



DECLARATION OF COMPLIANCE SAR ASSESSMENT Part 3 of 4

Motorola Solutions Inc. EME Test Laboratory Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD 11900 Bayan Lepas Penang, Malaysia.	Date of Report: 01/30/2023 Report Revision: I
Responsible Engineer: Saw Sun Hock (EME Engineer) Report Author: Kin Kting Lee (EME Technician) Date/s Tested: 8/24/2022-8/30/2022, 9/4/2022-9/13/2022, 11/13/2022 – 11/25/2022 Manufacturer: Motorola Solutions Inc. DUT Description: Handheld Portable – WAVE PTX TWO WAY RADIO Test TX mode(s): LTE, WCDMA, WLAN, BT / BT LE Max. Power output: Refer table 3 (Part 1 of 4) Nominal Power output: Refer table 3 (Part 1 of 4) Tx Frequency Bands: Refer table 3 (Part 1 of 4) Signaling type: QPSK, 16QAM, 64QAM, QPSK, DSSS, OFDM, SC-FDMA, RMC/AMR 12.2Kbps, HSDPA, HSUPA Model(s) Tested: HK2183A [HKUN4243A] Model(s) Certified: HK2183A [HKUN4243A], HK2184A [HKUN4245A] Serial Number(s): 642QYQ0178, 642QYQ0141, 642QYU0102 and 642QYU0031 Firmware Version: TAURUS_BASE_D00.00.02_APP_D00.01.63 Classification: General Population / Uncontrolled Environment Applicant Name: Motorola Solutions Inc. Applicant Address: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322 FCC ID: AZ489FT7166 FCC Test Firm Registration Number: 823256 IC: 109U-89FT7166 ISED Test Site registration: 24843	
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.	
 Saw Sun Hock (Approval Signatory) Approval Date: 01/30/2023	

Part 3 of 4

1.0 System Validation for WLAN 2.4GHz and 5.0GHz 3

2.0 System Verification for WLAN 2.4GHz and 5.0GHz 3

3.0 Equivalent Tissue Test Results for WLAN 2.4GHz and 5.0GHz 4

4.0 DUT Test Data for WLAN 2.4GHz and 5.0GHz 6

 4.1 SAR assessment for WLAN 2.4GHz (802.11b/g/n) 6

 4.2 SAR assessment for WLAN 5.0GHz (802.11a/n/ac)..... 9

 4.2.1 SAR assessment for U-NII-1 (5.15-5.25GHz)..... 11

 4.2.2 SAR assessment for U-NII-2C (5.45-5.65GHz) 12

 4.2.3 SAR assessment for U-NII-3 (5.65-5.85GHz)..... 14

5.0 Variability Assessment..... 15

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#
				1.71	39.0	11/25/2022
2462		1.77 (1.68-1.86)	39.3 (35.3-43.2)	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	11/17/2022#
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	
				4.76	32.4	09/13/2022#
				4.62	33.2	17/11/2022#
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	100	5500	0.0324
			112	5560	0.0215
			116	5580	0.0211
			128	5640	0.0223
		40	102	5510	0.0225
			110	5550	0.0158
			118	5590	0.0156
			126	5630	0.0160
	ac	20	100	5500	0.0267
			112	5560	0.0277
			116	5580	0.0269
			128	5640	0.0254
		40	102	5510	0.0228
			110	5550	0.0153
			118	5590	0.0140
			126	5630	0.0135
		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
	n	20	132	5660	0.0226
			149	5745	0.0230
			165	5825	0.0446
		40	134	5670	0.0330
			142	5710	0.0163
			151	5755	0.0169
	ac	20	159	5795	0.0322
			132	5660	0.0254
			149	5745	0.0237
			165	5825	0.0417
		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).