 22.89 | 23 | 0-1 | | |
| | | | | 825.5 | 20415 | 22.90 | 23 | 0-1 | | |
| | | | 7 | 836.5 | 20525 | 22.81 | 23 | 0-1 | | |
| | | | | 847.5 | 20635 | 22.89 | 23 | 0-1 | | |
| | | | | 825.5 | 20415 | 22.91 | 23 | 0-1 | | |
| | | 1 | 5RB | 836.5 | 20525 | 22.75 | 23 | 0-1 | | |
| 3 | | | | 847.5 | 20635 | 22.84 | 23 | 0-1 | | |
| 3 | | | | 825.5 | 20415 | 23.39 | 23.5 | 0-1 | | |
| | | | 0 | 836.5 | 20525 | 23.25 | 23.5 | 0-1 | | |
| | | | | 847.5 | 20635 | 23.28 | 23.5 | 0-1 | | |
| | | | | 825.5 | 20415 | 22.95 | 23.5 | 0-1 | | |
| | | 1 RB | 7 | 836.5 | 20525 | 23.00 | 23.5 | 0-1 | | |
| 1 | | | | 847.5 | 20635 | 22.88 | 23.5 | 0-1 | | |
| | | | | 825.5 | 20415 | 23.43 | 23.5 | 0-1 | | |
| 1 | | | 14 | 836.5 | 20525 | 23.29 | 23.5 | 0-1 | | |
| | | | | 847.5 | 20635 | 23.33 | 23.5 | 0-1 | | |
| | | | _ | 825.5 | 20415 | 22.12 | 22.5 | 0-2 | | |
| | 16-QAM | | 0 | 836.5 | 20525 | 21.85 | 22.5 | 0-2 | | |
| | | | | 847.5 | 20635 | 21.89 | 22.5 | 0-2 | | |
| | | | _ | 825.5 | 20415 | 21.97 | 22.5 | 0-2 | | |
| | 8 RB | 4 | 836.5 | 20525 | 21.98 | 22.5 | 0-2 | | | |
| | | | | 847.5 | 20635 | 22.00 | 22.5 | 0-2 | | |
| | | | _ | 825.5 | 20415 | 22.13 | 22.5 | 0-2 | | |
| | | | 7 | 836.5 | 20525 | 21.95 | 22.5 | 0-2 | | |
| | | | | 847.5 | 20635 | 22.07 | 22.5 | 0-2 | | |
| | | | EDD. | 825.5 | 20415 | 21.89 | 22 | 0-2 | | |
| | | 1 | 5RB | 836.5 | 20525 | 21.96 | 22 | 0-2 | | |
| | | | | 847.5 | 20635 | 21.87 | 22 | 0-2 | | |

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| FDD Band 5 | | | | | | | | | | |
|-------------|------------|---------|-----------|--------------------|---------|-----------------------------|------------------------|--------------------------------|--|--|
| Target 1995 | | | | | | | | | | |
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Power + Max. Tolerance | MPR Allowed per 3GPP(dB) | | |
| | | | | 824.7 | 20407 | 23.85 | 24 | 0 | | |
| | | | 0 | 836.5 | 20525 | 23.71 | 24 | 0 | | |
| | | | | 848.3 | 20643 | 23.79 | 24 | 0 | | |
| | | | | 824.7 | 20407 | 23.92 | 24 | 0 | | |
| | | 1 RB | 2 | 836.5 | 20525 | 23.73 | 24 | 0 | | |
| | | | | 848.3 | 20643 | 23.88 | 24 | 0 | | |
| | | | | 824.7 | 20407 | 23.85 | 24 | 0 | | |
| | | | 5 | 836.5 | 20525 | 23.72 | 24 | 0 | | |
| | | | | 848.3 | 20643 | 23.72 | 24 | 0 | | |
| | | | | 824.7 | 20407 | 23.16 | 23.5 | 0-1 | | |
| | QPSK | | 0 | 836.5 | 20525 | 22.96 | 23.5 | 0-1 | | |
| | | | | 848.3 | 20643 | 23.07 | 23.5 | 0-1 | | |
| | | | | 824.7 | 20407 | 23.10 | 23.5 | 0-1 | | |
| | | 3 RB | 2 | 836.5 | 20525 | 22.92 | 23.5 | 0-1 | | |
| | | | | 848.3 | 20643 | 23.12 | 23.5 | 0-1 | | |
| | | | | 824.7 | 20407 | 23.13 | 23.5 | 0-1 | | |
| | | | 3 | 836.5 | 20525 | 22.95 | 23.5 | 0-1 | | |
| | | | | 848.3 | 20643 | 23.10 | 23.5 | 0-1 | | |
| | | | | 824.7 | 20407 | 22.88 | 23 | 0-1 | | |
| | | 6 | SRB | 836.5 | 20525 | 22.73 | 23 | 0-1 | | |
| 1.4 | | | | 848.3 | 20643 | 22.83 | 23 | 0-1 | | |
| 1.7 | | | | 824.7 | 20407 | 23.09 | 24 | 0-1 | | |
| | | | 0 | 836.5 | 20525 | 23.20 | 24 | 0-1 | | |
| | | | | 848.3 | 20643 | 23.40 | 24 | 0-1 | | |
| | | | | 824.7 | 20407 | 23.53 | 24 | 0-1 | | |
| | | 1 RB | 2 | 836.5 | 20525 | 23.05 | 24 | 0-1 | | |
| | | | | 848.3 | 20643 | 23.21 | 24 | 0-1 | | |
| | | | | 824.7 | 20407 | 23.07 | 24 | 0-1 | | |
| | | | 5 | 836.5 | 20525 | 23.05 | 24 | 0-1 | | |
| | | | | 848.3 | 20643 | 23.03 | 24 | 0-1 | | |
| | | | | 824.7 | 20407 | 22.97 | 23 | 0-2 | | |
| | 16-QAM | | 0 | 836.5 | 20525 | 22.76 | 23 | 0-2 | | |
| | | | | 848.3 | 20643 | 22.96 | 23 | 0-2 | | |
| | | | | 824.7 | 20407 | 22.92 | 23 | 0-2 | | |
| | 3 RB | 3 RB | 2 | 836.5 | 20525 | 22.87 | 23 | 0-2 | | |
| | | | 848.3 | 20643 | 22.93 | 23 | 0-2 | | | |
| | | | 824.7 | 20407 | 22.97 | 23 | 0-2 | | | |
| | | | 3 | 836.5 | 20525 | 22.87 | 23 | 0-2 | | |
| | | | | 848.3 | 20643 | 22.96 | 23 | 0-2 | | |
| | | | | 824.7 | 20407 | 22.22 | 22.5 | 0-2 | | |
| | | 6 | SRB | 836.5 | 20525 | 21.87 | 22.5 | 0-2 | | |
| | | | | 848.3 | 20643 | 22.00 | 22.5 | 0-2 | | |

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| | | | | FDD Band | 7 | | | |
|---------|------------|---------|-----------|--------------------|---------|-----------------------------|-------------------------------------|--------------------------------|
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Target Power + Max. Tolerance (dBm) | MPR Allowed per 3GPP(dB) |
| | | | | 2510 | 20850 | 22.26 | 22.5 | 0 |
| | | | 0 | 2535 | 21100 | 22.21 | 22.5 | 0 |
| | | | | 2560 | 21350 | 22.14 | 22.5 | 0 |
| | | | | 2510 | 20850 | 22.22 | 22.5 | 0 |
| | | 1 RB | 50 | 2535 | 21100 | 22.13 | 22.5 | 0 |
| | | | | 2560 | 21350 | 22.35 | 22.5 | 0 |
| | | | | 2510 | 20850 | 22.43 | 22.5 | 0 |
| | | | 99 | 2535 | 21100 | 22.38 | 22.5 | 0 |
| | | | | 2560 | 21350 | 22.45 | 22.5 | 0 |
| | | | 0 | 2510 | 20850 | 21.29 | 22 | 0-1 |
| | QPSK | | | 2535 | 21100 | 21.24 | 22 | 0-1 |
| | 50 RB | | | 2560 | 21350 | 21.28 | 22 | 0-1 |
| | | | 2510 | 20850 | 21.38 | 22 | 0-1 | |
| | | 50 RB | 25 | 2535 | 21100 | 21.16 | 22 | 0-1 |
| | | | | 2560 | 21350 | 21.32 | 22 | 0-1 |
| | | | | 2510 | 20850 | 21.45 | 22 | 0-1 |
| | | | 50 | 2535 | 21100 | 21.19 | 22 | 0-1 |
| | | | | 2560 | 21350 | 21.40 | 22 | 0-1 |
| | | | | 2510 | 20850 | 21.39 | 21.5 | 0-1 |
| | | 100RB | | 2535 | 21100 | 21.19 | 21.5 | 0-1 |
| 20 | | | | 2560 | 21350 | 21.34 | 21.5 | 0-1 |
| 20 | | | | 2510 | 20850 | 21.27 | 22 | 0-1 |
| | | | 0 | 2535 | 21100 | 21.29 | 22 | 0-1 |
| | | | | 2560 | 21350 | 21.78 | 22 | 0-1 |
| | | | | 2510 | 20850 | 21.61 | 22 | 0-1 |
| | | 1 RB | 50 | 2535 | 21100 | 21.69 | 22 | 0-1 |
| | | | | 2560 | 21350 | 21.45 | 22 | 0-1 |
| | | | | 2510 | 20850 | 21.95 | 22 | 0-1 |
| | | | 99 | 2535 | 21100 | 21.92 | 22 | 0-1 |
| | | | | 2560 | 21350 | 21.71 | 22 | 0-1 |
| | | | | 2510 | 20850 | 20.32 | 21 | 0-2 |
| | 16-QAM | | 0 | 2535 | 21100 | 20.23 | 21 | 0-2 |
| | | | | 2560 | 21350 | 20.39 | 21 | 0-2 |
| | | | | 2510 | 20850 | 20.38 | 21 | 0-2 |
| | | 50 RB | 25 | 2535 | 21100 | 20.24 | 21 | 0-2 |
| | | | | 2560 | 21350 | 20.38 | 21 | 0-2 |
| | | | 2510 | 20850 | 20.53 | 21 | 0-2 | |
| | | | 50 | 2535 | 21100 | 20.21 | 21 | 0-2 |
| | | | | 2560 | 21350 | 20.43 | 21 | 0-2 |
| | | | | 2510 | 20850 | 20.37 | 20.5 | 0-2 |
| | | 10 | OORB | 2535 | 21100 | 20.21 | 20.5 | 0-2 |
| | | | | 2560 | 21350 | 20.31 | 20.5 | 0-2 |

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| | | | | FDD Band | 7 | | | |
|---------|------------|---------|-----------|--------------------|----------------|-----------------------------|-------------------------------------|--------------------------------|
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Target Power + Max. Tolerance (dRm) | MPR Allowed per 3GPP(dB) |
| | | | | 2507.5 | 20825 | 22.24 | 22.5 | 0 |
| | | | 0 | 2535 | 21100 | 22.18 | 22.5 | 0 |
| | | | | 2562.5 | 21375 | 22.23 | 22.5 | 0 |
| | | | | 2507.5 | 20825 | 22.34 | 22.5 | 0 |
| | | 1 RB | 36 | 2535 | 21100 | 22.11 | 22.5 | 0 |
| | | | | 2562.5 | 21375 | 22.23 | 22.5 | 0 |
| | | | | 2507.5 | 20825 | 22.41 | 22.5 | 0 |
| | | | 74 | 2535 | 21100 | 22.21 | 22.5 | 0 |
| | | | | 2562.5 | 21375 | 22.44 | 22.5 | 0 |
| | | QPSK | | 2507.5 | 20825 | 21.35 | 21.5 | 0-1 |
| | QPSK | | 0 | 2535 | 21100 | 21.22 | 21.5 | 0-1 |
| | | | | 2562.5 | 21375 | 21.29 | 21.5 | 0-1 |
| | | | | 2507.5 | 20825 | 21.40 | 21.5 | 0-1 |
| | | 36 RB | 18 | 2535 | 21100 | 21.17 | 21.5 | 0-1 |
| | | | | 2562.5 | 21375 | 21.35 | 21.5 | 0-1 |
| | | | | 2507.5 | 20825 | 21.47 | 21.5 | 0-1 |
| | | | 37 | 2535 | 21100 | 21.26 | 21.5 | 0-1 |
| | | | | 2562.5 | 21375 | 21.41 | 21.5 | 0-1 |
| | | 7500 | | 2507.5 2535 | 20825 | 21.40 | 21.5 | 0-1 |
| | | / | 75RB | | 21100 | 21.18 | 21.5 | 0-1 |
| 15 | | | | 2562.5 | 21375 | 21.33 | 21.5 | 0-1 |
| | | | | 2507.5 | 20825 | 21.89 | 22.5 | 0-1 |
| | | | 0 | 2535 | 21100 | 21.53 | 22.5 | 0-1 |
| | | | | 2562.5 | 21375 | 21.75 | 22.5 | 0-1 |
| | | 1 RB | 36 | 2507.5 | 20825 | 21.55 | 22.5 | 0-1 |
| | | IKB | 30 | 2535 2562.5 | 21100 | 21.52 | 22.5 22.5 | 0-1 |
| | | | | | 21375 | 21.76 | | 0-1 |
| | | | 74 | 2507.5 2535 | 20825 21100 | 22.01 21.57 | 22.5 22.5 | 0-1 0-1 |
| | | | , , | 2562.5 | 21100 | 21.94 | 22.5 | 0-1 |
| | | | | 2507.5 | 20825 | 20.39 | 22.5 | 0-1 |
| | 16-QAM | | 0 | 2535 | 21100 | 20.34 | 21 | 0-2 |
| | 10 2/11/1 | | | 2562.5 | 21375 | 20.21 | 21 | 0-2 |
| | | | | 2507.5 | 20825 | 20.37 | 21 | 0-2 |
| | | 36 RB | 18 | 2535 | 21100 | 20.28 | 21 | 0-2 |
| | | 36 RB | | 2562.5 | 21375 | 20.35 | 21 | 0-2 |
| | | | | 2507.5 | 20825 | 20.54 | 21 | 0-2 |
| | | 37 | 2535 | 21100 | 20.26 | 21 | 0-2 | |
| | | | | 2562.5 | 21375 | 20.42 | 21 | 0-2 |
| | - | | | 2507.5 | 20825 | 20.45 | 20.5 | 0-2 |
| | | 75F | 5RB | 2535 | 21100 | 20.26 | 20.5 | 0-2 |
| | | | | 2562.5 | 21375 | 20.33 | 20.5 | 0-2 |

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| FDD Band 7 | | | | | | | | | | |
|------------|------------|---------|-----------|--------------------|---------|-----------------------------|-------------------------------------|--------------------------------|--|--|
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | Conducted power (dBm) | Target Power + Max. Tolerance (dBm) | MPR Allowed per 3GPP(dB) | | |
| | | | | 2505 | 20800 | 22.23 | 22.5 | 0 | | |
| | | | 0 | 2535 | 21100 | 22.03 | 22.5 | 0 | | |
| | | | | 2565 | 21400 | 22.20 | 22.5 | 0 | | |
| | | | | 2505 | 20800 | 22.28 | 22.5 | 0 | | |
| | | 1 RB | 25 | 2535 | 21100 | 21.98 | 22.5 | 0 | | |
| | | | | 2565 | 21400 | 22.34 | 22.5 | 0 | | |
| | | | | 2505 | 20800 | 22.30 | 22.5 | 0 | | |
| | | | 49 | 2535 | 21100 | 22.09 | 22.5 | 0 | | |
| | | | | 2565 | 21400 | 22.33 | 22.5 | 0 | | |
| | | | | 2505 | 20800 | 21.31 | 21.5 | 0-1 | | |
| | QPSK | | 0 | 2535 | 21100 | 21.14 | 21.5 | 0-1 | | |
| | | | 2565 | 21400 | 21.27 | 21.5 | 0-1 | | | |
| | | 25 RB | | 2505 | 20800 | 21.33 | 21.5 | 0-1 | | |
| | | | 12 | 2535 | 21100 | 21.15 | 21.5 | 0-1 | | |
| | | | | 2565 | 21400 | 21.32 | 21.5 | 0-1 | | |
| | | | | 2505 | 20800 | 21.34 | 21.5 | 0-1 | | |
| | | | 25 | 2535 | 21100 | 21.29 | 21.5 | 0-1 | | |
| | | | | 2565 | 21400 | 21.37 | 21.5 | 0-1 | | |
| | | | | 2505 | 20800 | 21.39 | 21.5 | 0-1 | | |
| | | 50RB | | 2535 | 21100 | 21.14 | 21.5 | 0-1 | | |
| 10 | | | | 2565 | 21400 | 21.37 | 21.5 | 0-1 | | |
| 10 | | | | 2505 | 20800 | 21.84 | 22 | 0-1 | | |
| | | | 0 | 2535 | 21100 | 21.31 | 22 | 0-1 | | |
| | | | | 2565 | 21400 | 21.66 | 22 | 0-1 | | |
| | | | | 2505 | 20800 | 21.89 | 22 | 0-1 | | |
| | | 1 RB | 25 | 2535 | 21100 | 21.32 | 22 | 0-1 | | |
| | | | | 2565 | 21400 | 21.72 | 22 | 0-1 | | |
| | | | | 2505 | 20800 | 21.91 | 22 | 0-1 | | |
| | | | 49 | 2535 | 21100 | 21.43 | 22 | 0-1 | | |
| | | | | 2565 | 21400 | 21.61 | 22 | 0-1 | | |
| | | | _ | 2505 | 20800 | 20.30 | 20.5 | 0-2 | | |
| | 16-QAM | | 0 | 2535 | 21100 | 20.11 | 20.5 | 0-2 | | |
| | | | | 2565 | 21400 | 20.34 | 20.5 | 0-2 | | |
| | | | | 2505 | 20800 | 20.40 | 20.5 | 0-2 | | |
| | 25 RB | 25 RB | 12 | 2535 | 21100 | 20.11 | 20.5 | 0-2 | | |
| | | | 2565 | 21400 | 20.35 | 20.5 | 0-2 | | | |
| | | 25 | 2505 | 20800 | 20.37 | 20.5 | 0-2 | | | |
| | | | 25 | 2535 | 21100 | 20.11 | 20.5 | 0-2 | | |
| | | | | 2565 | 21400 | 20.38 | 20.5 | 0-2 | | |
| | | _ | ODD | 2505 | 20800 | 20.38 | 20.5 | 0-2 | | |
| | | 5 | 0RB | 2535 | 21100 | 20.14 | 20.5 | 0-2 | | |
| | | | | 2565 | 21400 | 20.33 | 20.5 | 0-2 | | |

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| FDD Band 7 | | | | | | | | | | | |
|------------|------------|---------|-----------|--------------------|---------|----------------|-------------------|-------------------------|--|--|--|
| | | | | | | Conducted | Target Power + | MPR | | | |
| BW(Mhz) | Modulation | RB Size | RB Offset | Frequency (MHz) | Channel | power (dBm) | Max. Tolerance | Allowed per 3GPP(dB) | | | |
| | | | | 2502.5 | 20775 | 22.16 | 22.5 | 0 | | | |
| | | | 0 | 2535 | 21100 | 22.07 | 22.5 | 0 | | | |
| | | | | 2567.5 | 21425 | 22.14 | 22.5 | 0 | | | |
| | | | | 2502.5 | 20775 | 22.37 | 22.5 | 0 | | | |
| | | 1 RB | 12 | 2535 | 21100 | 22.13 | 22.5 | 0 | | | |
| | | | | 2567.5 | 21425 | 22.21 | 22.5 | 0 | | | |
| | | | | 2502.5 | 20775 | 22.23 | 22.5 | 0 | | | |
| | | | 24 | 2535 | 21100 | 22.12 | 22.5 | 0 | | | |
| | | | | 2567.5 | 21425 | 22.25 | 22.5 | 0 | | | |
| | | | 0 | 2502.5 | 20775 | 21.37 | 21.5 | 0-1 | | | |
| | QPSK | | | 2535 | 21100 | 21.16 | 21.5 | 0-1 | | | |
| | | | | 2567.5 | 21425 | 21.37 | 21.5 | 0-1 | | | |
| | | | | 2502.5 | 20775 | 21.38 | 21.5 | 0-1 | | | |
| | | 12 RB | 6 | 2535 | 21100 | 21.14 | 21.5 | 0-1 | | | |
| | | | | 2567.5 | 21425 | 21.37 | 21.5 | 0-1 | | | |
| | | | | 2502.5 | 20775 | 21.42 | 21.5 | 0-1 | | | |
| | | | 13 | 2535 | 21100 | 21.17 | 21.5 | 0-1 | | | |
| | | | | 2567.5 | 21425 | 21.38 | 21.5 | 0-1 | | | |
| | | | | 2502.5 | 20775 | 21.34 | 21.5 | 0-1 | | | |
| | | 2 | 5RB | 2535 | 21100 | 21.12 | 21.5 | 0-1 | | | |
| 5 | | | | 2567.5 | 21425 | 21.36 | 21.5 | 0-1 | | | |
| · · | | | | 2502.5 | 20775 | 21.86 | 22 | 0-1 | | | |
| | | | 0 | 2535 | 21100 | 21.32 | 22 | 0-1 | | | |
| | | | | 2567.5 | 21425 | 21.74 | 22 | 0-1 | | | |
| | | | | 2502.5 | 20775 | 21.90 | 22 | 0-1 | | | |
| | | 1 RB | 12 | 2535 | 21100 | 21.38 | 22 | 0-1 | | | |
| | | | | 2567.5 | 21425 | 21.49 | 22 | 0-1 | | | |
| | | | | 2502.5 | 20775 | 21.32 | 22 | 0-1 | | | |
| | | | 24 | 2535 | 21100 | 21.34 | 22 | 0-1 | | | |
| | | | | 2567.5 | 21425 | 21.28 | 22 | 0-1 | | | |
| | | | | 2502.5 | 20775 | 20.46 | 20.5 | 0-2 | | | |
| | 16-QAM | | 0 | 2535 | 21100 | 20.21 | 20.5 | 0-2 | | | |
| | | | | 2567.5 | 21425 | 20.46 | 20.5 | 0-2 | | | |
| | 12 RB | | 2502.5 | 20775 | 20.44 | 20.5 | 0-2 | | | | |
| | | 6 | 2535 | 21100 | 20.15 | 20.5 | 0-2 | | | | |
| | | | | 2567.5 | 21425 | 20.48 | 20.5 | 0-2 | | | |
| | | | | 2502.5 | 20775 | 20.44 | 20.5 | 0-2 | | | |
| | | | 13 | 2535 | 21100 | 20.25 | 20.5 | 0-2 | | | |
| | | | | 2567.5 | 21425 | 20.38 | 20.5 | 0-2 | | | |
| | | | | 2502.5 | 20775 | 20.38 | 20.5 | 0-2 | | | |
| | | 25RI | 5RB | 2535 | 21100 | 20.20 | 20.5 | 0-2 | | | |
| İ | | | | 2567.5 | 21425 | 20.37 | 20.5 | 0-2 | | | |

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#. WLAN802.11 a/b/g/n (20M/40M) conducted power table:

| 802. | 11 b | Max. Rated Avg. | Average Power Output (dBM) |
|------|-----------|-----------------|----------------------------|
| СН | Frequency | Power + Max. | Data Rate (Mbps) |
| СП | (MHz) | Tolerance (dBm) | 1 |
| 1 | 2412 | 17 | 16.81 |
| 6 | 2437 | 17 | 16.98 |
| 11 | 2462 | 17 | 16.75 |

| 802. | .11 g | Max. Rated Avg. | Average Power Output (dBM) |
|------|-----------|-----------------|----------------------------|
| СН | Frequency | Power + Max. | Data Rate (Mbps) |
| СП | (MHz) | Tolerance (dBm) | 6 |
| 1 | 2412 | 14 | 13.73 |
| 6 | 2437 | 14 | 13.97 |
| 11 | 2462 | 14 | 13.74 |

| 802.11 | n (20M) | Max. Rated Avg. | Average Power Output (dBM) |
|--------|-----------------------|-----------------|----------------------------|
| СП | Frequency Power + Max | Power + Max. | Data Rate (Mbps) |
| CIT | | Tolerance (dBm) | 6.5 |
| 1 | 2412 | 12 | 9.2 |
| 6 | 2437 | 12 | 10 |
| 11 | 2462 | 12 | 9.22 |

| 802.11 | n (40M) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Average Power Output (dBM) |
|--------|-----------|--|----------------------------|
| СН | Frequency | | Data Rate (Mbps) |
| СП | (MHz) | | 13.5 |
| 3 | 2422 | 12 | 8.13 |
| 6 | 2437 | 12 | 10.04 |
| 9 | 2452 | 12 | 8.2 |

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| 802.11 a 5.2G (20M) | | Max. Rated Avg. | Average Power Output (dBM) |
|---------------------|-----------|-----------------|----------------------------|
| CH | Frequency | D M. | Data Rate (Mbps) |
| CH | (MHz) | | 6 |
| 36 | 5180 | 13 | 12.9 |
| 40 | 5200 | 13 | 12.82 |
| 44 | 5220 | 13 | 12.8 |
| 48 | 5240 | 13 | 12.76 |

| 802.11 a | 5.3G (20M) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Average Power Output (dBM) |
|----------|------------|--|----------------------------|
| CII | Frequency | | Data Rate (Mbps) |
| СН | (MHz) | | 6 |
| 52 | 5260 | 13 | 12.94 |
| 56 | 5280 | 13 | 12.97 |
| 60 | 5300 | 13 | 12.67 |
| 64 | 5320 | 13 | 12.72 |

| 802.11 a | 5.6G (20M) | Max. Rated Avg. | Average Power Output (dBM) |
|----------|------------|-----------------|----------------------------|
| СН | Frequency | Power + Max. | Data Rate (Mbps) |
| CH | (MHz) | Tolerance (dBm) | 6 |
| 100 | 5500 | 13 | 12.82 |
| 104 | 5520 | 13 | 12.71 |
| 108 | 5540 | 13 | 12.65 |
| 112 | 5560 | 13 | 12.97 |
| 116 | 5580 | 13 | 12.68 |
| 120 | 5600 | 13 | 12.75 |
| 124 | 5620 | 13 | 12.72 |
| 128 | 5640 | 13 | 12.78 |
| 132 | 5660 | 13 | 12.73 |
| 136 | 5680 | 13 | 12.67 |
| 140 | 5700 | 13 | 12.96 |

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| 802.11 a | 5.8G (20M) | Max. Rated Avg. | Average Power Output (dBM) |
|----------|------------|---------------------------------|----------------------------|
| СН | Frequency | Power + Max. Tolerance (dBm) | Data Rate (Mbps) |
| CIT | (MHz) | | 6 |
| 149 | 5745 | 13 | 12.94 |
| 153 | 5765 | 13 | 12.72 |
| 157 | 5785 | 13 | 12.83 |
| 161 | 5805 | 13 | 12.89 |
| 165 | 5825 | 13 | 12.99 |

| 802.11 n | 5.2G (20M) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Average Power Output (dBM) |
|----------|------------|--|----------------------------|
| 011 | Frequency | | Data Rate (Mbps) |
| СН | (MHz) | | 6.5 |
| 36 | 5180 | 11 | 10.91 |
| 40 | 5200 | 11 | 10.93 |
| 44 | 5220 | 11 | 10.94 |
| 48 | 5240 | 11 | 10.79 |

| 802.11 n | 5.3G (20M) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Average Power Output (dBM) |
|----------|------------|--|----------------------------|
| 011 | Frequency | | Data Rate (Mbps) |
| СН | (MHz) | | 6.5 |
| 52 | 5260 | 11 | 10.84 |
| 56 | 5280 | 11 | 10.96 |
| 60 | 5300 | 11 | 10.98 |
| 64 | 5320 | 11 | 10.76 |

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| 802.11 n | 5.6G (20M) | Max. Rated Avg. | Average Power Output (dBM) |
|----------|------------|-----------------|----------------------------|
| СН | Frequency | Power + Max. | Data Rate (Mbps) |
| CH | (MHz) | Tolerance (dBm) | 6.5 |
| 100 | 5500 | 11 | 10.78 |
| 104 | 5520 | 11 | 10.67 |
| 108 | 5540 | 11 | 10.97 |
| 112 | 5560 | 11 | 10.96 |
| 116 | 5580 | 11 | 10.81 |
| 120 | 5600 | 11 | 10.74 |
| 124 | 5620 | 11 | 10.73 |
| 128 | 5640 | 11 | 10.72 |
| 132 | 5660 | 11 | 10.68 |
| 136 | 5680 | 11 | 10.98 |
| 140 | 5700 | 11 | 10.94 |

| 802.11 n 5.8G (20M) | | Max. Rated Avg. | Average Power Output (dBM) |
|---------------------|-----------|---------------------------------|----------------------------|
| СН | Frequency | Power + Max. Tolerance (dBm) | Data Rate (Mbps) |
| OH | (MHz) | | 6.5 |
| 149 | 5745 | 11 | 10.9 |
| 153 | 5765 | 11 | 10.99 |
| 157 | 5785 | 11 | 10.78 |
| 161 | 5805 | 11 | 10.92 |
| 165 | 5825 | 11 | 10.66 |

| 802.11 | n 5.3G (40M) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Average Power Output (dBM) |
|--------|--------------------|--|----------------------------|
| CH | CH Frequency (MHz) | | Data Rate (Mbps) |
| СП | | | 13.5 |
| 54 | 5270 | 11 | 10.7 |
| 62 | 5310 | 11 | 10.93 |

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| 802.11 | n 5.6G (40M) | Max. Rated Avg. Power + Max. | Average Power Output (dBM) |
|--------|-----------------|---------------------------------|----------------------------|
| CH | Frequency (MHz) | | Data Rate (Mbps) |
| СП | Frequency (MHZ) | Tolerance (dBm) | 13.5 |
| 102 | 5510 | 11 | 10.97 |
| 110 | 5550 | 11 | 10.58 |
| 118 | 5590 | 11 | 10.58 |
| 126 | 5630 | 11 | 10.6 |
| 134 | 5670 | 11 | 10.98 |

| 802.11 n 5.8G (40M) | | Max. Rated Avg. | Average Power Output (dBM) | |
|---------------------|-----------------|-----------------|----------------------------|--|
| СН | Frequency (MHz) | Power + Max. | Data Rate (Mbps) | |
| | | Tolerance (dBm) | 13.5 | |
| 151 | 5755 | 11 | 10.62 | |
| 159 | 5795 | 11 | 10.56 | |

#. Bluetooth conducted power table:

| | | Target | Tolerance | |
|----------------|------|--------|-----------|--|
| | | [dBm] | +-[dBm] | |
| | low | 6 | ± 3 | |
| BR | mid | 6 | ± 3 | |
| | high | 6 | ± 3 | |
| | low | -2 | ± 2 | |
| EDR | mid | -2 | ± 2 | |
| | high | -2 | ± 2 | |
| | low | -2 | ± 2 | |
| 4.0 Low Energy | mid | -2 | ± 2 | |
| | high | -2 | ± 2 | |

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1.4 Test Environment

Ambient Temperature: 22±2° C Tissue Simulating Liquid: 22±2° C

1.5 Operation Description

- 1. The EUT is controlled by using a Radio Communication Tester (R&S CMU200 and Antrisu MT8820C), and the communication between the EUT and the tester is established by air link.
- 2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
- 3. During the SAR testing, the DASY 5 system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
- 4. Testing head SAR at lowest, middle and highest channel for all bands with Left Tilt /Left Cheek/Right Tilt/Right Cheek conditions.
- 5. Testing body-worn SAR by separating the EUT and the phantom 15mm distance when performing GSM850/1900, WCDMA Band II/V, LTE Band 5/7 and WLAN 5G. (Both front side & back side)
- 6. Testing hotspot mode SAR by separating the EUT and the phantom **10mm** distance.
 - #. The SAR testing for portable devices with wireless router capability is refered as test guidance of KDB 941225D06v02 (SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities).
 - #. The following procedures are applicable when the overall device length and width are ≥9 cm x 5 cm respectively. A test separation of 10 mm is required. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25 mm from that surface or edge, for the data modes, wireless technologies and frequency bands supporting hotspot mode.
 - # For WLAN 2.4G (15mm separation): the testing device support mobile hotspot function, the separation distance is 10mm (No need to perform body-worn

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SAR testing due to the hotspot mode (10mm separation distance) is more conservative than body-worn mode (15mm separation distance).

Test configurations:

- (1) Front side
- (2) Back side
- (3) Top side. (WWAN antenna to edge distance > 25mm_ No SAR measurement is necessary for this configuration)
- (4) Bottom side. (WLAN antenna to edge distance >25mm_ No SAR measurement is necessary for this configuration)
- (5) Right side. (WLAN antenna to edge distance >25mm_ No SAR measurement is necessary for this configuration)
- (6) Left side.
- 7. According to KDB447498D01v05r02 The 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by: [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] $\cdot [\sqrt{f(GHz)}] \le 3.0$ for 1-q SAR, SAR evaluation is not required. (Max power for Bluetooth is 9 dBm)

| | Maximum tune-up power(dBm) | Maximum tune-up power(mW) | All surfaces/sides | | |
|------|-------------------------------|---------------------------------|----------------------------|------------------------|----------------------------|
| Mode | | | Ant. to surface (mm) | Exclusion threshold | Require SAR testing? |
| ВТ | 9 | 7.943 | 15 | 0.834 | NO |

- 8. The SAR test of GPRS was performed on the maximum sourced-based time-averaged power.
- 9. The SAR measurement is not required for HSDPA/HSPA+ since its maximum output power is less than 1/4 dB higher than RMC without HSDPA/HSPA/HSPA+.

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10. LTE modes test according to KDB 941225D05v02r03.

- a. Per Section 5.2.1, the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation.
 - Using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
 - When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
 - When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
- b. Per Section 5.2.2, the largest channel bandwidth and measure SAR for QPSK with 50% RB allocation
 - The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.
- c. Per Section 5.2.3, the largest channel bandwidth and measure SAR for QPSK with 100% RB allocation
 - For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg.
 - Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
- d. Per Section 5.2.4, Higher order modulations
 - For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > 1/2 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

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- e. Per Section 5.3, other channel bandwidth standalone SAR test requirements
 - For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.
 - The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

802.11b DSSS SAR Test Requirements:

- 11. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 12. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

802.11g/n OFDM SAR Test Exclusion Requirements:

13. SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Initial Test Configuration:

14. An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and

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aggregated frequency band.

- 15. SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
- 16. WLAN 802.11 5.2a, 5.3a, 5.6a and 5.8a are chosen to be the initial test configurations.
- 17. BT and WLAN use the same antenna path and Bluetooth can't transmit simultaneously with WLAN.
- 18. The highest body SAR configuration is repeated with a headset attached.
- 19. According to KDB447498D01v05r02, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is \leq 100 MHz.
- 20. According to KDB865664D01v01r03, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-q SAR limit)
- 21. Since a display diagonal dimension(12.6cm) < 15.0 cm and an overall diagonal dimension(15.8cm) < 16.0 cm so that the phablet procedure in KDB648474D04 is not required. (please refer to Fig. 16)

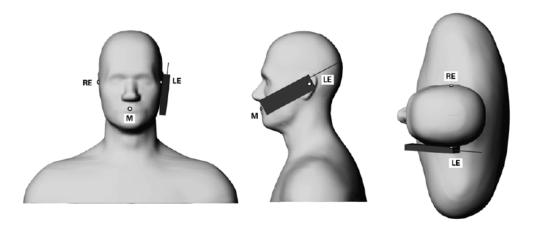
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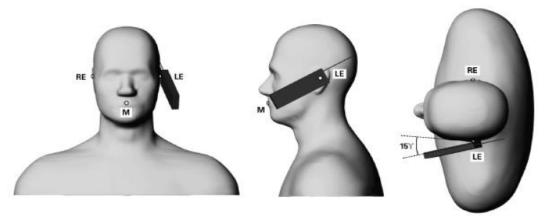


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1.6 Positioning Procedure



Phone position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:

The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

Ear/Tilt Position:

With the phone aligned in the Cheek/Touch position, the handset was tilted away from

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the mouth with respect to the test device reference point by 15 degrees.

1.7 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- 1. The extraction of the measured data (grid and values) from the Zoom Scan.
- 2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- 3. The generation of a high-resolution mesh within the measured volume.
- 4. The interpolation of all measured values from the measurement grid to the high-resolution grid.
- 5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
- 6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within -2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It

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is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans.

The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found.

If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

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1.8 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.8.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = \frac{\sigma}{\rho} |E|^2 = c \frac{\delta T}{\delta t}$$

Whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

• The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.

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• The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.

- The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures ($\sim 2\%$ for c; much better for ρ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed $\pm 5\%$.
- Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about $\pm 10\%$ (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is $\pm 5\%$ (RSS) when the same liquid is used for the calibration and for actual measurements and $\pm 7-9\%$ (RSS) when not, which is in good agreement with the estimates given in [2].

1.8.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

• The setup must enable accurate determination of the incident power.

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- The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

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1.9 The SAR Measurement System

A block diagram of the SAR measurement system is given in Fig. a. This SAR measurement system uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). Model EX3DV4 field probes are used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|²)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.

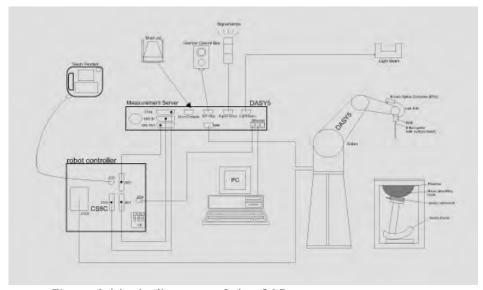


Fig. a A block diagram of the SAR measurement system

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The DASY 5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- Data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows7
- DASY 5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

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1.10 System Components

EX3DV4 E-Field Probe

| Construction | Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure |
|--------------|--|
| | material (resistant to organic solvents, e.g., DGBE) |
| Calibration | Basic Broad Band Calibration in air |
| | Conversion Factors (CF) for |
| | HSL835/1900/2450/2600/5200/5300/5600/5800MHz |
| | Additional CF for other liquids and frequencies upon |
| | request |
| Frequency | 10 MHz to > 6 GHz, Linearity: ± 0.6 dB |
| Directivity | ± 0.3 dB in HSL (rotation around probe axis) |
| | ± 0.5 dB in tissue material (rotation normal to probe axis) |
| Dynamic | 10 μW/g to > 100 mW/g |
| Range | Linearity: ± 0.2 dB (noise: typically < 1 μW/g) |
| Dimensions | Tip diameter: 2.5 mm |
| Application | High precision dosimetric measurements in any exposure scenario (e.g., very |
| | strong gradient fields). Only probe which enables compliance testing for |
| | frequencies up to 6 GHz with precision of better 30%. |

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SAM PHANTOM VA OC

| SAM PHANTON | /I V4.0C | | | | | | | | |
|------------------|--|---|--|--|--|--|--|--|--|
| Construction: | The shell corresponds to the specific | cations of the Specific | | | | | | | |
| | Anthropomorphic Mannequin (SAM) | nthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 | | | | | | | |
| | and IEC 62209. | | | | | | | | |
| | It enables the dosimetric evaluation | of left and right hand phone | | | | | | | |
| | usage as well as body mounted usage at the flat phantom region | | | | | | | | |
| | cover prevents evaporation of the liquid. Reference markings or | | | | | | | | |
| | phantom allow the complete setup of | of all predefined phantom positions | | | | | | | |
| | and measurement grids by manually teaching three points with the | | | | | | | | |
| | robot. | | | | | | | | |
| Shell Thickness: | 2 ± 0.2 mm | | | | | | | | |
| Filling Volume: | Approx. 25 liters | THE THE | | | | | | | |
| Dimensions: | Height: 850 mm; | 7 | | | | | | | |
| | Length: 1000 mm; | | | | | | | | |
| | Width: 500 mm | - | | | | | | | |
| | | | | | | | | | |

DEVICE HOLDER

| | | |
|--------------|--|--|
| Construction | In combination with the Twin SAM Phantom | |
| | V4.0/V4.0C or Twin SAM, the Mounting | |
| | Device (made from POM) enables the rotation | |
| | of the mounted transmitter in spherical | |
| | coordinates, whereby the rotation point is the | |
| | ear opening. The devices can be easily and | |
| | accurately positioned according to IEC, IEEE, | |
| | CENELEC, FCC or other specifications. The | |
| | device holder can be locked at different | |
| | phantom locations (left head, right head, flat | |
| | phantom). | |



Device Holder

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1.11 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% (according to KDB865664D01v01r03) from the target SAR values.

These tests were done at 850/1900/2450/2600/5200/5300/5600/5800 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was above 15 cm (\leq 3G) or 10 cm (>3G) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

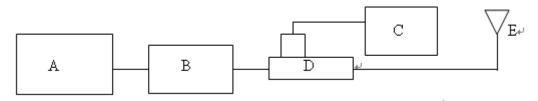
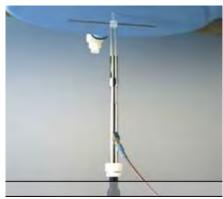


Fig. b The block diagram of system verification

- A. Signal Generator
- B. Amplifier
- C. Power Sensor
- D. Dual Directional Coupling
- E. Reference Dipole Antenna



Photograph of the Dipole Antenna

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| Validation Kit | S/N | Frequ (Mł | , | 1W Target SAR-1g (mW/g) | Measured SAR-1g (mW/g) | Measured SAR-1g normalized to 1W (mW/g) | Deviation (%) | Measured Date |
|-------------------|-------|--------------|------|-------------------------------|------------------------------|--|------------------|------------------|
| D835V2 | 4d063 | 835 | Head | 9.24 | 2.48 | 9.92 | 7.36% | May. 07,2015 |
| D835V2 | 4d063 | 835 | Head | 9.24 | 2.46 | 9.84 | 6.49% | Jun. 07,2015 |
| D835V2 | 4d063 | 835 | Body | 9.35 | 2.38 | 9.52 | 1.82% | May. 08,2015 |
| D835V2 | 4d063 | 835 | Body | 9.35 | 2.39 | 9.56 | 2.25% | Jun. 07,2015 |
| D1900V2 | 5d027 | 1900 | Head | 40.6 | 9.91 | 39.64 | -2.36% | May. 09,2015 |
| D1900V2 | 5d027 | 1900 | Body | 39.3 | 9.87 | 39.48 | 0.46% | May. 11,2015 |
| D1900V2 | 5d027 | 1900 | Head | 40.6 | 9.93 | 39.72 | -2.17% | Jun. 07,2015 |
| D1900V2 | 5d027 | 1900 | Body | 39.3 | 9.89 | 39.56 | 0.66% | Jun. 07,2015 |
| D2450V2 | 727 | 2450 | Head | 52 | 12.8 | 51.2 | -1.54% | May. 08,2015 |
| D2450V2 | 727 | 2450 | Body | 51 | 13.4 | 53.6 | 5.10% | May. 08,2015 |
| D2450V2 | 727 | 2450 | Head | 52 | 12.6 | 50.4 | -3.08% | Jun. 04,2015 |
| D2450V2 | 727 | 2450 | Body | 51 | 6.12 | 24.48 | -52.00% | Jun. 04,2015 |
| D2600V2 | 1005 | 2600 | Head | 56.8 | 14.3 | 57.2 | 0.70% | May. 12,2015 |
| D2600V2 | 1005 | 2600 | Body | 55.1 | 14.2 | 56.8 | 3.09% | May. 13,2015 |
| D2600V2 | 1005 | 2600 | Head | 56.8 | 14.2 | 56.8 | 0.00% | Jun. 09,2015 |
| D2600V2 | 1005 | 2600 | Body | 55.1 | 14.4 | 57.6 | 4.54% | Jun. 09,2015 |
| D5GHzV2 | 1023 | 5200 | Head | 77.9 | 7.71 | 77.1 | -1.03% | May. 11,2015 |
| D5GHzV2 | 1023 | 5200 | Body | 73.5 | 7.39 | 73.9 | 0.54% | May. 11,2015 |
| D5GHzV2 | 1023 | 5300 | Head | 81.7 | 8.29 | 82.9 | 1.47% | May. 11,2015 |
| D5GHzV2 | 1023 | 5300 | Body | 74.6 | 7.73 | 77.3 | 3.62% | May. 11,2015 |
| D5GHzV2 | 1023 | 5300 | Head | 81.7 | 8.21 | 82.1 | 0.49% | Jun. 04,2015 |
| D5GHzV2 | 1023 | 5300 | Body | 74.6 | 7.56 | 75.6 | 1.34% | Jun. 04,2015 |
| D5GHzV2 | 1023 | 5600 | Head | 81.4 | 7.95 | 79.5 | -2.33% | May. 11,2015 |
| D5GHzV2 | 1023 | 5600 | Body | 77.9 | 8.09 | 80.9 | 3.85% | May. 11,2015 |
| D5GHzV2 | 1023 | 5800 | Head | 78.2 | 8.06 | 80.6 | 3.07% | May. 11,2015 |
| D5GHzV2 | 1023 | 5800 | Body | 75.6 | 7.87 | 78.7 | 4.10% | May. 11,2015 |

Table 1. System validation (follow manufacture target value)

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1.12 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjuncation with Network Analyzer.

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the flat section of the phantom was at least 15 cm (≤3G) or 10 cm (>3G) during all tests. (Appendix Fig. 2)

| Tissue Type | Measured Frequency (MHz) | Target Dielectric Constant, Er | Target Conductivity, σ (S/m) | Measured Dielectric Constant, Er | Measured Conductivity, σ (S/m) | % dev εr | % dev σ | Measurement Date |
|----------------|--------------------------------|---|------------------------------------|---|--------------------------------------|----------|---------|---------------------|
| Head | 2437 | 39.223 | 1.788 | 38.532 | 1.805 | 1.79% | -0.95% | May. 8, 2015 |
| Heau | 2450 | 39.200 | 1.800 | 38.479 | 1.821 | 1.87% | -1.17% | Iviay. 6, 2015 |
| Body | 2437 | 52.717 | 1.938 | 51.238 | 2.019 | 2.89% | -4.18% | May. 8, 2015 |
| body | 2450 | 52.700 | 1.950 | 51.195 | 2.036 | 2.94% | -4.41% | Way. 6, 2015 |
| | 5180 | 36.009 | 4.635 | 37.265 | 4.726 | -3.37% | -1.97% | |
| | 5200 | 35.986 | 4.655 | 37.204 | 4.750 | -3.27% | -2.04% | |
| | 5280 | 35.894 | 4.737 | 36.954 | 4.860 | -2.87% | -2.60% | - May. 11, 2015 |
| Head | 5300 | 35.871 | 4.758 | 36.930 | 4.882 | -2.87% | -2.62% | |
| пеац | 5600 | 35.529 | 5.065 | 36.095 | 5.241 | -1.57% | -3.47% | |
| | 5700 | 35.414 | 5.168 | 35.861 | 5.364 | -1.25% | -3.79% | |
| | 5800 | 35.300 | 5.270 | 35.577 | 5.486 | -0.78% | -4.10% | |
| | 5825 | 35.271 | 5.296 | 35.496 | 5.521 | -0.63% | -4.26% | |
| | 5180 | 49.041 | 5.276 | 48.078 | 5.444 | 2.00% | -3.19% | |
| | 5200 | 49.014 | 5.299 | 47.906 | 5.466 | 2.31% | -3.15% | |
| | 5280 | 48.906 | 5.393 | 47.654 | 5.587 | 2.63% | -3.60% | |
| D = alc: | 5300 | 48.879 | 5.416 | 47.554 | 5.611 | 2.79% | -3.60% | M 11 2015 |
| Body | 5600 | 48.471 | 5.766 | 46.541 | 6.011 | 4.15% | -4.24% | May. 11, 2015 |
| | 5700 | 48.336 | 5.883 | 46.299 | 6.152 | 4.40% | -4.57% | |
| | 5800 | 48.200 | 6.000 | 45.975 | 6.278 | 4.84% | -4.63% | 1 |
| | 5825 | 48.166 | 6.029 | 45.881 | 6.284 | 4.98% | -4.23% | |

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| Tissue Type | Measured Frequency (MHz) | Target Dielectric Constant, Er | Target Conductivity, σ (S/m) | Measured Dielectric Constant, Er | Measured Conductivity, σ (S/m) | % dev εr | % dev σ | Measurement Date | |
|----------------|--------------------------------|---|------------------------------------|---|--------------------------------------|----------|---------|---------------------|--|
| | 824.2 | 41.556 | 0.899 | 40.874 | 0.865 | 1.64% | 3.80% | | |
| | 826.4 | 41.545 | 0.899 | 40.854 | 0.867 | 1.66% | 3.56% | | |
| | 829 | 41.531 | 0.900 | 40.831 | 0.871 | 1.69% | 3.22% | | |
| | 835 | 41.500 | 0.900 | 40.778 | 0.877 | 1.74% | 2.56% | | |
| Head | 836.5 | 41.500 | 0.902 | 40.753 | 0.879 | 1.80% | 2.55% | May.7, 2015 | |
| | 836.6 | 41.500 | 0.902 | 40.749 | 0.879 | 1.81% | 2.55% | | |
| | 844 | 41.500 | 0.910 | 40.688 | 0.887 | 1.96% | 2.53% | | |
| | 846.6 | 41.500 | 0.912 | 40.667 | 0.889 | 2.01% | 2.52% | | |
| | 848.8 | 41.500 | 0.915 | 40.653 | 0.892 | 2.04% | 2.51% | | |
| | 824.2 | 55.242 | 0.969 | 56.211 | 0.951 | -1.75% | 1.87% | | |
| | 826.4 | 55.234 | 0.969 | 56.194 | 0.953 | -1.74% | 1.65% | | |
| | 829 | 55.223 | 0.970 | 56.169 | 0.956 | -1.71% | 1.44% | | |
| | 835 | 55.200 | 0.970 | 56.127 | 0.962 | -1.68% | 0.82% | May.8, 2015 | |
| Body | 836.5 | 55.195 | 0.972 | 56.111 | 0.964 | -1.66% | 0.82% | | |
| | 836.6 | 55.195 | 0.972 | 56.109 | 0.964 | -1.66% | 0.82% | | |
| | 844 | 55.172 | 0.981 | 56.058 | 0.972 | -1.61% | 0.92% | | |
| | 846.6 | 55.164 | 0.984 | 56.033 | 0.975 | -1.58% | 0.91% | | |
| | 848.8 | 55.158 | 0.987 | 56.019 | 0.978 | -1.56% | 0.91% | <u>]</u> | |
| | 1850.2 | 40.000 | 1.400 | 40.674 | 1.351 | -1.69% | 3.50% | | |
| | 1852.4 | 40.000 | 1.400 | 40.661 | 1.353 | -1.65% | 3.36% | | |
| Head | 1880 | 40.000 | 1.400 | 40.501 | 1.381 | -1.25% | 1.36% | May.9, 2015 | |
| пеаи | 1900 | 40.000 | 1.400 | 40.388 | 1.403 | -0.97% | -0.21% | May. 9, 2015 | |
| | 1907.6 | 40.000 | 1.400 | 40.344 | 1.411 | -0.86% | -0.79% | | |
| | 1909.8 | 40.000 | 1.400 | 40.329 | 1.413 | -0.82% | -0.93% | | |
| | 1850.2 | 53.300 | 1.520 | 53.552 | 1.491 | -0.47% | 1.91% | | |
| | 1852.4 | 53.300 | 1.520 | 53.541 | 1.493 | -0.45% | 1.78% | | |
| Dodu | 1880 | 53.300 | 1.520 | 53.451 | 1.523 | -0.28% | -0.20% | May 11 2015 | |
| Body | 1900 | 53.300 | 1.520 | 53.365 | 1.544 | -0.12% | -1.58% | May.11, 2015 | |
| | 1907.6 | 53.300 | 1.520 | 53.326 | 1.552 | -0.05% | -2.11% | | |
| | 1909.8 | 53.300 | 1.520 | 53.317 | 1.554 | -0.03% | -2.24% | | |
| | 2510 | 39.124 | 1.865 | 40.432 | 1.821 | -3.34% | 2.36% | | |
| l | 2535 | 39.092 | 1.893 | 40.348 | 1.847 | -3.21% | 2.43% | | |
| Head | 2560 | 39.060 | 1.920 | 40.256 | 1.875 | -3.06% | 2.34% | May.12, 2015 | |
| | 2600 | 39.009 | 1.964 | 40.142 | 1.913 | -2.90% | 2.60% | | |
| <u> </u> | 2510 | 52.624 | 2.035 | 53.876 | 1.983 | -2.38% | 2.56% | | |
| | | | | | | | | | |
| Body | 2535 | 52.592 | 2.071 | 53.787 | 2.008 | -2.27% | 3.04% | May.13, 2015 | |
| | 2560 | 52.560 | 2.106 | 53.703 | 2.033 | -2.17% | 3.47% | | |
| | 2600 | 52.509 | 2.163 | 53.561 | 2.073 | -2.00% | 4.16% | | |

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| Tissue Type | Measured Frequency (MHz) | Target Dielectric Constant, εr | Target Conductivity, σ (S/m) | Measured Dielectric Constant, Er | Measured Conductivity, σ (S/m) | % dev εr | % dev σ | Measurement Date | |
|----------------|--------------------------------|---|------------------------------------|----------------------------------|--------------------------------------|----------|---------|---------------------|--|
| | 824.2 | 41.556 | 0.899 | 41.084 | 0.868 | 1.14% | 3.47% | | |
| Head | 826.4 | 41.545 | 0.899 | 41.067 | 0.870 | 1.15% | 3.23% | | |
| пеаи | 835 | 41.500 | 0.900 | 40.991 | 0.879 | 1.23% | 2.33% | | |
| | 836.5 | 41.500 | 0.902 | 40.976 | 0.881 | 1.26% | 2.33% | lup 7 2015 | |
| | 824.2 | 55.242 | 0.969 | 56.021 | 0.944 | -1.41% | 2.60% | Jun.7, 2015 | |
| Pody | 835 | 55.200 | 0.970 | 55.938 | 0.954 | -1.34% | 1.65% | | |
| Body | 844 | 55.172 | 0.981 | 55.874 | 0.963 | -1.27% | 1.83% | | |
| | 846.6 | 55.164 | 0.984 | 55.857 | 0.966 | -1.26% | 1.83% | | |
| | 1850.2 | 40.000 | 1.400 | 40.721 | 1.367 | -1.80% | 2.36% | | |
| Head | 1880 | 40.000 | 1.400 | 40.551 | 1.394 | -1.38% | 0.43% | | |
| | 1900 | 40.000 | 1.400 | 40.437 | 1.415 | -1.09% | -1.07% | lup 7 2015 | |
| | 1900 | 53.300 | 1.520 | 53.621 | 1.531 | -0.60% | -0.72% | Jun.7, 2015 | |
| Body | 1907.6 | 53.300 | 1.520 | 53.585 | 1.541 | -0.53% | -1.38% | | |
| | 1909.8 | 53.300 | 1.520 | 53.572 | 1.543 | -0.51% | -1.51% | | |
| Hood | 2510 | 39.124 | 1.865 | 40.211 | 1.841 | -2.78% | 1.29% | _ | |
| Head | 2600 | 39.009 | 1.964 | 39.916 | 1.936 | -2.33% | 1.43% | lup 0 2015 | |
| Body | 2510 | 52.624 | 2.035 | 53.121 | 1.994 | -0.94% | 2.01% | Jun.9, 2015 | |
| Бойу | 2600 | 52.509 | 2.163 | 52.814 | 2.104 | -0.58% | 2.73% | | |

| Tissue Type | Measured Frequency (MHz) | Target Dielectric Constant, | Target Conductivi ty, g (S/m) | Measured Dielectric Constant, | Measured Conductivi ty, | % dev εr | % dev σ | Measurement Date |
|----------------|--------------------------------|-----------------------------------|--|-------------------------------------|-------------------------------|----------|---------|---------------------|
| | 2437 | 39.223 | 1.788 | 38.517 | 1.825 | 1.80% | -2.07% | |
| Head | 2450 | 39.200 | 1.800 | 38.539 | 1.815 | 1.69% | -0.83% | |
| Heau | 5280 | 35.894 | 4.737 | 36.934 | 4.851 | -2.90% | -2.41% | |
| | 5300 | 35.849 | 4.778 | 36.93 | 4.882 | -3.02% | -2.18% | June. 4, 2015 |
| | 2437 | 52.717 | 1.938 | 51.248 | 2.011 | 2.79% | -3.77% | June. 4, 2015 |
| Pody | 2450 | 52.700 | 1.950 | 51.219 | 2.035 | 2.81% | -4.36% | |
| Body | 5280 | 48.906 | 5.393 | 47.627 | 5.561 | 2.61% | -3.12% | |
| | 5300 | 48.879 | 5.416 | 47.554 | 5.611 | 2.71% | -3.60% | |

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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The composition of the tissue simulating liquid:

| | | | position o | | | 9 1 | | | | |
|--------------------|------|----------|------------|---------|------------------|-----------|-------|-----------------|--|--|
| F | | | Ingredient | | | | | | | |
| Frequency (MHz) | Mode | DGMBE | Water | Salt | Preventol D-7 | Cellulose | Sugar | Total amount | | |
| 250 | Head | | 532.98 g | 18.3 g | 2.4 g | 3.2 g | 766 g | 1.3L(Kg) | | |
| 850 | Body | _ | 631.68 g | 11.72 g | 1.2 g | | 600 g | 1.0L(Kg) | | |
| 1000 | Head | 444.52 g | 552.42 g | 3.06 g | _ | | | 1.0L(Kg) | | |
| 1900 | Body | 300.67 g | 716.56 g | 4.0 g | | | | 1.0L(Kg) | | |
| 2450 | Head | 550ml | 450ml | _ | | | | 1.0L(Kg) | | |
| 2450 | Body | 301.7ml | 698.3ml | _ | | _ | _ | 1.0L(Kg) | | |
| 2/00 | Head | 550ml | 450ml | _ | _ | _ | _ | 1.0L(Kg) | | |
| 2600 | Body | 301.7ml | 698.3ml | | | | | 1.0L(Kg) | | |

Simulating Liquids for 5 GHz, Manufactured by SPEAG:

| Ingredients | Water | Esters, Emulsifiers, Inhibitors | Sodium and Salt |
|---------------|-------|---------------------------------|-----------------|
| (% by weight) | 60-80 | 20-40 | 0-1.5 |

Table 3. Recipes for tissue simulating liquid

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1.13 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels

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or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(2) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).

General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section. (Table .6)

| Human Exposure | Uncontrolled Environment General Population | Controlled Environment Occupational |
|---|--|-------------------------------------|
| Spatial Peak SAR (Brain) | 1.60 m W/g | 8.00 m W/g |
| Spatial Average SAR (Whole Body) | 0.08 m W/g | 0.40 m W/g |
| Spatial Peak SAR (Hands/Feet/Ankle/Wrist) | 4.00 m W/g | 20.00 m W/g |

Table 4. RF exposure limits

Notes:

- Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
- Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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2. Summary of Results

GSM 850 MHz

| Mode | Position | Distanc e (mm) | СН | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|--|-------------|----------------------|-----|----------------|--|---------------------------|---------|-----------------------------------|----------|--------------|
| GSM850 (Head) GSM850 (Head) GSM850 (Body-Worn speech mode) GPRS850 (Hotspot) (Hotspot) (1Dn4UP) Re CR Re | | () | | | | (aBM) | | Measured | Reported | |
| | Re Cheek | - | 128 | 824.2 | 33.50 | 33.00 | 12.20% | 0.123 | 0.138 | 81 |
| | Re Cheek | - | 190 | 836.6 | 33.50 | 33.00 | 12.20% | 0.099 | 0.111 | - |
| GSM850 | Re Cheek | - | 251 | 848.8 | 33.50 | 33.00 | 12.20% | 0.088 | 0.099 | - |
| (Head) | Re Tilt | - | 190 | 836.6 | 33.50 | 33.00 | 12.20% | 0.060 | 0.067 | - |
| | Le Cheek | - | 190 | 836.6 | 33.50 | 33.00 | 12.20% | 0.085 | 0.095 | - |
| | Le Tilt | - | 190 | 836.6 | 33.50 | 33.00 | 12.20% | 0.056 | 0.063 | - |
| | Front side | 15 | 190 | 836.6 | 33.50 | 33.00 | 12.20% | 0.084 | 0.094 | - |
| | Back side | 15 | 128 | 824.2 | 33.50 | 33.00 | 12.20% | 0.159 | 0.178 | 82 |
| | Back side | 15 | 190 | 836.6 | 33.50 | 33.00 | 12.20% | 0.130 | 0.146 | - |
| specon mede) | Back side | 15 | 251 | 848.8 | 33.50 | 33.00 | 12.20% | 0.110 | 0.123 | - |
| | Front side | 10 | 128 | 824.2 | 28.00 | 27.90 | 2.33% | 0.175 | 0.179 | - |
| | Back side | 10 | 128 | 824.2 | 28.00 | 27.90 | 2.33% | 0.462 | 0.473 | 83 |
| GPRS850 | Back side | 10 | 190 | 836.6 | 28.00 | 27.80 | 4.71% | 0.349 | 0.365 | - |
| (Hotspot) | Back side | 10 | 251 | 848.8 | 28.00 | 27.80 | 4.71% | 0.256 | 0.268 | - |
| (1Dn4UP) | Bottom side | 10 | 128 | 824.2 | 28.00 | 27.90 | 2.33% | 0.139 | 0.142 | - |
| | Right side | 10 | 128 | 824.2 | 28.00 | 27.90 | 2.33% | 0.192 | 0.196 | - |
| | Left side | 10 | 128 | 824.2 | 28.00 | 27.90 | 2.33% | 0.105 | 0.107 | - |

Type No · PM-0874-BV (Single SIM)·

| Type No | 1 W-0074-D | v (Sirigle . | . (ווווו | | | | | | | |
|----------------------------|------------|------------------|----------|----------------|---------------------------------------|---------------------------------|---------|----------|---------------------|--------------|
| | | | | | Max. Rated Avg. | | | | SAR over 1g /kg) | |
| Mode GSM850 | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| GSM850 (GMSK) (Head) | Re Cheek | - | 128 | 824.2 | 33.50 | 33.10 | 9.65% | 0.121 | 0.133 | - |
| GPRS850 (Hotspot) | Back side | 10mm | 128 | 824.2 | 28.00 | 27.80 | 4.71% | 0.427 | 0.447 | - |

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GSM 1900 MHz

| Mode | Position | Distanc e (mm) | СН | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power | Scaling | 1 ₁ (W/ | kg) | Plot page |
|-----------------------|-------------|----------------------|-----|----------------|--|---------------------------|---------|-----------------------|----------|--------------|
| | D 01 1 | | 010 | 1000.0 | 20.50 | (dBm) | 0.000/ | Measured | Reported | |
| | Re Cheek | - | 810 | 1909.8 | 30.50 | 30.50 | 0.00% | 0.078 | 0.078 | - |
| | Re Tilt | - | 810 | 1909.8 | 30.50 | 30.50 | 0.00% | 0.046 | 0.046 | - |
| GSM1900 | Le Cheek | - | 512 | 1850.2 | 30.50 | 30.40 | 2.33% | 0.121 | 0.124 | 84 |
| (Head) | Le Cheek | - | 661 | 1880 | 30.50 | 30.40 | 2.33% | 0.116 | 0.119 | - |
| | Le Cheek | - | 810 | 1909.8 | 30.50 | 30.50 | 0.00% | 0.100 | 0.100 | - |
| | Le Tilt | - | 810 | 1909.8 | 30.50 | 30.50 | 0.00% | 0.092 | 0.092 | - |
| 00144000 | Front side | 15 | 512 | 1850.2 | 30.50 | 30.40 | 2.33% | 0.248 | 0.254 | - |
| GSM1900 (Body-Worn | Front side | 15 | 661 | 1880 | 30.50 | 30.40 | 2.33% | 0.241 | 0.247 | - |
| speech mode) | Front side | 15 | 810 | 1909.8 | 30.50 | 30.50 | 0.00% | 0.319 | 0.319 | 85 |
| specon mede) | Back side | 15 | 810 | 1909.8 | 30.50 | 30.50 | 0.00% | 0.256 | 0.256 | - |
| | Front side | 10 | 512 | 1850.2 | 27.50 | 27.10 | 9.65% | 0.946 | 1.037 | - |
| | Front side | 10 | 661 | 1880 | 27.50 | 27.10 | 9.65% | 1.020 | 1.118 | - |
| | Front side | 10 | 810 | 1909.8 | 27.50 | 27.40 | 2.33% | 1.160 | 1.187 | 86 |
| | Front side* | 10 | 810 | 1909.8 | 27.50 | 27.40 | 2.33% | 1.150 | 1.177 | - |
| GPRS1900 | Back side | 10 | 512 | 1850.2 | 27.50 | 27.10 | 9.65% | 0.856 | 0.939 | - |
| (Hotspot) | Back side | 10 | 661 | 1880 | 27.50 | 27.10 | 9.65% | 0.903 | 0.990 | - |
| (1Dn4UP) | Back side | 10 | 810 | 1909.8 | 27.50 | 27.40 | 2.33% | 0.991 | 1.014 | - |
| | Bottom side | 10 | 512 | 1850.2 | 27.50 | 27.10 | 9.65% | 0.758 | 0.831 | - |
| | Bottom side | 10 | 661 | 1880 | 27.50 | 27.10 | 9.65% | 0.809 | 0.887 | - |
| | Bottom side | 10 | 810 | 1909.8 | 27.50 | 27.40 | 2.33% | 0.906 | 0.927 | - |
| | Right side | 10 | 810 | 1909.8 | 27.50 | 27.40 | 2.33% | 0.078 | 0.080 | - |
| | Left side | 10 | 810 | 1909.8 | 27.50 | 27.40 | 2.33% | 0.137 | 0.140 | - |

^{* -} repeated at the highest SAR measurement according to the KDB 865664 D01 Type No.: PM-0874-BV (Single SIM):

| . 7 | | (9 | | | | | | | | |
|-----------------------------|------------|------------------|-----|----------------|---------------------------------------|---------------------------------|---------|----------|--------------------|--------------|
| | | | | | Max. Rated Avg. | | | • | AR over 1g /kg) | |
| Mode | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| GSM1900 (GMSK) (Head) | Le Cheek | - | 512 | 1850.2 | 30.50 | 30.50 | 0.00% | 0.116 | 0.116 | - |
| GPRS1900 (Hotspot) | Front side | 10mm | 810 | 1909.8 | 27.50 | 27.30 | 4.71% | 0.939 | 0.983 | - |

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WCDMA Band II

| Mode | Position | Distanc e (mm) | СН | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power | Scaling | Averaged 1 (W/ | g 'kg) | Plot page |
|------------------|---------------------------|----------------------|------|----------------|--|---------------------------|---------|----------------------|-----------|--------------|
| | | (******) | | | • • | (dBm) | | Measured | · · | |
| | RE Cheek | - | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.231 | 0.232 | - |
| | RE Tilt | - | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.112 | 0.113 | - |
| R99 | LE Cheek | - | 9262 | 1852.4 | 24 | 23.89 | 2.57% | 0.273 | 0.280 | - |
| (Head) | LE Cheek | - | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.286 | 0.287 | 87 |
| | LE Cheek | 1 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 0.275 | 0.284 | _ |
| | LE Tilt | 1 | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.182 | 0.183 | - |
| | Front side | 15 | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.512 | 0.514 | - |
| Body-worn | Back side | 15 | 9262 | 1852.4 | 24 | 23.89 | 2.57% | 0.487 | 0.499 | - |
| (speech mode) | Back side | 15 | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.535 | 0.537 | - |
| modey | Back side | 15 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 0.551 | 0.569 | 88 |
| | Front side | 10 | 9262 | 1852.4 | 24 | 23.89 | 2.57% | 1.080 | 1.108 | - |
| | Front side | 10 | 9400 | 1880 | 24 | 23.98 | 0.46% | 1.030 | 1.035 | - |
| | Front side | 10 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 1.220 | 1.260 | - |
| | Back side | 10 | 9262 | 1852.4 | 24 | 23.89 | 2.57% | 1.090 | 1.118 | - |
| | Back side | 10 | 9400 | 1880 | 24 | 23.98 | 0.46% | 1.160 | 1.165 | - |
| | Back side | 10 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 1.350 | 1.394 | 89 |
| Hotspot | Back side* | 10 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 1.280 | 1.322 | - |
| 11013001 | Back side-with headset | 10 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 1.311 | 1.354 | - |
| | Bottom side | 10 | 9262 | 1852.4 | 24 | 23.89 | 2.57% | 0.829 | 0.850 | - |
| | Bottom side | 10 | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.931 | 0.935 | - |
| | Bottom side | 10 | 9538 | 1907.6 | 24 | 23.86 | 3.28% | 0.975 | 1.007 | - |
| | Right side | 10 | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.112 | 0.113 | - |
| | Left side | 10 | 9400 | 1880 | 24 | 23.98 | 0.46% | 0.159 | 0.160 | - |

^{* -} repeated at the highest SAR measurement according to the KDB 865664 D01v01r03

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Type No.: PM-0874-BV (Single SIM):

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|------------------|-------------|------------------|------|----------------|---------------------------------------|---------------------------------|---------|----------|--------------------|--------------|
| | | | | | Max. Rated Avg. | | | • | AR over 1g 'kg) | |
| Mode | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| R99 (Head) | Le Cheek | - | 9400 | 1880 | 24.00 | 23.55 | 10.92% | 0.254 | 0.282 | - |
| R99 (Hotspot) | Back side | 10mm | 9538 | 1907.6 | 24.00 | 23.44 | 13.76% | 1.120 | 1.274 | - |

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WCDMA Band V

| Mode | Position | Distanc e (mm) | СН | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged 1 (W/ Measured | kg) | Plot page |
|----------------------|-------------|----------------------|------|----------------|--|------------------------------------|---------|----------------------------------|-------|--------------|
| | RE Cheek | - | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.116 | 0.127 | 90 |
| | RE Cheek | - | 4183 | 836.6 | 24 | 23.58 | 10.15% | 0.105 | 0.116 | - |
| R99 | RE Cheek | - | 4233 | 846.6 | 24 | 23.54 | 11.17% | 0.111 | 0.123 | - |
| (Head) | RE Tilt | - | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.071 | 0.078 | - |
| | LE Cheek | - | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.084 | 0.092 | - |
| | LE Tilt | - | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.062 | 0.068 | - |
| | Front side | 15 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.087 | 0.095 | - |
| Body-worn (speech | Back side | 15 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.149 | 0.163 | 91 |
| mode) | Back side | 15 | 4183 | 836.6 | 24 | 23.58 | 10.15% | 0.142 | 0.156 | - |
| | Back side | 15 | 4233 | 846.6 | 24 | 23.54 | 11.17% | 0.141 | 0.157 | - |
| | Front side | 10 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.130 | 0.142 | - |
| | Back side | 10 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.341 | 0.373 | - |
| | Back side | 10 | 4183 | 836.6 | 24 | 23.58 | 10.15% | 0.350 | 0.386 | - |
| Hotspot | Back side | 10 | 4233 | 846.6 | 24 | 23.54 | 11.17% | 0.354 | 0.394 | 92 |
| | Bottom side | 10 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.089 | 0.097 | - |
| | Right side | 10 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.140 | 0.153 | - |
| | Left side | 10 | 4132 | 826.4 | 24 | 23.61 | 9.40% | 0.070 | 0.077 | - |

Type No.: PM-0874-BV (Single SIM):

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|---|------------|------------------|----------------|----------------|---------------------------------------|---------------------------------|---------|-------------------|--------------------|--------------|
| | | | | | Max. Rated Avg. | | | Averaged S (W/ | AR over 1g 'kg) | |
| Mode | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| R99 (Head) | l Le Cheek | - | 4132 | 826.4 | 24.00 | 23.98 | 0.46% | 0.114 | 0.115 | - |
| R99 (Hotspot) | Back side | 10mm | 4233 | 846.6 | 24.00 | 23.93 | 1.62% | 0.349 | 0.355 | - |

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LTE FDD Band V

| | Bandwidt | | 00 | DD | | Distance | | F | Max. Rated Avg. | Measured | | Averaged 1g (V | | Dist |
|-----------|------------|------------|------------|-------------|-------------|------------------|-------|----------------|---------------------------------------|------------------------|---------|-------------------|----------|--------------|
| Mode | h (MHz) | Modulatior | RB Size | RB start | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| | | | | 25 | RE Cheek | - | 20450 | 829 | 24 | 23.95 | 1.16% | 0.146 | 0.148 | - |
| | | | | 23 | RE Cheek | - | 20600 | 844 | 24 | 23.86 | 3.28% | 0.147 | 0.152 | 93 |
| | | | 1 RB | 49 | RE Cheek | - | 20525 | 836.5 | 24 | 23.75 | 5.93% | 0.144 | 0.153 | - |
| | | | 1 110 | | RE Tilt | - | 20450 | 829 | 24 | 23.95 | 1.16% | 0.080 | 0.081 | - |
| | | | | 25 | LE Cheek | - | 20450 | 829 | 24 | 23.95 | 1.16% | 0.107 | 0.108 | - |
| LTE | | | | | LE Tilt | - | 20450 | 829 | 24 | 23.95 | 1.16% | 0.070 | 0.071 | - |
| Band 5 | 10MHz | QPSK | | | RE Cheek | - | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.124 | 0.132 | - |
| (Head) | 1011112 | QIOK | 25 RB | 25 | RE Tilt | - | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.069 | 0.074 | - |
| (******) | | | 25 KD | 20 | LE Cheek | - | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.097 | 0.103 | - |
| | | | | | LE Tilt | - | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.060 | 0.064 | - |
| | | | | | RE Cheek | - | 20600 | 844 | 23 | 22.96 | 0.93% | 0.130 | 0.131 | - |
| | | | 50 | RR | RE Tilt | - | 20600 | 844 | 23 | 22.96 | 0.93% | 0.069 | 0.070 | - |
| | | | 30 1 | IND | LE Cheek | - | 20600 | 844 | 23 | 22.96 | 0.93% | 0.095 | 0.096 | - |
| | | | | | LE Tilt | - | 20600 | 844 | 23 | 22.96 | 0.93% | 0.053 | 0.053 | - |
| | | | | | Front side | 15 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.116 | 0.117 | - |
| | | | 1 RB | 25 | Back side | 15 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.129 | 0.130 | 94 |
| LTE | | | 1 KD | | Back side | 15 | 20600 | 844 | 24 | 23.86 | 3.28% | 0.128 | 0.132 | - |
| Band 5 | 10MHz | OPSK | | 49 | Back side | 15 | 20525 | 836.5 | 24 | 23.75 | 5.93% | 0.118 | 0.125 | - |
| (Body- | TOWNIZ | QF3K | 25 RB | 50 | Front side | 15 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.092 | 0.098 | - |
| Worn) | | | 23 KD | 30 | Back side | 15 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.094 | 0.100 | - |
| | | | 50 1 | DR | Front side | 15 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.098 | 0.099 | - |
| | | | 30 1 | ND | Back side | 15 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.098 | 0.099 | - |
| | | | | | Front side | 10 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.149 | 0.151 | - |
| | | | | 25 | Back side | 10 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.301 | 0.304 | - |
| | | | | | Back side | 10 | 20600 | 844 | 24 | 23.86 | 3.28% | 0.323 | 0.334 | 95 |
| | | | 1 RB | 49 | Back side | 10 | 20525 | 836.5 | 24 | 23.75 | 5.93% | 0.314 | 0.333 | - |
| | | | | | Bottom side | 10 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.090 | 0.091 | - |
| | | | | 25 | Right side | 10 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.169 | 0.171 | - |
| | | | | | Left side | 10 | 20450 | 829 | 24 | 23.95 | 1.16% | 0.095 | 0.096 | - |
| LTE | | | | | Front side | 10 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.118 | 0.126 | - |
| Band 5 | 10MHz | QPSK | | | Back side | 10 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.241 | 0.257 | - |
| (Hotspot) | | | 25 RB | 25 | Bottom side | 10 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.075 | 0.080 | - |
| | | | | | Right side | 10 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.077 | 0.082 | - |
| | | | | | Left side | 10 | 20450 | 829 | 23.5 | 23.22 | 6.66% | 0.081 | 0.086 | - |
| | | | | | Front side | 10 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.112 | 0.113 | - |
| | | | | | Back side | 10 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.256 | 0.258 | - |
| | | | 50 1 | RB | Bottom side | 10 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.080 | 0.081 | - |
| | | | | | Right side | 10 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.076 | 0.077 | - |
| | | | | | Left side | 10 | 20600 | 844 | 23 | 22.96 | 0.93% | 0.084 | 0.085 | - |

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Type No.: PM-0874-BV (Single SIM):

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|----------------|----------|-------------|---------|-----------|-----------|----------|-------|-------|-----------------------|------------------|---------|----------|-------------------|----------|
| Mod | Bandwidt | Modulation | RB Size | RB Offset | Docition | Distance | СН | Freq. | Max. Rated Avg. | Measured Avg. | | | SAR over V/kg) | Plot |
| Mode h (MH | (MHz) | viodulation | KD SIZE | RB Oliset | POSITION | (mm) | СП | (MHz) | Power + Max. Toleranc | Power (dBm) | Scaling | Measured | Reported | pag e |
| Band (Head | 1 10Mhz | QPSK | 1 | 49 | Re Cheek | - | 20525 | 836.5 | 24 | 23.82 | 4.23% | 0.158 | 0.165 | 96 |
| Band (Hotsp | 1 10Mhz | QPSK | 1 | 25 | Back side | 10 | 20600 | 844 | 24 | 23.91 | 2.09% | 0.325 | 0.332 | , |

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LTE FDD Band VII

| | Bandwidt | | | | | | | - | Max. Rated Avg. | Measured | | | SAR over V/kg) | B1 . |
|---------------|------------------|------------|------------|-------------|-------------|------------------|-------|----------------|---------------------------------------|------------------------|---------|----------|-------------------|--------------|
| Mode | h (MHz) | Modulatior | RB Size | RB start | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| | | | | | RE Cheek | - | 20850 | 2510 | 22.5 | 22.43 | 1.62% | 0.182 | 0.185 | 97 |
| | | | | | RE Cheek | - | 21100 | 2535 | 22.5 | 22.38 | 2.80% | 0.180 | 0.185 | - |
| | | | 1 RB | 99 | RE Cheek | - | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.173 | 0.175 | - |
| | | | I KD | 77 | RE Tilt | - | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.052 | 0.053 | - |
| | | | | | LE Cheek | - | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.155 | 0.157 | - |
| | | | | | LE Tilt | - | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.024 | 0.024 | - |
| LTE Band 7 | 20MHz | QPSK | | | RE Cheek | - | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.147 | 0.167 | - |
| (Head) | ZUIVITZ | QPSK | 50 RB | 50 | RE Tilt | - | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.046 | 0.052 | - |
| (Head) | | | 50 KB | 50 | LE Cheek | - | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.154 | 0.175 | - |
| | | | | | LE Tilt | - | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.062 | 0.070 | - |
| | | | | | RE Cheek | - | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.152 | 0.156 | - |
| | | | 100 | DD | RE Tilt | - | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.048 | 0.049 | - |
| | | | 100 | KB | LE Cheek | - | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.149 | 0.153 | - |
| | | | | | LE Tilt | - | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.060 | 0.062 | - |
| | | | 4.00 | | Front side | 15 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.311 | 0.315 | - |
| | | | 1 RB | 99 | Back side | 15 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.531 | 0.537 | 98 |
| LTE | | | | 50 | Front side | 15 | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.310 | 0.352 | - |
| Band 7 | | lz QPSK | | 0 | Back side | 15 | 21100 | 2535 | 22 | 21.24 | 19.12% | 0.482 | 0.574 | - |
| (Body- | Body- 20MHz QPSK | QPSK | 50 RB | | Back side | 15 | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.530 | 0.602 | - |
| Worn) | | | | 50 | Back side | 15 | 21350 | 2560 | 22 | 21.40 | 14.82% | 0.456 | 0.524 | - |
| | | | | | Front side | 15 | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.313 | 0.321 | - |
| | | | 100 | RB | Back side | 15 | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.540 | 0.554 | - |
| | | | | | Front side | 10 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.557 | 0.563 | - |
| | | | | | Back side | 10 | 20850 | 2510 | 22.5 | 22.43 | 1.62% | 1.260 | 1.280 | 99 |
| | | | | | Back side* | 10 | 20850 | 2510 | 22.5 | 22.43 | 1.62% | 1.190 | 1.209 | _ |
| | | | | | Back side | 10 | 21100 | 2535 | 22.5 | 22.38 | 2.80% | 1.130 | 1.162 | - |
| | | | 1 RB | 99 | Back side | 10 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 1.110 | 1.123 | _ |
| | | | | | Bottom side | 10 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.775 | 0.784 | - |
| | | | | | Right side | 10 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.171 | 0.173 | _ |
| | | | | | Left side | 10 | 21350 | 2560 | 22.5 | 22.45 | 1.16% | 0.137 | 0.139 | _ |
| | | | | 50 | Front side | 10 | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.608 | 0.690 | _ |
| | | | | 0 | Back side | 10 | 21100 | 2535 | 22 | 21.24 | 19.12% | 0.976 | 1.163 | _ |
| | | | | | Back side | 10 | 20850 | 2510 | 22 | 21.45 | 13.50% | 1.060 | 1.203 | _ |
| LTE | | | | 50 | Back side | 10 | 21350 | 2560 | 22 | 21.40 | 14.82% | 0.919 | 1.055 | _ |
| Band 7 | 20MHz | QPSK | 50 RB | 0 | Bottom side | 10 | 21100 | 2535 | 22 | 21.24 | 19.12% | 0.627 | 0.747 | _ |
| (Hotspot) | | | 00 KB | | Bottom side | 10 | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.736 | 0.835 | _ |
| | | | | | Bottom side | 10 | 21350 | 2560 | 22 | 21.40 | 14.82% | 0.592 | 0.680 | _ |
| | | | | 50 | Right side | 10 | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.121 | 0.000 | |
| | | | | | Left side | 10 | 20850 | 2510 | 22 | 21.45 | 13.50% | 0.121 | 0.137 | _ |
| | | | | | Front side | 10 | 20850 | 2510 | 21.5 | 21.45 | 2.57% | 0.125 | 0.142 | - |
| | | | | | Back side | 10 | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 1.060 | 1.087 | _ |
| | | | | | Back side | 10 | 21100 | | 21.5 | 21.39 | 7.40% | 0.942 | 1.087 | - |
| | | | 100 | DR | Back side | 10 | 21350 | 2535 2560 | 21.5 | 21.19 | 3.75% | 0.942 | 0.950 | - |
| | | | 100 | KD | | 10 | 20850 | | | | | | 0.950 | |
| | | | | | Bottom side | 10 | | 2510 | 21.5 | 21.39 | 2.57% | 0.755 | | - |
| | | | | | Right side | | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.120 | 0.123 | - |
| | | | | | Left side | 10 | 20850 | 2510 | 21.5 | 21.39 | 2.57% | 0.127 | 0.130 | - |

^{* -} repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01r03

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| <u>., , , , , , , , , , , , , , , , , , , </u> | •••• | | | 9.0 0 | | | | | | | | | | |
|--|-------------|------------|-----------|-----------|-----------|----------|-------|----------------------|----------------------------------|--|----------|----------|-------------------|------|
| Mada | Bandwidt | Modulation | RB Size | RB Offset | Position | Distance | СН | Freq. | Max. Rated Avg. Power + | Measured Avg. | Scaling | _ | SAR over V/kg) | Plot |
| Mode h (MHz) | viodulation | KD SIZE | RD Offset | FOSITION | (mm) | CH | (MHz) | Max. Tolerance (dBm) | Power (dBm) | , and the second | Measured | Reported | e e | |
| Band7 (Head) | 20Mhz | QPSK | 1 | 99 | Re Cheek | - | 20850 | 2510 | 22.5 | 22.31 | 4.47% | 0.165 | 0.172 | - |
| Band7 (Hotspot) | 20Mhz | QPSK | 1 | 99 | Back side | 10 | 20850 | 2510 | 22.5 | 22.31 | 4.47% | 1.24 | 1.295 | 100 |

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WLAN802.11 b

| | | | | | Max. Rated Avg. | Measured | | Averaged S (W/ | J | |
|-----------------------|----------------------------|------------------|----|----------------|---------------------------------------|------------------------|---------|-------------------|----------|--------------|
| Mode | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| | RE Cheek | - | 6 | 2437 | 17 | 16.98 | 0.46% | 0.320 | 0.321 | 101 |
| 802.11 b | RE Tilt | - | 6 | 2437 | 17 | 16.98 | 0.46% | 0.123 | 0.124 | - |
| (Head) | LE Cheek | - | 6 | 2437 | 17 | 16.98 | 0.46% | 0.261 | 0.262 | - |
| | LE Tilt | - | 6 | 2437 | 17 | 16.98 | 0.46% | 0.071 | 0.071 | - |
| | Front side | 10 | 6 | 2437 | 17 | 16.98 | 0.46% | 0.112 | 0.113 | - |
| | Back side | 10 | 6 | 2437 | 17 | 16.98 | 0.46% | 0.442 | 0.444 | 102 |
| 802.11 b (Hotspot) | Back side- with headset | 10 | 6 | 2437 | 17 | 16.98 | 0.46% | 0.31 | 0.311 | - |
| | Top side | 10 | 6 | 2437 | 17 | 16.98 | 0.46% | 0.022 | 0.023 | - |
| | Left side | 10 | 6 | 2437 | 17 | 16.98 | 0.46% | 0.181 | 0.182 | - |

Type No · PM-0874-BV (Single SIM) ·

| Type Ne | 7 I IVI-007- | DV (511 | gic Jilvi, | <i>,</i> . | | | | | | |
|-----------------------|--------------|------------------|------------|----------------|---------------------------------------|---------------------|---------|--------------------------------|----------|--------------|
| Mode | | | | | Max. Rated Avg. | Measured | | Averaged SAR over 1g (W/kg) | | |
| | Position | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| 802.11 b (Head) | RE Cheek | - | 6 | 2437 | 17.00 | 16.98 | 0.46% | 0.299 | 0.300 | - |
| 802.11 b (Hotspot) | Back side | 10mm | 6 | 2437 | 17.00 | 16.98 | 0.46% | 0.428 | 0.430 | - |

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WLAN802.11 a 5.2G

| | Position | Distance (mm) | СН | | Max. Rated Avg. | Measured | | Averaged S (W/ | | |
|-----------------|---------------|------------------|----|----------------|---------------------------------------|------------------------|---------|-------------------|----------|--------------|
| Mode | | | | Freq. (MHz) | Power + Max. Tolerance (dBm) | Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| 000.11 | RE Cheek | - | 36 | 5180 | 13 | 12.9 | 2.33% | 0.165 | 0.169 | 103 |
| 802.11a 5.2G | RE Tilt | - | 36 | 5180 | 13 | 12.9 | 2.33% | 0.029 | 0.030 | - |
| Head | LE Cheek | - | 36 | 5180 | 13 | 12.9 | 2.33% | 0.0725 | 0.074 | - |
| | LE Tilt | - | 36 | 5180 | 13 | 12.9 | 2.33% | 0.0314 | 0.032 | - |
| 802.11a 5.2G | Front side | 15 | 36 | 5180 | 13 | 12.9 | 2.33% | 0.00855 | 0.009 | - |
| (Body- worn) | Back side | 15 | 36 | 5180 | 13 | 12.9 | 2.33% | 0.189 | 0.193 | 104 |

WLAN802.11 a 5.3G

| | Position | | | Freq. (MHz) | Max. Rated | Measured | Scaling | Averaged SAR over 1g | | |
|-----------------|------------|------------------|----|----------------|-----------------------------|------------------------|---------|----------------------|----------|--------------|
| Mode | | Distance (mm) | СН | | Avg. Power + Max. Tolerance | Avg. Power (dBm) | | Measured | Reported | Plot page |
| | RE Cheek | - | 56 | 5280 | 13 | 12.97 | 0.69% | 0.306 | 0.308 | 105 |
| 802.11a 5.3G | RE Tilt | - | 56 | 5280 | 13 | 12.97 | 0.69% | 0.0668 | 0.067 | - |
| Head | LE Cheek | 1 | 56 | 5280 | 13 | 12.97 | 0.69% | 0.119 | 0.120 | - |
| 11044 | LE Tilt | - | 56 | 5280 | 13 | 12.97 | 0.69% | 0.039 | 0.039 | - |
| 802.11a 5.3G | Front side | 15 | 56 | 5280 | 13 | 12.97 | 0.69% | 0.0186 | 0.019 | - |
| (Body- worn) | Back side | 15 | 56 | 5280 | 13 | 12.97 | 0.69% | 0.225 | 0.227 | 106 |

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WLAN802.11 a 5.6G

| | Position | | | | Max. Rated | Measured | | Averaged 1 | SAR over | Plot page |
|-----------------|------------|------------------|-----|----------------|-----------------------------|------------------------|---------|------------|----------|--------------|
| Mode | | Distance (mm) | СН | Freq. (MHz) | Avg. Power + Max. Tolerance | Avg. Power (dBm) | Scaling | Measured | Reported | |
| | RE Cheek | - | 140 | 5700 | 13 | 12.96 | 0.93% | 0.094 | 0.095 | 107 |
| 802.11a 5.6G | RE Tilt | - | 140 | 5700 | 13 | 12.96 | 0.93% | 0.0237 | 0.024 | - |
| Head | LE Cheek | - | 140 | 5700 | 13 | 12.96 | 0.93% | 0.0212 | 0.021 | - |
| riodd | LE Tilt | - | 140 | 5700 | 13 | 12.96 | 0.93% | 0.00762 | 0.008 | - |
| 802.11a 5.6G | Front side | 15 | 140 | 5700 | 13 | 12.96 | 0.93% | 0.000317 | 0.0003 | - |
| (Body- worn) | Back side | 15 | 140 | 5700 | 13 | 12.96 | 0.93% | 0.0362 | 0.037 | 108 |

WLAN802.11 a 5.8G

| | Position | Distance (mm) | СН | Freq. (MHz) | Max. Rated Avg. Measured | | | Averaged SAR over 1g | | |
|------------------------------------|------------|------------------|-----|----------------|------------------------------|------------------------|---------|----------------------|----------|--------------|
| Mode | | | | | Power + Max. Tolerance | Avg. Power (dBm) | Scaling | Measured | Reported | Plot page |
| | RE Cheek | - | 165 | 5825 | 13 | 12.99 | 0.23% | 0.269 | 0.270 | 109 |
| 802.11a 5.8G | RE Tilt | - | 165 | 5825 | 13 | 12.99 | 0.23% | 0.0427 | 0.043 | - |
| Head | LE Cheek | - | 165 | 5825 | 13 | 12.99 | 0.23% | 0.11 | 0.110 | - |
| 11000 | LE Tilt | - | 165 | 5825 | 13 | 12.99 | 0.23% | 0.0235 | 0.024 | - |
| 802.11a 5.8G (Body- worn) | Front side | 15 | 165 | 5825 | 13 | 12.99 | 0.23% | 0.0108 | 0.011 | - |
| | Back side | 15 | 165 | 5825 | 13 | 12.99 | 0.23% | 0.139 | 0.139 | 110 |

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Type No.: PM-0874-BV (Single SIM):

| Mode | Position | | | | Max. Rated Avg. | | Scaling | Averaged SAR over 1g (W/kg) | | |
|---------------------------------|-----------|------------------|----|----------------|---------------------------------------|---------------------------------|---------|--------------------------------|----------|--------------|
| | | Distance (mm) | СН | Freq. (MHz) | Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | | Measured | Reported | Plot page |
| 802.11 a 5.3G (Head) | Re Cheek | - | 56 | 5280 | 13.00 | 12.66 | 8.14% | 0.281 | 0.304 | - |
| 802.11 a 5.3G (Body-worn) | Back side | 15mm | 56 | 5280 | 13.00 | 12.66 | 8.14% | 0.204 | 0.221 | - |

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3. Simultaneous Tramsmission Analysis

Simultaneous Tramsmission Scenarios:

| Simultaneous Transmit Configurations | Head | Body-Worn | Hotspot |
|--------------------------------------|------|-----------|---------|
| GSM850/1900 + 2.4GHz Wi-Fi | Yes | No | No |
| GPRS850/1900 + 2.4GHz Wi-Fi | No | No | Yes |
| UMTS B2/B5 + 2.4GHz Wi-Fi | Yes | No | Yes |
| LTE FDD B5/B7 + 2.4GHz Wi-Fi | Yes | No | Yes |
| GSM850/1900 + 5GHz Wi-Fi | Yes | Yes | No |
| GPRS850/1900 + 5GHz Wi-Fi | No | No | No |
| UMTS B2/B5 + 5GHz Wi-Fi | Yes | Yes | No |
| LTE FDD B5/B7 + 5GHz Wi-Fi | Yes | Yes | No |
| GSM850/1900 + Bluetooth | No | Yes | No |
| GPRS850/1900 + Bluetooth | No | No | No |
| UMTS B2/B5 + Bluetooth | No | Yes | No |
| LTE FDD B5/B7 + Bluetooth | No | Yes | No |

Notes:

- 1. GSM & WCDMA & LTE share the same antenna path and cannot transmit simultaneously
- Bluetooth, 5GHz WiFi, and 2.4GHz WiFi share the same antenna path and cannot transmit simultaneously.

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3.1 Estimated SAR calculation

According to KDB447498 D01v05 – When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

Estimated SAR =
$$\frac{\text{Max.tune up power(mW)}}{\text{Min. test separation distance(mm)}} \times \frac{\sqrt{\text{f(GHz)}}}{7.5}$$

If the minimum test separation distance is < 5mm, a distance of 5mm is used for estimated SAR calculation. When the test separation distance is >50mm, the 0.4W/kg is used for SAR-1g.

| Mode | Frequency (MHz) | Maximum Power (dBm) | Separation Distance (Body) (mm) | Estimated SAR 1g (Body) (W/kg) |
|-----------|--------------------|---------------------|---------------------------------|-----------------------------------|
| Bluetooth | 2480 | 9 | 15 | 0.111 |

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3.2 SPLSR evaluation and analysis

Per KDB447498D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR sum to peak location separation ratio(SPLSR).

The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion.

The ratio is determined by (SAR1 + SAR2) $^1.5$ /Ri, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

SAR1 and SAR2 are the highest reported or estimated SAR for each antenna in the pair, and Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

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Simultaneous Transmission Combination

| | repo | rted SAR WW | AN and WLA | N DTS 2.4G | Hz, Σ SAR ev | aluation | |
|-----------|---------|-------------|------------|------------|---------------------|---------------|---------|
| Frequency | D | osition | reported S | SAR / W/kg | ΣSAR | Calculated | SPLSR |
| band | P | OSILIOII | WWAN | WLAN | <1.6W/kg | distance (mm) | (≦0.04) |
| | | Right cheek | 0.138 | 0.321 | 0.459 | - | - |
| GSM 850 | Head | Right tilt | 0.060 | 0.124 | 0.184 | - | - |
| G3W 630 | rieau | Left cheek | 0.085 | 0.262 | 0.347 | - | - |
| | | Left tilt | 0.056 | 0.071 | 0.127 | - | - |
| | | Front | 0.179 | 0.113 | 0.292 | - | - |
| | Hotspot | Back | 0.473 | 0.444 | 0.917 | - | - |
| GPRS 850 | | Тор | - | 0.023 | 0.165 | - | - |
| (1Dn4UP) | | Bottom | 0.142 | - | - | - | - |
| | | Right | 0.196 | - | - | - | - |
| | | Left | 0.107 | 0.182 | - | - | - |
| | Head | Right cheek | 0.078 | 0.321 | 0.399 | - | - |
| GSM 1900 | | Right tilt | 0.046 | 0.124 | 0.170 | - | - |
| G3W 1700 | | Left cheek | 0.124 | 0.262 | 0.386 | - | - |
| | | Left tilt | 0.092 | 0.071 | 0.163 | - | - |
| | | Front | 1.187 | 0.113 | 1.300 | - | - |
| | | Back | 1.014 | 0.444 | 1.458 | - | - |
| GPRS 1900 | Hotspot | Тор | - | 0.023 | 0.950 | - | - |
| (1Dn4UP) | Hotspot | Bottom | 0.927 | = | - | ı | - |
| | | Right | 0.080 | - | - | - | - |
| | | Left | 0.140 | 0.182 | 0.322 | - | - |

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| | reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR evaluation | | | | | | | | | | |
|-----------|--|-------------|------------|------------|----------|---------------|---------|--|--|--|--|
| Frequency | D. | !#! | reported S | SAR / W/kg | ΣSAR | Calculated | SPLSR | | | | |
| band | P | osition | WWAN | WLAN | <1.6W/kg | distance (mm) | (≦0.04) | | | | |
| | | Right cheek | 0.232 | 0.321 | 0.553 | - | - | | | | |
| | Head | Right tilt | 0.113 | 0.124 | 0.237 | - | - | | | | |
| | пеаи | Left cheek | 0.287 | 0.262 | 0.549 | - | - | | | | |
| | | Left tilt | 0.183 | 0.071 | 0.254 | - | - | | | | |
| WCDMA | | Front | 1.260 | 0.113 | 1.373 | - | - | | | | |
| Band II | | Back | 1.394 | 0.444 | 1.838 | 104.7 | 0.024 | | | | |
| | Hotspot | Тор | - | 0.023 | - | - | - | | | | |
| | | Bottom | 1.007 | - | - | - | - | | | | |
| | | Right | 0.113 | - | - | - | - | | | | |
| | | Left | 0.160 | 0.182 | 0.342 | - | - | | | | |
| | | Right cheek | 0.127 | 0.321 | 0.448 | 1 | - | | | | |
| | Head | Right tilt | 0.078 | 0.124 | 0.202 | - | - | | | | |
| | пеаи | Left cheek | 0.092 | 0.262 | 0.354 | - | - | | | | |
| | | Left tilt | 0.068 | 0.071 | 0.139 | 1 | - | | | | |
| WCDMA | | Front | 0.142 | 0.113 | 0.255 | - | - | | | | |
| Band V | | Back | 0.394 | 0.444 | 0.838 | - | - | | | | |
| | Hotopot | Тор | - | 0.023 | - | - | - | | | | |
| | Hotspot | Bottom | 0.097 | - | - | - | - | | | | |
| | | Right | 0.153 | - | - | - | - | | | | |
| | | Left | 0.077 | 0.182 | 0.259 | - | - | | | | |

| | | | C | oordinates (cr | n) | | Peak | | | |
|-----------------|-------------|------------------------|-------|----------------|-------|----------------|--|-------|--|--|
| Conditions | Position | SAR Value (W/kg) | х | у | Z | ΣSAR (W/kg) | Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test | |
| WCDMA Band 2 | - Back side | 1.394 | -0.85 | 6.9 | 0.02 | 1.838 | 104.7 | 0.024 | SPLSR<0.04, | |
| 802.11b CH 6 | Dack side | 0.444 | -3.68 | -3.18 | -0.09 | 1.030 | 104.7 | 0.024 | Not required | |
| L, | WCDMA B2 | | | | | | | | | |

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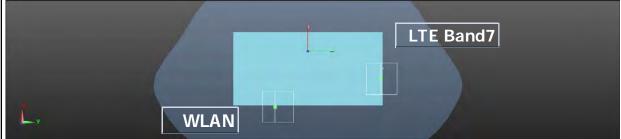
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| | repo | rted SAR WW | AN and WLA | N DTS 2.4G | Hz, Σ SAR eva | aluation | |
|-----------|---------|-------------|------------|------------|----------------------|---------------|---------|
| Frequency | P | osition | | AR / W/kg | ΣSAR | Calculated | SPLSR |
| band | | | WWAN | WLAN | <1.6W/kg | distance (mm) | (≤0.04) |
| | | Right cheek | 0.165 | 0.321 | 0.486 | - | - |
| | Head | Right tilt | 0.081 | 0.124 | 0.205 | - | - |
| | rieau | Left cheek | 0.108 | 0.262 | 0.370 | - | - |
| | | Left tilt | 0.071 | 0.071 | 0.142 | 1 | - |
| LTE FDD | | Front | 0.151 | 0.113 | 0.264 | - | - |
| Band 5 | | Back | 0.334 | 0.444 | 0.778 | - | - |
| | Hotspot | Тор | - | 0.023 | - | - | - |
| | | Bottom | 0.091 | - | - | - | - |
| | | Right | 0.171 | - | - | - | - |
| | | Left | 0.096 | 0.182 | 0.278 | - | - |
| | Head | Right cheek | 0.185 | 0.321 | 0.506 | - | - |
| | | Right tilt | 0.053 | 0.124 | 0.177 | - | - |
| | | Left cheek | 0.175 | 0.262 | 0.437 | - | - |
| | | Left tilt | 0.070 | 0.071 | 0.141 | - | - |
| LTE FDD | | Front | 0.690 | 0.113 | 0.803 | - | - |
| Band 7 | | Back | 1.280 | 0.444 | 1.724 | 105.8 | 0.021 |
| | Uotenet | Тор | - | 0.023 | - | - | - |
| | Hotspot | Bottom | 0.835 | - | - | - | - |
| | | Right | 0.173 | - | - | - | - |
| | | Left | 0.142 | 0.182 | 0.324 | - | - |

| | | | Coordinates (cm) | | | | Peak | | |
|------------------------|-------------|------------------------|------------------|-------|-------|----------------|--|-------|--|
| Conditions | Position | SAR Value (W/kg) | х | у | Z | ΣSAR (W/kg) | Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
| LTE Band 7 CH 20850 | b Back side | 1.294 | -0.96 | 7.04 | -0.01 | 1.724 | 105.8 | 0.021 | SPLSR<0.04, Not required |
| 802.11b CH 6 | | 0.444 | -3.68 | -3.18 | -0.09 | | | | |
| | | | | | | | | | |



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| | reporte | d SAR WWA | N and WLAI | N DTS 5.8 G | SHz, Σ SAR e | valuation | |
|-----------|---------|-----------|------------|-------------|---------------------|------------------|---------|
| Frequency | _ | Position | | AR / W/kg | ΣSAR | Calculated | SPLSR |
| band | Ро | | | WLAN | <1.6W/kg | distance (mm) | (≦0.04) |
| | | RE cheek | 0.138 | 0.27 | 0.408 | - | - |
| | Head | RE tilt | 0.060 | 0.043 | 0.103 | - | - |
| GSM 850 | пеаи | LE cheek | 0.085 | 0.11 | 0.195 | - | = |
| G31VI 63U | | LE tilt | 0.056 | 0.024 | 0.08 | - | - |
| | Body- | Front | 0.094 | 0.011 | 0.105 | - | = |
| | Worn | Back | 0.178 | 0.139 | 0.317 | - | - |
| | | RE cheek | 0.078 | 0.27 | 0.348 | - | = |
| | Head | RE tilt | 0.046 | 0.043 | 0.089 | ı | - |
| GSM 1900 | | LE cheek | 0.124 | 0.11 | 0.234 | - | = |
| G3W 1900 | | LE tilt | 0.092 | 0.024 | 0.116 | - | - |
| | Body- | Front | 0.319 | 0.011 | 0.33 | ı | - |
| | Worn | Back | 0.256 | 0.139 | 0.395 | - | = |
| | Head | RE cheek | 0.232 | 0.27 | 0.502 | - | - |
| | | RE tilt | 0.113 | 0.043 | 0.156 | ı | - |
| WCDMA | | LE cheek | 0.287 | 0.11 | 0.397 | ı | - |
| Band II | | LE tilt | 0.183 | 0.024 | 0.207 | - | - |
| | Body- | Front | 0.514 | 0.011 | 0.525 | - | = |
| | Worn | Back | 0.569 | 0.139 | 0.708 | - | - |
| | | RE cheek | 0.127 | 0.27 | 0.397 | - | = |
| | Head | RE tilt | 0.078 | 0.043 | 0.121 | - | - |
| WCDMA | пеаи | LE cheek | 0.092 | 0.11 | 0.202 | = | - |
| Band V | | LE tilt | 0.068 | 0.024 | 0.092 | - | - |
| | Body- | Front | 0.095 | 0.011 | 0.106 | = | - |
| | Worn | Back | 0.163 | 0.139 | 0.302 | - | - |

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| | reported SAR WWAN and WLAN DTS 5.8 GHz, Σ SAR evaluation | | | | | | | | | | |
|-----------|---|----------|-------|-----------|----------|------------------|---------|--|--|--|--|
| Frequency | _ | | | AR / W/kg | ΣSAR | Calculated | SPLSR | | | | |
| band | Position | | WWAN | WLAN | <1.6W/kg | distance (mm) | (≦0.04) | | | | |
| | | RE cheek | 0.165 | 0.27 | 0.435 | - | - | | | | |
| | Head | RE tilt | 0.081 | 0.043 | 0.124 | - | - | | | | |
| LTE FDD | пеац | LE cheek | 0.108 | 0.11 | 0.218 | - | - | | | | |
| Band 5 | | LE tilt | 0.071 | 0.024 | 0.095 | - | - | | | | |
| | Body- Worn | Front | 0.117 | 0.011 | 0.128 | - | - | | | | |
| | | Back | 0.132 | 0.139 | 0.271 | - | - | | | | |
| | | RE cheek | 0.185 | 0.27 | 0.455 | - | - | | | | |
| | Head | RE tilt | 0.053 | 0.043 | 0.096 | - | - | | | | |
| LTE FDD | пеаи | LE cheek | 0.175 | 0.11 | 0.285 | - | - | | | | |
| Band 7 | | LE tilt | 0.070 | 0.024 | 0.094 | - | - | | | | |
| | Body- | Front | 0.352 | 0.011 | 0.363 | - | - | | | | |
| | Worn | Back | 0.602 | 0.139 | 0.741 | - | - | | | | |

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| | reporte | d SAR WW | AN and WLA | AN UNII 5 GH | łz, ΣSAR eva | luation | |
|-----------|-----------|----------|------------|--------------|--------------|------------------|---------|
| Frequency | | | reported | SAR / W/kg | ΣSAR | Calculated | SPLSR |
| band | Posi | Position | | WLAN | <1.6W/kg | distance (mm) | (≦0.04) |
| | | RE cheek | 0.150 | 0.308 | 0.458 | - | - |
| | Head | RE tilt | 0.064 | 0.067 | 0.131 | - | - |
| GSM 850 | пеац | LE cheek | 0.111 | 0.12 | 0.231 | - | - |
| GSIVI 850 | | LE tilt | 0.073 | 0.039 | 0.112 | - | - |
| | Body-Worn | Front | 0.099 | 0.019 | 0.118 | - | - |
| | Body-Worn | Back | 0.155 | 0.227 | 0.382 | - | - |
| | | RE cheek | 0.083 | 0.308 | 0.391 | - | - |
| | Head | RE tilt | 0.037 | 0.067 | 0.104 | - | - |
| GSM 1900 | | LE cheek | 0.161 | 0.12 | 0.281 | - | - |
| G3W 1900 | | LE tilt | 0.067 | 0.039 | 0.106 | - | - |
| | Body-Worn | Front | 0.247 | 0.019 | 0.266 | - | - |
| | body-worn | Back | 0.222 | 0.227 | 0.449 | - | - |
| | Head | RE cheek | 0.185 | 0.308 | 0.493 | - | - |
| | | RE tilt | 0.087 | 0.067 | 0.154 | - | - |
| WCDMA | пеац | LE cheek | 0.270 | 0.12 | 0.39 | - | - |
| Band II | | LE tilt | 0.141 | 0.039 | 0.18 | - | - |
| | Rody Worn | Front | 0.536 | 0.019 | 0.555 | ı | - |
| | Body-Worn | Back | 0.429 | 0.227 | 0.656 | - | - |
| | | RE cheek | 0.123 | 0.308 | 0.431 | ı | - |
| | Head | RE tilt | 0.080 | 0.067 | 0.147 | - | - |
| WCDMA | пеаи | LE cheek | 0.116 | 0.12 | 0.236 | - | - |
| Band V | | LE tilt | 0.078 | 0.039 | 0.117 | - | - |
| | Body-Worn | Front | 0.101 | 0.019 | 0.12 | - | - |
| | Bouy-Worl | Back | 0.129 | 0.227 | 0.356 | - | - |

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| | reporte | d SAR WW | AN and WLA | AN UNII 5 GH | Iz, Σ SAR eva | luation | |
|-----------|-----------|----------|------------|--------------|----------------------|------------------|---------|
| Frequency | | | | SAR / W/kg | ΣSAR | Calculated | SPLSR |
| band | Posi | ition | WWAN | WLAN | <1.6W/kg | distance (mm) | (≦0.04) |
| | | RE cheek | 0.165 | 0.308 | 0.473 | 1 | - |
| | Head | RE tilt | 0.081 | 0.067 | 0.148 | - | - |
| LTE FDD | неац | LE cheek | 0.108 | 0.12 | 0.228 | - | - |
| Band5 | | LE tilt | 0.071 | 0.039 | 0.11 | - | - |
| | Body-Worn | Front | 0.117 | 0.019 | 0.136 | - | - |
| | | Back | 0.132 | 0.227 | 0.359 | - | - |
| | | RE cheek | 0.185 | 0.308 | 0.493 | - | - |
| | Head | RE tilt | 0.053 | 0.067 | 0.12 | - | - |
| LTE FDD | пеаи | LE cheek | 0.175 | 0.12 | 0.295 | - | - |
| Band7 | | LE tilt | 0.07 | 0.039 | 0.109 | - | - |
| | Body-Worn | Front | 0.352 | 0.019 | 0.371 | - | - |
| | | Back | 0.602 | 0.227 | 0.829 | - | - |

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| reported SAR WWAN and Bluetooth, ΣSAR evaluation | | | | | | | | | | |
|--|------------|-------|---------------------|-----------|----------|------------------|---------|--|--|--|
| Frequency band | Position | | reported SAR / W/kg | | ΣSAR | Calculated | SPLSR | | | |
| | | | WWAN | Bluetooth | <1.6W/kg | distance (mm) | (≦0.04) | | | |
| GSM 850 Body-V | Pody Worn | Front | 0.094 | 0.111 | 0.205 | - | - | | | |
| | Body-Worri | Back | 0.178 | 0.111 | 0.289 | - | - | | | |
| GSM 1900 | Body-Worn | Front | 0.319 | 0.111 | 0.43 | - | - | | | |
| G3W 1900 | | Back | 0.256 | 0.111 | 0.367 | - | - | | | |
| WCDMA | Pody Worn | Front | 0.514 | 0.111 | 0.625 | - | - | | | |
| Band II | Body-Worn | Back | 0.569 | 0.111 | 0.68 | - | - | | | |
| WCDMA | Pody Worn | Front | 0.095 | 0.111 | 0.206 | - | - | | | |
| Band V | Body-Worn | Back | 0.163 | 0.111 | 0.274 | - | - | | | |

| | reported SAR WWAN and Bluetooth, ΣSAR evaluation | | | | | | | | | | |
|------------------|--|----------|------------|-----------|----------|------------------|---------|--|--|--|--|
| Frequency | | | reported S | AR / W/kg | ΣSAR | Calculated | SPLSR | | | | |
| band | Posi | Position | | Bluetooth | <1.6W/kg | distance (mm) | (≦0.04) | | | | |
| LTE FDD | Body-Worn | Front | 0.117 | 0.111 | 0.228 | - | - | | | | |
| Band5 | | Back | 0.132 | 0.111 | 0.243 | - | - | | | | |
| LTE FDD Band7 | Body-Worn | Front | 0.352 | 0.111 | 0.463 | - | - | | | | |
| | | Back | 0.602 | 0.111 | 0.713 | - | - | | | | |

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4. Instruments List

| 4. Ilisti ulliciits | LIST | | | | |
|---------------------------------|------------------------------------|--------------------|------------|-----------------------------|--------------------------|
| Device | Manufacturer | Typo | Serial | Date of last | Date of next |
| Device | Manufacturei | Туре | number | calibration | calibration |
| | | | 3923 | Aug.28,2014 | Aug.27,2015 |
| Dosimetric E-Field Probe | Schmid & Partner Engineering AG | EX3DV4 | 7351 | Jan.08,2015 | Jan.07,2016 |
| Frobe | Engineering AG | | 3770 | Apr.28,2015 | Apr.27,2016 |
| | | D835V2 | 4d063 | Aug.28,2014 | Aug.27,2015 |
| Custom Validation | Colourid O Doutmon | D1900V2 | 5d027 | Apr.29,2015 | Apr.28,2016 |
| System Validation Dipole | Schmid & Partner Engineering AG | D2450V2 | 727 | Apr.22,2015 | Apr.21,2016 |
| | Linginicering Ad | D2600V2 | 1005 | Jan.27,2015 | Jan.26,2016 |
| | | D5GHzV2 | 1023 | Jan.29,2015 | Jan.28,2016 |
| | | | 1374 | May.06,2015 | May.05,2016 |
| Data acquisition Electronics | Schmid & Partner Engineering AG | DAE4 | 360 | Dec.11,2014 | Dec.10,2015 |
| | | | 856 | Aug.27,2014 | Aug.26,2015 |
| Software | Schmid & Partner Engineering AG | DASY 52 V52.8.8 | N/A | Calibration not required | Calibration not required |
| Phantom | Schmid & Partner Engineering AG | SAM | N/A | Calibration not required | Calibration not required |
| Network Analyzer | Agilent | E5071C | MY46108212 | Aug.28,2014 | Aug.27,2015 |
| Dielectric Probe Kit | Agilent | 85070E | MY44300677 | Calibration not required | Calibration not required |
| Dual-directional | | 772D | MY46151242 | ' | Jul.13,2015 |
| coupler | Agilent | 778D | 50313 | Aug.07,2014 | Aug.06,2015 |
| RF Signal Generator | Agilent | | MY50141235 | Dec.14,2013 | Dec.13,2016 |
| Power Meter | Agilent | E4417A | MY51410006 | Oct.25,2013 | Oct.24,2015 |
| Power Sensor | Agilent | E9301H | MY51470001 | Dec.16,2013 | Dec.15,2015 |
| Radio Communication Test | R&S | CMU200 | 113505 | Aug.14,2014 | Aug.13,2015 |
| Radio Communication Test | Anritsu | MT8820C | 6200930984 | Aug.28,2014 | Aug.27,2015 |
| TECPEL | Digital thermometer | DTM-303A | TP130074 | Mar.27,2015 | Mar.26,2016 |

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5. Measurements

Date: 2015/5/7

GSM 850_Head_Re Cheek_CH 128

Communication System: GSM; Frequency: 824.2 MHz, Duty Factor: 1:8.3

Medium parameters used: f = 824.2 MHz; $\sigma = 0.865 \text{ S/m}$; $\varepsilon_r = 40.874$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

· Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/HEAD/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.143 W/kg

Configuration/HEAD/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

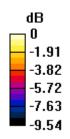
dx=8mm, dy=8mm, dz=5mm

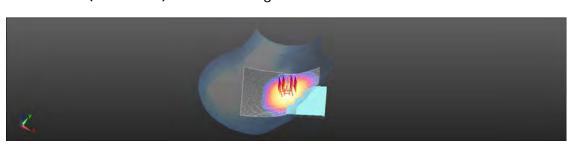
Reference Value = 1.484 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.156 W/kg

SAR(1 g) = 0.123 W/kg; SAR(10 g) = 0.093 W/kg

Maximum value of SAR (measured) = 0.140 W/kg





0 dB = 0.140 W/kg = -8.54 dBW/kg

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Date: 2015/5/8

GSM 850_Speech mode_Back side_CH 128_15mm

Communication System: GSM; Frequency: 824.2 MHz, Duty Factor: 1:8.3

Medium parameters used: f = 824.2 MHz; $\sigma = 0.951 \text{ S/m}$; $\varepsilon_r = 56.211$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.190 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

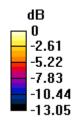
dx=8mm, dy=8mm, dz=5mm

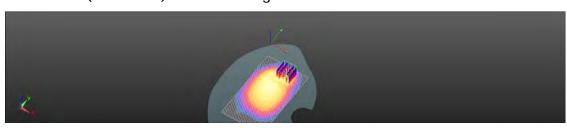
Reference Value = 11.50 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.254 W/kg

SAR(1 g) = 0.159 W/kg; SAR(10 g) = 0.094 W/kg

Maximum value of SAR (measured) = 0.210 W/kg





0 dB = 0.210 W/kg = -6.79 dBW/kg

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GPRS 850_Hotspot mode_Back side_CH 128_10mm

Communication System: GPRS (1Dn4Up); Frequency: 824.2 MHz, Duty Factor: 1:2

Medium parameters used: f = 824.2 MHz; $\sigma = 0.951 \text{ S/m}$; $\varepsilon_r = 56.211$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.627 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

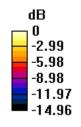
dx=8mm, dy=8mm, dz=5mm

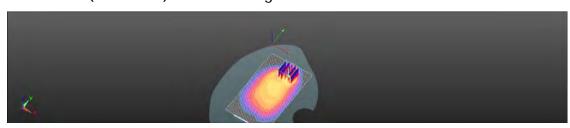
Reference Value = 15.22 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.839 W/kg

SAR(1 g) = 0.462 W/kg; SAR(10 g) = 0.247 W/kg

Maximum value of SAR (measured) = 0.634 W/kg





0 dB = 0.634 W/kq = -1.98 dBW/kq

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Date: 2015/5/9

GSM 1900_Head_Le Cheek_CH 512

Communication System: GSM; Frequency: 1850.2 MHz, Duty Factor: 1:8.3

Medium parameters used: f = 1850.2 MHz; $\sigma = 1.351 \text{ S/m}$; $\varepsilon_r = 40.674$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.42, 8.42, 8.42); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x141x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.162 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

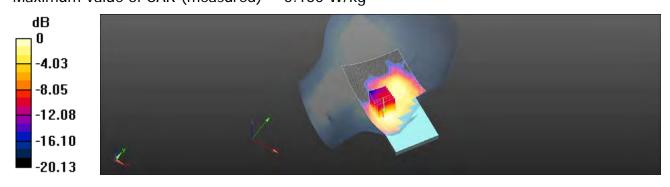
dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.235 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.192 W/kg

SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.076 W/kg

Maximum value of SAR (measured) = 0.160 W/kg



0 dB = 0.160 W/kg = -7.95 dBW/kg

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GSM 1900_Speech mode_Front side_CH 810_15mm

Communication System: GSM; Frequency: 1909.8 MHz, Duty Factor: 1:8.3

Medium parameters used: f = 1910 MHz; $\sigma = 1.554 \text{ S/m}$; $\epsilon_r = 53.317$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.03, 8.03, 8.03); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.431 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

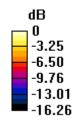
dx=8mm, dy=8mm, dz=5mm

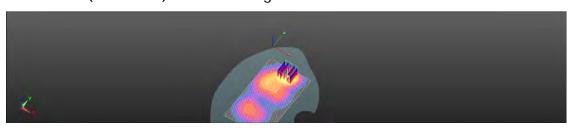
Reference Value = 4.542 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.549 W/kg

SAR(1 g) = 0.319 W/kg; SAR(10 g) = 0.172 W/kg

Maximum value of SAR (measured) = 0.436 W/kg





0 dB = 0.436 W/kg = -3.61 dBW/kg

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GPRS 1900_Hotspot mode_Front side_CH 810_10mm

Communication System: GPRS (1Dn4Up); Frequency: 1909.8 MHz, Duty Factor: 1:2 Medium parameters used: f = 1910 MHz; $\sigma = 1.554 \text{ S/m}$; $\epsilon_r = 53.317$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(8.03, 8.03, 8.03); Calibrated: 2014/8/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/5/6
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.56 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

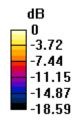
dx=8mm, dy=8mm, dz=5mm

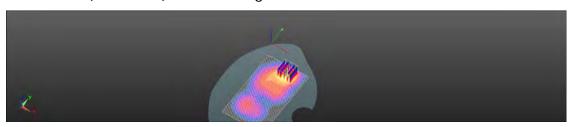
Reference Value = 7.975 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 2.16 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.590 W/kg

Maximum value of SAR (measured) = 1.70 W/kg





0 dB = 1.70 W/kq = 2.30 dBW/kq

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WCDMA Band 2_Head_Le Cheek_CH 9400

Communication System: WCDMA; Frequency: 1880 MHz, Duty Factor: 1:1

Medium parameters used: f = 1880 MHz; $\sigma = 1.381 \text{ S/m}$; $\epsilon_r = 40.501$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.42, 8.42, 8.42); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (61x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.361 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

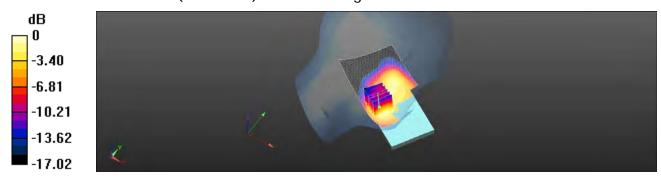
dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.422 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.450 W/kg

SAR(1 g) = 0.286 W/kg; SAR(10 g) = 0.177 W/kg

Maximum value of SAR (measured) = 0.372 W/kg



0 dB = 0.372 W/kg = -4.30 dBW/kg

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WCDMA Band 2_Speech mode_Back side_CH 9538_15mm

Communication System: WCDMA; Frequency: 1907.6 MHz, Duty Factor: 1:1

Medium parameters used: f = 1908 MHz; $\sigma = 1.552$ S/m; $\epsilon_r = 53.326$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.03, 8.03, 8.03); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.741 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

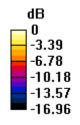
dx=8mm, dy=8mm, dz=5mm

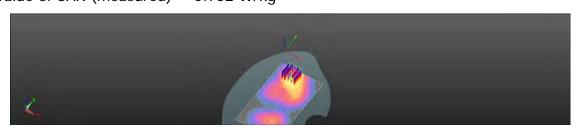
Reference Value = 5.761 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.919 W/kg

SAR(1 g) = 0.551 W/kg; SAR(10 g) = 0.307 W/kg

Maximum value of SAR (measured) = 0.752 W/kg





0 dB = 0.752 W/kg = -1.24 dBW/kg

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WCDMA Band 2_Hotspot mode_Back side_CH 9538_10mm

Communication System: WCDMA; Frequency: 1907.6 MHz, Duty Factor: 1:1

Medium parameters used: f = 1908 MHz; $\sigma = 1.552$ S/m; $\varepsilon_r = 53.326$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.03, 8.03, 8.03); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 1.91 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

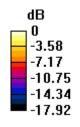
dx=8mm, dy=8mm, dz=5mm

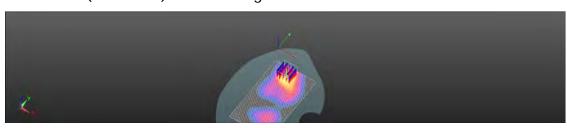
Reference Value = 6.545 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 2.40 W/kg

SAR(1 g) = 1.35 W/kg; SAR(10 g) = 0.702 W/kg

Maximum value of SAR (measured) = 1.93 W/kg





0 dB = 1.93 W/kq = 2.85 dBW/kq

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WCDMA Band 5_Head_Re Cheek_CH 4132

Communication System: WCDMA; Frequency: 826.4 MHz, Duty Factor: 1:1

Medium parameters used: f = 826.4 MHz; $\sigma = 0.867 \text{ S/m}$; $\varepsilon_r = 40.854$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/HEAD/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.133 W/kg

Configuration/HEAD/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

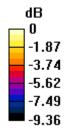
dx=8mm, dy=8mm, dz=5mm

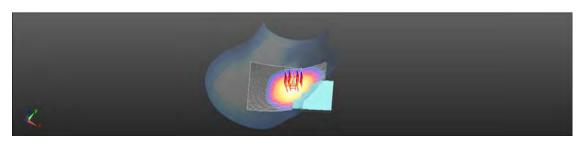
Reference Value = 1.983 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.146 W/kg

SAR(1 g) = 0.116 W/kg; SAR(10 g) = 0.089 W/kg

Maximum value of SAR (measured) = 0.132 W/kg





0 dB = 0.132 W/kq = -8.80 dBW/kq

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Date: 2015/5/8

WCDMA Band 5_Speech mode_Back side_CH 4132_15mm

Communication System: WCDMA; Frequency: 826.4 MHz, Duty Factor: 1:1

Medium parameters used: f = 826.4 MHz; $\sigma = 0.953 \text{ S/m}$; $\varepsilon_r = 56.194$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.177 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

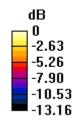
dx=8mm, dy=8mm, dz=5mm

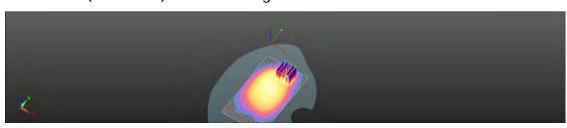
Reference Value = 11.15 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.240 W/kg

SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.089 W/kg

Maximum value of SAR (measured) = 0.197 W/kg





0 dB = 0.197 W/kq = -7.06 dBW/kq

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WCDMA Band 5_Hotspot mode_Back side_CH 4233_10mm

Communication System: WCDMA; Frequency: 846.6 MHz, Duty Factor: 1:1

Medium parameters used: f = 847 MHz; $\sigma = 0.975$ S/m; $\varepsilon_r = 56.033$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.473 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

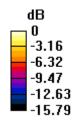
dx=8mm, dy=8mm, dz=5mm

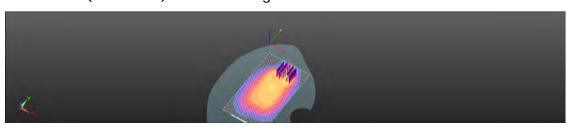
Reference Value = 12.83 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.654 W/kg

SAR(1 g) = 0.354 W/kg; SAR(10 g) = 0.186 W/kg

Maximum value of SAR (measured) = 0.489 W/kg





0 dB = 0.489 W/kg = -3.11 dBW/kg

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LTE Band 5 (10MHz)_Head_Re Cheek_CH 20600_QPSK_1-25

Communication System: LTE; Frequency: 844 MHz, Duty Factor: 1:1

Medium parameters used: f = 844 MHz; $\sigma = 0.887$ S/m; $\varepsilon_r = 40.688$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/HEAD/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.165 W/kg

Configuration/HEAD/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

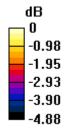
dx=8mm, dy=8mm, dz=5mm

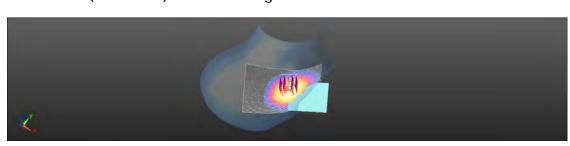
Reference Value = 6.558 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.174 W/kg

SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.121 W/kg

Maximum value of SAR (measured) = 0.161 W/kg





0 dB = 0.161 W/kq = -7.92 dBW/kq

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LTE Band 5 (10MHz)_Body-worn_Back side_CH 20450_QPSK_1-25_15mm

Communication System: LTE; Frequency: 829 MHz, Duty Factor: 1:1

Medium parameters used: f = 829 MHz; $\sigma = 0.956$ S/m; $\varepsilon_r = 56.169$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

• Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.146 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

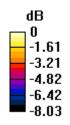
dx=8mm, dy=8mm, dz=5mm

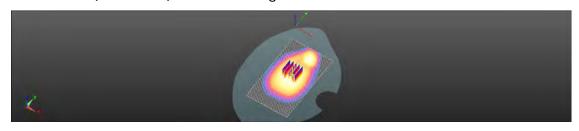
Reference Value = 12.66 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.158 W/kg

SAR(1 g) = 0.129 W/kg; SAR(10 g) = 0.101 W/kg

Maximum value of SAR (measured) = 0.146 W/kg





0 dB = 0.146 W/kq = -8.35 dBW/kq

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LTE Band 5 (10MHz)_Hotspot_Back side_CH 20600_QPSK_1-25_10mm

Communication System: LTE; Frequency: 844 MHz, Duty Factor: 1:1

Medium parameters used: f = 844 MHz; $\sigma = 0.972$ S/m; $\varepsilon_r = 56.058$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm,

dy=15 mm

Maximum value of SAR (interpolated) = 0.440 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

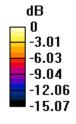
dx=8mm, dy=8mm, dz=5mm

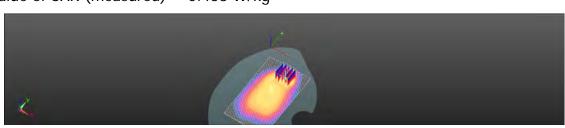
Reference Value = 14.27 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.589 W/kg

SAR(1 g) = 0.323 W/kg; SAR(10 g) = 0.173 W/kg

Maximum value of SAR (measured) = 0.438 W/kg





0 dB = 0.438 W/kq = -3.58 dBW/kq

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Date: 2015/6/7

LTE Band 5 (10MHz)_Head_Re Cheek_CH 20525_QPSK_1-49

Communication System:LTE; Frequency: 836.5 MHz, Duty Factor: 1:1

Medium parameters used: f = 836.5 MHz; $\sigma = 0.881 \text{ S/m}$; $\varepsilon_r = 40.976$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (71x121x1): Interpolated grid: dx=15mm,

dy=15mm

Maximum value of SAR (interpolated) = 0.189 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

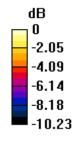
dx=8mm, dy=8mm, dz=5mm

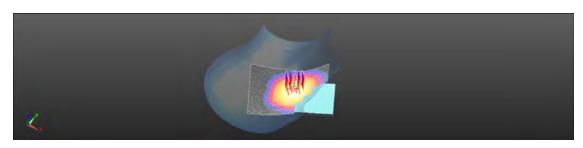
Reference Value = 3.368 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.208 W/kg

SAR(1 g) = 0.158 W/kg; SAR(10 g) = 0.117 W/kg

Maximum value of SAR (measured) = 0.183 W/kg





0 dB = 0.183 W/kg = -7.37 dBW/kg

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Date: 2015/5/12

LTE Band 7 (20MHz)_Head_Re Cheek_CH 20850_QPSK_1-99

Communication System: LTE Frequency: 2510 MHz, Duty Factor: 1:1

Medium parameters used: f = 2510 MHz; $\sigma = 1.821 \text{ S/m}$; $\varepsilon_r = 40.432$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.41, 7.41, 7.41); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x141x1): Interpolated grid: dx=12 mm,

dy=12 mm

Maximum value of SAR (interpolated) = 0.264 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

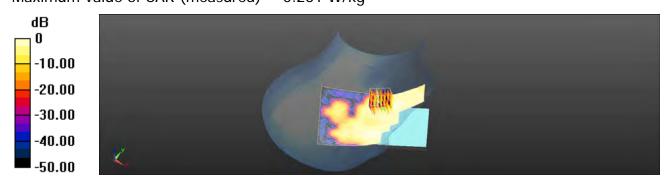
dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.975 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.360 W/kg

SAR(1 g) = 0.182 W/kg; SAR(10 g) = 0.089 W/kg

Maximum value of SAR (measured) = 0.261 W/kg



0 dB = 0.261 W/kg = -5.83 dBW/kg

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LTE Band 7 (20MHz)_Body-worn_Back side_CH 21350_QPSK_1-99_15mm

Communication System: LTE; Frequency: 2560 MHz, Duty Factor: 1:1

Medium parameters used: f = 2560 MHz; $\sigma = 2.033 \text{ S/m}$; $\epsilon_r = 53.703$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.36, 7.36, 7.36); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=12 mm,

dy=12 mm

Maximum value of SAR (interpolated) = 0.795 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

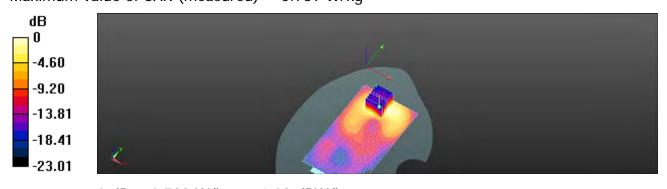
dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.471 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.531 W/kg; SAR(10 g) = 0.265 W/kg

Maximum value of SAR (measured) = 0.789 W/kg



0 dB = 0.789 W/kg = -1.03 dBW/kg

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Date: 2015/5/13

LTE Band 7 (20MHz)_Hotspot_Back side_CH 20850_QPSK_1-99_10mm

Communication System: LTE; Frequency: 2510 MHz, Duty Factor: 1:1

Medium parameters used: f = 2510 MHz; $\sigma = 1.983 \text{ S/m}$; $\epsilon_r = 53.876$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.36, 7.36, 7.36); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=12 mm,

dy=12 mm

Maximum value of SAR (interpolated) = 1.90 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

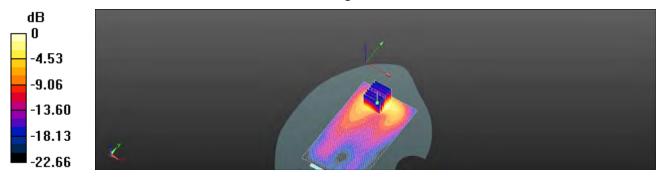
dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.802 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 2.69 W/kg

SAR(1 g) = 1.26 W/kg; SAR(10 g) = 0.592 W/kg

Maximum value of SAR (measured) = 1.95 W/kg



0 dB = 1.95 W/kg = 2.90 dBW/kg

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Date: 2015/6/9

LTE Band 7 (20MHz)_Hotspot_Back side_CH 20850_QPSK_1-99_10mm

Communication System:LTE; Frequency: 2510 MHz, Duty Factor: 1:1

Medium parameters used: f = 2510 MHz; $\sigma = 1.994 \text{ S/m}$; $\epsilon_r = 53.121$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.36, 7.36, 7.36); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/HEAD/Area Scan (81x141x1): Interpolated grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 1.67 W/kg

Configuration/HEAD/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

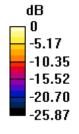
dx=5mm, dy=5mm, dz=5mm

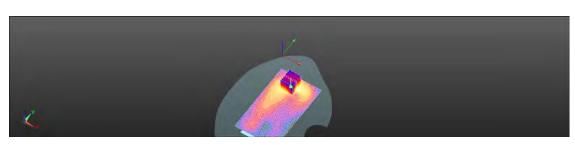
Reference Value = 5.498 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 2.38 W/kg

SAR(1 g) = 1.24 W/kg; SAR(10 g) = 0.572 W/kg

Maximum value of SAR (measured) = 1.75 W/kg





0 dB = 1.75 W/kg = 2.43 dBW/kg

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Date: 2015/5/8

WLAN802.11b_Head_Re Cheek_CH 6

Communication System: WLAN 2.45G; Frequency: 2437 MHz, Duty Factor: 1:1

Medium parameters used: f = 2437 MHz; $\sigma = 1.805 \text{ S/m}$; $\varepsilon_r = 38.532$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(7.4, 7.4, 7.4); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x151x1): Interpolated grid: dx=12 mm,

dy=12 mm

Maximum value of SAR (interpolated) = 0.493 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

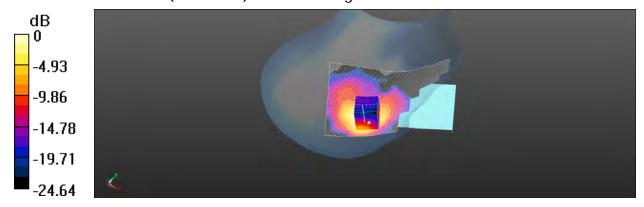
dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.390 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.751 W/kg

SAR(1 g) = 0.320 W/kg; SAR(10 g) = 0.154 W/kg

Maximum value of SAR (measured) = 0.510 W/kg



0 dB = 0.510 W/kq = -2.92 dBW/kq

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WLAN802.11b_Hotspot_Back_CH 6

Communication System: WLAN 2.45G; Frequency: 2437 MHz, Duty Factor: 1:1

Medium parameters used: f = 2437 MHz; $\sigma = 2.019$ S/m; $\varepsilon_r = 51.238$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(7.51, 7.51, 7.51); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x151x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.655 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

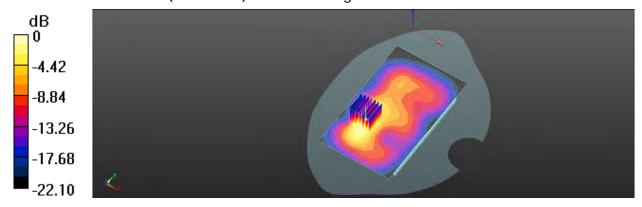
dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.464 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.954 W/kg

SAR(1 g) = 0.442 W/kg; SAR(10 g) = 0.210 W/kg

Maximum value of SAR (measured) = 0.669 W/kg



0 dB = 0.669 W/kg = -1.75 dBW/kg

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Date: 2015/5/11

WLAN802.11a 5.2G_Head_Re Cheek_CH 36

Communication System: WLAN 5G; Frequency: 5180 MHz, Duty Factor: 1:1

Medium parameters used: f = 5180 MHz; $\sigma = 4.726 \text{ S/m}$; $\epsilon_r = 37.265$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(5.49, 5.49, 5.49); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.359 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

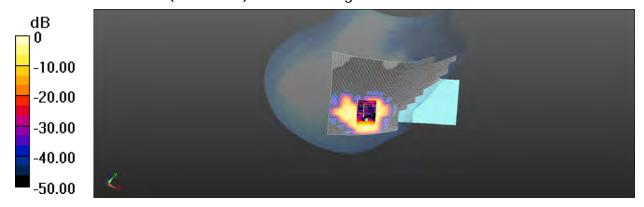
dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.3580 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.761 W/kg

SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.044 W/kg

Maximum value of SAR (measured) = 0.342 W/kg



0 dB = 0.342 W/kg = -4.66 dBW/kg

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WLAN802.11a 5.2G_Body-worn_Back_CH 36

Communication System: WLAN 5G; Frequency: 5180 MHz, Duty Factor: 1:1

Medium parameters used: f = 5180 MHz; $\sigma = 5.444 \text{ S/m}$; $\epsilon_r = 48.078$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.85, 4.85, 4.85); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x151x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.360 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

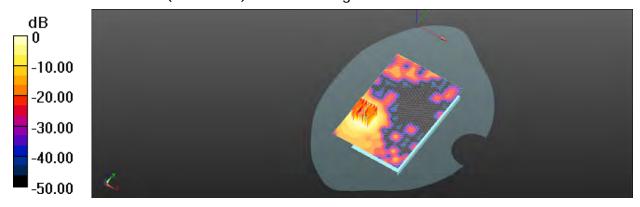
dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8547 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.731 W/kg

SAR(1 g) = 0.189 W/kg; SAR(10 g) = 0.066 W/kg

Maximum value of SAR (measured) = 0.344 W/kg



0 dB = 0.344 W/kg = -4.63 dBW/kg

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Date: 2015/5/11

WLAN802.11a 5.3G_Head_Re Cheek_CH 56

Communication System: WLAN 5G; Frequency: 5280 MHz, Duty Factor: 1:1

Medium parameters used: f = 5280 MHz; $\sigma = 4.86 \text{ S/m}$; $\varepsilon_r = 36.954$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(5.26, 5.26, 5.26); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.683 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

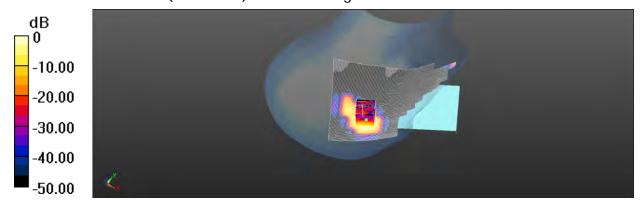
dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.928 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.306 W/kg; SAR(10 g) = 0.085 W/kg

Maximum value of SAR (measured) = 0.633 W/kg



0 dB = 0.633 W/kg = -1.99 dBW/kg

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Date: 2015/5/11

WLAN802.11a 5.3G_Body-worn_Back_CH 56

Communication System: WLAN 5G; Frequency: 5280 MHz, Duty Factor: 1:1

Medium parameters used: f = 5280 MHz; $\sigma = 5.587 \text{ S/m}$; $\epsilon_r = 47.654$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.62, 4.62, 4.62); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x151x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.424 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

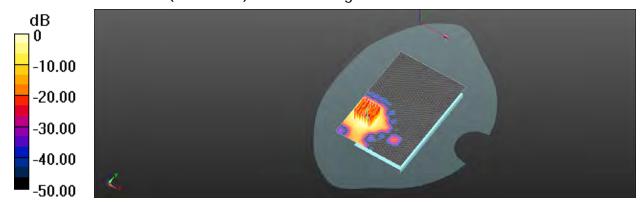
dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8649 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.893 W/kg

SAR(1 g) = 0.225 W/kg; SAR(10 g) = 0.079 W/kg

Maximum value of SAR (measured) = 0.420 W/kg



0 dB = 0.420 W/kg = -3.77 dBW/kg

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Date: 2015/5/11

WLAN802.11a 5.6G_Head_Re Cheek_CH 140

Communication System: WLAN 5G; Frequency: 5700 MHz, Duty Factor: 1:1

Medium parameters used: f = 5700 MHz; $\sigma = 5.312 \text{ S/m}$; $\epsilon_r = 35.861$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.245 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

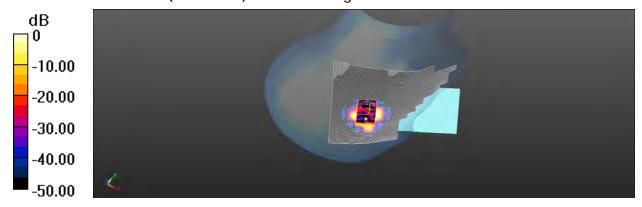
dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8487 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.455 W/kg

SAR(1 g) = 0.094 W/kg; SAR(10 g) = 0.027 W/kg

Maximum value of SAR (measured) = 0.229 W/kg



0 dB = 0.229 W/kg = -6.40 dBW/kg

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WLAN802.11a 5.6G_Body-worn_Back_CH 140

Communication System: WLAN 5G; Frequency: 5700 MHz, Duty Factor: 1:1

Medium parameters used: f = 5700 MHz; $\sigma = 6.152 \text{ S/m}$; $\epsilon_r = 46.299$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.28, 4.28, 4.28); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x151x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.101 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.7649 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.126 W/kg

SAR(1 g) = 0.0362 W/kg; SAR(10 g) = 0.011 W/kg

Maximum value of SAR (measured) = 0.0728 W/kg



0 dB = 0.0728 W/kg = -11.38 dBW/kg

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Date: 2015/5/11

WLAN802.11a 5.8G_Head_Re Cheek_CH 165

Communication System: WLAN 5G; Frequency: 5825 MHz, Duty Factor: 1:1

Medium parameters used: f = 5825 MHz; $\sigma = 5.521$ S/m; $\varepsilon_r = 35.496$; $\rho = 1000$ kg/m³

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.764 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

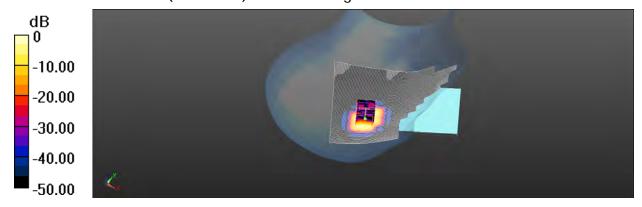
dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.783 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 2.93 W/kg

SAR(1 g) = 0.269 W/kg; SAR(10 g) = 0.069 W/kg

Maximum value of SAR (measured) = 0.640 W/kg



0 dB = 0.640 W/kg = -1.94 dBW/kg

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Date: 2015/5/11

WLAN802.11a 5.8G_Body-worn_Back_CH 165

Communication System: WLAN 5G; Frequency: 5825 MHz, Duty Factor: 1:1

Medium parameters used: f = 5825 MHz; $\sigma = 6.284 \text{ S/m}$; $\epsilon_r = 45.881$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.28, 4.28, 4.28); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x151x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.303 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm

Reference Value = 0.8695 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.667 W/kg

SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.261 W/kg



0 dB = 0.261 W/kg = -5.83 dBW/kg

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6. System Verification

Date: 2015/5/7

Dipole 835 MHz_SN:4d063_Head

Communication System: CW; Frequency: 835 MHz, Duty Factor: 1:1

Medium parameters used: f = 835 MHz; $\sigma = 0.877$ S/m; $\varepsilon_r = 40.788$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.41 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

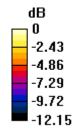
grid: dx=5mm, dy=5mm, dz=5mm

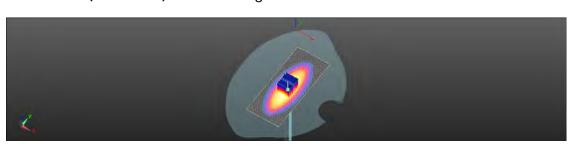
Reference Value = 58.43 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 4.47 W/kg

SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.59 W/kg

Maximum value of SAR (measured) = 3.60 W/kg





0 dB = 3.60 W/kq = 5.56 dBW/kq

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Date: 2015/5/8

Dipole 835 MHz_SN:4d063_Body

Communication System: CW; Frequency: 835 MHz, Duty Factor: 1:1

Medium parameters used: f = 835 MHz; $\sigma = 0.962$ S/m; $\varepsilon_r = 56.127$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE3 Sn360; Calibrated: 2014/12/11

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.88 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

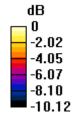
grid: dx=5mm, dy=5mm, dz=5mm

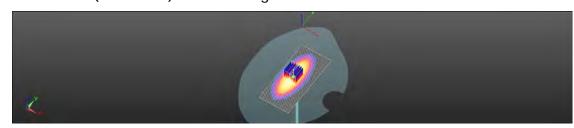
Reference Value = 53.87 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 3.35 W/kg

SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 2.88 W/kg





0 dB = 2.88 W/kq = 4.59 dBW/kq

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Date: 2015/5/9

Dipole 1900 MHz_SN:5d027_Head

Communication System: CW; Frequency: 1900 MHz, Duty Factor: 1:1

Medium parameters used: f = 1900 MHz; $\sigma = 1.403 \text{ S/m}$; $\epsilon_r = 40.388$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.42, 8.42, 8.42); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15

mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

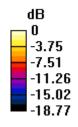
grid: dx=5mm, dy=5mm, dz=5mm

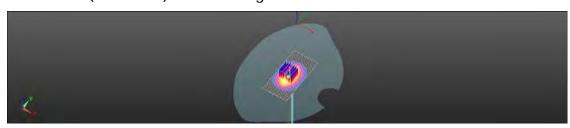
Reference Value = 98.58 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 18.0 W/kg

SAR(1 g) = 9.91 W/kg; SAR(10 g) = 5.21 W/kg

Maximum value of SAR (measured) = 13.8 W/kg





0 dB = 13.8 W/kg = 11.40 dBW/kg

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prosecuted to the fullest extent of the law.



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Date: 2015/5/11

Dipole 1900 MHz_SN:5d027_Body

Communication System: CW; Frequency: 1900 MHz, Duty Factor: 1:1

Medium parameters used: f = 1900 MHz; $\sigma = 1.544 \text{ S/m}$; $\epsilon_r = 53.365$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.03, 8.03, 8.03); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 15.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

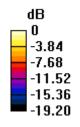
grid: dx=5mm, dy=5mm, dz=5mm

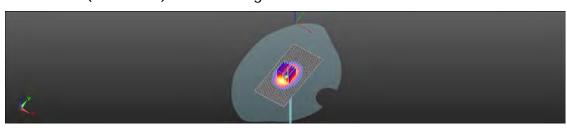
Reference Value = 96.13 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 9.87 W/kg; SAR(10 g) = 5.24 W/kg

Maximum value of SAR (measured) = 14.1 W/kg





0 dB = 14.1 W/kq = 11.49 dBW/kq

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Date: 2015/5/8

Dipole 2450 MHz_SN:727_Head

Communication System: CW; Frequency: 2450 MHz, Duty Factor: 1:1

Medium parameters used: f = 2450 MHz; $\sigma = 1.821 \text{ S/m}$; $\epsilon_r = 38.479$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(7.40, 7.40, 7.40); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x51x1): Interpolated grid: dx=12

mm, dy=12 mm

Maximum value of SAR (interpolated) = 21.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

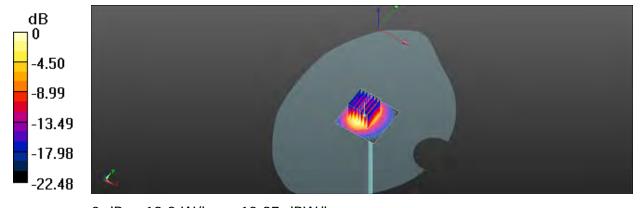
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 99.42 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 26.8 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.93 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

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Date: 2015/5/8

Dipole 2450 MHz_SN:727_Body

Communication System: CW; Frequency: 2450 MHz, Duty Factor: 1:1

Medium parameters used: f = 2450 MHz; $\sigma = 2.036 \text{ S/m}$; $\epsilon_r = 51.195$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(7.51, 7.51, 7.51); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x51x1): Interpolated grid: dx=12

mm, dy=12 mm

Maximum value of SAR (interpolated) = 21.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

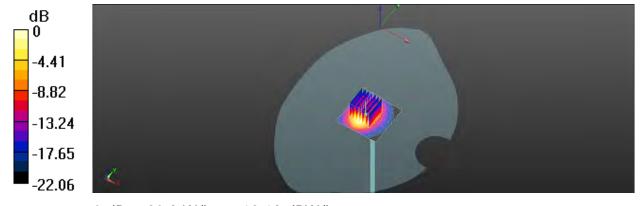
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.85 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 28.6 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.16 W/kg

Maximum value of SAR (measured) = 20.8 W/kg



0 dB = 20.8 W/kq = 13.18 dBW/kq

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Date: 2015/5/12

Dipole 2600 MHz_SN:1005_Head

Communication System: CW; Frequency: 2600 MHz, Duty Factor: 1:1

Medium parameters used: f = 2600 MHz; $\sigma = 1.913 \text{ S/m}$; $\varepsilon_r = 40.142$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.41, 7.41, 7.41); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x121x1): Interpolated grid:

dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 23.2 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

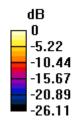
grid: dx=5mm, dy=5mm, dz=5mm

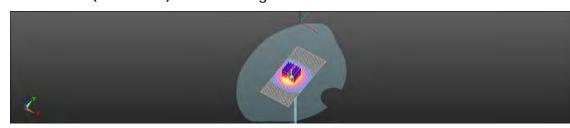
Reference Value = 99.82 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 32.8 W/kg

SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.29 W/kg

Maximum value of SAR (measured) = 23.0 W/kg





0 dB = 23.0 W/kg = 13.62 dBW/kg

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Date: 2015/5/13

Dipole 2600 MHz_SN:1005_Body

Communication System: CW; Frequency: 2600 MHz, Duty Factor: 1:1

Medium parameters used: f = 2600 MHz; $\sigma = 2.073 \text{ S/m}$; $\epsilon_r = 53.561$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.36, 7.36, 7.36); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x91x1): Interpolated grid: dx=12

mm, dy=12 mm

Maximum value of SAR (interpolated) = 24.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

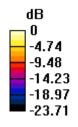
grid: dx=5mm, dy=5mm, dz=5mm

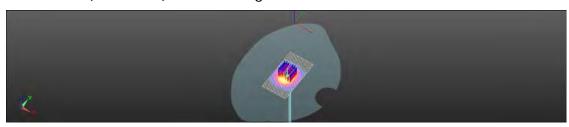
Reference Value = 97.04 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 31.0 W/kg

SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.24 W/kg

Maximum value of SAR (measured) = 22.4 W/kg





0 dB = 22.4 W/kg = 13.50 dBW/kg

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Date: 2015/5/11

Dipole 5200 MHz_SN:1023_Head

Communication System: CW; Frequency: 5200 MHz, Duty Factor: 1:1

Medium parameters used: f = 5200 MHz; $\sigma = 4.75 \text{ S/m}$; $\varepsilon_r = 37.204$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(5.49, 5.49, 5.49); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 14.9 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

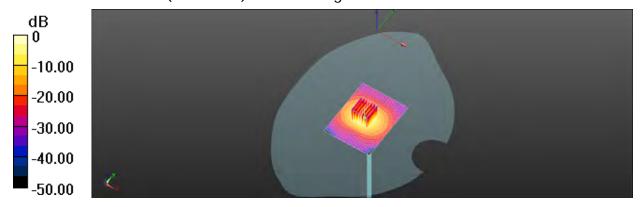
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 63.17 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 29.8 W/kg

SAR(1 g) = 7.71 W/kg; SAR(10 g) = 2.21 W/kg

Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 12.27 dBW/kg

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Dipole 5200 MHz_SN:1023_Body

Communication System: CW; Frequency: 5200 MHz, Duty Factor: 1:1

Medium parameters used: f = 5200 MHz; $\sigma = 5.466 \text{ S/m}$; $\varepsilon_r = 47.906$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.85, 4.85, 4.85); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.1 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 57.95 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 30.9 W/kg

SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.01 W/kg

Maximum value of SAR (measured) = 15.9 W/kg



0 dB = 15.9 W/kq = 11.28 dBW/kq

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Dipole 5300 MHz_SN:1023_Head

Communication System: CW; Frequency: 5300 MHz, Duty Factor: 1:1

Medium parameters used: f = 5300 MHz; $\sigma = 4.882 \text{ S/m}$; $\varepsilon_r = 36.93$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(5.26, 5.26, 5.26); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.8 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

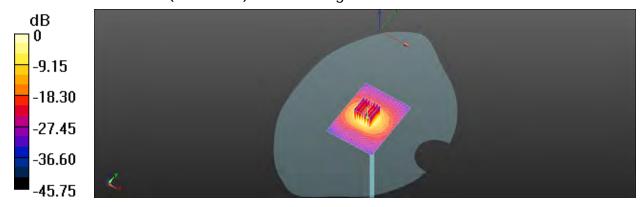
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 61.08 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 30.8 W/kg

SAR(1 g) = 8.29 W/kg; SAR(10 g) = 2.46 W/kg

Maximum value of SAR (measured) = 15.9 W/kg



0 dB = 15.9 W/kq = 12.53 dBW/kq

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Dipole 5300 MHz_SN:1023_Body

Communication System: CW; Frequency: 5300 MHz, Duty Factor: 1:1

Medium parameters used: f = 5300 MHz; $\sigma = 5.611 \text{ S/m}$; $\epsilon_r = 47.554$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.62, 4.62, 4.62); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.4 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

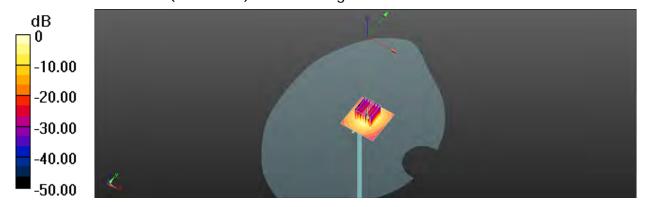
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 57.09 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 28.2 W/kg

SAR(1 g) = 7.73 W/kg; SAR(10 g) = 2.18 W/kg

Maximum value of SAR (measured) = 15.8 W/kg



0 dB = 15.8 W/kq = 11.50 dBW/kq

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Dipole 5600 MHz_SN:1023_Head

Communication System: CW; Frequency: 5600 MHz, Duty Factor: 1:1

Medium parameters used: f = 5600 MHz; $\sigma = 5.241 \text{ S/m}$; $\epsilon_r = 36.095$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.75, 4.75, 4.75); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.4 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

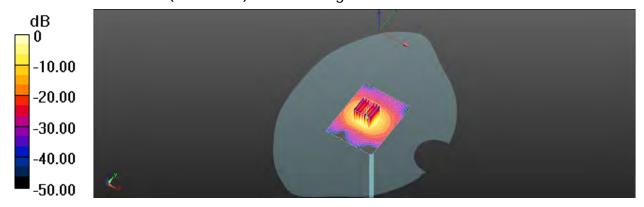
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 61.82 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 29.5 W/kg

SAR(1 g) = 7.95 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 13.9 W/kq = 12.43 dBW/kq

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Dipole 5600 MHz_SN:1023_Body

Communication System: CW; Frequency: 5600 MHz, Duty Factor: 1:1

Medium parameters used: f = 5600 MHz; $\sigma = 6.011 \text{ S/m}$; $\epsilon_r = 46.541$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4, 4, 4); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.6 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

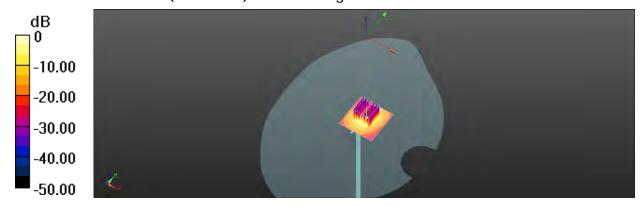
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 57.58 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 38.6 W/kg

SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.21 W/kg

Maximum value of SAR (measured) = 17.9 W/kg



0 dB = 17.9 W/kg = 12.96 dBW/kg

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Date: 2015/5/11

Dipole 5800 MHz_SN:1023_Head

Communication System: CW; Frequency: 5800 MHz, Duty Factor: 1:1

Medium parameters used: f = 5800 MHz; $\sigma = 5.486 \text{ S/m}$; $\epsilon_r = 35.577$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW, d=10mm/Area Scan (71x91x1): Interpolated

grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.4 W/kg

Configuration/Pin=100mW, d=10mm/Zoom Scan (7x7x12)/Cube 0:

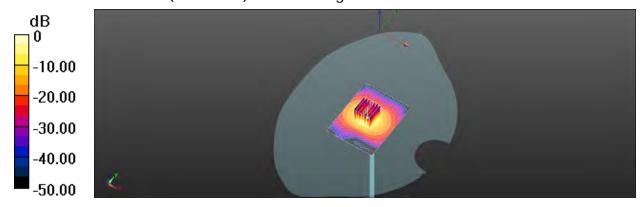
Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 60.47 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 32.2 W/kg

SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.34 W/kg

Maximum value of SAR (measured) = 16.5 W/kg



0 dB = 16.5 W/kq = 12.17 dBW/kq

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Date: 2015/5/11

Dipole 5800 MHz_SN:1023_Body

Communication System: CW; Frequency: 5800 MHz, Duty Factor: 1:1

Medium parameters used: f = 5800 MHz; $\sigma = 6.278 \text{ S/m}$; $\epsilon_r = 45.975$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN7351; ConvF(4.28, 4.28, 4.28); Calibrated: 2015/1/8;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.9 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 55.43 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 36.5 W/kg

SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.15 W/kg

Maximum value of SAR (measured) = 17.1 W/kg



0 dB = 17.1 W/kg = 12.33 dBW/kg

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Dipole 835 MHz_SN:4d063_Head

Communication System: CW; Frequency: 835 MHz, Duty Factor: 1:1

Medium parameters used: f = 835 MHz; $\sigma = 0.879$ S/m; $\varepsilon_r = 40.991$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2014/8/28/8/2;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.43 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

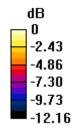
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 60.04 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 4.45 W/kg

SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.61 W/kg

Maximum value of SAR (measured) = 3.59 W/kg





0 dB = 3.59 W/kq = 5.55 dBW/kq

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Dipole 835 MHz_SN:4d063_Body

Communication System: CW; Frequency: 835 MHz, Duty Factor: 1:1

Medium parameters used: f = 835 MHz; $\sigma = 0.954 \text{ S/m}$; $\varepsilon_r = 55.938$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(10.32, 10.32, 10.32); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.87 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

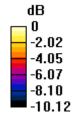
grid: dx=5mm, dy=5mm, dz=5mm

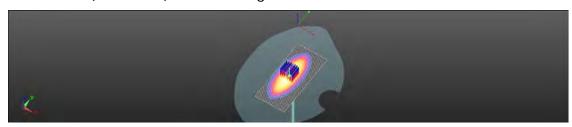
Reference Value = 54.11 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.31 W/kg

SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.55 W/kg

Maximum value of SAR (measured) = 2.87 W/kg





0 dB = 2.87 W/kg = 4.58 dBW/kg

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Date: 2015/6/7

Dipole 1900 MHz_SN:5d027_Head

Communication System: CW; Frequency: 1900 MHz, Duty Factor: 1:1

Medium parameters used: f = 1900 MHz; $\sigma = 1.415 \text{ S/m}$; $\epsilon_r = 40.437$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.42, 8.42, 8.42); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

• Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15

mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

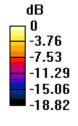
grid: dx=5mm, dy=5mm, dz=5mm

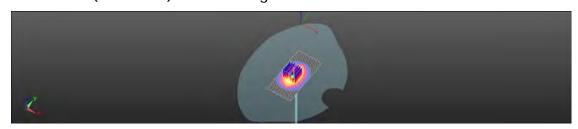
Reference Value = 98.42 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 18.1 W/kg

SAR(1 g) = 9.93 W/kg; SAR(10 g) = 5.2 W/kg

Maximum value of SAR (measured) = 13.6 W/kg





0 dB = 13.6 W/kg = 11.34 dBW/kg

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Date: 2015/6/7

Dipole 1900 MHz_SN:5d027_Body

Communication System: CW; Frequency: 1900 MHz, Duty Factor: 1:1

Medium parameters used: f = 1900 MHz; $\sigma = 1.531 \text{ m}$; $\epsilon_r = 53.621$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

S/

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(8.03, 8.03, 8.03); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid:

dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 15.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

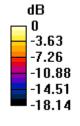
grid: dx=5mm, dy=5mm, dz=5mm

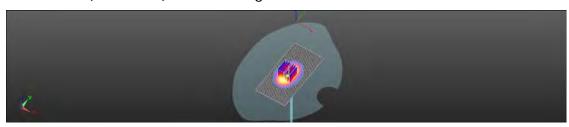
Reference Value = 96.66 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 9.89 W/kg; SAR(10 g) = 5.24 W/kg

Maximum value of SAR (measured) = 14.0 W/kg





0 dB = 14.0 W/kq = 11.46 dBW/kq

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Date: 2015/6/4

Dipole 2450 MHz_SN:727_Head

Communication System: CW; Frequency: 2450 MHz, Duty Factor: 1:1

Medium parameters used: f = 2450 MHz; $\sigma = 1.815 \text{ S/m}$; $\epsilon_r = 38.539$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(7.16, 7.16, 7.16); Calibrated: 2015/4/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=12

mm, dy=12 mm

Maximum value of SAR (interpolated) = 20.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

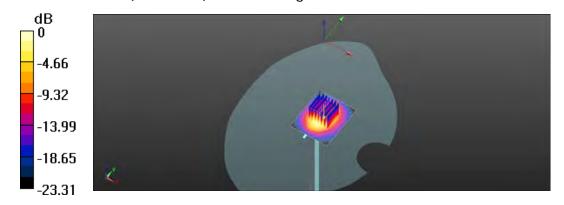
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.4 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 27.2 W/kg

SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.71 W/kg

Maximum value of SAR (measured) = 19.5 W/kg



0 dB = 19.5 W/kg = 12.90 dBW/kg

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Date: 2015/6/4

Dipole 2450 MHz_SN:727_Body

Communication System: CW; Frequency: 2450 MHz, Duty Factor: 1:1

Medium parameters used: f = 2450 MHz; $\sigma = 2.035 \text{ S/m}$; $\epsilon_r = 51.219$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(7.21, 7.21, 7.21); Calibrated: 2015/4/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x51x1): Interpolated grid: dx=12

mm, dy=12 mm

Maximum value of SAR (interpolated) = 21.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

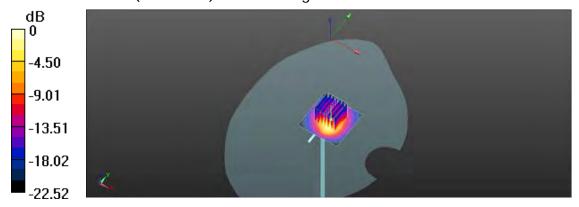
grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.8 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 28.7 W/kg

SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.12 W/kg

Maximum value of SAR (measured) = 20.9 W/kg



0 dB = 20.9 W/kg = 13.20 dBW/kg

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Date: 2015/6/9

Dipole 2600 MHz_SN:1005_Head

Communication System: CW; Frequency: 2600 MHz, Duty Factor: 1:1

Medium parameters used: f = 2600 MHz; $\sigma = 1.936 \text{ S/m}$; $\varepsilon_r = 39.916$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.41, 7.41, 7.41); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x121x1): Interpolated grid:

dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 23.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

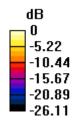
grid: dx=5mm, dy=5mm, dz=5mm

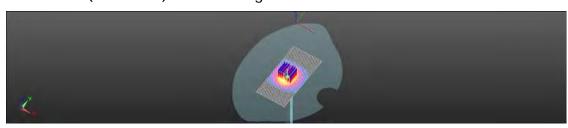
Reference Value = 99.44 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 32.8 W/kg

SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.27 W/kg

Maximum value of SAR (measured) = 22.8 W/kg





0 dB = 22.8 W/kg = 13.58 dBW/kg

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Date: 2015/6/9

Dipole 2600 MHz_SN:1005_Body

Communication System: CW; Frequency: 2600 MHz, Duty Factor: 1:1

Medium parameters used: f = 2600 MHz; $\sigma = 2.104 \text{ S/m}$; $\epsilon_r = 52.814$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3923; ConvF(7.36, 7.36, 7.36); Calibrated: 2014/8/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

• Electronics: DAE4 Sn1374; Calibrated: 2015/5/6

Phantom: Head

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x91x1): Interpolated grid: dx=12

mm, dy=12 mm

Maximum value of SAR (interpolated) = 25.4 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement

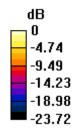
grid: dx=5mm, dy=5mm, dz=5mm

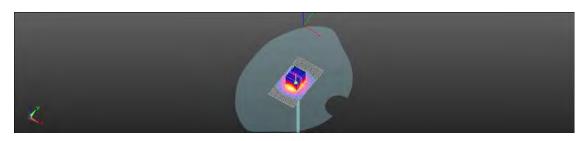
Reference Value = 98.89 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 31.9 W/kg

SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.29 W/kg

Maximum value of SAR (measured) = 23.0 W/kg





0 dB = 23.0 W/kq = 13.62 dBW/kq

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Date: 2015/6/4

Dipole 5300 MHz_SN:1023_Head

Communication System: CW; Frequency: 5300 MHz, Duty Factor: 1:1

Medium parameters used: f = 5300 MHz; $\sigma = 4.882 \text{ S/m}$; $\varepsilon_r = 36.93$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(5.27, 5.27, 5.27); Calibrated: 2015/4/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head:

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration /Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.5 W/kg

Configuration /Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

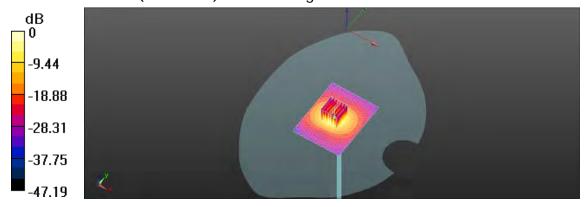
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 57.96 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 29.9 W/kg

SAR(1 g) = 8.21 W/kg; SAR(10 g) = 2.41 W/kg

Maximum value of SAR (measured) = 16.6 W/kg



0 dB = 16.6 W/kg = 12.20 dBW/kg

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Date: 2015/6/4

Dipole 5300 MHz_SN:1023_Body

Communication System: CW; Frequency: 5300 MHz, Duty Factor: 1:1

Medium parameters used: f = 5300 MHz; $\sigma = 5.611 \text{ S/m}$; $\epsilon_r = 47.554$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2014/8/27

Phantom: Head;

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10

mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.7 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

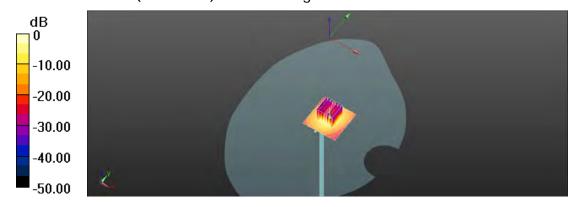
grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 53.32 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 44.1 W/kg

SAR(1 g) = 7.56 W/kg; SAR(10 g) = 2.11 W/kg

Maximum value of SAR (measured) = 15.1 W/kg



0 dB = 15.1 W/kg = 11.24 dBW/kg

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7. DAE & Probe Calibration Certificate

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

SGS-TW (Auden)

| Client SGS-TW (Aud | *** | | DAE4-1374_May15 |
|---|--|--|---|
| CALIBRATION (| CERTIFICATE | | |
| Object | DAE4 - SD 000 D04 BM - SN: 1374 | | |
| Calibration procedure(s) | QA CAL-06.v29 Calibration proces | ronics (DAE) | |
| Calibration date: | May 06, 2015 | | |
| This calibration certificate docum The measurements and the unce | nents the traceability to nation | onal standards, which realize the physical units obability are given on the following pages and | of measurements (SI). are part of the certificate. |
| All calibrations have been conduc | cted in the closed laboratory | y facility: environment temperature (22 ± 3)°C a | and humidity < 70%. |
| Calibration Equipment used (M& | TE critical for calibration) | | |
| Primary Standards | ID# | Cal Date (Certificate No.) | Scheduled Calibration |
| Keithley Multimeter Type 2001 | SN: 0810278 | 03-Oct-14 (No:15573) | Oct-15 |
| Secondary Standards | ID# | Check Date (in house) | Scheduled Check |
| Auto DAE Calibration Unit Calibrator Box V2.1 | SE UWS 053 AA 1001 SE UMS 006 AA 1002 | The state of the s | In house check: Jan-16 |
| | 1-10-10-32 | 06-Jan-15 (in house check) | In house check: Jen-16 |
| | | | In house check: Jan-16 |
| | Name | Function | In house check: Jan-16 Signature |
| | | | In house check: Jan-16 Signature |
| Calibrated by: | Name | Function | In house check: Jan-16 |
| Calibrated by: Approved by: | Name R.Mayoraz Fin Bomholt | Function Technician | In house check: Jan-16 Signature |

Certificate No: DAE4-1374_May15

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Glossary

DAE data acquisition electronics

Connector angle information used in DASY system to align probe sensor X to the robot

coordinate system.

Methods Applied and Interpretation of Parameters

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this
 - Common mode sensitivity: Influence of a positive or negative common mode voltage on the differential measurement.
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an
 - AD Converter Values with inputs shorted: Values on the internal AD converter corresponding to zero input voltage
 - Input Offset Measurement. Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
 - Power consumption: Typical value for information. Supply currents in various operating modes.

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DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1µV , full range = -100...+300 mV Low Range: 1LSB = 61nV , full range = -1......+3mV DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | x | Υ | z |
|---------------------|-----------------------|-----------------------|-----------------------|
| High Range | 405.241 ± 0.02% (k=2) | 405.484 ± 0.02% (k=2) | 405.011 ± 0.02% (k=2) |
| | | | 3.98770 ± 1.50% (k=2) |

Connector Angle

| Connector Angle to be used in DASY system | 245.0 ° ± 1 ° |
|---|---------------|

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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

| High Range | | Reading (μV) | Difference (μV) | Error (%) |
|----------------|------|--------------|-----------------|-----------|
| Channel X + I | nput | 200027.58 | -3.42 | -0.00 |
| Channel X + In | nput | 20005.73 | 2.63 | 0.01 |
| Channel X - In | put | -20003.18 | 3.04 | -0.02 |
| Channel Y + Ir | nput | 200027.12 | -3.98 | -0.00 |
| Channel Y + Ir | nput | 20002.62 | -0.35 | -0.00 |
| Channel Y - In | put | -20006.98 | -0.59 | 0.00 |
| Channel Z + Ir | put | 200031.31 | -0.10 | -0.00 |
| Channel Z + Ir | put | 20000.66 | -2.25 | -0.01 |
| Channel Z - In | put | -20008.41 | -1.94 | 0.01 |

| Low Range | | Reading (μV) | Difference (μV) | Error (%) |
|-----------|---------|--------------|-----------------|-----------|
| Channel X | + Input | 1999.56 | -0.09 | -0.00 |
| Channel X | + Input | 199.64 | 0.05 | 0.02 |
| Channel X | - Input | -201.87 | -1.56 | 0.78 |
| Channel Y | + Input | 1999.63 | 0.03 | 0.00 |
| Channel Y | + Input | 198.55 | -0.89 | -0.45 |
| Channel Y | - Input | -201.10 | -0.69 | 0.35 |
| Channel Z | + Input | 2000.11 | 0.64 | 0.03 |
| Channel Z | + Input | 197.27 | -2.23 | -1.12 |
| Channel Z | - Input | -202.39 | -1.99 | 0.99 |

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (μV) | Low Range Average Reading (μV) |
|-----------|-----------------------------------|------------------------------------|-----------------------------------|
| Channel X | 200 | -6.38 | -8.61 |
| | - 200 | 9.68 | 7.55 |
| Channel Y | 200 | 3.79 | 3.72 |
| | - 200 | -5.43 | -6.05 |
| Channel Z | 200 | -15.24 | -15.61 |
| | - 200 | 12.53 | 12.72 |

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (μV) | Channel Y (μV) | Channel Z (μV) |
|-----------|--------------------|----------------|----------------|----------------|
| Channel X | 200 | - | 6.28 | -2.15 |
| Channel Y | 200 | 9.34 | - | 7.43 |
| Channel Z | 200 | 9.24 | 6.77 | - |

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | High Range (LSB) | Low Range (LSB) |
|-----------|------------------|-----------------|
| Channel X | 16120 | 15044 |
| Channel Y | 15972 | 15769 |
| Channel Z | 16364 | 15426 |

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Average (μV) | min. Offset (μV) | max. Offset (μV) | Std. Deviation (µV) |
|-----------|--------------|------------------|------------------|---------------------|
| Channel X | -0.68 | -1.85 | 0.72 | 0.51 |
| Channel Y | -1.37 | -2.25 | -0.26 | 0.36 |
| Channel Z | 1.05 | -0.13 | 2.45 | 0.53 |

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|-----------|----------------|------------------|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

8. Low Battery Alarm Voltage (Typical values for information)

| Typical values Alarm Level (VDC) | | |
|----------------------------------|------|--|
| Supply (+ Vcc) | +7.9 | |
| Supply (- Vcc) | -7.6 | |

9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|----------------|-------------------|---------------|-------------------|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | -0.01 | -8 | -9 |

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Accreditation No.: SCS 108

Client Auden

Certificate No: DAE3-360_Dec14

| | CERTIFICATE | | | | |
|--|--|--|---|--|--|
| Object | DAE3 - SD 000 D03 AA - SN; 360 | | | | |
| Calibration procedure(s) | QA CAL-06.v28 Calibration procedure for the data acquisition electronics (DAE) | | | | |
| Calibration date: | December 11, 2014 | | | | |
| The measurements and the drice | cted in the closed laboratory | onal standards, which realize the physical unit- obability are given on the following pages and r facility: environment temperature (22 ± 3)°C | are part of the certificate. | | |
| Primary Standards | ID# | Cal Date (Cardy No.) | 4.500 | | |
| Keithley Multimeter Type 2001 | SN: 0810278 | Cal Date (Certificate No.) 03-Oct-14 (No:15573) | Scheduled Calibration Oct-15 | | |
| Secondary Standards | Long | AND THE RESERVE OF THE PARTY OF | Social | | |
| Auto DAE Calibration Unit Calibrator Box V2.1 | ID:# SE UWS 053 AA 1001 SE UMS 006 AA 1002 | Check Date (in house) 07-Jan-14 (in house check) 07-Jan-14 (in house check) | Scheduled Check In house check: Jan-15 In house check: Jan-15 | | |
| | Name Eric Hainfeld | Function Technician | Signature | | |
| Calibrated by: | | | | | |
| Calibrated by: | Fin Bombolt | Deputy Technical Manager | 111301111 | | |

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Gertificate No: DAE3-360_Dec14

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Accreditation No.: SCS 108

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Glossary

DAE data acquisition electronics

information used in DASY system to align probe sensor X to the robot Connector angle

coordinate system.

Methods Applied and Interpretation of Parameters

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this
 - Common mode sensitivity: Influence of a positive or negative common mode voltage on the differential measurement.
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an input voltage.
 - AD Converter Values with inputs shorted: Values on the internal AD converter corresponding to zero input voltage
 - Input Offset Measurement: Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
 - Power consumption: Typical value for information. Supply currents in various operating modes

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DC Voltage Measurement

A/D - Converter Resolution nominal

| Calibration Factors | Х | Y | z |
|---------------------|-----------------------|-----------------------|-----------------------|
| High Range | 404.235 ± 0.02% (k=2) | 404.079 ± 0.02% (k=2) | 404.092 ± 0.02% (k=2) |
| Low Range | 3.93556 ± 1.50% (k=2) | 3.93875 ± 1.50% (k=2) | 3.97215 ± 1.50% (k=2) |

Connector Angle

| Connector Angle to be used in DASY system | 221.5 ° ± 1 ° |
|---|---------------|

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Appendix (Additional assessments outside the scope of SCS108)

1. DC Voltage Linearity

| High Range | Reading (μV) | Difference (μV) | Error (%) |
|-------------------|--------------|-----------------|-----------|
| Channel X + Input | 199991.46 | -3.98 | -0.00 |
| Channel X + Input | 20008.87 | 8.06 | 0.04 |
| Channel X - Input | -19998.23 | 2.76 | -0.01 |
| Channel Y + Input | 199993.74 | -1.98 | -0.00 |
| Channel Y + Input | 20002.76 | 2.04 | 0.01 |
| Channel Y - Input | -20004.74 | -3.72 | 0.02 |
| Channel Z + Input | 199996.35 | 1.08 | 0.00 |
| Channel Z + Input | 20004.75 | 4.15 | 0.02 |
| Channel Z - Input | -20001.19 | -0.08 | 0.00 |

| Low Range | Reading (μV) | Difference (μV) | Error (%) |
|-------------------|--------------|-----------------|-----------|
| Channel X + Input | 2001.09 | 0.20 | 0.01 |
| Channel X + Input | 202.04 | 0.78 | 0.39 |
| Channel X - Input | -198.57 | 0.00 | -0.00 |
| Channel Y + Input | 2000.63 | -0.15 | -0.01 |
| Channel Y + Input | 199.98 | -1.13 | -0.56 |
| Channel Y - Input | -200.61 | -1.89 | 0.95 |
| Channel Z + Input | 2000.63 | -0.06 | -0.00 |
| Channel Z + Input | 200.51 | -0.55 | -0.27 |
| Channel Z - Input | -199.08 | -0.28 | 0.14 |

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec: Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (μV) | Low Range Average Reading (μV) |
|-----------|-----------------------------------|------------------------------------|-----------------------------------|
| Channel X | 200 | -2.07 | -3.89 |
| | - 200 | 5.38 | 3.59 |
| Channel Y | 200 | -10.03 | -10.94 |
| | - 200 | 9.36 | 8.51 |
| Channel Z | 200 | -8.08 | -9.02 |
| | - 200 | 7.61 | 7.87 |

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec: Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (μV) | Channel Y (μV) | Channel Z (μV) |
|-----------|--------------------|----------------|----------------|----------------|
| Channel X | 200 | - | 0.69 | -1.79 |
| Channel Y | 200 | 9.62 | - | 1.50 |
| Channel Z | 200 | 6.65 | 6.90 | - |

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time:

| | High Range (LSB) | Low Range (LSB) |
|-----------|------------------|-----------------|
| Channel X | 16315 | 13419 |
| Channel Y | 15925 | 15338 |
| Channel Z | 16062 | 13836 |

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10MΩ

| | Average (μV) | min. Offset (μV) | max. Offset (μV) | Std. Deviation (µV) |
|-----------|--------------|------------------|------------------|---------------------|
| Channel X | -0.65 | -1.81 | 0.26 | 0.42 |
| Channel Y | -0.75 | -1.87 | 0.30 | 0.41 |
| Channel Z | 0.82 | -0.16 | 2.31 | 0.51 |

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|-----------|----------------|------------------|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|----------------|-------------------|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.6 |

9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|----------------|-------------------|---------------|-------------------|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | -0.01 | -8 | -9 |

Certificate No: DAE3-360_Dec14

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Client SGS - TW (Auden)

Accorditation No.: SCS 108

Certificate No. DAE4-856_Aug14

| CALIBHATION | CERTIFICATE | | |
|--|---|---|---|
| Ottent | DAE4 - SD 000 D | 04 BM SN; 856 | |
| Caltration procedure(s) | QA CAL-06.v26 Calibration proces | dure for the data acquisition electric | onics (DAE) |
| Carbration date: | August 27, 2014 | | |
| | | crail standards: which resilize the physical units obability are given on the following pages and : | |
| All calibrations have been condu Calibration Equipment used (MS | | y tability: environment temperature (22 ± 3)°C o | and humidity = 70%. |
| Calilledion Equipment used (MS Primary Standards | TE criical (or paidration) | Cas Date (Certificate No.) | Scheduled Calibration |
| Calification Equipment used (MS | TE critical (or patibration) | | |
| Calification Equipment used \$MS Primary Standards Kertney Mattimeter Type 2007 | TE criical (or paidration) | Cas Date (Certificate No.) 01-Oct-13 (No.13976) | Scheduled Calibration Oct-14 |
| Calilledion Equipment used (MS Primary Standards | TE critical for pastiration) [ID-# SN - 0810976 ID-# | Cas Date (Certificate No.) | Scheduled Calibration |
| Calification Equipment used (MS Primary Standards Keithley Mutimeter Type 2001 Secondary Standards | ID # SE LW/S 053 AA 1001 | Cas Date (Certificase No.) 01-Oct-13 (Ne. 13976) Ofteck Date (in house) | Scheduled Calibration Oct-14 Scheduled Check |
| Calification Equipment used (MS Primary Standards Kerthey Maximeter Type 2007 Secondary Standards Auto DAE Calibrator Unit Calificator Box V2.1 | ID.# SNL080976 ID.# SELWS 953 AA 1001 SELWS 955 AA 1002 | Can Date (Certificate No.) (01-Cot-T3 (No.) 13976) Check Date (in house) (07-Jan-14 (in house check) (07-Jan-14 (in house check) | Scheduled Calibration Oct-14 Scheduled Check III Posse Check, Jan-15 |
| Calification Equipment used (MS Primary Standards Kertney Musimeter Type 2007 Secondary Standards Auto DAE Calibration Unit | ID-# SN-0810876 ID-# SE-UWS-053 AA 1001 SE-UWS-053 AA 1002 | Cas Date (Certificate No.) 01-Oct-13 (No.13976) Check Date (in house) 07-Jan-14 (in house check) 07-Jan-14 (in house check) | Scheduled Calibration Oct-14 Scheduled Check III Posse check: Jan-15 In house check: Jan-10 |
| Calification Equipment used (MS Primary Standards Kerthey Maximeter Type 2007 Secondary Standards Auto DAE Calibrator Unit Calificator Box V2.1 | ID.# SNL080976 ID.# SELWS 953 AA 1001 SELWS 955 AA 1002 | Can Date (Certificate No.) (01-Cot-T3 (No.) 13976) Check Date (in house) (07-Jan-14 (in house check) (07-Jan-14 (in house check) | Scheduled Calibration Oct-14 Scheduled Check III Posse check: Jan-15 In house check: Jan-10 |

Certificate No: DAE=-856_Aug14

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Calibration Laboratory of Schmid & Partner

Engineering AG
Zaughausstrasse 43, 9004 Zurich, Switzerland





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Accreditation No.: SCS 108

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Glossary

DAE data acquisition electronics

Connector angle information used in DASY system to align probe sensor X to the robot

coordinate system.

Methods Applied and Interpretation of Parameters

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - Common mode sensitivity: Influence of a positive or negative common mode voltage on the differential measurement.
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an input voltage.
 - AD Converter Values with inputs shorted. Values on the internal AD converter corresponding to zero input voltage
 - Input Offset Measurement. Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
 - Power consumption: Typical value for information. Supply currents in various operating modes.

Certificate No: DAE4-666_Aug14

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DC Voltage Measurement

A/D - Converter Resolution nominal

full range = -1.00,_+300 mV full range = -1. +3mV High Range: 1LSB = ETHY. Low Range: 1LSB = 61nV ; DASY measurement parameters: Auto Zern Time 3 sec; Measuring Ilmir 3 sec

| Calibration Factors | × | Ψ | 2 |
|---------------------|-----------------------|-----------------------|-----------------------|
| High Range | 403,468 ± 0.02% (4=2) | 404.581 ± 0.02% (6+2) | 403.903 ± 0.02% (k-2) |
| Low Range | 3.97681 ± 1.50% (k-2) | 3.97783 ± 1.50% (k=2) | 3.97815 ± 1.50% (k=2) |

Connector Angle

| Connector Angle to be used in DASY system | 52.5 ± 1 1 |
|---|------------|

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Appendix (Additional assessments outside the scope of SCS108)

1. DC Voltage Linearity

| High Range | Reading (µV) | Difference (µV) | Error (%) |
|-------------------|--------------|-----------------|-----------|
| Channel X + Input | 19999933 | 0.84 | 0.00 |
| Channel X + Input | 19990.00 | 32.25 | +0,01 |
| Channel X - Input | 20000.45 | 0.34 | -0,00 |
| Channel Y + Input | 199999.95 | 0.96 | 0.00 |
| Channel Y + Input | 19997,51 | -3.82 | -0,02 |
| Channal Y Input | -20000.77 | 0.07 | -0,00 |
| Channel Z + Input | 199997.26 | 0.19 | -0,00 |
| Channel Z + Input | 19997.65 | -3.57 | -0.02 |
| Channel Z - Input | -20002.47 | 1.55 | 0.01 |
| | | | |

| Low Bange | Reading (µV) | Difference (µV) | Error (%) |
|-------------------|--------------|-----------------|-----------|
| Channel X + Input | 2001.05 | -0.09 | -0,00 |
| Channel X + Input | 202,34 | D 60 | 0.40 |
| Channel X - Input | -198.21 | 0.26 | -0.13 |
| Channel Y + Input | 2001.39 | 0,26 | 0.01 |
| Channel Y + Input | 201.08 | -0,36 | 0.18 |
| Channel Y - Input | -199.24 | -0.78 | 0,39 |
| Channel Z + Input | 2000.92 | -0.16 | -0.01 |
| Channel Z + Input | 200,26 | -1.22 | -0.60 |
| Channel Z - Input | -199,91 | +1,47 | 0.74 |
| | | | |

2. Common mode sensitivity

| | Input Voltage (mV) | High Range Average Reading (µV) | Low Range Average Reading (µV) |
|-----------|--------------------|------------------------------------|-----------------------------------|
| Channel X | 200 | -14,76 | -16.42 |
| | -200 | 17,19 | 15,88 |
| Channel Y | 500 | -2.17 | 7,25 |
| | +200 | 0.30 | .0.01 |
| Channel Z | 200 | 10.27 | 10,05 |
| | -300 | -13.06 | -12.03 |

3. Channel separation

DASY measurement parameters: Auto Zero Time; 3 sac; Measuring time: 5 sec

| | Input Voltage (mV) | Channel X (µV) | Channel V (µV) | Channel Z (µV) |
|-----------|--------------------|----------------|----------------|----------------|
| Channel X | 200 | - >1 | 2.81 | -1.15 |
| Channel Y | 200 | 7.99 | | .3:07 |
| Channel Z | 200 | 8.55 | 5.24 | - |

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4. AD-Converter Values with Inputs shorted

DASY measurement garameters: Auto Zero Time: 3 sec: Measuring time: 3 sec:

| | High Range (LSB) | Low Range (LSB) |
|-----------|------------------|-----------------|
| Channel X | 16226 | 16620 |
| Channel Y | 15942 | 16803 |
| Channel 2 | 15875 | 16811 |

5. Input Offset Measurement

DASY measurement parameters. Auto Zero Time: 3 sec: Measuring time: 3 sec

local toMC

| | Average (μV) | min. Offset (µV) | max. Offset (µV) | Std. Deviation (µV) |
|-----------|--------------|------------------|------------------|------------------------|
| Channel X | 0.72 | +0.77 | 1.89 | 0.38 |
| Channel Y | -0.24 | -1.07 | 1,89 | 0,42 |
| Channel Z | -0.98 | 2.01 | 0.07 | 0.40 |

6. Input Offset Current

Nominal input circuitry offset current on all channels >25tA

7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|-----------|----------------|------------------|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|----------------|-------------------|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.0 |

9. Power Consumption (Typica values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|----------------|-------------------|---------------|-------------------|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | -0;01 | -8 | -9 |

Certificate No: DAE4-856_Aug14

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Multilateral Agreement for the recognition of caribration certification

Clinn

SGS-TW (Auden)

Certificate No: EX3-3923_Aug14

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3923

QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6

Calibration procedure for doximetric E field probes

Calibration date

Calibration procedure(s)

August 28, 2014

This collection coefficate accumulate me bacabolity to national standards, which realize the physical units of missistements (Si). The manuscriments and the uncertainties with confidence propositify are given on the following pages and are part of the confidence.

All calibrations have been conducted in the closed latoratory facility, environment temperature (22 ± 3)°C and furnitity < 70%.

Galibration Equativent used (M&TE critical for calibration)

| Primary Standards | 10 | Cal Date (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-----------------------------------|-------------------------|
| Power minter E44198 | GB41293874 | 03-Apr-14 (No. 217-01811) | Apr-15 |
| Power serior E4412A | MY41498087 | 03-Apr:14 (No. 217-01911) | April 5 |
| Reference 3 dft Attenuator | SN: 85064 (3u) | 03-Apr-14 (No. 217-01915) | Apr:15 |
| Reference 20 dB Attenuator | SN: 85277 (20x) | 03-Apr-14 (No. 217-01910) | Apr-15 |
| Reference 30 dB Attenuelor | SN 85129 (30b) | II3-Apr-14 (No. 217-81920) | Apr.15 |
| Reference Probe E830/V2 | SN: 3013 | 30-Dec-13 (No. E53-3013, Dec13) | Dec-14 |
| DAE4 | SN. 660 | 13-Dec-13 (No. DAE4-660_Dec/3) | Dec-14 |
| Secondary Standards | 10 | Check Date (in house) | Scheduled Chick |
| RF generator HP 8548C | LES3642U01700 | 4-Aug-99 (in house check Apr-13) | in house check. Ap:-16- |
| Network Analyzer HP 8753E | U837390585 | 18-Oct-01 (In house check Oct-13) | In house check: Oct-14 |

Calibrated by:

Experiment by:

Karty Februs:

Technical Missage

Issued August 70, 2014

This calibration certificate shall not be reproduced indept in full will our within argument of the laboratory.

Certificate No. EX3-3923, Aug 14

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C Service suisse d'étaionnage
Service syltzere di santium
Swas Calibration Service

Acceptimise No.: SCS 108

Accredited by the Same Accomplision Service (SAS)

The Swiss Accreditation Service is one of the signatories to the Elli Munitational Agmement for the recognition of calibration conflicts

Glossary:

TSL baske simulating liquid
NORMK.y.z sensitivity in free space
ConvF sensitivity in TSL / NORMx.y.z
DCP diode compression point

CF crest factor (1/duty_cycle) of this RF signal A, B, C, D modulation dependent linearization parameters

Polarization in initiation around probe axis

Poerization if a romani around an axis that is in the plane normal to probe axis (at measurement combin),

i.e., it = 0 is normal to proce axis

Connector Angle information used in DASY system to align probe sensor X to the robot boordinate system

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Minesurement Techniques", June 2013.
- Techniques", June 2013
 b) IEC 62209-1, "Procedure to measure the Specific Assemblen Rate (SAR) for fund-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", Fabruary 2005

Methods Applied and Interpretation of Parameters:

- NORMx, y,z: Assessed for E-field polarization 8 = 6 (f = 100 MHz in TEM-call; f > 1900 MHz, R22 waveguide).
 NORMx, y,z are only intermediate values, i.e., the uncertainties of NORMx, y,z does not affect the E²-field uncertainty inside TSL (see below ConVF).
- NORM(f)x,y,z = NCRMx,y,z * frequency_response (see Frequency Response Charl). This linearization is implemented in DASY4 software varsions later than 4.2. The uncertainty of the frequency response ≼ included in the stated uncertainty of ConvF.
- DCPx.y.z: DCP are numerical linearization parameters assessed based on the data of power aweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- As, y.z. Bs, y.z. Cs, y.z. Ds, y.z. VRx, y.z. A. B. C. D an numerical invariantion parameters assessed based on the data of power sweet for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the tilode.
- ConvF and Boundary Effect Parameters. Assessed in flat phantom using E-field (or Temperature Transfer
 Standard for t ≤ 800 MHz) and inside wavegude using analytical field distributions based on power
 measurements for t > 800 MHz. The same setups are used for assessment of the parameters applied for
 boundary companisation (alpha, depth) of which typical uncertainty values are given. These parameters are
 used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds
 to MORMs, y, z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent
 ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100
 MHz.
- Spherical isotropy (3D deviation from isotropy), it is field of low gradients resilized using a flat phantom exposed by a patch interns.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No toterance required.
- Connector Angle: The angle is assessed using the Information gained by determining the NORMx (no. uncertainty required).

Perincan No. EX3-1925 Aug 14

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EX 10VA - SVLTVE

7800006-20-501to

Probe EX3DV4

SN:3923

Manufactured; Calibrated: March 8, 2013 August 28, 2014

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system)

Contificate No: EX343923_Aug14

Page 2.6111

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EX3DV4-5N 3973

- Avignet set 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Basic Calibration Parameters

| | Sensor | Sensor Y | Sensor Z | Unc (k=2) |
|--|--------|----------|----------|-----------|
| Norm (µV/(V/m) ²) ^k | 0.58 | 0.48 | 0.47 | ±10,1% |
| DCP (mV)* | 99.2 | 102.2 | 103.3 | |

Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dBõV | C | dB | WR mV | Unc (k=Z) |
|-----|---------------------------|---|---------|-----------|-----|------|----------|--------------|
| O- | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 132.9 | 23,0 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 134 B | |
| | | 2 | 0.0 | 0.0 | 1.0 | | 135 (0 | |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No. EX3-9923_Aug14

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The uncertainties of MormX,Y,Z do not wheat the E field uncertainty make TEL (see Page 5 4nd 5) formers of mentination parameter uncertainty our required. Or entering to call the next using the reak deviation from most response opposing victor grain section into any is expressed. Or the equally of the



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August 20, 2014 EX30V4 SN:3923

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Calibration Parameter Determined in Head Tissue Simulating Media

| r (MHz) [©] | Relative Permittivity | Conductivity (S/m) | ConvF X | ConvF V | ConvF Z | Alphé 9 | Depth ^G (mm) | Unct. (k=2) |
|----------------------|--------------------------|-----------------------|---------|---------|---------|---------|----------------------------|----------------|
| 750 | 41,9 | 0:89 | 10.91 | 10.91 | 10.91 | 0.25 | 1.16 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 10.48 | 10.48 | 10.48 | 0.27 | 1.07 | ± 12.0 % |
| 900 | 41.5 | 0.97 | 10.26 | 10.25 | 10.26 | 0.17 | 1.53 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 8.72 | B;72 | 8.72 | 0:75 | 0.57 | ± 12.0 9 |
| 1900 | 40.0 | 1.40 | 3.42 | 8.42 | 8.42 | 0.45 | 0.77 | ±12.09 |
| 2000 | 40.0 | 1.48 | 8.46 | 5,46 | 8.46 | 0,67 | 0.63 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | B.02 | 5.02 | W.02 | 0.35 | 0.85 | ±1209 |
| 2450 | 39.2 | 1.80 | 7.66 | 7,66 | 7,66 | 0.33 | 0.87 | 112.01 |
| 2600 | 39.0 | 1.96 | 7.41 | 7.41 | 7.41 | 0.35 | 0.86 | ±12.05 |
| 5200 | 36.0 | 4.68 | 5.17 | 5.17 | 5.17 | 0.35 | 1.80 | +13.13 |
| 5300 | 35.9 | 4.76 | 4.99 | 4.99 | 4,99 | 0.35 | 1,80 | ±13.19 |
| SECKT | 35.5 | 5.07 | 4.71 | 4.71 | 4.71 | 0.40 | 1.80 | ±13.19 |
| 5600 | 35.3 | 5.27 | 4.67 | 4.67 | 4.67 | 0.40 | 1.80 | ± 13.1 % |

⁶ Frequency weldily above 300 MHz of a 100 MHz only applies to CASY 44 and higher (see Page 2), vice 4 is restricted to a 50 MHz. The uncertainty is the RSS of the Cornel uncertainty at celebration frequency and the uncertainty to the ordinated frequency welday better 500 MHz (a.1.0...25, 40, 50 and 70 MHz (b.). Some secondard to 200 MHz (b.). Above 5 GHz requency validity can be exceeded to 110 MHz.
*A frequencies better 3 CPS, the validity of feature currentless (c.) and be retained for 110 MHz.
*A frequencies better 3 CPS, the validity of feature currentless (c.) and be retained for 110 MHz.

Certocate No. EX3-3921, Aug 14

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An requestion comes a Care. We writely a few a Sight, be validly of tissue parameters (clarified in a fair control of the properties a few a appear or measured SAV values. At languages above a few a specific of the Confirmation of the control of the second of the seco



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E330V4- SN:3022

August 28, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) E | Relative Permittivity | Conductivity (S/m) | ConvF X | ConvFY | ConvF 2 | Alphu " | Depth to (mm) | Unct. (k=2) |
|-----------|--------------------------|-----------------------|---------|--------|---------|---------|------------------|----------------|
| 750 | 55.5 | 0.96 | 10.29 | 10.29 | 10.29 | 0.30 | 1.04 | ± 12.0.% |
| 635 | 55.2 | 0.97 | 10.32 | 10.32 | 10.32 | 0.55 | 0.78 | ± 12.0 % |
| 900 | 55,0 | 1,05 | 10.04 | 10.04 | 10.04 | 0.44 | 0.88 | ± 12.0 % |
| 1750 | 53.4 | 1.49 | 8.30 | 8.30 | 8,30 | 0.39 | 0.85 | ± 12.01 |
| 1900 | 53,8 | 1,52 | 8.03 | B 03 | 8.03 | 0.30 | 0.95 | ± 12.09 |
| 2000 | 53,3 | 1.52 | 8.16 | B.16 | 8.16 | 0.23 | 116 | ± 12.09 |
| 2300 | 62.9 | 1.01 | 7.76 | 7.76 | 7.76 | 0.44 | 0.77 | ± 12,0 9 |
| 2450 | 52.7 | 1.95 | 7.58 | 7.56 | 7.56 | 0.80 | 0.50 | ± 12.0 9 |
| 2600 | 52.5 | 216 | 7.36 | 7,36 | 7.36 | 0.80 | 0.50 | ± 12.0 9 |
| 5200 | 49.0 | 5,30 | 4.71 | 4.71 | 4.71 | 0.35 | 1.90 | ± 13.1 % |
| 5300 | 48,9 | 5.42 | 4.58 | 4,58 | 4.58 | 0.35 | 1.90 | 213.13 |
| 5600 | 48.5 | 5.77 | 4.09 | 4.09 | 4:09 | -0.4D | 1.00 | ±13.19 |
| 5800 | 48.2 | 6.00 | 4.33 | 4,33 | 4:33 | 0.40 | 1.90 | 2 13.13 |

Finguously validity above 380 MHz of ± 107 MHz only applied for DAGY vid a and higher [see Page 2], should be asserted to ± 50 MHz. The uncertainty is the HSS of the Count uncertainty at contrastion begans and the uncertainty for the indicated frequency band. Finguestry saidity below 360 MHz or ± 10, 25, 40, 50 and 70 MHz by Count asserted at 30, 54, 128, 150 and 200 MHz or page of key. Above 5 GHz begans or yaidity can be exceeded to ± 110 MHz.

All frequences below 3 GHz, the validity of issue parameters (a amile) can be released to ± 10% 1 input compression formula is applied to improved SAR values. At frequencies above 3 GHz, the validity of issue parameters. If and or is restricted to ± 5%. The uncertainty of the 150 of the Count and other parameters.

Applied out are delationated earger tissue parameters.

Applied out the boundary effect often outperformers below ± 2% for higher costs between 3-8 GHz at any delation larger than full this price to

Certificate No. EX3-3923_Aug 14

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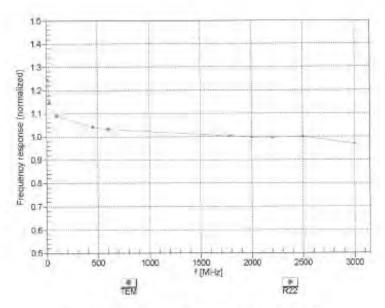


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EX3DV4- SN:3923

August 28, 2014

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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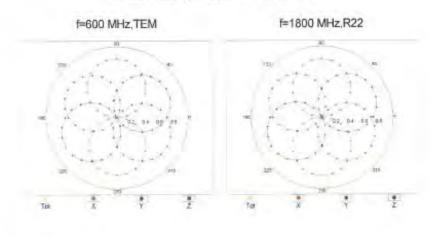
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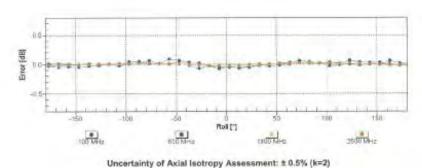


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August 28, 2014 EX3DV4-SN:3923

Receiving Pattern (6), 9 = 0°





Gertificate No: EX3-3923_Aug14

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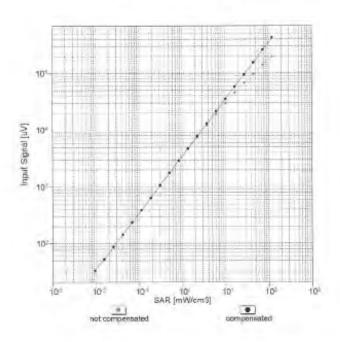
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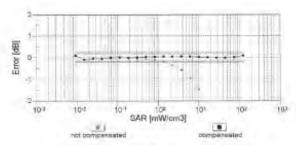


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August 28, 2014 EX3DV4- SN:3923

Dynamic Range f(SAR_{head}) (TEM cell , feval= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: EX3-3923_Aug14

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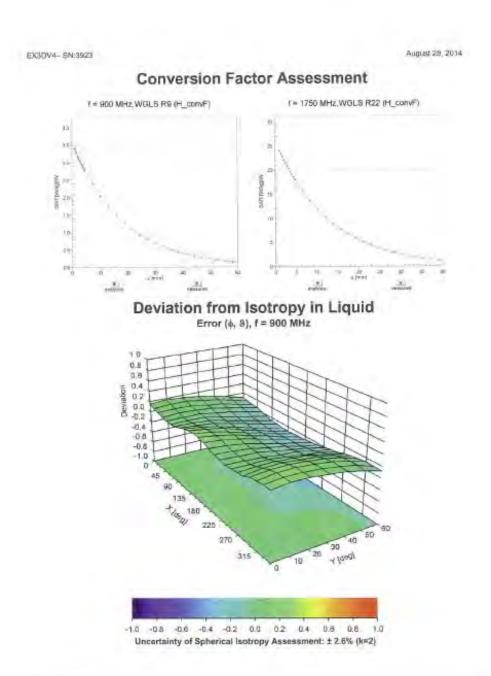
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EXXXV4 SN:3323

August 28, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Other Probe Parameters

| Sensor Arrangament | Triangular |
|---|------------|
| Connector Angle (*) | -57 |
| Mechanical Surface Delection Mode | anabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 cmm |
| Tip Length | 2 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 7 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Messurement Distance from Surface | 1.4 wm |

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Auden

Certificate No: EX3-7351_Jan15

CALIBRATION CERTIFICATE

EX3DV4 - SN:7351 Object

QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure(s)

Calibration procedure for dosimetric E-field probes

January 8, 2015 Calibration date:

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility, environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B | GB41293874 | 03-Apr-14 (No. 217-01911) | Apr-15 |
| Power sensor E4412A | MY41498087 | 03-Apr-14 (No. 217-01911) | Apr-15 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 03-Apr-14 (No. 217-01915) | Apr-15 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 03-Apr-14 (No. 217-01919) | Apr-15 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 03-Apr-14 (No. 217-01920) | Apr-15 |
| Reference Probe ES3DV2 | SN: 3013 | 30-Dec-14 (No. ES3-3013_Dec14) | Dec-15 |
| DAE4 | SN: 660 | 17-Dec-14 (No. DAE4-660_Dec14) | Dec-15 |
| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
| RF generator HP 8648C | US3642U01700 | 4-Aug-99 (in house check Apr-13) | In house check: Apr-16 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |

Name Function Calibrated by: Claudio Leubler Laboratory Technician Katja Pokovic Approved by: Technical Manager Issued: January 14, 2015 This calibration certificate shall not be reproduced except in full without written approval of the laboratory

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Certificate No: EX3-7351_Jan15

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Swiss Calibration Service

Accreditation No.: SCS 0108

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Glossary:

TSL tissue simulating liquid
NORMx.y.z sensitivity in free space
ConvF sensitivity in TSL / NORMx.y.z
DCP diode compression point
CF crest factor (1/duty, cycle) of the

CF crest factor (1/duty_cycle) of the RF signal A, B, C, D modulation dependent linearization parameters

Polarization φ rotation around probe axis

Polarization 9 9 rotation around an axis that is in the plane normal to probe axis (at measurement center),

i.e., 9 = 0 is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization 9 = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This linearization is
 implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included
 in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

Certificale No: EX3-7351_Jan15

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Probe EX3DV4

SN:7351

Manufactured: Oc Calibrated: Jar

October 13, 2014 January 8, 2015

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: EX3-7351_Jan15

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|--------------------------|----------|----------|----------|-----------|
| Norm $(\mu V/(V/m)^2)^A$ | 0.62 | 0.46 | 0.60 | ± 10.1 % |
| DCP (mV) ^B | 97.9 | 97.9 | 97.8 | 1 |

Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dB√μV | С | D dB | VR mV | Unc ^b (k=2) |
|-----|---------------------------|------|---------|------------|-----|---------|----------|---------------------------|
| 0 | CW | CW X | 0.0 | 0.0 | 1.0 | 0.00 | 159.7 | ±3.5 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 137.4 | |
| | | Z | 0.0 | 0.0 | 1.0 | | 152.5 | |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

<sup>Numerical linearization parameter: uncertainty not required.

Numerical linearization parameter: uncertainty not required.

Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the</sup> field value.



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) ^C | Relative Permittivity ^F | Conductivity (S/m) F | ConvF X | ConvF Y | ConvF Z | Alpha ^G | Depth ^G (mm) | Unct. (k=2) |
|----------------------|---------------------------------------|-------------------------|---------|---------|---------|--------------------|----------------------------|----------------|
| 750 | 41.9 | 0.89 | 10.10 | 10.10 | 10.10 | 0.41 | 0.94 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 10.07 | 10.07 | 10.07 | 0.70 | 0.66 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 8.42 | 8.42 | 8.42 | 0.45 | 0.76 | ± 12.0 % |
| 1900 | 40.0 | 1.40 | 8.12 | 8.12 | 8.12 | 0.42 | 0.80 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 8.05 | 8.05 | 8.05 | 0.44 | 0.86 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | 7.70 | 7.70 | 7.70 | 0.28 | 0.98 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 7.40 | 7.40 | 7.40 | 0.30 | 1.05 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 7.20 | 7.20 | 7.20 | 0.41 | 0.78 | ± 12.0 % |
| 5200 | 36.0 | 4.66 | 5.49 | 5.49 | 5.49 | 0.35 | 1.80 | ± 13.1 % |
| 5300 | 35.9 | 4.76 | 5.26 | 5.26 | 5.26 | 0.35 | 1.80 | ± 13.1 % |
| 5500 | 35.6 | 4.96 | 5.00 | 5.00 | 5.00 | 0.35 | 1.80 | ± 13.1 % |
| 5600 | 35.5 | 5.07 | 4.75 | 4.75 | 4.75 | 0.40 | 1.80 | ± 13.1 % |
| 5800 | 35.3 | 5.27 | 4.70 | 4.70 | 4.70 | 0.40 | 1.80 | ± 13.1 % |

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

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FAt frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of

the ConvP uncertainty for indicated target tissue parameters.

Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) ^C | Relative Permittivity ^F | Conductivity (S/m) F | ConvF X | ConvF Y | ConvF Z | Alpha ^G | Depth ^G (mm) | Unct. (k=2) |
|----------------------|---------------------------------------|-------------------------|---------|---------|---------|--------------------|----------------------------|----------------|
| 750 | 55.5 | 0.96 | 9.64 | 9.64 | 9.64 | 0.37 | 0.99 | ± 12.0 % |
| 835 | 55.2 | 0.97 | 9.37 | 9.37 | 9.37 | 0.29 | 1.10 | ± 12.0 % |
| 1750 | 53.4 | 1.49 | 8.13 | 8.13 | 8.13 | 0.52 | 0.73 | ± 12.0 % |
| 1900 | 53.3 | 1.52 | 7.92 | 7.92 | 7.92 | 0.80 | 0.59 | ± 12.0 % |
| 2000 | 53.3 | 1.52 | 7.96 | 7.96 | 7.96 | 0.44 | 0.79 | ± 12.0 % |
| 2300 | 52.9 | 1.81 | 7.64 | 7.64 | 7.64 | 0.48 | 0.77 | ± 12.0 % |
| 2450 | 52.7 | 1.95 | 7.51 | 7.51 | 7.51 | 0.64 | 0.64 | ± 12.0 % |
| 2600 | 52.5 | 2.16 | 7.24 | 7.24 | 7.24 | 0.80 | 0.50 | ± 12.0 % |
| 5200 | 49.0 | 5.30 | 4.85 | 4.85 | 4.85 | 0.40 | 1.90 | ± 13.1 % |
| 5300 | 48.9 | 5.42 | 4.62 | 4.62 | 4.62 | 0.40 | 1.90 | ± 13.1 % |
| 5500 | 48.6 | 5.65 | 4.27 | 4.27 | 4.27 | 0.45 | 1.90 | ± 13.1 % |
| 5600 | 48.5 | 5.77 | 4.00 | 4.00 | 4.00 | 0.50 | 1.90 | ± 13.1 % |
| 5800 | 48.2 | 6.00 | 4.28 | 4.28 | 4.28 | 0.50 | 1.90 | ± 13.1 % |

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity on the extended to ± 110 MHz.

F At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to

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measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (a and a) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

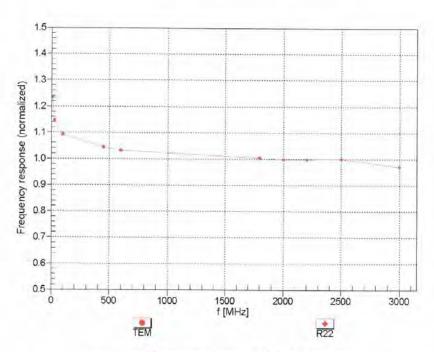
Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary



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Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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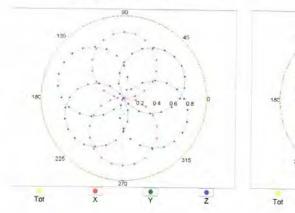


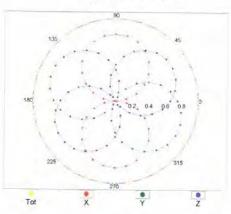
Page: 170 of 233

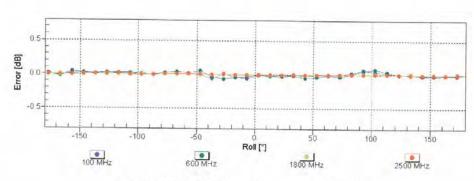
Receiving Pattern (ϕ), $9 = 0^{\circ}$



f=1800 MHz,R22







Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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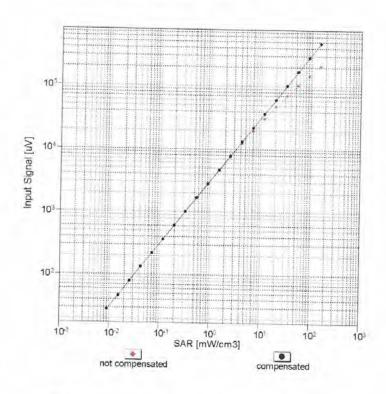
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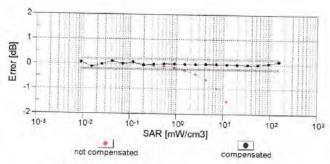
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Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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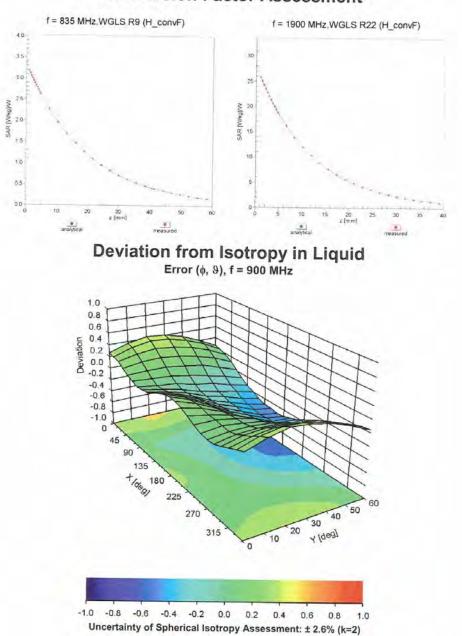
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Conversion Factor Assessment



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DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

Other Probe Parameters

| Sensor Arrangement | Triangular |
|---|----------------|
| Connector Angle (°) | |
| Mechanical Surface Detection Mode | -77 enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 9 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 1 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Measurement Distance from Surface | 1.4 mm |

Certificate No: EX3-7351_Jan15 Page 11 of 11

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

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Multilateral Agreement for the recognition of calibration certificates

Client

SGS-TW (Auden)

Certificate No: EX3-3770_Apr15

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3770

Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6

Calibration procedure for dosimetric E-field probes

Calibration date: April 28, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| ID . | Cal Date (Certificate No.) | Scheduled Calibration |
|-----------------|---|--|
| GB41293874 | 01-Apr-15 (No. 217-02128) | Mar-16 |
| MY41498087 | 01-Apr-15 (No. 217-02128) | Mar-16 |
| SN: S5054 (3c) | 01-Apr-15 (No. 217-02129) | Mar-16 |
| SN: S5277 (20x) | 01-Apr-15 (No. 217-02132) | Mar-16 |
| SN: S5129 (30b) | 01-Apr-15 (No. 217-02133) | Mar-16 |
| SN: 3013 | 30-Dec-14 (No. ES3-3013_Dec14) | Dec-15 |
| SN: 660 | 14-Jan-15 (No. DAE4-660_Jan15) | Jan-16 |
| ID | Check Date (in house) | Scheduled Check |
| US3642U01700 | 4-Aug-99 (in house check Apr-13) | In house check: Apr-16 |
| US37390585 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |
| | GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660 | GB41293874 D1-Apr-15 (No. 217-02128) |

| | Name | Function | Signature |
|----------------|----------------|-----------------------|------------------------|
| Calibrated by: | Jeton Kastrati | Laboratory Technician | 1 |
| Approved by: | Katja Pokovic | Technical Menager | Buy |
| | | | Issued: April 30, 2015 |

Certificate No: EX3-3770_Apr15

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Glossary:

TSL tissue simulating liquid
NORMx,y,z sensitivity in free space
ConvF sensitivity in TSL / NORMx,y,z
DCP diode compression point

CF crest factor (1/duty_cycle) of the RF signal A, B, C, D modulation dependent linearization parameters

Polarization φ rotation around probe axis

Polarization 9 9 rotation around an axis that is in the plane normal to probe axis (at measurement center).

i.e., 9 = 0 is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

 a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices; Measurement Techniques", June 2013

 i) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization 9 = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz; R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This linearization is
 implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included
 in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal
 characteristics
- Ax.y,z; Bx.y,z; Cx.y,z; Dx.y,z; VRx.y,z; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

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April 28, 2015 EX3DV4 - \$N:3770

Probe EX3DV4

SN:3770

Manufactured: July 6, 2010 Calibrated: April 28, 2015

Calibrated for DASY/EASY Systems (Note: non-compatible with DASY2 system!)

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April 28, 2015 EX3DV4-SN:3770

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|--|----------|----------|----------|-----------|
| Norm (µV/(V/m) ²) ^A | 0.31 | 0.62 | 0.40 | ± 10.1 % |
| DCP (mV) ^B | 105.3 | 100.7 | 101.6 | |

Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dB√μV | С | D dB | VR mV | Unc ^E (k=2) |
|-----|---------------------------|---|---------|------------|-----|---------|----------|---------------------------|
| 0 | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 145.1 | ±3.8 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 129.4 | |
| | | Z | 0.0 | 0.0 | 1.0 | | 138.4 | |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

B Numerical linearization parameter: uncertainty not required.

E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the



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April 28, 2015 EX3DV4-SN:3770

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) ^C | Relative Permittivity ^F | Conductivity (S/m) F | ConvF X | ConvF Y | ConvF Z | Alpha ^G | Depth ^G (mm) | Unct. (k=2) |
|----------------------|---------------------------------------|-------------------------|---------|---------|---------|--------------------|----------------------------|----------------|
| 750 | 41.9 | 0.89 | 9.53 | 9.53 | 9.53 | 0.26 | 1.28 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 9.13 | 9.13 | 9.13 | 0.21 | 1.53 | ± 12.0 % |
| 900 | 41.5 | 0.97 | 8.89 | 8.89 | 8.89 | 0.23 | 1.38 | ± 12.0 % |
| 1450 | 40.5 | 1.20 | 8.19 | 8.19 | 8.19 | 0.18 | 1.59 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 8.04 | 8.04 | 8.04 | 0.38 | 0.80 | ± 12.0 % |
| 1900 | 40.0 | 1.40 | 7.82 | 7.82 | 7.82 | 0.36 | 0.80 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 7.81 | 7.81 | 7.81 | 0.36 | 0.80 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | 7.47 | 7.47 | 7.47 | 0.27 | 0.96 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 7.16 | 7.16 | 7.16 | 0.34 | 0.80 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 6.85 | 6.85 | 6.85 | 0.34 | 0.92 | ± 12.0 % |
| 5250 | 35.9 | 4.71 | 5.27 | 5.27 | 5.27 | 0.30_ | 1.80 | ± 13.1 % |
| 5600 | 35.5 | 5.07 | 4.65 | 4.65 | 4.65 | 0.35 | 1.80 | ± 13.1 % |
| 5750 | 35.4 | 5.22 | 4.92 | 4.92 | 4.92 | 0.40 | 1.80 | ± 13.1 % |

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

F At frequencies below 3 GHz, the validity of tissue parameters (c and σ) can be relaxed to ± 10% if liquid compensation formula is applied to

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measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (and o) can be a measured to 1 to 3 might complete the measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (and o) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip

diameter from the boundary.



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EX3DV4-SN:3770

April 28, 2015

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Calibration Parameter Determined in Body Tissue Simulating Media

| ambiation i arameter betermined in body freede eminanting means | | | | | | | | | |
|---|---------------------------------------|-------------------------|---------|---------|---------|--------------------|----------------------------|----------------|--|
| f (MHz) ^C | Relative Permittivity ^F | Conductivity (S/m) F | ConvF X | ConvF Y | ConvF Z | Alpha ^G | Depth ^G (mm) | Unct. (k=2) | |
| 750 | 55.5 | 0.96 | 9.30 | 9.30 | 9.30 | 0.25 | 1.38 | ± 12.0 % | |
| 835 | 55.2 | 0.97 | 9.17 | 9.17 | 9.17 | 0.34 | 1.05 | ± 12.0 % | |
| 900 | 55.0 | 1.05 | 8.91 | 8.91 | 8.91 | 0.30 | 1.20 | ± 12.0 % | |
| 1450 | 54.0 | 1.30 | 8.12 | 8.12 | 8.12 | 0.18 | 1.62 | ± 12.0 % | |
| 1750 | 53.4 | 1.49 | 7.79 | 7.79 | 7.79 | 0.44 | 0.80 | ± 12.0 % | |
| 1900 | 53.3 | 1.52 | 7.59 | 7.59 | 7.59 | 0.44 | 0.80 | ± 12.0 % | |
| 2000 | 53.3 | 1.52 | 7.73 | 7.73 | 7.73 | 0.42 | 0.80 | ± 12.0 % | |
| 2300 | 52.9 | 1.81 | 7.32 | 7.32 | 7.32 | 0.41 | 0.80 | ± 12.0 % | |
| 2450 | 52.7 | 1.95 | 7.21 | 7.21 | 7.21 | 0.31 | 0.80 | ± 12.0 % | |
| 2600 | 52.5 | 2.16 | 6.96 | 6.96 | 6.96 | 0.27 | 0.80 | ± 12.0 % | |
| 5250 | 48.9 | 5.36 | 4.70 | 4.70 | 4.70 | 0.35 | 1.90 | ± 13.1 % | |
| 5600 | 48.5 | 5.77 | 4.03 | 4.03 | 4.03 | 0.45 | 1.90 | ± 13.1 % | |
| 5750 | 48.3 | 5.94 | 4.33 | 4.33 | 4.33 | 0.50 | 1.90 | ± 13.1 % | |

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± ±10 MHz.

FAt frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvE invertainty for indicated taxet tissue parameters.

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The ConvE uncertainty for indicated target tissue parameters.

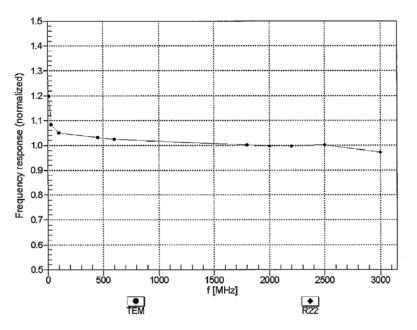
Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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April 28, 2015 EX3DV4-SN:3770

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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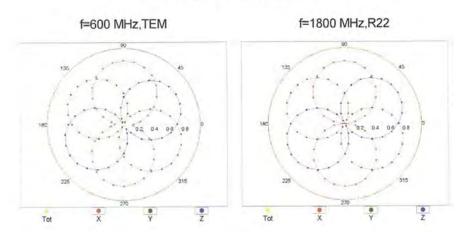
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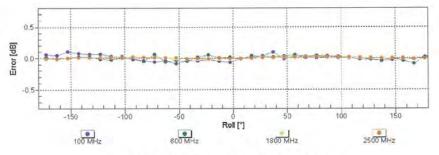


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Receiving Pattern (\$\phi\$), \$\text{9} = 0°





Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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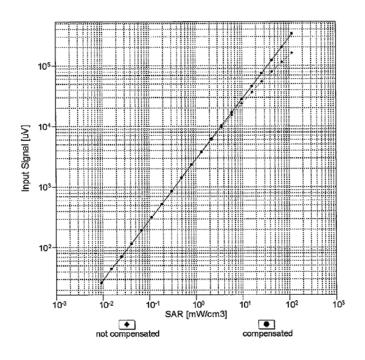


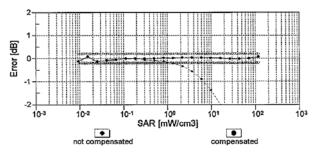
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EX3DV4-SN:3770

April 28, 2015

Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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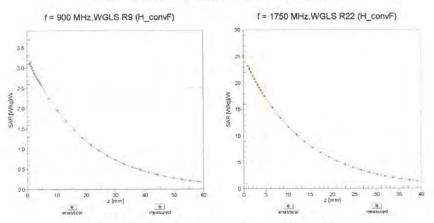
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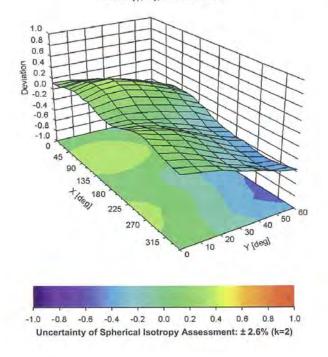
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Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (φ, θ), f = 900 MHz



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April 28, 2015 EX3DV4-SN:3770

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Other Probe Parameters

| Sensor Arrangement | Triangular |
|---|------------|
| Connector Angle (°) | -32.7 |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 9 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 1 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Measurement Distance from Surface | 1.4 mm |

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8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test

IEEE 1528

| <u>IEEE 1528</u> A | c | D | e | f | g | h=c * f / e | i=c * g / e | k |
|---|---------------|------------------------------|------------|---------|----------|----------------------|----------------------|----------------|
| A | Tolerance/ | ע | е | 1 | g | n=c * 17 e | 1=C + g / e | K |
| Source of Uncertainty | Uncertainty % | Probability Distributioin | Div | ci (1g) | ci (10g) | Standard uncertainty | Standard uncertainty | vi, or Veff |
| Measurement system | | | | | | | | |
| Probe calibration(under 6Ghz) | 6.55% | N | 1 | 1 | 1 | 6.55% | 6.55% | ∞ |
| Isotropy , Axial | 3.50% | R | √3 | 1 | 1 | 2.02% | 2.02% | ∞ |
| Isotropy, Hemispherical | 9.60% | R | √3 | 1 | 1 | 5.54% | 5.54% | ∞ |
| Boundary Effect | 1.00% | R | √3 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Linearity | 4.70% | R | $\sqrt{3}$ | 1 | 1 | 2.71% | 2.71% | ∞ |
| Detection Limits | 1.00% | R | $\sqrt{3}$ | 1 | 1 | 0.58% | 0.58% | ∞ |
| Readout Electronics | 0.30% | N | 1 | 1 | 1 | 0.30% | 0.30% | ∞ |
| Response time | 0.80% | R | $\sqrt{3}$ | 1 | 1 | 0.46% | | |
| Integration Time | 2.60% | R | $\sqrt{3}$ | 1 | 1 | 1.50% | 1.50% | ∞ |
| Measurement drift | 1.75% | R | $\sqrt{3}$ | 1 | 1 | 1.01% | 1.01% | ∞ |
| (class A evaluation) | 1.7570 | K | v 3 | | | 1.01 % | 1.0170 | |
| RF ambient condition - noise | 3.00% | R | $\sqrt{3}$ | 1 | 1 | 1.73% | 1.73% | ∞ |
| RF ambient conditions reflections | 3.00% | R | $\sqrt{3}$ | 1 | 1 | 1.73% | 1.73% | ∞ |
| Probe positioner Mechanical restrictions | 0.40% | R | √3 | 1 | 1 | 0.23% | 0.23% | ∞ |
| Probe Positioning with respect to phantom | 2.90% | R | √3 | 1 | 1 | 1.67% | 1.67% | ∞ |
| Post-processing | 1.00% | R | √3 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Max SAR Eval | 1.00% | R | √3 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Test Sample related | | | | | | | | |
| Test sample | 2.90% | N | 1 | 1 | 1 | 2.90% | 2.90% | M-1 |
| Device Holder Uncertainty | 3.60% | N | 1 | 1 | 1 | 3.60% | 3.60% | M-1 |
| Drift of output power | 5.00% | R | √3 | 1 | 1 | 2.89% | 2.89% | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | 4.00% | R | √3 | 1 | 1 | 2.31% | 2.31% | ∞ |
| Liquid conductivity(meas.) | 4.98% | N | 1 | 0.64 | 0.43 | | | |
| Liquid permitivity(meas.) | 4.80% | N | 1 | 0.6 | 0.49 | 2.88% | 2.35% | M |
| Combined standard uncertainty | | RSS | | | | 12.34% | 12.00% | |
| Expant uncertainty (95% confidence interval), K=2 | | | | | | 24.68% | 24.00% | |

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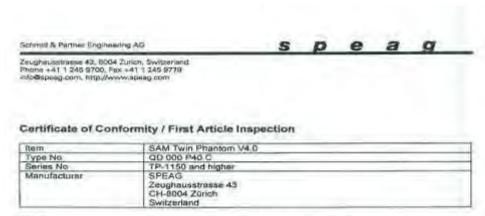
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9. Phantom Description



The series production process used allows the limitation to test of first articles.

Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item.

| Test | Requirement | Details | Units tested |
|--------------------------------|---|---|--|
| Dimensions | Compliant with the geometry according to the CAD model. | IT'IS CAD File (*) | First article, Samples |
| Material thickness of shell | Compliant with the requirements according to the standards | 2mm +/- 0.2mm in flat and specific areas of head section | First article, Samples, TP-1314 ft. |
| Material thickness at ERP | Compliant with the requirements according to the standards | 6mm +/- 0.2mm at ERP | First article, All items |
| Material parameters | Dielectric parameters for required frequencies | 300 MHz - 6 GHz: Relative permittivity < 5, Loss tangent < 0.05 | Material samples |
| Material resistivity | The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility. | DEGMBE based simulating fiquids | Pre-series, First article, Material samples |
| Sagging | Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid. | < 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below | Prototypes, Sample testing |

Standards

- CENELEC EN 5036 | IEEE Std 1528-2003 IEC 62209 Part I

- FCC DET Bulletin 65, Supplement C, Edition 01-01
 The IT IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity

Based on the sample tests above, we cartify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

07 07 2005

Signature / Stamp

Scienti & Popret Engineering AC 2503 nurse (east 43, 8004 2016) Switzeri Phone p41.1 245 2700 Par 26 by 245 3778 info Septeg.com, http://www.speeg.com

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10. System Validation from Original Equipment Supplier



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Member of SGS Group



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Calibration Laboratory of Schmid & Partner Engineering AG Zoughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kallimieritiers Beryled suissa d'étalonnage C Servicin evizoro di teratura **Swing Calibration Service**

ecomion No. 5CS 108

edual by the Swine Appleciation Service (BAS)

The Swiss Appreditation Service is one of the signatories to the EA Mulfishe at Agreement for the recognition of calibration cartificates

Glossary:

TSL ConvE

N/A

tissue simulating liquid

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)".
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL. The dipole is mounted with the spacer to position its feed. point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required
- SAR measured: SAR measured at the stated antenna input power,
- SAR normalized SAR as measured, normalized to an input power of 1 W at the antenna
- SAR for nominal TSL parameters. The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%

Certificate No: D835V2-4d16:(_Aug1+

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Measurement Conditions

| DASY Version | DASY5 | V52.8.8 |
|------------------------------|------------------------|-------------|
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom | |
| Distance Dipole Center - TSL | 15 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 835 MHz ± 1 MHz | |

Head TSL parameters

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 41.5 | 0.90 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 42.0 ± 6 % | 0.94 mha/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | **** | |

SAR result with Head TSL

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 2.38 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 9.24 W/kg ± 17.0 % (k=2) |

| SAR averaged over 10 cm3 (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 1.55 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 6.05 W/kg ± 16.5 % (k=2) |

Body TSL parameters

g parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 55.2 | 0.97 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 55.2 ± 6 % | 1.01 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 2.41 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 9.35 W/kg ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 1.59 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 6.21 W/kg ± 16.5 % (k=2) |

Certificate No: D835V2-4d063 Aug14

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Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

| Impedance: transformed to fined point | 51,7 \O - 3,6 \O | |
|---------------------------------------|------------------|--|
| Return Loss. | -28,2 dB | |

Antenna Parameters with Body TSL

| Impedance, transformed to feed point | 47.1 LL - 5.8 ju |
|--------------------------------------|------------------|
| Raturn Loss | -29.7 dB |

General Antenna Parameters and Design

| Electrical Delay (one direction) | T.391 ns |
|----------------------------------|----------|

After long term use with 100NV radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard symfrigin coaxial cable. The center conductor of the feeding line is directly connected to the ascend arm of the dipole. The antenna is therefore short-diculted for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standars.

No excessive large must be applied to the dipole arms, because they might bend on the soldered connections near the leedpoint may be damaged.

Additional EUT Data

| Manufactured by | SPEAG |
|-----------------|-------------------|
| Manufactured on | November 27, 2006 |

Certificate No: D835V2-4:063 Aug 14

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DASY5 Validation Report for Head TSL

Date: 28.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; $\sigma = 0.94$ S/m; $\epsilon_r = 42$; $\rho = 1000$ kg/m³ Phantom section; Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63,19-2011)

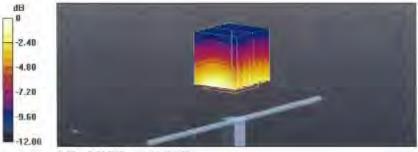
DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12,2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L.; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 56.23 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 3.53 W/kg

SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.55 W/kgMaximum value of SAR (measured) = 2.78 W/kg



0 dB = 2.78 W/kg = 4.44 dBW/kg

Certificate No: D835V2-4c083_Aug14

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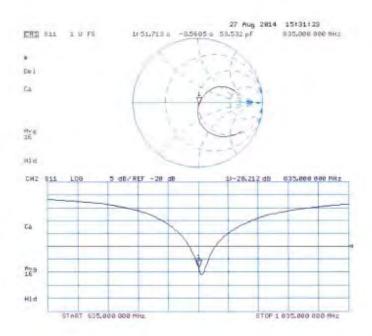
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Impedance Measurement Plot for Head TSL



Certificate No: D835V2-4d063_Aug14

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DASY5 Validation Report for Body TSL

Date: 27.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; $\sigma = 1.01 \text{ S/m}$; $\varepsilon_c = 55.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

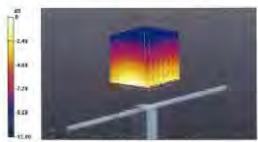
- Probe: ES3DV3 SN3205; ConvF(6.09, 6.09, 6.09); Calibrated: 30.12.2013;
- Sensor-Surface; 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0;

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 54.65 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 3,53 W/kg

SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.59 W/kg

Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Certificate No: D835V2-4d063 Aug 14

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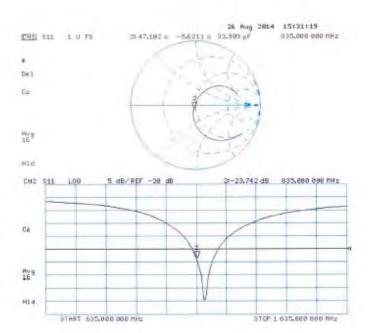
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Impedance Measurement Plot for Body TSL



Certificate No: D835V2-4d063_Aug14

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

April 29, 2015

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

SGS-TW (Auden)

Calibration date:

Certificate No: D1900V2-5d027_Apr15

| CALIBRATION CERTIFICATE | | |
|--------------------------|---|--|
| Object | D1900V2 - SN:5d027 | |
| Calibration procedure(s) | QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz | |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility; environment temperature (22 ± 3)°C and humidity < 70%.

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|-----------------------------|--------------------|-----------------------------------|------------------------|
| Power meter EPM-442A | GB37480704 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | US37292783 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-14 (No. 217-02021) | Oct-15 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Dec-14 (No. ES3-3205_Dec14) | Dec-15 |
| DAE4 | SN: 601 | 18-Aug-14 (No. DAE4-601_Aug14) | Aug-15 |
| Secondary Standards | ID# | Check Date (in house) | Scheduled Check |
| RF generator R&S SMT-06 | 100005 | 04-Aug-99 (in house check Oct-13) | In house check: Oct-16 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |
| | Name | Function | Signature |
| Calibrated by: | Claudio Leubler | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | 170111 |

Certificate No: D1900V2-5d027_Apr15

Page 1 of 8

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Issued: April 29, 2015



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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura

Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

tissue simulating liquid TSL

ConvF sensitivity in TSL / NORM x,y,z N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point, No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D1900V2-5d027 Apr15

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

| DASY Version | DASY5 | V52.8.8 |
|------------------------------|------------------------|-------------|
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom | |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | dx, dy , $dz = 5 mm$ | |
| Frequency | 1900 MHz ± 1 MHz | |

Head TSL parameters

eters and calculations were applied

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 40.0 | 1.40 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 38.6 ± 6 % | 1.37 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 10.1 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 40.6 W/kg ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 5.30 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 21.3 W/kg ± 16.5 % (k=2) |

Body TSL parameters

and calculations were applied

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 53.3 | 1.52 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 52.8 ± 6 % | 1.50 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 9.78 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 39.3 W/kg ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 5.20 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 20.9 W/kg ± 16.5 % (k=2) |

Certificate No: D1900V2-5d027_Apr15

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

| Impedance, transformed to feed point | 50.2 Ω + 2.5 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 32.2 dB |

Antenna Parameters with Body TSL

| Impedance, transformed to feed point | 46.5 Ω + 2.5 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 27.0 dB |

General Antenna Parameters and Design

| Electrical Delay (one direction) | 1.197 ns |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| Manufactured by | SPEAG |
|-----------------|-------------------|
| Manufactured on | December 17, 2002 |

Certificate No: D1900V2-5d027_Apr15

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DASY5 Validation Report for Head TSL

Date: 29.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.37 \text{ S/m}$; $\varepsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: ES3DV3 - SN3205; ConvF(5, 5, 5); Calibrated: 30.12.2014;

· Sensor-Surface: 3mm (Mechanical Surface Detection)

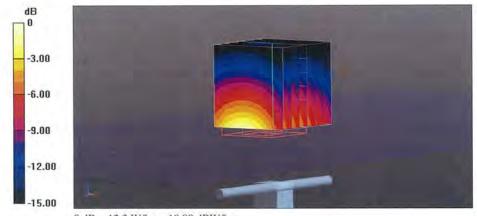
Electronics: DAE4 Sn601; Calibrated: 18.08.2014

Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 97.71 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 18.5 W/kg SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.3 W/kg Maximum value of SAR (measured) = 12.3 W/kg



0 dB = 12.3 W/kg = 10.90 dBW/kg

Certificate No: D1900V2-5d027_Apr15

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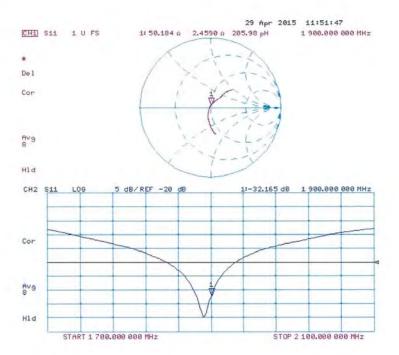
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Impedance Measurement Plot for Head TSL



Certificate No: D1900V2-5d027_Apr15

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DASY5 Validation Report for Body TSL

Date: 29.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

Communication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.5 \text{ S/m}$; $\varepsilon_r = 52.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: ES3DV3 - SN3205; ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2014;

· Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn601; Calibrated: 18.08.2014

Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002

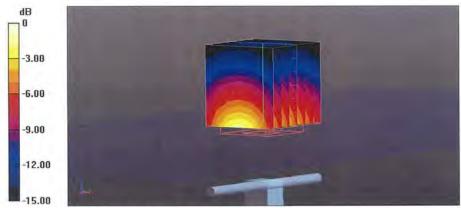
DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 94.63 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.78 W/kg; SAR(10 g) = 5.2 W/kgMaximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

Certificate No: D1900V2-5d027_Apr15

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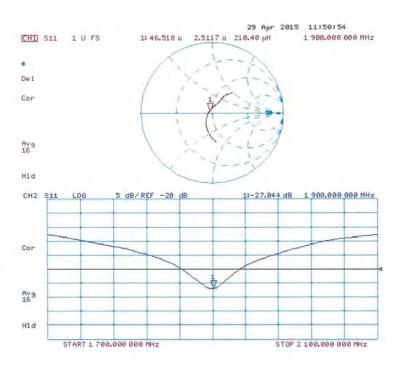
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Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d027_Apr15 Page 8 of 8

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Swiss Calibration Service

Accreditation No.: SCS 0108

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| CALIBRATION O | en) CERTIFICATE | | : D2450V2-727_Apr15 |
|--|--|--|--|
| Object | D2450V2 - SN: 7 | 27 | |
| Calibration procedure(s) | QA CAL-05.v9 Calibration proce | dure for dipole validation kits abo | ve 700 MHz |
| Calibration date: | April 22, 2015 | | |
| The management of the first of the control of the c | | robability are given on the following pages an | |
| | | ry facility: environment temperature (22 \pm 3) $^{\circ}$ C | C and humidity < 70%. |
| Calibration Equipment used (M& | | ry facility: environment temperature $(22 \pm 3)^{\circ}$ C Cal Date (Certificate No.) | C and humidity < 70%. Scheduled Calibration |
| Calibration Equipment used (M& | TE critical for calibration) | | |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A | ID # GB37480704 US37292783 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) | Scheduled Calibration Oct-15 Oct-15 |
| calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A | ID # GB37480704 US37292783 MY41092317 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) | Scheduled Calibration Oct-15 Oct-15 Oct-15 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) | Scheduled Calibration Oct-15 Oct-15 Mar-16 Mar-16 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-801_Aug14) Check Date (in house) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-15 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 |
| Calibration Equipment used (M8 Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 | ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 | Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14) | Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-15 |
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Certificate No: D2450V2-727_Apr15

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





Schweizerischer Kallbrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

C

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL tissue simulating liquid

ConvF sensitivity in TSL / NORM x,y,z N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

- iEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- EC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point.
 No uncertainty required.
- . SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D2450V2-727_Apr15

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No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

| DASY Version | DASY5 | V52.8.8 |
|------------------------------|------------------------|-------------|
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom | |
| Distance Dipole Center - TSL | 10 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 2450 MHz ± 1 MHz | |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 39.2 | 1.80 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 37.6 ± 6 % | 1.82 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | |

SAR result with Head TSL

| SAR averaged over 1 cm ³ (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 13.2 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 52.0 W/kg ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 6.10 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 24.2 W/kg ± 16.5 % (k=2) |

Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 52.7 | 1.95 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 50.6 ± 6 % | 2.02 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | | |

SAR result with Body TSL

| SAR averaged over 1 cm³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 13.1 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 51.0 W/kg ± 17.0 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 6.10 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 24.0 W/kg ± 16.5 % (k=2) |

Certificate No: D2450V2-727_Apr15 Page 3 of 8

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

| Impedance, transformed to feed point | 56.2 Ω + 1.3 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 24.6 dB |

Antenna Parameters with Body TSL

| Impedance, transformed to feed point | 51.8 Ω + 3.3 jΩ |
|--------------------------------------|-----------------|
| Return Loss | - 28.6 dB |

General Antenna Parameters and Design

| | Electrical Delay (one direction) | 1.149 ns |
|--|----------------------------------|----------|
|--|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| Manufactured by | SPEAG |
|-----------------|------------------|
| Manufactured on | January 09, 2003 |

Certificate No: D2450V2-727_Apr15 Page 4 of 8

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DASY5 Validation Report for Head TSL

Date: 22.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; $\sigma = 1.82 \text{ S/m}$; $\varepsilon_r = 37.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

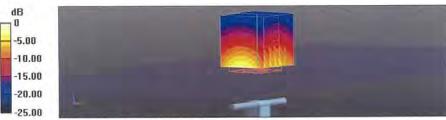
- Probe: ES3DV3 SN3205; ConvF(4.54, 4.54, 4.54); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 101.5 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 27.4 W/kg

SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.1 W/kgMaximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

Certificate No: D2450V2-727_Apr15 Page 5 of 8

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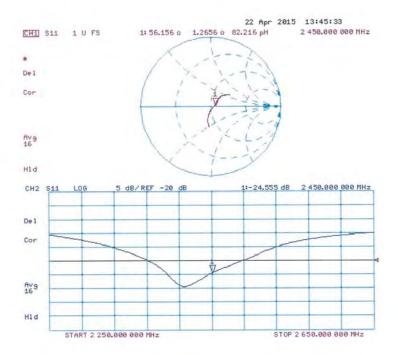
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Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-727 Apr15

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DASY5 Validation Report for Body TSL

Date: 22.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; $\sigma = 2.02$ S/m; $\varepsilon_r = 50.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.54 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 27.2 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.1 W/kgMaximum value of SAR (measured) = 17.4 W/kg



0 dB = 17.4 W/kg = 12.41 dBW/kg

Certificate No: D2450V2-727_Apr15

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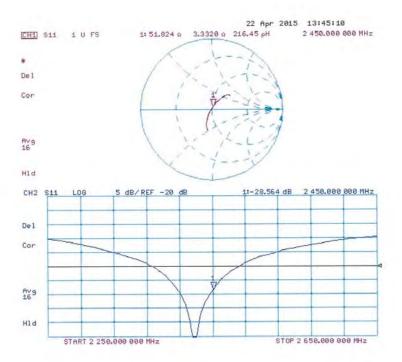
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Impedance Measurement Plot for Body TSL



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Calibration Laboratory of Schmid & Partner Engineering AG Zeugnausstrasse 43, 8004 Zurich, Switzerland





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Client SGS-TW (Auden)

Accreditation No.: SCS 0108

Certificate No: D2600V2-1005 Jan15

| ALIBHATION | ERTIFICATE | | |
|--|--|--|--|
| Opheci | D2600V2 - SN: 1 | 005 | |
| Cultivition procedure(s) | QA CAL-05 v9 Calibration proce | dure for dipole validation kits abo | we 700 MHz |
| Calibration date: | January 27, 2015 | i | |
| | The second secon | ional standants, which redize the physical un robability are given on the following pages an | |
| All custimitions have been conduc | ded in the closed laborator | ry tacility; environment temperature (32 ± 3)*1 | C and humidity < 70% |
| Calibration Equipment used (MS | TE critical for calibration | | |
| Primary Standards | IDA | Cat Date (Certificate No.) | Schedung Calibration |
| | | with the same of t | Octobring Calmanda |
| Power rester EPM-142A | GB37480704 | 07-Oct-14 (No. 217-02020) | Def-15 |
| Power sensor HP 8481A | US37292783 | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) | Def-15 Oct-15 |
| Power sensor HP 8481A Power sensor HP 8481A | US37292783 MY41092317 | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) | Def-15 Oct-15 Dof-15 |
| Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator | US37292783 MY41002317 SN: 5058 (20k) | 07-Oct-14 (No. 217-02000) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-03016) | Del-15 Oct-15 Dot-15 Apr-15 |
| Power sensor HP 8481 A Power sensor HP 8481 A Reference 20 dB Attenuator Type-N mismatch combination | US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 | 07-0±:14 (No. 217-02020) 07-0±:14 (No. 217-02020) 07-0±:14 (No. 217-02021) 03-4pr-14 (No. 217-01916) 03-4pr-14 (No. 217-01921) | Def-15 Oid-15 Doi-15 Apr-15 Apr-15 |
| Power sensor HP 8481 A. Power sensor HP 8481 A. Reterence 20 dB Attenuator Type-N miamatch combination Reterence Probe ES30V3. | US37292783 MY41092317 SN: 5056 (204) SN: 5047.2 / 06327 SN: 3205 | 07-Del-14 (No. 217-02080) 07-Del-14 (No. 217-02020) 07-Del-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dect4) | Del-15 Oid-15 Oct-15 Apr-15 Apr-15 Dec-15 |
| Power sensor HP 8481 A. Power sensor HP 8481 A. Reterence 20 dB Attenuator Typa-N miamatch continuation Reterence Probe ES30V3. | US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 | 07-0±:14 (No. 217-02020) 07-0±:14 (No. 217-02020) 07-0±:14 (No. 217-02021) 03-4pr-14 (No. 217-01916) 03-4pr-14 (No. 217-01921) | Def-15 Oid-15 Doi-15 Apr-15 Apr-15 |
| Power sensor HP 8481 A. Power sensor HP 8481A. Reference 20 dB Attenuator Type-N memaich combination Reference Probe ES30V3. DAE4. Secondary Standards | US37292783 MY41092317 SN: 5056 (204) SN: 5047.2 / 06327 SN: 3205 | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Occ-14 (No. ESS-9205, Dect 4) 18-Aug-14 (No. DAE4-601, Aug-14) Check Date (in house) | Del-15 Oct-15 Dot-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check |
| Power sensor HP 8481 A. Power sensor HP 9481 A. Power sensor HP 9481 A. Peterence 20 dB Attenuator Type-N miematch combination Reference Probe ES30V3 DAE4 Secondary Standards HI- generator HAS SM1-ser | US37282783 MY41092317 SN: 5060 (204) SN: 5047.2 / 06327 SN: 3205 SN: 601 | 07-0e:-14 (No. 217-02020) 07-0e:-14 (No. 217-02020) 07-0e:-14 (No. 217-02020) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-0ee-14 (No. ESS-3205_Dect4) 18-Aug-14 (No. DAS4-601_Aug14) Check Date (in house) us-aug- | Del-15 Oid-15 Del-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house check Oct-19 |
| Power sensor HP 8481 A. Power sensor HP 8481A. Reference 20 dB Attenuator Type-N memaich combination Reference Probe ES30V3. DAE4. Secondary Standards | US37292763 MY41092317 SN: 5040 (204) SN: 5047.2 / 06327 SN: 3205 SR: 601 | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Occ-14 (No. ESS-9205, Dect 4) 18-Aug-14 (No. DAE4-601, Aug-14) Check Date (in house) | Del-15 Oct-15 Dot-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check |
| Power sensor HP 8481 A Power sensor HP 9481 A Power sensor HP 9481 A Reference 20 dB Attenuator Type-N miematch combination Reference Probe ES30V3 DAE4 Secondary Standards HI- garagrator HAS SM1 sta | US37282783 MY41092317 SN: 5060 (204) SN: 5047.2 / 06327 SN: 3205 SN: 601 | 07-0e:-14 (No. 217-02020) 07-0e:-14 (No. 217-02020) 07-0e:-14 (No. 217-02020) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-0ee-14 (No. ESS-3205_Dect4) 18-Aug-14 (No. DAS4-601_Aug14) Check Date (in house) us-aug- | Del-15 Oid-15 Del-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house check Oct-19 |
| Power sensor HP 8481 A. Power sensor HP 9481 A. Power sensor HP 9481 A. Peterence 20 dB Attenuator Type-N miematch combination Reference Probe ES30V3 DAE4 Secondary Standards HI- generator HAS SM1-ser | US37292763 MY41092317 SN: 5090 (200) SN: 5047.2 / 06927 SN: 3205 SR: 601 ID 4* TLUUUS US37390535 S4206 | 07-Det-14 (No. 217-02020) D7-Det-14 (No. 217-02020) D7-Det-14 (No. 217-02021) D3-Apr-14 (No. 217-02021) D3-Apr-14 (No. 217-01916) D3-Apr-14 (No. 217-01921) 30-Dec-14 (No. 217-01921) 30-Dec-14 (No. ESS-9205, Dect4), 18-Aug-14 (No. DAE4-601, Aug-11) Dheck Date (in house) U8-Aug-14 (in house) U8-Aug-14 (in house check U61-13) 18-Oct-01 (in house check U61-14) | Del-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house preck Oct-19 In house check; Oct-17 |
| Power sensor HP 8481 A Power sensor HP 9481 A Power sensor HP 9481 A Helsrence 20 dB Attanuator Type-N miematch combination Reference Probe ES30V3 DAE4 Secondary Standards HI- generator HAS SM1-Be Netectic Analyzes HP 8753E | US37282783 MY41092317 SN: 5047.2 / 06327 SN: 3205 SN: 4205 SN: 4205 | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01921) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. 217-01921) 30-Dec-14 (No. DAS4-601_Augn4) Uhack Data (in house) us-augnin (in house) | Del-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house preck Oct-19 In house check; Oct-17 |
| Power sensor HP 8481A Power sensor HP 8481A Reterence 20 db Attenuator Type-N mismatch combination Reterence Probe ES30V3 DAE4 Secondary Standards HI- particular HAS SMI His Netectik Aralyzes HP 8753E Calibrated by | US37292763 MY41092317 SN: 5040 (204) SN: 5047 2 / 06927 SN: 3205 SN: 601 ID # TUAUS US37390535 S4206 Hierris Chualis Luulier | 07-Det-14 (No. 217-02020) D7-Det-14 (No. 217-02020) D7-Det-14 (No. 217-02021) D3-Apr-14 (No. 217-02021) D3-Apr-14 (No. 217-02021) 30-Dec-14 (No. 217-01921) 30-Dec-14 (No. 217-01921) 30-Dec-14 (No. 217-01921) D6-Aug-14 (No. DAE4-601_Aug-14) D6-Aug-14 (No. DAE4-601_Aug-14) D6-Date (in house) U8-hug-tif (in house) | Del-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house preck Oct-19 In house check; Oct-10 |

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Calibration Laboratory of Schmid & Partner Engineering AG Telog Sussinesse 43, 8004 Zurich, Switzerland





Service sunse d'élaborades Service sunse d'élaborage Servicio svizzero d'empluro Servicio svizzero d'empluro Service

Rocreditation No.: SCS 0106

Accrecited by the Swee Accreoqueon Service (SAS)

The Ewise Acceptation Service is one of the eignitories to the EA Multilateral Agreement for the recognition of calibration sentificative

Glossary:

TSL tissue simulating liquid
ConvF sensitivity in TSL / NORM x,y,z
N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

- EEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spellal-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- EC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 5 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate, All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL. The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The Impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point.
 No uncertainty required.
- · SAR measured: SAR measured at the stated antenns input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nonlinal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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Measurement Conditions

ASY system configuration, as far as not given on page 1.

| DASYS | V52 8 8 |
|------------------------|---|
| Advanced Extrapolation | |
| Moduler Flat Phentom | |
| 10 mm | with Spacer |
| die, dy, dz. = 5 mm | |
| 2600 MHz ⇒ T MHz | |
| | Advanced Extrapolation Moduler Flat Phentom 10. mgn dx. dy, dz. = 5 mm |

Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 39.0 | 1,95 mho/m |
| Measured Head TSL parameters | (22,0 ± 0.2) (C | 38.6 ± 6 % | 2.05 mha/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | - | |

SAR result with Head TSL

| SAR averaged over 1 cm2 (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 14.5 W/kg |
| SAR for nominal Head TSL parameters | Wt at busilemen | 56.8 W/kg = 17.0 % (k=2) |

| SAR averaged over 10 cm ² (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input pawer | 8.42 W/kg |
| SAR for nominal Head TSL parameters | pomsized to 1W | 25.4 W/kg + 16.5 % (k=2) |

Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 52.5 | 216 mho/m |
| Measured Body TSL parameters | (22:0 ± 0.2) °C | 81.1 ± 6 % | 2.21 mho/m ± 6.% |
| Body TSL temperature change during test | < 0.5 °C | _ | |

SAR result with Body TSL

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 250 mW input power | 14.0 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 55.1 W/kg = 17.0 % (k=2) |

| SAR averaged over 10 cm2 (10 g) of Body TSL | condition . | |
|---|--------------------|--------------------------|
| SAH measured | 250 mW input power | 6:20 W/kg |
| SAR for nominal Body TSL parameters | ngmalized to 1W | 24.6 W/kg ± 10.5 % (k±2) |

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Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

| impedance, transformed to feed point | 40,4 \(\Omega = 3,5 \) |
|--------------------------------------|-------------------------|
| Return Loss | - 29.3 dB |

Antenna Parameters with Body TSL

| Impedance, transformed to feed point | 46.8 (2 - 2-5 (4) | |
|--------------------------------------|-------------------|--|
| Return Luss | -27 6 dB | |

General Antenna Parameters and Design

| Electrical Delay (one direction) 1,534 ns |
|---|
|---|

After long term use with 100W radiated power, only a slight warning at the dipole near the feedpoint can be measured.

The dipote is made of standard semirigid coexis) cable. The center conductor of the feeding line is careally connected to the second arm of line dipote. The antienna is therefore short-oricalited for DC-signals. On some of the dipotes, small end caps are added to the dipote arms in order to improve matching when leaded according to the position as explained in the "Measurament Conditions" paragraph. The SAR data are not affected by this change. The overall dipote length is still according to the Standard.

No excessive force must be appred to the dipose arms, because they might bend or the soldered connections near the feedboint may be dismapsed.

Additional EUT Data

| Manufactured by | SPEAG |
|-----------------|-------------------|
| Manufactured on | December 23, 2006 |

Carolicate No. D2600V2-1005 Jan 15

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DASY5 Validation Report for Head TSL

Date: 27.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; $\sigma = 2.05 \text{ S/m}$; $\varepsilon_i = 38.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.49, 4.49, 4.49); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 98.94 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 30.6 W/kg SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.42 W/kg Maximum value of SAR (measured) = 18.6 W/kg



0 dB = 18.6 W/kg = 12.70 dBW/kg

Cartricate No. D2600V2-1005_Jan15

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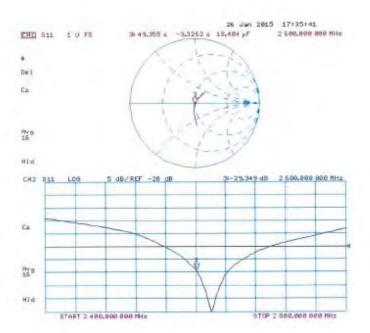
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 27,01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz

Medium parameters used: f = 2600 MHz; $\sigma = 2.21$ S/m; $\epsilon_c = 51.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

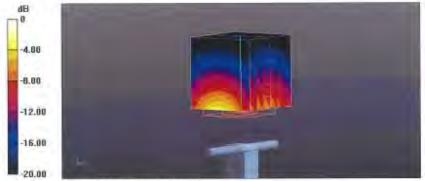
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration

- Probe: ES3DV3 SN3205; ConvF(4.13, 4.13, 4.13); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 96.04 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 29.6 W/kg SAR(1 g) = 14 W/kg; SAR(10 g) = 6.2 W/kgMaximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg = 12.72 dBW/kg

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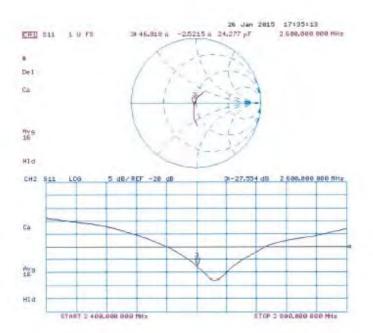
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Impedance Measurement Plot for Body TSL



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Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Appreditation No.: SCS 0108

Accidented by the Swiss Accreditation Service (SAS)

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Client SGS-TW (Auden)

Certificate No: D5GHzV2-1023 Jan 15

| Object | D5GHzV2 - SN:1 | 023 | |
|---|---|--|--|
| Calbration procedure(s) | QA CAL-22.v2 Calibration proce | edure for dipole validation kits bet | ween 3-6 GHz |
| Calibration date: | January 29, 2015 | 5 | |
| The measurements and the unce | rtantika with confidence p | ional alandards, which realize the physical un rebability are given on the following pages or ry facility: environment temperatura (22 ± 3)*(| d are part of the certificate |
| Calibration Equipment used (NA) | TE critical for calimatur) | | |
| | TE critical for callminum) | Cuil Date (Centificate No.) | Behedised Cathranan |
| Permany Standards Power resear EPM-442A Power nessor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combined on Fiellesence Probe EXIDV4 | | Call Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. EX3-3903 Dec14) 18-Aug-14 (No. DAE4-601 Aug/14) | Schellund Calbration Oct-15 Oct-15 Oct-15 Apr-15 Doc-15 Aug-15 |
| Pemary Standerds Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attanuator Type-N mismatch combination Reference Pinte EX3DV4 DAE4 | ID A GB37480704 US37292783 MY41092317 SN: 5058 (20kr) SN: 8047.2 / 06327 SN: 3503 | 07-Dd-14 (No. 217-02026) 07-Dd-14 (No. 217-02020) 07-Dd-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Dd-14 (No. EX3-3503 Dac14) 18-Aug-14 (No. DAE4-601 Aug/14) | Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-16 |
| Galibration Equipment used (M& Permary Standercle Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attanuator Type-N mismatch combination Fletisence Probe EX3DV4 DAE4 Secondary Standards RF generator R&S SMT 05 Network Analyzer HP 8753E | ID A GB37460704 UB37292783 M*41092317 SN: 5058 (20k) SN: 8047 2 / 05327 SN: 3503 SN: 801 | 07-Dct-14 (No. 217-02020) 07-Dct-14 (No. 217-02020) 07-Dct-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. EX3-3503_Dcc14) | Oct-15 Oct-15 Oct-10 Apr-15 Apr-15 Dec-15 Aug-15 Scheduer Check In house check Oct-16 |
| Permany Standerds Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Pimbe EX3DV4 DIAE4 Secondary Standards RF generator R&S SMT-06 | ID A GB87480794 LB97292783 MY41092317 SN: 5058 (20M) SN: 8047 2 / 06327 SN: 3503 SN: 801 ID 8 | 07-Oct-14 (No. 217-02026) 07-Oct-14 (No. 217-02026) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. EX3-3503, Dec14) 18-Aug-14 (No. EX3-3503, Dec14) | Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house diseas Oct-15 In house check: Oct-15 |
| Permany Standerds Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Pimbe EX3DV4 DIAE4 Secondary Standards RF generator R&S SMT-06 | ID A GB37480704 UB37292783 M*41092317 SN: 5058 (204) SN: 5047 2 / 05327 SN: 3503 SN: 801 ID 8 100005 US37590880 S4206 | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01916) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. EX3-3903 Dec14) 18-Aug-14 (No. EAS-4-601 Aug-14) Direct-Unte (in house) 04-Aug-89 (in house sheek Out-13) | Oct-15 Oct-15 Oct-10 Apr-15 Apr-15 Dec-15 Aug-15 Scheduer Check In house check Oct-16 |
| Permany Standercle Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attanuator Type-N mismatch combination Reference Pribe EX3DV4 DAE8 Secondary Standards RF generator R&S SMT 05 Network Analyzer HP 6753E | ID A GB37480704 UB37292783 MY41092317 SN: 5058 (20k) SN: 8047 2 / 06327 SN: 801 ID A 400005 US37390080 S4206 Name | 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-03021) 03-Apr-14 (No. 217-03021) 03-Apr-14 (No. 217-03021) 03-Oct-14 (No. EX3-3503 Dec14) 18-Aug-14 (No. EX3-3503 Dec14) 18-Aug-14 (No. EX3-3503 Dec14) 04-Aug-28 (in house check Out-13) 18-Oct-01 (In house check Out-13) | Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house disear Oct-15 In nouse check: Oct-15 |

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Accordination No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

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Glossary:

fissue simulating liquid TSL

ConvF sensitivity in TSL / NORM x,y.z not applicable or not measured N/A

Calibration is Performed According to the Following Standards:

- a) IEC 62209-2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures": Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters",
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 5 GHz"
- c) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques*, June 2013.

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAFI normalized: SAFI as measured, normalized to an input power of 1 W at the antenna
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%

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Measurement Conditions

stem configuration, as far as not given on page 1. DARVE

| DASY Version | DASYS | V52.6.6 |
|------------------------------|--|----------------------------------|
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom V5.0 | |
| Distance Dipole Center - TSL | 10 mm | with Specer |
| Zoom Scan Resolution | dx, dy = 4.0 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| Frequency | 5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5600 MHz ± 1 MHz | |

Head TSL parameters at 5200 MHz

| | Temperature | Permittivity | Conductivity |
|---|--------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 36.0 | 4.55 mho/m |
| Measured Head TGL parameters | [22,0±02] °C | 36.3 ± 0 % | 4.56 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | | _ |

SAR result with Head TSL at 5200 MHz

| SAR averaged over 1 cm² (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW Input power | 7.78 W/kg |
| SAR for nominal Head TSL parameters | normanized to 1W | 77.9 W/kg = 19.9 % (k=2) |

| SAR averaged over 10 cm ² (10 g) of Head TSL | constition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW Input power | 2:32 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 22.2 W/kg = 19.5 % (k=2) |

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Patter of risk

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Head TSL parameters at 5300 MHz

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 °C | 35,9 | 4.78 mham |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 361 + 6 % | 4.66 mho/m = 6 % |
| Head TSL temperature change during test | <0.5 °C | _ | - |

SAR result with Head TSL at 5300 MHz

| SAR averaged over 1 cm² (1 g) of Head TSL | Condition | |
|---|--------------------|----------------------------|
| BAR measured | 100 mW inpul power | 8.17 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 81.7 W / kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm ³ (10 g) of Head TSL | condition | |
|---|--------------------|---------------------------|
| SAR measured | 100 mW input power | 2.34 W/kg |
| SAH for nominal Head TSL parameters | normalized to 1W | 23.4 W/kg ± 19.5 % (kin2) |

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|-----------------|
| Nominal Head TSL parameters | S5'0, C | 35.5 | 5.07 mha/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.7 ± 6.% | 4.97 mho/m ± 6% |
| Head TSL temperature change during test | < 0.5 °C | _ | - |

SAR result with Head TSL at 5600 MHz

| SAR averaged over 1 cm ² (1 g) of Head TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 8.14 W/kg |
| SAR for nominal Hoard TSL parameters | WI al beslamon | 81.4 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm3 (10 g) of Head TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.31 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 23.1 W/kg ± 19.5 % (k=2) |

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Head TSL parameters at 5800 MHz

The following parameters and calculators were applied

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Head TSL parameters | 22.0 C | 35.3 | 5.27 mirolm |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 35.4 = 6.46 | 5.18 mho/m = 6 % |
| Head TSL temperature change during test | € 0.5 °C | _ | _ |

SAR result with Head TSL at 5800 MHz

| SAR averaged over 1 cm ² (1 g) of Head TSL | Gondillon | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7.82 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 78.2 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm2 (10 g) of Head TSL | condition | |
|---|--------------------|---------------------------|
| SAR measured | 100 mW input power | 2:23 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | 22.3 W/kg ± 19.5 % (ks/2) |

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Body TSL parameters at 5200 MHz

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 49,0 | 5.30 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 49.4 ± 6.55 | 5.42 mho/m ± 6 % |
| Body TSL temperature change during test | <0.5°C | | - |

SAR result with Body TSL at 5200 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7,33 W/kg |
| SAR for nominal Body TSL parameters. | normalized to 1W | 73.5 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm2 (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2,04 W/kg |
| SAR for nominal Body TSL parameters | normalized to TW | 20.5 W/kg = 19.5 % (k=2) |

Body TSL parameters at 5300 MHz

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.9 | 5.42 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 492=619 | 5.55 mho/m = 8.% |
| Body TSL temperature change during lest | < 0.5 °C | _ | 100 |

SAR result with Body TSL at 5300 MHz

| SAR averaged over 1 cm2 (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR massured | 100 mW input power | 7.45 W/kg |
| SAR for nominal Body TSL parameters | normalized to TW | 74.6 W/kg ± 19.9 % (k=2) |

| SAR averaged over 10 cm² (10 g) of Body TSL | gondition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.07 W/kg |
| SAR for nominal Flody TSL parameters | normalized to 1W | 20.8 W/kg = 19.5 % (k=2) |

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Body TSL parameters at 5600 MHz

The following parameters and calculations were appli-

| | Temperature | Permittivity | Conductivity |
|---|-----------------|--------------|------------------|
| Nominal Body TSL parameters | .82,0 °C | 48.5 | 5.77 mholm |
| Measured Body TSL parameters | (22,0 ± 0.2) °C | 48.7 ± 6 % | 5.96 mho/m ± 6 % |
| Body TSL temperature change during test | ≤05°C | - | |

SAR result with Body TSL at 5600 MHz

| SAR averaged over 1 cm2 (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW (rgul power | 7:77 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 77.9 W/kg = 19.9 % (k=2) |

| SAR averaged over 10 cm ² (16 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.15 W/kg |
| SAFI for nominal Body TSL parameters | normalized to 1W | 21.6 W/kg ± 19.5 % (k=2) |

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|-----------------|-------------------------|------------------|
| Nominal Body TSL parameters | 22.0 °C | 48.2 | 6,00 mno/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 48.4 ± 6.6 ₆ | 6.25 mhg/m ± 6 % |
| Body TSL temperature change during feet | < 0.5 ℃ | - | - |

SAR result with Body TSL at 5800 MHz

| SAR averaged over 1 cm ³ (1 g) of Body TSL | Condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 7,54 W/kg |
| SAFI for nominal Body TSL parameters | normalized to tW | 75,5 W/kg ± 19,9 % (k=2) |

| SAR averaged over 10 cm2 (10 g) of Body TSL | condition | |
|---|--------------------|--------------------------|
| SAR measured | 100 mW input power | 2.07 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | 30.7 W/kg = 19.5 % (k=2) |

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Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL at 5200 MHz

| Impedance, transformed to leed point | 49.2 (2 - 8,5 (6) |
|--------------------------------------|-------------------|
| Return Loss | -21.4 dB |

Antenna Parameters with Head TSL at 5300 MHz

| Impedance, transformed to feed point | 51.0.07 - 3.8 (1) |
|--------------------------------------|-------------------|
| Raturn Loss | -28 Z nB |

Antenna Parameters with Head TSL at 5600 MHz

| Impedance, transformed to lead point | 53.4 (1 + 2.7)(1 | |
|--------------------------------------|-------------------|--|
| Fletury Loss | - 27 5 0B | |

Antenna Parameters with Head TSL at 5800 MHz

| Impedance, transformed to feed point | 55.5 (2 + 1.0 j() |
|--------------------------------------|-------------------|
| Return Loss | -25.4 dB |

Antenna Parameters with Body TSL at 5200 MHz

| Impedance, transformed to feed point | 49.0 Q - 7.1 jū |
|--------------------------------------|-----------------|
| Relam Lass | - 22.8 dB |

Antenna Parameters with Body TSL at 5300 MHz

| Impedance, transformed to feed point | 51.5 Q - 2.2 JU |
|--------------------------------------|-----------------|
| Relum Loss | -31.7 dB |

Antenna Parameters with Body TSL at 5600 MHz

| Impedance, transformed to feed point | 54.6 Ω - 1.5 M | |
|--------------------------------------|----------------|--|
| Return Loss | -26.8 dB | |

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Antenna Parameters with Body TSL at 5800 MHz

| Impedance, transformed to feed point | 55.8.C + 2:8 jQ | |
|--------------------------------------|-----------------|--|
| Retirm Loss | +24.5 (6) | |

General Antenna Parameters and Design

| Electrical Delay (one direction) | 1.199 hs |
|----------------------------------|----------|

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard seminigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The amerina is therefore short-circulination DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

| Manufactined by | SPEAG |
|-----------------|-------------------|
| Manufactured on | February 05, 2004 |

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DASY5 Validation Report for Head TSL

Date: 28,01-2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW: Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 4.56$ S/m; $\epsilon_r = 36.3$; $\rho = 1000$ kg/m³. Medium parameters used: f = 5300 MHz; $\sigma = 4.66$ S/m; $\epsilon_r = 36.1$; $\rho = 1000$ kg/m³. Medium parameters used: f = 5000 MHz; $\sigma = 8.57$ S/m; $\epsilon_r = 35.7$; $\rho = 1000$ kg/m³. Medium parameters used: f = 5800 MHz; $\sigma = 5.18$ S/m; $\epsilon_r = 35.4$; $\rho = 1000$ kg/m³.

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSLC63,19-2011)

DASY52 Configuration.

- Probe: EX3DV4 SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30,12,2014, ConvF(5.21, 5.21, 5.21); Calibrated: 30.12,2014, ConvF(4.92, 4.92, 4.92); Calibrated: 30.12,2014, ConvF(4.9, 4.9, 4.9); Calibrated: 30.12,2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4-Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.14 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 28.3 W/kg

SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kgMaximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement groß dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.47 V/m; Power Drill = 0.05 dB

Peak SAR (extrapolated) = 30.7 W/kg

SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.34 W/kg

Maximum value of SAR (measured) = 18.6 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 63.68 V/m, Power Drift = 0.08 dB

Peak 5AR (extrapolated) = 32.2 W/kg

SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.31 W/kg

Maximum value of SAR (measured) = 18.9 W/kg

Cartificate No: DSGHzV2-1023_Jan 15

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Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 61.76 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 32.0 W/kgSAR(1 g) = 7.82 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 18.4 W/kg



0 dB = 17.8 W/kg = 12.50 dBW/kg

Certificate No: D5GHzV2-1023_Jan 15

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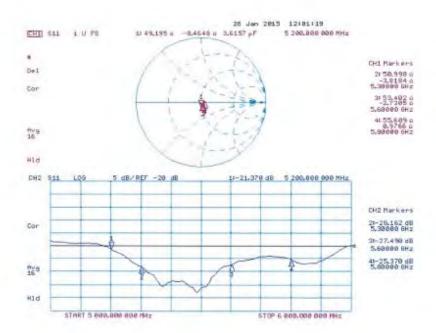
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 29.01.2015

Test Laboratory SPEAG, Zarich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW: Prequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz

Medium parameters used: l = 5200 MHz; $\sigma = 5.42 \text{ S/m}$; $v_s = 49.4$; $\rho = 1000 \text{ kg/m}^3$. Medium parameters used: f = 5300 MHz; $\alpha = 5.55$ S/m; $\epsilon_c = 49.2$; $\rho = 1000$ kg/m 3 , Medium parameters used: f = 5600 MHz; $\alpha = 5.96$ S/m; $\epsilon_c = 48.7$; $\rho = 1000$ kg/m 3 . Medium parameters used: f = 5800 MHz; $\alpha = 6.25$ S/m; $\epsilon_c = 48.4$; $\rho = 6.25$ S/m; $\epsilon_c = 6.25$ 1000 kg/m

Phantom section: Flat Section

Measurement Standard: DASY5 (TEEE/IEC/ANSI C63.19-2011)

DASY 52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(4.95, 4.95, 4.95); Calibrated: 30.12.2014, ConvF(4.78, 4.78, 4.78); Calibrated: 30.12.2014, ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2014, ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014.
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601 Calibrated 18:08:2014
- Planton: Flat Phantom 5.0 (back); Type: QD000P50AA; Seral: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 57.97 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 28.6 W/kg

SAR(1 g) = 7.33 W/kg; SAR(10 g) = 2.04 W/kg

Maximum value of SAR (measured) = 17.3 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 57.58 V/m. Power Drift = -0.06 dB

Peak SAR (extrapolated) = 30.0 W/kg

SAR(1 g) = 7.45 W/kg; SAR(10 g) = 2.07 W/kg

Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 56.88 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 34.4 W/kg

SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.15 W/kg

Maximum value of SAR (measured) = 19.3 W/kg.

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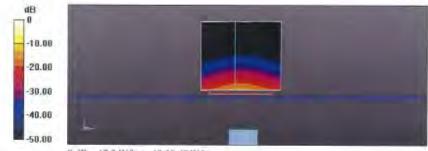
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 55.10 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 35.2 W/kg

SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.07 W/kg Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 17.3 W/kg = 12.38 dBW/kg

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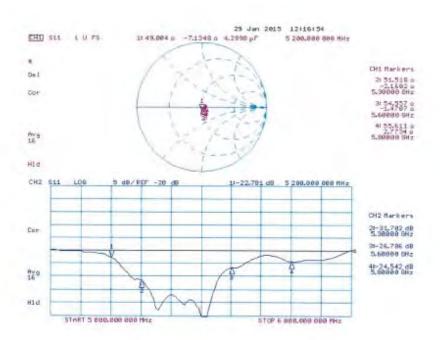
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Impedance Measurement Plot for Body TSL



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End of 1st part of report

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