TEST REPORT

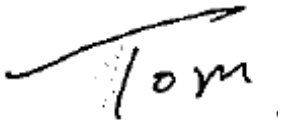
Applicant	YONG PING TOYS FACTORY
Address	TUCHENG INDUSTRIAL ZONE, LIANSHANG TOWN, CHENGHAI DISTRICT, GUANGONG PROVINCE, CHINA.

Manufacturer or Supplier	N/A
Address	N/A
Product	Toy car series
Brand Name	N/A
Model	6158B2
Additional Model & Model Difference:	6158,6158A1,6158A2,6158A3,6158B1 ,6158B3,6158C1,6158C2, etc., See section 3.1
Date of tests	Jul. 08, 2020 ~ Jul. 19, 2020

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

☒ **FCC Part 15, Subpart C, Section 15.227**

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

Tested by Tom Chen Project Engineer / EMC Department	Approved by Chris Chen Manager / EMC Department
	 Date: Aug. 18, 2020

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF200708N061	Original release	Aug. 18, 2020

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C , SECTION 15.227(2015-10)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
§15.207 (a)	AC Power Conducted Emission	N/A	EUT is powered by battery
§15.209 §15.227	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant
§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
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GHz	3.99dB

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 car series
MODEL NO.	6158B2
ADDITIONAL MODELS	6158, 6158A1, 6158A2, 6158A3, 6158B1, 6158B3, 6158C1, 6158C2, 6158C3, 6158F1, 6158F2, 6158F3, 6159, 6159H1, 6159H2, 6159H3, 6159J1, 6159J2, 6159J3, 6159K1, 6159K2, 6159K2, 6159L1, 6159L2, 6159L3, 6160, 6160Q1, 6160Q2, 6160Q3, 6160R1, 6160R2, 6160R3, 6160S1, 6160S2, 6160S3, 6160T1, 6160T2, 6160T3, 6161, 6161U1, 6161U2, 6161U3, 6161V1, 6161V2, 6161V3, 6161W1, 6161W2, 6161W3, 6161X1, 6161X2, 6161X3, 6166, 6166A1, 6166A2, 6166A3, 6166B1, 6166B2, 6166B3, 6166C1, 6166C2, 6166C3, 6166D1, 6166D2, 6166D3, 6156, 6156A, 6156B, 6156C, 6156D, 6156E, 6156F, 6168, 6168A, 6168B, 6168C, 6168D, 6168E, 6168F, 6168G, 6168H, 6168J, 6168K, 6168L, 6168M, 6168Q, 6168R, 6168S, 6168T, 6168U, 6168V, 6169, 6169A, 6169B, 6169C, 6169D, 6169E, 6169F, 6169G, 6169H, 6169J, 6169K, 6169L, 6169M, 6169Q, 6169R, 6169S, 6169T, 6169U, 6169V, 6148, 6148R, 6148S, 6148T, 6146, 6146A, 6146B, 6146C, 6146D, 6146E, 6146F, 6146Q, 6146R, 6146S, 6146T, 6146U, 6146V, 6146W, 6146X, 6146Y, 6146P, 6146-7, 6146-8, 6146-9, 6146-10, 6146-11, 6146-12, 6146-13, 6170, 6170A, 6170B, 6170C, 6170D, 6170E, 6170F, 6170G, 6170H, 6170J, 6170K, 6170L, 6170M, 6170Q, 6170R, 6170S, 6170T, 6170U, 6170V, 6171, 6172, 6173
FCC ID	2AMH66158B2
NOMINAL VOLTAGE	DC 3V (1.5V*AA*2) from Battery
MODULATION TYPE	ASK
OPERATING FREQUENCY	27.145MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Wire Antenna with 6dBi gain
I/O PORTS	Refer to user's manual

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.

3. Please refer to the EUT photo document (Reference No.: 200708N061) for detailed product photo.

4. Additional models (see below additional models list) are identical with the test model 6158B2 except the model number for marketing purpose.

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.

FREQUENCY	TEST MODES
27.145 MHz	Transmitting

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, 15.227

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

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [µV/m]	Field Strength of Fundamental Emission [Average] [µV/m]
26.96 – 27.28	100,000 (100 dBµV/m)	10,000 (80 dBµV/m)

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.

4.1.2 TEST INSTRUMENTS

9KHz~30MHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101564	Mar. 18,20	Mar. 17,21
Active Loop Antenna	SCHWARZBECK	FMZB 1519B	1519B-045	May 28,20	May 27,21
Amplifier	Burgeon	BPA-530	100210	Mar. 15,20	Mar. 14,21
Test Software	ADT	ADT_Radiated _V8.7.07	N/A	N/A	N/A

NOTES: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 10m Chamber

3. The FCC Site Registration No. is 749762.

30MHz~1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 18,20	Mar. 17,21
Bilog Antenna	Teseq	CBL 6111D	30643	Jun. 23,20	Jun. 22,21
Amplifier	Burgeon	BPA-530	100220	Mar. 15,20	Mar. 14,21
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Apr. 21,20	Apr. 20,21
Test software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A

NOTES:

1. The test was performed in 966 Chamber (a 3m Semi-anechoic 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

The basic test procedure was in accordance with ANSI C63.10 (section 6).

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. (Below 1000MHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10m chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. (Below 30MHz)
c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
d. The height of antenna 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.
e. 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.
f. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
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 Y, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level.
h. 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.
i.

NOTES:

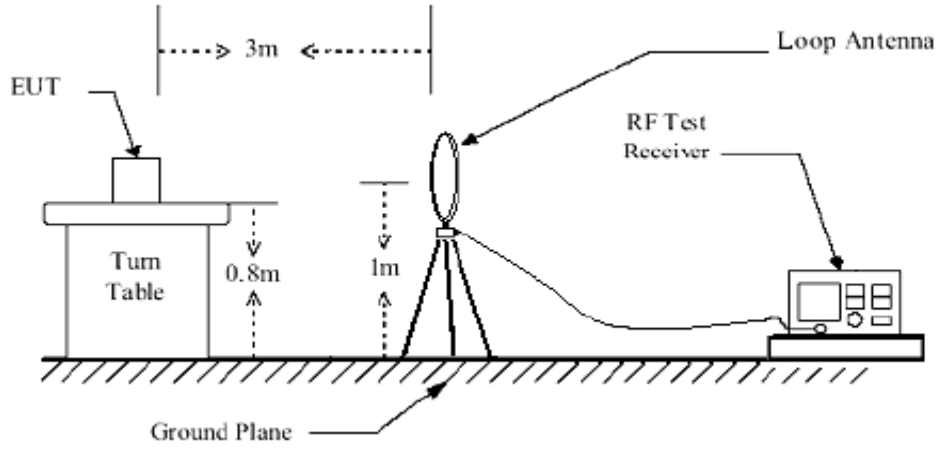
1. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz for peak detection (PK) at fundamental frequency below 30MHz; The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at radiated spurious emission frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
4. Margin value = Emission level – Limit value.
5. Fundamental AV value =PK Emission +AV factor.

4.1.4 DEVIATION FROM TEST STANDARD

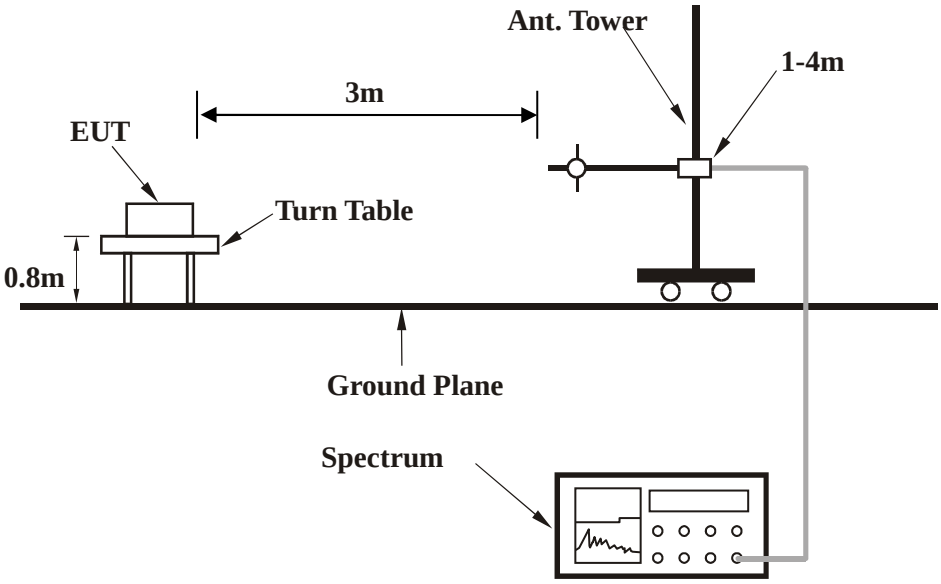
No deviation.

4.1.5 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).

4.1.6 EUT OPERATING CONDITIONS

a. Turned on the power of equipment.
b. Hold down the TX of button, then the EUT was operating.
c. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

4.1.7 TEST RESULTS

FIELD STRENGTH OF FUNDAMENTAL

ANTENNA POLARITY (PARALLEL): 0°

No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
*	27.145(PK)	-11.74	65.48	53.74	100	-46.26
*	27.145(AV)	-	-	47.91	80	-32.09

ANTENNA POLARITY (PERPENDICULAR): 90°

No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
*	27.145(PK)	-11.74	82.60	70.86	100	-29.14
*	27.145(AV)	-	-	65.03	80	-14.97

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. Margin value = Emission level – Limit value.
4. " * ": Fundamental frequency.
5. The average value of fundamental frequency is: Average value = Peak value +AV factor, where the AV factor is calculated from following formula: AV factor=20 log (Duty cycle) = 20 log (51.10%) = -5.83dB, Please see page 13~14 for plotted duty.
6. All three antenna orientations(parallel, perpendicular, and ground-parallel) testing. But the worst orientation showed in report only.

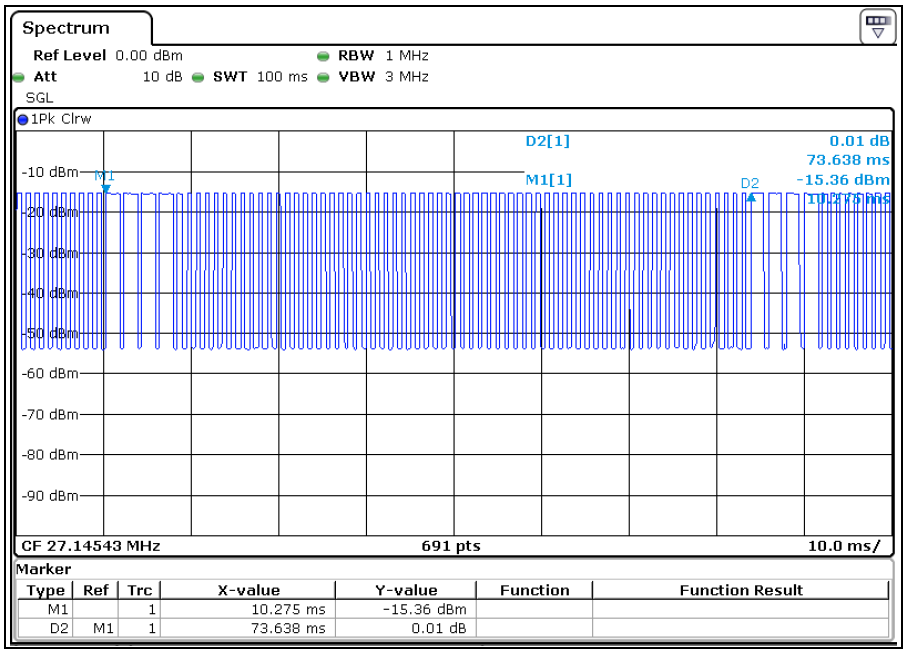
Duty Cycle:

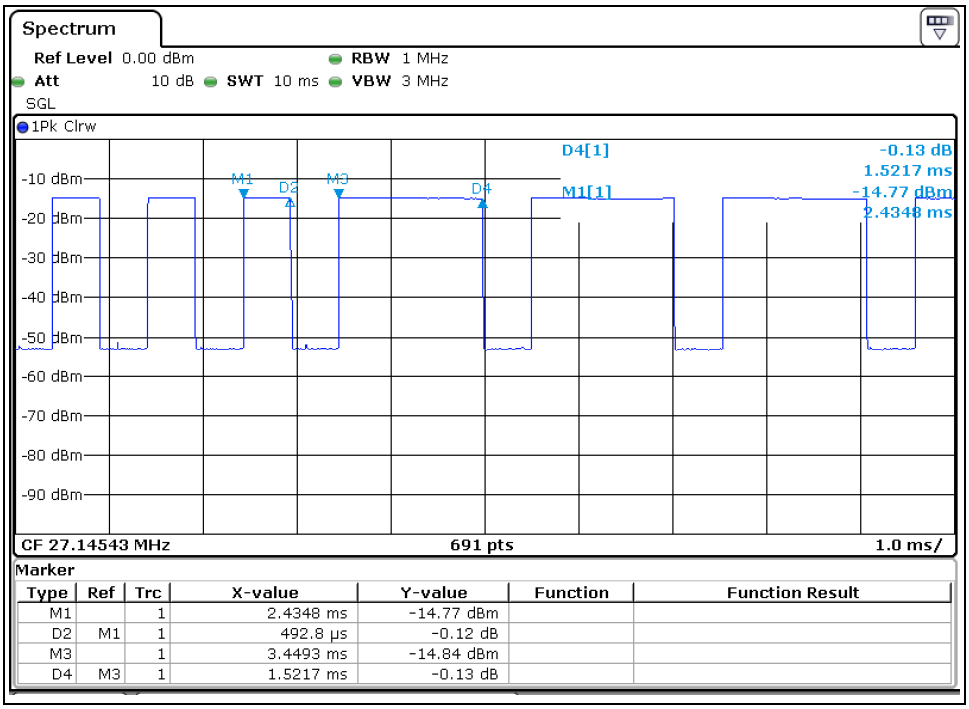
Tp = 73.638ms

Ton =0.4928*64 +1.5217*4= 37.626ms

Duty Cycle = Ton / Tp * 100% = 37.626/ 73.638= 51.10%

Tp=73.638ms



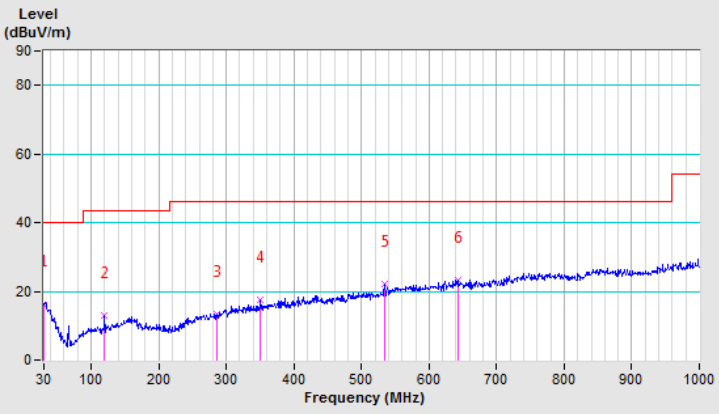

Spectrum
Ref Level 0.00 dBm
RBW 1 MHz
Att 10 dB SWT 10 ms VBW 3 MHz
SGL
1Pk Clrw
D4[1]
-0.13 dB
1.5217 ms
M1[1]
-14.77 dBm
2.4348 ms
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
M1
D2
M3
D4
CF 27.14543 MHz
691 pts
1.0 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4348 ms -14.77 dBm
D2 M1 1 492.8 µs -0.12 dB
M3 1 3.4493 ms -14.84 dBm
D4 M3 1 1.5217 ms -0.13 dB

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

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	30.00	16.20 QP	40.00	-23.80	1.00 H	145	28.34	-12.14
2	119.24	13.10 QP	43.50	-30.40	1.00 H	173	32.93	-19.83
3	285.11	13.44 QP	46.00	-32.56	1.00 H	180	28.53	-15.09
4	350.10	17.43 QP	46.00	-28.57	1.00 H	137	30.24	-12.81
5	534.40	22.00 QP	46.00	-24.00	1.00 H	240	30.36	-8.36
6	**643.04**	**23.17 QP**	**46.00**	**-22.83**	**1.00 H**	**175**	**28.97**	**-5.80**

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.

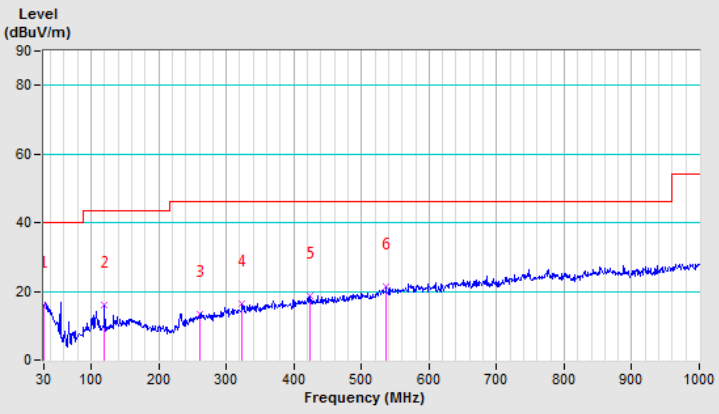


FREQUENCY RANGE	9KHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)

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	30.00	15.83 QP	40.00	-24.17	1.00 V	137	27.97	-12.14
2	119.24	15.90 QP	43.50	-27.60	1.00 V	57	35.73	-19.83
3	259.89	13.39 QP	46.00	-32.61	1.00 V	175	29.20	-15.81
4	322.94	16.22 QP	46.00	-29.78	1.00 V	156	29.82	-13.60
5	422.85	18.51 QP	46.00	-27.49	1.00 V	195	29.51	-11.00
6	536.34	21.34 QP	46.00	-24.66	1.00 V	147	29.61	-8.27

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



4.2 BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF BANDWIDTH MEASUREMENT

The field strength of any emissions appearing between the band edges and out of band shall be attenuated at least 20 dB below the level of the unmodulated carrier or to the general limits in Section 15.209.

FREQUENCY (MHz)	Limits [MHz]
27.145	within 26.96-27.28

4.2.2 TEST INSTRUMENTS

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

NOTES:

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

4.2.3 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.

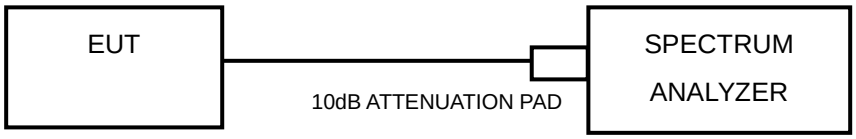
c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



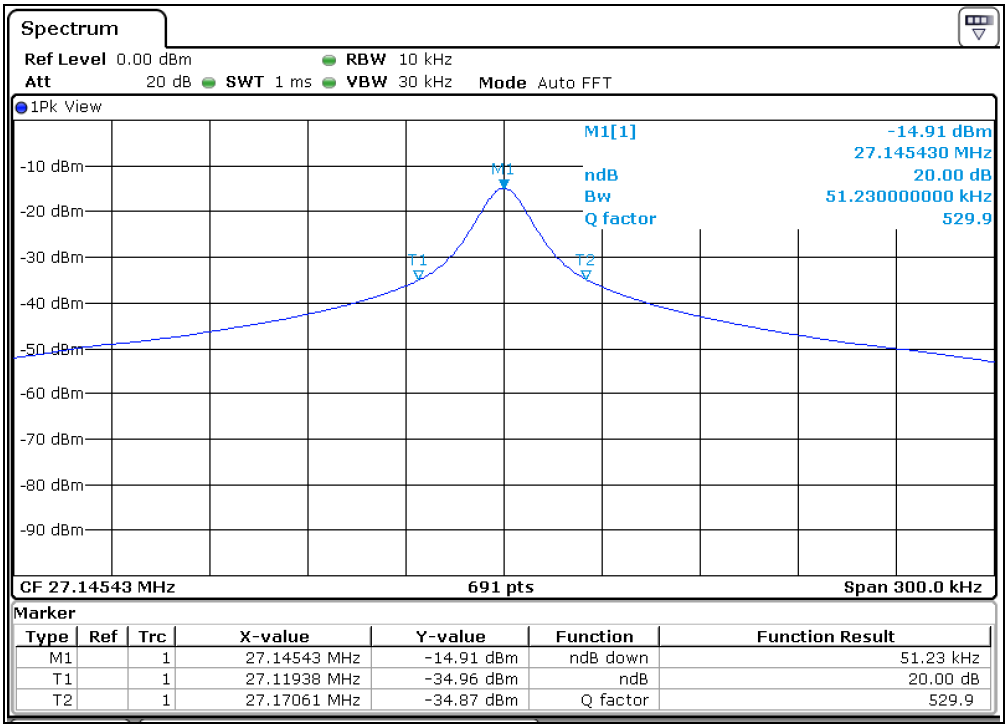
4.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6

4.2.7 TEST RESULTS

Lower & Upper Test Frequency Point (MHz)	Test Frequency (MHz)	P/F
Lower	27.11938	PASS
Upper	27.17061	PASS

Test Data:



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.

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