

#### **ELEMENT MATERIALS TECHNOLOGY**

(formerly PCTEST) 18855 Adams Ct, Morgan Hill, CA 95307 USA Tel. +1.410.290.6652 / Fax +1.410.290.6654 http://www.element.com



# SAR EVALUATION REPORT

Applicant Name:	Date of Testing:
Apple, Inc.	06/06/2022
One Apple Park Way	Test Site/Location:
Cupertino, CA 95014 USA	Element, Morgan Hill, CA, USA
	Document Serial No.:
	1C2205090037-11 BCG

#### FCC ID:

BCG-A2771

**APPLICANT:** 

APPLE, INC.

DUT Type: Application Type: FCC Rule Part(s): Model: Watch Certification CFR §2.1093 A2771

Equipment	Band & Mode	Tx Frequency	SAR			
Class	Build & Mode	TXTTOQUOLOY	1g Head (W/kg)	10g Extremity (W/kg)		
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.37	0.21		
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A		
NII	U-NII-2A	5260 - 5320 MHz	< 0.1	< 0.1		
NII	U-NII-2C	5500 - 5720 MHz	0.19	< 0.1		
NII	U-NII-3	5745 - 5825 MHz	0.24	< 0.1		
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.33	0.13		
Simultaneou	s SAR per KDB 690783 D	0.57	0.15			

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.







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
2.4 GHz WLAN	Data	2412 - 2472 MHz
U-NII-1	Data	5180 - 5240 MHz
U-NII-2A	Data	5260 - 5320 MHz
U-NII-2C	Data	5500 - 5720 MHz
U-NII-3	Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC	Data	13.56 MHz
UWB	Data	6489.6 - 7987.2 MHz

This device does not support network-based voice services. Head SAR was evaluated to address VoIP operations per FCC KDB Publications 447498 D010v06.

#### 1.2 Power Reduction for SAR

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

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## 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.

			•				ιαλιι			-pac		••					
				IEEE 802.11b (2.4 GHz)						IEEE 802.11g (2.4 GHz) IE					IEEE 802.11n (2.4 GHz)		
	Mode/ Band			Maxi	Maximum		Nominal		Maximum Non		ninal	nal Maximum		Nor	ninal		
			1	20.	00	1	9.00	1	7.00	16	.00	17	7.00	16	.00		
			2	20.	00	1	9.00	19	9.00	18	.00	19	9.00	18	.00		
			3	20.	00	1	9.00	19	9.00	18	.00	19	9.00	18	.00		
			4	20.			9.00		9.00		.00		9.00		.00		
Mod	dulated		5	20.			9.00		9.00		.00		9.00		.00		
Ave	erage -	20 MHz	6	20.			9.00	-	9.00		.00		9.00		.00		
ingle	Tx Chain	Bandwidt	h 7	20.			9.00		9.00		.00		9.00		.00		
(0	dBm)		8	20. 20.			9.00 9.00		9.00 9.00		.00 .00		9.00 9.00		.00		
			9 10	20.			9.00		9.00		.00		9.00 9.00		.00		
			11	20.			9.00		7.00		.00		7.00		.00		
			12	20.			9.00		4.50		.50		4.50		.50		
			13	18.			7.00		.50		50		.50		.50		
			÷	•	1		IEEE	802.	11a (5 G	GHz)	IEEE	802.1	L1n (5 Gl	Hz)			
		Mode	/ Band		Chai	nnel	Maxin	num	Nom	ninal	Maxir	num	Nom	inal			
				-		36		00	16.	16.00		.00 16.		00			
						40		00	16.	00	17.	00	16.00				
						4	17.0	00	16.	00	17.	00	16.0	00			
						8	17.0		16.		17.		16.0				
					5		17.0		16.		17.		16.0				
					5	-	17.0		16.		17.		16.0				
				20 MHz Bandwidth		0	17.0		16.		17.		16.0				
						4 )0	17.0 17.0		16. 16.		17. 17.		16.0 16.0				
						)4	17.0		16.		17.		16.0				
						)8	17.0		16.		17.		16.0				
	Modulate	ed Average -						12	17.0		16		17.		16.0		
		Tx Chain	20 MHz Ban			16	17.0		16.		17.		16.0				
	(0	dBm)			12		17.0	00	16.	00	17.	00	16.0	00			
					12	24	17.0	00	16.	00	17.	00	16.0	00			
					12	28	17.0	00	16.	00	17.	00	16.0	00			
					13	32	17.0	00	16.	00	17.	00	16.0	00			
					13		17.0		16.		17.		16.0				
				14		12.5		11.		12.		11.5					
				14		17.0		16.		17.		16.0					
					14		17.0		16.		17.		16.0				
					15		17.0		16		17.		16.0				
					15		17.0		16.	00	17.		16.0	0			
					16	31	17.0	n	16.	00	17.	<u></u>	16.0	0			

1.3.1	<b>Unlicensed Maximum</b>	Output Power
1.0.1	Unincenseu maximum	Output I Ower

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Mode / Band	Modulated Average - Single Tx Chain (dBm)	
Bluetooth BDR/LE	Maximum	19.00
	Nominal	18.00
Bluetooth EDR	Maximum	14.50
BluetoothEDK	Nominal	13.50
	Maximum	14.50
Bluetooth HDR	Nominal	13.50

#### 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	Bluetooth + 5GHz WI-FI	Yes	Yes		

- 1. 2.4 GHz WLAN, and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
- 2. 2.4 GHz WLAN, and 5 GHz WLAN share the same antenna path and cannot transmit simultaneously.

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#### 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.

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

#### 1.8 Guidance Applied

- 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 9.

#### 1.10 Device Housing Types and Wrist Band Types

Only one housing type, aluminum, is available for this model. 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.

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# **2** 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.

#### 2.1 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 ( $\rho$ ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 2-1).

Equation 2-1 SAR Mathematical Equation

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

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

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

where:

 $\sigma$  = conductivity of the tissue-simulating material (S/m)

- $\rho$  = mass density of the tissue-simulating material (kg/m<sup>3</sup>)
- 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]

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# **3** DOSIMETRIC ASSESSMENT

#### 3.1 Measurement Procedure

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

- 1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 3-1) 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.

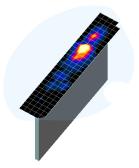


Figure 3-1 Sample SAR Area Scan

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 3-1) 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 3-1. 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 ( $10 \times 10 \times 10$ ) 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.

<b>F</b>	Maximum Area Scan Resolution (mm)	Maximum Zoom Scan Resolution (mm)	Max	imum Zoom So Resolution (		Minimum Zoom Scan
Frequency	$(\Delta x_{area}, \Delta y_{area})$	$(\Delta x_{2000}, \Delta y_{2000})$	Uniform Grid	G	raded Grid	Volume (mm) (x,y,z)
			∆z <sub>zoom</sub> (n)	$\Delta z_{zoom}(1)^*$	∆z <sub>zoom</sub> (n>1)*	
≤ 2 GHz	≤15	≤8	≤5	≤4	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤12	≤5	≤5	≤4	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤12	≤5	≤4	≤3	≤ 1.5*∆z <sub>zoom</sub> (n-1)	≥ 28
4-5 GHz	≤10	≤4	≤3	≤ 2.5	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤10	≤4	≤2	≤2	$\leq 1.5^*\Delta z_{zoom}(n-1)$	≥22

Table 3-1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04\*

\*Also compliant to IEEE 1528-2013 Table 6

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# **4** TEST CONFIGURATION POSITIONS

#### 4.1 Device Holder

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

#### 4.2 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.

#### 4.3 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.

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# **5 RF EXPOSURE LIMITS**

#### 5.1 Uncontrolled Environment

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

#### 5.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. 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.

HUMAN EXPOSURE LIMITS				
	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED EN∨IRONMENT <i>Occupational</i> (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		

Table 5-1 SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

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.

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# 6 FCC MEASUREMENT PROCEDURES

#### 6.1 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.

### 6.2 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.

#### 6.2.1 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.

### 6.2.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

#### 6.2.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

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#### 6.2.4 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:

- 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.

#### 6.2.5 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.

#### 6.2.6 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  $\leq 0.8$  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  $\leq 1.2$  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 6.2.5). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

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### 6.2.7 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  $\leq 1.2$  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.

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# **7 RF CONDUCTED POWERS**

#### 7.1 WLAN Conducted Powers

	2.4GHz Conducted Power [dBm]										
		IEEE	IEEE Transmission Mode								
Freq [MHz]	Channel	802.11b	802.11g	802.11n							
		Average	Average	Average							
2412	1	18.80	16.06	16.08							
2417	2		17.99	17.98							
2437	6	18.69	18.10	18.13							
2457	10		18.11	18.07							
2462	11	18.76	15.97	16.03							

 Table 7-1

 2.4 GHz WLAN Maximum Average RF Power

Table 7-2
5 GHz WLAN Maximum Average RF Power
5GHz (20MHz) Conducted Power [dBm]

5GHz	(20MHz) Cond	ducted Power	[dBm]
		IEEE Transm	nission Mode
Freq [MHz]	Channel	802.11a	802.11n
		Average	Average
5180	36	16.00	16.01
5200	40	16.04	16.03
5220	44	15.97	15.95
5240	48	15.88	15.98
5260	52	15.89	16.03
5280	56	15.83	16.02
5300	60	16.01	16.06
5320	64	16.03	15.97
5500	100	15.95	16.01
5600	120	15.79	16.10
5620	124	15.77	16.02
5720	144	15.98	16.01
5745	149	16.04	16.01
5785	157	15.98	15.97
5825	165	16.01	16.06

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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.

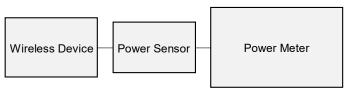
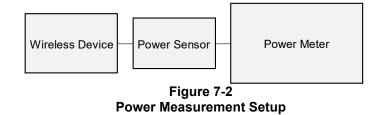


Figure 7-1 Power Measurement Setup

#### 7.2 Bluetooth Conducted Powers

Table 7-3 Bluetooth Average RF Power												
Freedoment		Data		Avg Conducted Power								
Frequency [MHz]	Modulation	Rate [Mbps]	Channel No.	[dBm]	[mW]							
2402	GFSK	1.0	0	18.24	66.681							
2441	GFSK	1.0	39	18.39	69.024							
2480	GFSK	1.0	78	18.54	71.450							

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



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# **8 SYSTEM VERIFICATION**

#### 8.1 Tissue Verification

Calibrated for			Measured	Measured	Measured	TARGET	TARGET		
ests Performed on:	Tissue Type	Calibration ('C)	Frequency (MHz)	Conductivity, σ (S/m)	Dielectric Constant, ε	Conductivity, σ (S/m)	Dielectric Constant, ε	% dev σ	% dev
			2300	1.688	40.027	1.670	39.500	1.08%	1.339
			2310 2320	1.699	39.989 39.950	1.679	39.480 39.460	1.19%	1.29
			2320	1.711	39.950	1.687	39.460	2.73%	0.97
			2450	1.864	39.490	1.800	39.200	3.56%	0.74
			2480	1.898	39.371 39.288	1.833	39.162 39.136	3.55%	0.53
06/06/2022	2450 Head	24.9	2500 2510	1.922	39.288	1.855	39.136	3.61% 3.64%	0.39
			2535	1.964	39.159	1.893	39.092	3.75%	0.17
			2550 2560	1.981 1.993	39.104 39.066	1.909	39.073 39.060	3.77% 3.80%	0.08
			2560	2.041	38.905	1.920	39.000	3.92%	-0.27
			2650	2.102	38.715	2.018	38.945	4.16%	-0.59
			2680 2700	2.137	38.587 38.497	2.051	38.907 38.882	4.19% 4.20%	-0.82
			2300	1.700	38.885	1.670	39.500	1.80%	-1.56
			2310	1.711	38.849	1.679	39.480	1.91%	-1.60
			2320 2400	1.723	38.815 38.546	1.687	39.460 39.289	2.13%	-1.63
			2400	1.876	38.389	1.800	39.209	4.22%	-2.07
			2480	1.908	38.275	1.833	39.162	4.09%	-2.26
06/06/2022	2450 Head	24.6	2500 2510	1.933	38.197 38.165	1.855	39.136 39.123	4.20% 4.29%	-2.40
			2535	1.977	38.090	1.893	39.092	4.44%	-2.56
			2550	1.994	38.042	1.909	39.073	4.45%	-2.64
			2560 2600	2.004	38.004 37.848	1.920	39.060 39.009	4.38% 4.53%	-2.70
			2650	2.112	37.678	2.018	38.945	4.66%	-3.25
			2680 5180	2.145	37.557 34.763	2.051	38.907 36.009	4.58%	-3.47
			5180	4.430	34.763	4.635	36.009	-4.42%	-3.40
			5200	4.458	34.735	4.655	35.986	-4.23%	-3.48
			5210	4.470	34.717	4.666	35.975	-4.20%	-3.50
			5220 5240	4.479	34.703 34.660	4.676	35.963 35.940	-4.21% -4.24%	-3.50
			5250	4.510	34.633	4.706	35.929	-4.16%	-3.61
			5260 5270	4.521 4.532	34.596 34.579	4.717 4.727	35.917 35.906	-4.16% -4.13%	-3.68
			5270	4.543	34.579	4.727	35.906	-4.10%	-3.67
			5290	4.554	34.564	4.748	35.883	-4.09%	-3.68
			5300 5310	4.565	34.552 34.535	4.758	35.871 35.860	-4.06%	-3.68
			5320	4.577	34.535	4.708	35.849	-4.07%	-3.09
			5500	4.784	34.216	4.963	35.643	-3.61%	-4.00
			5510 5520	4.795	34.188 34.169	4.973	35.632	-3.58% -3.51%	-4.05
			5530	4.821	34.150	4.994	35.609	-3.46%	-4.10
			5540	4.830	34.137	5.004	35.597	-3.48%	-4.10
			5550 5560	4.841	34.121 34.107	5.014 5.024	35.586	-3.45% -3.42%	-4.12
			5580	4.877	34.073	5.045	35.551	-3.33%	-4.16
			5600	4.900	34.036	5.065	35.529	-3.26%	-4.20
			5610 5620	4.910	34.023 34.006	5.076	35.518 35.506	-3.27% -3.24%	-4.21
			5640	4.942	33.975	5.106	35.483	-3.21%	-4.25
06/06/2022	5200-5800 Head	20.5	5660	4.966	33.934	5.127	35.460	-3.14% -3.10%	-4.30
			5670 5680	4.978 4.988	33.919 33.906	5.137 5.147	35.449 35.437	-3.10%	-4.32 -4.32
			5690	4.998	33.884	5.158	35.426	-3.10%	-4.35
			5700 5710	5.008 5.023	33.856 33.833	5.168 5.178	35.414	-3.10%	-4.40
			5710 5720	5.023	33.833 33.818	5.178 5.188	35.403 35.391	-2.99%	-4.43
			5745	5.059	33.781	5.214	35.363	-2.97%	-4.47
			5750	5.064 5.069	33.773 33.763	5.219 5.224	35.357 35.351	-2.97%	-4.48
			5755 5765	5.069	33.763 33.746	5.224	35.351 35.340	-2.97%	-4.49
			5775	5.097	33.718	5.245	35.329	-2.82%	-4.56
			5785 5795	5.110 5.119	33.694 33.675	5.255 5.265	35.317 35.305	-2.76%	-4.60
			5795	5.119	33.675	5.265	35.305	-2.77%	-4.62
			5800	5.123	33.668	5.270	35.300	-2.79%	-4.62
			5805 5825	5.128	33.660 33.624	5.275	35.294	-2.79% -2.64%	-4.63
			5825 5835	5.156 5.165	33.624 33.605	5.296 5.305	35.271 35.230	-2.64%	-4.67
			5845	5.172	33.595	5.315	35.210	-2.69%	-4.59
			5855	5.183	33.583	5.325	35.197	-2.67%	-4.59
			5865 5865	5.198 5.198	33.565 33.565	5.336 5.336	35.190 35.190	-2.59% -2.59%	-4.62
	1		5865	5.198	33.565	5.336	35.190	-2.59%	
			3003	0.190	33.303	0.000	33.190	-2.39%	-4.62
			5865	5.198	33.565	5.336	35.190	-2.59%	-4.62
									-4.62 -4.62 -4.68 -4.72

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.

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### 8.2 Test System Verification

Prior to SAR assessment, the system is verified to  $\pm 10\%$  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 8-2 System Verification Results – 1g												
	System Verification TARGET & MEASURED												
SAR System	Tissue Frequency (MHz)	equency Tissue Date		Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN Probe		Measured SAR1g (W/kg)	1W Target SAR1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation1g (%)	
AM7	2450	HEAD	06/06/2022	20.3	23.8	0.10	921	7674	5.140	54.20	51.400	-5.17%	
AM9	5250	HEAD	06/06/2022	21.6	20.5	0.05	1123	7638	3.790	80.50	75.800	-5.84%	
AM9	5600	HEAD	06/06/2022	21.6	20.5	0.05	1123	7638	3.900	83.70	78.000	-6.81%	
AM9	5750	HEAD	06/06/2022	21.6	20.5	0.05	1123	7638	3.810	80.50	76.200	-5.34%	

Table 8-3 System Verification Results – 10g

	System Verification TARGET & MEASURED													
SAR System	Frequency Date Temp.		Liquid Temp. (C)	Input Power (W)	Source SN Probe SI		Measured SAR10g (W/kg)	1W Target SAR10g (W/kg)	1W Normalized SAR10g (W/kg)	Deviation10g (%)				
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	06/06/2022	20.3	23.8	0.10	921	7674	2.380	25.50	23.800	-6.67%		
AM9	5250	HEAD	06/06/2022	21.6	20.5	0.05	1123	7638	1.080	22.90	21.600	-5.68%		
AM9	5600	HEAD	06/06/2022	21.6	20.5	0.05	1123	7638	1.110	23.70	22.200	-6.33%		
AM9	5750	HEAD	06/06/2022	21.6	20.5	0.05	1123	7638	1.090	22.70	21.800	-3.96%		

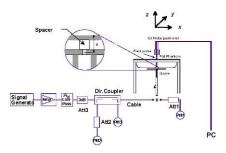


Figure 8-1 System Verification Setup Diagram



Figure 8-2 System Verification Setup Photo

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# 9 SAR DATA SUMMARY

#### 9.1 Standalone Head SAR Data

	Z.4 GHZ WLAN Head SAN																		
								1	MEASUR	EMENT RE	SULTS								
FREQU	REQUENCY	Mode	ode Service	Bandwidth	Maximum Allowed	Conducted	Power	Side	Spacing	Housing Type	Wristband Type	Device Serial			SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Drift [dB]				Nu	Number	(Mbps)	(%)	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11b	DSSS	22	20.00	18.80	-0.18	front	10 mm	Aluminum	Sport	CJH4CWX297	1	99.7	0.276	1.318	1.003	0.365	A1
2412	1	802.11b	DSSS	22	20.00	18.80	-0.02	front	10 mm	Aluminum	Metal Links	CJH4CWX297	1	99.7	0.188	1.318	1.003	0.249	
2412	1	802.11b	DSSS	22	20.00	18.80	-0.04	front	10 mm	Aluminum	Metal Loop	CJH4CWX297	1	99.7	0.206	1.318	1.003	0.272	
		ANSI / I	EEE C95.1	1992 - SAF	ETY LIMIT			Head											
	Spatial Peak						1.6 W/kg (mW/g)												
	Uncontrolled Exposure/General Population							averaged over 1 gram											

# Table 9-12.4 GHz WLAN Head SAR

# Table 9-25 GHz WLAN Head SAR

								MEASUREMENT RESULTS											
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted	Power	Side	Spacing	Housing Type	Wristband			Duty Cycle	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.	mode	001100	[MHz]	Power [dBm]	Power [dBm]	Drift [dB]	oluc	opuong	nousing Type	Туре	Number	(Mbps)	(%)	(W/kg)	(Power)	Cycle)	(W/kg)	1.01 #
5320	64	802.11a	OFDM	20	17.00	16.03	0.04	front	10 mm	Aluminum	Sport	F36L947J6F	6	98.7	0.054	1.250	1.013	0.068	
5320	64	802.11a	OFDM	20	17.00	16.03	0.02	front	10 mm	Aluminum	Metal Links	F36L947J6F	6	98.7	0.062	1.250	1.013	0.079	
5320	64	802.11a	OFDM	20	17.00	16.03	0.04	front	10 mm	Aluminum	Metal Loop	F36L947J6F	6	98.7	0.051	1.250	1.013	0.065	
5720	144 802.11a OFDM 20 17.00 15.98							front	10 mm	Aluminum	Sport	HQTX35336T	6	98.7	0.148	1.265	1.013	0.190	
5720	144	802.11a	OFDM	20	17.00	15.98	0.05	front	10 mm	Aluminum	Metal Links	HQTX35336T	6	98.7	0.144	1.265	1.013	0.185	
5720	144	802.11a	OFDM	20	17.00	15.98	-0.02	front	10 mm	Aluminum	Metal Loop	HQTX35336T	6	98.7	0.131	1.265	1.013	0.168	
5745	149	802.11a	OFDM	20	17.00	16.04	-0.03	front	10 mm	Aluminum	Sport	F36L947J6F	6	98.7	0.191	1.247	1.013	0.241	A2
5745	149	802.11a	OFDM	20	17.00	16.04	0.00	front	10 mm	Aluminum	Metal Links	F36L947J6F	6	98.7	0.152	1.247	1.013	0.192	
5745	149 802.11a OFDM 20 17.00 16.04 0.					0.03	front	10 mm	Aluminum	Metal Loop	F36L947J6F	6	98.7	0.180	1.247	1.013	0.227		
		ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Head											
	Spatial Peak												g (mW/g)						
		Uncontrolled Exposure/General Population						averaged over 1 gram											

#### Table 9-3 Bluetooth Head SAR

								MEASU	JREMEN	T RESULT	s																
FREQU	REQUENCY Mode Service Allowed Conducted Power					Power	Side	Spacing	Housing	Wristband	Device Serial	Data Rate	Duty	SAR (1g)	Scaling Factor (Cond	Scaling Factor (Duty	Reported SAR (1g)	Plot #									
MHz								opacing	Туре	Туре	Number	(Mbps)	Cycle (%)	(W/kg)	Power)	Cycle)	(W/kg)	FIOL#									
2480.00	78	Bluetooth	FHSS	19.00	18.54	-0.08	front	10 mm	Aluminum	Sport	F522RD9PVG	1	100	0.299	1.112	1.000	0.332	A3									
2480.00	0 78 Bluetooth FHSS 19.00 18.54 -0.0						front	10 mm	Aluminum	Metal Links	F522RD9PVG	1	100	0.143	1.112	1.000	0.159										
2480.00	78	Bluetooth	FHSS	19.00	18.54	0.00	front	10 mm	Aluminum	Metal Loop	F522RD9PVG	1	100	0.155	1.112	1.000	0.172										
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT											ŀ	lead														
	Spatial Peak						1.6 W/kg (mW/g)																				
	Uncontrolled Exposure/General Population											averaged	over 1 gr	am				averaged over 1 gram									

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# 9.2 Standalone Extremity SAR Data

	2.4 01																		
	MEASUREMENT RESULTS																		
FREQU	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing Type	Wristband Type	Device Serial Number	Data Rate	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (10g)	Plot#
MHz	Ch. [dBm] [dBm]						[ub]		i ype	туре	Number	(Mbps)		(%)	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1 802.11b DSSS 22 20.0 18.80							0 mm	Aluminum	Sport	FY0HPM7G9H	1	back	99.7	0.154	1.318	1.003	0.204	
2412	2 1 802.11b DSSS 22 20.0 18.80 0							0 mm	Aluminum	Metal Links	FY0HPM7G9H	1	back	99.7	0.155	1.318	1.003	0.205	A4
2412	1	802.11b	DSSS	22	20.0	18.80	0.06	0 mm	Aluminum	Metal Loop	FY0HPM7G9H	1	back	99.7	0.106	1.318	1.003	0.140	
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Extremity												
	Spatial Peak						4.0 W/kg (mW/g)												
		Uncontrolled Exposure/General Population						averaged over 10 grams											

Table 9-42.4 GHz WLAN Extremity SAR

Table 9-5 5 GHz WLAN Extremity SAR

						Ν	IEASUR	EMENT	RESULT	s									
FREQU	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power	Conducted Power [dBm]	Power Drift [dB]	Spacing	Housing	Wristband Type	Device Serial Number	Data Rate	Side	Duty Cycle	SAR (10g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (10g)	R Plot#
MHz	Ch.			[WHZ]	[dBm]	[dBm]	lapi		Туре	туре	Number	(Mbps)		(%)	(W/kg)	(Power)	Cycle)	(W/kg)	
5320	64	802.11a	OFDM	20	17.0	16.03	0.20	0 mm	Aluminum	Sport	HQTX35336T	6	back	98.7	0.000	1.250	1.013	0.000	
5320	64	802.11a	OFDM	20	17.0	16.03	0.11	0 mm	Aluminum	Metal Links	HQTX35336T	6	back	98.7	0.000	1.250	1.013	0.000	
5320	64	802.11a	OFDM	20	17.0	16.03	0.17	0 mm	Aluminum	Metal Loop	HQTX35336T	6	back	98.7	0.002	1.250	1.013	0.003	
5720	144	802.11a	OFDM	20	17.0	-0.03	0 mm	Aluminum	Sport	F36L947J6F	6	back	98.7	0.007	1.265	1.013	0.009		
5720	144	802.11a	OFDM	20	17.0	15.98	-0.15	0 mm	Aluminum	Metal Links	F36L947J6F	6	back	98.7	0.007	1.265	1.013	0.009	
5720	144	802.11a	OFDM	20	17.0	15.98	-0.04	0 mm	Aluminum	Metal Loop	F36L947J6F	6	back	98.7	0.012	1.265	1.013	0.016	
5745	149	802.11a	OFDM	20	17.0	16.04	0.03	0 mm	Aluminum	Sport	HQTX35336T	6	back	98.7	0.013	1.247	1.013	0.016	
5745	149	802.11a	OFDM	20	17.0	16.04	-0.03	0 mm	Aluminum	Metal Links	HQTX35336T	6	back	98.7	0.012	1.247	1.013	0.015	
5745	149	149 802.11a OFDM 20 17.0 16.04 -0.						0 mm	Aluminum	Metal Loop	HQTX35336T	6	back	98.7	0.015	1.247	1.013	0.019	A5
		ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Ex	tremity					
		Spatial Peak											4.0 W	'kg (mW	/g)				
		Uncontrolled Exposure/General Population										a	veraged	over 10	grams				

#### Table 9-6 Bluetooth Extremity SAR

	MEASUREMENT RESULTS																	
FREQU	QUENCY Mode Service Allowed Power [dBm] [dB							Housing Type	Wristband Type	Device Serial Number	Data Rate	Side	Duty Cycle	SAR (10g)	Scaling Factor (Cond	Scaling Factor (Duty	Reported SAR (10g)	Plot #
MHz	Ch. Power [dBm] [db							туре	туре	Number	(Mbps)		(%)	(W/kg)	Power)	Cycle)	(W/kg)	
2480	78         Bluetooth         FHSS         19.0         18.54         0.0						0 mm	Aluminum	Sport	F522RD9PVG	1	back	100	0.102	1.112	1.000	0.113	
2480	78	Bluetooth	FHSS	19.0	18.54	0.01	0 mm	Aluminum	Metal Links	F522RD9PVG	1	back	100	0.082	1.112	1.000	0.091	
2480	78	Bluetooth	FHSS	19.0	18.54	-0.02	0 mm	Aluminum	Metal Loop	F522RD9PVG	1	back	100	0.119	1.112	1.000	0.132	A6
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT										E	dremity						
	Spatial Peak					4.0 W/kg (mW/g)												
	Uncontrolled Exposure/General Population					averaged over 10 grams												

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#### 9.3 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, 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 represent the highest scaled SAR per Equipment Class.

#### WLAN Notes:

- 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 6.2.4 for more information.
- 2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 6.2.5 for more information.
- 3. 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.
- 4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. 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.

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#### FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS 10

#### 10.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to devices with builtin unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit together.

#### Simultaneous Transmission Procedures 10.2

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.

#### 10.3 Head SAR Simultaneous Transmission Analysis

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

Simultaneous Transmission Scenario (Head at 1.0 cm)									
	Bluetooth SAR	5 GHz WLAN SAR							
Exposure Condition	(W/kg)	(W/kg)	2 3AN (W/Kg)						
	1	2	1+2						
Head SAR	0.332	0.241	0.573						

Table 10-1

#### Extremity SAR Simultaneous Transmission Analysis 10.4

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

Simultaneous Transmission Scenario (Extremity at 0.0 cm)										
	Bluetooth SAR	5 GHz WLAN SAR	Σ SAR (W/kg)							
Exposure Condition	(W/kg)	(W/kg)	Z SAIN (W/Kg)							
	1	2	1+2							
Extremity SAR	0.132	0.019	0.151							

Table 10.2

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### 10.5 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.

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# 11 SAR MEASUREMENT VARIABILITY

#### 11.1 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.

#### 11.2 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.

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# **12 EQUIPMENT LIST**

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4438C	ESG Vector Signal Generator	3/24/2022	Annual	3/24/2023	MY45093678
Agilent	8753ES	S-Parameter Vector Network Analyzer	2/11/2022	Annual	2/11/2023	MY40003841
Agilent	E4438C	ESG Vector Signal Generator	10/17/2021	Annual	10/17/2022	MY45093852
Agilent	N5182A	MXG Vector Signal Generator	11/17/2021	Annual	11/17/2022	US46240505
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	351876
Amplifier Research	15S1G7	Amplifier	CBT	N/A	CBT	343972
Anritsu	MA24106A	USB Power Sensor	10/19/2021	Annual	10/19/2022	1827531
Anritsu	MA24106A	USB Power Sensor	3/2/2022	Annual	3/2/2023	1827532
Anritsu	MA24106A	USB Power Sensor	3/2/2022	Annual	3/2/2023	1827533
Anritsu	MA24106A	USB Power Sensor	9/21/2021	Annual	9/21/2022	1827526
Anritsu	MS2028C	Vector Network Analyzer	5/4/2022	Annual	5/4/2023	83641
Anritsu	MA2411B	Pulse Power Sensor	3/2/2022	Annual	3/2/2023	1126066
Anritsu	MA2411B	Pulse Power Sensor	5/19/2022	Annual	5/19/2023	1911106
Anritsu	ML2495A	Power Meter	3/17/2022	Annual	3/17/2023	941001
HEWLETT PACKARD	8753E	Network Analyzer	12/30/2021	Annual	12/30/2022	US38161081
SPEAG	D2450V2	2450 MHz SAR Dipole	11/9/2021	Annual	11/9/2022	921
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/22/2022	Annual	3/22/2023	1123
Seekonk	NC-100	Torque Wrench	7/30/2020	Biennial	7/30/2022	22217
Insize	1108-150	Digital Caliper	4/2/2022	Biennial	4/5/2024	409193536
SPEAG	DAE4	Dasy Data Acquisition Electronics	1/13/2022	Annual	1/13/2023	1403
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/21/2022	Annual	3/21/2023	1408
SPEAG	DAE5	Dasy Data Acquisition Electronics	8/6/2021	Annual	8/6/2022	1683
SPEAG	DAK-3.5	Dielectric Assesment Kit	4/11/2022	Annual	4/11/2023	1323
SPEAG	EX3DV4	SAR Probe	2/22/2022	Annual	2/22/2023	7427
SPEAG	EX3DV4	SAR Probe	3/22/2022	Annual	3/22/2023	7638
SPEAG	EX3DV5	SAR Probe	9/6/2021	Annual	9/6/2022	7674
SPEAG	MAIA	Modulation and Audio Interference Analyzer	CBT	N/A	CBT	1302
SPEAG	MAIA	Modulation and Audio Interference Analyzer	CBT	N/A	CBT	1542
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	N/A
Mini-Circuits	ZHDC-16-63-S+	50-6000MHz Bidirectional Coupler	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter	CBT	N/A	CBT	N/A
Mini-Circuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
Control Company	4353	Long stem Thermometer	10/28/2020	Biennial	10/28/2022	200670646
Control Company	4353	Long stem Thermometer	10/28/2020	Biennial	10/28/2022	200670653
Control Company	4040	Therm./Clock/Humidity Monitor	2/17/2022	Biennial	2/17/2024	200113274
Control Company	4040	Therm./Clock/Humidity Monitor	2/17/2022	Biennial	2/17/2024	200113269
Rohde & Schwarz	FSP-7	Spectrum Analyzer	1/18/2022	Annual	1/8/2023	100990
Keysight Technologies	E4438C	Vector Signal Generator	10/15/2021	Annual	10/15/2022	MY45092078
Keysight Technologies	N902A	MXA Signal Analyzer	7/23/2021	Annual	7/23/2022	MY53421444

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.

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# **13 MEASUREMENT UNCERTAINTIES**

а	b	с	d	e=	f	g	h =	i =	k
				f(d,k)			c x f/e	c x g/e	
	IEEE	Tol.	Prob.		c	C <sub>i</sub>	1gm	10gms	
Uncertainty Component	1528 Sec.	(± %)	Dist.	Div.	1gm	10 gms	u,	u,	v,
	000.	. ,			0	Ű	(± %)	(± %)	
Measurement System									
Probe Calibration	E2.1	7	N	1	1	1	7.0	7.0	<b>00</b>
Axial Isotropy	E2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E2.2	1.3	Ν	1	0.7	0.7	0.9	0.9	~~
Boundary Effect	E2.3	2	R	1.732	1	1	1.2	1.2	00
Linearity	E2.4	0.3	N	1	1	1	0.3	0.3	00
System Detection Limits	E2.4	0.25	R	1.732	1	1	0.1	0.1	~~
Modulation Response	E2.5	4.8	R	1.732	1	1	2.8	2.8	~~
Readout Electronics	E2.6	0.3	N	1	1	1	0.3	0.3	00
Response Time	E2.7	0.8	R	1.732	1	1	0.5	0.5	00
Integration Time	E2.8	2.6	R	1.732	1	1	1.5	1.5	~~
RF Ambient Conditions - Noise	E6.1	3	R	1.732	1	1	1.7	1.7	00
RF Ambient Conditions - Reflections	E6.1	3	R	1.732	1	1	1.7	1.7	00
Probe Positioner Mechanical Tolerance	E6.2	0.8	R	1.732	1	1	0.5	0.5	00
Probe Positioning w/ respect to Phantom	E6.3	6.7	R	1.732	1	1	3.9	3.9	00
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E5	4	R	1.732	1	1	2.3	2.3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Test Sample Related									
Test Sample Positioning	E4.2	3.12	Ν	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E4.1	1.67	Ν	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E2.9	5	R	1.732	1	1	2.9	2.9	~
SAR Scaling	E6.5	0	R	1.732	1	1	0.0	0.0	<b>00</b>
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	~~
Liquid Conductivity - measurement uncertainty	E3.3	4.3	Ν	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E3.3	4.2	Ν	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E3.4	3.4	R	1.732	0.78	0.71	1.5	1.4	~
Liquid Permittivity - Temperature Unceritainty	E3.4	0.6	R	1.732	0.23	0.26	0.1	0.1	<b>00</b>
Liquid Conductivity - deviation from target values	E3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	00
Liquid Permittivity - deviation from target values	E3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	~~
Combined Standard Uncertainty (k=1)						,	12.2	12.0	191
Expanded Uncertainty k=2							24.4	24.0	
(95% CONFIDENCE LEVEL)									

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

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# 14 CONCLUSION

#### 14.1 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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### **15** REFERENCES

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.
- [2] ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.
- [3] ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.
- [4] ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields RF and Microwave, New York: IEEE, December 2002.
- [5] IEEE Standards Coordinating Committee 39 Standards Coordinating Committee 34 IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
- [6] NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- [7] T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1 -124.
- [9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.
- [14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.
- [15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.
- [16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.
- [17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

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- [18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields High-frequency: 10kHz-300GHz, Jan. 1995.
- [19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.
- [20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.
- [21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.
- [22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz 300 GHz, 2015
- [23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07
- [24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01
- [25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04
- [26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04
- [27] FCC SAR Measurement and Reporting Requirements for 100MHz 6 GHz, KDB Publications 865664 D01-D02
- [28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02
- [29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.
- [30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

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