TEST REPORT NUMBER: (8522)089-0223

TEST REPORT

Applicant:	SHANTOU CITY CHENGHAI DISTRICT HUA LE TOYS FACTORY	Fax:	/
		E-mail:	15989739866@163.com
Address:	SOUTH FUHUA ROAD, HUAFU INDUSTRIAL ZONE, GUANGYI STREET, CHENGHAI, SHANTOU		
Test Date:	04 Apr, 2022 ---- 30 Apr, 2022		

Manufacturer or Supplier:	SHANTOU CITY CHENGHAI DISTRICT HUA LE TOYS FACTORY
Address:	SOUTH FUHUA ROAD, HUAFU INDUSTRIAL ZONE, GUANGYI STREET, CHENGHAI, SHANTOU
Sample Description:	TOYS SERIES
Model Number:	MK724A
Additional Model:	MK118B, MK158B, MK288B, MK298B, MK308A, MK328A, MK358A, MK368A, MK378A, MK618A, MK628A, MK638A, MK648A, MK658A, MK668A, MK678A, MK679A, MK698A, MK698B, MK722A, MK723A, MK723B, MK725A, MK725B, MK726A, MK727A, MK728A, MK729A, MK730A, MK732A, MK734A, MK735A, MK736A, MK737A, MK738A, MK739A, MK740A, MK741A, MK742A, MK743A, MK744A, MK745A, MK746A, MK747A, MK748A, MK749A, MK750A, MK751A, MK752A, MK753A, MK754A, MK755A, MK756A, MK757A, MK758A, MK759A, MK760A, MK761A, MK762A, MK763A, MK764A, MK765A, MK766A, MK767A, MK768A, MK769A, MK770A, MK771A, MK772A, MK773A, MK774A, MK775A, MK776A, MK777A, MK778A, MK779A, MK780A, MK781A, MK782A
Rated Voltage:	DC 3.0V(AA*2)
FCC ID	2A6OU-85630333
The submitted sample of the above equipment has been tested according to following standard(s)	
FCC Part 15, Subpart C, Section 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHZ, and 24.0-24.25 GHz ANSI C63,10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	
CONCLUSION: The submitted sample was found to COMPLY with the test requirement	

Assistant Manager

Name: Nick Lung
Date: MAY 07, 2022

TEST REPORT NUMBER: (8522)089-0223

1 Test Standards

The tests were performed according to following standards:
FCC Part 15, Subpart C, Section 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHZ, and 24.0-24.25 GHz
ANSI C63,10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

2 Summary

2.1 General Remarks

Date of receipt of test sample	04 Apr, 2022
Testing commenced on	04 Apr, 2022 ---- 30 Apr, 2022
Testing concluded on	30 Apr, 2022

2.2 Final Assessment

Test Content:	Assessment
The RF requirements pertaining to the technical standards and tested operation modes are	Fulfilled
The equipment under test	Fulfilled the RF requirements

3 Equipment Under Test

3.1 Short description of the Equipment Under Test (EUT)

EUT Name	TOYS SERIES
Model No.	MK724A
Additional Model	MK118B, MK158B, MK288B, MK298B, MK308A, MK328A, MK358A, MK368A, MK378A, MK618A, MK628A, MK638A, MK648A, MK658A, MK668A, MK678A, MK679A, MK698A, MK698B, MK722A, MK723A, MK723B, MK725A, MK725B, MK726A, MK727A, MK728A, MK729A, MK730A, MK732A, MK734A, MK735A, MK736A, MK737A, MK738A, MK739A, MK740A, MK741A, MK742A, MK743A, MK744A, MK745A, MK746A, MK747A, MK748A, MK749A, MK750A, MK751A, MK752A, MK753A, MK754A, MK755A, MK756A, MK757A, MK758A, MK759A, MK760A, MK761A, MK762A, MK763A, MK764A, MK765A, MK766A, MK767A, MK768A, MK769A, MK770A, MK771A, MK772A, MK773A, MK774A, MK775A, MK776A, MK777A, MK778A, MK779A, MK780A, MK781A, MK782A
FCC ID	2A6OU-85630333
Number of Tested Samples	1
Power Supply Voltage	DC 3.0V(AA*2)
Operating Mode	TX Mode

Operation Frequency	2410-2473MHz
Number of Channel	64
Modulation	GFSK
Antenna Type	Wire Antenna
Antenna Gain	0dBi
NOTE: 1. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual. The laboratory is not responsible for the accuracy of the information provided by manufacturer.	

3.2 EUT Configuration

(The CDF filled by the applicant can be viewed at the test laboratory.)
The following peripheral devices and interface cables were connected during the measurement:
Not Applicable

EUT

3.3 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	√	√	N/A	√	DC 3.0V(AA*2)

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

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

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

Channel List

Channel	Frequency (MHz)
The lowest channel	2410
The middle channel	2442
The highest channel	2473

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

4 Test Environment

4.1 Address of the test Laboratory

Test Laboratory:	AJT Testing Services Limited
Test Site:	1-2/F., NO.1, WENHUA SOUTH ROAD, CHENGHUA INDUSTRIAL ZONE, CHENGHAI DISTRICT, SHANTOU, GUANGDONG, CHINA
Tel:	86-754-85860999
Fax:	86-754-86984098

4.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:	
CNAS Accreditation NO.:	L4735
A2LA Accreditation NO.:	5443.01
Designation Number:	CN1263
Test Firm Registration Number:	127385
Industry Canada Site Registration Number:	25345
FCC Registration NO.:	0028094555

4.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:	
Temperature	15~35℃
Humidity	30~75%

4.4 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. Furthermore, component and process variability of devices are similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement Uncertainty (Standard: ETSI TR 100 028)	
Conducted Emission (CE)	±2.14dB
Radiated Emission below 1GHz	±4.44dB
Radiated Emission above 1GHz	±5.26dB

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

4.5 Test Types and Results

Standard: FCC PART 15, SUBPART C (SECTION 15.249)		
Standard Section	Test Type	Result
FCC Part 15 §15.209 & §15.249(a)	Radiated Emission (RE)	PASS
FCC Part 15 §15.215(c)	20dB Bandwidth	PASS
FCC Part 15 §15.207(a)	Conducted Emission (CE)	N/A
FCC Part 15 §15.203	Antenna Requirement	PASS
FCC Part 15 §15.205	Restricted Band Around Fundamental Frequency	PASS

5 Test Conditions and Results

5.1 Radiated Emission (RE)

For test instruments and accessories used see section 6

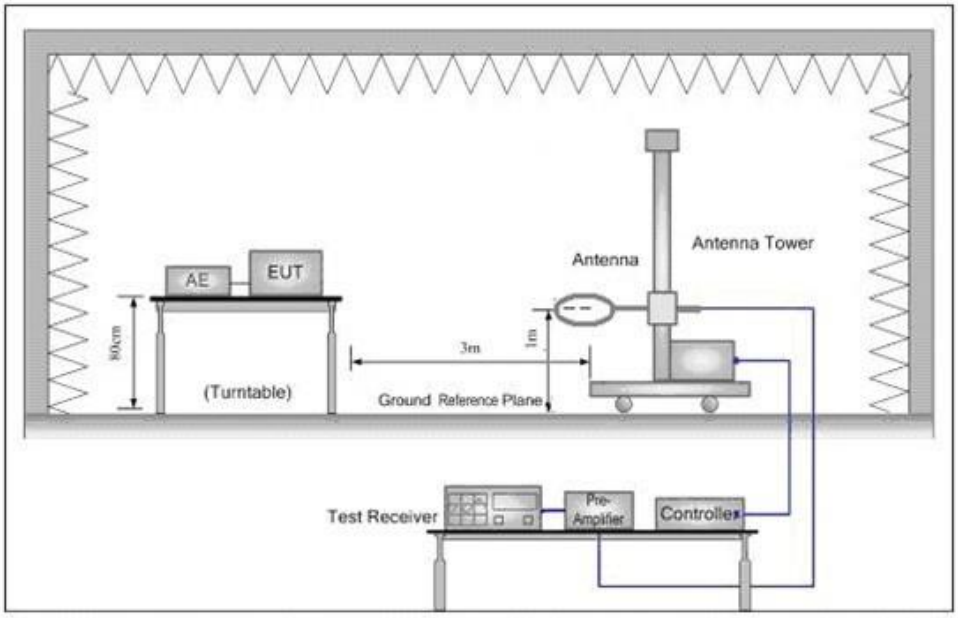
5.1.1 Test Procedures

(1) 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.
(2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
(3) 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.
(4) 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.

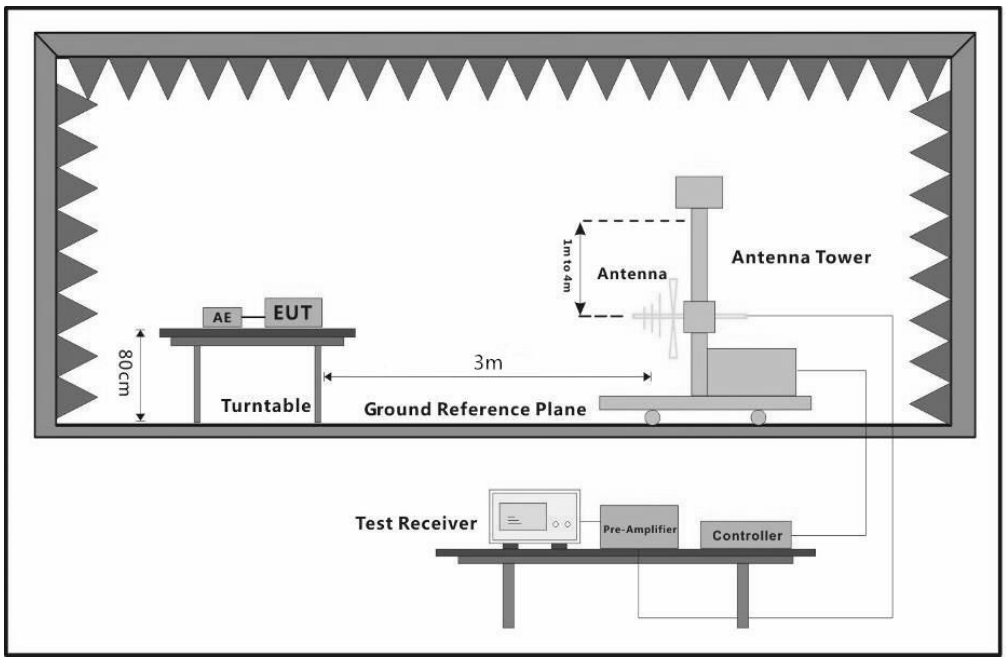
(5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
(6) For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
(7) 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. All modes of operation were investigated and the worst-case emissions are reported
4. 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.

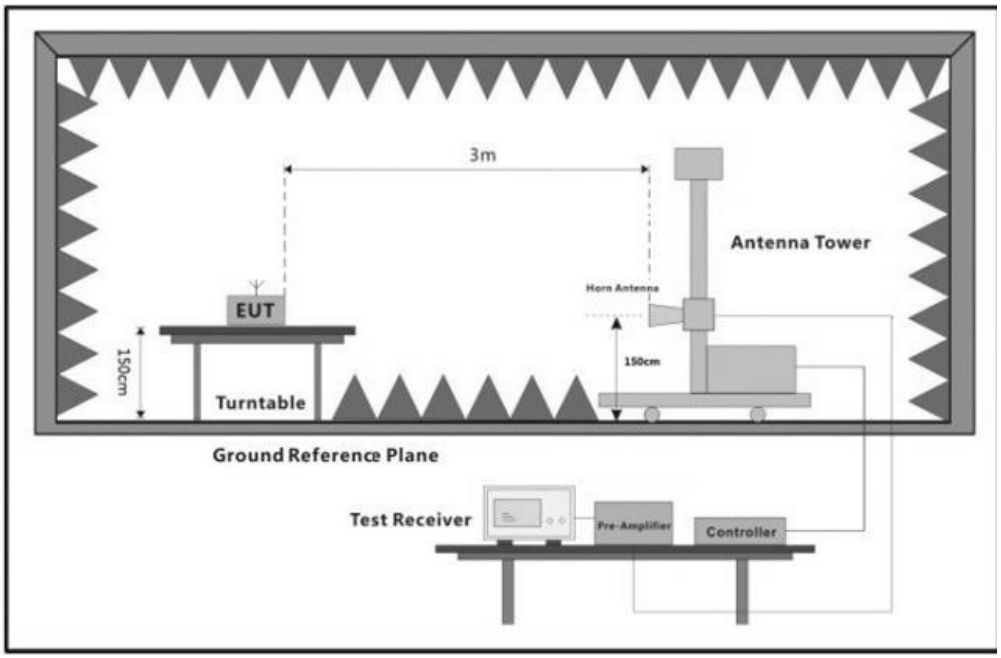
5.1.2 Test Setup



Below 30MHz



30MHz-1000MHz



Above 1GHz

5.1.3 Test Limits

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	Filed 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 (dBμV/m) = 20 log Emission level (μV/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. Emission from 9kHz to 30MHz is more than 20dB below the limit.

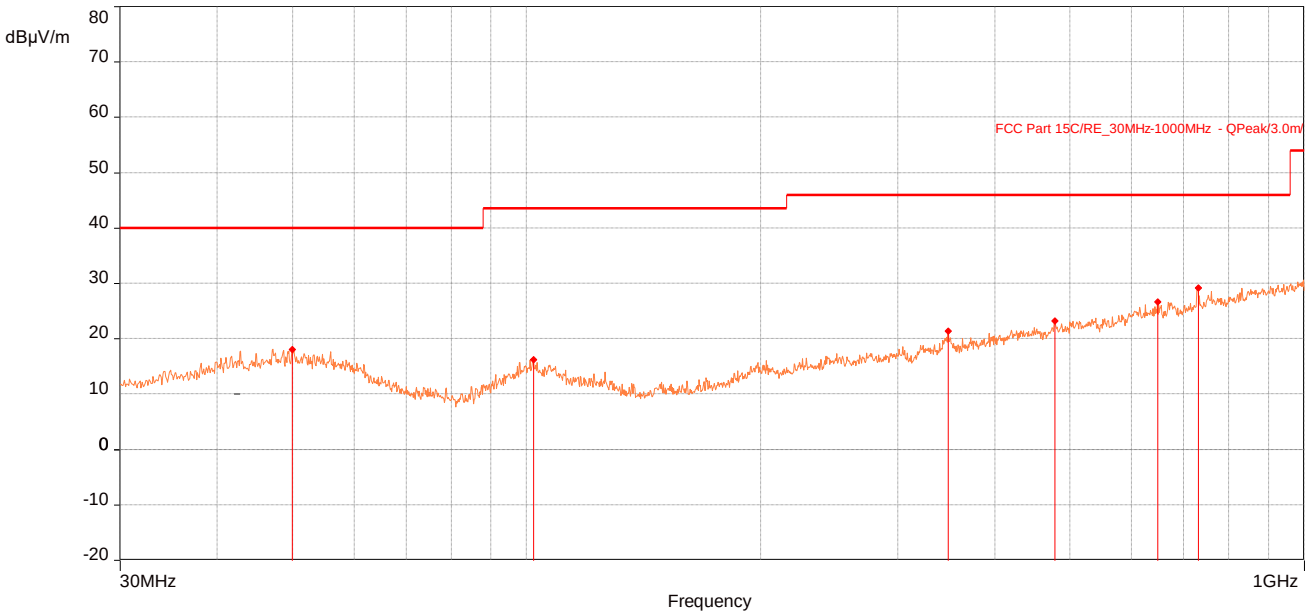
5.1.4 Test Results

The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

5.1.4.1 Radiated Emissions Test (Below 1GHz)

Test Point	Operation Mode	Result
Horizontal	TX mode	PASS

EUT Name	TOYS SERIES
Operating Condition	DC: 3.0V(AA*2)
Test Condition	Ambient Temperature: 21°C Humidity: 61%RH



Frequency (MHz)	Peak (dBµV/m)	QP (dBµV/m)	QP Lim. (dBµV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization
49.982	18.14	/	40.00	-21.86	128.00	1.99	Horizontal
101.974	16.20	/	43.50	-27.30	39.00	1.99	Horizontal
348.548	21.42	/	46.00	-24.58	95.00	1.00	Horizontal
477.267	23.28	/	46.00	-22.72	336.00	1.00	Horizontal
647.987	26.65	/	46.00	-19.35	135.00	1.00	Horizontal
730.049	29.19	/	46.00	-16.81	344.00	1.99	Horizontal

1.QP is abbreviation of Quasi-Peak
2.Margin = Emission Level - Limit Value
3.The emission levels of other frequencies were more than 20dB margin against the limit

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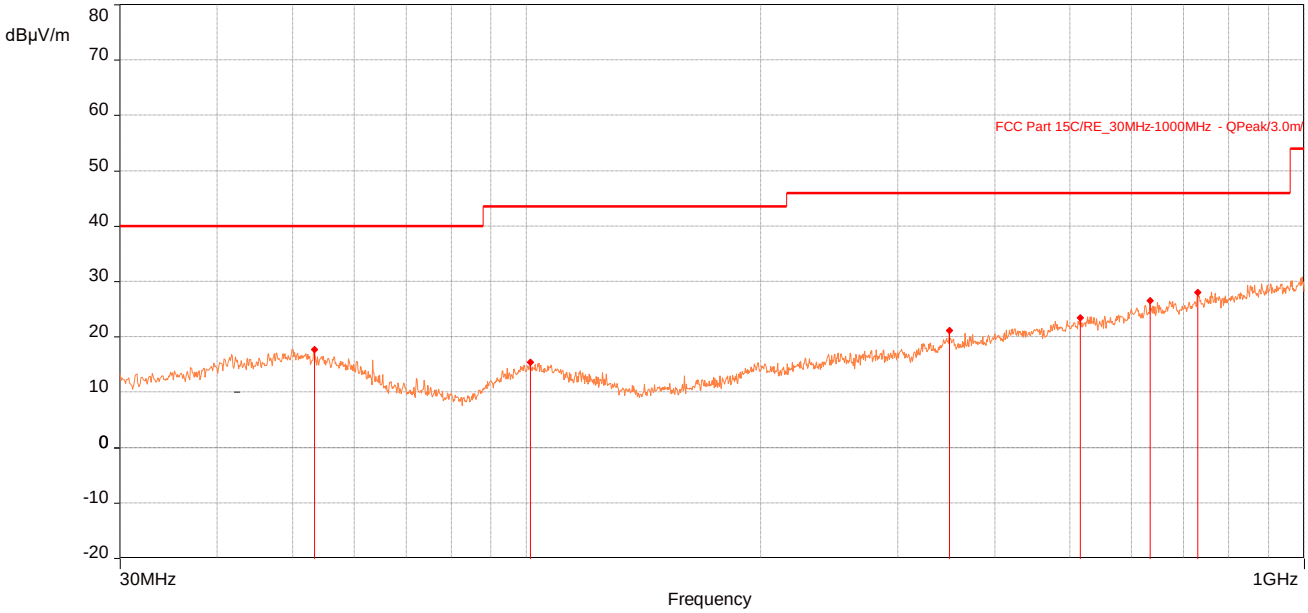
Test Point	Operation Mode	Result
Vertical	TX mode	PASS

EUT Name	TOYS SERIES
Operating Condition	DC: 3.0V(AA*2)
Test Condition	Ambient Temperature: 21°C Humidity: 61%RH



Frequency (MHz)	Peak (dBµV/m)	QP (dBµV/m)	QP Lim. (dBµV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization
53.377	17.75	/	40.00	-22.25	164.00	1.01	Vertical
101.004	15.39	/	43.50	-28.11	72.00	2.00	Vertical
349.615	21.22	/	46.00	-24.78	83.00	1.01	Vertical
514.612	23.50	/	46.00	-22.50	187.00	1.01	Vertical
632.855	26.59	/	46.00	-19.41	146.00	2.00	Vertical
729.273	28.09	/	46.00	-17.91	140.00	2.00	Vertical

1.QP is abbreviation of Quasi-Peak
2.Margin = Emission Level - Limit Value
3.The emission levels of other frequencies were more than 20dB margin against the limit

5.1.4.2 Radiated Emissions Test (Above 1GHz)

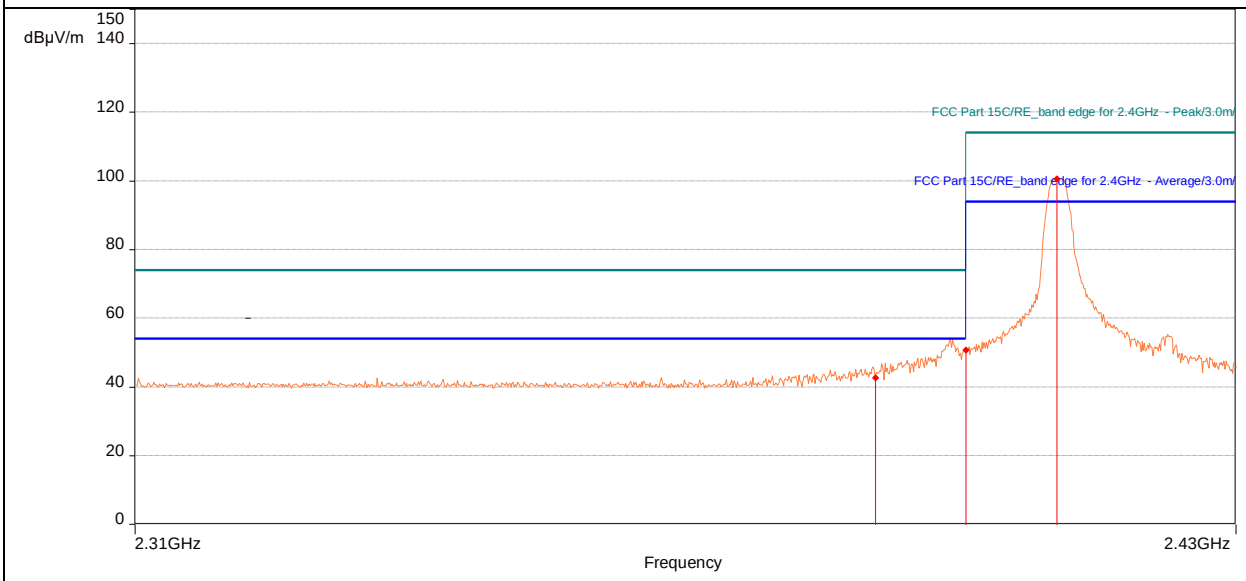
EUT Name	TOYS SERIES		
Channel	The Lowest Channel (2410MHz)	Detector Function	Peak (PK) Average (AV)
Frequency Range	Above 1GHz	Result	PASS

Antenna Polarity & Test Distance: Horizontal At 3m								
Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
2390.04	20.83	54.00	-33.17	1.49	238.00	Horizontal	-21.84	Average
2400	28.85	54.00	-25.15	1.49	163.00	Horizontal	-21.84	Average
*2410.08	78.75	94.00	-15.25	1.49	168.00	Horizontal	-21.84	Average
4819.9	37.01	54.00	-16.99	1.98	98.00	Horizontal	-21.84	Average
7230.5	38.05	54.00	-15.95	1.98	179.00	Horizontal	-21.84	Average
2390.04	42.67	74.00	-31.33	1.49	238.00	Horizontal	-2.58	Peak
2400	50.69	74.00	-23.31	1.49	163.00	Horizontal	-2.53	Peak
*2410.08	100.59	114.00	-13.41	1.49	168.00	Horizontal	-2.41	Peak
4819.9	58.85	74.00	-15.15	1.98	98.00	Horizontal	2.33	Peak
7230.5	59.89	74.00	-14.11	1.98	179.00	Horizontal	8.09	Peak
Antenna Polarity & Test Distance: Vertical At 3m								
Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
2390.04	18.38	54.00	-35.62	1.50	277.00	Vertical	-21.84	Average
2400	22.17	54.00	-31.83	1.50	38.00	Vertical	-21.84	Average
*2410.08	71.62	94.00	-22.38	1.50	69.00	Vertical	-21.84	Average
4819.9	38.24	54.00	-15.76	1.00	57.00	Vertical	-21.84	Average
7230.5	37.76	54.00	-16.24	1.99	152.00	Vertical	-21.84	Average
2390.04	40.22	74.00	-33.78	1.50	277.00	Vertical	-2.58	Peak
2400	44.01	74.00	-29.99	1.50	38.00	Vertical	-2.53	Peak
*2410.08	93.46	114.00	-20.54	1.50	69.00	Vertical	-2.41	Peak
4819.9	60.08	74.00	-13.92	1.00	57.00	Vertical	2.33	Peak
7230.5	59.60	74.00	-14.40	1.99	152.00	Vertical	8.09	Peak

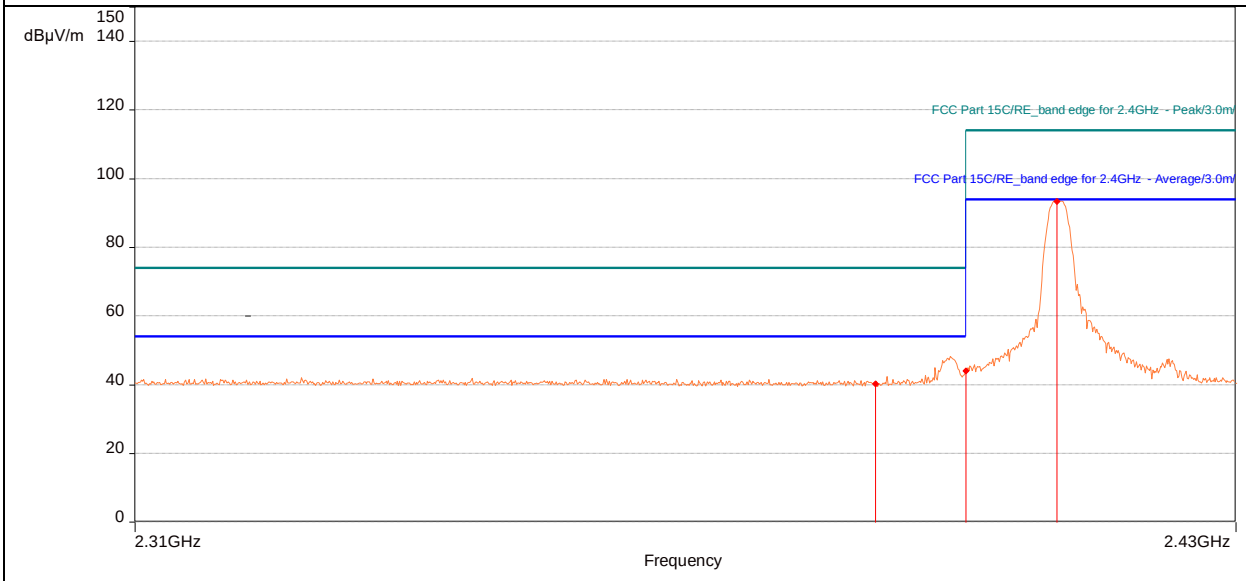
Remarks:
1. Emission level (dBμV/m) = Raw Value (dBμV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The emission levels of other frequencies were more than 20dB margin against the limit.
4. Margin = Emission level - Limit value
5. " * ": Fundamental frequency.
6. 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 (8.1%) = -21.84dB, please see 5.1.4.3.

Band Edge Plot

2410MHz Horizontal



2410MHz Vertical



EUT Name	TOYS SERIES		
Channel	The Middle Channel (2442mhz)	Detector Function	Peak (PK) Average (AV)
Frequency Range	Above 1GHz	Result	PASS

Antenna Polarity & Test Distance: Horizontal At 3m								
Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2442.0005	79.00	94.00	-15.00	1.50	184.00	Horizontal	-21.84	Average
4884.5	35.96	54.00	-18.04	1.99	234.00	Horizontal	-21.84	Average
7327.4	41.19	54.00	-12.81	1.99	163.00	Horizontal	-21.84	Average
*2442.0005	100.84	114.00	-13.16	1.50	184.00	Horizontal	-2.55	Peak
4884.5	57.80	74.00	-16.20	1.99	234.00	Horizontal	1.66	Peak
7327.4	63.03	74.00	-10.97	1.99	163.00	Horizontal	7.96	Peak
Antenna Polarity & Test Distance: Vertical At 3m								
Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2442.0005	71.10	94.00	-22.90	1.50	31.00	Vertical	-21.84	Average
4884.5	35.92	54.00	-18.08	1.01	110.00	Vertical	-21.84	Average
7327.4	40.00	54.00	-14.00	2.00	150.00	Vertical	-21.84	Average
*2442.0005	92.94	114.00	-21.06	1.50	31.00	Vertical	-2.55	Peak
4884.5	57.76	74.00	-16.24	1.01	110.00	Vertical	1.66	Peak
7327.4	61.84	74.00	-12.16	2.00	150.00	Vertical	7.96	Peak

Remarks:
1. Emission level (dBμV/m) = Raw Value (dBμV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The emission levels of other frequencies were more than 20dB margin against the limit.
4. Margin = Emission level - Limit value
5. " * ": Fundamental frequency.
6. 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 (8.1%) = -21.84dB, please see 5.1.4.3.

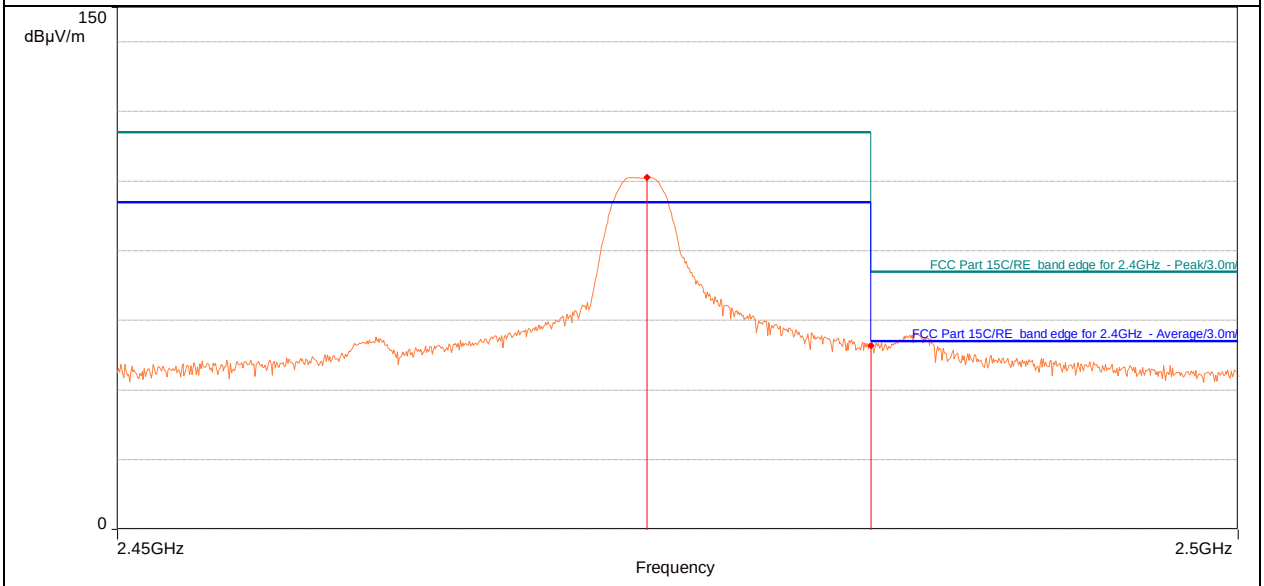
EUT Name	TOYS SERIES		
Channel	The Highest Channel (2473MHz)	Detector Function	Peak (PK) Average (AV)
Frequency Range	Above 1GHz	Result	PASS

Antenna Polarity & Test Distance: Horizontal At 3m								
Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2473.5	79.26	94.00	-14.74	1.48	195.00	Horizontal	-21.84	Average
2483.5	31.01	54.00	-22.99	1.48	212.00	Horizontal	-21.84	Average
4945.7	37.60	54.00	-16.40	1.99	102.00	Horizontal	-21.84	Average
7419.2	40.01	54.00	-13.99	1.99	154.00	Horizontal	-21.84	Average
*2473.5	101.10	114.00	-12.90	1.48	195.00	Horizontal	-2.46	Peak
2483.5	52.85	74.00	-21.15	1.48	212.00	Horizontal	-2.51	Peak
4945.7	59.44	74.00	-14.56	1.99	102.00	Horizontal	2.04	Peak
7419.2	61.85	74.00	-12.15	1.99	154.00	Horizontal	8.28	Peak
Antenna Polarity & Test Distance: Vertical At 3m								
Frequency (MHz)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Angle (°)	Polarization	Correction (dB)	Detector
*2473.5	72.03	94.00	-21.97	1.50	42.00	Vertical	-21.84	Average
2483.5	22.47	54.00	-31.53	1.50	89.00	Vertical	-21.84	Average
4945.7	35.19	54.00	-18.81	1.01	117.00	Vertical	-21.84	Average
7419.2	39.95	54.00	-14.05	2.00	151.00	Vertical	-21.84	Average
*2473.5	93.87	114.00	-20.13	1.50	42.00	Vertical	-2.46	Peak
2483.5	44.31	74.00	-29.69	1.50	89.00	Vertical	-2.51	Peak
4945.7	57.03	74.00	-16.97	1.01	117.00	Vertical	2.04	Peak
7419.2	61.79	74.00	-12.21	2.00	151.00	Vertical	8.28	Peak

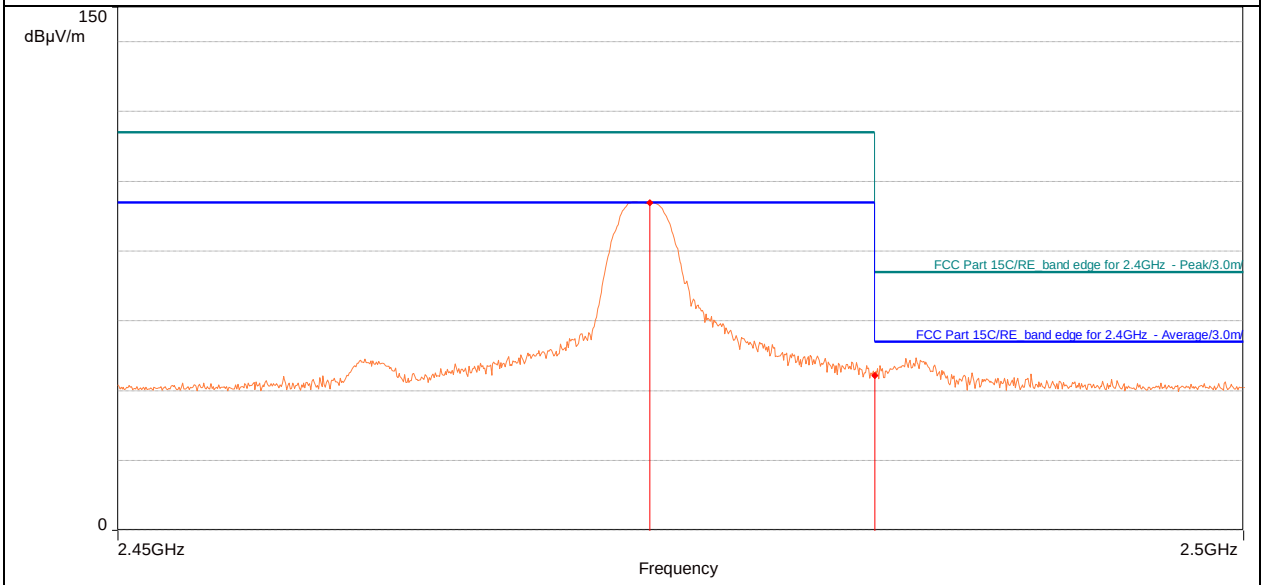
Remarks:
1. Emission level (dBμV/m) = Raw Value (dBμV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The emission levels of other frequencies were more than 20dB margin against the limit.
4. Margin = Emission level - Limit value
5. " * ": Fundamental frequency.
6. 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 (8.1%) = -21.84dB, please see 5.1.4.3.

Band Edge Plot

2473MHz Horizontal



2473MHz Vertical



5.1.4.3 Calculation of Average Factor

Effective period of the cycle = 0.958ms

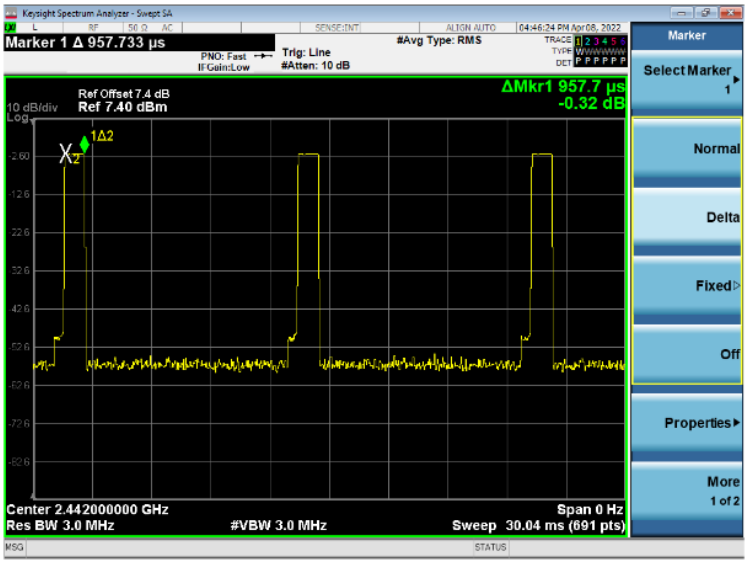
The duration of one cycle = 11.840ms

Duty Cycle = 0.958ms / 11.84ms = 8.1%

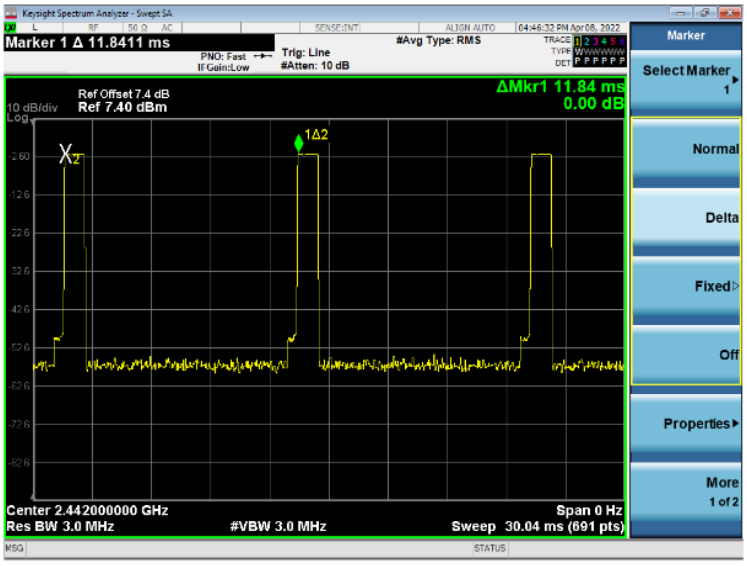
Averaging factor in dB = 20 log (duty cycle) = 20 log (8.1%) = -21.84dB

100ms Duty Cycle

Ton of one cycle



The duration of one cycle



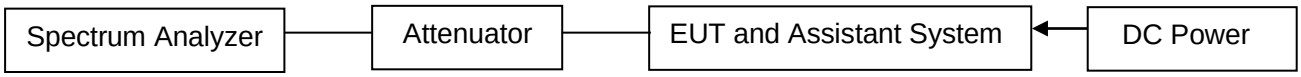
5.2 20dB Bandwidth

For test instruments and accessories used see section 6

5.2.1 Test Procedures

(1) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
(2) 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.
(3) Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
(4) Repeat above procedures until all frequencies measured were complete.

5.2.2 Test Setup



5.2.3 Test Limits

According to FCC 15.215(c), must be designed to ensure that the 20dB 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.

5.2.4 Test Results

Channel	Frequency (MHz)	F_L (MHz)	F_H (MHz)	20dB Bandwidth (MHz)
The lowest channel	2410	2409.656	2410.776	1.120
The middle channel	2442	2441.624	2442.848	1.224
The highest channel	2473	2472.660	2473.788	1.228

2410MHz

2442MHz


Keysight Spectrum Analyzer - Swept SA
Marker 2 2.473220000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
05:00:09 PM Apr 08, 2022
Ref Offset 7.48 dB
10 dB/div
Ref 5.00 dBm
Log
Mkr2 2.473 220 GHz
-1.00 dBm
Center 2.473000 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 4.000 MHz
#Sweep 8.000 ms (1001 pts)
1 N 1 f 2.472 660 GHz -21.29 dBm
2 N 1 f 2.473 220 GHz -1.00 dBm
3 N 1 f 2.473 788 GHz -21.12 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

2473MHz

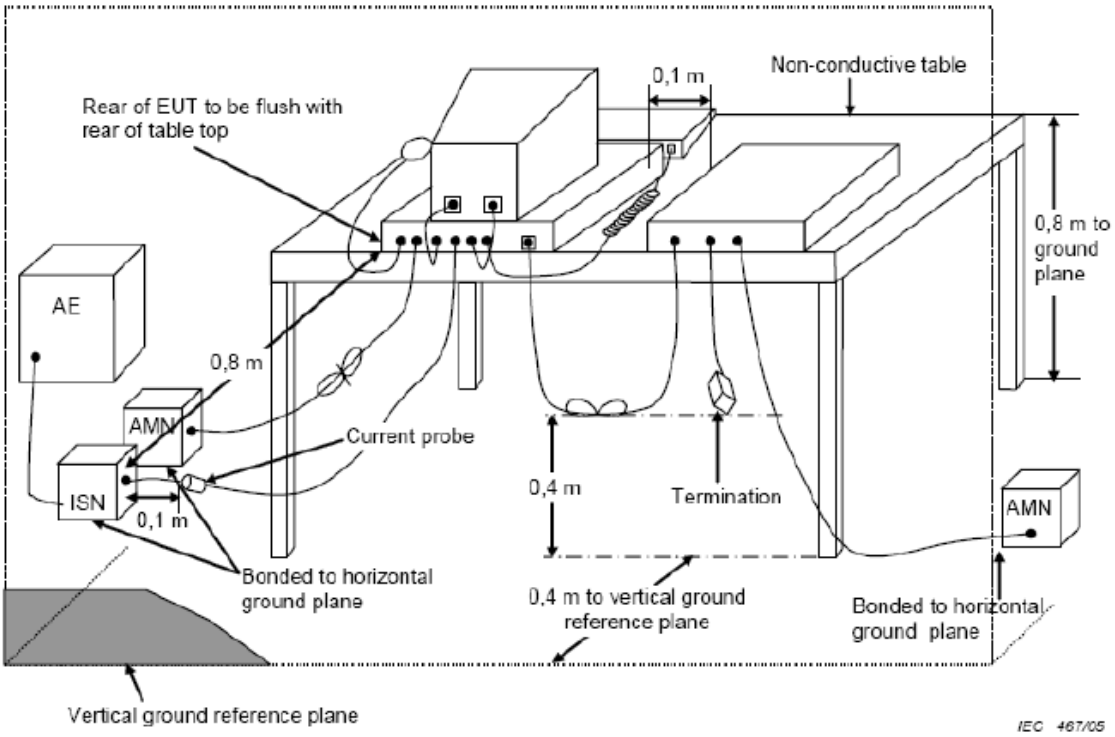
5.3 Conducted Emission (CE)

For test instruments and accessories used see section 6

5.3.1 Test Procedures

The PC Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test software, let EUT working in test mode, then test it. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to RSS-Gen issue 5 on Conducted Emission Test.

5.3.2 Test Setup



5.3.3 Test Limits

Standard: FCC Part 15 §15.207(a)		
Frequency of emission (MHz)	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

5.3.4 Test Results

Not Applicable
Note: The device is a DC power supply and does not apply to conducted emissions.

5.4 Antenna Requirements

5.4.1 Test Standard:

FCC Part 15, Subpart C 15.203

5.4.2 Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user. but the use of a standard antenna jack or electrical connector is prohibited.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropic ally radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

5.4.3 EUT Antenna:

The antenna is Wire Antenna and no consideration of replacement. The best case gain of the antenna is 0dBi.Antenna location: Refer to (8522)089-0223(B)_Internal Photos.

6 Test Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Spectrum Analyzer	Keysight	N9010A	MY51120099	2021/11/30	2022/11/30
2	JS0806-2 RF Control Unit	Tonscend	JS0806-2	188060124	2021/11/30	2022/11/30
3	Broadband Preamplifier	SCHWARZBECK	BBV 9743B	00067	2022/03/22	2023/03/22
4	Broadband Preamplifier	SCHWARZBECK	BBV 9718B	00002	2022/03/22	2023/03/22
5	EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102452	2021/07/16	2022/07/16
6	Trilog Broadband Antenna	SCHWARZBECK	VULB 9163	9163-1127	2021/07/12	2022/07/12
7	Horn Antenna	SCHWARZBECK	BBHA 9120D	01829	2021/06/22	2022/06/22
8	DC Power Supply	SIGLENT	SPD1168X	SPD1XEAD3 R 0167	2021/07/15	2022/07/16
9	Vector Signal Generator	Keysight	N5172B	MY53052255	2021/07/16	2022/07/16
10	Analog Signal Generator	Keysight	N5171B	MY53051692	2021/07/16	2022/07/16
11	Temperature Humidity Chamber	Yiheng	BPS-50CB	191005684	2021/11/30	2022/11/30
12	Temperature and Humidity Indicator	JianDaRenKe	Cos-03	612058	2021/06/29	2022/06/29
13	BAT-EMC Testing (Test Software)	NEXIO	BAT-EMC	Version: 3.16.0.74	N/A	N/A
14	JS1120-3 Test System (Test Software)	Tonscend	JS1120-3	Version: 2.5.77.0418	N/A	N/A
15	Double Ridge Guide Horn Antennas	A.H.Systems	SAS-574	588	2021/06/28	2022/06/28
16	Active Loop Antenna	BeiJing DaZe technology co. LTD	ZN30900C	15015	2022/03/22	2023/03/22

7 Test Photographs

Referring to – “(8522)089-0223(C)”.

8 Photos of the EUT

Referring to – “(8522)089-0223(A)” and “(8522)089-0223(B)”.

END OF TEST REPORT