

FCC Test Report (WLAN-15.407)

Report No.: RF150623E09-1

FCC ID: U8G-P1934

Test Model: MAX BR1 PRO LTE

Series Model: MAX BR1 PRO, MAX BR2, MAX BR4, Pismo 934, Surf SOHO,
Surf SOHO LTE, MAX BR2 LTE, MAX BR4 LTE

Received Date: June 23, 2015

Test Date: June 23 to July 15, 2015

Issued Date: July 24, 2015

Applicant: Pismo Labs Technology Limited

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Release Control Record

Issue No.	Description	Date Issued
RF150623E09-1	Original release.	July 24, 2015

1 Certificate of Conformity

Product: Industrial-Grade M2M Cellular Router

Brand: Pepwave / Peplink / Pismo

Test Model: MAX BR1 PRO LTE

Series Model: MAX BR1 PRO, MAX BR2, MAX BR4, Pismo 934, Surf SOHO, Surf SOHO LTE, MAX BR2 LTE, MAX BR4 LTE

Sample Status: MASS-PRODUCTION

Applicant: Pismo Labs Technology Limited

Test Date: June 23 to July 15, 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:** July 24, 2015
Claire Kuan / Specialist

Approved by : , **Date:** July 24, 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 -9.36dB at 2.79634MHz.
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 5725.00MHz & 5850.00MHz.
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	Antenna connector is PR-SMA not a standard connector.

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
	200MHz ~1000MHz	3.65 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	3.88 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	Industrial-Grade M2M Cellular Router
Brand	Pepwave / Peplink / Pismo
Test Model	MAX BR1 PRO LTE
Series Model	MAX BR1 PRO, MAX BR2, MAX BR4, Pismo 934, Surf SOHO, Surf SOHO LTE, MAX BR2 LTE, MAX BR4 LTE
Status of EUT	MASS-PRODUCTION
Power Supply Rating	DC 12V from power adapter or DC 10-24V from Terminal Block
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 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 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	For 15.407 802.11a: 146.218mW 802.11n (HT20): 139.959mW 802.11n (HT40): 75.683mW
	For 15.247 802.11b: 502.343mW 802.11g: 814.704mW 802.11n (HT20): 833.681mW 802.11n (HT40): 783.43mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. There are WLAN, WWAN(2G/3G), LTE(4G) and GPS technology used for the EUT.
2. 2.4GHz & 5GHz technology cannot transmit at same time.
3. WLAN/WWAN(2/3G)/LTE(4G) coexistence mode:

Condition	Technology	
1	WLAN(2.4GHz)	WWAN(2G)
2	WLAN(5GHz)	WWAN(2G)

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

4. The EUT contains WWAN certified module which FCC ID: N7NMC7355 (Model: MC7354).

5. All models are listed as below.

Brand	Model	Difference
Pepwave / Peplink / Pismo	MAX BR1 PRO LTE	All models are electrically identical, different model names are for marketing purpose.
	MAX BR1 PRO	
	MAX BR2	
	MAX BR4	
	Pismo 934	
	Surf SOHO	
	Surf SOHO LTE	
	MAX BR2 LTE	
	MAX BR4 LTE	

From the above models, model: **MAX BR1 PRO LTE** was selected as representative model for the test and its data was recorded in this report.

6. The EUT uses following adapter.

Brand	Ten Pao
Model	S040EM1200300
Input Power	AC 100-240V, 1.2A, 50/60Hz
Output Power	DC 12V, 3000mA
Power Line	DC output cable: Unshielded, 1.5m with one core

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

The antennas provided to the EOP, please refer to the following table:

WLAN Antenna Spec.							
No.	Transmitter Circuit	Brand	Model No.	Antenna Type	Antenna Connector	Gain(dBi) including cable loss	Frequency (GHz to GHz)
1	Chain (0)	SmartAnt	SAA06-220690	Dipole	RP-SMA	3	2.4~2.4835
		SmartAnt	SAA06-220690	Dipole	RP-SMA	4-5.5	5.15~5.25
		SmartAnt	SAA06-220690	Dipole	RP-SMA	5.5-6	5.725~5.85
2	Chain (1)	SmartAnt	SAA06-220690	Dipole	RP-SMA	3	2.4~2.4835
		SmartAnt	SAA06-220690	Dipole	RP-SMA	4-5.5	5.15~5.25
		SmartAnt	SAA06-220690	Dipole	RP-SMA	5.5-6	5.725~5.85
LTE Antenna Spec.							
Set	Transmitter Circuit	Brand	Model No.	Antenna Type	Antenna Connector	Gain(dBi) including cable loss	Frequency (GHz to GHz)
1	Cellular Main	Pulse	SPDA24700/2700	Dipole	SMA Male	2	698-960/ 1710-2170/ 2500-2700
	Cellular Diversity/ Aux	Pulse	SPDA24700/2700	Dipole	SMA Male	2	
GPS Antenna Spec.							
No.	Brand		Model No.	Antenna Type	Antenna Connector	Gain(dBi) including cable loss	Frequency (GHz to GHz)
1	Chang Hong		GPS-01	Magnetic	R-SMA Male	-1	1.57542 (+/- 1.023)

8. The EUT incorporates a SISO function.

2.4GHz			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX (Diversity)	1RX (Diversity)
802.11g	6 ~ 54Mbps	1TX (Diversity)	1RX (Diversity)
802.11n (HT20)	MCS 0~7	1TX (Diversity)	1RX (Diversity)
802.11n (HT40)	MCS 0~7	1TX (Diversity)	1RX (Diversity)
5GHz			
MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11a	6 ~ 54Mbps	1TX (Diversity)	1RX (Diversity)
802.11n (HT20)	MCS 0~7	1TX (Diversity)	1RX (Diversity)
802.11n (HT40)	MCS 0~7	1TX (Diversity)	1RX (Diversity)

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

Mode	Test Condition
1	Adapter
2	DC Terminal Block in

The worst radiated emission was found in **Mode 1**. Therefore only the test data of the modes were recorded in this report.

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

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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	√	√	√	√	With adapter
2	-	-	√	-	With DC Terminal Block in

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 EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane**.

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, 40, 48	OFDM	BPSK	6
802.11n (HT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11n (HT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11n (HT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	62	OFDM	BPSK	6
802.11a	5745-5825	149 to 165	149	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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	48	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.

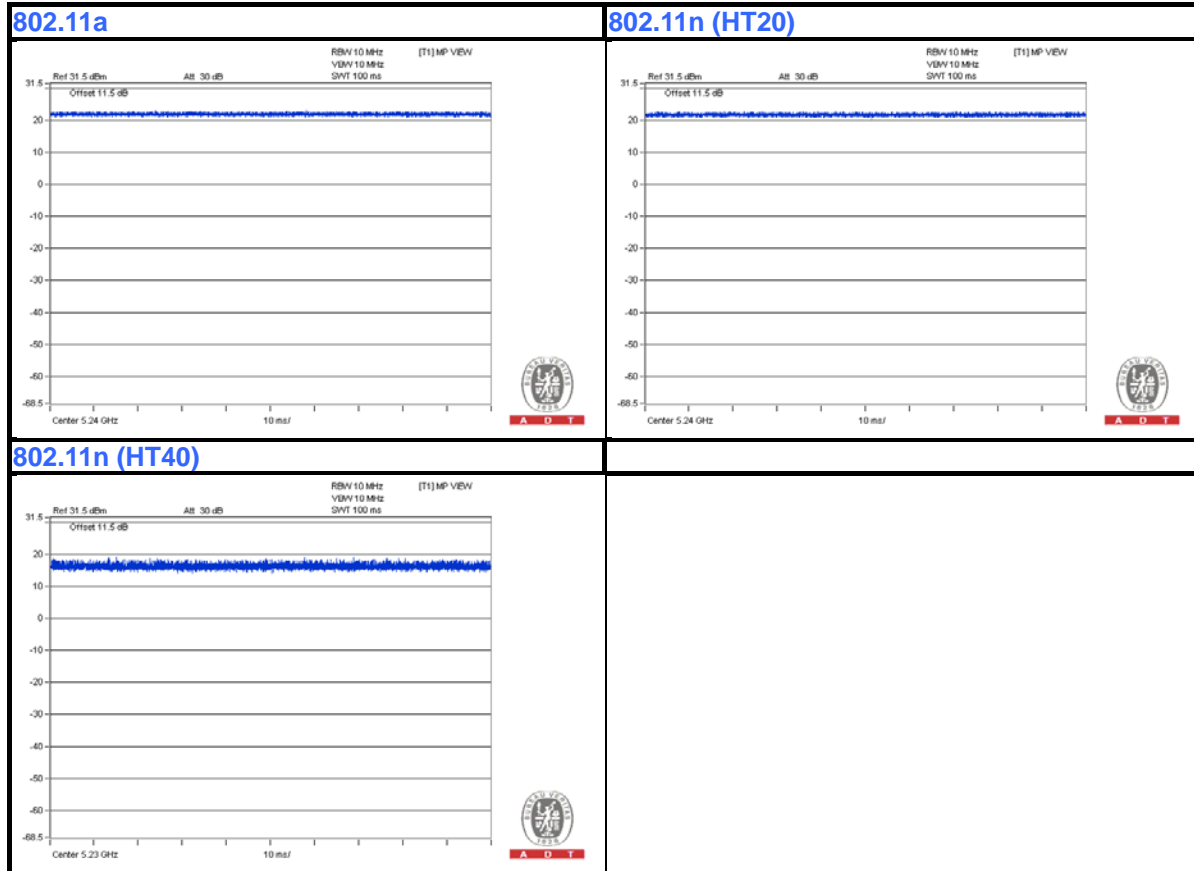
MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	48	OFDM	BPSK	6

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	22deg. C, 66%RH	120Vac, 60Hz	Weiwei Lo
	24deg. C, 67%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	19deg. C, 63%RH	120Vac, 60Hz	Robert Cheng
PLC	25deg. C, 64%RH	120Vac, 60Hz	JyunChun Lin
	25deg. C, 65%RH	120Vac, 60Hz (System)	JyunChun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.



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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	NOTEBOOK COMPUTER	DELL	E6400	D814C A00 APCC	NA	Provided by Lab
B.	HUB	Linksys	SD208	NA	NA	Provided by Lab
C.	DC POWER SUPPLY	GOOD WILL INSTRUMENT CO., LTD.	GPC-3030D	7700087	NA	Provided by Lab
D.	NOTEBOOK COMPUTER	DELL	E6420	482T3R1	FCC DoC	Provided by Lab

Note:

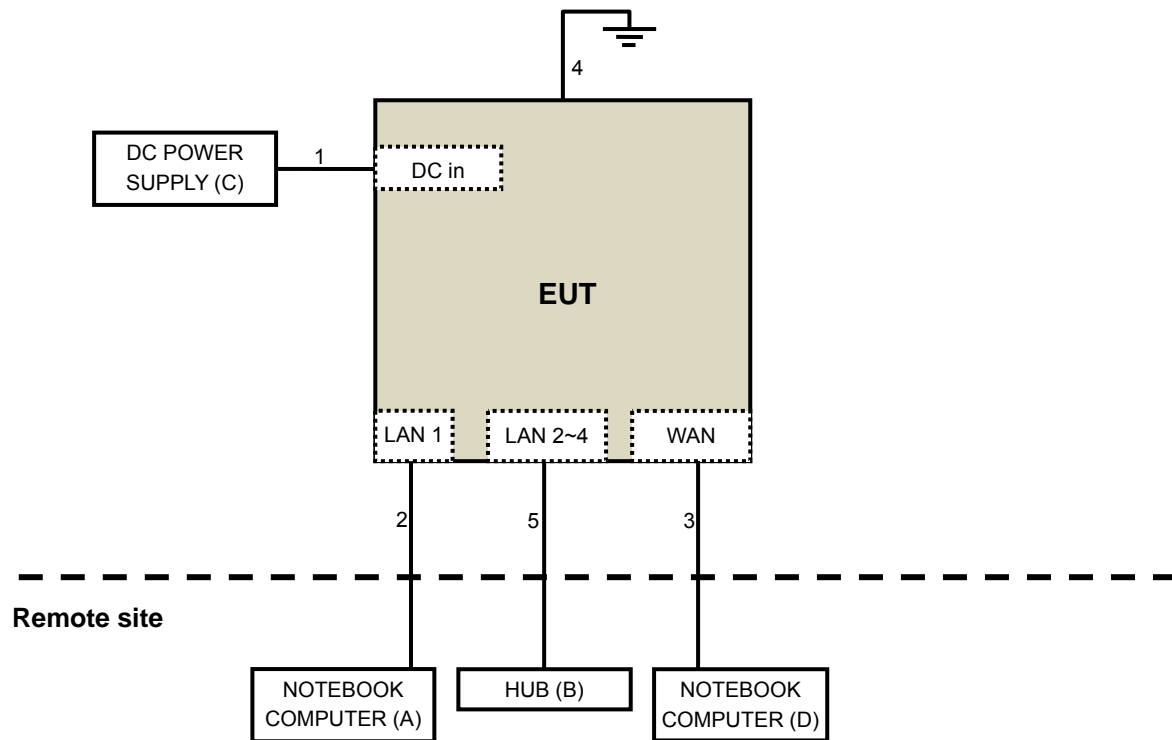
1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC	1	2	No	0	Provided by Lab
2.	RJ45	1	10	No	0	Provided by Lab
3.	RJ45	1	10	No	0	Provided by Lab
4.	EARTH	1	3	No	0	Provided by Lab
5.	RJ45	3	10	No	0	Provided by Lab
6.	DC	1	1.5	No	1	Supplied by client

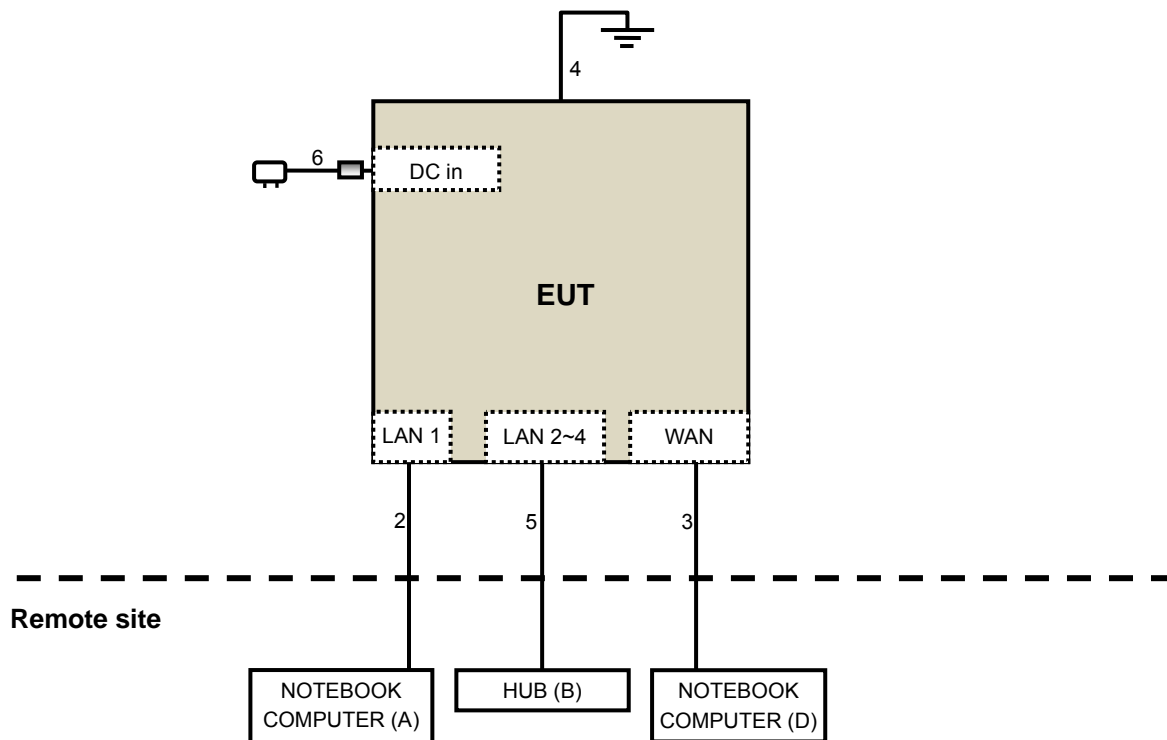
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

For conducted test mode 2:



For other test mode 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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2(dBuV/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(dBuV/m) ^{*1} PK:78.2 (dBuV/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:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001 -1 CHGCAB-001 -2	Oct. 04, 2014	Oct. 03, 2015
	RF-141	CHGCAB-004	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
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 test was performed in 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: July 10, 2015

4.1.3 Test Procedure

- a. The EUT was placed on the top of a rotating table 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:

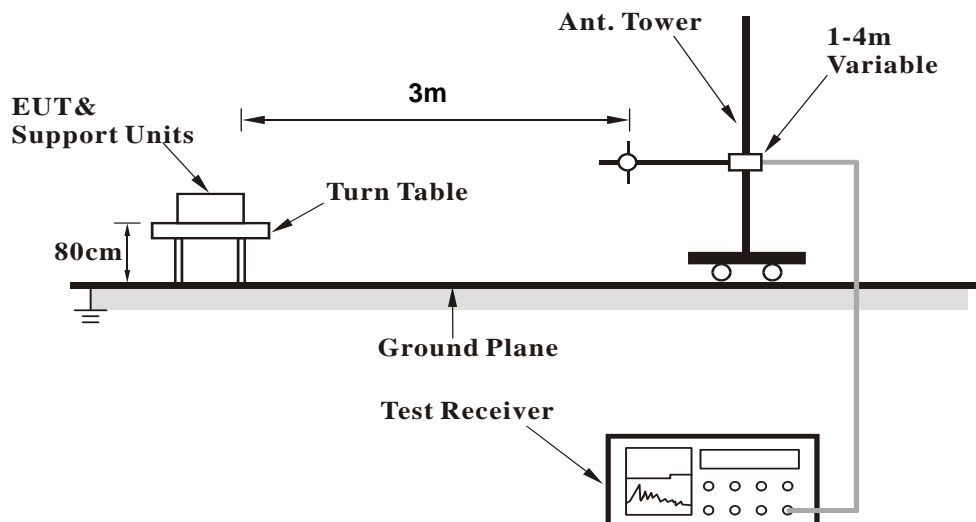
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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 ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) 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

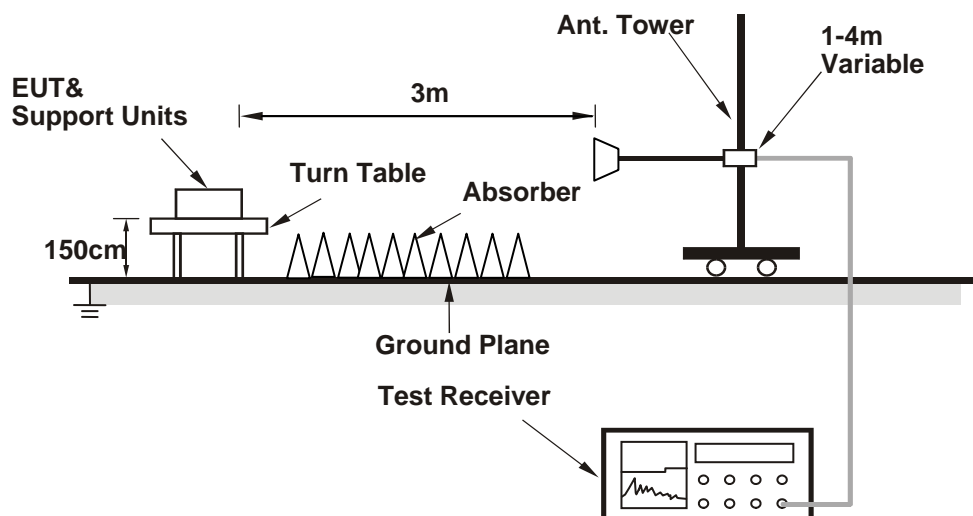
No deviation.

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 Condition

- Placed the EUT on the testing table.
- Prepared notebooks to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (artgui.exe) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

ABOVE 1GHz DATA :

802.11a

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

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	64.7 PK	74.0	-9.3	1.68 H	287	54.73	9.97
2	5150.00	49.7 AV	54.0	-4.3	1.68 H	287	39.73	9.97
3	*5180.00	97.9 PK			1.68 H	287	87.74	10.16
4	*5180.00	89.4 AV			1.68 H	287	79.24	10.16
5	#10360.00	60.5 PK	74.0	-13.5	1.06 H	130	43.52	16.98
6	#10360.00	47.1 AV	54.0	-6.9	1.06 H	130	30.12	16.98
7	15540.00	63.4 PK	74.0	-10.6	1.00 H	117	41.47	21.93
8	15540.00	48.0 AV	54.0	-6.0	1.00 H	117	26.07	21.93
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	70.2 PK	74.0	-3.8	1.97 V	314	60.23	9.97
2	5150.00	53.6 AV	54.0	-0.4	1.97 V	314	43.63	9.97
3	*5180.00	108.2 PK			1.97 V	314	98.04	10.16
4	*5180.00	99.9 AV			1.97 V	314	89.74	10.16
5	#10360.00	60.5 PK	74.0	-13.5	1.86 V	149	43.52	16.98
6	#10360.00	48.7 AV	54.0	-5.3	1.86 V	149	31.72	16.98
7	15540.00	60.7 PK	74.0	-13.3	1.84 V	145	38.77	21.93
8	15540.00	49.8 AV	54.0	-4.2	1.84 V	145	27.87	21.93

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	64.4 PK	74.0	-9.6	1.56 H	297	54.43	9.97
2	5150.00	49.2 AV	54.0	-4.8	1.56 H	297	39.23	9.97
3	*5200.00	104.2 PK			1.56 H	297	93.94	10.26
4	*5200.00	95.6 AV			1.56 H	297	85.34	10.26
5	5350.00	50.6 PK	74.0	-23.4	1.56 H	297	40.05	10.55
6	5350.00	39.8 AV	54.0	-14.2	1.56 H	297	29.25	10.55
7	#10400.00	60.8 PK	74.0	-13.2	1.05 H	120	43.74	17.06
8	#10400.00	47.2 AV	54.0	-6.8	1.05 H	120	30.14	17.06
9	15600.00	62.9 PK	74.0	-11.1	1.06 H	117	40.62	22.28
10	15600.00	47.7 AV	54.0	-6.3	1.06 H	117	25.42	22.28

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	73.5 PK	74.0	-0.5	1.71 V	358	63.53	9.97
2	5150.00	53.1 AV	54.0	-0.9	1.71 V	358	43.13	9.97
3	*5200.00	114.1 PK			1.71 V	358	103.84	10.26
4	*5200.00	105.7 AV			1.71 V	358	95.44	10.26
5	5350.00	54.6 PK	74.0	-19.4	1.71 V	358	44.05	10.55
6	5350.00	43.9 AV	54.0	-10.1	1.71 V	358	33.35	10.55
7	#10400.00	60.7 PK	74.0	-13.3	1.86 V	133	43.64	17.06
8	#10400.00	48.9 AV	54.0	-5.1	1.86 V	133	31.84	17.06
9	15600.00	60.9 PK	74.0	-13.1	1.80 V	149	38.62	22.28
10	15600.00	50.1 AV	54.0	-3.9	1.80 V	149	27.82	22.28

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	56.5 PK	74.0	-17.5	1.62 H	280	46.53	9.97
2	5150.00	45.7 AV	54.0	-8.3	1.62 H	280	35.73	9.97
3	*5240.00	108.5 PK			1.62 H	280	98.17	10.33
4	*5240.00	98.5 AV			1.62 H	280	88.17	10.33
5	5350.00	64.2 PK	74.0	-9.8	1.62 H	280	53.65	10.55
6	5350.00	42.2 AV	54.0	-11.8	1.62 H	280	31.65	10.55
7	#10480.00	64.1 PK	74.0	-9.9	1.18 H	32	47.37	16.73
8	#10480.00	53.4 AV	54.0	-0.6	1.18 H	32	36.67	16.73
9	15720.00	61.4 PK	74.0	-12.6	1.18 H	32	38.77	22.63
10	15720.00	49.8 AV	54.0	-4.2	1.18 H	32	27.17	22.63

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	70.4 PK	74.0	-3.6	1.81 V	359	60.43	9.97
2	5150.00	51.8 AV	54.0	-2.2	1.81 V	359	41.83	9.97
3	*5240.00	117.7 PK			1.81 V	359	107.37	10.33
4	*5240.00	109.0 AV			1.81 V	359	98.67	10.33
5	5350.00	68.9 PK	74.0	-5.1	1.81 V	359	58.35	10.55
6	5350.00	45.8 AV	54.0	-8.2	1.81 V	359	35.25	10.55
7	#10480.00	61.5 PK	74.0	-12.5	1.88 V	161	44.77	16.73
8	#10480.00	49.8 AV	54.0	-4.2	1.88 V	161	33.07	16.73
9	15720.00	60.7 PK	74.0	-13.3	1.88 V	161	38.07	22.63
10	15720.00	49.7 AV	54.0	-4.3	1.88 V	161	27.07	22.63

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	56.3 PK	74.0	-17.7	1.63 H	279	44.77	11.53
2	#5715.00	44.9 AV	54.0	-9.1	1.63 H	279	33.37	11.53
3	#5725.00	70.6 PK	78.2	-7.6	1.63 H	279	59.05	11.55
4	*5745.00	97.6 PK			1.63 H	279	85.97	11.63
5	*5745.00	89.2 AV			1.63 H	279	77.57	11.63
6	11490.00	60.3 PK	74.0	-13.7	1.10 H	142	43.00	17.30
7	11490.00	47.0 AV	54.0	-7.0	1.10 H	142	29.70	17.30
8	#17235.00	62.6 PK	74.0	-11.4	1.00 H	119	35.79	26.81
9	#17235.00	47.6 AV	54.0	-6.4	1.00 H	119	20.79	26.81

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	69.8 PK	74.0	-4.2	1.75 V	345	58.27	11.53
2	#5715.00	49.6 AV	54.0	-4.4	1.75 V	345	38.07	11.53
3	#5725.00	78.1 PK	78.2	-0.1	1.75 V	345	66.55	11.55
4	*5745.00	108.7 PK			1.75 V	345	97.07	11.63
5	*5745.00	99.7 AV			1.75 V	345	88.07	11.63
6	11490.00	60.0 PK	74.0	-14.0	1.87 V	137	42.70	17.30
7	11490.00	48.3 AV	54.0	-5.7	1.87 V	137	31.00	17.30
8	#17235.00	60.9 PK	74.0	-13.1	1.86 V	136	34.09	26.81
9	#17235.00	49.8 AV	54.0	-4.2	1.86 V	136	22.99	26.81

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	60.9 PK	74.0	-13.1	1.67 H	287	49.37	11.53
2	#5715.00	46.3 AV	54.0	-7.7	1.67 H	287	34.77	11.53
3	#5725.00	70.3 PK	78.2	-7.9	1.67 H	287	58.75	11.55
4	*5785.00	105.4 PK			1.67 H	287	93.66	11.74
5	*5785.00	95.8 AV			1.67 H	287	84.06	11.74
6	#5850.00	68.0 PK	78.2	-10.2	1.67 H	287	56.25	11.75
7	#5860.00	57.0 PK	74.0	-17.0	1.67 H	287	45.25	11.75
8	#5860.00	45.7 AV	54.0	-8.3	1.67 H	287	33.95	11.75
9	11570.00	64.3 PK	74.0	-9.7	1.18 H	21	46.39	17.91
10	11570.00	53.5 AV	54.0	-0.5	1.18 H	21	35.59	17.91
11	#17355.00	61.4 PK	74.0	-12.6	1.12 H	32	34.26	27.14
12	#17355.00	49.7 AV	54.0	-4.3	1.12 H	32	22.56	27.14

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	72.5 PK	74.0	-1.5	1.73 V	331	60.97	11.53
2	#5715.00	53.1 AV	54.0	-0.9	1.73 V	331	41.57	11.53
3	*5785.00	115.4 PK			1.73 V	331	103.66	11.74
4	*5785.00	106.6 AV			1.73 V	331	94.86	11.74
5	#5860.00	67.6 PK	74.0	-6.4	1.73 V	331	55.85	11.75
6	#5860.00	50.0 AV	54.0	-4.0	1.73 V	331	38.25	11.75
7	11570.00	61.6 PK	74.0	-12.4	1.87 V	165	43.69	17.91
8	11570.00	50.2 AV	54.0	-3.8	1.87 V	165	32.29	17.91
9	#17355.00	60.7 PK	74.0	-13.3	1.93 V	156	33.56	27.14
10	#17355.00	49.7 AV	54.0	-4.3	1.93 V	156	22.56	27.14

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	97.9 PK			1.69 H	300	86.12	11.78
2	*5825.00	91.0 AV			1.69 H	300	79.22	11.78
3	#5850.00	71.5 PK	78.2	-6.7	1.69 H	300	59.75	11.75
4	#5860.00	62.4 PK	74.0	-11.6	1.69 H	300	50.65	11.75
5	#5860.00	44.5 AV	54.0	-9.5	1.69 H	300	32.75	11.75
6	11650.00	60.1 PK	74.0	-13.9	1.07 H	110	41.94	18.16
7	11650.00	46.9 AV	54.0	-7.1	1.07 H	110	28.74	18.16
8	#17475.00	62.9 PK	74.0	-11.1	1.00 H	111	34.98	27.92
9	#17475.00	47.6 AV	54.0	-6.4	1.00 H	111	19.68	27.92

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	108.4 PK			1.87 V	344	96.62	11.78
2	*5825.00	100.0 AV			1.87 V	344	88.22	11.78
3	#5850.00	78.1 PK	78.2	-0.1	1.87 V	344	66.35	11.75
4	#5860.00	69.2 PK	74.0	-4.8	1.87 V	344	57.45	11.75
5	#5860.00	49.1 AV	54.0	-4.9	1.87 V	344	37.35	11.75
6	11650.00	61.2 PK	74.0	-12.8	1.81 V	128	43.04	18.16
7	11650.00	49.2 AV	54.0	-4.8	1.81 V	128	31.04	18.16
8	#17475.00	60.7 PK	74.0	-13.3	1.84 V	157	32.78	27.92
9	#17475.00	49.7 AV	54.0	-4.3	1.84 V	157	21.78	27.92

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	64.6 PK	74.0	-9.4	1.67 H	291	54.63	9.97
2	5150.00	49.7 AV	54.0	-4.3	1.67 H	291	39.73	9.97
3	*5180.00	98.5 PK			1.67 H	291	88.34	10.16
4	*5180.00	90.1 AV			1.67 H	291	79.94	10.16
5	#10360.00	59.8 PK	74.0	-14.2	1.10 H	110	42.82	16.98
6	#10360.00	46.7 AV	54.0	-7.3	1.10 H	110	29.72	16.98
7	15540.00	63.6 PK	74.0	-10.4	1.00 H	111	41.67	21.93
8	15540.00	48.0 AV	54.0	-6.0	1.00 H	111	26.07	21.93
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	70.3 PK	74.0	-3.7	1.78 V	360	60.33	9.97
2	5150.00	53.6 AV	54.0	-0.4	1.78 V	360	43.63	9.97
3	*5180.00	109.9 PK			1.78 V	360	99.74	10.16
4	*5180.00	100.7 AV			1.78 V	360	90.54	10.16
5	#10360.00	60.7 PK	74.0	-13.3	1.75 V	119	43.72	16.98
6	#10360.00	49.0 AV	54.0	-5.0	1.75 V	119	32.02	16.98
7	15540.00	60.1 PK	74.0	-13.9	1.79 V	152	38.17	21.93
8	15540.00	49.4 AV	54.0	-4.6	1.79 V	152	27.47	21.93

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	64.6 PK	74.0	-9.4	1.63 H	263	54.63	9.97
2	5150.00	49.7 AV	54.0	-4.3	1.63 H	263	39.73	9.97
3	*5200.00	104.2 PK			1.63 H	263	93.94	10.26
4	*5200.00	94.6 AV			1.63 H	263	84.34	10.26
5	5350.00	50.7 PK	74.0	-23.3	1.63 H	263	40.15	10.55
6	5350.00	40.1 AV	54.0	-13.9	1.63 H	263	29.55	10.55
7	#10400.00	60.6 PK	74.0	-13.4	1.02 H	134	43.54	17.06
8	#10400.00	47.1 AV	54.0	-6.9	1.02 H	134	30.04	17.06
9	15600.00	63.5 PK	74.0	-10.5	1.00 H	105	41.22	22.28
10	15600.00	47.9 AV	54.0	-6.1	1.00 H	105	25.62	22.28

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	71.0 PK	74.0	-3.0	1.88 V	357	61.03	9.97
2	5150.00	52.5 AV	54.0	-1.5	1.88 V	357	42.53	9.97
3	*5200.00	114.3 PK			1.88 V	357	104.04	10.26
4	*5200.00	105.5 AV			1.88 V	357	95.24	10.26
5	5350.00	54.2 PK	74.0	-19.8	1.88 V	357	43.65	10.55
6	5350.00	43.1 AV	54.0	-10.9	1.88 V	357	32.55	10.55
7	#10400.00	60.2 PK	74.0	-13.8	1.74 V	162	43.14	17.06
8	#10400.00	48.4 AV	54.0	-5.6	1.74 V	162	31.34	17.06
9	15600.00	60.4 PK	74.0	-13.6	1.80 V	134	38.12	22.28
10	15600.00	49.7 AV	54.0	-4.3	1.80 V	134	27.42	22.28

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	65.2 PK	74.0	-8.8	1.69 H	305	55.23	9.97
2	5150.00	45.2 AV	54.0	-8.8	1.69 H	305	35.23	9.97
3	*5240.00	106.8 PK			1.69 H	305	96.47	10.33
4	*5240.00	98.7 AV			1.69 H	305	88.37	10.33
5	5350.00	56.5 PK	74.0	-17.5	1.69 H	305	45.95	10.55
6	5350.00	45.0 AV	54.0	-9.0	1.69 H	305	34.45	10.55
7	#10480.00	59.8 PK	74.0	-14.2	1.08 H	107	43.07	16.73
8	#10480.00	46.6 AV	54.0	-7.4	1.08 H	107	29.87	16.73
9	15720.00	63.0 PK	74.0	-11.0	1.00 H	84	40.37	22.63
10	15720.00	47.7 AV	54.0	-6.3	1.00 H	84	25.07	22.63

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	70.0 PK	74.0	-4.0	1.62 V	356	60.03	9.97
2	5150.00	51.4 AV	54.0	-2.6	1.62 V	356	41.43	9.97
3	*5240.00	117.5 PK			1.62 V	356	107.17	10.33
4	*5240.00	108.9 AV			1.62 V	356	98.57	10.33
5	5350.00	68.0 PK	74.0	-6.0	1.62 V	356	57.45	10.55
6	5350.00	46.6 AV	54.0	-7.4	1.62 V	356	36.05	10.55
7	#10480.00	60.0 PK	74.0	-14.0	1.90 V	158	43.27	16.73
8	#10480.00	48.3 AV	54.0	-5.7	1.90 V	158	31.57	16.73
9	15720.00	60.8 PK	74.0	-13.2	1.78 V	155	38.17	22.63
10	15720.00	50.0 AV	54.0	-4.0	1.78 V	155	27.37	22.63

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	55.2 PK	74.0	-18.8	1.67 H	266	43.67	11.53
2	#5715.00	42.1 AV	54.0	-11.9	1.67 H	266	30.57	11.53
3	#5725.00	70.5 PK	78.2	-7.7	1.67 H	266	58.95	11.55
4	*5745.00	96.5 PK			1.67 H	266	84.87	11.63
5	*5745.00	89.2 AV			1.67 H	266	77.57	11.63
6	11490.00	60.4 PK	74.0	-13.6	1.08 H	129	43.10	17.30
7	11490.00	47.3 AV	54.0	-6.7	1.08 H	129	30.00	17.30
8	#17235.00	63.6 PK	74.0	-10.4	1.04 H	128	36.79	26.81
9	#17235.00	48.0 AV	54.0	-6.0	1.04 H	128	21.19	26.81

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	58.6 PK	74.0	-15.4	1.85 V	330	47.07	11.53
2	#5715.00	45.4 AV	54.0	-8.6	1.85 V	330	33.87	11.53
3	#5725.00	78.0 PK	78.2	-0.2	1.85 V	330	66.45	11.55
4	*5745.00	107.8 PK			1.85 V	330	96.17	11.63
5	*5745.00	99.2 AV			1.85 V	330	87.57	11.63
6	11490.00	60.2 PK	74.0	-13.8	1.84 V	140	42.90	17.30
7	11490.00	48.6 AV	54.0	-5.4	1.84 V	140	31.30	17.30
8	#17235.00	60.2 PK	74.0	-13.8	1.85 V	130	33.39	26.81
9	#17235.00	49.4 AV	54.0	-4.6	1.85 V	130	22.59	26.81

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	64.6 PK	74.0	-9.4	1.72 H	289	53.07	11.53
2	#5715.00	49.6 AV	54.0	-4.4	1.72 H	289	38.07	11.53
3	#5725.00	71.2 PK	78.2	-7.0	1.72 H	289	59.65	11.55
4	*5785.00	104.1 PK			1.72 H	289	92.36	11.74
5	*5785.00	95.1 AV			1.72 H	289	83.36	11.74
6	#5850.00	69.8 PK	78.2	-8.4	1.72 H	289	58.05	11.75
7	#5860.00	55.7 PK	74.0	-18.3	1.72 H	289	43.95	11.75
8	#5860.00	44.7 AV	54.0	-9.3	1.72 H	289	32.95	11.75
9	11570.00	60.8 PK	74.0	-13.2	1.00 H	126	42.89	17.91
10	11570.00	47.1 AV	54.0	-6.9	1.00 H	126	29.19	17.91
11	#17355.00	62.1 PK	74.0	-11.9	1.00 H	110	34.96	27.14
12	#17355.00	47.1 AV	54.0	-6.9	1.00 H	110	19.96	27.14

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	71.1 PK	74.0	-2.9	1.78 V	330	59.57	11.53
2	#5715.00	53.5 AV	54.0	-0.5	1.78 V	330	41.97	11.53
3	#5725.00	78.0 PK	78.2	-0.2	1.78 V	330	66.45	11.55
4	*5785.00	114.5 PK			1.78 V	330	102.76	11.74
5	*5785.00	106.1 AV			1.78 V	330	94.36	11.74
6	#5850.00	76.5 PK	78.2	-1.7	1.78 V	330	64.75	11.75
7	#5860.00	71.0 PK	74.0	-3.0	1.78 V	330	59.25	11.75
8	#5860.00	48.9 AV	54.0	-5.1	1.78 V	330	37.15	11.75
9	11570.00	59.2 PK	74.0	-14.8	1.88 V	123	41.29	17.91
10	11570.00	47.7 AV	54.0	-6.3	1.88 V	123	29.79	17.91
11	#17355.00	60.7 PK	74.0	-13.3	1.85 V	147	33.56	27.14
12	#17355.00	49.7 AV	54.0	-4.3	1.85 V	147	22.56	27.14

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	100.3 PK			1.76 H	301	88.52	11.78
2	*5825.00	92.1 AV			1.76 H	301	80.32	11.78
3	#5850.00	70.4 PK	78.2	-7.8	1.76 H	301	58.65	11.75
4	#5860.00	56.1 PK	74.0	-17.9	1.76 H	301	44.35	11.75
5	#5860.00	45.2 AV	54.0	-8.8	1.76 H	301	33.45	11.75
6	11650.00	60.5 PK	74.0	-13.5	1.05 H	110	42.34	18.16
7	11650.00	47.1 AV	54.0	-6.9	1.05 H	110	28.94	18.16
8	#17475.00	62.4 PK	74.0	-11.6	1.00 H	114	34.48	27.92
9	#17475.00	47.4 AV	54.0	-6.6	1.00 H	114	19.48	27.92

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	110.6 PK			1.85 V	328	98.82	11.78
2	*5825.00	102.5 AV			1.85 V	328	90.72	11.78
3	#5850.00	77.9 PK	78.2	-0.3	1.85 V	328	66.15	11.75
4	#5860.00	63.2 PK	74.0	-10.8	1.85 V	328	51.45	11.75
5	#5860.00	49.8 AV	54.0	-4.2	1.85 V	328	38.05	11.75
6	11650.00	60.1 PK	74.0	-13.9	1.86 V	144	41.94	18.16
7	11650.00	48.3 AV	54.0	-5.7	1.86 V	144	30.14	18.16
8	#17475.00	60.4 PK	74.0	-13.6	1.69 V	144	32.48	27.92
9	#17475.00	49.3 AV	54.0	-4.7	1.69 V	144	21.38	27.92

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	64.7 PK	74.0	-9.3	1.65 H	295	54.73	9.97
2	5150.00	50.1 AV	54.0	-3.9	1.65 H	295	40.13	9.97
3	*5190.00	91.4 PK			1.65 H	295	81.20	10.20
4	*5190.00	82.1 AV			1.65 H	295	71.90	10.20
5	5350.00	51.2 PK	74.0	-22.8	1.65 H	295	40.65	10.55
6	5350.00	39.8 AV	54.0	-14.2	1.65 H	295	29.25	10.55
7	#10380.00	60.0 PK	74.0	-14.0	1.04 H	99	42.98	17.02
8	#10380.00	46.7 AV	54.0	-7.3	1.04 H	99	29.68	17.02
9	15570.00	61.5 PK	74.0	-12.5	1.00 H	102	39.40	22.10
10	15570.00	46.4 AV	54.0	-7.6	1.00 H	102	24.30	22.10
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	66.0 PK	74.0	-8.0	1.72 V	360	56.03	9.97
2	5150.00	53.5 AV	54.0	-0.5	1.72 V	360	43.53	9.97
3	*5190.00	101.5 PK			1.72 V	360	91.30	10.20
4	*5190.00	92.2 AV			1.72 V	360	82.00	10.20
5	5350.00	54.2 PK	74.0	-19.8	1.72 V	360	43.65	10.55
6	5350.00	42.8 AV	54.0	-11.2	1.72 V	360	32.25	10.55
7	#10380.00	59.6 PK	74.0	-14.4	1.75 V	121	42.58	17.02
8	#10380.00	48.4 AV	54.0	-5.6	1.75 V	121	31.38	17.02
9	15570.00	60.4 PK	74.0	-13.6	1.87 V	151	38.30	22.10
10	15570.00	49.3 AV	54.0	-4.7	1.87 V	151	27.20	22.10

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	64.5 PK	74.0	-9.5	1.75 H	297	54.53	9.97
2	5150.00	49.3 AV	54.0	-4.7	1.75 H	297	39.33	9.97
3	*5230.00	98.0 PK			1.75 H	297	87.68	10.32
4	*5230.00	89.2 AV			1.75 H	297	78.88	10.32
5	5350.00	53.5 PK	74.0	-20.5	1.75 H	297	42.95	10.55
6	5350.00	40.2 AV	54.0	-13.8	1.75 H	297	29.65	10.55
7	#10460.00	60.7 PK	74.0	-13.3	1.08 H	84	43.88	16.82
8	#10460.00	47.5 AV	54.0	-6.5	1.08 H	84	30.68	16.82
9	15690.00	60.9 PK	74.0	-13.1	1.00 H	104	38.38	22.52
10	15690.00	46.4 AV	54.0	-7.6	1.00 H	104	23.88	22.52

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	5150.00	67.2 PK	74.0	-6.8	1.95 V	359	57.23	9.97
2	5150.00	53.5 AV	54.0	-0.5	1.95 V	359	43.53	9.97
3	*5230.00	108.3 PK			1.95 V	359	97.98	10.32
4	*5230.00	99.7 AV			1.95 V	359	89.38	10.32
5	5350.00	56.3 PK	74.0	-17.7	1.95 V	359	45.75	10.55
6	5350.00	42.4 AV	54.0	-11.6	1.95 V	359	31.85	10.55
7	#10460.00	60.2 PK	74.0	-13.8	1.80 V	152	43.38	16.82
8	#10460.00	48.3 AV	54.0	-5.7	1.80 V	152	31.48	16.82
9	15690.00	60.4 PK	74.0	-13.6	1.77 V	155	37.88	22.52
10	15690.00	49.5 AV	54.0	-4.5	1.77 V	155	26.98	22.52

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 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	64.4 PK	74.0	-9.6	1.67 H	296	52.87	11.53
2	#5715.00	49.2 AV	54.0	-4.8	1.67 H	296	37.67	11.53
3	#5725.00	67.6 PK	78.2	-10.6	1.67 H	296	56.05	11.55
4	*5755.00	92.2 PK			1.67 H	296	80.56	11.64
5	*5755.00	82.1 AV			1.67 H	296	70.46	11.64
6	11510.00	60.1 PK	74.0	-13.9	1.04 H	115	42.80	17.30
7	11510.00	46.8 AV	54.0	-7.2	1.04 H	115	29.50	17.30
8	#17265.00	62.1 PK	74.0	-11.9	1.00 H	120	35.39	26.71
9	#17265.00	47.0 AV	54.0	-7.0	1.00 H	120	20.29	26.71

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	69.3 PK	74.0	-4.7	1.87 V	331	57.77	11.53
2	#5715.00	53.5 AV	54.0	-0.5	1.87 V	331	41.97	11.53
3	#5725.00	74.9 PK	78.2	-3.3	1.87 V	331	63.35	11.55
4	*5755.00	102.3 PK			1.87 V	331	90.66	11.64
5	*5755.00	92.9 AV			1.87 V	331	81.26	11.64
6	11510.00	60.8 PK	74.0	-13.2	1.88 V	161	43.50	17.30
7	11510.00	48.9 AV	54.0	-5.1	1.88 V	161	31.60	17.30
8	#17265.00	59.6 PK	74.0	-14.4	1.84 V	133	32.89	26.71
9	#17265.00	48.8 AV	54.0	-5.2	1.84 V	133	22.09	26.71

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)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	56.5 PK	74.0	-17.5	1.66 H	287	44.97	11.53
2	#5715.00	45.2 AV	54.0	-8.8	1.66 H	287	33.67	11.53
3	#5725.00	66.5 PK	78.2	-11.7	1.66 H	287	54.95	11.55
4	*5795.00	98.6 PK			1.66 H	287	86.82	11.78
5	*5795.00	89.9 AV			1.66 H	287	78.12	11.78
6	#5850.00	71.2 PK	78.2	-7.0	1.66 H	287	59.45	11.75
7	#5860.00	64.2 PK	74.0	-9.8	1.66 H	287	52.45	11.75
8	#5860.00	48.9 AV	54.0	-5.1	1.66 H	287	37.15	11.75
9	11590.00	60.5 PK	74.0	-13.5	1.01 H	105	42.39	18.11
10	11590.00	46.9 AV	54.0	-7.1	1.01 H	105	28.79	18.11
11	#17385.00	62.5 PK	74.0	-11.5	1.00 H	115	35.05	27.45
12	#17385.00	47.8 AV	54.0	-6.2	1.00 H	115	20.35	27.45

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5715.00	65.3 PK	74.0	-8.7	1.82 V	344	53.77	11.53
2	#5715.00	51.4 AV	54.0	-2.6	1.82 V	344	39.87	11.53
3	*5795.00	108.7 PK			1.82 V	344	96.92	11.78
4	*5795.00	99.9 AV			1.82 V	344	88.12	11.78
5	#5850.00	77.2 PK	78.2	-1.0	1.82 V	344	65.45	11.75
6	#5860.00	72.1 PK	74.0	-1.9	1.82 V	343	60.35	11.75
7	#5860.00	53.8 AV	54.0	-0.2	1.82 V	343	42.05	11.75
8	11590.00	60.0 PK	74.0	-14.0	1.87 V	126	41.89	18.11
9	11590.00	48.3 AV	54.0	-5.7	1.87 V	126	30.19	18.11
10	#17385.00	60.5 PK	74.0	-13.5	1.87 V	148	33.05	27.45
11	#17385.00	49.4 AV	54.0	-4.6	1.87 V	148	21.95	27.45

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.

BELOW 1GHz WORST-CASE DATA

802.11a

CHANNEL	TX Channel 48	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	138.30	36.6 QP	43.5	-6.9	1.45 H	201	50.01	-13.44
2	450.11	28.8 QP	46.0	-17.2	1.74 H	241	36.54	-7.76
3	500.11	29.0 QP	46.0	-17.0	1.64 H	204	35.79	-6.83
4	624.61	39.8 QP	46.0	-6.2	1.50 H	241	43.52	-3.74
5	667.30	38.3 QP	46.0	-7.7	1.64 H	241	41.65	-3.31
6	899.74	36.8 QP	46.0	-9.2	1.24 H	241	36.05	0.73
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	49.71	33.6 QP	40.0	-6.4	1.24 V	301	46.70	-13.09
2	137.71	27.7 QP	43.5	-15.8	1.24 V	151	41.20	-13.48
3	500.14	27.7 QP	46.0	-18.3	1.24 V	241	34.55	-6.83
4	624.72	38.6 QP	46.0	-7.4	1.24 V	100	42.38	-3.74
5	667.51	36.7 QP	46.0	-9.3	1.24 V	211	39.99	-3.31
6	899.71	36.2 QP	46.0	-9.8	1.24 V	244	35.51	0.73

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 R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	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 BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 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: June 30 to July 15, 2015

4.2.3 Test Procedure

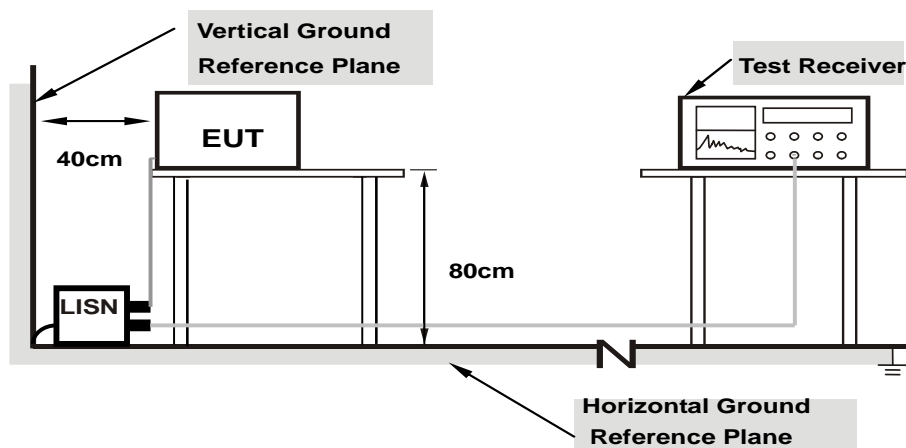
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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 Condition

Same as 4.1.6.

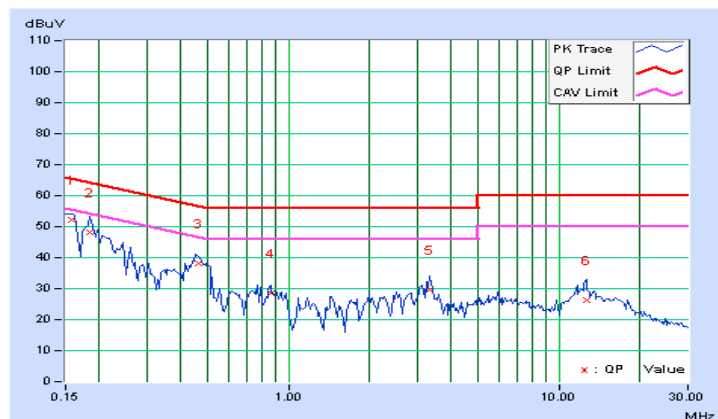
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.14	52.20	40.26	52.34	40.40	65.58	55.58	-13.24	-15.18
2	0.18516	0.15	48.00	36.75	48.15	36.90	64.25	54.25	-16.10	-17.35
3	0.46516	0.17	37.87	31.00	38.04	31.17	56.60	46.60	-18.56	-15.43
4	0.85703	0.19	28.24	21.75	28.43	21.94	56.00	46.00	-27.57	-24.06
5	3.33984	0.34	29.45	22.63	29.79	22.97	56.00	46.00	-26.21	-23.03
6	12.59375	0.84	25.50	19.80	26.34	20.64	60.00	50.00	-33.66	-29.36

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.

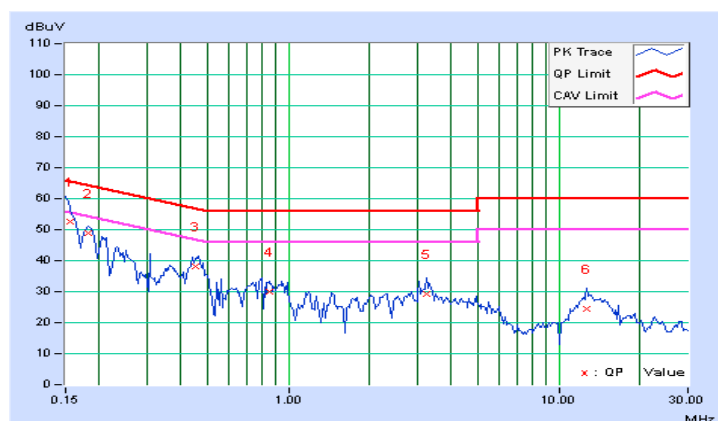


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15550	0.14	52.38	40.16	52.52	40.30	65.70	55.70	-13.18	-15.40
2	0.18125	0.15	48.61	37.07	48.76	37.22	64.43	54.43	-15.67	-17.21
3	0.45469	0.19	38.10	30.78	38.29	30.97	56.79	46.79	-18.49	-15.81
4	0.85128	0.23	29.93	23.92	30.16	24.15	56.00	46.00	-25.84	-21.85
5	3.23828	0.37	28.85	22.82	29.22	23.19	56.00	46.00	-26.78	-22.81
6	12.71094	0.91	23.44	17.72	24.35	18.63	60.00	50.00	-35.65	-31.37

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.



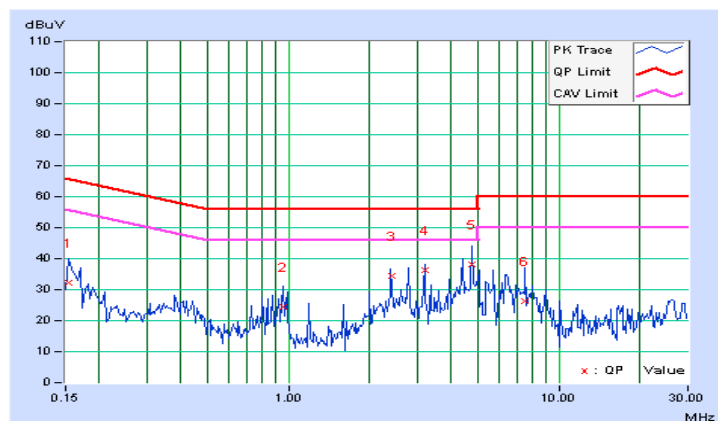
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.08	32.22	12.82	32.30	12.90	65.79	55.79	-33.49	-42.89
2	0.95078	0.13	24.29	11.75	24.42	11.88	56.00	46.00	-31.58	-34.12
3	2.39763	0.18	34.19	31.97	34.37	32.15	56.00	46.00	-21.63	-13.85
4	3.19531	0.20	36.05	29.30	36.25	29.50	56.00	46.00	-19.75	-16.50
5	4.79297	0.25	37.96	36.35	38.21	36.60	56.00	46.00	-17.79	-9.40
6	7.50781	0.35	26.12	5.28	26.47	5.63	60.00	50.00	-33.53	-44.37

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.

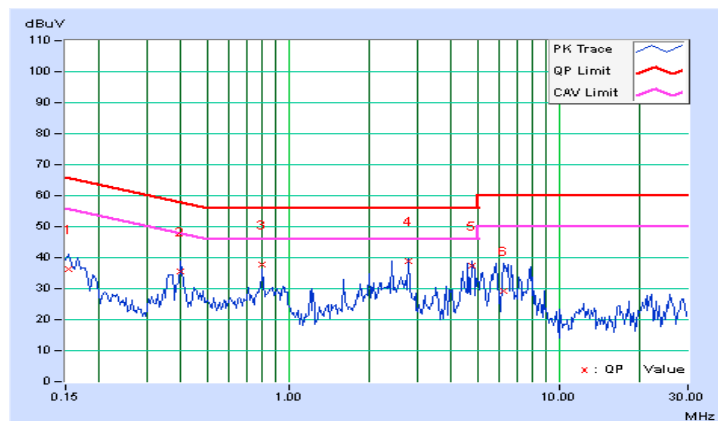


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.08	36.11	10.99	36.19	11.07	65.79	55.79	-29.60	-44.72
2	0.40000	0.10	35.44	31.76	35.54	31.86	57.85	47.85	-22.31	-15.99
3	0.79956	0.12	37.80	33.85	37.92	33.97	56.00	46.00	-18.08	-12.03
4	2.79634	0.19	38.57	36.45	38.76	36.64	56.00	46.00	-17.24	-9.36
5	4.79459	0.26	37.01	35.72	37.27	35.98	56.00	46.00	-18.73	-10.02
6	6.26172	0.32	28.91	5.93	29.23	6.25	60.00	50.00	-30.77	-43.75

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.



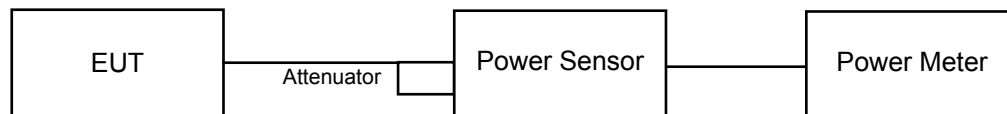
4.3 Transmit Power Measurement

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 \leq 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. 28, 2015	Apr. 27, 2016
Power Sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016

- NOTE:**
1. The test was performed in Oven room B.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: July 13, 2015

4.3.4 Test Procedure

A peak / average power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the power level.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	62.951	17.99	30	Pass
40	5200	104.713	20.20	30	Pass
48	5240	146.218	21.65	30	Pass
149	5745	33.113	15.20	30	Pass
157	5785	113.763	20.56	30	Pass
165	5825	53.703	17.30	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
36	5180	57.943	17.63	30	Pass
40	5200	107.895	20.33	30	Pass
48	5240	139.959	21.46	30	Pass
149	5745	28.642	14.57	30	Pass
157	5785	114.815	20.60	30	Pass
165	5825	55.719	17.46	30	Pass

802.11n (HT40)

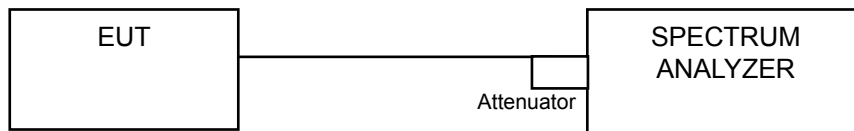
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
38	5190	8.63	9.36	30	Pass
46	5230	75.683	18.79	30	Pass
151	5755	11.668	10.67	30	Pass
159	5795	61.944	17.92	30	Pass

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/ 500kHz

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, 2015	May 07, 2016

- NOTE:**
1. The test was performed in Oven room B.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: July 13, 2015

4.4.4 Test Procedure

For U-NII-1:

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW \geq 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 \geq 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 $BWCF = 10\log(500 \text{ kHz}/300\text{kHz})$
5. Sweep time = auto, trigger set to "free run".
6. Trace average at least 100 traces in power averaging mode.
7. Record the max value

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.

4.4.7 Test Results

For U-NII-1:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
36	5180	3.59	17	Pass
40	5200	5.76	17	Pass
48	5240	7.26	17	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
36	5180	2.48	17	Pass
40	5200	5.15	17	Pass
48	5240	6.92	17	Pass

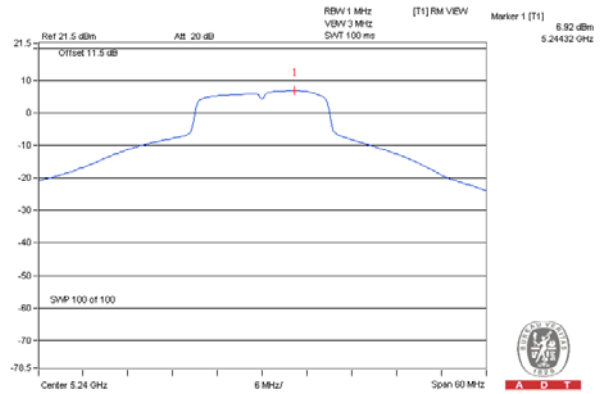
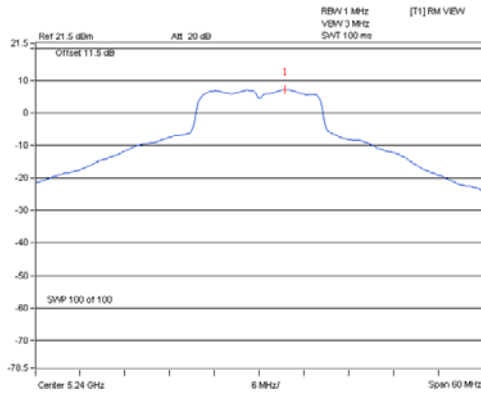
802.11n (HT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm)	MAX. Limit (dBm)	Pass / Fail
38	5190	-9.68	17	Pass
46	5230	-0.09	17	Pass

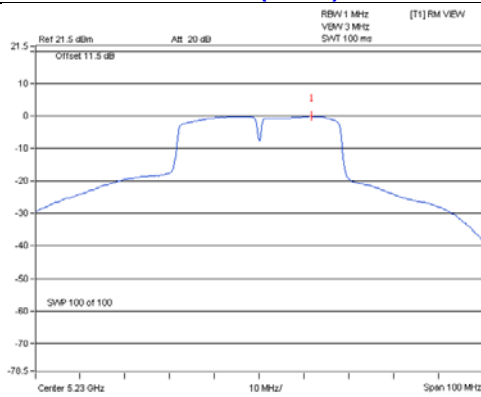
SPECTRUM PLOT OF WORST VALUE

802.11a / CH 48

802.11n (HT20) / CH48



802.11n (HT40) / CH 46



For U-NII-3:

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-7.02	-4.80	30	Pass
157	5785	-3.35	-1.13	30	Pass
165	5825	-9.30	-7.08	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-8.41	-6.19	30	Pass
157	5785	-3.86	-1.64	30	Pass
165	5825	-10.16	-7.94	30	Pass

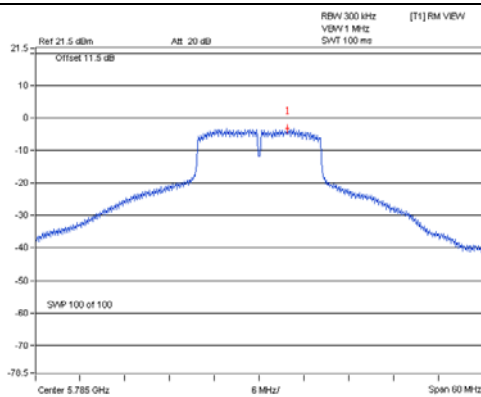
802.11n (HT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
151	5745	-17.69	-15.47	30	Pass
159	5785	-12.67	-10.45	30	Pass

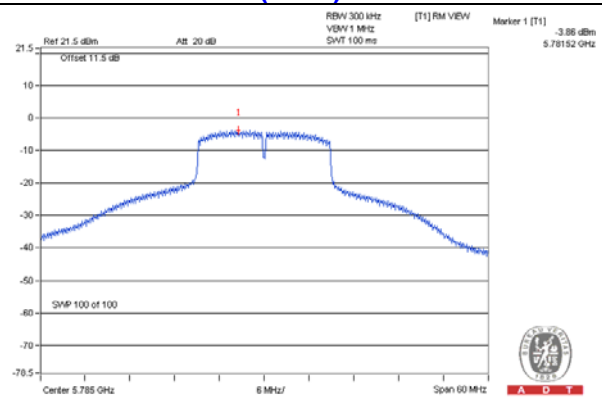
SPECTRUM PLOT OF WORST VALUE

802.11a / CH 157

802.11n (HT20) / CH157

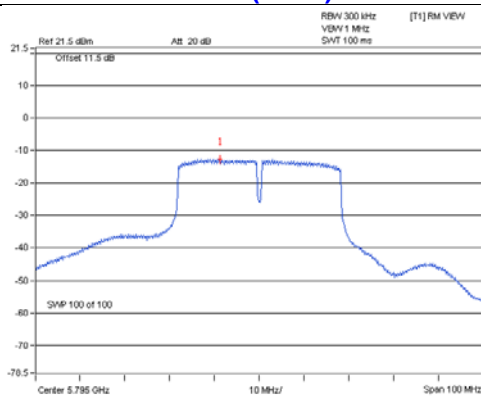


A D T



A D T

802.11n (HT40) / CH 159



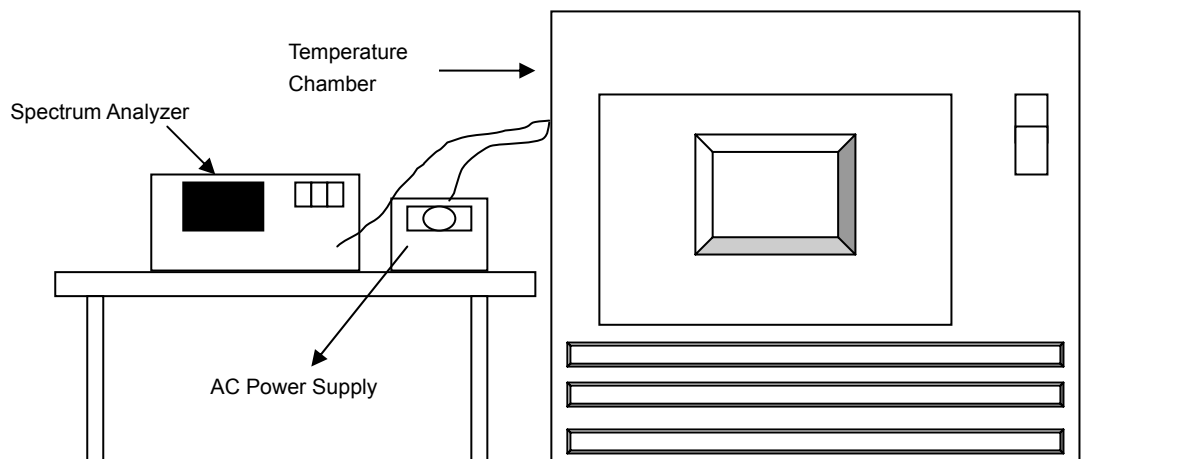
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4.5 Frequency Stability Measurement

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, 2015	May 07, 2016

- NOTE:**
1. The test was performed in Oven room B.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: July 13, 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

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5825MHz									
TEMP. (°C)	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	5824.9746	-0.00044	5824.9725	-0.00047	5824.9745	-0.00044	5824.9732	-0.00046
40	120	5825.0063	0.00011	5825.0111	0.00019	5825.008	0.00014	5825.0114	0.00020
30	120	5824.9935	-0.00011	5824.9929	-0.00012	5824.9902	-0.00017	5824.9898	-0.00018
20	120	5824.9794	-0.00035	5824.9758	-0.00042	5824.9786	-0.00037	5824.9793	-0.00036
10	120	5824.992	-0.00014	5824.991	-0.00015	5824.9932	-0.00012	5824.9876	-0.00021
0	120	5824.9874	-0.00022	5824.9848	-0.00026	5824.9892	-0.00019	5824.9864	-0.00023
-10	120	5825.0035	0.00006	5825.0034	0.00006	5825.0074	0.00013	5825.0088	0.00015
-20	120	5825.0182	0.00031	5825.0169	0.00029	5825.0167	0.00029	5825.0204	0.00035
-30	120	5824.9766	-0.00040	5824.9723	-0.00048	5824.9725	-0.00047	5824.9734	-0.00046

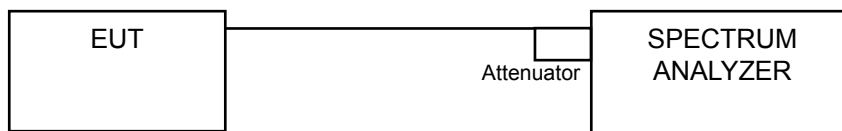
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5825MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5824.9805	-0.00033	5824.9763	-0.00041	5824.9791	-0.00036	5824.9802	-0.00034
	120	5824.9794	-0.00035	5824.9758	-0.00042	5824.9786	-0.00037	5824.9793	-0.00036
	102	5824.9798	-0.00035	5824.9765	-0.00040	5824.9791	-0.00036	5824.9788	-0.00036

4.6 6dB Bandwidth Measurement

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, 2015	May 07, 2016

- NOTE:**
1. The test was performed in Oven room B.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: July 13, 2015

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ 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	16.48	0.5	Pass
157	5785	16.50	0.5	Pass
165	5825	16.48	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.75	0.5	Pass
157	5785	17.69	0.5	Pass
165	5825	17.81	0.5	Pass

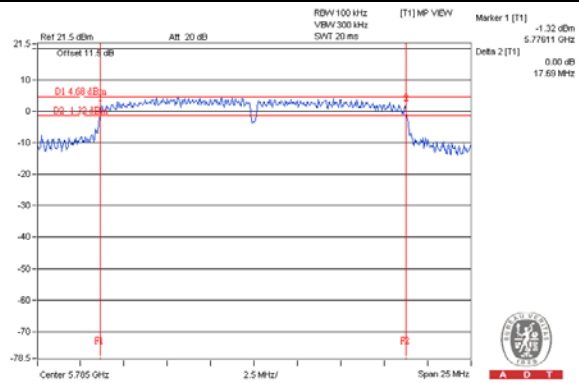
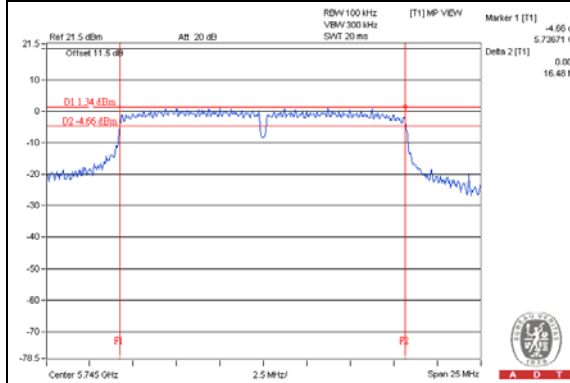
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	36.56	0.5	Pass
159	5795	36.56	0.5	Pass

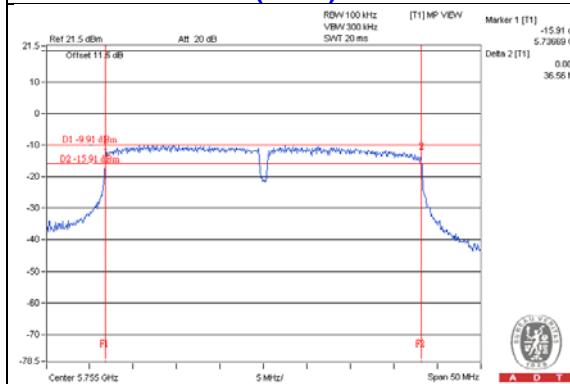
SPECTRUM PLOT OF WORST VALUE

802.11a / CH 149

802.11n (HT20) / CH 157



802.11n (HT40) / CH 151



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:

Linko EMC/RF Lab

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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

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Fax: 886-3-5935342

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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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