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SAR EVALUATION REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
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Gyeonggi-do, 16677, Korea

Date of Testing:
06/30/2024-07/28/2024
Test Site/Location:
Element, Columbia, MD, USA
Document Serial No.:
1M2405140040-01.A3L

FCC ID: **A3LSMX820**

APPLICANT: **SAMSUNG ELECTRONICS CO., LTD.**

DUT Type: Portable Computing Device
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SM-X820
Reference FCC ID: A3LSMX828U

Equipment Class	Band & Mode	Tx Frequency	SAR	
			1g Laptop SAR (W/kg)	1g Tablet SAR (W/kg)
DTS	2.4 GHz WIFI	2412 - 2472 MHz	**0.16**	**0.47**
NII	5 GHz WIFI	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz U-NII-4: 5845 - 5885 MHz	**<0.1**	**0.65**
6CD	6 GHz WIFI	U-NII-5: 5935 - 6415 MHz U-NII-6: 6435 - 6515 MHz U-NII-7: 6535 - 6875 MHz U-NII-8: 6895 - 7115 MHz	**0.16**	**0.71**
DSS	2.4 GHz Bluetooth	2402 - 2480 MHz	<0.1	**0.18**
Simultaneous SAR per KDB 690783 D01v01r03:			0.61	**0.97**

Equipment Class	Band & Mode	Tx Frequency	APD (W/m^2)		Reported PD (W/m^2)
			Laptop	Tablet	
6CD	6 GHz WIFI	U-NII-5: 5935 - 6415 MHz U-NII-6: 6435 - 6515 MHz U-NII-7: 6535 - 6875 MHz U-NII-8: 6895 - 7115 MHz	0.85	3.33	2.57

Note: This table above includes test data from RF exposure technical report S/N: 1M2405140039-20.A3L per FCC TCB workshop for data referencing of closely related product APPENDIX J (FCC ID A3LSMX828U)

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.7 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

RJ Ortanez
Executive Vice President

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T A B L E O F C O N T E N T S

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
2.4 GHz WIFI	Data	2412 - 2472 MHz
5 GHz WIFI	Data	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz
6 GHz WIFI	Data	U-NII-5: 5935 - 6415 MHz U-NII-6: 6435 - 6515 MHz U-NII-7: 6535 - 6855 MHz U-NII-8: 6875 - 7115 MHz
2.4 GHz Bluetooth	Data	2402 - 2480 MHz

1.2 Data Referencing

Reference Device		**Variant Device**	**Key differences**
FCC ID: A3LSMX828U		FCC ID: A3LSMX820	Removed components for Licensed Modes (see KDB Inquiry 913121 exhibit for Data Referencing)
Equipment Class	Mode	Data Referencing	Comments
DTS	2.4 GHz WIFI	Y	See SAR Report Section 9.1 for spot-check data
NII	5 GHz WIFI	Y	See SAR Report Section 9.1 for spot-check data
6CD SAR	6 GHz WIFI	Y	See SAR Report Section 9.1 for spot-check data
6CD PD	6 GHz WIFI	N	See SAR Report Section 10.1
DSS	2.4 GHz BT	Y	See SAR Report Section 9.1 for spot-check data
PCB	Licensed	N	Removed in Variant Device
CBE	Licensed	N	Removed in Variant Device

Per manufacturer declaration, there are two tablet devices FCC ID: A3LSMX828U and FCC ID: A3LSMX820, with high degree of similarity, reference model FCC ID: A3LSMX828U and variant model FCC ID: A3LSMX820. Both models share the same material, form factor, circuit design, and components, including antennas and their locations The reference and variant models use the same power tables and have the same tune-up tolerances. The tune-up tolerances unique to this model can be found in section 1.4.1 and for powers, in section 7.

Per FCC Approved Data Referencing Test Plan, testing was done fully on the reference model FCC ID: A3LSMX828U, while spot-check verification has been performed on variant model FCC ID: A3LSMX820. The reference and variant model comparison data summary is included in section 10. Please see RF exposure technical reports in Appendix J: for complete compliance evaluation for the reference model.

1.3 Power Reduction for SAR

This device used an independent fixed level power reduction mechanism for BT when the device is used in tablet configuration and motion is sensed. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.4 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

Note: Targets for 802.11ax RU operations can be found in 802.11ax RU SAR Exclusion Appendix.

1.4.1 2.4 GHz SISO/MIMO WLAN Output Power

The below table is applicable in the following conditions:

- Maximum Power

Power Level	IEEE 802.11 Modulated Output Power (in dBm)									
	Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO									
	b (CDD + STBC)			g (CDD + STBC)			n (CDD + STBC, SDM)			ax (SU) (CDD + STBC, SDM)		
Maximum / Nominal Power	Max		Nom.	Max		Nom.	Max		Nom.	Max		Nom.
2.45 GHz	15.0		14.0	18.0		17.0	18.0		17.0	15.0		14.0
							ch. 1:	16.5	15.5			
							ch. 11:	17.0	16.0			
	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0
	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0

The below table is applicable in the following conditions:

- Grip Sensor Active

Power Level	IEEE 802.11 Modulated Output Power (in dBm)									
	Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO									
	b (CDD + STBC)			g (CDD + STBC)			n (CDD + STBC, SDM)			ax (SU) (CDD + STBC, SDM)		
Maximum / Nominal Power	Max		Nom.	Max		Nom.	Max		Nom.	Max		Nom.
2.45 GHz	12.0		11.0	12.0		11.0	12.0		11.0	12.0		11.0
	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0
	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0

The below table is applicable in the following conditions:

- Simultaneous conditions with 5/6 GHz WLAN

Power Level	IEEE 802.11 Modulated Output Power (in dBm)									
	Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO									
	MIMO									
	b (CDD + STBC)			g (CDD + STBC)			n (CDD + STBC, SDM)			ax (SU) (CDD + STBC, SDM)		
Maximum / Nominal Power	Max		Nom.	Max		Nom.	Max		Nom.	Max		Nom.
2.45 GHz	10.0		9.0	10.0		9.0	10.0		9.0	10.0		9.0
	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0	ch. 12:	3.0	2.0
	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0	ch. 13:	0.0	-1.0

1.4.2 5 GHz SISO/MIMO WLAN Output Power

The below table is applicable in the following conditions:

- Maximum Power

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)							
		Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO							
		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	UNII-1	17.0 ch. 48: 13.0	16.0 12.0	17.0 ch. 48: 13.0	16.0 12.0	17.0 ch. 48: 13.0	16.0 12.0	11.0	10.0
	UNII-2A	17.0	16.0	17.0	16.0	17.0	16.0	11.0	10.0
	UNII-2C	17.0	16.0	17.0	16.0	17.0	16.0	11.0	10.0
	UNII-3	17.0 ch. 165: 16.0	16.0 15.0	17.0 ch. 165: 16.0	16.0 15.0	17.0 ch. 165: 16.0	16.0 15.0	11.0	10.0
	UNII-4	16.0	15.0	16.0	15.0	16.0	15.0	11.0	10.0
5 GHz WIFI (40MHz BW)	UNII-1			17.0 ch. 46: 13.0	16.0 12.0	17.0 ch. 38: 15.0 ch. 46: 13.0	16.0 14.0 12.0	11.0	10.0
	UNII-2A			17.0	16.0	17.0	16.0	11.0	10.0
	UNII-2C			17.0	16.0	17.0	16.0	11.0	10.0
	UNII-3			17.0	16.0	17.0	16.0	11.0	10.0
	UNII-4			16.0	15.0	16.0	15.0	11.0	10.0
5 GHz WIFI (80MHz BW)	UNII-1					12.5	11.5	11.0	10.0
	UNII-2A					16.0	15.0	11.0	10.0
	UNII-2C					16.0	15.0	11.0	10.0
	UNII-3					16.0	15.0	11.0	10.0
	UNII-4					16.0	15.0	11.0	10.0
5 GHz WIFI (160MHz BW)	UNII-1/2A					9.5	8.5	10.0	9.0
	UNII-2C					11.5	10.5	11.0	10.0
	UNII-3/4					15.0	14.0	11.0	10.0

The below table is applicable in the following conditions:

- Grip Sensor Active

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)							
		Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO							
		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	UNII-1	8.0	7.0	8.0	7.0	8.0	7.0	8.0	7.0
	UNII-2A	8.0	7.0	8.0	7.0	8.0	7.0	8.0	7.0
	UNII-2C	8.0	7.0	8.0	7.0	8.0	7.0	8.0	7.0
	UNII-3	8.0 ch. 165: 7.5	7.0 6.5	8.0 ch. 165: 7.5	7.0 6.5	8.0 ch. 165: 7.5	7.0 6.5	8.0 ch. 165: 7.5	7.0 6.5
	UNII-4	7.5	6.5	7.5	6.5	7.5	6.5	7.5	6.5
5 GHz WIFI (40MHz BW)	UNII-1			8.0	7.0	8.0	7.0	8.0	7.0
	UNII-2A			8.0	7.0	8.0	7.0	8.0	7.0
	UNII-2C			8.0	7.0	8.0	7.0	8.0	7.0
	UNII-3			8.0	7.0	8.0	7.0	8.0	7.0
	UNII-4			7.5	6.5	7.5	6.5	7.5	6.5
5 GHz WIFI (80MHz BW)	UNII-1					8.0	7.0	8.0	7.0
	UNII-2A					8.0	7.0	8.0	7.0
	UNII-2C					8.0	7.0	8.0	7.0
	UNII-3					8.0	7.0	8.0	7.0
	UNII-4					7.5	6.5	7.5	6.5
5 GHz WIFI (160MHz BW)	UNII-1/2A					8.0	7.0	8.0	7.0
	UNII-2C					8.0	7.0	8.0	7.0
	UNII-3/4					7.5	6.5	7.5	6.5

The below table is applicable in the following conditions:

- Simultaneous conditions with 2.4 GHz WLAN

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)							
		Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO							
		a (CDD + STBC)		n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)		ax (SU) (CDD + STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
5 GHz WIFI (20MHz BW)	UNII-1	6.5	5.5	6.5	5.5	6.5	5.5	6.5	5.5
	UNII-2A	6.5	5.5	6.5	5.5	6.5	5.5	6.5	5.5
	UNII-2C	6.5	5.5	6.5	5.5	6.5	5.5	6.5	5.5
	UNII-3	6.5 ch. 165: 6.0	5.5 5.0	6.5 ch. 165: 6.0	5.5 5.0	6.5 ch. 165: 6.0	5.5 5.0	6.5 ch. 165: 6.0	5.5 5.0
	UNII-4	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0
5 GHz WIFI (40MHz BW)	UNII-1			6.5	5.5	6.5	5.5	6.5	5.5
	UNII-2A			6.5	5.5	6.5	5.5	6.5	5.5
	UNII-2C			6.5	5.5	6.5	5.5	6.5	5.5
	UNII-3			6.5	5.5	6.5	5.5	6.5	5.5
	UNII-4			6.0	5.0	6.0	5.0	6.0	5.0
5 GHz WIFI (80MHz BW)	UNII-1					6.5	5.5	6.5	5.5
	UNII-2A					6.5	5.5	6.5	5.5
	UNII-2C					6.5	5.5	6.5	5.5
	UNII-3					6.5	5.5	6.5	5.5
	UNII-4					6.0	5.0	6.0	5.0
5 GHz WIFI (160MHz BW)	UNII-1/2A					6.5	5.5	6.5	5.5
	UNII-2C					6.5	5.5	6.5	5.5
	UNII-3/4					6.0	5.0	6.0	5.0

1.4.3 6 GHz SISO/MIMO WLAN Output Power

The below table is applicable in the following conditions:

- Maximum Power

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)			
		Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO			
		a (CDD + STBC)		ax (SU) (CDD + STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
6 GHz WIFI (20MHz BW)	UNII-5	10.0	9.0	10.0	9.0
	UNII-6	10.0	9.0	10.0	9.0
	UNII-7	10.0	9.0	10.0	9.0
	UNII-8	10.0	9.0	10.0	9.0
6 GHz WIFI (40MHz BW)	UNII-5			10.0	9.0
	UNII-6			10.0	9.0
	UNII-7			10.0	9.0
	UNII-8			10.0	9.0
6 GHz WIFI (80MHz BW)	UNII-5			10.0	9.0
	UNII-6			10.0	9.0
	UNII-7			10.0	9.0
	UNII-8			10.0	9.0
6 GHz WIFI (160MHz BW)	UNII-5			10.0	9.0
	UNII-6			10.0	9.0
	UNII-7			10.0	9.0
	UNII-8			10.0	9.0

The below table is applicable in the following conditions:

- Grip Sensor Active

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)			
		Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO			
		a (CDD + STBC)		ax (SU) (CDD + STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
6 GHz WIFI (20MHz BW)	UNII-5	6.5	5.5	6.5	5.5
	UNII-6	6.5	5.5	6.5	5.5
	UNII-7	6.5	5.5	6.5	5.5
	UNII-8	6.5	5.5	6.5	5.5
6 GHz WIFI (40MHz BW)	UNII-5			6.5	5.5
	UNII-6			6.5	5.5
	UNII-7			6.5	5.5
	UNII-8			6.5	5.5
6 GHz WIFI (80MHz BW)	UNII-5			6.5	5.5
	UNII-6			6.5	5.5
	UNII-7			6.5	5.5
	UNII-8			6.5	5.5
6 GHz WIFI (160MHz BW)	UNII-5			6.5	5.5
	UNII-6			6.5	5.5
	UNII-7			6.5	5.5
	UNII-8			6.5	5.5

The below table is applicable in the following conditions:

- Simultaneous conditions with 2.4 GHz WLAN

Mode	Band	IEEE 802.11 Modulated Output Power (in dBm)			
		Antenna WIFI 0, Antenna WIFI 1, and SISO in MIMO			
		a (CDD + STBC)		ax (SU) (CDD + STBC, SDM)	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
6 GHz WIFI (20MHz BW)	UNII-5	2.5	1.5	2.5	1.5
	UNII-6	2.5	1.5	2.5	1.5
	UNII-7	2.5	1.5	2.5	1.5
	UNII-8	2.5	1.5	2.5	1.5
6 GHz WIFI (40MHz BW)	UNII-5			2.5	1.5
	UNII-6			2.5	1.5
	UNII-7			2.5	1.5
	UNII-8			2.5	1.5
6 GHz WIFI (80MHz BW)	UNII-5			2.5	1.5
	UNII-6			2.5	1.5
	UNII-7			2.5	1.5
	UNII-8			2.5	1.5
6 GHz WIFI (160MHz BW)	UNII-5			2.5	1.5
	UNII-6			2.5	1.5
	UNII-7			2.5	1.5
	UNII-8			2.5	1.5

1.4.4 2.4 GHz Bluetooth Output Power

The below table is applicable in the following conditions:

- Maximum

Mode	Data Rate	Modulated Output Power (in dBm)			
		Single Antenna			
		Antenna WIFI 0		Antenna WIFI 1	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
Bluetooth	1Mbps	15.0	14.0	15.0	14.0
Bluetooth EDR	2Mbps	15.0	14.0	15.0	14.0
Bluetooth EDR	3Mbps	15.0	14.0	15.0	14.0
Bluetooth LE	1Mbps	15.0	14.0	15.0	14.0
Bluetooth LE	2Mbps	15.0	14.0	15.0	14.0
Bluetooth LE	125kbps	13.0	12.0	13.0	12.0
Bluetooth LE	500kbps	13.0	12.0	13.0	12.0

The below table is applicable in the following conditions:

- Grip Sensor Active
- 5/6 GHz WLAN Active
- Grip Sensor Active with 5/6 GHz WLAN"

Mode	Data Rate	Modulated Output Power (in dBm)			
		Single Antenna			
		Antenna WIFI 0		Antenna WIFI 1	
Maximum / Nominal Power		Max	Nom.	Max	Nom.
Bluetooth	1Mbps	7.5	6.5	7.5	6.5
Bluetooth EDR	2Mbps	7.5	6.5	7.5	6.5
Bluetooth EDR	3Mbps	7.5	6.5	7.5	6.5
Bluetooth LE	1Mbps	7.5	6.5	7.5	6.5
Bluetooth LE	2Mbps	7.5	6.5	7.5	6.5
Bluetooth LE	125kbps	7.5	6.5	7.5	6.5
Bluetooth LE	500kbps	7.5	6.5	7.5	6.5

1.5 DUT Antenna Locations

The overall dimensions of this device is > 200 mm. A diagram showing the location of the device antennas can be found in the DUT Antenna Diagram and SAR Test Setup Photographs Appendix. Exact dimensions and separation distances are shown in the Technical Descriptions in the FCC filings.

Table 1-1
Device Edges/Sides for SAR Testing Tablet Mode

Antenna	Back	Front	Top	Bottom	Right	Left
WIFI 0	Yes	No	Yes	Yes	Yes	Yes
WIFI 1	Yes	No	Yes	Yes	Yes	Yes
MIMO	Yes	No	Yes	Yes	Yes	Yes

Table 1-2
Device Edges/Sides for SAR Testing Laptop Mode

Antenna	Back	Front	Top	Bottom	Right	Left
WIFI 0	No	No	No	Yes	No	No
WIFI 1	No	No	No	Yes	No	No
MIMO	No	No	No	Yes	No	No

Note: Per FCC KDB Publication 616217 D04v01r01, particular edges were not required to be evaluated for SAR based on the SAR exclusion threshold in KDB 447498 D04v01. Additional edges may have been evaluated for simultaneous transmission analysis.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

Table 1-3
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Tablet/Laptop	Notes
1	2.4 GHz Bluetooth WIFI 1	Yes^	^ Bluetooth Tethering is considered
2	2.4 GHz Bluetooth WIFI 1 + 6 GHz WLAN MIMO	Yes^	^ Bluetooth Tethering is considered
3	2.4 GHz Bluetooth WIFI 1 + 5 GHz WLAN MIMO	Yes^	^ Bluetooth Tethering is considered
4	2.4 GHz Bluetooth WIFI 0	Yes^	^ Bluetooth Tethering is considered
5	2.4 GHz Bluetooth WIFI 0 + 6 GHz WLAN MIMO	Yes^	^ Bluetooth Tethering is considered
6	2.4 GHz Bluetooth WIFI 0 + 5 GHz WLAN MIMO	Yes^	^ Bluetooth Tethering is considered
7	2.4 GHz WLAN MIMO + 6 GHz WLAN MIMO	Yes	
8	2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	
9	2.4 GHz WLAN MIMO	Yes	
10	5 GHz WLAN MIMO	Yes	
11	6 GHz WLAN MIMO	Yes	
12	2.4 GHz Bluetooth WIFI 0 + 2.4 GHz WLAN WIFI 1 + 5 GHz WLAN MIMO	Yes^	^ Bluetooth Tethering is considered
13	2.4 GHz Bluetooth WIFI 0 + 2.4 GHz WLAN WIFI 1 + 6 GHz WLAN MIMO	Yes^	^ Bluetooth Tethering is considered
14	2.4 GHz Bluetooth WIFI 0 + 2.4 GHz WLAN WIFI 1	Yes^	^ Bluetooth Tethering is considered
15	2.4 GHz WLAN WIFI 0	Yes	
16	2.4 GHz WLAN WIFI 1	Yes	
17	5 GHz WLAN WIFI 0	Yes	
18	5 GHz WLAN WIFI 1	Yes	
19	6 GHz WLAN WIFI 0	Yes	
20	6 GHz WLAN WIFI 1	Yes	

1. This device supports 2x2 MIMO Tx for WLAN 802.11b/a/g/n/ac/ax. 802.11b/a/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.
2. This device supports Bluetooth Tethering.
3. 2.4 GHz WLAN WIFI 0 and 2.4 GHz Bluetooth WIFI 0 share the same antenna path and cannot transmit simultaneously.
4. 2.4 GHz WLAN WIFI 1 2.4 GHz Bluetooth WIFI 1 share the same antenna path and cannot transmit simultaneously.
5. 5 GHz WLAN and 6 GHz WLAN share the same antenna path and cannot transmit simultaneously.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

This device supports IEEE 802.11ac with the following features:

a) Up to 160 MHz Bandwidth only
b) No aggregate channel configurations
c) 2 Tx antenna output
d) 256 QAM is supported
e) TDWR and Band gap channels are supported

This device supports IEEE 802.11ax with the following features:

a) Up to 160 MHz Bandwidth only for 5/6 GHz
b) Up to 20 MHz Bandwidth only for 2.4 GHz
c) 2 Tx antenna output
d) Up to 1024 QAM is supported
e) TDWR and Band gap channels are supported for 5/6 GHz
f) MU-MIMO UL Operations are not supported

Per FCC Guidance, 802.11ax RU was considered a higher order 802.11 mode when compared to a/b/g/n/ac to apply KDB Publication 248227 D01v02r02 for OFDM mode selection. Therefore, SAR tests were not required for 802.11ax RU based on the maximum allowed output powers of OFDM modes and the reported SAR values. Per FCC Guidance, maximum conducted powers were performed for each RU size to demonstrate that the output powers would not be higher than the other OFDM 802.11 modes. Please see Measurement Reports SNs: 1M2405140040-02.A3L for 802.11ax RU output powers.

This device supports channel 1-13 for 2.4 GHz WLAN. However, because channel 12/13 targets are not higher than that of channels 1-11, channels 1, 6, and 11 were considered for SAR testing per FCC KDB 248227 D01V02r02.

Per FCC guidance, SAR was performed using 6.5 GHz SAR probe calibration factors. FCC KDB 648474 and FCC KDB 248227 were followed for test positions, distances, and modes. Per TCB workshop October 2020 notes, 5 channels were tested. Absorbed power density (APD) using a 4cm2 averaging area is reported based on SAR measurements. Incident power density is evaluated at 2mm ensuring that the resolution is sufficient such that integrated power density (iPD) between d=2mm and d=λ/5mm is ≥ -1dB per equipment manufacturer guidance. Power density results are scaled up for uncertainty above 30%.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D04v01 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- April 2019 TCB Workshop Notes (IEEE 802.11ax)
- FCC KDB 648474 D04 (Accessories)
- FCC KDB Publication 616217 D04v01r02 (Tablet/Laptop)
- IEC 62479:2010
- SPEAG DASY6 System Handbook
- IEC/IEEE 63195-1:2022
- SPEAG DASY6 Application Note (Interim Procedures for Devices Operating at 6-10 GHz) (Nov 2021)

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 10.

1.10 Bibliography

Report Type	Report Serial Number
RF Exposure Part 1 Test Report - Reference Model	1M2405140039-20.A3L

2 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

2.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 2-1).

Equation 2-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

3 DOSIMETRIC ASSESSMENT

3.1 Measurement Procedure

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

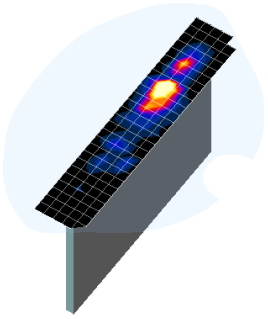


Figure 3-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 3-1) and IEEE 1528-2013.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 3-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 3-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

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

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

4 TEST CONFIGURATION POSITIONS

4.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02.

4.2 SAR Testing for Tablet per KDB Publication 616217 D04v01r02

Per FCC KDB Publication 616217 D04v01r02, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

5 RF EXPOSURE LIMITS

5.1 Uncontrolled Environment

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

5.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

5.3 RF Exposure Limits for Frequencies Below 6 GHz

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

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

5.4 RF Exposure Limits for Frequencies Above 6 GHz

Per §1.1310 (d)(3), the MPE limits are applied for frequencies above 6 GHz. Power Density is expressed in units of W/m^2 or mW/cm^2.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4 cm^2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes.

Table 5-2
Human Exposure Limits Specified in FCC 47 CFR §1.1310

Human Exposure to Radiofrequency (RF) Radiation Limits		
Frequency Range [MHz]	**Power Density** [mW/cm^2]	**Average Time** [Minutes]
(A) Limits For Occupational / Controlled Environments		
1,500 – 100,000	5.0	6
(B) Limits For General Population / Uncontrolled Environments		
1,500 – 100,000	1.0	30

Note: 1.0 mW/cm^2 is 10 W/m^2

6 FCC MEASUREMENT PROCEDURES

6.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

6.2 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset-based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

6.2.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

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

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

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

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

6.2.4 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

6.2.5 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

6.2.6 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 6.2.5).

6.2.7 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required.

6.2.8 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

7 RF CONDUCTED POWERS

7.1 WLAN Conducted Powers

Table 7-1
2.4 GHz WLAN Maximum Average RF Power – WIFI0

2.4GHz WIFI (20MHz 802.11b SISO WIFI0)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	14.49
2437	6		14.78
2462	11		14.66

Table 7-2
2.4 GHz WLAN Maximum Average RF Power – WIFI1

2.4GHz WIFI (20MHz 802.11b SISO WIFI1)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	14.69
2437	6		14.81
2462	11		14.69

Table 7-3
2.4 GHz WLAN Maximum Average RF Power – MIMO

2.4GHz WIFI (20MHz 802.11b MIMO)					
Freq [MHz]	Channel	Detector	Conducted Power [dBm]		
			WIFI0	WIFI1	MIMO
2412	1	Average	14.24	13.95	17.11
2437	6		14.92	14.32	17.64
2462	11		14.93	14.22	17.60

Table 7-4
2.4 GHz WLAN Reduced Average RF Power with Grip Sensor Active – WIFI0

2.4GHz WIFI (20MHz 802.11b SISO WIFI0)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	11.88
2437	6		11.37
2462	11		11.79

Table 7-5
2.4 GHz WLAN Reduced Average RF Power with Grip Sensor Active – WIFI1

2.4GHz WIFI (20MHz 802.11b SISO WIFI1)			
Freq. [MHz]	Channel	Detector	Conducted Power [dBm]
2412	1	Average	11.97
2437	6		11.91
2462	11		11.93

Table 7-6
2.4 GHz WLAN Reduced Average RF Power with Grip Sensor Active – MIMO

2.4GHz WIFI (20MHz 802.11b MIMO)					
Freq [MHz]	Channel	Detector	Conducted Power [dBm]		
			WIFI0	WIFI1	MIMO
2412	1	Average	11.68	11.95	14.83
2437	6		11.35	11.90	14.64
2462	11		11.60	11.99	14.81

Table 7-7
5 GHz WLAN Maximum Average RF Power – WIFI0

5GHz WIFI (40MHz 802.11n SISO WIFI0)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5190	38	16.50
	5230	46	12.02
UNII-2A	5270	54	16.25
	5310	62	16.32
UNII-2C	5510	102	16.26
	5590	118	16.40
	5630	126	16.38
	5710	142	16.82
UNII-3	5755	151	16.40
	5795	159	16.21
UNII-4	5835	167	15.46
	5875	175	15.19

Table 7-8
5 GHz WLAN Maximum Average RF Power – WIFI1

5GHz WIFI (40MHz 802.11n SISO WIFI1)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5190	38	16.42
	5230	46	12.51
UNII-2A	5270	54	16.55
	5310	62	16.30
UNII-2C	5510	102	16.59
	5590	118	16.63
	5630	126	16.60
	5710	142	16.60
UNII-3	5755	151	16.70
	5795	159	16.62
UNII-4	5835	167	15.40
	5875	175	15.24

Table 7-9
5 GHz WLAN Maximum Average RF Power – MIMO

5GHz WIFI (40MHz 802.11n MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			WIFI0	WIFI1	MIMO
UNII-1	5190	38	16.33	16.55	19.45
	5230	46	12.68	12.80	15.75
UNII-2A	5270	54	16.50	16.65	19.59
	5310	62	16.65	16.84	19.76
UNII-2C	5510	102	16.50	16.75	19.64
	5590	118	16.48	16.70	19.60
	5630	126	16.43	16.55	19.50
	5710	142	16.79	16.90	19.86
UNII-3	5755	151	16.27	16.90	19.61
	5795	159	16.50	16.90	19.71
UNII-4	5835	167	15.07	15.10	18.10
	5875	175	15.32	15.21	18.28

Table 7-10
5 GHz WLAN Reduced Average RF Power with Grip Sensor Active – WIFI0

5GHz WIFI (80MHz 802.11ac SISO WIFI0)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5210	42	7.45
UNII-2A	5290	58	7.58
UNII-2C	5530	106	7.75
	5610	122	7.97
	5690	138	7.50
UNII-3	5775	155	7.90
UNII-4	5885	177	6.84

Table 7-11
5 GHz WLAN Reduced Average RF Power with Grip Sensor Active – WIFI1

5GHz WIFI (80MHz 802.11ac SISO WIFI1)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5210	42	7.67
UNII-2A	5290	58	7.60
UNII-2C	5530	106	7.99
	5610	122	7.80
	5690	138	7.82
UNII-3	5775	155	7.72
UNII-4	5885	177	6.90

Table 7-12
5 GHz WLAN Reduced Average RF Power with Grip Sensor Active – MIMO

5GHz WIFI (80MHz 802.11ac MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			WIFI0	WIFI1	MIMO
UNII-1	5210	42	7.25	7.45	10.36
UNII-2A	5290	58	7.36	7.50	10.44
UNII-2C	5530	106	7.48	7.49	10.50
	5610	122	7.70	7.10	10.42
	5690	138	7.99	7.97	10.99
UNII-3	5775	155	7.20	7.99	10.62
UNII-4	5885	177	7.10	6.96	10.04

Table 7-13
6 GHz WLAN Maximum Average RF Power – WIFI0

6GHz WIFI (80MHz 802.11ax SISO WIFI0)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-5	5985	7	9.70
	6145	39	9.19
	6305	71	9.80
	6385	87	9.63
UNII-6	6465	103	9.76
UNII-7	6545	119	9.97
	6705	151	9.63
	6785	167	9.80
	6865	183	9.92
UNII-8	6945	199	9.36
	7025	215	9.68

Table 7-14
6 GHz WLAN Maximum Average RF Power – WIFI1

6GHz WIFI (80MHz 802.11ax SISO WIFI1)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-5	5985	7	9.79
	6145	39	9.98
	6305	71	9.80
	6385	87	9.97
UNII-6	6465	103	9.99
UNII-7	6545	119	9.40
	6705	151	9.62
	6785	167	9.52
	6865	183	9.45
UNII-8	6945	199	9.77
	7025	215	9.57

Table 7-15
6 GHz WLAN Maximum Average RF Power – MIMO

6GHz WIFI (80MHz 802.11ax MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			WIFI0	WIFI1	MIMO
UNII-5	5985	7	8.47	9.92	12.27
	6145	39	8.76	9.99	12.43
	6305	71	8.97	9.97	12.51
	6385	87	9.32	9.63	12.49
UNII-6	6465	103	9.78	9.61	12.71
UNII-7	6545	119	9.02	9.63	12.35
	6705	151	9.70	9.53	12.63
	6785	167	9.35	8.84	12.11
	6865	183	9.65	9.85	12.76
UNII-8	6945	199	9.17	9.64	12.42
	7025	215	8.89	9.92	12.45

Table 7-16
6 GHz WLAN Reduced Average RF Power with Grip Sensor Active – WIFI0

6GHz WIFI (80MHz 802.11ax SISO WIFI0)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-5	5985	7	5.90
	6145	39	5.81
	6305	71	6.08
	6385	87	6.00
UNII-6	6465	103	6.49
UNII-7	6545	119	6.03
	6705	151	6.49
	6785	167	6.09
	6865	183	6.10
UNII-8	6945	199	6.39
	7025	215	6.15

Table 7-17
6 GHz WLAN Reduced Average RF Power with Grip Sensor Active – WIFI1

6GHz WIFI (80MHz 802.11ax SISO WIFI1)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-5	5985	7	5.80
	6145	39	6.28
	6305	71	6.20
	6385	87	6.49
UNII-6	6465	103	6.04
UNII-7	6545	119	6.00
	6705	151	5.90
	6785	167	5.62
	6865	183	5.92
UNII-8	6945	199	5.94
	7025	215	5.90

Table 7-18
6 GHz WLAN Reduced Average RF Power with Grip Sensor Active – MIMO

6GHz WIFI (80MHz 802.11ax MIMO)					
Band	Freq [MHz]	Channel	Avg. Conducted Powers [dBm]		
			WIFI0	WIFI1	MIMO
UNII-5	5985	7	6.26	6.24	9.26
	6145	39	5.92	6.33	9.14
	6305	71	5.51	5.92	8.73
	6385	87	5.73	6.34	9.06
UNII-6	6465	103	5.90	6.49	9.22
UNII-7	6545	119	6.06	6.22	9.15
	6705	151	6.38	5.84	9.13
	6785	167	6.20	5.50	8.87
	6865	183	6.37	5.84	9.12
UNII-8	6945	199	6.16	6.00	9.09
	7025	215	6.17	6.02	9.11

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

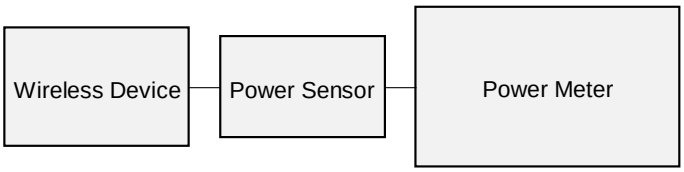


Figure 7-1
Power Measurement Setup

7.2 Bluetooth Conducted Powers

Table 7-19
Bluetooth Maximum Average RF Power – WIFI0

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	13.55	22.662
2441	1.0	39	13.83	24.143
2480	1.0	78	13.87	24.384
2402	2.0	0	14.39	27.460
2441	2.0	39	14.79	30.102
2480	2.0	78	13.52	22.465
2402	3.0	0	14.45	27.855
2441	3.0	39	14.80	30.186
2480	3.0	78	13.52	22.465

Table 7-20
Bluetooth Maximum Average RF Power – WIFI1

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	14.12	25.793
2441	1.0	39	13.91	24.575
2480	1.0	78	14.24	26.540
2402	2.0	0	14.01	25.183
2441	2.0	39	14.41	27.631
2480	2.0	78	13.31	21.434
2402	3.0	0	14.05	25.398
2441	3.0	39	14.45	27.868
2480	3.0	78	13.34	21.553

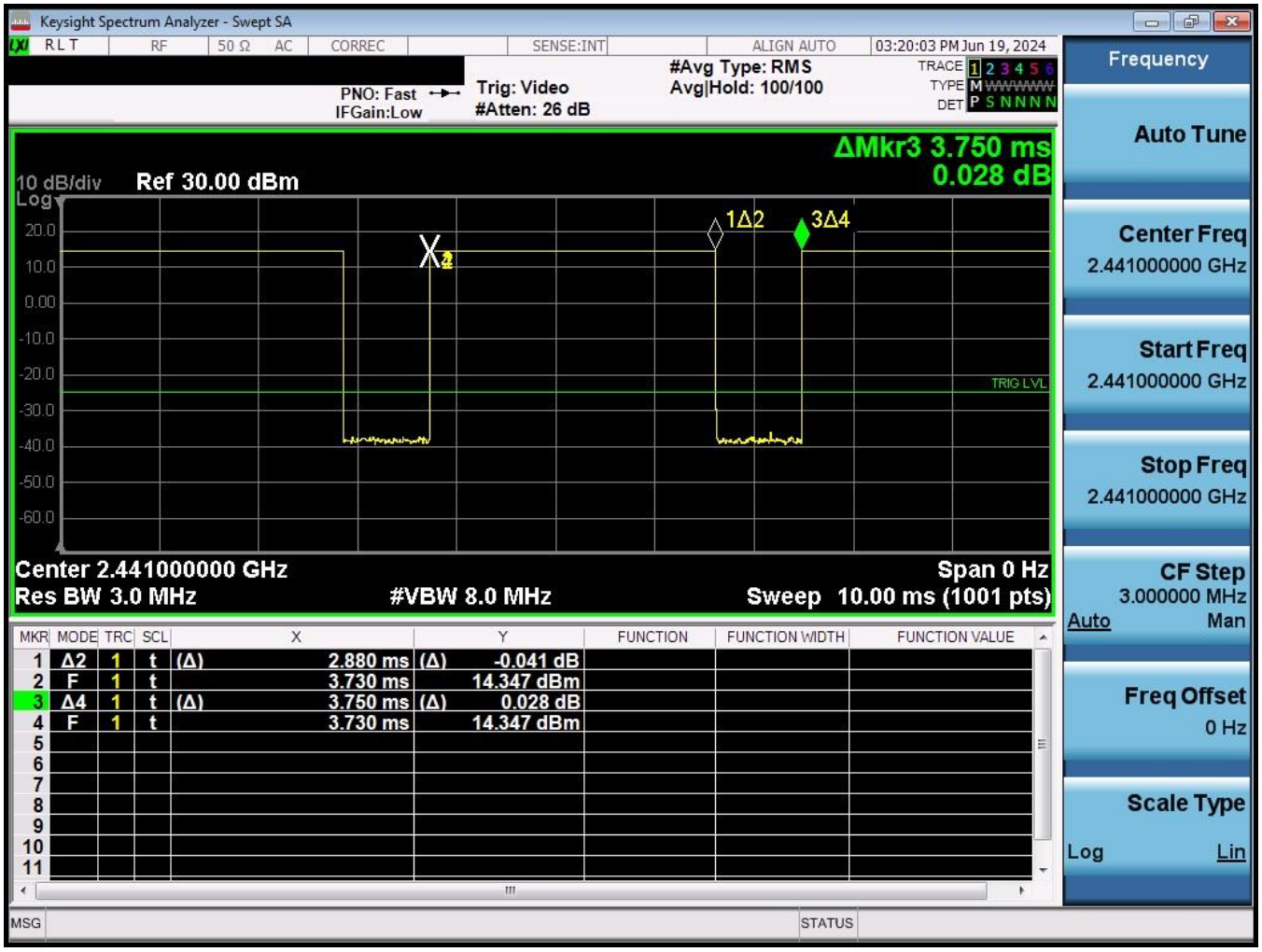
Table 7-21
Bluetooth Reduced Average RF Power in Tablet Mode – WIFI0

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	6.03	4.009
2441	1.0	39	6.22	4.188
2480	1.0	78	5.91	3.899

Table 7-22
Bluetooth Reduced Average RF Power in Tablet Mode – WIFI1

Frequency [MHz]	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
			[dBm]	[mW]
2402	1.0	0	6.06	4.036
2441	1.0	39	6.31	4.276
2480	1.0	78	5.88	3.873

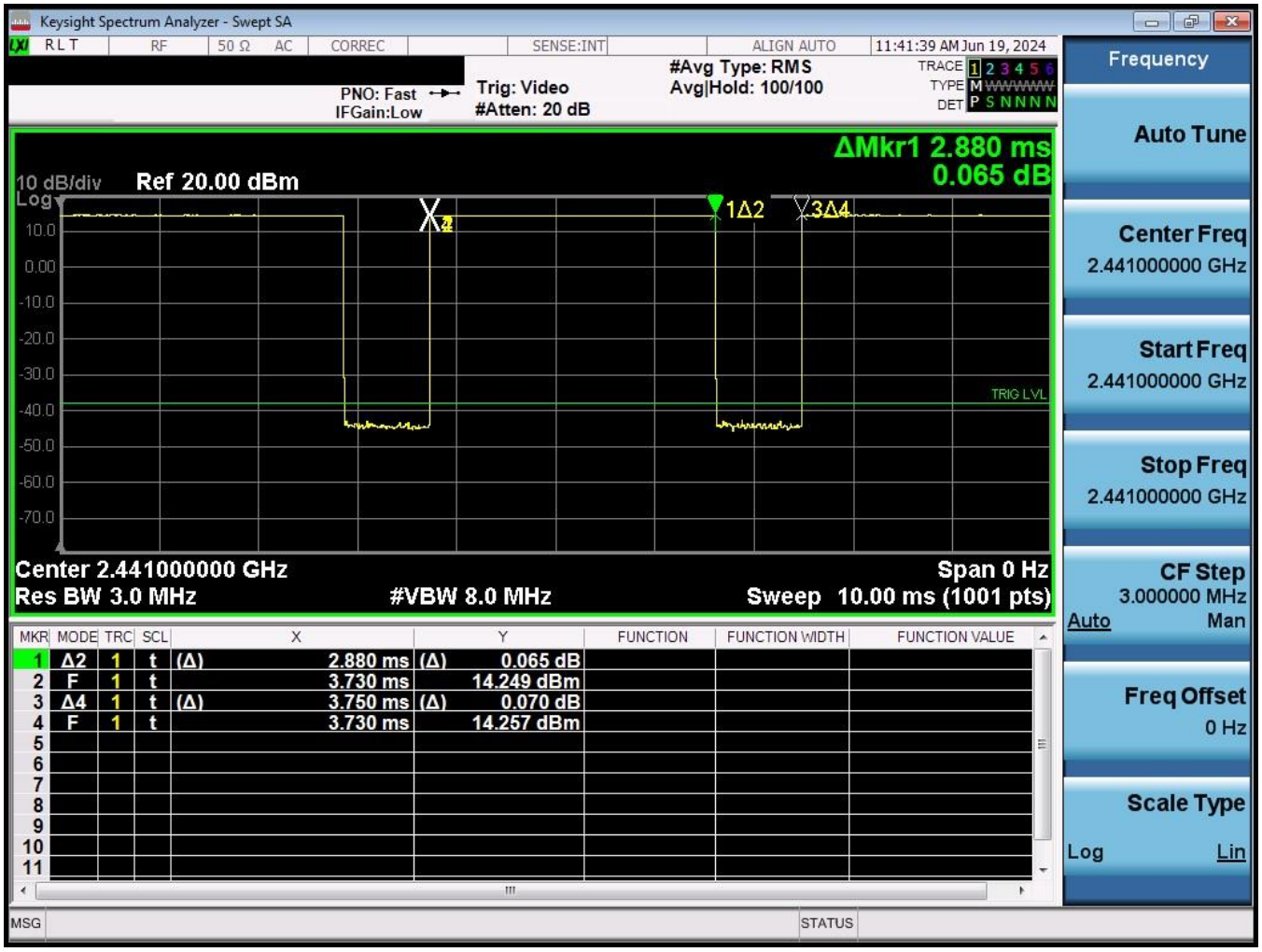
Figure 7-2
Bluetooth Transmission Plot – WIFI0



Equation 7-1
Bluetooth WIFI0 Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.88ms}{3.75ms} * 100\% = 76.8\%$$

Figure 7-3
Bluetooth Transmission Plot – WIFI1



Equation 7-2
Bluetooth WIFI1 Duty Cycle Calculation

$$\boldsymbol{Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{2.88ms}{3.75ms} * 100\% = 76.8\%}$$

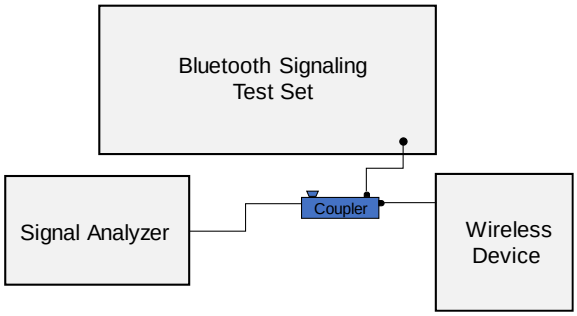


Figure 7-4
Power Measurement Setup

8 SYSTEM VERIFICATION

8.1 Tissue Verification

Table 8-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/22/2024	2450 Head	20.6	2300	1.741	39.434	1.670	39.500	4.25%	-0.17%
			2310	1.749	39.426	1.679	39.480	4.17%	-0.13%
			2320	1.757	39.410	1.687	39.460	4.15%	-0.13%
			2400	1.811	39.288	1.756	39.289	3.13%	0.00%
			2450	1.847	39.186	1.800	39.200	2.61%	-0.03%
			2480	1.867	39.131	1.833	39.162	1.85%	-0.08%
			2500	1.883	39.111	1.855	39.136	1.51%	-0.06%
			2510	1.891	39.099	1.866	39.123	1.34%	-0.06%
			2535	1.906	39.056	1.893	39.092	0.69%	-0.09%
			2550	1.916	39.023	1.909	39.073	0.37%	-0.13%
			2560	1.923	38.992	1.920	39.060	0.16%	-0.17%
			2600	1.955	38.867	1.964	39.009	-0.46%	-0.36%
			2650	1.991	38.779	2.018	38.945	-1.34%	-0.43%
			2680	2.010	38.697	2.051	38.907	-2.00%	-0.54%
			2700	2.023	38.622	2.073	38.882	-2.41%	-0.67%
07/24/2024	2450 Head	21.2	2300	1.694	38.470	1.670	39.500	1.44%	-2.61%
			2310	1.702	38.457	1.679	39.480	1.37%	-2.59%
			2320	1.710	38.445	1.687	39.460	1.36%	-2.57%
			2400	1.772	38.337	1.756	39.289	0.91%	-2.42%
			2450	1.814	38.265	1.800	39.200	0.78%	-2.39%
			2480	1.837	38.226	1.833	39.162	0.22%	-2.39%
			2500	1.852	38.209	1.855	39.136	-0.16%	-2.37%
			2510	1.860	38.197	1.866	39.123	-0.32%	-2.37%
			2535	1.881	38.159	1.893	39.092	-0.63%	-2.39%
			2550	1.893	38.133	1.909	39.073	-0.84%	-2.41%
			2560	1.900	38.116	1.920	39.060	-1.04%	-2.42%
			2600	1.933	38.044	1.964	39.009	-1.58%	-2.47%
			2650	1.974	37.939	2.018	38.945	-2.18%	-2.61%
			2680	1.998	37.868	2.051	38.907	-2.58%	-2.67%
			2700	2.018	37.821	2.073	38.882	-2.75%	-2.73%
07/25/2024	2450 Head	20.7	2300	1.718	40.272	1.670	39.500	2.87%	1.95%
			2310	1.725	40.252	1.679	39.480	2.74%	1.96%
			2320	1.733	40.234	1.687	39.460	2.73%	1.96%
			2400	1.793	40.115	1.756	39.289	2.11%	2.10%
			2450	1.831	40.035	1.800	39.200	1.72%	2.13%
			2480	1.855	39.992	1.833	39.162	1.20%	2.12%
			2500	1.871	39.962	1.855	39.136	0.86%	2.11%
			2510	1.878	39.945	1.866	39.123	0.64%	2.10%
			2535	1.898	39.905	1.893	39.092	0.26%	2.08%
			2550	1.912	39.885	1.909	39.073	0.16%	2.08%
			2560	1.921	39.873	1.920	39.060	0.05%	2.08%
			2600	1.953	39.823	1.964	39.009	-0.56%	2.09%
			2650	1.993	39.744	2.018	38.945	-1.24%	2.05%
			2680	2.018	39.698	2.051	38.907	-1.61%	2.03%
			2700	2.032	39.669	2.073	38.882	-1.98%	2.02%
07/22/2024	5200-5800 Head	20.0	5180	4.623	36.305	4.635	36.009	-0.26%	0.82%
			5190	4.636	36.276	4.645	35.998	-0.19%	0.77%
			5200	4.647	36.248	4.655	35.986	-0.17%	0.73%
			5210	4.655	36.222	4.666	35.975	-0.24%	0.69%
			5220	4.665	36.206	4.676	35.963	-0.24%	0.68%
			5240	4.682	36.164	4.696	35.940	-0.09%	0.62%
			5250	4.705	36.136	4.706	35.929	-0.02%	0.58%
			5260	4.716	36.114	4.717	35.917	-0.02%	0.55%
			5270	4.730	36.100	4.727	35.906	0.06%	0.54%
			5280	4.742	36.091	4.737	35.894	0.11%	0.55%
			5290	4.755	36.077	4.748	35.883	0.15%	0.54%
			5300	4.766	36.055	4.758	35.871	0.17%	0.52%
			5310	4.775	36.038	4.768	35.860	0.15%	0.50%
			5320	4.785	36.023	4.778	35.849	0.15%	0.49%
			5500	4.991	35.657	4.963	35.643	0.56%	0.04%
			5510	5.005	35.643	4.973	35.632	0.66%	0.03%
			5520	5.022	35.634	4.983	35.620	0.78%	0.03%
			5530	5.035	35.603	4.994	35.609	0.82%	-0.02%
			5540	5.044	35.584	5.004	35.597	0.80%	-0.04%
			5550	5.053	35.570	5.014	35.586	0.78%	-0.04%
			5560	5.064	35.557	5.024	35.574	0.80%	-0.05%
			5580	5.088	35.528	5.045	35.551	0.85%	-0.12%
			5600	5.111	35.464	5.065	35.529	0.91%	-0.18%
			5610	5.126	35.441	5.076	35.518	0.99%	-0.22%
			5620	5.142	35.416	5.086	35.506	1.10%	-0.25%
			5640	5.168	35.399	5.106	35.483	1.18%	-0.24%
			5660	5.192	35.363	5.127	35.460	1.27%	-0.27%
			5670	5.203	35.342	5.137	35.449	1.28%	-0.30%
			5680	5.212	35.325	5.147	35.437	1.26%	-0.32%
			5690	5.220	35.313	5.158	35.426	1.20%	-0.32%
			5700	5.232	35.295	5.168	35.414	1.24%	-0.34%
			5710	5.246	35.263	5.178	35.403	1.31%	-0.40%
			5720	5.260	35.233	5.188	35.391	1.39%	-0.45%
			5745	5.290	35.196	5.214	35.363	1.46%	-0.47%
			5750	5.298	35.191	5.219	35.357	1.51%	-0.47%
			5755	5.304	35.185	5.224	35.351	1.53%	-0.47%
			5765	5.316	35.160	5.234	35.340	1.57%	-0.51%
			5775	5.323	35.144	5.245	35.329	1.49%	-0.52%
			5785	5.331	35.127	5.255	35.317	1.45%	-0.54%
			5795	5.343	35.111	5.265	35.305	1.48%	-0.55%
			5800	5.350	35.101	5.270	35.300	1.52%	-0.56%
			5850	5.399	35.101	5.270	35.300	1.52%	-0.56%
			5805	5.357	35.090	5.275	35.294	1.55%	-0.58%
			5825	5.383	35.053	5.296	35.271	1.64%	-0.62%
			5835	5.395	35.038	5.305	35.230	1.70%	-0.54%
			5845	5.409	35.018	5.315	35.210	1.77%	-0.55%
			5850	5.416	35.000	5.320	35.200	1.80%	-0.54%
			5855	5.421	35.000	5.325	35.197	1.85%	-0.56%
			5865	5.432	34.977	5.336	35.190	1.80%	-0.61%
			5865	5.432	34.977	5.336	35.190	1.80%	-0.61%
			5865	5.432	34.977	5.336	35.190	1.80%	-0.61%
			5865	5.432	34.977	5.336	35.190	1.80%	-0.61%
			5875	5.441	34.950	5.347	35.183	1.76%	-0.64%
			5885	5.451	34.945	5.357	35.177	1.75%	-0.66%
			5905	5.477	34.912	5.379	35.163	1.82%	-0.71%
07/28/2024	6000 Head	21.9	5935	5.376	34.992	5.411	35.143	-0.65%	-0.46%
			5970	5.395	34.971	5.448	35.120	-0.97%	-0.42%
			5985	5.409	34.923	5.464	35.110	-1.06%	-0.53%
			6000	5.420	34.797	5.480	35.100	-1.09%	-0.86%
			6025	5.464	34.752	5.510	35.070	-0.47%	-0.91%
			6065	5.518	34.741	5.557	35.022	-0.70%	-0.80%
			6075	5.514	34.694	5.569	35.010	-0.99%	-0.90%
			6085	5.522	34.673	5.580	34.998	-1.04%	-0.93%
			6185	5.652	34.609	5.698	34.878	-0.81%	-0.78%
			6275	5.779	34.400	5.805	34.770	-0.45%	-1.06%
			6285	5.777	34.410	5.816	34.758	-0.67%	-0.98%
			6305	5.799	34.388	5.840	34.734	-0.70%	-1.00%
			6345	5.860	34.296	5.887	34.686	-0.46%	-1.12%
			6475	6.003	34.093	6.041	34.530	-0.63%	-1.27%
			6485	6.026	34.093	6.052	34.518	-0.43%	-1.23%
			6500	6.024	34.051	6.070	34.500	-0.76%	-1.30%
			6505	6.017	34.039	6.076	34.494	-0.97%	-1.32%
			6545	6.083	33.885	6.122	34.446	-0.66%	-1.63%
			6665	6.167	33.726	6.265	34.302	-1.56%	-1.68%
			6675	6.197	33.689	6.273	34.290	-1.21%	-1.75%
			6685	6.222	33.661	6.285	34.278	-1.00%	-1.80%
			6715	6.244	33.724	6.319	34.242	-1.19%	-1.51%
			6785	6.301	33.458	6.400	34.158	-1.55%	-2.05%
			6825	6.370	33.477	6.447	34.110	-1.19%	-1.86%
			6985	6.497	33.301	6.633	33.918	-2.05%	-1.82%
			6995	6.488	33.251	6.644	33.906	-2.35%	-1.93%
			7000	6.489	33.211	6.650	33.900	-2.42%	-2.03%
			7005	6.496	33.164	6.656	33.894	-2.40%	-2.15%
			7025	6.505	33.056	6.680	33.870	-2.87%	-2.40%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEC/IEEE 62209-1528:2020). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

8.2 Test System Verification

Prior to SAR assessment, the system is verified to +/- 10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility.

Table 8-2
System Verification Results – 1g

SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	DAE	Measured SAR 1g (W/kg)	1W Target SAR 1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation 1g (%)	Measured SAR 10g (W/kg)	1W Target SAR 10g (W/kg)	1W Normalized SAR 10g (W/kg)	Deviation 10g (%)	Measured 4cm² APD (W/m²)	1W Target 4cm² APD (W/m²)	1W Normalized 4cm² APD (W/m²)	Deviation 4cm² APD (%)
K3	2450	Head	07/22/2024	22.0	20.6	0.10	882	7558	1364	5.68	53.00	56.80	7.17%	2.62	24.90	26.20	5.22%	N/A	N/A	N/A	N/A
K3	2450	Head	07/24/2024	22.2	21.2	0.10	882	7558	1364	5.56	53.00	55.60	4.91%	2.59	24.90	25.90	4.02%	N/A	N/A	N/A	N/A
K6	2450	Head	07/25/2024	21.8	20.7	0.10	882	7402	1502	5.15	53.00	51.50	-2.83%	2.41	24.90	24.10	-3.21%	N/A	N/A	N/A	N/A
K2	5250	Head	07/22/2024	19.6	20.0	0.05	1237	7547	1322	3.75	80.10	75.00	-6.37%	1.08	22.90	21.60	-5.68%	N/A	N/A	N/A	N/A
K2	5600	Head	07/22/2024	19.6	20.0	0.05	1237	7547	1322	4.14	82.00	82.80	0.98%	1.19	23.30	23.80	2.15%	N/A	N/A	N/A	N/A
K2	5750	Head	07/22/2024	19.6	20.0	0.05	1237	7547	1322	3.78	79.20	75.60	-4.55%	1.09	22.50	21.80	-3.11%	N/A	N/A	N/A	N/A
K2	5850	Head	07/22/2024	19.6	20.0	0.05	1237	7547	1322	3.91	80.40	78.20	-2.74%	1.12	22.80	22.40	-1.75%	N/A	N/A	N/A	N/A
R	6500	Head	07/28/2024	22.2	21.9	0.03	1111	7527	1272	7.74	291.00	309.60	6.39%	1.42	53.50	56.80	6.17%	34.60	1300.00	1384.00	6.46%

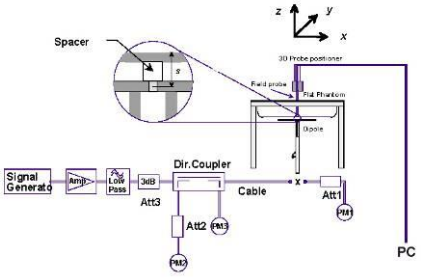


Figure 8-1
System Verification Setup Diagram

Figure 8-2
System Verification Setup Photo

8.3 Power Density Test System Verification

The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

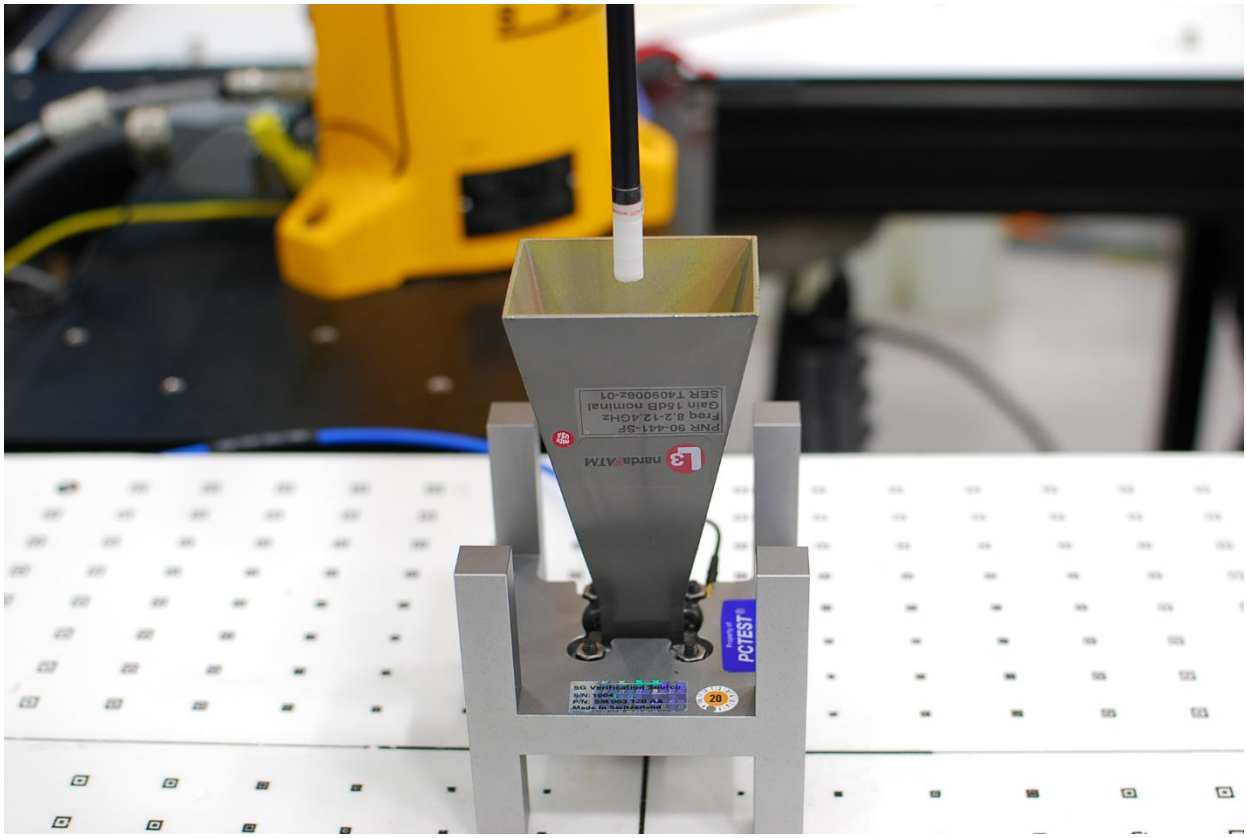


Figure 8-3
System Verification Setup Photo

Table 8-3
10 GHz Verifications

System Verification											
System	Frequency (GHz)	Date	Source S/N	Probe S/N	Prad (mW)	Normal psPD (W/m² over 4 cm²)		Deviation (dB)	Total psPD (W/m² over 4 cm²)		Deviation (dB)
						Measured	Target		Measured	Target	
Q	10	06/30/2024	1002	9622	93.3	60.50	54.60	0.45	60.70	54.90	0.44

Note: A **10 mm distance spacing** was used from the reference horn antenna aperture to the probe element.

9 SAR DATA SUMMARY

9.1 Standalone Body SAR Data

Table 9-1
2.4 GHz WLAN WIFI 0 Tablet Max Power

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 0	0790M	98.59	0.11	2437.00	6	1	15.0	14.78	Back	19	0.027	1.052	1.014	0.029	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 0	0790M	98.59	0.07	2437.00	6	1	15.0	14.78	Top	19	0.009	1.052	1.014	0.010	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 0	0790M	98.59	0.11	2437.00	6	1	15.0	14.78	Bottom	0	0.013	1.052	1.014	0.014	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 0	0790M	98.59	-0.02	2437.00	6	1	15.0	14.78	Right	0	0.000	1.052	1.014	0.000	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 0	0790M	98.59	-0.09	2437.00	6	1	15.0	14.78	Left	15	0.048	1.052	1.014	0.051	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 9-2
2.4 GHz WLAN WIFI 1 Tablet Max Power

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 1	0790M	98.59	0.18	2437.00	6	1	15.0	14.81	Back	19	0.038	1.045	1.014	0.040	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 1	0790M	98.59	0.11	2437.00	6	1	15.0	14.81	Top	19	0.044	1.045	1.014	0.047	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 1	0790M	98.59	-0.02	2437.00	6	1	15.0	14.81	Bottom	0	0.042	1.045	1.014	0.045	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 1	0790M	98.59	-0.01	2437.00	6	1	15.0	14.81	Right	15	0.090	1.045	1.014	0.095	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 1	0790M	98.59	0.06	2437.00	6	1	15.0	14.81	Left	0	0.004	1.045	1.014	0.004	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram						

Table 9-3
DTS SISO Spot-check Verification for Data Referencing

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 0	0790M	98.59	0.01	2462.00	11	1	12.0	11.79	Back	0	0.367	1.050	1.014	0.391	0.421	
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	WIFI 1	0790M	98.59	-0.02	2462.00	11	1	12.0	11.93	Right	0	0.485	1.016	1.014	0.500	0.471	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 9-4
2.4 GHz WLAN MIMO Tablet Max Power

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Add'l Info	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	-0.12	2437.00	6	1	15.0	14.92	15.0	14.32	Back	19	N/A	0.035	1.169	1.014	0.041	
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	-0.04	2437.00	6	1	15.0	14.92	15.0	14.32	Top	19	N/A	0.038	1.169	1.014	0.045	
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	0.18	2437.00	6	1	15.0	14.92	15.0	14.32	Bottom	0	N/A	0.043	1.169	1.014	0.051	
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	-0.02	2437.00	6	1	15.0	14.92	15.0	14.32	Right	15	N/A	0.089	1.169	1.014	0.105	A1
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	0.09	2437.00	6	1	15.0	14.92	15.0	14.32	Right	15	Variant 2	0.076	1.169	1.014	0.090	
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	-0.04	2437.00	6	1	15.0	14.92	15.0	14.32	Right	15	Variant 1	0.082	1.169	1.014	0.097	
Body	2.4 GHz WIFI/ IEEE 802.11b	20	DSSS	MIMO	0784M	98.59	-0.01	2437.00	6	1	15.0	14.92	15.0	14.32	Left	15	N/A	0.047	1.169	1.014	0.056	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: To achieve the 18 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15 dBm.

Table 9-5
DTS MIMO Spot-check Verification for Data Referencing

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	2.4 GHz WIFI/ IEEE 802.11b	DSSS	MIMO	0790M	98.59	-0.06	2462.00	11	1	12.0	11.60	12.0	11.99	Right	0	0.517	1.096	1.014	0.575	0.571	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: To achieve the 15 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 12 dBm.

Table 9-6
NII SISO Spot-check Verification for Data Referencing

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	WIFI 0	0779M	94.43	0.01	5290.00	58	58.5	8.0	7.58	Back	0	0.500	1.102	1.059	0.584	0.646	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							
Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	WIFI 1	0779M	94.75	-0.01	5290.00	58	58.5	8.0	7.60	Right	0	0.469	1.096	1.055	0.542	0.478	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							

Table 9-7
NII MIMO Spot-check Verification for Data Referencing

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	5 GHz WIFI/ IEEE 802.11ac	80	OFDM	MIMO	0779M	90.46	0.03	5775.00	155	U-NII-3	58.5	8.0	7.20	8.0	7.99	Left	0	0.548	1.202	1.105	0.728	0.675	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: To achieve the 11 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 8 dBm.

Table 9-8
6CD SISO Spot-check Verification for Data Referencing

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	6 GHz WIFI/ IEEE 802.11ax	80	OFDM	WIFI 0	0818M	94.03	0.06	6305.00	71	68.1	6.5	6.08	Back	0	0.582	1.102	1.063	0.682	0.709	
Body	6 GHz WIFI/ IEEE 802.11ax	80	OFDM	WIFI 1	0818M	94.37	0.16	5985.00	7	68.1	6.5	5.80	Right	0	0.198	1.175	1.060	0.247	0.222	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Body 1.6 W/kg (mW/g) averaged over 1 gram							
Exposure	Band/ Mode	Bandwidth [MHz]	Service/ Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured APD [W/m² (4cm²)]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported APD [W/m² (4cm²)]	APD Exposure Ratio	Plot #
Body	6 GHz WIFI/ IEEE 802.11ax	80	OFDM	WIFI 0	0818M	94.03	0.06	6305.00	71	68.1	6.5	6.08	Back	0	2.760	1.102	1.063	3.233	0.162	
Body	6 GHz WIFI/ IEEE 802.11ax	80	OFDM	WIFI 1	0818M	94.37	0.16	5985.00	7	68.1	6.5	5.80	Right	0	0.918	1.175	1.060	1.143	0.057	
Health Canada Safety Code 6 Spatial Peak Uncontrolled Exposure/ General Population													Body 20 W/m² average over 4 cm²							

Table 9-9
6CD MIMO Spot-check Verification for Data Referencing

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	6 GHz WIFI/ IEEE 802.11ax	80	OFDM	MIMO	0818M	90.00	-0.06	6465.00	103	68.1	6.5	5.90	6.5	6.49	Back	0	0.395	1.148	1.111	0.504	0.816	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Body 1.6 W/kg (mW/g) averaged over 1 gram							

Note: To achieve the 9.5 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 6.5 dBm.

Exposure	Band/ Mode	Bandwidth [MHz]	Service/ Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Max Allowed Power (2nd ant) [dBm]	Conducted Power (2nd ant) [dBm]	Test Position	Spacing [mm]	Measured APD [W/m² (4cm²)]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported APD [W/m² (4cm²)]	APD Exposure Ratio	Plot #
Body	6 GHz WIFI/ IEEE 802.11ax	80	OFDM	MIMO	0818M	90	-0.06	6465.00	103	68.1	6.5	5.90	6.5	6.49	Back	0	1.970	1.148	1.111	2.513	0.126	
Health Canada Safety Code 6 Spatial Peak Uncontrolled Exposure/ General Population															Body 20 W/m² average over 4 cm²							

Note: To achieve the 9.5 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 6.5 dBm.

Table 9-10
DSS Spot-check Verification for Data Referencing

Exposure	Band / Mode	Service / Modulation	Ant.	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Reported SAR from Reference Model (1g)	Plot #
Body	2.4 GHz Bluetooth	FHSS	WIFI 0	0779M	76.80	0.01	2441.00	39	1	7.5	6.22	Back	0	0.110	1.343	1.016	0.150	0.153	
Body	2.4 GHz Bluetooth	FHSS	WIFI 1	0779M	76.80	0.00	2441.00	39	1	7.5	6.31	Right	0	0.136	1.315	1.016	0.182	0.150	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Body 1.6 W/kg (mW/g) averaged over 1 gram							

9.2 SAR and Absorbed Power Density Test Notes:

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, FCC KDB Publication 447498 D04v01, and FCC KDB Publication 616217 D04v01r02.

2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D04v01.
6. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 11 for variability analysis.
7. FCC KDB Publication 616217 D04v01r02 Section 4.3, SAR tests are required for the back surface and edges of the tablet with the tablet touching the phantom. The SAR Exclusion Threshold in FCC KDB 447498 D04v01 was applied to determine SAR test exclusion for adjacent edge configurations.
8. Per FCC KDB 616217 D04, SAR is evaluated for the bottom surface of a keyboard when it is attached to the DUT in laptop configuration.
9. Per FCC KDB 648474 D04, highest reported SAR tablet configuration for a transmission band on an antenna was additionally evaluated with keyboard accessory attached and folded back at 360˚
10. The orange highlights throughout the report represent the highest scaled SAR per Equipment Class.

WLAN Notes:

1. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 6.2.4 for more information.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 6.2.5 for more information.

a) Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D04v01 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see the Simultaneous Numerical Calculations Appendix for complete analysis.

b) When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.

c) The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.

d) Per FCC guidance, SAR was performed using 6.5 GHz SAR probe calibration factors. Per October 2020 TCB Workshop notes, 5 channels were tested.

Bluetooth Notes

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 78% transmission duty factor for Bluetooth to determine compliance. See RF Conducted Power Section for the time domain plot and calculation for the duty factor of the device.

10 POWER DENSITY DATA SUMMARY

10.1 6 GHz WIFI Power Density Results

Table 10-1
6 GHz WLAN Tablet – SISO

MEASUREMENT RESULTS																								
Frequency (MHz)	Channel	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power [dBm]	Conducted Power (Ant 1) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift (dB)	Spacing (mm)	Antenna Config.	Accesory	DUT Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Grid Step (λ)	Scaling Factor for Measurement Uncertainty per IEC 62479	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Normal psPD (W/m²)	Scaled Normal psPD (W/m²)	Total psPD (W/m²)	Scaled Total psPD (W/m²)	Plot #
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	-0.14	2	WIFI 0	N/A	04G8P	34	Back	89.97	0.125	1.554	1.047	1.111	0.839	1.517	1.160	2.097	
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	-0.13	2	WIFI 0	N/A	04G8P	34	Top	89.97	0.125	1.554	1.047	1.111	0.347	0.627	0.403	0.728	
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	-0.16	2	WIFI 0	N/A	04G8P	34	Bottom	89.97	0.125	1.554	1.047	1.111	0.125	0.226	0.136	0.246	
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	0.13	2	WIFI 0	N/A	04G8P	34	Right	89.97	0.125	1.554	1.047	1.111	0.166	0.300	0.172	0.311	
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	-0.04	2	WIFI 0	N/A	04G8P	34	Left	89.97	0.125	1.554	1.047	1.111	0.595	1.076	0.659	1.191	
5985.00	7	802.11ax	OFDM	80	10.00	9.70	N/A	-0.10	2	WIFI 0	N/A	04G8P	34	Back	89.97	0.125	1.554	1.072	1.111	0.725	1.342	0.928	1.718	
6465.00	103	802.11ax	OFDM	80	10.00	9.76	N/A	-0.03	2	WIFI 0	N/A	04G8P	34	Back	89.97	0.125	1.554	1.057	1.111	0.756	1.380	0.866	1.580	
6705.00	151	802.11ax	OFDM	80	10.00	9.63	N/A	-0.20	2	WIFI 0	N/A	04G8P	34	Back	89.97	0.125	1.554	1.089	1.111	0.766	1.440	0.761	1.431	
7025.00	215	802.11ax	OFDM	80	10.00	9.68	N/A	-0.19	2	WIFI 0	N/A	04G8P	34	Back	89.97	0.125	1.554	1.076	1.111	0.493	0.916	0.535	0.994	
6465.00	103	802.11ax	OFDM	80	10.00	N/A	9.99	0.01	2	WIFI 1	N/A	04G8P	34	Back	89.97	0.125	1.554	1.002	1.111	0.370	0.640	0.391	0.676	
6465.00	103	802.11ax	OFDM	80	10.00	N/A	9.99	0.21	2	WIFI 1	N/A	04G8P	34	Top	89.97	0.125	1.554	1.002	1.111	0.209	0.362	0.234	0.405	
6465.00	103	802.11ax	OFDM	80	10.00	N/A	9.99	-0.13	2	WIFI 1	N/A	04G8P	34	Bottom	89.97	0.125	1.554	1.002	1.111	0.067	0.116	0.070	0.121	
6465.00	103	802.11ax	OFDM	80	10.00	N/A	9.99	0.11	2	WIFI 1	N/A	04G8P	34	Right	89.97	0.125	1.554	1.002	1.111	0.490	0.848	0.576	0.996	
6465.00	103	802.11ax	OFDM	80	10.00	N/A	9.99	0.00	2	WIFI 1	N/A	04G8P	34	Left	89.97	0.125	1.554	1.002	1.111	0.077	0.133	0.080	0.138	
5985.00	7	802.11ax	OFDM	80	10.00	N/A	9.79	-0.02	2	WIFI 1	N/A	04G8P	34	Right	89.97	0.125	1.554	1.050	1.111	1.080	1.958	1.420	2.574	
6305.00	71	802.11ax	OFDM	80	10.00	N/A	9.80	0.01	2	WIFI 1	N/A	04G8P	34	Right	89.97	0.125	1.554	1.047	1.111	0.686	1.240	0.846	1.529	
6705.00	151	802.11ax	OFDM	80	10.00	N/A	9.62	-0.11	2	WIFI 1	N/A	04G8P	34	Right	89.97	0.125	1.554	1.091	1.111	0.633	1.192	0.849	1.599	
7025.00	215	802.11ax	OFDM	80	10.00	N/A	9.57	-0.04	2	WIFI 1	N/A	04G8P	34	Right	89.97	0.125	1.554	1.104	1.111	0.571	1.088	0.775	1.477	
47 CFR §1.1310 - SAFETY LIMIT Spatial Average Uncontrolled Exposure / General Population															Power Density 10 W/m² averaged over 4 cm²									

Table 10-2
6 GHz WLAN Tablet – MIMO

MEASUREMENT RESULTS																										
Frequency (MHz)	Channel	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift (dB)	Spacing (mm)	Antenna Config.	Peak	Accesory	DUT Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Grid Step (λ)	iPD (W/m²)	Scaling Factor for Measurement Uncertainty per IEC 62479	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Normal psPD (W/m²)	Scaled Normal psPD (W/m²)	Total psPD (W/m²)	Scaled Total psPD (W/m²)	Plot #
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	0.07	2	MIMO	1	N/A	0835M	68.1	Back	89.97	0.125	-	1.554	1.038	1.111	0.741	1.328	0.960	1.720	
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	-0.17	2	MIMO	2	N/A	0835M	68.1	Back	89.97	0.125	-	1.554	1.038	1.111	0.329	0.590	0.405	0.726	
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	-0.16	2	MIMO	1	N/A	0835M	68.1	Top	89.97	0.125	-	1.554	1.038	1.111	0.202	0.362	0.299	0.536	
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	-0.01	2	MIMO	2	N/A	0835M	68.1	Top	89.97	0.125	-	1.554	1.038	1.111	0.280	0.502	0.425	0.762	
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	0.12	2	MIMO	1	N/A	0835M	68.1	Right	89.97	0.125	0.335	1.554	1.038	1.111	0.166	0.297	0.274	0.491	
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	0.12	9.27	MIMO	1	N/A	0835M	68.1	Right	89.97	0.125	0.220	1.554	1.038	1.111	0.133	0.238	0.167	0.299	
5985.00	7	802.11ax	OFDM	80	10.00	9.78	10.00	9.76	-0.01	2	MIMO	1	N/A	0835M	68.1	Left	89.97	0.125	-	1.554	1.057	1.111	2.200	4.015	3.420	6.241	A2
5985.00	7	802.11ax	OFDM	80	10.00	9.78	10.00	9.76	-0.13	2	MIMO	1	Variant 1	0835M	68.1	Left	89.97	0.125	-	1.554	1.057	1.111	0.313	0.571	0.385	0.703	
5985.00	7	802.11ax	OFDM	80	10.00	9.78	10.00	9.76	0.00	2	MIMO	1	Variant 2	0835M	68.1	Left	89.97	0.125	-	1.554	1.057	1.111	0.336	0.613	0.381	0.695	
6305.00	71	802.11ax	OFDM	80	10.00	9.20	10.00	9.83	-0.05	2	MIMO	1	N/A	0835M	68.1	Left	89.97	0.125	-	1.554	1.202	1.111	1.380	2.864	1.900	3.943	
6465.00	103	802.11ax	OFDM	80	10.00	9.88	10.00	9.84	-0.07	2	MIMO	1	N/A	0835M	68.1	Left	89.97	0.125	-	1.554	1.038	1.111	0.854	1.530	1.240	2.222	
6705.00	151	802.11ax	OFDM	80	10.00	9.63	10.00	9.72	-0.12	2	MIMO	1	N/A	0835M	68.1	Left	89.97	0.125	-	1.554	1.089	1.111	0.337	0.634	0.440	0.827	
7025.00	215	802.11ax	OFDM	80	10.00	9.43	10.00	9.87	-0.12	2	MIMO	1	N/A	0835M	68.1	Left	89.97	0.125	-	1.554	1.140	1.111	0.770	1.516	0.914	1.799	
47 CFR §1.1310 - SAFETY LIMIT Spatial Average Uncontrolled Exposure / General Population																	Power Density 10 W/m² averaged over 4 cm²									

Table 10-3
6 GHz WLAN Laptop

MEASUREMENT RESULTS																											
Frequency (MHz)	Channel	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1) [dBm]	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power (Ant 2) [dBm]	Conducted Power (Ant 2) [dBm]	Power Drift (dB)	Spacing (mm)	Antenna Config.	Keyboard Variant	DUT Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Grid Step (λ)	IPD (W/m²)	Scaling Factor for Measurement Uncertainty per IEC 62479	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Normal psPD (W/m²)	Scaled Normal psPD (W/m²)	Total psPD (W/m²)	Scaled Total psPD (W/m²)	Plot #
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	N/A	0.14	2	WiFi 0	1	0835M	34	Bottom	89.64	0.125	-	1.554	1.047	1.116	0.143	0.260	0.271	0.492	
6305.00	71	802.11ax	OFDM	80	10.00	9.80	N/A	N/A	-0.12	2	WiFi 0	2	0835M	34	Bottom	89.64	0.125	-	1.554	1.047	1.116	0.182	0.330	0.229	0.416	
6465.00	103	802.11ax	OFDM	80	N/A	N/A	10.00	9.99	-0.18	2	WiFi 1	1	0835M	34	Bottom	89.67	0.125	-	1.554	1.002	1.115	0.158	0.274	0.164	0.285	
6465.00	103	802.11ax	OFDM	80	N/A	N/A	10.00	9.99	-0.13	2	WiFi 1	2	0835M	34	Bottom	89.67	0.125	0.419	1.554	1.002	1.115	0.256	0.444	0.290	0.503	
6465.00	103	802.11ax	OFDM	80	N/A	N/A	10.00	9.99	0.15	9.27	WiFi 1	2	0835M	34	Bottom	89.67	0.125	0.285	1.554	1.002	1.115	0.123	0.214	0.159	0.276	
6465.00	103	802.11ax	OFDM	80	10.00	9.78	10.00	9.61	-0.19	2	MIMO	1	0835M	68.1	Bottom	89.97	0.125	-	1.554	1.094	1.111	0.439	0.829	0.485	0.916	A3
6465.00	103	802.11ax	OFDM	80	10.00	9.78	10.00	9.61	0.13	2	MIMO	2	0835M	68.1	Bottom	89.97	0.125	-	1.554	1.094	1.111	0.257	0.485	0.321	0.606	
47 CFR §1.1310 - SAFETY LIMIT Spatial Average Uncontrolled Exposure / General Population																				Power Density 10 W/m² averaged over 4 cm²							

Power Density General Notes

1. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
2. Batteries are fully charged at the beginning of the measurements. The DUT was connected to a wall charger for some measurements due to the test duration. It was confirmed that the charger plugged into this DUT did not impact the near-field PD test results.
3. Power density was calculated by repeated E-field measurements on two measurement planes separated by λ/4.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
5. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor.
6. Per equipment manufacturer guidance, power density was measured at d=2mm and d=λ/5mm using the same grid size and grid step size for some frequencies and surfaces. The integrated Power Density (iPD) was calculated based on these measurements. Since iPD ratio between the two distances is ≥ -1dB, the grid step was sufficient for determining compliance at d=2mm.
7. PTP-PR algorithm was used during psPD measurement and calculations.
8. PD results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D04

11 SAR MEASUREMENT VARIABILITY

11.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, all measured 1 g SAR values were <0.8 W/kg Therefore, no SAR measurement variability analysis was required.

11.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

12 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4404B	Spectrum Analyzer	N/A	N/A	N/A	MY45113242
Agilent	E4438C	ESG Vector Signal Generator	11/14/2023	Annual	11/14/2024	MY45093852
Agilent	E4438C	ESG Vector Signal Generator	11/15/2023	Annual	11/15/2024	MY45092078
Agilent	N5182A	MXG Vector Signal Generator	10/12/2023	Annual	10/12/2024	MY47400015
Agilent	N5182A	MXG Vector Signal Generator	3/7/2024	Annual	3/7/2025	MY47420603
Agilent	8753ES	S-Parameter Vector Network Analyzer	1/10/2024	Annual	1/10/2025	MY40001472
Agilent	E5515C	Wireless Communications Test Set	CBT	N/A	CBT	GB46310798
Agilent	E5515C	Wireless Communications Test Set	CBT	N/A	CBT	US41140256
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433973
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Anritsu	ML2496A	Power Meter	6/24/2024	Annual	6/24/2025	1840005
Anritsu	ML2495A	Power Meter	7/8/2024	Annual	7/8/2025	1039008
Anritsu	MA2411B	Pulse Power Sensor	8/22/2023	Annual	8/22/2024	1726262
Anritsu	MA2411B	Pulse Power Sensor	11/8/2023	Annual	11/8/2024	1027293
Anritsu	MA24106A	USB Power Sensor	12/4/2023	Annual	12/4/2024	1520501
Anritsu	MA24106A	USB Power Sensor	4/15/2024	Annual	4/15/2025	1827528
Mini-Circuits	PWR-4GHS	USB Power Sensor	6/12/2024	Annual	6/12/2025	12001070013
Control Company	4052	Long Stem Thermometer	2/27/2024	Biennial	2/27/2026	240174346
Control Company	4052	Long Stem Thermometer	2/27/2024	Biennial	2/27/2026	240171096
Control Company	4052	Long Stem Thermometer	2/27/2024	Biennial	2/27/2026	240171059
Control Company	4040	Therm./ Clock/ Humidity Monitor	4/15/2024	Biennial	4/15/2026	240310280
Control Company	4040	Therm./ Clock/ Humidity Monitor	4/15/2024	Biennial	4/15/2026	240310282
Control Company	S66279	Therm./ Clock/ Humidity Monitor	2/16/2024	Biennial	2/16/2026	240140051
Mitutoyo	500-196-30	CD-6"ASX 6Inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY54500644
Agilent	N9020A	MXA Signal Analyzer	6/14/2024	Annual	6/14/2025	MY56470202
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	CBT	N/A	CBT	2050
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Seekonk	NC-100	Torque Wrench	CBT	N/A	CBT	22217
Seekonk	NC-100	Torque Wrench	4/2/2024	Biennial	4/2/2026	1262
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/10/2024	Annual	1/10/2025	131453
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2023	Annual	11/13/2024	1277
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/14/2023	Annual	8/14/2024	1041
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1237
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1331
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1390
SPEAG	D2450V2	2450 MHz SAR Dipole	2/8/2024	Annual	2/8/2025	882
SPEAG	D5GHzV2	5 GHz MHz SAR Dipole	4/9/2024	Annual	4/9/2025	1237
SPEAG	D6.5GHzV2	6500 MHz SAR Dipole	2/22/2024	Annual	2/22/2025	1111
SPEAG	5G Verification Source 10GHz	10GHz System Verification Antenna	3/5/2024	Annual	3/5/2025	1002
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2024	Annual	5/8/2025	1502
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/6/2023	Annual	9/6/2024	1364
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/18/2023	Annual	10/18/2024	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/12/2024	Annual	3/12/2025	1272
SPEAG	EX3DV4	SAR Probe	3/8/2024	Annual	3/8/2025	7527
SPEAG	EX3DV4	SAR Probe	9/12/2023	Annual	9/12/2024	7558
SPEAG	EX3DV4	SAR Probe	5/10/2024	Annual	5/10/2025	7402
SPEAG	EX3DV4	SAR Probe	10/23/2023	Annual	10/23/2024	7547
SPEAG	EUmmWV4	EUmmWV4 Probe	2/2/2024	Annual	2/2/2025	9622

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

13 MEASUREMENT UNCERTAINTIES

Applicable for SAR Measurements < 6 GHz:

				f(d,k)			c x f/e	c x g/e	
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.73	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.73	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.73	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.73	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.73	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.73	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.73	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.73	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				12.2	12.0	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.4	24.0	

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

Applicable for SAR Measurements > 6 GHz:

Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	f(d,k) Div.	c_i 1gm	c_i 10 gms	c x f/e 1gm u_i (± %)	c x g/e 10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	9.3	N	1	1	1	9.3	9.3	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.73	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.73	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.73	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.73	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.73	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.73	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.73	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.73	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.73	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.73	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				13.8	13.6	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				27.6	27.1	

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

Applicable for Power Density Measurements:

a	b	c	d	e	f = c x f/e	g
Uncertainty Component	Unc. (± dB)	Prob. Dist.	Div.	c_i	u_i (± dB)	v_i
Measurement System						
Calibration	0.49	N	1	1	0.49	∞
Probe Correction	0.00	R	1.73	1	0.00	∞
Frequency Response	0.20	R	1.73	1	0.12	∞
Sensor Cross Coupling	0.00	R	1.73	1	0.00	∞
Isotropy	0.50	R	1.73	1	0.29	∞
Linearity	0.20	R	1.73	1	0.12	∞
Probe Scattering	0.00	R	1.73	1	0.00	∞
Probe Positioning offset	0.30	R	1.73	1	0.17	∞
Probe Positioning Repeatability	0.04	R	1.73	1	0.02	∞
Sensor MechanicalOffset	0.00	R	1.73	1	0.00	∞
Probe Spatial Resolution	0.00	R	1.73	1	0.00	∞
Field Impedence Dependance	0.00	R	1.73	1	0.00	∞
Amplitude and Phase Drift	0.00	R	1.73	1	0.00	∞
Amplitude and Phase Noise	0.04	R	1.73	1	0.02	∞
Measurement Area Truncation	0.00	R	1.73	1	0.00	∞
Data Acquisition	0.03	N	1	1	0.03	∞
Sampling	0.00	R	1.73	1	0.00	∞
Field Reconstruction	2.00	R	1.73	1	1.15	∞
Forward Transformation	0.00	R	1.73	1	0.00	∞
Power Density Scaling	0.00	R	1.73	1	0.00	∞
Spatial Averaging	0.10	R	1.73	1	0.06	∞
System Detection Limit	0.04	R	1.73	1	0.02	∞
Test Sample Related						
Probe Coupling with DUT	0.00	R	1.73	1	0.00	∞
Modulation Response	0.40	R	1.73	1	0.23	∞
Integration Time	0.00	R	1.73	1	0.00	∞
Response Time	0.00	R	1.73	1	0.00	∞
Device Holder Influence	0.10	R	1.73	1	0.06	∞
DUT alignment	0.00	R	1.73	1	0.00	∞
RF Ambient Conditions	0.04	R	1.73	1	0.02	∞
Ambient Reflections	0.04	R	1.73	1	0.02	∞
Immunity/Secondary Reception	0.00	R	1.73	1	0.00	∞
Drift of DUT	0.21	R	1.73	1	0.12	∞
Combined Standard Uncertainty (k=1)		RSS			1.34	∞
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				

14 CONCLUSION

14.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

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