

## TEST REPORT



Applicant	SHUOYING INDUSTRIAL ( SHENZHEN ) CO.,LTD
Address	shuoying Road, Hebei Industry Area, Dalang, Longhua Town, Baoan, Shenzhen, China.

Manufacturer or Supplier	SHUOYING INDUSTRIAL ( SHENZHEN ) CO.,LTD
Address	shuoying Road, Hebei Industry Area, Dalang, Longhua Town, Baoan, Shenzhen, China
Product	MID
Brand Name	N/A
Model	PR0880
Additional Model & Model Difference	N/A
Date of tests	Aug. 08, 2013 ~ Sep. 04, 2013

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247(2012-10)**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Tested by Glyn He Project Engineer / EMC Department	Approved by Sam Tung Manager / EMC Department
	 Date: Sep. 04, 2013

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Test Report No.: RF130808N004

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130808N004	Original release	Sep. 04, 2013

## 1 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 AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -5.85dB at 0.15391MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -8.3dB at 2390MHz
15.247(d)	Out of band 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	WLAN No antenna connector is used

## 2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.67dB
Radiated emissions	9KHz ~ 30MHz	2.5dB
	30MHz ~ 1GMHz	4.81dB
	1GHz ~ 18GHz	4.3 dB
	18GHz ~ 40GHz	1.94dB

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



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	MID
<b>MODEL NO.</b>	PR0880
<b>FCC ID</b>	XJN-PR0880X
<b>NOMINAL VOLTAGE</b>	3.7VDC from battery, 5VDC from USB or 5VDC from adapter
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>OPERATING FREQUENCY</b>	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
<b>PEAK POWER</b>	16.20dBm (Maximum)
<b>ANTENNA TYPE</b>	Internal wire antenna; 2.0dBi gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	N/A

**NOTE:**

1. The EUT provides one transmitter and one receiver.

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

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



### 3.2 DESCRIPTION OF TEST MODES

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

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

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 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

## 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	√	Power by adapter with wifi link
B	√	-	√	-	Powered by USB with wifi link
C	√	-	-	-	Powered by battery with wifi link

Where **RE<1G**: Radiated Emission below 1GHz

**PLC**: Power Line Conducted Emission

**RE≥1G**: Radiated Emission above 1GHz

**APCM**: Antenna Port Conducted Measurement

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

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5	X



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

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0	X
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	X
A	802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5	X
A	802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5	X

**POWER LINE CONDUCTED EMISSION TEST:**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11n HT20	1 to 11	6	OFDM	BPSK	6.5

**OUT OF BAND 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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 11	CCK	DBPSK	1.0
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A	802.11n HT20	1 to 11	1, 11	OFDM	BPSK	6.5
A	802.11n HT40	3 to 9	3, 9	OFDM	BPSK	13.5

**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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n HT20	1 to 11	1,6, 11	OFDM	BPSK	6.5
A	802.11n HT40	3 to 9	3,6, 9	OFDM	BPSK	13.5

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	24deg. C, 54%RH	DC 5V from adaptor	Venless long
RE≥1G	24deg. C, 54%RH	DC 5V from adaptor	Venless long
PLC	27deg. C, 65%RH	DC 5V from adaptor	Venless long
APCM	25deg. C, 60%RH	DC 5V from adaptor	Venless long

### 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, Section 15.247(2012-10)**

**558074 D01 DTS Meas Guidance v03r01**

**ANSI C63.10-2009**

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

### 3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A



## 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 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU 26	100005	May 14,13	May 13,14
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 14,13	May 13,14
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 14,13	May 13,14
Test software	ADT	ADT_Conc_V7.3.7	N/A	N/A	N/A

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in Shielding Room 553.

#### 4.1.3 TEST PROCEDURES

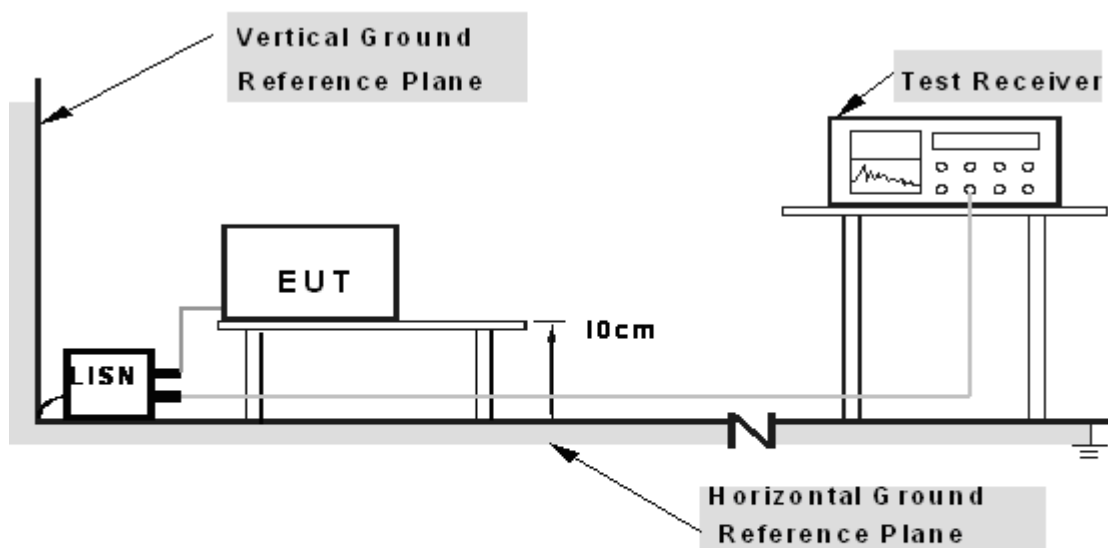
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



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

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

#### 4.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected all equipment.
- EUT was operated according to the type described in manufacturer's specifications or the user's manual.



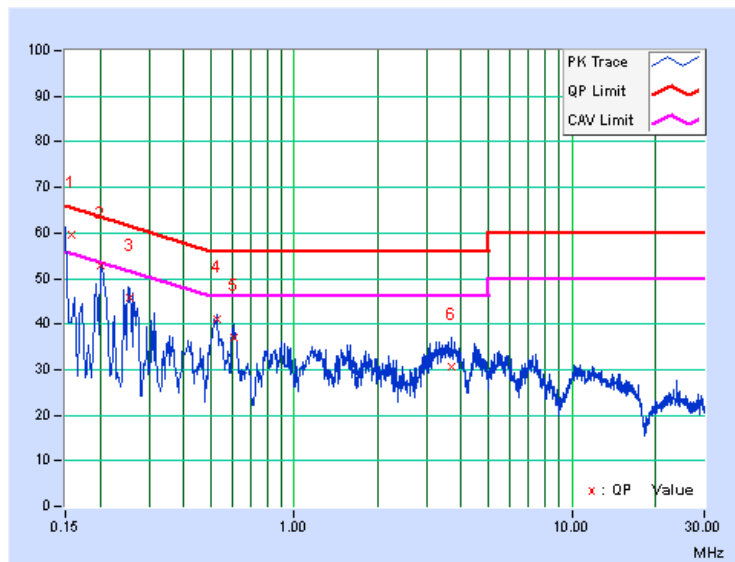
## 4.1.7 TEST RESULTS

## CONDUCTED WORST-CASE DATA: 802.11n- CH6

PHASE	Line	6dB BANDWIDTH	9kHz
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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	0.15737	10.63	48.88	33.05	59.51	43.68	65.60	55.60	-6.10	-11.93
2	0.20084	10.54	42.46	27.67	53.00	38.21	63.58	53.58	-10.58	-15.37
3	0.25557	10.42	35.51	21.66	45.93	32.08	61.57	51.57	-15.64	-19.49
4	0.52613	10.33	30.90	18.52	41.23	28.85	56.00	46.00	-14.77	-17.15
5	0.60356	10.25	26.78	17.01	37.03	27.26	56.00	46.00	-18.97	-18.74
6	3.66900	9.93	20.58	13.46	30.51	23.39	56.00	46.00	-25.49	-22.61

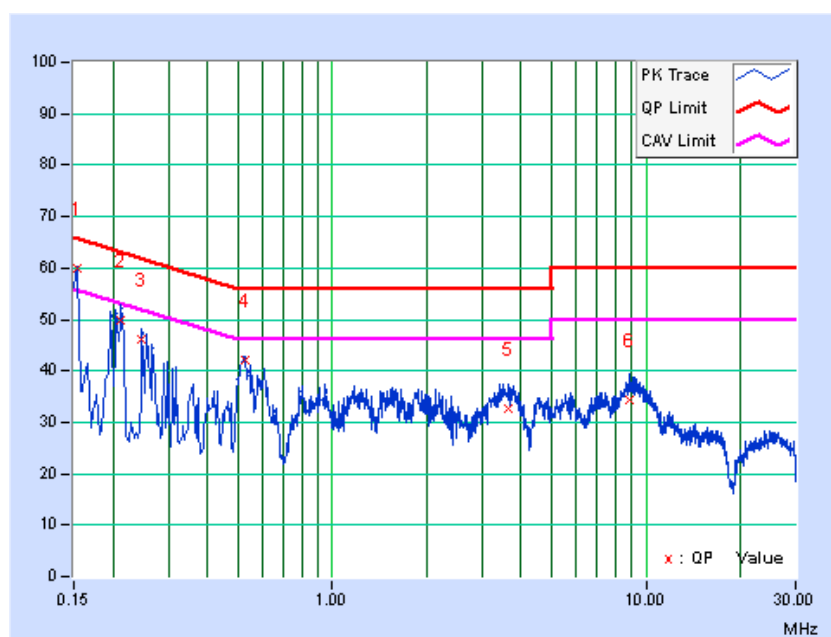
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value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



PHASE	Neutral	6dB BANDWIDTH	9kHz
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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	10.53	49.40	36.07	59.93	46.60	65.79	55.79	-5.85	-9.18
2	0.21256	10.41	39.44	21.37	49.85	31.78	63.10	53.10	-13.25	-21.32
3	0.24775	10.37	35.61	19.43	45.98	29.80	61.83	51.83	-15.86	-22.04
4	0.52927	10.50	31.59	18.07	42.09	28.57	56.00	46.00	-13.91	-17.43
5	3.65727	9.73	22.80	16.15	32.53	25.88	56.00	46.00	-23.47	-20.12
6	8.87321	9.96	24.28	17.30	34.24	27.26	60.00	50.00	-25.76	-22.74

- 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, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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. As shown in 15.35(b), 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 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	April 24,13	April 23,14
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 14,13	May 13,14
Loop antenna (9kHz~30MHz)	Daze	ZN30900A	0708	Nov. 28,12	Nov. 27,13
Bilog Antenna (20M-2GHz)	Teseq	CBL 6111D	25757	Nov. 22,12	Nov. 21,13
Horn Antenna (1GHz -18GHz)	EMCO	3117	00062558	Oct.18,12	Oct.17,13
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 04,11	Jan. 03,14
Pre-Amplifier (9kHz~1GHz)	SONOMA	310D	186955	Mar. 06,13	Mar. 05,14
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov.01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14,13	May 13,14
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,12	Nov. 03,13
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8 .8m	NSEMC006	Mar. 24,13	Mar. 23,14
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 31,12	Oct. 30,13
Test Software	ADT	ADT_Radiated _V7.6.15	N/A	N/A	N/A
Spectrum Analyzer	Agilent	E4446A	MY46180622	April 24,13	April 23,14

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test site was performed in Chamber 10m.
  3. The horn antenna are used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 502831.

#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

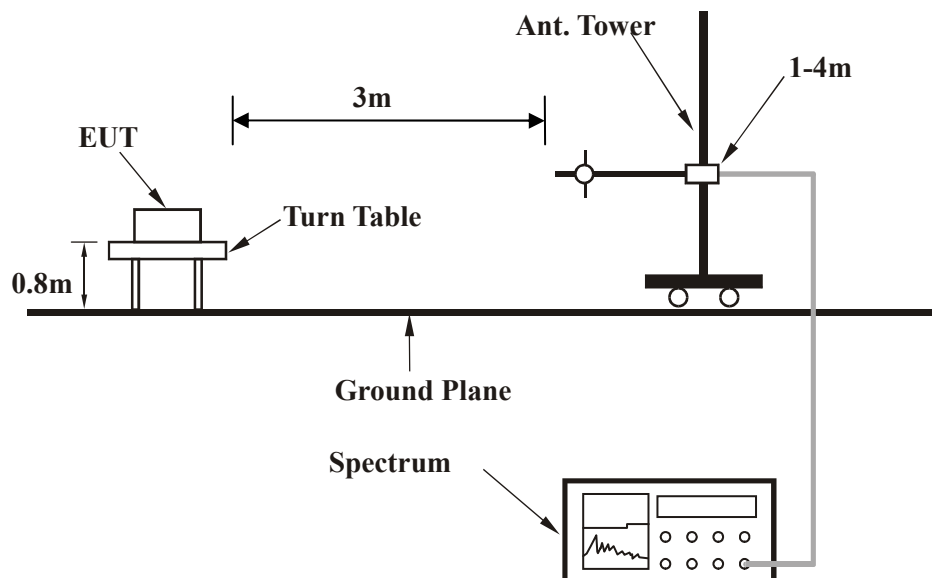
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz 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



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

#### 4.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



## 4.2.7 TEST RESULTS

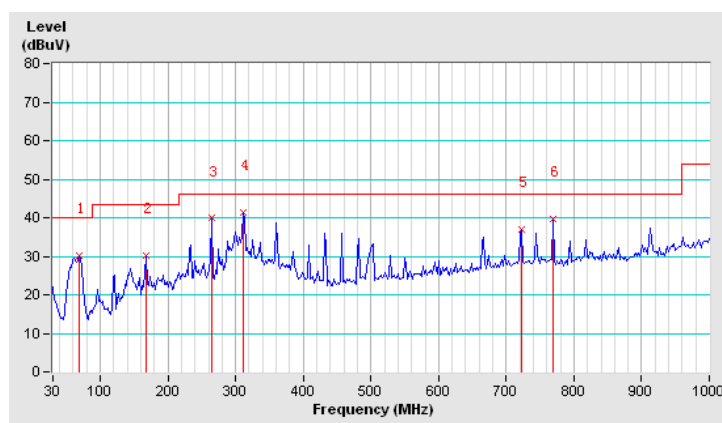
## BELOW 1GHz WORST-CASE DATA: 802.11n- CH6

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	68.80	30.1 QP	40.0	-9.9	1.00 H	322	23.40	6.69
2	167.74	30.3 QP	43.5	-13.2	2.48 H	66	18.32	12.02
3	264.74	39.9 QP	46.0	-6.1	1.02 H	287	24.90	14.97
4	311.30	41.4 QP	46.0	-4.6	1.26 H	249	25.16	16.27
5	722.58	37.0 QP	46.0	-9.0	2.50 H	0	10.54	26.50
6	769.14	39.7 QP	46.0	-6.3	1.99 H	138	12.64	27.10

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. For the test results, the EUT had been tested from 9KHz ~25GHz. But only the worst case was shown in test report.





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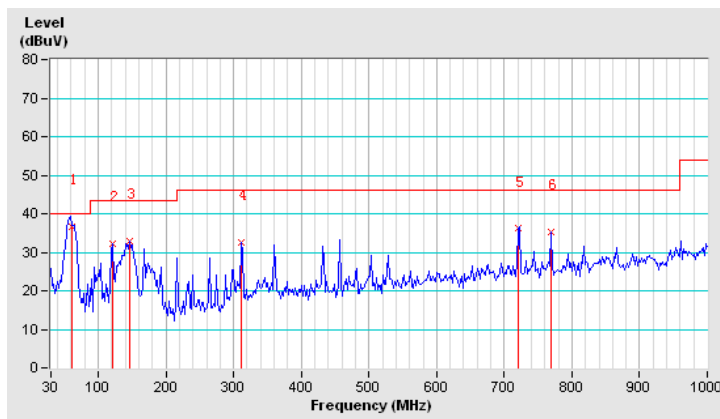
Test Report No.: RF130808N004

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	60.12	36.7 QP	40.0	-3.3	1.00 V	220	29.80	6.86
2	121.18	32.3 QP	43.5	-11.2	1.47 V	248	19.75	12.58
3	146.40	32.9 QP	43.5	-10.6	1.17 V	293	20.18	12.68
4	311.30	32.5 QP	46.0	-13.5	1.73 V	207	16.27	16.27
5	720.64	36.2 QP	46.0	-9.8	2.04 V	159	9.77	26.40
6	769.14	35.3 QP	46.0	-10.7	2.35 V	114	8.20	27.10

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. For the test results, the EUT had been tested from 9KHz ~25GHz. But only the worst case was shown in test report.



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## ABOVE 1GHz DATA

## 802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	57.3 PK	74.0	-16.7	1.03 H	289	20.89	36.41
2	2390.00	45.6 AV	54.0	-8.4	1.03 H	289	9.19	36.41
3	*2412.00	93.4 PK			1.03 H	289	56.79	36.61
4	*2412.00	81.7 AV			1.03 H	289	45.09	36.61
5	4824.00	54.9 PK	74.0	-19.1	1.08 H	172	5.65	49.25
6	4824.00	43.5 AV	54.0	-10.5	1.08 H	172	-5.75	49.25
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	58.4 PK	74.0	-15.6	1.00 V	125	21.99	36.41
2	2390.00	45.7 AV	54.0	-8.3	1.00 V	125	9.29	36.41
3	*2412.00	92.4 PK			1.00 V	125	55.79	36.61
4	*2412.00	81.4 AV			1.00 V	125	44.79	36.61
5	4824.00	54.8 PK	74.0	-19.2	1.12 V	213	5.55	49.25
6	4824.00	42.4 AV	54.0	-11.6	1.12 V	213	-6.85	49.25

## 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 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	93.2 PK			1.05 H	291	56.37	36.83
2	*2437.00	80.4 AV			1.05 H	291	43.57	36.83
3	4874.00	54.1 PK	74.0	-19.9	1.10 H	175	4.86	49.24
4	4874.00	42.2 AV	54.0	-11.8	1.10 H	175	-7.04	49.24
5	7311.00	57.4 PK	74.0	-16.6	1.14 H	104	10.80	46.60
6	7311.00	44.6 AV	54.0	-9.4	1.14 H	104	-2.00	46.60
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	91.8 PK			1.00 V	120	54.97	36.83
2	*2437.00	79.8 AV			1.00 V	120	42.97	36.83
3	4874.00	53.7 PK	74.0	-20.3	1.16 V	209	4.46	49.24
4	4874.00	41.1 AV	54.0	-12.9	1.16 V	209	-8.14	49.24
5	7311.00	56.8 PK	74.0	-17.2	1.06 V	340	10.20	46.60
6	7311.00	43.4 AV	54.0	-10.6	1.06 V	340	-3.20	46.60

**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 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	94.3 PK			1.04 H	298	57.25	37.05
2	*2462.00	82.4 AV			1.04 H	298	45.35	37.05
3	2483.50	58.3 PK	74.0	-15.7	1.04 H	298	21.06	37.24
4	2483.50	44.5 AV	54.0	-9.5	1.04 H	298	7.26	37.24
5	4924.00	53.9 PK	74.0	-20.1	1.12 H	178	4.68	49.22
6	4924.00	40.8 AV	54.0	-13.2	1.12 H	178	-8.42	49.22
7	7386.00	56.9 PK	74.0	-17.1	1.18 H	107	10.24	46.66
8	7386.00	43.5 AV	54.0	-10.5	1.18 H	107	-3.16	46.66
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)	CORRECTION FACTOR (dB/m)
1	*2462.00	92.3 PK			1.00 V	124	55.25	37.05
2	*2462.00	80.3 AV			1.00 V	124	43.25	37.05
3	2483.50	58.2 PK	74.0	-15.8	1.00 V	124	20.96	37.24
4	2483.50	44.8 AV	54.0	-9.2	1.00 V	124	7.56	37.24
5	4924.00	54.1 PK	74.0	-19.9	1.14 V	217	4.88	49.22
6	4924.00	43.1 AV	54.0	-10.9	1.14 V	217	-6.12	49.22
7	7386.00	57.5 PK	74.0	-16.5	1.03 V	345	10.84	46.66
8	7386.00	44.1 AV	54.0	-9.9	1.03 V	345	-2.56	46.66

**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.



802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	56.4 PK	74.0	-17.6	1.00 H	284	19.99	36.41
2	2390.00	42.7 AV	54.0	-11.3	1.00 H	284	6.29	36.41
3	*2412.00	90.5 PK			1.00 H	284	53.89	36.61
4	*2412.00	79.6 AV			1.00 H	284	42.99	36.61
5	4824.00	52.8 PK	74.0	-21.2	1.04 H	168	3.55	49.25
6	4824.00	40.3 AV	54.0	-13.7	1.04 H	168	-8.95	49.25
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	55.2 PK	74.0	-18.8	1.00 V	130	18.79	36.41
2	2390.00	43.6 AV	54.0	-10.4	1.00 V	130	7.19	36.41
3	*2412.00	89.8 PK			1.00 V	130	53.19	36.61
4	*2412.00	77.8 AV			1.00 V	130	41.19	36.61
5	4824.00	52.7 PK	74.0	-21.3	1.10 V	206	3.45	49.25
6	4824.00	40.5 AV	54.0	-13.5	1.10 V	206	-8.75	49.25

## 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.



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Test Report No.: RF130808N004

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	88.8 PK			1.08 H	294	51.97	36.83
2	*2437.00	76.4 AV			1.08 H	294	39.57	36.83
3	4874.00	52.8 PK	74.0	-21.2	1.14 H	178	3.56	49.24
4	4874.00	40.2 AV	54.0	-13.8	1.14 H	178	-9.04	49.24
5	7311.00	55.1 PK	74.0	-18.9	1.13 H	100	8.50	46.60
6	7311.00	42.6 AV	54.0	-11.4	1.13 H	100	-4.00	46.60
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	89.2 PK			1.00 V	126	52.37	36.83
2	*2437.00	76.4 AV			1.00 V	126	39.57	36.83
3	4874.00	52.1 PK	74.0	-21.9	1.14 V	214	2.86	49.24
4	4874.00	40.1 AV	54.0	-13.9	1.14 V	214	-9.14	49.24
5	7311.00	53.9 PK	74.0	-20.1	1.02 V	345	7.30	46.60
6	7311.00	41.4 AV	54.0	-12.6	1.02 V	345	-5.20	46.60

**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 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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			1.02 H	300	54.15	37.05
2	*2462.00	79.8 AV			1.02 H	300	42.75	37.05
3	2483.50	53.7 PK	74.0	-20.3	1.02 H	300	16.46	37.24
4	2483.50	41.8 AV	54.0	-12.2	1.02 H	300	4.56	37.24
5	4924.00	51.7 PK	74.0	-22.3	1.08 H	180	2.48	49.22
6	4924.00	38.9 AV	54.0	-15.1	1.08 H	180	-10.32	49.22
7	7386.00	54.4 PK	74.0	-19.6	1.14 H	105	7.74	46.66
8	7386.00	42.1 AV	54.0	-11.9	1.14 H	105	-4.56	46.66
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)	CORRECTION FACTOR (dB/m)
1	*2462.00	89.4 PK			1.00 V	129	52.35	37.05
2	*2462.00	77.4 AV			1.00 V	129	40.35	37.05
3	2483.50	55.6 PK	74.0	-18.4	1.00 V	129	18.36	37.24
4	2483.50	43.4 AV	54.0	-10.6	1.00 V	129	6.16	37.24
5	4924.00	51.6 PK	74.0	-22.4	1.10 V	220	2.38	49.22
6	4924.00	38.5 AV	54.0	-15.5	1.10 V	220	-10.72	49.22
7	7386.00	54.7 PK	74.0	-19.3	1.06 V	342	8.04	46.66
8	7386.00	42.8 AV	54.0	-11.2	1.06 V	342	-3.86	46.66

**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.



## 802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	54.8 PK	74.0	-19.2	1.00 H	287	18.39	36.41
2	2390.00	43.5 AV	54.0	-10.5	1.00 H	287	7.09	36.41
3	*2412.00	89.5 PK			1.00 H	287	52.89	36.61
4	*2412.00	77.4 AV			1.00 H	287	40.79	36.61
5	4824.00	51.9 PK	74.0	-22.1	1.07 H	172	2.65	49.25
6	4824.00	38.7 AV	54.0	-15.3	1.07 H	172	-10.55	49.25
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	53.6 PK	74.0	-20.4	1.00 V	122	17.19	36.41
2	2390.00	41.1 AV	54.0	-12.9	1.00 V	122	4.69	36.41
3	*2412.00	88.6 PK			1.00 V	122	51.99	36.61
4	*2412.00	75.9 AV			1.00 V	122	39.29	36.61
5	4824.00	52.1 PK	74.0	-21.9	1.07 V	198	2.85	49.25
6	4824.00	40.3 AV	54.0	-13.7	1.07 V	198	-8.95	49.25

## 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 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	87.9 PK			1.06 H	289	51.07	36.83
2	*2437.00	75.2 AV			1.06 H	289	38.37	36.83
3	4874.00	51.7 PK	74.0	-22.3	1.16 H	180	2.46	49.24
4	4874.00	38.4 AV	54.0	-15.6	1.16 H	180	-10.84	49.24
5	7311.00	53.8 PK	74.0	-20.2	1.09 H	104	7.20	46.60
6	7311.00	41.6 AV	54.0	-12.4	1.09 H	104	-5.00	46.60
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	88.6 PK			1.03 V	130	51.77	36.83
2	*2437.00	76.4 AV			1.03 V	130	39.57	36.83
3	4874.00	51.5 PK	74.0	-22.5	1.13 V	216	2.26	49.24
4	4874.00	39.2 AV	54.0	-14.8	1.13 V	216	-10.04	49.24
5	7311.00	54.3 PK	74.0	-19.7	1.04 V	347	7.70	46.60
6	7311.00	41.7 AV	54.0	-12.3	1.04 V	347	-4.90	46.60

**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 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	87.6 PK			1.00 H	295	50.55	37.05
2	*2462.00	74.2 AV			1.00 H	295	37.15	37.05
3	2483.50	53.9 PK	74.0	-20.1	1.00 H	295	16.66	37.24
4	2483.50	41.1 AV	54.0	-12.9	1.00 H	295	3.86	37.24
5	4924.00	51.1 PK	74.0	-22.9	1.04 H	176	1.88	49.22
6	4924.00	38.4 AV	54.0	-15.6	1.04 H	176	-10.82	49.22
7	7386.00	55.2 PK	74.0	-18.8	1.12 H	108	8.54	46.66
8	7386.00	43.5 AV	54.0	-10.5	1.12 H	108	-3.16	46.66
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)	CORRECTION FACTOR (dB/m)
1	*2462.00	88.2 PK			1.03 V	127	51.15	37.05
2	*2462.00	76.4 AV			1.03 V	127	39.35	37.05
3	2483.50	55.1 PK	74.0	-18.9	1.03 V	127	17.86	37.24
4	2483.50	42.8 AV	54.0	-11.2	1.03 V	127	5.56	37.24
5	4924.00	52.3 PK	74.0	-21.7	1.06 V	221	3.08	49.22
6	4924.00	40.1 AV	54.0	-13.9	1.06 V	221	-9.12	49.22
7	7386.00	54.7 PK	74.0	-19.3	1.02 V	344	8.04	46.66
8	7386.00	42.8 AV	54.0	-11.2	1.02 V	344	-3.86	46.66

**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.

802.11n (40MHz)

<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	53.8 PK	74.0	-20.2	1.00 H	289	17.39	36.41
2	2390.00	41.4 AV	54.0	-12.6	1.00 H	289	4.99	36.41
3	*2422.00	87.9 PK			1.00 H	289	51.20	36.70
4	*2422.00	75.4 AV			1.00 H	289	38.70	36.70
5	4844.00	51.4 PK	74.0	-22.6	1.06 H	173	2.16	49.24
6	4844.00	38.5 AV	54.0	-15.5	1.06 H	173	-10.74	49.24
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	2390.00	54.1 PK	74.0	-19.9	1.04 V	128	17.69	36.41
2	2390.00	41.8 AV	54.0	-12.2	1.04 V	128	5.39	36.41
3	*2422.00	88.2 PK			1.04 V	128	51.50	36.70
4	*2422.00	75.9 AV			1.04 V	128	39.20	36.70
5	4844.00	51.4 PK	74.0	-22.6	1.04 V	200	2.16	49.24
6	4844.00	38.5 AV	54.0	-15.5	1.04 V	200	-10.74	49.24

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





CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	87.4 PK			1.04 H	294	50.57	36.83
2	*2437.00	75.4 AV			1.04 H	294	38.57	36.83
3	4874.00	52.4 PK	74.0	-21.6	1.13 H	178	3.16	49.24
4	4874.00	40.1 AV	54.0	-13.9	1.13 H	178	-9.14	49.24
5	7311.00	53.8 PK	74.0	-20.2	1.10 H	107	7.20	46.60
6	7311.00	41.5 AV	54.0	-12.5	1.10 H	107	-5.10	46.60
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	88.3 PK			1.02 V	129	51.47	36.83
2	*2437.00	76.4 AV			1.02 V	129	39.57	36.83
3	4874.00	51.1 PK	74.0	-22.9	1.17 V	220	1.86	49.24
4	4874.00	39.2 AV	54.0	-14.8	1.17 V	220	-10.04	49.24
5	7311.00	54.9 PK	74.0	-19.1	1.03 V	341	8.30	46.60
6	7311.00	43.2 AV	54.0	-10.8	1.03 V	341	-3.40	46.60

**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.



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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	87.2 PK			1.00 H	134	50.24	36.96
2	*2452.00	75.3 AV			1.00 H	134	38.34	36.96
3	2483.50	54.3 PK	74.0	-19.7	1.00 H	134	17.06	37.24
4	2483.50	42.7 AV	54.0	-11.3	1.00 H	134	5.46	37.24
5	4904.00	51.3 PK	74.0	-22.7	1.05 H	224	2.07	49.23
6	4904.00	38.2 AV	54.0	-15.8	1.05 H	224	-11.03	49.23
7	7356.00	54.3 PK	74.0	-19.7	1.03 H	348	7.67	46.63
8	7356.00	42.6 AV	54.0	-11.4	1.03 H	348	-4.03	46.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	87.5 PK			1.07 V	280	50.54	36.96
2	*2452.00	74.9 AV			1.07 V	280	37.94	36.96
3	2483.50	54.3 PK	74.0	-19.7	1.07 V	280	17.06	37.24
4	2483.50	41.9 AV	54.0	-12.1	1.07 V	280	4.66	37.24
5	4904.00	51.8 PK	74.0	-22.2	1.08 V	185	2.57	49.23
6	4904.00	39.4 AV	54.0	-14.6	1.08 V	185	-9.83	49.23
7	7356.00	54.8 PK	74.0	-19.2	1.10 V	120	8.17	46.63
8	7356.00	42.6 AV	54.0	-11.4	1.10 V	120	-4.03	46.63

**REMARKS:**

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

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9KHz–40GHz)	Agilent	E4446A	MY46180622	Apr. 24,13	Apr. 23,14
Spectrum Analyzer (9KHz–25GHz)	Agilent	E7405A	MY45118807	May 14,13	May 13,14
Power Meter	Anritsu	ML2495A	1139001	Nov. 04,12	Nov. 03,13
Power Sensor	Anritsu	MA2411B	1126068	Nov. 04,12	Nov. 03,13
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in Oven room

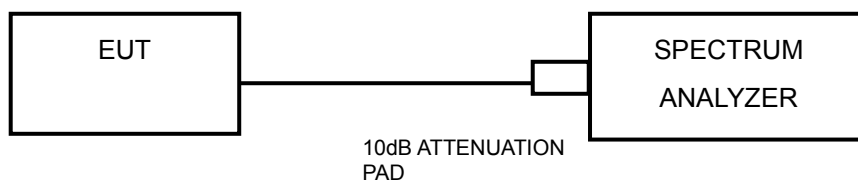
#### 4.3.3 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW)  $\geq 3$  RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) 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.



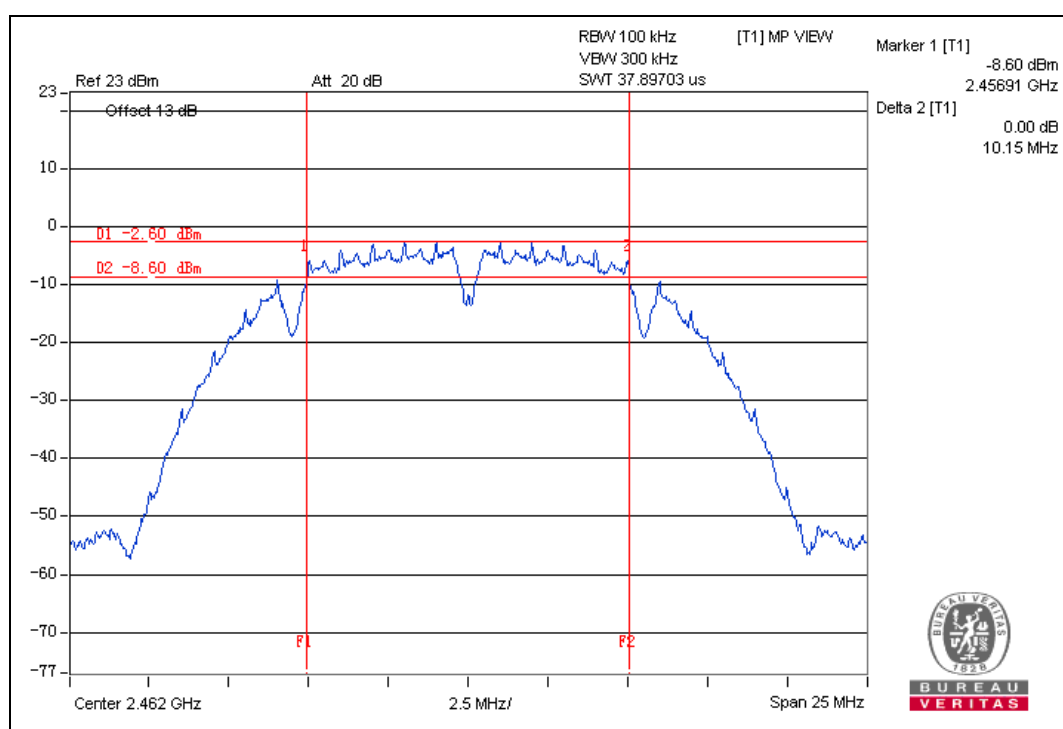
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#### 4.3.7 TEST RESULTS

##### 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.15	0.5	PASS
6	2437	10.14	0.5	PASS
11	2462	10.15	0.5	PASS



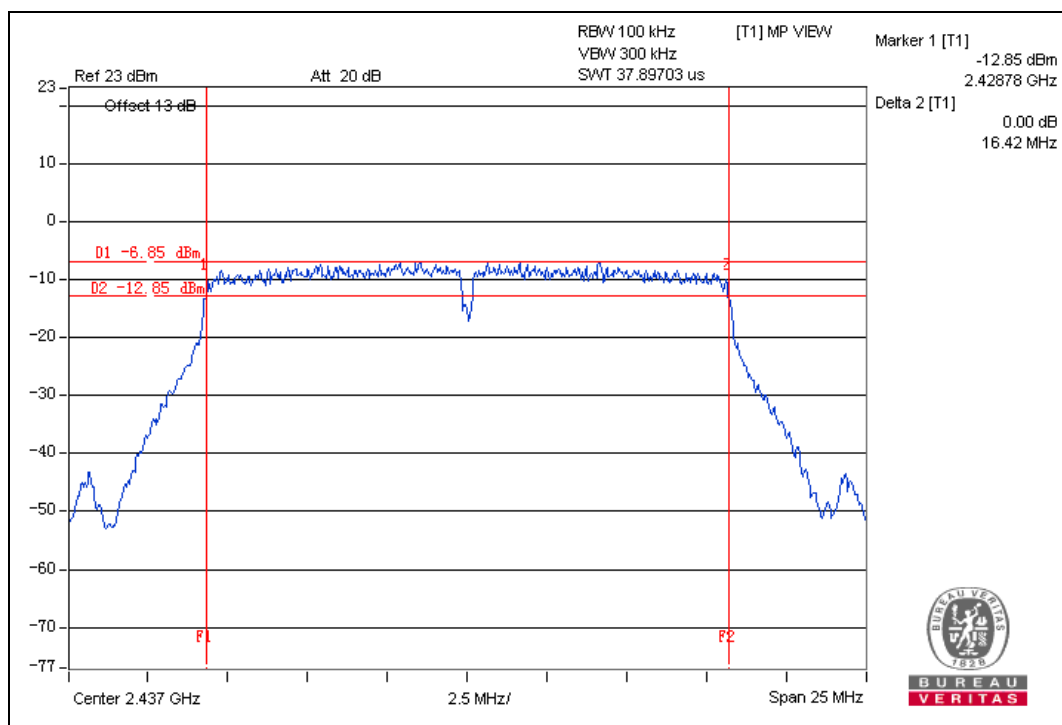


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Test Report No.: RF130808N004

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.41	0.5	PASS
6	2437	16.42	0.5	PASS
11	2462	16.41	0.5	PASS



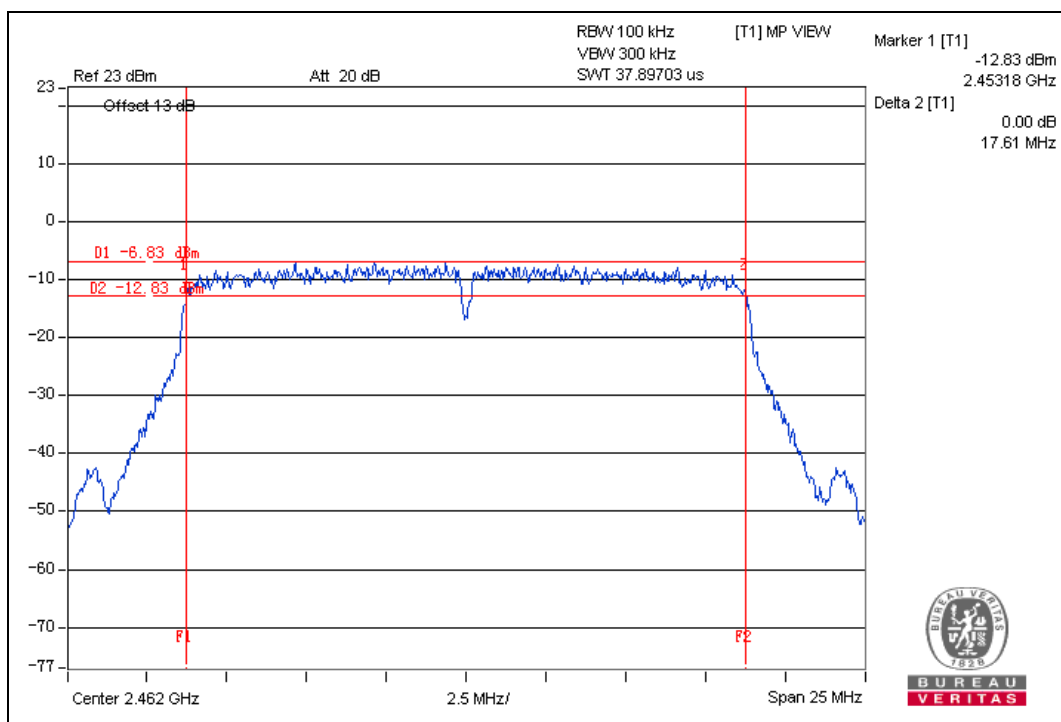


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Test Report No.: RF130808N004

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.60	0.5	PASS
6	2437	17.61	0.5	PASS
11	2462	17.61	0.5	PASS



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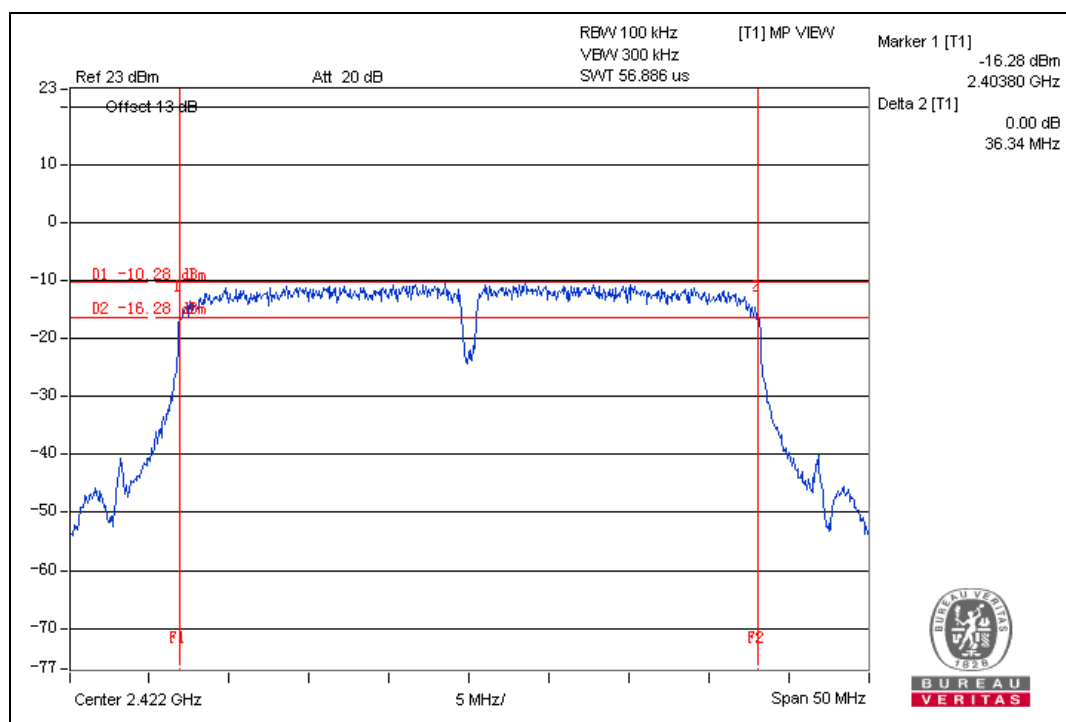


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Test Report No.: RF130808N004

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.34	0.5	PASS
6	2437	36.15	0.5	PASS
9	2452	36.33	0.5	PASS





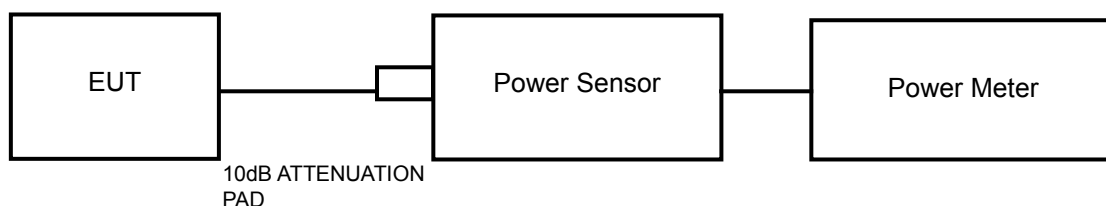


## 4.4 CONDUCTED OUTPUT POWER

### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	Anritsu	ML2495A	1139001	Nov. 04,12	Nov. 03,13
Power Sensor	Anritsu	MA2411B	1126068	Nov. 04,12	Nov. 03,13

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in Oven room

### 4.4.4 TEST PROCEDURES

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

### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.4.6 EUT OPERATING CONDITIONS

Same as item 4.3.6.



#### 4.4.7 TEST RESULTS

##### 4.4.7.1 MAXIMUM PEAK OUTPUT POWER

###### 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	10.97	30	PASS
6	2437	10.70	30	PASS
11	2462	11.50	30	PASS

###### 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.50	30	PASS
6	2437	15.20	30	PASS
11	2462	15.60	30	PASS

###### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.10	30	PASS
6	2437	16.20	30	PASS
11	2462	15.80	30	PASS

###### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
3	2422	15.20	30	PASS
6	2437	15.30	30	PASS
9	2452	15.50	30	PASS

**4.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)**

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

**802.11b**

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	6.89	N/A
6	2437	7.10	N/A
11	2462	7.20	N/A

**802.11g**

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	6.10	N/A
6	2437	6.24	N/A
11	2462	6.30	N/A

**802.11n (20MHz)**

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	5.50	N/A
6	2437	5.62	N/A
11	2462	5.45	N/A

**802.11n (40MHz)**

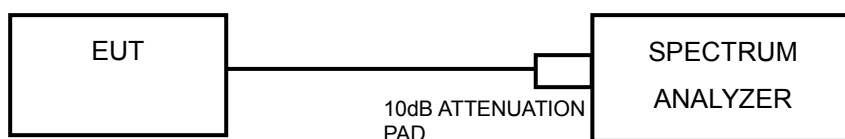
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
3	2422	5.50	N/A
6	2437	5.28	N/A
9	2452	5.10	N/A

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 100 kHz, VBW  $\geq 3 \times$  RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

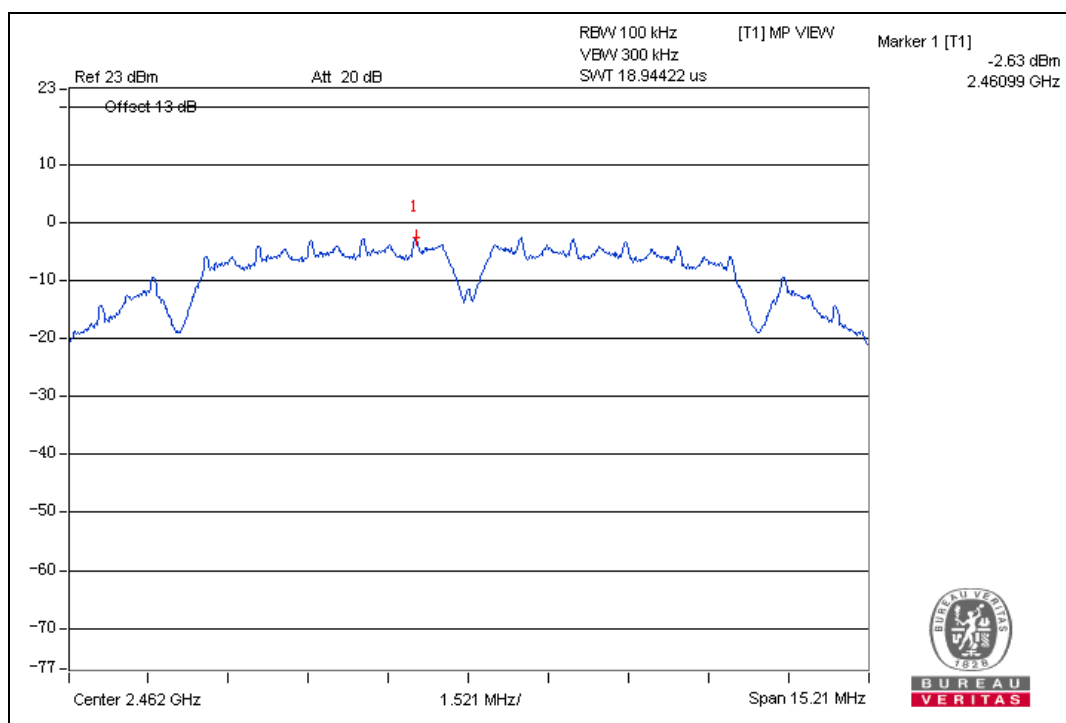
### 4.5.6 EUT OPERATING CONDITION

Same as item 4.3.6

## 4.5.7 TEST RESULTS

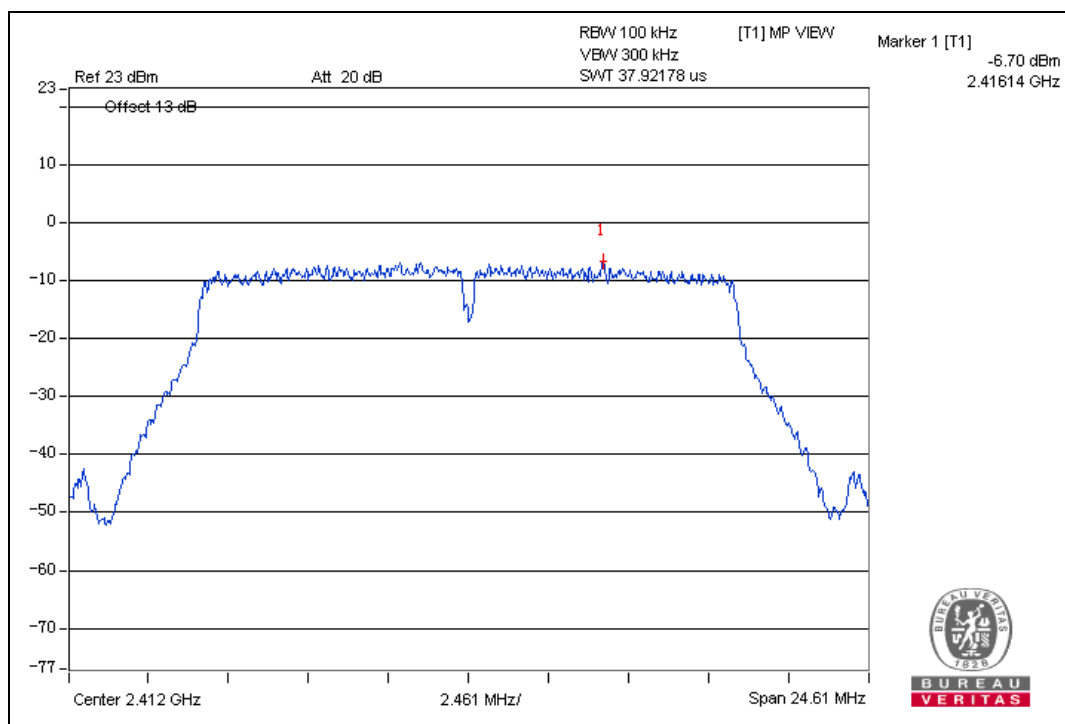
### 802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-2.74	8	PASS
6	2437	-2.66	8	PASS
11	2462	-2.63	8	PASS



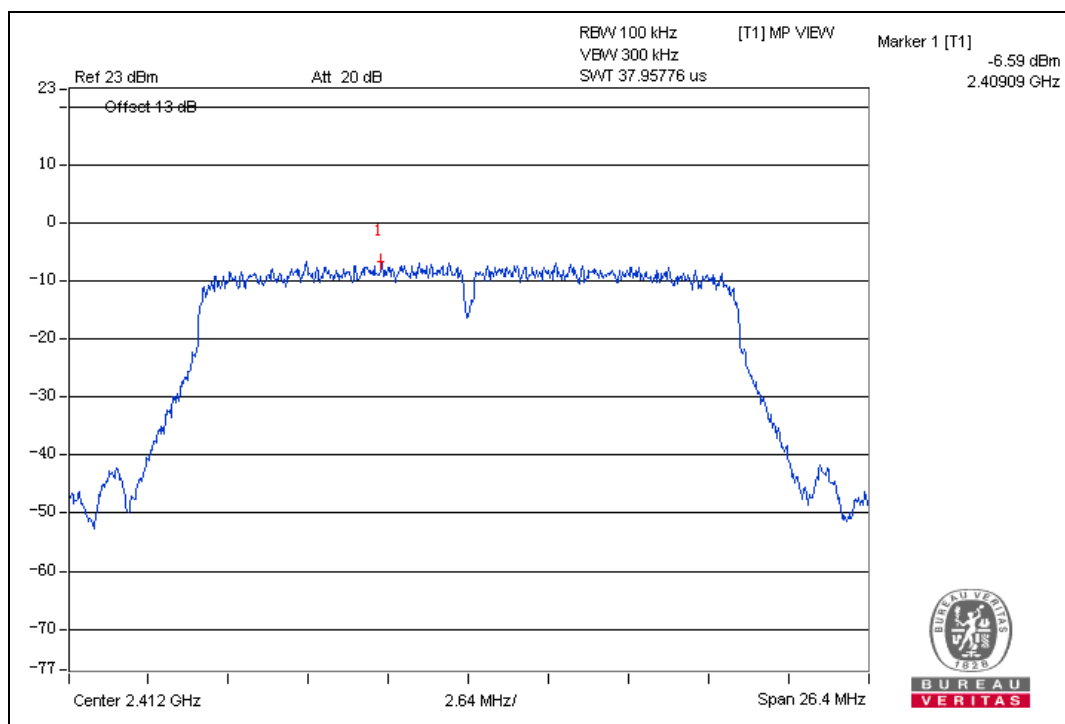
802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-6.70	8	PASS
6	2437	-6.83	8	PASS
11	2462	-7.49	8	PASS



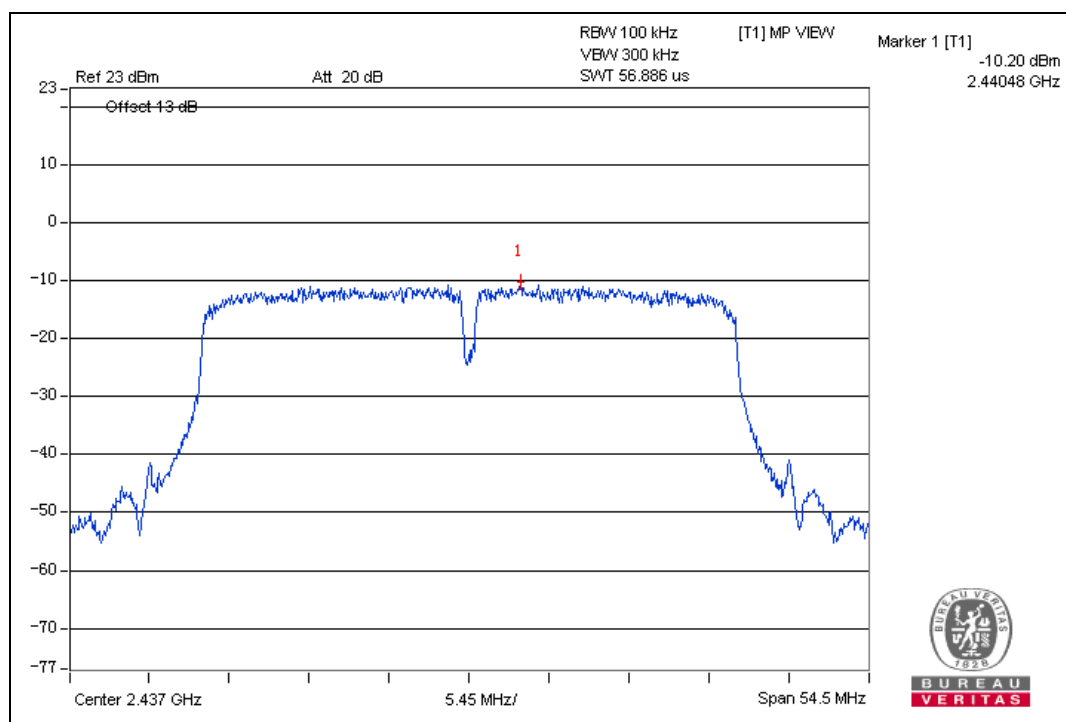
802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-6.59	8	PASS
6	2437	-6.90	8	PASS
11	2462	-6.96	8	PASS



**802.11n (40MHz)**

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-10.65	8	PASS
6	2437	-10.20	8	PASS
9	2452	-10.99	8	PASS





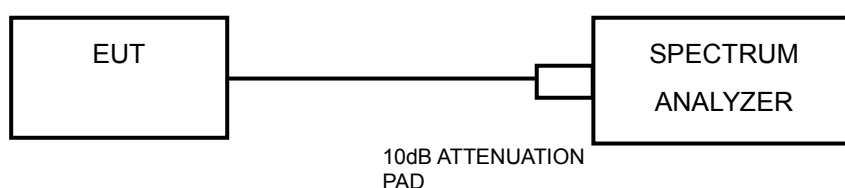


## 4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in  $100\text{kHz}$  Resolution Bandwidth).

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

### 4.6.4 TEST PROCEDURE

#### Measurement Procedure - Reference Level

1. Set the RBW =  $100\text{ kHz}$ .
2. Set the VBW  $\geq 300\text{ kHz}$ .
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  $100\text{ kHz}$  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.

#### **4.6.5 DEVIATION FROM TEST STANDARD**

No deviation.

#### **4.6.6 EUT OPERATING CONDITION**

Same as item 4.3.6



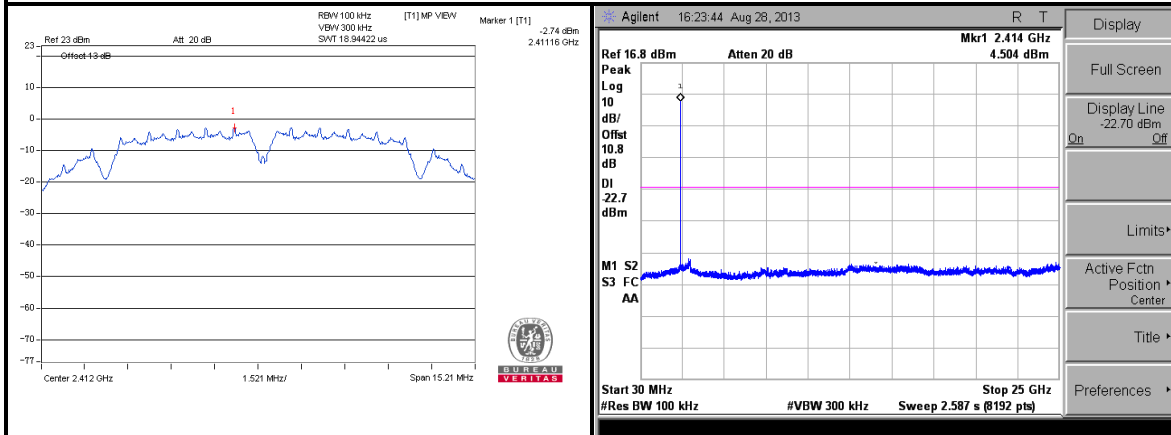
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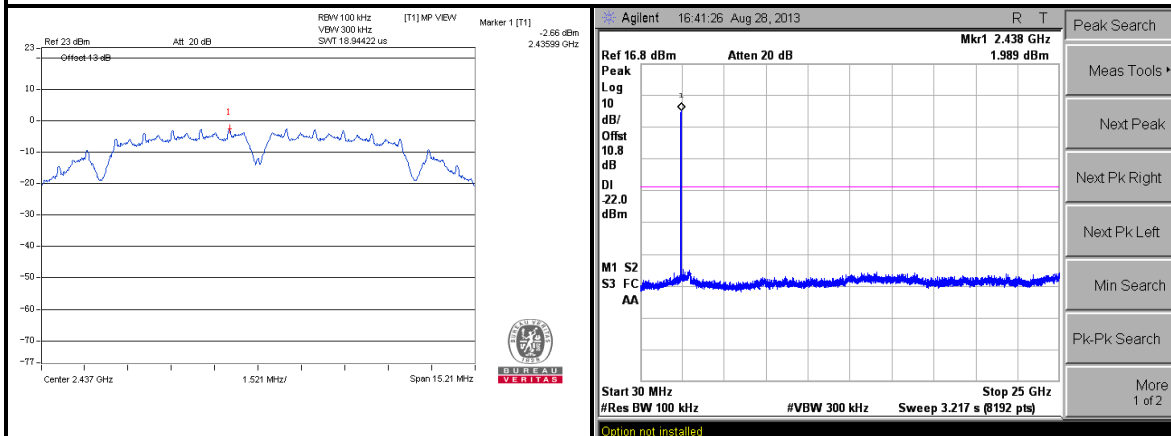
## 4.6.7 TEST RESULTS

802.11b

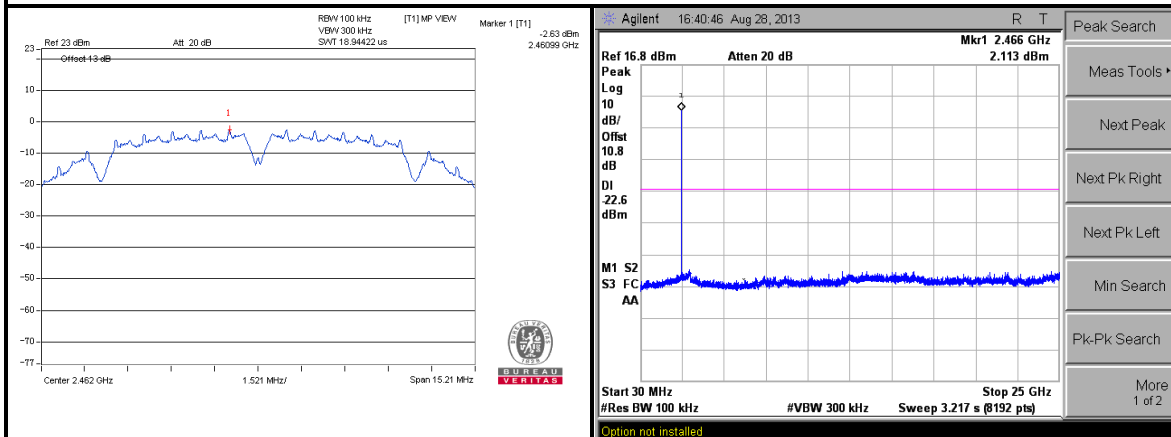
CH 1



CH 6



CH 11



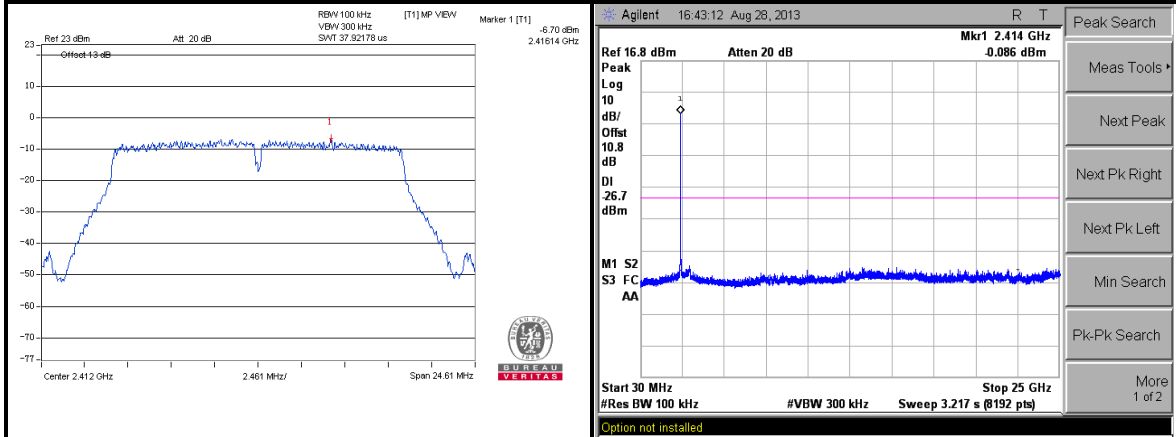


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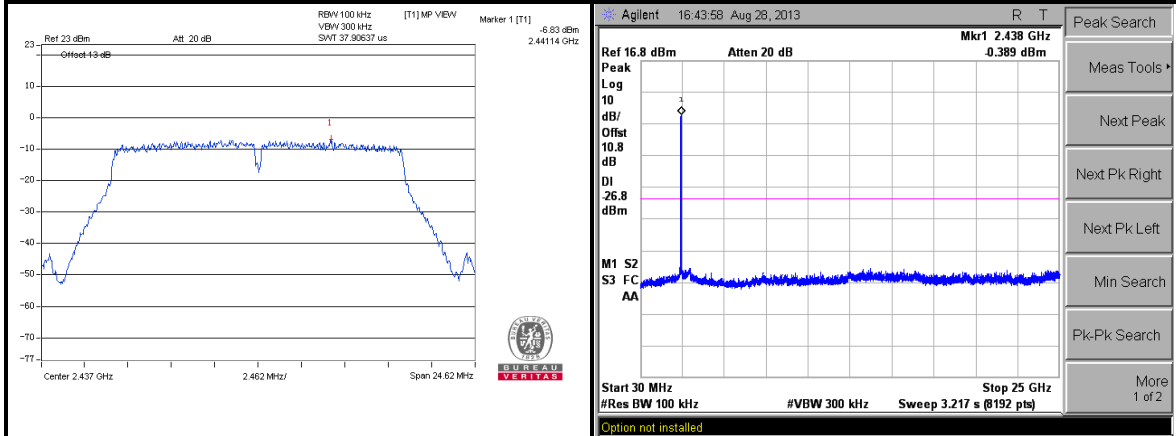
Test Report No.: RF130808N004

802.11g

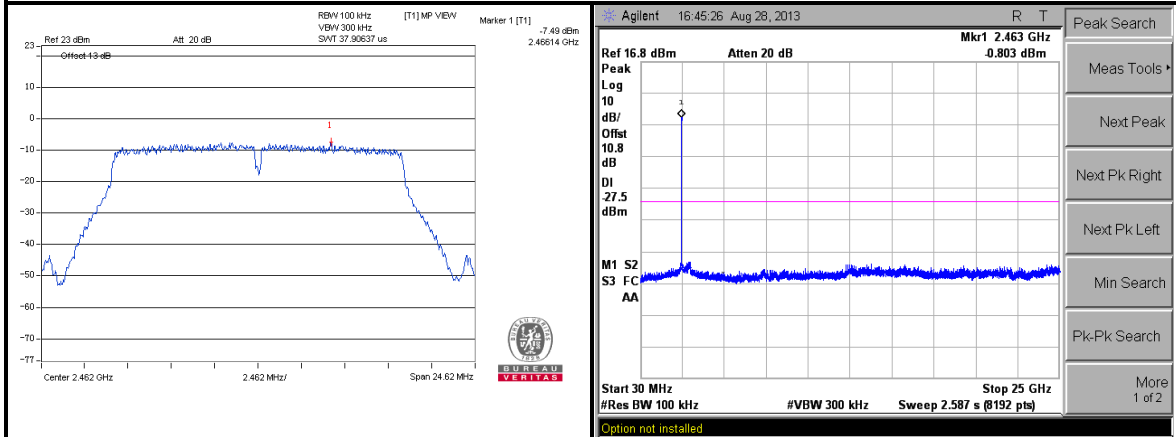
CH 1



CH 6



CH 11

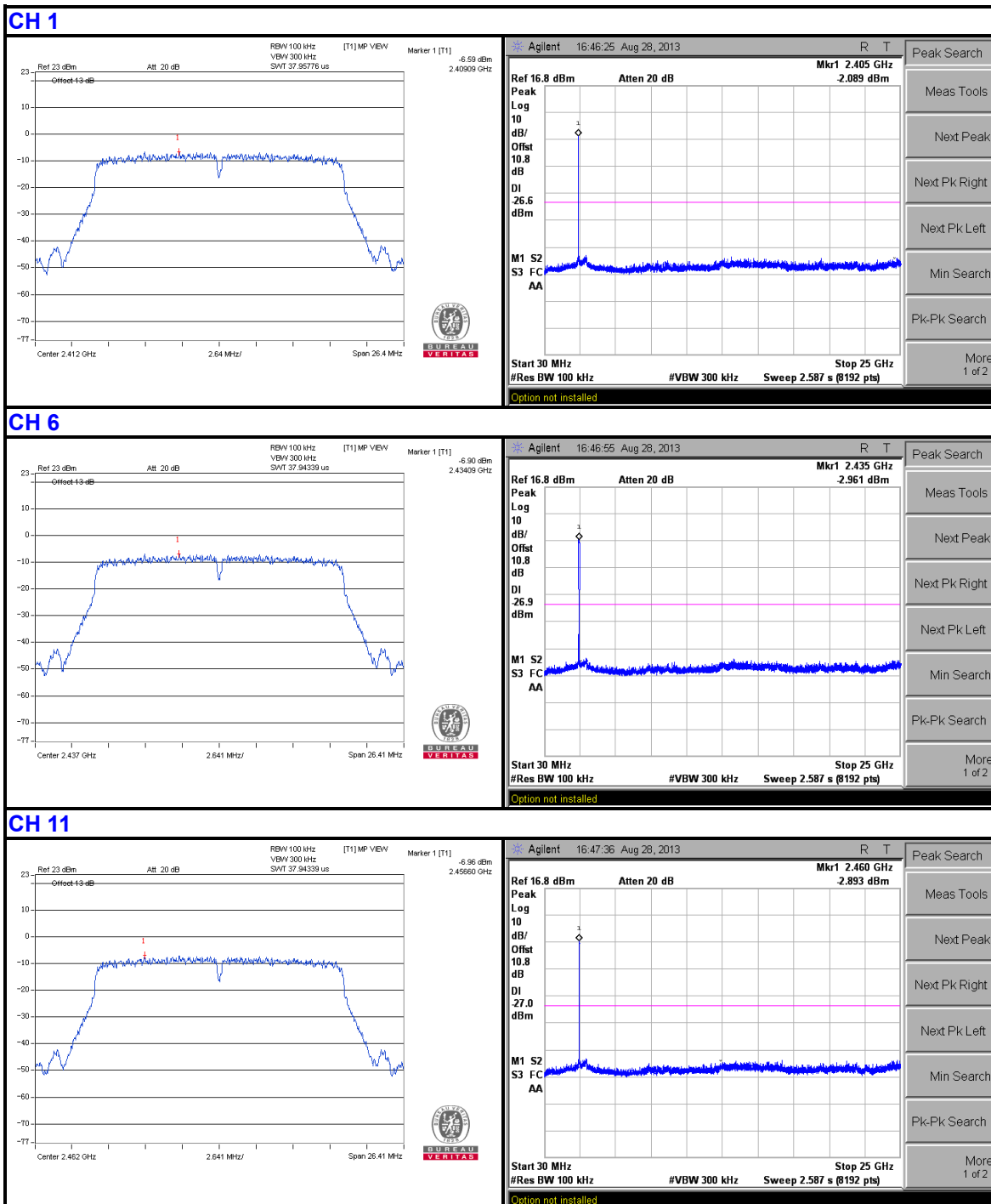




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802.11n (20MHz)



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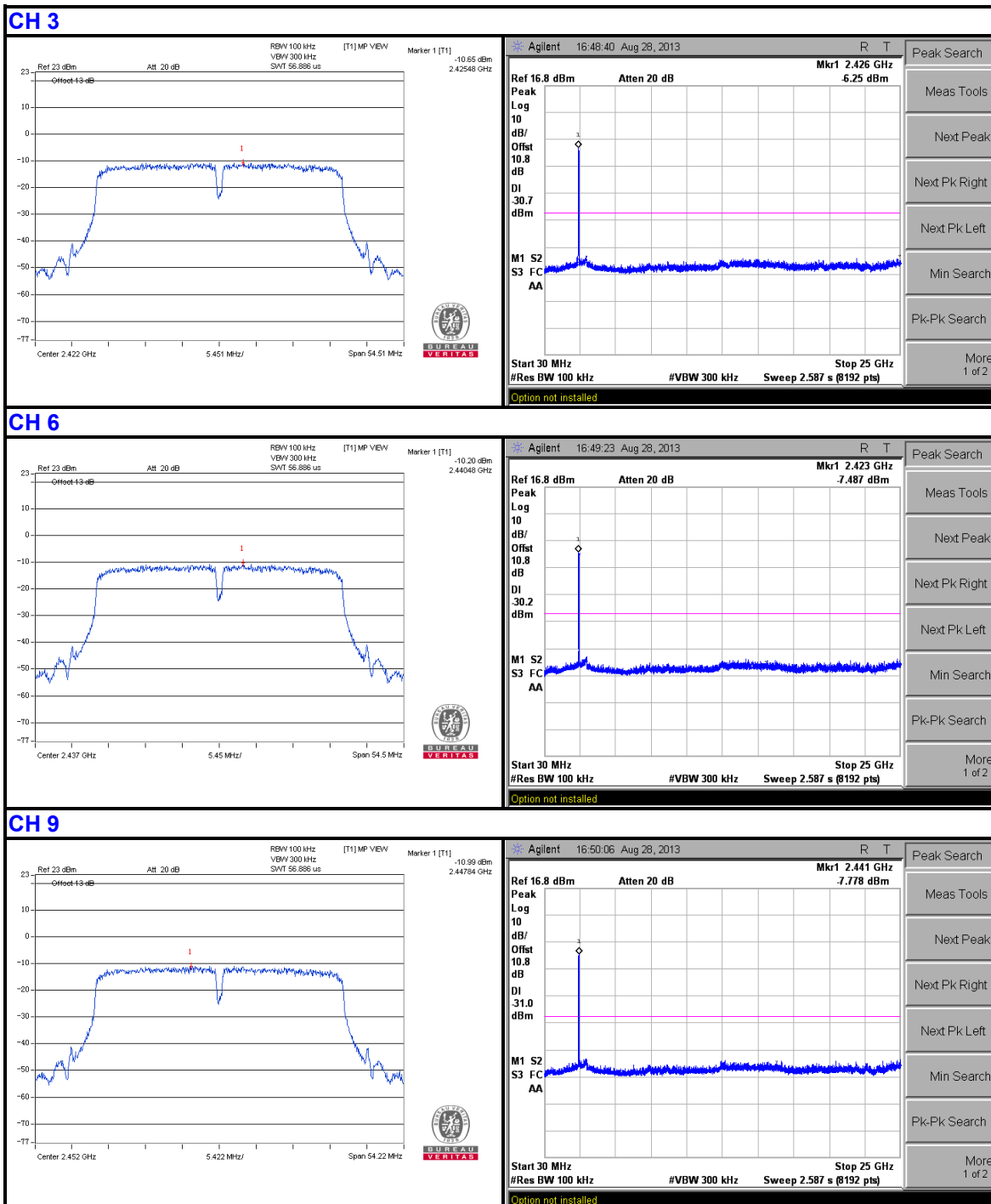
Report Version 1



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Test Report No.: RF130808N004

802.11n (40MHz)



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Report Version 1



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## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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