SAR EVALUATION REPORT

IEEE Std 1528-2013

For
Wearable Communication Device

FCC ID: 2AOL2-P0100HF
Model Name: P0100HFW1A00

Report Number: R15177957-S1
Issue Date: 2025-05-01

Prepared for
Hill-Rom Inc
1069 State Rte 46 E
Batesville, IN 47006-7520, US

1501 Nowell Rd.
Raleigh, NC 27607, US

Prepared by
UL LLC
12 LABORATORY DR
RTP, NC 27709, U.S.A.
TEL: (919) 549-1400

ACCREDITED
CERT #0751.06

Revision History

Rev.	Date	Revisions	Revised By
V1	2025-01-17	Initial Issue	--
V2	2025-01-29	Added Hill-Rom's NC location address to cover page	Sarah Kuhaneck
V3	2025-05-01	Corrected FCC ID on cover page	Sarah Kuhaneck

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1. Attestation of Test Results

Applicant Name		Hill-Rom Inc		
FCC ID		2AOL2-P0100HF		
Model Name		P0100HFW1A00		
Applicable Standards		Published RF exposure KDB procedures. IEEE Std 1528-2013		
Exposure Category		SAR Limits (W/Kg)		
		Peak spatial-average (1g of tissue)	Extremities (hands, wrists, ankles, etc.) (10g of tissue)	
General population / Uncontrolled exposure		1.6	4	
RF Exposure Conditions		Equipment Class - Highest Reported SAR (W/kg)		
		DTS	NII	DSS
Head*		0.136	0.351	0.027
Body-worn		0.632	0.306	0.200
Extremity		2.690	1.875	0.588
Simultaneous TX	Head*	0.163	0.378	0.378
	Body-worn	0.832	0.506	0.832
	Extremity	3.278	2.463	3.278
Date Tested		2024-11-21 to 2024-11-26		
Test Results		Pass		

Note: Head exposure is a front-of-face exposure condition with a test separation distance of 25 mm.

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested can demonstrate compliance with the requirements as documented in this report.

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to ensure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not considered unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the U.S. Government, or any agency of the U.S. government.

Approved & Released By:	Prepared By:
	
Richard Jankovics Staff Engineer UL LLC	Sarah Kuhaneck Engineer Project Associate UL LLC

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE Std 1528-2013, the following FCC Published RF exposure KDB procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D03 Supplement C Cross-Reference v01
- 447498 D04 Interim General RF Exposure Guidance v01
- 643646 D01 SAR Test for PTT Radios v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02

In addition to the above, the following information was used:

- TCB Workshop October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- TCB Workshop May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- TCB Workshop April 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))

3. Facilities and Accreditation

UL LLC is accredited by A2LA, cert. # 0751.06 for all testing performed within the scope of this report. Testing was performed at the locations noted below.

The test sites and measurement facilities used to collect data are located at 2800 Perimeter Park Dr, Morrisville, NC, USA.

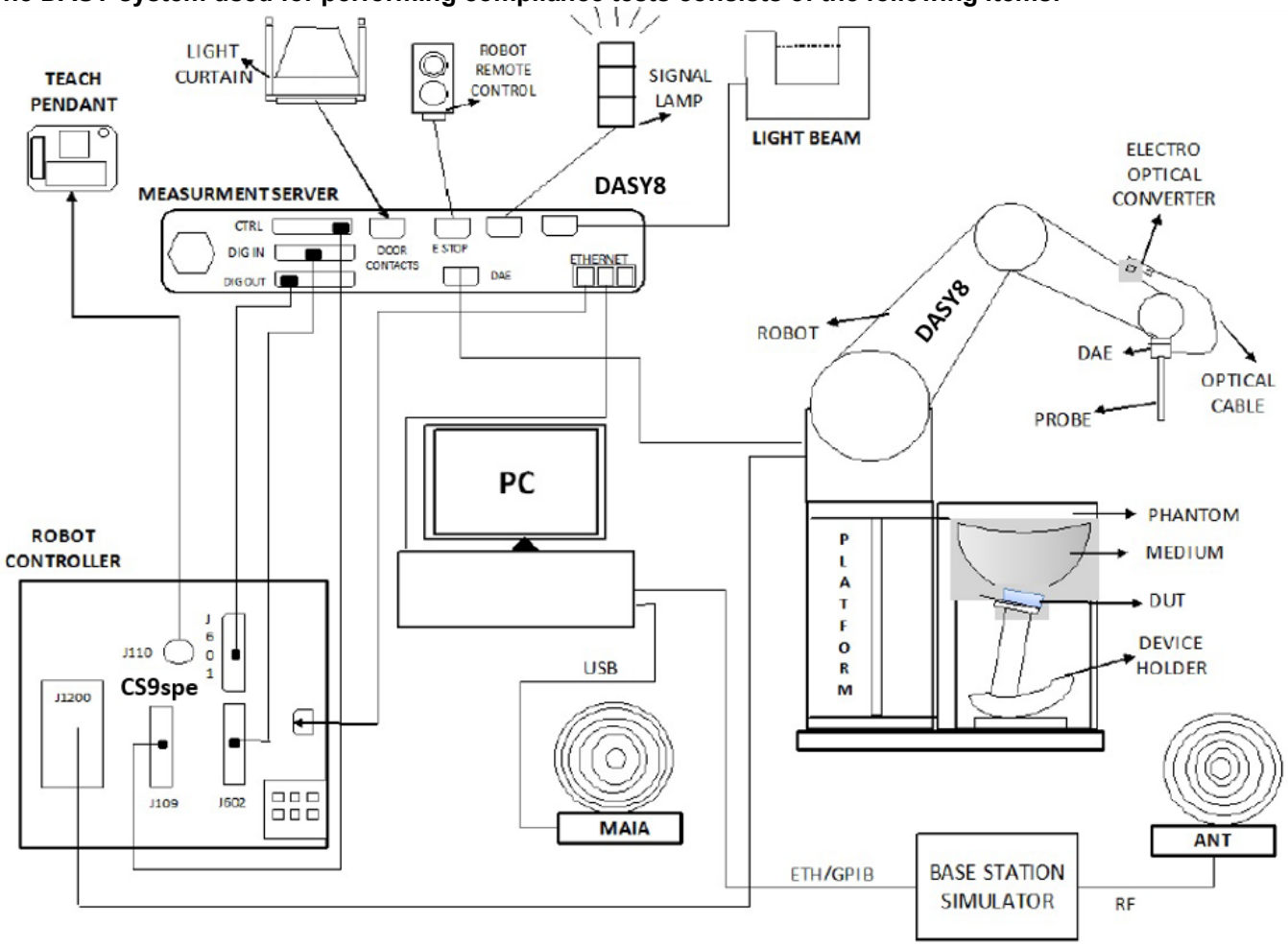
- SAR Lab 2A

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY8[1] software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

[1] DASY8 software used: DASY16.4.0.5005 and older generations.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEC/IEEE 62209-1528, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

Step 3: Zoom Scan

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

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
Network Analyzer	Keysight	E5063A	MY54100681	2024-07-31	2025-07-31
Dielectric Probe	SPEAG	DAKS-3.5	1147	2024-03-11	2025-03-11
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 DB	2024-03-11	2025-03-11
Thermometer	Fisher Scientific	15-078-181	181705017	2023-03-30	2025-03-30

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
Signal Generator	Keysight	N5181A	MY50140788	2024-08-01	2025-08-01
RF Power Meter	Keysight	N1912A	MY55116012	2024-08-02	2025-08-02
RF Power Sensor	Keysight	N1921A	MY55090025	2024-08-16	2025-08-16
RF Power Sensor	Keysight	N1921A	MY55090030	2024-07-09	2025-07-09
Amplifier	Mini-Circuits	ZVA-183WA-S+	S C484802241	N/A	N/A
Directional Coupler	Mini-Circuits	ZUDC10-183+	2214	N/A	N/A
DC Power Supply	Miteq	PS 15V1	1990186	N/A	N/A
RF Power Source	Speag	PowerSource1	4278	2024-06-17	2025-06-17

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
E-Field Probe	SPEAG	EX3DV4	7711	2024-03-15	2025-03-15
Data Acquisition Electronics	SPEAG	DAE4	1716	2024-03-13	2025-03-13
System Validation Dipole	SPEAG	CLA13	1017	2024-03-07	2025-03-07
System Validation Dipole	SPEAG	D2450V2	963	2024-10-11	2025-10-11
System Validation Dipole	SPEAG	D5GHzV2	1213	2024-10-14	2025-10-14
Environmental Indicator	Fisher Scientific	Traceable	240072452	2024-01-24	2026-01-24
Environmental Indicator	Fisher Scientific	Traceable	240072459	2024-01-24	2026-01-24

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
3-Path Diode Power Sensor	Rohde & Schwarz	NRP8S	112236	2024-07-12	2025-07-12

5. Measurement Uncertainty

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

Therefore, the measurement uncertainty is not required.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width x Thickness): 80 mm x 40 mm x 20 mm Overall Diagonal: 78 mm Display Diagonal: 24 mm This is a small wearable device
Back Cover	The Back Cover is not removable
Battery Options	Standard – Lithium-ion battery, Rating 3.85 Vdc, 2.965 Wh
Accessory	Lapel Clip
Test sample information	**S/N** 24CD8D8455C8 **Notes** Radiated and Conducted
Hardware Version	Rev 01
Software Version	1.0.000

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR testing
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20) 802.11n (HT40)	100% (802.11b) [1]
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)	100% (802.11a) [1]
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No		
	Does this device support Band gap channel(s)? ☐ Yes ☒ No		
Bluetooth	2.4 GHz	BR, EDR, and LE	N/A[2]
UWB[3] (Ultra-Wideband)	8 GHz	BPSK, 4BOK	N/A[2]

Notes:

1. Duty cycle for Wi-Fi is referenced from § 9.
2. Measured Duty Cycle is not required due to SAR test exemption.
3. UWB is categorically excluded because the manufacturer-declared maximum conducted output power is ≤ 1 mW.

7. RF Exposure Conditions (Test Configurations)

Refer to Appendix A for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

7.1. Standalone SAR Test Exclusion Considerations

Since the *Dedicated Host Approach* is applied, the standalone SAR test exclusion procedure in KDB 447498 D04 §2 and Annex B is applied in conjunction with KDB 616217 § 4.3 to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.

SAR Test Exclusion Calculations – Head and Body-worn

Band	Frequency (MHz)	Power			Distance (mm)		1 mW Blanket Exemption	SAR-based Exemption					
		Conducted		Antenna Gain	Back	Front	Power < 1 mW	ERP (mW)	X	Threshold (mW)		Exemption	
		dBm	mW	dBi						Back	Front	Back	Front
WLAN 2.4 GHz	2462	19	79.4	1.6	10.6	25	NEXT SECTION	3060.0	1.90	11.4	58.5	MEASURE	MEASURE
WLAN 5.2 GHz	5240	17	50.1	3.1	10.6	25	NEXT SECTION	3060.0	2.07	7.1	41.6	MEASURE	MEASURE
WLAN 5.3 GHz	5320	17	50.1	1.7	10.6	25	NEXT SECTION	3060.0	2.07	7.0	41.3	MEASURE	MEASURE
WLAN 5.5 GHz	5700	17	50.1	2.5	10.6	25	NEXT SECTION	3060.0	2.09	6.7	40.0	MEASURE	MEASURE
WLAN 5.8 GHz	5825	17	50.1	2.5	10.6	25	NEXT SECTION	3060.0	2.09	6.6	39.6	MEASURE	MEASURE
BLE	2480	0	1.0	0.5	8.8	25	EXEMPT	N/A	N/A	N/A	N/A	N/A	N/A

Note(s):

According to KDB 447498 D04, if maximum power is ≤ 1 mW SAR testing is not required. Otherwise, SAR testing is required if the maximum power is greater than the calculated threshold.

1. Per KDB447498 D04 §5.1, A test separation distance up to 25 mm must be applied for any in-front-of the face SAR test.

SAR Test Exclusion Calculations – Extremity

Band	Frequency (MHz)	Power			Distance (mm)							1 mW Blanket Exemption	SAR-based Exemption														
		Conducted		Antenna Gain	Back	Front	Edge Top	Top Right Corner	Edge Right	Edge Bottom	Edge Left	Power < 1 mW	ERP (mW)	X	Threshold (mW)							Exemption						
		dBm	mW	dBi											Back	Front	Edge Top	Top Right Corner	Edge Right	Edge Bottom	Edge Left	Back	Front	Edge Top	Top Right Corner	Edge Right	Edge Bottom	Edge Left
WLAN 2.4 GHz	2462	19	79.4	1.6	10.6	5	8.3	5	5	30.7	36.9	NEXT SECTION	3060.0	1.90	28.6	6.8	17.9	6.8	6.8	216.1	306.7	MEASURE	MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT
WLAN 5.2 GHz	5240	17	50.1	3.1	10.6	5	8.3	5	5	30.7	36.9	NEXT SECTION	3060.0	2.07	17.6	3.7	10.6	3.7	3.7	158.9	232.4	MEASURE	MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT
WLAN 5.3 GHz	5320	17	50.1	1.7	10.6	5	8.3	5	5	30.7	36.9	NEXT SECTION	3060.0	2.07	17.5	3.7	10.5	3.7	3.7	157.9	231.1	MEASURE	MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT
WLAN 5.5 GHz	5700	17	50.1	2.5	10.6	5	8.3	5	5	30.7	36.9	NEXT SECTION	3060.0	2.09	16.7	3.5	10.0	3.5	3.5	153.6	225.4	MEASURE	MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT
WLAN 5.8 GHz	5825	17	50.1	2.5	10.6	5	8.3	5	5	30.7	36.9	NEXT SECTION	3060.0	2.09	16.5	3.4	9.9	3.4	3.4	152.2	223.6	MEASURE	MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT
BLE	2480	0	1.0	0.5	8.8	11.2	48.2	41.7	10.2	5	9.2	EXEMPT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note(s):

According to KDB 447498 D04, if maximum power is ≤ 1 mW SAR testing is not required. Otherwise, SAR testing is required if the maximum power is greater than the calculated threshold.

7.2. Required Test Configurations

The table below identifies the standalone test configurations required for this device according to the findings in Section 7.1:

Exposure Condition	Band	Test Separation Distance (mm)	Back	Front	Edge Top	Top Right Corner	Edge Right	Edge Bottom	Edge Left
Head[1]	Wi-Fi 2.4 GHz	25	N/A	**Yes**	N/A	N/A	N/A	N/A	N/A
	Wi-Fi 5 GHz		N/A	**Yes**	N/A	N/A	N/A	N/A	N/A
	Bluetooth LE		N/A	**No**	N/A	N/A	N/A	N/A	N/A
	UWB[3]		N/A	**No**	N/A	N/A	N/A	N/A	N/A
Body-worn[2]	Wi-Fi 2.4 GHz	0	**Yes**	N/A	N/A	N/A	N/A	N/A	N/A
	Wi-Fi 5 GHz		**Yes**	N/A	N/A	N/A	N/A	N/A	N/A
	Bluetooth LE		**No**	N/A	N/A	N/A	N/A	N/A	N/A
	UWB[3]		**No**	N/A	N/A	N/A	N/A	N/A	N/A
Extremity	Wi-Fi 2.4 GHz	0	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
	Wi-Fi 5 GHz		**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
	Bluetooth LE		**No**	**No**	**No**	**No**	**No**	**No**	**No**
	UWB[3]		**No**	**No**	**No**	**No**	**No**	**No**	**No**

Note(s):

Yes = Testing is required.

No = Testing is not required.

1. Front orientation is required for Head exposure for Front-of-Face use.
2. Only Back is a Body-worn use case.
3. UWB is excluded as the manufacturer-declared maximum transmit power is < 1 mW.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.
Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.
The dielectric constant (εr) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within ± 5% of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for εr and σ may be relaxed to ± 10%. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

Dielectric Property Measurements Results:

SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta	Measured	Target	Delta
SAR 2A	2024-11-21	Head	2450	2450	39.8	39.2	1.53%	1.76	1.80	-2.33%
				2400	39.9	39.3	1.48%	1.72	1.75	-2.09%
				2500	39.7	39.1	1.46%	1.79	1.85	-3.40%
SAR 2A	2024-11-22	Head	5250	5250	35.2	35.9	-2.15%	4.52	4.70	-3.81%
				5150	35.4	36.0	-1.93%	4.41	4.60	-4.10%
				5350	35.0	35.8	-2.37%	4.64	4.80	-3.53%
SAR 2A	2024-11-22	Head	5600	5600	34.5	35.5	-2.85%	4.92	5.06	-2.77%
				5500	34.7	35.6	-2.63%	4.81	4.96	-3.06%
				5725	34.3	35.4	-3.14%	5.07	5.19	-2.28%
SAR 2A	2024-11-22	Head	5750	5750	34.2	35.4	-3.15%	5.10	5.21	-2.16%
				5700	34.3	35.4	-3.08%	5.04	5.16	-2.47%
				5850	34.1	35.3	-3.46%	5.21	5.32	-1.99%

8.2. System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was recorded and normalized to 1 W.

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within ±10% of the manufacturer calibrated dipole SAR target. Refer to Appendix B for the SAR System Check Plots.

SAR Lab	Date	Dipole Type & Serial Number	Dipole Cal. Due Date	Input Power (dBm)	Measured results for 1-g SAR				Measured results for 10-g SAR				Plot No.
					Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	Meas. Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10%	
SAR 2A	2024-11-21	D2450V2 SN: 963	2025-10-11	17.0	2.490	49.682	52.600	-5.55%	1.170	23.345	24.400	-4.33%	1
SAR 2A	2024-11-22	D5GHzV2 SN: 1213 (5.25 GHz)	2025-10-14	17.0	3.770	75.221	81.300	-7.48%	1.090	21.748	23.300	-6.66%	2
SAR 2A	2024-11-22	D5GHzV2 SN: 1213 (5.60 GHz)	2025-10-14	17.0	4.120	82.205	85.600	-3.97%	1.180	23.544	24.600	-4.29%	3
SAR 2A	2024-11-22	D5GHzV2 SN: 1213 (5.75 GHz)	2025-10-14	17.0	3.820	76.219	83.700	-8.94%	1.090	21.748	23.900	-9.00%	4

9. Conducted Output Power Measurements

Tune-Up Power Limits provided by the manufacturer are used to scale measured SAR values.

9.1. Wi-Fi 2.4GHz (DTS Band)

Maximum Output Power (Tune-up Limit) for Wi-Fi 2.4 GHz

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11b/g/n mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Mode	Bandwidth	Channel	Frequency (MHz)	Tune-up Power Limit (dBm)
802.11b DSSS	20 MHz	1	2412	19.0
		6	2437	19.0
		11	2462	19.0
802.11g OFDM	20 MHz	1	2412	16.0
		6	2437	18.0
		11	2462	16.0
802.11n OFDM	20 MHz	1	2412	15.0
		6	2437	18.0
		11	2462	15.0
802.11n OFDM	40 MHz	3	2412	14.0
		6	2437	16.0
		9	2462	14.0

Wi-Fi 2.4GHz Measured Results

Band	Mode	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1	2412	18.9	19.0	Yes
		6	2437	19.0	19.0	
		11	2462	19.0	19.0	

Duty Factor Measured Results

Mode	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11b	100	100	100.00%	1.00

Note(s):

Duty Cycle = (T on / period) * 100%

Duty Cycle plots

802.11b

9.2. Wi-Fi 5GHz (U-NII Bands)

Maximum Output Power (Tune-up Limit) for Wi-Fi 5 GHz

When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n modes, the channel in the lower order/sequence 802.11 transmission mode is selected.

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.

Band	Mode (Bandwidth)	Channel	Frequency (MHz)	Tune-up Power Limit (dBm)
UNII-1 5.2 GHz	802.11a	36	5180	16
		40	5200	17
		44	5220	17
		48	5240	17
	802.11n (HT20)	36	5180	15
		40	5200	16
		44	5220	16
		48	5240	16
	802.11ac (VHT20)	36	5180	15
		40	5200	16
		44	5220	16
		48	5240	16
	802.11n (HT40)	38	5190	14
		46	5230	16
	802.11ac (VHT40)	38	5190	14
		46	5230	16
	802.11ac (VHT80)	42	5210	12
UNII-2A 5.3 GHz	802.11a	52	5260	17
		56	5280	17
		60	5300	17
		64	5320	16
	802.11n (HT20)	52	5260	16
		56	5280	16
		60	5300	16
		64	5320	15
	802.11ac (VHT20)	52	5260	16
		56	5280	16
		60	5300	16
		64	5320	15
	802.11n (HT40)	54	5270	16
		62	5310	14
	802.11ac (VHT40)	54	5270	16
		62	5310	14
	802.11ac (VHT80)	58	5290	12

Band	Mode (Bandwidth)	Channel	Frequency (MHz)	Tune-up Power Limit (dBm)
UNII-2C 5.5 GHz	802.11a	100	5500	16
		116	5580	17
		124	5620	17
		144	5720	17
	802.11n (HT20)	100	5500	15
		116	5580	16
		124	5620	16
		144	5720	16
	802.11ac (VHT20)	100	5500	15
		116	5580	16
		124	5620	16
		144	5720	16
	802.11n (HT40)	102	5510	14
		118	5590	16
		126	5630	16
		142	5710	16
	802.11ac (VHT40)	102	5510	14
		118	5590	16
		126	5630	16
		142	5710	16
	802.11ac (VHT80)	106	5530	12
		138	5690	16
UNII-3 5.8 GHz	802.11a	149	5745	17
		157	5785	17
		165	5825	17
	802.11n (HT20)	149	5745	16
		157	5785	16
		165	5825	16
	802.11ac (VHT20)	149	5745	16
		157	5785	16
		165	5825	16
	802.11n (HT40)	151	5755	16
		159	5795	16
	802.11ac (VHT40)	151	5755	16
		159	5795	16
	802.11ac (VHT80)	155	5775	16

Wi-Fi 5 GHz Measured Results

Band	Mode	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 5.2 GHz	802.11a	36	5180	15.2	16.0	Yes
		40	5200	16.1	17.0	
		44	5220	16.1	17.0	
		48	5240	16.3	17.0	
Band	Mode	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2A 5.3 GHz	802.11a	52	5260	16.0	17.0	Yes
		56	5280	16.0	17.0	
		60	5300	15.9	17.0	
		64	5320	15.0	16.0	
Band	Mode	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11a	100	5500	15.9	16.0	Yes
		116	5580	16.7	17.0	
		124	5620	16.7	17.0	
		144	5720	15.7	17.0	
Band	Mode	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11a	149	5745	16.7	17.0	Yes
		157	5785	16.5	17.0	
		165	5825	16.3	17.0	

Duty Factor Measured Results

Mode	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11a	100	100	100.00%	1.00

Note(s):

Duty Cycle = (T on / period) * 100%

Duty Cycle plots

802.11a

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for Wi-Fi = Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

KDB 248227 D01 SAR meas for 802.11:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the *reported* SAR for the *initial test position* is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
  - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  - When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the *initial test position*, Area Scans were performed to determine the position with the *Maximum Value of SAR (measured)*. The position that produced the highest *Maximum Value of SAR* is considered the worst case position; thus used as the *initial test position*.

10.1. Wi-Fi (DTS Band)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 1-g SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11b	25	Front of Face	6	2437	0.139	100.0%	19.0	19.0	0.136	**0.136**	1
Body-worn	802.11b	0	Back	6	2437	0.623	100.0%	19.0	19.0	0.632	**0.632**	2
RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 10-g SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11b	0	Back	6	2437	0.307	100.0%	19.0	19.0			
			Front	6	2437	1.210	100.0%	19.0	19.0	1.150	1.150	
			Edge Top	6	2437	0.186	100.0%	19.0	19.0			
			Top Right Corner	6	2437	0.626	100.0%	19.0	19.0			
			Edge Right	6	2437	2.710	100.0%	19.0	19.0	2.690	**2.690**	3
				11	2462	2.480	100.0%	19.0	19.0	2.420	2.420	

10.2. Wi-Fi (U-NII Band)

UNII-1&2A

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 1-g SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11a	25	Front of Face	56	5280	0.279	100.0%	17.0	16.0	0.279	**0.351**	4
Body-worn	802.11a	0	Back	56	5280	0.087	100.0%	17.0	16.0	0.096	0.121	5
RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 10-g SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11a	0	Back	56	5280	0.023	100.0%	17.0	16.0			
			Front	56	5280	0.907	100.0%	17.0	16.0	0.950	1.196	
			Edge Top	56	5280	0.023	100.0%	17.0	16.0			
			Top Right Corner	56	5280	0.206	100.0%	17.0	16.0			
			Edge Right	52	5260	1.200	100.0%	17.0	16.0	1.430	1.800	
				56	5280	1.250	100.0%	17.0	16.0	1.460	1.838	6

Note(s):

Per KDB248227 D01, SAR testing is not required for UNII-1 because the reported SAR for UNII-2A is ≤ 1.2 W/kg (1g).
Per KDB248227 D01, SAR testing is not required for UNII-1 because the reported SAR for UNII-2A is ≤3 W/kg (10g).

UNII-2C

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 1-g SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11a	25	Front of Face	124	5620	0.190	100.0%	17.0	16.7	0.183	0.196	7
Body-worn	802.11a	0	Back	124	5620	0.196	100.0%	17.0	16.7	0.185	0.198	8
RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 10-g SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11a	0	Back	124	5620	0.065	100.0%	17.0	16.7			
			Front	124	5620	1.010	100.0%	17.0	16.7	1.020	1.093	
			Edge Top	124	5620	0.035	100.0%	17.0	16.7			
			Top Right Corner	124	5620	0.266	100.0%	17.0	16.7			
			Edge Right	124	5620	1.680	100.0%	17.0	16.7	1.750	**1.875**	9

UNII-3

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 1-g SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11a	25	Front of Face	157	5785	0.209	100.0%	17.0	16.5	0.207	0.232	10
Body-worn	802.11a	0	Back	157	5785	0.249	100.0%	17.0	16.5	0.273	**0.306**	11
RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan 10-g SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11a	0	Back	157	5785	0.093	100.0%	17.0	16.5			
			Front	157	5785	1.010	100.0%	17.0	16.5	0.978	1.097	
			Edge Top	157	5785	0.048	100.0%	17.0	16.5			
			Top Right Corner	157	5785	0.448	100.0%	17.0	16.5			
			Edge Right	157	5785	1.470	100.0%	17.0	16.5	1.560	1.750	12

10.3. Standalone SAR Test Exclusion Considerations & Estimated SAR

The RF exposure test exclusion criteria are determined by:

- 1-mW Test Exemption, regardless of separation distance. 100 kHz to 100 GHz.
- SAR-based Exemption, less than 40 cm. 300 MHz to 6 GHz.

$$P_{th}(mW) = ERP_{20cm}\left(\frac{d}{20\ cm}\right)^{x} \text{ for d ≤ 20 cm}$$

$$P_{th}(mW) = ERP_{20cm} \text{ for 20 cm < d ≤ 40 cm}$$

where

$$x = -\log_{10}\frac{60}{ERP_{20cm} * \sqrt{f}}$$

and *f* is in GHz, *d* is the separation distance (cm), and ERP_{20cm} is

$$ERP_{20cm}(mW) = 2040f \text{ for 0.3 GHz ≤ } f \text{ < 1.5 GHz}$$

$$ERP_{20cm}(mW) = 3060 \text{ for 1.5 GHz ≤ } f \text{ ≤ 6 GHz}$$

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

When the standalone SAR test exclusion is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$$SAR_{est} = SAR_{limit} * \frac{P_{ant}}{P_{th}} \text{ (W/kg)}$$

Where SAR_{limit} is 1.6 W/kg for 1-g SAR and 4.0 W/kg for 10-g SAR, P_{ant} is the maximum power in mW, and P_{th} is the threshold calculated above in mW.

RF Air interface	RF Exposure Conditions	Frequency (GHz)	Max. tune-up tolerance Power		Min. test separation distance (mm)	Calculated Exemption Threshold (mW)	Estimated 1-g SAR (W/kg)
			(dBm)	(mW)			
Bluetooth	Head	2.480	0.0	1	25	58.3	0.027
Bluetooth	Body-worn	2.480	0.0	1	8.8	8.0	0.200
RF Air interface	RF Exposure Conditions	Frequency (GHz)	Max. tune-up tolerance Power		Min. test separation distance (mm)	Calculated Exemption Threshold (mW)	Estimated 10-g SAR (W/kg)
			(dBm)	(mW)			
Bluetooth	Extremity	2.480	0.0	1	5	6.8	0.588

11. SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.8 or 2 W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.8 or 2 W/kg (1-g or 10-g respectively), repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 or 3.6 W/kg (~ 10% from the 1-g or 10-g respective SAR limit).
4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	First Repeated	
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio
2400	Wi-Fi 802.11b/g/n	Extremity	Edge Right	Yes	2.690	2.360	1.14
5300	Wi-Fi 802.11a/n/ac	Extremity	Edge Right	No	1.460	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Extremity	Edge Right	No	1.750	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Extremity	Edge Right	No	1.560	N/A	1.00

Note(s):

Repeated measurement is not required since the original highest measured SAR is <0.8 W/kg (1-g) or 2 W/kg (10-g) .
Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is < 1.20.

12. Simultaneous Transmission Conditions

RF Exposure Condition	Item	Capable Transmit Configurations		
Body-worn	1	DTS	+	DSS
	2	NII	+	DSS
Notes: 1. DTS and UNII cannot transmit simultaneously				

12.1. Simultaneous transmission SAR test exclusion considerations

KDB 447498 D04 Interim General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based upon Sum of SAR the sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. If the sum of the SARs is above the applicable limit then simultaneous transmission SAR test exclusion may still apply if the requirements of the SAR to Peak Location Ratio (SPLSR) evaluation are met.

12.2. Sum of the SAR for DTS & DSS

RF Exposure Condition	Standalone SAR (W/kg)		Σ 1-g SAR (W/kg)
	2.4 GHz WLAN 1	BLE 2	1 + 2
Head	0.136	0.027	**0.163**
Body-worn	0.632	0.200	**0.832**
RF Exposure Condition	**Standalone SAR (W/kg)**		**Σ 10-g SAR (W/kg)**
	2.4 GHz WLAN 1	**BLE 2**	**1 + 2**
Extremity	2.690	0.588	**3.278**

12.3. Sum of the SAR for NII & DSS

RF Exposure Condition	Standalone SAR (W/kg)		Σ 1-g SAR (W/kg)
	5 GHz WLAN 1	BLE 2	1 + 2
Head	0.351	0.027	**0.378**
Body-worn	0.306	0.200	**0.506**
RF Exposure Condition	**Standalone SAR (W/kg)**		**Σ 10-g SAR (W/kg)**
	5 GHz WLAN 1	**BLE 2**	**1 + 2**
Extremity	1.875	0.588	**2.463**

Appendixes

Refer to separated files for the following appendixes.

Appendix A: SAR Setup Photos

Appendix B: SAR System Check Plots

Appendix C: SAR Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: SAR Probe Certificates

Appendix F: SAR Dipole Certificates

END OF REPORT