FCC Test Report (WLAN-15.407)

Report No.: RF141203E08A-1

FCC ID: JNZVR0004

Test Model: V-R0004

Received Date: Dec. 03, 2014

Test Date: Jan. 20 to 22, 2015

Issued Date: Jan. 30, 2015

Applicant: LOGITECH FAR EAST LTD.

Address: #2 Creation Rd. 4, Science-Based Ind. Park Hsinchu Taiwan, R.O.C.

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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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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Table of Contents

Release Control Record **4**

1 Certificate of Conformity **5**

2 Summary of Test Results **6**

2.1 Measurement Uncertainty 6
2.2 Modification Record 6

3 General Information **7**

3.1 General Description of EUT (WLAN) 7
3.2 Description of Test Modes 9
3.2.1 Test Mode Applicability and Tested Channel Detail 10
3.3 Duty Cycle of Test Signal 12
3.4 Description of Support Units 13
3.4.1 Configuration of System under Test 14
3.5 General Description of Applied Standards 15

4 Test Types and Results **16**

4.1 Radiated Emission and Bandedge Measurement 16
4.1.1 Limits of Radiated Emission and Bandedge Measurement 16
4.1.2 Test Instruments 17
4.1.3 Test Procedures 19
4.1.4 Deviation from Test Standard 19
4.1.5 Test Set Up 20
4.1.6 EUT Operating Conditions 21
4.1.7 Test Results 22
4.2 Conducted Emission Measurement 39
4.2.1 Limits of Conducted Emission Measurement 39
4.2.2 Test Instruments 39
4.2.3 Test Procedures 40
4.2.4 Deviation from Test Standard 40
4.2.5 Test Setup 40
4.2.6 Eut Operating Conditions 40
4.2.7 Test Results (Mode 1) 41
4.2.8 Test Results (Mode 2) 43
4.3 Transmit Power Measurment 45
4.3.1 Limits Of Transmit Power Measurement 45
4.3.2 Test Setup 45
4.3.3 Test Instruments 46
4.3.4 Test Procedure 46
4.3.5 Deviation fromTest Standard 46
4.3.6 EUT Operating Conditions 46
4.3.7 Test Result 47
4.4 Peak Power Spectral Density Measurement 48
4.4.1 Limits Of Peak Power Spectral Density Measurement 48
4.4.2 Test Setup 48
4.4.3 Test Instruments 48
4.4.4 Test Procedures 49
4.4.5 Deviation from Test Standard 49
4.4.6 EUT Operating Conditions 49
4.4.7 Test Results 50
4.5 Frequency Stability 54
4.5.1 Limits Of Frequency Stability Measurement 54
4.5.2 Test Setup 54
4.5.3 Test Instruments 54
4.5.4 Test Procedure 54
4.5.5 Deviation from Test Standard 55

4.5.6 EUT Operating Condition 55
4.5.7 Test Results 56
4.6 6dB Bandwidth Measurment 57
4.6.1 Limits Of 6dB Bandwidth Measurement 57
4.6.2 Test Setup 57
4.6.3 Test Instruments 57
4.6.4 Test Procedure 57
4.6.5 Deviation from Test Standard 57
4.6.6 EUT Operating Condition 57
4.6.7 Test Results 58

5 Pictures of Test Arrangements 60

Appendix – Information on the Testing Laboratories 61

Release Control Record

Issue No.	Description	Date Issued
RF141203E08A-1	Original release.	Jan. 30, 2015

1 Certificate of Conformity

Product: ConferenceCam Connect

Brand: Logitech

Test Model: V-R0004

Sample Status: ENGINEERING SAMPLE

Applicant: LOGITECH FAR EAST LTD.

Test Date: Jan. 20 to 22, 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 : _____ , **Date:** Jan. 30, 2015
Midoli Peng / Specialist

Approved by : _____ , **Date:** Jan. 30, 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)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -6.17dB at 0.30234MHz.
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5715.00MHz
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, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.25GHz, 5.47~5.725GHz and 5.725~5.850GHz. For the 2400 ~ 2483.5MHz RF parameters was recorded in another 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 ~ 200MHz	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 (WLAN)

Product	ConferenceCam Connect
Brand	Logitech
Test Model	V-R0004
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 5V from USB interface or DC 3.6V from battery or DC 12V from power adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	OFDM
Transfer Rate	802.11a/g: up to 54Mbps 802.11n: up to 150Mbps
Operating Frequency	**For 15.407** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
	For 15.247 2.412 ~ 2.462GHz
Number of Channel	**For 15.407** 9 for 802.11a, 802.11n (HT20) 4 for 802.11n (HT40)
	For 15.247 11 for 802.11g, 802.11n (HT20)
Output Power	**For 15.407** 802.11a:206.063 mW 802.11n (HT20): 194.984mW 802.11n (HT40): 112.46 mW **For 15.247** 802.11g: 304.789mW 802.11n (HT20): 278.612mW
Antenna Type	Refer to NOTE
Antenna Connector	Refer to NOTE
Accessory Device	Remote control (Model : R-R0007) x1 Adapter x1
Data Cable Supplied	USB charging cable (shielded, 2m with one core) x 1

Note:

1. There are Bluetooth 4.0, WLAN and NFC (Passive) technology used for the EUT.
2. For WLAN, 2.4GHz and 5GHz technology can not transmit at same time.
3. WLAN and Bluetooth technology can transmit at same time.
4. The emission of the simultaneous operation (WLAN & Bluetooth) has been evaluated and no non-compliance was found.
5. The EUT must be supplied with a battery or a adapter, please refer to the following table:

Battery		
Brand	Model No.	Spec.
SANYO	533-000104	3.6Vdc, 3200 mAh, 11.52 Wh
Adapter		
Brand	Model No.	Spec.
Logitech	DSA-12CA-12 120100	AC Input: 100-240V, 0.3A, 50/60Hz DC Output: 12V, 1A DC output cable(shielded, 3m with one core)

6. The EUT was pre-tested under following test modes :

Test Mode	Description
Mode A	Power from Battery
Mode B	Power from Adapter
Mode C	**Power from USB interface**

For the above modes, the worst radiated test was found in **Mode C**. Therefore only the test data of the modes were recorded in this report.

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

BT					
Brand	Model	Gain (dBi)	Antenna Type	Connecter Type	Frequency range (GHz to GHz)
NA	NA	-1.29	PCB printed	NA	2.402 ~ 2.48
WLAN					
Brand	Model	Gain (dBi)	Antenna Type	Connecter Type	Frequency range (GHz to GHz)
NA	NA	1.64	PCB printed	NA	2.4 ~ 2.4835
		1.57			5.15 ~ 5.85

8. The EUT incorporates a SISO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11g	6 ~ 54Mbps	1TX	1RX
802.11n (HT20)	MCS 0~7	1TX	1RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	1TX	1RX
802.11n (HT20)	MCS 0~7	1TX	1RX
802.11n (HT40)	MCS 0~7	1TX	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

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 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		

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Power from USB interface
2	-	-	√	-	Power from Adapter

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement
NOTE: "-" 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)
1	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
1	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
1	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
1	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
1	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
1	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5

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)
1	802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6

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.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
1	802.11a	5745-5825	149 to 165	157	OFDM	BPSK	6
2	802.11a	5745-5825	149 to 165	157	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)
1	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
1	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
1	802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
1	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
1	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
1	802.11n (HT40)		151 to 159	151, 159	OFDM	BPSK	13.5

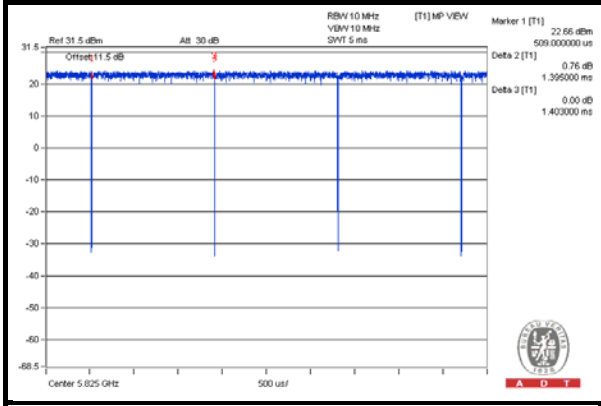
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	22deg. C, 71%RH	120Vac, 60Hz	Gary Cheng
RE<1G	23deg. C, 69%RH	120Vac, 60Hz	Tim Ho
PLC	20deg. C, 60%RH	120Vac, 60Hz	Mike Hsieh
APCM	25deg. C, 60%RH	120Vac, 60Hz	Andy Ho

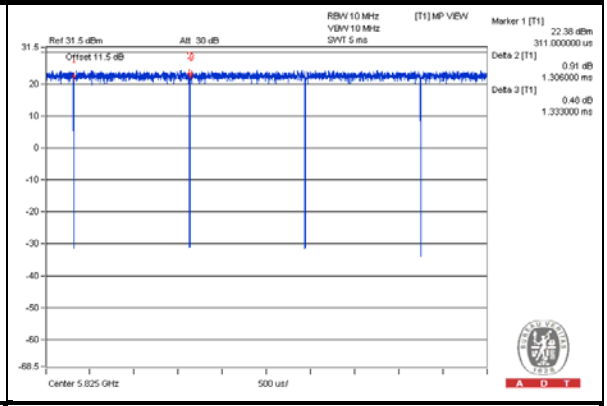
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is ≥ 98 %, duty factor is not required.
802.11a: Duty cycle = 1.395 ms/1.403 ms = 0.994
802.11n (HT20): Duty cycle = 1.306 ms/1.333 ms = 0.98
802.11n (HT40): Duty cycle = 0.646 ms/0.654 ms = 0.988

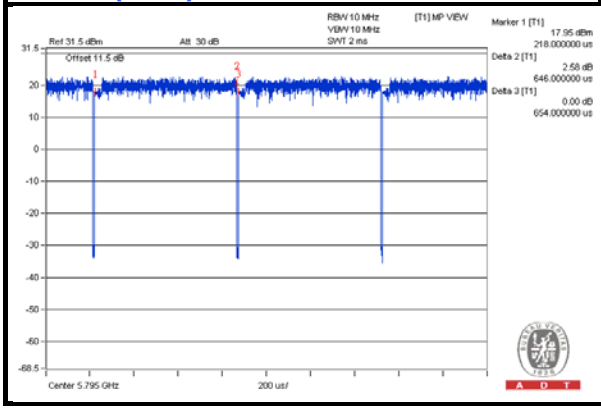
802.11a



802.11n (HT20)



802.11n (HT40)



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	Remark
A	NOTEBOOK COMPUTER	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B	MONITOR	DELL	U2410F	CNOJ257M728729AG159L	FCC DoC	Provided by Lab
C	RJ45 to USB connector	Logitech	NA	NA	NA	Supplied by Client
D	USB test tool	Logitech	NA	NA	NA	Supplied by Client
E	Test tool	Logitech	NA	NA	NA	Supplied by Client

NOTE:

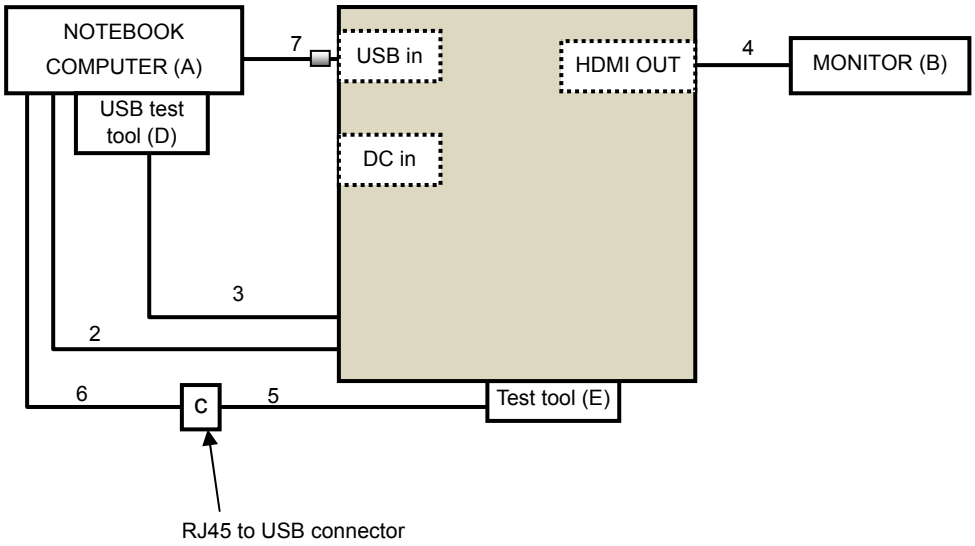
1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	3	Yes	1	Supplied by Client
2	USB	1	1	Yes	0	Supplied by Client(Set up only)
3	Cable	1	0.5	No	0	Supplied by Client(Set up only)
4	HDMI	1	1.5	No	0	Provided by Lab
5	RJ45	1	1.5	No	0	Supplied by Client(Set up only)
6	USB	1	1	No	0	Supplied by Client(Set up only)
7	USB	1	2	Yes	1	Supplied by Client

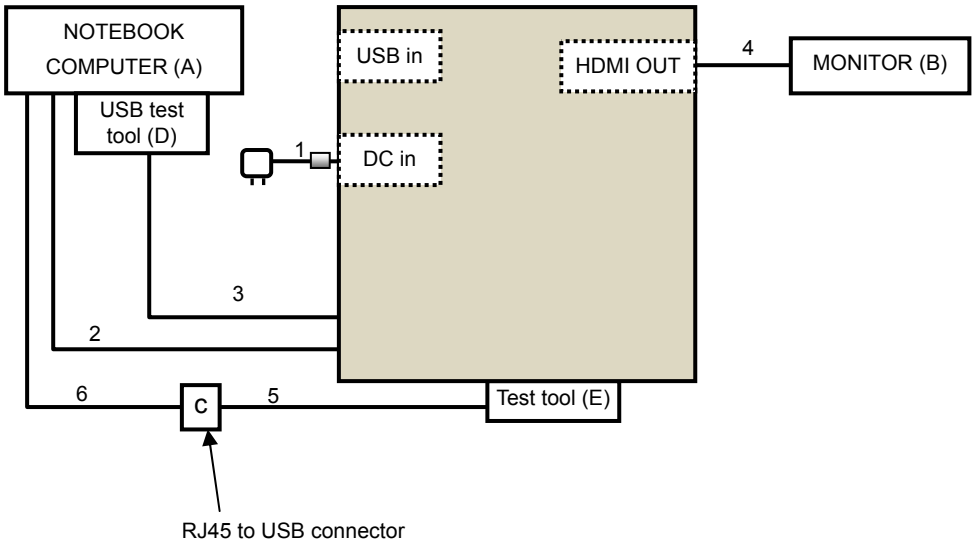
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

USB mode:



Adapter mode:



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

Below 1GHz test

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. 26, 2014	Feb. 25, 2015
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: Jan. 20, 2015

Above 1GHz test

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-1000VH2 B	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

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: Jan. 22, 2015

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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:

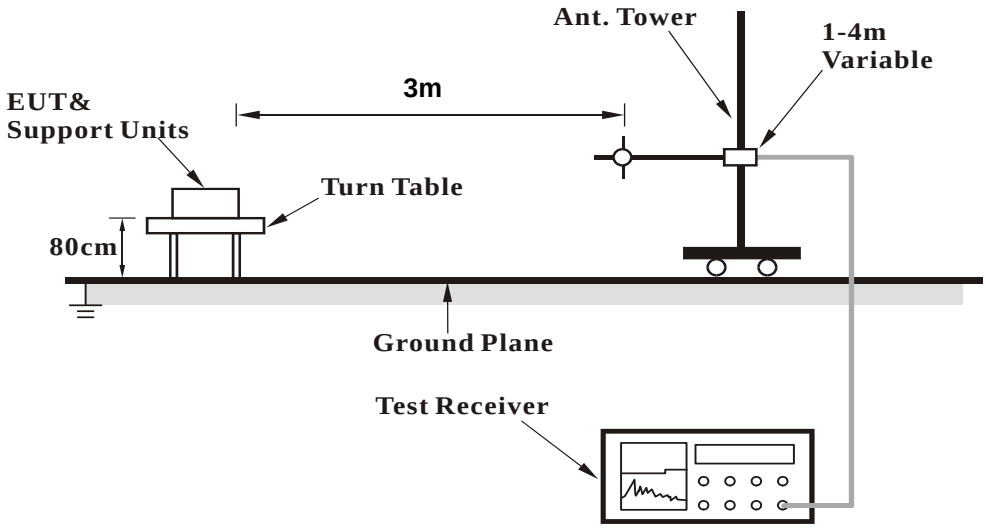
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

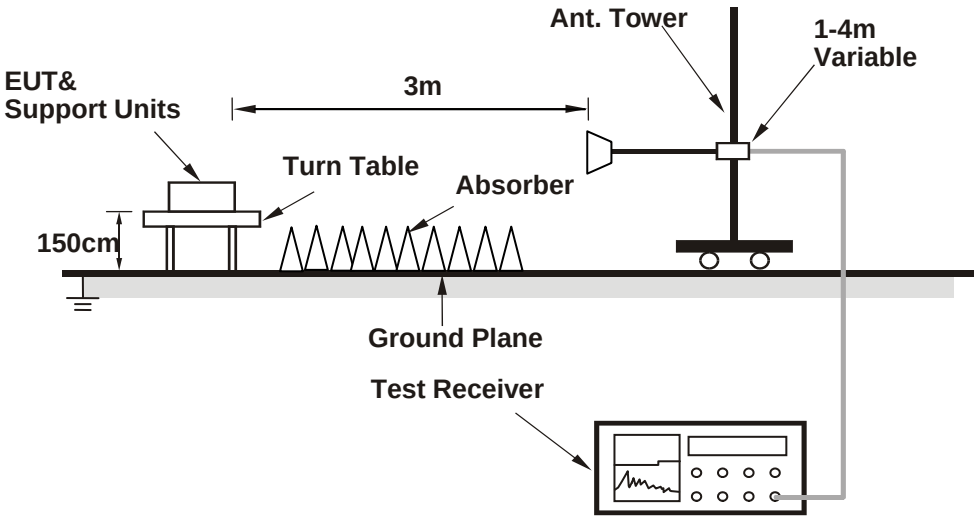
No deviation.

4.1.5 Test Set Up

<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. Placed the EUT on testing table.
2. Controlling software (MtkTool.exe) has been activated to set the EUT under transmission/receiving condition continuously.

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	65.8 PK	74.0	-8.2	1.14 H	207	61.52	4.28
2	5150.00	49.4 AV	54.0	-4.6	1.14 H	207	45.12	4.28
3	*5180.00	110.5 PK			1.14 H	207	106.11	4.39
4	*5180.00	100.7 AV			1.14 H	207	96.31	4.39
5	#10360.00	56.3 PK	74.0	-17.7	1.00 H	285	46.24	10.06
6	#10360.00	42.2 AV	54.0	-11.8	1.00 H	285	32.14	10.06
7	15540.00	62.7 PK	74.0	-11.3	1.11 H	135	47.86	14.84
8	15540.00	50.1 AV	54.0	-3.9	1.11 H	135	35.26	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	61.5 PK	74.0	-12.5	1.45 V	44	57.22	4.28
2	5150.00	45.4 AV	54.0	-8.6	1.45 V	44	41.12	4.28
3	*5180.00	105.1 PK			1.45 V	44	100.71	4.39
4	*5180.00	95.3 AV			1.45 V	44	90.91	4.39
5	#10360.00	56.4 PK	74.0	-17.6	1.23 V	152	46.34	10.06
6	#10360.00	42.8 AV	54.0	-11.2	1.23 V	152	32.74	10.06
7	15540.00	63.2 PK	74.0	-10.8	1.21 V	135	48.36	14.84
8	15540.00	50.1 AV	54.0	-3.9	1.21 V	135	35.26	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	55.1 PK	74.0	-18.9	1.15 H	206	50.82	4.28
2	5150.00	44.7 AV	54.0	-9.3	1.15 H	206	40.42	4.28
3	*5200.00	109.6 PK			1.15 H	206	105.16	4.44
4	*5200.00	100.2 AV			1.15 H	206	95.76	4.44
5	5350.00	54.3 PK	74.0	-19.7	1.15 H	206	49.79	4.51
6	5350.00	41.2 AV	54.0	-12.8	1.15 H	206	36.69	4.51
7	#10400.00	56.3 PK	74.0	-17.7	1.06 H	284	46.23	10.07
8	#10400.00	42.0 AV	54.0	-12.0	1.06 H	284	31.93	10.07
9	15600.00	62.5 PK	74.0	-11.5	1.07 H	142	47.44	15.06
10	15600.00	49.7 AV	54.0	-4.3	1.07 H	142	34.64	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	52.6 PK	74.0	-21.4	1.42 V	47	48.32	4.28
2	5150.00	42.3 AV	54.0	-11.7	1.42 V	47	38.02	4.28
3	*5200.00	105.5 PK			1.42 V	47	101.06	4.44
4	*5200.00	95.5 AV			1.42 V	47	91.06	4.44
5	5350.00	52.3 PK	74.0	-21.7	1.42 V	47	47.79	4.51
6	5350.00	39.6 AV	54.0	-14.4	1.42 V	47	35.09	4.51
7	#10400.00	55.9 PK	74.0	-18.1	1.21 V	137	45.83	10.07
8	#10400.00	42.4 AV	54.0	-11.6	1.21 V	137	32.33	10.07
9	15600.00	63.5 PK	74.0	-10.5	1.23 V	149	48.44	15.06
10	15600.00	50.2 AV	54.0	-3.8	1.23 V	149	35.14	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 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	110.2 PK			1.29 H	217	105.79	4.41
2	*5240.00	100.7 AV			1.29 H	217	96.29	4.41
3	5350.00	54.5 PK	74.0	-19.5	1.29 H	217	49.99	4.51
4	5350.00	40.8 AV	54.0	-13.2	1.29 H	217	36.29	4.51
5	#10480.00	56.5 PK	74.0	-17.5	1.04 H	295	46.24	10.26
6	#10480.00	42.3 AV	54.0	-11.7	1.04 H	295	32.04	10.26
7	15720.00	62.1 PK	74.0	-11.9	1.08 H	141	47.43	14.67
8	15720.00	49.6 AV	54.0	-4.4	1.08 H	141	34.93	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	104.6 PK			1.45 V	40	100.19	4.41
2	*5240.00	94.8 AV			1.45 V	40	90.39	4.41
3	5350.00	52.2 PK	74.0	-21.8	1.45 V	40	47.69	4.51
4	5350.00	38.4 AV	54.0	-15.6	1.45 V	40	33.89	4.51
5	#10480.00	56.7 PK	74.0	-17.3	1.28 V	139	46.44	10.26
6	#10480.00	43.0 AV	54.0	-11.0	1.28 V	139	32.74	10.26
7	15720.00	62.8 PK	74.0	-11.2	1.22 V	138	48.13	14.67
8	15720.00	49.6 AV	54.0	-4.4	1.22 V	138	34.93	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	1.47 H	239	61.40	4.90
2	#5715.00	49.8 AV	54.0	-4.2	1.47 H	239	44.90	4.90
3	#5725.00	77.7 PK	78.2	-0.5	1.47 H	239	72.77	4.93
4	*5745.00	108.6 PK			1.47 H	239	103.68	4.92
5	*5745.00	98.3 AV			1.47 H	239	93.38	4.92
6	11490.00	56.2 PK	74.0	-17.8	1.00 H	286	45.55	10.65
7	11490.00	42.1 AV	54.0	-11.9	1.00 H	286	31.45	10.65
8	#17235.00	62.1 PK	74.0	-11.9	1.08 H	139	42.65	19.45
9	#17235.00	49.6 AV	54.0	-4.4	1.08 H	139	30.15	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	62.4 PK	74.0	-11.6	1.48 V	37	57.50	4.90
2	#5715.00	46.6 AV	54.0	-7.4	1.48 V	37	41.70	4.90
3	#5725.00	73.2 PK	78.2	-5.0	1.48 V	37	68.27	4.93
4	*5745.00	104.6 PK			1.48 V	37	99.68	4.92
5	*5745.00	94.3 AV			1.48 V	37	89.38	4.92
6	11490.00	56.8 PK	74.0	-17.2	1.22 V	147	46.15	10.65
7	11490.00	44.3 AV	54.0	-9.7	1.22 V	147	33.65	10.65
8	#17235.00	64.2 PK	74.0	-9.8	1.20 V	147	44.75	19.45
9	#17235.00	51.5 AV	54.0	-2.5	1.20 V	147	32.05	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	66.7 PK	74.0	-7.3	1.65 H	239	61.80	4.90
2	#5715.00	50.9 AV	54.0	-3.1	1.65 H	239	46.00	4.90
3	#5725.00	71.3 PK	78.2	-6.9	1.65 H	239	66.37	4.93
4	*5785.00	114.0 PK			1.65 H	239	109.05	4.95
5	*5785.00	103.4 AV			1.65 H	239	98.45	4.95
6	#5850.00	68.3 PK	78.2	-9.9	1.65 H	239	63.28	5.02
7	#5860.00	64.6 PK	74.0	-9.4	1.65 H	239	59.56	5.04
8	#5860.00	48.5 AV	54.0	-5.5	1.65 H	239	43.46	5.04
9	11570.00	58.3 PK	74.0	-15.7	1.03 H	303	47.62	10.68
10	11570.00	44.6 AV	54.0	-9.4	1.03 H	303	33.92	10.68
11	#17355.00	63.6 PK	74.0	-10.4	1.08 H	134	43.84	19.76
12	#17355.00	50.4 AV	54.0	-3.6	1.08 H	134	30.64	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	62.6 PK	74.0	-11.4	1.41 V	33	57.70	4.90
2	#5715.00	48.4 AV	54.0	-5.6	1.41 V	33	43.50	4.90
3	#5725.00	68.4 PK	78.2	-9.8	1.41 V	33	63.47	4.93
4	*5785.00	110.0 PK			1.41 V	33	105.05	4.95
5	*5785.00	99.2 AV			1.41 V	33	94.25	4.95
6	#5850.00	64.8 PK	78.2	-13.4	1.41 V	33	59.78	5.02
7	#5860.00	60.8 PK	74.0	-13.2	1.41 V	33	55.76	5.04
8	#5860.00	45.6 AV	54.0	-8.4	1.41 V	33	40.56	5.04
9	11570.00	57.4 PK	74.0	-16.6	1.17 V	125	46.72	10.68
10	11570.00	45.3 AV	54.0	-8.7	1.17 V	125	34.62	10.68
11	#17355.00	64.6 PK	74.0	-9.4	1.23 V	143	44.84	19.76
12	#17355.00	51.4 AV	54.0	-2.6	1.23 V	143	31.64	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	110.7 PK			1.67 H	239	105.72	4.98
2	*5825.00	101.1 AV			1.67 H	239	96.12	4.98
3	#5850.00	77.7 PK	78.2	-0.5	1.67 H	239	72.68	5.02
4	#5860.00	68.2 PK	74.0	-5.8	1.67 H	239	63.16	5.04
5	#5860.00	53.4 AV	54.0	-0.6	1.67 H	239	48.36	5.04
6	11650.00	55.9 PK	74.0	-18.1	1.00 H	269	45.31	10.59
7	11650.00	42.2 AV	54.0	-11.8	1.00 H	269	31.61	10.59
8	#17475.00	61.3 PK	74.0	-12.7	1.04 H	147	41.35	19.95
9	#17475.00	49.0 AV	54.0	-5.0	1.04 H	147	29.05	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			1.51 V	51	101.72	4.98
2	*5825.00	97.1 AV			1.51 V	51	92.12	4.98
3	#5850.00	73.2 PK	78.2	-5.0	1.51 V	51	68.18	5.02
4	#5860.00	64.6 PK	74.0	-9.4	1.51 V	51	59.56	5.04
5	#5860.00	50.1 AV	54.0	-3.9	1.51 V	51	45.06	5.04
6	11650.00	56.6 PK	74.0	-17.4	1.19 V	137	46.01	10.59
7	11650.00	44.8 AV	54.0	-9.2	1.19 V	137	34.21	10.59
8	#17475.00	64.5 PK	74.0	-9.5	1.16 V	124	44.55	19.95
9	#17475.00	51.6 AV	54.0	-2.4	1.16 V	124	31.65	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.

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	67.7 PK	74.0	-6.3	1.03 H	207	63.42	4.28
2	5150.00	50.3 AV	54.0	-3.7	1.03 H	207	46.02	4.28
3	*5180.00	109.3 PK			1.03 H	207	104.91	4.39
4	*5180.00	99.9 AV			1.03 H	207	95.51	4.39
5	#10360.00	56.3 PK	74.0	-17.7	1.05 H	285	46.24	10.06
6	#10360.00	42.2 AV	54.0	-11.8	1.05 H	285	32.14	10.06
7	15540.00	61.7 PK	74.0	-12.3	1.11 H	156	46.86	14.84
8	15540.00	49.5 AV	54.0	-4.5	1.11 H	156	34.66	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	61.2 PK	74.0	-12.8	1.46 V	46	56.92	4.28
2	5150.00	45.1 AV	54.0	-8.9	1.46 V	46	40.82	4.28
3	*5180.00	105.3 PK			1.46 V	46	100.91	4.39
4	*5180.00	95.7 AV			1.46 V	46	91.31	4.39
5	#10360.00	56.1 PK	74.0	-17.9	1.20 V	147	46.04	10.06
6	#10360.00	42.3 AV	54.0	-11.7	1.20 V	147	32.24	10.06
7	15540.00	63.2 PK	74.0	-10.8	1.26 V	121	48.36	14.84
8	15540.00	50.3 AV	54.0	-3.7	1.26 V	121	35.46	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	55.6 PK	74.0	-18.4	1.32 H	218	51.32	4.28
2	5150.00	44.1 AV	54.0	-9.9	1.32 H	218	39.82	4.28
3	*5200.00	109.0 PK			1.32 H	218	104.56	4.44
4	*5200.00	99.8 AV			1.32 H	218	95.36	4.44
5	5350.00	53.9 PK	74.0	-20.1	1.32 H	218	49.39	4.51
6	5350.00	40.9 AV	54.0	-13.1	1.32 H	218	36.39	4.51
7	#10400.00	56.9 PK	74.0	-17.1	1.02 H	293	46.83	10.07
8	#10400.00	42.6 AV	54.0	-11.4	1.02 H	293	32.53	10.07
9	15600.00	62.2 PK	74.0	-11.8	1.08 H	131	47.14	15.06
10	15600.00	49.9 AV	54.0	-4.1	1.08 H	131	34.84	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	52.7 PK	74.0	-21.3	1.39 V	37	48.42	4.28
2	5150.00	42.2 AV	54.0	-11.8	1.39 V	37	37.92	4.28
3	*5200.00	105.6 PK			1.39 V	37	101.16	4.44
4	*5200.00	95.9 AV			1.39 V	37	91.46	4.44
5	5350.00	52.2 PK	74.0	-21.8	1.39 V	37	47.69	4.51
6	5350.00	38.9 AV	54.0	-15.1	1.39 V	37	34.39	4.51
7	#10400.00	55.7 PK	74.0	-18.3	1.24 V	143	45.63	10.07
8	#10400.00	42.0 AV	54.0	-12.0	1.24 V	143	31.93	10.07
9	15600.00	63.8 PK	74.0	-10.2	1.22 V	142	48.74	15.06
10	15600.00	50.7 AV	54.0	-3.3	1.22 V	142	35.64	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 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	109.6 PK			1.31 H	217	105.19	4.41
2	*5240.00	100.6 AV			1.31 H	217	96.19	4.41
3	5350.00	54.1 PK	74.0	-19.9	1.31 H	217	49.59	4.51
4	5350.00	40.9 AV	54.0	-13.1	1.31 H	217	36.39	4.51
5	#10480.00	56.7 PK	74.0	-17.3	1.00 H	287	46.44	10.26
6	#10480.00	42.4 AV	54.0	-11.6	1.00 H	287	32.14	10.26
7	15720.00	62.2 PK	74.0	-11.8	1.06 H	151	47.53	14.67
8	15720.00	49.9 AV	54.0	-4.1	1.06 H	151	35.23	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	104.2 PK			1.44 V	55	99.79	4.41
2	*5240.00	94.4 AV			1.44 V	55	89.99	4.41
3	5350.00	51.4 PK	74.0	-22.6	1.44 V	55	46.89	4.51
4	5350.00	37.9 AV	54.0	-16.1	1.44 V	55	33.39	4.51
5	#10480.00	56.5 PK	74.0	-17.5	1.30 V	125	46.24	10.26
6	#10480.00	43.1 AV	54.0	-10.9	1.30 V	125	32.84	10.26
7	15720.00	62.6 PK	74.0	-11.4	1.28 V	128	47.93	14.67
8	15720.00	49.7 AV	54.0	-4.3	1.28 V	128	35.03	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	66.1 PK	74.0	-7.9	1.49 H	241	61.20	4.90
2	#5715.00	47.7 AV	54.0	-6.3	1.49 H	241	42.80	4.90
3	#5725.00	78.0 PK	78.2	-0.2	1.49 H	241	73.07	4.93
4	*5745.00	106.9 PK			1.49 H	241	101.98	4.92
5	*5745.00	97.3 AV			1.49 H	241	92.38	4.92
6	11490.00	55.8 PK	74.0	-18.2	1.02 H	275	45.15	10.65
7	11490.00	41.8 AV	54.0	-12.2	1.02 H	275	31.15	10.65
8	#17235.00	62.4 PK	74.0	-11.6	1.06 H	115	42.95	19.45
9	#17235.00	50.0 AV	54.0	-4.0	1.06 H	115	30.55	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	61.2 PK	74.0	-12.8	1.42 V	14	56.30	4.90
2	#5715.00	45.5 AV	54.0	-8.5	1.42 V	14	40.60	4.90
3	#5725.00	73.8 PK	78.2	-4.4	1.42 V	14	68.87	4.93
4	*5745.00	104.2 PK			1.42 V	14	99.28	4.92
5	*5745.00	93.2 AV			1.42 V	14	88.28	4.92
6	11490.00	55.5 PK	74.0	-18.5	1.16 V	135	44.85	10.65
7	11490.00	42.2 AV	54.0	-11.8	1.16 V	135	31.55	10.65
8	#17235.00	62.6 PK	74.0	-11.4	1.14 V	132	43.15	19.45
9	#17235.00	50.1 AV	54.0	-3.9	1.14 V	132	30.65	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	67.0 PK	74.0	-7.0	1.35 H	240	62.10	4.90
2	#5715.00	51.5 AV	54.0	-2.5	1.35 H	240	46.60	4.90
3	#5725.00	73.1 PK	78.2	-5.1	1.35 H	240	68.17	4.93
4	*5785.00	112.8 PK			1.35 H	240	107.85	4.95
5	*5785.00	102.5 AV			1.35 H	240	97.55	4.95
6	#5850.00	69.7 PK	78.2	-8.5	1.35 H	240	64.68	5.02
7	#5860.00	62.1 PK	74.0	-11.9	1.35 H	240	57.06	5.04
8	#5860.00	47.5 AV	54.0	-6.5	1.35 H	240	42.46	5.04
9	11570.00	55.4 PK	74.0	-18.6	1.02 H	292	44.72	10.68
10	11570.00	43.4 AV	54.0	-10.6	1.02 H	292	32.72	10.68
11	#17355.00	62.1 PK	74.0	-11.9	1.09 H	125	42.34	19.76
12	#17355.00	49.2 AV	54.0	-4.8	1.09 H	125	29.44	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	62.6 PK	74.0	-11.4	1.36 V	42	57.70	4.90
2	#5715.00	48.2 AV	54.0	-5.8	1.36 V	42	43.30	4.90
3	#5725.00	68.4 PK	78.2	-9.8	1.36 V	42	63.47	4.93
4	*5785.00	109.4 PK			1.36 V	42	104.45	4.95
5	*5785.00	98.4 AV			1.36 V	42	93.45	4.95
6	#5850.00	64.3 PK	78.2	-13.9	1.36 V	42	59.28	5.02
7	#5860.00	61.3 PK	74.0	-12.7	1.36 V	42	56.26	5.04
8	#5860.00	46.0 AV	54.0	-8.0	1.36 V	42	40.96	5.04
9	11570.00	56.7 PK	74.0	-17.3	1.12 V	120	46.02	10.68
10	11570.00	44.2 AV	54.0	-9.8	1.12 V	120	33.52	10.68
11	#17355.00	63.4 PK	74.0	-10.6	1.13 V	153	43.64	19.76
12	#17355.00	50.3 AV	54.0	-3.7	1.13 V	153	30.54	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	108.9 PK			1.41 H	238	103.92	4.98
2	*5825.00	99.2 AV			1.41 H	238	94.22	4.98
3	#5850.00	78.0 PK	78.2	-0.2	1.41 H	238	72.98	5.02
4	#5860.00	67.4 PK	74.0	-6.6	1.41 H	238	62.36	5.04
5	#5860.00	51.7 AV	54.0	-2.3	1.41 H	238	46.66	5.04
6	11650.00	56.1 PK	74.0	-17.9	1.00 H	260	45.51	10.59
7	11650.00	42.1 AV	54.0	-11.9	1.00 H	260	31.51	10.59
8	#17475.00	61.1 PK	74.0	-12.9	1.02 H	131	41.15	19.95
9	#17475.00	48.8 AV	54.0	-5.2	1.02 H	131	28.85	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	105.4 PK			1.49 V	61	100.42	4.98
2	*5825.00	95.2 AV			1.49 V	61	90.22	4.98
3	#5850.00	74.2 PK	78.2	-4.0	1.51 V	17	69.18	5.02
4	#5860.00	64.9 PK	74.0	-9.1	1.55 V	60	59.86	5.04
5	#5860.00	49.2 AV	54.0	-4.8	1.55 V	60	44.16	5.04
6	11650.00	55.7 PK	74.0	-18.3	1.17 V	107	45.11	10.59
7	11650.00	43.8 AV	54.0	-10.2	1.17 V	107	33.21	10.59
8	#17475.00	64.3 PK	74.0	-9.7	1.08 V	87	44.35	19.95
9	#17475.00	51.5 AV	54.0	-2.5	1.08 V	87	31.55	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 (HT40)

CHANNEL	TX Channel 38	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	73.3 PK	74.0	-0.7	1.28 H	209	69.02	4.28
2	5150.00	53.6 AV	54.0	-0.4	1.28 H	209	49.32	4.28
3	*5190.00	104.4 PK			1.28 H	209	99.99	4.41
4	*5190.00	95.1 AV			1.28 H	209	90.69	4.41
5	#10380.00	52.4 PK	74.0	-21.6	1.00 H	274	42.33	10.07
6	#10380.00	38.3 AV	54.0	-15.7	1.00 H	274	28.23	10.07
7	15570.00	57.6 PK	74.0	-16.4	1.11 H	159	42.65	14.95
8	15570.00	45.3 AV	54.0	-8.7	1.11 H	159	30.35	14.95
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	5150.00	71.6 PK	74.0	-2.4	1.47 V	46	67.32	4.28
2	5150.00	51.3 AV	54.0	-2.7	1.47 V	46	47.02	4.28
3	*5190.00	99.2 PK			1.47 V	46	94.79	4.41
4	*5190.00	90.3 AV			1.47 V	46	85.89	4.41
5	#10380.00	51.6 PK	74.0	-22.4	1.35 V	120	41.53	10.07
6	#10380.00	37.7 AV	54.0	-16.3	1.35 V	120	27.63	10.07
7	15570.00	56.6 PK	74.0	-17.4	1.27 V	137	41.65	14.95
8	15570.00	44.3 AV	54.0	-9.7	1.27 V	137	29.35	14.95

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.

CHANNEL	TX Channel 46	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	*5230.00	106.5 PK			1.30 H	217	102.08	4.42
2	*5230.00	97.2 AV			1.30 H	217	92.78	4.42
3	5350.00	53.9 PK	74.0	-20.1	1.30 H	217	49.39	4.51
4	5350.00	41.3 AV	54.0	-12.7	1.30 H	217	36.79	4.51
5	#10460.00	54.4 PK	74.0	-19.6	1.00 H	298	44.19	10.21
6	#10460.00	40.3 AV	54.0	-13.7	1.00 H	298	30.09	10.21
7	15690.00	59.8 PK	74.0	-14.2	1.10 H	155	45.12	14.68
8	15690.00	47.9 AV	54.0	-6.1	1.10 H	155	33.22	14.68
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	*5230.00	102.4 PK			1.38 V	70	97.98	4.42
2	*5230.00	93.0 AV			1.38 V	70	88.58	4.42
3	5350.00	51.5 PK	74.0	-22.5	1.38 V	70	46.99	4.51
4	5350.00	39.6 AV	54.0	-14.4	1.38 V	70	35.09	4.51
5	#10460.00	50.6 PK	74.0	-23.4	1.33 V	124	40.39	10.21
6	#10460.00	36.5 AV	54.0	-17.5	1.33 V	124	26.29	10.21
7	15690.00	56.5 PK	74.0	-17.5	1.33 V	141	41.82	14.68
8	15690.00	44.0 AV	54.0	-10.0	1.33 V	141	29.32	14.68

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 151	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**	**73.9 PK**	**74.0**	**-0.1**	**1.45 H**	**240**	**69.00**	**4.90**
2	#5715.00	53.8 AV	54.0	-0.2	1.45 H	240	48.90	4.90
3	#5725.00	77.4 PK	78.2	-0.8	1.45 H	240	72.47	4.93
4	*5755.00	103.3 PK			1.45 H	240	98.37	4.93
5	*5755.00	93.9 AV			1.45 H	240	88.97	4.93
6	11510.00	54.2 PK	74.0	-19.8	1.02 H	251	43.54	10.66
7	11510.00	38.7 AV	54.0	-15.3	1.02 H	251	28.04	10.66
8	#17265.00	58.4 PK	74.0	-15.6	1.03 H	130	38.88	19.52
9	#17265.00	48.4 AV	54.0	-5.6	1.03 H	130	28.88	19.52
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	71.6 PK	74.0	-2.4	1.36 V	10	66.70	4.90
2	#5715.00	51.5 AV	54.0	-2.5	1.36 V	10	46.60	4.90
3	#5725.00	75.4 PK	78.2	-2.8	1.36 V	10	70.47	4.93
4	*5755.00	99.3 PK			1.36 V	10	94.37	4.93
5	*5755.00	89.4 AV			1.36 V	10	84.47	4.93
6	11510.00	55.8 PK	74.0	-18.2	1.14 V	137	45.14	10.66
7	11510.00	39.6 AV	54.0	-14.4	1.14 V	137	28.94	10.66
8	#17265.00	60.2 PK	74.0	-13.8	1.17 V	125	40.68	19.52
9	#17265.00	49.6 AV	54.0	-4.4	1.17 V	125	30.08	19.52

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 159	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	*5795.00	106.9 PK			1.46 H	237	101.94	4.96
2	*5795.00	97.3 AV			1.46 H	237	92.34	4.96
3	#5850.00	74.8 PK	78.2	-3.4	1.46 H	237	69.78	5.02
4	#5860.00	67.2 PK	74.0	-6.8	1.46 H	237	62.16	5.04
5	#5860.00	53.7 AV	54.0	-0.3	1.46 H	237	48.66	5.04
6	11590.00	54.6 PK	74.0	-19.4	1.00 H	283	43.91	10.69
7	11590.00	38.2 AV	54.0	-15.8	1.00 H	283	27.51	10.69
8	#17385.00	59.4 PK	74.0	-14.6	1.06 H	100	39.54	19.86
9	#17385.00	49.6 AV	54.0	-4.4	1.06 H	100	29.74	19.86
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	*5795.00	103.5 PK			1.36 V	10	98.54	4.96
2	*5795.00	93.2 AV			1.36 V	10	88.24	4.96
3	#5850.00	72.3 PK	78.2	-5.9	1.36 V	10	67.28	5.02
4	#5860.00	65.3 PK	74.0	-8.7	1.36 V	10	60.26	5.04
5	#5860.00	51.4 AV	54.0	-2.6	1.36 V	10	46.36	5.04
6	11590.00	56.3 PK	74.0	-17.7	1.14 V	137	45.61	10.69
7	11590.00	40.2 AV	54.0	-13.8	1.14 V	137	29.51	10.69
8	#17385.00	60.5 PK	74.0	-13.5	1.17 V	125	40.64	19.86
9	#17385.00	49.9 AV	54.0	-4.1	1.17 V	125	30.04	19.86

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 WORST-CASE DATA

802.11a

CHANNEL	TX Channel 157	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	97.43	33.0 QP	43.5	-10.5	2.00 H	120	51.05	-18.02
2	185.42	37.0 QP	43.5	-6.5	1.50 H	133	51.94	-14.97
3	243.35	32.5 QP	46.0	-13.5	1.00 H	332	46.65	-14.18
4	479.88	34.1 QP	46.0	-11.9	2.00 H	100	41.18	-7.12
5	499.85	33.7 QP	46.0	-12.3	1.50 H	313	40.46	-6.75
6	959.88	35.1 QP	46.0	-10.9	2.00 H	12	33.32	1.77
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	98.42	30.7 QP	43.5	-12.8	2.00 V	112	48.58	-17.86
2	185.23	39.4 QP	43.5	-4.1	1.00 V	154	54.37	-14.94
3	234.45	34.3 QP	46.0	-11.7	1.00 V	169	49.18	-14.91
4	381.86	35.7 QP	46.0	-10.3	2.00 V	99	45.35	-9.61
5	415.58	36.3 QP	46.0	-9.7	1.00 V	192	45.09	-8.79
6	958.68	35.0 QP	46.0	-11.0	1.00 V	355	33.26	1.75

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)	5DFB	COCCAB-001	Mar. 10 , 2014	Mar. 09, 2015
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: Jan. 22, 2015

4.2.3 Test Procedures

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.

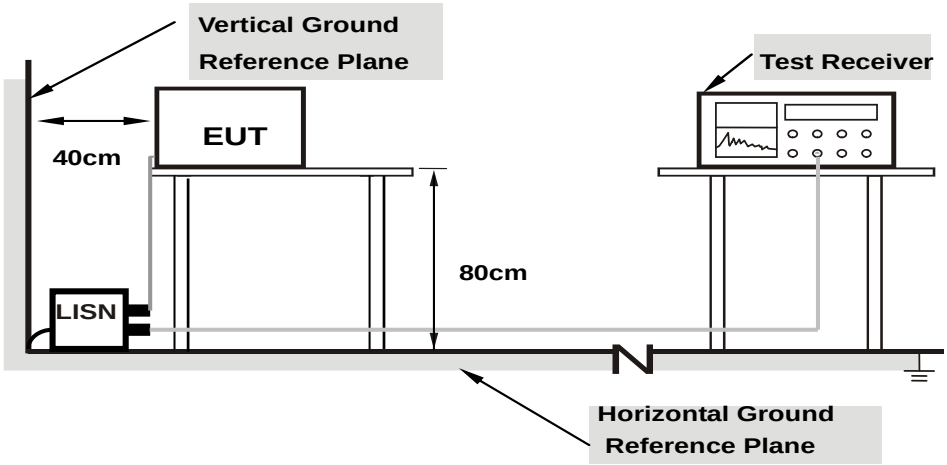
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

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.

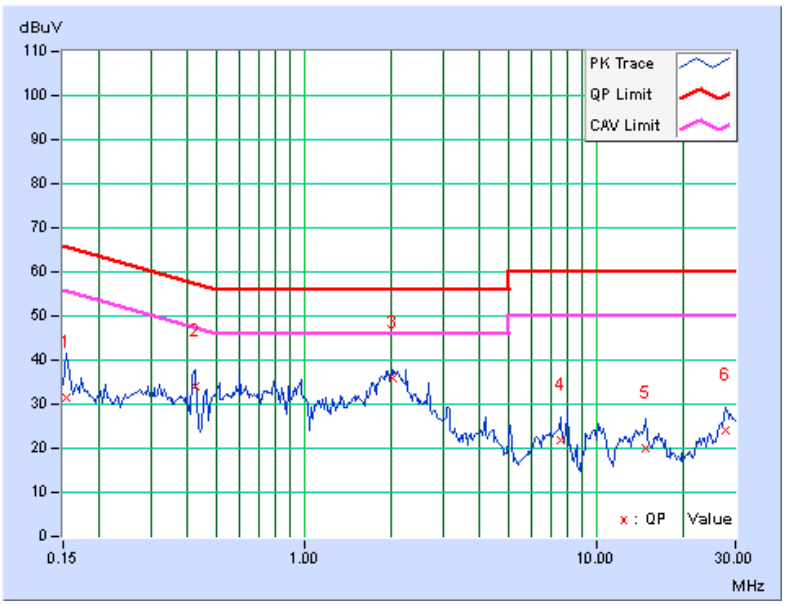
4.2.7 Test Results (Mode 1)

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	0.15391	0.07	31.56	25.65	31.63	25.72	65.79	55.79	-34.16	-30.07
2	0.42344	0.09	34.14	32.82	34.23	32.91	57.38	47.38	-23.15	-14.47
3	2.02734	0.18	35.87	31.45	36.05	31.63	56.00	46.00	-19.95	-14.37
4	7.55859	0.37	21.39	15.11	21.76	15.48	60.00	50.00	-38.24	-34.52
5	14.83203	0.58	19.60	15.07	20.18	15.65	60.00	50.00	-39.82	-34.35
6	27.91406	0.86	23.10	18.13	23.96	18.99	60.00	50.00	-36.04	-31.01

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.

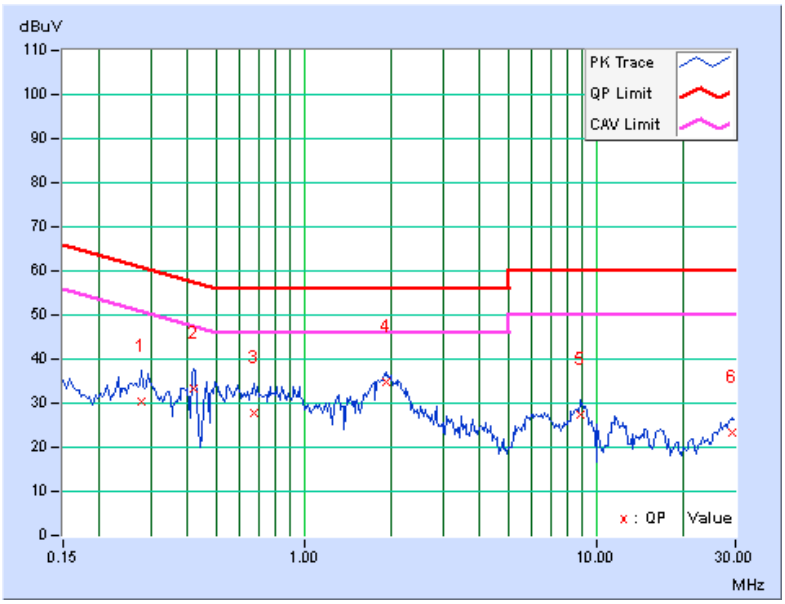


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.27891	0.07	30.41	27.13	30.48	27.20	60.85	50.85	-30.37	-23.65
2	0.41953	0.09	33.33	27.52	33.42	27.61	57.46	47.46	-24.04	-19.85
3	0.67734	0.11	27.65	24.82	27.76	24.93	56.00	46.00	-28.24	-21.07
4	1.90625	0.18	34.57	31.35	34.75	31.53	56.00	46.00	-21.25	-14.47
5	8.88672	0.42	26.90	21.28	27.32	21.70	60.00	50.00	-32.68	-28.30
6	29.17188	0.95	22.38	18.10	23.33	19.05	60.00	50.00	-36.67	-30.95

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.



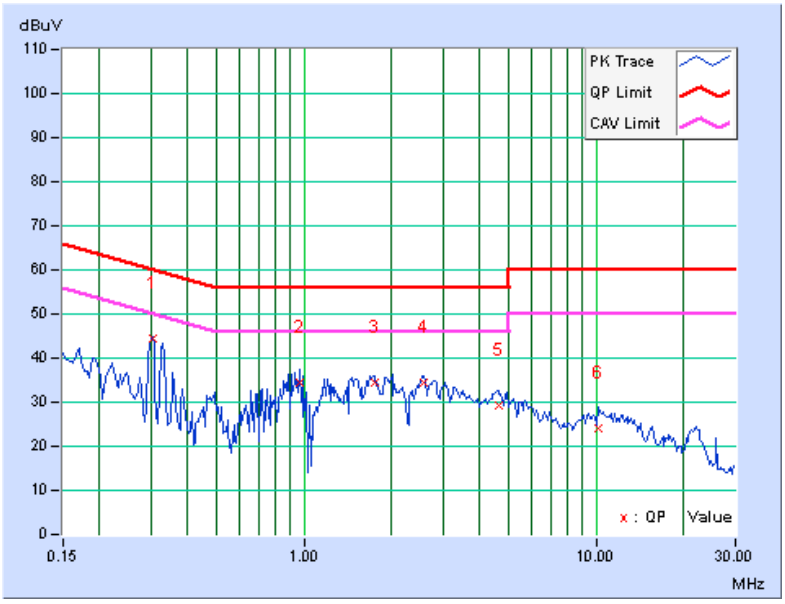
4.2.8 Test Results (Mode 2)

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	**0.30234**	**0.08**	**44.29**	**43.93**	**44.37**	**44.01**	**60.18**	**50.18**	**-15.81**	**-6.17**
2	0.96250	0.13	34.35	31.82	34.48	31.95	56.00	46.00	-21.52	-14.05
3	1.75781	0.17	34.44	33.47	34.61	33.64	56.00	46.00	-21.39	-12.36
4	2.55859	0.20	34.29	27.61	34.49	27.81	56.00	46.00	-21.51	-18.19
5	4.62109	0.27	28.95	19.30	29.22	19.57	56.00	46.00	-26.78	-26.43
6	10.23828	0.46	23.56	16.87	24.02	17.33	60.00	50.00	-35.98	-32.67

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.

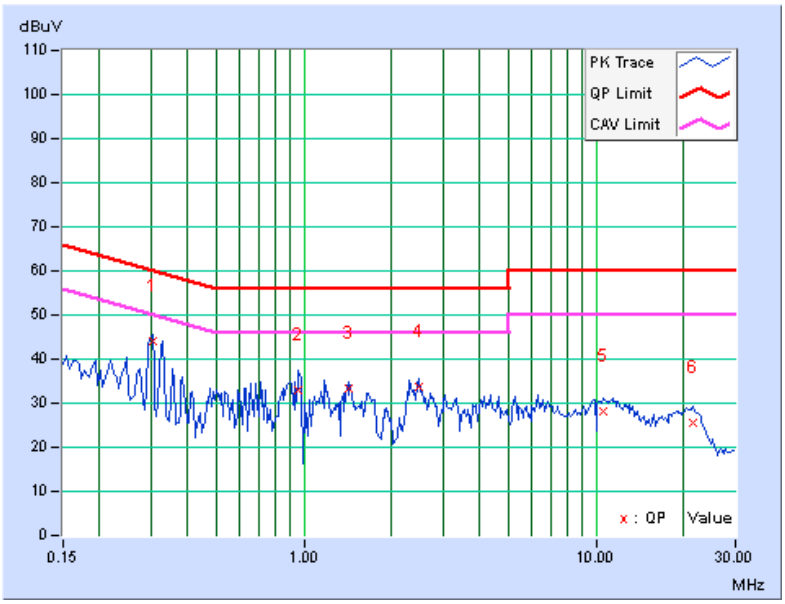


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.30234	0.08	44.17	43.22	44.25	43.30	60.18	50.18	-15.93	-6.88
2	0.95859	0.13	32.78	30.10	32.91	30.23	56.00	46.00	-23.09	-15.77
3	1.42188	0.15	33.03	32.45	33.18	32.60	56.00	46.00	-22.82	-13.40
4	2.46094	0.20	33.49	32.21	33.69	32.41	56.00	46.00	-22.31	-13.59
5	10.64844	0.48	27.80	22.28	28.28	22.76	60.00	50.00	-31.72	-27.24
6	21.41797	0.77	24.68	20.25	25.45	21.02	60.00	50.00	-34.55	-28.98

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.



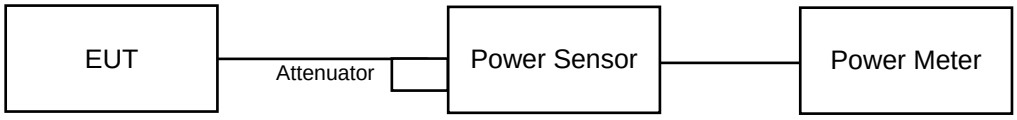
4.3 Transmit Power Measurment

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

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 2015

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. Tested date : Jan. 22, 2015

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

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	MAXIMUM CONDUCTED POWER (mW)	MAXIMUM CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	47.098	16.73	24	PASS
40	5200	44.875	16.52	24	PASS
48	5240	50.582	17.04	24	PASS
149	5745	54.325	17.35	30	PASS
157	5785	206.063	23.14	30	PASS
165	5825	108.643	20.36	30	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAXIMUM CONDUCTED POWER (mW)	MAXIMUM CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	47.315	16.75	24	PASS
40	5200	49.659	16.96	24	PASS
48	5240	54.954	17.40	24	PASS
149	5745	44.771	16.51	30	PASS
157	5785	194.984	22.90	30	PASS
165	5825	99.083	19.96	30	PASS

802.11n (HT40)

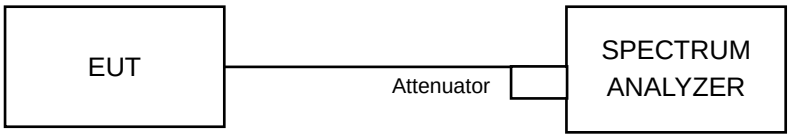
CHANNEL	CHANNEL FREQUENCY (MHz)	MAXIMUM CONDUCTED POWER (mW)	MAXIMUM CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	28.774	14.59	24	PASS
46	5230	52.602	17.21	24	PASS
151	5755	40.179	16.04	30	PASS
159	5795	112.46	20.51	30	PASS

4.4 Peak Power Spectral Density Measurement

4.4.1 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/ MHz

4.4.2 Test Setup



4.4.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. Tested date : Jan. 22, 2015

4.4.4 Test Procedures

※For U-NII-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:

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 and for duty cycle of test signal is < 98% add 10 log (1/duty cycle)

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1 Band

802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	4.69	11	PASS
40	5200	4.77	11	PASS
48	5240	5.07	11	PASS

802.11n (HT20)

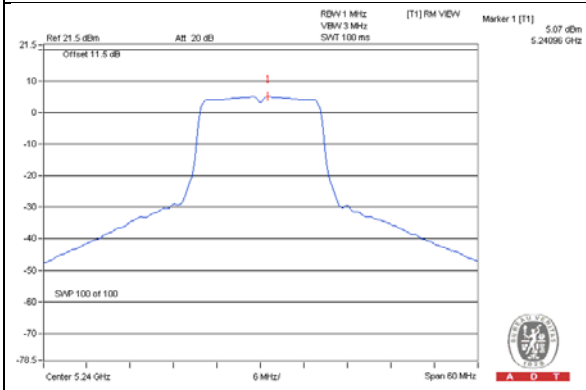
CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	4.39	11	PASS
40	5200	4.58	11	PASS
48	5240	4.94	11	PASS

802.11n (HT40)

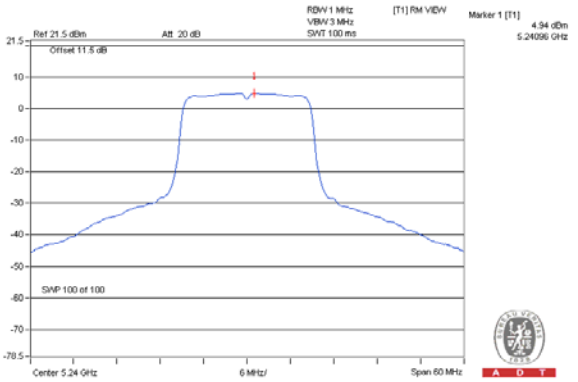
CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	-1.34	11	PASS
46	5230	1.45	11	PASS

SPECTRUM PLOT OF WORST VALUE

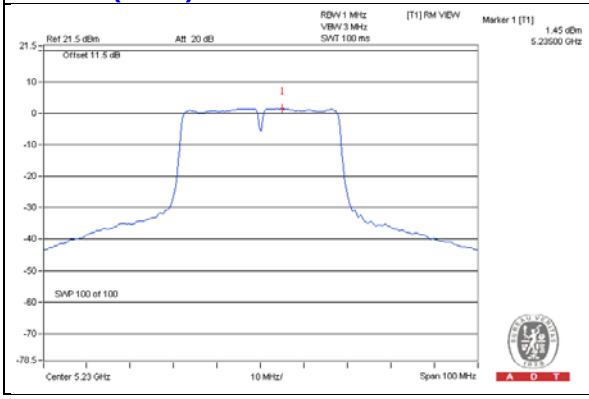
802.11a / CH48



802.11n (HT20) / CH48



802.11n (HT40) / CH46



For U-NII-3 Band

802.11a

Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
149	5745	-3.13	-0.91	30	PASS
157	5785	2.64	4.86	30	PASS
165	5825	0.04	2.26	30	PASS

802.11n (HT20)

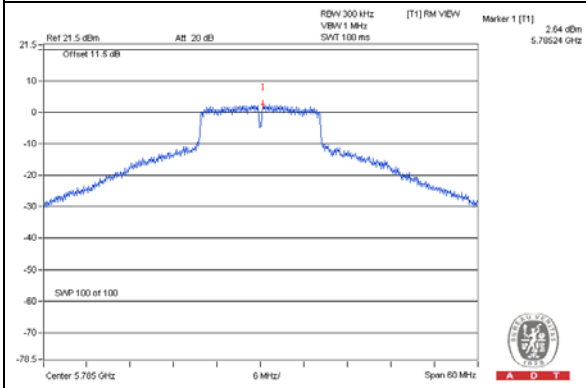
Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
149	5745	-4.06	-1.84	30	PASS
157	5785	2.19	4.41	30	PASS
165	5825	-0.69	1.53	30	PASS

802.11n (HT40)

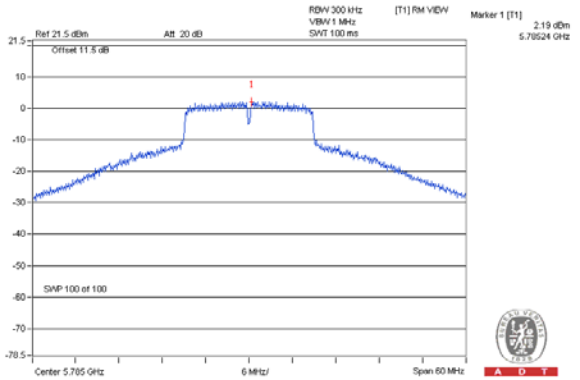
Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	PASS /FAIL
151	5755	-8.15	-5.93	30	PASS
159	5795	-3.42	-1.20	30	PASS

SPECTRUM PLOT OF WORST VALUE

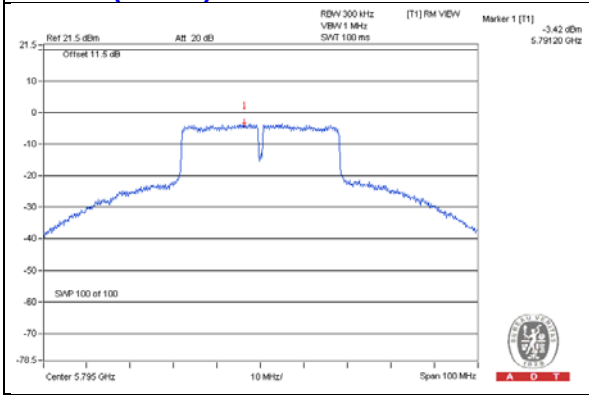
802.11a / CH157



802.11n (HT20) / CH157



802.11n (VHT40) / CH159

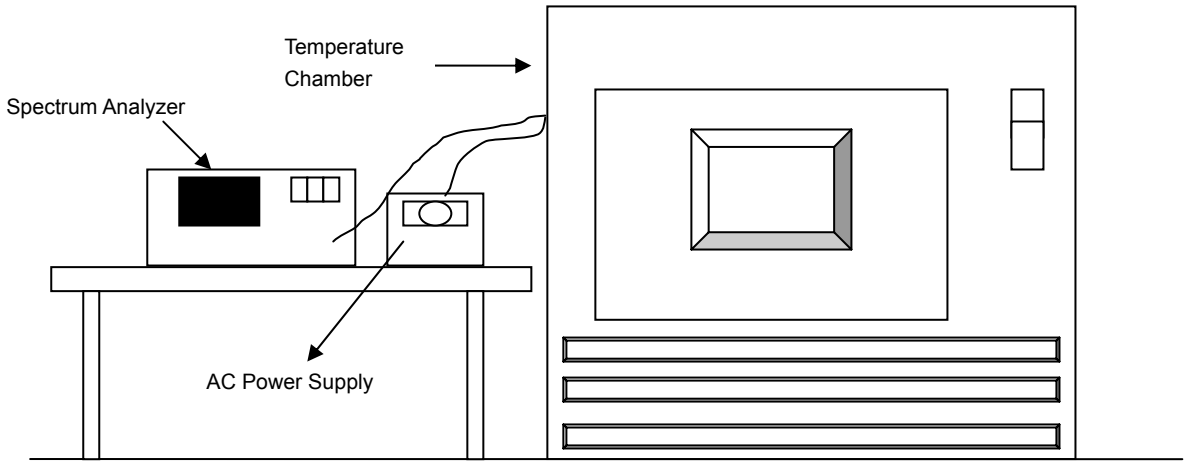


4.5 Frequency Stability

4.5.1 Limits Of Frequency Stability Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 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. Tested date : Jan. 22, 2015

4.5.4 Test Procedure

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.
.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 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	5240.0258	0.00049	5240.0258	0.00049	5240.0244	0.00047	5240.0262	0.00050
40	120	5239.9728	-0.00052	5239.9744	-0.00049	5239.9731	-0.00051	5239.9766	-0.00045
30	120	5239.9808	-0.00037	5239.9846	-0.00029	5239.9843	-0.00030	5239.9838	-0.00031
20	120	5239.9924	-0.00015	5239.9887	-0.00022	5239.9883	-0.00022	5239.9892	-0.00021
10	120	5239.9983	-0.00003	5239.9984	-0.00003	5239.9996	-0.00001	5240.0008	0.00002
0	120	5239.9951	-0.00009	5239.9962	-0.00007	5239.9932	-0.00013	5239.9956	-0.00008
-10	120	5239.987	-0.00025	5239.991	-0.00017	5239.9874	-0.00024	5239.9903	-0.00019
-20	120	5239.9764	-0.00045	5239.9765	-0.00045	5239.9736	-0.00050	5239.9767	-0.00044
-30	120	5240.0244	0.00047	5240.0239	0.00046	5240.0266	0.00051	5240.0234	0.00045

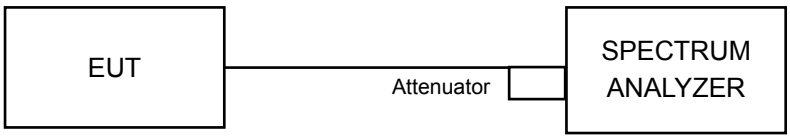
FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5240MHz									
TEMP. (℃)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5239.9934	-0.00013	5239.9878	-0.00023	5239.9882	-0.00023	5239.9886	-0.00022
	120	5239.9924	-0.00015	5239.9887	-0.00022	5239.9883	-0.00022	5239.9892	-0.00021
	102	5239.9918	-0.00016	5239.9886	-0.00022	5239.9881	-0.00023	5239.9888	-0.00021

4.6 6dB Bandwidth Measurment

4.6.1 Limits Of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. Tested date : Jan. 22, 2015

4.6.4 Test Procedure

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHZ)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.35	0.5	PASS
157	5785	16.37	0.5	PASS
165	5825	16.32	0.5	PASS

802.11n (HT20)

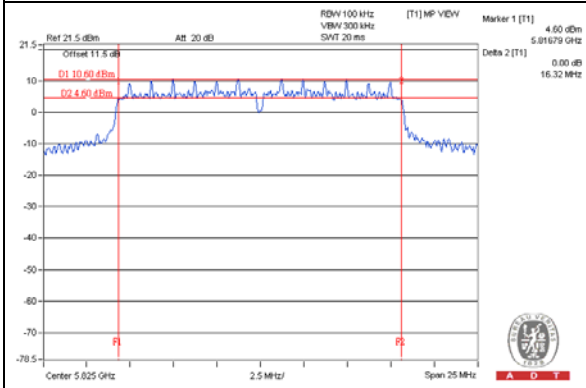
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHZ)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.82	0.5	PASS
157	5785	17.10	0.5	PASS
165	5825	16.34	0.5	PASS

802.11n (HT40)

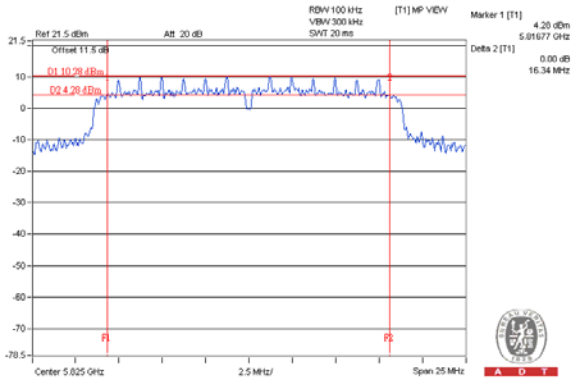
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHZ)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	35.91	0.5	PASS
159	5795	35.33	0.5	PASS

SPECTRUM PLOT OF WORST VALUE

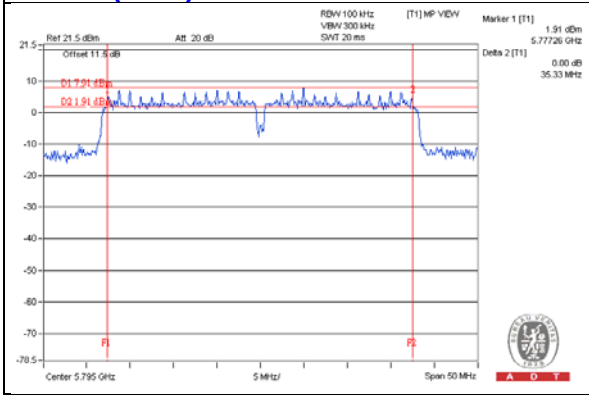
802.11a / CH165



802.11n (HT20) / CH165



802.11n (HT40) / CH159



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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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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