



# FCC TEST REPORT

**REPORT NO.:** RF130904E03

**MODEL NO.:** CWFB-124

**FCC ID:** SERCWFB124

**RECEIVED:** Aug. 07, 2013

**TESTED:** Aug. 07 to Sep. 26, 2013

**ISSUED:** Sep. 27, 2013

**APPLICANT:** AOF Imaging Technology (Shenzhen) Co., Ltd.

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

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## Table of Contents

RELEASE CONTROL RECORD .....	4
1. CERTIFICATION .....	5
2. SUMMARY OF TEST RESULTS .....	6
2.1 MEASUREMENT UNCERTAINTY .....	7
3. GENERAL INFORMATION .....	8
3.1 GENERAL DESCRIPTION OF EUT .....	8
3.2 DESCRIPTION OF TEST MODES .....	10
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL .....	11
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	14
3.4 DUTY CYCLE OF TEST SIGNAL .....	14
3.5 DESCRIPTION OF SUPPORT UNITS .....	15
3.6 CONFIGURATION OF SYSTEM UNDER TEST .....	15
4. TEST TYPES AND RESULTS .....	16
4.1 CONDUCTED EMISSION MEASUREMENT .....	16
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	16
4.1.2 TEST INSTRUMENTS .....	16
4.1.3 TEST PROCEDURES .....	17
4.1.4 DEVIATION FROM TEST STANDARD .....	17
4.1.5 TEST SETUP .....	17
4.1.6 EUT OPERATING CONDITIONS .....	18
4.1.7 TEST RESULTS .....	19
4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT .....	21
4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT .....	21
4.2.2 TEST INSTRUMENTS .....	22
4.2.3 TEST PROCEDURES .....	25
4.2.4 DEVIATION FROM TEST STANDARD .....	25
4.2.5 TEST SETUP .....	26
4.2.6 EUT OPERATING CONDITIONS .....	26
4.2.7 TEST RESULTS (MODE 1) .....	27
4.2.8 TEST RESULTS (MODE 2) .....	40
4.3 6DB BANDWIDTH MEASUREMENT .....	53
4.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT .....	53
4.3.2 TEST INSTRUMENTS .....	53
4.3.3 TEST PROCEDURE .....	53
4.3.4 DEVIATION FROM TEST STANDARD .....	53
4.3.5 TEST SETUP .....	53
4.3.6 EUT OPERATING CONDITIONS .....	53
4.3.7 TEST RESULTS .....	54
4.4 CONDUCTED OUTPUT POWER MEASUREMENT .....	56
4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT .....	56
4.4.2 INSTRUMENTS .....	56
4.4.3 TEST PROCEDURES .....	56
4.4.4 DEVIATION FROM TEST STANDARD .....	57
4.4.5 TEST SETUP .....	57
4.4.6 EUT OPERATING CONDITIONS .....	57
4.4.7 TEST RESULTS .....	58
4.5 AVERAGE OUTPUT POWER .....	59
4.5.1 FOR REFERENCE .....	59
4.5.2 TEST INSTRUMENTS .....	59
4.5.3 TEST PROCEDURES .....	59



A D T

4.5.4	TEST SETUP .....	59
4.5.5	EUT OPERATING CONDITIONS .....	59
4.5.6	TEST RESULTS .....	60
4.6	POWER SPECTRAL DENSITY MEASUREMENT .....	61
4.6.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....	61
4.6.2	TEST INSTRUMENTS.....	61
4.6.3	TEST PROCEDURE.....	61
4.6.4	DEVIATION FROM TEST STANDARD .....	61
4.6.5	TEST SETUP .....	61
4.6.6	EUT OPERATING CONDITION.....	61
4.6.7	TEST RESULTS .....	62
4.7	CONDUCTED OUT-BAND EMISSION MEASUREMENT .....	64
4.7.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	64
4.7.2	TEST INSTRUMENTS.....	64
4.7.3	TEST PROCEDURE.....	64
4.7.4	DEVIATION FROM TEST STANDARD .....	65
4.7.5	TEST SETUP .....	65
4.7.6	EUT OPERATING CONDITION.....	65
4.7.7	TEST RESULTS .....	65
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	70
6.	INFORMATION ON THE TESTING LABORATORIES .....	71
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....	72



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130904E03	Original release	Sep. 27, 2013



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## 1. CERTIFICATION

**PRODUCT:** Wi-Fi module  
**BRAND NAME:** AOF  
**MODEL NO.:** CWFB-124  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** AOF Imaging Technology (Shenzhen) Co., Ltd.  
**TESTED:** Aug. 07 to Sep. 26, 2013  
**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**  
ANSI C63.10-2009

The above equipment (Model: CWFB-124) 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:** Sep. 27, 2013  
( Lori Chung, Specialist )

**APPROVED BY** :  , **DATE:** Sep. 27, 2013  
( May Chen, Manager )



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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -17.02dB at 0.15391MHz
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.4dB at 4824.00MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX not a standard connector.



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## 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	2.98 dB
Radiated emissions (30MHz-1GHz)	4.22 dB
Radiated emissions (1GHz -6GHz)	3.54 dB
Radiated emissions (6GHz -18GHz)	4.08 dB
Radiated emissions (18GHz -40GHz)	4.11 dB



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Wi-Fi module
<b>MODEL NO.</b>	CWFB-124
<b>POWER SUPPLY</b>	DC 3.3V
<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 802.11a/g: up to 54Mbps 802.11n: up to 150Mbps
<b>OPERATING FREQUENCY</b>	2.412 ~ 2.462GHz
<b>NUMBER OF CHANNEL</b>	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
<b>MAXIMUM OUTPUT POWER</b>	802.11b: 110.408mW 802.11g: 142.561mW 802.11n (HT20): 143.549mW 802.11n (HT40): 116.413mW
<b>ANTENNA TYPE</b>	Please see NOTE
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	NA





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**NOTE:**

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

Ant.	Brand	Model	Antenna Type	Connector	Antenna Gain <include cable lose> (dB)	Antenna Cable Loss (dB)	Cable Length (cm)	Frequency range (MHz to MHz)
1	INPAQ	ACA-5036	Chip	NA	1.88	NA	NA	2400 ~ 2500
2	Unictron	AA273	PCB	IPEX	3.2	0.25	5	2400 ~ 2500

2. The EUT incorporates a SISO function without beam forming.

<b>MODULATION MODE</b>	<b>TX/RX FUNCTION</b>
<b>802.11b</b>	1TX/1RX
<b>802.11g</b>	1TX/1RX
<b>802.11n (HT20)</b>	1TX/1RX
<b>802.11n (HT40)</b>	1TX/1RX

3. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.

4. 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.



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### 3.2 DESCRIPTION OF TEST MODES

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
MODE 1	-	√	√	-	-	With Antenna 1
MODE 2	√	√	√	√	√	With Antenna 2

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:** 1. "-" means no effect.

2. **For MODE 1:** The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Z-plane.
3. **For MODE 2:** The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Z-plane (for below 1GHz) and Y-plane (for above 1GHz).

#### **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)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

#### **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)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5



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**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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

**ANTENNA PORT CONDUCTED MEASUREMENT:**

- 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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

**CONDUCTED OUT-BAND EMISSION MEASUREMENT:**

- 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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5



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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 68%RH	120Vac, 60Hz	Jason Huang
RE<1G	30deg. C, 71%RH	120Vac, 60Hz	Eagle Chen
RE≥1G	30deg. C, 70%RH	120Vac, 60Hz	Nelson Teng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee
OB	25deg. C, 60%RH	120Vac, 60Hz	Chilin Lee

### 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 C (15.247)

#### 558074 D01 DTS Meas Guidance v03r01

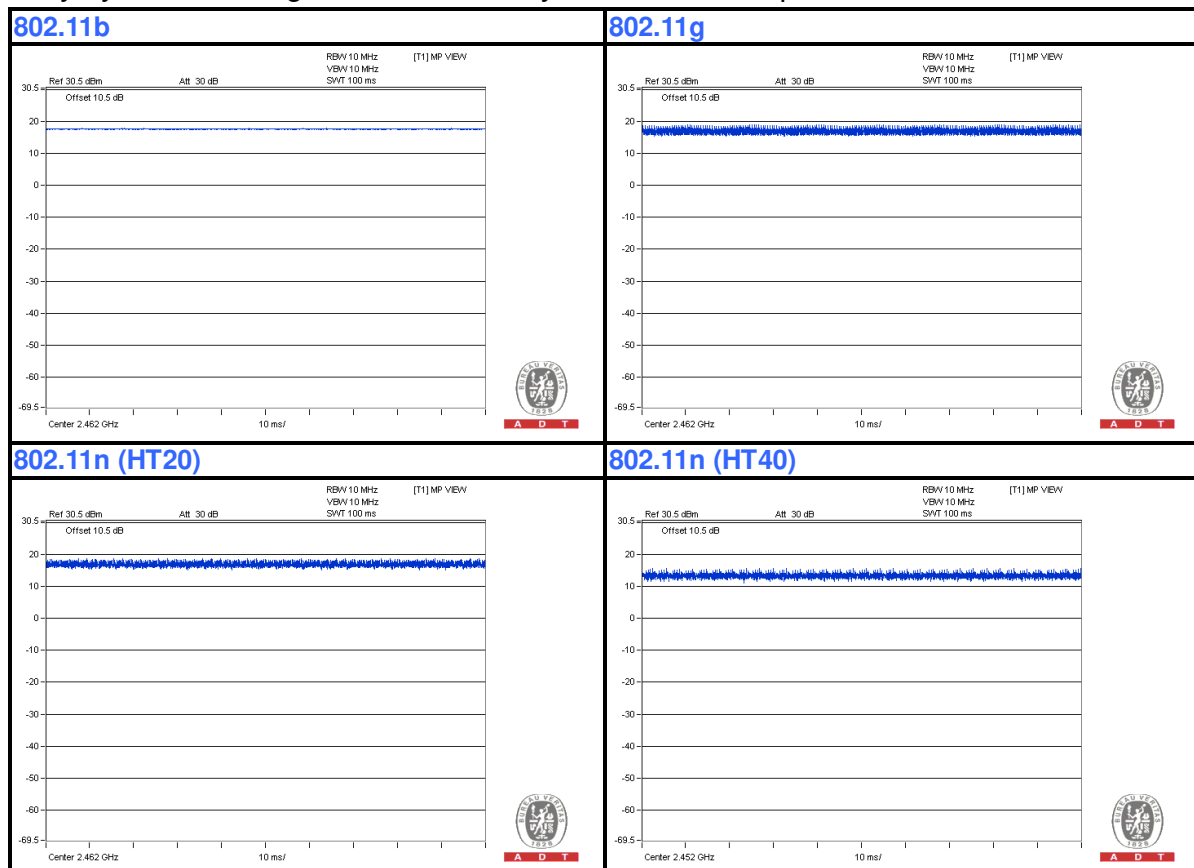
#### ANSI C63.10-2009

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.

### 3.4 DUTY CYCLE OF TEST SIGNAL

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





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### 3.5 DESCRIPTION OF SUPPORT UNITS

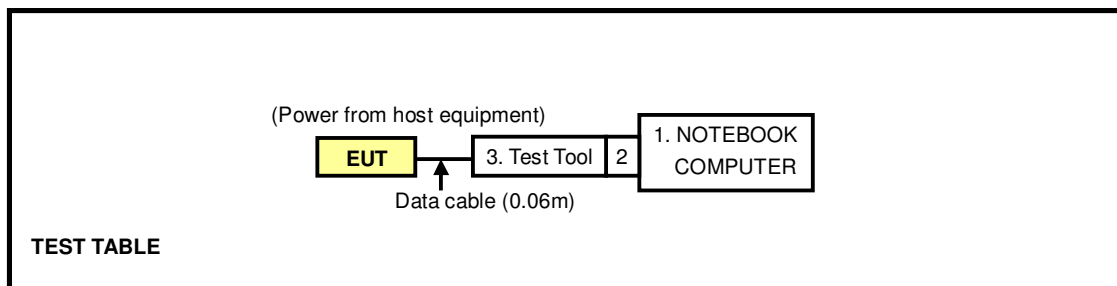
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER (For conducted emission test)	DELL	E6420	482T3R1	FCC DoC
	NOTEBOOK COMPUTER (For other test items)	lenovo	Lenovo NB	TP00005A	NA
2	SD card to ExpressCard adapter	NA	NA	1105254	EC230
3	Test Tool	AOF	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	Data cable (0.06m)
2	NA
3	NA

**NOTE:** All power cords of the above support units are non shielded (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 ROHDE & SCHWARZ	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) ROHDE & SCHWARZ	ENV216	100071	Nov. 09, 2012	Nov. 08, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 06, 2013	June 05, 2014
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7. 3	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Sep. 10, 2013



#### 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 levels under (Limit - 20dB) were not recorded.

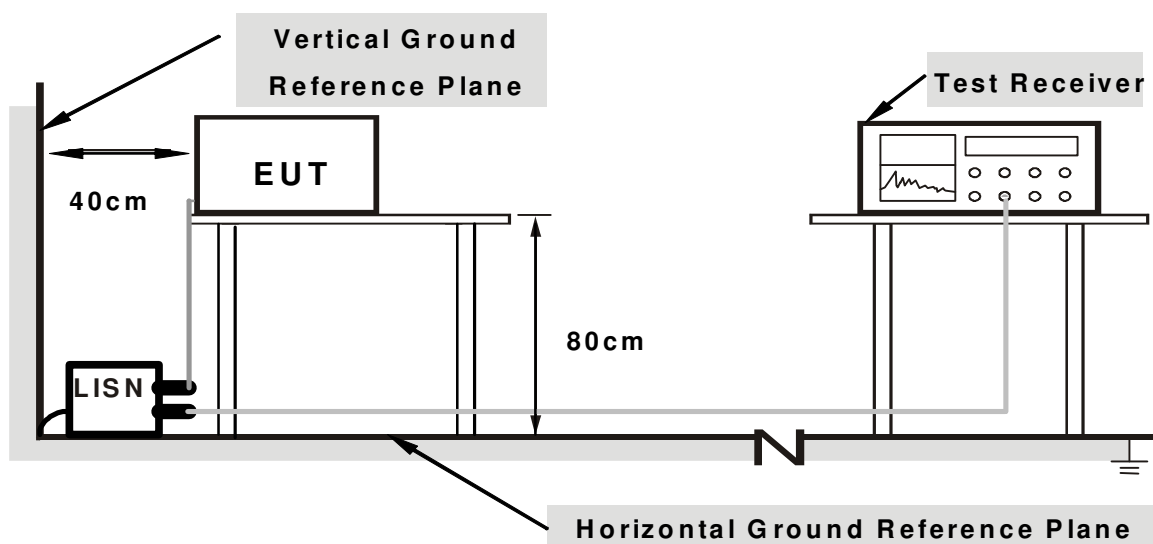
#### NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



**Note: 1. Support units were connected to second LISN.**

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 “MP\_Kit\_RTL11n\_8189E\_SDIO” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

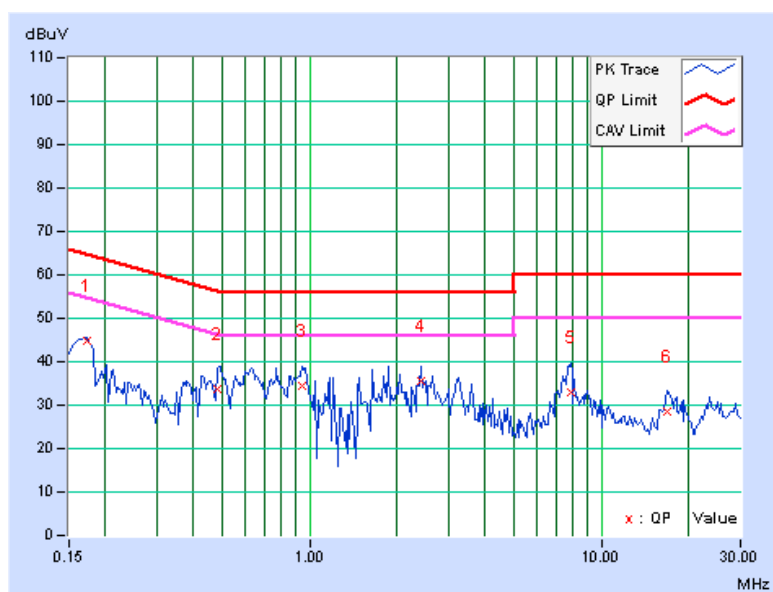
### 4.1.7 TEST RESULTS

<b>PHASE</b>	Line (L)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	----------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor [dB]	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	9.77	35.16	24.38	44.93	34.15	64.79	54.79	-19.86	-20.64
2	0.48594	9.81	23.92	14.62	33.73	24.43	56.24	46.24	-22.50	-21.80
3	0.94297	9.84	24.68	9.28	34.52	19.12	56.00	46.00	-21.48	-26.88
4	2.41797	9.89	25.73	13.62	35.62	23.51	56.00	46.00	-20.38	-22.49
5	7.84375	10.01	23.06	12.32	33.07	22.33	60.00	50.00	-26.93	-27.67
6	16.76172	10.13	18.30	9.97	28.43	20.10	60.00	50.00	-31.57	-29.90

#### 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

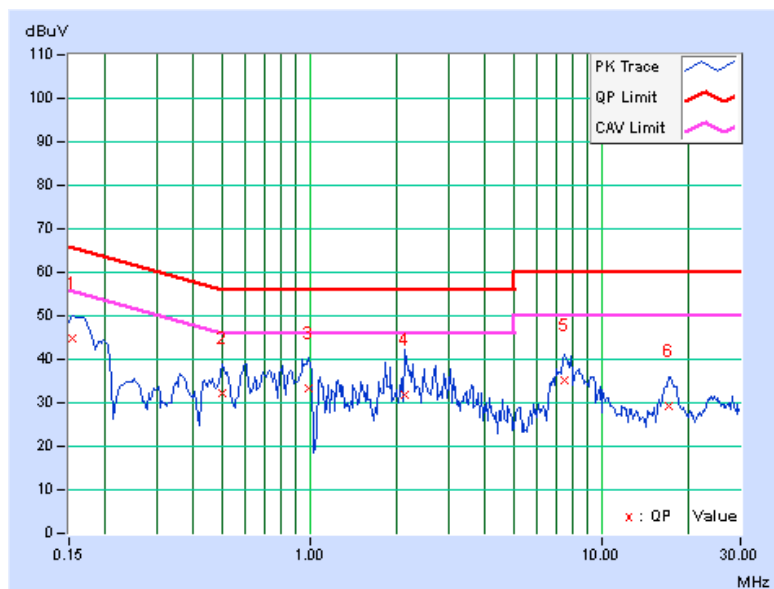


<b>PHASE</b>	Neutral (N)	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.76	34.99	29.01	44.75	38.77	65.79	55.79	-21.04	-17.02
2	0.50547	9.82	22.49	10.42	32.31	20.24	56.00	46.00	-23.69	-25.76
3	0.98984	9.84	23.64	7.19	33.48	17.03	56.00	46.00	-22.52	-28.97
4	2.12500	9.88	21.95	11.17	31.83	21.05	56.00	46.00	-24.17	-24.95
5	7.51953	10.02	25.06	14.42	35.08	24.44	60.00	50.00	-24.92	-25.56
6	17.03906	10.24	19.06	11.18	29.30	21.42	60.00	50.00	-30.70	-28.58

**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 RADIATED EMISSION AND BANDEGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEGE MEASUREMENT

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

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

**NOTE:**

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



## 4.2.2 TEST INSTRUMENTS

For below 1GHz MODE 1 test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Analyzer Spectrum ADVANTEST	U3751	160200410	Sep. 05, 2013	Sep. 04, 2014
Pre_Amplifier HP	8449B	3008A01922	Sep. 21, 2013	Sep. 20, 2014
Test Receiver ROHDE & SCHWARZ	ESCS 30	100027	May 14, 2013	May 13, 2014
Broadband Antenna SCHWARZBECK	VULB-9168	263	Mar. 26, 2013	Mar. 25, 2014
RF Switches	EM-H-01-1	1009	July 02, 2013	July 01, 2014
RF Cable (COMMATE/PEWC)	8D	STACAB-002	July 02, 2013	July 01, 2014
Software ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower & Turn Table CT	TT100	ADT01	NA	NA
CORCOM AC Filter	MRI2030	107/108	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 Open Site No. A.
3. The VCCI Site Registration No. is R-782.
4. The FCC Site Registration No. is 91097.
5. The CANADA Site Registration No. is IC 7450G-1.
6. Tested Date: Sep. 26, 2013



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**For below 1GHz MODE 2 test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Analyzer Spectrum ADVANTEST	U3751	160200410	Sep. 05, 2013	Sep. 04, 2014
Pre_Amplifier HP	8449B	3008A01922	Sep. 22, 2012	Sep. 21, 2013
Test Receiver ROHDE & SCHWARZ	ESCS 30	100027	May 14, 2013	May 13, 2014
Broadband Antenna SCHWARZBECK	VULB-9168	263	Mar. 26, 2013	Mar. 25, 2014
RF Switches	EM-H-01-1	1009	July 02, 2013	July 01, 2014
RF Cable (COMMATE/PEWC)	8D	STACAB-002	July 02, 2013	July 01, 2014
Software ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower & Turn Table CT	TT100	ADT01	NA	NA
CORCOM AC Filter	MRI2030	107/108	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 Open Site No. A.
3. The VCCI Site Registration No. is R-782.
4. The FCC Site Registration No. is 91097.
5. The CANADA Site Registration No. is IC 7450G-1.
6. Tested Date: Aug. 07, 2013



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**For above 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Sep. 17 to 26, 2013



#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**NOTE:**

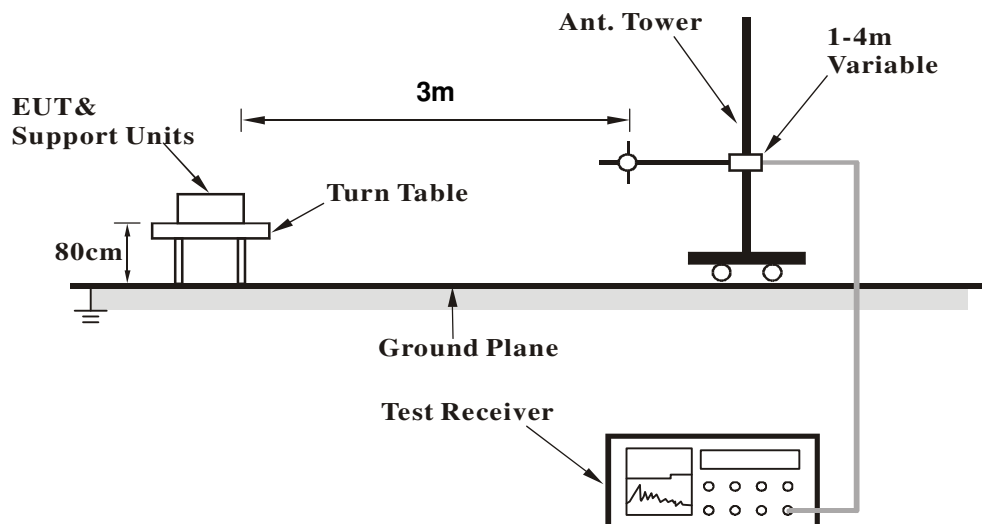
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

#### 4.2.4 DEVIATION FROM TEST STANDARD

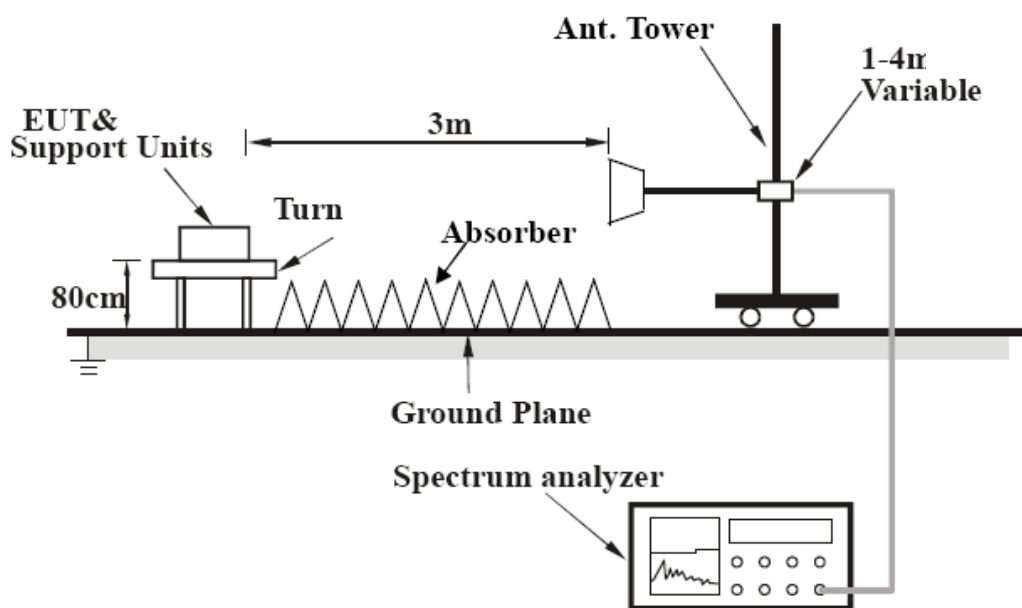
No deviation

#### 4.2.5 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.

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

#### 4.2.7 TEST RESULTS (MODE 1)

#### BELOW 1GHz WORST-CASE DATA

#### 802.11n (HT20)

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	124.92	37.0 QP	43.5	-6.5	1.59 H	316	22.63	14.36
2	249.83	41.9 QP	46.0	-4.1	1.26 H	312	26.85	15.04
3	274.85	40.3 QP	46.0	-5.7	1.00 H	39	24.13	16.20
4	324.80	39.7 QP	46.0	-6.3	1.00 H	36	22.01	17.68
5	400.00	38.7 QP	46.0	-7.3	1.00 H	169	19.38	19.28
6	960.00	32.3 QP	46.0	-13.7	1.46 H	29	3.22	29.11
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	125.00	28.3 QP	43.5	-15.2	1.00 V	22	13.95	14.38
2	251.12	40.6 QP	46.0	-5.5	2.23 V	349	25.53	15.02
3	274.85	33.0 QP	46.0	-13.0	1.00 V	28	16.76	16.20
4	324.80	29.9 QP	46.0	-16.1	1.00 V	316	12.20	17.68
5	400.00	31.0 QP	46.0	-15.0	1.00 V	321	11.70	19.28
6	960.00	32.4 QP	46.0	-13.6	1.49 V	29	3.25	29.11

#### 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



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**ABOVE 1GHz DATA**

**802.11b**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2385.28	48.9 PK	74.0	-25.1	1.12 H	206	16.47	32.43
2	2385.28	36.4 AV	54.0	-17.6	1.12 H	206	3.97	32.43
3	*2412.00	92.3 PK			1.12 H	206	59.77	32.53
4	*2412.00	89.8 AV			1.12 H	206	57.27	32.53
5	4824.00	51.3 PK	74.0	-22.7	1.22 H	174	10.86	40.44
6	4824.00	48.1 AV	54.0	-5.9	1.22 H	174	7.66	40.44

**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	2385.28	48.8 PK	74.0	-25.2	1.23 V	228	16.37	32.43
2	2385.28	37.1 AV	54.0	-16.9	1.23 V	228	4.67	32.43
3	*2412.00	96.8 PK			1.23 V	228	64.27	32.53
4	*2412.00	95.2 AV			1.23 V	228	62.67	32.53
5	4824.00	54.6 PK	74.0	-19.4	1.00 V	175	14.16	40.44
6	4824.00	51.6 AV	54.0	-2.4	1.00 V	175	11.16	40.44

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	93.5 PK			1.10 H	209	60.88	32.62
2	*2437.00	91.8 AV			1.10 H	209	59.18	32.62
3	4874.00	52.2 PK	74.0	-21.8	1.15 H	175	11.64	40.56
4	4874.00	48.6 AV	54.0	-5.4	1.15 H	175	8.04	40.56
5	7311.00	56.0 PK	74.0	-18.0	1.03 H	124	7.68	48.32
6	7311.00	43.2 AV	54.0	-10.8	1.03 H	124	-5.12	48.32

**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	*2437.00	99.4 PK			1.19 V	200	66.78	32.62
2	*2437.00	97.8 AV			1.19 V	200	65.18	32.62
3	4874.00	53.9 PK	74.0	-20.1	1.00 V	178	13.34	40.56
4	4874.00	51.4 AV	54.0	-2.6	1.00 V	178	10.84	40.56
5	7311.00	56.7 PK	74.0	-17.3	1.04 V	218	8.38	48.32
6	7311.00	43.7 AV	54.0	-10.3	1.04 V	218	-4.62	48.32

**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.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	91.5 PK			1.15 H	199	58.79	32.71
2	*2462.00	90.6 AV			1.15 H	199	57.89	32.71
3	2487.77	48.6 PK	74.0	-25.4	1.15 H	199	15.79	32.81
4	2487.77	36.0 AV	54.0	-18.0	1.15 H	199	3.19	32.81
5	4924.00	49.3 PK	74.0	-24.7	1.17 H	182	8.64	40.66
6	4924.00	46.6 AV	54.0	-7.4	1.17 H	182	5.94	40.66
7	7386.00	56.5 PK	74.0	-17.5	1.00 H	137	8.26	48.24
8	7386.00	43.5 AV	54.0	-10.5	1.00 H	137	-4.74	48.24

**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	*2462.00	97.2 PK			1.13 V	212	64.49	32.71
2	*2462.00	96.6 AV			1.13 V	212	63.89	32.71
3	4924.00	50.6 PK	74.0	-23.4	1.00 V	183	9.94	40.66
4	4924.00	49.1 AV	54.0	-4.9	1.00 V	183	8.44	40.66
5	7386.00	57.0 PK	74.0	-17.0	1.03 V	211	8.76	48.24
6	7386.00	43.9 AV	54.0	-10.1	1.03 V	211	-4.34	48.24

**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.

**802.11g**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	2390.00	53.2 PK	74.0	-20.8	1.11 H	221	20.75	32.45
2	2390.00	39.1 AV	54.0	-14.9	1.11 H	221	6.65	32.45
3	*2412.00	91.6 PK			1.11 H	221	59.07	32.53
4	*2412.00	85.8 AV			1.11 H	221	53.27	32.53
5	4824.00	47.8 PK	74.0	-26.2	1.27 H	149	7.36	40.44
6	4824.00	36.9 AV	54.0	-17.1	1.27 H	149	-3.54	40.44
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	2390.00	60.8 PK	74.0	-13.2	1.23 V	158	28.35	32.45
2	2390.00	45.3 AV	54.0	-8.7	1.23 V	158	12.85	32.45
3	*2412.00	95.2 PK			1.23 V	158	62.67	32.53
4	*2412.00	90.3 AV			1.23 V	158	57.77	32.53
5	4824.00	48.6 PK	74.0	-25.4	1.19 V	192	8.16	40.44
6	4824.00	37.3 AV	54.0	-16.7	1.19 V	192	-3.14	40.44

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	91.5 PK			1.08 H	206	58.88	32.62
2	*2437.00	85.7 AV			1.08 H	206	53.08	32.62
3	4874.00	47.8 PK	74.0	-26.2	1.23 H	152	7.24	40.56
4	4874.00	36.6 AV	54.0	-17.4	1.23 H	152	-3.96	40.56
5	7311.00	55.3 PK	74.0	-18.7	1.03 H	135	6.98	48.32
6	7311.00	43.3 AV	54.0	-10.7	1.03 H	135	-5.02	48.32

**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	*2437.00	95.7 PK			1.25 V	165	63.08	32.62
2	*2437.00	90.7 AV			1.25 V	165	58.08	32.62
3	4874.00	48.8 PK	74.0	-25.2	1.10 V	168	8.24	40.56
4	4874.00	37.0 AV	54.0	-17.0	1.10 V	168	-3.56	40.56
5	7311.00	56.6 PK	74.0	-17.4	1.09 V	223	8.28	48.32
6	7311.00	43.7 AV	54.0	-10.3	1.09 V	223	-4.62	48.32

**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.





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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	91.4 PK			1.09 H	216	58.69	32.71
2	*2462.00	85.9 AV			1.09 H	216	53.19	32.71
3	2483.50	53.1 PK	74.0	-20.9	1.09 H	216	20.31	32.79
4	2483.50	39.0 AV	54.0	-15.0	1.09 H	216	6.21	32.79
5	4924.00	47.6 PK	74.0	-26.4	1.28 H	153	6.94	40.66
6	4924.00	36.7 AV	54.0	-17.3	1.28 H	153	-3.96	40.66
7	7386.00	54.7 PK	74.0	-19.3	1.00 H	140	6.46	48.24
8	7386.00	42.9 AV	54.0	-11.1	1.00 H	140	-5.34	48.24

**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	*2462.00	95.5 PK			1.22 V	179	62.79	32.71
2	*2462.00	90.2 AV			1.22 V	179	57.49	32.71
3	2483.50	60.5 PK	74.0	-13.5	1.22 V	179	27.71	32.79
4	2483.50	45.2 AV	54.0	-8.8	1.22 V	179	12.41	32.79
5	4924.00	48.6 PK	74.0	-25.4	1.13 V	179	7.94	40.66
6	4924.00	36.9 AV	54.0	-17.1	1.13 V	179	-3.76	40.66
7	7386.00	56.5 PK	74.0	-17.5	1.03 V	232	8.26	48.24
8	7386.00	43.3 AV	54.0	-10.7	1.03 V	232	-4.94	48.24

**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.

802.11n (HT20)

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	53.7 PK	74.0	-20.3	1.10 H	211	21.25	32.45
2	2390.00	39.4 AV	54.0	-14.6	1.10 H	211	6.95	32.45
3	*2412.00	91.5 PK			1.10 H	211	58.97	32.53
4	*2412.00	85.8 AV			1.10 H	211	53.27	32.53
5	4824.00	47.2 PK	74.0	-26.8	1.28 H	158	6.76	40.44
6	4824.00	36.6 AV	54.0	-17.4	1.28 H	158	-3.84	40.44
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	2390.00	60.6 PK	74.0	-13.4	1.26 V	194	28.15	32.45
2	2390.00	45.3 AV	54.0	-8.7	1.26 V	194	12.85	32.45
3	*2412.00	95.1 PK			1.26 V	194	62.57	32.53
4	*2412.00	90.1 AV			1.26 V	194	57.57	32.53
5	4824.00	48.6 PK	74.0	-25.4	1.12 V	178	8.16	40.44
6	4824.00	36.8 AV	54.0	-17.2	1.12 V	178	-3.64	40.44

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	91.6 PK			1.05 H	209	58.98	32.62
2	*2437.00	86.3 AV			1.05 H	209	53.68	32.62
3	4874.00	48.3 PK	74.0	-25.7	1.23 H	160	7.74	40.56
4	4874.00	37.1 AV	54.0	-16.9	1.23 H	160	-3.46	40.56
5	7311.00	55.4 PK	74.0	-18.6	1.00 H	154	7.08	48.32
6	7311.00	43.3 AV	54.0	-10.7	1.00 H	154	-5.02	48.32

**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	*2437.00	95.6 PK			1.20 V	178	62.98	32.62
2	*2437.00	90.1 AV			1.20 V	178	57.48	32.62
3	4874.00	48.6 PK	74.0	-25.4	1.09 V	172	8.04	40.56
4	4874.00	36.9 AV	54.0	-17.1	1.09 V	172	-3.66	40.56
5	7311.00	56.1 PK	74.0	-17.9	1.03 V	237	7.78	48.32
6	7311.00	42.9 AV	54.0	-11.1	1.03 V	237	-5.42	48.32

**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.



A D T

<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	91.2 PK			1.10 H	203	58.49	32.71
2	*2462.00	85.9 AV			1.10 H	203	53.19	32.71
3	2483.50	52.8 PK	74.0	-21.2	1.10 H	203	20.01	32.79
4	2483.50	38.7 AV	54.0	-15.3	1.10 H	203	5.91	32.79
5	4924.00	47.5 PK	74.0	-26.5	1.34 H	166	6.84	40.66
6	4924.00	36.8 AV	54.0	-17.2	1.34 H	166	-3.86	40.66
7	7386.00	54.9 PK	74.0	-19.1	1.01 H	126	6.66	48.24
8	7386.00	43.3 AV	54.0	-10.7	1.01 H	126	-4.94	48.24

**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	*2462.00	95.8 PK			1.20 V	179	63.09	32.71
2	*2462.00	90.2 AV			1.20 V	179	57.49	32.71
3	2483.50	60.2 PK	74.0	-13.8	1.20 V	179	27.41	32.79
4	2483.50	44.7 AV	54.0	-9.3	1.20 V	179	11.91	32.79
5	4924.00	48.3 PK	74.0	-25.7	1.18 V	186	7.64	40.66
6	4924.00	36.5 AV	54.0	-17.5	1.18 V	186	-4.16	40.66
7	7386.00	56.6 PK	74.0	-17.4	1.05 V	231	8.36	48.24
8	7386.00	43.2 AV	54.0	-10.8	1.05 V	231	-5.04	48.24

**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.



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802.11n (HT40)

<b>CHANNEL</b>	TX Channel 3	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	52.2 PK	74.0	-21.8	1.09 H	326	19.75	32.45
2	2390.00	37.8 AV	54.0	-16.2	1.09 H	326	5.35	32.45
3	*2422.00	92.5 PK			1.09 H	215	59.93	32.57
4	*2422.00	81.5 AV			1.09 H	215	48.93	32.57
5	4844.00	47.8 PK	74.0	-26.2	1.26 H	166	7.32	40.48
6	4844.00	36.6 AV	54.0	-17.4	1.26 H	166	-3.88	40.48
7	7266.00	55.5 PK	74.0	-18.5	1.00 H	105	7.15	48.35
8	7266.00	43.7 AV	54.0	-10.3	1.00 H	105	-4.65	48.35

**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	2390.00	63.4 PK	74.0	-10.6	1.21 V	141	30.95	32.45
2	2390.00	45.9 AV	54.0	-8.1	1.21 V	141	13.45	32.45
3	*2422.00	97.7 PK			1.21 V	141	65.13	32.57
4	*2422.00	88.1 AV			1.21 V	141	55.53	32.57
5	4844.00	47.0 PK	74.0	-27.0	1.05 V	180	6.52	40.48
6	4844.00	36.6 AV	54.0	-17.4	1.05 V	180	-3.88	40.48
7	7266.00	55.5 PK	74.0	-18.5	1.02 V	216	7.15	48.35
8	7266.00	43.0 AV	54.0	-11.0	1.02 V	216	-5.35	48.35

**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) – 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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	92.5 PK			1.14 H	203	59.88	32.62
2	*2437.00	81.3 AV			1.14 H	203	48.68	32.62
3	4874.00	47.9 PK	74.0	-26.1	1.23 H	169	7.34	40.56
4	4874.00	36.6 AV	54.0	-17.4	1.23 H	169	-3.96	40.56
5	7311.00	55.8 PK	74.0	-18.2	1.03 H	108	7.48	48.32
6	7311.00	43.9 AV	54.0	-10.1	1.03 H	108	-4.42	48.32

**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	*2437.00	98.0 PK			1.20 V	149	65.38	32.62
2	*2437.00	88.3 AV			1.20 V	149	55.68	32.62
3	4874.00	47.0 PK	74.0	-27.0	1.09 V	168	6.44	40.56
4	4874.00	36.8 AV	54.0	-17.2	1.09 V	168	-3.76	40.56
5	7311.00	55.3 PK	74.0	-18.7	1.00 V	201	6.98	48.32
6	7311.00	42.7 AV	54.0	-11.3	1.00 V	201	-5.62	48.32

**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.



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<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2452.00	93.0 PK			1.10 H	224	60.32	32.68
2	*2452.00	81.8 AV			1.10 H	224	49.12	32.68
3	2483.50	51.9 PK	74.0	-22.1	1.10 H	224	19.11	32.79
4	2483.50	37.5 AV	54.0	-16.5	1.10 H	224	4.71	32.79
5	4904.00	47.6 PK	74.0	-26.4	1.24 H	161	6.97	40.63
6	4904.00	36.5 AV	54.0	-17.5	1.24 H	161	-4.13	40.63
7	7356.00	55.1 PK	74.0	-18.9	1.03 H	116	6.83	48.27
8	7356.00	43.3 AV	54.0	-10.7	1.03 H	116	-4.97	48.27

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	*2452.00	97.6 PK			1.16 V	150	64.92	32.68
2	*2452.00	87.8 AV			1.16 V	150	55.12	32.68
3	2483.50	63.3 PK	74.0	-10.7	1.16 V	150	30.51	32.79
4	2483.50	45.8 AV	54.0	-8.2	1.16 V	150	13.01	32.79
5	4904.00	46.9 PK	74.0	-27.1	1.10 V	172	6.27	40.63
6	4904.00	36.4 AV	54.0	-17.6	1.10 V	172	-4.23	40.63
7	7356.00	55.3 PK	74.0	-18.7	1.07 V	220	7.03	48.27
8	7356.00	42.9 AV	54.0	-11.1	1.07 V	220	-5.37	48.27

**REMARKS:**

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



## 4.2.8 TEST RESULTS (MODE 2)

### BELOW 1GHz WORST-CASE DATA

#### 802.11n (HT20)

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	Below 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	124.92	36.8 QP	43.5	-6.7	1.55 H	355	22.40	14.36
2	249.83	41.6 QP	46.0	-4.4	1.19 H	357	26.60	15.04
3	274.85	40.6 QP	46.0	-5.4	1.00 H	30	24.40	16.20
4	324.80	39.3 QP	46.0	-6.7	1.00 H	25	21.60	17.68
5	400.00	38.3 QP	46.0	-7.7	1.00 H	355	19.00	19.28
6	960.00	31.3 QP	46.0	-14.8	1.40 H	23	2.14	29.11

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	125.00	27.3 QP	43.5	-16.2	1.00 V	19	12.90	14.38
2	251.12	40.3 QP	46.0	-5.7	2.19 V	345	25.30	15.02
3	274.85	31.1 QP	46.0	-14.9	1.00 V	24	14.90	16.20
4	324.80	28.1 QP	46.0	-17.9	1.00 V	354	10.46	17.68
5	400.00	30.7 QP	46.0	-15.3	1.00 V	356	11.40	19.28
6	960.00	32.6 QP	46.0	-13.4	1.45 V	23	3.50	29.11

#### 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





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**ABOVE 1GHz DATA**

**802.11b**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	2385.28	48.2 PK	74.0	-25.8	1.10 H	205	14.69	33.51
2	2385.28	35.4 AV	54.0	-18.6	1.10 H	205	1.89	33.51
3	*2412.00	93.9 PK			1.10 H	205	60.31	33.59
4	*2412.00	90.6 AV			1.10 H	205	57.01	33.59
5	4824.00	55.1 PK	74.0	-18.9	1.19 H	167	11.92	43.18
6	4824.00	50.3 AV	54.0	-3.7	1.19 H	167	7.12	43.18

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	2385.28	49.0 PK	74.0	-25.0	1.17 V	214	15.49	33.51
2	2385.28	37.3 AV	54.0	-16.7	1.17 V	214	3.79	33.51
3	*2412.00	98.9 PK			1.17 V	214	65.31	33.59
4	*2412.00	96.2 AV			1.17 V	214	62.61	33.59
5	4824.00	57.0 PK	74.0	-17.0	1.00 V	162	13.82	43.18
6	4824.00	53.6 AV	54.0	-0.4	1.00 V	162	10.42	43.18

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	96.2 PK			1.09 H	207	62.53	33.67
2	*2437.00	93.0 AV			1.09 H	207	59.33	33.67
3	4874.00	55.2 PK	74.0	-18.8	1.18 H	173	11.96	43.24
4	4874.00	50.7 AV	54.0	-3.3	1.18 H	173	7.46	43.24
5	7311.00	56.3 PK	74.0	-17.7	1.00 H	121	8.23	48.07
6	7311.00	43.5 AV	54.0	-10.5	1.00 H	121	-4.57	48.07

**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	*2437.00	101.3 PK			1.17 V	213	67.63	33.67
2	*2437.00	98.8 AV			1.17 V	213	65.13	33.67
3	4874.00	56.6 PK	74.0	-17.4	1.00 V	165	13.36	43.24
4	4874.00	53.2 AV	54.0	-0.8	1.00 V	165	9.96	43.24
5	7311.00	56.4 PK	74.0	-17.6	1.00 V	232	8.33	48.07
6	7311.00	43.4 AV	54.0	-10.6	1.00 V	232	-4.67	48.07

**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.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	96.7 PK			1.08 H	218	62.96	33.74
2	*2462.00	93.5 AV			1.08 H	218	59.76	33.74
3	2487.77	49.2 PK	74.0	-24.8	1.08 H	218	15.37	33.83
4	2487.77	36.9 AV	54.0	-17.1	1.08 H	218	3.07	33.83
5	4924.00	54.9 PK	74.0	-19.1	1.20 H	178	11.63	43.27
6	4924.00	50.7 AV	54.0	-3.3	1.20 H	178	7.43	43.27
7	7386.00	55.9 PK	74.0	-18.1	1.01 H	131	7.50	48.40
8	7386.00	43.4 AV	54.0	-10.6	1.01 H	131	-5.00	48.40

**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	*2462.00	102.0 PK			1.15 V	215	68.26	33.74
2	*2462.00	99.5 AV			1.15 V	215	65.76	33.74
3	4924.00	56.5 PK	74.0	-17.5	1.10 V	162	13.23	43.27
4	4924.00	53.5 AV	54.0	-0.5	1.10 V	162	10.23	43.27
5	7386.00	55.9 PK	74.0	-18.1	1.00 V	224	7.50	48.40
6	7386.00	43.1 AV	54.0	-10.9	1.00 V	224	-5.30	48.40

**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.



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<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	52.8 PK	74.0	-21.2	1.08 H	220	19.27	33.53
2	2390.00	38.7 AV	54.0	-15.3	1.08 H	220	5.17	33.53
3	*2412.00	95.1 PK			1.08 H	220	61.51	33.59
4	*2412.00	85.5 AV			1.08 H	220	51.91	33.59
5	4824.00	48.3 PK	74.0	-25.7	1.26 H	165	5.12	43.18
6	4824.00	37.0 AV	54.0	-17.0	1.26 H	165	-6.18	43.18

**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	2390.00	61.3 PK	74.0	-12.7	1.21 V	144	27.77	33.53
2	2390.00	45.8 AV	54.0	-8.2	1.21 V	144	12.27	33.53
3	*2412.00	101.3 PK			1.21 V	144	67.71	33.59
4	*2412.00	92.2 AV			1.21 V	144	58.61	33.59
5	4824.00	48.7 PK	74.0	-25.3	1.15 V	177	5.52	43.18
6	4824.00	37.3 AV	54.0	-16.7	1.15 V	177	-5.88	43.18

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	95.1 PK			1.06 H	203	61.43	33.67
2	*2437.00	85.3 AV			1.06 H	203	51.63	33.67
3	4874.00	47.8 PK	74.0	-26.2	1.29 H	166	4.56	43.24
4	4874.00	36.6 AV	54.0	-17.4	1.29 H	166	-6.64	43.24
5	7311.00	55.3 PK	74.0	-18.7	1.05 H	138	7.23	48.07
6	7311.00	43.1 AV	54.0	-10.9	1.05 H	138	-4.97	48.07

**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	*2437.00	102.0 PK			1.23 V	156	68.33	33.67
2	*2437.00	92.9 AV			1.23 V	156	59.23	33.67
3	4874.00	48.6 PK	74.0	-25.4	1.09 V	180	5.36	43.24
4	4874.00	37.1 AV	54.0	-16.9	1.09 V	180	-6.14	43.24
5	7311.00	56.3 PK	74.0	-17.7	1.06 V	222	8.23	48.07
6	7311.00	43.6 AV	54.0	-10.4	1.06 V	222	-4.47	48.07

**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.



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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	95.2 PK			1.07 H	216	61.46	33.74
2	*2462.00	85.6 AV			1.07 H	216	51.86	33.74
3	2483.50	52.9 PK	74.0	-21.1	1.07 H	216	19.09	33.81
4	2483.50	39.0 AV	54.0	-15.0	1.07 H	216	5.19	33.81
5	4924.00	48.0 PK	74.0	-26.0	1.31 H	156	4.73	43.27
6	4924.00	36.8 AV	54.0	-17.2	1.31 H	156	-6.47	43.27
7	7386.00	55.4 PK	74.0	-18.6	1.06 H	131	7.00	48.40
8	7386.00	43.5 AV	54.0	-10.5	1.06 H	131	-4.90	48.40

**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	*2462.00	102.2 PK			1.19 V	142	68.46	33.74
2	*2462.00	93.1 AV			1.19 V	142	59.36	33.74
3	2483.50	66.0 PK	74.0	-8.0	1.19 V	142	32.19	33.81
4	2483.50	46.6 AV	54.0	-7.4	1.19 V	142	12.79	33.81
5	4924.00	48.8 PK	74.0	-25.2	1.12 V	181	5.53	43.27
6	4924.00	37.7 AV	54.0	-16.3	1.12 V	181	-5.57	43.27
7	7386.00	55.5 PK	74.0	-18.5	1.02 V	214	7.10	48.40
8	7386.00	43.1 AV	54.0	-10.9	1.02 V	214	-5.30	48.40

**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.

802.11n (HT20)

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	52.5 PK	74.0	-21.5	1.09 H	220	18.97	33.53
2	2390.00	38.2 AV	54.0	-15.8	1.09 H	220	4.67	33.53
3	*2412.00	95.4 PK			1.09 H	220	61.81	33.59
4	*2412.00	85.6 AV			1.09 H	220	52.01	33.59
5	4824.00	48.2 PK	74.0	-25.8	1.34 H	159	5.02	43.18
6	4824.00	36.9 AV	54.0	-17.1	1.34 H	159	-6.28	43.18
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	2390.00	60.9 PK	74.0	-13.1	1.11 V	153	27.37	33.53
2	2390.00	45.4 AV	54.0	-8.6	1.11 V	153	11.87	33.53
3	*2412.00	100.8 PK			1.18 V	136	67.21	33.59
4	*2412.00	91.8 AV			1.18 V	136	58.21	33.59
5	4824.00	48.6 PK	74.0	-25.4	1.15 V	183	5.42	43.18
6	4824.00	37.6 AV	54.0	-16.4	1.15 V	183	-5.58	43.18

**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.



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<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	95.3 PK			1.06 H	199	61.63	33.67
2	*2437.00	85.5 AV			1.06 H	199	51.83	33.67
3	4874.00	48.2 PK	74.0	-25.8	1.27 H	156	4.96	43.24
4	4874.00	36.9 AV	54.0	-17.1	1.27 H	156	-6.34	43.24
5	7311.00	55.6 PK	74.0	-18.4	1.02 H	135	7.53	48.07
6	7311.00	43.4 AV	54.0	-10.6	1.02 H	135	-4.67	48.07

**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	*2437.00	102.4 PK			1.18 V	150	68.73	33.67
2	*2437.00	93.3 AV			1.18 V	150	59.63	33.67
3	4874.00	48.4 PK	74.0	-25.6	1.07 V	184	5.16	43.24
4	4874.00	37.5 AV	54.0	-16.5	1.07 V	184	-5.74	43.24
5	7311.00	55.3 PK	74.0	-18.7	1.00 V	220	7.23	48.07
6	7311.00	43.1 AV	54.0	-10.9	1.00 V	220	-4.97	48.07

**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.





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<b>CHANNEL</b>	TX Channel 11	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2462.00	95.6 PK			1.09 H	221	61.86	33.74
2	*2462.00	85.6 AV			1.09 H	221	51.86	33.74
3	2483.50	52.5 PK	74.0	-21.5	1.09 H	221	18.69	33.81
4	2483.50	38.1 AV	54.0	-15.9	1.09 H	221	4.29	33.81
5	4924.00	48.2 PK	74.0	-25.8	1.24 H	168	4.93	43.27
6	4924.00	36.7 AV	54.0	-17.3	1.24 H	168	-6.57	43.27
7	7386.00	55.4 PK	74.0	-18.6	1.00 H	124	7.00	48.40
8	7386.00	43.4 AV	54.0	-10.6	1.00 H	124	-5.00	48.40

**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	*2462.00	102.0 PK			1.15 V	127	68.26	33.74
2	*2462.00	93.1 AV			1.15 V	127	59.36	33.74
3	2483.50	65.8 PK	74.0	-8.2	1.13 V	152	31.99	33.81
4	2483.50	46.5 AV	54.0	-7.5	1.13 V	152	12.69	33.81
5	4924.00	48.1 PK	74.0	-25.9	1.06 V	178	4.83	43.27
6	4924.00	37.3 AV	54.0	-16.7	1.06 V	178	-5.97	43.27
7	7386.00	55.4 PK	74.0	-18.6	1.03 V	220	7.00	48.40
8	7386.00	43.0 AV	54.0	-11.0	1.03 V	220	-5.40	48.40

**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.



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802.11n (HT40)

<b>CHANNEL</b>	TX Channel 3	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	2390.00	52.6 PK	74.0	-21.4	1.14 H	225	19.07	33.53
2	2390.00	38.2 AV	54.0	-15.8	1.14 H	225	4.67	33.53
3	*2422.00	92.2 PK			1.14 H	225	58.58	33.62
4	*2422.00	81.5 AV			1.14 H	225	47.88	33.62
5	4844.00	48.5 PK	74.0	-25.5	1.24 H	159	5.30	43.20
6	4844.00	37.1 AV	54.0	-16.9	1.24 H	159	-6.10	43.20
7	7266.00	55.7 PK	74.0	-18.3	1.00 H	115	7.79	47.91
8	7266.00	43.8 AV	54.0	-10.2	1.00 H	115	-4.11	47.91

**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	2390.00	62.9 PK	74.0	-11.1	1.19 V	142	29.37	33.53
2	2390.00	45.7 AV	54.0	-8.3	1.19 V	142	12.17	33.53
3	*2422.00	97.7 PK			1.19 V	142	64.08	33.62
4	*2422.00	87.9 AV			1.19 V	142	54.28	33.62
5	4844.00	47.6 PK	74.0	-26.4	1.04 V	170	4.40	43.20
6	4844.00	37.1 AV	54.0	-16.9	1.04 V	170	-6.10	43.20
7	7266.00	55.5 PK	74.0	-18.5	1.00 V	209	7.59	47.91
8	7266.00	43.1 AV	54.0	-10.9	1.00 V	209	-4.81	47.91

**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.

<b>CHANNEL</b>	TX Channel 6	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2437.00	92.2 PK			1.11 H	240	58.53	33.67
2	*2437.00	81.5 AV			1.11 H	240	47.83	33.67
3	4874.00	47.6 PK	74.0	-26.4	1.27 H	157	4.36	43.24
4	4874.00	36.9 AV	54.0	-17.1	1.27 H	157	-6.34	43.24
5	7311.00	55.4 PK	74.0	-18.6	1.02 H	129	7.33	48.07
6	7311.00	43.2 AV	54.0	-10.8	1.02 H	129	-4.87	48.07

**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	*2437.00	97.9 PK			1.20 V	148	64.23	33.67
2	*2437.00	88.2 AV			1.20 V	148	54.53	33.67
3	4874.00	47.6 PK	74.0	-26.4	1.06 V	175	4.36	43.24
4	4874.00	36.9 AV	54.0	-17.1	1.06 V	175	-6.34	43.24
5	7311.00	55.0 PK	74.0	-19.0	1.06 V	218	6.93	48.07
6	7311.00	42.8 AV	54.0	-11.2	1.06 V	218	-5.27	48.07

**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.



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<b>CHANNEL</b>	TX Channel 9	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		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	*2452.00	91.7 PK			1.11 H	227	57.99	33.71
2	*2452.00	81.2 AV			1.11 H	227	47.49	33.71
3	2483.50	53.0 PK	74.0	-21.0	1.11 H	227	19.19	33.81
4	2483.50	38.6 AV	54.0	-15.4	1.11 H	227	4.79	33.81
5	4904.00	47.3 PK	74.0	-26.7	1.29 H	166	4.03	43.27
6	4904.00	36.6 AV	54.0	-17.4	1.29 H	166	-6.67	43.27
7	7356.00	55.1 PK	74.0	-18.9	1.00 H	118	6.83	48.27
8	7356.00	43.2 AV	54.0	-10.8	1.00 H	118	-5.07	48.27

**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	*2452.00	99.5 PK			1.18 V	145	65.79	33.71
2	*2452.00	89.8 AV			1.18 V	145	56.09	33.71
3	2483.50	69.1 PK	74.0	-4.9	1.18 V	145	35.29	33.81
4	2483.50	51.5 AV	54.0	-2.5	1.18 V	145	17.69	33.81
5	4904.00	47.6 PK	74.0	-26.4	1.04 V	160	4.33	43.27
6	4904.00	36.8 AV	54.0	-17.2	1.04 V	160	-6.47	43.27
7	7356.00	55.0 PK	74.0	-19.0	1.07 V	229	6.73	48.27
8	7356.00	42.8 AV	54.0	-11.2	1.07 V	229	-5.47	48.27

**REMARKS:**

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

### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013

**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 : Sep. 16, 2013

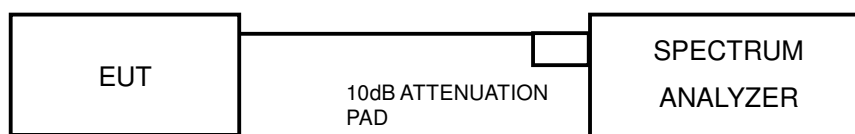
#### 4.3.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 100kHz
2. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. 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

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

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

### 4.3.7 TEST RESULTS

#### 802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.10	0.5	PASS
6	2437	10.14	0.5	PASS
11	2462	10.14	0.5	PASS

#### 802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.62	0.5	PASS
6	2437	16.64	0.5	PASS
11	2462	16.62	0.5	PASS

#### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.88	0.5	PASS
6	2437	17.87	0.5	PASS
11	2462	17.88	0.5	PASS

#### 802.11n (HT40)

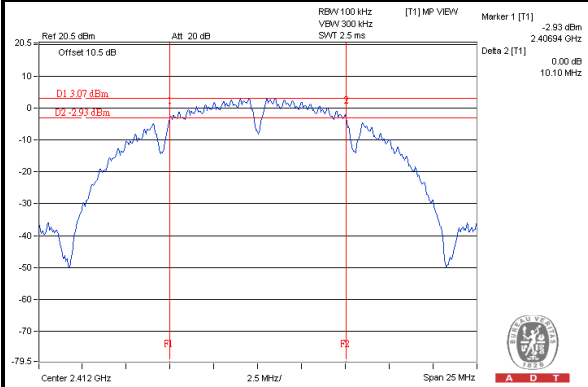
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.50	0.5	PASS
6	2437	36.51	0.5	PASS
9	2452	36.50	0.5	PASS



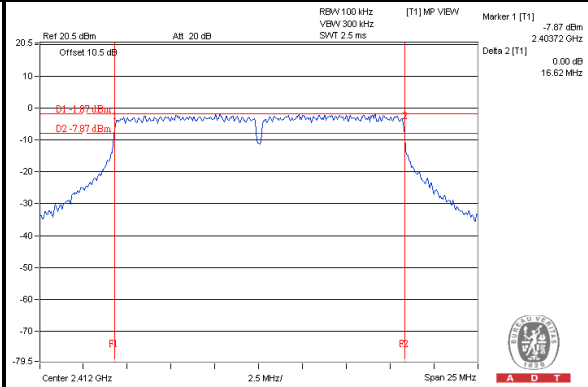
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### SPECTRUM PLOT OF WORST VALUE

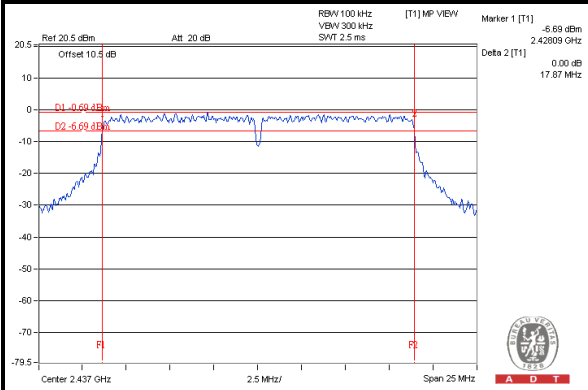
#### 802.11b / CH1



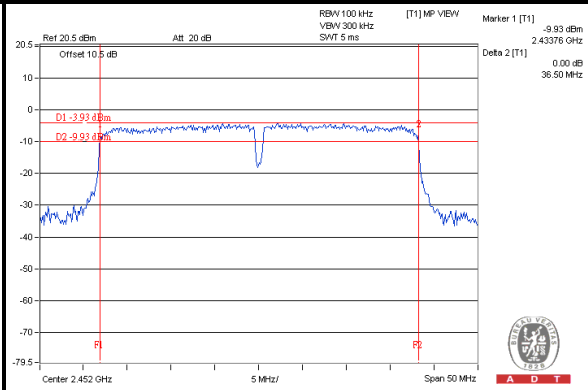
#### 802.11g / CH1



#### 802.11n (HT20) / CH6



#### 802.11n (HT40) / CH9



## 4.4 CONDUCTED OUTPUT POWER MEASUREMENT

### 4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT  $\leq$  4;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq$  40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT  $\geq$  5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

### 4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

**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 : Sep. 16, 2013

### 4.4.3 TEST PROCEDURES

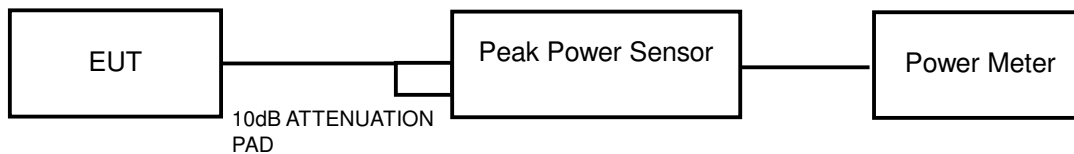
The peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the peak power level.



#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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#### 4.4.7 TEST RESULTS

##### 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	49.545	16.95	30	PASS
6	2437	84.528	19.27	30	PASS
11	2462	110.408	20.43	30	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	131.220	21.18	30	PASS
6	2437	142.561	21.54	30	PASS
11	2462	133.660	21.26	30	PASS

##### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	137.088	21.37	30	PASS
6	2437	143.549	21.57	30	PASS
11	2462	133.352	21.25	30	PASS

##### 802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	116.145	20.65	30	PASS
6	2437	116.413	20.66	30	PASS
9	2452	109.396	20.39	30	PASS



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## 4.5 AVERAGE OUTPUT POWER

### 4.5.1 FOR REFERENCE.

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power Sensor	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014

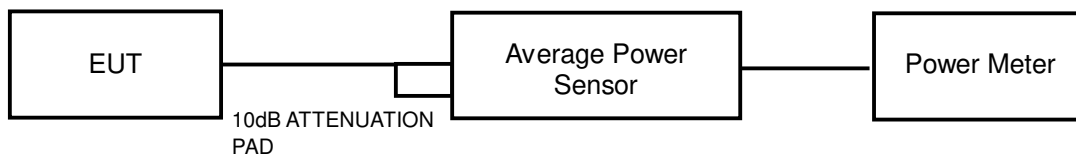
**Note:**

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 : Sep. 16, 2013

### 4.5.3 TEST PROCEDURES

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

### 4.5.4 TEST SETUP



### 4.5.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6

#### 4.5.6 TEST RESULTS

##### 802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	32.211	15.08
6	2437	54.576	17.37
11	2462	65.313	18.15

##### 802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	33.343	15.23
6	2437	38.371	15.84
11	2462	37.497	15.74

##### 802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	33.420	15.24
6	2437	38.282	15.83
11	2462	37.584	15.75

##### 802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
3	2422	31.261	14.95
6	2437	32.509	15.12
9	2452	30.549	14.85

## 4.6 POWER SPECTRAL DENSITY MEASUREMENT

### 4.6.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013

**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 : Sep. 16, 2013

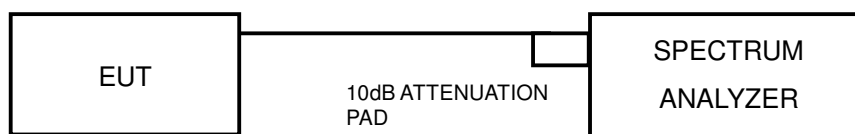
### 4.6.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.6.5 TEST SETUP



### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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#### 4.6.7 TEST RESULTS

##### 802.11b

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-17.09	8	PASS
6	2437	-14.93	8	PASS
11	2462	-14.36	8	PASS

##### 802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-16.34	8	PASS
6	2437	-15.70	8	PASS
11	2462	-15.67	8	PASS

##### 802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-15.89	8	PASS
6	2437	-15.78	8	PASS
11	2462	-15.08	8	PASS

##### 802.11n (HT40)

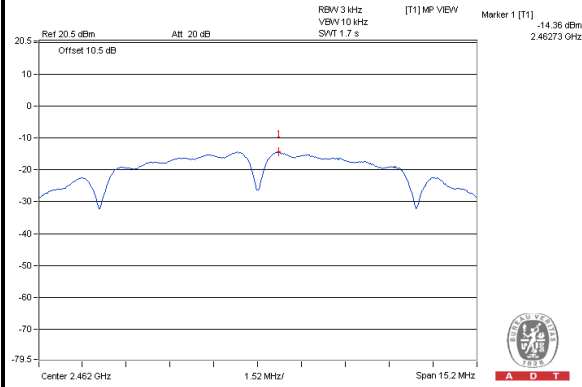
Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-17.72	8	PASS
6	2437	-15.49	8	PASS
9	2452	-17.62	8	PASS



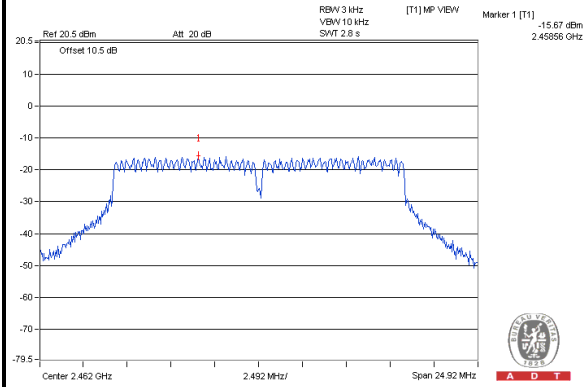
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### SPECTRUM PLOT OF WORST VALUE

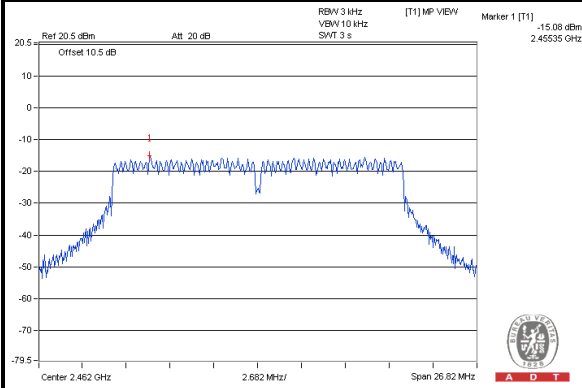
#### 802.11b / CH11



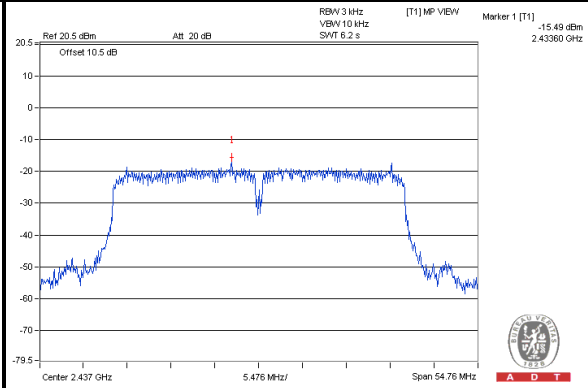
#### 802.11g / CH11



#### 802.11n (HT20) / CH11



#### 802.11n (HT40) / CH6



## 4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

### 4.7.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013

**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 : Sep. 16, 2013

### 4.7.3 TEST PROCEDURE

**Measurement Procedure - Reference Level**

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

**Measurement Procedure –Unwanted Emission Level**

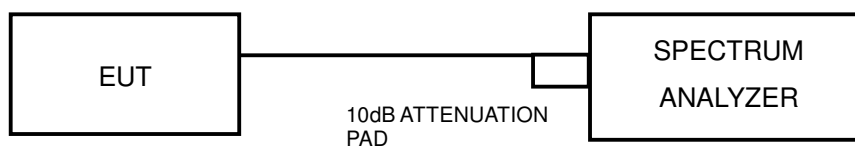
1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.



#### 4.7.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.7.5 TEST SETUP



#### 4.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 4.7.7 TEST RESULTS

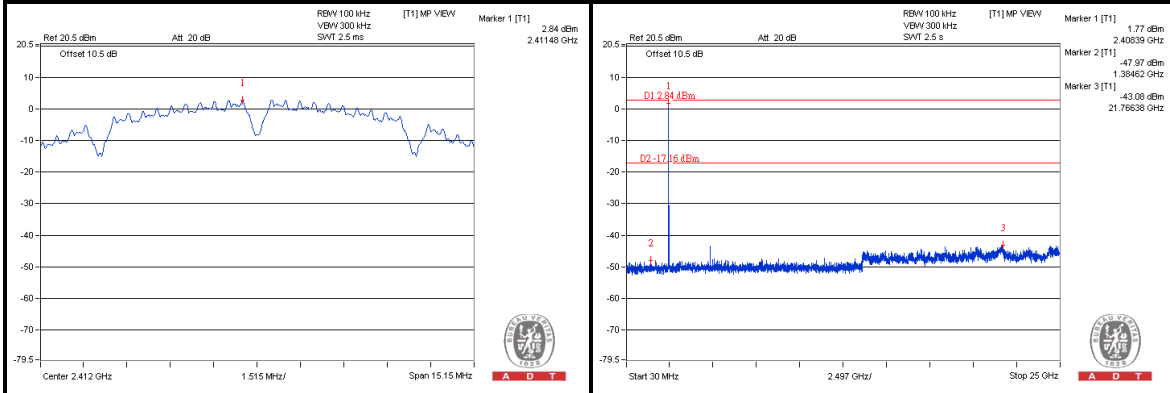
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



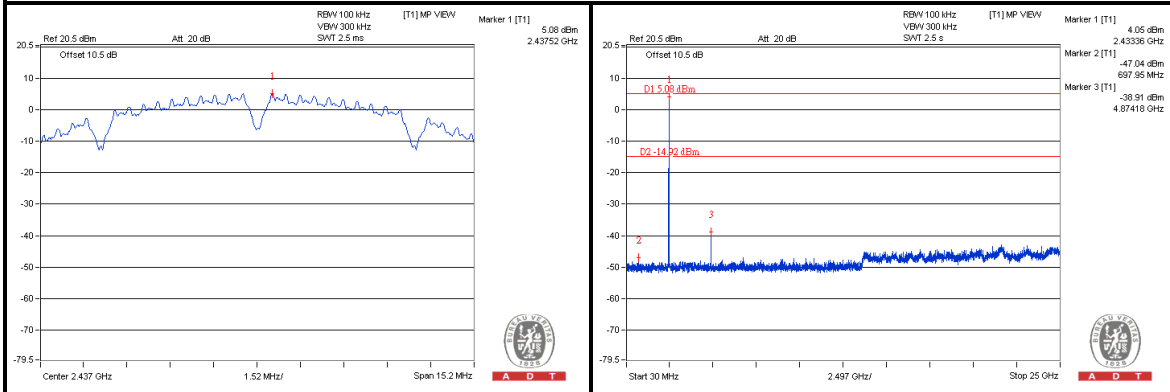
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802.11b:

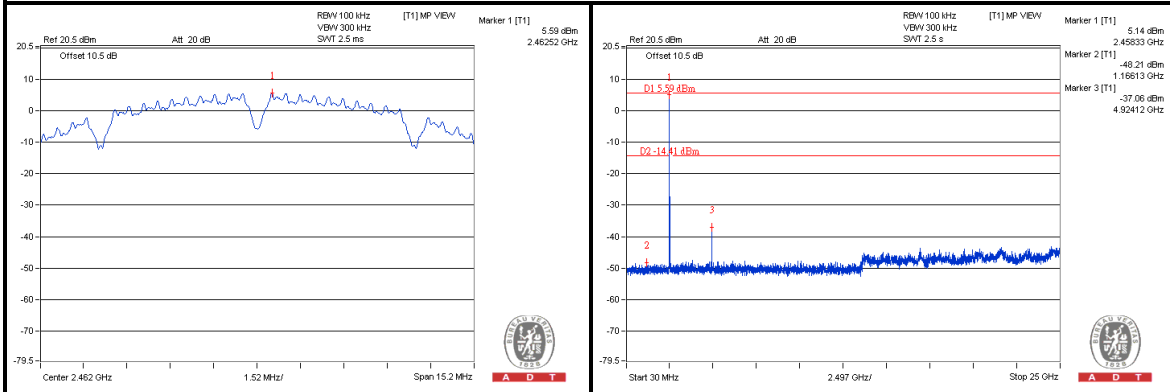
### CH 1



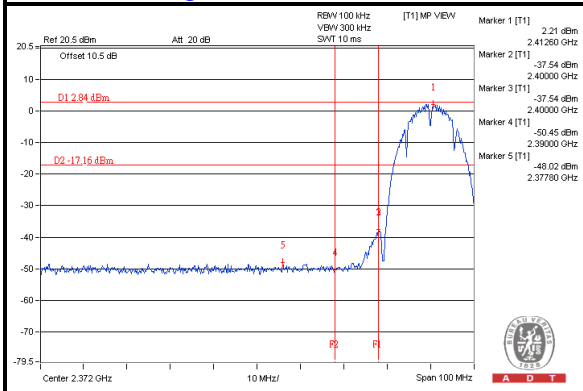
### CH 6



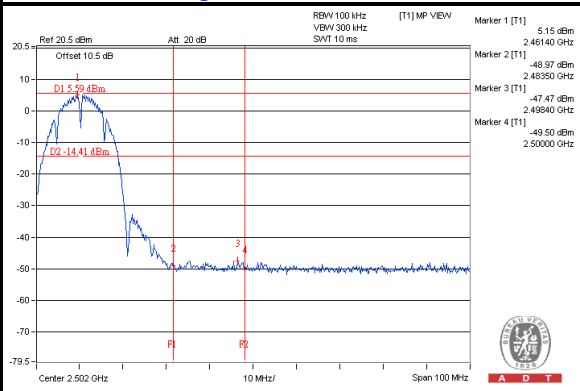
### CH 11



### CH 1 Band edge



### CH 11 Band edge

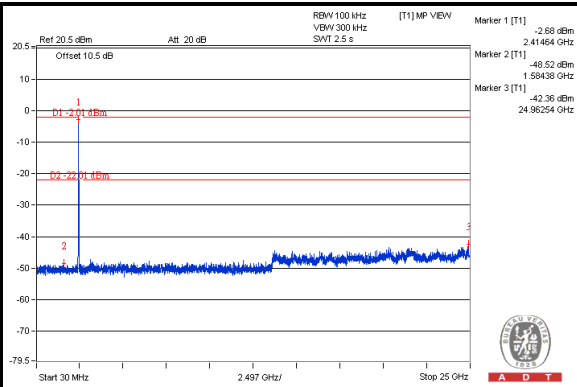
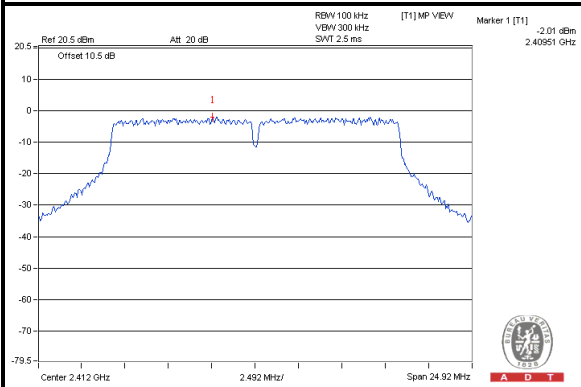




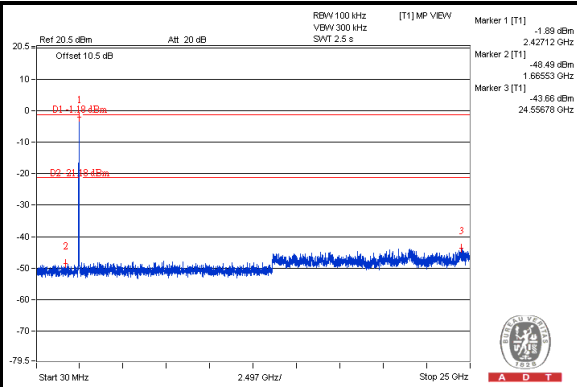
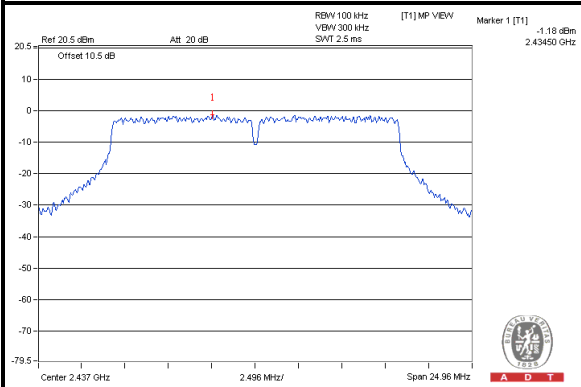
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### 802.11g:

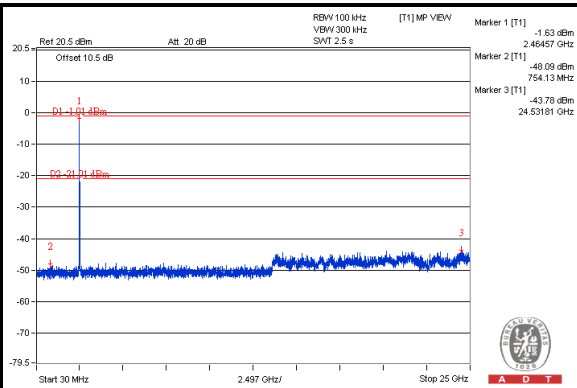
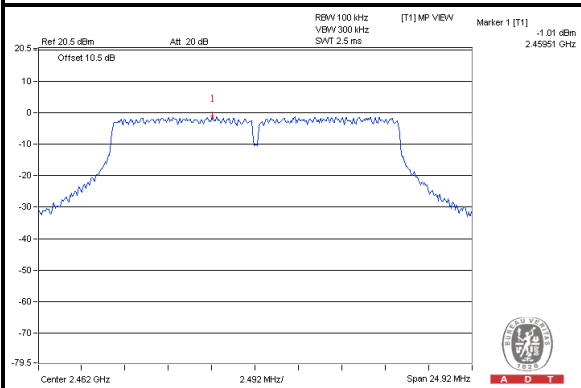
#### CH 1



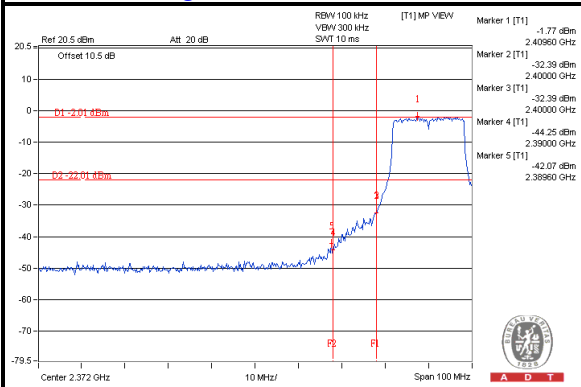
#### CH 6



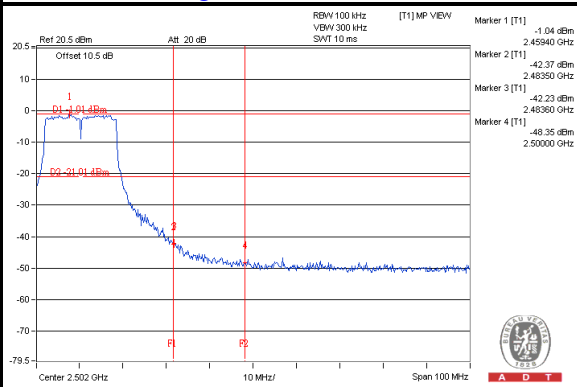
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

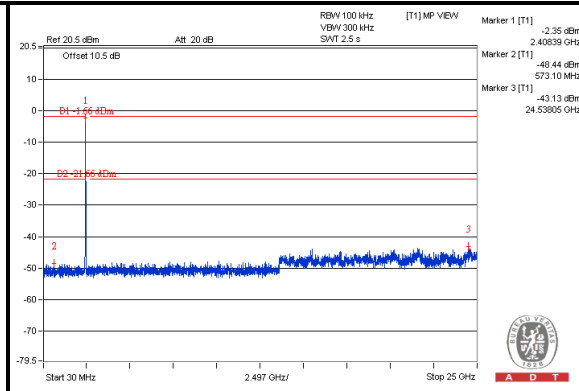
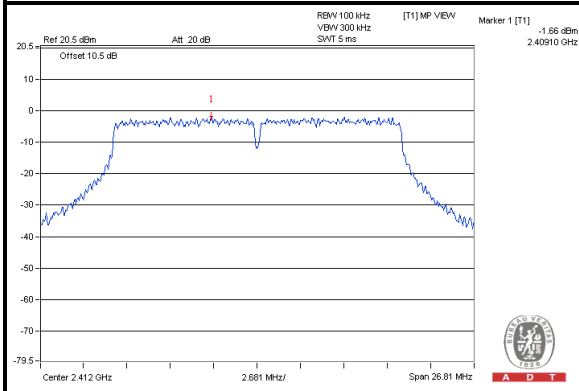




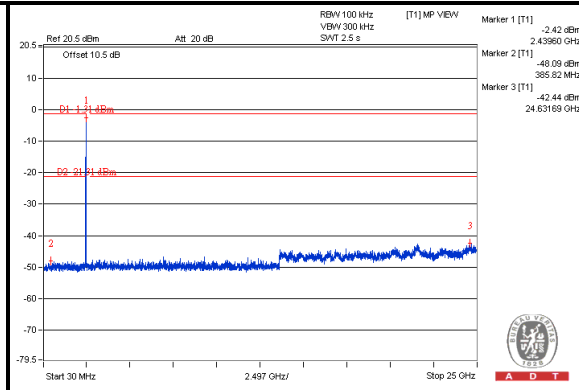
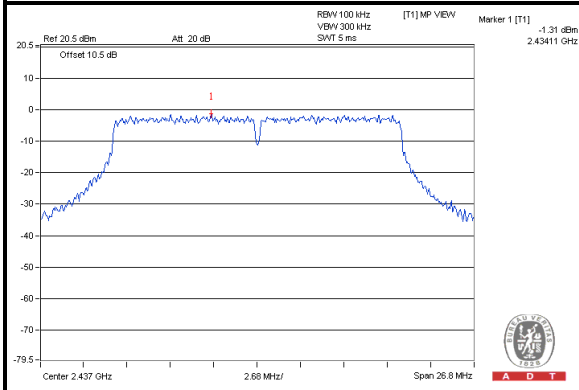
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### 802.11n (HT20):

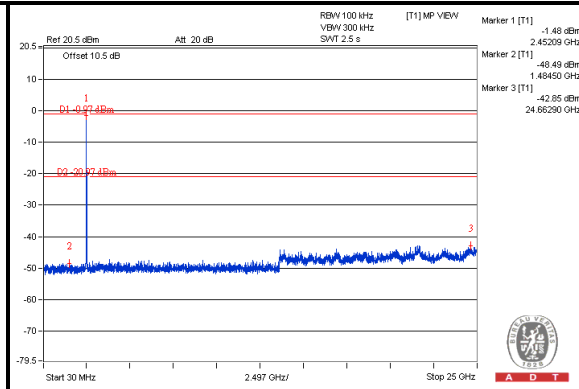
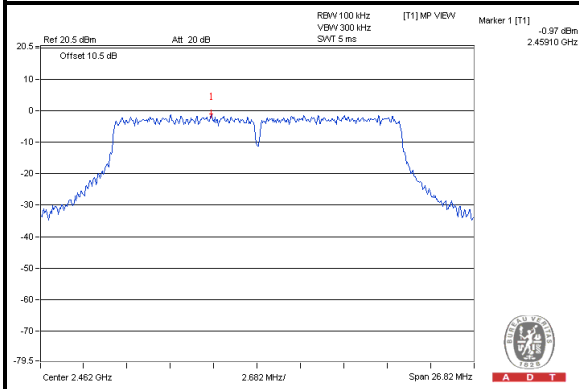
#### CH 1



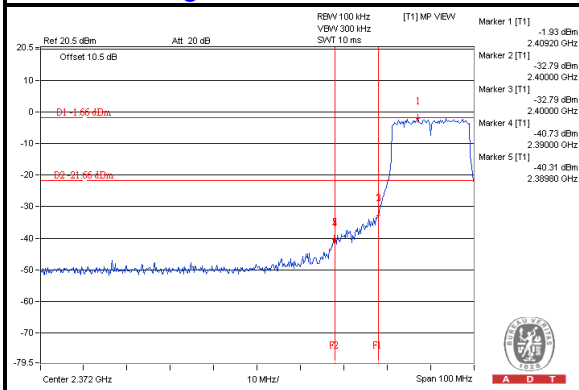
#### CH 6



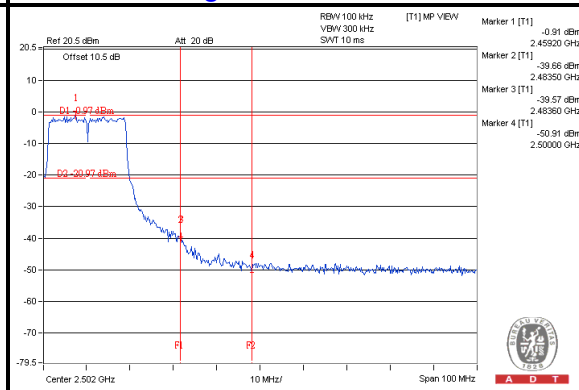
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

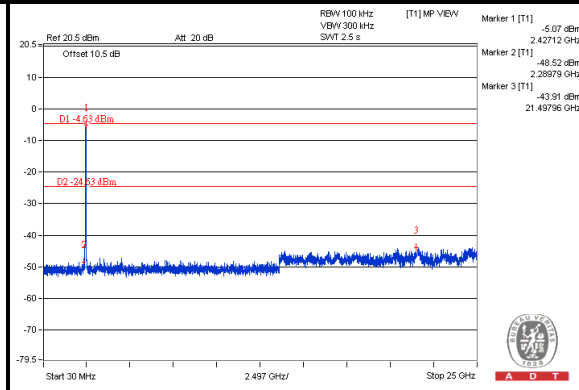
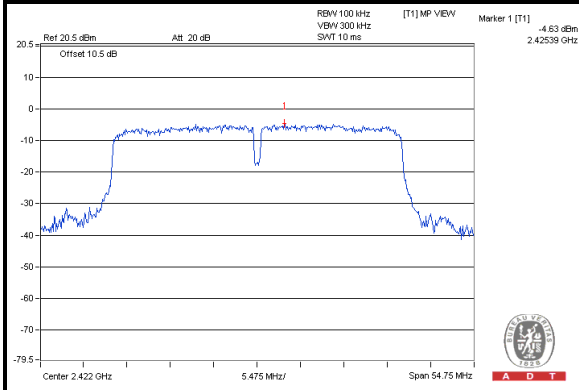




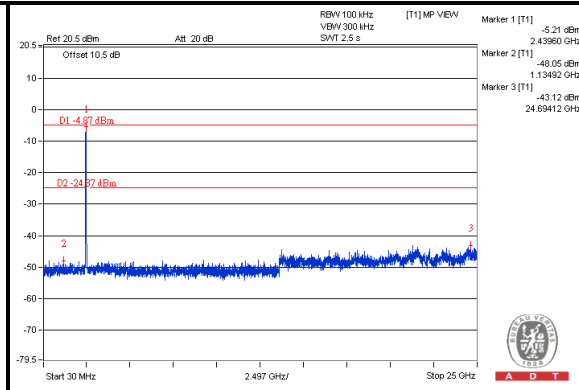
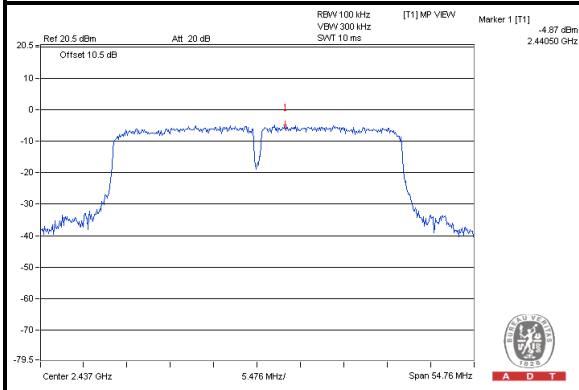
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### 802.11n (HT40):

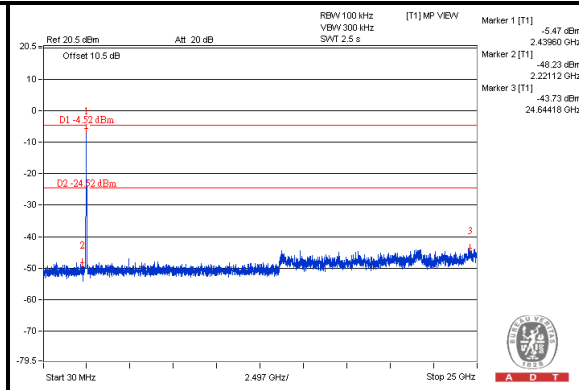
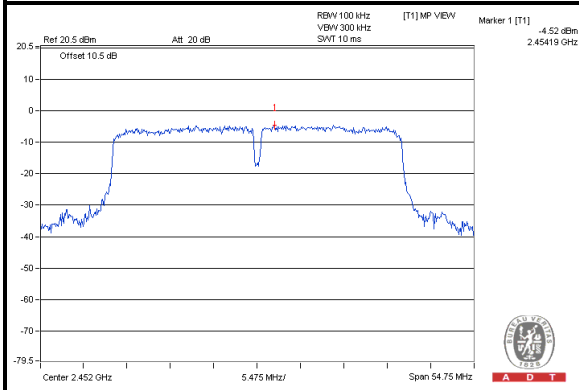
#### CH 3



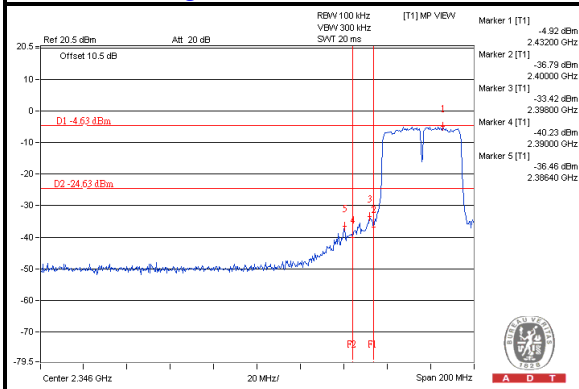
#### CH 6



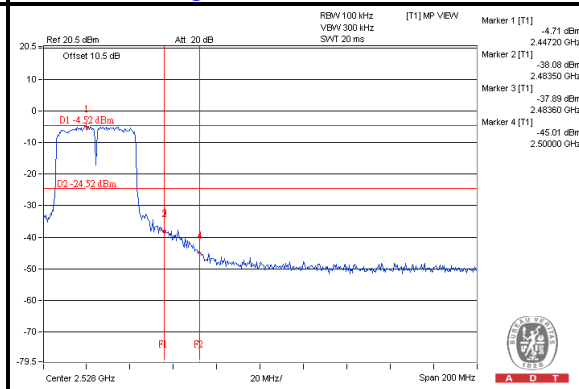
#### CH 9



#### CH 3 Band edge



#### CH 9 Band edge





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## 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.

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

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety/Telecom Lab:**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://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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## **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 ---**