Prüfbericht-Nr.: *Test report no.:*	CN241YH5 001	**Auftrags-Nr.:** *Order no.*:	48248997	Seite 1 von 61 *Page 1 of 61*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2024-06-19	
Auftraggeber: *Client:*	Persistent systems LLC 601 W 26th St Suite 905			
Prüfgegenstand: *Test item:*	5G NR Module			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	FN990A28			
Auftrags-Inhalt: *Order content*:	Test Report for FCC SAR			
Prüfgrundlage: *Test specification:*	FCC 47 CFR §2.1093 IEEE Std 1528-2013 IEC/IEEE 62209-1528:2020 Published RF exposure KDB procedures			
Wareneingangsdatum: *Date of sample receipt:*	2024-07-08			
Prüfmuster-Nr.: *Test sample no:*	A003763467-005			
Prüfzeitraum: *Testing period:*	2024-10-21 - 2024-10-26			
Ort der Prüfung: *Place of testing:*	EMC/RF Taipei Testing Site			
Prüflaboratorium: *Testing laboratory:*	Taipei Testing Laboratories			
Prüfergebnis*: *Test result*:*	Pass			

überprüft von: *compiled by:*	Ginger Chiang	**genehmigt von:** authorized by:	Morrison Huang
Datum: *Date:* 2024-12-03	Ginger Chiang	**Ausstellungsdatum:** *Issue date:* 2024-12-03	Morrison Huang
Stellung / *Position:*	Project Engineer	**Stellung** / *Position:*	Project Engineer

Sonstiges / *Other:*

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.* *Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

CONTENTS

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2024-12-03

1. General Information

1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows:

Equipment Class	Operating Mode	Highest Reported Body SAR_{1g} (1.0 cm Gap) (W/kg)
PCB	LTE Band 2	0.248
	LTE Band 5	0.485
	LTE Band 12	0.406
	LTE Band 14	0.589
	LTE Band 30	0.749
	LTE Band 66	0.249
	FR1 n2	0.261
	FR1 n5	0.504
	FR1 n30	0.745
	FR1 n66	0.214
	FR1 n77	0.506
EN-DC NSA SAR		Body-Worn (W/Kg)
		1.334

Note:

1. The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows: This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 10-gram SAR for Product Specific 10g SAR, limit: 4.0W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.
2. This device supports both LTE band 12 and band 17. The frequency span of LTE band 12 can completely cover LTE band 17, and they have the same tune-up power. SAR was tested for LTE band 12 only.
3. This device supports both LTE band 4 and band 66. The frequency span of LTE band 66 can completely cover LTE band 4, and they have the same tune-up power. SAR was tested for LTE band 66 only.

1.2 Equipment Under Test (EUT) Information

1.2.1 General Information

EUT Type	5G NR Module
Model Name	FN990A28
FCC ID	2AG3JFN990A28
Antenna Type	Monopole antenna
Antenna Gain	LTE Band 2: -5.6 dBi LTE Band 4: -5.6 dBi LTE Band 5: -8.54 dBi LTE Band 12: -8.54 dBi LTE Band 14: -8.54 dBi LTE Band 17: -8.54 dBi LTE Band 30: -6.69 dBi LTE Band 66: -5.6 dBi 5G NR n2: -5.6 dBi 5G NR n5: -8.54 dBi 5G NR n30: -6.69 dBi 5G NR n66: -5.6 dBi 5G NR n77: 0.97 dBi
Host Information	Product: Personal Transport System for the MPU5 Model: WR-PT5-0001

Note: The EUT is installed into the host during the test.

1.2.2 Wireless Technologies

Tx Frequency Bands (Unit: MHz)	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 66: 1710 MHz ~1780 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n77: 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3980 MHz
Uplink Modulations	LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM (Pi/2 BPSK/QPSK/16QAM/64QAM/ 256QAM) CP-OFDM (QPSK/16QAM/64QAM/ 256QAM)

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F., No. 758, Sec. 4, Bade Rd., Songshan Dist., Taipei City 105 Taiwan (R.O.C.)

2.2 Test Facilities

Taipei Testing Laboratories

No. 458-18, Sec. 2, Fenliao Rd., Linkou Dist., New Taipei City 244 Taiwan (R.O.C.)

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.3 List of Test and Measurement Instruments

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
E-field probes	SPEAG	EX3DV4	7400	2024/4/25	1 Year
Data Acquisition Electronics	SPEAG	DAE4	855	2024/4/22	1 Year
System Validation Dipole	SPEAG	D750V3	1199	2024/3/20	1 Year
System Validation Dipole	SPEAG	D835V2	4d058	2024/3/20	1 Year
System Validation Dipole	SPEAG	D1800V2	2d156	2024/3/15	1 Year
System Validation Dipole	SPEAG	D1900V2	5d090	2024/3/13	1 Year
System Validation Dipole	SPEAG	D2300V2	1108	2024/3/14	1 Year
System Validation Dipole	SPEAG	D3500V2	1105	2024/3/18	1 Year
System Validation Dipole	SPEAG	D3700V2	1077	2024/3/18	1 Year
System Validation Dipole	SPEAG	D3900V2	1049	2024/3/18	1 Year
Dielectric Assessment Kit	SPEAG	DAK-3.5	1292	2024/4/22	1 Year
ENA	Agilent	E5080A	MY55200677	2024/1/17	1 Year
Power Meter	Anritsu	ML2495A	1901008	2024/3/12	1 Year
Power Sensor	Anritsu	MA2411B	1725269	2024/3/12	1 Year
Power Sensor	R&S	NRP33S	101622	2024/3/21	1 Year
Signal Analyzer	R&S	FSV40	101512	2024/2/22	1 Year
Signal Generator	R&S	SMB100A03	181336	2024/6/11	1 Year
Wireless Tester	Anritsu	MT8821C	6262044753	2024/7/2	1 Year
Wireless Tester	Anritsu	MT8000A	6262036825	2024/4/17	1 Year
Digital Thermometer	Testo	608-H1	45207430	2023/11/24	1 Year
Directional coupler	Fairview Microwave	FMCP1025-20	A000553136-001	N/A	N/A
Power Amplifier	EMCI	EMC2830P	980352	N/A	N/A
Power Amplifier	mini-circuits	ZHL-42W	SN002101809	N/A	N/A
Twin Sam Phantom	SPEAG	QD000P40CC	TP-1467	N/A	N/A

3. Measurement Uncertainty

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor(a)	1/k(b)	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity
(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

SAR Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 4MHz - 10GHz range)								
Symbol	Input quantity *Xi* (source of uncertainty)	Unc. Value	Prob. Dist.	Div.	ci (1g)	ci (10g)	Std.Unc. (1g) (±%)	Std.Unc. (10g) (±%)
Measurement system errors								
CF	Probe calibration (±%)	18.6	N	2	1	1	9.3	9.3
***CF*drift**	Probe calibration drift (±%)	1.0	N	1	1	1	0.6	0.6
LIN	Probe linearity and detection limit (±%)	4.7	R	1.732	1	1	2.7	2.7
BBS	Broadband signal (±%)	3.0	N	1	1	1	1.7	1.7
ISO	Probe isotropy (±%)	7.6	R	2	1	1	4.4	4.4
DAE	Other probe and data acquisition errors (±%)	0.3	N	1.732	1	1	0.2	0.2
AMB	RF ambient and noise (±%)	1.8	N	1	1	1	1.8	1.8
∆xyz	Probe positioning errors (±mm)	0.20	N	1	0.33	0.33	0.07	0.07
DAT	Data processing errors (±%)	3.5	N	1	1	1	3.5	3.5
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Conductivity (meas.) DAK (±%)	2.5	N	1	0.78	0.71	2.0	1.8
LIQ(Tc)	Conductivity (temp.) (±%)	5	R	1.732	0.78	0.71	2.3	2.0
EPS	Phantom Permittivity (±%)	14	R	1.732	0.5	0.5	4.0	4.0
DIS	Distance DUT – TSL (±%)	2	N	1	2	2	4.0	4.0
Dxyz	Device Positioning (±%)	2	N	1	1	1	2.0	2.0
H	Device Holder (±%)	3.4	N	1	1	1	3.4	3.4
MOD	DUT Modulationm (±%)	2.4	R	1.732	1	1	1.4	1.4
TAS	Time-average SAR (±%)	2.4	R	1.732	1	1	1.4	1.4
***RF*drift**	DUT drift (±%)	5	N	1	1	1	5.0	5.0
VAL	Val Antenna Unc. (±%)	0	N	1	1	1	0.0	0.0
***P*in**	Unc. Input Power (±%)	0	N	1	1	1	0.0	0.0
Corrections to the SAR result								
C(ε',σ)	Deviation to Target (±%)	1.9	N	1	1	0.84	1.9	1.6
C(R)	SAR scaling (±%)	0	R	√3	1	1	0.0	0.0
u(∆SAR)	Combined uncertainty						14.9	14.8
	Coverage Factor for 95%						K=2	K=2
U	Expanded uncertainty					*U* =	**±**29.7	**±**29.6

Uncertainty budget for frequency range 4 MHz to 10 GHz

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

4. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR §2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure KDB procedures & manufacturer KDB inquiries:

- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 447498 D04 Interim General RF Exposure Guidance v01
- KDB 648474 D04 Handset SAR v01r03
- KDB 941225 D05 SAR for LTE Devices v02r05
- KDB 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02

In addition to the above, the following information was used:

- TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; Page 37, LTE Considerations (LTE Band 41 Test Channels)

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is average over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. SAR Measurement System

6.1 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:

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

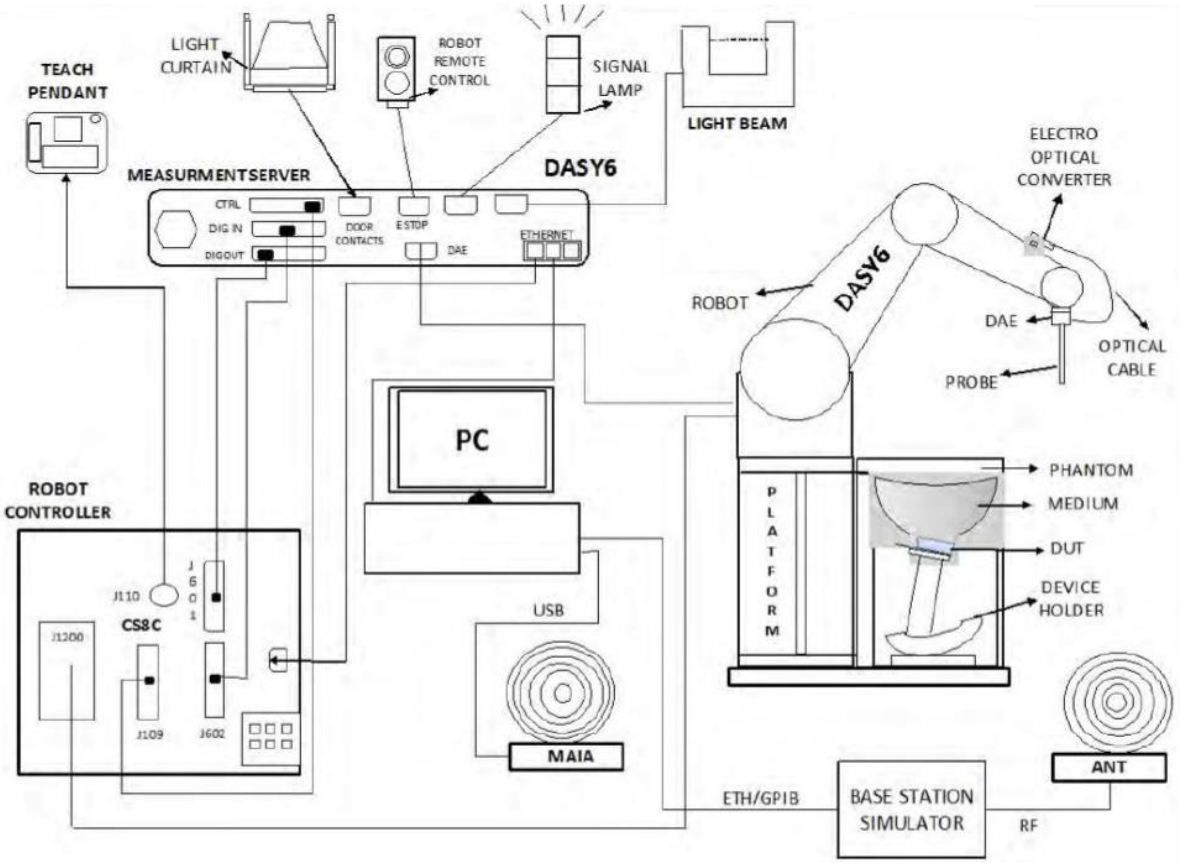
SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

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

6.2 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 DASY6 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.



DASY System Setup

6.2.1 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)

DASY6

6.2.2 Probes

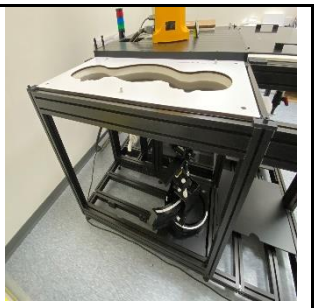
The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

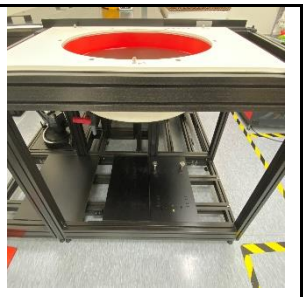
Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

6.2.3 Data Acquisition Electronics (DAE)

Model	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

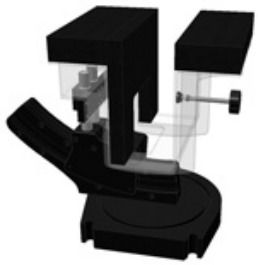
6.2.4 Phantoms

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEC/IEEE 62209-1528. 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 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 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	

6.2.5 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/IEEE 62209-1528 (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	

6.2.6 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	300 MHz to 10 GHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

6.2.7 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.

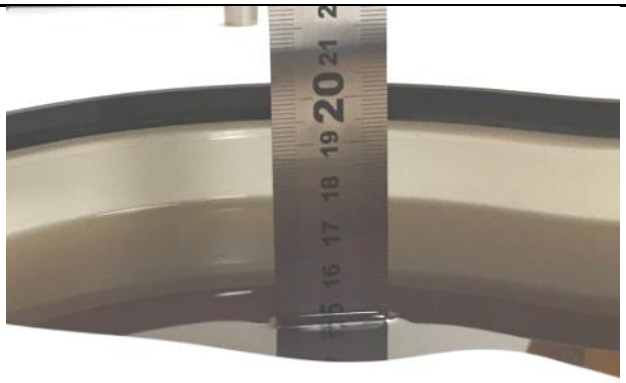


Photo of Liquid Height for Head Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 Appendix A.
The workshop effective February 19, 2019, FCC has permitted the use of single head tissue simulating liquid specified in IEC 62209 1 for all SAR tests.
The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

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
6500	34.5	32.8 ~ 36.2	6.07	6.04 ~ 6.11

7. 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

7.1 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	≤ 2GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan (Δx, Δy)	≦15mm	≦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 (2-3 GHz): ≦8 mm, 3-4 GHz: ≦7 mm, 4-6 GHz: ≦5 mm) may be applied.

7.2 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.

7.3 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.

7.4 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

7.5 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.

8. SAR Measurement Evaluation

8.1 EUT Configuration and Setting

<Connections between EUT and System Simulator>
For WWAN SAR testing, the EUT was linked and controlled by base station emulator (R&S_CMW500). Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

<Considerations Related to LTE for Setup and Testing>
This device contains LTE transmitter which follows 3GPP standards, is category 3, supports both QPSK and 16QAM modulations, and supported LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for both QPSK and 16QAM modulation. The results please refer to section 4.6 of this report.

EUT Supported LTE Band and Channel Bandwidth						
LTE Band	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz
2	V	V	V	V	V	V
4	V	V	V	V	V	V
5	V	V	V	V		
12	V	V	V	V		
14			V	V		
17			V	V		
30			V	V		
66	V	V	V	V	V	V

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

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)
	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
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

Table 6.2.1-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocation	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2,3]	≤ 0.5[2]	0[2,4]
	Pi/2 BPSK w Pi/2 BPSK DMRS	≤ 0.5[2,3]	0[2]	0[2,4]
	QPSK	≤ 1	0[5]	
	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 0 dB MPR is 26 dBm.
Note 2: Applicable for conditions where note 1 does not apply.
Note 3: For 3 MHz channel bandwidth the Pi/2 BPSK edge allocation MPR is 1 dB.
Note 4: For a UE indicating support for UE capability [*powerBoostRE/18*] and if the IE [*powerBoostPi2BPSKRel18*] is set to 1, the reference power is increased by [$\Delta P_{PowerBoost} - \Delta P_{PowerClass}$]
Note 5: For a UE indicating support for UE capability [*powerBoostRel18*] or [*powerBoostTSRel18*] and if the IE [*powerBoostQPSKRel18*] is set to 1, the reference power is increased by [$\Delta P_{PowerBoost} - \Delta P_{PowerClass}$]

Table 6.2.1-1: Maximum Power Reduction (MPR) for Power Class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocation	Inner RB allocations
DFT-s-OFDM CP-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0[1]
	QPSK	≤ 3.5	≤ 1	0[2]
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5	≤ 2.5	
	256 QAM	≤ 4.5		
	QPSK	≤ 3.5	≤ 3	≤ 1.5
DFT-s-OFDM	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		
	Pi/2 BPSK	≤ 3.5	≤ 0.5	01

Note 1: Applicable for a UE indicating support for UE capability [powerBoostRel18] or [powerBoostRel18TS] and if the IE [powerBoostPi2BPSKRel18] is set to 1. The reference power is increased by [$\Delta P_{PowerBoost} - \Delta P_{PowerClass}$]
Note 2: Applicable for a UE indicating support for UE capability [powerBoostRel18] or [powerBoostRel18TS] and if the IE [powerBoostQPSKRel18] is set to 1. The reference power is increased by [$\Delta P_{PowerBoost} - \Delta P_{PowerClass}$]

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.

LTE Downlink Carrier Aggregation (CA) Setup Configurations

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

EUT Supported Combinations of Downlink Carrier Aggregation							
Intra-Band Contiguous CA Operating Bands							
CA_2C	CA_5B	CA_66B	CA_66C				

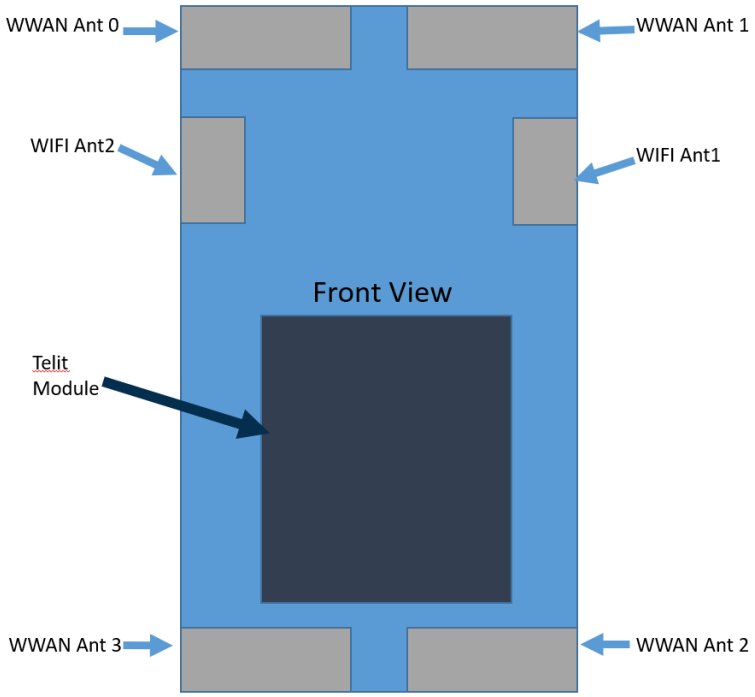
8.2 EUT Testing Position

According to technical standards, the EUT is tested for SAR compliance in head, body-worn accessory and other use configurations described in the following subsections.

8.2.1 Body Exposure Conditions

The EUT was tested for six surfaces of the EUT as front surface, back surface, left side, right side, top side, and bottom side. The separation distance between the EUT and phantom is 10mm.

8.2.2 Antenna Location



8.2.3 EN-DC Combination

EN-DC Combination	LTE Antenna	FR1 Antenna
DC_2A_n5A	0	0
DC_2A_n77A	0	3
DC_5A_n2A	0	0
DC_5A_n30A	0	0
DC_5A_n66A	0	0
DC_5A_n77A	0	3
DC_12A_n2A	0	0
DC_12A_n30A	0	0
DC_12A_n66A	0	0
DC_12A_n77A	0	3
DC_14A_n2A	0	0
DC_14A_n30A	0	0
DC_14A_n66A	0	0
DC_14A_n77A	0	3
DC_30A_n5A	0	0
DC_30A_n77A	0	3
DC_66A_n5A	0	0
DC_66A_n77A	0	3

8.3 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

The following materials are used for producing the tissue-equivalent materials.

Recipes of Tissue Simulating Liquid

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	44	-	0.2	-	56.0	-	42.1	-
H835	44	48.4	0.2	1.3	57.0	-	41.1	-
H900	44	48.4	0.2	1.4	58.0	-	40.2	-
H1450	44	-	-	0.6	-	-	56.1	-
H1640	44	-	-	0.5	-	-	53.7	-
H1750	44	45.3	-	0.4	-	-	52.6	-
H1800	44	45.3	-	0.5	-	-	55.2	-
H1900	44	45.3	-	0.2	-	-	55.3	-
H2000	44	45.3	-	0.1	-	-	55.4	-
H2300	44	-	-	0.1	-	-	55.0	-
H2450	44	-	-	0.1	-	-	54.9	-
H2600	44	-	-	0.1	-	-	54.8	-
H3500	44	-	-	0.2	-	20.0	71.8	-
H4000	44	-	-	-	-	-	56.0	-
H5G	44	-	-	-	-	17.2	65.5	17.2
H6G	44	-	-	-	-	-	56.0	-

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16M +resistivity
HEC: Hydroxyethyl Cellulose; Sorbitan monolaurate (Tween 20); Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]; Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl) phenyl]ether.

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

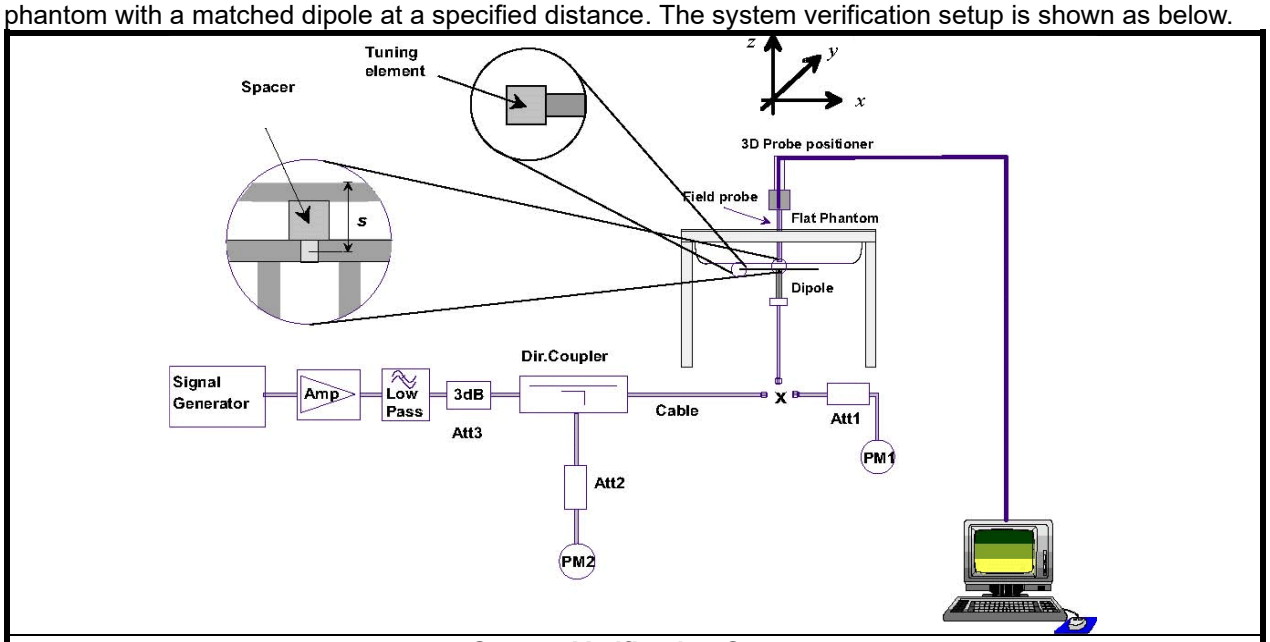
Tissue Type	Frequency (MHz)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
Head	750	0.892	42.655	0.89	41.9	0.22	1.80	2024/10/21
Head	835	0.918	42.485	0.9	41.5	2.00	2.37	2024/10/21
Head	1800	1.375	40.817	1.4	40	-1.79	2.04	2024/10/23
Head	1800	1.361	39.926	1.4	40	-2.79	-0.18	2024/10/24
Head	1900	1.407	40.566	1.4	40	0.50	1.42	2024/10/23
Head	1900	1.421	39.762	1.4	40	1.50	-0.59	2024/10/24
Head	2300	1.713	40.26	1.67	39.5	2.57	1.92	2024/10/23
Head	2300	1.677	39.98	1.67	39.5	0.42	1.22	2024/10/24
Head	3500	2.872	37.861	2.91	37.9	-1.31	-0.10	2024/10/26
Head	3700	3.001	37.52	3.12	37.7	-3.81	-0.48	2024/10/26
Head	3900	3.191	37.236	3.32	37.5	-3.89	-0.70	2024/10/26

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 ℃.

8.4 System Validation

System check Procedure

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.



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 %.

8.5 System Verification

The measuring results for system check are shown as below.

Test Date	Frequency (MHz)	Measured SAR 1g(W/kg)	normalized SAR 1g(W/kg)	Targeted SAR 1g(W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
2024/10/21	750	2.19	8.76	8.48	3.30	1199	7400	855
2024/10/21	835	2.56	10.24	9.94	3.02	4d058	7400	855
2024/10/23	1800	9.56	38.24	39.5	-3.19	2d156	7400	855
2024/10/24	1800	9.39	37.56	39.5	-4.91	2d156	7400	855
2024/10/23	1900	9.91	39.64	39.7	-0.15	5d090	7400	855
2024/10/24	1900	9.82	39.28	39.7	-1.06	5d090	7400	855
2024/10/23	2300	12.50	50	49.2	1.63	1108	7400	855
2024/10/24	2300	12.40	49.6	49.2	0.81	1108	7400	855
2024/10/26	3500	6.50	65	65.2	-0.31	1105	7400	855
2024/10/26	3700	6.43	64.3	66	-2.58	1077	7400	855
2024/10/26	3900	6.76	67.6	68.1	-0.73	1049	7400	855

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.

8.6 Maximum Output Power

8.6.1 Measured Conducted Power Result

All Rate have been tested, the Worst average power (Unit: dBm) is shown as below.

<Ant 0>

LTE B2/BW=1.4M		Average Conducted Power(dBm)				LTE B2/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			18607/ 1850.7	18900/ 1880	19193/ 1909.3				18615/ 1851.5	18900/ 1880	19185/ 1908.5
QPSK	1/0	23.50	23.05	22.88	22.79	QPSK	1/0	23.50	23.05	22.86	22.80
	1/2	23.50	23.10	22.87	22.75		1/7	23.50	23.19	22.91	22.74
	1/5	23.50	23.06	22.87	22.80		1/14	23.50	23.01	22.73	22.64
	3/0	23.50	23.02	22.87	22.78		8/0	22.50	22.21	21.88	21.75
	3/1	23.50	23.09	22.88	22.82		8/3	22.50	22.12	21.92	21.76
	3/3	23.50	23.06	22.90	22.79		8/7	22.50	22.13	21.92	21.80
	6/0	22.50	22.07	21.88	21.74		15/0	22.50	22.12	21.89	21.80
16QAM	1/0	22.50	22.26	22.13	21.86	16QAM	1/0	22.50	22.26	22.14	21.91
	1/2	22.50	22.30	22.09	21.90		1/7	22.50	22.40	22.11	22.03
	1/5	22.50	22.28	22.18	21.84		1/14	22.50	22.31	22.07	21.88
	3/0	22.50	22.21	22.09	21.82		8/0	21.50	21.22	20.98	20.81
	3/1	22.50	22.25	22.16	21.89		8/3	21.50	21.16	21.00	20.83
	3/3	22.50	22.27	22.09	21.91		8/7	21.50	21.14	20.90	20.82
	6/0	21.50	21.23	21.11	20.81		15/0	21.50	21.16	20.93	20.79
64QAM	1/0	21.50	21.32	20.97	20.89	64QAM	1/0	21.50	21.33	21.00	20.85
	1/2	21.50	21.29	20.95	20.92		1/7	21.50	21.29	21.10	20.95
	1/5	21.50	21.36	20.99	20.94		1/14	21.50	21.24	21.05	20.87
	3/0	21.50	21.29	21.00	20.94		8/0	20.50	20.24	19.89	19.78
	3/1	21.50	21.29	20.96	20.91		8/3	20.50	20.21	19.96	19.85
	3/3	21.50	21.28	21.00	20.88		8/7	20.50	20.18	19.95	19.76
	6/0	20.50	20.27	19.95	19.93		15/0	20.50	20.14	19.94	19.78
256QAM	1/0	18.50	18.22	17.93	17.88	256QAM	1/0	18.50	18.19	17.92	17.82
	1/2	18.50	18.20	17.90	17.79		1/7	18.50	18.23	17.91	17.84
	1/5	18.50	18.23	17.91	17.81		1/14	18.50	18.19	17.96	17.87
	3/0	18.50	18.28	17.91	17.85		8/0	18.50	18.27	17.87	17.82
	3/1	18.50	18.28	17.90	17.88		8/3	18.50	18.21	17.90	17.85
	3/3	18.50	18.23	17.88	17.88		8/7	18.50	18.25	17.88	17.85
	6/0	18.50	18.21	17.96	17.87		15/0	18.50	18.23	17.89	17.82

LTE B2/BW=5M		Average Conducted Power (dBm)				LTE B2/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			18625/ 1852.5	18900/ 1880	19175/ 1907.5				18650/ 1855	18900/ 1880	19150/ 1905
QPSK	1/0	23.50	23.13	22.84	22.63	QPSK	1/0	23.50	23.13	22.87	22.81
	1/12	23.50	23.14	22.82	22.73		1/24	23.50	23.03	22.78	22.69
	1/24	23.50	22.96	22.73	22.64		1/49	23.50	22.97	22.79	22.66
	12/0	22.50	22.12	21.79	21.69		25/0	22.50	22.08	21.84	21.72
	12/6	22.50	22.12	21.85	21.72		25/12	22.50	22.14	21.89	21.81
	12/13	22.50	21.97	21.79	21.68		25/25	22.50	22.02	21.81	21.79
	25/0	22.50	22.03	21.85	21.68		50/0	22.50	22.09	21.85	21.76
16QAM	1/0	22.50	22.41	22.09	21.93	16QAM	1/0	22.50	22.50	22.12	22.09
	1/12	22.50	22.46	22.22	22.09		1/24	22.50	22.32	22.15	22.06
	1/24	22.50	22.43	22.02	22.02		1/49	22.50	22.39	22.22	22.22
	12/0	21.50	21.26	20.93	20.83		25/0	21.50	21.25	20.96	20.83
	12/6	21.50	21.27	20.99	20.90		25/12	21.50	21.26	20.98	20.86
	12/13	21.50	21.17	20.97	20.86		25/25	21.50	21.14	20.93	20.88
	25/0	21.50	21.10	20.93	20.83		50/0	21.50	21.22	20.95	20.82
64QAM	1/0	21.50	21.25	21.03	20.87	64QAM	1/0	21.50	21.23	21.17	20.99
	1/12	21.50	21.34	21.06	20.96		1/24	21.50	21.24	21.13	21.05
	1/24	21.50	21.38	20.97	20.83		1/49	21.50	21.26	21.12	20.91
	12/0	20.50	20.14	19.91	19.79		25/0	20.50	20.19	19.98	19.84
	12/6	20.50	20.25	20.00	19.87		25/12	20.50	20.22	20.01	19.87
	12/13	20.50	20.15	19.95	19.86		25/25	20.50	20.12	19.96	19.86
	25/0	20.50	20.12	19.93	19.82		50/0	20.50	20.22	19.90	19.83
256QAM	1/0	18.50	18.25	17.87	17.86	256QAM	1/0	18.50	18.22	17.92	17.85
	1/12	18.50	18.24	17.91	17.82		1/24	18.50	18.28	17.90	17.83
	1/24	18.50	18.25	17.91	17.84		1/49	18.50	18.29	17.88	17.81
	12/0	18.50	18.28	17.97	17.80		25/0	18.50	18.28	17.94	17.85
	12/6	18.50	18.28	17.97	17.83		25/12	18.50	18.22	17.90	17.82
	12/13	18.50	18.25	17.93	17.81		25/25	18.50	18.24	17.97	17.81
	25/0	18.50	18.19	17.97	17.87		50/0	18.50	18.21	17.92	17.80

LTE B2/BW=15M		Average Conducted Power (dBm)				LTE B2/BW=20M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			18675/ 1857.5	18900/ 1880	19125/ 1902.5				18700/ 1860	18900/ 1880	19100/ 1900
QPSK	1/0	23.50	23.07	22.72	22.64	QPSK	1/0	23.50	23.15	23.13	22.79
	1/37	23.50	23.09	22.74	22.81		1/49	23.50	23.20	23.01	22.96
	1/74	23.50	23.07	22.73	22.74		1/99	23.50	23.12	22.97	23.04
	36/0	22.50	22.06	21.93	21.74		50/0	22.50	22.22	22.06	21.92
	36/19	22.50	22.02	21.82	21.77		50/24	22.50	22.29	22.08	21.98
	36/39	22.50	21.95	21.86	21.75		50/50	22.50	22.19	22.05	21.98
	75/0	22.50	22.04	21.82	21.72		100/0	22.50	22.22	22.02	21.92
16QAM	1/0	22.50	22.22	21.96	21.90	16QAM	1/0	22.50	22.19	21.93	21.79
	1/37	22.50	22.04	21.90	21.84		1/49	22.50	22.16	21.95	21.95
	1/74	22.50	22.28	21.84	21.83		1/99	22.50	22.11	22.01	21.87
	36/0	21.50	21.00	20.87	20.73		50/0	21.50	21.04	20.87	20.77
	36/19	21.50	21.06	20.74	20.72		50/24	21.50	21.09	20.81	20.79
	36/39	21.50	21.01	20.85	20.74		50/50	21.50	21.00	20.87	20.83
	75/0	21.50	21.07	20.87	20.76		100/0	21.50	21.02	20.85	20.69
64QAM	1/0	21.50	21.24	20.89	20.83	64QAM	1/0	21.50	21.14	20.99	20.77
	1/37	21.50	21.12	20.85	20.91		1/49	21.50	21.21	21.15	20.81
	1/74	21.50	21.02	21.00	20.68		1/99	21.50	20.98	20.89	20.90
	36/0	20.50	20.08	19.86	19.73		50/0	20.50	20.07	19.78	19.66
	36/19	20.50	20.05	19.78	19.75		50/24	20.50	20.05	19.77	19.80
	36/39	20.50	19.93	19.83	19.77		50/50	20.50	19.94	19.87	19.77
	75/0	20.50	20.04	19.81	19.71		100/0	20.50	20.04	19.82	19.70
256QAM	1/0	18.50	18.21	17.92	17.81	256QAM	1/0	18.50	18.28	17.93	17.81
	1/37	18.50	18.25	17.87	17.79		1/49	18.50	18.21	17.97	17.82
	1/74	18.50	18.24	17.90	17.88		1/99	18.50	18.27	17.87	17.88
	36/0	18.50	18.25	17.92	17.79		50/0	18.50	18.27	17.97	17.84
	36/19	18.50	18.26	17.93	17.80		50/24	18.50	18.26	17.90	17.83
	36/39	18.50	18.19	17.95	17.86		50/50	18.50	18.21	17.93	17.87
	75/0	18.50	18.23	17.89	17.81		100/0	18.50	18.27	17.96	17.81

LTE B4/BW=1.4M		Average Conducted Power(dBm)				LTE B4/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			19957/ 1710.7	20175/ 1732.5	20393/ 1754.3				19965/ 1711.5	20175/ 1732.5	20385/ 1753.5
QPSK	1/0	23.00	22.67	22.32	22.36	QPSK	1/0	23.00	22.79	22.46	22.48
	1/2	23.00	22.71	22.28	22.41		1/7	23.00	22.69	22.61	22.63
	1/5	23.00	22.68	22.37	22.33		1/14	23.00	22.73	22.52	22.59
	3/0	23.00	22.62	22.28	22.41		8/0	22.00	21.79	21.57	21.51
	3/1	23.00	22.64	22.33	22.38		8/3	22.00	21.74	21.61	21.55
	3/3	23.00	22.69	22.32	22.37		8/7	22.00	21.75	21.59	21.61
	6/0	22.00	21.68	21.32	21.40		15/0	22.00	21.69	21.54	21.53
16QAM	1/0	22.00	21.95	21.68	21.70	16QAM	1/0	22.00	21.95	21.69	21.65
	1/2	22.00	22.00	21.63	21.74		1/7	22.00	22.00	21.83	21.82
	1/5	22.00	21.99	21.69	21.73		1/14	22.00	21.91	21.72	21.79
	3/0	22.00	21.96	21.64	21.65		8/0	21.00	20.86	20.59	20.54
	3/1	22.00	21.97	21.73	21.71		8/3	21.00	20.82	20.64	20.60
	3/3	22.00	21.93	21.63	21.69		8/7	21.00	20.78	20.63	20.69
	6/0	21.00	20.92	20.64	20.72		15/0	21.00	20.75	20.60	20.57
64QAM	1/0	21.00	20.93	20.61	20.66	64QAM	1/0	21.00	20.94	20.66	20.66
	1/2	21.00	20.93	20.61	20.63		1/7	21.00	20.88	20.72	20.73
	1/5	21.00	20.88	20.66	20.70		1/14	21.00	20.81	20.62	20.79
	3/0	21.00	20.89	20.61	20.66		8/0	20.00	19.78	19.58	19.57
	3/1	21.00	20.97	20.58	20.63		8/3	20.00	19.81	19.65	19.58
	3/3	21.00	20.96	20.61	20.71		8/7	20.00	19.75	19.60	19.65
	6/0	20.00	19.90	19.62	19.71		15/0	20.00	19.76	19.56	19.52
256QAM	1/0	18.00	17.85	17.69	17.64	256QAM	1/0	18.00	17.91	17.62	17.65
	1/2	18.00	17.88	17.70	17.62		1/7	18.00	17.88	17.67	17.69
	1/5	18.00	17.85	17.63	17.69		1/14	18.00	17.87	17.66	17.62
	3/0	18.00	17.95	17.67	17.69		8/0	18.00	17.85	17.66	17.63
	3/1	18.00	17.86	17.60	17.66		8/3	18.00	17.85	17.67	17.70
	3/3	18.00	17.90	17.69	17.62		8/7	18.00	17.93	17.68	17.71
	6/0	18.00	17.95	17.70	17.70		15/0	18.00	17.91	17.70	17.66

LTE B4/BW=5M		Average Conducted Power (dBm)				LTE B4/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			19975/ 1712.5	20175/ 1732.5	20375/ 1752.5				20000/ 1715	20175/ 1732.5	20350/ 1750
QPSK	1/0	23.00	22.74	22.53	22.60	QPSK	1/0	23.00	22.80	22.55	22.56
	1/12	23.00	22.76	22.60	22.66		1/24	23.00	22.65	22.48	22.54
	1/24	23.00	22.72	22.54	22.56		1/49	23.00	22.69	22.48	22.51
	12/0	22.00	21.79	21.57	21.55		25/0	22.00	21.64	21.49	21.44
	12/6	22.00	21.75	21.59	21.66		25/12	22.00	21.72	21.51	21.48
	12/13	22.00	21.70	21.57	21.64		25/25	22.00	21.62	21.49	21.55
	25/0	22.00	21.69	21.58	21.64		50/0	22.00	21.72	21.50	21.44
16QAM	1/0	22.00	21.93	21.71	21.73	16QAM	1/0	22.00	21.91	21.72	21.99
	1/12	22.00	21.99	21.89	21.88		1/24	22.00	21.98	21.88	21.83
	1/24	22.00	22.00	21.81	21.79		1/49	22.00	22.00	21.88	21.96
	12/0	21.00	20.80	20.64	20.58		25/0	21.00	20.78	20.62	20.56
	12/6	21.00	20.84	20.70	20.71		25/12	21.00	20.84	20.66	20.60
	12/13	21.00	20.78	20.59	20.68		25/25	21.00	20.75	20.63	20.72
	25/0	21.00	20.76	20.61	20.64		50/0	21.00	20.78	20.56	20.58
64QAM	1/0	21.00	20.95	20.66	20.71	64QAM	1/0	21.00	20.84	20.69	20.69
	1/12	21.00	20.87	20.88	20.70		1/24	21.00	20.87	20.73	20.80
	1/24	21.00	20.98	20.72	20.68		1/49	21.00	20.98	20.70	20.78
	12/0	20.00	19.86	19.62	19.60		25/0	20.00	19.83	19.60	19.58
	12/6	20.00	19.75	19.68	19.67		25/12	20.00	19.86	19.60	19.60
	12/13	20.00	19.71	19.58	19.71		25/25	20.00	19.74	19.60	19.69
	25/0	20.00	19.69	19.58	19.67		50/0	20.00	19.83	19.63	19.60
256QAM	1/0	18.00	17.88	17.61	17.62	256QAM	1/0	18.00	17.92	17.66	17.69
	1/12	18.00	17.90	17.65	17.66		1/24	18.00	17.95	17.66	17.68
	1/24	18.00	17.95	17.61	17.69		1/49	18.00	17.86	17.69	17.62
	12/0	18.00	17.91	17.60	17.67		25/0	18.00	17.95	17.66	17.63
	12/6	18.00	17.92	17.66	17.68		25/12	18.00	17.90	17.60	17.70
	12/13	18.00	17.91	17.62	17.69		25/25	18.00	17.88	17.61	17.62
	25/0	18.00	17.90	17.69	17.70		50/0	18.00	17.93	17.70	17.70

LTE B4/BW=15M		Average Conducted Power (dBm)				LTE B4/BW=20M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			20025/ 1717.5	20175/ 1732.5	20325/ 1747.5				20050/ 1720	20175/ 1732.5	20300/ 1745
QPSK	1/0	23.00	22.64	22.40	22.42	QPSK	1/0	23.00	22.80	22.58	22.55
	1/37	23.00	22.80	22.52	22.55		1/49	23.00	22.76	22.61	22.62
	1/74	23.00	22.78	22.58	22.65		1/99	23.00	22.84	22.69	22.70
	36/0	22.00	21.66	21.50	21.41		50/0	22.00	21.73	21.60	21.50
	36/19	22.00	21.71	21.46	21.46		50/24	22.00	21.82	21.65	21.62
	36/39	22.00	21.64	21.51	21.59		50/50	22.00	21.70	21.66	21.64
	75/0	22.00	21.68	21.48	21.46		100/0	22.00	21.75	21.62	21.62
16QAM	1/0	22.00	21.63	21.73	21.57	16QAM	1/0	22.00	21.89	21.74	21.52
	1/37	22.00	21.83	21.67	21.67		1/49	22.00	21.84	21.67	21.83
	1/74	22.00	21.81	21.64	21.74		1/99	22.00	21.90	21.63	21.88
	36/0	21.00	20.67	20.49	20.46		50/0	21.00	20.68	20.50	20.44
	36/19	21.00	20.68	20.53	20.47		50/24	21.00	20.68	20.54	20.54
	36/39	21.00	20.64	20.51	20.58		50/50	21.00	20.62	20.57	20.62
	75/0	21.00	20.72	20.53	20.46		100/0	21.00	20.71	20.52	20.56
64QAM	1/0	21.00	20.78	20.66	20.56	64QAM	1/0	21.00	20.72	20.66	20.67
	1/37	21.00	20.84	20.60	20.76		1/49	21.00	20.81	20.78	20.99
	1/74	21.00	20.77	20.73	20.69		1/99	21.00	20.80	20.58	20.66
	36/0	20.00	19.68	19.51	19.44		50/0	20.00	19.67	19.54	19.42
	36/19	20.00	19.71	19.48	19.45		50/24	20.00	19.66	19.50	19.58
	36/39	20.00	19.64	19.54	19.55		50/50	20.00	19.64	19.56	19.60
	75/0	20.00	19.68	19.54	19.50		100/0	20.00	19.67	19.49	19.54
256QAM	1/0	18.00	17.91	17.67	17.67	256QAM	1/0	18.00	17.90	17.67	17.68
	1/37	18.00	17.87	17.68	17.69		1/49	18.00	17.94	17.60	17.69
	1/74	18.00	17.88	17.60	17.63		1/99	18.00	17.93	17.67	17.69
	36/0	18.00	17.87	17.68	17.68		50/0	18.00	17.92	17.68	17.61
	36/19	18.00	17.88	17.64	17.70		50/24	18.00	17.93	17.64	17.71
	36/39	18.00	17.93	17.65	17.70		50/50	18.00	17.85	17.70	17.66
	75/0	18.00	17.91	17.67	17.70		100/0	18.00	17.95	17.60	17.63

LTE B5/BW=1.4M		Average Conducted Power (dBm)				LTE B5/BW=3M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			20407/ 824.7	20525/ 836.5	20643/ 848.3				20415/ 825.5	20525/ 836.5	20635/ 847.5
QPSK	1/0	24.00	23.44	23.20	22.89	QPSK	1/0	24.00	23.47	23.25	22.94
	1/2	24.00	23.48	23.20	22.90		1/7	24.00	23.46	23.33	23.03
	1/5	24.00	23.45	23.25	22.86		1/14	24.00	23.49	23.27	22.86
	3/0	24.00	23.45	23.24	22.88		8/0	23.00	22.57	22.32	22.05
	3/1	24.00	23.43	23.21	22.90		8/3	23.00	22.57	22.34	22.02
	3/3	24.00	23.47	23.16	22.90		8/7	23.00	22.54	22.31	22.03
	6/0	23.00	22.48	22.15	21.91		15/0	23.00	22.57	22.26	22.04
16QAM	1/0	23.00	22.72	22.36	22.28	16QAM	1/0	23.00	22.68	22.41	22.31
	1/2	23.00	22.77	22.41	22.25		1/7	23.00	22.86	22.68	22.26
	1/5	23.00	22.68	22.31	22.24		1/14	23.00	22.79	22.43	22.13
	3/0	23.00	22.76	22.41	22.29		8/0	22.00	21.61	21.30	21.09
	3/1	23.00	22.70	22.40	22.23		8/3	22.00	21.66	21.41	21.13
	3/3	23.00	22.77	22.35	22.26		8/7	22.00	21.61	21.37	21.05
	6/0	22.00	21.73	21.39	21.26		15/0	22.00	21.56	21.36	21.01
64QAM	1/0	22.00	21.67	21.46	21.08	64QAM	1/0	22.00	21.62	21.47	21.13
	1/2	22.00	21.62	21.41	21.13		1/7	22.00	21.71	21.55	21.30
	1/5	22.00	21.68	21.46	21.13		1/14	22.00	21.61	21.50	21.06
	3/0	22.00	21.68	21.51	21.08		8/0	21.00	20.62	20.38	20.02
	3/1	22.00	21.64	21.48	21.13		8/3	21.00	20.61	20.40	20.08
	3/3	22.00	21.67	21.47	21.03		8/7	21.00	20.55	20.31	20.07
	6/0	21.00	20.66	20.46	20.08		15/0	21.00	20.57	20.35	20.05
256QAM	1/0	19.00	18.61	18.48	18.27	256QAM	1/0	19.00	18.64	18.40	18.27
	1/2	19.00	18.66	18.40	18.29		1/7	19.00	18.67	18.39	18.31
	1/5	19.00	18.65	18.44	18.36		1/14	19.00	18.60	18.44	18.33
	3/0	19.00	18.65	18.40	18.27		8/0	19.00	18.58	18.46	18.35
	3/1	19.00	18.59	18.48	18.33		8/3	19.00	18.61	18.42	18.28
	3/3	19.00	18.62	18.39	18.34		8/7	19.00	18.59	18.44	18.35
	6/0	19.00	18.63	18.48	18.28		15/0	19.00	18.60	18.43	18.33

LTE B5/BW=5M		Average Conducted Power(dBm)				LTE B5/BW=10M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			20425/ 826.5	20525/ 836.5	20625/ 846.5				20450/ 829	20525/ 836.5	20600/ 844
QPSK	1/0	24.00	23.50	23.34	23.04	QPSK	1/0	24.00	23.63	23.43	23.32
	1/12	24.00	23.51	23.43	23.07		1/24	24.00	23.44	23.38	23.06
	1/24	24.00	23.47	23.31	22.87		1/49	24.00	23.34	23.22	22.96
	12/0	23.00	22.56	22.35	22.08		25/0	23.00	22.57	22.38	22.22
	12/6	23.00	22.59	22.37	22.09		25/12	23.00	22.54	22.38	22.22
	12/13	23.00	22.52	22.28	21.95		25/25	23.00	22.48	22.25	22.01
	25/0	23.00	22.55	22.30	22.03		50/0	23.00	22.54	22.35	22.18
16QAM	1/0	23.00	22.80	22.54	22.26	16QAM	1/0	23.00	22.79	22.67	22.53
	1/12	23.00	22.76	22.72	22.31		1/24	23.00	22.68	22.56	22.37
	1/24	23.00	22.69	22.41	22.17		1/49	23.00	22.73	22.47	22.32
	12/0	22.00	21.57	21.39	21.10		25/0	22.00	21.56	21.41	21.27
	12/6	22.00	21.62	21.43	21.15		25/12	22.00	21.52	21.36	21.22
	12/13	22.00	21.59	21.33	20.96		25/25	22.00	21.47	21.30	21.07
	25/0	22.00	21.54	21.34	21.07		50/0	22.00	21.52	21.31	21.23
64QAM	1/0	22.00	21.65	21.52	21.27	64QAM	1/0	22.00	21.63	21.58	21.37
	1/12	22.00	21.68	21.60	21.20		1/24	22.00	21.66	21.56	21.27
	1/24	22.00	21.54	21.52	21.20		1/49	22.00	21.61	21.44	21.07
	12/0	21.00	20.59	20.39	20.08		25/0	21.00	20.57	20.43	20.27
	12/6	21.00	20.61	20.40	20.13		25/12	21.00	20.55	20.38	20.25
	12/13	21.00	20.56	20.29	20.02		25/25	21.00	20.49	20.29	20.04
	25/0	21.00	20.58	20.35	20.07		50/0	21.00	20.56	20.34	20.18
256QAM	1/0	19.00	18.66	18.43	18.28	256QAM	1/0	19.00	18.59	18.48	18.32
	1/12	19.00	18.67	18.48	18.30		1/24	19.00	18.66	18.43	18.32
	1/24	19.00	18.67	18.44	18.29		1/49	19.00	18.61	18.40	18.31
	12/0	19.00	18.67	18.40	18.34		25/0	19.00	18.62	18.41	18.33
	12/6	19.00	18.58	18.40	18.32		25/12	19.00	18.61	18.43	18.32
	12/13	19.00	18.61	18.40	18.31		25/25	19.00	18.64	18.41	18.33
	25/0	19.00	18.58	18.41	18.37		50/0	19.00	18.62	18.47	18.35

LTE B12/BW=1.4M		Average Conducted Power (dBm)				LTE B12/BW=3M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23017/ 699.7	23095/ 707.5	23173/ 715.3				23025/ 700.5	23095/ 707.5	23165/ 714.5
QPSK	1/0	24.00	23.81	23.41	23.22	QPSK	1/0	24.00	23.80	23.40	23.25
	1/2	24.00	23.78	23.44	23.17		1/7	24.00	23.74	23.47	23.30
	1/5	24.00	23.78	23.45	23.20		1/14	24.00	23.60	23.26	23.30
	3/0	24.00	23.82	23.38	23.21		8/0	23.00	22.79	22.45	22.26
	3/1	24.00	23.86	23.39	23.27		8/3	23.00	22.74	22.49	22.27
	3/3	24.00	23.79	23.42	23.17		8/7	23.00	22.69	22.43	22.36
	6/0	23.00	22.86	22.41	22.24		15/0	23.00	22.71	22.44	22.25
16QAM	1/0	23.00	22.99	22.53	22.46	16QAM	1/0	23.00	22.99	22.57	22.48
	1/2	23.00	22.97	22.50	22.46		1/7	23.00	22.96	22.65	22.58
	1/5	23.00	22.99	22.56	22.41		1/14	23.00	22.91	22.53	22.45
	3/0	23.00	22.96	22.48	22.43		8/0	22.00	21.86	21.52	21.31
	3/1	23.00	22.99	22.54	22.46		8/3	22.00	21.78	21.51	21.34
	3/3	23.00	22.99	22.52	22.41		8/7	22.00	21.71	21.47	21.37
	6/0	22.00	21.95	21.49	21.44		15/0	22.00	21.72	21.43	21.31
64QAM	1/0	22.00	21.81	21.64	21.48	64QAM	1/0	22.00	21.85	21.60	21.44
	1/2	22.00	21.78	21.64	21.50		1/7	22.00	21.99	21.67	21.50
	1/5	22.00	21.84	21.69	21.45		1/14	22.00	21.87	21.48	21.39
	3/0	22.00	21.85	21.69	21.48		8/0	21.00	20.83	20.46	20.31
	3/1	22.00	21.86	21.66	21.48		8/3	21.00	20.77	20.53	20.35
	3/3	22.00	21.77	21.63	21.50		8/7	21.00	20.72	20.46	20.35
	6/0	21.00	20.81	20.68	20.43		15/0	21.00	20.71	20.48	20.30
256QAM	1/0	19.00	18.99	18.75	18.60	256QAM	1/0	19.00	18.93	18.70	18.55
	1/2	19.00	18.92	18.69	18.60		1/7	19.00	19.00	18.70	18.55
	1/5	19.00	18.98	18.72	18.64		1/14	19.00	18.95	18.72	18.58
	3/0	19.00	18.99	18.71	18.63		8/0	19.00	18.89	18.73	18.56
	3/1	19.00	18.99	18.78	18.58		8/3	19.00	18.91	18.69	18.58
	3/3	19.00	18.97	18.78	18.56		8/7	19.00	18.97	18.79	18.64
	6/0	19.00	18.93	18.77	18.55		15/0	19.00	18.95	18.70	18.56

LTE B12/BW=5M		Average Conducted Power (dBm)				LTE B12/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23035/ 701.5	23095/ 707.5	23155/ 713.5				23060/ 704	23095/ 707.5	23130/ 711
QPSK	1/0	24.00	23.65	23.43	23.38	QPSK	1/0	24.00	23.97	23.74	23.60
	1/12	24.00	23.66	23.49	23.36		1/24	24.00	23.53	23.47	23.31
	1/24	24.00	23.56	23.39	23.24		1/49	24.00	23.42	23.37	23.22
	12/0	23.00	22.72	22.47	22.34		25/0	23.00	22.70	22.52	22.37
	12/6	23.00	22.76	22.48	22.29		25/12	23.00	22.65	22.51	22.46
	12/13	23.00	22.59	22.42	22.32		25/25	23.00	22.47	22.39	22.37
	25/0	23.00	22.63	22.47	22.32		50/0	23.00	22.62	22.47	22.41
16QAM	1/0	23.00	22.99	22.67	22.64	16QAM	1/0	23.00	22.91	22.96	22.81
	1/12	23.00	22.99	22.74	22.64		1/24	23.00	22.80	22.63	22.65
	1/24	23.00	22.76	22.62	22.56		1/49	23.00	22.78	22.51	22.43
	12/0	22.00	21.79	21.52	21.35		25/0	22.00	21.70	21.53	21.42
	12/6	22.00	21.80	21.52	21.38		25/12	22.00	21.67	21.54	21.48
	12/13	22.00	21.67	21.43	21.36		25/25	22.00	21.52	21.43	21.37
	25/0	22.00	21.65	21.50	21.36		50/0	22.00	21.62	21.47	21.40
64QAM	1/0	22.00	21.90	21.66	21.60	64QAM	1/0	22.00	21.97	21.77	21.59
	1/12	22.00	21.92	21.54	21.63		1/24	22.00	21.81	21.72	21.63
	1/24	22.00	21.76	21.51	21.48		1/49	22.00	21.63	21.49	21.40
	12/0	21.00	20.79	20.52	20.33		25/0	21.00	20.69	20.55	20.38
	12/6	21.00	20.80	20.51	20.36		25/12	21.00	20.67	20.49	20.47
	12/13	21.00	20.69	20.44	20.38		25/25	21.00	20.46	20.47	20.40
	25/0	21.00	20.66	20.48	20.34		50/0	21.00	20.61	20.48	20.43
256QAM	1/0	19.00	18.99	18.73	18.56	256QAM	1/0	19.00	18.95	18.71	18.58
	1/12	19.00	18.99	18.74	18.55		1/24	19.00	18.93	18.73	18.60
	1/24	19.00	18.98	18.78	18.61		1/49	19.00	18.97	18.73	18.55
	12/0	19.00	18.91	18.69	18.57		25/0	19.00	19.00	18.77	18.57
	12/6	19.00	18.97	18.71	18.61		25/12	19.00	18.94	18.77	18.56
	12/13	19.00	18.93	18.72	18.56		25/25	19.00	18.95	18.75	18.57
	25/0	19.00	18.96	18.75	18.61		50/0	19.00	18.92	18.78	18.64

LTE B14/BW=5M		Average Conducted Power (dBm)				LTE B14/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23305/ 790.5	23330/ 793	23355/ 795.5					23330/ 793	
QPSK	1/0	23.50	23.09	23.04	23.08	QPSK	1/0	23.50		23.17	
	1/12	23.50	23.05	23.08	23.10		1/24	23.50		23.04	
	1/24	23.50	22.98	23.03	23.00		1/49	23.50		22.97	
	12/0	22.50	21.99	22.03	22.02		25/0	22.50		22.04	
	12/6	22.50	22.12	22.04	22.07		25/12	22.50		22.08	
	12/13	22.50	22.07	22.08	22.07		25/25	22.50		22.10	
	25/0	22.50	22.07	22.02	22.03		50/0	22.50		21.99	
16QAM	1/0	22.50	22.27	22.27	22.25	16QAM	1/0	22.50		22.31	
	1/12	22.50	22.39	22.49	22.38		1/24	22.50		22.26	
	1/24	22.50	22.25	22.15	22.27		1/49	22.50		22.44	
	12/0	21.50	21.03	21.07	21.06		25/0	21.50		21.09	
	12/6	21.50	21.17	21.11	21.05		25/12	21.50		21.05	
	12/13	21.50	21.13	21.13	21.17		25/25	21.50		21.09	
	25/0	21.50	21.06	21.04	21.02		50/0	21.50		20.99	
64QAM	1/0	21.50	21.22	21.16	21.33	64QAM	1/0	21.50		21.19	
	1/12	21.50	21.33	21.33	21.39		1/24	21.50		21.21	
	1/24	21.50	21.18	21.19	21.32		1/49	21.50		21.13	
	12/0	20.50	20.01	20.05	20.07		25/0	20.50		20.04	
	12/6	20.50	20.13	20.05	20.10		25/12	20.50		20.07	
	12/13	20.50	20.08	20.11	20.07		25/25	20.50		20.07	
	25/0	20.50	20.07	20.01	20.01		50/0	20.50		20.00	
256QAM	1/0	18.50	18.11	17.99	18.04	256QAM	1/0	18.50		18.22	
	1/12	18.50	18.11	18.07	18.04		1/24	18.50		18.19	
	1/24	18.50	18.12	18.06	18.12		1/49	18.50		18.19	
	12/0	18.50	18.06	17.99	18.12		25/0	18.50		18.19	
	12/6	18.50	18.12	18.00	18.09		25/12	18.50		18.12	
	12/13	18.50	18.09	17.99	18.05		25/25	18.50		18.22	
	25/0	18.50	18.04	18.04	18.08		50/0	18.50		18.15	

LTE B17/BW=5M		Average Conducted Power (dBm)				LTE B17/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			23755/ 706.5	23790/ 710	23825/ 713.5				23780/ 709	23790/ 710	23800/ 711
QPSK	1/0	24.00	23.44	23.39	23.28	QPSK	1/0	24.00	23.59	23.46	23.53
	1/12	24.00	23.45	23.46	23.29		1/24	24.00	23.33	23.62	23.39
	1/24	24.00	23.27	23.26	23.25		1/49	24.00	23.30	23.37	23.29
	12/0	23.00	22.36	22.35	22.30		25/0	23.00	22.30	22.39	22.39
	12/6	23.00	22.39	22.39	22.34		25/12	23.00	22.44	22.40	22.41
	12/13	23.00	22.44	22.40	22.33		25/25	23.00	22.35	22.35	22.34
	25/0	23.00	22.42	22.28	22.27		50/0	23.00	22.44	22.42	22.39
16QAM	1/0	23.00	22.65	22.61	22.73	16QAM	1/0	23.00	22.68	22.73	22.84
	1/12	23.00	22.89	22.83	22.84		1/24	23.00	22.63	22.81	22.64
	1/24	23.00	22.68	22.62	22.70		1/49	23.00	22.47	22.60	22.54
	12/0	22.00	21.38	21.28	21.38		25/0	22.00	21.36	21.31	21.40
	12/6	22.00	21.45	21.41	21.44		25/12	22.00	21.44	21.36	21.31
	12/13	22.00	21.44	21.41	21.39		25/25	22.00	21.38	21.36	21.45
	25/0	22.00	21.42	21.32	21.28		50/0	22.00	21.45	21.38	21.35
64QAM	1/0	22.00	21.66	21.65	21.52	64QAM	1/0	22.00	21.68	21.66	21.62
	1/12	22.00	21.63	21.55	21.63		1/24	22.00	21.50	21.57	21.54
	1/24	22.00	21.68	21.60	21.49		1/49	22.00	21.49	21.47	21.53
	12/0	21.00	20.39	20.33	20.30		25/0	21.00	20.35	20.41	20.34
	12/6	21.00	20.44	20.32	20.38		25/12	21.00	20.48	20.38	20.28
	12/13	21.00	20.42	20.35	20.38		25/25	21.00	20.37	20.38	20.40
	25/0	21.00	20.47	20.31	20.20		50/0	21.00	20.41	20.34	20.31
256QAM	1/0	19.00	18.37	18.35	18.23	256QAM	1/0	19.00	18.57	18.45	18.43
	1/12	19.00	18.37	18.37	18.29		1/24	19.00	18.31	18.62	18.39
	1/24	19.00	18.20	18.24	18.22		1/49	19.00	18.25	18.36	18.21
	12/0	19.00	18.37	18.35	18.28		25/0	19.00	18.53	18.39	18.48
	12/6	19.00	18.35	18.40	18.23		25/12	19.00	18.24	18.54	18.29
	12/13	19.00	18.26	18.24	18.16		25/25	19.00	18.29	18.36	18.21
	25/0	19.00	18.24	18.26	18.19		50/0	19.00	18.22	18.32	18.28

LTE B30/BW=5M		Average Conducted Power (dBm)				LTE B30/BW=10M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			27685/ 2307.5	27710/ 2310	27735/ 2312.5					27710/ 2310	
QPSK	1/0	22.00	21.46	21.52	21.49	QPSK	1/0	22.00		21.58	
	1/12	22.00	21.51	21.53	21.42		1/24	22.00		21.44	
	1/24	22.00	21.41	21.45	21.50		1/49	22.00		21.36	
	12/0	21.00	20.41	20.46	20.46		25/0	21.00		20.44	
	12/6	21.00	20.53	20.44	20.52		25/12	21.00		20.46	
	12/13	21.00	20.48	20.42	20.49		25/25	21.00		20.39	
	25/0	21.00	20.51	20.43	20.49		50/0	21.00		20.41	
16QAM	1/0	21.00	20.64	20.59	20.69	16QAM	1/0	21.00		20.86	
	1/12	21.00	20.75	20.76	20.68		1/24	21.00		20.67	
	1/24	21.00	20.66	20.57	20.40		1/49	21.00		20.59	
	12/0	20.00	19.49	19.44	19.49		25/0	20.00		19.44	
	12/6	20.00	19.59	19.52	19.53		25/12	20.00		19.47	
	12/13	20.00	19.55	19.46	19.51		25/25	20.00		19.42	
	25/0	20.00	19.51	19.45	19.48		50/0	20.00		19.43	
64QAM	1/0	20.00	19.65	19.65	19.56	64QAM	1/0	20.00		19.61	
	1/12	20.00	19.69	19.77	19.62		1/24	20.00		19.62	
	1/24	20.00	19.56	19.60	19.64		1/49	20.00		19.53	
	12/0	19.00	18.43	18.42	18.53		25/0	19.00		18.44	
	12/6	19.00	18.54	18.49	18.57		25/12	19.00		18.47	
	12/13	19.00	18.51	18.45	18.53		25/25	19.00		18.40	
	25/0	19.00	18.52	18.43	18.49		50/0	19.00		18.42	
256QAM	1/0	17.00	16.42	16.52	16.54	256QAM	1/0	17.00		16.61	
	1/12	17.00	16.47	16.57	16.53		1/24	17.00		16.55	
	1/24	17.00	16.41	16.47	16.50		1/49	17.00		16.56	
	12/0	17.00	16.48	16.47	16.45		25/0	17.00		16.59	
	12/6	17.00	16.44	16.55	16.50		25/12	17.00		16.56	
	12/13	17.00	16.47	16.52	16.51		25/25	17.00		16.58	
	25/0	17.00	16.50	16.57	16.52		50/0	17.00		16.62	

LTE B66/BW=1.4M		Average Conducted Power(dBm)				LTE B66/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			131979/ 1710.7	132322/ 1745	132665/ 1779.3				131987/ 1711.5	132322/ 1745	132657/ 1778.5
QPSK	1/0	24.00	23.02	22.55	22.61	QPSK	1/0	24.00	22.59	22.40	23.51
	1/2	24.00	23.07	22.55	22.57		1/7	24.00	22.72	22.47	23.60
	1/5	24.00	22.98	22.50	22.64		1/14	24.00	22.70	22.39	23.60
	3/0	24.00	23.02	22.56	22.63		8/0	23.00	21.82	21.31	22.61
	3/1	24.00	23.01	22.52	22.62		8/3	23.00	21.72	21.54	22.64
	3/3	24.00	22.97	22.50	22.60		8/7	23.00	21.75	21.43	22.75
	6/0	23.00	21.97	21.55	21.60		15/0	23.00	21.66	21.46	22.63
16QAM	1/0	23.00	22.04	21.49	21.59	16QAM	1/0	23.00	21.91	21.66	22.67
	1/2	23.00	22.07	21.48	21.58		1/7	23.00	22.11	21.64	22.94
	1/5	23.00	22.06	21.44	21.55		1/14	23.00	21.62	21.70	22.61
	3/0	23.00	22.07	21.47	21.58		8/0	22.00	20.86	20.54	21.64
	3/1	23.00	22.04	21.49	21.58		8/3	22.00	20.75	20.49	21.75
	3/3	23.00	22.03	21.46	21.62		8/7	22.00	20.74	20.46	21.80
	6/0	22.00	21.01	20.52	20.60		15/0	22.00	20.75	20.46	21.63
64QAM	1/0	22.00	20.90	20.44	20.53	64QAM	1/0	22.00	20.90	20.62	21.75
	1/2	22.00	20.94	20.40	20.55		1/7	22.00	21.01	20.72	21.93
	1/5	22.00	20.88	20.40	20.52		1/14	22.00	20.88	20.73	21.68
	3/0	22.00	20.91	20.42	20.48		8/0	21.00	19.84	19.49	20.61
	3/1	22.00	20.91	20.43	20.54		8/3	21.00	19.79	19.56	20.72
	3/3	22.00	20.93	20.41	20.51		8/7	21.00	19.76	19.51	20.80
	6/0	21.00	19.90	19.40	19.48		15/0	21.00	19.68	19.56	20.60
256QAM	1/0	19.00	17.66	17.76	18.66	256QAM	1/0	19.00	17.63	17.79	18.69
	1/2	19.00	17.70	17.81	18.67		1/7	19.00	17.63	17.71	18.70
	1/5	19.00	17.63	17.73	18.70		1/14	19.00	17.67	17.73	18.63
	3/0	19.00	17.64	17.77	18.69		8/0	19.00	17.70	17.72	18.66
	3/1	19.00	17.71	17.78	18.64		8/3	19.00	17.63	17.79	18.60
	3/3	19.00	17.71	17.75	18.68		8/7	19.00	17.71	17.81	18.65
	6/0	19.00	17.64	17.77	18.66		15/0	19.00	17.65	17.72	18.64

LTE B66/BW=5M		Average Conducted Power (dBm)				LTE B66/BW=10M		Average Conducted Power (dBm)			
Modula -tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula -tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			131997/ 1712.5	132322/ 1745	132647/ 1777.5				132022/ 1715	132322/ 1745	132622/ 1775
QPSK	1/0	24.00	22.74	22.33	23.35	QPSK	1/0	24.00	22.69	22.32	23.24
	1/12	24.00	23.20	22.38	23.57		1/24	24.00	22.83	22.37	23.37
	1/24	24.00	22.63	22.29	23.47		1/49	24.00	22.64	22.51	23.64
	12/0	23.00	21.70	21.33	22.58		25/0	23.00	21.63	21.30	22.36
	12/6	23.00	21.71	21.37	22.55		25/12	23.00	21.73	21.46	22.40
	12/13	23.00	21.64	21.44	22.57		25/25	23.00	21.72	21.43	22.50
	25/0	23.00	21.63	21.37	22.47		50/0	23.00	21.69	21.37	22.46
16QAM	1/0	23.00	21.90	21.60	22.80	16QAM	1/0	23.00	21.79	21.61	22.68
	1/12	23.00	22.14	21.65	22.93		1/24	23.00	22.10	21.76	22.76
	1/24	23.00	22.01	21.68	22.94		1/49	23.00	22.19	21.77	22.79
	12/0	22.00	20.85	20.48	21.64		25/0	22.00	20.77	20.50	21.49
	12/6	22.00	20.89	20.54	21.68		25/12	22.00	20.80	20.44	21.52
	12/13	22.00	20.69	20.55	21.74		25/25	22.00	20.80	20.58	21.62
	25/0	22.00	20.79	20.43	21.58		50/0	22.00	20.85	20.48	21.62
64QAM	1/0	22.00	20.93	20.51	21.59	64QAM	1/0	22.00	20.74	20.52	21.56
	1/12	22.00	20.91	20.91	21.80		1/24	22.00	20.93	20.63	21.78
	1/24	22.00	20.87	20.70	21.81		1/49	22.00	20.92	20.61	21.74
	12/0	21.00	20.25	19.46	20.63		25/0	21.00	19.78	19.48	20.47
	12/6	21.00	19.89	19.49	20.63		25/12	21.00	19.87	19.53	20.52
	12/13	21.00	19.81	19.45	20.72		25/25	21.00	19.89	19.54	20.67
	25/0	21.00	19.76	19.40	20.57		50/0	21.00	19.83	19.47	20.53
256QAM	1/0	19.00	17.68	17.76	18.60	256QAM	1/0	19.00	17.70	17.80	18.67
	1/12	19.00	17.69	17.74	18.63		1/24	19.00	17.65	17.79	18.68
	1/24	19.00	17.64	17.79	18.64		1/49	19.00	17.70	17.71	18.65
	12/0	19.00	17.68	17.80	18.63		25/0	19.00	17.62	17.76	18.64
	12/6	19.00	17.64	17.81	18.64		25/12	19.00	17.64	17.81	18.64
	12/13	19.00	17.66	17.80	18.61		25/25	19.00	17.67	17.78	18.67
	25/0	19.00	17.63	17.81	18.65		50/0	19.00	17.69	17.78	18.67

LTE B66/BW=15M		Average Conducted Power (dBm)				LTE B66/BW=20M		Average Conducted Power (dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up	Channel/Frequency(MHz)		
			132047/ 1717.5	132322/ 1745	132597/ 1772.5				132072/ 1720	132322/ 1745	132572/ 1770
QPSK	1/0	24.00	22.54	22.29	23.13	QPSK	1/0	24.00	23.07	22.58	23.14
	1/37	24.00	22.95	22.30	23.36		1/49	24.00	22.66	22.30	23.28
	1/74	24.00	22.73	22.43	23.59		1/99	24.00	22.66	22.76	23.65
	36/0	23.00	21.59	21.36	22.13		50/0	23.00	21.71	21.44	22.13
	36/19	23.00	21.61	21.30	22.39		50/24	23.00	21.73	21.60	22.34
	36/39	23.00	21.64	21.48	22.44		50/50	23.00	21.66	21.61	22.48
	75/0	23.00	21.63	21.43	22.28		100/0	23.00	21.77	21.60	22.36
16QAM	1/0	23.00	21.56	21.63	22.08	16QAM	1/0	23.00	21.99	21.54	22.08
	1/37	23.00	21.72	21.39	22.51		1/49	23.00	21.85	21.24	22.45
	1/74	23.00	21.72	21.97	22.72		1/99	23.00	21.78	21.88	22.72
	36/0	22.00	20.70	20.51	21.24		50/0	22.00	20.65	20.39	21.06
	36/19	22.00	20.73	20.35	21.24		50/24	22.00	20.76	20.46	21.23
	36/39	22.00	20.65	20.53	21.52		50/50	22.00	20.65	20.57	21.44
	75/0	22.00	20.69	20.46	21.27		100/0	22.00	20.67	20.52	21.37
64QAM	1/0	22.00	20.72	20.27	21.27	64QAM	1/0	22.00	20.88	20.48	20.94
	1/37	22.00	20.82	20.20	21.69		1/49	22.00	20.73	21.21	21.49
	1/74	22.00	20.95	20.63	21.66		1/99	22.00	20.78	20.85	21.60
	36/0	21.00	19.71	19.38	20.17		50/0	21.00	19.59	19.40	20.10
	36/19	21.00	19.67	19.44	20.31		50/24	21.00	19.61	19.35	20.24
	36/39	21.00	19.52	19.48	20.56		50/50	21.00	19.55	19.56	20.40
	75/0	21.00	19.65	19.35	20.30		100/0	21.00	19.66	19.53	20.31
256QAM	1/0	19.00	17.65	17.71	18.64	256QAM	1/0	19.00	17.69	17.79	18.62
	1/37	19.00	17.61	17.77	18.66		1/49	19.00	17.67	17.80	18.63
	1/74	19.00	17.65	17.78	18.69		1/99	19.00	17.62	17.81	18.64
	36/0	19.00	17.68	17.78	18.61		50/0	19.00	17.61	17.78	18.68
	36/19	19.00	17.70	17.71	18.64		50/24	19.00	17.71	17.71	18.66
	36/39	19.00	17.71	17.71	18.66		50/50	19.00	17.71	17.75	18.63
	75/0	19.00	17.65	17.74	18.67		100/0	19.00	17.61	17.77	18.62

ULCA_2C										
Combination 20MHz + 20MHz										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune Up Power (dBm)
			RB Size	RB Offset	RB Size	RB Offset				
18700	18898	QPSK	1	99	1	0	2	0	23.43	23.5
18900	18702	QPSK	1	0	1	99	2	0	23.45	23.5
19100	18902	QPSK	1	0	1	99	2	0	23.23	23.5

ULCA_5B										
Combination 10MHz + 10MHz										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune Up Power (dBm)
			RB Size	RB Offset	RB Size	RB Offset				
20450	20549	QPSK	1	49	1	0	2	0	23.72	24
20575	20476	QPSK	1	0	1	49	2	0	23.73	24
20600	20501	QPSK	1	0	1	49	2	0	23.68	24

ULCA_66B										
Combination 15MHz + 5MHz										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune Up Power (dBm)
			RB Size	RB Offset	RB Size	RB Offset				
132047	132140	QPSK	1	0	1	24	2	0	23.37	24
132322	132229	QPSK	1	0	1	0	2	0	23.61	24
132597	132504	QPSK	1	0	1	24	2	0	23.67	24

ULCA_66C										
Combination 20MHz + 20MHz										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune Up Power (dBm)
			RB Size	RB Offset	RB Size	RB Offset				
132072	132270	QPSK	1	99	1	0	2	0	23.05	24
132322	132124	QPSK	1	0	1	99	2	0	23.06	24
132572	132374	QPSK	1	0	1	99	2	0	23.51	24

5G NR n2							
BW (MHz)	Modulation	RB	RB Offset	Power (dBm)			Tune-up Power (dBm)
				Low	Middle	High	
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	23.27	23.35	23.04	23.5
20	PI/2 BPSK	1	53	23.22	23.31	22.98	
20	PI/2 BPSK	1	104	23.17	23.25	22.91	
20	PI/2 BPSK	50	0	22.72	22.76	22.63	23.0
20	PI/2 BPSK	50	28	23.20	23.27	22.91	23.5
20	PI/2 BPSK	50	56	22.73	22.78	22.51	23.0
20	PI/2 BPSK	100	0	22.61	22.75	22.48	
20	QPSK	1	1	23.25	23.24	23.16	23.5
20	QPSK	1	53	23.20	23.26	23.02	
20	QPSK	1	104	23.20	23.25	22.94	
20	QPSK	50	0	22.26	22.36	22.06	22.5
20	QPSK	50	28	23.24	23.22	22.00	23.5
20	QPSK	50	56	22.19	22.31	21.96	22.5
20	QPSK	100	0	22.17	22.34	21.98	
20	16QAM	1	1	22.15	22.23	21.98	22.5
20	64QAM	1	1	20.48	19.90	20.38	21.0
20	256QAM	1	1	18.79	18.26	18.67	19.5
Channel				371500	376000	380500	Tune-up Power (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	23.14	23.15	22.85	23.5
Channel				371000	376000	381000	Tune-up Power (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	22.88	23.18	23.01	23.5
Channel				370500	376000	381500	Tune-up Power (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.09	23.01	22.88	23.5

5G NR n5							
BW (MHz)	Modulation	RB	RB Offset	Power (dBm)			Tune-up Power (dBm)
				Low	Middle	High	
Channel				166800	167300	167800	
Frequency (MHz)				834	836.5	839	
20	PI/2 BPSK	1	1	23.61	23.76	23.98	
20	PI/2 BPSK	1	53	23.45	23.42	23.66	24.0
20	PI/2 BPSK	1	104	23.18	23.00	23.34	
20	PI/2 BPSK	50	0	23.12	23.10	23.35	23.5
20	PI/2 BPSK	50	28	23.43	23.44	23.92	24.0
20	PI/2 BPSK	50	56	22.76	22.82	23.11	23.5
20	PI/2 BPSK	100	0	22.87	22.89	23.31	
20	QPSK	1	1	23.65	23.62	23.88	
20	QPSK	1	53	23.50	23.44	23.82	24.0
20	QPSK	1	104	23.01	23.03	23.29	
20	QPSK	50	0	22.51	22.68	22.88	23.0
20	QPSK	50	28	23.52	23.45	23.82	24.0
20	QPSK	50	56	22.28	22.36	22.66	23.0
20	QPSK	100	0	22.39	22.48	22.68	
20	16QAM	1	1	22.63	22.57	22.77	23.0
20	64QAM	1	1	20.65	20.84	21.18	21.5
20	256QAM	1	1	19.22	19.20	19.46	19.5
Channel				166300	167300	168300	Tune-up Power (dBm)
Frequency (MHz)				831.5	836.5	841.5	
15	PI/2 BPSK	1	1	23.55	23.54	22.83	24.0
Channel				165800	167300	168800	Tune-up Power (dBm)
Frequency (MHz)				829	836.5	844	
10	PI/2 BPSK	1	1	22.97	23.35	22.86	24.0
Channel				165300	167300	169300	Tune-up Power (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	PI/2 BPSK	1	1	23.50	23.40	23.00	24.0

5G NR n30							
BW (MHz)	Modulation	RB	RB Offset	Power (dBm)			Tune-up Power (dBm)
					Middle		
Channel					462000		
Frequency (MHz)					2310		
10	PI/2 BPSK	1	1		21.71		
10	PI/2 BPSK	1	26		21.78		22.0
10	PI/2 BPSK	1	50		21.76		
10	PI/2 BPSK	25	0		21.22		21.5
10	PI/2 BPSK	25	14		21.74		22.0
10	PI/2 BPSK	25	27		21.27		21.5
10	PI/2 BPSK	50	0		21.28		
10	QPSK	1	1		21.70		
10	QPSK	1	26		21.69		22.0
10	QPSK	1	50		21.73		
10	QPSK	25	0		20.70		21.0
10	QPSK	25	14		21.67		22.0
10	QPSK	25	27		20.74		21.0
10	QPSK	50	0		20.76		
10	16QAM	1	1		20.78		21.0
10	64QAM	1	1		19.15		19.5
10	256QAM	1	1		17.33		17.5

5G NR n66							
BW (MHz)	Modulation	RB	RB Offset	Power (dBm)			Tune-up Power (dBm)
				Low	Middle	High	
Channel				345000	349000	353000	
Frequency (MHz)				1725	1745	1765	
30	PI/2 BPSK	1	1	23.00	22.99	22.96	23.5
30	PI/2 BPSK	1	79	22.74	22.86	23.38	
30	PI/2 BPSK	1	158	22.74	23.30	23.41	
30	PI/2 BPSK	80	0	22.49	22.47	22.75	23.0
30	PI/2 BPSK	80	40	22.84	22.92	23.31	23.5
30	PI/2 BPSK	80	80	22.30	21.71	22.79	23.0
30	PI/2 BPSK	160	0	22.40	22.59	22.69	
30	QPSK	1	1	23.00	23.14	22.93	23.5
30	QPSK	1	79	22.89	22.91	23.01	
30	QPSK	1	158	22.74	23.35	23.40	
30	QPSK	80	0	21.98	22.02	22.28	22.5
30	QPSK	80	40	22.92	22.94	23.17	23.5
30	QPSK	80	80	21.83	22.23	22.38	22.5
30	QPSK	160	0	21.88	22.09	22.17	
30	16QAM	1	1	22.06	21.86	21.88	22.5
30	64QAM	1	1	20.30	20.32	20.29	21.0
30	256QAM	1	1	18.58	18.69	18.53	19.0
Channel				344000	349000	354000	Tune-up Power (dBm)
Frequency (MHz)				1720	1745	1770	
15	PI/2 BPSK	1	1	23.06	22.68	23.21	23.5
Channel				343000	349000	355000	Tune-up Power (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	23.06	22.70	23.21	23.5
Channel				342500	349000	355500	Tune-up Power (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	22.94	22.61	23.18	23.5

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5G NR n77 (3700MHz ~ 3980MHz)							
BW (MHz)	Modulation	RB	RB Offset	Power (dBm)			Tune-up Power (dBm)
				Low	Middle	High	
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	26.17	26.06	26.20	26.5
100	PI/2 BPSK	1	137	26.26	26.38	26.37	
100	PI/2 BPSK	1	271	26.30	26.27	26.28	
100	PI/2 BPSK	135	0	25.69	25.57	25.75	26.0
100	PI/2 BPSK	135	69	26.34	26.35	26.34	26.5
100	PI/2 BPSK	135	138	25.68	25.61	25.91	26.0
100	PI/2 BPSK	270	0	25.80	25.65	25.88	
100	QPSK	1	1	25.91	25.84	26.05	26.5
100	QPSK	1	137	25.99	26.01	26.17	
100	QPSK	1	271	26.17	26.17	26.10	
100	QPSK	135	0	25.11	24.98	25.11	25.5
100	QPSK	135	69	26.29	26.07	26.27	26.5
100	QPSK	135	138	25.20	25.07	25.25	25.5
100	QPSK	270	0	25.18	25.01	25.42	
100	16QAM	1	1	24.99	24.86	24.98	25.5
100	64QAM	1	1	23.39	23.32	23.36	24.0
100	256QAM	1	1	21.20	21.09	21.19	21.5
Channel				649334	656000	662666	Tune-up Power (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	26.00	25.91	26.10	26.5
Channel				648668	656000	663332	Tune-up Power (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	26.15	25.95	26.10	26.5
Channel				648000	656000	664000	Tune-up Power (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	26.11	26.18	26.14	26.5
Channel				647668	656000	664332	Tune-up Power (dBm)
Frequency (MHz)				3715.02	3840	3964.98	
30	PI/2 BPSK	1	1	26.17	26.27	26.13	26.5
Channel				647334	656000	664666	Tune-up Power (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	26.20	26.18	26.13	26.5

5G NR n77 (3450MHz ~ 3550MHz)							
BW (MHz)	Modulation	RB	RB Offset	Power (dBm)			Tune-up Power (dBm)
					Middle		
Channel					633332		
Frequency (MHz)					3499.98		
100	PI/2 BPSK	1	1		26.35		26.5
100	PI/2 BPSK	1	137		26.39		
100	PI/2 BPSK	1	271		26.36		
100	PI/2 BPSK	135	0		25.91		26.0
100	PI/2 BPSK	135	69		26.37		26.5
100	PI/2 BPSK	135	138		25.87		26.0
100	PI/2 BPSK	270	0		25.93		
100	QPSK	1	1		26.29		26.5
100	QPSK	1	137		26.21		
100	QPSK	1	271		26.27		
100	QPSK	135	0		25.44		25.5
100	QPSK	135	69		26.39		26.5
100	QPSK	135	138		25.40		25.5
100	QPSK	270	0		25.33		
100	16QAM	1	1		25.23		25.5
100	64QAM	1	1		23.54		24.0
100	256QAM	1	1		21.41		21.5
Channel				632668	633332	634000	Tune-up Power (dBm)
Frequency (MHz)				3490.02	3499.98	3510	
80	PI/2 BPSK	1	1	26.35	26.23	26.02	26.5
Channel				632000	633332	634666	Tune-up Power (dBm)
Frequency (MHz)				3480	3499.98	3519.99	
60	PI/2 BPSK	1	1	26.35	26.22	26.02	26.5
Channel				631334	633332	635332	Tune-up Power (dBm)
Frequency (MHz)				3470.01	3499.98	3529.98	
40	PI/2 BPSK	1	1	26.25	26.27	26.04	26.5
Channel				631000	633332	635666	Tune-up Power (dBm)
Frequency (MHz)				3465	3499.98	3534.99	
30	PI/2 BPSK	1	1	26.31	26.28	26.11	26.5
Channel				630668	633332	636000	Tune-up Power (dBm)
Frequency (MHz)				3460.02	3499.98	3540	
20	PI/2 BPSK	1	1	26.25	26.24	26.06	26.5

8.7 SAR Testing Results

8.7.1 SAR Test Reduction Considerations

<KDB 447498 D01, General RF Exposure Guidance>

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

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
(2) ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

<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.

8.7.2 SAR Results for Body Exposure Condition (Separation Distance is 1cm Gap)

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Max. Tune-Up Power (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
86	LTE Band 2	20M	QPSK	1	49	Front	Ant 0	18700	1860	23.20	23.50	1.072	-0.11	0.231	**0.248**
	LTE Band 2	20M	QPSK	50	24	Front	Ant 0	18700	1860	22.29	22.50	1.050	-0.14	0.187	0.196
	LTE Band 2	20M	QPSK	1	49	Back	Ant 0	18700	1860	23.20	23.50	1.072	-0.1	0.024	0.026
	LTE Band 2	20M	QPSK	50	24	Back	Ant 0	18700	1860	22.29	22.50	1.050	-0.19	0.019	0.020
	LTE Band 2	20M	QPSK	1	49	Left Side	Ant 0	18700	1860	23.20	23.50	1.072	-0.13	0.159	0.170
	LTE Band 2	20M	QPSK	50	24	Left Side	Ant 0	18700	1860	22.29	22.50	1.050	-0.18	0.132	0.139
	LTE Band 2	20M	QPSK	1	49	Right Side	Ant 0	18700	1860	23.20	23.50	1.072	-0.12	0.034	0.036
	LTE Band 2	20M	QPSK	50	24	Right Side	Ant 0	18700	1860	22.29	22.50	1.050	-0.19	0.026	0.027
	LTE Band 2	20M	QPSK	1	49	Top Side	Ant 0	18700	1860	23.20	23.50	1.072	-0.18	0.172	0.184
	LTE Band 2	20M	QPSK	50	24	Top Side	Ant 0	18700	1860	22.29	22.50	1.050	-0.11	0.141	0.148
	LTE Band 2	20M	QPSK	1	49	Bottom Side	Ant 0	18700	1860	23.20	23.50	1.072	-0.16	0.022	0.024
	LTE Band 2	20M	QPSK	50	24	Bottom Side	Ant 0	18700	1860	22.29	22.50	1.050	-0.15	0.018	0.019
	LTE Band 2C	20M	QPSK	1	0	Front	Ant 0	18900	1880	23.45	23.50	1.012	-0.13	0.211	0.213
		20M		1	99			18702	1860.2						
1	LTE Band 5	10M	QPSK	1	0	Front	Ant 0	20525	836.5	23.43	24.00	1.140	-0.13	0.425	**0.485**
	LTE Band 5	10M	QPSK	25	0	Front	Ant 0	20525	836.5	22.38	23.00	1.153	-0.11	0.344	0.397
	LTE Band 5	10M	QPSK	1	0	Back	Ant 0	20525	836.5	23.43	24.00	1.140	-0.15	0.077	0.088
	LTE Band 5	10M	QPSK	25	0	Back	Ant 0	20525	836.5	22.38	23.00	1.153	-0.16	0.063	0.073
	LTE Band 5	10M	QPSK	1	0	Left Side	Ant 0	20525	836.5	23.43	24.00	1.140	-0.13	0.325	0.371
	LTE Band 5	10M	QPSK	25	0	Left Side	Ant 0	20525	836.5	22.38	23.00	1.153	-0.11	0.256	0.295
	LTE Band 5	10M	QPSK	1	0	Right Side	Ant 0	20525	836.5	23.43	24.00	1.140	-0.16	0.095	0.109
	LTE Band 5	10M	QPSK	25	0	Right Side	Ant 0	20525	836.5	22.38	23.00	1.153	-0.13	0.080	0.092
	LTE Band 5	10M	QPSK	1	0	Top Side	Ant 0	20525	836.5	23.43	24.00	1.140	-0.18	0.244	0.278
	LTE Band 5	10M	QPSK	25	0	Top Side	Ant 0	20525	836.5	22.38	23.00	1.153	-0.19	0.192	0.221
	LTE Band 5	10M	QPSK	1	0	Bottom Side	Ant 0	20525	836.5	23.43	24.00	1.140	-0.17	0.013	0.014
	LTE Band 5	10M	QPSK	25	0	Bottom Side	Ant 0	20525	836.5	22.38	23.00	1.153	-0.04	0.010	0.011
	LTE Band 5B	10M	QPSK	1	0	Front	Ant 0	20575	841.5	23.73	24.00	1.064	0.09	0.420	0.447
		10M		1	49			20476	831.6						
13	LTE Band 12	10M	QPSK	1	0	Front	Ant 0	23095	707.5	23.74	24.00	1.062	-0.11	0.382	**0.406**
	LTE Band 12	10M	QPSK	25	0	Front	Ant 0	23095	707.5	22.52	23.00	1.117	-0.19	0.308	0.344
	LTE Band 12	10M	QPSK	1	0	Back	Ant 0	23095	707.5	23.74	24.00	1.062	-0.14	0.007	0.007
	LTE Band 12	10M	QPSK	25	0	Back	Ant 0	23095	707.5	22.52	23.00	1.117	-0.1	0.005	0.006
	LTE Band 12	10M	QPSK	1	0	Left Side	Ant 0	23095	707.5	23.74	24.00	1.062	-0.11	0.139	0.148
	LTE Band 12	10M	QPSK	25	0	Left Side	Ant 0	23095	707.5	22.52	23.00	1.117	-0.15	0.111	0.124
	LTE Band 12	10M	QPSK	1	0	Right Side	Ant 0	23095	707.5	23.74	24.00	1.062	-0.19	0.020	0.021
	LTE Band 12	10M	QPSK	25	0	Right Side	Ant 0	23095	707.5	22.52	23.00	1.117	-0.15	0.016	0.018
	LTE Band 12	10M	QPSK	1	0	Top Side	Ant 0	23095	707.5	23.74	24.00	1.062	-0.14	0.148	0.157
	LTE Band 12	10M	QPSK	25	0	Top Side	Ant 0	23095	707.5	22.52	23.00	1.117	-0.16	0.119	0.133
	LTE Band 12	10M	QPSK	1	0	Bottom Side	Ant 0	23095	707.5	23.74	24.00	1.062	-0.09	0.010	0.010
	LTE Band 12	10M	QPSK	25	0	Bottom Side	Ant 0	23095	707.5	22.52	23.00	1.117	-0.11	0.008	0.009
	LTE Band 17	10M	QPSK	1	24	Front	Ant 0	23790	710	23.62	24.00	1.091	-0.12	0.370	0.404
25	LTE Band 14	10M	QPSK	1	0	Front	Ant 0	23330	793	23.17	23.50	1.079	-0.11	0.546	**0.589**
	LTE Band 14	10M	QPSK	25	25	Front	Ant 0	23330	793	22.10	22.50	1.096	-0.19	0.453	0.497
	LTE Band 14	10M	QPSK	1	0	Back	Ant 0	23330	793	23.17	23.50	1.079	-0.12	0.075	0.081
	LTE Band 14	10M	QPSK	25	25	Back	Ant 0	23330	793	22.10	22.50	1.096	-0.1	0.059	0.065
	LTE Band 14	10M	QPSK	1	0	Left Side	Ant 0	23330	793	23.17	23.50	1.079	-0.1	0.344	0.371
	LTE Band 14	10M	QPSK	25	25	Left Side	Ant 0	23330	793	22.10	22.50	1.096	-0.19	0.293	0.321
	LTE Band 14	10M	QPSK	1	0	Right Side	Ant 0	23330	793	23.17	23.50	1.079	-0.12	0.135	0.146
	LTE Band 14	10M	QPSK	25	25	Right Side	Ant 0	23330	793	22.10	22.50	1.096	-0.14	0.113	0.124
	LTE Band 14	10M	QPSK	1	0	Top Side	Ant 0	23330	793	23.17	23.50	1.079	-0.11	0.222	0.240
	LTE Band 14	10M	QPSK	25	25	Top Side	Ant 0	23330	793	22.10	22.50	1.096	-0.13	0.190	0.208
	LTE Band 14	10M	QPSK	1	0	Bottom Side	Ant 0	23330	793	23.17	23.50	1.079	-0.13	0.019	0.021
	LTE Band 14	10M	QPSK	25	25	Bottom Side	Ant 0	23330	793	22.10	22.50	1.096	-0.12	0.014	0.015

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Max. Tune-Up Power (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
98	LTE Band 30	10M	QPSK	1	0	Front	Ant 0	27710	2310	21.58	22.00	1.102	-0.12	0.680	**0.749**
	LTE Band 30	10M	QPSK	25	12	Front	Ant 0	27710	2310	20.46	21.00	1.132	-0.13	0.536	0.607
	LTE Band 30	10M	QPSK	1	0	Back	Ant 0	27710	2310	21.58	22.00	1.102	-0.16	0.273	0.301
	LTE Band 30	10M	QPSK	25	12	Back	Ant 0	27710	2310	20.46	21.00	1.132	-0.18	0.215	0.243
	LTE Band 30	10M	QPSK	1	0	Left Side	Ant 0	27710	2310	21.58	22.00	1.102	-0.19	0.437	0.481
	LTE Band 30	10M	QPSK	25	12	Left Side	Ant 0	27710	2310	20.46	21.00	1.132	-0.15	0.341	0.386
	LTE Band 30	10M	QPSK	1	0	Right Side	Ant 0	27710	2310	21.58	22.00	1.102	-0.18	0.099	0.109
	LTE Band 30	10M	QPSK	25	12	Right Side	Ant 0	27710	2310	20.46	21.00	1.132	-0.1	0.074	0.084
	LTE Band 30	10M	QPSK	1	0	Top Side	Ant 0	27710	2310	21.58	22.00	1.102	-0.19	0.483	0.532
	LTE Band 30	10M	QPSK	25	12	Top Side	Ant 0	27710	2310	20.46	21.00	1.132	-0.12	0.375	0.425
	LTE Band 30	10M	QPSK	1	0	Bottom Side	Ant 0	27710	2310	21.58	22.00	1.102	-0.17	0.029	0.032
	LTE Band 30	10M	QPSK	25	12	Bottom Side	Ant 0	27710	2310	20.46	21.00	1.132	-0.19	0.017	0.019
110	LTE Band 66	20M	QPSK	1	99	Front	Ant 0	132572	1770	23.65	24.00	1.084	-0.19	0.230	**0.249**
	LTE Band 66	20M	QPSK	50	50	Front	Ant 0	132572	1770	22.48	23.00	1.127	-0.18	0.184	0.207
	LTE Band 66	20M	QPSK	1	99	Back	Ant 0	132572	1770	23.65	24.00	1.084	-0.18	0.035	0.038
	LTE Band 66	20M	QPSK	50	50	Back	Ant 0	132572	1770	22.48	23.00	1.127	-0.18	0.030	0.033
	LTE Band 66	20M	QPSK	1	99	Left Side	Ant 0	132572	1770	23.65	24.00	1.084	-0.1	0.169	0.183
	LTE Band 66	20M	QPSK	50	50	Left Side	Ant 0	132572	1770	22.48	23.00	1.127	-0.19	0.142	0.160
	LTE Band 66	20M	QPSK	1	99	Right Side	Ant 0	132572	1770	23.65	24.00	1.084	-0.19	0.026	0.029
	LTE Band 66	20M	QPSK	50	50	Right Side	Ant 0	132572	1770	22.48	23.00	1.127	-0.17	0.023	0.026
	LTE Band 66	20M	QPSK	1	99	Top Side	Ant 0	132572	1770	23.65	24.00	1.084	-0.16	0.173	0.188
	LTE Band 66	20M	QPSK	50	50	Top Side	Ant 0	132572	1770	22.48	23.00	1.127	-0.16	0.158	0.178
	LTE Band 66	20M	QPSK	1	99	Bottom Side	Ant 0	132572	1770	23.65	24.00	1.084	-0.16	0.021	0.023
	LTE Band 66	20M	QPSK	50	50	Bottom Side	Ant 0	132572	1770	22.48	23.00	1.127	-0.12	0.017	0.019
	LTE Band 66B	15M	QPSK	1	0	Front	Ant 0	132597	1772.5	23.67	24.00	1.079	0.15	0.217	0.234
		5M		1	24			132504	1763.2						
	LTE Band 66C	20M	QPSK	1	0	Front	Ant 0	132572	1770	23.51	24.00	1.119	0.11	0.210	0.235
		20M		1	99			132374	1750.2						
	LTE Band 4	20M	QPSK	1	99	Front	Ant 0	20175	1732.5	22.69	23.00	1.074	-0.18	0.224	0.241

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Max. Tune-Up Power (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
	FR1 n2	20M	BPSK	1	1	Front	Ant 0	376000	1880	23.35	23.50	1.035	-0.13	0.239	0.247
51	FR1 n2	20M	BPSK	50	28	Front	Ant 0	376000	1880	23.27	23.50	1.054	-0.16	0.248	**0.261**
	FR1 n2	20M	BPSK	1	1	Back	Ant 0	376000	1880	23.35	23.50	1.035	-0.15	0.021	0.022
	FR1 n2	20M	BPSK	50	28	Back	Ant 0	376000	1880	23.27	23.50	1.054	-0.06	0.020	0.021
	FR1 n2	20M	BPSK	1	1	Left Side	Ant 0	376000	1880	23.35	23.50	1.035	-0.1	0.165	0.171
	FR1 n2	20M	BPSK	50	28	Left Side	Ant 0	376000	1880	23.27	23.50	1.054	-0.1	0.160	0.169
	FR1 n2	20M	BPSK	1	1	Right Side	Ant 0	376000	1880	23.35	23.50	1.035	-0.16	0.034	0.035
	FR1 n2	20M	BPSK	50	28	Right Side	Ant 0	376000	1880	23.27	23.50	1.054	-0.16	0.034	0.036
	FR1 n2	20M	BPSK	1	1	Top Side	Ant 0	376000	1880	23.35	23.50	1.035	-0.19	0.176	0.182
	FR1 n2	20M	BPSK	50	28	Top Side	Ant 0	376000	1880	23.27	23.50	1.054	-0.17	0.168	0.177
	FR1 n2	20M	BPSK	1	1	Bottom Side	Ant 0	376000	1880	23.35	23.50	1.035	-0.12	0.012	0.013
	FR1 n2	20M	BPSK	50	28	Bottom Side	Ant 0	376000	1880	23.27	23.50	1.054	-0.11	0.013	0.013
	FR1 n5	20M	BPSK	1	1	Front	Ant 0	167300	836.5	23.76	24.00	1.057	-0.16	0.442	0.467
39	FR1 n5	20M	BPSK	50	28	Front	Ant 0	167300	836.5	23.44	24.00	1.138	-0.13	0.443	**0.504**
	FR1 n5	20M	BPSK	1	1	Back	Ant 0	167300	836.5	23.76	24.00	1.057	-0.08	0.109	0.115
	FR1 n5	20M	BPSK	50	28	Back	Ant 0	167300	836.5	23.44	24.00	1.138	-0.09	0.116	0.132
	FR1 n5	20M	BPSK	1	1	Left Side	Ant 0	167300	836.5	23.76	24.00	1.057	-0.17	0.340	0.359
	FR1 n5	20M	BPSK	50	28	Left Side	Ant 0	167300	836.5	23.44	24.00	1.138	-0.16	0.341	0.388
	FR1 n5	20M	BPSK	1	1	Right Side	Ant 0	167300	836.5	23.76	24.00	1.057	-0.13	0.092	0.097
	FR1 n5	20M	BPSK	50	28	Right Side	Ant 0	167300	836.5	23.44	24.00	1.138	-0.16	0.103	0.117
	FR1 n5	20M	BPSK	1	1	Top Side	Ant 0	167300	836.5	23.76	24.00	1.057	-0.17	0.244	0.258
	FR1 n5	20M	BPSK	50	28	Top Side	Ant 0	167300	836.5	23.44	24.00	1.138	-0.1	0.238	0.271
	FR1 n5	20M	BPSK	1	1	Bottom Side	Ant 0	167300	836.5	23.76	24.00	1.057	-0.18	0.015	0.015
	FR1 n5	20M	BPSK	50	28	Bottom Side	Ant 0	167300	836.5	23.44	24.00	1.138	-0.12	0.014	0.016

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Max. Tune-Up Power (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Reported SAR-1g (W/kg)
	FR1 n30	10M	BPSK	1	26	Front	Ant 0	462000	2310	21.78	22.00	1.052	-0.13	0.695	0.731
63	FR1 n30	10M	BPSK	25	14	Front	Ant 0	462000	2310	21.74	22.00	1.062	-0.13	0.702	**0.745**
	FR1 n30	10M	BPSK	1	26	Back	Ant 0	462000	2310	21.78	22.00	1.052	-0.1	0.265	0.279
	FR1 n30	10M	BPSK	25	14	Back	Ant 0	462000	2310	21.74	22.00	1.062	-0.19	0.270	0.287
	FR1 n30	10M	BPSK	1	26	Left Side	Ant 0	462000	2310	21.78	22.00	1.052	-0.11	0.408	0.429
	FR1 n30	10M	BPSK	25	14	Left Side	Ant 0	462000	2310	21.74	22.00	1.062	-0.15	0.419	0.445
	FR1 n30	10M	BPSK	1	26	Right Side	Ant 0	462000	2310	21.78	22.00	1.052	-0.19	0.082	0.086
	FR1 n30	10M	BPSK	25	14	Right Side	Ant 0	462000	2310	21.74	22.00	1.062	-0.1	0.082	0.087
	FR1 n30	10M	BPSK	1	26	Top Side	Ant 0	462000	2310	21.78	22.00	1.052	-0.11	0.438	0.461
	FR1 n30	10M	BPSK	25	14	Top Side	Ant 0	462000	2310	21.74	22.00	1.062	-0.15	0.453	0.481
	FR1 n30	10M	BPSK	1	26	Bottom Side	Ant 0	462000	2310	21.78	22.00	1.052	-0.1	0.063	0.066
	FR1 n30	10M	BPSK	25	14	Bottom Side	Ant 0	462000	2310	21.74	22.00	1.062	-0.19	0.063	0.067
	FR1 n66	30M	BPSK	1	158	Front	Ant 0	353000	1765	23.41	23.50	1.021	-0.14	0.204	0.208
75	FR1 n66	30M	BPSK	80	40	Front	Ant 0	353000	1765	23.41	23.50	1.021	-0.1	0.210	**0.214**
	FR1 n66	30M	BPSK	1	158	Back	Ant 0	353000	1765	23.41	23.50	1.021	-0.14	0.032	0.033
	FR1 n66	30M	BPSK	80	40	Back	Ant 0	353000	1765	23.41	23.50	1.021	-0.16	0.041	0.042
	FR1 n66	30M	BPSK	1	158	Left Side	Ant 0	353000	1765	23.41	23.50	1.021	-0.11	0.158	0.161
	FR1 n66	30M	BPSK	80	40	Left Side	Ant 0	353000	1765	23.41	23.50	1.021	-0.16	0.174	0.178
	FR1 n66	30M	BPSK	1	158	Right Side	Ant 0	353000	1765	23.41	23.50	1.021	-0.15	0.014	0.014
	FR1 n66	30M	BPSK	80	40	Right Side	Ant 0	353000	1765	23.41	23.50	1.021	-0.09	0.021	0.021
	FR1 n66	30M	BPSK	1	158	Top Side	Ant 0	353000	1765	23.41	23.50	1.021	-0.14	0.152	0.155
	FR1 n66	30M	BPSK	80	40	Top Side	Ant 0	353000	1765	23.41	23.50	1.021	0.01	0.143	0.146
	FR1 n66	30M	BPSK	1	158	Bottom Side	Ant 0	353000	1765	23.41	23.50	1.021	-0.18	0.011	0.011
	FR1 n66	30M	BPSK	80	40	Bottom Side	Ant 0	353000	1765	23.31	23.50	1.045	-0.14	0.014	0.015
	FR1 n77	100M	BPSK	1	137	Front	Ant 3	656000	3840	26.38	26.50	1.028	-0.15	0.479	0.497
124	FR1 n77	100M	BPSK	135	69	Front	Ant 3	656000	3840	26.35	26.50	1.035	-0.1	0.484	**0.506**
	FR1 n77	100M	BPSK	1	137	Back	Ant 3	656000	3840	26.38	26.50	1.028	-0.14	0.089	0.093
	FR1 n77	100M	BPSK	135	69	Back	Ant 3	656000	3840	26.35	26.50	1.035	-0.14	0.062	0.065
	FR1 n77	100M	BPSK	1	137	Left Side	Ant 3	656000	3840	26.38	26.50	1.028	-0.18	0.173	0.179
	FR1 n77	100M	BPSK	135	69	Left Side	Ant 3	656000	3840	26.35	26.50	1.035	-0.19	0.178	0.186
	FR1 n77	100M	BPSK	1	137	Right Side	Ant 3	656000	3840	26.38	26.50	1.028	-0.15	0.075	0.078
	FR1 n77	100M	BPSK	135	69	Right Side	Ant 3	656000	3840	26.35	26.50	1.035	-0.18	0.080	0.083
	FR1 n77	100M	BPSK	1	137	Top Side	Ant 3	656000	3840	26.38	26.50	1.028	-0.14	0.001	0.001
	FR1 n77	100M	BPSK	135	69	Top Side	Ant 3	656000	3840	26.35	26.50	1.035	-0.19	0.001	0.001
	FR1 n77	100M	BPSK	1	137	Bottom Side	Ant 3	656000	3840	26.38	26.50	1.028	-0.15	0.400	0.415
	FR1 n77	100M	BPSK	135	69	Bottom Side	Ant 3	656000	3840	26.35	26.50	1.035	-0.13	0.404	0.422
	FR1 n77	100M	BPSK	1	137	Front	Ant 3	633332	3499.98	26.38	26.50	1.028	-0.15	0.285	0.296
	FR1 n77	100M	BPSK	135	69	Front	Ant 3	633332	3499.98	26.35	26.50	1.035	-0.19	0.277	0.289
	FR1 n77	100M	BPSK	1	137	Back	Ant 3	633332	3499.98	26.38	26.50	1.028	-0.18	0.016	0.017
	FR1 n77	100M	BPSK	135	69	Back	Ant 3	633332	3499.98	26.35	26.50	1.035	-0.03	0.015	0.015
	FR1 n77	100M	BPSK	1	137	Left Side	Ant 3	633332	3499.98	26.38	26.50	1.028	-0.18	0.094	0.098
	FR1 n77	100M	BPSK	135	69	Left Side	Ant 3	633332	3499.98	26.35	26.50	1.035	-0.18	0.098	0.102
	FR1 n77	100M	BPSK	1	137	Right Side	Ant 3	633332	3499.98	26.38	26.50	1.028	-0.16	0.047	0.049
	FR1 n77	100M	BPSK	135	69	Right Side	Ant 3	633332	3499.98	26.35	26.50	1.035	-0.12	0.042	0.044
	FR1 n77	100M	BPSK	1	137	Top Side	Ant 3	633332	3499.98	26.38	26.50	1.028	-0.14	0.001	0.001
	FR1 n77	100M	BPSK	135	69	Top Side	Ant 3	633332	3499.98	26.35	26.50	1.035	-0.18	0.001	0.001
	FR1 n77	100M	BPSK	1	137	Bottom Side	Ant 3	633332	3499.98	26.38	26.50	1.028	-0.19	0.164	0.170
	FR1 n77	100M	BPSK	135	69	Bottom Side	Ant 3	633332	3499.98	26.35	26.50	1.035	-0.16	0.166	0.173

8.7.3 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.

Since all the measured SAR are less than 0.8 W/kg, the repeated measurement is not required.

8.7.4 DUT Holder Perturbations

Depending on antenna locations, buttons locations on phones or device, form factor (e.g. dongles etc.), the measured SAR could be influenced by the relative positions of the test device and its holder.

When the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required, using the highest SAR configuration among all applicable frequency bands with and without the device holder.

All the measured SAR are less than 1.2 W/kg, so the holder perturbation verification is not required.

8.7.5 EN-DC NSA Evaluation

<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.

Body			Reported SAR (W/kg)		Summed 10g SAR (W/kg)
WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	
LTE Band 2	FR1 n5	Front	0.248	0.504	0.752
		Back	0.026	0.132	0.158
		Left side	0.170	0.388	0.558
		Right side	0.036	0.117	0.153
		Top side	0.184	0.271	0.455
		Bottom side	0.024	0.016	0.040
LTE Band 2	FR1 n77	Front	0.248	0.506	0.754
		Back	0.026	0.093	0.119
		Left side	0.170	0.186	0.356
		Right side	0.036	0.083	0.119
		Top side	0.184	0.001	0.185
		Bottom side	0.024	0.422	0.446
LTE Band 5	FR1 n2	Front	0.485	0.261	0.746
		Back	0.088	0.022	0.110
		Left side	0.371	0.171	0.542
		Right side	0.109	0.036	0.145
		Top side	0.278	0.182	0.460
		Bottom side	0.014	0.013	0.027
LTE Band 5	FR1 n30	Front	0.485	0.745	1.230
		Back	0.088	0.287	0.375
		Left side	0.371	0.445	0.816
		Right side	0.109	0.087	0.196
		Top side	0.278	0.481	0.759
		Bottom side	0.014	0.067	0.081
LTE Band 5	FR1 n66	Front	0.485	0.214	0.699
		Back	0.088	0.042	0.130
		Left side	0.371	0.178	0.549
		Right side	0.109	0.021	0.130
		Top side	0.278	0.155	0.433
		Bottom side	0.014	0.015	0.029
LTE Band 5	FR1 n77	Front	0.485	0.506	0.991
		Back	0.088	0.093	0.181
		Left side	0.371	0.186	0.557
		Right side	0.109	0.083	0.192
		Top side	0.278	0.001	0.279
		Bottom side	0.014	0.422	0.436

Body			Reported SAR (W/kg)		Summed 10g SAR (W/kg)
WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	
LTE Band 12	FR1 n2	Front	0.406	0.261	0.667
		Back	0.007	0.022	0.029
		Left side	0.148	0.171	0.319
		Right side	0.021	0.036	0.057
		Top side	0.157	0.182	0.339
		Bottom side	0.010	0.013	0.023
LTE Band 12	FR1 n30	Front	0.406	0.745	1.151
		Back	0.007	0.287	0.294
		Left side	0.148	0.445	0.593
		Right side	0.021	0.087	0.108
		Top side	0.157	0.481	0.638
		Bottom side	0.010	0.067	0.077
LTE Band 12	FR1 n66	Front	0.406	0.214	0.620
		Back	0.007	0.042	0.049
		Left side	0.148	0.178	0.326
		Right side	0.021	0.021	0.042
		Top side	0.157	0.155	0.312
		Bottom side	0.010	0.015	0.025
LTE Band 12	FR1 n77	Front	0.406	0.506	0.912
		Back	0.007	0.093	0.100
		Left side	0.148	0.186	0.334
		Right side	0.021	0.083	0.104
		Top side	0.157	0.001	0.158
		Bottom side	0.010	0.422	0.432
LTE Band 14	FR1 n2	Front	0.589	0.261	0.850
		Back	0.081	0.022	0.103
		Left side	0.371	0.171	0.542
		Right side	0.146	0.036	0.182
		Top side	0.240	0.182	0.422
		Bottom side	0.021	0.013	0.034
LTE Band 14	FR1 n30	Front	0.589	0.745	1.334
		Back	0.081	0.287	0.368
		Left side	0.371	0.445	0.816
		Right side	0.146	0.087	0.233
		Top side	0.240	0.481	0.721
		Bottom side	0.021	0.067	0.088
LTE Band 14	FR1 n66	Front	0.589	0.214	0.803
		Back	0.081	0.042	0.123
		Left side	0.371	0.178	0.549
		Right side	0.146	0.021	0.167
		Top side	0.240	0.155	0.395
		Bottom side	0.021	0.015	0.036
LTE Band 14	FR1 n77	Front	0.589	0.506	1.095
		Back	0.081	0.093	0.174
		Left side	0.371	0.186	0.557
		Right side	0.146	0.083	0.229
		Top side	0.240	0.001	0.241
		Bottom side	0.021	0.422	0.443

Body			Reported SAR (W/kg)		Summed 10g SAR (W/kg)
WWAN Band	FR1 Band	Exposure Position	1	2	1+2
			WWAN	FR1	
LTE Band 30	FR1 n5	Front	0.749	0.504	1.253
		Back	0.301	0.132	0.433
		Left side	0.481	0.388	0.869
		Right side	0.109	0.117	0.226
		Top side	0.532	0.271	0.803
		Bottom side	0.032	0.016	0.048
LTE Band 30	FR1 n77	Front	0.749	0.506	1.255
		Back	0.301	0.093	0.394
		Left side	0.481	0.186	0.667
		Right side	0.109	0.083	0.192
		Top side	0.532	0.001	0.533
		Bottom side	0.032	0.422	0.454
LTE Band 66	FR1 n5	Front	0.249	0.504	0.753
		Back	0.038	0.132	0.170
		Left side	0.183	0.388	0.571
		Right side	0.029	0.117	0.146
		Top side	0.188	0.271	0.459
		Bottom side	0.023	0.016	0.039
LTE Band 66	FR1 n77	Front	0.249	0.506	0.755
		Back	0.038	0.093	0.131
		Left side	0.183	0.186	0.369
		Right side	0.029	0.083	0.112
		Top side	0.188	0.001	0.189
		Bottom side	0.023	0.422	0.445

9. Appendixes

Appendix A – SAR Plots of System Verification

Appendix B – SAR Plots of SAR Measurement

Appendix C – Calibration Certificate for Probe and Dipole

Appendix D – Photographs of the Test Set-Up

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