



No.: FCCSZ2025-0073-SAR

TEST REPORT

NAME OF SAMPLE : Wireless positioning terminals

CLIENT : Tianjin RoamWiFi Technology Co.,Ltd

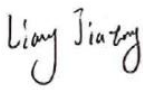
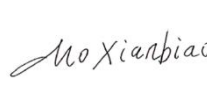
CLASSIFICATION OF TEST : N/A

FCC ID : 2ADUBQUADTRACKPRO

Max. SAR (1g): : Body-worn: **1.17** W/kg

CVC Testing Technology (Shenzhen) Co., Ltd.



Applicant	Name: Tianjin RoamWiFi Technology Co.,Ltd Address: 2018 Zhong Tian Road , Block 16 Unit 429, Ready built office, Tianjin Eco-city, Tianjin China		
Manufacturer	Name: Tianjin RoamWiFi Technology Co.,Ltd Address: 2018 Zhong Tian Road , Block 16 Unit 429, Ready built office, Tianjin Eco-city, Tianjin China		
Equipment Under Test	Name: Wireless positioning terminals Model/Type: QuadTrack Pro Trade mark: FIROAM SerialNO.: N/A Sampe NO.: 202507246301-7		
Date of Receipt.	Jul. 19, 2025	Date of Testing	Nov. 21,2025
Test Specification		Test Result	
ANSI/IEEE Std. C95.1 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013 Published RF exposure KDB procedures		Pass	
Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC Issue Date: Nov. 21,2025		
Compiled by:  <u>Liang Jiatong</u> Name Signature	Reviewed by:  <u>Mo Xianbiao</u> Name Signature	Approved by:  <u>Dong Sanbi</u> Name Signature	
Other Aspects: NONE.			
Abbreviations: Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCCSZ2025-0073-SAR	Original release	Nov. 21,2025



1. GENERAL INFORMATION

1.1. GENERAL PRODUCT INFORMATION

PRODUCT	Wireless positioning terminals
BRAND	FIROAM
MODEL	QuadTrack Pro
ADDITIONAL MODEL	NA
PMN	NA
HVIN	NA
Battery Information	1. DC 3.8V (1*3.8V battery) 2. DC 5V 1A from adapter
HW Version	NA
SW Version	NA
MODULATION MODE	LTE: QPSK, 16QAM Bluetooth: BLE1M, BLE2M
OPERATING FREQUENCY	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710MHz ~ 1780MHz Bluetooth: 2402 MHz to 2480 MHz
ANTENNA TYPE	LTE: FPC Antenna BLE: Ceramic antenna
Remark: 1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power 3. This is provided by the manufacturer. The laboratory is not responsible for technical data provided by the customer	



1.2. TEST Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (°C)	21.0-22.5
Humidity (%RH)	55-68

1.3. TEST Location

The tests and measurements refer to this report were performed by CVC Testing Technology (Shenzhen) Co., Ltd.

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FCC (Test firm designation number: CN1363)

IC (Test firm CAB identifier number: CN0137)

CNAS (Test firm designation number: L16091)



1.4. TEST Standards and Limits

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 941225 D05 v02r05	SAR for LTE Devices
8	FCC KDB 447498 D04 v01	Interim General RF Exposure Guidance

(A). Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

NOTE: 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 averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:

Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled Environments:

Are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

NOTE

GENERAL POPULATION/UNCONTROLLED EXPOSURE

PARTIAL BODY LIMIT

1.6 W/kg



1.5. Statement of Compliance

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

Mode	Highest Reported Body-worn SAR _{1g} (0 cm Gap) (W/kg)
LTE 66&4	0.72
LTE 7	0.43
LTE 12&17	0.27
LTE 13	0.60
LTE 25&2	1.17
LTE 26&5	0.06
LTE 41&38	0.51
Bluetooth	0.02
Highest Simultaneous Transmission SAR	Body-worn (W/kg)
	1.19

Note:

1. This device supports LTE B4 / B17 / B2 / B5 and B66 / B12 / B25 / B26. Since the supported frequency span for LTE B4 / B17 / B2 / B5 falls completely within the supports frequency span for LTE B66 / B12 / B25 / B26, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66 / B12 / B25 / B26.
2. 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. SAR Measurement System

2.1. CDefinition 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:

$$\text{SAR} = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dV} \right)$$

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

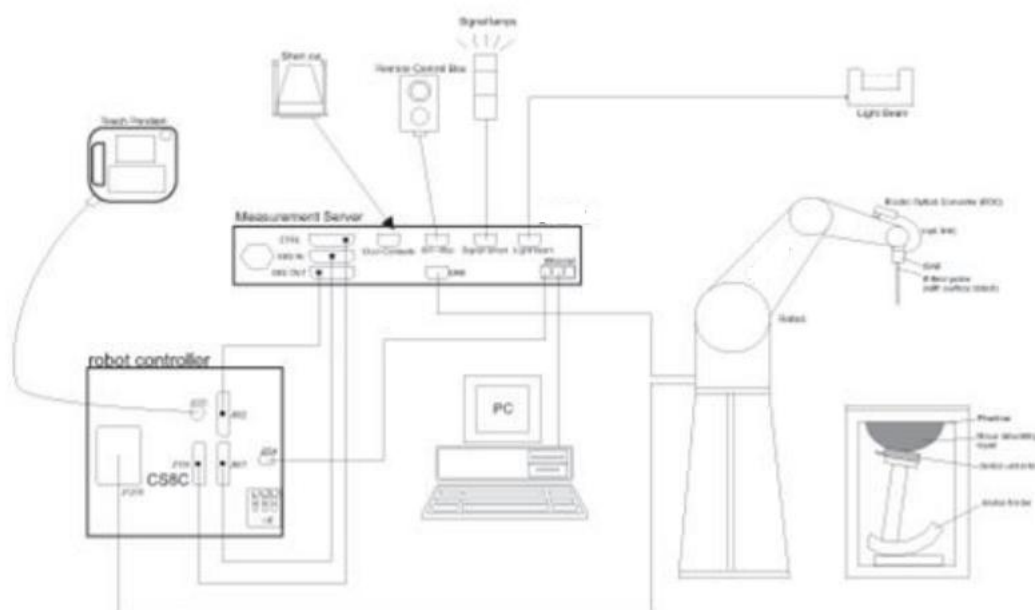
$$\text{SAR} = \frac{\sigma E^2}{\rho}$$

Where: σ is the conductivity of the tissue;

ρ is the mass density of the tissue and E is the RMS electrical field strength.

2.2. SAR System

DASY System Diagram:



DASY is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The DASY system consists of the following items:



- Main computer to control all the system
- 6 axis robot
- Data acquisition Electronics
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.



The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The Open SAR software computes the results to give a SAR value in a 1g or 10g mass.



2.3. Probe

EX3DV4 – Smallest isotropic dosimetric probe for high precision SAR measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 10 GHz with a precision of better than 30%

- Frequency range: 4 MHz – 10 GHz
- Dynamic range: 0.01 W/kg – >100 W/kg
- Tip diameter: 2.5 mm
- Scanning distance: ≥ 1.4 mm



Figure 1-Speag COMOSAR Dosimetric E field Dipole

2.4. Data Acquisition Electronics 4 (DAE4)

High precision 3-channel differential voltmeter for use with SPEAG's field, SAR, and temperature probes. Serial optical link for communication with the DASY8 measurement server. Two-step probe touch detector for mechanical surface detection and emergency robot stop.

- Measurement range: -100 – +300 mV (16-bit resolution and two range settings: 4 mV, 400 mV)
- Input offset voltage: $< 5 \mu\text{V}$ (with auto zero)
- Input resistance: 200 M Ω
- Input bias current: < 50 fA
- Battery power: >10 hours of operation (with two 9.6 V NiMH batteries)
- Dimensions (L $\times$ W $\times$ H): 60 $\times$ 60 $\times$ 68 mm
- Calibration: ISO/IEC 17025 calibration service available.



2.5. SAM-Twin Phantom

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. SAM-Twin V5.0 and higher has the same shell geometry and is manufactured from the same material as SAM-Twin V4.0 but with reinforced top structure.

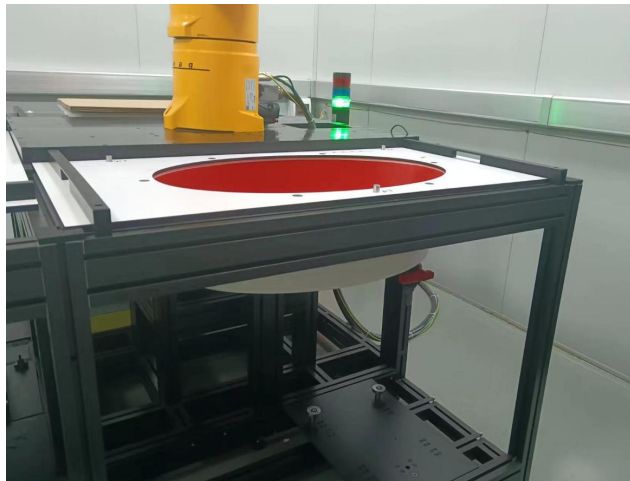
- Material: Vinyl ester, fiberglass reinforced (VE-GF)
- Shell Thickness: 2 ± 0.2 mm (6 ± 0.2 mm at ear point)
- Dimensions: Length: 1000 mm
Width: 500 mm
Height: adjustable feet



2.6. ELI Phantom

The ELI phantom is used 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 of SPEAG's dosimetric probes and dipoles. The latest ELI V8.0 phantom shell has optimized pretension in the bottom surface during production, such that the phantom is more robust and with reduced sagging.

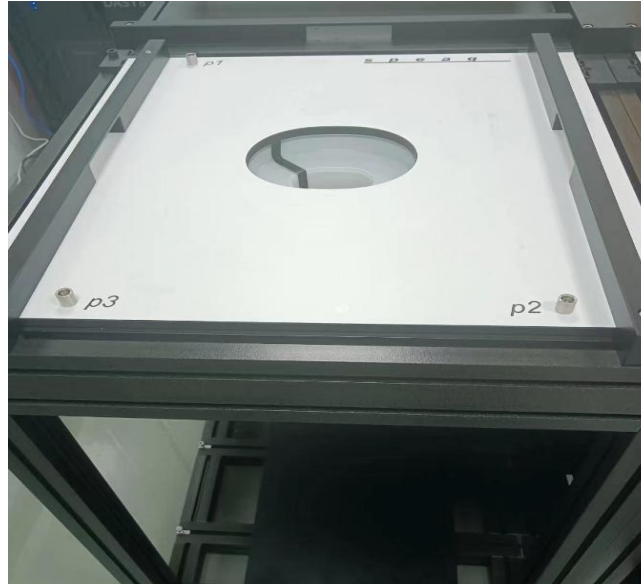
- Material: Vinyl ester, fiberglass reinforced (VE-GF)
- Shell Thickness: 2.0 ± 0.2 mm (bottom plate)
- Dimensions: Major axis: 600 mm,
Minor axis: 400 mm
- Filling Volume: approx. 30 liters.



2.7. WRIST Phantom

The Wrist Phantom V10 is shape-compatible with the CTIA approved OTA GFPC-V1 and optimized for specific absorption rate evaluation of watches and other wireless hand accessories.

- Material: Photosensitive epoxy acrylates
- Shell Thickness: 2 ± 0.2 mm
- Wrist Shape: Design compatible with CTIA forearm.



2.8. DEVICE Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.





2.9. SYSTEM Validation Dipoles

Symmetrical dipole with $1/4$ 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: >40 W

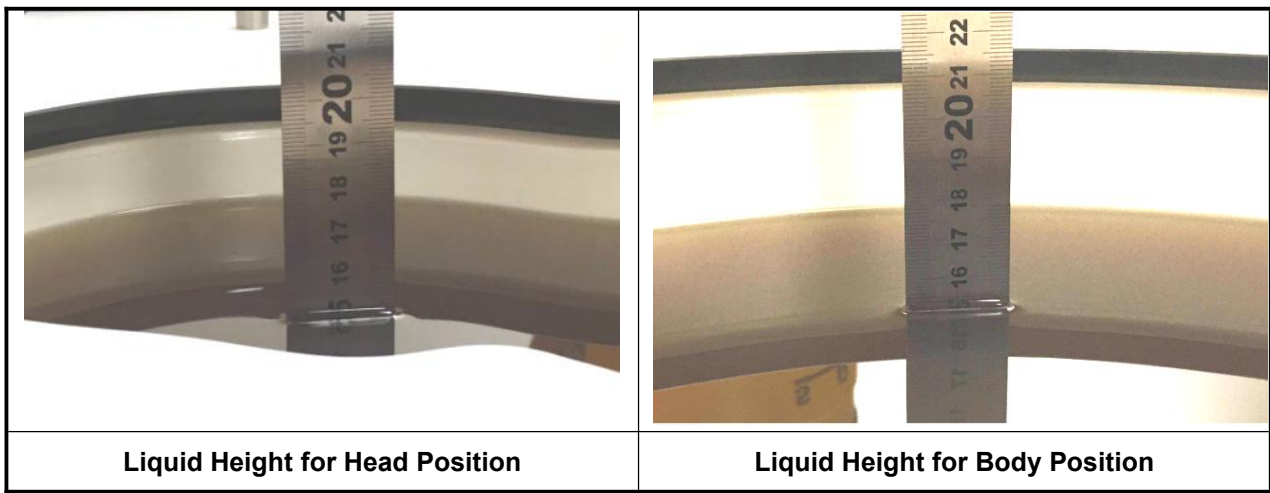




3. TISSUE Simulating Liquids

3.1. SIMULATING Liquids Parameter Check

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.



The dielectric properties of the tissue simulating liquids are defined in IEEE 1528. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.



Dielectric properties of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Target Conductivity
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1640	40.3	1.29
1750	40.1	1.37
1800	40.0	1.40
1900	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2300	39.5	1.67
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5300	35.9	4.76
5500	35.6	4.96
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48



3.2. LIQUIDS Measurement Results

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

Tissue Type	Frequency (MHz)	Measured Conductivity (σ)	Measured Permittivity (ϵ_r)	Target Conductivity γ (σ)	Target Permittivity γ (ϵ_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
H750	750	0.869	40.100	0.89	41.90	-2.36	-4.30	Nov. 13, 2025
H835	835	0.890	40.400	0.90	41.50	-1.11	-2.65	Nov. 14, 2025
H1750	1750	1.350	39.200	1.37	40.10	-1.46	-2.24	Nov. 14, 2025
H1900	1900	1.410	39.000	1.40	40.00	0.71	-2.50	Nov. 17, 2025
H2450	2450	1.790	40.000	1.80	39.20	-0.56	2.04	Nov. 13, 2025
H2600	2600	1.900	39.700	1.96	39.00	-3.06	1.79	Nov. 17, 2025

Note:

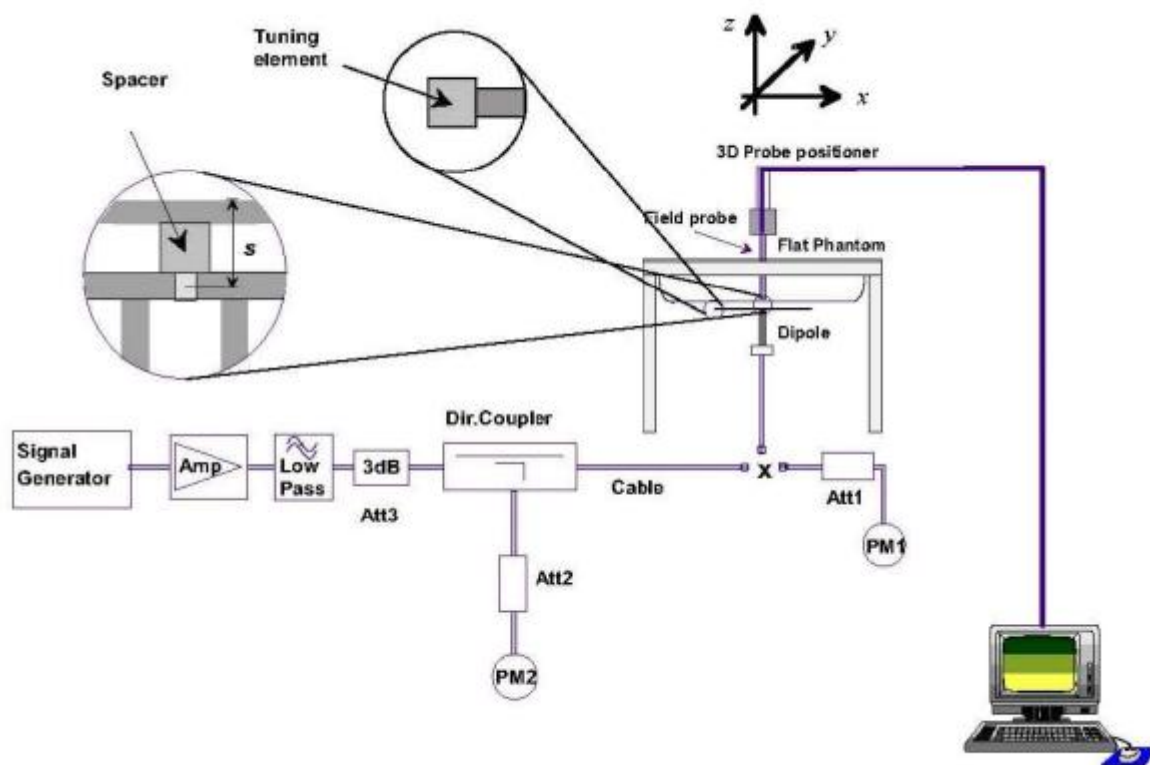
1. The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within $\pm 5\%$ of the target values. Liquid temperature during the SAR testing must be within $\pm 2^\circ\text{C}$.
2. Since the maximum deviation of dielectric properties of the tissue simulating liquid is within 5%.

4. SAR System Validation

4.1. VALIDATION System

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

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





4.2. SYSTEM Validation Result

The measuring result for system verification is tabulated as below.

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Nov. 13, 2025	750	8.53	2.20	8.76	2.65	1109	7738	1725
Nov. 14, 2025	835	9.75	2.41	9.59	-1.62	4d242	7738	1725
Nov. 14, 2025	1750	36.20	8.98	35.74	-1.27	1166	7738	1725
Nov. 17, 2025	1900	40.10	9.82	39.08	-2.53	5d229	7738	1725
Nov. 13, 2025	2450	53.40	13.30	52.93	-0.87	1014	7738	1725
Nov. 17, 2025	2600	56.80	13.60	54.13	-4.70	1153	7738	1725

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.



5. SAR Evaluation Procedures

To evaluate the peak spatial-average SAR values with respect to 1 g or 10 g cubes, fine resolution volume scans, called zoom scans, are performed at the peak SAR locations identified during the area scan. If the cube volume within the zoom scan chosen to calculate the peak spatial-average SAR touches any boundary of the zoom-scan volume, the zoom scan shall be repeated with the center of the zoom-scan volume shifted to the new maximum SAR location. For any secondary peaks found in the area scan that are within 2 dB of the maximum peak and are not within this zoom scan, the zoom scan shall be performed for such peaks, unless the peak spatial-average SAR at the location of the maximum peak is more than 2 dB below the applicable SAR limit (i.e., 1 W/kg for a 1.6 W/kg 1 g limit, or 1.26 W/kg for a 2 W/kg 10 g limit). The zoom scan resolutions specified in the table below must be applied to the SAR measurements.

Table 3 - Area scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface (z_{M1} in Figure 20 in mm)	5 ± 1	$\delta \ln(2)/2 \pm 0.5^a$
Maximum spacing between adjacent measured points in mm (see O.8.3.1) ^b	20, or half of the corresponding zoom scan length, whichever is smaller	$60/f$, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal (a in Figure 20) ^c	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°
a δ is the penetration depth for a plane-wave incident normally on a planar half-space. b See Clause O.8 on how Δx and Δy may be selected for individual area scan requirements. c The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz.		



Table 4 - Zoom scan parameters

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2 \pm 0,5^a$
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x- and y-directions (Δx and Δy , in mm)	8	24/f b
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	10/(f - 1)
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	12/f
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x- and y-directions (L_z , in O.8.3.2 , in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_h in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°
a δ is the penetration depth for a plane-wave incident normally on a planar half-space. b This is the maximum spacing allowed, which might not work for all circumstances.		



6. SAR Measurement Evaluation

6.1. 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		
7			V	V	V	V
12	V	V	V	V		
13			V	V		
17			V	V		
25	V	V	V	V	V	V
26	V	V	V	V	V	
38			V	V	V	V
41			V	V	V	V
66	V	V	V	V	V	V

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

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

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

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

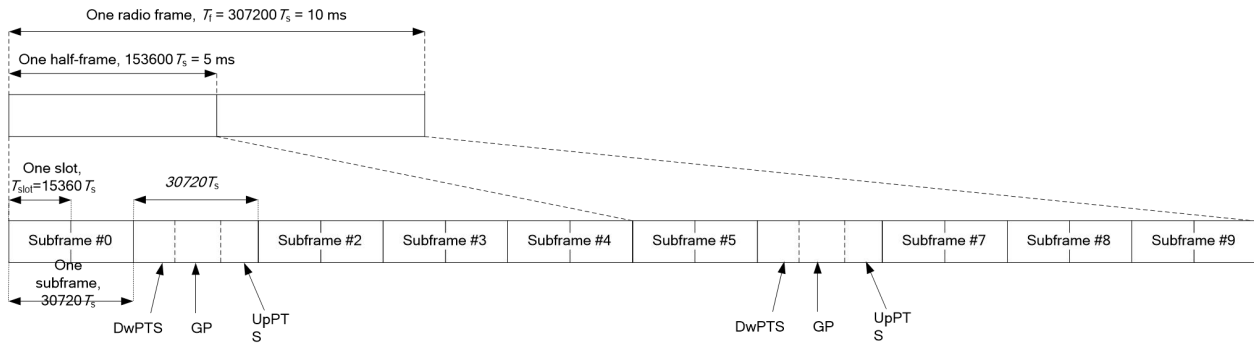
During LTE SAR testing, the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB was set in base station simulator. When the EUT has registered and communicated to base station simulator, the simulator set to make EUT transmitting the maximum radiated



power.

TDD-LTE Setup Configurations

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



3GPP TS 36.211 Frame Structure Type 2

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

3GPP TS 36.211 Configuration of Special Subframe

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

3GPP TS 36.211 Uplink-Downlink Configurations

The variety of different TD-LTE uplink-downlink configurations allows a network operator to allocate the network's capacity between uplink and downlink traffic to meet the needs of the network. The uplink duty cycle



of these seven configurations can readily be computed and shown in below.

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

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

<Considerations Related to Bluetooth for Setup and Testing>

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

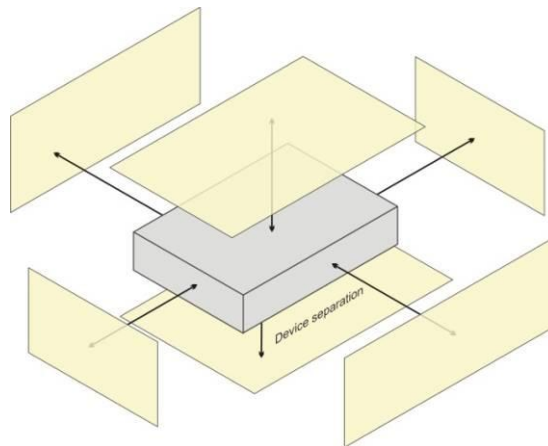


6.2. EUT Testing Position

6.2.1. Body-worn Exposure Conditions

Body-worn Position Conditions:

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode. SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$ the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.



Note 1: The antenna location shown on Appendix D of this report.



6.3. Simultaneous Transmission Possibilities

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

Simultaneous TX Combination	Capable Transmit Configurations	Body-worn (Data)
1	WWAN+BT	Yes



7. SAR test exclusion consider table

The WWAN SAR evaluation of Maximum power (dBm) summing tolerance.

Exposure position	Wireless Interface	LTE 2	LTE 4	LTE 5	LTE 7	LTE 12	LTE 13	LTE 17
	Calculated Frequency(GHz)	1900	1732.5	836.5	2510	704	782	711
	Maximum Turn-up Power(dBm)	24.5	24.5	25	24	24.5	24.5	24.5
	Maximum rated power(mW)	281.84	281.84	316.23	251.19	281.84	281.84	281.84
Front Face	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	exclusion threshold(mW)	0.62	0.68	2.52	0.47	3.56	2.89	3.49
	Testing required?	yes	yes	yes	yes	yes	yes	yes
Back Face	Separation distance (cm)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	exclusion threshold(mW)	3.36	3.36	9.22	2.69	11.75	10.14	11.59
	Testing required?	yes	yes	yes	yes	yes	yes	yes
Left Side	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	exclusion threshold(mW)	0.62	0.68	2.52	0.47	3.56	2.89	3.49
	Testing required?	yes	yes	yes	yes	yes	yes	yes
Right Side	Separation distance (cm)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	exclusion threshold(mW)	92.05	95.61	116.44	82.07	121.28	118.31	121
	Testing required?	yes	yes	yes	yes	yes	yes	yes
Top Side	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	exclusion threshold(mW)	0.62	0.68	2.52	0.47	3.56	2.89	3.49
	Testing required?	yes	yes	yes	yes	yes	yes	yes
Bottom Side	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	exclusion threshold(mW)	0.62	0.68	2.52	0.47	3.56	2.89	3.49
	Testing required?	yes	yes	yes	yes	yes	yes	yes

Exposure position	Wireless Interface	LTE 25	LTE 26	LTE 38	LTE 41	LTE 66	Bluetooth
	Calculated Frequency(GHz)	1905	841.5	2580	2680	1745	2480
	Maximum Turn-up Power(dBm)	24.5	24.5	25.0	25.0	25.0	7.0
	Maximum rated power(mW)	281.84	281.84	316.23	316.23	316.23	5.01
Front Face	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	0.2
	exclusion threshold(mW)	0.62	2.49	0.46	0.44	0.67	0.47
	Testing required?	yes	yes	yes	yes	yes	yes
Back Face	Separation distance (cm)	0.5	0.5	0.5	0.5	0.5	1.0
	exclusion threshold(mW)	3.36	9.15	0.63	2.55	3.6	10.17
	Testing required?	yes	yes	yes	yes	yes	no
Left Side	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	1.0
	exclusion threshold(mW)	0.62	2.49	0.46	0.44	0.67	10.07
	Testing required?	yes	yes	yes	yes	yes	no
Right Side	Separation distance (cm)	3.0	3.0	3.0	3.0	3.0	3.5
	exclusion threshold(mW)	91.95	116.28	81.15	79.89	95.33	110.63
	Testing required?	yes	yes	yes	yes	yes	no
Top Side	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	3.5
	exclusion threshold(mW)	0.62	2.49	0.46	0.44	0.67	110.63
	Testing required?	yes	yes	yes	yes	yes	no
Bottom Side	Separation distance (cm)	0.2	0.2	0.2	0.2	0.2	0.5
	exclusion threshold(mW)	0.62	2.49	0.46	0.44	0.67	2.72
	Testing required?	yes	yes	yes	yes	yes	yes

Note:

1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.



2. Per KDB 447498 D04, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. Per KDB 447498 D04, if the maximum time-averaged power available does not exceed 1 mW. This stand-alone SAR exemption test.
4. Per KDB 447498 D04, the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

5. Per KDB 447498 D04, An alternative to the SAR-based exemption is using below table and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in below table to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF Source frequency (MHz)	Threshold ERP(watts)
0.3-1.34	$1,920 R^2$
1.34-30	$3,450 R^2/f^2$
30-300	$3.83 R^2$
300-1,500	$0.0128 R^2 f$
1,500-100,000	$19.2 R^2$

6. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion.
8. for each frequency band, testing at higher data rates and higher order modulations is not required



when the maximum average output power for each of each of these configurations is less than $\frac{1}{4}$ db higher than those measured at the lower data rate than 11b mode, thus the SAR can be excluded.

7. Per KDB 616217 D04, SAR evaluation for the front surface of tablet display screens are generally not necessary.



8. Maximum Output Power

8.1. Maximum Conducted Power

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

Mode	LTE 2	LTE 4	LTE5
QPSK / 16QAM	24.0	25.0	25.0

Mode	LTE 7	LTE 12	LTE 13
QPSK / 16QAM	24.0	24.5	24.5

Mode	LTE 17	LTE 25	LTE 26
QPSK / 16QAM	24.5	24.5	25.0

Mode	LTE 38	LTE 41	LTE 66
QPSK / 16QAM	25.0	25.0	25.0

Mode	Bluetooth LE 1M		
Channel / Frequency (MHz)	0 (2402)	19 (2440)	39 (2480)
Average Power	3.5	6.0	7.0
Mode	Bluetooth LE 2M		
Channel / Frequency (MHz)	0 (2402)	19 (2440)	39 (2480)
Average Power	3.5	6.0	5.0



8.2. Measured Conducted Power Result

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18607	Mid CH 18900	High CH 19193		Low CH 18607	Mid CH 18900	High CH 19193	
			1850.7 MHz	1880.0 MHz	1909.3 MHz		1850.7 MHz	1880.0 MHz	1909.3 MHz	
2 / 1.4M	1	0	23.18	23.46	23.78	0	22.66	22.61	22.81	1
	1	2	23.68	22.62	22.98	0	22.19	22.12	22.22	1
	1	5	22.71	23.27	23.15	0	22.50	22.62	22.57	1
	3	0	23.71	23.48	23.63	0	22.78	22.68	22.88	1
	3	1	23.62	23.48	23.66	0	22.65	22.60	22.73	1
	3	3	23.35	23.38	23.11	0	22.64	22.69	22.86	1
	6	0	22.02	22.01	22.57	1	21.64	21.83	21.77	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18615	Mid CH 18900	High CH 19185		Low CH 18615	Mid CH 18900	High CH 19185	
			1851.5 MHz	1880.0 MHz	1908.5 MHz		1851.5 MHz	1880.0 MHz	1908.5 MHz	
2 / 3M	1	0	23.04	23.36	23.70	0	22.67	22.61	22.65	1
	1	7	23.62	22.55	22.93	0	22.11	22.18	22.20	1
	1	14	22.55	23.28	23.02	0	22.41	22.64	22.68	1
	8	0	22.61	22.47	22.73	1	21.67	21.79	21.87	2
	8	3	22.58	22.63	22.60	1	21.61	21.67	21.70	2
	8	7	22.23	22.48	22.25	1	21.70	21.71	21.86	2
	15	0	22.01	21.87	22.52	1	21.77	21.66	21.87	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18625	Mid CH 18900	High CH 19175		Low CH 18625	Mid CH 18900	High CH 19175	
			1852.5 MHz	1880.0 MHz	1907.5 MHz		1852.5 MHz	1880.0 MHz	1907.5 MHz	
2 / 5M	1	0	23.19	23.38	23.77	0	22.60	22.54	22.66	1
	1	12	23.73	22.45	22.98	0	22.01	22.22	22.28	1
	1	24	22.66	23.27	23.11	0	22.43	22.48	22.71	1
	12	0	22.54	22.43	22.74	1	21.77	21.83	21.78	2
	12	6	22.65	22.56	22.56	1	21.53	21.65	21.82	2
	12	13	22.40	22.42	22.14	1	21.73	21.60	21.86	2
	25	0	22.11	21.91	22.51	1	21.74	21.71	21.89	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18650	Mid CH 18900	High CH 19150		Low CH 18650	Mid CH 18900	High CH 19150	
			1855.0 MHz	1880.0 MHz	1905.0 MHz		1855.0 MHz	1880.0 MHz	1905.0 MHz	
2 / 10M	1	0	23.13	23.40	23.82	0	22.55	22.63	22.83	1
	1	24	23.78	22.48	22.94	0	22.02	22.07	22.31	1
	1	49	22.62	23.43	23.09	0	22.41	22.47	22.68	1
	25	0	22.69	22.40	22.66	1	21.65	21.84	21.94	2
	25	12	22.59	22.56	22.59	1	21.62	21.69	21.66	2
	25	25	22.29	22.39	22.19	1	21.66	21.73	21.75	2
	50	0	22.06	22.00	22.57	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18675	Mid CH 18900	High CH 19125		Low CH 18675	Mid CH 18900	High CH 19125	
			1857.5 MHz	1880.0 MHz	1902.5 MHz		1857.5 MHz	1880.0 MHz	1902.5 MHz	
2 / 15M	1	0	23.12	23.45	23.77	0	22.53	22.62	22.78	1
	1	37	23.60	22.59	22.93	0	22.18	22.14	22.31	1
	1	74	22.73	23.43	23.08	0	22.55	22.52	22.63	1
	36	0	22.66	22.55	22.63	1	/	/	/	2
	36	19	22.57	22.58	22.66	1	/	/	/	2
	36	39	22.28	22.47	22.16	1	/	/	/	2
	75	0	21.98	21.99	22.46	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18700	Mid CH 18900	High CH 19100		Low CH 18700	Mid CH 18900	High CH 19100	
			1860.0 MHz	1880.0 MHz	1900.0 MHz		1860.0 MHz	1880.0 MHz	1900.0 MHz	
2 / 20M	1	0	23.20	23.51	23.89	0	22.68	22.73	22.83	1
	1	50	23.80	22.63	23.04	0	22.20	22.25	22.35	1
	1	99	22.74	23.45	23.21	0	22.60	22.65	22.75	1
	50	0	22.74	22.59	22.79	1	/	/	/	2
	50	25	22.68	22.65	22.71	1	/	/	/	2
	50	50	22.43	22.54	22.28	1	/	/	/	2
	100	0	22.17	22.03	22.58	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19957	Mid CH 20175	High CH 20393		Low CH 19957	Mid CH 20175	High CH 20393	
			1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz	
4 / 1.4M	1	0	24.54	24.02	23.27	0	23.47	23.43	23.48	1
	1	2	23.95	24.36	24.09	0	23.08	23.02	22.97	1
	1	5	24.21	24.44	24.32	0	23.14	23.27	23.07	1
	3	0	24.59	24.60	24.42	0	23.29	23.20	23.25	1
	3	1	24.56	24.50	24.50	0	23.55	23.51	23.49	1
	3	3	24.16	24.76	24.03	0	23.14	23.20	23.22	1
	6	0	22.96	23.48	22.98	1	22.38	22.58	22.37	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19965	Mid CH 20175	High CH 20385		Low CH 19965	Mid CH 20175	High CH 20385	
			1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz	
4 / 3M	1	0	24.40	23.92	23.19	0	23.48	23.43	23.32	1
	1	7	23.89	24.29	24.04	0	23.00	23.08	22.95	1
	1	14	24.05	24.45	24.19	0	23.05	23.29	23.18	1
	8	0	23.49	23.59	23.52	1	22.18	22.31	22.24	2
	8	3	23.52	23.65	23.44	1	22.51	22.58	22.46	2
	8	7	23.04	23.86	23.17	1	22.20	22.22	22.22	2
	15	0	22.95	23.34	22.93	1	22.51	22.41	22.47	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19975	Mid CH 20175	High CH 20375		Low CH 19975	Mid CH 20175	High CH 20375	
			1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz	
4 / 5M	1	0	24.55	23.94	23.26	0	23.41	23.36	23.33	1
	1	12	24.00	24.19	24.09	0	22.90	23.12	23.03	1
	1	24	24.16	24.44	24.28	0	23.07	23.13	23.21	1
	12	0	23.42	23.55	23.53	1	22.28	22.35	22.15	2
	12	6	23.59	23.58	23.40	1	22.43	22.56	22.58	2
	12	13	23.21	23.80	23.06	1	22.23	22.11	22.22	2
	25	0	23.05	23.38	22.92	1	22.48	22.46	22.49	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20000	Mid CH 20175	High CH 20350		Low CH 20000	Mid CH 20175	High CH 20350	
			1715.0 MHz	1732.5 MHz	1750.0 MHz		1715.0 MHz	1732.5 MHz	1750.0 MHz	
4 / 10M	1	0	24.49	23.96	23.31	0	23.36	23.45	23.50	1
	1	24	24.05	24.22	24.05	0	22.91	22.97	23.06	1
	1	49	24.12	24.60	24.26	0	23.05	23.12	23.18	1
	25	0	23.57	23.52	23.45	1	22.16	22.36	22.31	2
	25	12	23.53	23.58	23.43	1	22.52	22.60	22.42	2
	25	25	23.10	23.77	23.11	1	22.16	22.24	22.11	2
	50	0	23.00	23.47	22.98	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20025	Mid CH 20175	High CH 20325		Low CH 20025	Mid CH 20175	High CH 20325	
			1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz	
4 / 15M	1	0	24.48	24.01	23.26	0	23.34	23.44	23.45	1
	1	37	23.87	24.33	24.04	0	23.07	23.04	23.06	1
	1	74	24.23	24.60	24.25	0	23.19	23.17	23.13	1
	36	0	23.54	23.67	23.42	1	/	/	/	2
	36	19	23.51	23.60	23.50	1	/	/	/	2
	36	39	23.09	23.85	23.08	1	/	/	/	2
	75	0	22.92	23.46	22.87	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20050	Mid CH 20175	High CH 20300		Low CH 20050	Mid CH 20175	High CH 20300	
			1720.0 MHz	1732.5 MHz	1745.0 MHz		1720.0 MHz	1732.5 MHz	1745.0 MHz	
4 / 20M	1	0	24.56	24.07	23.38	0	23.49	23.55	23.50	1
	1	50	24.07	24.37	24.15	0	23.09	23.15	23.10	1
	1	99	24.24	24.62	24.38	0	23.24	23.30	23.25	1
	50	0	23.62	23.71	23.58	1	/	/	/	2
	50	25	23.62	23.67	23.55	1	/	/	/	2
	50	50	23.24	23.92	23.20	1	/	/	/	2
	100	0	23.11	23.50	22.99	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20407	Mid CH 20525	High CH 20643		Low CH 20407	Mid CH 20525	High CH 20643	
			824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz	
5 / 1.4M	1	0	23.72	24.29	23.61	0	22.83	23.59	22.73	1
	1	2	23.85	23.78	23.48	0	22.74	22.87	22.92	1
	1	5	23.83	24.44	22.93	0	23.08	23.55	22.02	1
	3	0	23.75	24.40	24.06	0	22.99	23.24	22.80	1
	3	1	23.98	24.30	23.70	0	23.02	23.13	22.82	1
	3	3	24.12	24.38	23.71	0	23.07	23.43	22.63	1
	6	0	22.99	23.31	22.73	1	22.32	22.41	21.92	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20415	Mid CH 20525	High CH 20635		Low CH 20415	Mid CH 20525	High CH 20635	
			825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz	
5 / 3M	1	0	23.79	24.31	23.70	0	22.67	23.47	22.69	1
	1	7	23.72	23.80	23.38	0	22.84	23.04	23.10	1
	1	14	23.92	24.38	22.91	0	23.11	23.56	22.05	1
	8	0	22.83	23.26	23.04	1	21.87	22.21	21.89	2
	8	3	22.95	23.19	22.80	1	21.95	22.12	21.77	2
	8	7	23.04	23.39	22.55	1	22.04	22.48	21.65	2
	15	0	22.94	23.32	22.67	1	22.39	22.44	22.04	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20425	Mid CH 20525	High CH 20625		Low CH 20425	Mid CH 20525	High CH 20625	
			826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz	
5 / 5M	1	0	23.69	24.19	23.78	0	22.77	23.53	22.66	1
	1	12	23.79	23.86	23.48	0	22.85	22.90	23.09	1
	1	24	23.90	24.43	22.99	0	23.09	23.59	22.13	1
	12	0	22.89	23.35	22.97	1	21.95	22.22	21.86	2
	12	6	22.88	23.33	22.74	1	22.05	22.06	21.88	2
	12	13	23.10	23.47	22.57	1	22.10	22.38	21.70	2
	25	0	22.84	23.33	22.78	1	22.22	22.45	22.05	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20450	Mid CH 20525	High CH 20600		Low CH 20450	Mid CH 20525	High CH 20600	
			829.0 MHz	836.5 MHz	844.0 MHz		829.0 MHz	836.5 MHz	844.0 MHz	
5 / 10M	1	0	23.87	24.34	23.78	0	22.84	23.67	22.85	1
	1	24	23.87	23.95	23.58	0	22.90	23.07	23.11	1
	1	49	23.94	24.48	23.04	0	23.12	23.65	22.20	1
	25	0	22.92	23.40	23.14	1	22.05	22.30	21.95	2
	25	12	23.04	23.37	22.90	1	22.10	22.25	21.97	2
	25	25	23.16	23.55	22.71	1	22.14	22.49	21.78	2
	50	0	23.04	23.45	22.80	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20775	Mid CH 21100	High CH 21425		Low CH 20775	Mid CH 21100	High CH 21425	
			2502.5 MHz	2535.0 MHz	2567.5 MHz		2502.5 MHz	2535.0 MHz	2567.5 MHz	
7 / 5M	1	0	23.73	23.32	22.95	0	22.67	22.67	22.53	1
	1	12	23.61	22.87	22.35	0	22.54	22.28	22.36	1
	1	24	23.57	22.80	22.08	0	22.72	22.53	22.59	1
	12	0	22.73	22.68	22.14	1	21.81	21.78	21.60	2
	12	6	22.61	22.68	22.58	1	21.50	21.50	21.46	2
	12	13	22.80	22.41	22.35	1	21.71	21.46	21.60	2
	25	0	22.24	22.40	21.87	1	21.81	21.55	21.62	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20800	Mid CH 21100	High CH 21400		Low CH 20800	Mid CH 21100	High CH 21400	
			2505.0 MHz	2535.0 MHz	2565.0 MHz		2505.0 MHz	2535.0 MHz	2565.0 MHz	
7 / 10M	1	0	23.75	23.22	23.01	0	22.71	22.57	22.58	1
	1	24	23.72	22.86	22.39	0	22.43	22.28	22.24	1
	1	49	23.56	22.87	22.21	0	22.69	22.54	22.43	1
	25	0	22.81	22.70	22.08	1	21.79	21.69	21.70	2
	25	12	22.62	22.59	22.51	1	21.60	21.46	21.30	2
	25	25	22.79	22.40	22.39	1	21.70	21.54	21.60	2
	50	0	22.28	22.26	22.00	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20825	Mid CH 21100	High CH 21375		Low CH 20825	Mid CH 21100	High CH 21375	
			2507.5 MHz	2535.0 MHz	2562.5 MHz		2507.5 MHz	2535.0 MHz	2562.5 MHz	
7 / 15M	1	0	23.69	23.26	22.99	0	22.82	22.61	22.57	1
	1	37	23.61	22.97	22.46	0	22.53	22.44	22.41	1
	1	74	23.61	22.74	22.18	0	22.65	22.58	22.48	1
	36	0	22.80	22.62	22.20	1	/	/	/	2
	36	19	22.74	22.62	22.51	1	/	/	/	2
	36	39	22.94	22.42	22.42	1	/	/	/	2
	75	0	22.18	22.28	21.84	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20850	Mid CH 21100	High CH 21350		Low CH 20850	Mid CH 21100	High CH 21350	
			2510.0 MHz	2535.0 MHz	2560.0 MHz		2510.0 MHz	2535.0 MHz	2560.0 MHz	
7 / 20M	1	0	23.88	23.38	23.02	0	22.83	22.71	22.68	1
	1	50	23.79	22.98	22.55	0	22.57	22.45	22.42	1
	1	99	23.61	22.88	22.27	0	22.76	22.64	22.61	1
	50	0	22.91	22.70	22.22	1	/	/	/	2
	50	25	22.75	22.68	22.63	1	/	/	/	2
	50	50	22.97	22.59	22.42	1	/	/	/	2
	100	0	22.29	22.46	22.02	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23017	Mid CH 23095	High CH 23173		Low CH 23017	Mid CH 23095	High CH 23173	
			699.7 MHz	707.5 MHz	715.3 MHz		699.7 MHz	707.5 MHz	715.3 MHz	
12 / 1.4M	1	0	23.79	23.84	23.52	0	22.80	22.65	22.64	1
	1	2	23.79	23.49	23.56	0	22.80	22.77	22.66	1
	1	5	23.92	23.63	23.49	0	22.76	22.65	22.46	1
	3	0	23.75	23.77	23.74	0	22.75	22.68	22.59	1
	3	1	23.83	23.84	23.60	0	22.93	22.72	22.61	1
	3	3	23.85	23.81	23.41	0	22.72	22.80	22.51	1
	6	0	22.80	22.81	22.53	1	21.84	21.79	21.52	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23025	Mid CH 23095	High CH 23165		Low CH 23025	Mid CH 23095	High CH 23165	
			700.5 MHz	707.5 MHz	714.5 MHz		700.5 MHz	707.5 MHz	714.5 MHz	
12 / 3M	1	0	23.71	23.89	23.66	0	22.87	22.78	22.66	1
	1	7	23.71	23.48	23.51	0	22.80	22.81	22.65	1
	1	14	24.08	23.57	23.35	0	22.73	22.59	22.56	1
	8	0	22.87	22.79	22.65	1	21.78	21.75	21.51	2
	8	3	22.82	22.68	22.68	1	21.84	21.86	21.54	2
	8	7	22.78	22.81	22.40	1	21.72	21.82	21.65	2
	15	0	22.87	22.86	22.63	1	21.85	21.66	21.53	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23035	Mid CH 23095	High CH 23155		Low CH 23035	Mid CH 23095	High CH 23155	
			701.5 MHz	707.5 MHz	713.5 MHz		701.5 MHz	707.5 MHz	713.5 MHz	
12 / 5M	1	0	23.72	23.71	23.50	0	22.77	22.75	22.52	1
	1	12	23.70	23.55	23.65	0	22.81	22.84	22.54	1
	1	24	24.11	23.50	23.33	0	22.67	22.64	22.38	1
	12	0	22.93	22.86	22.61	1	21.84	21.77	21.66	2
	12	6	22.81	22.77	22.60	1	21.82	21.83	21.71	2
	12	13	22.75	22.83	22.53	1	21.79	21.75	21.50	2
	25	0	22.88	22.80	22.59	1	21.82	21.71	21.48	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23060	Mid CH 23095	High CH 23130		Low CH 23060	Mid CH 23095	High CH 23130	
			704.0 MHz	707.5 MHz	711.0 MHz		704.0 MHz	707.5 MHz	711.0 MHz	
12 / 10M	1	0	23.80	23.90	23.70	0	22.90	22.83	22.67	1
	1	24	23.89	23.58	23.69	0	22.93	22.86	22.70	1
	1	49	24.12	23.65	23.50	0	22.81	22.74	22.58	1
	25	0	22.94	22.87	22.78	1	21.91	21.84	21.68	2
	25	12	22.89	22.85	22.69	1	21.95	21.88	21.72	2
	25	25	22.91	22.83	22.57	1	21.90	21.83	21.67	2
	50	0	22.97	22.91	22.67	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23205	Mid CH 23230	High CH 23555		Low CH 23205	Mid CH 23230	High CH 23555	
			799.5 MHz	782 MHz	784.5 MHz		799.5 MHz	782 MHz	784.5 MHz	
13 / 5M	1	0	23.88	23.92	23.85	0	22.89	22.84	22.70	1
	1	12	23.97	23.87	24.05	0	22.81	22.89	22.85	1
	1	24	23.76	23.82	23.82	0	22.86	22.84	22.78	1
	12	0	23.01	22.96	23.02	1	22.10	22.15	22.09	2
	12	6	22.90	23.07	23.05	1	22.18	22.09	22.18	2
	12	13	22.78	22.89	22.92	1	21.97	21.93	21.99	2
	25	0	22.96	22.94	22.82	1	22.06	22.07	22.18	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
				Mid CH 23230				Mid CH 23230		
				782 MHz				782 MHz		
13 / 10M	1	0		24.03		0		22.90		1
	1	24		24.07		0		22.95		1
	1	49		23.93		0		22.94		1
	25	0		23.11		1		22.24		2
	25	12		23.10		1		22.20		2
	25	25		22.93		1		22.00		2
	50	0		23.00		1		/		2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23755	Mid CH 23790	High CH 23825		Low CH 23755	Mid CH 23790	High CH 23825	
			706.5 MHz	710.0 MHz	713.5 MHz		706.5 MHz	710.0 MHz	713.5 MHz	
17 / 5M	1	0	23.87	23.99	24.08	0	23.04	22.90	22.83	1
	1	12	23.71	23.51	23.91	0	23.04	23.06	22.90	1
	1	24	23.26	23.34	23.91	0	22.46	22.46	22.34	1
	12	0	22.69	22.76	22.98	1	21.91	21.92	21.90	2
	12	6	22.83	22.91	22.79	1	21.94	21.96	21.84	2
	12	13	22.83	22.73	22.64	1	21.87	21.88	21.70	2
	25	0	22.69	22.74	22.87	1	21.97	21.87	21.91	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23780	Mid CH 23790	High CH 23800		Low CH 23780	Mid CH 23790	High CH 23800	
			709.0 MHz	710.0 MHz	711.0 MHz		709.0 MHz	710.0 MHz	711.0 MHz	
17 / 10M	1	0	24.03	24.02	24.24	0	23.08	23.07	22.97	1
	1	24	23.74	23.67	23.99	0	23.11	23.10	23.00	1
	1	49	23.42	23.50	24.02	0	22.65	22.64	22.54	1
	25	0	22.89	22.90	23.00	1	22.03	22.02	21.92	2
	25	12	22.89	22.97	22.93	1	21.99	21.98	21.88	2
	25	25	22.85	22.89	22.81	1	21.94	21.93	21.83	2
	50	0	22.86	22.81	22.90	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26047	Mid CH 26365	High CH 26683		Low CH 26047	Mid CH 26365	High CH 26683	
			1850.7 MHz	1882.5 MHz	1914.3 MHz		1850.7 MHz	1882.5 MHz	1914.3 MHz	
25 / 1.4M	1	0	23.87	23.96	23.92	0	22.57	22.73	22.51	1
	1	2	23.82	23.13	23.08	0	22.41	22.47	22.26	1
	1	5	23.07	23.77	23.75	0	23.13	23.28	23.02	1
	3	0	23.87	23.07	23.77	0	22.91	22.98	22.90	1
	3	1	23.90	23.83	23.56	0	22.92	22.96	22.88	1
	3	3	23.65	23.88	23.95	0	22.73	22.91	22.74	1
	6	0	22.35	22.38	22.73	1	21.93	22.04	21.89	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26055	Mid CH 26365	High CH 26675		Low CH 26055	Mid CH 26365	High CH 26675	
			1851.5 MHz	1882.5 MHz	1913.5 MHz		1851.5 MHz	1882.5 MHz	1913.5 MHz	
25 / 3M	1	0	23.82	23.88	23.92	0	22.59	22.80	22.65	1
	1	7	23.87	23.09	23.12	0	22.25	22.45	22.24	1
	1	14	22.95	23.74	23.75	0	23.00	23.29	23.03	1
	8	0	22.91	22.12	22.68	1	21.97	22.06	21.75	2
	8	3	22.75	22.76	22.70	1	21.87	22.06	21.91	2
	8	7	22.76	22.87	22.89	1	21.89	22.03	21.76	2
	15	0	22.30	22.43	22.77	1	21.81	21.98	21.89	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26065	Mid CH 26365	High CH 26665		Low CH 26065	Mid CH 26365	High CH 26665	
			1852.5 MHz	1882.5 MHz	1912.5 MHz		1852.5 MHz	1882.5 MHz	1912.5 MHz	
25 / 5M	1	0	23.88	23.86	23.93	0	22.52	22.72	22.58	1
	1	12	23.84	23.21	23.23	0	22.39	22.51	22.20	1
	1	24	22.88	23.88	23.60	0	23.05	23.33	23.02	1
	12	0	22.79	22.18	22.77	1	21.89	22.05	21.82	2
	12	6	22.83	22.82	22.65	1	21.77	21.93	21.77	2
	12	13	22.68	22.99	22.86	1	21.87	21.98	21.80	2
	25	0	22.38	22.44	22.77	1	21.80	21.92	21.75	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26090	Mid CH 26365	High CH 26640		Low CH 26090	Mid CH 26365	High CH 26640	
			1855.0 MHz	1882.5 MHz	1910.0 MHz		1855.0 MHz	1882.5 MHz	1910.0 MHz	
25 / 10M	1	0	23.72	23.96	23.94	0	22.70	22.72	22.59	1
	1	24	23.94	23.18	23.14	0	22.37	22.56	22.21	1
	1	49	23.00	23.80	23.69	0	22.99	23.24	22.99	1
	25	0	22.88	22.17	22.83	1	21.78	21.96	21.80	2
	25	12	22.79	22.79	22.59	1	21.88	22.00	21.74	2
	25	25	22.68	22.79	23.00	1	21.89	21.91	21.84	2
	50	0	22.46	22.48	22.69	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26115	Mid CH 26365	High CH 26615		Low CH 26115	Mid CH 26365	High CH 26615	
			1857.5 MHz	1882.5 MHz	1907.5 MHz		1857.5 MHz	1882.5 MHz	1907.5 MHz	
25 / 15M	1	0	23.71	23.80	24.03	0	22.62	22.80	22.52	1
	1	37	23.96	23.14	23.11	0	22.38	22.48	22.23	1
	1	74	23.03	23.79	23.69	0	23.04	23.28	22.96	1
	36	0	22.82	22.17	22.82	1	/	/	/	2
	36	19	22.82	22.87	22.63	1	/	/	/	2
	36	39	22.80	22.86	22.92	1	/	/	/	2
	75	0	22.35	22.53	22.82	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26140	Mid CH 26365	High CH 26590		Low CH 26140	Mid CH 26365	High CH 26590	
			1860.0 MHz	1882.5 MHz	1905.0 MHz		1860.0 MHz	1882.5 MHz	1905.0 MHz	
25 / 20M	1	0	23.89	23.97	24.09	0	22.72	22.89	22.68	1
	1	50	24.01	23.22	23.27	0	22.42	22.59	22.38	1
	1	99	23.07	23.94	23.76	0	23.19	23.36	23.15	1
	50	0	22.94	22.24	22.88	1	/	/	/	2
	50	25	22.92	22.95	22.75	1	/	/	/	2
	50	50	22.82	22.99	23.03	1	/	/	/	2
	100	0	22.46	22.53	22.87	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26697	Mid CH 26865	High CH 27033		Low CH 26697	Mid CH 26865	High CH 27033	
			814.7 MHz	831.5 MHz	848.3 MHz		814.7 MHz	831.5 MHz	848.3 MHz	
26 / 1.4M	1	0	23.34	23.72	23.99	0	23.05	23.02	23.18	1
	1	2	24.24	24.15	24.30	0	23.33	23.19	23.41	1
	1	5	24.17	23.74	22.32	0	23.27	23.01	23.27	1
	3	0	24.20	24.04	24.42	0	23.27	23.09	23.17	1
	3	1	24.19	24.29	24.30	0	23.36	23.11	23.31	1
	3	3	24.02	24.20	24.39	0	23.26	23.03	23.34	1
	6	0	23.00	23.14	23.33	1	22.27	22.21	22.25	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26705	Mid CH 26865	High CH 27025		Low CH 26705	Mid CH 26865	High CH 27025	
			815.5 MHz	831.5 MHz	847.5 MHz		815.5 MHz	831.5 MHz	847.5 MHz	
26 / 3M	1	0	23.28	23.89	23.93	0	23.13	22.88	23.06	1
	1	7	24.23	24.07	24.22	0	23.35	23.24	23.50	1
	1	14	24.00	23.69	22.17	0	23.14	23.03	23.34	1
	8	0	23.23	23.13	23.44	1	22.20	22.04	22.22	2
	8	3	23.13	23.26	23.35	1	22.25	22.17	22.23	2
	8	7	23.06	23.16	23.35	1	22.36	22.06	22.27	2
	15	0	23.00	23.08	23.42	1	22.40	22.06	22.40	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26715	Mid CH 26865	High CH 27015		Low CH 26715	Mid CH 26865	High CH 27015	
			816.5 MHz	831.5 MHz	846.5 MHz		816.5 MHz	831.5 MHz	846.5 MHz	
26 / 5M	1	0	24.16	24.08	24.21	0	23.15	22.89	23.11	1
	1	12	24.03	23.83	22.19	0	23.43	23.15	23.47	1
	1	24	23.34	23.08	23.43	0	23.16	22.97	23.17	1
	12	0	23.24	23.16	23.31	1	22.20	22.02	22.25	2
	12	6	23.13	23.16	23.33	1	22.18	22.10	22.20	2
	12	13	23.00	23.06	23.29	1	22.23	22.03	22.36	2
	25	0	24.16	24.08	24.21	1	22.26	22.02	22.32	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26740	Mid CH 26865	High CH 26990		Low CH 26740	Mid CH 26865	High CH 26990	
			819.0 MHz	831.5 MHz	844.0 MHz		819.0 MHz	831.5 MHz	844.0 MHz	
26 / 10M	1	0	23.37	23.81	23.88	0	23.12	23.00	23.09	1
	1	24	24.17	24.14	24.22	0	23.29	23.14	23.33	1
	1	49	24.11	23.77	22.16	0	23.14	23.01	23.19	1
	25	0	23.23	23.05	23.35	1	22.19	22.01	22.33	2
	25	12	23.17	23.19	23.39	1	22.33	22.09	22.37	2
	25	25	23.01	23.13	23.26	1	22.29	22.04	22.36	2
	50	0	23.13	23.08	23.43	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26765	Mid CH 26865	High CH 26965		Low CH 26765	Mid CH 26865	High CH 26965	
			821.5 MHz	831.5 MHz	841.5 MHz		821.5 MHz	831.5 MHz	841.5 MHz	
26 / 15M	1	0	23.44	23.90	24.03	0	23.21	23.03	23.24	1
	1	37	24.25	24.17	24.35	0	23.48	23.30	23.51	1
	1	74	24.20	23.89	22.34	0	23.34	23.16	23.37	1
	36	0	23.35	23.23	23.46	1	/	/	/	2
	36	19	23.31	23.35	23.42	1	/	/	/	2
	36	39	23.20	23.23	23.45	1	/	/	/	2
	75	0	23.19	23.21	23.45	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 37775	Mid CH 38000	High CH 38225		Low CH 37775	Mid CH 38000	High CH 38225	
			2572.5 MHz	2595 MHz	2617.5 MHz		2572.5 MHz	2595 MHz	2617.5 MHz	
38/ 5M	1	0	24.65	23.21	23.33	0	23.05	23.10	23.12	1
	1	12	24.59	23.35	23.02	0	23.02	23.08	23.09	1
	1	24	24.41	23.07	23.05	0	23.04	23.14	23.02	1
	12	0	23.55	23.42	22.87	1	22.71	22.68	22.61	2
	12	6	23.34	23.43	23.30	1	22.61	22.64	22.60	2
	12	13	22.76	23.07	22.77	1	22.43	22.42	22.47	2
	25	0	22.91	23.78	23.03	1	22.54	22.59	22.65	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 37800	Mid CH 38000	High CH 38200		Low CH 37800	Mid CH 38000	High CH 38200	
			2575 MHz	2595 MHz	2615 MHz		2575 MHz	2595 MHz	2615 MHz	
38/ 10M	1	0	24.50	23.04	23.31	0	23.13	23.12	23.01	1
	1	24	24.48	23.40	23.03	0	22.97	23.10	23.08	1
	1	49	24.35	22.98	22.94	0	23.05	23.05	23.05	1
	25	0	23.69	23.48	23.00	1	22.76	22.77	22.75	2
	25	12	23.40	23.46	23.28	1	22.69	22.53	22.49	2
	25	25	22.81	23.12	22.82	1	22.44	22.49	22.48	2
	50	0	22.74	23.71	23.03	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 37825	Mid CH 38000	High CH 38175		Low CH 37825	Mid CH 38000	High CH 38175	
			2577.5 MHz	2595 MHz	2612.5 MHz		2577.5 MHz	2595 MHz	2612.5 MHz	
38/ 15M	1	0	24.50	23.16	23.23	0	23.11	23.10	22.98	1
	1	37	24.61	23.33	23.06	0	23.07	23.00	22.93	1
	1	74	24.27	23.10	23.05	0	23.03	23.18	23.06	1
	36	0	23.65	23.56	22.92	1	/	/	/	2
	36	19	23.33	23.38	23.26	1	/	/	/	2
	36	39	22.85	23.13	22.91	1	/	/	/	2
	75	0	22.74	23.75	23.07	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 37850	Mid CH 38000	High CH 38150		Low CH 37850	Mid CH 38000	High CH 38150	
			2580 MHz	2595 MHz	2610 MHz		2580 MHz	2595 MHz	2610 MHz	
38/ 20M	1	0	24.66	23.22	23.39	0	23.20	23.21	23.15	1
	1	50	24.65	23.46	23.21	0	23.16	23.17	23.11	1
	1	99	24.41	23.13	23.07	0	23.19	23.20	23.14	1
	50	0	23.73	23.59	23.01	1	/	/	/	2
	50	25	23.46	23.51	23.45	1	/	/	/	2
	50	50	22.94	23.16	22.96	1	/	/	/	2
	100	0	22.92	23.84	23.21	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK					3GPP MPR (dB)	16QAM					3GPP MPR (dB)
			Low CH	Mid CH	Mid CH	MidCH	High CH		Low CH	Mid CH	Mid CH	MidCH	High CH	
			39675	40148	40620	40193	41565		39675	40148	40620	40193	41565	
41/ 5M	1	0	2498.5 MHz	2545.8 MHz	2593 MHz	2640.3 MHz	2687.5 MHz	0	2498.5 MHz	2545.8 MHz	2593 MHz	2640.3 MHz	2687.5 MHz	1
	1	12	23.81	23.84	23.91	24.23	24.40	0	23.08	23.14	23.18	22.98	22.92	1
	1	24	23.76	23.92	23.85	24.12	24.29	0	23.43	23.55	23.59	23.49	23.43	1
	1	24	23.60	23.72	23.79	24.03	24.20	0	23.21	23.27	23.31	23.21	23.15	1
	12	0	23.01	23.03	22.96	23.42	23.59	1	22.54	22.60	22.64	22.54	22.48	2
	12	6	22.84	22.97	23.04	23.28	23.45	1	22.53	22.49	22.53	22.40	22.34	2
	12	13	22.97	23.28	23.21	23.55	23.72	1	22.60	22.67	22.71	22.44	22.38	2
	25	0	22.88	22.83	22.90	23.25	23.42	1	22.34	22.33	22.37	22.41	22.35	2

LTE Band / BW	RB Size	RB Offset	QPSK					3GPP MPR (dB)	16QAM					3GPP MPR (dB)
			Low CH	Mid CH	Mid CH	Mid CH	High CH		Low CH	Mid CH	Mid CH	Mid CH	High CH	
			39700	40160	40620	41080	41540		39700	40160	40620	41080	41540	
41/ 10M	1	0	2501 MHz	2547 MHz	2593 MHz	2639 MHz	2685 MHz	0	2501 MHz	2547 MHz	2593 MHz	2639 MHz	2685 MHz	1
	1	24	23.92	23.84	23.91	24.26	24.43	0	23.11	23.06	23.10	23.07	23.01	1
	1	24	23.81	23.87	23.80	24.16	24.33	0	23.48	23.57	23.61	23.39	23.33	1
	1	49	23.62	23.65	23.72	24.11	24.28	0	23.21	23.41	23.45	23.28	23.22	1
	25	0	22.95	23.10	23.03	23.46	23.63	1	22.44	22.46	22.50	22.54	22.48	2
	25	12	22.83	22.91	22.98	23.31	23.48	1	22.56	22.59	22.63	22.52	22.46	2
	25	25	23.17	23.31	23.24	23.48	23.65	1	22.43	22.51	22.55	22.47	22.41	2
	50	0	22.88	22.75	22.82	23.15	23.32	1	/	/	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK					3GPP MPR (dB)	16QAM					3GPP MPR (dB)
			Low CH	Mid CH	Mid CH	Mid CH	High CH		Low CH	Mid CH	Mid CH	Mid CH	High CH	
			39725	40173	40620	41068	41515		39725	40173	40620	41068	41515	
41/ 15M	1	0	2503.5 MHz	2548.3 MHz	2593 MHz	2637.8 MHz	2682.5 MHz	0	2503.5 MHz	2548.3 MHz	2593 MHz	2637.8 MHz	2682.5 MHz	1
	1	37	23.91	23.82	23.89	24.26	24.43	0	23.20	23.07	23.11	23.12	23.06	1
	1	37	23.75	23.97	23.90	24.16	24.33	0	23.45	23.45	23.49	23.34	23.28	1
	1	74	23.74	23.62	23.69	24.01	24.18	0	23.35	23.41	23.45	23.18	23.12	1
	36	0	22.95	23.08	23.01	23.41	23.58	1	/	/	/	/	/	2
	36	19	22.90	22.89	22.96	23.26	23.43	1	/	/	/	/	/	2
	36	39	23.02	23.26	23.19	23.43	23.60	1	/	/	/	/	/	2
	75	0	22.88	22.83	22.90	23.31	23.48	1	/	/	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK					3GPP MPR (dB)	16QAM					3GPP MPR (dB)
			Low CH	Mid CH	Mid CH	Mid CH	High CH		Low CH	Mid CH	Mid CH	Mid CH	High CH	
			39750	40185	40620	41055	41490		39750	40185	40620	41055	41490	
41/ 20M	1	0	2506 MHz	2549.5 MHz	2593 MHz	2646.5 MHz	2680 MHz	0	2506 MHz	2549.5 MHz	2593 MHz	2646.5 MHz	2680 MHz	1
	1	50	23.93	23.95	24.02	24.34	24.51	0	23.21	23.26	23.30	23.17	23.11	1
	1	50	23.89	24.05	23.98	24.30	24.47	0	23.57	23.62	23.66	23.53	23.47	1
	1	99	23.76	23.78	23.85	24.17	24.34	0	23.40	23.45	23.49	23.36	23.30	1
	50	0	23.05	23.21	23.14	23.46	23.63	1	/	/	/	/	/	2
	50	25	23.01	23.03	23.10	23.42	23.59	1	/	/	/	/	/	2
	50	50	23.17	23.33	23.26	23.58	23.75	1	/	/	/	/	/	2
	100	0	22.91	22.93	23.00	23.32	23.49	1	/	/	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 131979	Mid CH 132322	High CH 132665		Low CH 131979	Mid CH 132322	High CH 132665	
			1710.7 MHz	1745 MHz	1779.3 MHz		1710.7 MHz	1745 MHz	1779.3 MHz	
66 / 1.4M	1	0	24.42	23.89	23.95	0	23.30	23.41	23.53	1
	1	2	24.07	24.46	23.80	0	23.26	23.35	23.37	1
	1	5	24.34	23.82	24.07	0	22.78	23.06	22.93	1
	3	0	24.37	24.28	23.68	1	23.16	23.22	23.34	1
	3	1	24.29	24.35	24.20	1	23.09	23.20	23.25	1
	3	3	24.17	24.49	23.92	1	22.87	23.08	23.17	1
	6	0	22.95	23.43	22.84	1	22.16	22.51	22.37	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 131987	Mid CH 132322	High CH 132657		Low CH 131987	Mid CH 132322	High CH 132657	
			1711.5 MHz	1745 MHz	1778.5 MHz		1711.5 MHz	1745 MHz	1778.5 MHz	
66 / 3M	1	0	24.28	23.79	23.87	0	23.31	23.41	23.37	1
	1	7	24.01	24.39	23.75	0	23.18	23.41	23.35	1
	1	14	24.18	23.83	23.94	0	22.69	23.08	23.04	1
	8	0	23.27	23.27	22.78	1	22.05	22.33	22.33	2
	8	3	23.25	23.50	23.14	1	22.05	22.27	22.22	2
	8	7	23.05	23.59	23.06	1	21.93	22.10	22.17	2
	15	0	22.94	23.29	22.79	1	22.29	22.34	22.47	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 131997	Mid CH 132322	High CH 132647		Low CH 131997	Mid CH 132322	High CH 132647	
			1712.5 MHz	1745 MHz	1777.5 MHz		1712.5 MHz	1745 MHz	1777.5 MHz	
66 / 5M	1	0	24.43	23.81	23.94	0	23.24	23.34	23.38	1
	1	12	24.12	24.29	23.80	0	23.08	23.45	23.43	1
	1	24	24.29	23.82	24.03	0	22.71	22.92	23.07	1
	12	0	23.20	23.23	22.79	1	22.15	22.37	22.24	2
	12	6	23.32	23.43	23.10	1	21.97	22.25	22.34	2
	12	13	23.22	23.53	22.95	1	21.96	21.99	22.17	2
	25	0	23.04	23.33	22.78	1	22.26	22.39	22.49	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 132022	Mid CH 132322	High CH 132622		Low CH 132022	Mid CH 132322	High CH 132622	
			1715 MHz	1745 MHz	1775 MHz		1715 MHz	1745 MHz	1775 MHz	
66 / 10M	1	0	24.37	23.83	23.99	0	23.19	23.43	23.55	1
	1	24	24.17	24.32	23.76	0	23.09	23.30	23.46	1
	1	49	24.25	23.98	24.01	0	22.69	22.91	23.04	1
	25	0	23.35	23.20	22.71	1	22.03	22.38	22.40	2
	25	12	23.26	23.43	23.13	1	22.06	22.29	22.18	2
	25	25	23.11	23.50	23.00	1	21.89	22.12	22.06	2
	50	0	22.99	23.42	22.84	1	/	/	/	2



LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 132047	Mid CH 132322	High CH 132597		Low CH 132047	Mid CH 132322	High CH 132597	
			1717.5 MHz	1745 MHz	1772.5 MHz		1717.5 MHz	1745 MHz	1772.5 MHz	
66 / 15M	1	0	24.36	23.88	23.94	0	23.17	23.42	23.50	1
	1	37	23.99	24.43	23.75	0	23.25	23.37	23.46	1
	1	74	24.36	23.98	24.00	0	22.83	22.96	22.99	1
	36	0	23.32	23.35	22.68	1	/	/	/	2
	36	19	23.24	23.45	23.20	1	/	/	/	2
	36	39	23.10	23.58	22.97	1	/	/	/	2
	75	0	22.91	23.41	22.73	1	/	/	/	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 132072	Mid CH 132322	High CH 132572		Low CH 132072	Mid CH 132322	High CH 132572	
			1720 MHz	1745 MHz	1770 MHz		1720 MHz	1745 MHz	1770 MHz	
66 / 20M	1	0	24.44	23.94	24.06	0	23.32	23.53	23.55	1
	1	50	24.19	24.47	23.86	0	23.27	23.48	23.50	1
	1	99	24.37	24.00	24.13	0	22.88	23.09	23.11	1
	50	0	23.40	23.39	22.84	1	/	/	/	2
	50	25	23.35	23.52	23.25	1	/	/	/	2
	50	50	23.25	23.65	23.09	1	/	/	/	2
	100	0	23.10	23.45	22.85	1	/	/	/	2

Note:

Under the LTE Cat1 level, 16QAM only supports up to 27 RB.



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

<Bluetooth>

Mode	Bluetooth LE 1M		
Channel / Frequency (MHz)	0 (2402)	19 (2440)	39 (2480)
Average Power	3.01	5.65	6.48
Mode	Bluetooth LE 2M		
Channel / Frequency (MHz)	0 (2402)	19 (2440)	39 (2480)
Average Power	3.01	5.72	4.61



9. SAR Testing Results

9.1. 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.



9.2. SAR Results for Body-worn Exposure Condition (Separation Distance is 0 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	RB#	RB Offset	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
1	LTE 66&4	QPSK20M	Front Face	0	132322	1	50	25.0	24.47	1.13	-0.03	0.638	0.72
	LTE 66&4	QPSK20M	Rear Face	0	132322	1	50	25.0	24.47	1.13	0.03	0.378	0.43
	LTE 66&4	QPSK20M	Left Side	0	132322	1	50	25.0	24.47	1.13	-0.07	0.193	0.22
	LTE 66&4	QPSK20M	Right Side	0	132322	1	50	25.0	24.47	1.13	0.00	0.102	0.12
	LTE 66&4	QPSK20M	Top Side	0	132322	1	50	25.0	24.47	1.13	0.02	0.349	0.39
	LTE 66&4	QPSK20M	Bottom Side	0	132322	1	50	25.0	24.47	1.13	-0.02	0.258	0.29
	LTE 66&4	QPSK20M	Front Face	0	132322	50	50	24.0	23.65	1.08	-0.05	0.5104	0.55
	LTE 66&4	QPSK20M	Rear Face	0	132322	50	50	24.0	23.65	1.08	0.01	0.302	0.33
	LTE 66&4	QPSK20M	Left Side	0	132322	50	50	24.0	23.65	1.08	0.04	0.154	0.17
	LTE 66&4	QPSK20M	Right Side	0	132322	50	50	24.0	23.65	1.08	-0.10	0.087	0.09
	LTE 66&4	QPSK20M	Top Side	0	132322	50	50	24.0	23.65	1.08	-0.02	0.279	0.30
	LTE 66&4	QPSK20M	Bottom Side	0	132322	50	50	24.0	23.65	1.08	0.01	0.206	0.22
2	LTE 7	QPSK20M	Front Face	0	20850	1	0	24.0	23.88	1.03	0.10	0.414	0.43
	LTE 7	QPSK20M	Rear Face	0	20850	1	0	24.0	23.88	1.03	-0.03	0.293	0.30
	LTE 7	QPSK20M	Left Side	0	20850	1	0	24.0	23.88	1.03	-0.02	0.195	0.20
	LTE 7	QPSK20M	Right Side	0	20850	1	0	24.0	23.88	1.03	-0.02	0.095	0.10
	LTE 7	QPSK20M	Top Side	0	20850	1	0	24.0	23.88	1.03	-0.05	0.243	0.25
	LTE 7	QPSK20M	Bottom Side	0	20850	1	0	24.0	23.88	1.03	0.01	0.297	0.31
	LTE 7	QPSK20M	Front Face	0	20850	50	50	23.0	22.97	1.01	0.04	0.344	0.35
	LTE 7	QPSK20M	Rear Face	0	20850	50	50	23.0	22.97	1.01	-0.02	0.243	0.24
	LTE 7	QPSK20M	Left Side	0	20850	50	50	23.0	22.97	1.01	0.01	0.162	0.16
	LTE 7	QPSK20M	Right Side	0	20850	50	50	23.0	22.97	1.01	-0.04	0.081	0.08
	LTE 7	QPSK20M	Top Side	0	20850	50	50	23.0	22.97	1.01	-0.05	0.202	0.20
	LTE 7	QPSK20M	Bottom Side	0	20850	50	50	23.0	22.97	1.01	-0.03	0.247	0.25
3	LTE 12&17	QPSK10M	Front Face	0	23060	1	49	24.5	24.12	1.09	0.06	0.249	0.27
	LTE 12&17	QPSK10M	Rear Face	0	23060	1	49	24.5	24.12	1.09	-0.09	0.221	0.24
	LTE 12&17	QPSK10M	Left Side	0	23060	1	49	24.5	24.12	1.09	0.04	0.081	0.09
	LTE 12&17	QPSK10M	Right Side	0	23060	1	49	24.5	24.12	1.09	0.04	0.053	0.06
	LTE 12&17	QPSK10M	Top Side	0	23060	1	49	24.5	24.12	1.09	0.00	0.078	0.09
	LTE 12&17	QPSK10M	Bottom Side	0	23060	1	49	24.5	24.12	1.09	-0.06	0.134	0.15
	LTE 12&17	QPSK10M	Front Face	0	23060	25	0	23.5	22.94	1.14	-0.03	0.198	0.23
	LTE 12&17	QPSK10M	Rear Face	0	23060	25	0	23.5	22.94	1.14	-0.02	0.177	0.20
	LTE 12&17	QPSK10M	Left Side	0	23060	25	0	23.5	22.94	1.14	-0.05	0.065	0.07
	LTE 12&17	QPSK10M	Right Side	0	23060	25	0	23.5	22.94	1.14	-0.05	0.042	0.05
	LTE 12&17	QPSK10M	Top Side	0	23060	25	0	23.5	22.94	1.14	0.01	0.062	0.07
	LTE 12&17	QPSK10M	Bottom Side	0	23060	25	0	23.5	22.94	1.14	-0.04	0.108	0.12
4	LTE 13	QPSK10M	Front Face	0	23230	1	24	24.5	24.07	1.10	-0.03	0.542	0.60
	LTE 13	QPSK10M	Rear Face	0	23230	1	24	24.5	24.07	1.10	0.04	0.501	0.55
	LTE 13	QPSK10M	Left Side	0	23230	1	24	24.5	24.07	1.10	-0.02	0.092	0.10
	LTE 13	QPSK10M	Right Side	0	23230	1	24	24.5	24.07	1.10	-0.04	0.075	0.08
	LTE 13	QPSK10M	Top Side	0	23230	1	24	24.5	24.07	1.10	0.01	0.164	0.18
	LTE 13	QPSK10M	Bottom Side	0	23230	1	24	24.5	24.07	1.10	-0.05	0.317	0.35
	LTE 13	QPSK10M	Front Face	0	23230	25	0	23.5	23.11	1.09	-0.03	0.434	0.47
	LTE 13	QPSK10M	Rear Face	0	23230	25	0	23.5	23.11	1.09	0.02	0.404	0.44
	LTE 13	QPSK10M	Left Side	0	23230	25	0	23.5	23.11	1.09	-0.09	0.074	0.08
	LTE 13	QPSK10M	Right Side	0	23230	25	0	23.5	23.11	1.09	0.03	0.062	0.07
	LTE 13	QPSK10M	Top Side	0	23230	25	0	23.5	23.11	1.09	0.04	0.132	0.14
	LTE 13	QPSK10M	Bottom Side	0	23230	25	0	23.5	23.11	1.09	0.00	0.258	0.28



	LTE 25&2	QPSK20M	Front Face	0	26590	1	0	24.5	24.09	1.10	-0.12	0.987	1.08
	LTE 25&2	QPSK20M	Rear Face	0	26590	1	0	24.5	24.09	1.10	-0.02	0.545	0.60
	LTE 25&2	QPSK20M	Left Side	0	26590	1	0	24.5	24.09	1.10	0.04	0.412	0.45
	LTE 25&2	QPSK20M	Right Side	0	26590	1	0	24.5	24.09	1.10	-0.05	0.212	0.23
	LTE 25&2	QPSK20M	Top Side	0	26590	1	0	24.5	24.09	1.10	0.01	0.427	0.47
	LTE 25&2	QPSK20M	Bottom Side	0	26590	1	0	24.5	24.09	1.10	-0.04	0.415	0.46
	LTE 25&2	QPSK20M	Front Face	0	26590	50	50	23.5	23.03	1.11	-0.10	0.791	0.88
	LTE 25&2	QPSK20M	Rear Face	0	26590	50	50	23.5	23.03	1.11	0.04	0.463	0.52
	LTE 25&2	QPSK20M	Left Side	0	26590	50	50	23.5	23.03	1.11	-0.02	0.352	0.39
	LTE 25&2	QPSK20M	Right Side	0	26590	50	50	23.5	23.03	1.11	-0.05	0.173	0.19
	LTE 25&2	QPSK20M	Top Side	0	26590	50	50	23.5	23.03	1.11	0.01	0.364	0.41
	LTE 25&2	QPSK20M	Bottom Side	0	26590	50	50	23.5	23.03	1.11	0.03	0.354	0.39
5	LTE 25&2	QPSK20M	Front Face	0	26140	1	0	24.5	23.89	1.15	0.05	1.02	1.17
	LTE 25&2	QPSK20M	Front Face	0	26365	1	0	24.5	23.97	1.13	0.02	0.921	1.04
	LTE 25&2	QPSK20M	Front Face	0	26140	50	50	23.5	22.82	1.17	-0.06	0.816	0.95
	LTE 25&2	QPSK20M	Front Face	0	26365	50	50	23.5	22.99	1.12	0.03	0.738	0.83
	LTE 25&2	QPSK20M	Front Face	0	26140	100	0	23.5	22.46	1.27	0.03	0.792	1.01
	LTE 25&2	QPSK20M	Front Face	0	26140	1	0	24.5	23.89	1.15	0.03	0.996	1.15
6	LTE 26&5	QPSK15M	Front Face	0	26965	1	37	25.0	24.35	1.16	0.03	0.054	0.06
	LTE 26&5	QPSK15M	Rear Face	0	26965	1	37	25.0	24.35	1.16	-0.01	0.035	0.04
	LTE 26&5	QPSK15M	Left Side	0	26965	1	37	25.0	24.35	1.16	-0.03	0.015	0.02
	LTE 26&5	QPSK15M	Right Side	0	26965	1	37	25.0	24.35	1.16	-0.06	0.013	0.02
	LTE 26&5	QPSK15M	Top Side	0	26965	1	37	25.0	24.35	1.16	-0.09	0.011	0.01
	LTE 26&5	QPSK15M	Bottom Side	0	26965	1	37	25.0	24.35	1.16	0.04	0.012	0.01
	LTE 26&5	QPSK15M	Front Face	0	26965	36	0	24.0	23.46	1.13	0.00	0.046	0.05
	LTE 26&5	QPSK15M	Rear Face	0	26965	36	0	24.0	23.46	1.13	0.01	0.032	0.04
	LTE 26&5	QPSK15M	Left Side	0	26965	36	0	24.0	23.46	1.13	-0.02	0.013	0.01
	LTE 26&5	QPSK15M	Right Side	0	26965	36	0	24.0	23.46	1.13	-0.02	0.011	0.01
	LTE 26&5	QPSK15M	Top Side	0	26965	36	0	24.0	23.46	1.13	-0.05	0.01	0.01
	LTE 26&5	QPSK15M	Bottom Side	0	26965	36	0	24.0	23.46	1.13	0.01	0.01	0.01
7	LTE 41&38	QPSK20M	Front Face	0	41490	1	0	25.0	24.51	1.12	-0.16	0.452	0.51
	LTE 41&38	QPSK20M	Rear Face	0	41490	1	0	25.0	24.51	1.12	-0.02	0.156	0.17
	LTE 41&38	QPSK20M	Left Side	0	41490	1	0	25.0	24.51	1.12	0.01	0.102	0.11
	LTE 41&38	QPSK20M	Right Side	0	41490	1	0	25.0	24.51	1.12	0.01	0.086	0.10
	LTE 41&38	QPSK20M	Top Side	0	41490	1	0	25.0	24.51	1.12	0.03	0.285	0.32
	LTE 41&38	QPSK20M	Bottom Side	0	41490	1	0	25.0	24.51	1.12	-0.16	0.115	0.13
	LTE 41&38	QPSK20M	Front Face	0	41490	50	50	24.0	23.75	1.06	-0.01	0.362	0.38
	LTE 41&38	QPSK20M	Rear Face	0	41490	50	50	24.0	23.75	1.06	0.02	0.125	0.13
	LTE 41&38	QPSK20M	Left Side	0	41490	50	50	24.0	23.75	1.06	0.03	0.082	0.09
	LTE 41&38	QPSK20M	Right Side	0	41490	50	50	24.0	23.75	1.06	-0.02	0.069	0.07
	LTE 41&38	QPSK20M	Top Side	0	41490	50	50	24.0	23.75	1.06	0.04	0.228	0.24
	LTE 41&38	QPSK20M	Bottom Side	0	41490	50	50	24.0	23.75	1.06	-0.03	0.092	0.10

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
8	BLE	1M	Front Face	0	39	7.0	6.48	1.13	0.03	0.014	0.02
	BLE	1M	Bottom Side	0	39	7.0	6.48	1.13	-0.04	0.005	0.01



9.3. SAR Measurement Variability

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

SAR repeated measurement procedure:

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

Band	Test Position	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
LTE 25&2	Front Face	26140	1.02	0.996	1.02	N/A	N/A	N/A	N/A



9.4. Simultaneous Multi-band Transmission 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.

No.	Conditions (SAR1 + SAR2)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
1	LTE 66&4 + WLAN (DSS)	Hotspot	Front Face	0.72	0.02	0.74	ΣSAR < 1.6, Not required
			Rear Face	0.43		0.43	ΣSAR < 1.6, Not required
			Left Side	0.22		0.22	ΣSAR < 1.6, Not required
			Right Side	0.12		0.12	ΣSAR < 1.6, Not required
			Top Side	0.39		0.39	ΣSAR < 1.6, Not required
			Bottom Side	0.29	0.01	0.30	ΣSAR < 1.6, Not required
2	LTE 7 + WLAN (DSS)	Hotspot	Front Face	0.43	0.02	0.45	ΣSAR < 1.6, Not required
			Rear Face	0.30		0.30	ΣSAR < 1.6, Not required
			Left Side	0.20		0.20	ΣSAR < 1.6, Not required
			Right Side	0.10		0.10	ΣSAR < 1.6, Not required
			Top Side	0.25		0.25	ΣSAR < 1.6, Not required
			Bottom Side	0.31	0.01	0.32	ΣSAR < 1.6, Not required
3	LTE 12&17 + WLAN (DSS)	Hotspot	Front Face	0.27	0.02	0.29	ΣSAR < 1.6, Not required
			Rear Face	0.24		0.24	ΣSAR < 1.6, Not required
			Left Side	0.09		0.09	ΣSAR < 1.6, Not required
			Right Side	0.06		0.06	ΣSAR < 1.6, Not required
			Top Side	0.09		0.09	ΣSAR < 1.6, Not required
			Bottom Side	0.15	0.01	0.16	ΣSAR < 1.6, Not required
4	LTE 13 + WLAN (DSS)	Hotspot	Front Face	0.60	0.02	0.62	ΣSAR < 1.6, Not required
			Rear Face	0.55		0.55	ΣSAR < 1.6, Not required
			Left Side	0.10		0.10	ΣSAR < 1.6, Not required
			Right Side	0.08		0.08	ΣSAR < 1.6, Not required
			Top Side	0.18		0.18	ΣSAR < 1.6, Not required
			Bottom Side	0.35	0.01	0.36	ΣSAR < 1.6, Not required
5	LTE 25&2 + WLAN (DSS)	Hotspot	Front Face	1.17	0.02	1.19	ΣSAR < 1.6, Not required
			Rear Face	0.60		0.60	ΣSAR < 1.6, Not required
			Left Side	0.45		0.45	ΣSAR < 1.6, Not required
			Right Side	0.23		0.23	ΣSAR < 1.6,



							Not required
			Top Side	0.47		0.47	Σ SAR < 1.6, Not required
6	LTE 26&5 + WLAN (DSS)	Hotspot	Bottom Side	0.46	0.01	0.47	Σ SAR < 1.6, Not required
			Front Face	0.06	0.02	0.08	Σ SAR < 1.6, Not required
			Rear Face	0.04		0.04	Σ SAR < 1.6, Not required
			Left Side	0.02		0.02	Σ SAR < 1.6, Not required
			Right Side	0.02		0.02	Σ SAR < 1.6, Not required
			Top Side	0.01		0.01	Σ SAR < 1.6, Not required
			Bottom Side	0.01	0.01	0.02	Σ SAR < 1.6, Not required
7	LTE 41&38 + WLAN (DSS)	Hotspot	Front Face	0.51	0.02	0.53	Σ SAR < 1.6, Not required
			Rear Face	0.17		0.17	Σ SAR < 1.6, Not required
			Left Side	0.11		0.11	Σ SAR < 1.6, Not required
			Right Side	0.10		0.10	Σ SAR < 1.6, Not required
			Top Side	0.32		0.32	Σ SAR < 1.6, Not required
			Bottom Side	0.13	0.01	0.14	Σ SAR < 1.6, Not required

**10. Equipment List**

Equipment	Manufacturer	Model	SN	Cal. Data	Cal. interval
System Validation Dipole	SPEAG	D750V3	1109	Jun. 07, 2024	3 years
System Validation Dipole	SPEAG	D835V2	4d242	Jun. 07, 2024	3 years
System Validation Dipole	SPEAG	D1750V2	1166	Jun. 07, 2024	3 years
System Validation Dipole	SPEAG	D1900V2	5d229	Jun. 06, 2024	3 years
System Validation Dipole	SPEAG	D2000V2	1089	Jun. 07, 2024	3 years
System Validation Dipole	SPEAG	D2300V2	1087	Jun. 07, 2024	3 years
System Validation Dipole	SPEAG	D2450V2	1014	Jun. 06, 2024	3 years
System Validation Dipole	SPEAG	D2600V2	1153	Jun. 06, 2024	3 years
System Validation Dipole	SPEAG	D3500V2	1063	Jun. 06, 2024	3 years
System Validation Dipole	SPEAG	D3700V2	1020	Jun. 06, 2024	3 years
System Validation Dipole	SPEAG	D5GHzV2	1280	Jun. 06, 2024	3 years
Dosimetric E-Field Probe	SPEAG	EX3DV4	7738	Sep. 11, 2025	1 year
Data Acquisition Electronics	SPEAG	DAE4	1725	July. 30, 2025	1 year
Wideband Radio Communication Tester	R&S	CMW500	168558	May. 25, 2025	1 year
Signal Analyzer	R&S	FSV	104408	May. 20, 2025	1 year
Vector Network Analyzer	R&S	ZNB 40	101544	May. 20, 2025	1 year
Dielectric assessment Kit	SPEAG	DAK-3.5	1327	Feb. 25, 2025	1 year
Signal Generator	R&S	SMB 100B	101440	July. 30, 2025	1 year
Power Sensor	R&S	NRP18S-10	101843	Sep. 17, 2025	1 year
Power Sensor	R&S	NRP18S-10	101845	Sep. 17, 2025	1 year
DC Power Supply	Topward	3303D	810984	July. 24, 2025	1 year
Cavity Coupler	/	/	LS0300103	Jan. 08, 2025	1 year
Directional Coupler	/	SHX-DC04/12-20N	2206171042	Jan. 08, 2025	1 year
Coaxial attenuator	R&S	8491A	1424.6721k02-10 1845-HX	Sep. 17, 2025	1 year
Coaxial attenuator	R&S	8491A	1424.6721K02-10 1843-aM	Sep. 17, 2025	1 year
Digital Thermometer	LKM	DTM3000	3946	Jan. 15, 2025	1 year
temperature and humidity indicator	LINI-T	A10T	C193561473	Apr. 29, 2025	1 year
Head Tissue Simulating Liquid	SPEAG	HBBL600-10000V6	SLAAH U16 BC(Batch: 220525-1)	Jun. 01, 2022	N/A
Power Amplifier Mini circuit	mini-circuits	ZVA-183W-S+	726202215	Jan. 08, 2025	1 year
PHANTOM	SPEAG	ELI V8.0	2171	N/A	N/A
PHANTOM	SPEAG	SAM-Twin V8.0	2097	N/A	N/A



11. Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Source of Uncertainty	Tolerance ($\pm$ %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi Veff
Measurement System Errors								
Probe Calibration	$\pm 11.0\%$	Normal ($k=2$)	2	1	1	$\pm 5.5\%$	$\pm 5.5\%$	∞
Probe Calibration Drift	$\pm 1.7\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.0\%$	$\pm 1.0\%$	∞
Probe Linearity	$\pm 4.7\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 2.7\%$	$\pm 2.7\%$	∞
Broadband Signal	$\pm 3.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
Probe Isotropy	$\pm 7.6\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 4.4\%$	$\pm 4.4\%$	∞
Other Probe + Electronic	$\pm 0.7\%$	Normal	1	1	1	$\pm 0.7\%$	$\pm 0.7\%$	∞
RF Ambient	$\pm 1.8\%$	Normal	1	1	1	$\pm 1.8\%$	$\pm 1.8\%$	∞
Probe Positioning	$\pm 0.006\text{mm}$	Normal	1	0.14	0.14	$\pm 0.10\%$	$\pm 0.10\%$	∞
Data Processing	$\pm 1.2\%$	Normal	1	1	1	$\pm 1.2\%$	$\pm 1.2\%$	∞
Phantom and Device Errors								
Conductivity (meas.) ^{DAK}	$\pm 2.5\%$	Normal	1	0.78	0.71	$\pm 2.0\%$	$\pm 1.8\%$	100
Conductivity (temp.) ^{BB}	$\pm 3.3\%$	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 1.5\%$	$\pm 1.4\%$	∞
Phantom Permittivity	$\pm 14.0\%$	Rectangular	$\sqrt{3}$	0	0	$\pm 0\%$	$\pm 0\%$	∞
Distance DUT – TSL	$\pm 2.0\%$	Normal	1	2	2	$\pm 4.0\%$	$\pm 4.0\%$	∞
Device Positioning	$\pm 2.4\%/\pm 2.8\%$	Normal	1	1	1	$\pm 2.8\%$	$\pm 2.8\%$	30
Device Holder	$\pm 3.4\%/\pm 3.5\%$	Normal	1	1	1	$\pm 3.5\%$	$\pm 3.5\%$	30
DUT Modulation ^m	$\pm 2.4\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.4\%$	$\pm 1.4\%$	∞
Time-average SAR	$\pm 1.7\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.0\%$	$\pm 1.0\%$	∞
DUT drift	$\pm 2.5\%$	Normal	1	1	1	$\pm 2.5\%$	$\pm 2.5\%$	30
Val Antenna Unc. ^{val}	$\pm 0.0\%$	Normal	1	1	1	$\pm 0\%$	$\pm 0\%$	
Unc. Input Power ^{val}	$\pm 0.0\%$	Normal	1	1	1	$\pm 0\%$	$\pm 0\%$	
Correction to the SAR results								
$C(\epsilon, \sigma)$	$\pm 1.9\%$	Normal	1	1	0.84	$\pm 1.9\%$	$\pm 1.6\%$	
SAR scaling ^p	$\pm 0.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0\%$	$\pm 0\%$	
Combined Standard Uncertainty (K = 1)						$\pm 12.54\%$	$\pm 12.44\%$	
Expanded Uncertainty (K = 2)						$\pm 24.8\%$	$\pm 24.5\%$	

Uncertainty budget for frequency range 300 MHz to 3 GHz



Source of Uncertainty	Tolerance (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi Veff
Measurement System Errors								
Probe Calibration	±13.1%	Normal (k=2)	2	1	1	± 6.55 %	± 6.55 %	∞
Probe Calibration Drift	±1.7%	Rectangular	√3	1	1	±1.0%	±1.0%	∞
Probe Linearity	±4.7%	Rectangular	√3	1	1	±2.7%	±2.7%	∞
Broadband Signal	±2.6%	Rectangular	√3	1	1	±1.5%	±1.5%	∞
Probe Isotropy	±7.6%	Rectangular	√3	1	1	±4.4%	±4.4%	∞
Other Probe + Electronic	±1.2%	Normal	1	1	1	±1.2%	±1.2%	∞
RF Ambient	±1.8%	Normal	1	1	1	±1.8%	±1.8%	∞
Probe Positioning	±0.005mm	Normal	1	0.29	0.29	±0.15%	±0.15%	∞
Data Processing	±2.3%	Normal	1	1	1	±2.3%	±2.3%	∞
Phantom and Device Errors								
Conductivity (meas.) ^{DAK}	±2.5%	Normal	1	0.78	0.71	±2.0%	±1.8%	60
Conductivity (temp.) ^{BB}	±3.3%	Rectangular	√3	0.78	0.71	±1.5%	±1.4%	∞
Phantom Permittivity	±14.0%	Rectangular	√3	0.25	0.25	±2%	±2%	∞
Distance DUT – TSL	±2.0%	Normal	1	2	2	±4.0%	±4.0%	∞
Device Positioning	±2.4%/±2.8%	Normal	1	1	1	±2.8%	±2.8%	30
Device Holder	±3.4%/±3.5%	Normal	1	1	1	±3.5%	±3.5%	30
DUT Modulation ^m	±2.4%	Rectangular	√3	1	1	±1.4%	±1.4%	∞
Time-average SAR	±1.7%	Rectangular	√3	1	1	±1.0%	±1.0%	∞
DUT drift	±2.5%	Normal	1	1	1	±2.5%	±2.5%	30
Val Antenna Unc. ^{val}	±0.0%	Normal	1	1	1	±0%	±0%	
Unc. Input Power ^{val}	±0.0%	Normal	1	1	1	±0%	±0%	
Correction to the SAR results								
Deviation to Target	±1.9%	Normal	1	1	0.84	±1.9%	±1.6%	
SAR scaling ^p	±0.0%	Rectangular	√3	1	1	±0%	±0%	
Combined Standard Uncertainty (K = 1)						±12.8%	±12.7%	
Expanded Uncertainty (K = 2)						±25.8%	±25.4%	

Uncertainty budget for frequency range 3 GHz to 6 GHz



12. Appendixes

All attachments are integral parts of this test report. This applies especially to the following appendix:

12.1. Appendix A: SAR Plots of System Verification

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

12.2. Appendix B: SAR Plots of SAR Measurement

12.3. Appendix C: Calibration Certificate for probe and Dipole

Refer the appendix Calibration Report.

12.4. Appendix D: Photographs of EUT and setup



Important

- (1) The test report is invalid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of tester, reviewer and approver;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days;
- (6) Generally, commission test results apply to the samples as received. The sample information is provided by the customer and laboratory is not responsible for its authenticity;
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

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