verify No.673032719340

위변조방지/진위확인
www.docuqr.com

TEST REPORT

KCTL Inc.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

KCTL

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2019-03-27

2. Use of Report : -

3. Name of Product and Model : Mobile Phone / SM-A105FN/DS

4. Manufacturer and Country of Origin: Samsung Electronics Co., Ltd. / Korea

5. FCC ID : A3LSMA105FN

6. Date of Test : 2019-04-04 to 2019-04-22

7. Test Standards : IEEE 1528-2013, ANSI/IEEE C95.1, KDB Publication

8. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Kyounghoo Min (Signature)	Technical Manager Name : Gyuhyun Shim (Signature)

2019-04-24

KCTL Inc.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.

Report revision history

Date	Revision	Page No
2019-04-19	Initial report	-
2019-04-22	Revised Model Number Revised TEST SW, Antenna Diagram GSM1900 Revised due to additional testing Revised GSM Conducted Power	5 6 8,15,17,60,67, 68,69,78,82,83,84 36,37
2019-04-24	Sensor Operation Description Delete	22,23,25

Please note: Report KR19-SPF0009-B issued on 2019-04-24 supersedes previously issued report KR19-SPF0009-A issued on 2019-04-22.

This report shall not be reproduced except in full, without the written approval of KCTL Inc. This document may be altered or revised by KCTL Inc. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by KCTL Inc. will constitute fraud and shall nullify the document.

This test report is a general report that does not use the KOLAS accreditation mark and is not related to KOLAS accreditation.

CONTENTS

This test report shall not be reproduced, except in full, without the written approval

1. General information

Client	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Manufacturer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Contact Person		Ayeong Kim / ayeong.kim@samsung.com
Laboratory	:	KCTL Inc.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-3327, G-198, C-3706, T-1849 Industry Canada Registration No. : 8035A KOLAS No.: KT231

This test report shall not be reproduced, except in full, without the written approval

2. Device information

2.1 Basic description

EUT Type		Mobile Phone
Brand Name		Samsung Electronics Co., Ltd.
Mode of Operation		GSM850/1900, WCDMA Band2/5, LTE Band2/5/41, WLAN 2.4 GHz, Bluetooth
Model Number		SM-A105FN/DS
Serial Number	Radiation	R38M30F7VSH, R38M30F7PQT
	Conduction	R38M30F7JEJ
Derivative Model		SM-A105FN
Tx Freq. Range		GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1 850.2 MHz ~ 1 909.8 MHz WCDMA Band2: 1 850 MHz ~ 1 910 MHz WCDMA Band5: 824 MHz ~ 849 MHz LTE Band2: 1 850 MHz ~ 1 910 MHz LTE Band5: 824 MHz ~ 849 MHz LTE Band41: 2 496 MHz ~ 2 690 MHz WLAN 2.4 GHz : 2 412 MHz ~ 2 472 MHz Bluetooth : 2 402 MHz ~ 2 480 MHz
H/W Version		REV1.0
S/W Version		A105FN.01

2.2 Information about derivative model

*SM-A105FN: Changed from Dual Sim tray to Single Sim tray.

SM-A105FN/DS	SM-A105FN
	

2.3 RF power setting in TEST SW

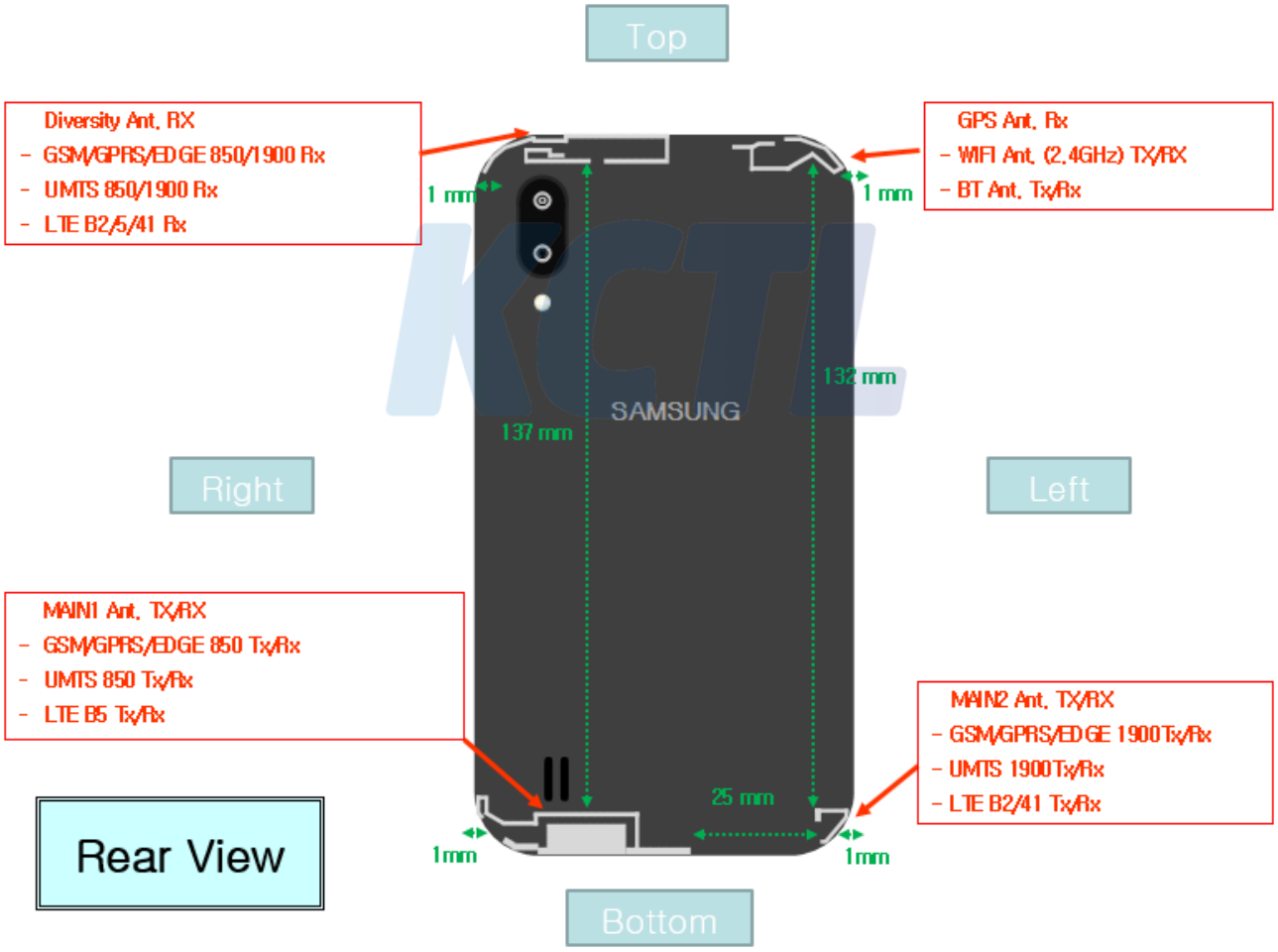
WLAN 2.4 GHz (2 412 MHz ~ 2 472 MHz)

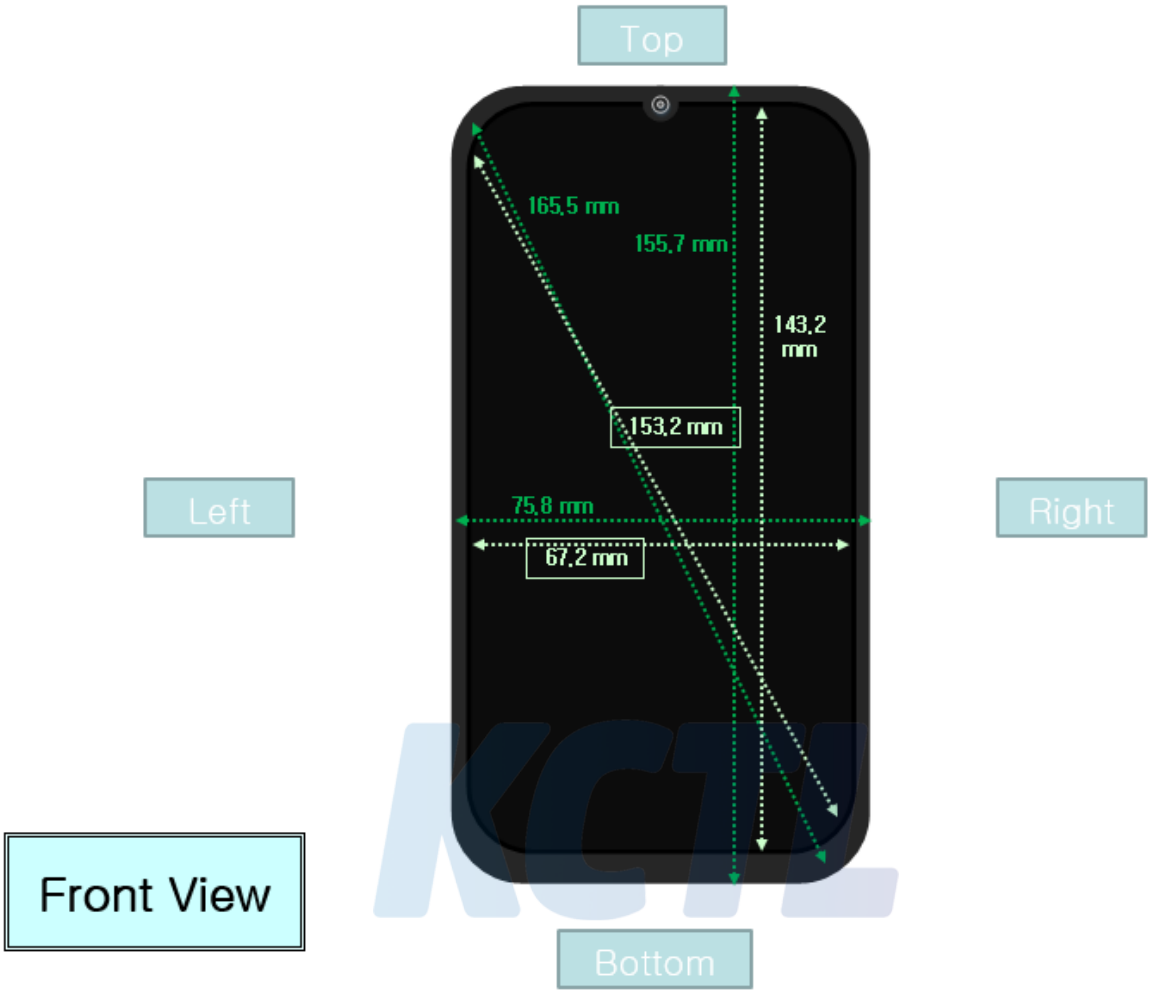
Mode	2 412 MHz	2 437 MHz	2 462 MHz	2 467 MHz	2 472 MHz
802.11b	18.00	18.00	18.00	7.00	7.00

WLAN 2.4 GHz Reduced Power (2 412 MHz ~ 2 472 MHz)

Mode	2 412 MHz	2 437 MHz	2 462 MHz	2 467 MHz	2 472 MHz
802.11b	11.00	11.00	11.00	7.00	7.00

2.4 Antenna Diagram




Top
165.5 mm
155.7 mm
143.2 mm
153.2 mm
Left
75.8 mm
67.2 mm
Right
Front View
Bottom

3. Summary of tests

3.1 SAR Test Results

Band	Head SAR (W/kg)	Body SAR (W/kg)	Hotspot SAR (W/kg)
GSM850	0.35	0.46	0.64
GSM1900	0.25	0.29	0.44
WCDMA Band 2	0.35	0.49	0.57
WCDMA Band 5	0.33	**0.54**	**1.19**
LTE Band 2	0.34	0.39	0.58
LTE Band 5	**0.36**	0.45	0.78
LTE Band 41	0.22	0.25	0.48
WLAN 2.4 GHz	0.15	0.15	0.37
Bluetooth	0.07	-	-

<Note>
* SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.
* When battery operating of this device is worst case mode.
* 1 g SAR Limit 1.6 W/kg
* Bluetooth and WLAN share the same antenna path.
* Bluetooth can't transmit with WLAN simultaneously.
* This device WWAN/WLAN/BT hotspot mode SAR are all less than 1.2W/kg, so no need to consider 10g product specific SAR.

3.2 Simultaneous Transmission

RF Exposure conditions	Band	Σ 1 g SAR (W/kg)	1 g SAR Limit (W/kg)
Head	LTE B5 + WLAN 2.4 GHz	0.52	1.6
Body	WCDMA B5 + WLAN 2.4 GHz	0.70	
Hotspot	WCDMA B5 + WLAN 2.4 GHz	**1.56**	

This test report shall not be reproduced, except in full, without the written approval

4. Report Overview

This report details the results of testing carried out on the samples listed in section 2, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this test report is used in any configuration other than that detailed in the test report, the manufacturer must ensure the new configuration complies with all relevant standards and certification requirements. Any mention of KCTL Inc. Wireless lab or testing done by KCTL Inc. Wireless lab made in connection with the distribution or use of the tested product must be approved in writing by KCTL Inc. Wireless lab.

5. Test Lab Declaration or Comments

None

6. Applicant Declaration or Comments

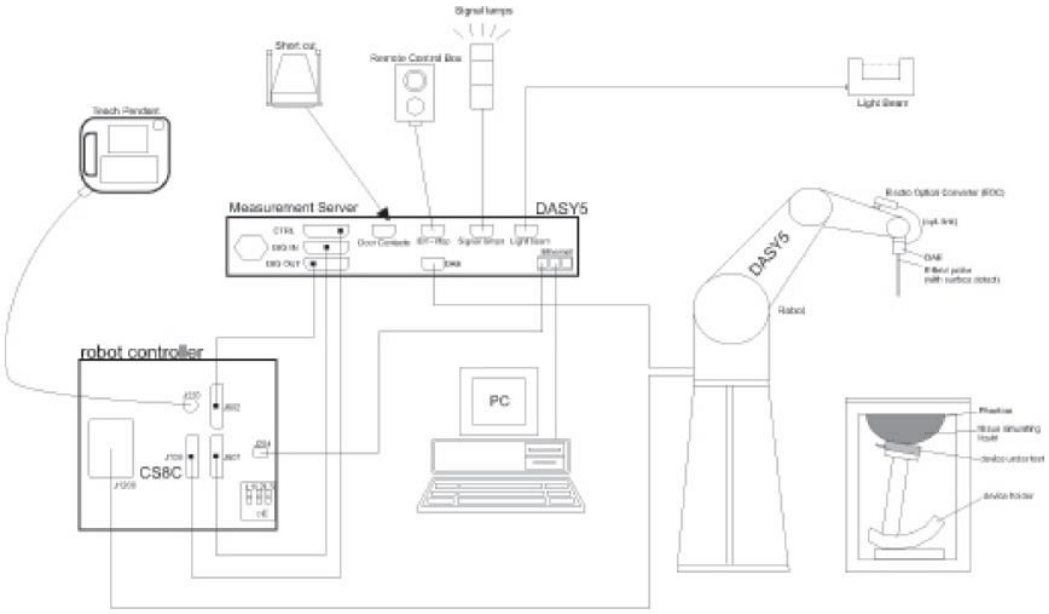
None

7. Measurement Uncertainty

The measured SAR was <1.5 W/kg and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncert ainty analysis per IEEE 1528-2013 was not required.

This test report shall not be reproduced, except in full, without the written approval

8. The SAR Measurement System



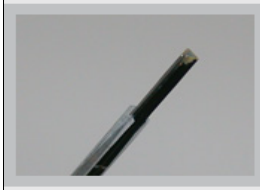
<SAR System Configuration>

- 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.
- 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 DASY5 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.

This test report shall not be reproduced, except in full, without the written approval

8.1 Isotropic E-field Probe

ES3DV3 **Isotropic E-Field Probe for Dosimetric Measurements**	
	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	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

EX3DV4 **Smallest Isotropic E-Field Probe for Dosimetric Measurements** **(Preliminary Specifications)**	
	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 TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 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); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

8.2 Phantom

Twin SAM	
	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot. Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions **(incl. Wooden Support)**	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters
Wooden Support	SPEAG standard phantom table
Accessories	Mounting Device and Adaptors

ELI	
	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4, but has reinforced top structure. ELI V6.0, released in August 2014, has the same shell geometry as ELI4 but offers increased longterm stability.
Material	Vinylester, glass fiber reinforced (VE-GF)
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters
Wooden Support	SPEAG standard phantom table
Accessories	Mounting Device and Adaptors

8.3 Device Holder for Transmitters

Mounting Devices and Adaptors

Mounting Device for Hand-Held Transmitters

MD4HHTV5 - Mounting Device for Hand-Held Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI Phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).

Material: Polyoxymethylene (POM)

Mounting Device for Laptops

MD4LAPV5 - Mounting Device for Laptops and other Body-Worn Transmitters

In combination with the Twin SAM V5.0/V5.0c or ELI Phantoms, the Mounting Device (Body-Worn) enables testing of ransmitter devices according to IEC 62209-2 specifications. The device holder can be locked for positioning at flat phantom section.

Material: Polyoxymethylene (POM), PET-G, Foam

9. System Verification

9.1 Tissue Verification

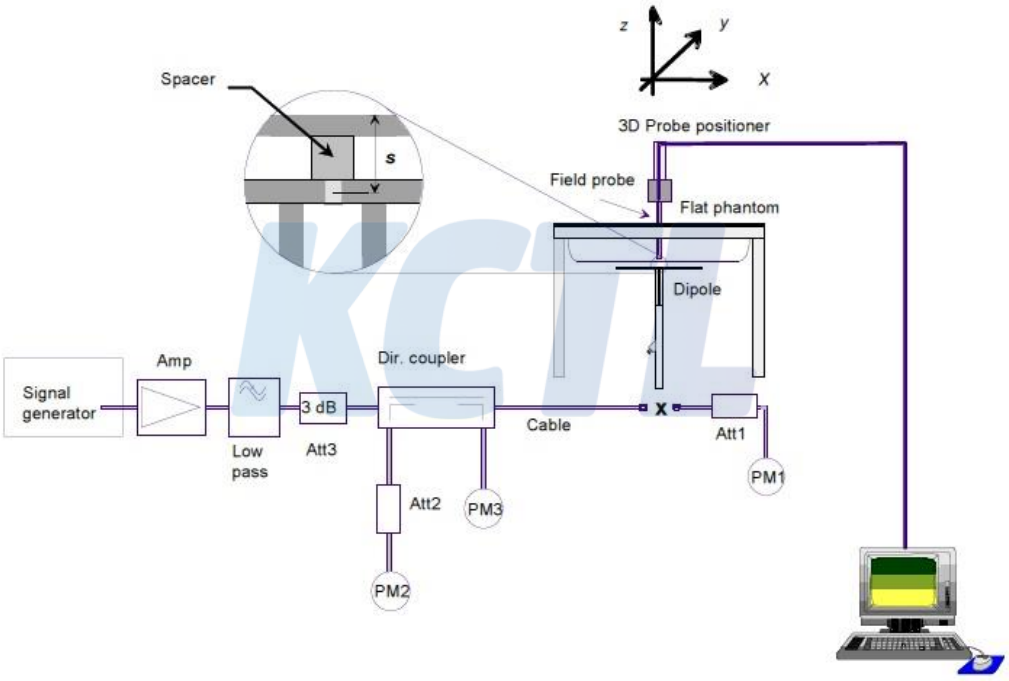
The dielectric properties for this Tissue Simulant Liquids were measured by using the SPEAG Model DAK3.5 Dielectric Probe in conjunction with Agilent E5071B Network Analyzer (300 kHz – 8 500 MHz). The Conductivity (σ) and Permittivity (ρ) are listed in Table 1.For the SAR measurement given in this report. The temperature variation of the Tissue Simulant Liquids was (22 ± 2) °C.

Freq. (MHz)	Tissue Type	Limit/Measured	Permittivity (ρ)	Conductivity (σ)	Temp (℃)
900	HSL	Recommended Limit	41.50 ± 5 % (39.43 ~ 43.58)	0.97 ± 5 % (0.92 ~ 1.02)	22 ± 2
		Measured, 2019-04-12	41.37	0.98	21.13
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-04-11	39.84	1.41	20.97
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-04-09	39.06	1.43	21.31
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-04-11	39.25	1.44	21.35
900	HSL	Recommended Limit	41.50 ± 5 % (39.43 ~ 43.58)	0.97 ± 5 % (0.92 ~ 1.02)	22 ± 2
		Measured, 2019-04-13	40.68	0.97	21.19
2 450	HSL	Recommended Limit	39.20 ± 5 % (37.24 ~ 41.16)	1.80 ± 5 % (1.71 ~ 1.89)	22 ± 2
		Measured, 2019-04-04	38.25	1.79	21.59
2 450	HSL	Recommended Limit	39.20 ± 5 % (37.24 ~ 41.16)	1.80 ± 5 % (1.71 ~ 1.89)	22 ± 2
		Measured, 2019-04-09	38.66	1.82	21.94
2 450	HSL	Recommended Limit	39.20 ± 5 % (37.24 ~ 41.16)	1.80 ± 5 % (1.71 ~ 1.89)	22 ± 2
		Measured, 2019-04-08	38.62	1.85	21.53
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-04-22	39.21	1.42	20.91

<Table 1.Measurement result of tissue electric parameters>

9.2 Test System Verification

The microwave circuit arrangement for system verification is sketched below picture. The daily system accuracy verification occurs within the flat section of the SAM phant om. A SAR measurement was performed to see if the measured SAR was within ± 1 0% from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the Table 2. During the tests, the ambient temperature of the laboratory was in the range (22 ± 2) ℃, the relative humidity was in the range(50 ± 20)% and the liquid depth Above the ear/grid reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the re sults are within acceptable tolerance of the reference values.



Validation Kit	Dipole Ant. S/N	Frequency (MHz)	Tissue Type	Limit/Measurement (Normalized to 1 W)	
					1 g
D900V2	1d138	900	HSL	Recommended Limit (Normalized)	10.80 ± 10 % (9.72 ~ 11.88)
				Measured, 2019-04-12	11.36
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-04-11	38.68
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-04-09	40.40
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-04-11	41.60
D900V2	1d138	900	HSL	Recommended Limit (Normalized)	10.80 ± 10 % (9.72 ~ 11.88)
				Measured, 2019-04-13	10.84
D2450V2	895	2 450	HSL	Recommended Limit (Normalized)	51.30 ± 10 % (46.17 ~ 56.43)
				Measured, 2019-04-04	53.60
D2450V2	895	2 450	HSL	Recommended Limit (Normalized)	51.30 ± 10 % (46.17 ~ 56.43)
				Measured, 2019-04-09	53.20
D2450V2	895	2 450	HSL	Recommended Limit (Normalized)	51.30 ± 10 % (46.17 ~ 56.43)
				Measured, 2019-04-08	54.00
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-04-22	40.00

<Table 2. Test System Verification Result>

This test report shall not be reproduced, except in full, without the written approval

10. Operation Configurations

Measurements were performed at the operating band. The EUT was set to maximum power level during all tests and at the beginning of each test the battery was fully charged.

This test report shall not be reproduced, except in full, without the written approval

11. SAR Measurement Procedures

Step 1: 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. The minimum distance of probe sensors to surface is 2 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: 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 locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal 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 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·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.	

This test report shall not be reproduced, except in full, without the written approval

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing1 g and 10 g of simulated tissue. The Zoom Scan measures 5x5x7 points within a cube whose 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 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04.

<table>
<tr><td colspan="3"></td><td>≤ 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>½·δ·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: ΔxArea, ΔyArea</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 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 ≤ 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: ΔxZoom, ΔyZoom</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: ΔzZoom(n)</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>ΔzZoom(1): between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>ΔzZoom(n>1): between subsequent points</td><td colspan="2">≤ 1.5·ΔzZoom(n-1) mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 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 ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 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>

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

* Z Scan Report on Liquid Measure the height Appendix C. Liquid Depth photo to replace

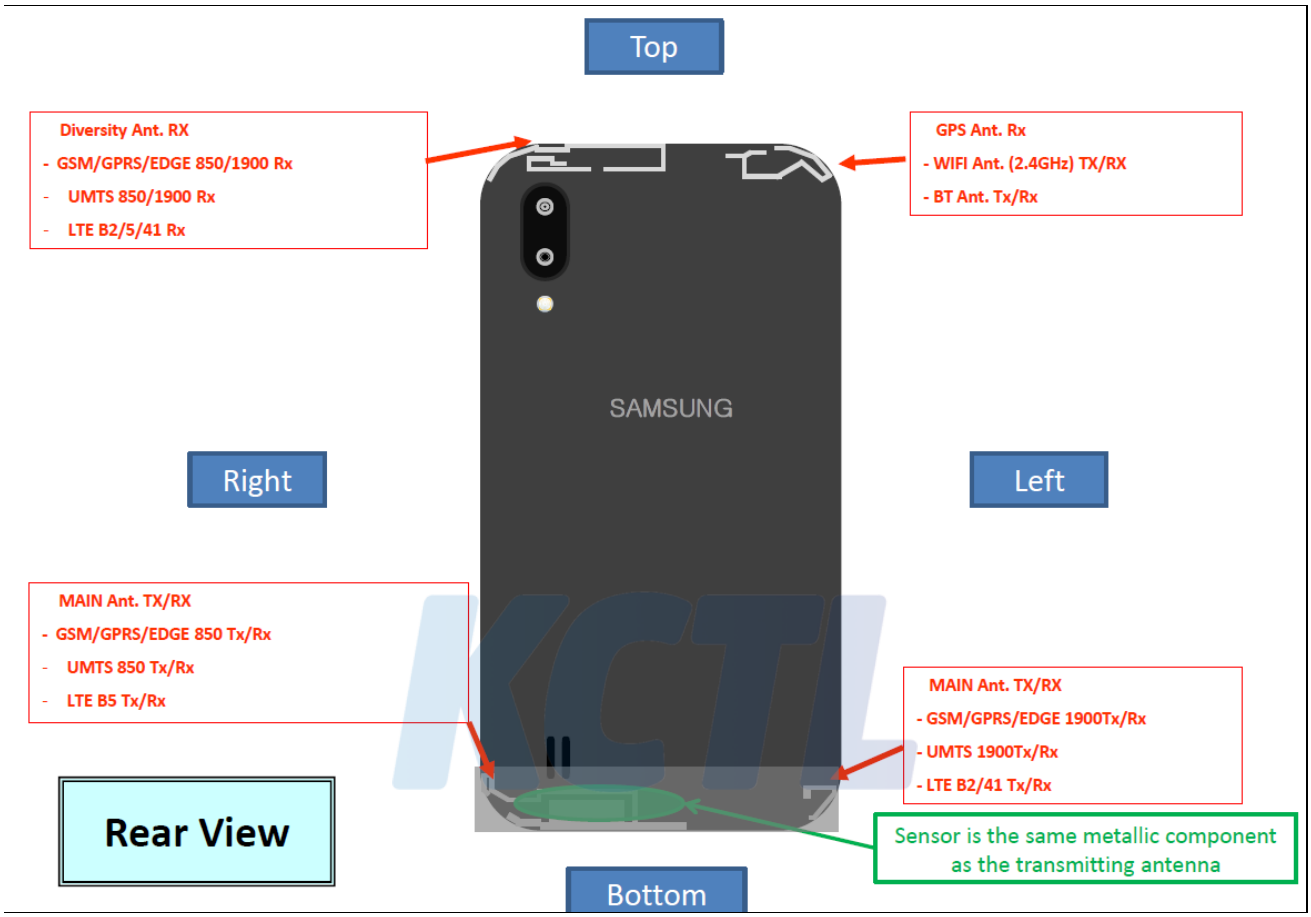
12. Test Equipment Information

Test Platform	SPEAG DASY5 System			
Version	8F – #1 DASY5 : Version 52.10.1.1476 SEMCAD : Version 14.6.11 (7439) 8F - #2 DASY5 : Version 52.8.8.1222 SEMCAD : Version 14.6.10 (7331)			
Location	KCTL Inc.			
Manufacture	SPEAG			
Hardware Reference				
Equipment	Model	Serial Number	Date of Calibration	Due date of next Calibration
Shield Room	Shield Room	8F - #1	N/A	N/A
Shield Room	Shield Room	8F - #2	N/A	N/A
DASY5 Robot	TX90XL Speag	F07/554JA1/A/01	N/A	N/A
DASY5 Controller	TX90XL Speag	F07/554JA1/C/01	N/A	N/A
DASY5 Robot	TX90XL Speag	F12/5L7FA1/A/01	N/A	N/A
DASY5 Controller	TX90XL Speag	F12/5L7FA1/C/01	N/A	N/A
Phantom	Twin SAM Phantom	1363	N/A	N/A
Phantom	Twin SAM Phantom	1724	N/A	N/A
Phantom	Twin SAM Phantom	1728	N/A	N/A
Mounting Device	Mounting Device	None	N/A	N/A
DAE	DAE4	666	2019-01-25	2020-01-25
DAE	DAE4	1342	2018-07-24	2019-07-24
Probe	EX3DV4	3865	2018-08-29	2019-08-29
Probe	EX3DV4	3928	2019-01-31	2020-01-31
Signal Generator	E4438C	MY42080486	2019-01-04	2020-01-04
Dual Power Meter	E4419B	GB43312301	2018-05-15	2019-05-15
Power Sensor	8481H	3318A19377	2018-05-15	2019-05-15
Power Sensor	8481H	3318A19379	2018-05-15	2019-05-15
Attenuator	8491B 3dB	17387	2018-05-14	2019-05-14
Attenuator	8491B-6dB	MY39270294	2018-05-14	2019-05-14
Attenuator	8491B 10dB	29425	2018-05-14	2019-05-14
Power Amplifier	GRF5039	1062	2018-05-15	2019-05-15
Power Amplifier	2055-BBS3Q7E9I	1005D/C0521	2019-03-08	2020-03-08
Dual Directional Coupler	778D	16059	2018-05-15	2019-05-15
Dual Directional Coupler	772D	2839A00719	2018-05-15	2019-05-15
Low Pass Filter	LA-15N	36543	2018-05-14	2019-05-14
Low Pass Filter	LA-30N	40058	2018-05-14	2019-05-14
Dipole Validation Kits	D900V2	1d138	2018-05-30	2020-05-30
Dipole Validation Kits	D1900V2	5d160	2018-04-25	2020-04-25
Dipole Validation Kits	D2450V2	895	2018-07-24	2020-07-24
Network Analyzer	E5071B	MY42403524	2019-01-04	2020-01-04
Dielectric Assessment kit	DAK-3.5	1078	2018-08-22	2019-08-22
Humidity/Temp. Data Recorder	MHB-382SD	23107	2018-06-14	2019-06-14
Humidity/Temp. Data Recorder	MHB-382SD	73871	2018-07-12	2019-07-12
Bluetooth Tester	TC-3000C	3000C000270	2018-08-02	2019-08-02
Radio Communication Tester	CMU200	106191	2018-05-14	2019-05-14
WIDEBANDRADIO COMMUNICATION TESTER	CMW500	141780	2019-01-25	2020-01-25

This test report shall not be reproduced, except in full, without the written approval

13. Sensor Trigger distance

13.1 Grip Sensor



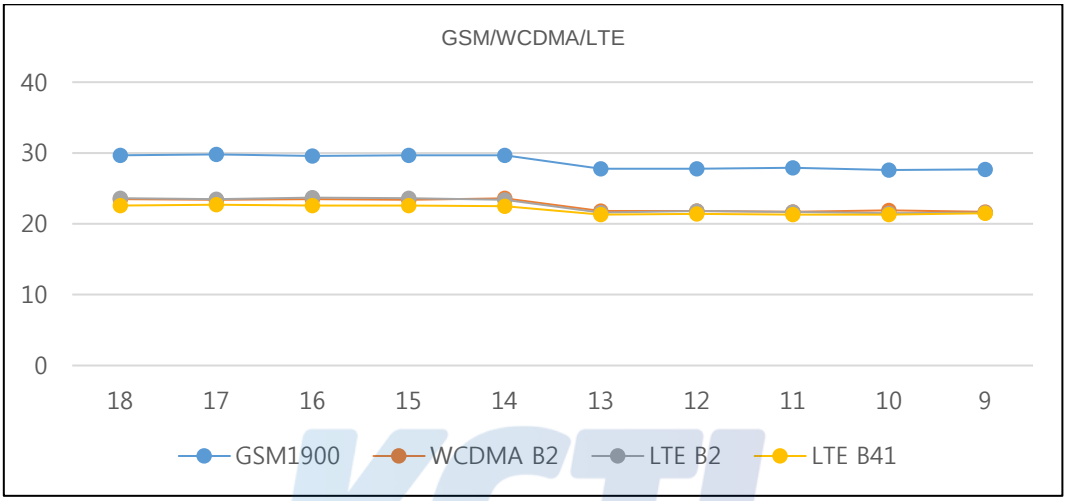
Resulting test positions for SAR mearsurementes

Wireless technologies	Trigger distance – Rear	
	Triggering Distance	Worst case distance for SAR
GSM1900	13 mm	12 mm
WCDMA B2	13 mm	12 mm
LTE B2	13 mm	12 mm
LTE B41	13 mm	12 mm

Wireless technologies	Trigger distance – Bottom	
	Triggering Distance	Worst case distance for SAR
GSM1900	7 mm	6 mm
WCDMA B2	7 mm	6 mm
LTE B2	7 mm	6 mm
LTE B41	7 mm	6 mm

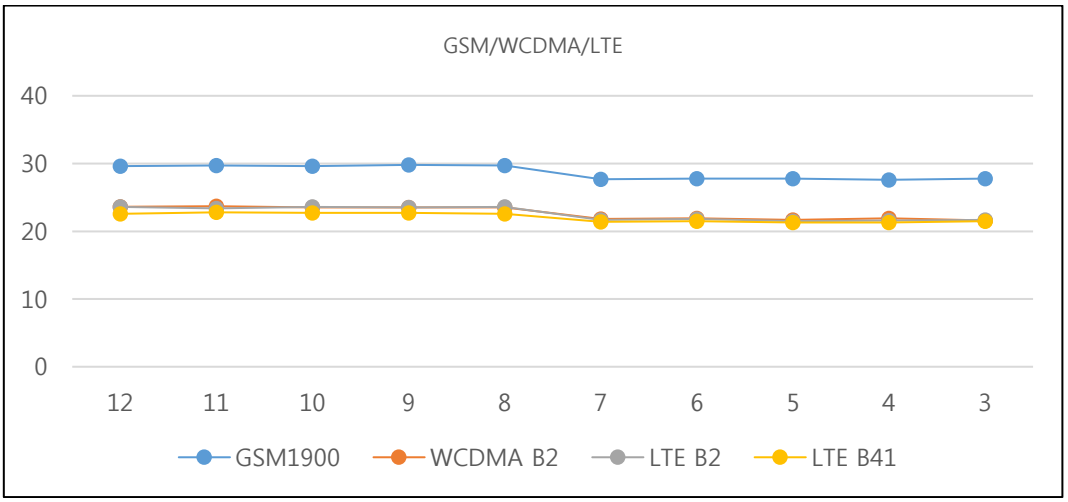
Rear DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	18	17	16	15	14	13	12	11	10	9
GSM1900	29.7	29.8	29.6	29.7	29.7	27.8	27.8	27.9	27.6	27.7
WCDMA B2	23.5	23.4	23.5	23.4	23.6	21.8	21.8	21.7	21.9	21.7
LTE B2	23.6	23.5	23.7	23.6	23.4	21.6	21.8	21.7	21.5	21.6
LTE B41	22.6	22.7	22.6	22.6	22.5	21.3	21.4	21.3	21.3	21.5



Bottom DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	12	11	10	9	8	7	6	5	4	3
GSM1900	29.6	29.7	29.6	29.8	29.7	27.7	27.8	27.8	27.6	27.8
WCDMA B2	23.6	23.7	23.5	23.5	23.5	21.8	21.9	21.7	21.9	21.6
LTE B2	23.6	23.4	23.6	23.5	23.6	21.7	21.8	21.5	21.6	21.7
LTE B41	22.6	22.8	22.7	22.7	22.6	21.4	21.5	21.3	21.3	21.5



This test report shall not be reproduced, except in full, without the written approval

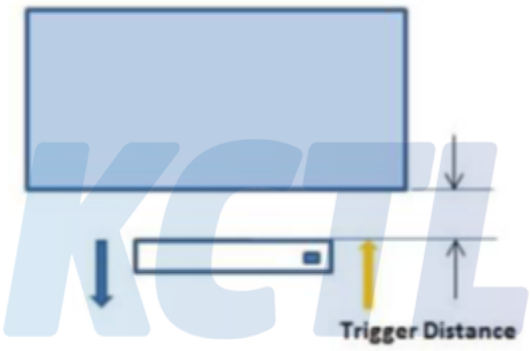
13.2 Proximity Sensor

Proximity Sensor Triggering Distance (KDB 616217 §6.2)

Rear of the DUT was placed directly below the flat phantom.The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 §6.2 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered).This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement.

It was confirmed separately that the output power was altered according to the proximity sensor status indication.This was achieved by observing the proximity sensor status at the same time as monitoring the conducted power Section 13 contains both the full and reduced conducted power measurements.



Proximity Sensor Trigger Distance Assessment
KDB 616217 §6.2, Rear

LEGEND
Direction of DUT travel for determination of power reduction triggering point
Direction of DUT travel for determination of full power resumption triggering point

Figure 2 shows a operational block diagram of the power reduction mechanism. The IR sensor chip is connected to the AP with POWER and INTERRUPT lines. For the IR Sensor chip, the POWER lines show the receive (photo diode) and send paths (IR LED) separately, for clarity. The INTERRUPT is normally set to a high voltage state represented by a voltage of 1.8V. If the end-user is in a voice or VOIP call and the IR sensor is not activated (i.e. device is not held-to-ear), the power line of from IR sensor is at high voltage, and will not result in a changed INTERRUPT value. But, if the human head is in proximity to the IR sensor (when IR sensor is activated), the POWER line drops to low voltage (0 V) and the INTERRUPT state is changed. At that time, the AP recognizes the low voltage and sends pre-programmed basic instructions, like turning off the screen to the device and provides feedback to the RF block on the lookup value to implement with respect to output power.

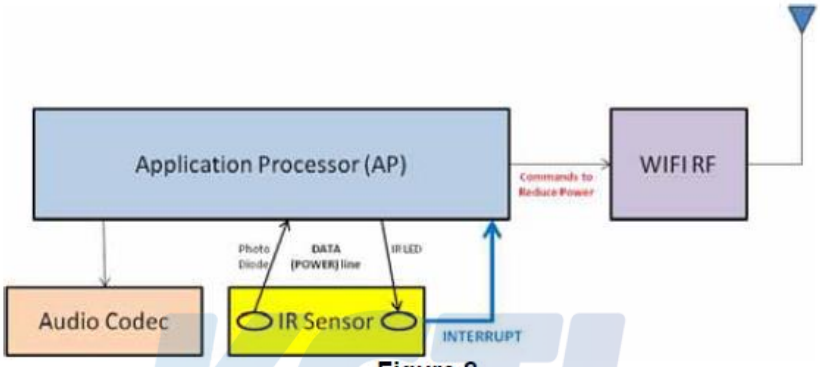


Figure 2
Operational Processing of Power Reduction

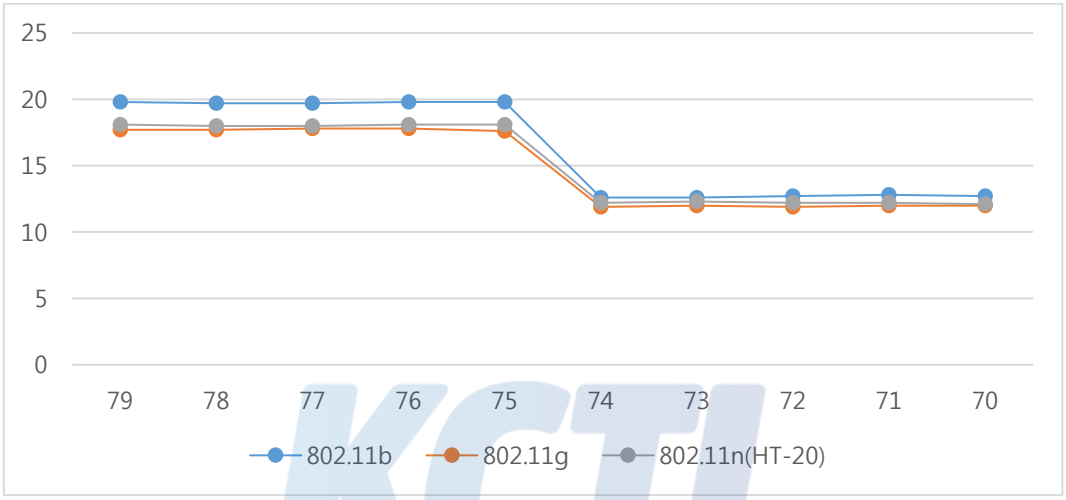
Summary of Trigger Distances

Tissue simulating liquid	Trigger distance	
	Moving toward phantom	Moving from phantom
WLAN 2.4 GHz Head	74 mm	79 mm

Proximity Sensor Triggering Distance Mesurement Results

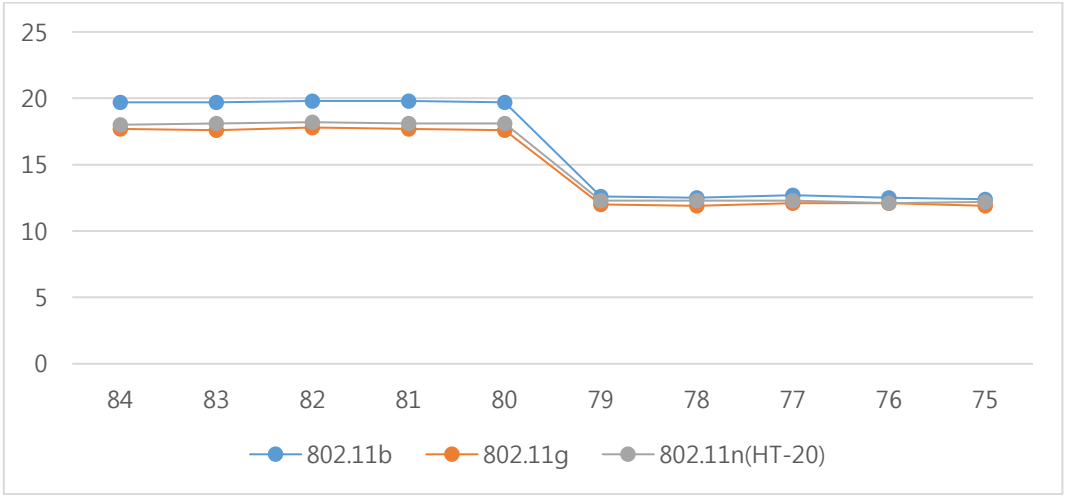
DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	79	78	77	76	75	74	73	72	71	70
802.11b	19.8	19.7	19.7	19.8	19.8	12.6	12.6	12.7	12.8	12.7
802.11g	17.7	17.7	17.8	17.8	17.6	11.9	12.0	11.9	12.0	12.0
802.11n(HT-20)	18.1	18.0	18.0	18.1	18.1	12.2	12.3	12.2	12.2	12.1



DUT Moving Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	84	83	82	81	80	79	78	77	76	75
802.11b	19.7	19.7	19.8	19.8	19.7	12.6	12.5	12.7	12.5	12.4
802.11g	17.7	17.6	17.8	17.7	17.6	12.0	11.9	12.1	12.1	11.9
802.11n(HT-20)	18.0	18.1	18.2	18.1	18.1	12.3	12.3	12.3	12.1	12.2



Proximity sensor coverage(KDB 616217 §6.3)

The following procedures do not apply and are not required for configurations where the antenna and sensor are collocated and the peak SAR location is overlapping with the sensor.

Test procedure:
a) The back surface or edge of the tablet is positioned at a test separation distance less than or equal to the distance required for back surface or edge triggering, with both the antenna and sensor pad located at least 20 mm laterally outside the edge (boundary) of the phantom, along the direction of maximum antenna and sensor offset. For the back surface, if the direction of maximum offset is not aligned with the tablet coordinates (physical edges) the tablet test position would not be aligned with the phantom coordinates (orientations). Each applicable tablet edge should be positioned perpendicularly to the phantom to determine sensor coverage. For antennas and/or sensors located near the corner of a tablet, both adjacent edges must be considered.

b) The similar sequence of steps applied to determine sensor triggering distance in 6.2 are used to verify back surface and edge sensor coverage by moving the tablet (sensor and antenna) horizontally toward the phantom while maintaining the same vertical separation between the back surface or edge and the phantom.

c) After the exact location where triggering of power reduction is determined, with respect to the sensor and antenna, the tablet movement should be continued, in 3 mm increments, until both the sensor and antenna(s) are fully under the phantom and at least 20 mm inside the phantom edge.

d) The process is then repeated from the opposite direction, starting at the other end of the maximum antenna and sensor offset, by rotating the tablet 180◦ along the vertical axis.

e) The triggering points should be documented graphically, with the antenna and sensor clearly identified, along with all relevant dimensions.

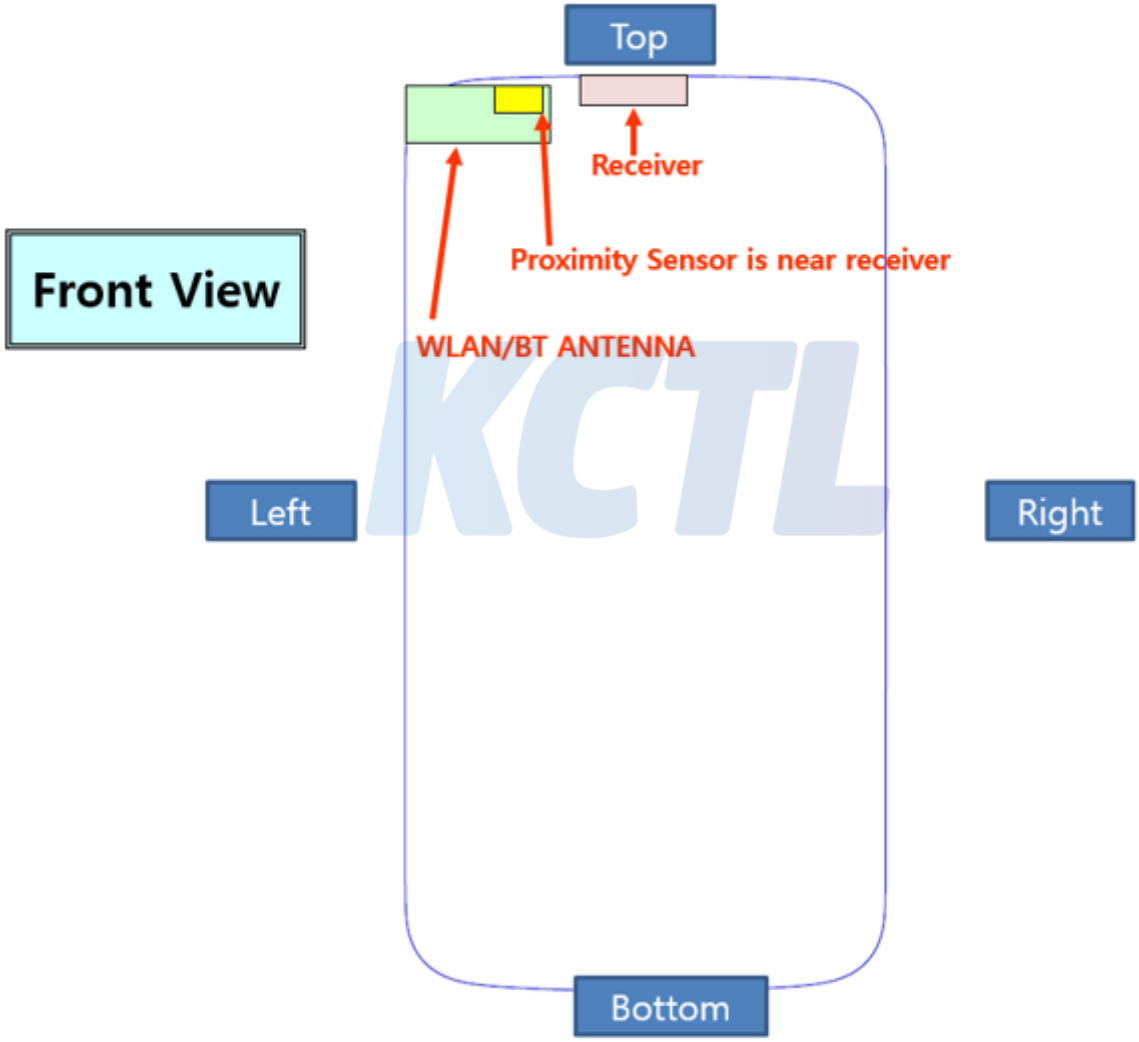
f) If the subsequently measured peak SAR location for the antenna is not between the triggering points, established by the sensor coverage tests from opposite ends of the antenna and sensor, additional SAR tests may be required for conditions where only part of the back surface or edge of a tablet corresponding to the antenna is in proximity to the user and the sensor may not be triggering as desired. A KDB inquiry must be submitted by the test lab to determine if additional tests are required and the proper test configurations to use for testing. This may include situations where the sensor coverage region is too small for the antenna, the sensor is located too far away from the antenna, the sensor location is insufficient to cover multiple antennas or the antenna is at the corner of a tablet etc.

This test report shall not be reproduced, except in full, without the written approval

According to FCC KDB 616217 6.3, if the proximity sensors are not designed to cover the entire rear surface of the device, the sensing regions are limited and are spatially offset from the proximity sensor.

However, this device uses a proximity sensor that is triggering in any conditions the user may use the device in proximity of the sensor in the device.

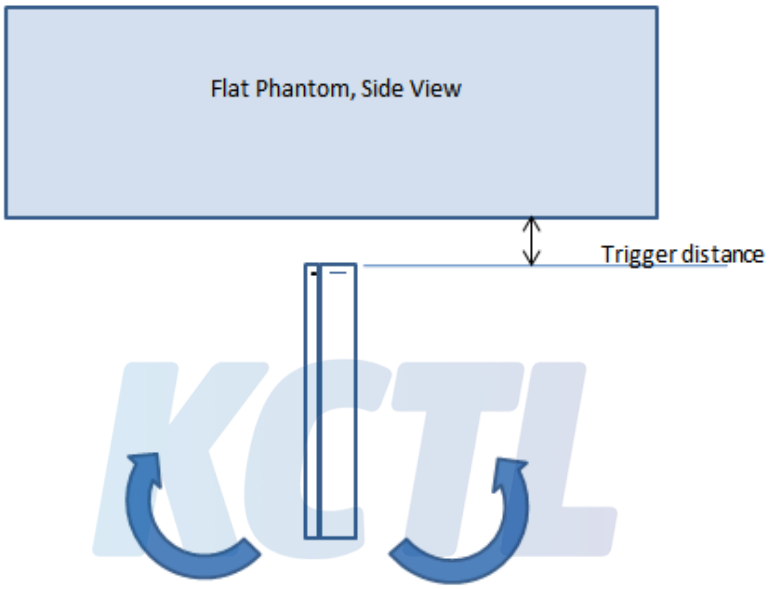
Therefore, no further sensor coverage assessments were required according to KDB 616217 D04 v01 r02 6.3.



Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom parallel to the base of the flat phantom for each band.

The EUT was rotated about Bottom for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated.
This procedure was repeated until the power remained reduced for all angles up to +/- 45°.



Proximity sensor tilt angle assessment (Bottom) KDB 616217 §6.4

Summary of Tilt Angle Influence to Proximity Sensor Triggering (Bottom)

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
WLAN 2.4 GHz	70 mm	70 mm	On	On	On	On	On	On	On	On	On	On	On

14. RF Average Conducted Output Power

14.1 Max. tune up power

GSM

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
GSM850	GSM Voice	33.0	34.0
	GPRS 1Tx	33.0	34.0
	GPRS 2Tx	30.5	31.5
	GPRS 3Tx	29.0	30.0
	GPRS 4Tx	27.5	28.5
	EGPRS 1Tx	27.0	28.0
	EGPRS 2Tx	25.0	26.0
	EGPRS 3Tx	23.5	24.5
	EGPRS 4Tx	22.5	23.5
GSM1900	GSM Voice	30.5	31.5
	GPRS 1Tx	30.5	31.5
	GPRS 2Tx	27.0	28.0
	GPRS 3Tx	25.5	26.5
	GPRS 4Tx	24.5	25.5
	EGPRS 1Tx	26.0	27.0
	EGPRS 2Tx	24.0	25.0
	EGPRS 3Tx	22.0	23.0
	EGPRS 4Tx	21.0	22.0

GSM Reduced Power

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
GSM1900	GSM Voice	28.5	29.5
	GPRS 1Tx	28.5	29.5
	GPRS 2Tx	25.0	26.0
	GPRS 3Tx	23.5	24.5
	GPRS 4Tx	22.8	23.8
	EGPRS 1Tx	26.0	27.0
	EGPRS 2Tx	24.0	25.0
	EGPRS 3Tx	22.0	23.0
	EGPRS 4Tx	21.0	22.0

This test report shall not be reproduced, except in full, without the written approval

WCDMA

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
WCDMA B2	RMC	23.0	24.0
	HSDPA	23.0	24.0
	HSUPA	21.0	22.0
WCDMA B5	RMC	24.0	25.0
	HSDPA	23.0	24.0
	HSUPA	21.0	22.0

WCDMA Reduced Power

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
WCDMA B2	RMC	21.0	22.0
	HSDPA	21.0	22.0
	HSUPA	19.0	20.0

LTE

Mode	Target Power (dBm)	Max. Allowed Power (dBm)
LTE B2	23.0	24.0
LTE B5	24.5	25.5
LTE B41	22.5	23.5

LTE Reduced Power

Mode	Target Power (dBm)	Max. Allowed Power (dBm)
LTE B2	21.0	22.0
LTE B41	21.0	22.0

This test report shall not be reproduced, except in full, without the written approval

WLAN 2.4 GHz (2 412 MHz ~ 2 472 MHz)

Mode	Channel	Target Power (dBm)	Max. Allowed Power (dBm)
802.11b	1~5, 7~11	18.5	19.5
	6	19.0	20.0
	12	8.5	9.5
	13	7.5	8.5
802.11g	1, 10	14.5	15.5
	2 ~ 9	17.0	18.0
	11	10.5	11.5
	12	7.0	8.0
	13	5.0	6.0
802.11n(HT-20)	1, 10	15.0	16.0
	2 ~ 9	17.5	18.5
	11	11.0	12.0
	12	7.5	8.5
	13	5.5	6.5

WLAN 2.4 GHz Reduced Power (2 412 MHz ~ 2 472 MHz)

Mode	Channel	Target Power (dBm)	Max. Allowed Power (dBm)
802.11b	1~11	12.0	13.0
	12	8.5	9.5
	13	7.5	8.5
802.11g	1, 10	10.5	11.5
	2 ~ 9	12.0	13.0
	11	6.5	7.5
	12	7.0	8.0
	13	5.0	6.0
802.11n(HT-20)	1, 10	10.5	11.5
	2 ~ 9	12.0	13.0
	11	6.5	7.5
	12	7.5	8.5
	13	5.0	6.0

Bluetooth (2 402 MHz ~ 2 480 MHz)

Mode	Max. Allowed Power (including tune-up tolerance)
BDR(GFSK)	10.5 dBm
EDR (π/4DQPSK)	10.5 dBm
EDR(8DPSK)	10.5 dBm
LE(GFSK)	6.5 dBm

This test report shall not be reproduced, except in full, without the written approval

14.2 Average Conducted Output Power

GSM

Per KDB 941225 D01 3G SAR Procedures:

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.

Maximum Burst-Average Output Power (dBm)										
Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM850	Low	32.02	32.01	29.85	28.56	26.78	26.93	24.61	22.91	21.54
	Middle	32.05	32.13	29.93	28.65	27.03	27.25	24.76	23.03	21.67
	High	32.18	32.28	30.06	28.94	27.31	27.48	25.26	23.42	22.03
GSM1900	Low	29.73	29.82	27.03	26.31	25.38	25.95	23.89	22.08	20.46
	Middle	29.62	29.71	26.86	25.91	24.92	25.84	23.77	21.94	20.36
	High	29.77	29.83	27.28	26.18	25.25	26.12	24.11	22.23	20.95
Maximum Frame-Average Output Power (dBm)										
Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM850	Low	22.99	22.98	23.83	24.30	23.77	17.90	18.59	18.65	18.53
	Middle	23.02	23.10	23.91	24.39	24.02	18.22	18.74	18.77	18.66
	High	23.15	23.25	24.04	24.68	24.30	18.45	19.24	19.16	19.02
GSM1900	Low	20.70	20.79	21.01	22.05	22.37	16.92	17.87	17.82	17.45
	Middle	20.59	20.68	20.84	21.65	21.91	16.81	17.75	17.68	17.35
	High	20.74	20.80	21.26	21.92	22.24	17.09	18.09	17.97	17.94

GSM850	Frame Tune-up	24.97	24.97	25.48	25.74	25.49	18.97	19.98	20.24	20.49
GSM1900		22.47	22.47	21.98	22.24	22.49	17.97	18.98	18.74	18.99

GSM Reduced Power

Maximum Burst-Average Output Power (dBm)										
Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM1900	Low	27.88	28.01	25.34	24.48	23.51	26.17	23.97	22.21	20.38
	Middle	27.74	27.87	25.17	24.23	23.18	26.05	23.85	21.98	20.25
	High	28.01	28.11	25.53	24.42	23.62	26.27	24.12	22.16	20.81
Maximum Frame-Average Output Power (dBm)										
Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM1900	Low	18.85	18.98	19.32	20.22	20.50	17.14	17.95	17.95	17.37
	Middle	18.71	18.84	19.15	19.97	20.17	17.02	17.83	17.72	17.24
	High	18.98	19.08	19.51	20.16	20.61	17.24	18.10	17.90	17.80

GSM1900	Frame Tune-up	20.47	20.47	19.98	20.24	20.79	17.97	18.98	18.74	18.99

KCTL

WCDMA B2

Mode	Average Conducted Power (dBm)		
	Frequency (MHz)		
	Low	Middle	High
RMC	23.61	23.53	23.88
HSDPA-Subtest 1	22.87	22.83	23.19
HSDPA-Subtest 2	22.92	22.87	23.24
HSDPA-Subtest 3	22.52	22.42	22.83
HSDPA-Subtest 4	22.39	22.32	22.69
HSUPA-Subtest 1	21.30	21.26	21.55
HSUPA-Subtest 2	18.79	18.66	19.00
HSUPA-Subtest 3	21.32	21.26	21.59
HSUPA-Subtest 4	18.79	18.67	18.89
HSUPA-Subtest 5	21.40	21.33	21.67

WCDMA B2 Reduced Power

Mode	Average Conducted Power (dBm)		
	Frequency (MHz)		
	Low	Middle	High
RMC	21.85	21.79	21.97
HSDPA-Subtest 1	21.68	21.63	21.94
HSDPA-Subtest 2	21.72	21.65	21.95
HSDPA-Subtest 3	21.74	21.65	21.96
HSDPA-Subtest 4	21.73	21.65	21.94
HSUPA-Subtest 1	20.75	20.69	20.99
HSUPA-Subtest 2	18.74	18.56	18.96
HSUPA-Subtest 3	20.77	20.73	20.97
HSUPA-Subtest 4	18.68	18.65	18.97
HSUPA-Subtest 5	21.42	21.31	21.66

This test report shall not be reproduced, except in full, without the written approval

WCDMA B5

Mode	Average Conducted Power (dBm)		
	Frequency (MHz)		
	Low	Middle	High
RMC	23.36	23.16	23.45
HSDPA-Subtest 1	23.23	23.09	23.23
HSDPA-Subtest 2	23.12	23.04	23.17
HSDPA-Subtest 3	22.48	22.24	22.53
HSDPA-Subtest 4	22.35	22.39	22.42
HSUPA-Subtest 1	21.05	20.88	21.10
HSUPA-Subtest 2	19.02	18.82	19.11
HSUPA-Subtest 3	21.03	20.90	21.12
HSUPA-Subtest 4	19.05	18.78	19.08
HSUPA-Subtest 5	21.54	21.37	21.68

* Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR.
The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

LTE B2

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	1.4 MHz	QPSK	1	0	0	23.41	23.24	23.49
			1	3	0	23.39	23.10	23.50
			1	5	0	23.42	23.12	23.51
			3	0	0	23.37	23.13	23.41
			3	1	0	23.38	23.11	23.43
			3	3	0	23.42	23.12	23.40
			6	0	1	22.40	22.18	22.48
		16QAM	1	0	1	21.96	22.17	22.38
			1	3	1	21.95	22.13	22.24
			1	5	1	21.93	22.15	22.29
			3	0	1	22.27	22.02	22.39
			3	1	1	22.28	22.01	22.52
			3	3	1	22.30	21.98	22.49
			6	0	2	21.36	21.06	21.49
	3 MHz	QPSK	1	0	0	23.35	23.14	23.56
			1	8	0	23.37	23.15	23.55
			1	14	0	23.36	23.12	23.49
			8	0	1	22.30	22.16	22.48
			8	4	1	22.29	22.18	22.47
			8	7	1	22.31	22.19	22.46
			15	0	1	22.28	22.18	22.42
		16QAM	1	0	1	22.43	22.18	22.32
			1	8	1	22.45	22.02	22.33
			1	14	1	22.57	21.95	22.37
			8	0	2	21.16	21.14	21.43
			8	4	2	21.14	21.15	21.41
			8	7	2	21.13	21.13	21.45
			15	0	2	21.17	21.07	21.49

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	5 MHz	QPSK	1	0	0	23.29	23.15	23.42
			1	12	0	23.27	23.18	23.49
			1	24	0	23.25	23.20	23.51
			12	0	1	22.33	22.16	22.46
			12	7	1	22.32	22.15	22.49
			12	13	1	22.30	22.18	22.50
			25	0	1	22.32	22.17	22.45
		16QAM	1	0	1	22.26	21.99	22.31
			1	12	1	22.28	22.02	22.38
			1	24	1	22.23	22.03	22.40
			12	0	2	21.16	21.19	21.46
			12	7	2	21.17	21.21	21.49
			12	13	2	21.18	21.20	21.51
			25	0	2	21.25	21.12	21.49
	10 MHz	QPSK	1	0	0	23.33	23.21	23.31
			1	25	0	23.29	23.24	23.46
			1	49	0	23.24	23.28	23.57
			25	0	1	22.31	22.19	22.39
			25	12	1	22.30	22.18	22.41
			25	25	1	22.25	22.21	22.52
			50	0	1	22.26	22.22	22.43
		16QAM	1	0	1	22.42	22.23	22.18
			1	25	1	22.35	22.21	22.28
			1	49	1	22.33	22.25	22.39
			25	0	2	21.31	21.17	21.35
			25	12	2	21.28	21.21	21.41
			25	25	2	21.25	21.32	21.48
			50	0	2	21.24	21.17	21.42

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	15 MHz	QPSK	1	0	0	23.41	23.14	23.25
			1	36	0	23.35	23.09	23.46
			1	74	0	23.30	23.21	23.60
			36	0	1	22.34	22.22	22.36
			36	18	1	22.32	22.23	22.46
			36	37	1	22.25	22.21	22.59
			75	0	1	22.28	22.21	22.49
		16QAM	1	0	1	22.45	22.09	22.13
			1	36	1	22.29	22.05	22.42
			1	74	1	22.32	22.14	22.48
			36	0	2	21.35	21.13	21.28
			36	18	2	21.33	21.14	21.36
			36	37	2	21.27	21.16	21.48
			75	0	2	21.25	21.15	21.42
	20 MHz	QPSK	1	0	0	23.52	23.16	23.10
			1	49	0	23.35	23.19	23.25
			1	99	0	23.33	23.29	23.61
			50	0	1	22.35	22.23	22.28
			50	24	1	22.30	22.25	22.41
			50	50	1	22.24	22.26	22.53
			100	0	1	22.30	22.23	22.39
		16QAM	1	0	1	22.29	22.25	22.24
			1	49	1	21.96	22.20	22.44
			1	99	1	22.12	22.37	22.74
			50	0	2	21.27	21.15	21.23
			50	24	2	21.22	21.18	21.36
			50	50	2	21.20	21.22	21.49
			100	0	2	21.24	21.24	21.40

This test report shall not be reproduced, except in full, without the written approval

LTE B2 Reduced Power

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	1.4 MHz	QPSK	1	0	0	21.26	21.18	21.52
			1	3	0	21.29	21.17	21.53
			1	5	0	21.27	21.16	21.56
			3	0	0	21.31	21.11	21.41
			3	1	0	21.32	21.10	21.44
			3	3	0	21.28	21.14	21.45
			6	0	0	21.30	21.12	21.42
		16QAM	1	0	0	21.09	20.86	20.96
			1	3	0	21.11	20.97	20.94
			1	5	0	21.10	20.89	20.99
			3	0	0	21.14	21.19	21.39
			3	1	0	21.13	21.20	21.41
			3	3	0	21.11	21.17	21.40
			6	0	0	21.19	21.23	21.46
	3 MHz	QPSK	1	0	0	21.38	21.21	21.43
			1	8	0	21.24	21.19	21.54
			1	14	0	21.23	21.18	21.41
			8	0	0	21.29	21.16	21.46
			8	4	0	21.28	21.17	21.52
			8	7	0	21.29	21.16	21.51
			15	0	0	21.27	21.11	21.45
		16QAM	1	0	0	21.26	20.79	21.45
			1	8	0	21.23	20.86	21.31
			1	14	0	21.41	21.01	21.50
			8	0	0	21.25	21.14	21.52
			8	4	0	21.31	21.16	21.51
			8	7	0	21.30	21.15	21.53
			15	0	0	21.34	21.13	21.49

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	5 MHz	QPSK	1	0	0	21.28	21.11	21.44
			1	12	0	21.29	21.17	21.52
			1	24	0	21.28	21.16	21.51
			12	0	0	21.27	21.19	21.47
			12	7	0	21.30	21.20	21.51
			12	13	0	21.27	21.21	21.54
			25	0	0	21.29	21.17	21.48
		16QAM	1	0	0	21.13	21.17	21.26
			1	12	0	21.11	21.18	21.25
			1	24	0	21.05	21.20	21.31
			12	0	0	21.26	21.16	21.37
			12	7	0	21.27	21.19	21.44
			12	13	0	21.26	21.19	21..46
			25	0	0	21.35	21.25	21.51
	10 MHz	QPSK	1	0	0	21.39	21.22	21.34
			1	25	0	21.39	21.26	21.52
			1	49	0	21.27	21.31	21.61
			25	0	0	21.28	21.21	21.39
			25	12	0	21.27	21.23	21.43
			25	25	0	21.25	21.22	21.51
			50	0	0	21.30	21.19	21.41
		16QAM	1	0	0	21.43	21.16	21.13
			1	25	0	21.38	21.15	21.22
			1	49	0	21.34	21.20	21.37
			25	0	0	21.36	21.23	21.38
			25	12	0	21.34	21.25	21.44
			25	25	0	21.31	21.24	21.53
			50	0	0	21.28	21.18	21.48

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	15 MHz	QPSK	1	0	0	21.37	21.16	21.26
			1	36	0	21.23	21.15	21.47
			1	74	0	21.18	21.22	21.62
			36	0	0	21.33	21.17	21.34
			36	18	0	21.28	21.21	21.45
			36	37	0	21.25	21.25	21.55
			75	0	0	21.24	21.23	21.48
		16QAM	1	0	0	21.44	21.19	20.89
			1	36	0	21.30	21.16	20.93
			1	74	0	21.29	21.23	21.27
			36	0	0	21.37	21.14	21.31
			36	18	0	21.38	21.17	21.43
			36	37	0	21.32	21.21	21.54
			75	0	0	21.32	21.19	21.44
	20 MHz	QPSK	1	0	0	21.38	21.16	21.08
			1	49	0	21.29	21.09	21.32
			1	99	0	21.25	21.29	21.63
			50	0	0	21.31	21.18	21.28
			50	24	0	21.29	21.17	21.36
			50	50	0	21.25	21.21	21.51
			100	0	0	21.21	21.20	21.39
		16QAM	1	0	0	21.18	21.11	21.00
			1	49	0	21.00	20.81	21.02
			1	99	0	21.02	21.24	21.52
			50	0	0	21.27	21.17	21.26
			50	24	0	21.26	21.19	21.36
			50	50	0	21.21	21.25	21.54
			100	0	0	21.26	21.24	21.44

This test report shall not be reproduced, except in full, without the written approval

LTE B5

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B5	1.4 MHz	QPSK	1	0	0	23.91	24.32	23.75
			1	3	0	24.05	24.26	24.06
			1	5	0	24.06	24.28	24.14
			3	0	0	24.51	24.24	24.07
			3	1	0	24.49	24.26	24.05
			3	3	0	24.53	24.22	24.03
			6	0	1	23.41	23.18	23.02
		16QAM	1	0	1	23.21	23.43	23.07
			1	3	1	23.20	23.45	23.09
			1	5	1	23.22	23.48	23.04
			3	0	1	23.16	23.25	23.03
			3	1	1	23.17	23.29	23.02
			3	3	1	23.14	23.28	23.02
			6	0	2	22.39	22.25	22.05
	3 MHz	QPSK	1	0	0	24.18	24.03	23.59
			1	8	0	23.99	23.86	23.61
			1	14	0	24.00	23.81	23.55
			8	0	1	23.41	23.24	23.12
			8	4	1	23.44	23.27	23.09
			8	7	1	23.42	23.29	23.11
			15	0	1	23.47	23.26	23.07
		16QAM	1	0	1	23.45	23.35	23.34
			1	8	1	23.43	23.19	22.96
			1	14	1	23.41	22.98	22.91
			8	0	2	22.39	22.18	22.11
			8	4	2	22.36	22.22	22.10
			8	7	2	22.41	22.23	22.09
			15	0	2	22.45	22.14	22.05

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B5	5 MHz	QPSK	1	0	0	23.97	23.93	23.60
			1	12	0	23.94	23.63	23.57
			1	24	0	23.91	23.66	23.54
			12	0	1	23.40	23.24	23.15
			12	7	1	23.43	23.25	23.11
			12	13	1	23.39	23.23	23.10
			25	0	1	23.42	23.22	23.14
		16QAM	1	0	1	23.16	22.91	22.98
			1	12	1	23.14	23.00	22.94
			1	24	1	23.12	23.05	22.89
			12	0	2	22.34	22.12	22.06
			12	7	2	22.36	22.10	22.04
			12	13	2	22.35	22.11	21.98
			25	0	2	22.49	22.23	22.11
	10 MHz	QPSK	1	0	0	24.31	23.76	23.67
			1	25	0	24.03	23.81	23.69
			1	49	0	24.08	23.80	23.78
			25	0	1	23.55	23.51	23.58
			25	12	1	24.04	24.06	24.09
			25	25	1	23.88	23.94	23.55
			50	0	1	23.77	23.66	23.82
		16QAM	1	0	1	23.54	23.24	23.07
			1	25	1	23.35	23.01	23.04
			1	49	1	23.41	23.05	23.01
			25	0	2	22.42	23.00	22.44
			25	12	2	22.39	22.94	22.34
			25	25	2	22.40	22.84	22.33
			50	0	2	22.35	22.88	22.25

This test report shall not be reproduced, except in full, without the written approval

LTE B41

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power				
						Channel				
						Low	Low-Mid	Middle	Mid-High	High
LTE B41	5 MHz	QPSK	1	0	0	22.69	22.36	22.27	22.25	22.19
			1	12	0	22.68	22.33	22.25	22.23	22.15
			1	24	0	22.71	22.31	22.22	22.21	22.12
			12	0	1	22.12	21.79	21.65	21.67	21.57
			12	7	1	22.10	21.81	21.66	21.64	21.54
			12	13	1	22.13	21.80	21.67	21.62	21.56
			25	0	1	22.11	21.78	21.64	21.65	21.54
		16QAM	1	0	1	21.89	21.77	21.53	21.66	21.61
			1	12	1	21.85	21.75	21.52	21.62	21.55
			1	24	1	21.90	21.74	21.49	21.60	21.56
			12	0	2	21.02	20.76	20.56	20.58	20.60
			12	7	2	21.08	20.74	20.57	20.54	20.59
			12	13	2	21.01	20.71	20.54	20.53	20.58
			25	0	2	21.07	20.75	20.69	20.63	20.54
	10 MHz	QPSK	1	0	0	22.57	22.39	22.21	22.27	22.19
			1	25	0	22.55	22.37	22.17	22.21	22.13
			1	49	0	22.59	22.32	22.13	22.17	22.11
			25	0	1	22.10	21.86	21.71	21.70	21.61
			25	12	1	22.08	21.81	21.67	21.68	21.59
			25	25	1	22.13	21.82	21.65	21.65	21.54
			50	0	1	22.12	21.83	21.66	21.67	21.58
		16QAM	1	0	1	21.95	21.55	21.41	21.40	21.42
			1	25	1	21.92	21.52	21.34	21.34	21.36
			1	49	1	21.91	21.49	21.32	21.31	21.30
			25	0	2	21.08	20.88	20.67	20.65	20.65
			25	12	2	21.10	20.86	20.65	20.67	20.63
			25	25	2	21.12	20.85	20.63	20.66	20.59
			50	0	2	21.08	20.79	20.63	20.64	20.54

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power				
						Channel				
						Low	Low-Mid	Middle	Mid-High	High
LTE B41	15 MHz	QPSK	1	0	0	22.43	22.30	22.74	22.15	21.98
			1	36	0	22.56	22.28	22.68	22.05	21.88
			1	74	0	22.55	22.19	22.60	21.98	21.81
			36	0	1	22.16	21.86	21.72	21.73	21.56
			36	18	1	22.15	21.84	21.71	21.71	21.57
			36	37	1	22.12	21.81	21.68	21.65	21.51
			75	0	1	22.09	21.80	21.66	21.69	21.57
		16QAM	1	0	1	21.93	21.86	21.64	21.52	21.53
			1	36	1	21.94	21.82	21.58	21.49	21.48
			1	74	1	21.91	21.78	21.47	21.38	21.39
			36	0	2	21.11	20.82	20.76	20.68	20.58
			36	18	2	21.12	20.83	20.71	20.67	20.57
			36	37	2	21.13	20.79	20.68	20.65	20.54
			75	0	2	21.06	20.78	20.65	20.66	20.61
	20 MHz	QPSK	1	0	0	22.61	22.52	22.38	22.26	22.35
			1	49	0	22.53	22.20	22.22	22.18	22.09
			1	99	0	22.54	22.31	22.21	22.17	22.14
			50	0	1	22.15	21.78	21.75	21.70	21.65
			50	24	1	22.12	21.79	21.73	21.63	21.62
			50	50	1	22.13	21.75	21.67	21.64	21.54
			100	0	1	22.14	21.74	21.66	21.60	21.55
		16QAM	1	0	1	21.77	21.75	21.25	21.48	21.63
			1	49	1	21.82	21.77	21.05	21.45	21.47
			1	99	1	21.78	21.75	20.89	21.44	21.21
			50	0	2	21.11	20.80	20.72	20.75	20.65
			50	24	2	21.13	20.78	20.67	20.71	20.59
			50	50	2	21.11	20.74	20.61	20.66	20.54
			100	0	2	21.06	20.77	20.68	20.65	20.59

This test report shall not be reproduced, except in full, without the written approval

LTE B41 Reduced Power

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power				
						Channel				
						Low	Low-Mid	Middle	Mid-High	High
LTE B41	5 MHz	QPSK	1	0	0	21.32	20.91	20.87	20.73	20.73
			1	12	0	21.32	20.89	20.83	20.71	20.72
			1	24	0	21.33	20.90	20.86	20.73	20.73
			12	0	0	21.31	20.98	20.89	20.78	20.75
			12	7	0	21.34	20.95	20.88	20.74	20.74
			12	13	0	21.31	20.96	20.86	20.77	20.74
			25	0	0	21.33	20.94	20.91	20.79	20.76
		16QAM	1	0	0	21.15	20.95	21.01	20.73	20.72
			1	12	0	21.16	20.94	20.98	20.71	20.71
			1	24	0	21.13	20.91	20.94	20.72	20.72
			12	0	0	20.77	20.36	20.35	20.29	20.29
			12	7	0	20.78	20.35	20.37	20.26	20.28
			12	13	0	20.78	20.37	20.39	20.24	20.28
			25	0	0	20.85	20.45	20.43	20.34	20.33
	10 MHz	QPSK	1	0	0	21.30	20.89	20.86	20.71	20.65
			1	25	0	21.27	20.88	20.87	20.70	20.66
			1	49	0	21.26	20.86	20.85	20.68	20.64
			25	0	0	21.34	20.97	20.89	20.75	20.74
			25	12	0	21.33	20.94	20.84	20.74	20.74
			25	25	0	21.32	20.91	20.86	20.74	20.71
			50	0	0	21.32	20.95	20.84	20.71	20.73
		16QAM	1	0	0	21.26	20.97	20.96	20.77	20.73
			1	25	0	21.32	20.94	20.95	20.76	20.71
			1	49	0	21.26	20.91	20.94	20.76	20.72
			25	0	0	21.31	20.54	20.43	20.35	20.26
			25	12	0	21.31	20.51	20.41	20.34	20.24
			25	25	0	21.32	20.53	20.42	20.36	20.21
			50	0	0	21.34	20.49	20.41	20.26	20.24

This test report shall not be reproduced, except in full, without the written approval

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power				
						Channel				
						Low	Low-Mid	Middle	Mid-High	High
LTE B41	15 MHz	QPSK	1	0	0	21.32	20.91	20.92	20.74	20.68
			1	36	0	21.31	20.90	20.91	20.73	20.67
			1	74	0	21.30	21.88	20.94	20.71	20.71
			36	0	0	21.31	20.93	20.96	20.81	20.74
			36	18	0	21.29	20.91	20.94	20.80	20.74
			36	37	0	21.30	20.91	20.95	20.80	20.71
			75	0	0	21.29	20.90	20.94	20.79	20.74
		16QAM	1	0	0	21.33	20.96	20.85	20.81	20.85
			1	36	0	21.31	20.94	20.84	20.79	20.83
			1	74	0	21.32	20.95	20.81	20.78	20.81
			36	0	0	20.81	20.49	20.45	20.28	20.25
			36	18	0	20.80	20.47	20.41	20.24	20.24
			36	37	0	21.79	20.48	20.44	20.25	20.22
			75	0	0	20.77	20.48	20.47	20.27	20.24
	20 MHz	QPSK	1	0	0	21.28	20.89	20.93	20.81	20.86
			1	49	0	21.27	20.88	20.89	20.71	20.84
			1	99	0	21.25	20.88	20.91	20.73	20.81
			50	0	0	21.23	20.93	20.98	20.71	20.75
			50	24	0	21.21	20.91	20.94	20.76	20.73
			50	50	0	21.22	20.91	20.96	20.74	20.73
			100	0	0	21.22	20.92	20.95	20.76	20.71
		16QAM	1	0	0	21.38	20.91	20.92	20.73	20.85
			1	49	0	21.37	20.88	20.91	20.72	20.84
			1	99	0	21.34	20.87	20.84	20.71	20.82
			50	0	0	20.74	20.39	20.41	20.26	20.28
			50	24	0	20.71	20.36	20.42	20.24	20.24
			50	50	0	20.72	20.38	20.43	20.21	20.26
			100	0	0	20.78	20.45	20.41	20.22	20.22

This test report shall not be reproduced, except in full, without the written approval

* LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, 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 thedevice and supported by the defined 3GPP LTE TDD configurations.
LTE TDD Bands support 3GPP TS 36.211.

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·Ts	2192·Ts	2560·Ts	7680·Ts	2192·Ts	2560·Ts
1	19760·Ts			20480·Ts		
2	21952·Ts			23040·Ts		
3	24144·Ts			25600·Ts		
4	26336·Ts			7680·Ts	4384·Ts	5120·Ts
5	6592·Ts	4384·Ts	5120·Ts	20480·Ts		
6	19760·Ts			23040·Ts		
7	21952·Ts			12800·Ts		
8	24144·Ts			-	-	-
9	13168·Ts			-	-	-

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to- Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink x (Ts) x # of S + # of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%

Ts = 1/(15000 x 2048) seconds

<Note>
* This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle

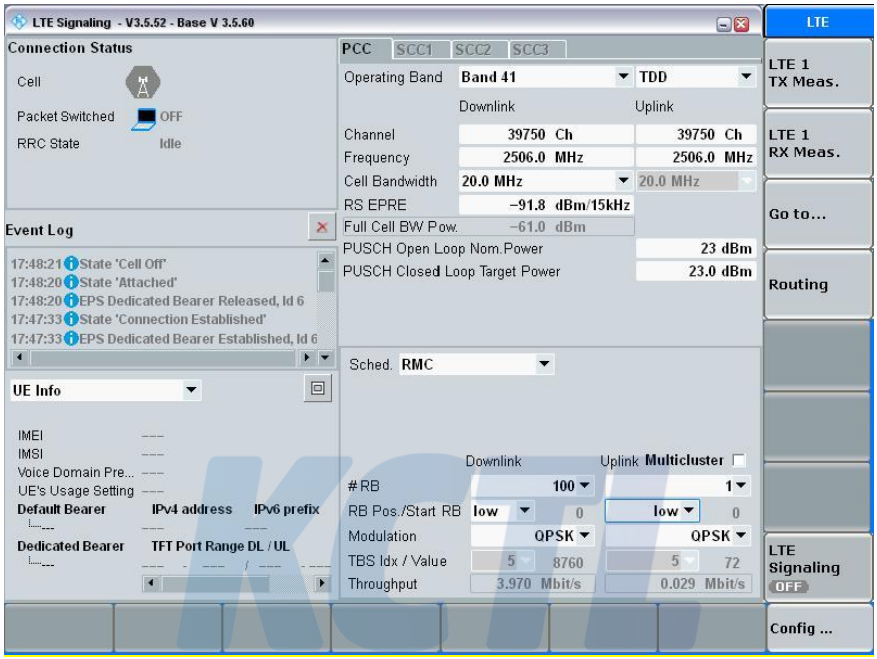
This test report shall not be reproduced, except in full, without the written approval

* LTE Band TDD setup for measurements

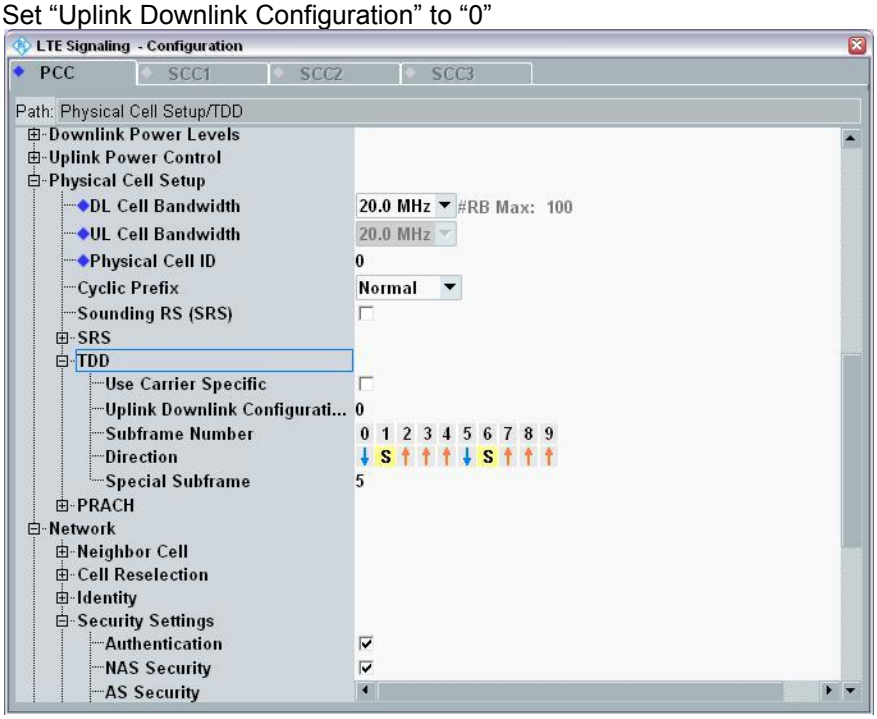
Procedure used to establish SAR test signal for LTE TDD Band

Set to CMW-500 with following parameters:

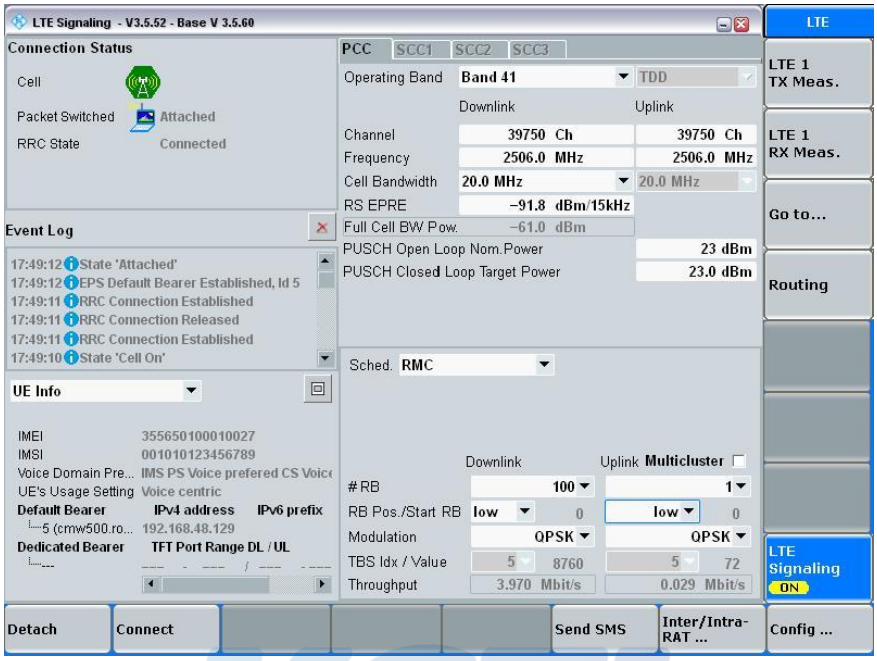
Operating Band: Select Band 41 and TDD
Set Frequency, Cell Bandwidth, RB
Turn the LTE Signaling off using “ON | OFF” key
Go to “Config….”



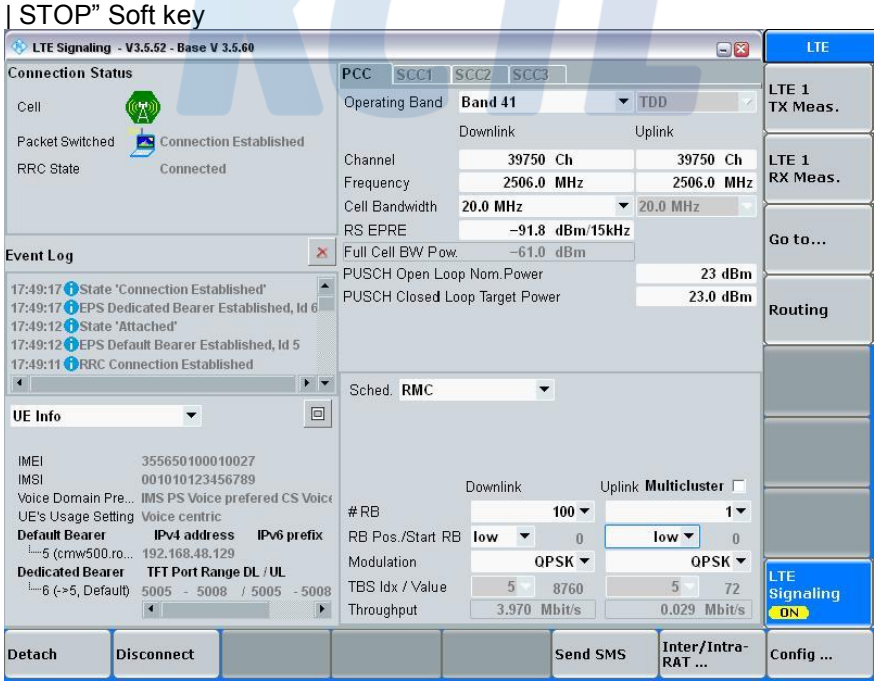
Go to “Physical Cell Setup”
Select “TDD” and Set “Uplink Downlink Configuration” to “0”



Turn the LTE Signaling off using “ON | OFF” key
After EUT is Attached
Select “Connect”

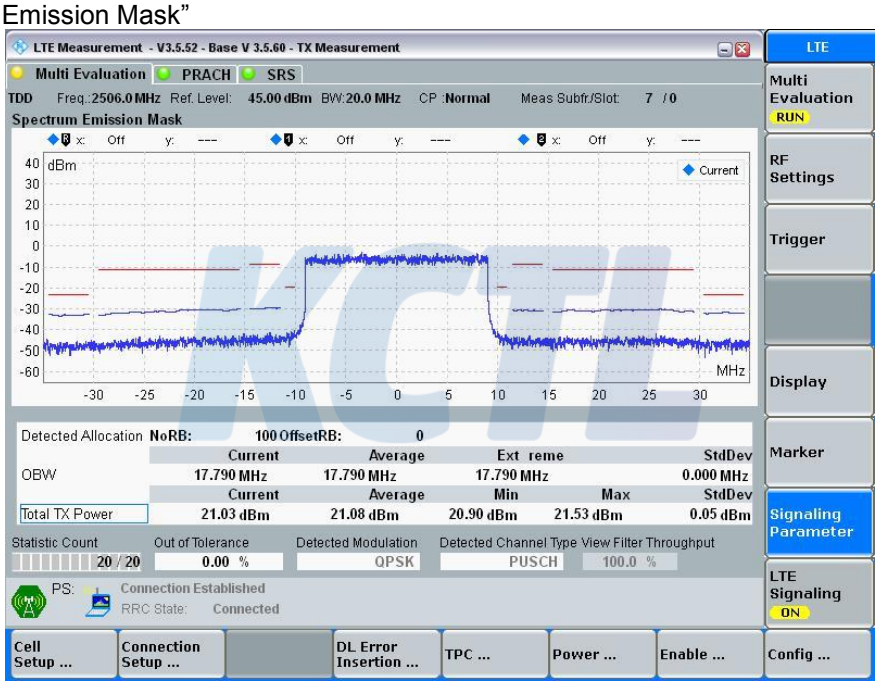


Select “LTE 1 TX Meas.”
Press “RESTART | STOP” Soft key



Select “Signaling Parameter”
Select “TX Power Control (TPC)” > Select “Active TPC Setup” to “Max Power” > Set “Closed Loop Target Power” to “23 dBm”

Go to “Display”
Select “Select View…”
Select “Spectrum Emission Mask”



WLAN 2.4 GHz (2 412 MHz ~ 2 472 MHz)

Mode	Conducted Powers (dBm)				
	2 412 MHz	2 437 MHz	2 462 MHz	2 467 MHz	2 472 MHz
802.11b_1 Mbps	18.81	19.85	19.19	8.55	7.72
802.11g_6 Mbps	15.41	17.71	10.83	7.57	5.71
802.11n(HT-20)_MCS0	15.20	18.05	11.12	7.90	6.12

WLAN 2.4 GHz Reduced Power (2 412 MHz ~ 2 472 MHz)

Mode	Conducted Powers (dBm)				
	2 412 MHz	2 437 MHz	2 462 MHz	2 467 MHz	2 472 MHz
802.11b_1 Mbps	11.96	12.64	12.56	8.48	8.08
802.11g_6 Mbps	10.47	11.90	6.57	6.92	5.25
802.11n(HT-20)_MCS0	10.61	12.27	6.85	7.21	5.43

Bluetooth (2 402 MHz ~ 2 480 MHz)

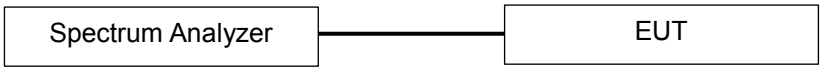
Mode	Conducted Powers (dBm)		
	Low	Mid.	High
BDR(GFSK)	9.00	10.28	8.57
EDR (π/4DQPSK)	5.82	7.46	5.62
EDR(8DPSK)	5.86	7.47	5.63
LE(GFSK)_1 M	5.13	6.00	5.26
LE(GFSK)_2 M	5.00	6.02	5.17

This test report shall not be reproduced, except in full, without the written approval

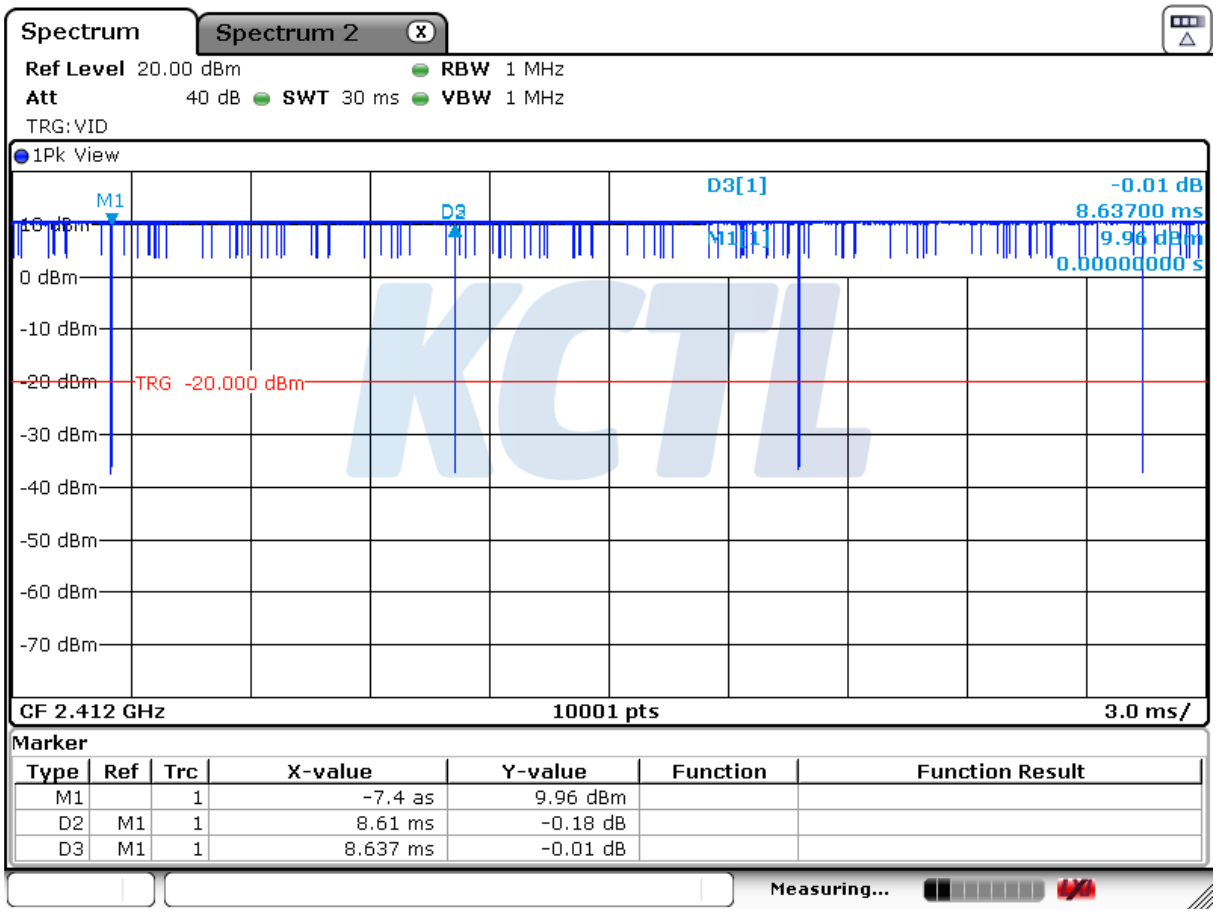
WLAN Duty Cycle

Mode		Duty Cycle [%]	Duty Cycle Compensate Factor
WLAN 2.4 GHz	802.11b	99.7	1.003

Power Measurement Setup



WLAN Transmission Plot



Bluetooth Duty Cycle

Mode		Duty Cycle [%]	Duty Cycle Compensate Factor
BDR	DH5	80.8	1.238

15. SAR Test Results

KDB 447498 D01, General RF Exposure Guidance

Testing of other required channels within the operating mode of a frequency band is not required when the reported SAR for the mid-band or highest output power channel is:

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

(2) ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz

(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

KDB 648474 D04 Handset SAR:

With headset attached, when the reported SAR for 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.

KDB 648474 D04 Handset SAR (Phablet Only):

When hotspot mode does not apply, 10-g Extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg .

KDB 941225 D01 SAR test for 3G devices:

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

KDB 941225 D05, SAR Evaluation Considerations for LTE Devices

(1) QPSK with 1 RB and 50% RB allocation

Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among 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; 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 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 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.

(3) Higher order modulations

SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > 1/2 dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

(4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is > 1/2 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.

This test report shall not be reproduced, except in full, without the written approval

KDB 248227 D01 SAR meas for 802.11:
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.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

This test report shall not be reproduced, except in full, without the written approval

15.1 GSM850

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	Voice	Right Cheek	0	836.6	32.05	34.0	1.57	0.220	**0.345**	#1
		Right Tilt	0	836.6	32.05	34.0	1.57	0.129	0.202	
		Left Cheek	0	836.6	32.05	34.0	1.57	0.199	0.312	
		Left Tilt	0	836.6	32.05	34.0	1.57	0.115	0.180	
Head (VoIP)	GPRS 3 Tx	Right Cheek	0	836.6	28.65	30.0	1.36	0.244	0.333	
		Right Tilt	0	836.6	28.65	30.0	1.36	0.204	0.278	
		Left Cheek	0	836.6	28.65	30.0	1.36	0.222	0.303	
		Left Tilt	0	836.6	28.65	30.0	1.36	0.142	0.194	
Body	Voice	Front	15	836.6	32.05	34.0	1.57	0.217	0.340	
		Rear	15	836.6	32.05	34.0	1.57	0.291	**0.456**	#2
	GPRS 3 Tx	Front	15	836.6	28.65	30.0	1.36	0.140	0.191	
		Rear	15	836.6	28.65	30.0	1.36	0.242	0.330	
Hotspot	GPRS 3 Tx	Front	10	836.6	28.65	30.0	1.36	0.143	0.195	
		Rear	10	836.6	28.65	30.0	1.36	0.467	**0.637**	#3
		Left	10	836.6	28.65	30.0	1.36	0.123	0.168	
		Right	10	836.6	28.65	30.0	1.36	0.212	0.289	
		Bottom	10	836.6	28.65	30.0	1.36	0.261	0.356	

15.2 GSM1900

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	Voice	Right Cheek	0	1 880	29.62	31.5	1.54	0.073	0.112	
		Right Tilt	0	1 880	29.62	31.5	1.54	0.046	0.070	
		Left Cheek	0	1 880	29.62	31.5	1.54	0.151	0.233	
		Left Tilt	0	1 880	29.62	31.5	1.54	0.071	0.110	
Head (VoIP)	GPRS 4 Tx	Right Cheek	0	1 880	24.92	25.5	1.14	0.103	0.118	
		Right Tilt	0	1 880	24.92	25.5	1.14	0.102	0.117	
		Left Cheek	0	1 880	24.92	25.5	1.14	0.214	**0.245**	#4
		Left Tilt	0	1 880	24.92	25.5	1.14	0.111	0.127	
Body	Voice	Front	15	1 880	29.62	31.5	1.54	0.111	0.171	
		Rear	15	1 880	29.62	31.5	1.54	0.191	**0.294**	#5
	GPRS 4 Tx	Front	15	1 880	24.92	25.5	1.14	0.156	0.178	
		Rear	15	1 880	24.92	25.5	1.14	0.233	0.266	
Hotspot	GPRS 4 Tx	Front	10	1 880	23.18	23.8	1.15	0.174	0.201	
		Rear	10	1 880	23.18	23.8	1.15	0.384	**0.443**	#6
		Left	10	1 880	23.18	23.8	1.15	0.172	0.198	
		Right	10	1 880	23.18	23.8	1.15	0.029	0.034	
		Bottom	10	1 880	23.18	23.8	1.15	0.162	0.187	

This test report shall not be reproduced, except in full, without the written approval

15.3 WCDMA B2

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	RMC	Right Cheek	0	1 880	23.53	24.0	1.11	0.157	0.175	
		Right Tilt	0	1 880	23.53	24.0	1.11	0.121	0.135	
		Left Cheek	0	1 880	23.53	24.0	1.11	0.311	**0.347**	#7
		Left Tilt	0	1 880	23.53	24.0	1.11	0.159	0.177	
Body	RMC	Front	15	1 880	23.53	24.0	1.11	0.260	0.290	
		Rear	15	1 880	23.53	24.0	1.11	0.435	**0.485**	#8
Hotspot	RMC	Front	10	1 880	21.79	22.0	1.05	0.303	0.318	
		Rear	10	1 880	21.79	22.0	1.05	0.543	**0.570**	#9
		Left	10	1 880	21.79	22.0	1.05	0.277	0.291	
		Right	10	1 880	21.79	22.0	1.05	0.040	0.042	
		Bottom	10	1 880	21.79	22.0	1.05	0.248	0.260	

15.4 WCDMA B5

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	RMC	Right Cheek	0	836.6	23.16	25.0	1.53	0.215	**0.328**	#10
		Right Tilt	0	836.6	23.16	25.0	1.53	0.140	0.214	
		Left Cheek	0	836.6	23.16	25.0	1.53	0.148	0.226	
		Left Tilt	0	836.6	23.16	25.0	1.53	0.098	0.149	
Body	RMC	Front	15	836.6	23.16	25.0	1.53	0.142	0.217	
		Rear	15	836.6	23.16	25.0	1.53	0.356	**0.544**	#11
Hotspot	RMC	Front	10	836.6	23.16	25.0	1.53	0.294	0.449	
		Rear	10	836.6	23.16	25.0	1.53	0.778	**1.188**	#12
		Rear	10	846.6	23.45	25.0	1.43	0.636	0.909	
		Rear	10	826.4	23.36	25.0	1.46	0.636	0.928	
		Left	10	836.6	23.16	25.0	1.53	0.281	0.429	
		Right	10	836.6	23.16	25.0	1.53	0.413	0.631	
		Bottom	10	836.6	23.16	25.0	1.53	0.340	0.519	

This test report shall not be reproduced, except in full, without the written approval

15.5 LTE B2

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	QPSK 20 MHz 1 RB	Right Cheek	0	1 900	23.61	24	1.09	0.157	0.172	
		Right Tilt	0	1 900	23.61	24	1.09	0.100	0.109	
		Left Cheek	0	1 900	23.61	24	1.09	0.301	0.329	
		Left Tilt	0	1 900	23.61	24	1.09	0.114	0.125	
	QPSK 20 MHz 50 RB	Right Cheek	0	1 900	22.53	24	1.40	0.147	0.206	
		Right Tilt	0	1 900	22.53	24	1.40	0.090	0.126	
		Left Cheek	0	1 900	22.53	24	1.40	0.240	**0.337**	#13
		Left Tilt	0	1 900	22.53	24	1.40	0.096	0.134	
Body	QPSK 20 MHz 1 RB	Front	15	1 900	23.61	24	1.09	0.189	0.207	
		Rear	15	1 900	23.61	24	1.09	0.323	0.353	
	QPSK 20 MHz 50 RB	Front	15	1 900	22.53	24	1.40	0.173	0.243	
		Rear	15	1 900	22.53	24	1.40	0.279	**0.391**	#14
Hotspot	QPSK 20 MHz 1 RB	Front	10	1 900	21.63	22	1.09	0.278	0.303	
		Rear	10	1 900	21.63	22	1.09	0.531	**0.578**	#15
		Left	10	1 900	21.63	22	1.09	0.276	0.301	
		Right	10	1 900	21.63	22	1.09	0.043	0.047	
		Bottom	10	1 900	21.63	22	1.09	0.250	0.272	
	QPSK 20 MHz 50 RB	Front	10	1 900	21.51	22	1.12	0.265	0.297	
		Rear	10	1 900	21.51	22	1.12	0.514	0.575	
		Left	10	1 900	21.51	22	1.12	0.266	0.298	
		Right	10	1 900	21.51	22	1.12	0.041	0.045	
		Bottom	10	1 900	21.51	22	1.12	0.239	0.268	

This test report shall not be reproduced, except in full, without the written approval

15.6 LTE B5

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	QPSK 10 MHz 1 RB	Right Cheek	0	829	24.31	25.5	1.32	0.208	0.274	
		Right Tilt	0	829	24.31	25.5	1.32	0.154	0.203	
		Left Cheek	0	829	24.31	25.5	1.32	0.239	0.314	
		Left Tilt	0	829	24.31	25.5	1.32	0.160	0.210	
	QPSK 10 MHz 25 RB	Right Cheek	0	844	24.09	25.5	1.38	0.090	0.125	
		Right Tilt	0	844	24.09	25.5	1.38	0.061	0.085	
		Left Cheek	0	844	24.09	25.5	1.38	0.262	**0.362**	#16
		Left Tilt	0	844	24.09	25.5	1.38	0.145	0.201	
Body	QPSK 10 MHz 1 RB	Front	15	829	24.31	25.5	1.32	0.248	0.326	
		Rear	15	829	24.31	25.5	1.32	0.340	**0.447**	#17
	QPSK 10 MHz 25 RB	Front	15	844	24.09	25.5	1.38	0.148	0.205	
		Rear	15	844	24.09	25.5	1.38	0.263	0.364	
Hotspot	QPSK 10 MHz 1 RB	Front	10	829	24.31	25.5	1.32	0.233	0.306	
		Rear	10	829	24.31	25.5	1.32	0.592	**0.779**	#18
		Left	10	829	24.31	25.5	1.32	0.232	0.305	
		Right	10	829	24.31	25.5	1.32	0.417	0.548	
		Bottom	10	829	24.31	25.5	1.32	0.314	0.413	
	QPSK 10 MHz 25 RB	Front	10	844	24.09	25.5	1.38	0.171	0.237	
		Rear	10	844	24.09	25.5	1.38	0.555	0.768	
		Left	10	844	24.09	25.5	1.38	0.188	0.260	
		Right	10	844	24.09	25.5	1.38	0.312	0.432	
		Bottom	10	844	24.09	25.5	1.38	0.291	0.403	

This test report shall not be reproduced, except in full, without the written approval

15.7 LTE B41

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	QPSK 20 MHz 1 RB	Right Cheek	0	2 506	22.61	23.5	1.23	0.083	0.102	
		Right Tilt	0	2 506	22.61	23.5	1.23	0.107	0.131	
		Left Cheek	0	2 506	22.61	23.5	1.23	0.178	**0.218**	#19
		Left Tilt	0	2 506	22.61	23.5	1.23	0.055	0.067	
	QPSK 20 MHz 50 RB	Right Cheek	0	2 506	22.15	23.5	1.36	0.076	0.104	
		Right Tilt	0	2 506	22.15	23.5	1.36	0.091	0.124	
		Left Cheek	0	2 506	22.15	23.5	1.36	0.142	0.194	
		Left Tilt	0	2 506	22.15	23.5	1.36	0.050	0.068	
Body	QPSK 20 MHz 1 RB	Front	15	2 506	22.61	23.5	1.23	0.125	0.153	
		Rear	15	2 506	22.61	23.5	1.23	0.182	0.223	
	QPSK 20 MHz 50 RB	Front	15	2 506	22.15	23.5	1.36	0.109	0.149	
		Rear	15	2 506	22.15	23.5	1.36	0.184	**0.251**	#20
Hotspot	QPSK 20 MHz 1 RB	Front	10	2 506	21.28	22.0	1.18	0.227	0.268	
		Rear	10	2 506	21.28	22.0	1.18	0.408	**0.482**	#21
		Left	10	2 506	21.28	22.0	1.18	0.193	0.228	
		Right	10	2 506	21.28	22.0	1.18	0.018	0.021	
		Bottom	10	2 506	21.28	22.0	1.18	0.251	0.296	
	QPSK 20 MHz 50 RB	Front	10	2 506	21.23	22.0	1.19	0.203	0.242	
		Rear	10	2 506	21.23	22.0	1.19	0.377	0.450	
		Left	10	2 506	21.23	22.0	1.19	0.181	0.216	
		Right	10	2 506	21.23	22.0	1.19	0.016	0.019	
		Bottom	10	2 506	21.23	22.0	1.19	0.224	0.267	

This test report shall not be reproduced, except in full, without the written approval

15.8 WLAN 2.4 GHz

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Duty Cycle Compensate Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	802.11b	Right Cheek	0	2 437	12.64	13.0	1.09	1.003	0.141	**0.154**	#22
		Right Tilt	0	2 437	12.64	13.0	1.09	1.003	0.112	0.122	
		Left Cheek	0	2 437	12.64	13.0	1.09	1.003	0.046	0.050	
		Left Tilt	0	2 437	12.64	13.0	1.09	1.003	0.044	0.048	
Body	802.11b	Front	15	2 437	19.85	20.0	1.04	1.003	0.109	0.113	
		Rear	15	2 437	19.85	20.0	1.04	1.003	0.146	**0.152**	#23
Hotspot	802.11b	Front	10	2 437	19.85	20.0	1.04	1.003	0.188	0.195	
		Rear	10	2 437	19.85	20.0	1.04	1.003	0.353	**0.367**	#24
		Left	10	2 437	19.85	20.0	1.04	1.003	0.209	0.217	
		Right	10	2 437	19.85	20.0	1.04	1.003	0.023	0.024	
		Top	10	2 437	19.85	20.0	1.04	1.003	0.097	0.100	

* KDB Publication 248227 D01v02r02, WLAN 2.4 GHz the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg per.
* When the original highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
* Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is >= 1.45 W/kg
* KDB Publication 248227 D01v02r02, The maximum output power permitted for devices authorized under §15.247 is 1 W conducted and 36 dBm EIRP.Within the frequency range of 2400 – 2483.5 MHz, currently a total of 13 channels may be used in the U.S. However, non-overlapping frequency channels are necessary to minimize interference degradation; therefore, channels 1, 6 and 11 are used most often. Channels 12 and 13, in general, require reduced output power to satisfy bandedge radiated field strength requirements at 2483.5 MHz. Provided higher maximum output power is not specified for the other channels, channels 1, 6 and 11 are used to configure 22 MHz DSSS and 20 MHz OFDM channels for SAR measurements; otherwise, the closest adjacent channel with the highest maximum output power specified for production units should be tested instead of channels 1, 6

15.9 Bluetooth

RF Exposure Conditions	Mode	EUT Position	Distance (mm)	Frequency (MHz)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Duty Cycle Compensate Factor	Measured 1 g SAR (W/kg)	Scaled 1 g SAR (W/kg)	Plot No.
Head	BDR_DH5	Right Cheek	0	2 441	10.28	10.5	1.05	1.238	0.055	**0.071**	#25
		Right Tilt	0	2 441	10.28	10.5	1.05	1.238	0.044	0.057	
		Left Cheek	0	2 441	10.28	10.5	1.05	1.238	0.022	0.028	
		Left Tilt	0	2 441	10.28	10.5	1.05	1.238	0.018	0.023	

This test report shall not be reproduced, except in full, without the written approval

SAR Test Exclusions Applied

Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50 mm is defined by the following equation:

$$\frac{\text{Max Power of Channel (mW)}}{\text{Test Separation Distance (mm)}} * \sqrt{Frequency\ (GHz)} \leq 3.0$$

Mode	Frequency (MHz)	Maximum Allowed Power (mW)	Separation Distance (mm)	≤ 3.0
Bluetooth	2 480	11.22	15	1.18
Bluetooth	2 480	11.22	10	1.77

Based on the maximum conducted power of Bluetooth and antenna to use separation distance, Bluetooth SAR was not required.

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6W/kg. When standalone SAR is not required to be measured per FCC KDB 447498 D01v06, the following equation must be used to estimate the standalone 1-g SAR for simultaneous transmission assessment involving that transmitter.

$$Estimated\ SAR = \frac{\sqrt{f\ (GHz)}}{7.5} * \frac{(Max\ Power\ of\ Channel\ mW)}{Min\ Separation\ Distance}$$

Mode	RF Exposure Conditions	Frequency (MHz)	Maximum Allowed Power (mW)	Separation Distance (Body) (mm)	Estimated SAR (Body) (W/kg)
Bluetooth	Body	2 480	11.22	15	0.157
Bluetooth	Hotspot	2 480	11.22	10	0.236

15.10 Simultaneous Transmission

15.10.1 Head Simultaneous Transmission with WLAN 2.4 GHz

Band	Scaled 1 g SAR WWAN (W/kg)	Scaled 1 g SAR WLAN (W/kg)	Σ 1 g SAR (W/kg)	SPLSR
GSM 850 + WLAN 2.4 GHz	0.345	0.154	0.499	ΣSAR<1.6, Not required
GSM 1900 + WLAN 2.4 GHz	0.245	0.154	0.399	ΣSAR<1.6, Not required
WCDMA B2 + WLAN 2.4 GHz	0.347	0.154	0.501	ΣSAR<1.6, Not required
WCDMA B5 + WLAN 2.4 GHz	0.328	0.154	0.482	ΣSAR<1.6, Not required
LTE B2 + WLAN 2.4 GHz	0.337	0.154	0.491	ΣSAR<1.6, Not required
LTE B5 + WLAN 2.4 GHz	0.362	0.154	**0.516**	ΣSAR<1.6, Not required
LTE B41 + WLAN 2.4 GHz	0.218	0.154	0.372	ΣSAR<1.6, Not required

15.10.2 Head Simultaneous Transmission with Bluetooth

Band	Scaled 1 g SAR WWAN (W/kg)	Scaled 1 g SAR Bluetooth (W/kg)	Σ 1 g SAR (W/kg)	SPLSR
GSM 850 + Bluetooth	0.345	0.071	0.416	ΣSAR<1.6, Not required
GSM 1900 + Bluetooth	0.245	0.071	0.316	ΣSAR<1.6, Not required
WCDMA B2 + Bluetooth	0.347	0.071	0.418	ΣSAR<1.6, Not required
WCDMA B5 + Bluetooth	0.328	0.071	0.399	ΣSAR<1.6, Not required
LTE B2 + Bluetooth	0.337	0.071	0.408	ΣSAR<1.6, Not required
LTE B5 + Bluetooth	0.362	0.071	**0.433**	ΣSAR<1.6, Not required
LTE B41 + Bluetooth	0.218	0.071	0.289	ΣSAR<1.6, Not required

This test report shall not be reproduced, except in full, without the written approval

15.10.3 Body Simultaneous Transmission with WLAN 2.4 GHz

Band	Scaled 1 g SAR WWAN (W/kg)	Scaled 1 g SAR WLAN (W/kg)	Σ 1 g SAR (W/kg)	SPLSR
GSM 850 + WLAN 2.4 GHz	0.456	0.152	0.608	ΣSAR<1.6, Not required
GSM 1900 + WLAN 2.4 GHz	0.294	0.152	0.446	ΣSAR<1.6, Not required
WCDMA B2 + WLAN 2.4 GHz	0.485	0.152	0.637	ΣSAR<1.6, Not required
WCDMA B5 + WLAN 2.4 GHz	0.544	0.152	**0.696**	ΣSAR<1.6, Not required
LTE B2 + WLAN 2.4 GHz	0.391	0.152	0.543	ΣSAR<1.6, Not required
LTE B5 + WLAN 2.4 GHz	0.447	0.152	0.599	ΣSAR<1.6, Not required
LTE B41 + WLAN 2.4 GHz	0.251	0.152	0.403	ΣSAR<1.6, Not required

15.10.4 Body Simultaneous Transmission with Bluetooth

Band	Scaled 1 g SAR WWAN (W/kg)	Estimated 1 g SAR Bluetooth (W/kg)	Σ 1 g SAR (W/kg)	SPLSR
GSM 850 + Bluetooth	0.456	0.157	0.613	ΣSAR<1.6, Not required
GSM 1900 + Bluetooth	0.294	0.157	0.451	ΣSAR<1.6, Not required
WCDMA B2 + Bluetooth	0.485	0.157	0.642	ΣSAR<1.6, Not required
WCDMA B5 + Bluetooth	0.544	0.157	**0.701**	ΣSAR<1.6, Not required
LTE B2 + Bluetooth	0.391	0.157	0.548	ΣSAR<1.6, Not required
LTE B5 + Bluetooth	0.447	0.157	0.604	ΣSAR<1.6, Not required
LTE B41 + Bluetooth	0.251	0.157	0.408	ΣSAR<1.6, Not required

This test report shall not be reproduced, except in full, without the written approval

15.10.5 Hotspot Simultaneous Transmission with WLAN 2.4 GHz

Band	Scaled 1 g SAR WWAN (W/kg)	Scaled 1 g SAR WLAN (W/kg)	Σ 1 g SAR (W/kg)	SPLSR
GSM 850 + WLAN 2.4 GHz	0.637	0.367	1.004	ΣSAR<1.6, Not required
GSM 1900 + WLAN 2.4 GHz	0.443	0.367	0.810	ΣSAR<1.6, Not required
WCDMA B2 + WLAN 2.4 GHz	0.570	0.367	0.937	ΣSAR<1.6, Not required
WCDMA B5 + WLAN 2.4 GHz	1.188	0.367	**1.555**	ΣSAR<1.6, Not required
LTE B2 + WLAN 2.4 GHz	0.578	0.367	0.945	ΣSAR<1.6, Not required
LTE B5 + WLAN 2.4 GHz	0.779	0.367	1.146	ΣSAR<1.6, Not required
LTE B41 + WLAN 2.4 GHz	0.482	0.367	0.849	ΣSAR<1.6, Not required

15.10.6 Hotspot Simultaneous Transmission with Bluetooth

Band	Scaled 1 g SAR WWAN (W/kg)	Estimated 1 g SAR Bluetooth (W/kg)	Σ 1 g SAR (W/kg)	SPLSR
GSM 850 + Bluetooth	0.637	0.236	0.873	ΣSAR<1.6, Not required
GSM 1900 + Bluetooth	0.443	0.236	0.679	ΣSAR<1.6, Not required
WCDMA B2 + Bluetooth	0.570	0.236	0.806	ΣSAR<1.6, Not required
WCDMA B5 + Bluetooth	1.188	0.236	**1.424**	ΣSAR<1.6, Not required
LTE B2 + Bluetooth	0.578	0.236	0.814	ΣSAR<1.6, Not required
LTE B5 + Bluetooth	0.779	0.236	1.015	ΣSAR<1.6, Not required
LTE B41 + Bluetooth	0.482	0.236	0.718	ΣSAR<1.6, Not required

<Note>
* Simultaneous transmission SAR test exclusion considerations
: Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Per KDB Publication 447498 D01v06.
* The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit (1.6 W/kg per 1-g). Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit. And therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06.
* Bluetooth and WLAN share the same antenna path.
* Bluetooth can't transmit with WLAN simultaneously.

This test report shall not be reproduced, except in full, without the written approval

16. Test System Verification Results

900 MHz(2019-04-12)

Procedure Name: d=15 mm, Pin=250 mW, dist=2.0 mm (EX-Probe)

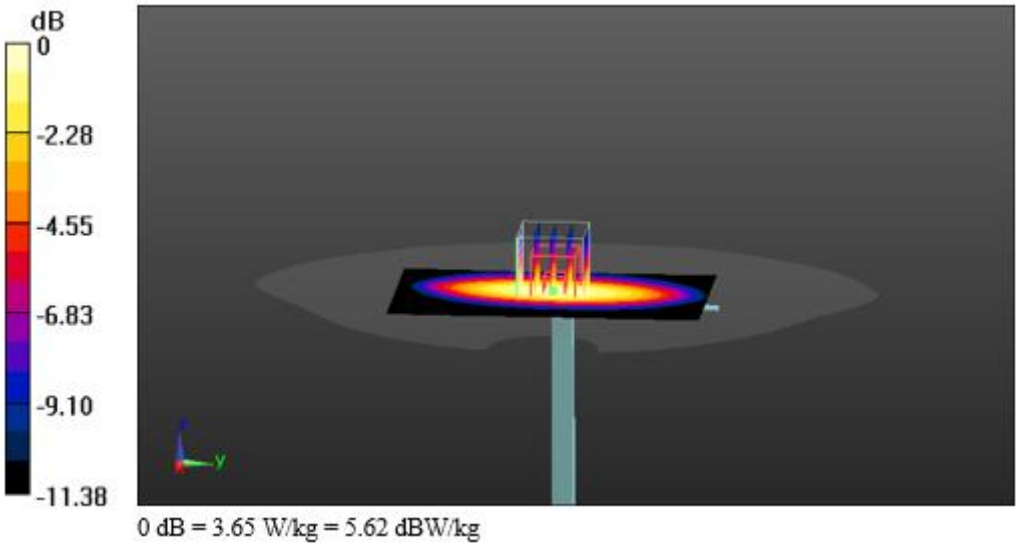
Frequency: 900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 0.98 S/m; ε_r = 41.368; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(9.94, 9.94, 9.94) @ 900 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/d=15 mm, Pin=250 mW, dist=2.0 mm (EX-Probe)/Area Scan (61x101x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.60 W/kg

Configuration/d=15 mm, Pin=250 mW, dist=2.0 mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 62.50 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 4.30 W/kg
SAR(1 g) = 2.84 W/kg; SAR(10 g) = 1.83 W/kg
Maximum value of SAR (measured) = 3.65 W/kg



1 900 MHz(2019-04-11)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

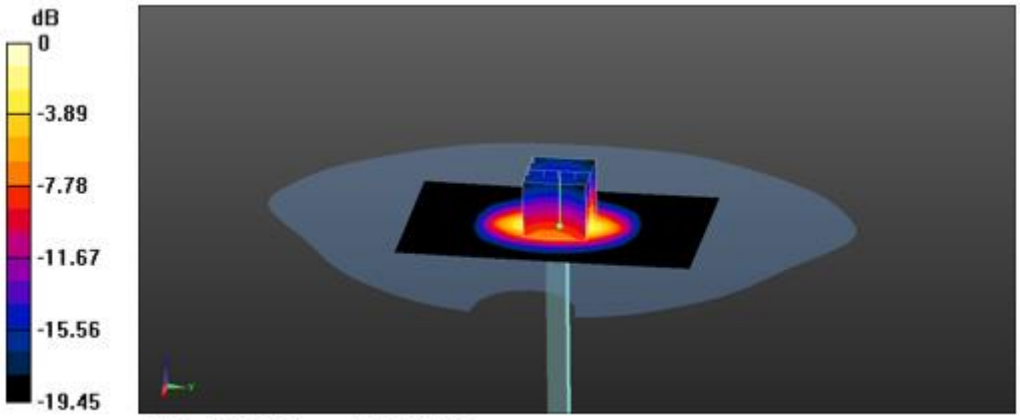
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.411 S/m; ε_r = 39.845; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.8 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 100.0 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 9.67 W/kg; SAR(10 g) = 4.92 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

1 900 MHz(2019-04-09)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

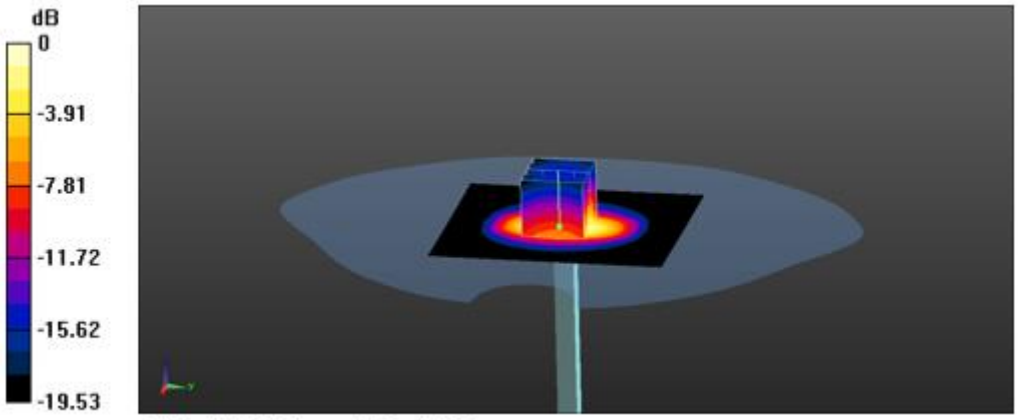
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.425 S/m; ε_r = 39.061; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.7 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 104.3 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 19.5 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.12 W/kg
Maximum value of SAR (measured) = 14.8 W/kg



0 dB = 14.8 W/kg = 11.70 dBW/kg

1 900 MHz(2019-04-11)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

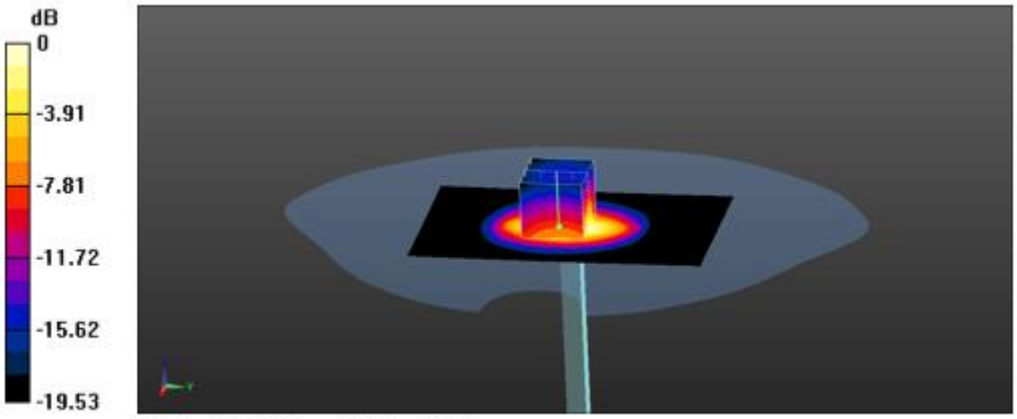
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.441 S/m; ε_r = 39.254; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.5 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 101.6 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 20.0 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.27 W/kg
Maximum value of SAR (measured) = 15.0 W/kg



0 dB = 15.0 W/kg = 11.76 dBW/kg

900 MHz(2019-04-13)

Procedure Name: d=15 mm, Pin=250 mW, dist=2.0 mm (EX-Probe)

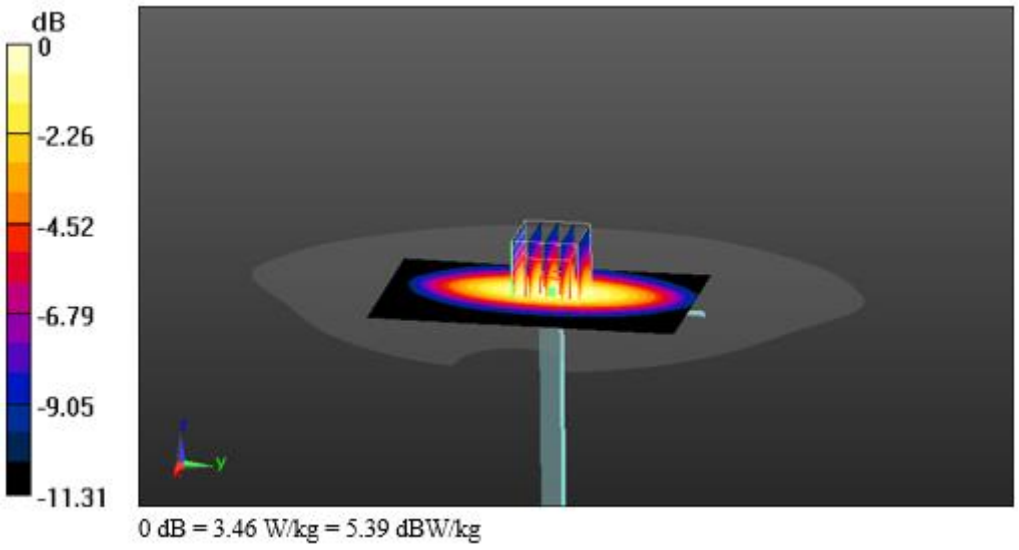
Frequency: 900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 0.974 S/m; ε_r = 40.68; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(9.94, 9.94, 9.94) @ 900 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/d=15 mm, Pin=250 mW, dist=2.0 mm (EX-Probe)/Area Scan (61x101x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.44 W/kg

Configuration/d=15 mm, Pin=250 mW, dist=2.0 mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.62 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 4.06 W/kg
SAR(1 g) = 2.71 W/kg; SAR(10 g) = 1.75 W/kg
Maximum value of SAR (measured) = 3.46 W/kg



2 450 MHz(2019-04-04)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

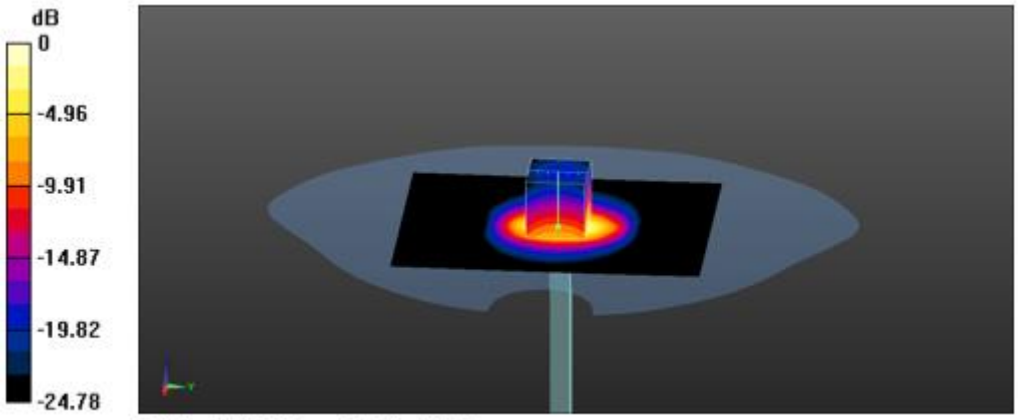
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.785 S/m; ε_r = 38.253; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (101x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.7 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 109.3 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 29.9 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 5.99 W/kg
Maximum value of SAR (measured) = 21.1 W/kg



0 dB = 21.1 W/kg = 13.24 dBW/kg

2 450 MHz(2019-04-09)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

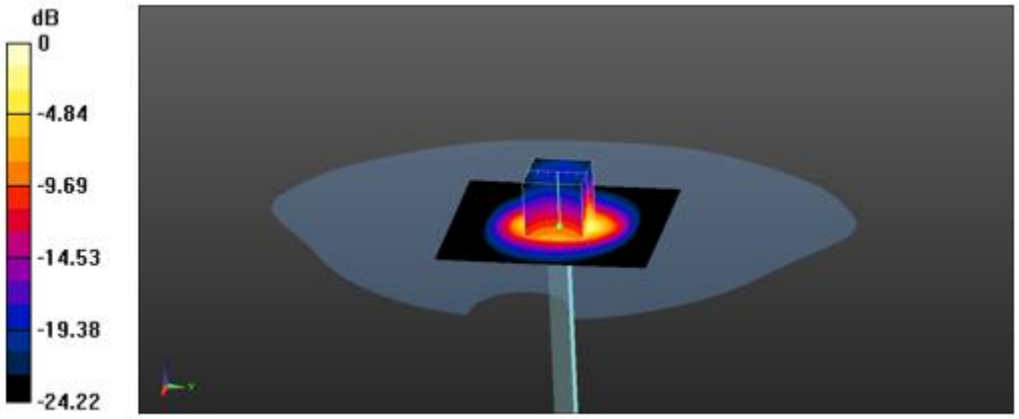
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.824 S/m; ε_r = 38.663; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (81x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 21.6 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 109.4 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 29.2 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 5.94 W/kg
Maximum value of SAR (measured) = 20.9 W/kg



0 dB = 20.9 W/kg = 13.20 dBW/kg

2 450 MHz(2019-04-08)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

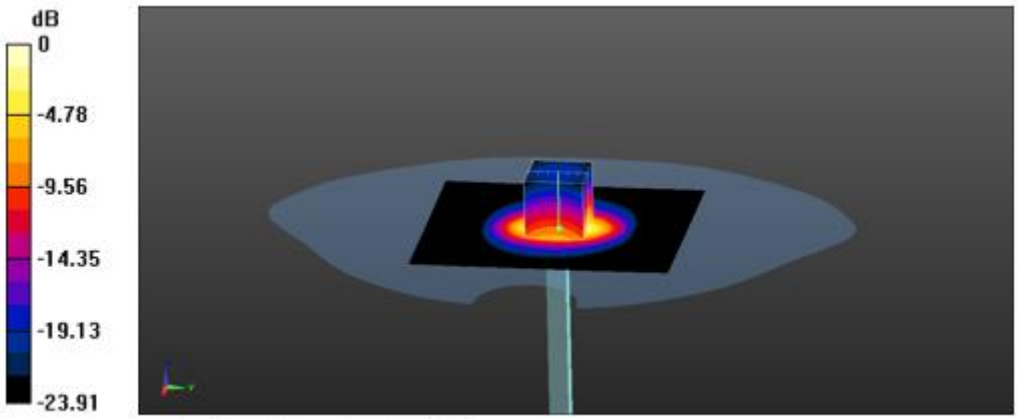
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.847 S/m; ε_r = 38.623; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (101x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.1 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 107.9 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 29.7 W/kg
SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.05 W/kg
Maximum value of SAR (measured) = 21.3 W/kg



0 dB = 21.3 W/kg = 13.28 dBW/kg

1 900 MHz(2019-04-22)

Procedure Name: d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)

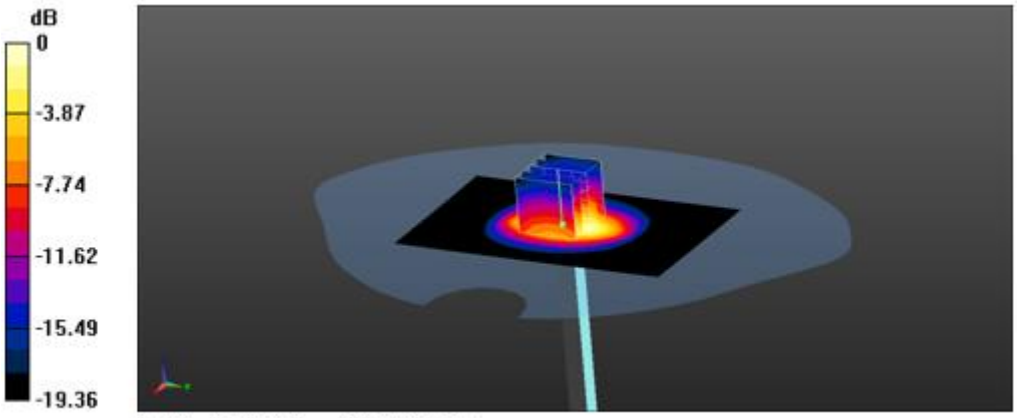
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.417 S/m; ε_r = 39.209; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.9 W/kg

System Performance Check (without Area Scan)/d=10 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 101.3 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10 W/kg; SAR(10 g) = 5.13 W/kg
Maximum value of SAR (measured) = 14.5 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

17. Test Results

#1

Procedure Name: GSM850_Voice_f.836.6_Right Cheek

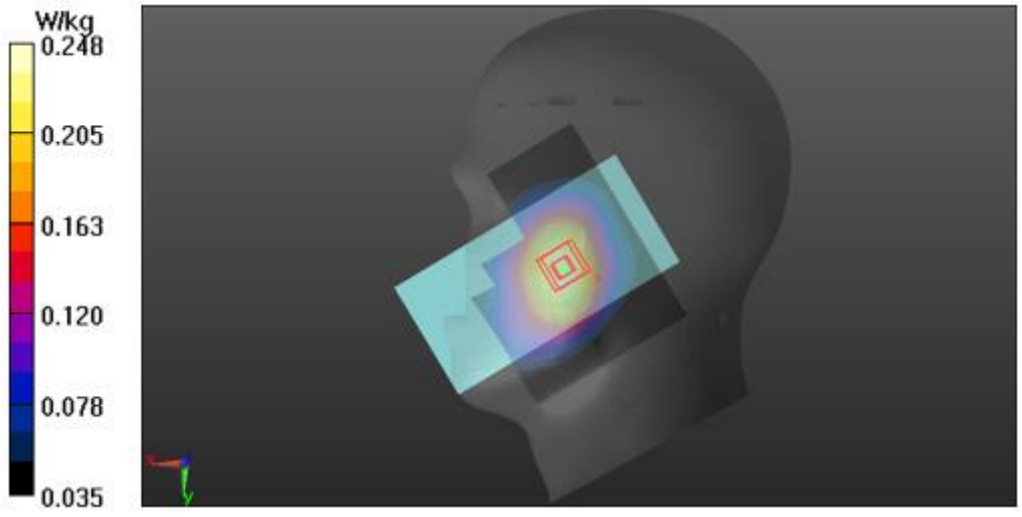
Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 836.6 MHz; σ = 0.916 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/GSM850_Voice_f.836.6_Right Cheek/Area Scan (91x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.249 W/kg

Configuration/GSM850_Voice_f.836.6_Right Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.99 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.265 W/kg
SAR(1 g) = 0.220 W/kg; SAR(10 g) = 0.170 W/kg
Maximum value of SAR (measured) = 0.248 W/kg



#2

Procedure Name: GSM850_Voice_f.836.6_Rear_15 mm

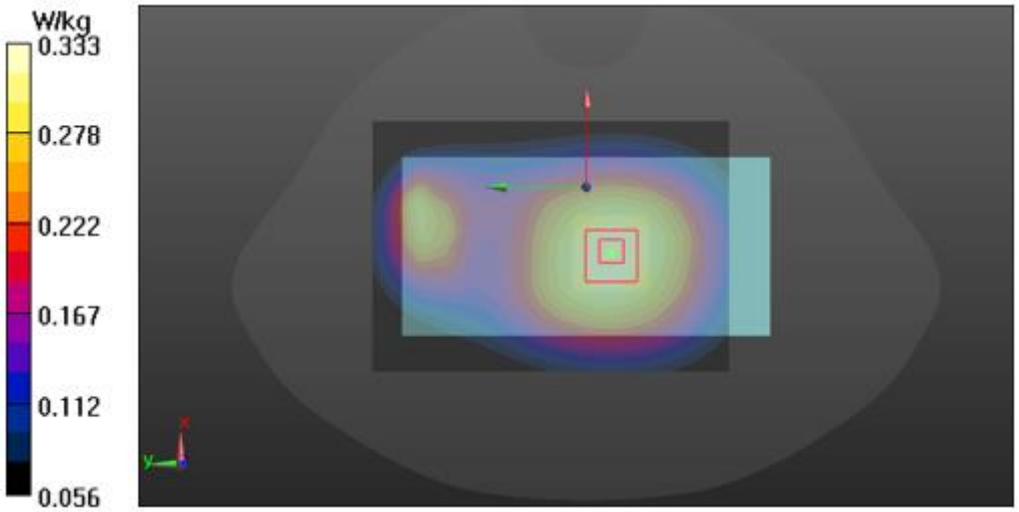
Frequency: 836.6 MHz;Duty Cycle: 1:8.30042
Medium parameters used: f = 836.6 MHz; σ = 0.916 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/GSM850_Voice_f.836.6_Rear_15 mm/Area Scan (71x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.333 W/kg

Configuration/GSM850_Voice_f.836.6_Rear_15 mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.13 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.361 W/kg
SAR(1 g) = 0.291 W/kg; SAR(10 g) = 0.222 W/kg
Maximum value of SAR (measured) = 0.333 W/kg



#3

Procedure Name: GSM850_3Tx_f.836.6_Rear_10 mm

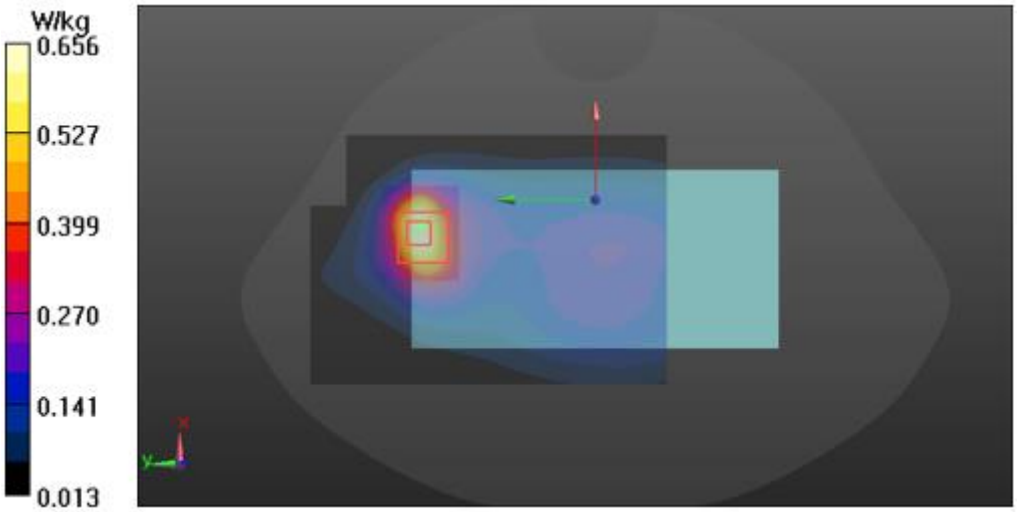
Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.916 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/GSM850_3Tx_f.836.6_Rear_10 mm/Area Scan (71x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.690 W/kg

Configuration/GSM850_3Tx_f.836.6_Rear_10 mm/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.29 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.867 W/kg
SAR(1 g) = 0.467 W/kg; SAR(10 g) = 0.261 W/kg
Maximum value of SAR (measured) = 0.656 W/kg



#4

Procedure Name: GSM1900_4Tx_f.1 880_Left Cheek

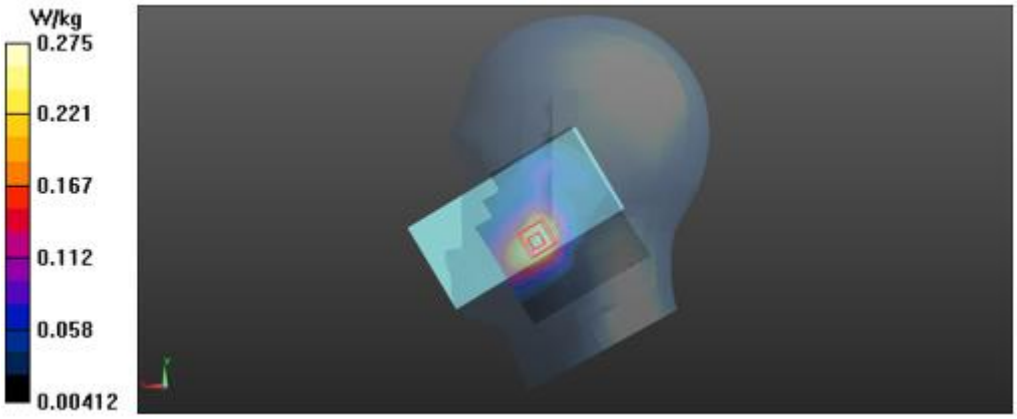
Frequency: 1880 MHz; Duty Cycle: 1:2.07491
Medium parameters used: f = 1880 MHz; σ = 1.396 S/m; ε_r = 39.283; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/GSM1900_4Tx_f.1 880_Left Cheek/Area Scan (81x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.282 W/kg

Configuration/GSM1900_4Tx_f.1 880_Left Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.249 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.350 W/kg
SAR(1 g) = 0.214 W/kg; SAR(10 g) = 0.131 W/kg
Maximum value of SAR (measured) = 0.275 W/kg



#5

Procedure Name: GSM1900_Voice_f.1 880_Rear_15 mm

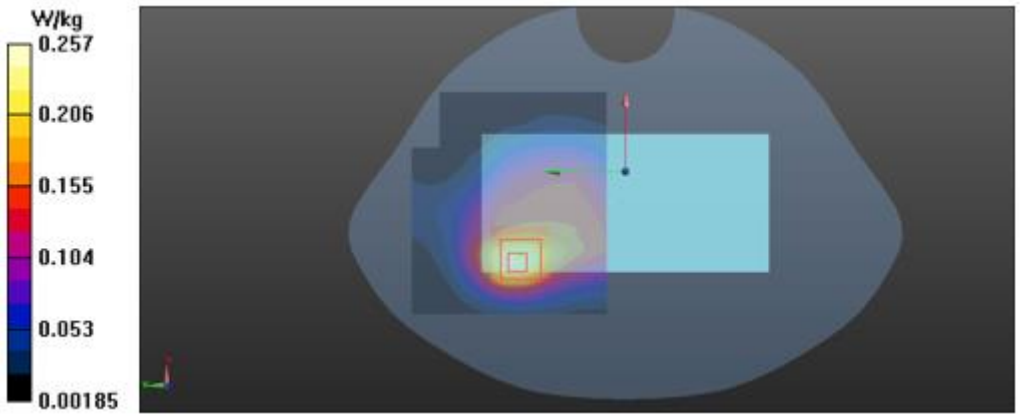
Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.395 S/m; ε_r = 39.83; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/GSM1900_Voice_f.1 880_Rear_15 mm/Area Scan (81x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.258 W/kg

Configuration/GSM1900_Voice_f.1 880_Rear_15 mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.650 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.345 W/kg
SAR(1 g) = 0.191 W/kg; SAR(10 g) = 0.106 W/kg
Maximum value of SAR (measured) = 0.257 W/kg



#6

Procedure Name: GSM1900_4Tx_f.1 880_Rear_10 mm

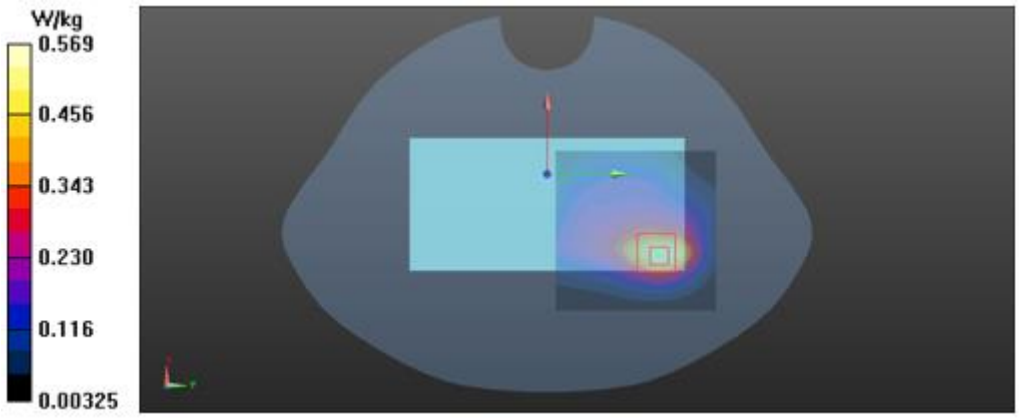
Frequency: 1880 MHz; Duty Cycle: 1:2.07491
Medium parameters used: f = 1880 MHz; σ = 1.396 S/m; ε_r = 39.283; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/GSM1900_4Tx_f.1 880_Rear_10 mm/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.625 W/kg

Configuration/GSM1900_4Tx_f.1 880_Rear_10 mm/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.129 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.749 W/kg
SAR(1 g) = 0.384 W/kg; SAR(10 g) = 0.201 W/kg
Maximum value of SAR (measured) = 0.569 W/kg



#7

Procedure Name: WCDMA_B2_f.1 880_Left Cheek

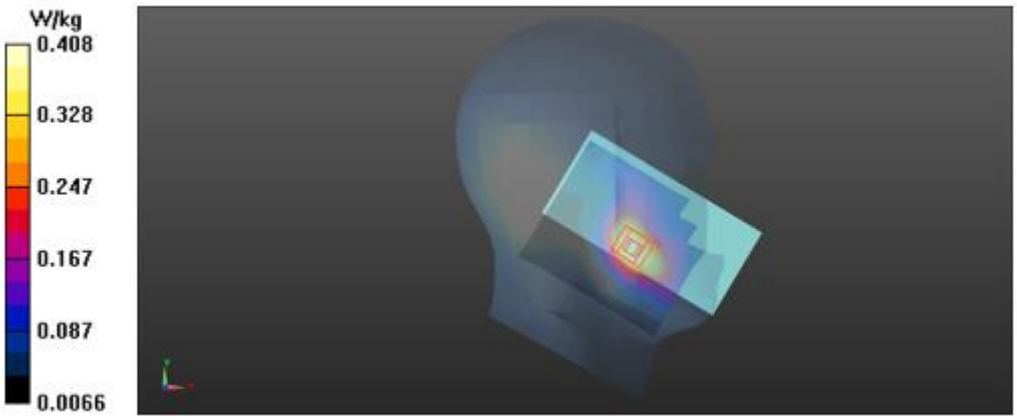
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.407 S/m; ε_r = 39.117; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/WCDMA_B2_f.1 880_Left Cheek/Area Scan (71x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.417 W/kg

Configuration/WCDMA_B2_f.1 880_Left Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.79 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.505 W/kg
SAR(1 g) = 0.311 W/kg; SAR(10 g) = 0.190 W/kg
Maximum value of SAR (measured) = 0.408 W/kg



#8

Procedure Name: WCDMA_B2_f.1 880_Rear_15 mm

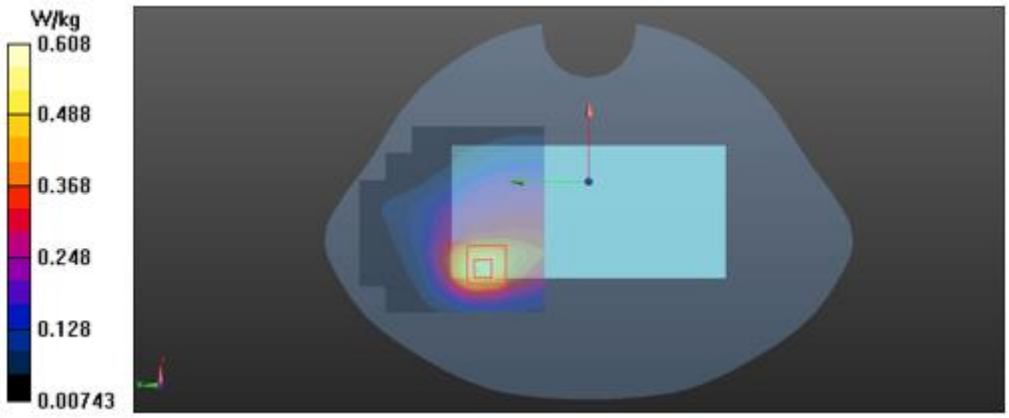
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.407 S/m; ε_r = 39.117; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/WCDMA_B2_f.1 880_Rear_15 mm/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.574 W/kg

Configuration/WCDMA_B2_f.1 880_Rear_15 mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.233 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.784 W/kg
SAR(1 g) = 0.435 W/kg; SAR(10 g) = 0.246 W/kg
Maximum value of SAR (measured) = 0.608 W/kg



#9

Procedure Name: WCDMA_B2_f.1 880_Rear_10 mm

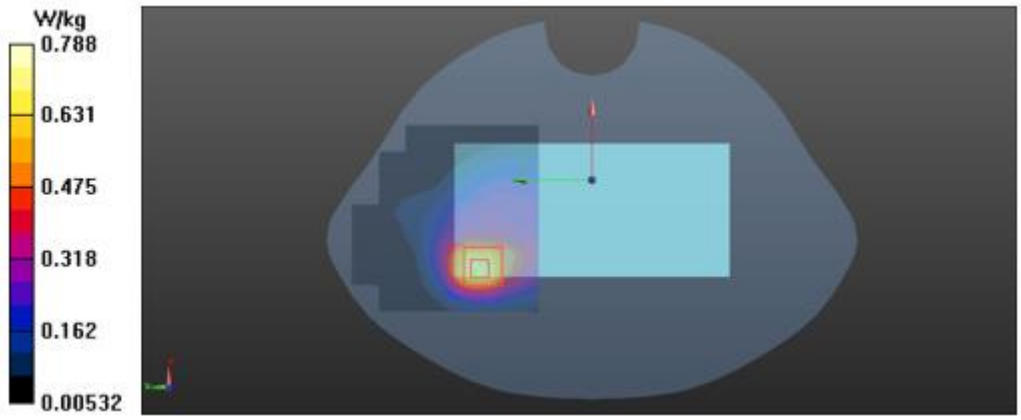
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.407 S/m; ε_r = 39.117; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/WCDMA_B2_f.1 880_Rear_10 mm/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.736 W/kg

Configuration/WCDMA_B2_f.1 880_Rear_10 mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.538 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.543 W/kg; SAR(10 g) = 0.289 W/kg
Maximum value of SAR (measured) = 0.788 W/kg



#10

Procedure Name: WCMDA_B5_f.836.6_Right Cheek

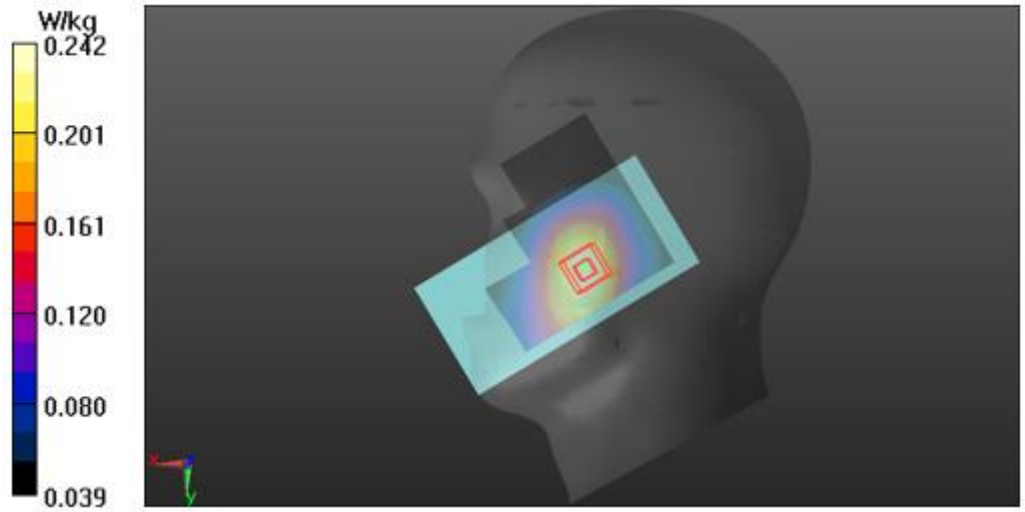
Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.916 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/WCMDA_B5_f.836.6_Right Cheek/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.253 W/kg

Configuration/WCMDA_B5_f.836.6_Right Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.80 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.259 W/kg
SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.166 W/kg
Maximum value of SAR (measured) = 0.242 W/kg



#11

Procedure Name: WCMDA_B5_f.836.6_Rear_15 mm

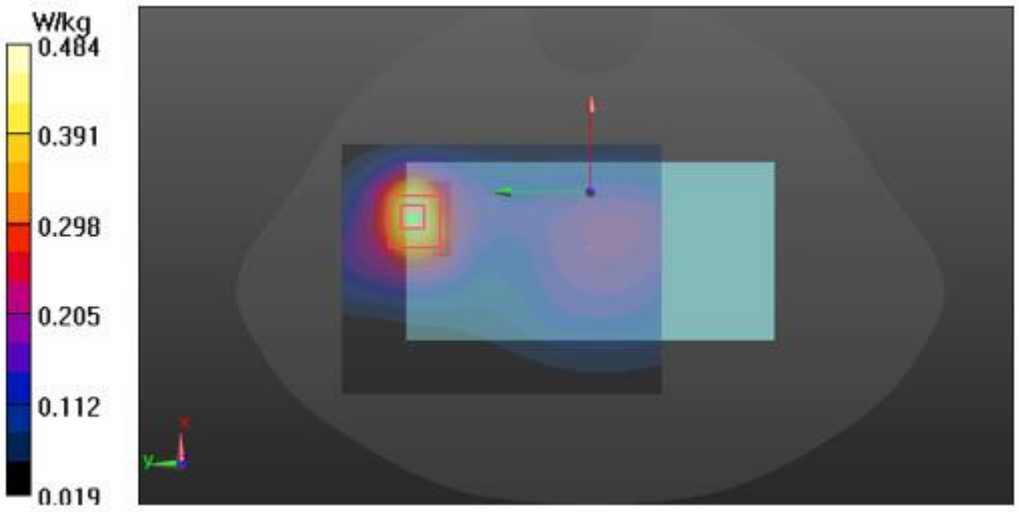
Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.916 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/WCMDA_B5_f.836.6_Rear_15 mm/Area Scan (71x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.488 W/kg

Configuration/WCMDA_B5_f.836.6_Rear_15 mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.56 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.598 W/kg
SAR(1 g) = 0.356 W/kg; SAR(10 g) = 0.210 W/kg
Maximum value of SAR (measured) = 0.484 W/kg



#12

Procedure Name: WCDMA_B5_f.836.6_Rear_10 mm

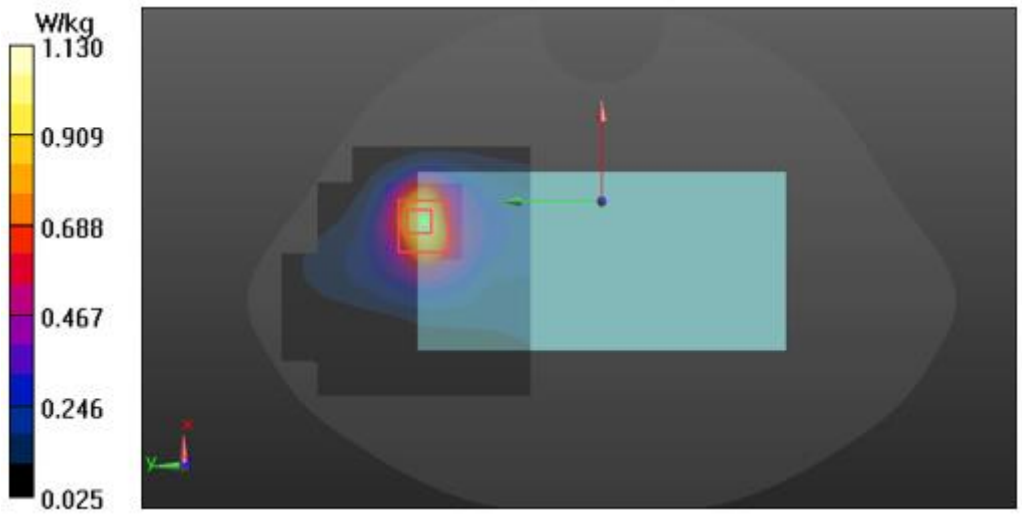
Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.916 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 836.6 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/WCDMA_B5_f.836.6_Rear_10 mm/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.11 W/kg

Configuration/WCDMA_B5_f.836.6_Rear_10 mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.78 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.778 W/kg; SAR(10 g) = 0.421 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



#13

Procedure Name: QPSK_20MHz_50RB_50offset_f.1 900_Left Cheek

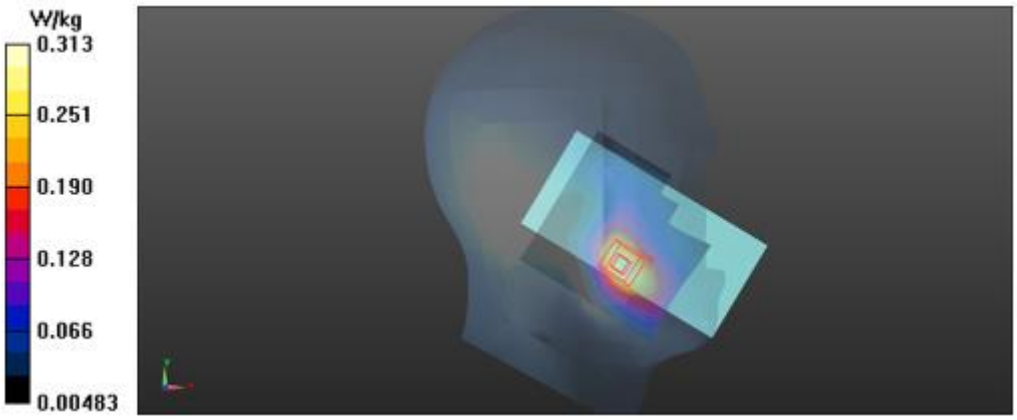
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.441 S/m; ε_r = 39.254; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/QPSK_20MHz_50RB_50offset_f.1 900_Left Cheek/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.339 W/kg

Configuration/QPSK_20MHz_50RB_50offset_f.1 900_Left Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.389 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.393 W/kg
SAR(1 g) = 0.240 W/kg; SAR(10 g) = 0.146 W/kg
Maximum value of SAR (measured) = 0.313 W/kg



#14

Procedure Name: QPSK_20MHz_50RB_50offset_f.1 900_Rear_15 mm

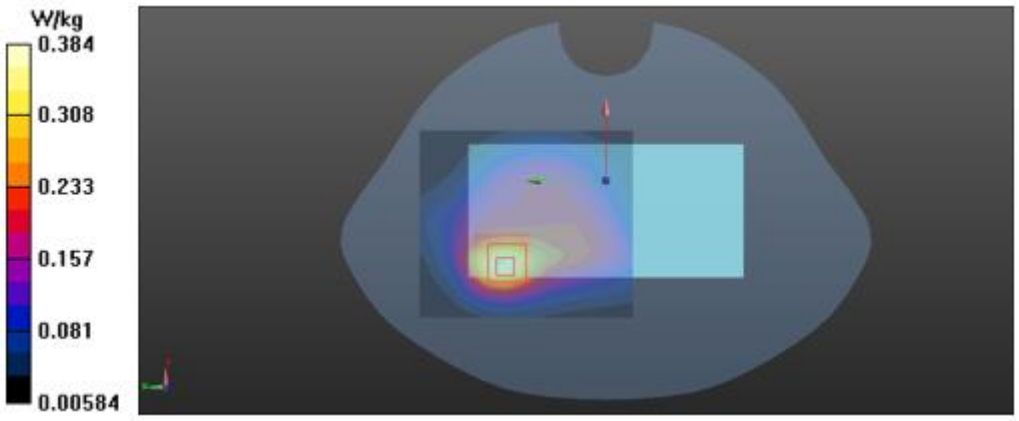
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.441 S/m; ε_r = 39.254; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/QPSK_20MHz_50RB_50offset_f.1 900_Rear_15 mm/Area Scan (71x81x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.393 W/kg

Configuration/QPSK_20MHz_50RB_50offset_f.1 900_Rear_15 mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.246 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.279 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.384 W/kg



#15

Procedure Name: QPSK_20MHz_1RB_99offset_f.1 900_Rear_10 mm

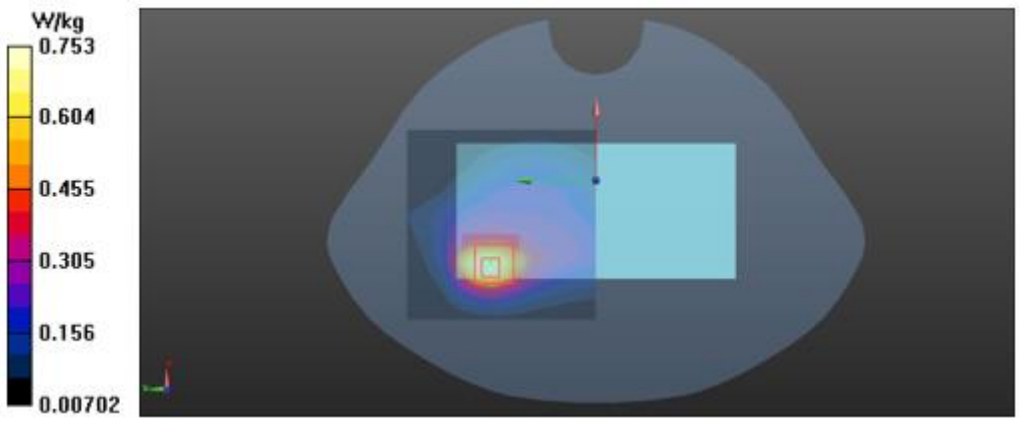
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.441 S/m; ε_r = 39.254; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.79, 7.79, 7.79); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin 1728; Type: QD000P40CD; Serial: TP:1728
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/QPSK_20MHz_1RB_99offset_f.1 900_Rear_10 mm/Area Scan (71x71x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.789 W/kg

Configuration/QPSK_20MHz_1RB_99offset_f.1 900_Rear_10 mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.446 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.531 W/kg; SAR(10 g) = 0.280 W/kg
Maximum value of SAR (measured) = 0.753 W/kg



#16

Procedure Name: QPSK_10MHz_25RB_12offset_f.844_Left Cheek

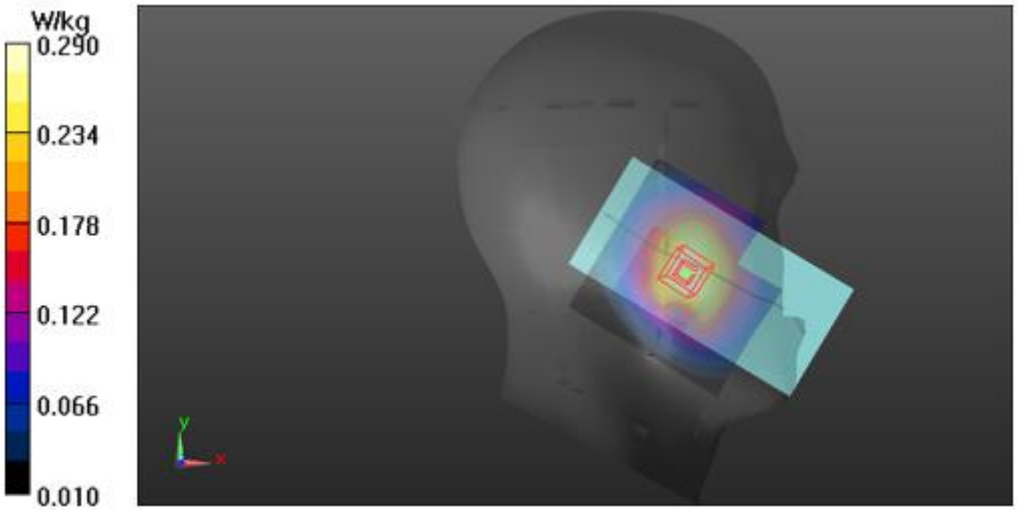
Frequency: 844 MHz;Duty Cycle: 1:1
Medium parameters used: f = 844 MHz; σ = 0.913 S/m; ε_r = 41.35; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 844 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/QPSK_10MHz_25RB_12offset_f.844_Left Cheek/Area Scan (71x71x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.305 W/kg

Configuration/QPSK_10MHz_25RB_12offset_f.844_Left Cheek/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.71 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.308 W/kg
SAR(1 g) = 0.262 W/kg; SAR(10 g) = 0.204 W/kg
Maximum value of SAR (measured) = 0.290 W/kg



#17

Procedure Name: QPSK_10MHz_1RB_0offset_829_Rear_15 mm

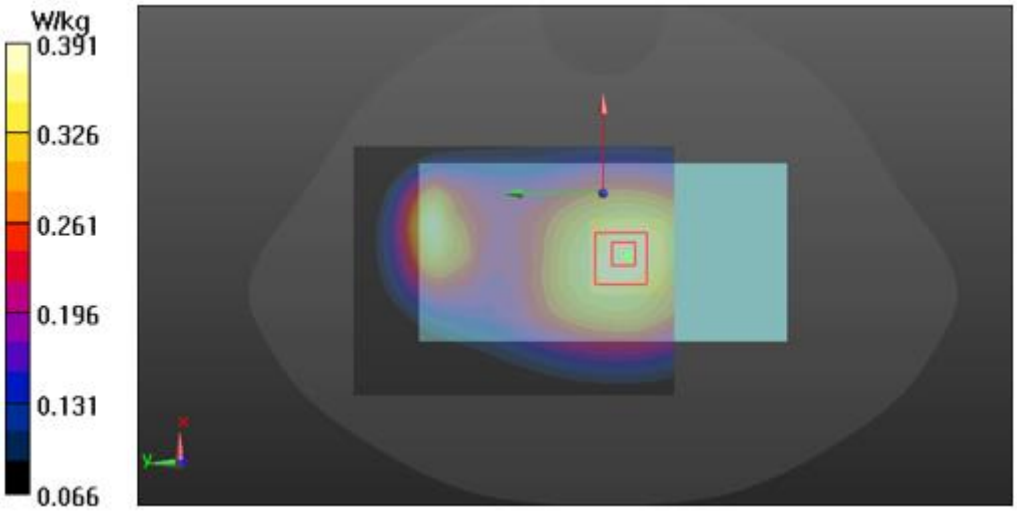
Frequency: 829 MHz;Duty Cycle: 1:1
Medium parameters used: f = 829 MHz; σ = 0.898 S/m; ε_r = 41.629; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 829 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/QPSK_10MHz_1RB_0offset_829_Rear_15 mm/Area Scan (71x91x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.390 W/kg

Configuration/QPSK_10MHz_1RB_0offset_829_Rear_15 mm/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.98 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.424 W/kg
SAR(1 g) = 0.340 W/kg; SAR(10 g) = 0.259 W/kg
Maximum value of SAR (measured) = 0.391 W/kg



#18

Procedure Name: QPSK_10MHz_1RB_0offset_829_Rear_10 mm

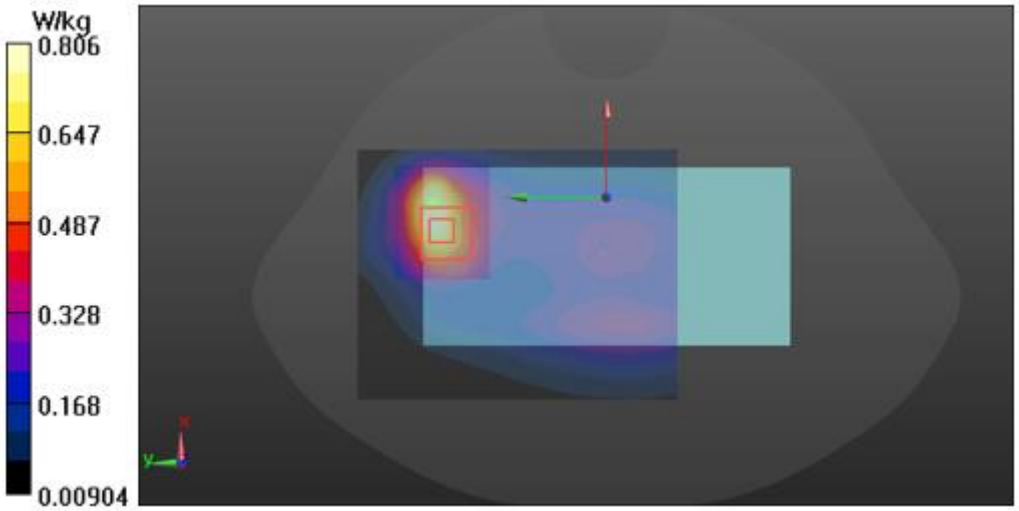
Frequency: 829 MHz;Duty Cycle: 1:1
Medium parameters used: f = 829 MHz; σ = 0.898 S/m; ε_r = 41.629; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01) @ 829 MHz; Calibrated: 2018-08-29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn666; Calibrated: 2019-01-25
- Phantom: Twin-SAM V4.0 (30deg probe tilt)_1_20180808; Type: QD 000 P40 CC; Serial: 1363
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Configuration/QPSK_10MHz_1RB_0offset_829_Rear_10 mm/Area Scan (71x91x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.893 W/kg

Configuration/QPSK_10MHz_1RB_0offset_829_Rear_10 mm/Zoom Scan (7x6x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.84 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.592 W/kg; SAR(10 g) = 0.347 W/kg
Maximum value of SAR (measured) = 0.806 W/kg



#19

Procedure Name: QPSK_20MHz_1RB_0offset_f.2 506_Left Cheek

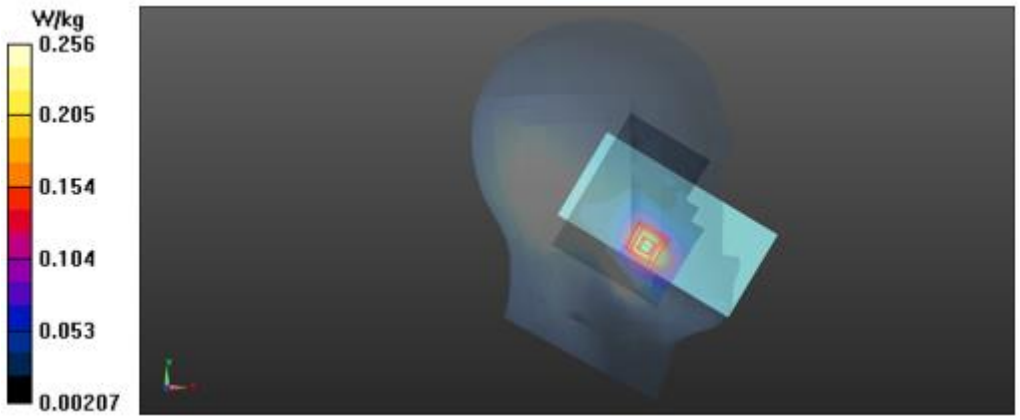
Frequency: 2506 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2506 MHz; σ = 1.842 S/m; ε_r = 38.145; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(6.92, 6.92, 6.92); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/QPSK_20MHz_1RB_0offset_f.2 506_Left Cheek/Area Scan (101x81x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.265 W/kg

Configuration/QPSK_20MHz_1RB_0offset_f.2 506_Left Cheek/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.388 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.343 W/kg
SAR(1 g) = 0.178 W/kg; SAR(10 g) = 0.093 W/kg
Maximum value of SAR (measured) = 0.256 W/kg



#20

Procedure Name: QPSK_20MHz_50RB_0offset_f.2 506_Rear_15 mm

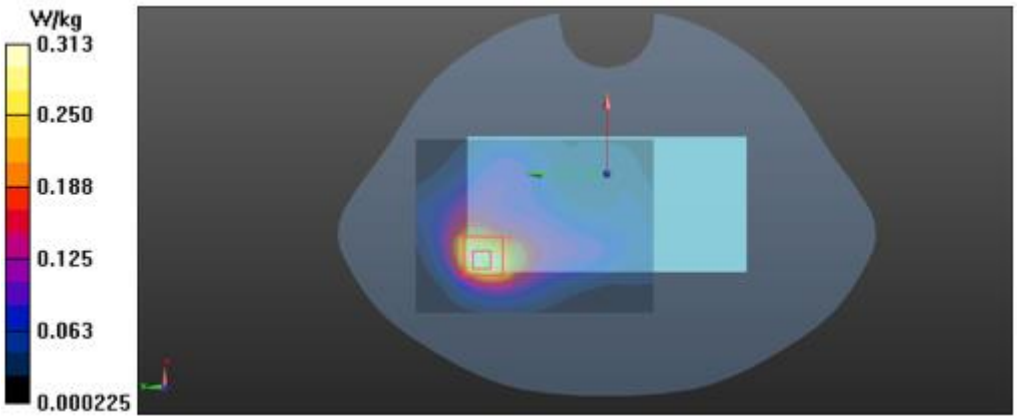
Frequency: 2506 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2506 MHz; σ = 1.842 S/m; ε_r = 38.145; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(6.92, 6.92, 6.92); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/QPSK_20MHz_50RB_0offset_f.2 506_Rear_15 mm/Area Scan (81x111x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.288 W/kg

Configuration/QPSK_20MHz_50RB_0offset_f.2 506_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.800 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.392 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.096 W/kg
Maximum value of SAR (measured) = 0.277 W/kg



#21

Procedure Name: QPSK_20MHz_1RB_0offset_f.2 506_Rear_10 mm

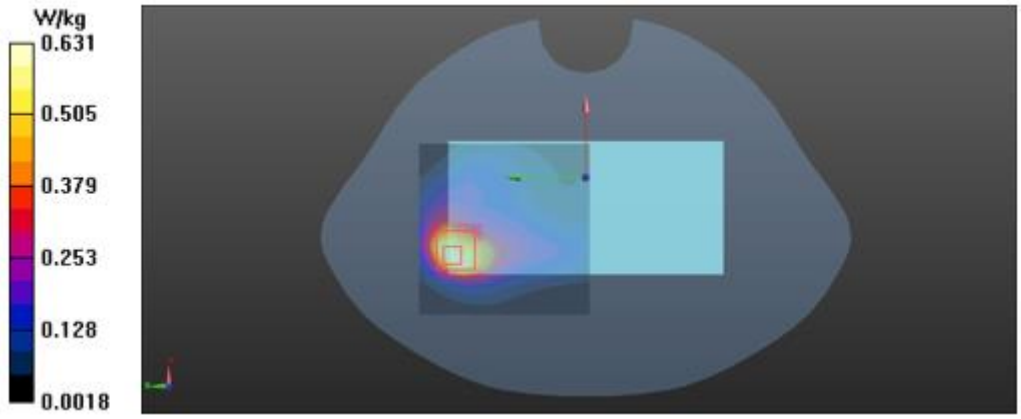
Frequency: 2506 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2506 MHz; σ = 1.842 S/m; ε_r = 38.145; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(6.92, 6.92, 6.92); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/QPSK_20MHz_1RB_0offset_f.2 506_Rear_10 mm/Area Scan (81x81x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.692 W/kg

Configuration/QPSK_20MHz_1RB_0offset_f.2 506_Rear_10 mm/Zoom Scan (7x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.380 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.920 W/kg
SAR(1 g) = 0.408 W/kg; SAR(10 g) = 0.207 W/kg
Maximum value of SAR (measured) = 0.631 W/kg



#22

Procedure Name: 802.11b_f.2 437_Right Cheek

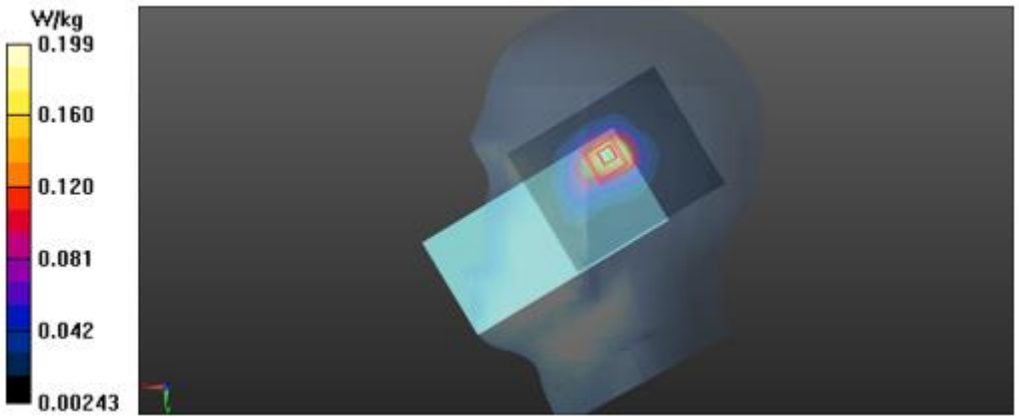
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.812 S/m; ε_r = 38.704; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11b_f.2 437_Right Cheek/Area Scan (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.204 W/kg

Configuration/802.11b_f.2 437_Right Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.23 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.282 W/kg
SAR(1 g) = 0.141 W/kg; SAR(10 g) = 0.073 W/kg
Maximum value of SAR (measured) = 0.199 W/kg



#23

Procedure Name: 802.11b_f.2 437_Rear_15 mm

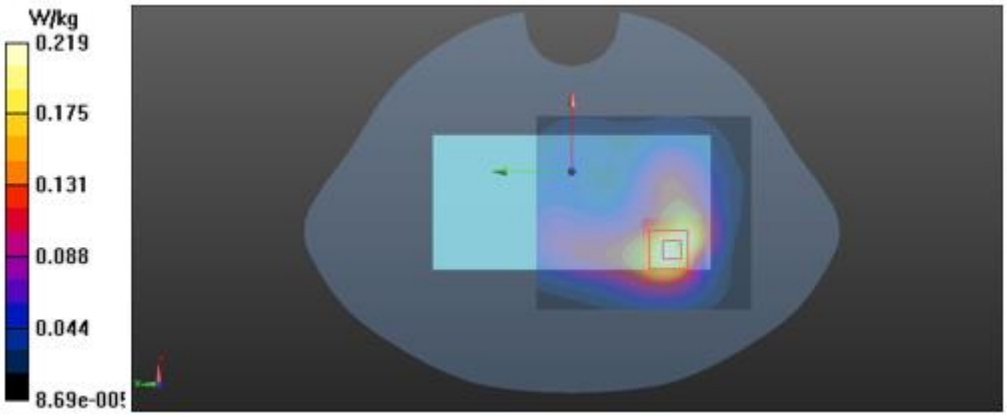
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.837 S/m; ε_r = 38.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11b_f.2 437_Rear_15 mm/Area Scan (91x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.240 W/kg

Configuration/802.11b_f.2 437_Rear_15 mm/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.558 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.311 W/kg
SAR(1 g) = 0.146 W/kg; SAR(10 g) = 0.075 W/kg
Maximum value of SAR (measured) = 0.219 W/kg



#24

Procedure Name: 802.11b_f.2 437_Rear_10 mm

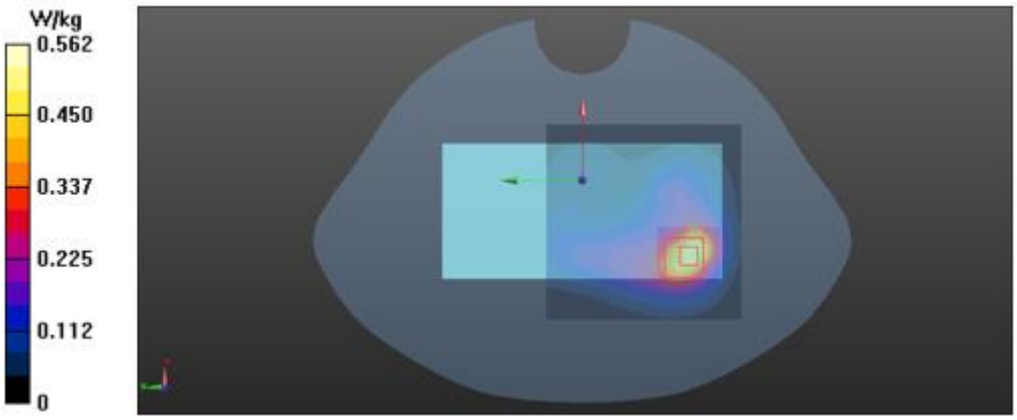
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.837 S/m; ε_r = 38.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/802.11b_f.2 437_Rear_10 mm/Area Scan (91x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.571 W/kg

Configuration/802.11b_f.2 437_Rear_10 mm/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.684 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.845 W/kg
SAR(1 g) = 0.353 W/kg; SAR(10 g) = 0.170 W/kg
Maximum value of SAR (measured) = 0.562 W/kg



#25

Procedure Name: Bluetooth_f.2 441_Right Cheek

Frequency: 2441 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2441 MHz; σ = 1.816 S/m; ε_r = 38.694; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3928; ConvF(7.21, 7.21, 7.21); Calibrated: 2019-01-31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1342; Calibrated: 2018-07-24
- Phantom: SAM twin SN1724; Type: QD000P40CD; Serial: TP:1724
- Measurement SW: DASY52, Version 52.8 (8);

Configuration/Bluetooth_f.2 441_Right Cheek/Area Scan (101x101x1): Interpolated grid:
dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0811 W/kg

Configuration/Bluetooth_f.2 441_Right Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid:
dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.966 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.111 W/kg
SAR(1 g) = 0.054 W/kg; SAR(10 g) = 0.028 W/kg
Maximum value of SAR (measured) = 0.0777 W/kg