TEST REPORT

Applicant:	NEW BRIGHT INDUSTRIAL CO., LTD.
Address:	9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, HONG KONG

Manufacturer or Supplier	NEW BRIGHT INDUSTRIAL CO., LTD.
Address	9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, HONG KONG
Product:	TOY Receiver
Brand Name:	N/A
Model:	GF1208AS12.8V
Additional Model & Model Difference	GF1208AS9.6V, see item 3.1 note
Date of tests:	Nov. 24, 2017~ Dec. 05, 2017

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

☒ **FCC Part 15, Subpart C, Section 15.249**

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

Tested by Breeze Jiang Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
	 Date: Dec. 11, 2017

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF171124N021-2	Original release	Dec. 11, 2017

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.249)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
§15.203	Antenna Requirement	PASS	No antenna connector is used
§15.207 (a)	Conducted Emission	N/A	Powered from battery
§15.205	Restricted Band of Operation	PASS	Compliant
§15.209 §15.249(a)	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant

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
Radiated emissions	9KHz ~ 30MHz	2.90dB
	30MHz ~ 1GMHz	3.83dB
	1GHz ~ 18GHz	4.93dB
	18GHz ~ 40GHz	4.80dB

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

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	TOY Receiver
MODEL NO.	GF1208AS12.8V
ADDITIONAL MODEL	GF1208AS9.6V
FCC ID	G6DGF1208AS
NOMINAL VOLTAGE	Car(GF1208AS9.6V): DC 9.6V from Li-ion battery, Car(GF1208AS12.8V): DC 12.8V from Li-ion battery
MODULATION TECHNOLOGY	GFSK
OPERATING FREQUENCY	2410-2473MHz
ANTENNA TYPE	Wire Antenna, with 0dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 171124N021-2) for detailed product photo.
4. The model:GF1208AS12.8V and GF1208AS9.6V are the same except the appearance and power supply mode, there are tests in this report.

   Remarks: The battery is support units.

3.2 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type. The worst case was found when the EUT was positioned on X axis for radiated emission. The EUT was tested under the following mode.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	-	√	Power by fully Battery

Where **RE<1G:** Radiated Emission below 1GHz **RE≥1G:** Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **BW:** 20db bandwidth

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

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

TESTED CHANNEL	TESTED FREQUENCY
Low	2410 MHz
Middle	2442 MHz
High	2473 MHz

Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	**2410**	22	2431	43	2452
2	2411	23	2432	44	2453
3	2412	24	2433	45	2454
4	2413	25	2434	46	2455
5	2414	26	2435	47	2456
6	2415	27	2436	48	2457
7	2416	28	2437	49	2458
8	2417	29	2438	50	2459
9	2418	30	2439	51	2460
10	2419	31	2440	52	2461
11	2420	32	2441	53	2462
12	2421	**33**	**2442**	54	2463
13	2422	34	2443	55	2464
14	2423	35	2444	56	2465
15	2424	36	2445	57	2466
16	2425	37	2446	58	2467
17	2426	38	2447	59	2468
18	2427	39	2448	60	2469
19	2428	40	2449	61	2470
20	2429	41	2450	62	2471
21	2430	42	2451	63	2472
64	**2473**				

Note: The more detailed channel, please refer to the product specifications

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	25deg. C, 55%RH	Power by fully Battery	Hardy
BW	25deg. C, 55%RH	Power by fully Battery	Hardy
PLC	-	-	-

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 15.249

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	Battery	NEW BRIGHT	12.8V 500mAh	N/A	N/A
2	Battery	NEW BRIGHT	9.6V 500mAh	N/A	N/A

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

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.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 12,17	Mar. 11,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,17	Nov. 03,18
Bilog Antenna (30MHz~1GHz)	Teseq	CBL 6111D	30643	Jul. 14, 17	Jul. 13, 18
Loop antenna (9KHz ~30MHz)	Daze	ZN30900A	0708	Mar. 12,17	Mar. 11,18
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,17	May 17,18
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 17	Aug. 07, 18
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 12,17	Mar. 11,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna (18GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 15,17	Mar. 14,18
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,17	Mar. 03, 18
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Mar. 09,17	Mar. 08,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,17	Nov. 03,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A

NOTE:

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 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 above1GHz if tested.
4. The FCC Site Registration No. is 749762.

4.1.3 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. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

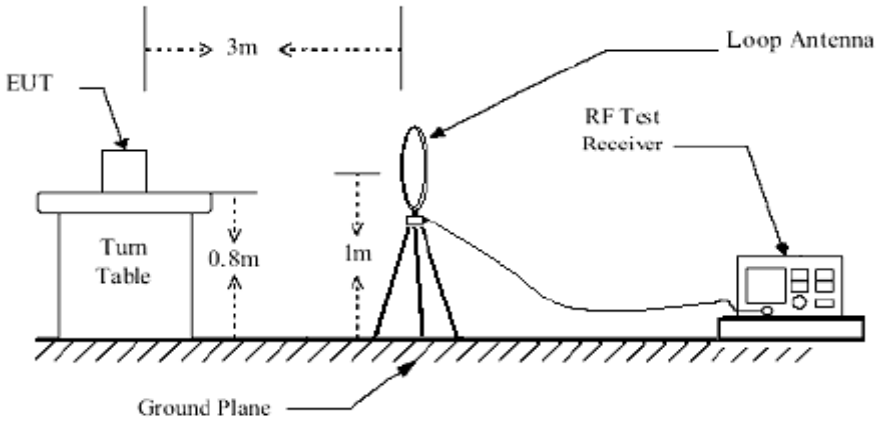
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
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.

4.1.4 DEVIATION FROM TEST STANDARD

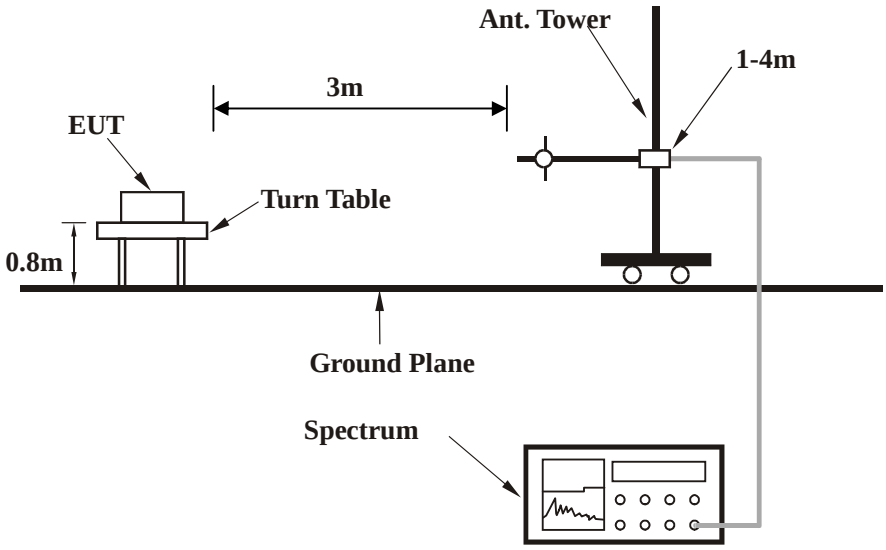
No deviation.

4.1.5 TEST SETUP

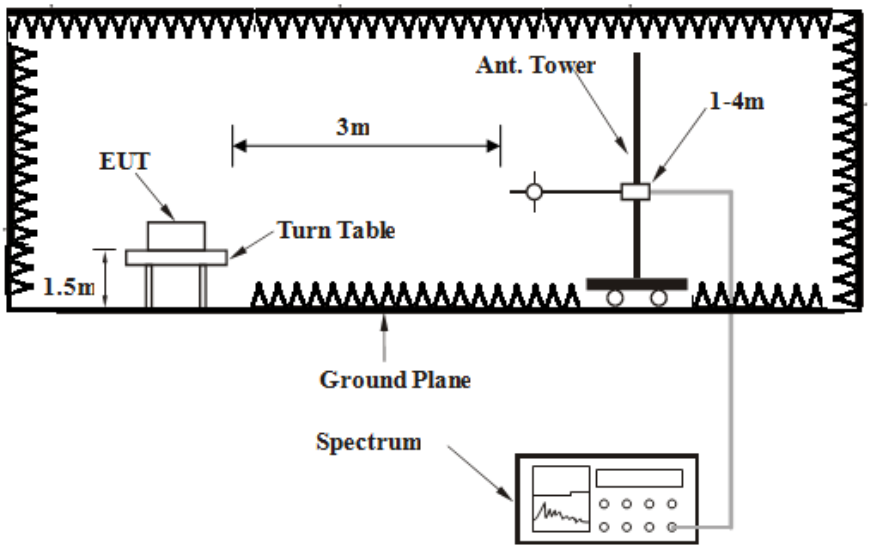
Below 30MHz



Below 1GHz test setup



Above 1GHz test setup



Note: 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 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

Power by 12.8V Battery

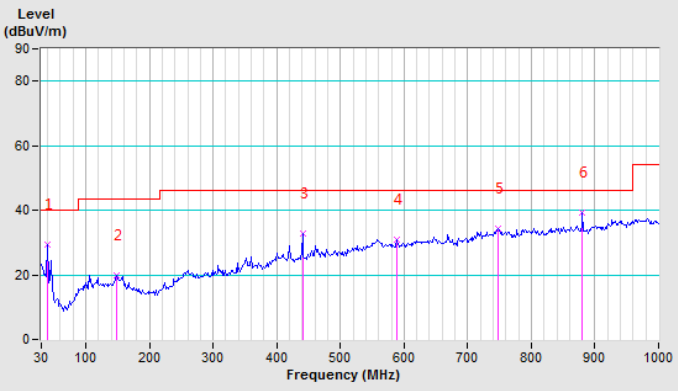
BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Middle Channel	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	39.33	29.27 QP	40.00	-10.73	1.00 H	52	40.46	-11.19
2	148.14	19.68 QP	43.50	-23.82	1.00 H	45	31.02	-11.34
3	440.38	32.91 QP	46.00	-13.09	1.00 H	252	36.21	-3.30
4	588.06	30.75 QP	46.00	-15.25	1.00 H	113	29.98	0.77
5	748.17	34.27 QP	46.00	-11.73	1.00 H	206	29.42	4.85
6	880.30	39.21 QP	46.00	-6.79	1.00 H	189	33.65	5.56

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 less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.

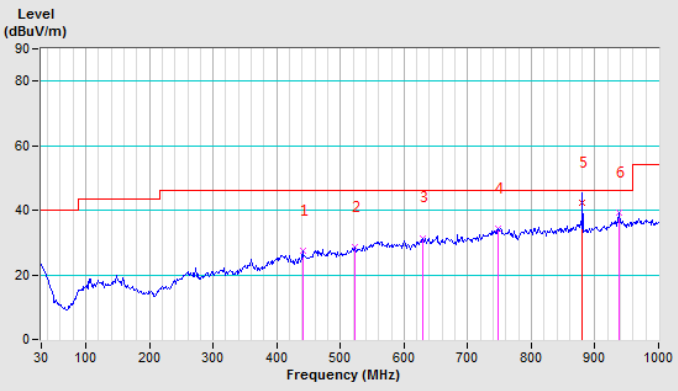


CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	440.38	27.44 QP	46.00	-18.56	1.00 V	25	30.74	-3.30
2	522.77	28.72 QP	46.00	-17.28	1.00 V	317	29.26	-0.54
3	630.03	31.46 QP	46.00	-14.54	1.00 V	214	29.24	2.22
4	748.17	34.42 QP	46.00	-11.58	1.00 V	62	29.57	4.85
5	**879.62**	**42.34 QP**	**46.00**	**-3.66**	**1.52 V**	**249**	**36.75**	**5.59**
6	937.82	39.40 QP	46.00	-6.60	1.00 V	157	31.70	7.70

REMARKS:

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



ABOVE 1GHz WORST-CASE DATA:

CHANNEL	TX Low Channel	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	2400.00	52.32 PK	74.00	-21.68	1.50 H	310	49.23	3.09
2	2400.00	41.00 AV	54.00	-13.00	1.50 H	310	37.91	3.09
3	*2410.00	71.69 PK	114.00	-42.31	1.50 H	310	68.57	3.12
4	*2410.00	60.37 AV	94.00	-33.63	1.50 H	310	57.25	3.12
5	4820.00	50.56 PK	74.00	-23.44	1.62 H	30	44.61	5.95
6	4820.00	39.24 AV	54.00	-14.76	1.62 H	30	33.29	5.95
7	7230.00	56.34 PK	74.00	-17.66	2.30 H	164	44.06	12.28
8	7230.00	45.02 AV	54.00	-8.98	2.30 H	164	32.74	12.28
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	2400.00	57.87 PK	74.00	-16.13	1.00 V	230	54.78	3.09
2	2400.00	46.55 AV	54.00	-7.45	1.00 V	230	43.46	3.09
3	*2410.00	72.29 PK	114.00	-41.71	1.00 V	230	69.17	3.12
4	*2410.00	60.97 AV	94.00	-33.03	1.00 V	230	57.85	3.12
5	4820.00	50.70 PK	74.00	-23.30	1.62 V	130	44.75	5.95
6	4820.00	39.38 AV	54.00	-14.62	1.62 V	130	33.43	5.95
7	7230.00	55.26 PK	74.00	-18.74	1.30 V	264	42.98	12.28
8	7230.00	43.93 AV	54.00	-10.07	1.30 V	264	31.65	12.28

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 Middle Channel	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	*2442.00	69.39 PK	114.00	-44.61	1.62 H	357	66.17	3.22
2	*2442.00	58.07 AV	94.00	-35.93	1.62 H	357	54.85	3.22
3	4884.00	50.36 PK	74.00	-23.64	1.65 H	284	44.30	6.06
4	4884.00	39.04 AV	54.00	-14.96	1.65 H	284	32.98	6.06
5	7326.00	55.76 PK	74.00	-18.24	1.36 H	297	43.06	12.70
6	7326.00	44.44 AV	54.00	-9.56	1.36 H	297	31.74	12.70
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	*2442.00	73.73 PK	114.00	-40.27	1.65 V	230	70.51	3.22
2	*2442.00	62.41 AV	94.00	-31.59	1.65 V	230	59.19	3.22
3	4884.00	50.64 PK	74.00	-23.36	1.62 V	312	44.58	6.06
4	4884.00	39.32 AV	54.00	-14.68	1.62 V	312	33.26	6.06
5	7326.00	56.36 PK	74.00	-17.64	1.32 V	185	43.66	12.70
6	7326.00	44.04 AV	54.00	-9.96	1.32 V	185	31.34	12.70

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
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 High Channel	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	*2473.00	71.26 PK	114.00	-42.74	1.50 H	230	67.94	3.32
2	*2473.00	60.94 AV	94.00	-33.06	1.50 H	230	57.62	3.32
3	2483.50	55.89 PK	74.00	-18.11	1.50 H	230	52.53	3.36
4	2483.50	44.57 AV	54.00	-9.43	1.50 H	230	41.21	3.36
5	4946.00	53.26 PK	74.00	-20.74	2.12 H	106	47.10	6.16
6	4946.00	41.94 AV	54.00	-12.06	2.12 H	106	35.78	6.16
7	7419.00	56.82 PK	74.00	-17.18	1.53 H	260	43.71	13.11
8	7419.00	45.50 AV	54.00	-8.50	1.53 H	260	32.39	13.11
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	2473.00	72.89 PK	114.00	-41.11	1.32 V	121	69.57	3.32
2	2473.00	61.57 AV	94.00	-32.43	1.32 V	121	58.25	3.32
3	2483.50	61.59 PK	74.00	-12.41	1.32 V	121	58.23	3.36
4	**2483.50**	**50.27 AV**	**54.00**	**-3.73**	**1.32 V**	**121**	**46.91**	**3.36**
5	4946.00	51.26 PK	74.00	-22.74	1.00 V	236	45.10	6.16
6	4946.00	39.94 AV	54.00	-14.06	1.00 V	236	33.78	6.16
7	7419.00	56.39 PK	74.00	-17.61	1.52 V	246	43.28	13.11
8	7419.00	45.07 AV	54.00	-8.93	1.52 V	246	31.96	13.11

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.

Power by 9.6V Battery

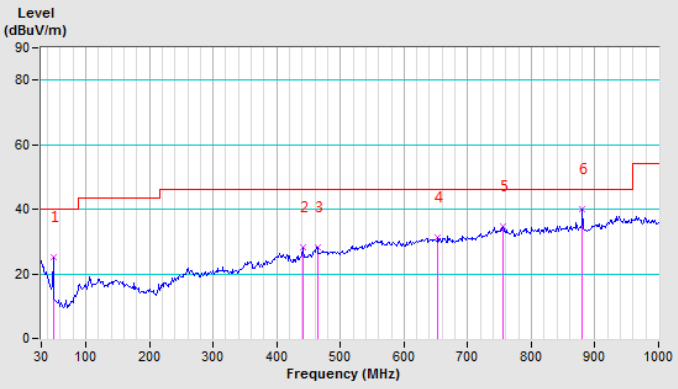
BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Middle Channel	**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	48.65	25.05 QP	40.00	-14.95	1.00 H	225	41.78	-16.73
2	440.38	28.33 QP	46.00	-17.67	1.00 H	69	31.63	-3.30
3	463.70	28.20 QP	46.00	-17.80	1.00 H	142	30.29	-2.09
4	653.35	31.13 QP	46.00	-14.87	1.00 H	305	28.99	2.14
5	755.95	34.58 QP	46.00	-11.42	1.00 H	163	29.79	4.79
6	880.30	39.86 QP	46.00	-6.14	1.00 H	256	34.30	5.56

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 less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.

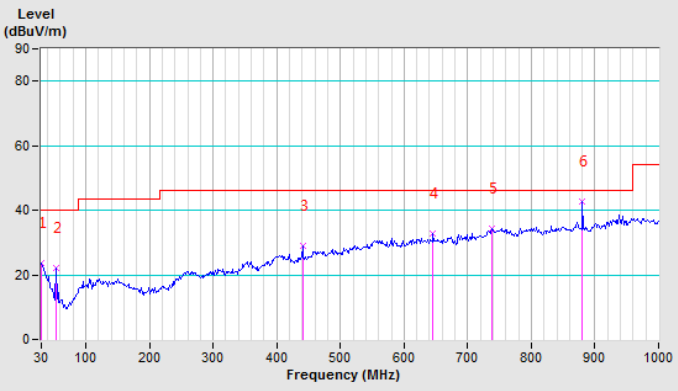


CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	23.68 QP	40.00	-16.32	2.00 V	254	30.05	-6.37
2	53.32	22.01 QP	40.00	-17.99	2.00 V	96	40.15	-18.14
3	440.38	29.12 QP	46.00	-16.88	2.00 V	14	32.42	-3.30
4	645.58	32.71 QP	46.00	-13.29	2.00 V	36	30.55	2.16
5	737.29	34.35 QP	46.00	-11.65	2.00 V	175	29.67	4.68
6	**880.30**	**42.81 QP**	**46.00**	**-3.19**	**2.00 V**	**26**	**37.25**	**5.56**

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 less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



ABOVE 1GHz WORST-CASE DATA:

CHANNEL	TX Low Channel	**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	2400.00	55.17 PK	74.00	-18.83	1.20 H	180	52.08	3.09
2	2400.00	44.89 AV	54.00	-9.11	1.20 H	180	41.80	3.09
3	*2410.00	67.58 PK	114.00	-46.42	1.20 H	180	64.46	3.12
4	*2410.00	57.30 AV	94.00	-36.70	1.20 H	180	54.18	3.12
5	4820.00	50.55 PK	74.00	-23.45	1.52 H	249	44.60	5.95
6	4820.00	40.27 AV	54.00	-13.73	1.52 H	249	34.32	5.95
7	7230.00	55.18 PK	74.00	-18.82	1.62 H	297	42.90	12.28
8	7230.00	44.90 AV	54.00	-9.10	1.62 H	297	32.62	12.28
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	2400.00	58.52 PK	74.00	-15.48	1.54 V	287	55.43	3.09
2	**2400.00**	**48.24 AV**	**54.00**	**-5.76**	**1.54 V**	**287**	**45.15**	**3.09**
3	*2410.00	74.51 PK	114.00	-39.49	1.54 V	287	71.39	3.12
4	*2410.00	64.23 AV	94.00	-29.77	1.54 V	287	61.11	3.12
5	4820.00	49.35 PK	74.00	-24.65	1.65 V	287	43.40	5.95
6	4820.00	39.07 AV	54.00	-14.93	1.65 V	287	33.12	5.95
7	7230.00	55.64 PK	74.00	-18.36	1.68 V	249	43.36	12.28
8	7230.00	45.36 AV	54.00	-8.64	1.68 V	249	33.08	12.28

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 Middle Channel	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	*2442.00	71.87 PK	114.00	-42.13	1.54 H	297	68.65	3.22
2	*2442.00	61.58 AV	94.00	-32.42	1.54 H	297	58.36	3.22
3	4884.00	50.21 PK	74.00	-23.79	1.65 H	249	44.15	6.06
4	4884.00	39.92 AV	54.00	-14.08	1.65 H	249	33.86	6.06
5	7326.00	55.98 PK	74.00	-18.02	1.62 H	297	43.28	12.70
6	7326.00	45.69 AV	54.00	-8.31	1.62 H	297	32.99	12.70
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	*2442.00	74.83 PK	114.00	-39.17	1.30 V	250	71.61	3.22
2	*2442.00	64.55 AV	94.00	-29.45	1.30 V	250	61.33	3.22
3	4884.00	51.23 PK	74.00	-22.77	1.64 V	287	45.17	6.06
4	4884.00	40.95 AV	54.00	-13.05	1.64 V	287	34.89	6.06
5	7236.00	55.19 PK	74.00	-18.81	1.26 V	259	42.88	12.31
6	7236.00	44.91 AV	54.00	-9.09	1.26 V	259	32.60	12.31

REMARKS:

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

CHANNEL	TX High Channel	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	*2473.00	71.26 PK	114.00	-42.74	1.62 H	278	67.94	3.32
2	*2473.00	60.97 AV	94.00	-33.03	1.62 H	278	57.65	3.32
3	2483.50	55.25 PK	74.00	-18.75	1.69 H	301	51.89	3.36
4	2483.50	44.96 AV	54.00	-9.04	1.69 H	301	41.60	3.36
5	4946.00	51.69 PK	74.00	-22.31	1.62 H	297	45.53	6.16
6	4946.00	41.40 AV	54.00	-12.60	1.62 H	297	35.24	6.16
7	7419.00	56.18 PK	74.00	-17.82	2.30 H	197	43.07	13.11
8	7419.00	45.89 AV	54.00	-8.11	2.30 H	197	32.78	13.11
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	*2473.00	72.59 PK	114.00	-41.41	1.65 V	210	69.27	3.32
2	*2473.00	62.30 AV	94.00	-31.70	1.65 V	210	58.98	3.32
3	2483.50	57.15 PK	74.00	-16.85	1.65 V	210	53.79	3.36
4	2483.50	46.86 AV	54.00	-7.14	1.65 V	210	43.50	3.36
5	4946.00	51.23 PK	74.00	-22.77	1.32 V	269	45.07	6.16
6	4946.00	40.94 AV	54.00	-13.06	1.32 V	269	34.78	6.16
7	7419.00	56.89 PK	74.00	-17.11	1.53 V	249	43.78	13.11
8	7419.00	46.60 AV	54.00	-7.40	1.53 V	249	33.49	13.11

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.

4.2 20dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

According to FCC 15.215(c), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 19,17	May 18,18
Power Sensor	Keysight	U2021XA	MY55060018	May 19,17	May 18,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 17	Oct.12, 18
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,17	Sep. 04,18
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,17	Nov. 03,18
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,17	Nov. 03,18
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,17	Nov. 03,18
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 17	Aug.07, 18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 10,17	Apr. 09,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.04, 17	Dec. 03, 18
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 17	Aug.07, 18
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

NOTE:

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

4.2.3 TEST PROCEDURE

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

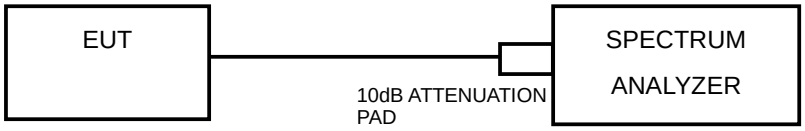
c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

d. Repeat above procedures until all frequencies measured were complete.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITIONS

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

4.2.7 TEST RESULTS

Power by 9.6V Battery

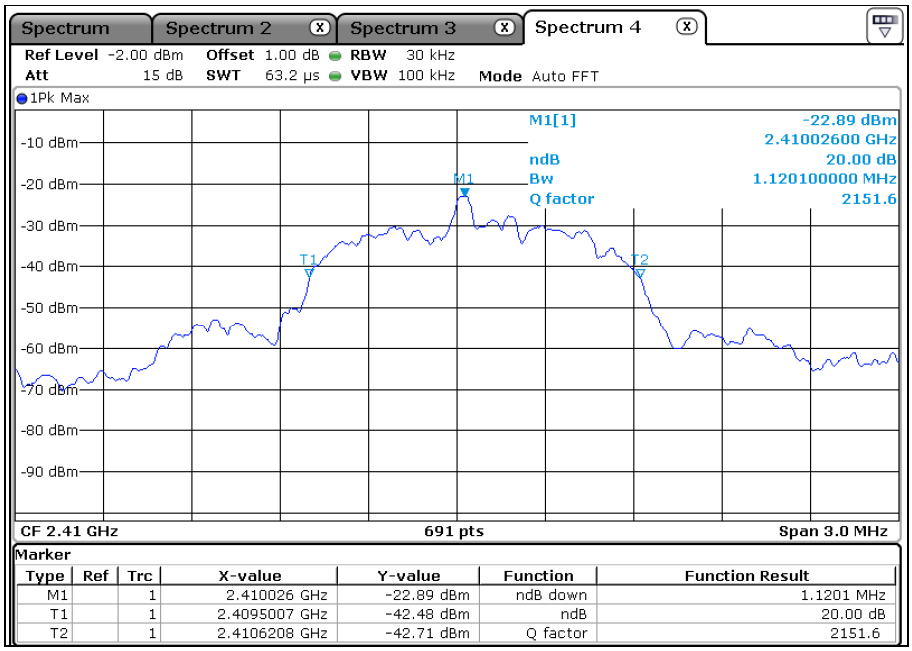
CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2410	1.1201
Middle	2442	1.1462
High	2473	1.1722

Power by 12.8V Battery

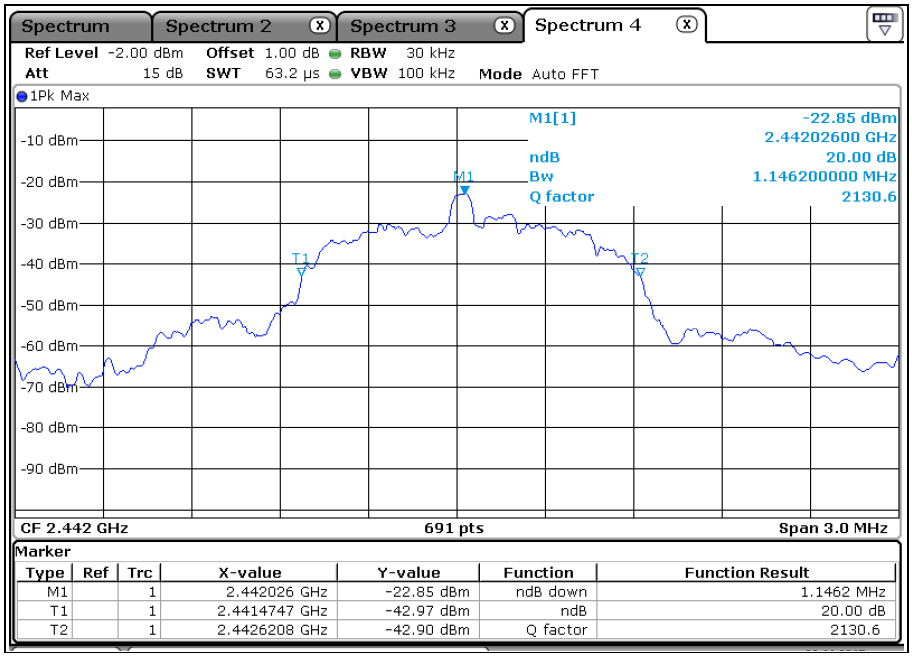
CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2410	1.1418
Middle	2442	1.1852
High	2473	1.1983

Power by 9.6V Battery

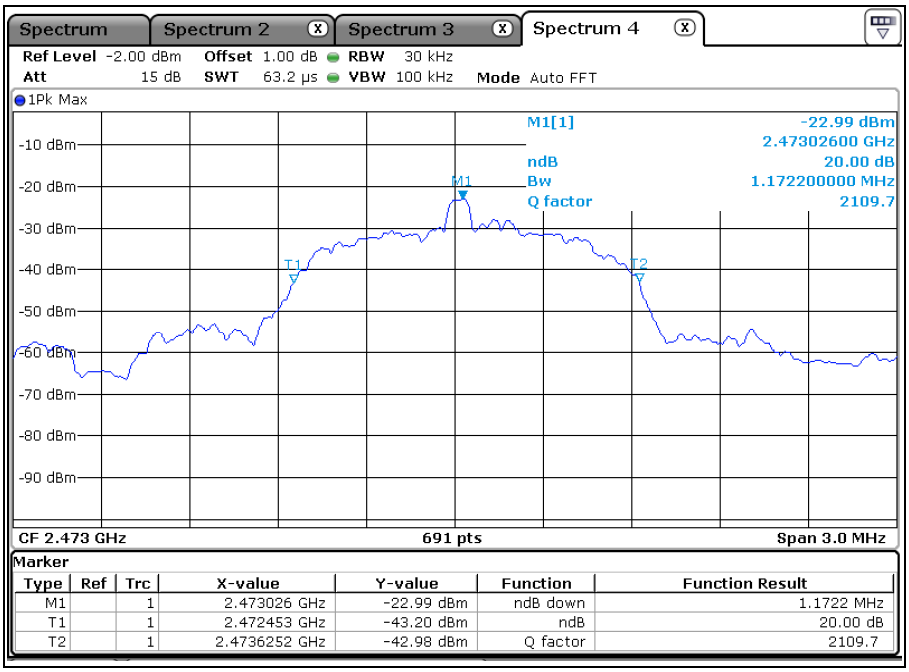
Test Data: Low channel



Test Data: Middle channel

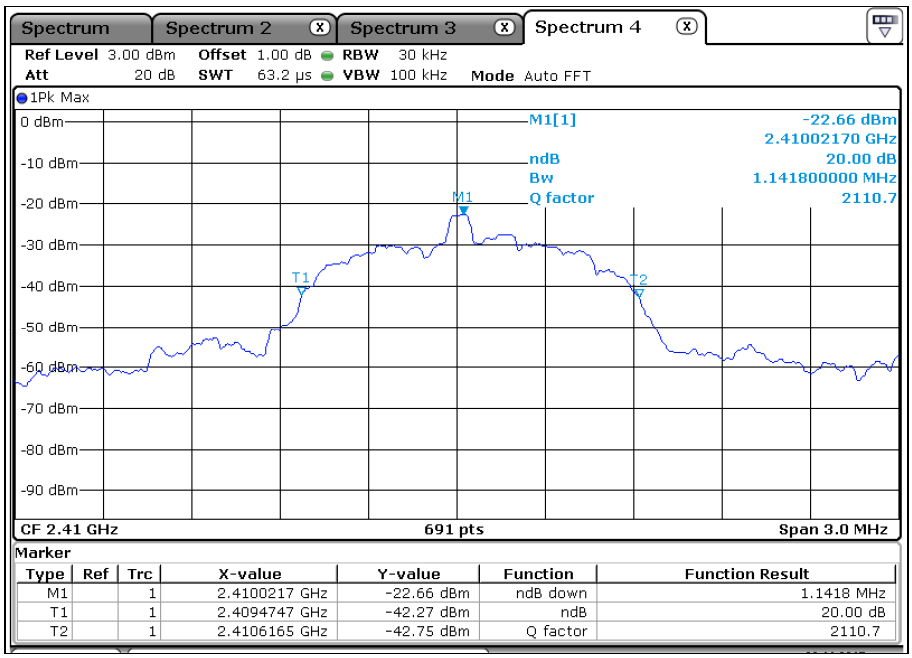


Test Data: High channel

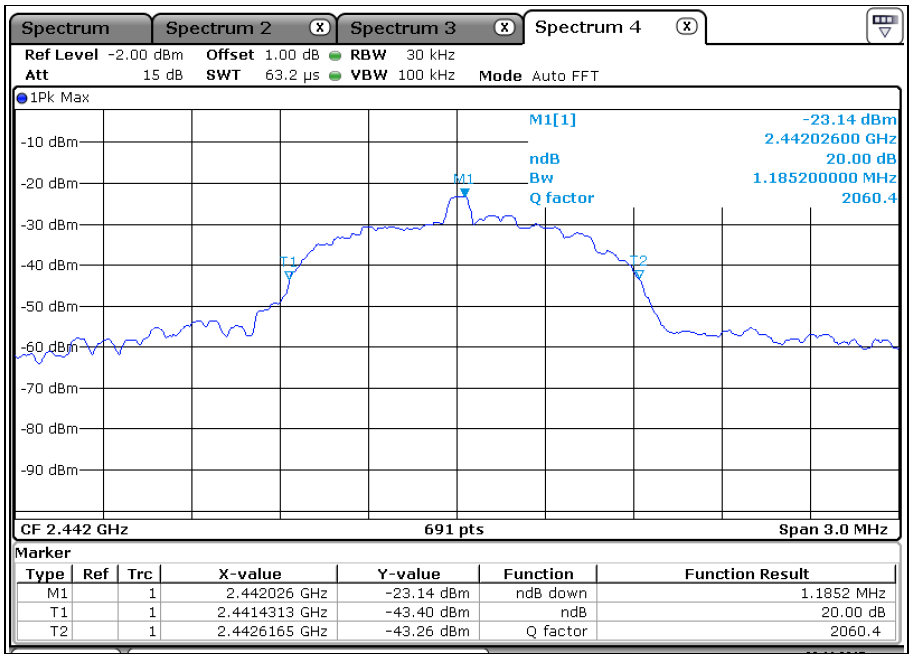


Power by 12.8V Battery

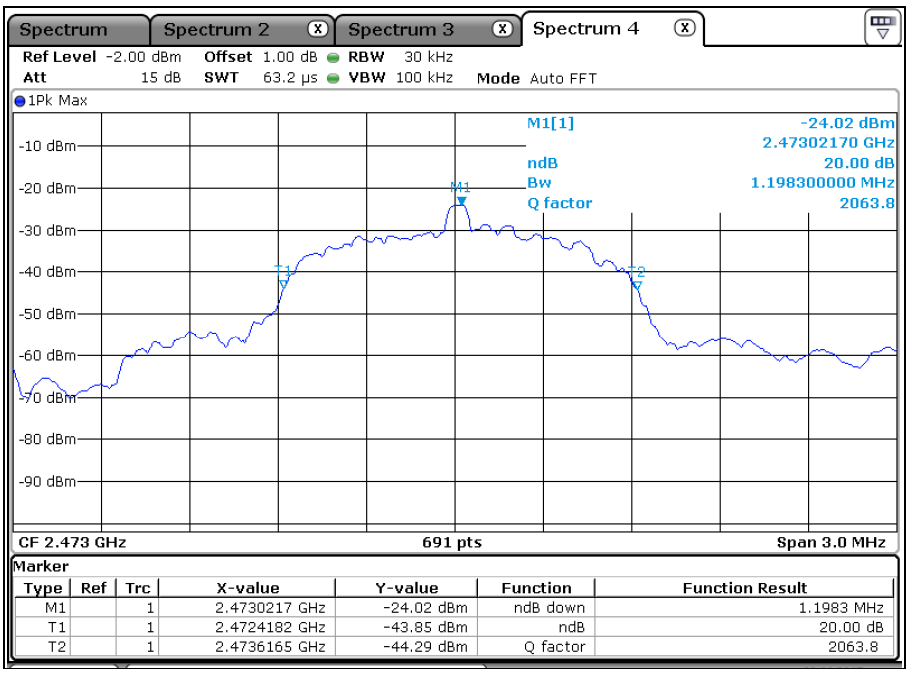
Test Data: Low channel



Test Data: Middle channel



Test Data: High channel



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---