




DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 3 of 4

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<p>Responsible Engineer: Report Author: Date/s Tested: Manufacturer: DUT Description: Test TX mode(s): Max. Power output: Nominal Power output: Tx Frequency Bands: Signaling type: Model(s) Tested: Model(s) Certified: Serial Number(s): Firmware Version: Classification: Applicant Name: Applicant Address: FCC ID: FCC Test Firm Registration Number:</p>	<p>Saw Sun Hock (EME Engineer) Kin Kting Lee (EME Technician) 8/24/2022-8/30/2022, 9/4/2022-9/13/2022, 11/13/2022 – 11/25/2022 Motorola Solutions Inc. Handheld Portable – WAVE PTX TWO WAY RADIO LTE, WCDMA, WLAN, BT / BT LE Refer table 3 (Part 1 of 4) Refer table 3 (Part 1 of 4) Refer table 3 (Part 1 of 4) QPSK, 16QAM, 64QAM, QPSK, DSSS, OFDM, SC-FDMA, RMC/AMR 12.2Kbps, HSDPA, HSUPA HK2183A [HKUN4243A] HK2183A [HKUN4243A], HK2184A [HKUN4245A] 642QYQ0178, 642QYQ0141, 642QYU0102 and 642QYU0031 TAURUS_BASE_D00.00.02_APP_D00.01.63 General Population / Uncontrolled Environment Motorola Solutions Inc. 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322 AZ489FT7166 823256 109U-89FT7166 24843</p>
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The test results clearly demonstrate compliance with General Population / Uncontrolled RF Exposure limits of 1.6 W/kg averaged over 1 gram per the requirements of FCC 47 CFR § 2.1093 and RSS-102 (Issue 5)

Based on the information and the testing results provided herein, the undersigned certifies that when used as stated in the operating instructions supplied, said product complies with the national and international reference standards and guidelines listed in section 4.0 of this report (no deviation from standard methods). This report shall not be reproduced without written approval from an officially designated representative of the Motorola Solutions Inc EME Laboratory. I attest to the accuracy of the data and assume full responsibility for the completeness of these measurements. This reporting format is consistent with the suggested guidelines of the TIA TSB-150 December 2004. The results and statements contained in this report pertain only to the device(s) evaluated.

<p style="text-align: center;">  Saw Sun Hock (Approval Signatory) Approval Date: 01/30/2023 </p>	
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1.0 System Validation for WLAN 2.4GHz and 5.0GHz

The SAR measurement system was validated according to procedures in KDB 865664. The validation status summary Table is below.

Table 1

Dates	Probe Calibration Point	Probe SN	Measured Tissue Parameters		Validation			
			σ	ϵ_r	Sensitivity	Linearity	Isotropy	
CW								
06/09/2022	Head	2450	7364	1.78	38.0	Pass	Pass	Pass
06/12/2022		5250		4.42	34.4	Pass	Pass	Pass
06/13/2022		5600		4.87	33.0	Pass	Pass	Pass
06/16/2022		5600	7485	4.27	32.8	Pass	Pass	Pass
06/17/2022		5750		5.05	33.1	Pass	Pass	Pass
06/27/2022		2450	7519	1.79	39.90	Pass	Pass	Pass
06/30/2022		5250		4.44	34.30	Pass	Pass	Pass
07/01/2022		5600		4.72	33.00	Pass	Pass	Pass
07/01/2022		5750		4.88	32.80	Pass	Pass	Pass

2.0 System Verification for WLAN 2.4GHz and 5.0GHz

System verification checks were conducted each day during the SAR assessment. The results are normalized to 1W. Appendix D includes DASY plots with the largest deviation from the qualified source SAR target for each dipole. The Table below summarizes the daily system check results used for the SAR assessment.

Table 2

Probe Serial #	Tissue Type	Dipole Kit / Serial #	Reference SAR @ 1W (W/kg)	System Check Results Measured (W/kg)	System Check Test Results when normalized to 1W (W/kg)	Tested Date
7364	IEEE/IEC Head	SPEAG D2450V2 / 782	54.40 ± 10%	14.10	56.40	09/07/2022#
				14.20	56.80	09/08/2022
		SPEAG D5250V2 / 1022	81.30 ± 10%	8.36	83.60	09/05/2022#
SPEAG D5600V2 / 1022		83.10 ± 10%	8.45	84.50	09/04/2022#	
7485		SPEAG D5750V2 / 1022	81.50 ± 10%	7.66	76.60	09/12/2022#
		SPEAG D5600V2 / 1022	83.10 ± 10%	8.19	81.90	09/13/2022#
7519		SPEAG D2450V2 / 782	54.40 ± 10%	1.61	50.95	11/16/2022#
				1.60	50.63	11/25/2022
		SPEAG D5250V2 / 1026	83.90 ± 10%	7.70	77.00	11/17/2022
		SPEAG D5600V2 / 1026	80.60 ± 10%	8.62	86.20	11/17/2022#
	SPEAG D5750V2 / 1026	79.70 ± 10%	8.25	82.50	11/18/2022	

Note: # denotes that the system verification check covers next testing day (within 24 hours)

3.0 Equivalent Tissue Test Results for WLAN 2.4GHz and 5.0GHz

Simulated tissue prepared for SAR measurements are measured daily and within 24 hours of SAR testing to verify that the tissue is within +/- 5% of target parameters for each tested channel. The table below summarizes the measured tissue parameters used for the SAR assessment.

Table 3

Frequency (MHz)	Tissue Type	Conductivity Target (S/m)	Dielectric Constant Target	Conductivity Meas. (S/m)	Dielectric Constant Meas.	Tested Date
2412	IEEE/IEC Head	1.77 (1.68-1.86)	39.3 (35.3-43.2)	1.73	37.7	09/07/2022#
				1.73	40.4	11/16/2022#
2437		1.79 (1.7-1.88)	39.2 (35.3-43.1)	1.76	37.6	09/07/2022#
				1.71	39.0	11/25/2022
2450		1.80 (1.71-1.89)	39.2 (35.3-43.1)	1.77	37.6	09/07/2022#
				1.77	37.3	09/08/2022
				1.76	40.4	11/16/2022#
2462		1.77 (1.68-1.86)	39.3 (35.3-43.2)	1.71	39.0	11/25/2022
				1.78	37.6	09/07/2022#
				1.78	37.2	09/08/2022
5180		4.64 (4.18-5.1)	36 (32.4-39.6)	4.53	38.8	09/05/2022#
				4.18	33.9	11/17/2022#
5220		4.68 (4.21-5.15)	36 (32.4-39.6)	4.58	38.7	09/05/2022#
5240		4.7 (4.23-5.17)	36 (32.4-39.6)	4.60	38.7	
5250		4.7 (4.23-5.17)	36 (32.4-39.6)	4.61	38.7	
				4.26	33.7	
5500		4.97 (4.47-5.46)	35.7 (32.1-39.2)	4.63	36.0	09/04/2022#
				4.51	33.3	11/17/2022#
5560		5.03 (4.53-5.53)	35.6 (32-39.1)	4.70	35.90	09/04/2022#
5640		5.11 (4.6-5.62)	35.5 (31.9-39)	4.79	35.7	
5600	5.07 (4.56-5.58)	35.5 (32-39.1)	4.74	35.8	09/13/2022#	
			4.76	32.4		
			4.62	33.2		
5660	5.13 (4.62-5.64)	35.4 (31.9-39)	4.82	32.3	09/12/2022#	
			4.82	32.3	09/13/2022#	
5700	5.17 (4.65-5.69)	35.4 (31.9-38.9)	4.86	32.3	09/12/2022#	
			4.86	32.3	09/13/2022#	
5750	5.22 (4.7-5.74)	35.4 (31.8-38.9)	4.79	32.2	09/12/2022#	
			4.78	32.2	11/18/2022	
5825	5.3 (4.77-5.83)	35.3 (31.7-38.8)	4.87	32.1	09/12/2022#	
			4.86	32.2	11/18/2022	

Note: # denotes that the tissue date covers next testing day (within 24 hours)

4.0 DUT Test Data for WLAN 2.4GHz and 5.0GHz

SAR test reduction is apply using the following criteria according to KDB 248227 D01:

- a. For 2.4GHz 802.11 g/n SAR testing is not required when then highest reported SAR for DSSS is adjusted by ratio of OFDM to DSSS specified maximum output power and adjusted SAR is ≤ 1.2 W/kg.
- b. Started the SAR with higher specified max output power, if U-NII-1 band and U-NII-2A band had the different max output power.
U-NII-2A SAR testing not required when U-NII-1 band highest adjusted SAR for a test configuration is ≤ 1.2 W/kg.
- c. For all positions/configurations, when reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required test positions/configurations are tested.

4.1 SAR assessment for WLAN 2.4GHz (802.11b/g/n)

Output Power Data

These power measurements were used to determine the necessary modes for SAR testing according to KDB 248227.

Table 4

Band	802.11	Ch. BW	Ch.	Freq. (MHz)	Measured conducted power (W)
2.4 GHz	b	20	1	2412	0.0508
			6	2437	0.0661
			11	2462	0.0463
	g	20	1	2412	0.0321
			6	2437	0.0361
			11	2462	0.0334
	n	20	1	2412	0.0207
			6	2437	0.0236
			11	2462	0.0218

Assessments at the Body

Table below presents the data of the body assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 5

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
AS1000215	PMNN4578A	PMLN7128A	None	2437.0000	0.05	-0.38	0.172	0.250	DAN-AB-221125-07
AS1000215	PMNN4578A	PMLN8439A	None	2437.0000	0.066	-0.02	0.045	0.049	AF-AB-220908-12#

Assessments at the Face

Table below presents the data of the Face assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 6

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
AS1000215	PMNN4578A	Radio @ front 2.5cm	None	2437.0000	0.066	0.02	0.006	0.007	AF-FACE-220908-18#

Additional Assessments for ISED Canada

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 7

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Body									
AS1000215	PMNN4578A	PMLN7128A	None	2412.0000	0.051	-0.22	0.045	0.066	AF-AB-220908-16#
				2437.0000	0.05	-0.38	0.172	0.250	DAN-AB-221125-07
				2462.0000	0.046	-0.20	0.013	0.048	AF-AB-220908-17#
Face									
AS1000215	PMNN4578A	Radio @ front 2.5cm	None	2412.0000	0.054	-0.02	0.012	0.016	SAN(ZIQ)-FACE-221117-05#
				2437.0000	0.066	-0.02	0.006	0.007	AF-FACE-220908-18#
				2462.0000	0.046	-0.04	0.0002	0.0003	MFR-FACE-220908-23

4.2 SAR assessment for WLAN 5.0GHz (802.11a/n/ac)

Output Power Data

These power measurements were used to determine the necessary modes for SAR testing according to KDB 248227.

Table 8

Band	802.11	Ch. BW (MHz)	Ch.	Freq. (MHz)	Measured conducted power (W)	
U-NII-1 (5.15-5.25GHz)	a	20	36	5180	0.0705	
			40	5200	0.0364	
			44	5220	0.0366	
			48	5240	0.0351	
	n	20	36	5180	0.0490	
			40	5200	0.0240	
			44	5220	0.0235	
			48	5240	0.0226	
		40	38	5190	0.0302	
			46	5230	0.0196	
	ac	20	36	5180	0.0448	
			40	5200	0.0238	
			44	5220	0.0234	
			48	5240	0.0223	
		40	38	5190	0.0303	
			46	5230	0.0154	
80			42	5210	0.0210	
U-NII-2A (5.25-5.35GHz)	a	20	52	5260	0.0333	
			56	5280	0.0316	
			60	5300	0.0316	
			64	5320	0.0311	
	n	20	52	5260	0.0216	
			56	5280	0.0208	
			60	5300	0.0208	
			64	5320	0.0200	
		40	54	5270	0.0181	
			62	5310	0.0175	
	ac	20	52	5260	0.0217	
			56	5280	0.0203	
			60	5300	0.0201	
			64	5320	0.0204	
		40	54	5270	0.0158	
			62	5310	0.0142	
			80	58	5290	0.0146

Table 8 (Continued)

Band	802.11	Ch. BW (MHz)	Ch.	Freq. (MHz)	Measured conducted power (W)	
U-NII-2C (5.47-5.65 GHz)	a	20	100	5500	0.0542	
			112	5560	0.0259	
			116	5580	0.0255	
			128	5640	0.0275	
	n	20	20	100	5500	0.0324
				112	5560	0.0215
				116	5580	0.0211
				128	5640	0.0223
		40	40	102	5510	0.0225
				110	5550	0.0158
				118	5590	0.0156
				126	5630	0.0160
	ac	20	20	100	5500	0.0267
				112	5560	0.0277
				116	5580	0.0269
				128	5640	0.0254
		40	40	102	5510	0.0228
				110	5550	0.0153
				118	5590	0.0140
				126	5630	0.0135
80		80	106	5530	0.0160	
			122	5610	0.0148	
			138	5690	0.0199	
			132	5660	0.0273	
U-NII-3 (5.65-5.85 GHz)	a	20	140	5700	0.0527	
			149	5745	0.0277	
			165	5825	0.0679	
			132	5660	0.0226	
	n	20	20	149	5745	0.0230
				165	5825	0.0446
				134	5670	0.0330
		40	40	142	5710	0.0163
				151	5755	0.0169
				159	5795	0.0322
	ac	20	20	132	5660	0.0254
				149	5745	0.0237
				165	5825	0.0417
		40	40	134	5670	0.0282
				142	5710	0.0177
				151	5755	0.0158
				159	5795	0.0335
		80	155	5775	0.0200	

4.2.1 SAR assessment for U-NII-1 (5.15-5.25GHz)

Assessments at the Body

Table below presents the data of the body assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 9

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
802.11a, 20MHz BW									
AS1000217	PMNN4578A	PMLN7128A	None	5180.0000	0.069	-0.04	0.459	0.479	DAN-AB-221117-09
AS1000217	PMNN4578A	PMLN8439A	None	5180.0000	0.071	-0.25	0.320	0.343	SAN-AB-220905-06

Assessments at the Face

Table below presents the data of the Face assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 10

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
802.11a, 20MHz BW									
AS1000217	PMNN4578A	Radio @ front 2.5cm	None	5180.0000	0.069	-0.12	0.075	0.080	DAN-FACE-221118-02#

Additional Assessments for ISED Canada

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 11

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Body (802.11a, 20MHz BW)									
AS1000217	PMNN4578A	PMLN7128A	None	5180.0000	0.069	-0.04	0.459	0.479	DAN-AB-221117-09
				5220.0000	0.037	-0.11	0.250	0.281	SAN-AB-220905-08
				5240.0000	0.035	0.09	0.261	0.298	SAN-AB-220905-09
Face (802.11a, 20MHz BW)									
AS1000217	PMNN4578A	Radio @ front 2.5cm	None	5180.0000	0.069	-0.12	0.075	0.080	DAN-FACE-221118-02#
				5220.0000	0.037	0.23	0.017	0.019	MFR-FACE-220906-01#
				5240.0000	0.035	-0.02	0.019	0.022	MFR-FACE-220906-02#

4.2.2 SAR assessment for U-NII-2C (5.45-5.65GHz)

Assessments at the Body

Table below presents the data of the body assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 12

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
802.11a, 20MHz BW									
AS1000217	PMNN4578A	PMLN7128A	None	5500.0000	0.041	-0.18	0.438	0.626	DAN-AB-221117-11
AS1000217	PMNN4578A	PMLN8439A	None	5500.0000	0.054	0.01	0.0273	0.285	SAN-AB-220904-11

Assessments at the Face

Table below presents the data of the Face assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 13

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
802.11a, 20MHz BW									
AS1000217	PMNN4578A	Radio @ front 2.5cm	None	5500.0000	0.041	0.02	0.041	0.056	DAN-FACE-221118-01#

Additional Assessments for ISED Canada

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 14

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Body (802.11a, 20MHz BW)									
AS1000217	PMNN4578A	PMLN7128A	None	5500.0000	0.041	-0.18	0.438	0.626	DAN-AB-221117-11
				5560.0000	0.026	-0.34	0.202	0.338	AF-AB-220904-14
				5640.0000	0.028	-0.20	0.267	0.407	AF-AB-220904-13
Face (802.11a, 20MHz BW)									
AS1000217	PMNN4578A	Radio @ front 2.5cm	None	5500.0000	0.041	0.02	0.041	0.056	DAN-FACE-221118-01#
				5560.0000	0.026	-0.33	0.012	0.020	AF-FACE-220905-02#
				5640.0000	0.028	-0.28	0.010	0.016	AF-FACE-220905-03#

4.2.3 SAR assessment for U-NII-3 (5.65-5.85GHz)

Assessments at the Body

Table below presents the data of the body assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 15

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
802.11a, 20MHz BW									
AS1000217	PMNN4578A	PMLN7128A	None	5825.000	0.058	-0.10	0.630	0.799	BL(ZIQ)-AB-221118-05
AS1000217	PMNN4578A	PMLN8439A	None	5825.000	0.068	-0.22	0.441	0.486	BL-AB-220913-02#

Assessments at the Face

Table below presents the data of the Face assessment. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 16

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
802.11a, 20MHz BW									
AS1000217	PMNN4578A	Radio @ front 2.5cm	None	5825.000	0.068	0.04	0.026	0.027	BL-FACE-220912-03

Additional Assessments for ISED Canada

As per ISED Notice 2016-DRS001, additional tests were required for the low, mid and high frequency channels for the configuration with the highest SAR value. The SAR results are in Tables below. SAR plot is included in Appendix D for the highest configuration (bolded).

Table 17

Antenna	Battery	Carry Accessory	Cable Accessory	Test Freq (MHz)	Init Pwr (W)	SAR Drift (dB)	Meas. 1g-SAR (W/kg)	Max Calc. 1g-SAR (W/kg)	Run#
Body (802.11a, 20MHz BW)									
AS1000217	PMNN4578A	PMLN7128A	None	5660.000	0.027	-0.27	0.251	0.391	BL-AB-220913-03#
				5700.000	0.063	-0.35	0.548	0.597	BL-AB-220913-04#
				5825.000	0.058	-0.10	0.630	0.799	BL(ZIQ)-AB-221118-05
Face (802.11a, 20MHz BW)									
AS1000217	PMNN4578A	Radio @ front 2.5cm	None	5660.000	0.027	0.33	0.014	0.021	FZ-FACE-220914-01#
				5700.000	0.053	0.08	0.043	0.052	FZ-FACE-220914-02#
				5825.000	0.068	0.04	0.026	0.027	BL-FACE-220912-03

5.0 Variability Assessment

Per the guidelines in KDB 865664 SAR variability assessment is not required because SAR results are below 0.8W/kg (General population).