

TEST REPORT

Applicant	Shenzhen Everbest Machinery Industry Co., Ltd
Address	19th Building, 5th Region, Baiwangxin Industrial Park, SongBai Rd., Baimang, Xili, Nanshan, Shenzhen China

Manufacturer or Supplier	Shenzhen Everbest Machinery Industry Co., Ltd
Address	19th Building, 5th Region, Baiwangxin Industrial Park, SongBai Rd., Baimang, Xili, Nanshan, Shenzhen China
Product	Face Recognition Scanner
Brand Name	CEM
Model	AI-321
Additional Models & Model Difference	AI-322, AI-328; See section 3.1
Date of tests	May. 21, 2020 ~ Jun. 22, 2020

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 Breeze Jiang Senior Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Jun. 24, 2020

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Test Report No.: RF200521N025-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF200521N025-2	Original release	Jun. 24, 2020

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used

2 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.70dB
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GMHz	3.60dB
	1GHz ~ 18GHz	4.82dB
	18GHz ~ 40GHz	5.00dB

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	Face Recognition Scanner
MODEL NO.	AI-321
ADDITIONAL MODELS	AI-322, AI-328
FCC ID	WIGAI-321
NOMINAL VOLTAGE	DC 12V 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: 158.125mW (Max. Measured) BT-LE: 8.492mW (Max. Measured)
ANTENNA TYPE	Integral Antenna, 2.32dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

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.: 200521N025) for detailed product photo.
5. Additional models AI-322, AI-328 are identical with the test model AI-321 except the model name for trading purpose.
6. The EUT was powered by the following adapter:

ADAPTER 1	
BRAND:	KUANTEN
MODEL:	KT36W120300H
INPUT:	AC 100-240V, 50/60Hz 1.0A
OUTPUT:	DC 12V, 3A, 36W
DC LINE:	Unshielded, non-detachable, 1.5m, with one core.

ADAPTER 2	
BRAND:	KUANTEN
MODEL:	KT36W120300CH
INPUT:	AC 100-240V, 50/60Hz 1.0A
OUTPUT:	DC 12V, 3A, 36W
DC LINE:	Unshielded, non-detachable, 1.5m, with one core.

Remarks: The EUT has two adapter, there PCB are identical except the plug, adapter 1 is replaceable plug and adapter 2 is fixed plug, in this report test at adapter 2.

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 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	
A	√	√	√	√	Powered by Adapter with (WIFI + BT) function

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	TESTED BY
RE<1G	26deg. C, 50%RH	DC 12V from Adapter	Cheng Zhong
RE≥1G	26deg. C, 50%RH	DC 12V from Adapter	Cheng Zhong
PLC	25deg. C, 60%RH	DC 12V from Adapter	Daniel
APCM	20deg. C, 55%RH	DC 12V from Adapter	Daniel

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 a dependent unit together without any other necessary accessories or support units.

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Mar. 12,20	Mar. 11,21
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 12,20	Mar. 11,21
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Mar. 13,20	Mar. 12,21
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jan. 17,20	Jan. 16,21
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

NOTES:

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

4.1.3 TEST PROCEDURES

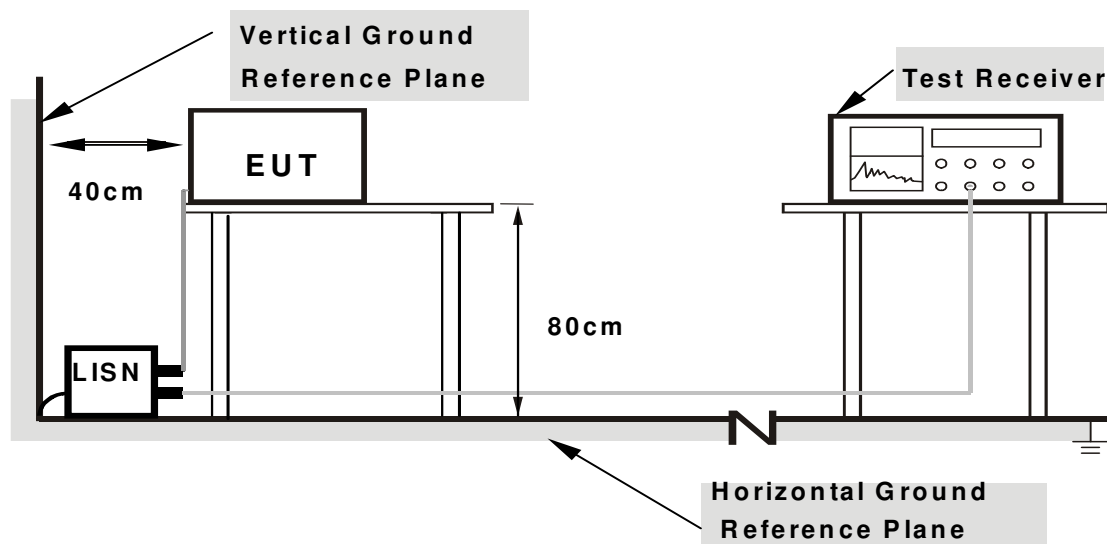
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

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

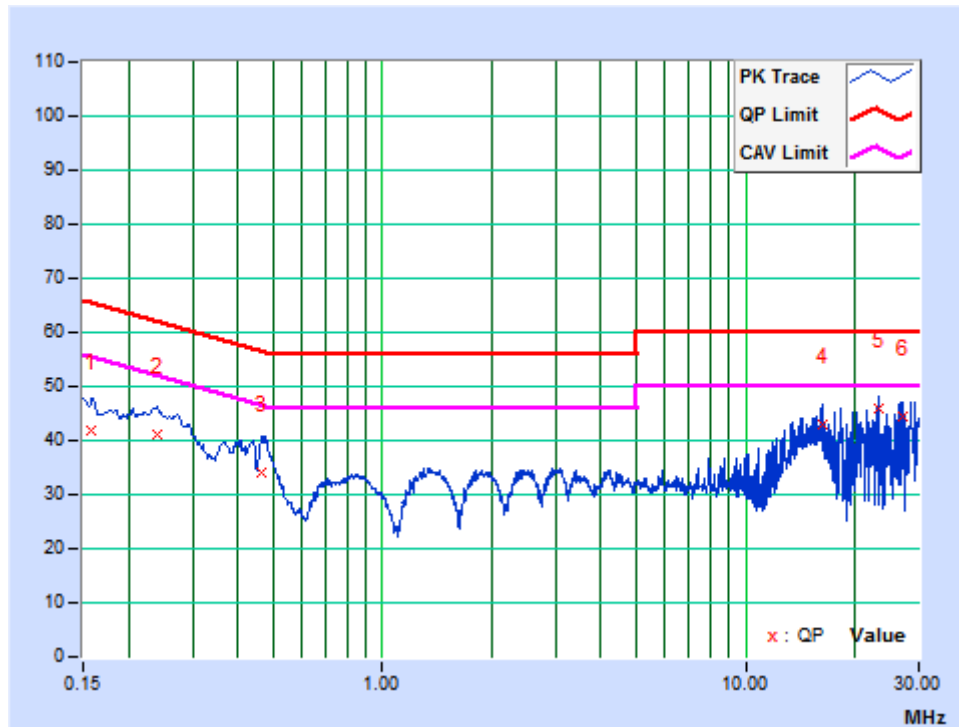
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

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	0.15882	9.72	32.14	18.99	41.86	28.71	65.53	55.53	-23.67	-26.82
2	0.24000	9.71	31.28	18.78	40.99	28.49	62.10	52.10	-21.10	-23.60
3	0.46762	9.74	24.26	16.76	34.00	26.50	56.56	46.56	-22.56	-20.06
4	16.22850	10.20	32.74	25.72	42.94	35.92	60.00	50.00	-17.06	-14.08
5	23.12700	10.49	35.44	28.19	45.93	38.68	60.00	50.00	-14.07	-11.32
6	27.15900	10.75	33.68	26.07	44.43	36.82	60.00	50.00	-15.57	-13.18

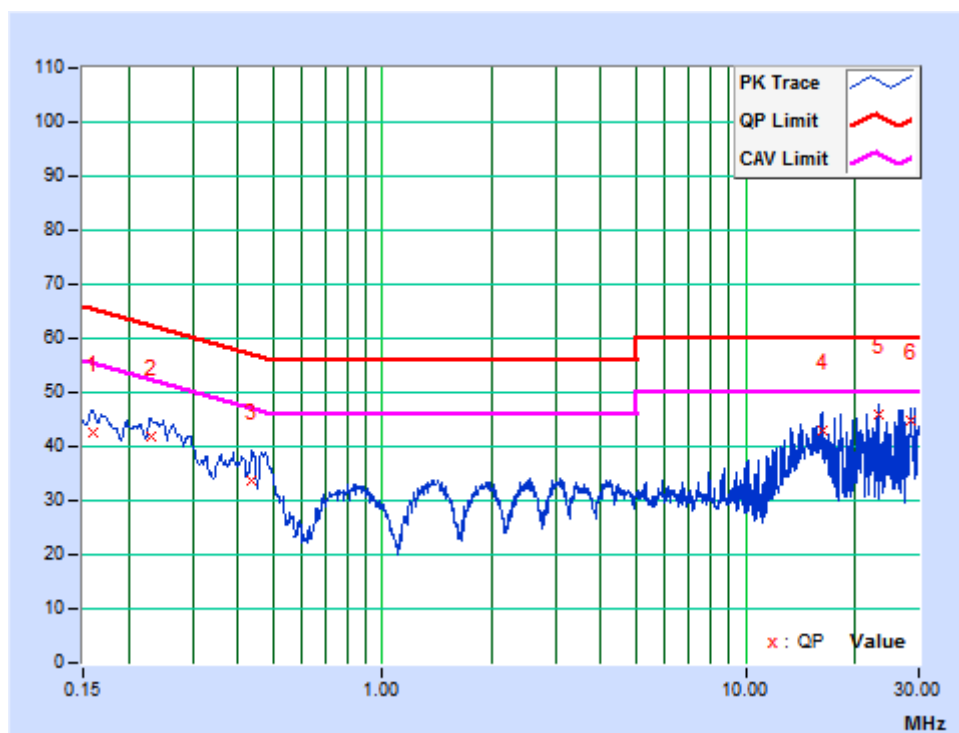
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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	0.15924	9.72	32.71	14.81	42.43	24.53	65.50	55.50	-23.07	-30.97
2	0.22985	9.71	32.20	21.50	41.91	31.21	62.46	52.46	-20.54	-21.24
3	0.43775	9.73	23.87	15.17	33.60	24.90	57.10	47.10	-23.50	-22.20
4	16.22850	10.20	32.85	25.79	43.05	35.99	60.00	50.00	-16.95	-14.01
5	23.12700	10.49	35.47	28.20	45.96	38.69	60.00	50.00	-14.04	-11.31
6	28.68450	10.86	33.78	26.04	44.64	36.90	60.00	50.00	-15.36	-13.10

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 18,20	Mar. 17,21
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May 14, 20	May 13, 21
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	May 28,20	May 27,21
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 15,20	Mar. 14,21
Bilog Antenna (20MHz -2GHz)	Teseq	CBL 6111D	30643	May 30,20	May 29,21
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 30,20	May 29,21
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	May 10, 20	May 09, 21
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 23,20	May 22,21
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	May 09,20	May 08,21
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Mar. 04,20	Mar. 03,21
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	May 20,20	May 19,21

NOTES:

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. And the centre of the loop shall be 1m above the ground.
- g. 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:

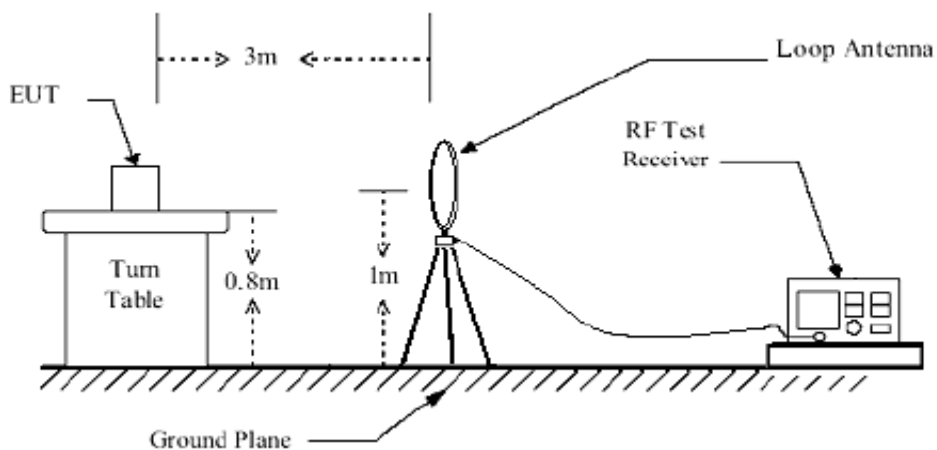
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

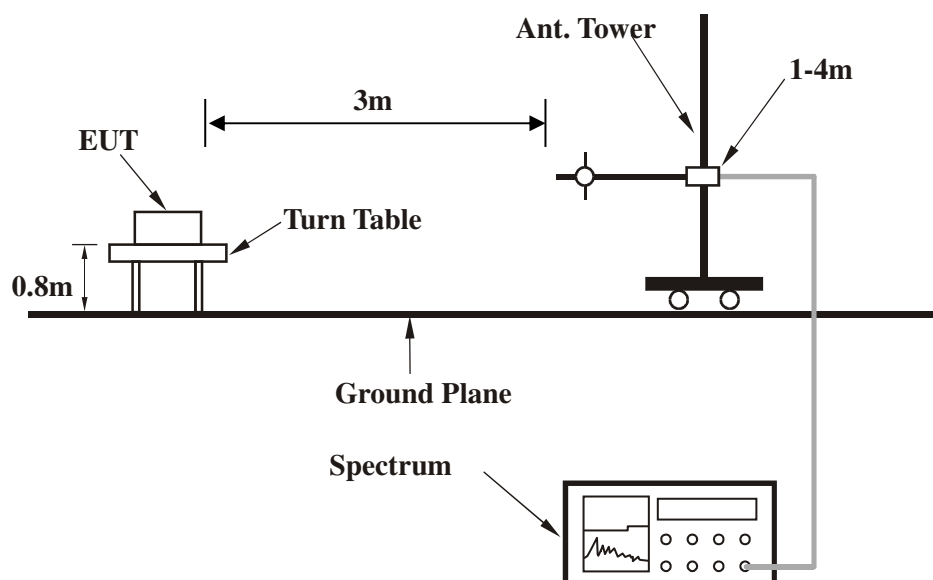
No deviation.

4.2.5 TEST SETUP

Below 30MHz test setup

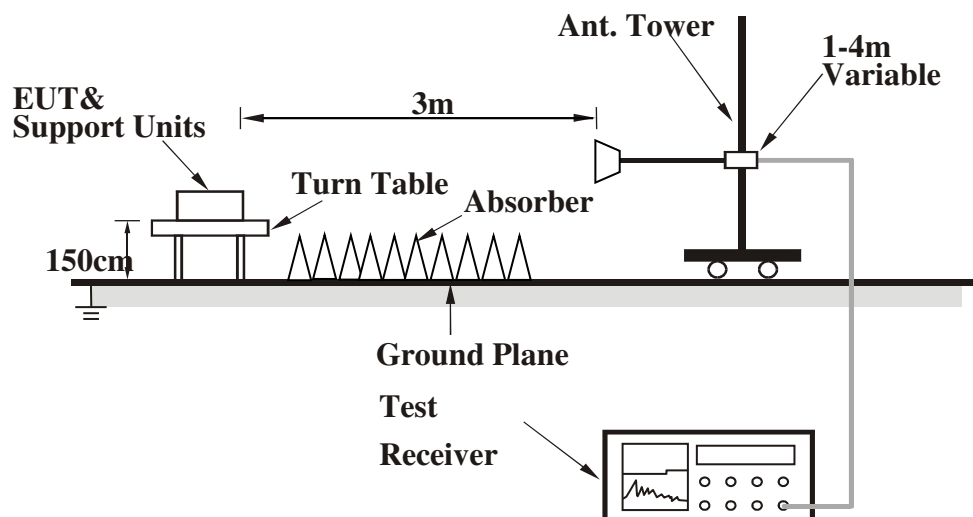


Below 1GHz test setup



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:

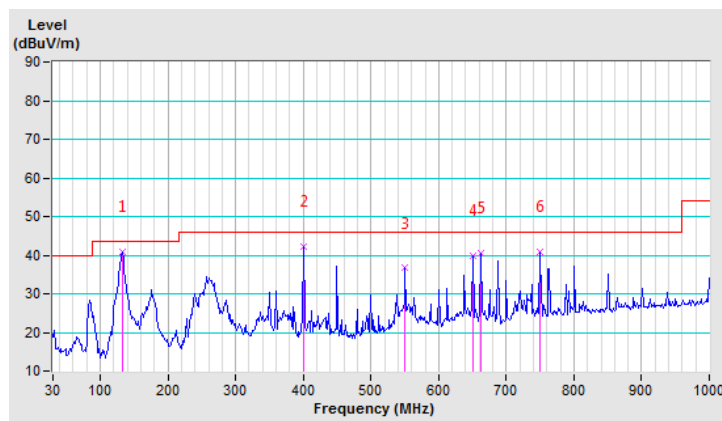
802.11b

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	132.60	40.84 QP	43.50	-2.66	1.00 H	160	57.98	-17.14
2	399.97	42.14 QP	46.00	-3.86	1.00 H	104	53.04	-10.90
3	550.75	36.62 QP	46.00	-9.38	1.00 H	64	44.18	-7.56
4	650.24	39.99 QP	46.00	-6.01	1.00 H	249	46.17	-6.18
5	662.68	40.60 QP	46.00	-5.40	1.00 H	80	46.69	-6.09
6	749.73	40.82 QP	46.00	-5.18	1.00 H	80	44.88	-4.06

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value

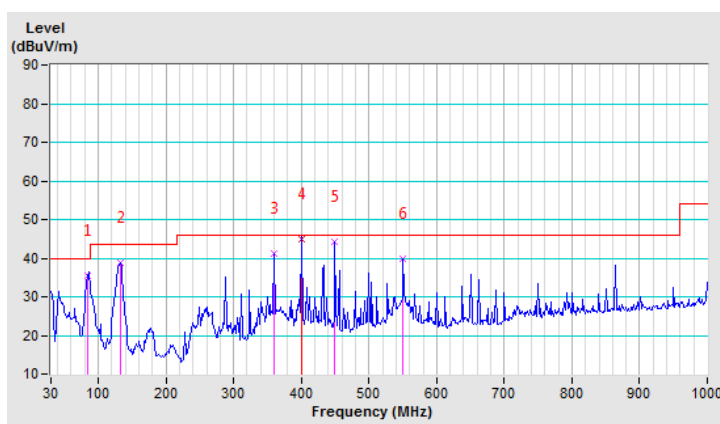


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	84.41	35.58 QP	40.00	-4.42	1.00 V	185	56.79	-21.21
2	132.60	38.90 QP	43.50	-4.60	1.00 V	108	56.04	-17.14
3	359.55	41.32 QP	46.00	-4.68	1.00 V	130	53.41	-12.09
4	399.97	44.89 QP	46.00	-1.11	1.00 V	30	55.79	-10.90
5	449.71	44.19 QP	46.00	-1.81	1.00 V	160	54.08	-9.89
6	550.75	39.77 QP	46.00	-6.23	1.00 V	192	47.33	-7.56

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. 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	47.10 PK	74.00	-26.90	1.00 H	309	43.02	4.08
2	2390.00	35.11 AV	54.00	-18.89	1.00 H	309	31.03	4.08
3	*2412.00	94.40 PK			1.00 H	309	90.22	4.18
4	*2412.00	90.20 AV			1.00 H	309	86.02	4.18
5	4824.00	49.14 PK	74.00	-24.86	1.00 H	201	41.12	8.02
6	4824.00	36.07 AV	54.00	-17.93	1.00 H	201	28.05	8.02
7	#7236.00	54.96 PK	74.00	-19.04	1.00 H	175	41.54	13.42
8	#7236.00	41.60 AV	54.00	-12.40	1.00 H	175	28.18	13.42
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	50.02 PK	74.00	-23.98	1.00 V	201	45.94	4.08
2	2390.00	37.40 AV	54.00	-16.60	1.00 V	201	33.32	4.08
3	*2412.00	97.09 PK			1.00 V	201	92.91	4.18
4	*2412.00	93.81 AV			1.00 V	201	89.63	4.18
5	4824.00	48.87 PK	74.00	-25.13	1.00 V	208	40.85	8.02
6	4824.00	35.08 AV	54.00	-18.92	1.00 V	208	27.06	8.02
7	#7236.00	53.87 PK	74.00	-20.13	1.00 V	201	40.45	13.42
8	#7236.00	41.04 AV	54.00	-12.96	1.00 V	201	27.62	13.42

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).
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	94.03 PK			1.00 H	10	89.74	4.29
2	*2437.00	89.80 AV			1.00 H	10	85.51	4.29
3	4874.00	49.60 PK	74.00	-24.40	1.00 H	130	41.40	8.20
4	4874.00	36.40 AV	54.00	-17.60	1.00 H	130	28.20	8.20
5	7311.00	55.13 PK	74.00	-18.87	1.00 H	78	41.49	13.64
6	7311.00	42.70 AV	54.00	-11.30	1.00 H	78	29.06	13.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	97.56 PK			1.00 V	300	93.27	4.29
2	*2437.00	93.60 AV			1.00 V	300	89.31	4.29
3	4874.00	49.50 PK	74.00	-24.50	1.00 V	60	41.30	8.20
4	4874.00	36.50 AV	54.00	-17.50	1.00 V	60	28.30	8.20
5	7311.00	54.20 PK	74.00	-19.80	1.00 V	281	40.56	13.64
6	7311.00	41.60 AV	54.00	-12.40	1.00 V	281	27.96	13.64

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	94.42 PK			1.00 H	346	90.02	4.40
2	*2462.00	90.30 AV			1.00 H	346	85.90	4.40
3	2483.50	47.21 PK	74.00	-26.79	1.00 H	346	42.70	4.51
4	2483.50	35.90 AV	54.00	-18.10	1.00 H	346	31.39	4.51
5	4924.00	50.60 PK	74.00	-23.40	1.00 H	116	42.22	8.38
6	4924.00	37.30 AV	54.00	-16.70	1.00 H	116	28.92	8.38
7	7386.00	55.18 PK	74.00	-18.82	1.00 H	104	41.33	13.85
8	7386.00	42.10 AV	54.00	-11.90	1.00 H	104	28.25	13.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	96.19 PK			1.00 V	146	91.79	4.40
2	*2462.00	92.08 AV			1.00 V	146	87.68	4.40
3	2483.50	47.76 PK	74.00	-26.24	1.00 V	146	43.25	4.51
4	2483.50	34.90 AV	54.00	-19.10	1.00 V	146	30.39	4.51
5	4924.00	49.60 PK	74.00	-24.40	1.00 V	215	41.22	8.38
6	4924.00	36.30 AV	54.00	-17.70	1.00 V	215	27.92	8.38
7	7386.00	54.92 PK	74.00	-19.08	1.00 V	91	41.07	13.85
8	7386.00	42.05 AV	54.00	-11.95	1.00 V	91	28.20	13.85

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.
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	49.61 PK	74.00	-24.39	1.00 H	330	45.53	4.08
2	2390.00	37.69 AV	54.00	-16.31	1.00 H	330	33.61	4.08
3	*2412.00	96.17 PK			1.00 H	130	91.99	4.18
4	*2412.00	85.95 AV			1.00 H	130	81.77	4.18
5	4824.00	50.32 PK	74.00	-23.68	1.00 H	328	42.30	8.02
6	4824.00	37.54 AV	54.00	-16.46	1.00 H	328	29.52	8.02
7	#7236.00	55.16 PK	74.00	-18.84	1.00 H	106	41.74	13.42
8	#7236.00	42.05 AV	54.00	-11.95	1.00 H	106	28.63	13.42
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	52.95 PK	74.00	-21.05	1.00 V	272	48.87	4.08
2	2390.00	38.23 AV	54.00	-15.77	1.00 V	272	34.15	4.08
3	*2412.00	99.13 PK			1.00 V	153	94.95	4.18
4	*2412.00	89.04 AV			1.00 V	155	84.86	4.18
5	4824.00	49.62 PK	74.00	-24.38	1.00 V	115	41.60	8.02
6	4824.00	35.80 AV	54.00	-18.20	1.00 V	153	27.78	8.02
7	#7236.00	54.96 PK	74.00	-19.04	1.00 V	90	41.54	13.42
8	#7236.00	43.10 AV	54.00	-10.90	1.00 V	90	29.68	13.42

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).
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	93.89 PK			1.00 H	48	89.60	4.29
2	*2437.00	82.50 AV			1.00 H	48	78.21	4.29
3	4874.00	51.41 PK	74.00	-22.59	1.00 H	47	43.21	8.20
4	4874.00	37.60 AV	54.00	-16.40	1.00 H	47	29.40	8.20
5	7311.00	55.64 PK	74.00	-18.36	1.00 H	58	42.00	13.64
6	7311.00	43.30 AV	54.00	-10.70	1.00 H	58	29.66	13.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.40 PK			1.00 V	60	94.11	4.29
2	*2437.00	87.63 AV			1.00 V	60	83.34	4.29
3	4874.00	50.10 PK	74.00	-23.90	1.00 V	79	41.90	8.20
4	4874.00	36.90 AV	54.00	-17.10	1.00 V	79	28.70	8.20
5	7311.00	54.10 PK	74.00	-19.90	1.00 V	60	40.46	13.64
6	7311.00	41.40 AV	54.00	-12.60	1.00 V	60	27.76	13.64

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	97.61 PK			1.00 H	27	93.21	4.40
2	*2462.00	85.93 AV			1.00 H	27	81.53	4.40
3	2483.50	52.64 PK	74.00	-21.36	1.00 H	27	48.13	4.51
4	2483.50	40.20 AV	54.00	-13.80	1.00 H	27	35.69	4.51
5	4924.00	49.52 PK	74.00	-24.48	1.00 H	25	41.14	8.38
6	4924.00	36.70 AV	54.00	-17.30	1.00 H	25	28.32	8.38
7	7386.00	54.10 PK	74.00	-19.90	1.00 H	113	40.25	13.85
8	7386.00	40.80 AV	54.00	-13.20	1.00 H	113	26.95	13.85
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	98.12 PK			1.00 V	148	93.72	4.40
2	*2462.00	86.19 AV			1.00 V	148	81.79	4.40
3	2483.50	56.80 PK	74.00	-17.20	1.00 V	148	52.29	4.51
4	2483.50	41.23 AV	54.00	-12.77	1.00 V	148	36.72	4.51
5	4924.00	48.13 PK	74.00	-25.87	1.00 V	176	39.75	8.38
6	4924.00	36.00 AV	54.00	-18.00	1.00 V	176	27.62	8.38
7	7386.00	55.10 PK	74.00	-18.90	1.00 V	108	41.25	13.85
8	7386.00	41.60 AV	54.00	-12.40	1.00 V	108	27.75	13.85

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.
5. " * ": Fundamental frequency.

802.11n HT20

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	50.79 PK	74.00	-23.21	1.00 H	46	46.71	4.08
2	2390.00	38.40 AV	54.00	-15.60	1.00 H	46	34.32	4.08
3	*2412.00	95.36 PK			1.00 H	50	91.18	4.18
4	*2412.00	83.60 AV			1.00 H	50	79.42	4.18
5	4824.00	51.60 PK	74.00	-22.40	1.00 H	116	43.58	8.02
6	4824.00	38.50 AV	54.00	-15.50	1.00 H	268	30.48	8.02
7	#7236.00	55.67 PK	74.00	-18.33	1.00 H	268	42.25	13.42
8	#7236.00	42.10 AV	54.00	-11.90	1.00 H	116	28.68	13.42
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	54.08 PK	74.00	-19.92	1.00 V	270	50.00	4.08
2	2390.00	40.44 AV	54.00	-13.56	1.00 V	270	36.36	4.08
3	*2412.00	98.78 PK			1.00 V	275	94.60	4.18
4	*2412.00	87.03 AV			1.00 V	550	82.85	4.18
5	4824.00	50.32 PK	74.00	-23.68	1.00 V	550	42.30	8.02
6	4824.00	37.40 AV	54.00	-16.60	1.00 V	275	29.38	8.02
7	#7236.00	55.06 PK	74.00	-18.94	1.00 V	164	41.64	13.42
8	#7236.00	42.30 AV	54.00	-11.70	1.00 V	164	28.88	13.42

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).
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	95.10 PK			1.00 H	12	90.81	4.29
2	*2437.00	83.12 AV			1.00 H	12	78.83	4.29
3	4874.00	49.66 PK	74.00	-24.34	1.00 H	47	41.46	8.20
4	4874.00	36.10 AV	54.00	-17.90	1.00 H	47	27.90	8.20
5	7311.00	55.82 PK	74.00	-18.18	1.00 H	41	42.18	13.64
6	7311.00	42.70 AV	54.00	-11.30	1.00 H	41	29.06	13.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.05 PK			1.00 V	298	94.76	4.29
2	*2437.00	87.24 AV			1.00 V	298	82.95	4.29
3	4874.00	49.25 PK	74.00	-24.75	1.00 V	48	41.05	8.20
4	4874.00	36.00 AV	54.00	-18.00	1.00 V	48	27.80	8.20
5	7311.00	53.49 PK	74.00	-20.51	1.00 V	98	39.85	13.64
6	7311.00	42.05 AV	54.00	-11.95	1.00 V	98	28.41	13.64

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.70 PK			1.00 H	344	91.30	4.40
2	*2462.00	83.26 AV			1.00 H	344	78.86	4.40
3	2483.50	55.60 PK	74.00	-18.40	1.00 H	344	51.09	4.51
4	2483.50	37.65 AV	54.00	-16.35	1.00 H	344	33.14	4.51
5	4924.00	50.28 PK	74.00	-23.72	1.00 H	315	41.90	8.38
6	4924.00	36.90 AV	54.00	-17.10	1.00 H	315	28.52	8.38
7	7386.00	55.48 PK	74.00	-18.52	1.00 H	55	41.63	13.85
8	7386.00	42.40 AV	54.00	-11.60	1.00 H	55	28.55	13.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	97.32 PK			1.00 V	148	92.92	4.40
2	*2462.00	85.06 AV			1.00 V	148	80.66	4.40
3	2483.50	55.11 PK	74.00	-18.89	1.00 V	148	50.60	4.51
4	2483.50	37.62 AV	54.00	-16.38	1.00 V	148	33.11	4.51
5	4924.00	48.56 PK	74.00	-25.44	1.00 V	15	40.18	8.38
6	4924.00	35.90 AV	54.00	-18.10	1.00 V	15	27.52	8.38
7	7386.00	54.16 PK	74.00	-19.84	1.00 V	35	40.31	13.85
8	7386.00	41.30 AV	54.00	-12.70	1.00 V	35	27.45	13.85

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.
5. " * ": Fundamental frequency.

BELOW 1GHz WORST-CASE DATA:

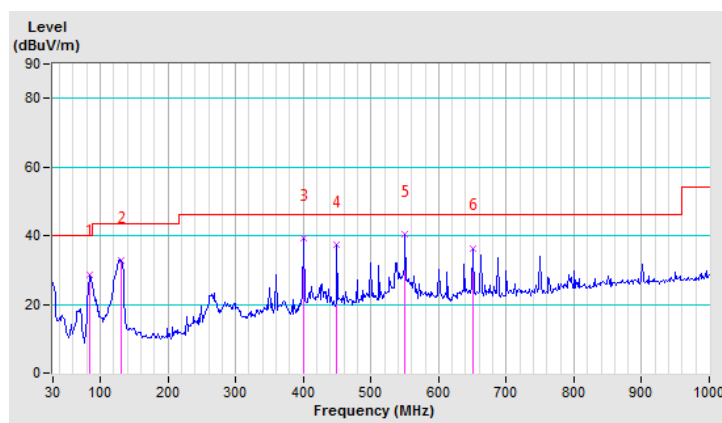
BT-LE (GFSK)

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	84.41	28.78 QP	40.00	-11.22	1.00 H	240	49.99	-21.21
2	131.04	32.83 QP	43.50	-10.67	1.00 H	174	49.92	-17.09
3	399.97	39.18 QP	46.00	-6.82	1.00 H	27	50.08	-10.90
4	449.71	37.22 QP	46.00	-8.78	1.00 H	68	47.11	-9.89
5	550.75	40.51 QP	46.00	-5.49	1.00 H	140	48.07	-7.56
6	650.24	36.38 QP	46.00	-9.62	1.00 H	75	42.56	-6.18

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value

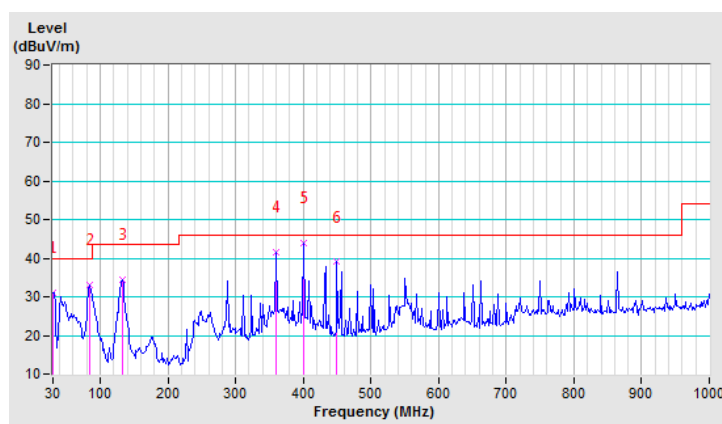


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	30.00	31.15 QP	40.00	-8.85	1.00 V	117	42.69	-11.54
2	84.41	33.03 QP	40.00	-6.97	1.00 V	240	54.24	-21.21
3	132.60	34.57 QP	43.50	-8.93	1.00 V	27	51.71	-17.14
4	359.55	41.46 QP	46.00	-4.54	1.00 V	99	53.55	-12.09
5	399.97	44.03 QP	46.00	-1.97	1.00 V	46	54.93	-10.90
6	449.71	38.98 QP	46.00	-7.02	1.00 V	106	48.87	-9.89

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value



ABOVE 1GHz TEST DATA:

BT-LE (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	46.11 PK	74.00	-27.89	1.00 H	314	42.03	4.08
2	2390.00	34.62 AV	54.00	-19.38	1.00 H	314	30.54	4.08
3	*2402.00	92.34 PK			1.00 H	314	88.20	4.14
4	*2402.00	91.51 AV			1.00 H	314	87.37	4.14
5	4804.00	52.26 PK	74.00	-21.74	1.00 H	237	44.32	7.94
6	4804.00	38.54 AV	54.00	-15.46	1.00 H	237	30.60	7.94
7	#7206.00	56.01 PK	74.00	-17.99	1.00 H	254	42.68	13.33
8	#7206.00	43.30 AV	54.00	-10.70	1.00 H	254	29.97	13.33
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	46.06 PK	74.00	-27.94	1.00 V	201	41.98	4.08
2	2390.00	34.62 AV	54.00	-19.38	1.00 V	201	30.54	4.08
3	*2402.00	93.93 PK			1.00 V	210	89.79	4.14
4	*2402.00	93.13 AV			1.00 V	210	88.99	4.14
5	4804.00	51.60 PK	74.00	-22.40	1.00 V	267	43.66	7.94
6	4804.00	38.05 AV	54.00	-15.95	1.00 V	267	30.11	7.94
7	#7206.00	55.96 PK	74.00	-18.04	1.00 V	157	42.63	13.33
8	#7206.00	43.41 AV	54.00	-10.59	1.00 V	157	30.08	13.33

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	93.44 PK			1.00 H	201	89.13	4.31
2	*2440.00	92.31 AV			1.00 H	201	88.00	4.31
3	4880.00	51.90 PK	74.00	-22.10	1.00 H	294	43.68	8.22
4	4880.00	39.25 AV	54.00	-14.75	1.00 H	294	31.03	8.22
5	7320.00	55.75 PK	74.00	-18.25	1.00 H	294	42.08	13.67
6	7320.00	42.68 AV	54.00	-11.32	1.00 H	294	29.01	13.67
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	92.82 PK			1.00 V	263	88.51	4.31
2	*2440.00	91.60 AV			1.00 V	263	87.29	4.31
3	4880.00	51.93 PK	74.00	-22.07	1.00 V	291	43.71	8.22
4	4880.00	38.10 AV	54.00	-15.90	1.00 V	291	29.88	8.22
5	7320.00	56.51 PK	74.00	-17.49	1.00 V	264	42.84	13.67
6	7320.00	42.60 AV	54.00	-11.40	1.00 V	264	28.93	13.67

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	91.97 PK			1.00 H	237	87.48	4.49
2	*2480.00	90.64 AV			1.00 H	237	86.15	4.49
3	2483.50	52.14 PK	74.00	-21.86	1.00 H	237	47.63	4.51
4	2483.50	46.83 AV	54.00	-7.17	1.00 H	237	42.32	4.51
5	4960.00	52.32 PK	74.00	-21.68	1.00 H	264	43.80	8.52
6	4960.00	38.57 AV	54.00	-15.43	1.00 H	264	30.05	8.52
7	7440.00	56.13 PK	74.00	-17.87	1.00 H	204	42.11	14.02
8	7440.00	42.88 AV	54.00	-11.12	1.00 H	204	28.86	14.02
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	89.49 PK			1.00 V	230	85.00	4.49
2	*2480.00	88.04 AV			1.00 V	230	83.55	4.49
3	2483.50	51.12 PK	74.00	-22.88	1.00 V	230	46.61	4.51
4	2483.50	44.33 AV	54.00	-9.67	1.00 V	230	39.82	4.51
5	4960.00	52.03 PK	74.00	-21.97	1.00 V	105	43.51	8.52
6	4960.00	38.52 AV	54.00	-15.48	1.00 V	105	30.00	8.52
7	7440.00	56.55 PK	74.00	-17.45	1.00 V	206	42.53	14.02
8	7440.00	42.75 AV	54.00	-11.25	1.00 V	206	28.73	14.02

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.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 22,20	May 21,21
Power Sensor	Keysight	U2021XA	MY55060018	May 22,20	May 21,21
Power Meter	Anritsu	ML2495A	1139001	Mar. 12,20	Mar. 11,21
Power Sensor	Anritsu	MA2411B	1531155	Mar. 12,20	Mar. 11,21
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 17, 19	Oct.16, 20
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Nov.15,19	Nov. 14,20
Oscilloscope	Agilent	DSO9254A	MY51260160	Sep. 18,19	Sep. 17,20
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Mar. 13,20	Mar. 12,21
Signal Generator	Agilent	N5183A	MY50140980	Sep. 19,19	Sep. 18,20
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Sep. 12,19	Sep. 11,20
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	May 20,20	May 19,21
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A
DC Source	Keysight	E3642A	MY56146098	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.

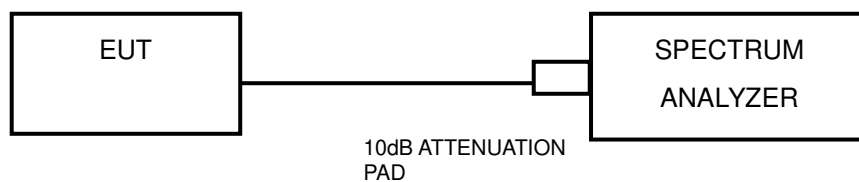


Test Report No.: RF200521N025-2

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	9.07	0.5	PASS
6	2437	8.57	0.5	PASS
11	2462	8.11	0.5	PASS

802.11g

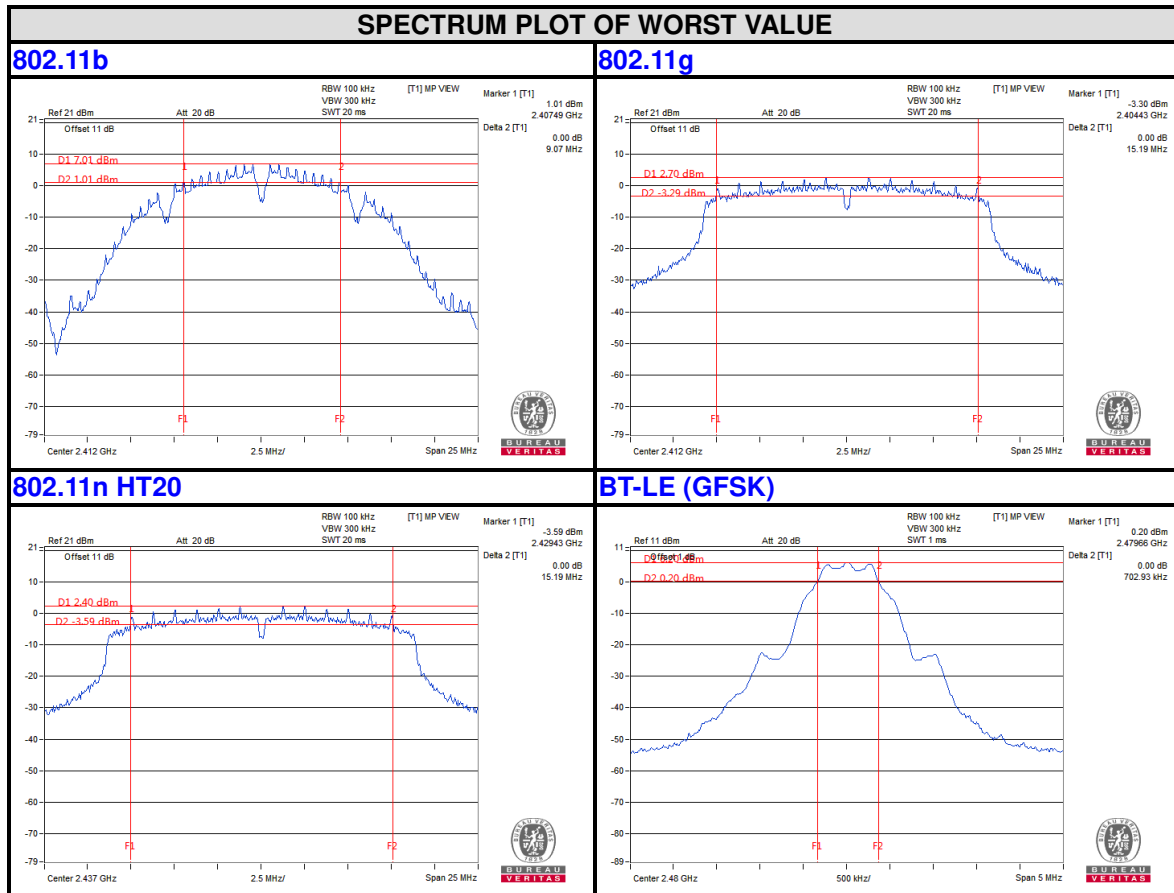
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.19	0.5	PASS
6	2437	15.16	0.5	PASS
11	2462	15.18	0.5	PASS

802.11n HT20

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.18	0.5	PASS
6	2437	15.19	0.5	PASS
11	2462	15.15	0.5	PASS

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.69	0.5	PASS
19	2440	0.69	0.5	PASS
39	2480	0.70	0.5	PASS

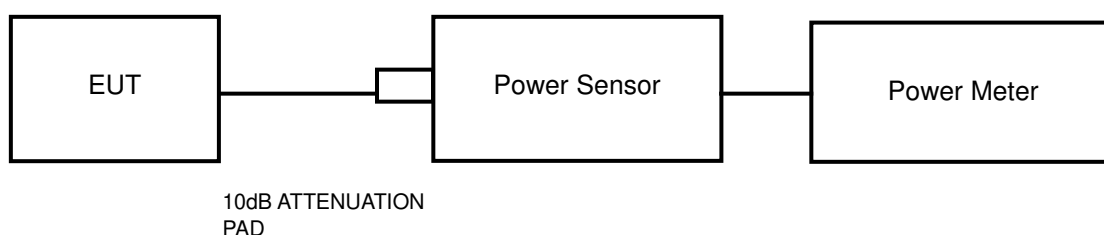


4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 22,20	May 21,21
Power Sensor	Keysight	U2021XA	MY55060018	May 22,20	May 21,21
Power Meter	Anritsu	ML2495A	1139001	Mar. 12,20	Mar. 11,21
Power Sensor	Anritsu	MA2411B	1531155	Mar. 12,20	Mar. 11,21
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 17, 19	Oct.16, 20
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Nov.15,19	Nov. 14,20
Oscilloscope	Agilent	DSO9254A	MY51260160	Sep. 18,19	Sep. 17,20
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Mar. 13,20	Mar. 12,21
Signal Generator	Agilent	N5183A	MY50140980	Sep. 19,19	Sep. 18,20
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Sep. 12,19	Sep. 11,20
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	May 20,20	May 19,21
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A
DC Source	Keysight	E3642A	MY56146098	N/A	N/A

NOTES:

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	18.25	66.834	1	PASS
6	2437	18.36	68.549	1	PASS
11	2462	18.50	70.795	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	21.94	156.315	1	PASS
6	2437	21.87	153.815	1	PASS
11	2462	21.99	158.125	1	PASS

802.11n HT20

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	21.32	135.519	1	PASS
6	2437	21.44	139.316	1	PASS
11	2462	21.47	140.281	1	PASS

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	9.29	8.492	1	PASS
19	2440	9.27	8.453	1	PASS
39	2480	8.14	6.516	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	15.39	34.594
6	2437	15.35	34.277
11	2462	15.43	34.914

802.11g

CHANNEL	CHANNEL FREQUENCY(MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)
1	2412	13.83	24.155
6	2437	13.86	24.322
11	2462	14.02	25.235

802.11n HT20

CHANNEL	CHANNEL FREQUENCY(MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)
1	2412	13.18	20.797
6	2437	13.29	21.33
11	2462	13.27	21.232

BT-LE (GFSK)

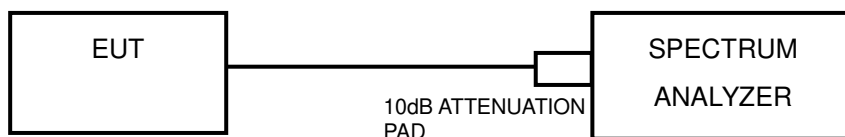
CHANNEL	CHANNEL FREQUENCY(MHz)	AVERAGE POWER (dBm)	AVG. POWER (mW)
0	2402	7.36	5.445
19	2440	7.32	5.395
39	2480	6.21	4.178

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set RBW to: 3KHz
- d) Set VBW $\geq 3 \times$ RBW.
- e) Detector = peak
- f) Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- g) Sweep time = auto couple.
- h) Use the peak marker function to determine the maximum amplitude level.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as item 4.3.6.

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-5.15	8.00	PASS
6	2437	-7.43	8.00	PASS
11	2462	-6.35	8.00	PASS

802.11g

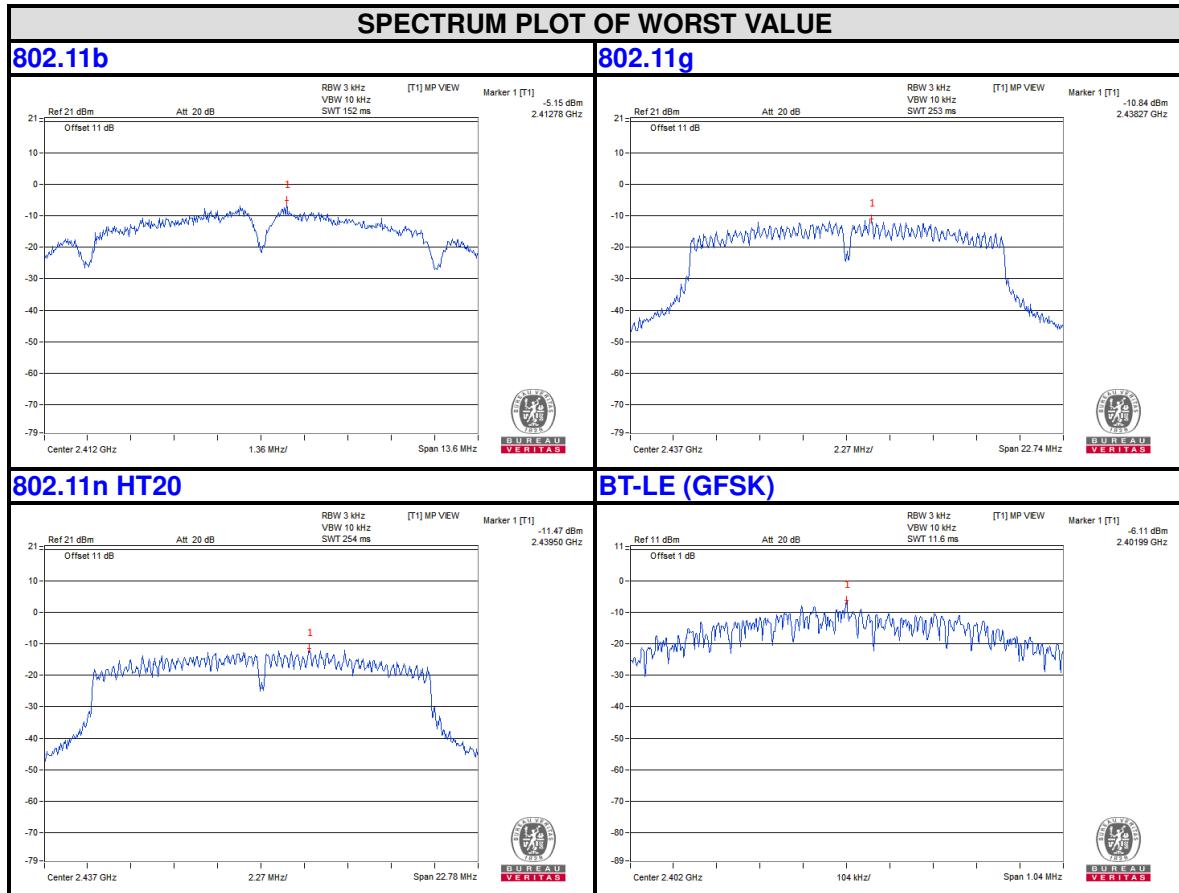
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.40	8.00	PASS
6	2437	-10.84	8.00	PASS
11	2462	-11.60	8.00	PASS

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Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.41	8.00	PASS
6	2437	-11.47	8.00	PASS
11	2462	-11.51	8.00	PASS

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Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-6.11	8.00	PASS
19	2440	-6.20	8.00	PASS
39	2480	-7.28	8.00	PASS

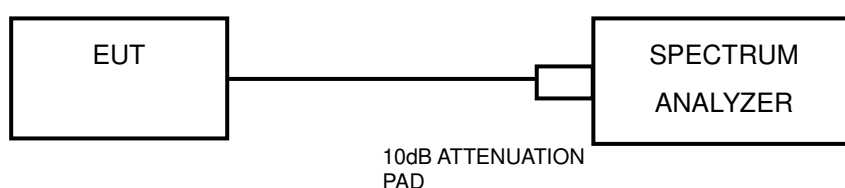


4.6 OUT OF BAND EMISSION MEASUREMENT

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 - Reference Level

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

Measurement Procedure –Unwanted Emission Level

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

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

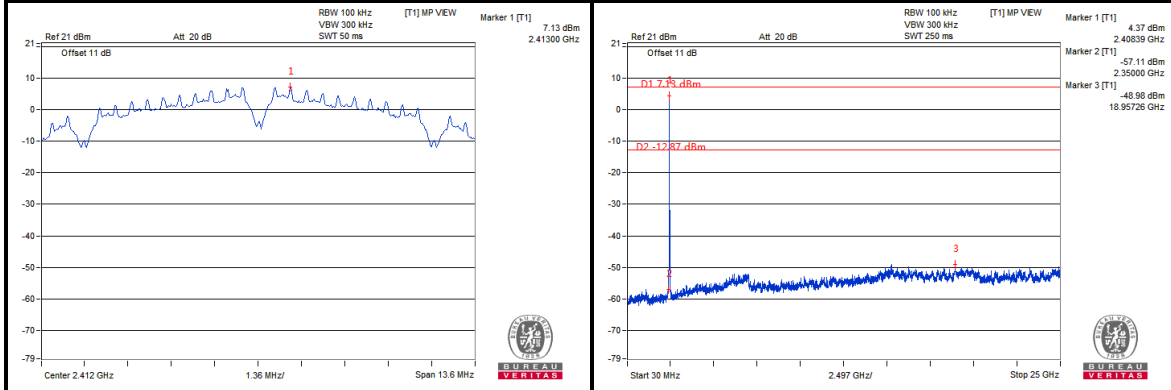
4.6.6 EUT OPERATING CONDITION

Same as item 4.3.6

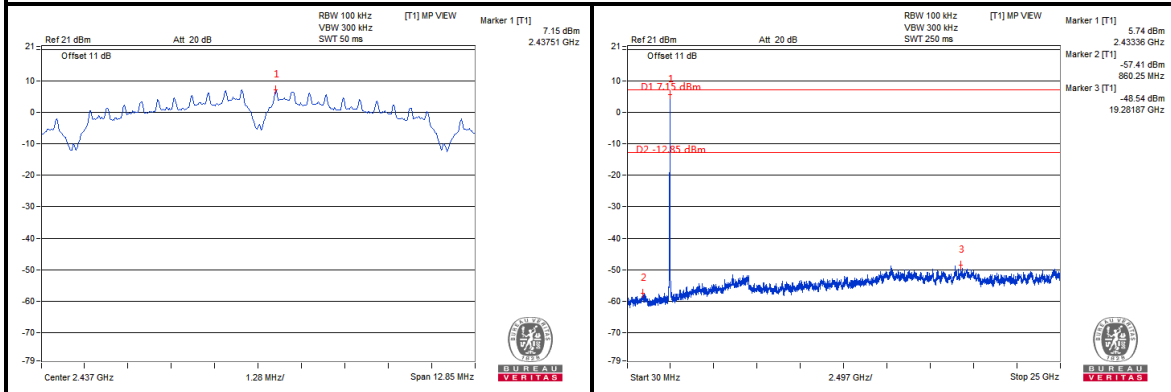
4.6.7 TEST RESULTS

802.11b

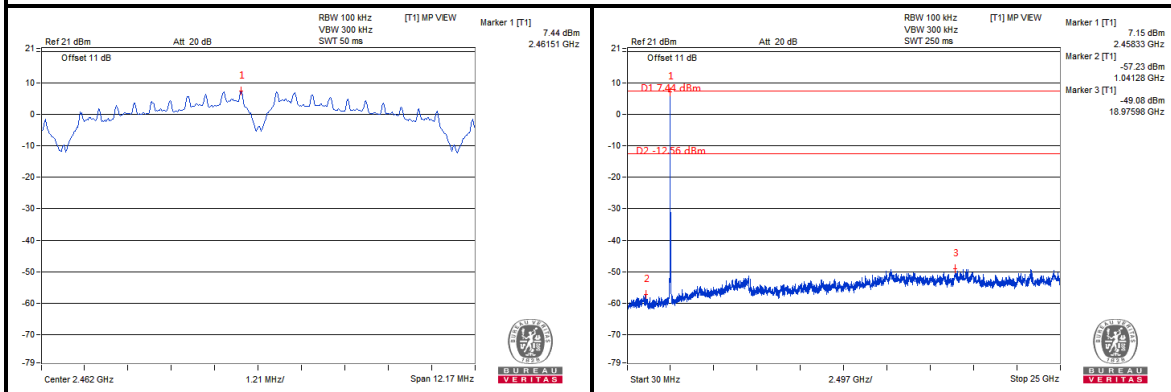
CH 1



CH 6

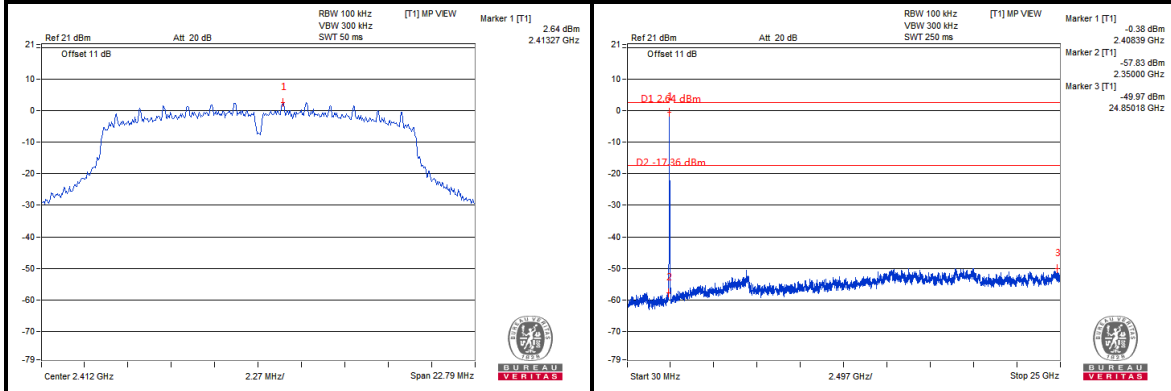


CH 11

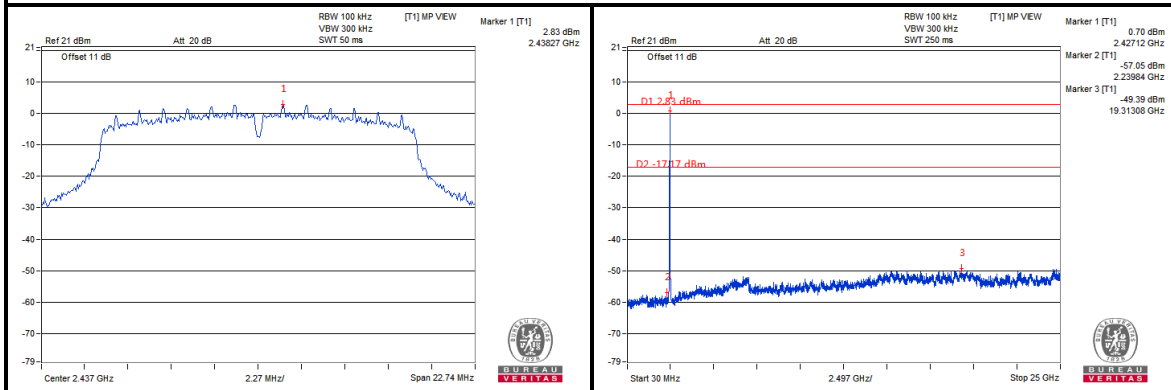


802.11g

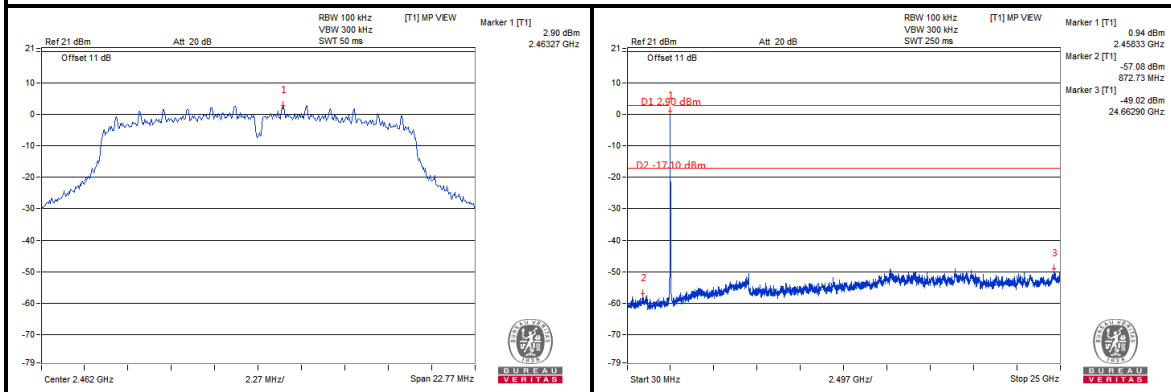
CH 1



CH 6

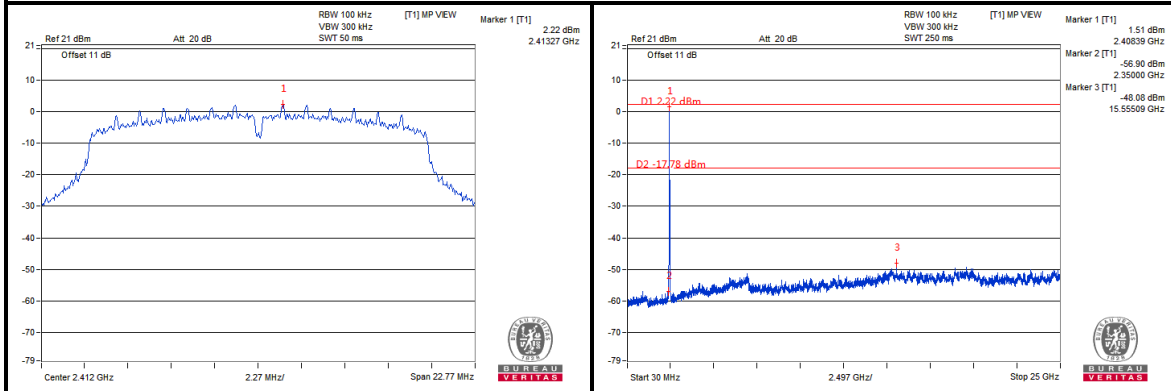


CH 11

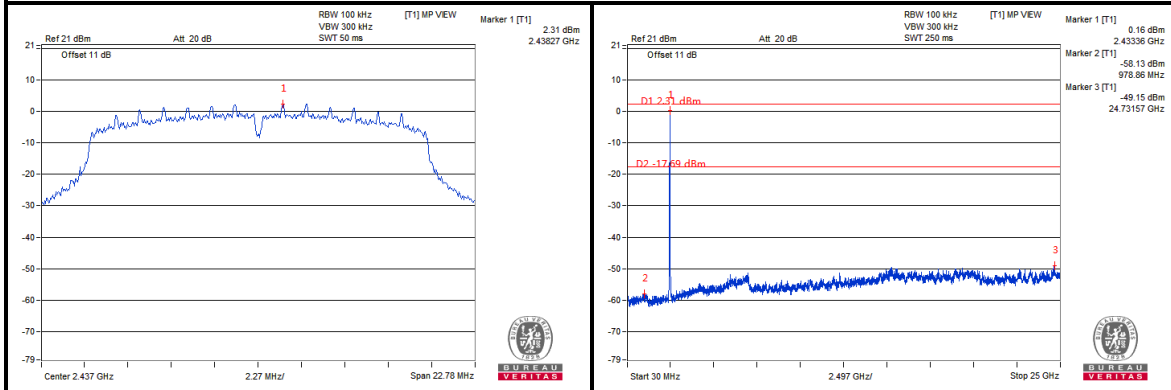


802.11n (HT20)

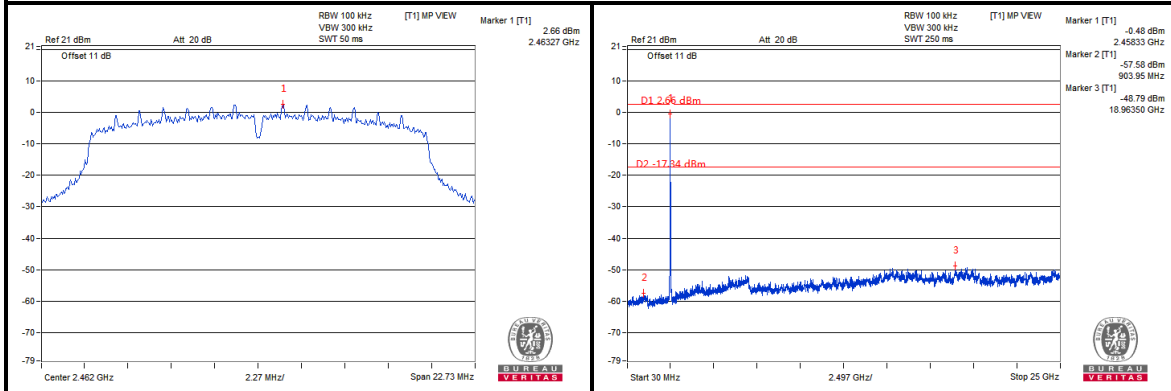
CH 1



CH 6

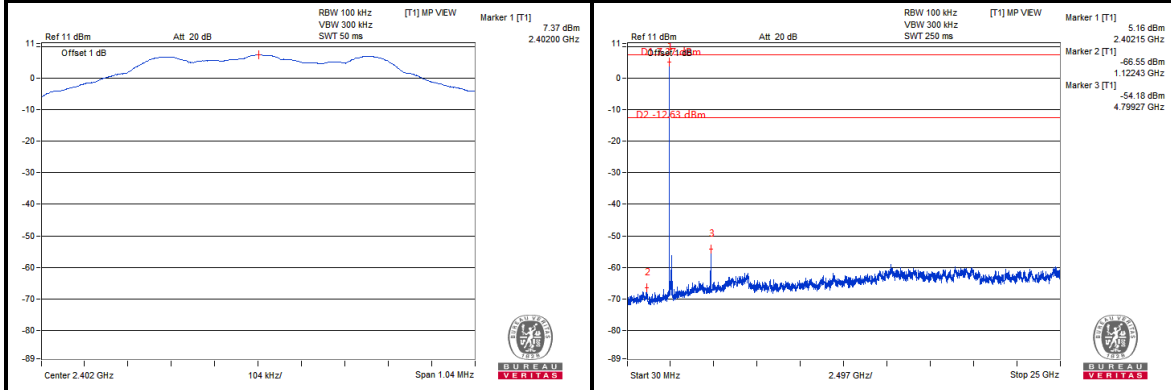


CH 11

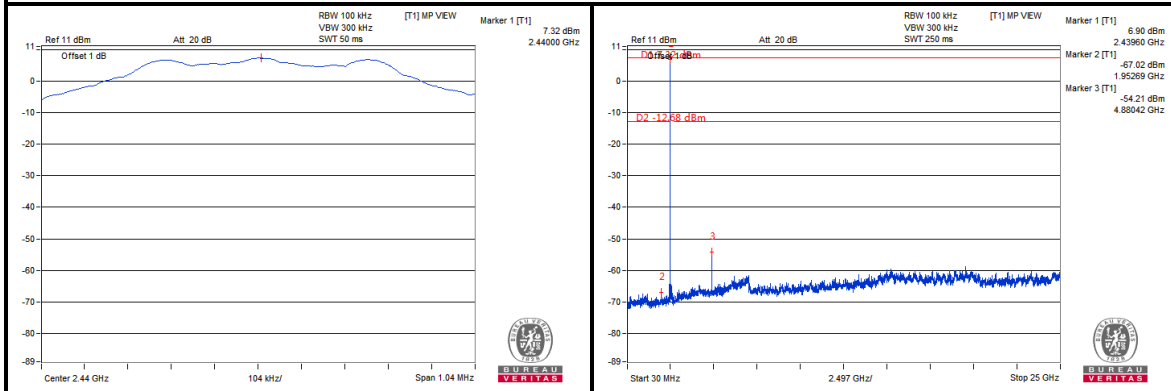


BT-LE (GFSK)

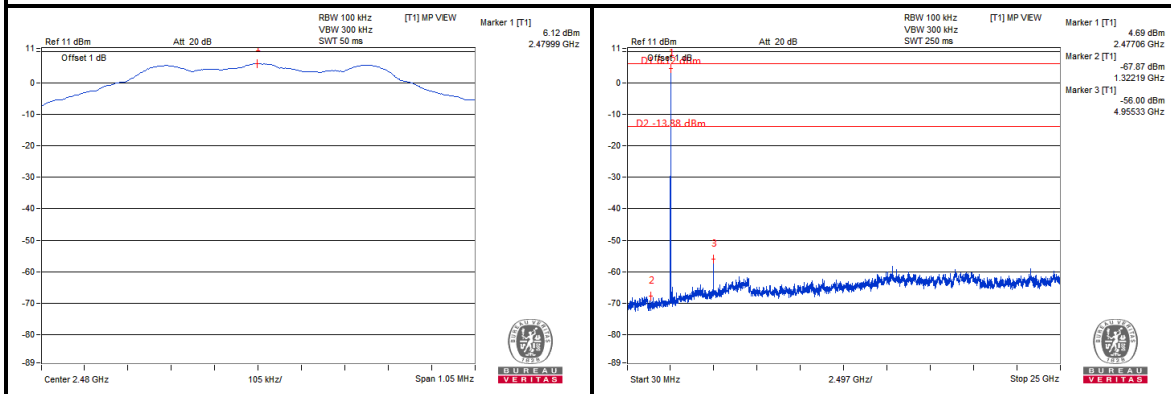
CH 0



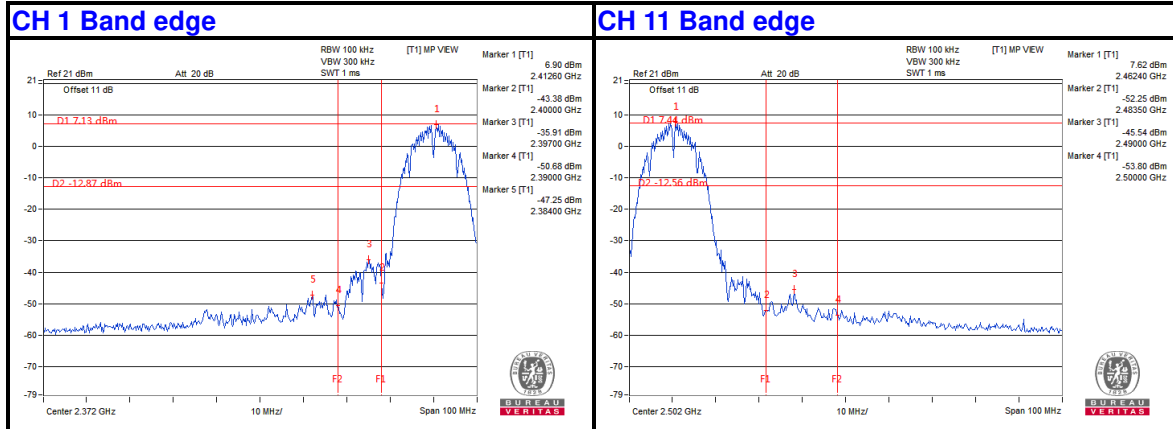
CH 19



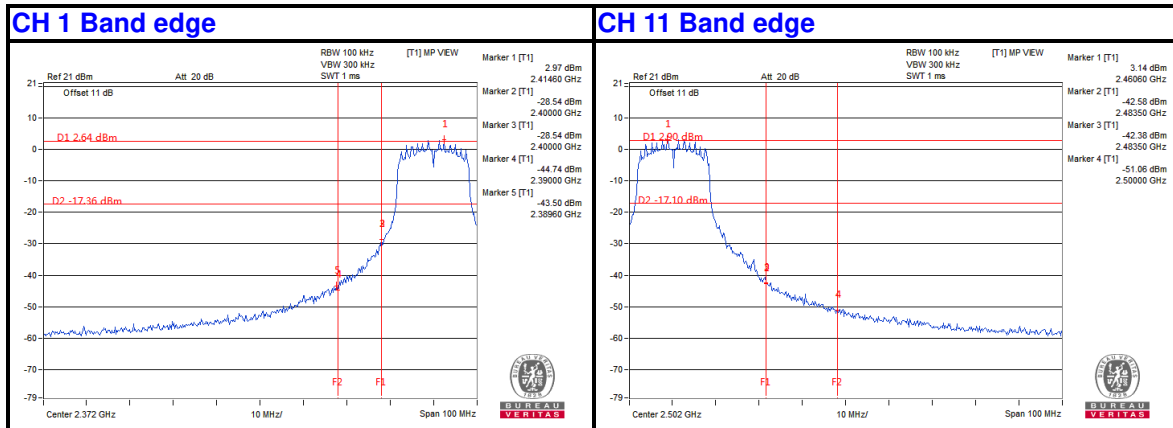
CH 39



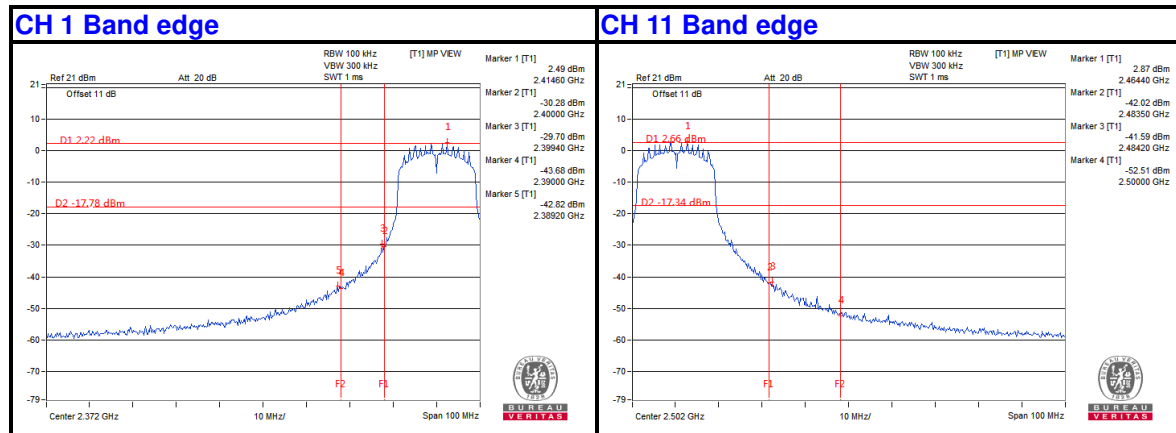
802.11b



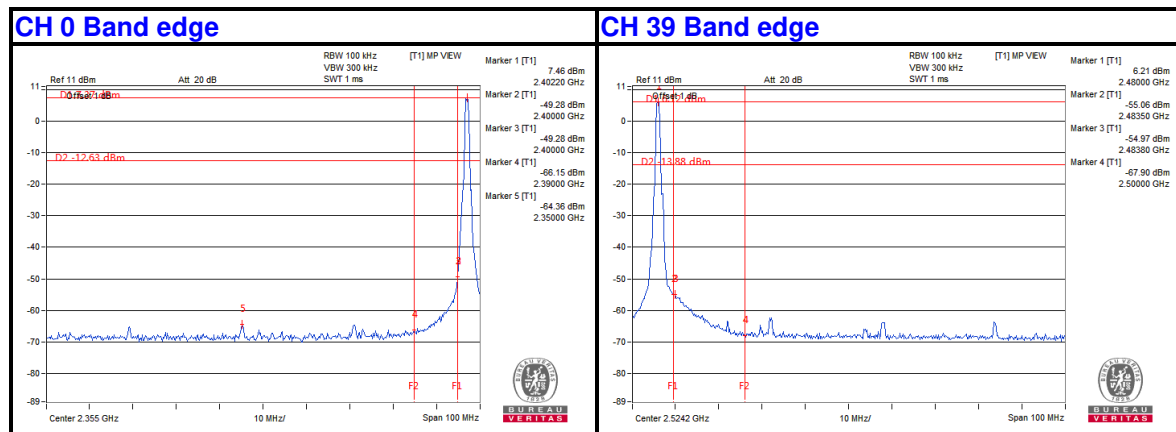
802.11g



802.11n HT20



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---