SAR Test Report

Report No.	:	**SF200519C01**
Applicant	:	**SAMSUNG ELECTRONICS CO. LTD.**
Address	:	**129 Samsung-ro, Yeongtong-gu, Suwon-Si Gyeonggi-do 16677 Korea (Republic Of)**
Product	:	**Tablet**
FCC ID	:	**A3LSMT975**
Brand	:	**Samsung**
Model No.	:	**SM-T975**
Standards	:	**FCC 47 CFR Part 2 (2.1093), IEEE C95.1:1992, IEEE Std 1528:2013 KDB 865664 D01 v01r04, KDB 865664 D02 v01r02 KDB 248227 D01 v02r02 , KDB 447498 D01 v06 , KDB 616217 D04 v01r02 KDB 941225 D01 v03r01 , KDB 941225 D05 v02r05, KDB 941225 D05A v01r02**
Sample Received Date	:	**May 19, 2020**
Date of Testing	:	**May 23, 2020 ~ Jun. 30, 2020**
Lab Address	:	**No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan**
Test Location	:	**No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City, Taiwan**

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch–Lin Kou Laboratories**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

Prepared By : Vera Huang

Vera Huang / Specialist

Approved By : Gordon Lin

Gordon Lin / Manager

FCC Accredited No.: TW0003

Table of Contents

Release Control Record

Report No.	Reason for Change	Date Issued
SF200519C01	Initial release	Jul. 03, 2020

1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest SAR-1g Body (W/kg)
PCB	GSM850	0.66
	GSM1900	0.82
	WCDMA II	0.82
	WCDMA IV	0.81
	WCDMA V	0.61
	LTE 2 & 25	0.82
	LTE 4 &66	0.82
	LTE 5	0.64
	LTE 12	0.52
	LTE 13	0.60
	LTE 26	0.53
	LTE 41	0.60
DTS	2.4G WLAN	0.66
NII	5.3G WLAN	0.59
	5.6G WLAN	0.62
	5.8G WLAN	0.66
DSS	Bluetooth	0.62

Highest Simultaneous Transmission SAR	Highest SAR-1g Body (W/kg)
	1.51

Note:

1. The SAR criteria **(Head & Body: SAR-1g1.6 W/kg, and Extremity: SAR-10g 4.0 W/kg)**for general population/uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.
2. This device supports both LTE band 66 and band 4. The frequency span of LTE band 66 can completely cover LTE band 4, and they has the same tune-up power. SAR was tested for LTE band 66 only.
3. This device supports both LTE band 25 and band 2. The frequency span of LTE band 25 can completely cover LTE band 2, and they has the same tune-up power. SAR was tested for LTE band 25 only.

2. Description of Equipment Under Test

EUT Type	Tablet
FCC ID	A3LSMT975
Brand Name	Samsung
Model Name	SM-T975
EUT Management No.	SAR01#, SAR02#
HW Version	REV0.4
SW Version	T975.001
Tx Frequency Bands (Unit: MHz)	GSM850 : 824.2 ~ 848.8 GSM1900 : 1850.2 ~ 1909.8 WCDMA Band II : 1852.4 ~ 1907.6 WCDMA Band IV : 1712.4 ~ 1752.6 WCDMA Band V : 826.4 ~ 846.6 LTE Band 2 : 1850.7 ~ 1909.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 4 : 1710.7 ~ 1754.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 5 : 824.7 ~ 848.3 (BW: 1.4M, 3M, 5M, 10M) LTE Band 12 : 699.7 ~ 715.3 (BW: 1.4M, 3M, 5M, 10M) LTE Band 13 : 779.5 ~ 784.5 (BW: 5M, 10M) LTE Band 25 : 1850.7 ~ 1914.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 26 : 814.7 ~ 848.3 (BW: 1.4M, 3M, 5M, 10M, 15M) LTE Band 41 : 2498.5 ~ 2687.5 (BW: 5M, 10M, 15M, 20M) LTE Band 66 : 1710.7 ~ 1779.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) WLAN : 2412 ~ 2472, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5720,5745 ~ 5825 Bluetooth : 2402 ~ 2480
Uplink Modulations	GSM & GPRS : GMSK EDGE : 8PSK WCDMA : QPSK LTE : QPSK, 16QAM, 64QAM 802.11b : DSSS 802.11a/g/n/ac/ax : OFDM Bluetooth : GFSK, π/4-DQPSK, 8-DPSK
Maximum Tune-up Conducted Power (Unit: dBm)	Please refer to section 4.6.1 of this report
Antenna Type	Metal Antenna
EUT Stage	Engineering Sample

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

List of Accessory:

Battery	**Brand Name**	Samsung
	Manufacturer	Samsung
	Model Name	EB-BT975ABY
	Power Rating	3.86Vdc, 9800mAh, 37.83Wh
Keyboard	**Brand Name**	Samsung
	Manufacturer	Samsung
	Model Name	EF-DT970
	Specification	N/A
S-pen	**Brand Name**	Samsung
	Manufacturer	Samsung
	Model Name	EJ-PT870
	Specification	Bluetooth

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ).The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

3.2 SPEAG DASY6 System

DASY6 system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY6 software defined. The DASY6 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

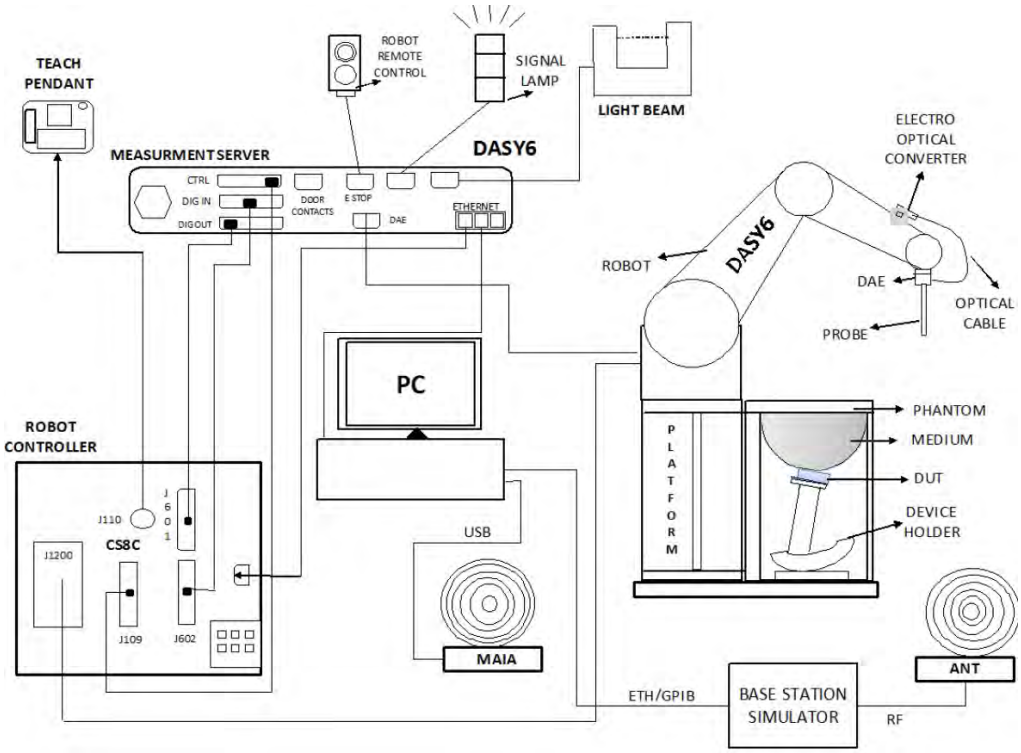


Fig-3.1 SPEAG DASY6 System Setup

3.2.1 Robot

The DASY6 systems use the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version of CS8c from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig-3.2 SPEAG DASY6 System

3.2.2 Probes

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

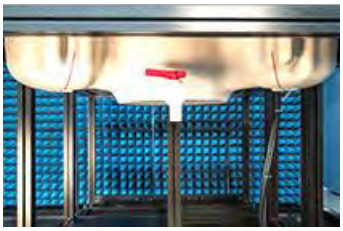
Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation 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

3.2.3 Data Acquisition Electronics (DAE)

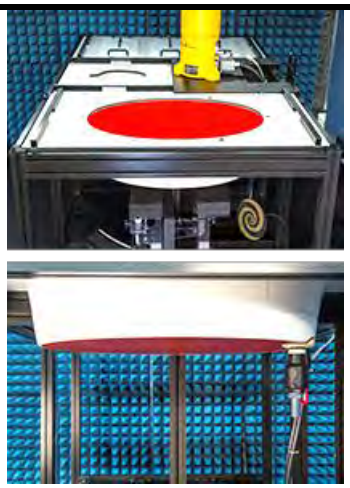
Model	DAE3, DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)
Input Offset Voltage	< 5µV (with auto zero)
Input Bias Current	< 50 fA
Dimensions	60 x 60 x 68 mm

3.2.4 Phantoms

Model	SAM-Twin Phantom
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE Std 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.
Material	Vinylester, fiberglass reinforced (VE-GF)
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet
Filling Volume	approx. 25 liters



Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices. 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.
Material	Vinylester, fiberglass reinforced (VE-GF)
Shell Thickness	2.0 ± 0.2 mm (bottom plate)
Dimensions	Major axis: 600 mm Minor axis: 400 mm
Filling Volume	approx. 30 liters



3.2.5 Device Holder

Model	MD4HHTV5 - Mounting Device for Hand-Held Transmitters
Construction	In combination with the Twin SAM 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)

Model	MDA4WTV5 - Mounting Device Adaptor for Ultra Wide Transmitters
Construction	An upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.
Material	Polyoxymethylene (POM)

Model	MDA4SPV6 - Mounting Device Adaptor for Smart Phones
Construction	The solid low-density MDA4SPV6 adaptor assuring no impact on the DUT radiation performance and is conform with any DUT design and shape.
Material	ROHACELL

Model	MD4LAPV5 - Mounting Device for Laptops and other Body-Worn Transmitters	
Construction	In combination with the Twin SAM or ELI phantoms, the Mounting Device (Body-Worn) enables testing of transmitter devices according to IEC 62209-2 specifications. The device holder can be locked for positioning at a flat phantom section.	
Material	Polyoxymethylene (POM), PET-G, Foam	

3.2.6 System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	750 MHz to 5800 MHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

3.2.7 Power Source

Model	Powersource1	
Signal Type	Continuous Wave	
Operating Frequencies	600 MHz to 5850 MHz	
Output Power	-5.0 dBm to +17.0 dBm	
Power Supply	5V DC, via USB jack	
Power Consumption	<3 W	
Applications	System performance check and validation with a CW signal.	

3.2.8 Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 10 % are listed in Table-3.1.

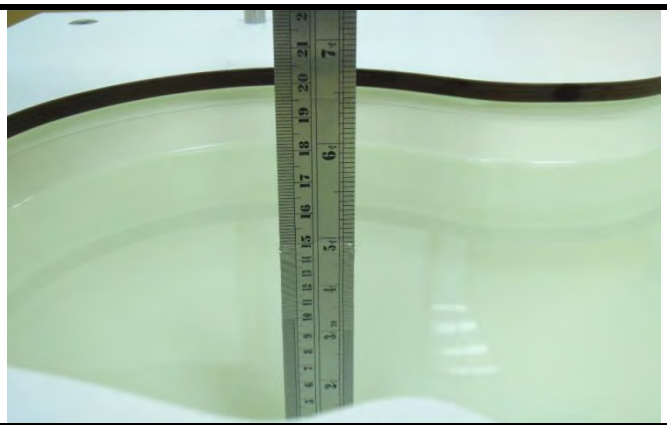


Photo of Liquid Height for Head Position

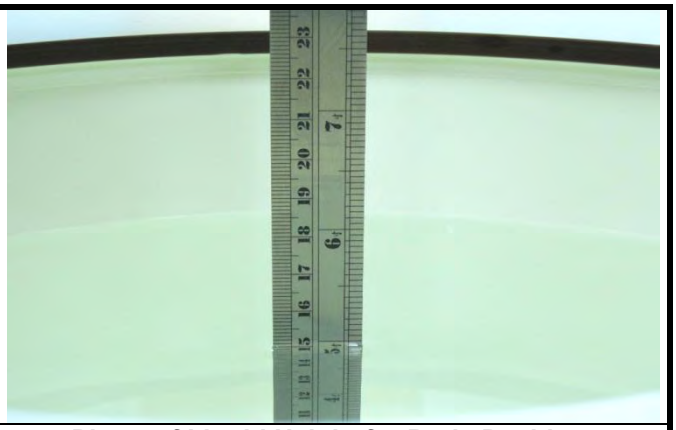


Photo of Liquid Height for Body Position

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±10 %	Target Conductivity	Range of ±10 %
450	43.5	39.2 ~ 47.9	0.87	0.78 ~ 0.96
750	41.9	37.7 ~ 46.1	0.89	0.80 ~ 0.98
835	41.5	37.4 ~ 45.7	0.90	0.81 ~ 0.99
900	41.5	37.4 ~ 45.7	0.97	0.87 ~ 1.07
1450	40.5	36.5 ~ 44.6	1.20	1.08 ~ 1.32
1500	40.4	36.4 ~ 44.4	1.23	1.11 ~ 1.35
1640	40.2	36.2 ~ 44.2	1.31	1.18 ~ 1.44
1750	40.1	36.1 ~ 44.1	1.37	1.23 ~ 1.51
1800	40.0	36.0 ~ 44.0	1.40	1.26 ~ 1.54
1900	40.0	36.0 ~ 44.0	1.40	1.26 ~ 1.54
2000	40.0	36.0 ~ 44.0	1.40	1.26 ~ 1.54
2100	39.8	35.8 ~ 43.8	1.49	1.34 ~ 1.64
2300	39.5	35.6 ~ 43.5	1.67	1.50 ~ 1.84
2450	39.2	35.3 ~ 43.1	1.80	1.62 ~ 1.98
2600	39.0	35.1 ~ 42.9	1.96	1.76 ~ 2.16
3000	38.5	34.7 ~ 42.4	2.40	2.16 ~ 2.64
3500	37.9	34.1 ~ 41.7	2.91	2.62 ~ 3.20
4000	37.4	33.7 ~ 41.1	3.43	3.09 ~ 3.77
4500	36.8	33.1 ~ 40.5	3.94	3.55 ~ 4.33
5000	36.2	32.6 ~ 39.8	4.45	4.01 ~ 4.90
5200	36.0	32.4 ~ 39.6	4.66	4.19 ~ 5.13
5400	35.8	32.2 ~ 39.4	4.86	4.37 ~ 5.35
5600	35.5	32.0 ~ 39.1	5.07	4.56 ~ 5.58
5800	35.3	31.8 ~ 38.8	5.27	4.74 ~ 5.80
6000	35.1	31.6 ~ 38.6	5.48	4.93 ~ 6.03

The dielectric properties of the tissue simulating liquids are defined in IEC 62209-1 and IEC 62209-2. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Since the range of ±10 % of the required target values is used to measure relative permittivity and conductivity, the SAR correction procedure is applied to correct measured SAR for the deviations in permittivity and conductivity. Only positive correction has been used to scale up the measured SAR, and SAR result would not be corrected if the correction △SAR has a negative sign.

The following table gives the recipes for tissue simulating liquids.

Table-3.2 Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3

3.3 SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

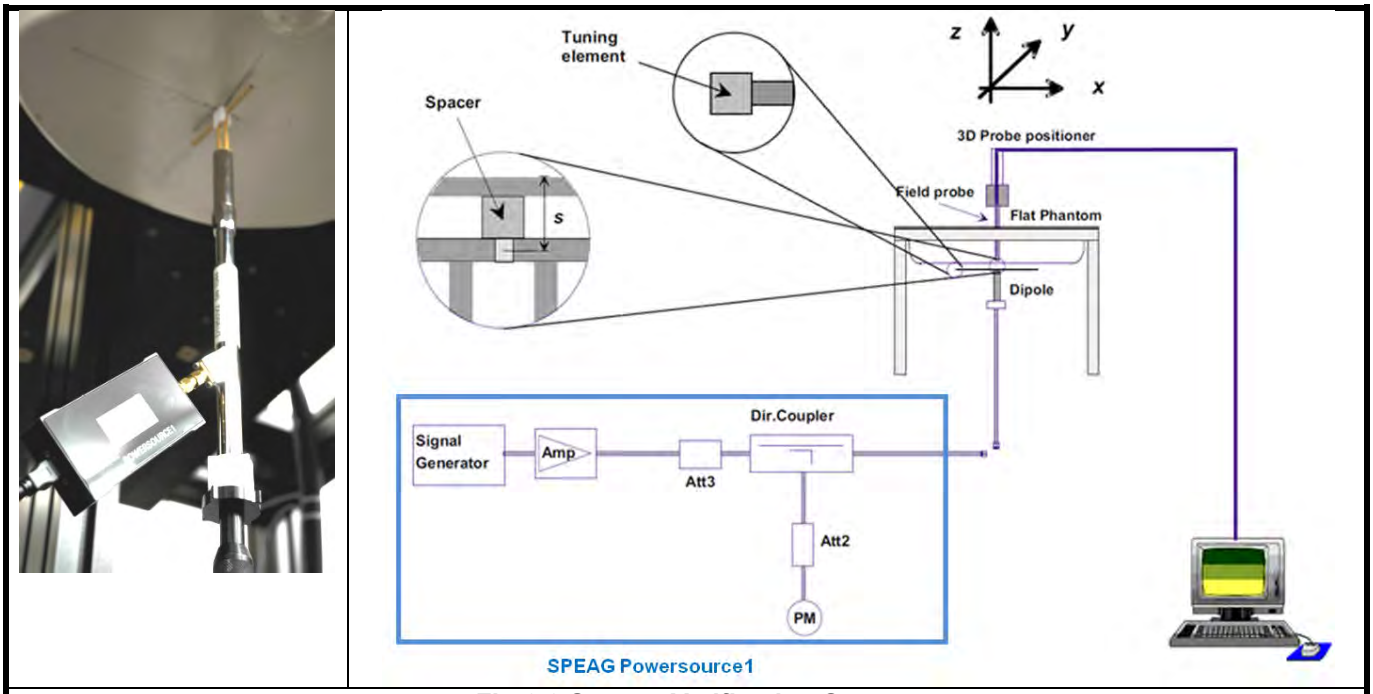


Fig-3.3 System Verification Setup

The SPEAG Powersource1 is a portable and very stable RF source providing a continuous wave (CW) signal. It is designed for conducting SAR system checks and SAR system validation of DASY and is compatible with IEC 62209-1, IEC 62209-2 and IEEE Std 1528 standards. The Powersource1 has been calibrated by SPEAG's ISO/IEC 17025-accredited calibration center. When using Powersource1, the setup can be simplified, as shown in Fig-3.3. The signal purity is warranted by design. Since the Powersource1 is calibrated, no additional equipment is needed and the Powersource1 can directly be connected to the SMA connector of the dipole without a cable as all separate components (signal generator, amplifier, coupler and power meter) are built into the unit.

The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The Powersource1 is adjusted for the desired forward power of 17 dBm at the dipole connector and the RF output power would be turned on. After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

3.4 SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom
(d) Perform SAR testing steps on the DASY system
(e) Record the SAR value

3.4.1 Area Scan and Zoom Scan Procedure

First area scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an area scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, zoom scan is required. The zoom scan is performed around the highest E-field value to determine the averaged SAR-distribution.

Measure the local SAR at a test point at 1.4 mm of the inner surface of the phantom recommended by SEPAG. The area scan (two-dimensional SAR distribution) is performed cover at least an area larger than the projection of the EUT or antenna. The measurement resolution and spatial resolution for interpolation shall be chosen to allow identification of the local peak locations to within one-half of the linear dimension of the corresponding side of the zoom scan volume. Following table provides the measurement parameters required for the area scan.

Parameter	$f \leqq 3$ GHz	3 GHz < $f \leqq 6$ GHz
Maximum distance from closest measurement point to phantom surface	5 ± 1	$\delta \ln(2)/2$ ±0.5
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

From the scanned SAR distribution, identify the position of the maximum SAR value, in addition identify the positions of any local maxima with SAR values within 2 dB of the maximum value that will not be within the zoom scan of other peaks. Additional peaks shall be measured only when the primary peak is within 2 dB of the SAR compliance limit (e.g. 1 W/kg for 1.6 W/kg, 1 g limit; or 1.26 W/kg for 2 W/kg, 10 g limit).

The zoom scan (three-dimensional SAR distribution) is performed at the local maxima locations identified in previous area scan procedure. The zoom scan volume must be larger than the required minimum dimensions. When graded grids are used, which only applies in the direction normal to the phantom surface, the initial grid separation closest to the phantom surface and subsequent graded grid increment ratios must satisfy the required protocols. The 1-g SAR averaging volume must be fully contained within the zoom scan measurement volume boundaries; otherwise, the measurement must be repeated by shifting or expanding the zoom scan volume. The similar requirements also apply to 10-g SAR measurements. Following table provides the measurement parameters required for the zoom scan.

Parameter		$f \leqq 3$ GHz	3 GHz < $f \leqq 6$ GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}		≦2 GHz: ≦8 mm 2 – 3 GHz: ≦5 mm	3 – 4 GHz: ≦5 mm 4 – 6 GHz: ≦4 mm
Maximum zoom scan spatial resolution, normal to phantom surface	*uniform grid:* $\Delta z_{Zoom}(n)$	≦5 mm	3 – 4 GHz: ≦4 mm 4 – 5 GHz: ≦3 mm 5 – 6 GHz: ≦2 mm
	graded grids: $\Delta z_{Zoom}(1)$	≦4 mm	3 – 4 GHz: ≦3.0 mm 4 – 5 GHz: ≦2.5 mm 5 – 6 GHz: ≦2.0 mm
	$\Delta z_{Zoom}(n>1)$	≦1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume (x, y, z)		≥30 mm	3 – 4 GHz: ≥28 mm 4 – 5 GHz: ≥25 mm 5 – 6 GHz: ≥22 mm

Per IEC 62209-2 AMD1, the successively higher resolution zoom scan is required if the zoom scan measured as defined above complies with both of the following criteria, or if the peak spatial-average SAR is below 0.1 W/kg, no additional measurements are needed:

(1) The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal grid steps in both x and y directions (Δx, Δy). This shall be checked for the measured zoom scan plane conformal to the phantom at the distance zM1.

(2) The ratio of the SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum SAR value shall be at least 30 %.

If one or both of the above criteria are not met, the zoom scan measurement shall be repeated using a finer resolution. New horizontal and vertical grid steps shall be determined from the measured SAR distribution so that the above criteria are met. Compliance with the above two criteria shall be demonstrated for the new measured zoom scan.

3.4.2 Volume Scan Procedure

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

3.4.3 Power Drift Monitoring

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

3.4.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

3.4.5 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard’s method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

4. SAR Measurement Evaluation

4.1 EUT Configuration and Setting

<Considerations Related to Proximity Sensor>

The device supports WWAN, WLAN, and Bluetooth capabilities. It is designed with a proximity sensor which can trigger/not trigger power reduction for GSM, WCDMA and LTE on Rear Face and Top Side of EUT for SAR compliance. The WLAN and Bluetooth are designed with a proximity sensor which can trigger/not trigger power reduction for WLAN 2.4G, 5G and Bluetooth on Rear Face, Top Side, Left Side, Left Corner, Right Side and Right Corner of EUT for SAR compliance. The power levels for all wireless technologies and the power reduction please refer to section 4.6 of this report.

Proximity Sensor Triggering Distances (KDB 616217 D04 §6.2)

The proximity sensor triggering distance was determined per KDB 616217 for rear face and applicable edge. Summary for power verification per distance was tabulated in the below table.

<WWAN Ant>

Output Power Verification in dBm for EUT Rear Face												
Band	Distance (mm)	15	16	17	18	19	20	21	22	23	24	25
GSM850, GPRS 1Tx	20	22.8	22.8	22.5	22.5	22.6	22.7	32.5	32.2	32.2	32.4	32.4
GSM850, GPRS 2Tx	20	21.4	21.9	21.4	21.6	21.9	21.6	31.6	31.1	31.2	31.4	31.4
GSM850, GPRS 3Tx	20	19.8	19.6	19.9	20.0	19.9	20.1	29.5	29.3	29.3	29.4	29.3
GSM850, GPRS 4Tx	20	17.7	18.0	17.6	17.6	17.5	18.0	27.5	27.2	27.5	27.5	27.4
GSM850, EDGE 1Tx	20	17.5	17.4	17.8	17.6	17.8	17.5	26.6	26.3	26.7	26.3	26.4
GSM850, EDGE 2Tx	20	15.5	15.6	15.6	15.6	15.6	15.4	25.2	24.8	25.0	24.9	24.7
GSM850, EDGE 3Tx	20	13.6	13.5	13.7	13.6	13.8	13.8	22.6	22.9	23.0	22.7	22.9
GSM850, EDGE 4Tx	20	12.6	13.0	12.9	13.0	12.8	12.8	22.2	22.3	21.8	21.9	21.8
GSM1900, GPRS 1Tx	20	21.2	21.5	21.3	21.4	21.5	21.1	29.2	29.7	29.5	29.7	29.3
GSM1900, GPRS 2Tx	20	19.6	19.3	19.6	19.2	19.5	19.7	28.2	28.3	28.3	28.6	28.3
GSM1900, GPRS 3Tx	20	17.5	17.3	17.4	17.6	17.6	17.6	26.9	26.6	26.7	26.6	26.8
GSM1900, GPRS 4Tx	20	15.3	15.7	15.4	15.7	15.2	15.7	24.9	24.7	24.8	24.8	24.9
GSM1900, EDGE 1Tx	20	18.8	18.7	18.4	18.8	18.5	18.6	25.6	26.0	25.5	25.6	25.9
GSM1900, EDGE 2Tx	20	16.9	16.9	16.4	16.9	16.6	16.7	24.4	24.0	24.5	24.4	24.0
GSM1900, EDGE 3Tx	20	14.6	14.5	15.0	14.6	15.0	14.8	21.6	21.7	21.6	21.5	21.5
GSM1900, EDGE 4Tx	20	13.6	13.8	13.9	13.6	13.4	13.7	21.4	21.2	21.5	21.2	21.5
WCDMA II	20	13.0	12.8	12.9	13.3	13.0	13.2	23.2	23.4	23.3	23.3	23.2
WCDMA IV	20	13.2	12.8	12.9	13.1	13.0	13.0	23.2	23.0	23.0	23.4	23.0
WCDMA V	20	13.8	13.6	13.9	13.6	13.6	14.1	23.5	23.4	23.9	23.7	23.5
LTE 2	20	12.6	12.7	12.7	12.9	12.8	12.8	22.8	22.7	22.6	22.7	22.9
LTE 4	20	12.9	12.9	12.8	13.2	12.8	13.1	22.6	23.1	22.8	22.9	22.8
LTE 5	20	15.0	15.1	15.0	14.9	14.8	14.9	24.0	23.8	23.9	23.6	23.6
LTE 12	20	14.1	14.2	13.9	13.8	13.9	14.0	23.9	24.0	23.6	23.7	23.9
LTE 13	20	14.1	14.2	14.2	14.3	13.8	14.1	23.6	23.9	23.8	23.8	23.5
LTE 25	20	13.0	12.6	12.8	12.6	12.8	12.7	23.0	23.2	22.8	23.0	23.2
LTE 26	20	13.9	14.0	13.9	14.2	13.9	14.2	23.4	23.3	23.3	23.8	23.6
LTE 66	20	12.6	12.8	12.8	12.7	12.8	12.7	23.1	22.9	23.2	22.7	22.9
LTE 41	20	14.1	14.2	13.8	13.9	14.1	14.2	24.1	24.0	23.7	24.0	23.6

Output Power Verification in dBm for EUT Top Side												
Band	Distance (mm)	20	21	22	23	24	25	26	27	28	29	30
GSM850, GPRS 1Tx	24	22.5	22.8	22.5	23.0	23.0	23.0	32.4	32.6	32.7	32.2	32.7
GSM850, GPRS 2Tx	24	21.8	21.8	21.5	21.4	21.4	21.6	31.1	31.2	31.4	31.5	31.1
GSM850, GPRS 3Tx	24	19.8	19.6	19.7	20.0	19.7	19.9	29.0	29.2	29.1	29.4	29.1
GSM850, GPRS 4Tx	24	17.6	17.6	17.9	17.7	17.9	17.5	27.5	27.5	27.4	27.4	27.1
GSM850, EDGE 1Tx	24	17.6	17.5	17.7	17.9	17.5	17.9	26.6	26.2	26.5	26.4	26.5
GSM850, EDGE 2Tx	24	15.7	15.8	15.8	15.8	15.6	15.4	25.0	25.2	25.0	25.2	24.8
GSM850, EDGE 3Tx	24	13.7	14.0	13.6	13.8	13.7	13.7	22.7	22.7	22.6	22.8	22.9
GSM850, EDGE 4Tx	24	12.7	12.5	12.7	12.7	12.8	12.9	22.3	22.2	22.2	22.3	22.3
GSM1900, GPRS 1Tx	24	21.5	21.6	21.5	21.1	21.4	21.1	29.7	29.5	29.6	29.7	29.2
GSM1900, GPRS 2Tx	24	19.7	19.6	19.6	19.4	19.6	19.5	28.2	28.3	28.1	28.4	28.1
GSM1900, GPRS 3Tx	24	17.8	17.8	17.5	17.4	17.6	17.6	26.9	26.8	26.4	26.5	26.4
GSM1900, GPRS 4Tx	24	15.4	15.3	15.5	15.2	15.2	15.2	24.9	24.9	24.6	24.7	24.9
GSM1900, EDGE 1Tx	24	18.4	18.6	18.9	18.8	18.5	18.7	25.5	25.6	25.8	25.8	25.6
GSM1900, EDGE 2Tx	24	16.7	16.5	16.5	16.5	16.6	16.4	24.4	24.5	24.1	24.4	24.0
GSM1900, EDGE 3Tx	24	14.7	15.0	14.5	14.5	14.5	14.6	21.8	21.6	22.0	22.0	22.0
GSM1900, EDGE 4Tx	24	13.6	13.9	13.5	13.6	13.6	13.6	21.5	21.2	21.0	21.5	21.2
WCDMA II	24	13.3	13.0	13.2	12.9	13.2	13.2	23.0	23.3	23.4	23.1	23.2
WCDMA IV	24	13.1	13.1	12.8	13.1	13.2	13.0	23.1	23.1	23.4	23.3	23.4
WCDMA V	24	14.0	13.8	14.0	13.6	13.6	14.1	23.7	23.5	23.9	23.8	23.6
LTE 2	24	12.9	12.7	12.6	13.0	12.9	12.9	22.6	22.9	23.1	22.6	22.6
LTE 4	24	13.1	13.0	13.0	12.8	12.7	13.1	22.6	22.6	22.8	23.1	23.1
LTE 5	24	15.0	15.1	15.1	15.1	15.2	14.8	24.1	24.0	23.9	23.9	23.6
LTE 12	24	14.1	14.2	13.9	13.9	14.1	14.3	24.1	24.0	23.9	23.7	24.0
LTE 13	24	13.9	14.0	14.2	14.3	13.9	14.0	23.7	23.7	23.7	23.5	23.5
LTE 25	24	12.9	12.9	13.0	13.1	12.7	12.8	23.1	22.7	23.0	23.1	22.9
LTE 26	24	14.0	13.9	14.0	13.9	13.9	13.8	23.3	23.8	23.8	23.7	23.8
LTE 66	24	12.7	12.6	13.1	12.7	13.0	12.8	22.7	23.1	22.8	22.9	23.2
LTE 41	24	14.1	13.7	13.7	14.0	14.1	13.7	23.8	23.9	23.7	24.0	23.9

<WLAN Ant.1>

Output Power Verification in dBm for EUT Rear Face												
Band	Distance (mm)	14	15	16	17	18	19	20	21	22	23	24
WLAN 2.4G	19	11.0	10.8	10.9	11.1	10.7	11.0	19.1	19.3	19.3	19.5	19.2
WLAN 5.3G	19	8.8	8.7	8.5	8.3	8.4	8.8	17.1	17.4	17.4	17.4	17.3
WLAN 5.6G	19	8.3	8.6	8.6	8.3	8.4	8.5	15.6	15.5	15.8	16.0	15.8
WLAN 5.8G	19	8.5	8.1	8.4	8.3	8.5	8.0	16.4	16.2	15.9	16.4	16.2
Bluetooth	19	10.8	11.1	11.1	10.8	11.3	11.0	11.9	11.9	11.5	11.7	11.7

Output Power Verification in dBm for EUT Top Side												
Band	Distance (mm)	15	16	17	18	19	20	21	22	23	24	25
WLAN 2.4G	20	10.7	10.7	10.6	10.6	11.0	11.0	19.5	19.5	19.2	19.1	19.5
WLAN 5.3G	20	8.8	8.7	8.3	8.4	8.5	8.6	17.6	17.6	17.3	17.5	17.5
WLAN 5.6G	20	8.5	8.1	8.5	8.3	8.3	8.4	15.9	15.8	15.9	15.6	15.8
WLAN 5.8G	20	8.3	8.4	8.4	8.2	8.1	8.1	16.1	16.4	16.2	16.0	16.4
Bluetooth	20	11.0	11.2	11.3	10.9	11.0	10.9	12.0	12.0	11.8	12.0	11.7

Output Power Verification in dBm for EUT Right Side												
Band	Distance (mm)	3	4	5	6	7	8	9	10	11	12	13
WLAN 2.4G	8	10.9	10.9	10.9	10.7	11.0	11.1	19.1	19.6	19.1	19.2	19.5
WLAN 5.3G	8	8.4	8.6	8.5	8.8	8.7	8.6	17.3	17.2	17.5	17.5	17.3
WLAN 5.6G	8	8.2	8.4	8.4	8.1	8.1	8.2	15.7	16.0	15.6	15.8	16.0
WLAN 5.8G	8	8.0	8.3	8.0	8.0	8.0	8.4	16.1	16.3	15.9	16.2	16.3
Bluetooth	8	10.8	11.0	10.9	11.2	10.8	11.2	12.0	11.7	11.8	11.7	11.6

Output Power Verification in dBm for EUT Right Corner												
Band	Distance (mm)	7	8	9	10	11	12	13	14	15	16	17
WLAN 2.4G	12	10.6	10.6	10.7	10.9	11.0	11.1	19.4	19.3	19.5	19.6	19.1
WLAN 5.3G	12	8.7	8.6	8.7	8.6	8.5	8.7	17.1	17.5	17.1	17.1	17.2
WLAN 5.6G	12	8.6	8.5	8.1	8.3	8.6	8.1	15.8	15.5	15.7	15.5	15.5
WLAN 5.8G	12	8.5	8.1	8.4	8.5	8.3	8.4	16.2	16.4	16.1	16.2	16.3
Bluetooth	12	11.0	11.0	11.2	11.1	10.8	11.0	11.7	11.9	11.7	11.5	11.8

<WLAN Ant.2>

Output Power Verification in dBm for EUT Rear Face												
Band	Distance (mm)	6	7	8	9	10	11	12	13	14	15	16
WLAN 2.4G	11	11.1	11.1	11.0	11.1	10.9	11.3	19.1	19.6	19.5	19.4	19.5
WLAN 5.3G	11	8.4	7.9	8.2	7.9	8.0	8.1	17.1	17.0	17.5	17.4	17.3
WLAN 5.6G	11	8.3	8.2	8.3	8.3	8.3	8.1	15.9	15.8	16.2	15.8	15.7
WLAN 5.8G	11	7.9	7.9	8.3	8.3	8.4	8.3	15.8	16.0	15.8	15.9	16.1
Bluetooth	11	10.4	10.6	10.3	10.2	10.2	10.2	10.7	10.7	10.4	10.3	10.7

Output Power Verification in dBm for EUT Top Edge												
Band	Distance (mm)	10	11	12	13	14	15	16	17	18	19	20
WLAN 2.4G	15	11.2	10.8	11.3	10.8	10.8	11.2	19.1	19.1	19.3	19.3	19.4
WLAN 5.3G	15	8.0	8.2	8.1	7.9	8.0	7.9	17.4	17.4	17.2	17.1	17.3
WLAN 5.6G	15	8.4	8.2	8.4	8.2	8.6	8.4	16.0	15.8	16.2	16.0	15.9
WLAN 5.8G	15	8.4	7.9	8.0	8.3	8.4	8.2	16.1	16.2	16.3	16.3	16.1
Bluetooth	15	10.6	10.4	10.7	10.2	10.6	10.5	10.5	10.3	10.7	10.4	10.8

Output Power Verification in dBm for EUT Left Edge												
Band	Distance (mm)	0	1	2	3	4	5	6	7	8	9	10
WLAN 2.4G	5	11.2	11.2	11.0	10.9	11.1	11.3	19.2	19.5	19.6	19.3	19.1
WLAN 5.3G	5	8.1	7.9	8.4	8.3	8.3	8.0	17.3	17.3	17.3	17.5	17.4
WLAN 5.6G	5	8.6	8.4	8.2	8.4	8.1	8.4	15.9	15.8	15.7	15.7	15.7
WLAN 5.8G	5	8.1	8.3	8.3	8.3	8.3	8.2	15.8	16.0	16.1	15.8	16.2
Bluetooth	5	10.2	10.7	10.4	10.6	10.6	10.2	10.4	10.6	10.7	10.4	10.3

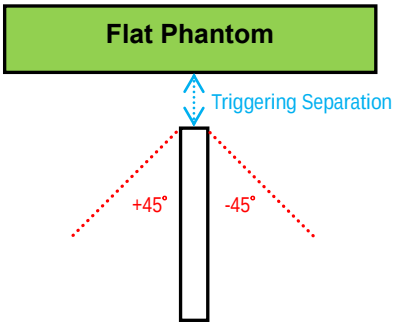
Output Power Verification in dBm for EUT Left Corner												
Band	Distance (mm)	5	6	7	8	9	10	11	12	13	14	15
WLAN 2.4G	10	11.1	11.0	10.9	11.0	11.0	11.1	19.6	19.2	19.1	19.6	19.3
WLAN 5.3G	10	8.4	8.2	8.3	8.3	8.1	8.2	17.3	17.5	17.1	17.0	17.1
WLAN 5.6G	10	8.4	8.2	8.1	8.5	8.6	8.2	15.8	16.2	15.8	16.0	15.7
WLAN 5.8G	10	8.2	8.2	8.1	8.1	8.1	8.4	15.9	16.1	16.1	15.9	16.0
Bluetooth	10	10.7	10.2	10.6	10.6	10.3	10.3	10.8	10.8	10.7	10.5	10.6

Proximity Sensor Coverage (KDB 616217 D04 §6.3)

Since the proximity sensor is collocated with antenna in one component, the procedure for proximity sensor coverage is not required.

Proximity Sensor Tilt Angle Influences(KDB 616217 D04 §6.4)

The proximity sensor tilt angle influence was determined per KDB 616217 for applicable edge. Summary for proximity sensor tilt angle influence is shown in below.



<WWAN Ant>

Orientation	Separation Distance (mm)	Tilt Angle										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
Top Edge	24	On	On	On	On	On	On	On	On	On	On	On

<WLAN Ant. 1>

Orientation	Separation Distance (mm)	Tilt Angle										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
Top Edge	20	On	On	On	On	On	On	On	On	On	On	On
Right Edge	8	On	On	On	On	On	On	On	On	On	On	On
Right Corner	12	On	On	On	On	On	On	On	On	On	On	On

<WLAN Ant. 2>

Orientation	Separation Distance (mm)	Tilt Angle										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
Top Edge	15	On	On	On	On	On	On	On	On	On	On	On
Left Edge	5	On	On	On	On	On	On	On	On	On	On	On
Left Corner	10	On	On	On	On	On	On	On	On	On	On	On

Summary for Proximity Sensor Triggering Test

According to the procedures noticed in KDB 616217 D04, the WWAN proximity sensor triggering distance is 20 mm for EUT Rear Face, and 24 mm for Top Side. The separation distance of 24 mm determined by the smallest triggering distance on Top Side is used to access the tilt angle influence and the sensor does not release during ±45 degree. Therefore, the smallest separation distance for tilt angle influence is 19 mm for the Top Side. The conservation triggering distances based on the separation distance for the sensor trigger / not triggered as EUT with power reduction at 0 mm, and EUT without power reduction at 19 mm for EUT Rear Face, and 23 mm for Top Side were used to test SAR.

The WLAN Ant 1 proximity sensor triggering distance is 19 mm for EUT Rear Face, 8 mm for EUT Right Side,12 mm for EUT Right Corner and 20 mm for EUT Top Side, . The separation distance of 8 mm determined by the smallest triggering distance on Right Side, Right Corner is 12mm and Top Side is 20mm are used to access the tilt angle influence and the sensor does not release during ±45 degree. Therefore, the smallest separation distance for tilt angle influence is 8 mm for the Right Side, 12mm for Right Corner and 20mm for Top Side. The conservation triggering distances based on the separation distance for the sensor trigger / not triggered as EUT with power reduction at 0 mm, and EUT without power reduction at 18 mm for EUT Rear Face, and 7 mm for Right Side, 11mm for Right Corner and 19mm for Top Side were used to test SAR.

The WLAN Ant 2 proximity sensor triggering distance is 11 mm for EUT Rear Face, 5 mm for EUT Left Side,10 mm for EUT Left Corner and 15 mm for EUT Top Side, . The separation distance of 5 mm determined by the smallest triggering distance on Left Side, Left Corner is 10mm and Top Side is 15mm are used to access the tilt angle influence and the sensor does not release during ±45 degree. Therefore, the smallest separation distance for tilt angle influence is 5 mm for the Left Side, 10mm for Left Corner and 15mm for Top Side. The conservation triggering distances based on the separation distance for the sensor trigger / not triggered as EUT with power reduction at 0 mm, and EUT without power reduction at 10 mm for EUT Rear Face, and 4 mm for Left Side, 9mm for Left Corner and 14mm for Top Side were used to test SAR.

For the WLAN MIMO mode the test distance, according to the WLAN Ant1 and Ant2 proximity sensor of test result, they used smaller distance to test SAR at same position.

The power reduction is depends on the proximity sensor input. For a steady SAR test, the power reduction was enabled or disabled manually by engineering software during SAR testing.

<Connections between EUT and System Simulator>

For WWAN SAR testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

<Considerations Related to GSM / GPRS / EDGE for Setup and Testing>

The maximum multi-slot capability supported by this device is as below.

1. This EUT is class B device
2. This EUT supports GPRS multi-slot class 12 (max. uplink: 4, max. downlink: 4, total timeslots: 5)
3. This EUT supports EDGE multi-slot class 12 (max. uplink: 4, max. downlink: 4, total timeslots: 5)

For GSM850 frequency band, the power control level is set to 5 for GSM mode and GPRS (GMSK: CS1), and set to 8 for EDGE (GMSK: MCS1, 8PSK: MCS9). For GSM1900 frequency band, the power control level is set to 0 for GSM mode and GPRS (GMSK: CS1), and set to 2 for EDGE (GMSK: MCS1, 8PSK: MCS9).

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.

<Considerations Related to WCDMA for Setup and Testing>

Release 5 HSDPA Data Devices

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA.HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(β_c, β_d), and HS-DPCCH power offset parameters (Δ_{ACK}, Δ_{NACK}, Δ_{CQI}) are set according to values indicated in below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS}(1)(2)	CM(3) (dB)	MPR (3) (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15(4)	15/15(4)	64	12/15(4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{HS} =30/15*β_c.

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

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

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d= 15/15.

Release 6 HSUPA Data Devices

The 3G SAR test reduction procedure is applied to body SAR with 12.2 kbps RMC as the primary mode. Otherwise, body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode. Otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing. Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in below.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS}(1)	β_{ec}	β_{ed}(4)(5)	β_{ed} (SF)	β_{ed} (Codes)	CM(2) (dB)	MPR(2)(6) (dB)	AG(5) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{HS} =30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{HS} =5/15*β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{HS}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

DC-HSDPA SAR Guidance

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

<Considerations Related to LTE for Setup and Testing>

This device contains LTE transmitter which follows 3GPP standards, is category 3, supports both QPSK and QAM modulations, and supported LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for both QPSK and QAM modulation. The results please refer to section 4.6 of this report.

EUT Supported LTE Band and Channel Bandwidth						
LTE Band	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz
2	V	V	V	V	V	V
4	V	V	V	V	V	V
5	V	V	V	V		
12	V	V	V	V		
13			V	V		
25	V	V	V	V	V	V
26	V	V	V	V	V	
41			V	V	V	V
66	V	V	V	V	V	V

The LTE maximum power reduction (MPR) in accordance with 3GPP TS 36.101 is active all times during LTE operation. The allowed MPR for the maximum output power is specified in below.

Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2
64QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	2
64QAM	> 5	> 4	> 8	> 12	> 16	> 18	3

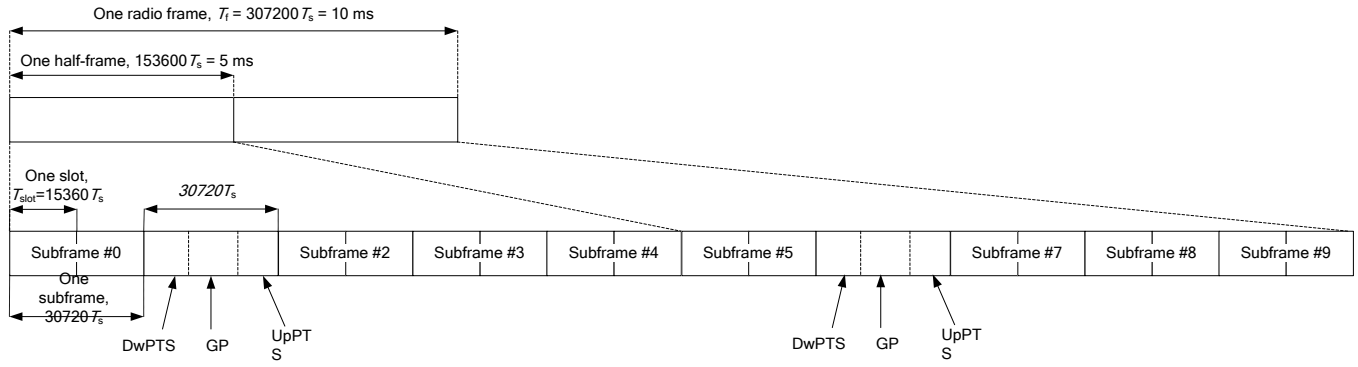
Note: MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with additional maximum power reduction (A-MPR) requirements defined in 3GPP TS 36.101 section 6.2.4 that was disabled for all FCC compliance testing.

During LTE SAR testing, the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB was set in base station simulator. When the EUT has registered and communicated to base station simulator, the simulator set to make EUT transmitting the maximum radiated power.

TDD-LTE Setup Configurations

According to KDB 941225 D05, SAR testing for TDD-LTE device must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP TDD-LTE configurations. The TDD-LTE of this device supports frame structure type 2 defined in 3GPP TS 36.211 section 4.2, and the frame structure configuration can be referred to below.



3GPP TS 36.211 Figure 4.2-1: Frame Structure Type 2

Special Subframe Configuration	Normal Cyclic Prefix in Downlink			Extended Cyclic Prefix in Downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal Cyclic Prefix in Uplink	Extended Cyclic Prefix in Uplink		Normal Cyclic Prefix in Uplink	Extended Cyclic Prefix in Uplink
0	6592 • Ts	2192 • Ts	2560 • Ts	7680 • Ts	2192 • Ts	2560 • Ts
1	19760 • Ts			20480 • Ts		
2	21952 • Ts			23040 • Ts		
3	24144 • Ts			25600 • Ts		
4	26336 • Ts			7680 • Ts	4384 • Ts	5120 • Ts
5	6592 • Ts	4384 • Ts	5120 • Ts	20480 • Ts		
6	19760 • Ts			23040 • Ts		
7	21952 • Ts			12800 • Ts		
8	24144 • Ts			-	-	-
9	13168 • Ts			-	-	-

3GPP TS 36.211 Table 4.2-1: Configuration of Special Subframe

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-Point Periodicity	Subframe Number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

3GPP TS 36.211 Table 4.2-2: Uplink-Downlink Configurations

The variety of different TD-LTE uplink-downlink configurations allows a network operator to allocate the network's capacity between uplink and downlink traffic to meet the needs of the network. The uplink duty cycle of these seven configurations can readily be computed and shown in below.

UL-DL Configuration	0	1	2	3	4	5	6
Highest Duty-Cycle	63.33%	43.33%	23.33%	31.67%	21.67%	11.67%	53.33%

Considering the highest transmission duty cycle, TDD-LTE was tested using Uplink-Downlink Configuration 0 with 6 uplink subframe and 2 special subframe. The special subframe was set to special subframe configuration 7 using extended cyclic prefix uplink. Therefore, SAR testing for TDD-LTE was performed at the maximum output power with highest transmission duty cycle of 63.33%.

LTE Downlink Carrier Aggregation(CA)Setup Configurations

LTE Carrier Aggregation (CA) was defined in 3GPP release 10 and higher. The LTE device in CA mode has one Primary Component Carrier (PCC) and one or more Secondary Component Carriers (SCC). PCC acts as the anchor carrier and can optionally cross-schedule data transmission on SCC. The RRC connection is only handled by one cell, the PCC for downlink and uplink communications. After making a data connection to the PCC, the LTE device adds the SCC on the downlink only. All uplink communications and acknowledgements remain identical to release 8 specifications on the PCC. The combinations of downlink carrier aggregation supported by this device are listed in below.

LTE CA Configurations and Bandwidth Combination Sets defined for Intra-Band Contiguous CA

Downlink CA Configuration	Component carriers in order of increasing carrier frequency			Maximum Aggregated Bandwidth (MHz)	Bandwidth Combination Set
	Channel bandwidths for carrier-1 (MHz)	Channel bandwidths for carrier-2 (MHz)	Channel bandwidths for carrier-3 (MHz)		
CA_2C	5	20		40	0
	10	15, 20			
	15	10, 15, 20		40	0
	20	5, 10, 15, 20			
CA_41C	10	20		40	0
	15	15, 20			
	20	10, 15, 20			
	5, 10	20		40	1
	15	15, 20			
	20	5, 10, 15, 20			
	10	15, 20		40	2
	15	10, 15, 20			
	20	10, 15, 20			
	10	20		40	3
	20	20			
CA_41D	10	20	15	60	0
	10	15, 20	20		
	15	20	10, 15		
	15	10, 15, 20	20		
	20	15, 20	10		
	20	10, 15, 20	15, 20		

Downlink CA Configuration	Component carriers in order of increasing carrier frequency			Maximum Aggregated Bandwidth (MHz)	Bandwidth Combination Set
	Channel bandwidths for carrier-1 (MHz)	Channel bandwidths for carrier-2 (MHz)	Channel bandwidths for carrier-3 (MHz)		
CA_66B	5	5, 10, 15		20	0
	10	5, 10			
	15	5			
CA_66C	5	20		40	0
	10	15, 20			
	15	10, 15, 20			
	20	5, 10, 15, 20			

LTE CA Configurations and Bandwidth Combination Sets defined for Intra-Band Non-Contiguous CA

Downlink CA Configuration	Component Carriers in order of Increasing Carrier Frequency			Maximum Aggregated Bandwidth (MHz)	Bandwidth Combination Set
	Channel Bandwidths for Carrier-1 (MHz)	Channel Bandwidths for Carrier-2 (MHz)	Channel Bandwidths for Carrier-3 (MHz)		
CA_2A-2A	5, 10, 15, 20	5, 10, 15, 20		40	0
CA_4A-4A	5, 10, 15, 20	5, 10, 15, 20		40	0
	5, 10	5, 10		20	1
CA_41A-41A	10, 15, 20	10, 15, 20		40	0
	5, 10, 15, 20	5, 10, 15, 20		40	1
CA_41A-41C	5, 10, 15, 20	Refer to CA_41C (BCS1)		60	0
	Refer to CA_41C (BCS1)		5, 10, 15, 20		
CA_41C-41C	Refer to CA_41C (BCS0)		Refer to CA_41C (BCS0)	80	0
CA_66A-66A	5, 10, 15, 20	5, 10, 15, 20		40	0

LTE CA Configurations and Bandwidth Combination Sets defined for Inter-Band CA (Two Bands)

Downlink CA Configuration	LTE Bands	Channel Bandwidths for Carrier (MHz)	Maximum Aggregated Bandwidth (MHz)	Bandwidth Combination Set
CA_2A-4A	2	1.4, 3, 5, 10, 15, 20	40	0
	4	5, 10, 15, 20		
	2	5, 10	20	1
	4	5, 10		
	2	5, 10, 15, 20	40	2
	4	5, 10, 15, 20		
CA_2A-5A	2	5, 10, 15, 20	30	0
	5	5, 10		
	2	5, 10	20	1
	5	5, 10		
CA_2A-13A	2	5, 10, 15, 20	30	0
	13	10		
	2	5, 10	20	1
	13	10		
CA_2A-66A	2	1.4, 3, 5, 10, 15, 20	40	0
	66	5, 10, 15, 20		
	2	5, 10	20	1
	66	5, 10		
	2	5, 10, 15, 20	40	2
	66	5, 10, 15, 20		

Downlink CA Configuration	LTE Bands	Channel Bandwidths for Carrier (MHz)	Maximum Aggregated Bandwidth (MHz)	Bandwidth Combination Set
CA_4A-5A	4	5, 10	20	0
	5	5, 10		
	4	5, 10, 15, 20	30	1
	5	5, 10		
CA_4A-12A	4	1.4, 3, 5, 10	20	0
	12	5, 10		
	4	1.4, 3, 5, 10, 15, 20	30	1
	12	5, 10		
	4	5, 10, 15, 20	30	2
	12	3, 5, 10		
	4	5, 10	20	3
	12	5, 10		
	4	5, 10, 15, 20	30	4
	12	5, 10		
	4	5, 10, 15	20	5
	12	5		
CA_4A-4A-12A	4	Refer to CA_4A-4A (BCS0)	50	0
	12	5, 10		
CA_4A-13A	4	5, 10, 15, 20	30	0
	13	10		
	4	5, 10	20	1
	13	10		
CA_5A-41A	5	5, 10	30	0
	46	20		
CA_5A-66A	5	5, 10	30	0
	66	5, 10, 15, 20		
CA_5A-66A-66A	5	5, 10	50	0
	66	Refer to CA_66A-66A (BCS0)		
CA_12A-66A	12	5, 10	20	0
	66	1.4, 3, 5,10		
	12	5, 10	30	1
	66	1.4, 3, 5, 10, 15, 20		
	12	3, 5, 10	30	2
	66	5, 10, 15, 20		
	12	5, 10	20	3
	66	5, 10		
	12	5, 10	30	4
	66	5, 10, 15, 20		
	12	5	20	5
	66	5, 10, 15		
CA_12A-66A-66A	12	5, 10	50	0
	66	Refer to CA_66A-66A (BCS0)		
CA_26A-41A	26	5, 10, 15	35	0
	41	5, 10, 15, 20		
CA_26A-41C	26	5, 10, 15	55	0
	41	Refer to CA_41C (BCS1)		

LTE CA Configurations and Bandwidth Combination Sets defined for Inter-Band CA (Three Bands)

Downlink CA Configuration	LTE Bands	Channel Bandwidths for Carrier [MHz]	Maximum Aggregated Bandwidth [MHz]	Bandwidth Combination Set
CA_2A-4A-5A	2	5, 10, 15,20	50	0
	4	5, 10, 15,20		
	5	5, 10		
CA_2A-4A-13A	2	5, 10, 15, 20	50	0
	4	5, 10, 15, 20		
	13	10		

<SAR Test Exclusion Evaluations for LTE Downlink CA>

According to Nov 2017 TCB Workshop, SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. The downlink Carrier Aggregation configurations are tabulated in separate columns. DL CA would be listed in the columns corresponding to Intra Band contiguous, Intra Band Non-contiguous, and 2bands/2CCs. The CA/CC combinations in each columns are sorted so that frequency bands listed in subsequent columns on each row are ascending subsets, as illustrated below; i.e., columns to the right correspond to increasing number of frequency bands and CCs.

Intra Band				Inter Band		
Contiguous	2CC Non-Contiguous	3CC Non-Contiguous	4CC Non-Contiguous	2 Bands / 2CC	2 Bands / 3CC	3 Bands / 3CC
				2A-4A		2A-4A-5A
				2A-5A		
				4A-2A		
				4A-5A		
				5A-2A		
				5A-4A		
				13A-2A		2A-4A-13A
				13A-4A		
				2A-13A		
				4A-13A		
	4A-4A			12A-4A		4A-4A-12A
				4A-12A		
	66A-66A			5A-66A		5A-66A-66A
				66A-5A		
				66A-12A		12A-66A-66A
				12A-66A		
				2A-12A	26A-41C	
				66A-2A		
				12A-2A		
				26A-41A		
				2A-66A		
			41D-41A	5A-41A		
			41A-41D			
		41A-41C	41C-41C			
		41C-41A				
	2A-2A					
	41A-41A					
2C						
41C						
66B						
66C						
41D						

Note : Only the blue mark need to test.

<Considerations Related to WLAN for Setup and Testing>

In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01,this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

Initial Test Configuration

An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.

Subsequent Test Configuration

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

SAR Test Configuration and Channel Selection

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n).After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following.

1) The channel closest to mid-band frequency is selected for SAR measurement.

2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands

For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following.

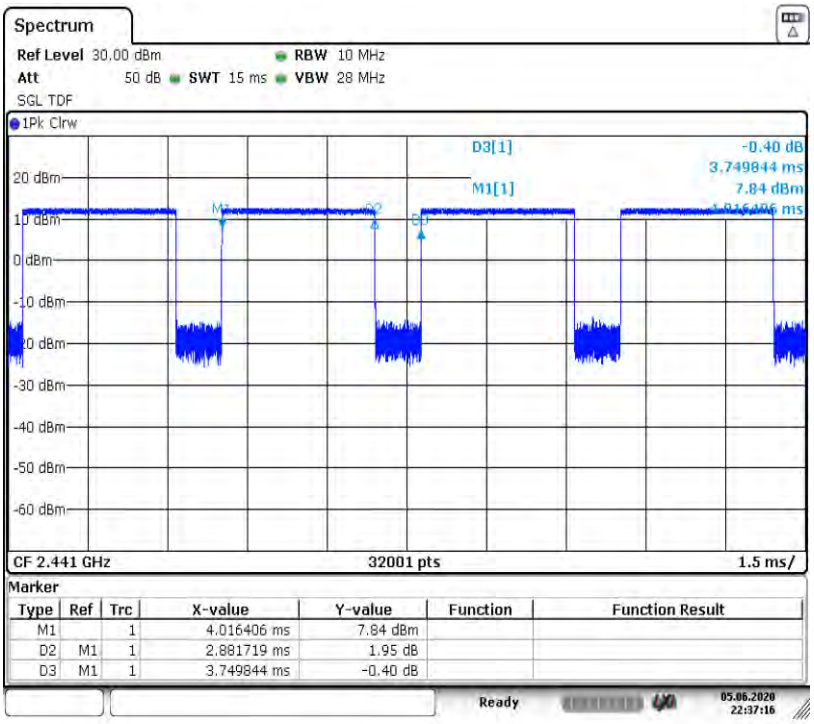
1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition).

2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

<Considerations Related to Bluetooth for Setup and Testing>

This device has installed Bluetooth engineering testing software which can provide continuous transmitting RF signal. During Bluetooth SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

The Bluetooth call box has been used during SAR measurement and the EUT was set to DH5 mode at the maximum output power. Its duty factor was calculated as below and the measured SAR for Bluetooth would be scaled to the 100% transmission duty factor to determine compliance.



Time-domain plot for Bluetooth transmission signal

The duty factor of Bluetooth signal has been calculated as following.
Duty Factor = Pulse Width / Total Period = 2.881719 / 3.749844 = 76.85 %

4.2 EUT Testing Position

4.2.1 Body Exposure Conditions

For full-size tablet, according to KDB 616217 D04, SAR evaluation is required for back surface and edges of the devices. The back surface and edges of the tablet are tested with the tablet touching the phantom. Exposures from antennas through the front surface of the display section of a tablet are generally limited to the user's hands. Exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary. When voice mode is supported on a tablet and it is limited to speaker mode or headset operations only, additional SAR testing for this type of voice use is not required.

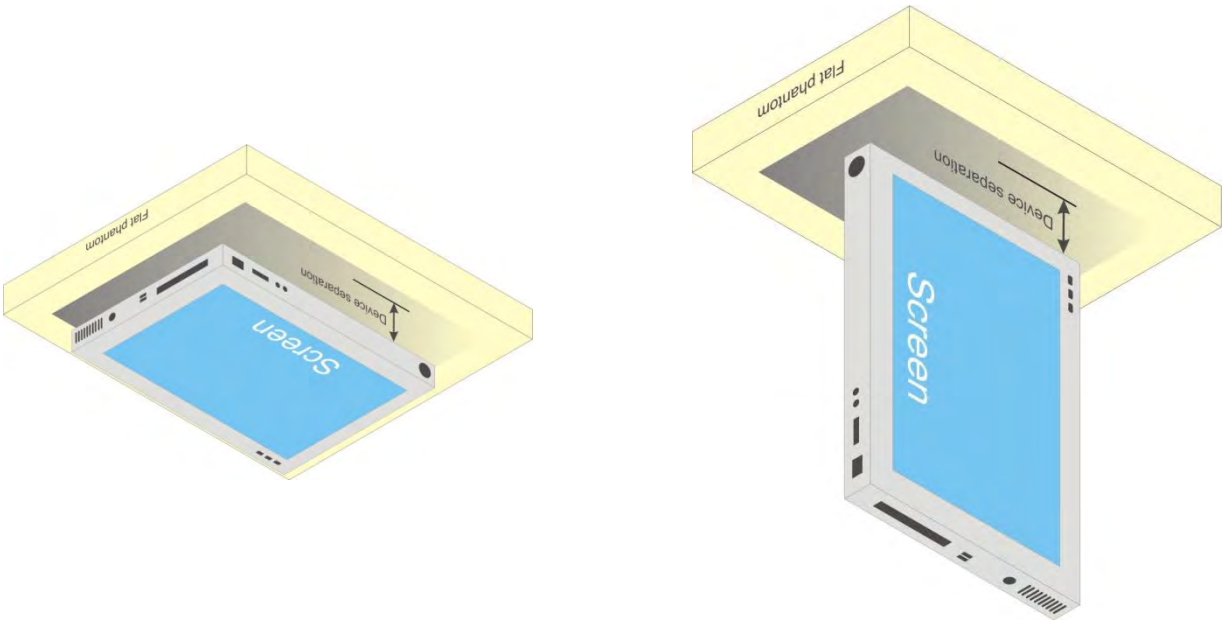


Fig-4.1 Illustration for Tablet Setup

4.3 Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
750	23.3	0.896	42.622	0.89	41.9	0.67	1.72	May. 23, 2020
750	23.5	0.886	43.472	0.89	41.9	-0.45	3.75	Jun. 08, 2020
750	23.2	0.891	42.805	0.89	41.9	0.11	2.16	Jun. 09, 2020
750	23.5	0.893	43.414	0.89	41.9	0.34	3.61	Jun. 20, 2020
750	23.5	0.883	43.401	0.89	41.9	-0.79	3.58	Jun. 20, 2020
750	23.1	0.886	43.449	0.89	41.9	-0.45	3.70	Jun. 27, 2020
835	23.3	0.919	43.064	0.9	41.5	2.11	3.77	May. 23, 2020
835	23.3	0.93	42.591	0.9	41.5	3.33	2.63	May. 25, 2020
835	23.1	0.928	41.992	0.9	41.5	3.11	1.19	Jun. 01, 2020
835	23.1	0.916	42.395	0.9	41.5	1.78	2.16	Jun. 05, 2020
835	23.5	0.926	42.806	0.9	41.5	2.89	3.15	Jun. 07, 2020
835	23.5	0.9	42.698	0.9	41.5	0.00	2.89	Jun. 19, 2020
835	23.5	0.9003	42.695	0.9	41.5	0.03	2.88	Jun. 19, 2020
835	23.1	0.918	41.176	0.9	41.5	2.00	-0.78	Jun. 25, 2020
835	23.3	0.917	40.866	0.9	41.5	1.89	-1.53	Jun. 29, 2020
1750	23.2	1.326	40.149	1.37	40.1	-3.21	0.12	Jun. 25, 2020
1750	23.3	1.343	41.026	1.37	40.1	-1.97	2.31	Jun. 28, 2020
1750	23.3	1.324	40.863	1.37	40.1	-3.36	1.90	Jun. 29, 2020
1900	23.2	1.454	39.605	1.4	40	3.86	-0.99	Jun. 25, 2020
1900	23.1	1.446	38.887	1.4	40	3.29	-2.78	Jun. 25, 2020
1900	23.3	1.459	40.615	1.4	40	4.21	1.54	Jun. 28, 2020
2450	23.2	1.873	38.701	1.8	39.2	4.06	-1.27	Jun. 24, 2020
2450	23.3	1.876	38.427	1.8	39.2	4.22	-1.97	Jun. 24, 2020
2450	23.3	1.824	38.456	1.8	39.2	1.33	-1.90	Jun. 25, 2020
2450	23.2	1.89	38.349	1.8	39.2	5.00	-2.17	Jun. 27, 2020
2450	23.3	1.869	39.087	1.8	39.2	3.83	-0.29	Jun. 29, 2020
2450	23.1	1.864	38.922	1.8	39.2	3.56	-0.71	Jun. 29, 2020
2600	23.2	2.031	38.237	1.96	39	3.62	-1.96	Jun. 24, 2020
2600	23.3	2.035	37.413	1.96	39	3.83	-4.07	Jun. 29, 2020
5250	23.2	4.795	35.269	4.71	35.9	1.80	-1.76	Jun. 24, 2020
5250	23.3	4.703	36.115	4.71	35.9	-0.15	0.60	Jun. 24, 2020
5250	23.3	4.766	36.972	4.71	35.9	1.19	2.99	Jun. 28, 2020
5250	23.3	4.756	35.667	4.71	35.9	0.98	-0.65	Jun. 26, 2020
5600	23.3	5.129	35.495	5.07	35.5	1.16	-0.01	Jun. 25, 2020
5600	23.3	5.21	36.221	5.07	35.5	2.76	2.03	Jun. 28, 2020
5600	23.5	5.004	36.093	5.07	35.5	-1.30	1.67	Jun. 29, 2020
5750	23.3	5.303	35.218	5.22	35.4	1.59	-0.51	Jun. 25, 2020
5750	23.3	5.357	35.815	5.22	35.4	2.62	1.17	Jun. 25, 2020
5750	23.1	5.186	34.238	5.22	35.4	-0.65	-3.28	Jun. 30, 2020

Note:

The dielectric properties of the tissue simulating liquid have been measured within 24 hours before the SAR testing and within ±10 % of the target values. Liquid temperature during the SAR testing has kept within ±2 ℃.

4.4 System Validation

The SAR measurement system was validated according to procedures in KDB 865664 D01. The validation status in tabulated summary is as below.

Test Date	Probe S/N	Calibration Point	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Validation for CW			Validation for Modulation		
					Sensitivity Range	Probe Linearity	Probe Isotropy	Modulation Type	Duty Factor	PAR
May. 23, 2020	7472	750	0.896	42.622	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 08, 2020	3898	750	0.886	43.472	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 09, 2020	3898	750	0.891	42.805	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 20, 2020	3971	750	0.893	43.414	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 20, 2020	7350	750	0.883	43.401	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 27, 2020	7350	750	0.886	43.449	Pass	Pass	Pass	N/A	N/A	N/A
May. 23, 2020	7472	835	0.919	43.064	Pass	Pass	Pass	N/A	N/A	N/A
May. 25, 2020	7472	835	0.93	42.591	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 01, 2020	7472	835	0.928	41.992	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 05, 2020	7472	835	0.916	42.395	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 07, 2020	3898	835	0.926	42.806	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 19, 2020	3971	835	0.9	42.698	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 19, 2020	7350	835	0.9003	42.695	Pass	Pass	Pass	GMSK	Pass	N/A
Jun. 25, 2020	7350	835	0.918	41.176	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 29, 2020	7350	835	0.917	40.866	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 25, 2020	7537	1750	1.326	40.149	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 28, 2020	7350	1750	1.343	41.026	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 29, 2020	7350	1750	1.324	40.863	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 25, 2020	7537	1900	1.454	39.605	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 25, 2020	7350	1900	1.446	38.887	Pass	Pass	Pass	GMSK	Pass	N/A
Jun. 28, 2020	7350	1900	1.459	40.615	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 24, 2020	7537	2450	1.873	38.701	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 24, 2020	7472	2450	1.876	38.427	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 25, 2020	7472	2450	1.824	38.456	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 27, 2020	7472	2450	1.89	38.349	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 29, 2020	7537	2450	1.869	39.087	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 29, 2020	3650	2450	1.864	38.922	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 24, 2020	7537	2600	2.031	38.237	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 29, 2020	7350	2600	2.035	37.413	Pass	Pass	Pass	N/A	N/A	N/A
Jun. 24, 2020	7537	5250	4.795	35.269	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 24, 2020	7472	5250	4.703	36.115	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 28, 2020	7472	5250	4.766	36.972	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 26, 2020	7350	5250	4.756	35.667	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 25, 2020	7472	5600	5.129	35.495	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 28, 2020	7472	5600	5.21	36.221	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 29, 2020	3898	5600	5.004	36.093	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 25, 2020	7472	5750	5.303	35.218	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 25, 2020	7472	5750	5.357	35.815	Pass	Pass	Pass	OFDM	N/A	Pass
Jun. 30, 2020	7350	5750	5.186	34.238	Pass	Pass	Pass	OFDM	N/A	Pass

4.5 System Verification

The measuring result for system verification is tabulated as below.

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
May. 23, 2020	750	8.56	0.392	7.84	-8.41	1013	7472	579
Jun. 08, 2020	750	8.56	0.389	7.78	-9.11	1013	3898	914
Jun. 09, 2020	750	8.56	0.392	7.84	-8.41	1013	3898	914
Jun. 20, 2020	750	8.56	0.393	7.86	-8.18	1013	3971	1277
Jun. 20, 2020	750	8.56	0.399	7.98	-6.78	1013	7350	917
Jun. 27, 2020	750	8.56	0.398	7.96	-7.01	1013	7350	917
May. 23, 2020	835	9.61	0.503	10.06	4.68	4d121	7472	579
May. 25, 2020	835	9.61	0.483	9.66	0.52	4d121	7472	579
Jun. 01, 2020	835	9.61	0.456	9.12	-5.10	4d121	7472	579
Jun. 05, 2020	835	9.61	0.438	8.76	-8.84	4d121	7472	579
Jun. 07, 2020	835	9.61	0.49	9.80	1.98	4d121	3898	914
Jun. 19, 2020	835	9.61	0.467	9.34	-2.81	4d121	3971	1277
Jun. 19, 2020	835	9.61	0.493	9.86	2.60	4d121	7350	917
Jun. 25, 2020	835	9.61	0.487	9.74	1.35	4d121	7350	917
Jun. 29, 2020	835	9.61	0.475	9.50	-1.14	4d121	7350	917
Jun. 25, 2020	1750	37.00	1.81	36.20	-2.16	1055	7537	1585
Jun. 28, 2020	1750	37.00	1.88	37.60	1.62	1055	7350	917
Jun. 29, 2020	1750	37.00	1.83	36.60	-1.08	1055	7350	917
Jun. 25, 2020	1900	40.30	1.85	37.00	-8.19	5d036	7537	1585
Jun. 25, 2020	1900	40.30	1.95	39.00	-3.23	5d036	7350	917
Jun. 28, 2020	1900	40.30	1.89	37.80	-6.20	5d036	7350	917
Jun. 24, 2020	2450	52.70	2.49	49.80	-5.50	737	7537	1585
Jun. 24, 2020	2450	52.70	2.72	54.40	3.23	737	7472	579
Jun. 25, 2020	2450	52.70	2.56	51.20	-2.85	737	7472	579
Jun. 27, 2020	2450	52.70	2.5	50.00	-5.12	737	7472	579
Jun. 29, 2020	2450	52.70	2.56	51.20	-2.85	737	7537	1585
Jun. 29, 2020	2450	52.70	2.58	51.60	-2.09	737	3650	861
Jun. 24, 2020	2600	57.30	2.85	57.00	-0.52	1020	7537	1585
Jun. 29, 2020	2600	57.30	2.86	57.20	-0.17	1020	7350	917
Jun. 24, 2020	5250	79.70	4	80.00	0.38	1019	7537	1585
Jun. 24, 2020	5250	79.70	4.03	80.60	1.13	1019	7472	579
Jun. 28, 2020	5250	79.70	4.01	80.20	0.63	1019	7472	579
Jun. 26, 2020	5250	79.70	3.98	79.60	-0.13	1019	7350	917
Jun. 25, 2020	5600	83.80	4.22	84.40	0.72	1019	7472	579
Jun. 28, 2020	5600	83.80	4.13	82.60	-1.43	1019	7472	579
Jun. 29, 2020	5600	83.80	4.21	84.20	0.48	1019	3898	914
Jun. 25, 2020	5750	80.40	4.08	81.60	1.49	1019	7472	579
Jun. 25, 2020	5750	80.40	4.03	80.60	0.25	1019	7472	579
Jun. 30, 2020	5750	80.40	4.05	81.00	0.75	1019	7350	917

Note:

Comparing to the reference SAR value provided by SPEAG in dipole calibration certificate, the deviation of system check results is within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots please refer to Appendix A of this report.

4.6 Maximum Output Power

4.6.1 Maximum Target Conducted Power

Refer to Appendix C.

4.6.2 Measured Conducted Power Result

Refer to Appendix D.

4.7 SAR Testing Results

4.7.1 SAR Test Reduction Considerations

<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

When SAR is not measured at the maximum power level allowed for production units, the measured SAR will be scaled to the maximum tune-up tolerance limit to determine compliance. The scaling factor for the tune-up power is defined as maximum tune-up limit (mW) / measured conducted power (mW). The reported SAR would be calculated by measured SAR x tune-up power scaling factor.

The SAR has been measured with highest transmission duty factor supported by the test mode tools for WLAN and/or Bluetooth. When the transmission duty factor could not achieve 100%, the reported SAR will be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up power. The scaling factor for the duty factor is defined as 100% / transmission duty cycle (%). The reported SAR would be calculated by measured SAR x tune-up power scaling factor x duty cycle scaling factor.

<KDB 941225 D01, 3G SAR Measurement Procedures>

The mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 1/4 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.

<Power Confirmation for SAR Test Exclusion for LTE Downlink CA>

According to KDB 941225 D05A, the uplink maximum output power below was measured with downlink CA active on the channel with highest measured maximum output power when downlink CA is inactive. The downlink SCC channel was paired with the uplink channel as normal operation. For intra-band contiguous CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing per section 5.4.1A of 3GPP TS36.521. For intra-band non-contiguous CA, the downlink channel spacing between the component carriers was set to maximum separation from PCC and remain fully within the downlink transmission band. For Inter-band CA, the SCC downlink channel was set to near the middle of its transmission band.

<Full Power>

Power Measurements for Intra-Band Contiguous Downlink CA

CA Combination	PCC								SCC1				Power	
	LTE Band	BW (MHz)	UL Channel	UL Freq. (MHz)	RB Size	RB Offset	DL Channel	DL Freq. (MHz)	LTE Band	BW (MHz)	DL Channel	DL Freq. (MHz)	Tx Power with DL-CA Active (dBm)	Single Carrier Tx Power (dBm)
2C	2	20	18902	1880.2	1	0	902	1960.2	2	20	1100	1980	23.03	23.05
41C	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	24.09	24.13
41D	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	24.06	24.13
66C	66	20	132572	1770	1	0	67036	2170	66	20	66838	2150.2	23.11	23.15
66B	66	15	132047	1717.5	1	0	66511	2117.5	66	5	66604	2126.8	23.05	23.15

Power Measurements for Intra-Band Non-Contiguous Downlink CA

CA Combination	PCC								SCC1				Power	
	LTE Band	BW (MHz)	UL Channel	UL Freq. (MHz)	RB Size	RB Offset	DL Channel	DL Freq. (MHz)	LTE Band	BW (MHz)	DL Channel	DL Freq. (MHz)	Tx Power with DL-CA Active (dBm)	Single Carrier Tx Power (dBm)
2A-2A	2	20	18900	1880	1	0	900	1960	2	20	1100	1980	22.99	23.05
41A-41A	41	20	40620	2593	1	0	40620	2593	41	20	39750	2506	24.12	24.13
41C-41C	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	24.01	24.13
41C-41A	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	24.03	24.13
41A-41D	41	20	40620	2593	1	0	40620	2593	41	20	41055	2636.5	24.01	24.13

Power Measurements for Inter-Band Downlink CA

CA Combination	PCC								SCC1				Power	
	LTE Band	BW (MHz)	UL Channel	UL Freq. (MHz)	RB Size	RB Offset	DL Channel	DL Freq. (MHz)	LTE Band	BW (MHz)	DL Channel	DL Freq. (MHz)	Tx Power with DL-CA Active (dBm)	Single Carrier Tx Power (dBm)
12A-2A	12	10	23130	711	1	0	5130	741	2	20	1100	1980	23.87	24.12
12A-66A-66A	12	10	23130	711	1	0	5130	741	66	20	66786	2145	23.91	24.12
26A-41A	26	15	26865	831.5	1	0	8865	876.5	41	20	40185	2549.5	23.13	23.82
26A-41C	26	15	26865	831.5	1	0	8865	876.5	41	20	40620	2593	23.16	23.82
2A-4A-13A	2	20	18900	1880	1	0	900	1960	4	20	2175	2132	22.39	23.05
2A-4A-5A	2	20	18900	1880	1	0	900	1960	4	20	2175	2132	22.36	23.05
2A-66A	2	20	18900	1880	1	0	900	1960	66	20	66786	2145	22.42	23.05
12A-4A-4A	12	10	23130	711	1	0	5130	741	4	20	2050	2120	23.77	24.12
5A-41A	5	10	20525	836.5	1	0	2525	881.5	41	20	40185	2549.5	23.22	24.05
5A-66A-66A	5	10	20525	836.5	1	0	2525	881.5	66	20	66786	2145	23.25	24.05

<Reduction Power>

Power Measurements for Intra-Band Contiguous Downlink CA

CA Combination	PCC								SCC1				Power	
	LTE Band	BW (MHz)	UL Channel	UL Freq. (MHz)	RB Size	RB Offset	DL Channel	DL Freq. (MHz)	LTE Band	BW (MHz)	DL Channel	DL Freq. (MHz)	Tx Power with DL-CA Active (dBm)	Single Carrier Tx Power (dBm)
2C	2	20	18902	1880.2	1	0	902	1960.2	2	20	1100	1980	13.01	13.12
41C	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	14.11	14.21
41D	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	14.07	14.21
66C	66	20	132572	1770	1	0	67036	2170	66	20	66838	2150.2	13.05	13.13
66B	66	15	132047	1717.5	1	0	66511	2117.5	66	5	66604	2126.8	13.09	13.13

Power Measurements for Intra-Band Non-Contiguous Downlink CA

CA Combination	PCC								SCC1				Power	
	LTE Band	BW (MHz)	UL Channel	UL Freq. (MHz)	RB Size	RB Offset	DL Channel	DL Freq. (MHz)	LTE Band	BW (MHz)	DL Channel	DL Freq. (MHz)	Tx Power with DL-CA Active (dBm)	Single Carrier Tx Power (dBm)
2A-2A	2	20	18900	1880	1	0	900	1960	2	20	1100	1980	13.02	13.12
41A-41A	41	20	40620	2593	1	0	40620	2593	41	20	39750	2506	14.11	14.21
41C-41C	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	14.16	14.21
41C-41A	41	20	40620	2593	1	0	40620	2593	41	20	40818	2612.8	14.12	14.21
41A-41D	41	20	40620	2593	1	0	40620	2593	41	20	41055	2636.5	14.09	14.21

Power Measurements for Inter-Band Downlink CA

CA Combination	PCC								SCC1				Power	
	LTE Band	BW (MHz)	UL Channel	UL Freq. (MHz)	RB Size	RB Offset	DL Channel	DL Freq. (MHz)	LTE Band	BW (MHz)	DL Channel	DL Freq. (MHz)	Tx Power with DL-CA Active (dBm)	Single Carrier Tx Power (dBm)
12A-2A	12	10	23130	711	1	0	5130	741	2	20	1100	1980	16.09	16.15
12A-66A-66A	12	10	23130	711	1	0	5130	741	66	20	66786	2145	16.10	16.15
26A-41A	26	15	26865	831.5	1	0	8865	876.5	41	20	40185	2549.5	16.02	16.18
26A-41C	26	15	26865	831.5	1	0	8865	876.5	41	20	40620	2593	15.98	16.18
2A-4A-13A	2	20	18900	1880	1	0	900	1960	4	20	2175	2132	13.02	13.12
2A-4A-5A	2	20	18900	1880	1	0	900	1960	4	20	2175	2132	12.99	13.12
2A-66A	2	20	18900	1880	1	0	900	1960	66	20	66786	2145	12.96	13.12
12A-4A-4A	12	10	23130	711	1	0	5130	741	4	20	2050	2120	16.01	16.15
5A-41A	5	10	20525	836.5	1	0	2525	881.5	41	20	40185	2549.5	16.07	16.13
5A-66A-66A	5	10	20525	836.5	1	0	2525	881.5	66	20	66786	2145	15.98	16.13

Summary for SAR Test Exclusion for LTE Downlink CA

Per power confirmation results in above, the uplink maximum output power with downlink CA active remains within the specified tune-up tolerance and not more than 0.25 dB higher than the maximum output power with downlink CA inactive. According to KDB 941225 D05A, the SAR test exclusion applies to LTE downlink CA operation.

<KDB 248227 D01, SAR Guidance for Wi-Fi Transmitters>

(1) 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.

(2) For WLAN 5GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is <=1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is <= 1.2 W/kg.

(3) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498to determine simultaneous transmission SAR test exclusion should be applied. Otherwise, SAR for MIMO mode will be measured with all applicable antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

<KDB 648474 D04, SAR Guidance for Dynamic Antenna Tuning>

This device supports dynamic antenna tuning for WCDMA II / IV / V and LTE 2 / 4 / 5 / 12 / 13 / 25 / 26 / 66 and LTE 2 is overlapped by LTE 25, LTE 4 is overlapped by LTE 66.

According to KDB 648474 D04 and FCC guidance in October 2015 TCBC workshop, the following test procedure was followed to demonstrate that SAR results in this report represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. The tuning state determined by the auto-tune was verified before and after SAR measurement for the highest reported SAR configuration for each band and testing configuration to confirm the antenna state of auto-tune is the same. Additional single point SAR time-sweep measurements were evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.

To evaluate all of the tuner states, the 120 tuner states were divided among the aggregate band, mode and exposure combinations so that each combination was evaluated every tuner states and also so that at least 3 single point SAR measurements were made for every available tuner state. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely by QRCT software installed in laptop PC through a micro USB cable connected between the DUT and the laptop PC, so that the DUT was not moved and the probe remained stationary at the same position throughout the entire series of single point measurements for each combination.

The operational description contains more information about the design and implementation of the dynamic antenna tuning.

Band	WCDMA II	Band	WCDMA IV	Band	WCDMA V	Band	LTE 5
Mode	RMC 12.2K	Mode	RMC 12.2K	Mode	RMC 12.2K	Mode	QPSK,10M
Position	Top Side	Position	Top Side	Position	Top Side	Position	Rear Face
Channel	9400	Channel	1413	Channel	4233	Channel	20525
Measured 1g SAR (W/kg)	0.775	Measured 1g SAR (W/kg)	0.753	Measured 1g SAR (W/kg)	0.550	Measured 1g SAR (W/kg)	0.532
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune	2.535	Auto-tune	2.083	Auto-tune	1.377	Auto-tune	1.219
Default (Open-loop)	2.535	Default (Open-loop)	1.881	Default (Open-loop)	1.116	Default (Open-loop)	0.858
State 0	2.511	State 0	2.081	State 0	0.877	State 0	0.675
State 1	2.472	State 1	2.076	State 1	1.043	State 1	0.877
State 2	2.457	State 2	2.075	State 2	1.066	State 2	0.901
State 3	2.448	State 3	2.073	State 3	1.093	State 3	0.929
State 4	2.432	State 4	2.055	State 4	1.143	State 4	0.987
State 5	2.423	State 5	2.052	State 5	1.202	State 5	1.041
State 6	2.356	State 6	2.017	State 6	1.308	State 6	1.128
State 7	2.302	State 7	1.986	State 7	1.371	State 7	1.142
State 8	2.222	State 8	1.932	State 8	1.366	State 8	1.021
State 9	2.091	State 9	1.836	State 9	1.188	State 9	0.726
State 10	1.975	State 10	1.736	State 10	0.975	State 10	0.521
State 11	1.788	State 11	1.576	State 11	0.683	State 11	0.325
State 12	1.516	State 12	1.311	State 12	0.379	State 12	0.167
State 13	2.535	State 13	1.881	State 13	0.478	State 13	0.365
State 14	2.532	State 14	1.933	State 14	0.628	State 14	0.473
State 15	2.529	State 15	1.937	State 15	0.647	State 15	0.486
State 16	2.475	State 16	1.951	State 16	0.663	State 16	0.495
State 17	2.478	State 17	1.977	State 17	0.693	State 17	0.512
State 18	2.488	State 18	1.988	State 18	0.711	State 18	0.515
State 19	2.489	State 19	2.013	State 19	0.701	State 19	0.479
State 20	2.496	State 20	2.055	State 20	0.618	State 20	0.395
State 21	2.487	State 21	2.067	State 21	0.483	State 21	0.296
State 22	2.523	State 22	2.082	State 22	0.301	State 22	0.176
State 23	2.483	State 23	2.083	State 23	0.207	State 23	0.133
State 24	2.352	State 24	1.931	State 24	0.128	State 24	0.076
State 25	2.073	State 25	1.663	State 25	0.066	State 25	0.041
State 26	2.057	State 26	1.937	State 26	0.921	State 26	0.726

Band	WCDMA II	Band	WCDMA IV	Band	WCDMA V	Band	LTE 5
State 27	2.025	State 27	1.912	State 27	1.101	State 27	0.923
State 28	2.002	State 28	1.905	State 28	1.127	State 28	0.951
State 29	1.998	State 29	1.902	State 29	1.151	State 29	0.981
State 30	1.967	State 30	1.881	State 30	1.199	State 30	1.032
State 31	1.958	State 31	1.877	State 31	1.247	State 31	1.072
State 32	1.875	State 32	1.819	State 32	1.338	State 32	1.133
State 33	1.831	State 33	1.778	State 33	1.377	State 33	1.099
State 34	1.739	State 34	1.701	State 34	1.343	State 34	0.955
State 35	1.601	State 35	1.582	State 35	1.129	State 35	0.659
State 36	1.485	State 36	1.471	State 36	0.917	State 36	0.473
State 37	1.327	State 37	1.315	State 37	0.641	State 37	0.295
State 38	1.085	State 38	1.068	State 38	0.358	State 38	0.157
State 39	0.263	State 39	0.407	State 39	0.917	State 39	0.866
State 40	0.283	State 40	0.429	State 40	1.116	State 40	1.123
State 41	0.282	State 41	0.422	State 41	1.142	State 41	1.176
State 42	0.276	State 42	0.415	State 42	1.158	State 42	1.093
State 43	0.269	State 43	0.405	State 43	1.203	State 43	1.118
State 44	0.281	State 44	0.418	State 44	1.239	State 44	1.131
State 45	0.263	State 45	0.391	State 45	1.258	State 45	1.219
State 46	0.255	State 46	0.375	State 46	1.199	State 46	0.915
State 47	0.235	State 47	0.345	State 47	1.055	State 47	0.675
State 48	0.206	State 48	0.301	State 48	0.761	State 48	0.401
State 49	0.182	State 49	0.267	State 49	0.563	State 49	0.273
State 50	0.151	State 50	0.215	State 50	0.367	State 50	0.169
State 51	0.111	State 51	0.155	State 51	0.195	State 51	0.089
State 52	2.289	State 52	1.943	State 52	0.525	State 52	0.402
State 53	2.319	State 53	1.983	State 53	0.667	State 53	0.503
State 54	2.311	State 54	1.985	State 54	0.683	State 54	0.513
State 55	2.323	State 55	1.989	State 55	0.693	State 55	0.521
State 56	2.317	State 56	2.007	State 56	0.717	State 56	0.523
State 57	2.313	State 57	2.011	State 57	0.715	State 57	0.518
State 58	2.312	State 58	2.021	State 58	0.676	State 58	0.456
State 59	2.298	State 59	2.031	State 59	0.569	State 59	0.366
State 60	2.248	State 60	2.016	State 60	0.438	State 60	0.271
State 61	2.155	State 61	1.951	State 61	0.271	State 61	0.163
State 62	2.067	State 62	1.861	State 62	0.189	State 62	0.111
State 63	1.897	State 63	1.701	State 63	0.119	State 63	0.072

Band	WCDMA II	Band	WCDMA IV	Band	WCDMA V	Band	LTE 5
State 64	1.597	State 64	1.397	State 64	0.063	State 64	0.043
State 65	0.277	State 65	0.443	State 65	0.753	State 65	0.608
State 66	0.325	State 66	0.505	State 66	0.872	State 66	0.631
State 67	0.322	State 67	0.515	State 67	0.862	State 67	0.613
State 68	0.321	State 68	0.508	State 68	0.843	State 68	0.583
State 69	0.315	State 69	0.511	State 69	0.786	State 69	0.523
State 70	0.343	State 70	0.535	State 70	0.715	State 70	0.461
State 71	0.341	State 71	0.536	State 71	0.523	State 71	0.319
State 72	0.346	State 72	0.543	State 72	0.371	State 72	0.221
State 73	0.338	State 73	0.528	State 73	0.255	State 73	0.151
State 74	0.322	State 74	0.488	State 74	0.145	State 74	0.087
State 75	0.301	State 75	0.436	State 75	0.101	State 75	0.062
State 76	0.259	State 76	0.358	State 76	0.063	State 76	0.043
State 77	0.337	State 77	0.243	State 77	0.033	State 77	0.023
State 78	0.235	State 78	0.348	State 78	0.871	State 78	0.858
State 79	0.252	State 79	0.366	State 79	1.071	State 79	1.143
State 80	0.249	State 80	0.361	State 80	1.097	State 80	1.173
State 81	0.243	State 81	0.355	State 81	1.113	State 81	1.092
State 82	0.238	State 82	0.348	State 82	1.153	State 82	1.123
State 83	0.247	State 83	0.358	State 83	1.191	State 83	1.128
State 84	0.231	State 84	0.336	State 84	1.211	State 84	1.092
State 85	0.225	State 85	0.321	State 85	1.149	State 85	0.873
State 86	0.205	State 86	0.299	State 86	0.996	State 86	0.628
State 87	0.181	State 87	0.261	State 87	0.701	State 87	0.365
State 88	0.161	State 88	0.227	State 88	0.512	State 88	0.246
State 89	0.132	State 89	0.185	State 89	0.331	State 89	0.152
State 90	0.102	State 90	0.133	State 90	0.175	State 90	0.079
State 91	0.243	State 91	0.376	State 91	0.775	State 91	0.632
State 92	0.288	State 92	0.432	State 92	0.907	State 92	0.551
State 93	0.281	State 93	0.431	State 93	0.887	State 93	0.623
State 94	0.278	State 94	0.432	State 94	0.863	State 94	0.596
State 95	0.282	State 95	0.436	State 95	0.802	State 95	0.523
State 96	0.297	State 96	0.455	State 96	0.716	State 96	0.453
State 97	0.296	State 97	0.458	State 97	0.503	State 97	0.301
State 98	0.303	State 98	0.467	State 98	0.348	State 98	0.205
State 99	0.296	State 99	0.456	State 99	0.347	State 99	0.138
State 100	0.282	State 100	0.422	State 100	0.131	State 100	0.081

Band	WCDMA II	Band	WCDMA IV	Band	WCDMA V	Band	LTE 5
State 101	0.265	State 101	0.381	State 101	0.106	State 101	0.057
State 102	0.231	State 102	0.312	State 102	0.056	State 102	0.037
State 103	0.172	State 103	0.211	State 103	0.031	State 103	0.022
State 104	2.511	State 104	2.066	State 104	0.872	State 104	0.675
State 105	2.448	State 105	1.866	State 105	0.478	State 105	0.363
State 106	2.056	State 106	1.938	State 106	0.921	State 106	0.731
State 107	0.257	State 107	0.401	State 107	0.911	State 107	0.875
State 108	2.297	State 108	1.928	State 108	0.522	State 108	0.397
State 109	0.271	State 109	0.431	State 109	0.751	State 109	0.601
State 110	0.232	State 110	0.345	State 110	0.865	State 110	0.862
State 111	0.239	State 111	0.371	State 111	0.775	State 111	0.633
State 112	2.512	State 112	2.072	State 112	0.873	State 112	0.675
State 113	2.521	State 113	1.878	State 113	0.478	State 113	0.363
State 114	2.056	State 114	1.938	State 114	0.921	State 114	0.727
State 115	0.259	State 115	0.401	State 115	0.913	State 115	0.873
State 116	2.298	State 116	1.933	State 116	0.522	State 116	0.399
State 117	0.273	State 117	0.432	State 117	0.748	State 117	0.601
State 118	0.235	State 118	0.346	State 118	0.868	State 118	0.851
State 119	0.243	State 119	0.372	State 119	0.773	State 119	0.632

Band	LTE 12	Band	LTE 13	Band	LTE 25	Band	LTE 26	Band	LTE 66
Mode	QPSK 10M	Mode	QPSK 10M	Mode	QPSK 20M	Mode	QPSK,15M	Mode	QPSK,20M
Position	Rear Face	Position	Rear Face	Position	Top Side	Position	Rear Face	Position	Top Side
Channel	23130	Channel	23230	Channel	26365	Channel	26865	Channel	132572
Measured 1g SAR (W/kg)	0.442	Measured 1g SAR (W/kg)	0.505	Measured 1g SAR (W/kg)	0.672	Measured 1g SAR (W/kg)	0.453	Measured 1g SAR (W/kg)	0.671
Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Tim Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune	1.022	Auto-tune	1.043	Auto-tune	2.586	Auto-tune	1.028	Auto-tune	2.199
Default (Open-loop)	0.606	Default (Open-loop)	0.923	Default (Open-loop)	2.586	Default (Open-loop)	0.714	Default (Open-loop)	2.057
State 0	0.849	State 0	0.613	State 0	2.581	State 0	0.570	State 0	2.151
State 1	0.958	State 1	0.801	State 1	2.539	State 1	0.743	State 1	2.143
State 2	0.952	State 2	0.828	State 2	2.523	State 2	0.747	State 2	2.149
State 3	0.937	State 3	0.849	State 3	2.511	State 3	0.778	State 3	2.126
State 4	0.899	State 4	0.895	State 4	2.483	State 4	0.839	State 4	2.112
State 5	0.843	State 5	0.913	State 5	2.483	State 5	0.883	State 5	2.111
State 6	0.662	State 6	0.895	State 6	2.411	State 6	0.940	State 6	2.173
State 7	0.496	State 7	0.786	State 7	2.361	State 7	0.970	State 7	2.155
State 8	0.355	State 8	0.616	State 8	2.272	State 8	0.867	State 8	2.083
State 9	0.212	State 9	0.381	State 9	2.147	State 9	0.610	State 9	1.978
State 10	0.148	State 10	0.263	State 10	2.027	State 10	0.424	State 10	1.882
State 11	0.095	State 11	0.161	State 11	1.848	State 11	0.272	State 11	1.707
State 12	0.051	State 12	0.083	State 12	1.557	State 12	0.128	State 12	1.425
State 13	0.591	State 13	0.341	State 13	2.586	State 13	0.293	State 13	2.057
State 14	0.669	State 14	0.443	State 14	2.507	State 14	0.392	State 14	2.121
State 15	0.666	State 15	0.452	State 15	2.511	State 15	0.405	State 15	2.135
State 16	0.656	State 16	0.455	State 16	2.536	State 16	0.419	State 16	2.132
State 17	0.613	State 17	0.461	State 17	2.543	State 17	0.427	State 17	2.146
State 18	0.566	State 18	0.455	State 18	2.546	State 18	0.434	State 18	2.151
State 19	0.423	State 19	0.391	State 19	2.535	State 19	0.395	State 19	2.101
State 20	0.305	State 20	0.302	State 20	2.558	State 20	0.320	State 20	2.128
State 21	0.212	State 21	0.216	State 21	2.541	State 21	0.244	State 21	2.136
State 22	0.123	State 22	0.125	State 22	2.501	State 22	0.140	State 22	2.141
State 23	0.085	State 23	0.085	State 23	2.535	State 23	0.094	State 23	2.199
State 24	0.055	State 24	0.052	State 24	2.411	State 24	0.049	State 24	2.086
State 25	0.031	State 25	0.028	State 25	2.125	State 25	0.024	State 25	1.822
State 26	0.871	State 26	0.655	State 26	2.113	State 26	0.617	State 26	2.069
State 27	0.932	State 27	0.835	State 27	2.073	State 27	0.780	State 27	2.045

Band	LTE 12	Band	LTE 13	Band	LTE 25	Band	LTE 26	Band	LTE 66
State 28	0.919	State 28	0.853	State 28	2.059	State 28	0.792	State 28	2.033
State 29	0.905	State 29	0.865	State 29	2.038	State 29	0.834	State 29	2.025
State 30	0.849	State 30	0.893	State 30	2.016	State 30	0.867	State 30	2.008
State 31	0.791	State 31	0.939	State 31	2.021	State 31	0.908	State 31	2.002
State 32	0.613	State 32	0.883	State 32	1.933	State 32	0.944	State 32	1.937
State 33	0.458	State 33	0.758	State 33	1.878	State 33	0.924	State 33	1.888
State 34	0.329	State 34	0.583	State 34	1.782	State 34	0.808	State 34	1.838
State 35	0.198	State 35	0.362	State 35	1.648	State 35	0.545	State 35	1.708
State 36	0.141	State 36	0.251	State 36	1.531	State 36	0.400	State 36	1.563
State 37	0.091	State 37	0.157	State 37	1.361	State 37	0.244	State 37	1.387
State 38	0.052	State 38	0.082	State 38	1.116	State 38	0.114	State 38	1.156
State 39	1.011	State 39	0.911	State 39	0.272	State 39	0.729	State 39	0.385
State 40	0.843	State 40	1.033	State 40	0.295	State 40	0.937	State 40	0.407
State 41	0.798	State 41	1.021	State 41	0.289	State 41	0.988	State 41	0.401
State 42	0.753	State 42	1.007	State 42	0.286	State 42	0.921	State 42	0.393
State 43	0.666	State 43	0.951	State 43	0.279	State 43	0.943	State 43	0.392
State 44	0.581	State 44	0.883	State 44	0.292	State 44	0.952	State 44	0.406
State 45	0.413	State 45	0.681	State 45	0.273	State 45	1.028	State 45	0.377
State 46	0.293	State 46	0.506	State 46	0.263	State 46	0.759	State 46	0.365
State 47	0.208	State 47	0.355	State 47	0.243	State 47	0.572	State 47	0.335
State 48	0.127	State 48	0.208	State 48	0.215	State 48	0.334	State 48	0.292
State 49	0.092	State 49	0.143	State 49	0.189	State 49	0.229	State 49	0.257
State 50	0.059	State 50	0.091	State 50	0.157	State 50	0.129	State 50	0.211
State 51	0.033	State 51	0.049	State 51	0.113	State 51	0.068	State 51	0.151
State 52	0.606	State 52	0.373	State 52	2.348	State 52	0.340	State 52	2.125
State 53	0.649	State 53	0.462	State 53	2.381	State 53	0.415	State 53	2.165
State 54	0.636	State 54	0.463	State 54	2.372	State 54	0.427	State 54	2.175
State 55	0.621	State 55	0.468	State 55	2.375	State 55	0.439	State 55	2.159
State 56	0.575	State 56	0.458	State 56	2.383	State 56	0.435	State 56	2.188
State 57	0.522	State 57	0.441	State 57	2.381	State 57	0.423	State 57	2.161
State 58	0.387	State 58	0.365	State 58	2.353	State 58	0.381	State 58	2.177
State 59	0.279	State 59	0.281	State 59	2.339	State 59	0.301	State 59	2.165

Band	LTE 12	Band	LTE 13	Band	LTE 25	Band	LTE 26	Band	LTE 66
State 60	0.279	State 60	0.201	State 60	2.306	State 60	0.230	State 60	2.146
State 61	0.195	State 61	0.118	State 61	2.226	State 61	0.134	State 61	2.081
State 62	0.116	State 62	0.081	State 62	2.106	State 62	0.092	State 62	1.991
State 63	0.081	State 63	0.052	State 63	1.948	State 63	0.055	State 63	1.817
State 64	0.052	State 64	0.027	State 64	1.642	State 64	0.030	State 64	1.512
State 65	0.029	State 65	0.543	State 65	0.287	State 65	0.499	State 65	0.416
State 66	0.743	State 66	0.495	State 66	0.337	State 66	0.534	State 66	0.491
State 67	0.572	State 67	0.471	State 67	0.335	State 67	0.518	State 67	0.491
State 68	0.533	State 68	0.447	State 68	0.332	State 68	0.494	State 68	0.482
State 69	0.502	State 69	0.395	State 69	0.337	State 69	0.437	State 69	0.488
State 70	0.432	State 70	0.341	State 70	0.353	State 70	0.389	State 70	0.507
State 71	0.368	State 71	0.235	State 71	0.352	State 71	0.256	State 71	0.513
State 72	0.251	State 72	0.165	State 72	0.359	State 72	0.178	State 72	0.522
State 73	0.176	State 73	0.113	State 73	0.351	State 73	0.113	State 73	0.512
State 74	0.122	State 74	0.067	State 74	0.335	State 74	0.059	State 74	0.471
State 75	0.072	State 75	0.047	State 75	0.301	State 75	0.049	State 75	0.428
State 76	0.053	State 76	0.031	State 76	0.269	State 76	0.030	State 76	0.351
State 77	0.035	State 77	0.017	State 77	0.201	State 77	0.003	State 77	0.242
State 78	0.021	State 78	0.923	State 78	0.243	State 78	0.714	State 78	0.333
State 79	1.022	State 79	1.043	State 79	0.259	State 79	0.955	State 79	0.356
State 80	0.819	State 80	1.032	State 80	0.255	State 80	0.995	State 80	0.351
State 81	0.769	State 81	1.006	State 81	0.251	State 81	0.921	State 81	0.346
State 82	0.727	State 82	0.943	State 82	0.243	State 82	0.940	State 82	0.338
State 83	0.633	State 83	0.872	State 83	0.255	State 83	0.956	State 83	0.347
State 84	0.548	State 84	0.651	State 84	0.239	State 84	0.920	State 84	0.326
State 85	0.381	State 85	0.467	State 85	0.232	State 85	0.733	State 85	0.315
State 86	0.271	State 86	0.322	State 86	0.213	State 86	0.522	State 86	0.289
State 87	0.191	State 87	0.189	State 87	0.188	State 87	0.293	State 87	0.252
State 88	0.115	State 88	0.131	State 88	0.167	State 88	0.199	State 88	0.223
State 89	0.082	State 89	0.082	State 89	0.138	State 89	0.116	State 89	0.183
State 90	0.053	State 90	0.043	State 90	0.102	State 90	0.055	State 90	0.131
State 91	0.031	State 91	0.576	State 91	0.251	State 91	0.529	State 91	0.362
State 92	0.762	State 92	0.501	State 92	0.291	State 92	0.450	State 92	0.416
State 93	0.557	State 93	0.475	State 93	0.291	State 93	0.523	State 93	0.413
State 94	0.515	State 94	0.446	State 94	0.288	State 94	0.493	State 94	0.415
State 95	0.483	State 95	0.386	State 95	0.291	State 95	0.428	State 95	0.418

Band	LTE 12	Band	LTE 13	Band	LTE 25	Band	LTE 26	Band	LTE 66
State 96	0.411	State 96	0.328	State 96	0.306	State 96	0.381	State 96	0.439
State 97	0.347	State 97	0.219	State 97	0.305	State 97	0.251	State 97	0.441
State 98	0.232	State 98	0.151	State 98	0.312	State 98	0.167	State 98	0.449
State 99	0.162	State 99	0.103	State 99	0.306	State 99	0.102	State 99	0.437
State 100	0.113	State 100	0.061	State 100	0.293	State 100	0.056	State 100	0.412
State 101	0.068	State 101	0.043	State 101	0.272	State 101	0.035	State 101	0.376
State 102	0.051	State 102	0.028	State 102	0.237	State 102	0.019	State 102	0.307
State 103	0.049	State 103	0.015	State 103	0.178	State 103	0.005	State 103	0.213
State 104	0.018	State 104	0.898	State 104	2.553	State 104	0.559	State 104	2.169
State 105	0.818	State 105	0.343	State 105	2.571	State 105	0.303	State 105	2.091
State 106	0.572	State 106	0.667	State 106	2.113	State 106	0.619	State 106	2.086
State 107	0.848	State 107	0.897	State 107	0.265	State 107	0.727	State 107	0.381
State 108	0.989	State 108	0.371	State 108	2.325	State 108	0.332	State 108	2.115
State 109	0.571	State 109	0.543	State 109	0.279	State 109	0.495	State 109	0.411
State 110	0.732	State 110	0.921	State 110	0.238	State 110	0.723	State 110	0.335
State 111	1.011	State 111	0.575	State 111	0.247	State 111	0.538	State 111	0.356
State 112	0.755	State 112	0.616	State 112	2.551	State 112	0.557	State 112	2.165
State 113	0.817	State 113	0.341	State 113	2.569	State 113	0.306	State 113	2.086
State 114	0.571	State 114	0.665	State 114	2.099	State 114	0.599	State 114	2.068
State 115	0.841	State 115	0.895	State 115	0.268	State 115	0.736	State 115	0.383
State 116	0.987	State 116	0.371	State 116	2.322	State 116	0.328	State 116	2.116
State 117	0.595	State 117	0.543	State 117	0.281	State 117	0.495	State 117	0.412
State 118	0.728	State 118	0.916	State 118	0.243	State 118	0.720	State 118	0.337
State 119	1.007	State 119	0.573	State 119	0.251	State 119	0.522	State 119	0.358

4.7.2 SAR Results for Body Exposure Condition

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	P-sensor	Keyboard Cover	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	GSM850	GPRS10	Rear Face	19	189	w/o		32.50	31.60	1.23	-0.1	0.375	0.46
	GSM850	GPRS10	Left Side	0	189	w/o		32.50	31.60	1.23	-0.13	0.189	0.23
	GSM850	GPRS10	Right Side	0	189	w/o		32.50	31.60	1.23	-0.06	0.299	0.37
	GSM850	GPRS10	Top Side	23	189	w/o		32.50	31.60	1.23	-0.13	0.438	0.54
	GSM850	GPRS10	Bottom Side	0	189	w/o		32.50	31.60	1.23	0	<0.001	0.00
	GSM850	GPRS10	Rear Face	0	189	w/		22.50	21.93	1.14	0.15	0.553	0.63
	GSM850	GPRS10	Top Side	0	189	w/		22.50	21.93	1.14	0.13	0.401	0.46
	GSM850	GPRS10	Rear Face	0	128	w/		22.50	21.66	1.21	-0.15	0.503	0.61
01	GSM850	GPRS10	Rear Face	0	251	w/		22.50	21.81	1.17	0.06	0.561	**0.66**
	GSM850	GPRS10	Rear Face	0	251	w/	v	22.50	21.81	1.17	0.06	0.071	0.08
	GSM1900	GPRS11	Rear Face	19	661	w/o		27.50	26.91	1.15	0.08	0.180	0.21
	GSM1900	GPRS11	Left Side	0	661	w/o		27.50	26.91	1.15	-0.01	0.097	0.11
	GSM1900	GPRS11	Right Side	0	661	w/o		27.50	26.91	1.15	-0.01	0.325	0.37
	GSM1900	GPRS11	Top Side	23	661	w/o		27.50	26.91	1.15	-0.05	0.173	0.20
	GSM1900	GPRS11	Bottom Side	0	661	w/o		27.50	26.91	1.15	0	<0.001	0.00
	GSM1900	GPRS10	Rear Face	0	661	w/		20.00	19.74	1.06	-0.08	0.598	0.63
02	GSM1900	GPRS10	Top Side	0	661	w/		20.00	19.74	1.06	-0.19	0.778	**0.82**
	GSM1900	GPRS10	Top Side	0	512	w/		20.00	19.59	1.10	-0.01	0.668	0.73
	GSM1900	GPRS10	Top Side	0	810	w/		20.00	19.71	1.07	-0.1	0.675	0.72
	GSM1900	GPRS10	Top Side	0	661	w/	v	20.00	19.74	1.06	-0.19	0.209	0.22
	WCDMA II	RMC12.2K	Rear Face	19	9538	w/o		23.50	23.37	1.03	-0.03	0.206	0.21
	WCDMA II	RMC12.2K	Left Side	0	9538	w/o		23.50	23.37	1.03	-0.09	0.160	0.16
	WCDMA II	RMC12.2K	Right Side	0	9538	w/o		23.50	23.37	1.03	-0.09	0.358	0.37
	WCDMA II	RMC12.2K	Top Side	23	9538	w/o		23.50	23.37	1.03	-0.04	0.206	0.21
	WCDMA II	RMC12.2K	Bottom Side	0	9538	w/o		23.50	23.37	1.03	0	<0.001	0.00
	WCDMA II	RMC12.2K	Rear Face	0	9538	w/		13.50	13.32	1.04	-0.09	0.623	0.65
	WCDMA II	RMC12.2K	Top Side	0	9538	w/		13.50	13.32	1.04	-0.1	0.751	0.78
	WCDMA II	RMC12.2K	Top Side	0	9262	w/		13.50	13.22	1.07	-0.01	0.735	0.79
03	WCDMA II	RMC12.2K	Top Side	0	9400	w/		13.50	13.23	1.06	-0.15	0.775	**0.82**
	WCDMA II	RMC12.2K	Top Side	0	9400	w/	v	13.50	13.23	1.06	-0.15	0.697	0.74
	WCDMA IV	RMC12.2K	Rear Face	19	1513	w/o		23.50	23.39	1.03	0.04	0.233	0.24
	WCDMA IV	RMC12.2K	Left Side	0	1513	w/o		23.50	23.39	1.03	0.02	0.199	0.20
	WCDMA IV	RMC12.2K	Right Side	0	1513	w/o		23.50	23.39	1.03	0.13	0.375	0.39
	WCDMA IV	RMC12.2K	Top Side	23	1513	w/o		23.50	23.39	1.03	-0.03	0.215	0.22
	WCDMA IV	RMC12.2K	Bottom Side	0	1513	w/o		23.50	23.39	1.03	0	<0.001	0.00
	WCDMA IV	RMC12.2K	Rear Face	0	1513	w/		13.50	13.27	1.05	0.11	0.608	0.64
	WCDMA IV	RMC12.2K	Top Side	0	1513	w/		13.50	13.27	1.05	-0.01	0.699	0.73
	WCDMA IV	RMC12.2K	Top Side	0	1312	w/		13.50	13.17	1.08	-0.01	0.673	0.73
04	WCDMA IV	RMC12.2K	Top Side	0	1413	w/		13.50	13.19	1.07	0.15	0.753	**0.81**
	WCDMA IV	RMC12.2K	Top Side	0	1413	w/	v	13.50	13.19	1.07	0.15	0.531	0.57
	WCDMA V	RMC12.2K	Rear Face	19	4182	w/o		24.50	23.92	1.14	-0.1	0.278	0.32
	WCDMA V	RMC12.2K	Left Side	0	4182	w/o		24.50	23.92	1.14	-0.15	0.133	0.15
	WCDMA V	RMC12.2K	Right Side	0	4182	w/o		24.50	23.92	1.14	-0.14	0.183	0.21
	WCDMA V	RMC12.2K	Top Side	23	4182	w/o		24.50	23.92	1.14	-0.03	0.331	0.38
	WCDMA V	RMC12.2K	Bottom Side	0	4182	w/o		24.50	23.92	1.14	0	<0.001	0.00
	WCDMA V	RMC12.2K	Rear Face	0	4182	w/		14.50	14.08	1.10	0.11	0.481	0.53
	WCDMA V	RMC12.2K	Top Side	0	4182	w/		14.50	14.08	1.10	0.16	0.448	0.49
	WCDMA V	RMC12.2K	Top Side	0	4132	w/		14.50	14.01	1.12	0.07	0.494	0.55
05	WCDMA V	RMC12.2K	Top Side	0	4233	w/		14.50	14.03	1.11	0.05	0.550	**0.61**
	WCDMA V	RMC12.2K	Top Side	0	4233	w/	v	14.50	14.03	1.11	0.05	0.165	0.18

Note. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	RB	Offset	P-sensor	Keyboard Cover	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	LTE 5	QPSK10M	Rear Face	19	20525	1	0	w/o		25.00	24.05	1.24	-0.07	0.426	0.53
	LTE 5	QPSK10M	Left Side	0	20525	1	0	w/o		25.00	24.05	1.24	-0.09	0.127	0.16
	LTE 5	QPSK10M	Right Side	0	20525	1	0	w/o		25.00	24.05	1.24	-0.11	0.206	0.26
	LTE 5	QPSK10M	Top Side	23	20525	1	0	w/o		25.00	24.05	1.24	-0.05	0.342	0.42
	LTE 5	QPSK10M	Bottom Side	0	20525	1	0	w/o		25.00	24.05	1.24	0	<0.001	0.00
	LTE 5	QPSK10M	Rear Face	19	20525	25	0	w/o		24.00	23.08	1.24	-0.1	0.309	0.38
	LTE 5	QPSK10M	Left Side	0	20525	25	0	w/o		24.00	23.08	1.24	-0.06	0.097	0.12
	LTE 5	QPSK10M	Right Side	0	20525	25	0	w/o		24.00	23.08	1.24	-0.09	0.167	0.21
	LTE 5	QPSK10M	Top Side	23	20525	25	0	w/o		24.00	23.08	1.24	-0.05	0.276	0.34
	LTE 5	QPSK10M	Bottom Side	0	20525	25	0	w/o		24.00	23.08	1.24	0	<0.001	0.00
06	LTE 5	QPSK10M	Rear Face	0	20525	1	0	w/		16.00	15.21	1.20	0.19	0.532	**0.64**
	LTE 5	QPSK10M	Top Side	0	20525	1	0	w/		16.00	15.21	1.20	0.14	0.529	0.63
	LTE 5	QPSK10M	Rear Face	0	20525	25	0	w/		16.00	15.18	1.21	-0.18	0.527	0.64
	LTE 5	QPSK10M	Top Side	0	20525	25	0	w/		16.00	15.18	1.21	0.02	0.520	0.63
	LTE 5	QPSK10M	Rear Face	0	20450	1	0	w/		16.00	15.15	1.22	-0.14	0.513	0.63
	LTE 5	QPSK10M	Rear Face	0	20600	1	0	w/		16.00	15.18	1.21	-0.13	0.522	0.63
	LTE 5	QPSK10M	Rear Face	0	20525	1	0	w/	v	16.00	15.21	1.20	0.19	0.104	0.12
	LTE 12	QPSK10M	Rear Face	19	23130	1	0	w/o		25.00	24.12	1.22	-0.04	0.154	0.19
	LTE 12	QPSK10M	Left Side	0	23130	1	0	w/o		25.00	24.12	1.22	-0.02	0.081	0.10
	LTE 12	QPSK10M	Right Side	0	23130	1	0	w/o		25.00	24.12	1.22	-0.01	0.088	0.11
	LTE 12	QPSK10M	Top Side	23	23130	1	0	w/o		25.00	24.12	1.22	-0.09	0.381	0.46
	LTE 12	QPSK10M	Bottom Side	0	23130	1	0	w/o		25.00	24.12	1.22	0	<0.001	0.00
	LTE 12	QPSK10M	Rear Face	19	23130	25	0	w/o		24.00	23.01	1.26	-0.02	0.183	0.23
	LTE 12	QPSK10M	Left Side	0	23130	25	0	w/o		24.00	23.01	1.26	-0.19	0.055	0.07
	LTE 12	QPSK10M	Right Side	0	23130	25	0	w/o		24.00	23.01	1.26	-0.06	0.067	0.08
	LTE 12	QPSK10M	Top Side	23	23130	25	0	w/o		24.00	23.01	1.26	0.08	0.169	0.21
	LTE 12	QPSK10M	Bottom Side	0	23130	25	0	w/o		24.00	23.01	1.26	0	<0.001	0.00
07	LTE 12	QPSK10M	Rear Face	0	23130	1	0	w/		15.00	14.33	1.17	0.18	0.442	**0.52**
	LTE 12	QPSK10M	Top Side	0	23130	1	0	w/		15.00	14.33	1.17	0.1	0.291	0.34
	LTE 12	QPSK10M	Rear Face	0	23130	25	0	w/		15.00	14.28	1.18	-0.19	0.330	0.39
	LTE 12	QPSK10M	Top Side	0	23130	25	0	w/		15.00	14.28	1.18	0.08	0.359	0.42
	LTE 12	QPSK10M	Rear Face	0	23060	1	0	w/		15.00	14.28	1.18	-0.18	0.314	0.37
	LTE 12	QPSK10M	Rear Face	0	23095	1	0	w/		15.00	14.27	1.18	-0.14	0.384	0.45
	LTE 12	QPSK10M	Rear Face	0	23130	1	0	w/	v	15.00	14.33	1.17	0.18	0.047	0.05
	LTE 13	QPSK10M	Rear Face	19	23230	1	0	w/o		25.00	23.87	1.30	-0.15	0.310	0.40
	LTE 13	QPSK10M	Left Side	0	23230	1	0	w/o		25.00	23.87	1.30	-0.01	0.076	0.10
	LTE 13	QPSK10M	Right Side	0	23230	1	0	w/o		25.00	23.87	1.30	0.02	0.131	0.17
	LTE 13	QPSK10M	Top Side	23	23230	1	0	w/o		25.00	23.87	1.30	-0.01	0.259	0.34
	LTE 13	QPSK10M	Bottom Side	0	23230	1	0	w/o		25.00	23.87	1.30	0.11	0.021	0.03
	LTE 13	QPSK10M	Rear Face	19	23230	25	0	w/o		24.00	22.96	1.27	-0.03	0.304	0.39
	LTE 13	QPSK10M	Left Side	0	23230	25	0	w/o		24.00	22.96	1.27	-0.11	0.071	0.09
	LTE 13	QPSK10M	Right Side	0	23230	25	0	w/o		24.00	22.96	1.27	0.04	0.111	0.14
	LTE 13	QPSK10M	Top Side	23	23230	25	0	w/o		24.00	22.96	1.27	-0.01	0.219	0.28
	LTE 13	QPSK10M	Bottom Side	0	23230	25	0	w/o		24.00	22.96	1.27	0.01	0.017	0.02
08	LTE 13	QPSK10M	Rear Face	0	23230	1	0	w/		15.00	14.29	1.18	0.12	0.505	**0.60**
	LTE 13	QPSK10M	Top Side	0	23230	1	0	w/		15.00	14.29	1.18	0.17	0.402	0.47
	LTE 13	QPSK10M	Rear Face	0	23230	25	0	w/		15.00	14.28	1.18	-0.15	0.423	0.50
	LTE 13	QPSK10M	Top Side	0	23230	25	0	w/		15.00	14.28	1.18	0.05	0.399	0.47
	LTE 13	QPSK10M	Rear Face	0	23230	1	0	w/	v	15.00	14.29	1.18	0.12	0.068	0.08

Note. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	RB	Offset	P-sensor	Keyboard Cover	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	LTE 25	QPSK20M	Rear Face	19	26365	1	0	w/o		24.00	23.21	1.20	-0.06	0.340	0.41
	LTE 25	QPSK20M	Left Side	0	26365	1	0	w/o		24.00	23.21	1.20	-0.1	0.171	0.21
	LTE 25	QPSK20M	Right Side	0	26365	1	0	w/o		24.00	23.21	1.20	-0.08	0.301	0.36
	LTE 25	QPSK20M	Top Side	23	26365	1	0	w/o		24.00	23.21	1.20	-0.05	0.341	0.41
	LTE 25	QPSK20M	Bottom Side	0	26365	1	0	w/o		24.00	23.21	1.20	0	<0.001	0.00
	LTE 25	QPSK20M	Rear Face	19	26365	50	0	w/o		23.00	22.27	1.18	-0.07	0.271	0.32
	LTE 25	QPSK20M	Left Side	0	26365	50	0	w/o		23.00	22.27	1.18	-0.18	0.139	0.16
	LTE 25	QPSK20M	Right Side	0	26365	50	0	w/o		23.00	22.27	1.18	-0.03	0.289	0.34
	LTE 25	QPSK20M	Top Side	23	26365	50	0	w/o		23.00	22.27	1.18	-0.05	0.272	0.32
	LTE 25	QPSK20M	Bottom Side	0	26365	50	0	w/o		23.00	22.27	1.18	0	<0.001	0.00
	LTE 25	QPSK20M	Rear Face	0	26365	1	0	w/		14.00	13.14	1.22	0.01	0.457	0.56
09	LTE 25	QPSK20M	Top Side	0	26365	1	0	w/		14.00	13.14	1.22	-0.13	0.672	**0.82**
	LTE 25	QPSK20M	Rear Face	0	26365	50	0	w/		14.00	13.12	1.22	-0.12	0.435	0.53
	LTE 25	QPSK20M	Top Side	0	26365	50	0	w/		14.00	13.12	1.22	-0.08	0.658	0.80
	LTE 25	QPSK20M	Top Side	0	26140	1	0	w/		14.00	13.07	1.24	-0.05	0.647	0.80
	LTE 25	QPSK20M	Top Side	0	26590	1	0	w/		14.00	13.11	1.23	-0.02	0.663	0.82
	LTE 25	QPSK20M	Top Side	0	26140	50	0	w/		14.00	13.05	1.24	-0.02	0.658	0.82
	LTE 25	QPSK20M	Top Side	0	26590	50	0	w/		14.00	13.09	1.23	-0.01	0.662	0.81
	LTE 25	QPSK20M	Top Side	0	26365	100	0	w/		14.00	13.05	1.24	-0.05	0.625	0.78
	LTE 25	QPSK20M	Top Side	0	26365	1	0	w/	v	14.00	13.14	1.22	-0.13	0.589	0.72
	LTE 26	QPSK15M	Rear Face	19	26865	1	0	w/o		25.00	23.82	1.31	0.04	0.408	0.53
	LTE 26	QPSK15M	Left Side	0	26865	1	0	w/o		25.00	23.82	1.31	-0.13	0.133	0.17
	LTE 26	QPSK15M	Right Side	0	26865	1	0	w/o		25.00	23.82	1.31	-0.08	0.222	0.29
	LTE 26	QPSK15M	Top Side	23	26865	1	0	w/o		25.00	23.82	1.31	-0.06	0.341	0.45
	LTE 26	QPSK15M	Bottom Side	0	26865	1	0	w/o		25.00	23.82	1.31	0	<0.001	0.00
	LTE 26	QPSK15M	Rear Face	19	26865	36	0	w/o		24.00	22.87	1.30	-0.08	0.293	0.38
	LTE 26	QPSK15M	Left Side	0	26865	36	0	w/o		24.00	22.87	1.30	-0.18	0.108	0.14
	LTE 26	QPSK15M	Right Side	0	26865	36	0	w/o		24.00	22.87	1.30	-0.11	0.177	0.23
	LTE 26	QPSK15M	Top Side	23	26865	36	0	w/o		24.00	22.87	1.30	-0.06	0.278	0.36
	LTE 26	QPSK15M	Bottom Side	0	26865	36	0	w/o		24.00	22.87	1.30	0	<0.001	0.00
10	LTE 26	QPSK15M	Rear Face	0	26865	1	0	w/		15.00	14.31	1.17	0.13	0.453	**0.53**
	LTE 26	QPSK15M	Top Side	0	26865	1	0	w/		15.00	14.31	1.17	0.19	0.405	0.47
	LTE 26	QPSK15M	Rear Face	0	26865	36	0	w/		15.00	14.28	1.18	-0.12	0.420	0.50
	LTE 26	QPSK15M	Top Side	0	26865	36	0	w/		15.00	14.28	1.18	0.02	0.401	0.47
	LTE 26	QPSK15M	Rear Face	0	26765	1	0	w/		15.00	14.25	1.19	-0.14	0.442	0.53
	LTE 26	QPSK15M	Rear Face	0	26965	1	0	w/		15.00	14.28	1.18	-0.18	0.414	0.49
	LTE 26	QPSK15M	Rear Face	0	26865	1	0	w/	v	15.00	14.31	1.17	0.13	0.072	0.08
	LTE 41	QPSK20M	Rear Face	19	40620	1	0	w/o		25.00	24.13	1.22	-0.07	0.078	0.10
	LTE 41	QPSK20M	Left Side	0	40620	1	0	w/o		25.00	24.13	1.22	-0.07	0.124	0.15
	LTE 41	QPSK20M	Right Side	0	40620	1	0	w/o		25.00	24.13	1.22	-0.07	0.285	0.35
	LTE 41	QPSK20M	Top Side	23	40620	1	0	w/o		25.00	24.13	1.22	-0.13	0.089	0.11
	LTE 41	QPSK20M	Bottom Side	0	40620	1	0	w/o		25.00	24.13	1.22	0	<0.001	0.00
	LTE 41	QPSK20M	Rear Face	19	40620	50	0	w/o		24.00	23.18	1.21	0.03	0.058	0.07
	LTE 41	QPSK20M	Left Side	0	40620	50	0	w/o		24.00	23.18	1.21	0.06	0.043	0.05
	LTE 41	QPSK20M	Right Side	0	40620	50	0	w/o		24.00	23.18	1.21	-0.12	0.205	0.25
	LTE 41	QPSK20M	Top Side	23	40620	50	0	w/o		24.00	23.18	1.21	-0.07	0.066	0.08
	LTE 41	QPSK20M	Bottom Side	0	40620	50	0	w/o		24.00	23.18	1.21	0	<0.001	0.00
	LTE 41	QPSK20M	Rear Face	0	40620	1	0	w/		15.00	14.21	1.20	-0.12	0.468	0.56
	LTE 41	QPSK20M	Top Side	0	40620	1	0	w/		15.00	14.21	1.20	-0.15	0.328	0.39
	LTE 41	QPSK20M	Rear Face	0	40620	50	0	w/		15.00	14.11	1.23	-0.03	0.444	0.55
	LTE 41	QPSK20M	Top Side	0	40620	50	0	w/		15.00	14.11	1.23	0.16	0.34	0.42
	LTE 41	QPSK20M	Rear Face	0	39750	1	0	w/		15.00	14.19	1.21	0.07	0.368	0.45
11	LTE 41	QPSK20M	Rear Face	0	40185	1	0	w/		15.00	13.73	1.34	-0.07	0.448	**0.60**
	LTE 41	QPSK20M	Rear Face	0	41055	1	0	w/		15.00	13.68	1.36	-0.01	0.402	0.55
	LTE 41	QPSK20M	Rear Face	0	41490	1	0	w/		15.00	13.77	1.33	0.05	0.341	0.45
	LTE 41	QPSK20M	Rear Face	0	40185	1	0	w/	v	15.00	13.73	1.34	-0.07	0.044	0.06

Note. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	RB	Offset	P-sensor	Keyboard Cover	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	LTE 66	QPSK20M	Rear Face	19	132572	1	0	w/o		24.00	23.15	1.22	-0.08	0.325	0.40
	LTE 66	QPSK20M	Left Side	0	132572	1	0	w/o		24.00	23.15	1.22	-0.13	0.113	0.14
	LTE 66	QPSK20M	Right Side	0	132572	1	0	w/o		24.00	23.15	1.22	0.04	0.276	0.34
	LTE 66	QPSK20M	Top Side	23	132572	1	0	w/o		24.00	23.15	1.22	-0.02	0.315	0.38
	LTE 66	QPSK20M	Bottom Side	0	132572	1	0	w/o		24.00	23.15	1.22	0	<0.001	0.00
	LTE 66	QPSK20M	Rear Face	19	132572	50	0	w/o		23.00	22.28	1.18	-0.06	0.296	0.35
	LTE 66	QPSK20M	Left Side	0	132572	50	0	w/o		23.00	22.28	1.18	-0.15	0.159	0.19
	LTE 66	QPSK20M	Right Side	0	132572	50	0	w/o		23.00	22.28	1.18	-0.06	0.32	0.38
	LTE 66	QPSK20M	Top Side	23	132572	50	0	w/o		23.00	22.28	1.18	-0.08	0.267	0.32
	LTE 66	QPSK20M	Bottom Side	0	132572	50	0	w/o		23.00	22.28	1.18	0	<0.001	0.00
	LTE 66	QPSK20M	Rear Face	0	132572	1	0	w/		14.00	13.13	1.22	-0.1	0.508	0.62
12	LTE 66	QPSK20M	Top Side	0	132572	1	0	w/		14.00	13.13	1.22	-0.16	0.671	0.82
	LTE 66	QPSK20M	Rear Face	0	132572	50	0	w/		14.00	13.12	1.22	-0.01	0.458	0.56
	LTE 66	QPSK20M	Top Side	0	132572	50	0	w/		14.00	13.12	1.22	-0.02	0.641	0.78
	LTE 66	QPSK20M	Top Side	0	132072	1	0	w/		14.00	13.01	1.26	-0.07	0.57	0.72
	LTE 66	QPSK20M	Top Side	0	132322	1	0	w/		14.00	13.09	1.23	-0.02	0.583	0.72
	LTE 66	QPSK20M	Top Side	0	132072	50	0	w/		14.00	13.00	1.26	0.02	0.609	0.77
	LTE 66	QPSK20M	Top Side	0	132322	50	0	w/		14.00	13.08	1.24	-0.05	0.630	0.78
	LTE 66	QPSK20M	Top Side	0	132572	1	0	w/	v	14.00	13.13	1.22	-0.16	0.611	0.75

Note. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	P-sensor	Tx Antenna	Keyboard Cover	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	WLAN2.4G	802.11b	Rear Face	10	11	w/o	Ant 2		99.85	1.00	20.00	19.57	1.10	-0.03	0.432	0.48
	WLAN2.4G	802.11b	Left Side	4	11	w/o	Ant 2		99.85	1.00	20.00	19.57	1.10	-0.02	0.554	0.61
	WLAN2.4G	802.11b	Left Corner	9	11	w/o	Ant 2		99.85	1.00	20.00	19.57	1.10	0.15	0.213	0.23
	WLAN2.4G	802.11b	Right Side	0	11	w/o	Ant 2		99.85	1.00	20.00	19.57	1.10	0	<0.001	0.00
	WLAN2.4G	802.11b	Top Side	14	11	w/o	Ant 2		99.85	1.00	20.00	19.57	1.10	-0.01	0.085	0.09
	WLAN2.4G	802.11b	Bottom Side	0	11	w/o	Ant 2		99.85	1.00	20.00	19.57	1.10	0	<0.001	0.00
	WLAN2.4G	802.11b	Rear Face	10	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	0.08	0.551	0.61
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	0	<0.001	0.00
	WLAN2.4G	802.11b	Left Side	4	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	0	<0.001	0.00
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	-0.08	0.56	0.61
	WLAN2.4G	802.11b	Left Corner	9	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	0	<0.001	0.00
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	-0.07	0.242	0.26
	WLAN2.4G	802.11b	Right Side	7	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	-0.03	0.346	0.38
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	0	<0.001	0.00
	WLAN2.4G	802.11b	Right Corner	11	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	-0.12	0.287	0.32
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	0	<0.001	0.00
	WLAN2.4G	802.11b	Top Side	14	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	0	<0.001	0.00
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	-0.15	0.191	0.21
	WLAN2.4G	802.11b	Bottom Side	0	6	w/o	MIMO_Ant 1		99.85	1.00	20.00	19.59	1.10	0	<0.001	0.00
							MIMO_Ant 2		99.85	1.00	20.00	19.64	1.09	0	<0.001	0.00
	WLAN2.4G	802.11b	Rear Face	0	1	w/	Ant 2		99.85	1.00	11.50	11.32	1.04	-0.18	0.478	0.50
	WLAN2.4G	802.11b	Left Side	0	1	w/	Ant 2		99.85	1.00	11.50	11.32	1.04	0.12	0.516	0.54
	WLAN2.4G	802.11b	Left Corner	0	1	w/	Ant 2		99.85	1.00	11.50	11.32	1.04	0.03	0.105	0.11
	WLAN2.4G	802.11b	Top Side	0	1	w/	Ant 2		99.85	1.00	11.50	11.32	1.04	-0.05	0.115	0.12
13	WLAN2.4G	802.11b	Rear Face	0	6	w/	MIMO_Ant 1		99.85	1.00	11.50	11.06	1.11	0.06	0.594	**0.66**
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0	<0.001	0.00
	WLAN2.4G	802.11b	Left Side	0	6	w/	MIMO_Ant 1		99.85	1.00	11.50	11.06	1.11	0	<0.001	0.00
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0.03	0.432	0.51
	WLAN2.4G	802.11b	Left Corner	0	6	w/	MIMO_Ant 1		99.85	1.00	11.50	11.06	1.11	0	<0.001	0.00
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0.11	0.121	0.14
	WLAN2.4G	802.11b	Right Side	0	6	w/	MIMO_Ant 1		99.85	1.00	11.50	11.06	1.11	-0.03	0.185	0.21
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0	<0.001	0.00
	WLAN2.4G	802.11b	Right Corner	0	6	w/	MIMO_Ant 1		99.85	1.00	11.50	11.06	1.11	0.14	0.329	0.37
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0	<0.001	0.00
	WLAN2.4G	802.11b	Top Side	0	6	w/	MIMO_Ant 1		99.85	1.00	11.50	11.06	1.11	-0.11	0.169	0.19
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0	<0.001	0.00
	WLAN2.4G	802.11b	Rear Face	0	1	w/	MIMO_Ant 1		99.85	1.00	11.50	10.85	1.16	0.11	0.558	0.65
							MIMO_Ant 2		99.85	1.00	11.50	11.01	1.12	0	<0.001	0.00
	WLAN2.4G	802.11b	Rear Face	0	11	w/	MIMO_Ant 1		99.85	1.00	11.50	9.68	1.52	0.07	0.401	0.61
							MIMO_Ant 2		99.85	1.00	11.50	10.26	1.33	0	<0.001	0.00
	WLAN2.4G	802.11b	Rear Face	0	6	w/	MIMO_Ant 1	v	99.85	1.00	11.50	11.06	1.11	0.06	0.043	0.05
							MIMO_Ant 2		99.85	1.00	11.50	10.82	1.17	0	<0.001	0.00

Note.

1. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.
2. Zoom scan will interrupted the secondary hotspot if maximum SAR value is below 0.1 W/kg under WLAN MIMO mode.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	P-sensor	Tx Antenna	Keyboard Cover	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	WLAN5.3G	802.11a	Rear Face	18	52	w/o	Ant 1		98.83	1.01	18.00	17.61	1.09	-0.01	0.048	0.05
	WLAN5.3G	802.11a	Left Side	0	52	w/o	Ant 1		98.83	1.01	18.00	17.61	1.09	-0.07	0.015	0.02
14	WLAN5.3G	802.11a	Right Side	7	52	w/o	Ant 1		98.83	1.01	18.00	17.61	1.09	-0.06	0.539	0.59
	WLAN5.3G	802.11a	Right Corner	11	52	w/o	Ant 1		98.83	1.01	18.00	17.61	1.09	-0.06	0.171	0.19
	WLAN5.3G	802.11a	Top Side	19	52	w/o	Ant 1		98.83	1.01	18.00	17.61	1.09	-0.07	0.075	0.08
	WLAN5.3G	802.11a	Bottom Side	0	52	w/o	Ant 1		98.83	1.01	18.00	17.61	1.09	0	<0.001	0.00
	WLAN5.3G	802.11a	Rear Face	10	52	w/o	Ant 2		98.83	1.01	18.00	17.52	1.12	0.12	0.105	0.12
	WLAN5.3G	802.11a	Left Side	4	52	w/o	Ant 2		98.83	1.01	18.00	17.52	1.12	-0.16	0.322	0.36
	WLAN5.3G	802.11a	Left Corner	9	52	w/o	Ant 2		98.83	1.01	18.00	17.52	1.12	-0.01	0.035	0.04
	WLAN5.3G	802.11a	Right Side	0	52	w/o	Ant 2		98.83	1.01	18.00	17.52	1.12	0.04	0.029	0.03
	WLAN5.3G	802.11a	Top Side	14	52	w/o	Ant 2		98.83	1.01	18.00	17.52	1.12	0.09	0.023	0.03
	WLAN5.3G	802.11a	Bottom Side	0	52	w/o	Ant 2		98.83	1.01	18.00	17.52	1.12	0	<0.001	0.00
	WLAN5.3G	802.11a	Rear Face	10	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	0	<0.001	0.00
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	-0.03	0.199	0.21
	WLAN5.3G	802.11a	Left Side	4	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	0	<0.001	0.00
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	-0.05	0.366	0.38
	WLAN5.3G	802.11a	Left Corner	9	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	0	<0.001	0.00
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	0.07	0.052	0.05
	WLAN5.3G	802.11a	Right Side	7	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	0.01	0.453	0.48
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	0	<0.001	0.00
	WLAN5.3G	802.11a	Right Corner	11	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	-0.13	0.186	0.20
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	0	<0.001	0.00
	WLAN5.3G	802.11a	Top Side	14	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	-0.13	0.102	0.11
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	-0.13	0.061	0.06
	WLAN5.3G	802.11a	Bottom Side	0	52	w/o	MIMO_Ant 1		98.83	1.01	18.00	17.85	1.04	0	<0.001	0.00
							MIMO_Ant 2		98.83	1.01	18.00	17.88	1.03	0	<0.001	0.00
	WLAN5.3G	802.11ac VHT80	Rear Face	0	58	w/	Ant 1		99.68	1.00	9.00	8.75	1.06	-0.05	0.281	0.30
	WLAN5.3G	802.11ac VHT80	Right Side	0	58	w/	Ant 1		99.68	1.00	9.00	8.75	1.06	-0.02	0.396	0.42
	WLAN5.3G	802.11ac VHT80	Right Corner	0	58	w/	Ant 1		99.68	1.00	9.00	8.75	1.06	-0.08	0.231	0.24
	WLAN5.3G	802.11ac VHT80	Top Side	0	58	w/	Ant 1		99.68	1.00	9.00	8.75	1.06	-0.06	0.108	0.11
	WLAN5.3G	802.11ac VHT80	Rear Face	0	58	w/	Ant 2		99.68	1.00	9.00	8.40	1.15	0.02	0.457	0.53
	WLAN5.3G	802.11ac VHT80	Left Side	0	58	w/	Ant 2		99.68	1.00	9.00	8.40	1.15	-0.05	0.171	0.20
	WLAN5.3G	802.11ac VHT80	Left Corner	0	58	w/	Ant 2		99.68	1.00	9.00	8.40	1.15	-0.04	0.066	0.08
	WLAN5.3G	802.11ac VHT80	Top Side	0	58	w/	Ant 2		99.68	1.00	9.00	8.40	1.15	-0.03	0.126	0.14
	WLAN5.3G	802.11ac VHT80	Rear Face	0	58	w/	MIMO_Ant 1		99.68	1.00	9.00	8.75	1.06	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.58	1.10	-0.05	0.511	0.56
	WLAN5.3G	802.11ac VHT80	Left Side	0	58	w/	MIMO_Ant 1		99.68	1.00	9.00	8.75	1.06	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.58	1.10	-0.07	0.169	0.19
	WLAN5.3G	802.11ac VHT80	Left Corner	0	58	w/	MIMO_Ant 1		99.68	1.00	9.00	8.75	1.06	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.58	1.10	-0.09	0.068	0.07
	WLAN5.3G	802.11ac VHT80	Right Side	0	58	w/	MIMO_Ant 1		99.68	1.00	9.00	8.75	1.06	-0.01	0.307	0.33
							MIMO_Ant 2		99.68	1.00	9.00	8.58	1.10	0	<0.001	0.00
	WLAN5.3G	802.11ac VHT80	Right Corner	0	58	w/	MIMO_Ant 1		99.68	1.00	9.00	8.75	1.06	0.05	0.197	0.21
							MIMO_Ant 2		99.68	1.00	9.00	8.58	1.10	0	<0.001	0.00
	WLAN5.3G	802.11ac VHT80	Top Side	0	58	w/	MIMO_Ant 1		99.68	1.00	9.00	8.75	1.06	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.58	1.10	-0.04	0.118	0.13
	WLAN5.3G	802.11a	Right Side	7	56	w/o	Ant 1		98.83	1.01	18.00	17.49	1.12	-0.01	0.507	0.57
	WLAN5.3G	802.11a	Right Side	7	60	w/o	Ant 1		98.83	1.01	18.00	17.33	1.17	-0.02	0.482	0.57
	WLAN5.3G	802.11a	Right Side	7	64	w/o	Ant 1		98.83	1.01	18.00	17.13	1.22	0.01	0.462	0.57
	WLAN5.3G	802.11a	Right Side	7	52	w/o	Ant 1	v	98.83	1.01	18.00	17.61	1.09	-0.06	0.433	0.48

Note.

1. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.
2. Zoom scan will interrupted the secondary hotspot if maximum SAR value is below 0.1 W/kg under WLAN MIMO mode.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	P-sensor	Tx Antenna	Keyboard Cover	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	WLAN5.6G	802.11n HT40	Rear Face	18	134	w/o	Ant 1		99.67	1.00	17.00	16.73	1.06	-0.02	0.044	0.05
	WLAN5.6G	802.11n HT40	Left Side	0	134	w/o	Ant 1		99.67	1.00	17.00	16.73	1.06	0	<0.001	0.00
	WLAN5.6G	802.11n HT40	Right Side	7	134	w/o	Ant 1		99.67	1.00	17.00	16.73	1.06	0.05	0.589	0.62
	WLAN5.6G	802.11n HT40	Right Corner	11	134	w/o	Ant 1		99.67	1.00	17.00	16.73	1.06	0.07	0.203	0.22
	WLAN5.6G	802.11n HT40	Top Side	19	134	w/o	Ant 1		99.67	1.00	17.00	16.73	1.06	-0.1	0.044	0.05
	WLAN5.6G	802.11n HT40	Bottom Side	0	134	w/o	Ant 1		99.67	1.00	17.00	16.73	1.06	0	<0.001	0.00
	WLAN5.6G	802.11n HT40	Rear Face	10	134	w/o	Ant 2		99.67	1.00	17.00	16.87	1.03	-0.05	0.144	0.15
	WLAN5.6G	802.11n HT40	Left Side	4	134	w/o	Ant 2		99.67	1.00	17.00	16.87	1.03	0.16	0.385	0.40
	WLAN5.6G	802.11n HT40	Left Corner	9	134	w/o	Ant 2		99.67	1.00	17.00	16.87	1.03	0.05	0.132	0.14
	WLAN5.6G	802.11n HT40	Right Side	0	134	w/o	Ant 2		99.67	1.00	17.00	16.87	1.03	-0.01	0.067	0.07
	WLAN5.6G	802.11n HT40	Top Side	14	134	w/o	Ant 2		99.67	1.00	17.00	16.87	1.03	0.02	0.016	0.02
	WLAN5.6G	802.11n HT40	Bottom Side	0	134	w/o	Ant 2		99.67	1.00	17.00	16.87	1.03	0	<0.001	0.00
	WLAN5.6G	802.11n HT40	Rear Face	10	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	-0.06	0.125	0.13
	WLAN5.6G	802.11n HT40	Left Side	4	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	-0.12	0.442	0.46
	WLAN5.6G	802.11n HT40	Left Corner	9	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	0.12	0.152	0.16
	WLAN5.6G	802.11n HT40	Right Side	7	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	-0.02	0.456	0.49
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	0	<0.001	0.00
	WLAN5.6G	802.11n HT40	Right Corner	11	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	-0.13	0.183	0.20
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	0	<0.001	0.00
	WLAN5.6G	802.11n HT40	Top Side	14	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	-0.07	0.086	0.09
	WLAN5.6G	802.11n HT40	Bottom Side	0	134	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.71	1.07	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.87	1.03	0	<0.001	0.00
	WLAN5.6G	802.11ac VHT80	Rear Face	0	138	w/	Ant 1		99.68	1.00	9.00	8.63	1.09	-0.07	0.346	0.38
	WLAN5.6G	802.11ac VHT80	Right Side	0	138	w/	Ant 1		99.68	1.00	9.00	8.63	1.09	0.03	0.388	0.42
	WLAN5.6G	802.11ac VHT80	Right Corner	0	138	w/	Ant 1		99.68	1.00	9.00	8.63	1.09	0.07	0.293	0.32
	WLAN5.6G	802.11ac VHT80	Top Side	0	138	w/	Ant 1		99.68	1.00	9.00	8.63	1.09	-0.05	0.069	0.08
15	WLAN5.6G	802.11ac VHT80	Rear Face	0	138	w/	Ant 2		99.68	1.00	9.00	8.69	1.07	0.16	0.575	0.62
	WLAN5.6G	802.11ac VHT80	Left Side	0	138	w/	Ant 2		99.68	1.00	9.00	8.69	1.07	-0.09	0.476	0.51
	WLAN5.6G	802.11ac VHT80	Left Corner	0	138	w/	Ant 2		99.68	1.00	9.00	8.69	1.07	0.01	0.096	0.10
	WLAN5.6G	802.11ac VHT80	Top Side	0	138	w/	Ant 2		99.68	1.00	9.00	8.69	1.07	-0.03	0.120	0.13
	WLAN5.6G	802.11ac VHT80	Rear Face	0	106	w/	MIMO_Ant 1		99.68	1.00	9.00	8.41	1.15	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.27	1.18	-0.02	0.515	0.61
	WLAN5.6G	802.11ac VHT80	Left Side	0	106	w/	MIMO_Ant 1		99.68	1.00	9.00	8.41	1.15	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.27	1.18	-0.16	0.296	0.35
	WLAN5.6G	802.11ac VHT80	Left Corner	0	106	w/	MIMO_Ant 1		99.68	1.00	9.00	8.41	1.15	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.27	1.18	0.03	0.106	0.13
	WLAN5.6G	802.11ac VHT80	Right Side	0	106	w/	MIMO_Ant 1		99.68	1.00	9.00	8.41	1.15	-0.08	0.249	0.29
							MIMO_Ant 2		99.68	1.00	9.00	8.27	1.18	0	<0.001	0.00
	WLAN5.6G	802.11ac VHT80	Right Corner	0	106	w/	MIMO_Ant 1		99.68	1.00	9.00	8.41	1.15	0.05	0.194	0.22
							MIMO_Ant 2		99.68	1.00	9.00	8.27	1.18	0	<0.001	0.00
	WLAN5.6G	802.11ac VHT80	Top Side	0	106	w/	MIMO_Ant 1		99.68	1.00	9.00	8.41	1.15	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.27	1.18	-0.09	0.111	0.13
	WLAN5.6G	802.11ac VHT80	Rear Face	0	106	w/	Ant 2		99.68	1.00	9.00	8.23	1.19	0.14	0.505	0.60
	WLAN5.6G	802.11ac VHT80	Rear Face	0	122	w/	Ant 2		99.68	1.00	9.00	8.55	1.11	0.16	0.535	0.59
	WLAN5.6G	802.11ac VHT80	Rear Face	0	138	w/	Ant 2	v	99.68	1.00	9.00	8.69	1.07	0.16	0.091	0.10

Note.

1. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.
2. Zoom scan will interrupted the secondary hotspot if maximum SAR value is below 0.1 W/kg under WLAN MIMO mode.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	P-sensor	Tx Antenna	Keyboard Cover	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	WLAN5.8G	802.11n HT40	Rear Face	18	151	w/o	Ant 1		99.67	1.00	17.00	16.61	1.09	0.16	0.038	0.04
	WLAN5.8G	802.11n HT40	Left Side	0	151	w/o	Ant 1		99.67	1.00	17.00	16.61	1.09	0	<0.001	0.00
	WLAN5.8G	802.11n HT40	Right Side	7	151	w/o	Ant 1		99.67	1.00	17.00	16.61	1.09	-0.04	0.515	0.56
	WLAN5.8G	802.11n HT40	Right Corner	11	151	w/o	Ant 1		99.67	1.00	17.00	16.61	1.09	-0.05	0.214	0.23
	WLAN5.8G	802.11n HT40	Top Side	19	151	w/o	Ant 1		99.67	1.00	17.00	16.61	1.09	0.03	0.065	0.07
	WLAN5.8G	802.11n HT40	Bottom Side	0	151	w/o	Ant 1		99.67	1.00	17.00	16.61	1.09	0	<0.001	0.00
	WLAN5.8G	802.11n HT40	Rear Face	10	151	w/o	Ant 2		99.67	1.00	17.00	16.28	1.18	-0.13	0.179	0.21
	WLAN5.8G	802.11n HT40	Left Side	4	151	w/o	Ant 2		99.67	1.00	17.00	16.28	1.18	-0.15	0.467	0.55
	WLAN5.8G	802.11n HT40	Left Corner	9	151	w/o	Ant 2		99.67	1.00	17.00	16.28	1.18	0.17	0.131	0.15
	WLAN5.8G	802.11n HT40	Right Side	0	151	w/o	Ant 2		99.67	1.00	17.00	16.28	1.18	-0.02	0.052	0.06
	WLAN5.8G	802.11n HT40	Top Side	14	151	w/o	Ant 2		99.67	1.00	17.00	16.28	1.18	0.19	0.078	0.09
	WLAN5.8G	802.11n HT40	Bottom Side	0	151	w/o	Ant 2		99.67	1.00	17.00	16.28	1.18	0	<0.001	0.00
	WLAN5.8G	802.11n HT40	Rear Face	10	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	-0.1	0.205	0.21
	WLAN5.8G	802.11n HT40	Left Side	4	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	-0.13	0.469	0.47
	WLAN5.8G	802.11n HT40	Left Corner	9	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	0.09	0.136	0.14
	WLAN5.8G	802.11n HT40	Right Side	7	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	0.01	0.479	0.55
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	0	<0.001	0.00
	WLAN5.8G	802.11n HT40	Right Corner	11	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	-0.02	0.242	0.28
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	0	<0.001	0.00
	WLAN5.8G	802.11n HT40	Top Side	14	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	-0.14	0.093	0.11
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	0	<0.001	0.00
	WLAN5.8G	802.11n HT40	Bottom Side	0	151	w/o	MIMO_Ant 1		99.67	1.00	17.00	16.43	1.14	0	<0.001	0.00
							MIMO_Ant 2		99.67	1.00	17.00	16.99	1.00	0	<0.001	0.00
	WLAN5.8G	802.11ac VHT80	Rear Face	0	155	w/	Ant 1		99.68	1.00	9.00	8.49	1.12	-0.04	0.343	0.38
	WLAN5.8G	802.11ac VHT80	Right Side	0	155	w/	Ant 1		99.68	1.00	9.00	8.49	1.12	0.14	0.448	0.50
	WLAN5.8G	802.11ac VHT80	Right Corner	0	155	w/	Ant 1		99.68	1.00	9.00	8.49	1.12	0.01	0.351	0.39
	WLAN5.8G	802.11ac VHT80	Top Side	0	155	w/	Ant 1		99.68	1.00	9.00	8.49	1.12	-0.02	0.079	0.09
16	WLAN5.8G	802.11ac VHT80	Rear Face	0	155	w/	Ant 2		99.68	1.00	9.00	8.36	1.16	-0.12	0.571	**0.66**
	WLAN5.8G	802.11ac VHT80	Left Side	0	155	w/	Ant 2		99.68	1.00	9.00	8.36	1.16	-0.16	0.341	0.40
	WLAN5.8G	802.11ac VHT80	Left Corner	0	155	w/	Ant 2		99.68	1.00	9.00	8.36	1.16	-0.08	0.149	0.17
	WLAN5.8G	802.11ac VHT80	Top Side	0	155	w/	Ant 2		99.68	1.00	9.00	8.36	1.16	-0.02	0.150	0.17
	WLAN5.8G	802.11ac VHT80	Rear Face	0	155	w/	MIMO_Ant 1		99.68	1.00	9.00	7.55	1.40	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.43	1.14	0.19	0.503	0.57
	WLAN5.8G	802.11ac VHT80	Left Side	0	155	w/	MIMO_Ant 1		99.68	1.00	9.00	7.55	1.40	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.43	1.14	-0.11	0.338	0.39
	WLAN5.8G	802.11ac VHT80	Left Corner	0	155	w/	MIMO_Ant 1		99.68	1.00	9.00	7.55	1.40	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.43	1.14	-0.03	0.121	0.14
	WLAN5.8G	802.11ac VHT80	Right Side	0	155	w/	MIMO_Ant 1		99.68	1.00	9.00	7.55	1.40	-0.07	0.367	0.51
							MIMO_Ant 2		99.68	1.00	9.00	8.43	1.14	0	<0.001	0.00
	WLAN5.8G	802.11ac VHT80	Right Corner	0	155	w/	MIMO_Ant 1		99.68	1.00	9.00	7.55	1.40	0.02	0.336	0.47
							MIMO_Ant 2		99.68	1.00	9.00	8.43	1.14	0	<0.001	0.00
	WLAN5.8G	802.11ac VHT80	Top Side	0	155	w/	MIMO_Ant 1		99.68	1.00	9.00	7.55	1.40	0	<0.001	0.00
							MIMO_Ant 2		99.68	1.00	9.00	8.43	1.14	-0.03	0.103	0.12
	WLAN5.8G	802.11ac VHT80	Rear Face	0	155	w/	Ant 2	v	99.68	1.00	9.00	8.36	1.16	-0.12	0.139	0.16

Note.

1. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.
2. Zoom scan will interrupted the secondary hotspot if maximum SAR value is below 0.1 W/kg under WLAN MIMO mode.

Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Ch.	P-sensor	Tx Antenna	Keyboard Cover	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	BT	BDR	Rear Face	18	0	w/o	Ant 1		76.85	1.30	13.00	11.98	1.26	0	<0.001	0.00
	BT	BDR	Left Side	0	0	w/o	Ant 1		76.85	1.30	13.00	11.98	1.26	0	<0.001	0.00
	BT	BDR	Right Side	7	0	w/o	Ant 1		76.85	1.30	13.00	11.98	1.26	0.02	0.142	0.23
	BT	BDR	Right Corner	11	0	w/o	Ant 1		76.85	1.30	13.00	11.98	1.26	0	<0.001	0.00
	BT	BDR	Top Side	19	0	w/o	Ant 1		76.85	1.30	13.00	11.98	1.26	0	<0.001	0.00
	BT	BDR	Bottom Side	0	0	w/o	Ant 1		76.85	1.30	13.00	11.98	1.26	0	<0.001	0.00
17	BT	BDR	Rear Face	0	39	w/	Ant 1		76.85	1.30	12.00	11.25	1.19	-0.15	0.305	0.47
	BT	BDR	Right Side	0	39	w/	Ant 1		76.85	1.30	12.00	11.25	1.19	-0.03	0.208	0.32
	BT	BDR	Right Corner	0	39	w/	Ant 1		76.85	1.30	12.00	11.25	1.19	0.15	0.161	0.25
	BT	BDR	Top Side	0	39	w/	Ant 1		76.85	1.30	12.00	11.25	1.19	-0.1	0.163	0.25
	BT	BDR	Rear Face	0	0	w/	Ant 1		76.85	1.30	12.00	10.55	1.40	0.02	0.202	0.37
	BT	BDR	Rear Face	0	78	w/	Ant 1		76.85	1.30	12.00	9.35	1.84	0.13	0.173	0.41
	BT	BDR	Rear Face	0	39	w/	Ant 1	v	76.85	1.30	12.00	11.25	1.19	-0.15	0.101	0.16
	BT	BDR	Rear Face	10	39	w/o	Ant 2		76.85	1.30	12.00	10.76	1.33	0	<0.001	0.00
	BT	BDR	Left Side	4	39	w/o	Ant 2		76.85	1.30	12.00	10.76	1.33	0.16	0.196	0.34
	BT	BDR	Left Corner	9	39	w/o	Ant 2		76.85	1.30	12.00	10.76	1.33	0	<0.001	0.00
	BT	BDR	Right Side	0	39	w/o	Ant 2		76.85	1.30	12.00	10.76	1.33	0	<0.001	0.00
	BT	BDR	Top Side	14	39	w/o	Ant 2		76.85	1.30	12.00	10.76	1.33	0	<0.001	0.00
	BT	BDR	Bottom Side	0	39	w/o	Ant 2		76.85	1.30	12.00	10.76	1.33	0	<0.001	0.00
	BT	BDR	Rear Face	0	39	w/	Ant 2		76.85	1.30	11.00	10.70	1.07	-0.18	0.285	0.40
18	BT	BDR	Left Side	0	39	w/	Ant 2		76.85	1.30	11.00	10.70	1.07	-0.01	0.443	0.62
	BT	BDR	Left Corner	0	39	w/	Ant 2		76.85	1.30	11.00	10.70	1.07	0.03	0.090	0.13
	BT	BDR	Top Side	0	39	w/	Ant 2		76.85	1.30	11.00	10.70	1.07	0	<0.001	0.00
	BT	BDR	Left Side	0	0	w/	Ant 2		76.85	1.30	11.00	9.09	1.55	0.13	0.285	0.57
	BT	BDR	Left Side	0	78	w/	Ant 2		76.85	1.30	11.00	9.18	1.52	0.02	0.275	0.54
	BT	BDR	Left Side	0	39	w/	Ant 2	v	76.85	1.30	11.00	10.70	1.07	-0.01	0.203	0.28

Note. The "< 0.001" means there is no SAR value or the SAR is too low to be measured.

4.7.3 Simultaneous Multi-band Transmission Evaluation

<Possibilities of Simultaneous Transmission>

The simultaneous transmission possibilities for this device are listed as below.

Simultaneous TX Combination	Capable Transmit Configurations	Body Exposure Condition
1	WWAN + BT Ant1	Yes
2	WWAN + WLAN 5G Ant1 + BT Ant1	Yes
3	WWAN + WLAN 2.4G Ant1 + WLAN 5G Ant1 (RSDB)	Yes
4	WWAN + BT Ant2	Yes
5	WWAN + WLAN 5G Ant2 + BT Ant2	Yes
6	WWAN + WLAN 2.4G Ant2 + WLAN 5G Ant2 (RSDB)	Yes

Note.

Because WLAN Ant1 and WLAN Ant2 are spatially separated (per section 6.1 of KDB 248827 D01), there is no need to evaluate WWAN with both WLAN Ant1 and WLAN Ant2 simultaneously.

<SAR Summation Analysis>

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR_{1g} of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit(SAR_{1g} 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR_{1g} is greater than the SAR limit (SAR_{1g} 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

<Estimated SAR Calculation>

According to KDB 447498 D01, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR was estimated according to following formula to result in substantially conservative SAR values of <= 0.4 W/kg to determine simultaneous transmission SAR test exclusion.

$$\text{Estimated SAR} = \frac{\text{Max. Tune up Power}_{(\text{mW})}}{\text{Min. Test Separation Distance}_{(\text{mm})}} \times \frac{\sqrt{f_{(\text{GHz})}}}{7.5}$$

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

Mode / Band	Frequency (GHz)	Max. Tune-up Power (dBm)	Test Position	Separation Distance (mm)	Estimated SAR (W/kg)
GSM850	0.848	26.5 (Max Frame-Averaged Power)	Body	0	0.40
GSM1900	1.909	23.24 (Max Frame-Averaged Power)	Body	0	0.40
WCDMA II	1.907	23.5	Body	0	0.40
WCDMA IV	1.752	23.5	Body	0	0.40
WCDMA V	0.846	24.5	Body	0	0.40
LTE 2	1.91	24.0	Body	0	0.40
LTE 4	1.755	24.0	Body	0	0.40
LTE 5	0.849	25.0	Body	0	0.40
LTE 12	0.716	25.0	Body	0	0.40
LTE 13	0.787	25.0	Body	0	0.40
LTE 25	1.915	24.0	Body	0	0.40
LTE 26	0.849	25.0	Body	0	0.40
LTE 41	2.69	25.0	Body	0	0.40
LTE 66	1.78	24.0	Body	0	0.40

Note:

1. The separation distance is determined from the outer housing of the EUT to the user.
2. When standalone SAR testing is not required, an estimated SAR can be applied to determine simultaneous transmission SAR test exclusion.

Mode / Band	Frequency (GHz)	Max. Tune-up Power (dBm)	Test Position	Separation Distance (mm)	Estimated SAR (W/kg)
WLAN 5GHz Ant 1	5.24	18.0	Body	0	0.40
WLAN 5GHz Ant 1	5.32	18.0	Body	0	0.40
WLAN 5GHz Ant 1	5.72	17.0	Body	0	0.40
WLAN 5GHz Ant 1	5.825	17.0	Body	0	0.40
WLAN 2.4GHz Ant 2	2.462	20.0	Body	0	0.40
WLAN 5GHz Ant 2	5.24	18.0	Body	0	0.40
WLAN 5GHz Ant 2	5.32	18.0	Body	0	0.40
WLAN 5GHz Ant 2	5.72	17.0	Body	0	0.40
WLAN 5GHz Ant 2	5.825	17.0	Body	0	0.40
WLAN 2.4GHz Ant 1+2	2.462	23.0	Body	0	0.40
WLAN 5GHz Ant 1+2	5.24	21.0	Body	0	0.40
WLAN 5GHz Ant 1+2	5.32	21.0	Body	0	0.40
WLAN 5GHz Ant 1+2	5.72	20.0	Body	0	0.40
WLAN 5GHz Ant 1+2	5.825	20.0	Body	0	0.40
BT Ant 1	2.48	13.0	Body	0	0.40
BT Ant 2	2.48	12.0	Body	0	0.40

Note:

1. The separation distance is determined from the outer housing of the EUT to the user.
2. When standalone SAR testing is not required, an estimated SAR can be applied to determine simultaneous transmission SAR test exclusion.

Refer to Appendix G for SAR Summation Analysis.

<SAR to Peak Location Separation Ratio Analysis>

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR. When SAR is measured for both antennas in the pair, the peak location separation distance is computed by the following formula.

$$\text{Peak Location Separation Distance} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

Where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the area or zoom scans.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna. Due to curvatures on the SAM phantom, when SAR is estimated for one of the antennas in an antenna pair, the measured peak SAR location will be translated onto the test device to determine the peak location separation for the antenna pair.

The SPLSR is determined by the following formula.

$$\text{SPLSR} = \frac{(\text{SAR}_1 + \text{SAR}_2)^{1.5}}{R_i}$$

Where SAR_1 and SAR_2 are the highest reported or estimated SAR for each antenna in the pair, and R_i is the separation distance between the peak SAR locations for the antenna pair in mm.

Refer to Appendix H for SPLSR and Volume Scan Analysis.

<Additional Simultaneous Transmission Analysis>

The additional test applies to mixed simultaneous transmission.

According to the KDB 447498 D01v06, When one of the following test exclusion conditions is satisfied for all combinations of simultaneous transmission configurations, further equipment approval is not required to incorporate transmitter modules in host devices that operate in the mixed mobile and portable host platform exposure conditions.

a) The [Σ of (the highest measured or estimated SAR for each standalone antenna configuration, adjusted for maximum tune-up tolerance) / 1.6 W/kg] + [Σ of MPE ratios] is ≤ 1.0.

b) The SAR to peak location separation ratios of all simultaneously transmitting antenna pairs operating in portable device exposure conditions are all ≤ 0.04, and the [Σ of MPE ratios] is ≤ 1.0.

The worst of condition evaluation:

(Worst Volume scan combine SAR) / Limit + (Field Strength Measured) / Limit ≤ 1.0

1.32/1.6 + 0.285/1.63 = 0.999 ≤ 1.0

Note. 0.285 is H-field of measurement result and the value is refer to BV CPS report no.SA200619C19.

Summary:

According to section 4.7.4 to evaluate the worst case, the results are all less than 1, so the rest of the configuration will not have the risk of failure.

Test Engineer：Chienlun Huang, and Eric Wu

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D750V3	1013	Aug. 23, 2019	1 Year
System Validation Dipole	SPEAG	D835V2	4d121	Aug. 23, 2019	1 Year
System Validation Dipole	SPEAG	D1750V2	1055	Aug. 23, 2019	1 Year
System Validation Dipole	SPEAG	D1900V2	5d036	Jan. 21, 2020	1 Year
System Validation Dipole	SPEAG	D2450V2	737	Aug. 26, 2019	1 Year
System Validation Dipole	SPEAG	D2600V2	1020	Aug. 26, 2019	1 Year
System Validation Dipole	SPEAG	D5GHzV2	1019	Mar. 13, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3650	Mar. 25, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3898	Jun. 27, 2019	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3971	Jan. 27, 2020	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7350	Dec. 16, 2019	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7472	Aug. 30, 2019	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7537	May 29, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE3	579	Aug. 27, 2019	1 Year
Data Acquisition Electronics	SPEAG	DAE4	914	Jun. 20, 2019	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1277	Jan. 24, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE4	917	Dec. 17, 2019	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1585	May 28, 2020	1 Year
Data Acquisition Electronics	SPEAG	DAE3	861	May. 27, 2020	1 Year
Universal Radio Communication Tester	Anritsu	MT8821C	6261786083	Jun. 27, 2019	1 Year
Universal Radio Communication Tester	Anritsu	MT8821C	6261786083	Jun. 19, 2020	1 Year
Spectrum Analyzer	R&S	FSL6	102006	Mar. 26, 2020	1 Year
Universal Wireless Test Set	Anritsu	MT8870A/MU8 87000A	6201699387	Oct. 07, 2019	1 Year
Dielectric Assessment Kit	SPEAG	DAKS-3.5	0004	Jun. 25, 2019	1 Year
Dielectric Assessment Kit	SPEAG	DAKS-3.5	1092	May. 26, 2020	1 Year
Powersource1	SPEAG	SE_UMS_160 BA	4010	Aug. 21, 2019	1 Year
Thermometer	YFE	YF-160A	120702365	Aug. 06, 2019	1 Year

6. Measurement Uncertainty

According to KDB 865664 D01, SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR, and ≥ 3.75 W/kg for 10-g SAR. The procedures described in IEEE Std 1528-2013should be applied. The expanded SAR measurement uncertainty must be ≤ 30%,for a confidence interval of k = 2. When the highest measured SAR within a frequency band is < 1.5 W/kg for 1-g and < 3.75 W/kg for 10-g, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. Hence, the measurement uncertainty analysis is not required in this SAR report because the test result met the condition.

7. Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Taiwan Huaya Lab:
Add: No. 19, Huaya 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan
Tel: +886-(0)3-318-3232
Fax: +886-(0)3-211-5834

Taiwan Linkou Lab:
Add: No. 47-2, Baodoucuokeng, Linkou Dist., New Taipei City 244, Taiwan
Tel: +886-(0)2-2605-2180
Fax: +886-(0)2-2605-2943

Taiwan Hsinchu Lab1:
Add: E-2, No. 1, Lixing 1st Rd., East Dist., Hsinchu City 300, Taiwan
Tel: +886-(0)3-666-8565
Fax: +886-(0)3-666-8323

Taiwan Hsinchu Lab2:
Add: No. 49, Ln. 206, Wende Rd., Qionglin Township, Hsinchu County 307, Taiwan
Tel: +886-(0)3-512-0595
Fax: +886-(0)3-512-0568

Taiwan Xindian Lab:
Add: B2F., No. 215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan
Tel: +886-(0)2-8914-5882
Fax: +886-(0)2-8914-5840

Email: service.adt@tw.bureauveritas.com
Web Site: https://ee.bureauveritas.com.tw/BVInternet/Default

The road map of all our labs can be found in our web site also.

---END---

Appendix A. SAR Plots of System Verification

The plots for system verification with largest deviation for each SAR system combination are shown as follows.

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/08

System Check_H750_200608

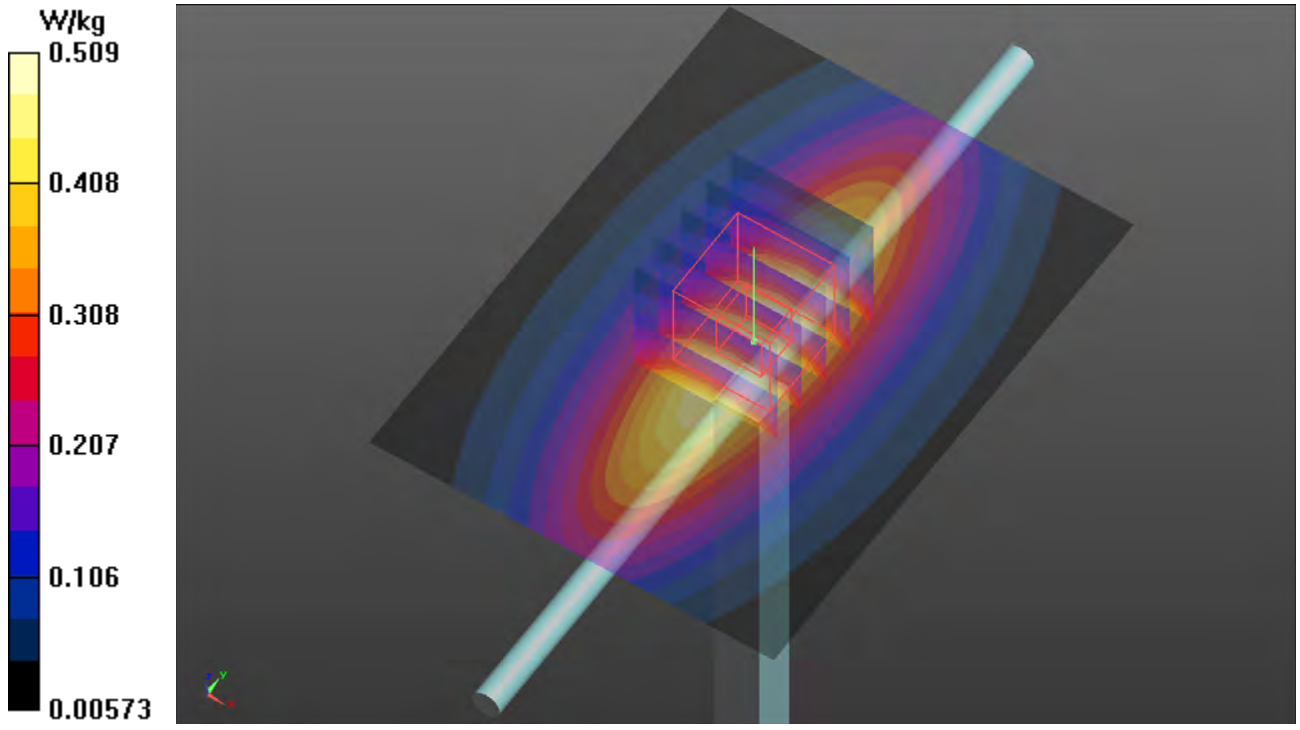
DUT: Dipole 750 MHz; Type: D750V3; SN: 1013

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: H06T09N1_0608 Medium parameters used: f = 750 MHz; σ = 0.886 S/m; ε_r = 43.472; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ; Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3898; ConvF(10.19, 10.19, 10.19) @ 750 MHz; Calibrated: 2019/06/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn914; Calibrated: 2019/06/20
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.509 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.06 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.583 W/kg
SAR(1 g) = 0.389 W/kg; SAR(10 g) = 0.254 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.516 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/05

System Check_H835_200605

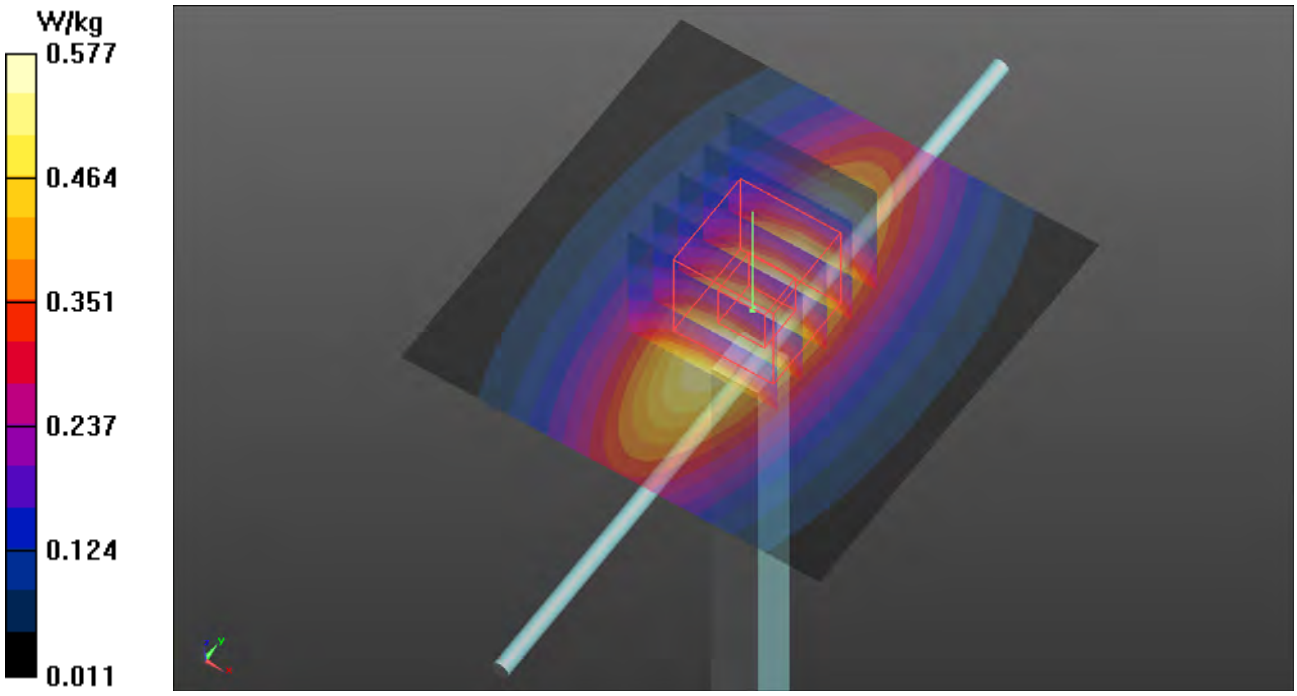
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: H07T10N2_0605 Medium parameters used: f = 835 MHz; σ = 0.916 S/m; ε_r = 42.395; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(10.18, 10.18, 10.18) @ 835 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.577 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.25 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.659 W/kg
SAR(1 g) = 0.438 W/kg; SAR(10 g) = 0.286 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.586 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

System Check_H1750_200625

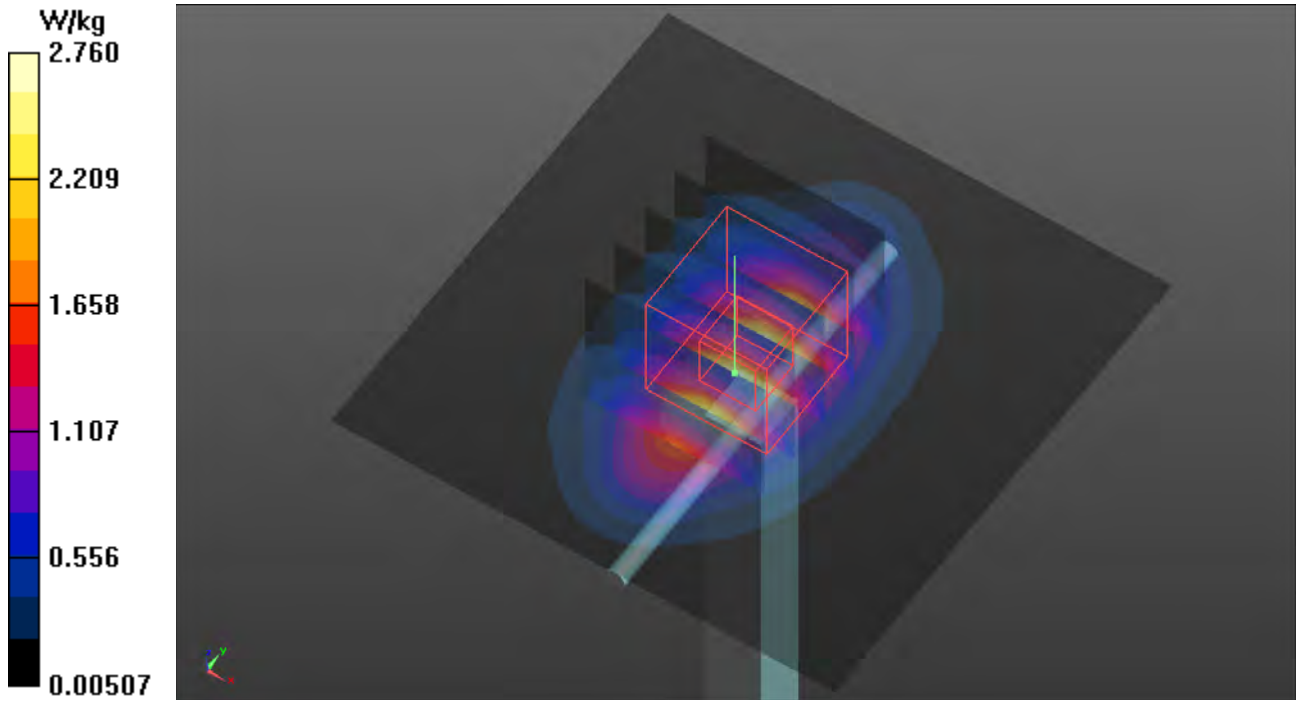
DUT: Dipole 1750 MHz; Type: D1750V2; SN: 1055

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: H16T20N1_0625 Medium parameters used: f = 1750 MHz; σ = 1.326 S/m; ε_r = 40.149; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.47, 8.47, 8.47) @ 1750 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.76 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 46.34 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.21 W/kg
SAR(1 g) = 1.81 W/kg; SAR(10 g) = 0.960 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 2.71 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

System Check_H1900_200625

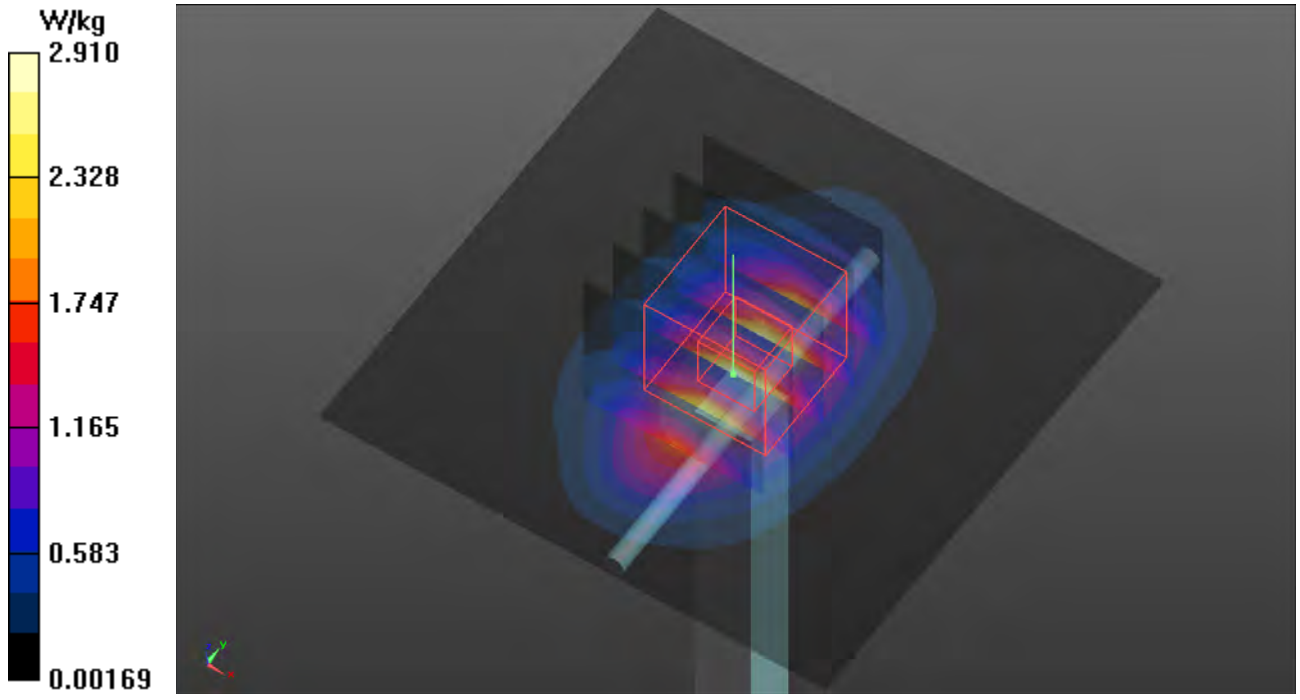
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d036

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: H16T20N1_0625 Medium parameters used: f = 1900 MHz; σ = 1.454 S/m; ε_r = 39.605; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.02, 8.02, 8.02) @ 1900 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.91 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 45.43 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.51 W/kg
SAR(1 g) = 1.85 W/kg; SAR(10 g) = 0.972 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 2.94 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/24

System Check_H2450_200624

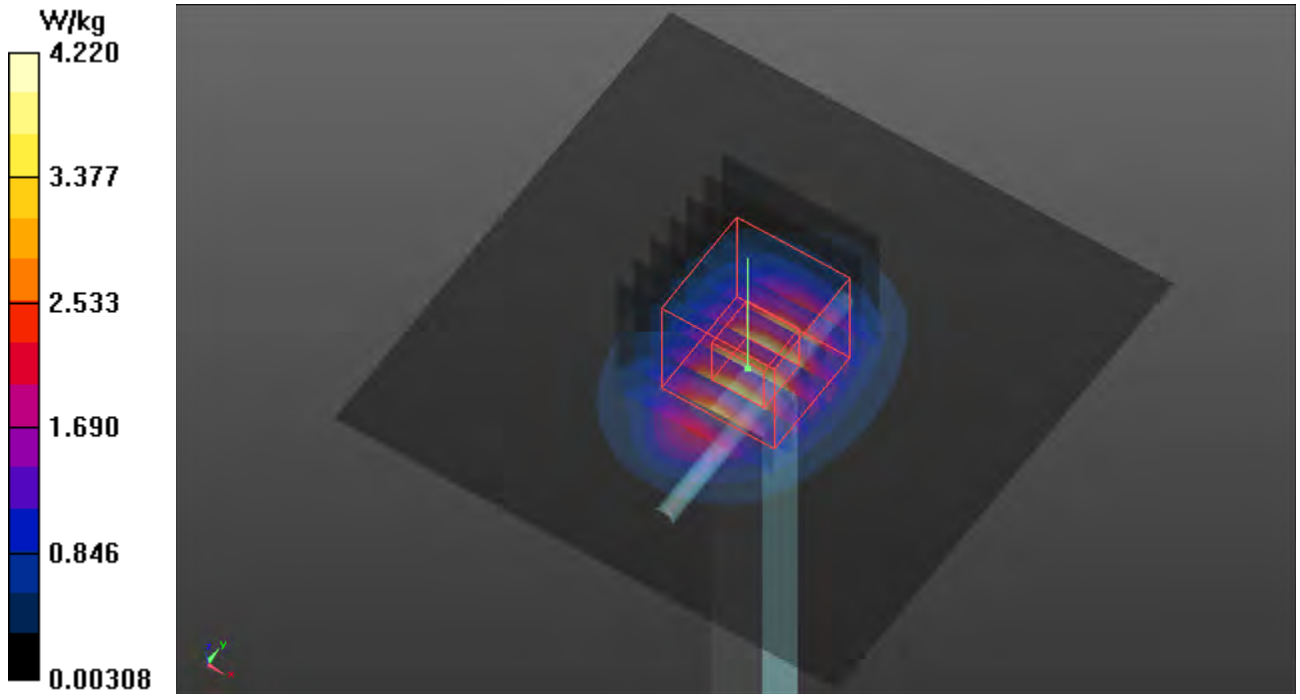
DUT: Dipole 2450 MHz; Type: D2450V2; SN: 737

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0624 Medium parameters used (interpolated): f = 2450 MHz; σ = 1.873 S/m; ε_r = 38.701; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(7.4, 7.4, 7.4) @ 2450 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.22 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 48.01 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 5.17 W/kg
SAR(1 g) = 2.49 W/kg; SAR(10 g) = 1.19 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 4.20 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/24

System Check_H2600_200624

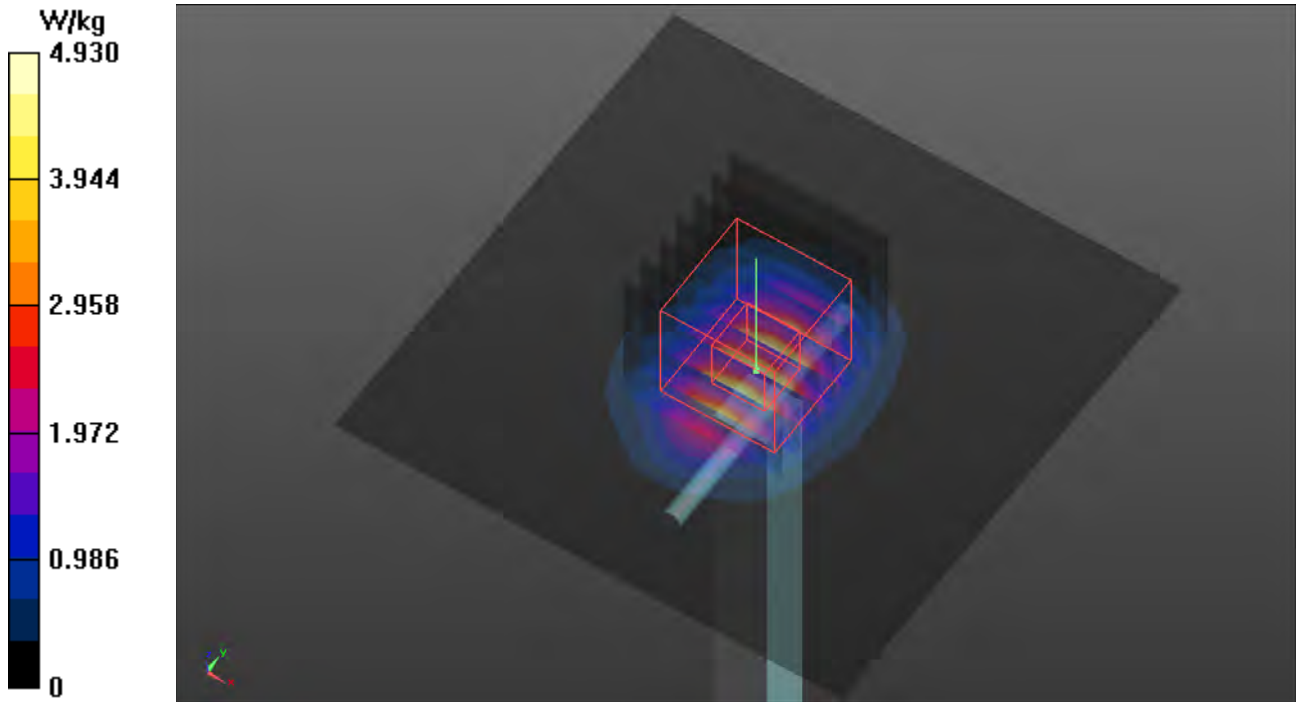
DUT: Dipole 2600 MHz; Type: D2600V2; SN: 1020

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: H19T27N1_0624 Medium parameters used: f = 2600 MHz; σ = 2.031 S/m; ε_r = 38.237; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(7.18, 7.18, 7.18) @ 2600 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.93 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.46 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 6.25 W/kg
SAR(1 g) = 2.85 W/kg; SAR(10 g) = 1.29 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 5.00 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/24

System Check_H5250_200624

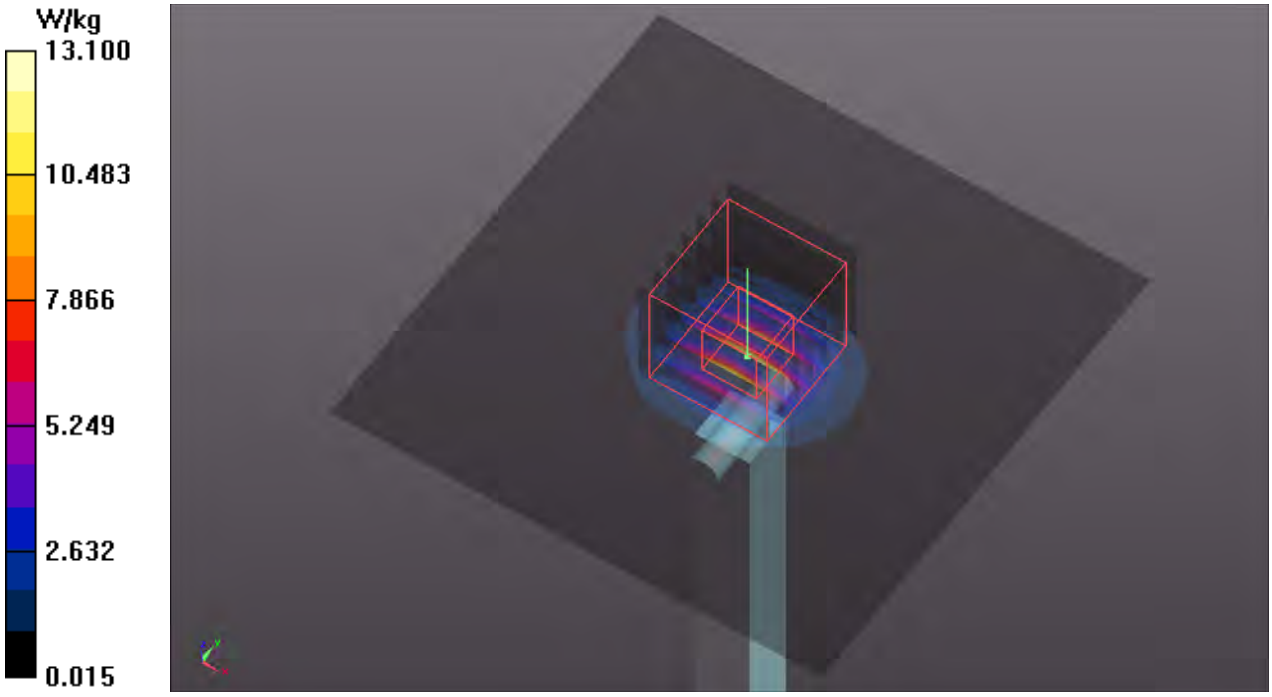
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0624 Medium parameters used: f = 5250 MHz; σ = 4.703 S/m; ε_r = 36.115; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.67, 5.67, 5.67) @ 5250 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.1 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 57.52 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 22.1 W/kg
SAR(1 g) = 4.03 W/kg; SAR(10 g) = 1.57 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 13.8 W/kg



System Check_H5600_200628

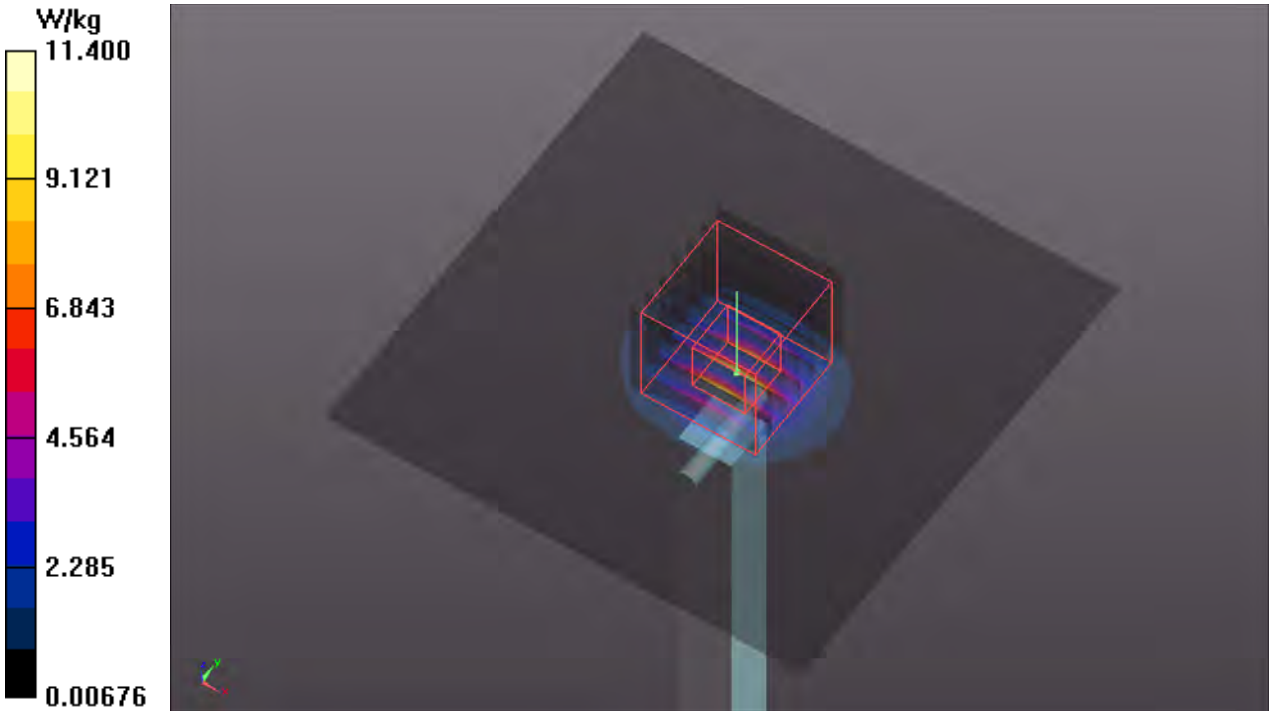
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0628 Medium parameters used: f = 5600 MHz; σ = 5.21 S/m; ε_r = 36.221; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.1, 5.1, 5.1) @ 5600 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 11.4 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.24 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 19.6 W/kg
SAR(1 g) = 4.13 W/kg; SAR(10 g) = 1.29 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 11.7 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

System Check_H5750_200625

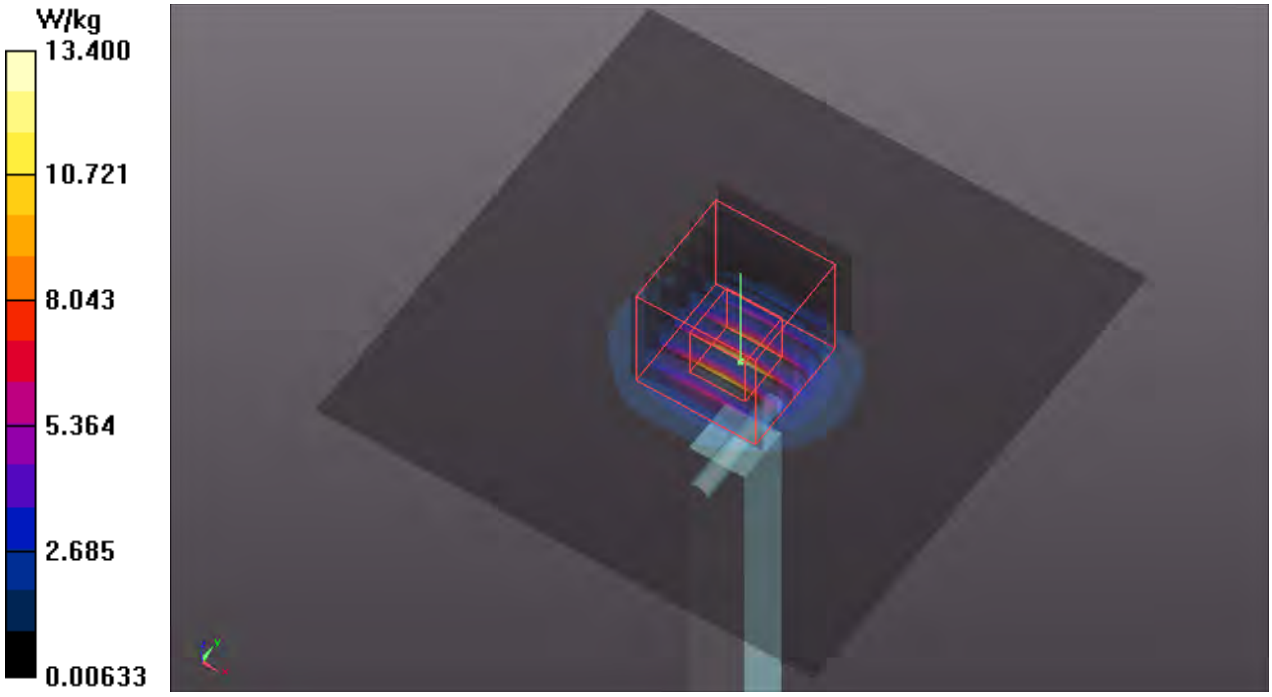
DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0625 Medium parameters used: f = 5750 MHz; σ = 5.303 S/m; ε_r = 35.218; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.23, 5.23, 5.23) @ 5750 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 53.86 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 25.2 W/kg
SAR(1 g) = 4.08 W/kg; SAR(10 g) = 1.53 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 14.0 W/kg



Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

P01 GSM850_GPRS10_Rear Face_0mm_Ch251_Power Reduction_w

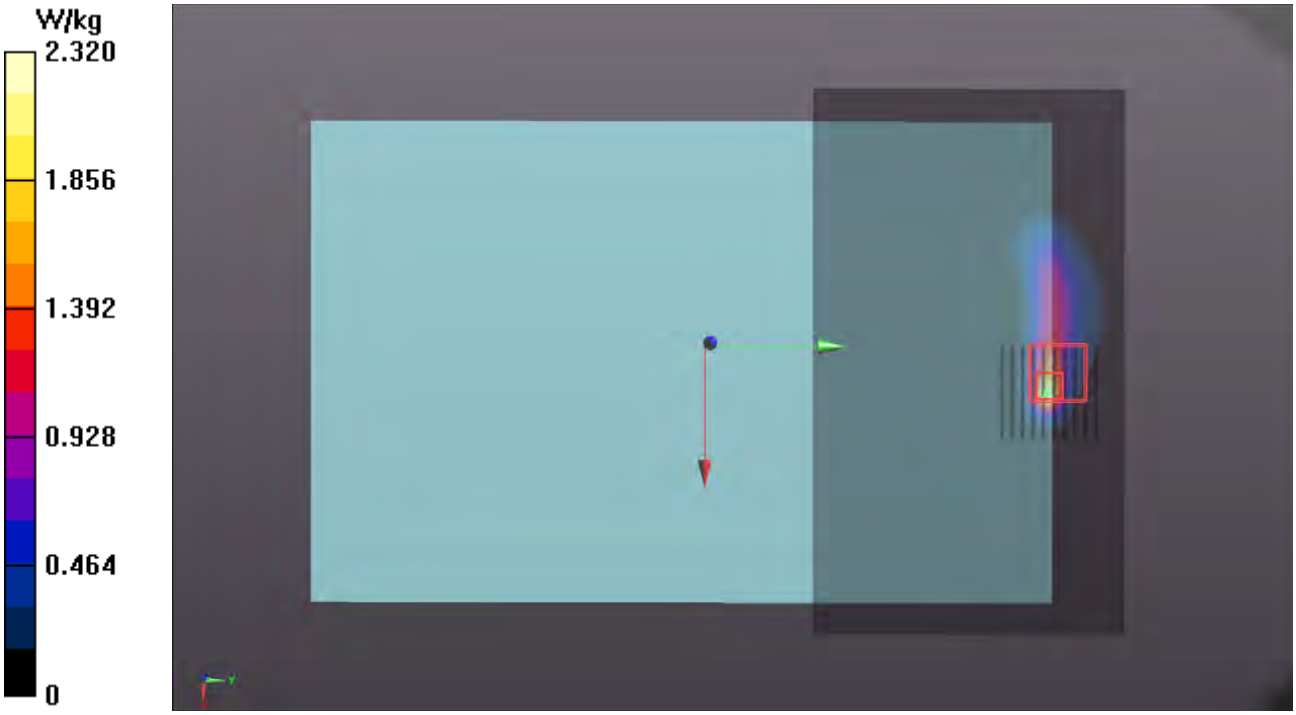
DUT: 200519C01

Communication System: UID 10024 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1); Frequency: 848.8 MHz;Duty Cycle: 1:4.53
Medium: H07T10N1_0619 Medium parameters used: f = 849 MHz; σ = 0.914 S/m; ε_r = 42.522; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.26, 10.26, 10.26) @ 848.8 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2020/01/24
- Phantom: ELI Phantom_1043; Type: QDOVA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (141x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.32 W/kg

Zoom Scan 2 (10x10x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 49.07 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 5.50 W/kg
SAR(1 g) = 0.561 W/kg; SAR(10 g) = 0.245 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.1 mm
Ratio of SAR at M2 to SAR at M1 = 48.2%
Maximum value of SAR (measured) = 1.47 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

P02 GSM1900_GPRS10_Top Side_0mm_Ch661_Power Reduction_w

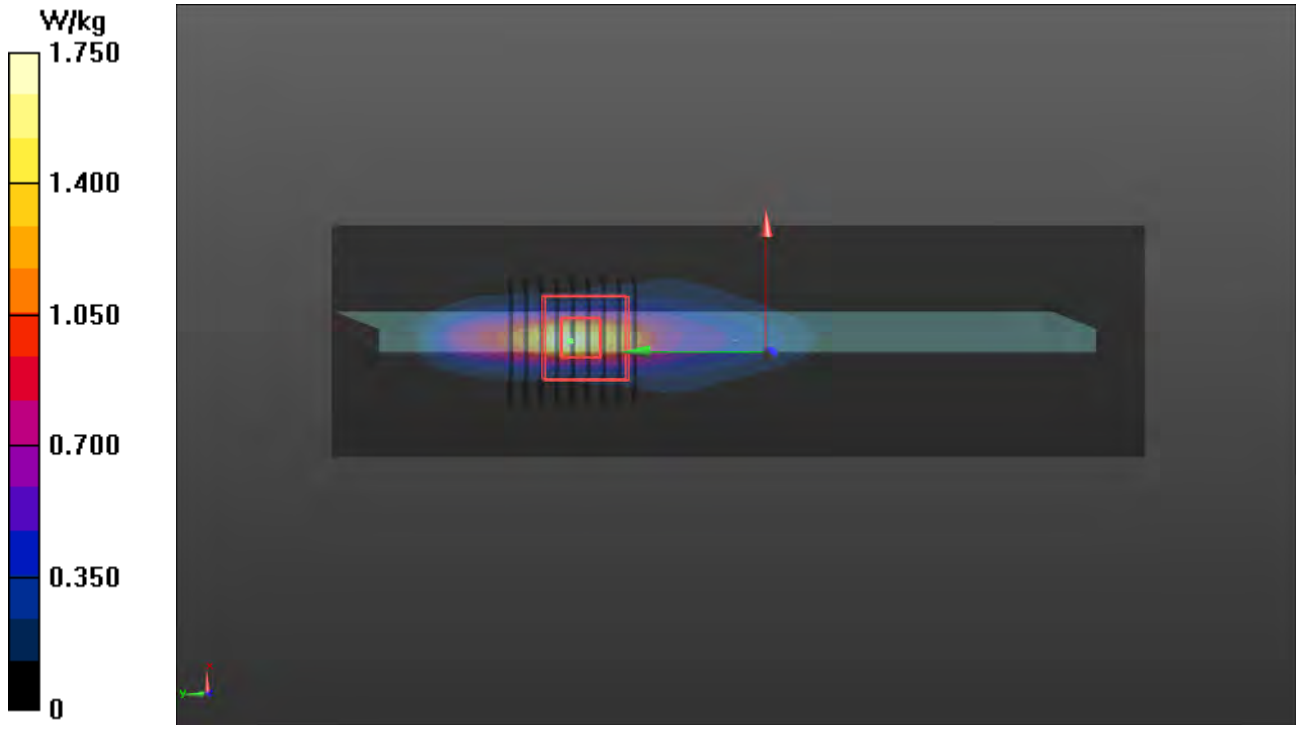
DUT: 200519C01

Communication System: UID 10024 - DAC, GPRS-FDD (TDMA, GMSK, TN 0-1); Frequency: 1880 MHz;Duty Cycle: 1:4.53
Medium: H16T20N1_0625 Medium parameters used: f = 1880 MHz; σ = 1.438 S/m; ε_r = 39.661; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.02, 8.02, 8.02) @ 1880 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.75 W/kg

Zoom Scan 2 (9x9x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 36.03 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 3.79 W/kg
SAR(1 g) = 0.778 W/kg; SAR(10 g) = 0.294 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.7 mm
Ratio of SAR at M2 to SAR at M1 = 61.9%
Maximum value of SAR (measured) = 1.92 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

P03 WCDMA II_RMC12.2K_Top Side_0mm_Ch9400_Power Reduction_w

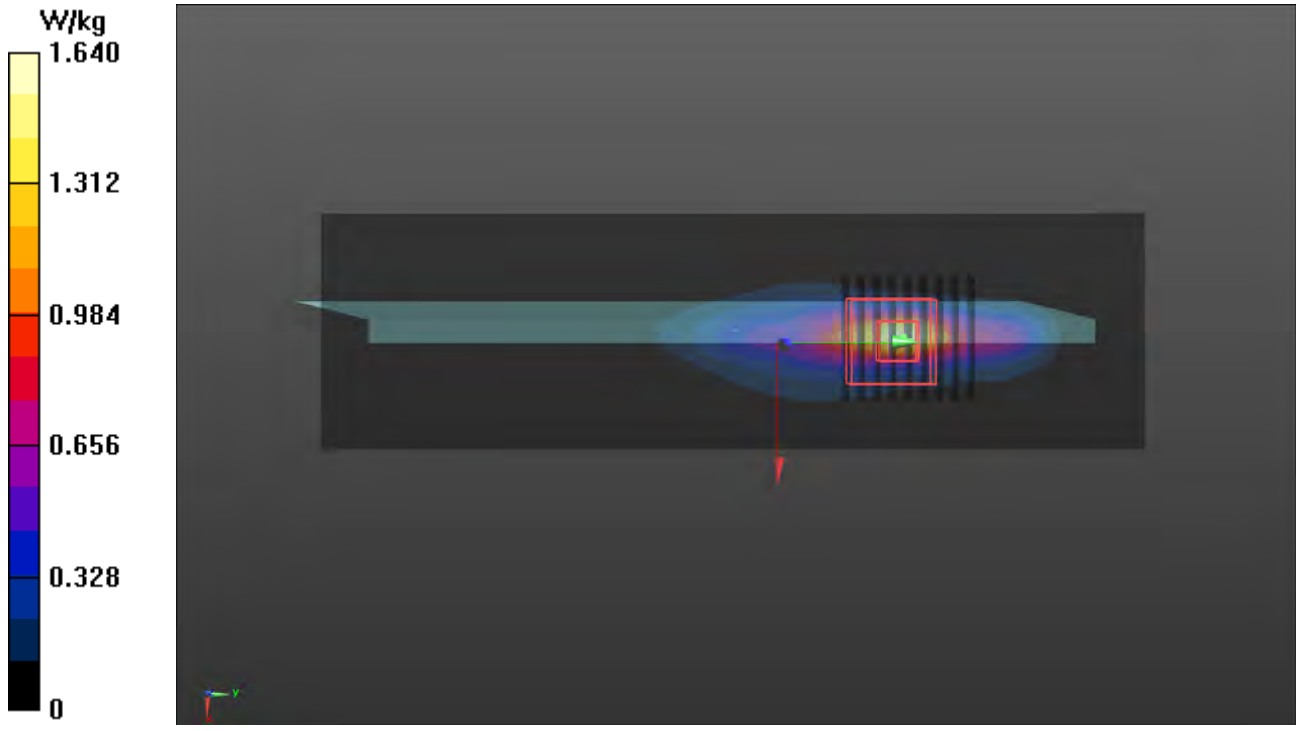
DUT: 200519C01

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1880 MHz;Duty Cycle: 1:1.95
Medium: H16T20N1_0625 Medium parameters used: f = 1880 MHz; σ = 1.438 S/m; ε_r = 39.661; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.02, 8.02, 8.02) @ 1880 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.64 W/kg

Zoom Scan 2 (9x9x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 34.54 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 4.16 W/kg
SAR(1 g) = 0.775 W/kg; SAR(10 g) = 0.295 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.3 mm
Ratio of SAR at M2 to SAR at M1 = 60.9%
Maximum value of SAR (measured) = 2.13 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

P04 WCDMA IV_RMC12.2K_Top Side_0mm_Ch1413_Power Reduction_w

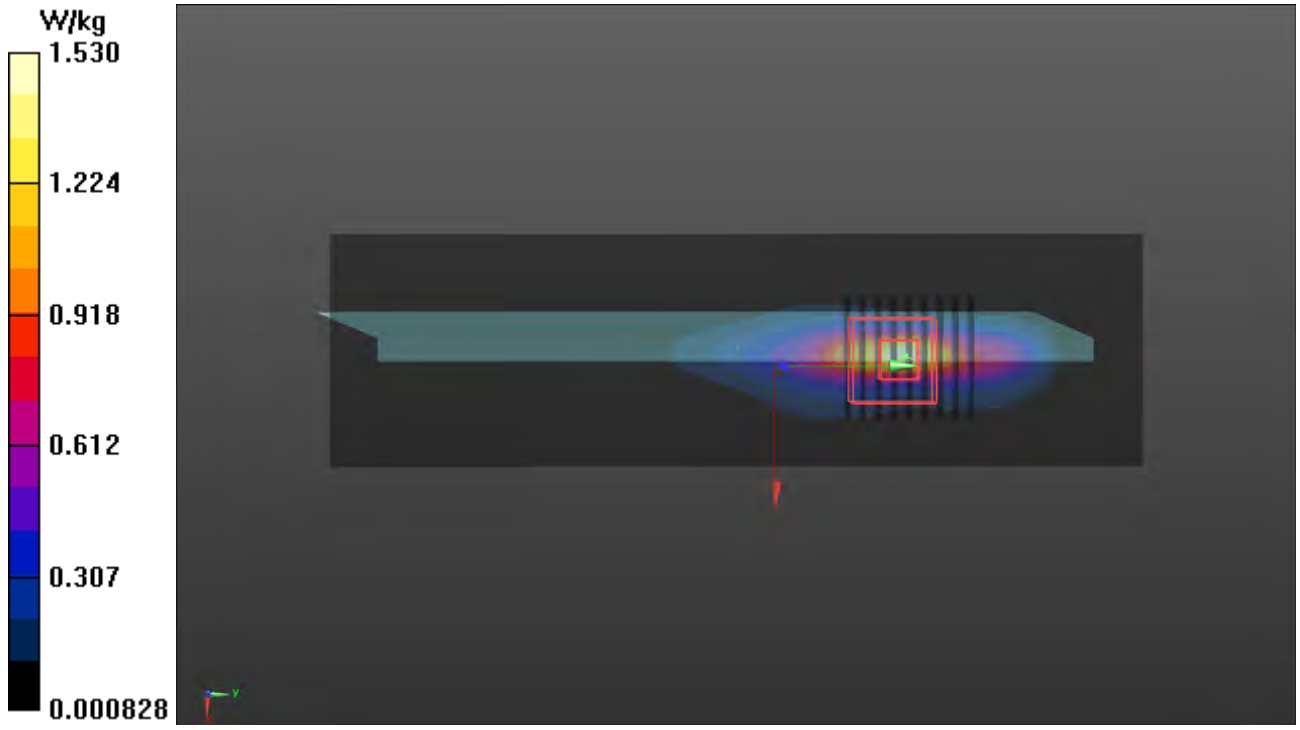
DUT: 200519C01

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 1732.6 MHz;Duty Cycle: 1:1.95
Medium: H16T20N1_0625 Medium parameters used: f = 1733 MHz; σ = 1.31 S/m; ε_r = 40.219; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.47, 8.47, 8.47) @ 1732.6 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.53 W/kg

Zoom Scan 2 (9x9x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 34.58 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 4.00 W/kg
SAR(1 g) = 0.753 W/kg; SAR(10 g) = 0.284 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.7 mm
Ratio of SAR at M2 to SAR at M1 = 59.4%
Maximum value of SAR (measured) = 1.95 W/kg



P05 WCDMA V_RMC12.2K_Top Side_0mm_Ch4233_Power Reduction_w

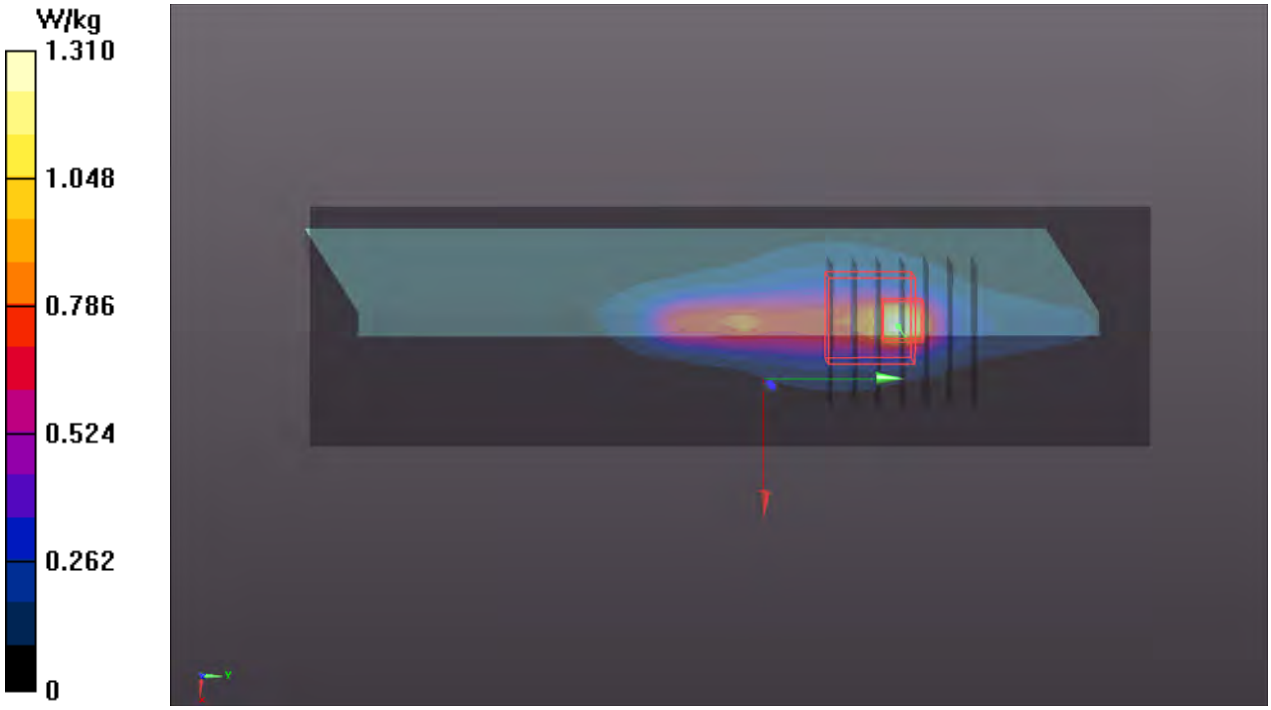
DUT: 200519C01

Communication System: UID 10011 - CAB, UMTS-FDD (WCDMA); Frequency: 846.6 MHz;Duty Cycle: 1:1.95
Medium: H07T10N1_0619 Medium parameters used: f = 847 MHz; σ = 0.912 S/m; ε_r = 42.547; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7350; ConvF(9.79, 9.79, 9.79) @ 846.6 MHz; Calibrated: 2019/12/16
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2019/12/17
- Phantom: ELI Phantom_1204; Type: QDOVA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.31 W/kg

Zoom Scan 2 (7x7x8)/Cube 0: Measurement grid: dx=6mm, dy=6mm, dz=1.4mm
Reference Value = 39.22 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.00 W/kg
SAR(1 g) = 0.550 W/kg; SAR(10 g) = 0.252 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 77.8%
Maximum value of SAR (measured) = 0.565 W/kg



P06 LTE 5_QPSK10M_Rear Face_0mm_Ch20525_1RB_OS0_Power Reduction_w

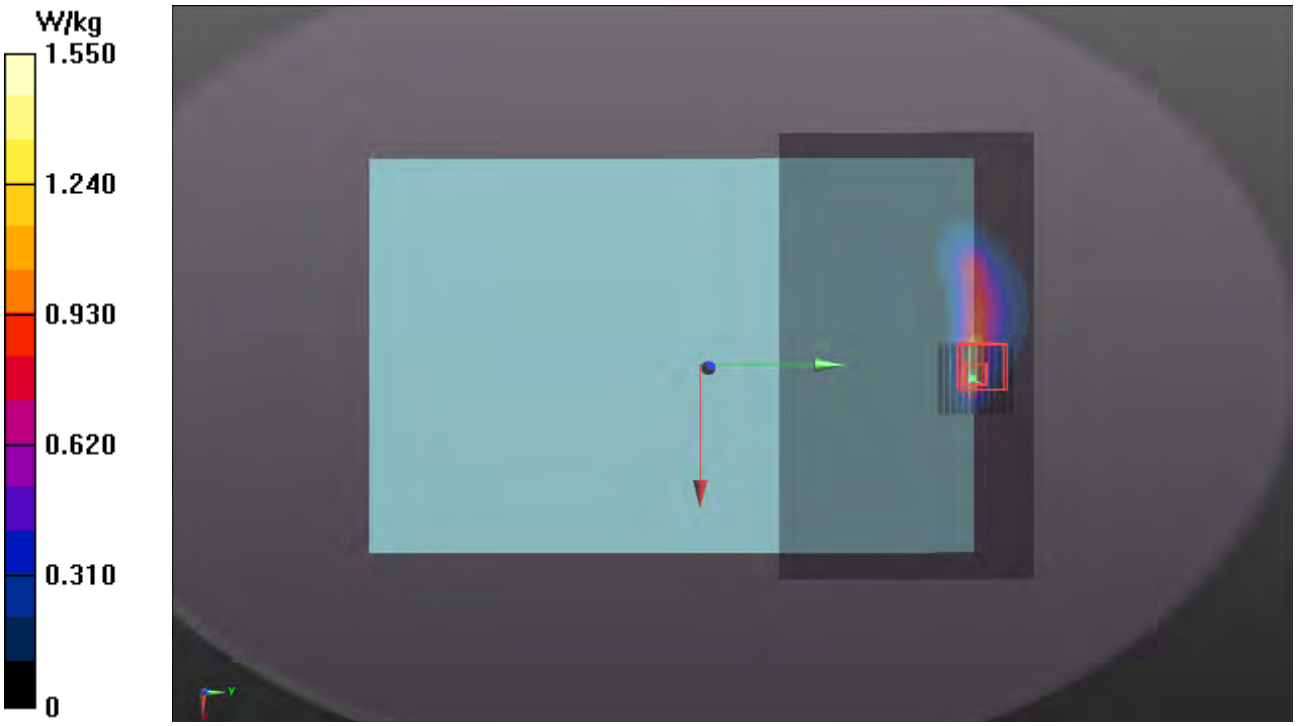
DUT: 200519C01

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 836.5 MHz;Duty Cycle: 1:3.74
Medium: H07T10N1_0619 Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.901 S/m;
ε_r = 42.682; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.26, 10.26, 10.26) @ 836.5 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2020/01/24
- Phantom: ELI Phantom_1043; Type: QDOVA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (141x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.55 W/kg

Zoom Scan 2 (12x12x8)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=1.4mm
Reference Value = 38.86 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 6.51 W/kg
SAR(1 g) = 0.532 W/kg; SAR(10 g) = 0.244 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 3.6 mm
Ratio of SAR at M2 to SAR at M1 = 48.8%
Maximum value of SAR (measured) = 1.79 W/kg



P07 LTE 12_QPSK10M_Rear Face_0mm_Ch23130_1RB_OS0_Power Reduction_w

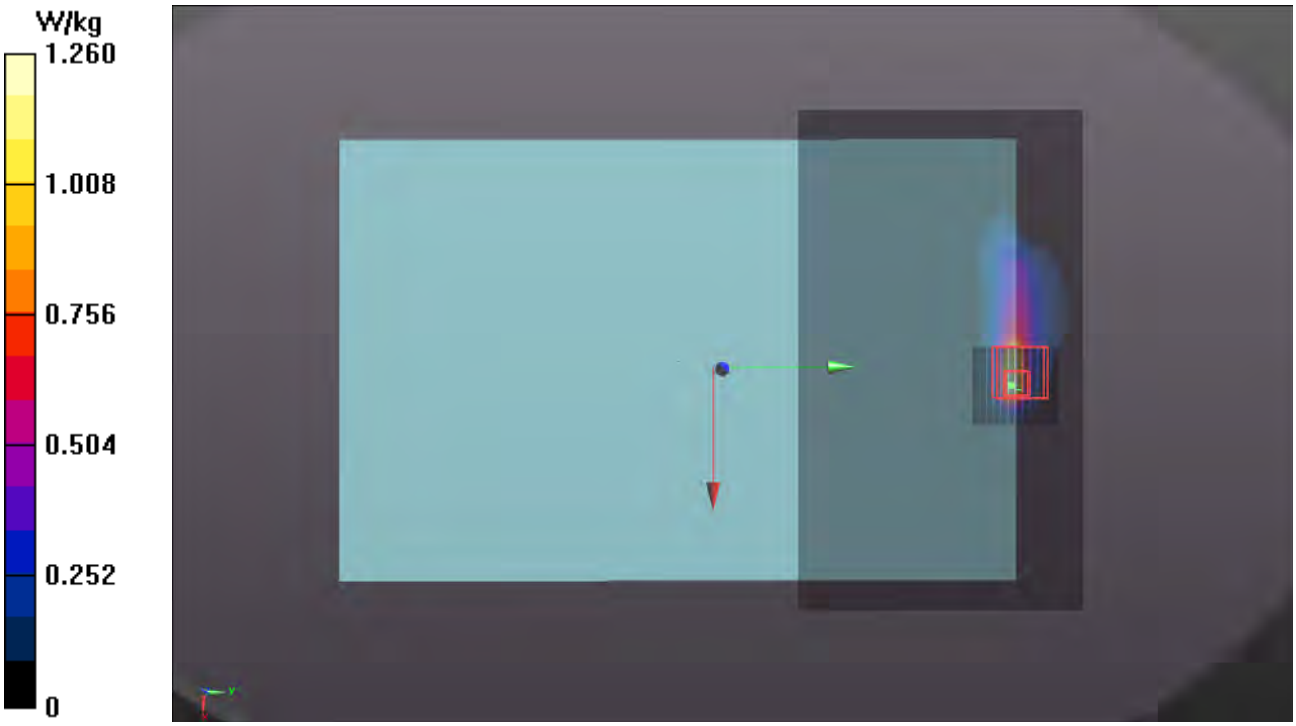
DUT: 200519C01

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 711 MHz;Duty Cycle: 1:3.74
Medium: H06T09N1_0620 Medium parameters used: f = 711 MHz; σ = 0.857 S/m; ε_r = 43.925; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.6, 10.6, 10.6) @ 711 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2020/01/24
- Phantom: ELI Phantom_1043; Type: QDOVA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (141x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.26 W/kg

Zoom Scan 2 (12x12x8)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=1.4mm
Reference Value = 37.02 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 5.92 W/kg
SAR(1 g) = 0.442 W/kg; SAR(10 g) = 0.176 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 3.2 mm
Ratio of SAR at M2 to SAR at M1 = 42.9%
Maximum value of SAR (measured) = 1.68 W/kg



P08 LTE 13_QPSK10M_Rear Face_0mm_Ch23230_1RB_OS0_Power Reduction_w

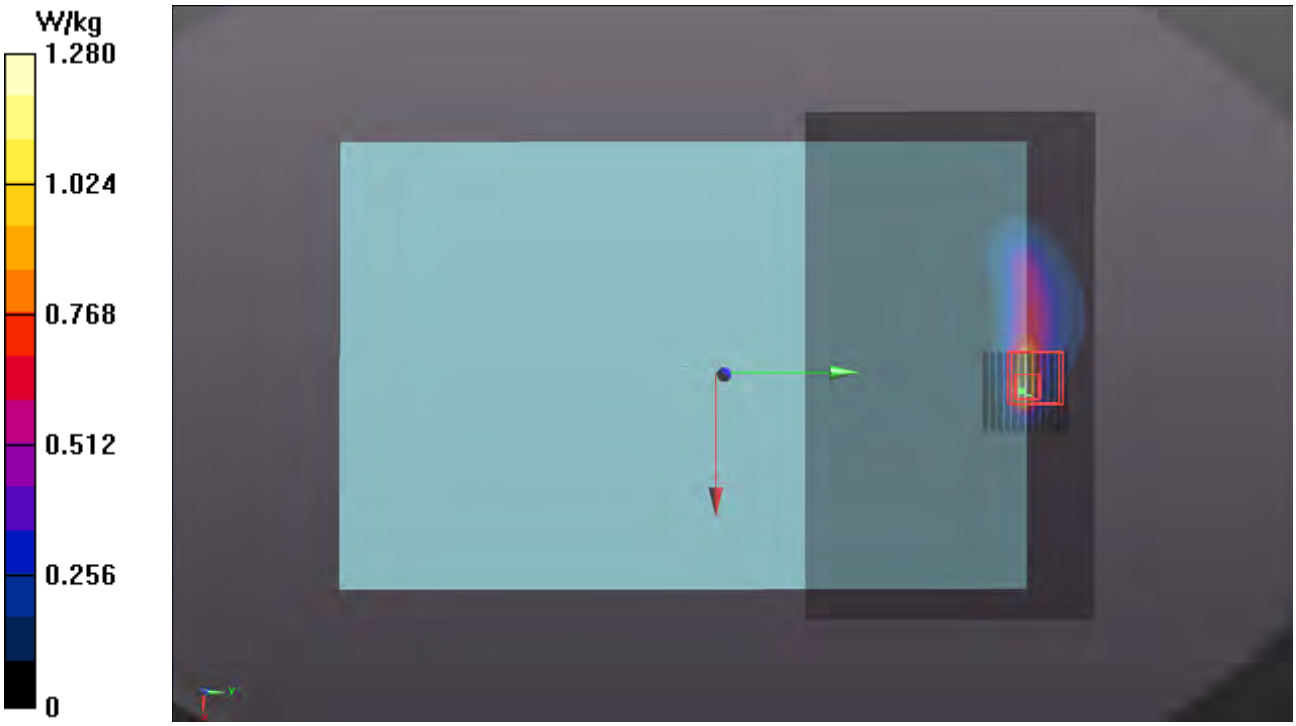
DUT: 200519C01

Communication System: UID 10175 - CAG, LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK);
Frequency: 782 MHz;Duty Cycle: 1:3.74
Medium: H06T09N1_0620 Medium parameters used: f = 782 MHz; σ = 0.923 S/m; ε_r = 43.013; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.6, 10.6, 10.6) @ 782 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2020/01/24
- Phantom: ELI Phantom_1043; Type: QDOVA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (141x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.28 W/kg

Zoom Scan 2 (12x12x8)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=1.4mm
Reference Value = 35.36 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 5.66 W/kg
SAR(1 g) = 0.505 W/kg; SAR(10 g) = 0.188 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 3.2 mm
Ratio of SAR at M2 to SAR at M1 = 44.3%
Maximum value of SAR (measured) = 1.70 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

P09 LTE 25_QPSK20M_Top Side_0mm_Ch26365_1RB_OS0_Power Reduction_w

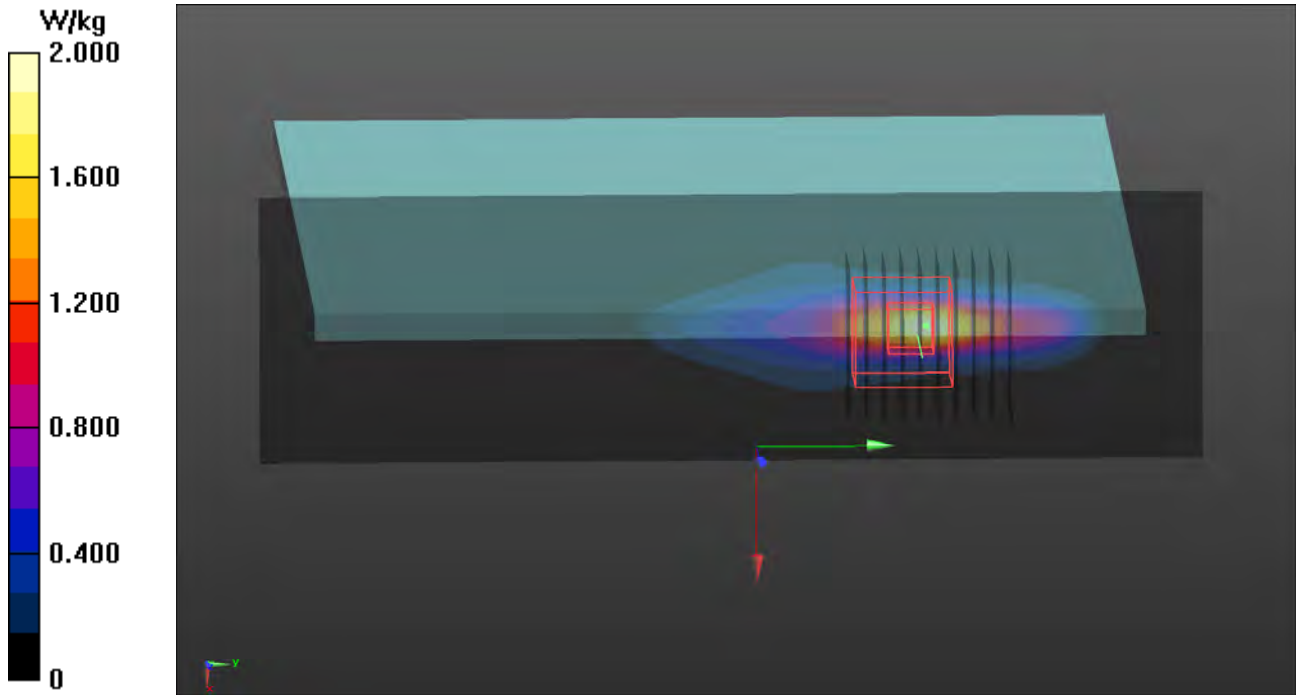
DUT: 200519C01

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK);
Frequency: 1882.5 MHz;Duty Cycle: 1:3.74
Medium: H16T20N1_0625 Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.44 S/m; ε_r = 39.656; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.02, 8.02, 8.02) @ 1882.5 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.00 W/kg

Zoom Scan 2 (10x10x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 38.37 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 4.45 W/kg
SAR(1 g) = 0.672 W/kg; SAR(10 g) = 0.318 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.8 mm
Ratio of SAR at M2 to SAR at M1 = 62.6%
Maximum value of SAR (measured) = 2.11 W/kg



P10 LTE 26_QPSK15M_Rear Face_0mm_Ch26865_1RB_OS0_Power Reduction_w

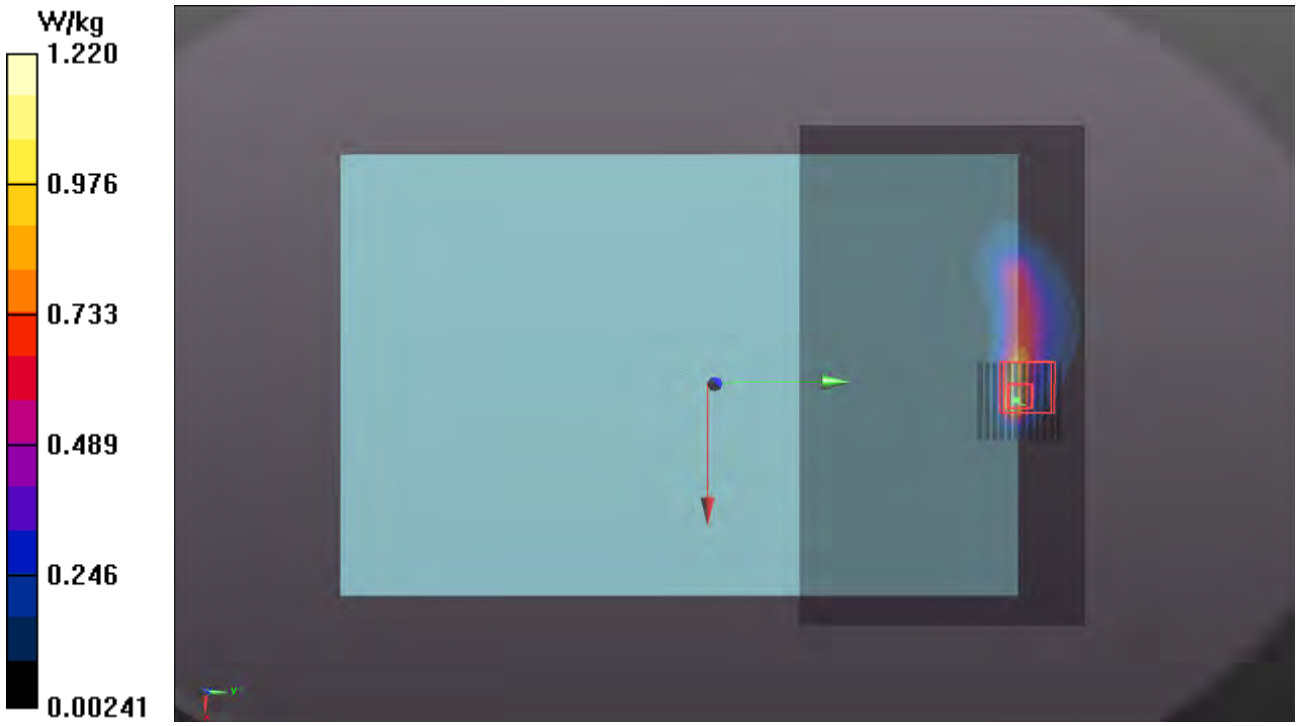
DUT: 200519C01

Communication System: UID 10181 - CAE, LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK);
Frequency: 831.5 MHz;Duty Cycle: 1:3.74
Medium: H07T10N1_0619 Medium parameters used (interpolated): f = 831.5 MHz; σ = 0.897 S/m;
ε_r = 42.738; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.26, 10.26, 10.26) @ 831.5 MHz; Calibrated: 2020/01/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1277; Calibrated: 2020/01/24
- Phantom: ELI Phantom_1043; Type: QDOVA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (141x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.22 W/kg

Zoom Scan 2 (12x12x8)/Cube 0: Measurement grid: dx=3mm, dy=3mm, dz=1.4mm
Reference Value = 34.71 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 5.18 W/kg
SAR(1 g) = 0.453 W/kg; SAR(10 g) = 0.195 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 3.6 mm
Ratio of SAR at M2 to SAR at M1 = 49.1%
Maximum value of SAR (measured) = 1.39 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/24

P11 LTE 41_QPSK20M_Rear Face_0mm_Ch40185_1RB_OS0_Power Reduction_w

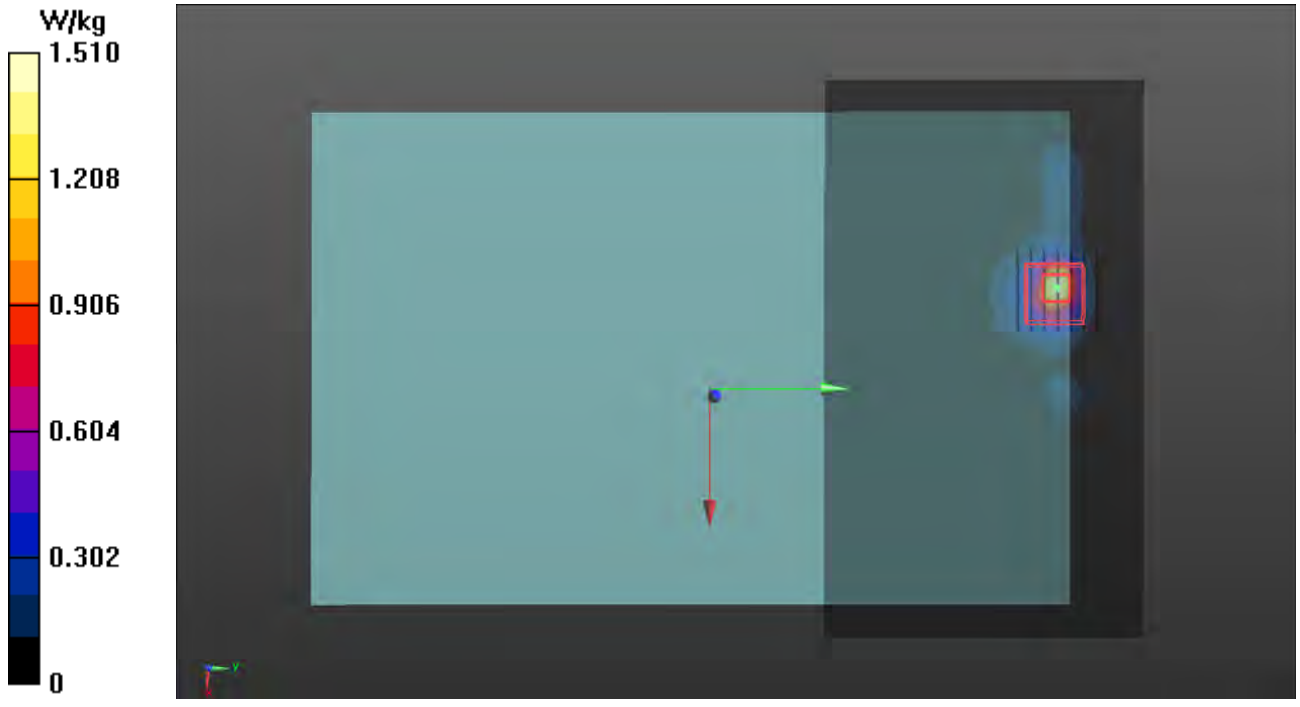
DUT: 200519C01

Communication System: UID 10172 - CAG, LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK);
Frequency: 2549.5 MHz;Duty Cycle: 1:8.33
Medium: H19T27N1_0624 Medium parameters used: f = 2550 MHz; σ = 1.976 S/m; ε_r = 38.334; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(7.18, 7.18, 7.18) @ 2549.5 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (181x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.51 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.02 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 0.448 W/kg; SAR(10 g) = 0.271 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 6 mm
Ratio of SAR at M2 to SAR at M1 = 40.5%
Maximum value of SAR (measured) = 1.28 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/25

P12 LTE 66_QPSK20M_Top Side_0mm_Ch132572_1RB_OS0_Power Reduction_w

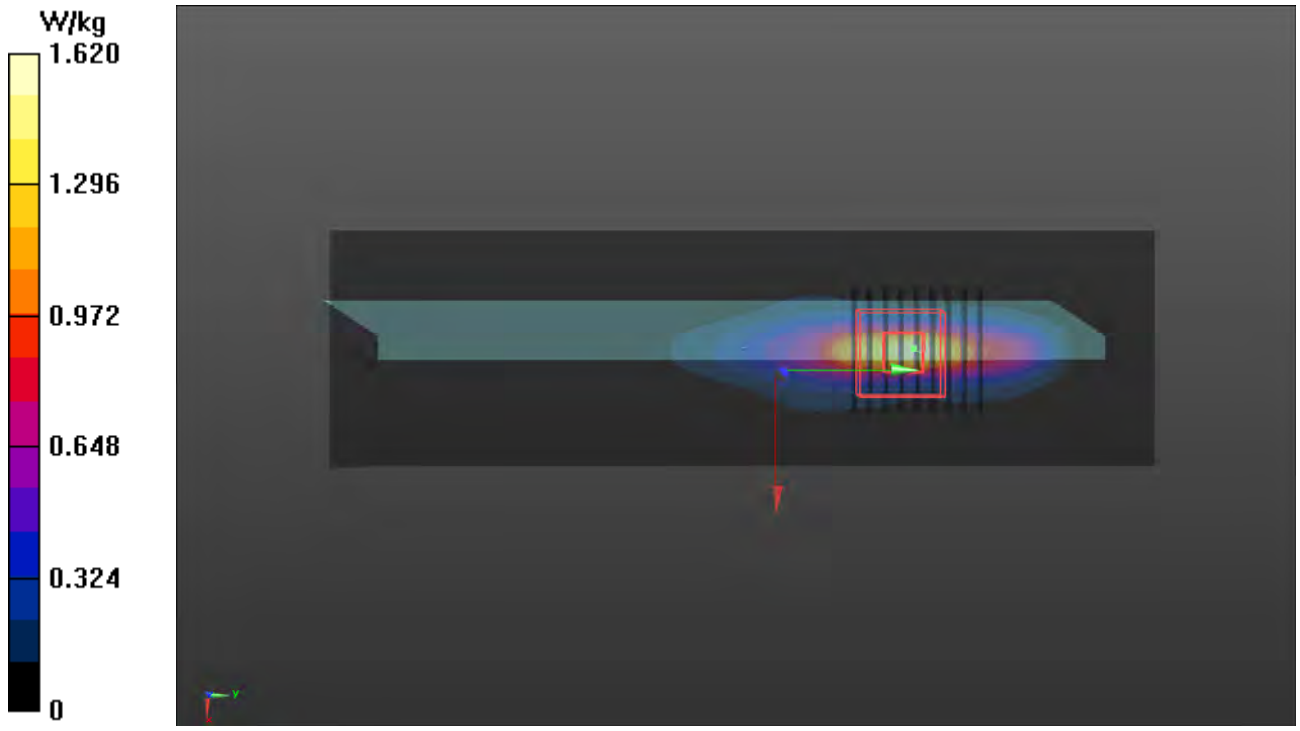
DUT: 200519C01

Communication System: UID 10169 - CAE, LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK);
Frequency: 1770 MHz;Duty Cycle: 1:3.74
Medium: H16T20N1_0625 Medium parameters used: f = 1770 MHz; σ = 1.343 S/m; ε_r = 40.088; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(8.47, 8.47, 8.47) @ 1770 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.62 W/kg

Zoom Scan 2 (9x9x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 35.96 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 0.671 W/kg; SAR(10 g) = 0.286 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.3 mm
Ratio of SAR at M2 to SAR at M1 = 61.2%
Maximum value of SAR (measured) = 1.80 W/kg



P13 WLAN2.4G_802.11b_Rear Face_0mm_Ch6_Power Reduction_w/ _Ant 1+2

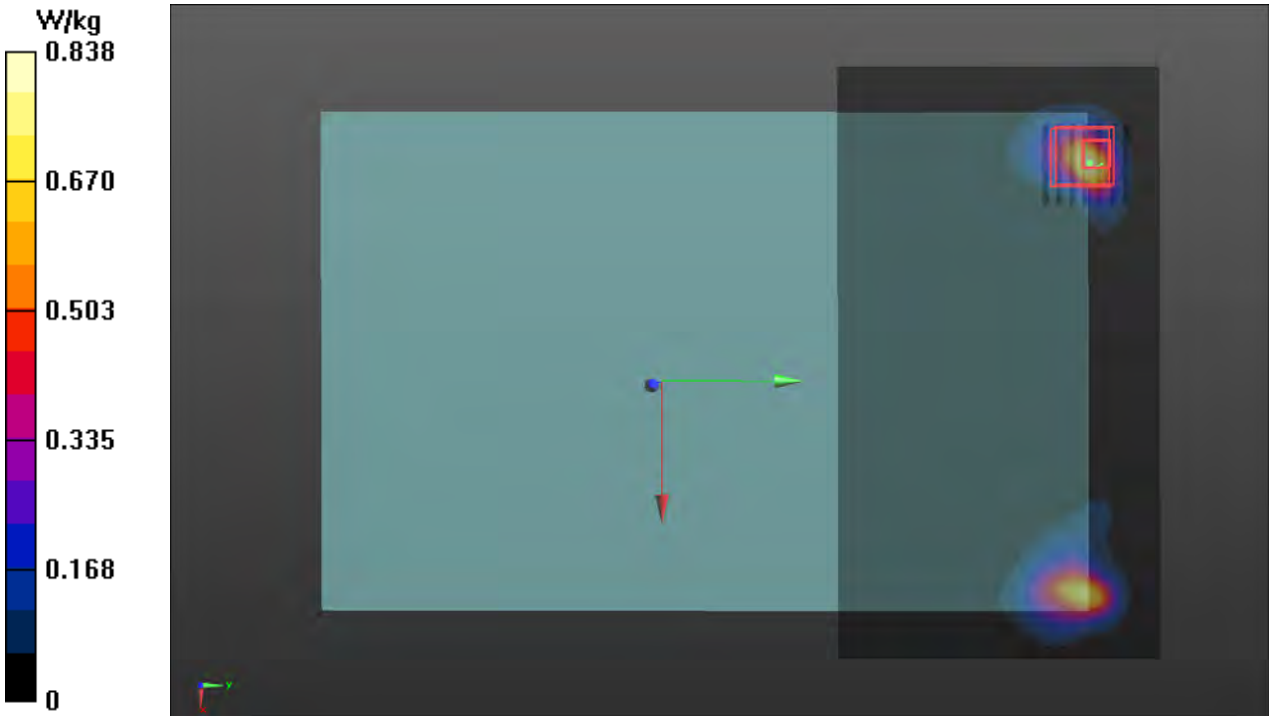
DUT: 200519C01

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: H19T27N4_0629 Medium parameters used (interpolated): f = 2437 MHz; σ = 1.84 S/m; ε_r = 38.969; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.75, 7.75, 7.75) @ 2437 MHz; Calibrated: 2020/03/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2020/05/27
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (191x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.838 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.85 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.594 W/kg; SAR(10 g) = 0.204 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.8 mm
Ratio of SAR at M2 to SAR at M1 = 33.5%
Maximum value of SAR (measured) = 0.952 W/kg



P14 WLAN5.3G_802.11a_Right Side_7mm_Ch52_Power Reduction_w_o _Ant1

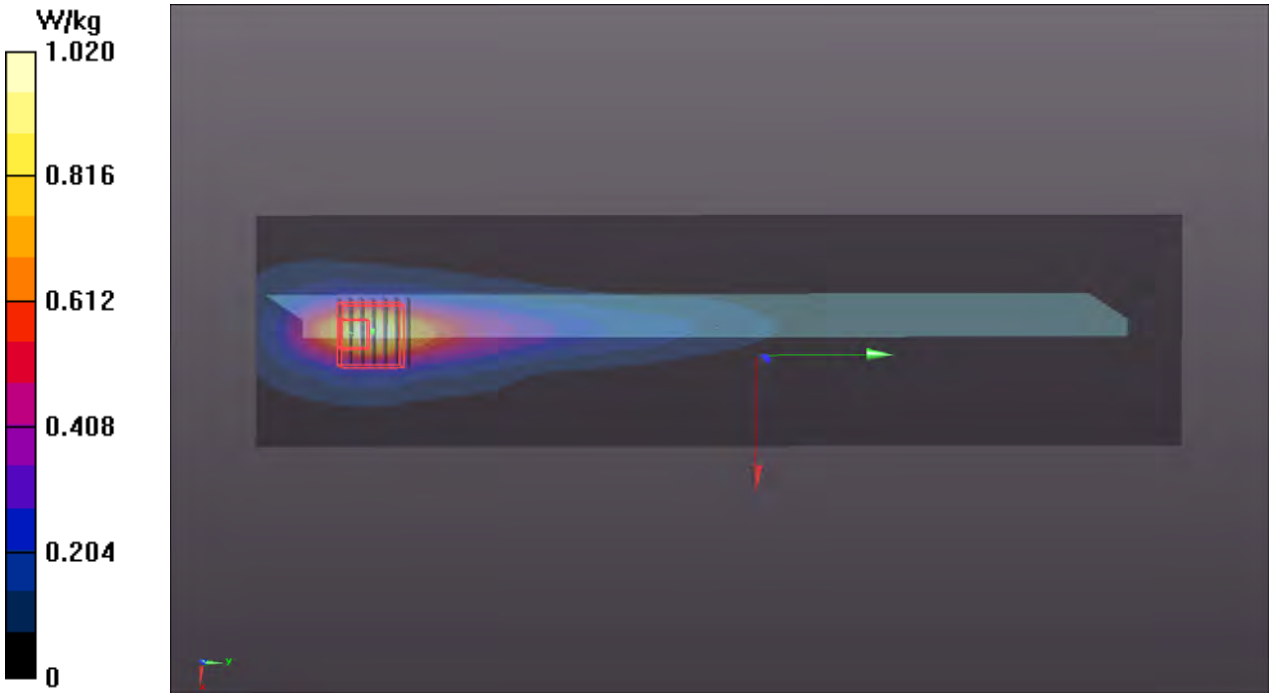
DUT: 200519C01

Communication System: UID 10317 - AAC, IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle); Frequency: 5260 MHz;Duty Cycle: 1:1.01
Medium: H34T60N1_0624 Medium parameters used: f = 5260 MHz; σ = 4.718 S/m; ε_r = 36.099; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.67, 5.67, 5.67) @ 5260 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (101x321x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.02 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 16.35 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.539 W/kg; SAR(10 g) = 0.199 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 8.8 mm
Ratio of SAR at M2 to SAR at M1 = 68.3%
Maximum value of SAR (measured) = 1.17 W/kg



P15 WLAN5.6G_802.11ac VHT80_Rear Face_0mm_Ch138_Power Reduction_w_Ant 2

DUT: 200519C01

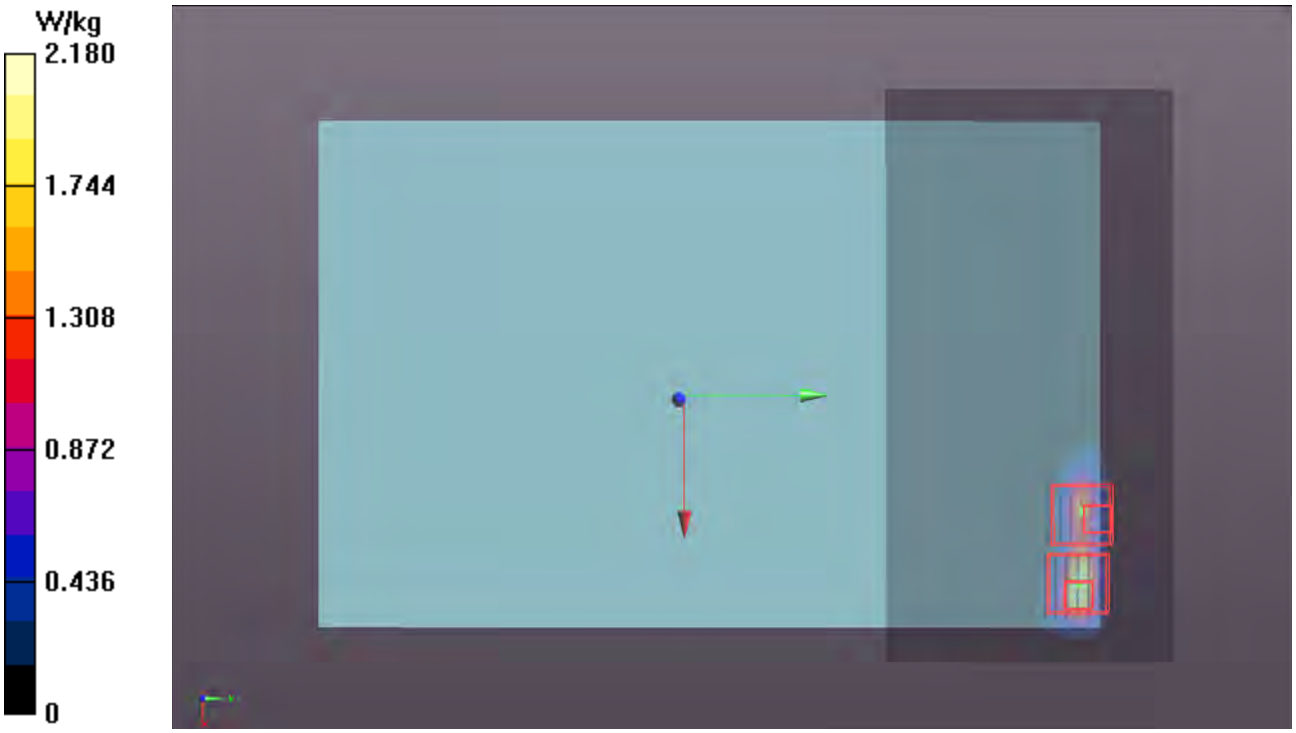
Communication System: UID 10544 - AAB, IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle); Frequency: 5690 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0625 Medium parameters used: f = 5690 MHz; σ = 5.23 S/m; ε_r = 35.332; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.23, 5.23, 5.23) @ 5690 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (211x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 2.18 W/kg

Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 18.12 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 5.42 W/kg
SAR(1 g) = 0.575 W/kg; SAR(10 g) = 0.178 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.2 mm
Ratio of SAR at M2 to SAR at M1 = 60.2%
Maximum value of SAR (measured) = 3.01 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 18.12 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 3.15 W/kg
SAR(1 g) = 0.507 W/kg; SAR(10 g) = 0.153 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.2 mm
Ratio of SAR at M2 to SAR at M1 = 62%
Maximum value of SAR (measured) = 1.47 W/kg


W/kg
2.180
1.744
1.308
0.872
0.436
0

P16 WLAN5.8G_802.11ac VHT80_Rear Face_0mm_Ch155_Power Reduction_w_Ant 2

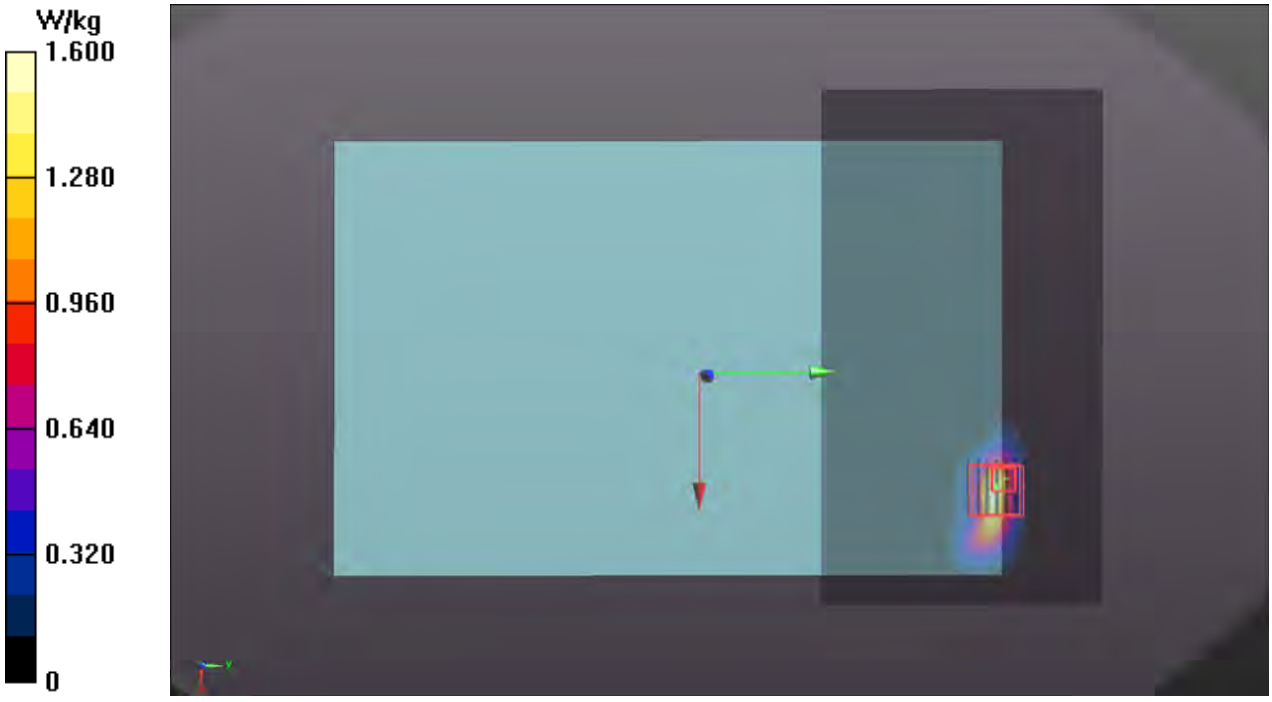
DUT: 200519C01

Communication System: UID 10544 - AAB, IEEE 802.11ac WiFi (80MHz, MCS0, 99pc duty cycle); Frequency: 5775 MHz;Duty Cycle: 1:1
Medium: H34T60N1_0625 Medium parameters used: f = 5775 MHz; σ = 5.328 S/m; ε_r = 35.188; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7472; ConvF(5.23, 5.23, 5.23) @ 5775 MHz; Calibrated: 2019/08/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2019/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (221x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.60 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 13.49 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 4.63 W/kg
SAR(1 g) = 0.571 W/kg; SAR(10 g) = 0.163 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 4.2 mm
Ratio of SAR at M2 to SAR at M1 = 62.6%
Maximum value of SAR (measured) = 2.74 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/24

P17 BT_BDR_Rear Face_0mm_Ch39_Power Reduction_w_Ant 1

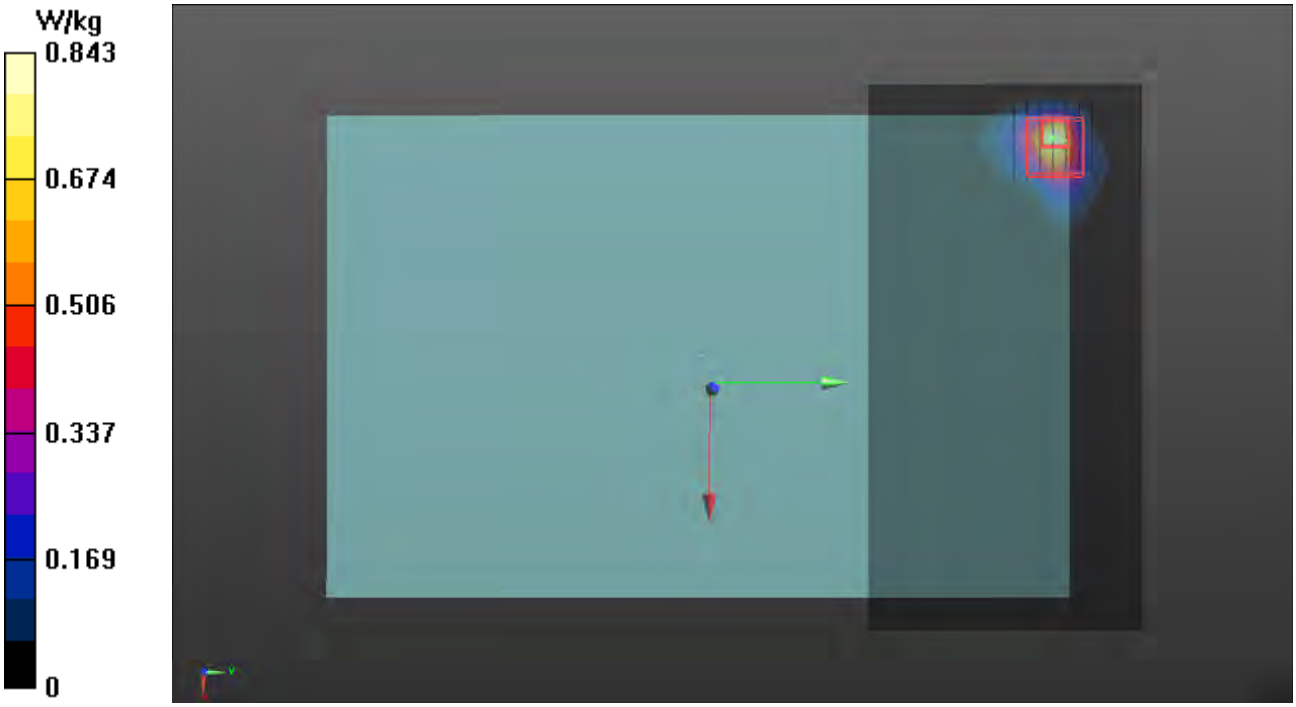
DUT: 200519C01

Communication System: UID 10032 - CAA, IEEE 802.15.1 Bluetooth (GFSK, DH5); Frequency: 2441 MHz;Duty Cycle: 1:1.3
Medium: H19T27N1_0624 Medium parameters used (interpolated): f = 2441 MHz; σ = 1.861 S/m; ε_r = 38.718; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃； Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(7.4, 7.4, 7.4) @ 2441 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (181x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.843 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.54 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.159 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 30.5%
Maximum value of SAR (measured) = 0.752 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2020/06/24

P18 BT_BDR_Left Side_0mm_Ch39_Power Reduction_w_Ant 2

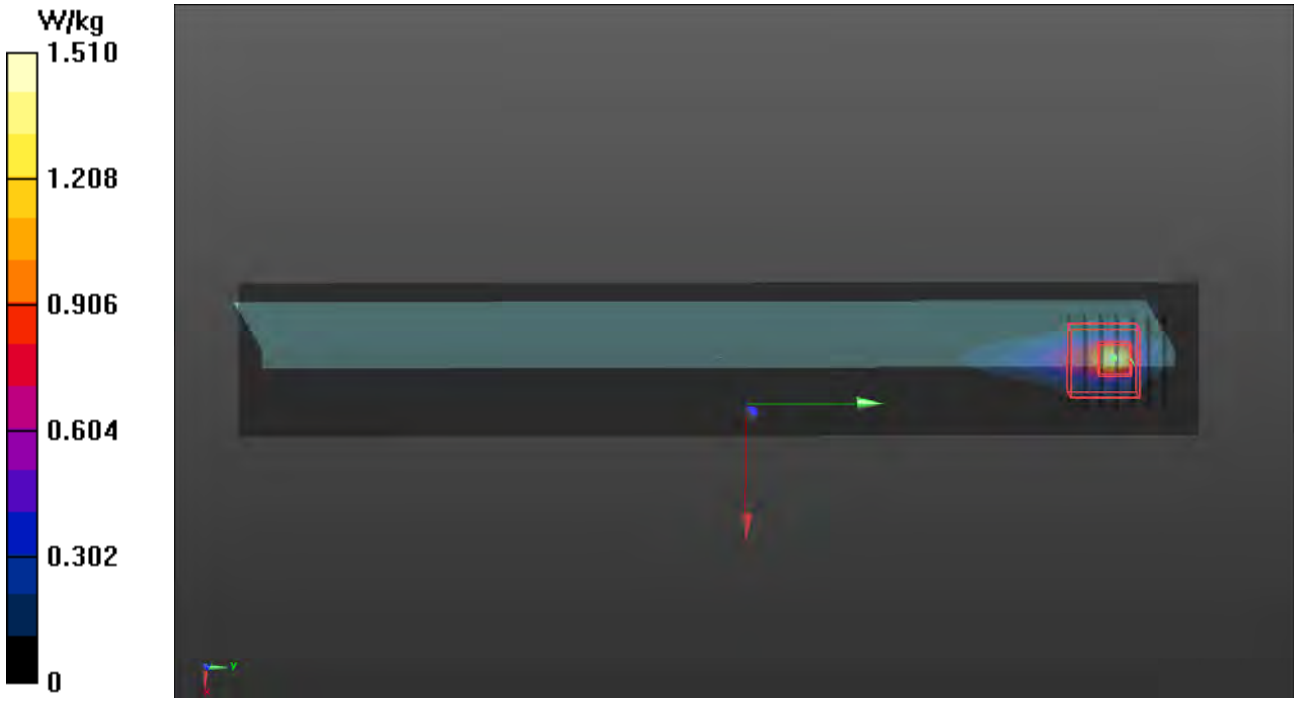
DUT: 200519C01

Communication System: UID 10032 - CAA, IEEE 802.15.1 Bluetooth (GFSK, DH5); Frequency: 2441 MHz;Duty Cycle: 1:1.3
Medium: H19T27N1_0624 Medium parameters used (interpolated): f = 2441 MHz; σ = 1.861 S/m; ε_r = 38.718; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7537; ConvF(7.4, 7.4, 7.4) @ 2441 MHz; Calibrated: 2020/05/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1585; Calibrated: 2020/05/28
- Phantom: ELI Phantom_2105; Type: QD OVA 004 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (41x251x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.51 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.75 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.07 W/kg
SAR(1 g) = 0.443 W/kg; SAR(10 g) = 0.196 W/kg (SAR corrected for target medium)
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 30.1%
Maximum value of SAR (measured) = 1.29 W/kg



Appendix C. Maximum Target Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

Full Power		
Mode	GSM850	GSM1900
	Maximum Burst-Averaged Output Power	Maximum Burst-Averaged Output Power
	Maximum Target Power	Maximum Target Power
GSM (GMSK, 1Tx-slot)	33.5	30.5
GPRS (GMSK, 1Tx-slot)	33.5	30.5
GPRS (GMSK, 2Tx-slot)	32.5	29.0
GPRS (GMSK, 3Tx-slot)	30.5	27.5
GPRS (GMSK, 4Tx-slot)	28.5	25.5
EDGE (8PSK, 1Tx-slot)	28.0	27.0
EDGE (8PSK, 2Tx-slot)	26.0	25.0
EDGE (8PSK, 3Tx-slot)	24.0	23.0
EDGE (8PSK, 4Tx-slot)	23.0	22.0

Full Power		
Mode	RMC 12.2K	HSDPA / DC-HSDPA / HSUPA
	Maximum Target Power	Maximum Target Power
WCDMA Band II	23.5	22.5
WCDMA Band IV	23.5	22.5
WCDMA Band V	24.5	23.5

Mode	QPSK	16QAM	64QAM
	Maximum Target Power	Maximum Target Power	Maximum Target Power
LTE 5	25.0	24.0	23.0
LTE 12	25.0	24.0	23.0
LTE 13	25.0	24.0	23.0
LTE 25	24.0	23.0	22.0
LTE 66	24.0	23.0	22.0
LTE 41	25.0	24.0	23.0

Reduction Power		
Mode	GSM850	GSM1900
	Maximum Burst-Averaged Output Power	Maximum Burst-Averaged Output Power
	Maximum Target Power	Maximum Target Power
GSM (GMSK, 1Tx-slot)	23.5	22.0
GPRS (GMSK, 1Tx-slot)	23.5	22.0
GPRS (GMSK, 2Tx-slot)	22.5	20.0
GPRS (GMSK, 3Tx-slot)	20.5	18.0
GPRS (GMSK, 4Tx-slot)	18.5	16.0
EDGE (8PSK, 1Tx-slot)	18.0	19.0
EDGE (8PSK, 2Tx-slot)	16.0	17.0
EDGE (8PSK, 3Tx-slot)	14.0	15.0
EDGE (8PSK, 4Tx-slot)	13.0	14.0

Reduction Power		
Mode	RMC 12.2K	HSDPA / DC-HSDPA / HSUPA
	Maximum Target Power	Maximum Target Power
WCDMA Band II	13.5	12.5
WCDMA Band IV	13.5	12.5
WCDMA Band V	14.5	13.5

Mode	QPSK	16QAM	64QAM
	Maximum Target Power	Maximum Target Power	Maximum Target Power
LTE 5	16.0	16.0	16.0
LTE 12	15.0	15.0	15.0
LTE 13	15.0	15.0	15.0
LTE 25	14.0	14.0	14.0
LTE 66	14.0	14.0	14.0
LTE 41	15.0	15.0	15.0

WLAN Full Power					
WLAN2.4GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11b	1	2412		20.0	23.0
	6	2437		20.0	23.0
	11	2462		20.0	23.0
	12	2467		5.0	5.0
	13	2472		-1.5	0.0
802.11g	1	2412		19.0	22.0
	6	2437		19.0	22.0
	11	2462		19.0	22.0
	12	2467		5.0	5.0
	13	2472		-1.5	0.0
802.11n HT20	1	2412		18.0	21.0
	6	2437		18.0	21.0
	11	2462		18.0	21.0
	12	2467		5.0	5.0
	13	2472		-1.5	0.0
802.11ac VHT20	1	2412		18.0	21.0
	6	2437		18.0	21.0
	11	2462		18.0	21.0
	12	2467		5.0	5.0
	13	2472		-1.5	0.0
802.11ax HE20	1	2412		15.0	18.0
	6	2437		15.0	18.0
	11	2462		15.0	18.0
	12	2467		5.0	5.0
	13	2472		-1.5	0.0

Bluetooth			Ant 1	Ant 2
Mode	Channel	Frequency	Max Tune up	Max Tune up
BR / EDR	0	2402	13.0	12.0
	39	2441	13.0	12.0
	78	2480	13.0	12.0
LE	0	2402	3.5	
	19	2440	3.5	
	39	2480	3.5	

WLAN Full Power					
WLAN 5.2GHz			Ant 0	Ant 1	Ant 0+1
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	36	5180	18.0	18.0	21.0
	40	5200	18.0	18.0	21.0
	44	5220	18.0	18.0	21.0
	48	5240	18.0	18.0	21.0
802.11n HT20	36	5180	17.0	17.0	20.0
	40	5200	17.0	17.0	20.0
	44	5220	17.0	17.0	20.0
	48	5240	17.0	17.0	20.0
802.11n HT40	38	5190	14.0	14.0	17.0
	46	5230	14.0	14.0	17.0
802.11ac VHT20	36	5180	17.0	17.0	20.0
	40	5200	17.0	17.0	20.0
	44	5220	17.0	17.0	20.0
	48	5240	17.0	17.0	20.0
802.11ac VHT40	38	5190	15.0	15.0	18.0
	46	5230	15.0	15.0	18.0
802.11ac VHT80	42	5210	14.0	14.0	17.0
802.11ax HE20	36	5180	14.0	14.0	17.0
	40	5200	14.0	14.0	17.0
	44	5220	14.0	14.0	17.0
	48	5240	14.0	14.0	17.0
802.11ax HE40	38	5190	12.0	12.0	15.0
	46	5230	12.0	12.0	15.0
802.11ax HE80	42	5210	11.0	11.0	14.0

WLAN Full Power					
WLAN 5.3GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	52	5260	18.0	18.0	21.0
	56	5280	18.0	18.0	21.0
	60	5300	18.0	18.0	21.0
	64	5320	18.0	18.0	21.0
802.11n HT20	52	5260	17.0	17.0	20.0
	56	5280	17.0	17.0	20.0
	60	5300	17.0	17.0	20.0
	64	5320	17.0	17.0	20.0
802.11n HT40	54	5270	14.0	14.0	17.0
	62	5310	14.0	14.0	17.0
802.11ac VHT20	52	5260	17.0	17.0	20.0
	56	5280	17.0	17.0	20.0
	60	5300	17.0	17.0	20.0
	64	5320	17.0	17.0	20.0
802.11ac VHT40	54	5270	15.0	15.0	18.0
	62	5310	15.0	15.0	18.0
802.11ac VHT80	58	5290	14.0	14.0	17.0
802.11ax HE20	52	5260	14.0	14.0	17.0
	56	5280	14.0	14.0	17.0
	60	5300	14.0	14.0	17.0
	64	5320	14.0	14.0	17.0
802.11ax HE40	54	5270	12.0	12.0	15.0
	62	5310	12.0	12.0	15.0
802.11ax HE80	58	5290	11.0	11.0	14.0

WLAN Full Power					
WLAN 5.6GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	100	5500	16.5	16.5	19.5
	116	5580	16.5	16.5	19.5
	132	5660	16.5	16.5	19.5
	140	5700	16.5	16.5	19.5
	144	5720	16.5	16.5	19.5
802.11n HT20	100	5500	17.0	17.0	20.0
	116	5580	17.0	17.0	20.0
	132	5660	17.0	17.0	20.0
	140	5700	17.0	17.0	20.0
	144	5720	17.0	17.0	20.0
802.11n HT40	102	5510	17.0	17.0	20.0
	110	5550	17.0	17.0	20.0
	118	5590	17.0	17.0	20.0
	134	5670	17.0	17.0	20.0
	142	5710	17.0	17.0	20.0
802.11ac VHT20	100	5500	17.0	17.0	20.0
	116	5580	17.0	17.0	20.0
	132	5660	17.0	17.0	20.0
	140	5700	17.0	17.0	20.0
	144	5720	17.0	17.0	20.0
802.11ac VHT40	102	5510	15.0	15.0	18.0
	110	5550	15.0	15.0	18.0
	118	5590	15.0	15.0	18.0
	134	5670	15.0	15.0	18.0
	142	5710	15.0	15.0	18.0
802.11ac VHT80	106	5530	14.0	14.0	17.0
	138	5690	14.0	14.0	17.0
802.11ax HE20	100	5500	14.0	14.0	17.0
	116	5580	14.0	14.0	17.0
	132	5660	14.0	14.0	17.0
	140	5700	14.0	14.0	17.0
	144	5720	14.0	14.0	17.0
802.11ax HE40	102	5510	12.0	12.0	15.0
	110	5550	12.0	12.0	15.0
	118	5590	12.0	12.0	15.0
	134	5670	12.0	12.0	15.0
	142	5710	12.0	12.0	15.0
802.11ax HE80	106	5530	11.0	11.0	14.0
	138	5690	11.0	11.0	14.0

WLAN Full Power					
WLAN 5.8GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	149	5745	16.5	16.5	19.5
	153	5765	16.5	16.5	19.5
	157	5785	16.5	16.5	19.5
	161	5805	16.5	16.5	19.5
	165	5825	16.5	16.5	19.5
802.11n HT20	149	5745	17.0	17.0	20.0
	153	5765	17.0	17.0	20.0
	157	5785	17.0	17.0	20.0
	161	5805	17.0	17.0	20.0
	165	5825	17.0	17.0	20.0
802.11n HT40	151	5755	17.0	17.0	20.0
	159	5795	17.0	17.0	20.0
802.11ac VHT20	149	5745	17.0	17.0	20.0
	153	5765	17.0	17.0	20.0
	157	5785	17.0	17.0	20.0
	161	5805	17.0	17.0	20.0
	165	5825	17.0	17.0	20.0
802.11ac VHT40	151	5755	15.0	15.0	18.0
	159	5795	15.0	15.0	18.0
802.11ac VHT80	155	5775	14.0	14.0	17.0
802.11ax HE20	149	5745	14.0	14.0	17.0
	153	5765	14.0	14.0	17.0
	157	5785	14.0	14.0	17.0
	161	5805	14.0	14.0	17.0
	165	5825	14.0	14.0	17.0
802.11ax HE40	151	5755	12.0	12.0	15.0
	159	5795	12.0	12.0	15.0
802.11ax HE80	155	5775	11.0	11.0	14.0

WLAN Redution Power					
WLAN2.4GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11b	1	2412		11.5	14.5
	6	2437		11.5	14.5
	11	2462		11.5	14.5
802.11g	1	2412		11.0	14.0
	6	2437		11.0	14.0
	11	2462		11.0	14.0
802.11n HT20	1	2412		11.0	14.0
	6	2437		11.0	14.0
	11	2462		11.0	14.0
802.11n HT40	3	2422		11.0	14.0
	6	2437		11.0	14.0
	9	2452		11.0	14.0
802.11ac VHT20	1	2412		11.0	14.0
	6	2437		11.0	14.0
	11	2462		11.0	14.0
802.11ac VHT40	3	2422		11.0	14.0
	6	2437		11.0	14.0
	9	2452		11.0	14.0
802.11ax HE20	1	2412		11.0	14.0
	6	2437		11.0	14.0
	11	2462		11.0	14.0
802.11ax HE40	3	2422		11.0	14.0
	6	2437		11.0	14.0
	9	2452		11.0	14.0

Bluetooth			Ant 1	Ant 2
Mode	Channel	Frequency	Max Tune up	Max Tune up
BR / EDR	0	2402	12.0	11.0
	39	2441	12.0	11.0
	78	2480	12.0	11.0
LE	0	2402		
	19	2440		
	39	2480		

WLAN Redution Power					
WLAN 5.2GHz			Ant 0	Ant 1	Ant 0+1
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	36	5180	11.0	11.0	14.0
	40	5200	11.0	11.0	14.0
	44	5220	11.0	11.0	14.0
	48	5240	11.0	11.0	14.0
802.11n HT20	36	5180	11.0	11.0	14.0
	40	5200	11.0	11.0	14.0
	44	5220	11.0	11.0	14.0
	48	5240	11.0	11.0	14.0
802.11n HT40	38	5190	11.0	11.0	14.0
	46	5230	11.0	11.0	14.0
802.11ac VHT20	36	5180	11.0	11.0	14.0
	40	5200	11.0	11.0	14.0
	44	5220	11.0	11.0	14.0
	48	5240	11.0	11.0	14.0
802.11ac VHT40	38	5190	11.0	11.0	14.0
	46	5230	11.0	11.0	14.0
802.11ac VHT80	42	5210	11.0	11.0	14.0
802.11ax HE20	36	5180	11.0	11.0	14.0
	40	5200	11.0	11.0	14.0
	44	5220	11.0	11.0	14.0
	48	5240	11.0	11.0	14.0
802.11ax HE40	38	5190	11.0	11.0	14.0
	46	5230	11.0	11.0	14.0
802.11ax HE80	42	5210	11.0	11.0	14.0

WLAN Redution Power					
WLAN 5.3GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	52	5260	11.0	11.0	14.0
	56	5280	11.0	11.0	14.0
	60	5300	11.0	11.0	14.0
	64	5320	11.0	11.0	14.0
802.11n HT20	52	5260	11.0	11.0	14.0
	56	5280	11.0	11.0	14.0
	60	5300	11.0	11.0	14.0
	64	5320	11.0	11.0	14.0
802.11n HT40	54	5270	11.0	11.0	14.0
	62	5310	11.0	11.0	14.0
802.11ac VHT20	52	5260	11.0	11.0	14.0
	56	5280	11.0	11.0	14.0
	60	5300	11.0	11.0	14.0
	64	5320	11.0	11.0	14.0
802.11ac VHT40	54	5270	11.0	11.0	14.0
	62	5310	11.0	11.0	14.0
802.11ac VHT80	58	5290	11.0	11.0	14.0
802.11ax HE20	52	5260	11.0	11.0	14.0
	56	5280	11.0	11.0	14.0
	60	5300	11.0	11.0	14.0
	64	5320	11.0	11.0	14.0
802.11ax HE40	54	5270	11.0	11.0	14.0
	62	5310	11.0	11.0	14.0
802.11ax HE80	58	5290	11.0	11.0	14.0

WLAN Redution Power					
WLAN 5.6GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	100	5500	11.0	11.0	14.0
	116	5580	11.0	11.0	14.0
	120	5600	11.0	11.0	14.0
	124	5620	11.0	11.0	14.0
	132	5660	11.0	11.0	14.0
	140	5700	11.0	11.0	14.0
	144	5720	11.0	11.0	14.0
802.11n HT20	100	5500	11.0	11.0	14.0
	116	5580	11.0	11.0	14.0
	120	5600	11.0	11.0	14.0
	124	5620	11.0	11.0	14.0
	132	5660	11.0	11.0	14.0
	140	5700	11.0	11.0	14.0
	144	5720	11.0	11.0	14.0
802.11n HT40	102	5510	11.0	11.0	14.0
	110	5550	11.0	11.0	14.0
	118	5590	11.0	11.0	14.0
	126	5630	11.0	11.0	14.0
	134	5670	11.0	11.0	14.0
	142	5710	11.0	11.0	14.0
802.11ac VHT20	100	5500	11.0	11.0	14.0
	116	5580	11.0	11.0	14.0
	120	5600	11.0	11.0	14.0
	124	5620	11.0	11.0	14.0
	132	5660	11.0	11.0	14.0
	140	5700	11.0	11.0	14.0
	144	5720	11.0	11.0	14.0
802.11ac VHT40	102	5510	11.0	11.0	14.0
	110	5550	11.0	11.0	14.0
	118	5590	11.0	11.0	14.0
	126	5630	11.0	11.0	14.0
	134	5670	11.0	11.0	14.0
	142	5710	11.0	11.0	14.0
802.11ac VHT80	106	5530	11.0	11.0	14.0
	122	5610	11.0	11.0	14.0
	138	5690	11.0	11.0	14.0
802.11ax HE20	100	5500	11.0	11.0	14.0
	116	5580	11.0	11.0	14.0
	120	5600	11.0	11.0	14.0
	124	5620	11.0	11.0	14.0
	132	5660	11.0	11.0	14.0
	140	5700	11.0	11.0	14.0
	144	5720	11.0	11.0	14.0
802.11ax HE40	102	5510	11.0	11.0	14.0
	110	5550	11.0	11.0	14.0
	118	5590	11.0	11.0	14.0
	126	5630	11.0	11.0	14.0
	134	5670	11.0	11.0	14.0
	142	5710	11.0	11.0	14.0
802.11ax HE80	106	5530	11.0	11.0	14.0
	122	5610	11.0	11.0	14.0
	138	5690	11.0	11.0	14.0

WLAN Redution Power					
WLAN 5.8GHz			Ant 1	Ant 2	Ant 1+2
Mode	Channel	Frequency	Max Tune up	Max Tune up	Max Tune up
802.11a	149	5745	11.0	11.0	14.0
	153	5765	11.0	11.0	14.0
	157	5785	11.0	11.0	14.0
	161	5805	11.0	11.0	14.0
	165	5825	11.0	11.0	14.0
802.11n HT20	149	5745	11.0	11.0	14.0
	153	5765	11.0	11.0	14.0
	157	5785	11.0	11.0	14.0
	161	5805	11.0	11.0	14.0
	165	5825	11.0	11.0	14.0
802.11n HT40	151	5755	11.0	11.0	14.0
	159	5795	11.0	11.0	14.0
802.11ac VHT20	149	5745	11.0	11.0	14.0
	153	5765	11.0	11.0	14.0
	157	5785	11.0	11.0	14.0
	161	5805	11.0	11.0	14.0
	165	5825	11.0	11.0	14.0
802.11ac VHT40	151	5755	11.0	11.0	14.0
	159	5795	11.0	11.0	14.0
802.11ac VHT80	155	5775	11.0	11.0	14.0
802.11ax HE20	149	5745	11.0	11.0	14.0
	153	5765	11.0	11.0	14.0
	157	5785	11.0	11.0	14.0
	161	5805	11.0	11.0	14.0
	165	5825	11.0	11.0	14.0
802.11ax HE40	151	5755	11.0	11.0	14.0
	159	5795	11.0	11.0	14.0
802.11ax HE80	155	5775	11.0	11.0	14.0

Appendix D. Measured Conducted Power

The measuring conducted power (Unit: dBm) are shown as below.

Full Power						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	32.35	**32.78**	32.56	29.60	**29.79**	29.59
GPRS 1Tx Slot	32.23	32.72	32.47	29.50	29.68	29.49
GPRS 2Tx Slot	31.11	31.60	31.35	28.42	28.60	28.41
GPRS 3Tx Slot	29.03	29.52	29.27	26.73	26.91	26.72
GPRS 4Tx Slot	27.11	27.60	27.35	24.82	25.00	24.81
EDGE 1Tx Slot (MCS9)	26.20	26.69	26.44	25.86	26.04	25.85
EDGE 2Tx Slot (MCS9)	24.72	25.21	24.96	24.30	24.48	24.29
EDGE 3Tx Slot (MCS9)	22.65	23.14	22.89	21.81	21.99	21.80
EDGE 4Tx Slot (MCS9)	21.76	22.25	22.00	21.28	21.46	21.27

Reduction Power						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency	**824.2**	**836.4**	**848.8**	**1850.2**	**1880**	**1909.8**
GSM	22.85	**23.08**	22.98	21.58	**21.75**	21.72
GPRS 1Tx Slot	22.73	22.99	22.88	21.47	21.62	21.59
GPRS 2Tx Slot	21.66	21.93	21.81	19.59	19.74	19.71
GPRS 3Tx Slot	19.86	20.13	20.01	17.63	17.78	17.75
GPRS 4Tx Slot	17.73	18.01	17.89	15.54	15.69	15.66
EDGE 1Tx Slot (MCS9)	17.57	17.85	17.73	18.78	18.93	18.90
EDGE 2Tx Slot (MCS9)	15.60	15.88	15.76	16.71	16.86	16.83
EDGE 3Tx Slot (MCS9)	13.68	13.96	13.84	14.83	14.98	14.96
EDGE 4Tx Slot (MCS9)	12.67	12.95	12.83	13.73	13.88	13.83

Full Power									
Band	**WCDMA II**			**WCDMA IV**			**WCDMA V**		
TX Channel	**9262**	**9400**	**9538**	**1312**	**1413**	**1513**	**4132**	**4182**	**4233**
Rx Channel	**9662**	**9800**	**9938**	**1537**	**1638**	**1738**	**4357**	**4407**	**4458**
Frequency	**1852.4**	**1880**	**1907.6**	**1712.4**	**1732.6**	**1752.6**	**826.4**	**836.4**	**846.6**
RMC 12.2K	23.32	23.35	**23.37**	23.31	23.29	**23.39**	23.84	**23.92**	23.86
HSDPA Subtest-1	22.31	22.36	22.42	22.32	22.35	22.41	22.83	22.91	22.85
HSDPA Subtest-2	22.33	22.38	22.43	22.29	22.33	22.42	22.81	22.89	22.83
HSDPA Subtest-3	21.85	21.89	21.89	21.85	21.81	21.87	22.33	22.41	22.35
HSDPA Subtest-4	21.86	21.87	21.91	21.82	21.82	21.89	22.32	22.40	22.34
DC-HSDPA Subtest-1	22.26	22.31	22.37	22.31	22.32	22.38	22.75	22.83	22.77
DC-HSDPA Subtest-2	22.29	22.33	22.38	22.26	22.30	22.39	22.73	22.81	22.75
DC-HSDPA Subtest-3	21.80	21.85	21.86	21.83	21.78	21.86	22.25	22.33	22.27
DC-HSDPA Subtest-4	21.81	21.82	21.86	21.79	21.81	21.88	22.24	22.32	22.26
HSUPA Subtest-1	22.28	22.35	22.37	22.35	22.29	22.35	22.81	22.89	22.83
HSUPA Subtest-2	20.25	20.36	20.38	20.28	20.32	20.36	20.84	20.92	20.86
HSUPA Subtest-3	21.31	21.35	21.37	21.29	21.28	21.35	21.81	21.89	21.83
HSUPA Subtest-4	20.28	20.33	20.35	20.07	20.05	20.15	20.80	20.88	20.82
HSUPA Subtest-5	22.31	22.41	22.42	22.31	22.32	22.41	22.82	22.90	22.84

Reduction Power

Band	WCDMA II			WCDMA IV			WCDMA V		
TX Channel	**9262**	**9400**	**9538**	**1312**	**1413**	**1513**	**4132**	**4182**	**4233**
Rx Channel	**9662**	**9800**	**9938**	**1537**	**1638**	**1738**	**4357**	**4407**	**4458**
Frequency	**1852.4**	**1880**	**1907.6**	**1712.4**	**1732.6**	**1752.6**	**826.4**	**836.4**	**846.6**
RMC 12.2K	13.22	13.23	**13.32**	13.17	13.19	**13.27**	14.01	**14.08**	14.03
HSDPA Subtest-1	12.23	12.27	12.31	12.23	12.24	12.29	13.05	13.13	13.12
HSDPA Subtest-2	12.27	12.30	12.33	12.21	12.22	12.31	13.06	13.12	13.09
HSDPA Subtest-3	11.73	11.78	11.83	11.69	11.74	11.79	12.56	12.61	12.61
HSDPA Subtest-4	11.78	11.76	11.86	11.68	11.73	11.77	12.51	12.66	12.03
DC-HSDPA Subtest-1	12.20	12.22	12.26	12.17	12.19	12.23	12.99	13.07	13.06
DC-HSDPA Subtest-2	12.22	12.25	12.30	12.14	12.16	12.24	13.01	13.05	13.05
DC-HSDPA Subtest-3	11.68	11.74	11.77	11.63	11.67	11.71	12.52	12.55	12.55
DC-HSDPA Subtest-4	11.73	11.71	11.82	11.64	11.67	11.68	12.45	12.58	11.98
HSUPA Subtest-1	12.21	12.20	12.33	12.11	12.14	12.25	12.09	12.12	12.07
HSUPA Subtest-2	10.23	10.33	10.26	10.18	10.17	10.34	11.05	11.16	11.08
HSUPA Subtest-3	11.40	11.27	11.24	11.17	11.19	11.25	12.02	12.12	12.09
HSUPA Subtest-4	10.24	10.28	10.30	9.97	10.03	10.09	11.07	11.15	11.07
HSUPA Subtest-5	12.24	12.23	12.26	12.18	12.19	12.21	13.01	13.08	13.11

FULL Power

LTE Band 2

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequence (MHz)		1860	1880	1900
20M	QPSK	1	0	23.02	**23.05**	22.98
		1	50	22.96	22.99	22.92
		1	99	22.95	22.98	22.91
		50	0	22.08	**22.11**	22.04
		50	25	22.05	22.08	22.01
		50	50	22.02	22.05	21.98
		100	0	22.03	**22.06**	21.99
	16QAM	1	0	22.05	22.08	22.01
		1	50	21.99	22.02	21.95
		1	99	21.98	22.01	21.94
		50	0	21.00	21.03	20.96
		50	25	20.98	21.01	20.94
		50	50	20.95	20.98	20.91
		100	0	20.99	21.02	20.95
	64QAM	1	0	21.09	21.12	21.05
		1	50	21.08	21.11	21.04
		1	99	21.06	21.09	21.02
		50	0	20.06	20.09	20.02
		50	25	20.05	20.08	20.01
		50	50	20.02	20.05	19.98
		100	0	20.03	20.06	19.99
BW	**MCS Index**	**Channel**		**18675**	**18900**	**19125**
		Frequence (MHz)		**1857.5**	**1880**	**1902.5**
15M	QPSK	1	0	22.98	22.98	22.93
		1	37	22.96	22.91	22.91
		1	74	22.90	22.97	22.85
		36	0	22.00	22.02	21.95
		36	19	22.05	22.08	21.93
		36	39	21.92	21.98	21.92
		75	0	21.98	22.05	21.89
	16QAM	1	0	21.96	22.01	21.97
		1	37	21.92	21.94	21.92
		1	74	21.92	21.96	21.86
		36	0	20.97	21.03	20.86
		36	19	20.90	21.00	20.85
		36	39	20.89	20.88	20.91
		75	0	20.94	20.94	20.93
	64QAM	1	0	20.99	21.11	20.98
		1	37	20.99	21.05	20.97
		1	74	21.00	21.01	20.93
		36	0	20.00	20.05	19.98
		36	19	20.04	19.98	19.98
		36	39	19.93	20.05	19.97
		75	0	19.97	19.97	19.93

FULL Power

LTE Band 2

BW	MCS Index	Channel		18650	18900	19150
		Frequence (MHz)		1855	1880	1905
10M	QPSK	1	0	22.87	22.80	22.89
		1	24	22.73	22.94	22.77
		1	49	22.77	22.81	22.79
		25	0	21.93	22.03	21.82
		25	12	21.91	22.01	21.84
		25	25	21.86	22.01	21.88
		50	0	21.96	21.92	21.89
	16QAM	1	0	21.90	21.92	21.90
		1	24	21.79	21.91	21.84
		1	49	21.74	21.84	21.86
		25	0	20.87	20.80	20.85
		25	12	20.86	20.82	20.79
		25	25	20.81	20.81	20.77
		50	0	20.87	20.92	20.84
	64QAM	1	0	21.02	21.00	20.90
		1	24	20.99	21.05	20.96
		1	49	20.89	21.05	20.78
		25	0	19.90	19.92	19.86
		25	12	19.95	19.97	19.94
		25	25	19.79	19.86	19.89
		50	0	20.02	19.96	19.90
BW	**MCS Index**	**Channel**		**18625**	**18900**	**19175**
		Frequence (MHz)		**1852.5**	**1880**	**1907.5**
5M	QPSK	1	0	22.94	22.88	22.69
		1	12	22.74	22.82	22.86
		1	24	22.70	22.88	22.71
		12	0	21.90	22.07	21.88
		12	6	21.96	21.97	21.67
		12	13	21.83	22.03	21.68
		25	0	22.00	21.97	21.82
	16QAM	1	0	21.94	21.90	21.83
		1	12	21.96	21.85	21.90
		1	24	21.98	21.84	21.76
		12	0	20.85	20.92	20.85
		12	6	20.86	20.91	20.76
		12	13	20.78	20.84	20.75
		25	0	20.90	20.81	20.78
	64QAM	1	0	20.91	21.05	20.96
		1	12	21.05	21.04	20.93
		1	24	20.84	21.09	20.87
		12	0	19.89	19.94	19.92
		12	6	19.85	20.00	19.98
		12	13	19.95	19.87	19.84
		25	0	19.81	19.85	19.81

FULL Power

LTE Band 2

BW	MCS Index	Channel		18615	18900	19185
		Frequence (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	22.99	22.89	22.93
		1	7	22.86	22.85	22.84
		1	14	22.86	22.78	22.85
		8	0	21.92	21.97	21.94
		8	3	21.99	21.97	22.00
		8	7	21.82	21.88	21.84
		15	0	21.94	21.98	21.93
	16QAM	1	0	22.00	21.97	21.94
		1	7	21.88	21.89	21.80
		1	14	21.91	21.87	21.85
		8	0	20.89	20.82	20.88
		8	3	20.80	20.94	20.75
		8	7	20.85	20.81	20.72
		15	0	20.83	20.84	20.73
	64QAM	1	0	20.95	20.96	20.81
		1	7	20.85	20.98	20.85
		1	14	20.86	20.87	20.86
		8	0	19.90	19.97	19.91
		8	3	20.00	19.87	19.91
		8	7	19.97	19.90	19.77
		15	0	19.80	19.94	19.82
BW	MCS Index	Channel		18607	18900	19193
		Frequence (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	22.98	22.83	22.97
		1	2	22.90	22.85	22.73
		1	5	22.92	22.92	22.79
		3	0	22.90	22.99	23.01
		3	1	22.96	22.90	22.86
		3	3	22.87	22.98	22.79
		6	0	21.89	21.96	21.97
	16QAM	1	0	21.86	21.96	21.85
		1	2	21.96	21.94	21.82
		1	5	21.90	21.85	21.76
		3	0	21.85	21.92	21.82
		3	1	21.84	21.81	21.86
		3	3	21.93	21.98	21.90
		6	0	20.89	21.00	20.81
	64QAM	1	0	21.04	21.06	20.97
		1	2	20.97	20.95	21.01
		1	5	20.95	21.05	20.91
		3	0	20.97	20.91	20.92
		3	1	20.92	21.00	20.96
		3	3	20.87	20.82	20.85
		6	0	19.90	19.94	19.89

FULL Power

LTE Band 4

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20050	20175	20300
		Frequence (MHz)		1720	1732.5	1745
20M	QPSK	1	0	23.06	23.01	**23.12**
		1	50	23.04	22.99	23.10
		1	99	22.88	22.83	22.94
		50	0	22.10	22.05	**22.16**
		50	25	22.09	22.04	22.15
		50	50	22.07	22.02	22.13
		100	0	22.06	22.01	**22.12**
	16QAM	1	0	22.08	22.03	22.14
		1	50	22.06	22.01	22.12
		1	99	22.05	22.00	22.11
		50	0	21.13	21.08	21.19
		50	25	21.10	21.05	21.16
		50	50	21.09	21.04	21.15
		100	0	21.07	21.02	21.13
	64QAM	1	0	21.22	21.17	21.28
		1	50	21.20	21.15	21.26
		1	99	21.08	21.03	21.14
		50	0	20.10	20.05	20.16
		50	25	20.08	20.03	20.14
		50	50	20.07	20.02	20.13
		100	0	20.06	20.01	20.12
BW	**MCS Index**	**Channel**		**20025**	**20175**	**20325**
		Frequence (MHz)		**1717.5**	**1732.5**	**1747.5**
15M	QPSK	1	0	23.05	22.98	23.03
		1	37	23.01	22.98	23.02
		1	74	22.79	22.74	22.87
		36	0	22.03	22.04	22.11
		36	19	22.08	22.02	22.12
		36	39	22.04	22.00	22.05
		75	0	21.97	21.97	22.08
	16QAM	1	0	22.07	21.95	22.07
		1	37	22.04	21.95	22.03
		1	74	22.03	21.94	22.04
		36	0	21.10	21.07	21.09
		36	19	21.02	20.96	21.06
		36	39	21.02	21.00	21.10
		75	0	21.07	20.94	21.11
	64QAM	1	0	21.19	21.11	21.25
		1	37	21.11	21.08	21.21
		1	74	21.03	21.00	21.11
		36	0	20.04	19.96	20.14
		36	19	20.05	20.00	20.08
		36	39	20.03	19.98	20.11
		75	0	20.00	19.97	20.05

FULL Power

LTE Band 4

BW	MCS Index	Channel		20000	20175	20350
		Frequence (MHz)		1715	1732.5	1750
10M	QPSK	1	0	22.91	22.93	23.03
		1	24	22.90	22.86	22.91
		1	49	22.84	22.70	22.78
		25	0	21.91	21.87	22.04
		25	12	21.96	21.96	21.92
		25	25	21.96	21.93	21.93
		50	0	22.02	21.96	21.95
	16QAM	1	0	21.90	21.93	22.02
		1	24	21.96	21.90	21.97
		1	49	21.92	21.93	21.97
		25	0	20.93	20.96	21.02
		25	12	20.99	20.89	21.00
		25	25	20.92	20.97	20.95
		50	0	20.96	20.87	20.99
	64QAM	1	0	**21.18**	21.07	21.16
		1	24	21.09	21.03	21.02
		1	49	21.01	20.86	21.10
		25	0	20.03	19.86	20.07
		25	12	19.94	19.96	20.01
		25	25	19.93	19.99	19.93
		50	0	19.91	19.85	19.97
BW	**MCS Index**	**Channel**		**19975**	**20175**	**20375**
		Frequence (MHz)		**1712.5**	**1732.5**	**1752.5**
5M	QPSK	1	0	22.97	22.79	22.92
		1	12	22.89	22.81	22.87
		1	24	22.73	22.63	22.84
		12	0	21.99	21.88	21.90
		12	6	22.00	21.98	22.08
		12	13	21.95	21.86	21.93
		25	0	21.95	21.88	21.78
	16QAM	1	0	21.94	21.80	21.92
		1	12	21.83	21.91	21.90
		1	24	21.92	21.83	21.90
		12	0	21.01	20.96	21.14
		12	6	21.01	20.87	21.10
		12	13	21.00	20.95	21.01
		25	0	20.92	20.86	20.89
	64QAM	1	0	21.04	21.06	21.17
		1	12	21.17	21.01	**21.25**
		1	24	20.95	21.01	21.06
		12	0	19.97	19.90	20.08
		12	6	19.86	19.98	20.06
		12	13	19.95	19.91	20.00
		25	0	19.92	19.93	20.07

FULL Power

LTE Band 4

BW	MCS Index	Channel		19965	20175	20385
		Frequence (MHz)		1711.5	1732.5	1753.5
3M	QPSK	1	0	22.98	22.80	22.98
		1	7	22.89	22.75	22.92
		1	14	22.75	22.60	22.78
		8	0	21.98	21.87	22.03
		8	3	21.89	21.94	22.03
		8	7	22.01	21.88	22.05
		15	0	21.95	21.92	22.09
	16QAM	1	0	21.93	21.79	22.06
		1	7	22.00	21.89	22.04
		1	14	21.97	21.78	22.01
		8	0	21.04	20.95	21.09
		8	3	20.98	20.94	21.09
		8	7	20.98	20.86	21.08
		15	0	20.95	20.90	21.01
	64QAM	1	0	21.03	21.13	21.10
		1	7	21.16	20.96	21.07
		1	14	20.88	20.87	20.94
		8	0	20.01	20.00	20.07
		8	3	20.01	19.98	19.96
		8	7	19.96	19.90	20.03
		15	0	20.05	19.87	20.01
BW	MCS Index	Channel		19957	20175	20393
		Frequence (MHz)		1710.7	1732.5	1754.3
1.4M	QPSK	1	0	22.86	22.93	23.03
		1	2	22.86	22.86	22.89
		1	5	22.84	22.75	22.89
		3	0	23.03	22.96	23.02
		3	1	22.99	22.95	22.96
		3	3	23.04	22.87	22.95
		6	0	21.96	21.84	22.03
	16QAM	1	0	22.00	21.84	21.98
		1	2	21.85	21.81	22.08
		1	5	21.88	21.79	22.00
		3	0	22.09	22.00	22.03
		3	1	21.98	22.01	22.05
		3	3	21.98	21.89	22.05
		6	0	20.96	20.80	20.91
	64QAM	1	0	21.16	21.00	**21.21**
		1	2	21.09	20.96	21.18
		1	5	20.91	20.91	20.98
		3	0	20.95	20.91	21.06
		3	1	20.96	20.79	21.07
		3	3	20.87	20.98	20.96
		6	0	19.96	19.97	19.94

FULL Power

LTE Band 5

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequence (MHz)		829	836.5	844
10M	QPSK	1	0	24.03	**24.05**	23.95
		1	24	23.82	24.02	23.92
		1	49	23.71	23.91	23.81
		25	0	22.88	**23.08**	22.98
		25	12	22.72	22.92	22.82
		25	25	22.77	22.97	22.87
		50	0	22.71	**22.91**	22.81
	16QAM	1	0	23.07	**23.27**	23.17
		1	24	23.05	23.25	23.15
		1	49	23.06	23.26	23.16
		25	0	21.81	22.01	21.91
		25	12	21.83	22.03	21.93
		25	25	21.88	22.08	21.98
		50	0	21.68	21.88	21.78
	64QAM	1	0	21.78	21.98	21.88
		1	24	21.98	22.18	22.08
		1	49	22.07	**22.27**	22.17
		25	0	20.83	21.03	20.93
		25	12	20.91	21.11	21.01
		25	25	20.88	21.08	20.98
		50	0	20.81	21.01	20.91
BW	**MCS Index**	**Channel**		**20425**	**20525**	**20625**
		Frequence (MHz)		**826.5**	**836.5**	**846.5**
5M	QPSK	1	0	23.94	24.02	23.90
		1	12	23.73	23.98	23.92
		1	24	23.61	23.82	23.74
		12	0	22.78	23.01	22.96
		12	6	22.66	22.88	22.72
		12	13	22.70	22.88	22.85
		25	0	22.66	22.82	22.80
	16QAM	1	0	23.03	23.24	23.17
		1	12	22.98	23.25	23.11
		1	24	23.02	23.22	23.09
		12	0	21.72	22.00	21.90
		12	6	21.82	21.96	21.83
		12	13	21.81	21.99	21.93
		25	0	21.58	21.88	21.75
	64QAM	1	0	21.73	21.93	21.87
		1	12	21.96	22.13	22.06
		1	24	21.98	**22.20**	22.07
		12	0	20.78	20.98	20.83
		12	6	20.84	21.03	20.95
		12	13	20.78	21.08	20.93
		25	0	20.81	20.92	20.88

FULL Power

LTE Band 5

BW	MCS Index	Channel		20415	20525	20635
		Frequence (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	23.91	23.94	23.81
		1	7	23.73	23.88	23.70
		1	14	23.59	23.77	23.69
		8	0	22.78	22.93	22.90
		8	3	22.53	22.78	22.72
		8	7	22.67	22.79	22.69
		15	0	22.51	22.89	22.71
	16QAM	1	0	22.83	23.09	23.10
		1	7	22.93	23.05	23.08
		1	14	22.97	23.06	23.13
		8	0	21.66	21.93	21.87
		8	3	21.74	21.92	21.75
		8	7	21.77	21.95	21.83
		15	0	21.54	21.71	21.66
	64QAM	1	0	21.64	21.83	21.72
		1	7	21.94	**22.08**	21.95
		1	14	21.95	22.08	22.05
		8	0	20.63	20.86	20.80
		8	3	20.76	21.02	20.95
		8	7	20.72	20.90	20.88
		15	0	20.67	20.94	20.72
BW	**MCS Index**	**Channel**		**20407**	**20525**	**20643**
		Frequence (MHz)		**824.7**	**836.5**	**848.3**
1.4M	QPSK	1	0	23.90	23.90	23.76
		1	2	23.62	23.94	23.73
		1	5	23.62	23.78	23.77
		3	0	23.74	23.88	23.82
		3	1	23.66	23.80	23.76
		3	3	23.67	23.92	23.82
		6	0	22.55	22.81	22.67
	16QAM	1	0	22.92	23.12	23.14
		1	2	22.97	**23.20**	23.00
		1	5	22.83	23.19	23.03
		3	0	22.59	22.83	22.67
		3	1	22.68	22.97	22.75
		3	3	22.75	22.93	22.88
		6	0	21.54	21.69	21.61
	64QAM	1	0	21.71	21.84	21.78
		1	2	21.95	22.10	21.88
		1	5	21.87	**22.15**	21.94
		3	0	21.70	21.95	21.82
		3	1	21.82	21.92	21.90
		3	3	21.73	21.90	21.92
		6	0	20.64	20.91	20.85

FULL Power

LTE Band 12

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequence (MHz)		704	707.5	711
10M	QPSK	1	0	23.89	23.95	24.12
		1	24	23.76	23.82	23.99
		1	49	23.73	23.79	23.96
		25	0	22.78	22.84	23.01
		25	12	22.76	22.82	22.99
		25	25	22.66	22.72	22.89
		50	0	22.73	22.76	22.93
	16QAM	1	0	23.26	23.32	23.49
		1	24	23.03	23.09	23.26
		1	49	22.94	23.02	23.17
		25	0	21.82	21.86	22.03
		25	12	21.88	21.94	22.11
		25	25	21.76	21.82	21.99
		50	0	21.83	21.89	22.06
	64QAM	1	0	22.02	22.06	22.23
		1	24	21.98	22.04	22.21
		1	49	21.82	21.88	22.05
		25	0	20.78	20.84	21.01
		25	12	20.81	20.86	21.03
		25	25	20.79	20.85	21.02
		50	0	20.74	20.83	20.97
BW	MCS Index	Channel		23035	23095	23155
		Frequence (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	23.85	23.85	24.08
		1	12	23.74	23.78	23.92
		1	24	23.68	23.69	23.91
		12	0	22.73	22.77	23.01
		12	6	22.69	22.74	22.89
		12	13	22.60	22.62	22.79
		25	0	22.70	22.75	22.84
	16QAM	1	0	23.23	23.24	23.45
		1	12	23.03	23.05	23.23
		1	24	22.94	22.94	23.11
		12	0	21.73	21.77	21.93
		12	6	21.84	21.84	22.10
		12	13	21.72	21.72	21.98
		25	0	21.83	21.83	22.05
	64QAM	1	0	22.01	22.02	22.20
		1	12	21.89	22.01	22.11
		1	24	21.72	21.85	22.00
		12	0	20.73	20.79	21.00
		12	6	20.73	20.86	20.99
		12	13	20.73	20.82	20.94
		25	0	20.71	20.83	20.97

FULL Power

LTE Band 12

BW	MCS Index	Channel		23025	23095	23165
		Frequence (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	23.84	23.92	24.05
		1	7	23.58	23.75	23.93
		1	14	23.51	23.62	23.75
		8	0	22.68	22.73	22.81
		8	3	22.55	22.77	22.85
		8	7	22.52	22.58	22.78
		15	0	22.61	22.68	22.73
	16QAM	1	0	23.11	23.14	23.38
		1	7	22.97	23.02	23.18
		1	14	22.85	22.93	23.10
		8	0	21.67	21.74	21.85
		8	3	21.73	21.86	22.07
		8	7	21.59	21.67	21.76
		15	0	21.69	21.68	22.06
	64QAM	1	0	21.88	21.97	22.10
		1	7	21.81	21.99	22.11
		1	14	21.61	21.78	21.94
		8	0	20.64	20.79	20.85
		8	3	20.69	20.69	20.92
		8	7	20.70	20.75	20.85
		15	0	20.57	20.60	20.81
BW	**MCS Index**	**Channel**		**23017**	**23095**	**23173**
		Frequence (MHz)		**699.7**	**707.5**	**715.3**
1.4M	QPSK	1	0	23.77	23.90	23.94
		1	2	23.53	23.57	23.98
		1	5	23.57	23.61	23.87
		3	0	23.72	23.65	23.95
		3	1	23.58	23.75	23.88
		3	3	23.44	23.52	23.70
		6	0	22.62	22.69	22.72
	16QAM	1	0	23.09	23.27	23.43
		1	2	22.81	22.92	23.19
		1	5	22.77	23.00	23.13
		3	0	22.62	22.74	22.85
		3	1	22.75	22.78	22.95
		3	3	22.67	22.67	22.84
		6	0	21.68	21.69	21.95
	64QAM	1	0	21.79	21.99	22.14
		1	2	21.80	21.98	22.06
		1	5	21.78	21.77	21.98
		3	0	21.69	21.65	21.87
		3	1	21.74	21.71	21.87
		3	3	21.68	21.80	21.87
		6	0	20.60	20.73	20.83

FULL Power

LTE Band 13

BW	MCS Index	RB Size	RB Offset		Mid	
		Channel			23230	
		Frequence (MHz)			782	
10M	QPSK	1	0		**23.87**	
		1	24		23.82	
		1	49		23.83	
		25	0		**22.96**	
		25	12		22.91	
		25	25		22.93	
		50	0		**22.78**	
	16QAM	1	0		23.25	
		1	24		23.31	
		1	49		23.03	
		25	0		22.13	
		25	12		21.98	
		25	25		21.89	
		50	0		21.85	
	64QAM	1	0		21.85	
		1	24		22.18	
		1	49		21.89	
		25	0		21.01	
		25	12		20.99	
		25	25		20.97	
		50	0		20.88	

BW	MCS Index	Channel		23205	23230	23255
		Frequence (MHz)		779.5	782	784.5
5M	QPSK	1	0	23.68	23.85	23.81
		1	12	23.65	23.83	23.81
		1	24	23.66	23.81	23.79
		12	0	22.83	22.95	22.93
		12	6	22.77	22.92	22.90
		12	13	22.74	22.89	22.87
		25	0	22.76	22.91	22.89
	16QAM	1	0	23.01	23.15	23.13
		1	12	22.93	23.08	23.06
		1	24	23.13	23.28	23.26
		12	0	21.78	21.93	21.91
		12	6	21.82	21.97	21.95
		12	13	21.78	21.93	21.91
		25	0	21.84	21.99	21.97
	64QAM	1	0	21.93	22.08	22.06
		1	12	22.06	22.21	22.19
		1	24	22.02	22.15	22.13
		12	0	20.81	20.96	20.94
		12	6	20.86	21.01	20.99
		12	13	20.93	21.05	21.03
		25	0	20.83	20.98	20.96

FULL Power

LTE Band 25

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26140	26365	26590
		Frequence (MHz)		1860	1882.5	1905
20M	QPSK	1	0	23.11	**23.21**	23.14
		1	50	23.06	23.16	23.09
		1	99	23.03	23.13	23.06
		50	0	22.17	**22.27**	22.20
		50	25	22.15	22.25	22.18
		50	50	22.11	22.21	22.14
		100	0	22.09	**22.19**	22.12
	16QAM	1	0	22.29	22.39	22.32
		1	50	22.26	22.36	22.29
		1	99	22.24	22.34	22.27
		50	0	21.12	21.22	21.15
		50	25	21.11	21.21	21.14
		50	50	21.09	21.19	21.12
		100	0	21.07	21.17	21.10
	64QAM	1	0	21.31	21.41	21.34
		1	50	21.23	21.33	21.26
		1	99	21.16	21.26	21.19
		50	0	20.23	20.33	20.26
		50	25	20.21	20.31	20.24
		50	50	20.19	20.29	20.22
		100	0	20.11	20.21	20.14
BW	**MCS Index**	**Channel**		**26115**	**26365**	**26615**
		Frequence (MHz)		**1857.5**	**1882.5**	**1907.5**
15M	QPSK	1	0	23.07	**23.21**	23.07
		1	37	22.96	23.07	23.02
		1	74	23.02	23.11	23.05
		36	0	22.17	22.25	22.13
		36	19	22.05	22.18	22.16
		36	39	22.06	22.18	22.13
		75	0	22.05	22.13	22.11
	16QAM	1	0	22.25	22.29	22.28
		1	37	22.21	22.35	22.24
		1	74	22.23	22.24	22.20
		36	0	21.11	21.15	21.05
		36	19	21.03	21.13	21.09
		36	39	21.00	21.10	21.09
		75	0	20.99	21.11	21.05
	64QAM	1	0	21.25	21.33	21.31
		1	37	21.16	21.26	21.21
		1	74	21.06	21.18	21.11
		36	0	20.17	20.26	20.20
		36	19	20.13	20.30	20.16
		36	39	20.13	20.25	20.14
		75	0	20.06	20.16	20.12

FULL Power

LTE Band 25

BW	MCS Index	Channel		26090	26365	26640
		Frequence (MHz)		1855	1882.5	1910
10M	QPSK	1	0	22.91	23.11	23.07
		1	24	23.00	22.98	23.02
		1	49	22.93	22.93	22.93
		25	0	22.07	22.15	22.01
		25	12	22.09	22.22	22.13
		25	25	22.09	22.11	21.95
		50	0	22.08	22.12	22.08
	16QAM	1	0	22.25	22.25	22.14
		1	24	22.16	22.20	22.08
		1	49	22.03	22.30	22.08
		25	0	20.94	21.11	20.98
		25	12	20.98	21.06	21.06
		25	25	20.97	21.11	20.96
		50	0	20.94	21.05	21.01
	64QAM	1	0	21.11	21.36	21.30
		1	24	21.20	21.26	21.17
		1	49	21.05	21.18	21.04
		25	0	20.17	20.17	20.20
		25	12	20.09	20.22	20.09
		25	25	19.99	20.27	20.03
		50	0	19.95	20.13	19.93
BW	**MCS Index**	**Channel**		**26065**	**26365**	**26665**
		Frequence (MHz)		**1852.5**	**1882.5**	**1912.5**
5M	QPSK	1	0	22.96	23.05	23.06
		1	12	23.02	22.97	22.95
		1	24	22.87	23.02	22.88
		12	0	22.02	22.11	21.98
		12	6	22.12	22.10	21.99
		12	13	21.96	22.10	21.87
		25	0	21.93	22.18	22.04
	16QAM	1	0	22.18	22.26	22.30
		1	12	22.16	22.25	22.21
		1	24	22.13	22.31	22.17
		12	0	21.00	21.11	21.12
		12	6	20.98	21.12	20.95
		12	13	21.00	21.16	20.97
		25	0	20.96	20.99	20.96
	64QAM	1	0	21.13	21.35	21.32
		1	12	21.12	21.09	21.06
		1	24	20.97	21.25	21.01
		12	0	20.04	20.14	20.16
		12	6	20.18	20.15	20.13
		12	13	20.03	20.23	20.06
		25	0	19.96	20.02	20.04

FULL Power

LTE Band 25

BW	MCS Index	Channel		26055	26365	26675
		Frequence (MHz)		1851.5	1882.5	1913.5
3M	QPSK	1	0	22.93	23.00	22.94
		1	7	22.89	23.03	23.03
		1	14	22.91	22.89	22.96
		8	0	22.03	22.25	22.11
		8	3	21.98	22.03	22.05
		8	7	21.94	22.13	22.03
		15	0	22.03	21.99	22.03
	16QAM	1	0	22.09	22.32	22.26
		1	7	22.25	22.26	22.17
		1	14	22.17	22.21	22.15
		8	0	20.92	21.08	21.06
		8	3	21.05	20.98	21.03
		8	7	20.96	21.13	21.04
		15	0	20.90	20.94	21.06
	64QAM	1	0	21.11	21.30	21.27
		1	7	21.15	21.27	21.12
		1	14	21.10	21.11	20.96
		8	0	20.19	20.16	20.20
		8	3	20.14	20.24	20.14
		8	7	20.16	20.13	20.00
		15	0	20.03	20.12	20.10
BW	MCS Index	Channel		26047	26365	26683
		Frequence (MHz)		1850.7	1882.5	1914.3
1.4M	QPSK	1	0	22.91	23.05	23.06
		1	2	22.91	23.08	22.88
		1	5	22.91	22.97	23.03
		3	0	23.07	23.11	22.98
		3	1	23.02	23.17	23.01
		3	3	23.02	23.07	23.02
		6	0	22.06	22.11	21.96
	16QAM	1	0	22.08	22.27	22.10
		1	2	22.19	22.21	22.18
		1	5	22.08	22.23	22.22
		3	0	22.03	22.06	22.09
		3	1	22.00	22.14	22.03
		3	3	22.02	22.11	22.04
		6	0	20.90	21.00	21.05
	64QAM	1	0	21.13	21.26	21.17
		1	2	21.13	21.22	21.18
		1	5	21.13	21.12	21.12
		3	0	21.08	21.25	21.19
		3	1	20.98	21.27	21.16
		3	3	21.05	21.19	20.98
		6	0	19.92	19.99	20.00

FULL Power

LTE Band 26

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26765	26865	26965
		Frequence (MHz)		821.5	831.5	841.5
15M	QPSK	1	0	23.79	23.82	23.81
		1	37	23.76	23.79	23.78
		1	74	23.78	23.81	23.77
		36	0	22.84	22.87	22.86
		36	19	22.82	22.85	22.84
		36	39	22.83	22.86	22.85
		75	0	22.82	22.85	22.84
	16QAM	1	0	23.12	23.15	23.14
		1	37	23.05	23.08	23.07
		1	74	22.99	23.02	23.01
		36	0	21.85	21.88	21.87
		36	19	21.84	21.87	21.86
		36	39	21.88	21.91	21.92
		75	0	21.85	21.88	21.87
	64QAM	1	0	22.09	22.12	22.11
		1	37	21.86	21.89	21.88
		1	74	21.65	21.68	21.67
		36	0	20.93	20.93	20.92
		36	19	20.72	20.75	20.74
		36	39	20.43	20.43	20.42
		75	0	20.45	20.48	20.47
BW	MCS Index	Channel		26740	26865	26990
		Frequence (MHz)		819	831.5	844
10M	QPSK	1	0	23.79	23.81	23.73
		1	24	23.73	23.76	23.77
		1	49	23.71	23.73	23.73
		25	0	22.81	22.80	22.79
		25	12	22.81	22.81	22.74
		25	25	22.81	22.81	22.75
		50	0	22.82	22.77	22.83
	16QAM	1	0	23.12	23.10	23.04
		1	24	23.02	23.08	23.04
		1	49	22.96	22.93	22.98
		25	0	21.84	21.80	21.83
		25	12	21.76	21.77	21.79
		25	25	21.80	21.86	21.92
		50	0	21.84	21.84	21.79
	64QAM	1	0	22.03	22.09	22.03
		1	24	21.77	21.82	21.78
		1	49	21.63	21.62	21.65
		25	0	20.83	20.86	20.82
		25	12	20.64	20.74	20.66
		25	25	20.35	20.40	20.42
		50	0	20.39	20.42	20.41

FULL Power

LTE Band 26

BW	MCS Index	Channel		26715	26865	27015
		Frequence (MHz)		816.5	831.5	846.5
5M	QPSK	1	0	23.67	23.62	23.68
		1	12	23.76	23.67	23.67
		1	24	23.54	23.75	23.57
		12	0	22.61	22.73	22.67
		12	6	22.66	22.76	22.68
		12	13	22.67	22.76	22.73
		25	0	22.69	22.81	22.79
	16QAM	1	0	23.00	23.01	22.93
		1	12	22.94	22.90	22.95
		1	24	22.86	22.87	22.83
		12	0	21.80	21.76	21.81
		12	6	21.82	21.77	21.79
		12	13	21.66	21.83	21.79
		25	0	21.75	21.83	21.64
	64QAM	1	0	21.89	21.92	21.93
		1	12	21.68	21.69	21.78
		1	24	21.49	21.50	21.65
		12	0	20.77	20.81	20.84
		12	6	20.54	20.57	20.67
		12	13	20.29	20.25	20.27
		25	0	20.27	20.39	20.38
BW	MCS Index	Channel		26705	26865	27025
		Frequence (MHz)		815.5	831.5	847.5
3M	QPSK	1	0	23.59	23.73	23.65
		1	7	23.60	23.57	23.44
		1	14	23.62	23.69	23.59
		8	0	22.65	22.76	22.61
		8	3	22.67	22.75	22.69
		8	7	22.76	22.73	22.68
		15	0	22.75	22.70	22.50
	16QAM	1	0	22.99	23.00	23.01
		1	7	23.01	22.86	22.87
		1	14	22.94	22.93	22.95
		8	0	21.77	21.86	21.74
		8	3	21.69	21.76	21.66
		8	7	21.74	21.78	21.72
		15	0	21.65	21.83	21.77
	64QAM	1	0	22.04	21.94	21.99
		1	7	21.76	21.81	21.86
		1	14	21.42	21.53	21.55
		8	0	20.74	20.85	20.82
		8	3	20.62	20.62	20.61
		8	7	20.38	20.19	20.35
		15	0	20.38	20.28	20.34

FULL Power

LTE Band 26

BW	MCS Index	Channel		26697	26865	27033
		Frequence (MHz)		814.7	831.5	848.3
1.4M	QPSK	1	0	23.66	23.69	23.76
		1	2	23.63	23.73	23.69
		1	5	23.74	23.70	23.62
		3	0	23.71	23.76	23.81
		3	1	23.66	23.71	23.80
		3	3	23.67	23.81	23.67
		6	0	22.65	22.76	22.78
	16QAM	1	0	22.89	23.13	23.07
		1	2	22.91	23.06	22.91
		1	5	22.91	22.98	22.96
		3	0	22.75	22.78	22.69
		3	1	22.73	22.79	22.62
		3	3	22.73	22.75	22.83
		6	0	21.72	21.68	21.73
	64QAM	1	0	22.05	21.93	22.06
		1	2	21.75	21.74	21.83
		1	5	21.51	21.54	21.57
		3	0	21.79	21.81	21.70
		3	1	21.61	21.59	21.61
		3	3	21.23	21.40	21.25
		6	0	20.44	20.26	20.30

FULL Power

LTE Band 66

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132072	132322	132572
		Frequence (MHz)		1720	1745	1770
20M	QPSK	1	0	23.02	23.05	**23.15**
		1	50	23.00	23.03	23.13
		1	99	22.94	22.97	23.07
		50	0	22.15	22.18	**22.28**
		50	25	22.10	22.13	22.23
		50	50	22.09	22.12	22.22
		100	0	22.04	22.07	**22.17**
	16QAM	1	0	22.13	22.16	22.26
		1	50	22.12	22.15	22.25
		1	99	22.10	22.13	22.23
		50	0	21.18	21.21	21.31
		50	25	21.16	21.19	21.29
		50	50	21.14	21.17	21.27
		100	0	21.12	21.15	21.25
	64QAM	1	0	21.08	21.11	21.21
		1	50	21.03	21.06	21.16
		1	99	21.00	21.03	21.13
		50	0	20.19	20.22	20.32
		50	25	20.16	20.19	20.29
		50	50	20.12	20.15	20.25
		100	0	20.10	20.13	20.23
BW	**MCS Index**	**Channel**		**132047**	**132322**	**132597**
		Frequence (MHz)		**1717.5**	**1745**	**1772.5**
15M	QPSK	1	0	22.93	22.95	23.05
		1	37	22.98	23.02	23.13
		1	74	22.89	22.88	23.06
		36	0	22.07	22.15	22.28
		36	19	22.03	22.08	22.16
		36	39	22.08	22.11	22.21
		75	0	21.95	21.99	22.07
	16QAM	1	0	22.05	22.14	22.22
		1	37	22.03	22.05	22.15
		1	74	22.04	22.07	22.23
		36	0	21.13	21.13	21.21
		36	19	21.06	21.09	21.20
		36	39	21.09	21.10	21.21
		75	0	21.04	21.15	21.23
	64QAM	1	0	21.02	21.11	21.14
		1	37	20.95	20.98	21.08
		1	74	20.97	21.00	21.03
		36	0	20.17	20.18	20.24
		36	19	20.14	20.18	20.25
		36	39	20.05	20.11	20.15
		75	0	20.07	20.06	20.19

FULL Power

LTE Band 66

BW	MCS Index	Channel		132022	132322	132622
		Frequence (MHz)		1715	1745	1775
10M	QPSK	1	0	22.99	23.01	23.00
		1	24	22.88	22.80	23.05
		1	49	22.92	22.81	22.97
		25	0	22.01	22.01	22.04
		25	12	22.03	21.90	22.08
		25	25	21.96	22.02	22.08
		50	0	21.97	21.88	22.02
	16QAM	1	0	21.97	22.05	22.12
		1	24	22.04	21.99	22.15
		1	49	22.02	21.90	22.17
		25	0	21.02	21.15	21.12
		25	12	21.12	21.05	21.25
		25	25	20.94	21.14	21.17
		50	0	20.98	20.95	21.19
	64QAM	1	0	20.92	21.04	20.97
		1	24	20.86	20.95	20.98
		1	49	20.83	20.83	20.97
		25	0	20.07	20.04	20.28
		25	12	20.07	20.15	20.14
		25	25	20.05	20.04	20.11
		50	0	20.05	19.98	20.07
BW	**MCS Index**	**Channel**		**131997**	**132322**	**132647**
		Frequence (MHz)		**1712.5**	**1745**	**1777.5**
5M	QPSK	1	0	22.98	22.99	22.93
		1	12	22.81	22.95	22.84
		1	24	22.83	22.92	22.82
		12	0	22.08	22.09	21.99
		12	6	21.91	22.01	22.12
		12	13	21.98	22.01	22.07
		25	0	21.86	21.99	21.94
	16QAM	1	0	21.98	22.07	22.21
		1	12	22.06	21.98	22.20
		1	24	22.08	22.11	22.13
		12	0	21.11	21.14	21.11
		12	6	21.00	21.01	21.18
		12	13	21.01	21.11	21.14
		25	0	20.94	21.07	21.08
	64QAM	1	0	20.94	21.07	21.21
		1	12	20.85	20.95	21.10
		1	24	20.82	20.79	20.98
		12	0	20.01	20.22	20.25
		12	6	20.09	19.97	20.22
		12	13	20.02	20.13	20.23
		25	0	20.04	20.00	20.04

FULL Power

LTE Band 66

BW	MCS Index	Channel		131987	132322	132657
		Frequence (MHz)		1711.5	1745	1778.5
3M	QPSK	1	0	22.91	22.87	23.10
		1	7	22.91	22.94	23.06
		1	14	22.82	22.80	23.01
		8	0	22.02	21.97	22.04
		8	3	21.95	21.99	22.08
		8	7	21.97	21.97	22.15
		15	0	21.95	21.92	22.09
	16QAM	1	0	21.99	22.03	22.05
		1	7	22.00	22.05	22.15
		1	14	22.03	22.01	22.06
		8	0	21.08	21.06	21.16
		8	3	21.12	21.08	21.14
		8	7	21.13	21.11	21.16
		15	0	20.90	21.01	21.21
	64QAM	1	0	20.92	20.98	21.05
		1	7	20.97	20.93	21.05
		1	14	20.83	21.00	21.00
		8	0	20.06	20.06	20.14
		8	3	20.06	20.04	20.25
		8	7	20.04	20.02	20.11
		15	0	19.98	20.11	20.18
BW	MCS Index	Channel		131979	132322	132665
		Frequence (MHz)		1710.7	1745	1779.3
1.4M	QPSK	1	0	22.92	23.01	22.95
		1	2	22.84	22.91	23.09
		1	5	22.82	22.79	22.94
		3	0	23.05	22.95	23.10
		3	1	22.97	23.11	23.07
		3	3	22.95	22.99	23.00
		6	0	21.98	21.93	22.11
	16QAM	1	0	22.02	22.05	22.10
		1	2	21.94	22.04	22.11
		1	5	21.92	22.01	22.02
		3	0	22.12	22.10	22.14
		3	1	22.09	22.07	22.17
		3	3	22.02	22.11	22.20
		6	0	20.96	21.09	21.16
	64QAM	1	0	20.94	20.94	20.99
		1	2	20.88	20.93	21.07
		1	5	20.87	20.89	21.02
		3	0	21.15	21.11	21.21
		3	1	20.95	21.06	21.09
		3	3	20.98	20.99	21.05
		6	0	19.92	20.02	20.09

FULL Power

LTE Band 41

BW	MCS Index	RB Size	RB Offset	Low	Mid	Mid	Mid	High
		Channel		39750	40185	40620	41055	41490
		Frequence (MHz)		2506	2549.5	2593	2636.5	2680
20M	QPSK	1	0	24.08	24.11	**24.13**	23.85	23.72
		1	50	24.04	24.07	24.09	23.81	23.68
		1	99	23.84	23.87	23.89	23.61	23.48
		50	0	23.13	23.16	**23.18**	22.90	22.77
		50	25	23.12	23.13	23.15	22.87	22.74
		50	50	23.02	23.05	23.07	22.79	22.66
		100	0	23.08	23.11	**23.13**	22.85	22.72
	16QAM	1	0	22.93	22.96	22.98	22.72	22.57
		1	50	22.97	23.05	23.02	22.74	22.61
		1	99	22.88	22.91	22.93	22.65	22.52
		50	0	22.11	22.13	22.15	21.87	21.74
		50	25	22.23	22.26	22.28	22.08	21.87
		50	50	22.12	22.15	22.17	21.89	21.76
		100	0	22.13	22.16	22.18	21.93	21.77
	64QAM	1	0	21.42	21.45	21.47	21.19	21.06
		1	50	21.84	21.87	21.89	21.61	21.48
		1	99	21.43	21.46	21.48	21.21	21.07
		50	0	21.02	21.05	21.07	20.79	20.66
		50	25	21.28	21.31	21.33	21.05	20.92
		50	50	21.07	21.13	21.12	20.84	20.71
		100	0	21.06	21.09	21.11	20.83	20.75
BW	**MCS Index**	**Channel**		**39725**	**40173**	**40620**	**41068**	**41515**
		Frequence (MHz)		**2503.5**	**2548.3**	**2593**	**2637.8**	**2682.5**
15M	QPSK	1	0	24.05	24.01	**24.13**	23.77	23.68
		1	37	24.01	23.97	24.06	23.81	23.65
		1	74	23.74	23.80	23.89	23.59	23.39
		36	0	23.05	23.07	23.18	22.85	22.68
		36	19	23.06	23.12	23.07	22.86	22.73
		36	39	23.02	23.01	22.97	22.78	22.58
		75	0	23.00	23.09	23.12	22.80	22.63
	16QAM	1	0	23.05	23.06	23.08	22.79	22.67
		1	37	23.04	23.01	23.03	22.75	22.59
		1	74	22.75	22.78	22.88	22.51	22.44
		36	0	22.07	22.08	22.09	21.81	21.72
		36	19	22.05	22.11	22.06	21.77	21.71
		36	39	21.93	21.97	22.07	21.79	21.64
		75	0	22.02	22.02	22.04	21.79	21.70
	64QAM	1	0	22.04	22.08	22.04	21.84	21.70
		1	37	21.94	22.00	22.09	21.78	21.62
		1	74	21.82	21.80	21.82	21.61	21.42
		36	0	21.08	21.09	21.15	20.86	20.77
		36	19	21.02	21.04	21.14	20.80	20.65
		36	39	20.98	20.99	20.98	20.74	20.59
		75	0	21.05	21.03	21.06	20.80	20.67

FULL Power

LTE Band 41

BW	MCS Index	Channel		39700	40160	40620	41080	41540
		Frequence (MHz)		2501	2547	2593	2639	2685
10M	QPSK	1	0	23.96	24.04	24.04	23.76	23.66
		1	24	23.95	24.02	23.96	23.74	23.54
		1	49	23.74	23.78	23.78	23.49	23.42
		25	0	23.01	23.04	23.00	22.73	22.64
		25	12	23.04	23.03	23.05	22.80	22.59
		25	25	22.92	22.96	23.01	22.65	22.60
		50	0	23.02	22.94	23.00	22.73	22.65
	16QAM	1	0	23.04	23.04	23.09	22.79	22.65
		1	24	22.94	22.97	23.00	22.74	22.57
		1	49	22.66	22.70	22.75	22.48	22.42
		25	0	22.01	21.98	22.05	21.76	21.62
		25	12	22.01	22.08	22.05	21.77	21.61
		25	25	21.89	21.94	22.00	21.68	21.58
		50	0	22.00	21.95	22.02	21.67	21.63
	64QAM	1	0	22.01	22.03	22.09	21.83	21.62
		1	24	21.92	21.93	22.03	21.76	21.58
		1	49	21.74	21.75	21.76	21.46	21.38
		25	0	21.06	21.02	21.04	20.82	20.61
		25	12	21.03	21.04	21.06	20.73	20.59
		25	25	20.93	20.99	21.04	20.73	20.57
		50	0	20.98	21.02	21.02	20.66	20.67
BW	**MCS Index**	**Channel**		**39675**	**40148**	**40620**	**41093**	**41565**
		Frequence (MHz)		**2498.5**	**2545.8**	**2593**	**2640.3**	**2687.5**
5M	QPSK	1	0	23.96	24.02	24.01	23.76	23.59
		1	12	23.96	23.96	23.94	23.76	23.62
		1	24	23.78	23.75	23.79	23.43	23.41
		12	0	23.10	22.99	23.17	22.81	22.73
		12	6	23.00	23.06	23.06	22.67	22.55
		12	13	22.98	22.89	23.00	22.66	22.49
		25	0	22.90	23.03	23.02	22.77	22.59
	16QAM	1	0	23.01	23.09	22.96	22.71	22.59
		1	12	22.95	22.98	22.98	22.71	22.60
		1	24	22.77	22.75	22.84	22.48	22.35
		12	0	22.04	22.00	22.17	21.81	21.70
		12	6	22.01	22.02	22.10	21.67	21.60
		12	13	21.89	21.97	22.02	21.73	21.57
		25	0	21.88	22.02	22.11	21.75	21.66
	64QAM	1	0	21.99	22.07	22.04	21.79	21.54
		1	12	21.97	21.99	21.99	21.74	21.60
		1	24	21.76	21.69	21.79	21.45	21.37
		12	0	21.03	20.97	21.12	20.87	20.64
		12	6	21.05	21.07	21.11	20.76	20.57
		12	13	20.91	20.92	21.02	20.75	20.49
		25	0	20.89	20.98	21.09	20.79	20.68

Reduction Power

LTE Band 2

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequence (MHz)		1860	1880	1900
20M	QPSK	1	0	13.12	13.11	13.09
		1	50	13.09	13.08	13.06
		1	99	13.06	13.05	13.03
		50	0	13.07	13.06	13.04
		50	25	13.04	13.03	13.01
		50	50	13.02	13.01	12.99
		100	0	13.03	13.02	13.00
	16QAM	1	0	13.08	13.07	13.05
		1	50	13.06	13.05	13.03
		1	99	13.02	13.01	12.99
		50	0	13.06	13.05	13.03
		50	25	13.03	13.02	13.00
		50	50	13.02	13.01	12.99
		100	0	13.04	13.03	13.01
	64QAM	1	0	13.07	13.06	13.04
		1	50	13.06	13.05	13.03
		1	99	13.04	13.03	13.01
		50	0	13.05	13.04	13.02
		50	25	13.04	13.03	13.01
		50	50	13.02	13.01	12.99
		100	0	13.03	13.02	13.00
BW	**MCS Index**	**Channel**		**18675**	**18900**	**19125**
		Frequence (MHz)		**1857.5**	**1880**	**1902.5**
15M	QPSK	1	0	13.02	13.03	13.02
		1	37	13.06	13.04	13.04
		1	74	13.05	12.95	12.97
		36	0	13.02	13.03	12.98
		36	19	12.95	13.03	12.98
		36	39	12.97	12.94	12.94
		75	0	13.03	12.98	12.94
	16QAM	1	0	13.05	13.02	12.99
		1	37	13.00	13.00	12.97
		1	74	12.97	12.94	12.92
		36	0	12.96	13.02	12.93
		36	19	12.95	13.01	12.94
		36	39	12.92	12.97	12.91
		75	0	12.98	12.97	12.91
	64QAM	1	0	13.01	13.05	12.95
		1	37	13.06	12.99	12.93
		1	74	12.96	12.99	13.00
		36	0	13.05	13.04	12.94
		36	19	13.00	12.98	12.98
		36	39	12.93	12.91	12.99
		75	0	13.00	12.92	12.97

Reduction Power

LTE Band 2

BW	MCS Index	Channel		18650	18900	19150
		Frequence (MHz)		1855	1880	1905
10M	QPSK	1	0	13.10	13.11	13.02
		1	24	13.01	13.07	13.01
		1	49	13.04	13.02	13.00
		25	0	13.04	12.98	12.97
		25	12	13.02	12.93	12.92
		25	25	13.01	13.00	12.99
		50	0	13.01	12.94	12.98
	16QAM	1	0	13.08	12.97	12.98
		1	24	13.03	13.03	13.03
		1	49	13.02	12.91	12.90
		25	0	12.98	13.02	12.94
		25	12	12.98	13.02	12.90
		25	25	12.92	12.95	12.95
		50	0	12.97	13.03	12.94
	64QAM	1	0	13.04	13.02	13.00
		1	24	13.05	12.98	12.99
		1	49	13.01	12.93	12.99
		25	0	12.99	13.04	12.99
		25	12	12.96	12.98	13.01
		25	25	13.01	12.93	12.95
		50	0	13.02	12.94	12.99
BW	**MCS Index**	**Channel**		**18625**	**18900**	**19175**
		Frequence (MHz)		**1852.5**	**1880**	**1907.5**
5M	QPSK	1	0	13.05	13.06	12.83
		1	12	12.93	12.98	12.80
		1	24	12.96	12.94	12.82
		12	0	12.93	12.95	12.92
		12	6	12.89	12.99	12.72
		12	13	12.84	12.92	12.76
		25	0	12.95	12.90	12.90
	16QAM	1	0	13.07	12.95	12.96
		1	12	12.95	12.92	12.90
		1	24	12.96	12.85	12.80
		12	0	12.96	12.98	12.87
		12	6	12.87	12.90	12.89
		12	13	12.89	12.85	12.88
		25	0	12.88	12.85	12.87
	64QAM	1	0	12.90	12.88	12.97
		1	12	12.84	12.88	12.91
		1	24	12.87	12.98	12.77
		12	0	12.98	13.02	12.96
		12	6	12.89	12.91	12.92
		12	13	12.96	12.87	12.91
		25	0	12.98	12.82	12.94

Reduction Power

LTE Band 2

BW	MCS Index	Channel		18615	18900	19185
		Frequence (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	12.97	12.92	12.96
		1	7	12.96	12.93	12.98
		1	14	12.92	12.95	12.90
		8	0	13.01	12.89	13.01
		8	3	13.04	12.90	12.94
		8	7	12.93	12.83	12.85
		15	0	12.92	12.94	12.89
	16QAM	1	0	12.95	12.85	12.94
		1	7	12.89	12.92	12.86
		1	14	12.91	12.87	12.85
		8	0	12.94	12.95	12.99
		8	3	12.96	12.94	12.90
		8	7	12.87	12.86	12.82
		15	0	12.87	12.92	12.89
	64QAM	1	0	12.85	12.87	12.95
		1	7	13.03	12.90	12.91
		1	14	12.91	12.87	12.90
		8	0	12.93	13.02	12.94
		8	3	12.91	12.95	12.80
		8	7	12.97	12.85	12.94
		15	0	13.00	12.94	12.87
BW	MCS Index	Channel		18607	18900	19193
		Frequence (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	13.10	13.09	12.90
		1	2	12.91	12.92	12.93
		1	5	12.93	12.84	12.94
		3	0	12.95	12.95	12.91
		3	1	12.94	12.90	12.96
		3	3	12.77	12.86	12.84
		6	0	12.98	12.89	12.93
	16QAM	1	0	13.07	13.02	12.85
		1	2	12.95	12.88	12.92
		1	5	13.02	12.95	12.97
		3	0	13.06	12.97	12.85
		3	1	12.84	12.88	12.78
		3	3	12.87	12.93	12.76
		6	0	12.88	12.82	12.98
	64QAM	1	0	13.06	12.91	12.94
		1	2	13.03	12.89	12.89
		1	5	13.02	12.97	12.93
		3	0	12.88	12.89	12.89
		3	1	12.98	12.88	12.92
		3	3	12.90	12.93	12.92
		6	0	12.90	12.89	12.96

Reduction Power

LTE Band 4

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20050	20175	20300
		Frequence (MHz)		1720	1732.5	1745
20M	QPSK	1	0	13.02	13.15	13.01
		1	50	12.89	13.02	12.88
		1	99	12.78	12.91	12.77
		50	0	12.98	13.11	12.97
		50	25	12.96	13.09	12.95
		50	50	12.92	13.05	12.91
		100	0	12.94	13.07	12.93
	16QAM	1	0	12.99	13.12	12.98
		1	50	12.97	13.10	12.96
		1	99	12.96	13.09	12.95
		50	0	12.98	13.11	12.97
		50	25	12.92	13.05	12.91
		50	50	12.88	13.01	12.87
		100	0	12.90	13.03	12.89
	64QAM	1	0	12.97	13.10	12.96
		1	50	12.92	13.05	12.91
		1	99	12.90	13.03	12.89
		50	0	12.95	13.08	12.94
		50	25	12.94	13.07	12.93
		50	50	12.92	13.05	12.91
		100	0	12.93	13.06	12.92
BW	MCS Index	Channel		20025	20175	20325
		Frequence (MHz)		1717.5	1732.5	1747.5
15M	QPSK	1	0	13.01	13.14	12.94
		1	37	12.85	12.97	12.88
		1	74	12.70	12.86	12.74
		36	0	12.96	13.05	12.96
		36	19	12.87	13.06	12.87
		36	39	12.87	13.03	12.87
		75	0	12.89	13.02	12.89
	16QAM	1	0	12.91	13.04	12.91
		1	37	12.96	13.10	12.95
		1	74	12.88	13.05	12.88
		36	0	12.98	13.11	12.94
		36	19	12.86	12.99	12.85
		36	39	12.81	12.95	12.77
		75	0	12.87	12.99	12.82
	64QAM	1	0	12.88	13.07	12.94
		1	37	12.84	13.02	12.90
		1	74	12.89	12.95	12.82
		36	0	12.93	13.04	12.90
		36	19	12.89	13.05	12.93
		36	39	12.90	13.02	12.90
		75	0	12.83	12.96	12.84

Reduction Power

LTE Band 4

BW	MCS Index	Channel		20000	20175	20350
		Frequence (MHz)		1715	1732.5	1750
10M	QPSK	1	0	12.89	13.05	12.83
		1	24	12.72	12.83	12.68
		1	49	12.65	12.78	12.70
		25	0	12.83	12.95	12.86
		25	12	12.79	12.91	12.94
		25	25	12.73	12.82	12.87
		50	0	12.81	13.02	12.85
	16QAM	1	0	12.87	13.05	12.92
		1	24	12.77	12.98	12.79
		1	49	12.91	13.00	12.77
		25	0	12.90	12.89	12.94
		25	12	12.80	12.89	12.77
		25	25	12.75	12.93	12.77
		50	0	12.89	12.87	12.75
	64QAM	1	0	12.83	12.92	12.87
		1	24	12.71	12.97	12.69
		1	49	12.73	12.92	12.82
		25	0	12.84	12.91	12.71
		25	12	12.79	13.05	12.89
		25	25	12.81	12.89	12.67
		50	0	12.88	12.98	12.87
BW	**MCS Index**	**Channel**		**19975**	**20175**	**20375**
		Frequence (MHz)		**1712.5**	**1732.5**	**1752.5**
5M	QPSK	1	0	12.97	13.00	12.71
		1	12	12.82	12.89	12.53
		1	24	12.68	12.87	12.69
		12	0	12.87	12.99	12.67
		12	6	12.90	12.88	12.80
		12	13	12.85	12.97	12.81
		25	0	12.82	13.02	12.62
	16QAM	1	0	12.91	12.98	12.86
		1	12	12.79	12.89	12.84
		1	24	12.87	12.96	12.87
		12	0	12.76	13.00	12.74
		12	6	12.76	13.02	12.82
		12	13	12.71	12.84	12.72
		25	0	12.77	12.88	12.74
	64QAM	1	0	12.72	13.08	12.83
		1	12	12.84	12.93	12.78
		1	24	12.83	12.96	12.74
		12	0	12.85	12.96	12.77
		12	6	12.86	12.93	12.73
		12	13	12.72	12.97	12.83
		25	0	12.80	12.93	12.78

Reduction Power

LTE Band 4

BW	MCS Index	Channel		19965	20175	20385
		Frequence (MHz)		1711.5	1732.5	1753.5
3M	QPSK	1	0	12.89	13.07	12.90
		1	7	12.77	12.78	12.80
		1	14	12.70	12.78	12.61
		8	0	12.86	13.09	12.75
		8	3	12.75	12.87	12.82
		8	7	12.81	12.84	12.76
		15	0	12.72	12.93	12.87
	16QAM	1	0	12.93	12.99	12.79
		1	7	12.82	13.05	12.89
		1	14	12.77	13.01	12.74
		8	0	12.76	13.09	12.91
		8	3	12.72	13.01	12.79
		8	7	12.70	12.81	12.79
		15	0	12.86	12.87	12.65
	64QAM	1	0	12.88	13.01	12.87
		1	7	12.72	12.92	12.79
		1	14	12.79	12.92	12.83
		8	0	12.89	12.99	12.80
		8	3	12.82	12.93	12.72
		8	7	12.82	12.91	12.68
		15	0	12.71	13.03	12.77
BW	**MCS Index**	**Channel**		**19957**	**20175**	**20393**
		Frequence (MHz)		**1710.7**	**1732.5**	**1754.3**
1.4M	QPSK	1	0	12.89	12.97	12.81
		1	2	12.72	12.94	12.69
		1	5	12.74	12.81	12.75
		3	0	12.91	12.99	12.92
		3	1	12.80	12.95	12.87
		3	3	12.80	12.91	12.76
		6	0	12.83	13.02	12.73
	16QAM	1	0	12.81	13.06	12.89
		1	2	12.86	13.00	12.95
		1	5	12.92	13.00	12.80
		3	0	12.81	12.86	12.93
		3	1	12.75	12.90	12.87
		3	3	12.83	12.90	12.76
		6	0	12.79	12.91	12.81
	64QAM	1	0	12.96	12.91	12.86
		1	2	12.67	12.96	12.85
		1	5	12.72	12.86	12.81
		3	0	12.88	12.97	12.79
		3	1	12.84	12.90	12.84
		3	3	12.76	12.91	12.66
		6	0	12.80	12.84	12.92

Reduction Power

LTE Band 5

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequence (MHz)		829	836.5	844
10M	QPSK	1	0	15.15	15.21	15.18
		1	24	15.11	15.17	15.14
		1	49	15.07	15.13	15.10
		25	0	15.12	15.18	15.15
		25	12	15.06	15.12	15.09
		25	25	15.07	15.13	15.10
		50	0	15.13	15.19	15.16
	16QAM	1	0	15.07	15.18	15.12
		1	24	15.09	15.16	15.14
		1	49	15.02	15.11	15.01
		25	0	15.10	15.17	15.13
		25	12	15.04	15.08	15.07
		25	25	15.01	15.07	15.06
		50	0	15.06	15.15	15.08
	64QAM	1	0	15.11	15.17	15.16
		1	24	15.01	15.12	15.12
		1	49	15.03	15.11	15.02
		25	0	15.09	15.13	15.15
		25	12	15.04	15.10	14.99
		25	25	15.03	15.05	15.04
		50	0	15.12	15.14	15.12
BW	MCS Index	Channel		20425	20525	20625
		Frequence (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	15.13	15.13	15.17
		1	12	15.04	15.09	15.07
		1	24	15.02	15.07	15.00
		12	0	15.04	15.11	15.08
		12	6	15.04	15.12	15.05
		12	13	15.00	15.04	15.07
		25	0	15.05	15.19	15.12
	16QAM	1	0	15.01	15.16	15.09
		1	12	15.00	15.15	15.08
		1	24	14.98	15.10	14.93
		12	0	15.04	15.10	15.05
		12	6	15.04	15.08	15.00
		12	13	14.98	15.04	14.96
		25	0	15.00	15.15	15.01
	64QAM	1	0	15.07	15.12	15.09
		1	12	14.97	15.06	15.09
		1	24	14.99	15.10	15.02
		12	0	15.06	15.13	15.11
		12	6	14.99	15.09	14.93
		12	13	14.96	15.00	14.99
		25	0	15.06	15.13	15.09

Reduction Power

LTE Band 5

BW	MCS Index	Channel		20415	20525	20635
		Frequence (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	15.10	15.04	15.05
		1	7	15.01	14.96	14.92
		1	14	14.85	14.98	15.02
		8	0	14.92	15.09	15.00
		8	3	14.88	14.98	14.90
		8	7	14.91	15.05	14.96
		15	0	15.00	15.06	14.95
	16QAM	1	0	14.95	15.08	14.91
		1	7	14.91	15.12	14.96
		1	14	14.83	14.95	14.89
		8	0	15.00	14.97	14.94
		8	3	14.91	14.87	14.86
		8	7	14.97	15.02	14.96
		15	0	14.92	14.99	14.89
	64QAM	1	0	15.05	14.96	14.99
		1	7	14.91	15.07	14.96
		1	14	14.95	14.92	14.84
		8	0	15.06	14.95	15.04
		8	3	14.84	14.99	14.84
		8	7	14.86	14.93	14.89
		15	0	15.10	14.98	14.97
BW	MCS Index	Channel		20407	20525	20643
		Frequence (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	15.00	15.07	14.94
		1	2	15.09	15.08	15.01
		1	5	14.96	14.98	14.88
		3	0	14.98	15.11	15.00
		3	1	14.87	15.03	14.93
		3	3	14.91	15.04	14.94
		6	0	15.08	15.10	14.93
	16QAM	1	0	14.95	15.07	15.01
		1	2	14.91	15.07	15.03
		1	5	14.91	14.99	14.90
		3	0	14.95	15.03	15.00
		3	1	14.92	15.07	14.89
		3	3	14.83	15.04	14.89
		6	0	14.86	15.11	14.87
	64QAM	1	0	15.05	14.96	15.05
		1	2	14.88	14.93	14.90
		1	5	14.97	14.87	14.88
		3	0	15.02	15.04	15.08
		3	1	14.88	14.89	14.95
		3	3	14.92	14.89	14.96
		6	0	15.03	14.96	14.97

Reduction Power

LTE Band 12

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23060	23095	23130
		Frequence (MHz)		704	707.5	711
10M	QPSK	1	0	14.28	14.27	14.33
		1	24	14.21	14.19	14.25
		1	49	14.17	14.16	14.22
		25	0	14.23	14.22	14.28
		25	12	14.21	14.23	14.26
		25	25	14.17	14.19	14.25
		50	0	14.22	14.21	14.27
	16QAM	1	0	14.25	14.19	14.32
		1	24	14.15	14.09	14.20
		1	49	14.16	14.12	14.16
		25	0	14.20	14.18	14.27
		25	12	14.13	14.21	14.18
		25	25	14.07	14.13	14.18
		50	0	14.19	14.17	14.22
	64QAM	1	0	14.20	14.21	14.18
		1	24	14.02	14.15	14.10
		1	49	14.13	14.02	14.14
		25	0	14.19	14.02	14.13
		25	12	14.13	14.13	14.08
		25	25	14.01	14.09	14.18
		50	0	14.17	14.14	14.15
BW	MCS Index	Channel		23035	23095	23155
		Frequence (MHz)		701.5	707.5	713.5
5M	QPSK	1	0	14.23	14.24	14.29
		1	12	14.12	14.13	14.15
		1	24	14.14	14.09	14.16
		12	0	14.19	14.15	14.25
		12	6	14.16	14.13	14.22
		12	13	14.14	14.18	14.15
		25	0	14.22	14.18	14.17
	16QAM	1	0	14.17	14.18	14.32
		1	12	14.10	14.03	14.18
		1	24	14.08	14.07	14.12
		12	0	14.19	14.10	14.26
		12	6	14.12	14.15	14.18
		12	13	14.04	14.08	14.09
		25	0	14.13	14.16	14.18
	64QAM	1	0	14.11	14.20	14.11
		1	12	14.01	14.07	14.08
		1	24	14.04	14.01	14.06
		12	0	14.12	14.02	14.13
		12	6	14.10	14.07	14.02
		12	13	13.94	14.00	14.09
		25	0	14.08	14.12	14.12

Reduction Power

LTE Band 12

BW	MCS Index	Channel		23025	23095	23165
		Frequence (MHz)		700.5	707.5	714.5
3M	QPSK	1	0	14.07	14.22	14.13
		1	7	14.11	14.17	14.15
		1	14	14.00	14.13	14.07
		8	0	14.05	14.16	14.10
		8	3	14.16	14.23	14.21
		8	7	14.07	14.05	14.00
		15	0	14.02	14.05	14.19
	16QAM	1	0	14.20	14.00	14.24
		1	7	14.00	13.93	14.12
		1	14	13.94	14.01	14.06
		8	0	14.01	14.02	14.13
		8	3	14.06	14.12	14.13
		8	7	13.92	13.93	14.00
		15	0	14.10	14.05	14.03
	64QAM	1	0	14.07	14.12	14.07
		1	7	13.88	14.05	13.93
		1	14	13.92	13.96	14.04
		8	0	14.00	13.92	14.03
		8	3	14.09	14.02	13.92
		8	7	13.89	13.99	14.02
		15	0	14.01	14.03	13.96
BW	MCS Index	Channel		23017	23095	23173
		Frequence (MHz)		699.7	707.5	715.3
1.4M	QPSK	1	0	14.12	14.14	13.98
		1	2	14.14	14.06	14.01
		1	5	14.01	14.01	14.12
		3	0	14.13	14.05	14.07
		3	1	14.06	14.15	14.00
		3	3	14.02	14.01	14.06
		6	0	14.00	13.96	14.00
	16QAM	1	0	14.16	14.08	14.25
		1	2	13.97	13.92	14.01
		1	5	14.01	13.94	14.05
		3	0	14.05	14.07	14.17
		3	1	14.02	14.14	14.05
		3	3	13.91	13.96	14.08
		6	0	14.10	14.12	14.05
	64QAM	1	0	14.00	14.06	14.10
		1	2	13.87	13.92	13.99
		1	5	14.01	14.01	14.02
		3	0	14.11	13.85	13.96
		3	1	14.07	14.11	13.95
		3	3	13.84	13.91	14.04
		6	0	14.08	13.99	14.02

Reduction Power

LTE Band 13

BW	MCS Index	RB Size	RB Offset		Mid	
		Channel			23230	
		Frequence (MHz)			782	
10M	QPSK	1	0		**14.29**	
		1	24		14.26	
		1	49		14.17	
		25	0		**14.28**	
		25	12		14.22	
		25	25		14.25	
		50	0		**14.21**	
	16QAM	1	0		14.26	
		1	24		14.23	
		1	49		14.09	
		25	0		14.27	
		25	12		14.22	
		25	25		14.23	
		50	0		14.14	
	64QAM	1	0		14.25	
		1	24		14.22	
		1	49		14.06	
		25	0		14.18	
		25	12		14.14	
		25	25		14.08	
		50	0		14.18	

BW	MCS Index	Channel		23205	23230	23255
		Frequence (MHz)		779.5	782	784.5
5M	QPSK	1	0	14.25	14.27	14.13
		1	12	14.17	14.19	14.05
		1	24	14.20	14.08	14.16
		12	0	14.24	14.19	14.20
		12	6	14.17	14.18	14.05
		12	13	14.15	14.17	14.11
		25	0	14.22	14.15	14.20
	16QAM	1	0	14.19	14.17	14.11
		1	12	14.24	14.17	14.07
		1	24	14.10	14.01	14.03
		12	0	14.14	14.14	14.12
		12	6	14.10	14.15	14.05
		12	13	14.07	14.07	14.00
		25	0	14.10	14.04	14.08
	64QAM	1	0	14.10	14.15	14.07
		1	12	14.04	14.19	13.98
		1	24	14.02	13.93	13.95
		12	0	14.16	14.01	14.06
		12	6	13.97	14.06	13.85
		12	13	14.11	14.02	13.91
		25	0	14.02	13.92	14.10

Reduction Power

LTE Band 25

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26140	26365	26590
		Frequence (MHz)		1860	1882.5	1905
20M	QPSK	1	0	13.07	13.14	13.11
		1	50	12.99	13.06	13.03
		1	99	12.96	13.03	13.00
		50	0	13.05	13.12	13.09
		50	25	13.04	13.11	13.08
		50	50	13.01	13.08	13.05
		100	0	12.98	13.05	13.02
	16QAM	1	0	13.04	13.11	13.08
		1	50	13.02	13.09	13.06
		1	99	13.01	13.08	13.05
		50	0	12.99	13.06	13.03
		50	25	12.98	13.05	13.02
		50	50	12.95	13.02	12.99
		100	0	12.96	13.03	13.01
	64QAM	1	0	13.01	13.08	13.05
		1	50	12.99	13.06	13.03
		1	99	12.95	13.02	12.99
		50	0	12.98	13.05	13.02
		50	25	12.96	13.03	13.02
		50	50	12.95	13.02	12.99
		100	0	12.97	13.04	13.01
BW	MCS Index	Channel		26115	26365	26615
		Frequence (MHz)		1857.5	1882.5	1907.5
15M	QPSK	1	0	12.98	13.09	13.02
		1	37	12.95	13.03	13.02
		1	74	12.87	13.02	12.95
		36	0	13.02	13.05	13.08
		36	19	12.98	13.06	13.08
		36	39	13.01	12.99	13.00
		75	0	12.92	13.00	12.98
	16QAM	1	0	12.97	13.04	13.05
		1	37	12.99	13.03	13.06
		1	74	13.00	13.08	12.99
		36	0	12.99	13.04	12.94
		36	19	12.91	12.96	13.01
		36	39	12.95	12.94	12.91
		75	0	12.91	12.97	12.91
	64QAM	1	0	12.99	13.07	12.98
		1	37	12.90	13.05	13.03
		1	74	12.92	12.98	12.98
		36	0	12.91	13.01	12.99
		36	19	12.92	12.98	12.93
		36	39	12.87	13.00	12.89
		75	0	12.96	13.04	12.97

Reduction Power

LTE Band 25

BW	MCS Index	Channel		26090	26365	26640
		Frequence (MHz)		1855	1882.5	1910
10M	QPSK	1	0	12.87	13.06	13.06
		1	24	12.91	12.85	12.83
		1	49	12.77	12.89	12.93
		25	0	12.89	12.93	13.03
		25	12	12.82	12.93	12.96
		25	25	12.87	12.87	12.88
		50	0	12.83	12.83	12.85
	16QAM	1	0	13.03	12.95	12.95
		1	24	12.92	12.98	12.88
		1	49	12.84	13.02	12.98
		25	0	12.93	13.00	12.94
		25	12	12.96	12.94	12.98
		25	25	12.83	12.93	12.80
		50	0	12.87	12.99	12.82
	64QAM	1	0	12.89	13.03	12.92
		1	24	12.97	13.06	12.93
		1	49	12.87	12.93	12.87
		25	0	12.84	12.97	12.90
		25	12	12.74	12.99	12.93
		25	25	12.80	12.91	12.96
		50	0	12.93	12.82	12.78
BW	MCS Index	Channel		26065	26365	26665
		Frequence (MHz)		1852.5	1882.5	1912.5
5M	QPSK	1	0	12.98	13.09	12.95
		1	12	12.86	12.97	12.87
		1	24	12.76	12.99	12.79
		12	0	12.89	13.02	12.89
		12	6	13.00	13.01	12.86
		12	13	12.98	12.96	12.79
		25	0	12.88	12.97	12.82
	16QAM	1	0	12.91	12.92	12.90
		1	12	12.91	13.04	12.96
		1	24	12.79	12.87	12.99
		12	0	12.90	12.98	13.00
		12	6	12.85	12.86	12.86
		12	13	12.82	12.81	12.84
		25	0	12.78	12.92	12.91
	64QAM	1	0	12.94	12.87	12.91
		1	12	12.77	12.98	12.87
		1	24	12.83	12.79	12.86
		12	0	12.94	12.83	12.79
		12	6	12.85	12.84	12.89
		12	13	12.82	12.92	12.89
		25	0	12.79	12.92	12.83

Reduction Power

LTE Band 25

BW	MCS Index	Channel		26055	26365	26675
		Frequence (MHz)		1851.5	1882.5	1913.5
3M	QPSK	1	0	12.93	13.00	12.89
		1	7	12.89	12.99	12.86
		1	14	12.79	12.93	12.87
		8	0	13.02	13.00	13.03
		8	3	12.95	12.98	12.92
		8	7	12.97	12.93	12.96
		15	0	12.88	12.94	12.85
	16QAM	1	0	12.90	12.91	12.94
		1	7	12.83	13.01	13.04
		1	14	12.80	13.04	12.85
		8	0	12.84	12.93	12.90
		8	3	12.91	12.96	12.95
		8	7	12.74	12.89	12.76
		15	0	12.82	12.93	12.79
	64QAM	1	0	12.93	12.95	13.00
		1	7	12.84	12.95	12.98
		1	14	12.78	12.87	12.89
		8	0	12.78	12.86	13.00
		8	3	12.76	13.01	12.91
		8	7	12.78	12.88	12.85
		15	0	12.89	12.94	12.90
BW	**MCS Index**	**Channel**		**26047**	**26365**	**26683**
		Frequence (MHz)		**1850.7**	**1882.5**	**1914.3**
1.4M	QPSK	1	0	12.93	12.93	12.99
		1	2	12.94	12.85	12.96
		1	5	12.79	12.97	12.91
		3	0	13.02	12.95	12.99
		3	1	13.00	12.95	13.05
		3	3	12.93	13.00	12.99
		6	0	12.80	12.89	12.82
	16QAM	1	0	12.98	12.98	12.98
		1	2	12.93	12.88	12.96
		1	5	12.77	12.99	13.00
		3	0	12.88	12.95	12.96
		3	1	12.76	12.99	12.98
		3	3	12.85	12.79	12.88
		6	0	12.89	12.94	12.82
	64QAM	1	0	12.83	12.99	12.94
		1	2	12.77	12.95	12.98
		1	5	12.89	12.90	12.92
		3	0	12.81	12.93	12.97
		3	1	12.89	12.92	12.96
		3	3	12.84	12.92	12.94
		6	0	12.92	12.87	13.00

Reduction Power

LTE Band 26

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26765	26865	26965
		Frequence (MHz)		821.5	831.5	841.5
15M	QPSK	1	0	14.25	14.31	14.28
		1	37	14.19	14.25	14.22
		1	74	14.23	14.26	14.23
		36	0	14.22	14.28	14.26
		36	19	14.21	14.27	14.23
		36	39	14.19	14.25	14.21
		75	0	14.23	14.26	14.22
	16QAM	1	0	14.21	14.29	14.21
		1	37	14.14	14.20	14.13
		1	74	14.15	14.16	14.21
		36	0	14.20	14.27	14.16
		36	19	14.12	14.27	14.18
		36	39	14.11	14.22	14.16
		75	0	14.18	14.25	14.22
	64QAM	1	0	14.16	14.29	14.20
		1	37	14.11	14.17	14.08
		1	74	14.07	14.10	14.19
		36	0	14.18	14.27	14.09
		36	19	14.12	14.22	14.08
		36	39	14.01	14.20	14.09
		75	0	14.09	14.21	14.17
BW	MCS Index	Channel		26740	26865	26990
		Frequence (MHz)		819	831.5	844
10M	QPSK	1	0	14.21	14.23	14.21
		1	24	14.12	14.24	14.22
		1	49	14.15	14.18	14.22
		25	0	14.19	14.20	14.26
		25	12	14.12	14.21	14.17
		25	25	14.11	14.20	14.16
		50	0	14.21	14.17	14.20
	16QAM	1	0	14.15	14.25	14.17
		1	24	14.14	14.12	14.08
		1	49	14.14	14.06	14.11
		25	0	14.14	14.24	14.07
		25	12	14.02	14.18	14.12
		25	25	14.05	14.20	14.16
		50	0	14.17	14.15	14.15
	64QAM	1	0	14.08	14.28	14.15
		1	24	14.04	14.14	14.03
		1	49	14.05	14.00	14.11
		25	0	14.13	14.25	14.04
		25	12	14.02	14.20	14.01
		25	25	13.92	14.13	14.02
		50	0	13.99	14.15	14.17

Reduction Power

LTE Band 26

BW	MCS Index	Channel		26715	26865	27015
		Frequence (MHz)		816.5	831.5	846.5
5M	QPSK	1	0	14.07	14.21	14.17
		1	12	14.11	14.12	14.18
		1	24	13.99	14.24	14.16
		12	0	14.12	14.25	14.17
		12	6	14.12	14.19	14.06
		12	13	14.05	14.06	14.14
		25	0	14.16	14.09	14.16
	16QAM	1	0	14.08	14.17	14.14
		1	12	14.11	14.12	14.00
		1	24	14.03	14.09	14.08
		12	0	14.08	14.16	14.08
		12	6	14.04	14.03	14.01
		12	13	13.96	14.15	14.05
		25	0	14.09	14.11	14.10
	64QAM	1	0	13.98	14.17	14.02
		1	12	13.95	14.08	13.97
		1	24	13.96	13.89	14.09
		12	0	14.01	14.11	13.91
		12	6	13.98	14.17	13.95
		12	13	13.88	14.01	13.89
		25	0	13.98	14.14	14.12
BW	**MCS Index**	**Channel**		**26705**	**26865**	**27025**
		Frequence (MHz)		**815.5**	**831.5**	**847.5**
3M	QPSK	1	0	14.09	14.19	14.11
		1	7	14.06	14.19	13.95
		1	14	14.08	14.06	14.01
		8	0	14.08	14.19	13.93
		8	3	14.03	14.10	14.10
		8	7	14.03	14.10	14.07
		15	0	14.18	14.14	13.99
	16QAM	1	0	14.07	14.11	14.11
		1	7	13.93	14.00	13.97
		1	14	13.95	13.99	14.11
		8	0	14.01	14.13	14.06
		8	3	14.07	14.18	14.08
		8	7	13.90	13.99	13.95
		15	0	14.08	14.10	14.19
	64QAM	1	0	14.00	14.12	14.03
		1	7	14.00	14.01	13.94
		1	14	13.97	13.94	14.04
		8	0	14.04	14.16	13.95
		8	3	14.02	14.18	13.88
		8	7	13.93	14.09	14.04
		15	0	13.91	14.06	14.01

Reduction Power

LTE Band 26

BW	MCS Index	Channel		26697	26865	27033
		Frequence (MHz)		814.7	831.5	848.3
1.4M	QPSK	1	0	14.05	14.14	14.26
		1	2	14.02	14.07	14.10
		1	5	14.16	14.15	14.16
		3	0	14.07	14.17	14.24
		3	1	14.08	14.18	14.05
		3	3	14.09	14.18	14.21
		6	0	14.08	14.04	14.10
	16QAM	1	0	14.10	14.18	14.11
		1	2	14.12	14.07	13.93
		1	5	14.01	14.09	14.19
		3	0	13.98	14.12	13.97
		3	1	14.00	14.09	14.07
		3	3	13.97	14.09	14.04
		6	0	14.02	14.18	14.06
	64QAM	1	0	14.08	14.19	14.14
		1	2	14.02	13.93	13.99
		1	5	13.91	13.95	14.01
		3	0	14.13	14.11	13.96
		3	1	13.97	14.07	13.94
		3	3	13.88	14.18	14.01
		6	0	14.06	14.09	14.00

Reduction Power

LTE Band 66

BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		132072	132322	132572
		Frequence (MHz)		1720	1745	1770
20M	QPSK	1	0	13.01	13.09	13.13
		1	50	12.99	13.07	13.11
		1	99	12.95	13.03	13.07
		50	0	13.00	13.08	13.12
		50	25	12.99	13.07	13.11
		50	50	12.97	13.05	13.09
		100	0	12.95	13.03	13.07
	16QAM	1	0	13.00	13.08	13.12
		1	50	12.98	13.06	13.10
		1	99	12.96	13.04	13.08
		50	0	12.99	13.07	13.11
		50	25	12.97	13.05	13.09
		50	50	12.95	13.03	13.07
		100	0	12.94	13.02	13.06
	64QAM	1	0	12.98	13.06	13.10
		1	50	12.96	13.04	13.08
		1	99	12.95	13.03	13.07
		50	0	12.97	13.05	13.09
		50	25	12.95	13.03	13.07
		50	50	12.93	13.01	13.05
		100	0	12.94	13.02	13.06
BW	MCS Index	Channel		132047	132322	132597
		Frequence (MHz)		1717.5	1745	1772.5
15M	QPSK	1	0	13.01	13.01	13.04
		1	37	12.90	13.03	13.06
		1	74	12.92	12.98	12.99
		36	0	12.95	13.03	13.04
		36	19	12.99	13.00	13.05
		36	39	12.92	13.01	13.07
		75	0	12.91	12.95	13.00
	16QAM	1	0	13.00	13.01	13.11
		1	37	12.90	12.97	13.07
		1	74	12.93	12.95	13.00
		36	0	12.95	12.99	13.01
		36	19	12.88	13.05	13.00
		36	39	12.88	12.98	13.03
		75	0	12.92	12.92	12.99
	64QAM	1	0	12.98	12.99	13.05
		1	37	12.95	12.94	13.00
		1	74	12.91	12.96	12.98
		36	0	12.94	12.96	13.03
		36	19	12.86	12.95	13.01
		36	39	12.91	12.93	12.98
		75	0	12.94	12.97	12.97

Reduction Power

LTE Band 66

BW	MCS Index	Channel		132022	132322	132622
		Frequence (MHz)		1715	1745	1775
10M	QPSK	1	0	12.77	12.94	12.91
		1	24	12.88	12.94	12.97
		1	49	12.87	12.88	13.06
		25	0	12.91	12.94	12.99
		25	12	12.95	13.04	13.02
		25	25	12.79	12.90	13.04
		50	0	12.71	12.83	13.00
	16QAM	1	0	12.90	12.98	12.97
		1	24	12.84	12.98	12.96
		1	49	12.81	12.95	12.87
		25	0	12.80	12.90	12.92
		25	12	12.90	13.01	12.99
		25	25	12.80	12.97	12.96
		50	0	12.85	12.90	13.00
	64QAM	1	0	12.88	12.89	13.01
		1	24	12.83	12.87	12.97
		1	49	12.79	12.90	12.92
		25	0	12.86	12.96	12.97
		25	12	12.84	12.93	13.02
		25	25	12.85	12.85	12.81
		50	0	12.79	12.99	12.90
BW	MCS Index	Channel		131997	132322	132647
		Frequence (MHz)		1712.5	1745	1777.5
5M	QPSK	1	0	12.94	12.94	12.78
		1	12	12.93	12.93	12.87
		1	24	12.82	12.85	12.88
		12	0	12.94	12.90	12.77
		12	6	12.87	12.98	13.01
		12	13	12.89	12.98	12.91
		25	0	12.86	12.89	12.82
	16QAM	1	0	12.85	13.00	13.04
		1	12	12.79	12.94	12.94
		1	24	12.79	12.92	13.06
		12	0	12.96	12.95	12.91
		12	6	12.83	12.82	12.91
		12	13	12.89	12.95	12.92
		25	0	12.81	13.02	12.94
	64QAM	1	0	12.79	12.86	12.95
		1	12	12.83	12.91	13.02
		1	24	12.82	12.99	12.99
		12	0	12.83	12.87	12.89
		12	6	12.86	12.88	12.86
		12	13	12.75	12.92	12.94
		25	0	12.73	12.88	12.99

Reduction Power

LTE Band 66

BW	MCS Index	Channel		131987	132322	132657
		Frequence (MHz)		1711.5	1745	1778.5
3M	QPSK	1	0	12.81	13.03	12.90
		1	7	12.88	12.93	12.98
		1	14	12.77	12.89	12.76
		8	0	12.79	12.98	12.90
		8	3	12.84	12.92	12.89
		8	7	12.77	12.88	12.95
		15	0	12.83	12.89	12.83
	16QAM	1	0	12.92	12.98	13.07
		1	7	12.87	12.94	12.88
		1	14	12.82	12.87	13.04
		8	0	12.80	12.83	12.97
		8	3	12.88	12.93	12.96
		8	7	12.80	12.84	12.98
		15	0	12.72	12.80	12.90
	64QAM	1	0	12.78	12.98	13.08
		1	7	12.79	12.89	12.92
		1	14	12.72	12.84	12.93
		8	0	12.87	12.98	12.95
		8	3	12.86	13.02	13.04
		8	7	12.80	12.90	12.92
		15	0	12.88	12.90	12.95
BW	**MCS Index**	**Channel**		**131979**	**132322**	**132665**
		Frequence (MHz)		**1710.7**	**1745**	**1779.3**
1.4M	QPSK	1	0	12.83	12.88	13.05
		1	2	12.93	13.04	13.05
		1	5	12.79	12.85	12.96
		3	0	12.84	12.91	12.96
		3	1	12.95	12.83	13.02
		3	3	12.79	12.88	13.06
		6	0	12.82	12.98	12.89
	16QAM	1	0	12.87	12.99	12.98
		1	2	12.76	13.03	12.96
		1	5	12.87	12.83	12.98
		3	0	12.98	12.94	13.02
		3	1	12.80	12.99	12.89
		3	3	12.80	12.85	13.03
		6	0	12.82	12.82	12.89
	64QAM	1	0	12.92	12.99	13.09
		1	2	12.82	12.82	12.93
		1	5	12.78	12.94	12.97
		3	0	12.82	13.01	12.85
		3	1	12.76	12.93	12.85
		3	3	12.87	12.88	12.86
		6	0	12.72	12.82	13.01

Reduction Power

LTE Band 41

BW	MCS Index	RB Size	RB Offset	Low	Mid	Mid	Mid	High
		Channel		39750	40185	40620	41055	41490
		Frequence (MHz)		2506	2549.5	2593	2636.5	2680
20M	QPSK	1	0	14.19	13.73	14.21	13.68	13.77
		1	50	14.05	13.59	14.07	13.54	13.63
		1	99	13.65	13.19	13.67	13.14	13.23
		50	0	14.09	13.63	14.11	13.58	13.67
		50	25	14.06	13.60	14.08	13.55	13.64
		50	50	13.91	13.45	13.93	13.40	13.49
		100	0	14.01	13.55	14.03	13.50	13.59
	16QAM	1	0	14.13	13.67	14.15	13.62	13.71
		1	50	13.99	13.53	14.01	13.48	13.57
		1	99	13.59	13.13	13.61	13.08	13.17
		50	0	14.03	13.57	14.05	13.52	13.61
		50	25	14.00	13.54	14.02	13.49	13.58
		50	50	13.85	13.39	13.87	13.34	13.43
		100	0	13.95	13.49	13.97	13.44	13.53
	64QAM	1	0	14.07	13.61	14.09	13.56	13.65
		1	50	13.93	13.47	13.95	13.42	13.51
		1	99	13.53	13.07	13.55	13.02	13.11
		50	0	13.97	13.51	13.99	13.46	13.55
		50	25	13.94	13.48	13.96	13.43	13.52
		50	50	13.79	13.33	13.81	13.28	13.37
		100	0	13.89	13.43	13.91	13.38	13.47
BW	MCS Index	Channel		39725	40173	40620	41068	41515
		Frequence (MHz)		2503.5	2548.3	2593	2637.8	2682.5
15M	QPSK	1	0	14.15	13.69	14.17	13.64	13.73
		1	37	14.01	13.55	14.03	13.50	13.59
		1	74	13.61	13.15	13.63	13.10	13.19
		36	0	14.05	13.59	14.07	13.54	13.63
		36	19	14.02	13.56	14.04	13.51	13.60
		36	39	13.87	13.41	13.89	13.36	13.45
		75	0	13.97	13.51	13.99	13.46	13.55
	16QAM	1	0	14.09	13.63	14.11	13.58	13.67
		1	37	13.95	13.49	13.97	13.44	13.53
		1	74	13.55	13.09	13.57	13.04	13.13
		36	0	13.99	13.53	14.01	13.48	13.57
		36	19	13.96	13.50	13.98	13.45	13.54
		36	39	13.81	13.35	13.83	13.30	13.39
		75	0	13.91	13.45	13.93	13.40	13.49
	64QAM	1	0	14.03	13.57	14.05	13.52	13.61
		1	37	13.89	13.43	13.91	13.38	13.47
		1	74	13.49	13.03	13.51	13.04	13.07
		36	0	13.93	13.47	13.95	13.42	13.51
		36	19	13.90	13.44	13.92	13.39	13.48
		36	39	13.75	13.29	13.77	13.24	13.33
		75	0	13.85	13.39	13.87	13.34	13.43

Reduction Power

LTE Band 41

BW	MCS Index	Channel		39700	40160	40620	41080	41540
		Frequence (MHz)		2501	2547	2593	2639	2685
10M	QPSK	1	0	14.11	13.65	14.13	13.60	13.69
		1	24	13.97	13.51	13.99	13.46	13.55
		1	49	13.57	13.11	13.59	13.06	13.15
		25	0	14.01	13.55	14.03	13.50	13.59
		25	12	13.98	13.52	14.00	13.47	13.56
		25	25	13.83	13.37	13.85	13.32	13.41
		50	0	13.93	13.47	13.95	13.42	13.51
	16QAM	1	0	14.05	13.59	14.07	13.54	13.63
		1	24	13.91	13.45	13.93	13.40	13.49
		1	49	13.51	13.05	13.53	13.11	13.09
		25	0	13.95	13.49	13.97	13.44	13.53
		25	12	13.92	13.46	13.94	13.41	13.50
		25	25	13.77	13.31	13.79	13.26	13.35
		50	0	13.87	13.41	13.89	13.36	13.45
	64QAM	1	0	13.99	13.53	14.01	13.48	13.57
		1	24	13.85	13.39	13.87	13.34	13.43
		1	49	13.45	13.14	13.47	13.08	13.03
		25	0	13.89	13.43	13.91	13.38	13.47
		25	12	13.86	13.40	13.88	13.35	13.44
		25	25	13.71	13.25	13.73	13.20	13.29
		50	0	13.81	13.35	13.83	13.30	13.39
BW	**MCS Index**	**Channel**		**39675**	**40148**	**40620**	**41093**	**41565**
		Frequence (MHz)		**2498.5**	**2545.8**	**2593**	**2640.3**	**2687.5**
5M	QPSK	1	0	14.08	13.62	14.10	13.57	13.66
		1	12	13.94	13.48	13.96	13.43	13.52
		1	24	13.54	13.08	13.56	13.03	13.12
		12	0	13.98	13.52	14.00	13.47	13.56
		12	6	13.95	13.49	13.97	13.44	13.53
		12	13	13.80	13.34	13.82	13.29	13.38
		25	0	13.90	13.44	13.92	13.39	13.48
	16QAM	1	0	14.02	13.56	14.04	13.51	13.60
		1	12	13.88	13.42	13.90	13.37	13.46
		1	24	13.48	13.02	13.50	13.08	13.06
		12	0	13.92	13.46	13.94	13.41	13.50
		12	6	13.89	13.43	13.91	13.38	13.47
		12	13	13.74	13.28	13.76	13.23	13.32
		25	0	13.84	13.38	13.86	13.33	13.42
	64QAM	1	0	13.96	13.50	13.98	13.45	13.54
		1	12	13.82	13.36	13.84	13.31	13.40
		1	24	13.42	13.11	13.44	13.05	13.03
		12	0	13.86	13.40	13.88	13.35	13.44
		12	6	13.83	13.37	13.85	13.32	13.41
		12	13	13.68	13.22	13.70	13.17	13.26
		25	0	13.78	13.32	13.80	13.27	13.36

WLAN FULL Power

Bluetooth Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
BR / EDR	0	2402	11.98
	39	2441	11.28
	78	2480	10.68

WLAN 5.3GHz Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
802.11a	52	5260	17.61
	56	5280	17.49
	60	5300	17.33
	64	5320	17.13

WLAN 5.6GHz Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
802.11n HT40	102	5510	16.3
	110	5550	16.51
	118	5590	16.05
	126	5630	16.66
	134	5670	16.73
	142	5710	16.53

WLAN 5.8GHz Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
802.11n HT40	151	5755	16.61
	159	5795	15.09

WLAN FULL Power

WLAN2.4GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11b	1	2412	19.53
	6	2437	19.19
	11	2462	19.57
	12	2467	4.37
	13	2472	4.17

Bluetooth Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
BR / EDR	0	2402	9.5
	39	2441	10.76
	78	2480	10.52

WLAN 5.3GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11a	52	5260	17.52
	56	5280	17.26
	60	5300	17.46
	64	5320	17.41

WLAN 5.6GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11n HT40	102	5510	16.44
	110	5550	16.59
	118	5590	16.58
	126	5630	16.73
	134	5670	16.87
	142	5710	16.44

WLAN 5.8GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11n HT40	151	5755	16.28
	159	5795	16.18

WLAN FULL Power

WLAN2.4GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11b	1	2412	19.26	20	19.78	20	22.54
	6	2437	19.59	20	19.64	20	22.63
	11	2462	19.08	20	19.85	20	22.49
	12	2467	1.42	2	1.48	2	4.46
	13	2472	1.69	-3	1.43	-3	4.57

WLAN 5.3GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11a	52	5260	17.85	18	17.88	18	20.88
	56	5280	17.75	18	17.71	18	20.74
	60	5300	17.67	18	17.79	18	20.74
	64	5320	17.16	18	17.39	18	20.29

WLAN 5.6GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11n HT40	102	5510	15.14	17	15.12	17	18.14
	110	5550	15.77	17	16.02	17	18.91
	118	5590	16	17	16.59	17	19.32
	126	5630	16.44	17	16.63	17	19.55
	134	5670	16.71	17	16.87	17	19.8
	142	5710	15.66	17	16.46	17	19.09

WLAN 5.8GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11n HT40	151	5755	16.43	17	16.99	17	19.73
	159	5795	16.01	17	16.94	17	19.51

WLAN Reduction Power

Bluetooth Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
BR / EDR	0	2402	10.55
	39	2441	11.25
	78	2480	9.35

WLAN 5.3GHz Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
802.11ac VHT80	58	5290	8.75

WLAN 5.6GHz Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
802.11ac VHT80	106	5530	8.27
	122	5610	8.31
	138	5690	8.63

WLAN 5.8GHz Ant 1			
Mode	Channel	Frequency	SISO Ant 1 Avg. Power
802.11ac VHT80	155	5775	8.49

WLAN Reduction Power

WLAN2.4GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11b	1	2412	11.32
	6	2437	11.19
	11	2462	10.51

Bluetooth Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
BR / EDR	0	2402	9.09
	39	2441	10.7
	78	2480	9.18

WLAN 5.3GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11ac VHT80	58	5290	8.4

WLAN 5.6GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11ac VHT80	106	5530	8.23
	122	5610	8.55
	138	5690	8.69

WLAN 5.8GHz Ant 2			
Mode	Channel	Frequency	SISO Ant 2 Avg. Power
802.11ac VHT80	155	5775	8.36

WLAN Reduction Power

WLAN2.4GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11b	1	2412	10.85	11.5	11.01	11.5	13.94
	6	2437	11.06	11.5	10.82	11.5	13.95
	11	2462	9.68	11.5	10.26	11.5	12.99

WLAN 5.3GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11ac VHT80	58	5290	8.75	9	8.58	9	11.68

WLAN 5.6GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11ac VHT80	106	5530	8.41	9	8.27	9	11.35
	122	5610	7.79	9	8.59	9	11.22
	138	5690	7.66	9	8.67	9	11.2

WLAN 5.8GHz Ant 1+2

Mode	Channel	Frequency	MIMO Ant 1 Avg. Power	MIMO Ant 1 Tune up	MIMO Ant 2 Avg. Power	MIMO Ant 2 Tune up	MIMO Ant 1+2 Avg. Power
802.11ac VHT80	155	5775	7.55	9	8.43	9	11.02

Appendix E. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D750V3-1013_Aug19**

CALIBRATION CERTIFICATE

Object: D750V3 - SN:1013

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: August 23, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	29-May-19 (No. EX3-7349_May19)	May-20
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 23, 2019

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.7 ± 6 %	0.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.56 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.62 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.7 Ω - 0.2 jΩ
Return Loss	- 28.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.034 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 23.08.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1013

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.9 S/m; ε_r = 42.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

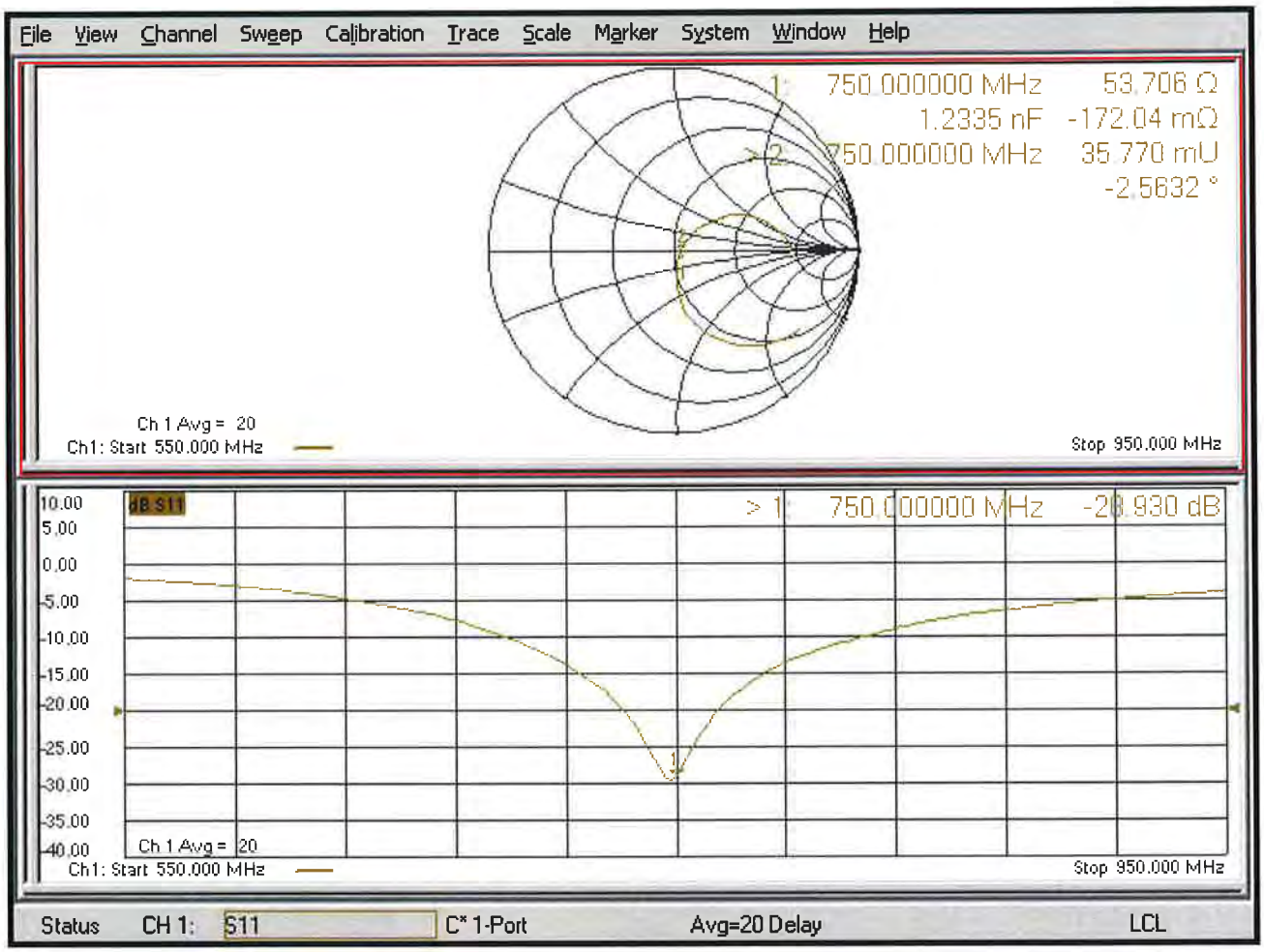
- Probe: EX3DV4 - SN7349; ConvF(10.07, 10.07, 10.07) @ 750 MHz; Calibrated: 29.05.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.83 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.22 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 2.86 W/kg

0 dB = 2.86 W/kg = 4.56 dBW/kg

Impedance Measurement Plot for Head TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D835V2-4d121_Aug19**

CALIBRATION CERTIFICATE

Object: D835V2 - SN:4d121

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: August 23, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	29-May-19 (No. EX3-7349_May19)	May-20
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 23, 2019

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.5 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.61 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.22 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω - 2.7 jΩ
Return Loss	- 31.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.395 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 23.08.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d121

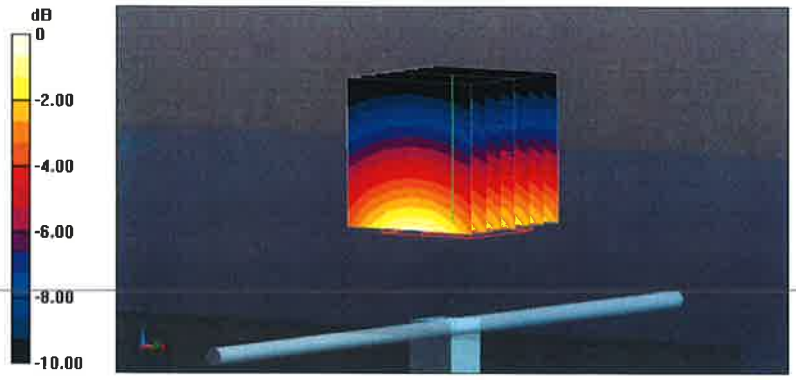
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 42.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.89, 9.89, 9.89) @ 835 MHz; Calibrated: 29.05.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

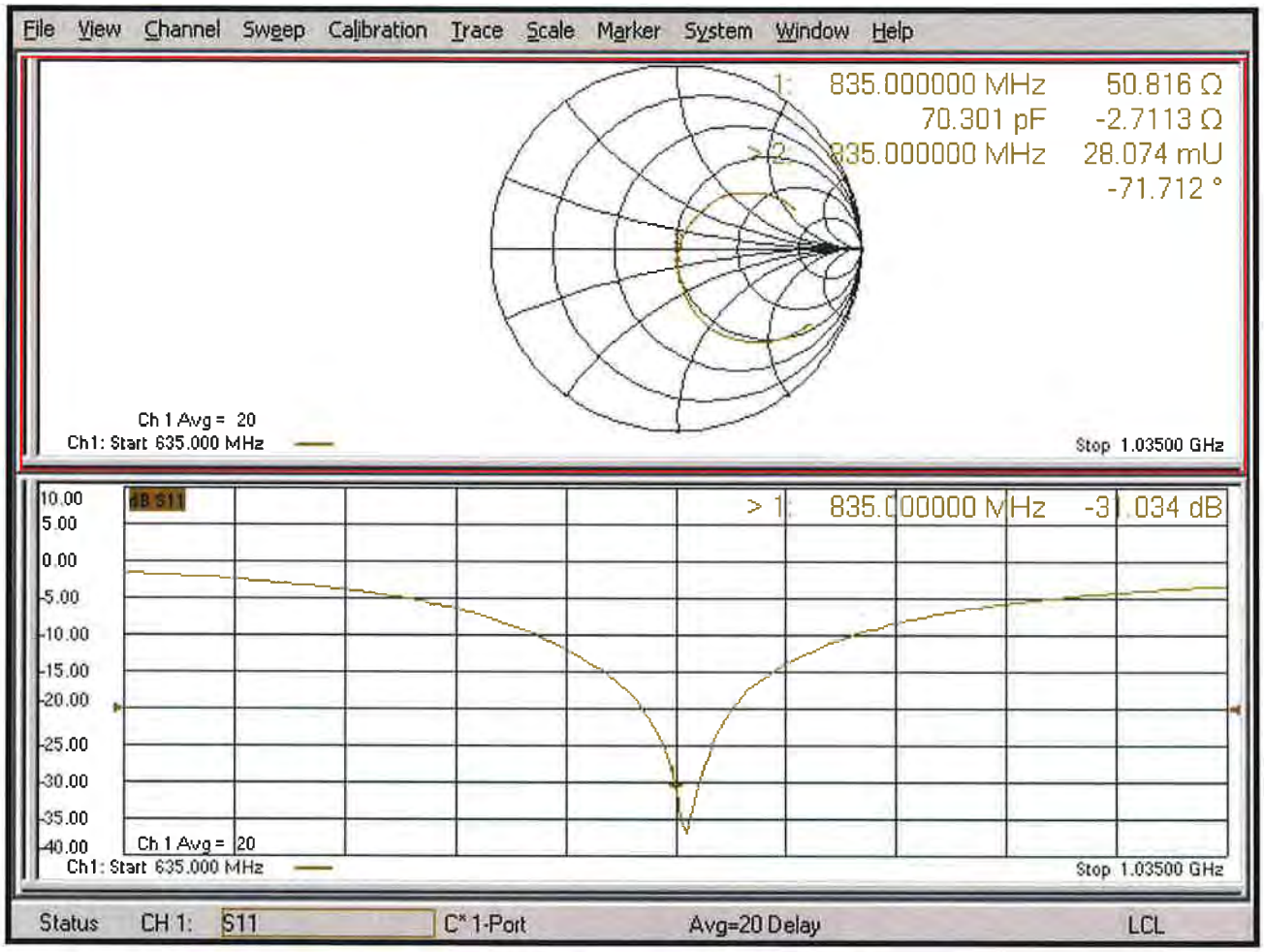
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 63.40 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.63 W/kg
SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 3.23 W/kg



0 dB = 3.23 W/kg = 5.09 dBW/kg

Impedance Measurement Plot for Head TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D1750V2-1055_Aug19**

CALIBRATION CERTIFICATE

Object	D1750V2 - SN:1055
Calibration procedure(s)	QA CAL-05.v11 Calibration Procedure for SAR Validation Sources between 0.7-3 GHz
Calibration date:	August 23, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	29-May-19 (No. EX3-7349_May19)	May-20
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 23, 2019

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.8 ± 6 %	1.36 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**37.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.85 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.5 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.8 Ω + 1.1 jΩ
Return Loss	- 39.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.221 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 23.08.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1055

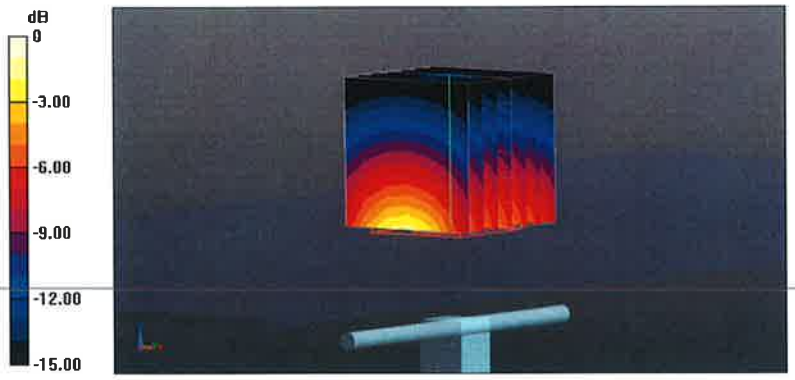
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.67, 8.67, 8.67) @ 1750 MHz; Calibrated: 29.05.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

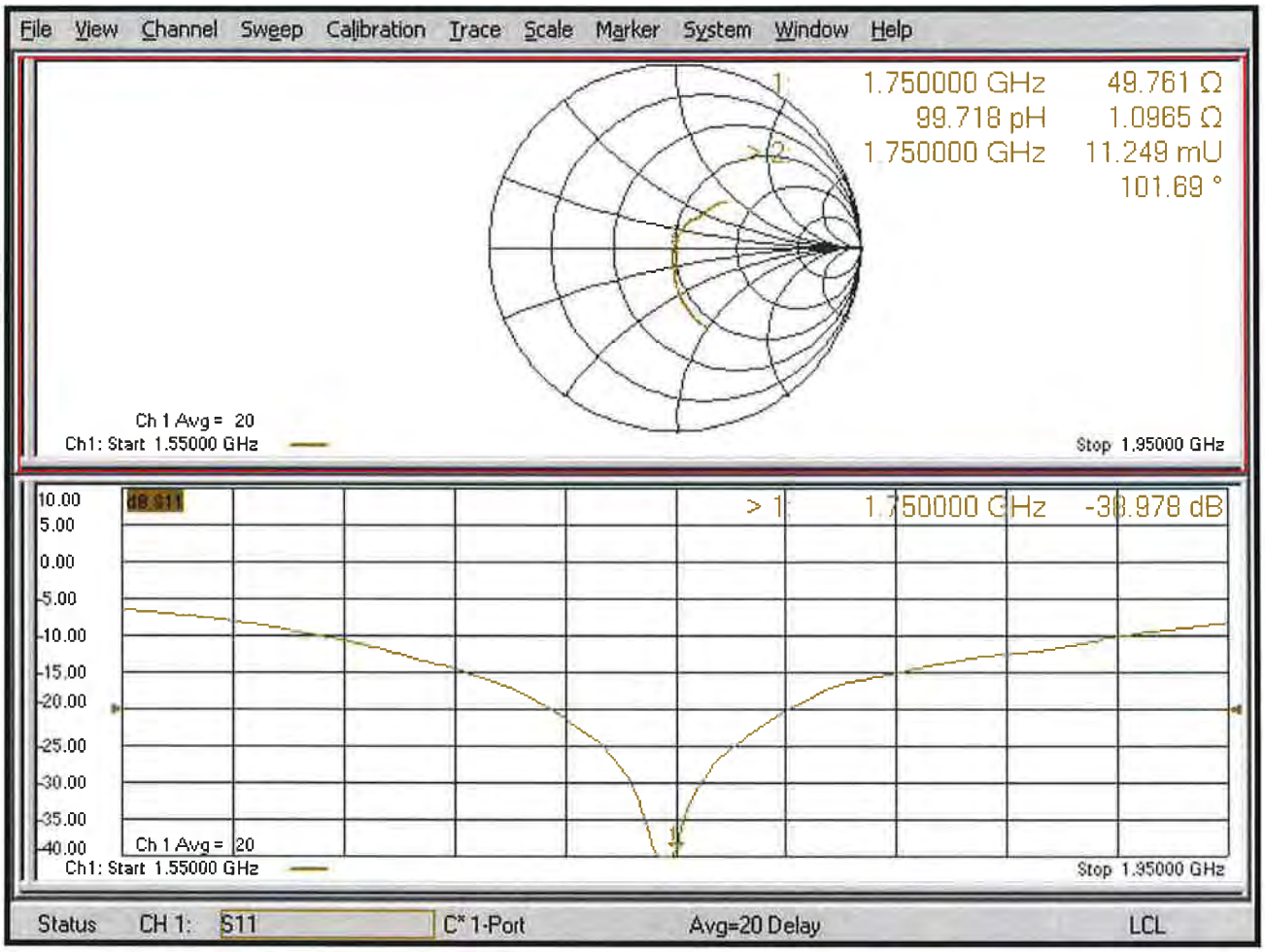
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.5 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.85 W/kg
Maximum value of SAR (measured) = 14.1 W/kg



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

Impedance Measurement Plot for Head TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client B.V. ADT (Auden)

Certificate No: D1900V2-5d036_Jan20

CALIBRATION CERTIFICATE

Object: D1900V2 - SN:5d036

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: January 21, 2020

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	31-Dec-19 (No. EX3-7349_Dec19)	Dec-20
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 22, 2020

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.4 ± 6 %	1.39 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.9 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω + 5.4 jΩ
Return Loss	- 25.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 21.01.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d036

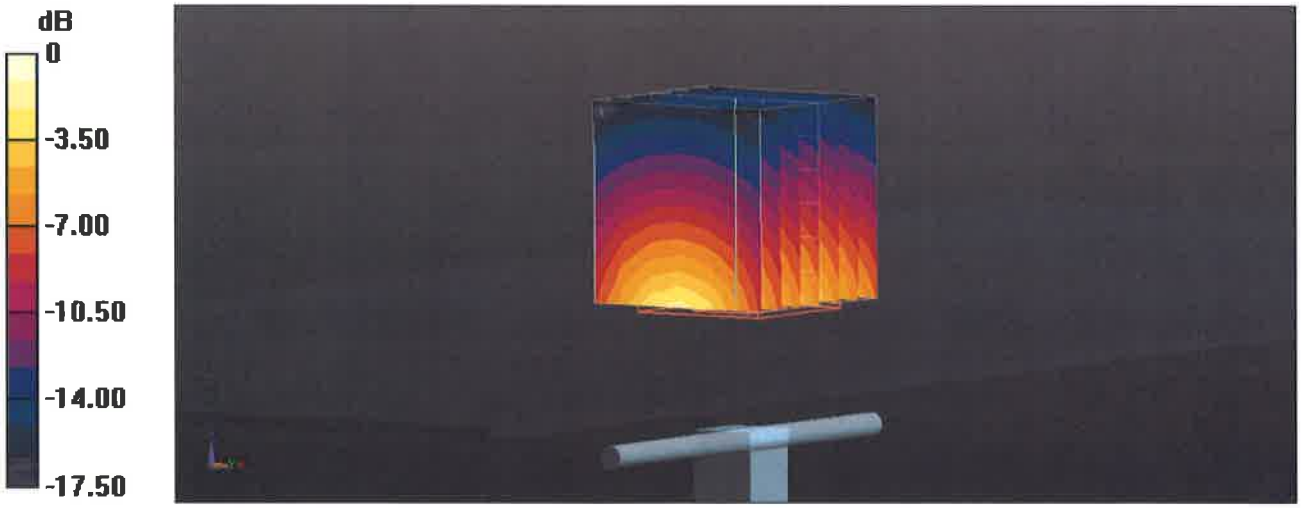
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.39 S/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.6, 8.6, 8.6) @ 1900 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

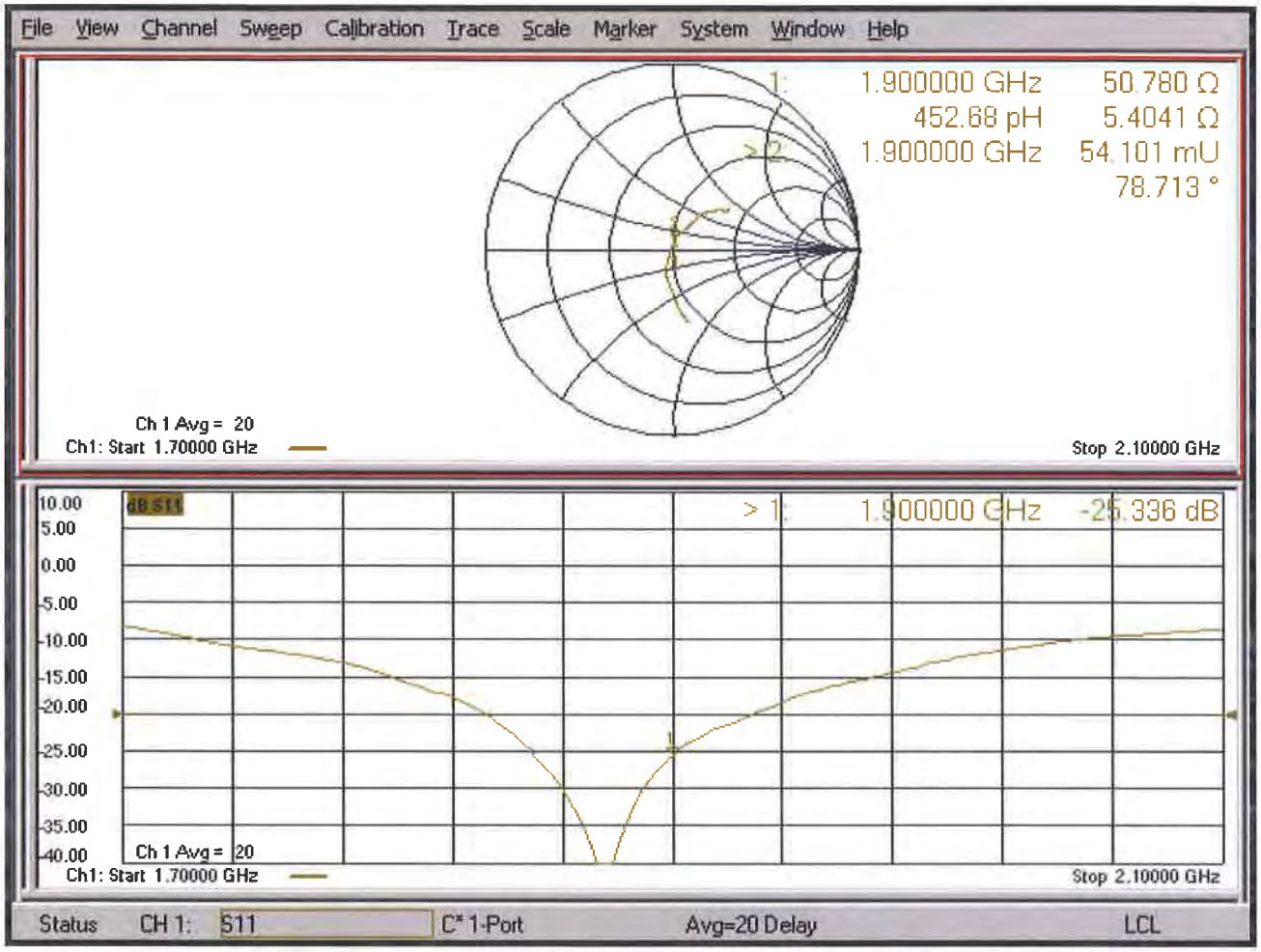
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 109.0 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.18 W/kg
Smallest distance from peaks to all points 3 dB below = 9.8 mm
Ratio of SAR at M2 to SAR at M1 = 54.4%
Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.90 dBW/kg

Impedance Measurement Plot for Head TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D2450V2-737_Aug19**

CALIBRATION CERTIFICATE

Object: D2450V2 - SN:737

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: August 26, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	29-May-19 (No. EX3-7349_May19)	May-20
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 26, 2019

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.8 ± 6 %	1.83 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.20 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.5 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.3 Ω + 4.5 jΩ
Return Loss	- 24.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.162 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 26.08.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:737

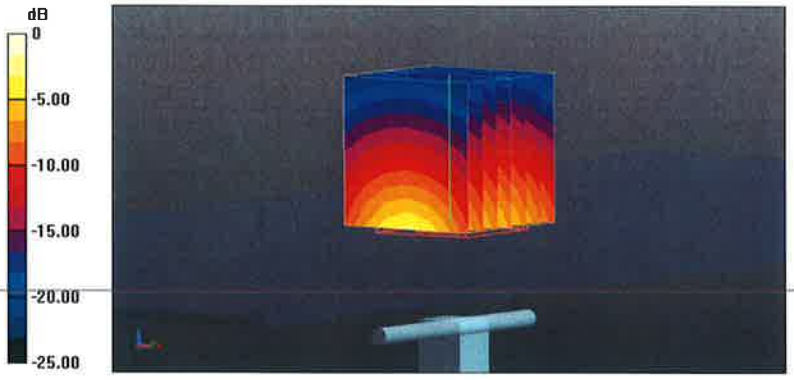
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.83 S/m; ε_r = 37.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.9, 7.9, 7.9) @ 2450 MHz; Calibrated: 29.05.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

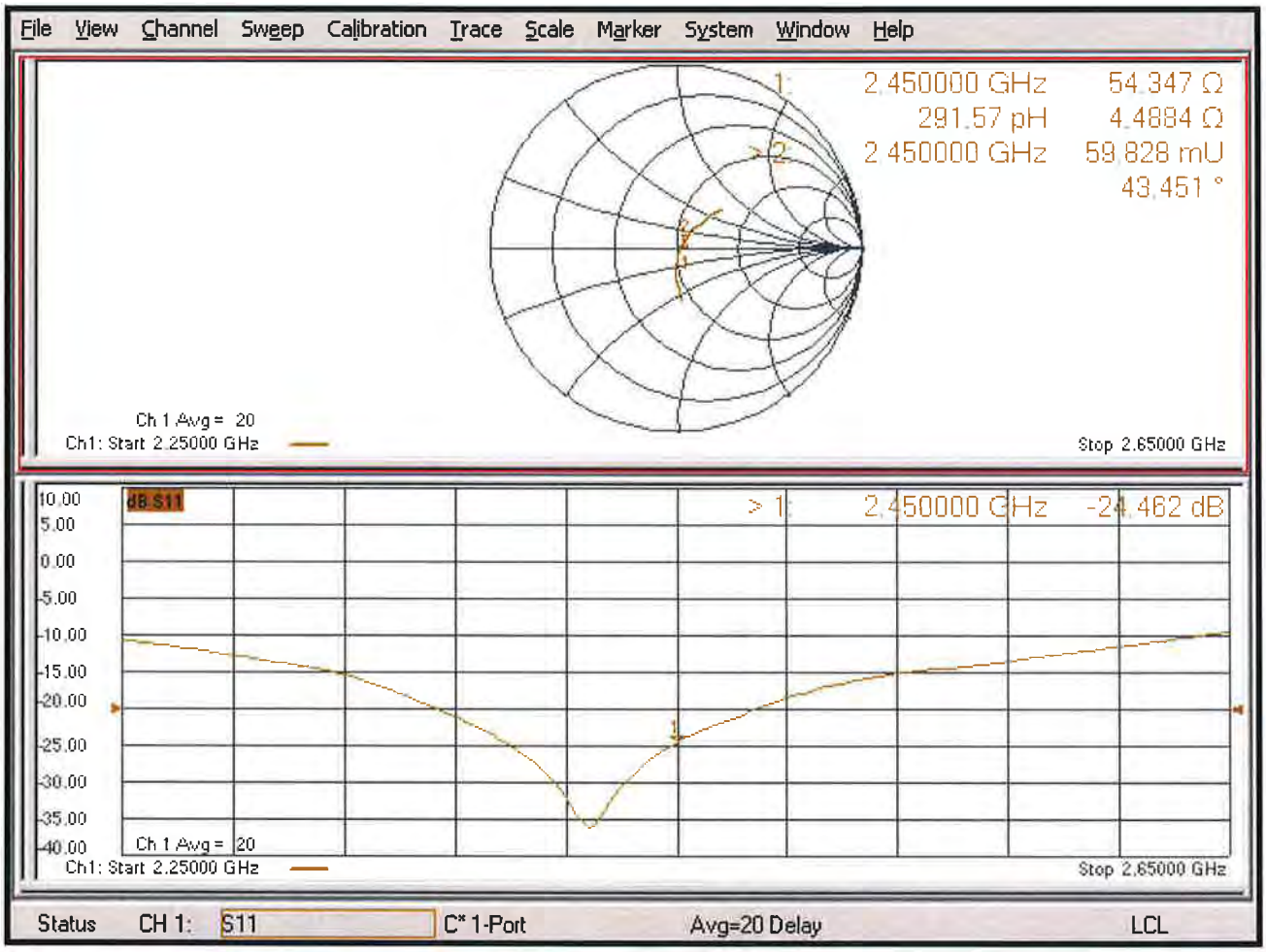
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 117.9 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 26.7 W/kg
SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.2 W/kg
Maximum value of SAR (measured) = 22.1 W/kg



0 dB = 22.1 W/kg = 13.44 dBW/kg

Impedance Measurement Plot for Head TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D2600V2-1020_Aug19**

CALIBRATION CERTIFICATE

Object: D2600V2 - SN:1020

Calibration procedure(s): QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: August 26, 2019

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	29-May-19 (No. EX3-7349_May19)	May-20
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 26, 2019

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.3 ± 6 %	2.00 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.6 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**57.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.48 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.6 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.6 Ω - 5.8 jΩ
Return Loss	- 23.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 26.08.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1020

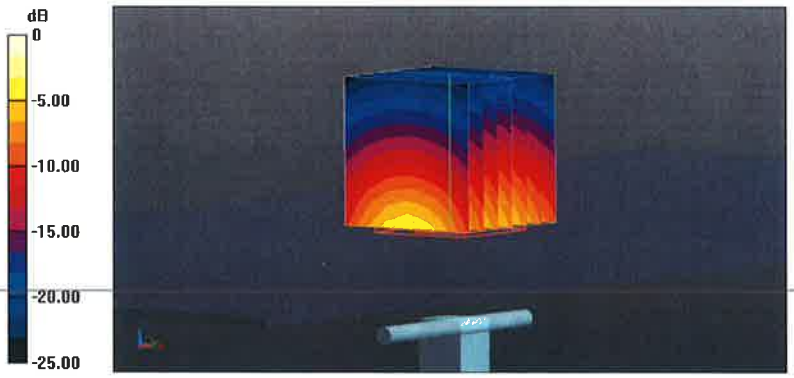
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2 S/m; ε_r = 37.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.69, 7.69, 7.69) @ 2600 MHz; Calibrated: 29.05.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1504); SEMCAD X 14.6.12(7470)

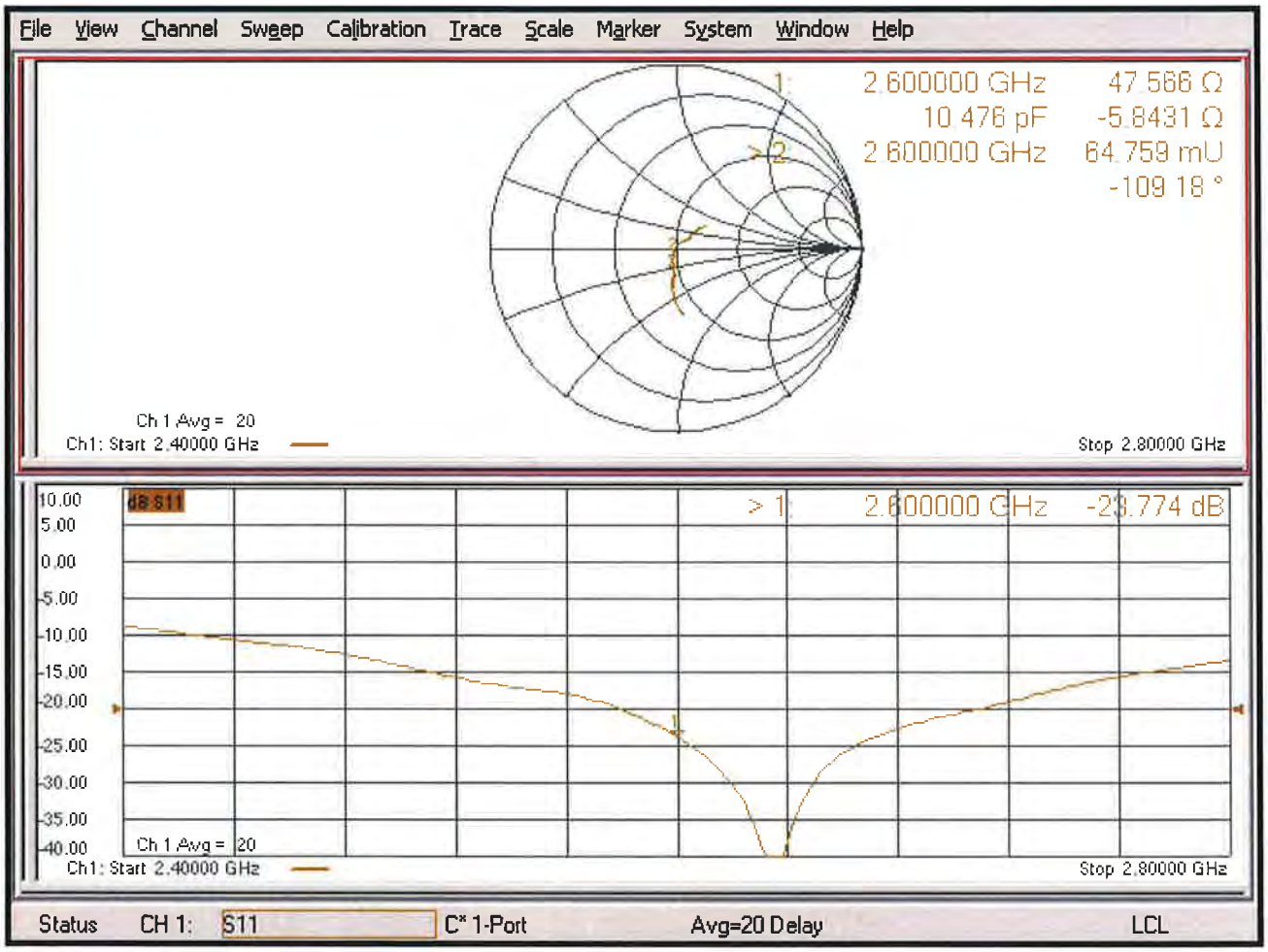
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 121.0 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 29.5 W/kg
SAR(1 g) = 14.6 W/kg; SAR(10 g) = 6.48 W/kg
Maximum value of SAR (measured) = 24.5 W/kg



0 dB = 24.5 W/kg = 13.89 dBW/kg

Impedance Measurement Plot for Head TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D5GHzV2-1019_Mar20**

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN:1019
Calibration procedure(s)	QA CAL-22.v4 Calibration Procedure for SAR Validation Sources between 3-6 GHz
Calibration date:	March 13, 2020

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 3503	31-Dec-19 (No. EX3-3503_Dec19)	Dec-20
DAE4	SN: 601	27-Dec-19 (No. DAE4-601_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 13, 2020

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5750 MHz ± 1 MHz 5850 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.9 ± 6 %	4.49 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	4.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.45 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**83.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.7 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5750 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.4	5.22 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.2 ± 6 %	4.99 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5750 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5850 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.2	5.32 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.1 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5850 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.24 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	54.6 Ω - 5.1 jΩ
Return Loss	- 23.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.1 Ω - 1.2 jΩ
Return Loss	- 22.4 dB

Antenna Parameters with Head TSL at 5750 MHz

Impedance, transformed to feed point	58.4 Ω + 3.9 jΩ
Return Loss	- 21.3 dB

Antenna Parameters with Head TSL at 5850 MHz

Impedance, transformed to feed point	55.8 Ω + 0.6 jΩ
Return Loss	- 25.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.204 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 13.03.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1019

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5850 MHz
Medium parameters used: f = 5250 MHz; σ = 4.49 S/m; ε_r = 34.9; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.84 S/m; ε_r = 34.4; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 4.99 S/m; ε_r = 34.2; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5850 MHz; σ = 5.1 S/m; ε_r = 34.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

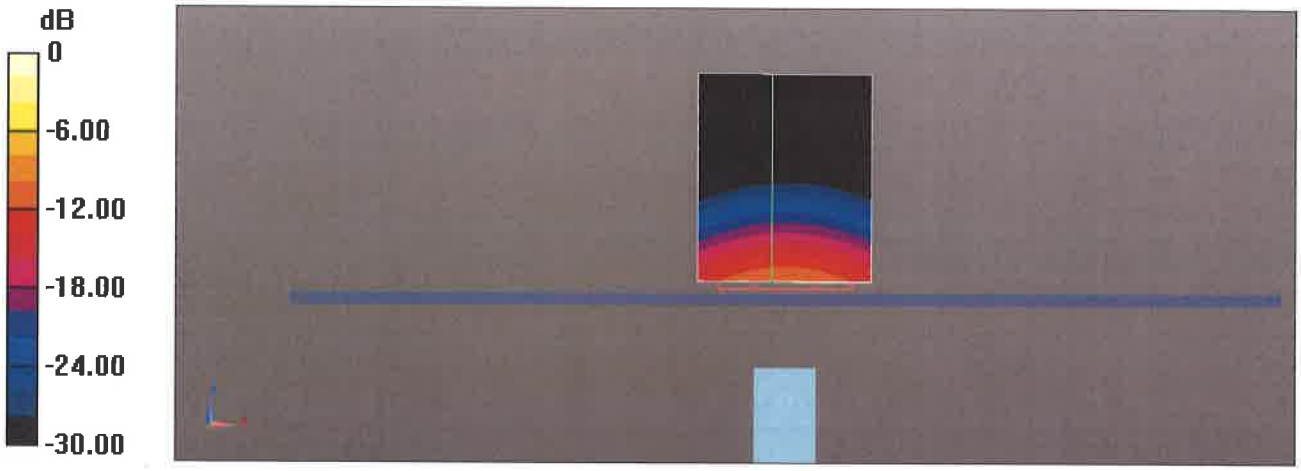
- Probe: EX3DV4 - SN3503; ConvF(5.5, 5.5, 5.5) @ 5250 MHz, ConvF(5.1, 5.1, 5.1) @ 5600 MHz, ConvF(5.08, 5.08, 5.08) @ 5750 MHz, ConvF(4.99, 4.99, 4.99) @ 5850 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 77.45 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 27.9 W/kg
SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.30 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 69.7%
Maximum value of SAR (measured) = 17.9 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 77.30 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 8.45 W/kg; SAR(10 g) = 2.39 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 67.1%
Maximum value of SAR (measured) = 19.4 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.26 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 8.11 W/kg; SAR(10 g) = 2.30 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.4%
Maximum value of SAR (measured) = 19.0 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5850 MHz/Zoom Scan, dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.08 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 33.4 W/kg
SAR(1 g) = 8.24 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 64.7%
Maximum value of SAR (measured) = 19.4 W/kg



0 dB = 19.4 W/kg = 12.88 dBW/kg

Impedance Measurement Plot for Head TSL