Supplementary FCC Test Report

Report No.:	RF120522E09K-1 R2
FCC ID:	UZ7MC92N0
Test Model:	MC92N0
Received Date:	Jan. 08, 2015
Test Date:	Feb. 12 to 26, 2015
Issued Date:	May 06, 2015
Applicant:	Zebra Technologies Corporation
Address:	1 Zebra Plaza Holtsville, NY 11742
Manufacturer:	Symbol Technologies, Inc.
Address:	1 Zebra Plaza Holtsville, NY 11742
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.
Test Location (1):	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Report Issue History Record of EUT (MC92N0)

Attachment No.	Issue Date	Description
120522E09	Aug. 07, 2012	Original
120522E09K	May 06, 2015	Upgrade the versions of the standard to section 15.407 under new rule

Release Control Record

Issue No.	Description	Date Issued
RF120522E09K-1	Original release.	Mar. 16, 2015
RF120522E09K-1 R1	1. Modified the applicant information. 2. Modified description of section 3.1.	Apr. 29, 2015
RF120522E09K-1 R2	Modified the address of applicant and manufacturer.	May 06, 2015

1 Certificate of Conformity

Product:	Mobile Computer
Brand:	Symbol
Test Model:	MC92N0
Sample Status:	MASS PRODUCTION
Applicant:	Zebra Technologies Corporation
Test Date:	Feb. 12 to 26, 2015
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2009

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Phoenix Huang , **Date:** May 06, 2015

Phoenix Huang / Specialist

Approved by : , **Date:** May 06, 2015

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407 Under New Rule)			
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

NOTE: 1. For WLAN: The EUT was operating in 2400~2483.5MHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz.

2. The DFS report was recorded in another test report.

3. This report is prepared for FCC Class II change. (Upgrade the versions of the standard to section 15.407 under new rule).

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.37 dB
	200MHz ~1000MHz	3.72 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	4.00 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Mobile Computer
Brand	Symbol
Test Model	MC92N0
Status of EUT	MASS PRODUCTION
Power Supply Rating	DC 7.4V from battery DC 12V to direct charging adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to11Mbps 802.11g / a: up to 54Mbps 802.11n (HT20): up to 72.2Mbps
Operating Frequency	**For 15.407** 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.7GHz, 5.745~5.825GHz **For 15.247** 2.412 ~ 2.472GHz
Number of Channel	**For 15.407** 24 for 802.11a, 802.11n (HT20) **For 15.247** 13 for 802.11b, 802.11g, 802.11n (HT20)
Output Power	802.11a: 89.331 mW 802.11n (HT20): 76.736mW
Antenna Type	Please see Note
Antenna Connector	Please see Note
Accessory Device	Battery x 1 (Part No.: 21-65587-03)
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II change. The difference compared with the Report No.: RF 120522E09-1 design is as the following:

   ◆ Upgrade the versions of the standard to section 15.407 under new rule

2. According to above conditions, all test items of U-NII band 1 and U-NII band 3 and Dynamic Frequency Selection test item need to be performed (except for Conducted Emission test item). And all data was verified to meet the requirements.

3. The EUT configuration list:

Scanner	With CR	Without CR	Keypad			
			53 key	43 key	33 key	28 key
SE4500	V	-	V	V	V	V
SE4500	-	V	V	V	V	V
SE4600	V	-	V	V	V	V
SE4600	-	V	V	V	V	V
SE965	V	-	V	V	V	V
SE965	-	V	V	V	V	V
SE1524	V	-	V	V	V	V
SE1524		V	V	V	V	V
CR : Condensation Resistant						

4. The Version of EUT information are as below:

Mobile Computer	OS Version	07.00.2806
	OEM Version	00.20.0005
Wireless(Fusion)	Part Number	31-FUSION-X2.00
	Version	X_2.00.0.0.040E
XW2DMT	Version	X_2.00.0.0.28
	Fusion	X_2.00.0.0.040E
BTRegTest Ver4.1	Version	4.1

5. The associated devices(optional) of EUT information are as below:

Product	Brand	Model	S/N
28keypad	NA	KYPD-MC9XMR000-01R	40A11W40H
33keypad	NA	KYPD-MC9XMX000-01R	40B52K50A
43keypad	NA	KYPD-MC9XMT000-01R	40A11R93G
53keypad	NA	KYPD-MC9XMS000-01R	40B63U43F
Product	Brand	Model	P/N
Headset	MOTOROLA	RCH50	RCH50
Headset	VXI	VR10	50-11300-050R
Power adapter (for Direct charging)	HIPRO	HP-A0502R3D	PWRS-14000-148R
Direct charging adapter	SYMBOL	ADP9000-110R	NA
AC Line cord	NA	NA	23844-00-00R
USB cable	NA	NA	25-62166-01R

6. The EUT could be supplied with a direct charging and battery as below table:

Direct charging adapter (not for sale together)	
Brand:	SYMBOL
Part No.:	ADP9000-110R
I/O Ports:	RS232 Port * 1 RJ45 Port *2
Associated Devices:	USB cable (unshielded, 1.8m with one core) USB cable (Part No.: 25-62166-01R)
Power Adapter (for Direct charging, and not for sale together) Brand: HIPRO Model No.: HP-A0502R3D Part No.: PWRS-14000-148R Input power : 100-240V, 50-60Hz, 2.4A Output power : +12V , 4.16A AC Line cord (unshielded, 2.2m without core) (Part No.: 23844-00-00R)	
Battery	
Brand:	SYMBOL
Part No.:	21-65587-03
Rating:	7.4V, 2200mAh, 16.3Wh

7. The antennas provided to the EUT, please refer to the following table:

WLAN Antenna Spec.			
Antenna	Type	Connecter	Gain (dBi)
Lant (Aux)	PIFA	NA	4.07 (2.4GHz) 4.96 (5GHz)
Rant (Main)	PIFA	NA	6.03 (2.4GHz) 4.51 (5GHz)
Bluetooth Antenna Spec			
Type	Connecter		Gain (dBi)
Chip	NA		-3.31

Note: This report chose the max. Antenna gain to do final test.

8. In the original test report, the EUT was pre-tested in chamber under following test modes :

Mode	Axis	Scanner	Headset	Keypad	CR	Power
Mode A	X-Y	SE4500	RCH50	53 Key	Without CR	Battery
Mode B	X-Y	SE1524	RCH50	53 Key	Without CR	Battery
Mode C	X-Y	SE965	RCH50	53 Key	Without CR	Battery
Mode D	X-Y	SE4600	RCH50	53 Key	Without CR	Battery
Mode E	X-Z	SE4500	RCH50	53 Key	Without CR	Battery
Mode F	Y-Z	SE4500	RCH50	53 Key	Without CR	Battery
Mode G	X-Y	SE4500	RCH50	53 Key	Without CR	Direct charging
Mode H	X-Y	SE4500	VR10	53 Key	Without CR	Direct charging
Mode I	X-Y	SE4500	VR10	28 Key	Without CR	Direct charging
Mode J	**X-Y**	**SE4500**	**VR10**	**43 Key**	**Without CR**	**Direct charging**
Mode K	X-Y	SE4500	VR10	33 Key	Without CR	Direct charging
Mode L	X-Y	SE4500	VR10	43 Key	With CR	Direct charging
Mode M	**X-Z**	**SE4500**	**VR10**	**43 Key**	**Without CR**	**Direct charging**
Mode N	Y-Z	SE4500	VR10	43 Key	Without CR	Direct charging

In the original test report: The worse radiated emission (Below 1GHz) was found in **Mode J**. And the worse radiated emission (Above 1GHz) was found in **Mode M**. Therefore only the test data of the modes were recorded in this report.

9. The EUT incorporates a SISO function. Both, main and diversity (aux.) antennas path can transmit but only one can transmit at given time while the other is RX only.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX (Diversity)	1RX
802.11g	6 ~ 54Mbps	1TX (Diversity)	1RX
802.11a	6 ~ 54Mbps	1TX (Diversity)	1RX
802.11n (HT20)	MCS 0~7	1TX (Diversity)	1RX

10. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

FOR 5745 ~ 5825MHz

5 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE≥1G	RE<1G	APCM	
A	-	√	-	EUT(X-Y) + Scanner (SE4500) + Headset(VR10) + Keypad(43) + Direct charging & Without CR
B	√	-	√	EUT(X-Z) + Scanner (SE4500) + Headset(VR10) + Keypad(43) + Direct charging & Without CR

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

NOTE:
1. The test mode was reference to the worst case in the original test report.
2. "-" means no effect.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11a	5180-5240	36 to 48	36, 40, 44, 48	OFDM	BPSK	6
	802.11n (HT20)		36 to 48	36, 40, 44, 48	OFDM	BPSK	6.5
	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	44	OFDM	BPSK	6

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

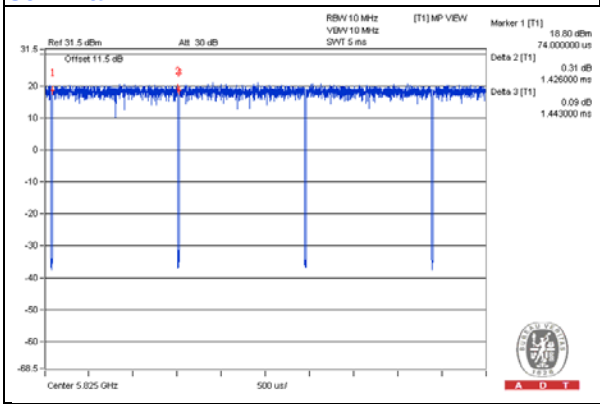
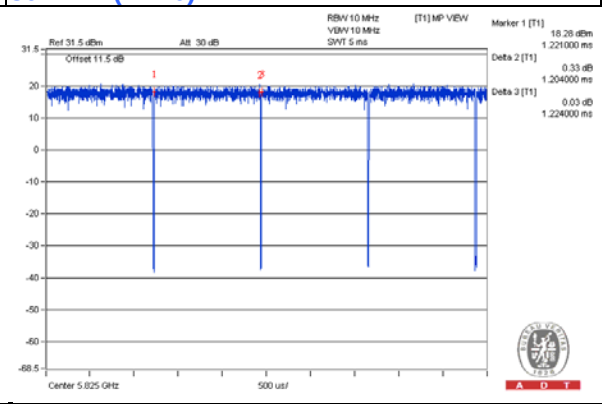
EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11a	5180-5240	36 to 48	36, 40, 44, 48	OFDM	BPSK	6
	802.11n (HT20)		36 to 48	36, 40, 44, 48	OFDM	BPSK	6.5
	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 73%RH	120Vac, 60Hz	Gary Cheng
RE<1G	24deg. C, 71%RH	120Vac, 60Hz	Robert Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.
802.11a: Duty cycle = 1.426 ms/1.443 ms = 0.988
802.11ac (VHT20): Duty cycle = 1.204 ms/1.224 ms = 0.984

802.11a	802.11n (HT20)
	

3.4 Description of Support Units

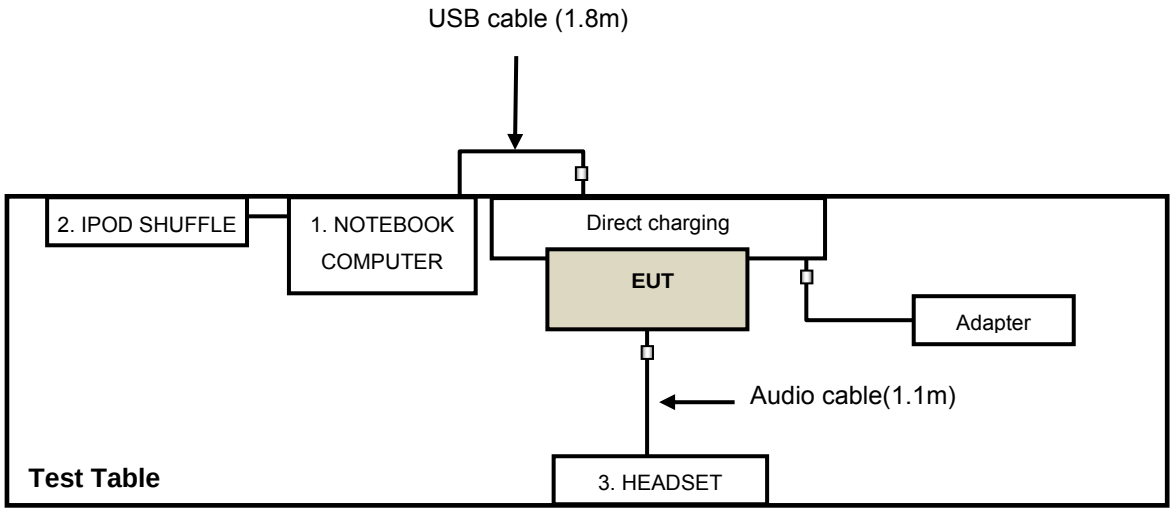
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	iPod shuffle	Apple	MC749TA/A	CC4DMFJUDFDM	NA
3	HEADSET	VXI	VR10	NA	NA

No.	Signal cable description
1	USB cable (unshielded, 1.8m with one core)
2	USB cable (shielded, 0.1m)
3	Audio cable (1.1m with one core)

NOTE: All power cords of the above support units are non shielded (1.8m).

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
789033 D02 General UNII Test Procedures New Rules v01
ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (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:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	**LIMIT**	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBμV/m)	AV:54 (dBμV/m)
APPLICABLE TO	**EIRP LIMIT**	**EQUIVALENT FIELD STRENGTH AT 3m**
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) [*1] PK:-17 (dBm/MHz) [*2]	PK: 68.2(dBμV/m) [*1] PK:78.2 (dBμV/m) [*2]

NOTE: [*1] beyond 10MHz of the band edge [*2] within 10 MHz of band edge

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

4.1.2 Test Instruments

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated_V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-SP-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 2016

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Feb. 12 to 16, 2015

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21,2014	July 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Feb. 26, 2015

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

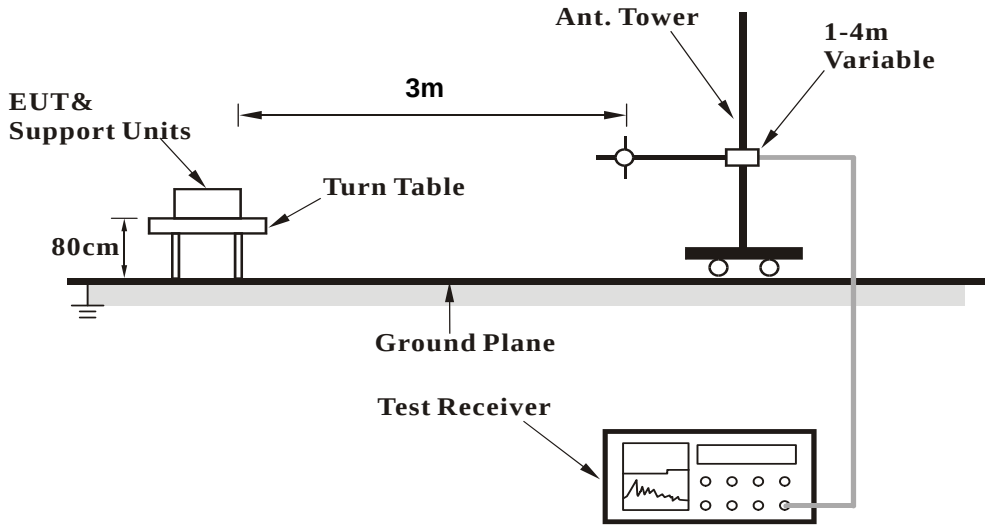
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

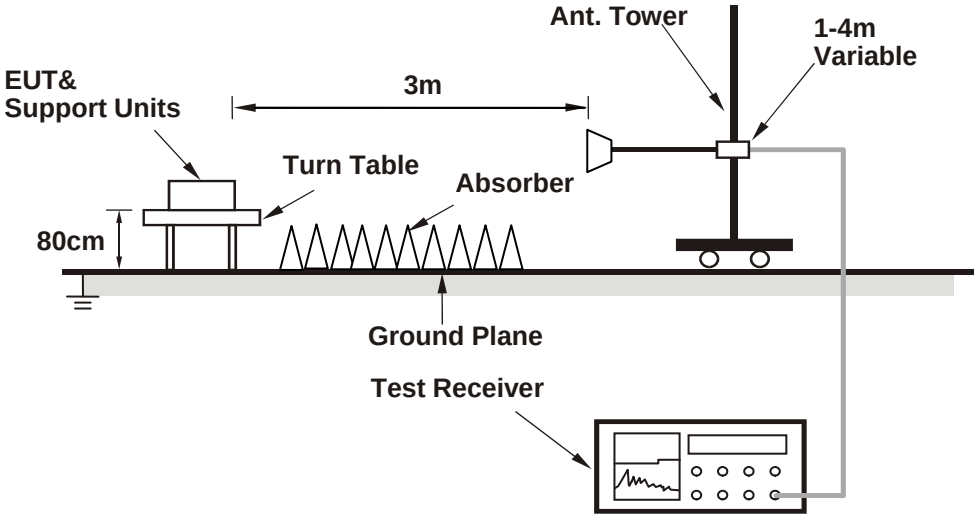
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

1. Turn on the power of EUT.
2. The communication partner run test program “MC92N0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.9 PK	74.0	-8.1	1.28 H	176	61.62	4.28
2	**5150.00**	**52.9 AV**	**54.0**	**-1.1**	**1.28 H**	**176**	**48.62**	**4.28**
3	*5180.00	107.6 PK			1.28 H	176	103.21	4.39
4	*5180.00	96.8 AV			1.28 H	176	92.41	4.39
5	#10360.00	53.4 PK	74.0	-20.6	1.29 H	121	43.34	10.06
6	#10360.00	41.0 AV	54.0	-13.0	1.29 H	121	30.94	10.06
7	15540.00	62.5 PK	74.0	-11.5	1.00 H	135	47.66	14.84
8	15540.00	49.2 AV	54.0	-4.8	1.00 H	135	34.36	14.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.0 PK	74.0	-7.0	1.42 V	215	62.72	4.28
2	5150.00	49.7 AV	54.0	-4.3	1.42 V	215	45.42	4.28
3	*5180.00	106.3 PK			1.42 V	215	101.91	4.39
4	*5180.00	95.0 AV			1.42 V	215	90.61	4.39
5	#10360.00	53.3 PK	74.0	-20.7	1.21 V	135	43.24	10.06
6	#10360.00	41.1 AV	54.0	-12.9	1.21 V	135	31.04	10.06
7	15540.00	62.0 PK	74.0	-12.0	1.12 V	176	47.16	14.84
8	15540.00	49.3 AV	54.0	-4.7	1.12 V	176	34.46	14.84

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.2 PK	74.0	-13.8	1.17 H	172	55.92	4.28
2	5150.00	43.8 AV	54.0	-10.2	1.17 H	172	39.52	4.28
3	*5200.00	108.1 PK			1.17 H	172	103.66	4.44
4	*5200.00	97.1 AV			1.17 H	172	92.66	4.44
5	#10400.00	53.1 PK	74.0	-20.9	1.34 H	111	43.03	10.07
6	#10400.00	40.6 AV	54.0	-13.4	1.34 H	111	30.53	10.07
7	15600.00	62.4 PK	74.0	-11.6	1.00 H	125	47.34	15.06
8	15600.00	48.8 AV	54.0	-5.2	1.00 H	125	33.74	15.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.6 PK	74.0	-16.4	1.42 V	211	53.32	4.28
2	5150.00	40.2 AV	54.0	-13.8	1.42 V	211	35.92	4.28
3	*5200.00	107.1 PK			1.44 V	202	102.66	4.44
4	*5200.00	95.8 AV			1.44 V	202	91.36	4.44
5	#10400.00	53.6 PK	74.0	-20.4	1.23 V	133	43.53	10.07
6	#10400.00	41.3 AV	54.0	-12.7	1.23 V	133	31.23	10.07
7	15600.00	61.7 PK	74.0	-12.3	1.14 V	185	46.64	15.06
8	15600.00	48.8 AV	54.0	-5.2	1.14 V	185	33.74	15.06

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 44	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5220.00	107.8 PK			1.14 H	175	103.38	4.42
2	*5220.00	96.9 AV			1.14 H	175	92.48	4.42
3	5350.00	52.1 PK	74.0	-21.9	1.14 H	175	47.59	4.51
4	5350.00	39.8 AV	54.0	-14.2	1.14 H	175	35.29	4.51
5	#10440.00	53.7 PK	74.0	-20.3	1.29 H	135	43.54	10.16
6	#10440.00	41.4 AV	54.0	-12.6	1.29 H	135	31.24	10.16
7	15660.00	62.1 PK	74.0	-11.9	1.00 H	136	47.30	14.80
8	15660.00	49.0 AV	54.0	-5.0	1.00 H	136	34.20	14.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5220.00	107.3 PK			1.41 V	211	102.88	4.42
2	*5220.00	95.8 AV			1.41 V	211	91.38	4.42
3	5350.00	51.4 PK	74.0	-22.6	1.41 V	211	46.89	4.51
4	5350.00	38.7 AV	54.0	-15.3	1.41 V	211	34.19	4.51
5	#10440.00	53.7 PK	74.0	-20.3	1.18 V	121	43.54	10.16
6	#10440.00	41.5 AV	54.0	-12.5	1.18 V	121	31.34	10.16
7	15660.00	61.8 PK	74.0	-12.2	1.17 V	173	47.00	14.80
8	15660.00	49.1 AV	54.0	-4.9	1.17 V	173	34.30	14.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.8 PK			1.15 H	176	103.39	4.41
2	*5240.00	96.9 AV			1.15 H	176	92.49	4.41
3	5350.00	52.3 PK	74.0	-21.7	1.15 H	176	47.79	4.51
4	5350.00	40.0 AV	54.0	-14.0	1.15 H	176	35.49	4.51
5	#10480.00	53.9 PK	74.0	-20.1	1.30 H	110	43.64	10.26
6	#10480.00	41.4 AV	54.0	-12.6	1.30 H	110	31.14	10.26
7	15720.00	62.0 PK	74.0	-12.0	1.00 H	149	47.33	14.67
8	15720.00	48.8 AV	54.0	-5.2	1.00 H	149	34.13	14.67
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.7 PK			1.45 V	201	102.29	4.41
2	*5240.00	95.4 AV			1.45 V	201	90.99	4.41
3	5350.00	51.9 PK	74.0	-22.1	1.45 V	201	47.39	4.51
4	5350.00	39.4 AV	54.0	-14.6	1.45 V	201	34.89	4.51
5	#10480.00	53.5 PK	74.0	-20.5	1.20 V	142	43.24	10.26
6	#10480.00	41.4 AV	54.0	-12.6	1.20 V	142	31.14	10.26
7	15720.00	61.6 PK	74.0	-12.4	1.18 V	191	46.93	14.67
8	15720.00	48.8 AV	54.0	-5.2	1.18 V	191	34.13	14.67

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	64.1 PK	74.0	-9.9	1.03 H	208	59.20	4.90
2	#5715.00	48.3 AV	54.0	-5.7	1.03 H	208	43.40	4.90
3	#5725.00	76.9 PK	78.2	-1.3	1.03 H	208	71.97	4.93
4	*5745.00	107.2 PK			1.03 H	208	102.28	4.92
5	*5745.00	96.0 AV			1.03 H	208	91.08	4.92
6	11490.00	52.9 PK	74.0	-21.1	1.39 H	120	42.25	10.65
7	11490.00	40.6 AV	54.0	-13.4	1.39 H	120	29.95	10.65
8	#17235.00	62.9 PK	74.0	-11.1	1.03 H	120	43.45	19.45
9	#17235.00	49.2 AV	54.0	-4.8	1.03 H	120	29.75	19.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	62.8 PK	74.0	-11.2	1.12 V	227	57.90	4.90
2	#5715.00	46.5 AV	54.0	-7.5	1.12 V	227	41.60	4.90
3	#5725.00	75.5 PK	78.2	-2.7	1.12 V	227	70.57	4.93
4	*5745.00	105.8 PK			1.12 V	227	100.88	4.92
5	*5745.00	94.2 AV			1.12 V	227	89.28	4.92
6	11490.00	53.9 PK	74.0	-20.1	1.20 V	144	43.25	10.65
7	11490.00	41.8 AV	54.0	-12.2	1.20 V	144	31.15	10.65
8	#17235.00	61.2 PK	74.0	-12.8	1.09 V	199	41.75	19.45
9	#17235.00	48.5 AV	54.0	-5.5	1.09 V	199	29.05	19.45

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	53.5 PK	74.0	-20.5	1.02 H	211	48.60	4.90
2	#5715.00	40.8 AV	54.0	-13.2	1.02 H	211	35.90	4.90
3	#5725.00	57.9 PK	78.2	-20.3	1.02 H	211	52.97	4.93
4	*5785.00	109.4 PK			1.02 H	211	104.45	4.95
5	*5785.00	97.6 AV			1.02 H	211	92.65	4.95
6	#5850.00	55.3 PK	78.2	-22.9	1.02 H	211	50.28	5.02
7	#5860.00	54.1 PK	74.0	-19.9	1.02 H	211	49.06	5.04
8	#5860.00	40.3 AV	54.0	-13.7	1.02 H	211	35.26	5.04
9	11570.00	53.0 PK	74.0	-21.0	1.32 H	103	42.32	10.68
10	11570.00	40.5 AV	54.0	-13.5	1.32 H	103	29.82	10.68
11	#17355.00	61.9 PK	74.0	-12.1	1.01 H	124	42.14	19.76
12	#17355.00	48.4 AV	54.0	-5.6	1.01 H	124	28.64	19.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	51.4 PK	74.0	-22.6	1.11 V	228	46.50	4.90
2	#5715.00	39.8 AV	54.0	-14.2	1.11 V	228	34.90	4.90
3	#5725.00	56.6 PK	78.2	-21.6	1.11 V	228	51.67	4.93
4	*5785.00	106.5 PK			1.11 V	228	101.55	4.95
5	*5785.00	95.3 AV			1.11 V	228	90.35	4.95
6	#5850.00	54.2 PK	78.2	-24.0	1.11 V	228	49.18	5.02
7	#5860.00	53.2 PK	74.0	-20.8	1.11 V	228	48.16	5.04
8	#5860.00	39.2 AV	54.0	-14.8	1.11 V	228	34.16	5.04
9	11570.00	53.9 PK	74.0	-20.1	1.20 V	148	43.22	10.68
10	11570.00	41.8 AV	54.0	-12.2	1.20 V	148	31.12	10.68
11	#17355.00	61.7 PK	74.0	-12.3	1.11 V	199	41.94	19.76
12	#17355.00	49.0 AV	54.0	-5.0	1.11 V	199	29.24	19.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.2 PK			1.01 H	211	104.22	4.98
2	*5825.00	97.7 AV			1.01 H	211	92.72	4.98
3	#5850.00	75.3 PK	78.2	-2.9	1.01 H	211	70.28	5.02
4	#5860.00	67.0 PK	74.0	-7.0	1.01 H	211	61.96	5.04
5	#5860.00	51.2 AV	54.0	-2.8	1.01 H	211	46.16	5.04
6	11650.00	52.8 PK	74.0	-21.2	1.34 H	124	42.21	10.59
7	11650.00	40.1 AV	54.0	-13.9	1.34 H	124	29.51	10.59
8	#17475.00	62.0 PK	74.0	-12.0	1.02 H	131	42.05	19.95
9	#17475.00	48.5 AV	54.0	-5.5	1.02 H	131	28.55	19.95
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	106.7 PK			1.14 V	234	101.72	4.98
2	*5825.00	95.5 AV			1.14 V	234	90.52	4.98
3	#5850.00	74.2 PK	78.2	-4.0	1.14 V	234	69.18	5.02
4	#5860.00	65.7 PK	74.0	-8.3	1.14 V	234	60.66	5.04
5	#5860.00	49.8 AV	54.0	-4.2	1.14 V	234	44.76	5.04
6	11650.00	54.4 PK	74.0	-19.6	1.20 V	127	43.81	10.59
7	11650.00	41.8 AV	54.0	-12.2	1.20 V	127	31.21	10.59
8	#17475.00	62.0 PK	74.0	-12.0	1.20 V	175	42.05	19.95
9	#17475.00	48.9 AV	54.0	-5.1	1.20 V	175	28.95	19.95

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (HT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.5 PK	74.0	-6.5	1.16 H	178	63.22	4.28
2	5150.00	52.8 AV	54.0	-1.2	1.16 H	178	48.52	4.28
3	*5180.00	106.9 PK			1.16 H	178	102.51	4.39
4	*5180.00	96.3 AV			1.16 H	178	91.91	4.39
5	#10360.00	53.3 PK	74.0	-20.7	1.31 H	122	43.24	10.06
6	#10360.00	40.9 AV	54.0	-13.1	1.31 H	122	30.84	10.06
7	15540.00	62.1 PK	74.0	-11.9	1.02 H	148	47.26	14.84
8	15540.00	48.8 AV	54.0	-5.2	1.02 H	148	33.96	14.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.2 PK	74.0	-8.8	1.47 V	204	60.92	4.28
2	5150.00	49.8 AV	54.0	-4.2	1.47 V	204	45.52	4.28
3	*5180.00	106.9 PK			1.47 V	204	102.51	4.39
4	*5180.00	95.4 AV			1.47 V	204	91.01	4.39
5	#10360.00	53.8 PK	74.0	-20.2	1.22 V	125	43.74	10.06
6	#10360.00	41.5 AV	54.0	-12.5	1.22 V	125	31.44	10.06
7	15540.00	61.7 PK	74.0	-12.3	1.11 V	169	46.86	14.84
8	15540.00	48.9 AV	54.0	-5.1	1.11 V	169	34.06	14.84

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.8 PK	74.0	-14.2	1.10 H	169	55.52	4.28
2	5150.00	44.0 AV	54.0	-10.0	1.10 H	169	39.72	4.28
3	*5200.00	107.8 PK			1.12 H	160	103.36	4.44
4	*5200.00	96.6 AV			1.12 H	160	92.16	4.44
5	#10400.00	52.9 PK	74.0	-21.1	1.32 H	120	42.83	10.07
6	#10400.00	40.7 AV	54.0	-13.3	1.32 H	120	30.63	10.07
7	15600.00	62.4 PK	74.0	-11.6	1.00 H	124	47.34	15.06
8	15600.00	49.3 AV	54.0	-4.7	1.00 H	124	34.24	15.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.4 PK	74.0	-17.6	1.47 V	210	52.12	4.28
2	5150.00	42.4 AV	54.0	-11.6	1.47 V	210	38.12	4.28
3	*5200.00	107.0 PK			1.47 V	210	102.56	4.44
4	*5200.00	95.3 AV			1.47 V	210	90.86	4.44
5	#10400.00	53.2 PK	74.0	-20.8	1.22 V	136	43.13	10.07
6	#10400.00	41.2 AV	54.0	-12.8	1.22 V	136	31.13	10.07
7	15600.00	62.0 PK	74.0	-12.0	1.07 V	187	46.94	15.06
8	15600.00	49.1 AV	54.0	-4.9	1.07 V	187	34.04	15.06

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 44	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5220.00	107.8 PK			1.13 H	170	103.38	4.42
2	*5220.00	96.7 AV			1.13 H	170	92.28	4.42
3	5350.00	59.5 PK	74.0	-14.5	1.16 H	166	54.99	4.51
4	5350.00	43.5 AV	54.0	-10.5	1.16 H	166	38.99	4.51
5	#10440.00	53.8 PK	74.0	-20.2	1.23 H	122	43.64	10.16
6	#10440.00	41.3 AV	54.0	-12.7	1.23 H	122	31.14	10.16
7	15660.00	62.5 PK	74.0	-11.5	1.00 H	142	47.70	14.80
8	15660.00	49.0 AV	54.0	-5.0	1.00 H	142	34.20	14.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5220.00	107.3 PK			1.43 V	218	102.88	4.42
2	*5220.00	95.7 AV			1.43 V	218	91.28	4.42
3	5350.00	56.4 PK	74.0	-17.6	1.43 V	218	51.89	4.51
4	5350.00	41.2 AV	54.0	-12.8	1.43 V	218	36.69	4.51
5	#10440.00	53.1 PK	74.0	-20.9	1.21 V	138	42.94	10.16
6	#10440.00	40.7 AV	54.0	-13.3	1.21 V	138	30.54	10.16
7	15660.00	62.0 PK	74.0	-12.0	1.17 V	188	47.20	14.80
8	15660.00	49.2 AV	54.0	-4.8	1.17 V	188	34.40	14.80

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.8 PK			1.01 H	182	102.39	4.41
2	*5240.00	96.3 AV			1.01 H	182	91.89	4.41
3	5350.00	53.3 PK	74.0	-20.7	1.01 H	182	48.79	4.51
4	5350.00	40.0 AV	54.0	-14.0	1.01 H	182	35.49	4.51
5	#10480.00	53.2 PK	74.0	-20.8	1.30 H	126	42.94	10.26
6	#10480.00	41.1 AV	54.0	-12.9	1.30 H	126	30.84	10.26
7	15720.00	63.0 PK	74.0	-11.0	1.00 H	132	48.33	14.67
8	15720.00	49.4 AV	54.0	-4.6	1.00 H	132	34.73	14.67
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.1 PK			1.40 V	217	101.69	4.41
2	*5240.00	94.8 AV			1.40 V	217	90.39	4.41
3	5350.00	52.5 PK	74.0	-21.5	1.40 V	217	47.99	4.51
4	5350.00	39.6 AV	54.0	-14.4	1.40 V	217	35.09	4.51
5	#10480.00	53.0 PK	74.0	-21.0	1.19 V	142	42.74	10.26
6	#10480.00	40.7 AV	54.0	-13.3	1.19 V	142	30.44	10.26
7	15720.00	62.4 PK	74.0	-11.6	1.10 V	169	47.73	14.67
8	15720.00	49.5 AV	54.0	-4.5	1.10 V	169	34.83	14.67

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	66.3 PK	74.0	-7.7	1.03 H	207	61.40	4.90
2	#5715.00	48.4 AV	54.0	-5.6	1.03 H	207	43.50	4.90
3	#5725.00	77.0 PK	78.2	-1.2	1.03 H	207	72.07	4.93
4	*5745.00	105.9 PK			1.03 H	207	100.98	4.92
5	*5745.00	95.3 AV			1.03 H	207	90.38	4.92
6	11490.00	52.8 PK	74.0	-21.2	1.33 H	112	42.15	10.65
7	11490.00	40.6 AV	54.0	-13.4	1.33 H	112	29.95	10.65
8	#17235.00	62.5 PK	74.0	-11.5	1.00 H	127	43.05	19.45
9	#17235.00	48.7 AV	54.0	-5.3	1.00 H	127	29.25	19.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	65.3 PK	74.0	-8.7	1.17 V	242	60.40	4.90
2	#5715.00	47.2 AV	54.0	-6.8	1.17 V	242	42.30	4.90
3	#5725.00	75.2 PK	78.2	-3.0	1.17 V	242	70.27	4.93
4	*5745.00	105.0 PK			1.17 V	242	100.08	4.92
5	*5745.00	93.5 AV			1.17 V	242	88.58	4.92
6	11490.00	53.5 PK	74.0	-20.5	1.21 V	126	42.85	10.65
7	11490.00	41.2 AV	54.0	-12.8	1.21 V	126	30.55	10.65
8	#17235.00	61.8 PK	74.0	-12.2	1.14 V	196	42.35	19.45
9	#17235.00	48.8 AV	54.0	-5.2	1.14 V	196	29.35	19.45

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	52.6 PK	74.0	-21.4	1.00 H	215	47.70	4.90
2	#5715.00	41.1 AV	54.0	-12.9	1.00 H	215	36.20	4.90
3	#5725.00	58.0 PK	78.2	-20.2	1.00 H	215	53.07	4.93
4	*5785.00	107.8 PK			1.00 H	215	102.85	4.95
5	*5785.00	97.2 AV			1.00 H	215	92.25	4.95
6	#5850.00	54.8 PK	78.2	-23.4	1.00 H	215	49.78	5.02
7	#5860.00	54.2 PK	74.0	-19.8	1.00 H	215	49.16	5.04
8	#5860.00	40.0 AV	54.0	-14.0	1.00 H	215	34.96	5.04
9	11570.00	52.5 PK	74.0	-21.5	1.28 H	110	41.82	10.68
10	11570.00	40.2 AV	54.0	-13.8	1.28 H	110	29.52	10.68
11	#17355.00	62.0 PK	74.0	-12.0	1.00 H	120	42.24	19.76
12	#17355.00	48.6 AV	54.0	-5.4	1.00 H	120	28.84	19.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	51.2 PK	74.0	-22.8	1.08 V	233	46.30	4.90
2	#5715.00	40.3 AV	54.0	-13.7	1.08 V	233	35.40	4.90
3	#5725.00	57.3 PK	78.2	-20.9	1.08 V	233	52.37	4.93
4	*5785.00	106.2 PK			1.08 V	233	101.25	4.95
5	*5785.00	95.2 AV			1.08 V	233	90.25	4.95
6	#5850.00	53.2 PK	78.2	-25.0	1.08 V	233	48.18	5.02
7	#5860.00	53.2 PK	74.0	-20.8	1.08 V	233	48.16	5.04
8	#5860.00	38.7 AV	54.0	-15.3	1.08 V	233	33.66	5.04
9	11570.00	53.4 PK	74.0	-20.6	1.27 V	133	42.72	10.68
10	11570.00	41.1 AV	54.0	-12.9	1.27 V	133	30.42	10.68
11	#17355.00	62.2 PK	74.0	-11.8	1.13 V	176	42.44	19.76
12	#17355.00	49.1 AV	54.0	-4.9	1.13 V	176	29.34	19.76

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	108.1 PK			1.00 H	209	103.12	4.98
2	*5825.00	97.1 AV			1.00 H	209	92.12	4.98
3	#5850.00	74.7 PK	78.2	-3.5	1.00 H	209	69.68	5.02
4	#5860.00	66.7 PK	74.0	-7.3	1.00 H	209	61.66	5.04
5	#5860.00	50.5 AV	54.0	-3.5	1.00 H	209	45.46	5.04
6	11650.00	53.1 PK	74.0	-20.9	1.35 H	100	42.51	10.59
7	11650.00	40.8 AV	54.0	-13.2	1.35 H	100	30.21	10.59
8	#17475.00	61.9 PK	74.0	-12.1	1.02 H	116	41.95	19.95
9	#17475.00	48.5 AV	54.0	-5.5	1.02 H	116	28.55	19.95
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	105.8 PK			1.12 V	227	100.82	4.98
2	*5825.00	95.3 AV			1.12 V	227	90.32	4.98
3	#5850.00	73.5 PK	78.2	-4.7	1.12 V	227	68.48	5.02
4	#5860.00	62.5 PK	74.0	-11.5	1.12 V	227	57.46	5.04
5	#5860.00	48.2 AV	54.0	-5.8	1.12 V	227	43.16	5.04
6	11650.00	53.9 PK	74.0	-20.1	1.28 V	131	43.31	10.59
7	11650.00	41.5 AV	54.0	-12.5	1.28 V	131	30.91	10.59
8	#17475.00	61.6 PK	74.0	-12.4	1.12 V	175	41.65	19.95
9	#17475.00	48.6 AV	54.0	-5.4	1.12 V	175	28.65	19.95

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Data

802.11a

CHANNEL	TX Channel 44	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	37.22	33.6 QP	40.0	-6.4	1.50 H	360	47.97	-14.37
2	133.86	33.8 QP	43.5	-9.7	1.50 H	228	48.26	-14.50
3	231.79	38.2 QP	46.0	-7.8	1.00 H	302	53.67	-15.47
4	304.50	37.6 QP	46.0	-8.4	1.00 H	270	50.29	-12.67
5	604.94	34.1 QP	46.0	-11.9	1.50 H	248	39.38	-5.27
6	748.59	35.9 QP	46.0	-10.1	1.00 H	333	38.84	-2.94
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.00	31.3 QP	40.0	-8.7	1.00 V	323	45.06	-13.73
2	214.86	36.5 QP	43.5	-7.0	1.00 V	168	52.74	-16.21
3	242.33	39.0 QP	46.0	-7.0	2.00 V	209	53.96	-14.99
4	323.10	38.0 QP	46.0	-8.0	1.50 V	186	50.21	-12.17
5	478.59	37.6 QP	46.0	-8.4	1.00 V	246	45.81	-8.21
6	604.82	39.6 QP	46.0	-6.4	1.50 V	235	44.86	-5.27

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 Transmit Power Measurment

4.2.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

4.2.2 Test Setup

4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.7 Test Result

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	79.799	19.02	24	Pass
40	5200	82.035	19.14	24	Pass
44	5220	89.331	19.51	24	Pass
48	5240	79.983	19.03	24	Pass
149	5745	51.286	17.10	30	Pass
157	5785	50.119	17.00	30	Pass
165	5825	50.119	17.00	30	Pass

802.11n (HT20)

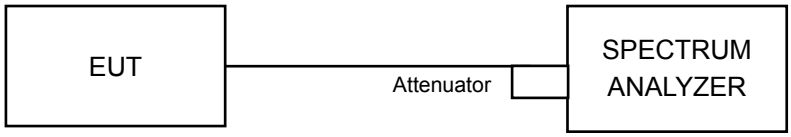
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	76.033	18.81	24	Pass
40	5200	76.384	18.83	24	Pass
44	5220	73.79	18.68	24	Pass
48	5240	76.736	18.85	24	Pass
149	5745	45.709	16.60	30	Pass
157	5785	49.888	16.98	30	Pass
165	5825	47.315	16.75	30	Pass

4.3 Peak Power Spectral Density Measurement

4.3.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

For U-NII-1 band:

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

For U-NII-3 band:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)
5. Sweep time = auto, trigger set to “free run”.
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

Same as Item 4.3.6

4.3.7 Test Results

For U-NII-1:

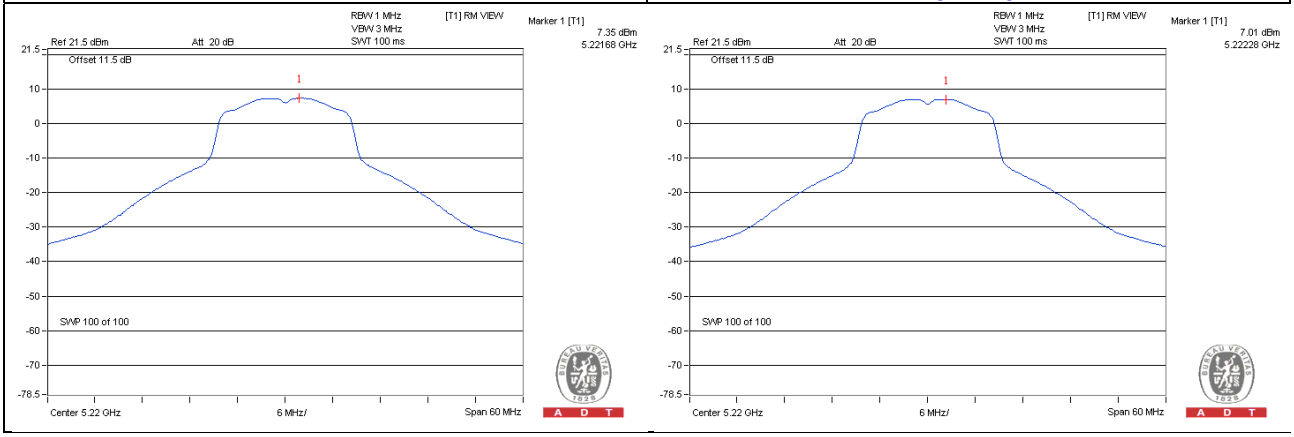
802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
36	5180	6.63	11	Pass
40	5200	7.25	11	Pass
44	5220	7.35	11	Pass
48	5240	7.24	11	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
36	5180	6.51	11	Pass
40	5200	6.98	11	Pass
44	5220	7.01	11	Pass
48	5240	6.96	11	Pass

Spectrum Plot of Worst Value	
802.11a / CH44	**802.11n (HT20) / CH44**



For U-NII-3:

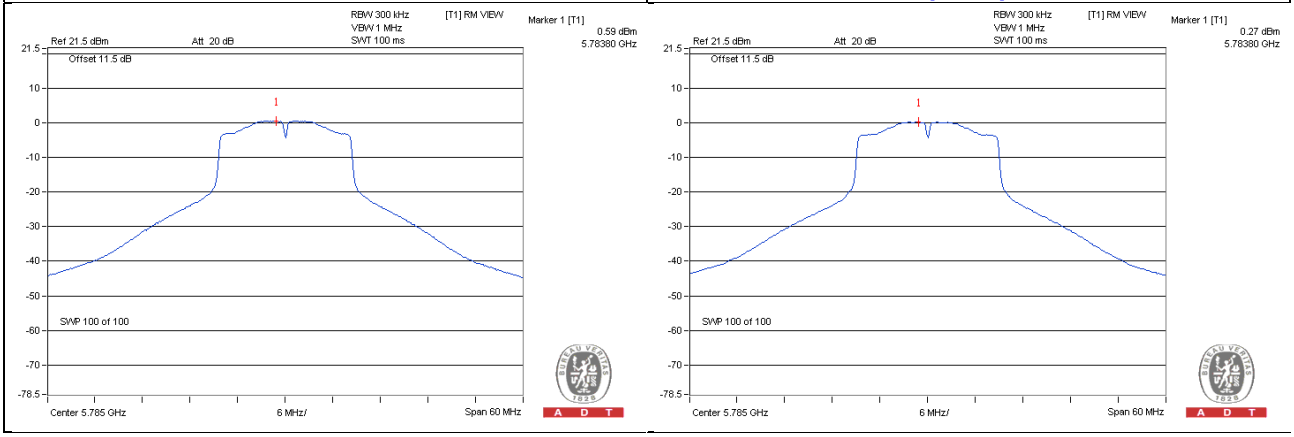
802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	0.08	2.30	30	Pass
157	5785	0.59	2.81	30	Pass
165	5825	0.54	2.76	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-0.67	1.55	30	Pass
157	5785	0.27	2.49	30	Pass
165	5825	-0.07	2.15	30	Pass

Spectrum Plot of Worst Value	
802.11a / CH157	**802.11n (HT20) / CH157**

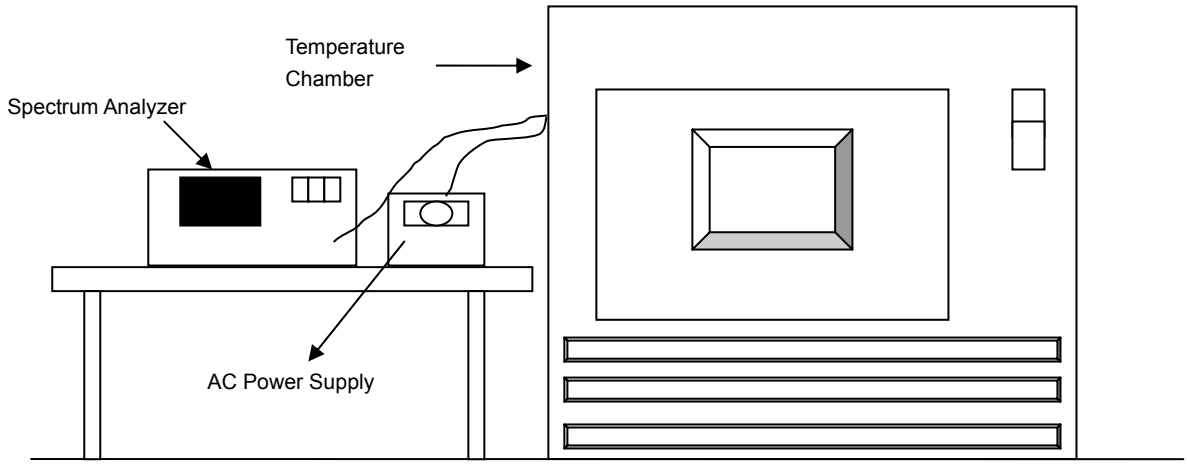


4.4 Frequency Stability Measurement

4.4.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Set the EUT transmit at un-modulation mode to test frequency stability.

4.4.7 Test Results

Frequemcy Stability Versus Temp.									
Operating Frequency: 5240MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5240.0156	0.00030	5240.0129	0.00025	5240.0131	0.00025	5240.0139	0.00027
40	120	5239.9842	-0.00030	5239.9821	-0.00034	5239.9802	-0.00038	5239.9791	-0.00040
30	120	5240.0131	0.00025	5240.015	0.00029	5240.0142	0.00027	5240.0139	0.00027
20	120	5240.0128	0.00024	5240.0122	0.00023	5240.0117	0.00022	5240.0119	0.00023
10	120	5240.0043	0.00008	5240.0047	0.00009	5240.0036	0.00007	5240.0047	0.00009
0	120	5239.9821	-0.00034	5239.982	-0.00034	5239.9814	-0.00035	5239.9803	-0.00038
-10	120	5240.0135	0.00026	5240.0104	0.00020	5240.0108	0.00021	5240.0108	0.00021
-20	120	5239.978	-0.00042	5239.9789	-0.00040	5239.9776	-0.00043	5239.98	-0.00038
-30	120	5239.9757	-0.00046	5239.9768	-0.00044	5239.9733	-0.00051	5239.9719	-0.00054

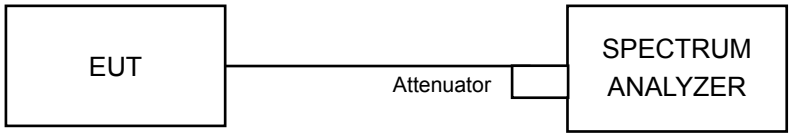
Frequemcy Stability Versus Temp.									
Operating Frequency: 5240MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5240.0132	0.00025	5240.0121	0.00023	5240.0107	0.00020	5240.0123	0.00023
	120	5240.0128	0.00024	5240.0122	0.00023	5240.0117	0.00022	5240.0119	0.00023
	102	5240.0127	0.00024	5240.0114	0.00022	5240.0126	0.00024	5240.0123	0.00023

4.5 6dB Bandwidth Measurment

4.5.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

MEASUREMENT PROCEDURE REF

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

802.11a

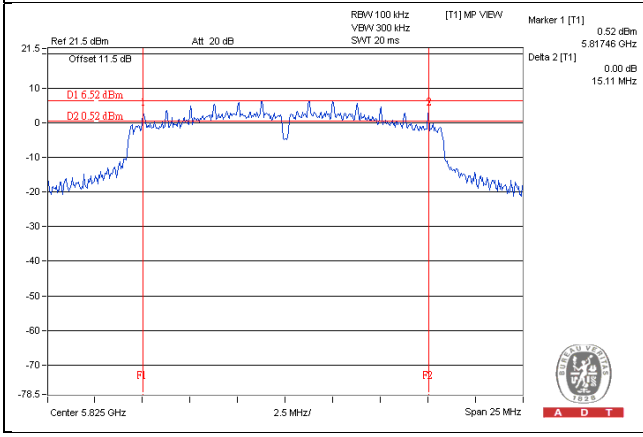
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.18	0.5	Pass
157	5785	15.14	0.5	Pass
165	5825	15.11	0.5	Pass

802.11n (HT20)

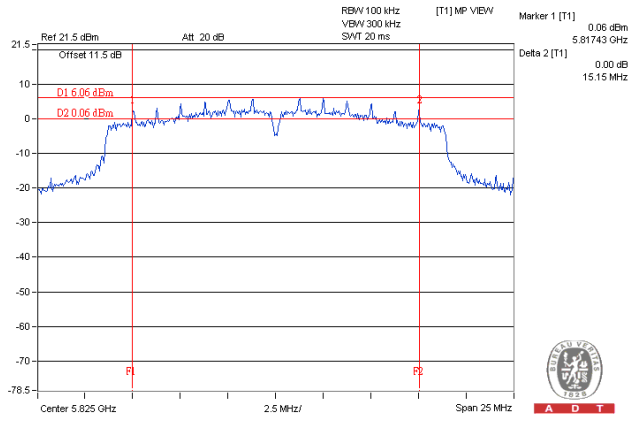
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.19	0.5	Pass
157	5785	15.17	0.5	Pass
165	5825	15.15	0.5	Pass

Spectrum Plot of Worst Value

802.11a / CH165



802.11n (HT20) / CH165



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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