



Test Report No.: RF170906N056-1



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 Transmitter
Brand Name:	N/A
Model:	GF31H1RR
Additional Model & Model Difference	N/A
Date of tests:	Jul. 28, 2017 ~ Sep. 12, 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 Tom Chen
Project Engineer / EMC Department

Approved by Glyn He
Supervisor / EMC Department

Date: Sep. 20, 2017

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170906N056-1	Original release	Sep. 20, 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 $k = 2$.



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3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	TOY Transmitter
MODEL NO.	GF31H1RR
ADDITIONAL MODEL	N/A
FCC ID	G6DGF31H1RR
NOMINAL VOLTAGE	DC 3V (1.5V*AA*2) from Battery
MODULATION TECHNOLOGY	GFSK
OPERATING FREQUENCY	2410-2475MHz
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.: 170906N056-1) for detailed product photo.



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 Y 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	√	√	-	√	DC 3V from New 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	2443 MHz
High	2475 MHz

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	23deg. C, 53%RH	DC 3V from New Battery	Xue Wang
BW	23deg. C, 53%RH	DC 3V from New Battery	Xue Wang
PLC	-	-	-



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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 without any other necessary accessories or support units



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.



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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. 04,16	Nov. 03,17
Bilog Antenna (30MHz~1GHz)	Teseq	CBL 6111D	30643	Jul. 28, 17	Jul. 27, 18
Loop antenna (9KHz ~30MHz)	Daze	ZN30900A	0708	Mar. 12,17	Mar. 11,18
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,17	Mar. 03, 18
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,17	May 17,18
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
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Mar. 09,17	Mar. 08,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	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 above 1GHz 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. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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:

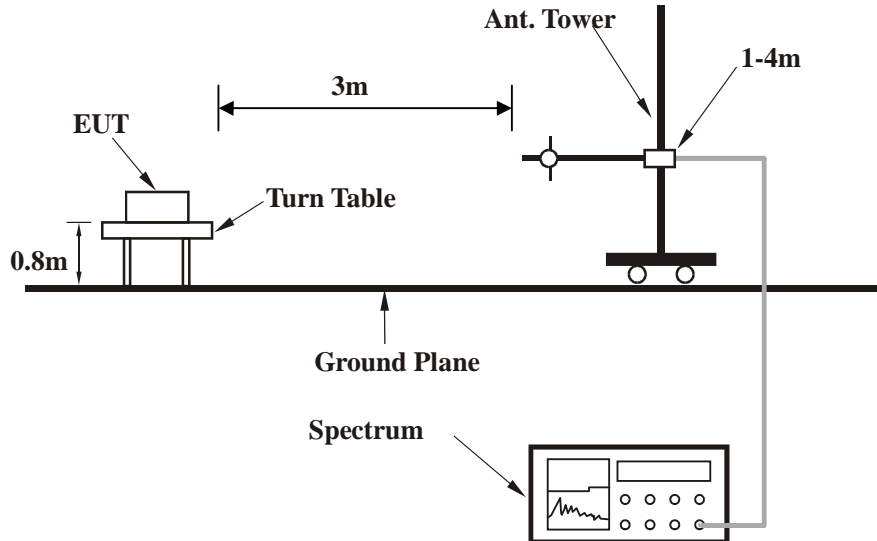
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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

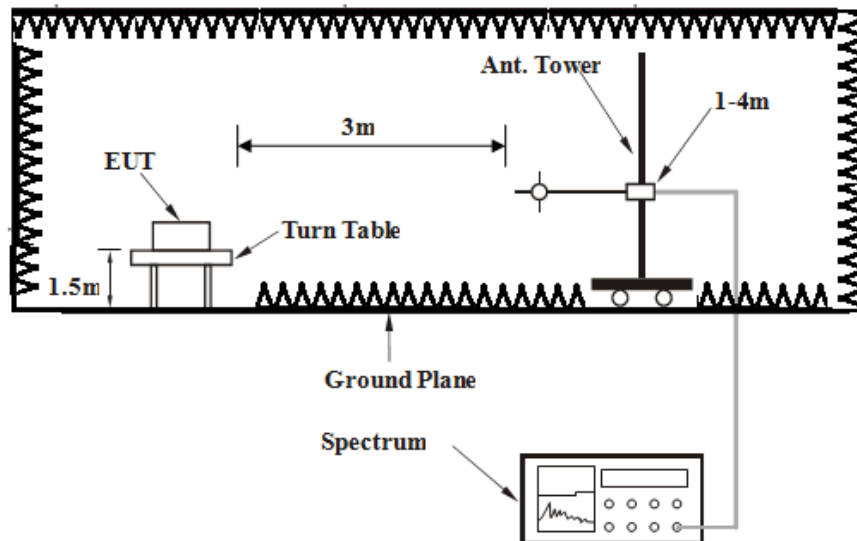
4.1.5 TEST SETUP

Below 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).

4.1.6 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.



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4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

CHANNEL	TX 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	77.16	18.5 QP	40.0	-21.5	100 H	0	9.4	9.1
2	166.24	20.1 QP	43.5	-23.4	100 H	0	6.5	13.6
3	277.82	22.4 QP	46.0	-23.6	100 H	0	8.7	13.7
4	306.60	23.8 QP	46.0	-22.2	100 H	0	9.5	14.3
5	424.72	26.0 QP	46.0	-20.0	100 H	0	8.4	17.6
6	513.26	29.0 QP	46.0	-17.0	100 H	0	10.5	18.5

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.



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CHANNEL	TX 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	77.16	19.6 QP	40.0	-20.4	100 V	0	10.5	9.1
2	166.24	20.5 QP	43.5	-23.0	100 V	0	6.9	13.6
3	277.82	21.9 QP	46.0	-24.1	100 V	0	8.2	13.7
4	306.60	23.2 QP	46.0	-22.8	100 V	0	8.9	14.3
5	424.72	25.7 QP	46.0	-20.3	100 V	0	8.1	17.6
6	513.26	28.8 QP	46.0	-17.2	100 V	0	10.3	18.5

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.



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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	60.5PK	74.0	-13.5	1.50 H	180	65.3	-4.8
2	2400.00	45.5AV	54.0	-8.5	1.50 H	180	50.3	-4.8
3	*2410.00	94.7PK	114.0	-19.3	1.50 H	180	99.5	-4.8
4	*2410.00	79.7AV	94.0	-14.3	1.50 H	180	84.5	-4.8
5	4820.00	56.3PK	74.0	-17.7	1.50 H	0	51.5	4.8
6	4820.00	41.3AV	54.0	-12.7	1.50 H	0	36.5	4.8
7	7230.00	57.8PK	74.0	-16.2	1.50 H	150	45.4	12.4
8	7230.00	42.8AV	54.0	-11.2	1.50 H	150	30.4	12.4
9	9640.00	46.7PK	74.0	-27.3	1.50 H	0	33.2	13.5
10	9640.00	31.7AV	54.0	-22.3	1.50 H	0	18.2	13.5
11	12050.00	51.6PK	74.0	-22.4	1.50 H	0	32.0	19.6
12	12050.00	36.6AV	54.0	-17.4	1.50 H	0	17.0	19.6
13	14460.00	52.1PK	74.0	-21.9	1.50 H	0	26.3	25.8
14	14460.00	37.1AV	54.0	-16.9	1.50 H	0	11.3	25.8
15	16870.00	51.7PK	74.0	-22.3	1.50 H	0	30.5	21.2
16	16870.00	36.7AV	54.0	-17.3	1.50 H	0	15.5	21.2
17	19280.00	52.6PK	74.0	-21.4	1.50 H	0	5.9	46.7
18	19280.00	37.6AV	54.0	-16.4	1.50 H	0	-9.1	46.7
19	21690.00	52.1PK	74.0	-21.9	1.50 H	0	5.2	46.9
20	21690.00	37.1AV	54.0	-16.9	1.50 H	0	-9.8	46.9
21	24100.00	52.8PK	74.0	-21.2	1.50 H	0	4.8	48.0
22	24100.00	37.8AV	54.0	-16.2	1.50 H	0	-10.2	48.0
23	26510.00	52.9PK	74.0	-21.1	1.50 H	0	4.4	48.5
24	26510.00	37.9AV	54.0	-16.1	1.50 H	0	-10.6	48.5



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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	60.7PK	74.0	-13.3	1.50 V	20	65.5	-4.8
2	2400.00	45.7AV	54.0	-8.3	1.50 V	20	50.5	-4.8
3	*2410.00	94.8PK	114.0	-19.2	1.50 V	20	99.6	-4.8
4	*2410.00	79.8AV	94.0	-14.2	1.50 V	20	84.6	-4.8
5	4820.00	55.8PK	74.0	-18.2	1.50 V	180	51.0	4.8
6	4820.00	40.8AV	54.0	-13.2	1.50 V	180	36.0	4.8
7	7230.00	57.3PK	74.0	-16.7	1.50 V	10	44.9	12.4
8	7230.00	42.3AV	54.0	-11.7	1.50 V	10	29.9	12.4
9	9640.00	49.1PK	74.0	-24.9	1.50 V	110	35.6	13.5
10	9640.00	34.1AV	54.0	-19.9	1.50 V	110	20.6	13.5
11	12050.00	51.6PK	74.0	-22.4	1.50 V	0	32.0	19.6
12	12050.00	36.6AV	54.0	-17.4	1.50 V	0	17.0	19.6
13	14460.00	51.5PK	74.0	-22.5	1.50 V	0	25.7	25.8
14	14460.00	36.5AV	54.0	-17.5	1.50 V	0	10.7	25.8
15	16870.00	51.5PK	74.0	-22.5	1.50 V	0	30.3	21.2
16	16870.00	36.5AV	54.0	-17.5	1.50 V	0	15.3	21.2
17	19280.00	51.9PK	74.0	-22.1	1.50 V	0	5.2	46.7
18	19280.00	36.9AV	54.0	-17.1	1.50 V	0	-9.8	46.7
19	21690.00	52.3PK	74.0	-21.7	1.50 V	0	5.4	46.9
20	21690.00	37.3AV	54.0	-16.7	1.50 V	0	-9.6	46.9
21	24100.00	52.9PK	74.0	-21.1	1.50 V	0	4.9	48.0
22	24100.00	37.9AV	54.0	-16.1	1.50 V	0	-10.1	48.0
23	26510.00	52.4PK	74.0	-21.6	1.50 V	0	3.9	48.5
24	26510.00	37.4AV	54.0	-16.6	1.50 V	0	-11.1	48.5

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 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	*2443.00	93.3PK	114.0	-20.7	1.50 H	0	98.1	-4.8
2	*2443.00	78.3AV	94.0	-15.7	1.50 H	0	83.1	-4.8
3	4886.00	55.9PK	74.0	-18.1	1.50 H	190	51.1	4.8
4	4886.00	40.9AV	54.0	-13.1	1.50 H	190	36.1	4.8
5	7329.00	56.6PK	74.0	-17.4	1.50 H	150	44.2	12.4
6	7329.00	41.6AV	54.0	-12.4	1.50 H	150	29.2	12.4
7	9772.00	47.4PK	74.0	-26.6	1.50 H	0	33.6	13.8
8	9772.00	32.4AV	54.0	-21.6	1.50 H	0	18.6	13.8
9	12215.00	53.0PK	74.0	-21	1.50 H	0	33.5	19.5
10	12215.00	38.0AV	54.0	-16	1.50 H	0	18.5	19.5
11	14658.00	51.6PK	74.0	-22.4	1.50 H	0	25.1	26.5
12	14658.00	36.6AV	54.0	-17.4	1.50 H	0	10.1	26.5
13	17101.00	52.5PK	74.0	-21.5	1.50 H	0	29.4	23.1
14	17101.00	37.5AV	54.0	-16.5	1.50 H	0	14.4	23.1
15	19544.00	52.5PK	74.0	-21.5	1.50 H	0	5.8	46.7
16	19544.00	37.5AV	54.0	-16.5	1.50 H	0	-9.2	46.7
17	21987.00	51.6PK	74.0	-22.4	1.50 H	0	4.3	47.3
18	21987.00	36.6AV	54.0	-17.4	1.50 H	0	-10.7	47.3
19	24430.00	52.3PK	74.0	-21.7	1.50 H	0	4.1	48.2
20	24430.00	37.3AV	54.0	-16.7	1.50 H	0	-10.9	48.2
21	26873.00	53.0PK	74.0	-21	1.50 H	0	4.5	48.5
22	26873.00	38.0AV	54.0	-16	1.50 H	0	-10.5	48.5



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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	*2443.00	95.1PK	114.0	-18.9	1.50 V	0	99.9	-4.8
2	*2443.00	80.1AV	94.0	-13.9	1.50 V	0	84.9	-4.8
3	4886.00	56.0PK	74.0	-18	1.50 V	180	51.2	4.8
4	4886.00	41.0AV	54.0	-13	1.50 V	180	36.2	4.8
5	7329.00	56.0PK	74.0	-18	1.50 V	30	43.6	12.4
6	7329.00	41.0AV	54.0	-13	1.50 V	30	28.6	12.4
7	9772.00	50.6PK	74.0	-23.4	1.50 V	120	36.8	13.8
8	9772.00	35.6AV	54.0	-18.4	1.50 V	120	21.8	13.8
9	12215.00	53.4PK	74.0	-20.6	1.50 V	0	33.9	19.5
10	12215.00	38.4AV	54.0	-15.6	1.50 V	0	18.9	19.5
11	14658.00	52.6PK	74.0	-21.4	1.50 V	0	26.1	26.5
12	14658.00	37.6AV	54.0	-16.4	1.50 V	0	11.1	26.5
13	17101.00	52.2PK	74.0	-21.8	1.50 V	0	29.1	23.1
14	17101.00	37.2AV	54.0	-16.8	1.50 V	0	14.1	23.1
15	19544.00	51.8PK	74.0	-22.2	1.50 V	0	5.1	46.7
16	19544.00	36.8AV	54.0	-17.2	1.50 V	0	-9.9	46.7
17	21987.00	52.6PK	74.0	-21.4	1.50 V	0	5.3	47.3
18	21987.00	37.6AV	54.0	-16.4	1.50 V	0	-9.7	47.3
19	24430.00	53.0PK	74.0	-21	1.50 V	0	4.8	48.2
20	24430.00	38.0AV	54.0	-16	1.50 V	0	-10.2	48.2
21	26873.00	52.7PK	74.0	-21.3	1.50 V	0	4.2	48.5
22	26873.00	37.7AV	54.0	-16.3	1.50 V	0	-10.8	48.5

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 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	2483.50	62.9PK	74.0	-11.1	1.50 H	10	67.7	-4.8
2	2483.50	47.9AV	54.0	-6.1	1.50 H	10	52.7	-4.8
3	*2475.00	92.6PK	114.0	-21.4	1.50 H	10	97.4	-4.8
4	*2475.00	77.6AV	94.0	-16.4	1.50 H	10	82.4	-4.8
5	4950.00	58.0PK	74.0	-16	1.50 H	180	53.1	4.9
6	4950.00	43.0AV	54.0	-11	1.50 H	180	38.1	4.9
7	7425.00	57.3PK	74.0	-16.7	1.50 H	160	44.7	12.6
8	7425.00	42.3AV	54.0	-11.7	1.50 H	160	29.7	12.6
9	9900.00	46.6PK	74.0	-27.4	1.50 H	0	32.7	13.9
10	9900.00	31.6AV	54.0	-22.4	1.50 H	0	17.7	13.9
11	12375.00	52.5PK	74.0	-21.5	1.50 H	0	33.3	19.2
12	12375.00	37.5AV	54.0	-16.5	1.50 H	0	18.3	19.2
13	14850.00	50.9PK	74.0	-23.1	1.50 H	0	25.0	25.9
14	14850.00	35.9AV	54.0	-18.1	1.50 H	0	10.0	25.9
15	17325.00	53.2PK	74.0	-20.8	1.50 H	0	28.7	24.5
16	17325.00	38.2AV	54.0	-15.8	1.50 H	0	13.7	24.5
17	19800.00	52.9PK	74.0	-21.1	1.50 H	0	6.1	46.8
18	19800.00	37.9AV	54.0	-16.1	1.50 H	0	-8.9	46.8
19	22275.00	52.1PK	74.0	-21.9	1.50 H	0	4.8	47.3
20	22275.00	37.1AV	54.0	-16.9	1.50 H	0	-10.2	47.3
21	24750.00	53.0PK	74.0	-21	1.50 H	0	4.8	48.2
22	24750.00	38.0AV	54.0	-16	1.50 H	0	-10.2	48.2
23	27225.00	53.8PK	74.0	-20.2	1.50 H	0	5.1	48.7
24	27225.00	38.8AV	54.0	-15.2	1.50 H	0	-9.9	48.7



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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	2483.50	64.2PK	74.0	-9.8	1.50 V	10	69.0	-4.8
2	2483.50	49.2AV	54.0	-4.8	1.50 V	10	54.0	-4.8
3	*2475.00	95.6PK	114.0	-18.4	1.50 V	10	100.4	-4.8
4	*2475.00	80.6AV	94.0	-13.4	1.50 V	10	85.4	-4.8
5	4950.00	56.3PK	74.0	-17.7	1.50 V	180	51.4	4.9
6	4950.00	41.3AV	54.0	-12.7	1.50 V	180	36.4	4.9
7	7425.00	55.6PK	74.0	-18.4	1.50 V	270	43.0	12.6
8	7425.00	40.6AV	54.0	-13.4	1.50 V	270	28.0	12.6
9	9900.00	49.8PK	74.0	-24.2	1.50 V	100	35.9	13.9
10	9900.00	34.8AV	54.0	-19.2	1.50 V	100	20.9	13.9
11	12375.00	51.7PK	74.0	-22.3	1.50 V	0	32.5	19.2
12	12375.00	36.7AV	54.0	-17.3	1.50 V	0	17.5	19.2
13	14850.00	52.3PK	74.0	-21.7	1.50 V	0	26.4	25.9
14	14850.00	37.3AV	54.0	-16.7	1.50 V	0	11.4	25.9
15	17325.00	52.5PK	74.0	-21.5	1.50 V	0	28.0	24.5
16	17325.00	37.5AV	54.0	-16.5	1.50 V	0	13.0	24.5
17	19800.00	51.9PK	74.0	-22.1	1.50 V	0	5.1	46.8
18	19800.00	36.9AV	54.0	-17.1	1.50 V	0	-9.9	46.8
19	22275.00	52.3PK	74.0	-21.7	1.50 V	0	5.0	47.3
20	22275.00	37.3AV	54.0	-16.7	1.50 V	0	-10.0	47.3
21	24750.00	53.5PK	74.0	-20.5	1.50 V	0	5.3	48.2
22	24750.00	38.5AV	54.0	-15.5	1.50 V	0	-9.7	48.2
23	27225.00	52.6PK	74.0	-21.4	1.50 V	0	3.9	48.7
24	27225.00	37.6AV	54.0	-16.4	1.50 V	0	-11.1	48.7

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 04,17	May 03,18
Power Sensor	Keysight	U2021XA	MY55060018	May 04,17	May 03,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 05,17	Apr. 04,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 17
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.

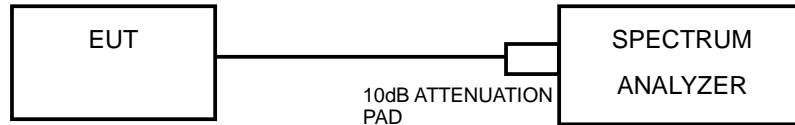
4.2.3 TEST PROCEDURE

- 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.

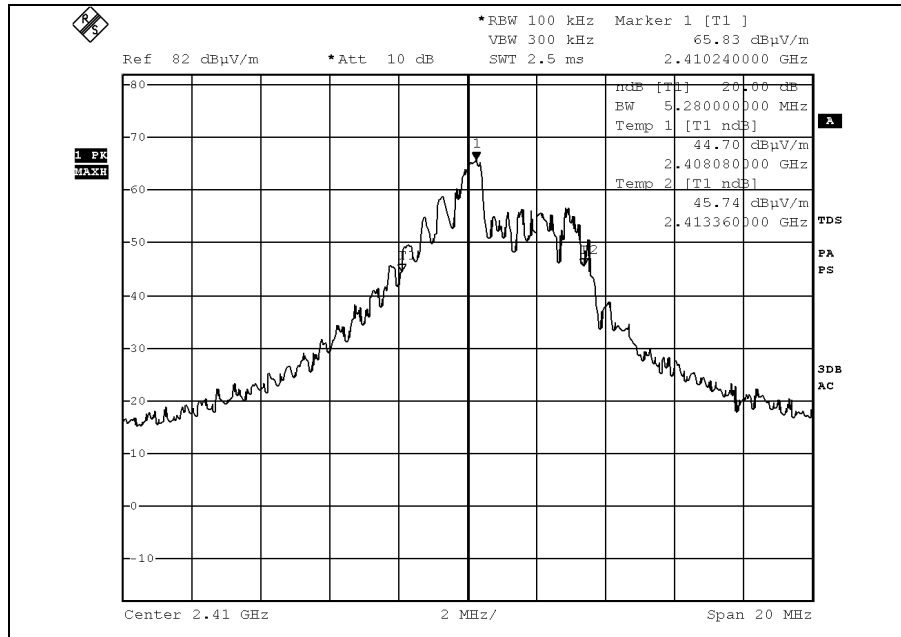
4.2.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2410	5.28
Middle	2443	2.36
High	2475	0.92

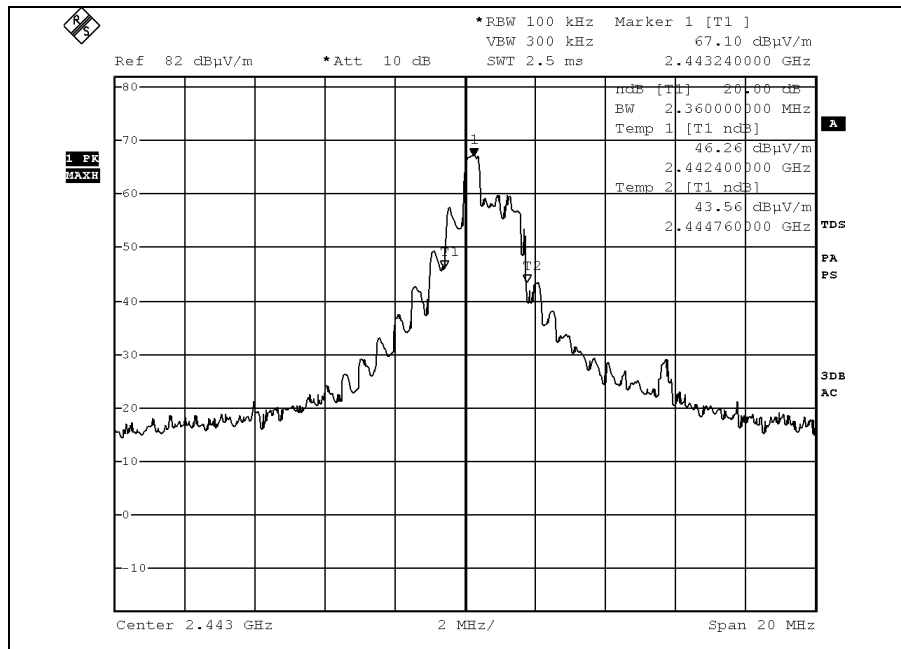


Test Report No.: RF170906N056-1

Test Data: Low channel



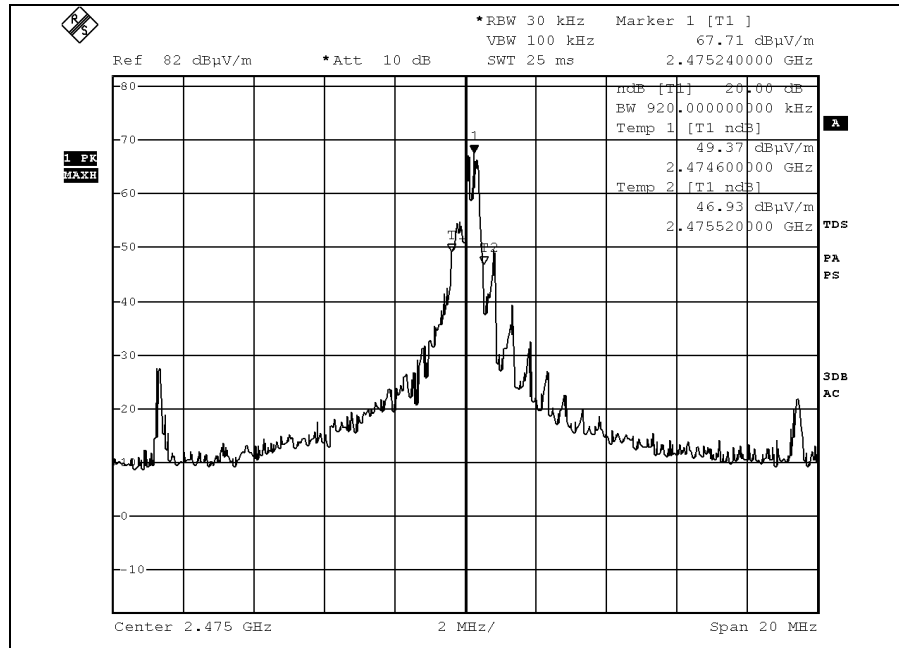
Test Data: Middle channel





Test Report No.: RF170906N056-1

Test Data: High channel





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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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---