



BUREAU  
VERITAS

Test Report No.: RF170310N002-1



# TEST REPORT

Applicant:	ShanTou Zegan Plastic Toys Co.,Ltd
Address:	Liannan Industrial District,Lianxia Town,Chenghai Zone,Shantou City,Guangdong Province,China

Manufacturer or Supplier	ShanTou Zegan Plastic Toys Co.,Ltd
Address	Liannan Industrial District,Lianxia Town,Chenghai Zone,Shantou City,Guangdong Province,China
Product:	1/12 Scale Amphibious Crawler
Brand Name:	ZEGAN
Model:	ZG-C1201W
Additional Model & Model Difference	ZG-C1201, ZG-C1201WS, ZG-C1211, etc; See items 3.1
Date of tests:	Mar. 18, 2017 ~ Apr. 18, 2017

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

FCC Part 15, Subpart C, Section 15.249(2015-10)

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

Approved by Breeze Jiang  
Project Engineer/ EMC Department

Approved by Glyn He  
Supervisor / EMC Department

Date: May 25, 2017

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



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**BUREAU**  
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Test Report No.: RF170310N002-1

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170310N002-1	Original release	May 06, 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

<b>PRODUCT</b>	1/12 Scale Amphibious Crawler
<b>MODEL NO.</b>	ZG-C1201W
<b>ADDITIONAL MODELS</b>	ZG-C1201, ZG-C1201WS, ZG-C1211, ZG-C1211W, ZG-C1211WS, ZG-C1221, ZG-C1221W, ZG-C1221WS, ZG-C1231, ZG-C1231W, ZG-C1231WS, ZG-C1202, ZG-C1202W, ZG-C1202WS, ZG-C1212, ZG-C1212W, ZG-C1212WS, ZG-C1222, ZG-C1222W, ZG-C1222WS, ZG-C1232, ZG-C1232W, ZG-C1232WS, ZG-C1801, ZG-C1811, ZG-C1821, ZG-C1802, ZG-C1812, ZG-C1822, ZG-C1241, ZG-C1241W, ZG-C1241WS, ZG-C1251, ZG-C1251W, ZG-C1251WS, ZG-C1242, ZG-C1242W, ZG-C1242WS, ZG-C1252, ZG-C1252W, ZG-C1252WS
<b>FCC ID</b>	2AL2Z-ZEGAN
<b>NOMINAL VOLTAGE</b>	DC 4.5V(1.5V*AA*3) from Battery
<b>MODULATION TECHNOLOGY</b>	GFSK
<b>OPERATING FREQUENCY</b>	2420-2465MHz
<b>ANTENNA TYPE</b>	Wire Antenna, with 1.9dBi gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	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.: 170310N002-1) for detailed product photo.
4. Additional models ZG-C1201, ZG-C1201WS, ZG-C1211, ZG-C1211W, ZG-C1211WS, ZG-C1221, ZG-C1221W, ZG-C1221WS, ZG-C1231, ZG-C1231W, ZG-C1231WS, ZG-C1202, ZG-C1202W, ZG-C1202WS, ZG-C1212, ZG-C1212W, ZG-C1212WS, ZG-C1222, ZG-C1222W, ZG-C1222WS, ZG-C1232, ZG-C1232W, ZG-C1232WS, ZG-C1801, ZG-C1811, ZG-C1821, ZG-C1802, ZG-C1812, ZG-C1822, ZG-C1241, ZG-C1241W, ZG-C1241WS, ZG-C1251, ZG-C1251W, ZG-C1251WS, ZG-C1242, ZG-C1242W, ZG-C1242WS, ZG-C1252, ZG-C1252W, ZG-C1252WS are identical with the test model ZG-C1201W except the model no. for trading purpose.



### 3.2 DESCRIPTION OF TEST MODES

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	-	√	DC 4.5V 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	2420 MHz
Middle	2447 MHz
High	2465 MHz

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

### TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	26deg. C, 50%RH	DC 4.5V from New Battery	Sen He
BW	26deg. C, 50%RH	DC 4.5V from New Battery	Sen He
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(2015-10)**

**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	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	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. 04,16	Nov. 03,17
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 14, 16	Jul. 13, 17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,16	May 17,17
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 16	Aug. 07, 17
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Mar. 12,16	Mar. 11,18
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna	ETS-Lindgren	3117	00062558	May 30,16	May 29,18
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. 04,16	Nov. 03,17
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug. 08,16	Aug. 07,17

**NOTE:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 12, 24 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 502831.



#### 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.

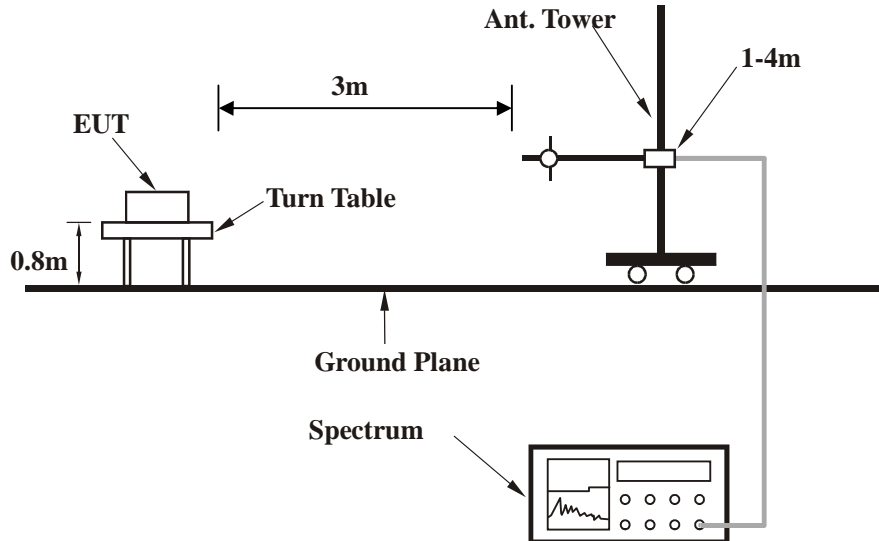
#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



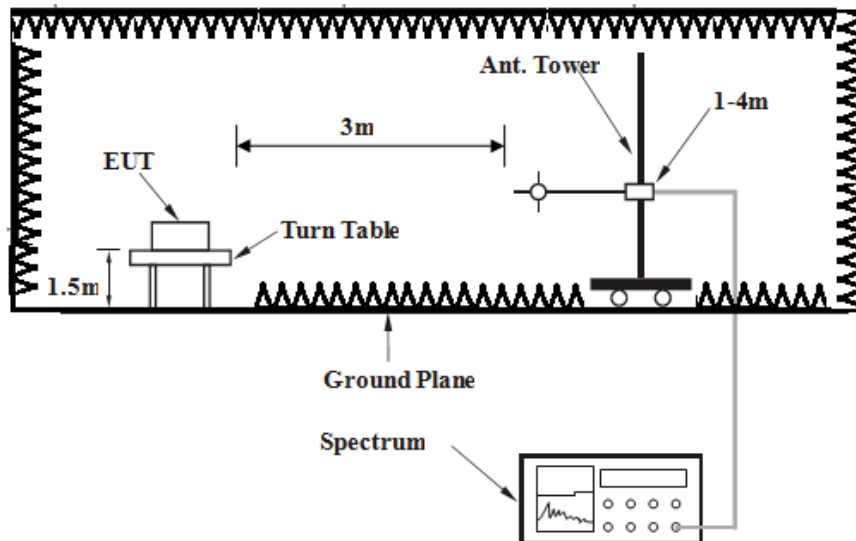
#### 4.1.5 TEST SETUP

##### 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

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



### 4.1.7 TEST RESULTS

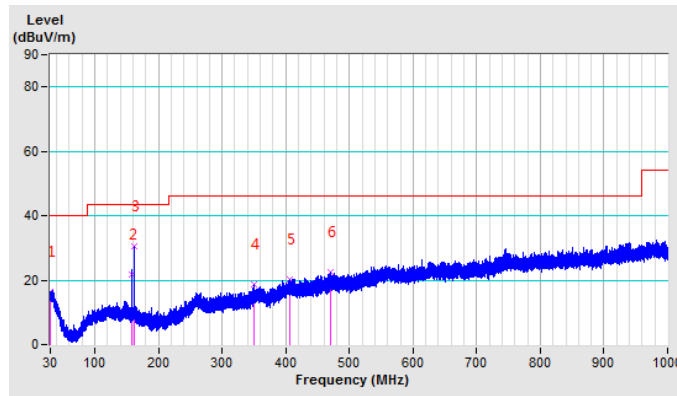
#### BELOW 1GHz WORST-CASE DATA

<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	16.51 QP	40.00	-23.49	1.00 H	233	27.78	-11.27
2	158.36	21.66 QP	43.50	-21.84	1.00 H	154	38.73	-17.07
3	161.95	30.54 QP	43.50	-12.96	1.00 H	321	47.96	-17.42
4	350.00	18.83 QP	46.00	-27.17	1.00 H	187	29.64	-10.81
5	405.45	20.30 QP	46.00	-25.70	1.00 H	235	28.69	-8.39
6	470.09	22.40 QP	46.00	-23.60	1.00 H	112	29.23	-6.83

#### REMARKS:

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



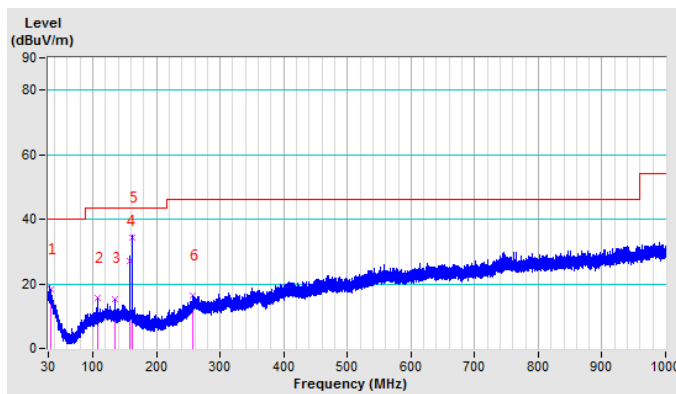


<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30MHz ~ 1GHz		

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	33.01	18.29 QP	40.00	-21.71	1.00 V	217	31.07	-12.78
2	107.47	15.68 QP	43.50	-27.82	1.00 V	186	33.69	-18.01
3	134.99	15.43 QP	43.50	-28.07	1.00 V	337	32.61	-17.18
4	158.36	27.08 QP	43.50	-16.42	1.00 V	169	44.15	-17.07
5	161.95	34.39 QP	43.50	-9.11	1.00 V	214	51.81	-17.42
6	256.98	16.40 QP	46.00	-29.60	1.00 V	109	29.63	-13.23

**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 other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





**ABOVE 1GHz WORST-CASE DATA:**

<b>CHANNEL</b>	TX Low Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	40.16 PK	74.00	-33.84	2.00 H	122	37.09	3.07
2	2400.00	27.33 AV	54.00	-26.67	2.00 H	122	24.26	3.07
3	*2420.00	60.60 PK	114.00	-53.40	2.00 H	122	57.49	3.11
4	*2420.00	47.77 AV	94.00	-46.23	2.00 H	122	44.66	3.11
5	4840.00	47.89 PK	74.00	-26.11	1.00 H	156	42.74	5.15
6	<b>4840.00</b>	<b>35.06 AV</b>	<b>54.00</b>	<b>-18.94</b>	<b>1.00 H</b>	<b>156</b>	<b>29.91</b>	<b>5.15</b>
7	7260.00	43.96 PK	74.00	-30.04	1.00 H	331	31.85	12.11
8	7260.00	31.13 AV	54.00	-22.87	1.00 H	331	19.02	12.11

**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	2400.00	39.11 PK	74.00	-34.89	2.00 V	182	36.04	3.07
2	2400.00	26.28 AV	54.00	-27.72	2.00 V	182	23.21	3.07
3	*2420.00	60.35 PK	114.00	-53.65	2.00 V	182	57.24	3.11
4	*2420.00	47.52 AV	94.00	-46.48	2.00 V	182	44.41	3.11
5	4840.00	45.69 PK	74.00	-28.31	1.00 V	139	40.54	5.15
6	4840.00	32.86 AV	54.00	-21.14	1.00 V	139	27.71	5.15
7	7260.00	43.63 PK	74.00	-30.37	1.00 V	133	31.52	12.11
8	7260.00	30.80 AV	54.00	-23.20	1.00 V	133	18.69	12.11

**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 other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.



<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	*2447.00	61.38 PK	114.00	-52.62	1.00 H	159	58.20	3.18
2	*2447.00	48.55 AV	94.00	-45.45	1.00 H	159	45.37	3.18
3	4894.00	46.99 PK	74.00	-27.01	1.00 H	154	41.73	5.26
4	4894.00	34.16 AV	54.00	-19.84	1.00 H	154	28.90	5.26
5	7341.00	44.98 PK	74.00	-29.02	1.00 H	178	32.55	12.43
6	7341.00	32.15 AV	54.00	-21.85	1.00 H	178	19.72	12.43
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	*2447.00	57.33 PK	114.00	-56.67	2.00 V	170	54.15	3.18
2	*2447.00	44.50 AV	94.00	-49.50	2.00 V	170	41.32	3.18
3	4894.00	42.86 PK	74.00	-31.14	1.00 V	133	37.60	5.26
4	4894.00	30.30 AV	54.00	-23.70	1.00 V	133	25.04	5.26
5	7341.00	45.49 PK	74.00	-28.51	1.00 V	189	33.06	12.43
6	7341.00	32.66 AV	54.00	-21.34	1.00 V	189	20.23	12.43

**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 other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.



<b>CHANNEL</b>	TX High Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	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	*2465.00	60.22 PK	114.00	-53.78	2.00 H	237	57.00	3.22
2	*2465.00	47.39 AV	94.00	-46.61	2.00 H	237	44.17	3.22
3	2483.50	38.12 PK	74.00	-35.88	2.00 H	237	34.85	3.27
4	2483.50	25.29 AV	54.00	-28.71	2.00 H	237	22.02	3.27
5	4930.00	47.36 PK	74.00	-26.64	1.00 H	159	42.03	5.33
6	4930.00	34.53 AV	54.00	-19.47	1.00 H	159	29.20	5.33
7	7395.00	44.72 PK	74.00	-29.28	1.00 H	220	32.08	12.64
8	7395.00	31.89 AV	54.00	-22.11	1.00 H	220	19.25	12.64

**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	*2465.00	57.43 PK	114.00	-56.57	2.00 V	198	54.21	3.22
2	*2465.00	44.60 AV	94.00	-49.40	2.00 V	198	41.38	3.22
3	2483.50	38.39 PK	74.00	-35.61	2.00 V	198	35.12	3.27
4	2483.50	25.56 AV	54.00	-28.44	2.00 V	198	22.29	3.27
5	4930.00	40.30 PK	74.00	-33.70	1.00 V	177	34.97	5.33
6	4930.00	27.47 AV	54.00	-26.53	1.00 V	177	22.14	5.33
7	7395.00	45.03 PK	74.00	-28.97	1.00 V	145	32.39	12.64
8	7395.00	32.20 AV	54.00	-21.80	1.00 V	145	19.56	12.64

**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 other emission levels were very low 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 04,16	May 03,17
Power Sensor	Keysight	U2021XA	MY55060018	May 04,16	May 03,17
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
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
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 16	Aug.07, 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
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 16	Aug.07, 17

**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

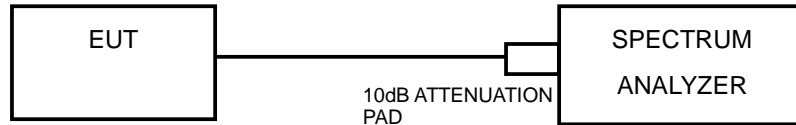
- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the 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

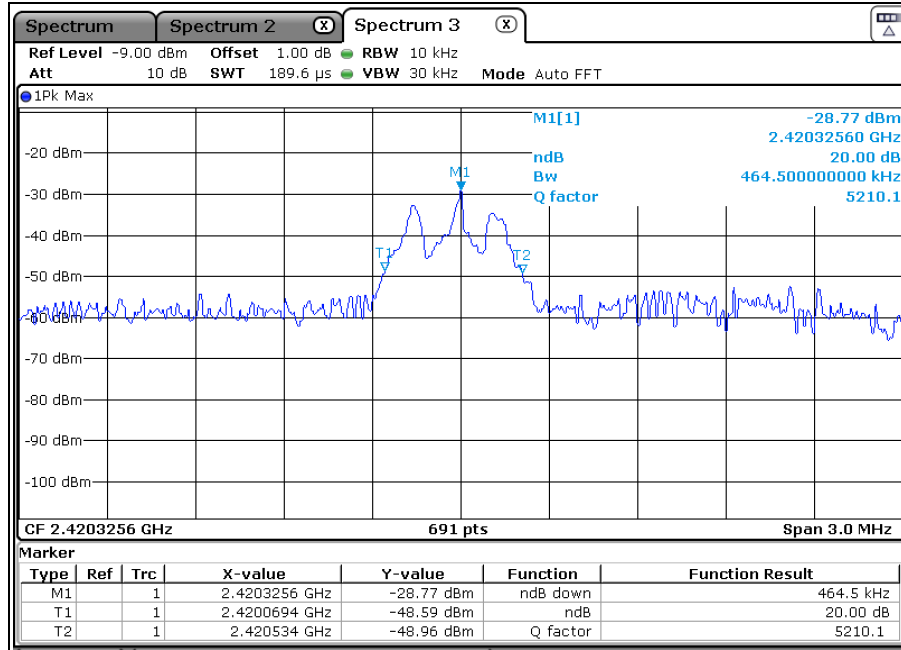
- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

#### 4.2.7 TEST RESULTS

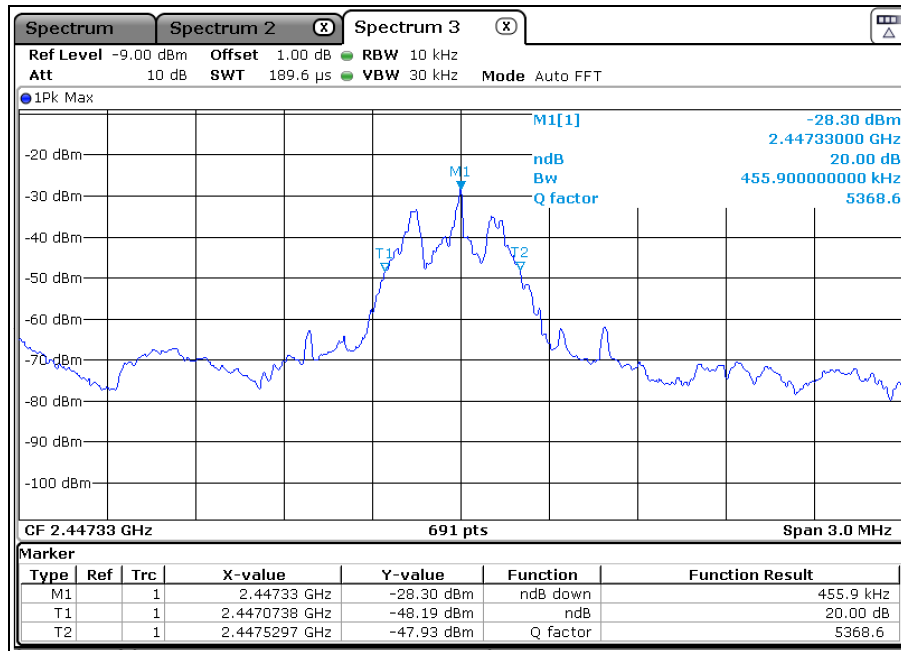
CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2420	0.4645
Middle	2447	0.4559
High	2465	0.4732



Test Data: Low channel



Test Data: Middle channel

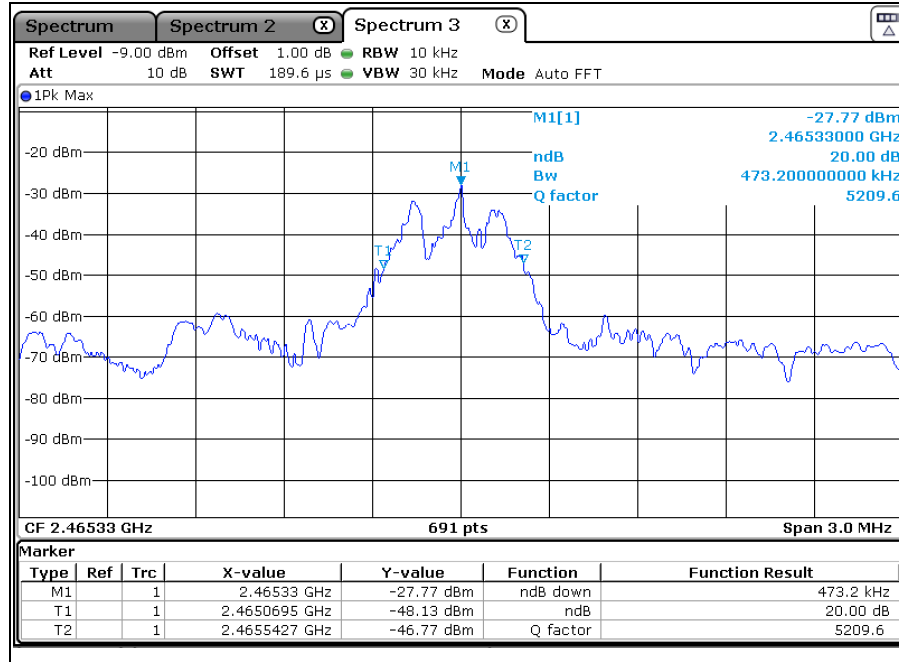




**BUREAU  
VERITAS**

Test Report No.: RF170310N002-1

Test Data: High channel





**BUREAU** Test Report No.: RF170310N002-1  
**VERITAS**

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



**BUREAU** Test Report No.: RF170310N002-1  
**VERITAS**

## 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---