SAR EVALUATION REPORT

IEEE Std 1528-2013

For
BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax and Digitizer

FCC ID: A3LSMX620
Model Name: SM-X620

Report Number: 15605547-S1V1
Issue Date: 3/4/2025

Prepared for
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ACCREDITED
CERT #0751.05

Revision History

Rev.	Date	Revisions	Revised By
V1	3/4/2025	Initial Issue	--

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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO., LTD.		
FCC ID	A3LSMX620		
Model Name	SM-X620		
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
Standalone	0.250	0.440	0.131
Simultaneous TX	0.261	0.764	0.471
Date Tested	1/13/2025 to 3/3/2025		
Test Results	Pass		

UL Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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:
	
Devin Chang Senior Laboratory Engineer UL Verification Services Inc.	Truc Tran Laboratory Engineer UL Verification Services Inc.

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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 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 616217 D04 SAR for laptop and tablets v01r02
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D06 Hotspot Mode v02r01

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

- TCB Workshop October 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- 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))
- TCB Workshop April 2019; RF Exposure Procedures (802.11ax SAR Testing)
- TCB Workshop April 2022; RF Exposure Procedures (Sum-Peak Location Separation Ratio)

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

47173 Benicia Street
SAR Labs E, F, G, H

UL Verification Services Inc. is accredited by A2LA, Certificate Number 0751.05

The Test Lab Conformity Assessment Body Identifier (CABID)

Location	CABID	Company Number
47173 Benicia Street, Fremont, CA, 94538 UNITED STATES	US0104	2324A

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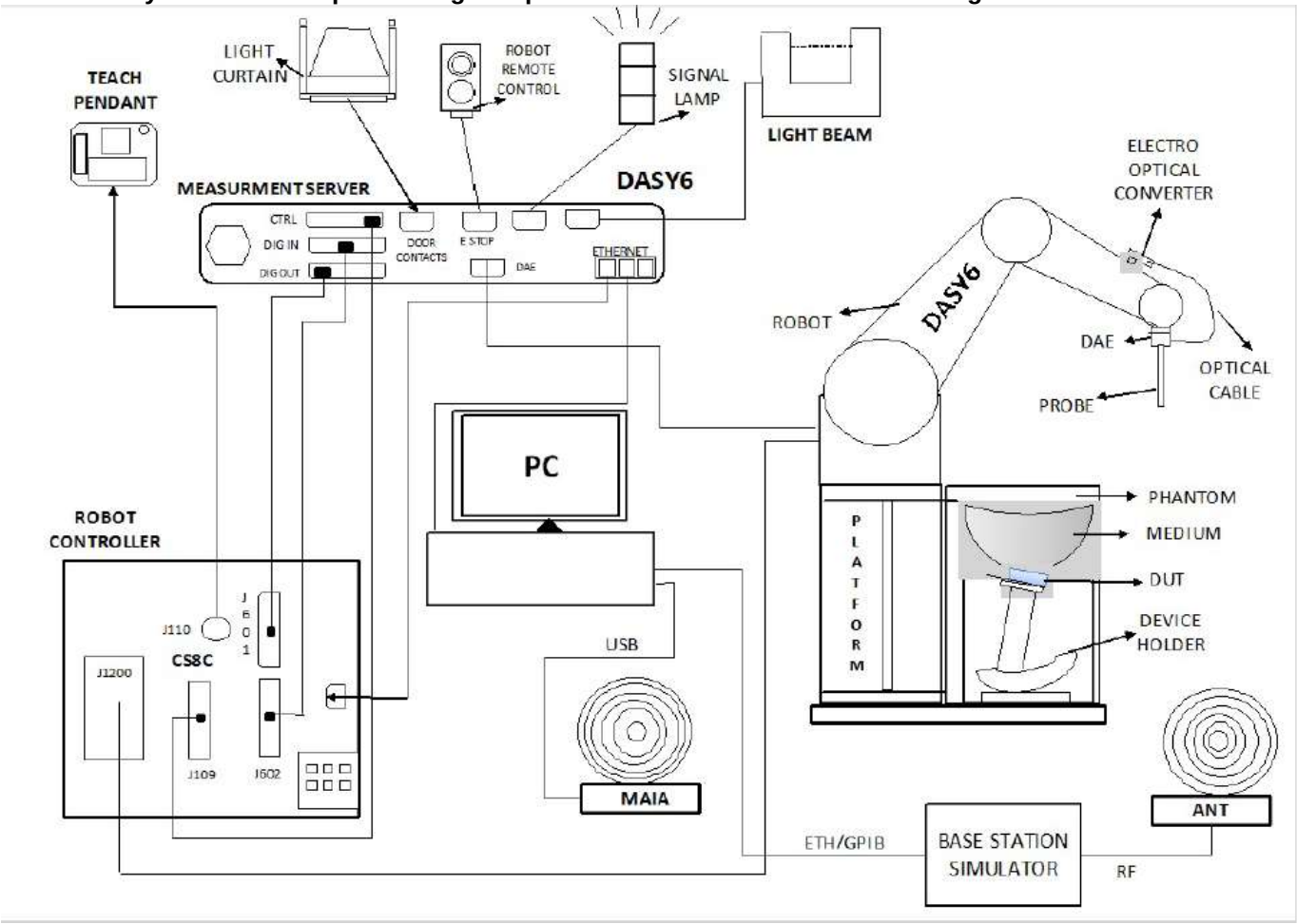
4. SAR Measurement System & Test Equipment

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 DASY6/8[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] DASY6/8 software used: DASY6.16.2 or DASY8.16.2 and older generations.

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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.	

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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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

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.

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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. Due Date
Vector Network Analyzer	Rohde & Schward	ZNLE6	101273-VA	3/5/2025
Dielectric Probe kit	SPEAG	DAK-3.5	1087	9/9/2025
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	9/9/2025
Thermometer	Fisher Scientific	Traceable	240466055	6/30/2025

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Generator	R&S	SMB 100A	180968-gX	2/16/2025
Signal Generator	R&S	SMB 100A	180970-zC	2/28/2026
Power Meter	Keysight	N1912A	MY55196009	1/31/2025
Power Meter	Keysight	N1911A	MY55196014	1/31/2025
Power Meter	Keysight	N1912A	MY55196009	1/31/2025
Power Meter	Keysight	N1912A	MY50001018	2/28/2025
Power Meter	Keysight	N1912A	MY55196004	1/31/2026
Power Sensor	Agilent	N1921A	MY53260010	2/28/2025
Power Sensor	Agilent	N1921A	MY52200012	1/31/2026
Power Sensor	Agilent	N1921A	MY53020038	1/31/2026
Power Sensor	Agilent	N1921A	MY53260001	1/31/2026
Power Sensor	R&S	NRP18A	100992-iu	2/28/2026
Bi-directional coupler	Mini-Circuits	ZUDC10-83-S+	2026	N/A
Bi-directional coupler	Mini-Circuits	ZUDC10-83-S+	2224	N/A

Note(s):

Equipment not used past calibration due date.

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Thermometer	Fisher Scientific	Traceable	170251204	6/30/2025
Thermometer	Fisher Scientific	Traceable	181163663	5/31/2025
Thermometer	Fisher Scientific	Traceable	240466058	6/30/2025
Thermometer	Fisher Scientific	Traceable	181163660	5/31/2025
Thermometer	Fisher Scientific	Traceable	181062319	10/31/2025
Data Acquisition Electronics (SAR Lab E)	SPEAG	DAE4	1545	2/6/2026
Data Acquisition Electronics (SAR Lab F)	SPEAG	DAE4	1239	3/6/2025
Data Acquisition Electronics (SAR Lab F)	SPEAG	DAE4	1548	2/7/2026
Data Acquisition Electronics (SAR Lab G)	SPEAG	DAE4	1433	2/5/2026
Data Acquisition Electronics (SAR Lab H)	SPEAG	DAE4	1799	5/2/2025
E-Field Probe (SAR Lab E)	SPEAG	EX3DV4	3772	2/11/2026
E-Field Probe (SAR Lab F)	SPEAG	EX3DV4	7808	5/8/2025
E-Field Probe (SAR Lab F)	SPEAG	EX3DV4	3773	2/11/2026
E-Field Probe (SAR Lab G)	SPEAG	EX3DV4	7779	5/10/2025
E-Field Probe (SAR Lab H)	SPEAG	EX3DV4	7807	5/8/2025
System Validation Dipole*	SPEAG	D2450V2	706	1/20/2026
System Validation Dipole*	SPEAG	D5GHzV2	1003	2/22/2025
System Validation Dipole*	SPEAG	D5GHzV2	1138	2/3/2026
System Validation Dipole	SPEAG	D5GHzV2	1168	2/6/2026

Note(s):

*Calibration has been extended via impedance measurement. Refer to Appendix F for details
Equipment not used past calibration due date.

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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.

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6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 300.56 mm x 194.74 mm Overall Diagonal: 348.5 mm Display Diagonal: 332.7 mm This is a Tablet and/or laptop device (overall diagonal dimension of the keyboard and/or display section of a laptop or tablet is > 20 cm)
Back Cover	The Back Cover is not removable
Battery Options	The rechargeable battery is not user accessible.
Accessory	Keyboard and S-Pen
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz) ☒ Mobile Hotspot (UNII-3)
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other Wi-Fi Direct is only available in hand use configuration ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz) ☒ Wi-Fi Direct (UNII-1/3)
Bluetooth Tethering (Hotspot)	BT Tethering mode permits the device to share its cellular data connection with other devices. ☒ BT Tethering (Bluetooth 2.4 GHz)
Test sample information	**S/N** — **Notes** R32C00462F — WLAN/BT Conducted R32XC00460T — WLAN/BT Radiated R32XC00468P — WLAN/BT Radiated R32XC0045DR — WLAN/BT Radiated R32XC0045FY — WLAN/BT Radiated 84dcea55301d7ece — WLAN/BT Radiated 84dcee49491d7ece — WLAN/BT Radiated
Hardware Version	REV1.0
Software Version	X620B.001

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode
Wi-Fi	2.4 GHz	802.11b/g/n/ax (20 MHz BW)
	5 GHz UNII-1/2A/2C/3/4	802.11a/n/ac/ax (20/40/80 MHz BW)
		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, LE

Notes:
Duty cycle for Wi-Fi is referenced from the DTS and U-NII reports. Refer to Section 10 for Duty Cycle values used for testing.

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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 § 4.3.1 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 for WLAN

Antennas < 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)					Calculated Threshold Value				
			dBm	mW	Back	Edge Top	Edge Right	Edge Bottom	Edge Left	Back	Edge Top	Edge Right	Edge Bottom	Edge Left
ANT 1	Max Power													
	Wi-Fi 2.4 GHz	2462	18.00	63	5	5	5	287.4	128.82	19.8 -MEASURE-	19.8 -MEASURE-	19.8 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.2 GHz	5240	16.50	45	5	5	5	287.4	128.82	20.6 -MEASURE-	20.6 -MEASURE-	20.6 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.3 GHz	5320	16.50	45	5	5	5	287.4	128.82	20.8 -MEASURE-	20.8 -MEASURE-	20.8 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.5 GHz	5700	16.50	45	5	5	5	287.4	128.82	21.5 -MEASURE-	21.5 -MEASURE-	21.5 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.8 GHz	5825	14.00	25	5	5	5	287.4	128.82	12.1 -MEASURE-	12.1 -MEASURE-	12.1 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.9 GHz	5905	15.50	35	5	5	5	287.4	128.82	17 -MEASURE-	17 -MEASURE-	17 -MEASURE-	> 50 mm	> 50 mm
	Bluetooth	2480	16.00	40	5	5	5	287.4	128.82	12.6 -MEASURE-	12.6 -MEASURE-	12.6 -MEASURE-	> 50 mm	> 50 mm
	Reduced Power													
	Wi-Fi 2.4 GHz	2462	10.00	10	5	5	5	287.4	128.82	3.1 -MEASURE-	3.1 -MEASURE-	3.1 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.2 GHz	5240	8.50	7	5	5	5	287.4	128.82	3.2 -MEASURE-	3.2 -MEASURE-	3.2 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.3 GHz	5320	8.50	7	5	5	5	287.4	128.82	3.2 -MEASURE-	3.2 -MEASURE-	3.2 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.5 GHz	5700	8.00	6	5	5	5	287.4	128.82	2.9 -EXEMPT-	2.9 -EXEMPT-	2.9 -EXEMPT-	> 50 mm	> 50 mm
	Wi-Fi 5.8 GHz	5825	8.50	7	5	5	5	287.4	128.82	3.4 -MEASURE-	3.4 -MEASURE-	3.4 -MEASURE-	> 50 mm	> 50 mm
	Wi-Fi 5.9 GHz	5905	8.50	7	5	5	5	287.4	128.82	3.4 -MEASURE-	3.4 -MEASURE-	3.4 -MEASURE-	> 50 mm	> 50 mm
	Bluetooth	2480	12.00	16	5	5	5	287.4	128.82	5 -MEASURE-	5 -MEASURE-	5 -MEASURE-	> 50 mm	> 50 mm

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)					Calculated Threshold Value				
			dBm	mW	Back	Edge Top	Edge Right	Edge Bottom	Edge Left	Back	Edge Top	Edge Right	Edge Bottom	Edge Left
ANT 2	Max Power													
	Wi-Fi 2.4 GHz	2462	18.00	63	5	5	128.82	287.4	5	19.8 -MEASURE-	19.8 -MEASURE-	> 50 mm	> 50 mm	19.8 -MEASURE-
	Wi-Fi 5.2 GHz	5240	16.50	45	5	5	128.82	287.4	5	20.6 -MEASURE-	20.6 -MEASURE-	> 50 mm	> 50 mm	20.6 -MEASURE-
	Wi-Fi 5.3 GHz	5320	16.50	45	5	5	128.82	287.4	5	20.8 -MEASURE-	20.8 -MEASURE-	> 50 mm	> 50 mm	20.8 -MEASURE-
	Wi-Fi 5.5 GHz	5700	16.50	45	5	5	128.82	287.4	5	21.5 -MEASURE-	21.5 -MEASURE-	> 50 mm	> 50 mm	21.5 -MEASURE-
	Wi-Fi 5.8 GHz	5825	14.00	25	5	5	128.82	287.4	5	12.1 -MEASURE-	12.1 -MEASURE-	> 50 mm	> 50 mm	12.1 -MEASURE-
	Wi-Fi 5.9 GHz	5905	15.50	35	5	5	128.82	287.4	5	17 -MEASURE-	17 -MEASURE-	> 50 mm	> 50 mm	17 -MEASURE-
	Reduced Power													
	Wi-Fi 2.4 GHz	2462	10.00	10	5	5	128.82	287.4	5	3.1 -MEASURE-	3.1 -MEASURE-	> 50 mm	> 50 mm	3.1 -MEASURE-
	Wi-Fi 5.2 GHz	5240	8.50	7	5	5	128.82	287.4	5	3.2 -MEASURE-	3.2 -MEASURE-	> 50 mm	> 50 mm	3.2 -MEASURE-
	Wi-Fi 5.3 GHz	5320	8.50	7	5	5	128.82	287.4	5	3.2 -MEASURE-	3.2 -MEASURE-	> 50 mm	> 50 mm	3.2 -MEASURE-
	Wi-Fi 5.5 GHz	5700	8.00	6	5	5	128.82	287.4	5	2.9 -EXEMPT-	2.9 -EXEMPT-	> 50 mm	> 50 mm	2.9 -EXEMPT-
	Wi-Fi 5.8 GHz	5825	8.50	7	5	5	128.82	287.4	5	3.4 -MEASURE-	3.4 -MEASURE-	> 50 mm	> 50 mm	3.4 -MEASURE-
	Wi-Fi 5.9 GHz	5905	8.50	7	5	5	128.82	287.4	5	3.4 -MEASURE-	3.4 -MEASURE-	> 50 mm	> 50 mm	3.4 -MEASURE-

Note(s):

According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required.

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Antennas > 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)					Calculated Threshold Value				
			dBm	mW	Back	Edge Top	Edge Right	Edge Bottom	Edge Left	Back	Edge Top	Edge Right	Edge Bottom	Edge Left
ANT 1	**Max Power**													
	Wi-Fi 2.4 GHz	2462	18.00	63	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2469.6 mW -EXEMPT-	883.8 mW -EXEMPT-
	Wi-Fi 5.2 GHz	5240	16.50	45	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2439.5 mW -EXEMPT-	853.7 mW -EXEMPT-
	Wi-Fi 5.3 GHz	5320	16.50	45	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2439 mW -EXEMPT-	853.2 mW -EXEMPT-
	Wi-Fi 5.5 GHz	5700	16.50	45	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2436.8 mW -EXEMPT-	851 mW -EXEMPT-
	Wi-Fi 5.8 GHz	5825	14.00	25	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2436.2 mW -EXEMPT-	850.4 mW -EXEMPT-
	Wi-Fi 5.9 GHz	5905	15.50	35	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2435.7 mW -EXEMPT-	849.9 mW -EXEMPT-
	Bluetooth	2480	16.00	40	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2469.3 mW -EXEMPT-	883.5 mW -EXEMPT-
	Reduced Power													
	Wi-Fi 2.4 GHz	2462	10.00	10	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2469.6 mW -EXEMPT-	883.8 mW -EXEMPT-
	Wi-Fi 5.2 GHz	5240	8.50	7	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2439.5 mW -EXEMPT-	853.7 mW -EXEMPT-
	Wi-Fi 5.3 GHz	5320	8.50	7	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2439 mW -EXEMPT-	853.2 mW -EXEMPT-
	Wi-Fi 5.5 GHz	5700	8.00	6	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2436.8 mW -EXEMPT-	851 mW -EXEMPT-
	Wi-Fi 5.8 GHz	5825	8.50	7	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2436.2 mW -EXEMPT-	850.4 mW -EXEMPT-
	Wi-Fi 5.9 GHz	5905	8.50	7	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2435.7 mW -EXEMPT-	849.9 mW -EXEMPT-
	Bluetooth	2480	12.00	16	5	5	5	287.4	128.82	< 50 mm	< 50 mm	< 50 mm	2469.3 mW -EXEMPT-	883.5 mW -EXEMPT-

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)					Calculated Threshold Value				
			dBm	mW	Back	Edge Top	Edge Right	Edge Bottom	Edge Left	Back	Edge Top	Edge Right	Edge Bottom	Edge Left
ANT 2	**Max Power**													
	Wi-Fi 2.4 GHz	2462	18.00	63	5	5	128.82	287.4	5	< 50 mm	< 50 mm	883.8 mW -EXEMPT-	2469.6 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.2 GHz	5240	16.50	45	5	5	128.82	287.4	5	< 50 mm	< 50 mm	853.7 mW -EXEMPT-	2439.5 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.3 GHz	5320	16.50	45	5	5	128.82	287.4	5	< 50 mm	< 50 mm	853.2 mW -EXEMPT-	2439 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.5 GHz	5700	16.50	45	5	5	128.82	287.4	5	< 50 mm	< 50 mm	851 mW -EXEMPT-	2436.8 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.8 GHz	5825	14.00	25	5	5	128.82	287.4	5	< 50 mm	< 50 mm	850.4 mW -EXEMPT-	2436.2 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.9 GHz	5905	15.50	35	5	5	128.82	287.4	5	< 50 mm	< 50 mm	849.9 mW -EXEMPT-	2435.7 mW -EXEMPT-	< 50 mm
	Reduced Power													
	Wi-Fi 2.4 GHz	2462	10.00	10	5	5	128.82	287.4	5	< 50 mm	< 50 mm	883.8 mW -EXEMPT-	2469.6 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.2 GHz	5240	8.50	7	5	5	128.82	287.4	5	< 50 mm	< 50 mm	853.7 mW -EXEMPT-	2439.5 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.3 GHz	5320	8.50	7	5	5	128.82	287.4	5	< 50 mm	< 50 mm	853.2 mW -EXEMPT-	2439 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.5 GHz	5700	8.00	6	5	5	128.82	287.4	5	< 50 mm	< 50 mm	851 mW -EXEMPT-	2436.8 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.8 GHz	5825	8.50	7	5	5	128.82	287.4	5	< 50 mm	< 50 mm	850.4 mW -EXEMPT-	2436.2 mW -EXEMPT-	< 50 mm
	Wi-Fi 5.9 GHz	5905	8.50	7	5	5	128.82	287.4	5	< 50 mm	< 50 mm	849.9 mW -EXEMPT-	2435.7 mW -EXEMPT-	< 50 mm

Note(s):

According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.

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:

Antenna	Band	Back	Edge Top	Edge Right	Edge Bottom	Edge Left
ANT 1	Wi-Fi 2.4GHz Wi-Fi 5.3 GHz Wi-Fi 5.8 GHz Wi-Fi 5.9 GHz Bluetooth	Yes	Yes	Yes	No	No
ANT 2	Wi-Fi 2.4GHz Wi-Fi 5.3 GHz Wi-Fi 5.8 GHz Wi-Fi 5.9 GHz	Yes	Yes	No	No	Yes

Note(s):

Yes = SAR testing is required.

No = SAR testing is not required.

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8. Dielectric Property Measurements & System Check

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 methodology used to determine the SAR correction is described in IEEE Std 1528-2013. The methodology was conducted over a frequency range of 30 MHz to 6000 MHz, but it is implemented over the 300 MHz to 6000 MHz frequency range. The methodology was also studied for permittivity (εr) and conductivity (σ) ranges of ± 20%, but ranges of ± 10% have been chosen. Given that the change in dielectric parameters influences the conversion factor of the probe, this influence will be small if a ± 10% range is used.

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

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.

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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 100 mW.
- The results are normalized to 1 W input power.

Liquid Check											System Check											
SAR Lab	Date	Tissue Type	Band (MHz)	Freq. (MHz)	Relative Permittivity (εr)			Conductivity (σ)			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.
					Measured	Target	Delta	Measured	Target	Delta					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 E	2/26/2025	Head	5750	5750	36.23	35.36	2.45%	5.02	5.21	-3.72%	2/27/2025	D5GHzV2 SN: 1138 (5.75 GHz)	2/6/2026	20.0	7.730	77.300	78.300	-1.28%	2.220	22.200	22.200	0.00%	1
				5700	36.36	35.42	2.65%	4.95	5.16	-4.18%													
				5850	36.04	35.30	2.10%	5.22	5.32	-1.82%													
SAR E	3/3/2025	Head	5750	5750	35.16	35.36	-0.57%	5.03	5.21	-3.49%	3/3/2025	D5GHzV2 SN: 1138 (5.75 GHz)	2/6/2026	20.0	8.420	84.200	78.300	7.54%	2.380	23.800	22.200	7.21%	2
				5700	35.26	35.42	-0.45%	4.94	5.16	-4.23%													
				5850	35.00	35.30	-0.85%	5.22	5.32	-1.86%													
SAR F	1/31/2025	Head	5850	5850	36.92	35.30	4.59%	5.19	5.32	-2.37%	1/31/2025	D5GHzV2 SN: 1138 (5.85 GHz)	2/6/2026	20.0	7.460	74.600	80.100	-6.87%	2.110	21.100	22.700	-7.05%	3
				5750	37.08	35.36	4.86%	5.08	5.21	-2.58%													
				5925	36.81	35.20	4.57%	5.28	5.40	-2.17%													
SAR F	2/3/2025	Head	5250	5250	37.46	35.93	4.25%	4.61	4.70	-2.02%	2/3/2025	D5GHzV2 SN: 1003 (5.25 GHz)	2/22/2026	20.0	7.400	74.000	80.300	-7.85%	2.120	21.200	22.900	-7.42%	4
				5150	37.59	36.05	4.28%	4.48	4.60	-2.63%													
				5350	37.31	35.82	4.16%	4.73	4.80	-1.51%													
SAR F	2/10/2025	Head	5750	5750	35.80	35.36	1.24%	5.04	5.21	-3.43%	2/10/2025	D5GHzV2 SN: 1138 (5.75 GHz)	2/6/2026	20.0	7.930	79.300	78.300	1.28%	2.260	22.600	22.200	1.80%	5
				5700	36.95	35.42	4.32%	4.94	5.16	-4.35%													
				5850	35.61	35.30	0.88%	5.22	5.32	-1.84%													
SAR F	2/26/2025	Head	5250	5250	38.60	35.93	7.42%	4.46	4.70	-5.17%	2/27/2025	D5GHzV2 SN: 1168 (5.25 GHz)	2/6/2026	20.0	8.170	81.700	81.100	0.74%	2.350	23.500	23.100	1.73%	6
				5150	38.76	36.05	7.53%	4.35	4.60	-5.50%													
				5350	38.45	35.82	7.35%	4.57	4.80	-4.94%													
SAR G	2/28/2025	Head	2450	2450	38.02	39.20	-3.01%	1.79	1.80	-0.56%	2/28/2025	D2450V2 SN: 706	1/20/2026	20.0	5.360	53.600	52.300	2.49%	2.510	25.100	24.500	2.45%	7
				2400	38.07	39.30	-3.12%	1.75	1.75	0.02%													
				2500	37.93	39.14	-3.08%	1.83	1.85	-1.51%													
SAR H	1/13/2025	Head	2450	2450	41.09	39.20	4.82%	1.65	1.80	-8.33%	1/13/2025	D2450V2 SN: 706	1/20/2026	20.0	5.070	50.700	52.300	-3.06%	2.400	24.000	24.500	-2.04%	8
				2400	41.16	39.30	4.74%	1.61	1.75	-8.09%													
				2500	41.05	39.14	4.89%	1.68	1.85	-9.39%													

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9. Conducted Output Power Measurements

The selection between antennas in the application is based on RSSI based antenna selection. The full details of power selections are described in the operational description. Refer to Sec. 7 and Sec. 10 for details of the testing. Test reductions have applied accordingly following the SAR KDB Procedure for the supported wireless technologies of the DUT. This is noted in detail for each technology in their respective Sections.

The Maximum Output Power already includes component uncertainty. KDB 447498 sec.4.1.(d) at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit.

Maximum Output Power (Tune-up Power Limit) 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.

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/ax 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 Limit (dBm)			
				SISO ANT 1		MIMO ANT 1 + ANT 2	
				Max	Reduced	Max	Reduced
802.11b DSSS	20 MHz	1	2412	18.0	10.0	21.0	13.0
		6	2437	18.0	10.0	21.0	13.0
		9	2452	18.0	10.0	21.0	13.0
		10	2457	18.0	10.0	21.0	13.0
		11	2462	18.0	10.0	21.0	13.0
		12	2467	6.0	6.0	9.0	9.0
		13	2472	2.0	2.0	5.0	5.0
802.11g/n/ax OFDM	20 MHz	1	2412	17.0	9.5	20.0	12.5
		6	2437	17.0	9.5	20.0	12.5
		9	2452	16.5	9.5	19.5	12.5
		10	2457	15.5	9.5	18.5	12.5
		11	2462	14.0	9.5	17.0	12.5
		12	2467	4.0	4.0	7.0	7.0
		13	2472	-2.0	-2.0	1.0	1.0

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Wi-Fi 2.4GHz Measured Results

Mode	Antenna	Ch #	Freq. (MHz)	Max Power (dBm)			Reduced Power (dBm)		
				Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
DSSS 802.11b	ANT 1	1	2412	17.6	18.0	Yes	9.2	10.0	Yes
		6	2437	17.8	18.0		9.0	10.0	
		11	2462	17.5	18.0		8.6	10.0	
	ANT 2	1	2412	17.5	18.0	Yes	9.0	10.0	Yes
		6	2437	17.8	18.0		8.6	10.0	
		11	2462	17.3	18.0		8.2	10.0	

Note(s):

1. SAR is not required for channels 12 and 13 because the tune-up limit and the measured output power for these two channels are not greater than those for the default test channels. Refer to KDB 248227 D01 section 3.1
2. Only ANT 1 supports Wi-Fi 2.4GHz SISO. To determine compliance for both antennas, MIMO was used for evaluations.

9.2. Wi-Fi 5GHz (U-NII 1-4 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/n/ac/ax 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.

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/n/ac/ax 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.

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Mode	Bandwidth	Channel	Frequency (MHz)	Tune-up Limit (dBm)			
				SISO ANT 2		MIMO ANT 1+ ANT 2	
				Max	Reduced	Max	Reduced
U-NII-1 5.2 GHz	802.11a 20 MHz	36	5180	16.5	8.5	19.5	11.5
		40	5200	16.5	8.5	19.5	11.5
		44	5220	16.5	8.5	19.5	11.5
		48	5240	15.0	8.5	18.0	11.5
	802.11n 20 MHz	36	5180	15.5	8.0	18.5	11.0
		40	5200	15.5	8.0	18.5	11.0
		44	5220	15.5	8.0	18.5	11.0
		48	5240	15.5	8.0	18.5	11.0
	802.11ac/ax 20 MHz	36	5180	15.0	8.0	18.0	11.0
		40	5200	15.0	8.0	18.0	11.0
		44	5220	15.0	8.0	18.0	11.0
		48	5240	15.0	8.0	18.0	11.0
	802.11n/ac 40 MHz	38	5190	11.0	8.0	14.0	11.0
		46	5230	13.5	8.0	16.5	11.0
	802.11ax 40 MHz	38	5190	11.0	8.0	14.0	11.0
		46	5230	13.0	8.0	16.0	11.0
	802.11ac/ax 80 MHz	42	5210	11.0	8.0	14.0	11.0
U-NII-2A 5.3 GHz	802.11a 20 MHz	52	5260	16.5	8.5	19.5	11.5
		56	5280	16.5	8.5	19.5	11.5
		60	5300	16.5	8.5	19.5	11.5
		64	5320	16.5	8.5	19.5	11.5
	802.11n/ac 20 MHz	52	5260	15.5	8.0	18.5	11.0
		56	5280	15.5	8.0	18.5	11.0
		60	5300	15.5	8.0	18.5	11.0
		64	5320	15.5	8.0	18.5	11.0
	802.11ax 20 MHz	52	5260	15.0	8.0	18.0	11.0
		56	5280	15.0	8.0	18.0	11.0
		60	5300	15.0	8.0	18.0	11.0
		64	5320	15.0	8.0	18.0	11.0
	802.11n/ac/ax 40 MHz	54	5270	13.0	8.0	16.0	11.0
		62	5310	13.0	8.0	16.0	11.0
	802.11ac/ax 80 MHz	58	5290	11.0	8.0	14.0	11.0

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Mode	Bandwidth	Channel	Frequency (MHz)	Tune-up Limit (dBm)			
				SISO ANT 2		MIMO ANT 1+ ANT 2	
				Max	Reduced	Max	Reduced
U-NII-2C 5.5 GHz	802.11a 20 MHz	100	5500	16.5	8.0	19.5	11.0
		116	5580	16.5	8.0	19.5	11.0
		124	5620	16.5	8.0	19.5	11.0
		144	5720	16.5	8.0	19.5	11.0
	802.11 n/ac/ax 20 MHz	100	5500	16.0	7.5	19.0	10.5
		116	5580	16.0	7.5	19.0	10.5
		124	5620	16.0	7.5	19.0	10.5
		144	5720	16.0	7.5	19.0	10.5
	802.11n/ac/ax 40 MHz	102	5510	14.0	7.5	17.0	10.5
		118	5590	14.0	7.5	17.0	10.5
		126	5630	14.0	7.5	17.0	10.5
		142	5710	14.0	7.5	17.0	10.5
	802.11ac/ax 80 MHz	106	5530	13.0	8.0	16.0	11.0
		122	5610	13.0	8.0	16.0	11.0
		138	5690	13.0	8.0	16.0	11.0
U-NII-3 5.8 GHz	802.11a 20 MHz	149	5745	14.0	8.5	17.0	11.5
		157	5785	14.0	8.5	17.0	11.5
		165	5825	14.0	8.5	17.0	11.5
	802.11n/ac 20 MHz	149	5745	14.0	8.0	17.0	11.0
		157	5785	14.0	8.0	17.0	11.0
		165	5825	14.0	8.0	17.0	11.0
	802.11ax 20 MHz	149	5745	13.5	8.0	16.5	11.0
		157	5785	13.5	8.0	16.5	11.0
		165	5825	13.5	8.0	16.5	11.0
	802.11n/ac 40 MHz	151	5755	14.0	7.5	17.0	10.5
		159	5795	14.0	7.5	17.0	10.5
	802.11ax 40 MHz	151	5755	13.5	7.5	16.5	10.5
		159	5795	13.5	7.5	16.5	10.5
	802.11ac/ax 80 MHz	155	5775	13.0	8.0	16.0	11.0
U-NII-4 5.9 GHz	802.11a 20 MHz	169	5845	15.5	8.5	18.5	11.5
		173	5865	15.5	8.5	18.5	11.5
		177	5885	15.5	8.5	18.5	11.5
	802.11n/ac 20 MHz	173	5865	14.5	8.0	17.5	11.0
		177	5885	14.5	8.0	17.5	11.0
		181	5905	14.5	8.0	17.5	11.0
	802.11ax 20 MHz	173	5865	14.0	8.0	17.0	11.0
		177	5885	14.0	8.0	17.0	11.0
		181	5905	14.0	8.0	17.0	11.0
	802.11n/ac 40 MHz	175	5875	14.0	7.5	17.0	10.5
	802.11ax 40 MHz	175	5875	12.0	7.5	15.0	10.5
	802.11ac 80 MHz	171	5855	13.0	7.5	16.0	10.5
	802.11ax 80 MHz	171	5855	12.0	8.0	15.0	11.0

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Wi-Fi 5 GHz Measured Results

Band	Mode	Antenna	Ch #	Freq. (MHz)	Max Power (dBm)			Reduced Power (dBm)		
					Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
UNII-2A 5.3 GHz	802.11a	ANT 1	52	5260	15.9	16.5	Yes	7.9	8.5	Yes
			56	5280	16.3	16.5		7.7	8.5	
			60	5300	16.5	16.5		7.2	8.5	
			64	5320	15.7	16.5		6.6	8.5	
		ANT 2	52	5260	15.2	16.5	Yes	7.1	8.5	Yes
			56	5280	15.7	16.5		6.9	8.5	
			60	5300	15.4	16.5		7.0	8.5	
			64	5320	15.4	16.5		7.0	8.5	
Band	Mode	Antenna	Ch #	Freq. (MHz)	Max Power (dBm)			Reduced Power (dBm)		
					Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11a	ANT 1	149	5745	13.4	14.0	Yes	7.1	8.5	Yes
			157	5785	13.6	14.0		7.0	8.5	
			165	5825	13.4	14.0		7.7	8.5	
		ANT 2	149	5745	12.8	14.0	Yes	6.8	8.5	Yes
			157	5785	13.4	14.0		7.8	8.5	
			165	5825	13.5	14.0		8.4	8.5	
Band	Mode	Antenna	Ch #	Freq. (MHz)	Max Power (dBm)			Reduced Power (dBm)		
					Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up Limit	SAR Test (Yes/No)
UNII-4 5.9 GHz	802.11a	ANT 1	169	5845	14 6	15.5	Yes	7.7	8.5	Yes
			173	5865	14.8	15.5		7.8	8.5	
			177	5885	15.2	15.5		7.7	8.5	
		ANT 2	169	5845	15.3	15.5	Yes	8.2	8.5	Yes
			173	5865	14.4	15.5		8.0	8.5	
			177	5885	14.5	15.5		8.0	8.5	

Note(s):

Only ANT 2 supports Wi-Fi 5GHz SISO. To determine compliance for both antennas, MIMO was used for evaluations.

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9.3. Bluetooth

Maximum Output Power (Tune-up Limit) for Bluetooth

From October 2016 TCB workshop, Power and SAR were measured with the device connected to a call box with hopping disabled using DH5 modulation. The duty cycle value from the device is taken from the Duty Cycle plot below.

SAR measurement is not required for the EDR and LE. When the secondary mode is ≤ ¼ dB higher than the primary mode.

Band	Mode	Channel	Frequency (MHz)	Tune-up Limit (dBm)	
				ANT 1	
				Max Power	Reduced Power
Bluetooth 2.4 GHz	BR	0	2402	16.0	12.0
		39	2441	16.0	12.0
		78	2480	16.0	12.0
	EDR	0	2402	12.0	12.0
		39	2441	12.0	12.0
		78	2480	12.0	12.0
	LE 125/500 Kbps	0	2402	13.0	12.0
		19	2440	13.0	12.0
		39	2480	13.0	12.0
	LE 1/2 Mbps	0	2402	16.0	12.0
		19	2440	16.0	12.0
		39	2480	16.0	12.0

Bluetooth Measured Results

Band	Mode	Ch #	Freq. (MHz)	ANT 1 Max Power (dBm)			ANT 1 Reduced Power (dBm)		
				Meas Pwr	Tune-up Limit	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
Bluetooth 2.4 GHz	BR GFSK	0	2402	15.0	16.0	Yes	11.5	12.0	Yes
		39	2441	15.1	16.0		12.0	12.0	
		78	2480	15.3	16.0		11.9	12.0	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.88313	3.75227	76.84%	1.30

Note(s):

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

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Duty Cycle plots

GFSK

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10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN and Bluetooth = Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi and Bluetooth = 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*.

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10.1. Wi-Fi (DTS Band)

Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Test Position(s)	Channel	Freq. (MHz)	Duty Cycle (%)	Max Output Pwr (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT 1	Standalone	802.11b	Max Power	19	Back	6	2437	98.29%	18.0	17.8	0.062	0.066	
ANT 1	Standalone	802.11b	Max Power	24	Edge Top	6	2437	98.29%	18.0	17.8	0.047	0.050	
ANT 1	Standalone	802.11b	Max Power	10	Edge Right	6	2437	98.29%	18.0	17.8	0.235	**0.250**	1
ANT 1	Standalone	802.11b	Reduced Power	0	Back	1	2412	98.29%	10.0	9.2	0.143	0.175	
ANT 1	Standalone	802.11b	Reduced Power	0	Edge Top	1	2412	98.29%	10.0	9.2	0.131	0.160	
ANT 1	Standalone	802.11b	Reduced Power	0	Edge Right	1	2412	98.29%	10.0	9.2	0.203	0.248	2
ANT 2	Standalone	802.11b	Max Power	19	Back	6	2437	98.29%	18.0	17.8	0.027	0.029	
ANT 2	Standalone	802.11b	Max Power	24	Edge Top	6	2437	98.29%	18.0	17.8	0.017	0.018	
ANT 2	Standalone	802.11b	Max Power	9	Edge Left	6	2437	98.29%	18.0	17.8	0.166	0.177	
ANT 2	Standalone	802.11b	Reduced Power	0	Back	1	2412	98.29%	10.0	9.0	0.067	0.086	
ANT 2	Standalone	802.11b	Reduced Power	0	Edge Top	1	2412	98.29%	10.0	9.0	0.077	0.099	
ANT 2	Standalone	802.11b	Reduced Power	0	Edge Left	1	2412	98.29%	10.0	9.0	0.132	0.169	

Note(s):

Only ANT 1 supports Wi-Fi 2.4GHz SISO. To determine compliance for both antennas, MIMO was used for evaluations.

10.2. Wi-Fi (U-NII Band)

U-NII 1 & 2A

When the specified maximum output power is the same for both U-NII band 1 and U-NII band 2A, begin SAR measurement in U-NII band 2A; and if the highest *reported* SAR for U-NII band 2A is

- ≤ 1.2 W/kg, SAR is not required for U-NII band I
- > 1.2 W/kg, both bands should be tested independently for SAR.

Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Test Position(s)	Channel	Freq. (MHz)	Duty Cycle (%)	Max Output Pwr (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT 1	Standalone	802.11a	Max Power	19	Back	60	5300	93.65%	16.5	16.5	0.012	0.013	
ANT 1	Standalone	802.11a	Max Power	24	Edge Top	60	5300	93.65%	16.5	16.5	0.010	0.011	
ANT 1	Standalone	802.11a	Max Power	10	Edge Right	60	5300	93.65%	16.5	16.5	0.143	0.153	
ANT 1	Standalone	802.11a	Reduced Power	0	Back	52	5260	93.65%	8.5	7.9	0.103	0.126	
ANT 1	Standalone	802.11a	Reduced Power	0	Edge Top	52	5260	93.65%	8.5	7.9	0.027	0.033	
ANT 1	Standalone	802.11a	Reduced Power	0	Edge Right	52	5260	93.65%	8.5	7.9	0.224	0.275	
ANT 2	Standalone	802.11a	Max Power	19	Back	60	5300	93.65%	16.5	15.4	0.032	0.044	
ANT 2	Standalone	802.11a	Max Power	24	Edge Top	60	5300	93.65%	16.5	15.4	0.018	0.025	
ANT 2	Standalone	802.11a	Max Power	9	Edge Left	60	5300	93.65%	16.5	15.4	0.320	**0.440**	3
ANT 2	Standalone	802.11a	Reduced Power	0	Back	52	5260	93.65%	8.5	7.1	0.267	0.394	4
ANT 2	Standalone	802.11a	Reduced Power	0	Edge Top	52	5260	93.65%	8.5	7.1	0.135	0.199	
ANT 2	Standalone	802.11a	Reduced Power	0	Edge Left	52	5260	93.65%	8.5	7.1	0.259	0.382	

U-NII 3

Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Test Position(s)	Channel	Freq. (MHz)	Duty Cycle (%)	Max Output Pwr (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT 1	Standalone	802.11a	Max Power	19	Back	157	5785	93.65%	14.0	13.6	0.019	0.022	
ANT 1	Standalone	802.11a	Max Power	24	Edge Top	157	5785	93.65%	14.0	13.6	0.009	0.011	
ANT 1	Standalone	802.11a	Max Power	10	Edge Right	157	5785	93.65%	14.0	13.6	0.097	0.114	5
ANT 1	Standalone	802.11a	Reduced Power	0	Back	165	5825	93.65%	8.5	7.7	0.246	0.316	6
ANT 1	Standalone	802.11a	Reduced Power	0	Edge Top	165	5825	93.65%	8.5	7.7	0.097	0.125	
ANT 1	Standalone	802.11a	Reduced Power	0	Edge Right	165	5825	93.65%	8.5	7.7	0.200	0.257	
ANT 2	Standalone	802.11a	Max Power	19	Back	157	5785	93.65%	14.0	13.4	0.010	0.012	
ANT 2	Standalone	802.11a	Max Power	24	Edge Top	157	5785	93.65%	14.0	13.4	0.007	0.009	
ANT 2	Standalone	802.11a	Max Power	9	Edge Left	157	5785	93.65%	14.0	13.4	0.050	0.061	
ANT 2	Standalone	802.11a	Reduced Power	0	Back	165	5825	93.65%	8.5	8.4	0.068	0.074	
ANT 2	Standalone	802.11a	Reduced Power	0	Edge Top	165	5825	93.65%	8.5	8.4	0.012	0.013	
ANT 2	Standalone	802.11a	Reduced Power	0	Edge Left	165	5825	93.65%	8.5	8.4	0.083	0.091	

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U-NII 4

Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Test Position(s)	Channel	Freq. (MHz)	Duty Cycle (%)	Max Output Pwr (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT 1	Standalone	802.11a	Max Power	19	Back	169	5845	93.65%	15.5	14.6	0.015	0.020	
ANT 1	Standalone	802.11a	Max Power	24	Edge Top	169	5845	93.65%	15.5	14.6	0.008	0.011	
ANT 1	Standalone	802.11a	Max Power	10	Edge Right	169	5845	93.65%	15.5	14.6	0.076	0.100	7
ANT 1	Standalone	802.11a	Reduced Power	0	Back	169	5845	93.65%	8.5	7.7	0.285	0.366	8
ANT 1	Standalone	802.11a	Reduced Power	0	Edge Top	169	5845	93.65%	8.5	7.7	0.054	0.069	
ANT 1	Standalone	802.11a	Reduced Power	0	Edge Right	169	5845	93.65%	8.5	7.7	0.182	0.234	
ANT 2	Standalone	802.11a	Max Power	19	Back	169	5845	93.65%	15.5	15.3	0.006	0.007	
ANT 2	Standalone	802.11a	Max Power	24	Edge Top	169	5845	93.65%	15.5	15.3	0.004	0.004	
ANT 2	Standalone	802.11a	Max Power	9	Edge Left	169	5845	93.65%	15.5	15.3	0.037	0.041	
ANT 2	Standalone	802.11a	Reduced Power	0	Back	169	5845	93.65%	8.5	8.2	0.145	0.166	
ANT 2	Standalone	802.11a	Reduced Power	0	Edge Top	169	5845	93.65%	8.5	8.2	0.012	0.014	
ANT 2	Standalone	802.11a	Reduced Power	0	Edge Left	169	5845	93.65%	8.5	8.2	0.173	0.198	

Note(s):

Only ANT 2 supports Wi-Fi 5GHz SISO. To determine compliance for both antennas, MIMO was used for evaluations.

10.3. Bluetooth

Antenna(s)	RF Exposure Condition(s)	Mode(s)	Power Mode(s)	Dist. (mm)	Test Position(s)	Channel	Freq. (MHz)	Max Output Pwr (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT 1	Standalone	GFSK (BDR)	Max Power	19	Back	39	2441	16.0	15.1	0.009	0.011	
ANT 1	Standalone	GFSK (BDR)	Max Power	24	Edge Top	39	2441	16.0	15.1	0.001	0.001	
ANT 1	Standalone	GFSK (BDR)	Max Power	10	Edge Right	39	2441	16.0	15.1	0.040	0.049	9
ANT 1	Standalone	GFSK (BDR)	Reduced Power	0	Back	39	2441	12.0	12.0	0.077	0.077	
ANT 1	Standalone	GFSK (BDR)	Reduced Power	0	Edge Top	39	2441	12.0	12.0	0.037	0.037	
ANT 1	Standalone	GFSK (BDR)	Reduced Power	0	Edge Right	39	2441	12.0	12.0	0.131	**0.131**	10

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.

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) .

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12. Simultaneous Transmission Conditions

RF Exposure Condition	Item	Capable Transmit Configurations		
Standalone	1	DTS Ant.1	+	DTS Ant.2
	2	U-NII Ant.1	+	U-NII Ant.2
	3	U-NII Ant.2	+	BT Ant.1

Notes:

1. Only DTS Ch. 1-11 & U-NII Ch. 149-165 support Hotspot.
2. DTS Radio cannot transmit simultaneously with Bluetooth Radio.
3. U-NII Radio can transmit simultaneously with Bluetooth Radio.

12.1. Simultaneous transmission SAR test exclusion considerations

KDB 447498 D01 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.

SAR to Peak Location Ratio (SPLSR)

KDB 447498 D01 General RF Exposure Guidance explains how to calculate the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR_1 is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of

$$[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

When an individual antenna transmits at on two bands simultaneously, the sum of the highest *reported* SAR for the frequency bands should be used to determine SAR_1.or SAR_2. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

The antennas in all antenna pairs that do not qualify for simultaneous transmission SAR test exclusion must be tested for SAR compliance, according to the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01

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Simultaneous transmission SAR measurement

When simultaneous transmission SAR measurements are required in different frequency bands not covered by a single probe calibration point then separate tests for each frequency band are performed. The tests are performed using enlarged zoom scans which are processed, by means of superposition, using the DASY5 volume scan post-processing procedures to determine the 1-g SAR for the aggregate SAR distribution.

The spatial resolution used for all enlarged zoom scans is the same as used for the most stringent zoom scans. I.E. the scan parameters required for the highest frequency assessed are used for all enlarged zoom scans. The scans cover the complete area of the device to ensure all transmitting antennas and radiating structures are assessed.

DASY5 provides the ability to perform Multiband Evaluations according to the latest standards using the Volume Scan job as well as appropriate routines for the Post-processing.

In order to extract and process measurements within different frequency bands, the SEMCAD X Post-processor performs the combination and subsequent superposition of these measurement data via DASY5= Combined MultiBand Averaged SAR.

Combined Multi Band Averaged SAR allows - in addition to the data extraction - an evaluation of the 1 g, 10 g and/or arbitrary averaged mass SAR.
Power Scaling Factor is used to allow the volume scans to be scaled by a value other than "1", this is important when the results need to be scaled to different maximum power levels. The Power Scaling Factor is applied to each individual point of the scan. When power scaling is used in multi-band combinations the scaling factor is applied to each individual point of the first scan, the second factor is then applied to each individual point of the second scan and so on. The scans are then combined.

12.2. Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR Estimation

1. When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
2. Dedicated Host Approach criteria for SAR test exclusion is likewise applied to SAR estimation, with certain distinctions between test exclusion and SAR estimation:
    - When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied for SAR estimation; this is the same between test exclusion and SAR estimation calculations.
    - When the separation distance from the antenna to an adjacent edge is > 5 mm but ≤ 50 mm, the actual antenna-to-edge separation distance is applied for SAR estimation.
    - When the minimum test separation distance is > 50 mm, the estimated SAR value is 0.4 W/kg
3. Please refer to Estimated SAR Tables to see which test positions are inherently compliant as they consist of only estimated SAR values for all applicable transmitters and consequently will always have sum of SAR values < 1.2 W/kg. Simultaneous transmission SAR analysis was therefore not performed for these test positions.

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Estimated SAR for WLAN

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)			Estimated 1-g SAR Value (W/kg)		
			dBm	mW	Back	Edge Top	Edge Right	Back	Edge Top	Edge Right
ANT 1	Max Power									
	Wi-Fi 2.4 GHz	2462	18.00	63	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.2 GHz	5240	16.50	45	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.3 GHz	5320	16.50	45	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.5 GHz	5700	16.50	45	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.8 GHz	5825	14.00	25	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.9 GHz	5905	15.50	35	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Bluetooth	2480	16.00	40	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Reduced Power									
	Wi-Fi 2.4 GHz	2462	10.00	10	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.2 GHz	5240	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.3 GHz	5320	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.5 GHz	5700	8.00	6	5	5	5	0.382	0.382	0.382
	Wi-Fi 5.8 GHz	5825	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.9 GHz	5905	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)			Estimated 1-g SAR Value (W/kg)		
			dBm	mW	Back	Edge Top	Edge Left	Back	Edge Top	Edge Left
ANT 2	Max Power									
	Wi-Fi 2.4 GHz	2462	18.00	63	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.2 GHz	5240	16.50	45	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.3 GHz	5320	16.50	45	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.5 GHz	5700	16.50	45	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.8 GHz	5825	14.00	25	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.9 GHz	5905	15.50	35	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Bluetooth	2480	16.00	40	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Reduced Power									
	Wi-Fi 2.4 GHz	2462	10.00	10	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.2 GHz	5240	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.3 GHz	5320	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.5 GHz	5700	8.00	6	5	5	5	0.382	0.382	0.382
	Wi-Fi 5.8 GHz	5825	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-
	Wi-Fi 5.9 GHz	5905	8.50	7	5	5	5	-MEASURE-	-MEASURE-	-MEASURE-

12.3. Sum of the SAR for Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					∑ 1-g SAR (W/kg)		
		1	2	3	4	5	1+2	3+4	4+5
		DTS ANT 1	DTS ANT 2	NII ANT 1	NII ANT 2	DSS ANT 1			
Standalone	Back	0.175	0.086	0.366	0.394	0.077	**0.261**	0.760	**0.471**
	Edge Top	0.160	0.099	0.382	0.382	0.037	0.259	**0.764**	0.419
	Edge Right	0.250		0.382		0.131	0.250	0.382	0.131
	Edge Left		0.177		0.440		0.177	0.440	0.440

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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

Appendix G: Sensor Triggering Validation

END OF REPORT

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