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SAR EVALUATION REPORT

Applicant Name:
Apple, Inc.
One Apple Park Way
Cupertino, CA 95014 USA

Date of Testing:
06/06/2022 – 08/23/2022
Test Site/Location:
Element, Morgan Hill, CA, USA
Document Serial No.:
1C2205090034-17.BCG

FCC ID: **BCG-A2727**

APPLICANT: **APPLE, INC.**

DUT Type: Watch
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: A2727

Equipment Class	Band & Mode	Tx Frequency	SAR	
			1g Head (W/kg)	10g Extremity (W/kg)
PCT	UMTS 850	826.40 - 846.60 MHz	< 0.1	0.35
PCT	UMTS 1750	1712.4 - 1752.6 MHz	0.31	< 0.1
PCT	UMTS 1900	1852.4 - 1907.6 MHz	0.49	0.13
PCT	LTE Band 12	699.7 - 715.3 MHz	< 0.1	0.44
PCT	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A
PCT	LTE Band 13	779.5 - 784.5 MHz	< 0.1	0.41
PCT	LTE Band 14	790.5 - 795.5 MHz	< 0.1	0.38
PCT	LTE Band 26 (Cell)	814.7 - 848.3 MHz	< 0.1	0.32
PCT	LTE Band 5 (Cell)	824.7 - 848.3 MHz	< 0.1	0.43
PCT	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.29	< 0.1
PCT	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A
PCT	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.48	0.13
PCT	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A
PCT	LTE Band 7	2502.5 - 2567.5 MHz	0.77	0.16
PCT	LTE Band 41	2498.5 - 2687.5 MHz	0.21	< 0.1
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.20	< 0.1
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.23	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			0.99	0.47

This watch has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

RJ Ortanez
Executive Vice President

The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz

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

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.

1.3.1 Maximum Output Power – UMTS Mode

Mode/Band		Modulated Average Output Power (in dBm)		
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6
UMTS Band 5 (850 MHz)	Max allowed power	**25.00**	**25.00**	**24.00**
	Nominal	**24.00**	**24.00**	**23.00**
UMTS Band 4 (1750 MHz)	Max allowed power	**24.00**	**24.00**	**24.00**
	Nominal	**23.00**	**23.00**	**23.00**
UMTS Band 2 (1900 MHz)	Max allowed power	**24.00**	**24.00**	**24.00**
	Nominal	**23.00**	**23.00**	**23.00**

1.3.2 Maximum Output Power – LTE Mode

Mode / Band		Modulated Average Output Power (in dBm)
LTE FDD Band 12	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 17	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 13	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 14	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 26	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 5	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 4	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 66	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 2	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 25	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 7	Max allowed power	**24.00**
	Nominal	**23.00**
LTE TDD Band 41	Max allowed power	**24.00**
	Nominal	**23.00**

1.3.3 Maximum Output Power – WiFi Mode

Mode/ Band			IEEE 802.11b (2.4 GHz)		IEEE 802.11g (2.4 GHz)		IEEE 802.11n (2.4 GHz)	
		Channel	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
Modulated Average - Single Tx Chain (dBm)	20 MHz Bandwidth	1	19.00	18.00	17.00	16.00	17.00	16.00
		2	19.00	18.00	18.50	17.50	18.50	17.50
		3	19.00	18.00	18.50	17.50	18.50	17.50
		4	19.00	18.00	18.50	17.50	18.50	17.50
		5	19.00	18.00	18.50	17.50	18.50	17.50
		6	19.00	18.00	18.50	17.50	18.50	17.50
		7	19.00	18.00	18.50	17.50	18.50	17.50
		8	19.00	18.00	18.50	17.50	18.50	17.50
		9	19.00	18.00	18.50	17.50	18.50	17.50
		10	19.00	18.00	18.50	17.50	18.50	17.50
		11	19.00	18.00	16.50	15.50	16.50	15.50
		12	19.00	18.00	15.00	14.00	15.00	14.00
		13	18.00	17.00	6.50	5.50	6.50	5.50

1.3.4 Maximum Output Power – Bluetooth Mode

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth BDR/LE	Maximum	**17.50**
	Nominal	**16.50**
Bluetooth EDR	Maximum	**14.00**
	Nominal	**13.00**
Bluetooth HDR	Maximum	**13.50**
	Nominal	**12.50**

1.4 DUT Antenna Locations

A diagram showing the location of the device antennas can be found in Appendix E**.**

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix E.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be operating 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 4.3.2 procedures.

Table 1-1
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Extremity
1	UMTS + 2.4 GHz WI-FI	Yes	Yes
2	UMTS + 2.4 GHz Bluetooth	Yes	Yes
3	LTE + 2.4 GHz WI-FI	Yes	Yes
4	LTE + 2.4 GHz Bluetooth	Yes	Yes

1. 2.4 GHz WLAN, and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. Licensed modes cannot transmit simultaneously.
3. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN scenario.
4. This device supports VOLTE.
5. This device supports VOWIFI.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

This device supports channel 1-13 for 2.4 GHz WLAN. However, because channel 12/13 targets are not higher than that of channels 1-11, channels 1, 6, and 11 were considered for SAR testing per FCC KDB 248227 D01V02r02.

(B) Licensed Transmitter(s)

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

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.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device is limited to 27 RB on the uplink for 16QAM modulation. Additional measurements were evaluated to support SAR test exclusion for 16 QAM as described in Section 7.5.4.

1.8 Guidance Applied

- FCC KDB Publication 941225 D01v03r01, D05v02r04 (3G/4G)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance, Wrist-worn Device Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- IEEE 1528-2013

1.9 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 10.

1.10 Device Housing Types and Wrist Band Types

This device has one housing types that was evaluated independently for SAR: Aluminum. The device can also be used with different wristband accessories. The non-metallic wrist accessory, sport band, was evaluated for all exposure conditions. The available metallic wrist accessories, metal links band and metal loop band, were additionally evaluated.

2 LTE INFORMATION

LTE Information					
Form Factor	Watch				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 14 (790.5 - 795.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
Channel Bandwidths	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 14: 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)		710 (23790)	711 (23800)	
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)	784.5 (23255)	
LTE Band 13: 10 MHz	N/A		782 (23230)	N/A	
LTE Band 14: 5 MHz	790.5 (23305)		793 (23330)	795.5 (23355)	
LTE Band 14: 10 MHz	N/A		793 (23330)	N/A	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	1				
Modulations Supported in UL	QPSK, 16QAM				
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 full CA features on 3GPP Release 12. All uplink communications are identical to the Release 8 Specifications. The following LTE Release 12 Features are not supported: Carrier Aggregation, Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development 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. [1]

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 [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (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 International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. 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.

3.1 SAR Definition

Specific Absorption Rate 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 Equation 3-1).

Equation 3-1
SAR Mathematical Equation

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

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/m^3)
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 relation 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.[6]

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:

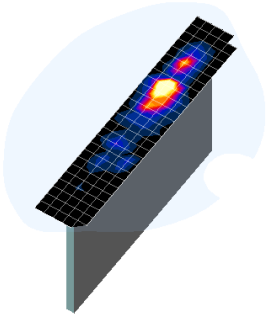

Figure 4-1
Sample SAR Area Scan

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 IEEE 1528-2013.
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.

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5*Δz_{zoom}(n-1)	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*Δz_{zoom}(n-1)	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*Δz_{zoom}(n-1)	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*Δz_{zoom}(n-1)	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*Δz_{zoom}(n-1)	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

5 TEST CONFIGURATION POSITIONS

5.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. Additionally, a manufacturer provided low-loss foam was used to position the device for head SAR evaluations.

5.2 Positioning for Head

Devices that are designed to be worn on the wrist may operate in speaker mode for voice communication, with the device worn on the wrist and positioned next to the mouth. When next-to-mouth SAR evaluation is required, the device is positioned at 10 mm from a flat phantom filled with head tissue-equivalent medium. The device is evaluated with wrist bands strapped together to represent normal use conditions.

5.3 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. When extremity SAR evaluation is required, the device is evaluated with the back of the device touching the flat phantom, which is filled with head tissue-equivalent medium. The device was evaluated with Sport wristband unstrapped and touching the phantom. For Metal Loop and Metal Links wristbands, the device was evaluated with wristbands strapped and the distance between wristbands and the phantom was minimized to represent the spacing created by actual use conditions.

6 RF EXPOSURE LIMITS

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. 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 6-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

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.

7 FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

7.1 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.

7.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

7.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

The device is 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 are 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 is 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 deviates by more than 5%, the SAR test and drift measurements are repeated.

7.4 SAR Measurement Conditions for UMTS

7.4.1 Output Power Verification

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, 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.

7.4.2 Head SAR Measurements

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.

7.4.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all “1s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

7.4.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

7.4.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

7.5 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements 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).

7.5.1 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.

7.5.2 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.

7.5.3 A-MPR

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

7.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
    i. The required channel and offset combination with the highest maximum output power is required for SAR.
    ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
    iii. 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.
b. 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.
c. 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.
d. 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 ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.
e. This device can only operate with 16QAM on the uplink with less than or equal to 27 RB. For 16QAM configurations with 10 MHz, 15 MHz and 20 MHz bandwidths, LTE powers for RB size of 15 (“50% RB”) and 27 (“100% RB”) with offsets to upper edge, middle, and lower edge of the channel are additionally measured for both QPSK and 16QAM modulations to support comparison and SAR test exclusion per Section 5.2.4 and 5.3.

7.5.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

7.6 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. 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 248227 D01v02r02 for more details.

7.6.1 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.

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.

7.6.2 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the 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 position 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. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

7.6.3 OFDM Transmission Mode and SAR Test Channel Selection

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 are 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.

7.6.4 Initial Test Configuration Procedure

For OFDM, 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 power 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, lowest data rate and lowest order IEEE 802.11 mode. 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. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 7.6.3). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

7.6.5 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 the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8 RF CONDUCTED POWERS

8.1 UMTS Conducted Powers

Table 8-1
Maximum Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	24.05	24.11	24.10	23.03	22.95	22.83	23.01	22.92	23.05	-
99		12.2 kbps AMR	23.93	24.04	23.91	23.11	23.18	23.03	23.06	23.05	23.14	-
6	HSDPA	Subtest 1	24.43	24.55	24.46	23.54	23.45	23.40	23.62	23.67	23.79	0
6		Subtest 2	23.45	23.53	23.42	22.69	22.77	22.64	22.82	22.62	22.59	0
6		Subtest 3	22.91	23.03	22.94	22.30	22.36	22.26	22.35	22.30	22.44	0.5
6		Subtest 4	22.68	22.74	22.65	22.06	22.11	22.01	22.13	22.10	22.19	0.5
6	HSUPA	Subtest 1	22.42	22.49	22.46	22.62	22.64	22.53	22.58	22.53	22.68	0
6		Subtest 2	21.21	21.26	21.23	20.60	20.67	20.52	20.59	20.57	20.62	2
6		Subtest 3	22.24	22.30	22.19	21.30	21.33	21.24	21.36	21.34	21.42	1
6		Subtest 4	21.42	21.57	21.45	20.67	20.78	20.70	20.91	20.80	20.82	2
6		Subtest 5	23.46	23.45	23.48	22.83	22.86	22.76	22.82	22.78	22.90	0

This device does not support DC-HSDPA.

Figure 8-1
Power Measurement Setup

8.2 LTE Conducted Powers

Per FCC KDB Publication 941225 D05v02r05, LTE SAR for the lower bandwidths was not required for testing 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. Lower bandwidth conducted powers for all LTE bands can be found in appendix F.

Some bands do not support non-overlapping channels. Per FCC Guidance, 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

8.2.1 LTE Band 12

Table 8-2
LTE Band 12 Conducted Power - 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.90**	0	0
	1	25	24.62		0
	1	49	24.86		0
	25	0	**23.89**	0-1	1
	25	12	23.78		1
	25	25	23.87		1
	50	0	23.86		1
	15	0	23.87	0-1	1
	15	17	23.75		1
	15	35	23.85		1
	27	0	23.85	0-2	1
	27	12	23.79		1
	27	23	23.87		1
16QAM	1	0	24.02	0-2	1
	1	25	23.90		1
	1	49	23.84		1
	25	0	22.64	0-3	2
	25	12	22.55		2
	25	25	22.55		2
	15	0	22.64	0-5	2
	15	17	22.53		2
	15	35	22.51		2
	27	0	22.61		2
	27	12	22.52		2
	27	23	22.54		2

8.2.2 LTE Band 13

Table 8-3
LTE Band 13 Conducted Power - 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.65**	0	0
	1	25	24.43		0
	1	49	24.52		0
	25	0	23.68	0-1	1
	25	12	**23.85**		1
	25	25	23.62		1
	50	0	23.80		1
	15	0	23.67	0-1	1
	15	17	23.58		1
	15	35	23.63		1
	27	0	23.73	0-2	1
	27	12	23.60		1
	27	23	23.58		1
16QAM	1	0	23.83	0-2	1
	1	25	23.56		1
	1	49	23.59		1
	25	0	22.54	0-3	2
	25	12	22.35		2
	25	25	22.42		2
	15	0	22.48	0-5	2
	15	17	22.38		2
	15	35	22.48		2
	27	0	22.51		2
	27	12	22.41		2
	27	23	22.42		2

8.2.3 LTE Band 14

Table 8-4
LTE Band 14 Conducted Power - 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.39	0	0
	1	25	**24.56**		0
	1	49	24.34		0
	25	0	**23.57**	0-1	1
	25	12	23.56		1
	25	25	23.50		1
	50	0	23.44		1
	15	0	23.54	0-1	1
	15	17	23.58		1
	15	35	23.48		1
	27	0	23.55	0-2	1
	27	12	23.53		1
	27	23	23.54		1
16QAM	1	0	23.22	0-2	1
	1	25	23.37		1
	1	49	23.09		1
	25	0	21.74	0-3	2
	25	12	21.78		2
	25	25	21.75		2
	15	0	21.78	0-5	2
	15	17	21.83		2
	15	35	21.72		2
	27	0	21.73		2
	27	12	21.76		2
	27	23	21.78		2

8.2.4 LTE Band 26

Table 8-5

LTE Band 26 Conducted Power - 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.50	**24.67**	24.52	0	0
	1	25	24.34	24.23	24.33		0
	1	49	24.45	24.37	24.47		0
	25	0	23.54	**23.57**	23.55	0-1	1
	25	12	23.50	23.44	23.49		1
	25	25	23.48	23.41	23.46		1
	50	0	23.52	23.44	23.53		1
	15	0	23.53	23.48	23.52	0-1	1
	15	17	23.49	23.45	23.49		1
	15	35	23.56	23.51	23.55		1
	27	0	23.59	23.51	23.54	0-2	1
	27	12	23.49	23.46	23.50		1
	27	23	23.53	23.48	23.51		1
16QAM	1	0	23.93	23.89	23.85	0-2	1
	1	25	23.68	23.82	24.04		1
	1	49	23.82	23.70	23.73		1
	25	0	22.53	22.65	22.70	0-3	2
	25	12	22.49	22.63	22.67		2
	25	25	22.48	22.60	22.63		2
	15	0	22.56	22.66	22.74	0-5	2
	15	17	22.47	22.61	22.69		2
	15	35	22.57	22.51	22.64		2
	27	0	22.47	22.71	22.70		2
	27	12	22.49	22.61	22.66		2
	27	23	22.50	22.59	22.68		2

8.2.5 LTE Band 5

Table 8-6
LTE Band 5 Conducted Power - 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	24.98	0	0
	1	25	**25.07**		0
	1	49	25.05		0
	25	0	24.19	0-1	1
	25	12	24.22		1
	25	25	**24.35**		1
	50	0	24.33		1
	15	0	24.12	0-1	1
	15	17	24.24		1
	15	35	24.25		1
	27	0	24.22	0-2	1
	27	12	24.24		1
	27	23	24.26		1
16QAM	1	0	23.89	0-2	1
	1	25	24.12		1
	1	49	23.88		1
	25	0	22.69	0-3	2
	25	12	22.71		2
	25	25	22.73		2
	15	0	22.62	0-5	2
	15	17	22.69		2
	15	35	22.70		2
	27	0	22.65		2
	27	12	22.69		2
	27	23	22.70		2

8.2.6 LTE Band 66

Table 8-7
LTE Band 66 Conducted Power - 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.75	**22.83**	22.60	0	0
	1	50	22.64	22.73	22.50		0
	1	99	22.68	22.66	22.54		0
	50	0	21.79	**21.85**	21.64	0-1	1
	50	25	21.70	21.78	21.68		1
	50	50	21.74	21.70	21.62		1
	100	0	21.81	21.79	21.82		1
	15	0	22.67	22.70	22.52	0-1	0
	15	42	22.62	22.59	22.57		0
	15	85	22.64	22.52	22.52		0
	27	0	21.73	21.85	21.75	0-2	1
	27	37	21.69	21.76	21.63		1
	27	73	21.79	21.60	21.58		1
16QAM	1	0	22.25	22.45	22.25	0-2	1
	1	50	22.18	22.25	22.20		1
	1	99	22.24	22.07	22.20		1
	15	0	22.10	22.16	22.05	0-3	1
	15	42	22.00	21.99	22.05		1
	15	85	22.13	21.94	22.00		1
	27	0	21.15	21.24	21.04	0-5	2
	27	37	21.15	21.09	21.05		2
	27	73	21.14	20.96	20.90		2

8.2.7 LTE Band 25

Table 8-8
LTE Band 25 Conducted Power - 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.27	23.18	23.17	0	0
	1	50	23.29	23.25	23.22		0
	1	99	23.36	23.27	**23.54**		0
	50	0	22.34	22.24	**22.60**	0-1	1
	50	25	22.37	22.32	22.44		1
	50	50	22.37	22.34	22.49		1
	100	0	22.59	22.58	22.55		1
	15	0	23.29	23.25	23.27	0-1	0
	15	42	23.30	23.31	23.33		0
	15	85	23.28	23.34	23.32		0
	27	0	22.29	22.21	22.32	0-2	1
	27	37	22.33	22.28	22.40		1
	27	73	22.33	22.31	22.36		1
16QAM	1	0	22.48	22.61	22.50	0-2	1
	1	50	22.40	22.66	22.43		1
	1	99	22.50	22.62	22.43		1
	15	0	22.44	22.30	22.42	0-3	1
	15	42	22.43	22.42	22.47		1
	15	85	22.45	22.44	22.46		1
	27	0	21.40	21.56	21.45	0-5	2
	27	37	21.41	21.56	21.43		2
	27	73	21.36	21.40	21.44		2

8.2.8 LTE Band 7

Table 8-9
LTE Band 7 Conducted Power - 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	**23.58**	22.90	23.08	0	0
	1	50	23.35	23.04	23.09		0
	1	99	23.08	23.26	23.40		0
	50	0	**22.56**	22.03	22.24	0-1	1
	50	25	22.24	22.17	22.40		1
	50	50	22.07	22.25	22.43		1
	100	0	22.42	22.32	22.55		1
	15	0	23.52	22.97	23.14	0-1	0
	15	42	23.23	23.14	23.29		0
	15	85	22.99	23.28	23.57		0
	27	0	22.44	21.92	22.11	0-2	1
	27	37	22.19	22.11	22.30		1
	27	73	21.93	22.22	22.61		1
16QAM	1	0	22.75	22.25	22.50	0-2	1
	1	50	22.65	22.35	22.64		1
	1	99	22.47	22.53	22.75		1
	15	0	22.44	21.97	22.17	0-3	1
	15	42	22.22	22.13	22.25		1
	15	85	22.00	22.23	22.42		1
	27	0	21.34	20.91	21.10	0-5	2
	27	37	21.16	21.09	21.32		2
	27	73	20.94	21.15	21.47		2

8.2.9 LTE Band 41

Table 8-10
LTE Band 41 Conducted Power - 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	23.47	23.06	23.25	23.42	**23.49**	0	0
	1	50	23.44	23.22	23.30	23.48	23.48		0
	1	99	23.22	23.33	23.34	23.47	23.48		0
	50	0	22.35	22.00	22.16	22.27	22.47	0-1	1
	50	25	22.24	22.10	22.19	22.29	22.47		1
	50	50	22.15	22.17	22.16	22.34	**22.50**		1
	100	0	22.33	22.10	22.18	22.32	22.48		1
	15	0	23.45	22.95	23.14	23.32	23.45	0-1	0
	15	42	23.26	23.11	23.19	23.31	23.58		0
	15	85	23.07	23.25	23.26	23.39	23.46		0
	27	0	22.47	22.00	22.16	22.29	22.57	0-2	1
	27	37	22.25	22.05	22.17	22.31	22.50		1
	27	73	22.03	22.17	22.21	22.35	22.49		1
16QAM	1	0	22.33	22.26	22.40	22.45	22.85	0-2	1
	1	50	22.47	22.37	22.48	22.40	22.75		1
	1	99	22.37	22.46	22.49	22.79	22.87		1
	15	0	22.46	21.99	22.20	22.37	22.60	0-3	1
	15	42	22.21	22.13	22.24	22.36	22.57		1
	15	85	22.05	22.19	22.28	22.42	22.56		1
	27	0	21.48	21.07	21.24	21.54	21.54	0-5	2
	27	37	21.19	21.19	21.33	21.51	21.49		2
	27	73	21.15	21.14	21.31	21.51	21.52		2

Figure 8-2
Power Measurement Setup

8.3 WLAN Conducted Powers

Table 8-11
2.4 GHz WLAN Maximum Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	17.91	15.90	15.90
2417	2		17.41	17.40
2437	6	17.89	17.32	17.25
2457	10		17.21	17.22
2462	11	17.87	15.40	15.38

Justification for test configurations for WLAN 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.

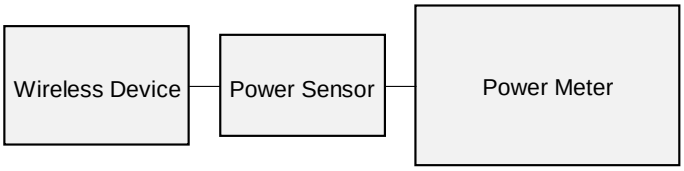

Figure 8-3
Power Measurement Setup

8.4 Bluetooth Conducted Powers

Table 8-12
Bluetooth Average RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	16.21	41.783
2441	GFSK	1.0	39	15.99	39.719
2480	GFSK	1.0	78	15.59	36.224

Note 1: Bluetooth was evaluated with a test mode with 100% transmission duty factor.

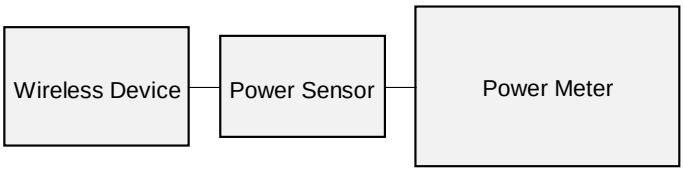

Figure 8-4
Power Measurement Setup

9 SYSTEM VERIFICATION

9.1 Tissue Verification

Table 9-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
06/14/2022	750 Head	21.4	680	0.889	42.947	0.888	42.305	0.11%	1.52%
			695	0.894	42.908	0.889	42.227	0.56%	1.61%
			700	0.896	42.898	0.889	42.201	0.79%	1.65%
			710	0.899	42.882	0.890	42.149	1.01%	1.74%
			725	0.904	42.852	0.891	42.071	1.46%	1.86%
			750	0.912	42.759	0.894	41.942	2.01%	1.95%
			770	0.918	42.671	0.895	41.838	2.57%	1.99%
			785	0.923	42.611	0.896	41.760	3.01%	2.04%
			800	0.929	42.577	0.897	41.682	3.57%	2.15%
08/03/2022	750 Head	19.4	680	0.847	40.265	0.888	42.305	-4.62%	-4.82%
			695	0.851	40.221	0.889	42.227	-4.27%	-4.75%
			700	0.853	40.215	0.889	42.201	-4.05%	-4.71%
			710	0.856	40.196	0.890	42.149	-3.82%	-4.63%
			725	0.861	40.181	0.891	42.071	-3.37%	-4.49%
			750	0.869	40.136	0.894	41.942	-2.80%	-4.31%
			770	0.877	40.086	0.895	41.838	-2.01%	-4.19%
			785	0.883	40.043	0.896	41.760	-1.45%	-4.11%
			800	0.889	40.004	0.897	41.682	-0.89%	-4.03%
08/11/2022	750 Head	23.5	680	0.859	43.341	0.888	42.305	-3.27%	2.45%
			695	0.864	43.307	0.889	42.227	-2.81%	2.56%
			700	0.865	43.298	0.889	42.201	-2.70%	2.60%
			710	0.869	43.274	0.890	42.149	-2.36%	2.67%
			725	0.875	43.223	0.891	42.071	-1.80%	2.74%
			750	0.885	43.143	0.894	41.942	-1.01%	2.86%
			770	0.892	43.096	0.895	41.838	-0.34%	3.01%
			785	0.896	43.062	0.896	41.760	0.00%	3.12%
			800	0.901	43.025	0.897	41.682	0.45%	3.22%
08/11/2022	750 Head	21.3	680	0.847	41.157	0.888	42.305	-4.62%	-2.71%
			695	0.851	41.108	0.889	42.227	-4.27%	-2.65%
			700	0.853	41.096	0.889	42.201	-4.05%	-2.62%
			710	0.856	41.079	0.890	42.149	-3.82%	-2.54%
			725	0.862	41.058	0.891	42.071	-3.25%	-2.41%
			750	0.871	40.997	0.894	41.942	-2.57%	-2.25%
			770	0.877	40.920	0.895	41.838	-2.01%	-2.19%
			785	0.882	40.880	0.896	41.760	-1.56%	-2.11%
			800	0.888	40.847	0.897	41.682	-1.00%	-2.00%
08/21/2022	750 Head	22.3	680	0.889	43.041	0.888	42.305	0.11%	1.74%
			695	0.894	42.990	0.889	42.227	0.56%	1.81%
			700	0.896	42.973	0.889	42.201	0.79%	1.83%
			710	0.899	42.938	0.890	42.149	1.01%	1.87%
			725	0.904	42.885	0.891	42.071	1.46%	1.93%
			750	0.913	42.796	0.894	41.942	2.13%	2.04%
			770	0.920	42.743	0.895	41.838	2.79%	2.16%
			785	0.925	42.702	0.896	41.760	3.24%	2.26%
			800	0.930	42.658	0.897	41.682	3.68%	2.34%
06/16/2022	835 Head	21.1	815	0.891	41.460	0.898	41.594	-0.78%	-0.32%
			820	0.895	41.394	0.899	41.578	-0.44%	-0.44%
			835	0.910	41.197	0.900	41.500	1.11%	-0.73%
			850	0.924	41.010	0.916	41.500	0.87%	-1.18%
08/01/2022	835 Head	20.9	815	0.907	40.133	0.898	41.594	1.00%	-3.51%
			820	0.909	40.120	0.899	41.578	1.11%	-3.51%
			835	0.914	40.070	0.900	41.500	1.56%	-3.45%
			850	0.920	40.020	0.916	41.500	0.44%	-3.57%
08/10/2022	835 Head	22.5	815	0.925	39.873	0.898	41.594	3.01%	-4.14%
			820	0.927	39.863	0.899	41.578	3.11%	-4.12%
			835	0.932	39.821	0.900	41.500	3.56%	-4.05%
			850	0.936	39.776	0.916	41.500	2.18%	-4.15%
08/13/2022	835 Head	20.5	815	0.894	41.869	0.898	41.594	-0.45%	0.66%
			820	0.896	41.855	0.899	41.578	-0.33%	0.67%
			835	0.901	41.813	0.900	41.500	0.11%	0.75%
			850	0.907	41.769	0.916	41.500	-0.98%	0.65%
06/08/2022	1750 Head	21.6	1710	1.293	38.636	1.348	40.142	-4.08%	-3.75%
			1720	1.302	38.588	1.354	40.126	-3.84%	-3.83%
			1745	1.326	38.468	1.368	40.087	-3.07%	-4.04%
			1750	1.331	38.446	1.371	40.079	-2.92%	-4.07%
			1770	1.350	38.381	1.383	40.047	-2.39%	-4.16%
			1790	1.368	38.305	1.394	40.016	-1.87%	-4.28%
06/10/2022	1750 Head	21.6	1710	1.294	38.577	1.348	40.142	-4.01%	-3.90%
			1720	1.303	38.540	1.354	40.126	-3.77%	-3.95%
			1745	1.325	38.441	1.368	40.087	-3.14%	-4.11%
			1750	1.330	38.422	1.371	40.079	-2.99%	-4.13%
			1770	1.349	38.347	1.383	40.047	-2.46%	-4.25%
			1790	1.367	38.269	1.394	40.016	-1.94%	-4.37%

Table 9-2
Measured Head Tissue Properties (Cont.)

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
06/10/2022	1900 Head	20.8	1850	1.419	39.915	1.400	40.000	1.36%	-0.21%
			1860	1.425	39.897	1.400	40.000	1.79%	-0.26%
			1880	1.438	39.863	1.400	40.000	2.71%	-0.34%
			1900	1.450	39.839	1.400	40.000	3.57%	-0.40%
			1905	1.453	39.833	1.400	40.000	3.79%	-0.42%
			1910	1.456	39.827	1.400	40.000	4.00%	-0.43%
06/12/2022	1900 Head	21.3	1850	1.401	39.084	1.400	40.000	0.07%	-2.29%
			1860	1.406	39.068	1.400	40.000	0.43%	-2.33%
			1880	1.418	39.040	1.400	40.000	1.29%	-2.40%
			1900	1.429	39.018	1.400	40.000	2.07%	-2.46%
			1905	1.432	39.012	1.400	40.000	2.29%	-2.47%
			1910	1.435	39.005	1.400	40.000	2.50%	-2.49%
06/15/2022	1900 Head	20.9	1850	1.413	40.029	1.400	40.000	0.93%	0.07%
			1860	1.419	40.015	1.400	40.000	1.36%	0.04%
			1880	1.431	39.983	1.400	40.000	2.21%	-0.04%
			1900	1.442	39.956	1.400	40.000	3.00%	-0.11%
			1905	1.445	39.950	1.400	40.000	3.21%	-0.12%
			1910	1.448	39.943	1.400	40.000	3.43%	-0.14%
06/06/2022	2450 Head	21.1	2300	1.716	40.452	1.670	39.500	2.75%	2.41%
			2310	1.724	40.434	1.679	39.480	2.68%	2.42%
			2320	1.732	40.414	1.687	39.460	2.67%	2.42%
			2400	1.793	40.292	1.756	39.289	2.11%	2.55%
			2450	1.833	40.222	1.800	39.200	1.83%	2.61%
			2480	1.855	40.167	1.833	39.162	1.20%	2.57%
			2500	1.871	40.132	1.855	39.136	0.86%	2.54%
			2510	1.879	40.118	1.866	39.123	0.70%	2.54%
			2535	1.899	40.086	1.893	39.092	0.32%	2.54%
			2550	1.911	40.064	1.909	39.073	0.10%	2.54%
			2560	1.919	40.045	1.920	39.060	-0.05%	2.52%
			2600	1.951	39.971	1.964	39.009	-0.66%	2.47%
			2650	1.992	39.896	2.018	38.945	-1.29%	2.44%
			2680	2.015	39.847	2.051	38.907	-1.76%	2.42%
			2700	2.031	39.815	2.073	38.882	-2.03%	2.40%
06/08/2022	2450 Head	21.9	2300	1.736	40.393	1.670	39.500	3.95%	2.26%
			2310	1.744	40.385	1.679	39.480	3.87%	2.29%
			2320	1.751	40.372	1.687	39.460	3.79%	2.31%
			2400	1.810	40.244	1.756	39.289	3.08%	2.43%
			2450	1.848	40.168	1.800	39.200	2.67%	2.47%
			2480	1.871	40.117	1.833	39.162	2.07%	2.44%
			2500	1.887	40.086	1.855	39.136	1.73%	2.43%
			2510	1.895	40.072	1.866	39.123	1.55%	2.43%
			2535	1.914	40.038	1.893	39.092	1.11%	2.42%
			2550	1.926	40.024	1.909	39.073	0.89%	2.43%
			2560	1.934	40.010	1.920	39.060	0.73%	2.43%
			2600	1.970	39.930	1.964	39.009	0.31%	2.36%
			2650	2.014	39.845	2.018	38.945	-0.20%	2.31%
			2680	2.039	39.794	2.051	38.907	-0.59%	2.28%
			2700	2.056	39.759	2.073	38.882	-0.82%	2.26%

Table 9-3
Measured Head Tissue Properties (Cont.)

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
08/17/2022	2450 Head	19.3	2300	1.727	38.445	1.670	39.500	3.41%	-2.67%
			2310	1.734	38.429	1.679	39.480	3.28%	-2.66%
			2320	1.741	38.411	1.687	39.460	3.20%	-2.66%
			2400	1.806	38.303	1.756	39.289	2.85%	-2.51%
			2450	1.847	38.203	1.800	39.200	2.61%	-2.54%
			2480	1.869	38.153	1.833	39.162	1.96%	-2.58%
			2500	1.884	38.115	1.855	39.136	1.56%	-2.61%
			2510	1.892	38.098	1.866	39.123	1.39%	-2.62%
			2535	1.911	38.055	1.893	39.092	0.95%	-2.65%
			2550	1.924	38.036	1.909	39.073	0.79%	-2.65%
			2560	1.932	38.020	1.920	39.060	0.63%	-2.66%
			2600	1.965	37.951	1.964	39.009	0.05%	-2.71%
			2650	2.006	37.868	2.018	38.945	-0.59%	-2.77%
			2680	2.032	37.815	2.051	38.907	-0.93%	-2.81%
			2700	2.049	37.776	2.073	38.882	-1.16%	-2.84%
08/23/2022	2450 Head	22.0	2300	1.719	37.904	1.670	39.500	2.93%	-4.04%
			2310	1.727	37.891	1.679	39.480	2.86%	-4.02%
			2320	1.734	37.877	1.687	39.460	2.79%	-4.01%
			2400	1.792	37.775	1.756	39.289	2.05%	-3.85%
			2450	1.831	37.713	1.800	39.200	1.72%	-3.79%
			2480	1.850	37.658	1.833	39.162	0.93%	-3.84%
			2500	1.866	37.613	1.855	39.136	0.59%	-3.89%
			2510	1.875	37.597	1.866	39.123	0.48%	-3.90%
			2535	1.894	37.570	1.893	39.092	0.05%	-3.89%
			2550	1.904	37.550	1.909	39.073	-0.26%	-3.90%
			2560	1.911	37.531	1.920	39.060	-0.47%	-3.91%
			2600	1.943	37.447	1.964	39.009	-1.07%	-4.00%
			2650	1.980	37.376	2.018	38.945	-1.88%	-4.03%
			2680	2.002	37.307	2.051	38.907	-2.39%	-4.11%
			2700	2.019	37.266	2.073	38.882	-2.60%	-4.16%

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 Publication 865664 D01v01r04). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

9.2 Test System Verification

Prior to SAR assessment, the system is verified to ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix D.

Table 9-4
System Verification Results – 1g

System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR1g (W/kg)	1W Target SAR1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation1g (%)
AM13	750	HEAD	06/14/2022	21.9	20.7	0.20	1057	7360	1.570	8.51	7.850	-7.76%
AM12	750	HEAD	08/03/2022	21.4	19.6	0.20	1097	7499	1.680	8.21	8.400	2.31%
AM12	835	HEAD	08/01/2022	21.4	20.9	0.20	4d108	7499	1.970	9.70	9.850	1.55%
AM5	850	HEAD	08/13/2022	20.1	19.7	0.20	1009	7490	1.910	9.80	9.550	-2.55%
AM1	1750	HEAD	06/08/2022	21.6	21.9	0.10	1083	7639	3.640	36.50	36.400	-0.27%
AM6	1900	HEAD	06/10/2022	21.7	19.5	0.10	5d030	7532	4.210	39.80	42.100	5.78%
AM10	1900	HEAD	06/15/2022	21.9	20.0	0.10	5d181	7308	4.150	40.10	41.500	3.49%
AM3	2450	HEAD	06/06/2022	22.7	23.2	0.10	921	7427	5.310	54.20	53.100	-2.03%
AM10	2600	HEAD	06/08/2022	23.8	21.6	0.10	1042	7308	5.430	55.80	54.300	-2.69%
AM10	2600	HEAD	08/23/2022	21.4	20.3	0.10	1042	7308	5.260	55.80	52.600	-5.73%

Table 9-5
System Verification Results – 10g

System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR10g (W/kg)	1W Target SAR10g (W/kg)	1W Normalized SAR10g (W/kg)	Deviation10g (%)
AM6	750	HEAD	08/11/2022	21.5	21.7	0.20	1097	7532	1.120	5.34	5.600	4.87%
AM8	750	HEAD	08/11/2022	21.5	20.3	0.20	1057	7546	1.120	5.58	5.600	0.36%
AM6	750	HEAD	08/21/2022	19.2	20.8	0.20	1097	7532	1.100	5.34	5.500	3.00%
AM7	835	HEAD	06/16/2022	22.3	20.3	0.20	4d040	7416	1.340	6.38	6.700	5.02%
AM12	835	HEAD	08/01/2022	21.4	20.9	0.20	4d108	7499	1.280	6.33	6.400	1.11%
AM12	835	HEAD	08/10/2022	24.2	21.2	0.20	4d040	7499	1.340	6.38	6.700	5.02%
AM1	1750	HEAD	06/08/2022	21.6	21.9	0.10	1083	7639	1.920	19.20	19.200	0.00%
AM1	1750	HEAD	06/10/2022	21.7	21.6	0.10	1083	7639	1.930	19.20	19.300	0.52%
AM6	1900	HEAD	06/12/2022	20.5	21.3	0.10	5d030	7532	2.190	20.40	21.900	7.35%
AM10	1900	HEAD	06/15/2022	21.9	20.0	0.10	5d181	7308	2.140	20.80	21.400	2.88%
AM3	2450	HEAD	06/06/2022	22.7	23.2	0.10	921	7427	2.430	25.50	24.300	-4.71%
AM7	2450	HEAD	08/17/2022	19.9	18.2	0.10	750	7416	2.600	24.50	26.000	6.12%
AM10	2600	HEAD	06/08/2022	23.8	21.6	0.10	1042	7308	2.420	24.90	24.200	-2.81%

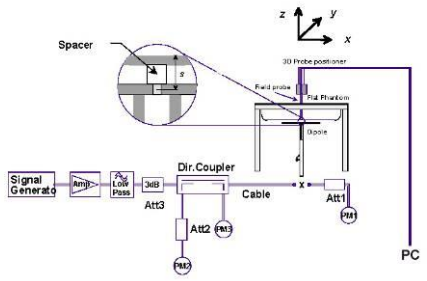

Figure 9-1
System Verification Setup Diagram

Figure 9-2
System Verification Setup Photo

10 SAR DATA SUMMARY

10.1 Standalone Head SAR Data

Table 10-1
UMTS 850 MHz Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Spacing	Housing Type	Wristband Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.00	24.11	-0.03	front	10 mm	Aluminum	Sport	V3RD7W9R5Q	1:1	0.001	1.227	0.001	A1
836.60	4183	UMTS 850	RMC	25.00	24.11	-0.01	front	10 mm	Aluminum	Metal Links	V3RD7W9R5Q	1:1	0.000	1.227	0.000	
836.60	4183	UMTS 850	RMC	25.00	24.11	0.04	front	10 mm	Aluminum	Metal Loop	V3RD7W9R5Q	1:1	0.001	1.227	0.001	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 10-2
UMTS 1750 MHz Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Spacing	Housing Type	Wristband Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1712.40	1312	UMTS 1750	RMC	24.00	23.03	-0.05	front	10 mm	Aluminum	Sport	LKP9Y0KMWF	1:1	0.136	1.250	0.170	
1712.40	1312	UMTS 1750	RMC	24.00	23.03	0.03	front	10 mm	Aluminum	Metal Links	LKP9Y0KMWF	1:1	0.196	1.250	0.245	
1712.40	1312	UMTS 1750	RMC	24.00	23.03	-0.02	front	10 mm	Aluminum	Metal Loop	LKP9Y0KMWF	1:1	0.248	1.250	0.310	A2
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 10-3
UMTS 1900 MHz Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Spacing	Housing Type	Wristband Type	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1907.60	9538	UMTS 1900	RMC	24.00	23.05	0.04	front	10 mm	Aluminum	Sport	N6VFR2YJN0	1:1	0.234	1.245	0.291	
1907.60	9538	UMTS 1900	RMC	24.00	23.05	-0.06	front	10 mm	Aluminum	Metal Links	N6VFR2YJN0	1:1	0.191	1.245	0.238	
1907.60	9538	UMTS 1900	RMC	24.00	23.05	0.06	front	10 mm	Aluminum	Metal Loop	N6VFR2YJN0	1:1	0.392	1.245	0.488	A3
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram									

Table 10-4
LTE Band 12 Head SAR

MEASUREMENT RESULTS																				
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	Sport	25.50	24.90	0.05	0	front	10 mm	Aluminum	QPSK	1	0	JCP99YP23C	1:1	0.002	1.148	0.002	
707.50	23095	Mid	LTE Band 12	10	Sport	24.50	23.89	0.06	1	front	10 mm	Aluminum	QPSK	25	0	JCP99YP23C	1:1	0.001	1.151	0.001	
707.50	23095	Mid	LTE Band 12	10	Metal Links	25.50	24.90	-0.14	0	front	10 mm	Aluminum	QPSK	1	0	JCP99YP23C	1:1	0.003	1.148	0.003	A4
707.50	23095	Mid	LTE Band 12	10	Metal Links	24.50	23.89	0.01	1	front	10 mm	Aluminum	QPSK	25	0	JCP99YP23C	1:1	0.002	1.151	0.002	
707.50	23095	Mid	LTE Band 12	10	Metal Loop	25.50	24.90	0.06	0	front	10 mm	Aluminum	QPSK	1	0	JCP99YP23C	1:1	0.002	1.148	0.002	
707.50	23095	Mid	LTE Band 12	10	Metal Loop	24.50	23.89	0.02	1	front	10 mm	Aluminum	QPSK	25	0	JCP99YP23C	1:1	0.001	1.151	0.001	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 10-5
LTE Band 13 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	Sport	25.50	24.65	0.05	0	front	10 mm	Aluminum	QPSK	1	0	YF7KGXDHXQ	1:1	0.000	1.216	0.000	
782.00	23230	Mid	LTE Band 13	10	Sport	24.50	23.85	0.20	1	front	10 mm	Aluminum	QPSK	25	12	YF7KGXDHXQ	1:1	0.002	1.161	0.002	
782.00	23230	Mid	LTE Band 13	10	Metal Links	25.50	24.65	0.05	0	front	10 mm	Aluminum	QPSK	1	0	YF7KGXDHXQ	1:1	0.000	1.216	0.000	
782.00	23230	Mid	LTE Band 13	10	Metal Links	24.50	23.85	0.07	1	front	10 mm	Aluminum	QPSK	25	12	YF7KGXDHXQ	1:1	0.000	1.161	0.000	
782.00	23230	Mid	LTE Band 13	10	Metal Loop	25.50	24.65	0.05	0	front	10 mm	Aluminum	QPSK	1	0	YF7KGXDHXQ	1:1	0.002	1.216	0.002	A5
782.00	23230	Mid	LTE Band 13	10	Metal Loop	24.50	23.85	-0.18	1	front	10 mm	Aluminum	QPSK	25	12	YF7KGXDHXQ	1:1	0.000	1.161	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 10-6
LTE Band 14 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
793.00	23330	Mid	LTE Band 14	10	Sport	25.50	24.56	0.06	0	front	10 mm	Aluminum	QPSK	1	25	Q0HP6MY59D	1:1	0.001	1.242	0.001	A6
793.00	23330	Mid	LTE Band 14	10	Sport	24.50	23.57	0.20	1	front	10 mm	Aluminum	QPSK	25	0	Q0HP6MY59D	1:1	0.000	1.239	0.000	
793.00	23330	Mid	LTE Band 14	10	Metal Links	25.50	24.56	0.20	0	front	10 mm	Aluminum	QPSK	1	25	Q0HP6MY59D	1:1	0.000	1.242	0.000	
793.00	23330	Mid	LTE Band 14	10	Metal Links	24.50	23.57	0.05	1	front	10 mm	Aluminum	QPSK	25	0	Q0HP6MY59D	1:1	0.000	1.239	0.000	
793.00	23330	Mid	LTE Band 14	10	Metal Loop	25.50	24.56	0.06	0	front	10 mm	Aluminum	QPSK	1	25	Q0HP6MY59D	1:1	0.000	1.242	0.000	
793.00	23330	Mid	LTE Band 14	10	Metal Loop	24.50	23.57	0.04	1	front	10 mm	Aluminum	QPSK	25	0	Q0HP6MY59D	1:1	0.000	1.239	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 10-7
LTE Band 26 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Sport	25.50	24.67	0.04	0	front	10 mm	Aluminum	QPSK	1	0	TXK2C7W3K5	1:1	0.001	1.211	0.001	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Sport	24.50	23.57	0.20	1	front	10 mm	Aluminum	QPSK	25	0	TXK2C7W3K5	1:1	0.002	1.239	0.002	A7
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Links	25.50	24.67	-0.07	0	front	10 mm	Aluminum	QPSK	1	0	TXK2C7W3K5	1:1	0.001	1.211	0.001	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Links	24.50	23.57	0.20	1	front	10 mm	Aluminum	QPSK	25	0	TXK2C7W3K5	1:1	0.000	1.239	0.000	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Loop	25.50	24.67	0.09	0	front	10 mm	Aluminum	QPSK	1	0	TXK2C7W3K5	1:1	0.000	1.211	0.000	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Loop	24.50	23.57	0.01	1	front	10 mm	Aluminum	QPSK	25	0	TXK2C7W3K5	1:1	0.000	1.239	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 10-8
LTE Band 5 (Cell) Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Sport	25.50	25.07	-0.01	0	front	10 mm	Aluminum	QPSK	1	25	N6VFR2YJN0	1:1	0.002	1.104	0.002	A8
836.50	20525	Mid	LTE Band 5 (Cell)	10	Sport	24.50	24.35	0.05	1	front	10 mm	Aluminum	QPSK	25	25	N6VFR2YJN0	1:1	0.001	1.035	0.001	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Links	25.50	25.07	0.08	0	front	10 mm	Aluminum	QPSK	1	25	N6VFR2YJN0	1:1	0.001	1.104	0.001	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Links	24.50	24.35	0.20	1	front	10 mm	Aluminum	QPSK	25	25	N6VFR2YJN0	1:1	0.000	1.035	0.000	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Loop	25.50	25.07	0.20	0	front	10 mm	Aluminum	QPSK	1	25	N6VFR2YJN0	1:1	0.000	1.104	0.000	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Loop	24.50	24.35	0.07	1	front	10 mm	Aluminum	QPSK	25	25	N6VFR2YJN0	1:1	0.000	1.035	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram										

Table 10-9
LTE Band 66 (AWS) Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Sport	24.50	22.83	0.01	0	front	10 mm	Aluminum	QPSK	1	0	YF7KGXDHXQ	1:1	0.115	1.469	0.169	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Sport	23.50	21.85	-0.01	1	front	10 mm	Aluminum	QPSK	50	0	YF7KGXDHXQ	1:1	0.085	1.462	0.124	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Links	24.50	22.83	0.04	0	front	10 mm	Aluminum	QPSK	1	0	YF7KGXDHXQ	1:1	0.166	1.469	0.244	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Links	23.50	21.85	-0.09	1	front	10 mm	Aluminum	QPSK	50	0	YF7KGXDHXQ	1:1	0.144	1.462	0.211	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Loop	24.50	22.83	-0.11	0	front	10 mm	Aluminum	QPSK	1	0	YF7KGXDHXQ	1:1	0.197	1.469	0.289	A9
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Loop	23.50	21.85	-0.03	1	front	10 mm	Aluminum	QPSK	50	0	YF7KGXDHXQ	1:1	0.157	1.462	0.230	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 10-10
LTE Band 25 (PCS) Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
1905.00	26590	High	LTE Band 25 (PCS)	20	Sport	24.50	23.54	-0.02	0	front	10 mm	Aluminum	QPSK	1	99	N6VFR2YJN0	1:1	0.269	1.247	0.335	
1905.00	26590	High	LTE Band 25 (PCS)	20	Sport	23.50	22.60	-0.08	1	front	10 mm	Aluminum	QPSK	50	0	N6VFR2YJN0	1:1	0.196	1.230	0.241	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Links	24.50	23.54	-0.01	0	front	10 mm	Aluminum	QPSK	1	99	N6VFR2YJN0	1:1	0.347	1.247	0.433	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Links	23.50	22.60	0.05	1	front	10 mm	Aluminum	QPSK	50	0	N6VFR2YJN0	1:1	0.223	1.230	0.274	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Loop	24.50	23.54	0.02	0	front	10 mm	Aluminum	QPSK	1	99	N6VFR2YJN0	1:1	0.383	1.247	0.478	A10
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Loop	23.50	22.60	0.05	1	front	10 mm	Aluminum	QPSK	50	0	N6VFR2YJN0	1:1	0.375	1.230	0.461	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 10-11
LTE Band 7 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2510.00	20850	Low	LTE Band 7	20	Sport	24.00	23.58	-0.04	0	front	10 mm	Aluminum	QPSK	1	0	V3RD7W9R5Q	1:1	0.480	1.102	0.529	
2535.00	21100	Mid	LTE Band 7	20	Sport	24.00	23.26	0.06	0	front	10 mm	Aluminum	QPSK	1	99	V3RD7W9R5Q	1:1	0.469	1.186	0.556	
2560.00	21350	High	LTE Band 7	20	Sport	24.00	23.40	0.20	0	front	10 mm	Aluminum	QPSK	1	99	V3RD7W9R5Q	1:1	0.666	1.148	**0.765**	A11
2510.00	20850	Low	LTE Band 7	20	Sport	23.00	22.56	0.04	1	front	10 mm	Aluminum	QPSK	50	0	V3RD7W9R5Q	1:1	0.287	1.107	0.318	
2510.00	20850	Low	LTE Band 7	20	Metal Links	24.00	23.58	0.07	0	front	10 mm	Aluminum	QPSK	1	0	V3RD7W9R5Q	1:1	0.320	1.102	0.353	
2510.00	20850	Low	LTE Band 7	20	Metal Links	23.00	22.56	0.05	1	front	10 mm	Aluminum	QPSK	50	0	V3RD7W9R5Q	1:1	0.272	1.107	0.301	
2510.00	20850	Low	LTE Band 7	20	Metal Loop	24.00	23.58	-0.01	0	front	10 mm	Aluminum	QPSK	1	0	V3RD7W9R5Q	1:1	0.305	1.102	0.336	
2510.00	20850	Low	LTE Band 7	20	Metal Loop	23.00	22.56	0.07	1	front	10 mm	Aluminum	QPSK	50	0	V3RD7W9R5Q	1:1	0.239	1.107	0.265	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 10-12
LTE Band 41 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Spacing	Housing Type	Modulation	RB Size	RB Offset	Device Serial Number	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2680.00	41490	High	LTE Band 41	20	Sport	24.00	23.49	0.00	0	front	10 mm	Aluminum	QPSK	1	0	LKP9Y0KMWF	1:1.58	0.183	1.125	0.206	
2680.00	41490	High	LTE Band 41	20	Sport	23.00	22.50	-0.03	1	front	10 mm	Aluminum	QPSK	50	50	LKP9Y0KMWF	1:1.58	0.149	1.122	0.167	
2680.00	41490	High	LTE Band 41	20	Metal Links	24.00	23.49	-0.06	0	front	10 mm	Aluminum	QPSK	1	0	LKP9Y0KMWF	1:1.58	0.182	1.125	0.205	
2680.00	41490	High	LTE Band 41	20	Metal Links	23.00	22.50	-0.04	1	front	10 mm	Aluminum	QPSK	50	50	LKP9Y0KMWF	1:1.58	0.132	1.122	0.148	
2680.00	41490	High	LTE Band 41	20	Metal Loop	24.00	23.49	-0.08	0	front	10 mm	Aluminum	QPSK	1	0	LKP9Y0KMWF	1:1.58	0.188	1.125	0.212	A12
2680.00	41490	High	LTE Band 41	20	Metal Loop	23.00	22.50	0.01	1	front	10 mm	Aluminum	QPSK	50	50	LKP9Y0KMWF	1:1.58	0.156	1.122	0.175	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population											Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 10-13
2.4 GHz WLAN Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Spacing	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.														(W/kg)			(W/kg)	
2412	1	802.11b	DSSS	22	19.00	17.91	-0.03	front	10 mm	Aluminum	Sport	YF7KGXDHXQ	1	99.7	0.152	1.285	1.003	**0.196**	A13
2412	1	802.11b	DSSS	22	19.00	17.91	0.06	front	10 mm	Aluminum	Metal Links	YF7KGXDHXQ	1	99.7	0.104	1.285	1.003	0.134	
2412	1	802.11b	DSSS	22	19.00	17.91	0.03	front	10 mm	Aluminum	Metal Loop	YF7KGXDHXQ	1	99.7	0.101	1.285	1.003	0.130	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**Head** **1.6 W/kg (mW/g)** averaged over 1 gram											

Table 10-14
Bluetooth Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Spacing	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	
2402.00	0	Bluetooth	FHSS	17.50	16.21	0.00	front	10 mm	Aluminum	Sport	VD4DQ5TQV3	1	100	0.168	1.346	1.000	0.226	
2402.00	0	Bluetooth	FHSS	17.50	16.21	-0.07	front	10 mm	Aluminum	Metal Links	VD4DQ5TQV3	1	100	0.126	1.346	1.000	0.170	
2402.00	0	Bluetooth	FHSS	17.50	16.21	-0.01	front	10 mm	Aluminum	Metal Loop	VD4DQ5TQV3	1	100	0.169	1.346	1.000	**0.227**	A14
ANSI / IEEE C95.1 1992 - SAFETY LIMIT **Spatial Peak** **Uncontrolled Exposure/General Population**								**Head** **1.6 W/kg (mW/g)** averaged over 1 gram											

10.2 Standalone Extremity SAR Data

Table 10-15
UMTS 850 MHz Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing Type	Wristband Type	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
836.60	4183	UMTS 850	RMC	25.00	24.11	0.01	0 mm	Aluminum	Sport	N6VFR2YJN0	1:1	back	0.257	1.227	0.315	
836.60	4183	UMTS 850	RMC	25.00	24.11	-0.03	0 mm	Aluminum	Metal Links	N6VFR2YJN0	1:1	back	0.273	1.227	0.335	
836.60	4183	UMTS 850	RMC	25.00	24.11	0.17	0 mm	Aluminum	Metal Loop	N6VFR2YJN0	1:1	back	0.282	1.227	0.346	A15
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

Table 10-16
UMTS 1750 MHz Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing Type	Wristband Type	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1712.40	1312	UMTS 1750	RMC	24.00	23.03	-0.07	0 mm	Aluminum	Sport	N6VFR2YJN0	1:1	back	0.040	1.250	0.050	
1712.40	1312	UMTS 1750	RMC	24.00	23.03	-0.03	0 mm	Aluminum	Metal Links	N6VFR2YJN0	1:1	back	0.026	1.250	0.033	
1712.40	1312	UMTS 1750	RMC	24.00	23.03	-0.14	0 mm	Aluminum	Metal Loop	N6VFR2YJN0	1:1	back	0.048	1.250	0.060	A16
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

Table 10-17
UMTS 1900 MHz Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing Type	Wristband Type	Device Serial Number	Duty Cycle	Side	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1907.60	9538	UMTS 1900	RMC	24.00	23.05	-0.10	0 mm	Aluminum	Sport	N6VFR2YJN0	1:1	back	0.108	1.245	0.134	A17
1907.60	9538	UMTS 1900	RMC	24.00	23.05	-0.17	0 mm	Aluminum	Metal Links	N6VFR2YJN0	1:1	back	0.035	1.245	0.044	
1907.60	9538	UMTS 1900	RMC	24.00	23.05	-0.05	0 mm	Aluminum	Metal Loop	N6VFR2YJN0	1:1	back	0.043	1.245	0.054	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams									

Table 10-18
LTE Band 12 Extremity Body SAR

MEASUREMENT RESULTS																					
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	LTE Band 12	10	Sport	25.5	24.90	-0.16	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1	0.380	1.148	**0.436**	A18
707.50	23095	Mid	LTE Band 12	10	Sport	24.5	23.89	-0.06	1	Aluminum	LKP9Y0KMWF	QPSK	25	0	0 mm	back	1:1	0.244	1.151	0.281	
707.50	23095	Mid	LTE Band 12	10	Metal Links	25.5	24.90	-0.02	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1	0.365	1.148	0.419	
707.50	23095	Mid	LTE Band 12	10	Metal Links	24.5	23.89	-0.09	1	Aluminum	LKP9Y0KMWF	QPSK	25	0	0 mm	back	1:1	0.205	1.151	0.236	
707.50	23095	Mid	LTE Band 12	10	Metal Loop	25.5	24.90	0.06	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1	0.304	1.148	0.349	
707.50	23095	Mid	LTE Band 12	10	Metal Loop	24.5	23.89	0.08	1	Aluminum	LKP9Y0KMWF	QPSK	25	0	0 mm	back	1:1	0.237	1.151	0.273	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4.0 W/kg (mW/g) averaged over 10 grams														

Table 12-19
LTE Band 13 Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	LTE Band 13	10	Sport	25.5	24.65	0.09	0	Aluminum	V3RD7W9R5Q	QPSK	1	0	0 mm	back	1:1	0.240	1.216	0.292	
782.00	23230	Mid	LTE Band 13	10	Sport	24.5	23.85	0.02	1	Aluminum	V3RD7W9R5Q	QPSK	25	12	0 mm	back	1:1	0.194	1.161	0.225	
782.00	23230	Mid	LTE Band 13	10	Metal Links	25.5	24.65	0.02	0	Aluminum	V3RD7W9R5Q	QPSK	1	0	0 mm	back	1:1	0.326	1.216	0.396	
782.00	23230	Mid	LTE Band 13	10	Metal Links	24.5	23.85	0.03	1	Aluminum	V3RD7W9R5Q	QPSK	25	12	0 mm	back	1:1	0.255	1.161	0.296	
782.00	23230	Mid	LTE Band 13	10	Metal Loop	25.5	24.65	0.09	0	Aluminum	V3RD7W9R5Q	QPSK	1	0	0 mm	back	1:1	0.333	1.216	0.405	A19
782.00	23230	Mid	LTE Band 13	10	Metal Loop	24.5	23.85	-0.07	1	Aluminum	V3RD7W9R5Q	QPSK	25	12	0 mm	back	1:1	0.211	1.161	0.245	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

Table 12-20
LTE Band 14 Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
793.00	23330	Mid	LTE Band 14	10	Sport	25.5	24.56	-0.18	0	Aluminum	VD4DQ5TQV3	QPSK	1	25	0 mm	back	1:1	0.294	1.242	0.365	
793.00	23330	Mid	LTE Band 14	10	Sport	24.5	23.57	0.05	1	Aluminum	VD4DQ5TQV3	QPSK	25	0	0 mm	back	1:1	0.188	1.239	0.233	
793.00	23330	Mid	LTE Band 14	10	Metal Links	25.5	24.56	-0.06	0	Aluminum	VD4DQ5TQV3	QPSK	1	25	0 mm	back	1:1	0.305	1.242	0.379	A20
793.00	23330	Mid	LTE Band 14	10	Metal Links	24.5	23.57	-0.10	1	Aluminum	VD4DQ5TQV3	QPSK	25	0	0 mm	back	1:1	0.188	1.239	0.233	
793.00	23330	Mid	LTE Band 14	10	Metal Loop	25.5	24.56	-0.18	0	Aluminum	VD4DQ5TQV3	QPSK	1	25	0 mm	back	1:1	0.285	1.242	0.354	
793.00	23330	Mid	LTE Band 14	10	Metal Loop	24.5	23.57	-0.13	1	Aluminum	VD4DQ5TQV3	QPSK	25	0	0 mm	back	1:1	0.206	1.239	0.255	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

Table 12-21
LTE Band 26 Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Sport	25.5	24.67	-0.14	0	Aluminum	JCP99YP23C	QPSK	1	0	0 mm	back	1:1	0.217	1.211	0.263	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Sport	24.5	23.57	-0.19	1	Aluminum	JCP99YP23C	QPSK	25	0	0 mm	back	1:1	0.189	1.239	0.234	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Links	25.5	24.67	-0.03	0	Aluminum	JCP99YP23C	QPSK	1	0	0 mm	back	1:1	0.245	1.211	0.297	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Links	24.5	23.57	-0.07	1	Aluminum	JCP99YP23C	QPSK	25	0	0 mm	back	1:1	0.195	1.239	0.242	
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Loop	25.5	24.67	-0.09	0	Aluminum	JCP99YP23C	QPSK	1	0	0 mm	back	1:1	0.261	1.211	0.316	A21
831.50	26865	Mid	LTE Band 26 (Cell)	10	Metal Loop	24.5	23.57	0.00	1	Aluminum	JCP99YP23C	QPSK	25	0	0 mm	back	1:1	0.188	1.239	0.233	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

Table 12-22
LTE Band 5 (Cell) Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling Factor	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Sport	25.5	25.07	-0.05	0	Aluminum	V3RD7W9R5Q	QPSK	1	25	0 mm	back	1:1	0.256	1.104	0.283	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Sport	24.5	24.35	0.01	1	Aluminum	V3RD7W9R5Q	QPSK	25	25	0 mm	back	1:1	0.217	1.035	0.225	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Links	25.5	25.07	0.02	0	Aluminum	V3RD7W9R5Q	QPSK	1	25	0 mm	back	1:1	0.391	1.104	0.432	A22
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Links	24.5	24.35	0.04	1	Aluminum	V3RD7W9R5Q	QPSK	25	25	0 mm	back	1:1	0.309	1.035	0.320	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Loop	25.5	25.07	-0.18	0	Aluminum	V3RD7W9R5Q	QPSK	1	25	0 mm	back	1:1	0.305	1.104	0.337	
836.50	20525	Mid	LTE Band 5 (Cell)	10	Metal Loop	24.5	24.35	0.00	1	Aluminum	V3RD7W9R5Q	QPSK	25	25	0 mm	back	1:1	0.239	1.035	0.247	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

Table 12-23
LTE Band 66 (AWS) Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Sport	24.5	22.83	-0.01	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1	0.028	1.469	0.041	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Sport	23.5	21.85	0.04	1	Aluminum	LKP9Y0KMWF	QPSK	50	0	0 mm	back	1:1	0.024	1.462	0.035	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Links	24.5	22.83	-0.12	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1	0.024	1.469	0.035	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Links	23.5	21.85	0.06	1	Aluminum	LKP9Y0KMWF	QPSK	50	0	0 mm	back	1:1	0.020	1.462	0.029	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Loop	24.5	22.83	0.08	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1	0.047	1.469	0.069	A23
1745.00	132322	Mid	LTE Band 66 (AWS)	20	Metal Loop	23.5	21.85	0.14	1	Aluminum	LKP9Y0KMWF	QPSK	50	0	0 mm	back	1:1	0.041	1.462	0.060	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

Table 12-24
LTE Band 25 (PCS) Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
1905.00	26590	High	LTE Band 25 (PCS)	20	Sport	24.5	23.54	0.03	0	Aluminum	N6VFR2YJN0	QPSK	1	99	0 mm	back	1:1	0.104	1.247	0.130	A24
1905.00	26590	High	LTE Band 25 (PCS)	20	Sport	23.5	22.60	-0.08	1	Aluminum	N6VFR2YJN0	QPSK	50	0	0 mm	back	1:1	0.077	1.230	0.095	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Links	24.5	23.54	-0.19	0	Aluminum	N6VFR2YJN0	QPSK	1	99	0 mm	back	1:1	0.052	1.247	0.065	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Links	23.5	22.60	-0.20	1	Aluminum	N6VFR2YJN0	QPSK	50	0	0 mm	back	1:1	0.038	1.230	0.047	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Loop	24.5	23.54	-0.18	0	Aluminum	N6VFR2YJN0	QPSK	1	99	0 mm	back	1:1	0.090	1.247	0.112	
1905.00	26590	High	LTE Band 25 (PCS)	20	Metal Loop	23.5	22.60	-0.11	1	Aluminum	N6VFR2YJN0	QPSK	50	0	0 mm	back	1:1	0.075	1.230	0.092	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

Table 12-25
LTE Band 7 (PCS) Extremity Body SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
2510.00	20850	Low	LTE Band 7	20	Sport	24.0	23.58	0.14	0	Aluminum	Q0HP6MY59D	QPSK	1	0	0 mm	back	1:1	0.099	1.102	0.109	
2510.00	20850	Low	LTE Band 7	20	Sport	23.0	22.56	0.01	1	Aluminum	Q0HP6MY59D	QPSK	50	0	0 mm	back	1:1	0.083	1.107	0.092	
2510.00	20850	Low	LTE Band 7	20	Metal Links	24.0	23.58	0.00	0	Aluminum	Q0HP6MY59D	QPSK	1	0	0 mm	back	1:1	0.121	1.102	0.133	
2510.00	20850	Low	LTE Band 7	20	Metal Links	23.0	22.56	0.13	1	Aluminum	Q0HP6MY59D	QPSK	50	0	0 mm	back	1:1	0.062	1.107	0.069	
2510.00	20850	Low	LTE Band 7	20	Metal Loop	24.0	23.58	0.19	0	Aluminum	Q0HP6MY59D	QPSK	1	0	0 mm	back	1:1	0.149	1.102	0.164	A25
2510.00	20850	Low	LTE Band 7	20	Metal Loop	23.0	22.56	0.03	1	Aluminum	Q0HP6MY59D	QPSK	50	0	0 mm	back	1:1	0.059	1.107	0.065	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

Table 12-26
LTE Band 41 Extremity SAR

MEASUREMENT RESULTS																						
FREQUENCY			Mode	Bandwidth [MHz]	Wristband Type	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Housing Type	Device Serial Number	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g) (W/kg)	Scaling Factor	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																				
2680.00	41490	High	LTE Band 41	20	Sport	24.0	23.49	-0.01	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1.58	0.055	1.125	0.062	A26
2680.00	41490	High	LTE Band 41	20	Sport	23.0	22.50	-0.20	1	Aluminum	LKP9Y0KMWF	QPSK	50	50	0 mm	back	1:1.58	0.040	1.122	0.045	
2680.00	41490	High	LTE Band 41	20	Metal Links	24.0	23.49	-0.14	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1.58	0.047	1.125	0.053	
2680.00	41490	High	LTE Band 41	20	Metal Links	23.0	22.50	0.03	1	Aluminum	LKP9Y0KMWF	QPSK	50	50	0 mm	back	1:1.58	0.028	1.122	0.031	
2680.00	41490	High	LTE Band 41	20	Metal Loop	24.0	23.49	-0.05	0	Aluminum	LKP9Y0KMWF	QPSK	1	0	0 mm	back	1:1.58	0.042	1.125	0.047	
2680.00	41490	High	LTE Band 41	20	Metal Loop	23.0	22.50	0.09	1	Aluminum	LKP9Y0KMWF	QPSK	50	50	0 mm	back	1:1.58	0.027	1.122	0.030	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

Table 12-27
2.4 GHz WLAN Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (10g) (W/kg)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																		
2412	1	802.11b	DSSS	22	19.0	17.91	0.03	0 mm	Aluminum	Sport	YF7KGXDHXQ	1	back	99.7	0.022	1.285	1.003	0.028	A27
2412	1	802.11b	DSSS	22	19.0	17.91	-0.07	0 mm	Aluminum	Metal Links	YF7KGXDHXQ	1	back	99.7	0.012	1.285	1.003	0.015	
2412	1	802.11b	DSSS	22	19.0	17.91	-0.08	0 mm	Aluminum	Metal Loop	YF7KGXDHXQ	1	back	99.7	0.011	1.285	1.003	0.014	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

Table 12-28
Bluetooth Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Mode	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	SAR (10g) (W/kg)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (10g) (W/kg)	Plot #
MHz	Ch.																	
2402	0	Bluetooth	FHSS	17.5	16.21	-0.11	0 mm	Aluminum	Sport	VD4DQ5TQV3	1	back	100	0.019	1.346	1.000	0.026	
2402	0	Bluetooth	FHSS	17.5	16.21	0.04	0 mm	Aluminum	Metal Links	VD4DQ5TQV3	1	back	100	0.023	1.346	1.000	0.031	
2402	0	Bluetooth	FHSS	17.5	16.21	0.01	0 mm	Aluminum	Metal Loop	VD4DQ5TQV3	1	back	100	0.025	1.346	1.000	0.034	A28
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Extremity 4.0 W/kg (mW/g) averaged over 10 grams				

10.3 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the 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. Per FCC KDB Publication 865664 D01v01r04, variability SAR tests were not required since measured SAR results for all frequency bands were less than 0.8 W/kg and 2.0 W/kg for 10g SAR.
7. This device has one housing type: Aluminum. The non-metallic wrist accessory, sport band, was evaluated for all exposure conditions. The available metallic wrist accessories, metal links band and metal loop band, were additionally evaluated.
8. This device is a portable wrist-worn device and does not support any other use conditions. Therefore, the procedures in FCC KDB Publication 447498 D01v06 Section 6.2 have been applied for extremity and next to mouth (head) conditions.
9. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.
10. The orange highlights throughout the report represents the highest scaled SAR per Equipment Class.

UMTS Notes:

1. UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.

2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations and ≤ 2.0 W/kg for 10g SAR then testing at the other channels is not required for such test configuration(s).

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 7.5.4.
2. 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.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 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).
4. Per FCC KDB Publication 447498 D01v06, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations and > 1.5 W/kg for 10g SAR, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. This device can only operate with 16 QAM on the uplink with less than or equal to 27 RB. QPSK and 16QAM LTE powers for RB size of 15 (“50% RB”) and 27 (“100% RB”) were additionally measured to support comparison and SAR test exclusion per KDB 941225 D05v02r04 Section 5.2.4 and 5.3.

WLAN Notes:

1. 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. See Section 7.6.2 for more information.
2. When the maximum reported 1g averaged SAR is ≤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 for 1g evaluations or all test channels were measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
3. 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. The reported SAR was scaled to the 100% transmission duty factor to determine compliance.

Bluetooth Notes

1. To determine compliance, Bluetooth SAR was measured with the maximum power condition. Bluetooth was evaluated with a test mode with 100% transmission duty factor.

11 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

11.1 Introduction

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

11.2 Simultaneous Transmission Procedures

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

11.3 Head SAR Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all housing and wristband types was used as a conservative evaluation for the simultaneous transmission analysis.

Table 11-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Head at 10 mm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 850	0.001	0.196	0.197
	UMTS 1750	0.310	0.196	0.506
	UMTS 1900	0.488	0.196	0.684
	LTE Band 12	0.003	0.196	0.199
	LTE Band 13	0.002	0.196	0.198
	LTE Band 14	0.001	0.196	0.197
	LTE Band 26 (Cell)	0.002	0.196	0.198
	LTE Band 5 (Cell)	0.002	0.196	0.198
	LTE Band 66 (AWS)	0.289	0.196	0.485
	LTE Band 25 (PCS)	0.478	0.196	0.674
	LTE Band 7	0.765	0.196	**0.961**
	LTE Band 41	0.212	0.196	0.408

Table 11-2
Simultaneous Transmission Scenario with Bluetooth and WLAN (Head at 10 mm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 850	0.001	0.227	0.228
	UMTS 1750	0.310	0.227	0.537
	UMTS 1900	0.488	0.227	0.715
	LTE Band 12	0.003	0.227	0.230
	LTE Band 13	0.002	0.227	0.229
	LTE Band 14	0.001	0.227	0.228
	LTE Band 26 (Cell)	0.002	0.227	0.229
	LTE Band 5 (Cell)	0.002	0.227	0.229
	LTE Band 66 (AWS)	0.289	0.227	0.516
	LTE Band 25 (PCS)	0.478	0.227	0.705
	LTE Band 7	0.765	0.227	**0.992**
	LTE Band 41	0.212	0.227	0.439

11.4 Extremity SAR Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all housing and wristband types was used as a conservative evaluation for the simultaneous transmission analysis.

Table 11-3
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Extremity at 0 mm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 850	0.346	0.028	0.374
	UMTS 1750	0.060	0.028	0.088
	UMTS 1900	0.134	0.028	0.162
	LTE Band 12	0.436	0.028	**0.464**
	LTE Band 13	0.405	0.028	0.433
	LTE Band 14	0.379	0.028	0.407
	LTE Band 26 (Cell)	0.316	0.028	0.344
	LTE Band 5 (Cell)	0.432	0.028	0.460
	LTE Band 66 (AWS)	0.069	0.028	0.097
	LTE Band 25 (PCS)	0.130	0.028	0.158
	LTE Band 7	0.164	0.028	0.192
	LTE Band 41	0.062	0.028	0.090

Table 11-4
Simultaneous Transmission Scenario with Bluetooth and WLAN (Extremity at 0 mm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 850	0.346	0.034	0.380
	UMTS 1750	0.060	0.034	0.094
	UMTS 1900	0.134	0.034	0.168
	LTE Band 12	0.436	0.034	**0.470**
	LTE Band 13	0.405	0.034	0.439
	LTE Band 14	0.379	0.034	0.413
	LTE Band 26 (Cell)	0.316	0.034	0.350
	LTE Band 5 (Cell)	0.432	0.034	0.466
	LTE Band 66 (AWS)	0.069	0.034	0.103
	LTE Band 25 (PCS)	0.130	0.034	0.164
	LTE Band 7	0.164	0.034	0.198
	LTE Band 41	0.062	0.034	0.096

11.5 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 .

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01, SAR measurement variability was not assessed for each frequency band since all measured SAR values are < 0.8 W/kg for 1g SAR and < 2.0 W/kg for 10g SAR.

12.2 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, the extended measurement uncertainty analysis was not required.

13 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4404B	Spectrum Analyzer	CBT	N/A	CBT	MY45113242
Agilent	E5515C	Wireless Communications Test Set	5/4/2021	Biennial	5/4/2023	GB41450275
Agilent	N5182A	MXG Vector Signal Generator	1/12/2022	Annual	1/12/2023	MY47420837
Agilent	E4438C	ESG Vector Signal Generator	1/18/2022	Annual	1/18/2023	MY42081752
Agilent	E4440A	PSA Series Spectrum Analyzer	3/29/2022	Annual	3/29/2023	MY46186272
Agilent	E4438C	ESG Vector Signal Generator	3/22/2022	Annual	3/22/2023	US41460739
Agilent	E4438C	ESG Vector Signal Generator	3/24/2022	Annual	3/24/2023	MY45093678
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343971
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433973
Anritsu	MA24106A	USB Power Sensor	3/28/2022	Annual	3/28/2023	1520503
Anritsu	MA24106A	USB Power Sensor	3/28/2022	Annual	3/28/2023	1520501
Anritsu	MA2411B	Pulse Power Sensor	3/28/2022	Annual	3/28/2023	1339007
Anritsu	ML2496A	Power Meter	3/29/2022	Annual	3/29/2023	1306009
Anritsu	MT8000A	Radio Communication Test Station	4/15/2022	Annual	4/15/2023	6272337439
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	5/11/2022	Annual	5/11/2023	6262044715
Control Company	4040	Therm./ Clock/ Humidity Monitor	3/12/2021	Biennial	3/12/2023	210202100
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670633
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670653
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670635
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670623
Control Company	4353	Long Stem Thermometer	10/28/2020	Biennial	10/28/2022	200670646
Mitutoyo	500-196-30	CD-6"ASX 6inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	E4438C	VECTOR SIGNAL GENERATOR	10/15/2021	Annual	10/15/2022	MY45092078
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	0120
MCL	BW-N10W5+	Attenuator	CBT	N/A	CBT	1507
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Anritsu	MA24106A	USB Power Sensor	12/3/2021	Annual	12/3/2022	2148504
Mini-Circuits	NLP-2950+	LOW PASS FILTER	9/15/2021	Annual	9/15/2022	UU16601938
Mini-Circuits	NLP-1200+	LOW PASS FILTER	9/15/2021	Annual	9/15/2022	UU19301915
Mini-Circuits	ZHDC-16-63-S+	Bidirectional Coupler	CBT	N/A	CBT	N/A
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	12/22/2021	Annual	12/21/2022	106578
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/11/2022	Annual	1/11/2023	101699
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/23/2022	Annual	3/23/2023	122206
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	9/29/2021	Annual	9/29/2022	151849
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	9/29/2021	Annual	9/29/2022	145663
Rohde & Schwarz	FSP-7	Spectrum Analyzer	1/18/2022	Annual	1/18/2023	100990
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/14/2022	Annual	4/14/2023	167284
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/14/2022	Annual	4/14/2023	167285
Pasternack	PE5011-1	Torque Wrench	12/21/2021	Biennial	12/21/2023	82475
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	10/7/2021	Annual	10/7/2022	1045
Agilent	MY40003841	S-Parameter Vector Network Analyzer	2/11/2022	Annual	2/11/2023	MY40003841
Traceable	4040 90080-06	Therm/ Clock/ Humidity Monitor	CBT	N/A	CBT	221514925
Traceable	4040 90080-06	Therm/ Clock/ Humidity Monitor	CBT	N/A	CBT	221514999
Traceable	4040 90080-06	Therm/ Clock/ Humidity Monitor	CBT	N/A	CBT	221514974
Traceable	4040 90080-06	Therm/ Clock/ Humidity Monitor	CBT	N/A	CBT	221514980
SPEAG	MAIA	Modulation and Audio Interference Analyzer	CBT	N/A	CBT	1260
SPEAG	MAIA	Modulation and Audio Interference Analyzer	CBT	N/A	CBT	1324
SPEAG	MAIA	Modulation and Audio Interference Analyzer	CBT	N/A	CBT	1243
SPEAG	D750V3	750 MHz SAR Dipole	9/8/2020	Biennial	9/8/2022	1097
SPEAG	D750V3	750 MHz SAR Dipole	5/16/2022	Annual	5/16/2023	1057
SPEAG	D835V2	835 MHz SAR Dipole	11/11/2019	Triennial	11/11/2022	4d108
SPEAG	D835V2	835 MHz SAR Dipole	5/16/2022	Annual	5/16/2023	4d040
SPEAG	D850V2	850 MHz SAR Dipole	12/7/2021	Annual	12/7/2022	1009
SPEAG	D1750V2	1750 MHz SAR Dipole	5/10/2022	Annual	5/10/2023	1083
SPEAG	D1900V2	1900 MHz SAR Dipole	9/10/2020	Biennial	9/10/2022	5d181
SPEAG	D1900V2	1900 MHz SAR Dipole	5/16/2022	Annual	5/16/2023	5d030
SPEAG	D2450V2	2450 MHz SAR Dipole	11/9/2021	Annual	11/9/2022	921
SPEAG	D2450V2	2450 MHz SAR Dipole	5/11/2022	Annual	5/11/2023	750
SPEAG	D2600V2	2600 MHz SAR Dipole	5/11/2022	Annual	5/11/2023	1042
SPEAG	EX3DV4	SAR Probe	3/21/2022	Annual	3/21/2023	7360
SPEAG	EX3DV4	SAR Probe	4/19/2022	Annual	4/19/2023	7499
SPEAG	EX3DV4	SAR Probe	12/10/2021	Annual	12/10/2022	7490
SPEAG	EX3DV4	SAR Probe	11/16/2021	Annual	11/16/2022	7639
SPEAG	EX3DV4	SAR Probe	4/22/2022	Annual	4/22/2023	7532
SPEAG	EX3DV4	SAR Probe	2/21/2022	Annual	2/21/2023	7308
SPEAG	EX3DV4	SAR Probe	2/22/2022	Annual	2/22/2023	7427
SPEAG	EX3DV4	SAR Probe	4/22/2022	Annual	4/22/2023	7546
SPEAG	EX3DV4	SAR Probe	5/18/2022	Annual	5/18/2023	7416
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/21/2022	Annual	3/21/2023	534
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/13/2022	Annual	4/13/2023	1465
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/20/2021	Annual	10/20/2022	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/11/2021	Annual	11/11/2022	1646
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/13/2022	Annual	4/13/2023	501
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/24/2022	Annual	2/24/2023	467
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/22/2022	Annual	2/22/2023	1403
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/14/2022	Annual	4/14/2023	1402
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/16/2022	Annual	5/16/2023	701

Note: 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. a 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. Each equipment item was used solely within its respective calibration period.

14 MEASUREMENT UNCERTAINTIES

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.73	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.73	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.73	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.73	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.73	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.73	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.73	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.73	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				12.2	12.0	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.4	24.0	

The above measurement uncertainties are according to IEEE Std. 1528-2013

15 CONCLUSION

15.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very 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 in possible biological effects 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 various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

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