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Report No.: SHEM140900232703 Page: 1 of 22

### **Cover Page**

### **FCC REPORT**

Application No.:	SHEM1409002327RF					
Applicant:	Hansong (Nanjing) Technology Ltd.					
FCC ID:	CO-MUSAIC1401					
IC:	7756A-MUSAIC1401					
Equipment Under Test (EUT):  NOTE: The following sample(s) submitted was/were identified on behalf of the client as						
Product Name:	Music Player					
Model No.:	MP10					
Standards:	FCC PART 15 Subpart C: 2014 RSS-210 Issue 8 (December 2010) RSS-Gen Issue 4 (November 2014)					
Date of Receipt:	September 12, 2014					
Date of Test:	December 08, 2014 to December 19, 2014					
Date of Issue:	January 06, 2015					
Test Result :	PASS *					

<sup>\*</sup>In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Tony Wu **E&E Section Manager** 

SGS-CSTC (Shanghai) Co., Ltd.

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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Report No.: SHEM140900232703

Page: 2 of 22

### 2 Version

Revision Record									
Version   Chapter   Date   Modifier   Remark									
00	/	January 06, 2015	/	Original					

Authorized for issue by:		
Engineer	Eddy Zong	Eddy Zong
	Print Name	
Clerk	Susie Liu	Suire Lin
	Print Name	
Reviewer	Keny Xu	Kony. xu
	Print Name	



Report No.: SHEM140900232703

Page: 3 of 22

### 3 Test Summary

Test Item	FCC Requirement	IC Requirement	Test method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203	RSS-Gen 7.1.2 Section 8.1.3	ANSI C63.10(2009)	PASS
AC Power Line Conducted Emission	FCC Part 15, Subpart C Section 15.207	RSS-Gen Section 8.8	ANSI C63.10(2009)	PASS
Field Strength of the Fundamental Signal	FCC Part 15, Subpart C Section 15.231 (e)	RSS-210 Issue 8 Annex 1.1 Table a	ANSI C63.10(2009)	PASS
Spurious Emissions	FCC Part 15, Subpart C Section 15.231 (e)/15.209	RSS-Gen Section 8.9 & 8.10	ANSI C63.10(2009)	PASS
20dB Bandwidth	FCC Part 15, Subpart C Section 15.231 (c)		ANSI C63.10(2009)	PASS
99% Occupied Bandwidth		RSS-Gen Section 6.6	RSS-Gen section 6.6	PASS
Dwell Time	FCC Part 15, Subpart C Section 15.231 (a)(1)		ANSI C63.10(2009)	PASS



Report No.: SHEM140900232703

Page: 4 of 22

### 4 Contents

		Page
1	COVER PAGE	1
2	VERSION	2
3	TEST SUMMARY	3
4	CONTENTS	4
5	GENERAL INFORMATION	5
5.	5.1 CLIENT INFORMATION	5
5.	5.2 GENERAL DESCRIPTION OF E.U.T	5
5.	5.3 TECHNICAL SPECIFICATIONS	5
5.	5.4 DESCRIPTION OF SUPPORT UNITS	5
5.	5.5 DETAILS OF TEST MODE	5
5.	5.6 TEST LOCATION	6
5.	5.7 TEST FACILITY	6
5.	5.8 MEASUREMENT UNCERTAINTY	7
6	EQUIPMENTS USED DURING TEST	8
7	TEST RESULTS AND MEASUREMENT DATA	9
7.	7.1 ANTENNA REQUIREMENT	9
7.	7.2 CONDUCTED EMISSIONS	10
7.	7.3 RADIATION EMISSIONS	13
	7.3.1 Field Strength of the Fundamental Signal	14
	7.3.2 Spurious Emissions	
7.	7.4 20dB Bandwidth	18
7.	7.5 99% OCCUPIED BANDWIDTH	20
7.	7.6 DWELL TIME	21
8	TEST SETUP PHOTOGRAPHS	22
9	EUT CONSTRUCTIONAL DETAILS	22



Report No.: SHEM140900232703

Page: 5 of 22

### 5 General Information

#### 5.1 Client Information

Applicant: Hansong (Nanjing) Technology Ltd.

Address of Applicant: 8th Kangping Road, Jiangning Economy and Technology Development

Zone, Nanjing, 211106, China

Manufacturer: Musaic Ltd.

Address of Manufacturer: 4-5 Bonhill Street, London EC2A 4BX, UK

Factory: Hansong (Nanjing) Technology Ltd.

Address of Factory: 8th Kangping Road, Jiangning Economy and Technology Development

Zone, Nanjing, 211106, China

### 5.2 General Description of E.U.T.

Brand Name: MUSAIC

Product Description: Fixed product, Manual activation transmission

Rated Input: DC 18V 3.3A

Adapter: Model No.: FJ-SW1803300D

Rated Input: AC 100V-240V 50/60Hz 1.5A MAX

Rated Output: DC 18V 3.3A

Cable length: AC port: 180 cm (2 wires)

DC port: 180 cm

#### 5.3 Technical Specifications

Operation Frequency: 433.92MHz

Modulation Technique: ASK Number of Channel: 1

Antenna Type: Integral Antenna

### 5.4 Description of Support Units

The EUT has been tested independently

#### 5.5 Details of Test Mode

Test Mode	Detail description of the test mode
Engineering mode	Keeps EUT working in continuous transmitting mode

Remark: The final measurement is performed in worst case emission of press lighting key (button 6)



Report No.: SHEM140900232703

Page: 6 of 22

### 5.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

### 5.7 Test Facility

#### CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2017-07-14.

#### • FCC – Registration No.: 402683

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

#### Industry Canada (IC) – IC Assigned Code: 8617A

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

#### VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.



Report No.: SHEM140900232703

Page: 7 of 22

### 5.8 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty		
1	Radio Frequency	< ±1 x 10 <sup>-5</sup>		
2	Total RF power, conducted	< ±1.5 dB		
3	RF power density, conducted	< ±3 dB		
4	Spurious emissions, conducted	< ±3 dB		
5	All emissions, radiated	< ±6 dB (30MHz – 1GHz) < ±6 dB (above 1GHz)		
6	Temperature	< ±1°C		
7	Humidity	< ±5 %		
8	DC and low frequency voltages	< ±3 %		



Report No.: SHEM140900232703

Page: 8 of 22

### 6 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2014-02-13	2015-02-12
2	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127490	2014-02-13	2015-02-12
3	Line impedance stabilization network	ETS	3816/2	00034161	2014-02-13	2015-02-12
4	Spectrum Analyzer	Rohde & Schwarz	FSP-30	2705121009	2014-02-13	2015-02-12
5	EMI test receiver	Rohde & Schwarz	ESU40	100109	2014-02-13	2015-02-12
6	Active Loop Antenna (9kHz to 30MHz)	Rohde & Schwarz	FMZB 1519	1519-034	2014-03-19	2015-03-18
7	Broadband UHF-VHF ANTENNA (25MHz to 2GHz)	SCHWARZBECK	VULB9168	9168-313	2014-02-13	2015-02-12
8	Ultra broadband antenna (25MHz to3GHz)	Rohde & Schwarz	HL562	100227	2014-08-30	2015-08-29
9	Horn Antenna (1GHz to 18GHz)	Rohde & Schwarz	HF906	100284	2014-02-13	2015-02-12
10	Horn Antenna (1GHz to 18GHz)	SCHWARZBECK	BBHA9120D	9120D-679	2014-02-13	2015-02-12
11	Horn Antenna (14GHz to 40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170373	2014-02-13	2015-02-12
12	Pre-amplifier (9KHz – 2GHz)	LNA6900	TESEQ	71033	2014-02-13	2015-02-12
13	Pre-amplifier (1GHz – 26.5GHz)	Rohde & Schwarz	SCU-F0118-G40- BZ4-CSS(F)	10001	2014-02-13	2015-02-12
14	Pre-amplifier (14GHz – 40GHz)	Rohde & Schwarz	SCU-F1840-G35- BZ3-CSS(F)	10001	2014-02-13	2015-02-12
15	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/880. 0-0.2/40-5SSK	9170397	2014-06-02	2015-06-01
16	High pass Filter	FSCW	HP 12/2800- 5AA2	19A45-02	2014-06-02	2015-06-01
17	High-low temperature cabinet	Suzhou Zhihe	TL-40	50110050	2014-09-11	2015-09-10
18	AC power stabilizer	WOCEN	6100	51122	2014-06-02	2015-06-01
19	DC power	QJE	QJ30003SII	611145	2014-06-02	2015-06-01
20	Signal Generator (Interferer)	Agilent	SMR40	100555	2014-02-14	2015-02-13
21	Signal Generator (Blocker)	Rohde & Schwarz	SMJ100A	02.20.360.142	2014-02-13	2015-02-12
22	Splitter	Anritsu	MA1612A	M12265	/	/
23	Coupler	e-meca	803-S-1	900-M01	/	/



Report No.: SHEM140900232703

Page: 9 of 22

### 7 Test results and Measurement Data

### 7.1 Antenna Requirement

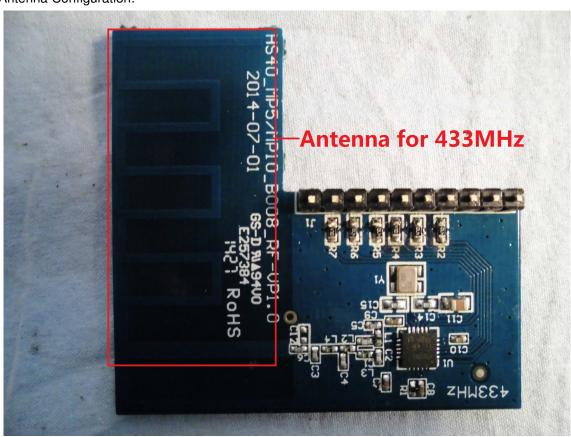
15.203 Requirement:

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.

#### **EUT Antenna:**

The antenna is integrated and no consideration of replacement.

#### Antenna Configuration:





Report No.: SHEM140900232703

Page: 10 of 22

#### 7.2 Conducted Emissions

Test Frequency Range:	150kHz to 30MHz							
Limit:		Limit (	dBuV)					
	Frequency range (MHz)	Quasi-peak	Quasi-peak					
	0.15-0.5	66 to 56*	66 to 56*					
	0.5-5	56	56					
	5-30	60	60					
	* Decreases with the loga	rithm of the frequency.						
Test Procedure:  Test Setup:	Frequency range (MHz)         Limit (dBuV)           Quasi-peak         Quasi-peak           0.15-0.5         66 to 56*         66 to 56*           0.5-5         56         56							
Test Results:	N/A							

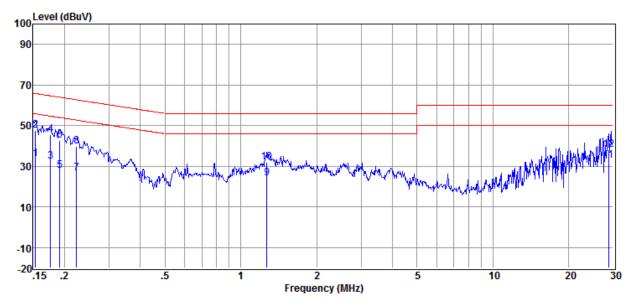


Report No.: SHEM140900232703

Page: 11 of 22

**Test Data** 

Test Port: AC Live Line



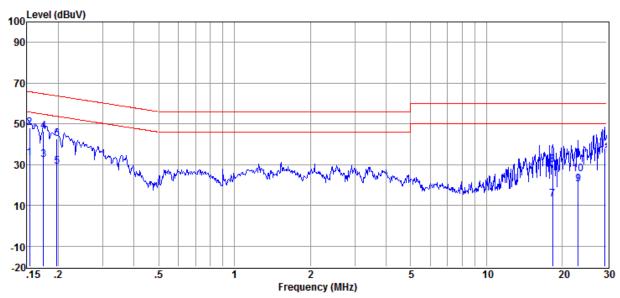
Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB)	(dB)	(dBµV)	(dBμV)	(dB)	
1	0.153	33.27	0.34	0.10	33.71	55.82	-22.11	Average
2	0.153	47.12	0.34	0.10	47.56	65.82	-18.26	QP
3	0.176	32.03	0.31	0.10	32.44	54.68	-22.24	Average
4	0.176	45.33	0.31	0.10	45.74	64.68	-18.94	QP
5	0.191	27.46	0.30	0.10	27.86	53.98	-26.12	Average
6	0.191	42.36	0.30	0.10	42.76	63.98	-21.22	QP
7	0.223	26.32	0.29	0.10	26.71	52.70	-25.99	Average
8	0.223	39.54	0.29	0.10	39.93	62.70	-22.77	QP
9	1.269	23.34	0.49	0.10	23.93	46.00	-22.07	Average
10	1.269	31.20	0.49	0.10	31.79	56.00	-24.21	QP
11	28.755	32.06	0.54	0.20	32.80	50.00	-17.20	Average
12	28.755	37.39	0.54	0.20	38.13	60.00	-21.87	QP



Report No.: SHEM140900232703

Page: 12 of 22

Test Port: AC Neutral Line



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB)	(dB)	(dBµV)	(dBµV)	(dB)	
1	0.154	32.80	0.32	0.10	33.22	55.78	-22.56	Average
2	0.154	47.42	0.32	0.10	47.84	65.78	-17.94	QP
3	0.175	32.02	0.29	0.10	32.41	54.72	-22.31	Average
4	0.175	46.21	0.29	0.10	46.60	64.72	-18.12	QP
5	0.198	28.52	0.26	0.10	28.88	53.71	-24.83	Average
6	0.198	42.15	0.26	0.10	42.51	63.71	-21.20	QP
7	18.328	12.46	0.39	0.17	13.02	50.00	-36.98	Average
8	18.328	29.30	0.39	0.17	29.86	60.00	-30.14	QP
9	23.140	19.60	0.41	0.20	20.21	50.00	-29.79	Average
10	23.140	24.74	0.41	0.20	25.35	60.00	-34.65	QP
11	29.371	33.86	0.53	0.20	34.59	50.00	-15.41	Average
12	29.371	37.52	0.53	0.20	38.25	60.00	-21.75	QP

Remark: Level = Read Level + LISN/ISN Factor + Cable Loss.



Report No.: SHEM140900232703

Page: 13 of 22

#### 7.3 Radiation Emissions

Test frequency range	9KHz – 6GHz					
Test Site:	Measurement Distance	e: 3m (Semi-And	echoic Cham	nber)		
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark	
	0.009MHz-0.015MHz	Quasi-peak	200Hz	1KHz	Quasi-peak	
	0.015MHz-30MHz	Quasi-peak	9kHz	30KHz	Quasi-peak	
	30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak	
	Above 1GHz	Peak	1MHz	3MHz	Peak	
	Above 1GHz	Peak	1MHz	10Hz	Average	
Limit: (Spurious Emissions)	Frequency	Field strength (uV/m)	Limit (dBuV/m )	Remark	Measurement distance (m)	
	0.009MHz-0.490MHz	2400/F(kHz)	-	Quasi-peak	300	
	0.490MHz-1.705MHz	24000/F(kHz)	-	Quasi-peak	30	
	1.705MHz-30MHz	30	-	Quasi-peak	30	
	30MHz-88MHz	100	40.0	Quasi-peak	3	
	88MHz-216MHz	150	43.5	Quasi-peak	3	
	216MHz-960MHz	200	46.0	Quasi-peak	3	
	960MHz-1GHz	500	54.0	Quasi-peak	3	
	Above 1GHz	500	54.0	Average	3	
	Above Tariz	300	74.0	Peak	3	
Limit:	Frequency	Limit (dBuV/m @3m) Remark			mark	
(Field strength of the fundamental signal)	433.09 - 434.61MHz	72.9		Average Value		
		92.9		Peak Value		
Test Procedure:	<ul> <li>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>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.</li> <li>c. The antenna 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.</li> <li>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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average</li> </ul>					

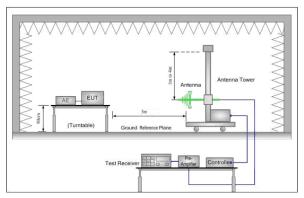
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Report No.: SHEM140900232703

Page: 14 of 22

	method as specified and then reported in a data sheet. g. The radiation measurements are performed in X, Y, Z axis positioning. And found the Z axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Setup:	



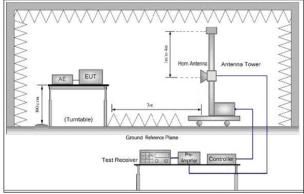


Figure 2. 30MHz to 1GHz

Figure 3. Above 1 GHz

Test Results: Pass

### 7.3.1 Field Strength of the Fundamental Signal

Frequency (MHz)	Result Level (dBμV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
433.92	80.27	80.8	-0.53	Peak	Vertical
	80.11	80.8	-0.69	Peak	Horizontal

Remark: If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

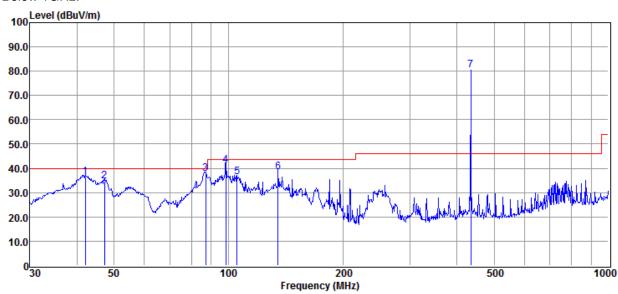


Report No.: SHEM140900232703

Page: 15 of 22

### 7.3.2 Spurious Emissions

#### Below 1GHz:



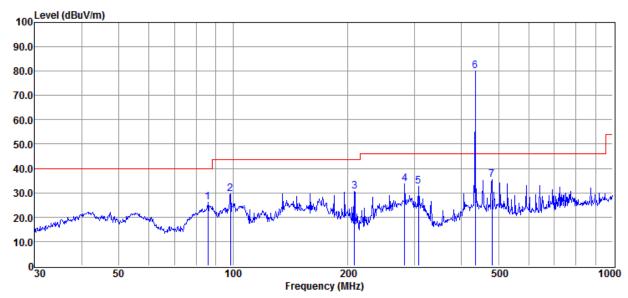
Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	42.007	46.73	13.10	23.70	0.29	36.42	40.00	-3.58	QP	Vertical
2	47.160	45.08	12.92	23.70	0.37	34.67	40.00	-5.33	QP	Vertical
3	87.112	52.08	8.47	23.67	0.77	37.65	40.00	-2.35	QP	Vertical
4	98.487	54.87	9.05	23.66	0.90	41.16	43.50	-2.34	QP	Vertical
5	105.272	49.04	9.91	23.66	0.96	36.25	43.50	-7.25	QP	Vertical
6	135.032	49.66	11.40	23.64	1.10	38.52	43.50	-4.98	QP	Vertical
7	433.920	86.18	15.52	23.71	2.28	80.27	Fundamer	ntal signal	Peak	Vertical



Report No.: SHEM140900232703

Page: 16 of 22

#### Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	85.898	40.34	8.56	23.67	0.77	26.00	40.00	-14.00	QP	Horizontal
2	98.487	43.17	9.05	23.66	0.90	29.46	43.50	-14.04	QP	Horizontal
3	208.580	43.66	9.12	23.62	1.43	30.59	43.50	-12.91	QP	Horizontal
4	282.985	44.13	11.28	23.66	1.78	33.53	46.00	-12.47	QP	Horizontal
5	307.831	42.25	12.14	23.67	1.91	32.63	46.00	-13.37	QP	Horizontal
6	433.920	86.02	15.52	23.71	2.28	80.11	Fundamer	ntal signal	Peak	Horizontal
7	480.528	40.51	16.20	23.73	2.38	35.36	46.00	-10.64	QP	Horizontal



Report No.: SHEM140900232703

Page: 17 of 22

#### 1GHz - 6GHz:

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1293.75	57.24	-7.41	49.83	54	-4.17	peak	Horizontal
2	3032.75	48.26	-0.13	48.13	54	-5.87	peak	Horizontal
3	5641.25	44.52	6.82	51.34	54	-2.66	peak	Horizontal
4	1293.75	58.44	-7.41	51.03	54	-2.97	peak	Vertical
5	2163.25	50.59	-2.93	47.66	54	-6.34	peak	Vertical
6	3032.75	53.68	-0.13	53.55	54	-0.45	peak	Vertical

#### Remark:

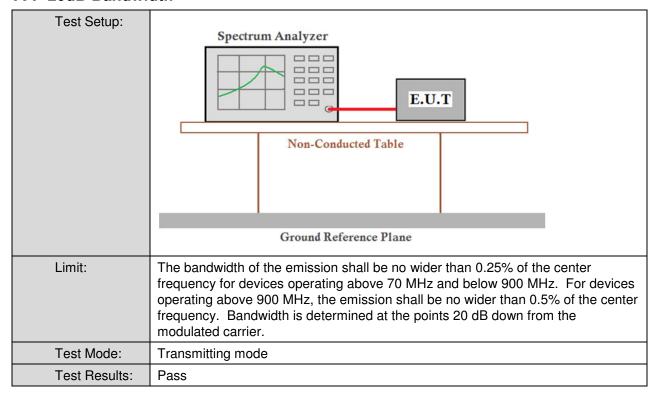
- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
  - Final Test Level =Receiver Reading Level +Antenna Factor + Cable Factor Preamplifier Factor
- 2) If Peak Result comply with AV limit, AV Result is deemed to comply with QP limit
- 3) No any other emissions level which are attenuated less than 20dB below the limit. According to 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.



Report No.: SHEM140900232703

Page: 18 of 22

#### 7.4 20dB Bandwidth



#### Test Data:

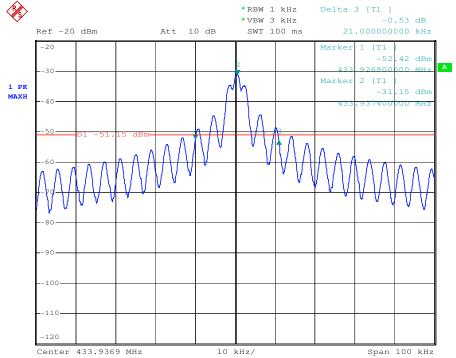
20dB bandwidth (kHz)	Limit (kHz)	Results
21	1084.8	Pass



Report No.: SHEM140900232703

Page: 19 of 22

### Test plot as follows:

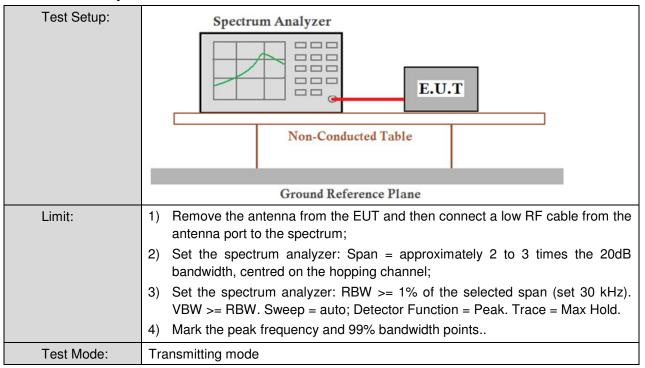




Report No.: SHEM140900232703

Page: 20 of 22

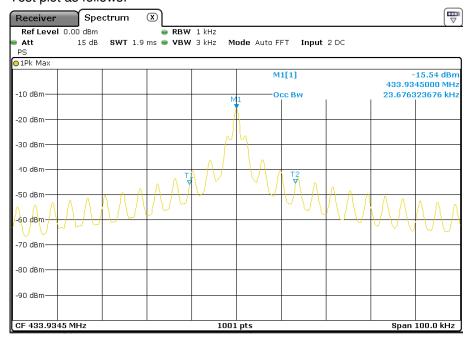
#### 7.5 99% Occupied Bandwidth



#### Test Data:

20dB bandwidth	23.68 kHz

### Test plot as follows:



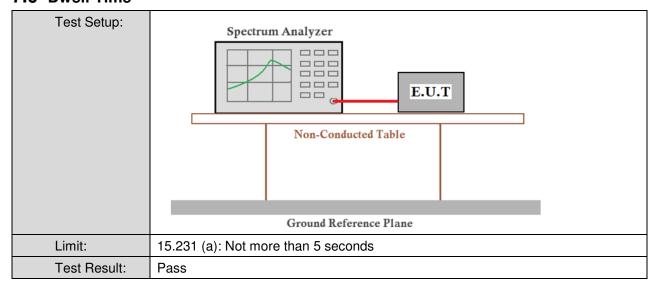
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Report No.: SHEM140900232703

Page: 21 of 22

#### 7.6 Dwell Time

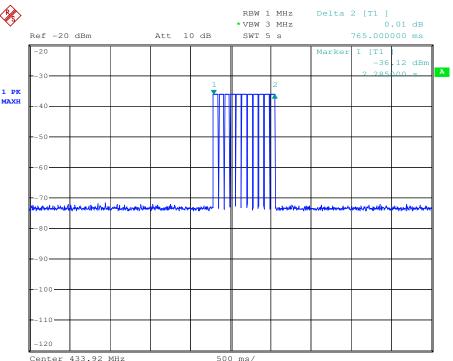


#### **Test Data:**

The device is a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

Transmission Duration(s)	Limit (s)	Result
0.765	≤5s	Pass

### Test plot as follows:



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Report No.: SHEM140900232703

Page: 22 of 22

### 8 Test Setup Photographs

Refer to the < MP10 \_Test Setup photos-FCC>.

### 9 EUT Constructional Details

Refer to the < MP10 \_External Photos-FCC> & < MP \_Internal Photos-FCC>.

-- End of the Report--