FCC SAR TEST REPORT

FCC ID	:	2A7DJ-2346766867652
Equipment	:	Smart Radio LTE with Walkie-Talkie
Brand Name	:	weavix
Model Name	:	walt
Marketing Name	:	weavix
Applicant	:	Weavix Inc. 10811 E Harry St. Wichita, KS 67207, USA
Manufacturer	:	Arima Communications (Jiangsu) Co., Ltd No.168, Jiaotong Notrh Road, Economic and Technological Development Zone, Wujiang District Suzhou City, Jiangsu Province, P.R.China
Standard	:	FCC 47 CFR Part 2 (2.1093)

The product was received on Feb. 20, 2024 and testing was started from Feb. 26, 2024 and completed on Apr. 22, 2024. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.

Cona Huang

Approved by: Cona Huang / Deputy Manager

ilac-MRA TAF Testing Laboratory 3786

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History of this test report

Report No.	Version	Description	Issued Date
FA261611-01	01	Initial issue of report	Sep. 02, 2024

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for **Weavix Inc., Smart Radio LTE with Walkie-Talkie, walt** are as follows.

Equipment Class	Frequency Band		Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
			Next to mouch (Separation 10mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Extremity (Separation 0mm)	
			1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	FDD LTE	LTE Band 7	0.71	0.71	0.71		1.23
		LTE Band 12	0.09	0.39	0.39		
		LTE Band 13	0.08	0.34	0.34		
		LTE Band 14	0.09	0.34	0.34		
		LTE Band 2 / 25	0.31	0.91	0.91		
		LTE Band 5 / 26	0.10	0.37	0.37		
		LTE Band 30	0.36	0.58	0.68		
		LTE Band 4 / 66	0.33	0.62	0.62		
	TDD LTE	LTE Band 38	0.39	0.39	0.29		
		LTE Band 41	0.33	0.33	0.72		
		LTE Band 42	0.22	0.30	0.30		
		LTE Band 48	0.16	0.33	0.33		
DTS	WLAN	2.4GHz WLAN	0.29	0.41	0.41		1.23
NII		5GHz WLAN	0.24	0.44	0.39		1.23
DSS	2.4GHz Band	Bluetooth	< 0.01	< 0.01	< 0.01		0.44
DXX	NFC	13.56MHz				< 0.01	
Date of Testing:			2024/02/26 ~ 2024/04/22				

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) 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

Reviewed by: Jason Wang
Report Producer: Daisy Peng

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Smart Radio LTE with Walkie-Talkie
Brand Name	weavix
Model Name	walt
Marketing Name	weavix
FCC ID	2A7DJ-2346766867652
IMEI Code	350434830311731
S / N	WT01012400401
HW Version	0910MB-007
SW Version	2.A.0075
Wireless Technology and 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 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3550 MHz ~ 3600 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Mode	LTE: QPSK, 16QAM, 64QAM WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC: ASK
EUT Stage	Identical Prototype
Remark: 1. Based on original Report No.: FA261611 to reduce LTB B5/B12/B13/B14/B26 maximum power and do full SAR testing, the other bands spot check worst case found in original report, the max SAR summary and Sim-Tx analysis evaluation were consideration highest SAR result between original report and this report.	

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	2A7DJ-2346766867652
Equipment Name	Smart Radio LTE with Walkie-Talkie
Operating Frequency Range of each LTE transmission band	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 14: 788 MHz ~ 798 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3550 MHz ~ 3600 MHz LTE Band 42: 3450 MHz ~ 3550 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Data only / Voice and Data
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3**
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

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

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		

LTE Band 14				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Channel #	Channel #	Freq.(MHz)
L	23305	790.5	23330	793
M	23330	793		
H	23355	795.5		

LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 30				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	27685	2307.5	27710	2310
M	27710	2310		
H	27735	2312.5		

LTE Band 38

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 42(Part 96)

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	43315	3552.5	43140	3555	43165	3557.5	43190	3560
M	43340	3575	43340	3575	43340	3575	43340	3575
H	43565	3597.5	43540	3595	43515	3592.5	43490	3590

LTE Band 42(Part 27Q)

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460
M	42590	3500	42590	3500	42590	3500	42590	3500
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540

LTE Band 48

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560
LM	55810	3607	55815	3607.5	55820	3608	55830	3609
MH	56170	3643	56165	3642.5	56160	3642	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690

LTE Band 66

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

4. RF Exposure Limits

4.1 Uncontrolled Environment

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

4.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram 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.

5. Specific Absorption Rate (SAR)

5.1 Introduction

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.

5.2 SAR Definition

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

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

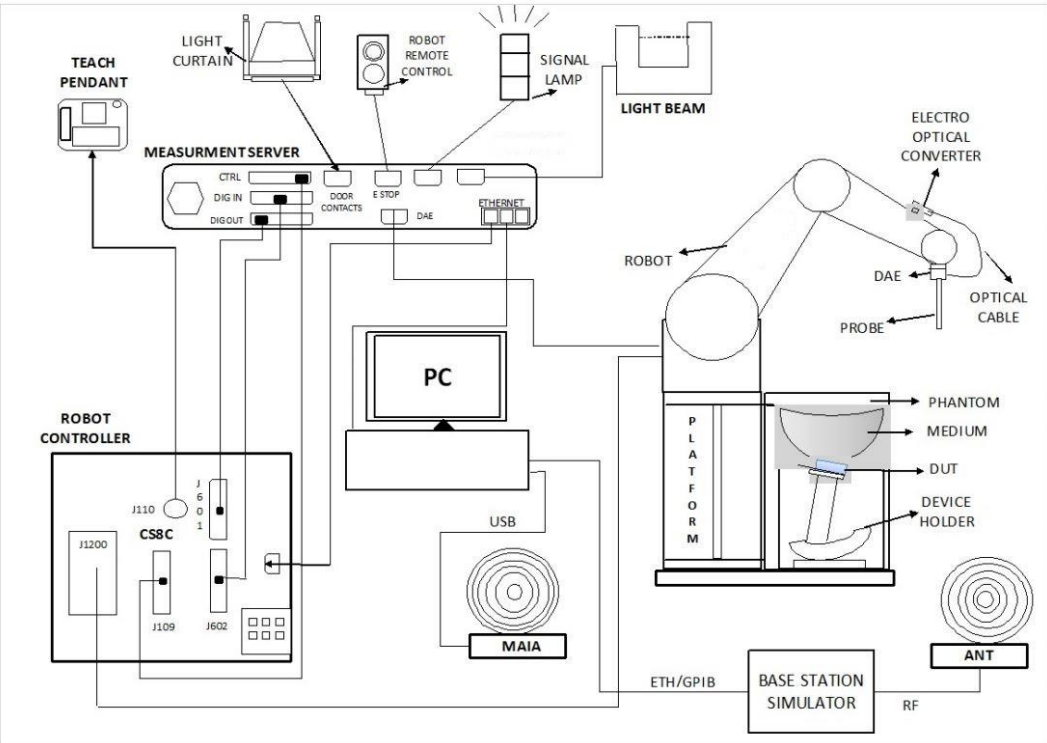
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- The DASY system in SAR Configuration is shown above
- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running windows software and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6.1 Test Site Location

The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Laboratory	EMC & Wireless Communications Laboratory		Wensan Laboratory				
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan				
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY	SAR15-HY	SAR18-HY	SAR21-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	SAR16-HY	SAR19-HY	SAR22-HY
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	SAR17-HY	SAR20-HY	

6.2 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
Dynamic Range	5 µW/g – >100 mW/g; Linearity: ±0.2 dB
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

6.3 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

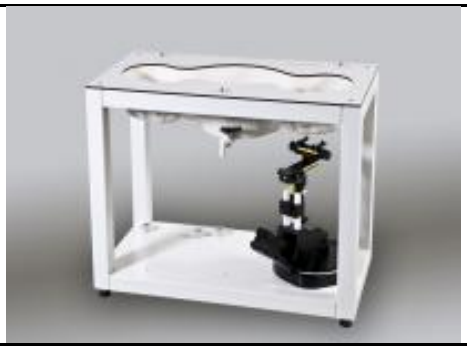
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

6.4 Phantom

<SAM Twin Phantom>

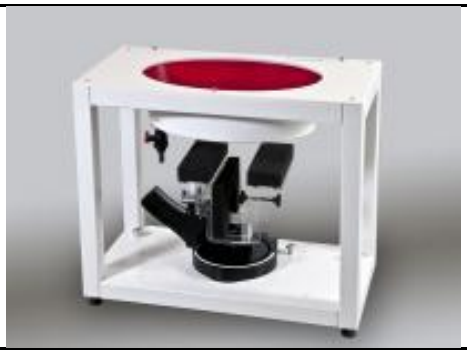
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm



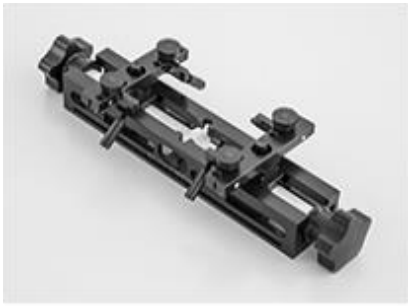
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

6.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Mounting Device for Laptops

7. Measurement Procedures

The measurement procedures are as follows:

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

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

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

7.1 Spatial Peak SAR Evaluation

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

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

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

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

7.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

7.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

7.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

7.5 Volume Scan Procedures

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

7.6 Power Drift Monitoring

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

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit(2)	D750V3	1107	Jun. 22, 2022	Jun. 20, 2024
SPEAG	835MHz System Validation Kit(2)	D835V2	4d167	Nov. 24, 2022	Nov. 22, 2024
SPEAG	1750MHz System Validation Kit(2)	D1750V2	1112	Jun. 22, 2022	Jun. 20, 2024
SPEAG	1900MHz System Validation Kit(2)	D1900V2	5d041	Aug. 19, 2021	Aug. 16, 2024
SPEAG	1900MHz System Validation Kit(2)	D1900V2	5d185	Jun. 17, 2022	Jun. 15, 2024
SPEAG	2300MHz System Validation Kit(2)	D2300V2	1006	Jan. 18, 2022	Jan. 15, 2025
SPEAG	2450MHz System Validation Kit(2)	D2450V2	736	Aug. 17, 2021	Aug. 14, 2024
SPEAG	2450MHz System Validation Kit(2)	D2450V2	929	Nov. 21, 2022	Nov. 19, 2024
SPEAG	2600MHz System Validation Kit(2)	D2600V2	1078	Jun. 23, 2022	Jun. 21, 2024
SPEAG	3500MHz System Validation Kit(2)	D3500V2	1014	Jan. 17, 2022	Jan. 14, 2025
SPEAG	3700MHz System Validation Kit(2)	D3700V2	1006	Jun. 20, 2022	Jun. 18, 2024
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1006	May. 25, 2023	May. 23, 2025
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1171	Apr. 20, 2021	Apr. 17, 2024
SPEAG	13MHz System Validation Kit	CLA13	1011	Jul. 10, 2023	Jul. 09, 2024
SPEAG	Data Acquisition Electronics	DAE4	316	Jan. 18, 2024	Jan. 17, 2025
SPEAG	Data Acquisition Electronics	DAE4	661	May. 23, 2023	May. 22, 2024
SPEAG	Data Acquisition Electronics	DAE4	1647	Dec. 27, 2023	Dec. 26, 2024
SPEAG	Data Acquisition Electronics	DAE4	1805	May. 16, 2023	May. 15, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3728	Mar. 22, 2023	Mar. 21, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Oct. 24, 2023	Oct. 23, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	7625	Dec. 14, 2023	Dec. 13, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	7793	Mar. 01, 2024	Feb. 28, 2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7814	May. 30, 2023	May. 29, 2024
Testo	Hygro meter	608-H1	45196600	Nov. 02, 2023	Nov. 01, 2024
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Nov. 13, 2023	Nov. 12, 2024
Keysight	5G Wireless Test Platform	E7515B	MY59321826	Apr. 26, 2023	Apr. 25, 2024
R&S	BT Base Station	CBT	101136	Oct. 22, 2023	Oct. 21, 2024
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Sep. 27, 2023	Sep. 26, 2024
Keysight	ENA Network Analyzer	E5071C	MY46104758	Oct. 30, 2023	Oct. 29, 2024
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 19, 2023	Sep. 18, 2024
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3690	Aug. 09, 2023	Aug. 08, 2024
Anritsu	Power Meter	ML2495A	1419002	Aug. 17, 2023	Aug. 16, 2024
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2023	Aug. 17, 2024
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 10, 2023	Jul. 09, 2024
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2023	Oct. 15, 2024
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

9. System Verification

9.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18℃ to 25℃, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18℃ to 25℃ and within ± 2℃ of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.
The liquid tissue depth was at least 15cm in the phantom for all SAR testing

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
13	22.1	0.757	53.400	0.75	55.00	0.93	-2.91	±5	2024/2/29
750	22.5	0.878	42.746	0.89	41.90	-1.35	2.02	±5	2024/4/21
835	22.5	0.910	42.450	0.90	41.50	1.11	2.29	±5	2024/4/21
1750	22.4	1.385	40.925	1.37	40.10	1.09	2.06	±5	2024/2/26
1750	22.6	1.370	40.618	1.37	40.10	0.00	1.29	±5	2024/4/22
1900	22.4	1.464	39.377	1.40	40.00	4.57	-1.56	±5	2024/2/26
1900	22.6	1.447	39.070	1.40	40.00	3.36	-2.33	±5	2024/4/22
2300	22.4	1.702	40.768	1.67	39.50	1.92	3.21	±5	2024/2/26
2300	22.6	1.629	39.571	1.67	39.50	-2.46	0.18	±5	2024/4/22
2450	22.7	1.865	38.402	1.80	39.20	3.61	-2.04	±5	2024/2/27
2450	22.6	1.777	38.992	1.80	39.20	-1.28	-0.53	±5	2024/4/22
2600	22.4	2.040	39.550	1.96	39.00	4.08	1.41	±5	2024/2/26
2600	22.2	1.963	38.336	1.96	39.00	0.15	-1.70	±5	2024/3/7
2600	22.6	1.943	38.384	1.96	39.00	-0.87	-1.58	±5	2024/4/22
3500	22.2	2.987	38.330	2.91	37.90	2.65	1.13	±5	2024/3/7
3500	22.6	2.937	37.722	2.91	37.90	0.93	-0.47	±5	2024/4/22
3700	22.2	3.145	38.093	3.12	37.70	0.80	1.04	±5	2024/3/7
3700	22.6	3.122	37.423	3.12	37.70	0.06	-0.73	±5	2024/4/22
5250	22.6	4.695	35.939	4.71	35.95	-0.32	-0.03	±5	2024/4/22
5600	22.7	5.116	35.617	5.07	35.50	0.91	0.33	±5	2024/2/27
5600	22.6	5.089	35.391	5.07	35.50	0.37	-0.31	±5	2024/4/22
5750	22.6	5.243	35.199	5.22	35.35	0.44	-0.43	±5	2024/4/22

9.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)	Test Site
2024/2/29	13	1000	CLA13-1011	EX3DV4 - SN3931	DAE4 Sn1805	0.514	0.544	0.514	-4.81	SAR-14
2024/4/21	750	50	D750V3-1107	EX3DV4 - SN7793	DAE4 Sn1647	0.406	8.540	8.12	-4.92	SAR-11
2024/4/21	835	50	D835V2-4d167	EX3DV4 - SN7793	DAE4 Sn1647	0.495	9.800	9.9	1.02	SAR-11
2024/2/26	1750	50	D1750V2-1112	EX3DV4 - SN7814	DAE4 Sn316	1.730	36.900	34.6	-6.23	SAR-08
2024/4/22	1750	50	D1750V2-1112	EX3DV4 - SN7793	DAE4 Sn1647	1.940	36.900	38.8	5.15	SAR-11
2024/2/26	1900	50	D1900V2-5d041	EX3DV4 - SN7814	DAE4 Sn316	1.870	40.600	37.4	-7.88	SAR-08
2024/4/22	1900	50	D1900V2-5d185	EX3DV4 - SN7793	DAE4 Sn1647	2.010	39.000	40.2	3.08	SAR-11
2024/2/26	2300	50	D2300V2-1006	EX3DV4 - SN7814	DAE4 Sn316	2.250	48.300	45	-6.83	SAR-08
2024/4/22	2300	50	D2300V2-1006	EX3DV4 - SN7793	DAE4 Sn1647	2.540	48.300	50.8	5.18	SAR-11
2024/2/27	2450	50	D2450V2-736	EX3DV4 - SN3728	DAE4 Sn661	2.650	54.200	53	-2.21	SAR-12
2024/4/22	2450	50	D2450V2-929	EX3DV4 - SN7793	DAE4 Sn1647	2.610	52.400	52.2	-0.38	SAR-11
2024/2/26	2600	50	D2600V2-1078	EX3DV4 - SN7814	DAE4 Sn316	2.650	55.400	53	-4.33	SAR-08
2024/3/7	2600	50	D2600V2-1078	EX3DV4 - SN7625	DAE4 Sn661	2.760	55.400	55.2	-0.36	SAR-13
2024/4/22	2600	50	D2600V2-1078	EX3DV4 - SN7793	DAE4 Sn1647	2.930	55.400	58.6	5.78	SAR-11
2024/3/7	3500	100	D3500V2-1014	EX3DV4 - SN7625	DAE4 Sn661	6.710	67.200	67.1	-0.15	SAR-13
2024/4/22	3500	100	D3500V2-1014	EX3DV4 - SN7793	DAE4 Sn1647	6.180	67.200	61.8	-8.04	SAR-11
2024/3/7	3700	50	D3700V2-1006	EX3DV4 - SN7625	DAE4 Sn661	3.100	65.600	62	-5.49	SAR-13
2024/4/22	3700	50	D3700V2-1006	EX3DV4 - SN7793	DAE4 Sn1647	3.110	65.600	62.2	-5.18	SAR-11
2024/4/22	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7793	DAE4 Sn1647	8.500	81.200	85	4.68	SAR-11
2024/2/27	5600	50	D5GHzV2-1171-5600	EX3DV4 - SN3728	DAE4 Sn661	3.790	83.400	75.8	-9.11	SAR-12
2024/4/22	5600	50	D5GHzV2-1006-5600	EX3DV4 - SN7793	DAE4 Sn1647	4.420	84.700	88.4	4.37	SAR-11
2024/4/22	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7793	DAE4 Sn1647	8.310	80.900	83.1	2.72	SAR-11

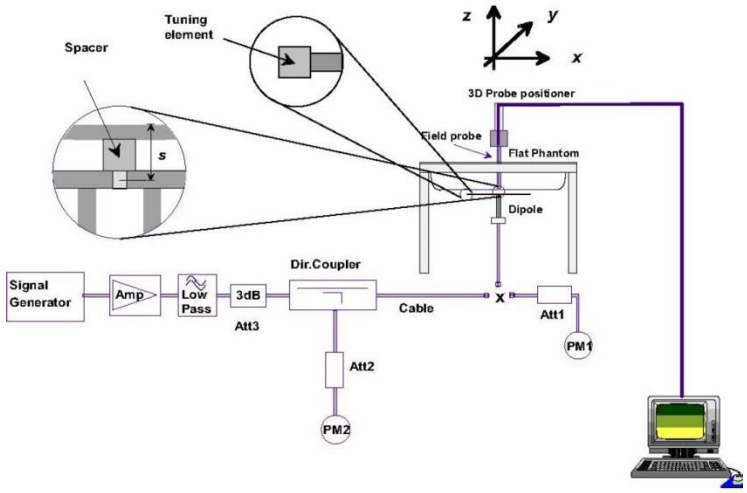


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

10. RF Exposure Positions

10.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

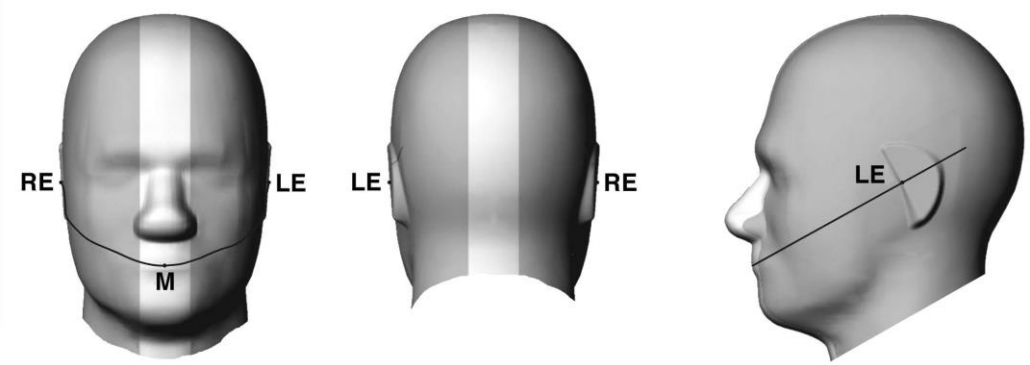


Fig 9.1.1 Front, back, and side views of SAM twin phantom

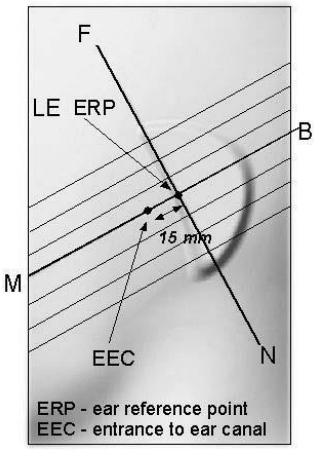


Fig 9.1.2 Close-up side view of phantom showing the ear region.

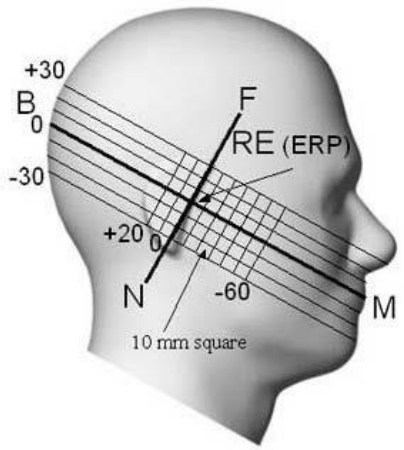


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

10.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). 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 parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

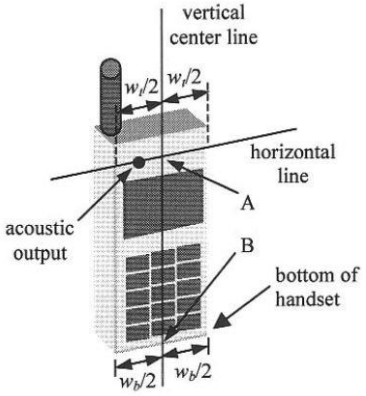


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

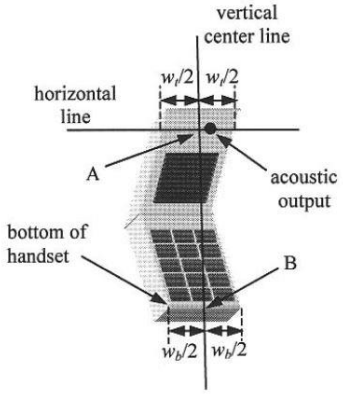


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

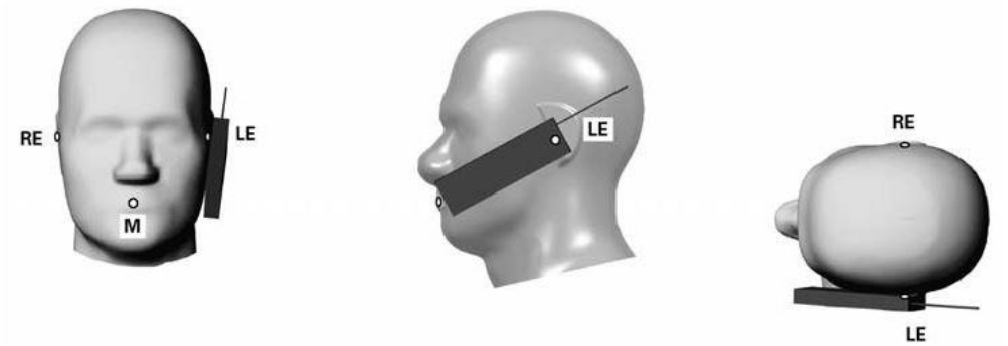


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

10.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

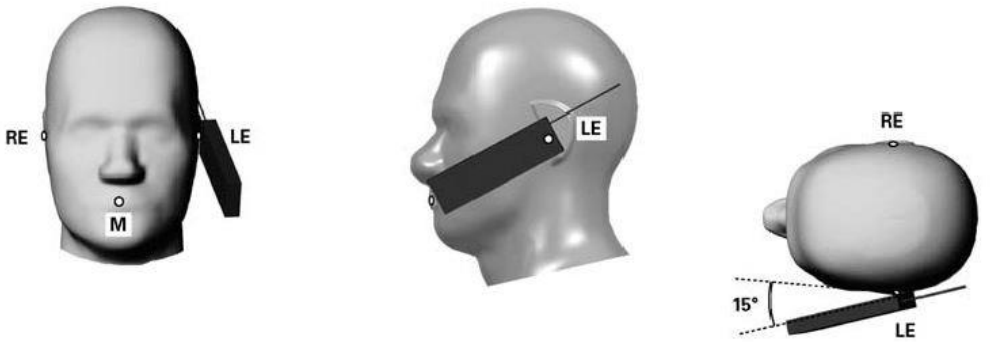


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

10.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, 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 FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

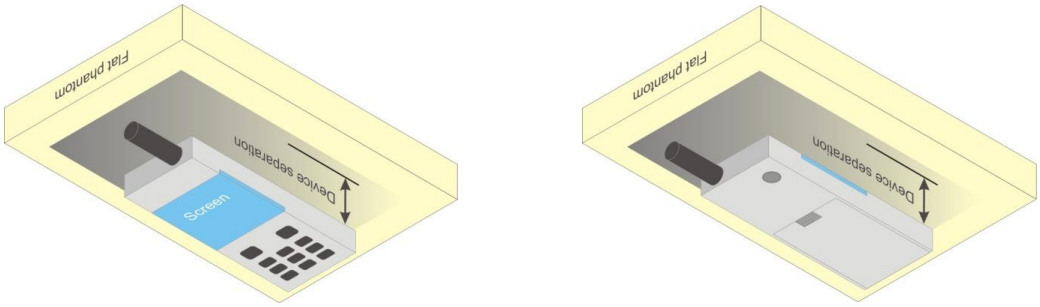


Fig 9.4 Body Worn Position

10.5 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

11. LTE Output Power (Unit: dBm)

<LTE Band 5_Ant 1>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	20.38	20.61	20.28	21
10	QPSK	1	25	20.43	20.47	20.35	
10	QPSK	1	49	20.42	20.39	20.29	
10	QPSK	25	0	19.54	19.56	19.30	20
10	QPSK	25	12	19.48	19.51	19.37	
10	QPSK	25	25	19.54	19.46	19.37	
10	QPSK	50	0	19.46	19.49	19.28	
10	16QAM	1	0	19.77	19.79	19.64	20
10	16QAM	1	25	19.79	19.81	19.74	
10	16QAM	1	49	19.83	19.70	19.64	
10	16QAM	25	0	18.56	18.59	18.40	19
10	16QAM	25	12	18.62	18.63	18.47	
10	16QAM	25	25	18.68	18.56	18.40	
10	16QAM	50	0	18.58	18.61	18.34	
10	64QAM	1	0	18.65	18.63	18.53	19
10	64QAM	1	25	18.77	18.70	18.55	
10	64QAM	1	49	18.72	18.64	18.54	
10	64QAM	25	0	17.61	17.65	17.44	18
10	64QAM	25	12	17.58	17.59	17.50	
10	64QAM	25	25	17.63	17.54	17.43	
10	64QAM	50	0	17.57	17.57	17.38	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	20.31	20.39	20.28	21
5	QPSK	1	12	20.43	20.43	20.32	
5	QPSK	1	24	20.37	20.38	20.20	
5	QPSK	12	0	19.44	19.52	19.23	20
5	QPSK	12	7	19.42	19.50	19.29	
5	QPSK	12	13	19.48	19.37	19.34	
5	QPSK	25	0	19.46	19.49	19.23	
5	16QAM	1	0	19.69	19.78	19.55	20
5	16QAM	1	12	19.71	19.74	19.70	
5	16QAM	1	24	19.75	19.68	19.61	
5	16QAM	12	0	18.54	18.51	18.33	19
5	16QAM	12	7	18.62	18.54	18.44	
5	16QAM	12	13	18.68	18.47	18.38	
5	16QAM	25	0	18.53	18.57	18.33	
5	64QAM	1	0	18.56	18.59	18.46	19
5	64QAM	1	12	18.67	18.70	18.52	
5	64QAM	1	24	18.71	18.54	18.53	
5	64QAM	12	0	17.57	17.58	17.34	18
5	64QAM	12	7	17.55	17.57	17.47	
5	64QAM	12	13	17.59	17.44	17.36	
5	64QAM	25	0	17.57	17.49	17.36	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	20.29	20.48	20.22	21
3	QPSK	1	8	20.33	20.39	20.35	
3	QPSK	1	14	20.36	20.37	20.25	

3	QPSK	8	0	19.52	19.56	19.22	20
3	QPSK	8	4	19.39	19.43	19.37	
3	QPSK	8	7	19.53	19.43	19.29	
3	QPSK	15	0	19.37	19.47	19.27	
3	16QAM	1	0	19.68	19.76	19.59	20
3	16QAM	1	8	19.73	19.79	19.71	
3	16QAM	1	14	19.73	19.65	19.62	
3	16QAM	8	0	18.48	18.50	18.32	19
3	16QAM	8	4	18.56	18.61	18.43	
3	16QAM	8	7	18.62	18.51	18.30	
3	16QAM	15	0	18.58	18.54	18.29	
3	64QAM	1	0	18.55	18.54	18.49	19
3	64QAM	1	8	18.77	18.62	18.47	
3	64QAM	1	14	18.70	18.56	18.53	
3	64QAM	8	0	17.61	17.60	17.38	18
3	64QAM	8	4	17.54	17.56	17.50	
3	64QAM	8	7	17.54	17.50	17.38	
3	64QAM	15	0	17.47	17.57	17.30	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	20.31	20.47	20.18	21
1.4	QPSK	1	3	20.38	20.47	20.26	
1.4	QPSK	1	5	20.33	20.32	20.21	
1.4	QPSK	3	0	19.47	19.51	19.22	
1.4	QPSK	3	1	19.40	19.44	19.28	
1.4	QPSK	3	3	19.46	19.38	19.29	
1.4	QPSK	6	0	19.46	19.45	19.19	20
1.4	16QAM	1	0	19.71	19.69	19.55	20
1.4	16QAM	1	3	19.78	19.75	19.67	
1.4	16QAM	1	5	19.83	19.60	19.60	
1.4	16QAM	3	0	18.52	18.54	18.37	
1.4	16QAM	3	1	18.53	18.53	18.44	
1.4	16QAM	3	3	18.60	18.54	18.36	
1.4	16QAM	6	0	18.56	18.60	18.32	19
1.4	64QAM	1	0	18.56	18.63	18.43	19
1.4	64QAM	1	3	18.76	18.63	18.53	
1.4	64QAM	1	5	18.62	18.55	18.46	
1.4	64QAM	3	0	17.51	17.58	17.36	
1.4	64QAM	3	1	17.57	17.51	17.47	
1.4	64QAM	3	3	17.57	17.44	17.37	
1.4	64QAM	6	0	17.54	17.52	17.37	18

<LTE Band 7_Ant 1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	22.89	22.67	22.64	24

<LTE Band 12_Ant 1>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23060	23095	23130	
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	21.70	21.76	21.70	22
10	QPSK	1	25	21.66	21.73	21.63	
10	QPSK	1	49	21.72	21.60	21.33	
10	QPSK	25	0	20.81	20.75	20.69	21
10	QPSK	25	12	20.81	20.75	20.63	
10	QPSK	25	25	20.78	20.75	20.49	
10	QPSK	50	0	20.77	20.75	20.61	
10	16QAM	1	0	21.15	21.05	21.08	22
10	16QAM	1	25	21.17	21.16	21.01	
10	16QAM	1	49	21.21	21.08	20.75	
10	16QAM	25	0	19.96	19.89	19.84	20
10	16QAM	25	12	19.96	19.89	19.77	
10	16QAM	25	25	19.90	19.87	19.62	
10	16QAM	50	0	19.91	19.88	19.73	
10	64QAM	1	0	20.07	19.99	20.00	21
10	64QAM	1	25	20.10	20.11	19.97	
10	64QAM	1	49	20.05	19.93	19.66	
10	64QAM	25	0	18.96	18.88	18.84	19
10	64QAM	25	12	18.97	18.92	18.76	
10	64QAM	25	25	18.89	18.86	18.64	
10	64QAM	50	0	18.94	18.88	18.75	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	21.67	21.66	21.65	22
5	QPSK	1	12	21.64	21.72	21.56	
5	QPSK	1	24	21.64	21.55	21.27	
5	QPSK	12	0	20.74	20.71	20.65	21
5	QPSK	12	7	20.71	20.70	20.55	
5	QPSK	12	13	20.74	20.75	20.40	
5	QPSK	25	0	20.70	20.71	20.59	
5	16QAM	1	0	21.09	21.04	21.03	21
5	16QAM	1	12	21.08	21.06	20.91	
5	16QAM	1	24	21.17	21.08	20.70	
5	16QAM	12	0	19.90	19.89	19.75	20
5	16QAM	12	7	19.90	19.79	19.75	
5	16QAM	12	13	19.90	19.77	19.54	
5	16QAM	25	0	19.83	19.78	19.64	
5	64QAM	1	0	20.05	19.89	19.96	20
5	64QAM	1	12	20.01	20.02	19.95	
5	64QAM	1	24	19.98	19.90	19.56	
5	64QAM	12	0	18.93	18.83	18.77	19
5	64QAM	12	7	18.90	18.84	18.67	
5	64QAM	12	13	18.79	18.83	18.60	
5	64QAM	25	0	18.93	18.78	18.66	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	21.68	21.67	21.66	22
3	QPSK	1	8	21.64	21.69	21.60	
3	QPSK	1	14	21.71	21.60	21.23	
3	QPSK	8	0	20.79	20.66	20.62	21

3	QPSK	8	4	20.80	20.69	20.53	
3	QPSK	8	7	20.72	20.71	20.39	
3	QPSK	15	0	20.76	20.74	20.55	
3	16QAM	1	0	21.10	20.96	21.05	
3	16QAM	1	8	21.10	21.10	20.94	21
3	16QAM	1	14	21.19	20.98	20.75	
3	16QAM	8	0	19.87	19.83	19.74	
3	16QAM	8	4	19.89	19.80	19.74	
3	16QAM	8	7	19.86	19.80	19.59	20
3	16QAM	15	0	19.82	19.86	19.67	
3	64QAM	1	0	20.06	19.92	19.95	
3	64QAM	1	8	20.05	20.02	19.94	20
3	64QAM	1	14	20.02	19.87	19.64	
3	64QAM	8	0	18.90	18.82	18.83	
3	64QAM	8	4	18.97	18.91	18.72	
3	64QAM	8	7	18.84	18.80	18.55	19
3	64QAM	15	0	18.86	18.81	18.65	
Channel				23017	23095	23173	Tune-up limit (dBm)
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	21.62	21.75	21.61	
1.4	QPSK	1	3	21.62	21.67	21.58	22
1.4	QPSK	1	5	21.72	21.56	21.29	
1.4	QPSK	3	0	20.73	20.71	20.60	
1.4	QPSK	3	1	20.75	20.75	20.54	
1.4	QPSK	3	3	20.71	20.72	20.48	21
1.4	QPSK	6	0	20.76	20.69	20.55	
1.4	16QAM	1	0	21.10	20.97	21.08	
1.4	16QAM	1	3	21.12	21.10	21.00	21
1.4	16QAM	1	5	21.14	20.98	20.75	
1.4	16QAM	3	0	19.96	19.86	19.79	
1.4	16QAM	3	1	19.96	19.85	19.77	
1.4	16QAM	3	3	19.90	19.84	19.54	20
1.4	16QAM	6	0	19.82	19.78	19.67	
1.4	64QAM	1	0	20.00	19.92	19.94	
1.4	64QAM	1	3	20.03	20.02	19.90	21
1.4	64QAM	1	5	19.99	19.93	19.65	
1.4	64QAM	3	0	18.86	18.88	18.83	
1.4	64QAM	3	1	18.97	18.89	18.74	
1.4	64QAM	3	3	18.84	18.78	18.64	19
1.4	64QAM	6	0	18.92	18.88	18.72	

<LTE Band 13_Ant 1>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23230			
Frequency (MHz)				782			
10	QPSK	1	0	20.50			20.5
10	QPSK	1	25	20.30			
10	QPSK	1	49	20.20			
10	QPSK	25	0	19.33			19.5
10	QPSK	25	12	19.31			
10	QPSK	25	25	19.30			
10	QPSK	50	0	19.29			
10	16QAM	1	0	19.71			20
10	16QAM	1	25	19.68			
10	16QAM	1	49	19.56			
10	16QAM	25	0	18.42			18.5
10	16QAM	25	12	18.43			
10	16QAM	25	25	18.41			
10	16QAM	50	0	18.41			
10	64QAM	1	0	18.64			19
10	64QAM	1	25	18.57			
10	64QAM	1	49	18.51			
10	64QAM	25	0	17.43			17.5
10	64QAM	25	12	17.46			
10	64QAM	25	25	17.35			
10	64QAM	50	0	17.43			
Channel				23205	23230	23255	Tune-up limit (dBm)
Frequency (MHz)				779.5	782	784.5	
5	QPSK	1	0	20.25	20.27	20.18	20.5
5	QPSK	1	12	20.16	20.26	20.17	
5	QPSK	1	24	20.17	20.19	20.13	
5	QPSK	12	0	19.14	19.24	19.15	19.5
5	QPSK	12	7	19.21	19.22	19.18	
5	QPSK	12	13	19.27	19.30	19.26	
5	QPSK	25	0	19.16	19.21	19.17	
5	16QAM	1	0	19.68	19.69	19.64	19.5
5	16QAM	1	12	19.59	19.66	19.62	
5	16QAM	1	24	19.39	19.48	19.43	
5	16QAM	12	0	18.30	18.38	18.31	18.5
5	16QAM	12	7	18.32	18.39	18.33	
5	16QAM	12	13	18.26	18.33	18.33	
5	16QAM	25	0	18.41	18.41	18.39	
5	64QAM	1	0	18.55	18.62	18.55	18.5
5	64QAM	1	12	18.51	18.57	18.47	
5	64QAM	1	24	18.31	18.41	18.34	
5	64QAM	12	0	17.32	17.38	17.37	17.5
5	64QAM	12	7	17.40	17.43	17.42	
5	64QAM	12	13	17.30	17.32	17.28	
5	64QAM	25	0	17.34	17.34	17.28	

<LTE Band 14_Ant 1>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23330			
Frequency (MHz)				793			
10	QPSK	1	0	20.49			20.5
10	QPSK	1	25	20.25			
10	QPSK	1	49	20.23			
10	QPSK	25	0	19.34			19.5
10	QPSK	25	12	19.36			
10	QPSK	25	25	19.26			
10	QPSK	50	0	19.34			
10	16QAM	1	0	19.69			20
10	16QAM	1	25	19.64			
10	16QAM	1	49	19.64			
10	16QAM	25	0	18.45			18.5
10	16QAM	25	12	18.44			
10	16QAM	25	25	18.36			
10	16QAM	50	0	18.45			
10	64QAM	1	0	18.59			19
10	64QAM	1	25	18.52			
10	64QAM	1	49	18.51			
10	64QAM	25	0	17.46			17.5
10	64QAM	25	12	17.42			
10	64QAM	25	25	17.40			
10	64QAM	50	0	17.42			
Channel				23305	23330	23355	Tune-up limit (dBm)
Frequency (MHz)				790.5	793	795.5	
5	QPSK	1	0	20.25	20.27	20.28	20.5
5	QPSK	1	12	20.22	20.20	20.22	
5	QPSK	1	24	20.13	20.23	20.14	
5	QPSK	12	0	19.25	19.27	19.24	19.5
5	QPSK	12	7	19.29	19.28	19.32	
5	QPSK	12	13	19.19	19.25	19.19	
5	QPSK	25	0	19.25	19.24	19.27	
5	16QAM	1	0	19.69	19.66	19.63	19.5
5	16QAM	1	12	19.60	19.63	19.61	
5	16QAM	1	24	19.60	19.56	19.60	
5	16QAM	12	0	18.45	18.40	18.41	18.5
5	16QAM	12	7	18.37	18.44	18.42	
5	16QAM	12	13	18.34	18.31	18.32	
5	16QAM	25	0	18.40	18.39	18.40	
5	64QAM	1	0	18.57	18.59	18.49	18.5
5	64QAM	1	12	18.48	18.49	18.47	
5	64QAM	1	24	18.47	18.42	18.43	
5	64QAM	12	0	17.44	17.42	17.45	17.5
5	64QAM	12	7	17.39	17.34	17.36	
5	64QAM	12	13	17.32	17.34	17.40	
5	64QAM	25	0	17.36	17.40	17.41	

<LTE Band 25_Ant 1>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26140	26340	26590	
Frequency (MHz)				1860	1880	1905	
20	QPSK	1	0	22.42	22.26	22.27	24

<LTE Band 26_Ant 1>							
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				26765	26865	26965	
Frequency (MHz)				821.5	831.5	841.5	
15	QPSK	1	0	20.96	21.04	20.97	21.5
15	QPSK	1	37	20.95	20.93	21.03	
15	QPSK	1	74	20.97	20.97	20.93	
15	QPSK	36	0	20.07	20.05	19.98	20.5
15	QPSK	36	20	20.03	20.02	19.98	
15	QPSK	36	39	20.07	19.96	19.95	
15	QPSK	75	0	20.02	19.98	19.92	
15	16QAM	1	0	20.24	20.32	20.29	20.5
15	16QAM	1	37	20.33	20.26	20.37	
15	16QAM	1	74	20.35	20.30	20.40	
15	16QAM	36	0	19.10	19.10	19.09	19.5
15	16QAM	36	20	19.12	19.10	19.05	
15	16QAM	36	39	19.16	19.01	19.05	
15	16QAM	75	0	19.10	19.09	19.03	
15	64QAM	1	0	19.20	19.18	19.26	19.5
15	64QAM	1	37	19.20	19.19	19.25	
15	64QAM	1	74	19.22	19.21	19.31	
15	64QAM	36	0	18.18	18.12	18.09	18.5
15	64QAM	36	20	18.13	18.11	18.05	
15	64QAM	36	39	18.17	18.05	18.10	
15	64QAM	75	0	18.10	18.04	18.06	
Channel				26740	26865	26990	Tune-up limit (dBm)
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	20.86	20.97	20.91	21.5
10	QPSK	1	25	20.95	20.86	20.97	
10	QPSK	1	49	20.97	20.93	20.92	
10	QPSK	25	0	20.07	20.02	19.91	20.5
10	QPSK	25	12	20.01	19.94	19.92	
10	QPSK	25	25	19.99	19.95	19.91	
10	QPSK	50	0	19.98	19.97	19.89	
10	16QAM	1	0	20.19	20.29	20.26	20.5
10	16QAM	1	25	20.29	20.16	20.37	
10	16QAM	1	49	20.34	20.20	20.38	
10	16QAM	25	0	19.02	19.02	19.06	19.5
10	16QAM	25	12	19.09	19.10	19.04	
10	16QAM	25	25	19.08	18.97	19.02	
10	16QAM	50	0	19.01	19.03	18.94	
10	64QAM	1	0	19.11	19.13	19.23	19.5
10	64QAM	1	25	19.12	19.15	19.16	
10	64QAM	1	49	19.18	19.20	19.28	
10	64QAM	25	0	18.14	18.12	18.02	18.5
10	64QAM	25	12	18.03	18.05	17.95	
10	64QAM	25	25	18.17	17.97	18.04	

10	64QAM	50	0	18.08	17.97	18.05	
Channel				26715	26865	27015	Tune-up limit (dBm)
Frequency (MHz)				816.5	831.5	846.5	
5	QPSK	1	0	20.91	20.99	20.95	21.5
5	QPSK	1	12	20.93	20.86	20.98	
5	QPSK	1	24	20.90	20.97	20.86	
5	QPSK	12	0	20.02	20.05	19.97	20.5
5	QPSK	12	7	19.97	19.94	19.98	
5	QPSK	12	13	19.98	19.89	19.86	
5	QPSK	25	0	19.96	19.94	19.92	
5	16QAM	1	0	20.16	20.24	20.19	20.5
5	16QAM	1	12	20.24	20.19	20.29	
5	16QAM	1	24	20.35	20.28	20.31	
5	16QAM	12	0	19.00	19.06	19.06	19.5
5	16QAM	12	7	19.07	19.10	19.01	
5	16QAM	12	13	19.06	18.99	19.01	
5	16QAM	25	0	19.03	19.09	18.93	
5	64QAM	1	0	19.15	19.12	19.25	19.5
5	64QAM	1	12	19.14	19.17	19.16	
5	64QAM	1	24	19.16	19.14	19.22	
5	64QAM	12	0	18.10	18.09	17.99	18.5
5	64QAM	12	7	18.08	18.01	17.98	
5	64QAM	12	13	18.08	18.04	18.09	
5	64QAM	25	0	18.03	18.04	17.96	
Channel				26705	26865	27025	Tune-up limit (dBm)
Frequency (MHz)				815.5	831.5	847.5	
3	QPSK	1	0	20.90	21.02	20.95	21.5
3	QPSK	1	8	20.89	20.90	20.96	
3	QPSK	1	14	20.95	20.97	20.87	
3	QPSK	8	0	20.00	19.95	19.88	20.5
3	QPSK	8	4	20.03	20.00	19.96	
3	QPSK	8	7	19.97	19.87	19.85	
3	QPSK	15	0	19.98	19.94	19.89	
3	16QAM	1	0	20.16	20.27	20.27	20.5
3	16QAM	1	8	20.33	20.18	20.32	
3	16QAM	1	14	20.29	20.21	20.40	
3	16QAM	8	0	19.10	19.04	19.07	19.5
3	16QAM	8	4	19.05	19.07	19.01	
3	16QAM	8	7	19.07	19.01	19.03	
3	16QAM	15	0	19.07	19.07	19.03	
3	64QAM	1	0	19.12	19.12	19.25	19.5
3	64QAM	1	8	19.11	19.11	19.25	
3	64QAM	1	14	19.13	19.14	19.25	
3	64QAM	8	0	18.14	18.10	18.02	18.5
3	64QAM	8	4	18.13	18.04	18.03	
3	64QAM	8	7	18.12	17.95	18.06	
3	64QAM	15	0	18.05	17.97	17.96	
Channel				26697	26865	27033	Tune-up limit (dBm)
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	20.92	20.99	20.96	21.5
1.4	QPSK	1	3	20.93	20.87	20.97	
1.4	QPSK	1	5	20.93	20.92	20.88	
1.4	QPSK	3	0	20.01	19.95	19.93	
1.4	QPSK	3	1	19.93	19.95	19.98	
1.4	QPSK	3	3	20.00	19.96	19.87	
1.4	QPSK	6	0	20.01	19.90	19.88	20.5

1.4	16QAM	1	0	20.15	20.24	20.28	20.5
1.4	16QAM	1	3	20.26	20.22	20.32	
1.4	16QAM	1	5	20.26	20.25	20.35	
1.4	16QAM	3	0	19.06	19.08	19.00	
1.4	16QAM	3	1	19.03	19.00	19.02	
1.4	16QAM	3	3	19.13	18.95	19.01	
1.4	16QAM	6	0	19.03	19.01	18.94	19.5
1.4	64QAM	1	0	19.19	19.12	19.23	19.5
1.4	64QAM	1	3	19.18	19.11	19.25	
1.4	64QAM	1	5	19.15	19.21	19.25	
1.4	64QAM	3	0	18.18	18.07	18.09	
1.4	64QAM	3	1	18.08	18.04	18.05	
1.4	64QAM	3	3	18.08	18.03	18.10	
1.4	64QAM	6	0	18.07	17.95	18.05	18.5

<LTE Band 30_Ant 1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				27710			
Frequency (MHz)				2310			
10	QPSK	1	0	22.71			24

<LTE Band 66_Ant 1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	22.97	22.76	22.49	24

<LTE Band 38_Ant 1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				37850	38000	38150	
Frequency (MHz)				2580	2595	2610	
20	QPSK	1	0	22.44	22.59	22.43	24

<LTE Band 41_Ant 1>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	22.44	22.51	22.52	22.56	22.50	23

<LTE Band 42_Ant 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				42190	42590	42990	
Frequency (MHz)				3460	3500	3540	
20	QPSK	1	0	20.91	21.14	21.37	21.5

<LTE Band 48_Ant 2>									
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	for EMC Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	55990	56150	56640	
Frequency (MHz)				3560	3609	3625	3641	3690	
20	QPSK	1	0	20.26	20.26	20.23	20.32	20.30	21.5

12. WiFi/Bluetooth Output Power (Unit: dBm)

<2.4GHz WLAN>						
2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11b 1Mbps	6	2437	17.97	18.00	99.12
<5.3GHz WLAN>						
5.3GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11ac-VHT40 MCS0	54	5270	16.80	17.00	96.45
		62	5310	13.90	14.00	
<5.5GHz WLAN>						
5.5GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11n-HT40 MCS0	102	5510	16.60	17.00	96.46
		110	5550	16.85	17.00	
		126	5630	17.10	17.50	
		134	5670	17.18	17.50	
<5.8GHz WLAN>						
5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11ac-VHT40 MCS0	151	5755	17.00	18.00	96.00
		159	5795	16.60	18.00	
	802.11ac-VHT80 MCS0	155	5775	16.70	18.00	93.00
<Bluetooth>						
Bluetooth	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	BR 1Mbps	0	2402	6.72	7.00	76.80

13. Exposure Position Consideration

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant. 1	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN Ant. 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant. 1	Yes	Yes	No	Yes	Yes	Yes
WWAN Ant. 2	Yes	Yes	No	Yes	Yes	Yes
BT&WLAN	Yes	Yes	Yes	No	Yes	Yes

General Note:

1. Detail antenna location refers to Appendix D.
2. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, 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. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.

14.1 Next to mouth SAR

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	LTE Band 7_Ant 1	20M	QPSK	1	0	Front	10mm	21100	2535	22.67	24.00	1.358			-0.07	0.166	0.225
02	LTE Band 12_Ant 1	10M	QPSK	1	0	Front	10mm	23095	707.5	21.76	22.00	1.057			-0.14	0.080	0.085
	LTE Band 12_Ant 1	10M	QPSK	25	0	Front	10mm	23095	707.5	20.75	21.00	1.059			0.03	0.063	0.067
03	LTE Band 13_Ant 1	10M	QPSK	1	0	Front	10mm	23230	782	20.50	20.50	1.000			-0.05	0.084	0.084
	LTE Band 13_Ant 1	10M	QPSK	25	0	Front	10mm	23230	782	19.33	19.50	1.040			-0.15	0.064	0.067
04	LTE Band 14_Ant 1	10M	QPSK	1	0	Front	10mm	23330	793	20.49	20.50	1.002			-0.02	0.087	0.087
	LTE Band 14_Ant 1	10M	QPSK	25	12	Front	10mm	23330	793	19.36	19.50	1.033			-0.15	0.067	0.069
05	LTE Band 25_Ant 1	20M	QPSK	1	0	Front	10mm	26140	1860	22.42	24.00	1.439			-0.12	0.195	0.281
06	LTE Band 26_Ant 1	15M	QPSK	1	0	Front	10mm	26865	831.5	21.04	21.50	1.112			-0.05	0.087	0.097
	LTE Band 26_Ant 1	15M	QPSK	36	0	Front	10mm	26865	831.5	20.05	20.50	1.109			0.11	0.069	0.077
07	LTE Band 30_Ant 1	10M	QPSK	1	0	Front	10mm	27710	2310	22.71	24.00	1.346			-0.03	0.070	0.094
08	LTE Band 66_Ant 1	20M	QPSK	1	0	Front	10mm	132072	1720	22.97	24.00	1.268			0.02	0.261	0.331
	LTE Band 66_Ant 1	20M	QPSK	1	0	Front	10mm	132322	1745	22.76	24.00	1.330			0.08	0.224	0.298
	LTE Band 66_Ant 1	20M	QPSK	1	0	Front	10mm	132572	1770	22.49	24.00	1.416			0.01	0.179	0.253
09	LTE Band 38_Ant 1	20M	QPSK	1	0	Front	10mm	38000	2595	22.59	24.00	1.384	62.9	1.006	0.01	0.278	0.387
10	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	41055	2636.5	22.56	23.00	1.107	62.9	1.006	0.08	0.295	0.328
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	39750	2506	22.44	23.00	1.138	62.9	1.006	0.12	0.062	0.071
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	40185	2549.5	22.51	23.00	1.119	62.9	1.006	0.08	0.121	0.136
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	40620	2593	22.52	23.00	1.117	62.9	1.006	-0.17	0.239	0.269
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	41490	2680	22.50	23.00	1.122	62.9	1.006	-0.03	0.220	0.248
11	LTE Band 42_Ant 2	20M	QPSK	1	0	Front	10mm	42990	3540	21.37	21.50	1.030	62.9	1.006	-0.02	0.213	0.221
	LTE Band 42_Ant 2	20M	QPSK	1	0	Front	10mm	42190	3460	20.91	21.50	1.146	62.9	1.006	-0.18	0.191	0.220
	LTE Band 42_Ant 2	20M	QPSK	1	0	Front	10mm	42590	3500	21.14	21.50	1.086	62.9	1.006	0.1	0.199	0.217
12	LTE Band 48_Ant 2	20M	QPSK	1	0	Front	10mm	56150	3641	20.32	21.50	1.312	62.9	1.006	-0.05	0.120	0.158
	LTE Band 48_Ant 2	20M	QPSK	1	0	Front	10mm	55340	3560	20.26	21.50	1.330	62.9	1.006	0.02	0.108	0.145
	LTE Band 48_Ant 2	20M	QPSK	1	0	Front	10mm	55830	3609	20.26	21.50	1.330	62.9	1.006	0.08	0.113	0.151
	LTE Band 48_Ant 2	20M	QPSK	1	0	Front	10mm	56640	3690	20.30	21.50	1.318	62.9	1.006	-0.08	0.117	0.155

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
13	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	6	2437	17.97	18.00	1.007	99.12	1.009	0.07	0.068	0.069
14	WLAN5GHz	802.11ac-VHT40 MCS0	Front	10mm	54	5270	16.80	17.00	1.047	96.45	1.037	-0.17	0.119	0.129
	WLAN5GHz	802.11ac-VHT40 MCS0	Front	10mm	62	5310	13.90	14.00	1.023	96.45	1.037	0.08	0.057	0.060
15	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	134	5670	17.18	17.50	1.076	96.46	1.037	0.09	0.216	0.241
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	102	5510	16.60	17.00	1.096	96.46	1.037	0.01	0.156	0.177
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	110	5550	16.85	17.00	1.035	96.46	1.037	0.03	0.206	0.221
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	126	5630	17.10	17.50	1.096	96.46	1.037	-0.08	0.210	0.239
16	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	155	5775	16.70	18.00	1.349	93	1.075	0.18	0.140	0.203
	WLAN5GHz	802.11ac-VHT40 MCS0	Front	10mm	151	5755	17.00	18.00	1.259	96	1.042	-0.08	0.149	0.195

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
17	Bluetooth	1Mbps	Front	10mm	0	2402	6.72	7.00	1.067	76.8	1.085	0	0.001	0.001

14.2 Hotspot SAR

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
18	LTE Band 7_Ant 1	20M	QPSK	1	0	Front	10mm	21100	2535	22.67	24.00	1.358			-0.07	0.166	0.225
	LTE Band 12_Ant 1	10M	QPSK	1	0	Front	10mm	23095	707.5	21.76	22.00	1.057			0.18	0.105	0.111
	LTE Band 12_Ant 1	10M	QPSK	25	0	Front	10mm	23095	707.5	20.75	21.00	1.059			-0.1	0.083	0.088
19	LTE Band 12_Ant 1	10M	QPSK	1	0	Back	10mm	23095	707.5	21.76	22.00	1.057			-0.02	0.369	0.390
	LTE Band 12_Ant 1	10M	QPSK	25	0	Back	10mm	23095	707.5	20.75	21.00	1.059			0.01	0.293	0.310
	LTE Band 12_Ant 1	10M	QPSK	1	0	Left Side	10mm	23095	707.5	21.76	22.00	1.057			-0.1	0.133	0.141
	LTE Band 12_Ant 1	10M	QPSK	25	0	Left Side	10mm	23095	707.5	20.75	21.00	1.059			0.19	0.106	0.112
	LTE Band 12_Ant 1	10M	QPSK	1	0	Right Side	10mm	23095	707.5	21.76	22.00	1.057			0.16	0.289	0.305
	LTE Band 12_Ant 1	10M	QPSK	25	0	Right Side	10mm	23095	707.5	20.75	21.00	1.059			-0.15	0.229	0.243
	LTE Band 12_Ant 1	10M	QPSK	1	0	Top Side	10mm	23095	707.5	21.76	22.00	1.057			0.07	0.001	0.001
	LTE Band 12_Ant 1	10M	QPSK	25	0	Top Side	10mm	23095	707.5	20.75	21.00	1.059			0.07	0.001	0.001
	LTE Band 12_Ant 1	10M	QPSK	1	0	Bottom Side	10mm	23095	707.5	21.76	22.00	1.057			0.18	0.074	0.078
	LTE Band 12_Ant 1	10M	QPSK	25	0	Bottom Side	10mm	23095	707.5	20.75	21.00	1.059			-0.18	0.059	0.062
	LTE Band 13_Ant 1	10M	QPSK	1	0	Front	10mm	23230	782	20.50	20.50	1.000			-0.17	0.117	0.117
	LTE Band 13_Ant 1	10M	QPSK	25	0	Front	10mm	23230	782	19.33	19.50	1.040			0.06	0.089	0.093
20	LTE Band 13_Ant 1	10M	QPSK	1	0	Back	10mm	23230	782	20.50	20.50	1.000			-0.05	0.342	0.342
	LTE Band 13_Ant 1	10M	QPSK	25	0	Back	10mm	23230	782	19.33	19.50	1.040			-0.09	0.262	0.272
	LTE Band 13_Ant 1	10M	QPSK	1	0	Left Side	10mm	23230	782	20.50	20.50	1.000			-0.01	0.101	0.101
	LTE Band 13_Ant 1	10M	QPSK	25	0	Left Side	10mm	23230	782	19.33	19.50	1.040			0.13	0.077	0.080
	LTE Band 13_Ant 1	10M	QPSK	1	0	Right Side	10mm	23230	782	20.50	20.50	1.000			0.04	0.324	0.324
	LTE Band 13_Ant 1	10M	QPSK	25	0	Right Side	10mm	23230	782	19.33	19.50	1.040			-0.08	0.247	0.257
	LTE Band 13_Ant 1	10M	QPSK	1	0	Top Side	10mm	23230	782	20.50	20.50	1.000			-0.08	0.001	0.001
	LTE Band 13_Ant 1	10M	QPSK	25	0	Top Side	10mm	23230	782	19.33	19.50	1.040			0.12	0.001	0.001
	LTE Band 13_Ant 1	10M	QPSK	1	0	Bottom Side	10mm	23230	782	20.50	20.50	1.000			0.05	0.082	0.082
	LTE Band 13_Ant 1	10M	QPSK	25	0	Bottom Side	10mm	23230	782	19.33	19.50	1.040			0.03	0.062	0.064
	LTE Band 14_Ant 1	10M	QPSK	1	0	Front	10mm	23330	793	20.49	20.50	1.002			-0.03	0.120	0.120
	LTE Band 14_Ant 1	10M	QPSK	25	12	Front	10mm	23330	793	19.36	19.50	1.033			0.14	0.093	0.096
21	LTE Band 14_Ant 1	10M	QPSK	1	0	Back	10mm	23330	793	20.49	20.50	1.002			-0.01	0.343	0.344
	LTE Band 14_Ant 1	10M	QPSK	25	12	Back	10mm	23330	793	19.36	19.50	1.033			-0.17	0.264	0.273
	LTE Band 14_Ant 1	10M	QPSK	1	0	Left Side	10mm	23330	793	20.49	20.50	1.002			0.11	0.099	0.099
	LTE Band 14_Ant 1	10M	QPSK	25	12	Left Side	10mm	23330	793	19.36	19.50	1.033			-0.05	0.076	0.078
	LTE Band 14_Ant 1	10M	QPSK	1	0	Right Side	10mm	23330	793	20.49	20.50	1.002			0.14	0.335	0.336
	LTE Band 14_Ant 1	10M	QPSK	25	12	Right Side	10mm	23330	793	19.36	19.50	1.033			0.17	0.259	0.267
	LTE Band 14_Ant 1	10M	QPSK	1	0	Top Side	10mm	23330	793	20.49	20.50	1.002			-0.05	0.001	0.001
	LTE Band 14_Ant 1	10M	QPSK	25	12	Top Side	10mm	23330	793	19.36	19.50	1.033			0.01	0.001	0.001
	LTE Band 14_Ant 1	10M	QPSK	1	0	Bottom Side	10mm	23330	793	20.49	20.50	1.002			0.18	0.078	0.078
	LTE Band 14_Ant 1	10M	QPSK	25	12	Bottom Side	10mm	23330	793	19.36	19.50	1.033			0.1	0.060	0.062
22	LTE Band 25_Ant 1	20M	QPSK	1	0	Back	10mm	26140	1860	22.42	24.00	1.439			-0.04	0.364	0.524
	LTE Band 26_Ant 1	15M	QPSK	1	0	Front	10mm	26865	831.5	21.04	21.50	1.112			0.08	0.121	0.135
	LTE Band 26_Ant 1	15M	QPSK	36	0	Front	10mm	26865	831.5	20.05	20.50	1.109			0.1	0.096	0.106
23	LTE Band 26_Ant 1	15M	QPSK	1	0	Back	10mm	26865	831.5	21.04	21.50	1.112			-0.05	0.334	0.371
	LTE Band 26_Ant 1	15M	QPSK	36	0	Back	10mm	26865	831.5	20.05	20.50	1.109			-0.18	0.266	0.295
	LTE Band 26_Ant 1	15M	QPSK	1	0	Left Side	10mm	26865	831.5	21.04	21.50	1.112			0.03	0.142	0.158
	LTE Band 26_Ant 1	15M	QPSK	36	0	Left Side	10mm	26865	831.5	20.05	20.50	1.109			0.12	0.113	0.125
	LTE Band 26_Ant 1	15M	QPSK	1	0	Right Side	10mm	26865	831.5	21.04	21.50	1.112			0.01	0.258	0.287
	LTE Band 26_Ant 1	15M	QPSK	36	0	Right Side	10mm	26865	831.5	20.05	20.50	1.109			0.1	0.206	0.228
	LTE Band 26_Ant 1	15M	QPSK	1	0	Top Side	10mm	26865	831.5	21.04	21.50	1.112			-0.08	0.001	0.001
	LTE Band 26_Ant 1	15M	QPSK	36	0	Top Side	10mm	26865	831.5	20.05	20.50	1.109			0.08	0.001	0.001
	LTE Band 26_Ant 1	15M	QPSK	1	0	Bottom Side	10mm	26865	831.5	21.04	21.50	1.112			-0.08	0.084	0.093
	LTE Band 26_Ant 1	15M	QPSK	36	0	Bottom Side	10mm	26865	831.5	20.05	20.50	1.109			-0.17	0.067	0.074

24	LTE Band 30_Ant 1	10M	QPSK	1	0	Bottom Side	10mm	27710	2310	22.71	24.00	1.346			-0.02	0.435	0.585
25	LTE Band 66_Ant 1	20M	QPSK	1	0	Back	10mm	132072	1720	22.97	24.00	1.268			-0.03	0.488	0.619
	LTE Band 66_Ant 1	20M	QPSK	1	0	Back	10mm	132322	1745	22.76	24.00	1.330			-0.08	0.441	0.587
	LTE Band 66_Ant 1	20M	QPSK	1	0	Back	10mm	132572	1770	22.49	24.00	1.416			0.1	0.393	0.556
26	LTE Band 38_Ant 1	20M	QPSK	1	0	Right Side	10mm	38000	2595	22.59	24.00	1.384	62.9	1.006	-0.1	0.098	0.136
27	LTE Band 41_Ant 1	20M	QPSK	1	0	Bottom Side	10mm	41055	2636.5	22.56	23.00	1.107	62.9	1.006	-0.01	0.642	0.715
	LTE Band 41_Ant 1	20M	QPSK	1	0	Bottom Side	10mm	39750	2506	22.44	23.00	1.138	62.9	1.006	0.08	0.176	0.201
	LTE Band 41_Ant 1	20M	QPSK	1	0	Bottom Side	10mm	40185	2549.5	22.51	23.00	1.119	62.9	1.006	0.01	0.319	0.359
	LTE Band 41_Ant 1	20M	QPSK	1	0	Bottom Side	10mm	40620	2593	22.52	23.00	1.117	62.9	1.006	0.03	0.508	0.571
	LTE Band 41_Ant 1	20M	QPSK	1	0	Bottom Side	10mm	41490	2680	22.50	23.00	1.122	62.9	1.006	-0.08	0.550	0.621
28	LTE Band 42_Ant 2	20M	QPSK	1	0	Back	10mm	42990	3540	21.37	21.50	1.030	62.9	1.006	0.03	0.259	0.268
29	LTE Band 48_Ant 2	20M	QPSK	1	0	Back	10mm	56150	3641	20.32	21.50	1.312	62.9	1.006	0.02	0.199	0.263

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
30	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	6	2437	17.97	18.00	1.007	99.12	1.009	0.14	0.177	0.180
31	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	155	5775	16.70	18.00	1.349	93	1.075	-0.17	0.270	0.392
	WLAN5GHz	802.11ac-VHT40 MCS0	Back	10mm	151	5755	17.00	18.00	1.259	96	1.042	0.1	0.288	0.378

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
32	Bluetooth	1Mbps	Back	10mm	0	2402	6.72	7.00	1.067	76.8	1.085	0.15	0.001	0.001

14.3 Body Worn Accessory SAR

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
33	LTE Band 7_Ant 1	20M	QPSK	1	0	Front	10mm	21100	2535	22.67	24.00	1.358			-0.07	0.166	0.225
	LTE Band 12_Ant 1	10M	QPSK	1	0	Front	10mm	23095	707.5	21.76	22.00	1.057			0.18	0.105	0.111
	LTE Band 12_Ant 1	10M	QPSK	25	0	Front	10mm	23095	707.5	20.75	21.00	1.059			-0.1	0.083	0.088
34	LTE Band 12_Ant 1	10M	QPSK	1	0	Back	10mm	23095	707.5	21.76	22.00	1.057			-0.02	0.369	0.390
	LTE Band 12_Ant 1	10M	QPSK	25	0	Back	10mm	23095	707.5	20.75	21.00	1.059			0.01	0.293	0.310
	LTE Band 13_Ant 1	10M	QPSK	1	0	Front	10mm	23230	782	20.50	20.50	1.000			-0.17	0.117	0.117
	LTE Band 13_Ant 1	10M	QPSK	25	0	Front	10mm	23230	782	19.33	19.50	1.040			0.06	0.089	0.093
35	LTE Band 13_Ant 1	10M	QPSK	1	0	Back	10mm	23230	782	20.50	20.50	1.000			-0.05	0.342	0.342
	LTE Band 13_Ant 1	10M	QPSK	25	0	Back	10mm	23230	782	19.33	19.50	1.040			-0.09	0.262	0.272
	LTE Band 14_Ant 1	10M	QPSK	1	0	Front	10mm	23330	793	20.49	20.50	1.002			-0.03	0.120	0.120
	LTE Band 14_Ant 1	10M	QPSK	25	12	Front	10mm	23330	793	19.36	19.50	1.033			0.14	0.093	0.096
36	LTE Band 14_Ant 1	10M	QPSK	1	0	Back	10mm	23330	793	20.49	20.50	1.002			-0.01	0.343	0.344
	LTE Band 14_Ant 1	10M	QPSK	25	12	Back	10mm	23330	793	19.36	19.50	1.033			-0.17	0.264	0.273
37	LTE Band 25_Ant 1	20M	QPSK	1	0	Back	10mm	26140	1860	22.42	24.00	1.439			-0.04	0.364	0.524
	LTE Band 26_Ant 1	15M	QPSK	1	0	Front	10mm	26865	831.5	21.04	21.50	1.112			0.08	0.121	0.135
	LTE Band 26_Ant 1	15M	QPSK	36	0	Front	10mm	26865	831.5	20.05	20.50	1.109			0.1	0.096	0.106
38	LTE Band 26_Ant 1	15M	QPSK	1	0	Back	10mm	26865	831.5	21.04	21.50	1.112			-0.05	0.334	0.371
	LTE Band 26_Ant 1	15M	QPSK	36	0	Back	10mm	26865	831.5	20.05	20.50	1.109			-0.18	0.266	0.295
39	LTE Band 30_Ant 1	10M	QPSK	1	0	Back	10mm	27710	2310	22.71	24.00	1.346			-0.11	0.309	0.416
40	LTE Band 66_Ant 1	20M	QPSK	1	0	Back	10mm	132072	1720	22.97	24.00	1.268			-0.03	0.488	0.619
	LTE Band 66_Ant 1	20M	QPSK	1	0	Back	10mm	132322	1745	22.76	24.00	1.330			-0.08	0.441	0.587
	LTE Band 66_Ant 1	20M	QPSK	1	0	Back	10mm	132572	1770	22.49	24.00	1.416			0.1	0.393	0.556
41	LTE Band 38_Ant 1	20M	QPSK	1	0	Front	10mm	38000	2595	22.59	24.00	1.384	62.9	1.006	0.01	0.278	0.387
42	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	41055	2636.5	22.56	23.00	1.107	62.9	1.006	0.08	0.295	0.328
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	39750	2506	22.44	23.00	1.138	62.9	1.006	0.12	0.062	0.071
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	40185	2549.5	22.51	23.00	1.119	62.9	1.006	0.08	0.121	0.136
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	40620	2593	22.52	23.00	1.117	62.9	1.006	-0.17	0.239	0.269
	LTE Band 41_Ant 1	20M	QPSK	1	0	Front	10mm	41490	2680	22.50	23.00	1.122	62.9	1.006	-0.03	0.220	0.248
43	LTE Band 42_Ant 2	20M	QPSK	1	0	Back	10mm	42990	3540	21.37	21.50	1.030	62.9	1.006	0.03	0.259	0.268
44	LTE Band 48_Ant 2	20M	QPSK	1	0	Back	10mm	56150	3641	20.32	21.50	1.312	62.9	1.006	0.02	0.199	0.263

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
45	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	6	2437	17.97	18.00	1.007	99.12	1.009	0.14	0.177	0.180
46	WLAN5GHz	802.11ac-VHT40 MCS0	Back	10mm	54	5270	16.80	17.00	1.047	96.45	1.037	0.03	0.215	0.233
47	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	134	5670	17.18	17.50	1.076	96.46	1.037	0.17	0.394	0.440
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	102	5510	16.60	17.00	1.096	96.46	1.037	-0.18	0.285	0.324
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	110	5550	16.85	17.00	1.035	96.46	1.037	0.1	0.375	0.403
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	126	5630	17.10	17.50	1.096	96.46	1.037	0.12	0.382	0.434
48	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	155	5775	16.70	18.00	1.349	93	1.075	-0.17	0.270	0.392
	WLAN5GHz	802.11ac-VHT40 MCS0	Back	10mm	151	5755	17.00	18.00	1.259	96	1.042	0.1	0.288	0.378

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
49	Bluetooth	1Mbps	Back	10mm	0	2402	6.72	7.00	1.067	76.8	1.085	0.15	0.001	0.001

14.4 Extremity SAR

<NFC SAR>

Plot No.	Band	Test Position	Gap (mm)	Freq. (MHz)	Power Drift (dB)	Measured 10g SAR (W/kg)
50	NFC	Back	0mm	13.56	0	0.001

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Next to Mouth/ Body / Limbs
1.	WWAN + 2.4GHz WLAN + 5GHz WLAN	Yes
2.	2.4GHz WLAN + Bluetooth	Yes
3.	5GHz WLAN + Bluetooth	Yes

General Note:

1. The Scaled SAR summation is calculated based on the same configuration and test position.
2. Per KDB 447498 D04, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
   v) The SPLSR calculated results please refer to section 15.4.

15.1 Next to mouth Exposure Conditions

Exposure Position	1	2	3	4	1+2+3 Summed 1g SAR (W/kg)	2+4 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)
	Maximum WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth			
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Front	0.706	0.286	0.241	0.001	**1.233**	**0.287**	**0.242**

15.2 Hotspot Exposure Conditions

Exposure Position	1	2	3	4	1+2+3 Summed 1g SAR (W/kg)	2+4 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
	Maximum WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
Front	0.706	0.286	0.203	0.001	**1.195**	**0.287**	**0.204**		
Back	0.905	0.408	0.392	0.001	**1.705**	**0.409**	**0.393**	0.02	Case 1
Left side	0.191	0.208	0.001	0.001	**0.400**	**0.209**	**0.002**		
Right side	0.506	0.150	0.001	0.001	**0.657**	**0.151**	**0.002**		
Top side		0.274	0.053	0.001	**0.327**	**0.275**	**0.054**		
Bottom side	0.715				**0.715**	**0.000**	**0.000**		

15.3 Body-Worn Accessory Exposure Conditions

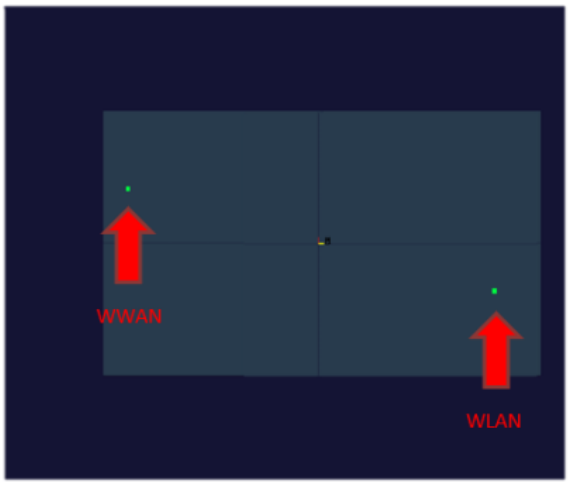
Exposure Position	1	2	3	4	1+2+3 Summed 1g SAR (W/kg)	2+4 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
	Maximum WWAN	WLAN2.4GHz	WLAN5GHz	Bluetooth					
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
Front	0.706	0.286	0.241	0.001	**1.233**	**0.287**	**0.242**		
Back	0.905	0.408	0.440	0.001	**1.753**	**0.409**	**0.441**	0.02	Case 2

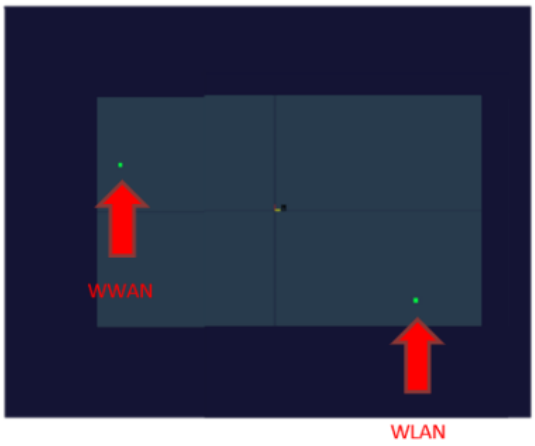
15.4 SPLSR Evaluation and Analysis

General Note:

1. Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
3. The detail hotspot point for each transmitter in each exposure condition are showing as below figure and the minimum 3D distance for each sum combination is used for SPLSR analysis.

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 1	LTE Band 25	Back	0.905	10	-28.1	-46.9	-207	96.4	1.31	0.02	Not required
	WLAN2.4GHz		0.408	10	-11.5	48	-209.1				
	LTE Band 25	Back	0.905	10	-28.1	-46.9	-207	111.3	1.30	0.01	Not required
	WLAN5GHz		0.392	10	22.8	52	-209.2				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 2	LTE Band 25	Back	0.905	10	-28.1	-46.9	-207	96.4	1.31	0.02	Not required
	WLAN2.4GHz		0.408	10	-11.5	48	-209.1				
	LTE Band 25	Back	0.905	10	-28.1	-46.9	-207	93.7	1.35	0.02	Not required
	WLAN5GHz		0.440	10	3.1	41.4	-209.2				





Test Engineer : Tony Wu, Willy Yu and Andy Chiang.

16. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

Declaration of Conformity:
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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

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

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

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

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

(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

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

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

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

Applicable for SAR Measurements:

Uncertainty Budget (4 MHz - 10 GHz range)							
Error Description	**Uncertainty Value (±%)**	**Probability**	**Divisor**	**(Ci) 1g**	**(Ci) 10g**	**Standard Uncertainty (1g) (±%)**	**Standard Uncertainty (10g) (±%)**
Measurement System							
Probe Calibration	18.60	N	2	1	1	9.3	9.3
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Linearity	4.70	R	1.732	1	1	2.7	2.7
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Post-processing	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Holder	3.60	N	1	1	1	3.6	3.6
Test sample Positioning	3.03	N	1	1	1	3.0	3.0
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Phantom and Setup							
Phantom Uncertainty	7.60	R	1.732	1	1	4.4	4.4
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.77	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.77	2.3	2.2
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.77	1.1	1.1
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.77	1.7	1.6
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						14.5%	14.2%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.4%

17. References

[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”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[13] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.