



BUREAU
VERITAS

Test Report No.: RF160218W003-2



Test Lab
Cert 2951.01

FCC TEST REPORT

(WIFI + BT LE)

Product: smartphone

Model Name: Ilium X210

FCC ID: ZC4X210

Applicant: Corporativo Lanix S.A. de C.V.

Address: Carretera Internacional Hermosillo-Nogales Km 8.5, Hermosillo
Sonora, Mexico

Manufacturer: Tinno Mobile Technology Corp.

Address: 4/F., H-3 Building, OCT Eastern Industrial Park. NO.1
XiangShan East Road., Nan Shan District, Shenzhen, P.R.
China..

Prepared by: Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch

Lab Location: No. 34, Chenwulu Section, Guantai Rd., Houjie Town,
Dongguan City, Guangdong 523942, China

TEL: +86 769 8593 5656

FAX: +86 769 8593 1080

E-MAIL: customerservice.dg@cn.bureauveritas.com

Report No.: RF160218W003-2

Received Date: Feb. 18, 2016

Test Date: Feb. 19, 2016 ~ Mar. 14, 2016

Issued Date: Mar. 15, 2016

This report should not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 CERTIFICATION	5
2 SUMMARY OF TEST RESULTS.....	6
2.1 MEASUREMENT UNCERTAINTY	6
3 GENERAL INFORMATION	7
3.1 GENERAL DESCRIPTION OF EUT.....	7
3.2 DESCRIPTION OF TEST MODES.....	9
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST	10
3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	10
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	13
3.4 DESCRIPTION OF SUPPORT UNITS.....	13
4 TEST TYPES AND RESULTS.....	14
4.1 CONDUCTED EMISSION MEASUREMENT	14
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	14
4.1.2 TEST INSTRUMENTS.....	14
4.1.3 TEST PROCEDURES	15
4.1.4 DEVIATION FROM TEST STANDARD	15
4.1.5 TEST SETUP	16
4.1.6 EUT OPERATING CONDITIONS	16
4.1.7 TEST RESULTS	17
4.2 RADIATED EMISSION MEASUREMENT	19
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	19
4.2.2 TEST INSTRUMENTS.....	20
4.2.3 TEST PROCEDURES	21
4.2.4 DEVIATION FROM TEST STANDARD	21
4.2.5 TEST SETUP	22
4.2.6 EUT OPERATING CONDITIONS	22
4.2.7 TEST RESULTS	23
4.3 6DB BANDWIDTH MEASUREMENT	46
4.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	46
4.3.2 TEST INSTRUMENTS.....	46
4.3.3 TEST PROCEDURE.....	46
4.3.4 DEVIATION FROM TEST STANDARD	47
4.3.5 TEST SETUP	47



4.3.6	EUT OPERATING CONDITIONS	47
4.3.7	TEST RESULTS	48
4.4	CONDUCTED OUTPUT POWER	53
4.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	53
4.4.2	TEST SETUP	53
4.4.3	TEST INSTRUMENTS	53
4.4.4	TEST PROCEDURES	53
4.4.5	DEVIATION FROM TEST STANDARD	53
4.4.6	EUT OPERATING CONDITIONS	53
4.4.7	TEST RESULTS	54
4.4.7.1	MAXIMUM PEAK OUTPUT POWER	54
4.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE)	56
4.5	POWER SPECTRAL DENSITY MEASUREMENT	58
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	58
4.5.2	TEST SETUP	58
4.5.3	TEST INSTRUMENTS	58
4.5.4	TEST PROCEDURE	58
4.5.5	DEVIATION FROM TEST STANDARD	58
4.5.6	EUT OPERATING CONDITION	58
4.5.7	TEST RESULTS	59
4.6	OUT OF BAND EMISSION MEASUREMENT	64
4.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	64
4.6.2	TEST SETUP	64
4.6.3	TEST INSTRUMENTS	64
4.6.4	TEST PROCEDURE	64
4.6.5	DEVIATION FROM TEST STANDARD	65
4.6.6	EUT OPERATING CONDITION	65
4.6.7	TEST RESULTS	65
4.6.8	TEST RESULTS	66
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	71
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	72



Test Report No.: RF160218W003-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF160218W003-2	Original release	Mar. 15, 2016

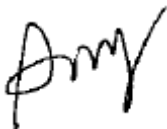


Test Report No.: RF160218W003-2

1 CERTIFICATION

PRODUCT: smartphone
BRAND NAME: LANIX
MODEL NAME: Ilium X210
APPLICANT: Corporativo Lanix S.A. de C.V.
TESTED: Feb. 19, 2016 ~ Mar. 14, 2016
TEST SAMPLE: Production unit
STANDARDS: **FCC Part 15, Subpart C. Section 15.247**
ANSI C63.10-2013

The above equipment has been tested by **Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : , **DATE:** Mar. 15, 2016
(Amyee Qian / Engineer)

APPROVED BY : , **DATE:** Mar. 15, 2016
(William Chung / Manager)



2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -9.05dB at 0.492000MHz.
15.205 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.4dB at 2483.50MHz.
15.247(d)	Out of band Emission 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

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.74dB
	30MHz ~ 1GMHz	3.55dB
	1GHz ~ 18GHz	4.84dB
	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

PRODUCT	smartphone
MODEL NAME	Ilium X210
NOMINAL VOLTAGE	5.0Vdc (adapter or host equipment) 3.7Vdc (Li-ion, battery)
MODULATION TECHNOLOGY	DSSS, OFDM, DTS
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM BT-LE(GFSK) for DTS
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n: up to 135 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11b/g/n(HT40) 2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	WLAN: 103.753mW (Maximum) BT-LE: 0.647mW (Maximum)
ANTENNA TYPE	PIFA Antenna with 0dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: Unshielded, detachable, 1.0m Earphone cable: Unshielded, detachable, 1.0m

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT was powered by the following adapter:

ADAPTER	
BRAND:	LANIX
MODEL:	Ilium X210-C
INPUT:	AC 100-240V, 150mA
OUTPUT:	DC 5V, 550mA

- The EUT matched the following USB cable and Earphone:

USB CABLE	
BRAND:	N/A
MODEL:	N/A
SIGNAL LINE:	1.0 METER



BUREAU VERITAS Test Report No.: RF160218W003-2

EARPHONE	
BRAND:	LANIX
MODEL:	N/A
SIGNAL LINE:	1.0 METER

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

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	1TX /1RX
802.11n (40MHz)	1TX /1RX

5. 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		

40 channels are provided for BT-LE (GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



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 Y 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	
-	√	√	√	√	-

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

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1	CCK	DBPSK	1.0
BT-LE	0 to 39	39	DTS	GFSK	1

For the test results, only the worst case was shown in test report.



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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5
BT-LE	0 to 39	0,19, 39	DTS	GFSK	1

POWER LINE CONDUCTED EMISSION TEST:

The EUT was tested with the following mode

EUT CONFIGURE MODE	TESTED CONDITION
-	BT Link+ WIFI (2.4G) Link + USB Cable + Adapter + Earphone

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 11	OFDM	BPSK	6.5
802.11n HT40	3 to 9	3, 9	OFDM	BPSK	13.5
BT-LE	0 to 39	0, 39	DTS	GFSK	1



ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	22deg. C, 54%RH	DC 5V from adaptor	Blue Zheng
RE≥1G	22deg. C, 54%RH	DC 5V from adaptor	Blue Zheng
PLC	25deg. C, 60%RH	DC 5V from adaptor	Yuqiang Yin
APCM	25deg. C, 60%RH	DC 3.7V from battery	Yuqiang Yin



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

558074 D01 DTS Meas Guidance v03r04

ANSI C63.10-2013

Note:

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Verification). 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	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m



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	ESCI	100340	May 11,15	May 10,16
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 11,15	May 10,16
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 11,15	May 10,16
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, GRGT/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) was not recorded.

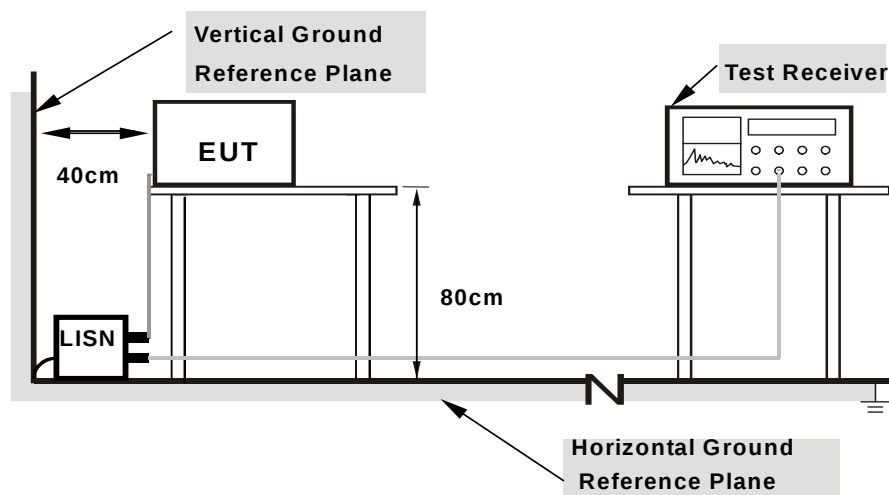
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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

- 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.



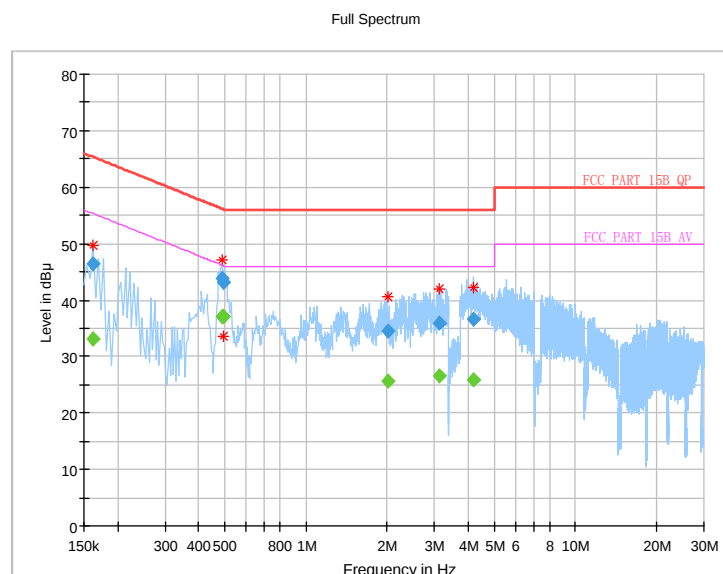
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	33.21	55.36	-22.15	L	ON	9.6
0.162000	46.36	---	65.36	-19.00	L	ON	9.6
0.488000	43.79	---	56.20	-12.41	L	ON	9.7
0.488000	---	37.14	46.20	-9.06	L	ON	9.7
0.492000	43.19	---	56.13	-12.94	L	ON	9.7
0.492000	---	37.08	46.13	-9.05	L	ON	9.7
2.008000	---	25.66	46.00	-20.34	L	ON	9.7
2.008000	34.43	---	56.00	-21.57	L	ON	9.7
3.124000	---	26.63	46.00	-19.37	L	ON	9.7
3.124000	35.90	---	56.00	-20.10	L	ON	9.7
4.208000	---	25.81	46.00	-20.19	L	ON	9.7
4.208000	36.53	---	56.00	-19.47	L	ON	9.7

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



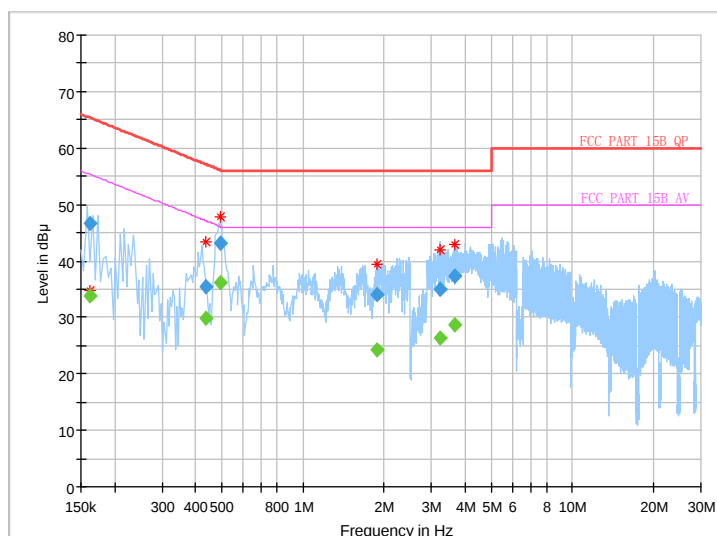


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
--------------	-------------	--------------------------	-----------------------------------

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	33.89	55.36	-21.47	N	ON	10.1
0.162000	46.64	---	65.36	-18.72	N	ON	10.1
0.436000	---	29.84	47.14	-17.30	N	ON	10.1
0.436000	35.54	---	57.14	-21.60	N	ON	10.1
0.496000	---	36.09	46.07	-9.98	N	ON	10.1
0.496000	43.10	---	56.07	-12.97	N	ON	10.1
1.884000	---	24.30	46.00	-21.70	N	ON	9.8
1.884000	34.01	---	56.00	-21.99	N	ON	9.8
3.224000	---	26.39	46.00	-19.61	N	ON	9.8
3.224000	34.91	---	56.00	-21.09	N	ON	9.8
3.676000	---	28.61	46.00	-17.39	N	ON	9.8
3.676000	37.27	---	56.00	-18.73	N	ON	9.8

- 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.

Full Spectrum





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	ESR7	101494	Apr. 27,15	Apr. 26,16
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Apr. 23,15	Apr. 22,16
Loop Antenna	Daze	ZN30900A	0708	Dec. 21,15	Dec. 20,16
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 16, 15	Jul. 15, 16
Horn Antenna	ETS-Lindgren	3117	00062558	May 30,14	May 29,16
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Jan. 21,14	Jan. 20,17
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,15	Mar. 03, 17
Pre-Amplifier (0.5~18GHz)	SCHWARZBECK	BBV 9718	9718-266	Mar 26,14	Mar. 25,16
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 19,15	Nov. 18,16
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 14	Aug. 07, 16
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	April. 19,14	April. 18,16
Test Software	ADT	ADT_Radiated V7.6.15.9.2	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, GRG/CHINA and NIM/CHINA.
2. The test was performed in 966 Chamber.
3. 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:

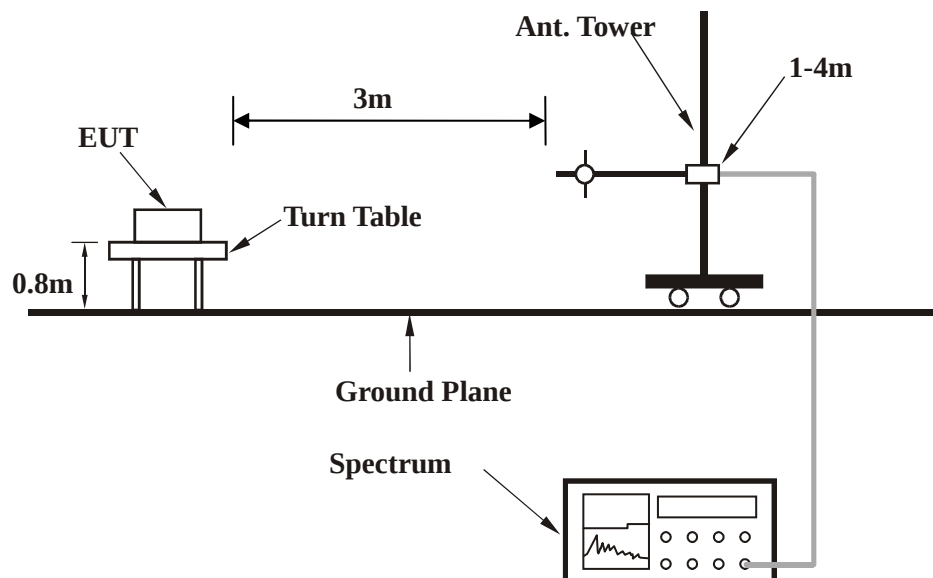
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

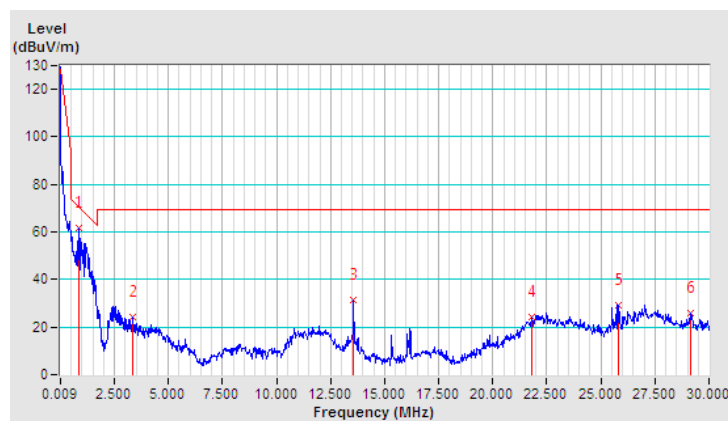
802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 30MHz		

ANTENNA POLARITY & TEST DISTANCE: OPEN 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	0.85	61.5 QP	69.0	-7.5	1.00	0	78.65	-17.14
2	3.37	24.3 QP	69.5	-45.2	1.00	0	41.45	-17.14
3	13.56	31.2 QP	69.5	-38.3	1.00	0	48.31	-17.14
4	21.81	24.1 QP	69.5	-45.4	1.00	0	41.28	-17.14
5	25.83	29.3 QP	69.5	-40.2	1.00	0	46.48	-17.14
6	29.13	25.7 QP	69.5	-43.8	1.00	0	43.69	-17.98

REMARKS:

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



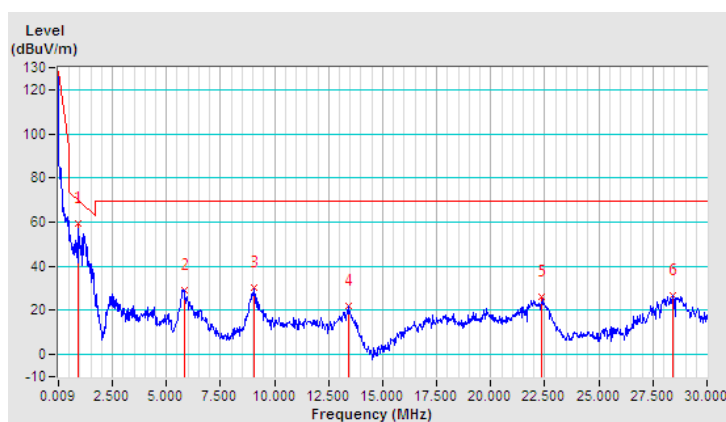


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 30MHz		

ANTENNA POLARITY & TEST DISTANCE: CLOSE 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	0.91	59.2 QP	68.4	-9.2	1.00	0	76.38	-17.14
2	5.83	29.3 QP	69.5	-40.2	1.00	0	46.48	-17.14
3	9.07	30.3 QP	69.5	-39.2	1.00	0	47.40	-17.14
4	13.41	22.1 QP	69.5	-47.4	1.00	0	39.21	-17.14
5	22.38	26.2 QP	69.5	-43.3	1.00	0	43.37	-17.14
6	28.41	26.7 QP	69.5	-42.8	1.00	0	44.52	-17.79

REMARKS:

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





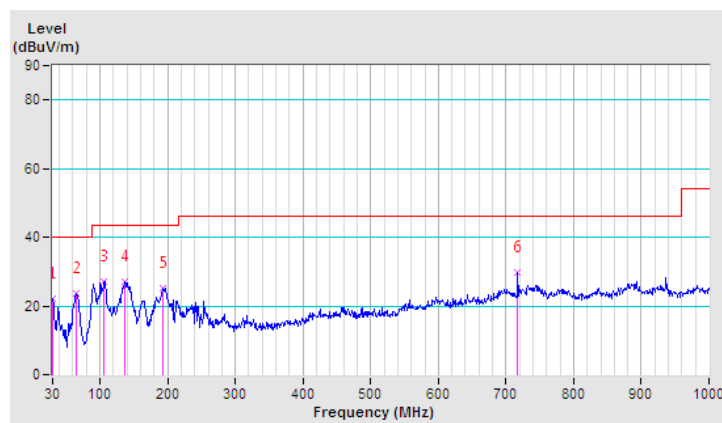
802.11g

CHANNEL	TX Channel 1	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	30.00	22.3 QP	40.0	-17.7	1.00 H	0	40.47	-18.21
2	64.92	23.8 QP	40.0	-16.2	1.00 H	0	51.99	-28.17
3	105.66	27.0 QP	43.5	-16.5	1.00 H	0	53.67	-26.69
4	136.70	27.3 QP	43.5	-16.3	1.00 H	0	53.57	-26.32
5	192.96	25.3 QP	43.5	-18.2	1.00 H	0	49.14	-23.88
6	716.76	29.7 QP	46.0	-16.3	1.00 H	0	39.41	-9.70

REMARKS:

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



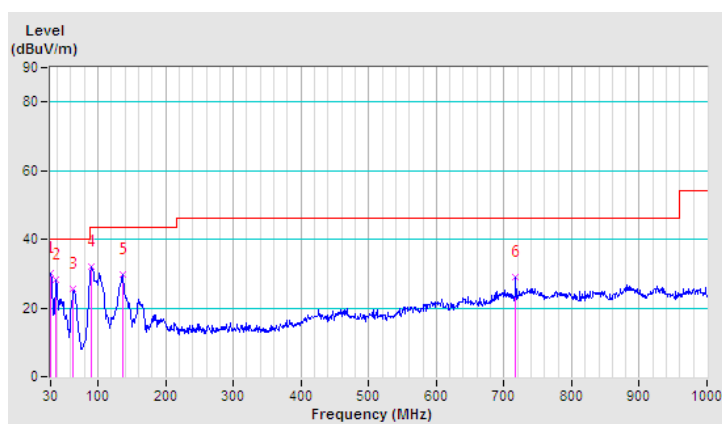


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	30.00	30.0 QP	40.0	-10.0	1.00 V	0	48.19	-18.21
2	37.76	28.1 QP	40.0	-11.9	1.00 V	0	51.54	-23.47
3	62.98	25.5 QP	40.0	-14.5	1.00 V	0	53.82	-28.28
4	90.14	32.2 QP	43.5	-11.3	1.00 V	0	59.92	-27.73
5	135.73	29.9 QP	43.5	-13.6	1.00 V	0	56.24	-26.37
6	716.76	29.0 QP	46.0	-17.0	1.00 V	0	38.67	-9.70

REMARKS:

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





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	57.9 PK	74.0	-16.1	1.48 H	179	65.77	-7.87
2	2390.00	50.0 AV	54.0	-4.0	1.48 H	179	57.87	-7.87
3	#2400.00	72.1 PK	85.4	-13.3	1.48 H	179	79.94	-7.84
4	#2400.00	64.3 AV	81.4	-17.1	1.48 H	179	72.14	-7.84
5	*2412.00	105.4 PK			1.48 H	179	113.21	-7.81
6	*2412.00	101.4 AV			1.48 H	179	109.21	-7.81
7	4824.00	53.5 PK	74.0	-20.5	1.00 H	343	55.47	-1.97
8	4824.00	47.2 AV	54.0	-6.8	1.00 H	343	49.17	-1.97
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	1.22 V	258	61.47	-7.87
2	2390.00	43.3 AV	54.0	-10.7	1.22 V	258	51.17	-7.87
3	#2400.00	68.4 PK	82.9	-14.5	1.22 V	258	76.24	-7.84
4	#2400.00	59.4 AV	78.5	-19.1	1.22 V	258	67.24	-7.84
5	*2412.00	102.9 PK			1.22 V	258	110.71	-7.81
6	*2412.00	98.5 AV			1.22 V	258	106.31	-7.81
7	4824.00	58.7 PK	74.0	-15.3	1.08 V	330	60.67	-1.97
8	4824.00	50.1 AV	54.0	-3.9	1.08 V	330	52.07	-1.97

REMARKS:

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



CHANNEL	TX Channel 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	105.8 PK			1.46 H	180	113.53	-7.73
2	*2437.00	101.3 AV			1.46 H	180	109.03	-7.73
3	4874.00	53.9 PK	74.0	-20.1	1.00 H	340	55.71	-1.81
4	4874.00	46.7 AV	54.0	-7.3	1.00 H	340	48.51	-1.81
5	7311.00	54.3 PK	74.0	-19.7	1.00 H	140	51.55	2.75
6	7311.00	41.2 AV	54.0	-12.8	1.00 H	140	38.45	2.75
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.6 PK			1.24 V	260	110.33	-7.73
2	*2437.00	98.2 AV			1.24 V	260	105.93	-7.73
3	4874.00	59.1 PK	74.0	-14.9	1.09 V	332	60.91	-1.81
4	4874.00	50.4 AV	54.0	-3.6	1.09 V	332	52.21	-1.81
5	7311.00	55.4 PK	74.0	-18.6	1.00 V	230	52.65	2.75
6	7311.00	41.8 AV	54.0	-12.2	1.00 V	230	39.05	2.75

REMARKS:

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



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	106.8 PK			1.43 H	186	114.46	-7.66
2	*2462.00	102.3 AV			1.43 H	186	109.96	-7.66
3	2483.50	59.5 PK	74.0	-14.5	1.43 H	186	67.10	-7.60
4	2483.50	51.6 AV	54.0	-2.4	1.43 H	186	59.20	-7.60
5	4924.00	54.7 PK	74.0	-19.3	1.00 H	335	56.34	-1.64
6	4924.00	46.9 AV	54.0	-7.1	1.00 H	335	48.54	-1.64
7	7386.00	54.7 PK	74.0	-19.3	1.00 H	142	51.83	2.87
8	7386.00	41.6 AV	54.0	-12.4	1.00 H	142	38.73	2.87
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	104.5 PK			1.20 V	256	112.16	-7.66
2	*2462.00	100.8 AV			1.20 V	256	108.46	-7.66
3	2483.50	56.0 PK	74.0	-18.0	1.20 V	256	63.60	-7.60
4	2483.50	49.3 AV	54.0	-4.7	1.20 V	256	56.90	-7.60
5	4924.00	60.2 PK	74.0	-13.8	1.10 V	330	61.84	-1.64
6	4924.00	51.3 AV	54.0	-2.7	1.10 V	330	52.94	-1.64
7	7386.00	54.9 PK	74.0	-19.1	1.00 V	226	52.03	2.87
8	7386.00	42.3 AV	54.0	-11.7	1.00 V	226	39.43	2.87

REMARKS:

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



Test Report No.: RF160218W003-2

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	56.7 PK	74.0	-17.3	1.46 H	176	64.57	-7.87
2	2390.00	48.2 AV	54.0	-5.8	1.46 H	176	56.07	-7.87
3	#2400.00	61.7 PK	85.6	-23.9	1.46 H	176	69.54	-7.84
4	#2400.00	49.7 AV	73.6	-23.9	1.46 H	176	57.54	-7.84
5	*2412.00	105.6 PK			1.46 H	176	113.41	-7.81
6	*2412.00	93.6 AV			1.46 H	176	101.41	-7.81
7	4824.00	53.2 PK	74.0	-20.8	1.00 H	341	55.17	-1.97
8	4824.00	45.7 AV	54.0	-8.3	1.00 H	341	47.67	-1.97
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	54.6 PK	74.0	-19.4	1.28 V	253	62.47	-7.87
2	2390.00	44.7 AV	54.0	-9.3	1.28 V	253	52.57	-7.87
3	#2400.00	68.5 PK	83.4	-14.9	1.28 V	253	76.34	-7.84
4	#2400.00	49.6 AV	73.4	-23.8	1.28 V	253	57.44	-7.84
5	*2412.00	103.4 PK			1.28 V	253	111.21	-7.81
6	*2412.00	93.4 AV			1.28 V	253	101.21	-7.81
7	4824.00	55.9 PK	74.0	-18.1	1.07 V	329	57.87	-1.97
8	4824.00	48.7 AV	54.0	-5.3	1.07 V	329	50.67	-1.97

REMARKS:

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



CHANNEL	TX Channel 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	105.2 PK			1.42 H	175	112.93	-7.73
2	*2437.00	92.8 AV			1.42 H	175	100.53	-7.73
3	4874.00	53.4 PK	74.0	-20.6	1.00 H	332	55.21	-1.81
4	4874.00	44.8 AV	54.0	-9.2	1.00 H	332	46.61	-1.81
5	7311.00	54.3 PK	74.0	-19.7	1.00 H	141	51.55	2.75
6	7311.00	40.9 AV	54.0	-13.1	1.00 H	141	38.15	2.75
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	103.7 PK			1.26 V	258	111.43	-7.73
2	*2437.00	92.9 AV			1.26 V	258	100.63	-7.73
3	4874.00	58.7 PK	74.0	-15.3	1.10 V	339	60.51	-1.81
4	4874.00	49.6 AV	54.0	-4.4	1.10 V	339	51.41	-1.81
5	7311.00	54.7 PK	74.0	-19.3	1.00 V	228	51.95	2.75
6	7311.00	40.6 AV	54.0	-13.4	1.00 V	228	37.85	2.75

REMARKS:

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



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	104.9 PK			1.44 H	182	112.56	-7.66
2	*2462.00	93.8 AV			1.44 H	182	101.46	-7.66
3	2483.50	65.4 PK	74.0	-8.6	1.44 H	182	73.00	-7.60
4	2483.50	50.8 AV	54.0	-3.2	1.44 H	182	58.40	-7.60
5	4924.00	53.7 PK	74.0	-20.3	1.00 H	340	55.34	-1.64
6	4924.00	45.4 AV	54.0	-8.6	1.00 H	340	47.04	-1.64
7	7386.00	54.5 PK	74.0	-19.5	1.00 H	139	51.63	2.87
8	7386.00	41.6 AV	54.0	-12.4	1.00 H	139	38.73	2.87
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	104.8 PK			1.23 V	253	112.46	-7.66
2	*2462.00	94.8 AV			1.23 V	253	102.46	-7.66
3	2483.50	69.9 PK	74.0	-4.1	1.23 V	253	77.50	-7.60
4	2483.50	51.1 AV	54.0	-2.9	1.23 V	253	58.70	-7.60
5	4924.00	53.2 PK	74.0	-20.8	1.12 V	334	54.84	-1.64
6	4924.00	38.8 AV	54.0	-15.2	1.12 V	334	40.44	-1.64
7	7386.00	54.3 PK	74.0	-19.7	1.00 V	230	51.43	2.87
8	7386.00	41.2 AV	54.0	-12.8	1.00 V	230	38.33	2.87

REMARKS:

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



802.11n (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	54.7 PK	74.0	-19.3	1.47 H	183	62.57	-7.87
2	2390.00	46.9 AV	54.0	-7.1	1.47 H	183	54.77	-7.87
3	#2400.00	59.3 PK	84.3	-25.0	1.47 H	183	67.14	-7.84
4	#2400.00	50.4 AV	71.4	-21.0	1.47 H	183	58.24	-7.84
5	*2412.00	104.3 PK			1.47 H	183	112.11	-7.81
6	*2412.00	91.4 AV			1.47 H	183	99.21	-7.81
7	4824.00	53.9 PK	74.0	-20.1	1.00 H	339	55.87	-1.97
8	4824.00	47.8 AV	54.0	-6.2	1.00 H	339	49.77	-1.97
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	1.30 V	248	61.97	-7.87
2	2390.00	43.5 AV	54.0	-10.5	1.30 V	248	51.37	-7.87
3	#2400.00	58.7 PK	82.8	-24.1	1.30 V	248	66.54	-7.84
4	#2400.00	46.8 AV	82.8	-36.0	1.30 V	248	54.64	-7.84
5	*2412.00	102.8 PK	71.2	-31.6	1.30 V	248	110.61	-7.81
6	*2412.00	91.2 AV			1.30 V	248	99.01	-7.81
7	4824.00	54.5 PK	74.0	-19.5	1.08 V	330	56.47	-1.97
8	4824.00	45.8 AV	54.0	-8.2	1.08 V	330	47.77	-1.97

REMARKS:

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



CHANNEL	TX Channel 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	104.3 PK			1.40 H	179	112.03	-7.73
2	*2437.00	92.8 AV			1.40 H	179	100.53	-7.73
3	4874.00	53.2 PK	74.0	-20.8	1.00 H	335	55.01	-1.81
4	4874.00	43.7 AV	54.0	-10.3	1.00 H	335	45.51	-1.81
5	7311.00	53.9 PK	74.0	-20.1	1.00 H	148	51.15	2.75
6	7311.00	40.2 AV	54.0	-13.8	1.00 H	148	37.45	2.75
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.3 PK			1.25 V	254	110.03	-7.73
2	*2437.00	90.7 AV			1.25 V	254	98.43	-7.73
3	4874.00	55.2 PK	74.0	-18.8	1.12 V	345	57.01	-1.81
4	4874.00	47.8 AV	54.0	-6.2	1.12 V	345	49.61	-1.81
5	7311.00	54.2 PK	74.0	-19.8	1.00 V	223	51.45	2.75
6	7311.00	40.6 AV	54.0	-13.4	1.00 V	223	37.85	2.75

REMARKS:

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



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	104.2 PK			1.42 H	187	111.86	-7.66
2	*2462.00	92.5 AV			1.42 H	187	100.16	-7.66
3	2483.50	63.8 PK	74.0	-10.2	1.42 H	187	71.40	-7.60
4	2483.50	48.7 AV	54.0	-5.3	1.42 H	187	56.30	-7.60
5	4924.00	54.3 PK	74.0	-19.7	1.00 H	342	55.94	-1.64
6	4924.00	45.8 AV	54.0	-8.2	1.00 H	342	47.44	-1.64
7	7386.00	54.1 PK	74.0	-19.9	1.00 H	136	51.23	2.87
8	7386.00	40.4 AV	54.0	-13.6	1.00 H	136	37.53	2.87
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	101.4 PK			1.25 V	257	109.06	-7.66
2	*2462.00	90.3 AV			1.25 V	257	97.96	-7.66
3	2483.50	67.2 PK	74.0	-6.8	1.25 V	257	74.80	-7.60
4	2483.50	47.7 AV	54.0	-6.3	1.25 V	257	55.30	-7.60
5	4924.00	53.6 PK	74.0	-20.4	1.14 V	338	55.24	-1.64
6	4924.00	42.7 AV	54.0	-11.3	1.14 V	338	44.34	-1.64
7	7386.00	54.4 PK	74.0	-19.6	1.00 V	228	51.53	2.87
8	7386.00	41.6 AV	54.0	-12.4	1.00 V	228	38.73	2.87

REMARKS:

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



802.11n (40MHz)

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	54.8 PK	74.0	-19.2	1.44 H	172	62.67	-7.87
2	2390.00	46.3 AV	54.0	-7.7	1.44 H	172	54.17	-7.87
3	#2400.00	58.9 PK	82.4	-23.5	1.44 H	172	66.74	-7.84
4	#2400.00	48.9 AV	70.6	-21.7	1.44 H	172	56.74	-7.84
5	*2422.00	102.4 PK			1.44 H	172	110.18	-7.78
6	*2422.00	90.6 AV			1.44 H	172	98.38	-7.78
7	4844.00	53.3 PK	74.0	-20.7	1.00 H	347	55.21	-1.91
8	4844.00	42.7 AV	54.0	-11.3	1.00 H	347	44.61	-1.91
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	53.3 PK	74.0	-20.7	1.26 V	254	61.17	-7.87
2	2390.00	42.4 AV	54.0	-11.6	1.26 V	254	50.27	-7.87
3	#2400.00	56.9 PK	80.6	-23.7	1.26 V	254	64.74	-7.84
4	#2400.00	46.8 AV	68.9	-22.1	1.26 V	254	54.64	-7.84
5	*2422.00	100.6 PK			1.26 V	254	108.38	-7.78
6	*2422.00	88.9 AV			1.26 V	254	96.68	-7.78
7	4844.00	53.9 PK	74.0	-20.1	1.09 V	324	55.81	-1.91
8	4844.00	44.1 AV	54.0	-9.9	1.09 V	324	46.01	-1.91

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
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	102.8 PK			1.45 H	178	110.53	-7.73
2	#2437.00	88.7 AV			1.45 H	178	96.43	-7.73
3	4874.00	53.7 PK	74.0	-20.3	1.00 H	335	55.51	-1.81
4	4874.00	42.8 AV	54.0	-11.2	1.00 H	335	44.61	-1.81
5	7311.00	54.3 PK	74.0	-19.7	1.00 H	145	51.55	2.75
6	7311.00	41.2 AV	54.0	-12.8	1.00 H	145	38.45	2.75
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	100.1 PK			1.24 V	251	107.83	-7.73
2	#2437.00	86.5 AV			1.24 V	251	94.23	-7.73
3	4874.00	54.7 PK	74.0	-19.3	1.06 V	338	56.51	-1.81
4	4874.00	43.5 AV	54.0	-10.5	1.06 V	338	45.31	-1.81
5	7311.00	54.1 PK	74.0	-19.9	1.00 V	230	51.35	2.75
6	7311.00	40.7 AV	54.0	-13.3	1.00 V	230	37.95	2.75

REMARKS:

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



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	103.5 PK			1.42 H	189	111.19	-7.69
2	*2452.00	88.7 AV			1.42 H	189	96.39	-7.69
3	2483.50	60.5 PK	74.0	-13.5	N/A H	189	68.10	-7.60
4	2483.50	46.3 AV	54.0	-7.7	N/A H	189	53.90	-7.60
5	4904.00	52.1 PK	74.0	-21.9	1.00 H	342	53.81	-1.71
6	4904.00	43.7 AV	54.0	-10.3	1.00 H	342	45.41	-1.71
7	7356.00	54.2 PK	74.0	-19.8	1.00 H	140	51.39	2.81
8	7356.00	40.8 AV	54.0	-13.2	1.00 H	140	37.99	2.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.3 PK			1.20 V	254	107.99	-7.69
2	*2452.00	89.2 AV			1.20 V	254	96.89	-7.69
3	2483.50	64.5 PK	74.0	-9.5	1.20 V	254	72.10	-7.60
4	2483.50	47.1 AV	54.0	-6.9	1.20 V	254	54.70	-7.60
5	4904.00	53.8 PK	74.0	-20.2	1.13 V	330	55.51	-1.71
6	4904.00	42.7 AV	54.0	-11.3	1.13 V	330	44.41	-1.71
7	7356.00	54.8 PK	74.0	-19.2	1.00 V	227	51.99	2.81
8	7356.00	40.9 AV	54.0	-13.1	1.00 V	227	38.09	2.81

REMARKS:

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



BELOW 1GHz WORST-CASE DATA:

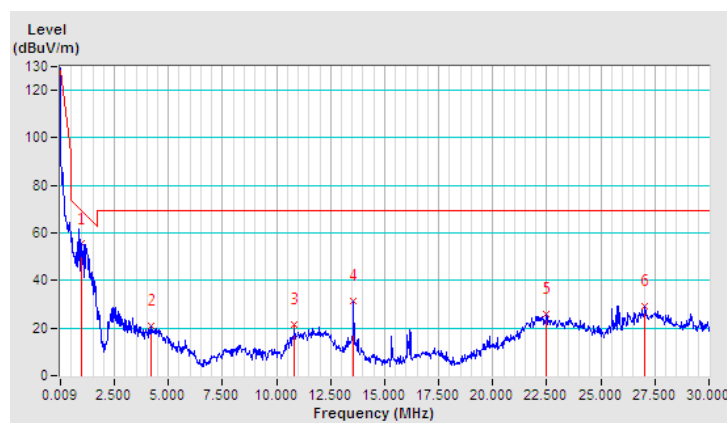
BT-LE (GFSK)

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 30MHz		

ANTENNA POLARITY & TEST DISTANCE: OPEN 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	0.97	55.4 QP	67.9	-12.5	1.00	0	72.50	-17.14
2	4.18	21.2 QP	69.5	-48.3	1.00	0	38.32	-17.14
3	10.84	21.4 QP	69.5	-48.1	1.00	0	38.52	-17.14
4	13.56	31.2 QP	69.5	-38.3	1.00	0	48.31	-17.14
5	22.47	25.7 QP	69.5	-43.8	1.00	0	42.85	-17.14
6	27.03	29.4 QP	69.5	-40.1	1.00	0	46.84	-17.42

REMARKS:

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



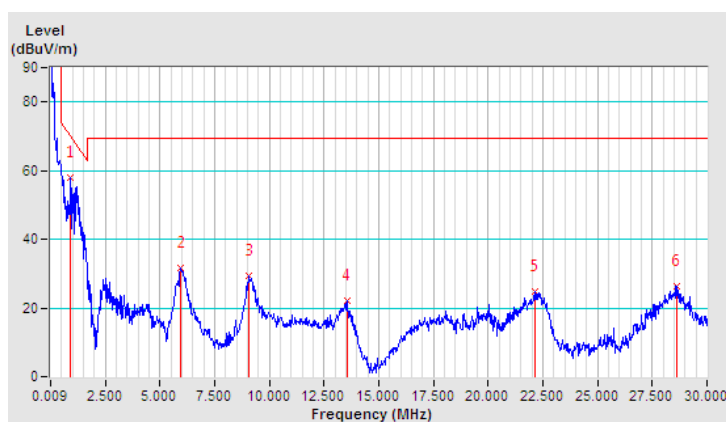


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 30MHz		

ANTENNA POLARITY & TEST DISTANCE: CLOSE 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	0.91	58.0 QP	68.5	-10.5	1.00	0	75.13	-17.14
2	5.95	31.5 QP	69.5	-38.0	1.00	0	48.65	-17.14
3	9.04	29.5 QP	69.5	-40.0	1.00	0	46.68	-17.14
4	13.53	22.1 QP	69.5	-47.4	1.00	0	39.23	-17.14
5	22.11	24.7 QP	69.5	-44.9	1.00	0	41.79	-17.14
6	28.59	26.2 QP	69.5	-43.3	1.00	0	44.06	-17.83

REMARKS:

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



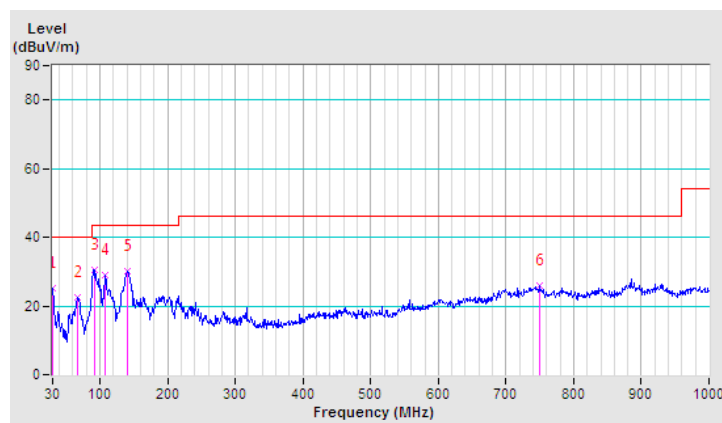
**BT-LE (GFSK)**

CHANNEL	TX Channel 39	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	30.00	25.0 QP	40.0	-15.0	1.00 H	0	43.20	-18.21
2	66.86	22.3 QP	40.0	-17.7	1.00 H	0	50.40	-28.06
3	92.08	30.5 QP	43.5	-13.0	1.00 H	0	58.03	-27.50
4	107.60	29.0 QP	43.5	-14.5	1.00 H	0	55.76	-26.74
5	140.58	30.0 QP	43.5	-13.5	1.00 H	0	56.11	-26.11
6	748.77	25.8 QP	46.0	-20.2	1.00 H	0	35.56	-9.73

REMARKS:

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



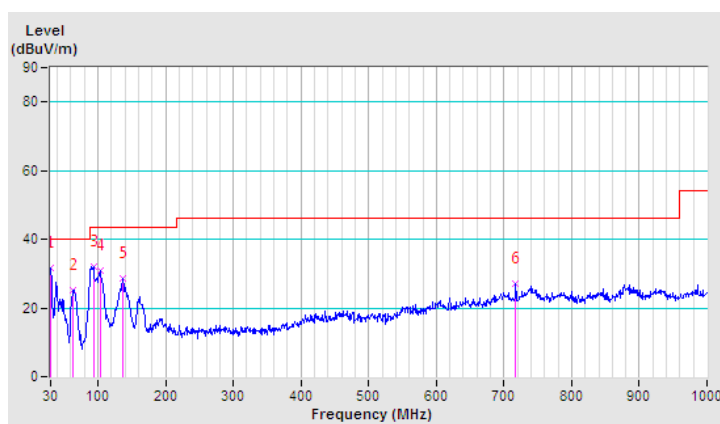


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	30.00	31.6 QP	40.0	-8.4	1.00 V	0	49.80	-18.21
2	62.98	25.2 QP	40.0	-14.8	1.00 V	0	53.49	-28.28
3	93.05	31.9 QP	43.5	-11.6	1.00 V	0	59.29	-27.38
4	102.75	30.8 QP	43.5	-12.8	1.00 V	0	57.36	-26.61
5	136.70	28.6 QP	43.5	-15.0	1.00 V	0	54.87	-26.32
6	716.76	26.9 QP	46.0	-19.1	1.00 V	0	36.60	-9.70

REMARKS:

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





ABOVE 1GHz TEST DATA:

BT-LF (GFSK)

CHANNEL	TX Channel 0	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	45.5 PK	74.0	-28.5	1.50 H	355	53.35	-7.87
2	2390.00	33.3 AV	54.0	-20.7	1.50 H	355	41.19	-7.87
3	*2402.00	66.2 PK			1.50 H	355	74.00	-7.84
4	*2402.00	52.6 AV			1.50 H	355	60.45	-7.84
5	4804.00	51.1 PK	74.0	-22.9	1.50 H	223	53.15	-2.04
6	4804.00	38.9 AV	54.0	-15.1	1.50 H	223	40.97	-2.04
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	44.9 PK	74.0	-29.1	1.50 V	92	52.73	-7.87
2	2390.00	33.1 AV	54.0	-20.9	1.50 V	92	40.93	-7.87
3	*2402.00	69.5 PK			1.50 V	92	77.35	-7.84
4	*2402.00	54.5 AV			1.50 V	92	62.37	-7.84
5	4804.00	51.2 PK	74.0	-22.8	1.50 V	179	53.23	-2.04
6	4804.00	38.3 AV	54.0	-15.7	1.50 V	179	40.35	-2.04

REMARKS:

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



CHANNEL	TX Channel 19	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	*2440.00	78.3 PK			1.50 H	345	86.05	-7.73
2	*2440.00	60.5 AV			1.50 H	345	68.26	-7.73
3	4880.00	52.9 PK	74.0	-21.1	1.15 H	245	54.66	-1.78
4	4880.00	40.8 AV	54.0	-13.3	1.15 H	245	42.53	-1.78
5	7320.00	58.0 PK	74.0	-16.0	1.15 H	176	55.26	2.76
6	7320.00	44.1 AV	54.0	-9.9	1.15 H	176	41.38	2.76
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	*2440.00	72.3 PK			1.00 V	167	79.98	-7.73
2	*2440.00	56.7 AV			1.00 V	167	64.39	-7.73
3	4880.00	53.1 PK	74.0	-20.9	1.00 V	72	54.85	-1.78
4	4880.00	40.8 AV	54.0	-13.2	1.00 V	72	42.55	-1.78
5	7320.00	57.1 PK	74.0	-16.9	1.00 V	236	54.37	2.76
6	7320.00	44.1 AV	54.0	-9.9	1.00 V	236	41.36	2.76

REMARKS:

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



CHANNEL	TX Channel 39	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	*2480.00	77.4 PK			1.10 H	252	84.98	-7.61
2	*2480.00	59.9 AV			1.10 H	252	67.46	-7.61
3	2483.50	44.5 PK	74.0	-29.5	1.10 H	252	52.11	-7.60
4	2483.50	33.3 AV	54.0	-20.7	1.10 H	252	40.94	-7.60
5	4960.00	52.8 PK	74.0	-21.2	1.00 H	142	54.36	-1.52
6	4960.00	39.7 AV	54.0	-14.3	1.00 H	142	41.19	-1.52
7	7440.00	55.7 PK	74.0	-18.3	1.00 H	212	52.75	2.96
8	7440.00	44.0 AV	54.0	-10.0	1.00 H	212	41.03	2.96
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	*2480.00	73.5 PK			1.00 V	15	81.12	-7.61
2	*2480.00	56.9 AV			1.00 V	15	64.54	-7.61
3	2483.50	44.9 PK	74.0	-29.1	1.00 V	15	52.49	-7.60
4	2483.50	33.3 AV	54.0	-20.7	1.00 V	15	40.87	-7.60
5	4960.00	53.5 PK	74.0	-20.5	1.00 V	236	55.01	-1.52
6	4960.00	40.3 AV	54.0	-13.7	1.00 V	236	41.79	-1.52
7	7440.00	56.2 PK	74.0	-17.8	1.00 V	158	53.28	2.96
8	7440.00	43.9 AV	54.0	-10.1	1.00 V	158	40.93	2.96

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.



4.3 6 dB 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 (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 07,15	Apr. 06,16
Power Meter	Anritsu	ML2495A	1139001	Feb. 20,15	Feb. 19,17
Power Sensor	Anritsu	MA2411B	1126068	Feb. 20,15	Feb. 19,17
Power Sensor	Keysight	U2021XA	MY55060016	Feb. 18,15	Feb. 17,17
Power Sensor	Keysight	U2021XA	MY55060018	Feb. 18,15	Feb. 17,17
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 12, 15	Oct. 11, 16

NOTE:

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

4.3.3 TEST PROCEDURE

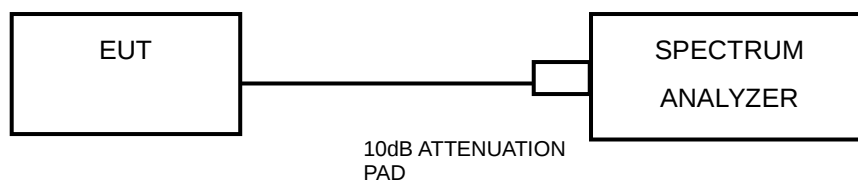
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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

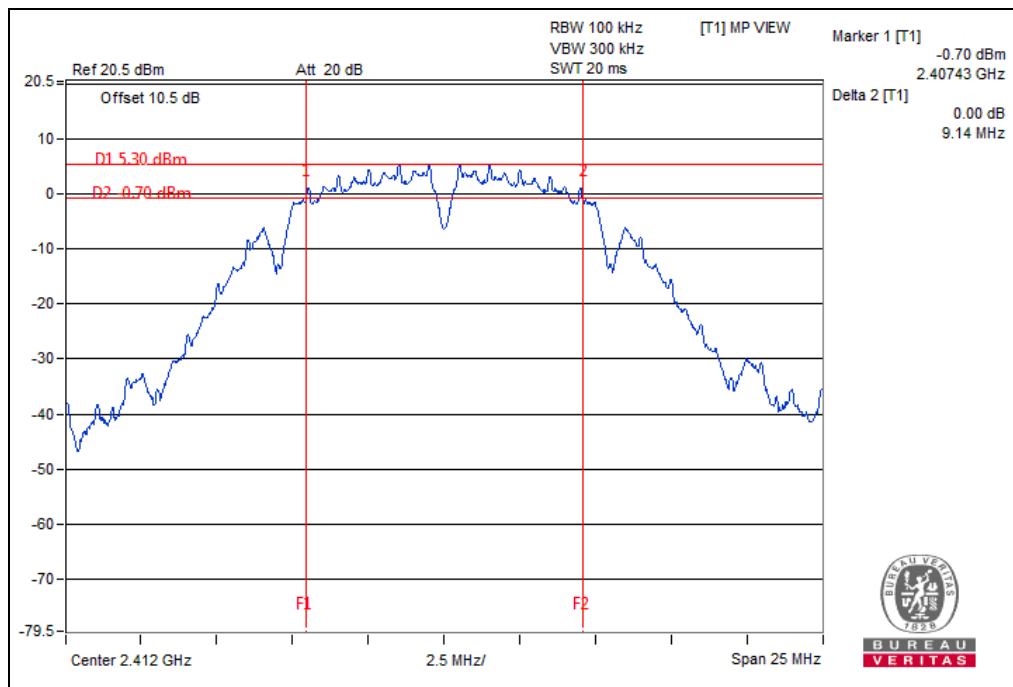
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.3.7 TEST RESULTS

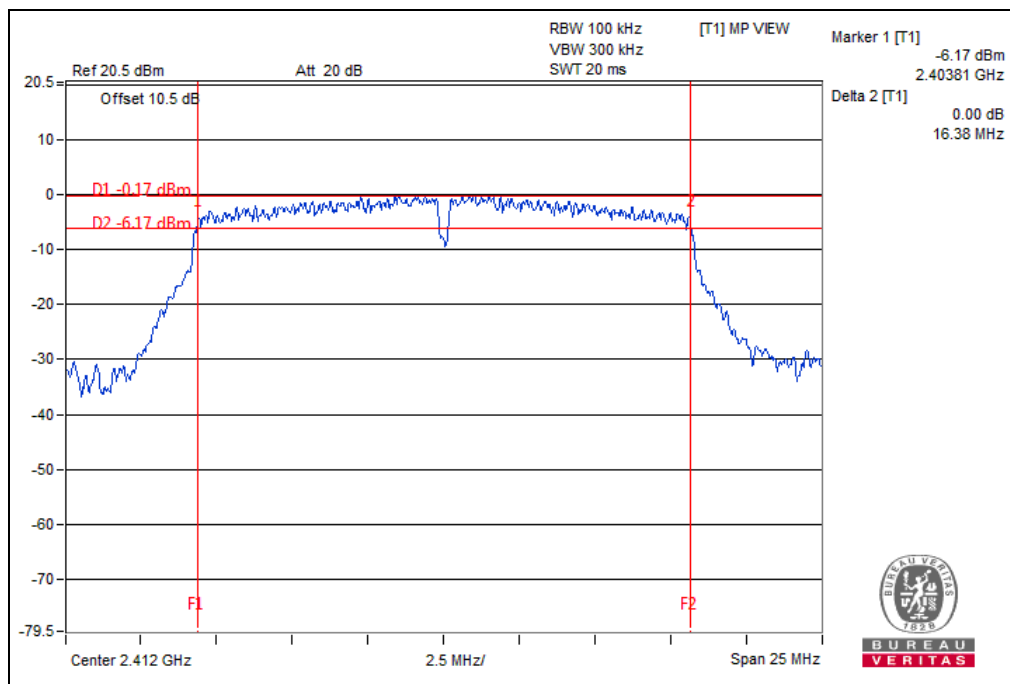
802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.14	0.5	PASS
6	2437	9.14	0.5	PASS
11	2462	9.14	0.5	PASS



802.11g

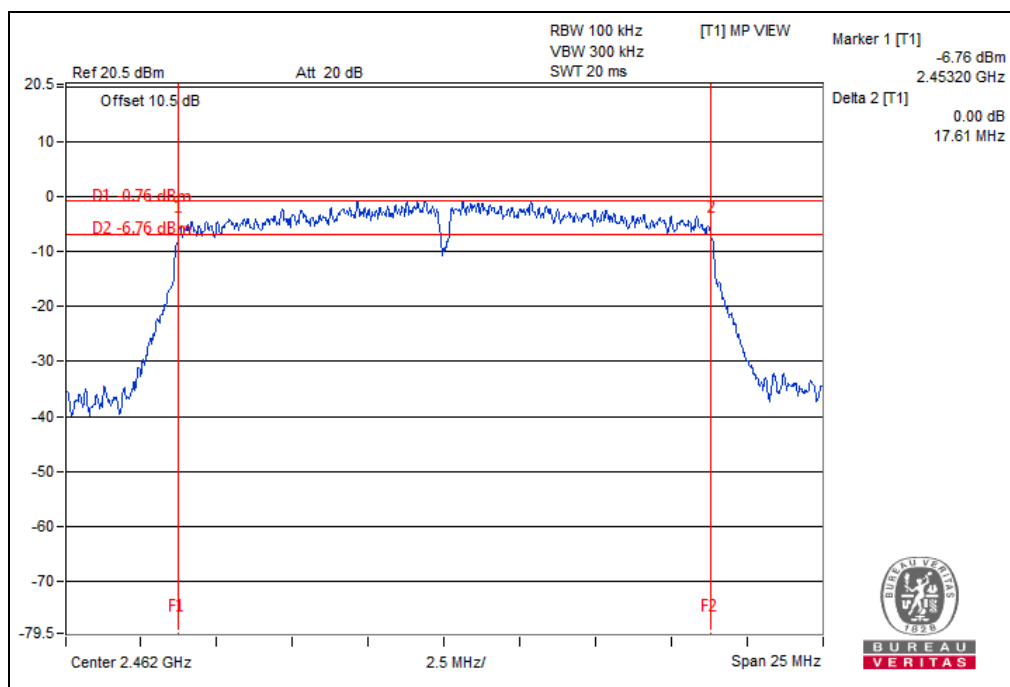
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.38	0.5	PASS
6	2437	16.36	0.5	PASS
11	2462	16.37	0.5	PASS





802.11n (20MHz)

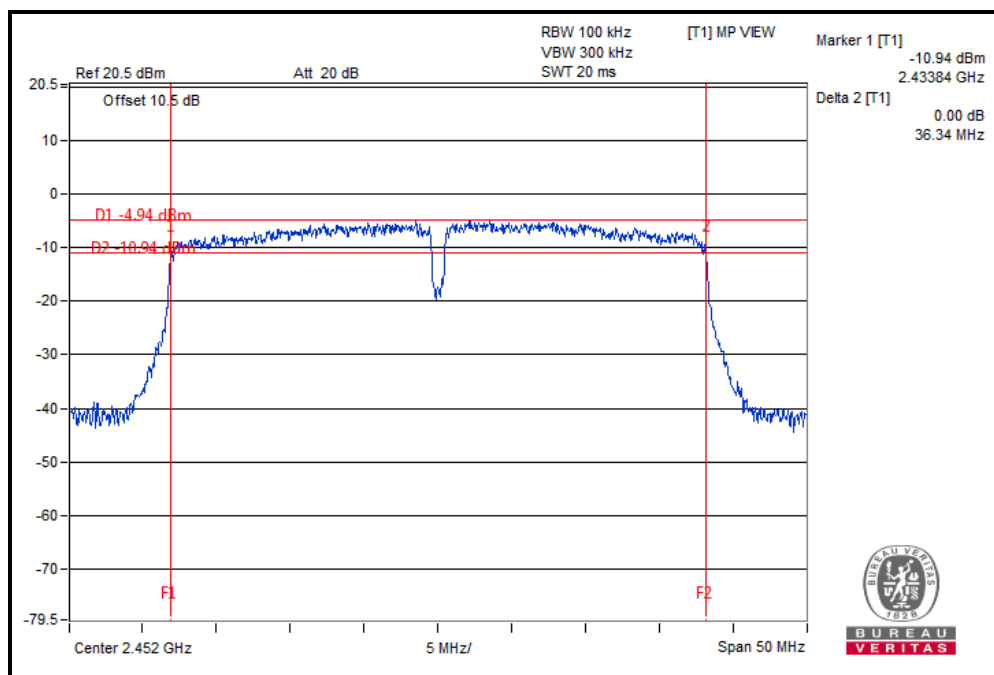
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.60	0.5	PASS
6	2437	17.60	0.5	PASS
11	2462	17.61	0.5	PASS





802.11n (40MHz)

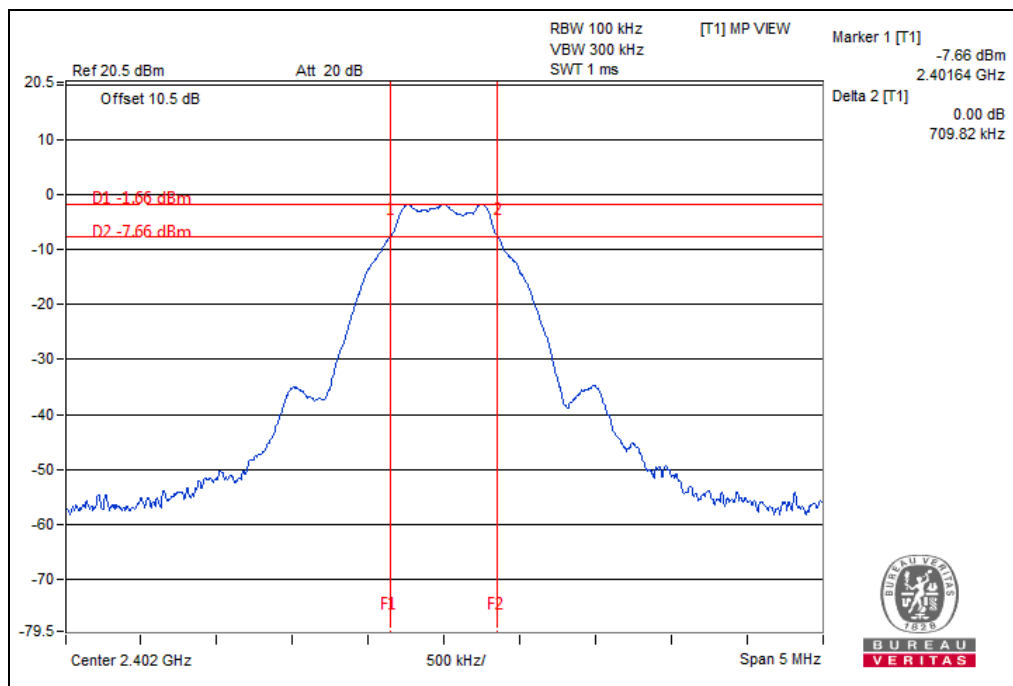
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.33	0.5	PASS
6	2437	36.32	0.5	PASS
9	2452	36.34	0.5	PASS





BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.71	0.5	PASS
19	2440	0.71	0.5	PASS
39	2480	0.71	0.5	PASS



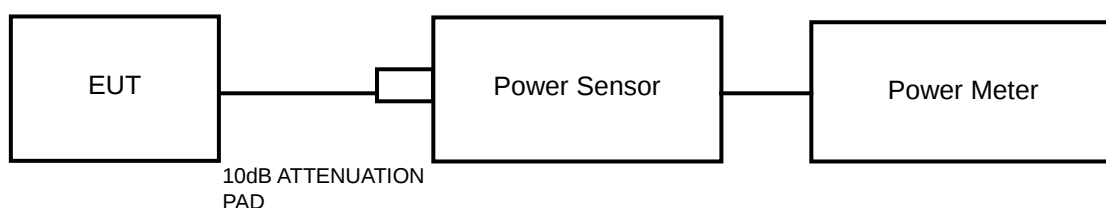


4.4 CONDUCTED OUTPUT POWER

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

Refer to section 4.3.3 to get information of above instrument.

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

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

4.4.7.1 MAXIMUM PEAK OUTPUT POWER

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	18.16	65.464	1	PASS
6	2437	18.47	70.307	1	PASS
11	2462	18.62	72.778	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	19.74	94.189	1	PASS
6	2437	19.98	99.541	1	PASS
11	2462	20.16	103.753	1	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	19.09	81.096	1	PASS
6	2437	19.23	83.753	1	PASS
11	2462	19.45	88.105	1	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
3	2422	18.47	70.307	1	PASS
6	2437	18.61	72.611	1	PASS
9	2452	18.87	77.090	1	PASS



BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	-1.91	0.644	1	PASS
19	2440	-1.89	0.647	1	PASS
39	2480	-2.47	0.566	1	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	15.38	N/A
6	2437	15.42	N/A
11	2462	15.55	N/A

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	12.85	N/A
6	2437	12.95	N/A
11	2462	13.06	N/A

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	12.23	N/A
6	2437	12.35	N/A
11	2462	12.48	N/A

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
3	2422	11.35	N/A
6	2437	11.51	N/A
9	2452	11.75	N/A



Test Report No.: RF160218W003-2

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	-2.09	N/A
19	2440	-2.07	N/A
39	2480	-2.67	N/A

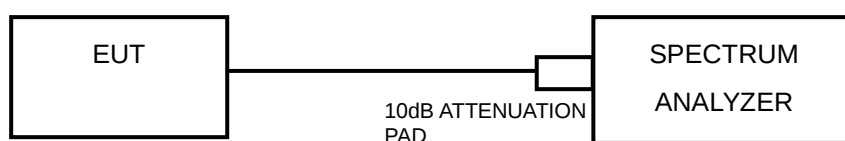


4.5 POWER SPECTRAL DENSITY MEASUREMENT

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 = 3 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

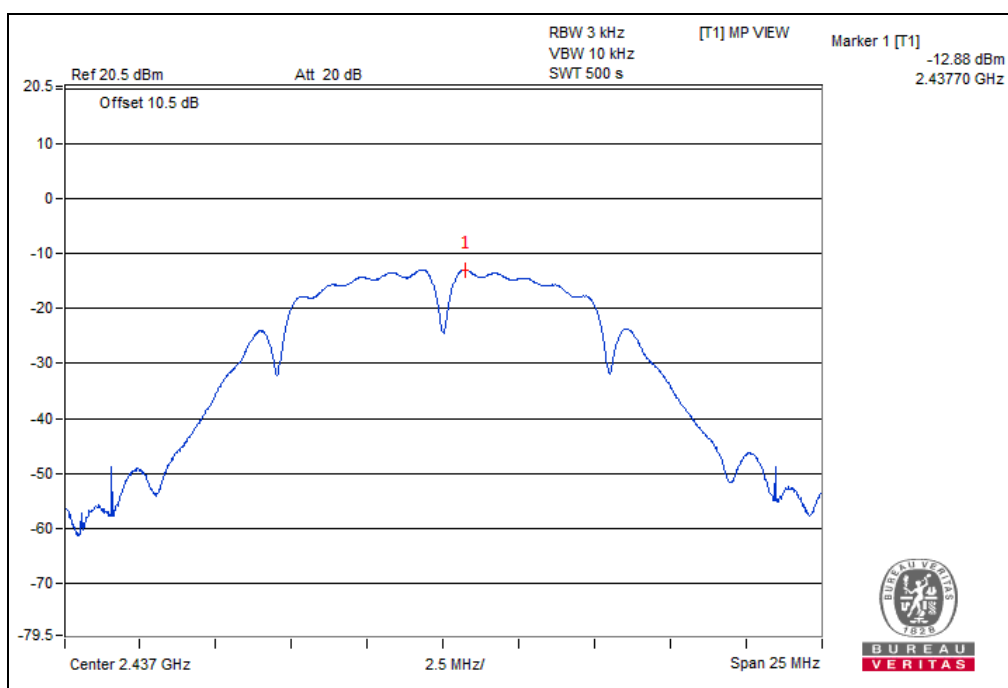
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.5.7 TEST RESULTS

802.11b

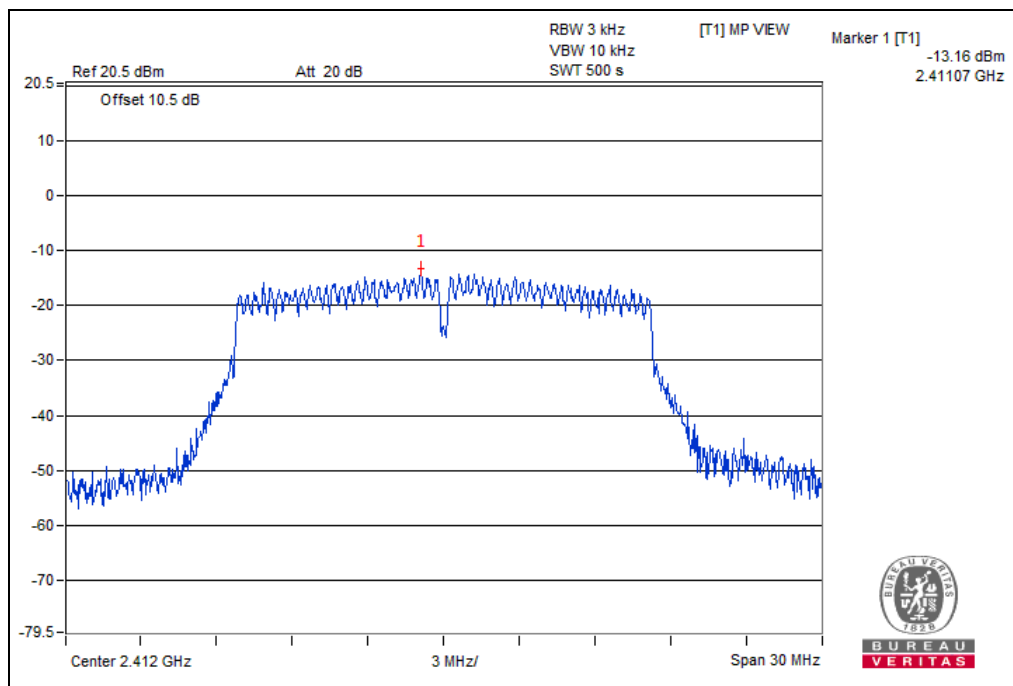
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.95	8	PASS
6	2437	-12.88	8	PASS
11	2462	-13.03	8	PASS





802.11g

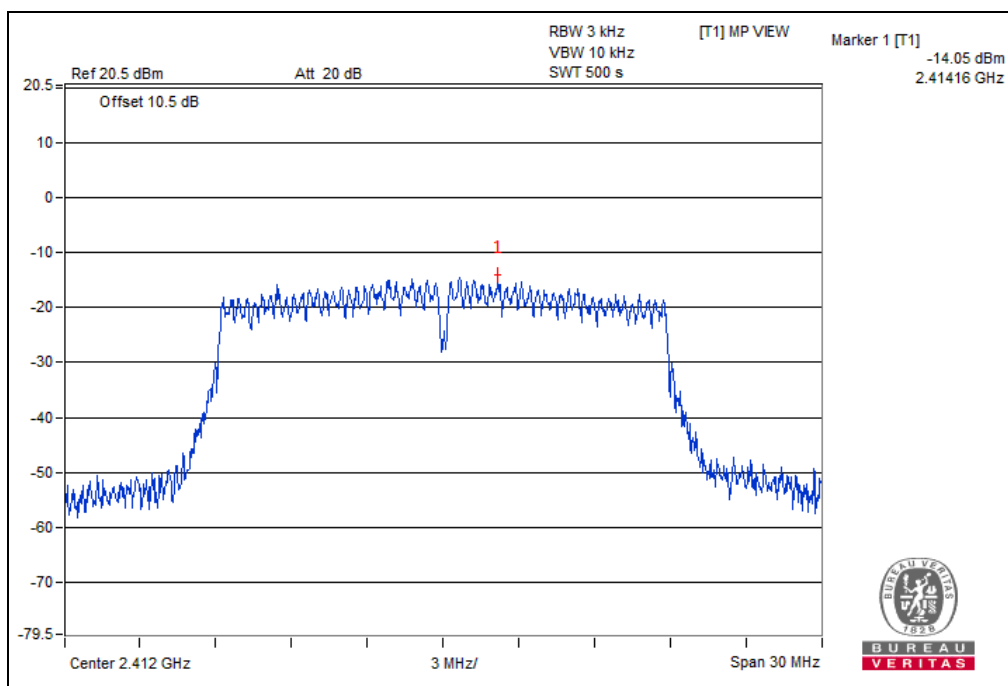
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.16	8	PASS
6	2437	-13.76	8	PASS
11	2462	-13.57	8	PASS





802.11n (20MHz)

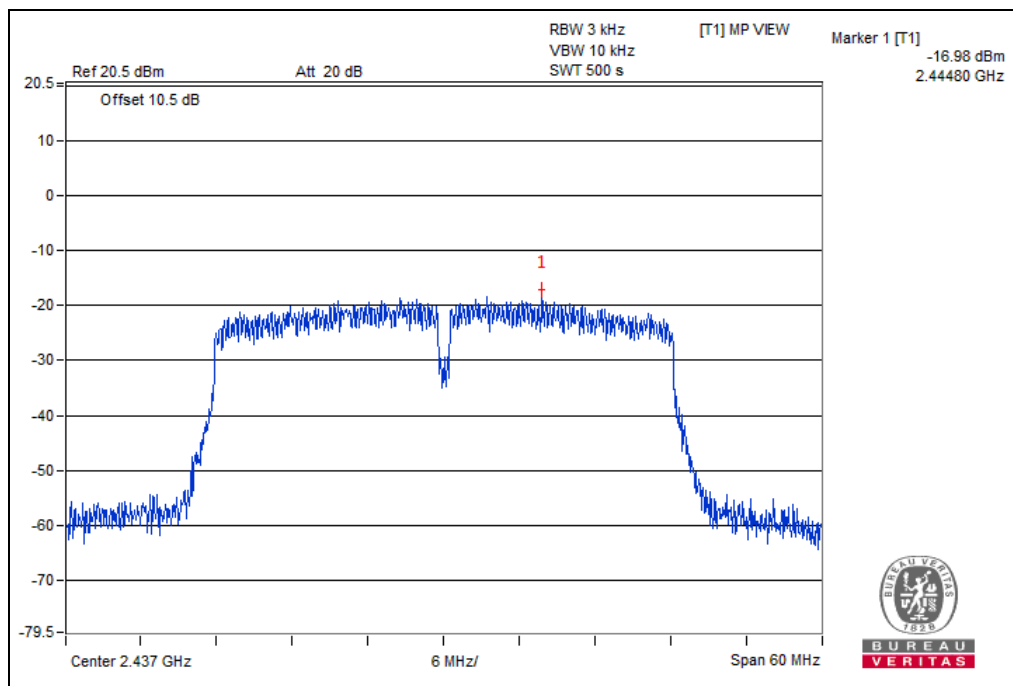
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-14.05	8	PASS
6	2437	-15.31	8	PASS
11	2462	-14.61	8	PASS





802.11n (40MHz)

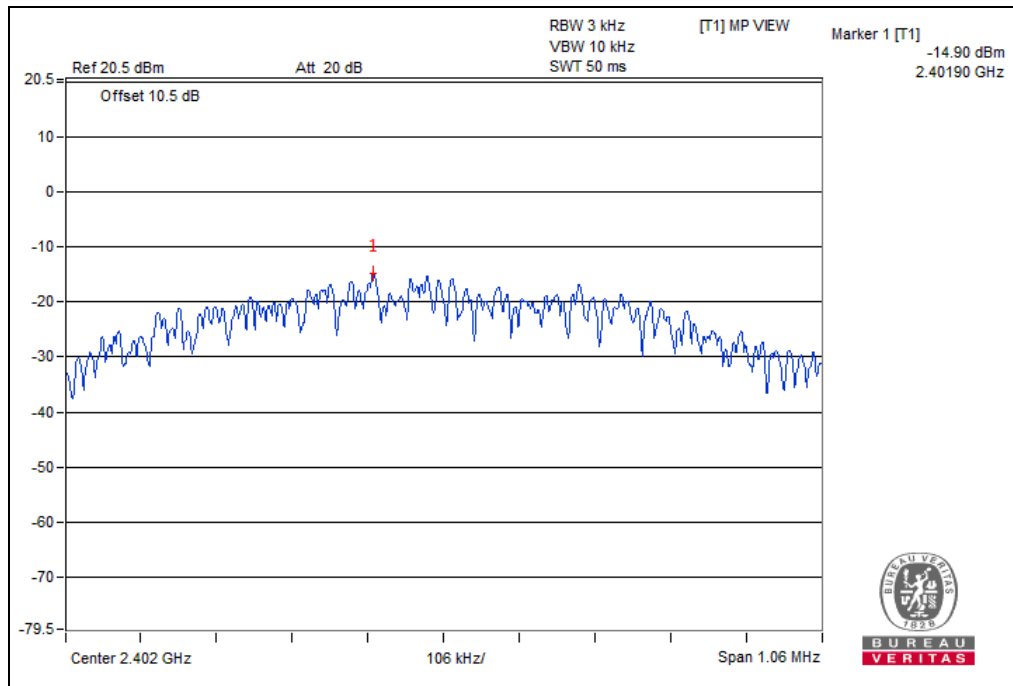
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-17.11	8	PASS
6	2437	-16.98	8	PASS
9	2452	-17.58	8	PASS





BT-LE (GFSK)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-14.90	8	PASS
19	2440	-15.45	8	PASS
39	2480	-15.41	8	PASS



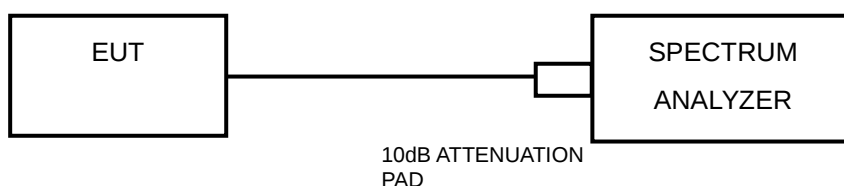


4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB 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 REF

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 OOB

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

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

4.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.



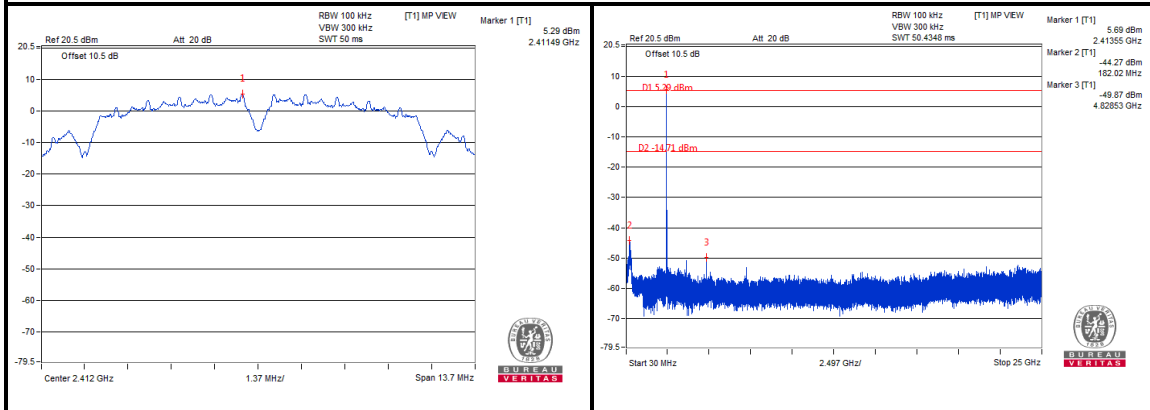
BUREAU
VERITAS

Test Report No.: RF160218W003-2

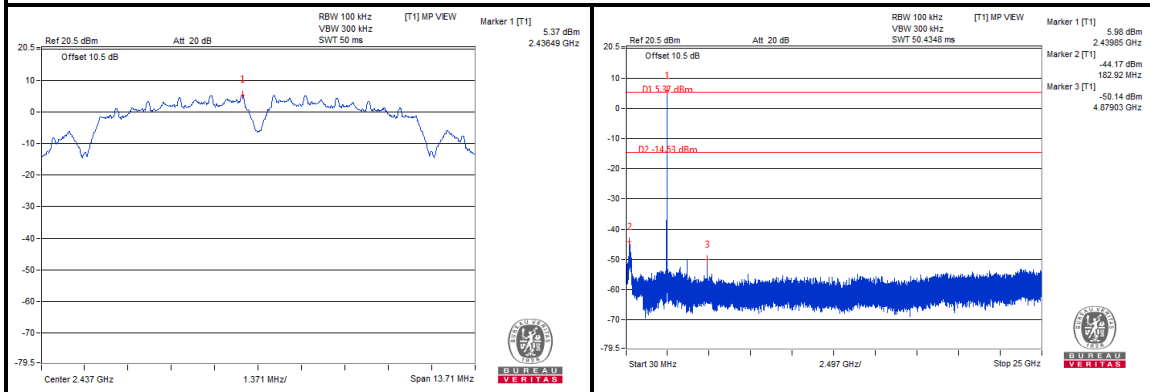
4.6.8 TEST RESULTS

802.11b

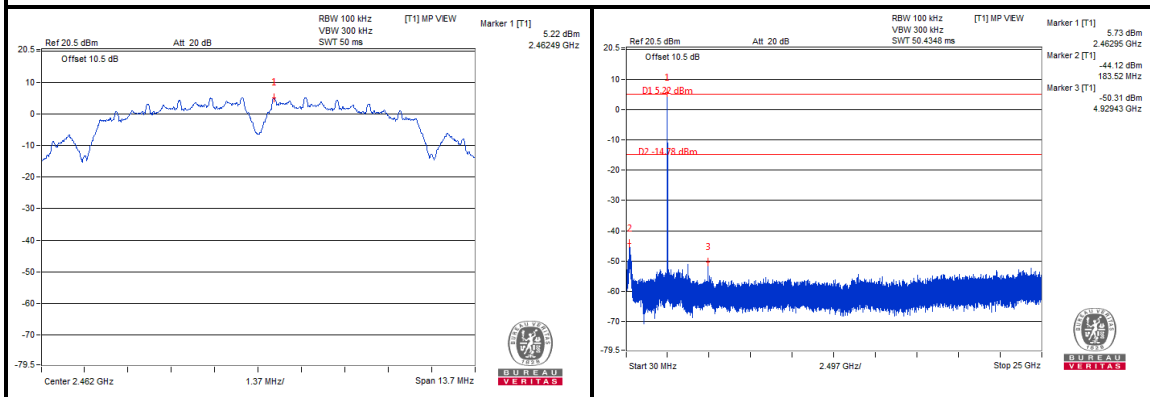
CH 1



CH 6



CH 11



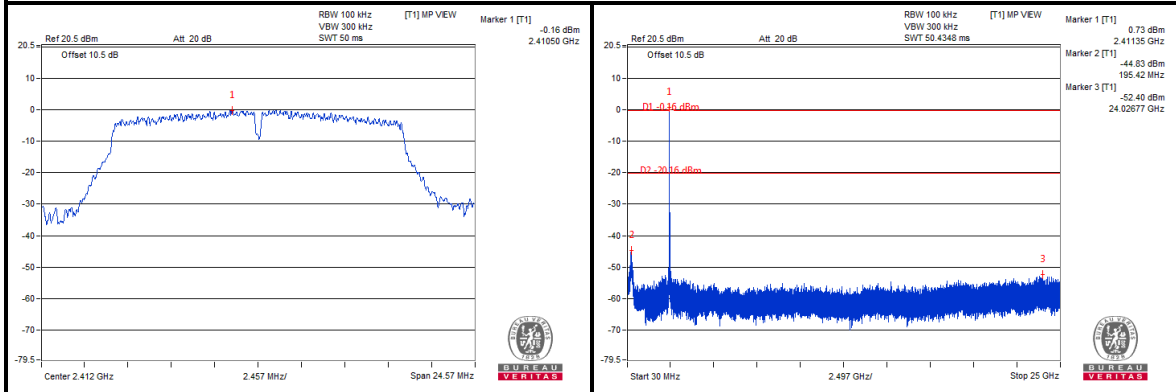


BUREAU
VERITAS

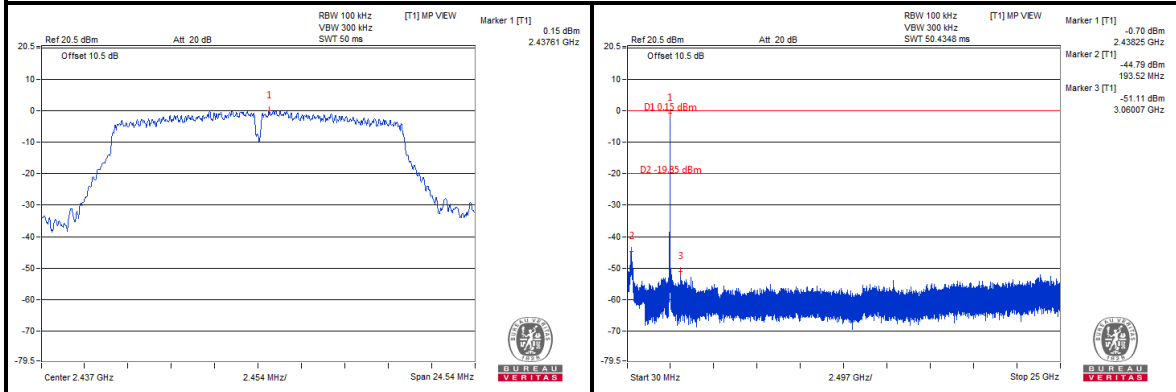
Test Report No.: RF160218W003-2

802.11g

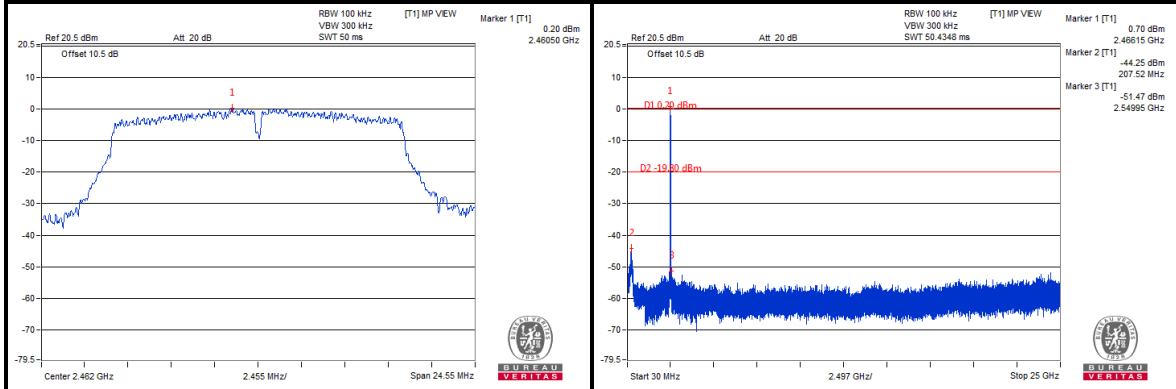
CH 1



CH 6



CH 11



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City, Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com

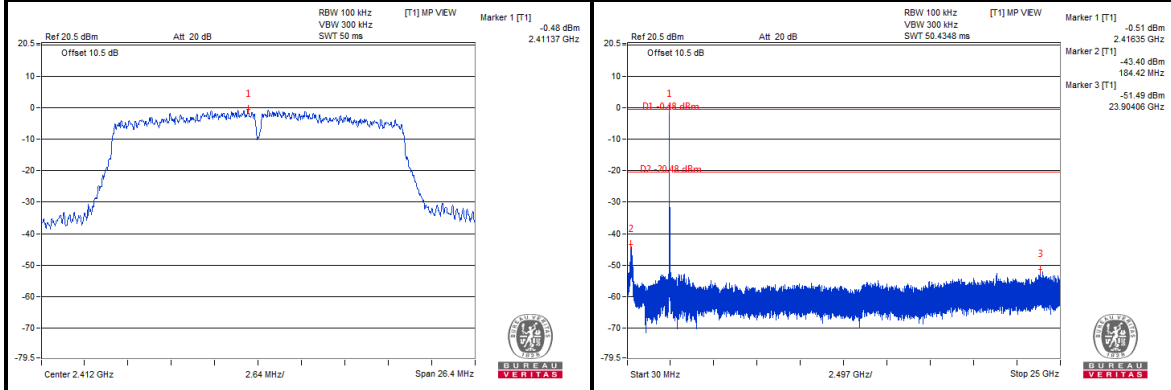


BUREAU
VERITAS

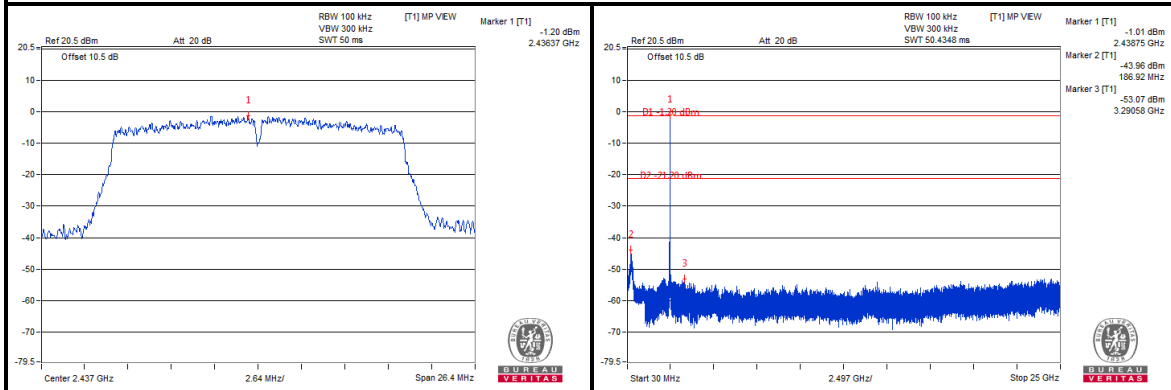
Test Report No.: RF160218W003-2

802.11n (20MHz)

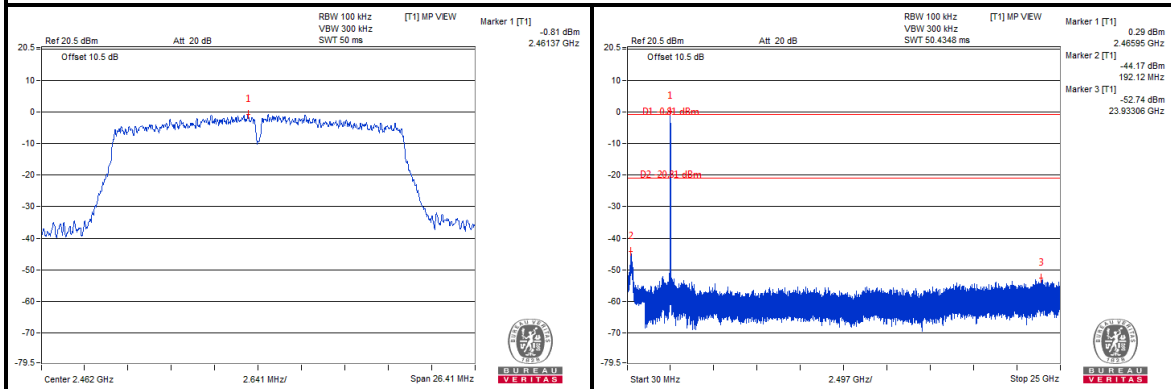
CH 1



CH 6



CH 11



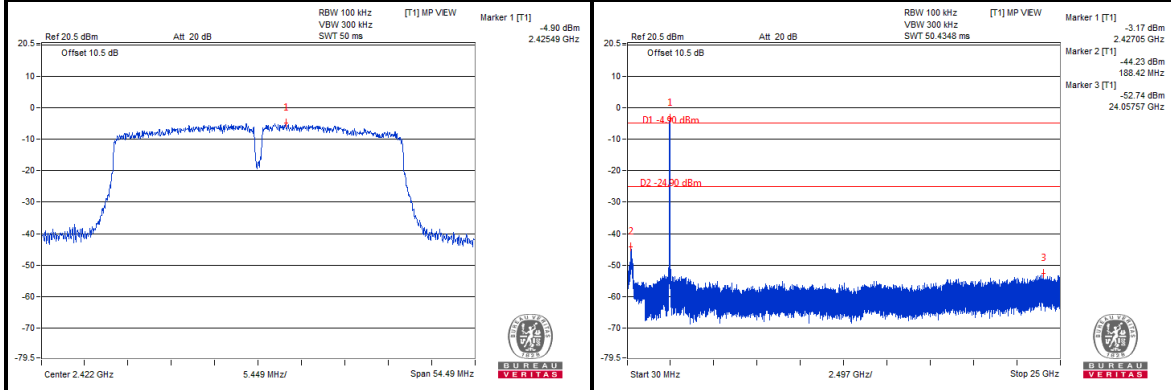


BUREAU
VERITAS

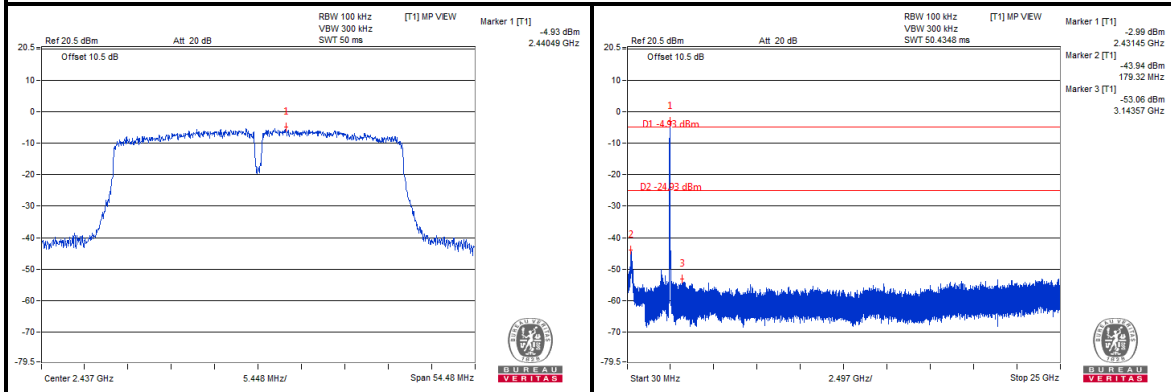
Test Report No.: RF160218W003-2

802.11n (40MHz)

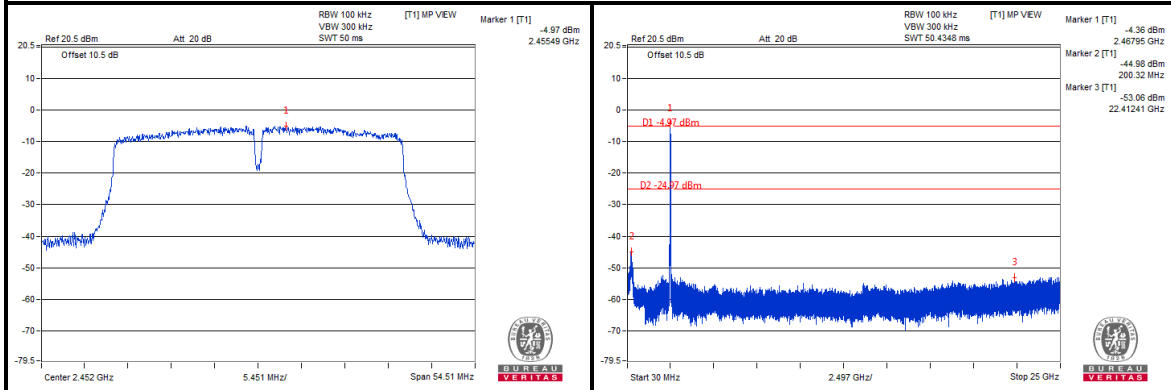
CH 3



CH 6



CH 9



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City, Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com

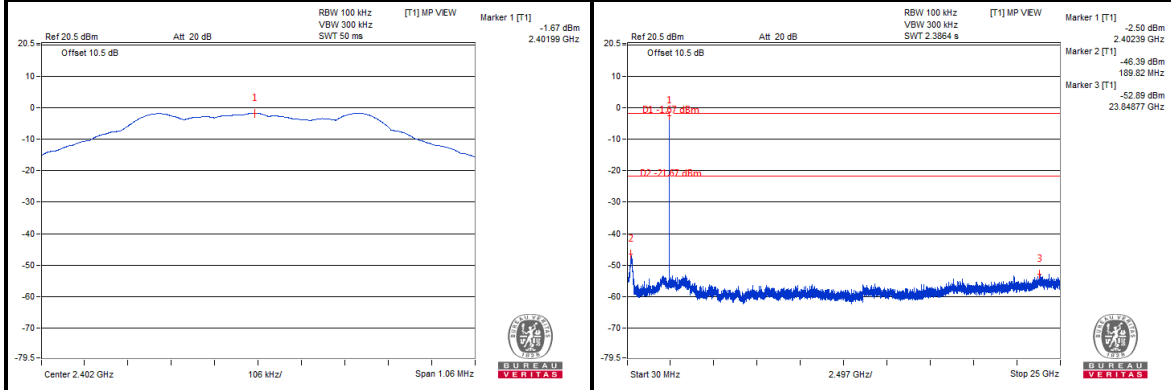


BUREAU
VERITAS

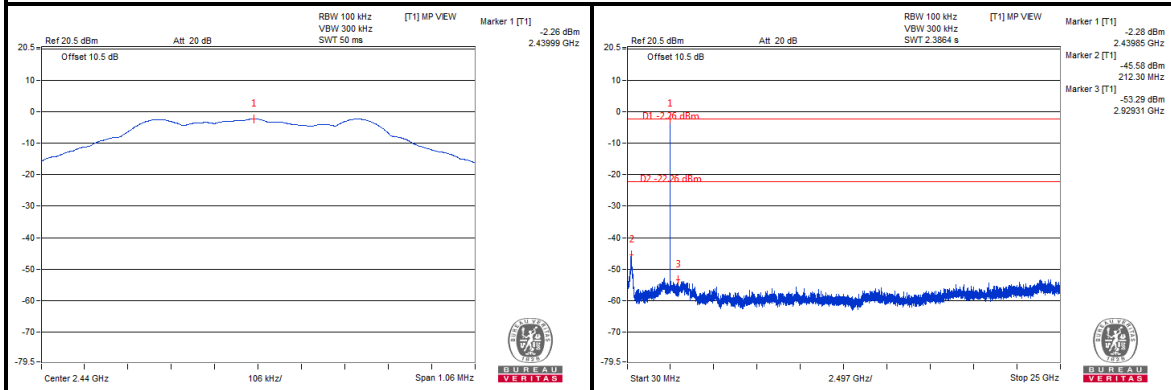
Test Report No.: RF160218W003-2

BT-LE (GFSK)

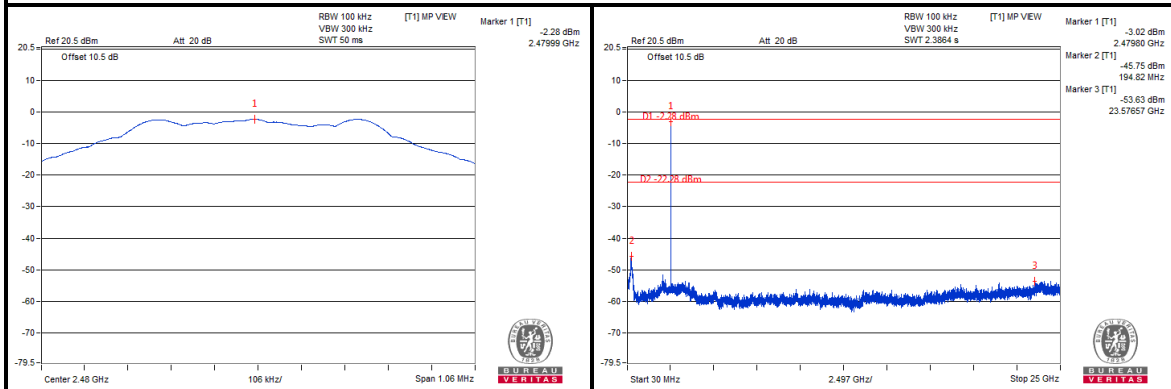
CH 0



CH 19



CH 39



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City, Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



Test Report No.: RF160218W003-2

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF160218W003-2

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---