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

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2019-01-25

2. Use of Report : -

3. Name of Product and Model : Mobile Phone / SM-A105F/DS

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

5. FCC ID : A3LSMA105F

6. Date of Test : 2019-02-01 to 2019-02-11

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 : Dongkyu Kim (Signature)	Technical Manager Name : Cheonsig Choi (Signature)

2019-02-22

KCTL Inc.

Report revision history

Date	Revision	Page No
2019-02-15	Initial report	-
2019-02-19	Updated information about derivative model, WLAN 2.4GHz max tune up power and SAR test plots.	5, 36, 63 ~ 104
2019-02-22	Updated System Verification limit	18 ~ 19

Please note: Report KR19-SPF0004-B issued on 2019-02-22 supercedes previously issued report KR19-SPF0004-A issued on 2019-02-19.

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

CONTENTS

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

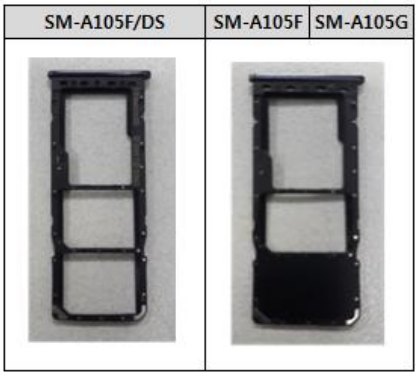
2. Device information

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, ANT+
Model Number	SM-A105F/DS
Serial Number	R38M109J7YP
Derivative Model	SM-A105F SM-A105G SM-A105G/DS
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 ~ 2 462 MHz Bluetooth, ANT+ : 2 402 MHz ~ 2 480 MHz
H/W Version	REV1.0
S/W Version	A105F.001

2.2 Information about derivative model

*SM-A105F / SM-A105G: Changed from Dual Sim tray to Single Sim tray.



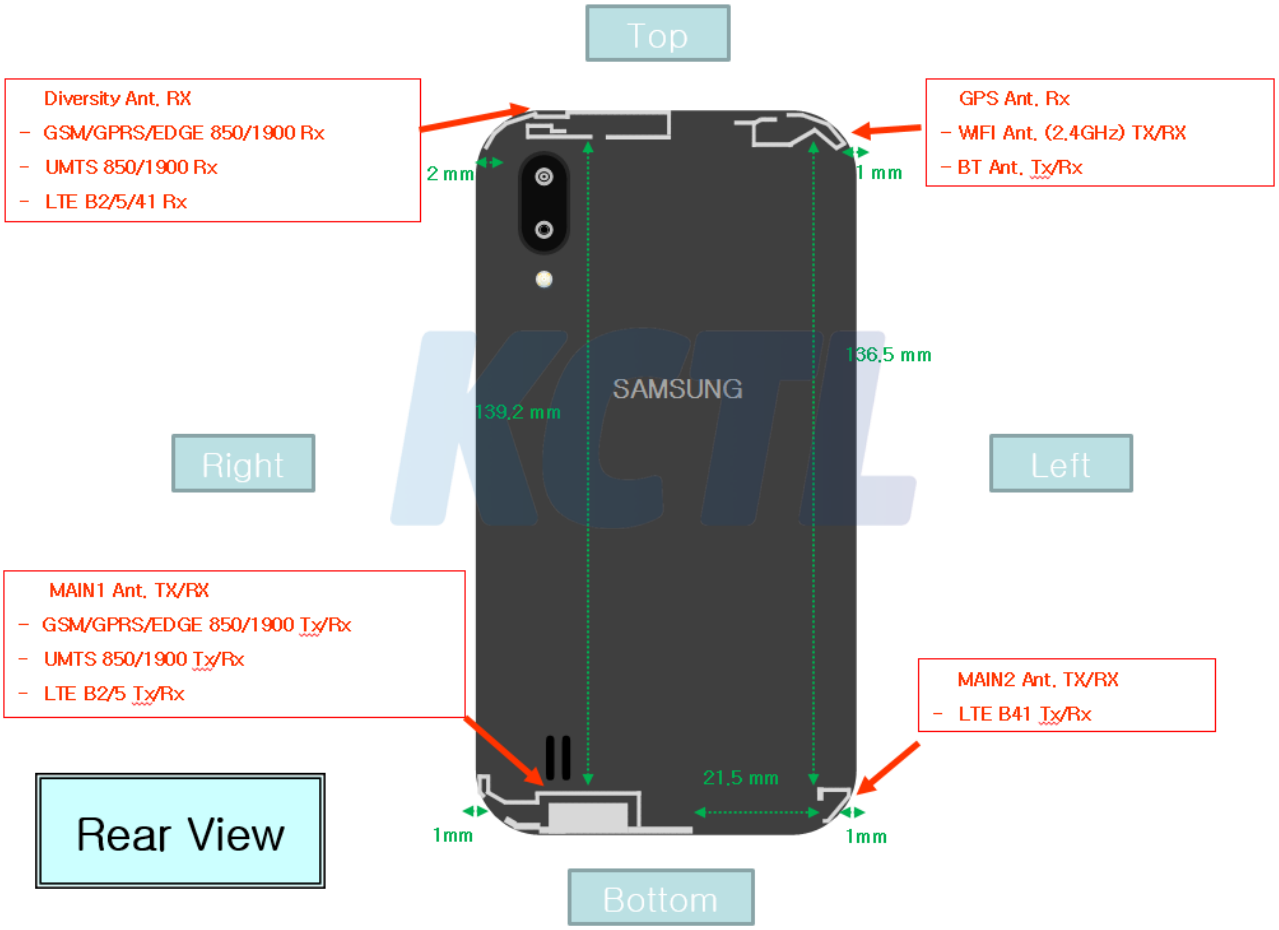
*SM-A105G/DS: LTE Band28 is enabled(Non-US Band)

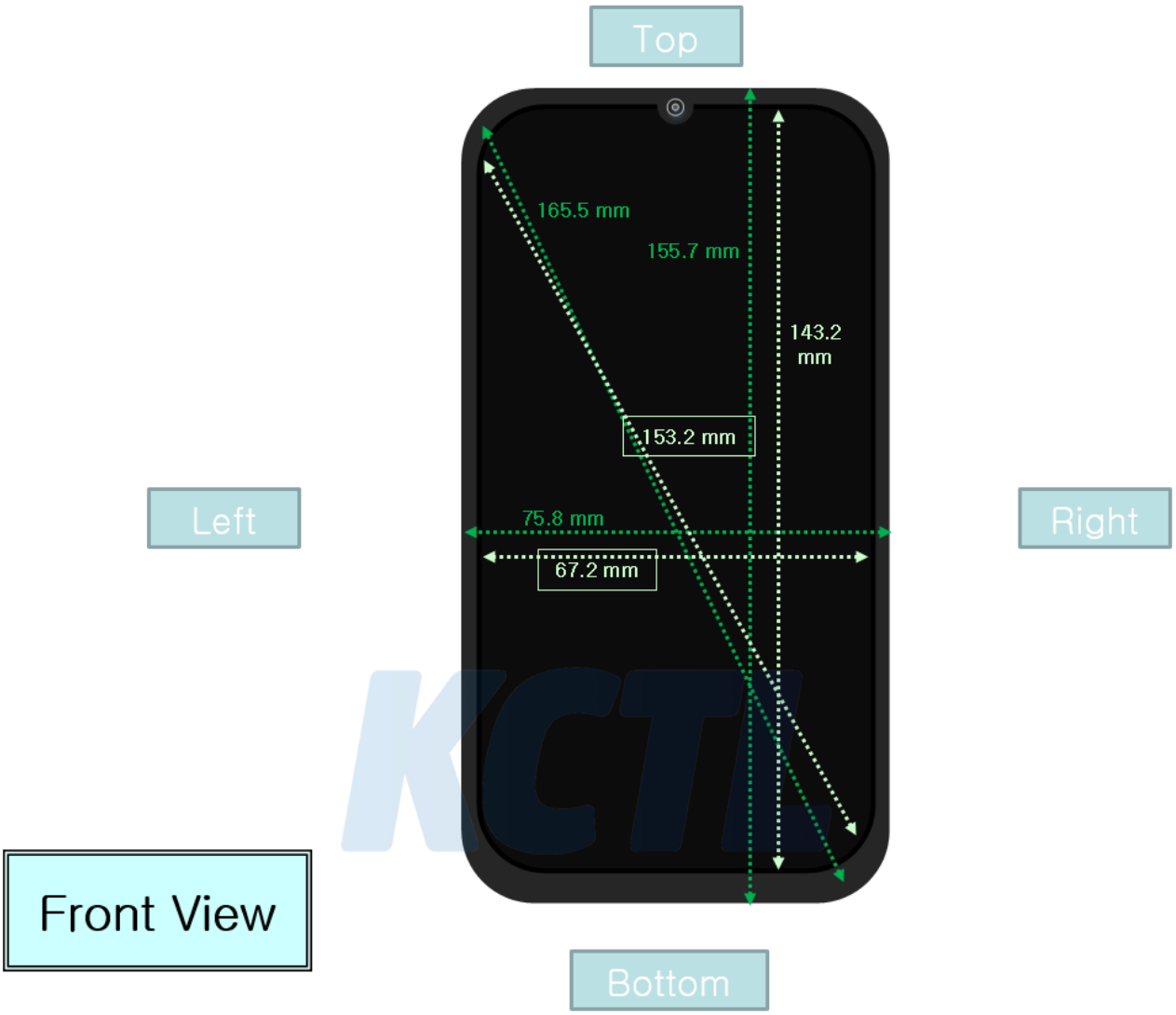
2.3 RF power setting in TEST SW

WLAN 2.4 GHz (2 412 MHz ~ 2 462 MHz)

Mode	Lowest Channel	Middle Channel	Highest Channel
802.11b	18.00	18.00	18.00

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	0.113	0.197	0.169
GSM1900	0.044	0.413	0.570
WCDMA Band 2	0.061	0.518	0.460
WCDMA Band 5	0.076	0.161	0.368
LTE Band 2	0.137	**0.625**	**0.650**
LTE Band 5	0.031	0.165	0.386
LTE Band 41	**0.198**	0.256	0.536
WLAN 2.4 GHz	0.148	0.130	0.316
Bluetooth	0.064	N/A	N/A

<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 B41 + WLAN 2.4 GHz	0.346	1.6
Body	LTE B2 + WLAN 2.4 GHz	0.755	
Hotspot	LTE B2 + WLAN 2.4 GHz	**0.966**	

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

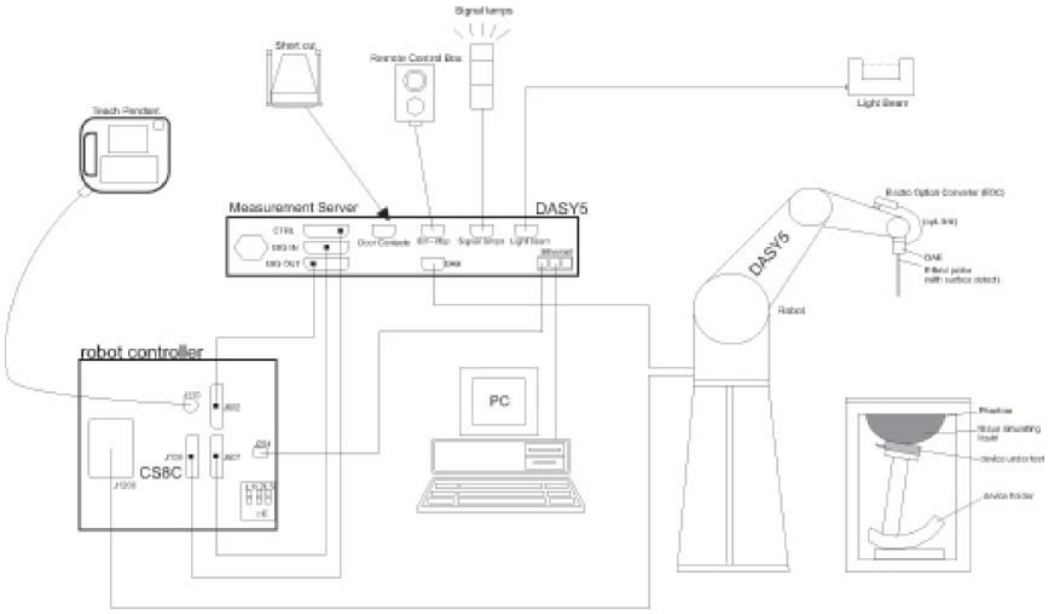
6. Applicant Declaration or Comments

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 uncertainty analysis per IEEE 1528-2013 was not required.

8. The SAR Measurement System

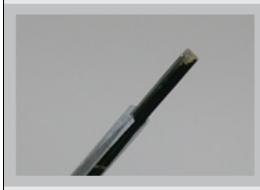


<SAR System Configuration>

- 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.

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 Head 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.

9.1.1 Head Tissue Verification

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, 2019-02-10	40.32	0.95	21.81
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-02-02	38.87	1.44	22.73
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-02-02	38.87	1.44	22.73
900	HSL	Recommended Limit	41.50 ± 5 % (39.43 ~ 43.58)	0.97 ± 5 % (0.92 ~ 1.02)	22 ± 2
		Measured, 2019-02-07	40.60	0.96	21.53
1 900	HSL	Recommended Limit	40.00 ± 5 % (38.00 ~ 42.00)	1.40 ± 5 % (1.33 ~ 1.47)	22 ± 2
		Measured, 2019-02-09	38.93	1.44	21.38
900	HSL	Recommended Limit	41.50 ± 5 % (39.43 ~ 43.58)	0.97 ± 5 % (0.92 ~ 1.02)	22 ± 2
		Measured, 2019-02-06	41.69	0.95	22.87
2 450	HSL	Recommended Limit	39.20 ± 5 % (37.24 ~ 41.16)	1.80 ± 5 % (1.71 ~ 1.89)	22 ± 2
		Measured, 2019-02-01	39.70	1.84	21.79
2 600	HSL	Recommended Limit	39.00 ± 5 % (37.05 ~ 40.95)	1.96 ± 5 % (1.86 ~ 2.06)	22 ± 2
		Measured, 2019-02-01	39.13	2.03	21.79
2 450	HSL	Recommended Limit	39.20 ± 5 % (37.24 ~ 41.16)	1.80 ± 5 % (1.71 ~ 1.89)	22 ± 2
		Measured, 2019-02-01	38.33	1.81	22.84

<Table 1.Measurement result of Head tissue electric parameters>

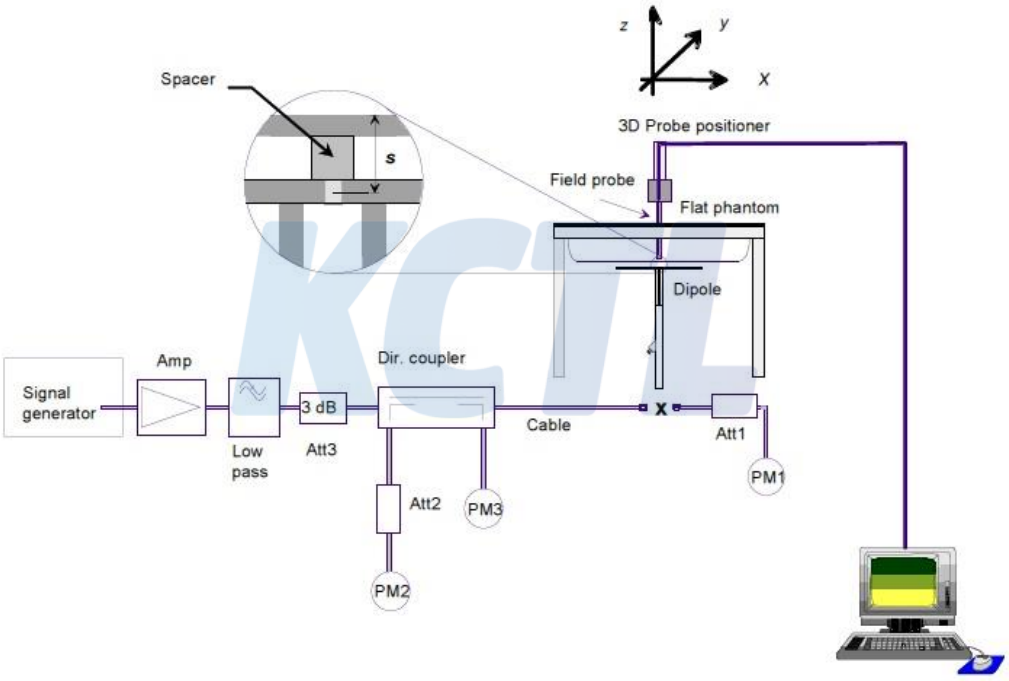
9.1.2 Body Tissue Verification

Freq. (MHz)	Tissue Type	Limit/Measured	Permittivity (ρ)	Conductivity (σ)	Temp (℃)
900	MSL	Recommended Limit	55.00 ± 5 % (52.25 ~ 57.75)	1.05 ± 5 % (1.00 ~ 1.10)	22 ± 2
		Measured, 2019-02-11	54.99	1.05	21.42
1 900	MSL	Recommended Limit	53.30 ± 5 % (50.64 ~ 55.97)	1.52 ± 5 % (1.44 ~ 1.60)	22 ± 2
		Measured, 2019-02-02	52.77	1.55	22.84
1 900	MSL	Recommended Limit	53.30 ± 5 % (50.64 ~ 55.97)	1.52 ± 5 % (1.44 ~ 1.60)	22 ± 2
		Measured, 2019-02-04	52.35	1.56	22.81
900	MSL	Recommended Limit	55.00 ± 5 % (52.25 ~ 57.75)	1.05 ± 5 % (1.00 ~ 1.10)	22 ± 2
		Measured, 2019-02-09	54.74	1.07	21.32
1 900	MSL	Recommended Limit	53.30 ± 5 % (50.64 ~ 55.97)	1.52 ± 5 % (1.44 ~ 1.60)	22 ± 2
		Measured, 2019-02-09	52.85	1.54	21.32
2 450	MSL	Recommended Limit	52.70 ± 5 % (50.07 ~ 55.34)	1.95 ± 5 % (1.85 ~ 2.05)	22 ± 2
		Measured, 2019-02-01	53.11	1.91	23.19
2 600	MSL	Recommended Limit	52.51 ± 5 % (49.88 ~ 55.14)	2.16 ± 5 % (2.05 ~ 2.27)	22 ± 2
		Measured, 2019-02-01	52.57	2.09	23.19
2 450	MSL	Recommended Limit	52.70 ± 5 % (50.07 ~ 55.34)	1.95 ± 5 % (1.85 ~ 2.05)	22 ± 2
		Measured, 2019-02-01	51.74	1.93	22.67

<Table 2.Measurement result of Body 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.



9.2.1 Test System Verification(Head)

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, 2019-02-10	10.92
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-02-02	41.20
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-02-02	41.20
D900V2	1d138	900	HSL	Recommended Limit (Normalized)	10.80 ± 10 % (9.72 ~ 11.88)
				Measured, 2019-02-07	11.28
D1900V2	5d160	1 900	HSL	Recommended Limit (Normalized)	39.80 ± 10 % (35.82 ~ 43.78)
				Measured, 2019-02-09	40.00
D900V2	1d138	900	HSL	Recommended Limit (Normalized)	10.80 ± 10 % (9.72 ~ 11.88)
				Measured, 2019-02-06	10.80
D2450V2	895	2 450	HSL	Recommended Limit (Normalized)	51.30 ± 10 % (46.17 ~ 56.43)
				Measured, 2019-02-01	52.00
D2600V2	1050	2 600	HSL	Recommended Limit (Normalized)	56.20 ± 10 % (50.58 ~ 61.82)
				Measured, 2019-02-01	57.20
D2450V2	895	2 450	HSL	Recommended Limit (Normalized)	51.30 ± 10 % (46.17 ~ 56.43)
				Measured, 2019-02-01	51.60

<Table 3. Head Test System Verification Result>

9.2.2 Test System Verification(Body)

Validation Kit	Dipole Ant. S/N	Frequency (MHz)	Tissue Type	Limit/Measurement (Normalized to 1 W)	
					1 g
D900V2	1d138	900	MSL	Recommended Limit (Normalized)	11.20 ± 10 % (10.08 ~ 12.32)
				Measured, 2019-02-11	10.64
D1900V2	5d160	1 900	MSL	Recommended Limit (Normalized)	40.40 ± 10 % (36.36 ~ 44.44)
				Measured, 2019-02-02	40.40
D1900V2	5d160	1 900	MSL	Recommended Limit (Normalized)	40.40 ± 10 % (36.36 ~ 44.44)
				Measured, 2019-02-04	42.00
D900V2	1d138	900	MSL	Recommended Limit (Normalized)	11.20 ± 10 % (10.08 ~ 12.32)
				Measured, 2019-02-09	11.44
D1900V2	5d160	1 900	MSL	Recommended Limit (Normalized)	40.40 ± 10 % (36.36 ~ 44.44)
				Measured, 2019-02-09	42.00
D2450V2	895	2 450	MSL	Recommended Limit (Normalized)	50.60 ± 10 % (45.54 ~ 55.66)
				Measured, 2019-02-01	53.60
D2600V2	1050	2 600	MSL	Recommended Limit (Normalized)	54.90 ± 10 % (49.41 ~ 60.39)
				Measured, 2019-02-01	56.40
D2450V2	895	2 450	MSL	Recommended Limit (Normalized)	50.60 ± 10 % (45.54 ~ 55.66)
				Measured, 2019-02-01	50.40

<Table 4. Body Test System Verification Result>

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.

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.	

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	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 - #2	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	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	1342	2018-07-24	2019-07-24
Probe	EX3DV4	3865	2018-08-29	2019-08-29
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	5057FE	1009	2018-10-11	2019-10-11
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
Dipole Validation Kits	D2600V2	1050	2018-07-26	2020-07-26
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
Radio Communication Analyzer	MT8820C	6201010005	2018-08-02	2019-08-02
WIDEBANDRADIO COMMUNICATION TESTER	CMW500	141780	2019-01-25	2020-01-25
Communication Tester	CMU200	106191	2018-05-14	2019-05-14
Bluetooth Tester	TC-3000C	3000C000270	2018-08-02	2019-08-02

13. Sensor operation description

General Description

TC305K is a high-performance Controller for capacitive touch keys. Its engine is an 8-bit 80C51 compatible Processor.

TC305K has three timer/counters, maximum 8-channel of fine turned touch sensors, maximum 11 programmable I/O pins, 4-channel 8-bit PWMs, 1Watchdog timer, POR (Power-On Reset), I2C and LVD (Low Voltage Detector) as peripherals. In addition, it contains an internal ring oscillator, which can generate the 25 MHz system clock signal.

TC305K has its own architecture for fast sensing. With the hardware filter, it provides noise immunity and excellent sensitivity. The firmware algorithm supports smart sensitivity and compensates for changes in the sensitivity due to environmental factors such as temperature and humidity.

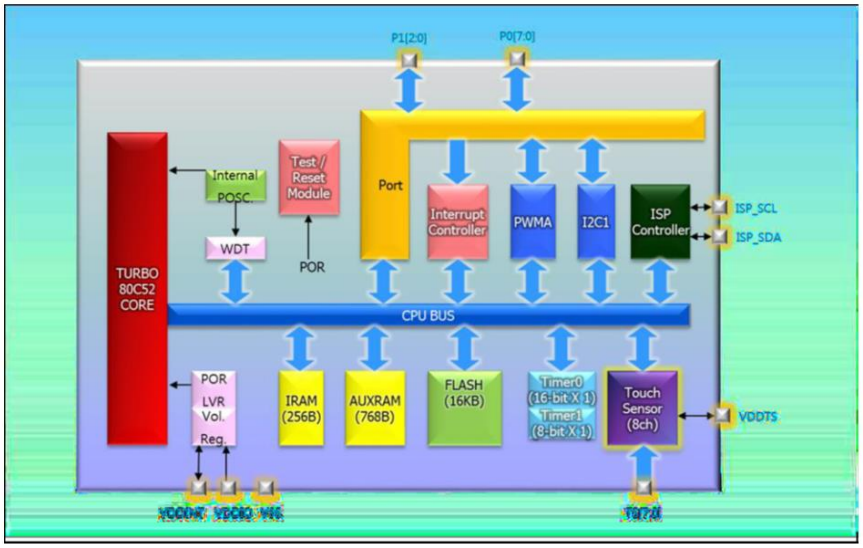
To effectively manage power, ***TC305K*** enables low power consumption by using scan interval and clock control methods after last touch.

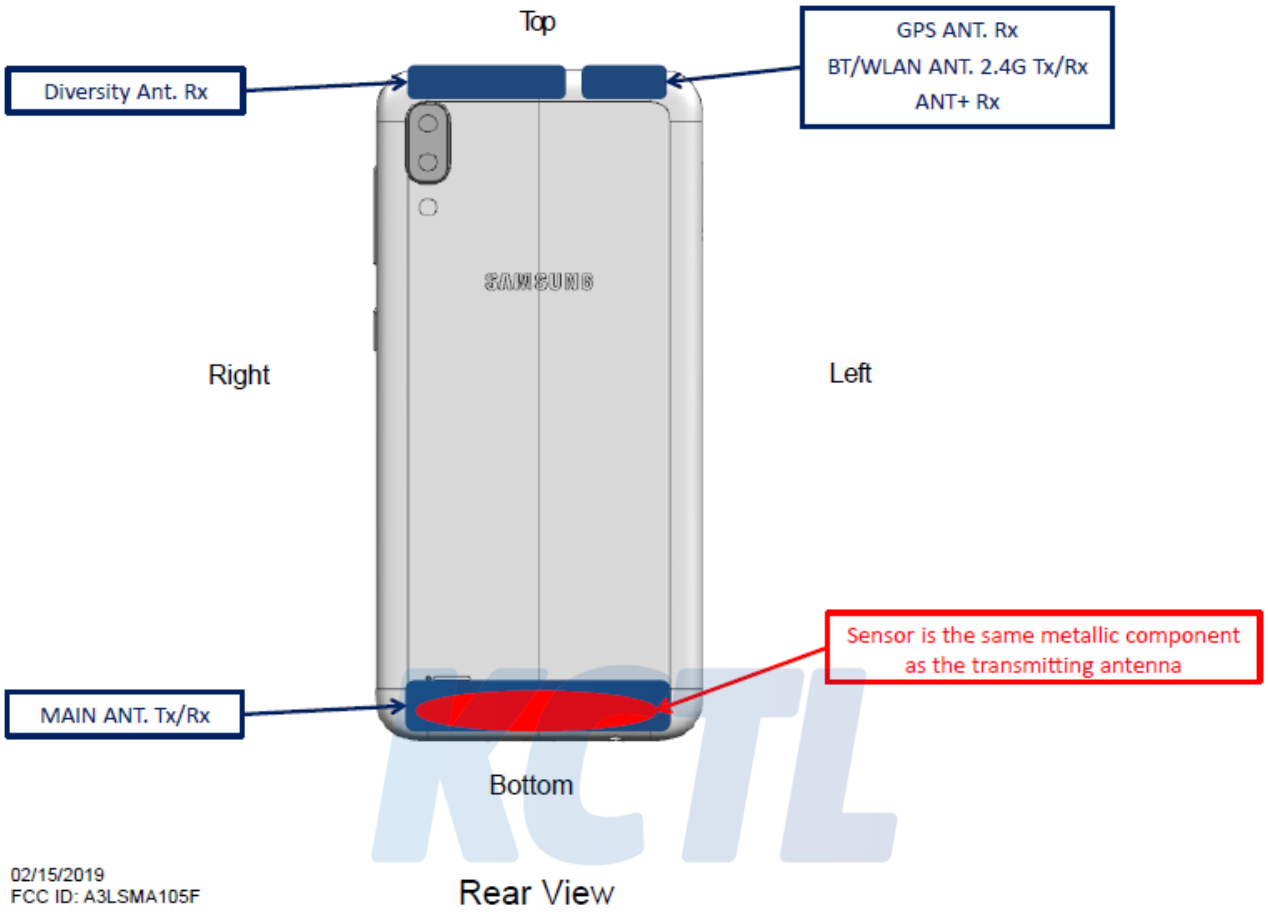
TC305K operates over the extended -20℃to +85℃ temperature range, and is available in the 16-pin QFN package.

Internal Structure Drawing

Figure shows the block diagram of ***TC305K***. Programs reside in the internal program memory (Embedded FlashMemory). Data are read from or written to data memory (SRAM) or special function registers (SFRs).

The internal registers of ***TC305K*** are configured as part of the on-chip RAM: therefore each register has an address. This is reasonable for ***TC305K***, since it has so many registers.





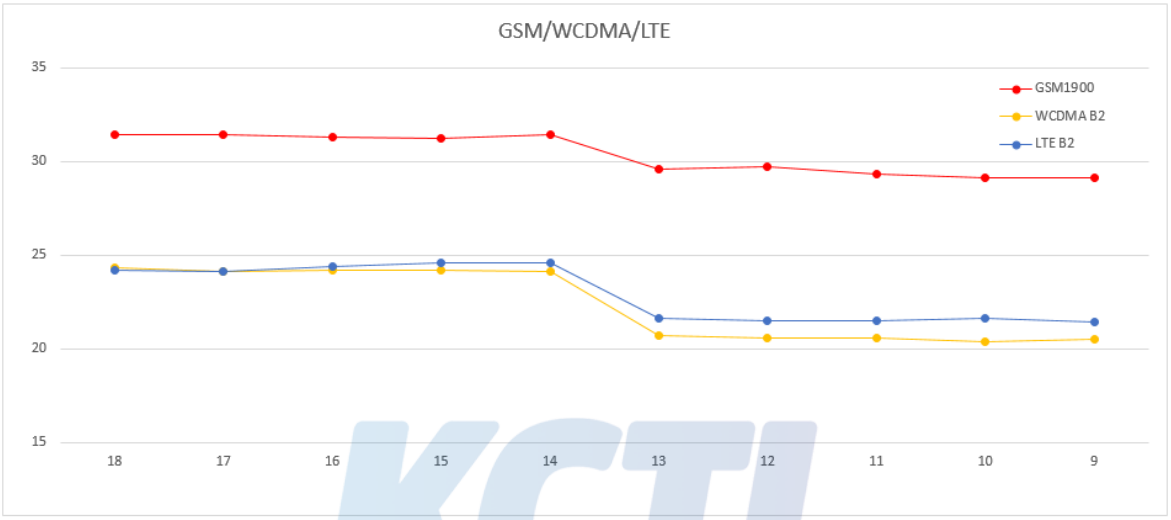
Resulting test positions for SAR mearsurementes

Wireless technolgies	Trigger distance – Rear	
	Triggerring Distance	Worst case distance for SAR
GSM1900	13 mm	12 mm
WCDMA B2	13 mm	12 mm
LTE B2	13 mm	12 mm

Wireless technolgies	Trigger distance – Bottom	
	Triggerring Distance	Worst case distance for SAR
GSM1900	9 mm	8 mm
WCDMA B2	9 mm	8 mm
LTE B2	9 mm	8 mm

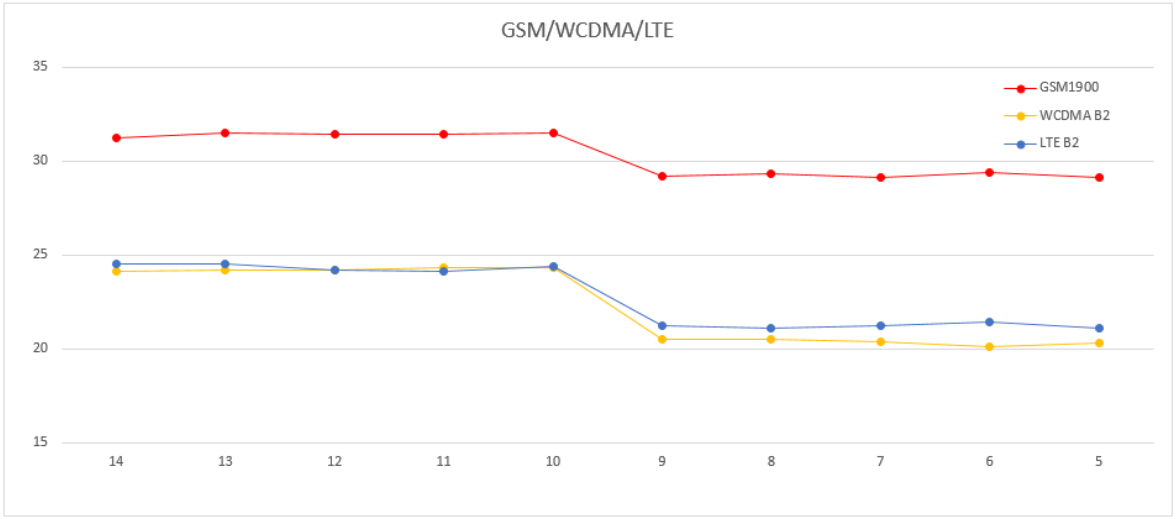
Rear DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	18	17	16	15	14	13	12	11	10	9
GSM1900	31.4	31.4	31.3	31.2	31.4	29.6	29.7	29.3	29.1	29.1
WCDMA B2	24.3	24.1	24.2	24.2	24.1	20.7	20.6	20.6	20.4	20.5
LTE B2	24.2	24.1	24.4	24.6	24.6	21.6	21.5	21.5	21.6	21.4



Bottom DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	14	13	12	11	10	9	8	7	6	5
GSM1900	31.2	31.5	31.4	31.4	31.5	29.2	29.3	29.1	29.4	29.1
WCDMA B2	24.1	24.2	24.2	24.3	24.3	20.5	20.5	20.4	20.1	20.3
LTE B2	24.5	24.5	24.2	24.1	24.4	21.2	21.1	21.2	21.4	21.1

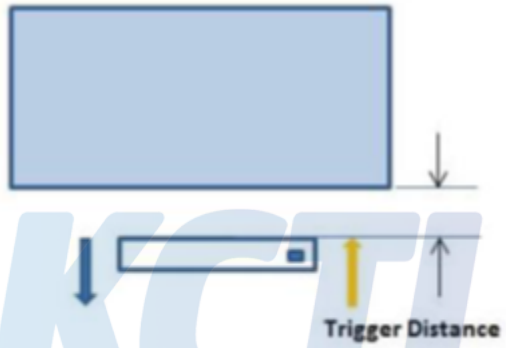


Proximity Sensor Triggering Distance (KDB 616217 §6.2)

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

Power Reduction for Head Conditions

When a user makes or receives a voice or VOIP call, the audio of the call is sent through the earpiece at the top of the device so that the device can be used next to the ear. The IR Sensor located at the top of the device is used to detect when the device is in proximity of the user's head in order to optimize the user's device experience, for example, to dim or turn off the screen to save battery life. For this model, an auxiliary function of the IR sensor is for the purpose of RF Safety (i.e. reducing output power for Head SAR compliance).

A **reduced power level** of the device is called when the IR sensor is activated while in a held-to-ear voice or VOIP call with the active audio receiver. Therefore, when the IR proximity sensor is active in a held-to-ear user scenario, the output power level is reduced. The maximum allowed output powers in all conditions are included in the maximum power document.

The Application Processor (AP) coordinates logic components (sensors, cameras, audio, etc) of the device. The AP controls the audio components of the device through the audio codec. When a call is placed or received, the AP sends the audio output through the earpiece, and also activates the IR Sensor Mechanism. When both the IR Sensor and the audio earpiece are activated, the AP uses pre-programmed instructions to send reduced output power to the antenna. The output power stays reduced until the audio through the earpiece is disabled, for example, when the user ends the call or uses Bluetooth, or when the device is not located next to the head.

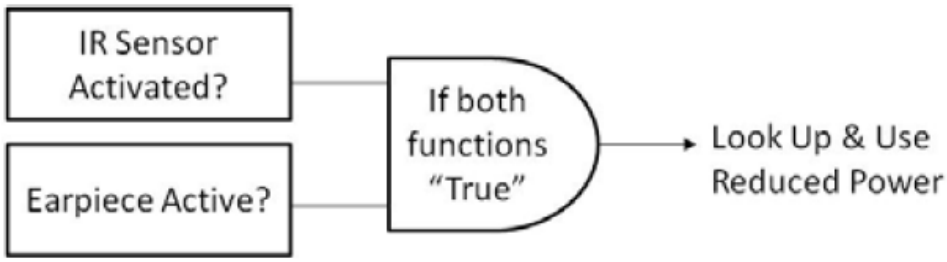


Figure 1
Power Reduction State Determination

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 heldto-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.

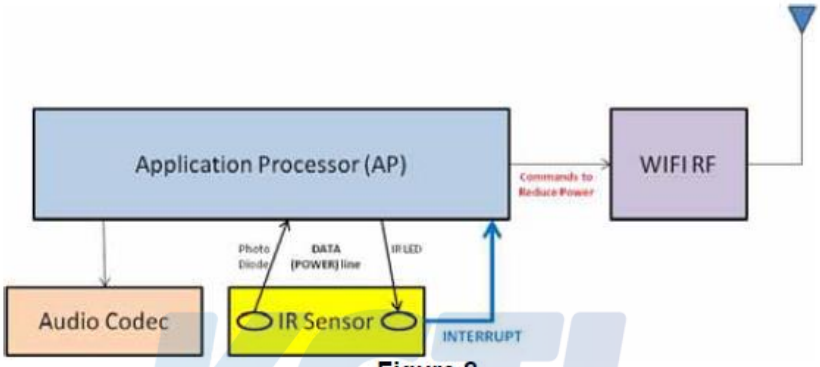


Figure 2
Operational Processing of Power Reduction

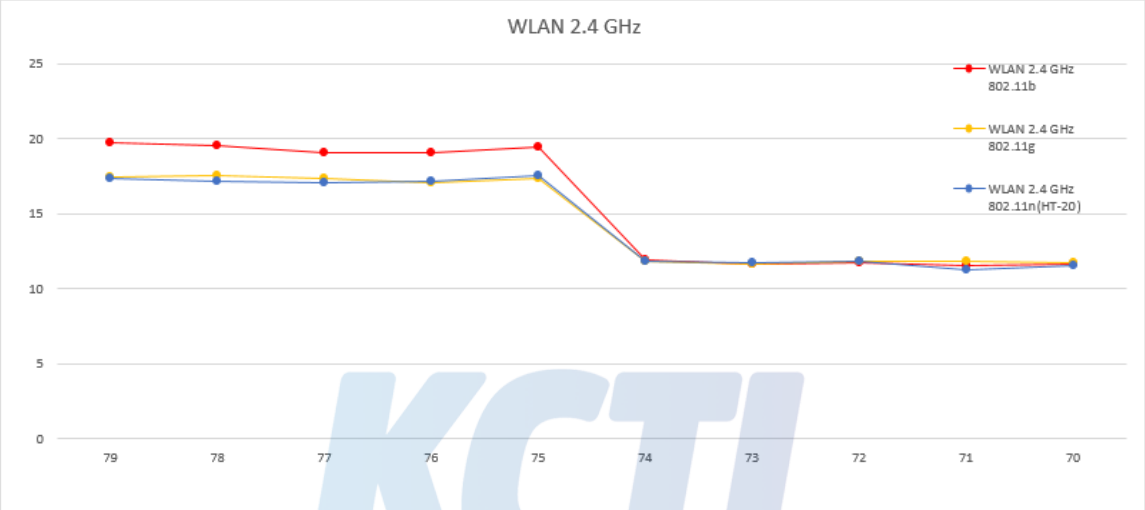
Summary of Trigger Distances

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

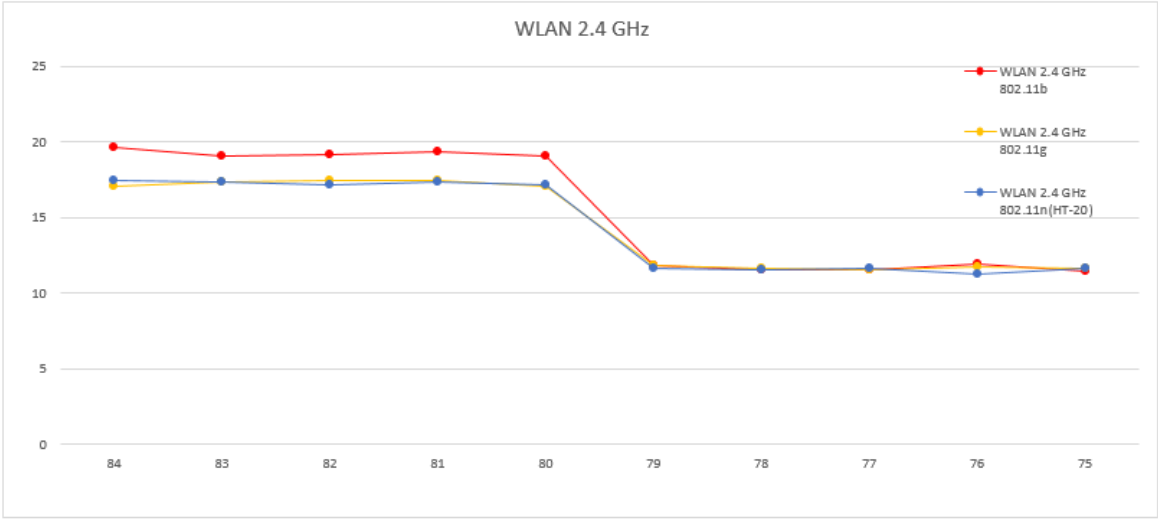
DUT Moving Toward (Trigger) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	79	78	77	76	75	74	73	72	71	70
802.11b	19.7	19.5	19.1	19.1	19.4	11.9	11.6	11.7	11.5	11.6
802.11g	17.4	17.5	17.3	17.1	17.3	11.8	11.6	11.8	11.8	11.7
802.11n(HT-20)	17.3	17.2	17.1	17.2	17.5	11.8	11.7	11.8	11.3	11.5



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	19.6	19.1	19.2	19.3	19.1	11.8	11.5	11.5	11.9	11.4
802.11g	17.1	17.3	17.4	17.4	17.1	11.8	11.6	11.5	11.7	11.6
802.11n(HT-20)	17.4	17.3	17.2	17.3	17.2	11.6	11.5	11.6	11.3	11.6



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.

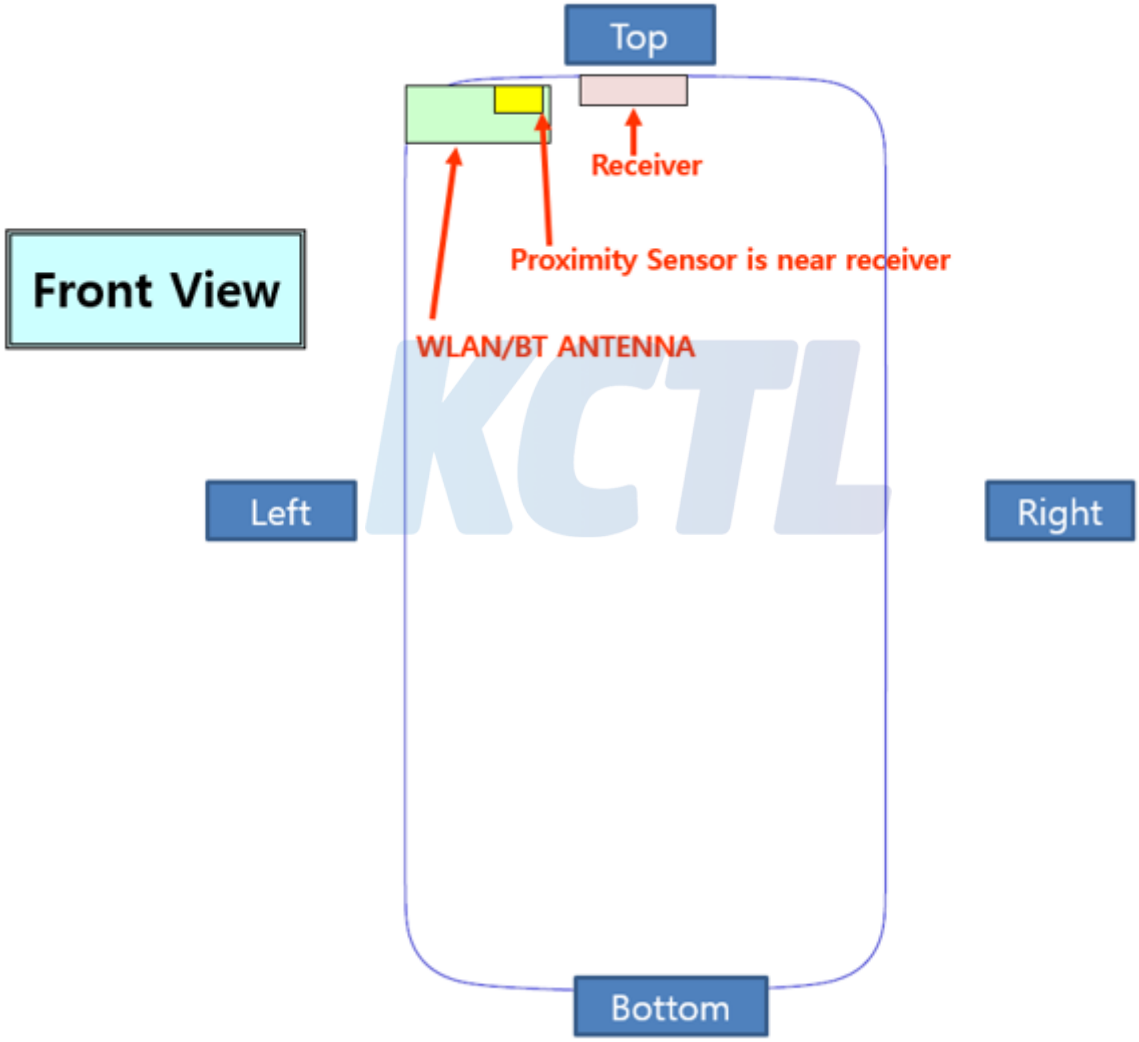
e) The triggering points should be documented graphically, with the antenna and sensor clearly identified, along with all relevant dimensions.

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.

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.

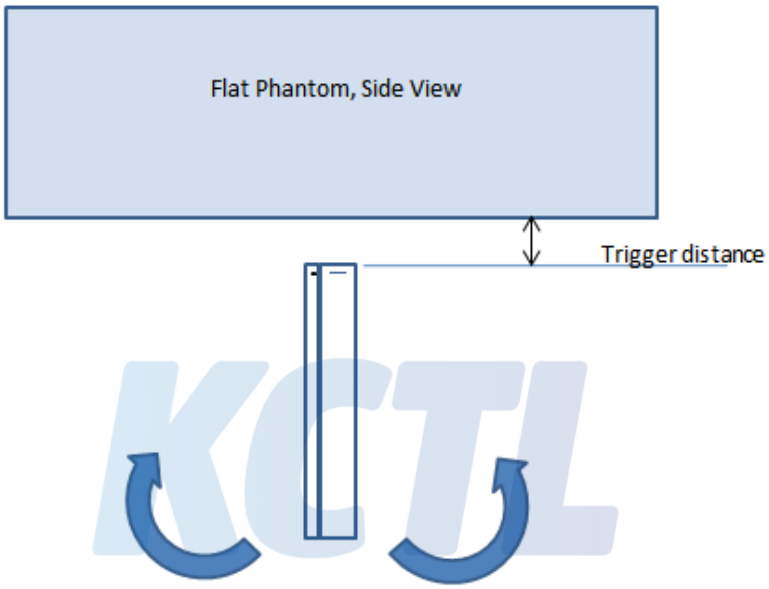
Therefore, no further sensor coverage assessments were required according to KDB 616217 D04 v01 r02 6.3.



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	33.5	34.5
	GPRS 1Tx	33.5	34.5
	GPRS 2Tx	31.5	32.5
	GPRS 3Tx	30.0	31.0
	GPRS 4Tx	28.5	29.5
	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	31.0	32.0
	GPRS 1Tx	31.0	32.0
	GPRS 2Tx	29.0	30.0
	GPRS 3Tx	27.5	28.5
	GPRS 4Tx	26.0	27.0
	EGPRS 1Tx	26.5	27.5
	EGPRS 2Tx	24.5	25.5
	EGPRS 3Tx	23.0	24.0
	EGPRS 4Tx	22.0	23.0

GSM Reduced Power

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
GSM1900	GSM Voice	29.0	30.0
	GPRS 1Tx	29.0	30.0
	GPRS 2Tx	27.0	28.0
	GPRS 3Tx	25.5	26.5
	GPRS 4Tx	24.0	25.0
	EGPRS 1Tx	26.5	27.5
	EGPRS 2Tx	24.5	25.5
	EGPRS 3Tx	23.0	24.0
	EGPRS 4Tx	22.0	23.0

WCDMA

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
WCDMA B2	RMC	24.0	25.0
	HSDPA	24.0	25.0
	HSUPA	23.0	24.0
WCDMA B5	RMC	24.5	25.5
	HSDPA	24.5	25.5
	HSUPA	23.5	24.5

WCDMA Reduced Power

Mode		Target Power (dBm)	Max. Allowed Power (dBm)
WCDMA B2	RMC	20.5	21.5
	HSDPA	20.5	21.5
	HSUPA	20.5	21.5

LTE

Mode	Target Power (dBm)	Max. Allowed Power (dBm)
LTE B2	24.0	25.0
LTE B5	24.5	25.5
LTE B41	23.0	24.0

LTE Reduced Power

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

WLAN 2.4 GHz (2 412 MHz ~ 2 462 MHz)

Mode	Channel	Target Power (dBm)	Max. Allowed Power (dBm)
802.11b	All	19.0	20.0
802.11g	1, 10	15.0	16.0
	2 ~ 9	17.0	18.0
	11	11.0	12.0
802.11n(HT-20)	1, 10	15.0	16.0
	2 ~ 9	18.0	19.0
	11	11.0	12.0

WLAN 2.4 GHz Reduced Power (2 412 MHz ~ 2 462 MHz)

Mode	Channel	Target Power (dBm)	Max. Allowed Power (dBm)
802.11b	All	12.0	13.0
802.11g	All	12.0	13.0
802.11n(HT-20)	All	12.0	13.0

Bluetooth (2 402 MHz ~ 2 480 MHz)

Mode	Max. Allowed Power (including tune-up tolerance)
BDR(GFSK)	10.0 dBm
EDR (π/4DQPSK)	10.0 dBm
EDR(8DPSK)	10.0 dBm
LE(GFSK)	6.5 dBm

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	33.23	33.25	31.07	29.48	27.80	26.40	24.16	22.93	21.76
	Middle	33.55	33.56	31.29	29.52	28.03	26.70	24.55	23.23	22.15
	High	33.79	33.81	31.64	29.78	28.41	27.00	24.90	23.55	22.45
GSM1900	Low	31.41	31.42	28.75	27.24	25.26	26.45	24.16	22.72	21.75
	Middle	31.46	31.48	29.04	27.46	25.64	26.55	24.31	22.75	21.85
	High	31.50	31.52	29.10	27.45	25.72	25.81	23.78	22.38	21.25
Maximum Frame-Average Output Power (dBm)										
Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM850	Low	24.20	24.22	25.05	25.22	24.79	17.37	18.14	18.67	18.75
	Middle	24.52	24.53	25.27	25.26	25.02	17.67	18.53	18.97	19.14
	High	24.76	24.78	25.62	25.52	25.40	17.97	18.88	19.29	19.44
GSM1900	Low	22.38	22.39	22.73	22.98	22.25	17.42	18.14	18.46	18.74
	Middle	22.43	22.45	23.02	23.20	22.63	17.52	18.29	18.49	18.84
	High	22.47	22.49	23.08	23.19	22.71	16.78	17.76	18.12	18.24

GSM850	Frame Tune-up	25.47	25.47	26.48	26.74	26.49	18.97	19.98	20.24	20.49
GSM1900		22.97	22.97	23.98	24.24	23.99	18.47	19.48	19.74	19.99

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	29.22	29.03	26.65	25.04	23.68	26.51	24.33	22.91	21.44
	Middle	29.59	29.64	26.98	25.45	24.29	26.62	24.52	23.08	21.69
	High	29.68	29.70	27.05	25.53	24.41	25.91	23.97	22.46	21.14
Maximum Frame-Average Output Power (dBm)										
Band	Channel	GSM	GPRS				EDGE			
		Voice	1Tx	2Tx	3Tx	4Tx	1Tx	2Tx	3Tx	4Tx
GSM1900	Low	20.19	20.00	20.63	20.78	20.67	17.48	18.31	18.65	18.43
	Middle	20.56	20.61	20.96	21.19	21.28	17.59	18.50	18.82	18.68
	High	20.65	20.67	21.03	21.27	21.40	16.88	17.95	18.20	18.13

GSM1900	Frame Tune-up	20.97	20.97	21.98	22.24	21.99	17.47	19.48	19.74	19.99

WCDMA B2

Mode	Average Conducted Power (dBm)		
	Frequency (MHz)		
	Low	Middle	High
RMC	24.04	24.13	23.96
HSDPA-Subtest 1	22.73	23.02	22.82
HSDPA-Subtest 2	22.23	22.56	22.35
HSDPA-Subtest 3	21.78	22.04	21.88
HSDPA-Subtest 4	21.80	22.03	21.89
HSUPA-Subtest 1	22.39	22.59	22.49
HSUPA-Subtest 2	19.42	19.73	19.53
HSUPA-Subtest 3	22.43	22.73	22.50
HSUPA-Subtest 4	19.06	19.24	19.67
HSUPA-Subtest 5	21.64	21.84	21.58

WCDMA B2 Reduced Power

Mode	Average Conducted Power (dBm)		
	Frequency (MHz)		
	Low	Middle	High
RMC	20.45	20.72	20.47
HSDPA-Subtest 1	19.69	19.89	19.84
HSDPA-Subtest 2	19.73	19.93	19.87
HSDPA-Subtest 3	19.75	19.94	19.90
HSDPA-Subtest 4	19.77	19.97	19.88
HSUPA-Subtest 1	19.70	19.93	19.89
HSUPA-Subtest 2	18.38	19.32	19.15
HSUPA-Subtest 3	19.65	20.14	19.91
HSUPA-Subtest 4	19.16	19.23	19.17
HSUPA-Subtest 5	19.78	20.13	19.92

WCDMA B5

Mode	Average Conducted Power (dBm)		
	Frequency (MHz)		
	Low	Middle	High
RMC	24.85	24.86	24.92
HSDPA-Subtest 1	23.45	23.41	23.47
HSDPA-Subtest 2	22.49	22.43	22.50
HSDPA-Subtest 3	22.47	22.46	22.53
HSDPA-Subtest 4	21.62	21.61	21.71
HSUPA-Subtest 1	23.58	23.56	23.62
HSUPA-Subtest 2	20.28	20.27	20.35
HSUPA-Subtest 3	23.61	23.58	23.67
HSUPA-Subtest 4	20.42	20.31	20.41
HSUPA-Subtest 5	21.27	21.28	21.31

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	24.26	24.97	24.51
			1	3	0	24.21	24.82	24.37
			1	5	0	24.12	24.85	24.34
			3	0	0	24.88	24.92	24.18
			3	1	0	23.73	24.46	23.99
			3	3	0	23.71	24.42	24.02
			6	0	1	23.94	24.14	24.01
		16QAM	1	0	1	23.69	24.44	24.01
			1	3	1	22.79	23.94	23.12
			1	5	1	22.80	24.26	23.18
			3	0	1	22.74	23.90	23.20
			3	1	1	22.68	23.51	22.95
			3	3	1	22.66	23.50	22.98
			6	0	2	22.64	23.50	23.02
	3 MHz	QPSK	1	0	0	24.13	24.39	24.92
			1	8	0	24.11	24.46	24.62
			1	14	0	24.09	24.31	24.39
			8	0	1	23.95	24.12	23.97
			8	4	1	23.94	24.11	23.96
			8	7	1	23.93	24.10	23.98
			15	0	1	23.94	24.07	23.97
		16QAM	1	0	1	23.07	23.45	23.47
			1	8	1	22.94	23.29	23.61
			1	14	1	22.92	23.39	23.57
			8	0	2	22.97	23.15	22.98
			8	4	2	22.94	23.12	23.00
			8	7	2	22.96	23.14	22.99
			15	0	2	22.99	23.17	22.97

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	5 MHz	QPSK	1	0	0	24.41	24.21	24.10
			1	12	0	24.39	24.19	24.11
			1	24	0	24.39	24.19	24.13
			12	0	1	23.96	24.10	23.95
			12	7	1	23.95	24.08	23.95
			12	13	1	23.92	24.09	23.94
			25	0	1	23.93	24.08	23.97
		16QAM	1	0	1	23.40	23.71	22.99
			1	12	1	23.36	23.67	22.98
			1	24	1	23.38	23.66	22.94
			12	0	2	22.87	23.11	22.90
			12	7	2	22.86	23.10	22.88
			12	13	2	22.85	23.09	22.91
			25	0	2	22.95	23.12	23.02
	10 MHz	QPSK	1	0	0	24.10	24.51	24.45
			1	25	0	24.07	24.46	24.38
			1	49	0	24.07	24.49	24.46
			25	0	1	23.95	24.11	23.91
			25	12	1	23.94	24.08	23.89
			25	25	1	23.92	24.08	23.92
			50	0	1	23.89	24.07	23.92
		16QAM	1	0	1	23.65	23.31	23.49
			1	25	1	23.61	23.23	23.51
			1	49	1	23.64	23.25	23.54
			25	0	2	22.95	23.16	23.00
			25	12	2	22.94	23.16	22.98
			25	25	2	22.91	23.15	23.02
			50	0	2	22.94	23.10	22.97

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	15 MHz	QPSK	1	0	0	24.51	24.64	24.44
			1	36	0	24.37	24.52	24.27
			1	74	0	24.43	24.60	24.52
			36	0	1	23.98	24.13	23.92
			36	18	1	23.96	24.09	23.95
			36	37	1	23.94	24.08	23.98
			75	0	1	23.94	24.11	23.94
		16QAM	1	0	1	23.04	23.61	23.05
			1	36	1	23.05	23.93	23.11
			1	74	1	22.99	23.57	23.13
			36	0	2	22.93	23.18	22.88
			36	18	2	22.91	23.17	22.91
			36	37	2	22.89	23.17	22.95
			75	0	2	22.94	23.18	22.99
	20 MHz	QPSK	1	0	0	24.13	24.59	24.03
			1	49	0	24.07	24.35	23.97
			1	99	0	24.05	24.25	23.90
			50	0	1	23.98	24.09	23.95
			50	24	1	23.91	24.07	23.91
			50	50	1	23.88	24.05	23.95
			100	0	1	23.87	24.07	23.96
		16QAM	1	0	1	23.15	23.49	23.24
			1	49	1	23.14	23.31	23.13
			1	99	1	23.09	23.18	23.30
			50	0	2	22.95	23.14	22.96
			50	24	2	22.89	23.11	22.95
			50	50	2	22.88	23.09	22.99
			100	0	2	22.95	23.18	23.02

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	21.22	21.44	21.21
			1	3	0	21.19	21.46	21.22
			1	5	0	21.23	21.50	21.26
			3	0	0	21.43	21.63	21.53
			3	1	0	21.46	21.64	21.54
			3	3	0	21.48	21.62	21.51
			6	0	0	21.48	21.64	21.55
		16QAM	1	0	0	20.83	21.17	21.15
			1	3	0	20.82	21.19	21.11
			1	5	0	21.81	21.18	21.16
			3	0	0	21.52	21.71	21.58
			3	1	0	21.50	21.69	21.56
			3	3	0	21.51	21.68	21.55
			6	0	0	21.49	21.60	21.45
	3 MHz	QPSK	1	0	0	21.19	21.49	21.17
			1	8	0	21.14	21.44	21.20
			1	14	0	21.20	21.43	21.19
			8	0	0	21.48	21.62	21.48
			8	4	0	21.49	21.63	21.50
			8	7	0	21.47	21.61	21.52
			15	0	0	21.46	21.63	21.52
		16QAM	1	0	0	21.28	21.61	21.13
			1	8	0	21.12	21.48	21.18
			1	14	0	21.11	21.43	21.24
			8	0	0	21.44	21.72	21.61
			8	4	0	21.41	21.70	21.63
			8	7	0	21.42	21.68	21.61
			15	0	0	21.48	21.62	21.53

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	5 MHz	QPSK	1	0	0	21.30	21.37	21.18
			1	12	0	21.26	21.31	21.15
			1	24	0	21.23	21.32	21.17
			12	0	0	21.53	21.65	21.54
			12	7	0	21.50	21.63	21.50
			12	13	0	21.52	21.64	21.53
			25	0	0	21.52	21.64	21.53
		16QAM	1	0	0	21.06	21.69	21.22
			1	12	0	21.04	21.67	21.18
			1	24	0	21.04	21.69	21.21
			12	0	0	21.49	21.64	21.47
			12	7	0	21.48	21.63	21.48
			12	13	0	21.48	21.62	21.48
			25	0	0	21.50	21.69	21.55
	10 MHz	QPSK	1	0	0	21.18	21.39	21.24
			1	25	0	21.15	21.38	21.27
			1	49	0	21.13	21.40	21.31
			25	0	0	21.48	21.66	21.46
			25	12	0	21.49	21.65	21.47
			25	25	0	21.46	21.64	21.46
			50	0	0	21.49	21.66	21.49
		16QAM	1	0	0	21.07	21.55	21.18
			1	25	0	21.05	21.53	21.21
			1	49	0	21.04	21.51	21.29
			25	0	0	21.56	21.76	21.52
			25	12	0	21.55	21.76	21.54
			25	25	0	21.53	21.74	21.56
			50	0	0	21.53	21.65	21.48

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B2	15 MHz	QPSK	1	0	0	21.34	21.58	21.18
			1	36	0	21.26	21.69	21.22
			1	74	0	21.26	21.49	21.25
			36	0	0	21.55	21.67	21.47
			36	18	0	21.54	21.65	21.52
			36	37	0	21.52	21.64	21.54
			75	0	0	21.51	21.68	21.52
		16QAM	1	0	0	21.16	21.66	21.25
			1	36	0	21.07	21.64	21.22
			1	74	0	21.10	21.58	21.28
			36	0	0	21.59	21.66	21.47
			36	18	0	21.57	21.67	21.52
			36	37	0	21.56	21.65	21.55
			75	0	0	21.52	21.67	21.56
	20 MHz	QPSK	1	0	0	21.29	21.63	21.33
			1	49	0	21.27	21.54	21.28
			1	99	0	21.22	21.45	21.41
			50	0	0	21.51	21.68	21.53
			50	24	0	21.50	21.67	21.55
			50	50	0	21.45	21.65	21.56
			100	0	0	21.53	21.65	21.57
		16QAM	1	0	0	21.20	21.56	21.47
			1	49	0	21.18	21.52	21.33
			1	99	0	21.10	21.52	21.53
			50	0	0	21.52	21.67	21.52
			50	24	0	21.49	21.67	21.54
			50	50	0	21.46	21.65	21.55
			100	0	0	21.54	21.69	21.59

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	24.11	24.02	24.41
			1	3	0	24.09	23.97	24.40
			1	5	0	24.11	24.02	24.44
			3	0	0	24.15	24.06	24.42
			3	1	0	24.16	24.09	24.43
			3	3	0	24.13	24.05	24.45
			6	0	1	23.17	23.12	23.46
		16QAM	1	0	1	23.05	22.78	22.95
			1	3	1	22.85	22.85	23.16
			1	5	1	22.93	22.79	23.30
			3	0	1	22.95	22.91	23.42
			3	1	1	23.21	23.12	23.39
			3	3	1	23.18	22.96	23.28
			6	0	2	22.19	21.99	22.35
	3 MHz	QPSK	1	0	0	24.16	23.94	24.45
			1	8	0	24.15	24.01	24.43
			1	14	0	24.13	24.04	24.40
			8	0	1	23.11	23.12	23.53
			8	4	1	23.09	23.08	23.54
			8	7	1	23.08	23.11	23.52
			15	0	1	23.11	23.15	23.48
		16QAM	1	0	1	23.15	23.12	23.33
			1	8	1	23.04	23.09	23.39
			1	14	1	23.05	23.28	23.42
			8	0	2	22.22	22.17	22.52
			8	4	2	22.13	22.13	22.49
			8	7	2	22.12	22.11	22.50
			15	0	2	22.15	22.21	22.48

Band	Band width	Modulation	RB Size	RB Offset	MPR	Maximum Power		
						Channel		
						Low	Middle	High
LTE B5	5 MHz	QPSK	1	0	0	24.04	23.98	24.49
			1	12	0	23.96	23.94	24.48
			1	24	0	23.93	23.94	24.48
			12	0	1	23.14	23.11	23.61
			12	7	1	23.11	23.12	23.61
			12	13	1	23.12	23.08	23.58
			25	0	1	23.12	23.10	23.58
		16QAM	1	0	1	22.75	22.83	23.27
			1	12	1	22.69	22.81	23.21
			1	24	1	22.70	22.85	23.27
			12	0	2	22.22	22.12	22.59
			12	7	2	22.19	22.05	22.55
			12	13	2	22.05	22.12	22.66
			25	0	2	22.11	22.09	22.56
	10 MHz	QPSK	1	0	0	24.15	24.01	24.50
			1	25	0	24.09	23.96	24.49
			1	49	0	24.08	24.04	24.48
			25	0	1	23.22	23.13	23.61
			25	12	1	23.21	23.09	23.60
			25	25	1	23.19	23.09	23.60
			50	0	1	23.21	23.11	23.48
		16QAM	1	0	1	23.09	23.02	23.38
			1	25	1	22.97	22.95	23.42
			1	49	1	22.97	23.01	23.39
			25	0	2	22.27	22.12	22.66
			25	12	2	22.23	22.13	22.63
			25	25	2	22.18	22.12	22.65
			50	0	2	22.21	22.14	22.63

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	22.76	23.06	23.06	23.08	23.35
			1	12	0	22.74	23.04	23.05	23.05	23.33
			1	24	0	22.73	23.02	23.03	23.03	23.32
			12	0	1	21.86	22.21	22.15	22.18	22.55
			12	7	1	21.85	22.19	22.14	22.16	22.53
			12	13	1	21.83	22.16	22.13	22.15	22.52
			25	0	1	21.83	22.43	22.15	22.23	22.54
		16QAM	1	0	1	21.63	21.96	21.85	22.03	22.46
			1	12	1	21.61	21.95	21.86	22.02	22.45
			1	24	1	21.60	21.94	21.84	22.00	22.44
			12	0	2	20.85	21.26	21.16	21.25	21.65
			12	7	2	20.83	21.24	21.15	21.23	21.64
			12	13	2	20.82	21.23	21.14	21.22	21.62
			25	0	2	20.96	21.24	21.23	21.24	21.66
	10 MHz	QPSK	1	0	0	22.94	23.03	22.98	23.05	23.33
			1	25	0	22.93	23.01	22.95	23.03	23.30
			1	49	0	22.92	23.00	22.93	23.02	22.29
			25	0	1	22.15	22.26	22.14	22.25	22.46
			25	12	1	22.14	22.25	22.13	22.24	22.45
			25	25	1	22.13	22.23	22.11	22.22	22.44
			50	0	1	22.06	22.44	22.13	22.25	22.43
		16QAM	1	0	1	22.03	22.16	21.95	22.14	22.35
			1	25	1	22.02	22.14	21.93	22.13	22.33
			1	49	1	22.01	22.13	21.94	22.11	22.32
			25	0	2	21.26	21.41	21.25	21.33	21.56
			25	12	2	21.25	21.38	21.23	21.31	21.55
			25	25	2	21.23	21.35	21.22	21.30	21.53
			50	0	2	21.25	21.26	21.24	21.25	21.44

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	22.75	23.06	22.93	23.06	23.21
			1	36	0	22.74	23.04	22.92	23.05	23.20
			1	74	0	22.73	23.03	22.90	23.03	23.18
			36	0	1	22.06	22.24	22.16	22.33	22.45
			36	18	1	22.05	22.23	22.14	22.31	22.44
			36	37	1	22.03	22.21	22.15	22.30	22.43
			75	0	1	21.93	22.16	22.15	22.23	22.44
		16QAM	1	0	1	21.55	21.99	22.05	21.94	22.26
			1	36	1	21.54	21.96	22.03	21.93	22.25
			1	74	1	21.52	21.94	22.02	21.91	22.23
			36	0	2	21.16	21.25	21.26	21.34	21.51
			36	18	2	21.14	21.23	21.25	21.33	21.49
			36	37	2	21.13	21.24	21.23	21.31	21.46
			75	0	2	21.06	21.24	21.24	21.25	21.43
	20 MHz	QPSK	1	0	0	22.85	23.03	22.96	23.16	23.20
			1	49	0	22.83	23.02	22.94	23.15	23.19
			1	99	0	22.84	23.00	22.92	23.13	23.17
			50	0	1	21.94	22.16	22.15	22.35	22.33
			50	24	1	21.93	22.15	22.14	22.34	22.32
			50	50	1	21.92	22.12	22.13	22.33	22.31
			100	0	1	21.84	22.03	22.06	22.23	22.24
		16QAM	1	0	1	21.74	21.86	21.80	22.04	22.15
			1	49	1	21.75	21.85	21.78	22.03	22.13
			1	99	1	21.74	21.83	21.75	22.01	22.12
			50	0	2	21.06	21.15	21.16	21.34	21.33
			50	24	2	21.04	21.13	21.15	21.33	21.32
			50	50	2	21.03	21.12	21.14	21.30	21.31
			100	0	2	20.96	21.05	21.16	21.23	21.25

WLAN 2.4 GHz (2 412 MHz ~ 2 462 MHz)

Mode	Conducted Powers (dBm)		
	Low	Mid.	High
802.11b_1 Mbps	19.30	19.90	19.40
802.11g_6 Mbps	15.74	17.34	11.04
802.11n(HT-20)_MCS0	15.25	17.55	11.45

WLAN 2.4 GHz Reduced Power (2 412 MHz ~ 2 462 MHz)

Mode	Conducted Powers (dBm)		
	Low	Mid.	High
802.11b_1 Mbps	11.61	11.91	11.71
802.11g_6 Mbps	11.64	11.84	11.84
802.11n(HT-20)_MCS0	11.75	11.85	11.85

Bluetooth (2 402 MHz ~ 2 480 MHz)

Mode	Conducted Powers (dBm)		
	Low	Mid.	High
BDR(GFSK)	8.63	9.33	7.73
EDR (π/4DQPSK)	7.11	7.91	6.31
EDR(8DPSK)	7.11	7.91	6.31
LE(GFSK)	4.25	4.25	4.35

WLAN Duty Cycle

Mode		Duty Cycle [%]	Duty Cycle Compensate Factor
WLAN 2.4 GHz	802.11b	99.7	1.00

Bluetooth Duty Cycle

Mode		Duty Cycle [%]	Duty Cycle Compensate Factor
BDR	DH5	80.8	1.24

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.

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.

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	33.55	34.5	1.24	0.063	0.078	
		Right Tilt	0	836.6	33.55	34.5	1.24	0.037	0.046	
		Left Cheek	0	836.6	33.55	34.5	1.24	0.052	0.064	
		Left Tilt	0	836.6	33.55	34.5	1.24	0.035	0.043	
Head (VoIP)	GPRS 3 Tx	Right Cheek	0	836.6	29.52	31.0	1.41	0.081	**0.113**	#1
		Right Tilt	0	836.6	29.52	31.0	1.41	0.041	0.058	
		Left Cheek	0	836.6	29.52	31.0	1.41	0.055	0.078	
		Left Tilt	0	836.6	29.52	31.0	1.41	0.034	0.048	
Body	Voice	Front	15	836.6	33.55	34.5	1.24	0.061	0.076	
		Rear	15	836.6	33.55	34.5	1.24	0.126	0.157	
	GPRS 3 Tx	Front	15	836.6	29.52	31.0	1.41	0.070	0.098	
		Rear	15	836.6	29.52	31.0	1.41	0.140	**0.197**	#2
Hotspot	GPRS 3 Tx	Front	10	836.6	29.52	31.0	1.41	0.071	0.100	
		Rear	10	836.6	29.52	31.0	1.41	0.076	0.106	
		Left	10	836.6	29.52	31.0	1.41	0.064	0.090	
		Right	10	836.6	29.52	31.0	1.41	0.120	**0.169**	#3
		Bottom	10	836.6	29.52	31.0	1.41	0.109	0.153	

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	31.46	32.0	1.13	0.033	0.037	
		Right Tilt	0	1 880	31.46	32.0	1.13	0.016	0.018	
		Left Cheek	0	1 880	31.46	32.0	1.13	0.009	0.010	
		Left Tilt	0	1 880	31.46	32.0	1.13	0.017	0.019	
Head (VoIP)	GPRS 3 Tx	Right Cheek	0	1 880	27.46	28.5	1.27	0.035	**0.044**	#4
		Right Tilt	0	1 880	27.46	28.5	1.27	0.019	0.024	
		Left Cheek	0	1 880	27.46	28.5	1.27	0.008	0.011	
		Left Tilt	0	1 880	27.46	28.5	1.27	0.017	0.021	
Body	Voice	Front	15	1 880	31.46	32.0	1.13	0.089	0.101	
		Rear	15	1 880	31.46	32.0	1.13	0.365	**0.413**	#5
	GPRS 3 Tx	Front	15	1 880	27.46	28.5	1.27	0.078	0.099	
		Rear	15	1 880	27.46	28.5	1.27	0.307	0.390	
Hotspot	GPRS 3 Tx	Front	10	1 880	25.45	26.3	1.20	0.113	0.136	
		Rear	10	1 880	25.45	26.3	1.20	0.474	**0.570**	#6
		Left	10	1 880	25.45	26.3	1.20	0.000	0.000	
		Right	10	1 880	25.45	26.3	1.20	0.017	0.020	
		Bottom	10	1 880	25.45	26.3	1.20	0.208	0.250	

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	24.13	25.0	1.22	0.050	**0.061**	#7
		Right Tilt	0	1 880	24.13	25.0	1.22	0.030	0.036	
		Left Cheek	0	1 880	24.13	25.0	1.22	0.024	0.030	
		Left Tilt	0	1 880	24.13	25.0	1.22	0.018	0.022	
Body	RMC	Front	15	1 880	24.13	25.0	1.22	0.183	0.224	
		Rear	15	1 880	24.13	25.0	1.22	0.424	**0.518**	#8
Hotspot	RMC	Front	10	1 880	20.72	21.5	1.20	0.259	0.310	
		Rear	10	1 880	20.72	21.5	1.20	0.384	**0.460**	#9
		Left	10	1 880	20.72	21.5	1.20	0.001	0.001	
		Right	10	1 880	20.72	21.5	1.20	0.010	0.012	
		Bottom	10	1 880	20.72	21.5	1.20	0.139	0.166	

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	24.86	25.5	1.16	0.066	**0.076**	#10
		Right Tilt	0	836.6	24.86	25.5	1.16	0.038	0.044	
		Left Cheek	0	836.6	24.86	25.5	1.16	0.047	0.054	
		Left Tilt	0	836.6	24.86	25.5	1.16	0.038	0.044	
Body	RMC	Front	15	836.6	24.86	25.5	1.16	0.055	0.063	
		Rear	15	836.6	24.86	25.5	1.16	0.139	**0.161**	#11
Hotspot	RMC	Front	10	836.6	24.86	25.5	1.16	0.058	0.067	
		Rear	10	836.6	24.86	25.5	1.16	**0.318**	**0.368**	#12
		Left	10	836.6	24.86	25.5	1.16	0.060	0.069	
		Right	10	836.6	24.86	25.5	1.16	0.123	0.143	
		Bottom	10	836.6	24.86	25.5	1.16	0.098	0.113	

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	1 880	24.59	25.0	1.10	0.125	**0.137**	#13
		Right Tilt	0	1 880	24.59	25.0	1.10	0.030	0.032	
		Left Cheek	0	1 880	24.59	25.0	1.10	0.032	0.035	
		Left Tilt	0	1 880	24.59	25.0	1.10	0.041	0.045	
	QPSK 20 MHz 50 RB	Right Cheek	0	1 880	24.09	25.0	1.23	0.090	0.111	
		Right Tilt	0	1 880	24.09	25.0	1.23	0.031	0.038	
		Left Cheek	0	1 880	24.09	25.0	1.23	0.028	0.035	
		Left Tilt	0	1 880	24.09	25.0	1.23	0.029	0.036	
Body	QPSK 20 MHz 1 RB	Front	15	1 880	24.59	25.0	1.10	0.121	0.133	
		Rear	15	1 880	24.59	25.0	1.10	0.522	0.574	
	QPSK 20 MHz 50 RB	Front	15	1 880	24.09	25.0	1.23	0.115	0.142	
		Rear	15	1 880	24.09	25.0	1.23	0.507	**0.625**	#14
Hotspot	QPSK 20 MHz 1 RB	Front	10	1 880	21.63	22.0	1.09	0.134	0.146	
		Rear	10	1880	21.63	22.0	1.09	0.560	0.610	
		Left	10	1 880	21.63	22.0	1.09	0.006	0.006	
		Right	10	1 880	21.63	22.0	1.09	0.034	0.037	
		Bottom	10	1 880	21.63	22.0	1.09	0.166	0.181	
	QPSK 20 MHz 50 RB	Front	10	1 880	21.68	22.0	1.08	0.135	0.145	
		Rear	10	1 880	21.68	22.0	1.08	0.604	**0.650**	#15
		Left	10	1 880	21.68	22.0	1.08	0.009	0.010	
		Right	10	1 880	21.68	22.0	1.08	0.035	0.037	
		Bottom	10	1 880	21.68	22.0	1.08	0.176	0.189	

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	844	24.50	25.5	1.26	0.022	0.028	
		Right Tilt	0	844	24.50	25.5	1.26	0.019	0.024	
		Left Cheek	0	844	24.50	25.5	1.26	0.020	0.025	
		Left Tilt	0	844	24.50	25.5	1.26	0.010	0.013	
	QPSK 10 MHz 25 RB	Right Cheek	0	844	23.61	25.5	1.55	0.020	**0.031**	#16
		Right Tilt	0	844	23.61	25.5	1.55	0.012	0.018	
		Left Cheek	0	844	23.61	25.5	1.55	0.016	0.025	
		Left Tilt	0	844	23.61	25.5	1.55	0.009	0.014	
Body	QPSK 10 MHz 1 RB	Front	15	844	24.50	25.5	1.26	0.056	0.071	
		Rear	15	844	24.50	25.5	1.26	0.130	0.164	
	QPSK 10 MHz 25 RB	Front	15	844	23.61	25.5	1.55	0.041	0.063	
		Rear	15	844	23.61	25.5	1.55	0.107	**0.165**	#17
Hotspot	QPSK 10 MHz 1 RB	Front	10	844	24.50	25.5	1.26	0.060	0.075	
		Rear	10	844	24.50	25.5	1.26	0.303	0.381	
		Left	10	844	24.50	25.5	1.26	0.044	0.055	
		Right	10	844	24.50	25.5	1.26	0.082	0.103	
		Bottom	10	844	24.50	25.5	1.26	0.104	0.131	
	QPSK 10 MHz 25 RB	Front	10	844	23.61	25.5	1.55	0.046	0.071	
		Rear	10	844	23.61	25.5	1.55	0.250	**0.386**	#18
		Left	10	844	23.61	25.5	1.55	0.033	0.051	
		Right	10	844	23.61	25.5	1.55	0.061	0.094	
		Bottom	10	844	23.61	25.5	1.55	0.081	0.125	

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	2 680	23.20	24.0	1.20	0.078	0.094	
		Right Tilt	0	2 680	23.20	24.0	1.20	0.114	0.137	
		Left Cheek	0	2 680	23.20	24.0	1.20	0.165	**0.198**	#19
		Left Tilt	0	2 680	23.20	24.0	1.20	0.057	0.068	
	QPSK 20 MHz 50 RB	Right Cheek	0	2 636.5	22.35	24.0	1.46	0.035	0.051	
		Right Tilt	0	2 636.5	22.35	24.0	1.46	0.068	0.100	
		Left Cheek	0	2 636.5	22.35	24.0	1.46	0.095	0.139	
		Left Tilt	0	2 636.5	22.35	24.0	1.46	0.051	0.074	
Body	QPSK 20 MHz 1 RB	Front	15	2 680	23.20	24.0	1.20	0.160	0.192	
		Rear	15	2 680	23.20	24.0	1.20	0.213	**0.256**	#20
	QPSK 20 MHz 50 RB	Front	15	2 636.5	22.35	24.0	1.46	0.096	0.141	
		Rear	15	2 636.5	22.35	24.0	1.46	0.134	0.196	
Hotspot	QPSK 20 MHz 1 RB	Front	10	2 680	23.20	24.0	1.20	0.286	0.344	
		Rear	10	2 680	23.20	24.0	1.20	0.446	**0.536**	#21
		Left	10	2 680	23.20	24.0	1.20	0.285	0.343	
		Right	10	2 680	23.20	24.0	1.20	0.017	0.020	
		Bottom	10	2 680	23.20	24.0	1.20	0.269	0.323	
	QPSK 20 MHz 50 RB	Front	10	2 636.5	22.35	24.0	1.46	0.176	0.257	
		Rear	10	2 636.5	22.35	24.0	1.46	0.285	0.417	
		Left	10	2 636.5	22.35	24.0	1.46	0.173	0.253	
		Right	10	2 636.5	22.35	24.0	1.46	0.009	0.013	
		Bottom	10	2 636.5	22.35	24.0	1.46	0.172	0.251	

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	11.91	13.0	1.29	1.003	0.115	**0.148**	#22
		Right Tilt	0	2 437	11.91	13.0	1.29	1.003	0.099	0.128	
		Left Cheek	0	2 437	11.91	13.0	1.29	1.003	0.051	0.065	
		Left Tilt	0	2 437	11.91	13.0	1.29	1.003	0.036	0.047	
Body	802.11b	Front	15	2 437	19.90	20.0	1.02	1.003	0.098	0.101	
		Rear	15	2 437	19.90	20.0	1.02	1.003	0.127	**0.130**	#23
Hotspot	802.11b	Front	10	2 437	19.90	20.0	1.02	1.003	0.173	0.178	
		Rear	10	2 437	19.90	20.0	1.02	1.003	0.308	**0.316**	#24
		Left	10	2 437	19.90	20.0	1.02	1.003	0.138	0.142	
		Right	10	2 437	19.90	20.0	1.02	1.003	0.011	0.012	
		Top	10	2 437	19.90	20.0	1.02	1.003	0.074	0.076	

* For 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 KDB Publication 248227 D01v02r02.

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	9.33	10.0	1.17	1.24	0.045	**0.064**	#25
		Right Tilt	0	2 441	9.33	10.0	1.17	1.24	0.007	0.010	
		Left Cheek	0	2 441	9.33	10.0	1.17	1.24	0.002	0.002	
		Left Tilt	0	2 441	9.33	10.0	1.17	1.24	0.000	0.000	

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	10.00	15	1.05
Bluetooth	2 480	10.00	10	1.57

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	10.00	15	0.140
Bluetooth	Hotspot	2 480	10.00	10	0.210

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	0.113	0.148	0.261	ΣSAR<1.6, Not required
GSM 1900 + WLAN 2.4 GHz	0.044	0.148	0.192	ΣSAR<1.6, Not required
WCDMA B2 + WLAN 2.4 GHz	0.061	0.148	0.209	ΣSAR<1.6, Not required
WCDMA B5 + WLAN 2.4 GHz	0.076	0.148	0.224	ΣSAR<1.6, Not required
LTE B2 + WLAN 2.4 GHz	0.137	0.148	0.285	ΣSAR<1.6, Not required
LTE B5 + WLAN 2.4 GHz	0.031	0.148	0.179	ΣSAR<1.6, Not required
LTE B41 + WLAN 2.4 GHz	0.198	0.148	**0.346**	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	0.113	0.064	0.177	ΣSAR<1.6, Not required
GSM 1900 + Bluetooth	0.044	0.064	0.108	ΣSAR<1.6, Not required
WCDMA B2 + Bluetooth	0.061	0.064	0.125	ΣSAR<1.6, Not required
WCDMA B5 + Bluetooth	0.076	0.064	0.140	ΣSAR<1.6, Not required
LTE B2 + Bluetooth	0.137	0.064	0.201	ΣSAR<1.6, Not required
LTE B5 + Bluetooth	0.031	0.064	0.095	ΣSAR<1.6, Not required
LTE B41 + Bluetooth	0.198	0.064	**0.262**	ΣSAR<1.6, Not required

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	0.197	0.130	0.327	ΣSAR<1.6, Not required
GSM 1900 + WLAN 2.4 GHz	0.413	0.130	0.543	ΣSAR<1.6, Not required
WCDMA B2 + WLAN 2.4 GHz	0.518	0.130	0.648	ΣSAR<1.6, Not required
WCDMA B5 + WLAN 2.4 GHz	0.161	0.130	0.291	ΣSAR<1.6, Not required
LTE B2 + WLAN 2.4 GHz	0.625	0.130	**0.755**	ΣSAR<1.6, Not required
LTE B5 + WLAN 2.4 GHz	0.165	0.130	0.295	ΣSAR<1.6, Not required
LTE B41 + WLAN 2.4 GHz	0.256	0.130	0.386	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	0.197	0.140	0.337	ΣSAR<1.6, Not required
GSM 1900 + Bluetooth	0.413	0.140	0.553	ΣSAR<1.6, Not required
WCDMA B2 + Bluetooth	0.518	0.140	0.658	ΣSAR<1.6, Not required
WCDMA B5 + Bluetooth	0.161	0.140	0.301	ΣSAR<1.6, Not required
LTE B2 + Bluetooth	0.625	0.140	**0.765**	ΣSAR<1.6, Not required
LTE B5 + Bluetooth	0.165	0.140	0.305	ΣSAR<1.6, Not required
LTE B41 + Bluetooth	0.256	0.140	0.396	ΣSAR<1.6, Not required

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	0.169	0.316	0.485	ΣSAR<1.6, Not required
GSM 1900 + WLAN 2.4 GHz	0.570	0.316	0.886	ΣSAR<1.6, Not required
WCDMA B2 + WLAN 2.4 GHz	0.460	0.316	0.776	ΣSAR<1.6, Not required
WCDMA B5 + WLAN 2.4 GHz	0.368	0.316	0.684	ΣSAR<1.6, Not required
LTE B2 + WLAN 2.4 GHz	0.650	0.316	**0.966**	ΣSAR<1.6, Not required
LTE B5 + WLAN 2.4 GHz	0.386	0.316	0.702	ΣSAR<1.6, Not required
LTE B41 + WLAN 2.4 GHz	0.536	0.316	0.852	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	0.169	0.210	0.379	ΣSAR<1.6, Not required
GSM 1900 + Bluetooth	0.570	0.210	0.780	ΣSAR<1.6, Not required
WCDMA B2 + Bluetooth	0.460	0.210	0.670	ΣSAR<1.6, Not required
WCDMA B5 + Bluetooth	0.368	0.210	0.578	ΣSAR<1.6, Not required
LTE B2 + Bluetooth	0.650	0.210	**0.860**	ΣSAR<1.6, Not required
LTE B5 + Bluetooth	0.386	0.210	0.596	ΣSAR<1.6, Not required
LTE B41 + Bluetooth	0.536	0.210	0.746	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.

16. Test System Verification Results

900 MHz(2019-02-10)

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

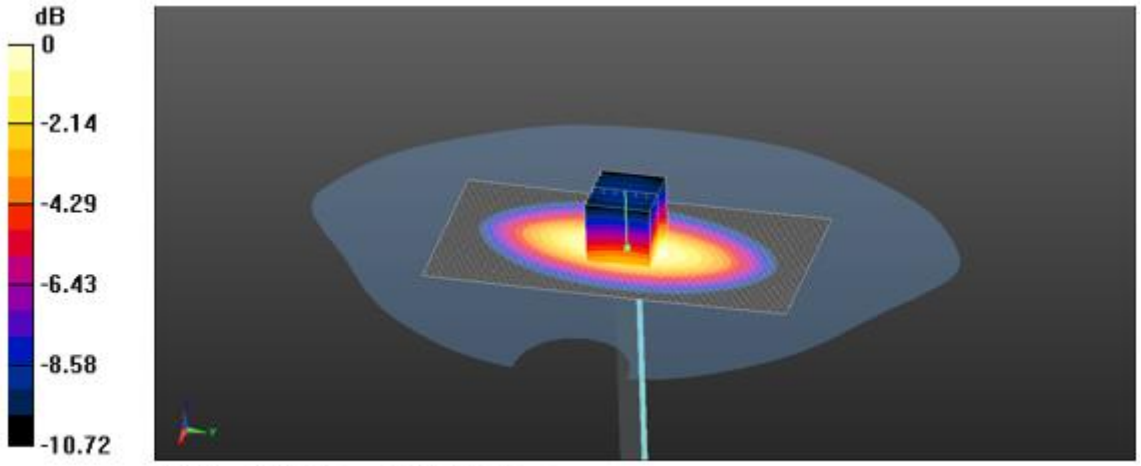
Frequency: 900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 0.946 S/m; ε_r = 40.321; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(9.94, 9.94, 9.94); Calibrated: 2018-08-29;
- 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=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (71x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.43 W/kg

System Performance Check (without Area Scan)/d=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.59 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 4.06 W/kg
SAR(1 g) = 2.73 W/kg; SAR(10 g) = 1.79 W/kg
Maximum value of SAR (measured) = 3.46 W/kg



0 dB = 3.46 W/kg = 5.39 dBW/kg

1 900 MHz(2019-02-02)

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

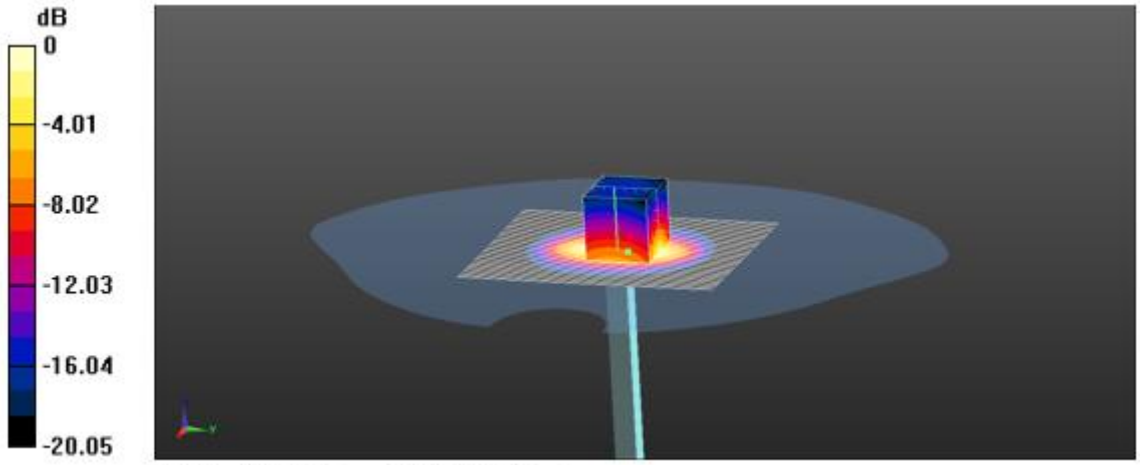
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.436 S/m; ε_r = 38.874; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.61, 8.61, 8.61); Calibrated: 2018-08-29;
- 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 (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 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 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.2 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 20.4 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.17 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2 W/kg = 11.82 dBW/kg

1 900 MHz(2019-02-02)

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

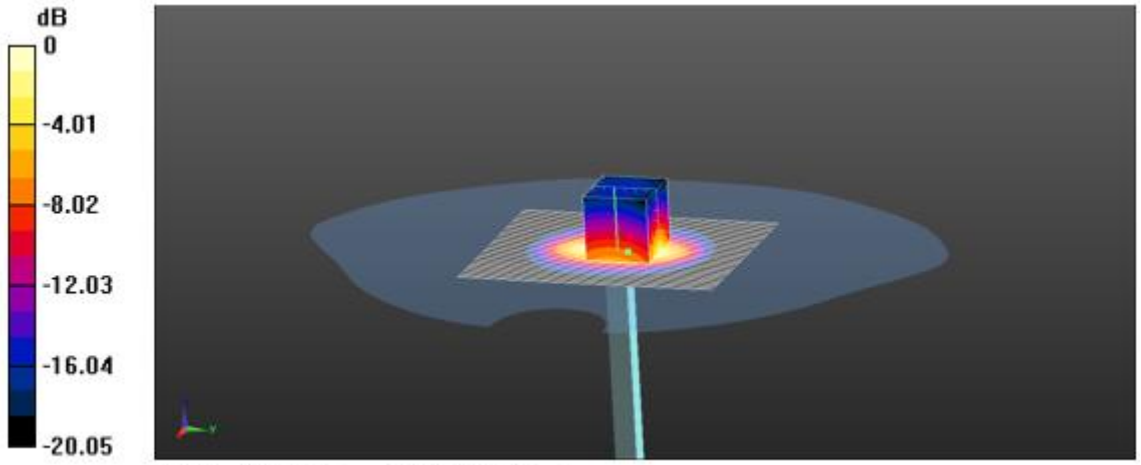
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.436 S/m; ε_r = 38.874; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.61, 8.61, 8.61); Calibrated: 2018-08-29;
- 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 (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 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 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.2 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 20.4 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.17 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2 W/kg = 11.82 dBW/kg

900 MHz(2019-02-07)

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

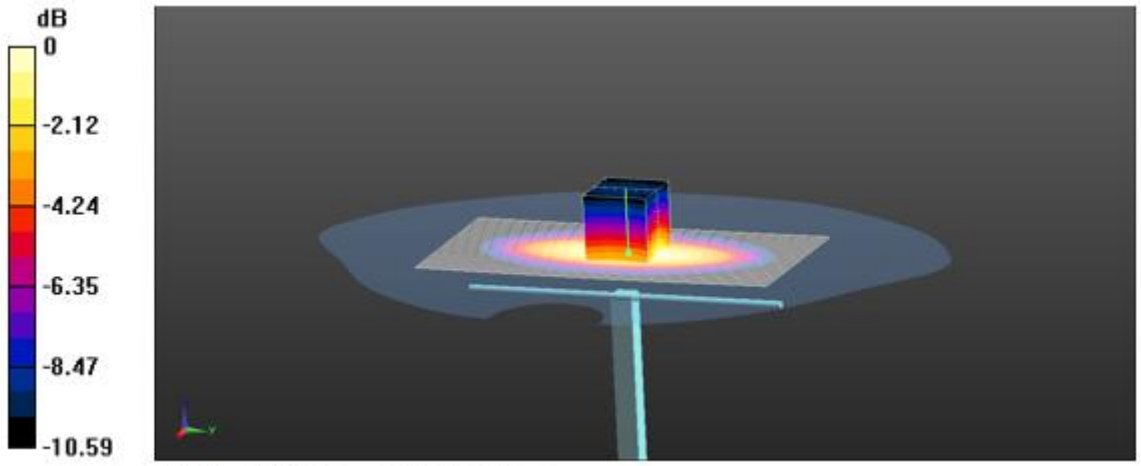
Frequency: 900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 0.963 S/m; ε_r = 40.605; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(9.94, 9.94, 9.94); Calibrated: 2018-08-29;
- 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=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (71x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.54 W/kg

System Performance Check (without Area Scan)/d=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.76 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 4.20 W/kg
SAR(1 g) = 2.82 W/kg; SAR(10 g) = 1.84 W/kg
Maximum value of SAR (measured) = 3.58 W/kg



0 dB = 3.58 W/kg = 5.54 dBW/kg

1 900 MHz(2019-02-09)

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

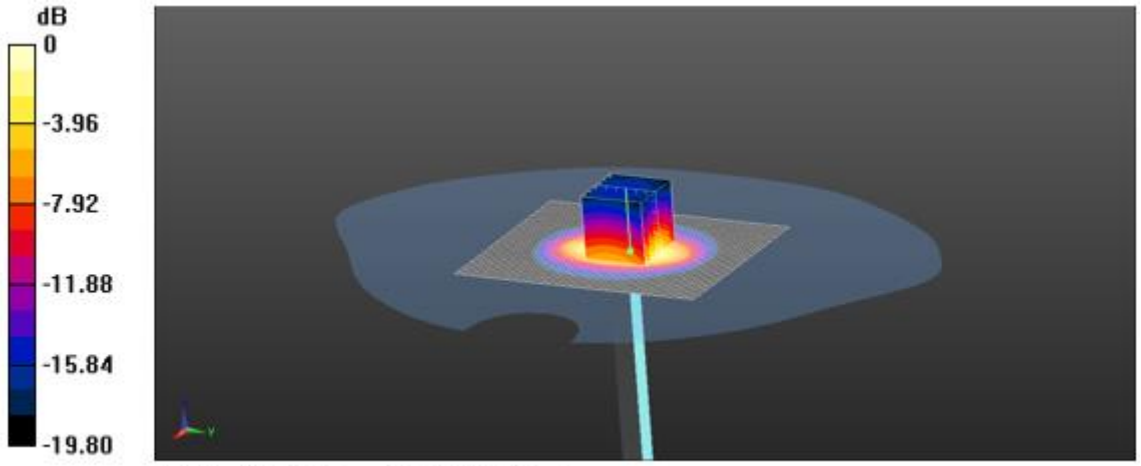
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.439 S/m; ε_r = 38.933; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.61, 8.61, 8.61); Calibrated: 2018-08-29;
- 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 (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 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 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.8 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 19.8 W/kg
SAR(1 g) = 10 W/kg; SAR(10 g) = 5.01 W/kg
Maximum value of SAR (measured) = 14.8 W/kg



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

900 MHz(2019-02-06)

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

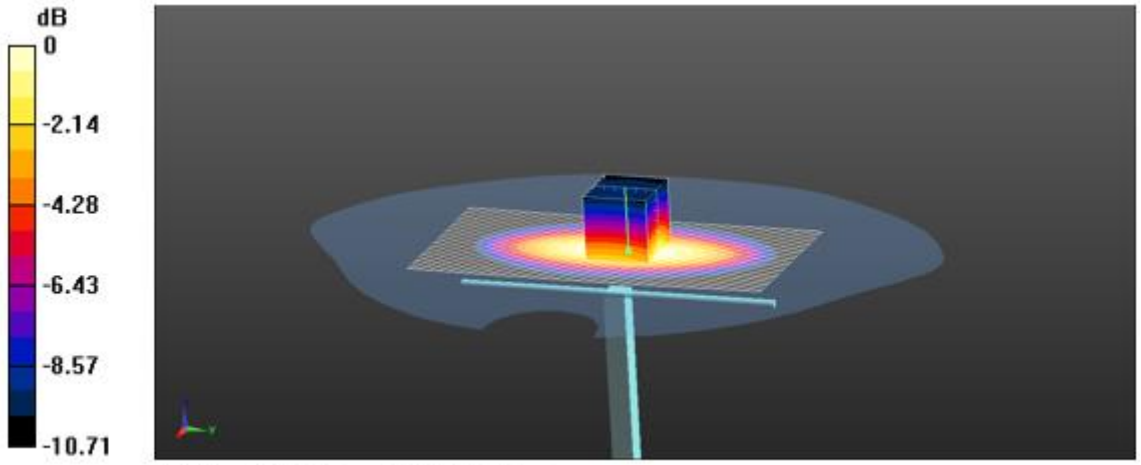
Frequency: 900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 0.955 S/m; ε_r = 41.688; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(9.94, 9.94, 9.94); Calibrated: 2018-08-29;
- 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=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (71x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.65 W/kg

System Performance Check (without Area Scan)/d=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.12 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 4.05 W/kg
SAR(1 g) = 2.7 W/kg; SAR(10 g) = 1.79 W/kg
Maximum value of SAR (measured) = 3.45 W/kg



0 dB = 3.45 W/kg = 5.38 dBW/kg

2 450 MHz(2019-02-01)

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

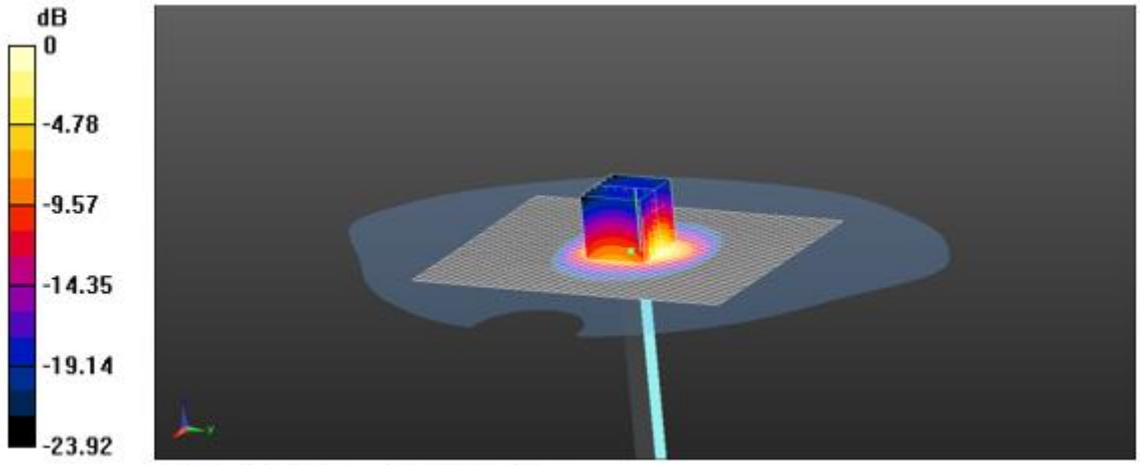
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.844 S/m; ε_r = 39.696; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.72, 7.72, 7.72); Calibrated: 2018-08-29;
- 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) = 20.3 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 = 105.6 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 5.92 W/kg
Maximum value of SAR (measured) = 19.8 W/kg



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

2 600 MHz(2019-02-01)

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

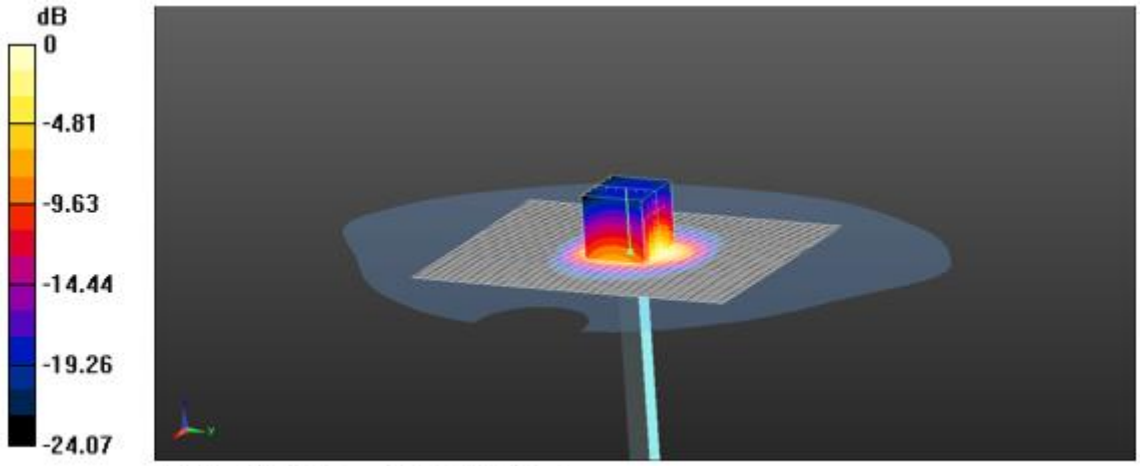
Frequency: 2600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.031 S/m; ε_r = 39.126; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.5, 7.5, 7.5); Calibrated: 2018-08-29;
- 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) = 22.6 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 = 105.3 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 30.0 W/kg
SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.52 W/kg
Maximum value of SAR (measured) = 21.8 W/kg



0 dB = 21.8 W/kg = 13.38 dBW/kg

2 450 MHz(2019-02-01)

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

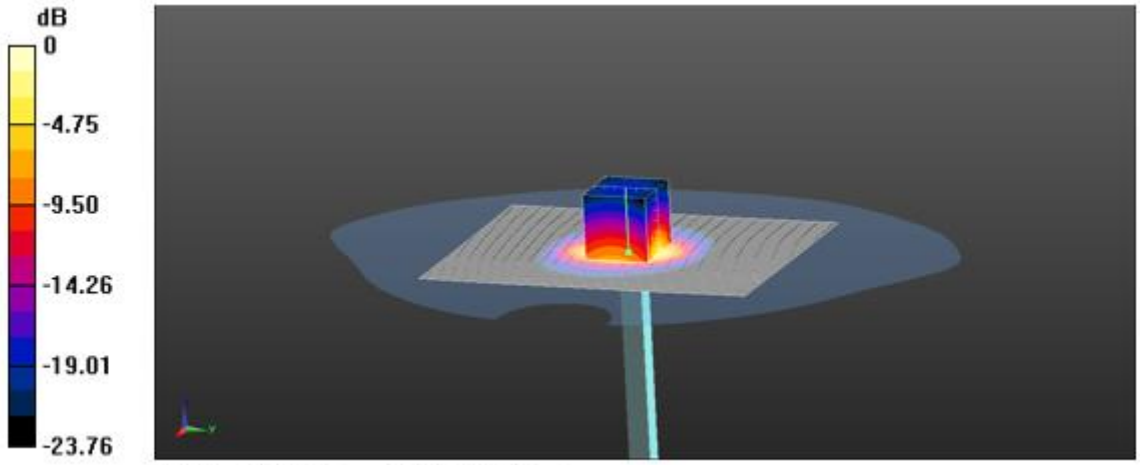
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.812 S/m; ε_r = 38.334; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.72, 7.72, 7.72); Calibrated: 2018-08-29;
- 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) = 21.1 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 = 106.4 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.84 W/kg
Maximum value of SAR (measured) = 20.1 W/kg



0 dB = 20.1 W/kg = 13.03 dBW/kg

900 MHz(2019-02-11)

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

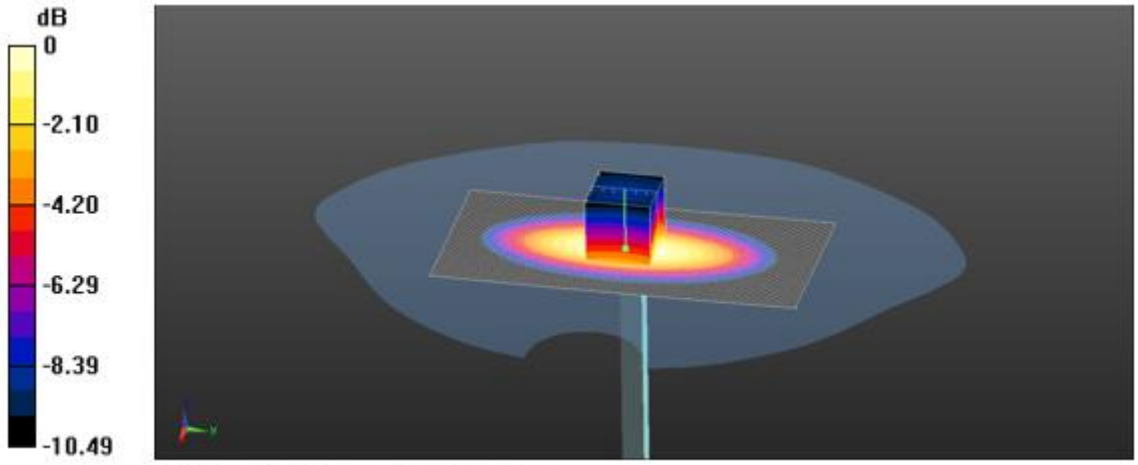
Frequency: 900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 1.046 S/m; ε_r = 54.988; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.37, 10.37, 10.37); Calibrated: 2018-08-29;
- 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=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (71x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.32 W/kg

System Performance Check (without Area Scan)/d=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.23 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.98 W/kg
SAR(1 g) = 2.66 W/kg; SAR(10 g) = 1.74 W/kg
Maximum value of SAR (measured) = 3.37 W/kg



0 dB = 3.37 W/kg = 5.28 dBW/kg

1 900 MHz(2019-02-02)

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

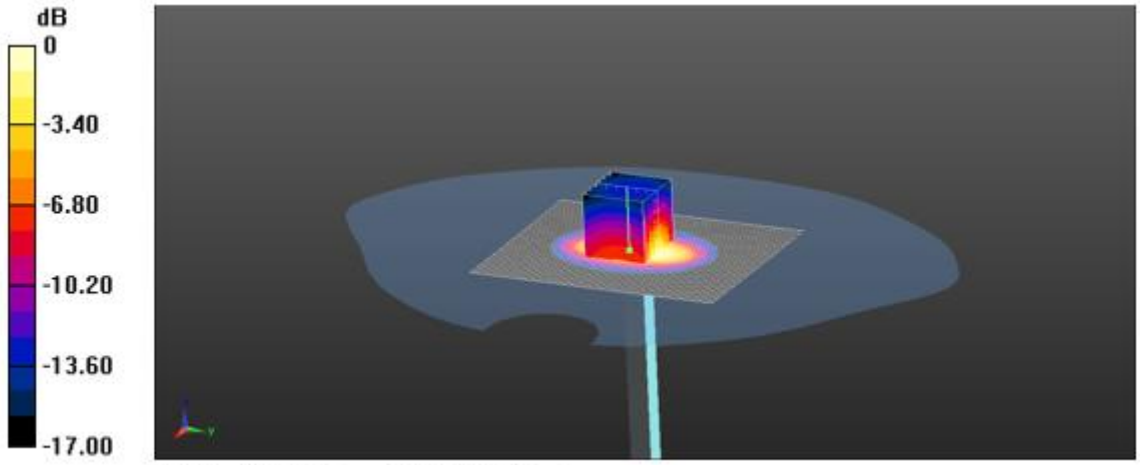
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.549 S/m; ε_r = 52.767; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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 (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 14.6 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 = 97.18 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.33 W/kg
Maximum value of SAR (measured) = 14.2 W/kg



0 dB = 14.2 W/kg = 11.52 dBW/kg

1 900 MHz(2019-02-04)

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

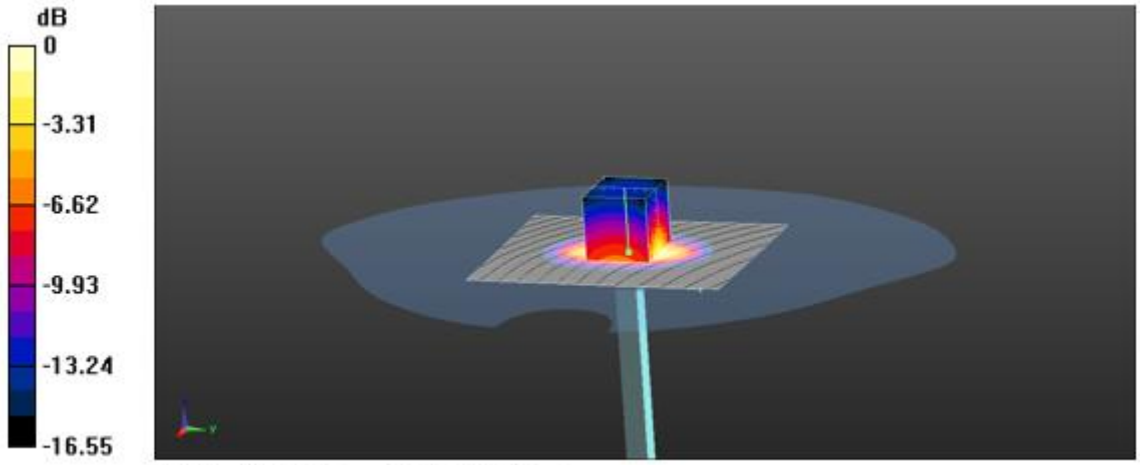
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.56 S/m; ε_r = 52.346; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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 (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 15.8 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 = 98.94 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.53 W/kg
Maximum value of SAR (measured) = 14.9 W/kg



0 dB = 14.9 W/kg = 11.73 dBW/kg

900 MHz(2019-02-09)

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

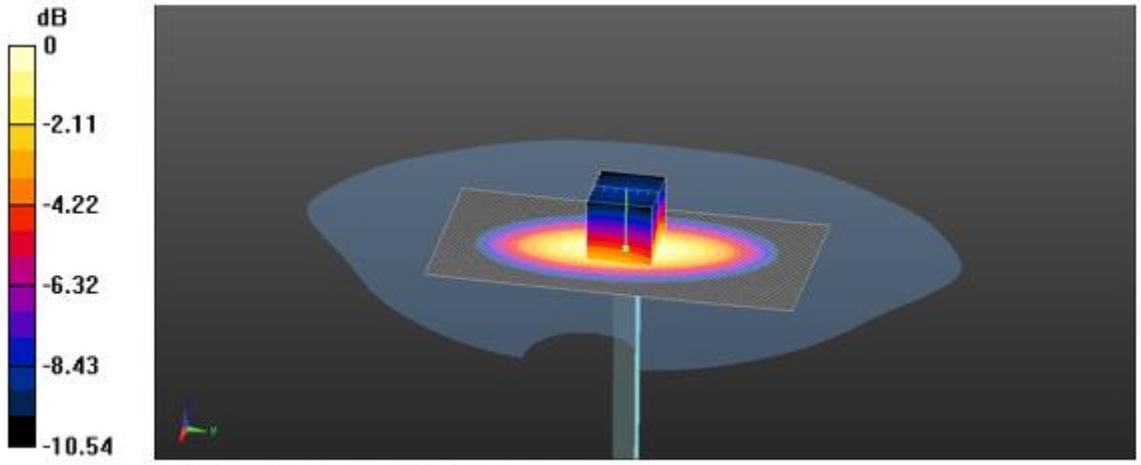
Frequency: 900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 1.068 S/m; ε_r = 54.741; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.37, 10.37, 10.37); Calibrated: 2018-08-29;
- 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=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Area Scan (71x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.60 W/kg

System Performance Check (without Area Scan)/d=15 mm, Pin=250 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.59 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 4.27 W/kg
SAR(1 g) = 2.86 W/kg; SAR(10 g) = 1.87 W/kg
Maximum value of SAR (measured) = 3.62 W/kg



0 dB = 3.62 W/kg = 5.59 dBW/kg

1 900 MHz(2019-02-09)

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

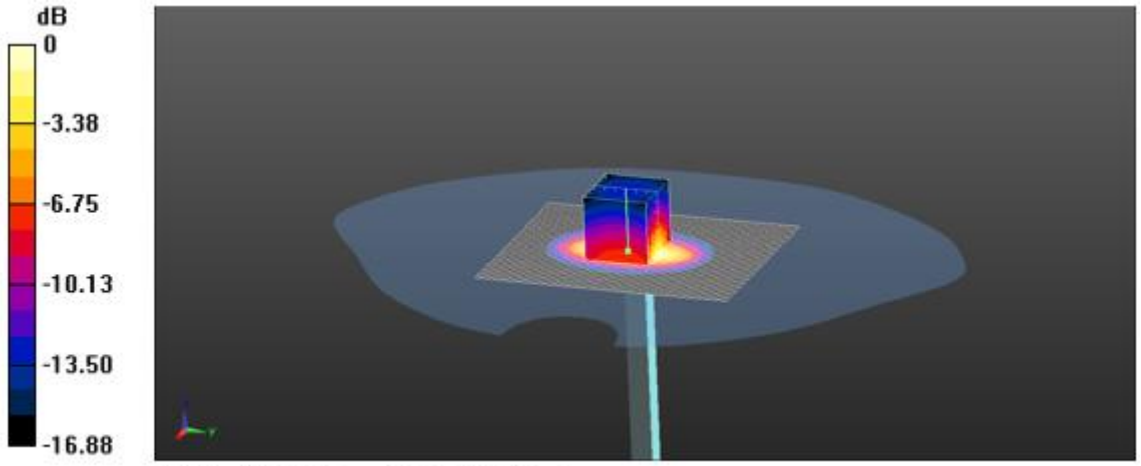
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.543 S/m; ε_r = 52.853; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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 (81x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 15.4 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 = 98.48 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.53 W/kg
Maximum value of SAR (measured) = 15.0 W/kg



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

2 450 MHz(2019-02-01)

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

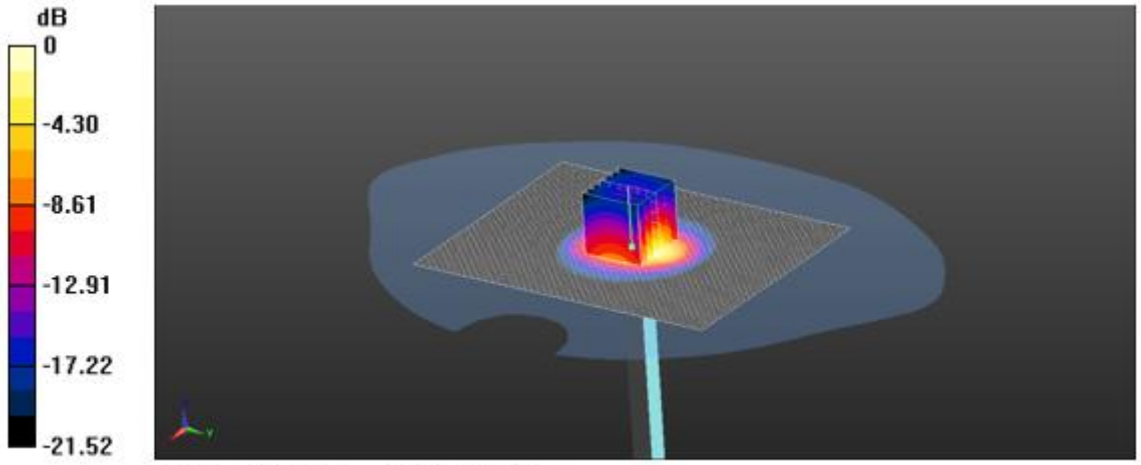
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.908 S/m; ε_r = 53.112; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.84, 7.84, 7.84); Calibrated: 2018-08-29;
- 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 (101x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 20.9 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 = 104.3 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 26.8 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.26 W/kg
Maximum value of SAR (measured) = 20.1 W/kg



0 dB = 20.1 W/kg = 13.03 dBW/kg

2 600 MHz(2019-02-01)

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

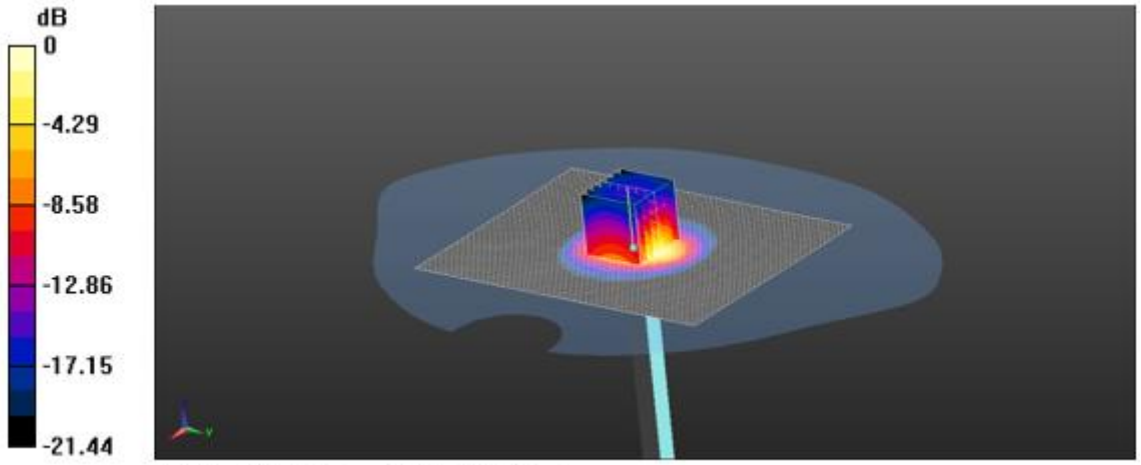
Frequency: 2600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.094 S/m; ε_r = 52.574; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.74, 7.74, 7.74); Calibrated: 2018-08-29;
- 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 (101x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.3 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 = 102.6 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.62 W/kg
Maximum value of SAR (measured) = 21.2 W/kg



0 dB = 21.2 W/kg = 13.26 dBW/kg

2 450 MHz(2019-02-01)

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

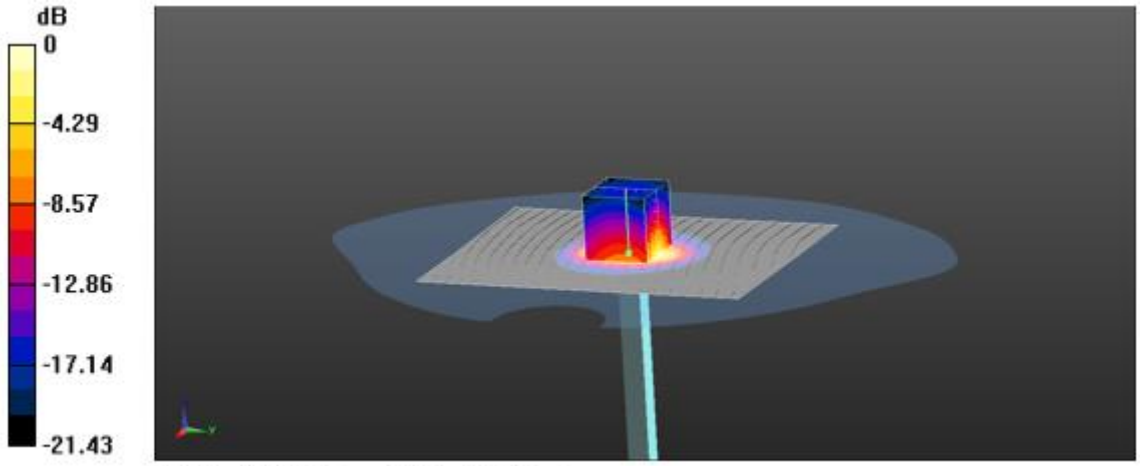
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.932 S/m; ε_r = 51.742; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.84, 7.84, 7.84); Calibrated: 2018-08-29;
- 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 (101x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.7 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 = 99.09 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 25.2 W/kg
SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.89 W/kg
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg = 12.81 dBW/kg

17. Test Results

#1

Procedure Name: GSM850_3Tx_f.836.6_Right Cheek

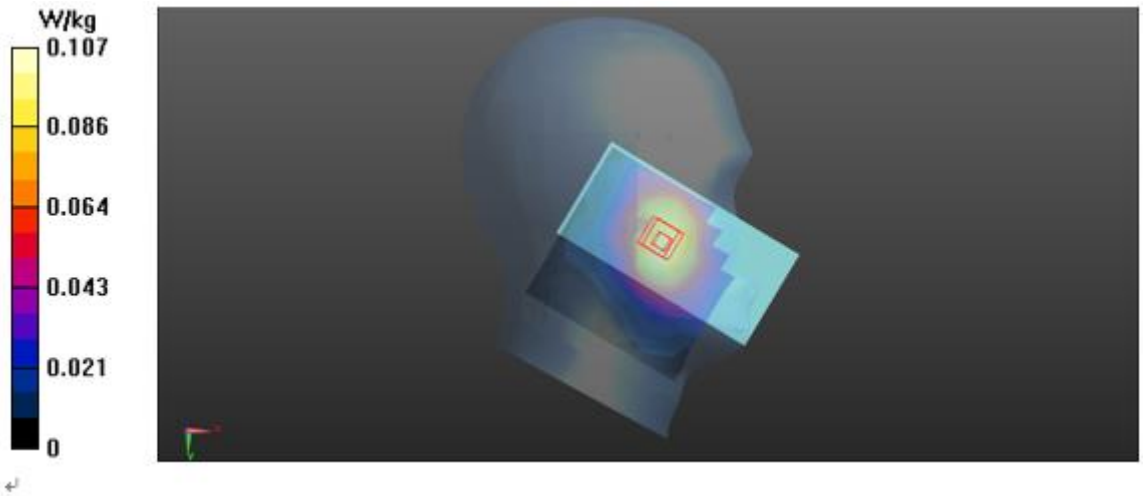
Frequency: 836.6 MHz; Duty Cycle: 1:2.76694
Medium parameters used: f = 836.6 MHz; σ = 0.882 S/m; ε_r = 40.915; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01); Calibrated: 2018-08-29;
- 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/GSM850_3Tx_f.836.6_Right Cheek/Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.107 W/kg

Configuration/GSM850_3Tx_f.836.6_Right Cheek/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.04 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.101 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.063 W/kg
Maximum value of SAR (measured) = 0.0944 W/kg



#2

Procedure Name: GSM850_3Tx_f.836.6_Rear_15 mm

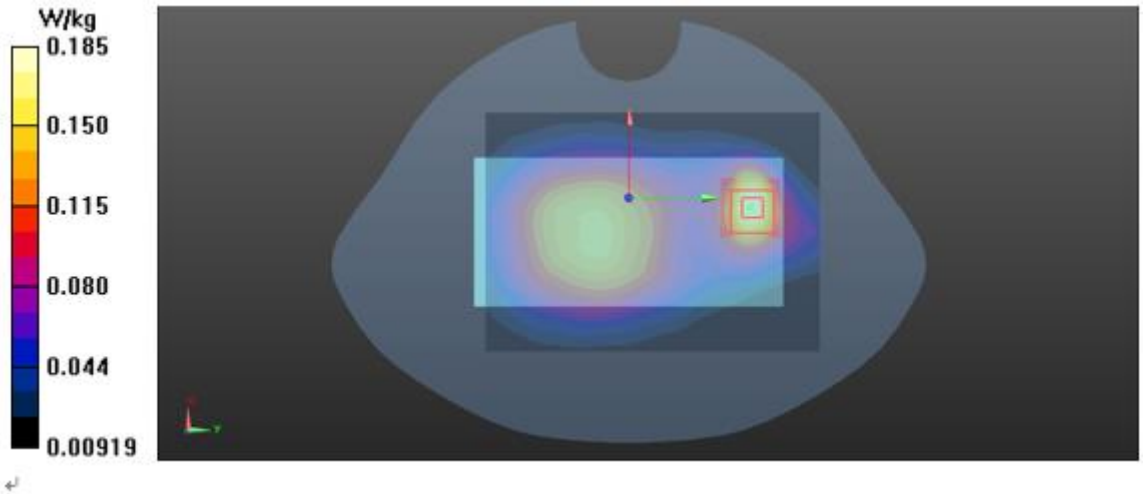
Frequency: 836.6 MHz; Duty Cycle: 1:2.76694
Medium parameters used: f = 836.6 MHz; σ = 0.978 S/m; ε_r = 55.259; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.39, 10.39, 10.39); Calibrated: 2018-08-29;
- 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/GSM850_3Tx_f.836.6_Rear_15 mm/Area Scan (101x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.184 W/kg

Configuration/GSM850_3Tx_f.836.6_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.960 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.234 W/kg
SAR(1 g) = 0.140 W/kg; SAR(10 g) = 0.086 W/kg
Maximum value of SAR (measured) = 0.185 W/kg



#3

Procedure Name: GSM850_3Tx_f.836.6_Right_10 mm

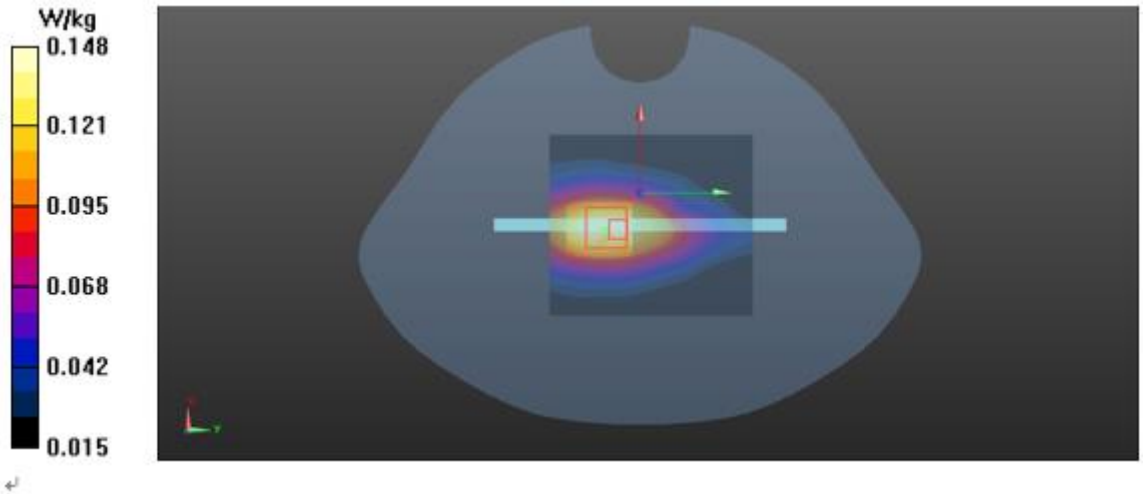
Frequency: 836.6 MHz; Duty Cycle: 1:2.76694
Medium parameters used: f = 836.6 MHz; σ = 0.978 S/m; ε_r = 55.259; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.39, 10.39, 10.39); Calibrated: 2018-08-29;
- 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/GSM850_3Tx_f.836.6_Right_10 mm/Area Scan (81x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.151 W/kg

Configuration/GSM850_3Tx_f.836.6_Right_10 mm/Zoom Scan (7x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.148 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.169 W/kg
SAR(1 g) = 0.120 W/kg; SAR(10 g) = 0.083 W/kg
Maximum value of SAR (measured) = 0.148 W/kg



#4

Procedure Name: GSM1900_3Tx_f.1 880_Right Cheek

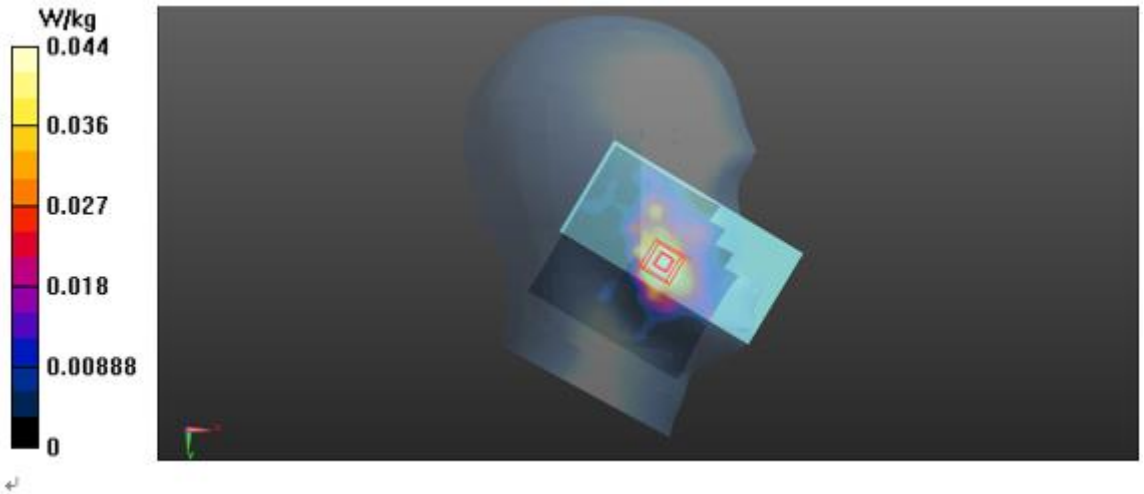
Frequency: 1880 MHz; Duty Cycle: 1:2.76694
Medium parameters used: f = 1880 MHz; σ = 1.417 S/m; ε_r = 38.966; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.61, 8.61, 8.61); Calibrated: 2018-08-29;
- 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/GSM1900_3Tx_f.1 880_Right Cheek/Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0553 W/kg

Configuration/GSM1900_3Tx_f.1 880_Right Cheek/Zoom Scan (9x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.432 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.0550 W/kg
SAR(1 g) = 0.035 W/kg; SAR(10 g) = 0.021 W/kg
Maximum value of SAR (measured) = 0.0444 W/kg



#5

Procedure Name: GSM1900_Voice_f.1 880_Rear_15 mm

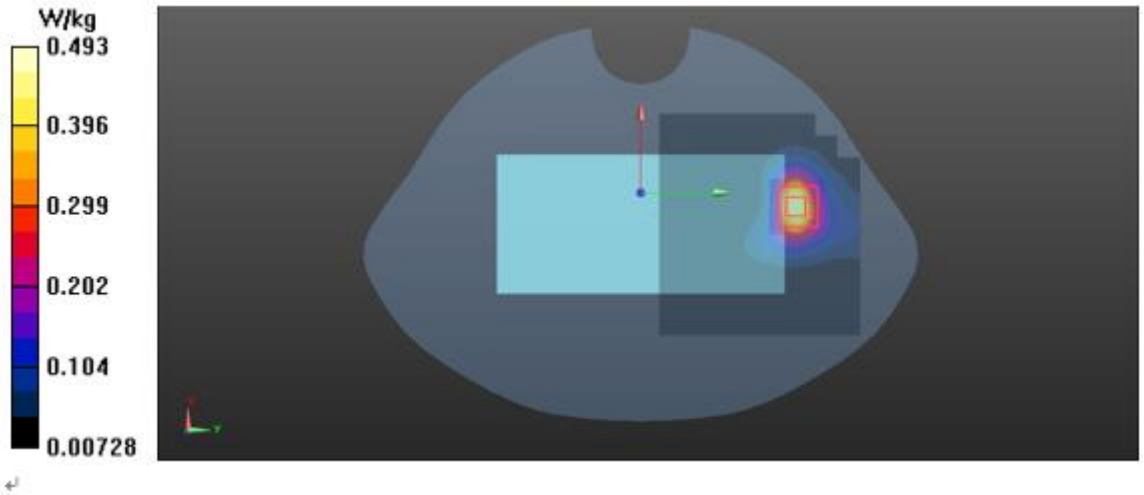
Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium parameters used: f = 1880 MHz; σ = 1.524 S/m; ε_r = 52.552; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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 (101x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.529 W/kg

Configuration/GSM1900_Voice_f.1 880_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.89 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.606 W/kg
SAR(1 g) = 0.365 W/kg; SAR(10 g) = 0.193 W/kg
Maximum value of SAR (measured) = 0.493 W/kg



#6

Procedure Name: GSM1900_3Tx_f.1 880_Rear_10 mm

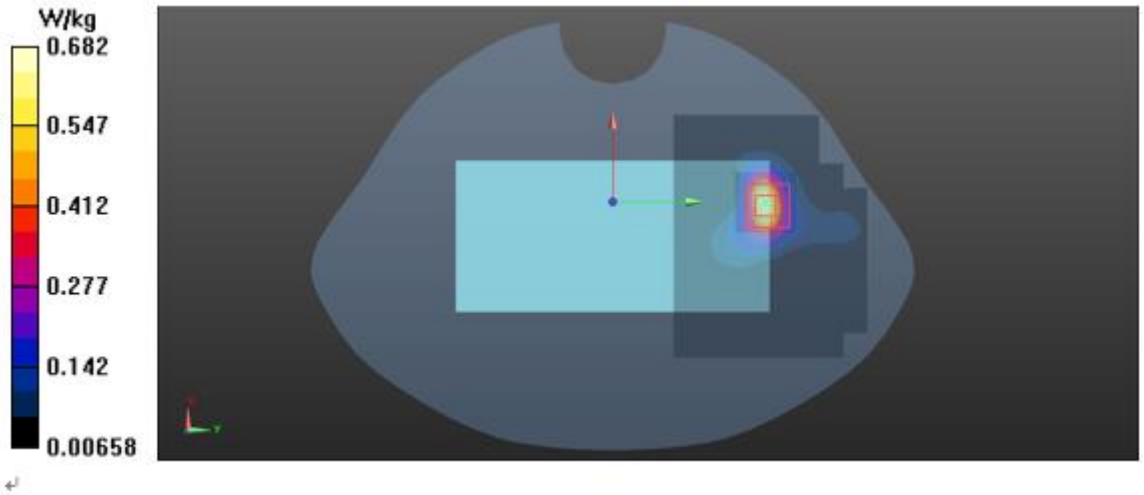
Frequency: 1880 MHz; Duty Cycle: 1:2.76694
Medium parameters used: f = 1880 MHz; σ = 1.527 S/m; ε_r = 52.916; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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_3Tx_f.1 880_Rear_10 mm/Area Scan (101x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.706 W/kg

Configuration/GSM1900_3Tx_f.1 880_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.13 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.853 W/kg
SAR(1 g) = 0.474 W/kg; SAR(10 g) = 0.228 W/kg
Maximum value of SAR (measured) = 0.682 W/kg



#7

Procedure Name: WCDMA_B2_f.1 880_Right Cheek

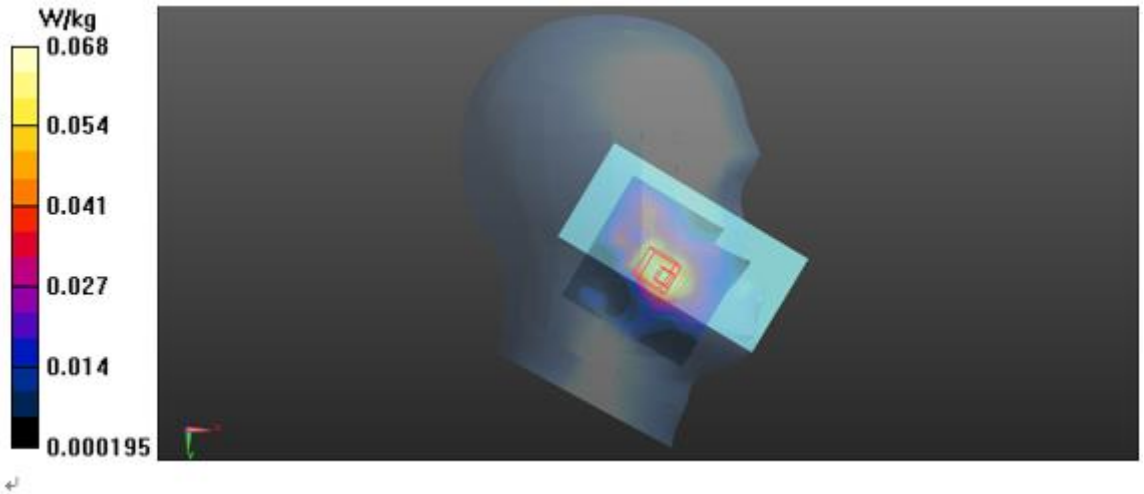
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.417 S/m; ε_r = 38.966; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.61, 8.61, 8.61); Calibrated: 2018-08-29;
- 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/WCDMA_B2_f.1 880_Right Cheek/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0651 W/kg

Configuration/WCDMA_B2_f.1 880_Right Cheek/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.086 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.0870 W/kg
SAR(1 g) = 0.050 W/kg; SAR(10 g) = 0.028 W/kg
Maximum value of SAR (measured) = 0.0680 W/kg



#8

Procedure Name: WCDMA_B2_f.1 880_Rear_15 mm

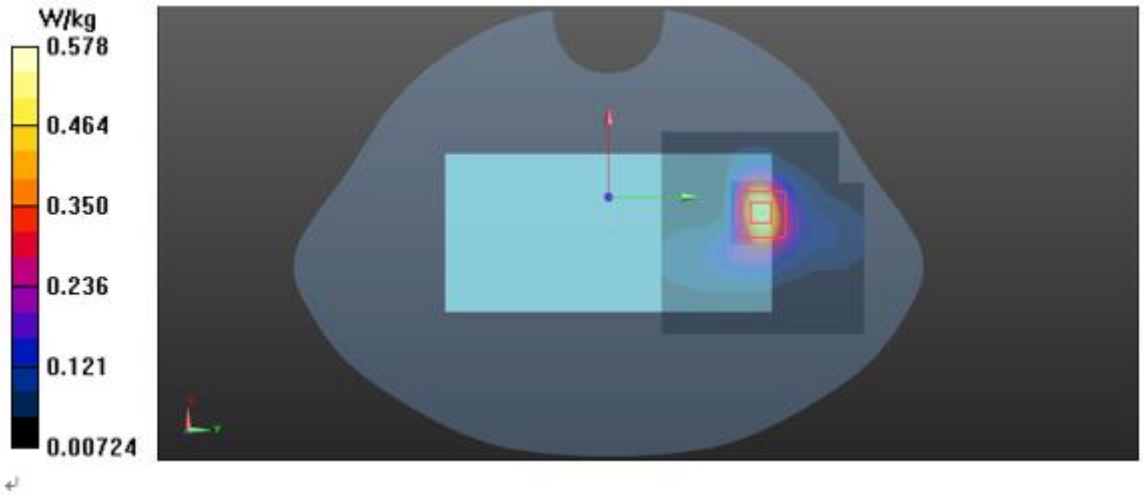
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.535 S/m; ε_r = 52.294; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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 (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.586 W/kg

Configuration/WCDMA_B2_f.1 880_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.07 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.709 W/kg
SAR(1 g) = 0.424 W/kg; SAR(10 g) = 0.224 W/kg
Maximum value of SAR (measured) = 0.578 W/kg



#9

Procedure Name: WCDMA_B2_f.1 880_Rear_10 mm

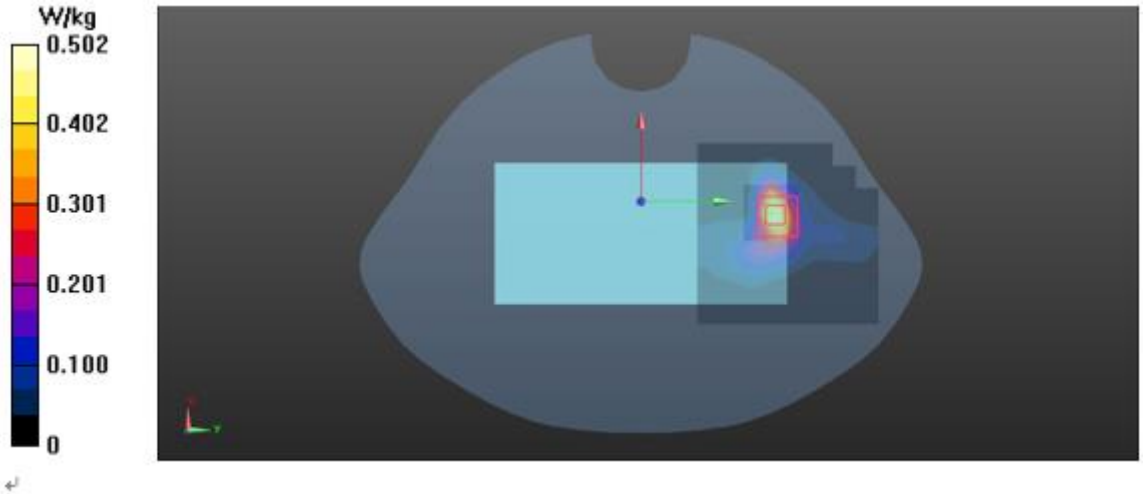
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.535 S/m; ε_r = 52.294; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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 (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.502 W/kg

Configuration/WCDMA_B2_f.1 880_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.294 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.706 W/kg
SAR(1 g) = 0.384 W/kg; SAR(10 g) = 0.185 W/kg
Maximum value of SAR (measured) = 0.550 W/kg



#10

Procedure Name: WCDMA_B5_f.836.6_Right Cheek

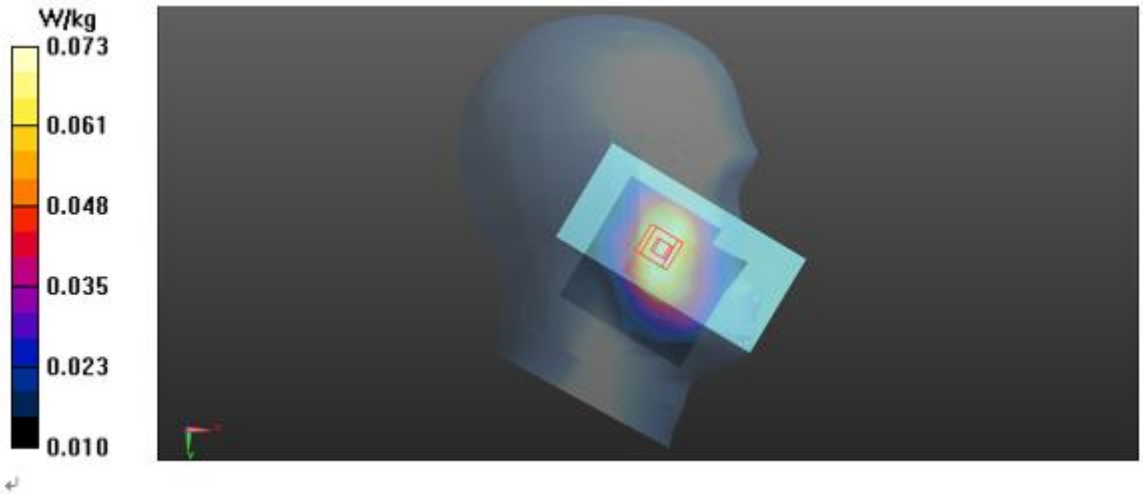
Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.899 S/m; ε_r = 41.119; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01); Calibrated: 2018-08-29;
- 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/WCDMA_B5_f.836.6_Right Cheek/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0724 W/kg

Configuration/WCDMA_B5_f.836.6_Right Cheek/Zoom Scan (9x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.356 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.0780 W/kg
SAR(1 g) = 0.066 W/kg; SAR(10 g) = 0.052 W/kg
Maximum value of SAR (measured) = 0.0731 W/kg



#11

Procedure Name: WCDMA_B5_f.836.6_Rear_15 mm

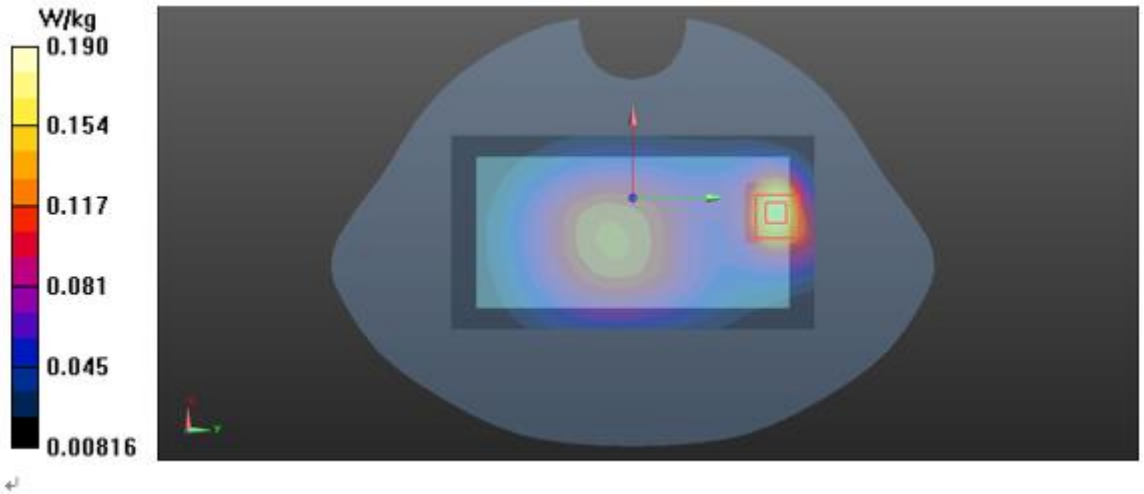
Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.992 S/m; ε_r = 55.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.39, 10.39, 10.39); Calibrated: 2018-08-29;
- 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_B5_f.836.6_Rear_15 mm/Area Scan (81x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.178 W/kg

Configuration/WCDMA_B5_f.836.6_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.69 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.239 W/kg
SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.084 W/kg
Maximum value of SAR (measured) = 0.190 W/kg



#12

Procedure Name: WCDMA_B5_f.836.6_Rear_10 mm

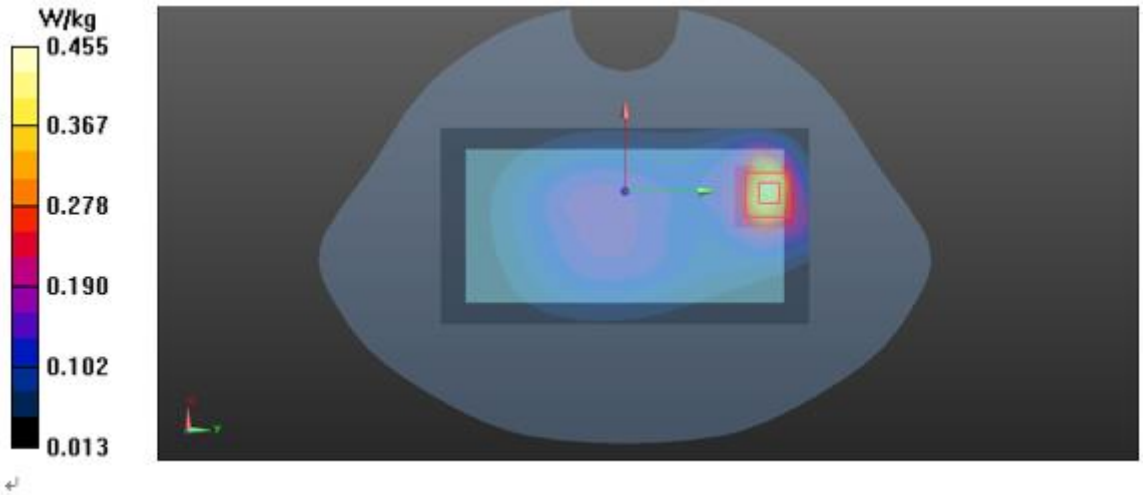
Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.6 MHz; σ = 0.992 S/m; ε_r = 55.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.39, 10.39, 10.39); Calibrated: 2018-08-29;
- 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_B5_f.836.6_Rear_10 mm/Area Scan (81x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.417 W/kg

Configuration/WCDMA_B5_f.836.6_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.38 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.318 W/kg; SAR(10 g) = 0.177 W/kg
Maximum value of SAR (measured) = 0.455 W/kg



#13

Procedure Name: QPSK_20MHz_1RB_0offset_f.1 880_Right Cheek

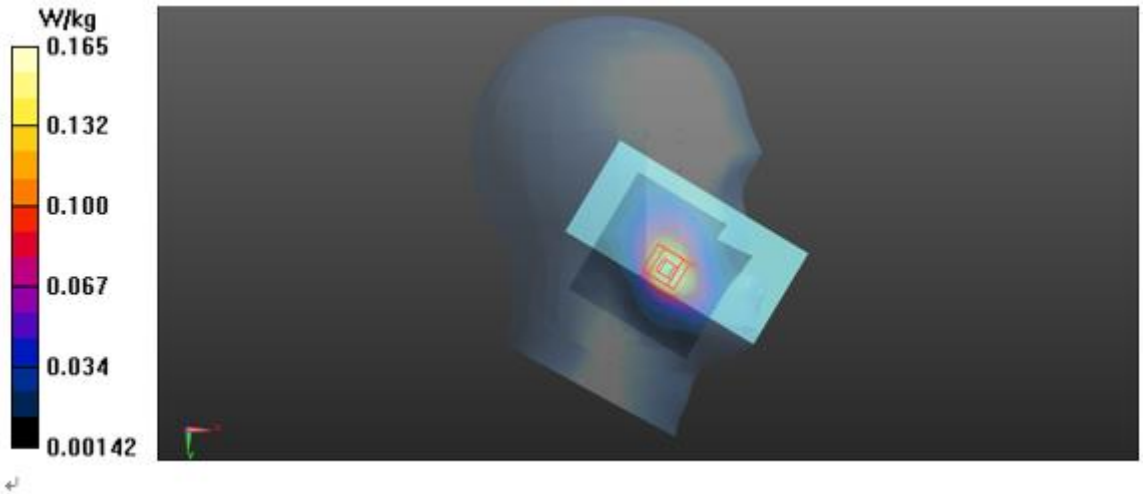
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.421 S/m; ε_r = 39.004; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.61, 8.61, 8.61); Calibrated: 2018-08-29;
- 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.1 880_Right Cheek/Area Scan (81x81x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.169 W/kg

Configuration/QPSK_20MHz_1RB_0offset_f.1 880_Right Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.730 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.205 W/kg
SAR(1 g) = 0.125 W/kg; SAR(10 g) = 0.074 W/kg
Maximum value of SAR (measured) = 0.165 W/kg



#14

Procedure Name: QPSK_20MHz_50RB_0offset_f.1 880_Rear_15mm

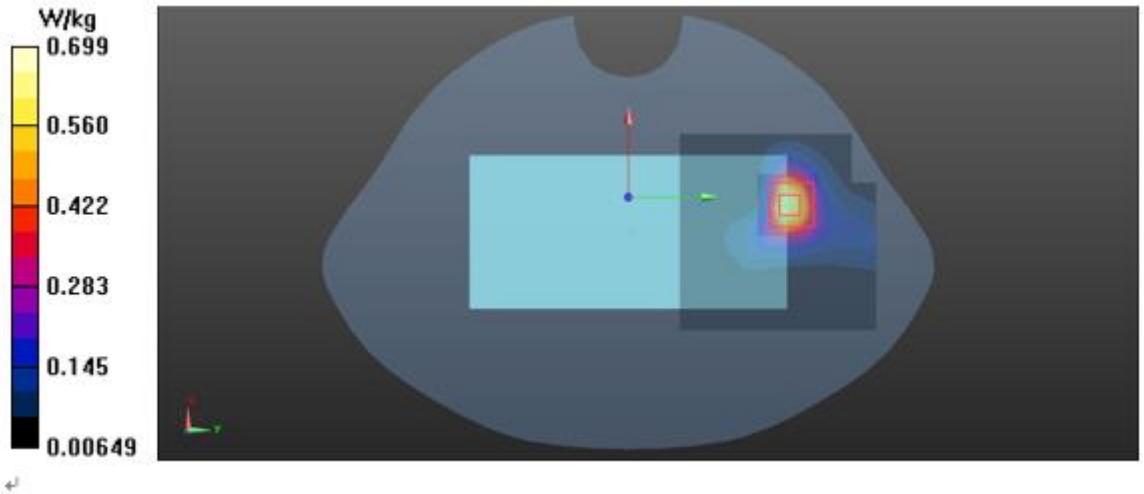
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.527 S/m; ε_r = 52.916; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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_0offset_f.1 880_Rear_15mm/Area Scan (81x81x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.691 W/kg

Configuration/QPSK_20MHz_50RB_0offset_f.1 880_Rear_15mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.44 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.857 W/kg
SAR(1 g) = 0.507 W/kg; SAR(10 g) = 0.264 W/kg
Maximum value of SAR (measured) = 0.699 W/kg



#15

Procedure Name: QPSK_20MHz_50RB_0offset_f.1 880_Rear_10 mm

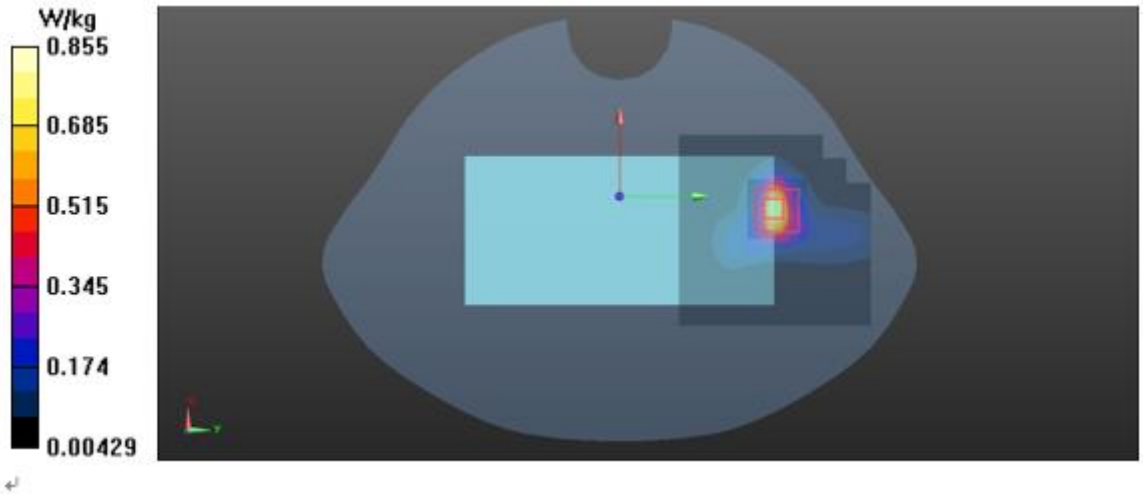
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.527 S/m; ε_r = 52.916; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(8.21, 8.21, 8.21); Calibrated: 2018-08-29;
- 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_0offset_f.1 880_Rear_10 mm/Area Scan (81x81x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.898 W/kg

Configuration/QPSK_20MHz_50RB_0offset_f.1 880_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.227 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.604 W/kg; SAR(10 g) = 0.283 W/kg
Maximum value of SAR (measured) = 0.855 W/kg



#16

Procedure Name: QPSK_10MHz_25RB_0offset_f.844_Right Cheek

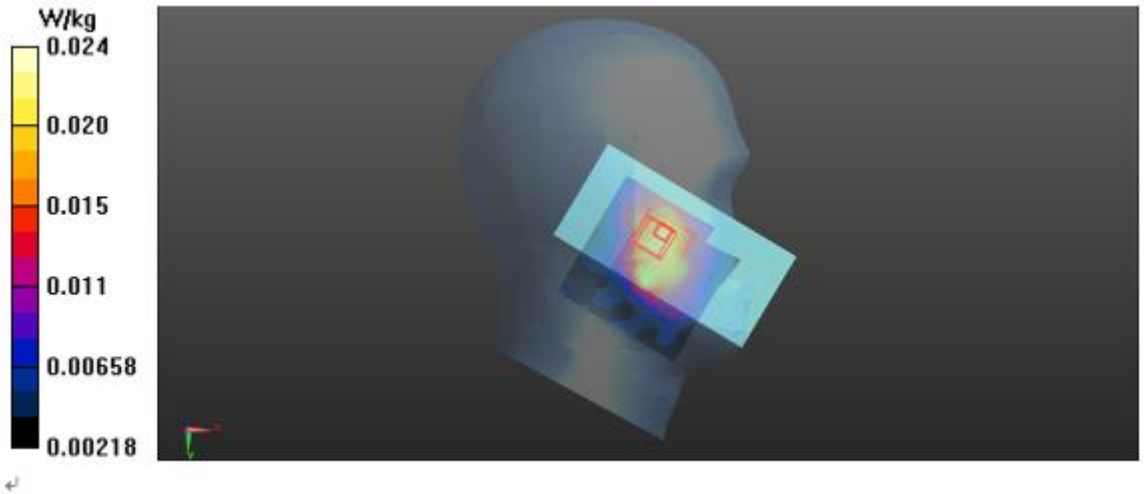
Frequency: 844 MHz; Duty Cycle: 1:1
Medium parameters used: f = 844 MHz; σ = 0.9 S/m; ε_r = 42.133; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.01, 10.01, 10.01); Calibrated: 2018-08-29;
- 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_10MHz_25RB_0offset_f.844_Right Cheek/Area Scan (81x81x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0235 W/kg

Configuration/QPSK_10MHz_25RB_0offset_f.844_Right Cheek/Zoom Scan (13x9x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.786 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.0290 W/kg
SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.016 W/kg
Maximum value of SAR (measured) = 0.0242 W/kg



#17

Procedure Name: QPSK_10MHz_25RB_0offset_f.844_Rear_15 mm

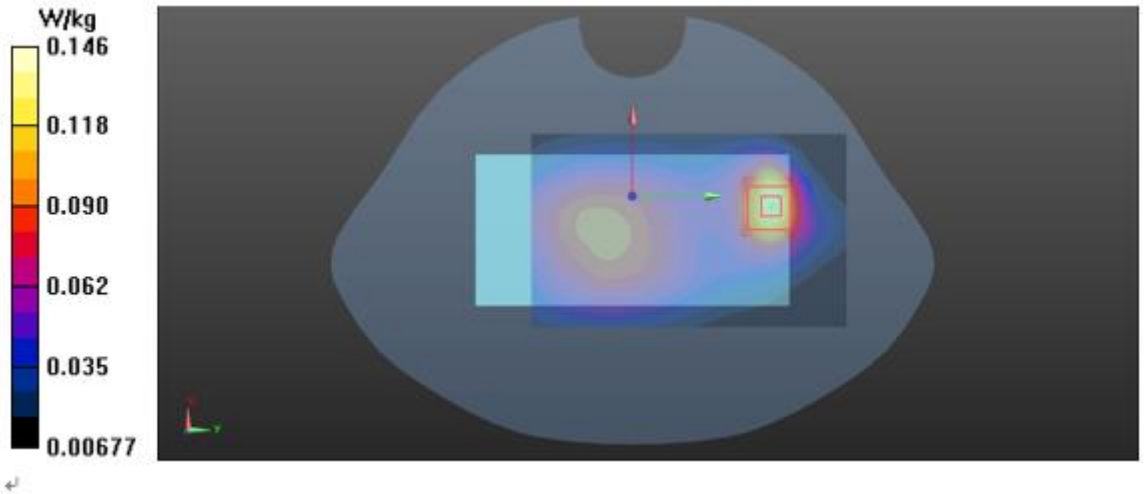
Frequency: 844 MHz; Duty Cycle: 1:1
Medium parameters used: f = 844 MHz; σ = 1.003 S/m; ε_r = 55.113; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.39, 10.39, 10.39); Calibrated: 2018-08-29;
- 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_10MHz_25RB_0offset_f.844_Rear_15 mm/Area Scan (81x131x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.146 W/kg

Configuration/QPSK_10MHz_25RB_0offset_f.844_Rear_15 mm/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.307 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.184 W/kg
SAR(1 g) = 0.107 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.146 W/kg



#18

Procedure Name: QPSK_10MHz_25RB_0offset_f.844_Rear_10 mm

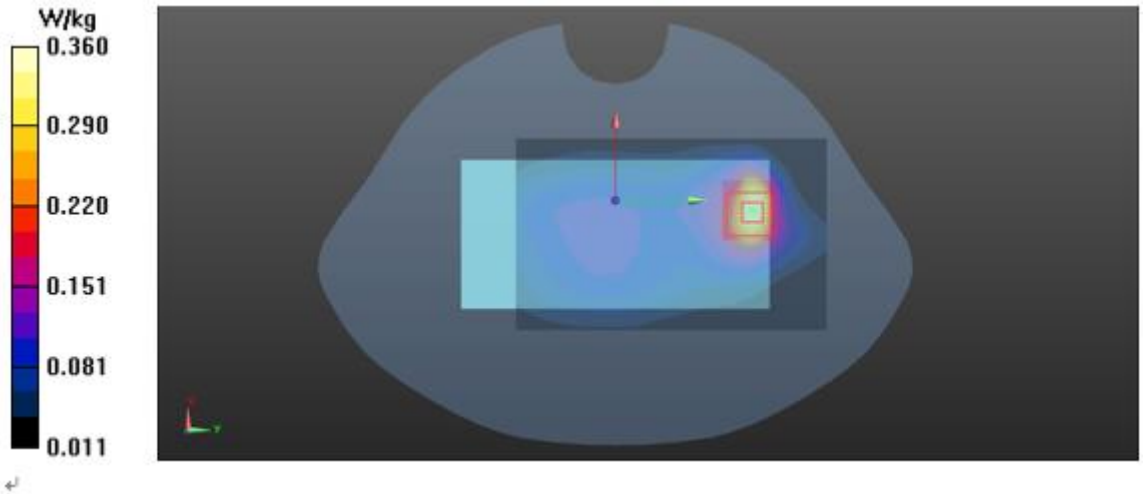
Frequency: 844 MHz; Duty Cycle: 1:1
Medium parameters used: f = 844 MHz; σ = 1.003 S/m; ε_r = 55.113; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(10.39, 10.39, 10.39); Calibrated: 2018-08-29;
- 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_10MHz_25RB_0offset_f.844_Rear_10 mm/Area Scan (81x131x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.370 W/kg

Configuration/QPSK_10MHz_25RB_0offset_f.844_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.874 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.482 W/kg
SAR(1 g) = 0.250 W/kg; SAR(10 g) = 0.141 W/kg
Maximum value of SAR (measured) = 0.360 W/kg



#19

Procedure Name: QPSK_20MHz_1RB_0offset_f.2 680_Left Cheek

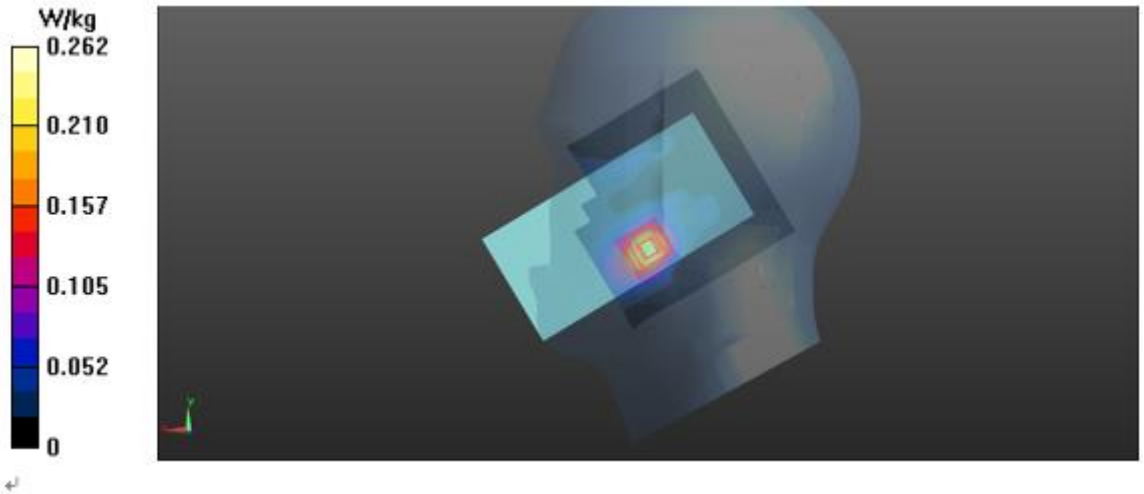
Frequency: 2680 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2680 MHz; σ = 2.125 S/m; ε_r = 38.804; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.5, 7.5, 7.5); Calibrated: 2018-08-29;
- 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.2 680_Left Cheek/Area Scan (101x101x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.262 W/kg

Configuration/QPSK_20MHz_1RB_0offset_f.2 680_Left Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.797 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.330 W/kg
SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.078 W/kg
Maximum value of SAR (measured) = 0.242 W/kg



#20

Procedure Name: QPSK_20MHz_1RB_0offset_f.2 680_Rear_15 mm

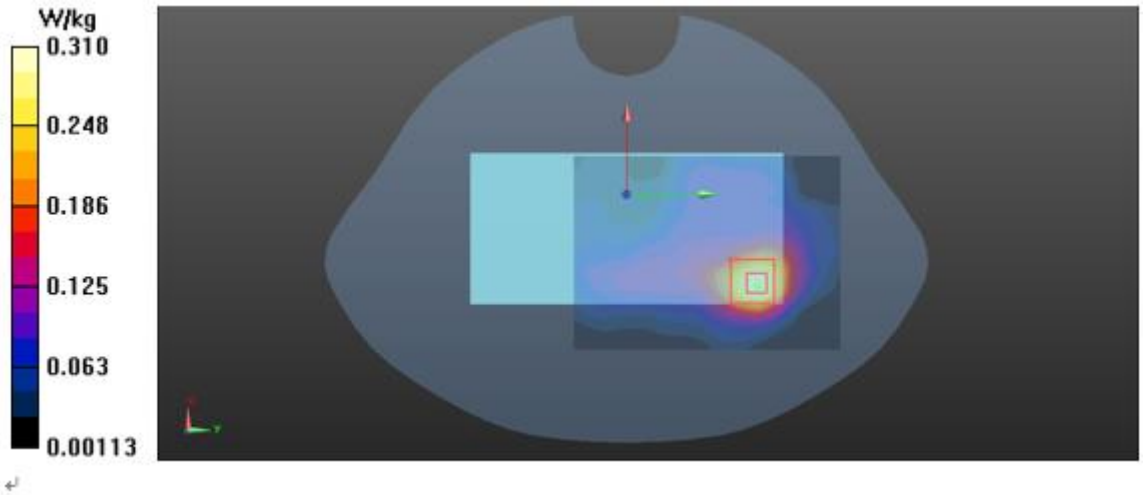
Frequency: 2680 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2680 MHz; σ = 2.189 S/m; ε_r = 52.367; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.74, 7.74, 7.74); Calibrated: 2018-08-29;
- 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_0offset_f.2 680_Rear_15 mm/Area Scan (81x111x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.309 W/kg

Configuration/QPSK_20MHz_1RB_0offset_f.2 680_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.60 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.421 W/kg
SAR(1 g) = 0.213 W/kg; SAR(10 g) = 0.112 W/kg
Maximum value of SAR (measured) = 0.310 W/kg



#21

Procedure Name: QPSK_20MHz_1RB_0offset_f.2 680_Rear_10 mm

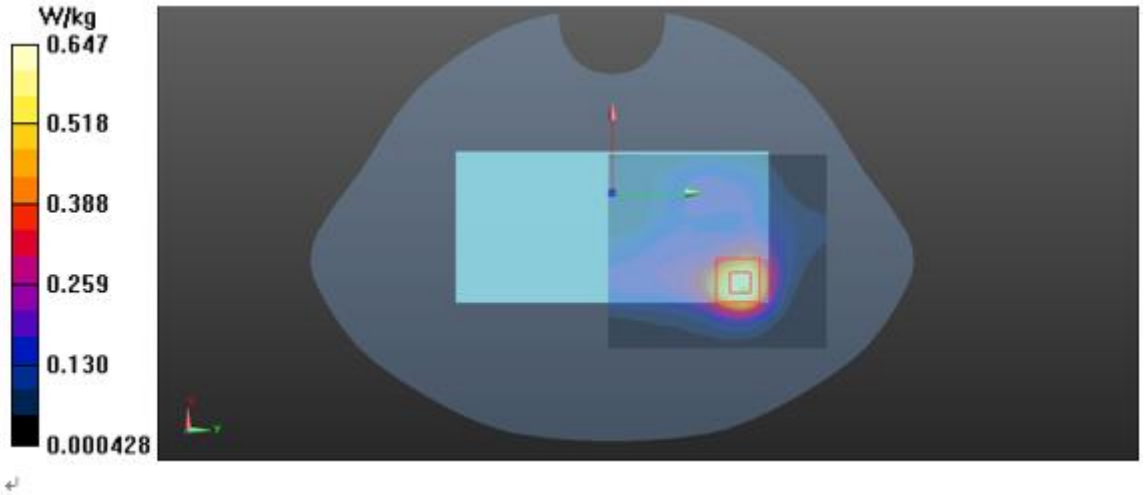
Frequency: 2680 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2680 MHz; σ = 2.189 S/m; ε_r = 52.367; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.74, 7.74, 7.74); Calibrated: 2018-08-29;
- 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_0offset_f.2 680_Rear_10 mm/Area Scan (81x91x1):
Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.730 W/kg

Configuration/QPSK_20MHz_1RB_0offset_f.2 680_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.70 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.928 W/kg
SAR(1 g) = 0.446 W/kg; SAR(10 g) = 0.230 W/kg
Maximum value of SAR (measured) = 0.647 W/kg



#22

Procedure Name: 802.11b_f.2 437_Right Cheek

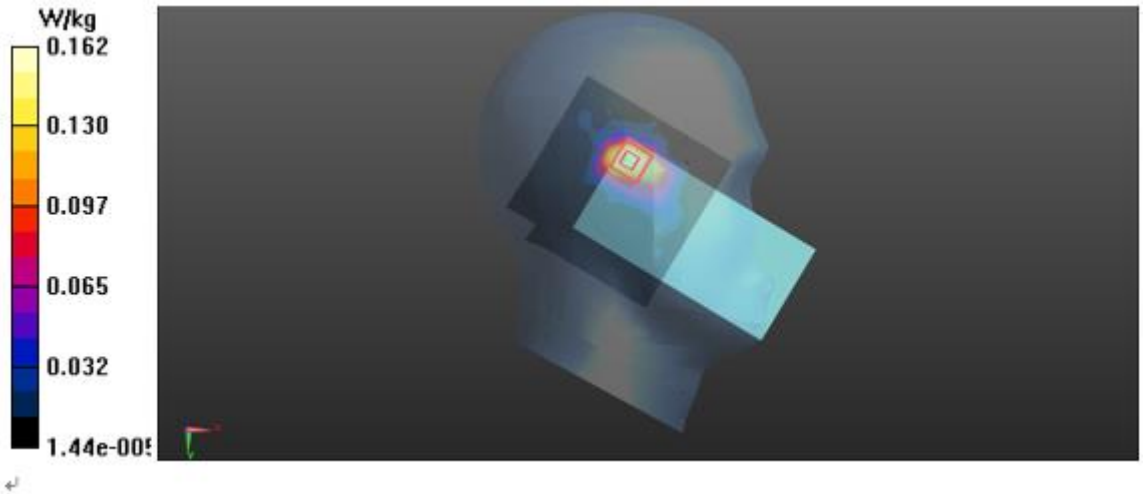
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.795 S/m; ε_r = 38.311; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.72, 7.72, 7.72); Calibrated: 2018-08-29;
- 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 (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.176 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 = 9.735 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.238 W/kg
SAR(1 g) = 0.115 W/kg; SAR(10 g) = 0.060 W/kg
Maximum value of SAR (measured) = 0.162 W/kg



#23

Procedure Name: 802.11b_f.2 437_Rear_15 mm

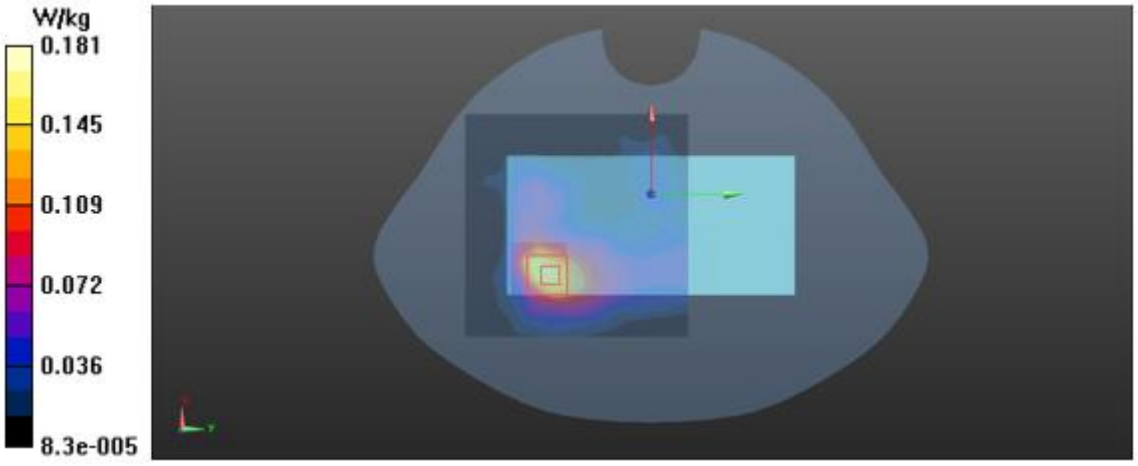
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.89 S/m; ε_r = 53.151; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.84, 7.84, 7.84); Calibrated: 2018-08-29;
- 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/802.11b_f.2 437_Rear_15 mm/Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.181 W/kg

Configuration/802.11b_f.2 437_Rear_15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.320 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.244 W/kg
SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.181 W/kg



#24

Procedure Name: 802.11b_f.2 437_Rear_10 mm

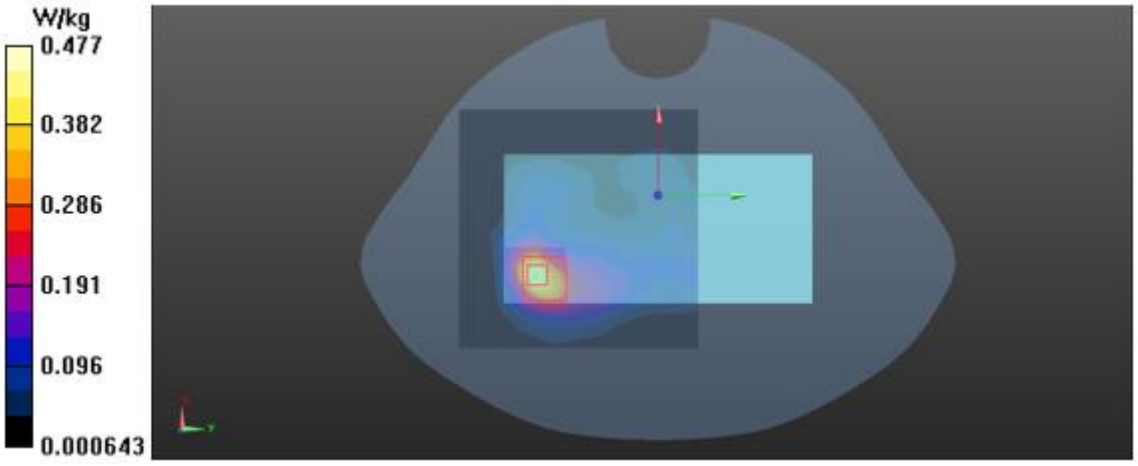
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.89 S/m; ε_r = 53.151; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.84, 7.84, 7.84); Calibrated: 2018-08-29;
- 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/802.11b_f.2 437_Rear_10 mm/Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.507 W/kg

Configuration/802.11b_f.2 437_Rear_10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.260 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.703 W/kg
SAR(1 g) = 0.308 W/kg; SAR(10 g) = 0.150 W/kg
Maximum value of SAR (measured) = 0.477 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 = 1.801 S/m; ε_r = 38.366; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3865; ConvF(7.72, 7.72, 7.72); Calibrated: 2018-08-29;
- 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) = 0.0985 W/kg

Configuration/Bluetooth_f.2 441_Right Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.0820 W/kg
SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.019 W/kg
Maximum value of SAR (measured) = 0.0681 W/kg