ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT

OF

WALKIE TALKIE

Model No.: WT1-02059.WT1-02136.WT1-02369.WT1-01265. WT1-02033. WT1-02371. WT6-01050. WT6-01096.WT2-01032.WT2-01059.WT2-01068A.WT2-01704.WT2-01706. WT2-01706A.WT2-01082.WT2-01096.WT2-01134.WT2-01136. WT2-01034.WT2-01366.WT2-01371.WT2-01393.WT2-01394. WT2-01801. WT3-01009.WT3-01057.WT3-01059.WT3-01062.WT3-01136. WT3-01369.WT3-20136.WT3-01032.WT3-01056.WT3-01082.WT3-01085. WT3-01096A.WT3-01096B.WT3-01265. WT3-01371.WT3-01392.WT3-01702. BK1-05082. BK1-05081. BK1-05057. BK1-05032. BK1-05080.BK1-05085. BK1-05096.

Trademark: N/A

FCC ID: 2ACFM85802878

Report No.: ES190523013E

Issue Date: June 04, 2019

Prepared for

Shantou City Daye Plastic Toys Co., Ltd
Baisha Industry Areas,Chenghai District,Shantou City,Guangdong,China

Prepared by

EMTEK(SHENZHEN) CO., LTD.
Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China.

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VERIFICATION OF COMPLIANCE

Applicant:	Shantou City Daye Plastic Toys Co.,Ltd Baisha Industry Areas,Chenghai District,Shantou City,Guangdong,China
Manufacturer:	Shantou City Daye Plastic Toys Co.,Ltd Baisha Industry Areas,Chenghai District,Shantou City,Guangdong,China
Product Description:	WALKIE TALKIE
Trade Mark:	N/A
Model Number:	WT1-02059.WT1-02136.WT1-02369.WT1-01265. WT1-02033.WT1-02371. WT6-01050.WT6-01096.WT2-01032.WT2-01059.WT2-01068A.WT2-01704. WT2-01706.WT2-01706A.WT2-01082.WT2-01096.WT2-01134.WT2-01136. WT2-01034.WT2-01366.WT2-01371.WT2-01393.WT2-01394.WT2-01801. WT3-01009.WT3-01057.WT3-01059.WT3-01062.WT3-01136.WT3-01369. WT3-20136.WT3-01032.WT3-01056.WT3-01082.WT3-01085.WT3-01096A. WT3-01096B.WT3-01265. WT3-01371.WT3-01392.WT3-01702.BK1-05082. BK1-05081. BK1-05057. BK1-05032. BK1-05080.BK1-05085. BK1-05096. (Note: These models are same except model number and appearance, here model: WT1-02371 was selected for full test.)

We hereby certify that:

The above equipment was tested by EMTEK(SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10-2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.235.

Date of Test : May 23, 2019 to June 04, 2019

Prepared by : Yaping Shen/Editor

Reviewer : Joe Xia/Supervisor

Approved & Authorized Signer : Lisa Wang/Manager

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	ES190523013E

Table of Contents

1. GENERAL INFORMATION

1.1 Product Description

Characteristics	Description
Product Name	WALKIE TALKIE
Model number	WT1-02371
Input rating	DC 2*1.5V Battery （New batteries were used during all testing）
Operating Frequency Range	49.86MHz
Number of Channels	1
Antenna Type	Spring Antenna
Modulation type	FM
Antenna Gain	0dBi

1.2 Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2016.10.24
The certificate is valid until 2022.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen 2016.5.19
The Laboratory has been assessed according to the requirements ISO/IEC 17025.

Accredited by FCC, August 03, 2017
Designation Number: CN1204
Test Firm Registration Number: 882943

Accredited by Industry Canada, November 24, 2015
The Certificate Registration Number is 4480A.

Accredited by A2LA, July 31, 2017
The Certificate Number is 4321.01.

Name of Firm : EMTEK(SHENZHEN) CO., LTD.

Site Location : Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China.

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter under continuously transmitting at maximum power mode. The Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of EUT was rotated according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

Table 2-1 Equipment Used in Tested System

Item	Equipment	Trade Mark	Model No.	FCC ID	Note
1.	WALKIE TALKIE	N/A	WT1-02371	2ACFM85802878	***EUT***

Note:

(1) Unless otherwise denoted as EUT in『Remark』column , device(s) used in tested system is a support equipment.

3. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.209& § 15.235(a)	Radiated Emission	Compliant
§15.235(b)	Occupied Bandwidth	Compliant

4. Description of test modes

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

5. TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	±1x10^-5
Maximum Peak Output Power Test	±1.0dB
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Power Density	±2.0dB
Occupied Bandwidth Test	±1.0dB
Band Edge Test	±3dB
All emission, radiated	±3dB
Antenna Port Emission	±3dB
Temperature	±0.5℃
Humidity	±3%

Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%

6. Radiated Emission Test

6.1 Measurement Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a Styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
   1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
   2) Change the antenna polarization and repeat 1) with vertical polarization.
   3) Make a hardcopy of the spectrum.
   4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
   5) Change the analyser mode to Clear/ Write and found the cone of emission.
   6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
   7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
   8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

Use the following spectrum analyzer settings:

When spectrum scanned from 30MHz to 1GHz setting resolution bandwidth 120KHz and video bandwidth 300KHz:

EMI Test Receiver	Setting
Attenuation	Auto
RB	120KHz
VB	300KHz
Detector	QP
Trace	Max hold

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 3MHz:

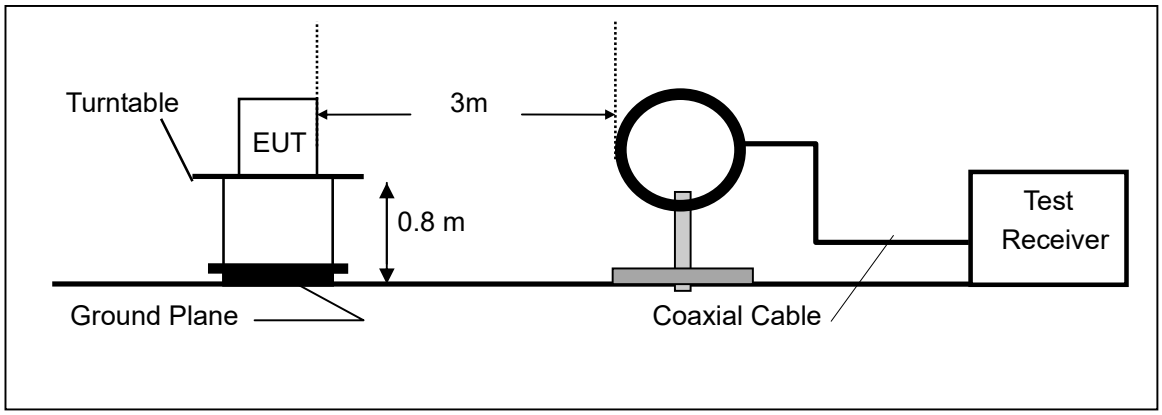
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max hold

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 10Hz:

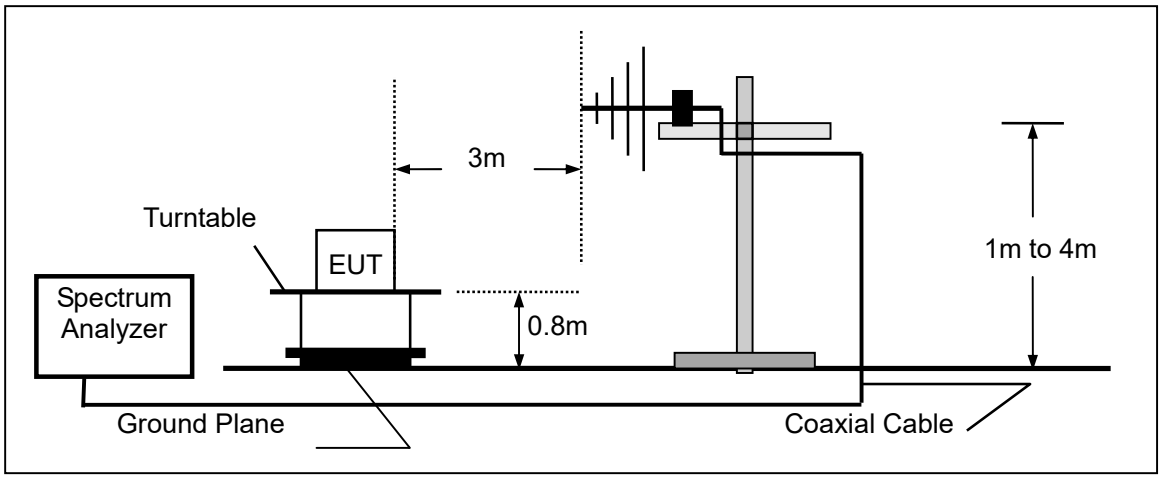
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	10Hz
Detector	Peak
Trace	Max hold

6.2 Test SET-UP (Block Diagram of Configuration)

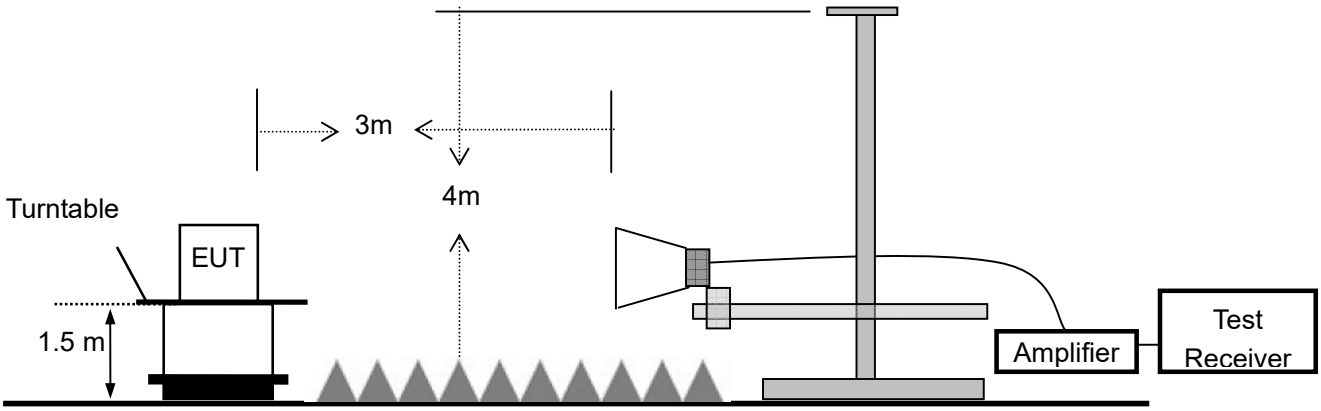
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



6.3 Measurement Equipment Used:

Item	Equipment	Manufacturer	Model No.	Serial No.	Characteristics	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	1166.5950.03	9KHz-3GHz	05/23/2019	1 Year
2.	Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	05/23/2019	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	000141	25MHz-2GHz	05/23/2019	1 Year
4.	Power Amplifier	CDS	RSU-M352	818	1MHz-1GHz	05/23/2019	1 Year
5.	Power Amplifier	HP	8447F	OPT H64	1GHz-26.5GHz	05/23/2019	1 Year
6.	Color Monitor	SUNSPO	SP-140A	N/A	--	05/23/2019	1 Year
7.	Single Line Filter	JIANLI	XL-3	N/A	--	05/23/2019	1 Year
8.	Single Phase Power Line Filter	JIANLI	DL-2X100B	N/A	--	05/23/2019	1 Year
9.	3 Phase Power Line Filter	JIANLI	DL-4X100B	N/A	--	05/23/2019	1 Year
10.	DC Power Filter	JIANLI	DL-2X50B	N/A	--	05/23/2019	1 Year
11.	Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	05/23/2019	1 Year
12.	Cable	Rosenberger	CIL02	A0783566	9KHz-3GHz	05/23/2019	1 Year
13.	Cable	Rosenberger	RG 233/U	525178	9KHz-3GHz	05/23/2019	1 Year
14.	Signal Analyzer	Rohde & Schwarz	FSV30	103040	9KHz-40GHz	05/23/2019	1 Year
15.	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1272	1GHz-18GHz	05/23/2019	1 Year
16.	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	14GHz -26.5GHz	05/23/2019	1 Year
17.	Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	05/23/2019	1 Year
18.	Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	05/23/2019	1 Year
19.	Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	05/23/2019	1 Year
20.	Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	05/23/2019	1 Year

6.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

Frequencies (MHz)	Field Strength (micorvolts/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 §15.235(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 (PK) [uV/m]	Field Strength of Fundamental Emission (AV) [uV/m]
49.82-49.90	100,000 (100 dBuV/m)	10,000 (80 dBuV/m)

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.

6.5 Measurement Result

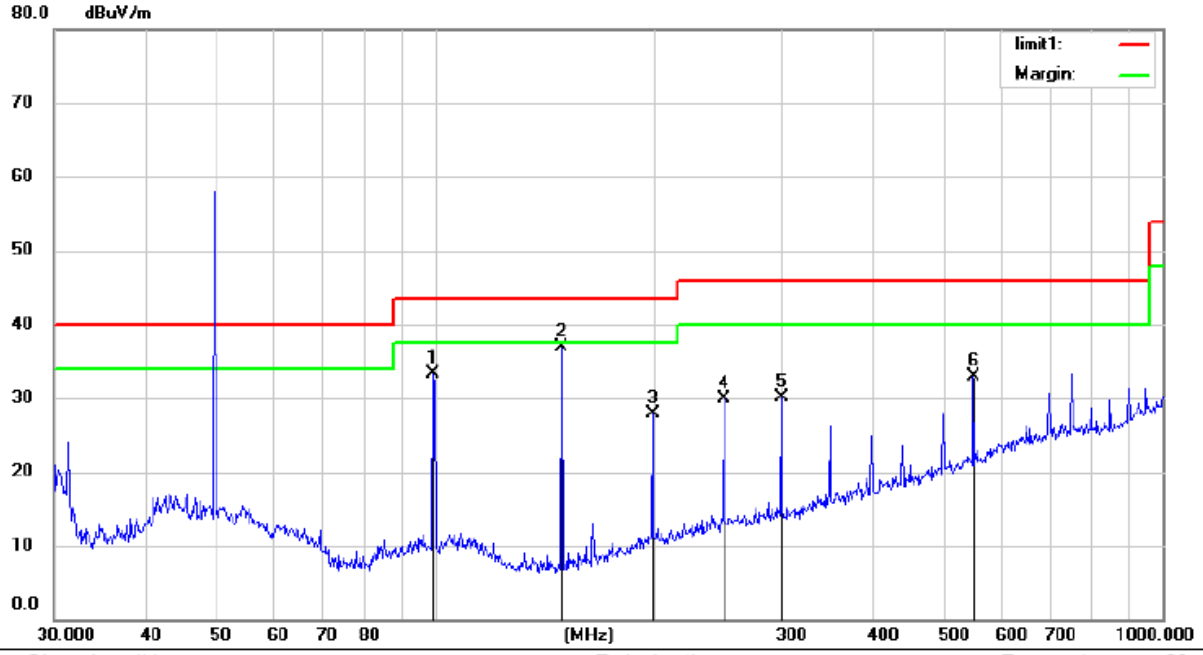
Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)
49.86(PK)	H	57.85	100	-42.15
49.86(AV)	H	48.78	80	-32.22
49.86(PK)	V	54.27	100	-45.73
49.86(AV)	V	45.69	80	-34.31

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Below 1000MHz:

Pass.

Please refer to the following data.

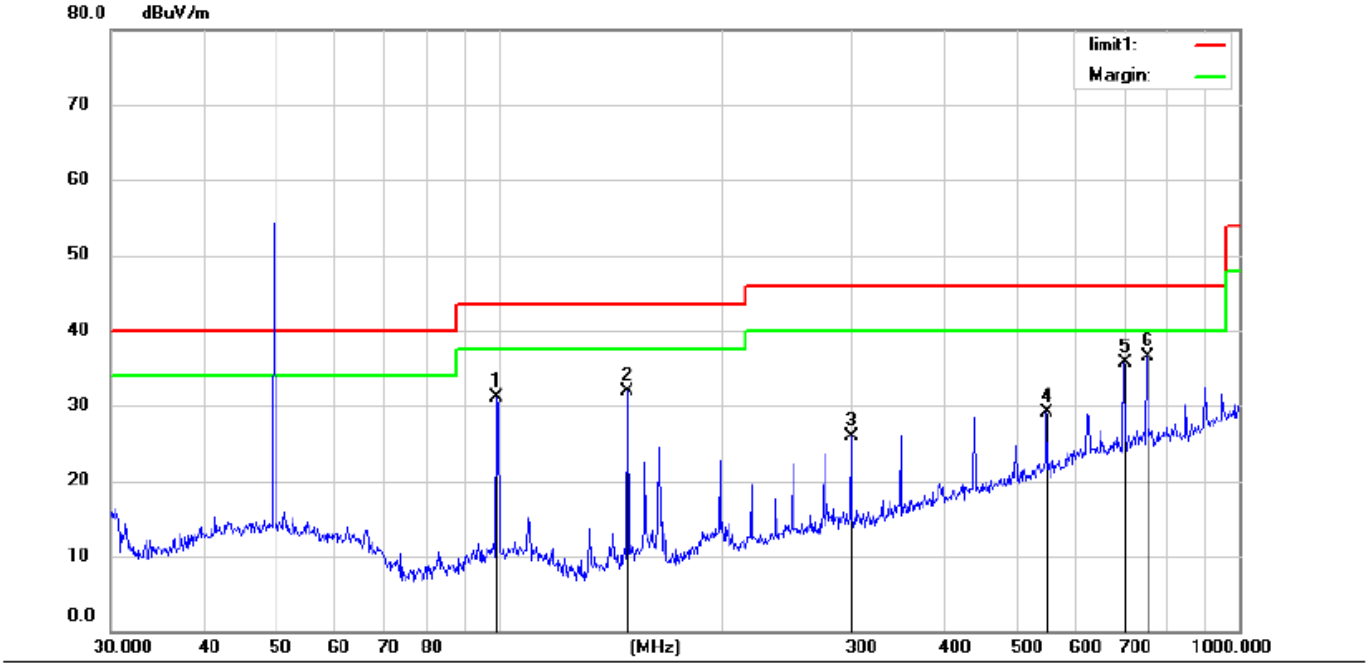


Site Chamber #1 Polarization: *Horizontal* Temperature: 26

Limit: (RE)FCC PART 15 C 3m Power: DC 4.5V Humidity: 55 %

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		99.5281	52.08	-18.68	33.40	43.50	-10.10	QP			
2	*	149.4857	58.37	-21.56	36.81	43.50	-6.69	QP			
3		199.2855	45.30	-17.32	27.98	43.50	-15.52	QP			
4		249.4250	45.36	-15.55	29.81	46.00	-16.19	QP			
5		299.3158	43.97	-13.91	30.06	46.00	-15.94	QP			
6		549.0195	40.64	-7.75	32.89	46.00	-13.11	QP			



Site Chamber #1 Polarization: *Vertical* Temperature: 26

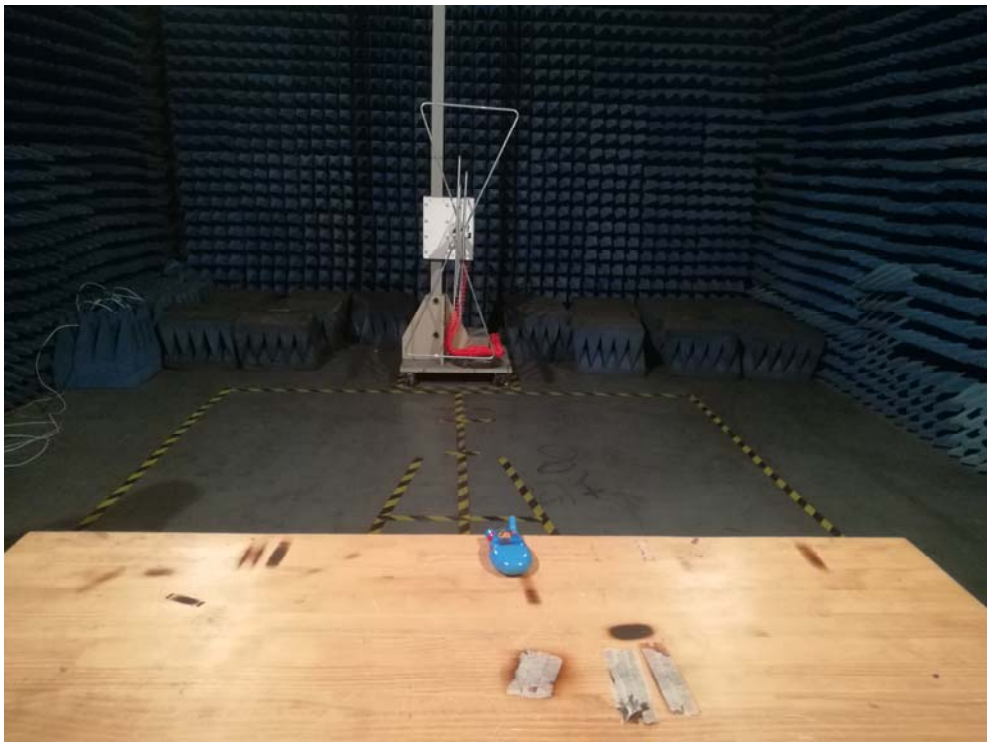
Limit: (RE)FCC PART 15 C 3m Power: DC 4.5V Humidity: 55 %

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		99.5281	49.79	-18.68	31.11	43.50	-12.39	QP			
2		149.4857	53.45	-21.56	31.89	43.50	-11.61	QP			
3		299.3158	39.79	-13.91	25.88	46.00	-20.12	QP			
4		549.0195	36.84	-7.75	29.09	46.00	-16.91	QP			
5		699.3046	39.87	-4.22	35.65	46.00	-10.35	QP			
6	*	750.1083	40.08	-3.55	36.53	46.00	-9.47	QP			

Note: No emission found except system noise floor (20dB below the limits) in 9 KHz to 30MHz, so not recorded in this report.

6.6 Radiated Measurement Photos:

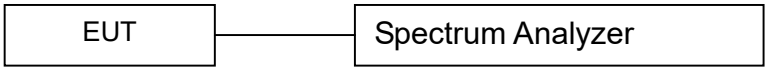


7 Occupied Bandwidth test

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW= 1KHz,VBW= 3KHz
4. Set SPA Max hold. Mark peak.

7.2 Test SET-UP (Block Diagram of Configuration)



7.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	Characteristics	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSV30	1321.3008K	10Hz-30GHz	05/23/2019	05/22/2020
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	05/23/2019	05/22/2020
Antenna Connector	ARTHUR-YANG	2244-N1TG1	N/A	10Hz-30GHz	05/23/2019	05/22/2020

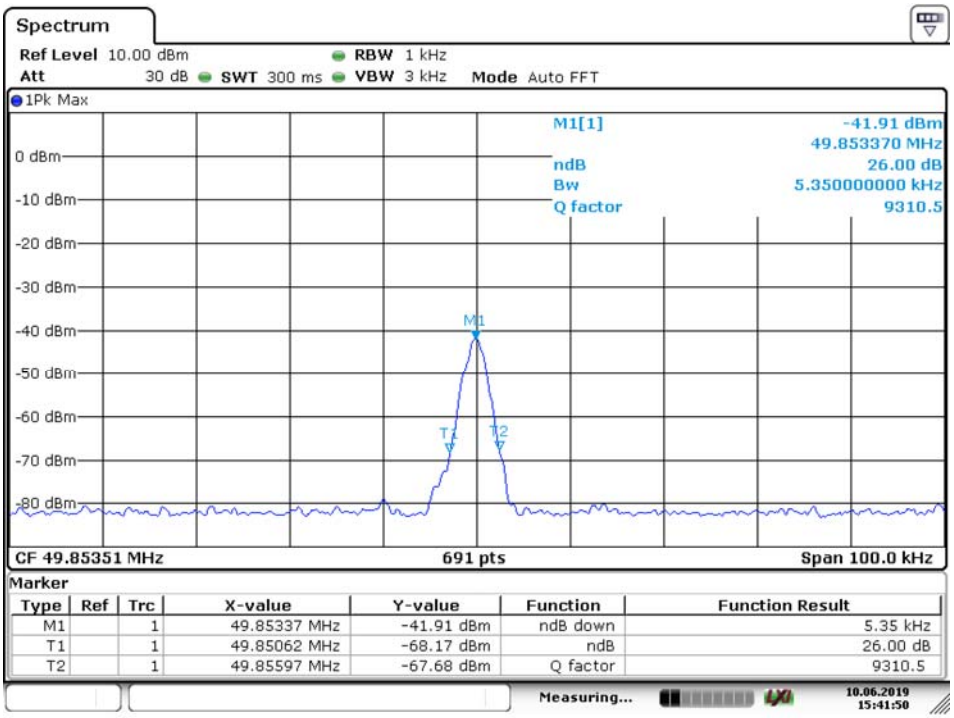
Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

7.4 Measurement Requirements:

The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in Section 15.209.

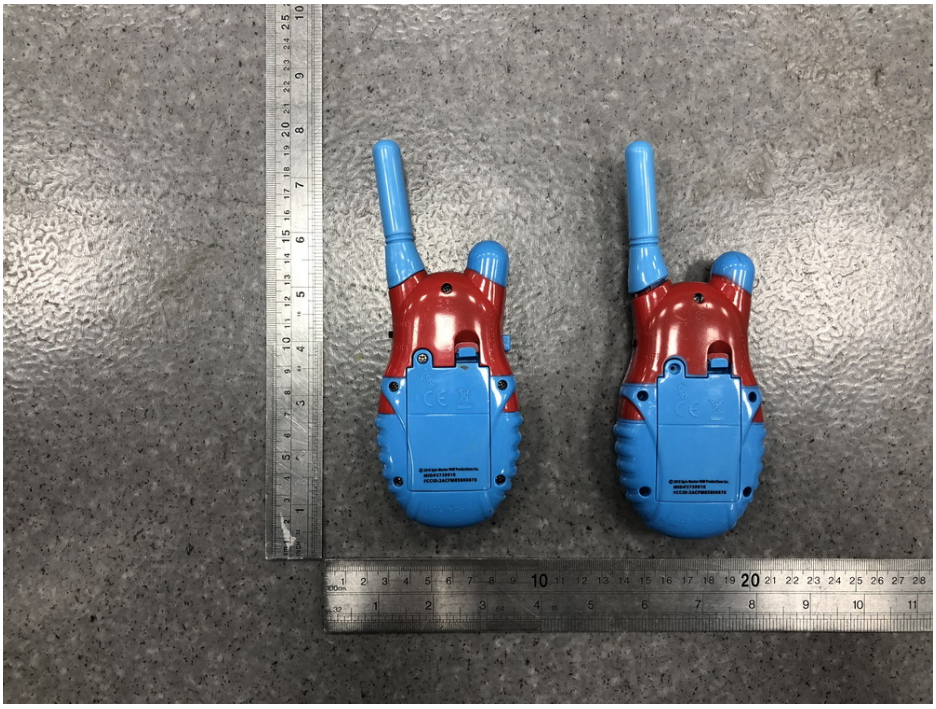
Frequency （MHZ）	Limits (MHZ)
49.86	49.82-49.90

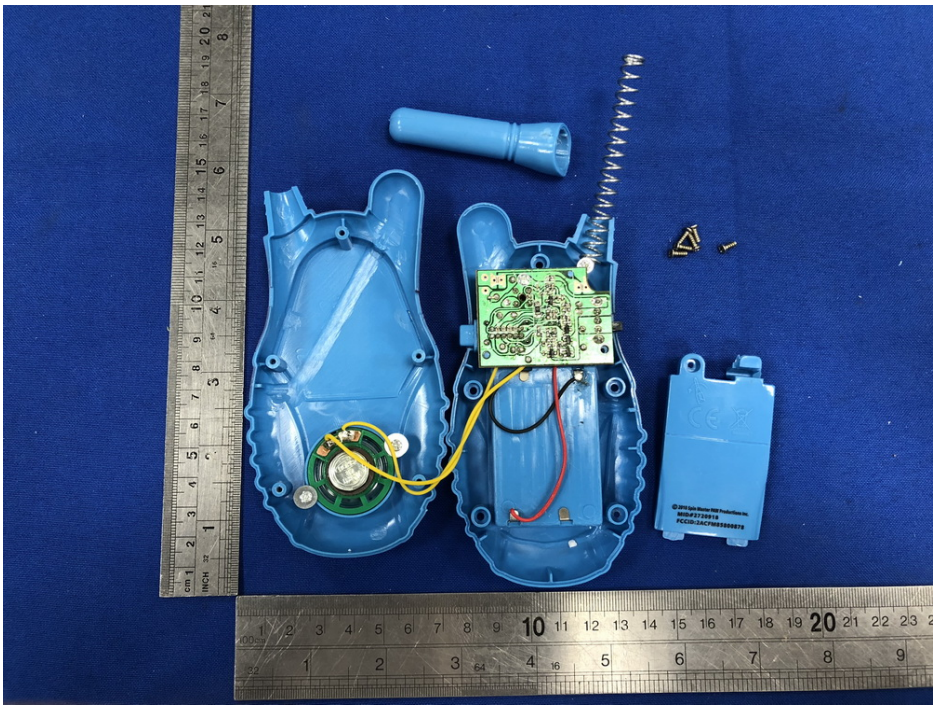
Refer to attached data chart.

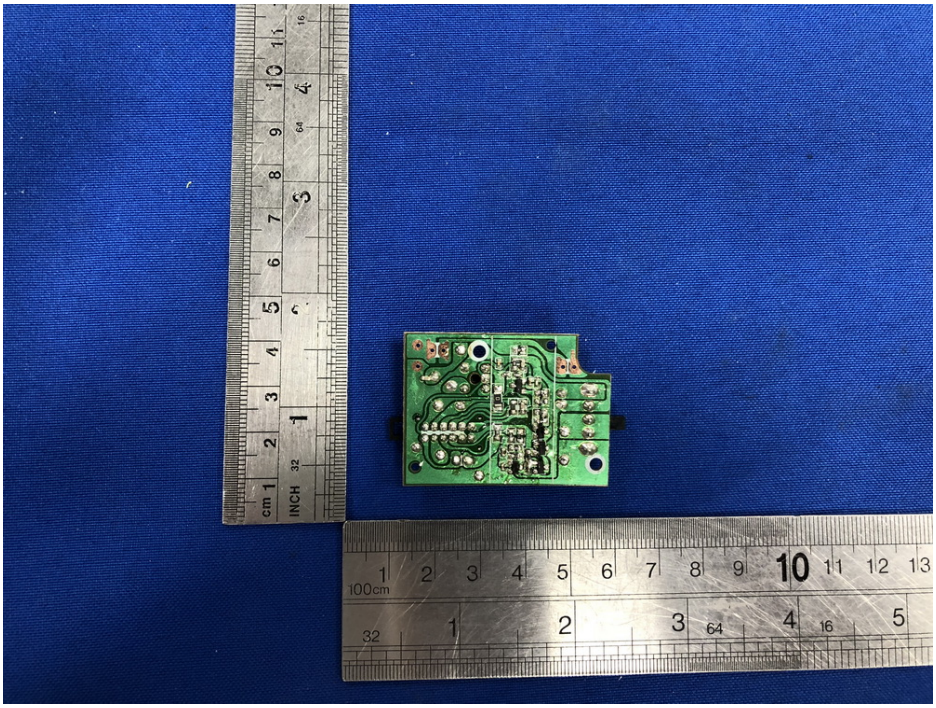


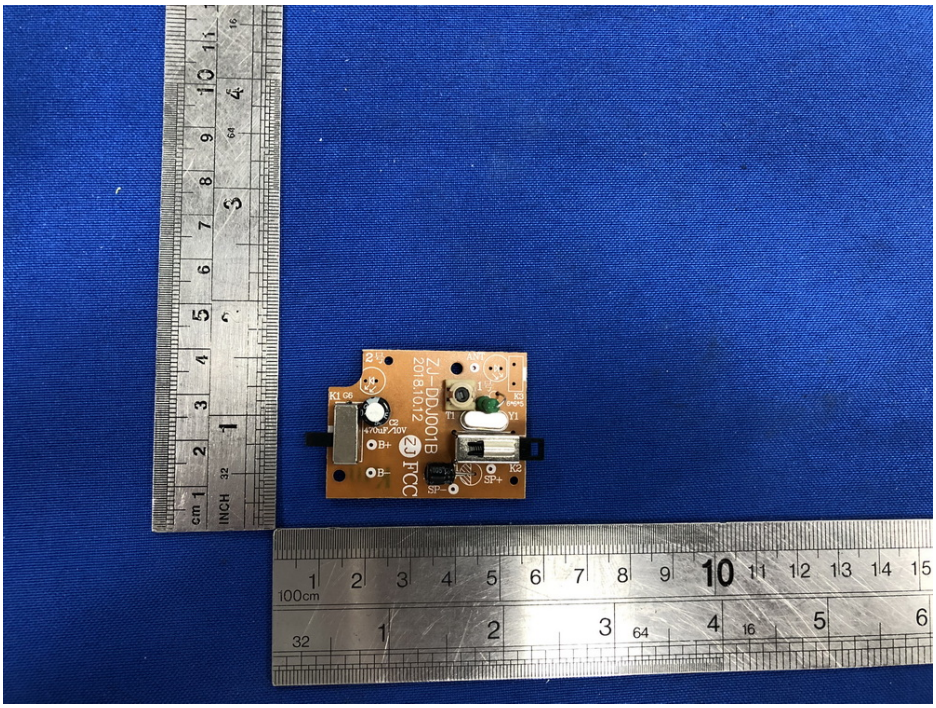
Result: 5.35kHz for 26dB bandwidth

APPENDIX I
(Photos of EUT)





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FCC
B+
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