TEST REPORT

Report Reference No. .... :	**TRE18110105**	R/C……….: 60229
FCC ID .... :	**2AI62T101**	
Applicant's name .... :	**SOTEN TECHNOLOGY (HONGKONG) CO., LIMITED**	
Address..:	FLAT/RM A 20/F KIU FU COMMERCIAL BLDG 300 LOCKHART ROAD WAN CHAI HK	
Manufacturer.......................................:	Shenzhen SOTEN Technology Co., Ltd.	
Address...:	10th Floor,2nd Building,BaiWang Research and development building, No. 5308 Shahe west road,Xili,Nanshan district,ShenZhen, China	
Test item description .... :	**Rugged Tablet**	
Trade Mark ....:	HUGEROCK	
Model/Type reference.......................:	T101	
Listed Model(s) ....:	S101	
Standard .... :	**FCC 47 CFR Part2.1093** **IEEE 1528: 2013**	
Date of receipt of test sample……….:	Nov. 16, 2018	
Date of testing…………………………...:	Nov. 19, 2018-Jan. 14, 2019	
Date of issue…………………………….:	Jan. 16, 2019	
Result................. ……………………..:	**PASS**	

Compiled by (position+printedname+signature)...:	File administrators:Xiaodong Zhao	Xiaodong Zhao
Supervised by (position+printedname+signature)...:	Test Engineer: Xiaodong Zhao	Xiaodong Zhao
Approved by (position+printedname+signature)...:	Manager: Hans Hu	Hans Hu

Testing Laboratory Name .... :	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address..:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

The test report merely correspond to the test sample.

Contents

1 . Test Standards and Report version

1.1. Test Standards

The tests were performed according to following standards:

FCC 47 Part 2.1093: Radiofrequency radiation exposure evaluation: portable devices.
IEEE Std 1528™-2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
FCC published RF exposure KDB procedures:
865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz
865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations
447498 D01 General RF Exposure Guidance v06: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
248227 D01 802 11 Wi-Fi SAR v02r02: SAR Measurement Proceduresfor802.11 a/b/g Transmitters
941225 D01 3G SAR Procedures v03r01: SAR Measurement Procedures for 3G Devices
941225 D05 SAR for LTE Devices v02r05: SAR Evaluation Considerations for LTE Devices
KDB 616217 D04 SAR for laptop and tablets v01r02: SAR Evaluation Requirements for Laptop, Notebook, Netbook and Tablet Computers

1.2. Report version

Revision No.	Date of issue	Description
N/A	2019-01-16	Original

2. Summary

2.1. Client Information

Applicant:	SOTEN TECHNOLOGY (HONGKONG) CO., LIMITED
Address:	FLAT/RM A 20/F KIU FU COMMERCIAL BLDG 300 LOCKHART ROAD WAN CHAI HK
Manufacturer:	Shenzhen SOTEN Technology Co., Ltd.
Address:	10th Floor,2nd Building,BaiWang Research and development building, No. 5308 Shahe west road,Xili,Nanshan district,ShenZhen, China

2.2. Product Description

Name of EUT:	Rugged Tablet			
Trade Mark:	HUGEROCK			
Model No.:	T101			
Listed Model(s):	S101			
Power supply:	DC 3.7V			
Device Category:	Portable			
Product stage:	Production unit			
RF Exposure Environment:	General Population/Uncontrolled			
IMEI:	866264030421585			
Hardware version:	T101-MainBoard-P3			
Software version:	T101-20181026-Q			
Device Dimension:	Overall (Length x Width x Thickness):316 x 210 x 18mm			
Maximum SAR Value				
Separation Distance:	Body: 0mm			
Max Report SAR Value (1g):	Test location:	PCB	DTS	Simultaneous TX
	Body:	0.793 W/kg	0.098 W/kg	1.193 W/kg
GSM				
Support Band:	GSM850,E-GSM900,DCS1800,PCS1900			
Modulation Type:	GSM/GPRS/EGPRS:GMSK EGPRS:8PSK			
GPRS Multislot Class:	12			
EGPRS Multislot Class:	12			
Antenna Type:	PIFA			
WCDMA				
Operation Band:	WCDMA Band I, WCDMA Band II, WCDMA Band V, WCDMA Band VIII			
Power Class:	Class 3			
Modulation Type:	QPSK			
DC-HSUPA Release Version:	Not Supported			
Antenna Type:	PIFA			

LTE	
Operation Band:	FDD Band 2, FDD Band 7
Power Class:	Class 3
Modulation Type:	QPSK,16QAM
Antenna Type:	PIFA
WIFI 2.4G	
Supported Type:	802.11b/802.11g/802.11n(HT20)/802.11n(HT40)
Modulation Type:	DSSS for 802.11b OFDM for 802.11g/802.11n(HT20)/802.11n(HT40)
Operation Frequency:	802.11b/802.11g/802.11n(HT20):2412MHz~2462MHz 802.11n(HT40):2422MHz~2452MHz
Channel Number:	802.11b/802.11g/802.11n(HT20):11 802.11n(HT40):7
Channel Separation:	5MHz
Antenna Type:	PIFA
Bluetooth	
Version:	BT4.0+EDR
Modulation:	GFSK, π/4DQPSK, 8DPSK
Operation Frequency:	2402MHz~2480MHz
Channel Number:	79
Channel Separation:	1MHz
Antenna Type:	PIFA
Bluetooth	
Version:	BT4.0+BLE
Modulation:	GFSK
Operation Frequency:	2402MHz~2480MHz
Channel Number:	40
Channel Separation:	2MHz
Antenna Type:	PIFA
Remark: *1. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power.*	

3. Test Environment

3.1. Test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

3.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 762235.

IC-Registration No.: 5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Ambient temperature	18 °C to 25 °C
Ambient humidity	30%RH to 70%RH
Air Pressure	950-1050mbar

4. Equipments Used during the Test

Used	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YY-MM-DD)	Due date (YY-MM-DD)
●	Data Acquisition Electronics DAEx	SPEAG	DAE4	1549	2018/04/25	2019/04/24
●	E-field Probe	SPEAG	EX3DV4	7494	2018/02/26	2019/02/25
●	Universal Radio Communication Tester	R&S	CMW500	137681	2018/07/11	2019/07/10
● Tissue-equivalent liquids Validation						
●	Dielectric Assessment Kit	SPEAG	DAK-3.5	1267	2018/03/01	2019/02/28
○	Dielectric Assessment Kit	SPEAG	DAK-12	1130	2018/03/01	2019/02/28
●	Network analyzer	Keysight	E5071C	MY46733048	2018/09/19	2019/09/18
● System Validation						
○	System Validation Antenna	SPEAG	CLA-150	4024	2018/02/21	2021/02/20
○	System Validation Dipole	SPEAG	D450V3	1102	2018/02/23	2021/02/22
○	System Validation Dipole	SPEAG	D750V3	1180	2018/02/07	2021/02/06
●	System Validation Dipole	SPEAG	D835V2	4d238	2018/02/19	2021/02/18
○	System Validation Dipole	SPEAG	D1750V2	1164	2018/02/06	2021/02/05
●	System Validation Dipole	SPEAG	D1900V2	5d226	2018/02/22	2021/02/21
●	System Validation Dipole	SPEAG	D2450V2	1009	2018/02/05	2021/02/04
●	System Validation Dipole	SPEAG	D2600V2	1150	2018/02/05	2021/02/04
○	System Validation Dipole	SPEAG	D5GHzV2	1273	2018/02/21	2021/02/20
●	Signal Generator	R&S	SMB100A	114360	2018/08/21	2019/08/20
●	Power Viewer for Windows	R&S	N/A	N/A	N/A	N/A
●	Power sensor	R&S	NRP18A	101010	2018/08/21	2019/08/20
●	Power sensor	R&S	NRP18A	101011	2018/08/21	2019/08/20
●	Power Amplifier	BONN	BLWA 0160-2M	1811887	2018/11/15	2019/11/14
●	Dual Directional Coupler	Mini-Circuits	ZHDC-10-62-S+	F975001814	2018/11/15	2019/11/14
●	Attenuator	Mini-Circuits	VAT-3W2+	1819	2018/11/15	2019/11/14
●	Attenuator	Mini-Circuits	VAT-10W2+	1741	2018/11/15	2019/11/14

Note:

1. *The Probe,Dipole and DAE calibration reference to the Appendix B and C.*
2. *Referring to KDB865664 D01, the dipole calibration interval can be extended to 3 years with justifcatio. The dipole are also not physically damaged or repaired during the interval.*

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met,extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

6. SAR Measurements System Configuration

6.1. SAR Measurement Set-up

The DASY5 system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronic (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.

A unit to operate the optical surface detector which is connected to the EOC.

The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.

The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2003.

DASY5 software and SEMCAD data evaluation software.

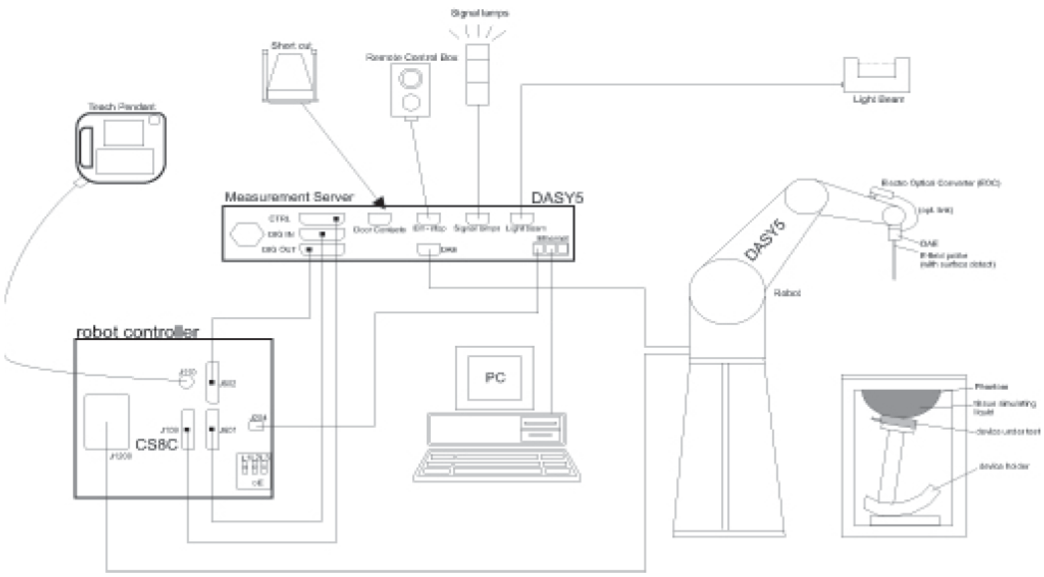
Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.

The generic twin phantom enabling the testing of left-hand and right-hand usage.

The device holder for handheld Mobile Phones.

Tissue simulating liquid mixed according to the given recipes.

System validation dipoles allowing to validate the proper functioning of the system.



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.

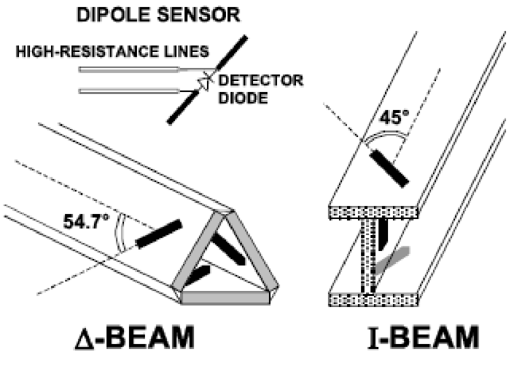
- **Probe Specification**

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	4 MHz to 10 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 W/kg; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 6 GHz Dosimetry in strong gradient fields Compliance tests of Mobile Phones
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

- **Isotropic E-Field Probe**

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



6.3. Phantoms

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI isfully compatible with standard and all known tissuesimulating liquids. ELI has been optimized regarding its performance and can beintegrated into our standard phantom tables. A cover prevents evaporation ofthe liquid. Reference markings on the phantom allow installation of thecomplete setup, including all predefined phantom positions and measurementgrids, by teaching three points. The phantom is compatible with all SPEAGdosimetric probes and dipoles.

ELI Phantom

6.4. Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the DASY system.
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

Device holder supplied by SPEAG

7. SAR Test Procedure

7.1. Scanning Procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5%.

The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

Area Scan
The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot.Before starting the area scan a grid spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged. After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

Zoom Scan
After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm.

Spatial Peak Detection
The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses.The DASY5 system allows evaluations that combine measured data and robot positions, such as:
• maximum search
• extrapolation
• boundary correction
• peak search for averaged SAR
During a maximum search, global and local maxima searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard’s method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.
Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space.
They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard’s method for extrapolation.

A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 5mm steps.

Table 1: Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v04

<table>
<tr><td colspan="3"></td><td>$\leq$ 3 GHz</td><td>$>$ 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>$\leq$ 2 GHz: $\leq$ 15 mm
2 – 3 GHz: $\leq$ 12 mm</td><td>3 – 4 GHz: $\leq$ 12 mm
4 – 6 GHz: $\leq$ 10 mm</td></tr>
<tr><td colspan="2">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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>$\leq$ 2 GHz: $\leq$ 8 mm
2 – 3 GHz: $\leq$ 5 mm*</td><td>3 – 4 GHz: $\leq$ 5 mm*
4 – 6 GHz: $\leq$ 4 mm*</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>$\leq$ 5 mm</td><td>3 – 4 GHz: $\leq$ 4 mm
4 – 5 GHz: $\leq$ 3 mm
5 – 6 GHz: $\leq$ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>$\leq$ 4 mm</td><td>3 – 4 GHz: $\leq$ 3 mm
4 – 5 GHz: $\leq$ 2.5 mm
5 – 6 GHz: $\leq$ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>$\geq$ 30 mm</td><td>3 – 4 GHz: $\geq$ 28 mm
4 – 5 GHz: $\geq$ 25 mm
5 – 6 GHz: $\geq$ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is $\leq$ 1.4 W/kg, $\leq$ 8 mm, $\leq$ 7 mm and $\leq$ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

7.2. Data Storage and Evaluation

Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors),s together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DA4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [W/kg], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

Data Evaluation

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	Sensitivity:	Normi, ai0, ai1, ai2
	Conversion factor:	ConvFi
	Diode compression point:	Dcpi
Device parameters:	Frequency:	f
	Crest factor:	cf
Media parameters:	Conductivity:	σ
	Density:	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

Vi: compensated signal of channel (i = x, y, z)
Ui: input signal of channel (i = x, y, z)
cf: crest factor of exciting field (DASY parameter)
dcpi: diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

$$\mathrm{E-fieldprobes:} \qquad E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

$$\mathrm{H-fieldprobes:} \qquad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1}f + a_{i2}f^2}{f}$$

Vi: compensated signal of channel (i = x, y, z)
Normi: sensor sensitivity of channel (i = x, y, z), [mV/(V/m)2] for E-field Probes
ConvF: sensitivity enhancement in solution
aij: sensor sensitivity factors for H-field probes
f: carrier frequency [GHz]
Ei: electric field strength of channel i in V/m
Hi: magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

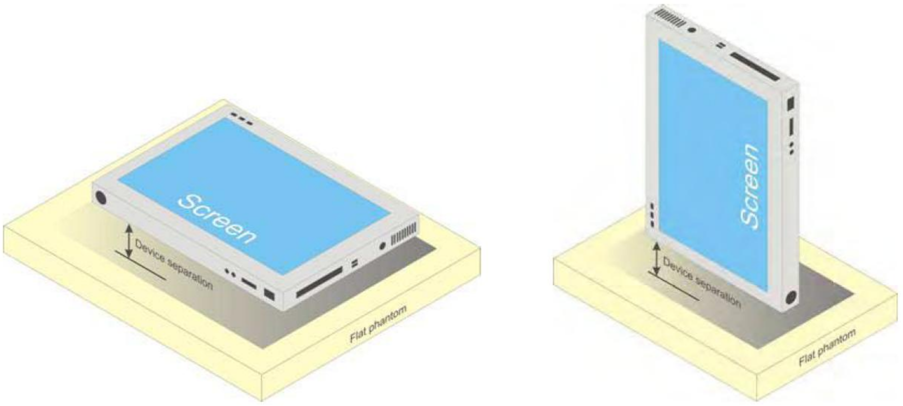
SAR:	local specific absorption rate in W/kg
Etot:	total field strength in V/m
σ:	conductivity in [mho/m] or [Siemens/m]
ρ:	equivalent tissue density in g/cm3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.

8. Position of the wireless device in relation to the phantom

8.1. Body-supported device

Other devices that fall into this category include tablet type portable computers and credit card transaction authorisation terminals, point-of-sale and/or inventory terminals. Where these devices may be torso or limb-supported, the same principles for body-supported devices are applied.



b) Tablet form factor portable computer

9. Dielectric Property Measurements & System Check

9.1. Tissue Dielectric Parameters

The liquid has previously been proven to be suited for worst-case. It's satisfying the latest tissue dielectric parameters requirements proposed by the KDB865664.

Tissue dielectric parameters for Head and Body				
Target Frequency	Head		Body	
(MHz)	εr	σ(s/m)	εr	σ(s/m)
835	41.50	0.90	55.20	0.97
1800-2000	40.00	1.40	53.30	1.52
2450	39.20	1.80	52.70	1.95
2600	39.00	1.96	52.50	2.16

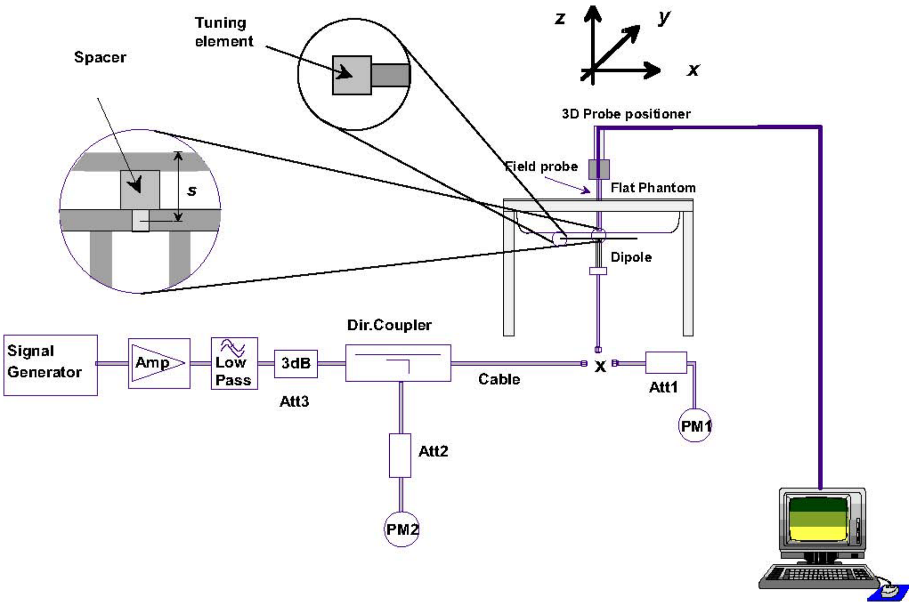
Check Result:

Dielectric performance of Body tissue simulating liquid									
Frequency (MHz)	εr		σ(s/m)		Delta (εr)	Delta (σ)	Limit	Temp (℃)	Date
	Target	Measured	Target	Measured					
835	55.20	55.40	0.97	0.97	0.36%	-0.41%	±5%	22	2019-01-07
1900	53.30	53.72	1.52	1.55	0.79%	1.97%	±5%	22	2019-01-08
2450	52.70	53.03	1.95	2.00	0.63%	2.56%	±5%	22	2019-01-09
2600	52.50	52.78	2.16	2.15	0.53%	-0.46%	±5%	22	2019-01-10

9.2. SAR System Check

The purpose of the system check is to verify that the system operates within its specifications at the decice test frequency.The system check is simple check of repeatability to make sure that the system works correctly at the time of the compliance test;

System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system (±10%).
System check is performed regularly on all frequency bands where tests are performed with the DASY5 system.



System Performance Check Setup

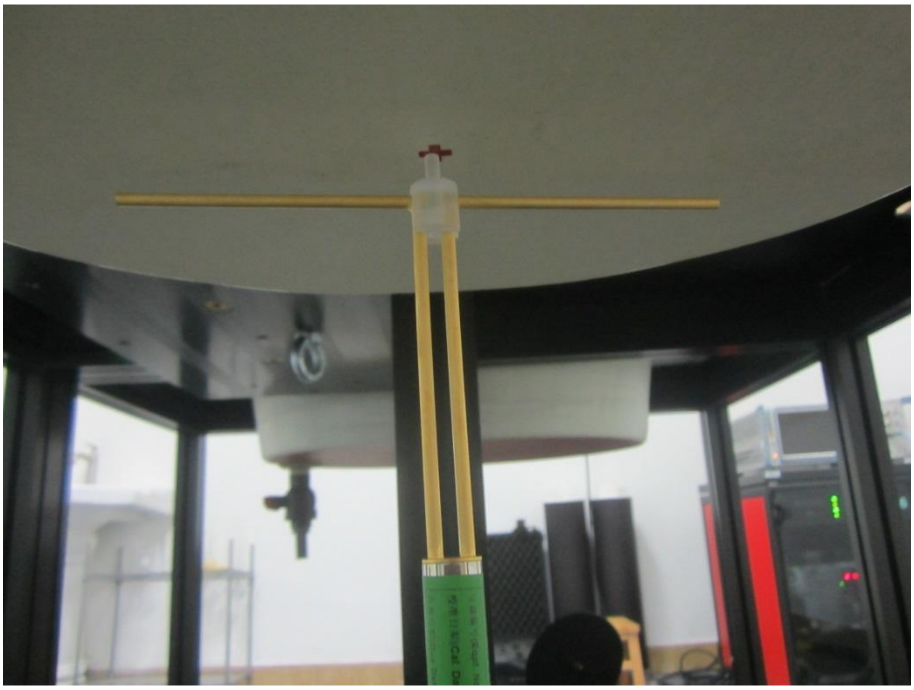


Photo of Dipole Setup

Check Result:

Body											
Frequency (MHz)	1g SAR			10g SAR			Delta (1g)	Delta (10g)	Limit	Temp (℃)	Date
	Target 1W	Normalize to 1W	Measured 250mW	Target 1W	Normalize to 1W	Measured 250mW					
835	9.64	10.08	2.52	6.32	6.64	1.66	4.56%	5.06%	±10%	22	2019-01-07
1900	39.80	41.60	10.40	20.90	21.68	5.42	4.52%	3.73%	±10%	22	2019-01-08
2450	49.40	50.00	12.50	23.30	23.32	5.83	1.21%	0.09%	±10%	22	2019-01-09
2600	54.60	58.80	14.70	24.40	26.36	6.59	7.69%	8.03%	±10%	22	2019-01-10

Plots of System Performance Check

System Performance Check-Body 835MHz

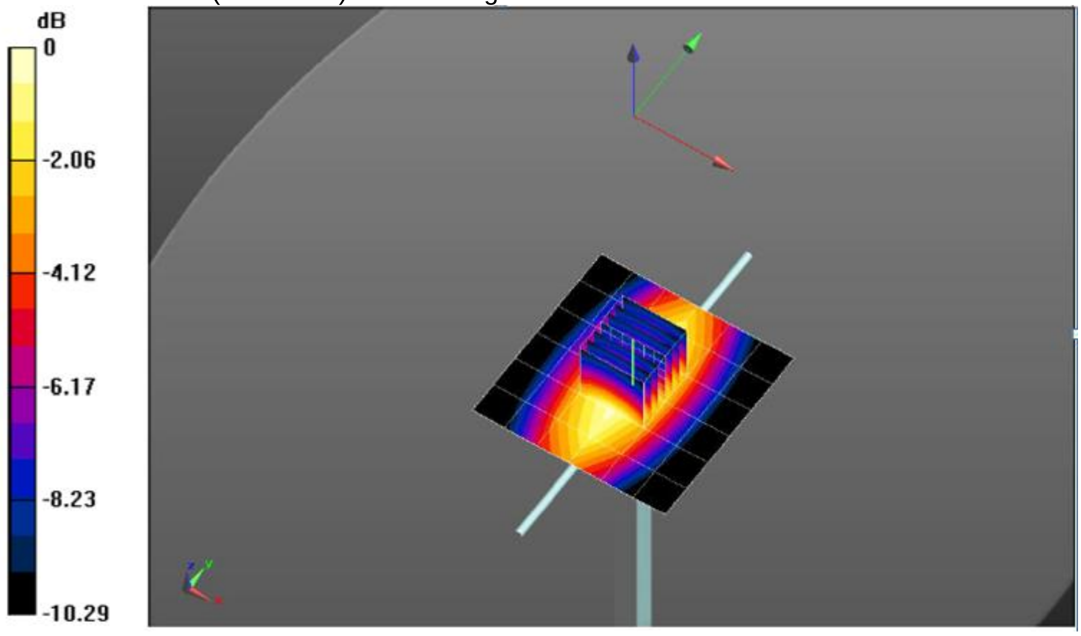
DUT: D835V2; Type: D835V2; Serial: 4d238
Date: 2019-01-07
Communication System: UID 0, CW (0); Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.966 S/m; ε_r = 55.403; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(10.5, 10.5, 10.5); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=15mm,Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.40 W/kg

Body/d=15mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.67 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.97 W/kg
SAR(1 g) = 2.52 W/kg; SAR(10 g) = 1.66 W/kg
Maximum value of SAR (measured) = 3.44 W/kg



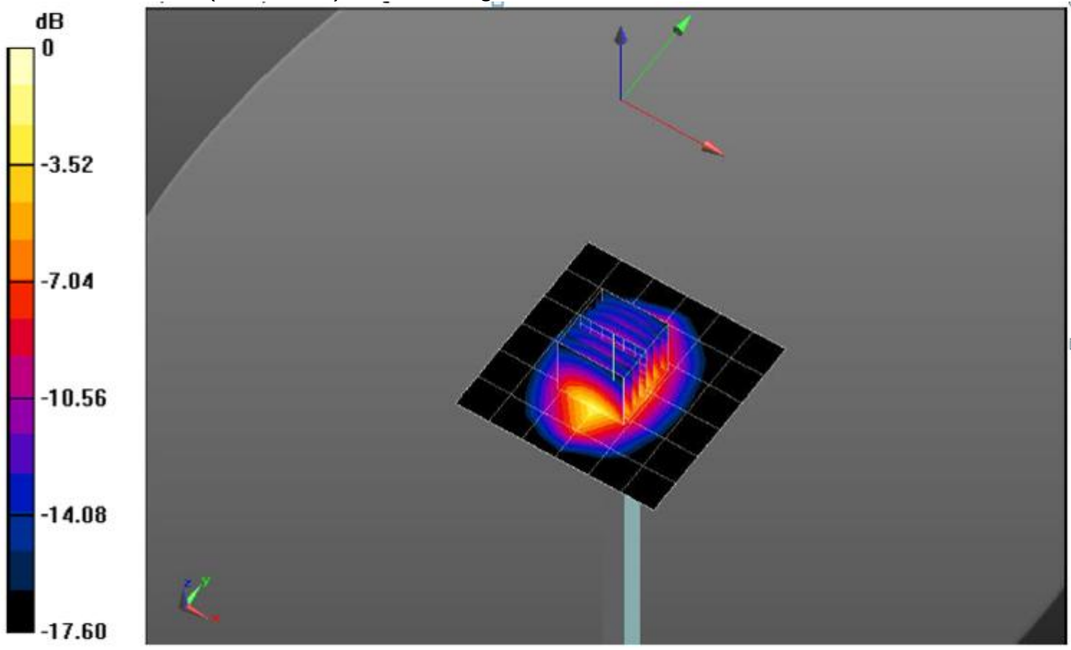
System Performance Check-Body 1900MHz

DUT: D1900V2; Type: D1900V2; Serial: 5d226
Date:2019-01-08
Communication System: UID 0, CW (0); Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.553 S/m; ε_r = 53.719; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.42, 8.42, 8.42); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=10mm,Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.4 W/kg
Body/d=10mm,Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 105.9 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.42 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



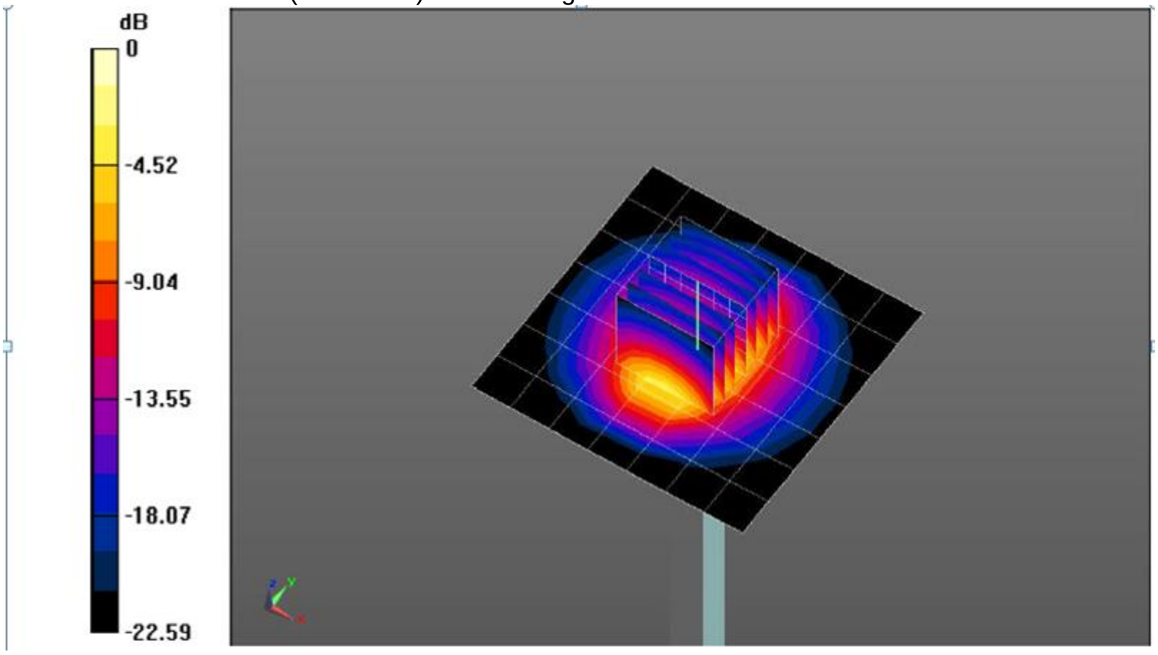
SystemPerformanceCheck-Body 2450MHz

DUT: D2450V2; Type: D2450V2; Serial: 1009
Date:2019-01-09
Communication System: UID 0, CW (0); Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.001 S/m; ε_r = 53.03; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(8.08, 8.08, 8.08); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=10mm,Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.1 W/kg
Body/d=10mm,Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.6 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.83 W/kg
Maximum value of SAR (measured) = 20.7 W/kg



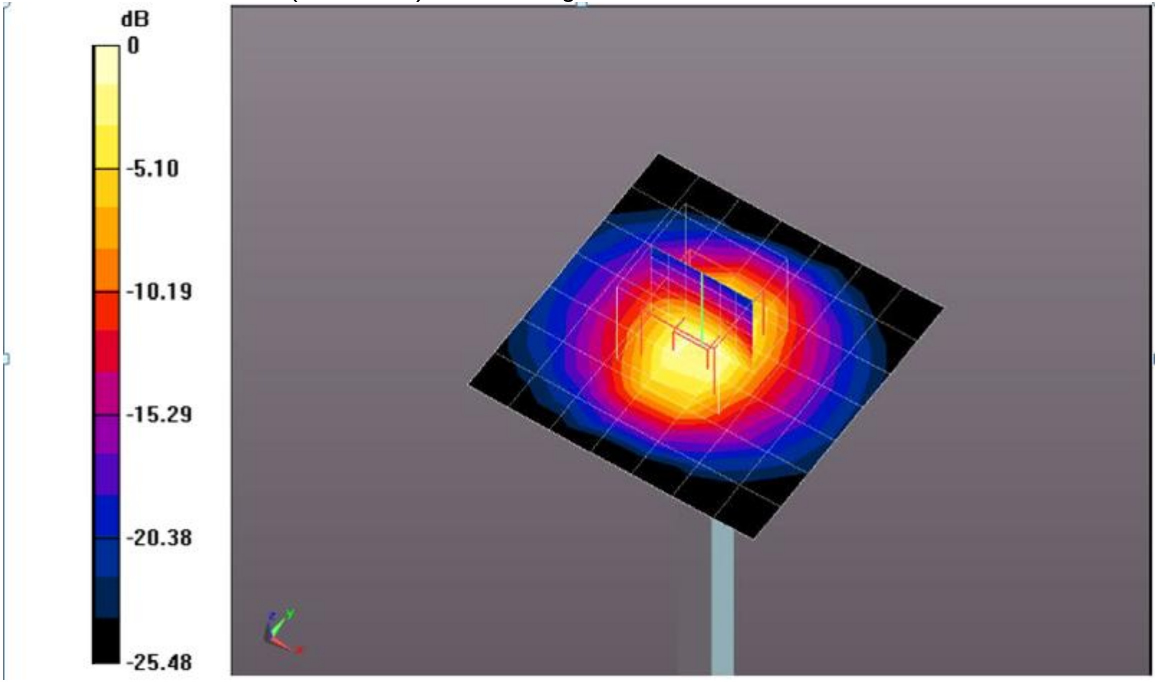
SystemPerformanceCheck-Body 2600MHz

DUT: D2600V2; Type: D2600V2; Serial: 1150
Date:2019-01-10
Communication System: UID 0, CW (0); Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.15 S/m; ε_r = 52.78; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7494; ConvF(7.51, 7.51, 7.51); Calibrated: 2/26/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1549; Calibrated: 4/25/2018
- Phantom: ELI V8.0 ; Type: QD OVA 004 AA ; Serial: 2078
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Body/d=10mm,Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 26.6 W/kg
Body/d=10mm,Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.2 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 31.6 W/kg
SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.59 W/kg
Maximum value of SAR (measured) = 25.1 W/kg



10. SAR Exposure Limits

SAR assessments have been made in line with the requirements of FCC 47 CFR § 2.1093.

Type Exposure	Limit (W/kg)	
	General Population/ Uncontrolled Exposure Environment	Occupational/ Controlled Exposure Environment
Spatial Average SAR (whole body)	0.08	0.4
Spatial Peak SAR (1g cube tissue for head and trunk)	**1.6**	8.0
Spatial Peak SAR (10g for limb)	4.0	20.0

Population/Uncontrolled Environments: are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

11. Conducted Power Measurement Results

GSM Conducted Power

1. *Per KDB 447498 D01, the maximum output power channel is used for SAR testing and further SAR test reduction.*
2. *Per KDB 941225 D01, considering the possibility of e.g. 3rd party VoIP operation for Head and Body-worn SAR test reduction for GSM and GPRS modes is determined by the source-base time-averaged output power including tune-up tolerance. The 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.*
3. *Per KDB941225 D01, for hotspot SAR test reduction for GPRS modes is determined by the source-based time-averaged output power including tune-up tolerance, For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.*

Mode: GSM850		**Burst Average Power (dBm)**			Division Factors	**Frame-Average Power (dBm)**		
		CH128	CH190	CH251		CH128	CH190	CH251
		824.2MHz	836.6MHz	848.8MHz		824.2MHz	836.6MHz	848.8MHz
GSM		31.55	33.15	32.01	-9.03	22.52	24.12	22.98
GPRS (GMSK)	1TX slot	32.99	34.25	33.53	-9.03	23.96	25.22	24.50
	2TXslots	32.17	33.43	32.82	-6.02	26.15	27.41	26.80
	3TXslots	30.52	31.92	31.25	-4.26	26.26	27.66	26.99
	4TXslots	29.73	31.16	30.49	-3.01	26.72	28.15	27.48
EGPRS (8PSK)	1TX slot	27.68	29.05	28.76	-9.03	18.65	20.02	19.73
	2TXslots	26.95	27.92	27.68	-6.02	20.93	21.90	21.66
	3TXslots	25.14	26.08	25.85	-4.26	20.88	21.82	21.59
	4TXslots	24.33	25.20	25.05	-3.01	21.32	22.19	22.04
Mode: PCS1900		**Burst Average Power (dBm)**			Division Factors	**Frame-Average Power (dBm)**		
		CH512	CH661	CH810		CH512	CH661	CH810
		1850.2MHz	1880.0MHz	1909.8MHz		1850.2MHz	1880.0MHz	1909.8MHz
GSM		29.83	30.31	29.82	-9.03	20.80	21.28	20.79
GPRS (GMSK)	1TXslot	29.92	30.34	29.87	-9.03	20.89	21.31	20.84
	2TXslots	29.38	29.85	29.42	-6.02	23.36	23.83	23.40
	3TXslots	27.79	28.30	28.04	-4.26	23.53	24.04	23.78
	4TXslots	26.69	27.20	26.99	-3.01	23.68	24.19	23.98
EGPRS (8PSK)	1TXslot	26.12	27.26	27.20	-9.03	17.09	18.23	18.17
	2TXslots	25.26	26.00	26.37	-6.02	19.24	19.98	20.35
	3TXslots	23.53	24.19	24.28	-4.26	19.27	19.93	20.02
	4TXslots	22.73	23.28	23.42	-3.01	19.72	20.27	20.41

Note:

1) Division Factors

To Frame-Average Power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> Burst Average Power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> Burst Average Power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> Burst Average Power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> Burst Average Power divided by (8/4) => -3.01dB

WCDMA Conducted Power

1. *The following tests were conducted according to the test requirements outlines in 3GPP TS34.121 specification.*
2. *The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode to determine SAR test exclusion*

A summary of thest setting are illustrated belowe:

HSDPA Setup Configureation:

a) The EUT was connected to base station RS CMU200 referred to the setup configuration
b) The RF path losses were compensated into the measurements
c) A call was established between EUT and base station with following setting:
   i. Set Gain Factors (βc and βd) and parameters were set according to each specific sub-test in the following table, C10.1.4, Quoted from the TS 34.121
   ii. Set RMC 12.2Kbps + HSDPA mode
   iii. Set Cell Power=-86dBm
   iv. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   v. Select HSDPA uplink parameters
   vi. Set Delta ACK, Delta NACK and Delta CQI=8
   vii. Set Ack-Nack repetition Factor to 3
   viii. Set CQI Feedback Cycle (K) to 4ms
   ix. Set CQI repetition factor to 2
   x. Power ctrl mode= all up bits
d) The transmitter maximum output power waw recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	CM (dB) *(Note 3)*	MPR (dB) *(Note 3)*
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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$, and Δ_{CQI} = 24/15 with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: 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 signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configureation:

a) The EUT was connected to base station RS CMU200 referred to the setup configuration
b) The RF path losses were compensated into the measurements
c) A call was established between EUT and base station with following setting:
   i. Call configs = 5.2b, 5.9b, 5.10b, and 5.13.2B with QPSK
   ii. Set Gain Factors (βc and βd) and parameters (AG index) were set according to each specific sub-test in the following table, C11.1.3, Quoted from the TS 34.121
   iii. Set Cell Power=-86dBm
   iv. Set channel type= 12.2Kbps + HSPA mode
   v. Set UE Target power
   vi. Set Ctrl mode=Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal the target E-TFCI of 75 for Sub-test 1, and other subtest's E-TFCI
d) The transmitter maximum output power waw recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1)*	β_{ec}	β_{ed} *(Note 5) (Note 6)*	β_{ed} *(SF)*	β_{ed} *(Codes)*	CM *(dB) (Note 2)*	MPR *(dB) (Note 2)*	*AG Index (Note 6)*	*E-TFCI*
1	11/15 *(Note 3)*	15/15 *(Note 3)*	64	11/15 *(Note 3)*	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 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 *(Note 4)*	15/15 *(Note 4)*	64	15/15 *(Note 4)*	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with 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 signalled 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 signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.

Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

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

Setup Configuration

General Note:

1. Per KDB 941225 D01, SAR for Head / Hotsport / Body-worn Exposure is measured using a 12.2Kbps RMC with TPC bit ocnfigured to all 1s
2. Per KDB 941225 D01 RMC12.2Kbps setting is used to evaluate SAR. If the maximum output power and Tune-up tolerance specified for production units in HSDPA/HSUPA is ≦1/4dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio fo specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC 12.2Kbps and the adjusted SAR is ≦1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.

Mode		WCDMA Band II			WCDMA Band V		
		Conducted Power (dBm)			Conducted Power (dBm)		
		CH9262	CH9400	CH9538	CH4132	CH4183	CH4233
		1852.4MHz	1880.0MHz	1907.6MHz	826.4MHz	836.6MHz	846.6MHz
AMR 12.2K		22.13	21.64	21.28	23.17	23.69	23.44
RMC 12.2K		22.26	21.89	21.32	23.34	23.73	23.61
HSDPA	Subtest-1	20.52	20.29	20.34	22.11	22.04	22.71
	Subtest-2	19.88	19.73	19.61	21.42	22.04	22.03
	Subtest-3	19.98	19.64	19.43	21.42	21.96	21.95
	Subtest-4	19.96	19.55	19.30	21.28	21.87	21.88
HSUPA	Subtest-1	19.98	19.77	19.84	19.83	20.43	20.48
	Subtest-2	19.89	19.73	19.75	19.92	20.53	20.56
	Subtest-3	19.03	19.87	19.78	20.86	21.46	21.49
	Subtest-4	19.96	19.78	19.80	19.48	20.08	19.97
	Subtest-5	19.38	19.17	19.36	20.21	19.91	19.95

LTE Conducted Power

General Note:

1. CMW500 base station simulator was used to setup the connection with EUT; the frequency band, channel,bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUTtransmitting at maximum power and at different configurations which are requested to be reported to FCC, forconducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and powermeasurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RBallocation, using the RB offset and required test channel combination with the highest maximum output power for RBoffsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than thesame configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, smaller bandwidth output power for each RB allocation configuration is > not ½ dBhigher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supportedbandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

LTE-FDD Band 2				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
1.4MHz	QPSK	1	0	21.07	21.02	21.00
			2	21.03	20.03	21.04
			5	21.08	21.02	21.02
		3	0	21.13	21.15	21.08
			1	21.17	21.07	21.11
			3	21.18	21.06	21.08
		6	0	20.12	20.03	20.02
	16QAM	1	0	20.36	20.37	20.24
			2	20.37	20.15	20.28
			5	20.41	20.37	20.26
		3	0	20.22	20.14	20.15
			1	20.26	20.09	20.18
			3	20.30	20.07	20.14
		6	0	19.17	19.03	19.18
3MHz	QPSK	1	0	21.05	21.04	21.00
			8	21.09	21.06	21.02
			14	21.11	20.97	20.98
		8	0	20.00	20.03	20.04
			4	20.06	20.09	20.04
			7	20.16	20.05	20.03
		15	0	20.17	20.05	20.03
	16QAM	1	0	20.38	20.40	20.21
			8	20.34	20.37	20.18
			14	20.42	20.36	20.24
		8	0	19.18	19.06	19.04
			4	19.20	19.03	19.07
			7	19.28	19.07	19.02
		15	0	19.17	19.06	19.07

LTE-FDD Band 2				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
5MHz	QPSK	1	0	21.21	21.16	21.11
			12	21.15	21.08	21.09
			24	21.20	21.03	21.05
		12	0	20.20	20.14	20.17
			7	20.19	20.10	20.04
			13	20.23	20.09	20.07
		25	0	20.22	20.05	20.02
	16QAM	1	0	20.50	20.41	20.22
			12	20.49	20.37	20.19
			24	20.51	20.30	20.23
		12	0	19.24	19.19	19.09
			7	19.26	19.12	19.17
			13	19.34	19.22	19.12
		25	0	19.26	19.09	19.07
10MHz	QPSK	1	0	21.16	21.21	20.96
			24	21.17	21.14	21.05
			49	21.14	20.99	21.04
		25	0	20.18	20.01	20.06
			24	20.21	20.05	20.09
			49	20.23	20.06	20.05
		50	0	20.24	20.07	19.99
	16QAM	1	0	20.51	20.59	20.15
			24	20.46	20.38	20.17
			49	20.47	20.41	20.30
		25	0	19.17	19.14	19.04
			24	19.20	19.11	19.02
			49	19.27	19.12	19.03
		50	0	19.29	19.14	19.02

LTE-FDD Band 2				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
15MHz	QPSK	1	0	21.20	21.22	20.92
			38	21.17	21.12	20.96
			74	21.18	20.96	21.06
		38	0	20.14	20.10	20.15
			18	20.20	20.04	20.17
			37	20.22	20.08	20.19
		75	0	20.23	20.16	20.13
	16QAM	1	0	20.52	20.50	20.23
			38	20.43	20.41	20.32
			74	20.47	20.29	20.35
		38	0	19.19	19.08	19.12
			18	19.22	19.03	19.08
			37	19.23	19.10	19.15
		75	0	19.26	19.18	19.08
20MHz	QPSK	1	0	21.32	21.41	20.93
			49	21.29	21.24	20.76
			99	21.39	21.08	21.04
		50	0	20.24	20.12	20.08
			25	20.19	20.08	20.01
			50	20.29	20.10	20.05
		100	0	20.23	20.16	20.01
	16QAM	1	0	20.56	20.73	20.29
			49	20.62	20.64	20.31
			99	20.57	20.47	20.34
		50	0	19.24	19.20	19.05
			25	19.26	19.13	19.10
			50	19.28	19.14	19.07
		100	0	19.31	19.18	19.05

LTE-FDD Band 7				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
5MHz	QPSK	1	0	22.24	22.27	22.55
			12	22.20	22.18	22.41
			24	22.32	22.19	22.34
		12	0	21.18	21.25	21.38
			7	21.29	21.31	21.34
			13	21.33	21.20	21.40
		25	0	21.23	21.17	21.40
	16QAM	1	0	21.38	21.43	21.71
			12	21.46	21.39	21.62
			24	21.55	21.34	21.51
		12	0	20.24	20.31	20.32
			7	20.26	20.29	20.36
			13	20.33	20.24	20.38
		25	0	20.20	20.13	20.41
10MHz	QPSK	1	0	22.15	22.21	22.51
			24	22.34	22.16	22.39
			49	22.52	22.18	22.32
		25	0	21.41	21.36	21.37
			24	21.37	21.21	21.41
			49	21.48	21.17	21.43
		50	0	21.37	21.17	21.47
	16QAM	1	0	21.40	21.50	21.75
			24	21.67	21.52	21.67
			49	21.78	21.50	21.59
		25	0	20.43	20.34	20.27
			24	20.28	20.39	20.33
			49	20.45	20.14	20.41
		50	0	20.34	20.15	20.47

LTE-FDD Band 7				Actual output Power (dBm)		
Band-width	Modulation	RB allocation	RB offset	Low	Middle	High
15MHz	QPSK	1	0	22.28	22.27	22.39
			38	22.43	22.18	22.32
			74	22.59	22.19	22.43
		38	0	21.34	21.41	21.85
			18	22.03	21.34	21.69
			37	22.12	21.45	21.87
		75	0	21.86	21.29	22.16
	16QAM	1	0	21.49	21.57	22.09
			38	21.23	21.51	21.22
			74	21.86	21.63	21.30
		38	0	21.05	20.41	20.94
			18	21.13	20.53	20.81
			37	21.14	20.23	20.70
		75	0	20.84	20.20	20.69
20MHz	QPSK	1	0	22.41	22.40	22.19
			49	22.45	22.41	22.61
			99	22.59	22.47	22.64
		50	0	21.91	21.87	21.87
			25	21.82	22.04	22.05
			50	21.95	21.94	22.12
		100	0	21.53	21.38	22.03
	16QAM	1	0	21.24	21.88	20.85
			49	21.64	21.73	20.82
			99	21.78	21.85	20.81
		50	0	20.67	20.77	20.71
			25	20.82	20.58	20.64
			50	20.88	20.48	20.85
		100	0	20.79	20.15	20.61

WLAN Conducted Power

For 2.4GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11b were for SAR evaluation. 802.11g/n were not investigated since the average putput powers over all channels and data rates were not more than 0.25dB higher than the tested channel in the lowest data rate of 802.11b mode.

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

WIFI 2.4G			
Mode	Channel	Frequency (MHz)	Conducted Average Power (dBm)
802.11b	1	2412	14.37
	6	2437	15.66
	11	2462	15.21
802.11g	1	2412	12.20
	6	2437	13.49
	11	2462	13.08
802.11n(HT20)	1	2412	12.43
	6	2437	13.36
	11	2462	13.05
802.11n(HT40)	3	2422	12.34
	6	2437	13.42
	9	2452	12.28

Bluetooth Conducted Power

Bluetooth			
Mode	Channel	Frequency (MHz)	Conducted power (dBm)
GFSK	0	2402	3.93
	39	2441	5.32
	78	2480	5.03
π/4QPSK	0	2402	2.94
	39	2441	4.14
	78	2480	3.76
8DPSK	0	2402	2.86
	39	2441	4.20
	78	2480	3.78
GFSK(BLE)	0	2402	3.89
	19	2440	5.04
	39	2480	4.94

12. Maximum Tune-up Limit

GSM		
Mode	Maximum Tune-up (dBm)	
	GSM850	PCS1900
GSM (GMSK, 1Tx Slot)	33.50	30.50
GPRS (GMSK, 1Tx Slots)	34.50	30.50
GPRS (GMSK, 2Tx Slots)	33.50	30.00
GPRS (GMSK, 3Tx Slots)	32.00	28.50
GPRS (GMSK, 4Tx Slots)	31.50	27.50
EGPRS (8PSK, 1Tx Slot)	29.50	27.50
EGPRS (8PSK, 2Tx Slots)	28.00	26.50
EGPRS (8PSK, 3Tx Slots)	26.50	24.50
EGPRS (8PSK, 4Tx Slots)	25.50	23.50

WCDMA		
Mode	Maximum Tune-up (dBm)	
	WCDMA Band II	WCDMA Band V
AMR 12.2Kbps	22.50	24.00
RMC 12.2Kbps	22.50	24.00
HSDPA Subtest-1	21.00	23.00
HSDPA Subtest-2	20.00	22.50
HSDPA Subtest-3	20.00	22.00
HSDPA Subtest-4	20.00	22.00
HSUPA Subtest-1	20.00	20.50
HSUPA Subtest-2	20.00	21.00
HSUPA Subtest-3	20.00	21.50
HSUPA Subtest-4	20.00	20.50
HSUPA Subtest-5	20.00	20.50

LTE				
Fequency Band	Band-width(MHz)	Modulation	RB allocation	Maximum Tune-up (dBm)
LTE Band 2	1.4	QPSK	1	21.50
			3	21.50
			6	20.50
		16QAM	1	20.50
			3	20.50
			6	19.50
	3	QPSK	1	21.50
			8	20.50
			15	20.50
		16QAM	1	20.50
			8	19.50
			15	19.50
	5	QPSK	1	21.50
			12	20.50
			25	20.50
		16QAM	1	21.00
			12	19.50
			25	19.50
	10	QPSK	1	21.50
			25	20.50
			50	20.50
		16QAM	1	21.00
			25	19.50
			50	19.50
	15	QPSK	1	21.50
			38	20.50
			75	20.50
		16QAM	1	21.00
			38	19.50
			75	19.50
	20	QPSK	1	21.50
			50	20.50
			100	20.50
		16QAM	1	21.00
			50	19.50
			100	19.50

LTE				
Fequency Band	Band-width(MHz)	Modulation	RB allocation	Maximum Tune-up (dBm)
LTE Band 7	5	QPSK	1	23.00
			12	21.50
			25	21.50
		16QAM	1	22.00
			12	20.50
			25	20.50
	10	QPSK	1	23.00
			25	21.50
			50	21.50
		16QAM	1	22.00
			25	20.50
			50	20.50
	15	QPSK	1	23.00
			38	22.50
			75	22.50
		16QAM	1	22.50
			38	21.50
			75	21.00
	20	QPSK	1	23.00
			50	22.50
			100	22.50
		16QAM	1	22.00
			50	21.00
			100	21.00

The allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2-1due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

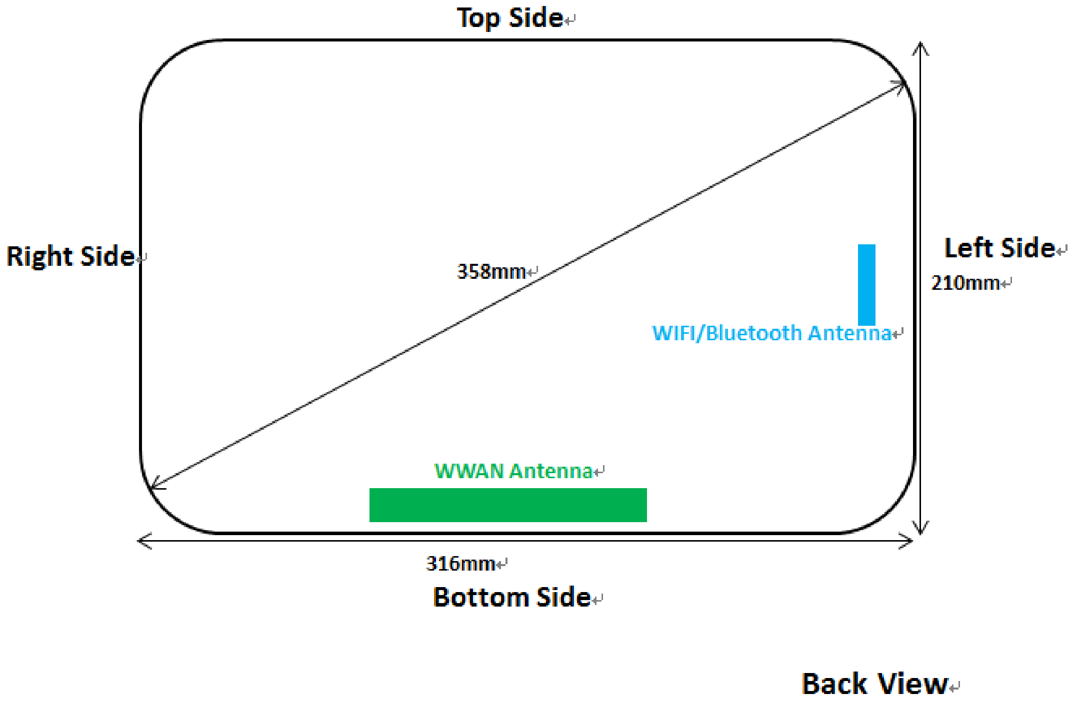
Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

WIFI 2.4G	
Mode	Maximum Tune-up (dBm)
802.11b	16.00
802.11g	13.50
802.11n(HT20)	13.50
802.11n(HT40)	13.50

Bluetooth	
Mode	Maximum Tune-up (dBm)
GFSK	5.50
π/4QPSK	4.50
8DPSK	4.50
GFSK(BLE)	5.50

13. RF Exposure Conditions (Test Configurations)

13.1. Antenna Location



13.2. Standalone SAR test exclusion considerations

KDB 447498 with KDB 616217:
a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g *SAR test exclusion thresholds* are determined by the following:
[(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR
When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according is applied to determine SAR test exclusion.
b) For 100 MHz to 6 GHz and *test separation distances* > 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following :
1) {[Power allowed at *numeric threshold* for 50 mm in step a)] + [(test separation distance - 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
2) {[Power allowed at *numeric threshold* for 50 mm in step a)] + [(test separation distance - 50 mm)·10]} mW, for > 1500 MHz and ≤6 GHz

Antennas ≤ 50mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		separation distances (mm)					Calculated Threshold Value				
		dBm	mW	Rear	Left	Right	Top	Bottom	Rear	Left	Right	Top	Bottom
GPRS850 2Tx slots	836.6	28.50	707.9	5	98	97	190	5	129.5 MEASURE	> 50 mm	> 50 mm	> 50 mm	129.5 MEASURE
GPRS1900 2Tx slots	1880	24.50	281.8	5	98	97	190	5	77.3 MEASURE	> 50 mm	> 50 mm	> 50 mm	77.3 MEASURE
WCDMA Band II	1880	22.50	177.8	5	98	97	190	5	48.8 MEASURE	> 50 mm	> 50 mm	> 50 mm	48.8 MEASURE
WCDMA Band V	836.6	24.00	251.2	5	98	97	190	5	46.0 MEASURE	> 50 mm	> 50 mm	> 50 mm	46.0 MEASURE
LTE Band 2	1880	21.50	141.3	5	98	97	190	5	38.7 MEASURE	> 50 mm	> 50 mm	> 50 mm	38.7 MEASURE
LTE Band 7	2535	23.00	199.5	5	98	97	190	5	63.5 MEASURE	> 50 mm	> 50 mm	> 50 mm	63.5 MEASURE
WIFI 2.4G	2437	16.00	39.8	5	7	296	77	97	12.4 MEASURE	8.9 MEASURE	> 50 mm	> 50 mm	> 50 mm
Bluetooth	2441	5.50	3.5	5	7	296	77	97	1.1 EXEMPT	0.8 EXEMPT	> 50 mm	> 50 mm	> 50 mm

Antennas > 50mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		separation distances (mm)					Calculated Threshold Value				
		dBm	mW	Rear	Left	Right	Top	Bottom	Rear	Left	Right	Top	Bottom
GPRS850 2Tx slots	836.6	28.50	707.9	5	98	97	190	5	≤ 50mm	432 mW EXEMPT	426 mW EXEMPT	945 mW EXEMPT	≤ 50mm
GPRS1900 2Tx slots	1880	24.50	281.8	5	98	97	190	5	≤ 50mm	589 mW EXEMPT	579 mW EXEMPT	1509 mW EXEMPT	≤ 50mm
WCDMA Band II	1880	22.50	177.8	5	98	97	190	5	≤ 50mm	589 mW EXEMPT	579 mW EXEMPT	1509 mW EXEMPT	≤ 50mm
WCDMA Band V	836.6	24.00	251.2	5	98	97	190	5	≤ 50mm	432 mW EXEMPT	426 mW EXEMPT	945 mW EXEMPT	≤ 50mm
LTE Band 2	1880	21.50	141.3	5	98	97	190	5	≤ 50mm	589 mW EXEMPT	579 mW EXEMPT	1509 mW EXEMPT	≤ 50mm
LTE Band 7	2535	23.00	199.5	5	98	97	190	5	≤ 50mm	574 mW EXEMPT	564 mW EXEMPT	1494 mW EXEMPT	≤ 50mm
WIFI 2.4G	2437	16.00	39.8	5	7	296	77	97	≤ 50mm	≤ 50mm	2556 mW EXEMPT	366 mW EXEMPT	566 mW EXEMPT
Bluetooth	2441	5.50	3.5	5	7	296	77	97	≤ 50mm	≤ 50mm	2556 mW EXEMPT	366 mW EXEMPT	566 mW EXEMPT

13.3. Required Test Configurations

The table below identifies the standalone test configurations required for this device according to the findings in Section 13.2:

Test Configurations	Rear	Left	Right	Top	Bottom
GPRS850 2Tx slots	Yes	No	No	No	Yes
GPRS1900 2Tx slots	Yes	No	No	No	Yes
WCDMA Band II	Yes	No	No	No	Yes
WCDMA Band V	Yes	No	No	No	Yes
LTE Band 2	Yes	No	No	No	Yes
LTE Band 7	Yes	No	No	No	Yes
WIFI 2.4G	Yes	Yes	No	No	No
Bluetooth	No	No	No	No	No

14. SAR Measurement Results

GSM850										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
GPRS (4Tx slots)	Rear	190	836.6	31.16	31.50	1.08	0.08	0.573	0.620	-
	Left	190	836.6	31.16	31.50	1.08	-	-	-	-
	Right	190	836.6	31.16	31.50	1.08	-	-	-	-
	Top	190	836.6	31.16	31.50	1.08	-	-	-	-
	Bottom	190	836.6	31.16	31.50	1.08	0.01	0.678	0.733	1

PCS1900										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
GPRS (4Tx slots)	Rear	661	1880.0	27.20	27.50	1.07	0.07	0.612	0.656	-
	Left	661	1880.0	27.20	27.50	1.07	-	-	-	-
	Right	661	1880.0	27.20	27.50	1.07	-	-	-	-
	Top	661	1880.0	27.20	27.50	1.07	-	-	-	-
	Bottom	661	1880.0	27.20	27.50	1.07	-0.06	0.723	0.775	2

WCDMA Band II										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
RMC 12.2Kbps	Rear	9400	1880.0	21.89	22.50	1.15	0.12	0.509	0.586	-
	Left	9400	1880.0	21.89	22.50	1.15	-	-	-	-
	Right	9400	1880.0	21.89	22.50	1.15	-	-	-	-
	Top	9400	1880.0	21.89	22.50	1.15	-	-	-	-
	Bottom	9400	1880.0	21.89	22.50	1.15	0.14	0.689	0.793	3

WCDMA Band V										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
RMC 12.2Kbps	Rear	4183	836.6	23.73	24.00	1.06	0.07	0.329	0.350	-
	Left	4183	836.6	23.73	24.00	1.06	-	-	-	-
	Right	4183	836.6	23.73	24.00	1.06	-	-	-	-
	Top	4183	836.6	23.73	24.00	1.06	-	-	-	-
	Bottom	4183	836.6	23.73	24.00	1.06	-0.19	0.400	0.426	4

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg

LTE Band 2										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
20M_1RB	Rear	18900	1880	21.41	21.50	1.02	-0.12	0.587	0.599	-
	Left	18900	1880	21.41	21.50	1.02	-	-	-	-
	Right	18900	1880	21.41	21.50	1.02	-	-	-	-
	Top	18900	1880	21.41	21.50	1.02	-	-	-	-
	Bottom	18900	1880	21.41	21.50	1.02	-0.16	0.695	0.710	5
20M_50RB	Rear	18900	1880	20.12	20.50	1.09	0.10	0.387	0.422	-
	Left	18900	1880	20.12	20.50	1.09	-	-	-	-
	Right	18900	1880	20.12	20.50	1.09	-	-	-	-
	Top	18900	1880	20.12	20.50	1.09	-	-	-	-
	Bottom	18900	1880	20.12	20.50	1.09	-0.12	0.423	0.462	-

LTE Band 7										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
20M_1RB	Rear	21100	2535	22.40	23.00	1.15	0.01	0.512	0.588	-
	Left	21100	2535	22.40	23.00	1.15	-	-	-	-
	Right	21100	2535	22.40	23.00	1.15	-	-	-	-
	Top	21100	2535	22.40	23.00	1.15	-	-	-	-
	Bottom	21100	2535	22.40	23.00	1.15	0.04	0.687	0.789	6
20M_50RB	Rear	21100	2535	21.87	22.50	1.16	0.09	0.325	0.376	-
	Left	21100	2535	21.87	22.50	1.16	-	-	-	-
	Right	21100	2535	21.87	22.50	1.16	-	-	-	-
	Top	21100	2535	21.87	22.50	1.16	-	-	-	-
	Bottom	21100	2535	21.87	22.50	1.16	0.12	0.428	0.495	-

Note:

1. Per KDB865664 D01v01r04, Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg
2. Per KDB 941225 D05v02r03, for QPSK with 100% RB allocation, SAR is not required when the highest maximumoutput power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations andthe highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highestoutput power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also betested.

WIFI 2.4G										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune up limit (dBm)	Tune up scaling factor	Power Drift(dB)	Measured SAR(1g) (W/kg)	Report SAR(1g) (W/kg)	Plot No.
		CH	MHz							
802.11b 1Mbps	Rear	6	2437	15.66	16.00	1.08	-0.12	0.005	0.005	-
	Left	6	2437	15.66	16.00	1.08	0.06	0.091	0.098	7
	Right	6	2437	15.66	16.00	1.08	-	-	-	-
	Top	6	2437	15.66	16.00	1.08	-	-	-	-
	Bottom	6	2437	15.66	16.00	1.08	-	-	-	-

Note:

1. According to the above table, the initial test position for body is “Rear”, and its reported SAR is≤ 0.4W/kg. Thus further SAR measurement is not required for the other (remaining) test positions. Because the reported SAR of the highest measured maximum output power channel for the exposureconfiguration is ≤ 0.8W/kg, no further SAR testing is required for 802.11b DSSS in that exposureconfiguration.
2. When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.
   a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.
   b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg. the 802.11g/n is not required

WIFI 2.4G- Scaled Reported SAR							
Mode	Test Position	Frequency		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
		CH	MHz				
802.11b 1Mbps	Rear	6	2437	100%	100%	0.005	0.005
	Left	6	2437	100%	100%	0.098	0.098

Note:

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 100% is achievable for WLAN in this project.

SAR Test Data Plots to the Appendix A.

15. Simultaneous Transmission analysis

No.	Simultaneous Transmission Configurations	Body-worn	Note
1	GSM(voice) + Bluetooth (data)	Yes	
2	GSM(voice) + WIFI (data)	Yes	
3	WCDMA(voice) + Bluetooth (data)	Yes	
4	WCDMA(voice) + WIFI (data)	Yes	
5	GPRS (data) + Bluetooth (data)	Yes	
6	GPRS (data) + WIFI (data)	Yes	
7	WCDMA (data) + Bluetooth (data)	Yes	
8	WCDMA (data) + WIFI (data)	Yes	
9	LTE + Bluetooth (data)	Yes	
10	LTE + WIFI (data)	Yes	

General note:

1. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. EUT will choose either GSM or WCDMA LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. The reported SAR summation is calculated based on the same configuration and test position
4. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01 based on the formula below
   a) [(max. Power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [√f(GHz)/x]W/kg for test separation distances ≦50mm; whetn x=7.5 for 1-g SAR, and x=18.75 for 10-g SAR.
   b) When the minimum separation distance is <5mm, the distance is used 5mm to determine SAR test exclusion
   c) 0.4 W/kg for 1-g SAR and 1.0W/kg for 10-g SAR, when the test separation distances is >50mm.

Estimated SAR(W/kg)					
Test Configurations	Rear	Left Side	Right Side	Top Side	Bottom Side
GPRS850 2Tx slots	-	0.400	0.400	0.400	-
GPRS850 2Tx slots	-	0.400	0.400	0.400	-
WCDMA Band II	-	0.400	0.400	0.400	-
WCDMA Band V	-	0.400	0.400	0.400	-
LTE Band 4	-	0.400	0.400	0.400	-
LTE Band 7	-	0.400	0.400	0.400	-
WIFI 2.4G	-	-	0.400	0.400	0.400
Bluetooth	0.148	0.106	0.400	0.400	0.400

Bluetooth Max power	Exposure position	Rear	Left
	Test separation	5mm	7mm
5.50 dBm	Estimated SAR (W/kg)	0.148	0.106

Maximum reported SAR value for Body mode-Tablet

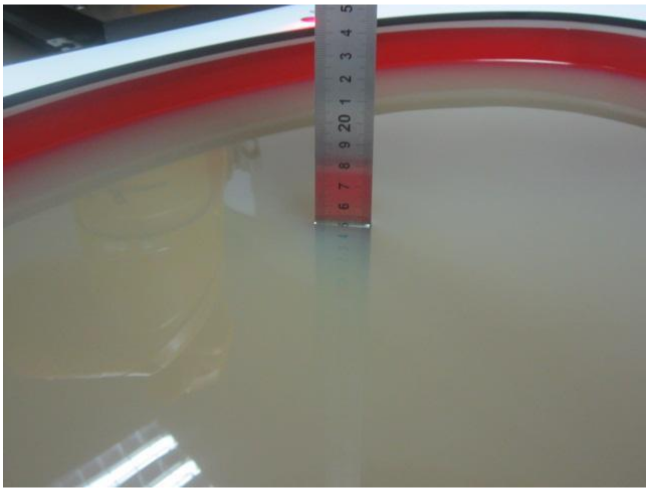
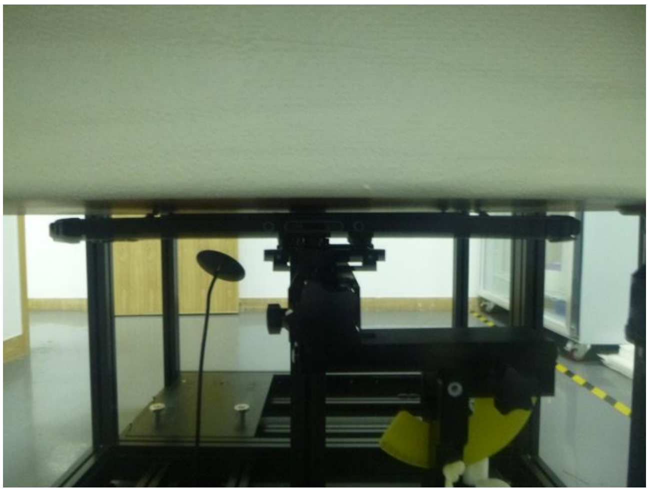
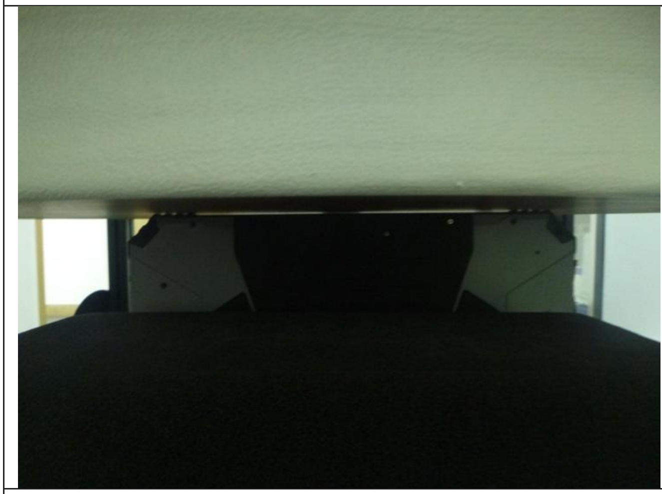
WWAN PCE + WLAN DTS					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	WLAN DTS	(W/kg)
GSM	GSM850	Rear	0.620	0.005	0.625
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.733	0.400	1.133
	PCS1900	Rear	0.656	0.005	0.661
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.775	0.400	1.175
WCDMA	Band II	Rear	0.586	0.005	0.591
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.793	0.400	1.193
	Band V	Rear	0.350	0.005	0.356
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.426	0.400	0.826
LTE	B2 1RB	Rear	0.599	0.005	0.605
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.710	0.400	1.110
	B2 50RB	Rear	0.422	0.005	0.428
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.462	0.400	0.862

LTE	B7 1RB	Rear	0.588	0.005	0.593
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.789	0.400	1.189
	B7 50RB	Rear	0.376	0.005	0.381
		Left side	0.400	0.098	0.498
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.495	0.400	0.895

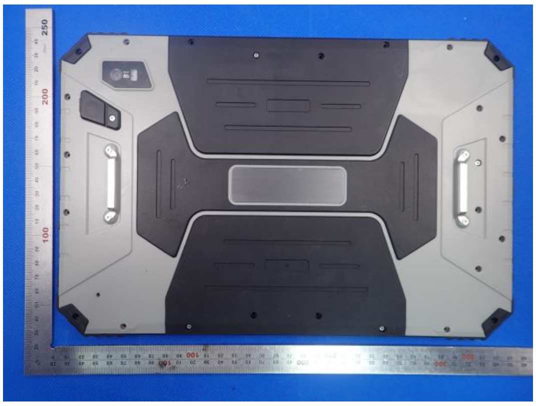
WWAN PCE + Bluetooth					
WWAN Band		Exposure Position	Max SAR (W/kg)		Summed SAR
			WWAN PCE	Bluetooth	(W/kg)
GSM	GSM850	Rear	0.620	0.148	0.768
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.733	0.400	1.133
	PCS1900	Rear	0.656	0.148	0.804
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.775	0.400	1.175
WCDMA	Band II	Rear	0.586	0.148	0.734
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.793	0.400	1.193
	Band V	Rear	0.350	0.148	0.498
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.426	0.400	0.826
LTE	B2 1RB	Rear	0.599	0.148	0.747
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.710	0.400	1.110
	B2 50RB	Rear	0.422	0.148	0.570
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.462	0.400	0.862

LTE	B7 1RB	Rear	0.588	0.148	0.736
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.789	0.400	1.189
	B7 50RB	Rear	0.376	0.148	0.524
		Left side	0.400	0.106	0.506
		Right side	0.400	0.400	0.800
		Top side	0.400	0.400	0.800
		Bottom side	0.495	0.400	0.895

16. TestSetup Photos

	
Liquid depth in the Body phantom	Rear (0mm)
	
Bottom Side (0mm)	Left Side (0mm)

17. External Photos of the EUT



---------End of Report----------