



SAR Test Report

Report No.: STS2605370H01X

Issued for

HM Electronics Inc

2848 Whiptail Loop, Carlsbad, CA 92010 USA

Product Name: FreeSpeak Cell Beltpack

Brand Name: N/A

Model Name: BP5GC1

Series Model(s): N/A

FCC: BYMBP5GC1

Test Standard: ANSI/IEEE Std. C95.1
FCC 47 CFR Part 2 (2.1093)
IEEE Std. 1528-2013

Max. Report SAR Body: 0.766 W/kg(1g)

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**TEST REPORT CERTIFICATION****Applicant's name** : HM Electronics Inc

Address : 2848 Whiptail Loop, Carlsbad, CA 92010 USA

Manufacturer's Name : HM Electronics Inc

Address : 2848 Whiptail Loop, Carlsbad, CA 92010 USA

Product description

Product name : FreeSpeak Cell Beltpack

Brand name : N/A

Model name : BP5GC1

Series Model..... : N/A

ANSI/IEEE Std. C95.1

Standards : FCC 47 CFR Part 2 (2.1093)

IEEE Std. 1528-2013

The device was tested by Shenzhen STS Test Services Co., Ltd. in accordance with the measurement methods and procedures specified in KDB 865664 The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Date of Test..... :

Date (s) of performance of tests..... : 30 Mar. 2026 ~ 21 May 2026

Date of Issue..... : 22 May 2026

Test Result..... : **Pass**

Testing Engineer :

(Xin.Liu)

Technical Manager :

(Shifan. Long)

Authorized Signatory :

(Bovey Yang)





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**Revision History**

Rev.	Issue Date	Report No.	Effect Page	Contents
00	22 May 2026	STS2605370H01X	ALL	Initial Issue



1. General Information

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

1.1 EUT Description

Product Name	FreeSpeak Cell Beltpack			
Brand Name	N/A			
Model Name	BP5GC1			
Series Model	N/A			
Model Difference	N/A			
Battery	Model No.: BAT80 Typical Capacity: 4400 mAh Rated Voltage: 3.6 V			
Device Category	Portable			
Product stage	Production unit			
RF Exposure Environment	General Population / Uncontrolled			
Frequency Range	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 13: 777 MHz ~ 787 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G n2: 1850 ~ 1910 MHz 5G n5: 824 ~ 849 MHz 5G n25: 1850 - 1915 MHz 5G n48: 3550 - 3700 MHz 5G n66: 1710 - 1780 MHz 5G n71: 663 - 698 MHz 5G n77: 3450 ~ 3550 MHz; 3700 ~ 3980MHz Bluetooth: 2402 MHz to 2480 MHz			
Max. Reported SAR: Test distance: Body:5mm	Band	Mode	Antenna	Body (W/kg)
	PCB	LTE Band 2	1	0.766
	PCB	LTE Band 4	1	0.575
	PCB	LTE Band 5	1	0.222
	PCB	LTE Band 12	1	0.336
	PCB	LTE Band 13	1	0.313
	CBE	LTE Band 48	1	0.419
	PCB	LTE Band 66	1	0.585
	PCB	N2	1	0.719
	PCB	N5	1	0.248
	PCB	N25	1	0.526
	CBE	N48	1	0.226
	PCB	N66	1	0.546
	PCB	N71	1	0.378
	PCB	N77	1	0.693
	DTS /DSS	Bluetooth	3	0.208
1-g Sum SAR				0.974
Limit				1.6W/kg
FCC Equipment Class	PCS Licensed Transmitter(PCB) Citizens Band End User Devices(CBE) Digital Transmission System (DTS)			



	Part 15 Spread Spectrum Transmitter (DSS)
Operating Mode:	LTE: QPSK, 16QAM, 64QAM(downlink only) 5G NR: DFT-s-OFDM, CP-OFDM ($\pi/2$ shift BPSK, QPSK, 16QAM, 64QAM, 256QAM) Bluetooth: GFSK + $\pi/4$ DQPSK+8DPSK BLE: GFSK
Antenna Specification:	LTE/NR: PIFA Antenna Bluetooth: PIFA Antenna
SIM Card	Support single card
Hotspot Mode	Not Support
DTM Mode	Not Support
Note: 1. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power 2. This amend report base on original report number: STS2604026H01X , only use software to open LTE and 25/41/71, 5G n48. Not effect other bands results. Add the new bands test results.	



1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (°C)	18-25
Humidity (%RH)	30-70

1.3 Test Factory

ShenZhen STS Test Services Co.,Ltd.

A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration No.: 625569

IC Registration No.: 12108A

A2LA Certificate No.: 4338.01



2. Test Standards and Limits

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	IEEE Std C95.1, 2019	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz. It specifies the maximum exposure limit of 1.6 W/kg as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.
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 D04 v0 1	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
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

(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

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups,

occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

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

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

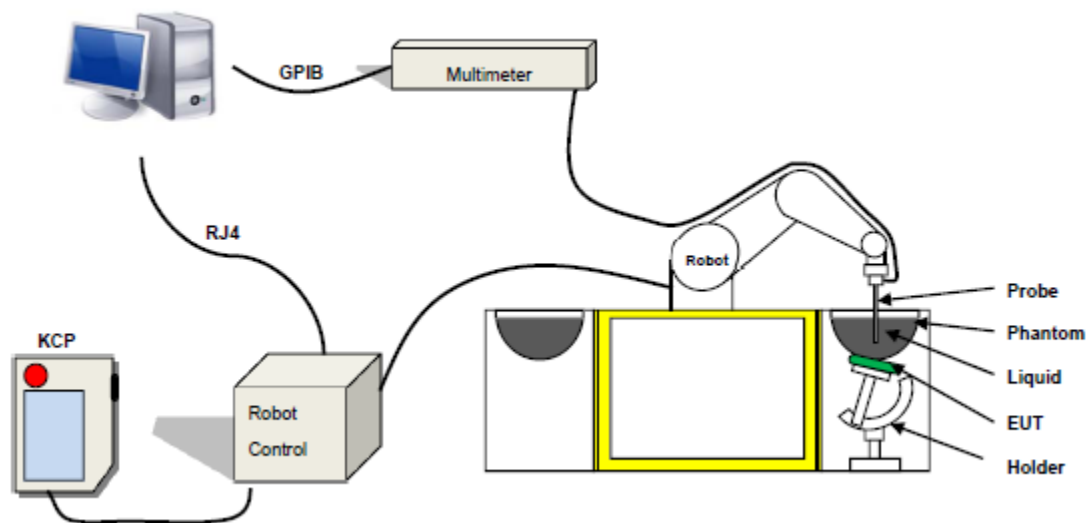
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SAR System

MVG SAR System Diagram:



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

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- 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.

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 08/21 EPG0352 with following specifications is used

- Probe Length: 330 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter: 2.5 mm
- Distance between dipole/probe extremity: 1 mm
- Dynamic range: 0.01-100 W/kg
- Probe linearity: 3%
- Axial Isotropy: < 0.10 dB
- Spherical Isotropy: < 0.10 dB
- Calibration range: 150 MHz to 6 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°



Figure 1-MVG COMOSAR Dosimetric E field Dipole

3.2.2 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

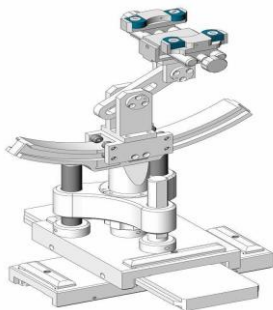
SN 32/14 SAM115



Figure-SN 21/21 ELLI48



3.2.3 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.



4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values

The uncertainty due to the liquid conductivity and permittivity arises from two different sources. The first source of error is the deviation of the liquid conductivity from its target value (max _ 5 %) and the second source of error arises from the measurement procedures used to assess conductivity. The uncertainty shall be assessed using a rectangular probability For 1 g averaging, the maximum weighting coefficient for SAR is 0,5.

IEEE SCC-34/SC-2 RECOMMENDED TISSUE DIELECTRIC PARAMETERS

The head and body tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following table.

Frequency	ϵ_r	σ 10g S/m
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 to 2000	40.0	1.40
2100	39.8	1.49
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
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27



The following table gives the recipes for tissue simulating liquid and the theoretical Conductivity/Permittivity.

Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ϵ
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Frequency (MHz)	Water (%)	Hexyl Carbitol (%)			Triton X-100 (%)		Conductivity σ (S/m)	Permittivity ϵ
5200	62.52	17.24			17.24		4.66	36.0
5800	62.52	17.24			17.24		5.27	35.3
Body (From instrument manufacturer)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ϵ
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5
Frequency(MHz)	Water	DGBE (%)			Salt (%)		Conductivity σ (S/m)	Permittivity ϵ
5200	78.60	21.40			/		5.30	49.00
5800	78.50	21.40			0.1		6.00	48.20

**LIQUID MEASUREMENT RESULTS**

LTE Band 12 & LTE Band 13									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-03-30	23.6	55.0	704.0	23.2	Permittivity	42.15	42.96	1.92	±5
					Conductivity	0.89	0.88	-1.12	±5
2026-03-30	23.6	55.0	707.5	23.2	Permittivity	42.13	42.95	1.95	±5
					Conductivity	0.89	0.88	-1.12	±5
2026-03-30	23.6	55.0	711.0	23.2	Permittivity	42.11	42.93	1.95	±5
					Conductivity	0.89	0.88	-1.12	±5
2026-03-30	23.6	55.0	750	23.2	Permittivity	41.90	42.84	2.24	±5
					Conductivity	0.89	0.91	2.25	±5
2026-03-30	23.6	55.0	782.0	23.2	Permittivity	41.80	42.76	2.30	±5
					Conductivity	0.90	0.93	3.33	±5

5G NR N71									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-05-21	22.4	48.5	673.0	22.1	Permittivity	42.30	42.68	0.90	±5
					Conductivity	0.89	0.85	-4.49	±5
2026-05-21	22.4	48.5	680.5	22.1	Permittivity	42.30	42.65	0.83	±5
					Conductivity	0.89	0.85	-4.49	±5
2026-05-21	22.4	48.5	688	22.1	Permittivity	42.30	42.63	0.78	±5
					Conductivity	0.89	0.85	-4.49	±5
2026-05-21	22.4	48.5	750	22.1	Permittivity	41.90	42.47	1.36	±5
					Conductivity	0.89	0.90	1.12	±5



LTE Band 5 & 5GNR N5									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-04-03	22.2	49.0	829.0	22.0	Permittivity	41.53	42.51	2.36	±5
					Conductivity	0.90	0.93	3.33	±5
2026-04-03	22.2	49.0	835	22.0	Permittivity	41.50	42.49	2.39	±5
					Conductivity	0.90	0.93	3.33	±5
2026-04-03	22.2	49.0	836.5	22.0	Permittivity	41.49	42.49	2.41	±5
					Conductivity	0.90	0.93	3.33	±5
2026-04-03	22.2	49.0	839.0	22.0	Permittivity	41.48	42.49	2.43	±5
					Conductivity	0.90	0.93	3.33	±5
2026-04-03	22.2	49.0	844.0	22.0	Permittivity	41.44	42.46	2.46	±5
					Conductivity	0.90	0.94	4.44	±5

LTE Band 4 & LTE Band 66 & 5GNR N66									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-04-07	22.7	56.1	1720.0	22.4	Permittivity	40.11	41.33	3.04	±5
					Conductivity	1.35	1.34	-0.74	±5
2026-04-07	22.7	56.1	1732.5	22.4	Permittivity	40.08	41.24	2.89	±5
					Conductivity	1.37	1.36	-0.73	±5
2026-04-07	22.7	56.1	1745.0	22.4	Permittivity	40.08	41.18	2.74	±5
					Conductivity	1.37	1.37	0.00	±5
2026-04-07	22.7	56.1	1770.0	22.4	Permittivity	40.04	41.07	2.57	±5
					Conductivity	1.38	1.39	0.72	±5
2026-04-07	22.7	56.1	1800	22.4	Permittivity	40.00	40.98	2.45	±5
					Conductivity	1.40	1.41	0.71	±5



LTE Band 2 & 5GNR N2									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-04-01	22.3	40.8	1860.0	21.6	Permittivity	40.00	40.41	1.02	±5
					Conductivity	1.40	1.36	-2.86	±5
2026-04-01	22.3	40.8	188.0	21.6	Permittivity	40.00	40.30	0.75	±5
					Conductivity	1.40	1.38	-1.43	±5
2026-04-01	22.3	40.8	1900	21.6	Permittivity	40.00	40.23	0.57	±5
					Conductivity	1.40	1.39	-0.71	±5

5GNR N25									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-05-20	21.8	40.8	1860.0	21.4	Permittivity	40.00	39.89	-0.27	±5
					Conductivity	1.40	1.37	-2.14	±5
2026-05-20	21.8	40.8	1882.5	21.4	Permittivity	40.00	39.82	-0.45	±5
					Conductivity	1.40	1.39	-0.71	±5
2026-05-20	21.8	40.8	1900	21.4	Permittivity	40.00	39.78	-0.55	±5
					Conductivity	1.40	1.41	0.71	±5
2026-05-20	21.8	40.8	1905.0	21.4	Permittivity	40.00	39.76	-0.60	±5
					Conductivity	1.40	1.41	0.71	±5



BT									
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-05-15	22.0	50.1	2402.0	21.9	Permittivity	39.20	38.87	-0.84	±5
					Conductivity	1.78	1.77	-0.56	±5
2026-05-15	22.0	50.1	2441.0	21.9	Permittivity	39.20	38.79	-1.05	±5
					Conductivity	1.80	1.81	0.56	±5
2026-05-15	22.0	50.1	2450	21.9	Permittivity	39.20	38.76	-1.12	±5
					Conductivity	1.80	1.81	0.56	±5
2026-05-15	22.0	50.1	2480.0	21.9	Permittivity	39.20	38.68	-1.33	±5
					Conductivity	1.83	1.83	0.00	±5



LTE Band 48 & 5G NR N48 & 5G NR N77

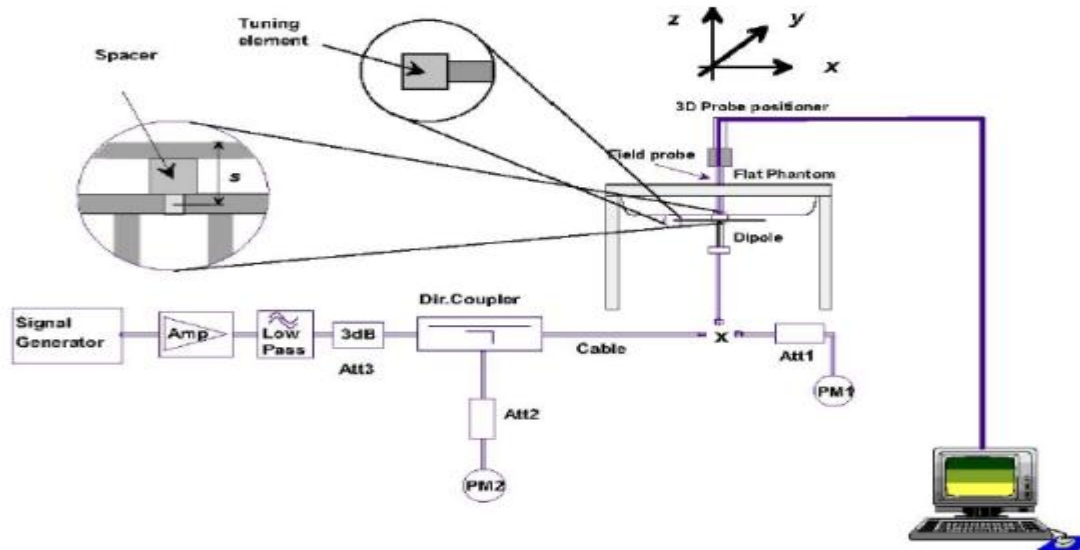
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2026-04-02	22.5	42.0	3500	22.2	Permittivity	37.90	37.39	-1.35	±5
					Conductivity	2.91	2.95	1.37	±5
2026-04-02	22.5	42.0	3500.01	22.2	Permittivity	37.90	37.39	-1.35	±5
					Conductivity	2.91	2.95	1.37	±5
2026-04-02	22.5	42.0	3560.0	22.2	Permittivity	37.90	37.35	-1.45	±5
					Conductivity	3.00	3.04	1.33	±5
2026-04-02	22.5	42.0	3625.0	22.2	Permittivity	37.80	37.28	-1.38	±5
					Conductivity	3.00	3.12	4.00	±5
2026-04-02	22.5	42.0	3690.0	22.2	Permittivity	37.70	37.22	-1.27	±5
					Conductivity	3.12	3.18	1.92	±5
2026-04-02	22.5	42.0	3700	22.2	Permittivity	37.70	37.20	-1.33	±5
					Conductivity	3.12	3.19	2.24	±5
2026-04-02	22.5	42.0	3710.0	22.2	Permittivity	37.70	37.19	-1.35	±5
					Conductivity	3.12	3.19	2.24	±5
2026-04-02	22.5	42.0	3840.0	22.2	Permittivity	37.50	37.09	-1.09	±5
					Conductivity	3.30	3.35	1.52	±5
2026-04-02	22.5	42.0	3900	22.2	Permittivity	37.50	37.02	-1.28	±5
					Conductivity	3.32	3.40	2.41	±5
2026-04-02	22.5	42.0	3969.99	22.2	Permittivity	37.40	36.92	-1.28	±5
					Conductivity	3.43	3.48	1.46	±5

5. SAR System Validation

5.1 Validation System

Each MVG system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the MVG 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.





5.2 Validation Result

Comparing to the original SAR value provided by MVG, the validation data should be within its specification of 10 %.

Date	Freq.	Power	Tested Value	Normalized SAR	Target SAR	Tolerance	Limit
	(MHz)	(mW)	(W/Kg)	(W/kg)	1g(W/kg)	(%)	(%)
2026-03-30	750	250	2.100	8.400	8.49	-1.06	±10
2026-05-21	750	250	2.188	8.752	8.49	3.09	±10
2026-04-03	835	250	2.583	10.332	9.63	7.29	±10
2026-04-07	1800	250	9.192	36.768	38.40	-4.25	±10
2026-04-01	1900	250	10.582	42.328	39.84	6.24	±10
2026-05-20	1900	250	10.238	40.952	39.84	2.79	±10
2026-05-15	2450	100	5.039	50.390	54.70	-7.88	±10
2026-04-02	3500	100	6.415	64.150	68.37	-6.17	±10
2026-04-02	3700	100	6.716	67.160	69.50	-3.37	±10
2026-04-02	3900	100	6.827	68.270	68.01	0.38	±10

Note:

1. The tolerance limit of System validation $\pm 10\%$.
2. The dipole input power (forward power) was 250mW or 100 mW.
3. The results are normalized to 1 W input power.



6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:

The following steps are used for each test position

- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

➤ Area Scan& Zoom Scan

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. Area scan and zoom scan resolution setting follows KDB 865664 D01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

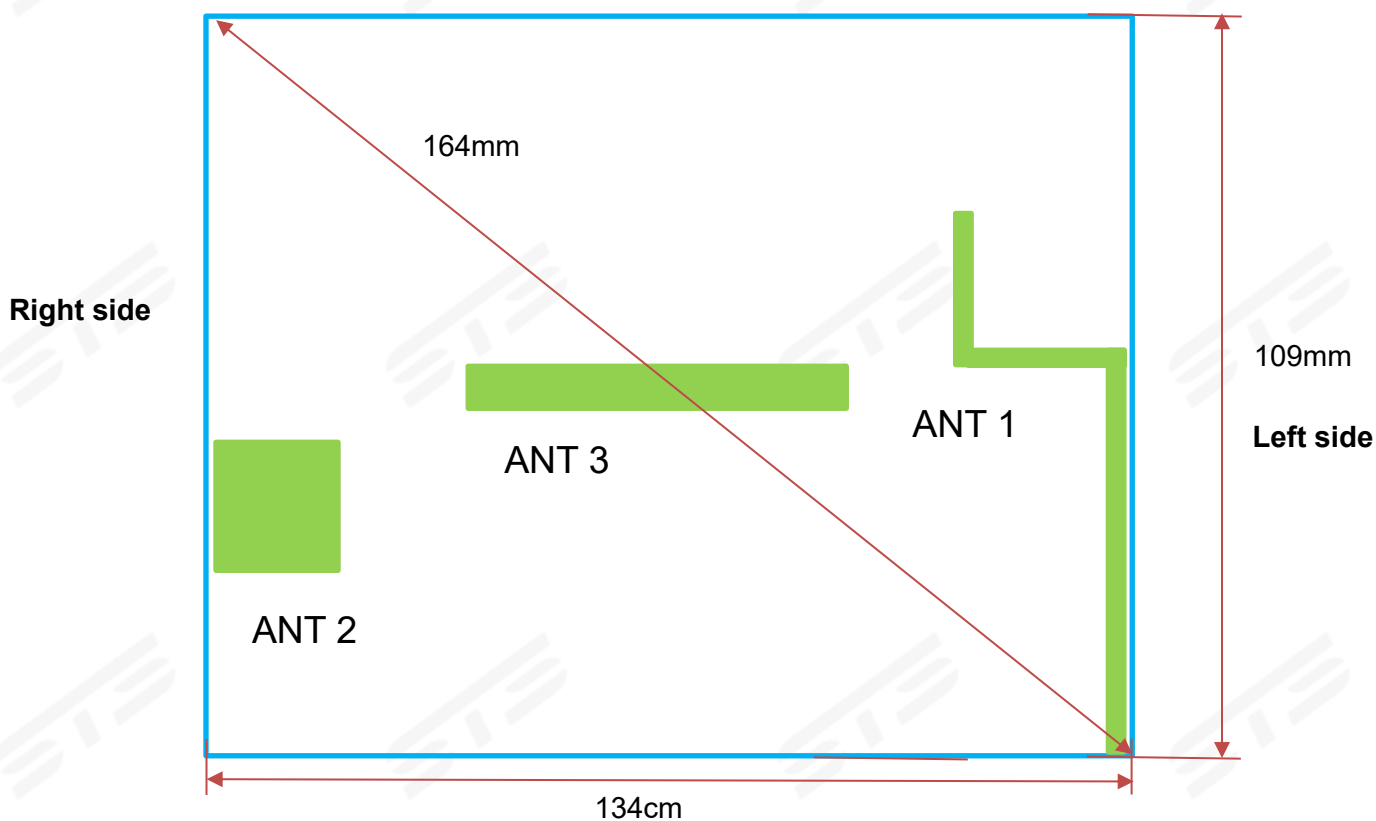


7. EUT Antenna Location Sketch

It is a FreeSpeak Cell Beltpack, support LTE/NR/ BT mode.

Device for Open

Top side



Bottom side
(Back view)

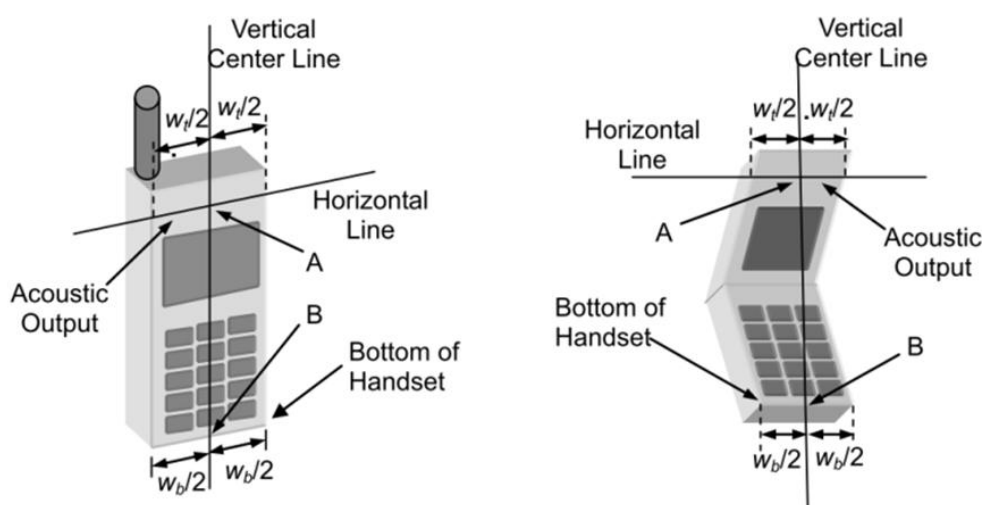
ANT	Support Band
ANT-1	LTE B2/LTE B4/LTE B5/LTE B12/LTE B13/LTE 48/LTE 66/N2/N5/N25/N48/N66/N71/N77
ANT-2	RX only
ANT-3	Bluetooth

8. EUT Test Position

This EUT was tested in Back.

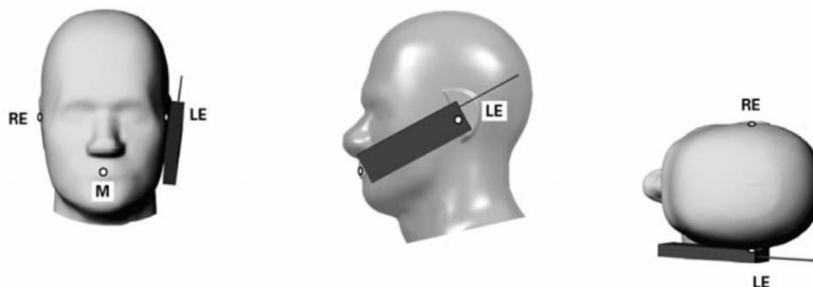
8.1 Define Two Imaginary Lines on the Handset

- (1) The vertical centerline passes through two points on the front side of the handset the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the handset.
- (2) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- (3) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



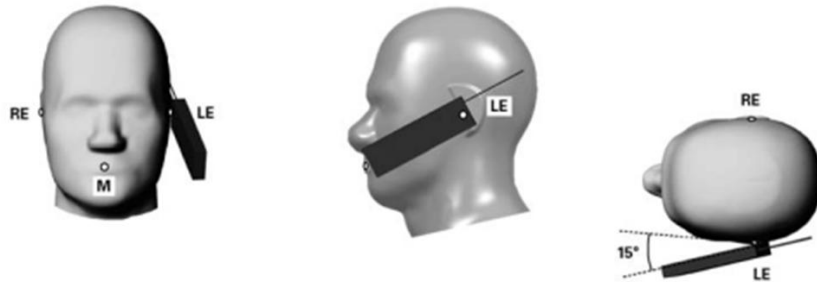
Cheek Position

- 1) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
- 2) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost



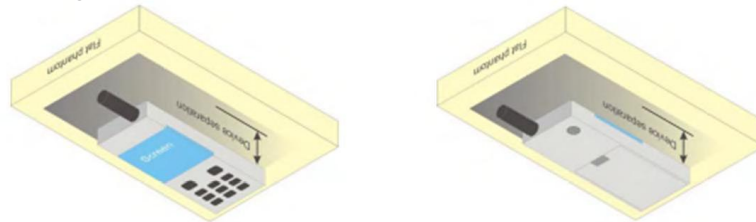
Title Position

- (1) To position the device in the “cheek” position described above.
- (2) While maintaining the device in the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until with the ear is lost.



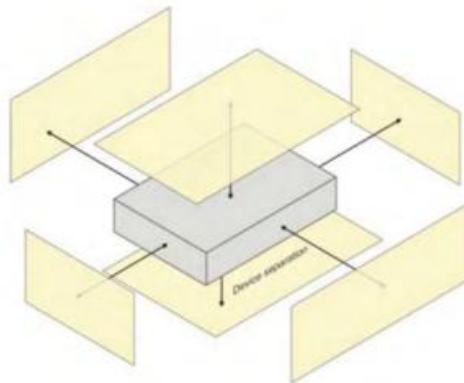
Body-worn Position Conditions:

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 D04 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.



8.2 Hotspot mode exposure position condition

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing function, the relevant hand and body exposure condition are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surface and edges with a transmitting antenna located within 25 mm from that surface or edge. When form factor of a handset is smaller than 9cm x 5cm, a test separation distance of 5mm (instead of 10mm) is required for testing hotspot mode. When the separate distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface).





9. Uncertainty

9.1 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEEE 1528: 2013. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

SATIMO Uncertainty- SN 08/21 EPG0352									
Measurement uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	5.72	N	1.00	1.00	1.00	5.72	5.72	∞
Axial Isotropy	E.2.2	0.18	R	1.73	0.71	0.71	0.07	0.07	∞
Hemispherical Isotropy	E.2.2	1.04	R	1.73	0.71	0.71	0.42	0.42	∞
Boundary effect	E.2.3	0.80	R	1.73	1.00	1.00	0.46	0.46	∞
Linearity	E.2.4	1.25	R	1.73	1.00	1.00	0.72	0.72	∞
System detection limits	E.2.4	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Modulation response	E.2.5	3.42	R	1.73	1.00	1.00	1.97	1.97	∞
Readout Electronics	E.2.6	0.26	N	1.00	1.00	1.00	0.26	0.26	∞
Response Time	E.2.7	0.17	R	1.73	1.00	1.00	0.10	0.10	∞
Integration Time	E.2.8	1.43	R	1.73	1.00	1.00	0.83	0.83	∞
RF ambient conditions-Noise	E.6.1	3.51	R	1.73	1.00	1.00	2.03	2.03	∞
RF ambient conditions-reflections	E.6.1	3.15	R	1.73	1.00	1.00	1.82	1.82	∞
Probe positioner mechanical tolerance	E.6.2	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Probe positioning with respect to phantom shell	E.6.3	1.40	R	1.73	1.00	1.00	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.10	R	1.73	1.00	1.00	1.21	1.21	∞
Test sample Related									
Test sample positioning	E.4.2	3.10	N	1.00	1.00	1.00	3.10	3.10	∞
Device holder uncertainty	E.4.1	3.80	N	1.00	1.00	1.00	3.80	3.80	∞
Output power variation—SAR drift measurement	E.2.9	4.50	R	1.73	1.00	1.00	2.60	2.60	∞
SAR scaling	E.6.5	1.80	R	1.73	1.00	1.00	1.04	1.04	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	3.70	R	1.73	1.00	1.00	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	2.40	R	1.73	0.78	0.71	1.08	0.98	M
Liquid permittivity measurement	E.3.3	4.10	N	1.00	0.78	0.71	3.20	2.91	M
Liquid conductivity—temperature uncertainty	E.3.4	2.70	R	1.73	0.23	0.26	0.36	0.41	∞
Liquid permittivity—temperature uncertainty	E.3.4	4.80	N	1.00	0.23	0.26	1.10	1.25	∞
Combined Standard Uncertainty			RSS				10.08	9.59	
Expanded Uncertainty (95% Confidence interval)			K=2				19.58	19.18	



SATIMO Uncertainty- SN 08/21 EPG0352									
System Validation uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+-%)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	5.72	N	1.00	1.00	1.00	5.72	5.72	∞
Axial Isotropy	E.2.2	0.18	R	1.73	1.00	1.00	0.10	0.10	∞
Hemispherical Isotropy	E.2.2	1.04	R	1.73	0.00	0.00	0.00	0.00	∞
Boundary effect	E.2.3	0.80	R	1.73	1.00	1.00	0.46	0.46	∞
Linearity	E.2.4	1.25	R	1.73	1.00	1.00	0.72	0.72	∞
System detection limits	E.2.4	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Modulation response	E.2.5	3.42	R	1.73	0.00	0.00	0.00	0.00	∞
Readout Electronics	E.2.6	0.26	N	1.00	1.00	1.00	0.26	0.26	∞
Response Time	E.2.7	0.17	R	1.73	0.00	0.00	0.00	0.00	∞
Integration Time	E.2.8	1.43	R	1.73	0.00	0.00	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.51	R	1.73	1.00	1.00	2.03	2.03	∞
RF ambient conditions-reflections	E.6.1	3.15	R	1.73	1.00	1.00	1.82	1.82	∞
Probe positioner mechanical tolerance	E.6.2	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Probe positioning with respect to phantom shell	E.6.3	1.40	R	1.73	1.00	1.00	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.10	R	1.73	1.00	1.00	1.21	1.21	∞
System validation source									
Deviation of experimental dipole from numerical dipole	E.6.4	4.80	N	1.00	1.00	1.00	4.80	4.80	∞
Input power and SAR drift measurement	8,6.6.4	5.10	R	1.73	1.00	1.00	2.94	2.94	∞
Dipole axis to liquid distance	8,E.6.6	2.40	R	1.73	1.00	1.00	1.39	1.39	∞
Phantom and set-up									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	3.70	R	1.73	1.00	1.00	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
Liquid conductivity (temperature uncertainty)	E.3.3	2.40	R	1.73	0.78	0.71	1.08	0.98	∞
Liquid conductivity(measured)	E.3.3	4.10	N	1.00	0.78	0.71	3.20	2.91	M
Liquid permittivity(temperature uncertainty)	E.3.4	2.70	R	1.73	0.23	0.26	0.36	0.41	∞
Liquid permittivity (measured)	E.3.4	4.80	N	1.00	0.23	0.26	1.10	1.25	M
Combined Standard Uncertainty			RSS				9.72	9.52	
Expanded Uncertainty			K=2				19.44	19.03	
(95% Confidence interval)									



SATIMO Uncertainty- SN 08/21 EPG0352									
° System Check uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
		(+- %)							
Measurement System									
Probe calibration drift	E.2.1.3	5.72	N	1.00	1.00	1.00	5.72	5.72	∞
Axial Isotropy	E.2.2	0.18	R	1.73	0.00	0.00	0.00	0.00	∞
Hemispherical Isotropy	E.2.2	1.04	R	1.73	0.00	0.00	0.00	0.00	∞
Boundary effect	E.2.3	0.8	R	1.73	0.00	0.00	0.00	0.00	∞
Linearity	E.2.4	1.25	R	1.73	0.00	0.00	0.00	0.00	∞
System detection limits	E.2.4	1.20	R	1.73	0.00	0.00	0.00	0.00	∞
Modulation response	E.2.5	3.42	R	1.73	0.00	0.00	0.00	0.00	∞
Readout Electronics	E.2.6	0.26	N	1.00	0.00	0.00	0.00	0.00	∞
Response Time	E.2.7	0.17	R	1.73	0.00	0.00	0.00	0.00	∞
Integration Time	E.2.8	1.43	R	1.73	0.00	0.00	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.51	R	1.73	0.00	0.00	0.00	0.00	∞
RF ambient conditions-reflections	E.6.1	3.15	R	1.73	0.00	0.00	0.00	0.00	∞
Probe positioner mechanical tolerance	E.6.2	1.2	R	1.73	1.00	1.00	0.69	0.69	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	1.73	1.00	1.00	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	3.9	R	1.73	0.00	0.00	0.00	0.00	∞
System check source (dipole)									
Deviation of experimental dipoles	E.6.4	4.8	N	1.00	1.00	1.00	4.80	4.80	∞
Input power and SAR drift measurement	8,6.6.4	5.1	R	1.73	1.00	1.00	2.94	2.94	∞
Dipole axis to liquid distance	8,E.6.6	2.4	R	1.73	1.00	1.00	1.39	1.39	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	3.7	R	1.73	1.00	1.00	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1.00	1.00	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	2.4	R	1.73	0.78	0.71	1.08	0.98	∞
Liquid permittivity measurement	E.3.3	4.1	N	1.00	0.78	0.71	3.20	2.91	M
Liquid conductivity—temperature uncertainty	E.3.4	2.7	R	1.73	0.23	0.26	0.36	0.41	∞
Liquid permittivity—temperature uncertainty	E.3.4	4.8	N	1.00	0.23	0.26	1.10	1.25	M
Combined Standard Uncertainty			RSS				5.56	5.20	
Expanded Uncertainty (95% Confidence interval)			K=2				11.12	10.41	



10. Conducted Power Measurement

10.1 Test Result

LTE Conducted Power

General Note:

1. Anritsu CMW500 base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05, For 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.
6. Per KDB 941225 D05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05, smaller bandwidth SAR testing is not required.
8. According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:
 - a) The maximum output power, including tolerance, for the smaller band must be $\leq$ the larger band to qualify for the SAR test exclusion.
 - b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.



LTE Band 2 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.61	23.79	23.69
1.4	1	2		23.68	23.79	23.73
1.4	1	5		23.60	23.78	23.74
1.4	3	0		23.61	23.72	23.73
1.4	3	1		23.63	23.79	23.73
1.4	3	2		23.64	23.76	23.66
1.4	6	0		22.64	22.81	22.72
1.4	1	0	16-QAM	22.79	22.93	22.81
1.4	1	2		22.88	22.96	22.97
1.4	1	5		22.84	22.94	22.87
1.4	3	0		22.74	22.92	22.73
1.4	3	1		22.76	22.92	22.71
1.4	3	2		22.76	22.86	22.75
1.4	6	0		21.71	21.85	21.69
3	1	0	QPSK	23.60	23.81	23.72
3	1	7		23.73	23.78	23.77
3	1	14		23.63	23.77	23.51
3	8	0		22.74	22.84	22.77
3	8	4		22.80	22.84	22.80
3	8	7		22.76	22.84	22.76
3	15	0		22.75	22.80	22.74
3	1	0	16-QAM	22.83	22.97	22.86
3	1	7		22.86	22.96	22.85
3	1	14		22.89	22.89	22.60
3	8	0		21.76	21.86	21.77
3	8	4		21.83	21.86	21.83
3	8	7		21.78	21.89	21.76
3	15	0		21.79	21.85	21.77



LTE Band 2 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.73	23.81	23.76
5	1	12		23.76	23.88	23.80
5	1	24		23.78	23.83	23.49
5	12	0		22.78	22.85	22.80
5	12	6		22.78	22.89	22.77
5	12	11		22.81	22.77	22.77
5	25	0		22.77	22.77	22.77
5	1	0	16-QAM	22.81	23.06	22.94
5	1	12		22.85	22.93	22.96
5	1	24		22.84	22.92	22.73
5	12	0		21.79	21.85	21.84
5	12	6		21.80	21.89	21.83
5	12	11		21.80	21.80	21.81
5	25	0		21.77	21.76	21.83
10	1	0	QPSK	23.68	23.65	23.72
10	1	24		23.78	23.77	23.71
10	1	49		23.72	23.71	23.65
10	25	0		22.80	22.79	22.75
10	25	12		22.85	22.76	22.75
10	25	24		22.82	22.74	22.70
10	50	0		22.86	22.75	22.78
10	1	0	16-QAM	22.90	22.90	22.83
10	1	24		22.89	22.94	22.88
10	1	49		22.86	22.9	22.83
10	25	0		21.79	21.80	21.80
10	25	12		21.86	21.80	21.82
10	25	24		21.84	21.75	21.77
10	50	0		21.88	21.78	21.84



LTE Band 2 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	23.61	23.64	23.74
15	1	37		23.69	23.77	23.75
15	1	74		23.65	23.74	23.58
15	36	0		22.77	22.75	22.77
15	36	18		22.78	22.74	22.79
15	36	39		22.77	22.76	22.77
15	75	0		22.85	22.82	22.88
15	1	0	16-QAM	22.82	22.91	22.86
15	1	38		22.96	22.89	22.85
15	1	75		22.83	22.95	22.72
15	36	0		21.79	21.82	21.84
15	36	18		21.79	21.74	21.81
15	36	39		21.76	21.78	21.73
15	75	0		21.89	21.85	21.84
20	1	0	QPSK	23.71	23.69	23.75
20	1	49		23.71	23.76	23.70
20	1	99		23.67	23.76	23.57
20	50	0		22.79	22.83	22.86
20	50	24		22.84	22.82	22.86
20	50	49		22.77	22.84	22.78
20	100	0		22.93	22.91	23.00
20	1	0	16-QAM	22.88	22.73	22.93
20	1	49		23.01	23.05	22.94
20	1	99		22.9	22.92	22.76
20	50	0		21.78	21.8	21.83
20	50	24		21.81	21.81	21.86
20	50	49		21.82	21.77	21.76
20	100	0		21.98	21.93	21.96



LTE Band 4 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.87	23.86	23.73
1.4	1	2		23.89	23.92	23.77
1.4	1	5		23.89	23.92	23.76
1.4	3	0		23.87	23.84	23.74
1.4	3	1		23.90	23.84	23.75
1.4	3	2		23.90	23.82	23.74
1.4	6	0		22.92	22.87	22.77
1.4	1	0	16-QAM	23.06	22.92	22.95
1.4	1	2		23.08	22.97	22.94
1.4	1	5		23.06	22.98	22.88
1.4	3	0		22.98	22.89	22.83
1.4	3	1		22.91	22.88	22.83
1.4	3	2		22.93	22.90	22.81
1.4	6	0		21.98	21.92	21.80
3	1	0	QPSK	23.84	23.84	23.77
3	1	7		23.90	23.95	23.78
3	1	14		23.81	23.87	23.73
3	8	0		22.95	22.93	22.81
3	8	4		22.96	22.97	22.83
3	8	7		22.95	22.85	22.77
3	15	0		22.94	22.86	22.81
3	1	0	16-QAM	23.06	22.88	22.90
3	1	7		23.07	22.97	22.88
3	1	14		23.04	23.07	22.83
3	8	0		21.95	21.90	21.81
3	8	4		21.97	21.97	21.88
3	8	7		21.97	21.88	21.80
3	15	0		21.94	21.91	21.83



LTE Band 4 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.92	23.88	23.82
5	1	12		23.96	23.93	23.86
5	1	24		23.86	23.91	23.73
5	12	0		22.96	22.97	22.86
5	12	6		22.97	22.90	22.83
5	12	11		22.84	22.89	22.83
5	25	0		22.85	22.87	22.82
5	1	0	16-QAM	22.99	22.90	23.00
5	1	12		22.98	23.05	23.07
5	1	24		22.94	23.02	22.90
5	12	0		21.92	21.94	21.86
5	12	6		21.95	21.90	21.86
5	12	11		21.85	21.88	21.85
5	25	0		21.86	21.87	21.86
10	1	0	QPSK	23.88	23.76	23.76
10	1	24		23.87	23.83	23.77
10	1	49		23.81	23.80	23.63
10	25	0		22.95	22.84	22.86
10	25	12		22.96	22.81	22.86
10	25	24		22.88	22.81	22.70
10	50	0		22.99	22.87	22.89
10	1	0	16-QAM	23.15	22.97	23.00
10	1	24		23.08	23.07	22.91
10	1	49		23.06	22.92	22.88
10	25	0		21.99	21.90	21.85
10	25	12		21.97	21.88	21.86
10	25	24		21.94	21.87	21.75
10	50	0		22.03	21.94	21.94



LTE Band 4 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	23.79	23.81	23.75
15	1	37		23.75	23.83	23.79
15	1	74		23.65	23.79	23.62
15	36	0		22.94	22.93	22.93
15	36	18		22.90	22.87	22.88
15	36	39		22.80	22.88	22.75
15	75	0		22.95	22.89	22.92
15	1	0	16-QAM	23.06	22.99	23.08
15	1	38		22.97	23.08	22.95
15	1	75		22.91	22.89	22.75
15	36	0		21.95	21.91	21.92
15	36	18		21.94	21.87	21.94
15	36	39		21.81	21.88	21.75
15	75	0		21.98	21.94	21.92
20	1	0	QPSK	23.91	23.63	23.80
20	1	49		23.81	23.79	23.74
20	1	99		23.75	23.67	23.66
20	50	0		22.96	22.88	22.92
20	50	24		22.88	22.84	22.93
20	50	49		22.82	22.83	22.77
20	100	0		22.99	22.93	23.00
20	1	0	16-QAM	22.94	22.88	22.95
20	1	49		22.96	23.30	22.91
20	1	99		22.90	23.00	22.73
20	50	0		21.95	21.90	21.90
20	50	24		21.86	21.88	21.89
20	50	49		21.83	21.83	21.76
20	100	0		22.01	21.99	22.01



LTE Band 5 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.50	23.50	23.58
1.4	1	2		23.53	23.59	23.66
1.4	1	5		23.54	23.53	23.62
1.4	3	0		23.54	23.53	23.61
1.4	3	1		23.55	23.55	23.61
1.4	3	2		23.56	23.56	23.62
1.4	6	0		22.56	22.54	22.59
1.4	1	0	16-QAM	22.71	22.66	22.69
1.4	1	2		22.73	22.67	22.75
1.4	1	5		22.68	22.64	22.75
1.4	3	0		22.59	22.59	22.70
1.4	3	1		22.59	22.68	22.74
1.4	3	2		22.58	22.63	22.72
1.4	6	0		21.61	21.62	21.69
3	1	0	QPSK	23.47	23.52	23.56
3	1	7		23.58	23.62	23.63
3	1	14		23.50	23.52	23.60
3	8	0		22.63	22.54	22.55
3	8	4		22.62	22.63	22.65
3	8	7		22.61	22.64	22.68
3	15	0		22.61	22.63	22.64
3	1	0	16-QAM	22.70	22.67	22.74
3	1	7		22.76	22.80	22.71
3	1	14		22.70	22.65	22.77
3	8	0		21.63	21.57	21.64
3	8	4		21.64	21.70	21.77
3	8	7		21.65	21.68	21.74
3	15	0		21.65	21.71	21.70



LTE Band 5 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.54	23.59	23.61
5	1	12		23.69	23.65	23.68
5	1	24		23.59	23.56	23.65
5	12	0		22.58	22.59	22.59
5	12	6		22.68	22.61	22.64
5	12	11		22.68	22.66	22.71
5	25	0		22.66	22.58	22.63
5	1	0	16-QAM	22.65	22.72	22.79
5	1	12		22.70	22.76	22.85
5	1	24		22.70	22.82	22.83
5	12	0		21.63	21.60	21.65
5	12	6		21.70	21.63	21.66
5	12	11		21.70	21.70	21.78
5	25	0		21.69	21.61	21.66
10	1	0	QPSK	23.57	23.60	23.54
10	1	24		23.57	23.62	23.61
10	1	49		23.49	23.58	23.60
10	25	0		22.64	22.64	22.61
10	25	12		22.69	22.74	22.71
10	25	24		22.67	22.68	22.69
10	50	0		22.72	22.68	22.77
10	1	0	16-QAM	22.80	22.75	22.74
10	1	24		22.80	22.73	22.82
10	1	49		22.69	22.74	22.71
10	25	0		21.65	21.63	21.66
10	25	12		21.75	21.74	21.70
10	25	24		21.72	21.72	21.72
10	50	0		21.76	21.68	21.80



LTE Band 12 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.59	23.61	23.53
1.4	1	2		23.63	23.61	23.55
1.4	1	5		23.60	23.63	23.47
1.4	3	0		23.62	23.62	23.48
1.4	3	1		23.58	23.64	23.49
1.4	3	2		23.57	23.60	23.50
1.4	6	0		22.58	22.58	22.54
1.4	1	0	16-QAM	22.78	22.79	22.74
1.4	1	2		22.77	22.78	22.73
1.4	1	5		22.67	22.73	22.57
1.4	3	0		22.61	22.65	22.61
1.4	3	1		22.64	22.70	22.60
1.4	3	2		22.57	22.70	22.59
1.4	6	0		21.54	21.61	21.59
3	1	0	QPSK	23.52	23.58	23.54
3	1	7		23.58	23.69	23.58
3	1	14		23.51	23.59	23.48
3	8	0		22.58	22.62	22.52
3	8	4		22.63	22.68	22.52
3	8	7		22.65	22.62	22.59
3	15	0		22.66	22.59	22.50
3	1	0	16-QAM	22.67	22.78	22.67
3	1	7		22.76	22.88	22.74
3	1	14		22.76	22.69	22.65
3	8	0		21.71	21.65	21.59
3	8	4		21.68	21.71	21.63
3	8	7		21.66	21.68	21.60
3	15	0		21.67	21.60	21.55



LTE Band 12 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.61	23.61	23.62
5	1	12		23.67	23.66	23.65
5	1	24		23.60	23.58	23.59
5	12	0		22.59	22.64	22.58
5	12	6		22.67	22.64	22.59
5	12	11		22.65	22.65	22.56
5	25	0		22.67	22.58	22.55
5	1	0	16-QAM	22.72	22.76	22.83
5	1	12		22.75	22.80	22.77
5	1	24		22.72	22.77	22.70
5	12	0		21.64	21.61	21.63
5	12	6		21.72	21.65	21.63
5	12	11		21.68	21.65	21.62
5	25	0		21.69	21.60	21.55
10	1	0	QPSK	23.54	23.65	23.64
10	1	24		23.59	23.64	23.62
10	1	49		23.55	23.48	23.48
10	25	0		22.61	22.64	22.61
10	25	12		22.71	22.63	22.67
10	25	24		22.65	22.64	22.59
10	50	0		22.78	22.68	22.77
10	1	0	16-QAM	22.79	22.81	22.78
10	1	24		22.81	22.81	22.74
10	1	49		22.73	22.73	22.70
10	25	0		21.65	21.64	21.66
10	25	12		21.73	21.63	21.71
10	25	24		21.68	21.63	21.60
10	50	0		21.77	21.68	21.78



LTE Band 13 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.87	23.71	23.66
5	1	12		23.80	23.72	23.77
5	1	24		23.71	23.66	23.67
5	12	0		22.81	22.74	22.64
5	12	6		22.77	22.77	22.76
5	12	11		22.71	22.73	22.73
5	25	0		22.75	22.75	22.74
5	1	0	16-QAM	22.91	22.80	22.92
5	1	12		22.96	22.80	22.94
5	1	24		22.81	22.92	22.83
5	12	0		21.82	21.74	21.69
5	12	6		21.78	21.79	21.80
5	12	11		21.73	21.76	21.76
5	25	0		21.77	21.77	21.78
10	1	0	QPSK	/	23.69	/
10	1	24		/	23.69	/
10	1	49		/	23.59	/
10	25	0		/	22.85	/
10	25	12		/	22.78	/
10	25	24		/	22.73	/
10	50	0		/	22.99	/
10	1	0	16-QAM	/	22.98	/
10	1	24		/	22.90	/
10	1	49		/	22.81	/
10	25	0		/	21.86	/
10	25	12		/	21.82	/
10	25	24		/	21.79	/
10	50	0		/	21.99	/



LTE Band 48 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	24.08	23.54	23.09
5	1	12		23.94	23.70	23.11
5	1	24		23.78	23.59	23.14
5	12	0		23.05	22.58	22.12
5	12	6		23.24	22.73	22.38
5	12	11		23.17	22.64	22.09
5	25	0		22.98	22.57	22.20
5	1	0	16-QAM	23.46	22.74	22.35
5	1	12		23.31	22.77	22.66
5	1	24		23.01	22.94	22.22
5	12	0		22.14	24.06	23.53
5	12	6		22.13	21.74	23.54
5	12	11		22.11	21.89	23.55
5	25	0		22.03	24.04	23.72
10	1	0	QPSK	23.84	23.53	22.78
10	1	24		24.00	23.74	22.92
10	1	49		24.00	23.38	22.99
10	25	0		23.35	22.62	21.94
10	25	12		23.54	22.51	21.86
10	25	24		23.28	22.41	22.15
10	50	0		23.45	22.59	21.89
10	1	0	16-QAM	23.19	22.66	22.34
10	1	24		23.50	22.57	22.56
10	1	49		23.64	22.62	22.38
10	25	0		22.50	24.25	23.68
10	25	12		22.46	21.91	23.73
10	25	24		22.11	24.11	23.53
10	50	0		21.94	21.74	23.52



LTE Band 48 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.83	22.52	24.02
15	1	37		22.84	22.30	24.20
15	1	74		22.58	22.16	23.95
15	36	0		21.85	23.74	23.18
15	36	18		21.85	23.67	23.01
15	36	39		21.98	23.70	23.06
15	75	0		21.81	23.72	23.14
15	1	0	16-QAM	22.07	23.77	23.61
15	1	38		21.90	23.95	23.47
15	1	75		22.14	23.91	23.15
15	36	0		23.53	22.67	22.15
15	36	18		23.15	22.89	22.10
15	36	39		23.64	22.62	22.19
15	75	0		23.41	22.80	22.14
20	1	0	QPSK	23.96	23.63	22.97
20	1	49		23.90	23.54	22.84
20	1	99		23.91	23.45	22.72
20	50	0		23.00	22.55	21.83
20	50	24		23.01	22.54	21.78
20	50	49		22.98	22.50	21.71
20	100	0		22.98	22.51	21.72
20	1	0	16-QAM	23.26	22.86	22.01
20	1	49		23.28	22.78	22.05
20	1	99		23.20	22.80	21.90
20	50	0		22.04	21.59	20.83
20	50	24		22.05	21.57	20.86
20	50	49		22.02	21.49	20.81
20	100	0		21.98	21.45	20.83



LTE Band 66 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	24.18	24.11	24.15
1.4	1	2		24.20	24.12	24.21
1.4	1	5		24.19	24.11	24.19
1.4	3	0		24.21	24.15	24.20
1.4	3	1		24.25	24.18	24.22
1.4	3	2		24.17	24.13	24.20
1.4	6	0		23.23	23.13	23.18
1.4	1	0	16-QAM	23.32	23.27	23.34
1.4	1	2		23.36	23.30	23.41
1.4	1	5		23.31	23.37	23.35
1.4	3	0		23.35	23.25	23.29
1.4	3	1		23.29	23.24	23.28
1.4	3	2		23.25	23.15	23.27
1.4	6	0		22.22	22.20	22.26
3	1	0	QPSK	24.16	24.11	24.19
3	1	7		24.25	24.17	24.26
3	1	14		24.12	24.10	24.15
3	8	0		23.22	23.19	23.24
3	8	4		23.27	23.23	23.28
3	8	7		23.13	23.17	23.23
3	15	0		23.14	23.23	23.24
3	1	0	16-QAM	23.33	23.22	23.43
3	1	7		23.41	23.35	23.45
3	1	14		23.32	23.22	23.45
3	8	0		22.26	22.20	22.28
3	8	4		22.31	22.25	22.27
3	8	7		22.20	22.21	22.24
3	15	0		22.20	22.21	22.24



LTE Band 66 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	24.25	24.19	24.25
5	1	12		24.27	24.24	24.31
5	1	24		24.22	24.17	24.23
5	12	0		23.29	23.25	23.28
5	12	6		23.20	23.26	23.33
5	12	11		23.15	23.20	23.26
5	25	0		23.18	23.25	23.31
5	1	0	16-QAM	23.40	23.42	23.46
5	1	12		23.36	23.48	23.48
5	1	24		23.38	23.44	23.47
5	12	0		22.30	22.27	22.34
5	12	6		22.23	22.26	22.33
5	12	11		22.20	22.27	22.36
5	25	0		22.21	22.22	22.31
10	1	0	QPSK	24.22	24.18	24.21
10	1	24		24.20	24.17	24.27
10	1	49		24.18	24.12	24.19
10	25	0		23.23	23.21	23.29
10	25	12		23.18	23.23	23.32
10	25	24		23.18	23.24	23.29
10	50	0		23.28	23.33	23.42
10	1	0	16-QAM	23.36	23.30	23.50
10	1	24		23.36	23.33	23.57
10	1	49		23.45	23.30	23.40
10	25	0		22.28	22.24	22.34
10	25	12		22.23	22.28	22.32
10	25	24		22.24	22.28	22.34
10	50	0		22.30	22.35	22.39



LTE Band 66 Maximum Average Power [dBm]						
ANT 1						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	24.09	24.10	24.18
15	1	37		24.16	24.13	24.23
15	1	74		24.09	24.01	24.11
15	36	0		23.26	23.22	23.30
15	36	18		23.26	23.25	23.35
15	36	39		23.15	23.13	23.33
15	75	0		23.34	23.30	23.38
15	1	0	16-QAM	23.31	23.29	23.35
15	1	38		23.33	23.36	23.36
15	1	75		23.33	23.28	23.24
15	36	0		22.27	22.24	22.34
15	36	18		22.28	22.25	22.35
15	36	39		22.18	22.16	22.32
15	75	0		22.37	22.34	22.37
20	1	0	QPSK	24.15	24.13	24.19
20	1	49		24.17	24.17	24.22
20	1	99		24.12	24.09	24.13
20	50	0		23.27	23.30	23.30
20	50	24		23.28	23.31	23.35
20	50	49		23.22	23.18	23.32
20	100	0		23.42	23.40	23.47
20	1	0	16-QAM	23.43	23.34	23.42
20	1	49		23.49	23.54	23.54
20	1	99		23.34	23.21	23.45
20	50	0		22.27	22.29	22.32
20	50	24		22.31	22.28	22.39
20	50	49		22.21	22.20	22.33
20	100	0		22.39	22.41	22.48



NR Conducted Powers

1. For 5G NR SAR testing, due to test setup limitations, SAR testing for NR was performed using factory test mode software to establish the connection and perform SAR with 100% transmission.

The DFT-s-OFDM and CP-OFDM waveforms were investigated, and DFT-s-OFDM was found to be the worst case.

The worst-case scenario for all measurements is based on an engineering evaluation and QPSK was observed as the worst one and set for all conducted and radiated. Output power measurements were measured on QPSK, 16QAM, 64QAM, 256QAM, and BPSK, modulations.

2. According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping 5G NR(FR1) bands as follows:

- c) The maximum output power, including tolerance, for the smaller band must be less than the larger band to qualify for the SAR test exclusion.
- d) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.

Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices



N2 ANT 1		Conducted Power(dBm)					
SCS 15kHz							
Bandwidth	Modulation	RB size	RB offset	372000	376000	380000	Tune up
				1860.0MHz	1880.0MHz	1900.0MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	23.84	24.01	23.83	23.5±1.0
		1	53	23.98	23.86	23.77	
		1	104	23.84	23.92	23.66	
		50	0	23.43	23.57	23.47	23.5±1.0
		50	28	23.91	24.01	23.75	
		50	56	23.44	23.45	23.48	
		100	0	23.58	23.46	23.34	23.0±1.0
	DFT-s-OFDM QPSK	1	1	24.00	24.05	24.12	23.5±1.0
		1	53	23.80	23.98	23.90	
		1	104	23.95	23.83	24.05	
		50	0	22.89	22.67	22.75	23.5±1.0
		50	28	23.94	23.87	24.05	
		50	56	22.63	22.97	22.87	
		100	0	23.21	22.95	23.05	22.5±1.0
	DFT-s-OFDM 16QAM	1	1	22.92	22.70	22.64	22.5±1.0
	DFT-s-OFDM 64QAM	1	1	21.03	21.06	20.88	20.5±1.0
	DFT-s-OFDM 256QAM	1	1	19.26	19.30	19.37	19.0±1.0
	CP-OFDM QPSK	1	1	22.29	22.60	22.23	22.0±1.0
	CP-OFDM 16QAM	1	1	21.89	21.77	21.71	21.5±1.0
	CP-OFDM 64QAM	1	1	20.26	20.39	20.01	20.0±1.0
	CP-OFDM 256QAM	1	1	17.16	17.54	17.10	17.0±1.0
Bandwidth	Modulation	RB size	RB offset	371500	376000	380500	Tune up
				1857.5MHz	1880.0MHz	1902.5MHz	
15MHz	DFT-s-OFDM QPSK	1	1	24.03	23.88	23.87	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	371000	376000	381000	Tune up
				1855.0MHz	1880.0MHz	1905.0MHz	
10MHz	DFT-s-OFDM QPSK	1	1	23.91	24.00	24.01	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	370500	376000	381500	Tune up
				1852.5MHz	1880.0MHz	1907.5MHz	
5MHz	DFT-s-OFDM QPSK	1	1	23.88	23.84	24.05	23.5±1.0



N5 ANT1		Conducted Power(dBm)					
SCS 15kHz							
Bandwidth	Modulation	RB size	RB offset	166800	167300	167800	Tune up
				834.0MHz	836.5MHz	839.0MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	23.81	23.87	23.91	23.5±1.0
		1	53	23.70	23.82	23.70	
		1	104	23.78	23.96	23.66	
		50	0	23.46	23.27	23.27	23.5±1.0
		50	28	23.79	23.73	23.62	
		50	56	23.24	23.20	23.41	
		100	0	23.34	23.43	23.43	23.0±1.0
	DFT-s-OFDM QPSK	1	1	23.91	23.96	23.77	23.5±1.0
		1	53	23.76	23.86	23.80	
		1	104	23.81	23.62	23.76	
		50	0	22.95	22.64	22.77	23.5±1.0
		50	28	23.88	23.65	23.70	
		50	56	22.69	22.83	22.82	
		100	0	22.97	22.92	22.91	22.5±1.0
	DFT-s-OFDM 16QAM	1	1	22.75	22.67	22.51	22.0±1.0
	DFT-s-OFDM 64QAM	1	1	21.54	21.46	21.66	21.0±1.0
	DFT-s-OFDM 256QAM	1	1	19.31	19.13	19.34	19.0±1.0
	CP-OFDM QPSK	1	1	22.47	22.03	22.28	22.0±1.0
	CP-OFDM 16QAM	1	1	21.98	21.95	21.70	21.5±1.0
	CP-OFDM 64QAM	1	1	20.53	20.02	20.53	20.0±1.0
	CP-OFDM 256QAM	1	1	17.46	17.27	17.52	17.0±1.0
Bandwidth	Modulation	RB size	RB offset	166300	167300	168300	Tune up
				831.5MHz	836.5MHz	841.5MHz	
15MHz	DFT-s-OFDM QPSK	1	1	23.86	23.95	23.86	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	165800	167300	168800	Tune up
				829.0MHz	836.5MHz	844.0MHz	
10MHz	DFT-s-OFDM QPSK	1	1	23.86	23.94	23.88	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	165300	167300	169300	Tune up
				826.5MHz	836.5MHz	846.5MHz	
5MHz	DFT-s-OFDM QPSK	1	1	23.84	23.86	23.95	23.5±1.0



N25 ANT 1		Conducted Power(dBm)					
SCS 15kHz							
Bandwidth	Modulation	RB size	RB offset	372000	376500	381000	Tune up
				1860.0MHz	1882.5MHz	1905.0MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	23.88	24.02	23.95	23.5±1.0
		1	53	23.87	23.89	23.97	
		1	104	24.06	23.97	23.89	
		50	0	23.59	23.64	23.43	23.5±1.0
		50	28	23.78	23.88	23.93	
		50	56	23.36	23.49	23.32	
		100	0	23.38	23.51	23.49	23.0±1.0
	DFT-s-OFDM QPSK	1	1	24.17	24.03	24.06	23.5±1.0
		1	53	24.03	24.15	24.04	
		1	104	23.92	24.02	24.00	
		50	0	23.20	23.05	22.95	23.5±1.0
		50	28	24.09	23.86	23.91	
		50	56	22.94	23.03	22.77	
		100	0	23.14	23.11	23.10	22.5±1.0
	DFT-s-OFDM 16QAM	1	1	23.10	22.91	23.13	22.5±1.0
	DFT-s-OFDM 64QAM	1	1	21.91	21.58	22.03	21.5±1.0
	DFT-s-OFDM 256QAM	1	1	19.54	19.46	19.82	19.5±1.0
	CP-OFDM QPSK	1	1	22.47	22.14	22.44	22.0±1.0
	CP-OFDM 16QAM	1	1	21.46	21.54	21.44	21.0±1.0
	CP-OFDM 64QAM	1	1	20.64	20.33	20.49	20.0±1.0
	CP-OFDM 256QAM	1	1	17.63	17.49	17.35	17.0±1.0
Bandwidth	Modulation	RB size	RB offset	371500	376500	381500	Tune up
				1857.5MHz	1882.5MHz	1907.5MHz	
15MHz	DFT-s-OFDM QPSK	1	1	24.12	23.87	24.01	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	371000	376500	382000	Tune up
				1855.0MHz	1882.5MHz	1910.0MHz	
10MHz	DFT-s-OFDM QPSK	1	1	24.05	23.93	24.01	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	370500	376500	382500	Tune up
				1852.5MHz	1882.5MHz	1912.5MHz	
5MHz	DFT-s-OFDM QPSK	1	1	23.89	24.12	24.10	23.5±1.0



N48 ANT 1			Conducted Power(dBm)				
SCS 30kHz							
Bandwidth	Modulation	RB size	RB offset	637334	641666	646000	Tune up
				3560.01 MHz	3624.99 MHz	3690.00 MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	23.35	23.62	23.66	23.0±1.0
		1	25	23.46	23.53	23.51	
		1	50	23.52	23.57	23.49	
		25	0	23.03	23.05	22.97	23.0±1.0
		25	12	23.51	23.63	23.46	
		25	25	23.24	23.04	23.05	
		50	0	23.01	23.05	22.90	22.5±1.0
	DFT-s-OFDM QPSK	1	1	23.55	23.70	23.46	23.0±1.0
		1	25	23.63	23.41	23.44	
		1	50	23.40	23.67	23.39	
		25	0	22.63	22.51	22.73	23.0±1.0
		25	12	23.28	23.57	23.45	
		25	25	22.62	22.51	22.43	
		50	0	22.85	22.59	22.69	22.0±1.0
	DFT-s-OFDM 16QAM	1	1	22.58	22.36	22.42	22.0±1.0
	DFT-s-OFDM 64QAM	1	1	21.15	21.00	21.14	20.5±1.0
	DFT-s-OFDM 256QAM	1	1	19.05	19.07	18.87	18.5±1.0
	CP-OFDM QPSK	1	1	22.04	22.27	22.10	22.0±1.0
	CP-OFDM 16QAM	1	1	21.67	21.66	21.37	21.0±1.0
	CP-OFDM 64QAM	1	1	20.09	19.80	19.94	19.5±1.0
	CP-OFDM 256QAM	1	1	16.80	17.09	17.05	16.5±1.0
Bandwidth	Modulation	RB size	RB offset	637168	641666	646332	Tune up
				3557.52 MHz	3624.99 MHz	3694.98 MHz	
15MHz	DFT-s-OFDM QPSK	1	1	23.50	23.43	23.48	23.0±1.0
Bandwidth	Modulation	RB size	RB offset	637000	641666	646332	Tune up
				3555.00 MHz	3624.99 MHz	3694.98 MHz	
10MHz	DFT-s-OFDM QPSK	1	1	23.52	23.31	23.44	23.0±1.0



N66 ANT 1		Conducted Power(dBm)					
SCS 15kHz							
Bandwidth	Modulation	RB size	RB offset	344000	349000	354000	Tune up
				1720.0MHz	1745.0MHz	1770.0MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	23.87	23.73	23.82	23.5±1.0
		1	53	23.79	23.78	23.67	
		1	104	23.83	23.65	23.77	
		50	0	23.38	23.25	23.15	23.5±1.0
		50	28	23.75	23.65	23.77	
		50	56	23.14	23.25	23.18	
		100	0	23.32	23.31	23.27	23.0±1.0
	DFT-s-OFDM QPSK	1	1	23.77	24.11	23.95	23.5±1.0
		1	53	23.81	23.86	23.87	
		1	104	24.06	23.79	23.76	
		50	0	22.96	22.92	22.91	23.5±1.0
		50	28	24.05	23.91	23.96	
		50	56	23.02	22.94	22.83	
		100	0	22.78	22.93	22.75	22.5±1.0
	DFT-s-OFDM 16QAM	1	1	22.78	22.64	22.71	22.5±1.0
	DFT-s-OFDM 64QAM	1	1	21.33	21.43	21.26	21.0±1.0
	DFT-s-OFDM 256QAM	1	1	19.15	19.20	19.35	19.0±1.0
	CP-OFDM QPSK	1	1	22.48	22.32	22.39	22.0±1.0
	CP-OFDM 16QAM	1	1	21.69	21.79	21.75	21.5±1.0
	CP-OFDM 64QAM	1	1	20.38	20.38	20.36	20.0±1.0
	CP-OFDM 256QAM	1	1	17.02	17.05	17.08	16.5±1.0
Bandwidth	Modulation	RB size	RB offset	343500	349000	354500	Tune up
				1717.5MHz	1745.0MHz	1772.5MHz	
15MHz	DFT-s-OFDM QPSK	1	1	23.88	23.74	23.86	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	343000	349000	355000	Tune up
				1715.0MHz	1745.0MHz	1775.0MHz	
10MHz	DFT-s-OFDM QPSK	1	1	23.68	23.70	23.53	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	342500	349000	355500	Tune up
				1712.5MHz	1745.0MHz	1777.5MHz	
5MHz	DFT-s-OFDM QPSK	1	1	23.78	23.88	23.76	23.5±1.0



N71 ANT 1		Conducted Power(dBm)					
SCS 15kHz							
Bandwidth	Modulation	RB size	RB offset	134600	136100	137600	Tune up
				673.0MHz	680.5MHz	688.0MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	23.81	23.87	23.91	23.5±1.0
		1	53	23.70	23.82	23.70	
		1	104	23.78	23.96	23.66	
		50	0	23.46	23.27	23.27	23.5±1.0
		50	28	23.79	23.73	23.62	
		50	56	23.24	23.20	23.41	
		100	0	23.34	23.43	23.43	23.0±1.0
	DFT-s-OFDM QPSK	1	1	23.91	23.96	23.77	23.5±1.0
		1	53	23.76	23.86	23.80	
		1	104	23.81	23.62	23.76	
		50	0	22.95	22.64	22.77	23.5±1.0
		50	28	23.88	23.65	23.70	
		50	56	22.69	22.83	22.82	
		100	0	22.97	22.92	22.91	22.5±1.0
	DFT-s-OFDM 16QAM	1	1	22.75	22.67	22.51	22.0±1.0
	DFT-s-OFDM 64QAM	1	1	21.54	21.46	21.66	21.0±1.0
	DFT-s-OFDM 256QAM	1	1	19.31	19.13	19.34	19.0±1.0
	CP-OFDM QPSK	1	1	22.47	22.03	22.28	22.0±1.0
	CP-OFDM 16QAM	1	1	21.98	21.95	21.70	21.5±1.0
	CP-OFDM 64QAM	1	1	20.53	20.02	20.53	20.0±1.0
	CP-OFDM 256QAM	1	1	17.46	17.27	17.52	17.0±1.0
Bandwidth	Modulation	RB size	RB offset	134100	136100	138100	Tune up
				670.5MHz	680.5MHz	690.5MHz	
15MHz	DFT-s-OFDM QPSK	1	1	23.86	24.05	23.87	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	133600	136100	138600	Tune up
				668.0MHz	680.5MHz	693.0MHz	
10MHz	DFT-s-OFDM QPSK	1	1	23.76	23.90	23.88	23.5±1.0
Bandwidth	Modulation	RB size	RB offset	133100	136100	139100	Tune up
				665.5MHz	680.5MHz	695.5MHz	
5MHz	DFT-s-OFDM QPSK	1	1	23.70	23.94	23.88	23.5±1.0



N77 ANT 1(3450 MHz-3550MHz)		Conducted Power(dBm)					
SCS 30kHz							
Bandwidth	Modulation	RB size	RB offset	630668	633334	636000	Tune up
				3460.02MHz	3500.01MHz	3540.00MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	25.76	25.89	25.97	25.5±1.0
		1	25	25.90	25.97	25.84	
		1	50	25.66	25.90	25.80	
		25	0	25.72	25.81	25.79	25.5±1.0
		25	12	25.93	25.66	25.93	
		25	25	25.94	25.73	25.89	
		50	0	25.29	25.44	25.47	25.0±1.0
	DFT-s-OFDM QPSK	1	1	26.00	26.02	25.89	25.5±1.0
		1	25	25.96	26.09	25.87	
		1	50	25.85	25.73	25.71	
		25	0	24.82	24.95	24.77	25.5±1.0
		25	12	25.76	25.95	25.85	
		25	25	24.86	24.83	24.72	
		50	0	24.97	25.09	24.84	24.5±1.0
	DFT-s-OFDM 16QAM	1	1	24.50	24.31	24.29	24.0±1.0
	DFT-s-OFDM 64QAM	1	1	23.06	22.87	23.05	22.5±1.0
	DFT-s-OFDM 256QAM	1	1	21.12	21.12	21.02	20.5±1.0
	CP-OFDM QPSK	1	1	23.92	24.18	24.09	23.5±1.0
	CP-OFDM 16QAM	1	1	23.51	23.67	23.24	23.0±1.0
	CP-OFDM 64QAM	1	1	22.01	22.11	22.00	21.5±1.0
	CP-OFDM 256QAM	1	1	19.26	19.53	19.60	19.0±1.0
Bandwidth	Modulation	RB size	RB offset	630500	633334	636166	Tune up
				3457.50MHz	3500.01MHz	3542.49MHz	
15MHz	DFT-s-OFDM QPSK	1	1	25.96	25.79	25.82	25.5±1.0
Bandwidth	Modulation	RB size	RB offset	630334	633334	636332	Tune up
				3455.01MHz	3500.01MHz	3544.98MHz	
10MHz	DFT-s-OFDM QPSK	1	1	25.83	26.05	26.15	25.5±1.0



N77 ANT 1(3700 MHz-3980MHz)			Conducted Power(dBm)				
SCS 30kHz							
Bandwidth	Modulation	RB size	RB offset	647334	656000	664666	Tune up
				3710.01 MHz	3840.00 MHz	3969.99 MHz	
20MHz	DFT-s-OFDM PI/2 BPSK	1	1	25.56	25.80	25.66	25.5±1.0
		1	25	25.57	25.69	25.73	
		1	50	25.74	25.73	25.69	
		25	0	25.26	25.24	25.08	25.5±1.0
		25	12	25.48	25.56	25.62	
		25	25	25.15	25.31	25.11	
		50	0	25.21	25.21	25.29	25.0±1.0
	DFT-s-OFDM QPSK	1	1	25.87	25.71	25.56	25.5±1.0
		1	25	25.63	25.69	25.81	
		1	50	25.75	25.75	25.75	
		25	0	24.90	24.81	24.70	25.5±1.0
		25	12	25.71	25.58	25.48	
		25	25	24.70	24.72	24.54	
		50	0	24.82	24.75	24.75	24.5±1.0
	DFT-s-OFDM 16QAM	1	1	24.86	24.62	24.77	24.5±1.0
	DFT-s-OFDM 64QAM	1	1	23.50	23.31	23.69	23.0±1.0
	DFT-s-OFDM 256QAM	1	1	21.35	21.15	21.68	21.0±1.0
	CP-OFDM QPSK	1	1	24.17	23.87	24.14	23.5±1.0
	CP-OFDM 16QAM	1	1	23.14	23.23	23.01	22.5±1.0
	CP-OFDM 64QAM	1	1	22.41	22.21	22.26	22.0±1.0
	CP-OFDM 256QAM	1	1	19.34	19.13	19.39	19.0±1.0
Bandwidth	Modulation	RB size	RB offset	647168	656000	664832	Tune up
				3707.52MHz	3840.00MHz	3972.48MHz	
15MHz	DFT-s-OFDM QPSK	1	1	25.85	25.56	25.65	25.5±1.0
Bandwidth	Modulation	RB size	RB offset	647000	656000	665000	Tune up
				3705.00MHz	3840.00MHz	3975.00MHz	
10MHz	DFT-s-OFDM QPSK	1	1	25.75	25.88	25.68	25.5±1.0

**BT Conducted Powers**

BT ANT 3				
Mode	Channel Number	Frequency (MHz)	PK power(dBm)	Average power(dBm)
GFSK(1Mbps)	0	2402	4.45	2.79
	39	2441	4.31	2.75
	78	2480	3.73	2.37
$\pi/4$ -QPSK(2Mbps)	0	2402	5.31	3.35
	39	2441	5.80	3.64
	78	2480	4.60	2.96
8DPSK(3Mbps)	0	2402	6.03	3.77
	39	2441	6.29	3.92
	78	2480	5.40	3.42

BLE:

BLE ANT 3				
Mode	Channel Number	Frequency (MHz)	PK power(dBm)	Average power(dBm)
GFSK(1Mbps)	0	2402	4.34	2.74
	19	2440	4.36	2.76
	39	2480	3.79	2.18
GFSK(2Mbps)	0	2402	4.29	2.74
	19	2440	4.59	2.93
	39	2480	3.86	2.30

Note:

According to FCC KDB 447498 D04 v01, The maximum conducted Average power of BLE is 3dBm (2.0mW), the power Is less than the low-power exclusion level defined (P max: 3mW), So BLE SAR is not required.



11. SAR Result Summary

SAR Result of LTE Band 2 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
20M	QPSK	1	49	Front Side	1880.0	0.356	-1.73	24.50	23.76	1.186	0.422	/
		1	49	Back Side	1880.0	0.646	0.17	24.50	23.76	1.186	0.766	1
		1	49	Back Side	1860.0	0.627	-0.41	24.50	23.71	1.199	0.752	/
		1	0	Back Side	1900.0	0.586	1.50	24.50	23.75	1.189	0.697	/
		1	49	Left Side	1880.0	0.435	2.10	24.50	23.76	1.186	0.516	/
		1	49	Right Side	1880.0	0.042	-1.68	24.50	23.76	1.186	0.050	/
		1	49	Top Side	1880.0	0.074	0.98	24.50	23.76	1.186	0.088	/
		1	49	Bottom Side	1880.0	0.097	-0.21	24.50	23.76	1.186	0.115	/
		50	24	Front Side	1900.0	0.273	2.40	23.50	22.86	1.159	0.316	/
		50	24	Back Side	1900.0	0.512	-2.49	23.50	22.86	1.159	0.593	/
		50	24	Left Side	1900.0	0.360	-1.07	23.50	22.86	1.159	0.417	/
		50	24	Right Side	1900.0	0.034	0.67	23.50	22.86	1.159	0.039	/
		50	24	Top Side	1900.0	0.063	0.95	23.50	22.86	1.159	0.073	/
		50	24	Bottom Side	1900.0	0.080	0.53	23.50	22.86	1.159	0.093	/



SAR Result of LTE Band 4 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
20M	QPSK	1	0	Front Side	1720.0	0.213	-2.19	24.50	23.91	1.146	0.244	/
		1	0	Back Side	1720.0	0.461	-1.36	24.50	23.91	1.146	0.528	/
		1	49	Back Side	1732.5	0.421	-0.51	24.50	23.79	1.178	0.496	/
		1	0	Back Side	1745.0	0.489	-1.85	24.50	23.80	1.175	0.575	2
		1	0	Left Side	1720.0	0.257	0.54	24.50	23.91	1.146	0.295	/
		1	0	Right Side	1720.0	0.036	3.79	24.50	23.91	1.146	0.041	/
		1	0	Top Side	1720.0	0.051	-1.69	24.50	23.91	1.146	0.058	/
		1	0	Bottom Side	1720.0	0.062	-0.73	24.50	23.91	1.146	0.071	/
		50	0	Front Side	1720.0	0.165	0.97	23.50	22.96	1.132	0.187	/
		50	0	Back Side	1720.0	0.415	-0.99	23.50	22.96	1.132	0.470	/
		50	0	Left Side	1720.0	0.190	1.46	23.50	22.96	1.132	0.215	/
		50	0	Right Side	1720.0	0.027	0.21	23.50	22.96	1.132	0.031	/
		50	0	Top Side	1720.0	0.036	2.69	23.50	22.96	1.132	0.041	/
		50	0	Bottom Side	1720.0	0.047	-3.89	23.50	22.96	1.132	0.053	/



SAR Result of LTE Band 5 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
10M	QPSK	1	24	Front Side	836.5	0.092	0.99	24.00	23.62	1.091	0.100	/
		1	24	Back Side	836.5	0.192	0.85	24.00	23.62	1.091	0.209	/
		1	24	Back Side	829.0	0.178	2.19	24.00	23.57	1.104	0.197	/
		1	24	Back Side	844.0	0.203	0.14	24.00	23.61	1.094	0.222	3
		1	24	Left Side	836.5	0.105	-0.43	24.00	23.62	1.091	0.115	/
		1	24	Right Side	836.5	0.025	-0.38	24.00	23.62	1.091	0.027	/
		1	24	Top Side	836.5	0.040	1.07	24.00	23.62	1.091	0.044	/
		1	24	Bottom Side	836.5	0.057	-0.56	24.00	23.62	1.091	0.062	/
		25	13	Front Side	836.5	0.080	-1.05	23.00	22.74	1.062	0.085	/
		25	13	Back Side	836.5	0.160	-2.46	23.00	22.74	1.062	0.170	/
		25	13	Left Side	836.5	0.091	1.16	23.00	22.74	1.062	0.097	/
		25	13	Top Side	836.5	0.031	0.31	23.00	22.74	1.062	0.033	/
		1	49	Bottom Side	844.0	0.057	-0.56	24.00	23.61	1.094	0.062	/
		25	13	Bottom Side	836.5	0.041	0.17	23.00	22.74	1.062	0.044	/



SAR Result of LTE Band 12 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
10M	QPSK	1	0	Front Side	707.5	0.189	0.66	24.00	23.65	1.084	0.205	/
		1	0	Back Side	707.5	0.310	3.10	24.00	23.65	1.084	0.336	4
		1	24	Back Side	704.0	0.289	-0.37	24.00	23.59	1.099	0.318	/
		1	0	Back Side	711.0	0.267	1.89	24.00	23.64	1.086	0.290	/
		1	0	Left Side	707.5	0.195	2.35	24.00	23.65	1.084	0.211	/
		1	0	Right Side	707.5	0.031	0.44	24.00	23.65	1.084	0.034	/
		1	0	Top Side	707.5	0.055	1.48	24.00	23.65	1.084	0.060	/
		1	0	Bottom Side	707.5	0.067	-0.45	24.00	23.65	1.084	0.073	/
		25	12	Front Side	704.0	0.145	-0.53	23.00	22.71	1.069	0.155	
		25	12	Back Side	704.0	0.236	-2.06	23.00	22.71	1.069	0.252	/
		25	12	Left Side	704.0	0.163	1.81	23.00	22.71	1.069	0.174	
		25	12	Right Side	704.0	0.024	0.36	23.00	22.71	1.069	0.026	/
		25	12	Top Side	704.0	0.042	-1.23	23.00	22.71	1.069	0.045	
		25	12	Bottom Side	704.0	0.053	-2.67	23.00	22.71	1.069	0.057	/



SAR Result of LTE Band 13 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
10M	QPSK	1	0	Front Side	782.0	0.141	0.26	24.50	23.69	1.205	0.170	/
		1	0	Back Side	782.0	0.260	0.67	24.50	23.69	1.205	0.313	5
		1	0	Left Side	782.0	0.178	-2.10	24.50	23.69	1.205	0.214	/
		1	0	Right Side	782.0	0.035	0.81	24.50	23.69	1.205	0.042	/
		1	0	Top Side	782.0	0.044	1.09	24.50	23.69	1.205	0.053	/
		1	0	Bottom Side	782.0	0.060	0.15	24.50	23.69	1.205	0.072	/
		25	0	Front Side	782.0	0.113	3.72	23.50	22.85	1.161	0.131	/
		25	0	Back Side	782.0	0.225	2.29	23.50	22.85	1.161	0.261	/
		25	0	Left Side	782.0	0.139	-1.97	23.50	22.85	1.161	0.161	/
		25	0	Right Side	782.0	0.026	-1.71	23.50	22.85	1.161	0.030	/
		25	0	Top Side	782.0	0.036	1.03	23.50	22.85	1.161	0.042	/
		25	0	Bottom Side	782.0	0.047	-0.38	23.50	22.85	1.161	0.055	/



SAR Result of LTE Band 48 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
20M	QPSK	1	0	Front Side	3560.0	0.175	2.63	24.50	23.96	1.132	0.198	
		1	0	Back Side	3560.0	0.342	-0.79	24.50	23.96	1.132	0.387	6
		1	0	Back Side	3625.0	0.317	0.40	24.50	23.63	1.222	0.387	
		1	0	Back Side	3690.0	0.295	1.15	24.50	22.97	1.422	0.419	
		1	0	Left Side	3560.0	0.252	-1.99	24.50	23.96	1.132	0.285	
		1	0	Right Side	3560.0	0.053	-2.83	24.50	23.96	1.132	0.060	
		1	0	Top Side	3560.0	0.077	-0.27	24.50	23.96	1.132	0.087	
		1	0	Bottom Side	3560.0	0.095	-1.33	24.50	23.96	1.132	0.108	
		50	24	Front Side	3560.0	0.129	2.58	23.50	23.01	1.119	0.144	
		50	24	Back Side	3560.0	0.282	3.43	23.50	23.01	1.119	0.316	/
		50	24	Left Side	3560.0	0.191	0.30	23.50	23.01	1.119	0.214	
		50	24	Right Side	3560.0	0.042	-0.99	23.50	23.01	1.119	0.047	
		50	24	Top Side	3560.0	0.063	2.85	23.50	23.01	1.119	0.070	
		50	24	Bottom Side	3560.0	0.079	-0.48	23.50	23.01	1.119	0.088	



SAR Result of LTE Band 66 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
20M	QPSK	1	49	Front Side	1770.0	0.311	-0.59	25.00	24.22	1.197	0.372	/
		1	49	Back Side	1770.0	0.489	0.92	25.00	24.22	1.197	0.585	7
		1	49	Back Side	1770.0	0.445	1.78	25.00	24.17	1.211	0.539	/
		1	49	Back Side	1770.0	0.411	-1.17	25.00	24.17	1.211	0.498	/
		1	49	Left Side	1770.0	0.356	1.96	25.00	24.22	1.197	0.426	/
		1	49	Right Side	1770.0	0.068	2.63	25.00	24.22	1.197	0.081	/
		1	49	Top Side	1770.0	0.082	-3.38	25.00	24.22	1.197	0.098	/
		1	49	Bottom Side	1770.0	0.099	1.04	25.00	24.22	1.197	0.119	/
		50	24	Front Side	1770.0	0.240	-3.96	24.00	24.22	0.951	0.228	/
		50	24	Back Side	1770.0	0.382	-1.41	24.00	23.35	1.161	0.444	/
		50	24	Left Side	1770.0	0.278	-0.83	24.00	23.35	1.161	0.323	/
		50	24	Right Side	1770.0	0.041	0.76	24.00	23.35	1.161	0.048	/
		50	24	Top Side	1770.0	0.063	0.52	24.00	23.35	1.161	0.073	/
		50	24	Bottom Side	1770.0	0.070	-2.43	24.00	23.35	1.161	0.081	/



SAR Result of N2 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
15kHz 20M	DFT-s- OFDM QPSK	1	1	Front Side	1900.0	0.359	0.91	24.50	24.12	1.091	0.392	/
		1	1	Back Side	1900.0	0.654	-2.12	24.50	24.12	1.091	0.714	8
		1	1	Back Side	1860.0	0.641	0.75	24.50	24.00	1.122	0.719	/
		1	1	Back Side	1880.0	0.605	-0.43	24.50	24.05	1.109	0.671	/
		1	1	Left Side	1900.0	0.485	-3.01	24.50	24.12	1.091	0.529	/
		1	1	Right Side	1900.0	0.049	1.89	24.50	24.12	1.091	0.053	/
		1	1	Top Side	1900.0	0.066	0.66	24.50	24.12	1.091	0.072	/
		1	1	Bottom Side	1900.0	0.085	1.32	24.50	24.12	1.091	0.093	/
		50	28	Front Side	1900.0	0.276	-2.60	24.50	24.05	1.109	0.306	/
		50	28	Back Side	1900.0	0.548	0.69	24.50	24.05	1.109	0.608	/
		50	28	Left Side	1900.0	0.401	2.69	24.50	24.05	1.109	0.445	/
		50	28	Right Side	1900.0	0.040	0.86	24.50	24.05	1.109	0.044	/
		50	28	Top Side	1900.0	0.059	-0.82	24.50	24.05	1.109	0.065	/
		50	28	Bottom Side	1900.0	0.076	-3.33	24.50	24.05	1.109	0.084	/



SAR Result of N5 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
		1	1	Front Side	836.5	0.118	1.08	24.50	23.96	1.132	0.134	/
		1	1	Back Side	836.5	0.202	-2.85	24.50	23.96	1.132	0.229	/
		1	1	Back Side	834.0	0.216	1.42	24.50	23.91	1.146	0.248	9
		1	53	Back Side	839.0	0.183	-2.06	24.50	23.80	1.175	0.215	/
		1	1	Left Side	836.5	0.145	-0.70	24.50	23.96	1.132	0.164	/
		1	1	Right Side	836.5	0.022	0.79	24.50	23.96	1.132	0.025	/
		1	1	Top Side	836.5	0.030	1.39	24.50	23.96	1.132	0.034	/
		1	1	Bottom Side	836.5	0.043	-2.13	24.50	23.96	1.132	0.049	/
		50	28	Front Side	834.0	0.103	-0.78	24.50	23.88	1.153	0.119	/
		50	28	Back Side	834.0	0.175	0.60	24.50	23.88	1.153	0.202	/
		50	28	Left Side	834.0	0.114	-2.48	24.50	23.88	1.153	0.131	/
		50	28	Right Side	834.0	0.017	0.94	24.50	23.88	1.153	0.020	/
		50	28	Top Side	834.0	0.021	-0.42	24.50	23.88	1.153	0.024	/
		50	28	Bottom Side	834.0	0.035	1.03	24.50	23.88	1.153	0.040	/



SAR Result of N25 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
15kHz 20M	DFT-s- OFDM QPSK	1	1	Front Side	1860.0	0.235	0.86	24.50	24.17	1.079	0.254	/
		1	1	Back Side	1860.0	0.429	-2.30	24.50	24.17	1.079	0.463	/
		1	53	Back Side	1882.5	0.485	-2.59	24.50	24.15	1.084	0.526	10
		1	1	Back Side	1860.0	0.460	1.22	24.50	24.06	1.107	0.509	/
		1	1	Left Side	1860.0	0.295	-1.07	24.50	24.17	1.079	0.318	/
		1	1	Right Side	1860.0	0.049	0.19	24.50	24.17	1.079	0.053	/
		1	1	Top Side	1860.0	0.058	-0.66	24.50	24.17	1.079	0.063	/
		1	1	Bottom Side	1860.0	0.076	-1.53	24.50	24.17	1.079	0.082	/
		50	28	Front Side	1860.0	0.194	-1.14	24.50	24.09	1.099	0.213	/
		50	28	Back Side	1860.0	0.402	0.38	24.50	24.09	1.099	0.442	/
		50	28	Left Side	1860.0	0.251	1.69	24.50	24.09	1.099	0.276	/
		50	28	Right Side	1860.0	0.040	0.98	24.50	24.09	1.099	0.044	/
		50	28	Top Side	1860.0	0.046	-0.16	24.50	24.09	1.099	0.051	/
		50	28	Bottom Side	1860.0	0.068	3.90	24.50	24.09	1.099	0.075	/



SAR Result of N48 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
30kHz 20M	DFT-s- OFDM QPSK	1	1	Front Side	3624.99	0.115	-0.22	24.00	23.70	1.072	0.123	/
		1	1	Back Side	3624.99	0.211	1.96	24.00	23.70	1.072	0.226	11
		1	25	Back Side	3560.01	0.183	0.78	24.00	23.70	1.072	0.196	/
		1	1	Back Side	3690.00	0.195	-1.14	24.00	23.70	1.072	0.209	/
		1	1	Left Side	3624.99	0.130	0.55	24.00	23.70	1.072	0.139	/
		1	1	Right Side	3624.99	0.028	-0.83	24.00	23.70	1.072	0.030	/
		1	1	Top Side	3624.99	0.042	3.39	24.00	23.70	1.072	0.045	/
		1	1	Bottom Side	3624.99	0.059	-1.07	24.00	23.70	1.072	0.063	/
		25	12	Front Side	3624.99	0.098	-2.10	24.00	23.57	1.104	0.108	/
		25	12	Back Side	3624.99	0.163	-2.14	24.00	23.57	1.104	0.180	/
		25	12	Left Side	3624.99	0.108	-0.97	24.00	23.57	1.104	0.119	/
		25	12	Right Side	3624.99	0.020	-1.89	24.00	23.57	1.104	0.022	/
		25	12	Top Side	3624.99	0.031	2.96	24.00	23.57	1.104	0.034	/
		25	12	Bottom Side	3624.99	0.042	-0.02	24.00	23.57	1.104	0.046	/



SAR Result of N66 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
15kHz 20M	DFT-s- OFDM QPSK	1	1	Front Side	1745.0	0.297	0.40	24.50	24.11	1.094	0.325	/
		1	1	Back Side	1745.0	0.499	-0.77	24.50	24.11	1.094	0.546	12
		1	104	Back Side	1720.0	0.467	-2.24	24.50	24.06	1.107	0.517	/
		1	1	Back Side	1770.0	0.438	3.41	24.50	23.95	1.135	0.497	/
		1	1	Left Side	1745.0	0.363	1.96	24.50	24.11	1.094	0.397	/
		1	1	Right Side	1745.0	0.045	2.19	24.50	24.11	1.094	0.049	/
		1	1	Top Side	1745.0	0.063	-0.32	24.50	24.11	1.094	0.069	/
		1	1	Bottom Side	1745.0	0.085	0.52	24.50	24.11	1.094	0.093	/
		25	12	Front Side	1720.0	0.235	-2.31	24.50	24.05	1.109	0.261	/
		25	12	Back Side	1720.0	0.417	2.29	24.50	24.05	1.109	0.462	/
		25	12	Left Side	1720.0	0.309	0.18	24.50	24.05	1.109	0.343	/
		25	12	Right Side	1720.0	0.036	-1.56	24.50	24.05	1.109	0.040	/
		25	12	Top Side	1720.0	0.051	-0.90	24.50	24.05	1.109	0.057	/
		25	12	Bottom Side	1720.0	0.070	-2.96	24.50	24.05	1.109	0.078	/



SAR Result of N71 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
Body Test Data (5mm)												
15kHz 20M	DFT-s- OFDM QPSK	1	1	Front Side	680.5	0.165	0.45	24.50	23.96	1.132	0.187	/
		1	1	Back Side	680.5	0.334	-1.20	24.50	23.96	1.132	0.378	13
		1	1	Back Side	673.0	0.310	0.59	24.50	23.91	1.146	0.355	/
		1	53	Back Side	688.0	0.325	-2.25	24.50	23.96	1.132	0.368	/
		1	1	Left Side	680.5	0.202	1.47	24.50	23.80	1.175	0.237	/
		1	1	Right Side	680.5	0.038	-0.36	24.50	23.96	1.132	0.043	/
		1	1	Top Side	680.5	0.050	-2.89	24.50	23.96	1.132	0.057	/
		1	1	Bottom Side	680.5	0.071	1.51	24.50	23.96	1.132	0.080	/
		50	28	Front Side	673.0	0.132	-2.21	24.50	23.88	1.153	0.152	/
		50	28	Back Side	673.0	0.269	-0.41	24.50	23.88	1.153	0.310	/
		50	28	Left Side	673.0	0.158	-1.05	24.50	23.88	1.153	0.182	/
		50	28	Right Side	673.0	0.030	0.67	24.50	23.88	1.153	0.035	/
		50	28	Top Side	673.0	0.038	1.14	24.50	23.88	1.153	0.044	/
		50	28	Bottom Side	673.0	0.060	-2.66	24.50	23.88	1.153	0.069	/



SAR Result of N77 ANT 1												
BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No.
3450MHz-3550MHz Body Test Data (5mm)												
30kHz 20M	DFT-s- OFDM QPSK	1	25	Front Side	3500.01	0.365	-3.92	26.50	26.09	1.099	0.401	/
		1	25	Back Side	3500.01	0.628	1.66	26.50	26.09	1.099	0.690	14
		1	1	Back Side	3460.02	0.564	0.33	26.50	26.00	1.122	0.633	
		1	1	Back Side	3540.0	0.602	-0.09	26.50	25.89	1.151	0.693	
		1	25	Left Side	3500.01	0.416	-1.65	26.50	26.09	1.099	0.457	/
		1	25	Right Side	3500.01	0.070	-2.65	26.50	26.09	1.099	0.077	/
		1	25	Top Side	3500.01	0.085	0.45	26.50	26.09	1.099	0.093	/
		1	25	Bottom Side	3500.01	0.109	1.86	26.50	26.09	1.099	0.120	/
		25	12	Front Side	3500.01	0.292	-1.74	26.50	25.95	1.135	0.331	/
		25	12	Back Side	3500.01	0.541	0.13	26.50	25.95	1.135	0.614	/
		25	12	Left Side	3500.01	0.348	0.94	26.50	25.95	1.135	0.395	/
		25	12	Right Side	3500.01	0.058	2.58	26.50	25.95	1.135	0.066	/
		25	12	Top Side	3500.01	0.071	1.95	26.50	25.95	1.135	0.081	/
		25	12	Bottom Side	3500.01	0.088	2.24	26.50	25.95	1.135	0.100	/
3700MHz-3980MHz Body Test Data (5mm)												
30kHz 20M	DFT-s- OFDM QPSK	1	1	Front Side	3710.0	0.195	1.10	26.50	25.87	1.156	0.225	/
		1	1	Back Side	3710.0	0.435	-2.16	26.50	25.87	1.156	0.503	/
		1	50	Back Side	3840.0	0.375	-1.60	26.50	25.75	1.189	0.446	/
		1	25	Back Side	3969.99	0.411	1.43	26.50	25.81	1.172	0.482	/
		1	1	Left Side	3710.0	0.305	-3.99	26.50	25.87	1.156	0.353	/
		1	1	Right Side	3710.0	0.045	-2.72	26.50	25.87	1.156	0.052	/
		1	1	Top Side	3710.0	0.058	2.01	26.50	25.87	1.156	0.067	/
		1	1	Bottom Side	3710.0	0.073	-2.48	26.50	25.87	1.156	0.084	/
		25	12	Front Side	3710.0	0.157	-3.46	26.50	25.71	1.199	0.188	/
		25	12	Back Side	3710.0	0.371	0.28	26.50	25.71	1.199	0.445	/
		25	12	Left Side	3710.0	0.275	-1.85	26.50	25.71	1.199	0.330	/
		25	12	Right Side	3710.0	0.032	-2.23	26.50	25.71	1.199	0.038	/
		25	12	Top Side	3710.0	0.041	0.91	26.50	25.71	1.199	0.049	/
		25	12	Bottom Side	3710.0	0.060	-2.45	26.50	25.71	1.199	0.072	/



SAR Result of Bluetooth ANT 3									
Model	Test Position	Freq.	SAR (1g) (W/kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaling Factor	Scaled SAR (W/Kg)	Meas.No
Body Test Data (5mm)									
8DPSK (3Mbps)	Front Side	2441.0	0.182	-1.02	4.50	3.92	1.143	0.208	15
	Front Side	2402.0	0.168	-3.63	4.50	3.77	1.183	0.199	/
	Front Side	2480.0	0.151	0.58	4.50	3.42	1.282	0.194	/
	Back Side	2441.0	0.092	-2.00	4.50	3.92	1.143	0.105	/
	Left Side	2441.0	0.031	1.07	4.50	3.92	1.143	0.035	/
	Right Side	2441.0	0.035	-0.66	4.50	3.92	1.143	0.040	/
	Top Side	2441.0	0.061	1.24	4.50	3.92	1.143	0.070	/
	Bottom Side	2441.0	0.029	-2.99	4.50	3.92	1.143	0.033	/

Note:

1. Per KDB 447498 D04, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
2. Per KDB 248227- When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
3. Per KDB 865664 D01, Repeated measurement is not required when the original highest measured SAR is <0.80 W/kg
4. When the user enables the personal Wireless router functions for the handsets, actual operations include simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.



12. Simultaneous Multi-band Transmission Evaluation

Application Simultaneous Transmission information:

Simultaneous State	Does it support
	Body & Hotspot
1. WWAN+ Bluetooth CH0	Y

NOTE:

1. WWAN cannot transmit simultaneously.
2. For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.

WWAN+ Bluetooth CH0/CH1

RF Exposure Conditions	SAR _{max} (W/kg)		Summed SAR
	1	2	
	WWAN	Bluetooth ANT 3	1+2
Body & Hotspot Test Data (5mm)	0.766	0.208	0.974



13. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
750MHz Dipole	MVG	SID750	SN 30/14 DIP0G750-331	2023-07-04	2026-07-03
835MHz Dipole	MVG	SID835	SN 30/14 DIP0G835-332	2023-07-04	2026-07-03
1800MHz Dipole	MVG	SID1800	5023-DIP1G800-747	2023-12-20	2026-12-19
1900MHz Dipole	MVG	SID1900	SN 30/14 DIP1G900-333	2023-09-14	2026-09-13
2450MHz Dipole	MVG	SID2450	SN 30/14 DIP2G450-335	2023-07-04	2026-07-03
3500MHz Dipole	MVG	SID3500	SN 08/21 DIP3G 500-553	2024-02-14	2027-02-13
3700MHz Dipole	MVG	SID3700	SN 08/21 DIP3G 700 -554	2024-02-14	2027-02-13
3900MHz Dipole	MVG	SID3900	SN 08/21 DIP3G 900-555	2024-02-14	2027-02-13
E-Field Probe	MVG	SSE2	SN 08/21 EPGO352	2025-09-15	2026-09-14
Dielectric Probe Kit	MVG	SCLMP	SN 32/14 OCPG67	2025-09-15	2026-09-14
Antenna	MVG	ANTA3	SN 07/13 ZNTA52	N/A	N/A
Phantom1	MVG	SAM	SN 32/14 SAM115	N/A	N/A
Phantom3	MVG	SAM	SN 21/21 ELLI48	N/A	N/A
Phone holder	MVG	N/A	SN 32/14 MSH97	N/A	N/A
Laptop holder	MVG	N/A	SN 32/14 LSH29	N/A	N/A
Attenuator	Agilent	HXT-10-8-SMA	240327017	2026-02-19	2027-02-18
Directional coupler	Xi'an Xingbo	XBOH-OA08-20 dB	211123-4-3	2026-02-19	2027-02-18
Network Analyzer	Agilent	E5071C	MY46520378	2025-09-11	2026-09-10
Multi Meter	Keithley	Multi Meter 2000	4050073	2025-09-11	2026-09-10
Signal Generator	Agilent	N5182A	MY50140530	2025-09-11	2026-09-10
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2026-02-19	2027-02-18
Wireless Communication Test Set	R&S	CMW500	156324	2025-09-11	2026-09-10
Power Amplifier	DESAY	ZHL-42W	9638	2025-09-11	2026-09-10
Power Meter	R&S	NRP	100510	2025-09-11	2026-09-10
Power Sensor	R&S	NRP-Z11	101919	2025-09-11	2026-09-10
Power Sensor	Keysight	U2021XA	MY56280002	2025-09-11	2026-09-10
Temperature hygrometer	SuWei	SW-108	N/A	2025-10-13	2026-10-13
Thermograph	Elitech	RC-4	S/N EF7176501537	2025-10-13	2026-10-13



ANNEX A: System Validation Plots

(Please See Appendix A)

ANNEX B: SAR Test Plots

(Please See Appendix B)

ANNEX C: Probe Calibration and Dipole Calibration Report

(Please See Appendix C)

ANNEX D: SAR Test setup photo

(Please See Appendix D)

※※※※※END OF THE REPORT※※※※※