FCC SAR Test Report

Report No.	:	**W7L-P24050018SA02**
Applicant	:	**i.safe MOBILE GmbH**
Address	:	**i_Park Tauberfranken 10 97922 Lauda-Koenigshofen Germany**
Manufacturer	:	**i.safe MOBILE GmbH**
Address	:	**i_Park Tauberfranken 10 97922 Lauda-Koenigshofen Germany**
Product	:	**Tablet**
FCC ID	:	**2AACZ-M940A01**
Brand	:	**i.safe MOBILE**
Model No.	:	**M940A01**
Marketing Name	:	**IS940.1, IS940.M1, IS940.2, IS940.RG**
Standards	:	**FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1992 / IEEE 1528:2013** **KDB 865664 D01 v01r04 / KDB 865664 D02 v01r02 / KDB 248227 D01 v02r02** **KDB 447498 D01 v06 / KDB 616217 D04 v01r02 / KDB 941225 D05 v02r05** **KDB 941225 D05A v01r02**
Date of Testing	:	**Jun. 05, 2024 ~ Aug. 15, 2024**
FCC Designation No.	:	**CN1171** **FCC Site Registration No.** : **525120**

CERTIFICATION: The above equipment have been tested by **BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD.**, 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 A2LA or any government agencies.

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Approved By : Luke Lu / Manager

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Release Control Record

Report No.	Reason for Change	Date Issued
W7L-P24050018SA02	Initial release	Aug. 21, 2024

1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest Reported Body SAR_{1g} (0 cm Gap) (W/kg)
PCB	LTE Band 7	1.13
	LTE Band 12 / 17	1.13
	LTE Band 13	1.05
	LTE Band 14	1.02
	LTE Band 25 / 2	1.08
	LTE Band 26 / 5	1.13
	LTE Band 30	1.17
	LTE Band 41 / 38	1.14
	LTE Band 42(Part27Q)	1.19
	LTE Band 48 / 43 / 42	1.18
	LTE Band 66 / 4	1.18
	LTE Band 71	0.81
	NR Band n5	1.02
	NR Band n7	1.06
	NR Band n12	1.03
	NR Band n14	0.89
	NR Band n25 / n2	1.04
	NR Band n30	1.18
	NR Band n41 / n38	1.04
	NR Band n48	1.19
	NR Band n66	1.15
	NR Band n71	0.80
	NR Band n77 / n78	0.98
DTS	2.4G WLAN	1.04
NII	5G WLAN	0.87
DSS	Bluetooth	0.67
DXX	NFC	N/A

Highest Simultaneous Transmission SAR	PCB (W/kg)	DTS (W/kg)	NII (W/kg)	DSS (W/kg)
	1.59	1.59	1.59	1.59

Note:

1. The SAR limit **(Head & Body: SAR_{1g} 1.6 W/kg, 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. Description of Equipment Under Test

EUT Type	Tablet
FCC ID	2AACZ-M940A01
IMEI Code	355817480004843
Brand Name	i.safe MOBILE
Model Name	M940A01
Marketing Name	IS940.1, IS940.M1, IS940.2, IS940.RG
HW Version	V05
SW Version	IS940_ROW_00.00_2_20240605
Tx Frequency Bands (Unit: MHz)	LTE Band 2 : 1850.7 ~ 1909.3 LTE Band 4 : 1710.7 ~ 1754.3 LTE Band 5 : 824.7 ~ 848.3 LTE Band 7 : 2502.5 ~ 2567.5 LTE Band 12 : 699.7 ~ 715.3 LTE Band 13 : 779.5 ~ 784.5 LTE Band 14 : 790.5 ~ 795.5 LTE Band 17 : 706.5 ~ 713.5 LTE Band 26 : 814.7 ~ 848.3 LTE Band 30 : 2307.5 ~ 2312.5 LTE Band 38 : 2572.5 ~ 2617.5 LTE Band 41 : 2498.5 ~ 2687.5 LTE Band 42 : 3452.5 ~ 3547.5, 3552.5 ~ 3597.5 LTE Band 43 : 3602.5 ~ 3697.5 LTE Band 48 : 3552.5 ~ 3697.5 LTE Band 66 : 1710.7 ~ 1779.3 LTE Band 71 : 665.5 ~ 695.5 NR Band n2 : 1852.5~ 1907.5 NR Band n5 : 826.5~ 846.5 NR Band n7 : 2502.5 ~ 2567.5 NR Band n12 : 701.5~ 713.5 NR Band n14 : 790.5~ 795.5 NR Band n25 : 1852.5~ 1912.5 NR Band n30 : 2307.5 ~ 2312.5 NR Band n38 : 2582.52 ~ 2607.48 NR Band n41 : 2506.02 ~ 2679.99 NR Band n48 : 3555 ~ 3694.98 NR Band n66 : 1712.5~ 1777.5 NR Band n71 : 665.5 ~ 695.5 NR Band n77 : 3460.02 ~ 3540, 3710.01 ~ 3969.99 NR Band n78 : 3460.02 ~ 3540 WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5700, 5745 ~ 5825 Bluetooth : 2402 ~ 2480 NFC : 13.56
Uplink Modulations	LTE : QPSK, 16QAM, 64QAM, 256QAM NR : Pi/2 BPSK (DFT-s-OFDM), QPSK (DFT-s-OFDM, CP-OFDM), 16QAM (DFT-s-OFDM, CP-OFDM), 64QAM (DFT-s-OFDM, CP-OFDM), 256QAM DFT-s-OFDM, CP-OFDM) 802.11b : DSSS 802.11a/g/n/ac : OFDM 802.11ax : OFDMA Bluetooth : GFSK, π/4-DQPSK, 8-DPSK NFC : ASK
Subcarrier Spacing	15 kHz（FDD）/ 30 kHz（TDD）
UL MIMO Band	SA: NR n41/77/78
Uplink Transmission Duty Cycle	40% for TDD Band
LTE Anchor Band for NR Band n2	LTE Band 5/7/12/13/14/66/71
LTE Anchor Band for NR Band n5	LTE Band 2/7/48/66
LTE Anchor Band for NR Band n7	LTE Band 2/5/12/13/66/71
LTE Anchor Band for NR Band n12	LTE Band 2/7/66
LTE Anchor Band for NR Band n25	LTE Band 12/48/66
LTE Anchor Band for NR Band n38	LTE Band 2/4/5/12/66/71
LTE Anchor Band for NR Band n41	LTE Band 2/4/5/12/25/26/66/71

LTE Anchor Band for NR Band n48	LTE Band 2/5/66
LTE Anchor Band for NR Band n66	LTE Band 2/5/7/12/13/14/48/71
LTE Anchor Band for NR Band n71	LTE Band 2/7/66
LTE Anchor Band for NR Band n77	LTE Band 5/7/12/13/14/41/66
LTE Anchor Band for NR Band n78	LTE Band 2/4/5/12/13/26/38/41/66/71
Maximum Tune-up Conducted Power (Unit: dBm)	Please refer to section 4.5.1 of this report.
Antenna Type	PIFA Antenna
EUT Stage	Identical Prototype

Note:

1. The above EUT information is declared by the manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.
2. This device supports both LTE Band 2/4/17/38 and LTE Band 25/66/12/41.Since the supported frequency span for LTE Band 2/4/17/38 falls completely within the LTE Band 25/66/12/41, they have the same target power, and share the same transmission path, therefore SAR was only assessed for LTE Band 25/66/12/41.
3. The SAR of LTE Band 42 (3552.5MHz ~ 3597.5 MHz), LTE Band 43 is covered by LTE Band 48 due to the same power level and with repeated frequency range.
4. This device supports both NR Band n2/n38/n78 and NR Band n25/n41/n77. Since the supported frequency span for NR Band n2/n38/n78 falls completely within the NR Band n25/n41/n77, they have the same target power, and share the same transmission path, therefore SAR was only assessed for NR Band n25/n41/n77.
5. For WWAN and WLAN Antennas, when the SAR sensor is detected close to the body state, power reduction will be activated to limit the maximum power. Proximity sensor triggering distances please refer to section 4.1 of this report.

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 DASY System

DASY 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 DASY5 software defined. The DASY 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.

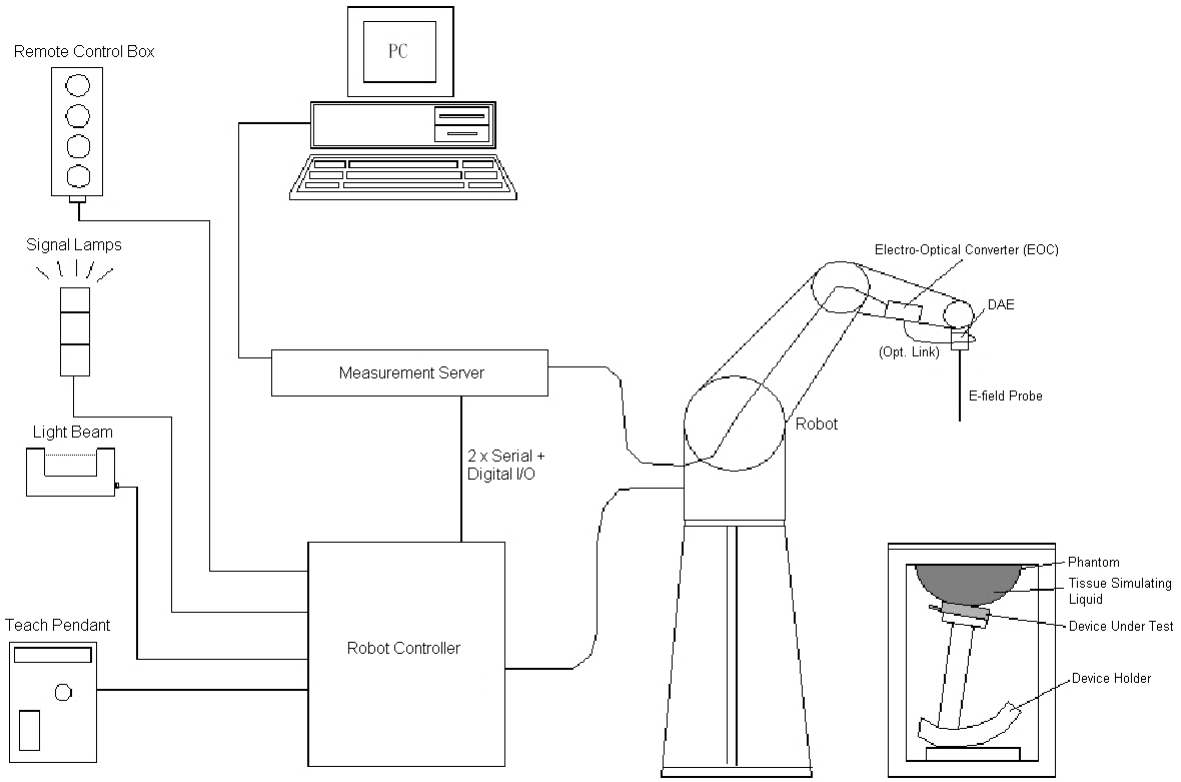


Fig-3.1 DASY System Setup

3.2.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: 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 DASY5

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	10 MHz to 6 GHz Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 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	

Model	ES3DV3	
Construction	Symmetrical design with triangular core. Interleaved sensors. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	5 µW/g to 100 mW/g Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

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	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber 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	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber 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	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, 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 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 5% are listed in Table-3.1.

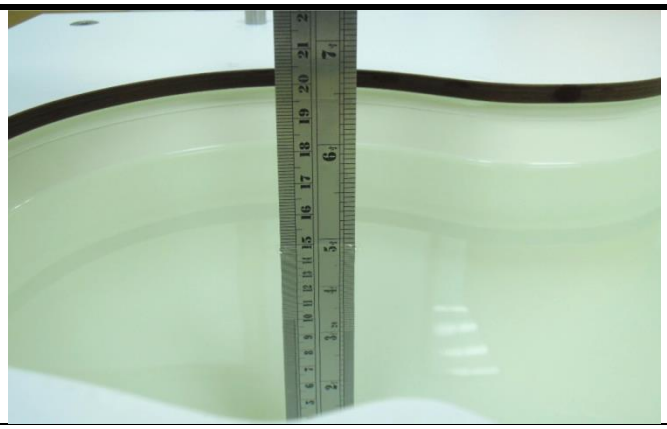


Photo of Liquid Height for Head Position

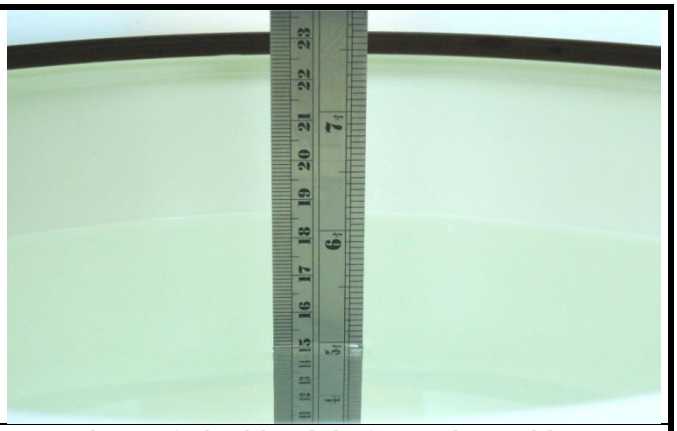


Photo of Liquid Height for Body Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528, and KDB 865664 D01 Appendix A. For the body tissue simulating liquids, the dielectric properties are defined in KDB 865664 D01 Appendix A. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Table-3.1 Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of ±5%	Target Conductivity	Range of ±5%
For Head				
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53

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	-	28.0	-	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.

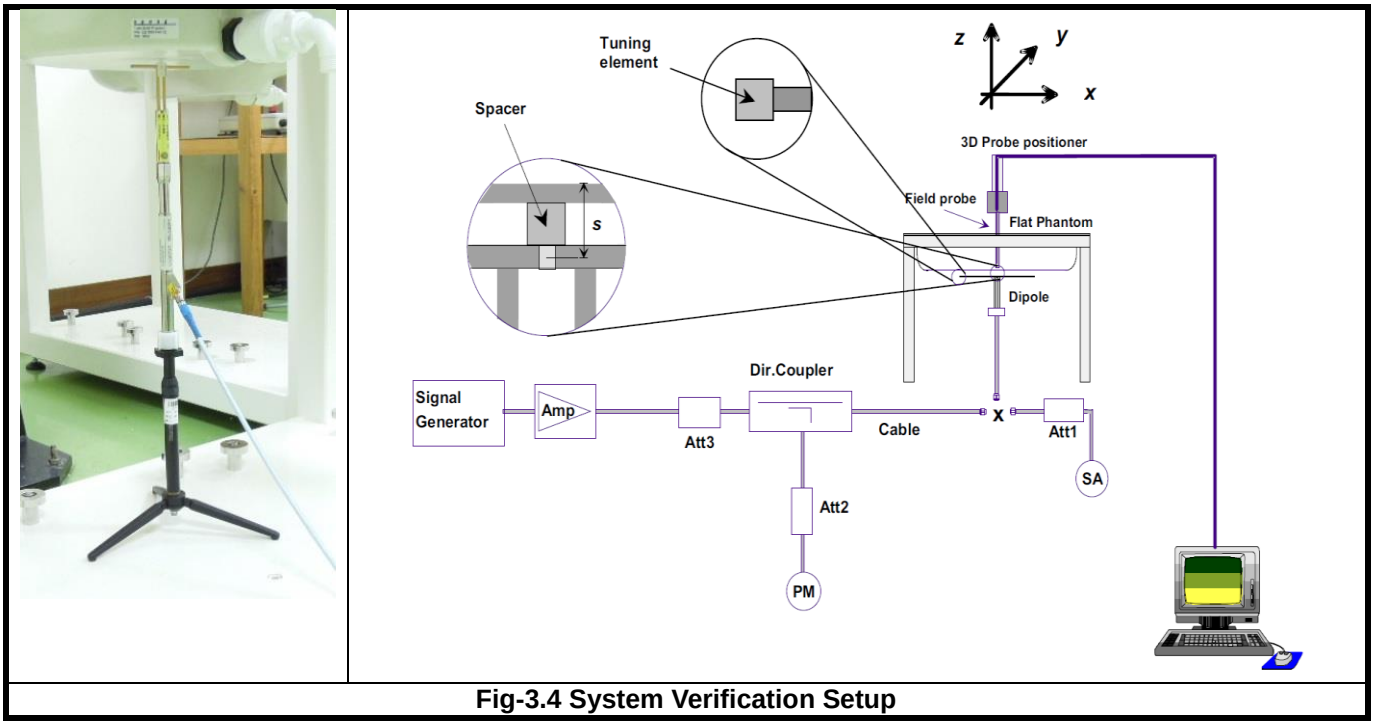


Fig-3.4 System Verification Setup

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 spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

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 & 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 over 10 g. According to KDB 865664 D01, the resolution for Area and Zoom scan is specified in the table below.

Items	<= 2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan (Δx, Δy)	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan (Δx, Δy)	<= 8 mm	<= 5 mm	<= 5 mm	<= 4 mm	<= 4 mm
Zoom Scan (Δz)	<= 5 mm	<= 5 mm	<= 4 mm	<= 3 mm	<= 2 mm
Zoom Scan Volume	>= 30 mm	>= 30 mm	>= 28 mm	>= 25 mm	>= 22 mm

Note:

When zoom scan is required and report SAR is <= 1.4 W/kg, the zoom scan resolution of Δx / Δy (2-3GHz: <= 8 mm, 3-4GHz: <= 7 mm, 4-6GHz: <= 5 mm) may be applied.

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

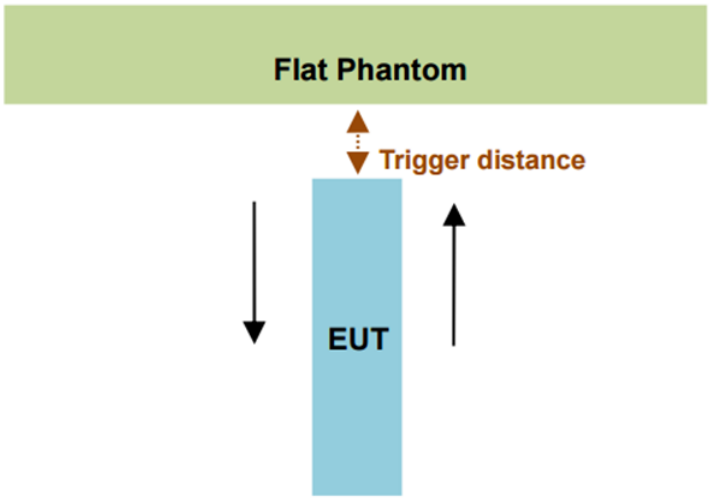
<Connections between EUT and System Simulator>

For WWAN SAR testing, the EUT was linked and controlled by base station emulator (Anritsu MT8820C is used for LTE). 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. For NR SAR testing, due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection.

<Proximity Sensor Triggering Distances>

The proximity sensor triggering distance was determined per KDB 616217 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.

In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering than that for 5700MHz, and the tissue-equivalent medium for 5700MHz was used for formal proximity sensor triggering testing.



Summary for power verification per distance was tabulated in the below table.

Ant 1

Output Power Verification in dBm for EUT Rear Face (moving toward phantom)											
Distance (mm)	0~15	16	17	18	19	20	21	22	23	24	25~50
LTE 2	18.53	18.53	18.53	18.53	18.53	22.89	22.89	22.89	22.89	22.89	22.89
LTE 4	18.99	18.99	18.99	18.99	18.99	22.84	22.84	22.84	22.84	22.84	22.84
LTE 7	15.01	15.01	15.01	15.01	15.01	22.86	22.86	22.86	22.86	22.86	22.86
LTE 25	18.53	18.53	18.53	18.53	18.53	22.88	22.88	22.88	22.88	22.88	22.88
LTE 30	16.26	16.26	16.26	16.26	16.26	22.86	22.86	22.86	22.86	22.86	22.86
LTE 38	16.12	16.12	16.12	16.12	16.12	22.99	22.99	22.99	22.99	22.99	22.99
LTE 41	16.17	16.17	16.17	16.17	16.17	23.19	23.19	23.19	23.19	23.19	23.19
LTE 66	18.99	18.99	18.99	18.99	18.99	22.93	22.93	22.93	22.93	22.93	22.93
NR n2	18.64	18.64	18.64	18.64	18.64	23.09	23.09	23.09	23.09	23.09	23.09
NR n7	15.05	15.05	15.05	15.05	15.05	23.09	23.09	23.09	23.09	23.09	23.09
NR n25	18.57	18.57	18.57	18.57	18.57	23.03	23.03	23.03	23.03	23.03	23.03
NR n30	16.05	16.05	16.05	16.05	16.05	22.81	22.81	22.81	22.81	22.81	22.81
NR n38	18.19	18.19	18.19	18.19	18.19	23.14	23.14	23.14	23.14	23.14	23.14
NR n41	18.18	18.18	18.18	18.18	18.18	23.13	23.13	23.13	23.13	23.13	23.13
NR n66	19.16	19.16	19.16	19.16	19.16	23.13	23.13	23.13	23.13	23.13	23.13
Output Power Verification in dBm for EUT Rear Face (moving away phantom)											
Distance (mm)	0~15	16	17	18	19	20	21	22	23	24	25~50
LTE 2	18.53	18.53	18.53	18.53	18.53	22.89	22.89	22.89	22.89	22.89	22.89
LTE 4	18.99	18.99	18.99	18.99	18.99	22.84	22.84	22.84	22.84	22.84	22.84
LTE 7	15.01	15.01	15.01	15.01	15.01	22.86	22.86	22.86	22.86	22.86	22.86
LTE 25	18.53	18.53	18.53	18.53	18.53	22.88	22.88	22.88	22.88	22.88	22.88
LTE 30	16.26	16.26	16.26	16.26	16.26	22.86	22.86	22.86	22.86	22.86	22.86
LTE 38	16.12	16.12	16.12	16.12	16.12	22.99	22.99	22.99	22.99	22.99	22.99
LTE 41	16.17	16.17	16.17	16.17	16.17	23.19	23.19	23.19	23.19	23.19	23.19
LTE 66	18.99	18.99	18.99	18.99	18.99	22.93	22.93	22.93	22.93	22.93	22.93
NR n2	18.64	18.64	18.64	18.64	18.64	23.09	23.09	23.09	23.09	23.09	23.09
NR n7	15.05	15.05	15.05	15.05	15.05	23.09	23.09	23.09	23.09	23.09	23.09
NR n25	18.57	18.57	18.57	18.57	18.57	23.03	23.03	23.03	23.03	23.03	23.03
NR n30	16.05	16.05	16.05	16.05	16.05	22.81	22.81	22.81	22.81	22.81	22.81
NR n38	18.19	18.19	18.19	18.19	18.19	23.14	23.14	23.14	23.14	23.14	23.14
NR n41	18.18	18.18	18.18	18.18	18.18	23.13	23.13	23.13	23.13	23.13	23.13
NR n66	19.16	19.16	19.16	19.16	19.16	23.13	23.13	23.13	23.13	23.13	23.13

Output Power Verification in dBm for EUT Right Side (moving toward phantom)											
Distance (mm)	0~11	12	13	14	15	16	17	18	19	20	21~50
LTE 2	18.53	18.53	18.53	18.53	18.53	22.89	22.89	22.89	22.89	22.89	22.89
LTE 4	18.99	18.99	18.99	18.99	18.99	22.84	22.84	22.84	22.84	22.84	22.84
LTE 7	15.01	15.01	15.01	15.01	15.01	22.86	22.86	22.86	22.86	22.86	22.86
LTE 25	18.53	18.53	18.53	18.53	18.53	22.88	22.88	22.88	22.88	22.88	22.88
LTE 30	16.26	16.26	16.26	16.26	16.26	22.86	22.86	22.86	22.86	22.86	22.86
LTE 38	16.12	16.12	16.12	16.12	16.12	22.99	22.99	22.99	22.99	22.99	22.99
LTE 41	16.17	16.17	16.17	16.17	16.17	23.19	23.19	23.19	23.19	23.19	23.19
LTE 66	18.99	18.99	18.99	18.99	18.99	22.93	22.93	22.93	22.93	22.93	22.93
NR n2	18.64	18.64	18.64	18.64	18.64	23.09	23.09	23.09	23.09	23.09	23.09
NR n7	15.05	15.05	15.05	15.05	15.05	23.09	23.09	23.09	23.09	23.09	23.09
NR n25	18.57	18.57	18.57	18.57	18.57	23.03	23.03	23.03	23.03	23.03	23.03
NR n30	16.05	16.05	16.05	16.05	16.05	22.81	22.81	22.81	22.81	22.81	22.81
NR n38	18.19	18.19	18.19	18.19	18.19	23.14	23.14	23.14	23.14	23.14	23.14
NR n41	18.18	18.18	18.18	18.18	18.18	23.13	23.13	23.13	23.13	23.13	23.13
NR n66	19.16	19.16	19.16	19.16	19.16	23.13	23.13	23.13	23.13	23.13	23.13
Output Power Verification in dBm for EUT Right Side (moving away phantom)											
Distance (mm)	0~11	12	13	14	15	16	17	18	19	20	21~50
LTE 2	18.53	18.53	18.53	18.53	18.53	22.89	22.89	22.89	22.89	22.89	22.89
LTE 4	18.99	18.99	18.99	18.99	18.99	22.84	22.84	22.84	22.84	22.84	22.84
LTE 7	15.01	15.01	15.01	15.01	15.01	22.86	22.86	22.86	22.86	22.86	22.86
LTE 25	18.53	18.53	18.53	18.53	18.53	22.88	22.88	22.88	22.88	22.88	22.88
LTE 30	16.26	16.26	16.26	16.26	16.26	22.86	22.86	22.86	22.86	22.86	22.86
LTE 38	16.12	16.12	16.12	16.12	16.12	22.99	22.99	22.99	22.99	22.99	22.99
LTE 41	16.17	16.17	16.17	16.17	16.17	23.19	23.19	23.19	23.19	23.19	23.19
LTE 66	18.99	18.99	18.99	18.99	18.99	22.93	22.93	22.93	22.93	22.93	22.93
NR n2	18.64	18.64	18.64	18.64	18.64	23.09	23.09	23.09	23.09	23.09	23.09
NR n7	15.05	15.05	15.05	15.05	15.05	23.09	23.09	23.09	23.09	23.09	23.09
NR n25	18.57	18.57	18.57	18.57	18.57	23.03	23.03	23.03	23.03	23.03	23.03
NR n30	16.05	16.05	16.05	16.05	16.05	22.81	22.81	22.81	22.81	22.81	22.81
NR n38	18.19	18.19	18.19	18.19	18.19	23.14	23.14	23.14	23.14	23.14	23.14
NR n41	18.18	18.18	18.18	18.18	18.18	23.13	23.13	23.13	23.13	23.13	23.13
NR n66	19.16	19.16	19.16	19.16	19.16	23.13	23.13	23.13	23.13	23.13	23.13

Ant 2

Output Power Verification in dBm for EUT Rear Face (moving toward phantom)											
Distance (mm)	0~14	15	16	17	18	19	20	21	22	23	24~50
LTE 2	14.57	14.57	14.57	14.57	14.57	14.57	20.01	20.01	20.01	20.01	20.01
LTE 4	14.61	14.61	14.61	14.61	14.61	14.61	20.05	20.05	20.05	20.05	20.05
LTE 5	20.58	20.58	20.58	20.58	20.58	20.58	22.94	22.94	22.94	22.94	22.94
LTE 7	13.66	13.66	13.66	13.66	13.66	13.66	20.12	20.12	20.12	20.12	20.12
LTE 13	21.05	21.05	21.05	21.05	21.05	21.05	22.92	22.92	22.92	22.92	22.92
LTE 14	21.07	21.07	21.07	21.07	21.07	21.07	22.93	22.93	22.93	22.93	22.93
LTE 25	14.66	14.66	14.66	14.66	14.66	14.66	20.09	20.09	20.09	20.09	20.09
LTE 26	20.55	20.55	20.55	20.55	20.55	20.55	22.94	22.94	22.94	22.94	22.94
LTE 38	15.75	15.75	15.75	15.75	15.75	15.75	20.19	20.19	20.19	20.19	20.19
LTE 41	15.92	15.92	15.92	15.92	15.92	15.92	20.38	20.38	20.38	20.38	20.38
NR n2	15.05	15.05	15.05	15.05	15.05	15.05	20.02	20.02	20.02	20.02	20.02
NR n5	20.77	20.77	20.77	20.77	20.77	20.77	23.22	23.22	23.22	23.22	23.22
NR n14	21.05	21.05	21.05	21.05	21.05	21.05	22.95	22.95	22.95	22.95	22.95
NR n25	15.04	15.04	15.04	15.04	15.04	15.04	19.97	19.97	19.97	19.97	19.97
NR n66	14.20	14.20	14.20	14.20	14.20	14.20	20.19	20.19	20.19	20.19	20.19
Output Power Verification in dBm for EUT Rear Face (moving away phantom)											
Distance (mm)	0~14	15	16	17	18	19	20	21	22	23	24~50
LTE 2	14.57	14.57	14.57	14.57	14.57	14.57	20.01	20.01	20.01	20.01	20.01
LTE 4	14.61	14.61	14.61	14.61	14.61	14.61	20.05	20.05	20.05	20.05	20.05
LTE 5	20.58	20.58	20.58	20.58	20.58	20.58	22.94	22.94	22.94	22.94	22.94
LTE 7	13.66	13.66	13.66	13.66	13.66	13.66	20.12	20.12	20.12	20.12	20.12
LTE 13	21.05	21.05	21.05	21.05	21.05	21.05	22.92	22.92	22.92	22.92	22.92
LTE 14	21.07	21.07	21.07	21.07	21.07	21.07	22.93	22.93	22.93	22.93	22.93
LTE 25	14.66	14.66	14.66	14.66	14.66	14.66	20.09	20.09	20.09	20.09	20.09
LTE 26	20.55	20.55	20.55	20.55	20.55	20.55	22.94	22.94	22.94	22.94	22.94
LTE 38	15.75	15.75	15.75	15.75	15.75	15.75	20.19	20.19	20.19	20.19	20.19
LTE 41	15.92	15.92	15.92	15.92	15.92	15.92	20.38	20.38	20.38	20.38	20.38
NR n2	15.05	15.05	15.05	15.05	15.05	15.05	20.02	20.02	20.02	20.02	20.02
NR n5	20.77	20.77	20.77	20.77	20.77	20.77	23.22	23.22	23.22	23.22	23.22
NR n14	21.05	21.05	21.05	21.05	21.05	21.05	22.95	22.95	22.95	22.95	22.95
NR n25	15.04	15.04	15.04	15.04	15.04	15.04	19.97	19.97	19.97	19.97	19.97
NR n66	14.20	14.20	14.20	14.20	14.20	14.20	20.19	20.19	20.19	20.19	20.19

Output Power Verification in dBm for EUT Top Side (moving toward phantom)											
Distance (mm)	0~12	13	14	15	16	17	18	19	20	21	22~50
LTE 2	14.57	14.57	14.57	14.57	14.57	14.57	20.01	20.01	20.01	20.01	20.01
LTE 4	14.61	14.61	14.61	14.61	14.61	14.61	20.05	20.05	20.05	20.05	20.05
LTE 5	20.58	20.58	20.58	20.58	20.58	20.58	22.94	22.94	22.94	22.94	22.94
LTE 7	13.66	13.66	13.66	13.66	13.66	13.66	20.12	20.12	20.12	20.12	20.12
LTE 13	21.05	21.05	21.05	21.05	21.05	21.05	22.92	22.92	22.92	22.92	22.92
LTE 14	21.07	21.07	21.07	21.07	21.07	21.07	22.93	22.93	22.93	22.93	22.93
LTE 25	14.66	14.66	14.66	14.66	14.66	14.66	20.09	20.09	20.09	20.09	20.09
LTE 26	20.55	20.55	20.55	20.55	20.55	20.55	22.94	22.94	22.94	22.94	22.94
LTE 38	15.75	15.75	15.75	15.75	15.75	15.75	20.19	20.19	20.19	20.19	20.19
LTE 41	15.92	15.92	15.92	15.92	15.92	15.92	20.38	20.38	20.38	20.38	20.38
NR n2	15.05	15.05	15.05	15.05	15.05	15.05	20.02	20.02	20.02	20.02	20.02
NR n5	20.77	20.77	20.77	20.77	20.77	20.77	23.22	23.22	23.22	23.22	23.22
NR n14	21.05	21.05	21.05	21.05	21.05	21.05	22.95	22.95	22.95	22.95	22.95
NR n25	15.04	15.04	15.04	15.04	15.04	15.04	19.97	19.97	19.97	19.97	19.97
NR n66	14.20	14.20	14.20	14.20	14.20	14.20	20.19	20.19	20.19	20.19	20.19

Output Power Verification in dBm for EUT Top Side (moving away phantom)											
Distance (mm)	0~12	13	14	15	16	17	18	19	20	21	22~50
LTE 2	14.57	14.57	14.57	14.57	14.57	14.57	20.01	20.01	20.01	20.01	20.01
LTE 4	14.61	14.61	14.61	14.61	14.61	14.61	20.05	20.05	20.05	20.05	20.05
LTE 5	20.58	20.58	20.58	20.58	20.58	20.58	22.94	22.94	22.94	22.94	22.94
LTE 7	13.66	13.66	13.66	13.66	13.66	13.66	20.12	20.12	20.12	20.12	20.12
LTE 13	21.05	21.05	21.05	21.05	21.05	21.05	22.92	22.92	22.92	22.92	22.92
LTE 14	21.07	21.07	21.07	21.07	21.07	21.07	22.93	22.93	22.93	22.93	22.93
LTE 25	14.66	14.66	14.66	14.66	14.66	14.66	20.09	20.09	20.09	20.09	20.09
LTE 26	20.55	20.55	20.55	20.55	20.55	20.55	22.94	22.94	22.94	22.94	22.94
LTE 38	15.75	15.75	15.75	15.75	15.75	15.75	20.19	20.19	20.19	20.19	20.19
LTE 41	15.92	15.92	15.92	15.92	15.92	15.92	20.38	20.38	20.38	20.38	20.38
NR n2	15.05	15.05	15.05	15.05	15.05	15.05	20.02	20.02	20.02	20.02	20.02
NR n5	20.77	20.77	20.77	20.77	20.77	20.77	23.22	23.22	23.22	23.22	23.22
NR n14	21.05	21.05	21.05	21.05	21.05	21.05	22.95	22.95	22.95	22.95	22.95
NR n25	15.04	15.04	15.04	15.04	15.04	15.04	19.97	19.97	19.97	19.97	19.97
NR n66	14.20	14.20	14.20	14.20	14.20	14.20	20.19	20.19	20.19	20.19	20.19

Ant 4

Output Power Verification in dBm for EUT Rear Face (moving toward phantom)											
Distance (mm)	0~7	8	9	10	11	12	13	14	15	16	17~50
LTE 42	15.12	15.12	15.12	15.12	15.12	15.12	20.56	20.56	20.56	20.56	20.56
NR n48	17.78	17.78	17.78	17.78	17.78	17.78	20.78	20.78	20.78	20.78	20.78
NR n77	16.18	16.18	16.18	16.18	16.18	16.18	20.66	20.66	20.66	20.66	20.66
NR n78	15.72	15.72	15.72	15.72	15.72	15.72	20.42	20.42	20.42	20.42	20.42
Output Power Verification in dBm for EUT Rear Face (moving away phantom)											
Distance (mm)	0~7	8	9	10	11	12	13	14	15	16	17~50
LTE 42	15.12	15.12	15.12	15.12	15.12	15.12	20.56	20.56	20.56	20.56	20.56
NR n48	17.78	17.78	17.78	17.78	17.78	17.78	20.78	20.78	20.78	20.78	20.78
NR n77	16.18	16.18	16.18	16.18	16.18	16.18	20.66	20.66	20.66	20.66	20.66
NR n78	15.72	15.72	15.72	15.72	15.72	15.72	20.42	20.42	20.42	20.42	20.42

Output Power Verification in dBm for EUT Right Side (moving toward phantom)											
Distance (mm)	0~10	11	12	13	14	15	16	17	18	19	20~50
LTE 42	15.12	15.12	15.12	15.12	15.12	15.12	20.56	20.56	20.56	20.56	20.56
NR n48	17.78	17.78	17.78	17.78	17.78	17.78	20.78	20.78	20.78	20.78	20.78
NR n77	16.18	16.18	16.18	16.18	16.18	16.18	20.66	20.66	20.66	20.66	20.66
NR n78	15.72	15.72	15.72	15.72	15.72	15.72	20.42	20.42	20.42	20.42	20.42
Output Power Verification in dBm for EUT Right Side (moving away phantom)											
Distance (mm)	0~10	11	12	13	14	15	16	17	18	19	20~50
LTE 42	15.12	15.12	15.12	15.12	15.12	15.12	20.56	20.56	20.56	20.56	20.56
NR n48	17.78	17.78	17.78	17.78	17.78	17.78	20.78	20.78	20.78	20.78	20.78
NR n77	16.18	16.18	16.18	16.18	16.18	16.18	20.66	20.66	20.66	20.66	20.66
NR n78	15.72	15.72	15.72	15.72	15.72	15.72	20.42	20.42	20.42	20.42	20.42

Ant 7

Output Power Verification in dBm for EUT Rear Face (moving toward phantom)											
Distance (mm)	0~5	6	7	8	9	10	11	12	13	14	15~50
LTE 42	18.41	18.41	18.41	18.41	18.41	18.41	22.83	22.83	22.83	22.83	22.83
LTE 43	16.62	16.62	16.62	16.62	16.62	16.62	23.16	23.16	23.16	23.16	23.16
LTE 48	18.78	18.78	18.78	18.78	18.78	18.78	23.13	23.13	23.13	23.13	23.13
NR n48	20.50	20.50	20.50	20.50	20.50	20.50	23.45	23.45	23.45	23.45	23.45
NR n77	17.57	17.57	17.57	17.57	17.57	17.57	23.02	23.02	23.02	23.02	23.02
NR n78	17.49	17.49	17.49	17.49	17.49	17.49	22.96	22.96	22.96	22.96	22.96
Output Power Verification in dBm for EUT Rear Face (moving away phantom)											
Distance (mm)	0~5	6	7	8	9	10	11	12	13	14	15~50
LTE 42	18.41	18.41	18.41	18.41	18.41	18.41	22.83	22.83	22.83	22.83	22.83
LTE 43	16.62	16.62	16.62	16.62	16.62	16.62	23.16	23.16	23.16	23.16	23.16
LTE 48	18.78	18.78	18.78	18.78	18.78	18.78	23.13	23.13	23.13	23.13	23.13
NR n48	20.50	20.50	20.50	20.50	20.50	20.50	23.45	23.45	23.45	23.45	23.45
NR n77	17.57	17.57	17.57	17.57	17.57	17.57	23.02	23.02	23.02	23.02	23.02
NR n78	17.49	17.49	17.49	17.49	17.49	17.49	22.96	22.96	22.96	22.96	22.96

Output Power Verification in dBm for EUT Right Side (moving toward phantom)											
Distance (mm)	0~3	4	5	6	7	8	9	10	11	12	13~50
LTE 42	18.41	18.41	18.41	18.41	18.41	18.41	18.41	22.83	22.83	22.83	22.83
LTE 43	16.62	16.62	16.62	16.62	16.62	16.62	16.62	23.16	23.16	23.16	23.16
LTE 8	18.78	18.78	18.78	18.78	18.78	18.78	18.78	23.13	23.13	23.13	23.13
NR n48	20.50	20.50	20.50	20.50	20.50	20.50	20.50	23.45	23.45	23.45	23.45
NR n77	17.57	17.57	17.57	17.57	17.57	17.57	17.57	23.02	23.02	23.02	23.02
NR n78	17.49	17.49	17.49	17.49	17.49	17.49	17.49	22.96	22.96	22.96	22.96
Output Power Verification in dBm for EUT Right Side (moving away phantom)											
Distance (mm)	0~3	4	5	6	7	8	9	10	11	12	13~50
LTE 42	18.41	18.41	18.41	18.41	18.41	18.41	18.41	22.83	22.83	22.83	22.83
LTE 43	16.62	16.62	16.62	16.62	16.62	16.62	16.62	23.16	23.16	23.16	23.16
LTE 48	18.78	18.78	18.78	18.78	18.78	18.78	18.78	23.13	23.13	23.13	23.13
NR n48	20.50	20.50	20.50	20.50	20.50	20.50	20.50	23.45	23.45	23.45	23.45
NR n77	17.57	17.57	17.57	17.57	17.57	17.57	17.57	23.02	23.02	23.02	23.02
NR n78	17.49	17.49	17.49	17.49	17.49	17.49	17.49	22.96	22.96	22.96	22.96

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Output Power Verification in dBm for EUT Rear Face (moving toward phantom)											
Distance (mm)	0~12	13	14	15	16	17	18	19	20	21	22~50
WLAN2.4G	14.72	14.72	14.72	14.72	14.72	14.72	14.72	18.67	18.67	18.67	18.67
WLAN5.2G	8.92	8.92	8.92	8.92	8.92	8.92	8.92	14.83	14.83	14.83	14.83
WLAN5.3G	9.10	9.10	9.10	9.10	9.10	9.10	9.10	15.08	15.08	15.08	15.08
WLAN5.5G	12.81	12.81	12.81	12.81	12.81	12.81	12.81	15.46	15.46	15.46	15.46
WLAN5.8G	11.97	11.97	11.97	11.97	11.97	11.97	11.97	15.54	15.54	15.54	15.54
Output Power Verification in dBm for EUT Rear Face (moving away phantom)											
Distance (mm)	0~12	13	14	15	16	17	18	19	20	21	22~50
WLAN2.4G	14.72	14.72	14.72	14.72	14.72	14.72	14.72	18.67	18.67	18.67	18.67
WLAN5.2G	8.92	8.92	8.92	8.92	8.92	8.92	8.92	14.83	14.83	14.83	14.83
WLAN5.3G	9.10	9.10	9.10	9.10	9.10	9.10	9.10	15.08	15.08	15.08	15.08
WLAN5.5G	12.81	12.81	12.81	12.81	12.81	12.81	12.81	15.46	15.46	15.46	15.46
WLAN5.8G	11.97	11.97	11.97	11.97	11.97	11.97	11.97	15.54	15.54	15.54	15.54

Output Power Verification in dBm for EUT Right Side (moving toward phantom)											
Distance (mm)	0~14	15	16	17	18	19	20	21	22	23	24~50
WLAN2.4G	14.72	14.72	14.72	14.72	14.72	14.72	14.72	18.67	18.67	18.67	18.67
WLAN5.2G	8.92	8.92	8.92	8.92	8.92	8.92	8.92	14.83	14.83	14.83	14.83
WLAN5.3G	9.10	9.10	9.10	9.10	9.10	9.10	9.10	15.08	15.08	15.08	15.08
WLAN5.5G	12.81	12.81	12.81	12.81	12.81	12.81	12.81	15.46	15.46	15.46	15.46
WLAN5.8G	11.97	11.97	11.97	11.97	11.97	11.97	11.97	15.54	15.54	15.54	15.54
Output Power Verification in dBm for EUT Right Side (moving away phantom)											
Distance (mm)	0~14	15	16	17	18	19	20	21	22	23	24~50
WLAN2.4G	14.72	14.72	14.72	14.72	14.72	14.72	14.72	18.67	18.67	18.67	18.67
WLAN5.2G	8.92	8.92	8.92	8.92	8.92	8.92	8.92	14.83	14.83	14.83	14.83
WLAN5.3G	9.10	9.10	9.10	9.10	9.10	9.10	9.10	15.08	15.08	15.08	15.08
WLAN5.5G	12.81	12.81	12.81	12.81	12.81	12.81	12.81	15.46	15.46	15.46	15.46
WLAN5.8G	11.97	11.97	11.97	11.97	11.97	11.97	11.97	15.54	15.54	15.54	15.54

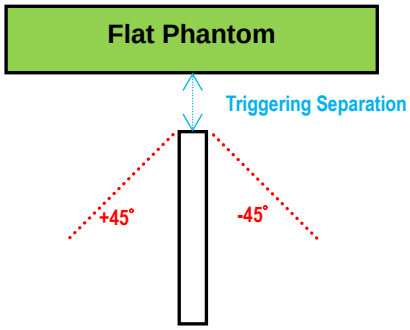
Proximity Sensor Coverage

In KDB 616217 section 6.3, if a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user, but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and "along the direction of maximum antenna and sensor offset".

However, this device uses a capacitive proximity sensor that is the same metallic component as the transmitting antenna to facilitate triggering in any condition the user may use the device in proximity of the antenna in the device. Therefore, no further sensor coverage assessments were required.

Proximity Sensor Tilt Angle Influences

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



Antenna	Orientation	Separation Distance (mm)	Tilt Angle										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
Antenna 1	Right Side	15	On	On	On	On	On	On	On	On	On	On	On
Antenna 2	Top Side	17	On	On	On	On	On	On	On	On	On	On	On
Antenna 4	Right Side	15	On	On	On	On	On	On	On	On	On	On	On
Antenna 7	Right Side	9	On	On	On	On	On	On	On	On	On	On	On
Antenna 8	Right Side	20	On	On	On	On	On	On	On	On	On	On	On
Antenna 9	Right Side	20	On	On	On	On	On	On	On	On	On	On	On

Summary for Proximity Sensor Triggering Distance

The detailed trigger distance is as follows:

Test position	Rear Face	Left Side	Right Side	Top Side	Bottom Side
Antenna 1	19mm	No detect	15mm	No detect	No detect
Antenna 2	19mm	No detect	No detect	17mm	No detect
Antenna 4	12mm	No detect	15mm	No detect	No detect
Antenna 7	10mm	No detect	9mm	No detect	No detect
Antenna 8	18mm	No detect	20mm	No detect	No detect
Antenna 9	18mm	No detect	20mm	No detect	No detect

Note:

1. The power reduction 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.
2. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed.

<Considerations Related to LTE for Setup and Testing>

This device contains an LTE transmitter which follows 3GPP standards, supports QPSK, 16QAM, 64QAM and 256QAM modulations, and supports LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for QPSK, 16QAM, 64QAM and 256QAM modulation. The results please refer to section 4.5 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**		
7			**V**	**V**	**V**	**V**
12	**V**	**V**	**V**	**V**		
13			**V**	**V**		
14			**V**	**V**		
17			**V**	**V**		
25	**V**	**V**	**V**	**V**	**V**	**V**
26	**V**	**V**	**V**	**V**	**V**	
30			**V**	**V**		
38			**V**	**V**	**V**	**V**
41			**V**	**V**	**V**	**V**
42			**V**	**V**	**V**	**V**
43			**V**	**V**	**V**	**V**
48			**V**	**V**	**V**	**V**
66	**V**	**V**	**V**	**V**	**V**	**V**
71			**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.

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

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

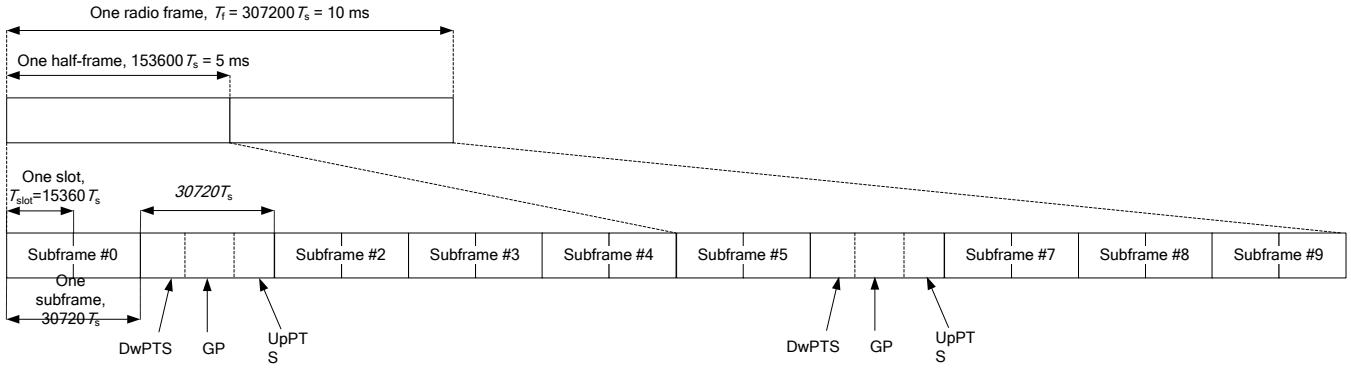
Note: MPR is according to the standard and implemented in the circuit (mandatory).

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

EUT Supported Combinations of Downlink Carrier Aggregation							
2CC Downlink Carrier Aggregation							
CA_5B	CA_7C	CA_38C	CA_41C	CA_42C	CA_48C	CA_66B	CA_66C
CA_2A-2A	CA_2A-5A	CA_2A-7A	CA_2A-12A	CA_2A-13A	CA_2A-66A	CA_4A-12A	CA_4A-13A
CA_5A-7A	CA_5A-66A	CA_12A-66A	CA_13A-66A	CA_41A_42A			

Note:

1. 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.
2. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
3. The detailed DL CA output power measurement results, please refer to Appendix D.

LTE Uplink Carrier Aggregation (CA) Setup Configurations

< Intra Band >

Intra-Band 2CC Uplink CA Operating Bands
CA_5B, CA_7C, CA_38C, CA_41C, CA_42C, CA_48C, 66B, 66C

Note:

1. UL CA shall be tested based on the worst-case SAR configuration determined from non-CA SAR testing result. The channel BW, channel number, RB allocation, etc. would be selected to allow contiguous CA of PCC and SCC. Uplink output power for UL CA is the total power measured across the PCC and SCC.
2. The UL CA mode power measurements represent the total power across both carriers. Measurements were made for all supported PCC bandwidths using the channel/RB combination resulting in the highest standalone output power at the least MPR (0 dB). SCC were set to use configurations similar to the PCC to establish conservative or worst-case equivalent SAR test conditions (highest maximum output power with MPR of 0 dB and RB allocation setting).
3. PCC RB allocation setting for UL CA has been adjusted based on the worst-case power.
4. According to November 2017 TCB workshop, Uplink CA SAR Test Guidance as follows:
   a) When the maximum output power for UL CA is ≤ standalone LTE mode (without CA)
      • PCC is configured according to the highest standalone SAR configuration tested

- SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC

b) When the Reported SAR for UL CA configuration, described above, is > 1.2W/kg, UL CA is also required for all required test channels(PCC based)

c) UL CA SAR is also required for standalone SAR configurations > 1.2W/kg when they are scaled to the UL CA power level

5. PCC RB allocation setting for UL CA has been adjusted based on the worst-case power, for detailed UL CA output power measurement results, please refer to Appendix D.

< LTE Inter-band UL CA combination and Maximum Power >

Inter-band UL CA Combination						
Inter-band UL CA configuration	PCC TX Carrier			SCC TX Carrier		
	TX Antenna	Standalone Max Tune up power(dBm)	ULCA Active Max Tune up power(dBm)	TX Antenna	Standalone Max Tune up power(dBm)	ULCA Active Max Tune up power(dBm)
CA_2A-4A	ANT1	24	15.5	ANT2	24	15.5
CA_2A-5A	ANT1	24	17.5	ANT2	24	17.5
CA_2A-7A	ANT2	24	14	ANT1	24	14
CA_2A-12A	ANT1	24	18.5	ANT2	24	18.5
CA_2A-13A	ANT1	24	18	ANT2	24	18
CA_2A-66A	ANT1	24	15.5	ANT2	24	15.5
CA_4A-12A	ANT1	24	18.5	ANT2	24	18.5
CA_4A-13A	ANT1	24	18	ANT2	24	18
CA_5A-7A	ANT2	24	15	ANT1	24	14.5
CA_5A-66A	ANT2	24	18	ANT1	24	18
CA_12A-66A	ANT2	24	19	ANT1	24	18
CA_13A-66A	ANT2	24	18	ANT1	24	18
CA_41A-42A	ANT1	24	15.5	ANT4	24	15.5

Note:

1. For Inter-band CA Simultaneous SAR analysis is performed using standalone SAR summed together and they are more conservative for inter-band CA.
2. Test positions and test channels used for the sim-Tx analysis are based on the standalone SAR result. When the Inter-band UL CA active, the PCC and SCC output power is equal or less than the standalone output power for each frequency bands, therefore, PCC and SCC power and SAR was estimated based on standalone results to performed sim-Tx analysis with WiFi and Bluetooth.
3. The single uplink 1g SAR values for each band are both less than 0.8W/kg and the algebraic summation of the 1g SAR value are less than 1.45W/kg, additional measurement are not required according to October 2018 TCB workshop guidance.
4. For detailed sim-Tx analysis results of Inter-band UL CA SAR, please refer to Appendix E.

<Considerations Related to 5G NR for Setup and Testing>

1. The 5G NR supports both SA and NSA modes. The details are as follows

Mode	Band	Duplex	SCS(KHz)	BW(M)
SA	5G NR n2	FDD	15	5, 10, 15, 20
	5G NR n5	FDD	15	5, 10, 15, 20
	5G NR n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	5G NR n12	FDD	15	5, 10, 15
	5G NR n14	FDD	15	5, 10
	5G NR n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	5G NR n30	FDD	15	5, 10
	5G NR n38	TDD	30	20, 30, 40
	5G NR n41	TDD	30	20, 30, 40, 50, 60, 80, 90, 100
	5G NR n48	TDD	30	10, 20, 40
	5G NR n66	FDD	15	5, 10, 15, 20, 30, 40
	5G NR n71	FDD	15	5, 10, 15, 20
	5G NR n77	TDD	30	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	5G NR n78	TDD	30	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
NSA	5G NR n2	FDD	15	5, 10, 15, 20
	5G NR n5	FDD	15	5, 10, 15, 20
	5G NR n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	5G NR n12	FDD	15	5, 10, 15
	5G NR n25	FDD	15	5, 10, 15, 20, 25, 30, 40
	5G NR n38	TDD	30	20, 30, 40
	5G NR n41	TDD	30	20, 30, 40, 50, 60, 80, 90, 100
	5G NR n48	TDD	30	10, 20, 40
	5G NR n66	FDD	15	5, 10, 15, 20, 30, 40
	5G NR n71	FDD	15	5, 10, 15, 20
	5G NR n77	TDD	30	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	5G NR n78	TDD	30	10, 20, 30, 40, 50, 60, 70, 80, 90, 100

2. For 5G NR test procedure was following step similar FCC KDB 941225 D05:

(1) For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg, CP-OFDM testing is not required.

(2) For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.

(3) SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offset at the upper edge, middle and lower edge of each required test channel.

(4) 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.

(5) 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% RB and 1RB allocations and the highest reported SAR for 1RB 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.

(6) Pi/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, Pi/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.

(7) Smaller bandwidth output power for each RB allocation configuration for this device will not. ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device.

Table 6.2.2.3-1: Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]		0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0dB MPR is 26dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40% of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

3. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level. So, SA SAR can represent NSA mode SAR.
4. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
5. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection.

< EN-DC combination and Maximum Power >

EN-DC Combination						
EN-DC configuration	LTE Single Carrier			NR Single Carrier		
	TX Antenna	Standalone Max Tune up power(dBm)	EN-DC Active Max Tune up power(dBm)	TX Antenna	Standalone Max Tune up power(dBm)	EN-DC Active Max Tune up power(dBm)
DC_2A_n5A	ANT1	24	17.5	ANT2	24	17.5
DC_2A_n7A	ANT2	24	14	ANT1	24	14
DC_2A_n12A	ANT1	24	18.5	ANT2	24	18.5
DC_2A_n38A	ANT2	24	15.5	ANT1	24	15.5
DC_2A_n41A	ANT2	24	15.5	ANT1	24	15.5
DC_2A_n48A	ANT1	24	17	ANT4	24	17
DC_2A_n66A	ANT1	24	15	ANT2	24	15
DC_2A_n71A	ANT1	24	18	ANT2	24	21
DC_2A_n78A	ANT1	24	17	ANT4	24	16.5
DC_4A_n38A	ANT2	24	15	ANT1	24	15
DC_4A_n41A	ANT2	24	15	ANT1	24	15
DC_4A_n78A	ANT1	24	17	ANT4	24	16.5
DC_5A_n2A	ANT2	24	17.5	ANT1	24	17.5
DC_5A_n7A	ANT2	24	17.5	ANT1	24	14
DC_5A_n38A	ANT2	24	17	ANT1	24	17
DC_5A_n41A	ANT2	24	17	ANT1	24	17
DC_5A_n48A	ANT2	24	19	ANT7	24	19
DC_5A_n66A	ANT2	24	17.5	ANT1	24	17.5
DC_5A_n77A	ANT2	24	19.5	ANT7	24	16.5
DC_5A_n78A	ANT2	24	19.5	ANT7	24	16.5
DC_7A_n2A	ANT1	24	14	ANT2	24	14
DC_7A_n5A	ANT1	24	14.5	ANT2	24	17
DC_7A_n12A	ANT1	24	14.5	ANT2	24	19
DC_7A_n66A	ANT1	24	14	ANT2	24	14
DC_7A_n71A	ANT1	24	14.5	ANT2	24	21
DC_7A_n77A	ANT2	24	14.5	ANT7	24	16.5
DC_7A_n78A	ANT2	24	14.5	ANT7	24	16.5
DC_12A_n2A	ANT2	24	19.5	ANT1	24	18
DC_12A_n7A	ANT2	24	20	ANT1	24	14
DC_12A_n25A	ANT2	24	19.5	ANT1	24	18
DC_12A_n38A	ANT2	24	19.5	ANT1	24	17.5
DC_12A_n66A	ANT2	24	19.5	ANT1	24	18

EN-DC Combination						
EN-DC configuration	LTE Single Carrier			NR Single Carrier		
	TX Antenna	Standalone Max Tune up power(dBm)	EN-DC Active Max Tune up power(dBm)	TX Antenna	Standalone Max Tune up power(dBm)	EN-DC Active Max Tune up power(dBm)
DC_12A_n41A	ANT2	24	19.5	ANT1	24	17.5
DC_12A_n77A	ANT2	24	21	ANT7	24	16.5
DC_12A_n78A	ANT2	24	21	ANT7	24	16.5
DC_13A_n2A	ANT2	24	18	ANT1	24	18
DC_13A_n7A	ANT2	24	18	ANT1	24	14
DC_13A_n66A	ANT2	24	18	ANT1	24	18
DC_13A_n77A	ANT2	24	21	ANT7	24	16.5
DC_13A_n78A	ANT2	24	21	ANT7	24	16.5
DC_14A_n2A	ANT2	24	18	ANT1	24	18
DC_14A_n66A	ANT2	24	18	ANT1	24	18
DC_14A_n77A	ANT2	24	20.5	ANT7	24	16.5
DC_25A_n41A	ANT2	24	15.5	ANT1	24	15.5
DC_26A_n41A	ANT2	24	17	ANT1	24	17
DC_26A_n78A	ANT2	24	19.5	ANT7	24	16.5
DC_38A_n78A	ANT2	24	16.5	ANT7	24	16.5
DC_41A_n77A	ANT2	24	16.5	ANT7	24	16.5
DC_41A_n78A	ANT2	24	16.5	ANT7	24	16.5
DC_48A_n5A	ANT7	24	17	ANT2	24	19.5
DC_48A_n25A	ANT7	24	17	ANT2	24	16
DC_48A_n66A	ANT7	24	17	ANT2	24	15
DC_66A_n2A	ANT1	24	17.5	ANT2	24	16
DC_66A_n5A	ANT1	24	17.5	ANT2	24	20
DC_66A_n7A	ANT2	24	15	ANT1	24	14
DC_66A_n12A	ANT1	24	17.5	ANT2	24	21
DC_66A_n25A	ANT1	24	17.5	ANT2	24	16
DC_66A_n38A	ANT2	24	15	ANT1	24	17
DC_66A_n41A	ANT2	24	15	ANT1	24	17
DC_66A_n48A	ANT1	24	17.5	ANT4	24	18
DC_66A_n71A	ANT1	24	17.5	ANT2	24	21
DC_66A_n77A	ANT1	24	17.5	ANT4	24	16.5
DC_66A_n78A	ANT1	24	17.5	ANT4	24	16.5
DC_71A_n2A	ANT2	24	21	ANT1	24	18
DC_71A_n7A	ANT2	24	21	ANT1	24	14

EN-DC Combination						
EN-DC configuration	LTE Single Carrier			NR Single Carrier		
	TX Antenna	Standalone Max Tune up power(dBm)	EN-DC Active Max Tune up power(dBm)	TX Antenna	Standalone Max Tune up power(dBm)	EN-DC Active Max Tune up power(dBm)
DC_71A_n38A	ANT2	24	21	ANT1	24	17.5
DC_71A_n41A	ANT2	24	21	ANT1	24	17.5
DC_71A_n66A	ANT2	24	21	ANT1	24	18
DC_71A_n78A	ANT2	24	21	ANT7	24	16.5

Note:

1. For NR EN-DC mode, standalone SAR performed for NR NSA band with the maximum power, EN-DC SAR summed EN-DC mode NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservative.
2. Test positions and test channels used for the sim-Tx analysis are based on the standalone SAR result. When the EN-DC active, the LTE and NR output power is equal or less than the standalone output power for each frequency bands, therefore, LTE and NR power and SAR was estimated based on standalone results to performed sim-Tx analysis with WiFi and Bluetooth.
3. For detailed sim-Tx analysis results of EN-DC SAR, please refer to Appendix E.

<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.

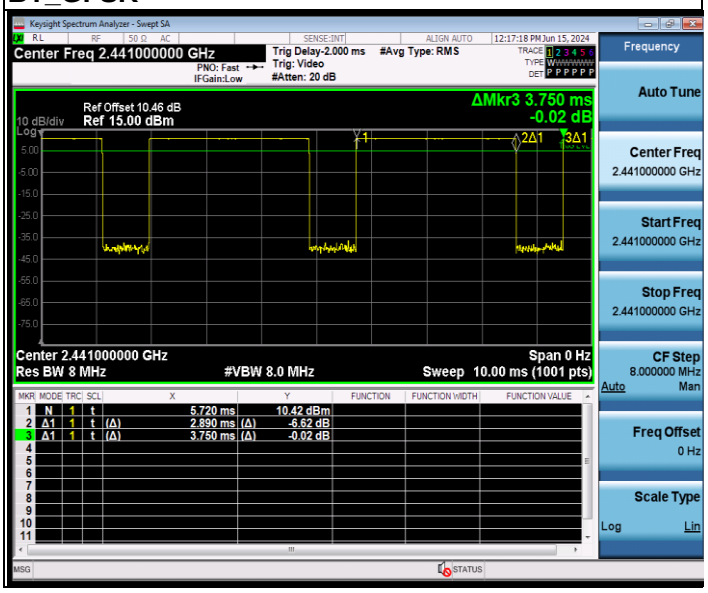
<Considerations Related to Bluetooth for Setup and Testing>

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.

<Duty Cycle of BT Test Signal>

BT_GFSK: Duty cycle = 2.89 / 3.75 = 0.7707

BT_GFSK



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.

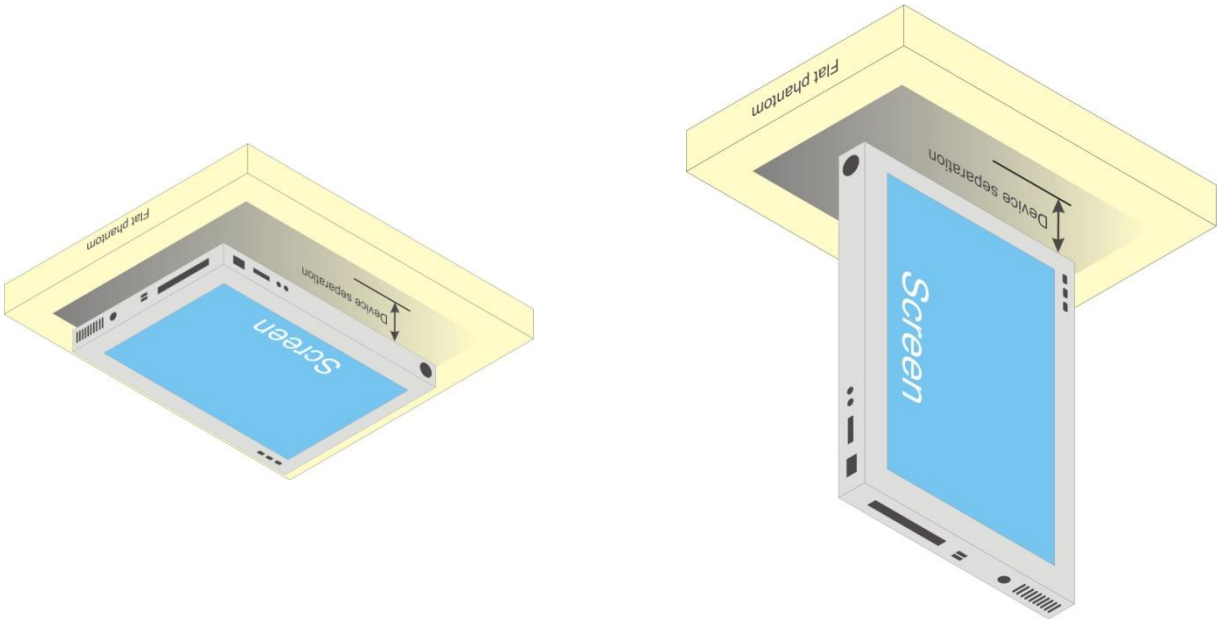


Fig-4.1 Illustration for Tablet Setup

4.2.2 SAR Text Exclusion Evaluations

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1. For the test separation distance <= 50 mm

$$\frac{\text{Max. Tune up Power}_{(mW)}}{\text{Min. Test Separation Distance}_{(mm)}} \times \sqrt{f_{(GHz)}} \leq 3.0 \text{ for SAR-1g, } \leq 7.5 \text{ for SAR-10g}$$

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2. For the test separation distance > 50 mm, and the frequency at 100 MHz to 1500 MHz

$$\left[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50\ \text{mm}) \times \left(\frac{f_{(MHz)}}{150}\right)\right]_{(mW)}$$

3. For the test separation distance > 50 mm, and the frequency at > 1500 MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50\ \text{mm}) \times 10]_{(mW)}$$

Exposure Position	Wireless Interface	ANT 1	ANT 2	ANT 4	ANT 7	ANT 8	ANT 9
	Calculated Frequency	2687MHz	2687MHz	3975MHz	3975MHz	5825MHz	5825MHz
	Maximum power (dBm)	24	24	24	24	16	16
	Maximum rated power(mW)	251.0	251.0	251.0	251.0	40.0	40.0
Bottom Face	Separation distance(mm)	0.0	0.0	0.0	0.0	0.0	0.0
	exclusion threshold	82.3	82.3	100.1	100.1	19.3	19.3
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Left Side	Separation distance(mm)	156.2	30.5	156.2	156.2	156.2	133.8
	exclusion threshold	1154.0	13.5	1137.0	1137.0	1124.0	900.0
	Testing required?	**No**	**Yes**	**No**	**No**	**No**	**No**
Right Side	Separation distance(mm)	9.2	137.8	9.2	9.2	9.2	34.5
	exclusion threshold	44.7	970.0	54.4	54.4	10.5	2.8
	Testing required?	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**
Top Side	Separation distance(mm)	141.5	17.4	121.0	59.8	235.0	248.5
	exclusion threshold	1007.0	23.7	785.0	173.0	1912.0	2047.0
	Testing required?	**No**	**Yes**	**No**	**Yes**	**No**	**No**
Bottom Side	Separation distance(mm)	124.0	248.0	145.0	206.0	30.6	17.3
	exclusion threshold	832.0	2072.0	1025.0	1635.0	3.2	5.6
	Testing required?	**No**	**No**	**No**	**No**	**Yes**	**Yes**

Note:

1. When separation distance <= 50 mm and the calculated result shown in above table is <= 3.0 for SAR-1g exposure condition, or <= 7.5 for SAR-10g exposure condition, the SAR testing exclusion is applied.
2. When separation distance > 50 mm and the device output power is less than the calculated result (power threshold, mW) shown in above table, the SAR testing exclusion is applied.

For NFC：

1. Maximum output power = 2000 mW
2. Duty Cycle = 99%
3. Length of each event = 0.5 second
4. Events per observation period = 2 times
5. Observation period = 360 seconds

Based on the above data, calculated the time-averaged power: (2000*0.99*0.5*2)/360 = 5.5 mW.

According to KDB 447498 D01v06, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following.

Mode	Max. Tune-up Power (mW)	Ant. to Surface (mm)	Exemption limit (mW)	Require SAR Testing?
NFC (13.56MHz)	5.5	5	442	No

4.3 Tissue Verification

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

Test Date	Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
Aug. 01, 2024	Head	750	22.7	0.892	41.542	0.89	41.90	0.22	-0.85
Aug. 02, 2024	Head	835	22.6	0.890	41.443	0.90	41.50	-1.11	-0.14
Aug. 03, 2024	Head	1750	22.2	1.380	39.467	1.37	40.10	0.73	-1.58
Aug. 04, 2024	Head	1900	22.3	1.434	40.136	1.40	40.00	2.43	0.34
Aug. 05, 2024	Head	2300	22.6	1.692	38.498	1.67	39.50	1.32	-2.54
Aug. 15, 2024	Head	2450	22.6	1.829	37.456	1.80	39.20	1.61	-4.45
Aug. 05, 2024	Head	2600	22.2	2.055	37.597	1.96	39.00	4.85	-3.60
Aug. 06, 2024	Head	2600	22.6	2.056	37.589	1.96	39.00	4.90	-3.62
Aug. 06, 2024	Head	3500	22.6	3.019	39.758	2.91	37.90	3.75	4.90
Aug. 07, 2024	Head	3500	22.7	3.022	39.756	2.91	37.90	3.85	4.90
Aug. 13, 2024	Head	3700	22.7	3.004	39.290	3.12	37.70	-3.72	4.22
Aug. 14, 2024	Head	3700	22.6	3.005	39.295	3.12	37.70	-3.69	4.23
Aug. 02, 2024	Head	3900	22.4	3.207	38.998	3.32	37.50	-3.40	3.99
Aug. 14, 2024	Head	3900	22.5	3.207	39.004	3.32	37.50	-3.40	4.01
Aug. 15, 2024	Head	5250	22.6	4.764	36.963	4.71	35.90	1.15	2.96
Aug. 15, 2024	Head	5600	22.1	5.207	36.213	5.07	35.50	2.70	2.01
Aug. 15, 2024	Head	5750	22.6	5.440	35.757	5.27	35.30	3.23	1.29

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

4.4 System Verification

The measuring result for system verification is tabulated as below.

<1g SAR>

Test Date	Mode	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
Aug. 01, 2024	Head	750	8.49	1.99	7.96	-6.24	1067	3873	1389
Aug. 02, 2024	Head	835	9.57	2.33	9.32	-2.61	4d139	3873	1389
Aug. 03, 2024	Head	1750	36.30	8.42	33.68	-7.22	1071	3873	1389
Aug. 04, 2024	Head	1900	39.80	9.17	36.68	-7.84	5d159	3873	1389
Aug. 05, 2024	Head	2300	49.60	11.90	47.60	-4.03	1053	3873	1389
Aug. 15, 2024	Head	2450	53.10	13.10	52.40	-1.32	893	3873	1389
Aug. 05, 2024	Head	2600	55.90	13.50	54.00	-3.40	1110	3873	1389
Aug. 06, 2024	Head	2600	55.90	14.30	57.20	2.33	1110	3873	1389
Aug. 06, 2024	Head	3500	65.50	6.11	61.10	-6.72	1111	3873	1389
Aug. 07, 2024	Head	3500	65.50	6.61	66.10	0.92	1111	3873	1389
Aug. 13, 2024	Head	3700	66.80	6.65	66.50	-0.45	1082	3873	1389
Aug. 14, 2024	Head	3700	66.80	6.22	62.20	-6.89	1082	3873	1389
Aug. 02, 2024	Head	3900	67.90	6.60	66.00	-2.80	1055	3873	1389
Aug. 14, 2024	Head	3900	67.90	6.67	66.70	-1.77	1055	3873	1389
Aug. 15, 2024	Head	5250	77.70	7.24	72.40	-6.82	1133	3873	1389
Aug. 15, 2024	Head	5600	82.40	8.82	88.20	7.04	1133	3873	1389
Aug. 15, 2024	Head	5750	78.60	8.12	81.20	3.31	1133	3873	1389

<10g SAR>

Test Date	Mode	Frequency (MHz)	1W Target SAR-10g (W/kg)	Measured SAR-10g (W/kg)	Normalized to 1W SAR-10g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Aug. 01, 2024	Head	750	5.59	1.33	5.32	-4.83	1067	3873	1389
Aug. 02, 2024	Head	835	6.31	1.56	6.24	-1.11	4d139	3873	1389
Aug. 03, 2024	Head	1750	19.50	4.69	18.76	-3.79	1071	3873	1389
Aug. 04, 2024	Head	1900	20.90	4.85	19.40	-7.18	5d159	3873	1389
Aug. 05, 2024	Head	2300	24.00	5.79	23.16	-3.50	1053	3873	1389
Aug. 15, 2024	Head	2450	24.90	6.20	24.80	-0.40	893	3873	1389
Aug. 05, 2024	Head	2600	25.40	6.19	24.76	-2.52	1110	3873	1389
Aug. 06, 2024	Head	2600	25.40	6.71	26.84	5.67	1110	3873	1389
Aug. 06, 2024	Head	3500	24.70	2.36	23.60	-4.45	1111	3873	1389
Aug. 07, 2024	Head	3500	24.70	2.44	24.40	-1.21	1111	3873	1389
Aug. 13, 2024	Head	3700	24.40	2.51	25.10	2.87	1082	3873	1389
Aug. 14, 2024	Head	3700	24.40	2.37	23.70	-2.87	1082	3873	1389
Aug. 02, 2024	Head	3900	23.70	2.35	23.50	-0.84	1055	3873	1389
Aug. 14, 2024	Head	3900	23.70	2.37	23.70	0.00	1055	3873	1389
Aug. 15, 2024	Head	5250	22.00	2.07	20.70	-5.91	1133	3873	1389
Aug. 15, 2024	Head	5600	23.20	2.49	24.90	7.33	1133	3873	1389
Aug. 15, 2024	Head	5750	22.00	2.32	23.20	5.45	1133	3873	1389

Note:

Comparing to the reference SAR value provided by SPEAG, the validation data should be within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.

4.5 Maximum Output Power

4.5.1 Maximum Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance please refer to Appendix D.

4.5.2 Measured Conducted Power Result

The measuring conducted average power (Unit: dBm) please refer to Appendix D.

4.6 SAR Testing Results

4.6.1 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

<KDB 941225 D05, SAR Evaluation Considerations for LTE Devices>

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

Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

(2) QPSK with 100% RB allocation

SAR is not required when the highest maximum output power for 100% RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

(3) Higher order modulations

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

(4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is > 1/2 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

<KDB 941225 D05, SAR Evaluation Considerations for 5G NR Devices>

(1) For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg, CP-OFDM testing is not required.

(2) For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.

(3) SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offset at the upper edge, middle and lower edge of each required test channel.

(4) 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.

(5) 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% RB and 1RB allocations and the highest reported SAR for 1RB 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.

(6) Pi/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, Pi/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.

(7) Smaller bandwidth output power for each RB allocation configuration for this device will not. ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device.

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

(1) For handsets operating next to ear, hotspot mode or mini-tablet configurations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When the reported SAR of initial test position is <= 0.4 W/kg, SAR testing for remaining test positions is not required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is <= 0.8 W/kg or all test positions are measured.

(2) 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.

(3) For WLAN 5 GHz, 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.

(4) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498 to 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.

4.6.2 SAR Results for Body Exposure Condition (Separation Distance is 0 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Power Reduction	Antenna	RB#	RB Offset	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	LTE 7	QPSK20M	Rear Face	0	21350	Reduce	Ant1	1	0	-	16.00	15.01	0.16	0.797	-	1.256	1.00
	LTE 7	QPSK20M	Right Side	0	21350	Reduce	Ant1	1	0	-	16.00	15.01	-0.12	0.522	-	1.256	0.66
	LTE 7	QPSK20M	Rear Face	0	21350	Reduce	Ant1	50	25	-	16.00	14.93	-0.08	0.767	-	1.279	0.98
	LTE 7	QPSK20M	Right Side	0	21350	Reduce	Ant1	50	25	-	16.00	14.93	0.08	0.518	-	1.279	0.66
	LTE 7	QPSK20M	Rear Face	0	20850	Reduce	Ant1	1	0	-	16.00	14.98	0.01	0.869	-	1.265	1.10
P01	LTE 7	QPSK20M	Rear Face	0	21100	Reduce	Ant1	1	0	-	16.00	14.91	-0.02	0.877	-	1.285	**1.13**
	LTE 7	QPSK20M	Rear Face	0	20850	Reduce	Ant1	50	25	-	16.00	14.83	-0.11	0.843	-	1.309	1.10
	LTE 7	QPSK20M	Rear Face	0	21100	Reduce	Ant1	50	25	-	16.00	14.83	0.14	0.851	-	1.309	1.11
	LTE 7	QPSK20M	Rear Face	0	21350	Reduce	Ant1	100	0	-	16.00	14.87	0.12	0.781	-	1.297	1.01
	LTE 7	QPSK20M	Rear Face	1.8	21100	Full	Ant1	1	0	-	24.00	22.71	0.13	0.507	-	1.346	0.68
	LTE 7	QPSK20M	Right Side	1.4	21100	Full	Ant1	1	0	-	24.00	22.71	0.14	0.596	-	1.346	0.80
	LTE 7	QPSK20M	Rear Face	0	21100	Reduce	Ant2	1	0	-	14.50	13.66	-0.02	0.348	-	1.213	0.42
	LTE 7	QPSK20M	Left Side	0	21100	Full	Ant2	1	0	-	21.00	20.12	0.17	0.086	-	1.225	0.11
	LTE 7	QPSK20M	Top Side	0	21100	Reduce	Ant2	1	0	-	14.50	13.66	-0.19	0.523	-	1.213	0.63
	LTE 7	QPSK20M	Rear Face	0	21100	Reduce	Ant2	50	50	-	14.50	13.61	-0.09	0.351	-	1.227	0.43
	LTE 7	QPSK20M	Left Side	0	21100	Full	Ant2	50	50	-	21.00	20.09	-0.10	0.087	-	1.233	0.11
	LTE 7	QPSK20M	Top Side	0	21100	Reduce	Ant2	50	50	-	14.50	13.61	-0.16	0.544	-	1.227	0.67
	LTE 7	QPSK20M	Top Side	0	20850	s	Ant2	50	50	-	14.50	13.54	-0.03	0.613	-	1.247	0.76
	LTE 7	QPSK20M	Top Side	0	21350	Reduce	Ant2	50	50	-	14.50	13.49	0.15	0.548	-	1.262	0.69
	LTE 7	QPSK20M	Rear Face	1.8	20850	Full	Ant2	1	0	-	21.00	20.04	-0.17	0.241	-	1.247	0.30
	LTE 7	QPSK20M	Top Side	1.6	20850	Full	Ant2	1	0	-	21.00	20.04	-0.03	0.419	-	1.247	0.52
	LTE 12/17	QPSK10M	Rear Face	0	23095	Full	Ant2	1	49	-	24.00	22.89	0.18	0.860	-	1.291	1.11
	LTE 12/17	QPSK10M	Left Side	0	23095	Full	Ant2	1	49	-	24.00	22.89	0.14	0.135	-	1.291	0.17
	LTE 12/17	QPSK10M	Top Side	0	23095	Full	Ant2	1	49	-	24.00	22.89	-0.02	0.473	-	1.291	0.61
	LTE 12/17	QPSK10M	Rear Face	0	23095	Full	Ant2	25	25	-	23.00	21.93	0.10	0.679	-	1.279	0.87
	LTE 12/17	QPSK10M	Left Side	0	23095	Full	Ant2	25	25	-	23.00	21.93	0.03	0.109	-	1.279	0.14
	LTE 12/17	QPSK10M	Top Side	0	23095	Full	Ant2	25	25	-	23.00	21.93	-0.18	0.419	-	1.279	0.54
	LTE 12/17	QPSK10M	Rear Face	0	23060	Full	Ant2	1	49	-	24.00	22.82	-0.02	0.810	-	1.312	1.06
P02	LTE 12/17	QPSK10M	Rear Face	0	23130	Full	Ant2	1	49	-	24.00	22.83	-0.03	0.862	-	1.309	**1.13**
	LTE 12/17	QPSK10M	Rear Face	0	23060	Full	Ant2	25	25	-	23.00	21.83	0.09	0.719	-	1.309	0.94
	LTE 12/17	QPSK10M	Rear Face	0	23130	Full	Ant2	25	25	-	23.00	21.91	-0.16	0.735	-	1.285	0.94
	LTE 12/17	QPSK10M	Rear Face	0	23095	Full	Ant2	50	0	-	23.00	21.88	-0.03	0.681	-	1.294	0.88
P03	LTE 13	QPSK10M	Rear Face	0	23230	Reduce	Ant2	1	0	-	22.00	21.05	0.07	0.842	-	1.245	**1.05**
	LTE 13	QPSK10M	Left Side	0	23230	Full	Ant2	1	0	-	24.00	22.92	0.11	0.229	-	1.282	0.29
	LTE 13	QPSK10M	Top Side	0	23230	Reduce	Ant2	1	0	-	22.00	21.05	0.02	0.371	-	1.245	0.46
	LTE 13	QPSK10M	Rear Face	0	23230	Reduce	Ant2	25	25	-	22.00	21.04	-0.17	0.828	-	1.247	1.03
	LTE 13	QPSK10M	Left Side	0	23230	Full	Ant2	25	25	-	23.00	22.00	0.09	0.187	-	1.259	0.24
	LTE 13	QPSK10M	Top Side	0	23230	Reduce	Ant2	25	25	-	22.00	21.04	-0.10	0.364	-	1.247	0.45
	LTE 13	QPSK10M	Rear Face	0	23230	Reduce	Ant2	50	0	-	22.00	20.80	-0.13	0.781	-	1.318	1.03
	LTE 13	QPSK10M	Rear Face	1.8	23230	Full	Ant2	1	0	-	24.00	22.92	-0.08	0.191	-	1.282	0.24
	LTE 13	QPSK10M	Top Side	1.6	23230	Full	Ant2	1	0	-	24.00	22.92	-0.02	0.107	-	1.282	0.14
P04	LTE 14	QPSK10M	Rear Face	0	23330	Reduce	Ant2	1	24	-	22.00	21.07	0.02	0.825	-	1.239	**1.02**
	LTE 14	QPSK10M	Left Side	0	23330	Full	Ant2	1	24	-	24.00	22.93	0.04	0.232	-	1.279	0.30
	LTE 14	QPSK10M	Top Side	0	23330	Reduce	Ant2	1	24	-	22.00	21.07	0.12	0.380	-	1.239	0.47
	LTE 14	QPSK10M	Rear Face	0	23330	Reduce	Ant2	25	12	-	22.00	21.05	-0.15	0.819	-	1.245	1.02
	LTE 14	QPSK10M	Left Side	0	23330	Full	Ant2	25	12	-	23.00	21.99	0.03	0.191	-	1.262	0.24
	LTE 14	QPSK10M	Top Side	0	23330	Reduce	Ant2	25	12	-	22.00	21.05	-0.02	0.372	-	1.245	0.46
	LTE 14	QPSK10M	Rear Face	0	23330	Reduce	Ant2	50	0	-	22.00	20.84	0.00	0.766	-	1.306	1.00
	LTE 14	QPSK10M	Rear Face	1.8	23330	Full	Ant2	1	24	-	24.00	22.93	-0.12	0.205	-	1.279	0.26
	LTE 14	QPSK10M	Top Side	1.6	23330	Full	Ant2	1	24	-	24.00	22.93	0.13	0.116	-	1.279	0.15
	LTE 25/2	QPSK20M	Rear Face	0	26140	Reduce	Ant1	1	0	-	19.50	18.53	-0.17	0.665	-	1.250	0.83
	LTE 25/2	QPSK20M	Right Side	0	26140	Reduce	Ant1	1	0	-	19.50	18.53	0.14	0.436	-	1.250	0.55
	LTE 25/2	QPSK20M	Rear Face	0	26140	Reduce	Ant1	50	25	-	19.50	18.51	-0.12	0.649	-	1.256	0.82
	LTE 25/2	QPSK20M	Right Side	0	26140	Reduce	Ant1	50	25	-	19.50	18.51	0.18	0.428	-	1.256	0.54
	LTE 25/2	QPSK20M	Rear Face	0	26340	Reduce	Ant1	1	0	-	19.50	18.38	-0.12	0.710	-	1.294	0.92
P05	LTE 25/2	QPSK20M	Rear Face	0	26590	Reduce	Ant1	1	0	-	19.50	18.25	-0.15	0.807	-	1.334	**1.08**
	LTE 25/2	QPSK20M	Rear Face	0	26340	Reduce	Ant1	50	25	-	19.50	18.34	0.11	0.701	-	1.306	0.92
	LTE 25/2	QPSK20M	Rear Face	0	26590	Reduce	Ant1	50	25	-	19.50	18.32	0.03	0.796	-	1.312	1.04
	LTE 25/2	QPSK20M	Rear Face	0	26140	Reduce	Ant1	100	0	-	19.50	18.37	0.04	0.707	-	1.297	0.92
	LTE 25/2	QPSK20M	Rear Face	1.8	26590	Full	Ant1	1	0	-	24.00	22.87	-0.06	0.294	-	1.297	0.38
	LTE 25/2	QPSK20M	Right Side	1.4	26590	Full	Ant1	1	0	-	24.00	22.87	-0.01	0.280	-	1.297	0.36
	LTE 25/2	QPSK20M	Rear Face	0	26340	Reduce	Ant2	1	0	-	15.50	14.66	-0.04	0.608	-	1.213	0.74
	LTE 25/2	QPSK20M	Left Side	0	26340	Full	Ant2	1	0	-	21.00	20.09	-0.05	0.236	-	1.233	0.29
	LTE 25/2	QPSK20M	Top Side	0	26340	Reduce	Ant2	1	0	-	15.50	14.66	0.04	0.355	-	1.213	0.43
	LTE 25/2	QPSK20M	Rear Face	0	26340	Reduce	Ant2	50	50	-	15.50	14.64	0.17	0.599	-	1.219	0.73
	LTE 25/2	QPSK20M	Left Side	0	26340	Full	Ant2	50	50	-	21.00	20.06	0.14	0.182	-	1.242	0.23
	LTE 25/2	QPSK20M	Top Side	0	26340	Reduce	Ant2	50	50	-	15.50	14.64	0.01	0.349	-	1.219	0.43
	LTE 25/2	QPSK20M	Rear Face	0	26140	Reduce	Ant2	1	0	-	15.50	14.54	-0.05	0.544	-	1.247	0.68
	LTE 25/2	QPSK20M	Rear Face	0	26590	Reduce	Ant2	1	0	-	15.50	14.55	0.04	0.589	-	1.245	0.73
	LTE 25/2	QPSK20M	Rear Face	1.8	26340	Full	Ant2	1	0	-	21.00	20.09	0.09	0.262	-	1.233	0.32
	LTE 25/2	QPSK20M	Top Side	1.6	26340	Full	Ant2	1	0	-	21.00	20.09	0.11	0.295	-	1.233	0.36
	LTE 26/5	QPSK15M	Rear Face	0	26865	Reduce	Ant2	1	0	-	21.50	20.55	-0.11	0.888	-	1.245	1.11
	LTE 26/5	QPSK15M	Left Side	0	26865	Full	Ant2	1	0	-	24.00	22.94	-0.04	0.223	-	1.276	0.28
	LTE 26/5	QPSK15M	Top Side	0	26865	Reduce	Ant2	1	0	-	21.50	20.55	-0.05	0.376	-	1.245	0.47
	LTE 26/5	QPSK15M	Rear Face	0	26865	Reduce	Ant2	36	19	-	21.50	20.53	0.12	0.858	-	1.250	1.07
	LTE 26/5	QPSK15M	Left Side	0	26865	Full	Ant2	36	19	-	23.00	21.96	-0.14	0.174	-	1.271	0.22
	LTE 26/5	QPSK15M	Top Side	0	26865	Reduce	Ant2	36	19	-	21.50	20.53	0.09	0.374	-	1.250	0.47
	LTE 26/5	QPSK15M	Rear Face	0	26765	Reduce	Ant2	1	0	-	21.50	20.44	-0.02	0.796	-	1.276	1.02

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Power Reduction	Antenna	RB#	RB Offset	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	LTE 26/5	QPSK15M	Rear Face	0	26915	Reduce	Ant2	1	0	-	21.50	20.52	0.13	0.870	-	1.253	1.09
P06	LTE 26/5	QPSK15M	Rear Face	0	26965	Reduce	Ant2	1	0	-	21.50	20.52	0.10	0.899	-	1.253	**1.13**
	LTE 26/5	QPSK15M	Rear Face	0	26765	Reduce	Ant2	36	19	-	21.50	20.36	0.05	0.771	-	1.300	1.00
	LTE 26/5	QPSK15M	Rear Face	0	26915	Reduce	Ant2	36	19	-	21.50	20.33	0.18	0.838	-	1.309	1.10
	LTE 26/5	QPSK15M	Rear Face	0	26965	Reduce	Ant2	36	19	-	21.50	20.45	0.13	0.861	-	1.274	1.10
	LTE 26/5	QPSK15M	Rear Face	0	26865	Reduce	Ant2	75	0	-	21.50	20.53	-0.10	0.868	-	1.250	1.09
	LTE 26/5	QPSK15M	Rear Face	1.8	26965	Full	Ant2	1	0	-	24.00	22.87	-0.12	0.205	-	1.297	0.27
	LTE 26/5	QPSK15M	Top Side	1.6	26965	Full	Ant2	1	0	-	24.00	22.87	-0.04	0.121	-	1.297	0.16
P07	LTE 30	QPSK10M	Rear Face	0	27710	Reduce	Ant1	1	0	-	17.00	16.26	0.00	0.986	-	1.186	**1.17**
	LTE 30	QPSK10M	Right Side	0	27710	Reduce	Ant1	1	0	-	17.00	16.26	-0.13	0.465	-	1.186	0.55
	LTE 30	QPSK10M	Rear Face	0	27710	Reduce	Ant1	25	25	-	17.00	16.23	-0.09	0.962	-	1.194	1.15
	LTE 30	QPSK10M	Right Side	0	27710	Reduce	Ant1	25	25	-	17.00	16.23	0.05	0.455	-	1.194	0.54
	LTE 30	QPSK10M	Rear Face	0	27710	Reduce	Ant1	50	0	-	17.00	16.16	0.00	0.942	-	1.213	1.14
	LTE 30	QPSK10M	Rear Face	1.8	27710	Full	Ant1	1	0	-	24.00	22.86	0.19	0.410	-	1.300	0.53
	LTE 30	QPSK10M	Right Side	1.4	27710	Full	Ant1	1	0	-	24.00	22.86	0.05	0.547	-	1.300	0.71
	LTE 41 / 38	QPSK20M	Rear Face	0	41490	Reduce	Ant1	1	0	-	17.00	16.17	0.19	0.900	-	1.211	1.09
	LTE 41 / 38	QPSK20M	Right Side	0	41490	Reduce	Ant1	1	0	-	17.00	16.17	0.04	0.598	-	1.211	0.72
	LTE 41 / 38	QPSK20M	Rear Face	0	41490	Reduce	Ant1	50	25	-	17.00	16.14	0.11	0.893	-	1.219	1.09
	LTE 41 / 38	QPSK20M	Right Side	0	41490	Reduce	Ant1	50	25	-	17.00	16.14	-0.18	0.588	-	1.219	0.72
	LTE 41 / 38	QPSK20M	Rear Face	0	39750	Reduce	Ant1	1	0	-	17.00	16.04	0.07	0.757	-	1.247	0.94
	LTE 41 / 38	QPSK20M	Rear Face	0	39790	Reduce	Ant1	1	0	-	17.00	16.04	-0.19	0.761	-	1.247	0.95
	LTE 41 / 38	QPSK20M	Rear Face	0	40185	Reduce	Ant1	1	0	-	17.00	15.99	-0.12	0.746	-	1.262	0.94
	LTE 41 / 38	QPSK20M	Rear Face	0	40620	Reduce	Ant1	1	0	-	17.00	16.08	0.19	0.798	-	1.236	0.99
P08	LTE 41 / 38	QPSK20M	Rear Face	0	41055	Reduce	Ant1	1	0	-	17.00	16.11	-0.05	0.930	-	1.227	**1.14**
	LTE 41 / 38	QPSK20M	Rear Face	0	41490	Reduce	Ant1	100	0	-	17.00	16.16	-0.03	0.901	-	1.213	1.09
	LTE 41 / 38	QPSK20M	Rear Face	1.8	41055	Full	Ant1	1	0	-	24.00	22.78	0.13	0.473	-	1.324	0.63
	LTE 41 / 38	QPSK20M	Right Side	1.4	41055	Full	Ant1	1	0	-	24.00	22.78	-0.06	0.555	-	1.324	0.74
	LTE 41 / 38	QPSK20M	Rear Face	0	40620	Reduce	Ant2	1	0	-	16.50	15.92	0.00	0.283	-	1.143	0.32
	LTE 41 / 38	QPSK20M	Left Side	0	40620	Full	Ant2	1	0	-	21.00	20.38	-0.18	0.061	-	1.153	0.07
	LTE 41 / 38	QPSK20M	Top Side	0	40620	Reduce	Ant2	1	0	-	16.50	15.92	-0.15	0.497	-	1.143	0.57
	LTE 41 / 38	QPSK20M	Rear Face	0	40620	Reduce	Ant2	50	25	-	16.50	15.90	0.10	0.275	-	1.148	0.32
	LTE 41 / 38	QPSK20M	Left Side	0	40620	Full	Ant2	50	25	-	21.00	20.19	0.17	0.055	-	1.205	0.07
	LTE 41 / 38	QPSK20M	Top Side	0	40620	Reduce	Ant2	50	25	-	16.50	15.90	0.16	0.486	-	1.148	0.56
	LTE 41 / 38	QPSK20M	Top Side	0	39750	Reduce	Ant2	1	0	-	16.50	15.77	-0.02	0.608	-	1.183	0.72
	LTE 41 / 38	QPSK20M	Top Side	0	39790	Reduce	Ant2	1	0	-	16.50	15.80	-0.14	0.627	-	1.175	0.74
	LTE 41 / 38	QPSK20M	Top Side	0	40185	Reduce	Ant2	1	0	-	16.50	15.88	-0.12	0.531	-	1.153	0.61
	LTE 41 / 38	QPSK20M	Top Side	0	41055	Reduce	Ant2	1	0	-	16.50	15.89	0.07	0.551	-	1.151	0.63
	LTE 41 / 38	QPSK20M	Rear Face	1.8	39790	Full	Ant2	1	0	-	21.00	20.17	-0.03	0.149	-	1.211	0.18
	LTE 41 / 38	QPSK20M	Top Side	1.6	39790	Full	Ant2	1	0	-	21.00	20.17	0.06	0.255	-	1.211	0.31
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42590	Reduce	Ant7	1	0	-	19.50	18.41	-0.19	0.862	-	1.285	1.11
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42590	Reduce	Ant7	1	0	-	19.50	18.41	-0.02	0.701	-	1.285	0.90
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42590	Reduce	Ant7	50	0	-	19.50	18.40	-0.09	0.858	-	1.288	1.11
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42590	Reduce	Ant7	50	0	-	19.50	18.40	0.06	0.684	-	1.288	0.88
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42190	Reduce	Ant7	1	0	-	19.50	18.13	0.11	0.868	-	1.371	1.19
P09	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42990	Reduce	Ant7	1	0	-	19.50	18.27	0.04	0.900	-	1.327	**1.19**
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42190	Reduce	Ant7	1	0	-	19.50	18.13	-0.15	0.696	-	1.371	0.95
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42990	Reduce	Ant7	1	0	-	19.50	18.27	-0.04	0.712	-	1.327	0.95
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42190	Reduce	Ant7	50	0	-	19.50	18.18	-0.12	0.842	-	1.355	1.14
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42990	Reduce	Ant7	50	0	-	19.50	18.21	-0.04	0.882	-	1.346	1.19
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42190	Reduce	Ant7	50	0	-	19.50	18.18	0.02	0.673	-	1.355	0.91
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42990	Reduce	Ant7	50	0	-	19.50	18.21	0.17	0.701	-	1.346	0.94
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42590	Reduce	Ant7	100	0	-	19.50	18.34	0.19	0.848	-	1.306	1.11
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42590	Reduce	Ant7	100	0	-	19.50	18.34	-0.14	0.693	-	1.306	0.91
	LTE 42 Part 27Q	QPSK20M	Rear Face	0.9	42590	Full	Ant7	1	0	-	24.00	22.83	-0.19	0.753	-	1.309	0.99
	LTE 42 Part 27Q	QPSK20M	Right Side	0.8	42590	Full	Ant7	1	0	-	24.00	22.83	0.02	0.806	-	1.309	1.06
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42990	Reduce	Ant4	1	0	-	15.50	15.04	0.00	0.319	-	1.112	0.35
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42990	Reduce	Ant4	1	0	-	15.50	15.04	-0.11	0.657	-	1.112	0.73
	LTE 42 Part 27Q	QPSK20M	Rear Face	0	42990	Reduce	Ant4	50	25	-	15.50	15.00	-0.07	0.312	-	1.122	0.35
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42990	Reduce	Ant4	50	25	-	15.50	15.00	0.00	0.658	-	1.122	0.74
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42190	Reduce	Ant4	50	25	-	15.50	14.91	0.13	0.659	-	1.146	0.75
	LTE 42 Part 27Q	QPSK20M	Right Side	0	42590	Reduce	Ant4	50	25	-	15.50	14.81	0.09	0.667	-	1.172	0.78
	LTE 42 Part 27Q	QPSK20M	Rear Face	1.1	42590	Full	Ant4	1	0	-	21.00	20.39	-0.05	0.343	-	1.151	0.39
	LTE 42 Part 27Q	QPSK20M	Right Side	1.4	42590	Full	Ant4	1	0	-	21.00	20.39	-0.17	0.306	-	1.151	0.35
	LTE 42 Part 96	QPSK20M	Rear Face	0	43340	Reduce	Ant4	1	0	-	15.50	15.12	0.09	0.271	-	1.091	0.30
	LTE 42 Part 96	QPSK20M	Right Side	0	43340	Reduce	Ant4	1	0	-	15.50	15.12	-0.11	0.662	-	1.091	0.72
	LTE 42 Part 96	QPSK20M	Rear Face	0	43340	Reduce	Ant4	50	25	-	15.50	15.08	-0.05	0.267	-	1.102	0.29
	LTE 42 Part 96	QPSK20M	Right Side	0	43340	Reduce	Ant4	50	25	-	15.50	15.08	-0.05	0.678	-	1.102	0.75
	LTE 42 Part 96	QPSK20M	Right Side	0	43190	Reduce	Ant4	50	25	-	15.50	14.99	-0.07	0.694	-	1.125	0.78
	LTE 42 Part 96	QPSK20M	Right Side	0	43490	Reduce	Ant4	50	25	-	15.50	15.08	-0.06	0.669	-	1.102	0.74
P10	LTE 48/43	QPSK20M	Rear Face	0	56640	Reduce	Ant7	1	0	-	19.50	18.78	-0.02	1.000	-	1.180	**1.18**
	LTE 48/43	QPSK20M	Right Side	0	56640	Reduce	Ant7	1	0	-	19.50	18.78	-0.05	0.632	-	1.180	0.75
	LTE 48/43	QPSK20M	Top Side	0	56640	Full	Ant7	1	0	-	24.00	23.13	0.19	0.044	-	1.222	0.05
	LTE 48/43	QPSK20M	Rear Face	0	56640	Reduce	Ant7	50	50	-	19.50	18.76	-0.13	0.988	-	1.186	1.17
	LTE 48/43	QPSK20M	Right Side	0	56640	Reduce	Ant7	50	50	-	19.50	18.76	-0.11	0.629	-	1.186	0.75
	LTE 48/43	QPSK20M	Top Side	0	56640	Full	Ant7	50	50	-	23.00	22.13	0.00	0.032	-	1.222	0.04
	LTE 48/43	QPSK20M	Rear Face	0	55340	Reduce	Ant7	1	0	-	19.50	18.63	0.05	0.825	-	1.222	1.01
	LTE 48/43	QPSK20M	Rear Face	0	55830	Reduce	Ant7	1	0	-	19.50	18.73	-0.15	0.892	-	1.194	1.07
	LTE 48/43	QPSK20M	Rear Face	0	56150	Reduce	Ant7	1	0	-	19.50	18.77	0.07	0.815	-	1.183	0.96
	LTE 48/43	QPSK20M	Rear Face	0	55340	Reduce	Ant7	50	50	-	19.50	18.65	0.16	0.801	-	1.216	0.97
	LTE 48/43	QPSK20M	Rear Face	0	55830	Reduce	Ant7	50	50	-	19.50	18.68	0.18	0.868	-	1.208	1.05
	LTE 48/43	QPSK20M	Rear Face	0	56150	Reduce	Ant7	50	50	-	19.50	18.62	-0.03	0.809	-	1.225	0.99
	LTE 48/43	QPSK20M	Rear Face	0	56640	Reduce	Ant7	100	0	-	19.50	18.77	-0.03	0.979	-	1.183	1.16

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Power Reduction	Antenna	RB#	RB Offset	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	LTE 48/43	QPSK20M	Rear Face	0.9	56640	Full	Ant7	1	0	-	24.00	23.13	0.07	0.919	-	1.222	1.12
	LTE 48/43	QPSK20M	Right Side	0.8	56640	Full	Ant7	1	0	-	24.00	23.13	-0.19	0.872	-	1.222	1.07
	LTE 66/4	QPSK20M	Rear Face	0	132572	Reduce	Ant1	1	0	-	20.00	18.99	-0.09	0.884	-	1.262	1.12
	LTE 66/4	QPSK20M	Right Side	0	132572	Reduce	Ant1	1	0	-	20.00	18.99	0.17	0.404	-	1.262	0.51
	LTE 66/4	QPSK20M	Rear Face	0	132572	Reduce	Ant1	50	0	-	20.00	18.96	0.15	0.865	-	1.271	1.10
	LTE 66/4	QPSK20M	Right Side	0	132572	Reduce	Ant1	50	0	-	20.00	18.96	0.18	0.386	-	1.271	0.49
P11	LTE 66/4	QPSK20M	Rear Face	0	132072	Reduce	Ant1	1	0	-	20.00	18.83	-0.10	0.905	-	1.309	**1.18**
	LTE 66/4	QPSK20M	Rear Face	0	132322	Reduce	Ant1	1	0	-	20.00	18.68	0.13	0.859	-	1.355	1.16
	LTE 66/4	QPSK20M	Rear Face	0	132072	Reduce	Ant1	50	0	-	20.00	18.83	-0.02	0.881	-	1.309	1.15
	LTE 66/4	QPSK20M	Rear Face	0	132322	Reduce	Ant1	50	0	-	20.00	18.81	-0.01	0.821	-	1.315	1.08
	LTE 66/4	QPSK20M	Rear Face	0	132572	Reduce	Ant1	100	0	-	20.00	18.89	-0.10	0.841	-	1.291	1.09
	LTE 66/4	QPSK20M	Rear Face	1.8	132072	Full	Ant1	1	0	-	24.00	22.87	-0.17	0.298	-	1.297	0.39
	LTE 66/4	QPSK20M	Right Side	1.4	132072	Full	Ant1	1	0	-	24.00	22.87	0.07	0.421	-	1.297	0.55
	LTE 66/4	QPSK20M	Rear Face	0	132322	Reduce	Ant2	1	0	-	15.50	14.67	0.16	0.593	-	1.211	0.72
	LTE 66/4	QPSK20M	Left Side	0	132322	Full	Ant2	1	0	-	21.00	20.15	-0.08	0.229	-	1.216	0.28
	LTE 66/4	QPSK20M	Top Side	0	132322	Reduce	Ant2	1	0	-	15.50	14.67	0.01	0.256	-	1.211	0.31
	LTE 66/4	QPSK20M	Rear Face	0	132322	Reduce	Ant2	50	50	-	15.50	14.66	0.02	0.593	-	1.213	0.72
	LTE 66/4	QPSK20M	Left Side	0	132322	Full	Ant2	50	50	-	21.00	20.07	0.09	0.217	-	1.239	0.27
	LTE 66/4	QPSK20M	Top Side	0	132322	Reduce	Ant2	50	50	-	15.50	14.66	-0.05	0.271	-	1.213	0.33
	LTE 66/4	QPSK20M	Rear Face	0	132072	Reduce	Ant2	50	50	-	15.50	14.52	0.12	0.623	-	1.253	0.78
	LTE 66/4	QPSK20M	Rear Face	0	132572	Reduce	Ant2	50	50	-	15.50	14.49	-0.08	0.615	-	1.262	0.78
	LTE 66/4	QPSK20M	Rear Face	0	132322	Reduce	Ant2	1	0	-	15.50	14.67	-0.02	0.593	-	1.211	0.72
	LTE 66/4	QPSK20M	Top Side	0	132322	Reduce	Ant2	1	0	-	15.50	14.67	-0.08	0.256	-	1.211	0.31
	LTE 66/4	QPSK20M	Rear Face	1.8	132072	Full	Ant2	1	0	-	21.00	20.02	-0.01	0.229	-	1.253	0.29
	LTE 66/4	QPSK20M	Top Side	1.6	132072	Full	Ant2	1	0	-	21.00	20.02	0.11	0.235	-	1.253	0.29
P12	LTE 71	QPSK20M	Rear Face	0	133372	Full	Ant2	1	50	-	24.00	22.91	0.11	0.630	-	1.285	**0.81**
	LTE 71	QPSK20M	Left Side	0	133372	Full	Ant2	1	50	-	24.00	22.91	-0.01	0.075	-	1.285	0.10
	LTE 71	QPSK20M	Top Side	0	133372	Full	Ant2	1	50	-	24.00	22.91	0.02	0.354	-	1.285	0.45
	LTE 71	QPSK20M	Rear Face	0	133372	Full	Ant2	50	0	-	23.00	21.98	-0.14	0.479	-	1.265	0.61
	LTE 71	QPSK20M	Left Side	0	133372	Full	Ant2	50	0	-	23.00	21.98	-0.01	0.060	-	1.265	0.08
	LTE 71	QPSK20M	Top Side	0	133372	Full	Ant2	50	0	-	23.00	21.98	-0.02	0.300	-	1.265	0.38
	LTE 71	QPSK20M	Rear Face	0	133222	Full	Ant2	1	50	-	24.00	22.78	-0.10	0.555	-	1.324	0.74
	LTE 71	QPSK20M	Rear Face	0	133322	Full	Ant2	1	50	-	24.00	22.81	-0.13	0.605	-	1.315	0.80
	LTE 71	QPSK20M	Rear Face	0	133372	Full	Ant2	100	0	-	23.00	21.79	0.02	0.482	-	1.321	0.64
	NR n5	DFT-QPSK20M	Rear Face	0	167300	Reduce	Ant2	1	1	-	21.50	20.77	-0.16	0.770	-	1.183	0.91
	NR n5	DFT-QPSK20M	Left Side	0	167300	Full	Ant2	1	1	-	24.00	23.22	0.17	0.202	-	1.197	0.24
	NR n5	DFT-QPSK20M	Top Side	0	167300	Reduce	Ant2	1	1	-	21.50	20.77	0.17	0.271	-	1.183	0.32
	NR n5	DFT-QPSK20M	Rear Face	0	167300	Reduce	Ant2	50	28	-	21.50	20.68	-0.17	0.841	-	1.208	1.02
	NR n5	DFT-QPSK20M	Left Side	0	167300	Full	Ant2	50	28	-	24.00	23.13	0.18	0.195	-	1.222	0.24
	NR n5	DFT-QPSK20M	Top Side	0	167300	Reduce	Ant2	50	28	-	21.50	20.68	0.16	0.294	-	1.208	0.36
	NR n5	DFT-QPSK20M	Rear Face	0	166800	Reduce	Ant2	1	1	-	21.50	20.56	-0.09	0.817	-	1.242	1.01
	NR n5	DFT-QPSK20M	Rear Face	0	167800	Reduce	Ant2	1	1	-	21.50	20.55	0.16	0.812	-	1.245	1.01
	NR n5	DFT-QPSK20M	Rear Face	0	166800	Reduce	Ant2	50	28	-	21.50	20.61	0.12	0.826	-	1.227	1.01
P13	NR n5	DFT-QPSK20M	Rear Face	0	167800	Reduce	Ant2	50	28	-	21.50	20.73	0.02	0.856	-	1.194	**1.02**
	NR n5	DFT-QPSK20M	Rear Face	0	167300	Reduce	Ant2	100	0	-	21.50	20.76	-0.06	0.838	-	1.186	0.99
	NR n5	DFT-QPSK20M	Rear Face	1.8	167800	Full	Ant2	1	1	-	24.00	23.14	0.15	0.219	-	1.219	0.27
	NR n5	DFT-QPSK20M	Top Side	1.6	167800	Full	Ant2	1	1	-	24.00	23.14	0.18	0.120	-	1.219	0.15
P14	NR n7	DFT-QPSK40M	Rear Face	0	503500	Reduce	Ant1	1	1	-	16.00	15.05	-0.12	0.849	-	1.245	**1.06**
	NR n7	DFT-QPSK40M	Right Side	0	503500	Reduce	Ant1	1	1	-	16.00	15.05	0.17	0.423	-	1.245	0.53
	NR n7	DFT-QPSK40M	Rear Face	0	503500	Reduce	Ant1	108	54	-	16.00	15.03	-0.18	0.802	-	1.250	1.00
	NR n7	DFT-QPSK40M	Right Side	0	503500	Reduce	Ant1	108	54	-	16.00	15.03	0.07	0.461	-	1.250	0.58
	NR n7	DFT-QPSK40M	Rear Face	0	507000	Reduce	Ant1	1	1	-	16.00	14.98	0.18	0.826	-	1.265	1.04
	NR n7	DFT-QPSK40M	Rear Face	0	510500	Reduce	Ant1	1	1	-	16.00	15.04	0.02	0.792	-	1.247	0.99
	NR n7	DFT-QPSK40M	Rear Face	0	507000	Reduce	Ant1	108	54	-	16.00	14.99	0.19	0.796	-	1.262	1.00
	NR n7	DFT-QPSK40M	Rear Face	0	510500	Reduce	Ant1	108	54	-	16.00	14.82	0.14	0.759	-	1.312	1.00
	NR n7	DFT-QPSK40M	Rear Face	0	503500	Reduce	Ant1	216	0	-	16.00	14.87	0.08	0.788	-	1.297	1.02
	NR n7	DFT-QPSK40M	Rear Face	1.8	503500	Full	Ant1	1	1	-	24.00	23.09	-0.14	0.610	-	1.233	0.75
	NR n7	DFT-QPSK40M	Right Side	1.4	503500	Full	Ant1	1	1	-	24.00	23.09	0.12	0.741	-	1.233	0.91
	NR n12	DFT-QPSK15M	Rear Face	0	141300	Full	Ant2	1	1	-	24.00	22.99	-0.11	0.698	-	1.262	0.88
	NR n12	DFT-QPSK15M	Left Side	0	141300	Full	Ant2	1	1	-	24.00	22.99	-0.13	0.077	-	1.262	0.10
	NR n12	DFT-QPSK15M	Top Side	0	141300	Full	Ant2	1	1	-	24.00	22.99	-0.05	0.367	-	1.262	0.46
	NR n12	DFT-QPSK15M	Rear Face	0	141300	Full	Ant2	36	22	-	24.00	22.88	0.00	0.680	-	1.294	0.88
	NR n12	DFT-QPSK15M	Left Side	0	141300	Full	Ant2	36	22	-	24.00	22.88	0.06	0.081	-	1.294	0.10
	NR n12	DFT-QPSK15M	Top Side	0	141300	Full	Ant2	36	22	-	24.00	22.88	0.12	0.379	-	1.294	0.49
	NR n12	DFT-QPSK15M	Rear Face	0	141500	Full	Ant2	1	1	-	24.00	22.91	0.06	0.761	-	1.285	0.98
	NR n12	DFT-QPSK15M	Rear Face	0	141700	Full	Ant2	1	1	-	24.00	22.91	-0.09	0.742	-	1.285	0.95
P15	NR n12	DFT-QPSK15M	Rear Face	0	141500	Full	Ant2	36	22	-	24.00	22.82	-0.07	0.782	-	1.312	**1.03**
	NR n12	DFT-QPSK15M	Rear Face	0	141700	Full	Ant2	36	22	-	24.00	22.77	-0.19	0.687	-	1.327	0.91
	NR n12	DFT-QPSK15M	Rear Face	0	141300	Full	Ant2	75	0	-	23.00	21.96	-0.08	0.679	-	1.271	0.86
	NR n14	DFT-QPSK10M	Rear Face	0	158600	Reduce	Ant2	1	1	-	22.00	21.05	0.02	0.705	-	1.245	0.88
	NR n14	DFT-QPSK10M	Left Side	0	158600	Full	Ant2	1	1	-	24.00	22.95	0.12	0.225	-	1.274	0.29
	NR n14	DFT-QPSK10M	Top Side	0	158600	Reduce	Ant2	1	1	-	22.00	21.05	-0.10	0.369	-	1.245	0.46
P16	NR n14	DFT-QPSK10M	Rear Face	0	158600	Reduce	Ant2	25	14	-	22.00	20.99	-0.01	0.706	-	1.262	**0.89**
	NR n14	DFT-QPSK10M	Left Side	0	158600	Full	Ant2	25	14	-	24.00	22.90	-0.03	0.211	-	1.288	0.27
	NR n14	DFT-QPSK10M	Top Side	0	158600	Reduce	Ant2	25	14	-	22.00	20.99	0.12	0.358	-	1.262	0.45
	NR n14	DFT-QPSK10M	Rear Face	0	158600	Reduce	Ant2	50	0	-	22.00	20.88	0.12	0.675	-	1.294	0.87
	NR n14	DFT-QPSK10M	Rear Face	1.8	158600	Full	Ant2	1	1	-	24.00	22.95	0.07	0.227	-	1.274	0.29
	NR n14	DFT-QPSK10M	Top Side	1.6	158600	Full	Ant2	1	1	-	24.00	22.95	-0.02	0.121	-	1.274	0.15
	NR n25/2	DFT-QPSK40M	Rear Face	0	379000	Reduce	Ant1	1	1	-	19.50	18.57	-0.15	0.794	-	1.239	0.98
	NR n25/2	DFT-QPSK40M	Right Side	0	379000	Reduce	Ant1	1	1	-	19.50	18.57	0.09	0.453	-	1.239	0.56
	NR n25/2	DFT-QPSK40M	Rear Face	0	379000	Reduce	Ant1	108	54	-	19.50	18.54	-0.01	0.794	-	1.247	0.99
	NR n25/2	DFT-QPSK40M	Right Side	0	379000	Reduce	Ant1	108	54	-	19.50	18.54	0.16	0.483	-	1.247	0.60
	NR n25/2	DFT-QPSK40M	Rear Face	0	374000	Reduce	Ant1	1	1	-	19.50	18.54	0.19	0.751	-	1.247	0.94

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Power Reduction	Antenna	RB#	RB Offset	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	NR n25/2	DFT-QPSK40M	Rear Face	0	376500	Reduce	Ant1	1	1	-	19.50	18.53	0.04	0.769	-	1.250	0.96
	NR n25/2	DFT-QPSK40M	Rear Face	0	374000	Reduce	Ant1	108	54	-	19.50	18.47	-0.14	0.767	-	1.268	0.97
P17	NR n25/2	DFT-QPSK40M	Rear Face	0	376500	Reduce	Ant1	108	54	-	19.50	18.33	-0.12	0.797	-	1.309	**1.04**
	NR n25/2	DFT-QPSK40M	Rear Face	0	379000	Reduce	Ant1	216	0	-	19.50	18.50	-0.11	0.771	-	1.259	0.97
	NR n25/2	DFT-QPSK40M	Rear Face	1.8	376500	Full	Ant1	1	1	-	24.00	22.97	0.18	0.230	-	1.268	0.29
	NR n25/2	DFT-QPSK40M	Right Side	1.4	376500	Full	Ant1	1	1	-	24.00	22.97	-0.12	0.285	-	1.268	0.36
	NR n25/2	DFT-QPSK40M	Rear Face	0	379000	Reduce	Ant2	1	1	-	16.00	15.04	0.15	0.501	-	1.247	0.62
	NR n25/2	DFT-QPSK40M	Left Side	0	379000	Full	Ant2	1	1	-	21.00	19.97	0.19	0.199	-	1.268	0.25
	NR n25/2	DFT-QPSK40M	Top Side	0	379000	Reduce	Ant2	1	1	-	16.00	15.04	-0.08	0.459	-	1.247	0.57
	NR n25/2	DFT-QPSK40M	Rear Face	0	379000	Reduce	Ant2	108	0	-	16.00	14.94	-0.01	0.491	-	1.276	0.63
	NR n25/2	DFT-QPSK40M	Left Side	0	379000	Full	Ant2	108	0	-	21.00	19.87	0.18	0.200	-	1.297	0.26
	NR n25/2	DFT-QPSK40M	Top Side	0	379000	Reduce	Ant2	108	0	-	16.00	14.94	0.02	0.437	-	1.276	0.56
	NR n25/2	DFT-QPSK40M	Rear Face	0	374000	Reduce	Ant2	1	1	-	16.00	14.91	-0.09	0.500	-	1.285	0.64
	NR n25/2	DFT-QPSK40M	Rear Face	0	376500	Reduce	Ant2	1	1	-	16.00	14.79	0.09	0.485	-	1.321	0.64
	NR n25/2	DFT-QPSK40M	Rear Face	1.8	374000	Full	Ant2	1	1	-	21.00	19.92	-0.08	0.252	-	1.282	0.32
	NR n25/2	DFT-QPSK40M	Top Side	1.6	374000	Full	Ant2	1	1	-	21.00	19.92	-0.18	0.346	-	1.282	0.44
P18	NR n30	DFT-QPSK10M	Rear Face	0	462000	Reduce	Ant1	1	1	-	17.00	16.05	-0.18	0.949	-	1.245	**1.18**
	NR n30	DFT-QPSK10M	Right Side	0	462000	Reduce	Ant1	1	1	-	17.00	16.05	0.06	0.635	-	1.245	0.79
	NR n30	DFT-QPSK10M	Rear Face	0	462000	Reduce	Ant1	25	14	-	17.00	16.00	0.01	0.930	-	1.259	1.17
	NR n30	DFT-QPSK10M	Right Side	0	462000	Reduce	Ant1	25	14	-	17.00	16.00	-0.02	0.652	-	1.259	0.82
	NR n30	DFT-QPSK10M	Rear Face	0	462000	Reduce	Ant1	50	0	-	17.00	15.81	0.04	0.891	-	1.315	1.17
	NR n30	DFT-QPSK10M	Rear Face	1.8	462000	Full	Ant1	1	1	-	24.00	22.81	0.01	0.431	-	1.315	0.57
	NR n30	DFT-QPSK10M	Right Side	1.4	462000	Full	Ant1	1	1	-	24.00	22.81	-0.16	0.543	-	1.315	0.71
	NR n41 / 38	DFT-QPSK100M	Rear Face	0	528000	Reduce	Ant1	1	1	40	19.00	18.18	0.04	0.788	-	1.208	0.95
	NR n41 / 38	DFT-QPSK100M	Right Side	0	528000	Reduce	Ant1	1	1	40	19.00	18.18	-0.10	0.428	-	1.208	0.52
P19	NR n41 / 38	DFT-QPSK100M	Rear Face	0	528000	Reduce	Ant1	135	69	40	19.00	18.17	-0.09	0.860	-	1.211	**1.04**
	NR n41 / 38	DFT-QPSK100M	Right Side	0	528000	Reduce	Ant1	135	69	40	19.00	18.17	-0.02	0.539	-	1.211	0.65
	NR n41 / 38	DFT-QPSK100M	Rear Face	0	509202	Reduce	Ant1	1	1	40	19.00	18.16	-0.17	0.762	-	1.213	0.92
	NR n41 / 38	DFT-QPSK100M	Rear Face	0	518598	Reduce	Ant1	1	1	40	19.00	17.93	-0.14	0.808	-	1.279	1.03
	NR n41 / 38	DFT-QPSK100M	Rear Face	0	509202	Reduce	Ant1	135	69	40	19.00	17.98	-0.02	0.759	-	1.265	0.96
	NR n41 / 38	DFT-QPSK100M	Rear Face	0	518598	Reduce	Ant1	135	69	40	19.00	18.00	0.07	0.796	-	1.259	1.00
	NR n41 / 38	DFT-QPSK100M	Rear Face	0	528000	Reduce	Ant1	270	0	40	19.00	18.07	0.06	0.828	-	1.239	1.03
	NR n41 / 38	DFT-QPSK100M	Rear Face	1.8	528000	Full	Ant1	1	1	40	24.00	23.13	0.16	0.239	-	1.222	0.29
	NR n41 / 38	DFT-QPSK100M	Right Side	1.4	528000	Full	Ant1	1	1	40	24.00	23.13	-0.16	0.307	-	1.222	0.38
	NR n41	CP-QPSK100M	Rear Face	0	528000	Full	Ant1+2	1	1	40	24.00	22.78	0.03	0.573	-	1.324	0.76
	NR n41	CP-QPSK100M	Left Side	0	528000	Full	Ant1+2	1	1	40	24.00	22.78	0.12	0.030	-	1.324	0.04
	NR n41	CP-QPSK100M	Right Side	0	528000	Full	Ant1+2	1	1	40	24.00	22.78	-0.19	0.374	-	1.324	0.50
	NR n41	CP-QPSK100M	Top Side	0	528000	Full	Ant1+2	1	1	40	24.00	22.78	-0.01	0.411	-	1.324	0.54
	NR n41	CP-QPSK100M	Rear Face	0	528000	Full	Ant1+2	137	68	40	24.00	22.40	-0.09	0.656	-	1.445	0.95
	NR n41	CP-QPSK100M	Left Side	0	528000	Full	Ant1+2	137	68	40	24.00	22.40	-0.15	0.033	-	1.445	0.05
	NR n41	CP-QPSK100M	Right Side	0	528000	Full	Ant1+2	137	68	40	24.00	22.40	-0.03	0.456	-	1.445	0.66
	NR n41	CP-QPSK100M	Top Side	0	528000	Full	Ant1+2	137	68	40	24.00	22.40	0.07	0.515	-	1.445	0.74
	NR n41	CP-QPSK100M	Rear Face	0	509202	Full	Ant1+2	137	68	40	24.00	22.13	0.07	0.568	-	1.538	0.87
	NR n41	CP-QPSK100M	Rear Face	0	518598	Full	Ant1+2	137	68	40	24.00	22.57	0.18	0.606	-	1.390	0.84
	NR n41	CP-QPSK100M	Rear Face	0	528000	Full	Ant1+2	273	0	40	22.00	20.92	-0.18	0.415	-	1.282	0.53
	NR n48	DFT-QPSK40M	Rear Face	0	645332	Reduce	Ant7	1	1	40	21.00	20.50	-0.09	0.938	-	1.122	1.05
	NR n48	DFT-QPSK40M	Right Side	0	645332	Reduce	Ant7	1	1	40	21.00	20.50	0.12	0.550	-	1.122	0.62
	NR n48	DFT-QPSK40M	Top Side	0	645332	Full	Ant7	1	1	40	24.00	23.45	-0.02	0.015	-	1.135	0.02
P20	NR n48	DFT-QPSK40M	Rear Face	0	645332	Reduce	Ant7	50	28	40	21.00	20.45	0.16	1.050	-	1.135	**1.19**
	NR n48	DFT-QPSK40M	Right Side	0	645332	Reduce	Ant7	50	28	40	21.00	20.45	-0.11	0.617	-	1.135	0.70
	NR n48	DFT-QPSK40M	Top Side	0	645332	Full	Ant7	50	28	40	24.00	23.39	0.01	0.019	-	1.151	0.02
	NR n48	DFT-QPSK40M	Rear Face	0	638000	Reduce	Ant7	1	1	40	21.00	20.37	-0.17	0.612	-	1.156	0.71
	NR n48	DFT-QPSK40M	Rear Face	0	641666	Reduce	Ant7	1	1	40	21.00	20.48	0.10	0.671	-	1.127	0.76
	NR n48	DFT-QPSK40M	Rear Face	0	638000	Reduce	Ant7	50	28	40	21.00	20.23	0.13	0.608	-	1.194	0.73
	NR n48	DFT-QPSK40M	Rear Face	0	641666	Reduce	Ant7	50	28	40	21.00	20.28	-0.09	0.646	-	1.180	0.76
	NR n48	DFT-QPSK40M	Rear Face	0	645332	Reduce	Ant7	100	0	40	21.00	20.49	-0.08	0.988	-	1.125	1.11
	NR n48	DFT-QPSK40M	Rear Face	0.9	645332	Full	Ant7	1	1	40	24.00	23.45	0.01	0.610	-	1.135	0.69
	NR n48	DFT-QPSK40M	Right Side	0.8	645332	Full	Ant7	1	1	40	24.00	23.45	-0.18	0.620	-	1.135	0.70
	NR n48	DFT-QPSK40M	Rear Face	0	645332	Reduce	Ant4	1	1	40	18.00	17.78	-0.08	0.417	-	1.052	0.44
	NR n48	DFT-QPSK40M	Right Side	0	645332	Reduce	Ant4	1	1	40	18.00	17.78	0.04	0.718	-	1.052	0.76
	NR n48	DFT-QPSK40M	Rear Face	0	645332	Reduce	Ant4	50	56	40	18.00	17.76	0.12	0.403	-	1.057	0.43
	NR n48	DFT-QPSK40M	Right Side	0	645332	Reduce	Ant4	50	56	40	18.00	17.76	-0.14	0.717	-	1.057	0.76
	NR n48	DFT-QPSK40M	Right Side	0	638000	Reduce	Ant4	1	1	40	18.00	17.73	-0.10	0.723	-	1.064	0.77
	NR n48	DFT-QPSK40M	Right Side	0	641666	Reduce	Ant4	1	1	40	18.00	17.73	0.14	0.693	-	1.064	0.74
	NR n48	DFT-QPSK40M	Rear Face	1.1	645332	Full	Ant4	1	1	40	21.00	20.70	-0.04	0.143	-	1.072	0.15
	NR n48	DFT-QPSK40M	Right Side	1.4	645332	Full	Ant4	1	1	40	21.00	20.70	0.09	0.173	-	1.072	0.19
	NR n66	DFT-QPSK40M	Rear Face	0	349000	Reduce	Ant1	1	1	-	20.00	19.16	0.17	0.902	-	1.213	1.09
	NR n66	DFT-QPSK40M	Right Side	0	349000	Reduce	Ant1	1	1	-	20.00	19.16	-0.15	0.419	-	1.213	0.51
	NR n66	DFT-QPSK40M	Rear Face	0	349000	Reduce	Ant1	108	54	-	20.00	19.05	0.09	0.847	-	1.245	1.05
	NR n66	DFT-QPSK40M	Right Side	0	349000	Reduce	Ant1	108	54	-	20.00	19.05	-0.06	0.390	-	1.245	0.49
P21	NR n66	DFT-QPSK40M	Rear Face	0	346000	Reduce	Ant1	1	1	-	20.00	19.07	-0.10	0.930	-	1.239	**1.15**
	NR n66	DFT-QPSK40M	Rear Face	0	352000	Reduce	Ant1	1	1	-	20.00	19.10	0.12	0.867	-	1.230	1.07
	NR n66	DFT-QPSK40M	Rear Face	0	346000	Reduce	Ant1	108	54	-	20.00	18.95	0.18	0.891	-	1.274	1.13
	NR n66	DFT-QPSK40M	Rear Face	0	352000	Reduce	Ant1	108	54	-	20.00	19.02	0.05	0.872	-	1.253	1.09
	NR n66	DFT-QPSK40M	Rear Face	0	349000	Reduce	Ant1	216	0	-	20.00	19.07	0.11	0.852	-	1.239	1.06
	NR n66	DFT-QPSK40M	Rear Face	1.8	346000	Full	Ant1	1	1	-	24.00	23.02	-0.18	0.289	-	1.253	0.36
	NR n66	DFT-QPSK40M	Right Side	1.4	346000	Full	Ant1	1	1	-	24.00	23.02	0.17	0.418	-	1.253	0.52
	NR n66	DFT-QPSK40M	Rear Face	0	349000	Reduce	Ant2	1	1	-	15.00	14.20	0.03	0.545	-	1.202	0.66
	NR n66	DFT-QPSK40M	Left Side	0	349000	Full	Ant2	1	1	-	21.00	20.19	-0.05	0.238	-	1.205	0.29
	NR n66	DFT-QPSK40M	Top Side	0	349000	Reduce	Ant2	1	1	-	15.00	14.20	-0.10	0.239	-	1.202	0.29

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Power Reduction	Antenna	RB#	RB Offset	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
	NR n66	DFT-QPSK40M	Rear Face	0	349000	Reduce	Ant2	108	54	-	15.00	14.17	-0.08	0.547	-	1.211	0.66
	NR n66	DFT-QPSK40M	Left Side	0	349000	Full	Ant2	108	54	-	21.00	20.17	-0.07	0.243	-	1.211	0.29
	NR n66	DFT-QPSK40M	Top Side	0	349000	Reduce	Ant2	108	54	-	15.00	14.17	-0.09	0.248	-	1.211	0.30
	NR n66	DFT-QPSK40M	Rear Face	0	346000	Reduce	Ant2	108	54	-	15.00	14.14	-0.17	0.565	-	1.219	0.69
	NR n66	DFT-QPSK40M	Rear Face	0	352000	Reduce	Ant2	108	54	-	15.00	14.06	0.17	0.538	-	1.242	0.67
	NR n66	DFT-QPSK40M	Rear Face	1.8	349000	Full	Ant2	1	1	-	21.00	20.19	0.06	0.266	-	1.205	0.32
	NR n66	DFT-QPSK40M	Top Side	1.6	349000	Full	Ant2	1	1	-	21.00	20.19	0.16	0.268	-	1.205	0.32
	NR n71	DFT-QPSK20M	Rear Face	0	136100	Full	Ant2	1	1	-	24.00	23.13	0.12	0.524	-	1.222	0.64
	NR n71	DFT-QPSK20M	Left Side	0	136100	Full	Ant2	1	1	-	24.00	23.13	-0.13	0.052	-	1.222	0.06
	NR n71	DFT-QPSK20M	Top Side	0	136100	Full	Ant2	1	1	-	24.00	23.13	0.14	0.387	-	1.222	0.47
	NR n71	DFT-QPSK20M	Rear Face	0	136100	Full	Ant2	50	28	-	24.00	23.09	0.04	0.547	-	1.233	0.67
	NR n71	DFT-QPSK20M	Left Side	0	136100	Full	Ant2	50	28	-	24.00	23.09	0.18	0.068	-	1.233	0.08
	NR n71	DFT-QPSK20M	Top Side	0	136100	Full	Ant2	50	28	-	24.00	23.09	0.15	0.393	-	1.233	0.48
	NR n71	DFT-QPSK20M	Rear Face	0	134600	Full	Ant2	50	28	-	24.00	23.00	-0.14	0.535	-	1.259	0.67
P22	NR n71	DFT-QPSK20M	Rear Face	0	137600	Full	Ant2	50	28	-	24.00	23.07	0.03	0.647	-	1.239	**0.80**
	NR n71	DFT-QPSK20M	Rear Face	0	136100	Full	Ant2	100	0	-	23.00	22.06	0.14	0.437	-	1.242	0.54
	NR n77/78 Part 27Q	DFT-QPSK100M	Rear Face	0	633334	Reduce	Ant7	1	1	40	18.50	17.46	-0.06	0.357	-	1.271	0.45
	NR n77/78 Part 27Q	DFT-QPSK100M	Right Side	0	633334	Reduce	Ant7	1	1	40	18.50	17.46	-0.07	0.365	-	1.271	0.46
	NR n77/78 Part 27Q	DFT-QPSK100M	Top Side	0	633334	Full	Ant7	1	1	40	24.00	22.91	-0.05	0.096	-	1.285	0.12
	NR n77/78 Part 27Q	DFT-QPSK100M	Rear Face	0	633334	Reduce	Ant7	135	69	40	18.50	17.41	-0.04	0.365	-	1.285	0.47
	NR n77/78 Part 27Q	DFT-QPSK100M	Right Side	0	633334	Reduce	Ant7	135	69	40	18.50	17.41	0.03	0.342	-	1.285	0.44
	NR n77/78 Part 27Q	DFT-QPSK100M	Top Side	0	633334	Full	Ant7	135	69	40	24.00	22.65	0.03	0.063	-	1.365	0.09
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	656000	Reduce	Ant7	1	1	40	18.50	17.57	0.03	0.769	-	1.239	0.95
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0	656000	Reduce	Ant7	1	1	40	18.50	17.57	0.06	0.308	-	1.239	0.38
	NR n77 Part 27O	DFT-QPSK100M	Top Side	0	656000	Full	Ant7	1	1	40	24.00	23.02	0.09	0.039	-	1.253	0.05
P23	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	656000	Reduce	Ant7	135	69	40	18.50	17.50	-0.11	0.776	-	1.259	**0.98**
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0	656000	Reduce	Ant7	135	69	40	18.50	17.50	0.04	0.311	-	1.259	0.39
	NR n77 Part 27O	DFT-QPSK100M	Top Side	0	656000	Full	Ant7	135	69	40	24.00	23.01	0.05	0.028	-	1.256	0.04
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	650000	Reduce	Ant7	1	1	40	18.50	17.51	-0.08	0.451	-	1.256	0.57
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	662000	Reduce	Ant7	1	1	40	18.50	17.49	0.18	0.633	-	1.262	0.80
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	650000	Reduce	Ant7	135	69	40	18.50	17.39	-0.18	0.430	-	1.291	0.56
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	662000	Reduce	Ant7	135	69	40	18.50	17.30	0.15	0.635	-	1.318	0.84
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	656000	Reduce	Ant7	270	0	40	18.50	17.47	-0.11	0.752	-	1.268	0.95
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0.9	656000	Full	Ant7	1	1	40	24.00	23.02	-0.09	0.663	-	1.253	0.83
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0.8	656000	Full	Ant7	1	1	40	24.00	23.02	0.16	0.658	-	1.253	0.82
	NR n77/78 Part 27Q	DFT-QPSK100M	Rear Face	0	633334	Reduce	Ant4	1	1	40	16.50	15.68	0.04	0.220	-	1.208	0.27
	NR n77/78 Part 27Q	DFT-QPSK100M	Right Side	0	633334	Reduce	Ant4	1	1	40	16.50	15.68	-0.04	0.428	-	1.208	0.52
	NR n77/78 Part 27Q	DFT-QPSK100M	Rear Face	0	633334	Reduce	Ant4	135	69	40	16.50	15.65	0.07	0.217	-	1.216	0.26
	NR n77/78 Part 27Q	DFT-QPSK100M	Right Side	0	633334	Reduce	Ant4	135	69	40	16.50	15.65	-0.03	0.481	-	1.216	0.58
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	662000	Reduce	Ant4	1	1	40	16.50	16.18	0.06	0.235	-	1.076	0.25
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0	662000	Reduce	Ant4	1	1	40	16.50	16.18	-0.08	0.592	-	1.076	0.64
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	0	662000	Reduce	Ant4	135	69	40	16.50	16.13	-0.03	0.252	-	1.089	0.27
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0	662000	Reduce	Ant4	135	69	40	16.50	16.13	0.17	0.582	-	1.089	0.63
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0	650000	Reduce	Ant4	135	69	40	16.50	15.99	0.18	0.495	-	1.125	0.56
	NR n77 Part 27O	DFT-QPSK100M	Right Side	0	656000	Reduce	Ant4	135	69	40	16.50	15.97	0.17	0.653	-	1.130	0.74
	NR n77 Part 27O	DFT-QPSK100M	Rear Face	1.1	656000	Full	Ant4	1	1	40	21.00	20.37	0.00	0.170	-	1.156	0.20
	NR n77 Part 27O	DFT-QPSK100M	Right Side	1.4	656000	Full	Ant4	1	1	40	21.00	20.37	0.13	0.246	-	1.156	0.28
	NR n77/78 Part 27Q	CP-QPSK100M	Rear Face	0	633334	Reduce	Ant7+4	1	1	40	22.00	20.26	0.01	0.290	-	1.493	0.43
	NR n77/78 Part 27Q	CP-QPSK100M	Right Side	0	633334	Reduce	Ant7+4	1	1	40	22.00	20.26	-0.02	0.489	-	1.493	0.73
	NR n77/78 Part 27Q	CP-QPSK100M	Top Side	0	633334	Full	Ant7+4	1	1	40	24.00	22.22	0.09	0.053	-	1.507	0.08
	NR n77/78 Part 27Q	CP-QPSK100M	Rear Face	0	633334	Reduce	Ant7+4	137	68	40	22.00	20.12	-0.16	0.305	-	1.542	0.47
	NR n77/78 Part 27Q	CP-QPSK100M	Right Side	0	633334	Reduce	Ant7+4	137	68	40	22.00	20.12	-0.09	0.566	-	1.542	0.87
	NR n77/78 Part 27Q	CP-QPSK100M	Top Side	0	633334	Full	Ant7+4	137	68	40	24.00	22.15	0.17	0.036	-	1.531	0.06
	NR n77/78 Part 27Q	CP-QPSK100M	Rear Face	0	633334	Full	Ant7+4	273	0	40	22.00	20.02	0.05	0.295	-	1.578	0.47
	NR n77 Part 27O	CP-QPSK100M	Rear Face	0	656000	Reduce	Ant7+4	1	1	40	22.00	20.48	0.12	0.547	-	1.419	0.78
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	656000	Reduce	Ant7+4	1	1	40	22.00	20.48	-0.06	0.688	-	1.419	0.98
	NR n77 Part 27O	CP-QPSK100M	Top Side	0	656000	Full	Ant7+4	1	1	40	24.00	22.45	-0.05	0.057	-	1.429	0.08
	NR n77 Part 27O	CP-QPSK100M	Rear Face	0	656000	Reduce	Ant7+4	137	68	40	22.00	20.47	-0.08	0.549	-	1.422	0.78
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	656000	Reduce	Ant7+4	137	68	40	22.00	20.47	0.02	0.683	-	1.422	0.97
	NR n77 Part 27O	CP-QPSK100M	Top Side	0	656000	Full	Ant7+4	137	68	40	24.00	22.41	0.14	0.037	-	1.442	0.05
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	650000	Reduce	Ant7+4	1	1	40	22.00	20.33	0.01	0.473	-	1.469	0.69
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	662000	Reduce	Ant7+4	1	1	40	22.00	20.27	0.10	0.578	-	1.489	0.86
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	650000	Reduce	Ant7+4	137	68	40	22.00	20.44	-0.17	0.481	-	1.432	0.69
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	662000	Reduce	Ant7+4	137	68	40	22.00	20.46	-0.19	0.571	-	1.426	0.81
	NR n77 Part 27O	CP-QPSK100M	Right Side	0	656000	Reduce	Ant7+4	273	0	40	22.00	20.45	0.02	0.679	-	1.429	0.97
	NR n77 Part 27O	CP-QPSK100M	Rear Face	0.9	656000	Full	Ant7+4	1	1	40	24.00	22.45	-0.08	0.225	-	1.429	0.32
	NR n77 Part 27O	CP-QPSK100M	Right Side	0.8	656000	Full	Ant7+4	1	1	40	24.00	22.45	0.06	0.508	-	1.429	0.73
	WLAN2.4G	802.11b	Rear Face	0	1	Reduce	Ant8+9	-	-	97.88	15.0	14.72	-0.17	0.660	1.022	1.067	0.70
P24	WLAN2.4G	802.11b	Right Side	0	1	Reduce	Ant8+9	-	-	97.88	15.0	14.72	0.15	0.973	1.022	1.067	**1.04**
	WLAN2.4G	802.11b	Bottom Side	0	1	Full	Ant8+9	-	-	97.88	19.0	18.67	0.02	0.053	1.022	1.079	0.06
	WLAN2.4G	802.11b	Right Side	0	6	Reduce	Ant8+9	-	-	97.88	15.0	14.44	0.08	0.587	1.022	1.138	0.67
	WLAN2.4G	802.11b	Right Side	0	11	Reduce	Ant8+9	-	-	97.88	15.0	14.62	-0.04	0.668	1.022	1.091	0.73
	WLAN2.4G	802.11b	Rear Face	1.7	1	Full	Ant8+9	-	-	97.88	19.0	18.67	-0.03	0.075	1.022	1.079	0.08
	WLAN2.4G	802.11b	Right Side	1.9	1	Full	Ant8+9	-	-	97.88	19.0	18.67	0.02	0.135	1.022	1.079	0.15
	WLAN5G	802.11a	Rear Face	0	64	Reduce	Ant8+9	-	-	99.05	10.0	9.10	-0.18	0.626	1.010	1.230	0.77
	WLAN5G	802.11a	Right Side	0	64	Reduce	Ant8+9	-	-	99.05	10.0	9.10	0.03	0.142	1.010	1.230	0.17
	WLAN5G	802.11a	Bottom Side	0	64	Full	Ant8+9	-	-	99.05	16.0	15.08	-0.09	0.084	1.010	1.236	0.10
	WLAN5G	802.11a	Rear Face	0	52	Reduce	Ant8+9	-	-	99.05	10.0	8.82	0.06	0.623	1.010	1.312	0.82
P25	WLAN5G	802.11a	Rear Face	0	56	Reduce	Ant8+9	-	-	99.05	10.0	8.75	0.00	0.636	1.010	1.334	**0.85**
	WLAN5G	802.11a	Rear Face	0	60	Reduce	Ant8+9	-	-	99.05	10.0	9.03	0.03	0.642	1.010	1.250	0.80
	WLAN5G	802.11a	Rear Face	1.7	56	Full	Ant8+9	-	-	99.05	16.0	14.83	-0.01	0.160	1.010	1.309	0.21
	WLAN5G	802.11a	Right Side	1.9	56	Full	Ant8+9	-	-	99.05	16.0	14.83	-0.12	0.082	1.010	1.309	0.11

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Power Reduction	Antenna	RB#	RB Offset	Duty Cycle %	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Duty Cycle Scaling Factor	Tune-up Scaling Factor	Scaled SAR-1g (W/kg)
P26	WLAN5G	802.11a	Rear Face	0	100	Reduce	Ant8+9	-	-	99.05	13.5	12.81	0.19	0.743	1.010	1.172	**0.87**
	WLAN5G	802.11a	Right Side	0	100	Reduce	Ant8+9	-	-	99.05	13.5	12.81	-0.17	0.260	1.010	1.172	0.30
	WLAN5G	802.11a	Bottom Side	0	100	Full	Ant8+9	-	-	99.05	16.0	15.46	0.10	0.103	1.010	1.132	0.12
	WLAN5G	802.11a	Rear Face	0	116	Reduce	Ant8+9	-	-	99.05	13.5	12.65	-0.04	0.714	1.010	1.216	0.87
	WLAN5G	802.11a	Rear Face	0	124	Reduce	Ant8+9	-	-	99.05	13.5	12.57	0.14	0.685	1.010	1.239	0.85
	WLAN5G	802.11a	Rear Face	0	132	Reduce	Ant8+9	-	-	99.05	13.5	12.45	-0.05	0.069	1.010	1.274	0.09
	WLAN5G	802.11a	Rear Face	0	140	Reduce	Ant8+9	-	-	99.05	13.5	12.55	0.12	0.650	1.010	1.245	0.81
	WLAN5G	802.11a	Rear Face	0	144	Reduce	Ant8+9	-	-	99.05	13.5	12.66	0.19	0.625	1.010	1.213	0.76
	WLAN5G	802.11a	Rear Face	1.7	100	Full	Ant8+9	-	-	99.05	16.0	15.46	-0.01	0.173	1.010	1.132	0.20
	WLAN5G	802.11a	Right Side	1.9	100	Full	Ant8+9	-	-	99.05	16.0	15.46	-0.07	0.074	1.010	1.132	0.08
P27	WLAN5G	802.11a	Rear Face	0	165	Reduce	Ant8+9	-	-	99.05	12.5	11.97	0.00	0.693	1.010	1.130	**0.78**
	WLAN5G	802.11a	Right Side	0	165	Reduce	Ant8+9	-	-	99.05	12.5	11.97	0.05	0.325	1.010	1.130	0.37
	WLAN5G	802.11a	Bottom Side	0	165	Full	Ant8+9	-	-	99.05	16.0	15.54	-0.07	0.094	1.010	1.113	0.11
	WLAN5G	802.11a	Rear Face	0	149	Reduce	Ant8+9	-	-	99.05	12.5	11.85	0.04	0.644	1.010	1.161	0.75
	WLAN5G	802.11a	Rear Face	0	157	Reduce	Ant8+9	-	-	99.05	12.5	11.88	0.06	0.653	1.010	1.153	0.75
	WLAN5G	802.11a	Rear Face	1.7	165	Full	Ant8+9	-	-	99.05	16.0	15.54	-0.18	0.179	1.010	1.113	0.20
	WLAN5G	802.11a	Right Side	1.9	165	Full	Ant8+9	-	-	99.05	16.0	15.54	0.11	0.102	1.010	1.113	0.11
	BT	GFSK	Rear Face	0	39	Full	Ant8	-	-	77.07	11.5	10.97	0.07	0.280	1.298	1.130	0.41
P28	BT	GFSK	Right Side	0	39	Full	Ant8	-	-	77.07	11.5	10.97	0.06	0.460	1.298	1.130	**0.67**
	BT	GFSK	Bottom Side	0	39	Full	Ant8	-	-	77.07	11.5	10.97	0.08	0.093	1.298	1.130	0.14
	BT	GFSK	Right Side	0	0	Full	Ant8	-	-	77.07	10.5	10.10	0.04	0.345	1.298	1.096	0.49
	BT	GFSK	Right Side	0	78	Full	Ant8	-	-	77.07	10.0	9.66	0.03	0.278	1.298	1.081	0.39

4.6.3 SAR Measurement Variability

According to KDB 865664 D01, SAR measurement variability was assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1. When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2. When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3. If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20, or when the original or repeated measurement is >= 1.45 W/kg, perform a second repeated measurement.
4. If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Band	Test Position	Separation Distance (cm)	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
LTE 12	Rear Face	0	23130	0.862	0.849	1.015	N/A	N/A	N/A	N/A
LTE 26	Rear Face	0	26965	0.899	0.872	1.031	N/A	N/A	N/A	N/A
NR n66	Rear Face	0	34600	0.930	0.924	1.006	N/A	N/A	N/A	N/A
LTE 25	Rear Face	0	26590	0.807	0.801	1.007	N/A	N/A	N/A	N/A
LTE 30	Rear Face	0	27710	0.986	0.956	1.031	N/A	N/A	N/A	N/A
LTE 41	Rear Face	0	41055	0.930	0.918	1.013	N/A	N/A	N/A	N/A
NR n48	Rear Face	0	645332	1.050	1.010	1.040	N/A	N/A	N/A	N/A
WLAN2.4G	Right Side	0	1	0.973	0.947	1.027	N/A	N/A	N/A	N/A

4.6.4 Simultaneous Multi-band Transmission Evaluation

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

Simultaneous TX Combination	Capable Transmit Configurations	Body Exposure Condition
1	WWAN + BT	Yes
2	WWAN + WLAN2.4G	Yes
3	WWAN + WLAN5G	Yes
4	WWAN + WLAN5G + BT	Yes

<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.

Note: The detailed sim-tx analysis please refer to Appendix E.

<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.

$$\text{SPLSR} = \frac{(SAR_1 + SAR_2)^{1.5}}{R_i}$$

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.

When the SPLSR is <= 0.04, the simultaneous transmission SAR is not required. Otherwise, the enlarged zoom scan and volume scan post-processing procedures will be performed.

Note:

1. Accordding to the TCB workshop test guide in April 2022, instead of doing a small volume scan over a co-located antenna pair, you may algebraically sum the SAR values of the co-located pair and use that value in SPLSR

calculation, use the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative

2. For ULCA and ENDC, for the purpose of mixed SPLSR combination, the SAR values of WWAN antennas 1 and 2, antennas 1 and 4, and antennas 2 and 7 are algebraically summed. The SAR values of Wi-Fi and Bluetooth are algebraically summed. Then the two closest hotspot points in WWAN and Wi-Fi/BT are selected for SPLSR calculation, which is relatively conservative.
3. Select the frequency band with the highest SAR value in the same WWAN antenna and the same RF exposure position, use the coordinates closest to Wi-Fi/BT antenna to perform SPLSR calculation with Wi-Fi/BT. This approach is relatively conservative and can represent all frequency bands in the same antenna.
4. Please refer to Appendix E for detailed SPLSR calculation results.

Test Engineer：Jiawei Tu, and Rikou Lu.

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Due Data
System Validation Dipole	SPEAG	D750V3	1067	Jun. 17, 2024	Jun. 16, 2025
System Validation Dipole	SPEAG	D835V2	4d139	Jun. 16, 2024	Jun. 15, 2025
System Validation Dipole	SPEAG	D1750V2	1071	Jun. 17, 2024	Jun. 16, 2025
System Validation Dipole	SPEAG	D1900V2	5d159	Jun. 15, 2024	Jun. 14, 2025
System Validation Dipole	SPEAG	D2300V2	1053	Jun. 16, 2024	Jun. 16, 2025
System Validation Dipole	SPEAG	D2450V2	893	Jun. 15, 2024	Jun. 14, 2025
System Validation Dipole	SPEAG	D2600V2	1110	Jun. 17, 2024	Jun. 16, 2025
System Validation Dipole	SPEAG	D3500V2	1111	Oct. 21, 2021	Oct. 20, 2024
System Validation Dipole	SPEAG	D3700V2	1082	Oct. 20, 2021	Oct. 19, 2024
System Validation Dipole	SPEAG	D3900V2	1055	Oct. 25, 2021	Oct. 24, 2024
System Validation Dipole	SPEAG	D5GHzV2	1133	Jun. 15, 2024	Jun. 14, 2025
Dosimetric E-Field Probe	SPEAG	EX3DV4	3873	Aug. 22, 2023	Aug. 21, 2024
Data Acquisition Electronics	SPEAG	DAE4	1389	Nov. 03, 2023	Nov. 02, 2024
Dielectric Probe Kit	SPEAG	DAK-3.5	1076	Aug. 20, 2024	Aug. 19, 2025
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Jan. 31, 2024	Jan. 30, 2025
ENA Series Network Analyzer	Agilent	E5071C	MY46214638	Apr. 28, 2024	Apr. 27, 2025
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510355	Jan. 31, 2024	Jan. 30, 2025
MXG Analog Signal Generator	KEYSIGHT	N5183A	MY50143024	Jan. 31, 2024	Jan. 30, 2025
Power Meter	Agilent	N1914A	MY52180044	Jan. 30, 2024	Jan. 29, 2025
Power Sensor	Agilent	E9304A H18	MY52050011	Jan. 30, 2024	Jan. 29, 2025
Power Meter	ANRITSU	ML2495A	1506002	Jan. 30, 2024	Jan. 29, 2025
Power Sensor	ANRITSU	MA2411B	1339353	Jan. 30, 2024	Jan. 29, 2025
Temp. & Humi. Recorder	HUATO	A2000TH	HE20107712	Apr. 29, 2024	Apr. 28, 2025
Electronic Thermometer	YONGFA	YF-160A	120100323	Apr. 29, 2024	Apr. 28, 2025
Coupler	Woken	0110A056020-10	COM27RW1A3	May. 20, 2024	May. 19, 2025

Note:

1. Referring to KDB 865664 D01 v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipole are also not physically damaged, or repaired during the interval. The dipole justification can be found in appendix C.
   The return loss is ＜ -20dB, within 20% of prior calibration, the impedance is with 5ohm of prior calibration.

6. Measurement Uncertainty

DASY5 Uncertainty Budget								
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**	**(Vi) Veff**
Measurement System								
Probe Calibration	6.0	N	1	1	1	6.0	6.0	∞
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6	∞
Modulation Response	3.2	R	1.732	1	1	1.8	1.8	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration Time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7	∞
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2	∞
Test Sample Related								
Device Positioning	3.0	N	1	1	1	3.0	3.0	35
Device Holder	3.6	N	1	1	1	3.6	3.6	12
Power Drift	5.0	R	1.732	1	1	2.9	2.9	∞
Power Scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Phantom and Setup								
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5	∞
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0	∞
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1	5
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0	∞
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0	∞
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0	5
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4	∞
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1	∞
Combined Std. Uncertainty						11.4%	11.4%	1013
Coverage Factor for 95 %						K=2	K=2	
Expanded STD Uncertainty						22.9%	22.7%	

Uncertainty budget for frequency range 30 MHz to 3 GHz

DASY5 Uncertainty Budget								
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**	**(Vi) Veff**
Measurement System								
Probe Calibration	6.55	N	1	1	1	6.5	6.5	∞
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6	∞
Modulation Response	3.2	R	1.732	1	1	1.8	1.8	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.0	R	1.732	1	1	0.0	0.0	∞
Integration Time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2	∞
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9	∞
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	3.0	N	1	1	1	3.0	3.0	35
Device Holder	3.6	N	1	1	1	3.6	3.6	12
Power Drift	5.0	R	1.732	1	1	2.9	2.9	∞
Power Scaling	0.0	R	1.732	1	1	0.0	0.0	∞
Phantom and Setup								
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8	∞
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0	∞
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1	5
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0	∞
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0	∞
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0	5
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4	∞
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1	∞
Combined Std. Uncertainty						12.5%	12.5%	1458
Coverage Factor for 95 %						K=2	K=2	
Expanded STD Uncertainty						25.0%	24.9%	

Uncertainty budget for frequency range 3 GHz to 6 GHz

7. Information on the Testing Laboratories

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 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:

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

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Appendix A. SAR Plots of System Verification

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

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.

Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

Appendix D. Conducted RF Output Power Table

The detailed power table are shown as follows.

Appendix E. Simultaneous Multi-band Transmission Evaluation

The simultaneous transmission evaluation and analysis is shown as below.

Appendix F. Photographs of EUT and Setup