

TEST REPORT

Applicant	Ningbo Lingzhu Technology CO., Ltd..
Address	No.578, Building 7, No.535 Kangqiao South Road, Jiangbei District, Ningbo, PRC

Manufacturer or Supplier	Ningbo Lingzhu Technology CO., Ltd.
Address	No.578, Building 7, No.535 Kangqiao South Road, Jiangbei District, Ningbo, PRC
Product	Smart Bluetooth Gateway Pro
Brand Name	N/A
Model	THP10-B-V2
Additional Model & Model Difference	N/A
Date of tests	Apr. 24, 2023 ~ Jun. 02, 2023

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 Niko Zhang Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Jul. 19, 2023

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2304WDG0057	Original release	Jul. 19, 2023

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	2.67dB
Radiated emissions	9KHz ~ 30MHz	2.80dB
	30MHz ~ 1GMHz	4.24dB
	1GHz ~ 18GHz	4.76dB
	18GHz ~ 40GHz	4.50dB

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 Bluetooth Gateway Pro
MODEL NO.	THP10-B-V2
FCC ID	2A789THP10-B-V2
NOMINAL VOLTAGE	DC 5V From Adapter
MODULATION TECHNOLOGY	DSSS, OFDM, GFSK
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM BT-LE for DTS
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2402-2480MHz for BT-LE(GFSK)
PEAK OUTPUT POWER	WLAN: 231.206mW (Maximum) BT-LE: 79.799mW (Maximum)
ANTENNA TYPE	FPC Antenna, WLAN: 2.03dBi Gain BT-LE: 3.48dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	DC LINE: Unshielded, Detachable, 0.5m Network Link: Unshielded, Detachable, 0.5m

NOTE:

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

MODULATION MODE	FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX
BT-LE	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.
4. Please refer to the EUT photo document (Reference No.: 2304WDG0057) for detailed product photo.
5. Adapter as an optional item, can be shipped with or without. The EUT was powered by the following adapter:

Adapter	
BRAND:	N/A
MODEL:	TPA-46B050100UU
INPUT:	100-240V~50/60Hz, 0.2A
OUTPUT:	5V, 1A

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		

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, power supply voltage range 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 Adapter

Where **RE<1G**: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz
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
-	BT Link+ 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)
A	802.11b	1 to 11	1	DSSS	DBPSK	6.0
A	BT-LE	0 to 39	39	DTS	BT-LE	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)
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	BT-LE	0 to 39	0,19, 39	DTS	BT-LE	1.0

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	BT-LE	0 to 39	0,19, 39	DTS	BT-LE	1.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE(Adapter)	TESTED BY
RE<1G	26deg. C, 50%RH	120V/60Hz	Cheng Zhong
RE≥1G	26deg. C, 50%RH	120V/60Hz	Cheng Zhong
PLC	25deg. C, 60%RH	120V/60Hz	Yang
APCM	20deg. C, 55%RH	120V/60Hz	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 15.247 Meas Guidance v05r02

ANSI C63.10-2013

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

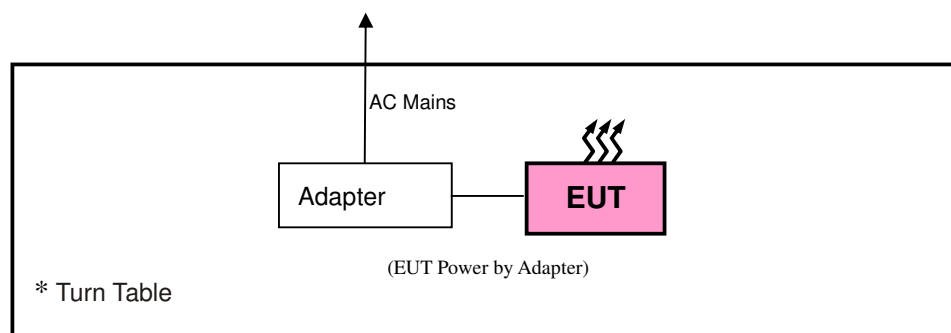
3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E6420	9H12FS1	N/A

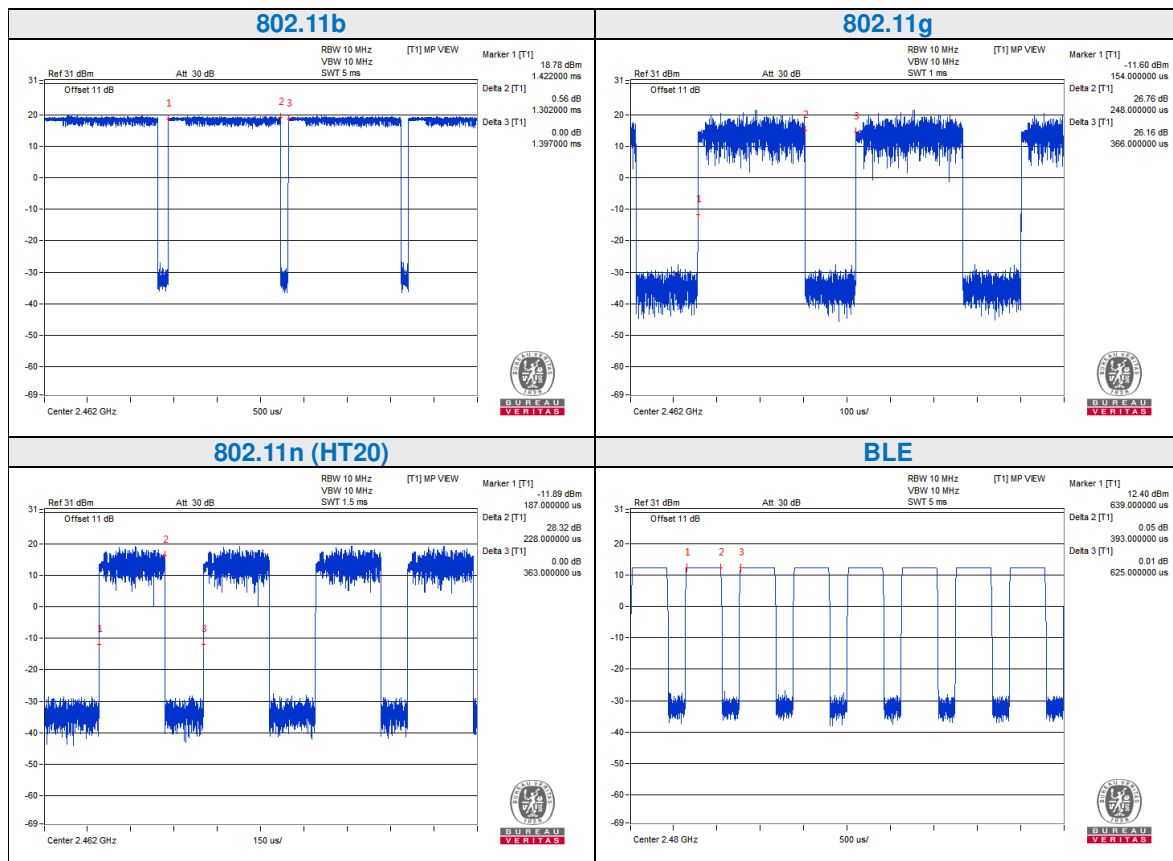
NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.0m; DC Line: Unshielded, Detachable 2.0m

3.5 CONFIGURATION OF SYSTEM UNDER TEST



3.6 DUTY CYCLE OF TESET SIGNAL

Test Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty factor (dB)	1/T Min. VBW (KHz)	VBW Setting
802.11b	1.302	1.397	93.2	0.31	0.768	1KHz
802.11g	0.248	0.366	67.8	1.69	4.032	5KHz
802.11n (HT20)	0.228	0.363	62.8	2.02	4.386	5KHz
BLE	0.393	0.625	62.9	2.015	2.545	3KHz



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Jan. 10,24
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Jan. 11,24
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Jan. 10,24
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jul. 27, 23
Coaxial RF Cable	SUHNER	RG 223/U-CE	C2310066DG	Jul. 24, 23
Test software	ADT	ADT_Cond_V7.3.7	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

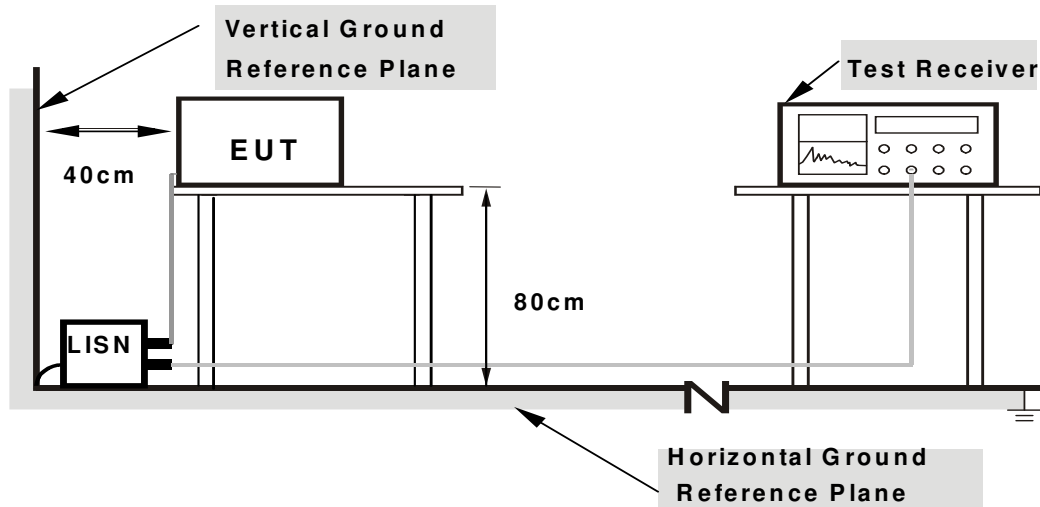
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

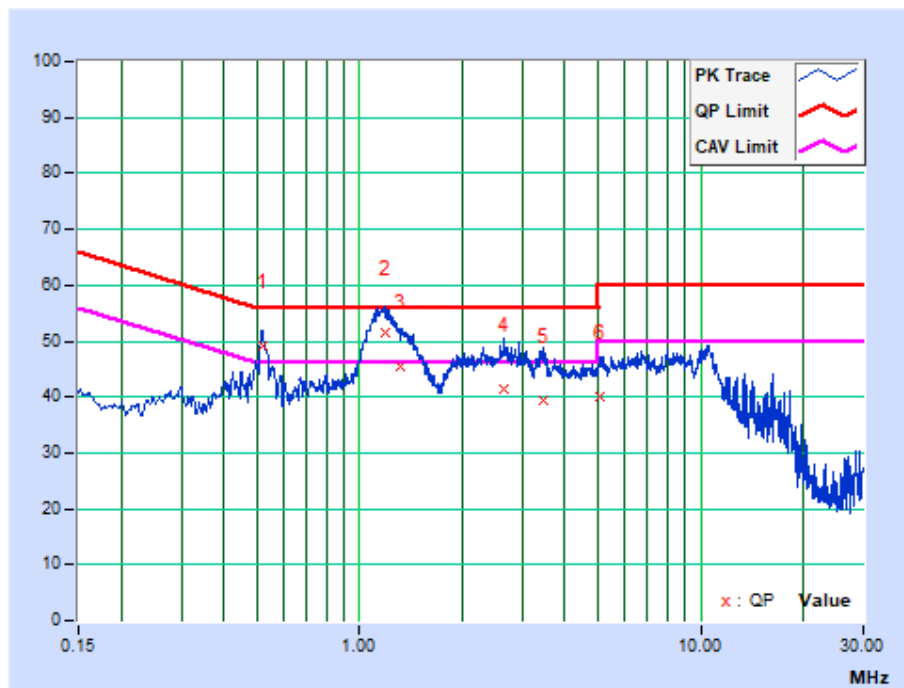
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: BT+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	0.51834	10.21	38.98	31.89	49.19	42.10	56.00	46.00	-6.81	-3.90
2	1.18725	10.24	41.30	28.60	51.54	38.84	56.00	46.00	-4.46	-7.16
3	1.31295	10.25	35.20	24.20	45.45	34.45	56.00	46.00	-10.55	-11.55
4	2.65650	10.29	31.27	21.58	41.56	31.87	56.00	46.00	-14.44	-14.13
5	3.46650	10.33	29.17	19.34	39.50	29.67	56.00	46.00	-16.50	-16.33
6	5.08650	10.42	29.61	19.82	40.03	30.24	60.00	50.00	-19.97	-19.76

- 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	0.51425	10.17	34.70	26.60	44.87	36.77	56.00	46.00	-11.13	-9.23
2	1.17375	10.21	36.49	24.23	46.70	34.44	56.00	46.00	-9.30	-11.56
3	1.43248	10.22	31.04	18.59	41.26	28.81	56.00	46.00	-14.74	-17.19
4	2.75325	10.28	26.33	14.40	36.61	24.68	56.00	46.00	-19.39	-21.32
5	4.99425	10.40	25.74	12.93	36.14	23.33	56.00	46.00	-19.86	-22.67
6	10.79250	10.91	28.84	20.60	39.75	31.51	60.00	50.00	-20.25	-18.49

- 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.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Jan. 10, 24
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May. 09, 24
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	Apr. 27, 24
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 06, 24
Trilog-Broadband Antenna(20M-2G)	SCHWARZBECK	VULB 9168	01282	Aug. 21, 23
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Apr. 27, 24
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 28, 24
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 22, 24
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Apr. 26, 24
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Jan. 16, 24
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A

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. For below 1GHz was used bilog antenna, and above 1GHz was used horn 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. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT, the lowest height of the magnetic antenna shall be 1.3m above the ground.
- a. 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:

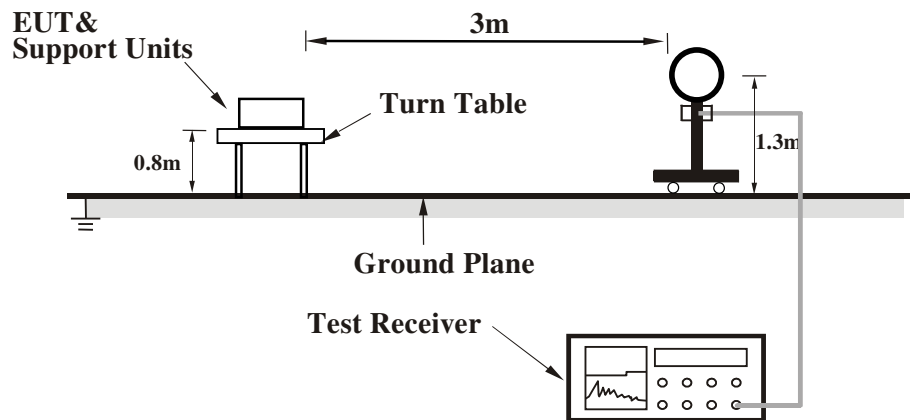
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

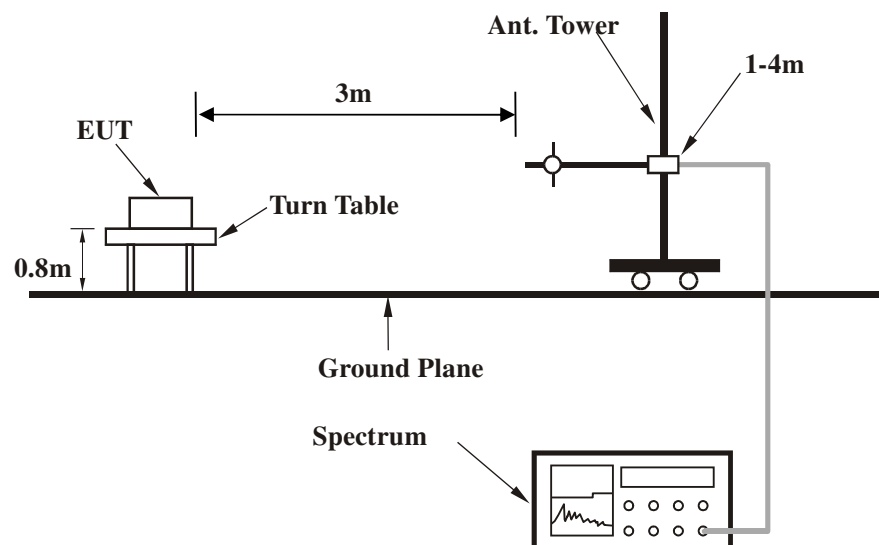
No deviation.

4.2.5 TEST SETUP

Below 30MHz test setup

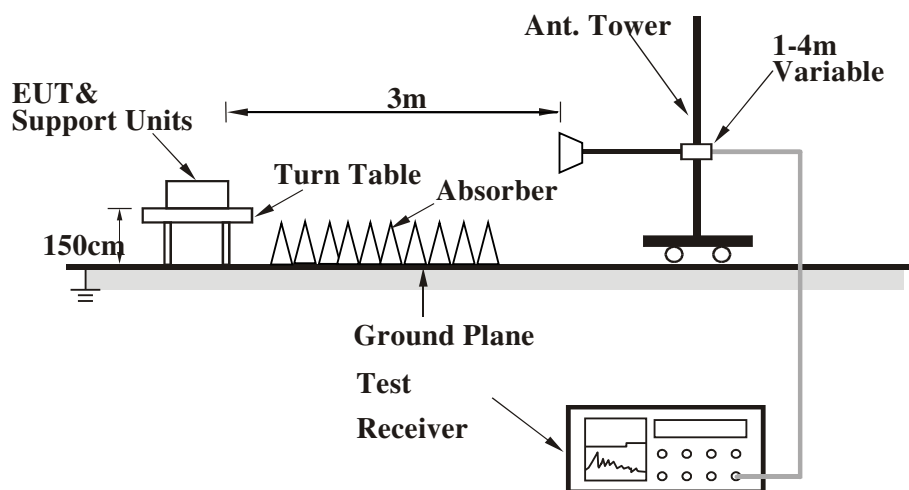


Below 1GHz test setup



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

- 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:

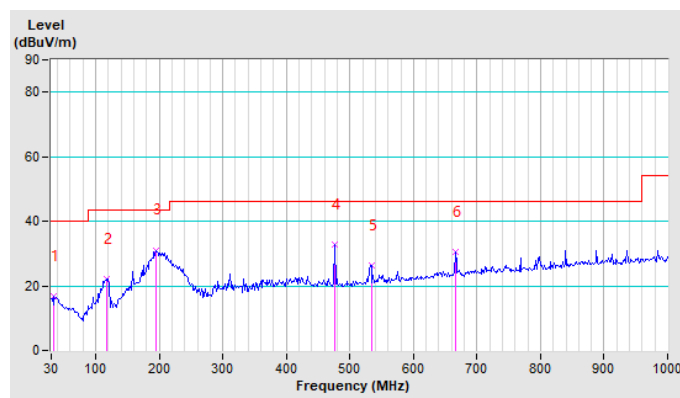
802.11b

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	34.66	16.83 QP	40.00	-23.17	2.50 H	235	34.18	-17.35
2	117.05	22.23 QP	43.50	-21.27	2.50 H	98	40.25	-18.02
3	194.78	31.08 QP	43.50	-12.42	2.50 H	114	48.72	-17.64
4	476.14	32.80 QP	46.00	-13.20	2.50 H	216	42.25	-9.45
5	533.65	26.29 QP	46.00	-19.71	2.50 H	59	34.33	-8.04
6	665.79	30.44 QP	46.00	-15.56	2.50 H	301	35.64	-5.20

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.

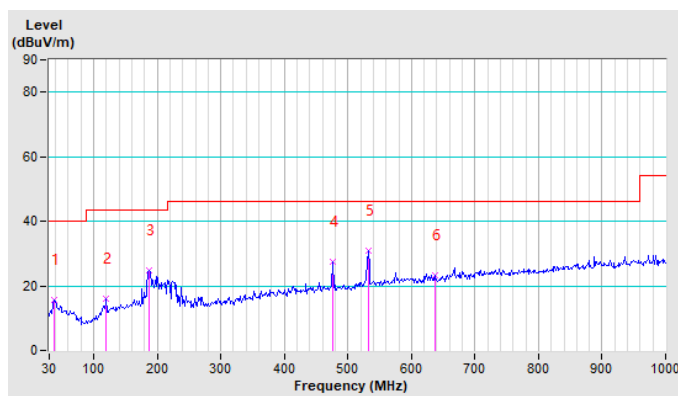


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	37.77	15.76 QP	40.00	-24.24	1.00 V	104	32.57	-16.81
2	120.16	15.96 QP	43.50	-27.54	1.00 V	89	33.74	-17.78
3	187.00	24.83 QP	43.50	-18.67	1.00 V	74	42.04	-17.21
4	476.14	27.44 QP	46.00	-18.56	1.00 V	57	36.89	-9.45
5	532.10	30.75 QP	46.00	-15.25	1.00 V	32	38.83	-8.08
6	636.25	23.13 QP	46.00	-22.87	1.00 V	18	28.98	-5.85

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	55.97 PK	74.00	-18.03	1.40 H	343	53.28	2.69
2	2390.00	40.15 AV	54.00	-13.85	1.40 H	343	37.46	2.69
3	*2412.00	112.81 PK			1.40 H	343	110.04	2.77
4	*2412.00	106.24 AV			1.40 H	343	103.47	2.77
5	4824.00	49.28 PK	74.00	-24.72	2.52 H	360	40.94	8.34
6	4824.00	41.29 AV	54.00	-12.71	2.52 H	360	32.95	8.34
7	#7236.00	52.35 PK	74.00	-21.65	1.06 H	89	42.80	9.55
8	#7236.00	40.28 AV	54.00	-13.72	1.06 H	89	30.73	9.55
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	47.88 PK	74.00	-26.12	1.00 V	338	45.19	2.69
2	2390.00	35.22 AV	54.00	-18.78	1.00 V	338	32.53	2.69
3	*2412.00	104.22 PK			1.00 V	338	101.45	2.77
4	*2412.00	97.04 AV			1.00 V	338	94.27	2.77
5	4824.00	51.28 PK	74.00	-22.72	2.00 V	95	42.94	8.34
6	4824.00	40.29 AV	54.00	-13.71	2.00 V	95	31.95	8.34
7	#7236.00	52.39 PK	74.00	-21.61	1.65 V	95	42.84	9.55
8	#7236.00	43.00 AV	54.00	-11.00	1.65 V	95	33.45	9.55

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	114.81 PK			1.54 H	341	111.97	2.84
2	*2437.00	106.19 AV			1.54 H	341	103.35	2.84
3	4874.00	49.65 PK	74.00	-24.35	1.65 H	90	40.96	8.69
4	4874.00	38.00 AV	54.00	-16.00	1.65 H	90	29.31	8.69
5	7311.00	53.20 PK	74.00	-20.80	1.56 H	34	43.61	9.59
6	7311.00	40.39 AV	54.00	-13.61	1.56 H	34	30.80	9.59
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	105.25 PK			1.00 V	95	102.41	2.84
2	*2437.00	97.68 AV			1.00 V	95	94.84	2.84
3	4874.00	51.29 PK	74.00	-22.71	1.65 V	95	42.60	8.69
4	4874.00	40.32 AV	54.00	-13.68	1.65 V	95	31.63	8.69
5	7311.00	52.39 PK	74.00	-21.61	1.65 V	256	42.80	9.59
6	7311.00	40.29 AV	54.00	-13.71	1.65 V	256	30.70	9.59

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	114.41 PK			1.70 H	340	111.49	2.92
2	*2462.00	106.53 AV			1.70 H	340	103.61	2.92
3	2483.50	63.18 PK	74.00	-10.82	1.70 H	340	60.20	2.98
4	2483.50	41.48 AV	54.00	-12.52	1.70 H	340	38.50	2.98
5	4924.00	51.29 PK	74.00	-22.71	1.62 H	96	42.24	9.05
6	4924.00	40.28 AV	54.00	-13.72	1.62 H	96	31.23	9.05
7	7386.00	51.29 PK	74.00	-22.71	1.00 H	96	41.66	9.63
8	7386.00	41.00 AV	54.00	-13.00	1.00 H	96	31.37	9.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.60 PK			1.00 V	250	102.68	2.92
2	*2462.00	96.80 AV			1.00 V	250	93.88	2.92
3	2483.50	54.00 PK	74.00	-20.00	1.00 V	209	51.02	2.98
4	2483.50	41.29 AV	54.00	-12.71	1.00 V	209	38.31	2.98
5	4924.00	52.36 PK	74.00	-21.64	1.95 V	85	43.31	9.05
6	4924.00	40.25 AV	54.00	-13.75	1.95 V	85	31.20	9.05
7	7386.00	51.29 PK	74.00	-22.71	1.78 V	81	41.66	9.63
8	7386.00	41.28 AV	54.00	-12.72	1.78 V	81	31.65	9.63

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The 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	54.83 PK	74.00	-19.17	1.75 H	343	52.14	2.69
2	2390.00	44.51 AV	54.00	-9.49	1.75 H	343	41.82	2.69
3	*2412.00	106.21 PK			1.75 H	343	103.44	2.77
4	*2412.00	97.98 AV			1.75 H	343	95.21	2.77
5	4824.00	52.19 PK	74.00	-21.81	1.98 H	55	43.85	8.34
6	4824.00	41.29 AV	54.00	-12.71	1.98 H	55	32.95	8.34
7	#7236.00	51.36 PK	74.00	-22.64	1.95 H	52	41.81	9.55
8	#7236.00	40.32 AV	54.00	-13.68	1.95 H	52	30.77	9.55
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	47.02 PK	74.00	-26.98	1.00 V	248	44.33	2.69
2	2390.00	36.92 AV	54.00	-17.08	1.00 V	248	34.23	2.69
3	*2412.00	98.30 PK			1.00 V	248	95.53	2.77
4	*2412.00	88.13 AV			1.00 V	248	85.36	2.77
5	4824.00	51.29 PK	74.00	-22.71	1.05 V	322	42.95	8.34
6	4824.00	38.15 AV	54.00	-15.85	1.05 V	322	29.81	8.34
7	#7236.00	49.25 PK	74.00	-24.75	1.62 V	69	39.70	9.55
8	#7236.00	40.20 AV	54.00	-13.80	1.62 V	69	30.65	9.55

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	106.65 PK			1.70 H	165	103.81	2.84
2	*2437.00	98.10 AV			1.70 H	165	95.26	2.84
3	4874.00	54.20 PK	74.00	-19.80	1.95 H	225	45.51	8.69
4	4874.00	40.32 AV	54.00	-13.68	1.95 H	225	31.63	8.69
5	7311.00	51.29 PK	74.00	-22.71	1.65 H	259	41.70	9.59
6	7311.00	40.39 AV	54.00	-13.61	1.65 H	259	30.80	9.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.35 PK			1.00 V	288	96.51	2.84
2	*2437.00	89.15 AV			1.00 V	288	86.31	2.84
3	4874.00	51.29 PK	74.00	-22.71	1.00 V	2	42.60	8.69
4	4874.00	37.00 AV	54.00	-17.00	1.00 V	2	28.31	8.69
5	7311.00	51.29 PK	74.00	-22.71	1.92 V	52	41.70	9.59
6	7311.00	41.65 AV	54.00	-12.35	1.92 V	52	32.06	9.59

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	107.83 PK			1.70 H	338	104.91	2.92
2	*2462.00	100.41 AV			1.70 H	338	97.49	2.92
3	2483.50	58.44 PK	74.00	-15.56	1.70 H	338	55.46	2.98
4	2483.50	46.66 AV	54.00	-7.34	1.70 H	338	43.68	2.98
5	4924.00	49.25 PK	74.00	-24.75	1.70 H	22	40.20	9.05
6	4924.00	36.80 AV	54.00	-17.20	1.70 H	22	27.75	9.05
7	7386.00	51.29 PK	74.00	-22.71	1.95 H	201	41.66	9.63
8	7386.00	40.26 AV	54.00	-13.74	1.95 H	201	30.63	9.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.25 PK			1.26 V	234	97.33	2.92
2	*2462.00	90.59 AV			1.26 V	234	87.67	2.92
3	2483.50	49.93 PK	74.00	-24.07	1.26 V	234	46.95	2.98
4	2483.50	37.81 AV	54.00	-16.19	1.26 V	234	34.83	2.98
5	4924.00	54.29 PK	74.00	-19.71	1.65 V	96	45.24	9.05
6	4924.00	41.35 AV	54.00	-12.65	1.65 V	96	32.30	9.05
7	7386.00	51.60 PK	74.00	-22.40	1.92 V	201	41.97	9.63
8	7386.00	40.32 AV	54.00	-13.68	1.92 V	201	30.69	9.63

REMARKS:

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

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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	51.28 PK	74.00	-22.72	1.50 H	150	48.59	2.69
2	2390.00	41.51 AV	54.00	-12.49	1.50 H	150	38.82	2.69
3	*2412.00	103.70 PK			1.50 H	150	100.93	2.77
4	*2412.00	95.62 AV			1.50 H	150	92.85	2.77
5	4824.00	51.00 PK	74.00	-23.00	1.62 H	52	42.66	8.34
6	4824.00	40.26 AV	54.00	-13.74	1.62 H	52	31.92	8.34
7	#7236.00	51.65 PK	74.00	-22.35	2.30 H	22	42.10	9.55
8	#7236.00	41.66 AV	54.00	-12.34	2.30 H	22	32.11	9.55
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	49.00 PK	74.00	-25.00	1.51 V	294	46.31	2.69
2	2390.00	38.63 AV	54.00	-15.37	1.51 V	294	35.94	2.69
3	*2412.00	100.73 PK			1.40 V	294	97.96	2.77
4	*2412.00	90.66 AV			1.40 V	294	87.89	2.77
5	4824.00	49.25 PK	74.00	-24.75	1.00 V	85	40.91	8.34
6	4824.00	38.10 AV	54.00	-15.90	1.00 V	85	29.76	8.34
7	#7236.00	51.29 PK	74.00	-22.71	1.00 V	201	41.74	9.55
8	#7236.00	40.28 AV	54.00	-13.72	1.00 V	201	30.73	9.55

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	105.20 PK			1.50 H	151	102.36	2.84
2	*2437.00	96.20 AV			1.50 H	151	93.36	2.84
3	4874.00	51.29 PK	74.00	-22.71	1.95 H	220	42.60	8.69
4	4874.00	40.32 AV	54.00	-13.68	1.95 H	220	31.63	8.69
5	7311.00	52.39 PK	74.00	-21.61	1.97 H	52	42.80	9.59
6	7311.00	41.00 AV	54.00	-13.00	1.97 H	52	31.41	9.59
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	101.25 PK			1.00 V	351	98.41	2.84
2	*2437.00	90.35 AV			1.00 V	351	87.51	2.84
3	4874.00	49.68 PK	74.00	-24.32	1.00 V	63	40.99	8.69
4	4874.00	37.00 AV	54.00	-17.00	1.00 V	63	28.31	8.69
5	7311.00	51.20 PK	74.00	-22.80	1.00 V	232	41.61	9.59
6	7311.00	40.36 AV	54.00	-13.64	1.00 V	232	30.77	9.59

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	106.64 PK			1.42 H	337	103.72	2.92
2	*2462.00	100.40 AV			1.42 H	337	97.48	2.92
3	2483.50	52.54 PK	74.00	-21.46	1.42 H	337	49.56	2.98
4	2483.50	42.64 AV	54.00	-11.36	1.42 H	337	39.66	2.98
5	4924.00	51.29 PK	74.00	-22.71	1.50 H	62	42.24	9.05
6	4924.00	40.29 AV	54.00	-13.71	1.50 H	62	31.24	9.05
7	7386.00	54.29 PK	74.00	-19.71	1.98 H	74	44.66	9.63
8	7386.00	42.90 AV	54.00	-11.10	1.98 H	74	33.27	9.63
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.47 PK			1.66 V	288	97.55	2.92
2	*2462.00	90.92 AV			1.66 V	288	88.00	2.92
3	2483.50	48.90 PK	74.00	-25.10	1.66 V	288	45.92	2.98
4	2483.50	38.72 AV	54.00	-15.28	1.66 V	288	35.74	2.98
5	4924.00	51.29 PK	74.00	-22.71	1.02 V	52	42.24	9.05
6	4924.00	40.08 AV	54.00	-13.92	1.02 V	52	31.03	9.05
7	7386.00	51.29 PK	74.00	-22.71	1.52 V	92	41.66	9.63
8	7386.00	40.32 AV	54.00	-13.68	1.52 V	92	30.69	9.63

REMARKS:

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

BELOW 1GHz WORST-CASE DATA:

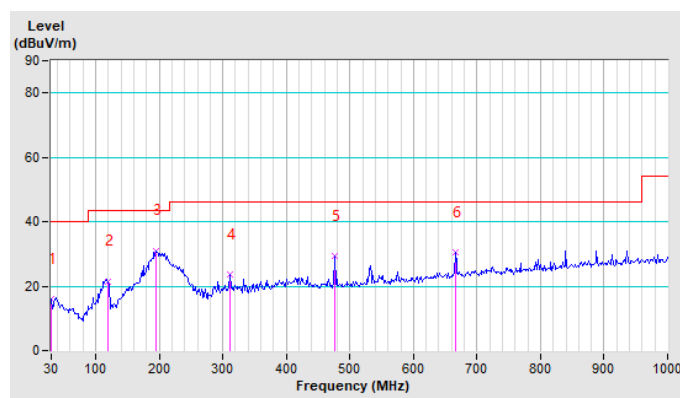
BT-LE (GFSK)

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	15.99 QP	40.00	-24.01	1.00 H	145	34.10	-18.11
2	120.16	21.51 QP	43.50	-21.99	1.00 H	173	39.29	-17.78
3	194.78	31.08 QP	43.50	-12.42	1.00 H	180	48.72	-17.64
4	311.36	23.47 QP	46.00	-22.53	1.00 H	137	37.27	-13.80
5	476.14	29.35 QP	46.00	-16.65	1.00 H	240	38.80	-9.45
6	665.79	30.44 QP	46.00	-15.56	1.00 H	175	35.64	-5.20

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.

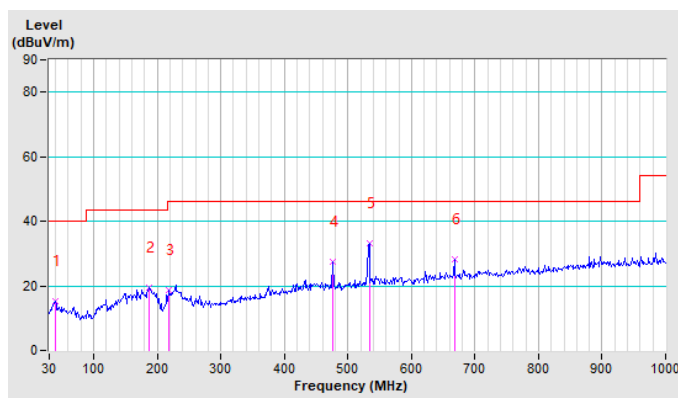


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.33	15.34 QP	40.00	-24.66	1.94 V	272	31.86	-16.52
2	187.00	19.30 QP	43.50	-24.20	1.79 V	287	36.51	-17.21
3	218.09	18.61 QP	46.00	-27.39	1.65 V	301	36.19	-17.58
4	476.14	27.35 QP	46.00	-18.65	1.49 V	317	36.80	-9.45
5	533.65	33.15 QP	46.00	-12.85	1.34 V	332	41.19	-8.04
6	667.34	28.17 QP	46.00	-17.83	2.00 V	255	33.35	-5.18

REMARKS:

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



ABOVE 1GHz TEST DATA:

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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	51.98 PK	74.00	-22.02	1.66 H	175	49.29	2.69
2	2390.00	40.18 AV	54.00	-13.82	1.66 H	175	37.49	2.69
3	*2402.00	116.57 PK			1.66 H	175	113.84	2.73
4	*2402.00	116.40 AV			1.66 H	175	113.67	2.73
5	4804.00	51.29 PK	74.00	-22.71	1.64 H	52	43.08	8.21
6	4804.00	41.25 AV	54.00	-12.75	1.64 H	52	33.04	8.21
7	#7206.00	55.20 PK	74.00	-18.80	1.60 H	22	45.67	9.53
8	#7206.00	41.20 AV	54.00	-12.80	1.60 H	22	31.67	9.53
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	47.55 PK	74.00	-26.45	1.00 V	242	44.86	2.69
2	2390.00	35.99 AV	54.00	-18.01	1.00 V	242	33.30	2.69
3	*2402.00	112.36 PK			1.00 V	242	109.63	2.73
4	*2402.00	112.00 AV			1.00 V	242	109.27	2.73
5	4804.00	48.75 PK	74.00	-25.25	1.64 V	55	40.54	8.21
6	4804.00	37.51 AV	54.00	-16.49	1.64 V	55	29.30	8.21
7	#7206.00	51.29 PK	74.00	-22.71	1.00 V	15	41.76	9.53
8	#7206.00	39.00 AV	54.00	-15.00	1.00 V	15	29.47	9.53

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 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	116.25 PK			1.70 H	175	113.40	2.85
2	*2440.00	116.00 AV			1.70 H	175	113.15	2.85
3	4880.00	51.29 PK	74.00	-22.71	1.65 H	69	42.55	8.74
4	4880.00	41.32 AV	54.00	-12.68	1.65 H	69	32.58	8.74
5	7320.00	52.36 PK	74.00	-21.64	1.09 H	22	42.77	9.59
6	7320.00	40.95 AV	54.00	-13.05	1.09 H	22	31.36	9.59
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	114.68 PK			1.00 V	50	111.83	2.85
2	*2440.00	114.36 AV			1.00 V	50	111.51	2.85
3	4880.00	52.36 PK	74.00	-21.64	1.69 V	304	43.62	8.74
4	4880.00	40.20 AV	54.00	-13.80	1.69 V	304	31.46	8.74
5	7320.00	50.39 PK	74.00	-23.61	1.80 V	62	40.80	9.59
6	7320.00	40.28 AV	54.00	-13.72	1.80 V	62	30.69	9.59

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 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	113.09 PK			1.47 H	114	110.12	2.97
2	*2480.00	112.96 AV			1.47 H	114	109.99	2.97
3	2483.50	73.72 PK	74.00	-0.28	1.47 H	114	70.74	2.98
4	2483.50	61.74 AV	54.00	7.74	1.47 H	114	58.76	2.98
5	4960.00	51.29 PK	74.00	-22.71	1.09 H	229	41.99	9.30
6	4960.00	43.20 AV	54.00	-10.80	1.09 H	229	33.90	9.30
7	7440.00	51.36 PK	74.00	-22.64	1.00 H	84	41.70	9.66
8	7440.00	44.29 AV	54.00	-9.71	1.00 H	84	34.63	9.66
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	110.00 PK			1.66 V	64	107.03	2.97
2	*2480.00	109.91 AV			1.66 V	64	106.94	2.97
3	2483.50	68.70 PK	74.00	-5.30	1.66 V	54	65.72	2.98
4	2483.50	59.03 AV	54.00	5.03	1.66 V	54	56.05	2.98
5	4960.00	51.29 PK	74.00	-22.71	1.09 V	51	41.99	9.30
6	4960.00	40.28 AV	54.00	-13.72	1.09 V	51	30.98	9.30
7	7440.00	51.29 PK	74.00	-22.71	3.00 V	51	41.63	9.66
8	7440.00	40.32 AV	54.00	-13.68	3.00 V	51	30.66	9.66

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were less than 20dB margin 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.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	Jan. 11, 24
Power Meter	Anritsu	ML2495A	1139001	Aug. 22, 23
Power Sensor	Anritsu	MA2411B	1531155	Aug. 22, 23
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 02, 23
Oscilloscope	Agilent	DSO9254A	MY51260160	Jul. 27, 23
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 11, 24
Signal Generator	Agilent	N5183A	MY50140980	Jul. 20, 23
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 20, 23
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A
Test software	ADT	ADT_RF Test Software V6.6.5.3	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.

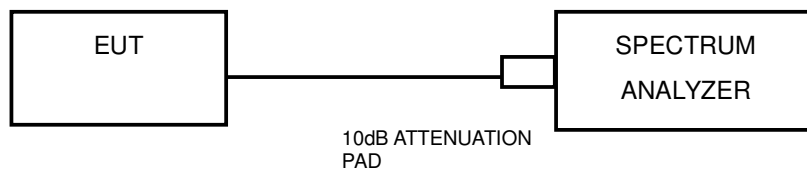
4.3.3 TEST PROCEDURE

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	8.41	0.5	PASS
6	2437	8.56	0.5	PASS
11	2462	8.92	0.5	PASS

802.11g

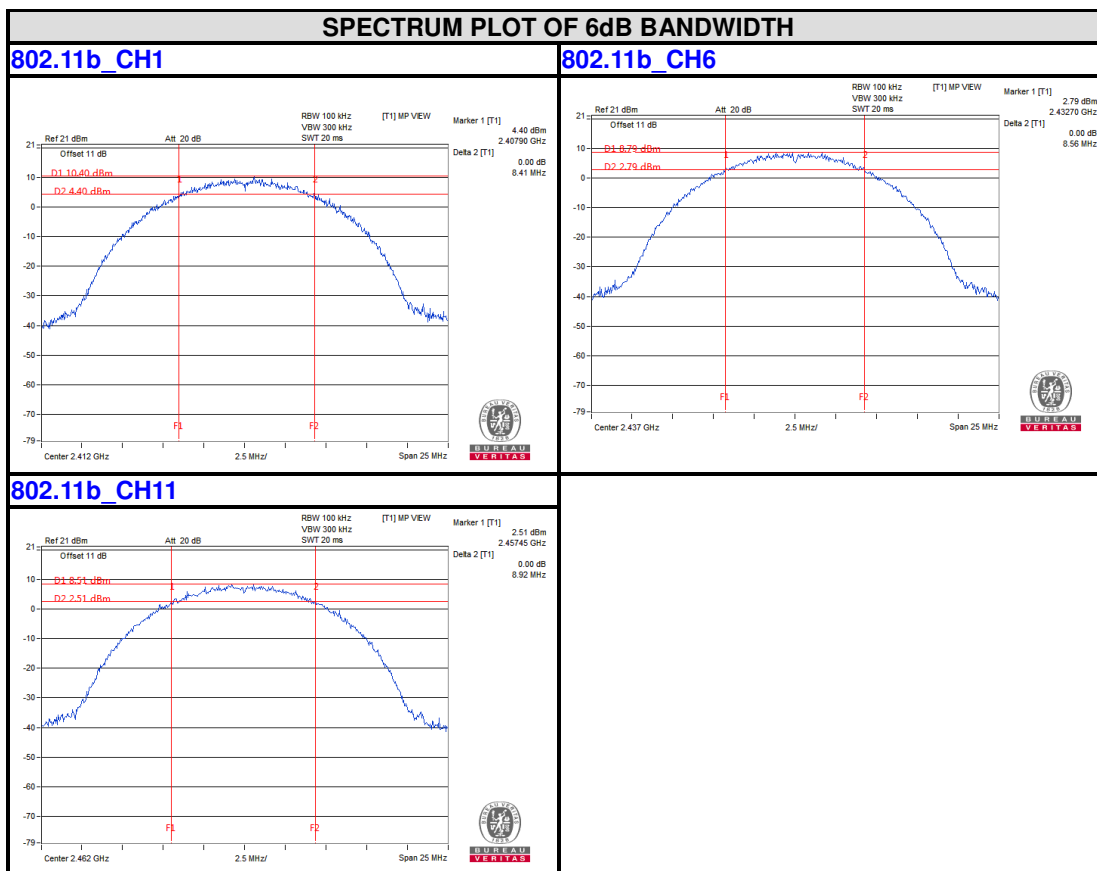
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.49	0.5	PASS
6	2437	16.50	0.5	PASS
11	2462	16.42	0.5	PASS

802.11n HT20

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.69	0.5	PASS
6	2437	17.56	0.5	PASS
11	2462	17.40	0.5	PASS

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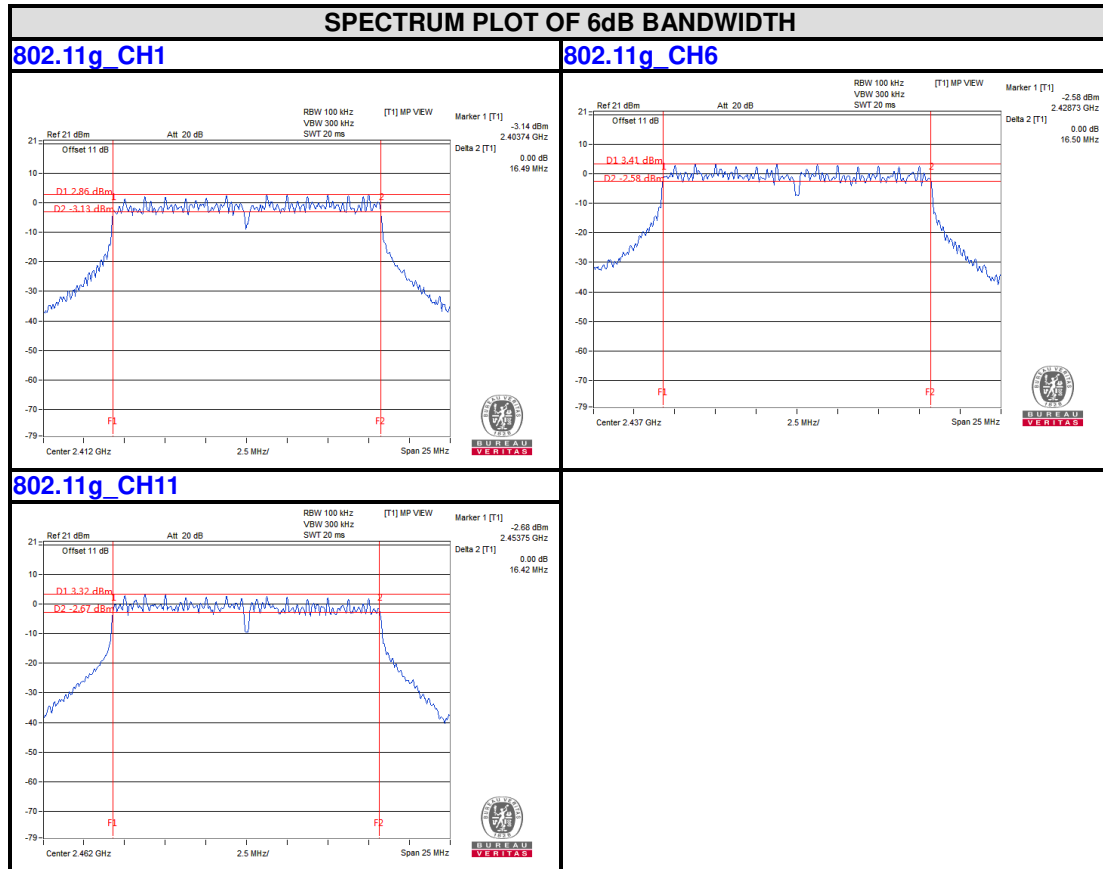
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.657	0.5	PASS
19	2440	0.659	0.5	PASS
39	2480	0.658	0.5	PASS





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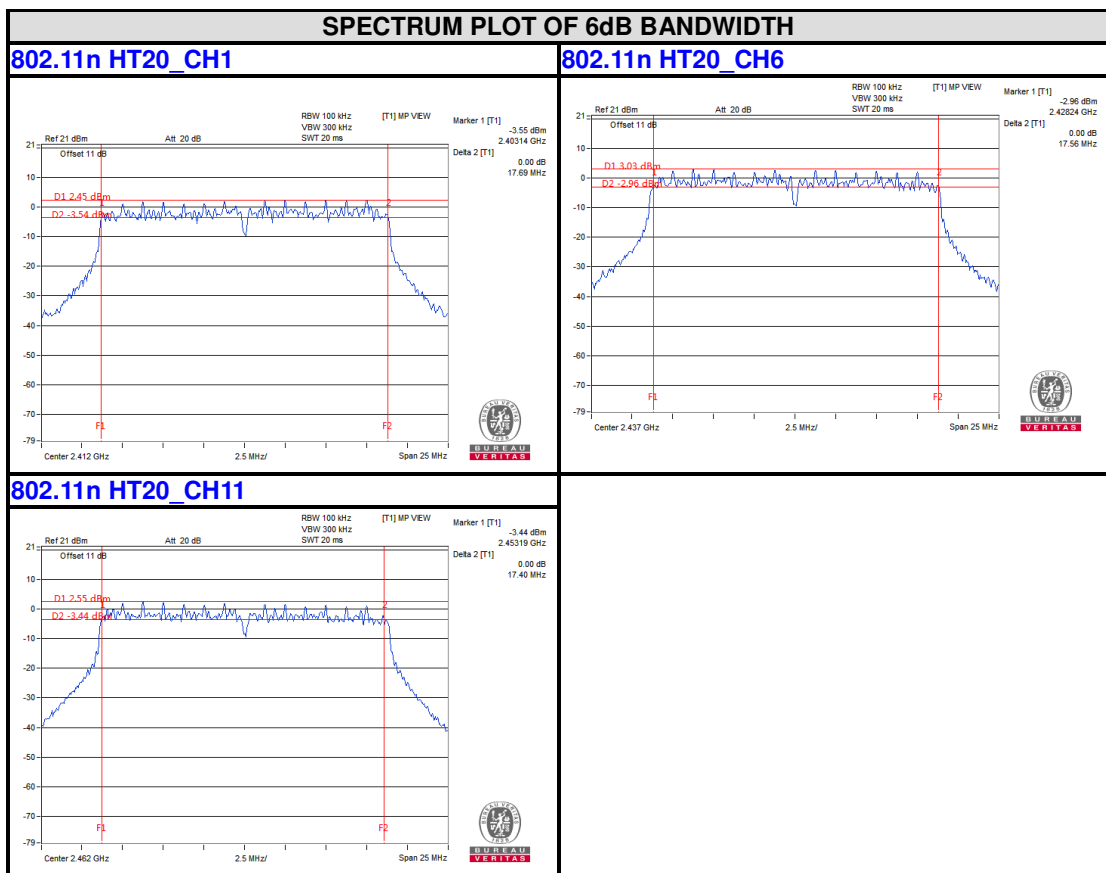
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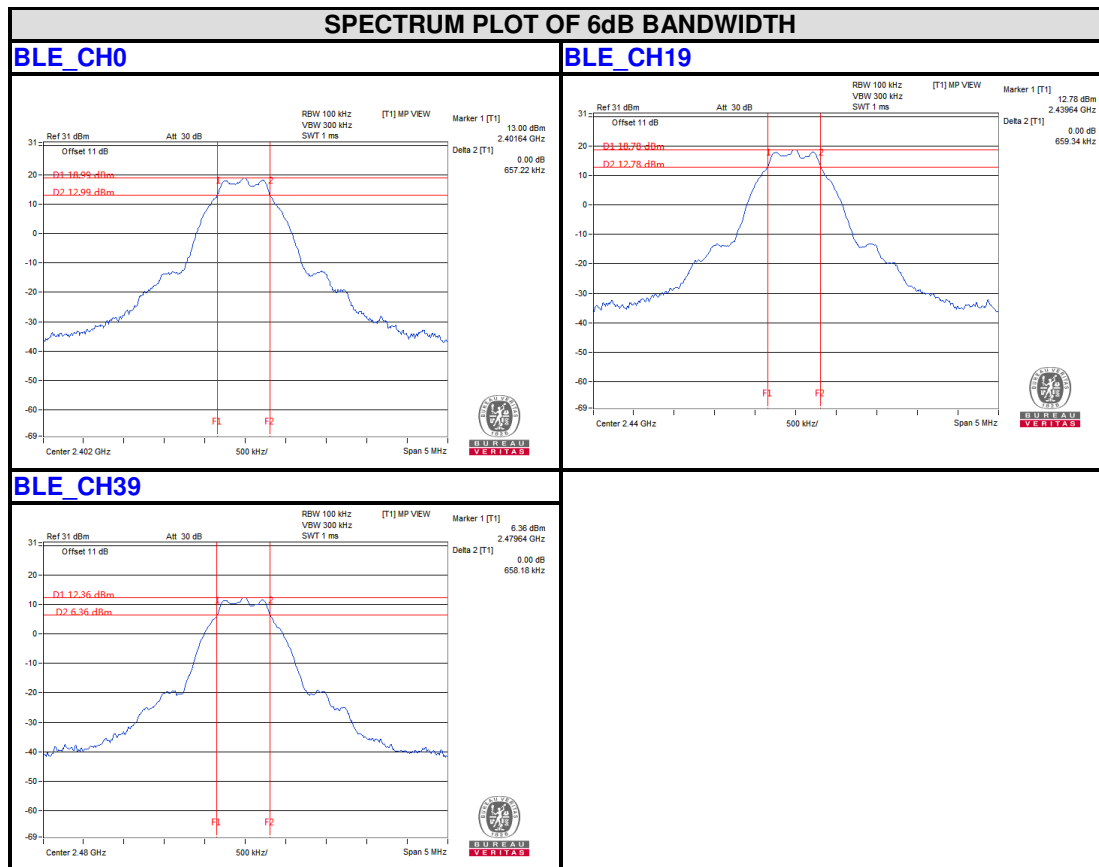


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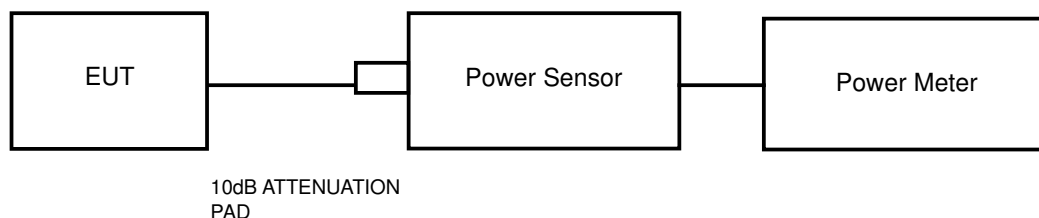


4.4 CONDUCTED OUTPUT POWER

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.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	Jan. 11, 24
Power Meter	Anritsu	ML2495A	1139001	Aug. 22, 23
Power Sensor	Anritsu	MA2411B	1531155	Aug. 22, 23
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 02, 23
Oscilloscope	Agilent	DSO9254A	MY51260160	Jul. 27, 23
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 11, 24
Signal Generator	Agilent	N5183A	MY50140980	Jul. 20, 23
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 20, 23
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A
Test software	ADT	ADT_RF Test Software V6.6.5.3	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 power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power level.

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and set the detector to AVERAGE. 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

MAXIMUM PEAK OUTPUT POWER

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	23.42	219.786	1	PASS
6	2437	23.62	230.144	1	PASS
11	2462	23.64	231.206	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	22.65	184.077	1	PASS
6	2437	22.68	185.353	1	PASS
11	2462	22.21	166.341	1	PASS

802.11n HT20

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	21.96	157.036	1	PASS
6	2437	22.06	160.694	1	PASS
11	2462	21.32	135.519	1	PASS

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CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	19.02	79.799	1	PASS
19	2440	18.93	78.163	1	PASS
39	2480	12.40	17.378	1	PASS

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)	AVG. POWER (mW)
1	2412	17.03	50.466
6	2437	17.21	52.602
11	2462	17.30	53.703

Note: This power value includes Duty factor.

802.11g

CHANNEL	CHANNEL FREQUENCY(MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)
1	2412	14.68	29.376
6	2437	14.71	29.58
11	2462	14.54	28.445

Note: This power value includes Duty factor.

802.11n HT20

CHANNEL	CHANNEL FREQUENCY(MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)
1	2412	13.70	23.442
6	2437	14.17	26.122
11	2462	13.65	23.174

Note: This power value includes Duty factor.

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY(MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)
0	2402	17.13	51.642
19	2440	16.93	49.317
39	2480	10.58	11.429

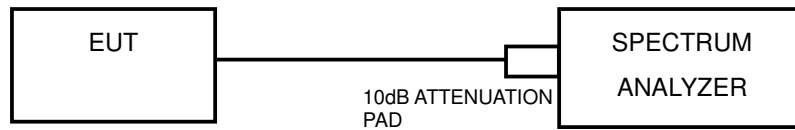
Note: This power value includes Duty factor.

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

- Set instrument center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set RBW to: 3KHz
- Set VBW $\geq 3 \times$ RBW.
- Detector = peak
- Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- Sweep time = auto couple.
- 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	-5.07	8.00	PASS
6	2437	-5.71	8.00	PASS
11	2462	-6.38	8.00	PASS

Note: This PSD value includes Duty factor.

802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-13.04	8.00	PASS
6	2437	-9.69	8.00	PASS
11	2462	-11.52	8.00	PASS

Note: This PSD value includes Duty factor.

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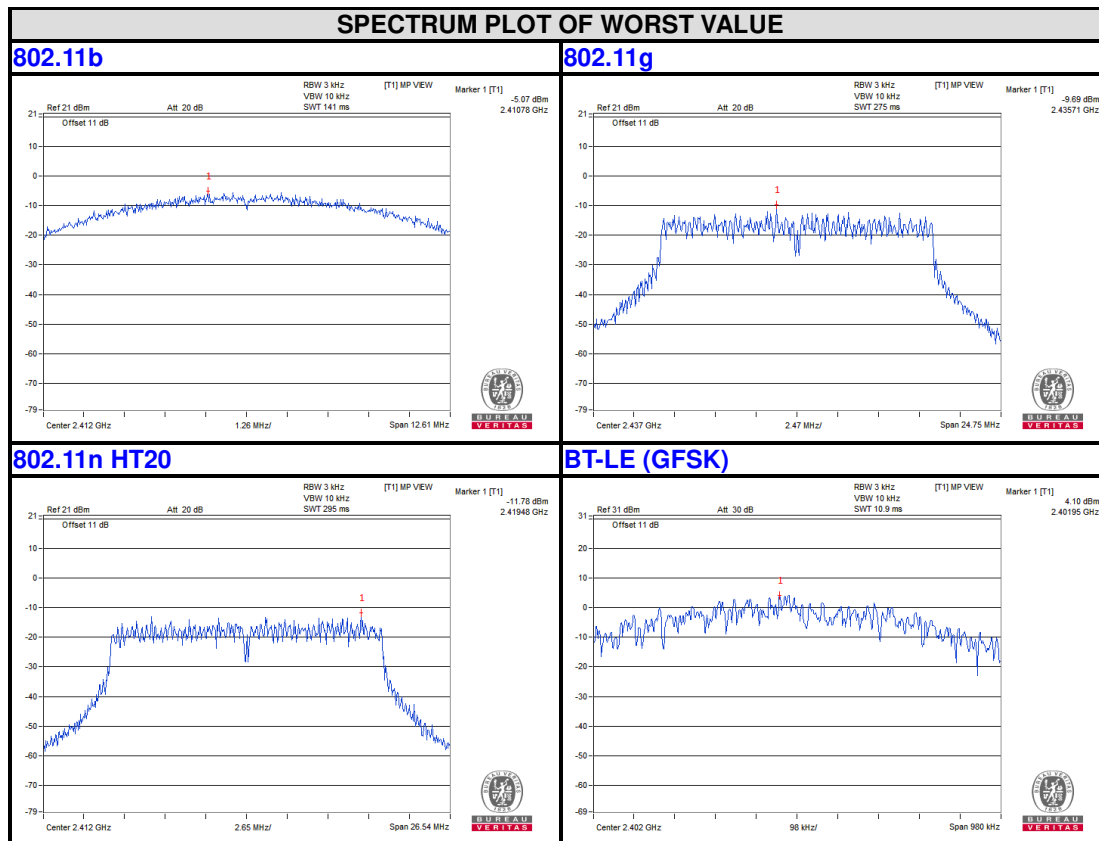
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.78	8.00	PASS
6	2437	-11.86	8.00	PASS
11	2462	-13.77	8.00	PASS

Note: This PSD value includes Duty factor.

BT-LE (GFSK)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	4.10	8.00	PASS
19	2440	3.96	8.00	PASS
39	2480	-2.58	8.00	PASS

Note: This PSD value includes Duty factor.

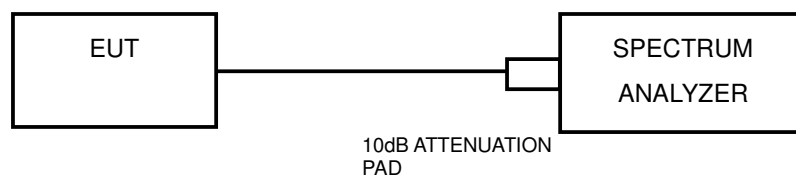


4.6 OUT OF BAND EMISSION MEASUREMENT

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 - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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

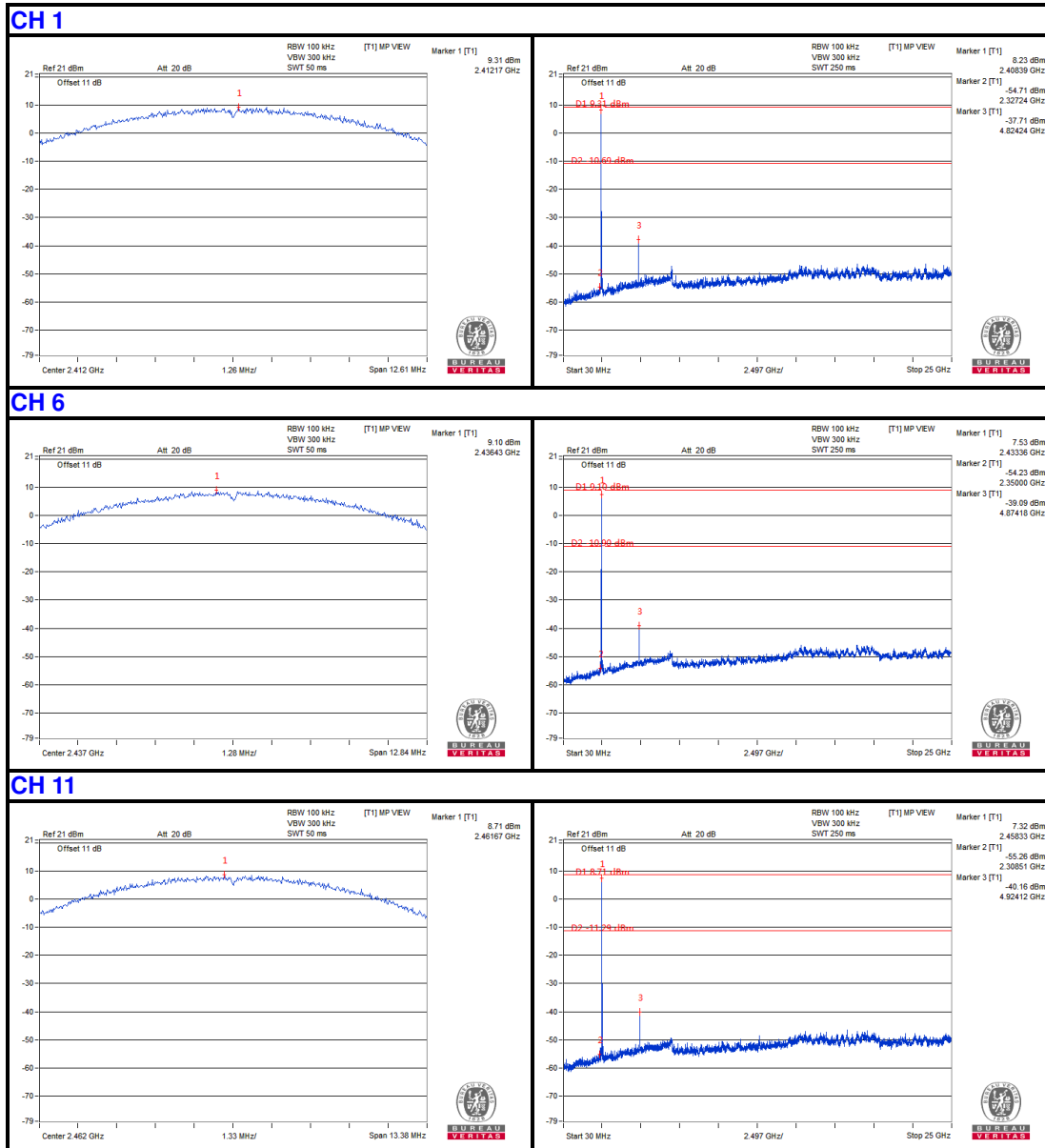
No deviation.

4.6.6 EUT OPERATING CONDITION

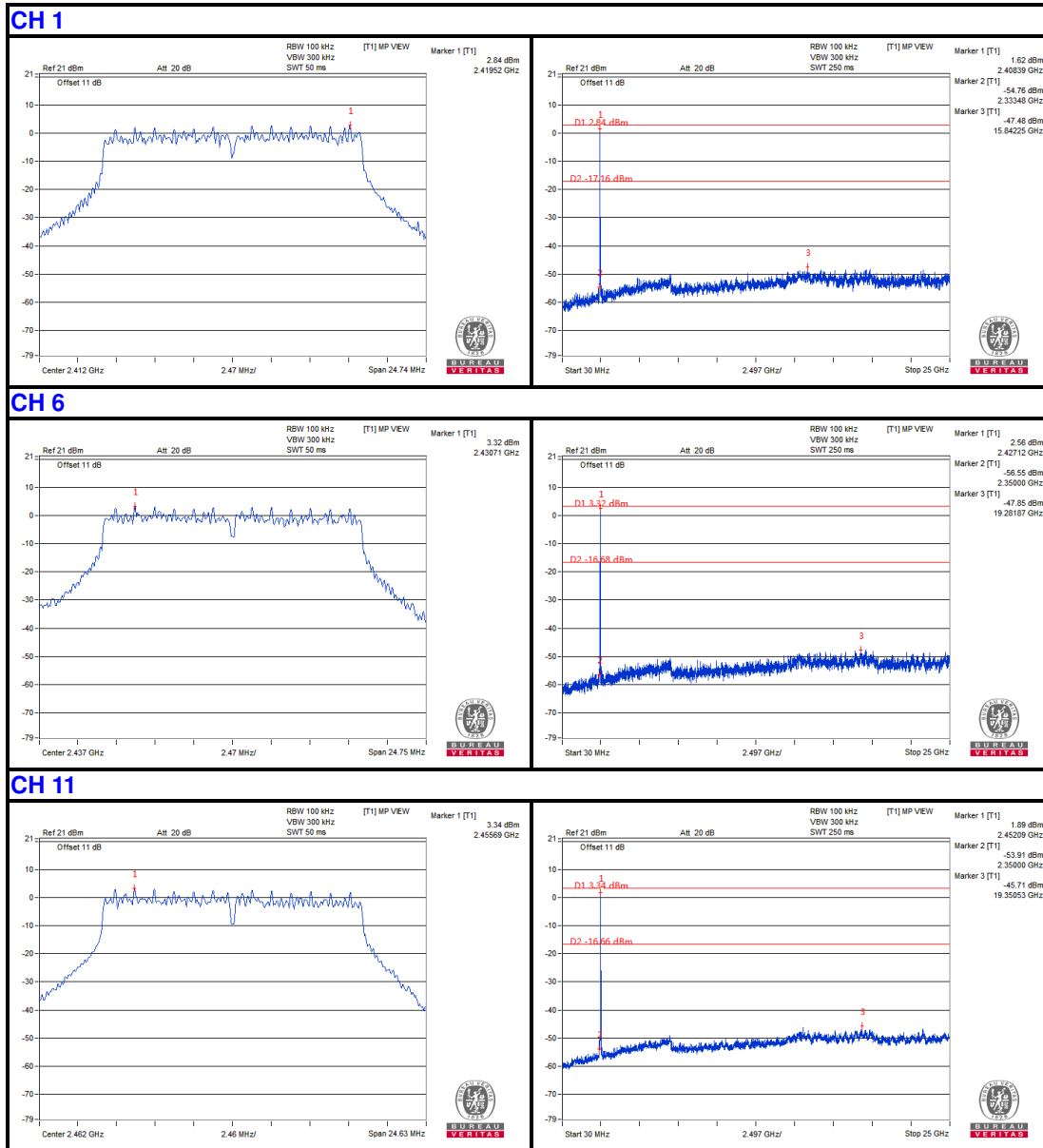
Same as item 4.3.6

4.6.7 TEST RESULTS

802.11b

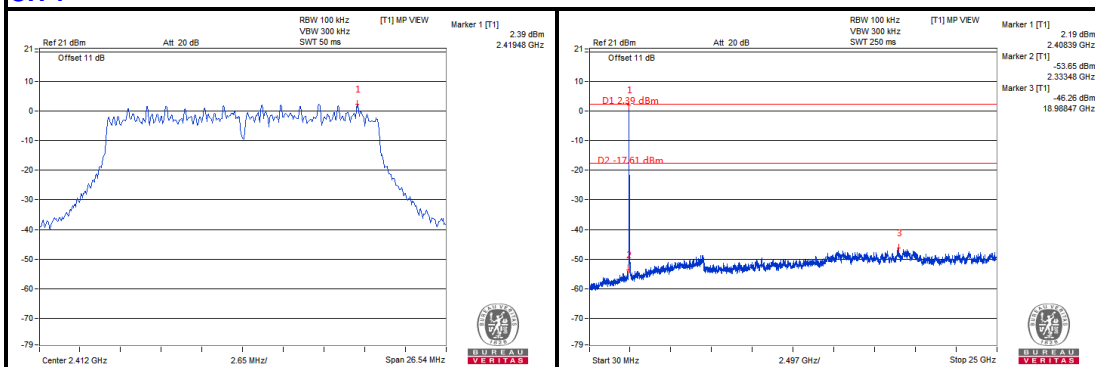


802.11g

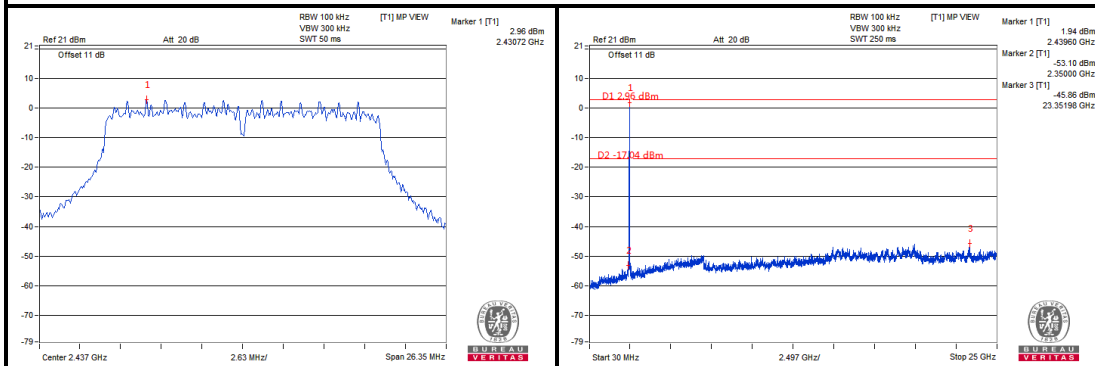


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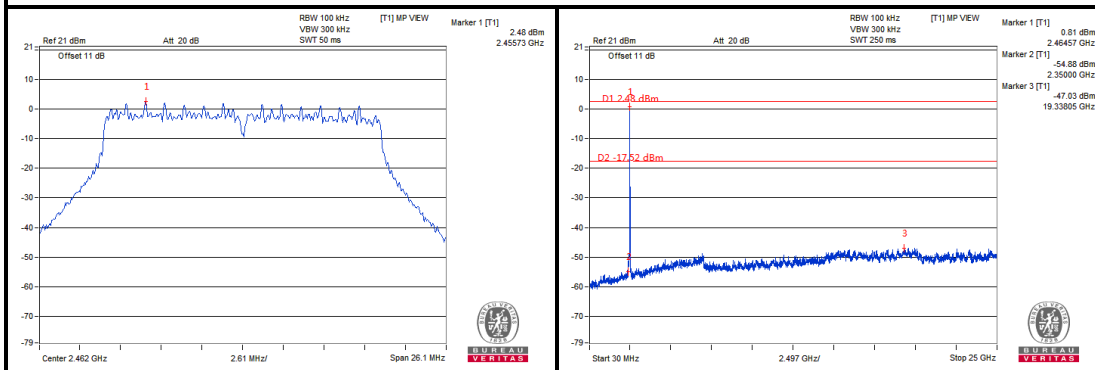
CH 1



CH 6

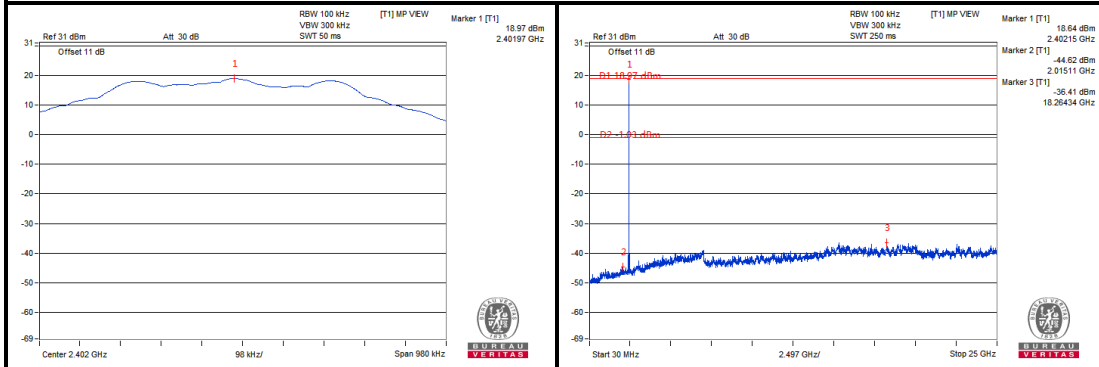


CH 11

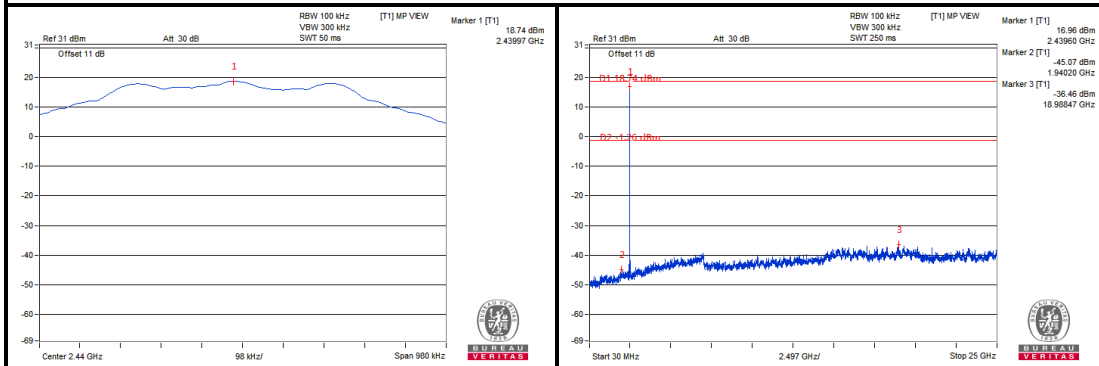


BT-LE (GFSK)

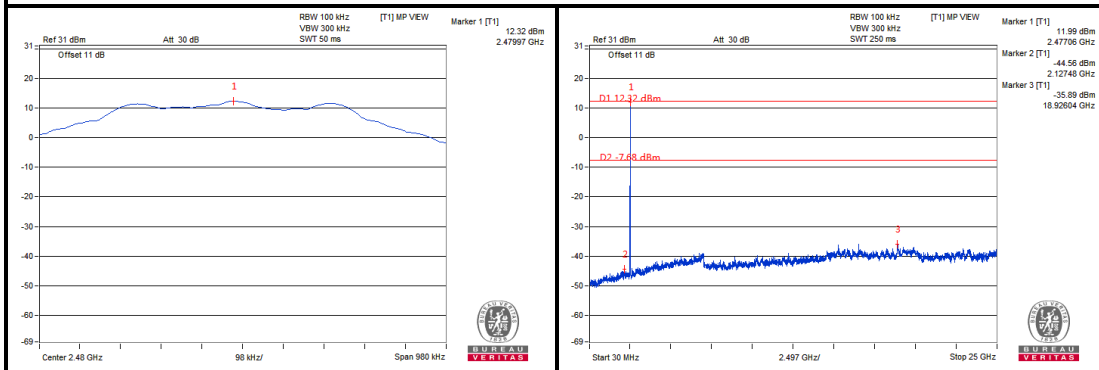
CH 0



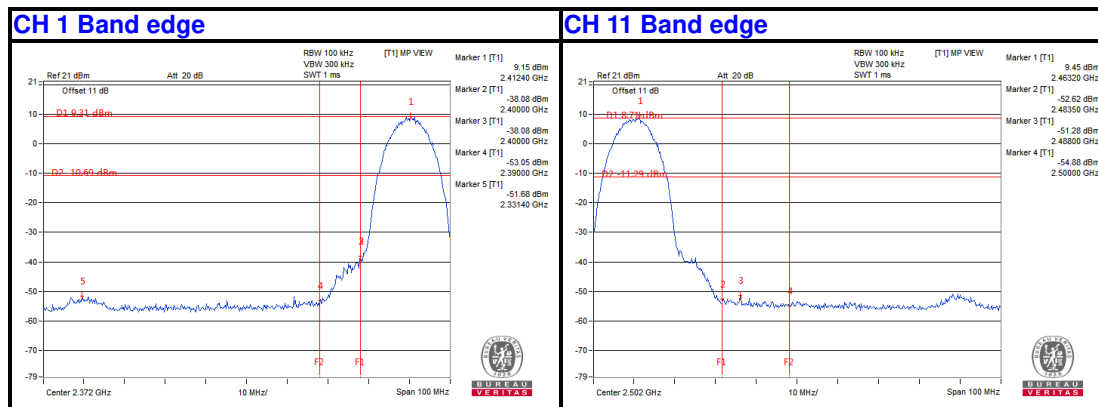
CH 19



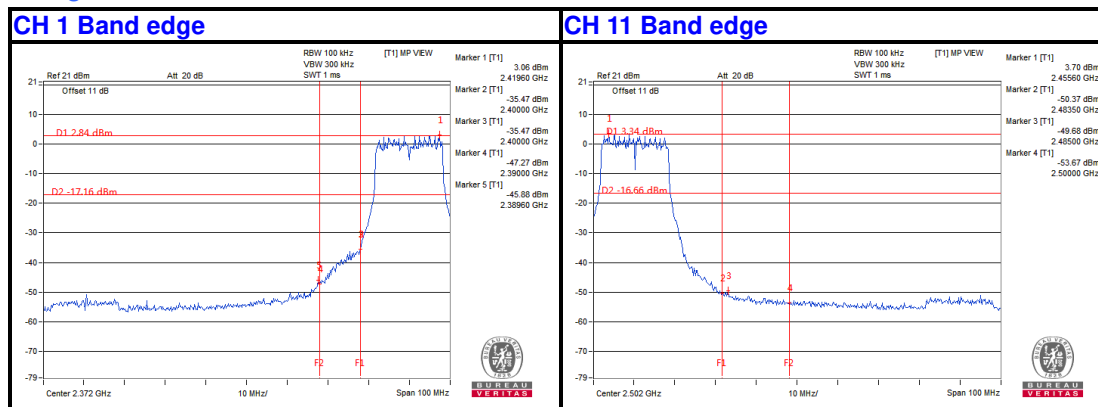
CH 39



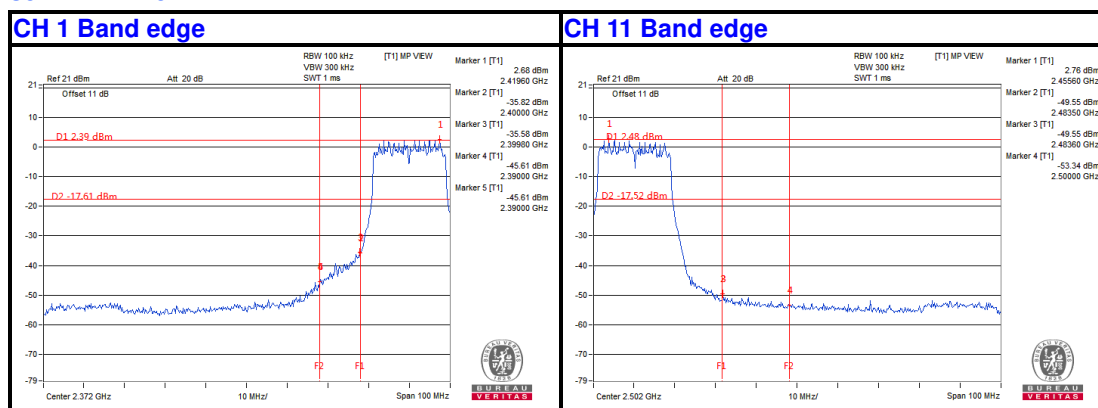
802.11b



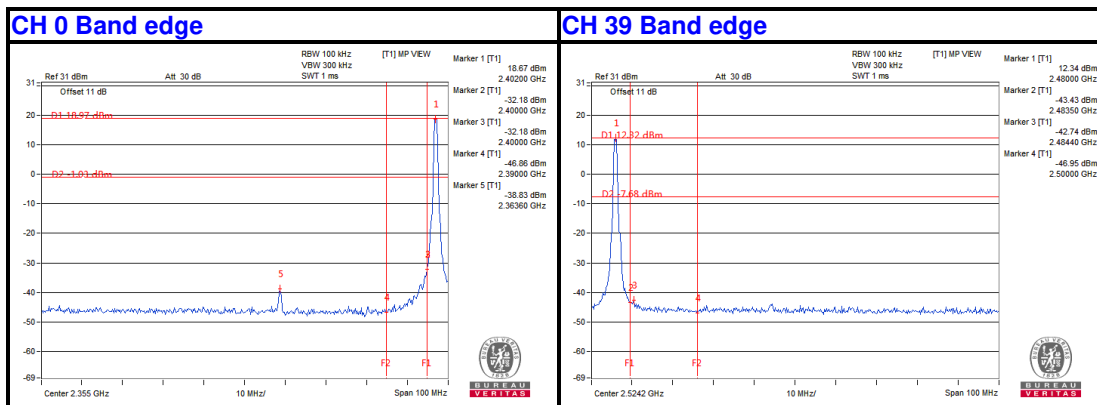
802.11g



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BT-LE (GFSK)



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---