SAR EVALUATION REPORT

FCC 47 CFR § 2.1093
IEEE Std 1528-2013

For
Tablet Device

FCC ID: BCGA1673
Model Name: A1673

Report Number: 15U22427-S1V3
Issue Date: 2/22/2016

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	2/9/2016	Initial Issue	--
V2	2/17/2016	Report revised based on Reviewer comments: 1. Sec. 6.3.: Corrected typo in Bluetooth table. 2. Sec. 7.1.: Revised exclusion tables. 3. Sec. 10.: Added note to clarify test logic. 4. Sec. 10.2.2.: Corrected typos. 5. Sec. 12.: Revised SAR estimation table.	Ray Su
V3	2/22/2016	Report revised based on Reviewer comments: 1. Sec. 6.1.: Corrected device display diagonal dimension. 2. Sec. 7.1.: Revised exclusion table title 3. Sec. 12.: Revised SAR estimation table title. 4. Appendix: Revised Appendix A	Ray Su

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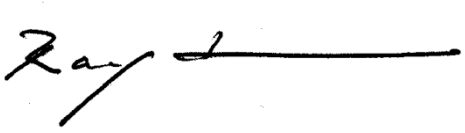
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1. Attestation of Test Results

Applicant Name	APPLE INC.			
FCC ID	BCGA1673			
Model Name	A1673			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average(1g of tissue)			
General population / Uncontrolled exposure	1.6			
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	Licensed	DTS	U-NII	DSS (BT)
Standalone	N/A	1.058	1.180	1.150
Simultaneous TX	N/A	1.074	1.412	1.412
Date Tested	1/4/2016 to 2/5/2016			
Test Results	Pass			

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly 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 NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released By:	Prepared By:
	
Bobby Bayani Senior Engineer UL Verification Services Inc.	Ray Su 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
- 690783 D01 SAR Listings on Grants v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02

3. Facilities and Accreditation

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

47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	
SAR Lab F	
SAR Lab G	
SAR Lab H	

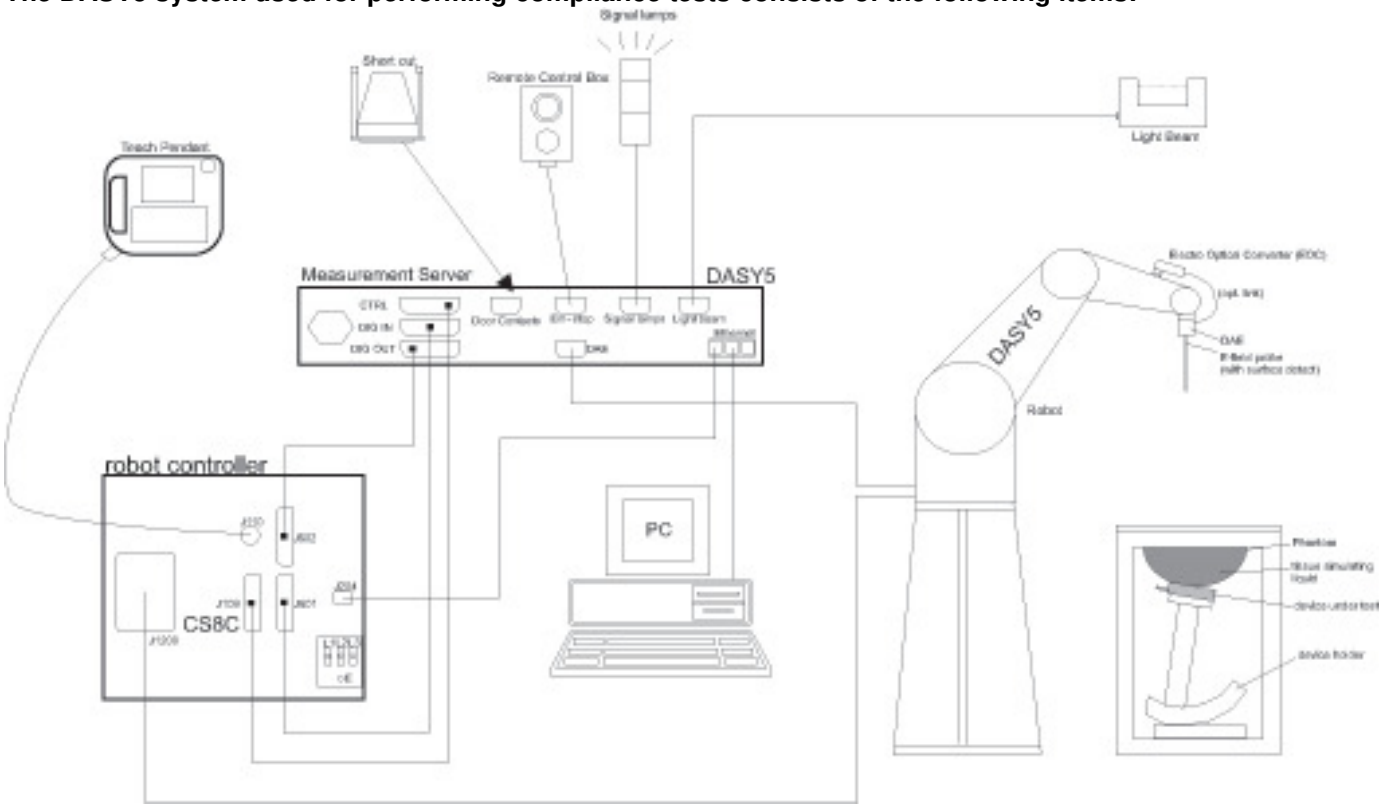
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4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY5 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 WinXP or Win7 and the DASY5 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.

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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 IEEE Standard 1528 and IEC 62209 standards, 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.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

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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
Network Analyzer	Agilent	8753ES	MY40000980	4/17/2016
Dielectric Probe kit	SPEAG	DAK-3.5	1082	9/15/2016
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	Traceable Calibration Control Co.	4242	140562250	8/24/2016

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	HP	8665B	3744A01084	5/8/2016
Power Meter	Keysight Technologies	N1912A	MY55196004	7/1/2016
Power Meter	Agilent	N1912A	MY50001018	10/19/2017
Power Sensor	Agilent	E9323A	MY53070007	3/2/2016
Power Sensor	Agilent	E9323A	MY53070005	4/29/2016
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	AMETEK	XT 15-4	1319A02778	N/A
Synthesized Signal Generator	HP	8665B	3744A01155	3/18/2016
Power Meter	HP	437B	3125U16345	6/15/2016
Power Meter	HP	437B	3125U12345	7/31/2016
Power Sensor	HP	8481A	2702A76223	9/3/2016
Power Sensor	HP	8481A	1926A27048	8/3/2016
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	BK PRECISION	1611	215-02292	N/A
E-Field Probe (SAR Lab A)	SPEAG	EX3DV4	3751	11/18/2016
E-Field Probe (SAR Lab B)	SPEAG	EX3DV4	3686	8/28/2016
E-Field Probe (SAR Lab C)	SPEAG	EX3DV4	3936	7/21/2016
E-Field Probe (SAR Lab D)	SPEAG	EX3DV4	3885	9/18/2016
E-Field Probe (SAR Lab D)	SPEAG	EX3DV4	3773	4/22/2016
Data Acquisition Electronics (SAR Lab A)	SPEAG	DAE4	1357	2/20/2016
Data Acquisition Electronics (SAR Lab B)	SPEAG	DAE4	1360	3/12/2016
Data Acquisition Electronics (SAR Lab C)	SPEAG	DAE4	1380	7/13/2016
Data Acquisition Electronics (SAR Lab D)	SPEAG	DAE4	1239	4/16/2016
System Validation Dipole	SPEAG	D2450V2	748	2/20/2016
System Validation Dipole	SPEAG	D5GHzV2	1168	11/13/2016
System Validation Dipole	SPEAG	D5GHzV2	1003	2/20/2016

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Keysight	N1912A	MY55196004	7/1/2016
Power Sensor	Agilent	N1921A	MY5320001	9/24/2016

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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, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

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6. Device Under Test (DUT) Information

6.1. DUT Description

Model A1673 is a tablet with multimedia functions (music, application support, and video)

IEEE 802.11a/b/g/n/ac radio (MIMO 2x2) and Bluetooth radio

There are two suppliers of the Wi-Fi/Bluetooth radio modules to support the production volumes of the device. The two variants are referenced in this report as:

Module 1 = Wi-Fi/BT module supplier 1

Module 2 = Wi-Fi/BT module supplier 2

The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Complete SAR evaluation is performed on the device with one Wi-Fi/Bluetooth radio module, and then the test is repeated on the device with the other Wi-Fi/Bluetooth module at the highest SAR value.

Device Dimension	Overall (Length x Width): 240 mm x 169.47 mm Overall Diagonal: 287.1 mm Display Diagonal: 245.7 mm
Back Cover	☒ The rechargeable battery is not user accessible.
Battery Options	☒ The rechargeable battery is not user accessible.
AirPlay	AirPlay mode enabled devices transfer data directly between each other ☒ AirPlay (Wi-Fi 2.4 GHz) ☒ AirPlay (Wi-Fi 5 GHz)

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)	100%
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)	100%
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No		
	Does this device support Band gap channel? ☒ Yes ☐ No		
Bluetooth	2.4 GHz	Version 4.2 + LE	77.5% (DH5)

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6.3. Maximum Output Power from Tune-up Procedure

KDB 447498 sec.4.1.(3) 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

Wi-Fi 2.4 GHz Band

Band (GHz)	No. of Transmitters	Mode	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
2.4	1 Tx	802.11b	1	2412	16.5	16.0	15.0	Yes
			2	2417	16.5	16.0	15.0	
			6	2437	16.5	16.0	15.0	
			10	2457	16.5	16.0	15.0	
			11	2462	16.5	16.0	15.0	
			12	2467	16.5	16.0	15.0	
			13	2472	14.0	14.0	14.0	
		802.11g	1	2412	15.0	15.0	15.0	No
			2	2417	16.5	16.0	15.0	
			6	2437	16.5	16.0	15.0	
			10	2457	16.5	16.0	15.0	
			11	2462	14.0	14.0	14.0	
			12	2467	12.0	12.0	12.0	
			13	2472	3.0	3.0	3.0	
		802.11n HT20	1	2412	15.0	15.0	15.0	No
			2	2417	16.5	16.0	15.0	
			6	2437	16.5	16.0	15.0	
			10	2457	16.5	16.0	15.0	
			11	2462	14.0	14.0	14.0	
			12	2467	12.0	12.0	12.0	
			13	2472	3.0	3.0	3.0	
	2 Tx	802.11g CDD	1	2412	14.0	14.0		Yes
			2	2417	16.5	16.0		
			6	2437	16.5	16.0		
			10	2457	16.5	16.0		
			11	2462	13.0	13.0		
			12	2467	10.5	10.5		
			13	2472	2.0	2.0		
		802.11n HT20 CDD	1	2412	14.0	14.0		No
			2	2417	16.5	16.0		
			6	2437	16.5	16.0		
			10	2457	16.5	16.0		
			11	2462	13.0	13.0		
			12	2467	10.5	10.5		
			13	2472	2.0	2.0		
		802.11n HT20 STBC	1	2412	14.0	14.0		No
			2	2417	16.5	16.0		
			6	2437	16.5	16.0		
			10	2457	16.5	16.0		
			11	2462	13.0	13.0		
			12	2467	10.5	10.5		
			13	2472	2.0	2.0		
		802.11n HT20 SDM	1	2412	14.0	14.0		No
			2	2417	16.5	16.0		
			6	2437	16.5	16.0		
			10	2457	16.5	16.0		
			11	2462	13.0	13.0		
			12	2467	10.5	10.5		
			13	2472	2.0	2.0		

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Wi-Fi 2.4 GHz Band continued

Band (GHz)	No. of Transmitters	Mode	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
2.4	2 Tx	802.11g CDD	1	2412	14.0		14.0	Yes
			2	2417	16.5		15.0	
			6	2437	16.5		15.0	
			10	2457	16.5		15.0	
			11	2462	13.0		13.0	
			12	2467	10.5		10.5	
			13	2472	2.0		2.0	
		802.11n HT20 CDD	1	2412	14.0		14.0	No
			2	2417	16.5		15.0	
			6	2437	16.5		15.0	
			10	2457	16.5		15.0	
			11	2462	13.0		13.0	
			12	2467	10.5		10.5	
			13	2472	2.0		2.0	
		802.11n HT20 STBC	1	2412	14.0		14.0	No
			2	2417	16.5		15.0	
			6	2437	16.5		15.0	
			10	2457	16.5		15.0	
			11	2462	13.0		13.0	
			12	2467	10.5		10.5	
			13	2472	2.0		2.0	
		802.11n HT20 SDM	1	2412	14.0		14.0	No
			2	2417	16.5		15.0	
			6	2437	16.5		15.0	
			10	2457	16.5		15.0	
			11	2462	13.0		13.0	
			12	2467	10.5		10.5	
			13	2472	2.0		2.0	

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Wi-Fi 5.2 GHz Band

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.2	802.11a	1 Tx	36	5180	16.0	16.0	16.0	No
			40	5200	17.0	16.5	17.0	
			44	5220	17.0	16.5	17.0	
			48	5240	17.0	16.5	17.0	
	802.11n	1 Tx HT20	36	5180	16.0	16.0	16.0	Yes
			40	5200	17.0	16.5	17.0	
			44	5220	17.0	16.5	17.0	
			48	5240	17.0	16.5	17.0	
		1 Tx HT40	38	5190	14.0	14.0	14.0	
			46	5230	17.0	16.5	17.0	
	802.11ac	1 Tx VHT20	36	5180	16.0	16.0	16.0	No
			40	5200	17.0	16.5	17.0	
			44	5220	17.0	16.5	17.0	
			48	5240	17.0	16.5	17.0	
		1 Tx VHT40	38	5190	14.0	14.0	14.0	No
			46	5230	17.0	16.5	17.0	
		1 Tx VHT80	42	5210	13.5	13.5	13.5	No

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Wi-Fi 5.2 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.2	802.11a	2 Tx CDD	36	5180	14.5	14.5		No
			40	5200	16.0	16.0		
			44	5220	16.0	16.0		
			48	5240	16.0	16.0		
	802.11n	2 Tx HT20 CDD	36	5180	14.5	14.5		No
			40	5200	16.0	16.0		
			44	5220	16.0	16.0		
			48	5240	16.0	16.0		
		2 Tx HT20 STBC	36	5180	14.5	14.5		No
			40	5200	17.0	16.5		
			44	5220	17.0	16.5		
			48	5240	17.0	16.5		
		2 Tx HT20 SDM	36	5180	14.5	14.5		No
			40	5200	17.0	16.5		
			44	5220	17.0	16.5		
			48	5240	17.0	16.5		
		2 Tx HT40 CDD	38	5190	13.0	13.0		No
			46	5230	16.0	16.0		
		2 Tx HT40 STBC	38	5190	13.0	13.0		
			46	5230	17.0	16.5		
		2 Tx HT40 SDM	38	5190	13.0	13.0		
			46	5230	17.0	16.5		
	802.11ac	2 Tx VHT20 CDD	36	5180	14.5	14.5		No
			40	5200	16.0	16.0		
			44	5220	16.0	16.0		
			48	5240	16.0	16.0		
		2 Tx VHT20 STBC	36	5180	14.5	14.5		No
			40	5200	17.0	16.5		
			44	5220	17.0	16.5		
			48	5240	17.0	16.5		
		2 Tx VHT20 SDM	36	5180	14.5	14.5		No
			40	5200	17.0	16.5		
			44	5220	17.0	16.5		
			48	5240	17.0	16.5		
		2 Tx VHT40 CDD	38	5190	13.0	13.0		No
			46	5230	16.0	16.0		
		2 Tx VHT40 STBC	38	5190	13.0	13.0		
			46	5230	17.0	16.5		
		2 Tx VHT40 SDM	38	5190	13.0	13.0		
			46	5230	17.0	16.5		
		2 Tx VHT80 CDD	42	5210	12.0	12.0		No
		2 Tx VHT80 STBC	42	5210	12.0	12.0		
		2 Tx VHT80 SDM	42	5210	12.0	12.0		

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Wi-Fi 5.2 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.2	802.11a	2 Tx CDD	36	5180	14.5		14.5	No
			40	5200	16.0		16.0	
			44	5220	16.0		16.0	
			48	5240	16.0		16.0	
	802.11n	2 Tx HT20 CDD	36	5180	14.5		14.5	No
			40	5200	16.0		16.0	
			44	5220	16.0		16.0	
			48	5240	16.0		16.0	
		2 Tx HT20 STBC	36	5180	14.5		14.5	No
			40	5200	17.0		17.0	
			44	5220	17.0		17.0	
			48	5240	17.0		17.0	
		2 Tx HT20 SDM	36	5180	14.5		14.5	No
			40	5200	17.0		17.0	
			44	5220	17.0		17.0	
			48	5240	17.0		17.0	
		2 Tx HT40 CDD	38	5190	13.0		13.0	No
			46	5230	16.0		16.0	
		2 Tx HT40 STBC	38	5190	13.0		13.0	Yes
			46	5230	17.0		17.0	
		2 Tx HT40 SDM	38	5190	13.0		13.0	No
			46	5230	17.0		17.0	
	802.11ac	2 Tx VHT20 CDD	36	5180	14.5		14.5	No
			40	5200	16.0		16.0	
			44	5220	16.0		16.0	
			48	5240	16.0		16.0	
		2 Tx VHT20 STBC	36	5180	14.5		14.5	No
			40	5200	17.0		17.0	
			44	5220	17.0		17.0	
			48	5240	17.0		17.0	
		2 Tx VHT20 SDM	36	5180	14.5		14.5	No
			40	5200	17.0		17.0	
			44	5220	17.0		17.0	
			48	5240	17.0		17.0	
		2 Tx VHT40 CDD	38	5190	13.0		13.0	No
			46	5230	16.0		16.0	
		2 Tx VHT40 STBC	38	5190	13.0		13.0	
			46	5230	17.0		17.0	
		2 Tx VHT40 SDM	38	5190	13.0		13.0	
			46	5230	17.0		17.0	
		2 Tx VHT80 CDD	42	5210	12.0		12.0	No
		2 Tx VHT80 STBC	42	5210	12.0		12.0	
		2 Tx VHT80 SDM	42	5210	12.0		12.0	

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Wi-Fi 5.3 GHz Band

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.3	802.11a	1 Tx	52	5260	17.5	17.0	15.5	No
			56	5280	17.5	17.0	15.5	
			60	5300	17.5	17.0	15.5	
			64	5320	16.0	16.0	15.5	
	802.11n	1 Tx HT20	52	5260	17.5	17.0	15.5	No
			56	5280	17.5	17.0	15.5	
			60	5300	17.5	17.0	15.5	
			64	5320	16.0	16.0	15.5	
		1 Tx HT40	54	5270	17.5	17.0	15.5	Yes
			62	5310	15.0	15.0	15.0	
	802.11ac	1 Tx VHT20	52	5260	17.5	17.0	15.5	No
			56	5280	17.5	17.0	15.5	
			60	5300	17.5	17.0	15.5	
			64	5320	16.0	16.0	15.5	
		1 Tx VHT40	54	5270	17.5	17.0	15.5	No
			62	5310	15.0	15.0	15.0	
		1 Tx VHT80	58	5290	13.5	13.5	13.5	No

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Wi-Fi 5.3 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.3	802.11a	2 Tx CDD	52	5260	16.0	16.0		No
			56	5280	16.0	16.0		
			60	5300	16.0	16.0		
			64	5320	14.5	14.5		
	802.11n	2 Tx HT20 CDD	52	5260	16.0	16.0		No
			56	5280	16.0	16.0		
			60	5300	16.0	16.0		
			64	5320	14.5	14.5		
		2 Tx HT20 STBC	52	5260	17.0	17.0		No
			56	5280	17.0	17.0		
			60	5300	17.0	17.0		
			64	5320	14.5	14.5		
		2 Tx HT20 SDM	52	5260	17.0	17.0		No
			56	5280	17.0	17.0		
			60	5300	17.0	17.0		
			64	5320	14.5	14.5		
		2 Tx HT40 CDD	54	5270	16.0	16.0		No
			62	5310	14.0	14.0		
		2 Tx HT40 STBC	54	5270	17.0	17.0		Yes
			62	5310	14.0	14.0		
		2 Tx HT40 SDM	54	5270	17.0	17.0		No
			62	5310	14.0	14.0		
	802.11ac	2 Tx VHT20 CDD	52	5260	16.0	16.0		No
			56	5280	16.0	16.0		
			60	5300	16.0	16.0		
			64	5320	14.5	14.5		
		2 Tx VHT20 STBC	52	5260	17.0	17.0		No
			56	5280	17.0	17.0		
			60	5300	17.0	17.0		
			64	5320	14.5	14.5		
		2 Tx VHT20 SDM	52	5260	17.0	17.0		No
			56	5280	17.0	17.0		
			60	5300	17.0	17.0		
			64	5320	14.5	14.5		
		2 Tx VHT40 CDD	54	5270	16.0	16.0		No
			62	5310	14.0	14.0		
		2 Tx VHT40 STBC	54	5270	17.0	17.0		
			62	5310	14.0	14.0		
		2 Tx VHT40 SDM	54	5270	17.0	17.0		
			62	5310	14.0	14.0		
		2 Tx VHT80 CDD	58	5290	12.0	12.0		No
		2 Tx VHT80 STBC	58	5290	12.0	12.0		
		2 Tx VHT80 SDM	58	5290	12.0	12.0		

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Wi-Fi 5.3 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.3	802.11a	2 Tx CDD	52	5260	16.0		15.5	No
			56	5280	16.0		15.5	
			60	5300	16.0		15.5	
			64	5320	14.5		14.5	
	802.11n	2 Tx HT20 CDD	52	5260	16.0		15.5	No
			56	5280	16.0		15.5	
			60	5300	16.0		15.5	
			64	5320	14.5		14.5	
		2 Tx HT20 STBC	52	5260	17.0		15.5	No
			56	5280	17.0		15.5	
			60	5300	17.0		15.5	
			64	5320	14.5		14.5	
		2 Tx HT20 SDM	52	5260	17.0		15.5	No
			56	5280	17.0		15.5	
			60	5300	17.0		15.5	
			64	5320	14.5		14.5	
		2 Tx HT40 CDD	54	5270	16.0		15.5	No
			62	5310	14.0		14.0	
		2 Tx HT40 STBC	54	5270	17.0		15.5	No
			62	5310	14.0		14.0	
		2 Tx HT40 SDM	54	5270	17.0		15.5	No
			62	5310	14.0		14.0	
	802.11ac	2 Tx VHT20 CDD	52	5260	16.0		15.5	No
			56	5280	16.0		15.5	
			60	5300	16.0		15.5	
			64	5320	14.5		14.5	
		2 Tx VHT20 STBC	52	5260	17.0		15.5	No
			56	5280	17.0		15.5	
			60	5300	17.0		15.5	
			64	5320	14.5		14.5	
		2 Tx VHT20 SDM	52	5260	17.0		15.5	No
			56	5280	17.0		15.5	
			60	5300	17.0		15.5	
			64	5320	14.5		14.5	
		2 Tx VHT40 CDD	54	5270	16.0		15.5	No
			62	5310	14.0		14.0	
		2 Tx VHT40 STBC	54	5270	17.0		15.5	
			62	5310	14.0		14.0	
		2 Tx VHT40 SDM	54	5270	17.0		15.5	
			62	5310	14.0		14.0	
		2 Tx VHT80 CDD	58	5290	12.0		12.0	No
		2 Tx VHT80 STBC	58	5290	12.0		12.0	
		2 Tx VHT80 SDM	58	5290	12.0		12.0	

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Wi-Fi 5.5 GHz Band

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11a	1 Tx	100	5500	15.5	15.5	15.0	No
			104	5520	16.0	16.5	15.0	
			108	5540	16.0	16.5	15.0	
			112	5560	16.0	16.5	15.0	
			116	5580	16.0	16.5	15.0	
			120	5600	16.0	16.5	15.0	
			124	5620	16.0	16.5	15.0	
			128	5640	16.0	16.5	15.0	
			132	5660	16.0	16.5	15.0	
			136	5680	16.0	16.5	15.0	
			140	5700	15.0	15.0	15.0	
			144	5720	16.0	16.5	15.0	
	802.11n	1 Tx HT20	100	5500	15.5	15.5	15.0	No
			104	5520	16.0	16.5	15.0	
			108	5540	16.0	16.5	15.0	
			112	5560	16.0	16.5	15.0	
			116	5580	16.0	16.5	15.0	
			120	5600	16.0	16.5	15.0	
			124	5620	16.0	16.5	15.0	
			128	5640	16.0	16.5	15.0	
			132	5660	16.0	16.5	15.0	
			136	5680	16.0	16.5	15.0	
			140	5700	15.0	15.0	15.0	
			144	5720	16.0	16.5	15.0	
		1 Tx HT40	102	5510	14.0	14.0	14.0	No
			110	5550	16.0	16.5	15.0	
			118	5590	16.0	16.5	15.0	
			126	5630	16.0	16.5	15.0	
			134	5670	16.0	16.0	15.0	
			142	5710	16.0	16.5	15.0	
	802.11ac	1 Tx VHT20	100	5500	15.5	15.5	15.0	No
			104	5520	16.0	16.5	15.0	
			108	5540	16.0	16.5	15.0	
			112	5560	16.0	16.5	15.0	
			116	5580	16.0	16.5	15.0	
			120	5600	16.0	16.5	15.0	
			124	5620	16.0	16.5	15.0	
			128	5640	16.0	16.5	15.0	
			132	5660	16.0	16.5	15.0	
			136	5680	16.0	16.5	15.0	
			140	5700	15.0	15.0	15.0	
			144	5720	16.0	16.5	15.0	
		1 Tx VHT40	102	5510	14.0	14.0	14.0	No
			110	5550	16.0	16.5	15.0	
			118	5590	16.0	16.5	15.0	
			126	5630	16.0	16.5	15.0	
			134	5670	16.0	16.0	15.0	
			142	5710	16.0	16.5	15.0	
		1 Tx VHT80	106	5530	14.0	14.0	14.0	Yes
			122	5610	16.0	16.5	15.0	
			138	5690	16.0	16.5	15.0	

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Wi-Fi 5.5 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11a	2 Tx CDD	100	5500	14.5	14.5		No
			104	5520	15.0	15.0		
			108	5540	15.0	15.0		
			112	5560	15.0	15.0		
			116	5580	15.0	15.0		
			120	5600	15.0	15.0		
			124	5620	15.0	15.0		
			128	5640	15.0	15.0		
			132	5660	15.0	15.0		
			136	5680	15.0	15.0		
			140	5700	13.5	13.5		
			144	5720	15.0	15.0		
	802.11n	2 Tx HT20 CDD	100	5500	14.5	14.5		No
			104	5520	15.0	15.0		
			108	5540	15.0	15.0		
			112	5560	15.0	15.0		
			116	5580	15.0	15.0		
			120	5600	15.0	15.0		
			124	5620	15.0	15.0		
			128	5640	15.0	15.0		
			132	5660	15.0	15.0		
			136	5680	15.0	15.0		
			140	5700	13.5	13.5		
			144	5720	15.0	15.0		
		2 Tx HT20 STBC	100	5500	14.5	14.5		No
			104	5520	16.0	16.5		
			108	5540	16.0	16.5		
			112	5560	16.0	16.5		
			116	5580	16.0	16.5		
			120	5600	16.0	16.5		
			124	5620	16.0	16.5		
			128	5640	16.0	16.5		
			132	5660	16.0	16.5		
			136	5680	16.0	16.5		
			140	5700	13.5	13.5		
			144	5720	16.0	16.5		
		2 Tx HT20 SDM	100	5500	14.5	14.5		No
			104	5520	16.0	16.5		
			108	5540	16.0	16.5		
			112	5560	16.0	16.5		
			116	5580	16.0	16.5		
			120	5600	16.0	16.5		
			124	5620	16.0	16.5		
			128	5640	16.0	16.5		
			132	5660	16.0	16.5		
			136	5680	16.0	16.5		
			140	5700	13.5	13.5		
			144	5720	16.0	16.5		

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Wi-Fi 5.5 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11n	2 Tx HT40 CDD	102	5510	13.0	13.0		No
			110	5550	15.0	15.0		
			118	5590	15.0	15.0		
			126	5630	15.0	15.0		
			134	5670	15.0	15.0		
			142	5710	15.0	15.0		
		2 Tx HT40 STBC	102	5510	13.0	13.0		No
			110	5550	16.0	16.5		
			118	5590	16.0	16.5		
			126	5630	16.0	16.5		
			134	5670	15.0	15.0		
			142	5710	16.0	16.5		
		2 Tx HT40 SDM	102	5510	13.0	13.0		No
			110	5550	16.0	16.5		
			118	5590	16.0	16.5		
			126	5630	16.0	16.5		
			134	5670	15.0	15.0		
			142	5710	16.0	16.5		
	802.11ac	2 Tx VHT20 CDD	100	5500	14.5	14.5		No
			104	5520	15.0	15.0		
			108	5540	15.0	15.0		
			112	5560	15.0	15.0		
			116	5580	15.0	15.0		
			120	5600	15.0	15.0		
			124	5620	15.0	15.0		
			128	5640	15.0	15.0		
			132	5660	15.0	15.0		
			136	5680	15.0	15.0		
			140	5700	13.5	13.5		
			144	5720	15.0	15.0		
		2 Tx VHT20 STBC	100	5500	14.5	14.5		No
			104	5520	16.0	16.5		
			108	5540	16.0	16.5		
			112	5560	16.0	16.5		
			116	5580	16.0	16.5		
			120	5600	16.0	16.5		
			124	5620	16.0	16.5		
			128	5640	16.0	16.5		
			132	5660	16.0	16.5		
			136	5680	16.0	16.5		
			140	5700	13.5	13.5		
			144	5720	16.0	16.5		
		2 Tx VHT20 SDM	100	5500	14.5	14.5		No
			104	5520	16.0	16.5		
			108	5540	16.0	16.5		
			112	5560	16.0	16.5		
			116	5580	16.0	16.5		
			120	5600	16.0	16.5		
			124	5620	16.0	16.5		
			128	5640	16.0	16.5		
			132	5660	16.0	16.5		
			136	5680	16.0	16.5		
			140	5700	13.5	13.5		
			144	5720	16.0	16.5		

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Wi-Fi 5.5 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11ac	2 Tx VHT40 CDD	102	5510	13.0	13.0		No
			110	5550	15.0	15.0		
			118	5590	15.0	15.0		
			126	5630	15.0	15.0		
			134	5670	15.0	15.0		
			142	5710	15.0	15.0		
		2 Tx VHT40 STBC	102	5510	13.0	13.0		No
			110	5550	16.0	16.5		
			118	5590	16.0	16.5		
			126	5630	16.0	16.5		
			134	5670	15.0	15.0		
			142	5710	16.0	16.5		
		2 Tx VHT40 SDM	102	5510	13.0	13.0		No
			110	5550	16.0	16.5		
			118	5590	16.0	16.5		
			126	5630	16.0	16.5		
			134	5670	15.0	15.0		
			142	5710	16.0	16.5		
		2 Tx VHT80 CDD	106	5530	13.0	13.0		Yes
			122	5610	16.0	16.5		
			138	5690	16.0	16.5		
		2 Tx VHT80 STBC	106	5530	13.0	13.0		No
			122	5610	16.0	16.5		
			138	5690	16.0	16.5		
		2 Tx VHT80 SDM	106	5530	13.0	13.0		No
			122	5610	16.0	16.5		
			138	5690	16.0	16.5		

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Wi-Fi 5.5 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11a	2 Tx CDD	100	5500	14.5		14.5	No
			104	5520	15.0		15.0	
			108	5540	15.0		15.0	
			112	5560	15.0		15.0	
			116	5580	15.0		15.0	
			120	5600	15.0		15.0	
			124	5620	15.0		15.0	
			128	5640	15.0		15.0	
			132	5660	15.0		15.0	
			136	5680	15.0		15.0	
			140	5700	13.5		13.5	
			144	5720	15.0		15.0	
	802.11n	2 Tx HT20 CDD	100	5500	14.5		14.5	No
			104	5520	15.0		15.0	
			108	5540	15.0		15.0	
			112	5560	15.0		15.0	
			116	5580	15.0		15.0	
			120	5600	15.0		15.0	
			124	5620	15.0		15.0	
			128	5640	15.0		15.0	
			132	5660	15.0		15.0	
			136	5680	15.0		15.0	
			140	5700	13.5		13.5	
			144	5720	15.0		15.0	
		2 Tx HT20 STBC	100	5500	14.5		14.5	No
			104	5520	16.0		15.0	
			108	5540	16.0		15.0	
			112	5560	16.0		15.0	
			116	5580	16.0		15.0	
			120	5600	16.0		15.0	
			124	5620	16.0		15.0	
			128	5640	16.0		15.0	
			132	5660	16.0		15.0	
			136	5680	16.0		15.0	
			140	5700	13.5		13.5	
			144	5720	16.0		15.0	
		2 Tx HT20 SDM	100	5500	14.5		14.5	No
			104	5520	16.0		15.0	
			108	5540	16.0		15.0	
			112	5560	16.0		15.0	
			116	5580	16.0		15.0	
			120	5600	16.0		15.0	
			124	5620	16.0		15.0	
			128	5640	16.0		15.0	
			132	5660	16.0		15.0	
			136	5680	16.0		15.0	
			140	5700	13.5		13.5	
			144	5720	16.0		15.0	

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Wi-Fi 5.5 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11n	2 Tx HT40 CDD	102	5510	13.0		13.0	No
			110	5550	15.0		15.0	
			118	5590	15.0		15.0	
			126	5630	15.0		15.0	
			134	5670	15.0		15.0	
			142	5710	15.0		15.0	
		2 Tx HT40 STBC	102	5510	13.0		13.0	No
			110	5550	16.0		15.0	
			118	5590	16.0		15.0	
			126	5630	16.0		15.0	
			134	5670	15.0		15.0	
			142	5710	16.0		15.0	
		2 Tx HT40 SDM	102	5510	13.0		13.0	No
			110	5550	16.0		15.0	
			118	5590	16.0		15.0	
			126	5630	16.0		15.0	
			134	5670	15.0		15.0	
			142	5710	16.0		15.0	
	802.11ac	2 Tx VHT20 CDD	100	5500	14.5		14.5	No
			104	5520	15.0		15.0	
			108	5540	15.0		15.0	
			112	5560	15.0		15.0	
			116	5580	15.0		15.0	
			120	5600	15.0		15.0	
			124	5620	15.0		15.0	
			128	5640	15.0		15.0	
			132	5660	15.0		15.0	
			136	5680	15.0		15.0	
			140	5700	13.5		13.5	
			144	5720	15.0		15.0	
		2 Tx VHT20 STBC	100	5500	14.5		14.5	No
			104	5520	16.0		15.0	
			108	5540	16.0		15.0	
			112	5560	16.0		15.0	
			116	5580	16.0		15.0	
			120	5600	16.0		15.0	
			124	5620	16.0		15.0	
			128	5640	16.0		15.0	
			132	5660	16.0		15.0	
			136	5680	16.0		15.0	
			140	5700	13.5		13.5	
			144	5720	16.0		15.0	
		2 Tx VHT20 SDM	100	5500	14.5		14.5	No
			104	5520	16.0		15.0	
			108	5540	16.0		15.0	
			112	5560	16.0		15.0	
			116	5580	16.0		15.0	
			120	5600	16.0		15.0	
			124	5620	16.0		15.0	
			128	5640	16.0		15.0	
			132	5660	16.0		15.0	
			136	5680	16.0		15.0	
			140	5700	13.5		13.5	
			144	5720	16.0		15.0	

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Wi-Fi 5.5 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.5	802.11ac	2 Tx VHT40 CDD	102	5510	13.0		13.0	No
			110	5550	15.0		15.0	
			118	5590	15.0		15.0	
			126	5630	15.0		15.0	
			134	5670	15.0		15.0	
			142	5710	15.0		15.0	
		2 Tx VHT40 STBC	102	5510	13.0		13.0	No
			110	5550	16.0		15.0	
			118	5590	16.0		15.0	
			126	5630	16.0		15.0	
			134	5670	15.0		15.0	
			142	5710	16.0		15.0	
		2 Tx VHT40 SDM	102	5510	13.0		13.0	No
			110	5550	16.0		15.0	
			118	5590	16.0		15.0	
			126	5630	16.0		15.0	
			134	5670	15.0		15.0	
			142	5710	16.0		15.0	
		2 Tx VHT80 CDD	106	5530	13.0		13.0	Yes
			122	5610	16.0		15.0	
			138	5690	16.0		15.0	
		2 Tx VHT80 STBC	106	5530	13.0		13.0	No
			122	5610	16.0		15.0	
			138	5690	16.0		15.0	
		2 Tx VHT80 SDM	106	5530	13.0		13.0	No
			122	5610	16.0		15.0	
			138	5690	16.0		15.0	

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Wi-Fi 5.8 GHz Band

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.8	802.11a	1 Tx	149	5745	15.5	15.5	15.5	Yes
			153	5765	16.5	17.5	16.0	
			157	5785	16.5	17.5	16.0	
			161	5805	16.5	17.5	16.0	
			165	5825	16.5	16.5	16.0	
	802.11n	1 Tx HT20	149	5745	15.5	15.5	15.5	No
			153	5765	16.5	17.5	16.0	
			157	5785	16.5	17.5	16.0	
			161	5805	16.5	17.5	16.0	
			165	5825	16.5	16.5	16.0	
		1 Tx HT40	151	5755	13.0	13.0	13.0	Yes
			159	5795	16.5	16.5	16.0	
	802.11ac	1 Tx VHT20	149	5745	15.5	15.5	15.5	No
			153	5765	16.5	17.5	16.0	
			157	5785	16.5	17.5	16.0	
			161	5805	16.5	17.5	16.0	
			165	5825	16.5	16.5	16.0	
		1 Tx VHT40	151	5755	13.0	13.0	13.0	No
			159	5795	16.5	16.5	16.0	
		1 Tx VHT80	155	5775	13.5	13.5	13.5	No

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Wi-Fi 5.8 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.8	802.11a	2 Tx CDD	149	5745	13.5	13.5		Yes
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
	802.11n	2 Tx HT20 CDD	149	5745	13.5	13.5		No
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
		2 Tx HT20 STBC	149	5745	13.5	13.5		No
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
		2 Tx HT20 SDM	149	5745	13.5	13.5		No
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
		2 Tx HT40 CDD	151	5755	12.5	12.5		No
			159	5795	15.5	15.5		
		2 Tx HT40 STBC	151	5755	12.5	12.5		No
			159	5795	15.5	15.5		
		2 Tx HT40 SDM	151	5755	12.5	12.5		No
			159	5795	15.5	15.5		
	802.11ac	2 Tx VHT20 CDD	149	5745	13.5	13.5		No
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
		2 Tx VHT20 STBC	149	5745	13.5	13.5		No
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
		2 Tx VHT20 SDM	149	5745	13.5	13.5		No
			153	5765	16.5	17.5		
			157	5785	16.5	17.5		
			161	5805	16.5	17.5		
			165	5825	14.5	14.5		
		2 Tx VHT40 CDD	151	5755	12.5	12.5		No
			159	5795	15.5	15.5		
		2 Tx VHT40 STBC	151	5755	12.5	12.5		
			159	5795	15.5	15.5		
		2 Tx VHT40 SDM	151	5755	12.5	12.5		
			159	5795	15.5	15.5		
		2 Tx VHT80 CDD	155	5775	13.0	13.0		No
		2 Tx VHT80 STBC	155	5775	13.0	13.0		
		2 Tx VHT80 SDM	155	5775	13.0	13.0		

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Wi-Fi 5.8 GHz Band continued

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. RF Output Power (dBm)			SAR Test (Yes/No)
					Antenna A	Antenna B	Antenna C	
5.8	802.11a	2 Tx CDD	149	5745	13.5		13.5	Yes
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
	802.11n	2 Tx HT20 CDD	149	5745	13.5		13.5	No
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
		2 Tx HT20 STBC	149	5745	13.5		13.5	No
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
		2 Tx HT20 SDM	149	5745	13.5		13.5	No
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
		2 Tx HT40 CDD	151	5755	12.5		12.5	No
			159	5795	15.5		15.5	
		2 Tx HT40 STBC	151	5755	12.5		12.5	No
			159	5795	15.5		15.5	
		2 Tx HT40 SDM	151	5755	12.5		12.5	No
			159	5795	15.5		15.5	
	802.11ac	2 Tx VHT20 CDD	149	5745	13.5		13.5	No
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
		2 Tx VHT20 STBC	149	5745	13.5		13.5	No
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
		2 Tx VHT20 SDM	149	5745	13.5		13.5	No
			153	5765	16.5		16.0	
			157	5785	16.5		16.0	
			161	5805	16.5		16.0	
			165	5825	14.5		14.5	
		2 Tx VHT40 CDD	151	5755	12.5		12.5	No
			159	5795	15.5		15.5	
		2 Tx VHT40 STBC	151	5755	12.5		12.5	
			159	5795	15.5		15.5	
		2 Tx VHT40 SDM	151	5755	12.5		12.5	
			159	5795	15.5		15.5	
		2 Tx VHT80 CDD	155	5775	13.0		13.0	No
		2 Tx VHT80 STBC	155	5775	13.0		13.0	
		2 Tx VHT80 SDM	155	5775	13.0		13.0	

Bluetooth

RF Air interface	Mode	Max. RF Output Power (dBm)			
		Ant. B		Ant. C	
		Max Power	Low Power	Max Power	Low Power
Bluetooth	GFSK	17.0	10.5	15.5	9.5

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6.4. Antenna Dimensions and Separation Distances

Refer to separate filing document.

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7. RF Exposure Conditions (Test Configurations)

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 and BT

Antennas < 50mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)					Calculated Threshold Value				
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 2	Edge 3	Edge 4
Wi-Fi Antenna A													
Wi-Fi 2.4 GHz	2462	16.50	45	5	227.9	132.7	3.1	7.1	14.1 -MEASURE-	> 50 mm	> 50 mm	14.1 -MEASURE-	10.1 -MEASURE-
Wi-Fi 5.3 GHz	5320	17.50	56	5	227.9	132.7	3.1	7.1	25.8 -MEASURE-	> 50 mm	> 50 mm	25.8 -MEASURE-	18.5 -MEASURE-
Wi-Fi 5.5 GHz	5700	16.00	40	5	227.9	132.7	3.1	7.1	19.1 -MEASURE-	> 50 mm	> 50 mm	19.1 -MEASURE-	13.6 -MEASURE-
Wi-Fi 5.8 GHz	5825	16.50	45	5	227.9	132.7	3.1	7.1	21.7 -MEASURE-	> 50 mm	> 50 mm	21.7 -MEASURE-	15.5 -MEASURE-
Wi-Fi Antenna B													
Wi-Fi 2.4 GHz	2462	16.00	40	5	227.9	7.1	3.1	132.7	12.6 -MEASURE-	> 50 mm	9 -MEASURE-	12.6 -MEASURE-	> 50 mm
Wi-Fi 5.3 GHz	5320	17.00	50	5	227.9	7.1	3.1	132.7	23.1 -MEASURE-	> 50 mm	16.5 -MEASURE-	23.1 -MEASURE-	> 50 mm
Wi-Fi 5.5 GHz	5700	16.50	45	5	227.9	7.1	3.1	132.7	21.5 -MEASURE-	> 50 mm	15.3 -MEASURE-	21.5 -MEASURE-	> 50 mm
Wi-Fi 5.8 GHz	5825	17.50	56	5	227.9	7.1	3.1	132.7	27 -MEASURE-	> 50 mm	19.3 -MEASURE-	27 -MEASURE-	> 50 mm
Wi-Fi Antenna C													
Wi-Fi 2.4 GHz	2462	15.00	32	5	3.1	91.2	224.6	42	10 -MEASURE-	10 -MEASURE-	> 50 mm	> 50 mm	1.2 -EXEMPT-
Wi-Fi 5.2 GHz	5240	17.00	50	5	3.1	91.2	224.6	42	22.9 -MEASURE-	22.9 -MEASURE-	> 50 mm	> 50 mm	2.7 -EXEMPT-
Wi-Fi 5.5 GHz	5700	15.00	32	5	3.1	91.2	224.6	42	15.3 -MEASURE-	15.3 -MEASURE-	> 50 mm	> 50 mm	1.8 -EXEMPT-
Wi-Fi 5.8 GHz	5825	16.00	40	5	3.1	91.2	224.6	42	19.3 -MEASURE-	19.3 -MEASURE-	> 50 mm	> 50 mm	2.3 -EXEMPT-
Bluetooth Antenna B High Power													
Bluetooth	2480	17.00	50	5	227.9	7.1	3.1	132.7	15.7 -MEASURE-	> 50 mm	11.2 -MEASURE-	15.7 -MEASURE-	> 50 mm
Bluetooth Antenna B Low Power													
Bluetooth	2480	10.50	11	5	227.9	7.1	3.1	132.7	3.5 -MEASURE-	> 50 mm	2.5 -EXEMPT-	3.5 -MEASURE-	> 50 mm
Bluetooth Antenna C High Power													
Bluetooth	2480	15.50	35	5	3.1	91.2	224.6	42	11 -MEASURE-	11 -MEASURE-	> 50 mm	> 50 mm	1.3 -EXEMPT-
Bluetooth Antenna C Low Power													
Bluetooth	2480	9.50	9	5	3.1	91.2	224.6	42	2.8 -EXEMPT-	2.8 -EXEMPT-	> 50 mm	> 50 mm	0.3 -EXEMPT-

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

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)					Calculated Threshold Value				
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 2	Edge 3	Edge 4
Wi-Fi (Antenna A)													
Wi-Fi 2.4 GHz	2462	16.50	45	5	227.9	132.7	3.1	7.1	< 50 mm	1874.6 mW -EXEMPT-	922.6 mW -EXEMPT-	< 50 mm	< 50 mm
Wi-Fi 5.3 GHz	5320	17.50	56	5	227.9	132.7	3.1	7.1	< 50 mm	1844 mW -EXEMPT-	892 mW -EXEMPT-	< 50 mm	< 50 mm
Wi-Fi 5.5 GHz	5700	16.00	40	5	227.9	132.7	3.1	7.1	< 50 mm	1841.8 mW -EXEMPT-	889.8 mW -EXEMPT-	< 50 mm	< 50 mm
Wi-Fi 5.8 GHz	5825	16.50	45	5	227.9	132.7	3.1	7.1	< 50 mm	1841.2 mW -EXEMPT-	889.2 mW -EXEMPT-	< 50 mm	< 50 mm
Wi-Fi (Antenna B)													
Wi-Fi 2.4 GHz	2462	16.00	40	5	227.9	7.1	3.1	132.7	< 50 mm	1874.6 mW -EXEMPT-	< 50 mm	< 50 mm	922.6 mW -EXEMPT-
Wi-Fi 5.3 GHz	5320	17.00	50	5	227.9	7.1	3.1	132.7	< 50 mm	1844 mW -EXEMPT-	< 50 mm	< 50 mm	892 mW -EXEMPT-
Wi-Fi 5.5 GHz	5700	16.50	45	5	227.9	7.1	3.1	132.7	< 50 mm	1841.8 mW -EXEMPT-	< 50 mm	< 50 mm	889.8 mW -EXEMPT-
Wi-Fi 5.8 GHz	5825	17.50	56	5	227.9	7.1	3.1	132.7	< 50 mm	1841.2 mW -EXEMPT-	< 50 mm	< 50 mm	889.2 mW -EXEMPT-
Wi-Fi (Antenna C)													
Wi-Fi 2.4 GHz	2462	15.00	32	5	3.1	91.2	224.6	42	< 50 mm	< 50 mm	507.6 mW -EXEMPT-	1841.6 mW -EXEMPT-	< 50 mm
Wi-Fi 5.2 GHz	5240	17.00	50	5	3.1	91.2	224.6	42	< 50 mm	< 50 mm	477.5 mW -EXEMPT-	1811.5 mW -EXEMPT-	< 50 mm
Wi-Fi 5.5 GHz	5700	15.00	32	5	3.1	91.2	224.6	42	< 50 mm	< 50 mm	474.8 mW -EXEMPT-	1808.8 mW -EXEMPT-	< 50 mm
Wi-Fi 5.8 GHz	5825	16.00	40	5	3.1	91.2	224.6	42	< 50 mm	< 50 mm	474.2 mW -EXEMPT-	1808.2 mW -EXEMPT-	< 50 mm
Bluetooth Antenna B High Power													
Bluetooth	2480	17.00	50	5	227.9	7.1	3.1	132.7	< 50 mm	1874.3 mW -EXEMPT-	< 50 mm	< 50 mm	922.3 mW -EXEMPT-
Bluetooth Antenna B Low Power													
Bluetooth	2480	10.50	11	5	227.9	7.1	3.1	132.7	< 50 mm	1874.3 mW -EXEMPT-	< 50 mm	< 50 mm	922.3 mW -EXEMPT-
Bluetooth Antenna C High Power													
Bluetooth	2480	15.50	35	5	3.1	91.2	224.6	42	< 50 mm	< 50 mm	507.3 mW -EXEMPT-	1841.3 mW -EXEMPT-	< 50 mm
Bluetooth Antenna C Low Power													
Bluetooth	2480	9.50	9	5	3.1	91.2	224.6	42	< 50 mm	< 50 mm	507.3 mW -EXEMPT-	1841.3 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.

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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:

WLAN

Test Configurations	Rear	Edge 1 (Top Edge)	Edge 2 (Right Edge)	Edge 3 (Bottom Edge)	Edge 4 (Left Edge)
Wi-Fi SISO, 2.4 GHz, Antenna A	Yes	No	No	Yes	Yes
Wi-Fi SISO, 2.4 GHz, Antenna B	Yes	No	Yes	Yes	No
Wi-Fi SISO, 2.4 GHz, Antenna C	Yes	Yes	No	No	No
Wi-Fi SISO, 5 GHz, Antenna A	Yes	No	No	Yes	Yes
Wi-Fi SISO, 5 GHz, Antenna B	Yes	No	Yes	Yes	No
Wi-Fi SISO, 5 GHz, Antenna C	Yes	Yes	No	No	No
Wi-Fi MIMO, 2.4 GHz, Antenna A + B	Yes	No	Yes	Yes	Yes
Wi-Fi MIMO, 2.4 GHz, Antenna A + C	Yes	Yes	No	Yes	Yes
Wi-Fi MIMO, 5 GHz, Antenna A + B	Yes	No	Yes	Yes	Yes
Wi-Fi MIMO, 5 GHz, Antenna A + C	Yes	Yes	No	Yes	Yes
Bluetooth P_{max}, Antenna B	Yes	No	Yes	Yes	No
Bluetooth P_{low}, Antenna B	Yes	No	No	Yes	No
Bluetooth P_{max}, Antenna C	Yes	Yes	No	No	No
Bluetooth P_{low}, Antenna C	No	No	No	No	No

Note(s):

Yes = Testing is required.

No = Testing is not required.

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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.

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

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Dielectric Property Measurements Results:
SAR Lab A

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
1/19/2016	Body 5180	e'	48.0800	Relative Permittivity (ϵ_r):	48.08	49.05	-1.97	5
		e"	18.8000	Conductivity (σ):	5.41	5.27	2.72	5
	Body 5200	e'	48.3900	Relative Permittivity (ϵ_r):	48.39	49.02	-1.28	5
		e"	18.8300	Conductivity (σ):	5.44	5.29	2.83	5
	Body 5600	e'	48.1000	Relative Permittivity (ϵ_r):	48.10	48.48	-0.78	5
		e"	18.9000	Conductivity (σ):	5.89	5.76	2.15	5
	Body 5800	e'	47.3300	Relative Permittivity (ϵ_r):	47.33	48.20	-1.80	5
		e"	19.3800	Conductivity (σ):	6.25	6.00	4.17	5
	Body 5825	e'	47.5200	Relative Permittivity (ϵ_r):	47.52	48.20	-1.41	5
		e"	19.2800	Conductivity (σ):	6.24	6.00	4.08	5
1/25/2016	Body 5180	e'	50.0600	Relative Permittivity (ϵ_r):	50.06	49.05	2.07	5
		e"	18.6500	Conductivity (σ):	5.37	5.27	1.90	5
	Body 5200	e'	50.0800	Relative Permittivity (ϵ_r):	50.08	49.02	2.16	5
		e"	18.6600	Conductivity (σ):	5.40	5.29	1.90	5
	Body 5600	e'	49.4500	Relative Permittivity (ϵ_r):	49.45	48.48	2.01	5
		e"	19.0300	Conductivity (σ):	5.93	5.76	2.86	5
	Body 5800	e'	49.1400	Relative Permittivity (ϵ_r):	49.14	48.20	1.95	5
		e"	19.2500	Conductivity (σ):	6.21	6.00	3.47	5
	Body 5825	e'	49.1100	Relative Permittivity (ϵ_r):	49.11	48.20	1.89	5
		e"	19.2800	Conductivity (σ):	6.24	6.00	4.08	5
1/29/2016	Body 5180	e'	47.4600	Relative Permittivity (ϵ_r):	47.46	49.05	-3.24	5
		e"	18.0800	Conductivity (σ):	5.21	5.27	-1.21	5
	Body 5200	e'	47.4700	Relative Permittivity (ϵ_r):	47.47	49.02	-3.16	5
		e"	18.0800	Conductivity (σ):	5.23	5.29	-1.27	5
	Body 5600	e'	46.8500	Relative Permittivity (ϵ_r):	46.85	48.48	-3.36	5
		e"	18.4800	Conductivity (σ):	5.75	5.76	-0.12	5
	Body 5800	e'	46.5000	Relative Permittivity (ϵ_r):	46.50	48.20	-3.53	5
		e"	18.7300	Conductivity (σ):	6.04	6.00	0.67	5
	Body 5825	e'	46.5200	Relative Permittivity (ϵ_r):	46.52	48.20	-3.49	5
		e"	18.7600	Conductivity (σ):	6.08	6.00	1.27	5

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SAR Lab B

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
1/20/2016	Body 5180	e'	48.8700	Relative Permittivity (ϵ_r):	48.87	49.05	-0.36	5
		e"	18.5600	Conductivity (σ):	5.35	5.27	1.41	5
	Body 5200	e'	48.8100	Relative Permittivity (ϵ_r):	48.81	49.02	-0.43	5
		e"	18.6200	Conductivity (σ):	5.38	5.29	1.68	5
	Body 5600	e'	48.1600	Relative Permittivity (ϵ_r):	48.16	48.48	-0.66	5
		e"	19.2100	Conductivity (σ):	5.98	5.76	3.83	5
	Body 5800	e'	47.8800	Relative Permittivity (ϵ_r):	47.88	48.20	-0.66	5
		e"	19.3500	Conductivity (σ):	6.24	6.00	4.01	5
	Body 5825	e'	47.8400	Relative Permittivity (ϵ_r):	47.84	48.20	-0.75	5
		e"	19.3500	Conductivity (σ):	6.27	6.00	4.45	5
1/25/2016	Body 5180	e'	49.4400	Relative Permittivity (ϵ_r):	49.44	49.05	0.80	5
		e"	18.5600	Conductivity (σ):	5.35	5.27	1.41	5
	Body 5200	e'	49.4700	Relative Permittivity (ϵ_r):	49.47	49.02	0.92	5
		e"	18.5500	Conductivity (σ):	5.36	5.29	1.30	5
	Body 5600	e'	48.7200	Relative Permittivity (ϵ_r):	48.72	48.48	0.50	5
		e"	18.9800	Conductivity (σ):	5.91	5.76	2.59	5
	Body 5800	e'	48.3690	Relative Permittivity (ϵ_r):	48.37	48.20	0.35	5
		e"	19.2700	Conductivity (σ):	6.21	6.00	3.58	5
	Body 5825	e'	48.4100	Relative Permittivity (ϵ_r):	48.41	48.20	0.44	5
		e"	19.3100	Conductivity (σ):	6.25	6.00	4.24	5
2/5/2016	Body 5180	e'	48.3700	Relative Permittivity (ϵ_r):	48.37	49.05	-1.38	5
		e"	18.4800	Conductivity (σ):	5.32	5.27	0.97	5
	Body 5200	e'	48.2800	Relative Permittivity (ϵ_r):	48.28	49.02	-1.51	5
		e"	18.5900	Conductivity (σ):	5.38	5.29	1.52	5
	Body 5600	e'	47.6700	Relative Permittivity (ϵ_r):	47.67	48.48	-1.67	5
		e"	19.0400	Conductivity (σ):	5.93	5.76	2.91	5
	Body 5800	e'	47.5800	Relative Permittivity (ϵ_r):	47.58	48.20	-1.29	5
		e"	19.2100	Conductivity (σ):	6.20	6.00	3.25	5
	Body 5825	e'	47.4800	Relative Permittivity (ϵ_r):	47.48	48.20	-1.49	5
		e"	19.2400	Conductivity (σ):	6.23	6.00	3.86	5

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SAR Lab C

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
1/19/2016	Body 5180	e'	47.4800	Relative Permittivity (ϵ_r):	47.48	49.05	-3.19	5
		e"	18.5200	Conductivity (σ):	5.33	5.27	1.19	5
	Body 5200	e'	47.3600	Relative Permittivity (ϵ_r):	47.36	49.02	-3.39	5
		e"	18.4300	Conductivity (σ):	5.33	5.29	0.64	5
	Body 5600	e'	46.7000	Relative Permittivity (ϵ_r):	46.70	48.48	-3.67	5
		e"	19.0400	Conductivity (σ):	5.93	5.76	2.91	5
	Body 5800	e'	46.5800	Relative Permittivity (ϵ_r):	46.58	48.20	-3.36	5
		e"	19.0900	Conductivity (σ):	6.16	6.00	2.61	5
	Body 5825	e'	46.3300	Relative Permittivity (ϵ_r):	46.33	48.20	-3.88	5
		e"	19.1100	Conductivity (σ):	6.19	6.00	3.16	5
1/25/2016	Body 5180	e'	48.8100	Relative Permittivity (ϵ_r):	48.81	49.05	-0.48	5
		e"	18.7400	Conductivity (σ):	5.40	5.27	2.39	5
	Body 5200	e'	48.8200	Relative Permittivity (ϵ_r):	48.82	49.02	-0.41	5
		e"	18.7400	Conductivity (σ):	5.42	5.29	2.34	5
	Body 5600	e'	48.1400	Relative Permittivity (ϵ_r):	48.14	48.48	-0.70	5
		e"	19.1000	Conductivity (σ):	5.95	5.76	3.23	5
	Body 5800	e'	47.7500	Relative Permittivity (ϵ_r):	47.75	48.20	-0.93	5
		e"	19.3700	Conductivity (σ):	6.25	6.00	4.11	5
	Body 5825	e'	47.7500	Relative Permittivity (ϵ_r):	47.75	48.20	-0.93	5
		e"	19.4100	Conductivity (σ):	6.29	6.00	4.78	5
1/29/2016	Body 5180	e'	49.1900	Relative Permittivity (ϵ_r):	49.19	49.05	0.29	5
		e"	18.6200	Conductivity (σ):	5.36	5.27	1.74	5
	Body 5200	e'	49.1600	Relative Permittivity (ϵ_r):	49.16	49.02	0.29	5
		e"	18.6100	Conductivity (σ):	5.38	5.29	1.63	5
	Body 5600	e'	48.4500	Relative Permittivity (ϵ_r):	48.45	48.48	-0.06	5
		e"	19.0700	Conductivity (σ):	5.94	5.76	3.07	5
	Body 5800	e'	48.0700	Relative Permittivity (ϵ_r):	48.07	48.20	-0.27	5
		e"	19.3200	Conductivity (σ):	6.23	6.00	3.84	5
	Body 5825	e'	48.0500	Relative Permittivity (ϵ_r):	48.05	48.20	-0.31	5
		e"	19.3500	Conductivity (σ):	6.27	6.00	4.45	5
2/1/2015	Body 5180	e'	47.9600	Relative Permittivity (ϵ_r):	47.96	49.05	-2.22	5
		e"	17.6900	Conductivity (σ):	5.10	5.27	-3.34	5
	Body 5200	e'	47.9700	Relative Permittivity (ϵ_r):	47.97	49.02	-2.14	5
		e"	17.7200	Conductivity (σ):	5.12	5.29	-3.23	5
	Body 5600	e'	47.4400	Relative Permittivity (ϵ_r):	47.44	48.48	-2.14	5
		e"	17.8700	Conductivity (σ):	5.56	5.76	-3.41	5
	Body 5800	e'	47.1200	Relative Permittivity (ϵ_r):	47.12	48.20	-2.24	5
		e"	18.0100	Conductivity (σ):	5.81	6.00	-3.20	5
	Body 5825	e'	47.0800	Relative Permittivity (ϵ_r):	47.08	48.20	-2.32	5
		e"	18.0100	Conductivity (σ):	5.83	6.00	-2.78	5

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SAR Lab D

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
1/4/2016	Body 2450	e'	50.7600	Relative Permittivity (ϵ_r):	50.76	52.70	-3.68	5
		e"	14.7300	Conductivity (σ):	2.01	1.95	2.90	5
	Body 2410	e'	50.8800	Relative Permittivity (ϵ_r):	50.88	52.76	-3.56	5
		e"	14.6400	Conductivity (σ):	1.96	1.91	2.85	5
	Body 2475	e'	50.7200	Relative Permittivity (ϵ_r):	50.72	52.67	-3.70	5
		e"	14.7700	Conductivity (σ):	2.03	1.99	2.39	5
1/8/2016	Body 2450	e'	53.0400	Relative Permittivity (ϵ_r):	53.04	52.70	0.65	5
		e"	14.9500	Conductivity (σ):	2.04	1.95	4.44	5
	Body 2410	e'	53.0800	Relative Permittivity (ϵ_r):	53.08	52.76	0.61	5
		e"	14.8300	Conductivity (σ):	1.99	1.91	4.18	5
	Body 2475	e'	52.9600	Relative Permittivity (ϵ_r):	52.96	52.67	0.55	5
		e"	14.9700	Conductivity (σ):	2.06	1.99	3.78	5
1/21/2016	Body 2450	e'	51.9800	Relative Permittivity (ϵ_r):	51.98	52.70	-1.37	5
		e"	14.6600	Conductivity (σ):	2.00	1.95	2.42	5
	Body 2410	e'	52.1500	Relative Permittivity (ϵ_r):	52.15	52.76	-1.15	5
		e"	14.5900	Conductivity (σ):	1.96	1.91	2.50	5
	Body 2475	e'	51.8800	Relative Permittivity (ϵ_r):	51.88	52.67	-1.50	5
		e"	14.7300	Conductivity (σ):	2.03	1.99	2.11	5
1/25/2016	Body 2450	e'	51.9200	Relative Permittivity (ϵ_r):	51.92	52.70	-1.48	5
		e"	14.1400	Conductivity (σ):	1.93	1.95	-1.22	5
	Body 2410	e'	52.0600	Relative Permittivity (ϵ_r):	52.06	52.76	-1.33	5
		e"	14.0700	Conductivity (σ):	1.89	1.91	-1.16	5
	Body 2475	e'	51.8500	Relative Permittivity (ϵ_r):	51.85	52.67	-1.55	5
		e"	14.2200	Conductivity (σ):	1.96	1.99	-1.42	5
1/28/2016	Body 2450	e'	50.8000	Relative Permittivity (ϵ_r):	50.80	52.70	-3.61	5
		e"	14.5900	Conductivity (σ):	1.99	1.95	1.93	5
	Body 2410	e'	50.9000	Relative Permittivity (ϵ_r):	50.90	52.76	-3.52	5
		e"	14.5000	Conductivity (σ):	1.94	1.91	1.87	5
	Body 2475	e'	50.7400	Relative Permittivity (ϵ_r):	50.74	52.67	-3.66	5
		e"	14.6200	Conductivity (σ):	2.01	1.99	1.35	5
2/1/2016	Body 2450	e'	52.0500	Relative Permittivity (ϵ_r):	52.05	52.70	-1.23	5
		e"	14.2000	Conductivity (σ):	1.93	1.95	-0.80	5
	Body 2410	e'	52.1000	Relative Permittivity (ϵ_r):	52.10	52.76	-1.25	5
		e"	14.0900	Conductivity (σ):	1.89	1.91	-1.02	5
	Body 2475	e'	51.9800	Relative Permittivity (ϵ_r):	51.98	52.67	-1.31	5
		e"	14.2400	Conductivity (σ):	1.96	1.99	-1.28	5

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

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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.

SAR Room	Date	Tissue Type	Dipole Type _Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
A	1/19/2016	Body	D5GHzV2 SN:1168 (5.2 GHz)	11/13/2016	7.44	74.40	75.0	-0.80	2.09	20.9	21.0	-0.48	
A	1/25/2016	Body	D5GHzV2 SN:1168 (5.2 GHz)	11/13/2016	8.15	81.50	75.0	8.67	2.28	22.8	21.0	8.57	1,2
A	1/29/2016	Body	D5GHzV2 SN:1168 (5.2 GHz)	11/13/2016	7.25	72.5	75.0	-3.33	2.04	20.4	21.0	-2.86	
B	1/20/2016	Body	D5GHzV2 SN:1168 (5.8 GHz)	11/13/2016	8.30	83.0	78.1	6.27	2.27	22.7	21.6	5.09	
B	1/25/2016	Body	D5GHzV2 SN:1168 (5.8 GHz)	11/13/2016	7.29	72.9	78.1	-6.66	2.01	20.1	21.6	-6.94	3,4
B	2/5/2016	Body	D5GHzV2 SN:1003 (5.8 GHz)	11/13/2016	7.72	77.2	75.0	2.93	2.15	21.5	20.6	4.37	5,6
C	1/19/2016	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/13/2016	7.98	79.8	82.5	-3.27	2.20	22.0	23.0	-4.35	
C	1/25/2016	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/13/2016	8.43	84.3	82.5	2.18	2.3	23.2	23.0	0.87	
C	1/29/2016	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/13/2016	8.53	85.3	82.5	3.39	2.35	23.5	23.0	2.17	
C	2/1/2016	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/13/2016	7.84	78.4	82.5	-4.97	2.2	21.8	23.0	-5.22	7,8
D	1/4/2016	Body	D2450V2 SN:748	2/20/2016	4.86	48.6	50.3	-3.38	2.22	22.2	23.5	-5.53	9,10
D	1/8/2016	Body	D2450V2 SN:748	2/20/2016	5.02	50.2	50.3	-0.20	2.30	23.0	23.5	-2.13	
D	1/21/2016	Body	D2450V2 SN:748	2/20/2016	5.33	53.3	50.3	5.96	2.44	24.4	23.5	3.83	11,12
D	1/25/2016	Body	D2450V2 SN:748	2/20/2016	5.10	51.0	50.3	1.39	2.34	23.4	23.5	-0.43	
D	1/28/2016	Body	D2450V2 SN:748	2/20/2016	5.30	53.0	50.3	5.37	2.43	24.3	23.5	3.40	
D	2/1/2016	Body	D2450V2 SN:748	2/20/2016	5.18	51.8	50.3	2.98	2.37	23.7	23.5	0.85	

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9. Conducted Output Power Measurements

9.1. Wi-Fi 2.4GHz (DTS Band)

Measured Results

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Average Power (dBm)		
					Antenna A	Antenna B	Antenna C
2.4	802.11b	1 Tx	1	2412	16.4	15.9	14.8
			6	2437	16.4	16.0	14.8
			11	2462	16.4	16.0	14.8
			12	2467	16.4	16.0	14.8
			13	2472	14.0	14.0	14.0
	802.11g CDD	2 Tx A + B	1	2412	14.0	14.0	
			2	2417	16.5	16.0	
			6	2437	16.5	16.0	
			10	2457	16.5	16.0	
			11	2462	13.0	13.0	
			12	2467	10.5	10.5	
			13	2472	2.0	2.0	
	802.11g CDD	2 Tx A + C	1	2412	14.0		14.0
			2	2417	16.3		15.0
			6	2437	16.5		15.0
			10	2457	16.5		15.0
			11	2462	13.0		13.0
			12	2467	10.5		10.5
			13	2472	2.0		2.0

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

Measured Results

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Average Power (dBm)		
					Antenna A	Antenna B	Antenna C
5.2	802.11n HT40	1 Tx	38	5190			14.0
			46	5230			16.9
	802.11n HT40 STBC	2 Tx	38	5190	13.0		13.0
			46	5230	17.0		16.9
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Average Power (dBm)		
					Antenna A	Antenna B	Antenna C
5.3	802.11n HT40	1 Tx	54	5270	17.5	17.0	
			62	5310	15.0	14.9	
	802.11n HT40 STBC	2 Tx	54	5270	17.0	17.0	
			62	5310	14.0	14.0	
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Average Power (dBm)		
					Antenna A	Antenna B	Antenna C
5.5	802.11ac VHT80	1 Tx	106	5530	14.0	14.0	14.0
			122	5610	15.9	16.5	15.0
			138	5690	15.9	16.5	15.0
	802.11ac VHT80 CDD	2 Tx	106	5530	13.0	13.0	
			122	5610	16.0	16.2	
			138	5690	16.0	16.2	
	802.11ac VHT80 CDD	2 Tx	106	5530	13.0		13.0
			122	5610	16.0		15.0
			138	5690	16.0		15.0
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Average Power (dBm)		
					Antenna A	Antenna B	Antenna C
5.8	802.11n HT 40	1 Tx	151	5755	13.0		13.0
			159	5795	16.5		16.0
	802.11a	1 Tx	153	5765		17.5	
			157	5785		17.5	
			161	5805		17.4	
	802.11a CDD	2 Tx	153	5765	16.1	17.5	
			157	5785	16.1	17.5	
			161	5805	16.1	17.5	
		2 Tx	153	5765	16.3		16.0
			157	5785	16.3		16.0
			161	5805	16.3		16.0

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9.3. Bluetooth

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Average Power (dBm)			
					Max Power		Low Power	
					Antenna B	Antenna C	Antenna B	Antenna C
2.4	V3.0 +EDR GFSK	1 Tx	0	2402	17.0	15.0	10.5	9.1
			39	2441	17.0	15.0	10.5	9.2
			78	2480	16.8	14.7	10.3	9.2

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10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

KDB 248227 D01 SAR meas for 802.11 v02r02:

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*.

Note(s):

For Simultaneous Transmission SAR evaluation purposes, SAR testing was performed on several test configuration/test position combinations eligible for test exclusion so that the resultant value may replace the overly conservative estimated values.

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10.1. Wi-Fi (DTS Band)

Module 1

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
2.4 GHz	802.11b 20MHz	0	Rear	6	2437	16.5	16.4					0.060	0.027	0.062	0.028									
			Edge 1	6	2437	16.5	16.4					0.005	0.002	0.005	0.002									
			Edge 3	6	2437	16.5	16.4					1.020	0.325	1.044	0.333									
				12	2467	16.5	16.4					1.030	0.324	1.054	0.332									
			Edge 4	6	2437	16.5	16.4					0.133	0.061	0.136	0.062									
	802.11b 20MHz	0	Rear	6	2437			16.0	16.0							0.062	0.026	0.062	0.026					
			Edge 1	6	2437			16.0	16.0							0.008	0.004	0.008	0.004					
			Edge 2	6	2437			16.0	16.0							0.156	0.068	0.156	0.068					
			Edge 3	6	2437			16.0	16.0							1.020	0.322	1.020	0.322					
				12	2467			16.0	16.0							0.747	0.243	0.747	0.243					
	802.11b 20MHz	0	Rear	6	2437					15.0	14.8									0.084	0.037	0.087	0.039	
			Edge 1	6	2437					15.0	14.8									1.010	0.335	1.058	0.351	1
				12	2467					15.0	14.8									1.010	0.340	1.058	0.356	
			Edge 3	6	2437					15.0	14.8									0.001	<0.001	0.001	<0.001	
			Edge 4	6	2437					15.0	14.8									0.042	0.019	0.044	0.020	

2 Tx

Band	Mode	Dist. (mm)	Position	Ch #	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
2.4 GHz	802.11g CDD	0	Rear	6	2437	16.5	16.5	16.0	16.0			0.080	0.036	0.080	0.036	0.047	0.021	0.047	0.021					
			Edge 1	6	2437	16.5	16.5	16.0	16.0			0.005	0.001	0.005	0.001	0.007	0.002	0.007	0.002					
			Edge 2	6	2437	16.5	16.5	16.0	16.0							0.147	0.064	0.147	0.064					
			Edge 3	6	2437	16.5	16.5	16.0	16.0			1.020	0.322	1.020	0.322	0.916	0.290	0.916	0.290					
				10	2457	16.5	16.5	16.0	16.0			1.030	0.329	1.030	0.329	0.904	0.287	0.904	0.287					
			Edge 4	6	2437	16.5	16.5	16.0	16.0			0.155	0.070	0.155	0.070									
2.4 GHz	802.11g CDD	0	Rear	6	2437	16.5	16.5			15.0	15.0	0.087	0.038	0.087	0.038					0.103	0.044	0.103	0.044	
			Edge 1	6	2437	16.5	16.5			15.0	15.0									0.994	0.333	0.994	0.333	
				10	2457	16.5	16.5			15.0	15.0									0.997	0.335	0.997	0.335	
			Edge 2	6	2437	16.5	16.5			15.0	15.0									0.014	0.006	0.014	0.006	
			Edge 3	6	2437	16.5	16.5			15.0	15.0	1.010	0.319	1.010	0.319									
				10	2457	16.5	16.5			15.0	15.0	1.020	0.323	1.020	0.323									
			Edge 4	6	2437	16.5	16.5			15.0	15.0	0.148	0.066	0.148	0.066					0.040	0.018	0.040	0.018	

Module 2

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
2.4 GHz	802.11b 20MHz	0	Edge 1	6	2437					15.0	15.0									0.993	0.327	0.993	0.327	

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10.2. Wi-Fi (U-NII Band)

10.2.1. Wi-Fi (U-NII-I Band)

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.2 GHz	802.11n HT40	0	Rear	46	5230					17.0	16.9									0.092	0.035	0.094	0.036	
			Edge 1	38	5190					14.0	14.0									0.358	0.097	0.358	0.097	
				46	5230					17.0	16.9									0.949	0.276	0.971	0.282	2
			Edge 4	46	5230					17.0	16.9									<0.001	<0.001	<0.001	<0.001	

2 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.2 GHz	802.11n HT40 STBC	0	Rear	46	5230	17.0	17.0			17.0	16.9	0.047	0.016	0.047	0.016					0.091	0.035	0.093	0.035	
			Edge 1	38	5190	13.0	13.0			13.0	13.0									0.255	0.069	0.255	0.069	
				46	5230	17.0	17.0			17.0	16.9									0.936	0.271	0.958	0.277	
			Edge 3	46	5230	17.0	17.0			17.0	16.9	0.581	0.196	0.581	0.196									
			Edge 4	46	5230	17.0	17.0			17.0	16.9	0.090	0.034	0.090	0.034					<0.001	<0.001	<0.001	<0.001	

Module 2

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.2 GHz	802.11n HT40	0	Edge 1	46	5230					17.0	17.0									0.963	0.279	0.963	0.279	

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10.2.2. Wi-Fi (U-NII-2A Band)

Module 1

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.3 GHz	802.11n HT40	0	Rear	54	5270	17.5	17.5					0.127	0.051	0.127	0.051									
			Edge 3	54	5270	17.5	17.5					0.786	0.276	0.786	0.276									
				62	5310	15.0	15.0					0.464	0.159	0.464	0.159									
			Edge 4	54	5270	17.5	17.5					0.147	0.057	0.147	0.057									
	802.11n HT40	0	Rear	54	5270			17.0	17.0							0.150	0.062	0.150	0.062					
			Edge 2	54	5270			17.0	17.0							0.176	0.066	0.176	0.066					
			Edge 3	54	5270			17.0	17.0							1.180	0.431	1.180	0.431					3
				62	5310			15.0	14.9							0.674	0.238	0.690	0.244					

2 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.3 GHz	802.11n HT40 STBC	0	Rear	54	5270	17.0	17.0	17.0	17.0			0.060	0.025	0.060	0.025	0.099	0.041	0.099	0.041					
			Edge 2	54	5270	17.0	17.0	17.0	17.0							0.174	0.066	0.174	0.066					
			Edge 3	54	5270	17.0	17.0	17.0	17.0			0.657	0.228	0.657	0.228	1.130	0.371	1.130	0.371					
				62	5310	14.0	14.0	14.0	14.0			0.343	0.115	0.343	0.115	0.477	0.161	0.477	0.161					
			Edge 4	54	5270	17.0	17.0	17.0	17.0			0.145	0.059	0.145	0.059									

Module 2

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.3 GHz	802.11n HT40	0	Edge 3	54	5270			17.0	16.9							1.080	0.368	1.105	0.377					

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10.2.3. Wi-Fi (U-NII-2C Band)

Module 1

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.5 GHz	802.11ac VHT80	0	Rear	122	5610	16.0	15.9					0.104	0.043	0.106	0.044									
			Edge 2	122	5610	16.0	15.9					<0.001	<0.001	<0.001	<0.001									
			Edge 3	122	5610	16.0	15.9					1.030	0.345	1.054	0.353									
				138	5690	16.0	15.9					0.845	0.317	0.865	0.324									
			Edge 4	122	5610	16.0	15.9					0.176	0.055	0.180	0.056									
	802.11ac VHT80	0	Rear	122	5610			16.5	16.5							0.117	0.046	0.117	0.046					
			Edge 2	122	5610			16.5	16.5							0.132	0.045	0.132	0.045					
			Edge 3	122	5610			16.5	16.5							0.909	0.308	0.909	0.308					
				138	5690			16.5	16.5							0.811	0.280	0.811	0.280					
			Edge 4	122	5610			16.5	16.5							<0.001	<0.001	<0.001	<0.001					
	802.11ac VHT80	0	Rear	122	5610					15.0	15.0									0.133	0.054	0.133	0.054	
			Edge 1	122	5610					15.0	15.0									1.150	0.383	1.150	0.383	4
				138	5690					15.0	15.0									1.100	0.377	1.100	0.377	
			Edge 2	122	5610					15.0	15.0									<0.001	<0.001	<0.001	<0.001	
			Edge 4	122	5610					15.0	15.0									<0.001	<0.001	<0.001	<0.001	

2 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.5 GHz	802.11ac VHT80 CDD	0	Rear	122	5610	16.0	16.0	16.5	16.2			0.107	0.045	0.107	0.045	0.067	0.022	0.072	0.024					
			Edge 2	122	5610	16.0	16.0	16.5	16.2							0.110	0.034	0.118	0.036					
			Edge 3	122	5610	16.0	16.0	16.5	16.2			1.020	0.364	1.020	0.364	0.738	0.243	0.791	0.260					
				138	5690	16.0	16.0	16.5	16.2			0.861	0.318	0.861	0.318	0.832	0.291	0.892	0.312					
			Edge 4	122	5610	16.0	16.0	16.5	16.2			0.170	0.062	0.170	0.062									
5.5 GHz	802.11ac VHT80 CDD	0	Rear	122	5610	16.0	16.0			15.0	15.0	0.137	0.054	0.137	0.054					0.115	0.039	0.115	0.039	
			Edge 1	122	5610	16.0	16.0			15.0	15.0									1.070	0.357	1.070	0.357	
				138	5690	16.0	16.0			15.0	15.0									1.060	0.363	1.060	0.363	
			Edge 2	122	5610	16.0	16.0			15.0	15.0	<0.001	<0.001	<0.001	<0.001									
			Edge 3	122	5610	16.0	16.0			15.0	15.0	1.080	0.394	1.080	0.394									
				138	5690	16.0	16.0			15.0	15.0	0.780	0.286	0.780	0.286									
			Edge 4	122	5610	16.0	16.0			15.0	15.0	0.195	0.071	0.195	0.071									

Module 2

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.5 GHz	802.11ac VHT80	0	Edge 1	122	5610					15.0	15.0									1.110	0.369	1.110	0.369	

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10.2.4. Wi-Fi (U-NII-3 Band)

Module 1

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.8 GHz	802.11n HT40	0	Rear	159	5795	16.5	16.5					0.082	0.033	0.082	0.033									
			Edge 3	151	5755	13.0	13.0					0.401	0.119	0.401	0.119									
				159	5795	16.5	16.5					0.844	0.270	0.844	0.270									
			Edge 4	159	5795	16.5	16.5					0.095	0.033	0.095	0.033									
	802.11a	0	Rear	157	5785			17.5	17.5							0.073	0.027	0.073	0.027					
			Edge 2	157	5785			17.5	17.5							0.136	0.037	0.136	0.037					
			Edge 3	153	5765			17.5	17.5							1.060	0.342	1.060	0.342					
				157	5785			17.5	17.5							0.987	0.322	0.987	0.322					
	802.11n HT40	0	Rear	159	5795					16.0	16.0									0.123	0.050	0.123	0.050	
			Edge 1	151	5755					13.0	13.0									0.539	0.186	0.539	0.186	
				159	5795					16.0	16.0									1.180	0.419	1.180	0.419	5
			Edge 4	159	5795					16.0	16.0									0.002	<0.001	0.002	<0.001	

2 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.8 GHz	802.11a CDD	0	Rear	157	5785	16.5	16.1	17.5	17.5			0.099	0.038	0.108	0.042	0.067	0.026	0.067	0.026					
			Edge 2	157	5785	16.5	16.1	17.5	17.5							0.129	0.041	0.129	0.041					
			Edge 3	153	5765	16.5	16.1	17.5	17.5			0.668	0.232	0.732	0.254	0.951	0.324	0.951	0.324					
				157	5785	16.5	16.1	17.5	17.5			0.663	0.243	0.727	0.266	1.000	0.315	1.000	0.315					
			Edge 4	157	5785	16.5	16.1	17.5	17.5			0.094	0.032	0.103	0.035									
5.8 GHz	802.11a CDD	0	Rear	157	5785	16.5	16.3			16.0	16.0	0.091	0.035	0.095	0.037					0.131	0.046	0.131	0.046	
			Edge 1	153	5765	16.5	16.3			16.0	16.0									1.100	0.389	1.100	0.389	
				157	5785	16.5	16.3			16.0	16.0									1.110	0.383	1.110	0.383	
			Edge 3	157	5785	16.5	16.3			16.0	16.0	0.720	0.252	0.754	0.264									
			Edge 4	157	5785	16.5	16.3			16.0	16.0	0.060	0.022	0.063	0.023					0.003	<0.001	0.003	<0.001	

Module 2

1 Tx

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)						SAR (W/kg)												Plots
						Antenna A		Antenna B		Antenna C		Antenna A				Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		Measured		Scaled		
												1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.8 GHz	802.11n HT40	0	Edge 1	159	5795					16.0	16.0									1.100	0.390	1.100	0.390	

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10.3. Bluetooth

10.3.1. Bluetooth (P_{Max})

Module 1

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
						Antenna B		Antenna C		Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
										1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
Bluetooth	GFSK	0	Rear	39	2441	17.0	17.0			0.089	0.039	0.089	0.039					
			Edge 2	39	2441	17.0	17.0			0.141	0.062	0.141	0.062					
			Edge 3	0	2402	17.0	17.0			1.010	0.314	1.010	0.314					
				39	2441	17.0	17.0			1.150	0.361	1.150	0.361					6
				78	2480	17.0	16.8			0.751	0.236	0.786	0.247					
	GFSK	0	Rear	39	2441			15.5	15.0					0.081	0.035	0.091	0.039	
			Edge 1	0	2402			15.5	15.0					0.743	0.244	0.834	0.274	
				39	2441			15.5	15.0					0.822	0.271	0.922	0.304	
				78	2480			15.5	14.7					0.889	0.294	1.069	0.353	
			Edge 3	39	2441			15.5	15.0					0.004	0.001	0.004	<0.001	
			Edge 4	39	2441			15.5	15.0					0.033	0.015	0.037	0.017	

Module 2

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
						Antenna B		Antenna C		Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
										1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
Bluetooth	GFSK	0	Edge 3	39	2441	17.0	16.2			0.855	0.265	1.028	0.319					

10.3.2. Bluetooth (P_{low})

Module 1

Band	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
						Antenna B		Antenna C		Antenna B				Antenna C				
						Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
										1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
Bluetooth	GFSK	0	Rear	39	2441	10.5	10.5			0.018	0.007	0.018	0.007					
			Edge 1	39	2441	10.5	10.5			<0.001	<0.001	<0.001	<0.001					
			Edge 2	39	2441	10.5	10.5			0.035	0.016	0.035	0.016					
			Edge 3	39	2441	10.5	10.5			0.232	0.071	0.232	0.071					
	GFSK	0	Rear	39	2441			9.5	9.2					0.021	0.009	0.023	0.010	
			Edge 1	39	2441			9.5	9.2					0.208	0.067	0.223	0.072	
			Edge 3	39	2441			9.5	9.2					<0.001	<0.001	<0.001	<0.001	
			Edge 4	39	2441			9.5	9.2					0.007	0.003	0.008	0.003	

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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 3 (1-g or 10-g respectively) 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 or 3 (1-g or 10-g respectively).

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	Standalone	Edge 1	No	1.03	N/A	N/A
	BT	Standalone	Edge 3	Yes	1.15	0.968	1.19
5200	Wi-Fi 802.11a/n/ac	Standalone	Edge 3	Yes	0.963	0.944	1.02
5300	Wi-Fi 802.11a/n/ac	Standalone	Edge 3	Yes	1.18	1.1	1.07
5500	Wi-Fi 802.11a/n/ac	Standalone	Edge 1	Yes	1.15	1.07	1.07
5800	Wi-Fi 802.11a/n/ac	Standalone	Edge 1	Yes	1.18	1.12	1.05

Note(s):

Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20 or 3 (1-g or 10-g respectively).

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12. Simultaneous Transmission SAR Analysis

KDB 447498 D01 General RF Exposure Guidance introduces a new formula for calculating 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 measured 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 measured 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:

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

Simultaneous Transmission Conditions

RF Exposure Condition	Item	Capable Transmit Configurations		
Standalone	1	+ Antenna A Wi-Fi 2.4 GHz SISO	+	Antenna B Bluetooth (P_{Max})
	2	+ Antenna A Wi-Fi 2.4 GHz SISO	+	Antenna C Bluetooth (P_{Max})
	3	+ Antenna A Wi-Fi 5 GHz SISO	+	Antenna B Bluetooth (P_{Low})
	4	+ Antenna A Wi-Fi 5 GHz SISO	+	Antenna C Bluetooth (P_{Low})
	5	+ Antenna B Wi-Fi 5 GHz SISO	+	Antenna B Bluetooth (P_{Low})
	6	+ Antenna B Wi-Fi 5 GHz SISO	+	Antenna C Bluetooth (P_{Low})
	7	+ Antenna C Wi-Fi 5 GHz SISO	+	Antenna B Bluetooth (P_{Low})
	8	+ Antenna C Wi-Fi 5 GHz SISO	+	Antenna C Bluetooth (P_{Low})
	9	+ Antenna A + B Wi-Fi 5 GHz MIMO	+	Antenna B Bluetooth (P_{Low})
	10	+ Antenna A + B Wi-Fi 5 GHz MIMO	+	Antenna C Bluetooth (P_{Low})
	11	+ Antenna A + C Wi-Fi 5 GHz MIMO	+	Antenna B Bluetooth (P_{Low})
	12	+ Antenna A + C Wi-Fi 5 GHz MIMO	+	Antenna C Bluetooth (P_{Low})

Notes:

1. Wi-Fi 2.4GHz Radio on Antenna B and Antenna C cannot transmit simultaneously with Bluetooth Radio.

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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.

Estimated SAR for WLAN and BT

Tx	Frequency	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
Interface	(MHz)	dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Wi-Fi Antenna A															
Wi-Fi 2.4 GHz	2462	16.50	45	5	227.9	132.7	3.1	7.1		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.3 GHz	5320	17.50	56	5	227.9	132.7	3.1	7.1		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.5 GHz	5700	16.00	40	5	227.9	132.7	3.1	7.1		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.8 GHz	5825	16.50	45	5	227.9	132.7	3.1	7.1		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi Antenna B															
Wi-Fi 2.4 GHz	2462	16.00	40	5	227.9	7.1	3.1	132.7		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.3 GHz	5320	17.00	50	5	227.9	7.1	3.1	132.7		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.5 GHz	5700	16.50	45	5	227.9	7.1	3.1	132.7		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.8 GHz	5825	17.50	56	5	227.9	7.1	3.1	132.7		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi Antenna C															
Wi-Fi 2.4 GHz	2462	15.00	32	5	3.1	91.2	224.6	42		-MEASURE-	-MEASURE-	0.400	0.400	0.159	
Wi-Fi 5.2 GHz	5240	17.00	50	5	3.1	91.2	224.6	42		-MEASURE-	-MEASURE-	0.400	0.400	0.363	
Wi-Fi 5.5 GHz	5700	15.00	32	5	3.1	91.2	224.6	42		-MEASURE-	-MEASURE-	0.400	0.400	0.243	
Wi-Fi 5.8 GHz	5825	16.00	40	5	3.1	91.2	224.6	42		-MEASURE-	-MEASURE-	0.400	0.400	0.306	
Wi-Fi Antenna A + B															
Wi-Fi 2.4 GHz	2462	16.50	45	5	227.9	7.1	3.1	7.1		-MEASURE-	0.400	-MEASURE-	-MEASURE-	-MEASURE-	
Wi-Fi 5.3 GHz	5320	17.00	50	5	227.9	7.1	3.1	7.1		-MEASURE-	0.400	-MEASURE-	-MEASURE-	-MEASURE-	
Wi-Fi 5.5 GHz	5700	16.50	45	5	227.9	7.1	3.1	7.1		-MEASURE-	0.400	-MEASURE-	-MEASURE-	-MEASURE-	
Wi-Fi 5.8 GHz	5825	17.50	56	5	227.9	7.1	3.1	7.1		-MEASURE-	0.400	-MEASURE-	-MEASURE-	-MEASURE-	
Wi-Fi Antenna A + C															
Wi-Fi 2.4 GHz	2462	16.50	45	5	3.1	91.2	3.1	7.1		-MEASURE-	-MEASURE-	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.2 GHz	5320	17.00	50	5	3.1	91.2	3.1	7.1		-MEASURE-	-MEASURE-	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.5 GHz	5700	16.00	40	5	3.1	91.2	3.1	7.1		-MEASURE-	-MEASURE-	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.8 GHz	5825	16.50	45	5	3.1	91.2	3.1	7.1		-MEASURE-	-MEASURE-	0.400	-MEASURE-	-MEASURE-	
Bluetooth Antenna B High Power															
Bluetooth	2480	17.00	50	5	227.9	7.1	3.1	132.7		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Bluetooth Antenna B Low Power															
Bluetooth	2480	10.50	11	5	227.9	7.1	3.1	132.7		-MEASURE-	0.400	0.330	-MEASURE-	0.400	
Bluetooth Antenna C High Power															
Bluetooth	2480	15.50	35	5	3.1	91.2	224.6	42		-MEASURE-	-MEASURE-	0.400	0.400	0.175	
Bluetooth Antenna C Low Power															
Bluetooth	2480	9.50	9	5	3.1	91.2	224.6	42		0.378	0.378	0.400	0.400	0.045	

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12.1. Sum of the SAR for Wi-Fi DTS & BT

RF Exposure Conditions	Test Position	① Wi-Fi 2.4GHz (Ant A)	② Bluetooth (Ant B)	③ Bluetooth (Ant C)	① + ②		① + ③	
					∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Standalone	Rear	0.062	0.089	0.091	0.151	No	0.153	No
	Edge 1	0.005	0.400	1.069	0.405	No	1.074	No
	Edge 2	0.400	0.141	0.400	0.541	No	0.800	No
	Edge 3	1.044	1.150	0.004	2.194	**Yes**	1.048	No
	Edge 4	0.136	0.400	0.037	0.536	No	0.173	No

SAR to Peak Location Separation Ratio (SPLSR)

Test Position	Standalone SAR (W/kg)		∑ 1-g SAR (W/kg)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
	① DTS	② Bluetooth						
Rear	1.044	1.150	① + ②	2.194	126.1	0.03	No	1

12.2. Sum of the SAR for Wi-Fi UNII & BT

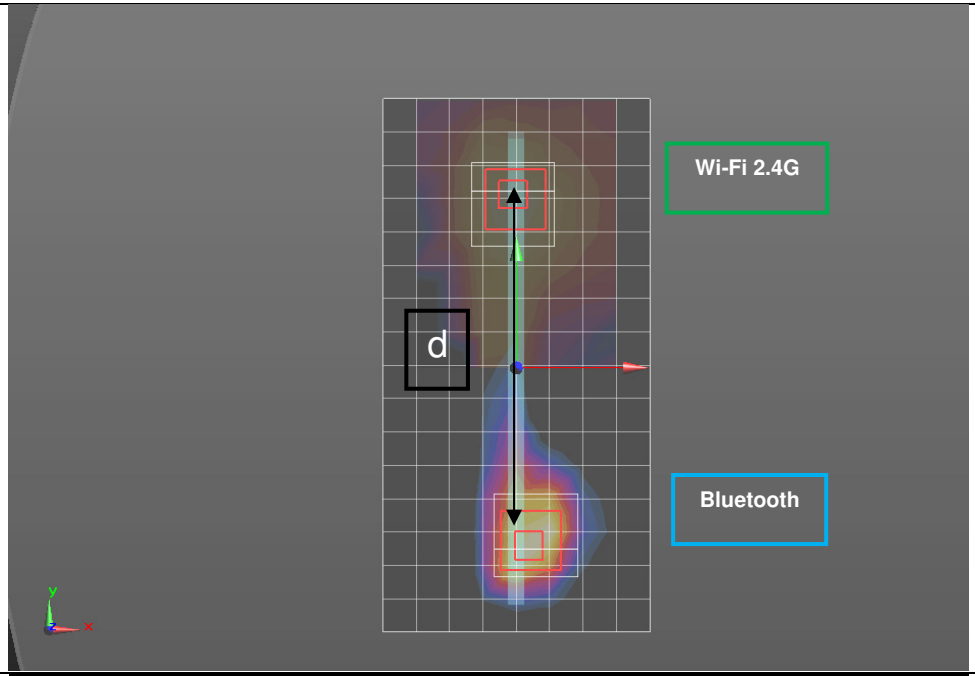
RF Exposure Conditions	Test Position	① Wi-Fi 5 GHz (Ant A)	② Wi-Fi 5 GHz (Ant B)	③ Wi-Fi 5 GHz (Ant C)	④ Wi-Fi 5 GHz MIMO (Ant A + B)	⑤ Wi-Fi 5 GHz MIMO (Ant A + C)	⑥ Bluetooth (Ant B)	⑦ Bluetooth (Ant C)	① + ⑥		① + ⑦		② + ⑥		② + ⑦		③ + ⑥		③ + ⑦		④ + ⑥		④ + ⑦		⑤ + ⑥		⑤ + ⑦	
									∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)	∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
Standalone	Rear	0.127	0.150	0.133	0.108	0.137	0.018	0.023	0.145	No	0.150	No	0.168	No	0.173	No	0.151	No	0.151	No	0.156	No	0.126	No	0.155	No	0.160	No
	Edge 1	0.400	0.400	1.180	0.400	1.110	0.001	0.223	0.401	No	0.623	No	0.401	No	0.623	No	1.181	No	1.181	No	1.403	No	0.401	No	1.111	No	1.333	No
	Edge 2	0.001	0.176	0.001	0.174	0.001	0.035	0.400	0.036	No	0.401	No	0.211	No	0.576	No	0.036	No	0.036	No	0.401	No	0.209	No	0.036	No	0.401	No
	Edge 3	1.054	1.180	0.400	1.130	1.080	0.232	0.001	1.286	No	1.055	No	1.412	No	1.181	No	0.632	No	0.632	No	0.401	No	1.362	No	1.312	No	1.081	No
	Edge 4	0.180	0.001	0.002	0.170	0.195	0.400	0.008	0.580	No	0.188	No	0.401	No	0.009	No	0.402	No	0.402	No	0.010	No	0.570	No	0.595	No	0.203	No

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is ≤ 0.04 for all circumstances that require SPLSR calculation.

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Figure (1)



Mode		Peak SAR W/kg	X m	Y m	Z m	d: Calculated distance (mm)	
DTS (Ant. A)	①	3.39	-0.0012	0.0618	-0.185	① + ②	126.1
BT (Ant. B)	②	3.89	0.0032	-0.0642	-0.183		

The Peak Location Separation Distance is computed by using the
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

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Appendixes

Refer to separated files for the following appendixes.

15U22427-S1V2 SAR_App A Photos & Ant. Locations (STC_180days)

15U22427-S1V1 SAR_App B System Check Plots

15U22427-S1V1 SAR_App C Highest Test Plots

15U22427-S1V1 SAR_App D Tissue Ingredients

15U22427-S1V1 SAR_App E Probe Cal. Certificates

15U22427-S1V1 SAR_App F Dipole Cal. Certificates

END OF REPORT

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