



Variant FCC RF Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : 9370, 9842
FCC ID : IHDT56VE2
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

This is a variant report which is only valid together with the original report. The product testing was completed on Dec. 23, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

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Approved by: Jones Tsai / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR6O1212-11E	Rev. 01	This is a variant report for 9370, 9842. The product equality declaration could be referred to Appendix D. Based on the similarity between current and previous, only the Radiated Spurious Emission from original test report (Sporton Report Number FR6O1212-02F) were verified for the differences.	Jan. 13, 2017



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(b)	Unwanted Emissions	15.407(b)(4)(i) &15.209(a)	Pass	Under limit 9.04 dB at 932.100 MHz



1 General Description

1.1 Applicant

Motorola Mobility LLC

222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC

222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	9370, 9842
FCC ID	IHDT56VE2
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/NFC/ WLAN2.4GHz 802.11b/g/n HT20 WLAN5GHz 802.11a/n HT20/HT40/ Bluetooth v3.0+EDR/Bluetooth v4.0 LE/ Bluetooth v4.2 LE
IMEI Code	Radiation: 351857080038217/351857080038225
HW Version	DVT2
SW Version	potter_oem_userdebug_7.0_NPN25.124_1787_intcfg-test-keys_oem
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT sample 1 and sample 2, the differences between two samples are only for SIM slot, sample 1 is dual SIM slot, sample 2 is single SIM slot. According to the difference, the sample 1 to perform full RF test.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Channel Frequency Range	5745 MHz ~ 5825 MHz
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
Antenna Type / Gain	Loop Antenna with gain -2.50 dBi

1.5 Specification of Accessory

Specification of Accessory				
AC Adapter	Brand Name	Motorola(Salom)	Model Name	SSW-2680US/SSW-2680UK/ SSW-2680EU/SSW-2680MX/ SSW-2680AR
	Power Rating	I/P: 100-240 Vac, 500mA, O/P: 5 Vdc,1600mA or 9Vdc,1600mA or 12Vdc,1200mA		
Battery 1	Brand Name	motorola(SUNWODA)	Model Name	HG40
	Power Rating	3.8Vdc,2810/3000mAh (Min/Typ)	Type	Li-ion
Battery 2	Brand Name	motorola(AmpereX)	Model Name	HG40
	Power Rating	3.8Vdc,2810/3000mAh (Min/Typ)	Type	Li-ion
USB Cable	Brand Name	Motorola	Model Name	SKN6461A
	Signal Line Type	1.0 meter, non-shielded cable, without ferrite core		
Earphone	Brand Name	Motorola(Jiangxi Lianchuang)	Model Name	MEMD1532B080008
	Signal Line Type	1.2 meter, non-shielded cable, without ferrite core		

1.6 Modification of EUT

No modifications are made to the EUT during all test items.



1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.	
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958	
Test Site No.	Sporton Site No.	FCC Registration No.
	03CH02-KS	418269

Note: The test site complies with ANSI C63.4 2014 requirement.

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5745-5825 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	-	-	165	5825

Note: The above Frequency and Channel in "*" were 802.11n HT40.

2.2 Test Mode

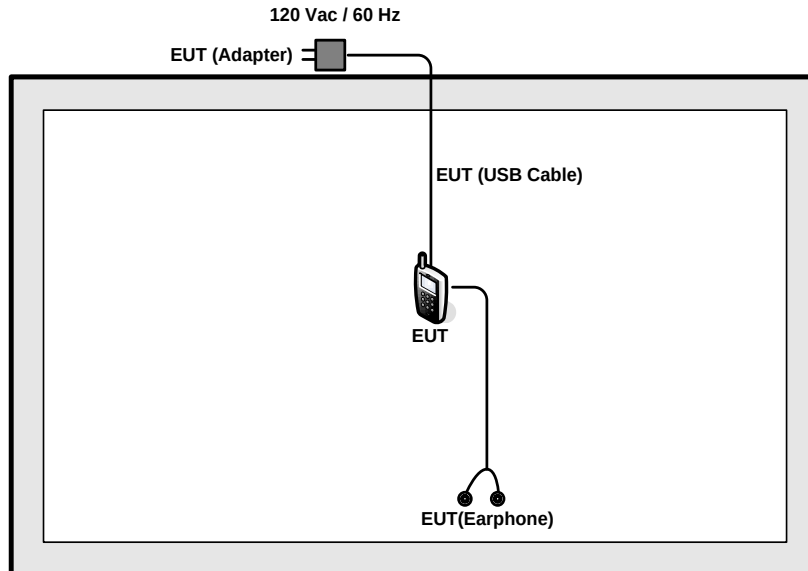
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

Ch. #		Band IV : 5745-5825 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	149	149	151
M	Middle	157	157	-
H	High	165	165	159

2.3 Connection Diagram of Test System

<WLAN 802.11a Tx Mode>



<WLAN 802.11n HT20/HT40 Tx Mode>





2.4 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.

3 Test Result

3.1 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.1.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part 15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

- (3) KDB 789033 D02 General UNII Test Procedures New Rules v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

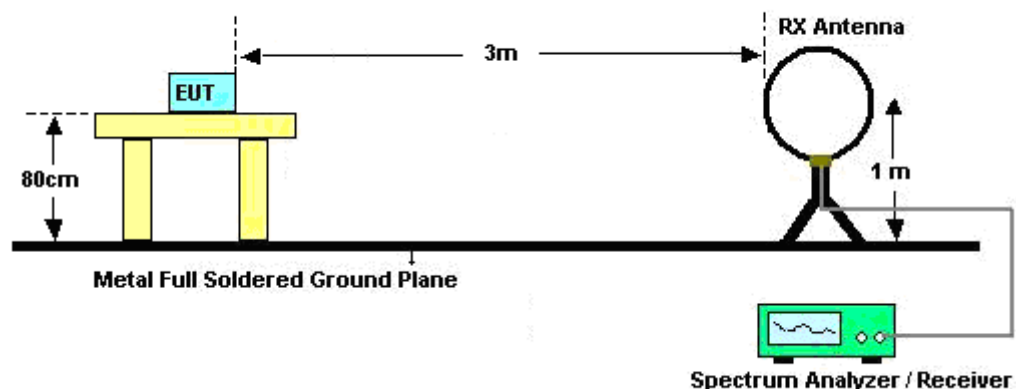
3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03. Section G) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW ≥ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

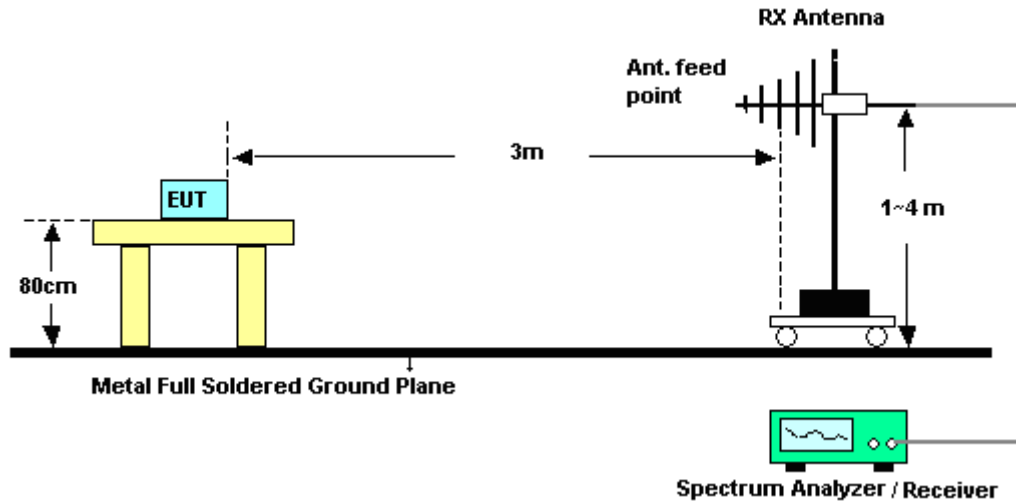
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.1.4 Test Setup

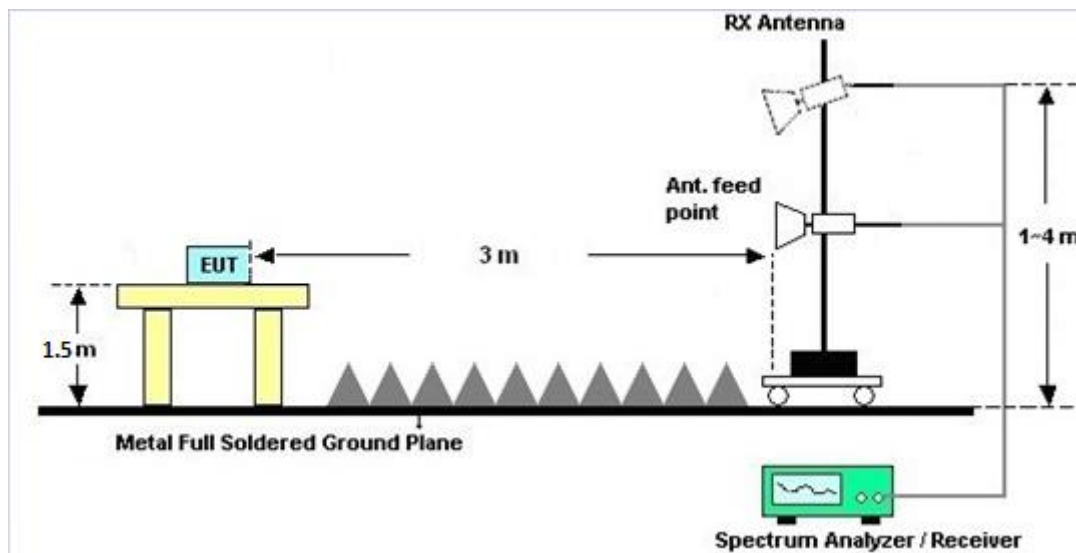
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.1.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.1.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A.

3.1.7 Duty Cycle

Please refer to Appendix B.

3.1.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix A.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Dec. 23, 2016	Aug. 08, 2017	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44GHz, MAX 30dB	Apr. 22, 2016	Dec. 23, 2016	Apr. 21, 2017	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Dec. 23, 2016	Nov. 22, 2017	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Aug. 20, 2016	Dec. 23, 2016	Aug. 19, 2017	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 22, 2016	Dec. 23, 2016	Oct. 21, 2017	Radiation (03CH02-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	1943529	1GHz~18GHz	Jan. 20, 2016	Dec. 23, 2016	Jan. 19, 2017	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 03, 2016	Dec. 23, 2016	Mar. 02, 2017	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	Apr. 22, 2016	Dec. 23, 2016	Apr. 21, 2017	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1GHz~26.5GHz	Oct. 13, 2016	Dec. 23, 2016	Oct. 12, 2017	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Jan. 20, 2016	Dec. 23, 2016	Jan. 19, 2017	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	6160100024 73	N/A	NCR	Dec. 23, 2016	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Dec. 23, 2016	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Dec. 23, 2016	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5dB
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Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1dB
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Appendix A. Radiated Spurious Emission

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 149 5745MHz		5699.5	58.9	-46.03	104.93	49.73	32.2	7.47	30.5	236	68	P	H
		5718.9	66.48	-44.11	110.59	57.14	32.27	7.52	30.45	236	68	P	H
		5724.8	79.75	-42.09	121.84	70.41	32.27	7.52	30.45	236	68	P	H
		5752	104.3	-	-	94.82	32.33	7.56	30.41	236	68	P	H
		5752	96.92	-	-	87.44	32.33	7.56	30.41	236	68	A	H
		5698	55.74	-48.09	103.83	46.57	32.2	7.47	30.5	351	94	P	V
		5719.8	63.08	-47.76	110.84	53.74	32.27	7.52	30.45	351	94	P	V
		5723.7	73.71	-45.63	119.34	64.37	32.27	7.52	30.45	351	94	P	V
		5742	101.3	-	-	91.89	32.3	7.54	30.43	351	94	P	V
		5742	94.04	-	-	84.63	32.3	7.54	30.43	351	94	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 157 5785MHz		5694.4	63.74	-37.43	101.17	54.57	32.2	7.47	30.5	104	119	P	H
		5719.9	52.95	-57.92	110.87	43.61	32.27	7.52	30.45	104	119	P	H
		5724.8	56.3	-65.54	121.84	46.96	32.27	7.52	30.45	104	119	P	H
		5850.86	51.02	-69.32	120.34	41.39	32.5	7.62	30.49	104	119	P	H
		5873.66	58.61	-47.06	105.67	48.99	32.56	7.63	30.57	104	119	P	H
		5878.41	57.62	-45.15	102.77	48	32.56	7.63	30.57	104	119	P	H
		5782	107.47	-	-	97.91	32.37	7.58	30.39	104	119	P	H
		5782	99.19	-	-	89.63	32.37	7.58	30.39	104	119	A	H
		5695.2	60.12	-41.64	101.76	50.95	32.2	7.47	30.5	138	116	P	V
		5718.6	52.62	-57.89	110.51	43.28	32.27	7.52	30.45	138	116	P	V
		5720.3	53.58	-58	111.58	44.24	32.27	7.52	30.45	138	116	P	V
		5850.86	51.6	-68.74	120.34	41.97	32.5	7.62	30.49	138	116	P	V
		5874.04	55.42	-50.15	105.57	45.8	32.56	7.63	30.57	138	116	P	V
		5887.91	54.58	-41.14	95.72	44.97	32.59	7.63	30.61	138	116	P	V
		5790	103.14	-	-	93.5	32.4	7.6	30.36	138	116	P	V
		5790	95.53	-	-	85.89	32.4	7.6	30.36	138	116	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a CH 165 5825MHz		5850.67	65.38	-55.39	120.77	55.75	32.5	7.62	30.49	102	290	P	H
		5855.99	60.47	-50.15	110.62	50.85	32.53	7.62	30.53	102	290	P	H
		5877.27	55.96	-47.65	103.61	46.34	32.56	7.63	30.57	102	290	P	H
		5820	103.58	-	-	93.96	32.46	7.61	30.45	102	290	P	H
		5820	95.68	-	-	86.06	32.46	7.61	30.45	102	290	A	H
		5852.57	62.18	-54.26	116.44	52.55	32.5	7.62	30.49	149	268	P	V
		5855.42	58.61	-52.17	110.78	48.99	32.53	7.62	30.53	149	268	P	V
		5879.74	53.22	-48.56	101.78	43.6	32.56	7.63	30.57	149	268	P	V
		5818	101.92	-	-	92.28	32.43	7.61	30.4	149	268	P	V
		5818	94.4	-	-	84.76	32.43	7.61	30.4	149	268	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11a		11490	41.84	-32.16	74	48.97	39.22	10.63	56.98	160	360	P	H
CH 149		11490	41.64	-32.36	74	48.77	39.22	10.63	56.98	160	360	P	V
5745MHz													
802.11a		11570	42.99	-31.01	74	50.33	39.13	10.68	57.15	160	360	P	H
CH 157		11570	41.97	-32.03	74	49.31	39.13	10.68	57.15	160	360	P	V
5785MHz													
802.11a		11650	42.56	-31.44	74	50.08	39.05	10.72	57.29	160	360	P	H
CH 165		11650	42.12	-31.88	74	49.64	39.05	10.72	57.29	160	360	P	V
5825MHz													
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Band 4 5725~5850MHz****WIFI 802.11n HT20 (Band Edge @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		5699.9	56.88	-48.35	105.23	47.71	32.2	7.47	30.5	170	354	P	H
		5718.3	69.49	-40.93	110.42	60.15	32.27	7.52	30.45	170	354	P	H
		5724.2	79.25	-41.23	120.48	69.91	32.27	7.52	30.45	170	354	P	H
		5742	102.03	-	-	92.62	32.3	7.54	30.43	170	354	P	H
		5742	94.53	-	-	85.12	32.3	7.54	30.43	170	354	A	H
		5692.7	57.53	-42.39	99.92	48.36	32.2	7.47	30.5	351	104	P	V
		5719.8	70.28	-40.56	110.84	60.94	32.27	7.52	30.45	351	104	P	V
		5724.5	79.37	-41.79	121.16	70.03	32.27	7.52	30.45	351	104	P	V
		5748	101.99	-	-	92.58	32.3	7.54	30.43	351	104	P	V
		5748	94.3	-	-	84.89	32.3	7.54	30.43	351	104	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 157 5785MHz		5697.2	60.68	-42.56	103.24	51.51	32.2	7.47	30.5	116	320	P	H
		5717.7	50.86	-59.4	110.26	41.52	32.27	7.52	30.45	116	320	P	H
		5724.4	52.05	-68.88	120.93	42.71	32.27	7.52	30.45	116	320	P	H
		5852.38	49.59	-67.28	116.87	39.96	32.5	7.62	30.49	116	320	P	H
		5873.85	54.87	-50.75	105.62	45.25	32.56	7.63	30.57	116	320	P	H
		5876.7	54.88	-49.16	104.04	45.26	32.56	7.63	30.57	116	320	P	H
		5782	103.15	-	-	93.59	32.37	7.58	30.39	116	320	P	H
		5782	95.37	-	-	85.81	32.37	7.58	30.39	116	320	A	H
		5692.8	59.38	-40.61	99.99	50.21	32.2	7.47	30.5	330	81	P	V
		5713.1	51.01	-57.96	108.97	41.77	32.23	7.49	30.48	330	81	P	V
		5724.6	51.93	-69.46	121.39	42.59	32.27	7.52	30.45	330	81	P	V
		5850.67	49.66	-71.11	120.77	40.03	32.5	7.62	30.49	330	81	P	V
		5873.66	54.92	-50.75	105.67	45.3	32.56	7.63	30.57	330	81	P	V
		5877.46	55.52	-47.95	103.47	45.9	32.56	7.63	30.57	330	81	P	V
		5792	104.13	-	-	94.49	32.4	7.6	30.36	330	81	P	V
		5792	95.39	-	-	85.75	32.4	7.6	30.36	330	81	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 165 5825MHz		5850	68.51	-53.79	122.3	58.88	32.5	7.62	30.49	115	119	P	H
		5855.04	61.86	-49.03	110.89	52.24	32.53	7.62	30.53	115	119	P	H
		5876.13	54.09	-50.37	104.46	44.47	32.56	7.63	30.57	115	119	P	H
		5822	103.2	-	-	93.58	32.46	7.61	30.45	115	119	P	H
		5822	95.13	-	-	85.51	32.46	7.61	30.45	115	119	A	H
		5850.1	67.69	-54.38	122.07	58.06	32.5	7.62	30.49	323	83	P	V
		5861.88	60.18	-48.79	108.97	50.56	32.53	7.62	30.53	323	83	P	V
		5875.94	54.26	-50.34	104.6	44.64	32.56	7.63	30.57	323	83	P	V
		5820	102.3	-	-	92.68	32.46	7.61	30.45	323	83	P	V
		5820	94.61	-	-	84.99	32.46	7.61	30.45	323	83	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 149 5745MHz		11490	42.96	-31.04	74	50.09	39.22	10.63	56.98	160	360	P	H
		11490	44.87	-29.13	74	52	39.22	10.63	56.98	160	360	P	V
802.11n HT20 CH 157 5785MHz		11570	43.81	-30.19	74	51.15	39.13	10.68	57.15	160	360	P	H
		11570	44.49	-29.51	74	51.83	39.13	10.68	57.15	160	360	P	V
802.11n HT20 CH 165 5825MHz		11650	41.83	-32.17	74	49.35	39.05	10.72	57.29	160	360	P	H
		11650	42.49	-31.51	74	50.01	39.05	10.72	57.29	160	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		5700	65.72	-39.58	105.3	56.55	32.2	7.47	30.5	100	177	P	H
		5717.6	80.88	-29.35	110.23	71.54	32.27	7.52	30.45	100	177	P	H
		5724.4	81.27	-39.66	120.93	71.93	32.27	7.52	30.45	100	177	P	H
		5853.9	56.01	-57.4	113.41	46.39	32.53	7.62	30.53	100	177	P	H
		5863.4	57.93	-50.62	108.55	48.31	32.53	7.62	30.53	100	177	P	H
		5883.92	51.24	-47.44	98.68	41.62	32.56	7.63	30.57	100	177	P	H
		5752	103.27	-	-	93.79	32.33	7.56	30.41	100	177	P	H
		5752	95.26	-	-	85.78	32.33	7.56	30.41	100	177	A	H
		5699.3	63.3	-41.48	104.78	54.13	32.2	7.47	30.5	100	97	P	V
		5719.4	77.82	-32.91	110.73	68.48	32.27	7.52	30.45	100	97	P	V
		5722.5	78.64	-37.96	116.6	69.3	32.27	7.52	30.45	100	97	P	V
		5852.76	53.02	-62.99	116.01	43.39	32.5	7.62	30.49	100	97	P	V
		5858.27	54.47	-55.51	109.98	44.85	32.53	7.62	30.53	100	97	P	V
		5881.45	50.33	-50.18	100.51	40.71	32.56	7.63	30.57	100	97	P	V
		5746	101.77	-	-	92.36	32.3	7.54	30.43	100	97	P	V
		5746	92.77	-	-	83.36	32.3	7.54	30.43	100	97	A	V



WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 159 5795MHz		5697.8	59.89	-43.79	103.68	50.72	32.2	7.47	30.5	100	178	P	H
		5712.3	61.21	-47.54	108.75	51.97	32.23	7.49	30.48	100	178	P	H
		5723	59.76	-57.98	117.74	50.42	32.27	7.52	30.45	100	178	P	H
		5850	61.47	-60.83	122.3	51.84	32.5	7.62	30.49	100	178	P	H
		5859.79	58.88	-50.68	109.56	49.26	32.53	7.62	30.53	100	178	P	H
		5875.56	56.88	-48	104.88	47.26	32.56	7.63	30.57	100	178	P	H
		5784	101.95	-	-	92.39	32.37	7.58	30.39	100	178	P	H
		5784	94.5	-	-	84.94	32.37	7.58	30.39	100	178	A	H
		5694.1	57.65	-43.3	100.95	48.48	32.2	7.47	30.5	100	98	P	V
		5713	59.55	-49.39	108.94	50.31	32.23	7.49	30.48	100	98	P	V
		5721.5	55.98	-58.34	114.32	46.64	32.27	7.52	30.45	100	98	P	V
		5850.29	59.12	-62.52	121.64	49.49	32.5	7.62	30.49	100	98	P	V
		5857.13	58.12	-52.18	110.3	48.5	32.53	7.62	30.53	100	98	P	V
		5884.87	55.95	-42.02	97.97	46.33	32.56	7.63	30.57	100	98	P	V
		5788	98.93	-	-	89.29	32.4	7.6	30.36	100	98	P	V
		5788	92.08	-	-	82.44	32.4	7.6	30.36	100	98	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 151 5755MHz		11510	44.25	-29.75	74	51.42	39.21	10.64	57.02	160	360	P	H
		11510	43.58	-30.42	74	50.75	39.21	10.64	57.02	160	360	P	V
802.11n HT40 CH 159 5795MHz		11590	43.99	-30.01	74	51.38	39.11	10.69	57.19	160	360	P	H
		11590	42.61	-31.39	74	50	39.11	10.69	57.19	160	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 4 5725~5850MHz

Emission below 1GHz

5GHz WIFI 802.11n HT20 (LF @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
5GHz 802.11n HT20 LF		32.91	27.81	-12.19	40	31.43	26.22	0.65	30.49	-	-	P	H
		85.29	27.53	-12.47	40	39.66	16.6	0.99	29.72	-	-	P	H
		114.39	31.7	-11.8	43.5	40.25	19.6	1.15	29.3	150	2	P	H
		187.14	23.08	-20.42	43.5	32.71	17.41	1.45	28.49	-	-	P	H
		408.3	32.43	-13.57	46	33.04	24.39	2.13	27.13	-	-	P	H
		934.04	32.11	-13.89	46	24.67	29.39	3.21	25.16	-	-	P	H
		30	30.1	-9.9	40	33.25	26.7	0.65	30.5	-	-	P	V
		85.29	23.09	-16.91	40	35.22	16.6	0.99	29.72	-	-	P	V
		115.36	23.08	-20.42	43.5	31.65	19.57	1.15	29.29	-	-	P	V
		450.98	29.39	-16.61	46	28.98	25.27	2.21	27.07	-	-	P	V
		797.27	35.14	-10.86	46	28.69	29.05	2.96	25.56	-	-	P	V
		932.1	36.96	-9.04	46	29.57	29.34	3.21	25.16	150	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
2		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

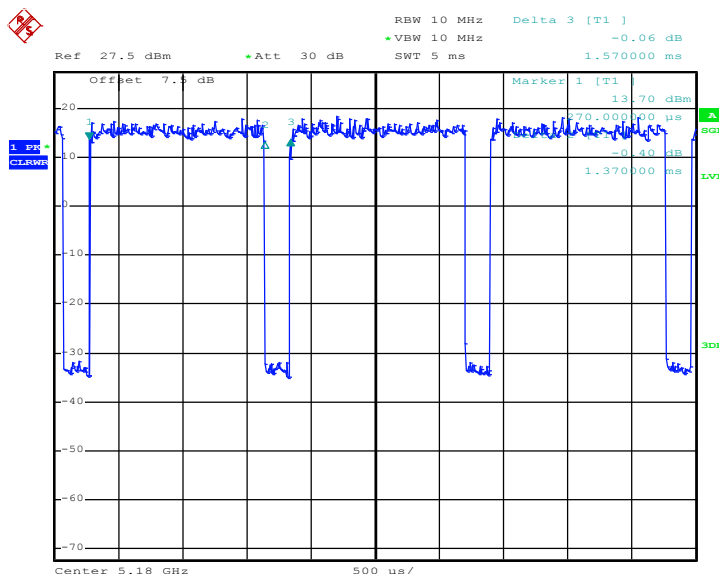
= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix B. Duty Cycle Plots

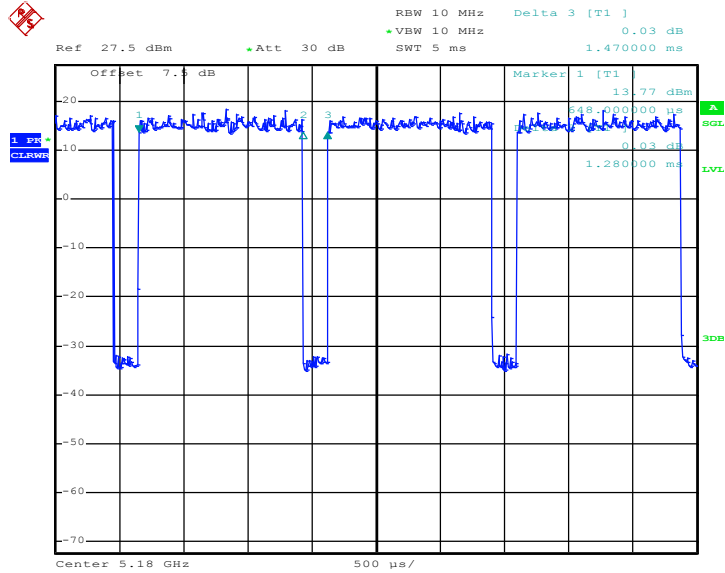
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.26	1.37	0.73	1KHz
802.11n HT20	87.07	1.28	0.78	1KHz
802.11n HT40	85.73	1.23	0.82	1KHz

802.11a

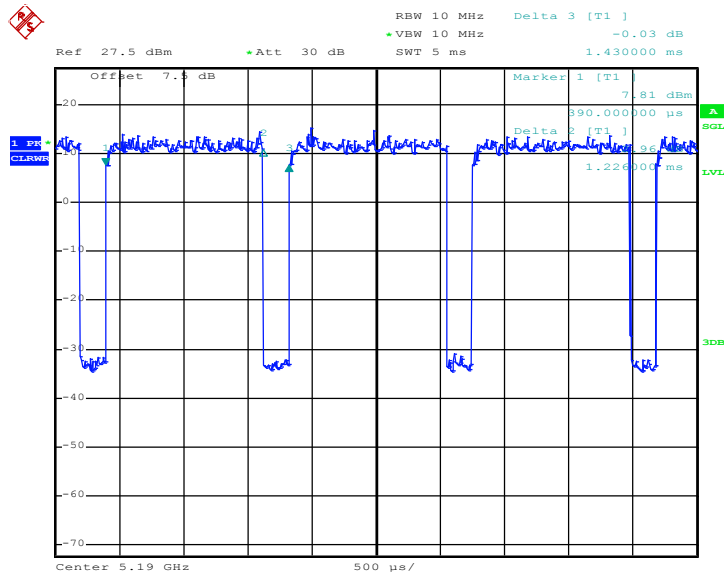




802.11n HT20



802.11n HT40





Appendix D. Product Equality Declaration



Appendix E. Original Report

Please refer to Sporton report number FR6O1212-02F which is issued separately.