

# FCC TEST REPORT (15.407)

**REPORT NO.:** RF120103E05-1

**MODEL NO.:** Z-RS-DC001

**FCC ID:** ZKP-RDC001

**RECEIVED:** Jan. 03, 2012

**TESTED:** Feb. 20 to Mar. 16, 2012

**ISSUED:** Mar. 20, 2012

**APPLICANT:** ZOLL Medical Corporation.

**ADDRESS:** 269 Mill Road. Chelmsford, MA 01824.

**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120103E05-1	Original release	Mar. 20, 2012



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## 1. CERTIFICATION

**PRODUCT:** 802.11 a/b/g/n embedded TCP/IP stack Wifi CF card with DFS

**BRAND NAME:** ZOLL

**MODEL NO.:** Z-RS-DC001

**TEST SAMPLE:** ENGINEERING SAMPLE

**APPLICANT:** ZOLL Medical Corporation.

**TESTED:** Feb. 20 to Mar. 16, 2012

**STANDARDS:** **FCC Part 15, Subpart E (Section 15.407)**  
ANSI C63.10-2009

The above equipment (Model: Z-RS-DC001) 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 :** Claire Kuan , **DATE:** Mar. 20, 2012  
( Claire Kuan, Specialist )

**APPROVED BY :** May Chen , **DATE:** Mar. 20, 2012  
( May Chen, Deputy Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 5GHz, 5180~5240MHz, 5260~5320MHz and 5500~5700MHz

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.21dB at 0.19297MHz
15.407(b/1/2/3)(b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.3dB at 11320.00MHz.
15.407(a/1/2)	Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is Murata not a standard connector.

### NOTE:

1. The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz and 5.47~5.725GHz. For the 2400 ~ 2483.5MHz and 5.725~5.85GHz 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:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.81 dB
Radiated emissions (1GHz -18GHz)	4 dB
Radiated emissions (18GHz -40GHz)	2.49 dB

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	802.11 a/b/g/n embedded TCP/IP stack Wifi CF card with DFS
<b>MODEL NO.</b>	Z-RS-DC001
<b>POWER SUPPLY</b>	DC 3.3V from host equipment
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b: up to 11Mbps 802.11g / a: up to 54Mbps 802.11n (20MHz, 800ns GI): up to 65Mbps
<b>OPERATING FREQUENCY</b>	<b>For 15.407</b> 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.47~5.6GHz, 5.65~5.725GHz
	<b>For 15.247</b> 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
<b>NUMBER OF CHANNEL</b>	<b>For 15.407</b> 16 for 802.11a, 802.11n (20MHz)
	<b>For 15.247(2.4GHz)</b> 11 for 802.11b, 802.11g, 802.11n (20MHz)
	<b>For 15.247(5GHz)</b> 5 for 802.11a, 802.11n (20MHz)
<b>MAXIMUM OUTPUT POWER</b>	<b>For 15.407</b> 802.11a: 42.7mW 802.11n (20MHz): 43.7mW
	<b>For 15.247(2.4GHz)</b> 802.11b: 58.9mW 802.11g: 67.6mW 802.11n (20MHz): 69.2mW
<b>MAXIMUM OUTPUT POWER</b>	<b>For 15.247(5GHz)</b> 802.11a: 26.3mW 802.11n (20MHz): 27.5mW
<b>ANTENNA TYPE</b>	Refer to note for more details
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	NA



# NOTE:

1. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2412~2462	5180~5320	5500~5700	5745~5825
802.11b	√	-	-	-
802.11g	√	-	-	-
802.11a	-	√	√	√
802.11n (20MHz)	√	√	√	√
802.11n (40MHz)	-	-	-	-

2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX

3. The antenna provided to the EUT, please refer to the following table:

Antenna Type	Gain (dBi)	Connector Type	Frequency range
PCB printed	1.30	NA	2.4GHz
	1.97		5GHz

4. 2.4GHz and 5GHz technology cannot transmit at same time.
5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
6. The above EUT information was declared by the 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 ~ 5320MHz

8 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

### FOR 5500 ~ 5700MHz

8 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	116	5580 MHz
104	5520 MHz	132	5660 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 MHz

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission      **RE < 1G**: Radiated Emission below 1GHz  
**RE ≥ 1G**: Radiated Emission above 1GHz      **APCM**: Antenna Port Conducted Measurement  
**OB**: Conducted Out-Band Emission Measurement

**NOTE:**

The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

#### **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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 140	52	OFDM	BPSK	6

#### **RADIATED EMISSION TEST (BELOW 1 GHz):**

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 140	52	OFDM	BPSK	6

### **RADIATED EMISSION TEST (ABOVE 1 GHz):**

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6
802.11n (20MHz)	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5

### **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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6
802.11n (20MHz)	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5

### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	23deg. C, 74%RH	120Vac, 60Hz	Kyle Huang
RE<1G	23deg. C, 65%RH	120Vac, 60Hz	Robert Chang
RE <sup>3</sup> 1G	23deg. C, 69%RH	120Vac, 60Hz	Amos Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Amos Chuang
OB	25deg. C, 60%RH	120Vac, 60Hz	Amos Chuang

### 3.3 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)**

ANSI C63.10-2009

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

### 3.4 DUTY CYCLE OF TEST SIGNAL

Test tool can set the EUT to transmit at > 98 % duty cycle.



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### 3.5 DESCRIPTION OF SUPPORT UNITS

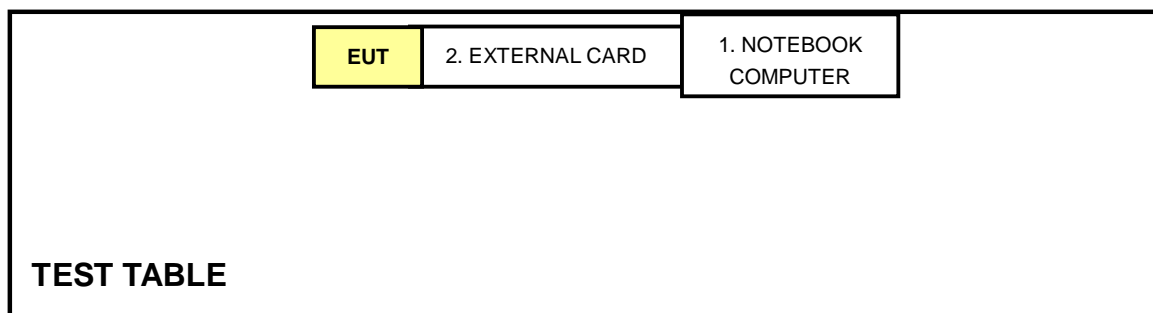
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	EXTERNAL CARD	AmbiCom	NA	NA	NA

No.	Signal cable description
1	NA
2	NA

Note: The power cords of the above support units were unshielded (1.8m).

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST



## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	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 0.50 MHz.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 12, 2012	Mar. 11, 2013
Line-Impedance Stabilization Network (for EUT)	NSLK8127	8127-522	Sep. 07, 2011	Sep. 06, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 02, 2011	Nov. 01, 2012
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 16, 2012

#### 4.1.3 TEST PROCEDURES

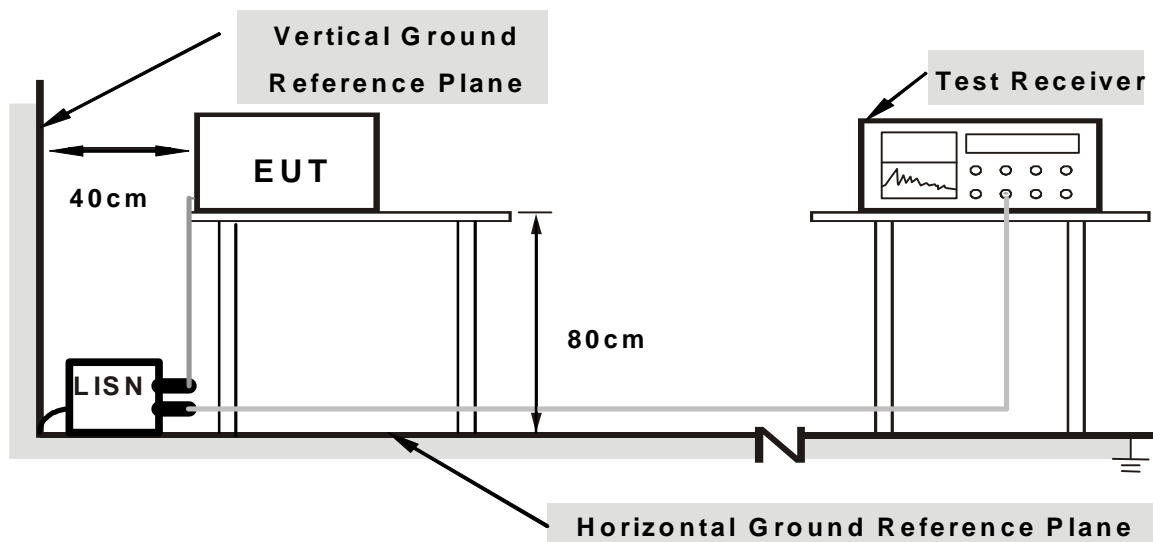
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.
- b. The two LISNs provide 50 ohm/ 50uH of coupling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

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation



#### 4.1.5 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 related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

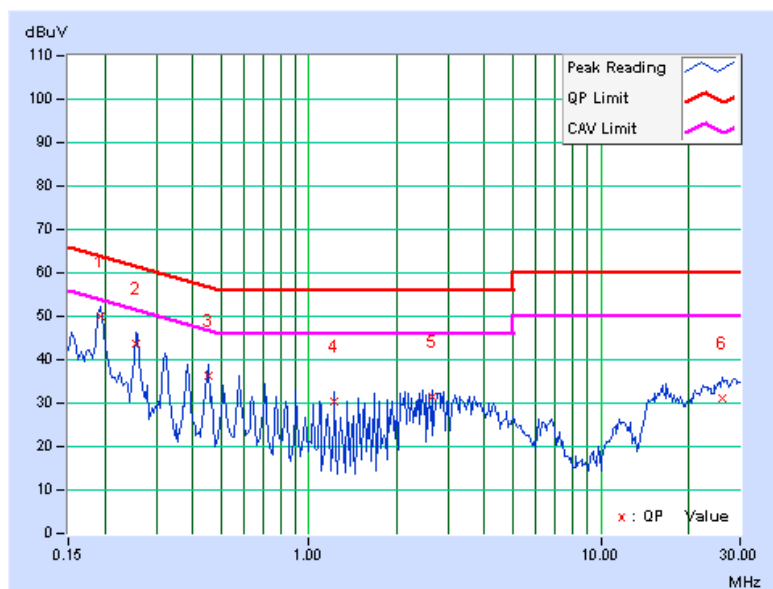
1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “RF\_TET\_GCSet1129.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

#### 4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.10	49.87	46.60	49.97	46.70	63.91	53.91	-13.94	-7.21
2	0.25609	0.10	43.73	40.25	43.83	40.35	61.56	51.56	-17.72	-11.20
3	0.45078	0.11	36.29	33.58	36.40	33.69	56.86	46.86	-20.46	-13.17
4	1.22319	0.16	30.37	28.95	30.53	29.11	56.00	46.00	-25.47	-16.89
5	2.64091	0.24	31.07	27.44	31.31	27.68	56.00	46.00	-24.69	-18.32
6	26.22209	0.90	30.25	25.13	31.15	26.03	60.00	50.00	-28.85	-23.97

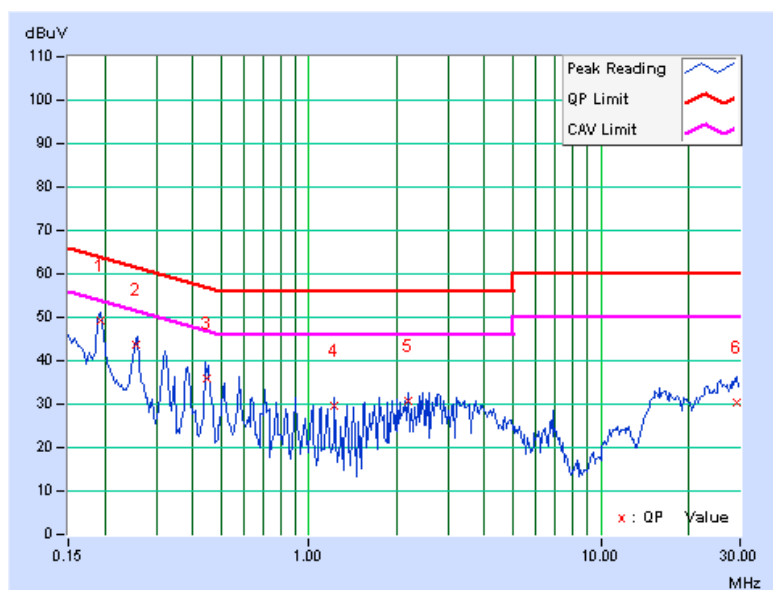
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.  
3. The emission levels of other frequencies were very low against the limit.  
4. Margin value = Emission level - Limit value  
5. Correction factor = Insertion loss + Cable loss  
6. Emission Level = Correction Factor + Reading Value.



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.09	49.04	46.20	49.13	46.29	63.91	53.91	-14.78	-7.62
2	0.25700	0.10	43.59	41.12	43.69	41.22	61.53	51.53	-17.84	-10.31
3	0.44972	0.11	35.95	33.80	36.06	33.91	56.88	46.88	-20.82	-12.97
4	1.22266	0.14	29.63	27.82	29.77	27.96	56.00	46.00	-26.23	-18.04
5	2.19141	0.18	30.39	26.93	30.57	27.11	56.00	46.00	-25.43	-18.89
6	29.37500	0.88	29.33	23.04	30.21	23.92	60.00	50.00	-29.79	-26.08

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

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

**NOTE:**

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

#### 4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

**NOTE:**

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

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



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## 4.2.3 TEST INSTRUMENTS

### For below 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 26, 2011	Dec. 25, 2012
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in 966 Chamber No. G.

4. The FCC Site Registration No. is 966073.

5. The VCCI Site Registration No. is G-137.

6. The CANADA Site Registration No. is IC 7450H-2.

7. Tested Date: Feb. 20, 2012



A D T

**For above 1GHz**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 14, 2011	Dec. 13, 2012
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2011	Nov. 29 , 2012
HP Pre_Amplifier	8449B	300801923	Oct. 31, 2011	Oct. 30, 2012
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 14, 2011	Apr. 13, 2012
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 16, 2011	Dec. 15, 2012
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2012	Jan. 16, 2013
RF Switches	EMH-011	1001	Sep. 24, 2011	Sep. 23, 2012
RF CABLE (Chaintek)	Sucoflex 106	72662/6	Jan. 19, 2012	Jan. 18, 2013
RF Cable	8DFB	STCCAB-30M-1GHz	Sep. 24, 2011	Sep. 23, 2012
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	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) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.  
 3. The test was performed in Open Site No. C.  
 4. The FCC Site Registration No. is 656396.  
 5. The VCCI Site Registration No. is R-1626.  
 6. The CANADA Site Registration No. is IC 7450G-3.  
 7. Tested date: Feb. 20 to Mar. 14, 2012

#### 4.2.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meters chamber room for below 1GHz test and 10 meters open site for above 1GHz 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 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

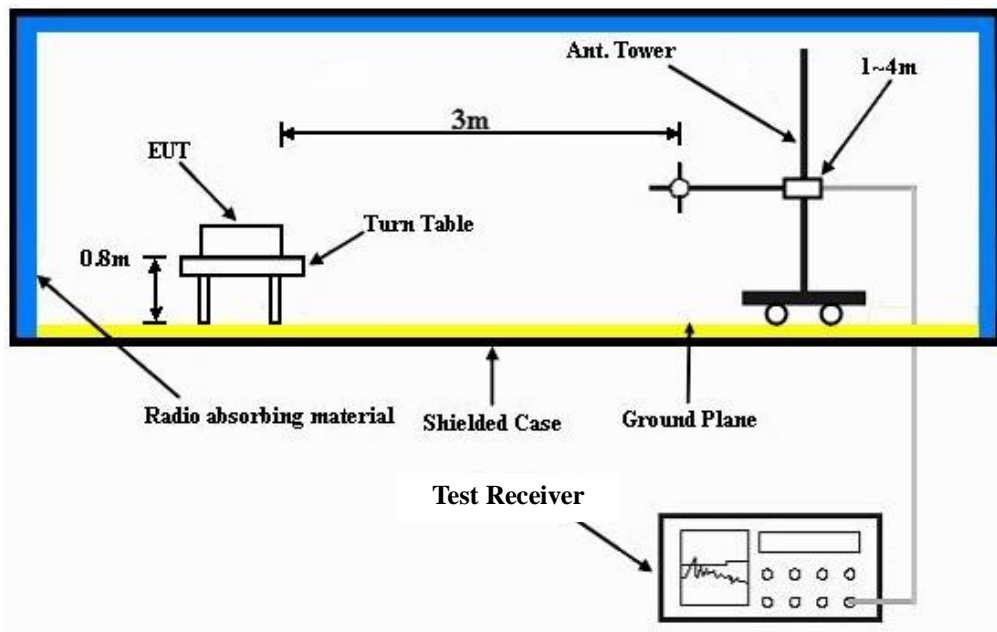
#### 4.2.5 DEVIATION FROM TEST STANDARD

No deviation

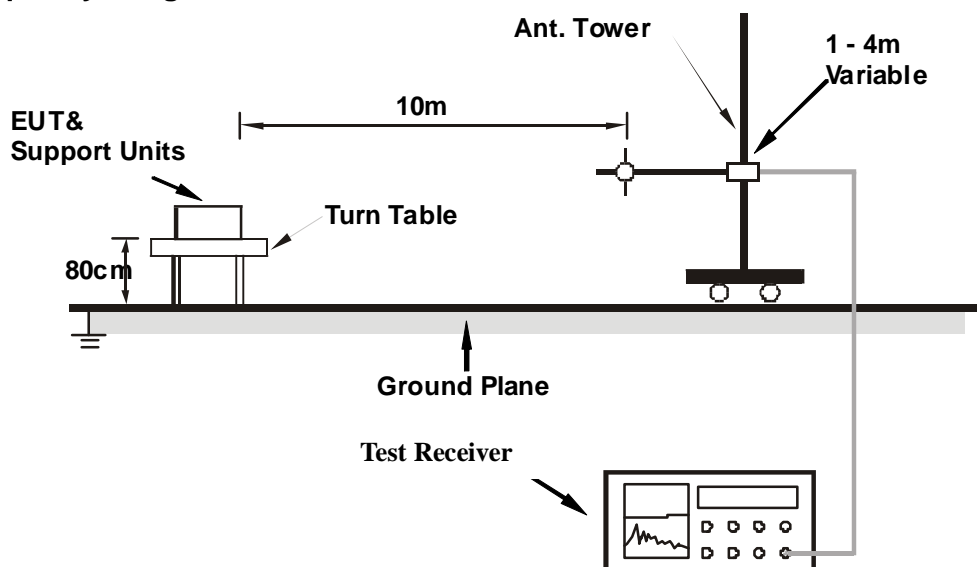


#### 4.2.6 TEST SETUP

##### <Frequency Range below 1GHz>



##### <Frequency Range above 1GHz>



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

## 4.2.8 TEST RESULTS

### BELOW 1GHz WORST-CASE DATA

#### 802.11a

CHANNEL	TX Channel 52	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)	CORRECTIO N FACTOR (dB/m)
1	80.68	31.6 QP	40.0	-8.4	2.00 H	324	21.77	9.83
2	200.05	37.1 QP	43.5	-6.4	1.25 H	139	25.69	11.39
3	288.04	40.9 QP	46.0	-5.1	1.00 H	315	26.05	14.84
4	531.64	38.0 QP	46.0	-8.0	1.00 H	314	16.93	21.05
5	831.48	38.1 QP	46.0	-7.9	2.00 H	355	11.75	26.36
6	863.93	37.5 QP	46.0	-8.5	2.00 H	308	10.63	26.85
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)	CORRECTIO N FACTOR (dB/m)
1	80.46	34.2 QP	40.0	-5.8	1.00 V	59	24.37	9.86
2	278.12	36.4 QP	46.0	-9.6	1.21 V	33	21.93	14.45
3	367.38	42.7 QP	46.0	-3.3	1.12 V	69	25.61	17.08
4	393.60	40.5 QP	46.0	-5.5	1.56 V	74	22.77	17.76
5	632.21	36.8 QP	46.0	-9.2	1.25 V	257	14.06	22.72
6	830.89	37.4 QP	46.0	-8.6	1.00 V	241	11.03	26.35

**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).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.

## 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)	CORRECTIO N FACTOR (dB/m)
1	5150.00	61.5 PK	74.0	-12.5	1.44 H	201	24.80	36.70
2	5150.00	48.2 AV	54.0	-5.8	1.44 H	201	11.50	36.70
3	*5180.00	98.6 PK			1.49 H	216	61.86	36.74
4	*5180.00	86.1 AV			1.49 H	216	49.36	36.74
5	#10360.00	63.3 PK	68.3	-5.0	1.07 H	244	16.62	46.68
6	15540.00	67.5 PK	74.0	-6.5	1.00 H	26	18.99	48.51
7	15540.00	51.6 AV	54.0	-2.4	1.00 H	26	3.09	48.51
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)	CORRECTIO N FACTOR (dB/m)
1	5150.00	57.2 PK	74.0	-16.8	1.24 V	131	20.50	36.70
2	5150.00	46.2 AV	54.0	-7.8	1.24 V	131	9.50	36.70
3	*5180.00	107.3 PK			1.24 V	124	70.56	36.74
4	*5180.00	97.2 AV			1.24 V	124	60.46	36.74
5	#10360.00	47.8 PK	68.3	-20.5	1.75 V	101	1.12	46.68
6	15540.00	64.8 PK	74.0	-9.2	1.09 V	297	16.29	48.51
7	15540.00	51.3 AV	54.0	-2.7	1.09 V	297	2.79	48.51

**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).
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)	CORRECTIO N FACTOR (dB/m)
1	*5200.00	101.8 PK			1.24 H	213	65.03	36.77
2	*5200.00	88.5 AV			1.24 H	213	51.73	36.77
3	#10400.00	67.4 PK	68.3	-0.9	1.46 H	66	20.83	46.57
4	15600.00	67.6 PK	74.0	-6.4	1.00 H	41	19.24	48.36
5	15600.00	51.8 AV	54.0	-2.2	1.00 H	41	3.44	48.36
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)	CORRECTIO N FACTOR (dB/m)
1	*5200.00	109.3 PK			1.21 V	122	72.53	36.77
2	*5200.00	99.2 AV			1.21 V	122	62.43	36.77
3	#10400.00	60.7 PK	68.3	-7.6	1.57 V	109	14.13	46.57
4	15600.00	64.7 PK	74.0	-9.3	1.04 V	311	16.34	48.36
5	15600.00	51.1 AV	54.0	-2.9	1.04 V	311	2.74	48.36

**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).  
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)	CORRECTIO N FACTOR (dB/m)
1	*5240.00	102.6 PK			1.43 H	217	65.75	36.85
2	*5240.00	89.6 AV			1.43 H	217	52.75	36.85
3	#10480.00	67.7 PK	68.3	-0.6	1.44 H	93	20.82	46.88
4	15720.00	67.2 PK	74.0	-6.8	1.04 H	28	19.17	48.03
5	15720.00	51.5 AV	54.0	-2.5	1.04 H	28	3.47	48.03
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)	CORRECTIO N FACTOR (dB/m)
1	*5240.00	110.3 PK			1.24 V	124	73.45	36.85
2	*5240.00	99.8 AV			1.24 V	124	62.95	36.85
3	#10480.00	60.9 PK	68.3	-7.4	1.52 V	104	14.02	46.88
4	15720.00	64.8 PK	74.0	-9.2	1.08 V	315	16.77	48.03
5	15720.00	51.1 AV	54.0	-2.9	1.08 V	315	3.07	48.03

**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).  
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 52	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)	CORRECTIO N FACTOR (dB/m)
1	*5260.00	102.6 PK			1.38 H	210	65.71	36.89
2	*5260.00	89.4 AV			1.38 H	210	52.51	36.89
3	#10520.00	66.9 PK	68.3	-1.4	1.47 H	237	19.95	46.95
4	15780.00	67.4 PK	74.0	-6.6	1.03 H	32	19.35	48.05
5	15780.00	51.4 AV	54.0	-2.6	1.03 H	32	3.35	48.05
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)	CORRECTIO N FACTOR (dB/m)
1	*5260.00	110.6 PK			1.21 V	123	73.71	36.89
2	*5260.00	99.4 AV			1.21 V	123	62.51	36.89
3	#10520.00	60.4 PK	68.3	-7.9	1.54 V	107	13.45	46.95
4	15780.00	64.9 PK	74.0	-9.1	1.04 V	317	16.85	48.05
5	15780.00	51.3 AV	54.0	-2.7	1.04 V	317	3.25	48.05

**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).  
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 60	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)	CORRECTIO N FACTOR (dB/m)
1	*5300.00	102.1 PK			1.36 H	215	65.13	36.97
2	*5300.00	89.2 AV			1.36 H	215	52.23	36.97
3	10600.00	65.8 PK	74.0	-8.2	1.52 H	233	18.88	46.92
4	10600.00	53.1 AV	54.0	-0.9	1.52 H	233	6.18	46.92
5	15900.00	67.9 PK	74.0	-6.1	1.06 H	49	20.41	47.49
6	15900.00	51.6 AV	54.0	-2.4	1.06 H	49	4.11	47.49
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)	CORRECTIO N FACTOR (dB/m)
1	*5300.00	107.4 PK			1.24 V	126	70.43	36.97
2	*5300.00	97.3 AV			1.24 V	126	60.33	36.97
3	10600.00	56.4 PK	74.0	-17.6	1.51 V	104	9.48	46.92
4	10600.00	46.3 AV	54.0	-7.7	1.51 V	104	-0.62	46.92
5	15900.00	64.3 PK	74.0	-9.7	1.07 V	316	16.81	47.49
6	15900.00	51.2 AV	54.0	-2.8	1.07 V	316	3.71	47.49

**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).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. " \* ": Fundamental frequency.

CHANNEL	TX Channel 64	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)	CORRECTIO N FACTOR (dB/m)
1	*5320.00	101.3 PK			1.39 H	227	64.29	37.01
2	*5320.00	88.4 AV			1.39 H	227	51.39	37.01
3	5350.00	61.1 PK	74.0	-12.9	1.32 H	237	24.04	37.06
4	5350.00	47.5 AV	54.0	-6.5	1.32 H	237	10.44	37.06
5	10640.00	65.6 PK	74.0	-8.4	1.03 H	234	18.58	47.02
6	10640.00	53.4 AV	54.0	-0.6	1.03 H	234	6.38	47.02
7	15960.00	67.9 PK	74.0	-6.1	1.04 H	62	20.25	47.65
8	15960.00	51.8 AV	54.0	-2.2	1.04 H	62	4.15	47.65
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)	CORRECTIO N FACTOR (dB/m)
1	*5320.00	107.3 PK			1.25 V	248	70.29	37.01
2	*5320.00	96.4 AV			1.25 V	248	59.39	37.01
3	5350.00	69.9 PK	74.0	-4.1	1.26 V	299	32.84	37.06
4	5350.00	53.4 AV	54.0	-0.6	1.26 V	299	16.34	37.06
5	10640.00	56.8 PK	74.0	-17.2	1.54 V	103	9.78	47.02
6	10640.00	46.7 AV	54.0	-7.3	1.54 V	103	-0.32	47.02
7	15960.00	64.8 PK	74.0	-9.2	1.04 V	319	17.15	47.65
8	15960.00	51.1 AV	54.0	-2.9	1.04 V	319	3.45	47.65

**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).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. " \* ": Fundamental frequency.



CHANNEL	TX Channel 100	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)	CORRECTIO N FACTOR (dB/m)
1	5460.00	59.8 PK	74.0	-14.2	1.33 H	198	22.50	37.30
2	5460.00	46.9 AV	54.0	-7.1	1.33 H	198	9.60	37.30
3	#5470.00	65.3 PK	68.3	-3.0	1.33 H	221	27.97	37.33
4	*5500.00	103.6 PK			1.34 H	208	66.20	37.40
5	*5500.00	92.3 AV			1.34 H	208	54.90	37.40
6	11000.00	64.6 PK	74.0	-9.4	1.43 H	58	16.86	47.74
7	11000.00	53.2 AV	54.0	-0.8	1.43 H	58	5.46	47.74
8	#16500.00	67.2 PK	68.3	-1.1	1.04 H	59	19.08	48.12
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)	CORRECTIO N FACTOR (dB/m)
1	5460.00	59.4 PK	74.0	-14.6	1.03 V	313	22.10	37.30
2	5460.00	46.1 AV	54.0	-7.9	1.03 V	313	8.80	37.30
3	#5470.00	67.8 PK	68.3	-0.5	1.12 V	122	30.47	37.33
4	*5500.00	109.2 PK			1.20 V	282	71.80	37.40
5	*5500.00	101.1 AV			1.20 V	282	63.70	37.40
6	11000.00	56.9 PK	74.0	-17.1	1.51 V	102	9.16	47.74
7	11000.00	46.8 AV	54.0	-7.2	1.51 V	102	-0.94	47.74
8	#16500.00	64.3 PK	68.3	-4.0	1.02 V	324	16.18	48.12

**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).  
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 116	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)	CORRECTIO N FACTOR (dB/m)
1	*5580.00	103.7 PK			1.36 H	299	66.17	37.53
2	*5580.00	92.6 AV			1.36 H	299	55.07	37.53
3	11160.00	64.1 PK	74.0	-9.9	1.43 H	56	16.42	47.68
4	11160.00	53.2 AV	54.0	-0.8	1.43 H	56	5.52	47.68
5	#16740.00	67.4 PK	68.3	-0.9	1.03 H	62	18.74	48.66
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)	CORRECTIO N FACTOR (dB/m)
1	*5580.00	110.4 PK			1.21 V	287	72.87	37.53
2	*5580.00	102.4 AV			1.21 V	287	64.87	37.53
3	11160.00	62.6 PK	74.0	-11.4	1.39 V	19	14.92	47.68
4	11160.00	51.8 AV	54.0	-2.2	1.39 V	19	4.12	47.68
5	#16740.00	64.6 PK	68.3	-3.7	1.04 V	321	15.94	48.66

**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).  
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 132	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)	CORRECTIO N FACTOR (dB/m)
1	*5660.00	103.4 PK			1.31 H	297	65.65	37.75
2	*5660.00	92.7 AV			1.31 H	297	54.95	37.75
3	11320.00	64.6 PK	74.0	-9.4	1.40 H	60	16.72	47.88
4	11320.00	53.7 AV	54.0	-0.3	1.40 H	60	5.82	47.88
5	#16980.00	67.5 PK	68.3	-0.8	1.02 H	59	18.54	48.96
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)	CORRECTIO N FACTOR (dB/m)
1	*5660.00	110.0 PK			1.24 V	278	72.25	37.75
2	*5660.00	101.5 AV			1.24 V	278	63.75	37.75
3	11320.00	60.8 PK	74.0	-13.2	1.37 V	20	12.92	47.88
4	11320.00	50.1 AV	54.0	-3.9	1.37 V	20	2.22	47.88
5	#16980.00	64.3 PK	68.3	-4.0	1.04 V	329	15.34	48.96

**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).  
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 140	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)	CORRECTIO N FACTOR (dB/m)
1	*5700.00	101.4 PK			1.32 H	292	63.53	37.87
2	*5700.00	89.3 AV			1.32 H	292	51.43	37.87
3	#5725.00	62.3 PK	68.3	-6.0	1.32 H	295	24.36	37.94
4	11400.00	63.1 PK	74.0	-10.9	1.42 H	62	15.51	47.59
5	11400.00	51.9 AV	54.0	-2.1	1.42 H	62	4.31	47.59
6	#17100.00	67.2 PK	68.3	-1.1	1.04 H	62	17.40	49.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	*5700.00	109.3 PK			1.24 V	274	71.43	37.87
2	*5700.00	99.4 AV			1.24 V	274	61.53	37.87
3	#5725.00	67.7 PK	68.3	-0.6	1.15 V	93	29.76	37.94
4	11400.00	62.1 PK	74.0	-11.9	1.29 V	15	14.51	47.59
5	11400.00	50.3 AV	54.0	-3.7	1.29 V	15	2.71	47.59
6	#17100.00	64.5 PK	68.3	-3.8	1.02 V	321	14.70	49.80

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
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 (20MHz)

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)	CORRECTIO N FACTOR (dB/m)
1	5150.00	65.2 PK	74.0	-8.8	1.30 H	298	28.50	36.70
2	5150.00	50.2 AV	54.0	-3.8	1.30 H	298	13.50	36.70
3	*5180.00	101.6 PK			1.31 H	294	64.86	36.74
4	*5180.00	89.6 AV			1.31 H	294	52.86	36.74
5	#10360.00	63.6 PK	68.3	-4.7	1.05 H	245	16.92	46.68
6	15540.00	64.7 PK	74.0	-9.3	1.00 H	321	16.19	48.51
7	15540.00	51.6 AV	54.0	-2.4	1.00 H	321	3.09	48.51
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)	CORRECTIO N FACTOR (dB/m)
1	5150.00	69.6 PK	74.0	-4.4	1.30 V	279	32.90	36.70
2	5150.00	52.3 AV	54.0	-1.7	1.30 V	279	15.60	36.70
3	*5180.00	107.7 PK			1.29 V	291	70.96	36.74
4	*5180.00	99.8 AV			1.29 V	291	63.06	36.74
5	#10360.00	46.2 PK	68.3	-22.1	1.72 V	104	-0.48	46.68
6	15540.00	64.2 PK	74.0	-9.8	1.02 V	329	15.69	48.51
7	15540.00	51.1 AV	54.0	-2.9	1.02 V	329	2.59	48.51

**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).  
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.



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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)	CORRECTIO N FACTOR (dB/m)
1	*5200.00	103.4 PK			1.34 H	291	66.63	36.77
2	*5200.00	92.3 AV			1.34 H	291	55.53	36.77
3	#10400.00	66.5 PK	68.3	-1.8	1.40 H	74	19.93	46.57
4	15600.00	64.6 PK	74.0	-9.4	1.00 H	326	16.24	48.36
5	15600.00	51.6 AV	54.0	-2.4	1.00 H	326	3.24	48.36
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)	CORRECTIO N FACTOR (dB/m)
1	*5200.00	112.4 PK			1.24 V	294	75.63	36.77
2	*5200.00	102.3 AV			1.24 V	294	65.53	36.77
3	#10400.00	60.2 PK	68.3	-8.1	1.05 V	107	13.63	46.57
4	15600.00	64.5 PK	74.0	-9.5	1.00 V	326	16.14	48.36
5	15600.00	51.5 AV	54.0	-2.5	1.00 V	326	3.14	48.36

**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).  
 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)	CORRECTIO N FACTOR (dB/m)
1	*5240.00	103.5 PK			1.27 H	283	66.65	36.85
2	*5240.00	92.6 AV			1.27 H	283	55.75	36.85
3	#10480.00	67.8 PK	68.3	-0.5	1.44 H	89	20.92	46.88
4	15720.00	64.6 PK	74.0	-9.4	1.00 H	324	16.57	48.03
5	15720.00	51.5 AV	54.0	-2.5	1.00 H	324	3.47	48.03
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)	CORRECTIO N FACTOR (dB/m)
1	*5240.00	112.2 PK			1.24 V	291	75.35	36.85
2	*5240.00	102.1 AV			1.24 V	291	65.25	36.85
3	#10480.00	60.1 PK	68.3	-8.2	1.04 V	111	13.22	46.88
4	15720.00	64.9 PK	74.0	-9.1	1.02 V	316	16.87	48.03
5	15720.00	52.0 AV	54.0	-2.0	1.02 V	316	3.97	48.03

**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).  
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 52	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)	CORRECTIO N FACTOR (dB/m)
1	*5260.00	103.7 PK			1.24 H	279	66.81	36.89
2	*5260.00	92.3 AV			1.24 H	279	55.41	36.89
3	#10520.00	67.7 PK	68.3	-0.6	1.40 H	77	20.75	46.95
4	15780.00	64.9 PK	74.0	-9.1	1.00 H	329	16.85	48.05
5	15780.00	51.9 AV	54.0	-2.1	1.00 H	329	3.85	48.05
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)	CORRECTIO N FACTOR (dB/m)
1	*5260.00	112.3 PK			1.21 V	288	75.41	36.89
2	*5260.00	102.0 AV			1.21 V	288	65.11	36.89
3	#10520.00	60.4 PK	68.3	-7.9	1.06 V	112	13.45	46.95
4	15780.00	64.5 PK	74.0	-9.5	1.02 V	332	16.45	48.05
5	15780.00	51.6 AV	54.0	-2.4	1.02 V	332	3.55	48.05

**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).  
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.





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CHANNEL	TX Channel 60	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)	CORRECTIO N FACTOR (dB/m)
1	*5300.00	109.3 PK			1.21 H	276	72.33	36.97
2	*5300.00	89.4 AV			1.21 H	276	52.43	36.97
3	10600.00	64.6 PK	74.0	-9.4	1.42 H	88	17.68	46.92
4	10600.00	53.2 AV	54.0	-0.8	1.42 H	88	6.28	46.92
5	15900.00	65.4 PK	74.0	-8.6	1.00 H	316	17.91	47.49
6	15900.00	52.2 AV	54.0	-1.8	1.00 H	316	4.71	47.49
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)	CORRECTIO N FACTOR (dB/m)
1	*5300.00	107.6 PK			1.24 V	279	70.63	36.97
2	*5300.00	97.3 AV			1.24 V	279	60.33	36.97
3	10600.00	59.9 PK	74.0	-14.1	1.54 V	65	12.98	46.92
4	10600.00	49.1 AV	54.0	-4.9	1.54 V	65	2.18	46.92
5	15900.00	64.0 PK	74.0	-10.0	1.05 V	337	16.51	47.49
6	15900.00	51.4 AV	54.0	-2.6	1.05 V	337	3.91	47.49

**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).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. " \* ": Fundamental frequency.

CHANNEL	TX Channel 64	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)	CORRECTIO N FACTOR (dB/m)
1	*5320.00	110.4 PK			1.24 H	283	73.39	37.01
2	*5320.00	90.4 AV			1.24 H	283	53.39	37.01
3	5350.00	61.4 PK	74.0	-12.6	1.21 H	279	24.34	37.06
4	5350.00	47.4 AV	54.0	-6.6	1.21 H	279	10.34	37.06
5	10640.00	64.4 PK	74.0	-9.6	1.46 H	84	17.38	47.02
6	10640.00	52.8 AV	54.0	-1.2	1.46 H	84	5.78	47.02
7	15960.00	64.9 PK	74.0	-9.1	1.00 H	321	17.25	47.65
8	15960.00	51.9 AV	54.0	-2.1	1.00 H	321	4.25	47.65
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)	CORRECTIO N FACTOR (dB/m)
1	*5320.00	106.7 PK			1.24 V	283	69.69	37.01
2	*5320.00	96.2 AV			1.24 V	283	59.19	37.01
3	5350.00	70.7 PK	74.0	-3.3	1.13 V	266	33.64	37.06
4	5350.00	53.2 AV	54.0	-0.8	1.13 V	266	16.14	37.06
5	10640.00	60.0 PK	74.0	-14.0	1.55 V	60	12.98	47.02
6	10640.00	49.1 AV	54.0	-4.9	1.55 V	60	2.08	47.02
7	15960.00	64.3 PK	74.0	-9.7	1.00 V	328	16.65	47.65
8	15960.00	51.6 AV	54.0	-2.4	1.00 V	328	3.95	47.65

**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).  
3. The other emission levels were very low against the limit.  
4. Margin value = Emission level – Limit value.  
5. " \* ": Fundamental frequency.

CHANNEL	TX Channel 100	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)	CORRECTIO N FACTOR (dB/m)
1	5460.00	59.6 PK	74.0	-14.4	1.24 H	113	22.30	37.30
2	5460.00	46.6 AV	54.0	-7.4	1.24 H	113	9.30	37.30
3	#5470.00	67.3 PK	68.3	-1.0	1.21 H	116	29.97	37.33
4	*5500.00	102.4 PK			1.21 H	273	65.00	37.40
5	*5500.00	92.3 AV			1.21 H	273	54.90	37.40
6	11000.00	64.0 PK	74.0	-10.0	1.42 H	76	16.26	47.74
7	11000.00	52.7 AV	54.0	-1.3	1.42 H	76	4.96	47.74
8	#16500.00	67.4 PK	68.3	-0.9	1.00 H	326	19.28	48.12
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)	CORRECTIO N FACTOR (dB/m)
1	5460.00	59.3 PK	74.0	-14.7	1.21 V	113	22.00	37.30
2	5460.00	46.1 AV	54.0	-7.9	1.21 V	113	8.80	37.30
3	#5470.00	67.6 PK	68.3	-0.7	1.23 V	117	30.27	37.33
4	*5500.00	109.3 PK			1.24 V	279	71.90	37.40
5	*5500.00	101.4 AV			1.24 V	279	64.00	37.40
6	11000.00	59.5 PK	74.0	-14.5	1.53 V	71	11.76	47.74
7	11000.00	48.6 AV	54.0	-5.4	1.53 V	71	0.86	47.74
8	#16500.00	64.3 PK	68.3	-4.0	1.00 V	321	16.18	48.12

**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).  
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.



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CHANNEL	TX Channel 116	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)	CORRECTIO N FACTOR (dB/m)
1	*5580.00	102.7 PK			1.24 H	269	65.17	37.53
2	*5580.00	92.4 AV			1.24 H	269	54.87	37.53
3	11160.00	64.1 PK	74.0	-9.9	1.43 H	62	16.42	47.68
4	11160.00	53.1 AV	54.0	-0.9	1.43 H	62	5.42	47.68
5	#16740.00	67.6 PK	68.3	-0.7	1.00 H	321	18.94	48.66
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)	CORRECTIO N FACTOR (dB/m)
1	*5580.00	109.6 PK			1.24 V	266	72.07	37.53
2	*5580.00	101.5 AV			1.24 V	266	63.97	37.53
3	11160.00	59.2 PK	74.0	-14.8	1.48 V	86	11.52	47.68
4	11160.00	48.3 AV	54.0	-5.7	1.48 V	86	0.62	47.68
5	#16740.00	65.3 PK	68.3	-3.0	1.00 V	277	16.64	48.66

**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).  
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 132	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)	CORRECTIO N FACTOR (dB/m)
1	*5660.00	102.9 PK			1.26 H	273	65.15	37.75
2	*5660.00	92.5 AV			1.26 H	273	54.75	37.75
3	11320.00	65.1 PK	74.0	-8.9	1.44 H	57	17.22	47.88
4	11320.00	53.4 AV	54.0	-0.6	1.44 H	57	5.52	47.88
5	#16980.00	67.3 PK	68.3	-1.0	1.00 H	326	18.34	48.96
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)	CORRECTIO N FACTOR (dB/m)
1	*5660.00	109.9 PK			1.26 V	269	72.15	37.75
2	*5660.00	101.7 AV			1.26 V	269	63.95	37.75
3	11320.00	58.8 PK	74.0	-15.2	1.45 V	81	10.92	47.88
4	11320.00	48.1 AV	54.0	-5.9	1.45 V	81	0.22	47.88
5	#16980.00	65.4 PK	68.3	-2.9	1.00 V	283	16.44	48.96

**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).  
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 140	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)	CORRECTIO N FACTOR (dB/m)
1	*5700.00	102.4 PK			1.21 H	253	64.53	37.87
2	*5700.00	92.3 AV			1.21 H	253	54.43	37.87
3	#5725.00	64.2 PK	68.3	-4.1	1.24 H	116	26.26	37.94
4	11400.00	61.8 PK	74.0	-12.2	1.03 H	247	14.21	47.59
5	11400.00	49.4 AV	54.0	-4.6	1.03 H	247	1.81	47.59
6	#17100.00	67.4 PK	68.3	-0.9	1.00 H	324	17.60	49.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTIO N FACTOR (dB/m)
1	*5700.00	109.2 PK			1.24 V	253	71.33	37.87
2	*5700.00	101.3 AV			1.24 V	253	63.43	37.87
3	#5725.00	67.8 PK	68.3	-0.5	1.15 V	93	29.86	37.94
4	11400.00	58.8 PK	74.0	-15.2	1.43 V	90	11.21	47.59
5	11400.00	47.9 AV	54.0	-6.1	1.43 V	90	0.31	47.59
6	#17100.00	65.6 PK	68.3	-2.7	1.00 V	279	15.80	49.80

**REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).  
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).  
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.

### 4.3 TRANSMIT POWER MEASUREMENT

#### 4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

**NOTE:** Where B is the 26dB emission bandwidth in MHz.

#### 4.3.2 TEST INSTRUMENTS

##### FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

**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 : Feb. 20, 2012

##### FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

**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 : Feb. 20, 2012

#### 4.3.3 TEST PROCEDURE

##### FOR POWER OUTPUT MEASUREMENT

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

##### FOR 26dB OCCUPIED BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

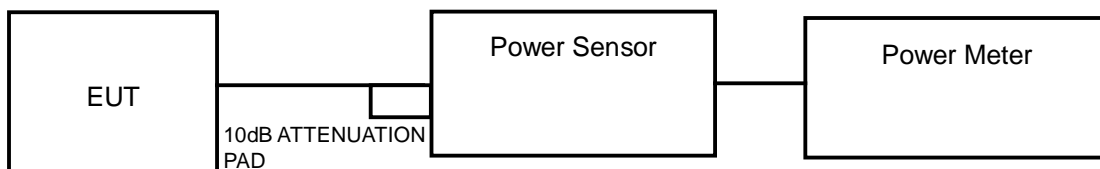
#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

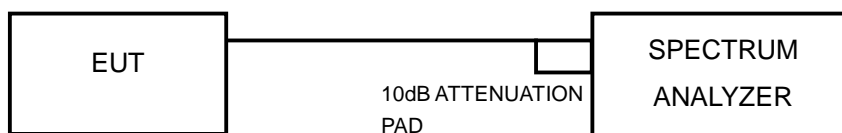


#### 4.3.5 TEST SETUP

##### FOR POWER OUTPUT MEASUREMENT



##### FOR 26dB OCCUPIED BANDWIDTH



#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

#### 4.3.7 TEST RESULTS

##### POWER OUTPUT: 802.11a

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
36	5180	17.4	12.4	17.00	PASS
40	5200	42.7	16.3	17.00	PASS
48	5240	38.9	15.9	17.00	PASS
52	5260	39.8	16.0	24.00	PASS
60	5300	18.6	12.7	24.00	PASS
64	5320	14.8	11.7	24.00	PASS
100	5500	7.6	8.8	24.00	PASS
116	5580	7.8	8.9	24.00	PASS
132	5660	9.3	9.7	24.00	PASS
140	5700	6.2	7.9	24.00	PASS

### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
36	5180	17.4	12.4	17.00	PASS
40	5200	43.7	16.4	17.00	PASS
48	5240	41.7	16.2	17.00	PASS
52	5260	38.9	15.9	24.00	PASS
60	5300	20.0	13.0	24.00	PASS
64	5320	14.5	11.6	24.00	PASS
100	5500	8.9	9.5	24.00	PASS
116	5580	9.6	9.8	24.00	PASS
132	5660	10.0	10.0	24.00	PASS
140	5700	5.2	7.2	24.00	PASS

## 26dB BANDWIDTH:

### 802.11a

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
36	5180	33.38
40	5200	43.34
48	5240	43.61
52	5260	44.03
60	5300	40.65
64	5320	32.38
100	5500	34.92
116	5580	38.04
132	5660	41.66
140	5700	39.04

### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)
36	5180	24.86
40	5200	46.67
48	5240	46.58
52	5260	48.41
60	5300	44.60
64	5320	25.96
100	5500	43.11
116	5580	38.71
132	5660	43.84
140	5700	40.12

#### 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

##### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

##### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

**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 : Feb. 20, 2012

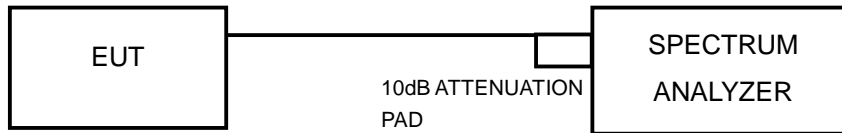
##### 4.4.3 TEST PROCEDURES

- 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

##### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6

## 4.4.7 TEST RESULTS

### 802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
36	5180	0.5	4.00	PASS
40	5200	2.9	4.00	PASS
48	5240	3.7	4.00	PASS
52	5260	3.1	11.00	PASS
60	5300	0.6	11.00	PASS
64	5320	-0.9	11.00	PASS
100	5500	-2.2	11.00	PASS
116	5580	-2.8	11.00	PASS
132	5660	-2.5	11.00	PASS
140	5700	-3.0	11.00	PASS



# 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
36	5180	-1.8	4.00	PASS
40	5200	3.8	4.00	PASS
48	5240	3.2	4.00	PASS
52	5260	2.8	11.00	PASS
60	5300	0.8	11.00	PASS
64	5320	-2.7	11.00	PASS
100	5500	-2.1	11.00	PASS
116	5580	-3.5	11.00	PASS
132	5660	-3.5	11.00	PASS
140	5700	-4.1	11.00	PASS

## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

**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 : Feb. 23, 2012

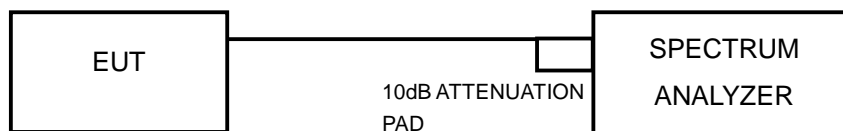
### 4.5.3 TEST PROCEDURE

- 1) Set RBW = 1 MHz, VBW  $\leq$  3 MHz, Detector = peak.
- 2) Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
- 3) Use the peak search function to find the peak of the spectrum.
- 4) Measure the PPSD.
- 5) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.5.5 TEST SETUP



### 4.5.6 EUT OPERATING CONDITIONS

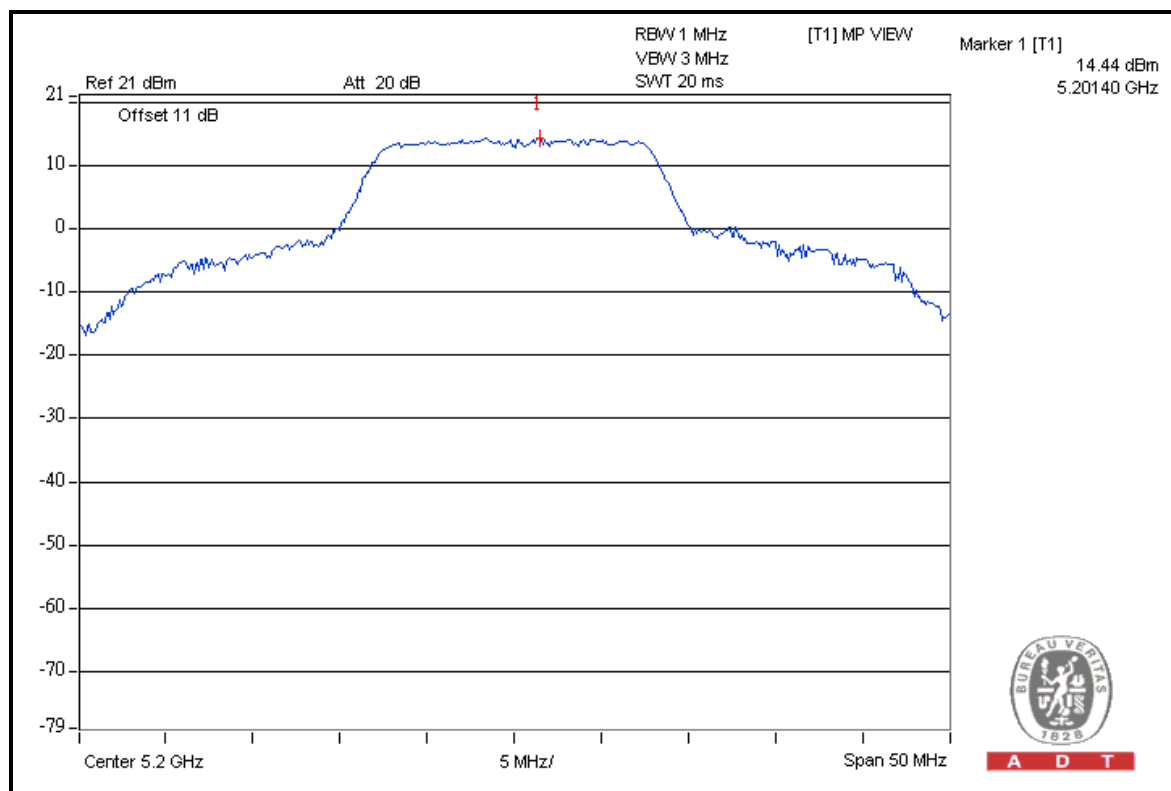
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

## 4.5.7 TEST RESULTS

### 802.11a

CHANNEL	FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
36	5180	10.83	0.5	10.4	13	PASS
40	5200	14.44	2.9	11.5	13	PASS
48	5240	14.01	3.7	10.3	13	PASS
52	5260	13.69	3.1	10.6	13	PASS
60	5300	11.15	0.6	10.5	13	PASS
64	5320	8.68	-0.9	9.6	13	PASS
100	5500	7.80	-2.2	10.0	13	PASS
116	5580	7.02	-2.8	9.8	13	PASS
132	5660	7.43	-2.5	9.9	13	PASS
140	5700	7.05	-3.0	10.0	13	PASS

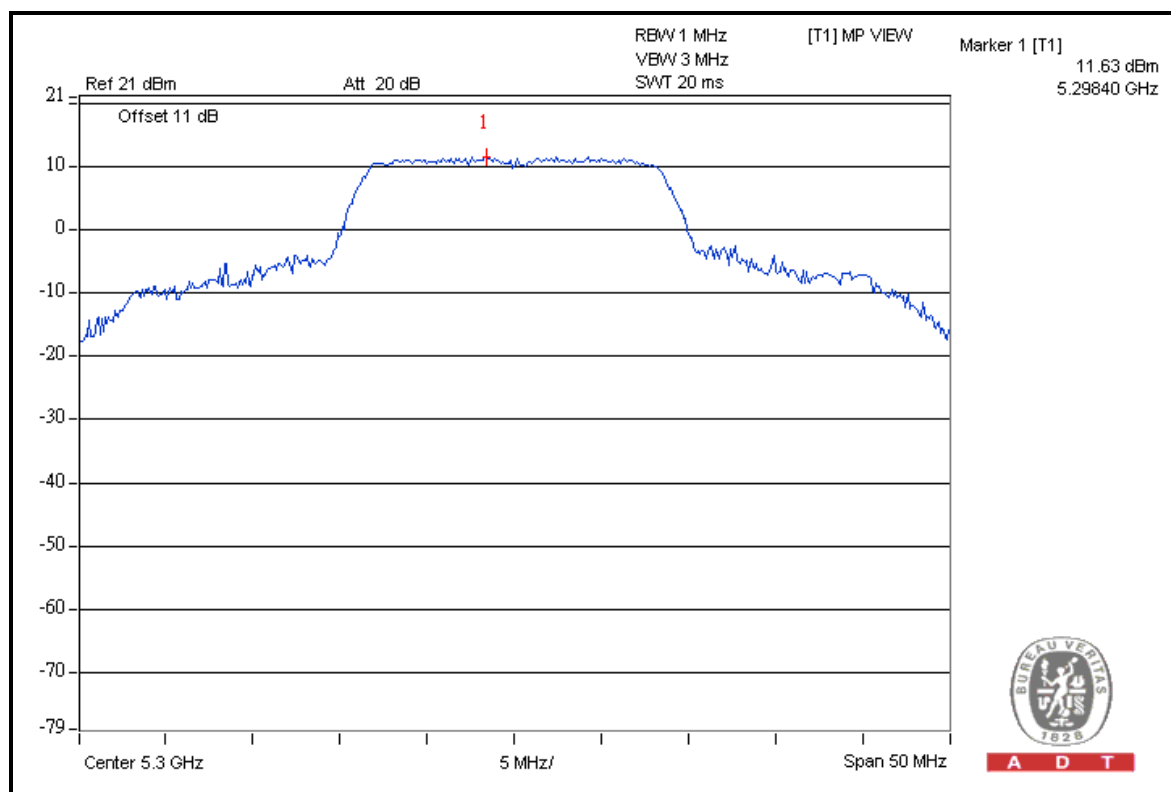
### CH 40



### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
36	5180	8.84	-1.8	10.6	13	PASS
40	5200	14.17	3.8	10.4	13	PASS
48	5240	13.82	3.2	10.7	13	PASS
52	5260	13.50	2.8	10.7	13	PASS
60	5300	11.63	0.8	10.9	13	PASS
64	5320	7.86	-2.7	10.5	13	PASS
100	5500	8.42	-2.1	10.5	13	PASS
116	5580	6.18	-3.5	9.6	13	PASS
132	5660	6.64	-3.5	10.2	13	PASS
140	5700	5.54	-4.1	9.6	13	PASS

### CH 60



## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

**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 : Feb. 20, 2012

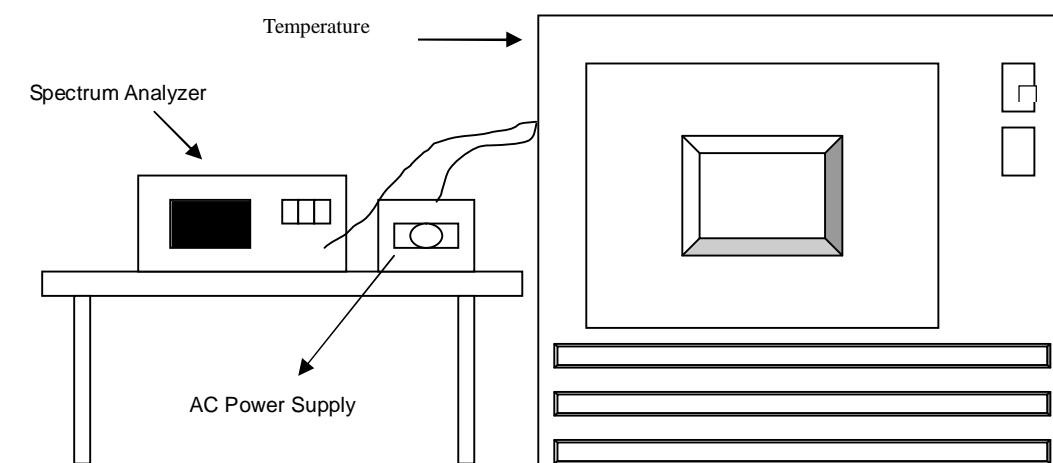
### 4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. 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.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. 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.

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.6.5 TEST SETUP



#### 4.6.6 EUT OPERATING CONDITION

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

#### 4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	ppm	(MHz)	ppm	(MHz)	ppm	(MHz)	ppm
50	120	5180.0139	2.6834	5180.0105	2.0270	5180.0126	2.4324	5180.0186	3.5907
40	120	5179.9907	-1.7954	5179.9932	-1.3127	5179.992	-1.5444	5179.9953	-0.9073
30	120	5179.9935	-1.2548	5179.9957	-0.8301	5179.9953	-0.9073	5179.9922	-1.5058
20	120	5179.9864	-2.6255	5179.9892	-2.0849	5179.994	-1.1583	5179.989	-2.1236
10	120	5180.0085	1.6409	5180.0042	0.8108	5180.0009	0.1737	5180.0057	1.1004
0	120	5180.0021	0.4054	5180.0021	0.4054	5180.0047	0.9073	5180.009	1.7375
-10	120	5179.986	-2.7027	5179.9842	-3.0502	5179.9811	-3.6486	5179.9826	-3.3591
-20	120	5180.0213	4.1120	5180.0223	4.3050	5180.0212	4.0927	5180.0209	4.0347
-30	120	5179.9957	-0.8301	5179.9964	-0.6950	5179.995	-0.9653	5179.9965	-0.6757

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5180MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	ppm	(MHz)	ppm	(MHz)	ppm	(MHz)	ppm
20	138	5179.9862	-2.6641	5179.9897	-1.9884	5179.9945	-1.0618	5179.9895	-2.0270
	120	5179.9864	-2.6255	5179.9892	-2.0849	5179.994	-1.1583	5179.989	-2.1236
	102	5179.9855	-2.7992	5179.9905	-1.8340	5179.9952	-0.9266	5179.9898	-1.9691

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 6. 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.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

[www.adt.com.tw/index.5.phtml](http://www.adt.com.tw/index.5.phtml).

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

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

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**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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



A D T

## **7.APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No modifications were made to the EUT by the lab during the test.

**--- END ---**