

TEST REPORT

Applicant	Shanghai Mobvoi Information Technology Company Limited
Address	Building 2-106,1690 Cailun Road,China (Shanghai) free trade area, China Shanghai 201203 China

Manufacturer or Supplier	Shanghai Mobvoi Information Technology Company Limited
Address	Building 2-106,1690 Cailun Road,China (Shanghai) free trade area, China Shanghai 201203 China
Product	Smart Speaker
Brand Name	Mobvoi
Model	TicHome Mini
Additional Model & Model Difference	N/A
Date of tests	Aug. 15, 2017 ~ Sep. 02, 2017

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

☒ **FCC Part 15, Subpart C, Section 15.247**

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

Tested by Harry Li Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
	 Date: Oct. 17, 2017

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TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS.....	5
2 MEASUREMENT UNCERTAINTY	5
3 GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF EUT.....	6
3.2 DESCRIPTION OF TEST MODES.....	7
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST	8
3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	8
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	11
3.4 DESCRIPTION OF SUPPORT UNITS.....	11
4 TEST TYPES AND RESULTS.....	12
4.1 CONDUCTED EMISSION MEASUREMENT	12
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	12
4.1.2 TEST INSTRUMENTS.....	12
4.1.3 TEST PROCEDURES	13
4.1.4 DEVIATION FROM TEST STANDARD	13
4.1.5 TEST SETUP.....	14
4.1.6 EUT OPERATING CONDITIONS	14
4.1.7 TEST RESULTS	15
4.2 RADIATED EMISSION MEASUREMENT	17
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	17
4.2.2 TEST INSTRUMENTS.....	18
4.2.3 TEST PROCEDURES	19
4.2.4 DEVIATION FROM TEST STANDARD	19
4.2.5 TEST SETUP.....	20
4.2.6 EUT OPERATING CONDITIONS	20
4.2.7 TEST RESULTS	21
4.3 6DB BANDWIDTH MEASUREMENT.....	35
4.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	35
4.3.2 TEST INSTRUMENTS.....	35
4.3.3 TEST PROCEDURE.....	35
4.3.4 DEVIATION FROM TEST STANDARD	35
4.3.5 TEST SETUP.....	36
4.3.6 EUT OPERATING CONDITIONS	36
4.3.7 TEST RESULTS	37

4.4	CONDUCTED OUTPUT POWER	39
4.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	39
4.4.2	TEST SETUP	39
4.4.3	TEST INSTRUMENTS	39
4.4.4	TEST PROCEDURES	40
4.4.5	DEVIATION FROM TEST STANDARD	40
4.4.6	EUT OPERATING CONDITIONS	40
4.4.7	TEST RESULTS	41
4.5	POWER SPECTRAL DENSITY MEASUREMENT	43
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	43
4.5.2	TEST SETUP	43
4.5.3	TEST INSTRUMENTS	43
4.5.4	TEST PROCEDURE	43
4.5.5	DEVIATION FROM TEST STANDARD	43
4.5.6	EUT OPERATING CONDITION	44
4.5.7	TEST RESULTS	44
4.6	OUT OF BAND EMISSION MEASUREMENT	46
4.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	46
4.6.2	TEST SETUP	46
4.6.3	TEST INSTRUMENTS	46
4.6.4	TEST PROCEDURE	46
4.6.5	DEVIATION FROM TEST STANDARD	47
4.6.6	EUT OPERATING CONDITION	47
4.6.7	TEST RESULTS	48
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	54
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	55



Test Report No.: RF170815N042-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170815N042-2	Original release	Oct. 17, 2017

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.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
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	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	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	3.83dB
	1GHz ~ 18GHz	4.93dB
	18GHz ~ 40GHz	4.80dB

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

PRODUCT	Smart Speaker
MODEL NO.	TicHome Mini
ADDITIONAL NO.	N/A
FCC ID	2AHEA-TICHOMEMINI
NOMINAL VOLTAGE	DC 3.7V from Li-ion Battery or DC 5V from USB Host Unit
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
OPERATING FREQUENCY RANG	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
AVERAGE POWER	15.25dBm(Maximum)
ANTENNA TYPE	FPC Antenna, with 3.07dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB Line: Unshielded, Detachable, 0.75m

NOTE:

1. The EUT provides completed transmitters and receivers:

MODULATION MODE	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		

9 channels are provided for 802.11n(HT40):

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

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	-	-	-	√	Powered by Full Battery& Powered by USB Host Unit
B	√	√	√	-	Powered by Full Battery& Powered by adaptor

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

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	TESTED CONDITION
B	WIFI (2.4G) Link

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)
B	802.11b	1 to 11	1	OFDM	DBPSK	1.0

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)
B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
B	802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
B	802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	6.5

BANDEDGE 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	DSSS	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, 6, 9	OFDM	BPSK	6.5

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	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	6.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	25deg. C, 53%RH	DC 5V From Adapter	Xue Wang
RE≥1G	25deg. C, 53%RH	DC 5V From Adapter	Xue Wang
PLC	25deg. C, 55%RH	DC 5V from Notebook	Dragon
APCM	20deg. C, 55%RH	DC 3.7V From Battery	Sen He

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

KDB 558074 D01 DTS Meas Guidance v04

ANSI C63.10-2013

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

NOTE: It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B(VoC). The test report has been issued separately.

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	Notebook	DELL	5P2PM2X	12400120329	N/A
2	Notebook	DELL	Vostro145	X16-96100	N/A
3	Mouse	DELL	MS111-L	CN-09RRC7-48729-39 E-0C7Y	N/A
4	Printer	Lenovo	LJ2200L	LP02857415 48001408	N/A
5	Adapter	Apple	A1229	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.8m; DC Line: Unshielded, Detachable 1.8m;
2	
3	USB Line: Unshielded, Detachable 1.5m;
4	AC Line: Unshielded, Detachable 1.8m; USB Line: Unshielded, Detachable 1.8m;
5	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 μ 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	ESR7	101494	Apr. 05,17	Apr. 04,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 06,17	Mar. 05,18
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 05,17	Apr. 04,18
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jan. 04,17	Jan. 03,18
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

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

4.1.3 TEST PROCEDURES

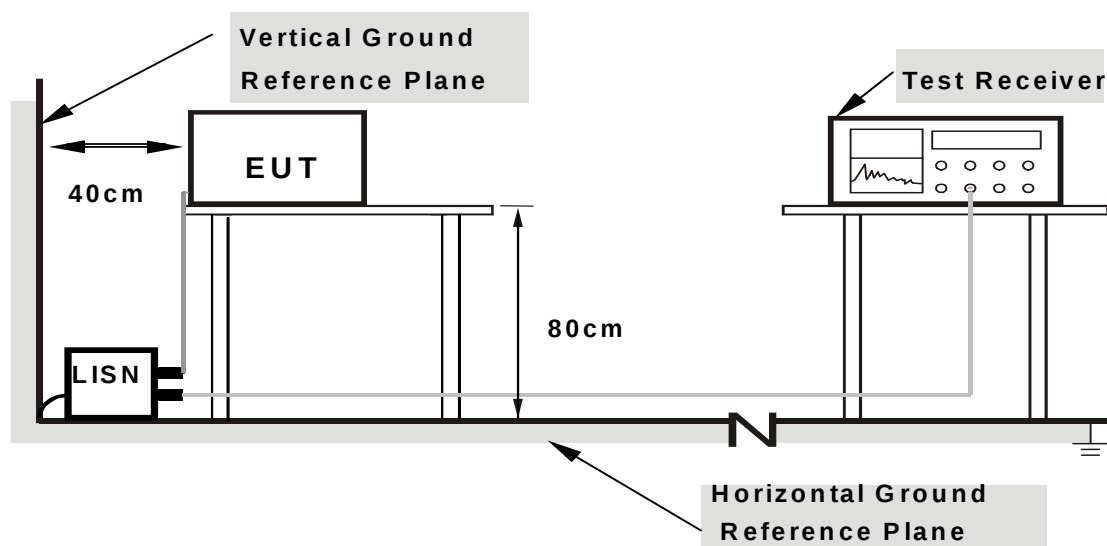
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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) were 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 cm 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

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

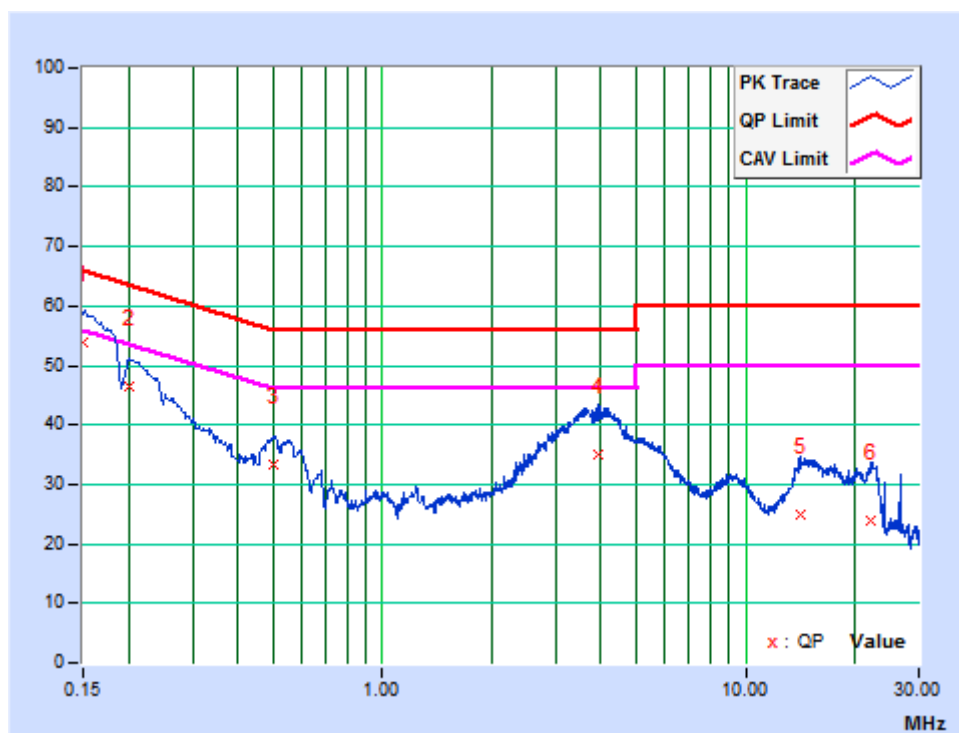
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: WIFI

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	0.15000	10.22	43.68	26.33	53.90	36.55	66.00	56.00	-12.10	-19.45
2	0.20036	10.22	36.21	18.16	46.43	28.38	63.60	53.60	-17.17	-25.22
3	0.50000	10.22	22.95	13.93	33.17	24.15	56.00	46.00	-22.83	-21.85
4	3.94350	10.22	24.67	18.14	34.89	28.36	56.00	46.00	-21.11	-17.64
5	14.12925	10.25	14.65	5.36	24.90	15.61	60.00	50.00	-35.10	-34.39
6	21.99300	10.27	13.68	6.75	23.95	17.02	60.00	50.00	-36.05	-32.98

- 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	0.15000	10.01	44.24	26.70	54.25	36.71	66.00	56.00	-11.75	-19.29
2	0.19983	10.01	36.03	18.76	46.04	28.77	63.62	53.62	-17.58	-24.85
3	0.49559	10.02	22.80	13.13	32.82	23.15	56.07	46.07	-23.25	-22.92
4	3.61050	10.02	24.94	17.68	34.96	27.70	56.00	46.00	-21.04	-18.30
5	4.04250	10.02	24.90	18.00	34.92	28.02	56.00	46.00	-21.08	-17.98
6	22.48350	10.15	21.73	16.49	31.88	26.64	60.00	50.00	-28.12	-23.36

- 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.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 12,17	Mar. 11,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Bilog Antenna (30MHz~1GHz)	Teseq	CBL 6111D	30643	Jul. 14, 17	Jul. 13, 18
Loop antenna (9KHz ~30MHz)	Daze	ZN30900A	0708	Mar. 12,17	Mar. 11,18
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,17	May 17,18
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 17	Aug. 07, 18
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 12,17	Mar. 11,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna (18GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 15,17	Mar. 14,18
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,17	Mar. 03, 18
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Mar. 09,17	Mar. 08,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug. 08,17	Aug. 07,18

NOTE:

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.

4.2.3 TEST PROCEDURES

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

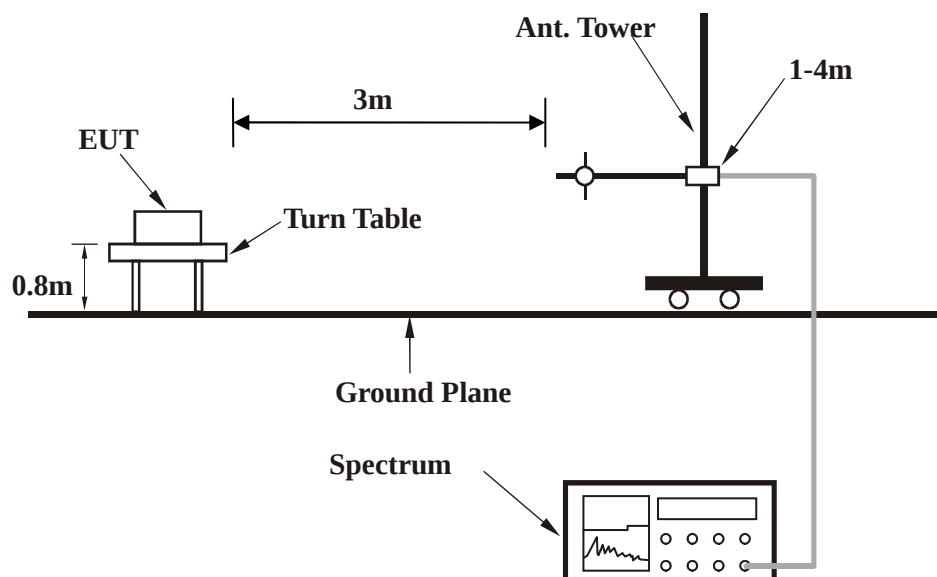
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $> 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes, the worst-case test configuration was reported on the file test setup photo.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

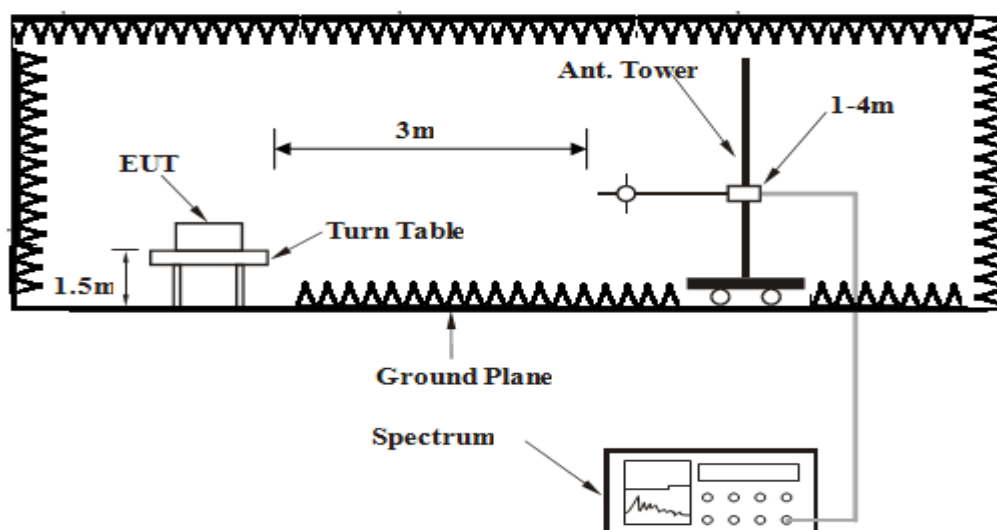
4.2.5 TEST SETUP

Below 1GHz test setup



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

Above 1GHz test setup



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

4.2.6 EUT OPERATING CONDITIONS

- Placed the EUT 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:

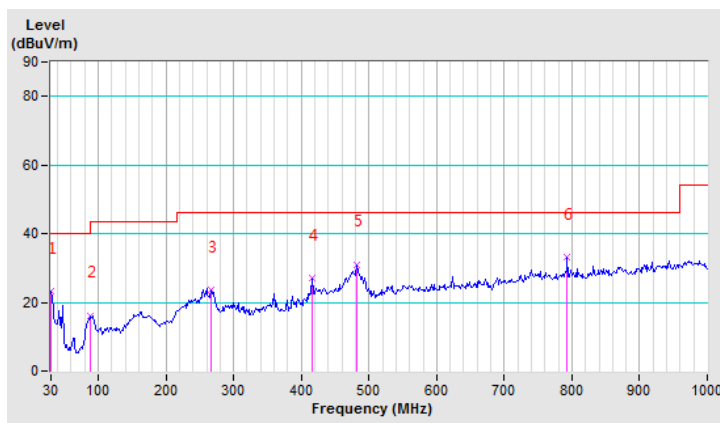
802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 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	30.00	23.21 QP	40.00	-16.79	1.00 H	127	34.48	-11.27
2	89.07	16.21 QP	43.50	-27.29	1.00 H	144	35.80	-19.59
3	266.28	23.51 QP	46.00	-22.49	1.00 H	306	36.75	-13.24
4	415.51	26.94 QP	46.00	-19.06	1.00 H	225	35.64	-8.70
5	482.36	31.05 QP	46.00	-14.95	1.00 H	137	37.69	-6.64
6	793.25	33.01 QP	46.00	-12.99	1.00 H	50	33.02	-0.01

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 emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.

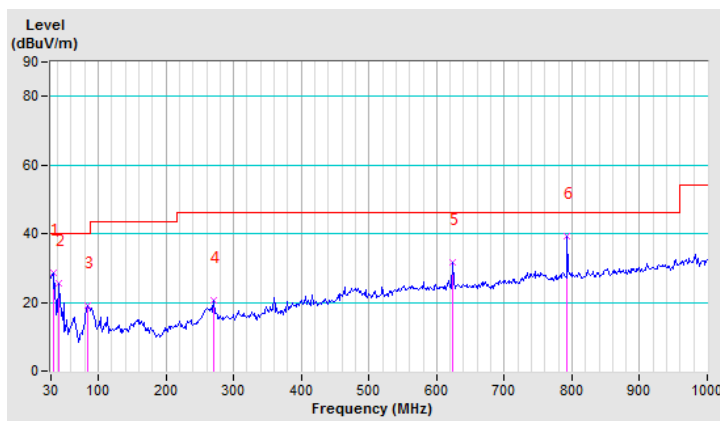


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	33.11	28.60 QP	40.00	-11.40	1.00 V	137	41.50	-12.90
2	42.44	25.45 QP	40.00	-14.55	1.00 V	283	43.32	-17.87
3	84.41	19.21 QP	40.00	-20.79	2.00 V	204	40.26	-21.05
4	270.95	20.50 QP	46.00	-25.50	2.00 V	76	34.17	-13.67
5	623.81	31.55 QP	46.00	-14.45	2.00 V	112	34.55	-3.00
6	793.25	39.42 QP	46.00	-6.58	2.00 V	292	39.43	-0.01

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 emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



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	55.65 PK	74.00	-18.35	1.00 H	360	52.59	3.06
2	2390.00	42.37 AV	54.00	-11.63	1.00 H	360	39.31	3.06
3	*2412.00	106.37 PK			1.00 H	360	103.25	3.12
4	*2412.00	88.36 AV			1.00 H	360	85.24	3.12
5	4824.00	61.25 PK	74.00	-12.75	1.00 H	205	55.29	5.96
6	4824.00	49.54 AV	54.00	-4.46	1.00 H	205	43.58	5.96
7	#7236.00	60.30 PK	74.00	-13.70	1.55 H	50	47.99	12.31
8	#7236.00	46.25 AV	54.00	-7.75	1.55 H	50	33.94	12.31
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	44.59 PK	74.00	-29.41	1.00 V	205	41.53	3.06
2	2390.00	33.69 AV	54.00	-20.31	1.00 V	205	30.63	3.06
3	*2412.00	88.69 PK			1.20 V	205	95.57	3.12
4	*2412.00	74.95 AV			1.20 V	205	71.83	3.12
5	4824.00	53.36 PK	74.00	-20.64	1.55 V	95	47.40	5.96
6	4824.00	43.98 AV	54.00	-10.02	1.55 V	95	38.02	5.96
7	#7236.00	59.59 PK	74.00	-14.41	1.44 V	84	47.28	12.31
8	#7236.00	46.69 AV	54.00	-7.31	1.44 V	84	34.38	12.31

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 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	104.37 PK			1.55 H	30	101.16	3.21
2	*2437.00	85.76 AV			1.55 H	30	82.55	3.21
3	4874.00	63.04 PK	74.00	-10.96	1.55 H	48	56.99	6.05
4	4874.00	50.95 AV	54.00	-3.05	1.55 H	48	44.90	6.05
5	7311.00	60.25 PK	74.00	-13.75	1.00 H	204	47.61	12.64
6	7311.00	46.25 AV	54.00	-7.75	1.00 H	204	33.61	12.64
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	95.86 PK			1.55 V	50	92.65	3.21
2	*2437.00	82.76 AV			1.55 V	50	79.55	3.21
3	4874.00	56.26 PK	74.00	-17.74	1.00 V	205	50.21	6.05
4	4874.00	45.15 AV	54.00	-8.85	1.00 V	205	39.10	6.05
5	7311.00	59.65 PK	74.00	-14.35	1.00 V	360	47.01	12.64
6	7311.00	46.63 AV	54.00	-7.37	1.00 V	360	33.99	12.64

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 emission levels of other frequencies were less than 20dB margin 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	105.69 PK			1.00 H	211	102.40	3.29
2	*2462.00	87.29 AV			1.00 H	211	84.00	3.29
3	2483.50	58.26 PK	74.00	-15.74	1.65 H	211	54.90	3.36
4	2483.50	43.59 AV	54.00	-10.41	1.65 H	211	40.23	3.36
5	4924.00	63.26 PK	74.00	-10.74	1.00 H	20	57.13	6.13
6	4924.00	49.45 AV	54.00	-4.55	1.00 H	20	43.32	6.13
7	7386.00	60.12 PK	74.00	-13.88	1.22 H	305	47.16	12.96
8	7386.00	46.69 AV	54.00	-7.31	1.22 H	305	33.73	12.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	96.22 PK			1.32 V	28	92.93	3.29
2	*2462.00	81.86 AV			1.32 V	28	78.57	3.29
3	2483.50	45.25 PK	74.00	-28.75	1.32 V	28	41.89	3.36
4	2483.50	33.15 AV	54.00	-20.85	1.32 V	28	29.79	3.36
5	4924.00	53.21 PK	74.00	-20.79	1.00 V	360	47.08	6.13
6	4924.00	40.15 AV	54.00	-13.85	1.00 V	360	34.02	6.13
7	7386.00	58.59 PK	74.00	-15.41	1.45 V	102	45.63	12.96
8	7386.00	45.36 AV	54.00	-8.64	1.45 V	102	32.40	12.96

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin 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	55.59 PK	74.00	-18.41	2.05 H	162	52.53	3.06
2	2390.00	43.48 AV	54.00	-10.52	2.05 H	162	40.42	3.06
3	*2412.00	106.41 PK			1.25 H	62	103.29	3.12
4	*2412.00	96.78 AV			1.25 H	62	93.66	3.12
5	4824.00	52.29 PK	74.00	-21.71	1.00 H	214	46.33	5.96
6	4824.00	39.46 AV	54.00	-14.54	1.00 H	214	33.50	5.96
7	#7236.00	58.49 PK	74.00	-15.51	1.22 H	15	46.18	12.31
8	#7236.00	46.36 AV	54.00	-7.64	1.22 H	15	34.05	12.31
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	43.87 PK	74.00	-30.13	1.00 V	244	40.81	3.06
2	2390.00	33.69 AV	54.00	-20.31	1.00 V	244	30.63	3.06
3	*2412.00	91.09 PK			1.00 V	244	87.97	3.12
4	*2412.00	89.69 AV			1.00 V	244	76.57	3.12
5	4824.00	52.59 PK	74.00	-21.41	1.55 V	48	46.63	5.96
6	4824.00	39.84 AV	54.00	-14.16	1.55 V	48	33.88	5.96
7	#7236.00	59.48 PK	74.00	-14.52	2.01 V	47	47.17	12.31
8	#7236.00	46.28 AV	54.00	-7.72	2.01 V	47	33.97	12.31

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 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	106.29 PK			1.00 H	23	103.08	3.21
2	*2437.00	95.12 AV			1.00 H	23	91.91	3.21
3	4874.00	52.11 PK	74.00	-21.89	1.22 H	302	46.06	6.05
4	4874.00	39.03 AV	54.00	-14.97	1.22 H	302	32.98	6.05
5	7311.00	57.16 PK	74.00	-16.84	3.02 H	165	44.52	12.64
6	7311.00	44.36 AV	54.00	-9.64	3.02 H	165	31.72	12.64
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	90.25 PK			1.55 V	42	87.04	3.21
2	*2437.00	78.70 AV			1.55 V	42	75.49	3.21
3	4874.00	51.02 PK	74.00	-22.98	1.20 V	301	44.97	6.05
4	4874.00	37.00 AV	54.00	-17.00	1.20 V	301	30.95	6.05
5	7311.00	58.59 PK	74.00	-15.41	1.00 V	204	45.95	12.64
6	7311.00	45.36 AV	54.00	-8.64	1.00 V	204	32.72	12.64

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 emission levels of other frequencies were less than 20dB margin 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	106.27 PK			1.00 H	205	102.98	3.29
2	*2462.00	95.98 AV			1.00 H	205	92.69	3.29
3	2483.50	64.26 PK	74.00	-9.74	1.00 H	241	60.90	3.36
4	2483.50	47.69 AV	54.00	-6.31	1.00 H	241	44.33	3.36
5	4924.00	52.15 PK	74.00	-21.85	2.05 H	48	46.02	6.13
6	4924.00	39.15 AV	54.00	-14.85	2.05 H	48	33.02	6.13
7	7386.00	58.16 PK	74.00	-15.84	3.02 H	190	45.20	12.96
8	7386.00	45.26 AV	54.00	-8.74	3.02 H	190	32.30	12.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	91.25 PK			1.00 V	15	87.96	3.29
2	*2462.00	79.46 AV			1.00 V	15	76.17	3.29
3	2483.50	52.36 PK	74.00	-21.64	1.00 V	204	49.00	3.36
4	2483.50	42.69 AV	54.00	-11.31	1.00 V	204	39.33	3.36
5	4924.00	51.99 PK	74.00	-22.01	3.02 V	166	45.86	6.13
6	4924.00	38.69 AV	54.00	-15.31	3.02 V	166	32.56	6.13
7	7386.00	59.15 PK	74.00	-14.85	1.00 V	214	46.19	12.96
8	7386.00	45.69 AV	54.00	-8.31	1.00 V	214	32.73	12.96

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

802.11n HT20

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	63.26 PK	74.00	-10.74	1.20 H	284	60.20	3.06
2	2390.00	48.15 AV	54.00	-5.85	1.20 H	284	45.09	3.06
3	*2412.00	106.23 PK			1.20 H	284	103.11	3.12
4	*2412.00	96.69 AV			1.20 H	284	93.57	3.12
5	4824.00	52.25 PK	74.00	-21.75	1.00 H	204	46.29	5.96
6	4824.00	40.18 AV	54.00	-13.82	1.00 H	204	34.22	5.96
7	#7236.00	57.19 PK	74.00	-16.81	2.05 H	311	44.88	12.31
8	#7236.00	44.36 AV	54.00	-9.64	2.05 H	311	32.05	12.31
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	54.86 PK	74.00	-19.14	1.00 V	237	51.80	3.06
2	2390.00	43.50 AV	54.00	-10.50	1.00 V	237	40.44	3.06
3	*2412.00	101.22 PK			1.00 V	237	98.10	3.12
4	*2412.00	90.50 AV			1.00 V	237	87.38	3.12
5	4824.00	50.49 PK	74.00	-23.51	1.00 V	214	44.53	5.96
6	4824.00	37.15 AV	54.00	-16.85	1.00 V	214	31.19	5.96
7	#7236.00	58.16 PK	74.00	-15.84	3.02 V	18	45.85	12.31
8	#7236.00	45.23 AV	54.00	-8.77	3.02 V	18	32.92	12.31

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 emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 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	106.02 PK			2.01 H	200	102.81	3.21
2	*2437.00	95.19 AV			2.01 H	200	91.98	3.21
3	4874.00	51.99 PK	74.00	-22.01	3.02 H	166	45.94	6.05
4	4874.00	40.36 AV	54.00	-13.64	3.02 H	166	34.31	6.05
5	7311.00	56.32 PK	74.00	-17.68	1.55 H	49	43.68	12.64
6	7311.00	43.29 AV	54.00	-10.71	1.55 H	49	30.65	12.64
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	101.05 PK			3.02 V	166	97.84	3.21
2	*2437.00	90.15 AV			3.02 V	166	86.94	3.21
3	4874.00	49.69 PK	74.00	-24.31	1.33 V	60	43.64	6.05
4	4874.00	36.36 AV	54.00	-17.64	1.33 V	60	30.31	6.05
5	7311.00	57.48 PK	74.00	-16.52	1.02 V	16	44.84	12.64
6	7311.00	44.36 AV	54.00	-9.64	1.02 V	16	31.72	12.64

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 emission levels of other frequencies were less than 20dB margin 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	105.26 PK			1.77 H	50	101.97	3.29
2	*2462.00	94.89 AV			1.77 H	50	91.60	3.29
3	2483.50	65.25 PK	74.00	-8.75	1.77 H	50	61.89	3.36
4	2483.50	50.56 AV	54.00	-3.44	1.77 H	50	47.20	3.36
5	4924.00	50.50 PK	74.00	-23.50	1.00 H	205	44.37	6.13
6	4924.00	39.62 AV	54.00	-14.38	1.00 H	205	33.49	6.13
7	7386.00	55.16 PK	74.00	-18.84	1.00 H	46	42.20	12.96
8	7386.00	42.36 AV	54.00	-11.64	1.00 H	46	29.40	12.96
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.26 PK			3.02 V	166	97.97	3.29
2	*2462.00	90.06 AV			3.02 V	166	86.77	3.29
3	2483.50	53.26 PK	74.00	-20.74	3.02 V	166	49.90	3.36
4	2483.50	42.59 AV	54.00	-11.41	3.02 V	166	39.23	3.36
5	4924.00	49.59 PK	74.00	-24.41	1.20 V	201	43.46	6.13
6	4924.00	36.58 AV	54.00	-17.42	1.20 V	201	30.45	6.13
7	7386.00	57.02 PK	74.00	-16.98	3.02 V	188	44.06	12.96
8	7386.00	44.36 AV	54.00	-9.64	3.02 V	188	31.40	12.96

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

802.11n (HT40)

CHANNEL	TX Channel 3	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	65.62 PK	74.00	-8.30	2.37 H	285	62.56	3.06
2	2390.00	47.14 AV	54.00	-6.78	2.37 H	285	44.08	3.06
3	*2422.00	102.32 PK			2.37 H	285	99.13	3.19
4	*2422.00	89.00 AV			2.37 H	285	85.81	3.19
5	4844.00	39.64 PK	74.00	-34.36	1.87 H	284	33.17	6.47
6	4844.00	28.65 AV	54.00	-25.35	1.87 H	284	22.18	6.47
7	7266.00	45.30 PK	74.00	-28.70	1.84 H	243	33.15	12.15
8	7266.00	34.51 AV	54.00	-19.49	1.84 H	243	22.36	12.15
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	59.18 PK	74.00	-14.74	2.51 V	301	56.12	3.06
2	2390.00	38.19 AV	54.00	-15.73	2.51 V	301	35.13	3.06
3	*2422.00	98.48 PK			2.51 V	301	95.29	3.19
4	*2422.00	84.90 AV			2.51 V	301	81.71	3.19
5	4844.00	42.56 PK	74.00	-31.44	1.49 V	230	36.09	6.47
6	4844.00	32.06 AV	54.00	-21.94	1.49 V	230	25.59	6.47
7	7266.00	45.05 PK	74.00	-28.95	1.94 V	328	32.90	12.15
8	7266.00	34.46 AV	54.00	-19.54	1.94 V	328	22.31	12.15

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	98.71 PK			2.03 H	87	95.50	3.21
2	*2437.00	85.63 AV			2.03 H	87	82.42	3.21
3	4874.00	51.83 PK	74.00	-22.17	2.65 H	275	45.35	6.48
4	4874.00	34.83 AV	54.00	-19.17	2.65 H	275	28.35	6.48
5	7311.00	42.03 PK	74.00	-31.97	2.73 H	184	29.82	12.21
6	7311.00	34.57 AV	54.00	-19.43	2.73 H	184	22.36	12.21
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	94.14 PK			1.49 V	235	90.93	3.21
2	*2437.00	81.34 AV			1.49 V	235	78.13	3.21
3	4874.00	38.37 PK	74.00	-35.63	2.21 V	257	31.89	6.48
4	4874.00	31.12 AV	54.00	-22.88	2.21 V	257	24.64	6.48
5	7311.00	45.62 PK	74.00	-28.38	1.98 V	324	33.41	12.21
6	7311.00	36.42 AV	54.00	-17.58	1.98 V	324	24.21	12.21

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 9	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	*2452.00	99.72 PK			2.07 H	116	96.49	3.23
2	*2452.00	86.29 AV			2.07 H	116	83.06	3.23
3	2483.50	60.93 PK	74.00	-13.07	2.07 H	116	57.64	3.29
4	2483.50	49.36 AV	54.00	-4.64	2.07 H	116	46.07	3.29
5	4904.00	38.77 PK	74.00	-35.23	3.16 H	223	32.28	6.49
6	4904.00	30.85 AV	54.00	-23.15	3.16 H	223	24.36	6.49
7	7356.00	45.06 PK	74.00	-28.94	1.00 H	65	32.80	12.26
8	7356.00	35.58 AV	54.00	-18.42	1.00 H	65	23.32	12.26
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	98.48 PK			2.35 V	198	95.25	3.23
2	*2452.00	86.36 AV			2.35 V	198	83.13	3.23
3	2483.50	61.20 PK	74.00	-12.80	2.35 V	198	57.91	3.29
4	2483.50	49.25 AV	54.00	-4.75	2.35 V	198	45.96	3.29
5	4904.00	42.60 PK	74.00	-31.40	2.16 V	230	36.11	6.49
6	4904.00	32.14 AV	54.00	-21.86	2.16 V	230	25.65	6.49
7	7356.00	43.70 PK	74.00	-30.30	1.48 V	213	31.44	12.26
8	7356.00	34.45 AV	54.00	-19.55	1.48 V	213	22.19	12.26

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.
Power Sensor	Keysight	U2021XA	MY55060016	May 19,17	May 18,18
Power Sensor	Keysight	U2021XA	MY55060018	May 19,17	May 18,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 17	Aug.07, 18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 10,17	Apr. 09,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 17	Aug.07, 18
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

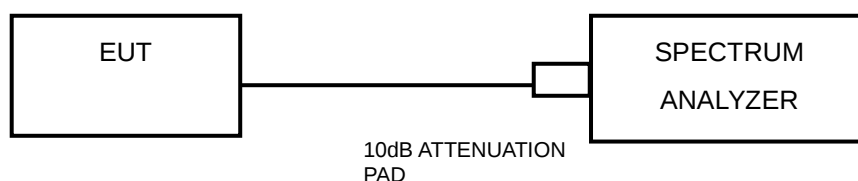
4.3.3 TEST PROCEDURE

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	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.03	0.5	PASS
6	2437	8.57	0.5	PASS
11	2462	9.07	0.5	PASS

802.11g

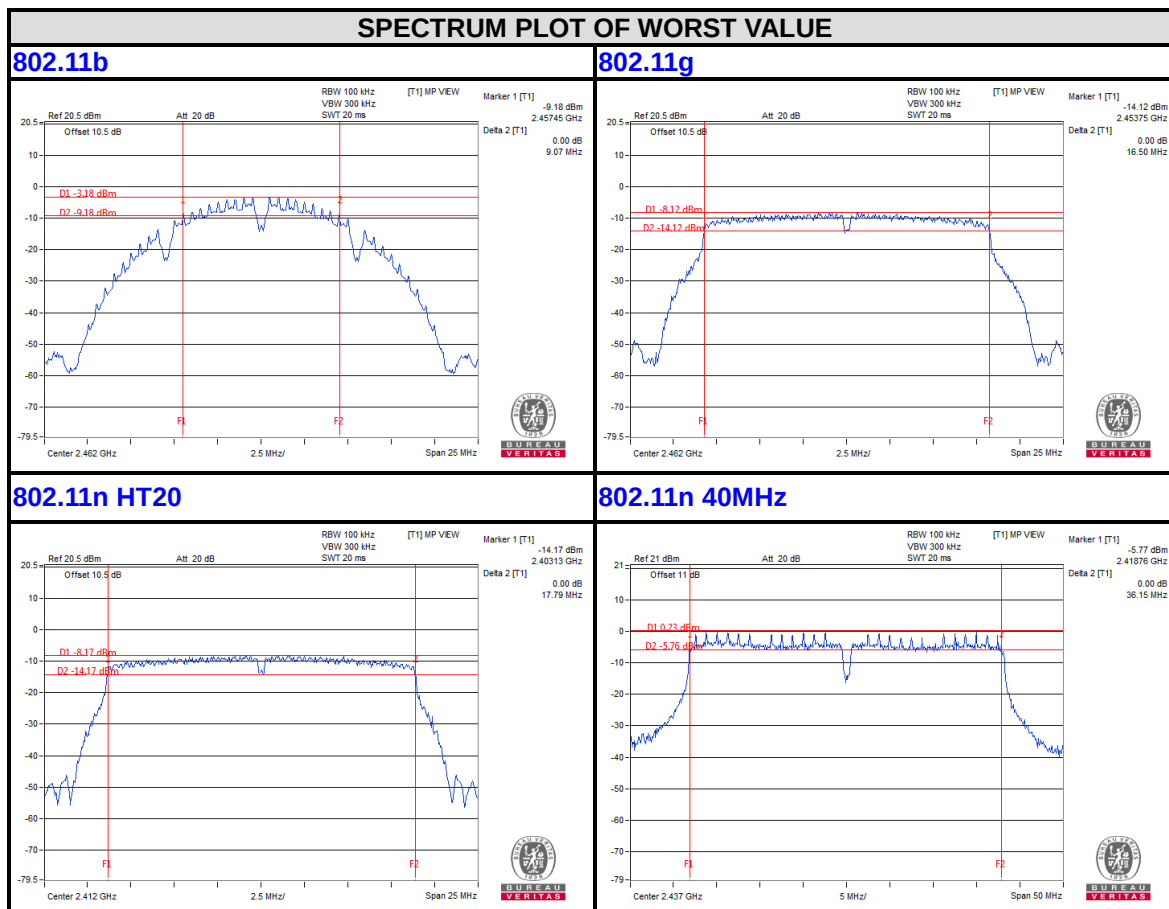
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	18.49	0.5	PASS
6	2437	18.45	0.5	PASS
11	2462	18.50	0.5	PASS

802.11n HT20

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.79	0.5	PASS
6	2437	17.70	0.5	PASS
11	2462	17.71	0.5	PASS

802.11n HT40

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	35.91	35.81	0.5	PASS
6	2437	36.15	35.79	0.5	PASS
9	2452	35.81	35.62	0.5	PASS

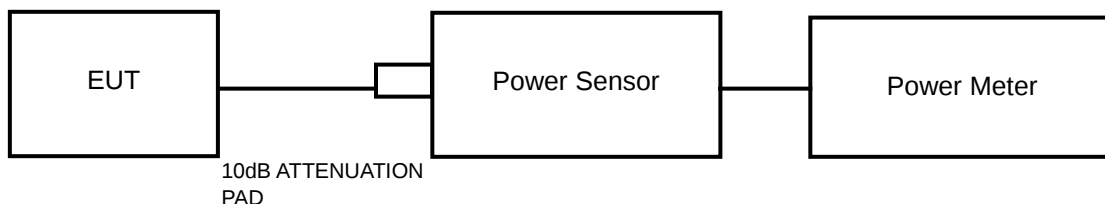


4.4 CONDUCTED OUTPUT POWER

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 Sensor	Keysight	U2021XA	MY55060016	May 19,17	May 18,18
Power Sensor	Keysight	U2021XA	MY55060018	May 19,17	May 18,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 17	Aug.07, 18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 10,17	Apr. 09,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 17	Aug.07, 18
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

4.4.4 TEST PROCEDURES

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

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

4.4.7 TEST RESULTS

AVERAGE OUTPUT POWER

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)	AVG. POWER (mW)	PEAK POWER LIMIT (W)	PASS / FAIL
1	2412	15.25	33.497	1	PASS
6	2437	15.08	32.211	1	PASS
11	2462	14.73	29.717	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)	PEAK POWER LIMIT (W)	PASS / FAIL
1	2412	14.12	25.823	1	PASS
6	2437	14.51	28.249	1	PASS
11	2462	14.16	26.062	1	PASS

802.11n HT20

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)	POWER LIMIT (W)	PASS / FAIL
1	2412	14.23	26.485	1	PASS
6	2437	14.27	26.730	1	PASS
11	2462	14.46	27.925	1	PASS

802.11n HT40

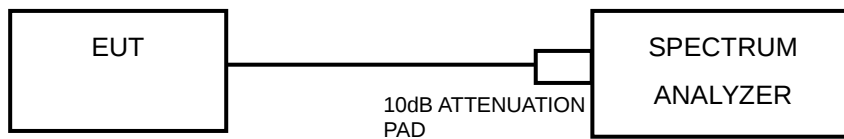
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)	POWER LIMIT (W)	PASS / FAIL
3	2422	14.54	28.44	1	PASS
6	2437	14.42	27.67	1	PASS
9	2452	14.42	27.67	1	PASS

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

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to at least 1.5 times the OBW.
- c) Set RBW to: 3KHz
- d) Set VBW $\geq 3 \times$ RBW.
- e) Detector = peak
- f) Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- g) Sweep time = auto couple.
- h) 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/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-6.89	8.00	PASS
6	2437	-7.48	8.00	PASS
11	2462	-7.66	8.00	PASS

802.11g

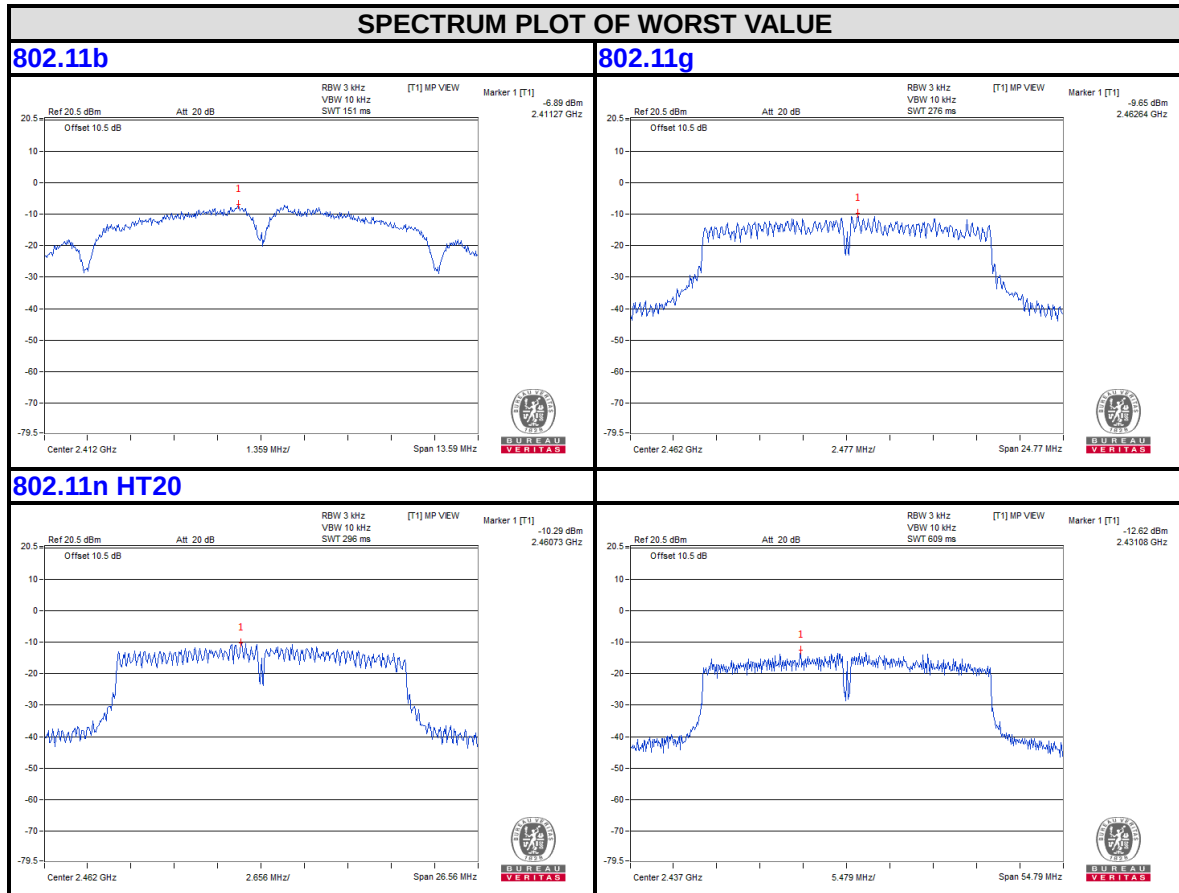
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-9.90	8.00	PASS
6	2437	-9.83	8.00	PASS
11	2462	-9.65	8.00	PASS

802.11n HT20

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-18.62	8.00	PASS
6	2437	-18.95	8.00	PASS
11	2462	-19.84	8.00	PASS

802.11n HT40

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-13.20	8.00	PASS
6	2437	-12.62	8.00	PASS
9	2452	-13.69	8.00	PASS

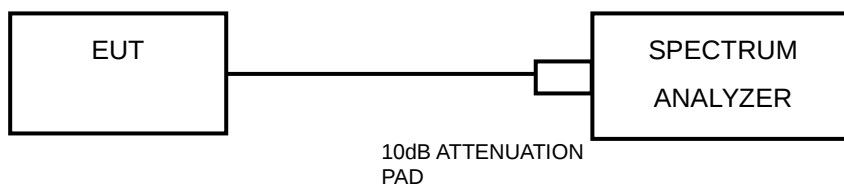


4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below -30dB of the highest emission level of operating band (in 100kHz 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 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.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

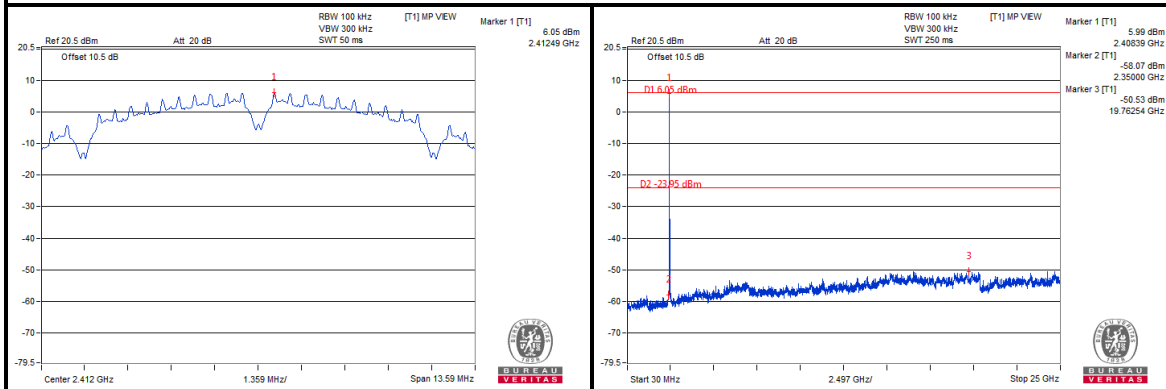
4.6.6 EUT OPERATING CONDITION

Same as item 4.3.6

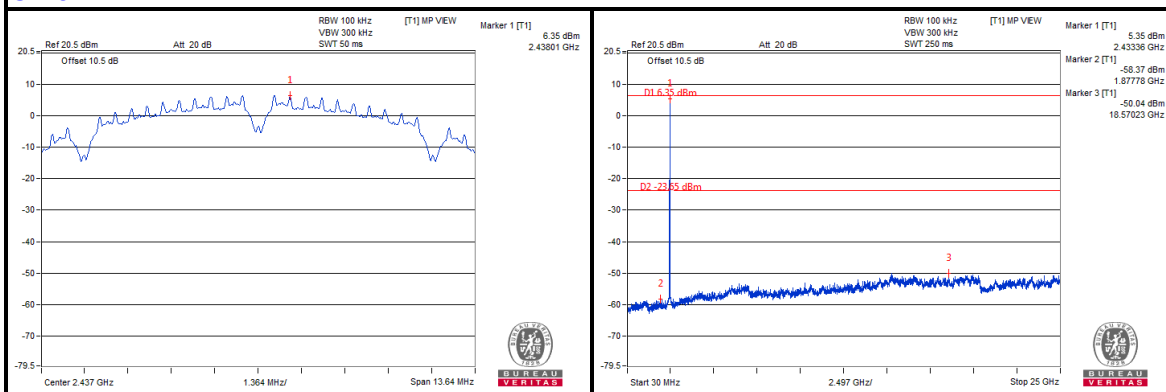
4.6.7 TEST RESULTS

802.11b

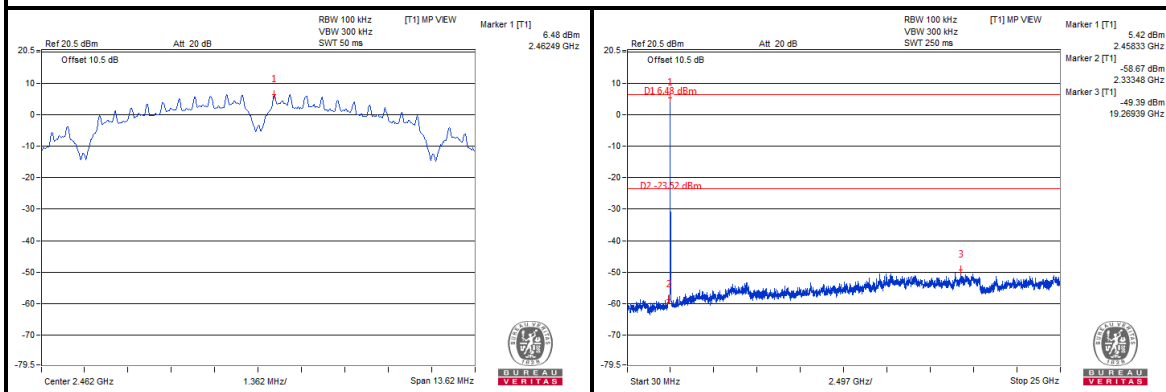
CH 1



CH 6

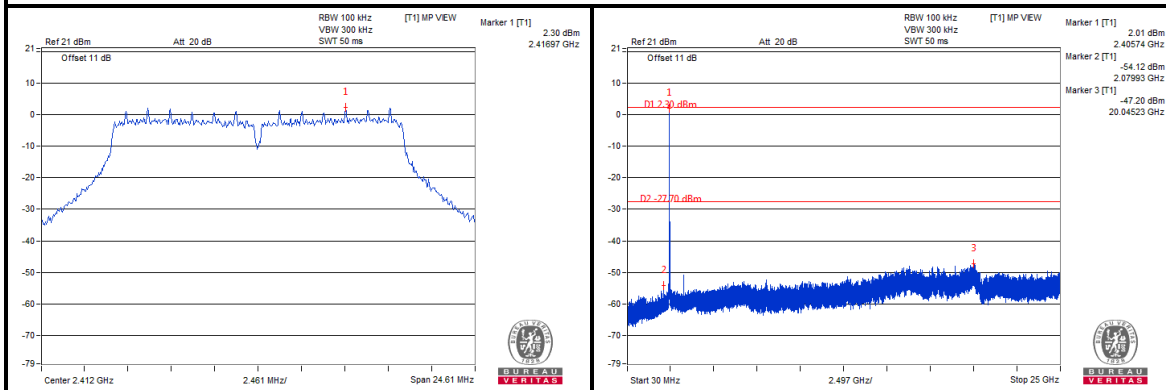


CH 11

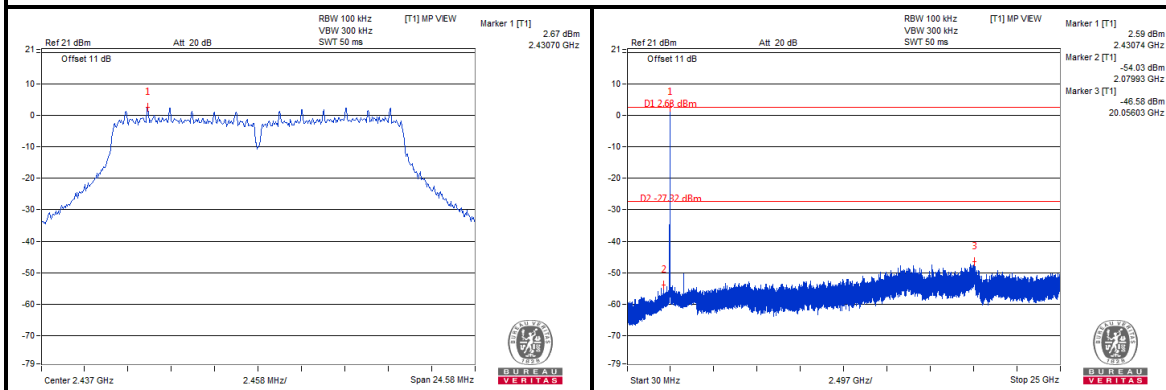


802.11g

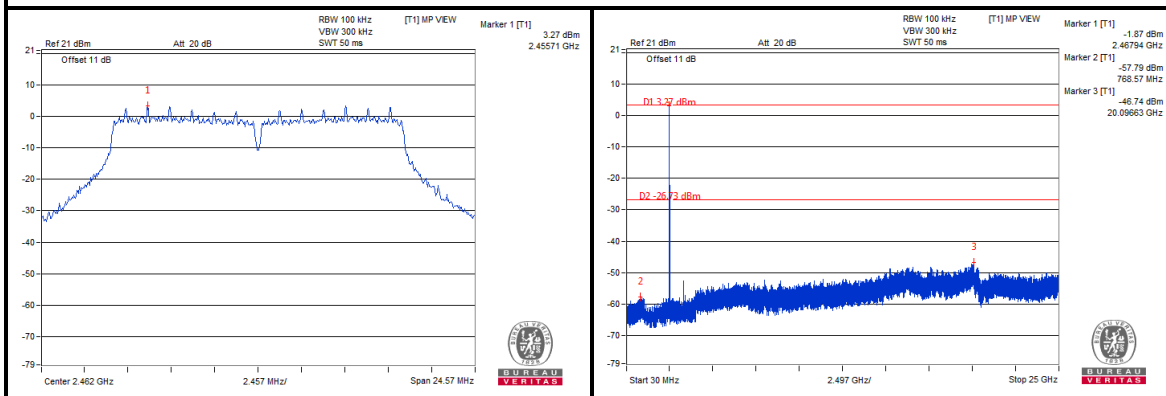
CH 1



CH 6

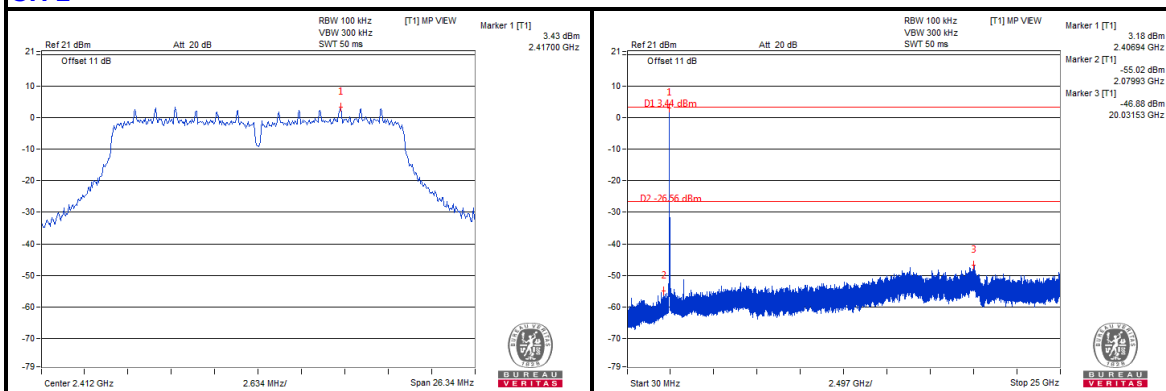


CH 11

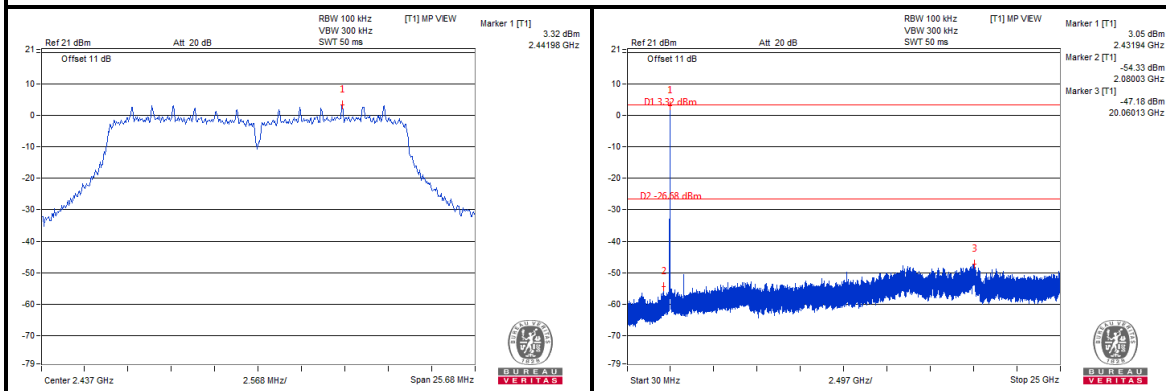


802.11n HT20

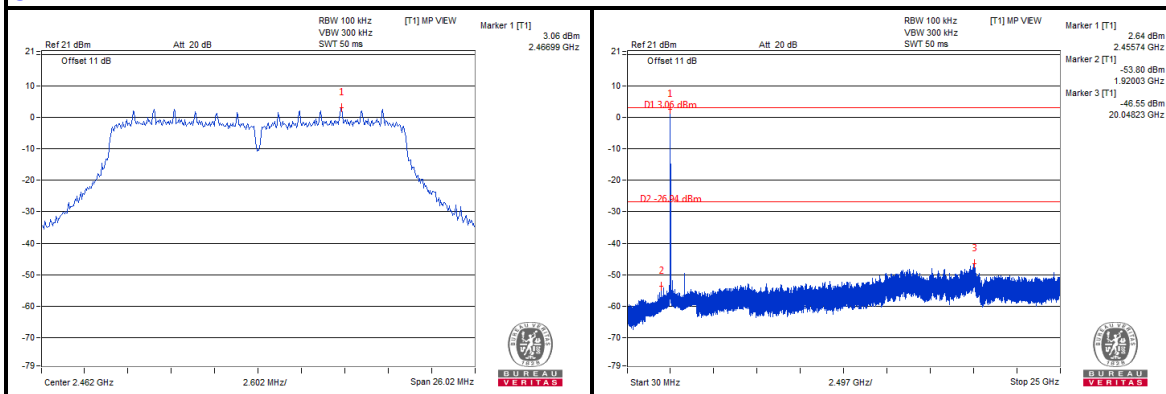
CH 1



CH 6

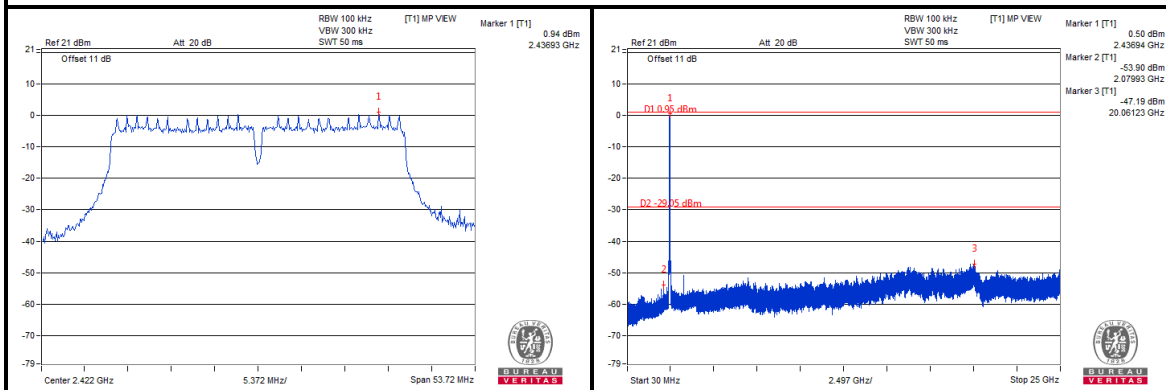


CH 11

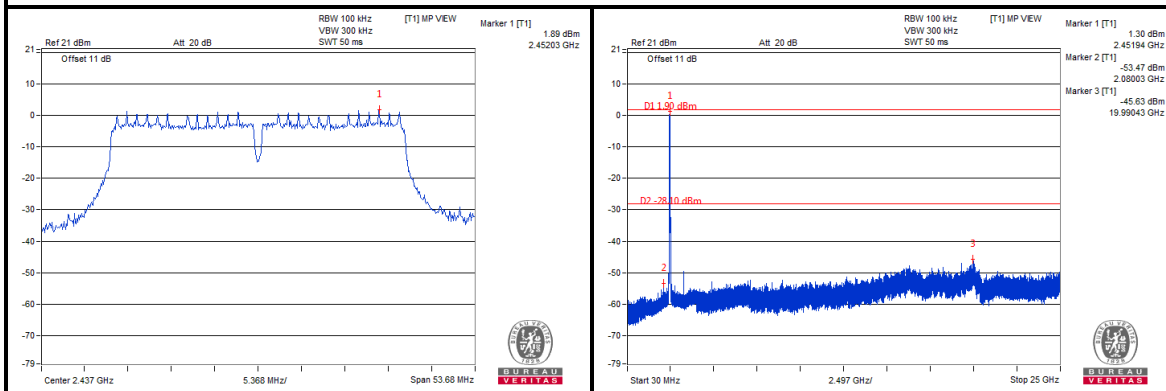


802.11n HT40

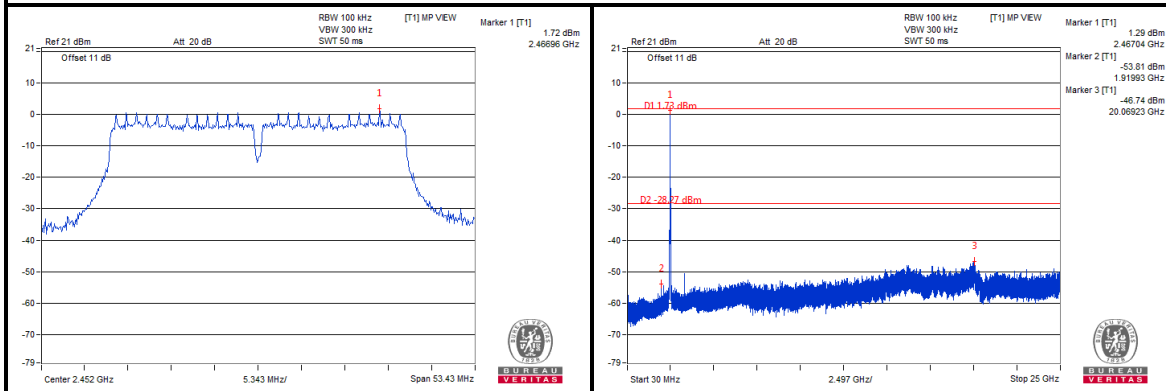
CH 3



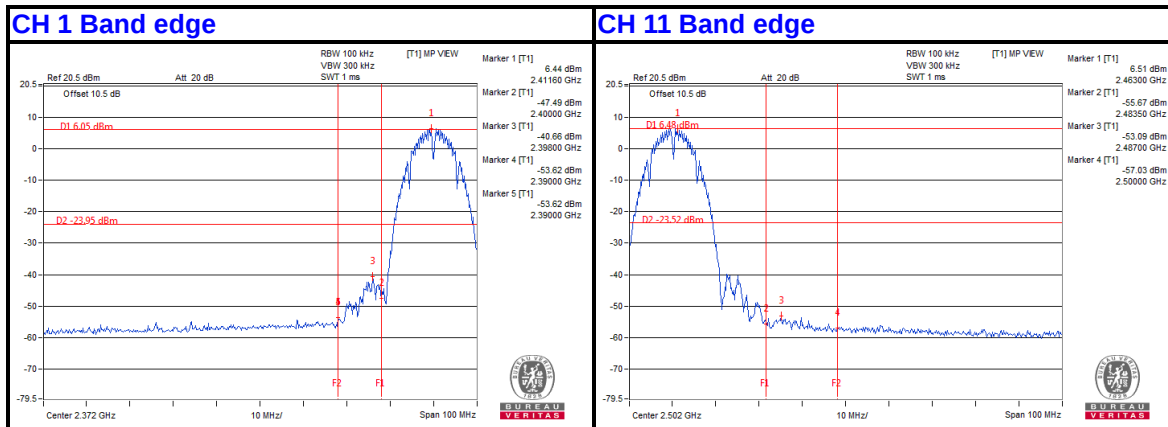
CH 6



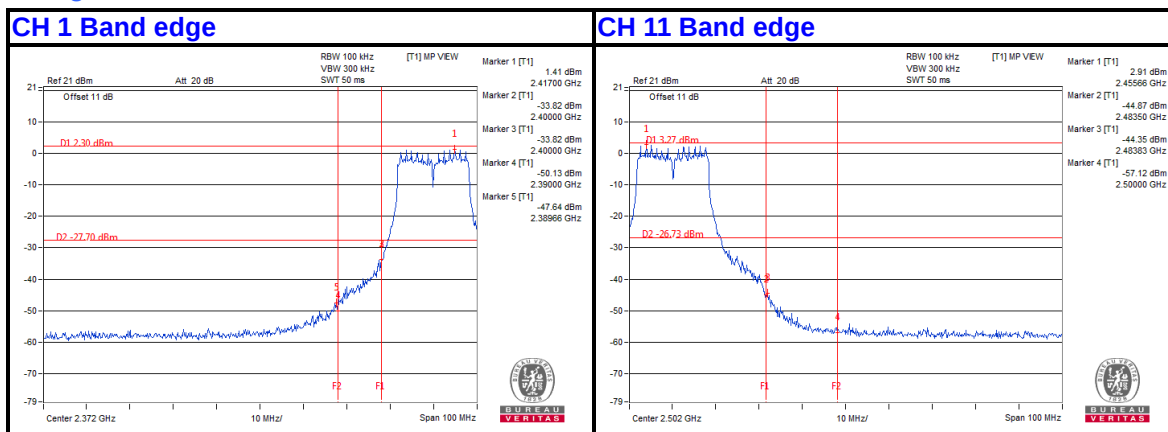
CH 9



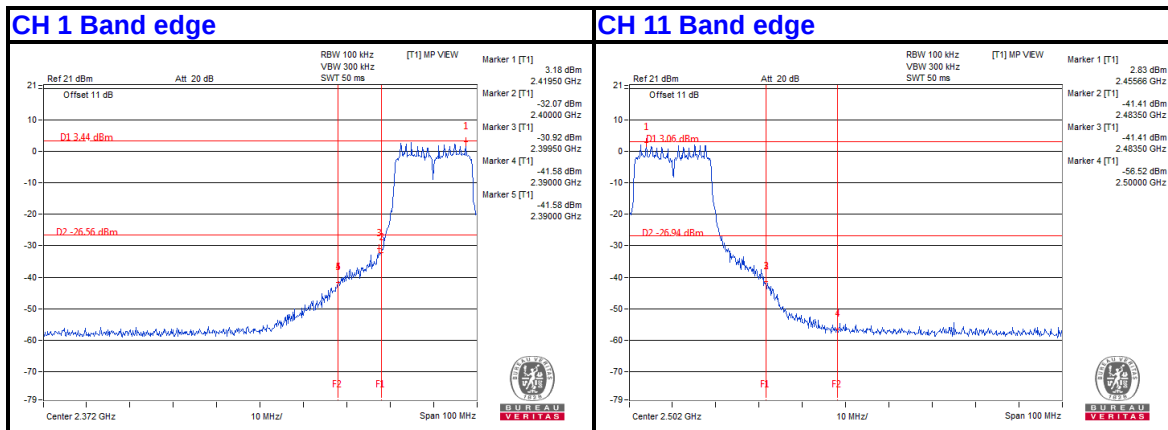
802.11b



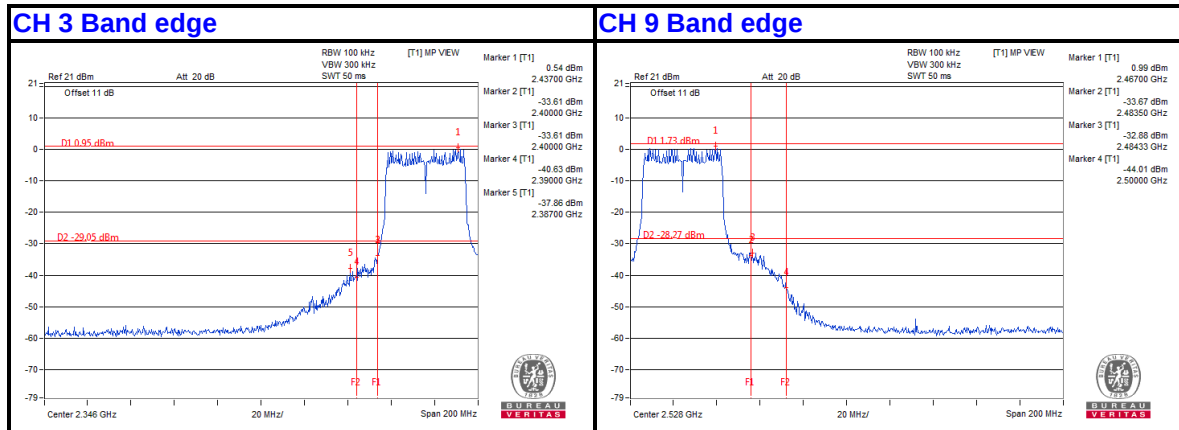
802.11g



802.11n HT20



802.11n HT40





Test Report No.: RF170815N042-2

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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.

---END---