

TEST REPORT



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1. Report No : DRRFCC2512-0073(1)

2. Customer

• Name : Kyocera Corporation

• Address : Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa, Japan

3. Use of Report : FCC Original Grant

4. Product Name / Model Name : Mobile Phone / EB1220

FCC ID : JOYEB1220

5. FCC Regulation(s) : CFR 47 Part 2 subpart 2.1093

Test Method Used : FCC SAR KDB Publications (Details in test report)

IEC/IEEE 62209-1528:2020

6. Date of Test : 2025.12.01 ~ 2025.12.10

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : Refer to appended test report.

9. Test Result : Refer to attached test report.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Reviewed by
	Name : SeungMin Lim 	Name : HakMin Kim 

2025 . 12 . 29 .

Dt&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Tested by	Reviewed by
DRRFCC2512-0073	Dec. 22, 2025	Initial issue	SeungMin Lim	HakMin Kim
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1. DESCRIPTION OF DEVICE

1.1 General Information

EUT type	Mobile Phone				
FCC ID	JOYEB1220				
Equipment model name	EB1220				
Equipment add model name	N/A				
Equipment serial no.	Identical prototype				
FCC Test Firm Registration No.	704742				
FCC & ISED MRA Designation No.	KR0034				
TX Frequency Range	Band	Mode	Operating Modes	Bandwidth	Frequency
	GSM 850	GSM/GPRS	Voice/Data	-	824.2 MHz ~ 848.8 MHz
	GSM 1900	GSM/GPRS	Voice/Data	-	1 850.2 MHz ~ 1 909.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	826.4 MHz ~ 846.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	699.7 MHz ~ 715.3 MHz
	2.4 GHz W-LAN	802.11b/g/n/ax	Voice/Data	HT20/HE20	2 412 MHz ~ 2 462 MHz
	5.2 GHz W-LAN	802.11a/n/ac/ax	Voice/Data	HT20/VHT20/HE20	5 180 MHz ~ 5 240 MHz
		802.11n/ac/ax	Voice/Data	HT40/VHT40/HE40	5 190 MHz ~ 5 230 MHz
		802.11ac/ax	Voice/Data	VHT80/HE80	5 210 MHz
	5.3 GHz W-LAN	802.11a/n/ac/ax	Voice/Data	HT20/VHT20/HE20	5 260 MHz ~ 5 320 MHz
		802.11n/ac/ax	Voice/Data	HT40/VHT40/HE40	5 270 MHz ~ 5 310 MHz
		802.11ac/ax	Voice/Data	VHT80/HE80	5 290 MHz
	5.6 GHz W-LAN	802.11a/n/ac/ax	Voice/Data	HT20/VHT20/HE20	5 500 MHz ~ 5 720 MHz
		802.11n/ac/ax	Voice/Data	HT40/VHT40/HE40	5 510 MHz ~ 5 710 MHz
		802.11ac/ax	Voice/Data	VHT80/HE80	5 530 MHz ~ 5 690 MHz
6 GHz W-LAN (UNII 5)	802.11ax	Data	HE20	5 935 MHz ~ 6 415 MHz	
	802.11ax	Data	HE40	5 965 MHz ~ 6 405 MHz	
	802.11ax	Data	HE80	5 985 MHz ~ 6 385 MHz	
	802.11ax	Data	HE160	6 025 MHz ~ 6 345 MHz	
Bluetooth	-	Data	-	2 402 MHz ~ 2 480 MHz	
NFC	-	Data	-	13.56 MHz	
Equipment Class	Band	Reported SAR			
		1g SAR (W/kg)			10g SAR (W/kg)
		Head	Body-Worn	Hotspot	Phablet/Extremity
PCE	GSM 850	0.43	0.55	-	-
PCE	GPRS 850	0.43	0.54	0.54	-
PCE	GSM 1900	0.37	0.32	-	-
PCE	GPRS 1900	0.39	0.37	0.37	-
PCE	WCDMA 850	0.30	0.51	0.51	-
PCE	LTE Band 12	0.17	0.19	0.19	-
DTS(SISO)	2.4 GHz W-LAN	0.12	< 0.1	< 0.1	-
DTS(MIMO)	2.4 GHz W-LAN	0.11	0.1	0.1	-
U-NII-1(SISO)	5.2 GHz W-LAN	-	-	-	-
U-NII-1(MIMO)	5.2 GHz W-LAN	-	-	-	-
U-NII-2A(SISO)	5.3 GHz W-LAN	0.11	0.27	-	0.33
U-NII-2A(MIMO)	5.3 GHz W-LAN	0.13	0.30	-	0.29
U-NII-2C(SISO)	5.6 GHz W-LAN	< 0.1	0.27	-	0.25
U-NII-2C(MIMO)	5.6 GHz W-LAN	< 0.1	0.16	-	0.23
U-NII-5(SISO)	6 GHz W-LAN	< 0.1	0.26	-	0.35
U-NII-5(MIMO)	6 GHz W-LAN	0.14	0.32	-	0.38
DSS	Bluetooth(Ant.3)	0.55	0.15	0.20	-
DSS	Bluetooth(Ant.5)	0.12	0.18	0.21	-
DTS	Bluetooth LE(Ant.3)	< 0.1	< 0.1	< 0.1	-
DTS	Bluetooth LE(Ant.5)	< 0.1	< 0.1	< 0.1	-
DXX	NFC	-	-	-	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03		1.12	1.05	0.72	0.38
Equipment Class	Band	Reported APD (W/m²)			
		Head	Body-Worn	Hotspot	Phablet
6XD	6 GHz W-LAN	0.83	2.55	-	9.24
		Reported PD (W/m²)			
		6.05			
TER		0.67	0.96	-	0.61
FCC Equipment Class	Licensed Portable Transmitter Held to Ear (PCE) Part 15 Spread Spectrum Transmitter(DSS) Digital Transmission System(DTS) Unlicensed National Information Infrastructure (UNII) 6 GHz Low Power Indoor Client(6XD) Low Power Communications Device Transmitter (DXX)				
Date(s) of Tests	2025.12.01 ~ 2025.12.10				
Antenna Type	Internal Antenna				
Functions	- GSM/GPRS (GPRS Class: 12) supported. * DTM not supported. - VoIP is supported. - W-LAN 2.4 GHz is supported Hotspot. - W-LAN 5 GHz is not supported Hotspot. - W-LAN 6 GHz is not supported Hotspot.				

1.2 Power Reduction for SAR

There is no power reduction used for any band/mode implemented in this device for SAR purposes.

1.3 Nominal and Maximum Output Power Specifications

The Nominal and Maximum Output Power Specifications are in section 9 of this test report.

1.4 DUT Antenna Locations

The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device of the device antenna can be found in JOYEB1220_Antenna Location. Since the diagonal dimension of this device is > 160 mm and < 200 mm, it is considered a "phablet"

Mode	Device Sides for SAR Testing					
	Top	Bottom	Front	Rear	Right	Left
GSM/GPRS 850 Ant.0	X	O	O	O	X	O
GSM/GPRS 1900 Ant.0	X	O	O	O	X	O
WCDMA 850 Ant.0	X	O	O	O	X	O
LTE Band 12 Ant.0	X	O	O	O	X	O
2.4G W-LAN Ant.3	O	X	O	O	O	X
2.4G W-LAN Ant.5	X	X	O	O	X	O
2.4G W-LAN MIMO	O	X	O	O	O	O
5G W-LAN Ant.3	O	X	O	O	O	X
5G W-LAN Ant.5	X	X	O	O	X	O
5G W-LAN MIMO	O	X	O	O	O	O
6G W-LAN Ant.3	O	X	O	O	O	X
6G W-LAN Ant.5	X	X	O	O	X	O
6G W-LAN MIMO	O	X	O	O	O	O
Bluetooth Ant.3	O	X	O	O	O	X
Bluetooth Ant.5	X	X	O	O	X	O
NFC	O	O	O	O	O	O

Note 1: Particular DUT edges were not required to be evaluated for Hotspot SAR or Phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 648474 D04v01r03. The antenna document shows the distances between the transmit antennas and the edges of the device.

Note 2: O - Test / X - Not test.

1.5 Simultaneous Transmission Capabilities

The Simultaneous Transmission Capabilities are in section 12 of this test report.

1.6 Miscellaneous SAR Test Considerations

(A) WIFI

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB publication 248227 D01v02r02.

(B) Licensed Transmitter(s)

GSM/GPRS DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS Data.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

1.7 Guidance Applied

- IEEE 1528-2013
- IEC/IEEE 62209-1528
- FCC KDB Publication 941225 D01v03r01 (3G SAR Procedures)
- FCC KDB Publication 941225 D05v02r05 (SAR for LTE Devices)
- FCC KDB Publication 941225 D05Av01r02 (LTE Rel.10 KDB Inquiry Sheet)
- FCC KDB Publication 941225 D06v02r01(Hotspot Mode)
- FCC KDB Publication 248227 D01v02r02 (802.11 Wi-Fi SAR)
- FCC KDB Publication 447498 D01v06 (General RF Exposure Guidance)
- FCC KDB Publication 648474 D04v01r03 (Handset SAR)
- FCC KDB Publication 690783 D01v01r03 (SAR Listings on Grants)
- FCC KDB Publication 865664 D01v01r04 (SAR Measurement 100 MHz to 6 GHz)
- FCC KDB Publication 865664 D02v01r02 (RF Exposure Reporting)
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- October 2016 TCB Workshop Notes (Bluetooth Duty Factor)
- October 2016 TCB Workshop Notes (DUT Holder Perturbations)
- April 2019 TCB Workshop Notes (Tissue Simulating Liquids, IEEE 802.11ax)
- April 2021 TCB Workshop Notes (U-NII 6-7 GHz Interim Procedures)
- October 2022 TCB Workshop Notes (IPD and SAR evaluation of f-above-6 GHz portable devices)
- SPEAG DASY6 System Handbook (June 2020)
- SPEAG DASY6 Application Note (Interim Procedures for Devices Operating at 6-10 GHz)

1.8 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

1.9 FCC & ISED MRA test lab designation no. : KR0034

2. LTE INFORMATION

LTE Information					
Form Factor	Mobile Phone				
Frequency Range of each LTE transmission Band	LTE Band 12 (699.7 ~ 715.3 MHz)				
Channel Bandwidths	LTE Band 12 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
Channel Number and Frequencies(MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)	N/A	707.5 (23095)	N/A	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	N/A	707.5 (23095)	N/A	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	N/A	707.5 (23095)	N/A	713.5 (23155)
LTE Band 12: 10 MHz	704.0 (23060)	N/A	707.5 (23095) ^{Note1}	N/A	711.0 (23130)
UE Category	UE Cat 4				
Modulations Supported in UL	QPSK, 16QAM, 64QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	Yes				
A-MPR (Additional MPR) disabled for SAR Testing?	Yes				
LTE Additional Information	This device does not support both UL and DL carrier aggregation.				

Note(s)

1. LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.

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.

3. INTROCUCTION

The FCC and Industry Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ) It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Fig. 3.1)

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

Fig. 3.1 SAR Mathematical Equation

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

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

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

4. DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4.1) and IEEE1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4.1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4.1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

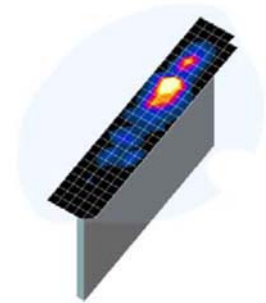


Figure 4.1
Sample SAR Area Scan

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm $\pm$ 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm $\pm$ 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° $\pm$ 1°	20° $\pm$ 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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
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 1 st 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	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm	
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 IEEE Std 1528-2013 for details.				
* When zoom scan is required and the <u>reported</u> SAR from the <u>area scan based 1-g SAR estimation</u> procedures of KDB Publication 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.				

Table 4.1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

5. DEFINITION OF REFERENCE POINTS

5.1 Ear Reference Point

Figure 5.1 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point(ERP), and “RE” is the right ERP. The ERPs are 15 mm posterior to the entrance to the Ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5.1. The plane Passing, through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck- Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 5.1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

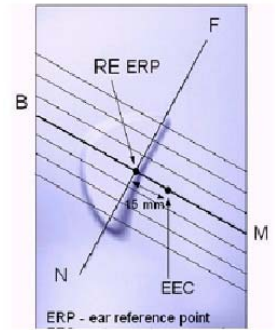


Figure 5.1
Close-up side view
of ERP

5.2 Handset Reference Points

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Fig. 5.3). The “test device reference point” was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5.2 Front, back and side view SAM Twin Phantom

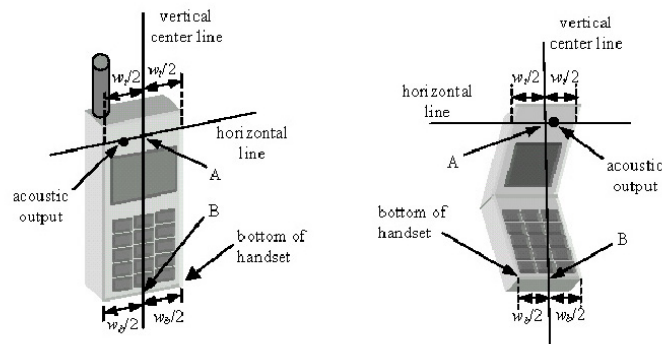


Figure 5.3 Handset Vertical Center & Horizontal Line Reference Points

6. TEST CONFIGURATION POSITIONS FOR HANDSETS

6.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$.

6.2 Positioning for Cheek/Touch

1. The test device was positioned with the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6.1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.



Figure 6.1 Front, Side and Top View of Cheek/Touch Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the ear.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the plane normal to MB-NF including the line MB (reference plane).
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the phone contact with the ear, the handset was rotated about the line NF until any point on the handset made contact with a phantom point below the ear (cheek). (See Figure 6.2)

6.3 Positioning for Ear / 15 ° Tilt

With the test device aligned in the “Cheek/Touch Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15 degree.
2. The phone was then rotated around the horizontal line by 15 degree.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the phone touches the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. The tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6.3).

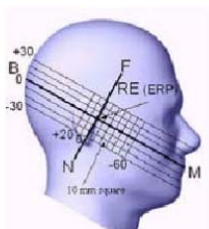


Figure 6.2 Side view w/relevant markings



Figure 6.3 Front, Side and Top View of Ear/15° Position

6.4 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6.4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

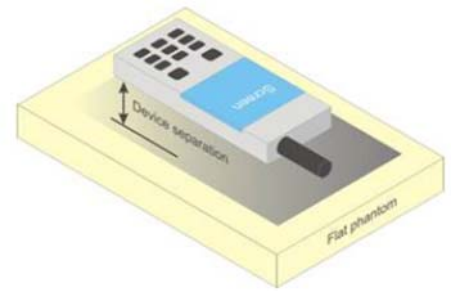


Figure 6.4 Sample Body-Worn Diagram

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

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

6.5 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

6.6 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, rear and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions.

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

6.7 Phablet Configurations

For smart phones with a display diagonal $> 150 \text{ mm}$ or an overall diagonal dimension $> 160 \text{ mm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna $\leq 25 \text{ mm}$ from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR $> 1.2 \text{ W/kg}$.

7. RF EXPOSURE LIMITS

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.

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 employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This 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.

Table 7.1.SAR Human Exposure Specified in ANSI/IEEE C95.1-1992

	HUMAN EXPOSURE LIMITS	
	General Public Exposure (W/kg) or (mW/g)	Occupational Exposure (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.0

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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).

RF Exposure Limits for Frequencies Above 6 GHz

Per §1.1310 (d)(3), the MPE limits are applied for frequencies above 6 GHz. Power Density is expressed in units of W/m^2 or mW/cm^2 .

Peak Spatially Averaged Power Density was evaluated over a circular area of 4 cm^2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes.

Table 7.2. SAR Human Exposure Specified in FCC 47 CFR §1.1310

Human Exposure to Radiofrequency (RF) Radiation Limits		
Frequency Range [MHz]	Power Density [mW/cm ²]	Average Time [Minutes]
(A) Limits For Occupational / Controlled Environments		
1,500 – 100,000	5.0	6
(B) Limits For General Population / Uncontrolled Environments		
1,500 – 100,000	1.0	30

Note: 1.0 mW/cm^2 is 10 W/m^2

8. FCC MEASUREMENT PROCEDURES

Power measurements were performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, When SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01.

The device was placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test were evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device was tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviated by more than 5%, the SAR test and drift measurements were repeated.

8.3 SAR Measurement Conditions for WCDMA (UMTS)

8.3.1 Output Power Verification

Maximum output power is measured on the High, Middle and Low channels for each applicable transmission band according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1s”.

Maximum output power is verified on the High, Middle and Low channels according to the general, descriptions in section 5.2 of 3GPP TS 34.121 (release 5), using the appropriate RMC with TPC, (transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

8.3.2 Head SAR Measurements for Handsets

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all “1s”. SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than 0.25 dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that resulted in the highest SAR for that RF channel in the 12.2 kbps RMC mode.

8.3.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s".

8.3.4 Release 5 HSDPA Data Devices

The following procedures are applicable to HSDPA data devices operating under 3GPP Release 5. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSDPA operates in conjunction with WCDMA and requires an active DPCCH. The default test configuration is to measure SAR in WCDMA with HSDPA remain inactive, to establish a radio link between the test device and a communication test set using a 12.2 kbps RMC configured in Test Loop Mode 1. SAR for HSDPA is selectively measured using the highest reported SAR configuration in WCDMA, with an FRC in H-set 1 and a 12.2 kbps RMC. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCHn) according to exposure conditions, device operating capabilities and maximum output power specified for production units, including tune-up tolerance by applying the 3G SAR test reduction procedures. Maximum output power is verified according to the applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	CM (dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5
Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$ Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. Note 3: 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 signaled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.						

Figure 9.1 Table 1

8.3.5 Release 6 HSUPA Data Devices

The following procedures are applicable to HSPA (HSUPA/HSDPA) data devices operating under 3GPP Release 6. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSUPA operates in conjunction with WCDMA and HSDPA. SAR is initially measured in WCDMA test configurations with HSPA remain inactive. The default test configuration is to establish a radio link between the test device and a communication test set to configure a 12.2 kbps RMC in Test Loop Mode 1. SAR for HSPA is selectively measured with HS-DPCCH, E-DPCCH and E-DPDCH, all enabled, along with a 12.2 kbps RMC using the highest reported SAR configuration in WCDMA with 12.2 kbps RMC only.

An FRC is configured according to HS-DPCCH Sub-test 1 using H-set 1 and QPSK. HSPA is configured according to E-DCH Sub-test 5 requirements. SAR for other HSPA sub-test configurations is confirmed selectively according to exposure conditions, E-DCH UE Category and maximum output power of production units, including tune-up tolerance by applying the 3G SAR test reduction procedure. Maximum output power is verified according to procedures in applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories for HS-DPCCH and HSPA, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_e	β_d	β_d (SF)	β_e/β_d	$\beta_{hs}^{(1)}$	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM ⁽²⁾ (dB)	MPR (dB)	AG ⁽⁴⁾ Index	E-TFCI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	22/15	209/225	1039/225	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	$\beta_{ed}: 47/15$ $\beta_{ed}: 47/15$	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 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_e = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_e$.
Note 2: CM = 1 for $\beta_e/\beta_d = 12/15$, $\beta_{hs}/\beta_e = 24/15$. For all other combinations of DPDCCH, DPCCCH, HS-DPCCCH, E-DPDCCH and E-DPCCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_e/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_e = 10/15$ and $\beta_d = 15/15$.
Note 4: For subtest 5 the β_e/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to $\beta_e = 14/15$ and $\beta_d = 15/15$.
Note 5: Testing UE using E-DPDCCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

Figure 9.2 Table 2

8.4 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05v02r05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The call simulator was used for LTE output power measurement and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

8.4.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.4.3 A-MPR

A-MPR (Addition MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.4.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r05:

- Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
 - The required channel and offset combination with the highest maximum output power is required for SAR.
 - When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channel is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
 - When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
- Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
- Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 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.
- Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to 0.5 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

8.4.5 64QAM uplink

(1) Per KDB 941225 D05 V02r05, we'll measure conducted powers per Section 5.1 for all uplink modulations (QPSK, 16QAM, 64QAM) and include in the test report.

(2) From these power measurements, we will apply the procedures in Section 5.2.4 ("Higher Order Modulations") to determine SAR test reduction for 16QAM and 64QAM test cases.

8.5 SAR Testing with 802.11 Transmitters

The normal network operating configurations are not suitable for measuring the SAR of 802.11 b/g/n transmitters. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227D01v02r02 for more details.

8.5.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92-96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.5.2 U-NII and U-NII-2A

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following, with respect to the highest reported SAR and maximum output power specified for production units. The procedures are applied independently to each exposure configuration; for example, head, body, hotspot mode etc.

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

8.5.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements.

When Terminal Doppler Weather Rader (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification.

Unless band gap channels are permanently disabled, SAR must be considered for these channels. When band gap channels are disabled, each band is tested independently according to the normally required OFDM SAR measurements and probe calibration frequency points requirements.

8.5.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all position in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test position are measured.

8.5.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

8.5.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a and 802.11n or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n or 802.11g then 802.11n is used for SAR measurement. When the maximum output power were the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.5.7 Initial Test Configuration Procedure

For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, and lowest data rate. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured.

8.5.8 Subsequent Test Configuration Procedures

For OFDM configurations, in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure, when applicable. When the highest reported SAR for the initial test configuration, adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power is ≤ 1.2 W/kg, no additional SAR testing for the subsequent test configurations is required.

8.5.9 MIMO SAR Considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

9. RF CONDUCTED POWERS

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06

9.1 GSM Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Voice[dBm]	Burst Average GMSK [dBm]			
		1 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot
GSM/GPRS 850	Maximum	33.9	33.9	30.9	29.1	27.9
	Nominal	32.5	32.5	29.5	27.7	26.5
GSM/GPRS 1900	Maximum	30.9	30.9	27.9	26.1	24.9
	Nominal	29.5	29.5	26.5	24.7	23.5

Table 9.1.1 GSM Nominal and Maximum Output Power Spec

Band	Channel	Maximum Burst-Averaged Output Power(dBm)				
		Voice	GPRS Data (GMSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
GSM 850	128	32.44	32.46	29.65	28.06	26.83
	190	32.53	32.54	29.68	27.94	26.76
	251	32.63	32.66	29.61	27.72	26.77
PCS 1900	512	29.55	29.56	26.54	24.83	23.67
	661	29.70	29.72	26.71	24.95	23.76
	810	29.66	29.68	26.65	24.87	23.74
Band	Channel	Calculated Maximum Frame-Averaged Output Power(dBm)				
		Voice	GPRS Data (GMSK)			
		GSM CS 1 Slot	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot
GSM 850	128	23.41	23.43	23.63	23.80	23.82
	190	23.50	23.51	23.66	23.68	23.75
	251	23.60	23.63	23.59	23.46	23.76
PCS 1900	512	20.52	20.53	20.52	20.57	20.66
	661	20.67	20.69	20.69	20.69	20.75
	810	20.63	20.65	20.63	20.61	20.73
GSM 850		23.47	23.47	23.48	23.44	23.49
PCS 1900		20.47	20.47	20.48	20.44	20.49

Table 9.1.2 GSM Conducted Power

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
- GPRS (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.

GPRS Multislot class: 12 (max 4 TX Uplink slots)
DTM Multislot Class: N/A

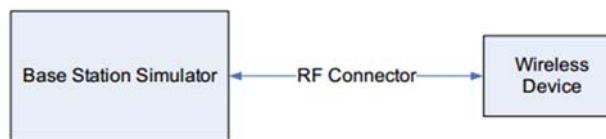


Figure 9.1 Power Measurement Setup

9.2 WCDMA Nominal and Maximum Output Power Spec and Conducted Powers

3GPP Release Version	Mode			Cellular Band (dBm)	3GPP MPR (dB)
99	WCDMA	Voice	Maximum	24.3	-
			Nominal	23.0	
5	HSDPA	Subtest 1	Maximum	23.3	0
			Nominal	22.0	
5		Subtest 2	Maximum	23.3	0
			Nominal	22.0	
5		Subtest 3	Maximum	22.8	0.5
			Nominal	21.5	
5		Subtest 4	Maximum	22.8	0.5
			Nominal	21.2	
6	HSUPA	Subtest 1	Maximum	23.3	0
			Nominal	22.0	
6		Subtest 2	Maximum	21.3	2
			Nominal	20.0	
6		Subtest 3	Maximum	22.3	1
			Nominal	21.0	
6		Subtest 4	Maximum	21.3	2
			Nominal	20.0	
6		Subtest 5	Maximum	23.3	0
			Nominal	22.0	

Table 9.1.1 WCDMA Nominal and Maximum Output Power Spec

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band (dBm)			3GPP MPR (dB)
			4132	4183	4233	
99	WCDMA	12.2 kbps RMC	23.15	23.16	23.13	-
99		12.2 kbps AMR	23.11	23.14	23.10	-
5	HSDPA	Subtest 1	22.28	21.93	22.03	0
5		Subtest 2	22.10	21.95	21.95	0
5		Subtest 3	21.74	21.62	21.68	0.5
5		Subtest 4	21.65	21.53	21.62	0.5
6	HSUPA	Subtest 1	22.18	21.96	22.05	0
6		Subtest 2	20.20	20.17	20.14	2
6		Subtest 3	21.21	21.10	20.96	1
6		Subtest 4	20.15	20.02	20.17	2
6		Subtest 5	22.17	22.10	21.99	0

Table 9.1.2 WCDMA Conducted Power

WCDMA SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

The manufacturer declares that the HSDPA and HSUPA transmitter's power will not exceed the R99 maximum transmit power in devices based on Qualcomm's HSPA chipset solutions.

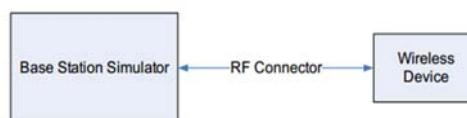


Figure 9.2 Power Measurement Setup

9.3 LTE Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Modulated Average[dBm]
LTE Band 12	Maximum	24.3
	Nominal	23.0

Table 9.3.1.1 Nominal and Maximum Output Power Spec

1) LTE Band 12

LTE Band 12 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23095 (707.5 MHz)		
			Conducted Power (dBm)		
QPSK	1	0	23.25	≤ 1	0
	1	25	23.45		
	1	49	23.43		
	25	0	22.29		1
	25	12	22.36		
	25	25	22.34		
16QAM	50	0	22.34	≤ 1	1
	1	0	22.35		1
	1	25	22.63		
	1	49	22.62		
	25	0	21.12		2
	25	12	21.30		
64QAM	25	25	21.28		
	50	0	21.27	≤ 2	2
	1	0	21.30		2
	1	25	21.63		
	1	49	21.50		
	25	0	20.16		3
64QAM	25	12	20.27		
	25	25	20.16		
	50	0	20.39	≤ 3	3

Table 9.3.1.2 LTE Conducted Power

Note : LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.

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.

LTE Band 12 Conducted Power-- 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23035 (701.5 MHz)	23095 (707.5 MHz)	23155 (713.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.23	23.25	23.18	≤ 1	0
	1	12	23.35	23.31	23.31		
	1	24	23.25	23.16	23.26		
	12	0	22.22	22.17	22.26		1
	12	6	22.29	22.20	22.33		
	12	13	22.28	22.14	22.32		
	25	0	22.31	22.25	22.21		
16QAM	1	0	22.34	22.42	22.27	≤ 1	1
	1	12	22.54	22.46	22.41		
	1	24	22.34	22.21	22.33		
	12	0	21.38	21.31	21.27	≤ 2	2
	12	6	21.38	21.36	21.36		
	12	13	21.38	21.31	21.34		
	25	0	21.46	21.34	21.40		
64QAM	1	0	21.40	21.33	21.30	≤ 2	2
	1	12	21.51	21.42	21.42		
	1	24	21.40	21.31	21.22		
	12	0	20.24	20.20	20.30	≤ 3	3
	12	6	20.32	20.31	20.34		
	12	13	20.28	20.17	20.25		
	15	0	20.33	20.28	20.37		

Table 9.3.1.3 LTE Conducted Power

LTE Band 12 Conducted Power-- 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.37	23.30	23.27	≤ 1	0
	1	7	23.44	23.37	23.29		
	1	14	23.35	23.33	23.20		
	8	0	22.28	22.09	22.14		1
	8	4	22.29	22.21	22.25		
	8	7	22.17	22.14	22.19		
	15	0	22.26	22.30	22.22		
16QAM	1	0	22.57	22.45	22.36	≤ 1	1
	1	7	22.62	22.49	22.38		
	1	14	22.53	22.47	22.34		
	8	0	21.37	21.27	21.26	≤ 2	2
	8	4	21.46	21.37	21.42		
	8	7	21.37	21.25	21.21		
	15	0	21.40	21.21	21.35		
64QAM	1	0	21.54	21.41	21.39	≤ 2	2
	1	7	21.57	21.50	21.44		
	1	14	21.51	21.49	21.33		
	8	0	20.40	20.23	20.25	≤ 3	3
	8	4	20.42	20.36	20.26		
	8	7	20.25	20.33	20.21		
	15	0	20.39	20.35	20.35		

Table 9.3.1.4 LTE Conducted Power

LTE Band 12 Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.15	23.27	23.15	≤ 1	0
	1	2	23.24	23.43	23.29		
	1	5	23.22	23.39	23.24		
	3	0	23.29	23.36	23.20		
	3	2	23.30	23.41	23.32		
	3	3	23.26	23.27	23.20		
	6	0	22.23	22.22	22.17	1	
16QAM	1	0	22.31	22.44	22.34	≤ 1	1
	1	2	22.43	22.52	22.39		
	1	5	22.23	22.47	22.38		
	3	0	22.49	22.37	22.34		
	3	2	22.49	22.49	22.44		
	3	3	22.34	22.29	22.37		
	6	0	21.42	21.33	21.37	≤ 2	2
64QAM	1	0	21.27	21.34	21.33	≤ 2	2
	1	2	21.39	21.46	21.36		
	1	5	21.22	21.45	21.26		
	3	0	21.21	21.42	21.25		
	3	2	21.40	21.47	21.46		
	3	3	21.35	21.40	21.24		
	6	0	20.40	20.19	20.22	≤ 3	3

Table 9.3.1.5 LTE Conducted Power

9.4 WLAN Nominal and Maximum Output Power Spec and Conducted Powers

Band (GHz)	Mode	Ch	Modulated Average[dBm]					
			Ant.3		Ant.5		MIMO(CDD/SDM)	
			Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
2.4	802.11b	1-11	12.0	9.0	12.0	9.0	15.0	12.0
	802.11g	1-11	12.0	9.0	12.0	9.0	15.0	12.0
	802.11n	1-11	12.0	9.0	12.0	9.0	15.0	12.0
	802.11ax/RU	1-11	12.0	9.0	12.0	9.0	15.0	12.0

Table 9.4.1 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11 (2.4 GHz) Conducted Power[dBm]					
			Ant.3		Ant.5		MIMO	
802.11b	2 412	1	11.20		11.63		14.61	
	2 437	6	11.22		11.76		14.60	
	2 462	11	10.90		11.44		14.47	
	2 412	1	11.66		11.62		14.55	
802.11g	2 437	6	11.75		11.61		14.48	
	2 462	11	11.59		11.43		14.42	
	2 412	1	11.55		11.62		14.49	
802.11n (HT-20)	2 437	6	11.59		11.56		14.50	
	2 462	11	11.54		11.38		14.39	
	2 412	1	11.55		11.61		14.49	
802.11ax (HE20)	2 437	6	11.68		11.73		14.55	
	2 462	11	11.54		11.32		14.40	

Table 9.4.2 IEEE 802.11 Average RF Power

Band (GHz)	Mode	Ch	Modulated Average[dBm]					
			Ant.3		Ant.5		MIMO(CDD/SDM)	
			Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
5 (UNII)	802.11a	36-144	12.0	9.0	12.0	9.0	15.0	12.0
	802.11n/ac/ax/RU (20MHz)	36-144	12.0	9.0	12.0	9.0	15.0	12.0
	802.11n/ac/ax/RU (40MHz)	38-142	12.0	9.0	12.0	9.0	15.0	12.0
	802.11ac/ax/RU (80MHz)	42-138	12.0	9.0	12.0	9.0	15.0	12.0

Table 9.4.5 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11a (5 GHz) Conducted Power[dBm]					
			Ant.3		Ant.5		MIMO	
802.11a	5 180	36	11.12		11.81		14.65	
	5 200	40	11.21		11.93		14.71	
	5 220	44	11.30		11.88		14.76	
	5 240	48	11.49		11.80		14.56	
	5 260	52	11.53		11.70		14.64	
	5 280	56	11.61		11.75		14.67	
	5 300	60	11.70		11.86		14.57	
	5 320	64	11.57		11.78		14.65	
	5 500	100	11.85		11.56		14.61	
	5 580	116	11.65		11.60		14.59	
	5 660	132	11.29		11.54		14.52	
	5 700	140	11.02		11.41		14.61	
	5 720	144	10.95		11.51		14.72	

Table 9.4.6 IEEE 802.11a Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT20 (5 GHz) Conducted Power[dBm]					
			Ant.3		Ant.5		MIMO	
802.11n (HT20)	5 180	36	10.92		11.78		14.50	
	5 200	40	11.16		11.76		14.61	
	5 220	44	11.24		11.71		14.63	
	5 240	48	11.45		11.70		14.45	
	5 260	52	11.45		11.68		14.54	
	5 280	56	11.53		11.58		14.58	
	5 300	60	11.55		11.76		14.44	
	5 320	64	11.57		11.78		14.50	
	5 500	100	11.69		11.06		14.44	
	5 580	116	11.50		10.97		14.57	
	5 660	132	11.22		11.09		14.40	
	5 700	140	10.93		11.25		14.48	
	5 720	144	10.89		11.23		14.64	

Table 9.4.7 IEEE 802.11n HT20 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT20 (5 GHz) Conducted Power[dBm]					
			Ant.3		Ant.5		MIMO	
802.11ac (VHT20)	5 180	36	11.05		11.73		14.47	
	5 200	40	11.17		11.81		14.57	
	5 220	44	11.26		11.84		14.66	
	5 240	48	11.32		11.62		14.47	
	5 260	52	11.49		11.63		14.51	
	5 280	56	11.56		11.64		14.48	
	5 300	60	11.52		11.73		14.53	
	5 320	64	11.54		11.71		14.50	
	5 500	100	11.81		11.46		14.56	
	5 580	116	11.50		11.21		14.44	
	5 660	132	11.22		11.39		14.44	
	5 700	140	11.01		11.53		14.54	
	5 720	144	10.93		11.36		14.61	

Table 9.4.8 IEEE 802.11ac VHT20 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT40 (5 GHz) Conducted Power[dBm]					
			Ant.3		Ant.5		MIMO	
802.11n (HT40)	5 190	38	11.17		11.74		14.53	
	5 230	46	11.18		11.71		14.62	
	5 270	54	11.33		11.52		14.60	
	5 310	62	11.44		11.57		14.45	
	5 510	102	11.57		11.71		14.58	
	5 550	110	11.57		11.63		14.47	
	5 670	134	11.69		11.42		14.46	
	5 710	142	11.75		11.65		14.48	

Table 9.4.9 IEEE 802.11n HT40 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT40 (5 GHz) Conducted Power[dBm]		
			Ant.3	Ant.5	MIMO
802.11ac (VHT40)	5 190	38	10.93	11.80	14.60
	5 230	46	11.20	11.72	14.56
	5 270	54	11.13	11.58	14.53
	5 310	62	11.41	11.71	14.51
	5 510	102	11.35	11.15	14.56
	5 550	110	11.56	11.02	14.56
	5 670	134	11.60	11.04	14.41
	5 710	142	11.68	11.04	14.50

Table 9.4.10 IEEE 802.11ac VHT40 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT80 (5 GHz) Conducted Power[dBm]		
			Ant.3	Ant.5	MIMO
802.11ac (VHT80)	5 210	42	10.97	11.70	14.58
	5 290	58	11.15	11.38	14.65
	5 530	106	11.20	11.58	14.46
	5 610	122	11.41	11.23	14.56
	5 690	138	11.52	11.16	14.63

Table 9.4.11 IEEE 802.11ac VHT80 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ax HE20 (5 GHz) Conducted Power[dBm]		
			Ant.3	Ant.5	MIMO
802.11ax (HE20)	5 180	36	11.09	11.79	14.60
	5 200	40	11.03	11.83	14.62
	5 220	44	11.13	11.83	14.52
	5 240	48	11.44	11.63	14.45
	5 260	52	11.50	11.66	14.51
	5 280	56	11.57	11.64	14.58
	5 300	60	11.51	11.69	14.41
	5 320	64	11.58	11.84	14.49
	5 500	100	11.79	11.12	14.57
	5 580	116	11.61	11.30	14.44
	5 660	132	11.09	11.50	14.46
	5 700	140	10.89	11.48	14.49
	5 720	144	10.82	11.43	14.50

Table 9.4.7 IEEE 802.11ax HE20 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT40 (5 GHz) Conducted Power[dBm]		
			Ant.3	Ant.5	MIMO
802.11ax (HE40)	5 190	38	10.98	11.63	14.56
	5 230	46	11.08	11.67	14.66
	5 270	54	11.26	11.51	14.58
	5 310	62	11.48	11.64	14.47
	5 510	102	11.49	11.40	14.54
	5 550	110	11.57	11.66	14.52
	5 670	134	11.68	11.42	14.48
	5 710	142	11.59	11.52	14.45

Table 9.4.9 IEEE 802.11ax HE40 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11ac VHT80 (5 GHz) Conducted Power[dBm]		
			Ant.3	Ant.5	MIMO
802.11ax (HE80)	5 210	42	11.04	11.65	14.53
	5 290	58	11.14	11.54	14.62
	5 530	106	11.18	11.70	14.40
	5 610	122	11.39	11.26	14.50
	5 690	138	11.52	11.14	14.60

Table 9.4.11 IEEE 802.11ax HE80 Average RF Power

Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.
- Output Power and SAR is not required for 802.11 g/n HT20/ax HE20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjust SAR is ≤ 1.2 W/kg.
- The underlined data rate and channel above were tested for SAR.

Band	Mode	RU/SU	Modulated Average[dBm]					
			Ant.3		Ant.5		MIMO	
			Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
Wi-Fi 6 GHz (UNII 5)	802.11ax HE20	RU26	-4.5	-7.5	-4.5	-7.5	-1.5	-4.5
		RU52	-1.5	-4.5	-1.5	-4.5	1.5	-1.5
		RU106	1.5	-1.5	1.5	-1.5	4.5	1.5
		RU242	3.0	0.0	3.0	0.0	6.0	3.0
	802.11ax HE40	RU26	-4.5	-7.5	-4.5	-7.5	-1.5	-4.5
		RU52	-1.5	-4.5	-1.5	-4.5	1.5	-1.5
		RU106	1.5	-1.5	1.5	-1.5	4.5	1.5
		RU242	3.0	0.0	3.0	0.0	6.0	3.0
		RU484	6.0	3.0	6.0	3.0	9.0	6.0
	802.11ax HE80	RU26	-4.5	-7.5	-4.5	-7.5	-1.5	-4.5
		RU52	-1.5	-4.5	-1.5	-4.5	1.5	-1.5
		RU106	1.5	-1.5	1.5	-1.5	4.5	1.5
		RU242	3.0	0.0	3.0	0.0	6.0	3.0
		RU484	6.0	3.0	6.0	3.0	9.0	6.0
		RU996	9.0	6.0	9.0	6.0	12.0	9.0
	802.11ax HE160	RU26	-4.5	-7.5	-4.5	-7.5	-1.5	-4.5
		RU52	-1.5	-4.5	-1.5	-4.5	1.5	-1.5
		RU106	1.5	-1.5	1.5	-1.5	4.5	1.5
		RU242	3.0	0.0	3.0	0.0	6.0	3.0
		RU484	6.0	3.0	6.0	3.0	9.0	6.0
		RU996	9.0	6.0	9.0	6.0	12.0	9.0
		RU996*2/SU	12.0	9.0	12.0	9.0	15.0	12.0

Table 8.2.1 Nominal and Maximum Output Power Spec

Band	Mode	Ch	Conducted Power[dBm]		
			Ant.3	Ant.5	MIMO
Wi-Fi 6 GHz (UNII 5)	802.11ax HE20	2	2.47	2.15	5.26
		45	2.44	2.21	5.25
		93	2.37	1.96	5.09
	802.11ax HE40	2	5.23	5.36	8.17
		45	5.21	5.30	8.22
		93	5.19	5.13	8.22
	802.11ax HE80	7	8.40	8.58	11.93
		39	8.28	8.45	11.95
		87	8.30	8.45	11.84
	802.11ax HE160	15	11.54	11.47	13.94
		47	11.42	11.44	13.80
		79	11.63	11.68	14.06

Table 8.2.2 Average RF Power

Justification for reduced test configurations for WIFI channels per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

The average output powers of this device were tested by below configuration.

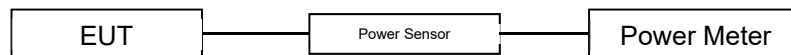


Figure 9.4 Power Measurement Setup

9.5 Bluetooth Nominal and Maximum Output Power Spec and Conducted Powers

Channel	Frequency (MHz)	Burst AVG Output Power (1Mbps) (dBm)	Frame AVG Output Power (1Mbps) (dBm)	Burst AVG Output Power (2Mbps) (dBm)	Frame AVG Output Power (2Mbps) (dBm)	Burst AVG Output Power (3Mbps) (dBm)	Frame AVG Output Power (3Mbps) (dBm)
Low	2 402	17.90	16.76	16.90	15.76	16.90	15.76
Mid	2 441	17.90	16.76	16.90	15.76	16.90	15.76
High	2 480	17.90	16.76	16.90	15.76	16.90	15.76

Table 9.5.1 Nominal and Maximum Output Power Spec (Burst/Frame) (Ant.3)

Channel	Frequency (MHz)	Burst AVG Output Power (1Mbps) (dBm)	Frame AVG Output Power (1Mbps) (dBm)	Burst AVG Output Power (2Mbps) (dBm)	Frame AVG Output Power (2Mbps) (dBm)	Burst AVG Output Power (3Mbps) (dBm)	Frame AVG Output Power (3Mbps) (dBm)
Low	2 402	14.07	12.92	13.86	12.71	13.78	12.63
Mid	2 441	14.11	12.96	13.80	12.65	13.90	12.75
High	2 480	14.05	12.90	13.88	12.73	13.86	12.71

Table 9.5.2 Bluetooth Burst and Frame Average RF Power (Ant.3)

Channel	Frequency (MHz)	Burst AVG Output Power (LE / 1Mbps) (dBm)	Frame AVG Output Power (LE / 1Mbps) (dBm)	Burst AVG Output Power (LE / 2Mbps) (dBm)	Frame AVG Output Power (LE / 2Mbps) (dBm)	Burst AVG Output Power (LE / Long Range) (dBm)	Frame AVG Output Power (LE / Long Range) (dBm)
Low	2 402	9.60	8.46	9.60	8.46	9.60	8.46
Mid	2 440	9.60	8.46	9.60	8.46	9.60	8.46
High	2 480	9.60	8.46	9.60	8.46	9.60	8.46

Table 9.5.3 Nominal and Maximum Output Power Spec (Burst/Frame) (Ant.3)

Channel	Frequency (MHz)	Burst AVG Output Power (LE / 1Mbps) (dBm)	Frame AVG Output Power (LE / 1Mbps) (dBm)	Burst AVG Output Power (LE / 2Mbps) (dBm)	Frame AVG Output Power (LE / 2Mbps) (dBm)	Burst AVG Output Power (LE / Long Range) (dBm)	Frame AVG Output Power (LE / Long Range) (dBm)
Low	2 402	5.55	2.69	5.52	2.64	5.50	2.69
Mid	2 440	4.84	1.98	4.81	1.93	4.79	1.93
High	2 480	6.34	3.48	6.32	3.44	6.30	3.44

Table 9.5.4 Bluetooth Burst and Frame Average RF Power (Ant.3)

Channel	Frequency (MHz)	Burst AVG Output Power (1Mbps) (dBm)	Frame AVG Output Power (1Mbps) (dBm)	Burst AVG Output Power (2Mbps) (dBm)	Frame AVG Output Power (2Mbps) (dBm)	Burst AVG Output Power (3Mbps) (dBm)	Frame AVG Output Power (3Mbps) (dBm)
Low	2 402	17.20	16.06	16.20	15.06	16.20	15.06
Mid	2 441	17.20	16.06	16.20	15.06	16.20	15.06
High	2 480	17.20	16.06	16.20	15.06	16.20	15.06

Table 9.5.5 Nominal and Maximum Output Power Spec (Burst/Frame) (Ant.5)

Channel	Frequency (MHz)	Burst AVG Output Power (1Mbps) (dBm)	Frame AVG Output Power (1Mbps) (dBm)	Burst AVG Output Power (2Mbps) (dBm)	Frame AVG Output Power (2Mbps) (dBm)	Burst AVG Output Power (3Mbps) (dBm)	Frame AVG Output Power (3Mbps) (dBm)
Low	2 402	14.02	12.87	13.71	12.56	13.85	12.70
Mid	2 441	14.08	12.93	13.77	12.62	13.88	12.73
High	2 480	14.05	12.90	13.76	12.61	13.82	12.67

Table 9.5.6 Bluetooth Burst and Frame Average RF Power (Ant.5)

Channel	Frequency (MHz)	Burst AVG Output Power (LE / 1Mbps) (dBm)	Frame AVG Output Power (LE / 1Mbps) (dBm)	Burst AVG Output Power (LE / 2Mbps) (dBm)	Frame AVG Output Power (LE / 2Mbps) (dBm)	Burst AVG Output Power (LE / Long Range) (dBm)	Frame AVG Output Power (LE / Long Range) (dBm)
Low	2 402	9.60	8.46	9.60	8.46	9.60	8.46
Mid	2 440	9.60	8.46	9.60	8.46	9.60	8.46
High	2 480	9.60	8.46	9.60	8.46	9.60	8.46

Table 9.5.7 Nominal and Maximum Output Power Spec (Burst/Frame) (Ant.5)

Channel	Frequency (MHz)	Burst AVG Output Power (LE / 1Mbps) (dBm)	Frame AVG Output Power (LE / 1Mbps) (dBm)	Burst AVG Output Power (LE / 2Mbps) (dBm)	Frame AVG Output Power (LE / 2Mbps) (dBm)	Burst AVG Output Power (LE / Long Range) (dBm)	Frame AVG Output Power (LE / Long Range) (dBm)
Low	2 402	5.35	2.29	5.28	2.40	5.32	2.26
Mid	2 440	5.99	3.93	5.91	3.03	5.95	2.89
High	2 480	5.55	2.49	5.53	2.65	5.52	2.46

Table 9.5.8 Bluetooth Burst and Frame Average RF Power (Ant.5)

Bluetooth Conducted Powers procedures

1. Bluetooth (BDR, EDR)

1) Enter DUT mode in EUT and operate it.

When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.

2) Instruments and EUT were connected like Figure 9.5.1.

3) The maximum output powers of BDR(1 Mbps), EDR(2, 3 Mbps) and each frequency were set by a Bluetooth Tester.

4) Power levels were measured by a Power Meter.

2. Bluetooth (LE)

1) Enter LE mode in EUT and operate it.

When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.

2) Instruments and EUT were connected like Figure 9.5.1.

3) The average conducted output powers of LE and each frequency can measurement according to setting program in EUT.

4) Power levels were measured by a Power Meter.

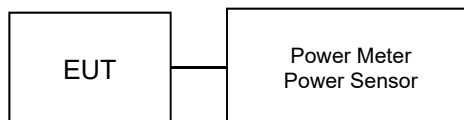


Figure 9.5.1 Average Power Measurement Setup

- Bluetooth Transmission Plot (Ant.3)

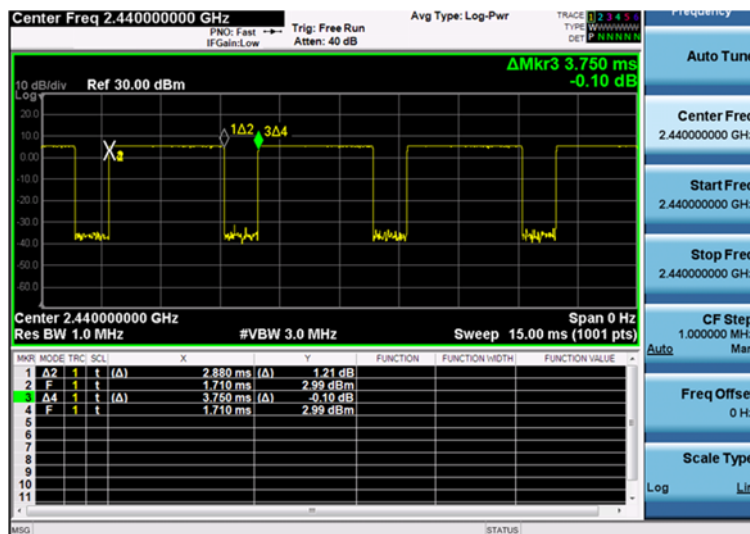


Figure 9.5.2 Bluetooth Transmission Plot

- Bluetooth Duty Cycle Calculation

$$\text{Duty Cycle} = \text{Pulse/Period} * 100\% = (2.880/3.750) * 100 = 76.8 \%$$

- Bluetooth LE Transmission Plot (Ant.3)

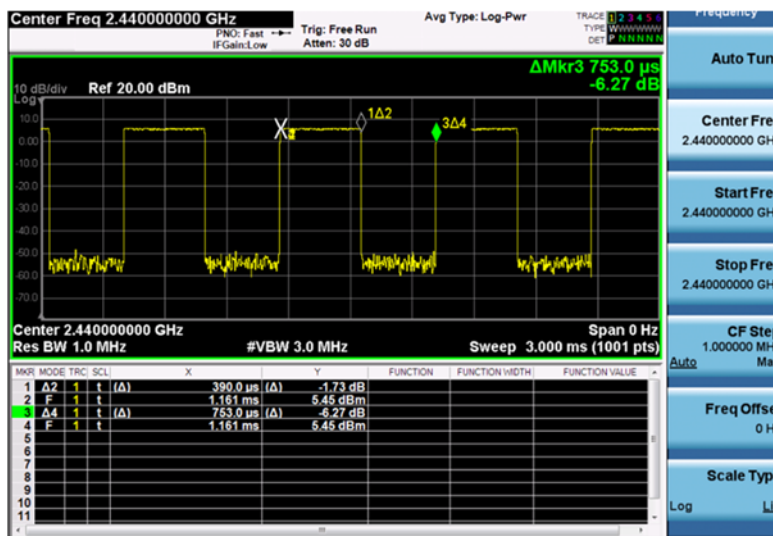


Figure 9.5.3 Bluetooth Transmission Plot

- Bluetooth LE Duty Cycle Calculation

$$\text{Duty Cycle} = \text{Pulse/Period} * 100\% = (390.0/753.0) * 100 = 51.8\%$$

- Bluetooth Transmission Plot (Ant.5)



Figure 9.5.4 Bluetooth Transmission Plot

- Bluetooth Duty Cycle Calculation

$$\text{Duty Cycle} = \text{Pulse/Period} * 100\% = (2.880/3.750) * 100 = 76.8 \%$$

- Bluetooth LE Transmission Plot (Ant.5)



Figure 9.5.5 Bluetooth Transmission Plot

- Bluetooth LE Duty Cycle Calculation

$$\text{Duty Cycle} = \text{Pulse/Period} * 100\% = (392.0/757.0) * 100 = 51.8\%$$

10. SYSTEM VERIFICATION

10.1 Tissue Verification

MEASURED TISSUE PARAMETERS										
Date(s)	Tissue Type	Ambient Temp.[°C]	Liquid Temp.[°C]	Measured Frequency [MHz]	Target Dielectric Constant, ϵ_r	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ_r	Measured Conductivity, σ (S/m)	Er Deviation [%]	σ Deviation [%]
Dec. 5. 2025	13 Head	21.3	21.2	12.0	55.000	0.750	55.722	0.762	1.31	1.60
				13.0	55.000	0.750	55.663	0.770	1.21	2.67
				13.6	55.000	0.750	56.083	0.770	1.97	2.67
				14.0	55.000	0.750	55.645	0.771	1.17	2.80
Dec. 4. 2025	750 Head	21.2	21.1	707.5	42.129	0.887	40.808	0.894	-3.14	0.79
				750.0	41.900	0.890	40.726	0.908	-2.80	2.02
Dec. 1. 2025	835 Head (GSM)	21.5	21.4	824.2	41.552	0.899	42.931	0.904	3.32	0.56
				835.0	41.500	0.900	42.930	0.910	3.45	1.11
				836.6	41.500	0.901	42.927	0.911	3.44	1.11
				848.8	41.500	0.914	42.912	0.917	3.40	0.33
Dec. 3. 2025	835 Head (WCDMA)	21.7	21.6	826.4	41.542	0.899	42.755	0.877	2.92	-2.45
				835.0	41.500	0.900	42.748	0.883	3.01	-1.89
				836.6	41.500	0.901	42.748	0.884	3.01	-1.89
				848.8	41.500	0.914	42.728	0.890	2.96	-2.63
Dec. 2. 2025	1 900 Head	21.3	21.2	1 850.2	40.000	1.400	40.188	1.408	0.47	0.57
				1 880.0	40.000	1.400	40.151	1.426	0.38	1.86
				1 900.0	40.000	1.400	40.150	1.440	0.37	2.86
				1 909.8	40.000	1.400	40.150	1.447	0.37	3.36
Dec. 3. 2025	2 450 Head (W-LAN)	21.4	21.3	2 412.0	39.265	1.766	40.619	1.758	3.45	-0.45
				2 437.0	39.222	1.788	40.587	1.777	3.48	-0.62
				2 450.0	39.200	1.800	40.568	1.788	3.49	-0.67
				2 462.0	39.184	1.813	40.553	1.798	3.49	-0.83
Dec. 4. 2025	2 450 Head (Bluetooth)	21.2	21.1	2 402.0	39.282	1.757	40.607	1.749	3.37	-0.46
				2 440.0	39.217	1.791	40.561	1.779	3.43	-0.67
				2 441.0	39.215	1.792	40.560	1.780	3.43	-0.67
				2 450.0	39.200	1.800	40.546	1.787	3.43	-0.72
				2 480.0	39.160	1.832	40.511	1.812	3.45	-1.09
Dec. 8. 2025	5 200 5 300 Head	20.8	20.7	5 200.0	36.000	4.660	36.400	4.660	1.11	0.00
				5 210.0	35.990	4.670	36.400	4.670	1.14	0.00
				5 290.0	35.910	4.750	36.200	4.770	0.81	0.42
				5 300.0	35.900	4.760	36.200	4.790	0.84	0.63
Dec 9. 2025	5 600 Head	20.5	20.3	5 500.0	35.650	4.965	35.900	4.990	0.70	0.50
				5 530.0	35.605	4.997	35.800	5.030	0.55	0.66
				5 600.0	35.500	5.070	35.700	5.120	0.56	0.99
				5 690.0	35.410	5.160	35.500	5.230	0.25	1.36
Dec 10. 2025	6 500 Head	20.6	20.4	6 025.0	35.070	5.510	34.900	5.590	-0.48	1.45
				6 185.0	34.878	5.698	34.600	5.790	-0.80	1.61
				6 345.0	34.686	5.887	34.200	6.000	-1.40	1.92
				6 500.0	34.500	6.070	33.900	6.190	-1.74	1.98

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB 865664 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the sample which was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity, for example from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

10.2 Test System Verification

Prior to assessment, the system is verified to the $\pm 10\%$ of the specifications at using the SAR Dipole kit(s). (Graphic Plots Attached)

Table 10.2.1 System Verification Results (1g)

SYSTEM DIPOLE VERIFICATION TARGET & MEASURED												
SAR System #	Freq. [MHz]	SAR Dipole kits	Date(s)	Tissue Type	Ambient Temp. [°C]	Liquid Temp. [°C]	Probe S/N	Input Power (mW)	1 W Target SAR _{1g} (W/kg)	Measured SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation [%]
B	750	D750V3, SN:1049	Dec. 4, 2025	Head	21.2	21.1	7337	250	8.68	2.18	8.72	0.46
B	835 (GSM)	D835V2, SN:464	Dec. 1, 2025	Head	21.5	21.4	7337	250	9.47	2.32	9.28	-2.01
B	835 (WCDMA)	D835V2, SN:464	Dec. 3, 2025	Head	21.7	21.6	7337	250	9.47	2.25	9.00	-4.96
B	1900	D1900V2,SN:5d029	Dec. 2, 2025	Head	21.3	21.2	7337	100	39.1	3.88	38.8	-0.77
G	2450 (W-LAN)	D2450V2, SN: 726	Dec. 3, 2025	Head	21.4	21.3	3933	100	52.2	5.39	53.9	3.26
G	2450 (Bluetooth)	D2450V2, SN: 726	Dec. 4, 2025	Head	21.2	21.1	3933	100	52.2	5.31	53.1	1.72
G	5200	D5GHzV2,SN:1212	Dec. 8, 2025	Head	20.8	20.7	3933	100	77.6	8.07	80.7	3.99
G	5300	D5GHzV2,SN:1212	Dec. 8, 2025	Head	20.8	20.7	3933	100	79.4	8.21	82.1	3.40
G	5500	D5GHzV2,SN:1212	Dec. 9, 2025	Head	20.5	20.3	3933	100	84.2	8.11	81.1	-3.68
G	5600	D5GHzV2,SN:1212	Dec. 9, 2025	Head	20.5	20.3	3933	100	81.2	7.96	79.6	-1.97
G	6500	D6.5GHzV2, SN:1017	Dec. 10, 2025	Head	20.6	20.4	3933	25	302.0	7.42	296.8	-1.72

Table 10.2.2 System Verification Results (10g)

SYSTEM DIPOLE VERIFICATION TARGET & MEASURED												
SAR System #	Freq. [MHz]	SAR Dipole kits	Date(s)	Tissue Type	Ambient Temp. [°C]	Liquid Temp. [°C]	Probe S/N	Input Power (mW)	1 W Target SAR _{10g} (W/kg)	Measured SAR _{10g} (W/kg)	1 W Normalized SAR _{10g} (W/kg)	Deviation [%]
B	13	CLA13, SN:1030	Dec. 5, 2025	Head	21.3	21.2	3916	250	0.308	0.076	0.304	-1.30
G	5200	D5GHzV2,SN:1212	Dec. 8, 2025	Head	20.8	20.7	3933	100	22.2	2.25	22.5	1.35
G	5300	D5GHzV2,SN:1212	Dec. 8, 2025	Head	20.8	20.7	3933	100	22.7	2.35	23.5	3.52
G	5500	D5GHzV2,SN:1212	Dec. 9, 2025	Head	20.5	20.3	3933	100	23.8	2.32	23.2	-2.52
G	5600	D5GHzV2,SN:1212	Dec. 9, 2025	Head	20.5	20.3	3933	100	23.2	2.27	22.7	-2.16
G	6500	D6.5GHzV2, SN:1017	Dec. 10, 2025	Head	20.6	20.4	3933	25	55.6	1.44	57.6	3.60

Table 10.2.3 System Verification Results (APD)

SYSTEM DIPOLE VERIFICATION TARGET & MEASURED												
SAR System #	Freq. [MHz]	SAR Dipole kits	Date(s)	Tissue Type	Ambient Temp. [°C]	Liquid Temp. [°C]	Probe S/N	Input Power (mW)	1 W Target 4 cm ² APD (W/m ²)	Measured 4 cm ² APD (W/m ²)	1 W Normalized 4 cm ² APD (W/m ²)	Deviation [%]
G	6500	D6.5GHzV2, SN:1017	Dec. 10, 2025	Head	20.6	20.4	3933	25	1350	34.8	1392	3.11

Note(s)

1. System Verification was measured with input 250 mW, 100 mW, 25 mW and normalized to 1W.

2. Full system validation status and results can be found in Appendix D.

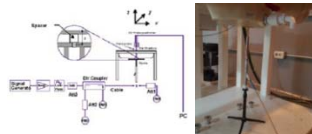


Figure 10.1 Dipole Verification Test Setup Diagram & Photo

Table 10.2.4 Reference Target PD Values

5G Verification Source	Serial No.	Cal. Date	Freq. (GHz)	Averaging Area	Prad (mW)	Input Power (mW)	Normal psPD Values (W/m²)	Total psPD Values (W/m²)	Note
							4 cm²	4 cm²	
10 GHz	1026	Jan. 16. 2025	10	Circular	93.3		54.30	54.70	Cal. report target
10 GHz	1026	Jan. 16. 2025	10	Circular		100	58.20	58.63	Convert target from Cal. report

Table 10.2.5 System Verification Results (IPD)

SAR System #	Freq. [GHz]	SAR Dipole kits	Date(s)	Input Power (mW)	Probe S/N	Normal psPD (W/m² over 4 cm²)		Deviation [%]	Total psPD (W/m² over 4 cm²)		Deviation [%]	Visual Inspection
						Target	Measured		Target	Measured		
E	10	Horn Antenna (10 GHz) SN:1026	Dec. 1. 2025	100	9400	58.20	55.90	-3.95	58.63	56.30	-3.97	confirmed
E	10	Horn Antenna (10 GHz) SN:1026	Dec. 2. 2025	100	9400	58.20	59.50	2.23	58.63	61.50	4.90	confirmed
E	10	Horn Antenna (10 GHz) SN:1026	Dec. 3. 2025	100	9400	58.20	57.90	-0.52	58.63	58.20	-0.73	confirmed

- Note(s):
- IPD Dielectric Property
Media is air so Relative Permittivity (ϵ_r) and Conductivity (σ) is 1.
 - IPD System Verification Results
Per Nov 2017, TCB Workshop
System Validation is required before a system is deployed for measurement.
System Verification is also required before each series of continuous measurement and, as applicable, repeated at least weekly.
Peak and spatially averaged power density at the peak location(s) must be compared to calibrated results according to the defined test conditions.
- The same spatial resolution and measurement region used in the waveguide calibration should be applied to system validation and system verification.
- 4 cm² spatial averaging have been used according to FCC requirement.
- Power density distribution should also be verified, both spatially (shape) and numerically (level) through visual inspection for noticeable differences.
- The Horn antenna input power (forward power) was 100 mW.
- The measured psPDn+, psPDtot+, and psPDmod+ values over 4 cm² for the desired averaging geometry are compared to the calibrated value and expected to be below $\pm 10\%$.
 - A 10 mm distance spacing was used from the reference horn antenna aperture to the probe element.

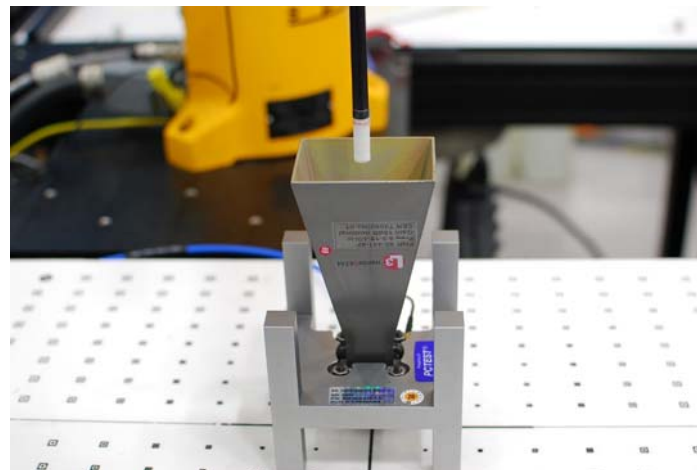


Figure 10.2 System Verification Test Setup Diagram & Photo

11. SAR TEST RESULTS

11.1 Standalone Head SAR Results

Table 11.1.1 GSM/GPRS 850 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GSM	33.90	32.53	-0.140	Left Touch	FCC #1	1	1:8.3	0.314	1.371	0.430	A1
836.6	190	GSM850	GSM	33.90	32.53	0.150	Right Touch	FCC #1	1	1:8.3	0.271	1.371	0.372	
836.6	190	GSM850	GSM	33.90	32.53	0.090	Left Tilt	FCC #1	1	1:8.3	0.187	1.371	0.256	
836.6	190	GSM850	GSM	33.90	32.53	-0.040	Right Tilt	FCC #1	1	1:8.3	0.164	1.371	0.225	
836.6	190	GSM850	GPRS	27.90	26.76	0.150	Left Touch	FCC #1	4	1:2.075	0.328	1.300	0.426	
836.6	190	GSM850	GPRS	27.90	26.76	-0.190	Right Touch	FCC #1	4	1:2.075	0.276	1.300	0.359	
836.6	190	GSM850	GPRS	27.90	26.76	-0.120	Left Tilt	FCC #1	4	1:2.075	0.196	1.300	0.255	
836.6	190	GSM850	GPRS	27.90	26.76	0.110	Right Tilt	FCC #1	4	1:2.075	0.166	1.300	0.216	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.1.2 PCS/GPRS 1900 Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
1 880.0	661	PCS1900	PCS	30.90	29.70	-0.120	Left Touch	FCC #1	1	1:8.3	0.284	1.318	0.374	A2
1 880.0	661	PCS1900	PCS	30.90	29.70	0.000	Right Touch	FCC #1	1	1:8.3	0.098	1.318	0.129	
1 880.0	661	PCS1900	PCS	30.90	29.70	0.030	Left Tilt	FCC #1	1	1:8.3	0.025	1.318	0.033	
1 880.0	661	PCS1900	PCS	30.90	29.70	0.000	Right Tilt	FCC #1	1	1:8.3	0.040	1.318	0.053	
1 880.0	661	PCS1900	GPRS	24.90	23.76	0.100	Left Touch	FCC #1	4	1:2.075	0.300	1.300	0.390	
1 880.0	661	PCS1900	GPRS	24.90	23.76	0.000	Right Touch	FCC #1	4	1:2.075	0.101	1.300	0.131	
1 880.0	661	PCS1900	GPRS	24.90	23.76	-0.110	Left Tilt	FCC #1	4	1:2.075	0.029	1.300	0.038	
1 880.0	661	PCS1900	GPRS	24.90	23.76	0.000	Right Tilt	FCC #1	4	1:2.075	0.041	1.300	0.053	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.1.3 WCDMA 850 Head SAR

MEASUREMENT RESULTS													
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch												
836.6	4183	WCDMA 850	RMC	24.30	23.16	0.110	Left Touch	FCC #1	1:1	0.201	1.300	0.261	A3
836.6	4183	WCDMA 850	RMC	24.30	23.16	-0.160	Right Touch	FCC #1	1:1	0.100	1.300	0.130	
836.6	4183	WCDMA 850	RMC	24.30	23.16	0.180	Left Tilt	FCC #1	1:1	0.231	1.300	0.300	
836.6	4183	WCDMA 850	RMC	24.30	23.16	-0.040	Right Tilt	FCC #1	1:1	0.179	1.300	0.233	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram					

Table 11.1.4 LTE Band 12 Head SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	24.30	23.45	0.140	0	Left Touch	FCC #1	QPSK	1	25	1:1	0.142	1.216	0.173	A4
707.5	23095	LTE B12	10	23.30	22.36	-0.120	1	Left Touch	FCC #1	QPSK	25	12	1:1	0.123	0.986	0.121	
707.5	23095	LTE B12	10	24.30	23.45	-0.120	0	Right Touch	FCC #1	QPSK	1	25	1:1	0.108	1.216	0.131	
707.5	23095	LTE B12	10	23.30	22.36	0.160	1	Right Touch	FCC #1	QPSK	25	12	1:1	0.087	0.986	0.086	
707.5	23095	LTE B12	10	24.30	23.45	0.160	0	Left Tilt	FCC #1	QPSK	1	25	1:1	0.103	1.216	0.125	
707.5	23095	LTE B12	10	23.30	22.36	0.150	1	Left Tilt	FCC #1	QPSK	25	12	1:1	0.090	0.986	0.089	
707.5	23095	LTE B12	10	24.30	23.45	-0.010	0	Right Tilt	FCC #1	QPSK	1	25	1:1	0.043	1.216	0.052	
707.5	23095	LTE B12	10	23.30	22.36	0.040	1	Right Tilt	FCC #1	QPSK	25	12	1:1	0.036	0.986	0.035	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.1.5 DTS Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
2 437.0	6	802.11b (Ant.3)	12.00	11.22	0.140	Left Touch	FCC #2	0.114	1	99.3	0.096	1.197	1.007	0.116	A5
2 437.0	6	802.11b (Ant.3)	12.00	11.22	0.050	Right Touch	FCC #2	0.045	1	99.3	0.034	1.197	1.007	0.041	
2 437.0	6	802.11b (Ant.3)	12.00	11.22	0.070	Left Tilt	FCC #2	0.037	1	99.3	0.032	1.197	1.007	0.039	
2 437.0	6	802.11b (Ant.3)	12.00	11.22	0.170	Right Tilt	FCC #2	0.036	1	99.3	0.031	1.197	1.007	0.037	A6
2 437.0	6	802.11b (Ant.5)	12.00	11.76	0.010	Left Touch	FCC #2	0.011	1	99.3	0.018	1.057	1.007	0.019	
2 437.0	6	802.11b (Ant.5)	12.00	11.76	0.180	Right Touch	FCC #2	0.058	1	99.3	0.035	1.057	1.007	0.037	
2 437.0	6	802.11b (Ant.5)	12.00	11.76	0.000	Left Tilt	FCC #2	0.005	1	99.3	0.007	1.057	1.007	0.007	A7
2 437.0	6	802.11b (Ant.5)	12.00	11.76	-0.140	Right Tilt	FCC #2	0.013	1	99.3	0.014	1.057	1.007	0.015	
2 412.0	1	802.11b (MIMO)	15.00	14.61	-0.180	Left Touch	FCC #2	0.107	1	98.9	0.093	1.197	1.011	0.113	
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.140	Right Touch	FCC #2	0.091	1	98.9	0.060	1.197	1.011	0.073	A7
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.090	Left Tilt	FCC #2	0.050	1	98.9	0.042	1.197	1.011	0.051	
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.140	Right Tilt	FCC #2	0.048	1	98.9	0.034	1.197	1.011	0.041	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram							

Adjusted SAR results for OFDM SAR													
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR	
MHz	Ch												
2 437.0	6	802.11b (Ant.3)	DSSS	12.00	0.116	2 437.0	802.11g	OFDM	12.00	1.000	0.116		X
2 437.0	6	802.11b (Ant.3)	DSSS	12.00	0.116	2 437.0	802.11n	OFDM	12.00	1.000	0.116		X
2 437.0	6	802.11b (Ant.3)	DSSS	12.00	0.116	2 437.0	802.11ax	OFDM	12.00	1.000	0.116		X
2 437.0	6	802.11b (Ant.5)	DSSS	12.00	0.037	2 437.0	802.11g	OFDM	12.00	1.000	0.037		X
2 437.0	6	802.11b (Ant.5)	DSSS	12.00	0.037	2 437.0	802.11n	OFDM	12.00	1.000	0.037		X
2 437.0	6	802.11b (Ant.5)	DSSS	12.00	0.037	2 437.0	802.11ax	OFDM	12.00	1.000	0.037		X
2 412.0	1	802.11b (MIMO)	DSSS	15.00	0.113	2 412.0	802.11g	OFDM	15.00	1.000	0.113		X
2 412.0	1	802.11b (MIMO)	DSSS	15.00	0.113	2 412.0	802.11n	OFDM	15.00	1.000	0.113		X
2 412.0	1	802.11b (MIMO)	DSSS	15.00	0.113	2 412.0	802.11ax	OFDM	15.00	1.000	0.113		X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram					

Note: SAR is not required for the following 2.4 GHz OFDM conditions. 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.

Table 11.1.6 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.170	Left Touch	FCC #2	0.083	MCS0	99.6	0.089	1.216	1.004	0.109	A8
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.060	Right Touch	FCC #2	0.057	MCS0	99.6	0.040	1.216	1.004	0.049	
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	0.000	Left Tilt	FCC #2	0.023	MCS0	99.6	0.019	1.216	1.004	0.023	
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.100	Right Tilt	FCC #2	0.016	MCS0	99.6	0.009	1.216	1.004	0.011	A9
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	0.190	Left Touch	FCC #2	0.024	MCS0	99.6	0.029	1.153	1.004	0.034	
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	0.040	Right Touch	FCC #2	0.021	MCS0	99.6	0.042	1.153	1.004	0.049	
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	-0.040	Left Tilt	FCC #2	0.013	MCS0	99.6	0.002	1.153	1.004	0.002	A10
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	-0.080	Right Tilt	FCC #2	0.013	MCS0	99.6	0.016	1.153	1.004	0.019	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	0.070	Left Touch	FCC #2	0.091	MCS0	99.6	0.104	1.216	1.004	0.127	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	-0.060	Right Touch	FCC #2	0.059	MCS0	99.6	0.075	1.216	1.004	0.092	A10
5 290.0	58	802.11ac (MIMO)	15.00	14.65	-0.010	Left Tilt	FCC #2	0.043	MCS0	99.6	0.036	1.216	1.004	0.044	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	-0.060	Right Tilt	FCC #2	0.031	MCS0	99.6	0.021	1.216	1.004	0.026	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure												Head 1.6 W/kg (mW/g) averaged over 1 gram			

Adjusted SAR results for UNII-1 and UNII-2A SAR												
FREQUENCY		Model/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR [W/kg]	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Adjusted Factor	1g Adjusted SAR [W/kg]	SAR for the band with lower maximum output power
MHz	Ch											
5 290.0	58	802.11ac (Ant.3)	OFDM	12.00	0.109	5 210.0	802.11ac	OFDM	12.00	1.000	0.109	X
5 290.0	58	802.11ac (Ant.5)	OFDM	12.00	0.049	5 210.0	802.11ac	OFDM	12.00	1.000	0.049	X
5 290.0	58	802.11ac (MIMO)	OFDM	15.00	0.127	5 210.0	802.11ac	OFDM	15.00	1.000	0.127	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						Head 1.6 W/kg (mW/g) averaged over 1 gram						

Note: U-NII-1 and U-NII-2A Bands: When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

Table 11.1.7 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	-0.010	Left Touch	FCC #2	0.081	MCS0	99.6	0.083	1.117	1.004	0.093	A11
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	-0.100	Right Touch	FCC #2	0.046	MCS0	99.6	0.045	1.117	1.004	0.050	
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	-0.060	Left Tilt	FCC #2	0.033	MCS0	99.6	0.022	1.117	1.004	0.025	
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	0.030	Right Tilt	FCC #2	0.025	MCS0	99.6	0.022	1.117	1.004	0.025	A12
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.000	Left Touch	FCC #2	0.010	MCS0	99.6	0.011	1.102	1.004	0.012	
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.010	Right Touch	FCC #2	0.018	MCS0	99.6	0.019	1.102	1.004	0.021	
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.010	Left Tilt	FCC #2	0.007	MCS0	99.6	0.007	1.102	1.004	0.008	A13
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.000	Right Tilt	FCC #2	0.014	MCS0	99.6	0.005	1.102	1.004	0.006	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.000	Left Touch	FCC #2	0.078	MCS0	99.6	0.060	1.117	1.004	0.067	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	-0.080	Right Touch	FCC #2	0.030	MCS0	99.6	0.042	1.117	1.004	0.047	A13
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.060	Left Tilt	FCC #2	0.027	MCS0	99.6	0.006	1.117	1.004	0.007	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.000	Right Tilt	FCC #2	0.019	MCS0	99.6	0.010	1.117	1.004	0.011	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.1.8 UNII Head SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
6 345.0	79	802.11ax (Ant.3)	12.00	11.54	-0.020	Left Touch	FCC #2	0.051	MCS0	99.6	0.044	1.089	1.004	0.048	A14
6 185.0	15	802.11ax (Ant.3)	12.00	11.42	-0.050	Right Touch	FCC #2	0.049	MCS0	99.6	0.043	1.112	1.004	0.048	
6 185.0	47	802.11ax (Ant.3)	12.00	11.63	-0.020	Right Touch	FCC #2	0.053	MCS0	99.6	0.042	1.143	1.004	0.048	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.010	Right Touch	FCC #2	0.064	MCS0	99.6	0.046	1.089	1.004	0.050	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.070	Left Tilt	FCC #2	0.023	MCS0	99.6	0.013	1.089	1.004	0.014	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.020	Right Tilt	FCC #2	0.051	MCS0	99.6	0.043	1.089	1.004	0.047	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.030	Left Touch	FCC #2	0.035	MCS0	99.6	0.015	1.076	1.004	0.016	A15
6 185.0	15	802.11ax (Ant.5)	12.00	11.47	-0.010	Right Touch	FCC #2	0.025	MCS0	99.6	0.015	1.130	1.004	0.017	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	-0.050	Right Touch	FCC #2	0.029	MCS0	99.6	0.004	1.138	1.004	0.005	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.030	Right Touch	FCC #2	0.031	MCS0	99.6	0.020	1.076	1.004	0.022	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.020	Left Tilt	FCC #2	0.015	MCS0	99.6	0.006	1.076	1.004	0.006	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	0.000	Right Tilt	FCC #2	0.018	MCS0	99.6	0.005	1.076	1.004	0.005	
6 025.0	15	802.11ax (MIMO)	15.00	13.94	0.030	Left Touch	FCC #2	0.104	MCS0	99.6	0.108	1.276	1.004	0.138	A16-1
6 185.0	47	802.11ax (MIMO)	15.00	13.80	-0.050	Left Touch	FCC #2	0.110	MCS0	99.6	0.106	1.318	1.004	0.140	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.100	Left Touch	FCC #2	0.109	MCS0	99.6	0.113	1.242	1.004	0.141	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.040	Right Touch	FCC #2	0.083	MCS0	99.6	0.043	1.242	1.004	0.054	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.030	Left Tilt	FCC #2	0.062	MCS0	99.6	0.048	1.242	1.004	0.060	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.100	Right Tilt	FCC #2	0.034	MCS0	99.6	0.045	1.242	1.004	0.056	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Head 1.6 W/kg (mW/g) averaged over 1 gram						

Table 11.1.9 UNII Head APD

MEASUREMENT RESULTS														
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Data Rate [Mbps]	Duty Cycle	APD [W/m² (4cm²)]	Scaling Factor	Scaling Factor (Duty Cycle)	Scaled APD [W/m² (4cm²)]	Plots #
MHz	Ch													
6 345.0	79	802.11ax (Ant.3)	12.00	11.54	-0.020	Left Touch	FCC #2	MCS0	99.6	0.270	1.089	1.004	0.295	
6 025.0	15	802.11ax (Ant.3)	12.00	11.42	-0.050	Right Touch	FCC #2	MCS0	99.6	0.201	1.112	1.004	0.224	
6 185.0	47	802.11ax (Ant.3)	12.00	11.63	-0.020	Right Touch	FCC #2	MCS0	99.6	0.254	1.143	1.004	0.291	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.010	Right Touch	FCC #2	MCS0	99.6	0.353	1.089	1.004	0.386	A14
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.070	Left Tilt	FCC #2	MCS0	99.6	0.003	1.089	1.004	0.003	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.020	Right Tilt	FCC #2	MCS0	99.6	0.260	1.089	1.004	0.284	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.030	Left Touch	FCC #2	MCS0	99.6	0.125	1.076	1.004	0.135	
6 025.0	15	802.11ax (Ant.5)	12.00	11.47	-0.010	Right Touch	FCC #2	MCS0	99.6	0.106	1.130	1.004	0.120	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	-0.050	Right Touch	FCC #2	MCS0	99.6	0.045	1.138	1.004	0.051	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.030	Right Touch	FCC #2	MCS0	99.6	0.131	1.076	1.004	0.142	A15
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.020	Left Tilt	FCC #2	MCS0	99.6	0.018	1.076	1.004	0.019	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	0.000	Right Tilt	FCC #2	MCS0	99.6	0.026	1.076	1.004	0.028	
6 025.0	15	802.11ax (MIMO)	15.00	13.94	0.030	Left Touch	FCC #2	MCS0	99.6	0.560	1.276	1.004	0.717	
6 185.0	47	802.11ax (MIMO)	15.00	13.80	-0.050	Left Touch	FCC #2	MCS0	99.6	0.628	1.318	1.004	0.831	A16-2
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.100	Left Touch	FCC #2	MCS0	99.6	0.622	1.242	1.004	0.776	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.040	Right Touch	FCC #2	MCS0	99.6	0.253	1.242	1.004	0.315	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.030	Left Tilt	FCC #2	MCS0	99.6	0.319	1.242	1.004	0.398	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.100	Right Tilt	FCC #2	MCS0	99.6	0.274	1.242	1.004	0.342	

Note(s):
1. APD (Absorbed Power Density) over 4 cm² averaging area is reported based on SAR measurements.
2. 10 W/m² = 1.0 mW/cm²

Table 11.1.10 Bluetooth Head SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2 441.0	39	Bluetooth (Ant.3)	17.90	14.11	0.150	Left Touch	FCC #2	1	76.8	0.176	2.393	1.302	0.548	A17
2 441.0	39	Bluetooth (Ant.3)	17.90	14.11	0.070	Right Touch	FCC #2	1	76.8	0.051	2.393	1.302	0.159	
2 441.0	39	Bluetooth (Ant.3)	17.90	14.11	-0.180	Left Tilt	FCC #2	1	76.8	0.045	2.393	1.302	0.140	
2 441.0	39	Bluetooth (Ant.3)	17.90	14.11	0.080	Right Tilt	FCC #2	1	76.8	0.051	2.393	1.302	0.159	
2 440.0	19	Bluetooth LE (Ant.3)	9.60	4.84	0.000	Left Touch	FCC #2	1	51.8	0.017	2.992	1.931	0.098	
2 440.0	19	Bluetooth LE (Ant.3)	9.60	4.84	0.120	Right Touch	FCC #2	1	51.8	0.002	2.992	1.931	0.012	
2 440.0	19	Bluetooth LE (Ant.3)	9.60	4.84	-0.130	Left Tilt	FCC #2	1	51.8	0.007	2.992	1.931	0.040	
2 440.0	19	Bluetooth LE (Ant.3)	9.60	4.84	-0.130	Right Tilt	FCC #2	1	51.8	0.003	2.992	1.931	0.017	
2 441.0	39	Bluetooth (Ant.5)	17.20	14.08	-0.150	Left Touch	FCC #2	1	76.8	0.024	2.051	1.302	0.064	
2 441.0	39	Bluetooth (Ant.5)	17.20	14.08	-0.100	Right Touch	FCC #2	1	76.8	0.045	2.051	1.302	0.120	A18
2 441.0	39	Bluetooth (Ant.5)	17.20	14.08	0.100	Left Tilt	FCC #2	1	76.8	0.006	2.051	1.302	0.016	
2 441.0	39	Bluetooth (Ant.5)	17.20	14.08	0.060	Right Tilt	FCC #2	1	76.8	0.018	2.051	1.302	0.048	
2 440.0	19	Bluetooth LE (Ant.5)	9.60	5.99	-0.130	Left Touch	FCC #2	1	51.8	0.001	2.296	1.931	0.004	
2 440.0	19	Bluetooth LE (Ant.5)	9.60	5.99	0.000	Right Touch	FCC #2	1	51.8	0.003	2.296	1.931	0.013	
2 440.0	19	Bluetooth LE (Ant.5)	9.60	5.99	0.000	Left Tilt	FCC #2	1	51.8	0.001	2.296	1.931	0.004	
2 440.0	19	Bluetooth LE (Ant.5)	9.60	5.99	-0.070	Right Tilt	FCC #2	1	51.8	0.001	2.296	1.931	0.004	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Head 1.6 W/kg (mW/g) averaged over 1 gram						

11.2 Standalone Body-Worn/Hotspot SAR Results

Table 11.2.1 GPRS/WCDMA Body-Worn/Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Spacing [Side]	Device Serial Number	# of Time Slots	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #	
MHz	Ch														
836.6	190	GSM850	GSM	33.90	32.53	-0.060	10 mm [Front]	FCC #1	1	1:8.3	0.233	1.371	0.319	B1	
836.6	190	GSM850	GSM	33.90	32.53	-0.020	10 mm [Rear]	FCC #1	1	1:8.3	0.403	1.371	0.553		
836.6	190	GSM850	GPRS	27.90	26.76	-0.160	10 mm [Bottom]	FCC #1	4	1:2.075	0.366	1.300	0.476		
836.6	190	GSM850	GPRS	27.90	26.76	0.020	10 mm [Front]	FCC #1	4	1:2.075	0.244	1.300	0.317		
836.6	190	GSM850	GPRS	27.90	26.76	-0.010	10 mm [Rear]	FCC #1	4	1:2.075	0.415	1.300	0.540		
836.6	190	GSM850	GPRS	27.90	26.76	-0.160	10 mm [Left]	FCC #1	4	1:2.075	0.185	1.300	0.241		
1 880.0	661	PCS1900	PCS	30.90	29.70	-0.110	10 mm [Front]	FCC #1	1	1:8.3	0.153	1.318	0.202	B2	
1 880.0	661	PCS1900	PCS	30.90	29.70	0.050	10 mm [Rear]	FCC #1	1	1:8.3	0.239	1.318	0.315		
1 880.0	661	PCS1900	GPRS	24.90	23.76	0.080	10 mm [Bottom]	FCC #1	4	1:2.075	0.188	1.300	0.244		
1 880.0	661	PCS1900	GPRS	24.90	23.76	0.080	10 mm [Front]	FCC #1	4	1:2.075	0.181	1.300	0.235		
1 880.0	661	PCS1900	GPRS	24.90	23.76	-0.060	10 mm [Rear]	FCC #1	4	1:2.075	0.288	1.300	0.374		
1 880.0	661	PCS1900	GPRS	24.90	23.76	0.030	10 mm [Left]	FCC #1	4	1:2.075	0.151	1.300	0.196		
836.6	4183	WCDMA 850	RMC	24.30	23.16	0.040	10 mm [Bottom]	FCC #1	N/A	1:1	0.377	1.300	0.490	B3	
836.6	4183	WCDMA 850	RMC	24.30	23.16	-0.070	10 mm [Front]	FCC #1	N/A	1:1	0.330	1.300	0.429		
836.6	4183	WCDMA 850	RMC	24.30	23.16	-0.070	10 mm [Rear]	FCC #1	N/A	1:1	0.389	1.300	0.506		
836.6	4183	WCDMA 850	RMC	24.30	23.16	-0.080	10 mm [Left]	FCC #1	N/A	1:1	0.167	1.300	0.217		
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note(s):

1. Orange entries represent Body-Worn & Hotspot measurements.
2. Purple entries represent Body-Worn measurements.

Table 11.2.2 LTE B12 Body-Worn/Hotspot SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	1g SAR (W/kg)	Scaling Factor	1g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	24.30	23.45	0.150	0	10 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.092	1.216	0.112	B4
707.5	23095	LTE B12	10	23.30	22.36	-0.030	1	10 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.074	1.242	0.092	
707.5	23095	LTE B12	10	24.30	23.45	-0.010	0	10 mm [Front]	FCC #1	QPSK	1	25	1:1	0.112	1.216	0.136	
707.5	23095	LTE B12	10	23.30	22.36	0.040	1	10 mm [Front]	FCC #1	QPSK	25	12	1:1	0.099	1.242	0.123	
707.5	23095	LTE B12	10	24.30	23.45	0.100	0	10 mm [Rear]	FCC #1	QPSK	1	25	1:1	0.157	1.216	0.191	
707.5	23095	LTE B12	10	23.30	22.36	-0.070	1	10 mm [Rear]	FCC #1	QPSK	25	12	1:1	0.144	1.242	0.179	
707.5	23095	LTE B12	10	24.30	23.45	0.070	0	10 mm [Left]	FCC #1	QPSK	1	25	1:1	0.146	1.216	0.178	
707.5	23095	LTE B12	10	23.30	22.36	-0.150	1	10 mm [Left]	FCC #1	QPSK	25	12	1:1	0.117	1.242	0.146	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure										Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: Orange entries represent Body-Worn & Hotspot measurements.

Table 11.2.3 DTS Body-Worn/Hotspot SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	SAR (W/kg)	Plots #
MHz	Ch														
2 437.0	6	802.11b (Ant.3)	12.00	11.22	0.170	10 mm [Top]	FCC #2	0.024	1	99.3	0.034	1.197	1.007	0.041	B5
2 437.0	6	802.11b (Ant.3)	12.00	11.22	0.050	10 mm [Front]	FCC #2	0.042	1	99.3	0.035	1.197	1.007	0.042	
2 437.0	6	802.11b (Ant.3)	12.00	11.22	-0.070	10 mm [Rear]	FCC #2	0.081	1	99.3	0.076	1.197	1.007	0.092	
2 437.0	6	802.11b (Ant.3)	12.00	11.22	-0.010	10 mm [Right]	FCC #2	0.063	1	99.3	0.061	1.197	1.007	0.074	
2 437.0	6	802.11b (Ant.5)	12.00	11.76	0.030	10 mm [Front]	FCC #2	0.011	1	99.3	0.004	1.057	1.007	0.004	
2 437.0	6	802.11b (Ant.5)	12.00	11.76	0.100	10 mm [Rear]	FCC #2	0.072	1	99.3	0.072	1.057	1.007	0.077	
2 437.0	6	802.11b (Ant.5)	12.00	11.76	-0.140	10 mm [Left]	FCC #2	0.040	1	99.3	0.034	1.057	1.007	0.036	B6
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.100	10 mm [Top]	FCC #2	0.034	1	98.9	0.037	1.197	1.011	0.045	B7
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.160	10 mm [Front]	FCC #2	0.028	1	98.9	0.018	1.197	1.011	0.022	
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.180	10 mm [Rear]	FCC #2	0.090	1	98.9	0.086	1.197	1.011	0.104	
2 412.0	1	802.11b (MIMO)	15.00	14.61	-0.020	10 mm [Right]	FCC #2	0.057	1	98.9	0.050	1.197	1.011	0.061	
2 412.0	1	802.11b (MIMO)	15.00	14.61	0.030	10 mm [Left]	FCC #2	0.050	1	98.9	0.050	1.197	1.011	0.061	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure									Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: Orange entries represent Body-Worn & Hotspot measurements.

Adjusted SAR results for OFDM SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Ratio of OFDM to DSSS	1g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2 437.0	6	802.11b (Ant.3)	DSSS	12.00	0.093	2 437.0	802.11g	OFDM	12.00	1.000	0.093	X
2 437.0	6	802.11b (Ant.3)	DSSS	12.00	0.093	2 437.0	802.11n	OFDM	12.00	1.000	0.093	X
2 437.0	6	802.11b (Ant.3)	DSSS	12.00	0.093	2 437.0	802.11ax	OFDM	12.00	1.000	0.093	X
2 437.0	6	802.11b (Ant.5)	DSSS	12.00	0.078	2 437.0	802.11g	OFDM	12.00	1.000	0.078	X
2 437.0	6	802.11b (Ant.5)	DSSS	12.00	0.078	2 437.0	802.11n	OFDM	12.00	1.000	0.078	X
2 437.0	6	802.11b (Ant.5)	DSSS	12.00	0.078	2 437.0	802.11ax	OFDM	12.00	1.000	0.078	X
2 412.0	1	802.11b (MIMO)	DSSS	15.00	0.104	2 412.0	802.11g	OFDM	15.00	1.000	0.104	X
2 412.0	1	802.11b (MIMO)	DSSS	15.00	0.104	2 412.0	802.11n	OFDM	15.00	1.000	0.104	X
2 412.0	1	802.11b (MIMO)	DSSS	15.00	0.104	2 412.0	802.11ax	OFDM	15.00	1.000	0.104	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						Body 1.6 W/kg (mW/g) averaged over 1 gram						

Note: SAR is not required for the following 2.4 GHz OFDM conditions. 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.

Table 11.2.4 UNII Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	0.080	10 mm [Front]	FCC #2	0.045	MCS0	99.6	0.037	1.216	1.004	0.045	
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.010	10 mm [Rear]	FCC #2	0.155	MCS0	99.6	0.180	1.216	1.004	0.220	B8
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	0.050	10 mm [Front]	FCC #2	0.020	MCS0	99.6	0.005	1.153	1.004	0.006	
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	0.170	10 mm [Rear]	FCC #2	0.210	MCS0	99.6	0.232	1.153	1.004	0.269	B9
5 290.0	58	802.11ac (MIMO)	15.00	14.65	0.050	10 mm [Front]	FCC #2	0.039	MCS0	99.6	0.034	1.216	1.004	0.042	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	0.160	10 mm [Rear]	FCC #2	0.219	MCS0	99.6	0.249	1.216	1.004	0.304	B10
ANSI / IEEE C95.1-2005- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Adjusted SAR results for UNII-1 and UNII-2A SAR													
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	1g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Adjusted Factor	1g Adjusted SAR (W/kg)	SAR for the band with lower maximum output power	
MHz	Ch												
5 290.0	58	802.11ac (Ant.3)	OFDM	12.00	0.220	5 210.0	802.11ac	OFDM	12.00	1.000	0.220		X
5 290.0	58	802.11ac (Ant.5)	OFDM	12.00	0.269	5 210.0	802.11ac	OFDM	12.00	1.000	0.269		X
5 290.0	58	802.11ac (MIMO)	OFDM	15.00	0.304	5 210.0	802.11ac	OFDM	15.00	1.000	0.304		X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: U-NII-1 and U-NII-2A Bands: When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

Table 11.2.5 UNII Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	-0.080	10 mm [Front]	FCC #2	0.037	MCS0	99.6	0.042	1.117	1.004	0.047	
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	0.000	10 mm [Rear]	FCC #2	0.126	MCS0	99.6	0.143	1.117	1.004	0.160	B11
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.000	10 mm [Front]	FCC #2	0.026	MCS0	99.6	0.016	1.102	1.004	0.018	
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.150	10 mm [Rear]	FCC #2	0.219	MCS0	99.6	0.242	1.102	1.004	0.268	B12
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.000	10 mm [Front]	FCC #2	0.027	MCS0	99.6	0.034	1.117	1.004	0.038	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	-0.070	10 mm [Rear]	FCC #2	0.138	MCS0	99.6	0.146	1.117	1.004	0.164	B13
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.2.6 UNII Body-Worn SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.040	10 mm [Front]	FCC #2	0.036	MCS0	99.6	0.036	1.089	1.004	0.039	
6 185.0	15	802.11ax (Ant.3)	12.00	11.54	0.070	10 mm [Rear]	FCC #2	0.214	MCS0	99.6	0.224	1.112	1.004	0.250	
6 185.0	47	802.11ax (Ant.3)	12.00	11.42	0.020	10 mm [Rear]	FCC #2	0.215	MCS0	99.6	0.225	1.143	1.004	0.258	B14
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.010	10 mm [Rear]	FCC #2	0.202	MCS0	99.6	0.228	1.089	1.004	0.249	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	0.020	10 mm [Front]	FCC #2	0.023	MCS0	99.6	0.012	1.076	1.004	0.013	
6 185.0	15	802.11ax (Ant.5)	12.00	11.47	-0.020	10 mm [Rear]	FCC #2	0.119	MCS0	99.6	0.126	1.130	1.004	0.143	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	-0.080	10 mm [Rear]	FCC #2	0.142	MCS0	99.6	0.149	1.138	1.004	0.170	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.040	10 mm [Rear]	FCC #2	0.157	MCS0	99.6	0.168	1.076	1.004	0.181	B15
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.090	10 mm [Front]	FCC #2	0.042	MCS0	99.6	0.043	1.242	1.004	0.054	
6 185.0	15	802.11ax (MIMO)	15.00	13.94	-0.170	10 mm [Rear]	FCC #2	0.201	MCS0	99.6	0.206	1.276	1.004	0.264	
6 185.0	47	802.11ax (MIMO)	15.00	13.80	-0.020	10 mm [Rear]	FCC #2	0.219	MCS0	99.6	0.229	1.318	1.004	0.303	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.160	10 mm [Rear]	FCC #2	0.243	MCS0	99.6	0.253	1.242	1.004	0.315	B16-1
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 11.2.7 UNII Body-Worn APD

MEASUREMENT RESULTS														
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Data Rate [Mbps]	Duty Cycle	APD [W/m² (4cm²)]	Scaling Factor	Scaling Factor (Duty Cycle)	Scaled APD [W/m² (4cm²)]	Plots #
MHz	Ch													
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.040	10 mm [Front]	FCC #2		99.6	0.294	1.089	1.004	0.321	
6 025.0	15	802.11ax (Ant.3)	12.00	11.54	0.070	10 mm [Rear]	FCC #2		99.6	1.760	1.112	1.004	1.965	
6 185.0	47	802.11ax (Ant.3)	12.00	11.42	0.020	10 mm [Rear]	FCC #2		99.6	1.800	1.143	1.004	2.066	B14
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.010	10 mm [Rear]	FCC #2		99.6	1.820	1.089	1.004	1.990	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	0.020	10 mm [Front]	FCC #2		99.6	0.090	1.076	1.004	0.097	
6 025.0	15	802.11ax (Ant.5)	12.00	11.47	-0.020	10 mm [Rear]	FCC #2		99.6	0.946	1.130	1.004	1.073	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	-0.080	10 mm [Rear]	FCC #2		99.6	1.030	1.138	1.004	1.177	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.040	10 mm [Rear]	FCC #2		99.6	1.170	1.076	1.004	1.264	B15
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.090	10 mm [Front]	FCC #2		99.6	0.334	1.242	1.004	0.416	
6 025.0	15	802.11ax (MIMO)	15.00	13.94	-0.170	10 mm [Rear]	FCC #2		99.6	1.750	1.276	1.004	2.242	
6 185.0	47	802.11ax (MIMO)	15.00	13.80	-0.020	10 mm [Rear]	FCC #2		99.6	1.930	1.318	1.004	2.554	B16-2
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.160	10 mm [Rear]	FCC #2		99.6	1.960	1.242	1.004	2.444	

Note(s):

1. APD (Absorbed Power Density) over 4 cm² averaging area is reported based on SAR measurements.

2. 10 W/m² = 1.0 mW/cm²

Table 11.2.8 Bluetooth Body-Worn/Hotspot SAR

FREQUENCY		Mode	MEASUREMENT RESULTS											Plots #
MHz	Ch		Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	
2.441.0	39	Bluetooth (Ant.3)	17.90	14.11	0.160	10 mm [Top]	FCC #2	1	76.8	0.017	2.393	1.302	0.053	
2.441.0	39	Bluetooth (Ant.3)	17.90	14.11	0.150	10 mm [Front]	FCC #2	1	76.8	0.018	2.393	1.302	0.056	
2.441.0	39	Bluetooth (Ant.3)	17.90	14.11	-0.180	10 mm [Rear]	FCC #2	1	76.8	0.047	2.393	1.302	0.146	
2.441.0	39	Bluetooth (Ant.3)	17.90	14.11	0.030	10 mm [Right]	FCC #2	1	76.8	0.065	2.393	1.302	0.203	B17
2.440.0	19	Bluetooth (Ant.3)	9.60	4.84	0.130	10 mm [Top]	FCC #2	1	51.8	0.004	2.992	1.931	0.023	
2.440.0	19	Bluetooth (Ant.3)	9.60	4.84	0.070	10 mm [Front]	FCC #2	1	51.8	0.001	2.992	1.931	0.006	
2.440.0	19	Bluetooth (Ant.3)	9.60	4.84	0.040	10 mm [Rear]	FCC #2	1	51.8	0.006	2.992	1.931	0.035	
2.440.0	19	Bluetooth (Ant.3)	9.60	4.84	-0.100	10 mm [Right]	FCC #2	1	51.8	0.002	2.992	1.931	0.012	
2.441.0	39	Bluetooth (Ant.5)	17.20	14.08	0.030	10 mm [Front]	FCC #2	1	76.8	0.012	2.051	1.302	0.032	
2.441.0	39	Bluetooth (Ant.5)	17.20	14.08	0.020	10 mm [Rear]	FCC #2	1	76.8	0.069	2.051	1.302	0.184	
2.441.0	39	Bluetooth (Ant.5)	17.20	14.08	0.160	10 mm [Left]	FCC #2	1	76.8	0.077	2.051	1.302	0.206	B18
2.440.0	19	Bluetooth (Ant.5)	9.60	5.99	0.010	10 mm [Front]	FCC #2	1	51.8	0.004	2.296	1.931	0.018	
2.440.0	19	Bluetooth (Ant.5)	9.60	5.99	-0.020	10 mm [Rear]	FCC #2	1	51.8	0.009	2.296	1.931	0.040	
2.440.0	19	Bluetooth (Ant.5)	9.60	5.99	-0.070	10 mm [Left]	FCC #2	1	51.8	0.005	2.296	1.931	0.022	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak								Body 1.6 W/kg (mW/g) averaged over 1 gram						
Uncontrolled Exposure/General Population Exposure														

Note: Orange entries represent Body-Worn & Hotspot measurements.

11.3 Standalone Phablet/Extremity SAR Results

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required when Hotspot 1g SAR (scaled to maximum output power including tolerance) < 1.2 W/kg.

Table 11.3.1 UNII Phablet/Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	0.000	0 mm [Top]	FCC #2	0.002	MCS0	99.6	0.001	1.216	1.004	0.001	
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.190	0 mm [Front]	FCC #2	0.045	MCS0	99.6	0.043	1.216	1.004	0.052	
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.060	0 mm [Rear]	FCC #2	0.110	MCS0	99.6	0.120	1.216	1.004	0.147	
5 290.0	58	802.11ac (Ant.3)	12.00	11.15	-0.010	0 mm [Right]	FCC #2	0.251	MCS0	99.6	0.268	1.216	1.004	0.327	C1
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	-0.050	0 mm [Front]	FCC #2	0.015	MCS0	99.6	0.015	1.153	1.004	0.017	
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	-0.010	0 mm [Rear]	FCC #2	0.186	MCS0	99.6	0.222	1.153	1.004	0.257	C2
5 290.0	58	802.11ac (Ant.5)	12.00	11.38	0.020	0 mm [Left]	FCC #2	0.128	MCS0	99.6	0.142	1.153	1.004	0.164	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	0.000	0 mm [Top]	FCC #2	0.001	MCS0	99.6	0.003	1.216	1.004	0.004	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	-0.030	0 mm [Front]	FCC #2	0.030	MCS0	99.6	0.027	1.216	1.004	0.033	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	0.050	0 mm [Rear]	FCC #2	0.192	MCS0	99.6	0.215	1.216	1.004	0.262	
5 290.0	58	802.11ac (MIMO)	15.00	14.65	-0.020	0 mm [Right]	FCC #2	0.219	MCS0	99.6	0.240	1.216	1.004	0.293	C3
5 290.0	58	802.11ac (MIMO)	15.00	14.65	-0.000	0 mm [Left]	FCC #2	0.145	MCS0	99.6	0.144	1.216	1.004	0.176	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Phablet 4.0 W/kg (mW/g) averaged over 10 gram							

Adjusted SAR results for UNII-1 and UNII-2A SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	10g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm]	Adjusted Factor	10g Adjusted SAR (W/kg)	SAR for the band with lower maximum output power
MHz	Ch											
5 290.0	58	802.11ac (Ant.3)	OFDM	12.00	0.327	5 210.0	802.11ac	OFDM	12.00	1.000	0.327	X
5 290.0	58	802.11ac (Ant.5)	OFDM	12.00	0.257	5 210.0	802.11ac	OFDM	12.00	1.000	0.257	X
5 290.0	58	802.11ac (MIMO)	OFDM	15.00	0.293	5 210.0	802.11ac	OFDM	15.00	1.000	0.293	X
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						Phablet 4.0 W/kg (mW/g) averaged over 10 gram						

Note: U-NII-1 and U-NII-2A Bands: When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 3.0 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

Table 11.3.2 UNII Phablet/Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	0.000	0 mm [Top]	FCC #2	0.005	MCS0	99.6	0.005	1.117	1.019	0.006	
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	0.050	0 mm [Front]	FCC #2	0.029	MCS0	99.6	0.024	1.117	1.019	0.027	
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	0.000	0 mm [Rear]	FCC #2	0.107	MCS0	99.6	0.118	1.117	1.019	0.134	
5 690.0	138	802.11ac (Ant.3)	12.00	11.52	-0.020	0 mm [Right]	FCC #2	0.194	MCS0	99.6	0.220	1.117	1.019	0.250	C4
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.000	0 mm [Front]	FCC #2	0.015	MCS0	99.6	0.009	1.102	1.019	0.010	
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	0.000	0 mm [Rear]	FCC #2	0.200	MCS0	99.6	0.209	1.102	1.019	0.235	C5
5 530.0	106	802.11ac (Ant.5)	12.00	11.58	-0.060	0 mm [Left]	FCC #2	0.186	MCS0	99.6	0.189	1.102	1.019	0.212	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	-0.040	0 mm [Top]	FCC #2	0.001	MCS0	99.6	0.001	1.117	1.019	0.001	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.000	0 mm [Front]	FCC #2	0.024	MCS0	99.6	0.107	1.117	1.019	0.122	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	-0.070	0 mm [Rear]	FCC #2	0.170	MCS0	99.6	0.198	1.117	1.019	0.225	C6
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.140	0 mm [Right]	FCC #2	0.175	MCS0	99.6	0.190	1.117	1.019	0.216	
5 690.0	138	802.11ac (MIMO)	15.00	14.63	0.000	0 mm [Left]	FCC #2	0.140	MCS0	99.6	0.144	1.117	1.019	0.164	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Phablet 4.0 W/kg (mW/g) averaged over 10 gram							

Table 11.3.3 UNII Phablet/Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch														
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.080	0 mm [Top]	FCC #2	0.008	MCS0	99.6	0.009	1.089	1.004	0.010	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.190	0 mm [Front]	FCC #2	0.047	MCS0	99.6	0.053	1.089	1.004	0.058	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.090	0 mm [Rear]	FCC #2	0.176	MCS0	99.6	0.176	1.089	1.004	0.192	
6 025.0	15	802.11ax (Ant.3)	12.00	11.54	-0.120	0 mm [Right]	FCC #2	0.262	MCS0	99.6	0.290	1.112	1.004	0.324	
6 185.0	47	802.11ax (Ant.3)	12.00	11.42	-0.070	0 mm [Right]	FCC #2	0.278	MCS0	99.6	0.303	1.143	1.004	0.348	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.110	0 mm [Right]	FCC #2	0.280	MCS0	99.6	0.323	1.089	1.004	0.353	C7
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.020	0 mm [Front]	FCC #2	0.015	MCS0	99.6	0.010	1.076	1.004	0.011	
6 025.0	15	802.11ax (Ant.5)	12.00	11.47	-0.020	0 mm [Rear]	FCC #2	0.099	MCS0	99.6	0.105	1.130	1.004	0.119	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	0.050	0 mm [Rear]	FCC #2	0.100	MCS0	99.6	0.107	1.138	1.004	0.122	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.150	0 mm [Rear]	FCC #2	0.115	MCS0	99.6	0.122	1.076	1.004	0.132	C8
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	0.060	0 mm [Left]	FCC #2	0.091	MCS0	99.6	0.096	1.076	1.004	0.104	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.040	0 mm [Top]	FCC #2	0.009	MCS0	99.6	0.009	1.242	1.004	0.011	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.060	0 mm [Front]	FCC #2	0.043	MCS0	99.6	0.037	1.242	1.004	0.046	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.010	0 mm [Rear]	FCC #2	0.169	MCS0	99.6	0.186	1.242	1.004	0.232	
6 025.0	15	802.11ax (MIMO)	15.00	13.94	-0.030	0 mm [Right]	FCC #2	0.271	MCS0	99.6	0.299	1.276	1.004	0.383	C9
6 185.0	47	802.11ax (MIMO)	15.00	13.80	0.030	0 mm [Right]	FCC #2	0.262	MCS0	99.6	0.285	1.318	1.004	0.377	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.020	0 mm [Right]	FCC #2	0.286	MCS0	99.6	0.306	1.242	1.004	0.382	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.070	0 mm [Left]	FCC #2	0.067	MCS0	99.6	0.076	1.242	1.004	0.095	
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								Phablet 4.0 W/kg (mW/g) averaged over 10 gram							

Table 11.3.4 UNII Phablet/Extremity APD

MEASUREMENT RESULTS														
FREQUENCY		Mode (Antenna)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Data Rate [Mbps]	Duty Cycle	APD [W/m² (4cm²)]	Scaling Factor	Scaling Factor (Duty Cycle)	Scaled APD [W/m² (4cm²)]	Plots #
MHz	Ch													
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.080	0 mm [Top]	FCC #2	MCS0	99.6	0.215	1.089	1.004	0.235	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.190	0 mm [Front]	FCC #2	MCS0	99.6	1.240	1.089	1.004	1.356	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.090	0 mm [Rear]	FCC #2	MCS0	99.6	4.130	1.089	1.004	4.516	
6 025.0	15	802.11ax (Ant.3)	12.00	11.54	-0.120	0 mm [Right]	FCC #2	MCS0	99.6	6.990	1.112	1.004	7.804	
6 185.0	47	802.11ax (Ant.3)	12.00	11.42	-0.070	0 mm [Right]	FCC #2	MCS0	99.6	7.350	1.143	1.004	8.435	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.110	0 mm [Right]	FCC #2	MCS0	99.6	7.850	1.089	1.004	8.583	C7
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.020	0 mm [Front]	FCC #2	MCS0	99.6	0.235	1.076	1.004	0.254	
6 025.0	15	802.11ax (Ant.5)	12.00	11.47	-0.020	0 mm [Rear]	FCC #2	MCS0	99.6	2.510	1.130	1.004	2.848	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	0.050	0 mm [Rear]	FCC #2	MCS0	99.6	2.570	1.138	1.004	2.936	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.150	0 mm [Rear]	FCC #2	MCS0	99.6	2.940	1.076	1.004	3.176	C8
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	0.060	0 mm [Left]	FCC #2	MCS0	99.6	1.800	1.076	1.004	1.945	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.040	0 mm [Top]	FCC #2	MCS0	99.6	0.210	1.242	1.004	0.262	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.060	0 mm [Front]	FCC #2	MCS0	99.6	0.880	1.242	1.004	1.097	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.010	0 mm [Rear]	FCC #2	MCS0	99.6	4.370	1.242	1.004	5.449	
6 025.0	15	802.11ax (MIMO)	15.00	13.94	-0.030	0 mm [Right]	FCC #2	MCS0	99.6	7.210	1.276	1.004	9.237	C9
6 185.0	47	802.11ax (MIMO)	15.00	13.80	0.030	0 mm [Right]	FCC #2	MCS0	99.6	6.820	1.318	1.004	9.025	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.020	0 mm [Right]	FCC #2	MCS0	99.6	7.350	1.242	1.004	9.165	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.070	0 mm [Left]	FCC #2	MCS0	99.6	1.800	1.242	1.004	2.245	

Note(s):

1. APD (Absorbed Power Density) over 4 cm² averaging area is reported based on SAR measurements.

2. 10 W/m² = 1.0 mW/cm²

Table 11.3.5 NFC Extremity SAR

MEASUREMENT RESULTS							
FREQUENCY		Mode	Drift Power [dB]	Phantom Position	Device Serial Number	Duty Cycle (%)	10 g SAR (W/kg)
MHz	Ch						
13.6	13600	NFC	0.000	0 mm [Top]	FCC #2	100	<0.001
13.6	13600	NFC	0.000	0 mm [Bottom]	FCC #2	100	<0.001
13.6	13600	NFC	0.000	0 mm [Front]	FCC #2	100	<0.001
13.6	13600	NFC	-0.000	0 mm [Rear]	FCC #2	100	0.005
13.6	13600	NFC	0.000	0 mm [Right]	FCC #2	100	<0.001
13.6	13600	NFC	0.000	0 mm [Left]	FCC #2	100	<0.001
ANSI / IEEE C95.1-1992- SAFETY LIMIT Spatial Peak						Extremity 4.0 W/kg (mW/g) averaged over 10 gram	
Uncontrolled Exposure/General Population Exposure							

11.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013 and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was not > 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were performed.
8. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated.
9. SAR measurements were performed using the DASY5 automated system. The procedure for spatial peak SAR evaluation has been implemented according to the IEEE 1528 standard. During a maximum search, global and local maxima searches are automatically performed in 2-D after each area scan measurement. The algorithm will find the global maximum and all local maxima within 2 dB of the global maxima for all SAR distributions. All local maxima within 2 dB of the global maximum were searched and passed for the Zoom Scan measurement.

GSM Notes:

1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2. This device supports GSM VOIP in the head and body-worn configurations; therefore GPRS was additionally evaluated for head and body-worn compliance.
3. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS slot configurations. The configuration with the highest target frame averaged output power was evaluated for hotspot SAR.
4. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). Since the maximum output power variation across the required test channels is not $> \frac{1}{2}$ dB, the middle channel was used for testing.

WCDMA (UMTS) Notes:

1. WCDMA (UMTS) mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r05. The general test procedures used for testing can be found in Section 8.4.4.
2. According to FCC KDB 941225 D05v02r05, when the reported SAR is ≤ 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required.
Otherwise, SAR is required for the remaining required test channels using the 1 RB, 50% RB and 100% RB allocation with highest output power for that channel.
Only one channel, and as reported SAR values for 1 RB allocation and 50% RB allocation were less than 1.45 W/kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
4. A-MPR was disabled for all SAR tests by setting NS=1 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is > 0.8 W/kg, testing for other channels is performed at the highest output power level for 1 RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg, Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. Testing for 16QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WLAN Notes:

1. The initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output and the adjust SAR is ≤ 1.2 W/kg.
3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg.
4. When the maximum reported 1g averaged SAR ≤ 0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg or all test channels were measured.
5. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor to determine compliance.
6. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by making a SAR measurement with both antennas transmitting simultaneously.
7. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
8. Per FCC guidance, SAR was performed using 6.5 GHz SAR probe calibration factor for WIFI 6E.

Bluetooth Notes:

1. Bluetooth SAR was measured with the device connected to a call with hopping disabled with DH5 operation and Tx test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. Refer to section 9.5 for the time-domain plot and calculation for the duty factor of the device.
2. Head and hotspot Bluetooth SAR were evaluated for BT tethering applications.
3. The highest frame average power configurations for both Bluetooth and Bluetooth LE were evaluated for SAR. The worst case configuration was used for the remaining test positions as the most conservative scenario.

11.5 IPD (Incident Power Density) Results

Table 11.5.1 UNII IPD

FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Grid Step [A]	Data Rate [Mbps]	Duty Cycle [%]	Scaling Factor for Measurement Uncertainty per IEC 62479	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Normal psPD (W/m²)	Scaled Normal psPD (W/m²)	Total psPD (W/m²)	Scaled Total psPD (W/m²)	Plots #
MHz	Ch																	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.160	2 mm [Top]	FCC #3	0.050	MCS0	99.6	1.116	1.089	1.004	0.041	0.050	0.283	0.345	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	-0.170	2 mm [Front]	FCC #3	0.050	MCS0	99.6	1.116	1.089	1.004	0.252	0.307	0.326	0.398	
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.080	2 mm [Rear]	FCC #3	0.050	MCS0	99.6	1.116	1.089	1.004	3.510	4.283	4.110	5.015	
6 025.0	15	802.11ax (Ant.3)	12.00	11.54	0.100	2 mm [Right]	FCC #3	0.050	MCS0	99.6	1.116	1.112	1.004	2.800	3.489	4.250	5.295	
6 185.0	47	802.11ax (Ant.3)	12.00	11.42	-0.060	2 mm [Right]	FCC #3	0.050	MCS0	99.6	1.116	1.143	1.004	3.640	4.662	4.720	6.045	D1
6 345.0	79	802.11ax (Ant.3)	12.00	11.63	0.020	2 mm [Right]	FCC #3	0.050	MCS0	99.6	1.116	1.089	1.004	2.570	3.136	4.360	5.320	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.130	2 mm [Front]	FCC #3	0.050	MCS0	99.6	1.116	1.076	1.004	0.104	0.125	0.190	0.229	
6 025.0	15	802.11ax (Ant.5)	12.00	11.47	-0.120	2 mm [Rear]	FCC #3	0.050	MCS0	99.6	1.116	1.130	1.004	2.050	2.596	2.490	3.153	
6 185.0	47	802.11ax (Ant.5)	12.00	11.44	-0.180	2 mm [Rear]	FCC #3	0.050	MCS0	99.6	1.116	1.138	1.004	1.460	1.862	1.780	2.270	
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.030	2 mm [Rear]	FCC #3	0.050	MCS0	99.6	1.116	1.076	1.004	1.910	2.303	3.080	3.713	D2
6 345.0	79	802.11ax (Ant.5)	12.00	11.68	-0.040	2 mm [Left]	FCC #3	0.050	MCS0	99.6	1.116	1.076	1.004	2.240	2.701	2.860	3.448	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.170	2 mm [Top]	FCC #3	0.050	MCS0	99.6	1.116	1.242	1.004	0.021	0.029	0.148	0.206	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.040	2 mm [Front]	FCC #3	0.050	MCS0	99.6	1.116	1.242	1.004	0.261	0.363	0.392	0.546	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.080	2 mm [Rear]	FCC #3	0.050	MCS0	99.6	1.116	1.242	1.004	1.080	1.503	2.030	2.825	
6 025.0	15	802.11ax (MIMO)	15.00	13.94	-0.040	2 mm [Right]	FCC #3	0.050	MCS0	99.6	1.116	1.276	1.004	2.250	3.217	3.510	5.018	
6 185.0	47	802.11ax (MIMO)	15.00	13.80	-0.040	2 mm [Right]	FCC #3	0.050	MCS0	99.6	1.116	1.318	1.004	2.760	4.076	3.730	5.508	D3
6 345.0	79	802.11ax (MIMO)	15.00	14.06	-0.080	2 mm [Right]	FCC #3	0.050	MCS0	99.6	1.116	1.242	1.004	2.990	4.161	3.680	5.121	
6 345.0	79	802.11ax (MIMO)	15.00	14.06	0.060	2 mm [Left]	FCC #3	0.050	MCS0	99.6	1.116	1.242	1.004	1.740	2.421	2.210	3.076	

Note(s):

1. 10 W/m²= 1.0 mW/cm²

2. Per TCBC workshop guide, Incident power density results were scaled according to IEC62479:2010 for the portion of the measurement uncertainty >30%. Total expanded uncertainty of 1.51 dB (41.6%) was used to determine the psPD measurement scaling factor.

3. Per manufacturer guide, Grid Step setting were using the automatic grid step function of measurement system tool.

4. Per manufacturer guide, Incident power density was measured at d=2mm.

5. ESR Algorithm was used during psPD measurement and calculations.

6. SISO Ant mode was evaluated in the worst case configuration of SAR test results.

7. MIMO Ant mode was evaluated for the entire measurement position in the worst case configuration of SAR test results.

11.6 Power Density General Notes

1. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
2. Batteries are fully charged at the beginning of the measurements. The DUT was connected to a wall charger for some measurements due to the test duration. It was confirmed that the charger plugged into this DUT did not impact the near-field PD test results.
3. Power density was calculated by repeated E-field measurements on two measurement planes separated by $\lambda/4$.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
5. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 1.51 dB (41.6%) was used to determine the psPD measurement scaling factor.
6. Per equipment manufacturer guidance, power density was measured at $d=2\text{mm}$ and $d=\lambda/5\text{mm}$ using the same grid size and grid step size for some frequencies and surfaces. The integrated Power Density (iPD) was calculated based on these measurements. Since iPD ratio between the two distances is $\geq -1\text{dB}$, the grid step was sufficient for determining compliance at $d=2\text{mm}$.
7. psPD for MIMO was evaluated by making a measurement with both antennas transmitting simultaneously.
8. ESR Algorithm was used during psPD measurement and calculations.
9. PD results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D04.

12. FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

12.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to handsets with built-in unlicensed transmitters such as 802.11b/g/n and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

12.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of the sum 1-g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤ 1.6 W/kg. The different test position in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

For all combinations where the TER sum is not greater than 1, there's no further analysis required for compliance demonstration.

12.3 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06.

Table 12.3.1 Simultaneous SAR Cases (Head, Body-Worn, Hotspot)

No.	Capable Transmit Configuration	Head SAR	Body-Worn SAR	Hotspot SAR	Note
1	GSM + Wi-Fi 2.4 GHz Ant.3	Yes	Yes	N/A	
2	GSM + Wi-Fi 2.4 GHz Ant.5	Yes	Yes	N/A	
3	GSM + Wi-Fi 2.4 GHz MIMO	Yes	Yes	N/A	
4	GSM + Bluetooth 2.4 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
5	GSM + Bluetooth 2.4 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
6	GSM + Wi-Fi 5 GHz Ant.3	Yes	Yes	N/A	
7	GSM + Wi-Fi 5 GHz Ant.5	Yes	Yes	N/A	
8	GSM + Wi-Fi 5 GHz MIMO	Yes	Yes	N/A	
9	GSM + Wi-Fi 6 GHz Ant.3	Yes	Yes	N/A	
10	GSM + Wi-Fi 6 GHz Ant.5	Yes	Yes	N/A	
11	GSM + Wi-Fi 6 GHz MIMO	Yes	Yes	N/A	
12	GSM + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
13	GSM + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
14	GSM + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
15	GSM + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
16	GSM + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
17	GSM + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
18	GSM + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
19	GSM + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
20	GSM + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
21	GSM + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
22	GSM + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
23	GSM + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
24	(WCDMA/LTE) + Wi-Fi 2.4 GHz Ant.3	Yes	Yes	Yes	
25	(WCDMA/LTE) + Wi-Fi 2.4 GHz Ant.5	Yes	Yes	Yes	
26	(WCDMA/LTE) + Wi-Fi 2.4 GHz MIMO	Yes	Yes	Yes	
27	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3	Yes*	Yes	Yes	*Bluetooth Tethering is considered.
28	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5	Yes*	Yes	Yes	*Bluetooth Tethering is considered.
29	(WCDMA/LTE) + Wi-Fi 5 GHz Ant.3	Yes	Yes	N/A	
30	(WCDMA/LTE) + Wi-Fi 5 GHz Ant.5	Yes	Yes	N/A	
31	(WCDMA/LTE) + Wi-Fi 5 GHz MIMO	Yes	Yes	N/A	
32	(WCDMA/LTE) + Wi-Fi 6 GHz Ant.3	Yes	Yes	N/A	
33	(WCDMA/LTE) + Wi-Fi 6 GHz Ant.5	Yes	Yes	N/A	
34	(WCDMA/LTE) + Wi-Fi 6 GHz MIMO	Yes	Yes	N/A	
35	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
36	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
37	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
38	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
39	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
40	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
41	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
42	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
43	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
44	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.3	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
45	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.5	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
46	(WCDMA/LTE) + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz MIMO	Yes*	Yes	N/A	*Bluetooth Tethering is considered.
47	GPRS + Wi-Fi 2.4 GHz Ant.3	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
48	GPRS + Wi-Fi 2.4 GHz Ant.5	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
49	GPRS + Wi-Fi 2.4 GHz MIMO	Yes*	Yes	Yes	*Pre-installed VOIP applications are considered.
50	GPRS + Bluetooth 2.4 GHz Ant.3	Yes**	Yes	Yes	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
51	GPRS + Bluetooth 2.4 GHz Ant.5	Yes**	Yes	Yes	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
52	GPRS + Wi-Fi 5 GHz Ant.3	Yes*	Yes	N/A	*Pre-installed VOIP applications are considered.
53	GPRS + Wi-Fi 5 GHz Ant.5	Yes*	Yes	N/A	*Pre-installed VOIP applications are considered.
54	GPRS + Wi-Fi 5 GHz MIMO	Yes*	Yes	N/A	*Pre-installed VOIP applications are considered.
55	GPRS + Wi-Fi 6 GHz Ant.3	Yes*	Yes	N/A	*Pre-installed VOIP applications are considered.
56	GPRS + Wi-Fi 6 GHz Ant.5	Yes*	Yes	N/A	*Pre-installed VOIP applications are considered.
57	GPRS + Wi-Fi 6 GHz MIMO	Yes*	Yes	N/A	*Pre-installed VOIP applications are considered.
58	GPRS + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.3	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
59	GPRS + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.5	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
60	GPRS + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz MIMO	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
61	GPRS + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.3	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
62	GPRS + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.5	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
63	GPRS + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz MIMO	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
64	GPRS + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.3	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
65	GPRS + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.5	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
66	GPRS + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz MIMO	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
67	GPRS + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.3	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
68	GPRS + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.5	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
69	GPRS + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz MIMO	Yes**	Yes	N/A	*Pre-installed VOIP applications are considered. *Bluetooth Tethering is considered.
Notes: 1. WiFi 2.4GHz is supported Hotspot. 2. WiFi 5 GHz is not supported Hotspot. 3. WiFi 6 GHz is not supported Hotspot. 4. LTE, WCDMA, GPRS is supported Hotspot. 5. VoIP is supported in LTE, WCDMA and GSM. 6. GSM, WCDMA and LTE can not transmit simultaneously since they share the same chip.					

Table 12.3.2 Simultaneous SAR Cases (Phablet)

No.	Capable Transmit Configuration	Phablet SAR	Note
1	NFC + WWAN + Wi-Fi 2.4 GHz Ant.3	Yes	
2	NFC + WWAN + Wi-Fi 2.4 GHz Ant.5	Yes	
3	NFC + WWAN + Wi-Fi 2.4 GHz MIMO	Yes	
4	NFC + WWAN + Bluetooth 2.4 GHz Ant.3	Yes	
5	NFC + WWAN + Bluetooth 2.4 GHz Ant.5	Yes	
6	NFC + WWAN + Wi-Fi 5 GHz Ant.3	Yes	
7	NFC + WWAN + Wi-Fi 5 GHz Ant.5	Yes	
8	NFC + WWAN + Wi-Fi 5 GHz MIMO	Yes	
9	NFC + WWAN + Wi-Fi 6 GHz Ant.3	Yes	
10	NFC + WWAN + Wi-Fi 6 GHz Ant.5	Yes	
11	NFC + WWAN + Wi-Fi 6 GHz MIMO	Yes	
12	NFC + WWAN + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.3	Yes	
13	NFC + WWAN + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz Ant.5	Yes	
14	NFC + WWAN + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 5 GHz MIMO	Yes	
15	NFC + WWAN + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.3	Yes	
16	NFC + WWAN + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz Ant.5	Yes	
17	NFC + WWAN + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 5 GHz MIMO	Yes	
18	NFC + WWAN + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.3	Yes	
19	NFC + WWAN + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz Ant.5	Yes	
20	NFC + WWAN + Bluetooth 2.4 GHz Ant.3 + Wi-Fi 6 GHz MIMO	Yes	
21	NFC + WWAN + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.3	Yes	
22	NFC + WWAN + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz Ant.5	Yes	
23	NFC + WWAN + Bluetooth 2.4 GHz Ant.5 + Wi-Fi 6 GHz MIMO	Yes	

12.4 Head SAR Simultaneous Transmission Analysis

Table 12.4.1 Simultaneous Transmission Scenario (Head)

Mode	Conf. (Head)													Σ SAR (W/kg)																							
		2G/3 G/4G			Wi-Fi 2.4G Ant.3			Wi-Fi 2.4G Ant.5			Wi-Fi 2.4G MIMO			Wi-Fi 5G Ant.3			Wi-Fi 5G Ant.5			Wi-Fi 5G MIMO			Wi-Fi 5G MIMO			BT Ant.3			BT Ant.5								
		1	2	3	4	5	6	7	8	9	10	11	12	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10	1+11	1+12	1+13	1+14	1+15	1+16	1+17	1+18	1+19	1+20					
GSM 850	Left Touch	0.430	0.116	0.019	0.113	0.109	0.034	0.122	0.048	0.016	0.141	0.548	0.064	0.546	0.450	0.543	0.886	0.828	0.622	0.877	0.866	0.136	0.444	0.514	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545				
	Right Touch	0.372	0.041	0.037	0.073	0.050	0.049	0.052	0.050	0.022	0.054	0.159	0.120	0.413	0.469	0.444	0.581	0.579	0.522	0.542	0.540	0.581	0.582	0.584	0.542	0.511	0.545	0.545	0.545	0.545	0.545	0.545					
	Left Tilt	0.256	0.039	0.007	0.051	0.025	0.008	0.044	0.014	0.008	0.060	0.140	0.016	0.295	0.264	0.307	0.421	0.404	0.441	0.287	0.280	0.316	0.411	0.403	0.456	0.287	0.332	0.279	0.332	0.279	0.332	0.279	0.332				
	Right Tilt	0.225	0.031	0.015	0.041	0.025	0.019	0.026	0.047	0.026	0.056	0.159	0.046	0.263	0.243	0.266	0.403	0.403	0.398	0.291	0.299	0.431	0.395	0.440	0.330	0.279	0.329	0.279	0.329	0.279	0.329	0.279	0.329				
GSM 1900	Left Touch	0.380	0.116	0.019	0.113	0.109	0.034	0.122	0.048	0.016	0.141	0.548	0.064	0.506	0.469	0.503	0.847	0.872	0.665	0.861	0.867	0.136	0.444	0.514	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545	0.545				
	Right Touch	0.331	0.041	0.037	0.073	0.050	0.049	0.052	0.050	0.022	0.054	0.159	0.120	0.372	0.369	0.254	0.541	0.539	0.392	0.392	0.393	0.541	0.512	0.544	0.502	0.273	0.355	0.355	0.355	0.355	0.355	0.355					
	Left Tilt	0.038	0.039	0.007	0.051	0.025	0.008	0.044	0.014	0.008	0.060	0.140	0.016	0.076	0.046	0.089	0.303	0.186	0.222	0.076	0.061	0.068	0.162	0.164	0.238	0.062	0.114	0.062	0.114	0.062	0.114	0.062	0.114				
	Right Tilt	0.053	0.037	0.015	0.041	0.025	0.019	0.026	0.047	0.026	0.056	0.159	0.046	0.091	0.089	0.084	0.297	0.291	0.298	0.126	0.120	0.127	0.289	0.218	0.288	0.148	0.101	0.148	0.101	0.148	0.101	0.148					
WCDMA 850	Left Touch	0.281	0.116	0.019	0.113	0.109	0.034	0.122	0.048	0.016	0.141	0.548	0.064	0.377	0.285	0.274	0.518	0.543	0.397	0.434	0.399	0.492	0.508	0.501	0.574	0.342	0.468	0.468	0.468	0.468	0.468	0.468	0.468				
	Right Touch	0.130	0.041	0.037	0.073	0.050	0.049	0.052	0.050	0.022	0.054	0.159	0.120	0.171	0.167	0.203	0.339	0.336	0.301	0.299	0.342	0.339	0.311	0.343	0.300	0.272	0.309	0.272	0.309	0.272	0.309	0.272	0.309				
	Left Tilt	0.300	0.039	0.007	0.051	0.025	0.008	0.044	0.014	0.008	0.060	0.140	0.016	0.339	0.309	0.301	0.465	0.448	0.484	0.341	0.324	0.360	0.447	0.500	0.331	0.303	0.379	0.303	0.379	0.303	0.379	0.303	0.379				
	Right Tilt	0.233	0.037	0.015	0.041	0.025	0.019	0.026	0.047	0.026	0.056	0.159	0.048	0.270	0.248	0.274	0.419	0.410	0.417	0.305	0.299	0.309	0.439	0.397	0.449	0.328	0.286	0.328	0.286	0.328	0.286	0.328					
LTE Band 12	Left Touch	0.173	0.116	0.019	0.113	0.109	0.034	0.122	0.048	0.016	0.141	0.548	0.064	0.288	0.162	0.269	0.602	0.735	0.348	0.345	0.270	0.364	0.769	0.727	0.862	0.269	0.379	0.379	0.379	0.379	0.379	0.379	0.379				
	Right Touch	0.131	0.041	0.037	0.073	0.050	0.049	0.052	0.050	0.022	0.054	0.159	0.120	0.172	0.169	0.204	0.341	0.339	0.382	0.302	0.300	0.343	0.341	0.312	0.344	0.302	0.279	0.302	0.279	0.302	0.279	0.302					
	Left Tilt	0.125	0.039	0.007	0.051	0.025	0.008	0.044	0.014	0.008	0.060	0.140	0.016	0.164	0.133	0.176	0.290	0.273	0.309	0.168	0.149	0.189	0.280	0.272	0.325	0.165	0.148	0.165	0.148	0.165	0.148	0.165					
	Right Tilt	0.052	0.037	0.015	0.041	0.025	0.019	0.026	0.047	0.026	0.056	0.159	0.046	0.089	0.087	0.093	0.226	0.226	0.237	0.125	0.119	0.126	0.258	0.217	0.267	0.147	0.106	0.147	0.106	0.147	0.106	0.147					

Table 12.4.2 Total Exposure Ratio (Head)

Mode	Conf. (Head)	2G/3G/4G						Wi-Fi 5G Ant.3						Wi-Fi 5G Ant.5						Wi-Fi 5G Ant.6						TER																				
		1			2			3			4			5			6			1+4			1+5			1+6			1+2+4			1+2+5			1+2+6			1+3+4			1+3+5			1+3+6		
		1	2	3	4	5	6	7	8	9	10	11	12	1+4	1+5	1+6	1+2+4	1+2+5	1+2+6	1+3+4	1+3+5	1+3+6	1+4+5	1+4+6	1+5+6	1+2+3+4	1+2+3+5	1+2+3+6	1+3+4+5	1+3+4+6	1+3+5+6	1+4+5+6	1+2+3+4+5	1+2+3+4+6	1+2+3+5+6	1+3+4+5+6										
GSM 850	Left Touch	0.430	0.548	0.064	0.548	0.548	0.309	0.229	0.546	0.309	0.229	0.546	0.309	0.292	0.324	0.324	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364						
	Right Touch	0.372	0.159	0.120	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.255	0.287	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362						
	Left Tilt	0.256	0.140	0.016	0.140	0.140	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.215	0.258	0.258	0.271	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225						
	Right Tilt	0.225	0.159	0.048	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.195	0.280	0.283	0.284	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225						
GSM 1900	Left Touch	0.380	0.548	0.064	0.548	0.548	0.359	0.229	0.546	0.359	0.229	0.546	0.359	0.292	0.324	0.324	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364						
	Right Touch	0.331	0.159	0.120	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.255	0.287	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362						
	Left Tilt	0.038	0.140	0.016	0.140	0.140	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.215	0.258	0.258	0.271	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225						
	Right Tilt	0.053	0.159	0.048	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.195	0.280	0.283	0.284	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225						
WCDMA 850	Left Touch	0.281	0.548	0.064	0.548	0.548	0.359	0.229	0.546	0.359	0.229	0.546	0.359	0.292	0.324	0.324	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364						
	Right Touch	0.130	0.159	0.120	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.255	0.287	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362						
	Left Tilt	0.300	0.140	0.016	0.140	0.140	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.215	0.258	0.258	0.271	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225						
	Right Tilt	0.233	0.159	0.048	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.195	0.280	0.283	0.284	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225						
LTE Band 12	Left Touch	0.173	0.548	0.064	0.548	0.548	0.359	0.229	0.546	0.359	0.229	0.546	0.359	0.292	0.324	0.324	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364	0.652	0.635	0.666	0.349	0.332	0.364						
	Right Touch	0.131	0.159	0.120	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.255	0.287	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362	0.371	0.354	0.386	0.347	0.330	0.362						
	Left Tilt	0.125	0.140	0.016	0.140	0.140	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.215	0.258	0.258	0.271	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225	0.202	0.210	0.225						
	Right Tilt	0.052	0.159	0.048	0.159	0.159	0.359	0.229	0.546	0.229	0.546	0.229	0.546	0.229	0.163	0.195	0.280	0.283	0.284	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225	0.210	0.193	0.225						

12.5 Body-Worn Simultaneous Transmission Analysis

Table 12.5.1 Simultaneous Transmission Scenario (Body-Worn at 10 mm)

Mode	Conf. (Head d)	2G/3G/4G																Σ SAR (W/kg)															
		Wi-Fi 2.4G Ant.3				Wi-Fi 2.4G Ant.5				Wi-Fi 5G MIMO				Wi-Fi 2.4G MIMO				Wi-Fi 5G MIMO				BT Ant.3				BT Ant.5							
		1	2	3	4	5	6	7	8	9	10	11	12	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10	1+11	1+12	1+13	1+14	1+15	1+16					
GSM 850	Front	0.319	0.042	0.004	0.022	0.047	0.016	0.042	0.009	0.013	0.054	0.058	0.032	0.362	0.324	0.341	0.423	0.393	0.417	0.399	0.389	0.383	0.415	0.388	0.429	0.321	0.364	0.455					
	Rear	0.553	0.092	0.077	0.014	0.040	0.220	0.289	0.304	0.253	0.181	0.315	0.148	0.184	0.466	0.447	0.398	0.505	0.500	0.493	0.482	0.483	0.507	0.483	0.518	0.481	0.512	0.514					
GSM 1900	Front	0.235	0.042	0.004	0.022	0.047	0.016	0.042	0.009	0.013	0.054	0.058	0.032	0.277	0.249	0.257	0.338	0.309	0.333	0.314	0.275	0.309	0.331	0.304	0.345	0.307	0.280	0.321					
	Rear	0.424	0.092	0.077	0.014	0.040	0.220	0.289	0.304	0.253	0.181	0.315	0.148	0.184	0.466	0.447	0.398	0.505	0.500	0.493	0.482	0.483	0.507	0.483	0.518	0.481	0.512	0.514					
WCDMA 850	Front	0.319	0.042	0.004	0.022	0.047	0.016	0.042	0.009	0.013	0.054	0.058	0.032	0.362	0.324	0.341	0.423	0.393	0.417	0.399	0.389	0.383	0.415	0.388	0.429	0.321	0.364	0.455					
	Rear	0.553	0.092	0.077	0.014	0.040	0.220	0.289	0.304	0.253	0.181	0.315	0.148	0.184	0.466	0.447	0.398	0.505	0.500	0.493	0.482	0.483	0.507	0.483	0.518	0.481	0.512	0.514					
LTE Band 12	Front	0.136	0.042	0.004	0.022	0.047	0.016	0.042	0.009	0.013	0.054	0.058	0.032	0.178	0.148	0.156	0.229	0.215	0.186	0.210	0.202	0.205	0.226	0.205	0.215	0.181	0.191	0.222					
	Rear	0.191	0.092	0.077	0.014	0.040	0.220	0.289	0.304	0.253	0.181	0.315	0.148	0.184	0.466	0.447	0.398	0.505	0.500	0.493	0.482	0.483	0.507	0.483	0.518	0.481	0.512	0.514					

12.6 Hotspot SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 941225 D06v02r01, the device edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR ("").

Table 12.6.1 Simultaneous Transmission Scenario (Hotspot at 10 mm)

Mode	Conf. (Head)	2G/3G/4G	BT Ant.3	BT Ant.5	Wi-Fi 2.4G Ant.3	Wi-Fi 2.4G Ant.5	Wi-Fi 2.4G MIMO	Σ SAR (W/kg)				
								1+2	1+3	1+4	1+5	1+6
GSM 850	Top	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Bottom	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Front	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Rear	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Right	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Left	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
GSM 1900	Top	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Bottom	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Front	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Rear	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Right	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Left	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
WCDMA 850	Top	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Bottom	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Front	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Rear	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Right	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Left	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
LTE Band 12	Top	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Bottom	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Front	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Rear	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Right	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045
	Left	-	-	-	-	-	-	0.053	0.476	0.041	0.476	0.045

12.7 Phablet SAR Simultaneous Transmission Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required of Hotspot 1g SAR (scaled to maximum output power, including tolerance) < 1.2 W/kg.

Table 11.7.1 Simultaneous Transmission Scenario (Phablet at 0 mm)

Mode	Conf. (Head)	NFC+ 2G/4G	Wi-Fi 2.4G Ant.3	Wi-Fi 2.4G Ant.5	Wi-Fi 2.4G MIMO	Wi-Fi 5G Ant.3	Wi-Fi 5G Ant.5	Wi-Fi 5G MIMO	Wi-Fi 6G Ant.3	Wi-Fi 6G Ant.5	Wi-Fi 6G MIMO	BT Ant.3	BT Ant.5	Σ SAR (W/kg)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
														1	2	3	4	5	6	7	8	9	10	11	12	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10	1+11	1+12	1+13	1+14	1+15	1+16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
														1	2	3	4	5	6	7	8	9	10	11	12	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10	1+11	1+12	1+13	1+14	1+15	1+16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
GSM 850	Top	0.001	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Table 12.7.2 Total Exposure Ratio (Phablet at 0 mm)

Mode	Conf. (Head)	NFC+ 2G/3G/4G	BT Ant.3	BT Ant.5	Wi-Fi 5G Ant.3	Wi-Fi 5G Ant.5	Wi-Fi 5G MIMO	TER										
								1	2	3	4	5	6	1+4	1+5	1+6	1+2+4	1+2+5
GSM 850	Top	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Bottom	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Front	0.001	-	-	-	0.308	0.229	0.548	0.040	0.023	0.055	0.040	0.023	0.055	0.040	0.023	0.055	0.055
	Rear	0.005	-	-	-	5.015	3.713	2.825	0.503	0.373	0.284	0.503	0.373	0.284	0.503	0.373	0.284	0.284
	Right	0.001	-	-	-	0.040	0.508	0.508	0.608	0.451	0.608	0.501	0.608	0.451	0.608	0.501	0.608	0.501
	Left	0.001	-	-	-	0.348	3.076	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308
GSM 1900	Top	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Bottom	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Front	0.001	-	-	-	0.345	0.229	0.548	0.035	0.023	0.055	0.035	0.023	0.055	0.035	0.023	0.055	0.055
	Rear	0.005	-	-	-	0.000	3.713	2.825	0.001	0.373	0.284	0.001	0.373	0.284	0.001	0.373	0.284	0.284
	Right	0.001	-	-	-	0.040	0.508	0.508	0.608	0.451	0.608	0.501	0.608	0.451	0.608	0.501	0.608	0.501
	Left	0.001	-	-	-	0.348	3.076	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308
WCDMA A 850	Top	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Bottom	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Front	0.001	-	-	-	0.345	0.229	0.548	0.035	0.023	0.055	0.035	0.023	0.055	0.035	0.023	0.055	0.055
	Rear	0.005	-	-	-	0.000	3.713	2.825	0.001	0.373	0.284	0.001	0.373	0.284	0.001	0.373	0.284	0.284
	Right	0.001	-	-	-	0.040	0.508	0.508	0.608	0.451	0.608	0.501	0.608	0.451	0.608	0.501	0.608	0.501
	Left	0.001	-	-	-	0.348	3.076	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308
LTE Band 12	Top	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Bottom	0.001	-	-	-	0.345	-	0.206	0.035	-	0.021	0.035	-	-	0.021	0.035	-	0.021
	Front	0.001	-	-	-	0.345	0.229	0.548	0.035	0.023	0.055	0.035	0.023	0.055	0.035	0.023	0.055	0.055
	Rear	0.005	-	-	-	0.000	3.713	2.825	0.001	0.373	0.284	0.001	0.373	0.284	0.001	0.373	0.284	0.284
	Right	0.001	-	-	-	0.040	0.508	0.508	0.608	0.451	0.608	0.501	0.608	0.451	0.608	0.501	0.608	0.501
	Left	0.001	-	-	-	0.348	3.076	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308	0.345	0.308

13. SAR MEASUREMENT VARIABILITY

13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1. When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2. A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~10% from the 1-g SAR limit).
3. A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
4. Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
5. The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure to the corresponding SAR thresholds.

13.2 Measurement Uncertainty

The measured SAR was < 1.5 W/kg for 1g and < 3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04 was not required.

14. EQUIPMENT LIST

Table 14.1.1 Test Equipment Calibration

	Type	Manufacturer	Model	Cal.Date	Next.Cal.Date	S/N
☒	SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒	SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒	SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒	Robot	SPEAG	TX60L	N/A	N/A	F14/5VR2A1/A/01
☒	Robot	SPEAG	TX90XL	N/A	N/A	F15/50NHA1/A/01
☒	Robot	SPEAG	TX60L	N/A	N/A	F24/0061586/A/003
☒	Robot Controller	SPEAG	CS8C	N/A	N/A	F14/5VR2A1/C/01
☒	Robot Controller	SPEAG	CS8C	N/A	N/A	F15/50NHA1/C/01
☒	Robot Controller	SPEAG	CS8C	N/A	N/A	F24/0061586/C/003
☒	Joystick	SPEAG	N/A	N/A	N/A	D21142605A
☒	Joystick	SPEAG	N/A	N/A	N/A	005695
☒	Joystick	SPEAG	N/A	N/A	N/A	D21144508C
☒	Intel Xeon W-2 253 3.70 GHz Windows 11 Professional	N/A	N/A	N/A	N/A	N/A
☒	Intel Core i7-8 700K 3.70 GHz Window 10 Pro	N/A	N/A	N/A	N/A	N/A
☒	Intel Xeon W5-2 455X 3.19 GHz Windows 11 Pro	N/A	N/A	N/A	N/A	N/A
☒	Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒	Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒	Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒	Device Holder	SPEAG	SD000H01KA	N/A	N/A	N/A
☒	Device Holder	SPEAG	SD000H01KA	N/A	N/A	N/A
☒	Device Holder	SPEAG	SD000H01KA	N/A	N/A	N/A
☒	mmWave Device Holder	SPEAG	QD 015 050 AA	N/A	N/A	1007
☒	Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1783
☒	2 mm Oval Phantom ELI6	SPEAG	QDOVA003AA	N/A	N/A	2008
☒	mmWave Phantom	SPEAG	QD 015 025 CA	N/A	N/A	1050
☒	Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1837
☒	Twin SAM Phantom	SPEAG	QD000P41AA	N/A	N/A	2199
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2025-04-23	2026-04-23	1485
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2025-07-10	2026-07-10	1335
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2025-09-15	2026-09-15	1453
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2025-02-18	2026-02-18	1391
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2025-02-21	2026-02-21	7337
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2025-03-19	2026-03-19	3916
☒	E-Field mm-Wave Probe	SPEAG	EUmWV3	2025-07-10	2026-07-10	9400
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2025-09-22	2026-09-22	3933
☒	Confined Loop Antenna (13 MHz)	SPEAG	CLA13	2025-11-20	2026-11-20	1030
☒	750MHz SAR Dipole	SPEAG	D750V3	2025-03-12	2026-03-12	1049
☒	835MHz SAR Dipole	SPEAG	D835V2	2025-02-17	2026-02-17	464
☒	1 900MHz SAR Dipole	SPEAG	D1900V2	2025-02-17	2026-02-17	5d029
☒	2 450MHz SAR Dipole	SPEAG	D2450V2	2025-04-15	2026-04-15	726
☒	5 GHz SAR Dipole	SPEAG	D5GHzV2	2025-08-20	2026-08-20	1212
☒	6.5 GHz SAR Dipole	SPEAG	D6.5GHzV2	2025-09-10	2027-09-10	1017
☒	Horn Antenna (10 GHz)	SPEAG	5G Verification Source 10 GHz	2025-01-16	2026-01-16	1026
☒	Signal Generator	Agilent	E4438C	2025-05-28	2026-05-28	US41461520
☒	10 MHz - 20 GHz Microwave Generator	AEROFLEX	6813A	2025-11-20	2026-11-20	680001/683
☒	RF Power Amplifier	OPHIRRF	5069	2025-11-20	2026-11-20	1006
☒	Broadband Amplifier	SUNGSAN	SA1077	2024-11-29	2025-11-29	SA1077-001
☒	Amplifier	EMPOWER	BBS3Q7ELU	2025-05-30	2026-05-30	1020
☒	High Power RF Amplifier	EMPOWER	BBS3Q8CCJ	2025-05-30	2026-05-30	1005
☒	Mini-Circuits Amplifier (5.9 - 18 GHz)	Mini Circuits	ZVE-3W-183+	2025-11-18	2026-11-18	954702237
☒	Power Meter	HP	EPM-442A	2024-11-26	2025-11-26	GB37170267
☒	Power Meter	Anritsu	ML2488B	2024-11-27	2025-11-27	0846003
☒	Power Sensor	Anritsu	MA2472D	2024-11-27	2025-11-27	0845419
☒	Power Sensor	HP	8481A	2024-11-29	2025-11-29	2702A65976
☒	Power Sensor	HP	8481A	2024-11-29	2025-11-29	2702A61707
☒	Directional Coupler (0.1 - 250 MHz)	Mini Circuits	ZMDC-30-1+	2025-11-20	2026-11-20	F795802232
☒	Dual Directional Coupler	Agilent	778D-012	2024-11-25	2025-11-25	50228
☒	Directional Coupler	HP	772D	2025-05-30	2026-05-30	2889A01064
☒	Low pass filter (15 MHz)	Mini Circuits	BPL-15+	2025-11-20	2026-11-20	15542
☒	Low Pass Filter 1 GHz	Wainwright Instruments	WLK6-1000-1400-9000-60SS	2025-06-24	2026-06-24	165
☒	Low Pass Filter 1.5 GHz	MICROLAB	LA-15N	2025-05-28	2026-05-28	2
☒	Low Pass Filter 3.0 GHz	MICROLAB	LA-30N	2025-05-28	2026-05-28	2
☒	Low Pass Filter 6.0 GHz	MICROLAB	LA-60N	2024-11-18	2025-11-18	03942
☒	Low pass filter (10 GHz)	Mini Circuits	ZLFW-K103+	2025-11-20	2026-11-20	2232
☒	Mini Circuits Low Pass Filter DC-8 400 MHz	Mini Circuits	VLV-8400+	2024-11-26	2025-11-26	15542
☒	Attenuators(10 dB)	WEINSCHTEL	23-10-34	2024-11-25	2025-11-25	BP4387
☒	Attenuators	H/P	8494A	2025-05-28	2026-05-28	3308A33341
☒	Attenuators	Saluki	3.5TS2-3dB-26.5G	2025-05-29	2026-05-29	21090703
☒	Dielectric Probe kit	SPEAG	DAKS-12	2025-09-16	2026-09-16	1040
☒	Dielectric Probe kit	SPEAG	R60	2025-09-22	2026-09-22	22323001
☒	Dielectric Probe kit	SPEAG	DAK-3.5	2025-07-07	2026-07-07	1046
☒	Dielectric Probe kit	SPEAG	R140	2025-07-17	2026-07-17	0101213
☒	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	2025-05-28	2026-05-28	GB41321164
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2024-11-26	2025-11-26	101414
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2024-11-28	2025-11-28	171059
☒	Bluetooth Tester	TESCOM	TC-3000C	2025-05-27	2026-05-27	3000C000563

NOTE(S):

- The E-field probe was calibrated by SPEAG, by temperature measurement procedure. Dipole Verification measurement is performed by DT&C before each test. The brain and muscle simulating material are calibrated by DT&C using the dielectric probe system and network analyzer to determine the conductivity and permittivity (dielectric constant) of the brain and muscle-equivalent material. Each equipment item was used solely within its respective calibration period.
- CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

15. MEASUREMENT UNCERTAINTIES

13 ~ 600 MHz SAR

Error Description	Uncertainty value %	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (%)	Standard 10 g (%)	Ci x U_i 1 g	Ci x U_i 10 g	vi 2 or Veff
Measurement System										
Probe calibration	13.3	Normal	2	1	1	6.65	6.65	6.65	6.65	∞
Probe Calibration Drift	1.7	Rectangular	$\sqrt{3}$	1	1	1.0	1.0	1.0	1.0	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	2.7	2.7	∞
Broadband Signal	0.6	Rectangular	$\sqrt{3}$	1	1	0.3	0.3	0.3	0.3	∞
Probe Isotropy	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	4.4	4.4	∞
Data acquisition	0.8	Normal	1	1	1	0.8	0.8	0.8	0.8	∞
RF Ambient Conditions	1.8	Normal	1	1	1	1.8	1.8	1.8	1.8	∞
Probe Positioning	0.006 mm	Normal	1	0.04	0.04	2.50	2.50	0.10	0.10	∞
Data Processing	1.2	Normal	1	1	1	1.2	1.2	1.2	1.2	∞
Phantom and Device										
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	2.89	2.89	1.85	1.24	∞
Liquid conductivity (Meas.)	3.1	Normal	1	0.78	0.71	3.10	3.10	2.42	2.20	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	2.89	2.89	1.73	1.41	∞
Liquid permittivity (Meas.)	3.2	Normal	1	0.23	0.26	3.20	3.20	0.74	0.83	10
Temp. unc. - Conductivity	2.0	Rectangular	$\sqrt{3}$	0.78	0.71	0.90	0.82	0.70	0.58	∞
Temp. unc. - Permittivity	2.0	Rectangular	$\sqrt{3}$	0.23	0.26	0.27	0.30	0.06	0.08	∞
Phantom Shell Permittivity	14.0	Rectangular	$\sqrt{3}$	0	0	8.1	8.1	0.0	0.0	∞
Distance DUT-TSL	2.0	Normal	1	2	2	2.0	2.0	4.0	4.0	∞
Device Positioning	2.7	Normal	1	1	1	2.7	2.7	2.7	2.7	10
Device Holder	2.2	Normal	1	1	1	2.2	2.2	2.2	2.2	10
DUT Modulation	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	1.4	1.4	∞
Time-average SAR	1.7	Rectangular	$\sqrt{3}$	1	1	1.0	1.0	1.0	1.0	∞
DUT drift	2.5	Normal	1	1	1	2.5	2.5	2.5	2.5	∞
Validation Antenna	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Uncertainty in Accepted Power	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Correction to the SAR results										
Deviation to target	1.9	Normal	1	1	0.84	1.9	1.9	1.9	1.6	∞
SAR Scaling	0.0	Rectangular	$\sqrt{3}$	1	1	0.0	0.0	0.0	0.0	∞
Combined Standard Uncertainty						11	11			∞
Expanded Uncertainty (k=2)						22	22			

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 11\%$$

$$= 22\% \text{ (The confidence level is about } 95\% \text{ } k = 2)$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 11\%$$

$$= 22\% \text{ (The confidence level is about } 95\% \text{ } k = 2)$$

750 ~ 2 600 MHz SAR

Error Description	Uncertainty value %	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (%)	Standard 10 g (%)	Ci x U _i 1 g	Ci x U _i 10 g	vi 2 or Veff
Measurement System										
Probe calibration	11.0	Normal	2	1	1	5.50	5.50	5.50	5.50	∞
Probe Calibration Drift	1.7	Rectangular	√3	1	1	1.0	1.0	1.0	1.0	∞
Probe Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	2.7	2.7	∞
Broadband Signal	2.8	Rectangular	√3	1	1	1.6	1.6	1.6	1.6	∞
Probe Isotropy	7.6	Rectangular	√3	1	1	4.4	4.4	4.4	4.4	∞
Data acquisition	0.8	Normal	1	1	1	0.8	0.8	0.8	0.8	∞
RF Ambient Conditions	1.8	Normal	1	1	1	1.8	1.8	1.8	1.8	∞
Probe Positioning	0.006 mm	Normal	1	0.14	0.14	0.71	0.71	0.10	0.10	∞
Data Processing	1.2	Normal	1	1	1	1.2	1.2	1.2	1.2	∞
Phantom and Device										
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	2.89	2.89	1.85	1.24	∞
Liquid conductivity (Meas.)	3.2	Normal	1	0.78	0.71	3.20	3.20	2.50	2.27	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	2.89	2.89	1.73	1.41	∞
Liquid permittivity (Meas.)	3.3	Normal	1	0.23	0.26	3.30	3.30	0.76	0.86	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	1.15	1.15	0.90	0.82	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	1.15	1.15	0.27	0.30	∞
Phantom Shell Permittivity	14.0	Rectangular	√3	0	0	8.1	8.1	0.0	0.0	∞
Distance DUT-TSL	2.0	Normal	1	2	2	2.0	2.0	4.0	4.0	∞
Device Positioning	2.7	Normal	1	1	1	2.7	2.7	2.7	2.7	10
Device Holder	2.4	Normal	1	1	1	2.4	2.4	2.4	2.4	10
DUT Modulation	2.4	Rectangular	√3	1	1	1.4	1.4	1.4	1.4	∞
Time-average SAR	1.7	Rectangular	√3	1	1	1.0	1.0	1.0	1.0	∞
DUT drift	2.5	Normal	1	1	1	2.5	2.5	2.5	2.5	∞
Validation Antenna	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Uncertainty in Accepted Power	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Correction to the SAR results										
Deviation to target	1.9	Normal	1	1	0.84	1.9	1.9	1.9	1.6	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	0.0	0.0	∞
Combined Standard Uncertainty						11	11			∞
Expanded Uncertainty (k=2)						22	22			

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 11\%$$

= 22 % (The confidence level is about 95 % k = 2)

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 11\%$$

= 22 % (The confidence level is about 95 % k = 2)

3 000 ~ 6 000 MHz SAR

Error Description	Uncertainty value %	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (%)	Standard 10 g (%)	Ci x U _i 1 g	Ci x U _i 10 g	vi 2 or Veff
Measurement System										
Probe calibration	13.1	Normal	2	1	1	6.55	6.55	6.55	6.55	∞
Probe Calibration Drift	1.7	Rectangular	√3	1	1	1.0	1.0	1.0	1.0	∞
Probe Linearity	4.7	Rectangular	√3	1	1	2.7	2.7	2.7	2.7	∞
Broadband Signal	2.6	Rectangular	√3	1	1	1.5	1.5	1.5	1.5	∞
Probe Isotropy	7.6	Rectangular	√3	1	1	4.4	4.4	4.4	4.4	∞
Data acquisition	1.2	Normal	1	1	1	1.2	1.2	1.2	1.2	∞
RF Ambient Conditions	1.8	Normal	1	1	1	1.8	1.8	1.8	1.8	∞
Probe Positioning	0.005 mm	Normal	1	0.29	0.29	0.7	0.7	0.2	0.2	∞
Data Processing	2.3	Normal	1	1	1	2.3	2.3	2.3	2.3	∞
Phantom and Device										
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	2.89	2.89	1.85	1.24	∞
Liquid conductivity (Meas.)	3.3	Normal	1	0.78	0.71	3.30	3.30	2.57	2.34	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	2.89	2.89	1.73	1.41	∞
Liquid permittivity (Meas.)	3.3	Normal	1	0.23	0.26	3.30	3.30	0.76	0.86	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	1.15	1.15	0.90	0.82	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	1.15	1.15	0.27	0.30	∞
Phantom Shell Permittivity	14.0	Rectangular	√3	0.25	0.25	8.1	8.1	2.0	2.0	∞
Distance DUT-TSL	2.0	Normal	1	2	2	2.0	2.0	4.0	4.0	∞
Device Positioning	2.7	Normal	1	1	1	2.7	2.7	2.7	2.7	10
Device Holder	2.6	Normal	1	1	1	2.6	2.6	2.6	2.6	10
DUT Modulation	2.4	Rectangular	√3	1	1	1.4	1.4	1.4	1.4	∞
Time-average SAR	1.7	Rectangular	√3	1	1	1.0	1.0	1.0	1.0	∞
DUT drift	2.5	Normal	1	1	1	2.5	2.5	2.5	2.5	∞
Validation Antenna	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Uncertainty in Accepted Power	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Correction to the SAR results										
Deviation to target	1.9	Normal	1	1	0.84	1.9	1.9	1.9	1.6	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	0.0	0.0	∞
Combined Standard Uncertainty						12	12			∞
Expanded Uncertainty (k=2)						24	24			

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 12\%$$

= 24 % (The confidence level is about 95 % k = 2)

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 12\%$$

= 24 % (The confidence level is about 95 % k = 2)

6 000 ~ 9 000 MHz SAR

Error Description	Uncertainty value %	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (%)	Standard 10 g (%)	Ci x U_i 1 g	Ci x U_i 10 g	vi 2 or Veff
Measurement System										
Probe calibration	18.6	Normal	2	1	1	9.30	9.30	9.30	9.30	∞
Probe Calibration Drift	1.7	Rectangular	$\sqrt{3}$	1	1	1.0	1.0	1.0	1.0	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	2.7	2.7	2.7	2.7	∞
Broadband Signal	2.6	Rectangular	$\sqrt{3}$	1	1	1.5	1.5	1.5	1.5	∞
Probe Isotropy	7.6	Rectangular	$\sqrt{3}$	1	1	4.4	4.4	4.4	4.4	∞
Data acquisition	2.4	Normal	1	1	1	2.4	2.4	2.4	2.4	∞
RF Ambient Conditions	1.8	Normal	1	1	1	1.8	1.8	1.8	1.8	∞
Probe Positioning	3.9	Normal	1	0.50	0.50	3.9	3.9	2.0	2.0	∞
Data Processing	3.5	Normal	1	1	1	3.5	3.5	3.5	3.5	∞
Phantom and Device										
Liquid conductivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.64	0.43	2.89	2.89	1.85	1.24	∞
Liquid conductivity (Meas.)	3.1	Normal	1	0.78	0.71	3.10	3.10	2.42	2.20	10
Liquid permittivity (Target)	5.0	Rectangular	$\sqrt{3}$	0.60	0.49	2.89	2.89	1.73	1.41	∞
Liquid permittivity (Meas.)	3.1	Normal	1	0.23	0.26	3.10	3.10	0.71	0.81	10
Temp. unc. - Conductivity	2.0	Rectangular	$\sqrt{3}$	0.78	0.71	1.15	1.15	0.90	0.82	∞
Temp. unc. - Permittivity	2.0	Rectangular	$\sqrt{3}$	0.23	0.26	1.15	1.15	0.27	0.30	∞
Phantom Shell Permittivity	14.0	Rectangular	$\sqrt{3}$	0.5	0.5	8.1	8.1	4.0	4.0	∞
Distance DUT-TSL	2.0	Normal	1	2	2	2.0	2.0	4.0	4.0	∞
Device Positioning	2.3	Normal	1	1	1	2.3	2.3	2.3	2.3	10
Device Holder	2.1	Normal	1	1	1	2.1	2.1	2.1	2.1	10
DUT Modulation	2.4	Rectangular	$\sqrt{3}$	1	1	1.4	1.4	1.4	1.4	∞
Time-average SAR	1.7	Rectangular	$\sqrt{3}$	1	1	1.0	1.0	1.0	1.0	∞
DUT drift	2.5	Normal	1	1	1	2.5	2.5	2.5	2.5	∞
Validation Antenna	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Uncertainty in Accepted Power	0.0	Normal	1	1	1	0.0	0.0	0.0	0.0	∞
Correction to the SAR results										
Deviation to target	1.9	Normal	1	1	0.84	1.9	1.9	1.9	1.6	∞
SAR Scaling	0.0	Rectangular	$\sqrt{3}$	1	1	0.0	0.0	0.0	0.0	∞
Combined Standard Uncertainty						14	14			∞
Expanded Uncertainty (k=2)						28	28			

$$U(1\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 14\%$$

$$= 28\% \text{ (The confidence level is about 95 \% } k = 2 \text{)}$$

$$U(10\text{ g}) = k \cdot u_c$$

$$= 2 \cdot 14\%$$

$$= 28\% \text{ (The confidence level is about 95 \% } k = 2 \text{)}$$

6 500 MHz APD

Symbol	Error Description	Uncertainty value	Probability Distribution	Divisor	(Ci) (1 g) / (1 cm ²)	(Ci) (8 g/10 g) / (4 cm ²)	Std. Unc. (1 g) / (1 cm ²)	Std. Unc. (8 g/10 g) / (4 cm ²)
psSAR	Module SAR V16.2 (Table 6.3.3)	±14.2/14.1%	Normal	1	1	1	±14.2%	±14.1%
PDC	Power Density Conversion	±13.5%	Rectangular	√3	1	1	±7.8%	±7.8%
u(ΔSAR)	Combined Uncertainty						±16.2%	±16.9%
U	Expanded Uncertainty In dB						±32.4% ±1.2dB	±32.2% ±1.2dB

6 500 MHz Incident Power Density

Error Description	Unc. (± dB)	Probability Distribution	Divisor	(Ci)	U_i (± dB)	V_i
Measurement System						
Calibration	0.49	Normal	1	1	0.49	∞
Probe corection	0.00	Rectangular	√3	1	0.00	∞
Frequency response (BW =<1GHz)	0.20	Rectangular	√3	1	0.12	∞
Sensor cross coupling	0.00	Rectangular	√3	1	0.00	∞
Isotropy	0.50	Rectangular	√3	1	0.29	∞
Linearity	0.20	Rectangular	√3	1	0.12	∞
Probe scatering	0.00	Rectangular	1	1	0.00	∞
Probe positioning offset	0.30	Rectangular	√3	1	0.17	∞
Probe positioning repeatability	0.04	Rectangular	√3	1	0.02	∞
Sensor mechanical offset	0.00	Rectangular	√3	1	0.00	∞
Probe spatial resolution	0.00	Rectangular	√3	1	0.00	∞
Field impedance dependance	0.00	Rectangular	√3	1	0.00	∞
Measurement drift	0.05	Rectangular	√3	1	0.03	∞
Amplitude and phase noise	0.04	Rectangular	√3	1	0.02	∞
Measurement area truncation	0.00	Rectangular	√3	1	0.00	∞
Data acquisition	0.03	Normal	1	1	0.03	∞
Sampling	0.00	Rectangular	√3	1	0.00	∞
Field reconstruction	0.60	Rectangular	√3	1	0.35	∞
Signal-to-Noise Ratio	0.00	Rectangular	√3	1	0.00	∞
FTE/MEO	0.00	Rectangular	√3	1	0.00	∞
Power density scaling	-	Rectangular	√3	1	-	∞
Spatial averaging	0.10	Rectangular	√3	1	0.06	∞
Test Sample Related						
Probe coupling with DUT	0.00	Rectangular	√3	1	0.00	∞
Modulation response	0.40	Rectangular	√3	1	0.23	∞
Integration time	0.00	Rectangular	√3	1	0.00	∞
Response time	0.00	Rectangular	√3	1	0.00	∞
Device holder influence	0.10	Rectangular	√3	1	0.06	∞
DUT alignment	0.00	Rectangular	√3	1	0.00	∞
RF ambient conditions	0.04	Rectangular	√3	1	0.02	∞
Laboratory Temperature	0.05	Rectangular	√3	1	0.03	∞
Laboratory Reflections	0.04	Rectangular	√3	1	0.02	∞
Immunity/secondary reception	0.00	Rectangular	√3	1	0.00	∞
Drift of the DUT	-	Rectangular	√3	1	0.00	∞
Combined Standard Uncertainty					0.75	∞
Expanded Uncertainty (k=2)					1.51	

16. CONCLUSION

Measurement Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC. These measurements are taken to simulate the RF effects exposure under the worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The test results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are every complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role impossible biological effect are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease).

Because innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

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- [30] Anexo à Resolução No. 533, de 10 de September de 2009.
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APPENDIX A. – Probe Calibration Data

**Calibration Laboratory of
Schmid & Partner
Engineering AG**

Zeughausstrasse 43, 8004 Zurich, Switzerland



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client

Dt&C

Gyeonggi-do, Republic of Korea

Certificate No.

EX-7337_Feb25**CALIBRATION CERTIFICATE**

Object

EX3DV4 - SN:7337

Calibration procedure(s)

QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6,
QA CAL-25.v8
Calibration procedure for dosimetric E-field probes

Calibration date

February 21, 2025

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Calibration Date (Certificate No.)	Sched. Cal.
Power Sensor R&S NRP-33T	SN: 100967	28-Mar-24 (No. 217-04038)	Mar-25
Short [S6019] + Attenuator [S6020]	SN: L1119	26-Mar-24 (No. 217-04048)	Mar-25
OCP DAK-12	SN: 1016	24-Sept-24 (No. OCP-DAK12-1016_Sep24)	Sep-25
OCP DAK-3.5	SN: 1249	23-Sept-24 (No. OCP-DAK3.5-1249_Sep24)	Sep-25
Reference Probe EX3DV4	SN: 7349	10-Jan-25 (No. EX3-7349_Jan25)	Jan-26
DAE4	SN: 1301	07-Nov-24 (No. DAE4-1301_Nov24)	Nov-25

Secondary Standards	ID	Check Date (in house)	Sched. Check
ACAP 2020 Calibration Box	SN: L1404	30-Sept-24 (No. Report_ACAP2020E-Cave_20240930s)	Sep-25

	Name	Function	Signature
Calibrated by	Aidonia Georgiadou	Laboratory Technician	
Approved by	Niels Kuster	Quality Manager	
Issued: February 20, 2025			
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

Certificate No: EX-7337_Feb25

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Calibration Laboratory ofSchmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland



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Accredited by the Swiss Accreditation Service (SAS)
 The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\theta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\theta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,y,z} * frequency_response** (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

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Parameters of Probe: EX3DV4 - SN:7337**Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k = 2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.62	0.67	0.53	$\pm 10.1\%$
DCP (mV) ^B	107.7	105.2	102.5	$\pm 4.7\%$

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max dev.	Max Unc ^E k = 2
0	CW	X	0.00	0.00	1.00	0.00	120.4	$\pm 1.2\%$	$\pm 4.7\%$
		Y	0.00	0.00	1.00		128.1		
		Z	0.00	0.00	1.00		127.6		
10352	Pulse Waveform (200Hz, 10%)	X	2.00	62.00	7.00	10.00	60.0	$\pm 3.0\%$	$\pm 9.6\%$
		Y	1.40	60.07	6.11		60.0		
		Z	5.88	74.48	14.09		60.0		
10353	Pulse Waveform (200Hz, 20%)	X	0.82	60.00	5.04	6.99	80.0	$\pm 2.2\%$	$\pm 9.6\%$
		Y	0.79	60.00	4.90		80.0		
		Z	20.00	86.72	16.83		80.0		
10354	Pulse Waveform (200Hz, 40%)	X	0.26	145.33	0.03	3.98	95.0	$\pm 2.8\%$	$\pm 9.6\%$
		Y	0.00	121.42	0.77		95.0		
		Z	20.00	88.77	16.71		95.0		
10355	Pulse Waveform (200Hz, 60%)	X	9.34	158.77	17.63	2.22	120.0	$\pm 1.7\%$	$\pm 9.6\%$
		Y	0.04	157.46	19.52		120.0		
		Z	20.00	93.11	17.78		120.0		
10387	QPSK Waveform, 1 MHz	X	0.53	63.33	12.49	1.00	150.0	$\pm 3.7\%$	$\pm 9.6\%$
		Y	0.49	61.55	11.07		150.0		
		Z	1.62	65.76	14.66		150.0		
10388	QPSK Waveform, 10 MHz	X	1.32	65.86	13.96	0.00	150.0	$\pm 1.1\%$	$\pm 9.6\%$
		Y	1.22	64.18	12.96		150.0		
		Z	2.14	67.25	15.34		150.0		
10396	64-QAM Waveform, 100 kHz	X	1.67	64.23	15.73	3.01	150.0	$\pm 1.0\%$	$\pm 9.6\%$
		Y	1.57	63.16	15.30		150.0		
		Z	2.75	70.36	18.82		150.0		
10399	64-QAM Waveform, 40 MHz	X	2.79	66.19	15.04	0.00	150.0	$\pm 1.6\%$	$\pm 9.6\%$
		Y	2.72	65.47	14.61		150.0		
		Z	3.48	66.91	15.62		150.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	3.90	66.48	15.47	0.00	150.0	$\pm 2.8\%$	$\pm 9.6\%$
		Y	3.89	66.09	15.26		150.0		
		Z	4.84	65.66	15.48		150.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E^2 -field uncertainty inside TSL (see Pages 5 and 6).

^B Linearization parameter uncertainty for maximum specified field strength.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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Parameters of Probe: EX3DV4 - SN:7337

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms V^{-2}$	T2 $ms V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
x	9.4	66.93	32.42	3.25	0.00	4.90	0.46	0.00	1.00
y	9.9	71.83	33.71	2.24	0.00	4.90	0.22	0.00	1.00
z	41.7	307.02	34.67	14.02	0.00	5.01	1.67	0.05	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	20.3°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

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Parameters of Probe: EX3DV4 - SN:7337

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity ^F (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc ^H (k = 2)
750	41.9	0.89	9.41	9.19	10.27	0.37	1.27	±11.0%
835	41.5	0.90	9.18	8.97	10.03	0.37	1.27	±11.0%
900	41.5	0.97	9.01	8.81	9.84	0.37	1.27	±11.0%
1750	40.1	1.37	7.90	7.72	8.63	0.36	1.27	±11.0%
1900	40.0	1.40	7.67	7.50	8.38	0.36	1.27	±11.0%
2450	39.2	1.80	7.19	7.03	7.85	0.35	1.27	±11.0%
2600	39.0	1.96	7.16	6.99	7.81	0.35	1.27	±11.0%
3500	37.9	2.91	6.46	6.31	7.05	0.34	1.27	±13.1%
3700	37.7	3.12	6.36	6.22	6.95	0.34	1.27	±13.1%
5200	36.0	4.66	5.68	5.55	6.20	0.30	1.27	±13.1%
5300	35.9	4.76	5.43	5.31	5.93	0.30	1.27	±13.1%
5500	35.6	4.96	5.15	5.03	5.62	0.28	1.27	±13.1%
5600	35.5	5.07	5.16	5.04	5.63	0.27	1.27	±13.1%
5800	35.3	5.27	5.25	5.13	5.73	0.26	1.27	±13.1%

^C Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

^F The probes are calibrated using tissue simulating liquids (TSL) that deviate for ϵ and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than +1% for frequencies below 3 GHz and below ±2% for frequencies between 3–6 GHz at any distance larger than half the probe tip diameter from the boundary.

^H The stated uncertainty is the total calibration uncertainty (k = 2) of Norm-ConvF. This is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1528:2020.

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Parameters of Probe: EX3DV4 - SN:7337

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity ^F (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc ^H (k = 2)
6500	34.5	6.07	5.42	5.30	5.92	0.20	1.27	±18.6%

^C Frequency validity at 6.5 GHz is -600/+700 MHz, and ±700 MHz at or above 7 GHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^F The probes are calibrated using tissue simulating liquids (TSL) that deviate for ϵ and σ by less than ±10% from the target values (typically better than ±6%) and are valid for TSL with deviations of up to ±10%.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz; below ±2% for frequencies between 3–6 GHz; and below ±4% for frequencies between 6–10 GHz at any distance larger than half the probe tip diameter from the boundary.

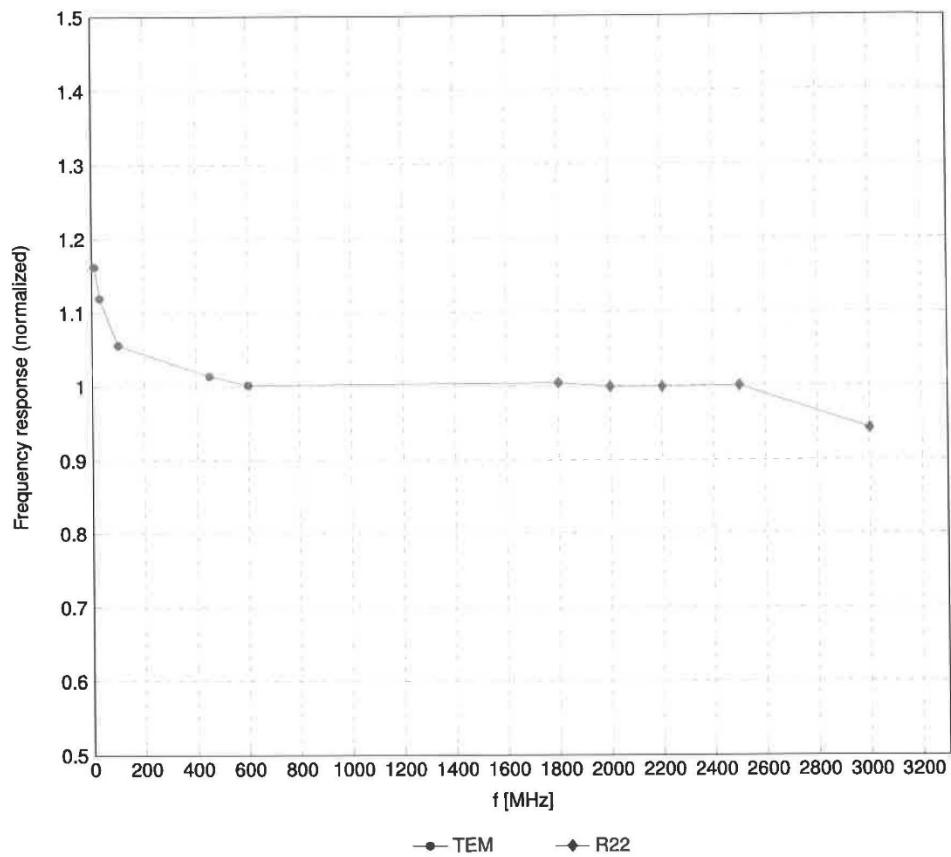
^H The stated uncertainty is the total calibration uncertainty (k = 2) of Norm-ConvF. This is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1528:2020.

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Frequency Response of E-Field

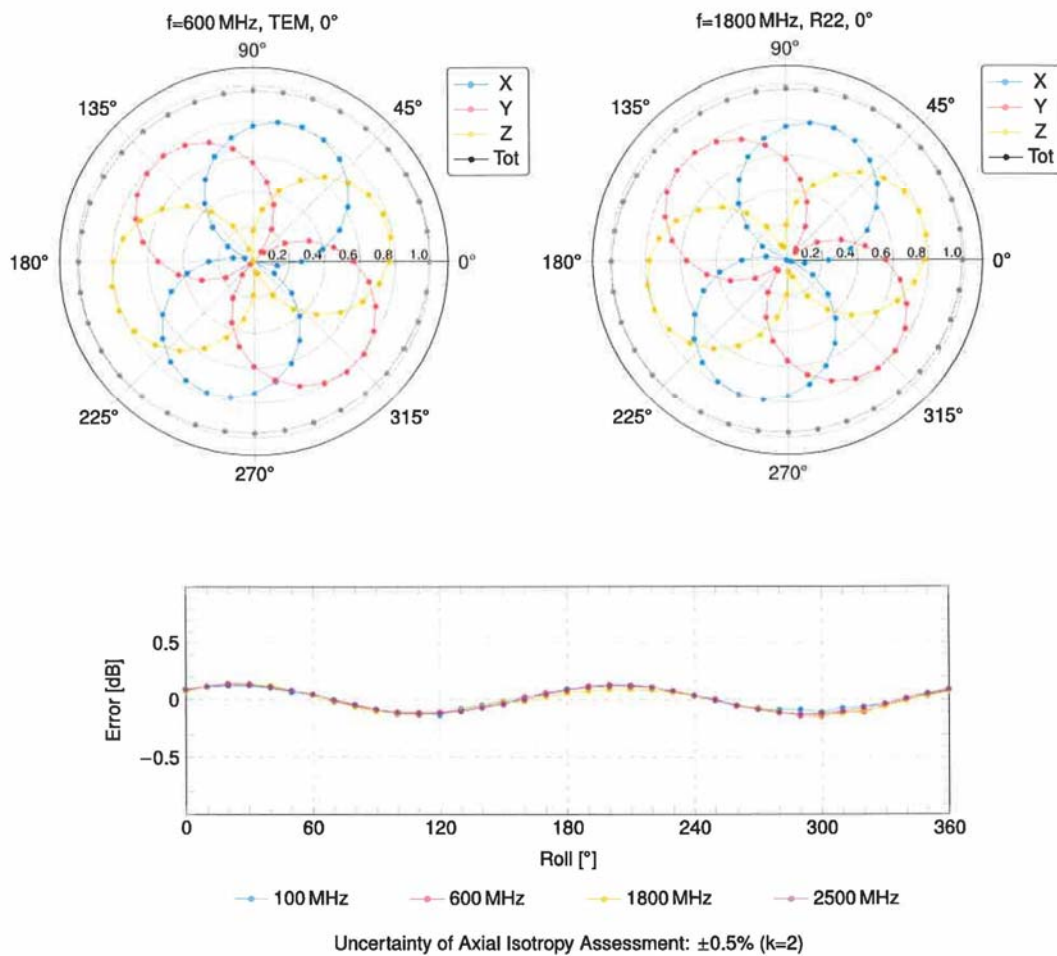
(TEM-Cell:ifi110 EXX, Waveguide:R22)



Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

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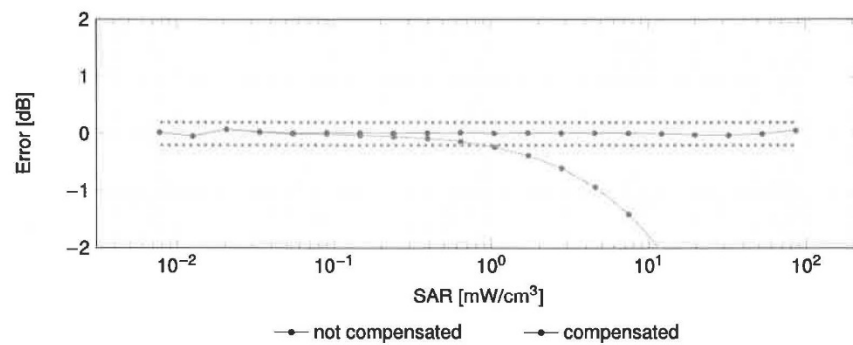
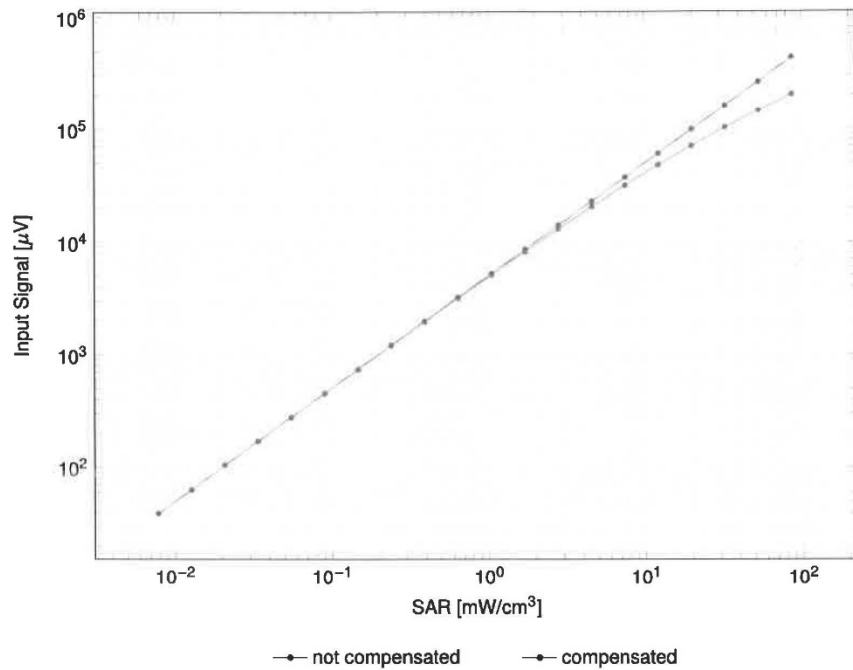
Receiving Pattern (ϕ), $\theta = 0^\circ$ 

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Dynamic Range f(SAR_{head})

(TEM cell, $f_{\text{eval}} = 1900 \text{ MHz}$)

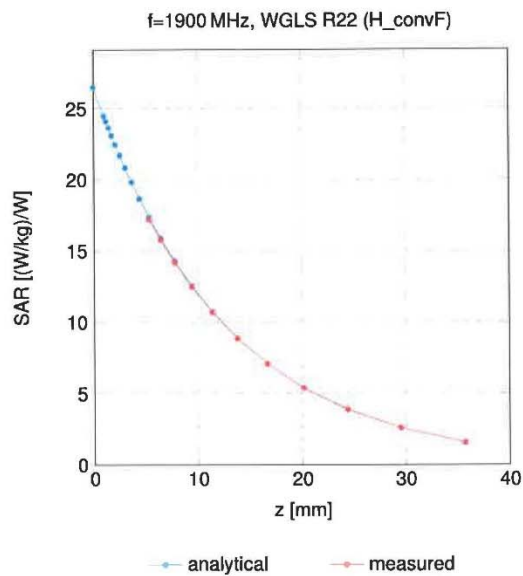


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

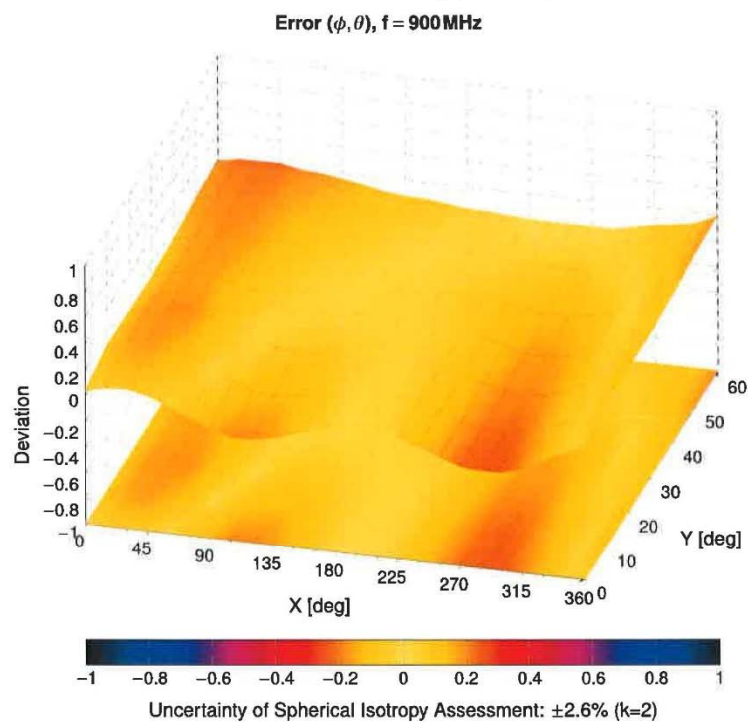
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Conversion Factor Assessment



Deviation from Isotropy in Liquid



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Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc ^E k = 2
0		CW	CW	0.00	±4.7
10010	CAB	SAR Validation (Square, 100 ms, 10 ms)	Test	10.00	±9.6
10011	CAC	UMTS-FDD (WCDMA)	WCDMA	2.91	±9.6
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	±9.6
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	±9.6
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	±9.6
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	±9.6
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	±9.6
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	±9.6
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	±9.6
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	±9.6
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	±9.6
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	±9.6
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	±9.6
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	±9.6
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	±9.6
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	±9.6
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	±9.6
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	±9.6
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	±9.6
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	±9.6
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	±9.6
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	±9.6
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	±9.6
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	±9.6
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	±9.6
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	±9.6
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	±9.6
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	±9.6
10059	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	±9.6
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	±9.6
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	±9.6
10062	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	±9.6
10063	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	±9.6
10064	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	±9.6
10065	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	±9.6
10066	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	±9.6
10067	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	±9.6
10068	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	±9.6
10069	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	±9.6
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	±9.6
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	±9.6
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	±9.6
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	±9.6
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	±9.6
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	±9.6
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	±9.6
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	±9.6
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	±9.6
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	±9.6
10097	CAC	UMTS-FDD (HSDPA)	WCDMA	3.98	±9.6
10098	CAC	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	±9.6
10099	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	±9.6
10100	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	±9.6
10101	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	±9.6
10102	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	±9.6
10103	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	±9.6
10104	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	±9.6
10105	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	±9.6
10108	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	±9.6
10109	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
10110	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	±9.6
10111	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	±9.6