SAR TEST REPORT

Applicant	Shanghai Xiangcheng Communication Technology Co.,Ltd
FCC ID	2A2UU-K1211
Product	Smart POS Terminal
Brand	Kobile
Model	K1211
Report No.	EFTA25022169-IE-08-S1V2
Issue Date	July 11, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **IEEE 1528-2013, ANSI C95.1: 1992, IEEE C95.1: 1991.** The test results show that the equipment tested can demonstrate compliance with the requirements as documented in this report.

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Version	Revision Description	Issue Date
Rev.0	Initial issue of report.	May 28, 2025
Rev.1	Updated data.	June 10, 2025
Rev.2	Updated data.	July 11, 2025
Note: This revised report (Report No.: EFTA25022169-IE-08-S1V2) supersedes and replaces the previously issued report (Report No.: EFTA25022169-IE-08- S1V1). Please discard or destroy the previously issued report and dispose of it accordingly.		

1. Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

A2LA (Certificate Number: 3857.01)
Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Location

Company:	Eurofins TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
Country:	P. R. China
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E-mail:	Kain.Xu@cpt.eurofinscn.com

1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25°C
Relative humidity	Min. = 20%, Max. = 80%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards Reflection of surrounding objects is minimized and in compliance with requirement of standards	

2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows:

Table 1: Highest SAR

Mode	Highest Reported SAR (W/kg)
	10g SAR Extremity (Separation 0mm)
GSM 850	1.336
GSM 1900	0.175
WCDMA Band II	0.280
WCDMA Band IV	0.177
WCDMA Band V	0.825
LTE FDD 4	0.167
LTE FDD 7	0.800
LTE FDD 12/17	0.348
LTE FDD 2/25	0.260
LTE FDD 5/26	0.819
LTE TDD 38/41	0.773
Wi-Fi (2.4GHz)	1.406
Wi-Fi (5GHz)	0.789
Bluetooth	0.223
Date of Testing: March 28,2025 ~ April 3,2025; June 2, 2025 Date of Sample Received: February 26, 2025	
Note: 1. The device is in compliance with SAR for Uncontrolled Environment /General Population exposure limits (4.0 W/kg) specified in ANSI C95.1: 1992/IEEE C95.1: 1991 and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013. 2. All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. 3. According to TCB workshop October, 2014 RF Exposure Procedures Update (Overlapping LTE Bands): SAR for LTE Band 17 (Frequency range 704-716 MHz) is covered by LTE Band 12 (Frequency	

range 699-716 MHz); LTE Band 38 (Frequency range 2570 ~ 2620 MHz) is covered by LTE Band 41 (Frequency range 2535 ~ 2655 MHz); LTE Band 2 (Frequency range 1850 ~ 1910 MHz) is covered by LTE Band 25 (Frequency range 1850 ~ 1915 MHz) ; LTE Band 5 (Frequency range 824 ~ 849 MHz) is covered by LTE Band 26 (Frequency range 814 ~ 849 MHz) due to similar frequency range, same maximum tune up limit and same channel bandwidth.

Table 2: Highest Simultaneous Transmission SAR

Exposure Configuration	Product Specific 10-g SAR (Separation 0mm)
Highest Simultaneous Transmission SAR (W/kg)	1.406

3. Description of Equipment Under Test

Client Information

Applicant	Shanghai Xiangcheng Communication Technology Co.,Ltd
Applicant address	6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai
Manufacturer	Shanghai Xiangcheng Communication Technology Co.,Ltd
Manufacturer address	6th Floor, Building 10, No.3000 Longdong Avenue, Pudong New District, Shanghai

General Technologies

EUT Stage	Identical Prototype
Model	K1211
IMEI	IMEI1: 868421070001739 IMEI2: 868421070004238
Hardware Version	V1.0
Software Version	6201.30.0001.241.001
Antenna Type	Internal Antenna
Power Class	GSM 850: 4 GSM 1900: 1 WCDMA Band II/IV/V: 3 LTE Band 2/4/5/7/12/17/25/26/38/41: 3
Power Level	GSM 850: level 5 GSM 1900: level 0 WCDMA Band II/IV/V: all up bits LTE Band 2/4/5/7/12/17/25/26/38/41: max power
EUT Accessory	
Adapter	Manufacturer: Chongqing Lianmao Electronics Co., LTD Model: LM-603E-050200U02CE-1
Battery	Manufacturer: DongGuan HongDe Battery Co., Ltd Model: N0411
USB Cable	Manufacturer: Shenzhen Huajia Shengming Technology Co., LTD Model: HJ-262BL1311-1
Note: The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.	

Wireless Technology and Frequency Range

<table>
<tr><th colspan="2">Wireless Technology</th><th>Modulation</th><th>Operating mode</th><th>Tx (MHz)</th><th>Rx (MHz)</th></tr>
<tr><td rowspan="3">GSM</td><td>850</td><td rowspan="2">GPRS(GMSK)
EGPRS(GMSK,8PSK)</td><td rowspan="2">☐Multi-slot Class:8-1UP
☐Multi-slot Class:10-2UP
☒Multi-slot Class:12-4UP
☐Multi-slot Class:33-4UP</td><td>824 ~ 849</td><td>869 ~ 894</td></tr>
<tr><td>1900</td><td>1850 ~ 1910</td><td>1930 ~ 1990</td></tr>
<tr><td colspan="5">Does this device support DTM (Dual Transfer Mode)? ☐Yes ☒No</td></tr>
<tr><td rowspan="3">WCDMA</td><td>Band II</td><td rowspan="3">QPSK, 16QAM</td><td rowspan="3">HSDPA UE Category:24
HSUPA UE Category:7
DC-HSDPA UE Category:24
HSPA+ Downlink Category:14</td><td>1850 ~ 1910</td><td>1930 ~ 1990</td></tr>
<tr><td>Band IV</td><td>1710 ~ 1755</td><td>2110 ~ 2155</td></tr>
<tr><td>Band V</td><td>824 ~ 849</td><td>869 ~ 894</td></tr>
<tr><td rowspan="12">LTE</td><td>FDD 2</td><td rowspan="10">QPSK, 16QAM, 64QAM</td><td rowspan="10">/</td><td>1850 ~ 1910</td><td>1930 ~ 1990</td></tr>
<tr><td>FDD 4</td><td>1710 ~ 1755</td><td>2110 ~ 2155</td></tr>
<tr><td>FDD 5</td><td>824 ~ 849</td><td>869 ~ 894</td></tr>
<tr><td>FDD 7</td><td>2500 ~ 2570</td><td>2620 ~ 2690</td></tr>
<tr><td>FDD 12</td><td>699 ~ 716</td><td>729 ~ 746</td></tr>
<tr><td>FDD 17</td><td>704 ~ 716</td><td>734 ~ 746</td></tr>
<tr><td>FDD 25</td><td>1850 ~ 1915</td><td>1930 ~ 1995</td></tr>
<tr><td>FDD 26</td><td>814 ~ 849</td><td>859 ~ 894</td></tr>
<tr><td>TDD 38</td><td>2570 ~ 2620</td><td>2570 ~ 2620</td></tr>
<tr><td>TDD 41</td><td>2535 ~ 2655</td><td>2535 ~ 2655</td></tr>
<tr><td colspan="5">Does this device support Carrier Aggregation (CA) ☐Yes ☒No</td></tr>
<tr><td colspan="5">Does this device support SV-LTE (1xRTT-LTE)? ☐Yes ☒No</td></tr>
<tr><td>Bluetooth</td><td>2.4GHz</td><td colspan="2">Version 5.0 BR/EDR + LE</td><td>2402 ~2480</td><td>2402 ~2480</td></tr>
<tr><td rowspan="4">Wi-Fi</td><td rowspan="2">2.4GHz</td><td>DSSS, OFDM</td><td>802.11b/g/n HT20</td><td>2412 ~ 2462</td><td>2412 ~ 2462</td></tr>
<tr><td>OFDM</td><td>802.11n HT40</td><td>2422 ~ 2452</td><td>2422 ~ 2452</td></tr>
<tr><td>5GHz</td><td>OFDM</td><td>802.11a/n HT20/ HT40/
ac VHT20/ VHT40/ VHT80</td><td>5150 ~ 5250
5250 ~ 5350
5725 ~ 5850</td><td>5150 ~ 5250
5250 ~ 5350
5725 ~ 5850</td></tr>
<tr><td colspan="5">Does this device support MIMO ☐Yes ☒No</td></tr>
<tr><td>NFC</td><td colspan="5">13.56MHz</td></tr>
</table>

4. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE 1528- 2013, ANSI C95.1: 1992, IEEE C95.1: 1991, the following FCC Published RF exposure KDB procedures:

KDB 248227 D01 802.11Wi-Fi SAR v02r02
KDB 447498 D01 General RF Exposure Guidance v06
KDB 690783 D01 SAR Listings on Grants v01r03
KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02 RF Exposure Reporting v01r02
KDB 941225 D01 3G SAR Procedures v03r01
KDB 941225 D05 SAR for LTE Devices v02r05
KDB 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02

5. Operational Conditions during Test

5.1 Test Positions

5.1.1 Body Worn Configuration

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations.

Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person’s face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

a) The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

b) The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions. The 1-g SAR at 5 mm for UMPC mini-tablets is not required. When hotspot mode applies, product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold. The normal tablet procedures in KDB Publication 616217 are required when the overall diagonal dimension of the device is > 20.0 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Product specific 10-g SAR is also not required for the front (top) surface of larger form factor full size tablets. The more conservative normal tablet SAR results can be used to support phablet mode product specific 10-g SAR.

c) The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless modes and exposure conditions.

5.2 Measurement Variability

Per FCC KDB Publication 865664 D01, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:
1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

5.3 Test Configuration

5.3.1 GSM Test Configuration

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot. The allowed power reduction in the multi-slot configuration is as following:
Output power of reductions:
Table 3: The allowed power reduction in the multi-slot configuration

Number of timeslots in uplink assignment	Permissible nominal reduction of maximum output power (dB)
1	0
2	0 to 3,0
3	1,8 to 4,8
4	3,0 to 6,0

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. GSM voice and GPRS data use GMSK, which is a constant amplitude modulation with minimal peak to average power difference within the time-slot burst. For EDGE, GMSK is used for MCS 1 – MCS 4 and 8-PSK is used for MCS 5 – MCS 9; where 8-PSK has an inherently higher peak-to-average power ratio. The GMSK and 8-PSK EDGE configurations are considered separately for SAR compliance. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode.

5.3.2 WCDMA Test Configuration

5.3.2.1 3G SAR Test Reduction Procedure

The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations modes according to output power, exposure conditions and device operating capabilities. Maximum output power is verified by applying the applicable versions of 3GPP TS 34.121.

5.3.2.2 Body SAR

SAR for Body SAR configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the EUT with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported body SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the EUT, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC

5.3.2.3 Release 5 HSDPA Test Configuration

The 3G SAR test reduction procedure is applied to HSDPA Body SAR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures in the "Release 5 HSDPA Data Devices" section of this document, for the highest SAR Body SAR configuration in 12.2 kbps RMC. EUT with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

HSDPA should be configured according to the UE category of a test device. The number of HSDSCH /HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors (βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in the Table below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Table 4: Subtests for WCDMA Release 5 HSDPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (note 1, note 2)	CM (dB) (note 3)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (note 4)	15/15 (note 4)	64	12/15 (note 4)	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

Note1: $\triangle_{ACK}$, $\triangle_{NACK}$ and $\triangle_{CQI}$= 8⇔A_{hs} = β_{hs}/β_c=30/15⇔β_{hs}=30/15*β_c

Note2: CM=1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.

Note3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_c=11/15 and β_d=15/15.

5.3.2.4 Release 6 HSUPA Test Configuration

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) Body SAR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures in the "Release 6 HSPA Data Devices" section of this document, for the highest body SAR configuration in 12.2 kbps RMC. When VOIP is applicable for next to the ear head exposure in HSPA, the 3G SAR test reduction procedure is applied to HSPA with 12.2 kbps RMC as the primary mode; Otherwise, the same HSPA configuration used for body SAR measurements is tested for next to the ear head exposure.

Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in Table 5 and other applicable procedures described in the 'WCDMA EUT and 'Release 5 HSDPA Data Devices' sections of this document

Table 4: Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	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_{ed1}:47/15 β_{ed2}: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(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, ΔNACK and Δ_{CQI} = 8 ⇔ A_{hs} = β_{hs}/β_c = 30/15 ⇔ β_{hs}= 30/15 *β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Figure 5.1g.

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Table 5: HSUPA UE Category

UE E-DCH Category	Maximum E-DCHz Codes Transmitted	Number of HARQ Processes	E-DCH TTI (ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	11484	5.76
	4	4	10		20000	2.00
7 (No DPDCH)	4	8	2	2 SF2 & 2 SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.
UE Categories 1 to 6 supports QPSK only. UE Category 7 supports QPSK and 16QAM.
(TS25.306-7.3.0)

5.3.2.5 HSPA, HSPA+ and DC-HSDPA Test Configuration

SAR test exclusion for HSPA, HSPA+ and DC-HSDPA is determined according to the following:

1) The HSPA procedures are applied to configure 3GPP Rel. 6 HSPA devices in the required sub-test mode(s) to determine SAR test exclusion.

2) SAR is required for Rel. 7 HSPA+ when SAR is required for Rel. 6 HSPA; Otherwise, the 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode.36 Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

3) SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

4) When the devices supporting HSPA, HSPA+ or DC-HSDPA:

a) The output power measurement results and applicable release version(s) of 3GPP TS 34.121.

b) Power measurement difficulties due to test equipment setup or availability must be resolved between the grantee and its test lab.

c) The power measurement results are in agreement with the individual device implementation and specifications. When Enhanced MPR (E-MPR) applies, the normal MPR targets may be modified according to the Cubic Metric (CM) measured by the device, which must be taken into consideration.

d) The UE category, operating parameters, such as the β and Δ values used to configure the device for testing, power setback procedures described in 3GGPP TS 34.121 for the power measurements, and HSPA/HSPA+ channel conditions (active and stable) for the entire duration of the measurement according to the required E-TFCI and AG index values.

5) When SAR measurement is required, the test configurations, procedures and power measurement results must be clearly described to confirm that the required test parameters are used, including E-TFCI and AG index stability and output power conditions.

Table 6: HS-DSCH UE Category

Table 5.1a: FDD HS-DSCH physical layer categories

<table>
<tr><th>HS-DSCH category</th><th>Maximum number of HS-DSCH codes received</th><th>Minimum inter-TTI interval</th><th>Maximum number of bits of an HS-DSCH transport block received within an HS-DSCH TTI NOTE 1</th><th>Total number of soft channel bits</th><th>Supported modulations without MIMO operation or dual cell operation</th><th>Supported modulations with MIMO operation and without dual cell operation</th><th>Supported modulations with dual cell operation</th></tr>
<tr><td>Category 1</td><td>5</td><td>3</td><td>7298</td><td>19200</td><td rowspan="10">QPSK, 16QAM</td><td rowspan="14">Not applicable (MIMO not supported)</td><td rowspan="22">Not applicable (dual cell operation not supported)</td></tr>
<tr><td>Category 2</td><td>5</td><td>3</td><td>7298</td><td>28800</td></tr>
<tr><td>Category 3</td><td>5</td><td>2</td><td>7298</td><td>28800</td></tr>
<tr><td>Category 4</td><td>5</td><td>2</td><td>7298</td><td>38400</td></tr>
<tr><td>Category 5</td><td>5</td><td>1</td><td>7298</td><td>57600</td></tr>
<tr><td>Category 6</td><td>5</td><td>1</td><td>7298</td><td>67200</td></tr>
<tr><td>Category 7</td><td>10</td><td>1</td><td>14411</td><td>115200</td></tr>
<tr><td>Category 8</td><td>10</td><td>1</td><td>14411</td><td>134400</td></tr>
<tr><td>Category 9</td><td>15</td><td>1</td><td>20251</td><td>172800</td></tr>
<tr><td>Category 10</td><td>15</td><td>1</td><td>27952</td><td>172800</td></tr>
<tr><td>Category 11</td><td>5</td><td>2</td><td>3630</td><td>14400</td><td rowspan="2">QPSK</td></tr>
<tr><td>Category 12</td><td>5</td><td>1</td><td>3630</td><td>28800</td></tr>
<tr><td>Category 13</td><td>15</td><td>1</td><td>35280</td><td>259200</td><td rowspan="2">QPSK, 16QAM, 64QAM</td></tr>
<tr><td>Category 14</td><td>15</td><td>1</td><td>42192</td><td>259200</td></tr>
<tr><td>Category 15</td><td>15</td><td>1</td><td>23370</td><td>345600</td><td rowspan="2" colspan="2">QPSK, 16QAM</td></tr>
<tr><td>Category 16</td><td>15</td><td>1</td><td>27952</td><td>345600</td></tr>
<tr><td rowspan="2">Category 17 NOTE 2</td><td rowspan="2">15</td><td rowspan="2">1</td><td>35280</td><td>259200</td><td>QPSK, 16QAM, 64QAM</td><td>–</td></tr>
<tr><td>23370</td><td>345600</td><td>–</td><td>QPSK, 16QAM</td></tr>
<tr><td rowspan="2">Category 18 NOTE 3</td><td rowspan="2">15</td><td rowspan="2">1</td><td>42192</td><td>259200</td><td>QPSK, 16QAM, 64QAM</td><td>–</td></tr>
<tr><td>27952</td><td>345600</td><td>–</td><td>QPSK, 16QAM</td></tr>
<tr><td>Category 19</td><td>15</td><td>1</td><td>35280</td><td>518400</td><td rowspan="2" colspan="2">QPSK, 16QAM, 64QAM</td></tr>
<tr><td>Category 20</td><td>15</td><td>1</td><td>42192</td><td>518400</td></tr>
<tr><td>Category 21</td><td>15</td><td>1</td><td>23370</td><td>345600</td><td rowspan="4">-</td><td rowspan="4">-</td><td rowspan="2">QPSK, 16QAM</td></tr>
<tr><td>Category 22</td><td>15</td><td>1</td><td>27952</td><td>345600</td></tr>
<tr><td>Category 23</td><td>15</td><td>1</td><td>35280</td><td>518400</td><td rowspan="2">QPSK, 16QAM, 64QAM</td></tr>
<tr><td>Category 24</td><td>15</td><td>1</td><td>42192</td><td>518400</td></tr>
</table>

5.3.3 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The R&S CMW500 was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

A) Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

B) MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

C) A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

D) Largest Channel Bandwidth Standalone SAR Test Requirements

1) QPSK with 1 RB allocation

Start with 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.

2) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

3) 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 1) and 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.

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections 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 > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

E) 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 A) 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.

5.3.4 Additional Requirements for TDD LTE Specification

For Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

TDD LTE Band supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table: Uplink-downlink configurations for uplink-downlink configurations and Table: Configuration of special subframe (lengths of DwPTS/GP/UpPTS) for Special subframe configurations.

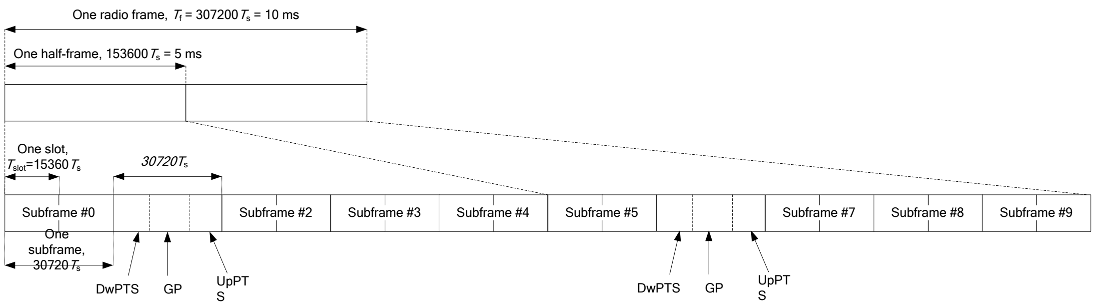


Figure 1: Frame structure type 2

Table 7: Configuration of Special Subframe (Lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 8: Uplink-Downlink Configurations

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

According to Figure 1, one radio frame is configured by 10 subframes, which consist of Uplink-subframe, Downlink-subframe and Special subframe. For TDD-LTE, the Duty Cycle should be calculated on Uplink-subframes and Special subframes, due to Special subframe containing both Uplink transmissions. So for one radio frame, Duty Cycle can be calculated with formula as below. The count of Uplink subframes are according to Table: Uplink-downlink configurations:

Duty cycle = (30720Ts*Ups + Uplink Component*Specials)/(307200Ts)

About the uplink component of Special subframes, we can figure out by Table: Configuration of special subframe (lengths of DwPTS/GP/UpPTS):

Uplink Component = UpPTS

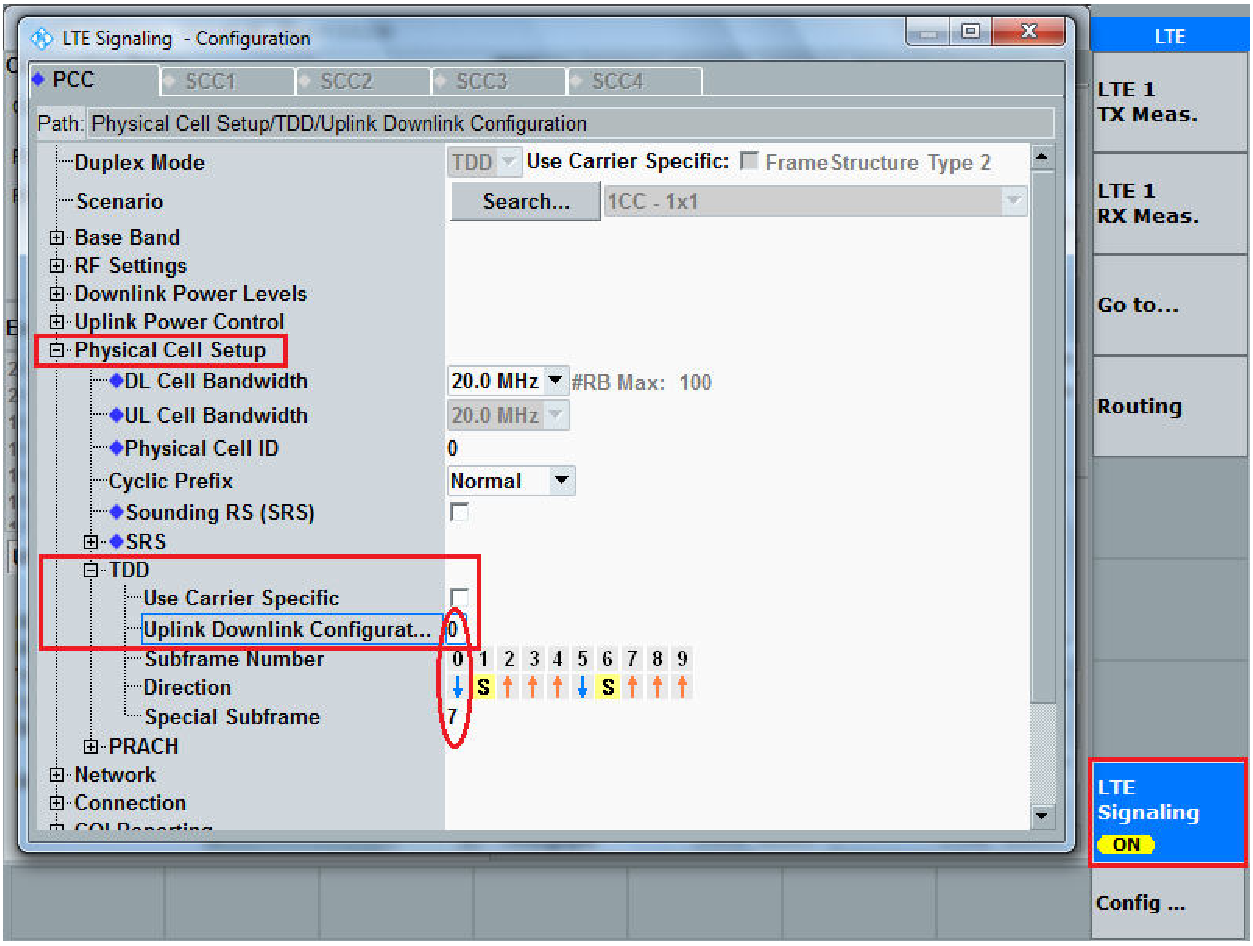
In conclusion, for the TDD LTE Band, Duty Cycle can be calculated with formula as below. All these sets are ok when we test, or we can set as below.

Duty cycle = [(30720Ts*Ups) + UpPTS *Specials]/(307200Ts)

And we can get different Duty cycles under different configurations:

Uplink-downlink configuration	Subframe number			Configuration of special subframe							
				Normal cyclic prefix in downlink				Extended cyclic prefix in downlink			
				Normal cyclic prefix in uplink		Extended cyclic prefix in uplink		Normal cyclic prefix in uplink		Extended cyclic prefix in uplink	
	D	S	U	configuration 0~4	configuration 5~9	configuration 0~4	configuration 5~9	configuration 0~3	configuration 4~7	configuration 0~3	configuration 4~7
0	2	2	6	61.43%	62.85%	61.67%	63.33%	61.43%	62.85%	61.67%	63.33%
1	4	2	4	41.43%	42.85%	41.67%	43.33%	41.43%	42.85%	41.67%	43.33%
2	6	2	2	21.43%	22.85%	21.67%	23.33%	21.43%	22.85%	21.67%	23.33%
3	6	1	3	30.71%	31.43%	30.83%	31.67%	30.71%	31.43%	30.83%	31.67%
4	7	1	2	20.71%	21.43%	20.83%	21.67%	20.71%	21.43%	20.83%	21.67%
5	8	1	1	10.71%	11.43%	10.83%	11.67%	10.71%	11.43%	10.83%	11.67%
6	3	2	5	51.43%	52.85%	51.67%	53.33%	51.43%	52.85%	51.67%	53.33%

SAR test Plan: For TDD LTE, SAR should be tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7 for Frame structure type



5.3.5 Wi-Fi Test Configuration

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; These are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the *reported* SAR for the *initial test position* is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
  - ✧ For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  - ✧ When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - ✧ The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.

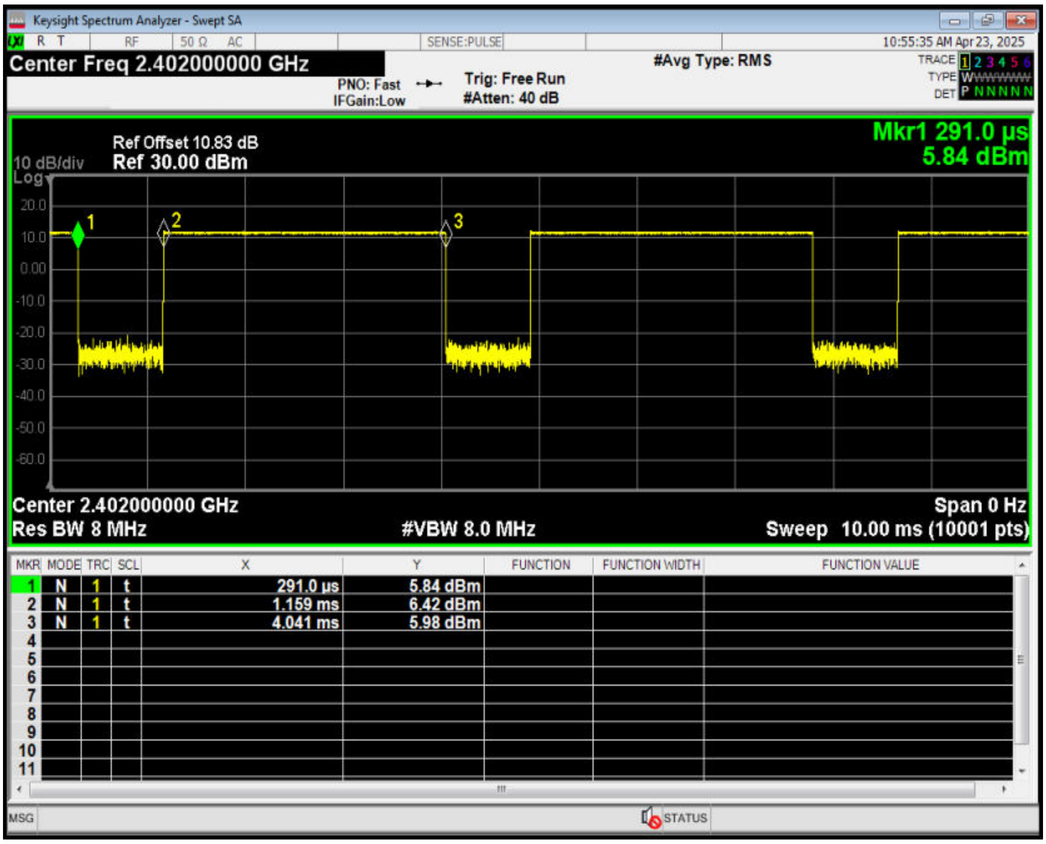
To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered the worst case position; thus used as the initial test position.

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

5.3.6 Bluetooth Test Configuration

For Bluetooth SAR testing, Bluetooth engineering testing software installed on the EUT can provide continuous transmitting RF signal with maximum output power. And the CBT control the EUT operating with hoping off and data rate set for DH5.

The SAR measurement takes full account of the Bluetooth duty cycle and is reflected in the report, and the duty factor of the device is as follow:

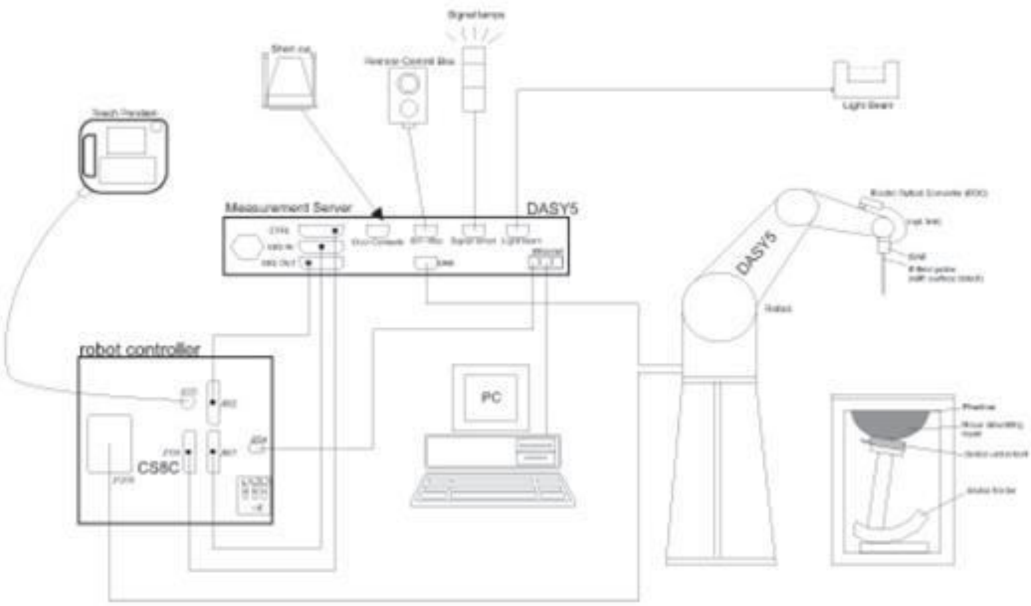


Note: Duty factor= Ton (ms)/ T(on+off) (ms)=76.9%

6. SAR Measurements System Configuration

6.1 SAR Measurement Set-up

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A 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 from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6.2 DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

EX3DV4 Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μW/g to > 100 mW/g Linearity: ± 0.2dB (noise: typically < 1 μW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 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%.

E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

SAR=C∆T/∆t

Where: ∆t = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

∆T = Temperature increase due to RF exposure.

Or

$SAR=|E|^2\sigma/\rho$

Where: σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

6.3 SAR Measurement Procedure

Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

	≤3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2}\cdot\delta\cdot\ln(2)$ ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td colspan="3"></td><td>≤3GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: $\Delta x_{zoom} \Delta y_{zoom}$</td><td>≤2GHz: ≤8mm
2 – 3GHz: ≤5mm*</td><td>3 – 4GHz: ≤5mm*
4 – 6GHz: ≤4mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">Uniform grid: $\Delta z_{zoom}(n)$</td><td>≤5mm</td><td>3 – 4GHz: ≤4mm
4 – 5GHz: ≤3mm
5 – 6GHz: ≤2mm</td></tr>
<tr><td rowspan="2">Graded grid</td><td>$\Delta z_{zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤4mm</td><td>3 – 4GHz: ≤3mm
4 – 5GHz: ≤2.5mm
5 – 6GHz: ≤2mm</td></tr>
<tr><td>$\Delta z_{zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">X, y, z</td><td>≥30mm</td><td>3 – 4GHz: ≥28mm
4 – 5GHz: ≥25mm
5 – 6GHz: ≥22mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4W/kg, ≤8mm, ≤7mm and ≤5mm zoom scan resolution may be applied, respectively, for 2GHz to 3GHz, 3GHz to 4GHz and 4GHz to 6GHz.</td></tr>
</table>

Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

7. Main Test Equipment

Name of Equipment	Manufacturer	Type/Model	Serial Number	Software Version	Last Cal.	Cal. Due Date
Network Analyzer	Agilent	E5071B	MY42404014	/	2024-05-07	2025-05-06
Dielectric Probe Kit	SPEAG	DAK-3.5	1332	/	2024-07-15	2025-07-14
Power Meter	Agilent	E4417A	GB41291714	/	2024-05-07	2025-05-06
Power Sensor	Agilent	N8481H	MY50350004	/	2024-05-07	2025-05-06
Power Sensor	Agilent	E9327A	US40441622	/	2024-05-07	2025-05-06
Signal Generator	Keysight	N5182B-X07	MY51350303	/	2024-12-02	2025-12-01
Dual Directional Coupler	UCL	UCL-DDC056G-S	20010600118	/	/	/
Amplifier	R&S	SCU18F	101022	/	2024-05-08	2025-05-07
Wireless Communication Tester	R&S	CMW 500	146734	/	2024-05-07	2025-05-06
E-field Probe	SPEAG	EX3DV4	7689	/	2024-06-04	2025-06-03
DAE	SPEAG	DAE4	1317	/	2024-09-10	2025-09-09
Validation Kit 750MHz	SPEAG	D750V3	1045	/	2023-09-12	2026-09-11
Validation Kit 835MHz	SPEAG	D835V2	4d020	/	2023-09-15	2026-09-14
Validation Kit 1750MHz	SPEAG	D1750V2	1033	/	2023-03-23	2026-03-22
Validation Kit 1900MHz	SPEAG	D1900V2	5d060	/	2023-09-12	2026-09-11
Validation Kit 2450MHz	SPEAG	D2450V2	786	/	2023-09-12	2026-09-11
Validation Kit 2600MHz	SPEAG	D2600V2	1025	/	2024-05-08	2027-05-07
Validation Kit 5GHz	SPEAG	D5GHzV2	1203	/	2022-12-09	2025-12-08
Software for Tissue	SPEAG	DAK 3.0.4.1	/	3.0.4.1	/	/
Temperature Probe	Auden	DTM3000	3905	/	2024-12-03	2025-12-02
Hygrothermograph	Anymetr	HTC - 1	TA2024A031	/	2024-05-06	2025-05-05
Test System	SPEAG	TX90 XLspeag	F08/5AH5A1/A/01	52.10.4.1527	/	/

8. Tissue Dielectric Parameter Measurements & System Check

8.1 Tissue Verification

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 24 hours of use; or earlier if the dielectric parameters can become out of tolerance.

Target values

Frequency (MHz)	ε_r	σ(s/m)
750	42.0	0.90
835	41.5	0.90
1750	40.1	1.37
1900	40.0	1.40
2450	39.2	1.80
2600	39.0	1.96
5250	35.9	4.71
5600	35.5	5.07
5750	35.4	5.22

Measurements results

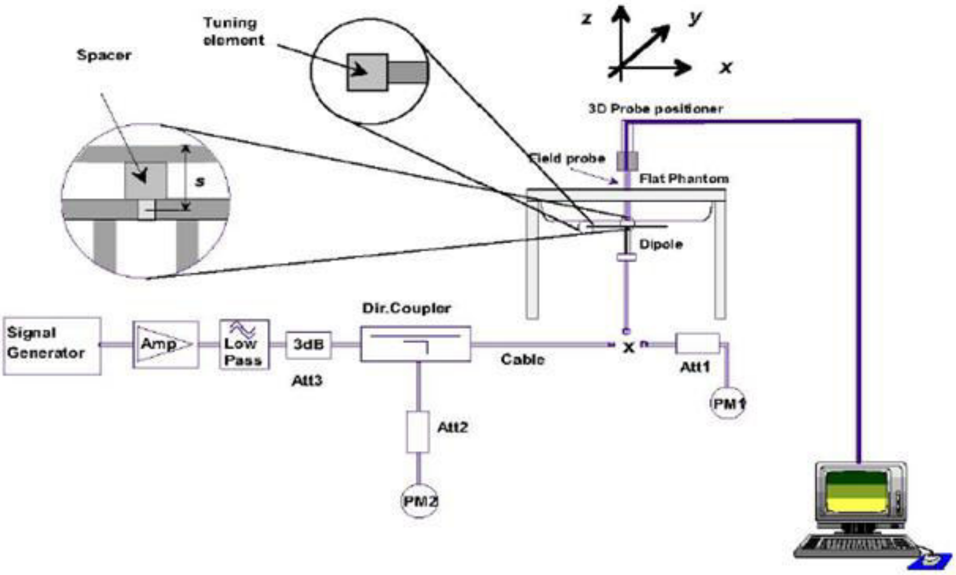
Frequency (MHz)	Test Date	Temp ℃	Measured Dielectric Parameters		Target Dielectric Parameters		Limit (Within ±5%)	
			ε_r	σ(s/m)	ε_r	σ(s/m)	Dev ε_r(%)	Dev σ(%)
750	2025/4/10	21.5	42.2	0.87	42.0	0.90	0.48	-3.33
	2025/6/2	21.5	42.3	0.88	42.0	0.90	0.95	-1.12
835	2025/4/10	21.5	41.4	0.92	41.5	0.90	-0.24	2.22
	2025/6/2	21.5	41.4	0.88	41.5	0.90	-0.24	-2.22
1750	2025/4/11	21.5	40.0	1.33	40.1	1.37	-0.25	-2.92
	2025/6/2	21.5	40.2	1.34	40.1	1.37	0.25	-2.19
1900	2025/4/11	21.5	40.0	1.40	40.0	1.40	0.00	0.00
	2025/6/2	21.5	40.1	1.41	40.0	1.40	0.25	0.71
2450	2025/4/19	21.5	38.7	1.82	39.2	1.80	-1.28	1.11
	2025/6/1	21.5	38.6	1.81	39.2	1.80	-1.53	0.56
2600	2025/4/12	21.5	38.2	1.96	39.0	1.96	-2.05	0.00
	2025/6/1	21.5	38.3	1.99	39.0	1.96	-1.79	1.53
5250	2025/4/20	21.5	35.8	4.69	35.9	4.71	-0.28	-0.42
	2025/6/1	21.5	35.5	4.80	35.9	4.71	-1.11	1.91
5600	2025/4/20	21.5	21.5	35.4	5.17	35.5	5.07	-0.28

	2025/6/1	21.5	34.2	5.21	35.5	5.07	-3.66	2.76
5750	2025/4/20	21.5	35.2	5.32	35.4	5.22	-0.56	1.92
	2025/6/1	21.5	34.9	5.21	35.4	5.22	-1.41	-0.19
Note: The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm.								

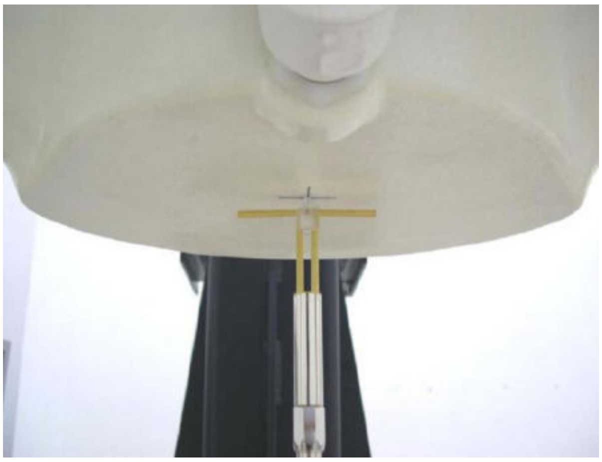
8.2 System Check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulates were measured using the dielectric probe kit and the network analyzer. A system check measurement for every day was made following the determination of the dielectric parameters of the Tissue simulates, using the dipole validation kit. The dipole antenna was placed under the flat section of the twin SAM phantom.

System check is performed regularly on all frequency bands where tests are performed with the DASY system.



Picture 1 System Check setup



Picture 2 Setup Photo

Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining return loss (＞20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB 865664 D01:

Dipole		Date of Measurement	Return Loss (dB)	Δ %	Impedance (Ω)			
					Real	ΔΩ	Imaginary	ΔΩ
Dipole D750V3 SN: 1045	Head Liquid	2023-09-12	30.4	/	51.9	/	-2.47	/
		2024-09-11	30.12	-0.9	52.3	0.4	-2.46	0.01
Dipole D835V2 SN: 4d020	Head Liquid	9/15/2023	28.3	/	50.6	/	-3.80	/
		9/14/2024	28.9	2.0	51.4	0.8	-3.66	0.14
Dipole D1750V2 SN: 1033	Head Liquid	3/23/2023	36.2	/	51.2	/	-0.98	/
		3/22/2024	35.4	-2.2	51.6	0.4	-1.28	-0.3
Dipole D1900V2 SN: 5d060	Head Liquid	9/12/2023	24.0	/	50.5	/	6.32	/
		9/11/2024	24.1	0.6	50.9	0.4	6.83	0.51
Dipole D2450V2 SN:786	Head Liquid	9/12/2023	28.2	/	52.2	/	3.34	/
		9/11/2024	28.6	1.4	52.8	0.6	3.43	0.09
Dipole D5GHzV2 (5250 MHz) SN: 1203	Head Liquid	12/9/2022	29.0	/	48.5	/	-3.20	/
		12/8/2023	28.4	-2.1	48.4	-0.1	-3.4	-0.2
Dipole D5GHzV2 (5600 MHz) SN: 1203	Head Liquid	12/9/2022	30.4	/	51.7	/	2.60	/
		12/8/2023	30.5	0.3%	51.5	-0.2	2.4	-0.2
Dipole D5GHzV2 (5750 MHz) SN: 1203	Head Liquid	12/9/2022	25.3	/	53.6	/	4.30	/
		12/8/2023	25.7	1.6%	53.1	-0.5	4.7	0.4

System Check Results

Frequency (MHz)	Test Date	Temp ℃	250mW Measured SAR_{1g} (W/kg)	1W Normalized SAR_{1g} (W/kg)	1W Target SAR_{1g} (W/kg)	Δ % (Limit ±10%)	Plot No.
750	2025/4/10	21.5	2.10	8.40	8.37	0.36	1
	2025/6/2	21.5	2.13	8.52	8.47	0.59	2
835	2025/4/10	21.5	2.43	9.72	9.65	0.73	3
	2025/6/2	21.5	2.44	9.76	9.75	0.10	4
1750	2025/4/11	21.5	9.03	36.12	35.90	0.61	5
	2025/6/2	21.5	8.95	35.80	36.80	-2.72	6
1900	2025/4/11	21.5	9.55	38.20	39.50	-3.29	7
	2025/6/2	21.5	9.88	39.52	40.40	-2.18	8
2450	2025/4/19	21.5	13.52	54.08	52.30	3.40	9
	2025/6/1	21.5	13.70	54.80	52.60	4.18	10
2600	2025/4/12	21.5	13.90	55.60	56.10	-0.89	21
	2025/6/1	21.5	13.94	55.76	56.10	-0.61	32
Frequency (MHz)	**Test Date**	**Temp ℃**	**100mW Measured SAR_{1g} (W/kg)**	**1W Normalized SAR_{1g} (W/kg)**	**1W Target SAR_{1g} (W/kg)**	**Δ % (Limit ±10%)**	**Plot No.**
5250	2025/4/20	21.5	7.46	74.60	78.00	-4.36	43
	2025/6/1	21.5	7.87	78.70	77.70	1.29	54
5600	2025/4/20	21.5	7.98	79.80	80.50	-0.87	65
	2025/6/1	21.5	7.67	76.70	80.30	-4.48	76
5750	2025/4/20	21.5	7.75	77.50	77.40	0.13	87
	2025/6/1	21.5	7.66	76.60	76.80	-0.26	98
Note: Target Values used derive from the calibration certificate data storage and evaluation.							

9. Normal and Maximum Output Power

KDB 447498 D01 at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit.

9.1 GSM Mode

GSM850-Main Ant		Burst-Averaged Output Power(dBm)				Division Factors	Frame-Averaged Output Power(dBm)			
		Tune-up	Channel/Frequency (MHz)				Tune-up	Channel/Frequency (MHz)		
		MAX	128/824.2	190/836.6	251/848.8		MAX	128/824.2	190/836.6	251/848.8
GSM	CS	34.00	33.02	33.09	33.11	9.03	24.97	23.99	24.06	24.08
GPRS/EGPRS (GMSK)	1 Tx Slot	33.00	32.04	32.14	32.18	6.02	26.98	26.02	26.12	26.16
	2 Tx Slots	31.00	29.83	29.95	30.04	4.26	26.74	25.57	25.69	25.78
	3 Tx Slots	30.00	28.71	28.87	28.98	3.01	**26.99**	25.70	25.86	25.97
	4 Tx Slots	28.00	26.62	26.63	26.86	9.03	18.97	17.59	17.60	17.83
EGPRS (8PSK)	1 Tx Slot	27.00	25.95	25.77	25.75	6.02	20.98	19.93	19.75	19.73
	2 Tx Slots	25.00	23.59	23.31	24.03	4.26	20.74	19.33	19.05	19.77
	3 Tx Slots	23.50	22.37	22.31	22.51	3.01	20.49	19.36	19.30	19.50
	4 Tx Slots	34.00	33.02	33.09	33.11	9.03	24.97	23.99	24.06	24.08
PCS 1900-Main Ant		Burst-Averaged Output Power(dBm)				Division Factors	Frame-Averaged Output Power(dBm)			
		Tune-up	Channel/Frequency (MHz)				Tune-up	Channel/Frequency (MHz)		
		MAX	512/1850.2	661/1880	810/1909.8		MAX	512/1850.2	661/1880	810/1909.8
GSM	CS	31.00	30.13	29.93	29.72	9.03	21.97	21.10	20.90	20.69
GPRS/EGPRS (GMSK)	1 Tx Slot	30.00	29.17	28.87	28.69	6.02	**23.98**	23.15	22.85	22.67
	2 Tx Slots	27.50	26.87	26.57	26.27	4.26	23.24	22.61	22.31	22.01
	3 Tx Slots	26.50	25.81	25.51	25.21	3.01	23.49	22.80	22.50	22.20
	4 Tx Slots	28.00	27.33	27.38	27.33	9.03	18.97	18.30	18.35	18.30
EGPRS (8PSK)	1 Tx Slot	27.00	26.49	26.49	26.49	6.02	20.98	20.47	20.47	20.47
	2 Tx Slots	25.00	24.48	24.55	24.47	4.26	20.74	20.22	20.29	20.21
	3 Tx Slots	24.00	23.36	23.64	23.34	3.01	20.99	20.35	20.63	20.33
	4 Tx Slots	31.00	30.13	29.93	29.72	9.03	21.97	21.10	20.90	20.69

9.2 WCDMA Mode

The following tests were completed according to the test requirements outlined in the 3GPP TS34.121 specification.

WCDMA-Main Ant		Band II(dBm)				Band IV(dBm)				Band V(dBm)			
Tx Channel		9262	9400	9538	Tune-up Limit	1312	1413	1513	Tune-up Limit	4132	4183	4233	Tune-up Limit
Frequency(MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.6	846.6	
RMC	12.2kbps	23.19	23.20	23.13	24.00	23.43	23.44	23.38	24.00	23.26	23.28	23.31	24.00
HSDPA	Sub 1	22.93	23.05	22.64	24.00	23.01	23.13	23.31	24.00	22.86	22.81	22.74	24.00
	Sub 2	22.57	22.17	22.12	23.50	22.55	22.57	22.69	23.50	22.44	22.29	22.40	23.50
	Sub 3	22.50	22.45	22.13	23.50	22.44	22.75	22.68	23.50	22.41	22.33	22.29	23.50
	Sub 4	21.99	21.79	21.53	23.00	22.15	22.11	22.22	23.00	21.68	21.93	21.69	23.00
HSUPA	Sub 1	21.80	21.80	21.51	23.00	22.08	22.34	22.28	23.00	21.81	21.70	21.77	23.00
	Sub 2	22.55	22.44	21.99	23.50	22.45	22.80	22.58	23.50	22.16	22.20	22.37	23.50
	Sub 3	21.40	21.22	21.10	22.50	21.66	21.52	21.75	22.50	21.13	21.24	21.20	22.50
	Sub 4	21.87	21.66	21.59	23.00	21.89	22.12	22.28	23.00	21.84	21.78	21.63	23.00
	Sub 5	21.17	21.15	21.03	22.50	21.49	21.57	21.52	22.50	21.16	21.25	21.17	22.50
DC-HSDPA	Sub 1	22.32	22.15	22.01	23.50	22.52	22.65	22.56	23.50	22.09	22.21	22.33	23.50
	Sub 2	22.35	22.25	21.94	23.50	22.41	22.63	22.55	23.50	22.08	22.21	22.22	23.50
	Sub 3	22.36	22.14	21.91	23.50	22.52	22.66	22.62	23.50	22.27	22.20	22.23	23.50
	Sub 4	21.84	21.87	21.42	23.00	22.14	22.07	22.21	23.00	21.75	21.61	21.66	23.00
HSPA+	Sub 5	22.03	21.80	21.61	23.00	22.09	22.08	22.22	23.00	21.62	21.60	21.69	23.00
Note: Per KDB 941225 D01, SAR for each exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.													

9.3 LTE Mode

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

Main Antenna

LTE B2				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				18607/1850.7	18900/1880	19193/1909.3	
1.4MHz	QPSK	1	0	23.02	23.00	23.05	24.00
		1	2	23.12	23.12	23.16	24.00
		1	5	23.01	23.04	23.05	24.00
		3	0	23.08	23.11	23.12	24.00
		3	2	23.16	23.16	23.15	24.00
		3	3	23.10	23.14	23.16	24.00
		6	0	22.12	22.15	22.18	23.00
	16QAM	1	0	22.30	22.33	22.34	23.00
		1	2	22.44	22.45	22.50	23.00
		1	5	22.28	22.25	22.34	23.00
		3	0	22.11	22.16	22.13	23.00
		3	2	22.10	22.21	22.24	23.00
		3	3	22.11	22.09	22.16	23.00
		6	0	21.22	21.22	21.23	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				18615/1851.5	18900/1880	19185/1908.5	
3MHz	QPSK	1	0	23.05	23.07	23.11	24.00
		1	7	23.04	23.08	23.10	24.00
		1	14	23.03	23.10	23.14	24.00
		8	0	22.10	22.17	22.17	23.00
		8	4	22.09	22.13	22.22	23.00
		8	7	22.08	22.14	22.19	23.00
		15	0	22.13	22.11	22.17	23.00
	16QAM	1	0	22.42	22.34	22.30	23.00
		1	7	22.34	22.29	22.34	23.00
		1	14	22.35	22.32	22.33	23.00

		8	0	21.16	21.21	21.26	22.00
		8	4	21.11	21.22	21.28	22.00
		8	7	21.15	21.20	21.27	22.00
		15	0	21.06	21.18	21.17	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				18625/1852.5	18900/1880	19175/1907.5	
5MHz	QPSK	1	0	23.02	23.00	23.09	24.00
		1	13	23.05	23.11	23.17	24.00
		1	24	22.91	23.00	23.04	24.00
		12	0	22.07	22.19	22.26	23.00
		12	6	22.13	22.18	22.25	23.00
		12	13	22.09	22.12	22.13	23.00
		25	0	22.13	22.18	22.24	23.00
	16QAM	1	0	22.13	22.15	22.27	23.00
		1	13	22.22	22.31	22.38	23.00
		1	24	22.09	22.21	22.24	23.00
		12	0	21.06	21.16	21.23	22.00
		12	6	21.14	21.19	21.21	22.00
		12	13	21.06	21.10	21.09	22.00
		25	0	21.09	21.20	21.22	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				18650/1855	18900/1880	19150/1905	
10MHz	QPSK	1	0	23.10	23.11	23.10	24.00
		1	25	23.15	23.22	23.23	24.00
		1	49	23.06	23.08	23.13	24.00
		25	0	22.12	22.24	22.44	23.00
		25	13	22.14	22.16	22.19	23.00
		25	25	22.20	22.14	22.11	23.00
		50	0	22.17	22.20	22.29	23.00
	16QAM	1	0	22.24	22.33	22.30	23.00
		1	25	22.32	22.46	22.41	23.00
		1	49	22.18	22.31	22.33	23.00
		25	0	21.09	21.25	21.35	22.00
		25	13	21.19	21.18	21.20	22.00
		25	25	21.17	21.10	21.07	22.00
		50	0	21.14	21.17	21.26	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				18675/1857.5	18900/1880	19125/1902.5	
15MHz	QPSK	1	0	23.04	22.97	23.01	24.00
		1	38	23.03	23.11	23.11	24.00
		1	74	22.93	22.99	23.08	24.00
		36	0	22.12	22.25	22.24	23.00
		36	18	22.13	22.17	22.21	23.00
		36	39	22.16	22.15	22.09	23.00

		75	0	22.13	22.20	22.17	23.00
	16QAM	1	0	22.25	22.32	22.33	23.00
		1	38	22.29	22.44	22.41	23.00
		1	74	22.16	22.26	22.38	23.00
		36	0	21.04	21.19	21.17	22.00
		36	18	21.06	21.13	21.15	22.00
		36	39	21.08	21.08	21.02	22.00
		75	0	21.09	21.16	21.16	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				18700/1860	18900/1880	19100/1900	
20MHz	QPSK	1	0	22.90	22.91	22.91	24.00
		1	50	23.14	23.24	23.16	24.00
		1	99	22.76	22.91	22.93	24.00
		50	0	22.03	22.27	22.09	23.00
		50	25	22.15	22.17	22.17	23.00
		50	50	22.13	22.13	21.89	23.00
		100	0	22.09	22.18	21.99	23.00
	16QAM	1	0	22.17	22.16	22.19	23.00
		1	50	22.37	22.53	22.46	23.00
		1	99	22.04	22.18	22.18	23.00
		50	0	21.04	21.26	21.05	22.00
		50	25	21.13	21.21	21.16	22.00
		50	50	21.14	21.08	20.87	22.00
		100	0	21.06	21.14	20.97	22.00

LTE B4				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				19957/1710.7	20175/1732.5	20393/1754.3	
1.4MHz	QPSK	1	0	23.10	23.12	23.12	24.00
		1	2	23.21	23.29	23.21	24.00
		1	5	23.08	23.13	23.09	24.00
		3	0	23.18	23.24	23.18	24.00
		3	2	23.20	23.29	23.24	24.00
		3	3	23.17	23.25	23.20	24.00
		6	0	22.20	22.25	22.23	23.00
	16QAM	1	0	22.31	22.48	22.48	23.00
		1	2	22.45	22.59	22.53	23.00
		1	5	22.38	22.45	22.40	23.00
		3	0	22.18	22.28	22.24	23.00
		3	2	22.18	22.26	22.27	23.00
		3	3	22.13	22.19	22.21	23.00
		6	0	21.30	21.36	21.31	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				19965/1711.5	20175/1732.5	20385/1753.5	

Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
3MHz	QPSK	1	0	23.20	23.30	23.21	24.00
		1	7	23.21	23.25	23.19	24.00
		1	14	23.22	23.22	23.16	24.00
		8	0	22.23	22.30	22.23	23.00
		8	4	22.26	22.29	22.27	23.00
		8	7	22.22	22.25	22.22	23.00
		15	0	22.23	22.27	22.20	23.00
	16QAM	1	0	22.51	22.61	22.48	23.00
		1	7	22.50	22.62	22.51	23.00
		1	14	22.47	22.58	22.49	23.00
		8	0	21.28	21.36	21.31	22.00
		8	4	21.31	21.32	21.34	22.00
		8	7	21.29	21.40	21.29	22.00
		15	0	21.25	21.27	21.28	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				19975/1712.5	20175/1732.5	20375/1752.5	
5MHz	QPSK	1	0	23.12	23.25	23.10	24.00
		1	13	23.26	23.31	23.16	24.00
		1	24	23.10	23.16	23.06	24.00
		12	0	22.26	22.31	22.22	23.00
		12	6	22.31	22.33	22.29	23.00
		12	13	22.27	22.25	22.23	23.00
		25	0	22.19	22.26	22.27	23.00
	16QAM	1	0	22.32	22.51	22.41	23.00
		1	13	22.51	22.55	22.53	23.00
		1	24	22.41	22.42	22.44	23.00
		12	0	21.20	21.33	21.26	22.00
		12	6	21.28	21.36	21.32	22.00
		12	13	21.22	21.28	21.24	22.00
		25	0	21.23	21.30	21.26	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20000/1715	20175/1732.5	20350/1750	
10MHz	QPSK	1	0	23.20	23.28	23.28	24.00
		1	25	23.34	23.35	23.33	24.00
		1	49	23.18	23.23	23.22	24.00
		25	0	22.32	22.36	22.31	23.00
		25	13	22.30	22.32	22.23	23.00
		25	25	22.25	22.33	22.26	23.00
		50	0	22.29	22.36	22.27	23.00
	16QAM	1	0	22.45	22.62	22.56	23.00
		1	25	22.69	22.61	22.57	23.00
		1	49	22.58	22.52	22.51	23.00
		25	0	21.32	21.37	21.36	22.00
		25	13	21.30	21.33	21.31	22.00

Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
		25	25	21.27	21.33	21.28	22.00
		50	0	21.32	21.37	21.29	22.00
Bandwidth	Modulation	RB Allocation	Offset	20025/1717.5	20175/1732.5	20325/1747.5	Tune-up
15MHz	QPSK	1	0	23.17	23.25	23.23	24.00
		1	38	23.28	23.25	23.19	24.00
		1	74	23.18	23.13	23.09	24.00
		36	0	22.32	22.33	22.30	23.00
		36	18	22.29	22.30	22.26	23.00
		36	39	22.26	22.29	22.23	23.00
		75	0	22.31	22.31	22.27	23.00
	16QAM	1	0	22.41	22.44	22.40	23.00
		1	38	22.53	22.44	22.34	23.00
		1	74	22.46	22.34	22.27	23.00
		36	0	21.33	21.32	21.29	22.00
		36	18	21.30	21.27	21.27	22.00
		36	39	21.25	21.25	21.23	22.00
		75	0	21.29	21.34	21.26	22.00
Bandwidth	Modulation	RB Allocation	Offset	20050/1720	20175/1732.5	20300/1745	Tune-up
20MHz	QPSK	1	0	22.99	23.09	23.10	24.00
		1	50	23.34	23.35	23.35	24.00
		1	99	23.03	22.96	22.98	24.00
		50	0	22.39	22.39	22.30	23.00
		50	25	22.32	22.30	22.32	23.00
		50	50	22.23	22.28	22.20	23.00
		100	0	22.30	22.34	22.23	23.00
	16QAM	1	0	22.25	22.37	22.30	23.00
		1	50	22.55	22.63	22.51	23.00
		1	99	22.29	22.25	22.15	23.00
		50	0	21.38	21.37	21.30	22.00
		50	25	21.33	21.32	21.33	22.00
		50	50	21.21	21.28	21.25	22.00
		100	0	21.31	21.34	21.26	22.00

LTE B5				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				20407/824.7	20525/836.5	20643/848.3	
1.4MHz	QPSK	1	0	22.79	22.72	22.67	24.00
		1	2	22.94	22.88	22.82	24.00
		1	5	22.79	22.72	22.70	24.00
		3	0	22.90	22.86	22.80	24.00
		3	2	22.93	22.78	22.81	24.00
		3	3	22.88	22.83	22.81	24.00

Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
		6	0	21.92	21.85	21.83	23.00
	16QAM	1	0	22.03	21.97	21.92	23.00
		1	2	22.15	22.16	22.07	23.00
		1	5	22.06	21.99	21.96	23.00
		3	0	21.90	21.77	21.83	23.00
		3	2	21.87	21.80	21.80	23.00
		3	3	21.85	21.79	21.79	23.00
		6	0	20.99	20.92	20.93	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20415/825.5	20525/836.5	20635/847.5	
3MHz	QPSK	1	0	22.86	22.82	22.80	24.00
		1	7	22.77	22.81	22.75	24.00
		1	14	22.83	22.77	22.74	24.00
		8	0	21.85	21.80	21.83	23.00
		8	4	21.90	21.88	21.84	23.00
		8	7	21.86	21.85	21.77	23.00
		15	0	21.87	21.81	21.86	23.00
	16QAM	1	0	22.00	22.11	22.12	23.00
		1	7	22.09	22.08	22.08	23.00
		1	14	22.11	22.06	22.05	23.00
		8	0	20.94	20.88	20.86	22.00
		8	4	20.95	20.88	20.87	22.00
		8	7	20.90	20.86	20.83	22.00
		15	0	20.81	20.80	20.81	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20425/826.5	20525/836.5	20625/846.5	
5MHz	QPSK	1	0	22.78	22.73	22.70	24.00
		1	13	22.86	22.84	22.83	24.00
		1	24	22.73	22.67	22.67	24.00
		12	0	21.88	21.85	21.86	23.00
		12	6	21.92	21.83	21.84	23.00
		12	13	21.86	21.86	21.75	23.00
		25	0	21.87	21.87	21.79	23.00
	16QAM	1	0	22.07	22.01	21.92	23.00
		1	13	22.11	22.11	22.02	23.00
		1	24	22.01	21.95	21.90	23.00
		12	0	20.80	20.80	20.80	22.00
		12	6	20.90	20.87	20.82	22.00
		12	13	20.85	20.82	20.70	22.00
		25	0	20.88	20.88	20.78	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20450/829	20525/836.5	20600/844	
10MHz	QPSK	1	0	22.78	22.78	22.78	24.00
		1	25	22.89	22.88	22.81	24.00

		1	49	22.80	22.73	22.75	24.00
		25	0	21.91	21.89	21.88	23.00
		25	13	21.91	21.88	21.83	23.00
		25	25	21.84	21.93	21.75	23.00
		50	0	21.91	21.91	21.80	23.00
	16QAM	1	0	22.06	22.05	22.09	23.00
		1	25	22.20	22.17	22.11	23.00
		1	49	22.07	22.05	22.02	23.00
		25	0	20.89	20.86	20.87	22.00
		25	13	20.93	20.89	20.86	22.00
		25	25	20.87	20.92	20.73	22.00
		50	0	20.91	20.90	20.82	22.00

LTE B7				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				20775/2502.5	21100/2535	21425/2567.5	
5MHz	QPSK	1	0	23.54	23.42	23.43	24.00
		1	13	23.68	23.58	23.57	24.00
		1	24	23.56	23.46	23.44	24.00
		12	0	22.65	22.64	22.60	23.00
		12	6	22.74	22.65	22.66	23.00
		12	13	22.69	22.59	22.61	23.00
		25	0	22.71	22.61	22.59	23.00
	16QAM	1	0	22.81	22.57	22.59	23.00
		1	13	22.93	22.75	22.79	23.00
		1	24	22.76	22.64	22.61	23.00
		12	0	21.61	21.54	21.57	22.00
		12	6	21.71	21.63	21.66	22.00
		12	13	21.67	21.53	21.57	22.00
		25	0	21.69	21.59	21.59	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20800/2505	21100/2535	21400/2565	
10MHz	QPSK	1	0	23.61	23.49	23.55	24.00
		1	25	23.69	23.66	23.60	24.00
		1	49	23.64	23.57	23.54	24.00
		25	0	22.73	22.68	22.62	23.00
		25	13	22.78	22.68	22.67	23.00
		25	25	22.82	22.64	22.71	23.00
		50	0	22.75	22.70	22.66	23.00
	16QAM	1	0	22.80	22.69	22.78	23.00
		1	25	22.94	22.85	22.89	23.00
		1	49	22.85	22.74	22.77	23.00
		25	0	21.68	21.68	21.61	22.00
		25	13	21.76	21.65	21.66	22.00

		25	25	21.80	21.62	21.64	22.00
		50	0	21.74	21.67	21.64	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20825/2507.5	21100/2535	21375/2562.5	
15MHz	QPSK	1	0	23.62	23.51	23.45	24.00
		1	38	23.72	23.61	23.59	24.00
		1	74	23.67	23.56	23.55	24.00
		36	0	22.75	22.72	22.65	23.00
		36	18	22.78	22.73	22.71	23.00
		36	39	22.81	22.71	22.74	23.00
		75	0	22.78	22.72	22.69	23.00
	16QAM	1	0	22.82	22.64	22.65	23.00
		1	38	22.95	22.79	22.79	23.00
		1	74	22.83	22.74	22.65	23.00
		36	0	21.71	21.67	21.63	22.00
		36	18	21.77	21.68	21.62	22.00
		36	39	21.79	21.67	21.70	22.00
		75	0	21.74	21.69	21.66	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				20850/2510	21100/2535	21350/2560	
20MHz	QPSK	1	0	23.43	23.31	23.25	24.00
		1	50	23.68	23.68	23.65	24.00
		1	99	23.39	23.38	23.37	24.00
		50	0	22.69	22.75	22.64	23.00
		50	25	22.83	22.72	22.72	23.00
		50	50	22.85	22.68	22.75	23.00
		100	0	22.74	22.70	22.65	23.00
	16QAM	1	0	22.59	22.47	22.51	23.00
		1	50	22.93	22.78	22.88	23.00
		1	99	22.49	22.58	22.62	23.00
		50	0	21.65	21.70	21.60	22.00
		50	25	21.77	21.76	21.68	22.00
		50	50	21.79	21.64	21.71	22.00
		100	0	21.73	21.66	21.64	22.00

LTE B12				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				23017/699.7	23095/707.5	23173/715.3	
1.4MHz	QPSK	1	0	22.46	22.43	22.41	24.00
		1	2	22.61	22.54	22.52	24.00
		1	5	22.41	22.43	22.39	24.00
		3	0	22.56	22.48	22.52	24.00
		3	2	22.65	22.54	22.55	24.00
		3	3	22.54	22.54	22.51	24.00

		6	0	21.56	21.59	21.54	23.00
	16QAM	1	0	21.67	21.68	21.68	23.00
		1	2	21.78	21.76	21.77	23.00
		1	5	21.66	21.75	21.67	23.00
		3	0	21.61	21.58	21.48	23.00
		3	2	21.55	21.49	21.50	23.00
		3	3	21.54	21.54	21.47	23.00
		6	0	20.65	20.71	20.64	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				23025/700.5	23095/707.5	23165/714.5	
3MHz	QPSK	1	0	22.47	22.49	22.51	24.00
		1	7	22.48	22.48	22.44	24.00
		1	14	22.55	22.51	22.46	24.00
		8	0	21.53	21.50	21.53	23.00
		8	4	21.60	21.61	21.57	23.00
		8	7	21.57	21.55	21.55	23.00
		15	0	21.58	21.55	21.57	23.00
	16QAM	1	0	21.84	21.80	21.81	23.00
		1	7	21.79	21.73	21.66	23.00
		1	14	21.87	21.77	21.77	23.00
		8	0	20.63	20.67	20.62	22.00
		8	4	20.66	20.68	20.66	22.00
		8	7	20.64	20.63	20.66	22.00
		15	0	20.62	20.56	20.54	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				23035/701.5	23095/707.5	23155/713.5	
5MHz	QPSK	1	0	22.42	22.40	22.35	24.00
		1	13	22.52	22.52	22.48	24.00
		1	24	22.48	22.46	22.42	24.00
		12	0	21.53	21.53	21.54	23.00
		12	6	21.61	21.65	21.61	23.00
		12	13	21.54	21.57	21.56	23.00
		25	0	21.61	21.60	21.60	23.00
	16QAM	1	0	21.72	21.80	21.64	23.00
		1	13	21.88	21.90	21.79	23.00
		1	24	21.90	21.78	21.73	23.00
		12	0	20.53	20.54	20.53	22.00
		12	6	20.64	20.64	20.61	22.00
		12	13	20.57	20.57	20.57	22.00
		25	0	20.60	20.62	20.58	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				23060/704	23095/707.5	23130/711	
10MHz	QPSK	1	0	22.48	22.44	22.43	24.00
		1	25	22.56	22.56	22.57	24.00

		1	49	22.58	22.54	22.56	24.00
		25	0	21.67	21.51	21.61	23.00
		25	13	21.68	21.59	21.60	23.00
		25	25	21.69	21.57	21.63	23.00
		50	0	21.67	21.60	21.62	23.00
	16QAM	1	0	21.77	21.74	21.77	23.00
		1	25	21.90	21.85	21.81	23.00
		1	49	21.94	21.83	21.87	23.00
		25	0	20.70	20.53	20.66	22.00
		25	13	20.66	20.63	20.60	22.00
		25	25	20.71	20.58	20.62	22.00
		50	0	20.71	20.60	20.65	22.00

LTE B17				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				23755/706.5	23790/710	23825/713.5	
5MHz	QPSK	1	0	22.42	22.44	22.43	24.00
		1	13	22.57	22.60	22.60	24.00
		1	24	22.56	22.50	22.49	24.00
		12	0	21.63	21.63	21.60	23.00
		12	6	21.69	21.68	21.65	23.00
		12	13	21.66	21.63	21.62	23.00
		25	0	21.65	21.66	21.67	23.00
	16QAM	1	0	21.76	21.78	21.76	23.00
		1	13	21.89	21.87	21.87	23.00
		1	24	21.86	21.83	21.70	23.00
		12	0	20.62	20.59	20.55	22.00
		12	6	20.70	20.63	20.62	22.00
		12	13	20.64	20.55	20.60	22.00
		25	0	20.65	20.65	20.64	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				23780/709	23790/710	23800/711	
10MHz	QPSK	1	0	22.56	22.59	22.50	24.00
		1	25	22.61	22.65	22.56	24.00
		1	49	22.63	22.62	22.59	24.00
		25	0	21.63	21.67	21.67	23.00
		25	13	21.69	21.69	21.67	23.00
		25	25	21.68	21.65	21.67	23.00
		50	0	21.69	21.71	21.71	23.00
	16QAM	1	0	21.87	21.87	21.91	23.00
		1	25	21.88	21.96	21.89	23.00
		1	49	21.91	21.92	21.93	23.00
		25	0	20.64	20.66	20.65	22.00
		25	13	20.68	20.64	20.65	22.00

		25	25	20.71	20.68	20.69	22.00
		50	0	20.67	20.74	20.69	22.00

LTE B25				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				26047/1850.7	26365/1882.5	26683/1914.3	
1.4MHz	QPSK	1	0	22.89	22.96	22.99	24.00
		1	2	23.02	23.06	23.04	24.00
		1	5	22.91	22.96	22.99	24.00
		3	0	23.02	23.02	23.11	24.00
		3	2	23.07	23.05	23.11	24.00
		3	3	22.97	23.05	23.06	24.00
		6	0	22.04	22.04	22.14	23.00
	16QAM	1	0	22.18	22.19	22.14	23.00
		1	2	22.31	22.39	22.33	23.00
		1	5	22.17	22.23	22.20	23.00
		3	0	22.03	22.02	21.98	23.00
		3	2	22.02	22.03	21.98	23.00
		3	3	21.99	22.02	22.00	23.00
		6	0	21.09	21.06	21.15	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26055/1851.5	26365/1882.5	26675/1913.5	
3MHz	QPSK	1	0	23.03	23.02	23.07	24.00
		1	7	22.99	23.02	23.08	24.00
		1	14	22.96	23.01	23.06	24.00
		8	0	21.99	22.07	22.13	23.00
		8	4	22.05	22.06	22.15	23.00
		8	7	22.02	22.01	22.17	23.00
		15	0	22.03	22.10	22.16	23.00
	16QAM	1	0	22.19	22.29	22.24	23.00
		1	7	22.20	22.27	22.23	23.00
		1	14	22.19	22.19	22.20	23.00
		8	0	21.13	21.14	21.19	22.00
		8	4	21.08	21.14	21.21	22.00
		8	7	21.09	21.16	21.21	22.00
		15	0	21.02	21.06	21.14	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26065/1852.5	26365/1882.5	26665/1912.5	
5MHz	QPSK	1	0	22.91	22.94	23.02	24.00
		1	13	22.96	23.08	23.14	24.00
		1	24	22.84	22.95	22.99	24.00
		12	0	22.01	22.13	22.11	23.00
		12	6	22.06	22.11	22.24	23.00
		12	13	22.05	22.04	22.23	23.00

		25	0	22.05	22.10	22.21	23.00
	16QAM	1	0	22.08	22.20	22.22	23.00
		1	13	22.24	22.28	22.23	23.00
		1	24	22.10	22.15	22.12	23.00
		12	0	21.03	21.07	21.04	22.00
		12	6	21.05	21.07	21.15	22.00
		12	13	21.04	21.04	21.17	22.00
		25	0	21.01	21.08	21.19	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26090/1855	26365/1882.5	26640/1910	
10MHz	QPSK	1	0	23.10	23.02	23.08	24.00
		1	25	23.14	23.15	23.22	24.00
		1	49	23.01	23.02	23.13	24.00
		25	0	22.04	22.24	22.37	23.00
		25	13	22.10	22.14	22.23	23.00
		25	25	22.12	22.11	22.37	23.00
		50	0	22.10	22.14	22.39	23.00
	16QAM	1	0	22.28	22.27	22.30	23.00
		1	25	22.25	22.42	22.53	23.00
		1	49	22.18	22.27	22.23	23.00
		25	0	21.05	21.21	21.35	22.00
		25	13	21.07	21.11	21.19	22.00
		25	25	21.11	21.02	21.31	22.00
		50	0	21.09	21.13	21.31	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26115/1857.5	26365/1882.5	26615/1907.5	
15MHz	QPSK	1	0	23.04	23.01	22.99	24.00
		1	38	23.01	23.04	23.10	24.00
		1	74	22.90	22.99	23.08	24.00
		36	0	22.09	22.21	22.32	23.00
		36	18	22.12	22.15	22.20	23.00
		36	39	22.07	22.16	22.29	23.00
		75	0	22.09	22.17	22.31	23.00
	16QAM	1	0	22.32	22.32	22.31	23.00
		1	38	22.33	22.41	22.39	23.00
		1	74	22.17	22.38	22.34	23.00
		36	0	21.08	21.17	21.33	22.00
		36	18	21.08	21.14	21.17	22.00
		36	39	21.08	21.07	21.26	22.00
		75	0	21.10	21.12	21.30	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26140/1860	26365/1882.5	26590/1905	
20MHz	QPSK	1	0	22.89	22.87	22.84	24.00
		1	50	23.13	23.17	23.15	24.00

		1	99	22.79	22.82	22.85	24.00
		50	0	22.05	22.28	22.37	23.00
		50	25	22.08	22.16	22.22	23.00
		50	50	22.13	22.16	22.12	23.00
		100	0	22.03	22.18	22.27	23.00
	16QAM	1	0	22.21	22.21	21.99	23.00
		1	50	22.37	22.50	22.29	23.00
		1	99	22.08	22.10	21.99	23.00
		50	0	21.04	21.27	21.26	22.00
		50	25	21.08	21.18	21.19	22.00
		50	50	21.11	21.15	21.13	22.00
		100	0	21.05	21.18	21.25	22.00

LTE B26				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				26697/814.7	26865/831.5	27033/848.3	
1.4MHz	QPSK	1	0	22.77	22.64	22.62	24.00
		1	2	22.80	22.78	22.79	24.00
		1	5	22.72	22.66	22.63	24.00
		3	0	22.85	22.75	22.77	24.00
		3	2	22.88	22.79	22.78	24.00
		3	3	22.81	22.76	22.78	24.00
		6	0	21.82	21.77	21.80	23.00
	16QAM	1	0	22.04	21.97	21.92	23.00
		1	2	22.17	22.04	22.05	23.00
		1	5	21.98	21.96	21.95	23.00
		3	0	21.81	21.78	21.74	23.00
		3	2	21.79	21.80	21.71	23.00
		3	3	21.79	21.77	21.68	23.00
		6	0	20.94	20.86	20.85	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26705/815.5	26865/831.5	27025/847.5	
3MHz	QPSK	1	0	22.82	22.77	22.75	24.00
		1	7	22.79	22.77	22.74	24.00
		1	14	22.76	22.83	22.79	24.00
		8	0	21.82	21.83	21.80	23.00
		8	4	21.87	21.84	21.82	23.00
		8	7	21.81	21.79	21.81	23.00
		15	0	21.81	21.83	21.82	23.00
	16QAM	1	0	22.17	22.05	21.93	23.00
		1	7	22.05	22.01	21.93	23.00
		1	14	22.03	22.03	21.97	23.00
		8	0	20.83	20.87	20.88	22.00
		8	4	20.88	20.88	20.89	22.00

		8	7	20.84	20.86	20.83	22.00
		15	0	20.83	20.84	20.74	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26715/816.5	26865/831.5	27015/846.5	
5MHz	QPSK	1	0	22.72	22.66	22.57	24.00
		1	13	22.78	22.74	22.69	24.00
		1	24	22.66	22.65	22.62	24.00
		12	0	21.75	21.81	21.82	23.00
		12	6	21.86	21.86	21.84	23.00
		12	13	21.81	21.83	21.65	23.00
		25	0	21.81	21.85	21.78	23.00
	16QAM	1	0	22.02	21.99	21.86	23.00
		1	13	22.03	22.10	21.99	23.00
		1	24	21.92	21.98	21.88	23.00
		12	0	20.75	20.79	20.84	22.00
		12	6	20.86	20.89	20.82	22.00
		12	13	20.79	20.85	20.65	22.00
		25	0	20.76	20.87	20.74	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26740/819	26865/831.5	26990/844	
10MHz	QPSK	1	0	22.84	22.77	22.74	24.00
		1	25	22.86	22.84	22.79	24.00
		1	49	22.85	22.78	22.75	24.00
		25	0	21.82	21.89	21.83	23.00
		25	13	21.85	21.88	21.85	23.00
		25	25	21.89	21.84	21.71	23.00
		50	0	21.87	21.87	21.79	23.00
	16QAM	1	0	22.08	22.07	21.96	23.00
		1	25	22.10	22.01	21.94	23.00
		1	49	22.12	22.11	21.96	23.00
		25	0	20.80	20.87	20.80	22.00
		25	13	20.90	20.88	20.82	22.00
		25	25	20.92	20.86	20.68	22.00
		50	0	20.84	20.86	20.80	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				26765/821.5	26865/831.5	26965/841.5	
15MHz	QPSK	1	0	22.68	22.67	22.64	24.00
		1	38	22.78	22.75	22.74	24.00
		1	74	22.71	22.69	22.70	24.00
		36	0	21.86	21.82	21.80	23.00
		36	18	21.89	21.90	21.85	23.00
		36	39	21.88	21.85	21.76	23.00
		75	0	21.88	21.83	21.78	23.00
	16QAM	1	0	21.89	21.84	21.93	23.00

		1	38	21.96	21.94	21.97	23.00
		1	74	21.90	21.88	21.93	23.00
		36	0	20.84	20.83	20.77	22.00
		36	18	20.83	20.88	20.80	22.00
		36	39	20.87	20.85	20.73	22.00
		75	0	20.87	20.82	20.78	22.00

LTE B38				Maximum Output Power (dBm)			Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			
				37775/2572.5	38000/2595	38225/2617.5	
5MHz	QPSK	1	0	23.56	23.49	23.35	24.00
		1	13	23.59	23.59	23.43	24.00
		1	24	23.52	23.44	23.35	24.00
		12	0	22.64	22.62	22.51	23.00
		12	6	22.73	22.66	22.60	23.00
		12	13	22.71	22.66	22.56	23.00
		25	0	22.70	22.57	22.49	23.00
	16QAM	1	0	22.63	22.52	22.39	23.00
		1	13	22.62	22.63	22.48	23.00
		1	24	22.57	22.51	22.38	23.00
		12	0	21.59	21.53	21.43	22.00
		12	6	21.67	21.61	21.51	22.00
		12	13	21.61	21.57	21.48	22.00
		25	0	21.71	21.60	21.55	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				37800/2575	38000/2595	38200/2615	
10MHz	QPSK	1	0	23.70	23.60	23.48	24.00
		1	25	23.54	23.50	23.37	24.00
		1	49	23.66	23.57	23.47	24.00
		25	0	22.65	22.66	22.51	23.00
		25	13	22.68	22.61	22.47	23.00
		25	25	22.66	22.60	22.56	23.00
		50	0	22.61	22.56	22.49	23.00
	16QAM	1	0	22.73	22.64	22.53	23.00
		1	25	22.53	22.54	22.42	23.00
		1	49	22.66	22.57	22.50	23.00
		25	0	21.69	21.65	21.49	22.00
		25	13	21.69	21.62	21.52	22.00
		25	25	21.69	21.63	21.51	22.00
		50	0	21.68	21.63	21.48	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				37825/2577.5	38000/2595	38175/2612.5	
15MHz	QPSK	1	0	23.57	23.51	23.43	24.00
		1	38	23.64	23.55	23.42	24.00

		1	74	23.56	23.46	23.37	24.00
		36	0	22.66	22.62	22.56	23.00
		36	18	22.75	22.67	22.58	23.00
		36	39	22.70	22.70	22.56	23.00
		75	0	22.61	22.55	22.48	23.00
	16QAM	1	0	22.64	22.56	22.43	23.00
		1	38	22.64	22.57	22.44	23.00
		1	74	22.64	22.53	22.43	23.00
		36	0	21.60	21.59	21.45	22.00
		36	18	21.68	21.57	21.45	22.00
		36	39	21.60	21.53	21.49	22.00
		75	0	21.62	21.53	21.45	22.00

Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)			Tune-up
				37850/2580	38000/2595	38150/2610	
20MHz	QPSK	1	0	23.41	23.40	23.27	24.00
		1	50	23.66	23.61	23.56	24.00
		1	99	23.90	23.78	23.68	24.00
		50	0	22.52	22.49	22.36	23.00
		50	25	22.59	22.51	22.42	23.00
		50	50	22.59	22.50	22.39	23.00
		100	0	22.64	22.59	22.49	23.00
	16QAM	1	0	22.49	22.42	22.33	23.00
		1	50	22.76	22.73	22.54	23.00
		1	99	22.94	22.82	22.76	23.00
		50	0	21.60	21.49	21.41	22.00
		50	25	21.65	21.57	21.42	22.00
		50	50	21.62	21.54	21.41	22.00
		100	0	21.62	21.57	21.47	22.00

LTE B41				Maximum Output Power (dBm)				Tune-up
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)				
				40065/2537.5	40385/2569.5	40705/2601.5	41215/2652.5	
5MHz	QPSK	1	0	23.56	23.24	23.52	23.27	24.00
		1	13	23.68	23.89	23.64	23.40	24.00
		1	24	23.55	23.51	23.51	23.27	24.00
		12	0	22.66	22.81	22.63	22.42	23.00
		12	6	22.74	22.47	22.71	22.43	23.00
		12	13	22.69	22.92	22.69	22.45	23.00
		25	0	22.66	22.78	22.61	22.39	23.00
	16QAM	1	0	22.58	22.61	22.57	22.32	23.00
		1	13	22.70	22.96	22.66	22.41	23.00
		1	24	22.58	22.50	22.55	22.33	23.00
		12	0	21.68	21.67	21.57	21.34	22.00
		12	6	21.76	21.50	21.65	21.39	22.00

		12	13	21.61	21.91	21.61	21.33	22.00
		25	0	21.72	21.52	21.74	21.44	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)				Tune-up
				40090/2540	40390/2570	40690/2600	41190/2650	
10MHz	QPSK	1	0	23.68	23.46	23.68	23.45	24.00
		1	25	23.57	23.69	23.53	23.33	24.00
		1	49	23.69	23.41	23.66	23.41	24.00
		25	0	22.72	22.69	22.69	22.48	23.00
		25	13	22.67	22.53	22.65	22.40	23.00
		25	25	22.68	22.58	22.72	22.37	23.00
		50	0	22.62	22.70	22.64	22.44	23.00
	16QAM	1	0	22.74	22.53	22.69	22.54	23.00
		1	25	22.65	22.68	22.60	22.33	23.00
		1	49	22.70	22.60	22.65	22.44	23.00
		25	0	21.79	21.79	21.73	21.54	22.00
		25	13	21.74	21.66	21.68	21.44	22.00
		25	25	21.77	21.77	21.73	21.42	22.00
		50	0	21.68	21.60	21.68	21.43	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)				Tune-up
				40115/2542.5	40395/2570.5	40685/2599.5	2647.5/41140	
15MHz	QPSK	1	0	23.61	23.52	23.56	23.35	24.00
		1	38	23.63	23.87	23.59	23.39	24.00
		1	74	23.56	23.51	23.54	23.30	24.00
		36	0	22.65	22.47	22.71	22.52	23.00
		36	18	22.71	22.81	22.69	22.45	23.00
		36	39	22.70	22.76	22.75	22.42	23.00
		75	0	22.63	22.54	22.63	22.37	23.00
	16QAM	1	0	22.67	22.59	22.63	22.38	23.00
		1	38	22.70	22.64	22.65	22.45	23.00
		1	74	22.65	22.70	22.61	22.34	23.00
		36	0	21.63	21.71	21.55	21.44	22.00
		36	18	21.65	21.58	21.61	21.40	22.00
		36	39	21.69	21.89	21.68	21.31	22.00
		75	0	21.70	21.60	21.64	21.39	22.00
Bandwidth	Modulation	RB Allocation	Offset	Channel/Frequency(MHz)				Tune-up
				40140/2545	40400/2571	40670/2598	41140/2645	
20MHz	QPSK	1	0	23.46	23.44	23.44	23.24	24.00
		1	50	23.69	23.70	23.71	23.43	24.00
		1	99	23.43	23.37	23.37	23.15	24.00
		50	0	22.59	22.53	22.57	22.39	23.00
		50	25	22.63	22.69	22.60	22.37	23.00

		50	50	22.60	22.62	22.55	22.27	23.00
		100	0	22.68	22.74	22.69	22.40	23.00
	16QAM	1	0	22.51	22.43	22.52	22.28	23.00
		1	50	22.74	22.70	22.70	22.56	23.00
		1	99	22.50	22.44	22.43	22.22	23.00
		50	0	21.69	21.87	21.61	21.44	22.00
		50	25	21.70	21.62	21.64	21.37	22.00
		50	50	21.67	21.71	21.59	21.31	22.00
		100	0	21.70	21.60	21.60	21.44	22.00

9.4 WLAN Mode

Wi-Fi 2.4GHz Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)	
		Tune-up	Meas.
802.11b (1M)	1/2412	19.00	18.45
	6/2437	19.00	18.17
	11/2462	19.00	18.23
802.11g (6M)	1/2412	17.00	15.58
	6/2437	17.00	15.51
	11/2462	17.00	15.58
802.11n (HT20,800ns) (MCS0)	1/2412	15.00	14.07
	6/2437	15.00	14.11
	11/2462	15.00	14.06
802.11n (HT40,400ns) (MCS0)	3/2422	15.00	14.51
	6/2437	15.00	14.37
	9/2452	15.00	14.39
Note: Initial test configuration is 802.11b mode.			

Wi-Fi 5GHz (U-NII-1) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)	
		Tune-up	Meas.
802.11a(6M)	36/5180	15.50	14.79
	40/5200	15.50	14.29
	48/5240	15.50	14.13
802.11nHT20(MCS0)	36/5180	14.50	13.06
	40/5200	14.50	13.23
	48/5240	14.50	13.03
802.11nHT40(MCS0)	38/5190	15.50	15.04
	46/5230	15.50	14.53
802.11ac-VHT20(MCS0)	36/5180	14.50	13.09
	40/5200	14.50	13.22
	48/5240	14.50	13.02
802.11ac-VHT40(MCS0)	38/5190	14.50	13.63
	46/5230	14.50	13.39
802.11ac-VHT80(MCS0)	42/5210	14.00	12.89

Wi-Fi 5GHz (U-NII-2A) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)	
		Tune-up	Meas.
802.11a(6M)	52/5260	15.50	14.04
	60/5300	15.50	14.05
	64/5320	15.50	13.89
802.11nHT20(MCS0)	52/5260	14.50	13.50
	60/5300	14.50	13.27
	64/5320	14.50	13.35
802.11nHT40(MCS0)	54/5270	15.50	14.76
	62/5310	15.50	14.30
802.11ac-VHT20(MCS0)	52/5260	14.50	13.46
	60/5300	14.50	13.27
	64/5320	14.50	13.20
802.11ac-VHT40(MCS0)	54/5270	14.50	12.87
	62/5310	14.50	13.19
802.11ac-VHT80(MCS0)	58/5290	14.00	12.81
Note. Initial test configuration is 802.11a mode.			

Wi-Fi 5GHz (U-NII-3) Mode	Channel /Frequency(MHz)	Maximum Output Power (dBm)	
		Tune-up	Meas.
802.11a(6M)	149/5745	15.50	14.46
	157/5785	15.50	14.37
	165/5825	15.50	14.29
802.11nHT20(MCS0)	149/5745	14.50	13.61
	157/5785	14.50	13.64
	165/5825	14.50	13.59
802.11nHT40(MCS0)	151/5755	15.50	14.96
	159/5795	15.50	15.04
802.11ac-VHT20(MCS0)	149/5745	14.50	13.74
	157/5785	14.50	13.73
	165/5825	14.50	13.58
802.11ac-VHT40(MCS0)	151/5755	14.50	13.46
	159/5795	14.50	13.53
802.11ac-VHT80(MCS0)	155/5775	14.00	12.84
Note. Initial test configuration is 802.11a mode.			

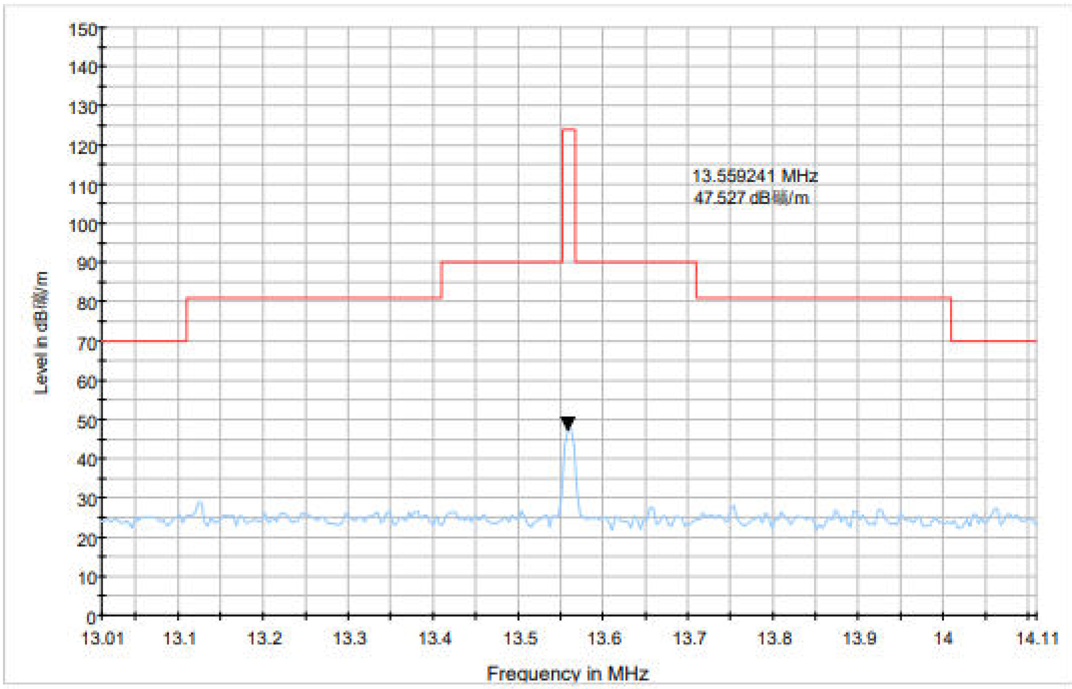
9.5 Bluetooth Mode

Bluetooth	Conducted Power(dBm)			Tune-up Limit (dBm)
	Channel/Frequency(MHz)			
	Ch 0/2402 MHz	Ch 39/2441 MHz	Ch 78/2480 MHz	
GFSK	11.15	10.47	11.04	12.00
π/4DQPSK	9.99	9.61	9.62	11.50
8DPSK	11.39	10.69	10.69	11.50
BLE	0/2402	19/2440	39/2480	/
GFSK(1M)	-1.99	-1.43	-1.79	0.00
GFSK(2M)	-1.94	-1.42	-1.77	0.00

9.6 NFC Mode

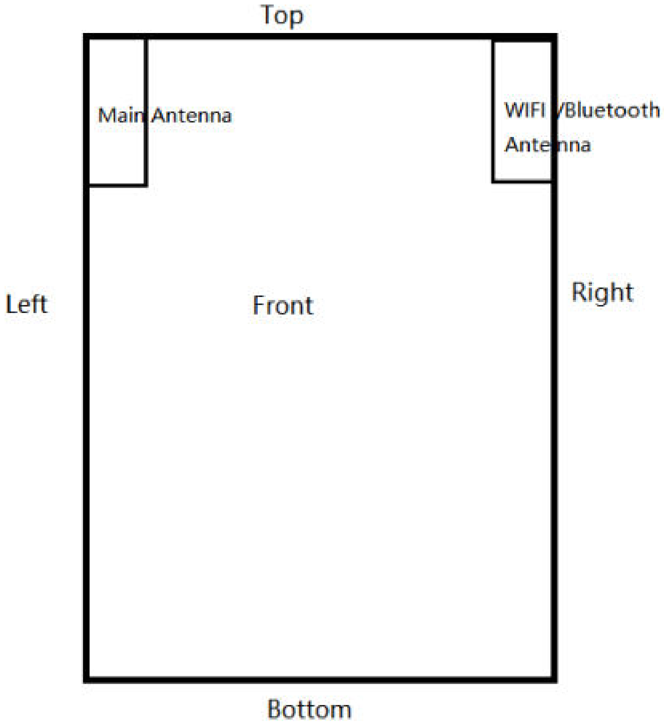
Frequency(MHz)	dBμV/m @3m	EIRP (dBm)	Tune-up Limit (dBm)	Tune-up Limit (mW)
13.56	47.53	-47.70	-46.00	＜0.0001
Note1: EIRP = Max.H-field strength @ 3m – 95.2 Note2: Tune-up ＜ 1mW According to Section 4.2.4 of KDB 447498 D01 V06, there is an exemption from SAR testing.				

The test is in transmitting all modes, NFC-A was selected as the worst condition. The test data of the worst-case condition was recorded in this report. A symbol (dB礦/m) in the test plot below means (dBμV/m)



10. Measured and Reported (Scaled) SAR Results

10.1 EUT Antenna Locations



Overall (Length x Width): 135 mm x 85 mm Overall Diagonal: 155 mm							
Distance of the Antenna to the EUT Surface/Edge							
Antenna	Back Side	Front Side	Front Side 2	Left Edge	Right Edge	Top Edge	Bottom Edge
Main-Antenna	＜25mm	＜25mm	＜25mm	＜25mm	＞25mm	＜25mm	＞25mm
Bluetooth/Wi-Fi Antenna	＜25mm	＜25mm	＜25mm	＞25mm	＜25mm	＜25mm	＞25mm
Positions for SAR Tests							
Mode	Back Side	Front side	Front Side 2	Left Edge	Right Edge	Top Edge	Bottom Edge
Main-Antenna	Yes	Yes	Yes	Yes	N/A	Yes	N/A
Bluetooth/Wi-Fi Antenna	Yes	Yes	Yes	N/A	Yes	Yes	N/A

Note:

1. Per KDB 941225 D06, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.
2. Per FCC KDB 447498 D01, for each exposure position, testing of other requised channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

a) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100MHz
b) ≤ 0.6 W/kg or 1.5 W/kg, for1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
c) ≤ 0.4 W/kg or 1.0 Wkg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

3. When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.

10.2 Standalone SAR Test Exclusion Considerations

Per KDB 447498 D01, the 1-g and 10-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)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for product specific 10-g SAR

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Per KDB 447498 D01, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Bluetooth	Distance (mm)	MAX Power (dBm)	Frequency (MHz)	Ratio	Evaluation
Product Specific 10-g SAR	5	12	2480	5.0	No

10.3 Measured SAR Results

Note:

2. The value with blue color is the maximum SAR Value of each test band.
3. For GSM, when multiple slots are used, SAR should be tested to account for the maximum source-based time-averaged output power.
4. For WCDMA, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.
5. For LTE, QPSK with 100% RB allocation, SAR is required when and the highest reported SAR for 1 RB and 50% RB allocation in are≥ 50% limit(1g).
6. Per 248227, for band U-NII-1 and U-NII-2A, when the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.

Extremity SAR for Main Antenna

Band	Test Position	Dist. (mm)	Mode	RB	Offset	Ch./Freq. (MHz)	Tune-up (dBm)	Measured power (dBm)	Measured SAR10g (W/Kg)	Power Drift (dB)	Scaling Factor	Report SAR10g (W/Kg)	Plot No.
GSM 850	Back Side	0	4TX Slots	NA	NA	190/836.6	30.00	28.87	0.001	0.020	1.30	0.001	/
	Front Side	0	4TX Slots	NA	NA	190/836.6	30.00	28.87	0.429	0.037	1.30	0.556	/
	Front Side 2	0	4TX Slots	NA	NA	190/836.6	30.00	28.87	0.011	0.040	1.30	0.014	/
	Left Edge	0	4TX Slots	NA	NA	190/836.6	30.00	28.87	1.030	-0.060	1.30	1.336	19
	Right Edge	0	4TX Slots	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	4TX Slots	NA	NA	190/836.6	30.00	28.87	0.096	0.060	1.30	0.125	/
	Bottom Edge	0	4TX Slots	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
GSM 1900	Back Side	0	2TX Slots	NA	NA	661/1880	30.00	28.87	0.001	0.020	1.30	0.001	/
	Front Side	0	2TX Slots	NA	NA	661/1880	30.00	28.87	0.017	0.033	1.30	0.022	/
	Front Side 2	0	2TX Slots	NA	NA	661/1880	30.00	28.87	0.001	0.017	1.30	0.001	/
	Left Edge	0	2TX Slots	NA	NA	661/1880	30.00	28.87	0.135	-0.080	1.30	0.175	20
	Right Edge	0	2TX Slots	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	2TX Slots	NA	NA	661/1880	30.00	28.87	0.001	0.100	1.30	0.001	/
	Bottom Edge	0	2TX Slots	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
WCDMA II	Back Side	0	RMC 12.2K	NA	NA	9400/1880	24.00	23.20	0.001	0.017	1.20	0.001	/
	Front Side	0	RMC 12.2K	NA	NA	9400/1880	24.00	23.20	0.027	0.040	1.20	0.032	/
	Front Side 2	0	RMC 12.2K	NA	NA	9400/1880	24.00	23.20	0.001	0.090	1.20	0.001	/
	Left Edge	0	RMC 12.2K	NA	NA	9400/1880	24.00	23.20	0.233	-0.020	1.20	0.280	21
	Right Edge	0	RMC 12.2K	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	RMC 12.2K	NA	NA	9400/1880	24.00	23.20	0.021	0.033	1.20	0.025	/
	Bottom Edge	0	RMC 12.2K	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
WCDMA IV	Back Side	0	RMC 12.2K	NA	NA	1413/1732.6	24.00	23.44	0.001	-0.042	1.14	0.001	/
	Front Side	0	RMC 12.2K	NA	NA	1413/1732.6	24.00	23.44	0.001	0.026	1.14	0.001	/

	Front Side 2	0	RMC 12.2K	NA	NA	1413/1732.6	24.00	23.44	0.001	0.040	1.14	0.001	/
	Left Edge	0	RMC 12.2K	NA	NA	1413/1732.6	24.00	23.44	0.156	-0.090	1.14	0.177	22
	Right Edge	0	RMC 12.2K	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	RMC 12.2K	NA	NA	1413/1732.6	24.00	23.44	0.001	0.017	1.14	0.001	/
	Bottom Edge	0	RMC 12.2K	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
WCDMA V	Back Side	0	RMC 12.2K	NA	NA	4183/836.6	24.00	23.28	0.001	0.042	1.18	0.001	/
	Front Side	0	RMC 12.2K	NA	NA	4183/836.6	24.00	23.28	0.317	0.100	1.18	0.374	/
	Front Side 2	0	RMC 12.2K	NA	NA	4183/836.6	24.00	23.28	0.001	0.038	1.18	0.001	/
	Left Edge	0	RMC 12.2K	NA	NA	4183/836.6	24.00	23.28	0.699	0.050	1.18	0.825	23
	Right Edge	0	RMC 12.2K	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	RMC 12.2K	NA	NA	4183/836.6	24.00	23.28	0.076	-0.021	1.18	0.090	/
	Bottom Edge	0	RMC 12.2K	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
LTE 4	Back Side	0	QPSK	1	50	20175/1732.5	24.00	23.35	0.001	0.010	1.16	0.001	/
		0	QPSK	50%	0	20175/1732.5	23.00	22.39	0.001	0.033	1.15	0.001	/
	Front Side	0	QPSK	1	50	20175/1732.5	24.00	23.35	0.001	0.090	1.16	0.001	/
		0	QPSK	50%	0	20175/1732.5	23.00	22.39	0.001	0.092	1.15	0.001	/
	Front Side 2	0	QPSK	1	50	20175/1732.5	24.00	23.35	0.001	0.090	1.16	0.001	/
		0	QPSK	50%	0	20175/1732.5	23.00	22.39	0.001	0.012	1.15	0.001	/
	Left Edge	0	QPSK	1	50	20175/1732.5	24.00	23.35	0.144	-0.060	1.16	0.167	24
		0	QPSK	50%	0	20175/1732.5	23.00	22.39	0.130	0.015	1.15	0.150	/
	Right Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	QPSK	1	50	20175/1732.5	24.00	23.35	0.001	0.042	1.16	0.001	/
		0	QPSK	50%	0	20175/1732.5	23.00	22.39	0.001	0.033	1.15	0.001	/
	Bottom Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
LTE 5	Back Side	0	QPSK	1	25	20450/829	24.00	22.89	0.001	0.080	1.29	0.001	/
		0	QPSK	50%	25	20525/836.5	23.00	21.93	0.001	-0.024	1.28	0.001	/
	Front Side	0	QPSK	1	25	20450/829	24.00	22.89	0.286	0.033	1.29	0.369	/
		0	QPSK	50%	25	20525/836.5	23.00	21.93	0.239	0.046	1.28	0.306	/
	Front Side 2	0	QPSK	1	25	20450/829	24.00	22.89	0.003	0.026	1.29	0.004	/
		0	QPSK	50%	25	20525/836.5	23.00	21.93	0.001	0.010	1.28	0.001	/
	Left Edge	0	QPSK	1	25	20450/829	24.00	22.89	0.634	-0.040	1.29	0.819	25
		0	QPSK	50%	25	20525/836.5	23.00	21.93	0.488	0.170	1.28	0.624	/
	Right Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	QPSK	1	25	20450/829	24.00	22.89	0.064	0.018	1.29	0.083	/
		0	QPSK	50%	25	20525/836.5	23.00	21.93	0.060	0.026	1.28	0.077	/
	Bottom Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
LTE 7	Back Side	0	QPSK	1	50	20850/2510	24.00	23.68	0.001	0.010	1.08	0.001	/
		0	QPSK	50%	50	20850/2510	23.00	22.85	0.001	0.029	1.04	0.001	/
	Front Side	0	QPSK	1	50	20850/2510	24.00	23.68	0.035	0.030	1.08	0.038	/

		0	QPSK	50%	50	20850/2510	23.00	22.85	0.029	-0.050	1.04	0.030	/
	Front Side 2	0	QPSK	1	50	20850/2510	24.00	23.68	0.002	0.040	1.08	0.002	/
		0	QPSK	50%	50	20850/2510	23.00	22.85	0.001	0.017	1.04	0.001	/
	Left Edge	0	QPSK	1	50	20850/2510	24.00	23.68	0.743	-0.083	1.08	0.800	26
		0	QPSK	50%	50	20850/2510	23.00	22.85	0.679	0.026	1.04	0.703	/
	Right Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	QPSK	1	50	20850/2510	24.00	23.68	0.030	0.041	1.08	0.032	/
		0	QPSK	50%	50	20850/2510	23.00	22.85	0.023	0.059	1.04	0.024	/
	Bottom Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
LTE 12	Back Side	0	QPSK	1	49	23060/704	24.00	22.58	0.001	0.014	1.39	0.001	/
		0	QPSK	50%	25	23060/704	23.00	21.69	0.001	-0.030	1.35	0.001	/
	Front Side	0	QPSK	1	49	23060/704	24.00	22.58	0.055	0.062	1.39	0.076	/
		0	QPSK	50%	25	23060/704	23.00	21.69	0.044	0.021	1.35	0.059	/
	Front Side 2	0	QPSK	1	49	23060/704	24.00	22.58	0.001	0.090	1.39	0.001	/
		0	QPSK	50%	25	23060/704	23.00	21.69	0.001	0.032	1.35	0.001	/
	Left Edge	0	QPSK	1	49	23060/704	24.00	22.58	0.251	-0.050	1.39	0.348	27
		0	QPSK	50%	25	23060/704	23.00	21.69	0.224	0.017	1.35	0.303	/
	Right Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	QPSK	1	49	23060/704	24.00	22.58	0.001	0.033	1.39	0.001	/
		0	QPSK	50%	25	23060/704	23.00	21.69	0.001	0.048	1.35	0.001	/
	Bottom Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
LTE 25	Back Side	0	QPSK	1	50	26365/1882.5	24.00	23.17	0.001	0.030	1.21	0.001	/
		0	QPSK	50%	0	26590/1905	24.00	22.37	0.001	-0.041	1.46	0.001	/
	Front Side	0	QPSK	1	50	26365/1882.5	24.00	23.17	0.028	0.025	1.21	0.034	/
		0	QPSK	50%	0	26590/1905	24.00	22.37	0.020	0.070	1.46	0.029	/
	Front Side 2	0	QPSK	1	50	26365/1882.5	24.00	23.17	0.001	0.035	1.21	0.001	/
		0	QPSK	50%	0	26590/1905	24.00	22.37	0.001	0.090	1.46	0.001	/
	Left Edge	0	QPSK	1	50	26365/1882.5	24.00	23.17	0.215	-0.060	1.21	0.260	28
		0	QPSK	50%	0	26590/1905	24.00	22.37	0.163	0.010	1.46	0.237	/
	Right Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	QPSK	1	50	26365/1882.5	24.00	23.17	0.022	0.026	1.21	0.027	/
		0	QPSK	50%	0	26590/1905	24.00	22.37	0.011	-0.020	1.46	0.016	/
	Bottom Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
LTE 41	Back Side	0	QPSK	1	50	40670/2598	24.00	23.71	0.001	0.040	1.07	0.001	/
		0	QPSK	50%	25	40400/2571	23.00	22.69	0.001	0.086	1.07	0.001	/
	Front Side	0	QPSK	1	50	40670/2598	24.00	23.71	0.039	0.016	1.07	0.042	/
		0	QPSK	50%	25	40400/2571	23.00	22.69	0.036	0.025	1.07	0.039	/
	Front Side 2	0	QPSK	1	50	40670/2598	24.00	23.71	0.004	0.160	1.07	0.004	/

		0	QPSK	50%	25	40400/2571	23.00	22.69	0.002	0.030	1.07	0.002	/
	Left Edge	0	QPSK	1	50	40670/2598	24.00	23.71	0.723	-0.048	1.07	0.773	29
		0	QPSK	50%	25	40400/2571	23.00	22.69	0.658	-0.070	1.07	0.707	/
	Right Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
	Top Edge	0	QPSK	1	50	40670/2598	24.00	23.71	0.044	0.030	1.07	0.047	/
		0	QPSK	50%	25	40400/2571	23.00	22.69	0.032	0.028	1.07	0.034	/
	Bottom Edge	0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/
		0	QPSK	NA	NA	NA	NA	NA	NA	NA	NA	NA	/

Product-specific 10g SAR for Wi-Fi/ Bluetooth Antenna

Band	Test Position	Dist. (mm)	Mode	Duty Cycle	Ch./Freq. (MHz)	Tune-up (dBm)	Measured power (dBm)	Measured SAR10g (W/Kg)	Power Drift (dB)	Scaling Factor	Report SAR10g (W/Kg)	Plot No.
Wi-Fi 2.4G	Back Side	0	802.11b	100.0%	1/2412	19.00	18.45	0.073	-0.039	1.13	0.083	/
	Front Side	0	802.11b	100.0%	1/2412	19.00	18.45	0.082	-0.050	1.13	0.093	/
	Front Side 2	0	802.11b	100.0%	1/2412	19.00	18.45	0.019	0.032	1.13	0.021	/
	Left Edge	0	802.11b	100.0%	NA	NA	NA	NA	NA	NA	NA	/
	Right Edge	0	802.11b	100.0%	1/2412	19.00	18.45	1.240	0.020	1.13	1.406	30
	Top Edge	0	802.11b	100.0%	1/2412	19.00	18.45	0.158	0.040	1.13	0.179	/
	Bottom Edge	0	802.11b	100.0%	NA	NA	NA	NA	NA	NA	NA	/
Wi-Fi U-NII-1	Back Side	0	802.11nHT40	100.0%	38/5190	15.50	15.04	0.064	0.040	1.11	0.071	/
	Front Side	0	802.11nHT40	100.0%	38/5190	15.50	15.04	0.055	0.027	1.11	0.061	/
	Front Side 2	0	802.11nHT40	100.0%	38/5190	15.50	15.04	0.001	0.090	1.11	0.001	/
	Left Edge	0	802.11nHT40	100.0%	NA	NA	NA	NA	NA	NA	NA	/
	Right Edge	0	802.11nHT40	100.0%	38/5190	15.50	15.04	0.537	-0.042	1.11	0.597	/
	Top Edge	0	802.11nHT40	100.0%	38/5190	15.50	15.04	0.075	0.090	1.11	0.083	/
	Bottom Edge	0	802.11nHT40	100.0%	NA	NA	NA	NA	NA	NA	NA	/
Wi-Fi U-NII-2A	Back Side	0	802.11nHT40	100.0%	54/5270	15.50	14.76	0.066	-0.032	1.19	0.078	/
	Front Side	0	802.11nHT40	100.0%	54/5270	15.50	14.76	0.064	-0.050	1.19	0.076	/
	Front Side 2	0	802.11nHT40	100.0%	54/5270	15.50	14.76	0.001	0.015	1.19	0.001	/
	Left Edge	0	802.11nHT40	100.0%	NA	NA	NA	NA	NA	NA	NA	/
	Right Edge	0	802.11nHT40	100.0%	54/5270	15.50	14.76	0.546	0.154	1.19	0.648	/
	Top Edge	0	802.11nHT40	100.0%	54/5270	15.50	14.76	0.074	0.014	1.19	0.088	/
	Bottom Edge	0	802.11nHT40	100.0%	NA	NA	NA	NA	NA	NA	NA	/
Wi-Fi U-NII-3	Back Side	0	802.11nHT40	100.0%	159/5795	15.50	15.04	0.023	0.070	1.11	0.026	/
	Front Side	0	802.11nHT40	100.0%	159/5795	15.50	15.04	0.099	0.048	1.11	0.110	/
	Front Side 2	0	802.11nHT40	100.0%	159/5795	15.50	15.04	0.003	0.030	1.11	0.003	/
	Left Edge	0	802.11nHT40	100.0%	NA	NA	NA	NA	NA	NA	NA	/
	Right Edge	0	802.11nHT40	100.0%	159/5795	15.50	15.04	0.709	0.107	1.11	0.789	31
	Top Edge	0	802.11nHT40	100.0%	159/5795	15.50	15.04	0.090	0.070	1.11	0.100	/
	Bottom Edge	0	802.11nHT40	100.0%	NA	NA	NA	NA	NA	NA	NA	/
Bluetooth	Back Side	0	DH5	76.9%	0/2402	12.00	11.15	0.001	0.016	1.58	0.002	/
	Front Side	0	DH5	76.9%	0/2402	12.00	11.15	0.001	-0.04	1.58	0.002	/

	Front Side 2	0	DH5	76.9%	0/2402	12.00	11.15	0.001	0.025	1.58	0.002	/
	Left Edge	0	DH5	76.9%	NA	NA	NA	NA	NA	NA	NA	/
	Right Edge	0	DH5	76.9%	0/2402	12.00	11.15	0.141	0.043	1.58	0.223	32
	Top Edge	0	DH5	76.9%	0/2402	12.00	11.15	0.019	0.011	1.58	0.030	/
	Bottom Edge	0	DH5	76.9%	NA	NA	NA	NA	NA	NA	NA	/

10.4 Simultaneous Transmission Analysis

Simultaneous Transmission Configurations	Extremity SAR
WWAN Main-Antenna+ Bluetooth-Antenna	Yes
WWAN Main-Antenna + Wi-Fi 2.4G-Antenna	Yes
WWAN Main-Antenna + Wi-Fi 5G-Antenna	Yes

General Note:

1. The Scaled SAR summation is calculated based on the same configuration and test position.

2. Per KDB 447498 D01, simultaneous transmission SAR is compliant if,

i) Scalar SAR summation < 1.6W/kg, simultaneously transmission SAR measurement is not necessary.

ii) SPLSR = (SAR1 + SAR2)$^{1.5}$ / (min. separation distance, mm), and the peak separation distance is determined from the square root of [$(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2$], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.

iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

The Maximum SAR_{10g} Value for Main-Antenna

Test Position \ SAR_{10g}(W/kg)		GSM 850	GSM 1900	WCDMA Band II	WCDA Band IV	WCDA Band V	LTE FDD 4	LTE FDD 7	LTE FDD 12/17	LTE FDD 2/25	LTE FDD 5/26	LTE FDD 38/41	MAX. SAR_{10g}
Extremity SAR	Back Side	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Front Side	0.556	0.022	0.032	0.001	0.374	0.001	0.369	0.038	0.076	0.034	0.042	0.556
	Front Side 2	0.014	0.001	0.001	0.001	0.001	0.001	0.004	0.002	0.001	0.001	0.004	0.014
	Left Edge	1.336	0.175	0.280	0.177	0.825	0.167	0.819	0.800	0.348	0.260	0.773	1.336
	Right Edge	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Top Edge	0.125	0.001	0.025	0.001	0.090	0.001	0.083	0.032	0.001	0.027	0.047	0.125
	Bottom Edge	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

About Bluetooth, Wi-Fi and Main-Antenna

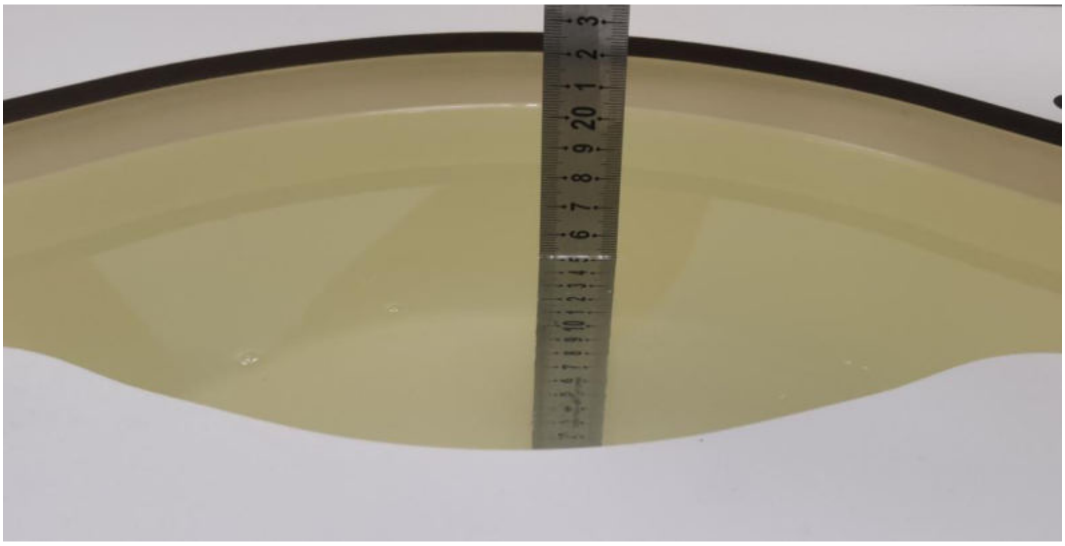
Test Position \ SAR_{10g}(W/kg)		Main-Antenna	Wi-Fi 2.4G	Wi-Fi 5GHz max(U-NII-1;U-NII-2A;U-NII-3)	Bluetooth	MAX. $\Sigma SAR_{1g/10g}$		
		1	2	3	4	1+2	1+3	1+4
Extremity SAR	Back Side	0.001	0.083	0.078	0.002	0.084	0.080	0.003
	Front Side	0.556	0.093	0.110	0.002	0.649	0.667	0.558
	Front Side 2	0.014	0.021	0.003	0.002	0.035	0.018	0.016
	Left Edge	1.336	N/A	N/A	N/A	1.376	1.356	1.338
	Right Edge	N/A	1.406	0.789	0.223	1.406	0.789	0.223
	Top Edge	0.125	0.179	0.100	0.030	0.304	0.225	0.155
	Bottom Edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note:
1. The value with blue color is the maximum ΣSAR1g/10g Value.
2. MAX. ΣSAR1g/10g =Unlicensed SARMAX +Licensed SARMAX
3. MAX. ΣSAR10g =1.406W/kg<4 W/kg, so the Simultaneous transmission SAR with volume scan are not required for Wi-Fi -Antenna and Main-Antenna.

ANNEX A: Test Layout

Tissue Simulating Liquids

For the measurement of the field distribution inside the flat phantom with DASY, the phantom must be filled with around 25 liters of homogeneous tissue simulating liquid. For SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is ≥15 cm, which is shown as below.



liquid depth in the body Phantom

ANNEX B: System Check Results

Plot 1 System Performance Check at 750 MHz TSL

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1045

Date: 2025/4/10

Communication System:CW (0); Frequency: 750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 750 MHz; σ = 0.87 S/m; ε_r = 42.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.58, 10.07, 10.24); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=15mm,Pin=250mW/Area Scan (4x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.31 W/kg

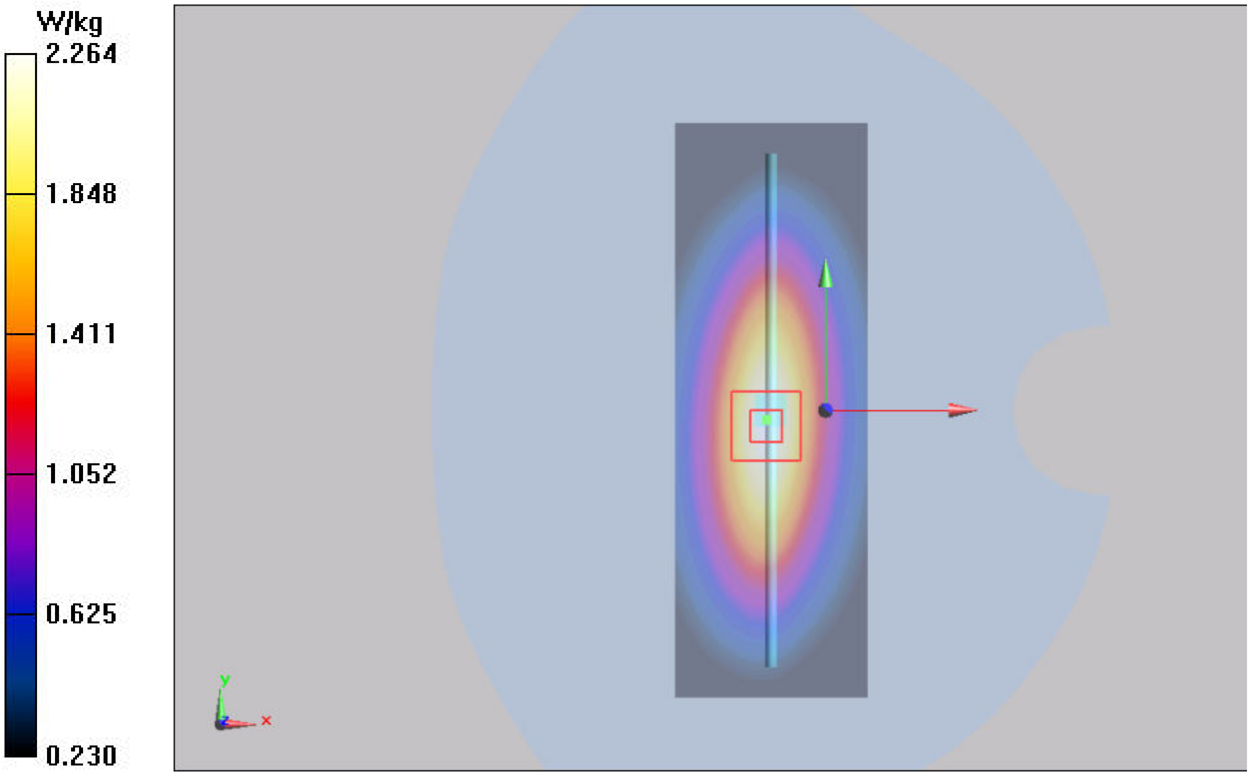
d=15mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 50.557 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 2.10 W/kg; SAR(10 g) = 1.37 W/kg

Maximum value of SAR (measured) = 2.264 W/kg



Plot 2 System Performance Check at 750 MHz TSL

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1045

Date: 2025/6/2

Communication System:CW (0); Frequency: 750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 750 MHz; σ = 0.88 S/m; ε_r = 42.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.58, 10.07, 10.24); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=15mm,Pin=250mW/Area Scan (4x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.15 W/kg

d=15mm,Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 50.165V/m; Power Drift = -0.08 dB

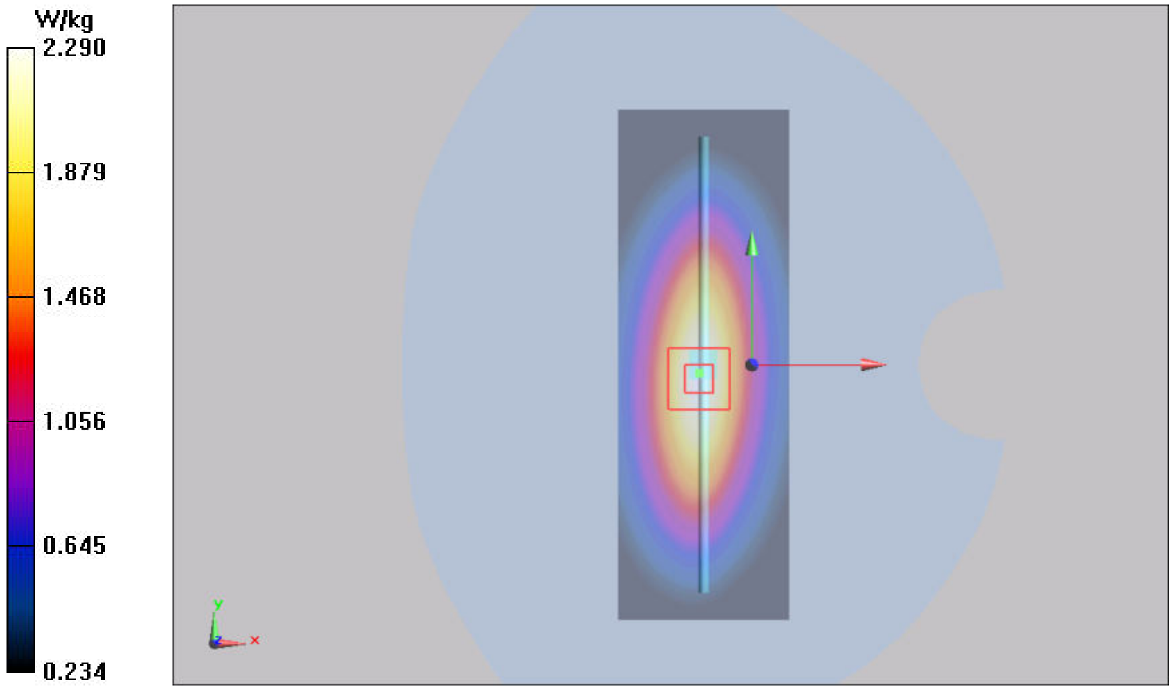
Peak SAR (extrapolated) = 3.16 W/kg

SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.41 W/kg

Smallest distance from peaks to all points 3 dB below = 8.7 mm

Ratio of SAR at M2 to SAR at M1 = 62.5%

Maximum value of SAR (measured) = 2.29 W/kg



Plot 3 System Performance Check at 835 MHz TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d020

Date: 2025/4/10

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1

Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 41.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.44, 9.92, 10.09); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=15mm, Pin=250mW/Area Scan (4x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.64 W/kg

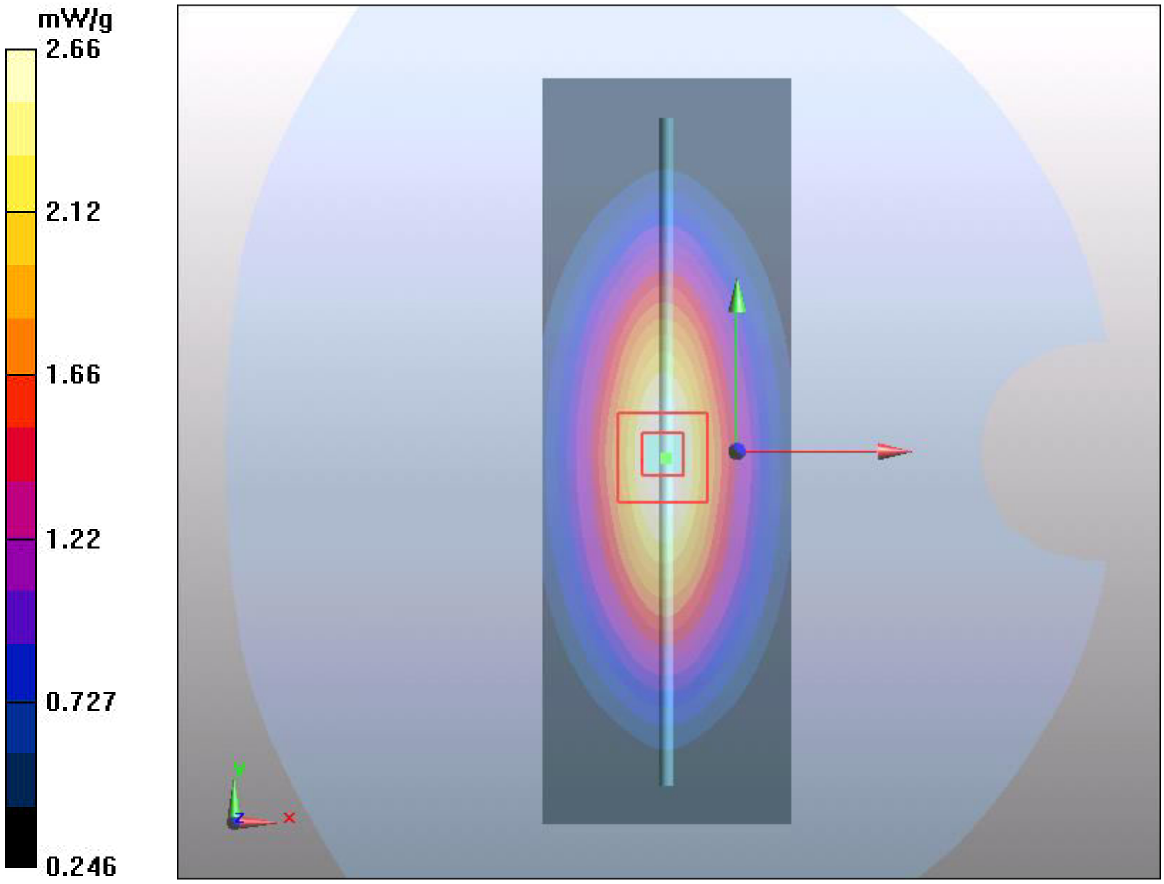
d=15mm, Pin=250mW/Zoom Scan(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.4 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.61 W/kg

Maximum value of SAR (measured) = 2.66 W/kg



Plot 4 System Performance Check at 835 MHz TSL

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d020

Date: 2025/6/2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1

Medium parameters used: f = 835 MHz; σ = 0.88 S/m; ε_r = 41.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.44, 9.92, 10.09); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=15mm, Pin=250mW/Area Scan (4x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.58 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.241 V/m; Power Drift = -0.076 dB

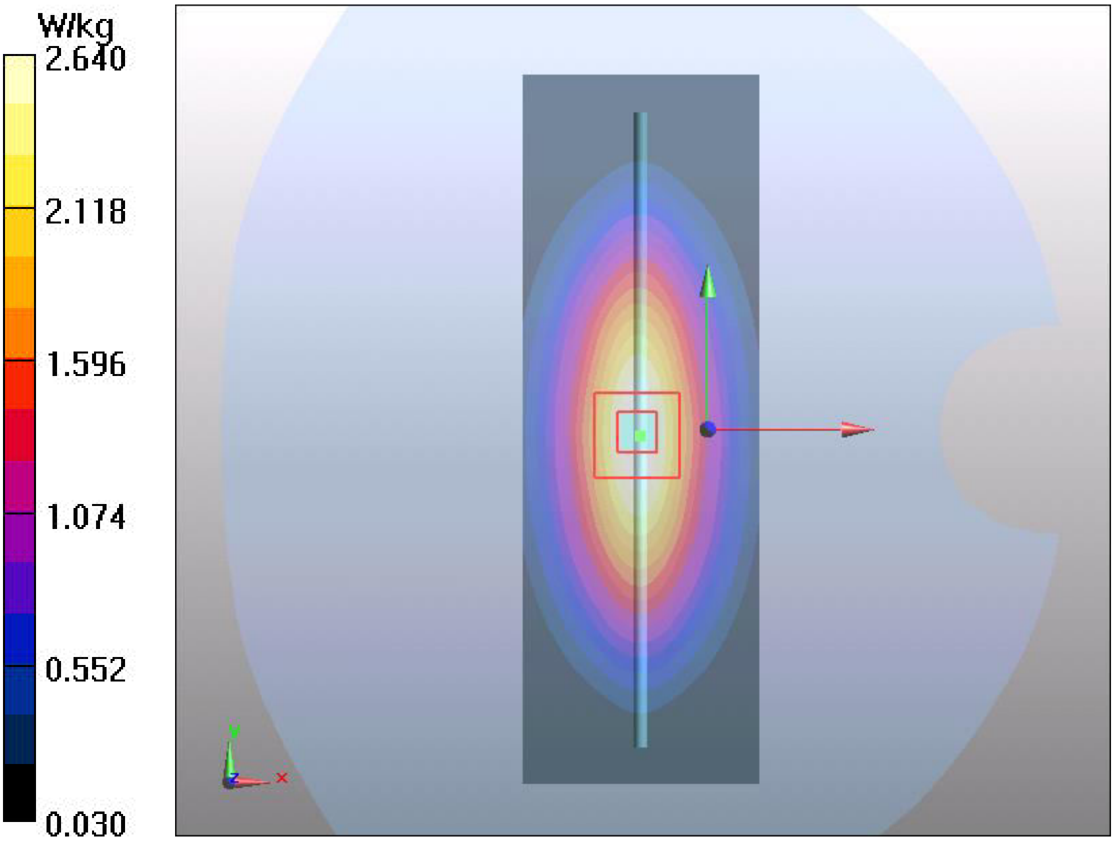
Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.6 W/kg

Smallest distance from peaks to all points 3 dB below = 16.6 mm

Ratio of SAR at M2 to SAR at M1 = 68.1%

Maximum value of SAR (measured) = 2.64 W/kg



Plot 5 System Performance Check at 1750 MHz TSL

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1033

Date: 2025/4/11

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.33 S/m; ε_r = 40.0; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(8.01, 8.42, 8.56); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (5x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 9.7 W/kg

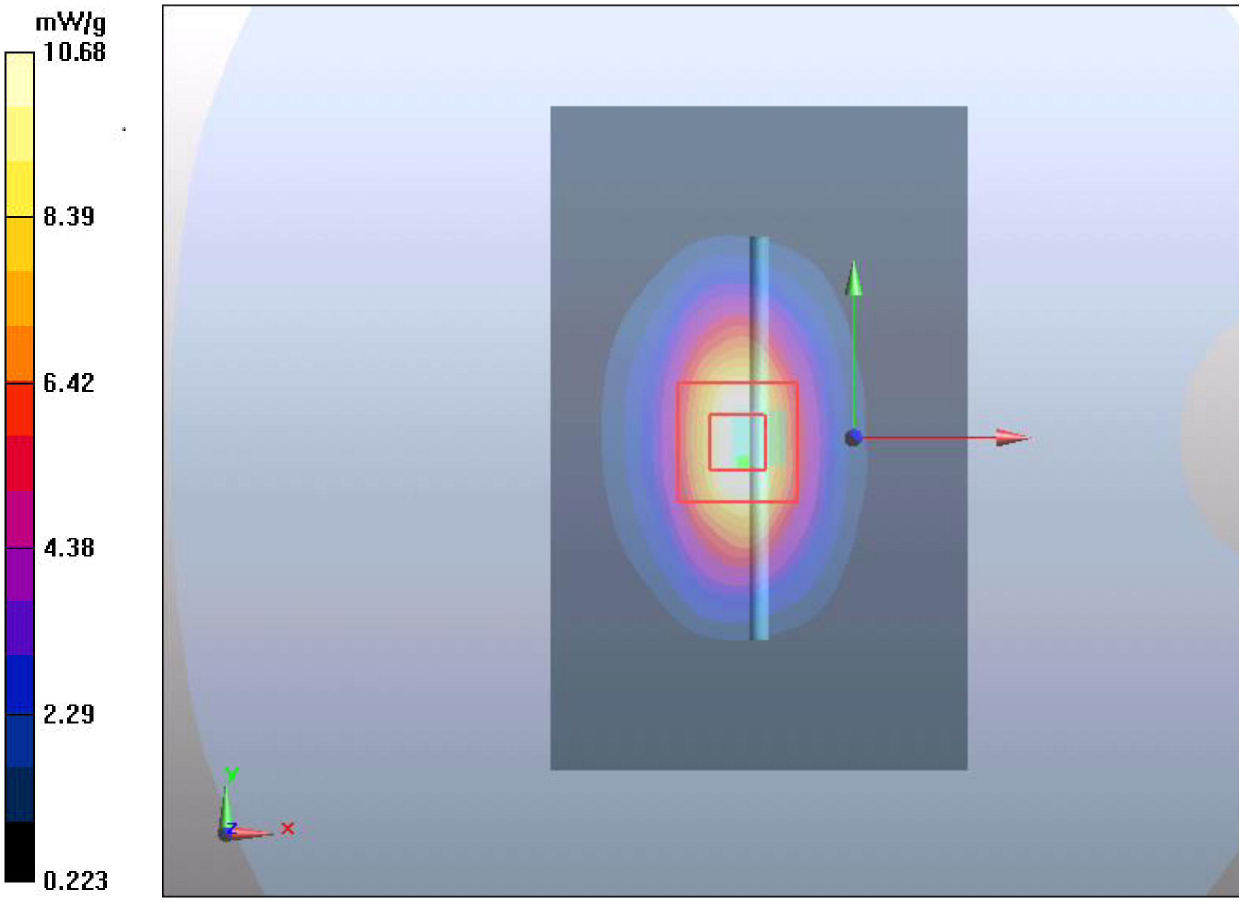
d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 80 V/m; Power Drift = 0.065 dB

Peak SAR (extrapolated) = 14.8 W/kg

SAR(1 g) = 9.03 W/kg; SAR(10 g) = 4.84 W/kg

Maximum value of SAR (measured) = 10.68 W/kg



Plot 6 System Performance Check at 1750 MHz TSL

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1033

Date: 2025/6/2

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1750 MHz; σ = 1.34 S/m; ε_r = 40.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(8.01, 8.42, 8.56); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (5x8x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 9.18 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 80.385 V/m; Power Drift = 0.075 dB

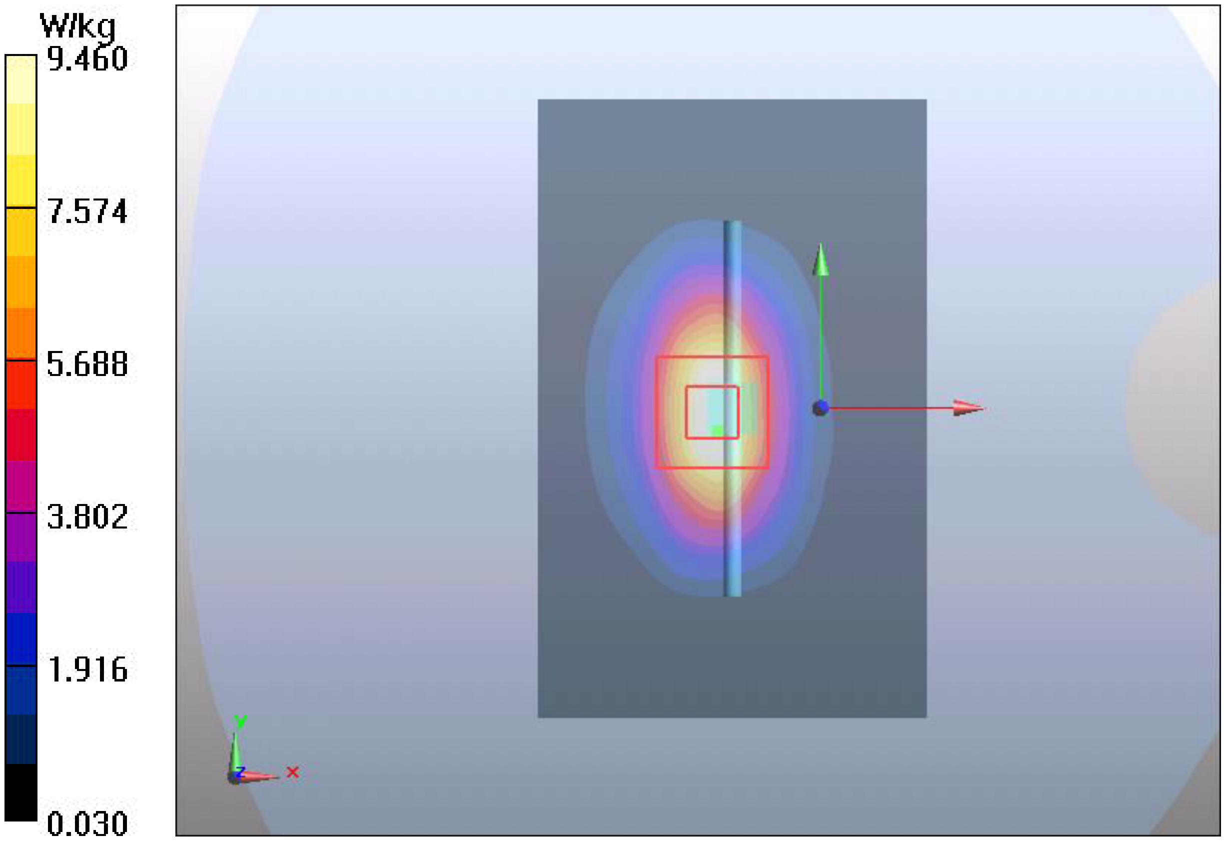
Peak SAR (extrapolated) = 15.5 W/kg

SAR(1 g) = 8.95 W/kg; SAR(10 g) = 4.8 W/kg

Smallest distance from peaks to all points 3 dB below = 10mm

Ratio of SAR at M2 to SAR at M1 = 53.5%

Maximum value of SAR (measured) = 9.46 W/kg



Plot 7 System Performance Check at 1900 MHz TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d060

Date: 2025/4/11

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1900 MHz; σ = 1.40 S/m; ε_r = 40.0; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.88, 8.28, 8.42); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (4x7x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 12.9 W/kg

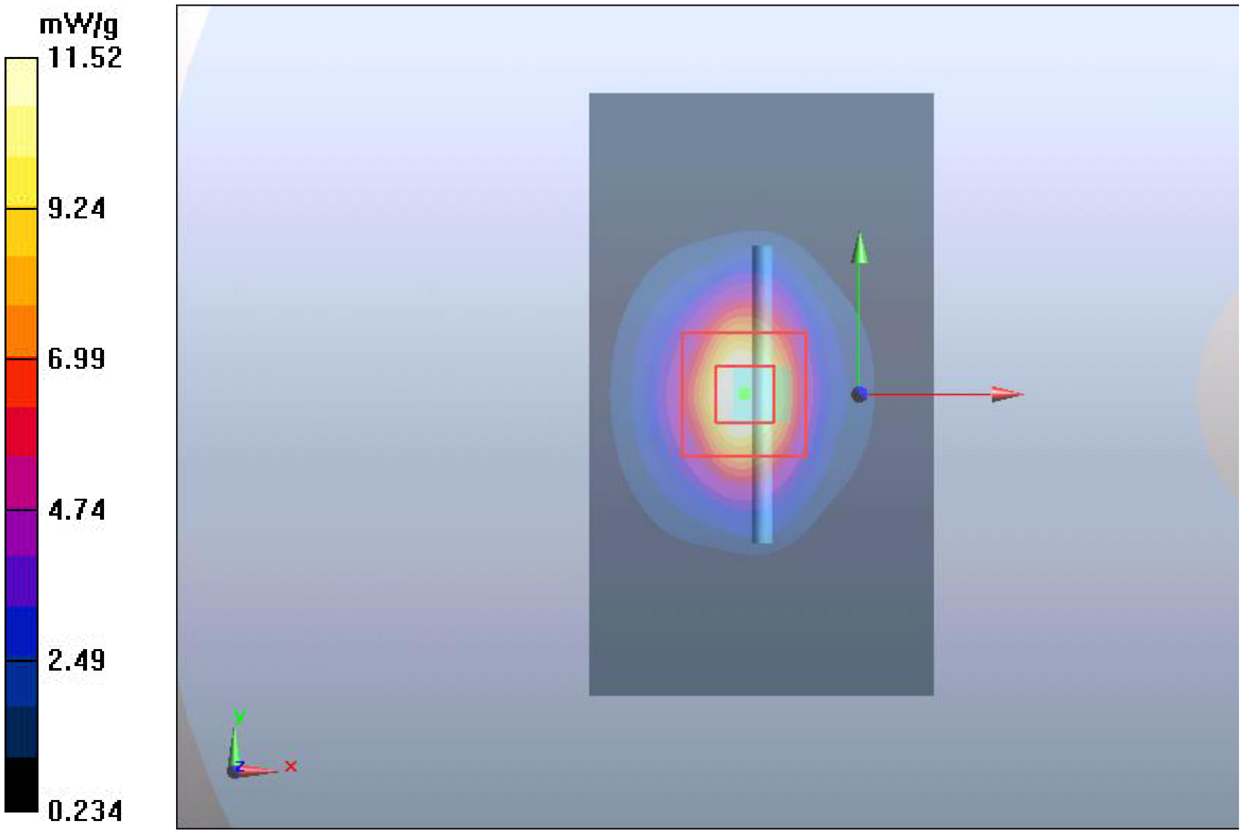
d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.8 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 20.1 W/kg

SAR(1 g) = 9.55 W/kg; SAR(10 g) = 4.99 W/kg

Maximum value of SAR (measured) = 11.52 W/kg



Plot 8 System Performance Check at 1900 MHz TSL

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d060

Date: 2025/6/2

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1900 MHz; σ = 1.41 S/m; ε_r = 40.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.88, 8.28, 8.42); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (4x7x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 10.23 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 85.857V/m; Power Drift = 0.026 dB

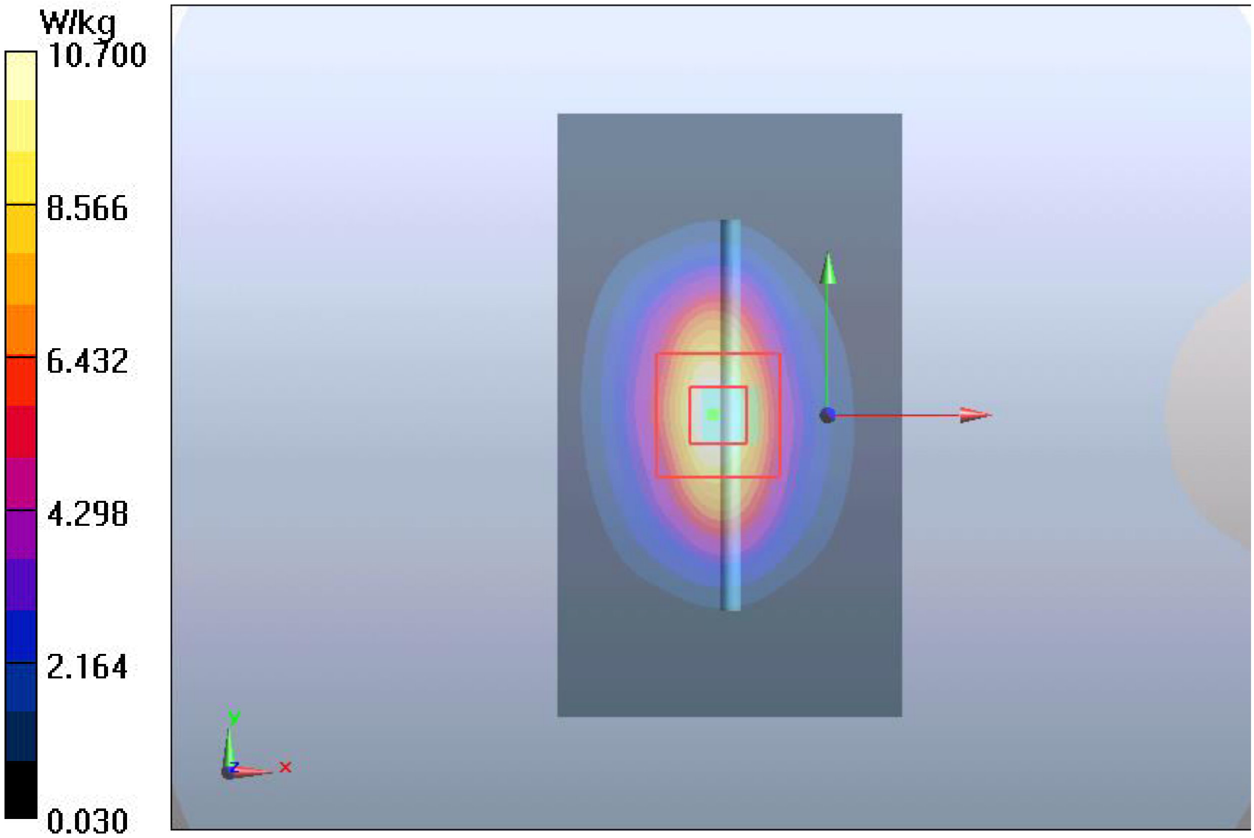
Peak SAR (extrapolated) = 17.84 W/kg

SAR(1 g) = 9.88 W/kg; SAR(10 g) = 4.9 W/kg

Smallest distance from peaks to all points 3 dB below = 11.4 mm

Ratio of SAR at M2 to SAR at M1 = 52.7%

Maximum value of SAR (measured) = 10.70 W/kg



Plot 9 System Performance Check at 2450 MHz TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Date: 2025/4/19

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.82 S/m; ε_r = 38.7; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.62, 8.01, 8.14); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (4x7x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 21.11 W/kg

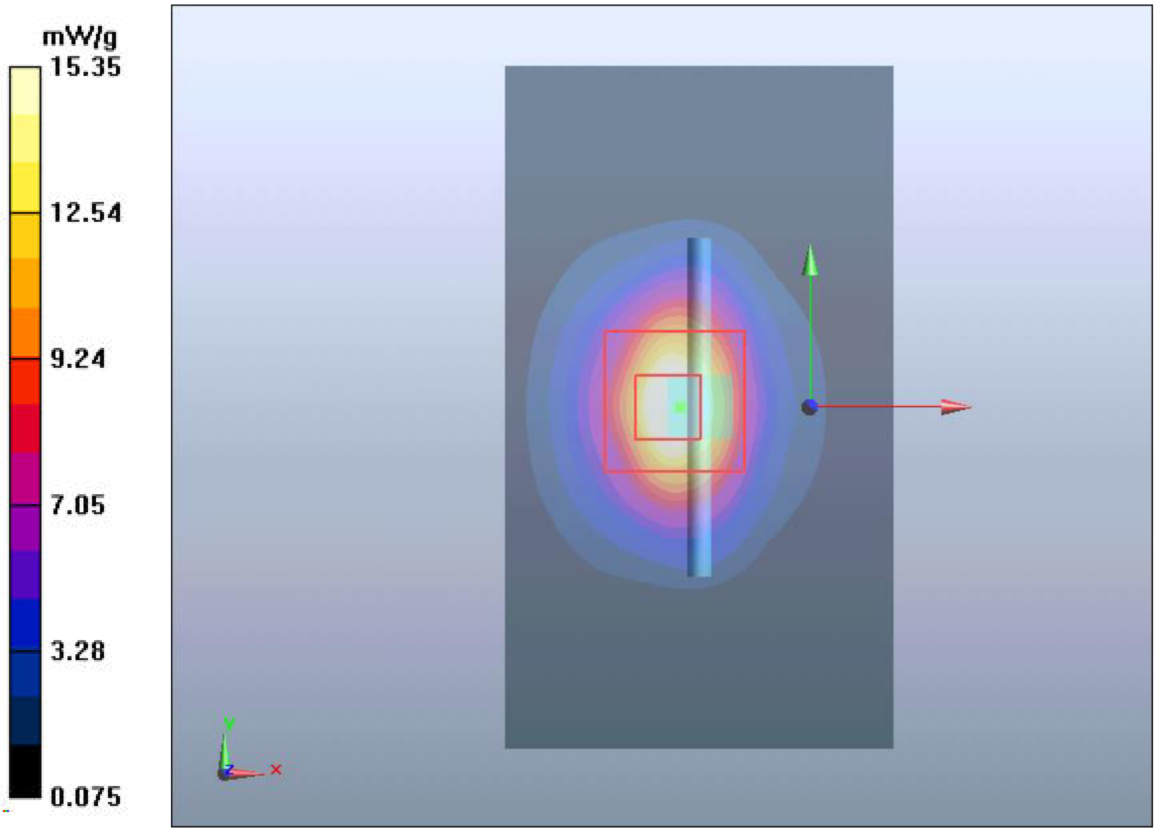
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 67.0 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 28.0 W/kg

SAR(1 g) = 13.52 W/kg; SAR(10 g) = 6.17 W/kg

Maximum value of SAR (measured) = 15.35 W/kg



Plot 10 System Performance Check at 2450 MHz TSL

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 786

Date: 2025/6/1

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.81 S/m; ε_r = 38.6; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.62, 8.01, 8.14); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (4x7x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 14.26 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 88.834 V/m; Power Drift = 0.015 dB

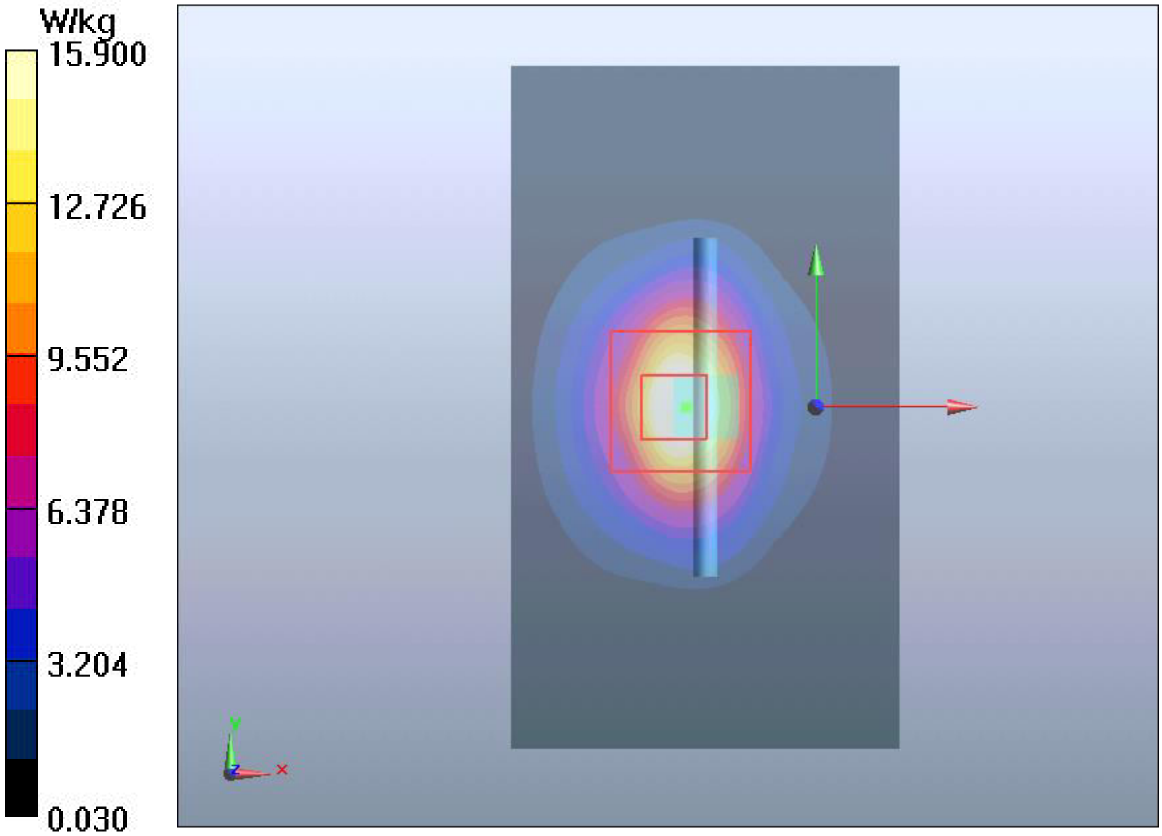
Peak SAR (extrapolated) = 30.10 W/kg

SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.22 W/kg

Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 47%

Maximum value of SAR (measured) = 15.90 W/kg



Plot 11 System Performance Check at 2600 MHz TSL

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1025

Date: 2025/4/12

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2600 MHz; σ = 1.96S/m; ε_r = 38.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.39, 7.77, 7.89); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (6x10x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 17.439 W/kg

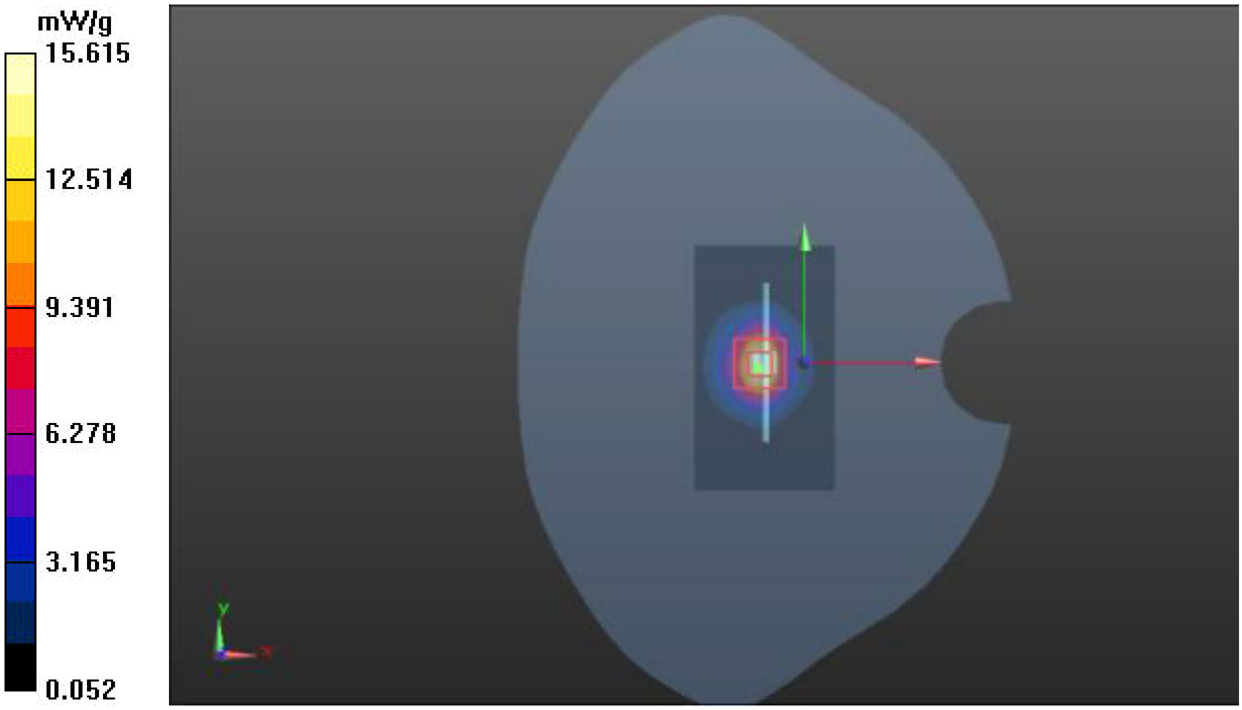
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.998 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 31.858 W/kg

SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.08 W/kg

Maximum value of SAR (measured) = 15.615 W/kg



Plot 12 System Performance Check at 2600 MHz TSL

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1025

Date: 2025/6/1

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2600 MHz; σ = 1.99 S/m; ε_r = 38.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.39, 7.77, 7.89); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=250mW/Area Scan (4x7x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 14.20 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.465 V/m; Power Drift = 0.146 dB

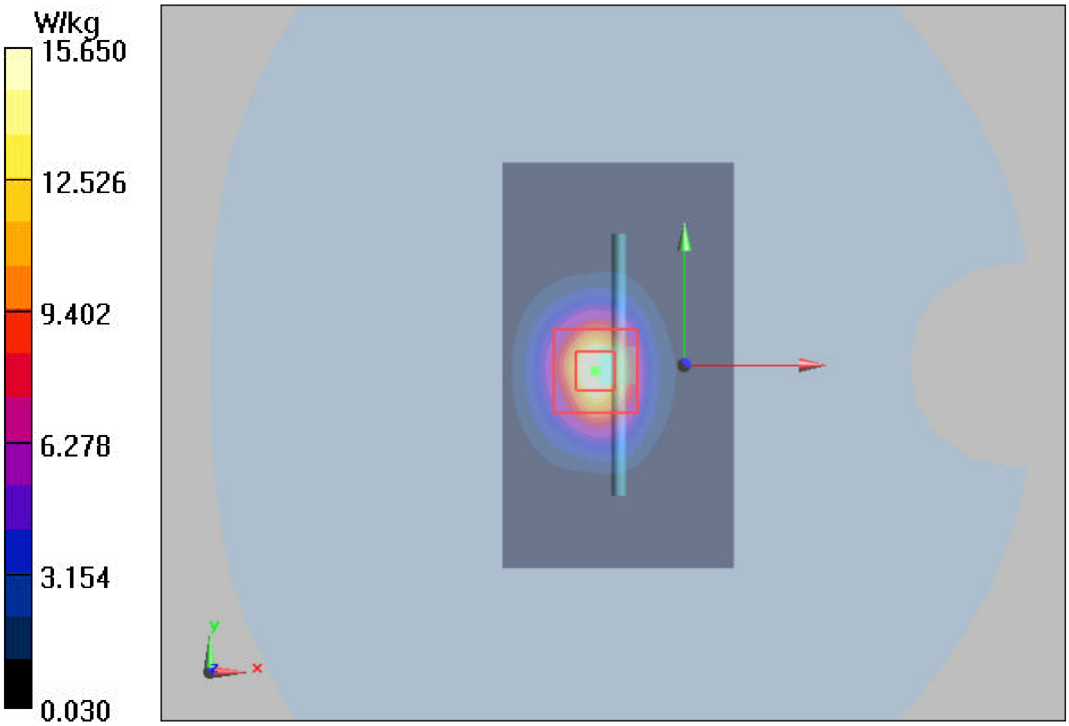
Peak SAR (extrapolated) = 31.85 W/kg

SAR(1 g) = 13.94 W/kg; SAR(10 g) = 6.11 W/kg

Smallest distance from peaks to all points 3 dB below = 10 mm

Ratio of SAR at M2 to SAR at M1 = 47.1%

Maximum value of SAR (measured) = 15.650 W/kg



Plot 13 System Performance Check at 5250 MHz TSL

DUT: Dipole 5250 MHz; Type: D5GHzV2; Serial: 1151

Date: 2025/4/20

Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5250 MHz; σ = 4.69 S/m; ε_r = 35.8; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.87, 6.17, 6.27); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=100mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 7.69 W/kg

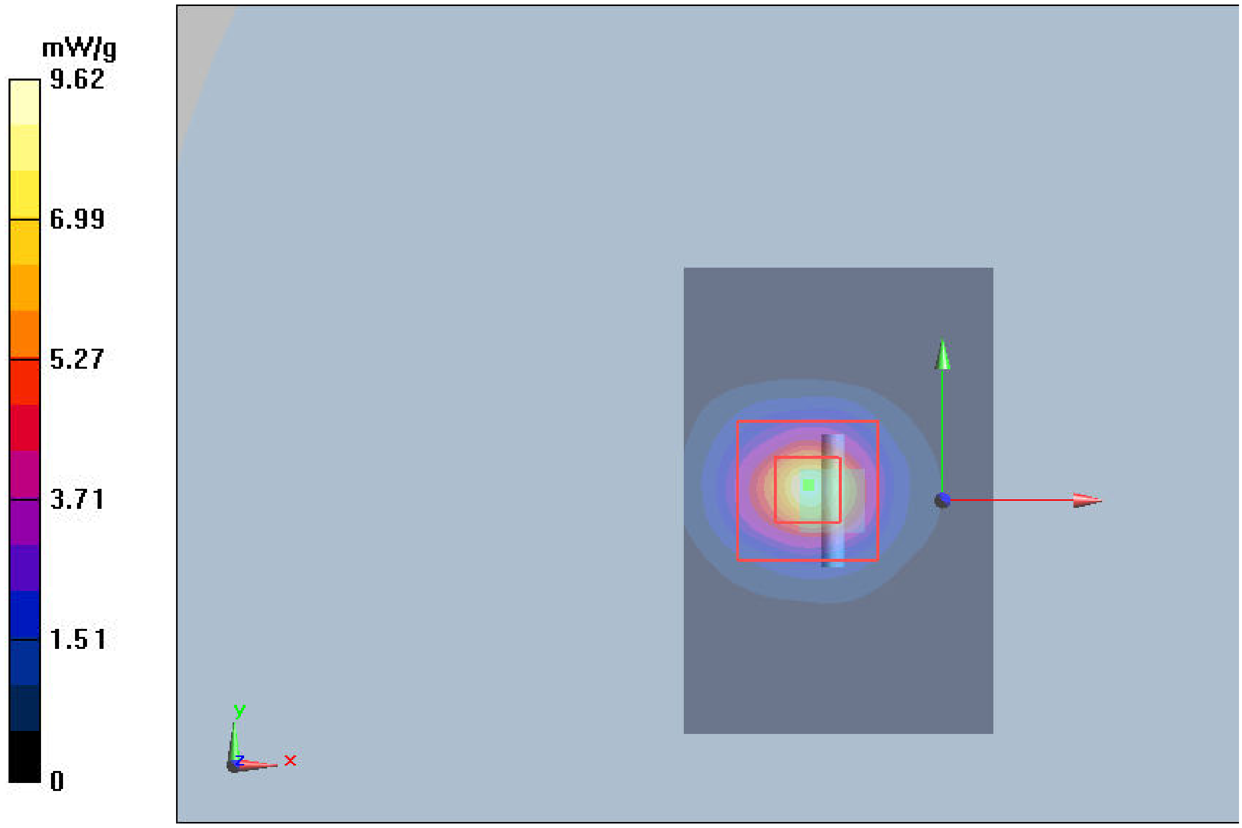
d=10mm, Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 36.3 V/m; Power Drift = 0.0277 dB

Peak SAR (extrapolated) = 47.7 W/kg

SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.26 W/kg

Maximum value of SAR (measured) = 9.62 W/kg



Plot 14 System Performance Check at 5250 MHz TSL

DUT: Dipole 5250 MHz; Type: D5GHzV2; Serial: 1151

Date: 2025/6/1

Communication System: CW; Frequency: 5250 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5250 MHz; σ = 4.80 S/m; ε_r = 35.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.87, 6.17, 6.27); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=100mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 9.14 W/kg

d=10mm, Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 33.654 V/m; Power Drift = -0.095 dB

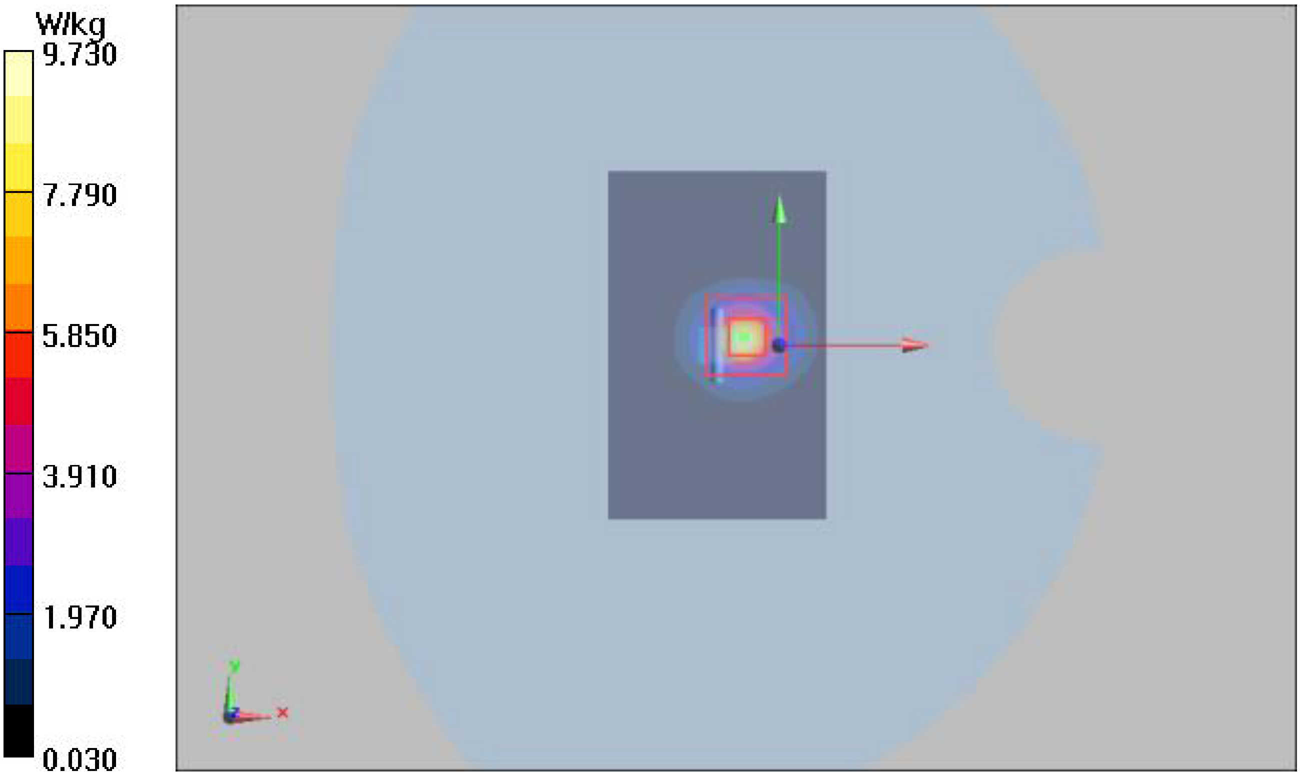
Peak SAR (extrapolated) = 52.20 W/kg

SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.25 W/kg

Smallest distance from peaks to all points 3 dB below = 7.2 mm

Ratio of SAR at M2 to SAR at M1 = 63%

Maximum value of SAR (measured) = 9.73 W/kg



Plot 15 System Performance Check at 5600 MHz TSL

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1151

Date: 2025/4/20

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5600 MHz; σ = 5.17 S/m; ε_r = 35.4; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.33, 5.60, 5.70); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=100mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 8.30 W/kg

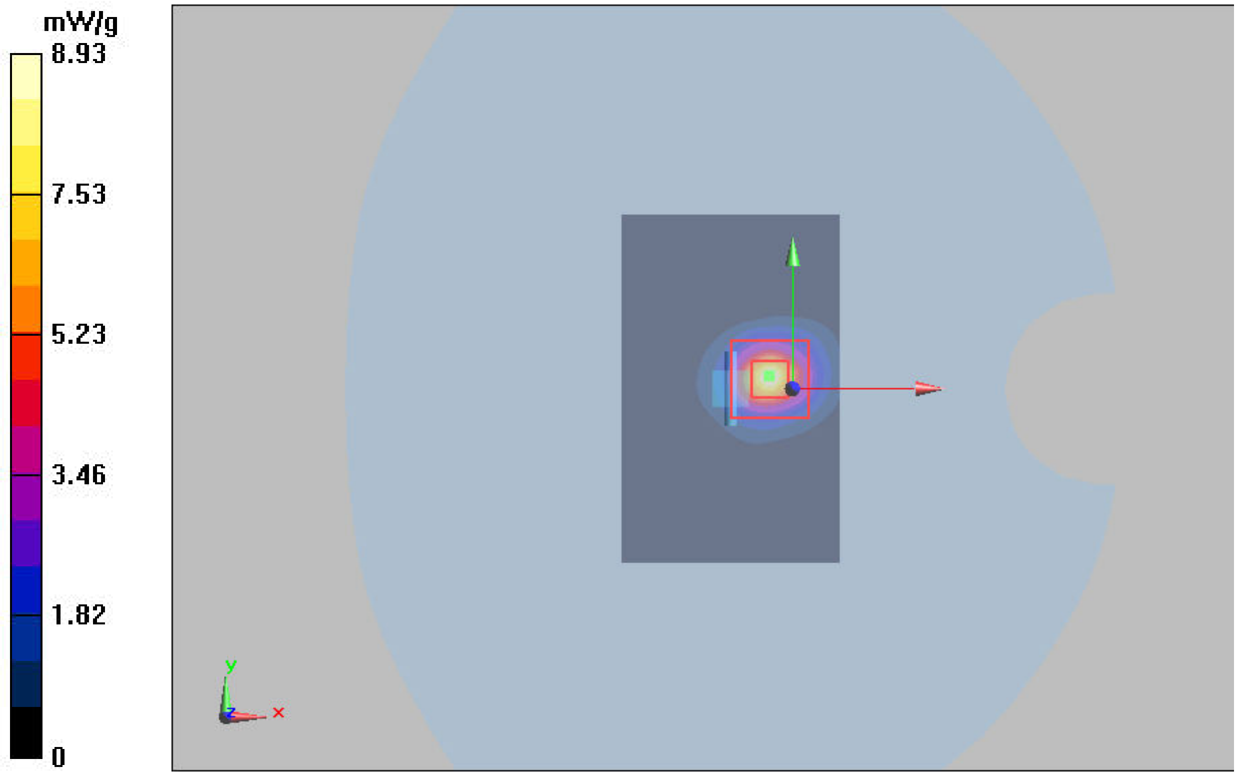
d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 23.13 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 23.0 W/kg

SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 8.93 W/kg



Plot 16 System Performance Check at 5600 MHz TSL

DUT: Dipole 5600 MHz; Type: D5GHzV2; Serial: 1151

Date: 2025/6/1

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5600 MHz; σ = 5.21 S/m; ε_r = 34.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.33, 5.60, 5.70); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=100mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 8.25 W/kg

d=10mm, Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 23.142 V/m; Power Drift = -0.028 dB

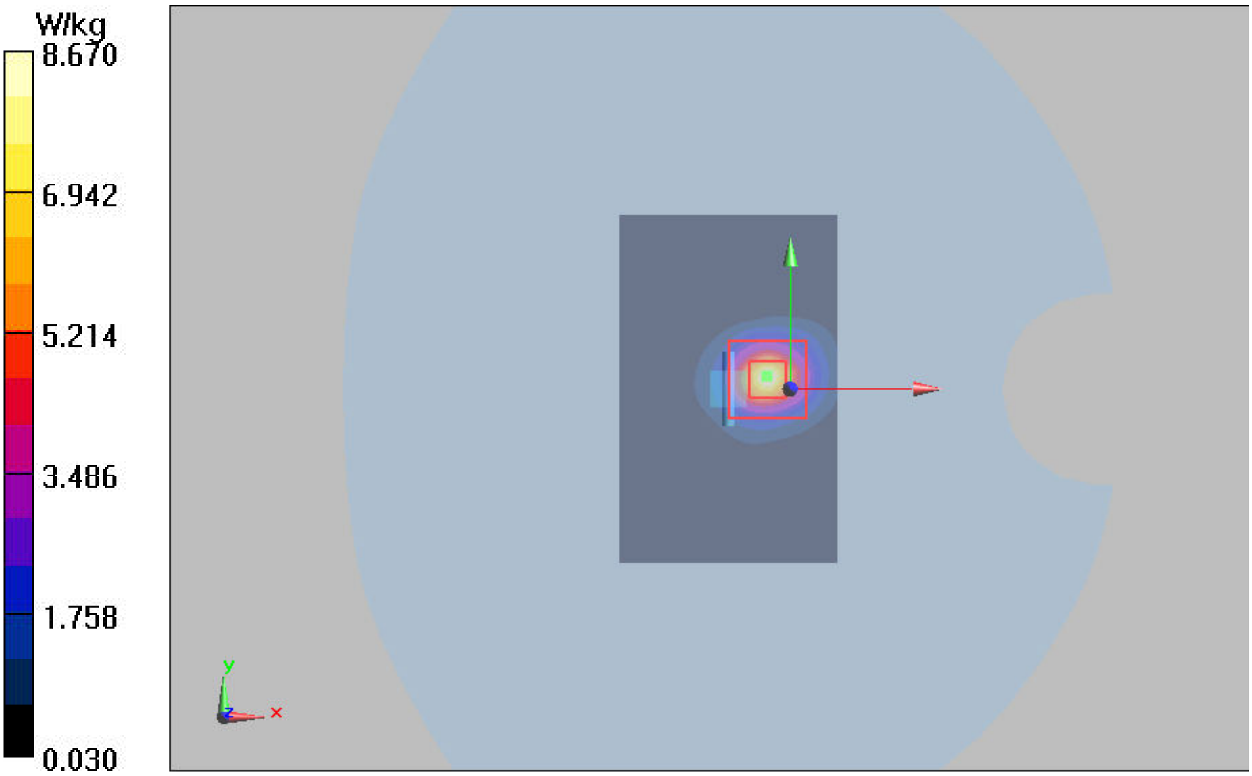
Peak SAR (extrapolated) = 22.9 W/kg

SAR(1 g) = 7.67 W/kg; SAR(10 g) = 2.27 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 61.9%

Maximum value of SAR (measured) = 8.67 W/kg



Plot 17 System Performance Check at 5750 MHz TSL

DUT: Dipole 5750 MHz; Type: D5GHzV2; Serial: 1151

Date: 2025/4/20

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 5.32 S/m; ε_r = 35.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.31, 5.59, 5.68); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=100mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 7.84 W/kg

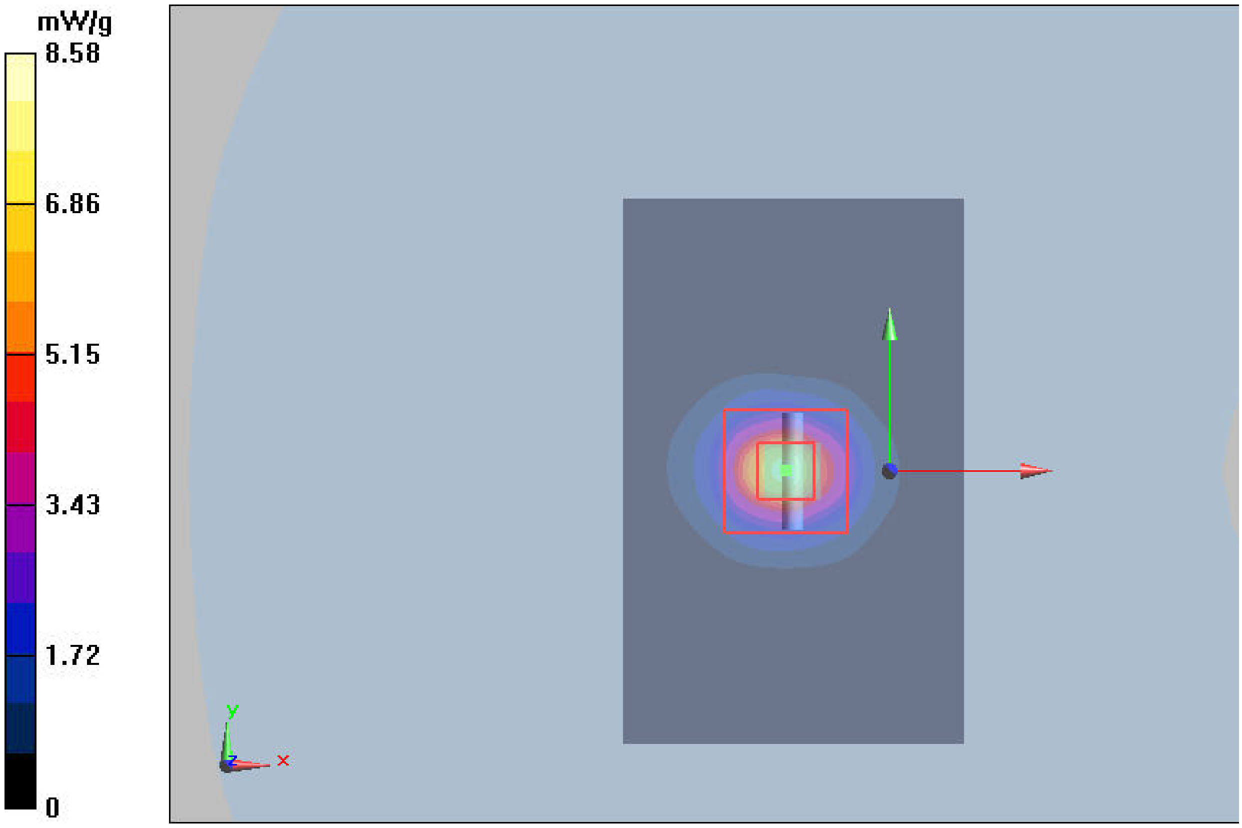
d=10mm, Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 38 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 22.6 W/kg

SAR(1 g) = 7.75 W/kg; SAR(10 g) = 2.19 W/kg

Maximum value of SAR (measured) = 8.58 W/kg



Plot 18 System Performance Check at 5750 MHz TSL

DUT: Dipole 5750 MHz; Type: D5GHzV2; Serial: 1151

Date: 2025/6/1

Communication System: CW; Frequency: 5750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 5750 MHz; σ = 5.21 S/m; ε_r = 34.9; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.31, 5.59, 5.68); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

d=10mm, Pin=100mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 8.31 W/kg

d=10mm, Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 25.26 V/m; Power Drift = 0.044 dB

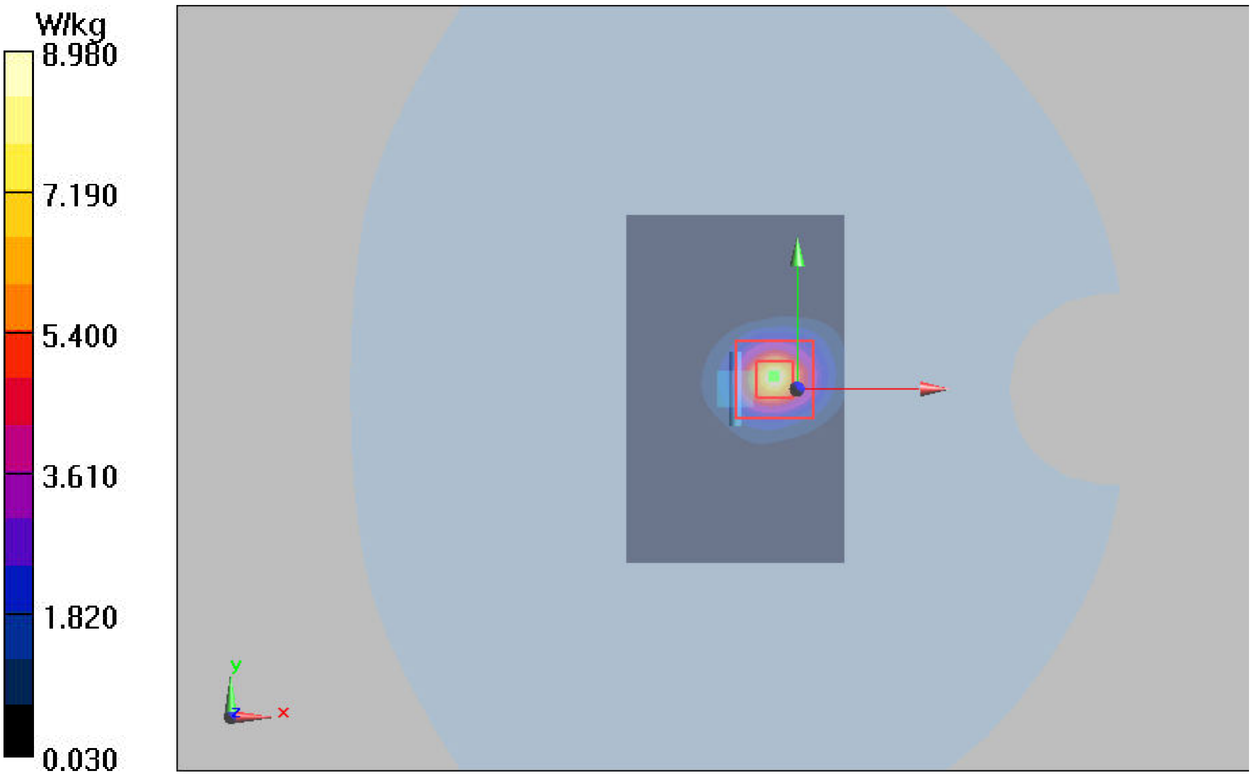
Peak SAR (extrapolated) = 23.4 W/kg

SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.27 W/kg

Smallest distance from peaks to all points 3 dB below = 7.8 mm

Ratio of SAR at M2 to SAR at M1 = 59.4%

Maximum value of SAR (measured) = 8.98 W/kg



ANNEX C: Highest Graph Results

Plot 19 GSM 850 GPRS(4TX) Left Edge Mid

Date: 2025/4/10

Communication System: UID 0, GPRS 4TX (0); Frequency: 836.6 MHz;Duty Cycle: 1:2.07491

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.948 S/m; ε_r = 42.274; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.44, 9.92, 10.09); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

GSM 850 GPRS(4TX) Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.29 W/kg

GSM 850 GPRS(4TX) Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.43 V/m; Power Drift = -0.060 dB

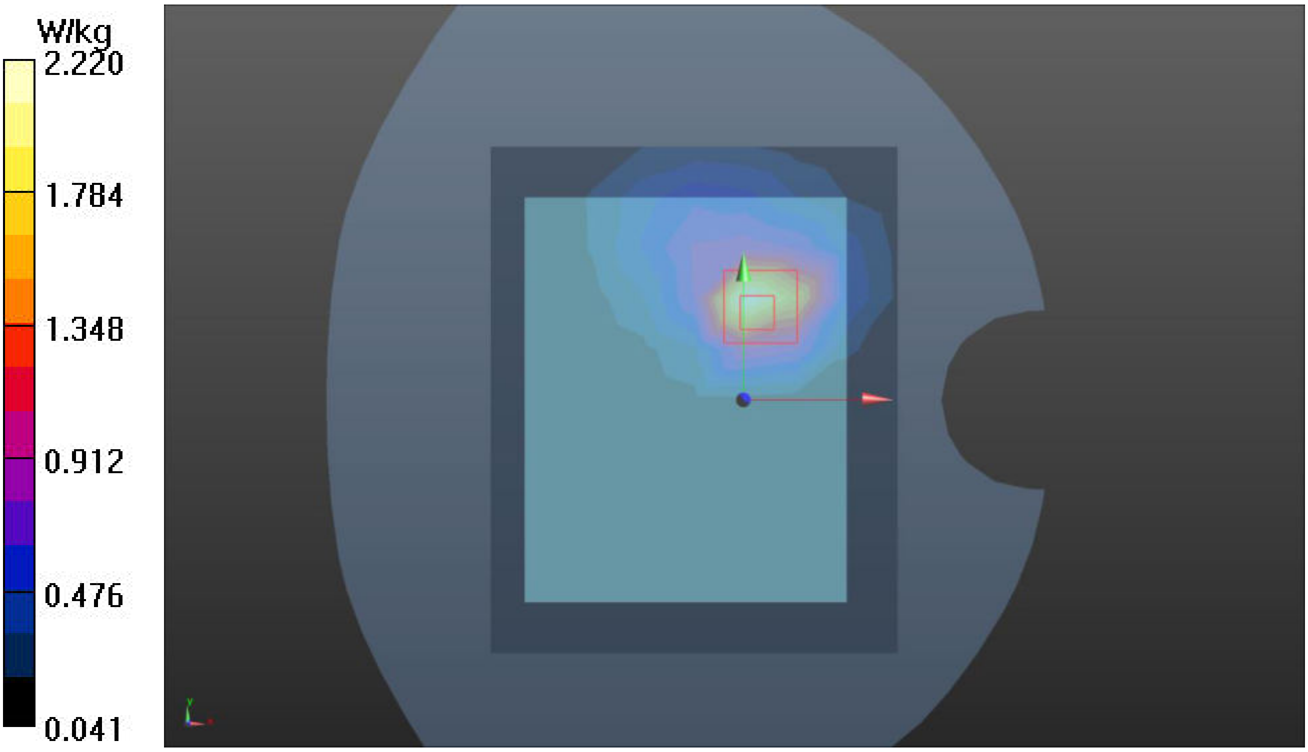
Peak SAR (extrapolated) = 5.45 W/kg

SAR(1 g) = 2.2 W/kg; SAR(10 g) = 1.03 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 52.4%

Maximum value of SAR (measured) = 2.22 W/kg



Plot 20 GSM 1900 GPRS(2TX) Left Edge Mid

Date: 2025/4/11

Communication System: UID 0, GPRS 2TX (0); Frequency: 1880 MHz;Duty Cycle: 1:4.14954

Medium parameters used: f = 1880 MHz; σ = 1.4 S/m; ε_r = 38.43; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.88, 8.28, 8.42); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

GSM 1900 GPRS(2TX) Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.371 W/kg

GSM 1900 GPRS(2TX) Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.783 V/m; Power Drift = -0.080 dB

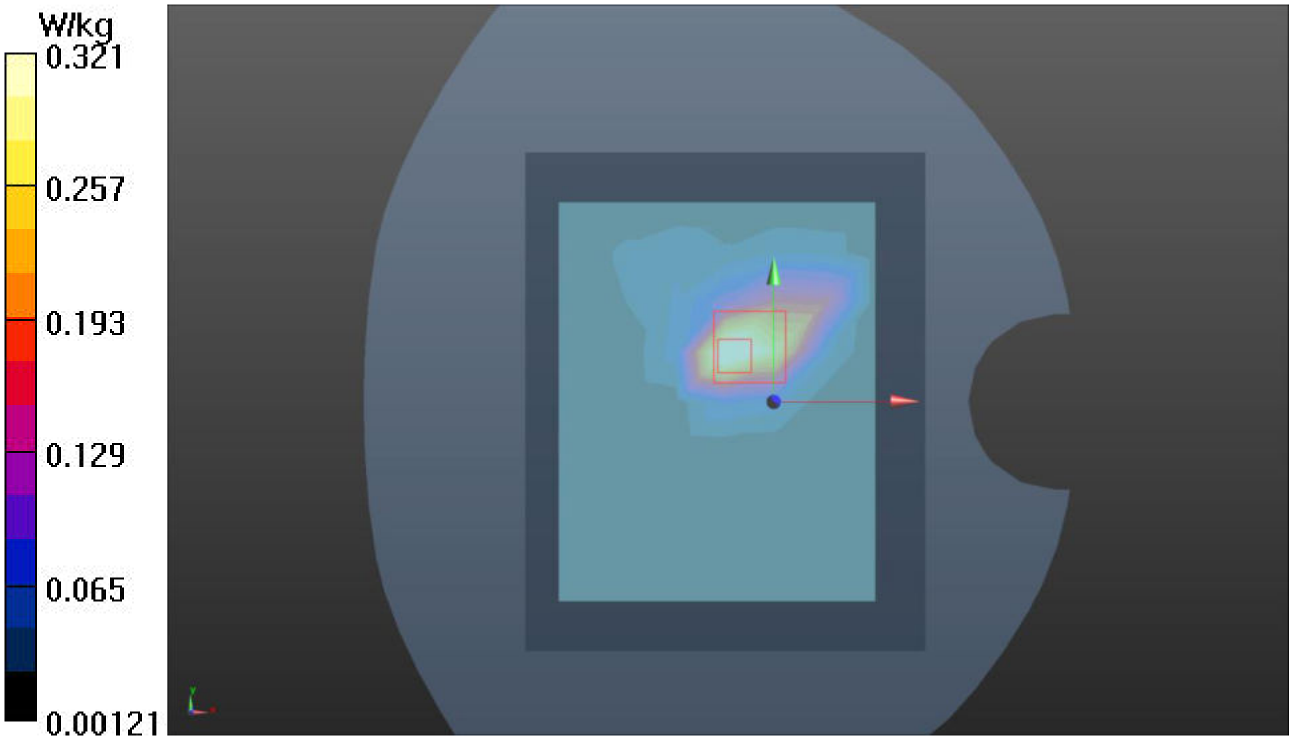
Peak SAR (extrapolated) = 0.780 W/kg

SAR(1 g) = 0.290 W/kg; SAR(10 g) = 0.135 W/kg

Smallest distance from peaks to all points 3 dB below = 9.2 mm

Ratio of SAR at M2 to SAR at M1 = 42.3%

Maximum value of SAR (measured) = 0.321 W/kg



Plot 21 WCDMA B2 Left Edge Mid

Date: 2025/4/11

Communication System: UID 0, WCDMA (0); Frequency: 1880 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.4 S/m; ε_r = 38.43; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.88, 8.28, 8.42); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

WCDMA B2 Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.629 W/kg

WCDMA B2 Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.693 V/m; Power Drift = -0.020 dB

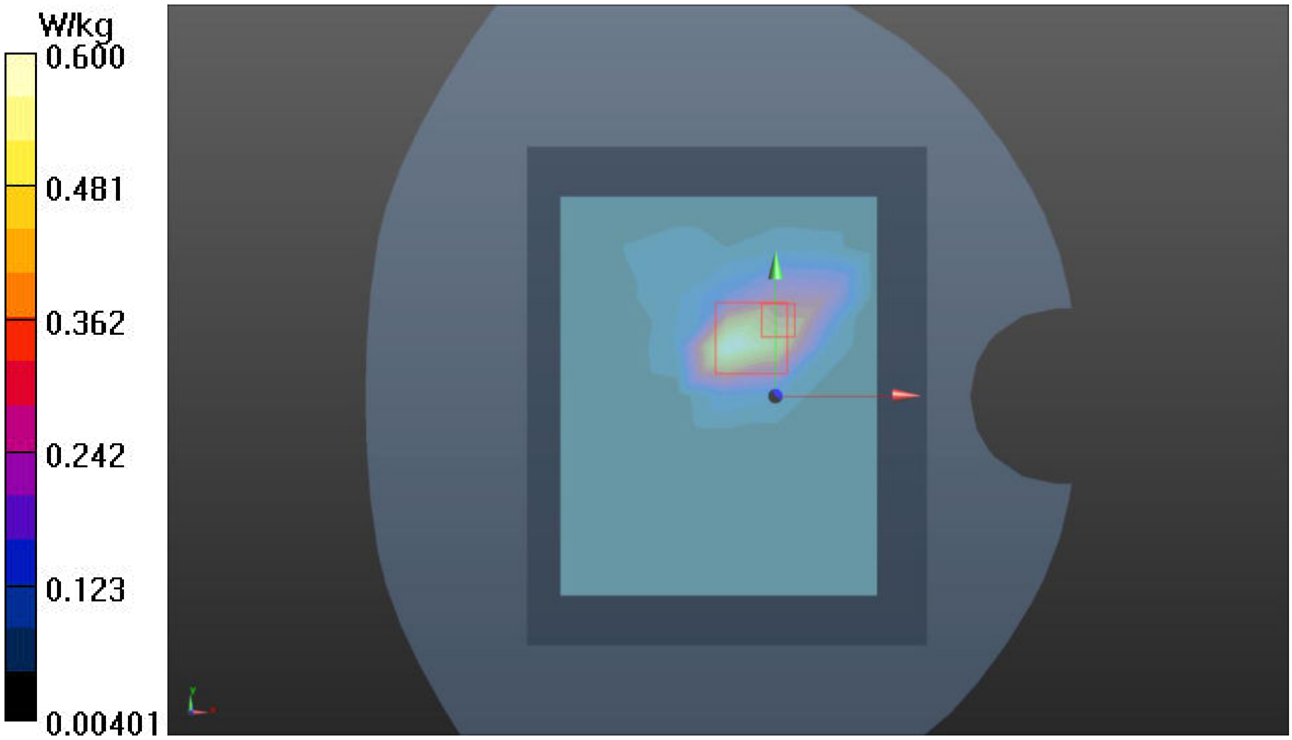
Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.520 W/kg; SAR(10 g) = 0.233 W/kg

Smallest distance from peaks to all points 3 dB below = 8.2 mm

Ratio of SAR at M2 to SAR at M1 = 41.4%

Maximum value of SAR (measured) = 0.600 W/kg



Plot 22 WCDMA B4 Left Edge Mid

Date: 2025/4/11

Communication System: UID 0, WCDMA (0); Frequency: 1732.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.27 S/m; ε_r = 38.942; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(8.01, 8.42, 8.56); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

WCDMA B4 Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.437 W/kg

WCDMA B4 Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.207 V/m; Power Drift = -0.090 dB

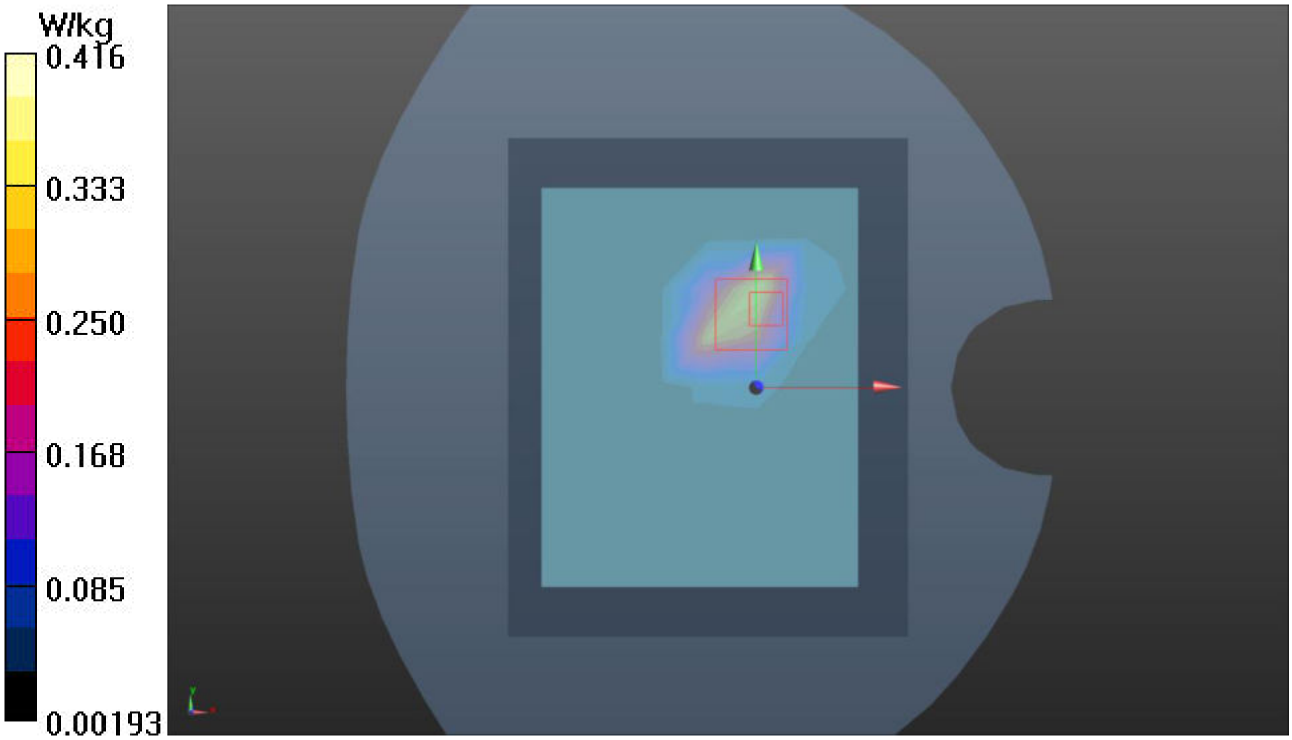
Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.400 W/kg; SAR(10 g) = 0.156 W/kg

Smallest distance from peaks to all points 3 dB below = 8 mm

Ratio of SAR at M2 to SAR at M1 = 36.7%

Maximum value of SAR (measured) = 0.416 W/kg



Plot 23 WCDMA B5 Left Edge Mid

Date: 2025/4/10

Communication System: UID 0, WCDMA (0); Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.948 S/m; ε_r = 42.274; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.44, 9.92, 10.09); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

WCDMA B5 Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.52 W/kg

WCDMA B5 Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.75 V/m; Power Drift = -0.050 dB

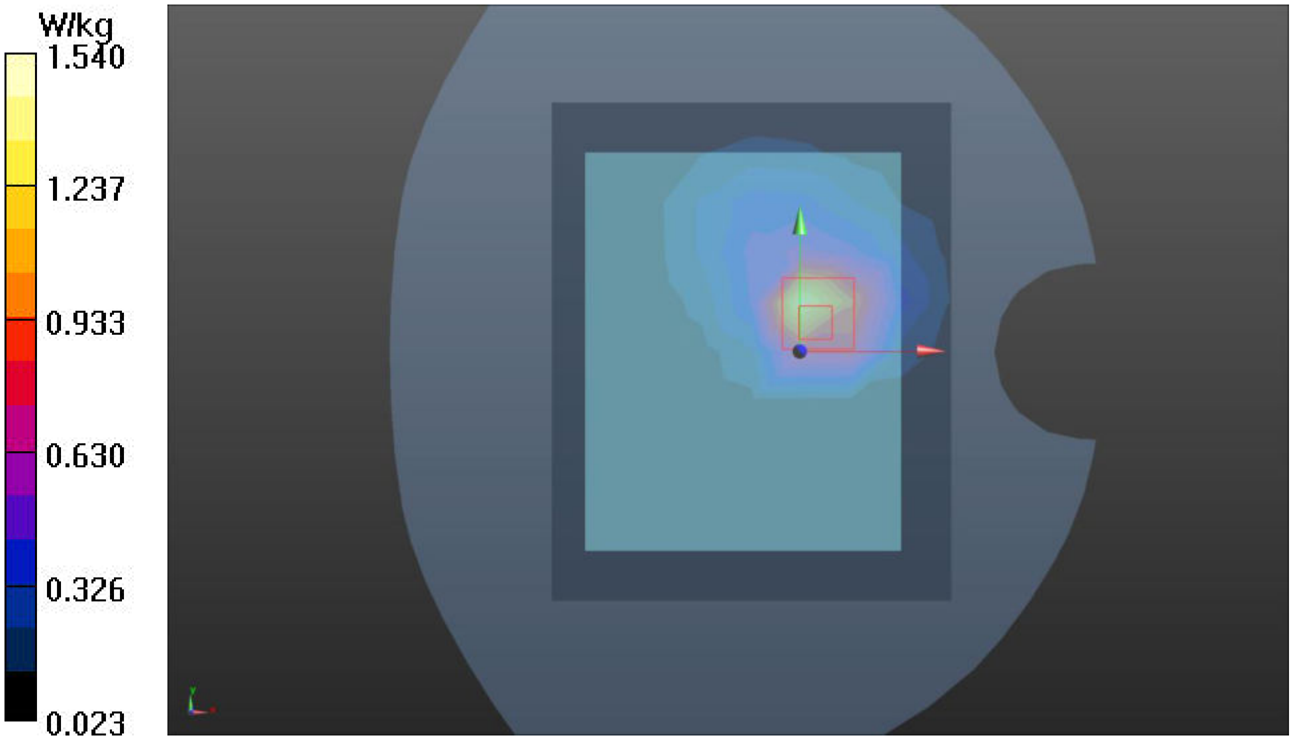
Peak SAR (extrapolated) = 3.77 W/kg

SAR(1 g) = 1.5 W/kg; SAR(10 g) = 0.699 W/kg

Smallest distance from peaks to all points 3 dB below = 9.1 mm

Ratio of SAR at M2 to SAR at M1 = 51.5%

Maximum value of SAR (measured) = 1.54 W/kg



Plot 24 LTE B4 1RB Left Edge Mid

Date: 2025/4/11

Communication System: UID 0, LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.27 S/m; ε_r = 38.943; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(8.01, 8.42, 8.56); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

LTE B4 1RB Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.365 W/kg

LTE B4 1RB Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.828 V/m; Power Drift = -0.060 dB

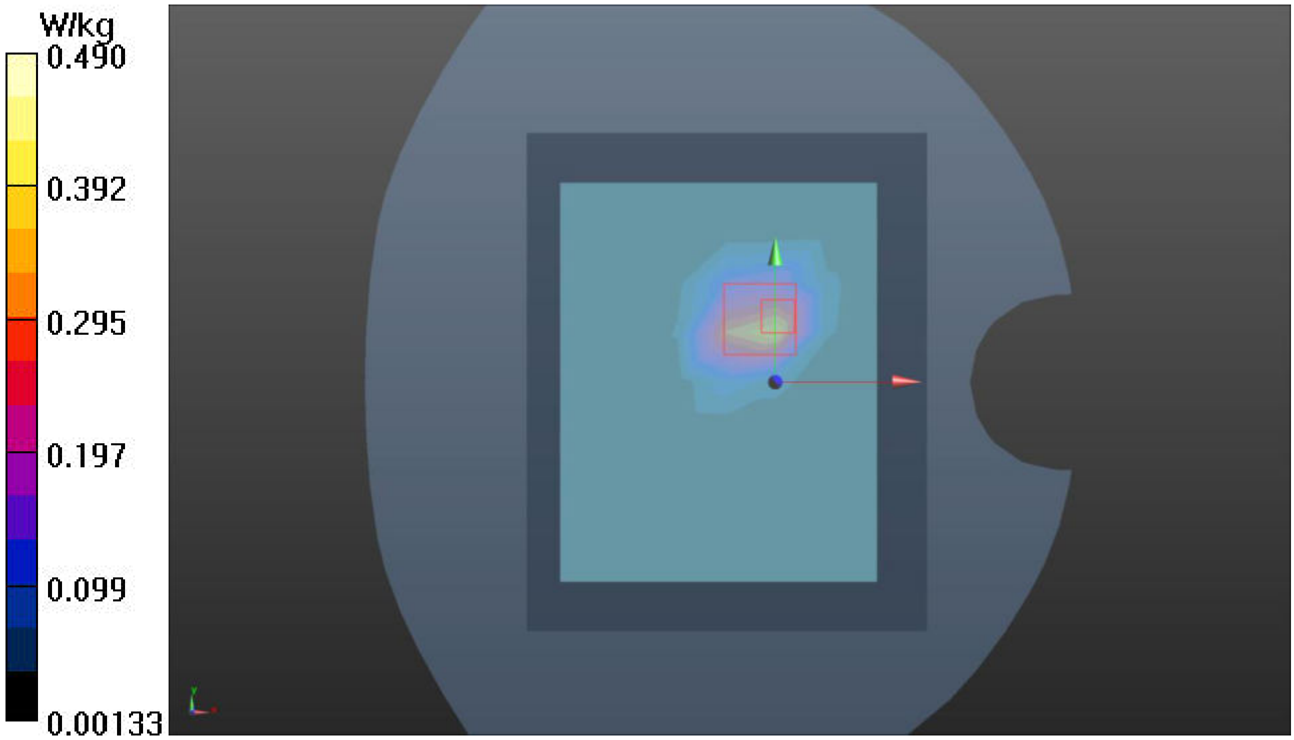
Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.361 W/kg; SAR(10 g) = 0.144 W/kg

Smallest distance from peaks to all points 3 dB below = 8.8 mm

Ratio of SAR at M2 to SAR at M1 = 45.2%

Maximum value of SAR (measured) = 0.490 W/kg



Plot 25 LTE B5 1RB Left Edge Low

Date: 2025/4/10

Communication System: UID 0, LTE (0); Frequency: 829 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 829 MHz; σ = 0.945 S/m; ε_r = 42.335; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.44, 9.92, 10.09); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

LTE B5 1RB Left Edge 0mm/Low/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.39 W/kg

LTE B5 1RB Left Edge 0mm/Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.90 V/m; Power Drift = -0.040 dB

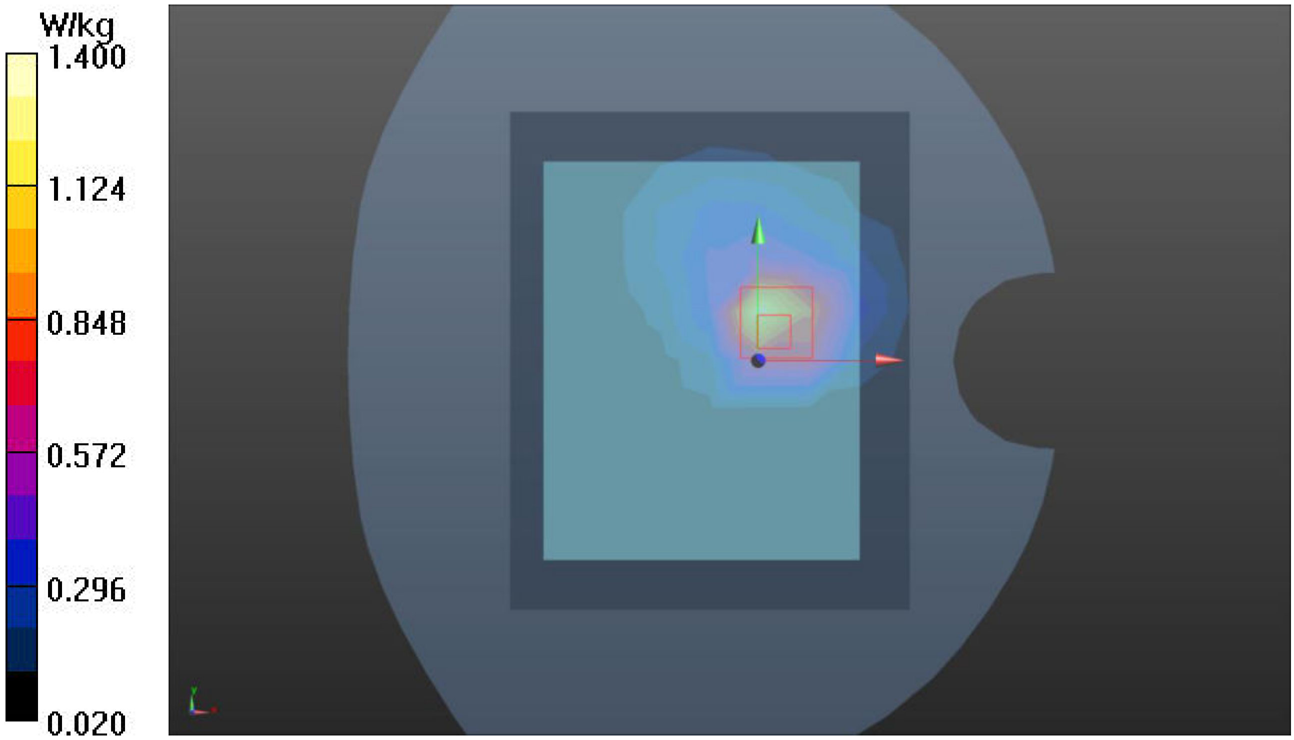
Peak SAR (extrapolated) = 3.39 W/kg

SAR(1 g) = 1.36 W/kg; SAR(10 g) = 0.634 W/kg

Smallest distance from peaks to all points 3 dB below = 9.1 mm

Ratio of SAR at M2 to SAR at M1 = 51.7%

Maximum value of SAR (measured) = 1.40 W/kg



Plot 26 LTE B7 1RB Left Edge Low

Date: 2025/4/12

Communication System: UID 0, LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2510 MHz; σ = 1.906 S/m; ε_r = 38.249; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.62, 8.01, 8.14); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

LTE B7 1RB Left Edge 0mm/Low/Area Scan (11x14x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 2.50 W/kg

LTE B7 1RB Left Edge 0mm/Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.552 V/m; Power Drift = -0.083 dB

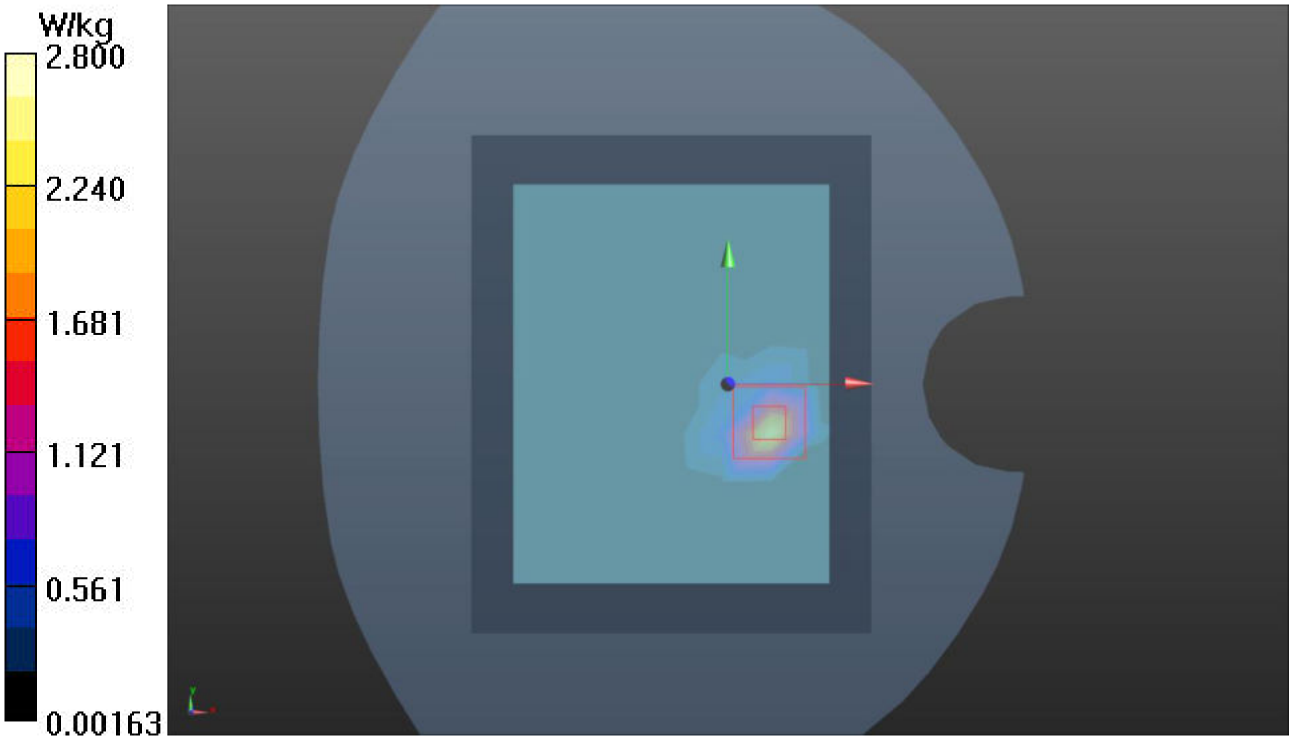
Peak SAR (extrapolated) = 6.00 W/kg

SAR(1 g) = 2.27 W/kg; SAR(10 g) = 0.743 W/kg

Smallest distance from peaks to all points 3 dB below = 9.8 mm

Ratio of SAR at M2 to SAR at M1 = 49.9%

Maximum value of SAR (measured) = 2.80 W/kg



Plot 27 LTE B12 1RB Left Edge Low

Date: 2025/4/10

Communication System: UID 0, LTE (0); Frequency: 704 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 704 MHz; σ = 0.88 S/m; ε_r = 43.223; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(9.58, 10.07, 10.24); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

LTE B12 1RB Left Edge 0mm/Low/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.478 W/kg

LTE B12 1RB Left Edge 0mm/Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.13 V/m; Power Drift = -0.050 dB

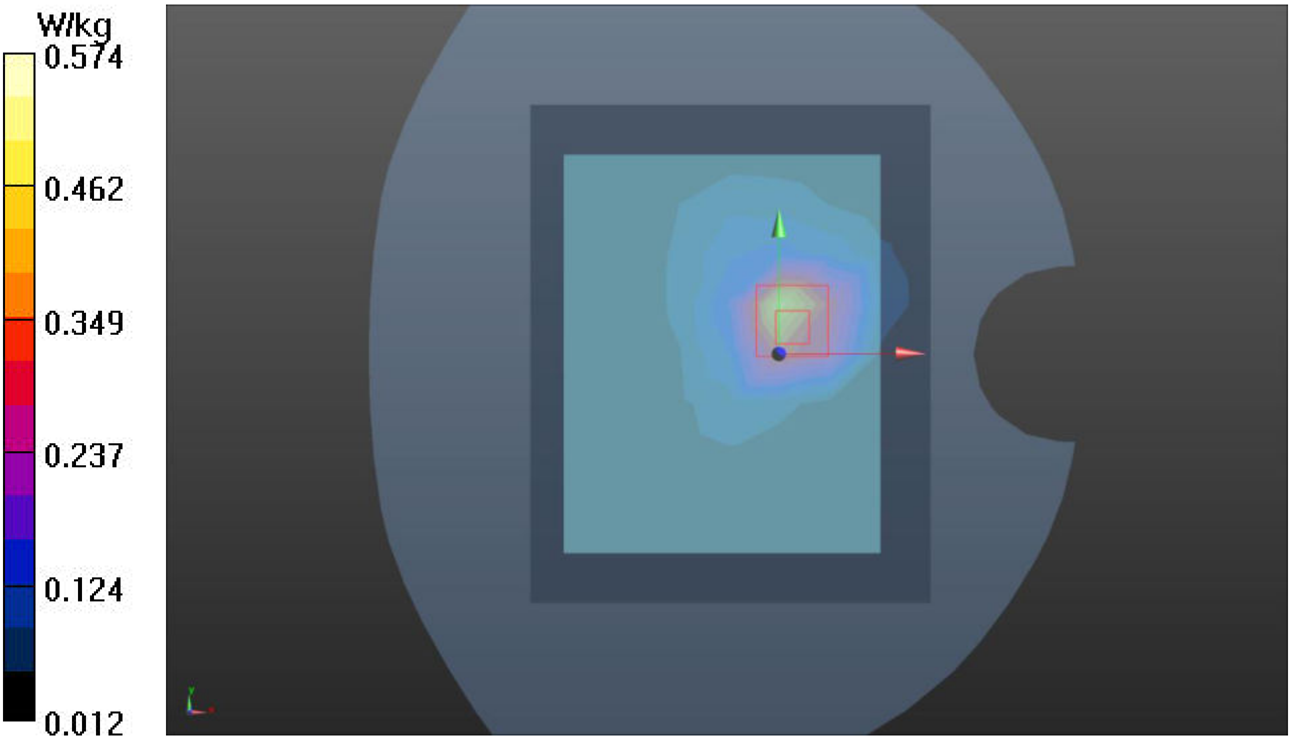
Peak SAR (extrapolated) = 1.32 W/kg

SAR(1 g) = 0.532 W/kg; SAR(10 g) = 0.251 W/kg

Smallest distance from peaks to all points 3 dB below = 10.2 mm

Ratio of SAR at M2 to SAR at M1 = 48.9%

Maximum value of SAR (measured) = 0.574 W/kg



Plot 28 LTE B25 1RB Left Edge Mid

Date: 2025/4/11

Communication System: UID 0, LTE (0); Frequency: 1882.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.391 S/m; ε_r = 38.425; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.88, 8.28, 8.42); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

LTE B25 1RB Left Edge 0mm/Mid/Area Scan (9x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.551 W/kg

LTE B25 1RB Left Edge 0mm/Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.576 V/m; Power Drift = -0.060 dB

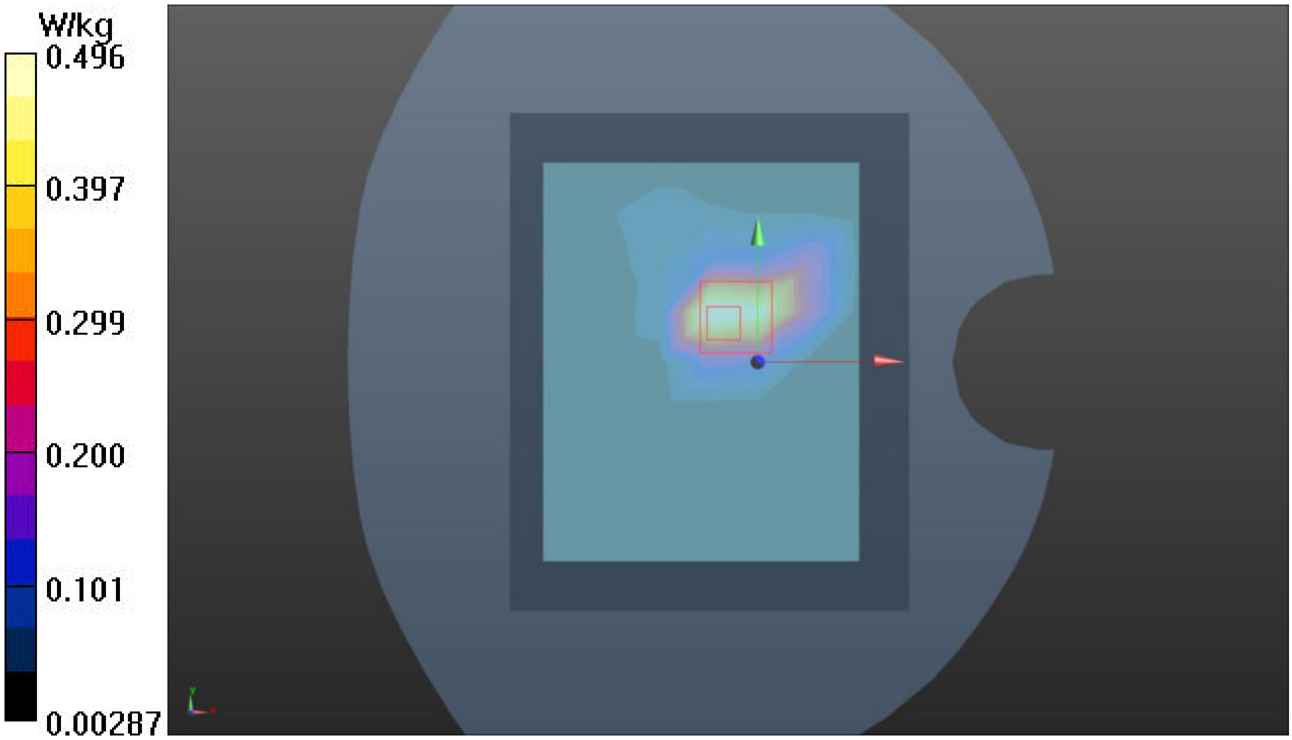
Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.468 W/kg; SAR(10 g) = 0.215 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 43.1%

Maximum value of SAR (measured) = 0.496 W/kg



Plot 29 LTE B41 1RB Left Edge Mid

Date: 2025/4/12

Communication System: UID 0, LTE (0); Frequency: 2598 MHz;Duty Cycle: 1:1.58

Medium parameters used (interpolated): f = 2598 MHz; σ = 2.008 S/m; ε_r = 37.914; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.39, 7.77, 7.89); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

LTE B41 1RB Left Edge 0mm/Mid/Area Scan (11x14x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 2.72 W/kg

LTE B41 1RB Left Edge 0mm/Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.314 V/m; Power Drift = -0.048 dB

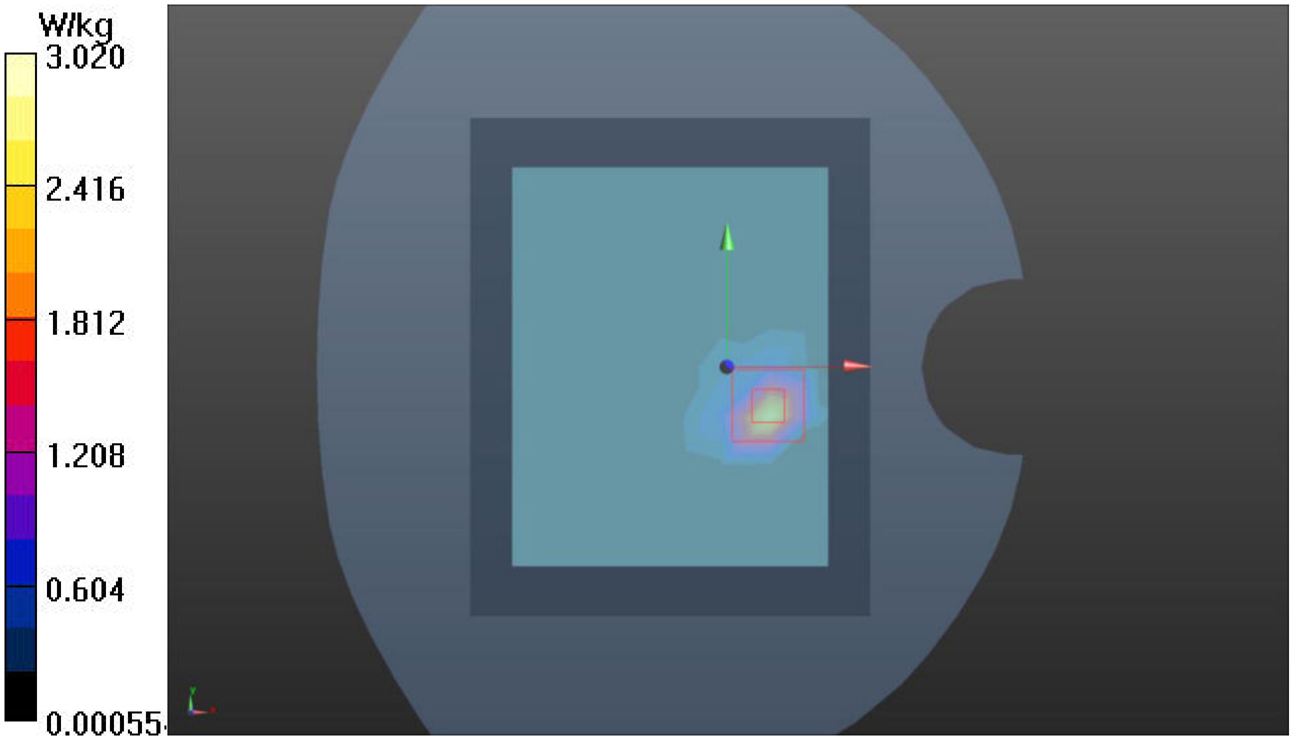
Peak SAR (extrapolated) = 6.43 W/kg

SAR(1 g) = 2.25 W/kg; SAR(10 g) = 0.723 W/kg

Smallest distance from peaks to all points 3 dB below = 8.8 mm

Ratio of SAR at M2 to SAR at M1 = 40.9%

Maximum value of SAR (measured) = 3.02 W/kg



Plot 30 802.11b Right Edge Low

Date: 2025/4/19

Communication System: UID 0, 802.11b (0); Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2412 MHz; σ = 1.796 S/m; ε_r = 38.612; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.62, 8.01, 8.14); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

802.11b Right Edge 0mm/Low/Area Scan (11x14x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (measured) = 3.01 W/kg

802.11b Right Edge 0mm/Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.198 V/m; Power Drift = 0.020 dB

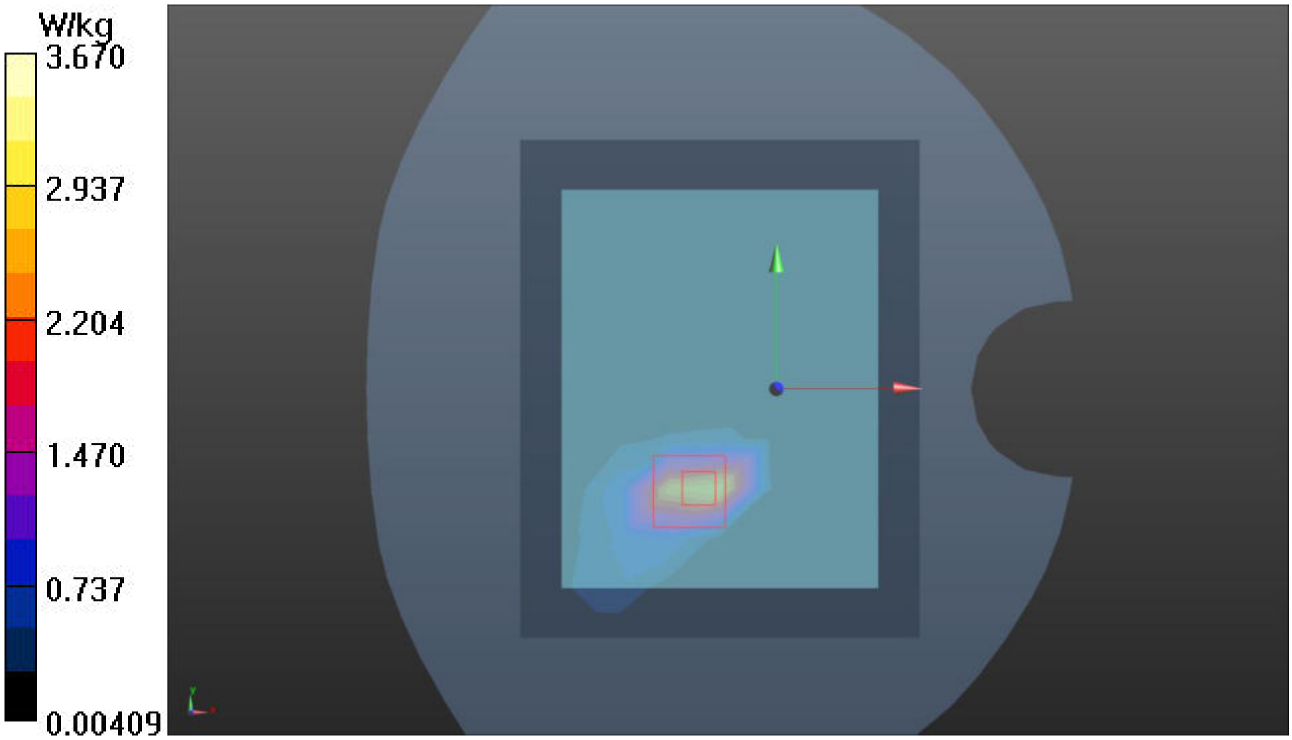
Peak SAR (extrapolated) = 7.50 W/kg

SAR(1 g) = 3.1 W/kg; SAR(10 g) = 1.24 W/kg

Smallest distance from peaks to all points 3 dB below = 9.8 mm

Ratio of SAR at M2 to SAR at M1 = 45.2%

Maximum value of SAR (measured) = 3.67 W/kg



Plot 31 802.11n HT40 Right Edge 0mm High

Date: 2025/4/20

Communication System: UID 0, 802.11n HT40 (0); Frequency: 5795 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 5795 MHz; σ = 5.394 S/m; ε_r = 34.105; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(5.31, 5.59, 5.68); Calibrated: 2024/6/4

Electronics: DAE4 SN1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

802.11n HT40 Right Edge 0mm/High/Area Scan (14x17x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.43 W/kg

802.11n HT40 Right Edge 0mm/High/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.560 V/m; Power Drift = 0.107 dB

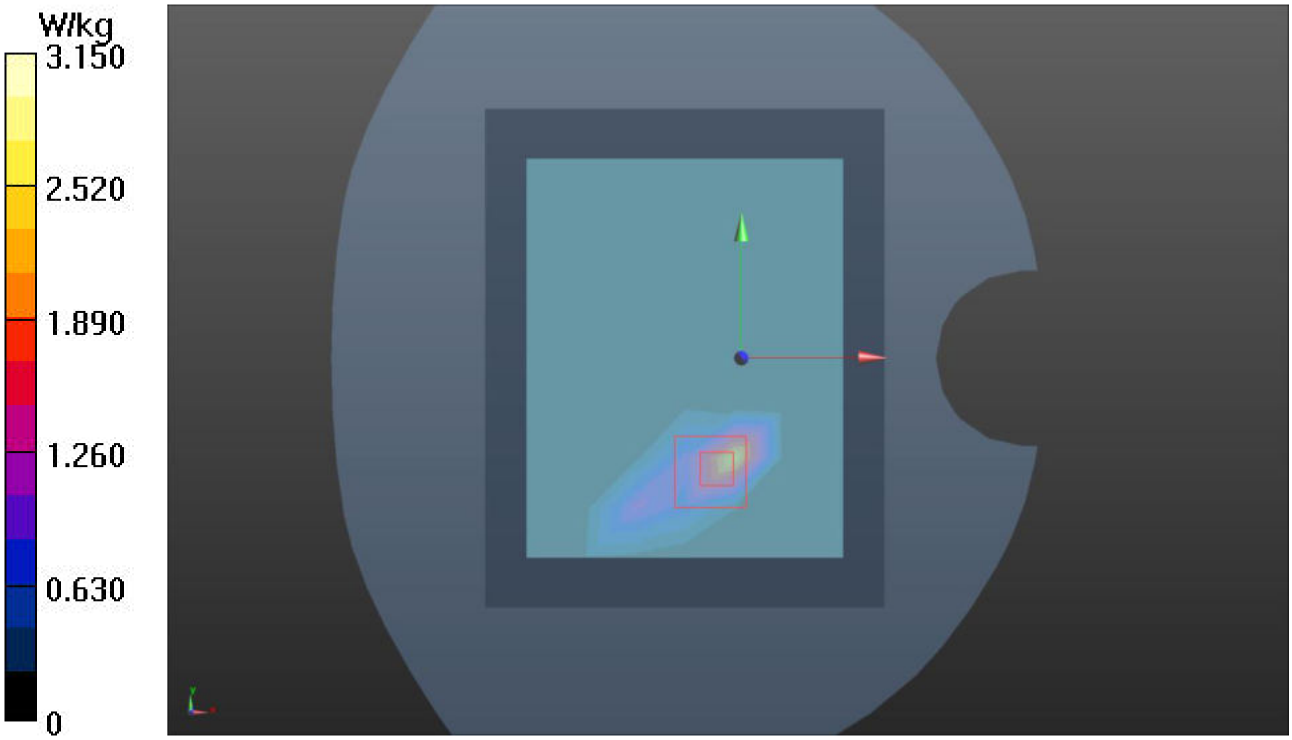
Peak SAR (extrapolated) = 7.18 W/kg

SAR(1 g) = 2.34 W/kg; SAR(10 g) = 0.709 W/kg

Smallest distance from peaks to all points 3 dB below = 9.4 mm

Ratio of SAR at M2 to SAR at M1 = 48.1%

Maximum value of SAR (measured) = 3.15 W/kg



Plot 32 BT DH5 Right Edge 0mm Low

Date: 2025/4/19

Communication System: UID 0, BT (0); Frequency: 2402 MHz;Duty Cycle: 1:1.30

Medium parameters used (interpolated): f = 2402 MHz; σ = 1.785 S/m; ε_r = 38.654; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃ Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Probe: EX3DV4 - SN7689; ConvF(7.62, 8.01, 8.14); Calibrated: 2024/6/4

Electronics: DAE4 Sn1317; Calibrated: 2024/9/10

Phantom: SAM 2; Type: QD000P40CD; Serial: TP:1666

Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

802.11b Right Edge 0mm/Low/Area Scan (11x14x1): Measurement grid: dx=12mm, dy=12mm

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

802.11b Right Edge 0mm/Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.6620 V/m; Power Drift = 0.043 dB

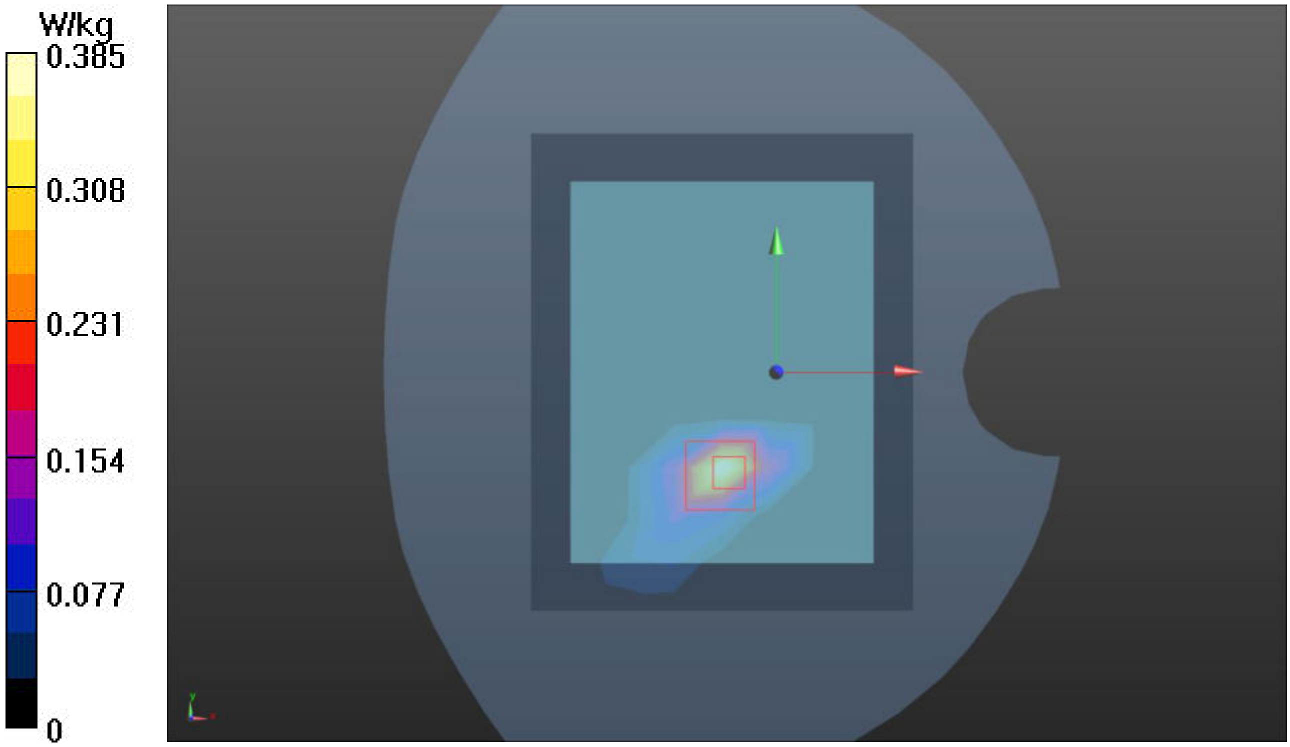
Peak SAR (extrapolated) = 0.839 W/kg

SAR(1 g) = 0.349 W/kg; SAR(10 g) = 0.141 W/kg

Smallest distance from peaks to all points 3 dB below = 16.6 mm

Ratio of SAR at M2 to SAR at M1 = 48.5%

Maximum value of SAR (measured) = 0.385 W/kg



ANNEX D: Probe Calibration Certificate (SN: 7689)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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

Accreditation No.: **SCS 0108**

Client: **TA Shanghai**

Certificate No. **EX-7689_Jun24**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:7689

Calibration procedure(s): QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8
Calibration procedure for dosimetric E-field probes

Calibration date: June 04, 2024

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 NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z91	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
OCP DAK-3.5 (weighted)	SN: 1249	05-Oct-23 (OCP-DAK3.5-1249_Oct23)	Oct-24
OCP DAK-12	SN: 1016	05-Oct-23 (OCP-DAK12-1016_Oct23)	Oct-24
Reference 20 dB Attenuator	SN: CC2552 (20x)	26-Mar-24 (No. 217-04046)	Mar-25
DAE4	SN: 660	23-Feb-24 (No. DAE4-660_Feb24)	Feb-25
Reference Probe EX3DV4	SN: 7349	03-Nov-23 (No. EX3-7349_Nov23)	Nov-24

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-22)	In house check: Jun-24
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by	Joanna Lleshaj	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	

Issued: June 4, 2024

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX-7689_Jun24 Page 1 of 22

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

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

Accreditation No.: **SCS 0108**

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	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ 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) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ 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 E^2-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. 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 $f \leq 800$ 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).

Certificate No: EX-7689_Jun24 Page 2 of 22

EX3DV4 - SN:7689 June 04, 2024

Parameters of Probe: EX3DV4 - SN:7689

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc ($k=2$)
Norm ($\mu V/(V/m)^2$) A	0.56	0.61	0.60	±10.1%
DCP (mV) B	102.7	103.5	104.8	±4.7%

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B $dB\sqrt{\mu V}$	C	D dB	VR mV	Max dev.	Max Unc E $k=2$
0	CW	X	0.00	0.00	1.00	0.00	123.5	±1.1%	±4.7%
		Y	0.00	0.00	1.00		119.7		
		Z	0.00	0.00	1.00		140.9		
10352	Pulse Waveform (200Hz, 10%)	X	1.60	61.02	6.64	10.00	60.0	±2.5%	±9.6%
		Y	1.42	60.16	6.02		60.0		
		Z	1.73	61.65	6.95		60.0		
10353	Pulse Waveform (200Hz, 20%)	X	0.79	60.00	4.97	6.99	80.0	±2.2%	±9.6%
		Y	0.82	60.00	4.79		80.0		
		Z	10.00	72.00	9.00		80.0		
10354	Pulse Waveform (200Hz, 40%)	X	0.32	149.82	0.95	3.98	95.0	±2.8%	±9.6%
		Y	20.00	72.00	7.00		95.0		
		Z	0.20	139.27	0.20		95.0		
10355	Pulse Waveform (200Hz, 60%)	X	0.29	60.00	2.80	2.22	120.0	±1.7%	±9.6%
		Y	8.70	158.89	15.99		120.0		
		Z	9.34	158.65	18.11		120.0		
10387	QPSK Waveform, 1 MHz	X	0.72	66.25	13.93	1.00	150.0	±3.8%	±9.6%
		Y	0.59	64.27	12.38		150.0		
		Z	0.79	67.02	14.20		150.0		
10388	QPSK Waveform, 10 MHz	X	1.50	66.93	14.73	0.00	150.0	±1.3%	±9.6%
		Y	1.37	65.88	13.93		150.0		
		Z	1.55	67.15	14.85		150.0		
10396	64-QAM Waveform, 100 kHz	X	1.72	64.78	16.18	3.01	150.0	±0.9%	±9.6%
		Y	1.71	64.79	15.98		150.0		
		Z	1.75	65.00	16.24		150.0		
10399	64-QAM Waveform, 40 MHz	X	2.95	66.69	15.41	0.00	150.0	±1.6%	±9.6%
		Y	2.86	66.30	15.09		150.0		
		Z	2.87	66.14	15.14		150.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	3.96	66.18	15.49	0.00	150.0	±3.0%	±9.6%
		Y	3.86	65.92	15.26		150.0		
		Z	4.05	66.38	15.59		150.0		

Note: For details on UID parameters see Appendix

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%.

A The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
B Linearization parameter uncertainty for maximum specified field strength.
E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Parameters of Probe: EX3DV4 - SN:7689

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms V^{-2}$	T2 $ms V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
x	10.8	78.12	33.65	2.19	0.00	4.90	0.42	0.00	1.00
y	10.5	76.45	33.69	3.63	0.00	4.91	0.50	0.00	1.00
z	11.2	81.08	33.46	3.12	0.00	4.90	0.41	0.00	1.00

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	-2.4°
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

Note: Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

Parameters of Probe: EX3DV4 - SN:7689

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)C	Relative PermittivityF	ConductivityF (S/m)	ConvF X	ConvF Y	ConvF Z	AlphaG	DepthG (mm)	UncH (k = 2)
13	55.0	0.75	14.55	15.41	17.14	0.00	1.25	±13.3%
750	41.9	0.89	9.58	10.07	10.24	0.34	1.27	±11.0%
835	41.5	0.90	9.44	9.92	10.09	0.34	1.27	±11.0%
1750	40.1	1.37	8.01	8.42	8.56	0.35	1.27	±11.0%
1900	40.0	1.40	7.88	8.28	8.42	0.35	1.27	±11.0%
2000	40.0	1.40	7.78	8.18	8.32	0.35	1.27	±11.0%
2300	39.5	1.67	7.65	8.04	8.17	0.35	1.27	±11.0%
2450	39.2	1.80	7.62	8.01	8.14	0.35	1.27	±11.0%
2600	39.0	1.96	7.39	7.77	7.89	0.35	1.27	±11.0%
3300	38.2	2.71	6.80	7.15	7.27	0.36	1.27	±13.1%
3500	37.9	2.91	6.76	7.11	7.22	0.36	1.27	±13.1%
3700	37.7	3.12	6.71	7.05	7.17	0.36	1.27	±13.1%
3900	37.5	3.32	6.51	6.84	6.95	0.37	1.27	±13.1%
4100	37.2	3.53	6.39	6.72	6.83	0.37	1.27	±13.1%
4400	36.9	3.84	6.31	6.63	6.74	0.37	1.27	±13.1%
4600	36.7	4.04	6.28	6.59	6.70	0.37	1.27	±13.1%
4800	36.4	4.25	6.21	6.53	6.64	0.37	1.27	±13.1%
4950	36.3	4.40	6.11	6.42	6.53	0.36	1.27	±13.1%
5250	35.9	4.71	5.87	6.17	6.27	0.33	1.27	±13.1%
5600	35.5	5.07	5.33	5.60	5.70	0.29	1.27	±13.1%
5750	35.4	5.22	5.31	5.59	5.68	0.28	1.27	±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. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.
F The probes are calibrated using tissue simulating liquids (TSL) that deviate for ϵ and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.
G 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.
H The stated uncertainty is the total calibration uncertainty ($k = 2$) of Norm-ConvF. Therefore, The uncertainty stated is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1528:2020.