SAR EVALUATION REPORT

IEEE Std 1528-2013

For
Bicycle Head Unit

FCC ID: C9O-HKB1
Model Name: 12300

Report Number: 15052493-S1V3
Issue Date: 2/22/2024

Prepared for
SRAM LLC
1000 W Fulton Market, 4th Floor
Chicago, IL 60607, USA

Prepared by
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

ACCREDITED
CERT #0751.05

Revision History

Rev.	Date	Revisions	Revised By
V1	12/8/2023	Initial Issue	--
V2	1/29/2024	1. Added additional 2.45 GHz dielectric parameters and System Check information in §8. 2. Included additional BLE data in §9, §10. 3. Included BLE simultaneous scenario in §12. 4. Added additional plots in Appendix C. 5. Updated Appendix A with additional information for antennas.	AJ Newcomer
V3	2/22/2024	Section 6.2: Updated Notes	Coltyce Sanders

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1. Attestation of Test Results

Applicant Name	SRAM LLC		
FCC ID	C9O-HKB1		
Model Name	12300		
Applicable Standards	Published RF exposure KDB procedures. IEEE Std 1528-2013		
Exposure Category	SAR Limits (W/Kg)		
	Peak spatial-average (1g of tissue)		
General population	1.6		
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)		
	DTS	NII	DSS
Standalone	0.630	1.132	0.021
Standalone Simultaneous TX	0.661	1.163	1.163
Date Tested	11/29/2023 to 1/25/2024		
Test Results	Pass		

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

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

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

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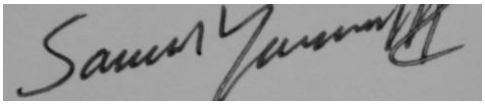
Approved & Released By:	Prepared By:
	
Devin Chang Senior Laboratory Engineer UL Verification Services Inc.	Samuel Yarman III Laboratory Engineer UL Verification Services Inc.

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
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02

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

- TCB Workshop October 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- TCB Workshop October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- TCB Workshop May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- TCB Workshop April 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))
- TCB Workshop April 2022; RF Exposure Procedures (Sum-Peak Location Separation Ratio)

3. Facilities and Accreditation

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

47266 Benicia Street
SAR Labs 1

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

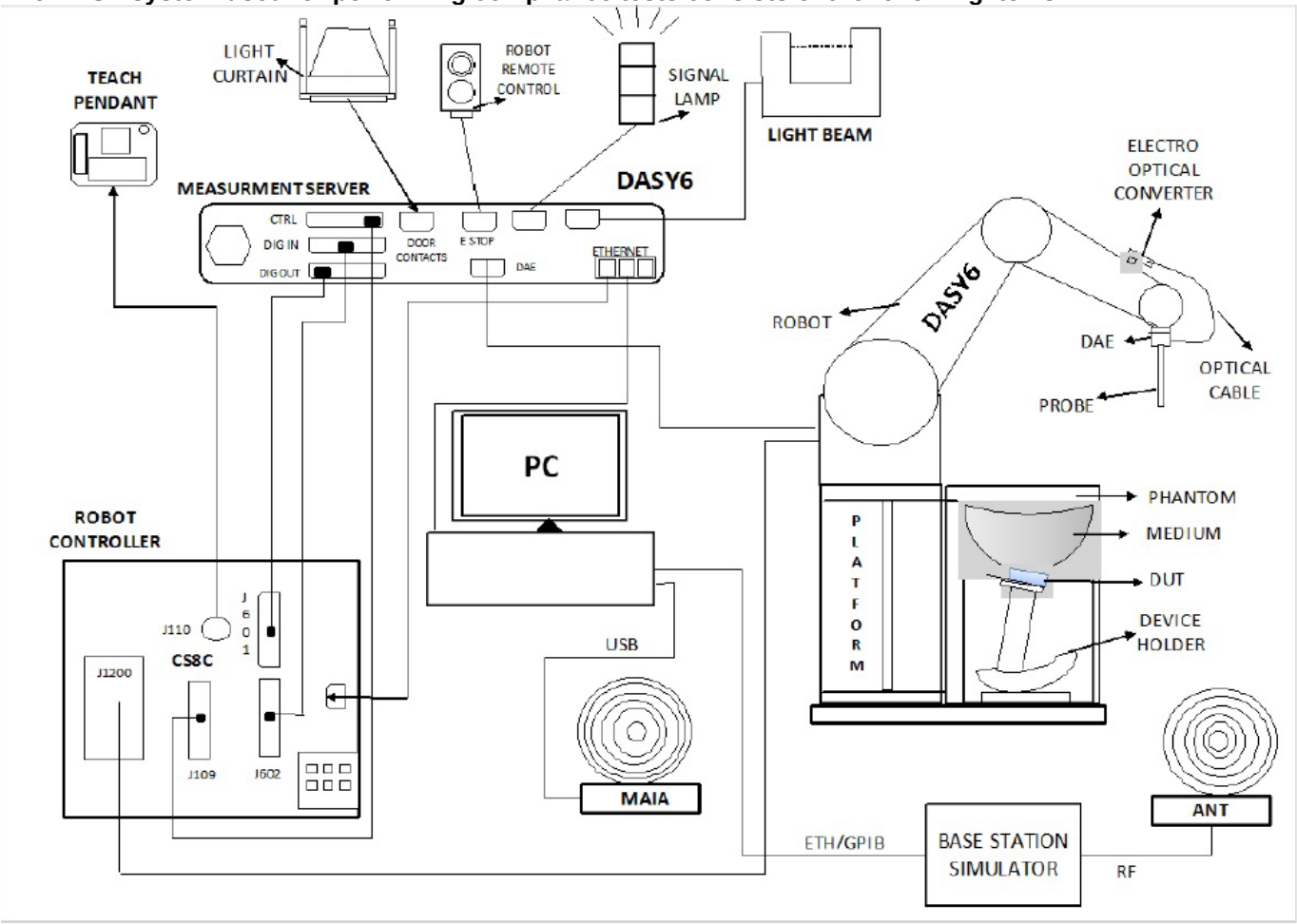
The Test Lab Conformity Assessment Body Identifier (CABID)

Location	CABID	Company Number
47266 Benicia Street, Fremont, CA, 94538 UNITED STATES	US0104	2324A

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6/8[1] software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder, and other accessories according to the targeted measurement.

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

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

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

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

Step 3: Zoom Scan

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

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

			≤ 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.

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
Dielectric Probe kit	SPEAG	DAK-3.5	1103	2/6/2024
Shorting Block	SPEAG	DAK-1.2/3.5 Short	SM DAK 200 BA	2/6/2024
Vector Network Analyzer	ROHDE & SCHWARZ	ZNLE6	101273-VA	2/19/2024
Thermometer	Fisher Scientific	Traceable	140493798	4/30/2024

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Genarator	R&S	SMB 100A	180968-GX	2/14/2024
Power Meter	HP	437B	3125U11364	1/26/2024
Power Sensor	HP	8481A	3125U11364	1/26/2024
Amplifier	Miteq	AMF-4D-00400600-50-30P	1795093	N/A
Bi-directional coupler	Werlatone	C8060-102	4736	N/A
DC Power Supply	Sorensen	XT 15-4	1802A01877	N/A
MXG Analog Signal Generator	Agilent	N5181A	MY50140630	1/31/2024

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 1)	SPEAG	EX3DV4	7657	5/30/2024
DATA ACQUISITION ELECTRONICS (SAR 1)	SPEAG	DAE4	1357	1/27/2024
DATA ACQUISITION ELECTRONICS (SAR 1)	SPEAG	DAE4	1799	4/4/2024
Thermometer (SAR 1)	Fisherbrand	Traceable	181073792	2/29/2024
SYSTEM VALIDATION DIPOLE	SPEAG	D2450V2	706	1/20/2024
SYSTEM VALIDATION DIPOLE	SPEAG	D2450V2	899	4/18/2024
SYSTEM VALIDATION DIPOLE	SPEAG	D5GHzV2	1003	2/22/2024

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Keysight	N1912A	MY55196007	1/31/2024
Power Sensor	Agilent	N1921A	MY53260001	1/31/2024

5. Measurement Uncertainty

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

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 98.17 mm x 55.92 mm Overall Diagonal: 112.98 mm Display Diagonal: 79.75 mm This is a Small mounted device (When the factor is smaller than 10 cm × 6 cm)
Back Cover	The Back Cover is not removable
Battery Options	The rechargeable battery is not user accessible.
Accessory	Mount
Test sample information	**S/N** **IMEI** **Notes** 00414GA232960009 Unlicensed Radiated 1234567 Unlicensed Conducted
Hardware Version	HVT
Software Version	H-2.0.

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR testing
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20) 802.11n (HT40)	99.14% $_{(802.11b)}$ [1]
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)	98.19% $_{(802.11a)}$ [1]
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No		
	Does this device support Band gap channel(s)? ☒ Yes ☐ No		
Bluetooth	2.4 GHz	BR, EDR, and LE	76.88%$_{(GFSK)}$ [2] 62.53%$_{(BLE)}$ [2,6]
ANT+	2.4 GHz	GFSK and LE	49.21%$_{(ANT+)}$ [3] 100%$_{(BLE (ANT+))}$ [5,6]
AIREA	2405 – 2475 MHz	O-QPSK and LE	47.21%$_{(AIREA)}$ [4] 100%$_{(BLE (Sramlink))}$ [5,6]

Notes:

1. Refer to §9.1 and §9.2 for Wi-Fi DTS and UNII Measured Duty Cycles respectively.
2. Refer to §9.3 for Bluetooth Measured Duty Cycle.
3. Refer to §9.4 for ANT+ Measured Duty Cycle.
4. Refer to §9.5 for AIREA Measured Duty Cycle.
5. Refer to §9.6 for BLE (ANT+) and BLE (Sramlink) Measured Duty Cycle.
6. Wi-Fi/BT duty cycle is a separate ANT from both BLE (ANT+) and BLE (ANT+), hence why the duty cycles are different.

7. RF Exposure Conditions (Test Configurations)

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

Antenna	Band	Back	Front	Edge Top	Edge Right	Edge Bottom	Edge Left
WIFI/BT/BLE	Wi-Fi 2.4GHz Wi-Fi 5GHz Bluetooth	Yes	Yes	Yes	Yes	No	Yes
ANT+/BLE	2.4GHz Bluetooth LE	Yes	Yes	No	Yes	Yes	Yes
AIREA/BLE	802.15.4 Bluetooth LE	Yes	Yes	No	Yes	Yes	Yes

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

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

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

Dielectric Property Measurements Results:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
1	11/28/2023	5250	Head	5250	35.45	35.9	-1.34%	4.49	4.70	-4.51%
				5150	35.62	36.0	-1.19%	4.38	4.60	-4.76%
				5350	35.26	35.8	-1.56%	4.60	4.80	-4.32%
1	11/28/2023	5600	Head	5600	34.83	35.5	-1.98%	4.87	5.06	-3.70%
				5500	35.02	35.6	-1.76%	4.76	4.96	-3.97%
				5725	34.61	35.4	-2.21%	5.02	5.19	-3.30%
1	11/28/2023	5750	Head	5750	34.57	35.4	-2.24%	5.05	5.21	-3.22%
				5700	34.65	35.4	-2.17%	4.99	5.16	-3.42%
				5850	34.40	35.3	-2.55%	5.15	5.32	-3.14%
1	11/28/2023	2450	Head	2450	38.46	39.2	-1.89%	1.74	1.80	-3.56%
				2400	38.57	39.3	-1.85%	1.70	1.75	-3.23%
				2500	38.40	39.1	-1.88%	1.77	1.85	-4.43%
1	1/25/2024	2450	Head	2450	39.86	39.2	1.68%	1.74	1.80	-3.17%
				2400	39.94	39.3	1.64%	1.70	1.75	-2.95%
				2500	39.79	39.1	1.67%	1.78	1.85	-4.16%

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 dipole input power (forward power) for the CLA 13 was 1 W.
- The results are normalized to 1 W input power.

System Check Results

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

SAR Lab	Date	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 %	
1	11/29/2023	Head	D5GHzV2 SN: 1003 (5.25 GHz)	2/22/2024	7.480	74.80	80.30	-6.85%	2.130	21.30	22.90	-6.99%	1
1	11/29/2023	Head	D5GHzV2 SN: 1003 (5.60 GHz)	2/22/2024	7.840	78.40	83.00	-5.54%	2.210	22.10	23.70	-6.75%	2
1	11/29/2023	Head	D5GHzV2 SN: 1003 (5.75 GHz)	2/22/2024	7.250	72.50	79.30	-8.58%	2.050	20.50	22.40	-8.48%	3
1	11/29/2023	Head	D2450V2 SN: 706	1/20/2024	4.820	48.20	52.30	-7.84%	2.250	22.50	24.50	-8.16%	4
1	1/25/2024	Head	D2450V2 SN: 899	4/18/2024	5.490	54.90	51.90	5.78%	2.630	26.30	24.40	7.79%	5

9. Conducted Output Power Measurements

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

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

Maximum Output Power (Tune-up Power Limit) provided by the manufacturer are used to scale measured SAR values.

9.1. Wi-Fi 2.4GHz (DTS Band)

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

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

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

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

Wi-Fi 2.4GHz Measured Results

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1	2412	18.5	19.0	Yes
		6	2437	18.0	19.0	
		11	2462	18.1	19.0	
OFDM 2.4 GHz	802.11g	1	2412		16.5	No
		6	2437		16.5	
		11	2462		16.5	
	802.11n (HT20)	1	2412		13.5	No
		6	2437		14.5	
		11	2462		13.0	
	802.11n (HT40)	3	2422		16.0	No
		6	2437		15.5	
		9	2452		15.0	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11b	1 Mbps	12.452	12.5615	99.14%	1.01

Duty Cycle plots

802.11b

9.2. Wi-Fi 5GHz (U-NII 1-3 Bands)

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

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

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

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

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

Wi-Fi 5 GHz Measured Results

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 5.2 GHz	802.11a	36	5180	15.5	17.0	Yes
		40	5200	14.7	16.5	
		48	5240	15.9	17.0	
	802.11n (HT20)	36	5180		16.5	No
		40	5200		16.5	
		48	5240		17.0	
	802.11n (HT40)	38	5190		16.0	No
		46	5230		16.0	
	802.11ac (VHT80)	42	5210		14.0	No
Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2A 5.3 GHz	802.11a	52	5260	15.9	17.0	Yes
		60	5300	15.9	17.0	
		64	5320	14.0	15.5	
	802.11n (HT20)	52	5260		17.0	No
		60	5300		17.0	
		64	5320		15.0	
	802.11n (HT40)	54	5270		16.0	No
		62	5310		16.0	
	802.11ac (VHT80)	58	5290		9.0	No

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11a	100	5500	14.3	15.5	Yes
		116	5580	16.0	17.0	
		140	5700	15.7	16.5	
		144	5720	15.6	17.0	
	802.11n (HT20)	100	5500		15.5	No
		116	5580		16.0	
		140	5700		16.0	
		144	5720		16.0	
	802.11n (HT40)	102	5510		13.5	No
		110	5550		16.0	
		134	5670		16.0	
		142	5710		16.0	
	802.11ac (VHT80)	106	5530		11.5	No
		122	5610		15.5	
		138	5690		16.0	

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11a	149	5745	15.8	17.0	Yes
		157	5785	15.8	17.0	
		165	5825	16.0	17.0	
	802.11n (HT20)	149	5745		16.0	No
		157	5785		16.0	
		165	5825		16.0	
	802.11n (HT40)	151	5755		16.0	No
		159	5795		16.0	
	802.11ac (VHT80)	155	5775		16.0	No

Duty Factor Measured Results

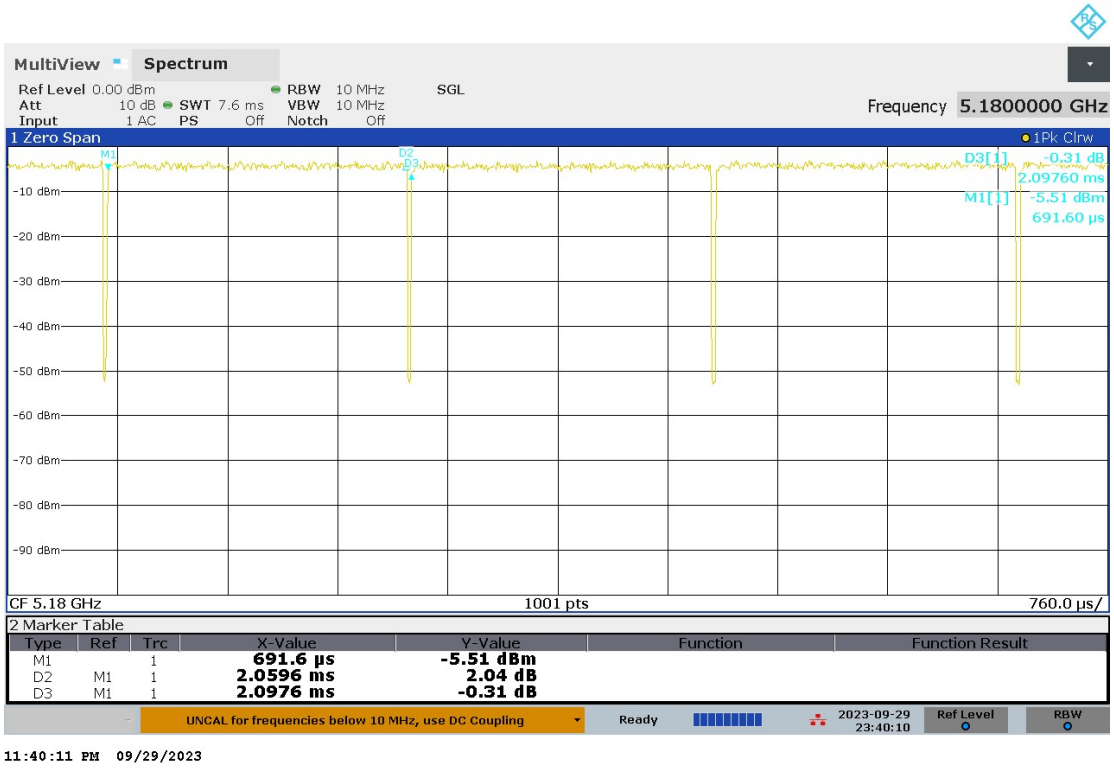
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11a	6 Mbps	2.060	2.098	98.19%	1.02

Note(s):

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

Duty Cycle plots

802.11a



9.3. Bluetooth

Maximum Output Power (Tune-up Limit) for Bluetooth

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

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

Bluetooth Measured Results

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
Bluetooth 2.4 GHz	BR GFSK	0	2402	3.5	4.0	Yes
		39	2441	5.8	6.5	
		78	2480	4.4	4.5	
	EDR, π/4 DQPSK	0	2402	2.2	3.0	No
		39	2441	4.6	5.0	
		78	2480	3.3	3.5	
	EDR, 8-DPSK	0	2402	2.2	3.0	No
		39	2441	4.7	5.0	
		78	2480	3.3	3.5	
	LE, GFSK	0	2402	-1.1	0.0	No
		19	2440	1.0	1.0	
		39	2480	-0.4	0.0	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.879	3.745	76.88%	1.30

Note(s):

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

Duty Cycle plots

GFSK

9.4. ANT+

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
2.4 GHz	GFSK (ANT+)	Low	2402	5.9	7.0	Yes
		Mid	2440	6.0	7.0	
		High	2480	5.9	7.0	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK (ANT+)	1 Mbps	2.083	4.233	49.21%	2.03

GFSK (ANT+)

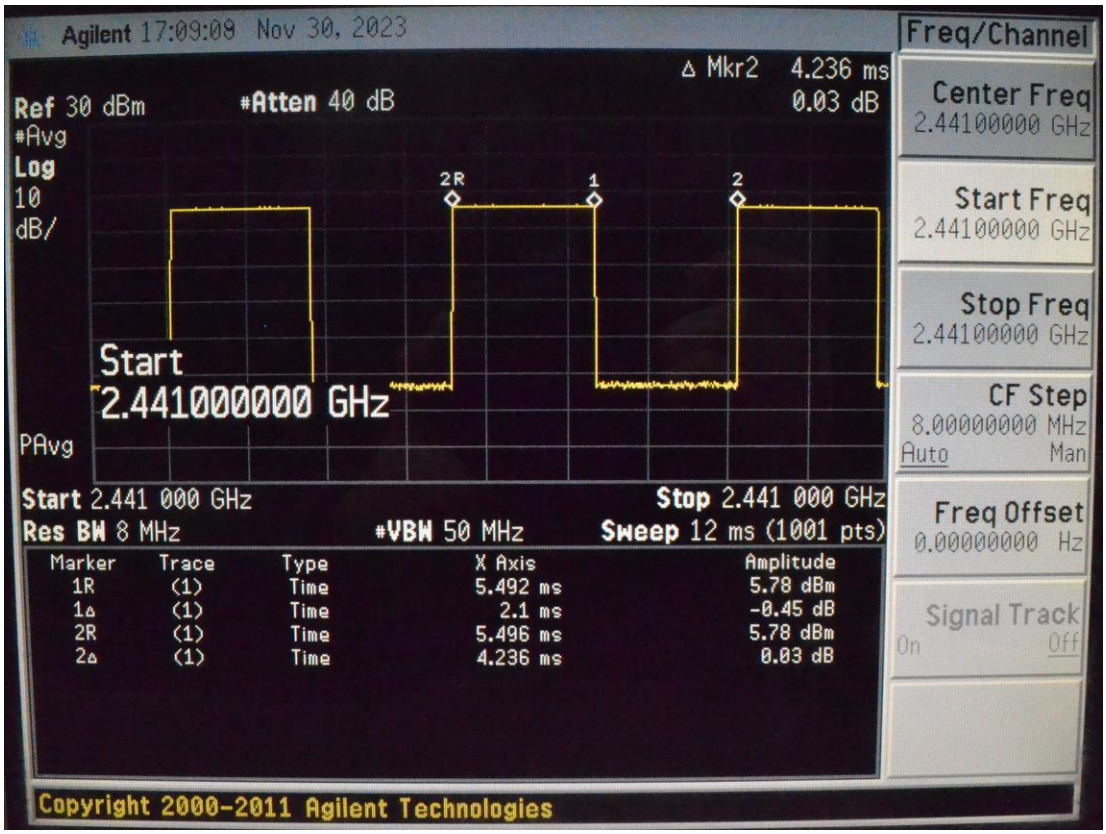
9.5. AIREA

Band	Mode	Ch #	Freq. (MHz)	Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
2.4 GHz	AIREA	Low	2405	6.1	7.0	Yes
		Mid	2440	6.1	7.0	
		High	2475	6.1	7.0	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
AIREA	1 Mbps	2.1	4.236	49.58%	2.02

AIREA



9.6. BLE (ANT+)

Band	Mode	Ch #	Freq. (MHz)	ANT+_BLE (Chain 1) Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
2.4 GHz	LE, GFSK	Low	2402	6.0	7.0	Yes
		Mid	2440	6.0	7.0	
		High	2480	6.0	7.0	

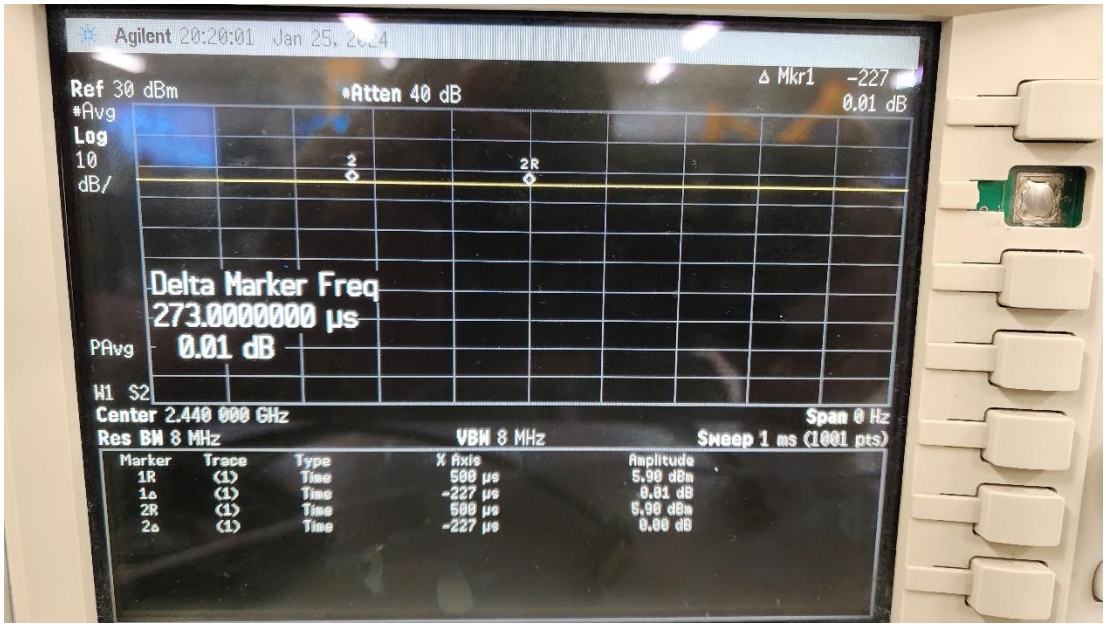
9.7. BLE (Sramlink)

Band	Mode	Ch #	Freq. (MHz)	Sramlink (Chain 0) Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
2.4 GHz	LE, GFSK	Low	2402	6.0	7.0	Yes
		Mid	2440	6.1	7.0	
		High	2480	6.1	7.0	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
ANT+/BLE AIREA/BLE	1 Mbps	0.5	0.5	100.00%	1.00

ANT+/BLE & AIREA/BLE



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

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

KDB 447498 D01 General RF Exposure Guidance:

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

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

KDB 248227 D01 SAR meas for 802.11:

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

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

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

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

10.1. Wi-Fi (DTS Band)

When the 802.11b reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required. If SAR is > 0.8 W/kg and ≤ 1.2 W/kg, SAR is required for the next highest measured output power channel. Finally, if SAR is > 1.2 W/kg, SAR is required for the third channel.

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

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi_BT	Standalone	802.11b	5	99.14%	Back	1	2412.0	0.294	19.0	18.5	0.300	0.340	
					Front	1	2412.0	0.543	19.0	18.5	0.557	**0.630**	1
					Edge Top	1	2412.0	0.235	19.0	18.5	0.239	0.270	
					Edge Right	1	2412.0	0.120	19.0	18.5	0.122	0.138	
					Edge Left	1	2412.0	0.345	19.0	18.5	0.350	0.396	

10.2. Wi-Fi (U-NII 1-3 Bands)

UNII-1 &2A

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

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

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi_BT	Standalone	802.11a	5	98.19%	Back	60	5300.0	0.294	17.0	15.9			
					Front	52	5260.0	0.695	17.0	15.9	0.729	0.956	
						60	5300.0	0.733	17.0	15.9	0.753	**0.988**	2
					Edge Top	60	5300.0	0.539	17.0	15.9			
					Edge Right	60	5300.0	0.090	17.0	15.9			
					Edge Left	60	5300.0	0.545	17.0	15.9	0.555	0.728	

UNII-2C

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi_BT	Standalone	802.11a	5	98.19%	Back	116	5580.0	0.343	17.0	16.0			
					Front	100	5500.0	0.771	15.5	14.3	0.843	**1.132**	3
						116	5580.0	0.768	17.0	16.0	0.754	0.967	
						144	5720.0	0.661	17.0	15.6	0.715	1.005	
					Edge Top	116	5580.0	0.487	17.0	16.0	0.528	0.677	
					Edge Right	116	5580.0	0.031	17.0	16.0			
					Edge Left	116	5580.0	0.587	17.0	16.0	0.626	0.803	
						144	5720.0	0.553	17.0	15.6	0.606	0.852	

UNII-3

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi_BT	Standalone	802.11a	5	98.19%	Back	165	5825.0	0.207	17.0	16.0			
					Front	165	5825.0	0.570	17.0	16.0	0.586	**0.751**	4
					Edge Top	165	5825.0	0.216	17.0	16.0			
					Edge Right	165	5825.0	0.027	17.0	16.0			
					Edge Left	165	5825.0	0.473	17.0	16.0	0.510	0.654	

10.3. Bluetooth

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
WiFi_BT	Standalone	GFSK (BDR)	5	76.88%	Back	39	2441.0	6.5	5.8	0.005	0.008	
					Front	39	2441.0	6.5	5.8	0.012	**0.021**	5
					Edge Top	39	2441.0	6.5	5.8	0.005	0.016	
					Edge Right	39	2441.0	6.5	5.8	0.000	0.000	
					Edge Left	39	2441.0	6.5	5.8	0.004	0.008	

10.4. ANT+

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT+_BLE	Standalone	GFSK	5	49.21%	Back	Mid	2440.0	7.0	6.0	0.011	**0.007**	6
					Front	Mid	2440.0	7.0	6.0	0.010	0.007	
					Edge Right	Mid	2440.0	7.0	6.0	0.010	**0.007**	
					Edge Bottom	Mid	2440.0	7.0	6.0	0.002	0.002	
					Edge Left	Mid	2440.0	7.0	6.0	0.000	0.000	

10.5. AIREA

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
Sramlink	Standalone	O-QPSK	5	47.21%	Back	Mid	2440.0	7.0	6.1	0.013	**0.012**	7
					Front	Mid	2440.0	7.0	6.1	0.014	0.010	
					Edge Right	Mid	2440.0	7.0	6.1	0.000	0.000	
					Edge Bottom	Mid	2440.0	7.0	6.1	0.003	0.005	
					Edge Left	Mid	2440.0	7.0	6.1	0.007	**0.009**	

10.6. BLE (ANT+)

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
ANT+_BLE	Standalone	GFSK	5	100.00%	Back	Mid	2440.0	7.0	6.1	0.035	0.043	
					Front	Mid	2440.0	7.0	6.1	0.051	**0.063**	8
					Edge Right	Mid	2440.0	7.0	6.1	0.025	0.031	
					Edge Bottom	Mid	2440.0	7.0	6.1	0.024	0.030	
					Edge Left	Mid	2440.0	7.0	6.1	0.026	0.032	

10.7. BLE (Sramlink)

ANT	RF Exposure Conditions	Mode	Dist. (mm)	Duty Cycle (%)	Test Position	Ch No.	Freq. (MHz)	TuP Limit (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
Sramlink	Standalone	GFSK	5	100.00%	Back	Mid	2440.0	7.0	6.1	0.037	**0.046**	9
					Front	Mid	2440.0	7.0	6.1	0.033	0.041	
					Edge Right	Mid	2440.0	7.0	6.1	0.009	0.011	
					Edge Bottom	Mid	2440.0	7.0	6.1	0.017	0.021	
					Edge Left	Mid	2440.0	7.0	6.1	0.021	0.026	

11. SAR Measurement Variability

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

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

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	First Repeated		Second Repeated		Third Repeated
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio	Measured SAR (W/kg)	Largest to Smallest SAR Ratio	Measured SAR (W/kg)
5000	Wi-Fi 5.5 GHz	Standalone	Front	Yes	0.843	0.711	1.19	N/A	N/A	N/A

12. Simultaneous Transmission Conditions

RF Exposure Condition	Item	Simultaneous Tx Scenarios				
Standalone	1	DTS	+	DSS	+	ANT+
	2	NII	+	DSS	+	AIREA
	3	DTS	+	DSS	+	AIREA
	4	NII	+	DSS	+	ANT+
	5	BT	+	ANT+	+	BLE
	6	BT	+	AIREA	+	BLE

Note(s):

1. ANT+ and AIREA Cannot transmit simultaneously.
2. DTS and NII Cannot transmit simultaneously.

12.1. Simultaneous transmission SAR test exclusion considerations

KDB 447498 D01 General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

12.1.1. Sum of SAR

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

12.1.2. Simultaneous transmission SAR measurement

When simultaneous transmission SAR measurements are required in different frequency bands not covered by a single probe calibration point then separate tests for each frequency band are performed. The tests are performed using enlarged zoom scans which are processed, by means of superposition, using the DASY6 volume scan post-processing procedures to determine the 1-g SAR for the aggregate SAR distribution.

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

DASY6 provides the ability to perform Multiband Evaluations according to the latest standards using the Volume Scan job as well as appropriate routines for the Post-processing.

In order to extract and process measurements within different frequency bands, the SEMCAD X Post-processor performs the combination and subsequent superposition of these measurement data via DASY6= Combined MultiBand Averaged SAR.

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

12.2. Sum of the SAR for Wi-Fi 2.4GHz, Wi-Fi 5 GHz, BT, ANT+, & AIREA

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)					
		1	2	3	4	5	6	1+3+4	1+3+5	2+3+4	2+3+5	3+4+6	3+5+6
		Wi-Fi 2.4 GHz	Wi-Fi 5 GHz	BT	ANT+	AIREA	BLE						
Standalone	Back	0.340	0.677	0.008	0.007	0.012	0.046	0.355	0.360	0.692	0.697	0.061	0.066
	Front	0.630	1.132	0.021	0.007	0.010	0.063	0.658	**0.661**	1.160	**1.163**	0.091	0.094
	Edge Top	0.270	0.677	0.016				0.286	0.286	0.693	0.693	0.016	0.016
	Edge Right	0.138	0.677	0.000	0.007	0.000	0.031	0.145	0.138	0.684	0.677	0.038	0.031
	Edge Bottom				0.002	0.005	0.030	0.002	0.005	0.002	0.005	0.032	0.035
	Edge Left	0.396	0.852	0.008	0.000	0.009	0.033	0.404	0.413	0.860	0.869	0.041	0.050

Note(s):

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.

Appendixes

Refer to separated files for the following appendixes.

Appendix A: SAR Setup Photos

Appendix B: SAR System Check Plots

Appendix C: SAR Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: SAR Probe Certificates

Appendix F: SAR Dipole Certificates

END OF REPORT