FCC SAR TEST REPORT

FCC ID	:	**UZ7ET56ET**
Equipment	:	**Tablet**
Brand Name	:	**Zebra**
Model Name	:	**ET56ET**
Applicant	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Manufacturer	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**FCC 47 CFR Part 2 (2.1093)**

The product was received on Aug. 05, 2020 and testing was started from Aug. 22, 2020 and completed on Sep. 06, 2020. 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA072904-01	01	Initial issue of report	Sep. 18, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Zebra Technologies Corporation, Tablet, ET56ET, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary Body 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	WCDMA II	1.09	1.56
	WCDMA IV	1.09	
	WCDMA V	1.35	
	LTE Band 2	1.13	
	LTE Band 4	1.21	
	LTE Band 5	1.19	
	LTE Band 7	1.27	
	LTE Band 17	1.31	
	LTE Band 38 / 41	0.97	
DTS	2.4GHz WLAN	1.26	1.51
NII	5GHz WLAN	1.33	1.51
Date of Testing:		2020/8/22 ~ 2020/9/6	

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 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) 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: Wan Liu

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, if the KDB standards were not list within TAF approval, because it is include in the FCC KDB 447498.

- 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 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Tablet
Brand Name	Zebra
Model Name	ET56ET
FCC ID	UZ7ET56ET
IMEI Code	351094910001948
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz 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 17: 704 MHz ~ 716 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DV1
SW Version	Android 10
FW Version	10-13-05.00-QG-U00-PRD-HEL-04(For TX/Normal mode) 10-11-23.00-QG-U00-PLT-HEL-04(For TXBF only)
MFD	15JUL20
EUT Stage	Identical Prototype

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	UZ7ET56ET
Equipment Name	Tablet
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 17: 704 MHz ~ 716 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz
Channel Bandwidth	LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 17: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3** Modulation | Channel bandwidth / Transmission bandwidth (N_{RB}) | MPR (dB) 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz QPSK: > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 16 QAM: ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 16 QAM: > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 64 QAM: ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 2 64 QAM: > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 3 256 QAM: ≥ 1 | ≤ 5
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.
Power reduction applied to satisfy SAR compliance	1. Yes, Proximity Sensor.

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 17				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

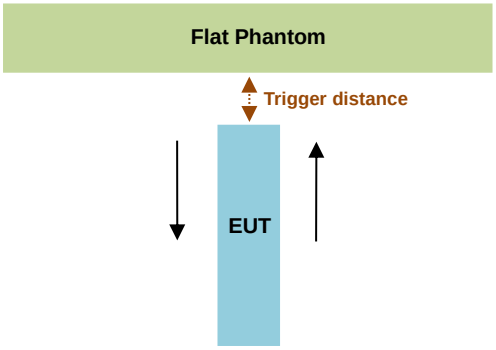
LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	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
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
H M	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

4. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 6.2)>:

For the device is fully integrated, touch sensing capacitive sensor. It uses a charge transfer capacitive acquisition method that is capable of near range proximity detection. In this device offers a state of the art capacitive sensing engine with an embedded sampling capacitor and voltage regulator allowing the overall solution cost to be reduced and improving system immunity in noisy environments.
Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed. The details are illustrated as following, and the shortest triggering distances were reported and used for SAR assessment.
In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering distance than that for 1900MHz, and the tissue-equivalent medium for 1900MHz was used for formal proximity sensor triggering testing.



Proximity Sensor Trigger Distance for WWAN (mm)		
Position	Bottom Face	Edge 1
Minimum	23	17

Proximity Sensor Trigger Distance for WLAN Ant 1 (mm)		
Position	Bottom Face	Edge 2
Minimum	27	18

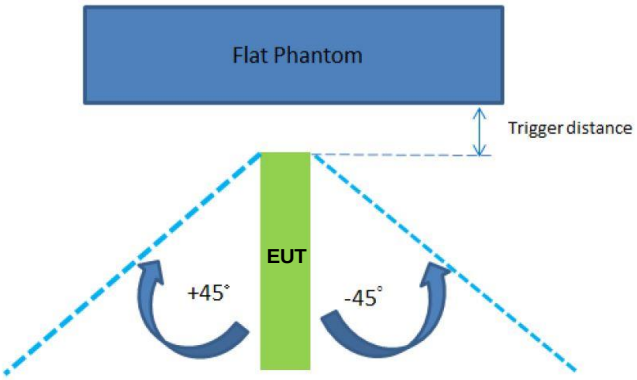
Proximity Sensor Trigger Distance for WLAN Ant 2 (mm)		
Position	Bottom Face	Edge 2
Minimum	21	18

<Proximity Sensor Triggering Coverage (KDB 616217 D04 section 6.3)>:

If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.
Illustrated in the internal photo exhibit, although the senor is spatially offset, there is no trigger condition where the antenna is next to the user but the sensor is laterally further away, therefore proximity sensor coverage testing is not required.
This procedure is not required because antenna and sensor are collocated and the peak SAR location is overlapping with the sensor.

<Tablet Tilt angle influences to proximity sensor triggering (KDB 616217 D04 section 6.4)>:

The influence of table tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at above separation distance.
Rotating the tablet around the edge next to the phantom in ≤ 10° increments until the tablet is ± 45° from the vertical position at 0°, and the maximum output power remains in the reduced mode.



The Sensor Trigger Distance for WWAN (mm)	
Position	Edge 1
Minimum	17

The Sensor Trigger Distance for WLAN Ant 1 (mm)	
Position	Edge 2
Minimum	19

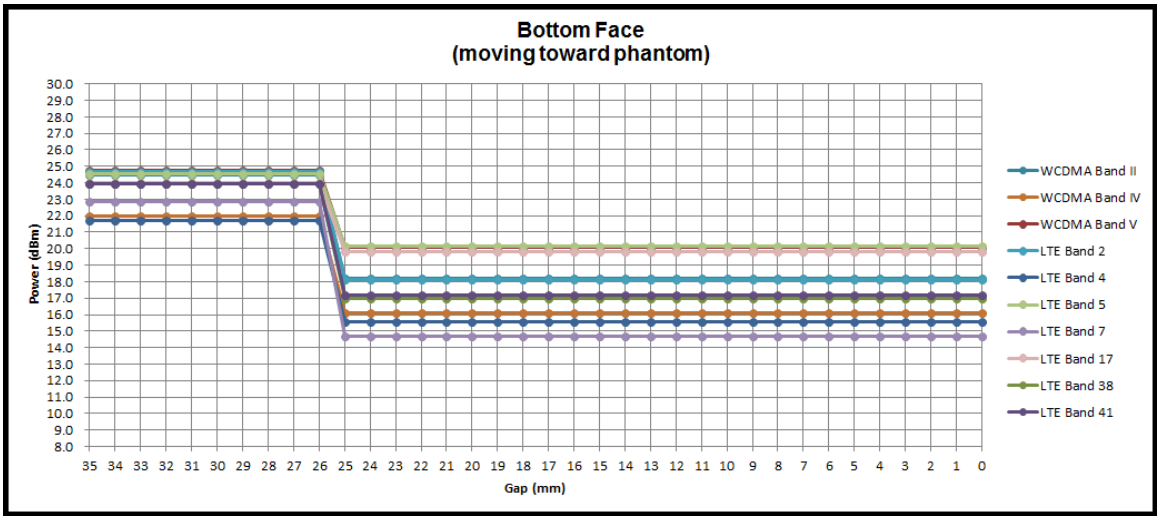
The Sensor Trigger Distance for WLAN Ant 2 (mm)	
Position	Edge 2
Minimum	13

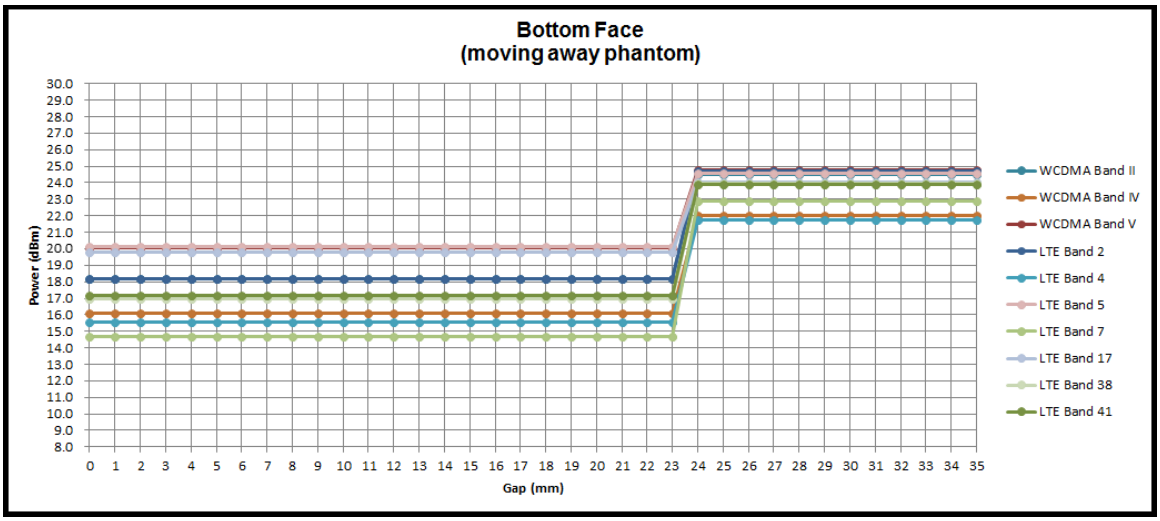
Proximity sensor power reduction

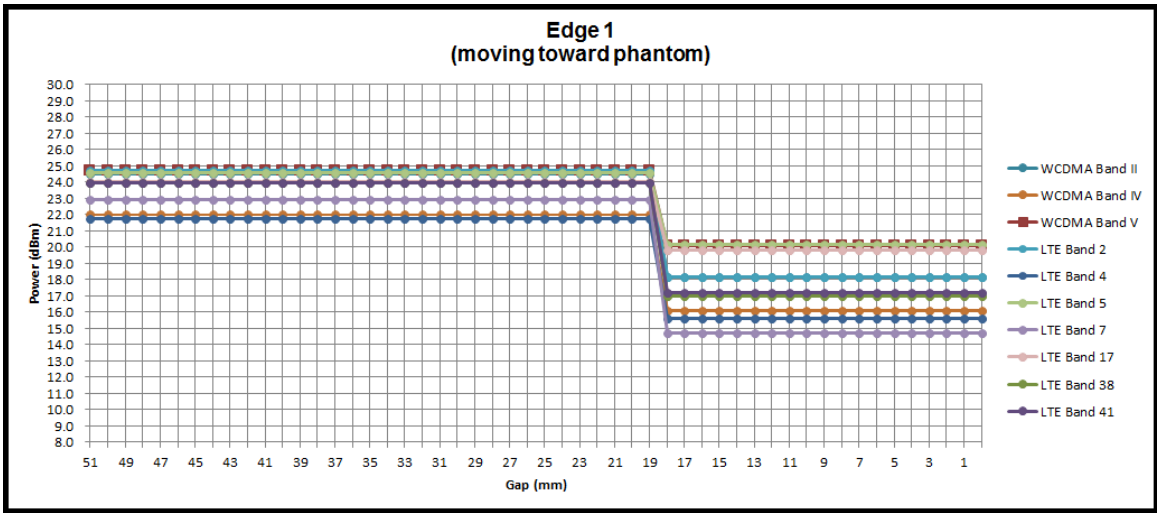
Exposure Position / wireless mode	Bottom Face(1)	Edge 1(1)	Edge 2	Edge 3	Edge 4
WCDMA Band II	7 dB	7 dB	0 dB	0 dB	0 dB
WCDMA Band IV	6.5 dB	6.5 dB	0 dB	0 dB	0 dB
WCDMA Band V	5 dB	5 dB	0 dB	0 dB	0 dB
LTE Band 2	7 dB	7 dB	0 dB	0 dB	0 dB
LTE Band 4	6.5 dB	6.5 dB	0 dB	0 dB	0 dB
LTE Band 5	4.5 dB	4.5 dB	0 dB	0 dB	0 dB
LTE Band 7	8 dB	8 dB	0 dB	0 dB	0 dB
LTE Band 17	4 dB	4 dB	0 dB	0 dB	0 dB
LTE Band 38/41	7 dB	7 dB	0 dB	0 dB	0 dB

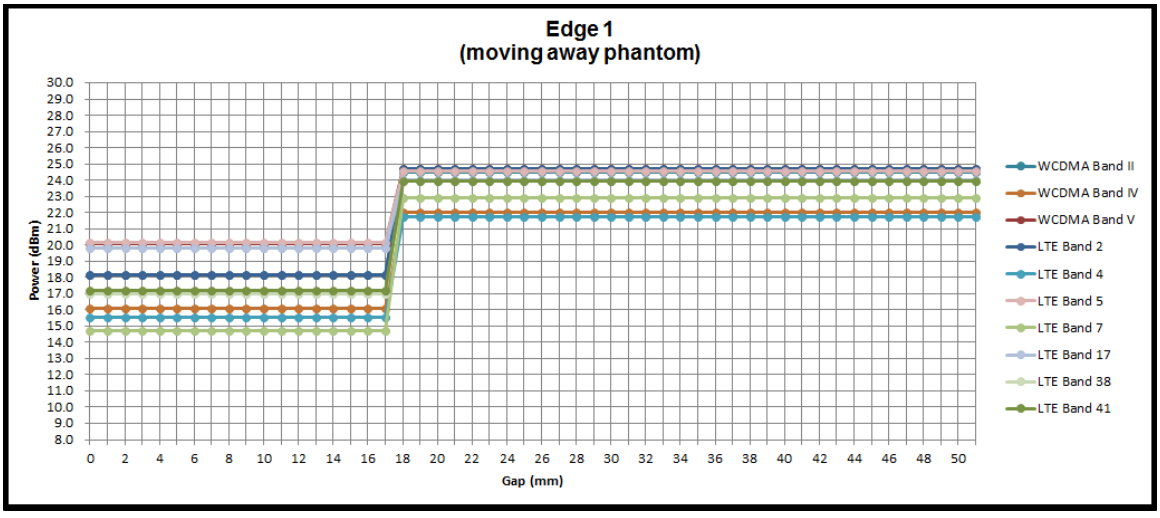
Remark:
1. (1): Reduced maximum limit applied by activation of proximity sensor.
2. Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown as below.
3. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
   - Bottom Face: 22 mm.
   - Edge1: 16 mm

Power Measurement during Sensor Trigger distance testing




Bottom Face
(moving away phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 17
LTE Band 38
LTE Band 41


Edge 1
(moving toward phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 17
LTE Band 38
LTE Band 41

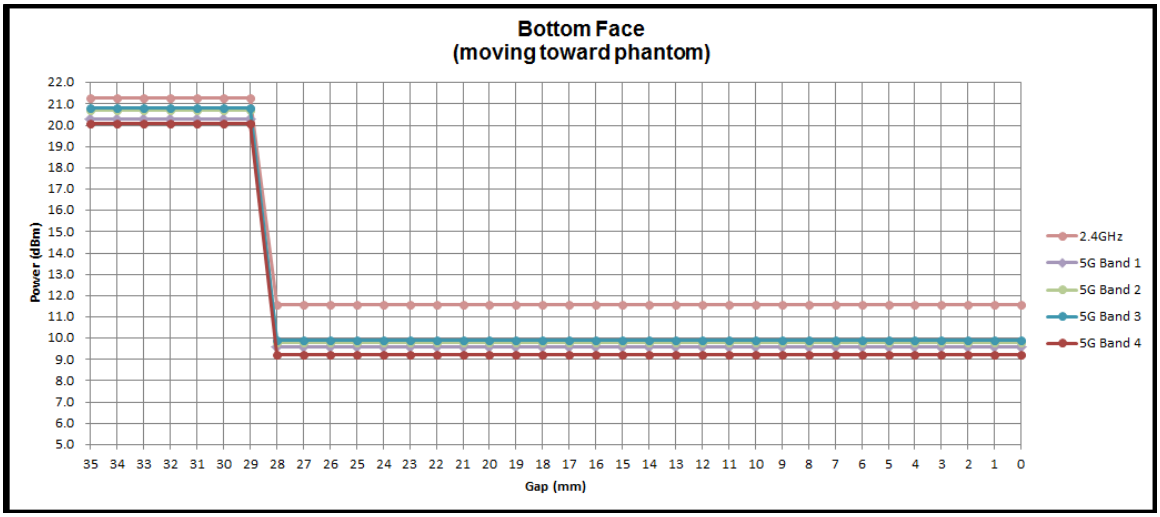

Edge 1
(moving away phantom)
Power (dBm)
Gap (mm)
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 4
LTE Band 5
LTE Band 7
LTE Band 17
LTE Band 38
LTE Band 41

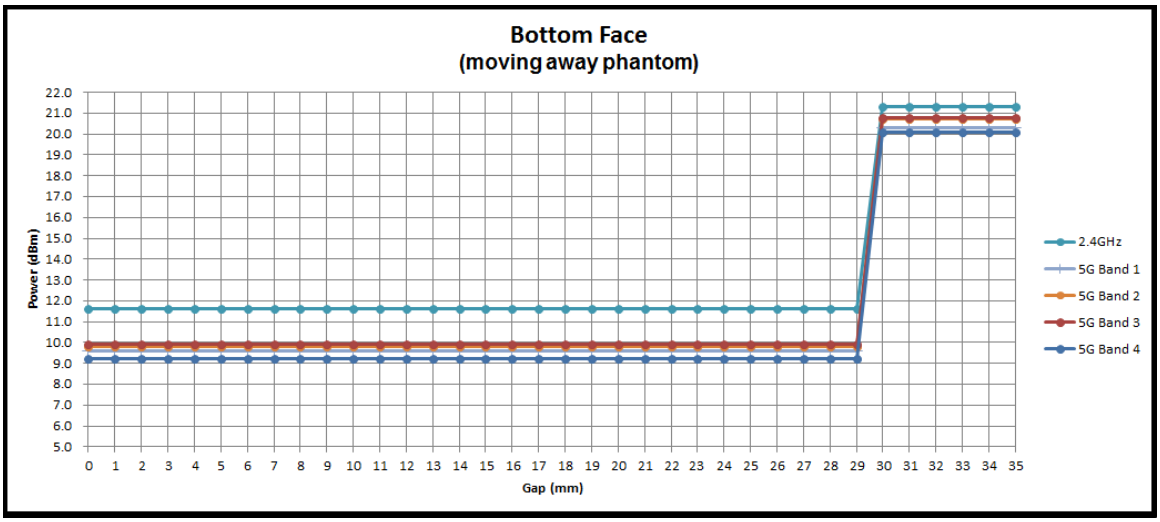
Exposure Position / wireless mode	Bottom Face(1)	Edge 1	Edge 2(1)	Edge 3	Edge 4
2.4GHz WLAN Ant 1	9 dB	0 dB	9 dB	0 dB	0 dB
5.2GHz WLAN Ant 1	10.5 dB	0 dB	10.5 dB	0 dB	0 dB
5.3GHz WLAN Ant 1	11 dB	0 dB	11 dB	0 dB	0 dB
5.5GHz WLAN Ant 1	11 dB	0 dB	11 dB	0 dB	0 dB
5.8GHz WLAN Ant 1	11 dB	0 dB	11 dB	0 dB	0 dB
2.4GHz WLAN Ant 2	9.5 dB	0 dB	9.5 dB	0 dB	0 dB
5.2GHz WLAN Ant 2	10.5 dB	0 dB	10.5 dB	0 dB	0 dB
5.3GHz WLAN Ant 2	11 dB	0 dB	11 dB	0 dB	0 dB
5.5GHz WLAN Ant 2	11 dB	0 dB	11 dB	0 dB	0 dB
5.8GHz WLAN Ant 2	11 dB	0 dB	11 dB	0 dB	0 dB

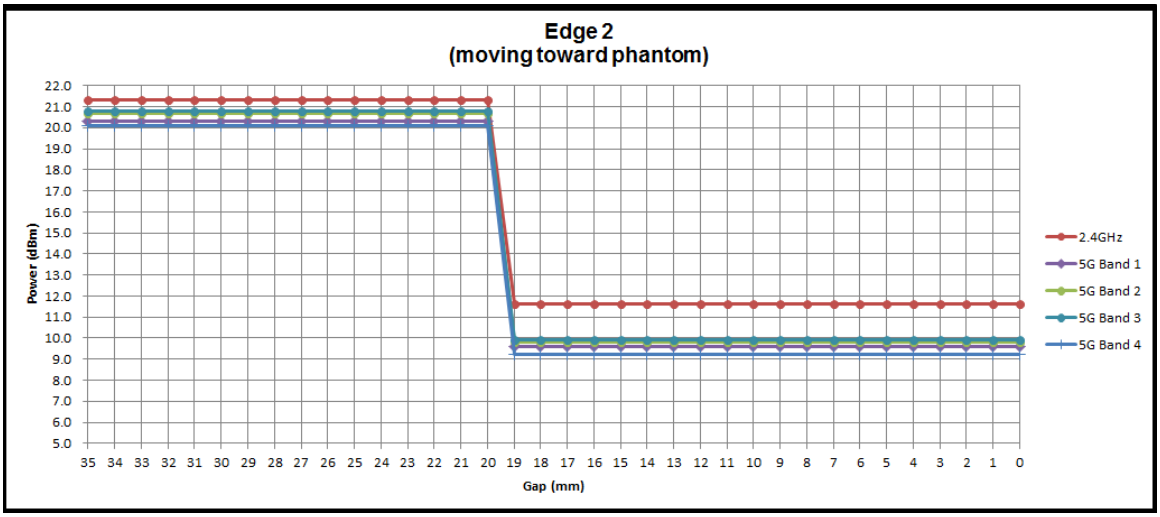
Remark:
1. (1): Reduced maximum limit applied by activation of proximity sensor.
2. Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown as below.
3. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
   - Bottom Face: 27 mm for WLAN Ant 1, 20 mm for WLAN Ant 2.
   - Edge2: 17 mm for WLAN Ant 1, 11 mm for WLAN Ant 2

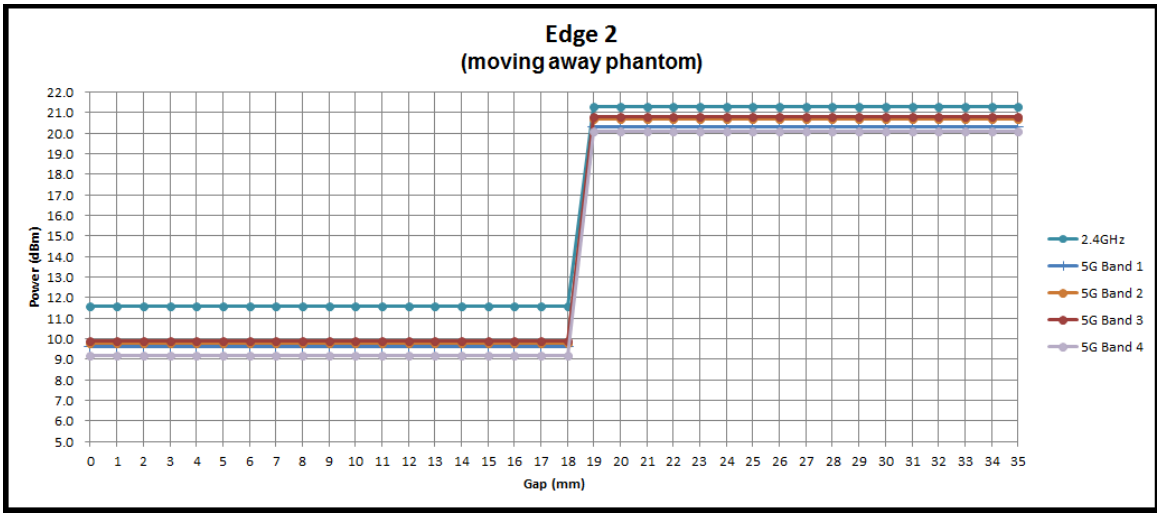
Power Measurement during Sensor Trigger distance testing

WLAN Ant 1

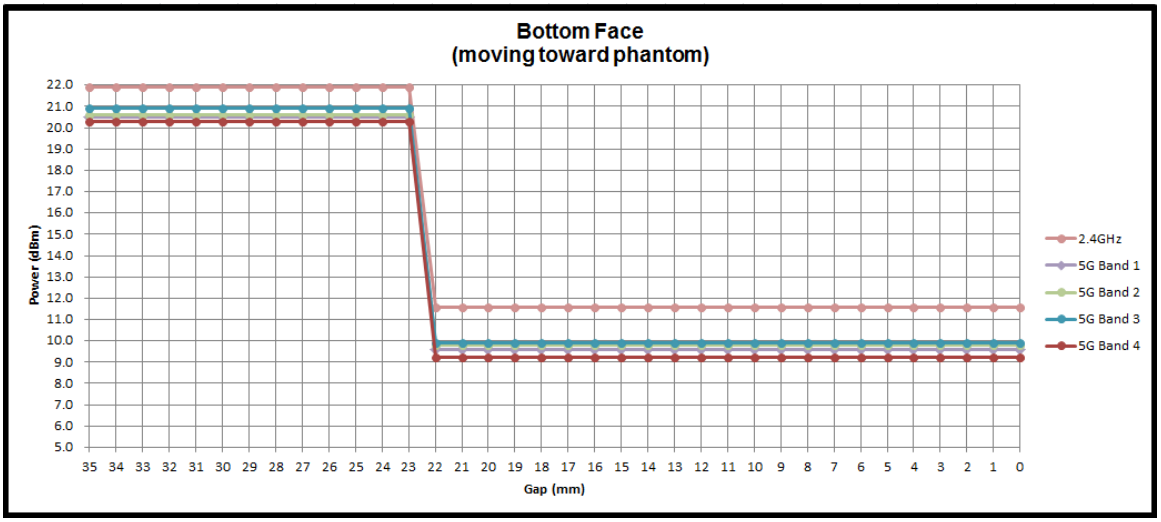


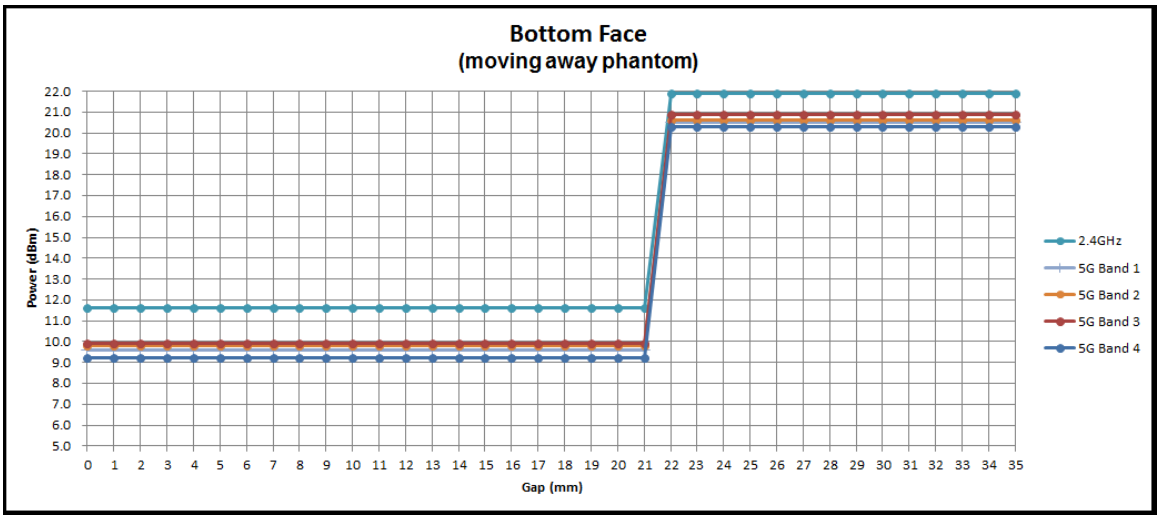

Bottom Face
(moving away phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4

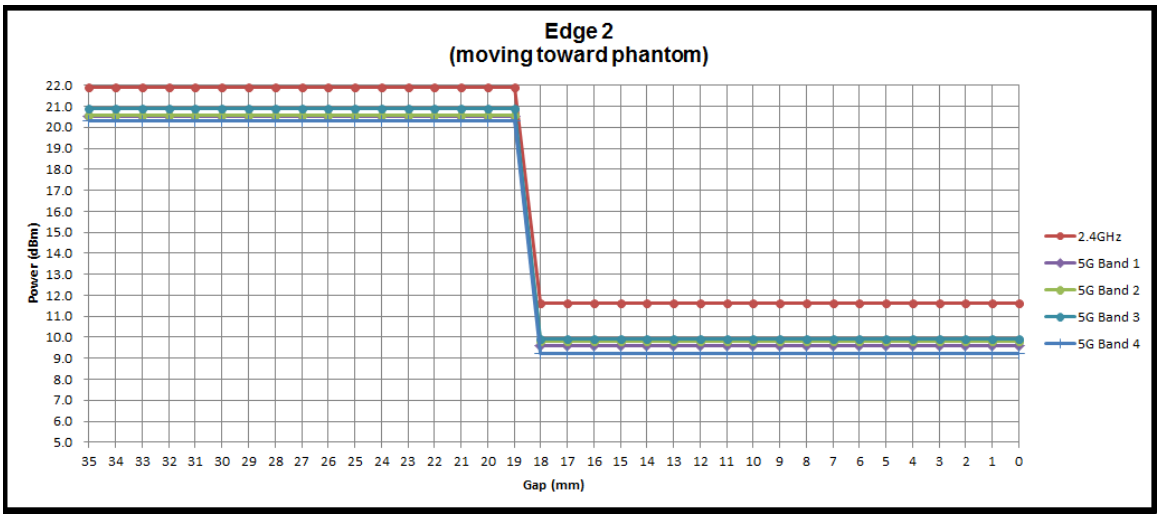

Edge 2
(moving toward phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4

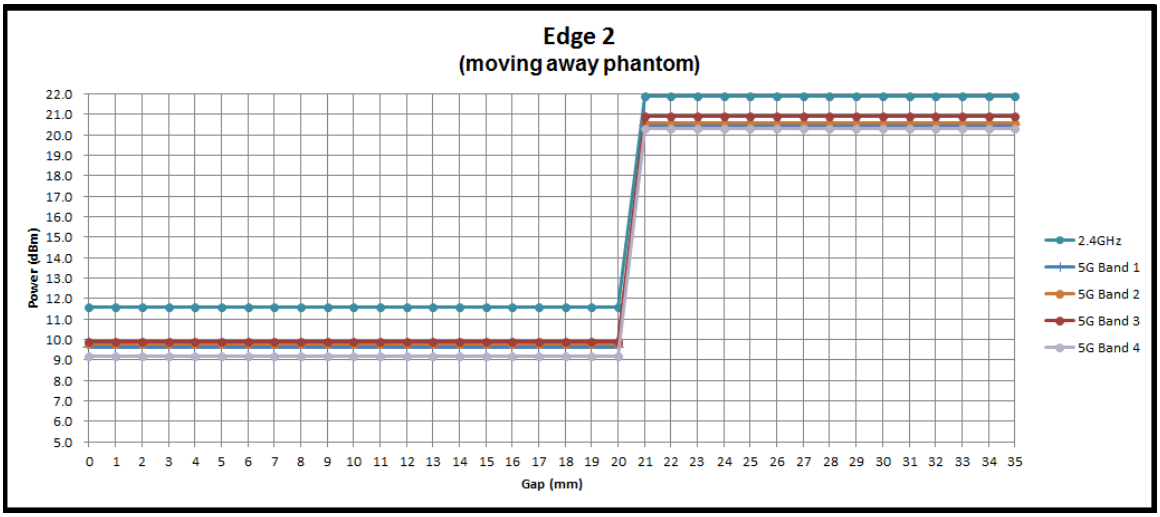

Edge 2
(moving away phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4

WLAN Ant 2


Bottom Face
(moving toward phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4


Bottom Face
(moving away phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4


Edge 2
(moving toward phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4


Edge 2
(moving away phantom)
Power (dBm)
Gap (mm)
2.4GHz
5G Band 1
5G Band 2
5G Band 3
5G Band 4

5. RF Exposure Limits

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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.

6. Specific Absorption Rate (SAR)

6.1 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.

6.2 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:

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

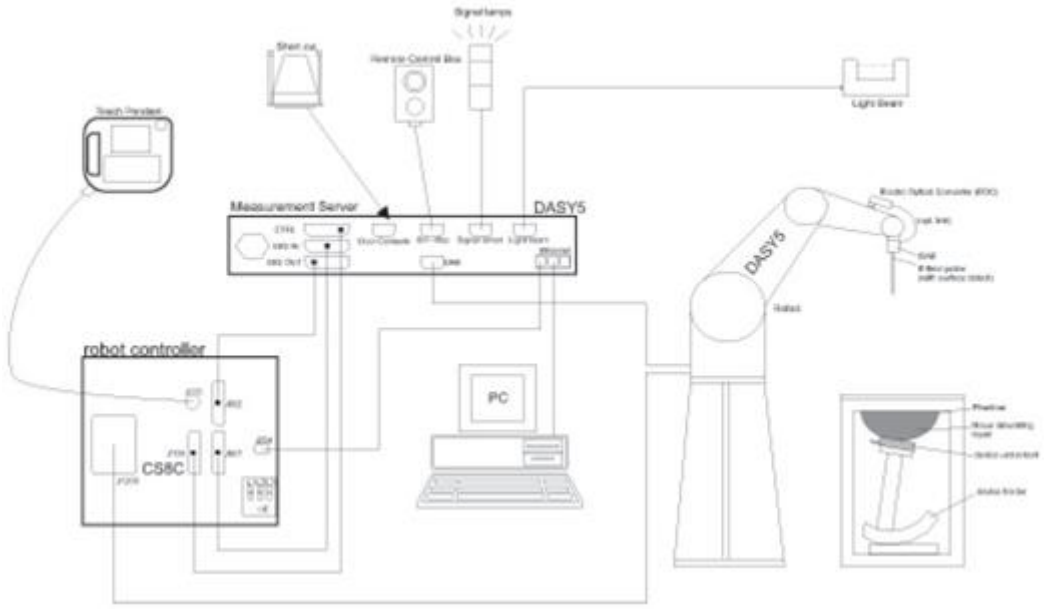
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. System Description and Setup

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



- 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 WinXP or Win7 and the DASY5 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.

7.1 Test Site Location

Sporton Lab and below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 0007) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory			
Test Site Location	TW1190 No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, CHINESE TAIPEI		TW0007 No. 58, Aly. 75, Ln. 564, Wehnua 3rd, Rd., Guishan Dist., Taoyuan City, CHINESE TAIPEI	
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY
	SAR06-HY	SAR10-HY		

7.2 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	10 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	10 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	

7.3 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.

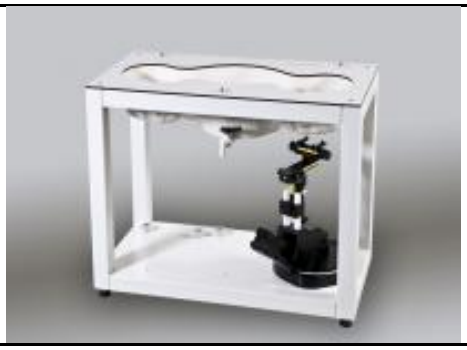
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

7.4 Phantom

<SAM Twin Phantom>

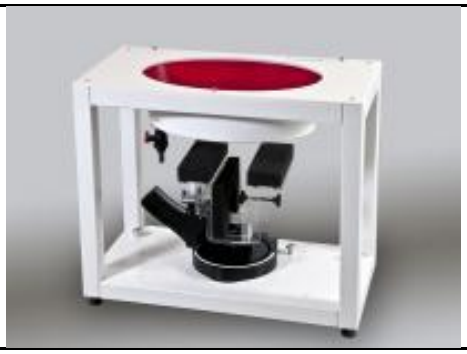
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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.

7.5 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

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(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

8.1 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

8.2 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.

8.3 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.	

8.4 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	≤ $1.5 \cdot \Delta z_{Zoom}(n-1)$	
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.

8.5 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.

8.6 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.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit(2)	D750V3	1107	Mar. 08, 2019	Mar. 06, 2021
SPEAG	835MHz System Validation Kit	D835V2	4d167	Nov. 25, 2019	Nov. 24, 2020
SPEAG	1750MHz System Validation Kit(2)	D1750V2	1112	Mar. 07, 2019	Mar. 05, 2021
SPEAG	1900MHz System Validation Kit(2)	D1900V2	5d041	Sep. 11, 2018	Sep. 09, 2020
SPEAG	2450MHz System Validation Kit(2)	D2450V2	736	Aug. 31, 2018	Aug. 29, 2020
SPEAG	2600MHz System Validation Kit(2)	D2600V2	1078	Mar. 06, 2019	Mar. 04, 2021
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1006	Sep. 27, 2018	Sep. 25, 2020
SPEAG	Data Acquisition Electronics	DAE4	1424	Jan. 24, 2020	Jan. 23, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Sep. 20, 2019	Sep. 19, 2020
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 24, 2020	Jul. 23, 2021
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 12, 2019	Nov. 11, 2020
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 12, 2019	Nov. 11, 2020
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 31, 2019	Oct. 30, 2020
Agilent	Wireless Communication Test Set	E5515C	MY50267236	Mar. 18, 2020	Mar. 17, 2021
R&S	BT Base Station	CBT	100815	Feb. 15, 2020	Feb. 14, 2021
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Nov. 20, 2019	Nov. 19, 2020
Agilent	ENA Network Analyzer	E5071C	MY46101588	Jun. 10, 2020	Jun. 09, 2021
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 18, 2019	Sep. 17, 2020
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Nov. 18, 2019	Nov. 17, 2020
Anritsu	Power Meter	ML2495A	0932001	Oct. 03, 2019	Oct. 02, 2020
Anritsu	Power Sensor	MA2411B	0846202	Oct. 03, 2019	Oct. 02, 2020
Anritsu	Power Meter	ML2495A	1218006	Oct. 14, 2019	Oct. 13, 2020
Anritsu	Power Sensor	MA2411B	1207363	Oct. 14, 2019	Oct. 13, 2020
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 30, 2020	Jun. 29, 2021
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Mar. 12, 2020	Mar. 11, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2019	Oct. 15, 2020
Mini-Circuits	Power Amplifier	ZHL-42W+	321501827	Aug. 06, 2020	Aug. 05, 2021
ATM	Dual Directional Coupler	C122H-10	P610410z-02	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.

10. System Verification

10.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

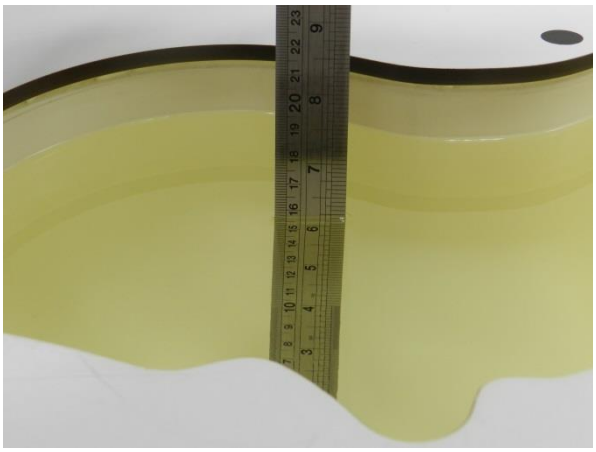


Fig 10.1Photo of Liquid Height for Head SAR

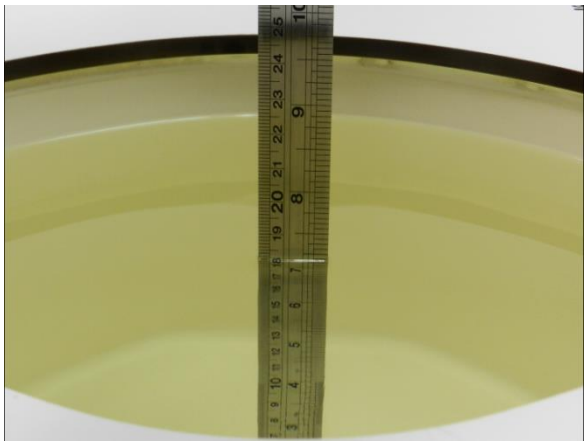


Fig 10.2 Photo of Liquid Height for Body SAR

10.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<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
750	22.3	0.890	42.349	0.89	41.90	0.00	1.07	±5	2020/8/24
835	22.3	0.899	42.474	0.90	41.50	-0.11	2.35	±5	2020/8/24
1750	22.4	1.357	40.774	1.37	40.10	-0.95	1.68	±5	2020/8/22
1750	22.4	1.361	40.492	1.37	40.10	-0.66	0.98	±5	2020/9/2
1900	22.4	1.373	39.058	1.40	40.00	-1.93	-2.36	±5	2020/8/22
2450	22.4	1.804	39.537	1.80	39.20	0.22	0.86	±5	2020/8/28
2600	22.5	1.964	39.381	1.96	39.00	0.20	0.98	±5	2020/8/23
2600	22.4	1.977	39.009	1.96	39.00	0.87	0.02	±5	2020/8/31
5250	22.4	4.885	36.480	4.71	35.95	3.72	1.47	±5	2020/8/28
5600	22.4	5.002	35.853	5.07	35.50	-1.34	0.99	±5	2020/9/6
5750	22.4	5.164	35.621	5.22	35.35	-1.07	0.77	±5	2020/9/6

10.3 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 (%)
2020/8/24	750	250	D750V3-1107	EX3DV4 - SN7306	DAE4 Sn1424	2.21	8.32	8.84	6.25
2020/8/24	835	250	D835V2-4d167	EX3DV4 - SN7306	DAE4 Sn1424	2.45	9.55	9.8	2.62
2020/8/22	1750	250	D1750V2-1112	EX3DV4 - SN7306	DAE4 Sn1424	9.06	36.70	36.24	-1.25
2020/9/2	1750	250	D1750V2-1112	EX3DV4 - SN3925	DAE4 Sn1424	9.24	36.70	36.96	0.71
2020/8/22	1900	250	D1900V2-5d041	EX3DV4 - SN7306	DAE4 Sn1424	10.10	40.20	40.4	0.50
2020/8/28	2450	250	D2450V2-736	EX3DV4 - SN7306	DAE4 Sn1424	13.90	52.70	55.6	5.50
2020/8/23	2600	250	D2600V2-1078	EX3DV4 - SN7306	DAE4 Sn1424	13.90	57.60	55.6	-3.47
2020/8/31	2600	250	D2600V2-1078	EX3DV4 - SN3925	DAE4 Sn1424	13.70	57.60	54.8	-4.86
2020/8/28	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7306	DAE4 Sn1424	7.77	80.70	77.7	-3.72
2020/9/6	5600	100	D5GHzV2-1006-5250	EX3DV4 - SN3925	DAE4 Sn1424	8.64	80.70	86.4	7.06
2020/9/6	5750	100	D5GHzV2-1006-5250	EX3DV4 - SN3925	DAE4 Sn1424	7.60	80.70	76	-5.82

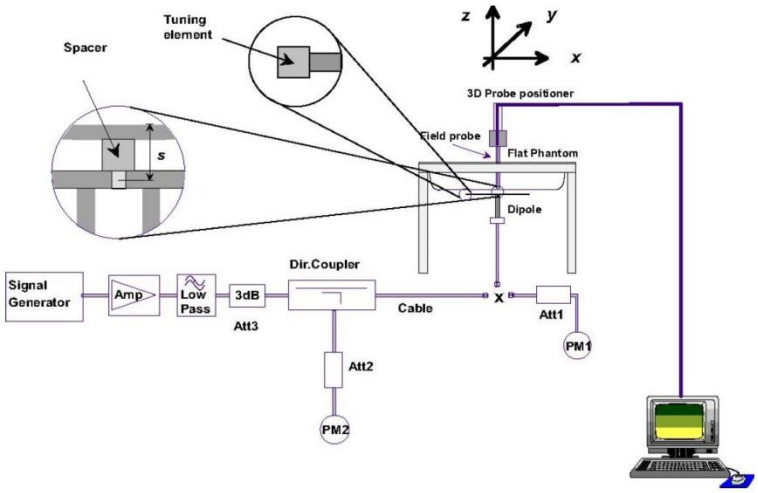


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

12. UMTS/CDMA/LTE Output Power (Unit: dBm)

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

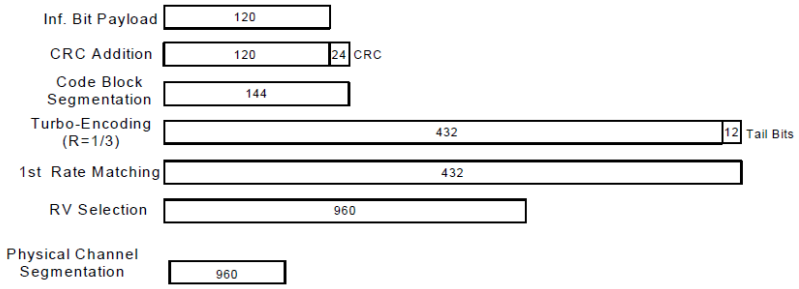


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Default Power Mode

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	24.38	24.49	24.45	25.50	21.74	21.99	21.76	23.00	24.65	24.74	24.72	25.50
3GPP Rel 6	HSDPA Subtest-1	23.78	23.99	23.75	24.50	21.27	21.01	20.94	22.00	23.73	23.70	23.79	24.50
3GPP Rel 6	HSDPA Subtest-2	23.81	24.00	23.79	24.50	21.26	20.98	20.94	22.00	23.76	23.71	23.82	24.50
3GPP Rel 6	HSDPA Subtest-3	23.27	23.51	23.40	24.00	20.75	20.52	20.44	21.50	23.25	23.24	23.31	24.00
3GPP Rel 6	HSDPA Subtest-4	23.31	23.49	23.39	24.00	20.75	20.48	20.40	21.50	23.26	23.21	23.30	24.00
3GPP Rel 8	DC-HSDPA Subtest-1	23.78	23.92	23.71	24.50	21.27	20.99	20.90	22.00	23.70	23.68	23.74	24.50
3GPP Rel 8	DC-HSDPA Subtest-2	23.76	23.95	23.70	24.50	21.21	20.93	20.89	22.00	23.67	23.63	23.73	24.50
3GPP Rel 8	DC-HSDPA Subtest-3	23.22	23.46	23.33	24.00	20.74	20.42	20.34	21.50	23.24	23.23	23.27	24.00
3GPP Rel 8	DC-HSDPA Subtest-4	23.28	23.40	23.32	24.00	20.69	20.46	20.39	21.50	23.21	23.11	23.27	24.00
3GPP Rel 6	HSUPA Subtest-1	23.80	24.01	23.88	24.50	21.22	20.97	20.91	22.00	23.68	23.65	23.75	24.50
3GPP Rel 6	HSUPA Subtest-2	21.80	21.95	21.77	22.50	19.22	18.97	18.90	20.00	21.72	21.64	21.69	22.50
3GPP Rel 6	HSUPA Subtest-3	22.77	22.96	22.74	23.50	20.22	19.98	19.96	21.00	22.72	22.68	22.74	23.50
3GPP Rel 6	HSUPA Subtest-4	21.72	22.00	21.76	22.50	19.23	19.00	18.90	20.00	21.78	21.61	21.72	22.50
3GPP Rel 6	HSUPA Subtest-5	23.80	24.00	23.80	24.50	21.20	21.00	21.00	22.00	23.80	23.60	23.70	24.50

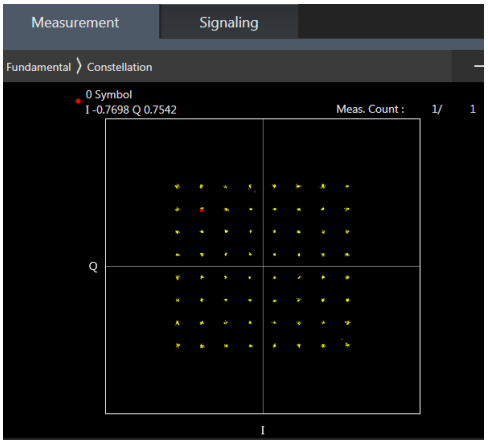
Reduced Power Mode

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	RMC 12.2Kbps	17.97	18.18	17.95	18.50	15.93	16.10	15.63	16.50	19.68	20.08	19.50	20.50
3GPP Rel 6	HSDPA Subtest-1	17.11	17.41	17.16	17.50	15.33	15.00	14.91	15.50	18.66	18.71	18.74	19.50
3GPP Rel 6	HSDPA Subtest-2	17.20	17.38	17.14	17.50	15.27	15.08	15.05	15.50	18.72	18.71	18.82	19.50
3GPP Rel 6	HSDPA Subtest-3	16.61	16.89	16.81	17.00	14.81	14.53	14.47	15.00	18.28	18.19	18.27	19.00
3GPP Rel 6	HSDPA Subtest-4	16.73	16.85	16.78	17.00	14.71	14.50	14.41	15.00	18.20	18.15	18.32	19.00
3GPP Rel 8	DC-HSDPA Subtest-1	17.11	17.29	17.10	17.50	15.26	15.11	14.96	15.50	18.70	18.66	18.77	19.50
3GPP Rel 8	DC-HSDPA Subtest-2	17.18	17.31	17.06	17.50	15.19	14.95	14.93	15.50	18.61	18.58	18.75	19.50
3GPP Rel 8	DC-HSDPA Subtest-3	16.64	16.88	16.72	17.00	14.78	14.44	14.47	15.00	18.24	18.16	18.26	19.00
3GPP Rel 8	DC-HSDPA Subtest-4	16.70	16.73	16.71	17.00	14.74	14.48	14.44	15.00	18.18	18.09	18.20	19.00
3GPP Rel 6	HSUPA Subtest-1	17.13	17.40	17.22	17.50	15.21	15.03	14.91	15.50	18.71	18.62	18.73	19.50
3GPP Rel 6	HSUPA Subtest-2	15.15	15.34	15.12	15.50	13.26	13.05	12.94	13.50	16.69	16.64	16.72	17.50
3GPP Rel 6	HSUPA Subtest-3	16.19	16.32	16.12	16.50	14.17	14.02	13.91	14.50	17.69	17.61	17.75	18.50
3GPP Rel 6	HSUPA Subtest-4	15.14	15.41	15.16	15.50	13.28	13.01	12.91	13.50	16.71	16.54	16.74	17.50
3GPP Rel 6	HSUPA Subtest-5	17.14	17.41	17.22	17.50	15.31	15.09	14.97	15.50	18.81	18.61	18.64	19.50

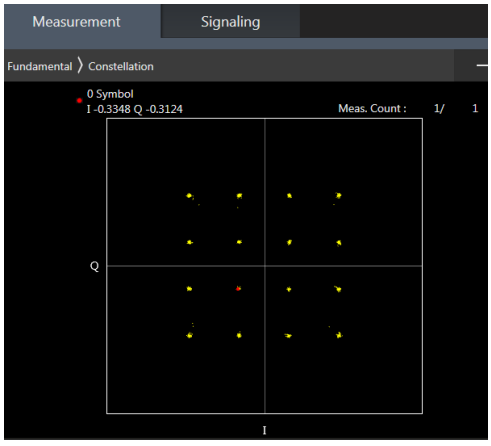
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 38 SAR test was covered by Band 41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

Default Power Mode

<LTE Band 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				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	24.69	24.70	24.51	25.5
20	QPSK	1	49	24.54	24.58	24.46	
20	QPSK	1	99	24.66	24.66	24.45	
20	QPSK	50	0	23.73	23.76	23.65	24.5
20	QPSK	50	24	23.70	23.71	23.59	
20	QPSK	50	50	23.71	23.72	23.61	
20	QPSK	100	0	23.66	23.69	23.63	
20	16QAM	1	0	23.92	23.93	23.83	24.5
20	16QAM	1	49	24.04	23.99	23.79	
20	16QAM	1	99	23.98	24.01	23.70	
20	16QAM	50	0	22.78	22.79	22.71	23.5
20	16QAM	50	24	22.81	22.85	22.63	
20	16QAM	50	50	22.80	22.86	22.62	
20	16QAM	100	0	22.74	22.78	22.72	
20	64QAM	1	0	22.90	22.85	22.78	23.5
20	64QAM	1	49	22.87	22.95	22.81	
20	64QAM	1	99	22.96	22.97	22.75	
20	64QAM	50	0	21.80	21.76	21.79	22.5
20	64QAM	50	24	21.83	21.86	21.73	
20	64QAM	50	50	21.82	21.87	21.69	
20	64QAM	100	0	21.79	21.83	21.78	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	24.61	24.68	24.51	25.5
15	QPSK	1	37	24.53	24.57	24.42	
15	QPSK	1	74	24.57	24.63	24.40	
15	QPSK	36	0	23.56	23.67	23.49	24.5
15	QPSK	36	20	23.67	23.66	23.56	
15	QPSK	36	39	23.69	23.72	23.56	
15	QPSK	75	0	23.60	23.68	23.56	
15	16QAM	1	0	23.89	23.89	23.79	24.5
15	16QAM	1	37	23.98	23.92	23.69	
15	16QAM	1	74	23.94	23.94	23.63	
15	16QAM	36	0	22.71	22.73	22.61	23.5
15	16QAM	36	20	22.79	22.85	22.55	
15	16QAM	36	39	22.78	22.82	22.55	
15	16QAM	75	0	22.65	22.78	22.64	
15	64QAM	1	0	22.81	22.85	22.74	23.5
15	64QAM	1	37	22.87	22.86	22.81	
15	64QAM	1	74	22.89	22.89	22.70	
15	64QAM	36	0	21.75	21.71	21.72	22.5
15	64QAM	36	20	21.79	21.81	21.71	
15	64QAM	36	39	21.80	21.85	21.67	
15	64QAM	75	0	21.74	21.80	21.71	

Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	24.60	24.66	24.51	25.5
10	QPSK	1	25	24.48	24.51	24.36	
10	QPSK	1	49	24.60	24.58	24.39	
10	QPSK	25	0	23.61	23.67	23.48	24.5
10	QPSK	25	12	23.63	23.64	23.50	
10	QPSK	25	25	23.66	23.72	23.57	
10	QPSK	50	0	23.64	23.66	23.61	
10	16QAM	1	0	23.84	23.92	23.83	24.5
10	16QAM	1	25	24.01	23.96	23.71	
10	16QAM	1	49	23.89	23.91	23.60	
10	16QAM	25	0	22.74	22.77	22.70	23.5
10	16QAM	25	12	22.80	22.85	22.62	
10	16QAM	25	25	22.78	22.82	22.57	
10	16QAM	50	0	22.66	22.78	22.62	
10	64QAM	1	0	22.89	22.79	22.75	23.5
10	64QAM	1	25	22.79	22.94	22.73	
10	64QAM	1	49	22.93	22.90	22.71	
10	64QAM	25	0	21.78	21.69	21.69	22.5
10	64QAM	25	12	21.78	21.76	21.68	
10	64QAM	25	25	21.78	21.79	21.64	
10	64QAM	50	0	21.70	21.79	21.78	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	24.63	24.67	24.43	25.5
5	QPSK	1	12	24.49	24.52	24.41	
5	QPSK	1	24	24.57	24.64	24.41	
5	QPSK	12	0	23.58	23.68	23.53	24.5
5	QPSK	12	7	23.69	23.71	23.56	
5	QPSK	12	13	23.71	23.72	23.58	
5	QPSK	25	0	23.66	23.64	23.61	
5	16QAM	1	0	23.82	23.93	23.80	24.5
5	16QAM	1	12	24.02	23.97	23.71	
5	16QAM	1	24	23.97	23.98	23.62	
5	16QAM	12	0	22.69	22.72	22.63	23.5
5	16QAM	12	7	22.77	22.78	22.53	
5	16QAM	12	13	22.79	22.85	22.60	
5	16QAM	25	0	22.74	22.71	22.72	
5	64QAM	1	0	22.85	22.79	22.71	23.5
5	64QAM	1	12	22.79	22.87	22.79	
5	64QAM	1	24	22.92	22.94	22.69	
5	64QAM	12	0	21.77	21.70	21.70	22.5
5	64QAM	12	7	21.76	21.80	21.69	
5	64QAM	12	13	21.79	21.82	21.62	
5	64QAM	25	0	21.69	21.79	21.73	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	24.59	24.66	24.41	25.5
3	QPSK	1	8	24.44	24.58	24.37	

3	QPSK	1	14	24.58	24.60	24.40	
3	QPSK	8	0	23.56	23.62	23.46	24.5
3	QPSK	8	4	23.69	23.62	23.52	
3	QPSK	8	7	23.70	23.65	23.51	
3	QPSK	15	0	23.64	23.68	23.55	
3	16QAM	1	0	23.83	23.84	23.78	24.5
3	16QAM	1	8	24.01	23.99	23.70	
3	16QAM	1	14	23.89	23.91	23.60	
3	16QAM	8	0	22.68	22.72	22.67	23.5
3	16QAM	8	4	22.77	22.82	22.54	
3	16QAM	8	7	22.73	22.83	22.57	
3	16QAM	15	0	22.64	22.72	22.68	
3	64QAM	1	0	22.84	22.84	22.72	23.5
3	64QAM	1	8	22.86	22.85	22.76	
3	64QAM	1	14	22.93	22.87	22.67	
3	64QAM	8	0	21.75	21.67	21.78	22.5
3	64QAM	8	4	21.76	21.76	21.64	
3	64QAM	8	7	21.82	21.84	21.63	
3	64QAM	15	0	21.74	21.78	21.73	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	24.68	24.66	24.41	25.5
1.4	QPSK	1	3	24.47	24.54	24.45	
1.4	QPSK	1	5	24.59	24.65	24.36	
1.4	QPSK	3	0	24.64	24.60	24.48	
1.4	QPSK	3	1	24.47	24.49	24.45	
1.4	QPSK	3	3	24.60	24.61	24.38	
1.4	QPSK	6	0	23.64	23.62	23.59	24.5
1.4	16QAM	1	0	23.88	23.85	23.76	24.5
1.4	16QAM	1	3	24.03	23.89	23.74	
1.4	16QAM	1	5	23.92	23.91	23.64	
1.4	16QAM	3	0	23.82	23.90	23.83	
1.4	16QAM	3	1	24.01	23.98	23.74	
1.4	16QAM	3	3	23.88	23.99	23.60	
1.4	16QAM	6	0	22.68	22.70	22.65	23.5
1.4	64QAM	1	0	22.84	22.76	22.69	23.5
1.4	64QAM	1	3	22.87	22.95	22.78	
1.4	64QAM	1	5	22.86	22.88	22.73	
1.4	64QAM	3	0	22.88	22.78	22.73	
1.4	64QAM	3	1	22.83	22.95	22.75	
1.4	64QAM	3	3	22.86	22.87	22.74	
1.4	64QAM	6	0	21.71	21.79	21.73	22.5

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	21.71	21.72	21.57	23
20	QPSK	1	49	21.70	21.59	21.50	
20	QPSK	1	99	21.60	21.50	21.43	
20	QPSK	50	0	20.66	20.67	20.61	22
20	QPSK	50	24	20.62	20.64	20.54	
20	QPSK	50	50	20.60	20.64	20.54	
20	QPSK	100	0	20.61	20.64	20.55	
20	16QAM	1	0	21.06	21.02	21.03	22
20	16QAM	1	49	21.15	21.10	20.97	
20	16QAM	1	99	21.05	20.98	20.89	
20	16QAM	50	0	19.85	19.75	19.79	21
20	16QAM	50	24	19.73	19.75	19.73	
20	16QAM	50	50	19.73	19.74	19.66	
20	16QAM	100	0	19.70	19.73	19.68	
20	64QAM	1	0	20.04	19.91	19.94	21
20	64QAM	1	49	20.12	19.95	19.85	
20	64QAM	1	99	19.90	19.88	19.72	
20	64QAM	50	0	18.83	18.75	18.77	20
20	64QAM	50	24	18.76	18.76	18.72	
20	64QAM	50	50	18.72	18.74	18.67	
20	64QAM	100	0	18.72	18.76	18.64	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	21.62	21.72	21.47	23
15	QPSK	1	37	21.68	21.53	21.42	
15	QPSK	1	74	21.54	21.46	21.33	
15	QPSK	36	0	20.59	20.58	20.54	22
15	QPSK	36	20	20.59	20.56	20.44	
15	QPSK	36	39	20.59	20.62	20.53	
15	QPSK	75	0	20.60	20.55	20.50	
15	16QAM	1	0	20.98	20.93	20.97	22
15	16QAM	1	37	21.12	21.01	20.90	
15	16QAM	1	74	21.00	20.98	20.79	
15	16QAM	36	0	19.81	19.74	19.73	21
15	16QAM	36	20	19.73	19.69	19.64	
15	16QAM	36	39	19.67	19.72	19.62	
15	16QAM	75	0	19.66	19.67	19.66	
15	64QAM	1	0	20.02	19.90	19.92	21
15	64QAM	1	37	20.05	19.86	19.80	
15	64QAM	1	74	19.87	19.85	19.66	
15	64QAM	36	0	18.77	18.67	18.67	20
15	64QAM	36	20	18.71	18.75	18.67	
15	64QAM	36	39	18.68	18.74	18.66	
15	64QAM	75	0	18.70	18.70	18.62	
Channel				20000	20175	20350	Tune-up limit

Frequency (MHz)				1715	1732.5	1750	(dBm)
10	QPSK	1	0	21.69	21.62	21.55	23
10	QPSK	1	25	21.62	21.52	21.45	
10	QPSK	1	49	21.56	21.40	21.39	
10	QPSK	25	0	20.63	20.60	20.58	22
10	QPSK	25	12	20.60	20.55	20.50	
10	QPSK	25	25	20.59	20.60	20.50	
10	QPSK	50	0	20.52	20.58	20.47	
10	16QAM	1	0	20.99	21.01	21.02	22
10	16QAM	1	25	21.12	21.10	20.93	
10	16QAM	1	49	21.04	20.98	20.85	
10	16QAM	25	0	19.79	19.66	19.71	21
10	16QAM	25	12	19.67	19.69	19.71	
10	16QAM	25	25	19.64	19.70	19.62	
10	16QAM	50	0	19.69	19.66	19.58	
10	64QAM	1	0	19.97	19.89	19.85	21
10	64QAM	1	25	20.08	19.91	19.80	
10	64QAM	1	49	19.90	19.82	19.72	
10	64QAM	25	0	18.73	18.65	18.69	20
10	64QAM	25	12	18.74	18.74	18.69	
10	64QAM	25	25	18.65	18.70	18.59	
10	64QAM	50	0	18.69	18.71	18.55	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	21.67	21.69	21.56	23
5	QPSK	1	12	21.62	21.50	21.50	
5	QPSK	1	24	21.60	21.47	21.35	
5	QPSK	12	0	20.66	20.63	20.52	22
5	QPSK	12	7	20.61	20.54	20.45	
5	QPSK	12	13	20.57	20.63	20.54	
5	QPSK	25	0	20.52	20.62	20.49	
5	16QAM	1	0	20.98	21.00	20.97	22
5	16QAM	1	12	21.12	21.00	20.89	
5	16QAM	1	24	21.01	20.88	20.89	
5	16QAM	12	0	19.78	19.68	19.75	21
5	16QAM	12	7	19.69	19.73	19.67	
5	16QAM	12	13	19.65	19.74	19.56	
5	16QAM	25	0	19.62	19.72	19.58	
5	64QAM	1	0	20.03	19.91	19.87	21
5	64QAM	1	12	20.12	19.90	19.78	
5	64QAM	1	24	19.86	19.82	19.71	
5	64QAM	12	0	18.77	18.69	18.70	20
5	64QAM	12	7	18.76	18.72	18.69	
5	64QAM	12	13	18.63	18.65	18.67	
5	64QAM	25	0	18.62	18.68	18.63	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	21.67	21.65	21.57	23
3	QPSK	1	8	21.62	21.52	21.45	
3	QPSK	1	14	21.54	21.45	21.38	

3	QPSK	8	0	20.56	20.67	20.54	22
3	QPSK	8	4	20.59	20.57	20.54	
3	QPSK	8	7	20.50	20.55	20.48	
3	QPSK	15	0	20.60	20.60	20.50	
3	16QAM	1	0	21.04	20.95	21.03	22
3	16QAM	1	8	21.13	21.04	20.97	
3	16QAM	1	14	20.98	20.88	20.89	
3	16QAM	8	0	19.82	19.73	19.69	21
3	16QAM	8	4	19.69	19.69	19.66	
3	16QAM	8	7	19.63	19.70	19.58	
3	16QAM	15	0	19.67	19.65	19.59	
3	64QAM	1	0	19.99	19.89	19.93	21
3	64QAM	1	8	20.10	19.90	19.76	
3	64QAM	1	14	19.81	19.85	19.71	
3	64QAM	8	0	18.74	18.73	18.70	20
3	64QAM	8	4	18.74	18.70	18.65	
3	64QAM	8	7	18.62	18.70	18.57	
3	64QAM	15	0	18.69	18.66	18.61	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	21.71	21.63	21.48	23
1.4	QPSK	1	3	21.65	21.51	21.43	
1.4	QPSK	1	5	21.55	21.45	21.34	
1.4	QPSK	3	0	21.61	21.69	21.47	
1.4	QPSK	3	1	21.60	21.54	21.43	
1.4	QPSK	3	3	21.50	21.48	21.39	
1.4	QPSK	6	0	20.58	20.61	20.53	22
1.4	16QAM	1	0	21.03	20.93	20.97	22
1.4	16QAM	1	3	21.14	21.02	20.89	
1.4	16QAM	1	5	20.99	20.96	20.82	
1.4	16QAM	3	0	20.97	20.98	20.95	
1.4	16QAM	3	1	21.09	21.03	20.93	
1.4	16QAM	3	3	21.01	20.92	20.86	
1.4	16QAM	6	0	19.65	19.70	19.59	21
1.4	64QAM	1	0	20.04	19.83	19.87	21
1.4	64QAM	1	3	20.06	19.85	19.85	
1.4	64QAM	1	5	19.88	19.83	19.71	
1.4	64QAM	3	0	19.99	19.88	19.92	
1.4	64QAM	3	1	20.10	19.85	19.81	
1.4	64QAM	3	3	19.81	19.80	19.69	
1.4	64QAM	6	0	18.66	18.73	18.63	20

<LTE Band 5>

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	24.53	24.55	24.54	25.5
10	QPSK	1	25	24.52	24.53	24.49	
10	QPSK	1	49	24.50	24.54	24.52	
10	QPSK	25	0	23.62	23.63	23.52	24.5
10	QPSK	25	12	23.54	23.55	23.43	
10	QPSK	25	25	23.61	23.49	23.41	
10	QPSK	50	0	23.52	23.56	23.45	
10	16QAM	1	0	23.81	23.75	23.83	24.5
10	16QAM	1	25	23.81	23.90	23.71	
10	16QAM	1	49	23.85	23.89	23.74	
10	16QAM	25	0	22.69	22.67	22.59	23.5
10	16QAM	25	12	22.64	22.68	22.57	
10	16QAM	25	25	22.69	22.63	22.47	
10	16QAM	50	0	22.63	22.67	22.52	
10	64QAM	1	0	22.72	22.70	22.73	23.5
10	64QAM	1	25	22.77	22.80	22.68	
10	64QAM	1	49	22.78	22.81	22.69	
10	64QAM	25	0	21.72	21.70	21.57	22.5
10	64QAM	25	12	21.67	21.68	21.56	
10	64QAM	25	25	21.70	21.64	21.53	
10	64QAM	50	0	21.68	21.66	21.58	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	24.49	24.48	24.48	25.5
5	QPSK	1	12	24.43	24.47	24.46	
5	QPSK	1	24	24.47	24.47	24.52	
5	QPSK	12	0	23.55	23.56	23.52	24.5
5	QPSK	12	7	23.44	23.53	23.34	
5	QPSK	12	13	23.51	23.42	23.35	
5	QPSK	25	0	23.51	23.54	23.35	
5	16QAM	1	0	23.81	23.74	23.74	24.5
5	16QAM	1	12	23.81	23.87	23.65	
5	16QAM	1	24	23.85	23.85	23.72	
5	16QAM	12	0	22.63	22.60	22.57	23.5
5	16QAM	12	7	22.55	22.58	22.53	
5	16QAM	12	13	22.66	22.62	22.45	
5	16QAM	25	0	22.54	22.66	22.42	
5	64QAM	1	0	22.69	22.67	22.66	23.5
5	64QAM	1	12	22.74	22.77	22.67	
5	64QAM	1	24	22.69	22.80	22.61	
5	64QAM	12	0	21.62	21.64	21.54	22.5
5	64QAM	12	7	21.63	21.66	21.46	
5	64QAM	12	13	21.63	21.54	21.52	
5	64QAM	25	0	21.63	21.65	21.49	

Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	24.47	24.47	24.47	25.5
3	QPSK	1	8	24.45	24.51	24.48	
3	QPSK	1	14	24.50	24.47	24.44	
3	QPSK	8	0	23.62	23.54	23.50	24.5
3	QPSK	8	4	23.49	23.51	23.41	
3	QPSK	8	7	23.59	23.48	23.32	
3	QPSK	15	0	23.45	23.53	23.39	
3	16QAM	1	0	23.75	23.69	23.76	24.5
3	16QAM	1	8	23.77	23.90	23.64	
3	16QAM	1	14	23.81	23.80	23.66	
3	16QAM	8	0	22.60	22.65	22.52	23.5
3	16QAM	8	4	22.57	22.58	22.57	
3	16QAM	8	7	22.60	22.55	22.47	
3	16QAM	15	0	22.59	22.63	22.47	
3	64QAM	1	0	22.69	22.60	22.68	23.5
3	64QAM	1	8	22.67	22.70	22.65	
3	64QAM	1	14	22.76	22.77	22.69	
3	64QAM	8	0	21.70	21.70	21.49	22.5
3	64QAM	8	4	21.60	21.67	21.53	
3	64QAM	8	7	21.62	21.56	21.48	
3	64QAM	15	0	21.65	21.64	21.58	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	24.42	24.35	24.34	25.5
1.4	QPSK	1	3	24.31	24.39	24.38	
1.4	QPSK	1	5	24.43	24.38	24.29	
1.4	QPSK	3	0	23.55	23.56	23.61	
1.4	QPSK	3	1	23.52	23.51	23.55	
1.4	QPSK	3	3	23.50	23.50	23.52	
1.4	QPSK	6	0	23.31	23.45	23.34	24.5
1.4	16QAM	1	0	23.61	23.55	23.69	24.5
1.4	16QAM	1	3	23.69	23.82	23.59	
1.4	16QAM	1	5	23.73	23.69	23.54	
1.4	16QAM	3	0	22.50	22.51	22.56	
1.4	16QAM	3	1	22.51	22.52	22.51	
1.4	16QAM	3	3	22.54	22.51	22.50	
1.4	16QAM	6	0	22.51	22.55	22.38	23.5
1.4	64QAM	1	0	22.59	22.55	22.63	23.5
1.4	64QAM	1	3	22.57	22.59	22.50	
1.4	64QAM	1	5	22.71	22.72	22.62	
1.4	64QAM	3	0	21.58	21.55	22.15	
1.4	64QAM	3	1	21.52	21.55	22.10	
1.4	64QAM	3	3	21.55	21.57	21.55	
1.4	64QAM	6	0	21.60	21.53	21.53	22.5

<LTE Band 7>

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	22.71	22.89	22.83	23.5
20	QPSK	1	49	22.40	22.83	22.71	
20	QPSK	1	99	22.31	22.86	22.62	
20	QPSK	50	0	21.70	21.90	21.78	22.5
20	QPSK	50	24	21.62	21.84	21.74	
20	QPSK	50	50	21.64	21.88	21.68	
20	QPSK	100	0	21.65	21.87	21.76	
20	16QAM	1	0	21.59	22.05	21.93	22.5
20	16QAM	1	49	21.73	22.12	22.09	
20	16QAM	1	99	22.12	22.14	22.23	
20	16QAM	50	0	20.56	20.90	20.78	21.5
20	16QAM	50	24	20.70	20.94	20.86	
20	16QAM	50	50	20.82	20.99	20.89	
20	16QAM	100	0	20.71	20.95	20.83	
20	64QAM	1	0	20.55	20.96	20.88	21.5
20	64QAM	1	49	20.67	21.07	20.99	
20	64QAM	1	99	21.05	21.10	21.15	
20	64QAM	50	0	19.62	19.95	19.82	20.5
20	64QAM	50	24	19.76	19.98	19.88	
20	64QAM	50	50	19.81	19.96	19.91	
20	64QAM	100	0	19.72	19.98	19.87	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	22.63	22.85	22.81	23.5
15	QPSK	1	37	22.32	22.80	22.70	
15	QPSK	1	74	22.28	22.86	22.60	
15	QPSK	36	0	21.40	21.75	21.64	22.5
15	QPSK	36	20	21.53	21.84	21.68	
15	QPSK	36	39	21.68	21.83	21.70	
15	QPSK	75	0	21.58	21.87	21.71	
15	16QAM	1	0	21.50	22.05	21.89	22.5
15	16QAM	1	37	21.71	22.09	22.02	
15	16QAM	1	74	22.05	22.14	22.22	
15	16QAM	36	0	20.52	20.87	20.73	21.5
15	16QAM	36	20	20.63	20.94	20.83	
15	16QAM	36	39	20.73	20.99	20.88	
15	16QAM	75	0	20.67	20.86	20.80	
15	64QAM	1	0	20.55	20.94	20.87	21.5
15	64QAM	1	37	20.66	21.02	20.98	
15	64QAM	1	74	20.99	21.09	21.11	
15	64QAM	36	0	19.52	19.85	19.82	20.5
15	64QAM	36	20	19.66	19.96	19.85	
15	64QAM	36	39	19.77	19.87	19.82	
15	64QAM	75	0	19.71	19.92	19.83	
Channel				20800	21100	21400	Tune-up limit

Frequency (MHz)				2505	2535	2565	(dBm)
10	QPSK	1	0	22.70	22.83	22.75	23.5
10	QPSK	1	25	22.40	22.76	22.63	
10	QPSK	1	49	22.26	22.81	22.59	
10	QPSK	25	0	21.40	21.73	21.65	22.5
10	QPSK	25	12	21.59	21.82	21.71	
10	QPSK	25	25	21.64	21.79	21.72	
10	QPSK	50	0	21.56	21.78	21.73	
10	16QAM	1	0	21.51	22.05	21.86	22.5
10	16QAM	1	25	21.63	22.10	22.08	
10	16QAM	1	49	22.05	22.13	22.22	
10	16QAM	25	0	20.55	20.88	20.70	21.5
10	16QAM	25	12	20.63	20.87	20.76	
10	16QAM	25	25	20.72	20.98	20.88	
10	16QAM	50	0	20.66	20.88	20.83	
10	64QAM	1	0	20.50	20.96	20.87	21.5
10	64QAM	1	25	20.60	20.98	20.99	
10	64QAM	1	49	20.99	21.03	21.10	
10	64QAM	25	0	19.61	19.91	19.74	20.5
10	64QAM	25	12	19.71	19.90	19.82	
10	64QAM	25	25	19.72	19.87	19.83	
10	64QAM	50	0	19.64	19.88	19.85	
Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	22.69	22.86	22.79	23.5
5	QPSK	1	12	22.37	22.78	22.69	
5	QPSK	1	24	22.27	22.77	22.59	
5	QPSK	12	0	21.43	21.80	21.62	22.5
5	QPSK	12	7	21.59	21.74	21.70	
5	QPSK	12	13	21.72	21.86	21.72	
5	QPSK	25	0	21.59	21.78	21.70	
5	16QAM	1	0	21.51	22.02	21.88	22.5
5	16QAM	1	12	21.73	22.02	22.02	
5	16QAM	1	24	22.08	22.08	22.20	
5	16QAM	12	0	20.54	20.82	20.73	21.5
5	16QAM	12	7	20.65	20.93	20.76	
5	16QAM	12	13	20.81	20.98	20.89	
5	16QAM	25	0	20.63	20.94	20.83	
5	64QAM	1	0	20.48	20.94	20.86	21.5
5	64QAM	1	12	20.67	21.04	20.95	
5	64QAM	1	24	21.00	21.05	21.06	
5	64QAM	12	0	19.61	19.86	19.75	20.5
5	64QAM	12	7	19.71	19.94	19.78	
5	64QAM	12	13	19.73	19.94	19.83	
5	64QAM	25	0	19.72	19.90	19.85	

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23780	23790	23800	
Frequency (MHz)				709	710	711	
10	QPSK	1	0	23.92	24.03	23.94	25
10	QPSK	1	25	23.88	23.87	23.86	
10	QPSK	1	49	23.76	23.71	23.71	
10	QPSK	25	0	22.93	22.94	22.90	24
10	QPSK	25	12	22.89	22.91	22.86	
10	QPSK	25	25	22.83	22.79	22.84	
10	QPSK	50	0	22.86	22.89	22.87	
10	16QAM	1	0	23.37	23.28	23.36	24
10	16QAM	1	25	23.16	23.26	23.19	
10	16QAM	1	49	23.18	23.19	23.08	
10	16QAM	25	0	22.06	22.06	22.06	23
10	16QAM	25	12	22.05	22.06	22.01	
10	16QAM	25	25	21.98	21.96	21.98	
10	16QAM	50	0	22.01	22.00	22.02	
10	64QAM	1	0	22.27	22.24	22.25	23
10	64QAM	1	25	22.14	22.15	22.17	
10	64QAM	1	49	22.01	22.05	22.02	
10	64QAM	25	0	21.07	21.09	21.06	22
10	64QAM	25	12	21.07	21.06	21.07	
10	64QAM	25	25	20.98	20.98	20.95	
10	64QAM	50	0	21.05	21.03	20.99	
Channel				23755	23790	23825	Tune-up limit (dBm)
Frequency (MHz)				706.5	710	713.5	
5	QPSK	1	0	23.84	24.02	23.88	25
5	QPSK	1	12	23.79	23.79	23.80	
5	QPSK	1	24	23.75	23.62	23.66	
5	QPSK	12	0	22.88	22.85	22.86	24
5	QPSK	12	7	22.87	22.86	22.82	
5	QPSK	12	13	22.83	22.79	22.75	
5	QPSK	25	0	22.82	22.83	22.86	
5	16QAM	1	0	23.37	23.25	23.27	24
5	16QAM	1	12	23.08	23.18	23.16	
5	16QAM	1	24	23.11	23.12	23.01	
5	16QAM	12	0	22.05	21.99	21.97	23
5	16QAM	12	7	22.00	22.02	22.00	
5	16QAM	12	13	21.97	21.86	21.96	
5	16QAM	25	0	21.99	21.96	21.93	
5	64QAM	1	0	22.26	22.21	22.18	23
5	64QAM	1	12	22.13	22.07	22.11	
5	64QAM	1	24	21.96	22.03	21.94	
5	64QAM	12	0	21.05	21.00	21.01	22
5	64QAM	12	7	20.97	20.96	21.06	
5	64QAM	12	13	20.97	20.97	20.92	
5	64QAM	25	0	21.04	21.01	20.96	

Reduced Power Mode

<LTE Band 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				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	18.09	18.16	17.84	18.5
20	QPSK	1	49	17.88	18.08	17.83	
20	QPSK	1	99	18.08	17.90	17.63	
20	QPSK	50	0	17.06	17.09	16.90	17.5
20	QPSK	50	24	16.95	17.02	16.80	
20	QPSK	50	50	17.00	17.08	16.82	
20	QPSK	100	0	16.97	17.04	16.83	
20	16QAM	1	0	17.40	17.42	17.27	17.5
20	16QAM	1	49	17.42	17.43	17.42	
20	16QAM	1	99	17.34	17.38	17.30	
20	16QAM	50	0	16.23	16.41	16.18	16.5
20	16QAM	50	24	16.31	16.39	16.11	
20	16QAM	50	50	16.33	16.36	16.05	
20	16QAM	100	0	16.37	16.40	16.07	
20	64QAM	1	0	16.27	16.32	16.40	16.5
20	64QAM	1	49	16.32	16.42	16.34	
20	64QAM	1	99	16.32	16.26	16.12	
20	64QAM	50	0	15.17	15.44	15.23	15.5
20	64QAM	50	24	15.14	15.43	15.14	
20	64QAM	50	50	15.09	15.36	15.13	
20	64QAM	100	0	15.05	15.36	15.16	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	18.03	18.14	17.78	18.5
15	QPSK	1	37	17.89	18.12	17.76	
15	QPSK	1	74	18.07	17.87	17.63	
15	QPSK	36	0	16.98	17.06	16.83	17.5
15	QPSK	36	20	16.96	17.05	16.83	
15	QPSK	36	39	17.03	17.04	16.77	
15	QPSK	75	0	17.06	16.98	16.79	
15	16QAM	1	0	17.32	17.45	17.31	17.5
15	16QAM	1	37	17.40	17.48	17.37	
15	16QAM	1	74	17.38	17.39	17.34	
15	16QAM	36	0	16.28	16.39	16.14	16.5
15	16QAM	36	20	16.30	16.45	16.16	
15	16QAM	36	39	16.30	16.39	16.07	
15	16QAM	75	0	16.39	16.32	16.09	
15	64QAM	1	0	16.27	16.37	16.44	16.5
15	64QAM	1	37	16.29	16.39	16.42	
15	64QAM	1	74	16.28	16.24	16.16	
15	64QAM	36	0	15.15	15.44	15.16	15.5
15	64QAM	36	20	15.11	15.38	15.12	
15	64QAM	36	39	15.11	15.34	15.07	
15	64QAM	75	0	15.11	15.44	15.07	

Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	18.09	18.15	17.79	18.5
10	QPSK	1	25	17.94	18.13	17.78	
10	QPSK	1	49	18.02	17.96	17.64	
10	QPSK	25	0	17.00	17.06	16.86	17.5
10	QPSK	25	12	16.93	17.11	16.84	
10	QPSK	25	25	17.05	17.04	16.80	
10	QPSK	50	0	16.97	16.98	16.77	
10	16QAM	1	0	17.31	17.45	17.31	17.5
10	16QAM	1	25	17.43	17.47	17.43	
10	16QAM	1	49	17.38	17.38	17.29	
10	16QAM	25	0	16.26	16.42	16.17	16.5
10	16QAM	25	12	16.30	16.40	16.10	
10	16QAM	25	25	16.35	16.43	16.12	
10	16QAM	50	0	16.35	16.39	16.03	
10	64QAM	1	0	16.26	16.39	16.42	16.5
10	64QAM	1	25	16.31	16.39	16.41	
10	64QAM	1	49	16.33	16.26	16.18	
10	64QAM	25	0	15.16	15.46	15.24	15.5
10	64QAM	25	12	15.20	15.48	15.08	
10	64QAM	25	25	15.09	15.34	15.06	
10	64QAM	50	0	15.08	15.38	15.06	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	18.07	18.09	17.78	18.5
5	QPSK	1	12	17.98	18.10	17.79	
5	QPSK	1	24	18.04	17.93	17.61	
5	QPSK	12	0	17.06	17.10	16.86	17.5
5	QPSK	12	7	16.99	17.06	16.86	
5	QPSK	12	13	17.03	17.06	16.75	
5	QPSK	25	0	17.00	17.04	16.82	
5	16QAM	1	0	17.40	17.40	17.26	17.5
5	16QAM	1	12	17.44	17.46	17.33	
5	16QAM	1	24	17.34	17.40	17.33	
5	16QAM	12	0	16.26	16.36	16.18	16.5
5	16QAM	12	7	16.24	16.36	16.17	
5	16QAM	12	13	16.35	16.34	16.12	
5	16QAM	25	0	16.42	16.32	16.03	
5	64QAM	1	0	16.20	16.37	16.41	16.5
5	64QAM	1	12	16.31	16.33	16.36	
5	64QAM	1	24	16.32	16.30	16.17	
5	64QAM	12	0	15.17	15.46	15.19	15.5
5	64QAM	12	7	15.14	15.47	15.08	
5	64QAM	12	13	15.05	15.39	15.10	
5	64QAM	25	0	15.08	15.43	15.16	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	18.06	18.14	17.86	18.5
3	QPSK	1	8	17.94	18.05	17.84	

3	QPSK	1	14	18.00	17.92	17.60	
3	QPSK	8	0	16.97	17.09	16.90	17.5
3	QPSK	8	4	16.96	17.02	16.81	
3	QPSK	8	7	16.99	17.02	16.79	
3	QPSK	15	0	17.00	16.98	16.74	
3	16QAM	1	0	17.39	17.44	17.31	17.5
3	16QAM	1	8	17.39	17.46	17.38	
3	16QAM	1	14	17.34	17.40	17.26	
3	16QAM	8	0	16.24	16.38	16.18	16.5
3	16QAM	8	4	16.24	16.45	16.13	
3	16QAM	8	7	16.38	16.34	16.14	
3	16QAM	15	0	16.41	16.32	16.09	
3	64QAM	1	0	16.25	16.38	16.45	16.5
3	64QAM	1	8	16.35	16.34	16.42	
3	64QAM	1	14	16.24	16.31	16.19	
3	64QAM	8	0	15.07	15.43	15.18	15.5
3	64QAM	8	4	15.17	15.38	15.11	
3	64QAM	8	7	15.08	15.35	15.08	
3	64QAM	15	0	15.13	15.37	15.11	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	18.04	18.06	17.81	18.5
1.4	QPSK	1	3	17.88	18.15	17.77	
1.4	QPSK	1	5	17.98	17.91	17.61	
1.4	QPSK	3	0	18.01	18.11	17.87	
1.4	QPSK	3	1	17.89	18.08	17.83	
1.4	QPSK	3	3	17.99	17.95	17.62	
1.4	QPSK	6	0	17.03	17.05	16.81	17.5
1.4	16QAM	1	0	17.39	17.39	17.28	17.5
1.4	16QAM	1	3	17.43	17.44	17.40	
1.4	16QAM	1	5	17.38	17.39	17.32	
1.4	16QAM	3	0	17.38	17.37	17.23	
1.4	16QAM	3	1	17.42	17.41	17.40	
1.4	16QAM	3	3	17.37	17.43	17.30	
1.4	16QAM	6	0	16.32	16.40	16.10	16.5
1.4	64QAM	1	0	16.30	16.41	16.45	16.5
1.4	64QAM	1	3	16.37	16.42	16.37	
1.4	64QAM	1	5	16.30	16.25	16.16	
1.4	64QAM	3	0	16.21	16.39	16.43	
1.4	64QAM	3	1	16.27	16.35	16.35	
1.4	64QAM	3	3	16.27	16.25	16.16	
1.4	64QAM	6	0	15.13	15.41	15.13	15.5

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	15.54	15.58	15.41	16.5
20	QPSK	1	49	15.43	15.32	15.26	
20	QPSK	1	99	15.26	15.18	15.07	
20	QPSK	50	0	14.51	14.52	14.42	15.5
20	QPSK	50	24	14.50	14.41	14.31	
20	QPSK	50	50	14.35	14.38	14.26	
20	QPSK	100	0	14.48	14.49	14.31	
20	16QAM	1	0	14.93	14.83	14.73	15.5
20	16QAM	1	49	14.83	14.74	14.66	
20	16QAM	1	99	14.72	14.55	14.41	
20	16QAM	50	0	13.61	13.52	13.53	14.5
20	16QAM	50	24	13.65	13.53	13.43	
20	16QAM	50	50	13.48	13.47	13.39	
20	16QAM	100	0	13.60	13.51	13.40	
20	64QAM	1	0	13.81	13.69	13.63	14.5
20	64QAM	1	49	13.72	13.68	13.60	
20	64QAM	1	99	13.53	13.42	13.39	
20	64QAM	50	0	12.65	12.54	12.55	13.5
20	64QAM	50	24	12.65	12.57	12.45	
20	64QAM	50	50	12.49	12.52	12.39	
20	64QAM	100	0	12.59	12.49	12.42	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	15.53	15.51	15.40	16.5
15	QPSK	1	37	15.41	15.32	15.24	
15	QPSK	1	74	15.28	15.18	15.08	
15	QPSK	36	0	14.48	14.49	14.45	15.5
15	QPSK	36	20	14.51	14.39	14.29	
15	QPSK	36	39	14.32	14.39	14.22	
15	QPSK	75	0	14.47	14.48	14.29	
15	16QAM	1	0	14.91	14.86	14.66	15.5
15	16QAM	1	37	14.82	14.75	14.63	
15	16QAM	1	74	14.65	14.52	14.35	
15	16QAM	36	0	13.64	13.55	13.54	14.5
15	16QAM	36	20	13.67	13.47	13.41	
15	16QAM	36	39	13.48	13.41	13.38	
15	16QAM	75	0	13.57	13.51	13.38	
15	64QAM	1	0	13.79	13.63	13.56	14.5
15	64QAM	1	37	13.66	13.65	13.57	
15	64QAM	1	74	13.54	13.35	13.33	
15	64QAM	36	0	12.61	12.55	12.53	13.5
15	64QAM	36	20	12.63	12.53	12.42	
15	64QAM	36	39	12.49	12.47	12.32	
15	64QAM	75	0	12.52	12.42	12.40	
Channel				20000	20175	20350	Tune-up limit

Frequency (MHz)				1715	1732.5	1750	(dBm)
10	QPSK	1	0	15.55	15.57	15.33	16.5
10	QPSK	1	25	15.38	15.32	15.26	
10	QPSK	1	49	15.30	15.14	15.03	
10	QPSK	25	0	14.50	14.43	14.44	15.5
10	QPSK	25	12	14.51	14.39	14.22	
10	QPSK	25	25	14.30	14.33	14.25	
10	QPSK	50	0	14.42	14.42	14.28	
10	16QAM	1	0	14.87	14.84	14.68	15.5
10	16QAM	1	25	14.75	14.75	14.59	
10	16QAM	1	49	14.65	14.51	14.35	
10	16QAM	25	0	13.65	13.48	13.52	14.5
10	16QAM	25	12	13.61	13.47	13.35	
10	16QAM	25	25	13.50	13.44	13.40	
10	16QAM	50	0	13.54	13.46	13.37	
10	64QAM	1	0	13.72	13.66	13.58	14.5
10	64QAM	1	25	13.59	13.66	13.56	
10	64QAM	1	49	13.48	13.35	13.36	
10	64QAM	25	0	12.62	12.56	12.56	13.5
10	64QAM	25	12	12.57	12.53	12.43	
10	64QAM	25	25	12.52	12.46	12.33	
10	64QAM	50	0	12.46	12.44	12.34	
Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	15.52	15.52	15.35	16.5
5	QPSK	1	12	15.35	15.28	15.20	
5	QPSK	1	24	15.27	15.15	15.04	
5	QPSK	12	0	14.44	14.39	14.47	15.5
5	QPSK	12	7	14.48	14.36	14.23	
5	QPSK	12	13	14.31	14.29	14.27	
5	QPSK	25	0	14.44	14.36	14.26	
5	16QAM	1	0	14.80	14.80	14.61	15.5
5	16QAM	1	12	14.71	14.77	14.52	
5	16QAM	1	24	14.68	14.50	14.37	
5	16QAM	12	0	13.67	13.49	13.49	14.5
5	16QAM	12	7	13.56	13.49	13.28	
5	16QAM	12	13	13.53	13.42	13.37	
5	16QAM	25	0	13.52	13.47	13.36	
5	64QAM	1	0	13.65	13.66	13.56	14.5
5	64QAM	1	12	13.58	13.62	13.54	
5	64QAM	1	24	13.47	13.31	13.38	
5	64QAM	12	0	12.60	12.57	12.51	13.5
5	64QAM	12	7	12.58	12.52	12.36	
5	64QAM	12	13	12.53	12.42	12.33	
5	64QAM	25	0	12.47	12.45	12.27	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	15.50	15.53	15.35	16.5
3	QPSK	1	8	15.34	15.22	15.23	
3	QPSK	1	14	15.23	15.17	15.02	

3	QPSK	8	0	14.46	14.42	14.45	15.5
3	QPSK	8	4	14.51	14.29	14.26	
3	QPSK	8	7	14.26	14.22	14.28	
3	QPSK	15	0	14.39	14.39	14.24	
3	16QAM	1	0	14.74	14.80	14.57	15.5
3	16QAM	1	8	14.69	14.75	14.47	
3	16QAM	1	14	14.67	14.47	14.33	
3	16QAM	8	0	13.60	13.44	13.51	14.5
3	16QAM	8	4	13.49	13.44	13.21	
3	16QAM	8	7	13.46	13.41	13.36	
3	16QAM	15	0	13.47	13.46	13.34	
3	64QAM	1	0	13.65	13.69	13.58	14.5
3	64QAM	1	8	13.52	13.60	13.55	
3	64QAM	1	14	13.40	13.26	13.36	
3	64QAM	8	0	12.62	12.60	12.47	13.5
3	64QAM	8	4	12.53	12.51	12.31	
3	64QAM	8	7	12.52	12.42	12.30	
3	64QAM	15	0	12.40	12.38	12.30	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	15.64	15.58	15.33	16.5
1.4	QPSK	1	3	15.46	15.57	15.41	
1.4	QPSK	1	5	15.54	15.67	15.31	
1.4	QPSK	3	0	15.59	15.59	15.47	
1.4	QPSK	3	1	15.41	15.41	15.44	
1.4	QPSK	3	3	15.66	15.61	15.38	
1.4	QPSK	6	0	14.66	14.62	14.52	15.5
1.4	16QAM	1	0	14.92	14.90	14.76	15.5
1.4	16QAM	1	3	15.04	14.85	14.70	
1.4	16QAM	1	5	14.88	14.91	14.64	
1.4	16QAM	3	0	14.86	14.82	14.78	
1.4	16QAM	3	1	14.98	14.92	14.75	
1.4	16QAM	3	3	14.86	14.96	14.65	
1.4	16QAM	6	0	13.66	13.61	13.58	14.5
1.4	64QAM	1	0	13.85	13.73	13.64	14.5
1.4	64QAM	1	3	13.79	13.85	13.67	
1.4	64QAM	1	5	13.76	13.87	13.70	
1.4	64QAM	3	0	13.79	13.75	13.63	
1.4	64QAM	3	1	13.88	13.84	13.64	
1.4	64QAM	3	3	13.85	13.83	13.67	
1.4	64QAM	6	0	12.64	12.74	12.71	13.5

<LTE Band 5>

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	20.12	20.16	19.73	21
10	QPSK	1	25	20.04	19.96	19.67	
10	QPSK	1	49	19.98	19.78	19.48	
10	QPSK	25	0	19.12	19.14	18.73	20
10	QPSK	25	12	19.11	19.03	18.71	
10	QPSK	25	25	19.05	18.95	18.66	
10	QPSK	50	0	19.09	19.10	18.71	
10	16QAM	1	0	19.52	19.45	19.15	20
10	16QAM	1	25	19.47	19.37	19.09	
10	16QAM	1	49	19.43	19.16	18.92	
10	16QAM	25	0	18.25	18.14	17.85	19
10	16QAM	25	12	18.24	18.14	17.85	
10	16QAM	25	25	18.17	18.09	17.78	
10	16QAM	50	0	18.21	18.10	17.83	
10	64QAM	1	0	18.67	18.31	18.06	19
10	64QAM	1	25	18.38	18.25	18.00	
10	64QAM	1	49	18.34	18.14	17.82	
10	64QAM	25	0	17.26	17.17	16.86	18
10	64QAM	25	12	17.27	17.15	16.86	
10	64QAM	25	25	17.20	17.10	16.80	
10	64QAM	50	0	17.21	17.14	16.80	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	20.08	20.11	19.75	21
5	QPSK	1	12	20.03	19.98	19.61	
5	QPSK	1	24	20.00	19.79	19.46	
5	QPSK	12	0	19.09	19.13	18.70	20
5	QPSK	12	7	19.14	18.99	18.71	
5	QPSK	12	13	19.01	18.90	18.62	
5	QPSK	25	0	19.06	19.11	18.70	
5	16QAM	1	0	19.48	19.41	19.17	20
5	16QAM	1	12	19.49	19.34	19.07	
5	16QAM	1	24	19.36	19.10	18.94	
5	16QAM	12	0	18.21	18.16	17.83	19
5	16QAM	12	7	18.24	18.10	17.86	
5	16QAM	12	13	18.20	18.12	17.78	
5	16QAM	25	0	18.22	18.09	17.83	
5	64QAM	1	0	18.62	18.27	18.09	19
5	64QAM	1	12	18.34	18.21	17.94	
5	64QAM	1	24	18.34	18.11	17.82	
5	64QAM	12	0	17.22	17.19	16.82	18
5	64QAM	12	7	17.23	17.08	16.84	
5	64QAM	12	13	17.14	17.09	16.78	
5	64QAM	25	0	17.24	17.15	16.81	
Channel				20415	20525	20635	Tune-up limit

Frequency (MHz)				825.5	836.5	847.5	(dBm)
3	QPSK	1	0	20.05	20.08	19.71	21
3	QPSK	1	8	20.02	19.95	19.60	
3	QPSK	1	14	19.99	19.78	19.43	
3	QPSK	8	0	19.11	19.11	18.67	20
3	QPSK	8	4	19.15	18.97	18.71	
3	QPSK	8	7	18.99	18.91	18.62	
3	QPSK	15	0	19.08	19.08	18.65	
3	16QAM	1	0	19.47	19.38	19.18	20
3	16QAM	1	8	19.50	19.28	19.08	
3	16QAM	1	14	19.37	19.04	18.97	
3	16QAM	8	0	18.16	18.10	17.82	19
3	16QAM	8	4	18.17	18.03	17.80	
3	16QAM	8	7	18.17	18.06	17.80	
3	16QAM	15	0	18.24	18.04	17.81	
3	64QAM	1	0	18.64	18.21	18.05	19
3	64QAM	1	8	18.27	18.14	17.89	
3	64QAM	1	14	18.37	18.10	17.77	
3	64QAM	8	0	17.19	17.21	16.79	18
3	64QAM	8	4	17.26	17.11	16.81	
3	64QAM	8	7	17.10	17.07	16.81	
3	64QAM	15	0	17.18	17.11	16.74	
Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	20.01	20.08	19.82	21
1.4	QPSK	1	3	19.96	20.04	19.89	
1.4	QPSK	1	5	20.05	20.00	19.86	
1.4	QPSK	3	0	19.91	19.99	19.94	
1.4	QPSK	3	1	19.88	19.88	19.93	
1.4	QPSK	3	3	19.86	20.01	19.88	
1.4	QPSK	6	0	19.17	19.07	19.05	20
1.4	16QAM	1	0	19.41	19.35	19.27	20
1.4	16QAM	1	3	19.48	19.29	19.18	
1.4	16QAM	1	5	19.35	19.34	19.13	
1.4	16QAM	3	0	19.34	19.36	19.27	
1.4	16QAM	3	1	19.44	19.37	19.19	
1.4	16QAM	3	3	19.41	19.48	19.06	
1.4	16QAM	6	0	18.18	18.14	18.15	19
1.4	64QAM	1	0	18.30	18.19	18.06	19
1.4	64QAM	1	3	18.34	18.32	18.17	
1.4	64QAM	1	5	18.32	18.37	18.21	
1.4	64QAM	3	0	18.39	18.23	18.21	
1.4	64QAM	3	1	18.35	18.37	18.16	
1.4	64QAM	3	3	18.33	18.37	18.18	
1.4	64QAM	6	0	17.15	17.26	17.16	18

<LTE Band 7>

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	14.53	14.71	14.67	15.5
20	QPSK	1	49	14.44	14.53	14.62	
20	QPSK	1	99	14.52	14.69	14.67	
20	QPSK	50	0	13.49	13.58	13.49	14.5
20	QPSK	50	24	13.45	13.55	13.42	
20	QPSK	50	50	13.48	13.54	13.38	
20	QPSK	100	0	13.47	13.54	13.49	
20	16QAM	1	0	13.78	13.88	14.13	14.5
20	16QAM	1	49	13.86	14.02	14.35	
20	16QAM	1	99	13.99	14.23	14.48	
20	16QAM	50	0	12.54	12.65	12.89	13.5
20	16QAM	50	24	12.60	12.71	12.98	
20	16QAM	50	50	12.61	12.73	13.03	
20	16QAM	100	0	12.56	12.71	12.98	
20	64QAM	1	0	13.45	12.79	13.08	13.5
20	64QAM	1	49	13.48	12.90	13.12	
20	64QAM	1	99	13.50	13.17	13.41	
20	64QAM	50	0	12.34	11.67	11.93	12.5
20	64QAM	50	24	12.38	11.71	12.01	
20	64QAM	50	50	12.42	11.73	12.03	
20	64QAM	100	0	12.41	11.76	12.00	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	14.56	14.69	14.61	15.5
15	QPSK	1	37	14.45	14.49	14.63	
15	QPSK	1	74	14.46	14.70	14.69	
15	QPSK	36	0	13.47	13.54	13.43	14.5
15	QPSK	36	20	13.47	13.56	13.39	
15	QPSK	36	39	13.43	13.54	13.39	
15	QPSK	75	0	13.50	13.54	13.43	
15	16QAM	1	0	13.76	13.91	14.16	14.5
15	16QAM	1	37	13.88	13.99	14.34	
15	16QAM	1	74	13.95	14.24	14.44	
15	16QAM	36	0	12.47	12.67	12.91	13.5
15	16QAM	36	20	12.60	12.68	12.92	
15	16QAM	36	39	12.60	12.66	12.99	
15	16QAM	75	0	12.57	12.68	12.96	
15	64QAM	1	0	13.42	12.74	13.05	13.5
15	64QAM	1	37	13.49	12.83	13.15	
15	64QAM	1	74	13.50	13.14	13.40	
15	64QAM	36	0	12.32	11.62	11.96	12.5
15	64QAM	36	20	12.32	11.73	12.04	
15	64QAM	36	39	12.38	11.68	12.03	
15	64QAM	75	0	12.34	11.79	11.99	

Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	14.59	14.68	14.54	15.5
10	QPSK	1	25	14.46	14.46	14.64	
10	QPSK	1	49	14.40	14.63	14.66	
10	QPSK	25	0	13.42	13.56	13.45	14.5
10	QPSK	25	12	13.45	13.52	13.42	
10	QPSK	25	25	13.46	13.47	13.34	
10	QPSK	50	0	13.50	13.55	13.39	
10	16QAM	1	0	13.71	13.94	14.18	14.5
10	16QAM	1	25	13.82	13.99	14.35	
10	16QAM	1	49	13.98	14.26	14.37	
10	16QAM	25	0	12.45	12.62	12.94	13.5
10	16QAM	25	12	12.57	12.69	12.89	
10	16QAM	25	25	12.61	12.67	12.93	
10	16QAM	50	0	12.50	12.66	12.91	
10	64QAM	1	0	13.40	12.77	13.04	13.5
10	64QAM	1	25	13.51	12.79	13.12	
10	64QAM	1	49	13.43	13.17	13.37	
10	64QAM	25	0	12.25	11.62	11.89	12.5
10	64QAM	25	12	12.32	11.76	12.01	
10	64QAM	25	25	12.36	11.67	12.06	
10	64QAM	50	0	12.34	11.82	11.96	
Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	14.53	14.62	14.55	15.5
5	QPSK	1	12	14.44	14.46	14.61	
5	QPSK	1	24	14.37	14.62	14.59	
5	QPSK	12	0	13.38	13.58	13.44	14.5
5	QPSK	12	7	13.45	13.50	13.42	
5	QPSK	12	13	13.43	13.42	13.33	
5	QPSK	25	0	13.50	13.56	13.34	
5	16QAM	1	0	13.67	13.96	14.21	14.5
5	16QAM	1	12	13.82	13.95	14.36	
5	16QAM	1	24	13.96	14.26	14.31	
5	16QAM	12	0	12.48	12.56	12.87	13.5
5	16QAM	12	7	12.50	12.62	12.92	
5	16QAM	12	13	12.58	12.65	12.94	
5	16QAM	25	0	12.52	12.67	12.87	
5	64QAM	1	0	13.37	12.79	12.99	13.5
5	64QAM	1	12	13.47	12.73	13.08	
5	64QAM	1	24	13.37	13.19	13.40	
5	64QAM	12	0	12.18	11.59	11.86	12.5
5	64QAM	12	7	12.33	11.71	11.97	
5	64QAM	12	13	12.31	11.62	12.04	
5	64QAM	25	0	12.32	11.81	11.96	

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23780	23790	23800	
Frequency (MHz)				709	710	711	
10	QPSK	1	0	19.74	19.81	19.73	21
10	QPSK	1	25	19.76	19.72	19.75	
10	QPSK	1	49	19.79	19.75	19.78	
10	QPSK	25	0	18.82	18.83	18.82	20
10	QPSK	25	12	18.75	18.80	18.81	
10	QPSK	25	25	18.81	18.76	18.80	
10	QPSK	50	0	18.82	18.83	18.81	
10	16QAM	1	0	19.17	19.18	19.15	20
10	16QAM	1	25	19.20	19.12	19.13	
10	16QAM	1	49	19.27	19.20	19.18	
10	16QAM	25	0	17.94	17.92	17.93	19
10	16QAM	25	12	17.94	17.95	17.93	
10	16QAM	25	25	17.93	17.90	17.92	
10	16QAM	50	0	17.91	17.90	17.92	
10	64QAM	1	0	19.00	18.07	18.11	19
10	64QAM	1	25	19.00	18.04	18.09	
10	64QAM	1	49	19.00	18.12	18.15	
10	64QAM	25	0	17.91	16.98	16.95	18
10	64QAM	25	12	17.93	16.97	16.97	
10	64QAM	25	25	17.87	16.96	16.94	
10	64QAM	50	0	17.90	16.95	16.95	
Channel				23755	23790	23825	Tune-up limit (dBm)
Frequency (MHz)				706.5	710	713.5	
5	QPSK	1	0	19.74	19.76	19.70	21
5	QPSK	1	12	19.71	19.69	19.76	
5	QPSK	1	24	19.76	19.71	19.73	
5	QPSK	12	0	18.78	18.79	18.83	20
5	QPSK	12	7	18.77	18.82	18.84	
5	QPSK	12	13	18.74	18.71	18.80	
5	QPSK	25	0	18.76	18.83	18.80	
5	16QAM	1	0	19.11	19.16	19.13	20
5	16QAM	1	12	19.16	19.15	19.08	
5	16QAM	1	24	19.20	19.22	19.12	
5	16QAM	12	0	17.96	17.85	17.95	19
5	16QAM	12	7	17.91	17.88	17.92	
5	16QAM	12	13	17.94	17.85	17.90	
5	16QAM	25	0	17.86	17.88	17.95	
5	64QAM	1	0	19.00	18.01	18.06	19
5	64QAM	1	12	18.93	18.03	18.04	
5	64QAM	1	24	19.00	18.13	18.17	
5	64QAM	12	0	17.91	16.98	16.96	18
5	64QAM	12	7	17.91	16.93	17.00	
5	64QAM	12	13	17.87	16.89	16.95	
5	64QAM	25	0	17.92	16.94	16.96	

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

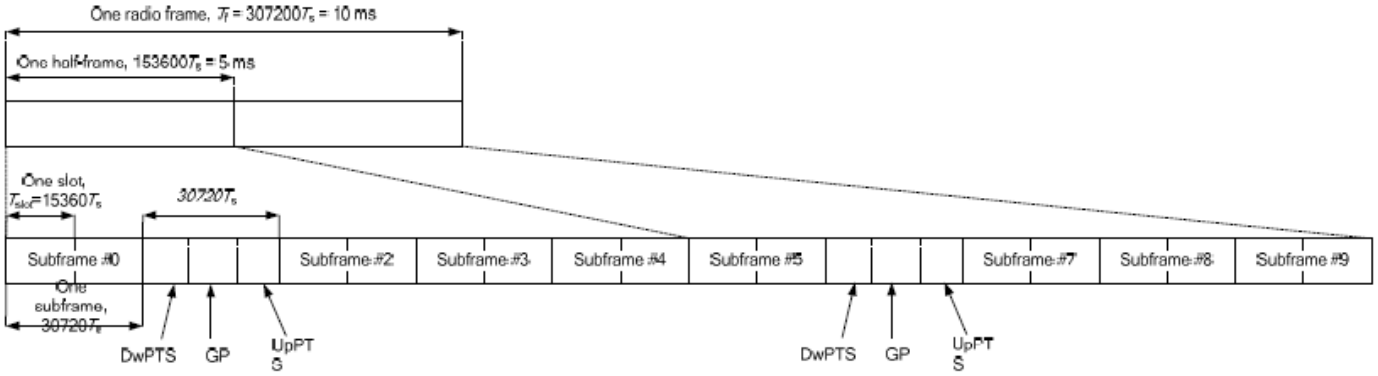


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. 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 scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

Default Power Mode

<LTE Band 38>

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	23.72	23.96	23.75	24.5
20	QPSK	1	49	23.71	23.69	23.72	
20	QPSK	1	99	23.61	23.83	23.74	
20	QPSK	50	0	22.80	22.83	22.84	23.5
20	QPSK	50	24	22.73	22.87	22.86	
20	QPSK	50	50	22.81	22.91	22.90	
20	QPSK	100	0	22.77	22.89	22.88	
20	16QAM	1	0	23.05	23.11	23.03	23.5
20	16QAM	1	49	23.02	23.10	23.07	
20	16QAM	1	99	22.97	23.12	23.14	
20	16QAM	50	0	21.93	21.92	21.95	22.5
20	16QAM	50	24	21.87	21.99	21.99	
20	16QAM	50	50	21.82	21.98	21.99	
20	16QAM	100	0	21.90	21.97	22.00	
20	64QAM	1	0	21.94	21.94	22.00	22.5
20	64QAM	1	49	21.94	21.98	22.01	
20	64QAM	1	99	21.87	22.06	22.10	
20	64QAM	50	0	20.90	20.96	20.94	21.5
20	64QAM	50	24	20.87	21.01	20.96	
20	64QAM	50	50	20.86	20.98	20.97	
20	64QAM	100	0	20.93	21.00	20.97	
Channel				37825	38000	38175	Tune-up limit (dBm)
Frequency (MHz)				2577.5	2595	2612.5	
15	QPSK	1	0	23.69	23.88	23.73	24.5
15	QPSK	1	37	23.67	23.64	23.67	
15	QPSK	1	74	23.54	23.80	23.73	
15	QPSK	36	0	22.80	22.78	22.74	23.5
15	QPSK	36	20	22.73	22.77	22.85	
15	QPSK	36	39	22.77	22.89	22.80	
15	QPSK	75	0	22.70	22.87	22.81	
15	16QAM	1	0	22.98	23.07	22.99	23.5
15	16QAM	1	37	23.00	23.05	23.06	
15	16QAM	1	74	22.88	23.11	23.14	
15	16QAM	36	0	21.84	21.90	21.88	22.5
15	16QAM	36	20	21.85	21.95	21.90	
15	16QAM	36	39	21.72	21.92	21.96	
15	16QAM	75	0	21.82	21.93	22.00	
15	64QAM	1	0	21.93	21.92	21.92	22.5
15	64QAM	1	37	21.91	21.91	21.92	
15	64QAM	1	74	21.84	22.02	22.04	
15	64QAM	36	0	20.90	20.96	20.92	21.5
15	64QAM	36	20	20.82	20.99	20.95	
15	64QAM	36	39	20.85	20.88	20.91	
15	64QAM	75	0	20.91	20.99	20.96	

Channel				37800	38000	38200	Tune-up limit (dBm)
Frequency (MHz)				2575	2595	2615	
10	QPSK	1	0	23.68	23.92	23.66	24.5
10	QPSK	1	25	23.63	23.66	23.62	
10	QPSK	1	49	23.61	23.80	23.65	
10	QPSK	25	0	22.79	22.80	22.81	23.5
10	QPSK	25	12	22.64	22.82	22.80	
10	QPSK	25	25	22.72	22.86	22.81	
10	QPSK	50	0	22.71	22.86	22.87	
10	16QAM	1	0	22.98	23.04	22.99	23.5
10	16QAM	1	25	22.96	23.09	23.01	
10	16QAM	1	49	22.87	23.08	23.14	
10	16QAM	25	0	21.85	21.89	21.88	22.5
10	16QAM	25	12	21.79	21.99	21.97	
10	16QAM	25	25	21.72	21.90	21.95	
10	16QAM	50	0	21.83	21.91	21.91	
10	64QAM	1	0	21.93	21.94	21.93	22.5
10	64QAM	1	25	21.88	21.94	21.98	
10	64QAM	1	49	21.78	22.00	22.07	
10	64QAM	25	0	20.90	20.93	20.85	21.5
10	64QAM	25	12	20.85	20.93	20.96	
10	64QAM	25	25	20.82	20.96	20.87	
10	64QAM	50	0	20.92	20.90	20.88	
Channel				37775	38000	38225	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	QPSK	1	0	23.72	23.93	23.69	24.5
5	QPSK	1	12	23.71	23.65	23.68	
5	QPSK	1	24	23.52	23.76	23.68	
5	QPSK	12	0	22.74	22.82	22.74	23.5
5	QPSK	12	7	22.64	22.78	22.76	
5	QPSK	12	13	22.80	22.85	22.90	
5	QPSK	25	0	22.72	22.87	22.81	
5	16QAM	1	0	23.04	23.02	23.03	23.5
5	16QAM	1	12	22.99	23.09	22.97	
5	16QAM	1	24	22.87	23.09	23.04	
5	16QAM	12	0	21.88	21.87	21.95	22.5
5	16QAM	12	7	21.86	21.96	21.96	
5	16QAM	12	13	21.73	21.92	21.92	
5	16QAM	25	0	21.85	21.96	21.94	
5	64QAM	1	0	21.87	21.94	21.91	22.5
5	64QAM	1	12	21.91	21.98	21.97	
5	64QAM	1	24	21.78	22.02	22.08	
5	64QAM	12	0	20.80	20.92	20.84	21.5
5	64QAM	12	7	20.77	20.93	20.87	
5	64QAM	12	13	20.76	20.98	20.91	
5	64QAM	25	0	20.93	20.90	20.89	

<LTE Band 41>

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	22.64	23.02	23.49	23.45	23.92	24.5
20	QPSK	1	49	22.48	22.93	23.38	23.41	23.80	
20	QPSK	1	99	22.60	22.99	23.41	23.42	23.90	
20	QPSK	50	0	21.64	22.09	22.45	22.46	22.95	23.5
20	QPSK	50	24	21.60	22.02	22.43	22.43	22.84	
20	QPSK	50	50	21.59	22.06	22.43	22.42	22.88	
20	QPSK	100	0	21.60	22.11	22.51	22.46	22.89	
20	16QAM	1	0	21.48	21.91	22.28	22.30	22.77	23.5
20	16QAM	1	49	21.57	22.06	22.41	22.41	22.84	
20	16QAM	1	99	21.63	22.10	22.46	22.49	22.86	
20	16QAM	50	0	20.65	21.09	21.44	21.44	21.90	22.5
20	16QAM	50	24	20.63	21.09	21.52	21.50	21.82	
20	16QAM	50	50	20.60	21.07	21.52	21.49	21.84	
20	16QAM	100	0	20.62	21.09	21.47	21.50	21.90	
20	64QAM	1	0	20.18	20.64	21.08	21.08	21.54	22.5
20	64QAM	1	49	20.37	20.73	21.13	21.15	21.61	
20	64QAM	1	99	20.29	20.77	21.17	21.24	21.60	
20	64QAM	50	0	19.64	20.04	20.45	20.52	20.88	21.5
20	64QAM	50	24	19.63	20.13	20.48	20.54	20.87	
20	64QAM	50	50	19.64	20.13	20.44	20.52	20.84	
20	64QAM	100	0	19.67	20.04	20.49	20.51	20.85	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	22.60	22.86	23.28	23.25	23.76	24.5
15	QPSK	1	37	22.60	22.92	23.28	23.37	23.73	
15	QPSK	1	74	22.72	22.89	23.40	23.41	23.75	
15	QPSK	36	0	21.68	21.98	22.37	22.39	22.76	23.5
15	QPSK	36	20	21.73	22.01	22.39	22.37	22.74	
15	QPSK	36	39	21.78	22.06	22.41	22.38	22.79	
15	QPSK	75	0	21.72	22.05	22.43	22.46	22.81	
15	16QAM	1	0	21.65	21.88	22.20	22.24	22.69	23.5
15	16QAM	1	37	21.69	22.01	22.35	22.39	22.76	
15	16QAM	1	74	21.80	22.08	22.43	22.40	22.82	
15	16QAM	36	0	20.84	21.06	21.44	21.42	21.85	22.5
15	16QAM	36	20	20.75	21.01	21.50	21.47	21.79	
15	16QAM	36	39	20.80	21.02	21.46	21.39	21.77	
15	16QAM	75	0	20.81	21.06	21.40	21.45	21.88	
15	64QAM	1	0	20.56	20.62	21.06	21.03	21.50	22.5
15	64QAM	1	37	20.52	20.67	21.09	21.07	21.56	
15	64QAM	1	74	20.51	20.70	21.17	21.17	21.52	
15	64QAM	36	0	19.80	20.00	20.41	20.48	20.87	21.5
15	64QAM	36	20	19.82	20.11	20.41	20.46	20.78	
15	64QAM	36	39	19.77	20.10	20.34	20.46	20.77	
15	64QAM	75	0	19.85	19.95	20.48	20.42	20.82	
Channel				39700	40160	40620	41080	41540	Tune-up

Frequency (MHz)				2501	2547	2593	2639	2685	limit (dBm)
10	QPSK	1	0	22.64	22.79	23.26	23.30	23.77	24.5
10	QPSK	1	25	22.59	22.91	23.31	23.39	23.70	
10	QPSK	1	49	22.80	22.92	23.37	23.35	23.77	
10	QPSK	25	0	21.73	21.96	22.39	22.40	22.81	23.5
10	QPSK	25	12	21.75	21.93	22.33	22.37	22.76	
10	QPSK	25	25	21.79	21.96	22.34	22.34	22.83	
10	QPSK	50	0	21.74	22.03	22.46	22.45	22.84	
10	16QAM	1	0	21.62	21.85	22.20	22.24	22.70	23.5
10	16QAM	1	25	21.67	21.98	22.35	22.39	22.82	
10	16QAM	1	49	21.83	22.06	22.41	22.45	22.78	
10	16QAM	25	0	20.81	21.02	21.38	21.41	21.84	22.5
10	16QAM	25	12	20.78	21.02	21.46	21.41	21.75	
10	16QAM	25	25	20.77	21.07	21.52	21.47	21.80	
10	16QAM	50	0	20.76	21.04	21.41	21.40	21.88	
10	64QAM	1	0	20.58	20.63	20.98	21.07	21.48	22.5
10	64QAM	1	25	20.57	20.65	21.10	21.10	21.60	
10	64QAM	1	49	20.52	20.70	21.07	21.23	21.56	
10	64QAM	25	0	19.77	20.03	20.35	20.42	20.84	21.5
10	64QAM	25	12	19.81	20.12	20.38	20.53	20.79	
10	64QAM	25	25	19.81	20.11	20.37	20.42	20.77	
10	64QAM	50	0	19.86	19.97	20.45	20.42	20.84	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	22.56	22.84	23.25	23.30	23.80	24.5
5	QPSK	1	12	22.63	22.87	23.32	23.40	23.77	
5	QPSK	1	24	22.71	22.96	23.40	23.32	23.72	
5	QPSK	12	0	21.74	21.91	22.38	22.36	22.83	23.5
5	QPSK	12	7	21.74	21.93	22.42	22.42	22.79	
5	QPSK	12	13	21.70	22.06	22.35	22.36	22.81	
5	QPSK	25	0	21.75	22.11	22.48	22.40	22.81	
5	16QAM	1	0	21.58	21.84	22.23	22.22	22.77	23.5
5	16QAM	1	12	21.70	22.00	22.36	22.37	22.79	
5	16QAM	1	24	21.83	22.09	22.39	22.47	22.76	
5	16QAM	12	0	20.77	21.03	21.41	21.43	21.87	22.5
5	16QAM	12	7	20.76	21.06	21.43	21.41	21.73	
5	16QAM	12	13	20.71	21.04	21.44	21.42	21.83	
5	16QAM	25	0	20.78	21.09	21.39	21.50	21.89	
5	64QAM	1	0	20.66	20.61	21.06	21.01	21.53	22.5
5	64QAM	1	12	20.54	20.70	21.09	21.14	21.54	
5	64QAM	1	24	20.51	20.70	21.08	21.22	21.55	
5	64QAM	12	0	19.80	20.02	20.37	20.46	20.86	21.5
5	64QAM	12	7	19.74	20.12	20.41	20.54	20.83	
5	64QAM	12	13	19.75	20.09	20.39	20.46	20.79	
5	64QAM	25	0	19.83	19.98	20.41	20.51	20.78	

Reduced Power Mode

<LTE Band 38>

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	16.72	16.98	16.92	17.5
20	QPSK	1	49	16.59	16.94	16.94	
20	QPSK	1	99	16.82	16.91	16.95	
20	QPSK	50	0	15.69	16.15	16.08	16.5
20	QPSK	50	24	15.88	16.14	16.08	
20	QPSK	50	50	15.89	16.09	16.09	
20	QPSK	100	0	15.86	16.13	16.11	
20	16QAM	1	0	15.85	16.16	16.24	16.5
20	16QAM	1	49	16.05	16.14	16.26	
20	16QAM	1	99	16.12	16.13	16.28	
20	16QAM	50	0	14.84	15.20	15.18	15.5
20	16QAM	50	24	14.98	15.23	15.18	
20	16QAM	50	50	15.01	15.25	15.20	
20	16QAM	100	0	15.01	15.22	15.19	
20	64QAM	1	0	14.80	15.08	15.13	15.5
20	64QAM	1	49	14.85	15.22	15.15	
20	64QAM	1	99	15.02	15.18	15.18	
20	64QAM	50	0	13.89	14.17	14.16	14.5
20	64QAM	50	24	14.01	14.20	14.16	
20	64QAM	50	50	14.03	14.23	14.20	
20	64QAM	100	0	14.01	14.22	14.19	
Channel				37825	38000	38175	Tune-up limit (dBm)
Frequency (MHz)				2577.5	2595	2612.5	
15	QPSK	1	0	17.01	17.24	17.24	17.5
15	QPSK	1	37	16.82	17.19	17.25	
15	QPSK	1	74	17.15	17.17	17.26	
15	QPSK	36	0	15.95	16.39	16.34	16.5
15	QPSK	36	20	16.21	16.43	16.38	
15	QPSK	36	39	16.14	16.36	16.32	
15	QPSK	75	0	16.12	16.45	16.41	
15	16QAM	1	0	16.13	16.46	16.47	16.5
15	16QAM	1	37	16.36	16.39	16.57	
15	16QAM	1	74	16.45	16.36	16.52	
15	16QAM	36	0	15.17	15.43	15.41	15.5
15	16QAM	36	20	15.21	15.56	15.51	
15	16QAM	36	39	15.28	15.54	15.53	
15	16QAM	75	0	15.27	15.50	15.44	
15	64QAM	1	0	15.08	15.34	15.43	15.5
15	64QAM	1	37	15.08	15.51	15.48	
15	64QAM	1	74	15.26	15.51	15.51	
15	64QAM	36	0	14.16	14.50	14.49	14.5
15	64QAM	36	20	14.26	14.51	14.44	
15	64QAM	36	39	14.26	14.51	14.51	
15	64QAM	75	0	14.25	14.49	14.44	

Channel				37800	38000	38200	Tune-up limit (dBm)
Frequency (MHz)				2575	2595	2615	
10	QPSK	1	0	16.96	17.21	17.25	17.5
10	QPSK	1	25	16.83	17.13	17.22	
10	QPSK	1	49	17.13	17.16	17.25	
10	QPSK	25	0	15.94	16.34	16.34	16.5
10	QPSK	25	12	16.17	16.38	16.34	
10	QPSK	25	25	16.14	16.32	16.26	
10	QPSK	50	0	16.06	16.42	16.39	
10	16QAM	1	0	16.10	16.45	16.50	16.5
10	16QAM	1	25	16.35	16.38	16.54	
10	16QAM	1	49	16.48	16.34	16.51	
10	16QAM	25	0	15.11	15.40	15.35	15.5
10	16QAM	25	12	15.20	15.58	15.53	
10	16QAM	25	25	15.26	15.55	15.53	
10	16QAM	50	0	15.27	15.50	15.45	
10	64QAM	1	0	15.05	15.27	15.43	15.5
10	64QAM	1	25	15.01	15.52	15.50	
10	64QAM	1	49	15.20	15.46	15.54	
10	64QAM	25	0	14.14	14.45	14.49	14.5
10	64QAM	25	12	14.23	14.49	14.40	
10	64QAM	25	25	14.20	14.50	14.49	
10	64QAM	50	0	14.24	14.46	14.44	
Channel				37775	38000	38225	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	QPSK	1	0	16.97	17.21	17.23	17.5
5	QPSK	1	12	16.79	17.12	17.19	
5	QPSK	1	24	17.15	17.16	17.21	
5	QPSK	12	0	15.96	16.27	16.37	16.5
5	QPSK	12	7	16.13	16.32	16.32	
5	QPSK	12	13	16.10	16.30	16.28	
5	QPSK	25	0	16.06	16.41	16.32	
5	16QAM	1	0	16.09	16.40	16.52	16.5
5	16QAM	1	12	16.32	16.39	16.51	
5	16QAM	1	24	16.42	16.35	16.53	
5	16QAM	12	0	15.09	15.39	15.29	15.5
5	16QAM	12	7	15.23	15.57	15.54	
5	16QAM	12	13	15.20	15.52	15.51	
5	16QAM	25	0	15.30	15.49	15.41	
5	64QAM	1	0	14.99	15.29	15.37	15.5
5	64QAM	1	12	15.04	15.45	15.49	
5	64QAM	1	24	15.21	15.41	15.49	
5	64QAM	12	0	14.07	14.41	14.51	14.5
5	64QAM	12	7	14.23	14.47	14.43	
5	64QAM	12	13	14.18	14.49	14.50	
5	64QAM	25	0	14.24	14.40	14.47	

<LTE Band 41>

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	16.46	16.81	17.02	17.05	17.17	17.5
20	QPSK	1	49	16.00	16.67	17.09	16.90	16.82	
20	QPSK	1	99	16.34	16.93	17.13	16.88	16.55	
20	QPSK	50	0	15.31	15.83	16.26	16.08	16.36	16.5
20	QPSK	50	24	15.37	15.85	16.35	16.14	16.02	
20	QPSK	50	50	15.44	15.97	16.22	16.04	16.14	
20	QPSK	100	0	15.34	15.81	16.27	16.11	16.28	
20	16QAM	1	0	15.61	16.08	16.26	16.35	16.33	16.5
20	16QAM	1	49	15.49	16.13	16.19	16.41	16.34	
20	16QAM	1	99	15.68	16.48	16.40	16.37	16.31	
20	16QAM	50	0	14.46	14.96	15.36	15.20	15.26	15.5
20	16QAM	50	24	14.47	15.00	15.41	15.28	15.18	
20	16QAM	50	50	14.40	15.10	15.40	15.24	15.28	
20	16QAM	100	0	14.49	15.07	15.42	15.22	15.30	
20	64QAM	1	0	14.44	14.98	15.35	15.35	15.40	15.5
20	64QAM	1	49	14.52	15.07	15.42	15.31	15.23	
20	64QAM	1	99	14.66	15.20	15.34	15.35	15.12	
20	64QAM	50	0	13.40	13.95	14.36	14.26	14.27	14.5
20	64QAM	50	24	13.53	14.04	14.39	14.28	14.17	
20	64QAM	50	50	13.59	14.12	14.47	14.30	14.30	
20	64QAM	100	0	13.63	14.00	14.49	14.20	14.33	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	16.00	16.52	16.97	16.94	17.08	17.5
15	QPSK	1	37	16.07	16.56	17.07	16.88	16.74	
15	QPSK	1	74	16.35	16.81	17.16	16.91	16.56	
15	QPSK	36	0	15.25	15.84	16.25	16.08	16.03	16.5
15	QPSK	36	20	15.40	15.95	16.26	16.12	15.95	
15	QPSK	36	39	15.33	15.94	16.25	16.13	16.05	
15	QPSK	75	0	15.32	15.75	16.24	16.17	16.00	
15	16QAM	1	0	15.54	16.04	16.42	16.39	16.38	16.5
15	16QAM	1	37	15.50	16.12	16.59	16.35	16.29	
15	16QAM	1	74	15.63	16.50	16.55	16.56	16.21	
15	16QAM	36	0	14.40	15.01	15.42	15.18	15.23	15.5
15	16QAM	36	20	14.48	15.01	15.43	15.24	15.12	
15	16QAM	36	39	14.43	15.07	15.45	15.18	15.21	
15	16QAM	75	0	14.50	15.00	15.46	15.15	15.19	
15	64QAM	1	0	14.44	15.04	15.29	15.29	15.28	15.5
15	64QAM	1	37	14.58	15.09	15.47	15.25	15.23	
15	64QAM	1	74	14.71	15.11	15.48	15.29	15.14	
15	64QAM	36	0	13.38	14.05	14.36	14.16	14.14	14.5
15	64QAM	36	20	13.52	14.00	14.38	14.18	14.09	

15	64QAM	36	39	13.59	14.00	14.40	14.20	14.30	
15	64QAM	75	0	13.55	14.08	14.44	14.24	14.28	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	15.95	16.57	17.02	16.82	16.88	17.5
10	QPSK	1	25	15.98	16.55	17.09	16.91	16.74	
10	QPSK	1	49	16.29	16.78	17.20	16.88	16.35	
10	QPSK	25	0	15.24	15.88	16.23	16.13	16.09	16.5
10	QPSK	25	12	15.44	15.93	16.21	16.04	15.94	
10	QPSK	25	25	15.43	15.87	16.17	16.06	16.00	
10	QPSK	50	0	15.27	15.78	16.20	16.04	16.05	
10	16QAM	1	0	15.53	15.96	16.40	16.34	16.32	16.5
10	16QAM	1	25	15.51	16.14	16.59	16.35	16.26	
10	16QAM	1	49	15.72	16.36	16.63	16.46	16.31	
10	16QAM	25	0	14.44	15.02	15.44	15.18	15.14	15.5
10	16QAM	25	12	14.40	15.05	15.44	15.19	15.08	
10	16QAM	25	25	14.52	15.04	15.36	15.09	15.15	
10	16QAM	50	0	14.46	14.96	15.42	15.11	15.15	
10	64QAM	1	0	14.43	15.05	15.22	15.32	15.23	15.5
10	64QAM	1	25	14.47	15.11	15.46	15.29	15.21	
10	64QAM	1	49	14.62	15.10	15.48	15.26	15.15	
10	64QAM	25	0	13.31	13.98	14.28	14.09	14.15	14.5
10	64QAM	25	12	13.49	13.97	14.34	14.14	14.13	
10	64QAM	25	25	13.51	14.09	14.33	14.21	14.27	
10	64QAM	50	0	13.64	13.95	14.34	14.10	14.29	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	16.00	16.48	16.97	16.86	16.82	17.5
5	QPSK	1	12	16.09	16.55	16.97	16.82	16.76	
5	QPSK	1	24	16.25	16.79	17.19	16.86	16.35	
5	QPSK	12	0	15.22	15.91	16.21	16.07	16.00	16.5
5	QPSK	12	7	15.47	15.92	16.19	16.02	15.94	
5	QPSK	12	13	15.30	15.96	16.07	16.03	15.99	
5	QPSK	25	0	15.26	15.80	16.20	16.09	15.97	
5	16QAM	1	0	15.61	16.04	16.45	16.36	16.39	16.5
5	16QAM	1	12	15.53	16.13	16.52	16.29	16.25	
5	16QAM	1	24	15.74	16.38	16.59	16.39	16.12	
5	16QAM	12	0	14.42	14.99	15.37	15.06	15.10	15.5
5	16QAM	12	7	14.38	15.05	15.37	15.11	15.07	
5	16QAM	12	13	14.48	15.07	15.37	15.05	15.23	
5	16QAM	25	0	14.37	14.91	15.29	15.05	15.17	
5	64QAM	1	0	14.36	14.97	15.20	15.23	15.16	15.5
5	64QAM	1	12	14.47	15.00	15.41	15.34	15.20	
5	64QAM	1	24	14.60	15.05	15.52	15.31	15.11	
5	64QAM	12	0	13.29	13.99	14.29	14.01	14.06	14.5
5	64QAM	12	7	13.42	13.85	14.25	14.17	14.12	
5	64QAM	12	13	13.54	13.97	14.35	14.18	14.19	
5	64QAM	25	0	13.67	13.99	14.40	14.21	14.25	

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

General Note:

1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
3. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
4. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
5. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<Default Power mode>

<Non-beamforming mode>

<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	21.30	21.50	100
		6	2437	21.10	21.50	
		11	2462	20.10	20.50	
	802.11g 6Mbps	1	2412	19.70	20.00	97.64
		6	2437	19.30	19.50	
		11	2462	17.80	18.00	
	802.11n-HT20 MCS0	1	2412	18.90	19.00	97.72
		6	2437	18.80	19.00	
		11	2462	16.90	17.00	
	802.11n-HT40 MCS0	3	2422	17.80	18.00	96.26
		6	2437	17.70	18.00	
		9	2452	15.90	16.00	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	21.90	22.00	100
		6	2437	21.50	21.50	
		11	2462	21.40	21.50	
	802.11g 6Mbps	1	2412	19.90	20.00	97.87
		6	2437	19.70	20.00	
		11	2462	19.20	19.50	
	802.11n-HT20 MCS0	1	2412	18.20	18.50	97.97
		6	2437	19.20	19.50	
		11	2462	19.10	19.50	
	802.11n-HT40 MCS0	3	2422	15.30	15.50	96.25
		6	2437	18.20	18.50	
		9	2452	16.40	16.50	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	24.36	24.50	100
		6	2437	24.21	24.50	
		11	2462	24.26	24.50	
	802.11g 6Mbps	1	2412	20.36	20.50	97.88
		6	2437	22.26	22.50	
		11	2462	21.26	21.50	
	802.11n-HT20 MCS0	1	2412	19.86	20.00	97.97
		6	2437	21.76	22.50	
		11	2462	19.91	20.00	
	802.11n-HT40 MCS0	3	2422	17.41	17.50	96.27
		6	2437	21.26	21.50	
		9	2452	18.46	18.50	

<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	20.30	20.50	98.11
		40	5200	20.20	20.50	
		44	5220	20.20	20.50	
		48	5240	20.00	20.50	
	802.11n-HT20 MCS0	36	5180	20.20	20.50	97.72
		40	5200	20.00	20.50	
		44	5220	20.00	20.50	
		48	5240	19.90	20.50	
	802.11n-HT40 MCS0	38	5190	18.60	19.00	97.47
		46	5230	18.90	19.00	
	802.11ac-VHT20 MCS0	36	5180	20.10	20.50	97.97
		40	5200	19.90	20.50	
		44	5220	19.90	20.50	
		48	5240	19.80	20.50	
	802.11ac-VHT40 MCS0	38	5190	18.50	19.00	97.18
		46	5230	18.80	19.00	
	802.11ac-VHT80 MCS0	42	5210	18.50	19.00	94.84

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	20.30	21.00	98.11
		56	5280	20.30	21.00	
		60	5300	20.70	21.00	
		64	5320	20.20	21.00	
	802.11n-HT20 MCS0	52	5260	20.10	21.00	97.72
		56	5280	20.10	21.00	
		60	5300	20.60	21.00	
		64	5320	20.70	21.00	
	802.11n-HT40 MCS0	54	5270	18.50	18.50	97.47
		62	5310	17.90	18.00	
	802.11ac-VHT20 MCS0	52	5260	20.00	21.00	97.97
		56	5280	20.00	21.00	
		60	5300	20.50	21.00	
		64	5320	20.60	21.00	
	802.11ac-VHT40 MCS0	54	5270	18.40	18.50	97.18
		62	5310	17.80	18.00	
	802.11ac-VHT80 MCS0	58	5290	16.30	16.50	94.84

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	20.40	21.00	98.11
		116	5580	20.80	21.00	
		124	5620	20.30	21.00	
		132	5660	20.30	21.00	
		144	5720	20.30	21.00	
	802.11n-HT20 MCS0	100	5500	20.30	21.00	97.72
		116	5580	20.60	21.00	
		124	5620	20.50	21.00	
		132	5660	20.50	21.00	
		144	5720	20.50	21.00	
	802.11n-HT40 MCS0	102	5510	19.20	20.00	97.47
		110	5550	19.60	20.00	
		126	5630	19.20	20.00	
		134	5670	18.70	20.00	
		142	5710	19.60	20.00	
	802.11ac-VHT20 MCS0	100	5500	20.20	21.00	97.97
		116	5580	20.50	21.00	
		124	5620	20.50	21.00	
		132	5660	20.40	21.00	
		144	5720	20.40	21.00	
	802.11ac-VHT40 MCS0	102	5510	19.10	20.00	97.18
		110	5550	19.50	20.00	
		126	5630	19.00	20.00	
		134	5670	18.60	20.00	
		142	5710	19.50	20.00	
	802.11ac-VHT80 MCS0	106	5530	16.80	17.00	94.84
		122	5610	20.10	20.50	
		138	5690	19.90	20.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	20.10	21.00	98.11
		157	5785	19.90	21.00	
		165	5825	19.80	21.00	
	802.11n-HT20 MCS0	149	5745	20.10	21.00	97.72
		157	5785	19.80	21.00	
		165	5825	19.70	21.00	
	802.11n-HT40 MCS0	151	5755	19.20	19.50	97.47
		159	5795	19.10	19.50	
	802.11ac-VHT20 MCS0	149	5745	20.00	21.00	97.97
		157	5785	19.70	21.00	
		165	5825	19.60	21.00	
	802.11ac-VHT40 MCS0	151	5755	19.10	19.50	97.18
		159	5795	19.00	19.50	
	802.11ac-VHT80 MCS0	155	5775	19.50	20.00	94.84

<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	20.50	20.50	98.11
		40	5200	20.40	20.50	
		44	5220	20.40	20.50	
		48	5240	20.30	20.50	
	802.11n-HT20 MCS0	36	5180	20.40	20.50	97.97
		40	5200	20.30	20.50	
		44	5220	20.30	20.50	
		48	5240	20.30	20.50	
	802.11n-HT40 MCS0	38	5190	18.90	19.50	97.48
		46	5230	19.20	19.50	
	802.11ac-VHT20 MCS0	36	5180	20.30	20.50	97.47
		40	5200	20.30	20.50	
		44	5220	20.20	20.50	
		48	5240	20.20	20.50	
	802.11ac-VHT40 MCS0	38	5190	18.80	19.50	96.86
		46	5230	19.10	19.50	
	802.11ac-VHT80 MCS0	42	5210	19.30	19.50	94.27

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	20.60	21.00	98.11
		56	5280	20.20	21.00	
		60	5300	20.20	21.00	
		64	5320	20.60	21.00	
	802.11n-HT20 MCS0	52	5260	20.40	21.00	97.97
		56	5280	20.40	21.00	
		60	5300	20.50	21.00	
		64	5320	20.60	21.00	
	802.11n-HT40 MCS0	54	5270	20.00	20.00	97.48
		62	5310	18.50	18.50	
	802.11ac-VHT20 MCS0	52	5260	20.30	21.00	97.47
		56	5280	20.30	21.00	
		60	5300	20.40	21.00	
		64	5320	20.50	21.00	
	802.11ac-VHT40 MCS0	54	5270	19.90	20.00	96.86
		62	5310	18.40	18.50	
	802.11ac-VHT80 MCS0	58	5290	18.10	18.50	94.27

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	20.90	21.00	98.11
		116	5580	20.50	21.00	
		124	5620	20.50	21.00	
		132	5660	20.50	21.00	
		144	5720	20.70	21.00	
	802.11n-HT20 MCS0	100	5500	20.50	21.00	97.97
		116	5580	20.40	21.00	
		124	5620	20.40	21.00	
		132	5660	20.40	21.00	
		144	5720	20.60	21.00	
	802.11n-HT40 MCS0	102	5510	19.40	19.50	97.48
		110	5550	19.50	19.50	
		126	5630	19.50	19.50	
		134	5670	19.50	19.50	
		142	5710	19.50	19.50	
	802.11ac-VHT20 MCS0	100	5500	20.40	21.00	97.47
		116	5580	20.30	21.00	
		124	5620	20.30	21.00	
		132	5660	20.30	21.00	
		144	5720	20.50	21.00	
	802.11ac-VHT40 MCS0	102	5510	19.30	19.50	96.86
		110	5550	19.40	19.50	
		126	5630	19.30	19.50	
		134	5670	19.40	19.50	
		142	5710	19.40	19.50	
	802.11ac-VHT80 MCS0	106	5530	20.20	20.50	94.27
		122	5610	20.10	20.50	
		138	5690	20.10	20.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	20.30	21.00	98.11
		157	5785	20.10	21.00	
		165	5825	20.20	21.00	
	802.11n-HT20 MCS0	149	5745	20.50	21.00	97.97
		157	5785	20.40	21.00	
		165	5825	20.30	21.00	
	802.11n-HT40 MCS0	151	5755	19.60	20.00	97.48
		159	5795	19.50	19.50	
	802.11ac-VHT20 MCS0	149	5745	20.40	21.00	97.47
		157	5785	20.30	21.00	
		165	5825	20.20	21.00	
	802.11ac-VHT40 MCS0	151	5755	19.50	19.50	96.86
		159	5795	19.40	19.50	
	802.11ac-VHT80 MCS0	155	5775	20.00	20.00	94.27

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	22.71	23.00	98.11
		40	5200	22.66	23.00	
		44	5220	22.66	23.00	
		48	5240	22.81	23.00	
	802.11n-HT20 MCS0	36	5180	22.66	23.00	98.22
		40	5200	22.46	23.00	
		44	5220	22.37	23.00	
		48	5240	22.58	23.00	
	802.11n-HT40 MCS0	38	5190	21.46	21.50	97.48
		46	5230	22.21	22.50	
	802.11ac-VHT20 MCS0	36	5180	22.56	23.00	97.47
		40	5200	22.27	23.00	
		44	5220	22.27	23.00	
		48	5240	22.48	23.00	
	802.11ac-VHT40 MCS0	38	5190	21.36	21.50	96.86
		46	5230	22.11	22.50	
	802.11ac-VHT80 MCS0	42	5210	21.36	21.50	94.23

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	22.61	23.50	98.11
		56	5280	22.61	23.50	
		60	5300	23.02	23.50	
		64	5320	22.97	23.50	
	802.11n-HT20 MCS0	52	5260	22.88	23.50	98.22
		56	5280	22.88	23.50	
		60	5300	23.07	23.50	
		64	5320	22.87	23.50	
	802.11n-HT40 MCS0	54	5270	22.41	22.50	97.48
		62	5310	20.27	20.50	
	802.11ac-VHT20 MCS0	52	5260	22.78	23.50	97.47
		56	5280	22.78	23.50	
		60	5300	22.97	23.50	
		64	5320	22.77	23.50	
	802.11ac-VHT40 MCS0	54	5270	22.31	22.50	96.86
		62	5310	20.17	20.50	
	802.11ac-VHT80 MCS0	58	5290	19.32	19.50	94.23

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	22.97	23.50	98.11
		116	5580	23.01	23.50	
		124	5620	23.01	23.50	
		132	5660	23.01	23.50	
		144	5720	23.21	23.50	
	802.11n-HT20 MCS0	100	5500	22.97	23.50	98.22
		116	5580	23.06	23.50	
		124	5620	23.06	23.50	
		132	5660	23.06	23.50	
		144	5720	23.31	23.50	
	802.11n-HT40 MCS0	102	5510	21.87	22.00	97.48
		110	5550	22.56	23.00	
		126	5630	22.56	23.00	
		134	5670	22.76	23.00	
		142	5710	22.76	23.00	
	802.11ac-VHT20 MCS0	100	5500	22.87	23.50	97.47
		116	5580	22.96	23.50	
		124	5620	22.96	23.50	
		132	5660	22.96	23.50	
		144	5720	23.21	23.50	
	802.11ac-VHT40 MCS0	102	5510	21.77	22.00	96.86
		110	5550	22.46	23.00	
		126	5630	22.46	23.00	
		134	5670	22.66	23.00	
		142	5710	22.66	23.00	
	802.11ac-VHT80 MCS0	106	5530	21.87	22.00	94.23
		122	5610	22.71	23.00	
		138	5690	22.66	23.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	23.21	24.00	98.11
		157	5785	23.46	24.00	
		165	5825	23.26	24.00	
	802.11n-HT20 MCS0	149	5745	23.56	24.00	97.97
		157	5785	23.41	24.00	
		165	5825	23.26	24.00	
	802.11n-HT40 MCS0	151	5755	22.36	22.50	97.48
		159	5795	22.26	22.50	
	802.11ac-VHT20 MCS0	149	5745	23.46	24.00	97.47
		157	5785	23.31	24.00	
		165	5825	23.16	24.00	
	802.11ac-VHT40 MCS0	151	5755	22.26	22.50	96.86
		159	5795	22.16	22.50	
	802.11ac-VHT80 MCS0	155	5775	22.51	23.00	94.23

<Beamforming mode>

<5GHz WLAN ANT1+2>

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11ac-VHT20 MCS0	36	20.64	21.00	100
		40	20.64	21.00	
		44	20.47	21.00	
		48	20.58	21.00	
	802.11ac-VHT40 MCS0	38	21.56	22.00	100
		46	21.41	22.00	
	802.11ac-VHT80 MCS0	42	20.97	21.00	100

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11ac-VHT20 MCS0	52	20.64	21.00	100
		56	20.64	21.00	
		60	20.60	21.00	
		64	20.48	21.00	
	802.11ac-VHT40 MCS0	54	21.41	21.50	100
		62	20.97	21.50	
	802.11ac-VHT80 MCS0	58	19.41	19.50	100

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11ac-VHT20 MCS0	100	20.45	21.00	100
		116	20.62	21.00	
		124	20.62	21.00	
		132	20.62	21.00	
		144	20.23	21.00	
	802.11ac-VHT40 MCS0	102	21.57	22.00	100
		110	21.71	22.00	
		126	21.41	22.00	
		134	21.41	22.00	
		142	21.37	22.00	
	802.11ac-VHT80 MCS0	106	22.21	22.50	100
		122	22.17	22.50	
		138	22.01	22.50	

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11ac-VHT20 MCS0	149	21.96	22.50	100
		157	22.06	22.50	
		165	22.47	22.50	
	802.11ac-VHT40 MCS0	151	21.16	21.50	100
		159	21.36	21.50	
	802.11ac-VHT80 MCS0	155	21.81	22.00	100

<Reduced Power mode>

<Non-beamforming mode>

<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	11.60	12.50	100
		6	2437	11.60	12.50	
		11	2462	11.60	12.50	
	802.11g 6Mbps	1	2412	11.60	12.50	98.33
		6	2437	11.60	12.50	
		11	2462	11.50	12.50	
	802.11n-HT20 MCS0	1	2412	11.30	12.50	98.21
		6	2437	11.20	12.50	
		11	2462	11.30	12.50	
	802.11n-HT40 MCS0	3	2422	11.20	12.50	96.55
		6	2437	11.30	12.50	
		9	2452	11.40	12.50	
		10	2457	11.50	12.50	
		11	2462	11.30	12.50	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	11.60	12.50	100
		6	2437	11.90	12.50	
		11	2462	11.60	12.50	
	802.11g 6Mbps	1	2412	11.80	12.50	98.33
		6	2437	11.50	12.50	
		11	2462	11.50	12.50	
	802.11n-HT20 MCS0	1	2412	11.20	12.50	98.21
		6	2437	11.40	12.50	
		11	2462	11.10	12.50	
	802.11n-HT40 MCS0	3	2422	11.40	12.50	96.86
		6	2437	11.50	12.50	
		9	2452	11.40	12.50	
		10	2457	11.40	12.50	
		11	2462	11.50	12.50	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	14.11	15.50	100
		6	2437	14.21	15.50	
		11	2462	14.11	15.50	
	802.11g 6Mbps	1	2412	14.31	15.50	98.33
		6	2437	14.31	15.50	
		11	2462	14.21	15.50	
	802.11n-HT20 MCS0	1	2412	14.11	15.50	98.21
		6	2437	14.21	15.50	
		11	2462	14.11	15.50	
	802.11n-HT40 MCS0	3	2422	14.21	15.50	96.86
		6	2437	14.31	15.50	
		9	2452	14.21	15.50	
		10	2457	14.31	15.50	
		11	2462	14.31	15.50	

<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	9.30	10.00	98.10
		40	5200	9.60	10.00	
		44	5220	9.30	10.00	
		48	5240	9.20	10.00	
	802.11n-HT20 MCS0	36	5180	9.40	10.00	97.46
		40	5200	9.60	10.00	
		44	5220	9.40	10.00	
		48	5240	9.30	10.00	
	802.11n-HT40 MCS0	38	5190	9.70	10.00	96.84
		46	5230	9.70	10.00	
	802.11ac-VHT20 MCS0	36	5180	9.30	10.00	97.97
		40	5200	9.50	10.00	
		44	5220	9.40	10.00	
		48	5240	9.30	10.00	
	802.11ac-VHT40 MCS0	38	5190	9.40	10.00	97.47
		46	5230	9.40	10.00	
	802.11ac-VHT80 MCS0	42	5210	9.60	10.00	93.51

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	9.70	10.00	98.10
		56	5280	9.80	10.00	
		60	5300	9.80	10.00	
		64	5320	9.70	10.00	
	802.11n-HT20 MCS0	52	5260	9.80	10.00	97.46
		56	5280	9.90	10.00	
		60	5300	9.70	10.00	
		64	5320	9.90	10.00	
	802.11n-HT40 MCS0	54	5270	9.70	10.00	96.84
		62	5310	9.50	10.00	
	802.11ac-VHT20 MCS0	52	5260	9.60	10.00	97.97
		56	5280	9.80	10.00	
		60	5300	9.60	10.00	
		64	5320	9.70	10.00	
	802.11ac-VHT40 MCS0	54	5270	9.70	10.00	97.47
		62	5310	9.60	10.00	
	802.11ac-VHT80 MCS0	58	5290	9.80	10.00	93.51

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.60	10.00	98.10
		116	5580	9.50	10.00	
		124	5620	9.80	10.00	
		132	5660	9.70	10.00	
		144	5720	9.60	10.00	
	802.11n-HT20 MCS0	100	5500	9.50	10.00	97.46
		116	5580	9.60	10.00	
		124	5620	9.80	10.00	
		132	5660	9.70	10.00	
		144	5720	9.60	10.00	
	802.11n-HT40 MCS0	102	5510	9.80	10.00	96.84
		110	5550	9.90	10.00	
		126	5630	9.90	10.00	
		134	5670	9.70	10.00	
		142	5710	9.70	10.00	
	802.11ac-VHT20 MCS0	100	5500	9.50	10.00	97.97
		116	5580	9.60	10.00	
		124	5620	9.70	10.00	
		132	5660	9.60	10.00	
		144	5720	9.60	10.00	
	802.11ac-VHT40 MCS0	102	5510	9.40	10.00	97.47
		110	5550	9.30	10.00	
		126	5630	9.80	10.00	
		134	5670	9.40	10.00	
		142	5710	9.40	10.00	
	802.11ac-VHT80 MCS0	106	5530	9.80	10.00	93.51
		122	5610	9.90	10.00	
		138	5690	9.80	10.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	9.00	10.00	98.10
		157	5785	9.00	10.00	
		165	5825	8.90	10.00	
	802.11n-HT20 MCS0	149	5745	9.00	10.00	97.46
		157	5785	9.10	10.00	
		165	5825	9.00	10.00	
	802.11n-HT40 MCS0	151	5755	9.10	10.00	96.84
		159	5795	9.00	10.00	
	802.11ac-VHT20 MCS0	149	5745	9.10	10.00	97.97
		157	5785	9.00	10.00	
		165	5825	9.00	10.00	
	802.11ac-VHT40 MCS0	151	5755	9.10	10.00	97.47
		159	5795	9.00	10.00	
	802.11ac-VHT80 MCS0	155	5775	9.20	10.00	93.51

<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	9.40	10.00	98.57
		40	5200	9.90	10.00	
		44	5220	9.50	10.00	
		48	5240	9.50	10.00	
	802.11n-HT20 MCS0	36	5180	9.60	10.00	97.46
		40	5200	9.80	10.00	
		44	5220	9.70	10.00	
		48	5240	9.50	10.00	
	802.11n-HT40 MCS0	38	5190	9.60	10.00	97.47
		46	5230	9.80	10.00	
	802.11ac-VHT20 MCS0	36	5180	9.60	10.00	97.97
		40	5200	9.70	10.00	
		44	5220	9.70	10.00	
		48	5240	9.60	10.00	
	802.11ac-VHT40 MCS0	38	5190	9.60	10.00	97.48
		46	5230	9.70	10.00	
	802.11ac-VHT80 MCS0	42	5210	9.70	10.00	92.31

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	9.50	10.00	98.57
		56	5280	9.90	10.00	
		60	5300	9.70	10.00	
		64	5320	9.50	10.00	
	802.11n-HT20 MCS0	52	5260	9.60	10.00	97.46
		56	5280	9.80	10.00	
		60	5300	9.60	10.00	
		64	5320	9.60	10.00	
	802.11n-HT40 MCS0	54	5270	9.60	10.00	97.47
		62	5310	9.80	10.00	
	802.11ac-VHT20 MCS0	52	5260	9.70	10.00	97.97
		56	5280	9.70	10.00	
		60	5300	9.50	10.00	
		64	5320	9.60	10.00	
	802.11ac-VHT40 MCS0	54	5270	9.70	10.00	97.48
		62	5310	9.70	10.00	
	802.11ac-VHT80 MCS0	58	5290	9.90	10.00	92.31

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.70	10.00	98.57
		116	5580	9.60	10.00	
		124	5620	9.70	10.00	
		132	5660	9.80	10.00	
		144	5720	9.40	10.00	
	802.11n-HT20 MCS0	100	5500	9.50	10.00	97.46
		116	5580	9.50	10.00	
		124	5620	9.70	10.00	
		132	5660	9.60	10.00	
		144	5720	9.40	10.00	
	802.11n-HT40 MCS0	102	5510	9.90	10.00	97.47
		110	5550	9.80	10.00	
		126	5630	9.80	10.00	
		134	5670	9.80	10.00	
		142	5710	9.80	10.00	
	802.11ac-VHT20 MCS0	100	5500	9.30	10.00	97.97
		116	5580	9.40	10.00	
		124	5620	9.60	10.00	
		132	5660	9.50	10.00	
		144	5720	9.20	10.00	
	802.11ac-VHT40 MCS0	102	5510	9.20	10.00	97.48
		110	5550	9.30	10.00	
		126	5630	9.70	10.00	
		134	5670	9.40	10.00	
		142	5710	9.30	10.00	
	802.11ac-VHT80 MCS0	106	5530	9.80	10.00	92.31
		122	5610	9.50	10.00	
		138	5690	9.50	10.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	9.10	10.00	98.57
		157	5785	9.10	10.00	
		165	5825	9.00	10.00	
	802.11n-HT20 MCS0	149	5745	9.10	10.00	97.46
		157	5785	9.00	10.00	
		165	5825	9.10	10.00	
	802.11n-HT40 MCS0	151	5755	9.00	10.00	97.47
		159	5795	9.00	10.00	
	802.11ac-VHT20 MCS0	149	5745	9.20	10.00	97.97
		157	5785	9.10	10.00	
		165	5825	9.10	10.00	
	802.11ac-VHT40 MCS0	151	5755	9.20	10.00	97.48
		159	5795	9.10	10.00	
	802.11ac-VHT80 MCS0	155	5775	9.40	10.00	92.31

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	12.41	13.00	98.09
		40	5200	12.56	13.00	
		44	5220	12.51	13.00	
		48	5240	12.41	13.00	
	802.11n-HT20 MCS0	36	5180	12.61	13.00	97.95
		40	5200	12.61	13.00	
		44	5220	12.51	13.00	
		48	5240	12.41	13.00	
	802.11n-HT40 MCS0	38	5190	12.51	13.00	97.47
		46	5230	12.41	13.00	
	802.11ac-VHT20 MCS0	36	5180	12.51	13.00	97.97
		40	5200	12.51	13.00	
		44	5220	12.41	13.00	
		48	5240	12.41	13.00	
	802.11ac-VHT40 MCS0	38	5190	12.61	13.00	96.86
		46	5230	12.41	13.00	
	802.11ac-VHT80 MCS0	42	5210	12.41	13.00	93.51

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	12.71	13.00	98.09
		56	5280	12.91	13.00	
		60	5300	12.61	13.00	
		64	5320	12.41	13.00	
	802.11n-HT20 MCS0	52	5260	12.51	13.00	97.95
		56	5280	12.91	13.00	
		60	5300	12.61	13.00	
		64	5320	12.51	13.00	
	802.11n-HT40 MCS0	54	5270	12.41	13.00	97.47
		62	5310	12.41	13.00	
	802.11ac-VHT20 MCS0	52	5260	12.41	13.00	97.97
		56	5280	12.81	13.00	
		60	5300	12.51	13.00	
		64	5320	12.41	13.00	
	802.11ac-VHT40 MCS0	54	5270	12.41	13.00	96.86
		62	5310	12.41	13.00	
	802.11ac-VHT80 MCS0	58	5290	12.51	13.00	93.51

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	12.41	13.00	98.09
		116	5580	12.61	13.00	
		124	5620	12.71	13.00	
		132	5660	12.61	13.00	
		144	5720	12.41	13.00	
	802.11n-HT20 MCS0	100	5500	12.41	13.00	97.95
		116	5580	12.41	13.00	
		124	5620	12.61	13.00	
		132	5660	12.66	13.00	
		144	5720	12.51	13.00	
	802.11n-HT40 MCS0	102	5510	12.51	13.00	97.47
		110	5550	12.51	13.00	
		126	5630	12.91	13.00	
		134	5670	12.51	13.00	
		142	5710	12.51	13.00	
	802.11ac-VHT20 MCS0	100	5500	12.41	13.00	97.97
		116	5580	12.41	13.00	
		124	5620	12.51	13.00	
		132	5660	12.56	13.00	
		144	5720	12.61	13.00	
	802.11ac-VHT40 MCS0	102	5510	12.51	13.00	96.86
		110	5550	12.51	13.00	
		126	5630	12.81	13.00	
		134	5670	12.51	13.00	
		142	5710	12.61	13.00	
	802.11ac-VHT80 MCS0	106	5530	12.51	13.00	93.51
		122	5610	12.51	13.00	
		138	5690	12.51	13.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a 6Mbps	149	5745	12.21	13.00	98.09
		157	5785	12.31	13.00	
		165	5825	12.21	13.00	
	802.11n-HT20 MCS0	149	5745	12.41	13.00	97.95
		157	5785	12.21	13.00	
		165	5825	12.11	13.00	
	802.11n-HT40 MCS0	151	5755	12.41	13.00	97.47
		159	5795	12.31	13.00	
	802.11ac-VHT20 MCS0	149	5745	12.21	13.00	97.97
		157	5785	12.31	13.00	
		165	5825	12.41	13.00	
	802.11ac-VHT40 MCS0	151	5755	12.41	13.00	96.86
		159	5795	12.21	13.00	
	802.11ac-VHT80 MCS0	155	5775	12.41	13.00	93.51

<Beamforming mode>

<5GHz WLAN ANT1+2>

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11ac-VHT20 MCS0	36	12.51	13.00	100
		40	12.51	13.00	
		44	12.41	13.00	
		48	12.41	13.00	
	802.11ac-VHT40 MCS0	38	12.61	13.00	100
		46	12.41	13.00	
	802.11ac-VHT80 MCS0	42	12.41	13.00	100

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11ac-VHT20 MCS0	52	12.41	13.00	100
		56	12.81	13.00	
		60	12.51	13.00	
		64	12.41	13.00	
	802.11ac-VHT40 MCS0	54	12.41	13.00	100
		62	12.41	13.00	
	802.11ac-VHT80 MCS0	58	12.51	13.00	100

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11ac-VHT20 MCS0	100	12.41	13.00	100
		116	12.41	13.00	
		124	12.51	13.00	
		132	12.56	13.00	
		144	12.61	13.00	
	802.11ac-VHT40 MCS0	102	12.51	13.00	100
		110	12.51	13.00	
		126	12.81	13.00	
		134	12.51	13.00	
		142	12.61	13.00	
	802.11ac-VHT80 MCS0	106	12.51	13.00	100
		122	12.51	13.00	
		138	12.51	13.00	

	Mode	Channel	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11ac-VHT20 MCS0	149	12.21	13.00	100
		157	12.31	13.00	
		165	12.41	13.00	
	802.11ac-VHT40 MCS0	151	12.41	13.00	100
		159	12.21	13.00	
	802.11ac-VHT80 MCS0	155	12.41	13.00	100

<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	3.05	0.33	0.34
	CH 39	2441	2.94	-0.19	-0.14
	CH 78	2480	3.32	0.96	0.95
Tune-up Limit			3.50	1.00	1.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	5.50	5.50
	CH 19	2440	5.90	5.90
	CH 39	2480	6.70	6.70
Tune-up Limit			7.00	7.00

14. Exposure Position Evaluation

<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v06, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v06, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v06, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

Exposure Position	Wireless Interface	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 17	LTE Band 5	LTE Band 4	LTE Band 2	LTE Band 7	LTE Band 38 / 41	BT ANT 1	2.4GHz WLAN ANT 1	2.4GHz WLAN ANT 2	5GHz WLAN ANT 1	5GHz WLAN ANT 2
	Calculated Frequency	846MHz	1750MHz	1907MHz	714MHz	848MHz	1754MHz	1909MHz	2567MHz	2687MHz	2480MHz	2462MHz	2462MHz	5825MHz	5825MHz
	Maximum power (dBm)	25.5	23	25.5	25	25.5	23	25.5	23.5	24.5	7	21.5	22	21	21
	Maximum rated power(mW)	355.0	200.0	355.0	316.0	355.0	200.0	355.0	224.0	282.0	5.0	141.0	158.0	126.0	126.0
Bottom Face	Separation distance(mm)	5.0									5.0	5.0	5.0	5.0	5.0
	exclusion threshold	65.3	52.9	98.1	53.4	65.4	53.0	98.1	71.8	92.5	1.6	44.3	49.6	60.8	60.8
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Edge 1	Separation distance(mm)	5.0									106.5	106.5	21.5	106.5	21.5
	exclusion threshold	65.3	52.9	98.1	53.4	65.4	53.0	98.1	71.8	92.5	660.0	661.0	11.5	627.0	14.1
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
Edge 2	Separation distance(mm)	166.4									5.0	5.0	5.0	5.0	5.0
	exclusion threshold	820.0	1278.0	1273.0	732.0	821.0	1278.0	1273.0	1258.0	1256.0	1.6	44.3	49.6	60.8	60.8
	Testing required?	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Edge 3	Separation distance(mm)	166.0									63.4	63.4	148.4	63.4	148.4
	exclusion threshold	817.0	1274.0	1269.0	730.0	819.0	1273.0	1269.0	1254.0	1252.0	229.0	230.0	1080.0	196.0	1046.0
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 4	Separation distance(mm)	31.0									261.8	261.8	261.8	261.8	261.8
	exclusion threshold	10.5	8.5	15.8	8.6	10.6	8.5	15.8	11.6	14.9	2213.0	2214.0	2214.0	2180.0	2180.0
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No

15. 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
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.
4. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in normal mode was performed:
   - Bottom Face: 22 mm for WWAN, 27 mm for WLAN Ant 1, 20 mm for WLAN Ant 2.
   - Edge1: 16 mm for WWAN
   - Edge2: 17 mm for WLAN Ant 1, 11 mm for WLAN Ant 2

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 38 SAR test was covered by Band 41; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio ≤ 0.04, no additional SAR measurements for MIMO.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
8. For Bluetooth SAR testing is selected the same WLAN Ant 1 position to be tested.

15.1 Body SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	ON	9400	1880	18.18	18.50	1.076	-0.03	0.745	0.802
	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	ON	9262	1852.4	17.97	18.50	1.130	0.06	0.712	0.805
	WCDMA II	RMC 12.2Kbps	Edge 1	0mm	ON	9538	1907.6	17.95	18.50	1.135	-0.13	0.710	0.806
01	WCDMA II	RMC 12.2Kbps	Bottom Face	0mm	ON	9400	1880	18.18	18.50	1.076	0.12	1.010	1.087
	WCDMA II	RMC 12.2Kbps	Bottom Face	0mm	ON	9262	1852.4	17.97	18.50	1.130	0.11	0.861	0.973
	WCDMA II	RMC 12.2Kbps	Bottom Face	0mm	ON	9538	1907.6	17.95	18.50	1.135	-0.13	0.851	0.965
	WCDMA II	RMC 12.2Kbps	Edge 4	0mm	OFF	9400	1880	24.49	25.50	1.262	0.07	0.577	0.728
	WCDMA II	RMC 12.2Kbps	Edge 1	16mm	OFF	9400	1880	24.49	25.50	1.262	0.01	0.362	0.457
	WCDMA II	RMC 12.2Kbps	Bottom Face	22mm	OFF	9400	1880	24.49	25.50	1.262	0.06	0.221	0.279
	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	ON	1413	1732.6	16.10	16.50	1.096	-0.12	0.941	1.032
02	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	ON	1312	1712.4	15.93	16.50	1.140	-0.01	0.954	1.088
	WCDMA IV	RMC 12.2Kbps	Edge 1	0mm	ON	1513	1752.6	15.63	16.50	1.222	0.03	0.890	1.087
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0mm	ON	1413	1732.6	16.10	16.50	1.096	-0.06	0.760	0.833
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0mm	ON	1312	1712.4	15.93	16.50	1.140	0.05	0.828	0.944
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0mm	ON	1513	1752.6	15.63	16.50	1.222	0.06	0.698	0.853
	WCDMA IV	RMC 12.2Kbps	Edge 4	0mm	OFF	1413	1732.6	21.99	23.00	1.262	0.09	0.162	0.204
	WCDMA IV	RMC 12.2Kbps	Edge 1	16mm	OFF	1413	1732.6	21.99	23.00	1.262	-0.13	0.691	0.872
	WCDMA IV	RMC 12.2Kbps	Edge 1	16mm	OFF	1312	1712.4	21.74	23.00	1.337	0.05	0.632	0.845
	WCDMA IV	RMC 12.2Kbps	Edge 1	16mm	OFF	1513	1752.6	21.76	23.00	1.330	0.09	0.640	0.851
	WCDMA IV	RMC 12.2Kbps	Bottom Face	22mm	OFF	1413	1732.6	21.99	23.00	1.262	-0.03	0.104	0.131
	WCDMA V	RMC 12.2Kbps	Edge 1	0mm	ON	4182	836.4	20.08	20.50	1.102	-0.04	0.777	0.856
	WCDMA V	RMC 12.2Kbps	Edge 1	0mm	ON	4132	826.4	19.68	20.50	1.208	0.12	0.825	0.996
	WCDMA V	RMC 12.2Kbps	Edge 1	0mm	ON	4233	846.6	19.50	20.50	1.259	0.05	0.836	1.052
	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	ON	4182	836.4	20.08	20.50	1.102	-0.16	1.020	1.124
	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	ON	4132	826.4	19.68	20.50	1.208	0.07	1.070	1.292
03	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	ON	4233	846.6	19.50	20.50	1.259	0.07	1.070	1.347
	WCDMA V	RMC 12.2Kbps	Edge 4	0mm	OFF	4182	836.4	24.74	25.50	1.191	0.01	0.190	0.226
	WCDMA V	RMC 12.2Kbps	Edge 1	16mm	OFF	4182	836.4	24.74	25.50	1.191	0.04	0.267	0.318
	WCDMA V	RMC 12.2Kbps	Bottom Face	22mm	OFF	4182	836.4	24.74	25.50	1.191	-0.12	0.112	0.133

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Edge 1	0mm	ON	18900	1880	18.16	18.50	1.081	0.08	0.704	0.762
	LTE Band 2	20M	QPSK	50	0	Edge 1	0mm	ON	18900	1880	17.09	17.50	1.099	0.09	0.648	0.712
04	LTE Band 2	20M	QPSK	1	0	Bottom Face	0mm	ON	18900	1880	18.16	18.50	1.081	0.04	1.040	1.125
	LTE Band 2	20M	QPSK	1	0	Bottom Face	0mm	ON	18700	1860	18.09	18.50	1.099	0.04	0.817	0.898
	LTE Band 2	20M	QPSK	1	0	Bottom Face	0mm	ON	19100	1900	17.84	18.50	1.164	0.11	0.830	0.966
	LTE Band 2	20M	QPSK	50	0	Bottom Face	0mm	ON	18900	1880	17.09	17.50	1.099	-0.03	0.828	0.910
	LTE Band 2	20M	QPSK	50	0	Bottom Face	0mm	ON	18700	1860	17.06	17.50	1.107	0.06	0.794	0.878
	LTE Band 2	20M	QPSK	50	0	Bottom Face	0mm	ON	19100	1900	16.90	17.50	1.148	0.09	0.790	0.907
	LTE Band 2	20M	QPSK	100	0	Bottom Face	0mm	ON	18900	1880	17.04	17.50	1.112	-0.04	0.720	0.800
	LTE Band 2	20M	QPSK	1	0	Edge 4	0mm	OFF	18900	1880	24.70	25.50	1.202	0.08	0.457	0.549
	LTE Band 2	20M	QPSK	50	0	Edge 4	0mm	OFF	18900	1880	23.76	24.50	1.186	-0.11	0.369	0.437
	LTE Band 2	20M	QPSK	1	0	Edge 1	16mm	OFF	18900	1880	24.70	25.50	1.202	-0.16	0.387	0.465
	LTE Band 2	20M	QPSK	50	0	Edge 1	16mm	OFF	18900	1880	23.76	24.50	1.186	-0.12	0.283	0.336
	LTE Band 2	20M	QPSK	1	0	Bottom Face	22mm	OFF	18900	1880	24.70	25.50	1.202	-0.01	0.333	0.400
	LTE Band 2	20M	QPSK	50	0	Bottom Face	22mm	OFF	18900	1880	23.76	24.50	1.186	0.04	0.275	0.326
	LTE Band 4	20M	QPSK	1	0	Edge 1	0mm	ON	20175	1732.5	15.58	16.50	1.236	0.07	0.876	1.083
	LTE Band 4	20M	QPSK	50	0	Edge 1	0mm	ON	20175	1732.5	14.52	15.50	1.253	0.09	0.856	1.072
05	LTE Band 4	20M	QPSK	100	0	Edge 1	0mm	ON	20175	1732.5	14.49	15.50	1.262	0.08	0.956	1.206
	LTE Band 4	20M	QPSK	1	0	Bottom Face	0mm	ON	20175	1732.5	15.58	16.50	1.236	-0.11	0.693	0.857
	LTE Band 4	20M	QPSK	50	0	Bottom Face	0mm	ON	20175	1732.5	14.52	15.50	1.253	-0.06	0.645	0.808
	LTE Band 4	20M	QPSK	100	0	Bottom Face	0mm	ON	20175	1732.5	14.49	15.50	1.262	0.05	0.730	0.921
	LTE Band 4	20M	QPSK	1	0	Edge 4	0mm	OFF	20175	1732.5	21.72	23.00	1.343	0.18	0.151	0.203
	LTE Band 4	20M	QPSK	50	0	Edge 4	0mm	OFF	20175	1732.5	20.67	22.00	1.358	-0.13	0.125	0.169
	LTE Band 4	20M	QPSK	1	0	Edge 1	16mm	OFF	20175	1732.5	21.72	23.00	1.343	-0.17	0.735	0.987
	LTE Band 4	20M	QPSK	50	0	Edge 1	16mm	OFF	20175	1732.5	20.67	22.00	1.358	-0.12	0.681	0.925
	LTE Band 4	20M	QPSK	100	0	Edge 1	16mm	OFF	20175	1732.5	20.64	22.00	1.368	0.09	0.602	0.823
	LTE Band 4	20M	QPSK	1	0	Bottom Face	22mm	OFF	20175	1732.5	21.72	23.00	1.343	0.13	0.143	0.191
	LTE Band 4	20M	QPSK	50	0	Bottom Face	22mm	OFF	20175	1732.5	20.67	22.00	1.358	0.04	0.102	0.139
	LTE Band 5	10M	QPSK	1	0	Edge 1	0mm	ON	20525	836.5	20.16	21.00	1.213	0.06	0.814	0.987
	LTE Band 5	10M	QPSK	25	0	Edge 1	0mm	ON	20525	836.5	19.14	20.00	1.219	-0.11	0.677	0.825
	LTE Band 5	10M	QPSK	50	0	Edge 1	0mm	ON	20525	836.5	19.10	20.00	1.230	0.14	0.722	0.889
06	LTE Band 5	10M	QPSK	1	0	Bottom Face	0mm	ON	20525	836.5	20.16	21.00	1.213	0.04	0.982	1.192
	LTE Band 5	10M	QPSK	25	0	Bottom Face	0mm	ON	20525	836.5	19.14	20.00	1.219	-0.13	0.773	0.942
	LTE Band 5	10M	QPSK	50	0	Bottom Face	0mm	ON	20525	836.5	19.10	20.00	1.230	0.12	0.705	0.867
	LTE Band 5	10M	QPSK	1	0	Edge 4	0mm	OFF	20525	836.5	24.55	25.50	1.245	-0.12	0.170	0.212
	LTE Band 5	10M	QPSK	25	0	Edge 4	0mm	OFF	20525	836.5	23.63	24.50	1.222	0.01	0.134	0.164
	LTE Band 5	10M	QPSK	1	0	Edge 1	16mm	OFF	20525	836.5	24.55	25.50	1.245	0.01	0.382	0.475
	LTE Band 5	10M	QPSK	25	0	Edge 1	16mm	OFF	20525	836.5	23.63	24.50	1.222	0.12	0.275	0.336
	LTE Band 5	10M	QPSK	1	0	Bottom Face	22mm	OFF	20525	836.5	24.55	25.50	1.245	-0.14	0.248	0.309
	LTE Band 5	10M	QPSK	25	0	Bottom Face	22mm	OFF	20525	836.5	23.63	24.50	1.222	0.05	0.136	0.166

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
07	LTE Band 7	20M	QPSK	1	0	Edge 1	0mm	ON	21100	2535	14.71	15.50	1.199	-0.06	1.060	1.271
	LTE Band 7	20M	QPSK	1	0	Edge 1	0mm	ON	20850	2510	14.53	15.50	1.250	-0.15	0.963	1.203
	LTE Band 7	20M	QPSK	1	0	Edge 1	0mm	ON	21350	2560	14.67	15.50	1.211	0.11	0.941	1.139
	LTE Band 7	20M	QPSK	50	0	Edge 1	0mm	ON	21100	2535	13.58	14.50	1.236	0.09	0.892	1.103
	LTE Band 7	20M	QPSK	50	0	Edge 1	0mm	ON	20850	2510	13.49	14.50	1.262	-0.15	0.838	1.058
	LTE Band 7	20M	QPSK	50	0	Edge 1	0mm	ON	21350	2560	13.49	14.50	1.262	-0.05	0.853	1.076
	LTE Band 7	20M	QPSK	100	0	Edge 1	0mm	ON	21100	2535	13.54	14.50	1.247	0.09	0.804	1.003
	LTE Band 7	20M	QPSK	1	0	Bottom Face	0mm	ON	21100	2535	14.71	15.50	1.199	0.12	0.708	0.850
	LTE Band 7	20M	QPSK	1	0	Bottom Face	0mm	ON	20850	2510	14.53	15.50	1.250	0.05	0.685	0.856
	LTE Band 7	20M	QPSK	1	0	Bottom Face	0mm	ON	21350	2560	14.67	15.50	1.211	0.12	0.672	0.814
	LTE Band 7	20M	QPSK	50	0	Bottom Face	0mm	ON	21100	2535	13.58	14.50	1.236	0.09	0.615	0.760
	LTE Band 7	20M	QPSK	100	0	Bottom Face	0mm	ON	21100	2535	13.54	14.50	1.247	-0.07	0.505	0.630
	LTE Band 7	20M	QPSK	1	0	Edge 4	0mm	OFF	21100	2535	22.89	23.50	1.151	-0.15	0.452	0.520
	LTE Band 7	20M	QPSK	50	0	Edge 4	0mm	OFF	21100	2535	21.90	22.50	1.148	-0.13	0.426	0.489
	LTE Band 7	20M	QPSK	1	0	Edge 1	16mm	OFF	21100	2535	22.89	23.50	1.151	-0.16	0.510	0.587
	LTE Band 7	20M	QPSK	50	0	Edge 1	16mm	OFF	21100	2535	21.90	22.50	1.148	0.15	0.485	0.557
	LTE Band 7	20M	QPSK	1	0	Bottom Face	22mm	OFF	21100	2535	22.89	23.50	1.151	0.05	0.204	0.234
	LTE Band 7	20M	QPSK	50	0	Bottom Face	22mm	OFF	21100	2535	21.90	22.50	1.148	0.04	0.147	0.169
	LTE Band 17	10M	QPSK	1	0	Edge 1	0mm	ON	23790	710	19.81	21.00	1.315	0.16	0.716	0.942
	LTE Band 17	10M	QPSK	25	0	Edge 1	0mm	ON	23790	710	18.83	20.00	1.309	0.14	0.666	0.872
	LTE Band 17	10M	QPSK	50	0	Edge 1	0mm	ON	23790	710	18.83	20.00	1.309	-0.13	0.613	0.802
08	LTE Band 17	10M	QPSK	1	0	Bottom Face	0mm	ON	23790	710	19.81	21.00	1.315	0.11	0.994	1.307
	LTE Band 17	10M	QPSK	25	0	Bottom Face	0mm	ON	23790	710	18.83	20.00	1.309	0.11	0.796	1.043
	LTE Band 17	10M	QPSK	50	0	Bottom Face	0mm	ON	23790	710	18.83	20.00	1.309	0.18	0.791	1.035
	LTE Band 17	10M	QPSK	1	0	Edge 4	0mm	OFF	23790	710	24.03	25.00	1.250	0.06	0.357	0.446
	LTE Band 17	10M	QPSK	25	0	Edge 4	0mm	OFF	23790	710	22.94	24.00	1.276	0.04	0.300	0.383
	LTE Band 17	10M	QPSK	1	0	Edge 1	16mm	OFF	23790	710	24.03	25.00	1.250	0.01	0.317	0.396
	LTE Band 17	10M	QPSK	25	0	Edge 1	16mm	OFF	23790	710	22.94	24.00	1.276	0.12	0.265	0.338
	LTE Band 17	10M	QPSK	1	0	Bottom Face	22mm	OFF	23790	710	24.03	25.00	1.250	0.02	0.243	0.303
	LTE Band 17	10M	QPSK	25	0	Bottom Face	22mm	OFF	23790	710	22.94	24.00	1.276	-0.07	0.189	0.241

<TDD LTE SAR>

	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	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)
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	ON	41490	2680	17.17	17.50	1.079	62.9	1.006	0.12	0.558	0.606
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	ON	39750	2506	16.46	17.50	1.271	62.9	1.006	0.01	0.752	0.961
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	ON	40185	2549.5	16.81	17.50	1.172	62.9	1.006	-0.13	0.725	0.855
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	ON	40620	2593	17.02	17.50	1.117	62.9	1.006	0.07	0.726	0.816
	LTE Band 41	20M	QPSK	1	0	Edge 1	0mm	ON	41055	2636.5	17.05	17.50	1.109	62.9	1.006	-0.08	0.599	0.668
	LTE Band 41	20M	QPSK	50	0	Edge 1	0mm	ON	41490	2680	16.36	16.50	1.033	62.9	1.006	0.02	0.391	0.406
	LTE Band 41	20M	QPSK	100	0	Edge 1	0mm	ON	41490	2680	16.28	16.50	1.052	62.9	1.006	0.04	0.389	0.412
	LTE Band 41	20M	QPSK	1	0	Bottom Face	0mm	ON	41490	2680	17.17	17.50	1.079	62.9	1.006	-0.03	0.613	0.665
09	LTE Band 41	20M	QPSK	1	0	Bottom Face	0mm	ON	39750	2506	16.46	17.50	1.271	62.9	1.006	-0.17	0.759	0.970
	LTE Band 41	20M	QPSK	1	0	Bottom Face	0mm	ON	40185	2549.5	16.81	17.50	1.172	62.9	1.006	-0.15	0.788	0.929
	LTE Band 41	20M	QPSK	1	0	Bottom Face	0mm	ON	40620	2593	17.02	17.50	1.117	62.9	1.006	-0.17	0.762	0.856
	LTE Band 41	20M	QPSK	1	0	Bottom Face	0mm	ON	41055	2636.5	17.05	17.50	1.109	62.9	1.006	0.04	0.496	0.553
	LTE Band 41	20M	QPSK	50	0	Bottom Face	0mm	ON	41490	2680	16.36	16.50	1.033	62.9	1.006	0.13	0.422	0.438
	LTE Band 41	20M	QPSK	100	0	Bottom Face	0mm	ON	41490	2680	16.28	16.50	1.052	62.9	1.006	0.05	0.413	0.437
	LTE Band 41	20M	QPSK	1	0	Edge 4	0mm	OFF	41490	2680	23.92	24.50	1.143	62.9	1.006	0.06	0.396	0.455
	LTE Band 41	20M	QPSK	50	0	Edge 4	0mm	OFF	41490	2680	22.95	23.50	1.135	62.9	1.006	-0.12	0.369	0.421
	LTE Band 41	20M	QPSK	1	0	Edge 1	16mm	OFF	41490	2680	23.92	24.50	1.143	62.9	1.006	0.09	0.464	0.533
	LTE Band 41	20M	QPSK	50	0	Edge 1	16mm	OFF	41490	2680	22.95	23.50	1.135	62.9	1.006	-0.08	0.440	0.502
	LTE Band 41	20M	QPSK	1	0	Bottom Face	22mm	OFF	41490	2680	23.92	24.50	1.143	62.9	1.006	0.03	0.169	0.194
	LTE Band 41	20M	QPSK	50	0	Bottom Face	22mm	OFF	41490	2680	22.95	23.50	1.135	62.9	1.006	0.08	0.153	0.175

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 1	ON	11	2462	11.60	12.50	1.230	100	1.000	0.02	0.321	0.395
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	0mm	Ant 1	ON	11	2462	11.60	12.50	1.230	100	1.000	-0.02	0.675	0.830
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	0mm	Ant 1	ON	6	2437	11.60	12.50	1.230	100	1.000	0.08	0.558	0.686
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	0mm	Ant 1	ON	1	2412	11.60	12.50	1.230	100	1.000	0.09	0.579	0.712
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	27mm	Ant 1	OFF	1	2412	21.30	21.50	1.047	100	1.000	0.07	0.211	0.221
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	17mm	Ant 1	OFF	1	2412	21.30	21.50	1.047	100	1.000	0.05	0.302	0.316
10	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 2	ON	6	2437	11.90	12.50	1.148	100	1.000	-0.09	1.100	1.263
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 2	ON	1	2412	11.60	12.50	1.230	100	1.000	0.06	0.864	1.063
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 2	ON	11	2462	11.60	12.50	1.230	100	1.000	-0.11	0.785	0.966
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	0mm	Ant 2	ON	6	2437	11.90	12.50	1.148	100	1.000	0.04	0.366	0.420
	WLAN2.4GHz	802.11b 1Mbps	Edge 1	0mm	Ant 2	OFF	1	2412	21.90	22.00	1.023	100	1.000	0.06	0.096	0.098
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	20mm	Ant 2	OFF	1	2412	21.90	22.00	1.023	100	1.000	-0.11	0.286	0.293
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	11mm	Ant 2	OFF	1	2412	21.90	22.00	1.023	100	1.000	0.08	0.489	0.500
	WLAN2.4GHz	802.11g 6Mbps	Bottom Face	0mm	Ant 2	ON	1	2412	11.80	12.50	1.175	98.33	1.017	-0.04	0.765	0.914
	WLAN2.4GHz	802.11g 6Mbps	Bottom Face	0mm	Ant 2	ON	6	2437	11.50	12.50	1.259	98.33	1.017	0.12	0.984	1.260
	WLAN2.4GHz	802.11g 6Mbps	Bottom Face	0mm	Ant 2	ON	11	2462	11.50	12.50	1.259	98.33	1.017	-0.07	0.642	0.822
	WLAN2.4GHz	802.11g 6Mbps	Edge 2	0mm	Ant 2	ON	1	2412	11.80	12.50	1.175	98.33	1.017	0.18	0.325	0.388
	WLAN2.4GHz	802.11g 6Mbps	Edge 1	0mm	Ant 2	OFF	1	2412	19.90	20.00	1.023	97.87	1.022	-0.09	0.072	0.075
	WLAN2.4GHz	802.11g 6Mbps	Bottom Face	20mm	Ant 2	OFF	1	2412	19.90	20.00	1.023	97.87	1.022	0.05	0.154	0.161
	WLAN2.4GHz	802.11g 6Mbps	Edge 2	11mm	Ant 2	OFF	1	2412	19.90	20.00	1.023	97.87	1.022	0.19	0.287	0.300
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	ON	58	5290	9.80	10.00	1.047	93.51	1.069	0.05	0.322	0.360
11	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	ON	58	5290	9.80	10.00	1.047	93.51	1.069	0.09	1.030	1.153
	WLAN5GHz	802.11n-HT40 MCS0	Edge 2	0mm	Ant 1	ON	54	5270	9.70	10.00	1.072	96.84	1.033	0.07	0.958	1.060
	WLAN5GHz	802.11a 6Mbps	Bottom Face	27mm	Ant 1	OFF	60	5300	20.70	21.00	1.072	98.11	1.019	0.04	0.308	0.336
	WLAN5GHz	802.11a 6Mbps	Edge 2	17mm	Ant 1	OFF	60	5300	20.70	21.00	1.072	98.11	1.019	-0.11	0.911	0.995
	WLAN5GHz	802.11a 6Mbps	Edge 2	17mm	Ant 1	OFF	56	5280	20.30	21.00	1.175	98.11	1.019	-0.11	0.864	1.034
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 2	ON	58	5290	9.90	10.00	1.023	92.31	1.083	0.06	0.189	0.209
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	58	5290	9.90	10.00	1.023	92.31	1.083	0.1	0.853	0.945
	WLAN5GHz	802.11n-HT40 MCS0	Edge 2	0mm	Ant 2	ON	62	5310	9.80	10.00	1.047	97.47	1.026	0.05	0.725	0.779
	WLAN5GHz	802.11a 6Mbps	Edge 1	0mm	Ant 2	OFF	64	5320	20.60	21.00	1.096	98.11	1.019	-0.04	0.184	0.206
	WLAN5GHz	802.11a 6Mbps	Bottom Face	20mm	Ant 2	OFF	64	5320	20.60	21.00	1.096	98.11	1.019	0.03	0.088	0.098
	WLAN5GHz	802.11a 6Mbps	Edge 2	11mm	Ant 2	OFF	64	5320	20.60	21.00	1.096	98.11	1.019	0.09	0.409	0.457

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	ON	122	5610	9.90	10.00	1.023	93.51	1.069	0.08	0.523	0.572
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	ON	122	5610	9.90	10.00	1.023	93.51	1.069	0.01	1.090	1.192
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	ON	106	5530	9.80	10.00	1.047	93.51	1.069	0.05	0.802	0.898
	WLAN5GHz	802.11a 6Mbps	Bottom Face	27mm	Ant 1	OFF	116	5580	20.80	21.00	1.047	98.11	1.019	0.04	0.313	0.334
	WLAN5GHz	802.11a 6Mbps	Edge 2	17mm	Ant 1	OFF	116	5580	20.80	21.00	1.047	98.11	1.019	0.12	0.898	0.958
	WLAN5GHz	802.11a 6Mbps	Edge 2	17mm	Ant 1	OFF	100	5500	20.40	21.00	1.148	98.11	1.019	0.06	0.755	0.883
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 2	ON	106	5530	9.80	10.00	1.047	92.31	1.083	0.12	0.122	0.138
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	106	5530	9.80	10.00	1.047	92.31	1.083	0.09	0.911	1.033
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	122	5610	9.50	10.00	1.122	92.31	1.083	0.08	1.050	1.276
12	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	138	5690	9.50	10.00	1.122	92.31	1.083	0.03	1.090	1.325
	WLAN5GHz	802.11n-HT40 MCS0	Edge 2	0mm	Ant 2	ON	102	5510	9.80	10.00	1.047	97.97	1.021	0.11	0.965	1.032
	WLAN5GHz	802.11a 6Mbps	Edge 1	0mm	Ant 2	OFF	100	5500	20.90	21.00	1.023	98.11	1.019	-0.05	0.166	0.173
	WLAN5GHz	802.11a 6Mbps	Bottom Face	20mm	Ant 2	OFF	100	5500	20.90	21.00	1.023	98.11	1.019	0.08	0.112	0.117
	WLAN5GHz	802.11a 6Mbps	Edge 2	11mm	Ant 2	OFF	100	5500	20.90	21.00	1.023	98.11	1.019	0.09	0.585	0.610
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	ON	155	5775	9.20	10.00	1.202	94.84	1.054	-0.07	0.344	0.436
	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	ON	155	5775	9.20	10.00	1.202	94.84	1.054	0.04	0.637	0.807
	WLAN5GHz	802.11n-HT40 MCS0	Edge 2	0mm	Ant 1	ON	151	5755	9.10	10.00	1.230	96.84	1.033	0.09	0.589	0.749
	WLAN5GHz	802.11a 6Mbps	Bottom Face	27mm	Ant 1	OFF	149	5745	20.10	21.00	1.230	98.11	1.019	-0.05	0.261	0.327
	WLAN5GHz	802.11a 6Mbps	Edge 2	17mm	Ant 1	OFF	149	5745	20.10	21.00	1.230	98.11	1.019	-0.06	0.971	1.217
	WLAN5GHz	802.11a 6Mbps	Edge 2	17mm	Ant 1	OFF	157	5785	19.90	21.00	1.288	98.11	1.019	0.11	0.901	1.183
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 2	ON	155	5775	9.40	10.00	1.148	92.31	1.083	0.12	0.289	0.359
13	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	155	5775	9.40	10.00	1.148	92.31	1.083	0.11	0.986	1.226
	WLAN5GHz	802.11n-HT40 MCS0	Edge 2	0mm	Ant 2	ON	159	5795	9.00	10.00	1.259	97.47	1.026	0.06	0.886	1.144
	WLAN5GHz	802.11a 6Mbps	Edge 1	0mm	Ant 2	OFF	149	5745	20.30	21.00	1.175	98.11	1.019	-0.05	0.201	0.241
	WLAN5GHz	802.11a 6Mbps	Bottom Face	20mm	Ant 2	OFF	149	5745	20.30	21.00	1.175	98.11	1.019	0.12	0.289	0.346
	WLAN5GHz	802.11a 6Mbps	Edge 2	11mm	Ant 2	OFF	149	5745	20.30	21.00	1.175	98.11	1.019	-0.11	0.980	1.173
	WLAN5GHz	802.11a 6Mbps	Edge 2	11mm	Ant 2	OFF	165	5825	20.20	21.00	1.202	98.11	1.019	0.06	0.859	1.052

15.2 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	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)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	-	ON	4233	846.6	19.50	20.50	1.259	-	1.000	0.07	1.070	-	1.347
2nd	WCDMA V	RMC 12.2Kbps	Bottom Face	0mm	-	ON	4233	846.6	19.50	20.50	1.259	-	1.000	0	1.010	1.06	1.272
1st	LTE Band 2	20M_QPSK_1_0	Bottom Face	0mm	-	ON	18900	1880	18.16	18.50	1.081	-	1.000	0.04	1.040	-	1.125
2nd	LTE Band 2	20M_QPSK_1_0	Bottom Face	0mm	-	ON	18900	1880	18.16	18.50	1.081	-	1.000	-0.03	0.974	1.07	1.053
1st	LTE Band 4	20M_QPSK_100_0	Edge 1	0mm	-	ON	20175	1732.5	14.49	15.50	1.262	-	1.000	0.08	0.956	-	1.206
2nd	LTE Band 4	20M_QPSK_100_0	Edge 1	0mm	-	ON	20175	1732.5	14.49	15.50	1.262	-	1.000	0.12	0.921	1.04	1.162
1st	LTE Band 7	20M_QPSK_1_0	Edge 1	0mm	-	ON	21100	2535	14.71	15.50	1.199	-	1.000	-0.06	1.060	-	1.271
2nd	LTE Band 7	20M_QPSK_1_0	Edge 1	0mm	-	ON	21100	2535	14.71	15.50	1.199	-	1.000	0.05	1.020	1.04	1.223
1st	LTE Band 17	10M_QPSK_1_0	Bottom Face	0mm	-	ON	23790	710	19.81	21.00	1.315	-	1.000	0.11	0.994	-	1.307
2nd	LTE Band 17	10M_QPSK_1_0	Bottom Face	0mm	-	ON	23790	710	19.81	21.00	1.315	-	1.000	0.05	0.949	1.05	1.248
1st	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 2	ON	6	2437	11.90	12.50	1.148	100	1.000	-0.09	1.100	-	1.263
2nd	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 2	ON	6	2437	11.90	12.50	1.148	100	1.000	-0.05	1.040	1.06	1.194
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	ON	58	5290	9.80	10.00	1.047	93.51	1.069	0.09	1.030	-	1.153
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	ON	58	5290	9.80	10.00	1.047	93.51	1.069	0.01	0.987	1.04	1.105
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	138	5690	9.50	10.00	1.122	92.31	1.083	0.03	1.090	-	1.325
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	138	5690	9.50	10.00	1.122	92.31	1.083	0.02	1.070	1.02	1.300
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	155	5775	9.40	10.00	1.148	92.31	1.083	0.11	0.986	-	1.226
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 2	ON	155	5775	9.40	10.00	1.148	92.31	1.083	-0.08	0.971	1.02	1.207

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
1.	WWAN + WLAN2.4GHz ANT 1 + WLAN2.4GHz ANT 2	Yes
2.	WWAN + WLAN5GHz ANT 1 + WLAN5GHz ANT 2	Yes
3.	WWAN + WLAN2.4GHz ANT 1 + WLAN5GHz ANT 2	Yes
4.	WWAN + Bluetooth	Yes
5.	WLAN + Bluetooth	No

General Note:

1. The Scaled SAR summation is calculated based on the same configuration and test position.
2. Per KDB 447498 D01v06, 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 16.2.
3. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.
   iv) Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
7 dBm	Estimated SAR (W/kg)	0.210 W/kg

16.1 Body Exposure Conditions

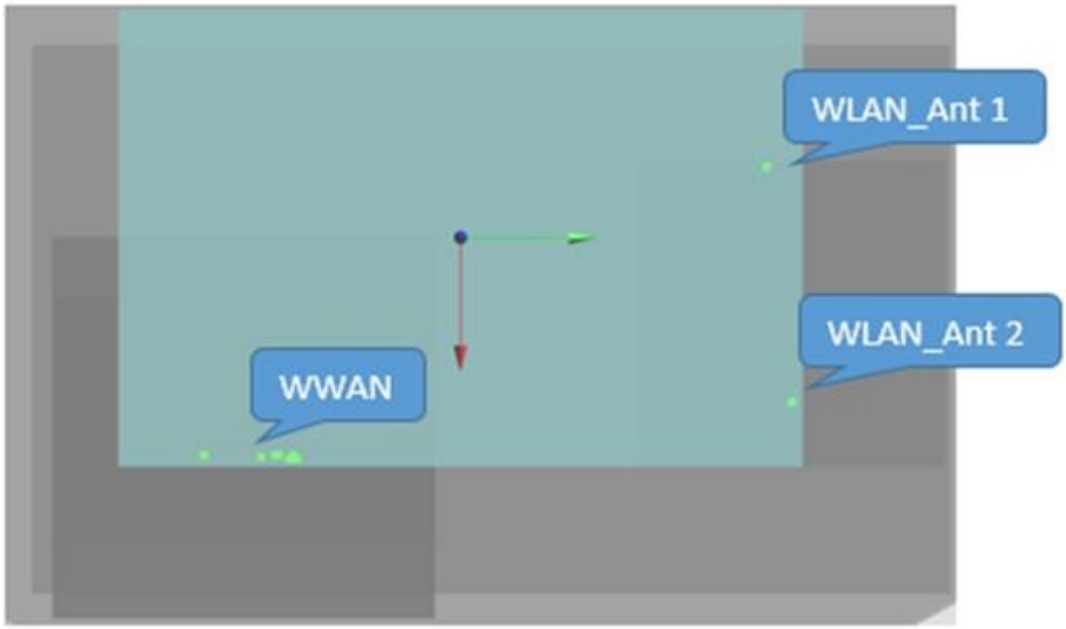
WWAN Band		Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+2+3 SPLSR	1+2+3 Case No	1+4+5 SPLSR	1+4+5 Case No	1+2+5 SPLSR	1+2+5 Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1										
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)										
WCDMA	WCDMA II	Bottom Face	1.087	0.395	1.263	0.572	0.359	0.210	2.745	2.018	1.841	1.297	0.02	Case 1	0.01	Case 2	0.01	Case 3
		Edge 1	0.806		0.098		0.241		0.904	1.047	1.047	0.806						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.728						0.728	0.728	0.728	0.728						
	WCDMA IV	Bottom Face	0.944	0.395	1.263	0.572	0.359	0.210	2.602	1.875	1.698	1.154	0.02	Case 6	0.01	Case 7	0.01	Case 8
		Edge 1	1.088		0.098		0.241		1.186	1.329	1.329	1.088						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.204						0.204	0.204	0.204	0.204						
	WCDMA V	Bottom Face	1.347	0.395	1.263	0.572	0.359	0.210	3.005	2.278	2.101	1.557	0.02	Case 9	0.01	Case 10	0.01	Case 11
		Edge 1	1.052		0.098		0.241		1.150	1.293	1.293	1.052						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.226						0.226	0.226	0.226	0.226						
LTE	LTE Band 2	Bottom Face	1.125	0.395	1.263	0.572	0.359	0.210	2.783	2.056	1.879	1.335	0.02	Case 12	0.01	Case 13	0.01	Case 14
		Edge 1	0.762		0.098		0.241		0.860	1.003	1.003	0.762						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.549						0.549	0.549	0.549	0.549						
	LTE Band 4	Bottom Face	0.921	0.395	1.263	0.572	0.359	0.210	2.579	1.852	1.675	1.131	0.02	Case 15	0.01	Case 16	0.01	Case 17
		Edge 1	1.206		0.098		0.241		1.304	1.447	1.447	1.206						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.203						0.203	0.203	0.203	0.203						
	LTE Band 5	Bottom Face	1.192	0.395	1.263	0.572	0.359	0.210	2.850	2.123	1.946	1.402	0.02	Case 18	0.01	Case 19	0.01	Case 20
		Edge 1	0.987		0.098		0.241		1.085	1.228	1.228	0.987						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.212						0.212	0.212	0.212	0.212						
	LTE Band 7	Bottom Face	0.856	0.395	1.263	0.572	0.359	0.210	2.514	1.787	1.610	1.066	0.02	Case 21	0.01	Case 22	0.01	Case 23
		Edge 1	1.271		0.098		0.241		1.369	1.512	1.512	1.271						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.520						0.520	0.520	0.520	0.520						
	LTE Band 17	Bottom Face	1.307	0.395	1.263	0.572	0.359	0.210	2.965	2.238	2.061	1.517	0.02	Case 24	0.01	Case 25	0.01	Case 26
		Edge 1	0.942		0.098		0.241		1.040	1.183	1.183	0.942						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.446						0.446	0.446	0.446	0.446						
	LTE Band 41	Bottom Face	0.970	0.395	1.263	0.572	0.359	0.210	2.628	1.901	1.724	1.180	0.02	Case 27	0.01	Case 28	0.01	Case 29
		Edge 1	0.961		0.098		0.241		1.059	1.202	1.202	0.961						
		Edge 2		0.830	0.500	1.217	1.325	0.210	1.330	2.542	2.155	0.210			0.04	Case 4	0.03	Case 5
		Edge 4	0.455						0.455	0.455	0.455	0.455						

16.2 SPLSR Evaluation and Analysis

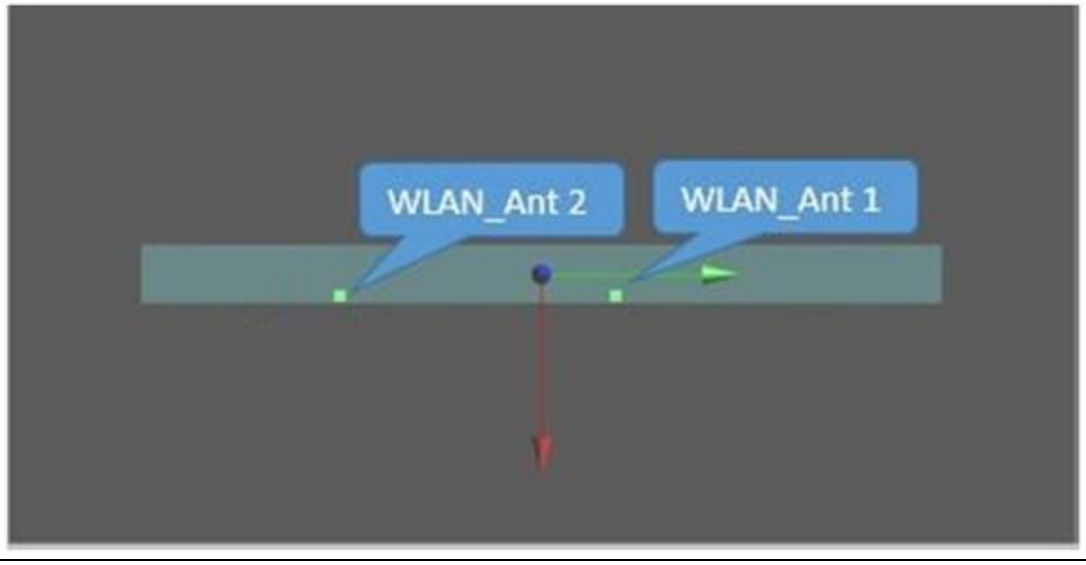
General Note:

1. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
2. 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.

Bottom Face



Edge 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 1	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	WCDMA II	Bottom Face	1.087	0	87.4	-79.4	-2.59	218.4	1.48	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	WCDMA II	Bottom Face	1.087	0	87.4	-79.4	-2.59	210.4	2.35	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	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	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WCDMA II	Bottom Face	1.087	0	87.4	-79.4	-2.59	216.0	1.66	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	WCDMA II	Bottom Face	1.087	0	87.4	-79.4	-2.59	205.7	1.45	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (cm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 3	WCDMA II	Bottom Face	1.087	0	87.4	-79.4	-2.59	218.4	1.48	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	WCDMA II	Bottom Face	1.087	0	87.4	-79.4	-2.59	205.7	1.45	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	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 4	WLAN5G_Ant 1	Edge 2	1.217	17	-0.74	32.54	-4.13	90.4	2.54	0.04	Not required
	WLAN5G_Ant 2		1.325	0	-0.8	-57.8	-2.25				

	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 5	WLAN2.4G_Ant 1	Edge 2	0.83	0	4.2	36	-4.27	94.0	2.16	0.03	Not required
	WLAN5G_Ant 2		1.325	0	-0.8	-57.8	-2.25				

	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 6	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	WCDMA IV	Bottom Face	0.944	0	88.42	-82.75	-2.67	221.8	1.34	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	WCDMA IV	Bottom Face	0.944	0	88.42	-82.75	-2.67	213.9	2.21	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 7	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WCDMA IV	Bottom Face	0.944	0	88.42	-82.75	-2.67	219.4	1.52	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	WCDMA IV	Bottom Face	0.944	0	88.42	-82.75	-2.67	209.1	1.30	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 8	WCDMA IV	Bottom Face	0.944	0	88.42	-82.75	-2.67	221.8	1.34	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	WCDMA IV	Bottom Face	0.944	0	88.42	-82.75	-2.67	209.1	1.30	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 9	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	WCDMA V	Bottom Face	1.347	0	90.4	-65.6	-2.62	208.3	1.74	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	WCDMA V	Bottom Face	1.347	0	90.4	-65.6	-2.62	197.0	2.61	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 10	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WCDMA V	Bottom Face	1.347	0	90.4	-65.6	-2.62	205.9	1.92	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	WCDMA V	Bottom Face	1.347	0	90.4	-65.6	-2.62	192.4	1.71	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 11	WCDMA V	Bottom Face	1.347	0	90.4	-65.6	-2.62	208.3	1.74	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	WCDMA V	Bottom Face	1.347	0	90.4	-65.6	-2.62	192.4	1.71	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 12	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	LTE B2	Bottom Face	1.125	0	87.4	-79.4	-2.68	218.4	1.52	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B2	Bottom Face	1.125	0	87.4	-79.4	-2.68	210.4	2.39	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 13	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	LTE B2	Bottom Face	1.125	0	87.4	-79.4	-2.68	216.0	1.70	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	LTE B2	Bottom Face	1.125	0	87.4	-79.4	-2.68	205.7	1.48	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 14	LTE B2	Bottom Face	1.125	0	87.4	-79.4	-2.68	218.4	1.52	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B2	Bottom Face	1.125	0	87.4	-79.4	-2.68	205.7	1.48	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 15	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	LTE B4	Bottom Face	0.921	0	88.4	-81.8	-2.14	220.9	1.32	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B4	Bottom Face	0.921	0	88.4	-81.8	-2.14	212.9	2.18	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 16	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	LTE B4	Bottom Face	0.921	0	88.4	-81.8	-2.14	218.6	1.49	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	LTE B4	Bottom Face	0.921	0	88.4	-81.8	-2.14	208.2	1.28	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 17	LTE B4	Bottom Face	0.921	0	88.4	-81.8	-2.14	220.9	1.32	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B4	Bottom Face	0.921	0	88.4	-81.8	-2.14	208.2	1.28	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 18	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	LTE B5	Bottom Face	1.192	0	88.8	-68.8	-2.73	210.1	1.59	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B5	Bottom Face	1.192	0	88.8	-68.8	-2.73	200.0	2.46	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 19	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	LTE B5	Bottom Face	1.192	0	88.8	-68.8	-2.73	207.7	1.76	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	LTE B5	Bottom Face	1.192	0	88.8	-68.8	-2.73	195.3	1.55	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 20	LTE B5	Bottom Face	1.192	0	88.8	-68.8	-2.73	210.1	1.59	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B5	Bottom Face	1.192	0	88.8	-68.8	-2.73	195.3	1.55	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 21	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	LTE B7	Bottom Face	0.856	0	89.6	-102.5	-2.15	239.5	1.25	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B7	Bottom Face	0.856	0	89.6	-102.5	-2.15	233.6	2.12	0.01	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 22	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	LTE B7	Bottom Face	0.856	0	89.6	-102.5	-2.15	237.2	1.43	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	LTE B7	Bottom Face	0.856	0	89.6	-102.5	-2.15	228.9	1.22	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 23	LTE B7	Bottom Face	0.856	0	89.6	-102.5	-2.15	239.5	1.25	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B7	Bottom Face	0.856	0	89.6	-102.5	-2.15	228.9	1.22	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 24	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	LTE B17	Bottom Face	1.307	0	88.8	-70.2	-2.72	211.3	1.70	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B17	Bottom Face	1.307	0	88.8	-70.2	-2.72	201.4	2.57	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 25	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	LTE B17	Bottom Face	1.307	0	88.8	-70.2	-2.72	208.9	1.88	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	LTE B17	Bottom Face	1.307	0	88.8	-70.2	-2.72	196.7	1.67	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 26	LTE B17	Bottom Face	1.307	0	88.8	-70.2	-2.72	211.3	1.70	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B17	Bottom Face	1.307	0	88.8	-70.2	-2.72	196.7	1.67	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 27	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	93.9	1.66	0.02	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				
	LTE B41	Bottom Face	0.97	0	86.6	-96	-2.91	232.4	1.37	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B41	Bottom Face	0.97	0	86.6	-96	-2.91	226.9	2.23	0.01	Not required
	WLAN2.4G_Ant 2		1.263	0	66.6	130	-1.77				

	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 28	WLAN5G_Ant 1	Bottom Face	0.572	0	-23.4	106	-2.53	89.7	0.93	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	LTE B41	Bottom Face	0.97	0	86.6	-96	-2.91	230.0	1.54	0.01	Not required
	WLAN5G_Ant 1		0.572	0	-23.4	106	-2.53				
	LTE B41	Bottom Face	0.97	0	86.6	-96	-2.91	222.1	1.33	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (cm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 29	LTE B41	Bottom Face	0.97	0	86.6	-96	-2.91	232.4	1.37	0.01	Not required
	WLAN2.4G_Ant 1		0.395	0	-24.7	108	-2.43				
	LTE B41	Bottom Face	0.97	0	86.6	-96	-2.91	222.1	1.33	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				
	WLAN2.4G_Ant 1	Bottom Face	0.395	0	-24.7	108	-2.43	90.6	0.75	0.01	Not required
	WLAN5G_Ant 2		0.359	0	64.3	125	-2.24				

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17. 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. 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.

18. 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 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

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

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