



Test Report No.: RF2208WDG0258



# TEST REPORT

Applicant	Innovative Technology Electronics, LLC
Address	3513 Brighton Blvd Suite 570, Denver, CO 80216, USA

Manufacturer or Supplier	Guangdong Leetac Electronics Technology Co., Ltd.
Address	No.15 Danli Road, South District, Zhongshan, Guangdong, China.
Product	Music Center with Bluetooth
Brand Name	Victrola, Innovative Technology
Model	VTA-600B
Additional Models & Model Difference	VTA-600B(PC).1, VTA-600B(PC).1-XXX, VTA-600B(PC).1-XXX-SDF; etc., See items 3.1
Date of tests	Aug. 30, 2022 ~ Sep. 09, 2022

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

**FCC Part 15, Subpart C, Section 15.247**

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

Tested by Niko Zhang  
Project Engineer / EMC Department

Approved by Glyn He  
Assistant Manager / EMC Department

Date: Sep. 19, 2022

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2108WDG0295	Original release	Sep. 18, 2021
RF2208WDG0258	Based on the original report RF2108WDG0295 changed the model No., removed the USB-PC port, update the Bluetooth IC software, It needed to be retest CE, RSE, Output Power items after engineer evaluated.	Sep. 19, 2022



## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output Power	PASS	Meet the requirement of limit.
15.247(d)& 15.209	Transmitter Radiated Emission	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	3.05dB
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GMHz	3.63dB
	1GHz ~ 18GHz	4.96dB
	18GHz ~ 40GHz	4.37dB

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>	Music Center with Bluetooth
<b>MODEL NO.</b>	VTA-600B
<b>ADDITIONAL MODELS</b>	VTA-600B(PC).1, VTA-600B(PC).1-XXX, VTA-600B(PC).1-XXX-SDF, VTA-600B(PC) , VTA-600B(PC)-XXX, VTA-600B(PC)-XXX-SDF, VTA-600B.2, VTA-600B.2-BLK, VTA-600B.2-BLK-SDF, VTA-600B.2-ESP, VTA-600B.2-ESP-SDF, VTA-600B.2-MAH, VTA-600B.2-MAH-SDF, VTA-600B.2-OAK, VTA-600B.2-OAK-SDF, VTA-600B.2-WHT, VTA-600B.2-WHT-SDF, VTA-600B.2-XXX, VTA-600B.2-XXX-SDF, VTA-600B-BLK, VTA-600B-BLK-SDF, VTA-600B-ESP, VTA-600B-ESP-SDF, VTA-600B-MAH, VTA-600B-MAH-SDF, VTA-600B-OAK, VTA-600B-OAK-SDF, VTA-600B-WHT, VTA-600B-WHT-SDF, VTA-600B-XXX, VTA-600B-XXX-SDF, VTA-600BXXXXXXXXXX (where each "X" can be digit "0-9", letter "A-Z", "-" or blank respectively, means unit color or pattern)
<b>FCC ID</b>	2AFHW-VTA600BPC1
<b>POWER SUPPLY</b>	AC 120V 60Hz
<b>MODULATION TECHNOLOGY</b>	FHSS
<b>MODULATION TYPE</b>	GFSK, $\pi/4$ DQPSK, 8DPSK
<b>OPERATING FREQUENCY</b>	2402MHz~2480MHz
<b>NUMBER OF CHANNEL</b>	79
<b>PEAK OUTPUT POWER</b>	1.722mW (Max. Measured)
<b>ANTENNA TYPE</b>	PCB Antenna, 0.68dBi Gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	AC Line: Unshielded, Undetachable 1.6m; Line Out: Unshielded Detachable 1.2m;
<b>ACCESSORY</b>	Remote control

**NOTES:**

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.



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3. Please refer to the EUT photo document (Reference No.: 2208WDG0258) for detailed product photo.
4. Additional models (see above table) are identical with the test model VTA-600B except the model name color and pattern for trading purpose.
5. Trade name Victrola and Innovative Technology can be used for all the models.



### 3.2 DESCRIPTION OF TEST MODES

79 channels are provided to this EUT:

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	<b>78</b>	<b>2480</b>
19	2421	<b>39</b>	<b>2441</b>	59	2461		



### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photograph 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, power supply voltage range and antenna ports. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	√	AC 120V/60Hz with BT link

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

**RE≥1G**: Radiated Emission above 1GHz  
**APCM**: Antenna Port Conducted Measurement

#### RADIATED EMISSION TEST (BELOW 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, X axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	39	FHSS	GFSK	DH5

For the test results, only the worst case was shown in test report.

#### RADIATED EMISSION TEST (ABOVE 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, X axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5
	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5



**POWER LINE CONDUCTED EMISSION TEST:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0	FHSS	GFSK	DH5

**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, antenna ports (if EUT with antenna diversity architecture), and packet types.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5
	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	25deg. C, 55%RH	AC 120V 60Hz	Jelly
RE≥1G	25deg. C, 55%RH	AC 120V 60Hz	Jelly
PLC	25deg. C, 55%RH	AC 120V 60Hz	Ryker
APCM	25deg. C, 60%RH	AC 120V 60Hz	Ryker



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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 15.247**

**KDB 558074 D01 15.247 Meas Guidance v05r02**

**ANSI C63.10-2013**

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

### **3.4 DESCRIPTION OF SUPPORT UNITS**

The EUT has been tested as an independent unit together 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 (dBµV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

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

#### 4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Jan. 18, 23
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Jan. 23, 23
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Jan. 18, 23
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jul. 27, 23
Coaxial RF Cable	/	CE CABLE	C2310066DG	Jul. 24, 23
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A

- NOTES:**
1. The test was performed in shielded room 553 (Chen Wu).
  2. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



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#### 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) was not recorded.

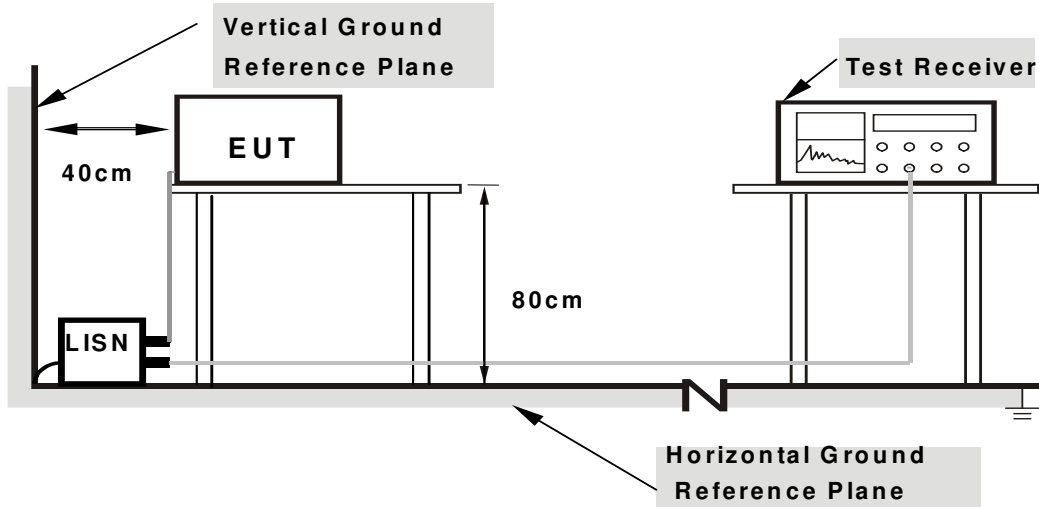
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



#### 4.1.5 TEST SETUP



- Note:**
- 1.Support units were connected to second LISN.
  - 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

#### 4.1.6 EUT OPERATING CONDITIONS

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



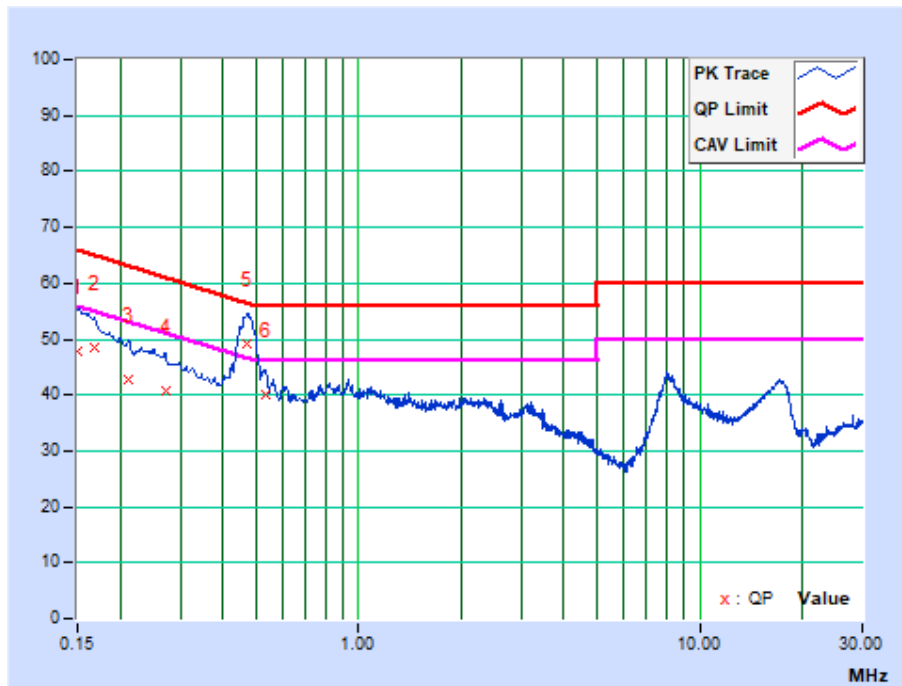
**4.1.7 TEST RESULTS**

**CONDUCTED WORST-CASE CH0 DATA:**

<b>PHASE</b>	Line	<b>6dB BANDWIDTH</b>	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	0.15000	9.82	38.05	19.95	47.87	29.77	66.00	56.00	-18.13	-26.23
2	0.16787	9.83	38.61	21.92	48.44	31.75	65.07	55.07	-16.63	-23.32
3	0.21067	9.85	33.07	20.27	42.92	30.12	63.18	53.18	-20.26	-23.06
4	0.27144	9.87	30.92	13.75	40.79	23.62	61.07	51.07	-20.28	-27.45
5	0.46950	9.92	39.07	28.19	48.99	38.11	56.52	46.52	-7.53	-8.41
6	0.53250	9.93	30.01	19.47	39.94	29.40	56.00	46.00	-16.06	-16.60

- 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.





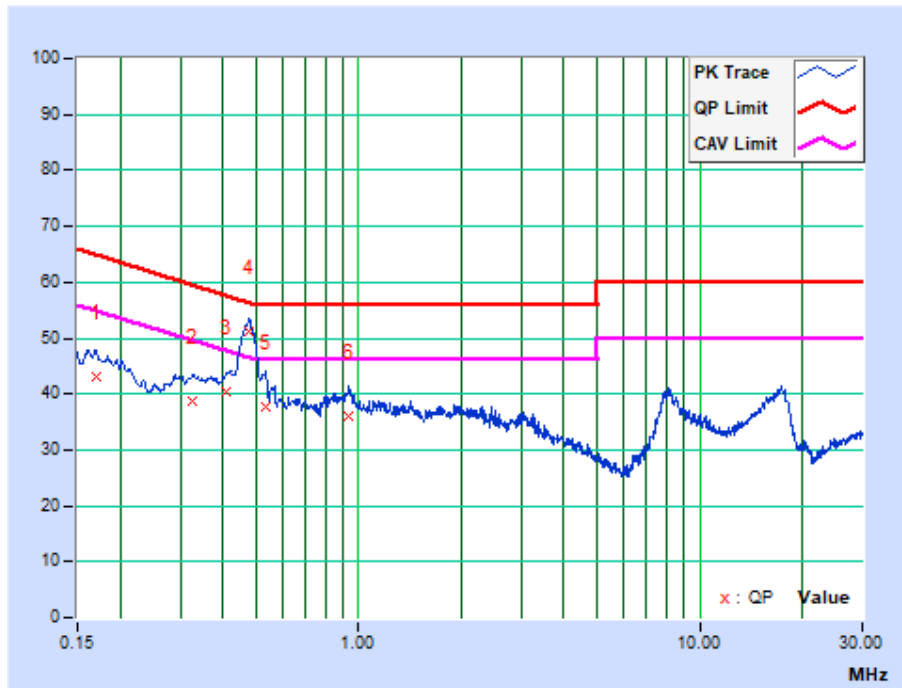
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<b>PHASE</b>	Neutral	<b>6dB BANDWIDTH</b>	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16966	9.76	33.42	18.06	43.18	27.82	64.98	54.98	-21.79	-27.15
2	0.32483	9.80	28.98	16.04	38.78	25.84	59.58	49.58	-20.80	-23.74
3	0.40871	9.80	30.61	14.96	40.41	24.76	57.67	47.67	-17.26	-22.91
<b>4</b>	<b>0.47635</b>	<b>9.82</b>	<b>41.30</b>	<b>29.43</b>	<b>51.12</b>	<b>39.25</b>	<b>56.40</b>	<b>46.40</b>	<b>-5.28</b>	<b>-7.15</b>
5	0.53503	9.82	27.90	18.18	37.72	28.00	56.00	46.00	-18.28	-18.00
6	0.93750	9.82	26.15	15.81	35.97	25.63	56.00	46.00	-20.03	-20.37

- 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.



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## 4.2. RADIATED EMISSION AND BANDEDGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEDGE 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). Other emissions shall be at least 20dB below the highest level of the desired power.

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

**NOTES:**

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



### 4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Feb. 22, 23
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May. 09, 23
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	Apr. 27, 23
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 08, 23
Trilog-Broadband Antenna(20M-2G)	SCHWARZBECK	VULB 9168	01263	Sep. 30, 22
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Apr. 27, 23
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 28, 23
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 22, 23
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Apr. 26, 23
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Jan. 10, 23
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A

**NOTES:**

1. The test was performed in 966 Chamber (Chen Wu).
2. The calibration interval of the above test instruments is 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 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 placed 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 performed using fresh batteries. The turntable was rotated to maximize the emission level.

#### NOTES:

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 1 MHz 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.

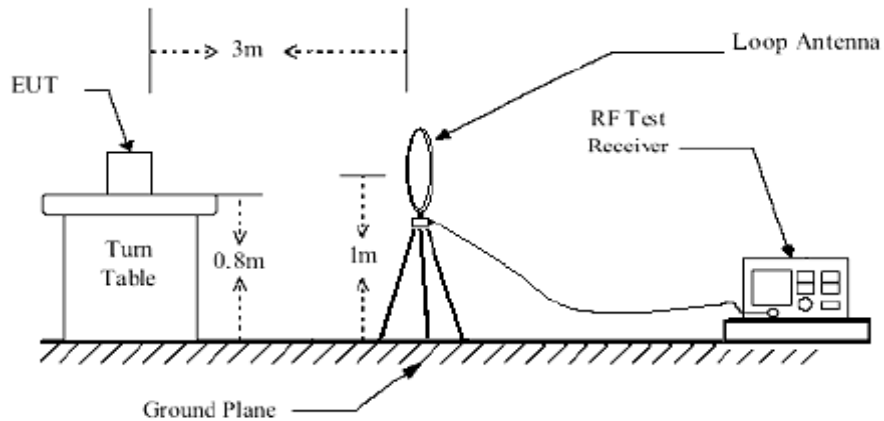


#### 4.2.4 DEVIATION FROM TEST STANDARD

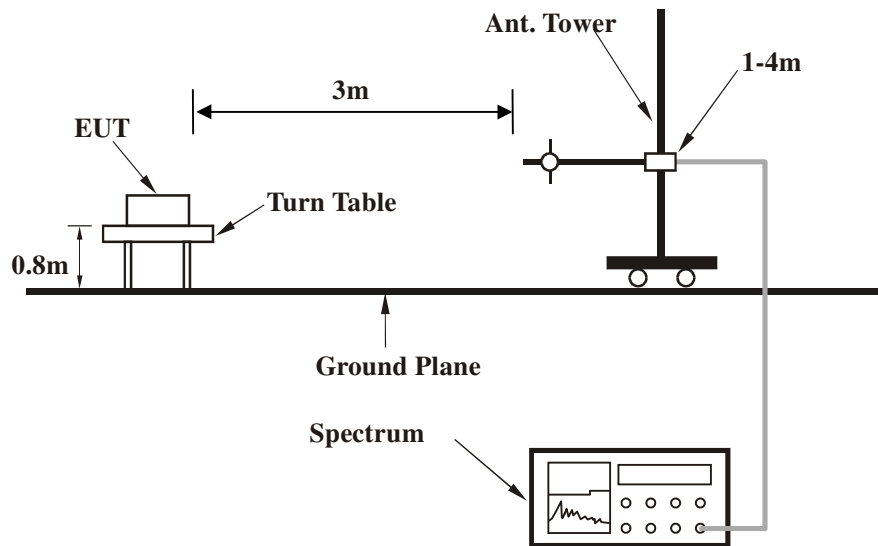
No deviation.

#### 4.2.5 TEST SETUP

##### Below 30MHz test setup



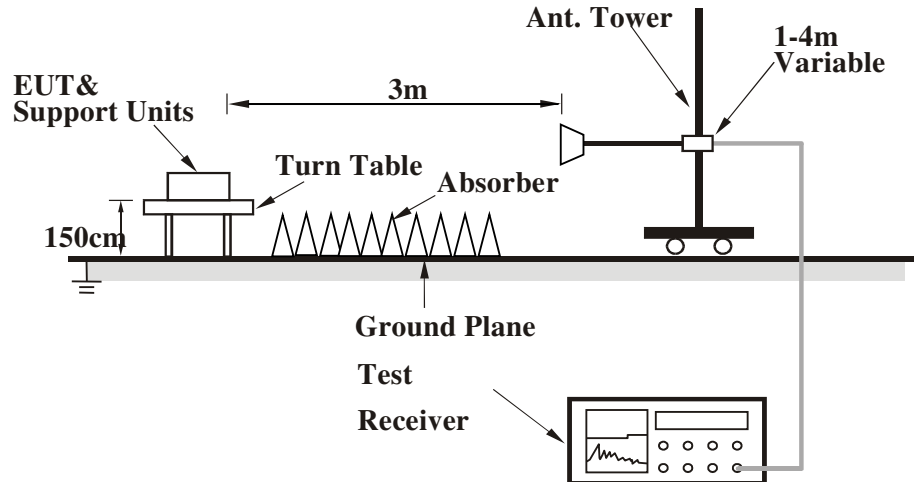
##### Below 1GHz test setup



**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:**

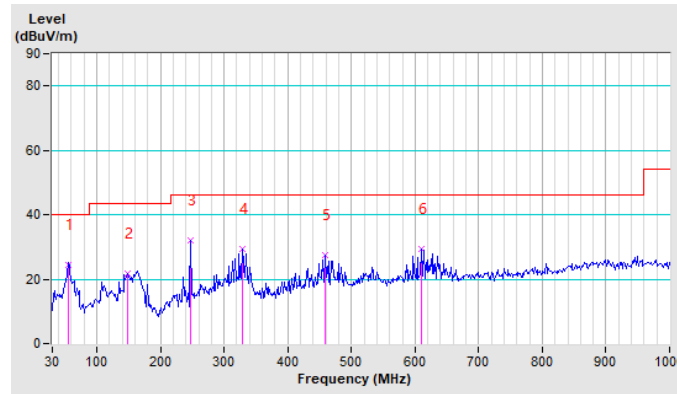
**GFSK DH5**

<b>CHANNEL</b>	Channel 39	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
<b>NO.</b>	<b>FREQ. (MHz)</b>	<b>EMISSION LEVEL (dBuV/m)</b>	<b>LIMIT (dBuV/m)</b>	<b>MARGIN (dB)</b>	<b>ANTENNA HEIGHT (m)</b>	<b>TABLE ANGLE (Degree)</b>	<b>RAW VALUE (dBuV)</b>	<b>CORRECTIO N FACTOR (dB/m)</b>
1	55.48	24.41 QP	40.00	-15.59	2.00 H	245	42.27	-17.86
2	148.14	21.62 QP	43.50	-21.88	2.00 H	0	38.43	-16.81
3	247.63	31.89 QP	46.00	-14.11	2.00 H	0	49.13	-17.24
4	328.46	29.18 QP	46.00	-16.82	2.00 H	0	43.92	-14.74
5	459.04	27.52 QP	46.00	-18.48	2.00 H	0	38.88	-11.36
6	609.82	29.36 QP	46.00	-16.64	2.00 H	0	36.98	-7.62

**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





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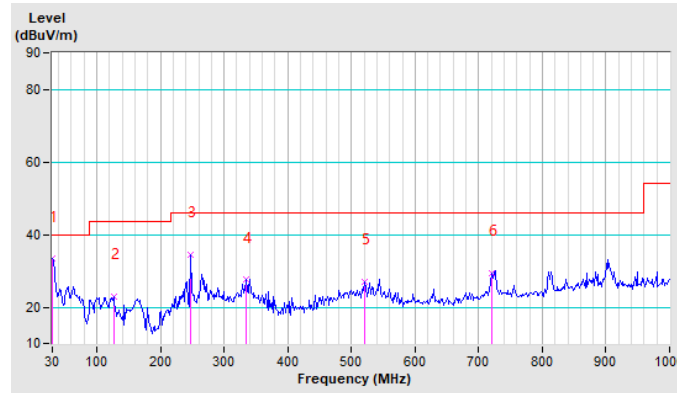
**Test Report No.: RF2208WDG0258**

<b>CHANNEL</b>	Channel 39	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	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)	CORRECTIO N FACTOR (dB/m)
1	30.00	33.27 QP	40.00	-6.73	1.00 V	313	51.79	-18.52
2	126.38	22.88 QP	43.50	-20.62	1.00 V	0	40.91	-18.03
3	247.63	34.39 QP	46.00	-11.61	1.00 V	345	51.63	-17.24
4	334.68	27.53 QP	46.00	-18.47	1.00 V	0	42.11	-14.58
5	521.22	27.10 QP	46.00	-18.90	1.00 V	0	36.83	-9.73
6	720.19	29.36 QP	46.00	-16.64	1.00 V	0	35.56	-6.20

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value



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ABOVE 1GHz DATA

BT\_GFSK

<b>CHANNEL</b>	TX Channel 0	<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	2390.00	47.55 PK	74.00	-26.45	1.00 H	29	44.75	2.80
2	2390.00	35.82 AV	54.00	-18.18	1.00 H	29	33.02	2.80
3	*2402.00	90.51 PK			1.00 H	125	87.67	2.84
4	*2402.00	87.90 AV			1.00 H	125	85.06	2.84
5	4804.00	49.59 PK	74.00	-24.41	1.00 H	16	42.53	7.06
6	4804.00	36.03 AV	54.00	-17.97	1.00 H	16	28.97	7.06
7	#7206.00	51.49 PK	74.00	-22.51	1.00 H	13	41.54	9.95
8	#7206.00	39.23 AV	54.00	-14.77	1.00 H	13	29.28	9.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	47.87 PK	74.00	-26.13	2.00 V	123	45.07	2.80
2	2390.00	34.91 AV	54.00	-19.09	2.00 V	123	32.11	2.80
3	*2402.00	95.87 PK			2.00 V	0	93.03	2.84
4	*2402.00	89.58 AV			2.00 V	0	86.74	2.84
5	4804.00	48.96 PK	74.00	-25.04	2.00 V	152	41.90	7.06
6	4804.00	36.32 AV	54.00	-17.68	2.00 V	152	29.26	7.06
7	#7206.00	49.31 PK	74.00	-24.69	2.00 V	154	39.36	9.95
8	#7206.00	39.42 AV	54.00	-14.58	2.00 V	154	29.47	9.95

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. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.





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Test Report No.: RF2208WDG0258

<b>CHANNEL</b>	TX Channel 39	<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	*2441.00	91.22 PK			1.00 H	152	88.26	2.96
2	*2441.00	80.88 AV			1.00 H	152	77.92	2.96
3	4882.00	49.17 PK	74.00	-24.83	2.00 H	158	41.54	7.63
4	4882.00	39.28 AV	54.00	-14.72	2.00 H	158	31.65	7.63
5	7323.00	51.37 PK	74.00	-22.63	1.00 H	164	41.26	10.11
6	7323.00	38.73 AV	54.00	-15.27	1.00 H	164	28.62	10.11
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	*2441.00	93.09 PK			1.00 V	15	90.13	2.96
2	*2441.00	74.08 AV			1.00 V	15	71.12	2.96
3	4882.00	49.41 PK	74.00	-24.59	1.00 V	45	41.78	7.63
4	4882.00	36.63 AV	54.00	-17.37	1.00 V	45	29.00	7.63
5	7323.00	49.25 PK	74.00	-24.75	1.00 V	156	39.14	10.11
6	7323.00	38.34 AV	54.00	-15.66	1.00 V	156	28.23	10.11

**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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.

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Test Report No.: RF2208WDG0258

<b>CHANNEL</b>	TX Channel 78	<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	*2480.00	88.45 PK			1.00 H	125	85.38	3.07
2	*2480.00	79.37 AV			1.00 H	125	76.30	3.07
3	2483.50	49.61 PK	74.00	-24.39	1.00 H	156	46.53	3.08
4	2483.50	39.50 AV	54.00	-14.50	1.00 H	156	36.42	3.08
5	4960.00	46.66 PK	74.00	-27.34	1.00 H	163	38.45	8.21
6	4960.00	34.56 AV	54.00	-19.44	1.00 H	163	26.35	8.21
7	7440.00	50.12 PK	74.00	-23.88	2.00 H	126	39.85	10.27
8	7440.00	37.87 AV	54.00	-16.13	2.00 H	126	27.60	10.27

**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	91.25 PK			2.00 V	158	88.18	3.07
2	*2480.00	84.71 AV			2.00 V	158	81.64	3.07
3	2483.50	49.62 PK	74.00	-24.38	1.00 V	94	46.54	3.08
4	2483.50	32.78 AV	54.00	-21.22	1.00 V	94	29.70	3.08
5	4960.00	48.44 PK	74.00	-25.56	2.00 V	75	40.23	8.21
6	4960.00	34.36 AV	54.00	-19.64	2.00 V	75	26.15	8.21
7	7440.00	50.40 PK	74.00	-23.60	1.00 V	78	40.13	10.27
8	7440.00	37.74 AV	54.00	-16.26	1.00 V	78	27.47	10.27

**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. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

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Test Report No.: RF2208WDG0258

BT\_8DPSK

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	44.13 PK	74.00	-29.87	2.00 H	59	41.33	2.80
2	2390.00	31.79 AV	54.00	-22.21	2.00 H	59	28.99	2.80
3	*2402.00	94.63 PK			1.00 H	154	91.79	2.84
4	*2402.00	78.39 AV			1.00 H	154	75.55	2.84
5	4804.00	45.87 PK	74.00	-28.13	1.00 H	158	38.81	7.06
6	4804.00	34.77 AV	54.00	-19.23	1.00 H	158	27.71	7.06
7	#7206.00	49.04 PK	74.00	-24.96	2.00 H	165	39.09	9.95
8	#7206.00	37.90 AV	54.00	-16.10	2.00 H	165	27.95	9.95

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	45.09 PK	74.00	-28.91	1.00 V	100	42.29	2.80
2	2390.00	32.09 AV	54.00	-21.91	1.00 V	100	29.29	2.80
3	*2402.00	95.70 PK			1.00 V	100	92.86	2.84
4	*2402.00	76.62 AV			1.00 V	100	73.78	2.84
5	4804.00	45.09 PK	74.00	-28.91	1.00 V	16	38.03	7.06
6	4804.00	34.88 AV	54.00	-19.12	1.00 V	16	27.82	7.06
7	#7206.00	48.52 PK	74.00	-25.48	2.00 V	46	38.57	9.95
8	#7206.00	38.03 AV	54.00	-15.97	2.00 V	46	28.08	9.95

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. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.
6. " # " : The radiated frequency is out of the restricted band.

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Test Report No.: RF2208WDG0258

<b>CHANNEL</b>	TX Channel 39	<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	*2441.00	91.33 PK			2.00 H	157	88.37	2.96
2	*2441.00	72.55 AV			2.00 H	157	69.59	2.96
3	4882.00	43.86 PK	74.00	-30.14	1.00 H	78	36.23	7.63
4	4882.00	34.29 AV	54.00	-19.71	1.00 H	78	26.66	7.63
5	7323.00	47.05 PK	74.00	-26.95	2.00 H	189	36.94	10.11
6	7323.00	36.79 AV	54.00	-17.21	2.00 H	189	26.68	10.11

**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	*2441.00	93.58 PK			1.00 V	78	90.62	2.96
2	*2441.00	84.66 AV			1.00 V	78	81.70	2.96
3	4882.00	46.01 PK	74.00	-27.99	2.00 V	196	38.38	7.63
4	4882.00	34.49 AV	54.00	-19.51	2.00 V	196	26.86	7.63
5	7323.00	46.80 PK	74.00	-27.20	1.00 V	75	36.69	10.11
6	7323.00	36.91 AV	54.00	-17.09	1.00 V	75	26.80	10.11

**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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " \* " : Fundamental frequency.

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Test Report No.: RF2208WDG0258

<b>CHANNEL</b>	TX Channel 78	<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	*2480.00	91.18 PK			1.00 H	38	88.11	3.07
2	*2480.00	80.15 AV			1.00 H	38	77.08	3.07
3	2483.50	53.11 PK	74.00	-20.89	1.00 H	189	50.03	3.08
4	<b>2483.50</b>	<b>39.78 AV</b>	<b>54.00</b>	<b>-14.22</b>	<b>1.00 H</b>	<b>189</b>	<b>36.70</b>	<b>3.08</b>
5	4960.00	48.10 PK	74.00	-25.90	1.00 H	45	39.89	8.21
6	4960.00	36.80 AV	54.00	-17.20	1.00 H	45	28.59	8.21
7	7440.00	46.55 PK	74.00	-27.45	2.00 H	47	36.28	10.27
8	7440.00	37.50 AV	54.00	-16.50	2.00 H	47	27.23	10.27
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	92.44 PK			1.00 V	36	89.37	3.07
2	*2480.00	83.54 AV			1.00 V	36	80.47	3.07
3	2483.50	48.48 PK	74.00	-25.52	1.00 V	64	45.40	3.08
4	2483.50	38.89 AV	54.00	-15.11	1.00 V	64	35.81	3.08
5	4960.00	46.96 PK	74.00	-27.04	1.00 V	36	38.75	8.21
6	4960.00	36.06 AV	54.00	-17.94	1.00 V	36	27.85	8.21
7	7440.00	48.61 PK	74.00	-25.39	1.00 V	197	38.34	10.27
8	7440.00	37.16 AV	54.00	-16.84	1.00 V	197	26.89	10.27

**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. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

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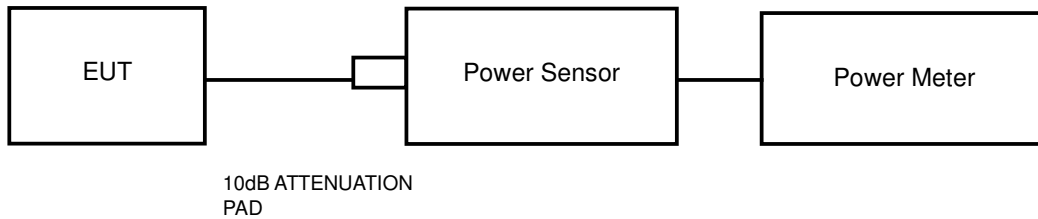


### 4.3 CONDUCTED OUTPUT POWER

#### 4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 125mW.

#### 4.3.2 TEST SETUP



#### 4.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Meter	Anritsu	ML2495A	1139001	Feb. 27, 23
Power Sensor	Anritsu	MA2411B	1531155	Feb. 27, 23
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 03, 22
Oscilloscope	Agilent	DSO9254A	MY51260160	Jul. 27, 23
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 16, 23
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A
Test software	ADT	ADT_RF Test Software V6.6.5.3	N/A	N/A

**NOTE:**

1. The test was performed in RF Oven room. (Chenwu).
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.



#### 4.3.4 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.

#### 4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.6 EUT OPERATING CONDITION

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

#### MAXIMUM PEAK OUTPUT POWER

##### GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	-0.12	0.9727	125	PASS
39	2441	-0.93	0.8072	125	PASS
78	2480	-1.76	0.6668	125	PASS

##### 8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	2402	2.36	<b>1.722</b>	125	PASS
39	2441	1.51	1.416	125	PASS
78	2480	0.66	1.164	125	PASS





**AVERAGE OUTPUT POWER(FOR REFERENCE)**

**GFSK**

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	AVERAGE POWER (mW)
0	2402	-1.30	0.7413
39	2441	-2.13	0.6124
78	2480	-2.97	0.5047

**8DPSK**

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	AVERAGE POWER (mW)
0	2402	-1.32	0.7379
39	2441	-2.06	0.6223
78	2480	-2.91	0.5117



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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---**