Supplementary FCC Test Report

(WLAN - 15.407)

Report No.:	RF120522E09N-1
FCC ID:	UZ7MC92N0
Test Model:	MC92N0
Received Date:	Mar. 23, 2015
Test Date:	Mar. 31 to Apr. 13, 2015
Issued Date:	May 13, 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	Mar. 16, 2015	Upgrade the versions of the standard to section 15.407 under new rule
120522E09N	May 13, 2015	1. Added Bluetooth 4.0 technology used for the EUT 2. Added new SKU: SE4750 3. Changed the battery 4. Changed the version of EUT

Release Control Record

Issue No.	Description	Date Issued
RF120522E09N-1	Original release.	May 13, 2015

1 Certificate of Conformity

Product:	Mobile Computer
Brand:	Symbol
Test Model:	MC92N0
Sample Status:	MASS-PRODUCTION
Applicant:	Zebra Technologies Corporation
Test Date:	Mar. 31 to Apr. 13, 2015
Standard:	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 : _____ , **Date:** May 13, 2015

Elsie Hsu / Specialist

Approved by : _____ , **Date:** May 13, 2015

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -8.14dB at 0.72156MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5150.000MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	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, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz. For the 2400 ~ 2483.5MHz RF parameters was recorded in another test report.

2. This report is prepared for FCC Class II change. (Only radiated emissions / conducted power / conducted emission tests of SE4750 were presented in this test report).

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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~6GHz	3.72 dB
	6GHz ~ 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, 5.45~5.825GHz **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	**For 15.407** 802.11a: 69.984 mW **For 15.247** 802.11n (HT20): 190.546mW
Antenna Type	Please see Note
Antenna Connector	Please see Note
Accessory Device	Battery x 1 (Part No.: 82-111734-01)
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II change. The difference compared with the Report No.: RF120522E09K-1 design is as the following:

   ◆ Added Bluetooth 4.0 technology used for the EUT

   ◆ Added new SKU: SE4750

Original						
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
Addition						
Scanner	With CR	Without CR	Keypad			
			53 key	43 key	33 key	28 key
SE4750	V	-	V	V	V	V
CR : Condensation Resistant						

   ◆ Changed the battery as below table.

Original	
Brand:	SYMBOL
Part No.:	21-65587-03
Rating:	7.4V, 2200mAh, 16.3Wh
Newly	
Brand:	SYMBOL
Part No.:	82-111734-01
Rating:	7.4V, 2400mAh, 17.76Wh

   ◆ Changed the version of EUT information as below table.

Mobile Computer	OS Version	07.00.2806
	OEM Version	00.20.0005
Wireless(Fusion)	Part Number	31-FUSION-X2.00
	Version	X_2.00.0.0.063R
XW2DMT	Version	X_2.00.0.0.28
	Fusion	X_2.00.0.0.040E
BTRegTest Ver4.1	Version	4.1

2. According to above conditions, only radiated emissions / conducted power / conducted emission tests of SE4750 need to be performed. And all data was verified to meet the requirements.

3. There are Bluetooth and WLAN technology used for the EUT.
4. WLAN and Bluetooth technology can transmit at same time.
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: Model No.: Part No.: Input power : Output power :	 HIPRO HP-A0502R3D PWRS-14000-148R 100-240V, 50-60Hz, 2.4A +12V , 4.16A AC Line cord (unshielded, 2.2m without core) (Part No.: 23844-00-00R)
Battery	
Brand:	SYMBOL
Part No.:	82-111734-01
Rating:	7.4V, 2400mAh, 17.76Wh

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. 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

9. 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 5260 ~ 5320MHz

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

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

FOR 5500 ~ 5700MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 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	PLC	APCM	
A	-	-	√	-	EUT(Y-Z) + Scanner (SE4750) + Headset(RCH50) + Keypad(53) + Direct charging & Without CR
B	-	√	-	-	EUT(X-Y) + Scanner (SE4750) + Headset(VR10) + Keypad(43) + Direct charging & Without CR
C	√	-	-	√	EUT(X-Z) + Scanner (SE4750) + Headset(VR10) + Keypad(43) + Direct charging & Without CR

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **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.

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

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

Power Line Conducted Emission Test:

☒ 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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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.

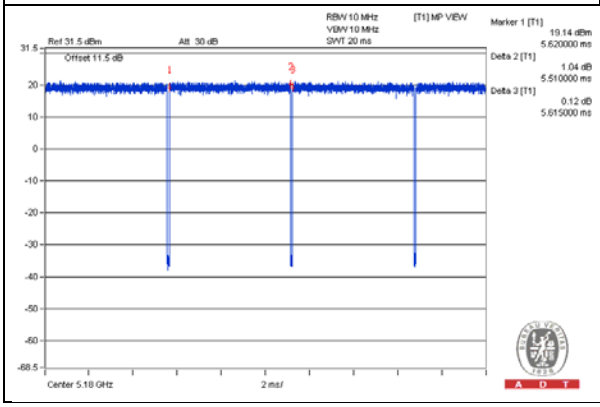
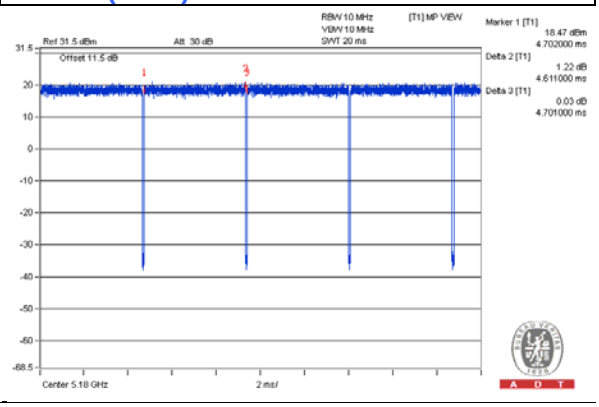
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36	OFDM	BPSK	6
802.11n (HT20)		36 to 48	36	OFDM	BPSK	6.5
802.11a	5745-5825	149 to 165	149	OFDM	BPSK	6
802.11n (HT20)		149 to 165	157	OFDM	BPSK	6.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	21deg. C, 65%RH	120Vac, 60Hz	Andy Ho
RE<1G	24deg. C, 71%RH	120Vac, 60Hz	Robert Cheng
PLC	25deg. C, 70%RH	120Vac, 60Hz	Eagle Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Andy Ho

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.

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.

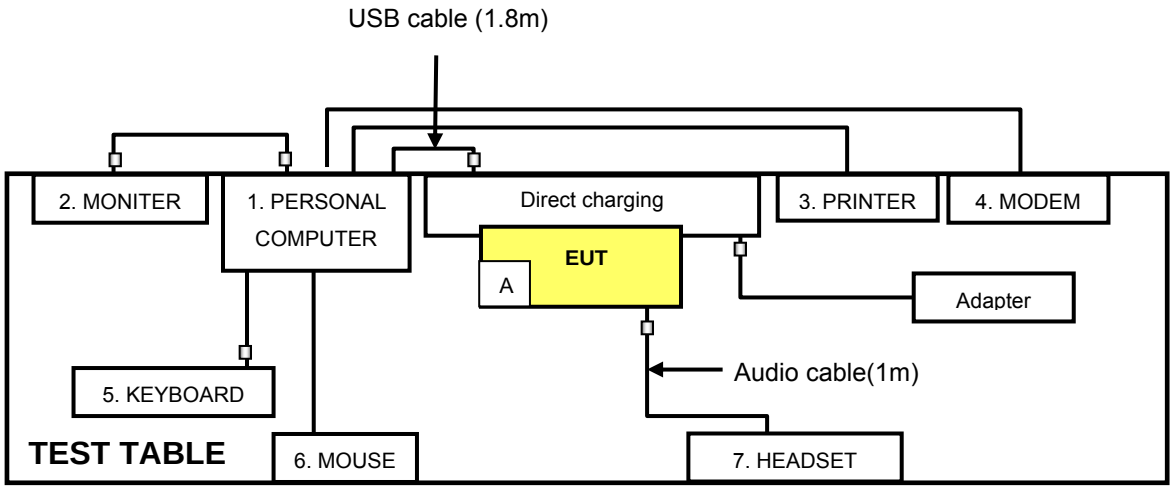
For conducted emission test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	PERSONAL COMPUTER	DELL	DCSCMF	9KKB32S	FCC DoC
2	MONITOR	DELL	E2210Hc	CN-OG337R-64180-97S-OQDS	FCC DoC
3	PRINTER	EPSON	LQ-300+II	G88Y074083	FCC DoC
4	MODEM	ACEEX	1414	0206026778	IFAXDM1414
5	KEYBOARD	DELL	SK-8115	MY-0DJ325-71619-99B-0476	FCC DoC
6	MOUSE	DELL	M056UOA	FOROOBF9	FCC DoC
7	HEADSET	Motorola	RCH50	NA	NA
For other test items					
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

For conducted emission test	
No.	Signal cable description
1	USB cable (unshielded, 1.8m with one core)
2	VGA cable. (1.8m with two cores)
3	USB cable.(1.8m)
4	RS232 cable.(1.1m)
5	USB cable.(1.8m with one core)
6	USB cable.(1.8m)
7	Audio cable (1m with one core)
For other test items	
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).

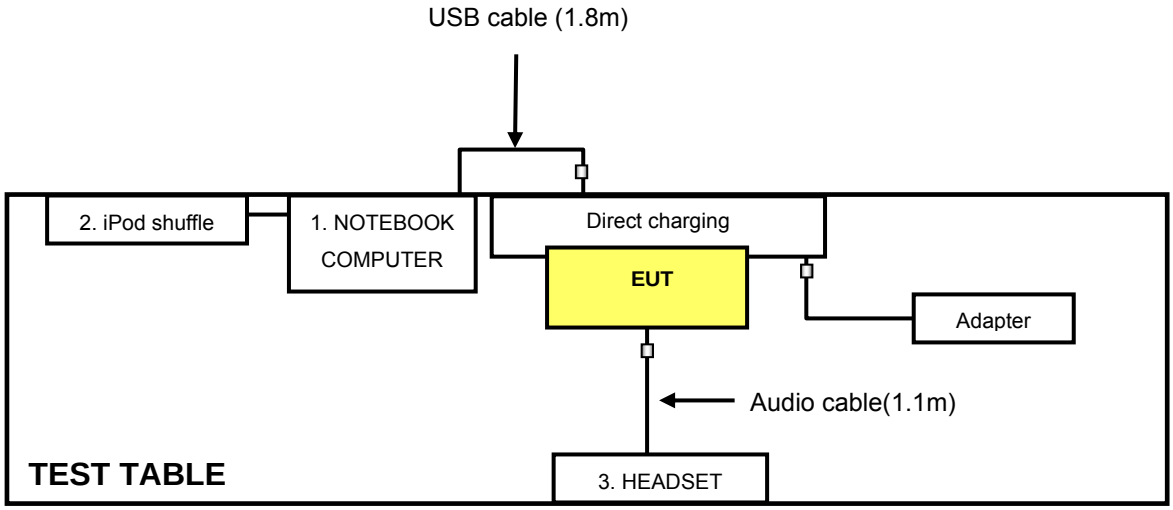
3.4.1 Configuration of System under Test

For Conducted emission test:



NOTE: 1. Item A is the SD Card.

For other test items



3.5 General Description of Applied Standard

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 Procedure 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.

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 Procedure 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

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-1000VH2B	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: Apr. 02, 2015

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. 06, 2015	Feb. 05, 2016
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 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	329751/4 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

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: Apr. 13, 2015

4.1.3 Test Procedure

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:

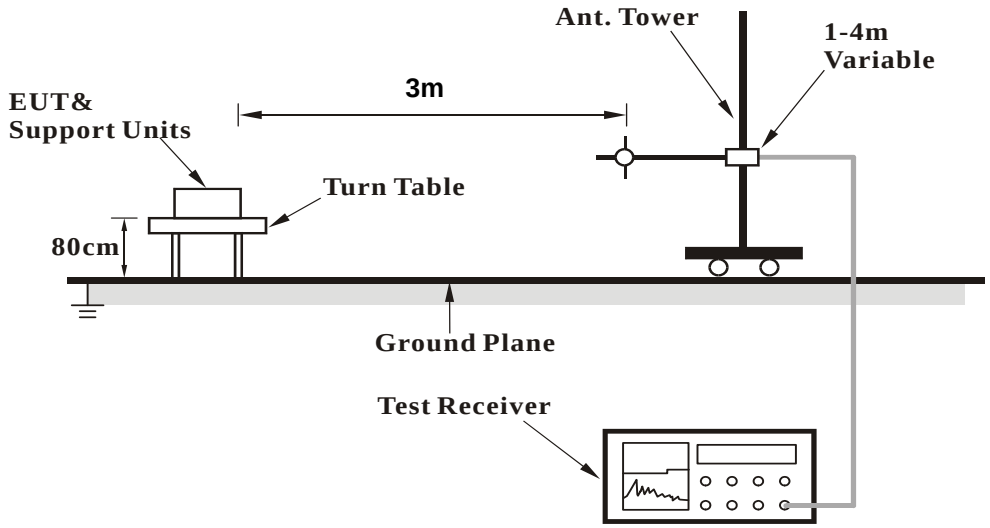
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

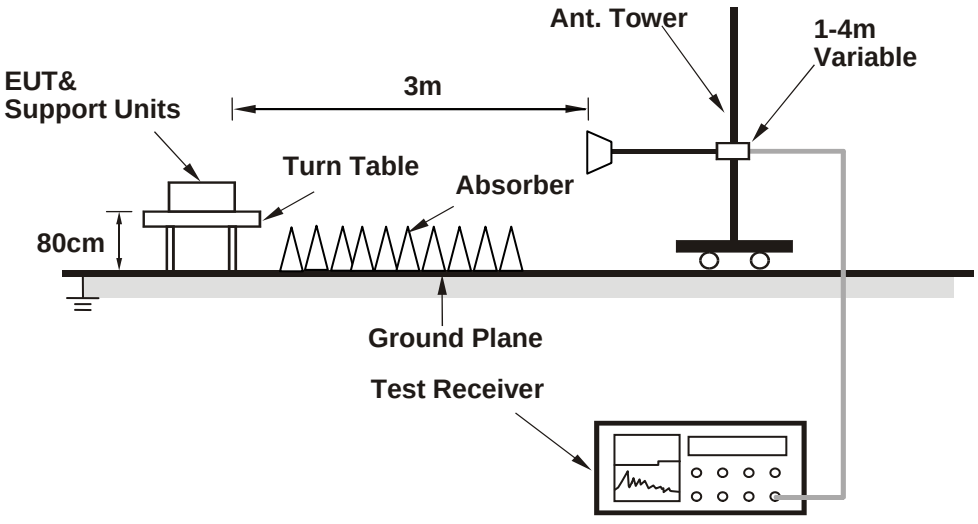
No deviation.

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	66.6 PK	74.0	-7.4	1.30 H	182	61.05	5.55
2	**5150.00**	**53.0 AV**	**54.0**	**-1.0**	**1.30 H**	**182**	**47.45**	**5.55**
3	*5180.00	107.5 PK			1.20 H	153	101.81	5.69
4	*5180.00	96.7 AV			1.20 H	153	91.01	5.69
5	#10360.00	52.9 PK	68.2	-15.3	1.33 H	134	40.21	12.69
6	15540.00	62.4 PK	74.0	-11.6	1.00 H	132	45.57	16.83
7	15540.00	49.2 AV	54.0	-4.8	1.00 H	132	32.37	16.83
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	65.1 PK	74.0	-8.9	1.41 V	202	59.55	5.55
2	5150.00	49.5 AV	54.0	-4.5	1.41 V	202	43.95	5.55
3	*5180.00	106.2 PK			1.38 V	226	100.51	5.69
4	*5180.00	94.9 AV			1.38 V	226	89.21	5.69
5	#10360.00	53.9 PK	68.2	-14.3	1.20 V	146	41.21	12.69
6	15540.00	61.6 PK	74.0	-12.4	1.19 V	181	44.77	16.83
7	15540.00	48.8 AV	54.0	-5.2	1.19 V	181	31.97	16.83

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	63.7 PK	74.0	-10.3	1.00 H	196	57.36	6.34
2	#5715.00	47.8 AV	54.0	-6.2	1.00 H	196	41.46	6.34
3	#5725.00	77.0 PK	78.2	-1.2	1.04 H	213	70.66	6.34
4	*5745.00	106.6 PK			1.03 H	209	100.28	6.32
5	*5745.00	95.5 AV			1.03 H	209	89.18	6.32
6	11490.00	53.0 PK	74.0	-21.0	1.31 H	141	40.00	13.00
7	11490.00	40.6 AV	54.0	-13.4	1.31 H	141	27.60	13.00
8	#17235.00	62.1 PK	74.0	-11.9	1.00 H	130	40.22	21.88
9	#17235.00	48.7 AV	54.0	-5.3	1.00 H	130	26.82	21.88
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	63.3 PK	74.0	-10.7	1.02 V	236	56.96	6.34
2	#5715.00	47.8 AV	54.0	-6.2	1.02 V	236	41.46	6.34
3	#5725.00	75.3 PK	78.2	-2.9	1.07 V	236	68.96	6.34
4	*5745.00	104.3 PK			1.05 V	241	97.98	6.32
5	*5745.00	93.7 AV			1.05 V	241	87.38	6.32
6	11490.00	53.3 PK	74.0	-20.7	1.13 V	136	40.30	13.00
7	11490.00	41.2 AV	54.0	-12.8	1.13 V	136	28.20	13.00
8	#17235.00	61.7 PK	74.0	-12.3	1.13 V	160	39.82	21.88
9	#17235.00	49.2 AV	54.0	-4.8	1.13 V	160	27.32	21.88

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	68.2 PK	74.0	-5.8	1.20 H	158	62.65	5.55
2	5150.00	52.9 AV	54.0	-1.1	1.20 H	158	47.35	5.55
3	*5180.00	107.1 PK			1.18 H	160	101.41	5.69
4	*5180.00	96.1 AV			1.18 H	160	90.41	5.69
5	#10360.00	52.7 PK	74.0	-21.3	1.33 H	146	40.01	12.69
6	#10360.00	39.9 AV	54.0	-14.1	1.33 H	146	27.21	12.69
7	15540.00	62.4 PK	74.0	-11.6	1.04 H	145	45.57	16.83
8	15540.00	48.9 AV	54.0	-5.1	1.04 H	145	32.07	16.83
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	66.6 PK	74.0	-7.4	1.20 V	218	61.05	5.55
2	5150.00	50.0 AV	54.0	-4.0	1.20 V	218	44.45	5.55
3	*5180.00	106.2 PK			1.45 V	222	100.51	5.69
4	*5180.00	94.3 AV			1.45 V	222	88.61	5.69
5	#10360.00	53.6 PK	74.0	-20.4	1.21 V	129	40.91	12.69
6	#10360.00	41.1 AV	54.0	-12.9	1.21 V	129	28.41	12.69
7	15540.00	61.8 PK	74.0	-12.2	1.22 V	173	44.97	16.83
8	15540.00	49.1 AV	54.0	-4.9	1.22 V	173	32.27	16.83

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	52.4 PK	74.0	-21.6	1.07 H	208	46.06	6.34
2	#5715.00	40.9 AV	54.0	-13.1	1.07 H	208	34.56	6.34
3	#5725.00	58.1 PK	78.2	-20.1	1.00 H	196	51.76	6.34
4	*5785.00	108.0 PK			1.00 H	197	101.70	6.30
5	*5785.00	97.5 AV			1.00 H	197	91.20	6.30
6	#5850.00	54.5 PK	78.2	-23.7	1.03 H	215	48.32	6.18
7	#5860.00	53.8 PK	74.0	-20.2	1.00 H	232	47.65	6.15
8	#5860.00	39.8 AV	54.0	-14.2	1.00 H	232	33.65	6.15
9	11570.00	52.9 PK	74.0	-21.1	1.28 H	128	39.98	12.92
10	11570.00	40.6 AV	54.0	-13.4	1.28 H	128	27.68	12.92
11	#17355.00	62.7 PK	74.0	-11.3	1.00 H	124	40.57	22.13
12	#17355.00	49.9 AV	54.0	-4.1	1.00 H	124	27.77	22.13
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	1.20 V	223	44.86	6.34
2	#5715.00	39.9 AV	54.0	-14.1	1.20 V	223	33.56	6.34
3	#5725.00	56.4 PK	78.2	-21.8	1.19 V	207	50.06	6.34
4	*5785.00	106.1 PK			1.12 V	201	99.80	6.30
5	*5785.00	95.4 AV			1.12 V	201	89.10	6.30
6	#5850.00	53.7 PK	78.2	-24.5	1.10 V	212	47.52	6.18
7	#5860.00	52.2 PK	74.0	-21.8	1.17 V	220	46.05	6.15
8	#5860.00	39.5 AV	54.0	-14.5	1.17 V	220	33.35	6.15
9	11570.00	53.3 PK	74.0	-20.7	1.24 V	128	40.38	12.92
10	11570.00	41.2 AV	54.0	-12.8	1.24 V	128	28.28	12.92
11	#17355.00	61.3 PK	74.0	-12.7	1.16 V	174	39.17	22.13
12	#17355.00	48.5 AV	54.0	-5.5	1.16 V	174	26.37	22.13

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 36	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	157.21	36.0 QP	43.5	-7.5	1.07 H	111	49.53	-13.52
2	345.25	39.3 QP	46.0	-6.7	1.24 H	111	50.90	-11.56
3	482.11	34.2 QP	46.0	-11.8	1.64 H	244	42.35	-8.11
4	605.31	35.2 QP	46.0	-10.8	1.24 H	211	40.48	-5.27
5	696.21	33.2 QP	46.0	-12.8	1.74 H	274	37.18	-3.97
6	757.24	37.4 QP	46.0	-8.6	1.34 H	110	40.19	-2.78
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	151.34	35.5 QP	43.5	-8.0	1.64 V	102	48.60	-13.11
2	212.47	38.7 QP	43.5	-4.8	1.24 V	110	55.00	-16.32
3	294.27	36.7 QP	46.0	-9.3	1.34 V	244	49.69	-13.02
4	319.35	37.7 QP	46.0	-8.3	1.24 V	197	49.94	-12.27
5	475.34	37.5 QP	46.0	-8.6	1.24 V	67	45.74	-8.29
6	521.24	36.2 QP	46.0	-9.8	1.67 V	244	43.38	-7.17

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	157.35	36.1 QP	43.5	-7.4	1.12 H	12	49.66	-13.52
2	345.34	39.5 QP	46.0	-6.6	1.64 H	57	51.01	-11.56
3	482.25	34.4 QP	46.0	-11.6	1.24 H	99	42.47	-8.11
4	605.67	35.5 QP	46.0	-10.5	1.47 H	69	40.79	-5.25
5	696.67	33.6 QP	46.0	-12.4	1.45 H	304	37.54	-3.96
6	757.36	37.2 QP	46.0	-8.8	1.45 H	69	39.99	-2.78
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	151.12	35.2 QP	43.5	-8.3	1.42 V	222	48.30	-13.09
2	212.11	38.4 QP	43.5	-5.1	1.64 V	244	54.74	-16.33
3	294.10	36.4 QP	46.0	-9.6	2.41 V	164	49.43	-13.02
4	319.64	37.2 QP	46.0	-8.8	1.34 V	100	49.47	-12.26
5	475.37	37.2 QP	46.0	-8.8	1.64 V	100	45.50	-8.29
6	521.11	36.6 QP	46.0	-9.4	1.21 V	209	43.73	-7.17

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

802.11n (HT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	157.64	36.3 QP	43.5	-7.2	1.67 H	58	49.81	-13.55
2	345.45	39.3 QP	46.0	-6.7	1.24 H	360	50.90	-11.56
3	482.37	34.5 QP	46.0	-11.5	1.88 H	57	42.57	-8.11
4	605.54	35.6 QP	46.0	-10.4	1.34 H	88	40.87	-5.26
5	696.24	33.2 QP	46.0	-12.8	1.33 H	68	37.21	-3.97
6	757.51	37.5 QP	46.0	-8.6	1.64 H	204	40.23	-2.78
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	151.28	35.5 QP	43.5	-8.1	1.24 V	144	48.55	-13.10
2	212.25	38.6 QP	43.5	-4.9	1.31 V	306	54.89	-16.33
3	294.25	36.7 QP	46.0	-9.3	1.00 V	311	49.69	-13.02
4	319.41	37.6 QP	46.0	-8.4	1.74 V	137	49.87	-12.26
5	475.54	37.8 QP	46.0	-8.3	1.45 V	174	46.03	-8.28
6	521.24	36.2 QP	46.0	-9.8	1.74 V	124	43.41	-7.17

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

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	157.84	36.5 QP	43.5	-7.0	1.24 H	100	50.02	-13.56
2	345.64	39.5 QP	46.0	-6.5	1.29 H	245	51.09	-11.55
3	482.54	34.6 QP	46.0	-11.4	1.29 H	95	42.74	-8.10
4	605.41	35.7 QP	46.0	-10.3	1.21 H	77	41.00	-5.26
5	696.34	33.7 QP	46.0	-12.3	1.24 H	241	37.71	-3.97
6	757.24	37.6 QP	46.0	-8.4	1.24 H	22	40.42	-2.78
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	151.14	35.2 QP	43.5	-8.3	1.24 V	22	48.33	-13.09
2	212.35	38.2 QP	43.5	-5.3	1.29 V	34	54.56	-16.32
3	294.38	36.4 QP	46.0	-9.6	1.58 V	56	49.43	-13.01
4	319.21	37.4 QP	46.0	-8.6	1.24 V	83	49.70	-12.28
5	475.14	37.6 QP	46.0	-8.4	1.54 V	74	45.90	-8.29
6	521.45	36.6 QP	46.0	-9.4	1.47 V	88	43.81	-7.17

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 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7.3	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 test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Mar. 31, 2015

4.2.3 Test Procedure

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

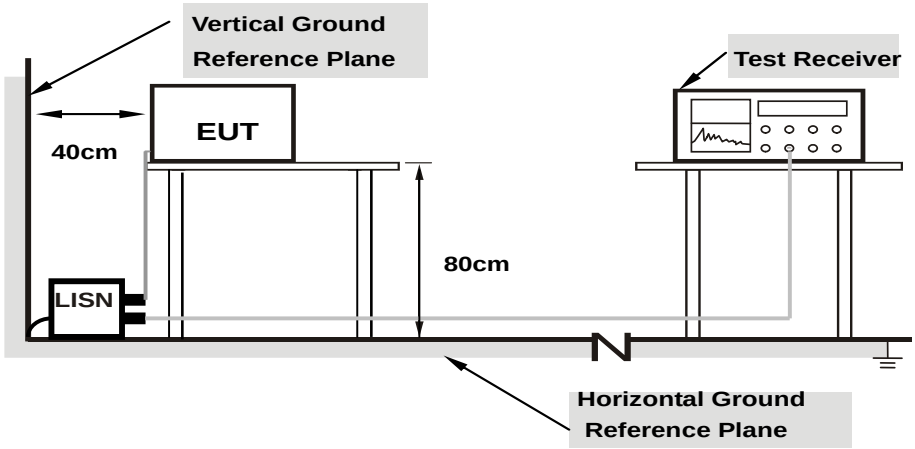
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

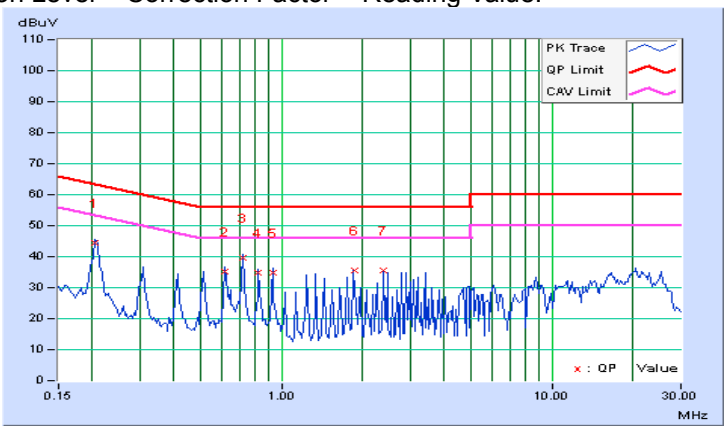
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20506	0.09	44.18	37.82	44.27	37.91	63.40	53.40	-19.13	-15.49
2	0.61875	0.11	35.02	32.90	35.13	33.01	56.00	46.00	-20.87	-12.99
3	**0.72156**	**0.12**	**39.48**	**37.74**	**39.60**	**37.86**	**56.00**	**46.00**	**-16.40**	**-8.14**
4	0.82388	0.12	34.58	32.20	34.70	32.32	56.00	46.00	-21.30	-13.68
5	0.92734	0.13	34.56	32.06	34.69	32.19	56.00	46.00	-21.31	-13.81
6	1.85519	0.16	35.58	32.32	35.74	32.48	56.00	46.00	-20.26	-13.52
7	2.37109	0.18	35.20	30.36	35.38	30.54	56.00	46.00	-20.62	-15.46

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

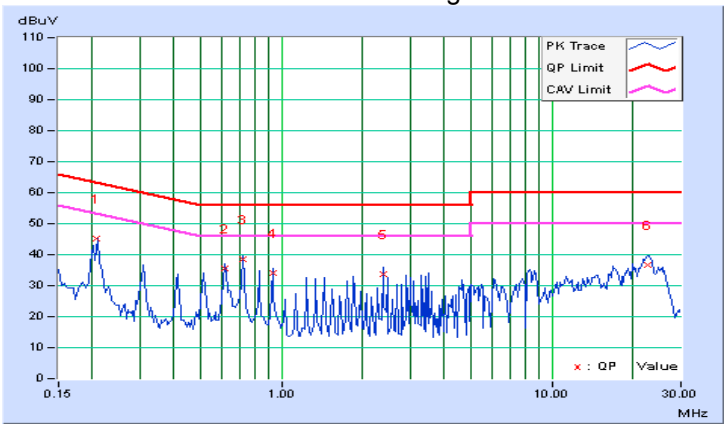


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20622	0.08	45.10	37.32	45.18	37.40	63.36	53.36	-18.18	-15.96
2	0.61875	0.11	35.48	33.08	35.59	33.19	56.00	46.00	-20.41	-12.81
3	0.72194	0.12	38.40	35.96	38.52	36.08	56.00	46.00	-17.48	-9.92
4	0.92734	0.13	34.00	31.16	34.13	31.29	56.00	46.00	-21.87	-14.71
5	2.37109	0.18	33.40	26.98	33.58	27.16	56.00	46.00	-22.42	-18.84
6	22.56737	0.80	35.90	30.54	36.70	31.34	60.00	50.00	-23.30	-18.66

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



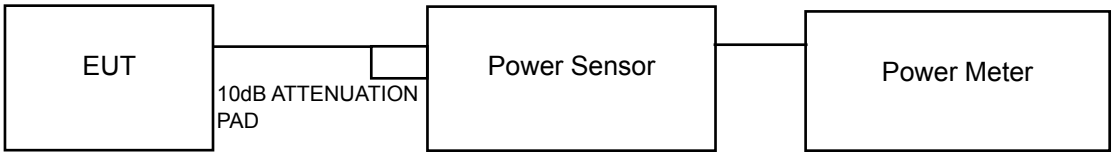
4.3 Transmit Power Measurment

4.3.1 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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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.

4.3.5 Deviation fromTest Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

POWER OUTPUT:

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	MAXIMUM CONDUCTED POWER (mW)	MAXIMUM CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	68.234	18.34	24.00	PASS
149	5745	50.35	17.02	30.00	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAXIMUM CONDUCTED POWER (mW)	MAXIMUM CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	69.984	18.45	24.00	PASS
157	5785	47.315	16.75	30.00	PASS

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.

If you have any comments, please feel free to contact us at the following:

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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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