World Standardization Certification &Testing CO.,LTD
World Standardization Safety and EMC Testing Centre

FCC ID
TEST REPORT

for

FM Modulator

MODEL: F-190

FCC ID:UK3-F190

Test Report Number: WSCT09060156E-1
Issued Date: Jun. 30, 2009

Issued for

Daza Technology Electronics
Room 1410-1411,BlockA,Jiahe Building,shennan
Mid-road,Shenzhen,china

Issued By:

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Revision History Of Report

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	WSCT09060156E-1	Initial Issue	ALL	Kallen Wang

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1 TEST CERTIFICATION

Product:	FM Modulator
Model:	F-190
Applicant:	Daza Technology Electronics Room 1410-1411,BlockA,Jiahe Building,shennan Mid-road,Shenzhen,china
Manufacturer:	Daza Technology Electronics Room 1410-1411,BlockA,Jiahe Building,shennan Mid-road,Shenzhen,china
Brand:	N/A
Tested:	Jun. 11~29,2009
Test Voltage:	DC 12V
Applicable Standards:	FCC Part 15 Subpart C: 2007 ANSI C63.4:2003

Deviation from Applicable Standard
None

The above equipment has been tested by World Standardization Certification & Testing Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: _____ ***Date:*** ***2009/06/30***

(Joe Lin)

Check By: _____ ***Date:*** ***2009/06/30***

(Kelly Wu)

Approved By: _____ ***Date:*** ***2009/06/30***

(Kallen Wang)

2 TEST RESULT SUMMARY

Standard	Item	Result
FCC Part 15 Subpart C: Clause 15.239	Conducted Emission	N/A
	Radiated Emission	PASS
	Bandwidth Test	PASS
	Frequency Range	PASS

Note: 1. The test result judgment is decided by the limit of test standard
2. The information of measurement uncertainty is available upon the customer's request.

3 EUT DESCRIPTION

Product	FM Modulator
Brand Name	N/A
Model	F-190
Applicant	Daza Technology Electronics
Housing material	Plastic/Metal
EUT Type	☒ Engineering Sample. ☐ Product Sample, ☐ Mass Product Sample.
Serial Number	N/A
Antenna Type	Integral Antenna
EUT Power Rating	DC 12V
Temperature Range(Operating)	+15 ~+ 35℃
Operational frequency	88.1MHz-107.9MHz
Channel Separation	0.2M
Modulation type	FSK

Model Differences

N/A

Note: N/A stand for no applicable.

4 TEST METHODOLOGY

4.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the below additional components, and configuration, which produced the worst emission levels, was selected and recorded in this report.

1)The measurement was performed at 3 axis for lie orientation, side orientation and stand orientation. The lie orientation is the worst mode, so only the worst mode test data was reported.

2) Mp3 player input EUT an audio signal, and Mp3 playe were turned up the highest volume output.

the following test mode was recorder in this report.

Test item	Test mode
Radiated Emission	Tx88.1MHz, Tx98.1MHz, Tx107.9MHz,
Bandwidth Test	Tx88.1MHz, Tx98.1MHz, Tx107.9MHz,
Frequency Range	Tx88.1MHz, Tx107.9MHz

4.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

Note: *Test program is self-repeating throughout the test.*

5 SETUP OF EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF SUPPORT UNITS

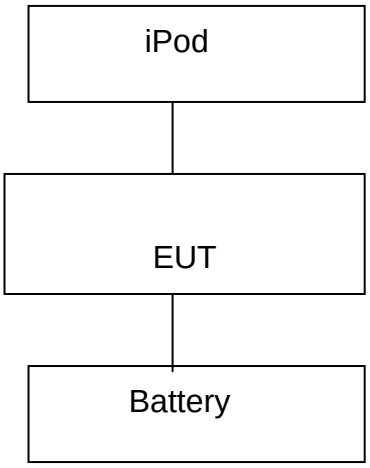
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	SD card	128Mb	N/A	N/A	Kingston	N/A	N/A
2.	DC Power Supply	RXN-3010D	2009006875	N/A	ZHAOXIN	Unshielded 1.5m	Unshielded 1.5m
3.	U-disc	512Mb	N/A	N/A	lenovo	N/A	N/A
4.	iPod	4GB	6U749DBEYOP	N/A	iPod	N/A	N/A

Note:

1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. CONFIGURATION OF SYSTEM UNDER TEST



6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at
1-2/F, DaChong Science&Technology Building, No.28 of Tonggu Road,Nanshan District, ShenZhen.PRC

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC (certificate registration number is 276008)
	TIMCO (certificate registration number is Q2001)
Japan	VCCI
	(certificate registration number is C-2912, R-2662)
Germany	TUV Rheinland
Canada	INDUSTRY CANADA
	(certificated registration number is 46405-7700)

Copies of granted accreditation certificates are available for downloading from our web site, http://www.wsct.org.cn

6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in ANSI C63.4:

Measurement	Frequency		Uncertainty
Conducted emissions	9kHz~30MHz		+/- 3.59dB
Radiated emissions	Horizontal	30MHz ~ 200MHz	+/- 4.77dB
		200MHz ~1000MHz	+/- 4.93dB
	Vertical	30MHz ~ 200MHz	+/- 5.04dB
		200MHz ~1000MHz	+/- 4.93dB

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

7 Test Requirements

7.1. CONDUCTED EMISSION MEASUREMENT

7.1.1. LIMITS

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTE:

(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 0.50 MHz.
(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.

7.1.2. TEST INSTRUMENTS

Conducted Emission Test Site G				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI	100005	06/23/2010
LISN	AFJ	LS16	16010222119	04/02/2010
LISN(EUT)	Meestec	AN3016	04/10040	04/02/2010

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).
2. N.C.R = No Calibration Request.

7.1.3. TEST PROCEDURES

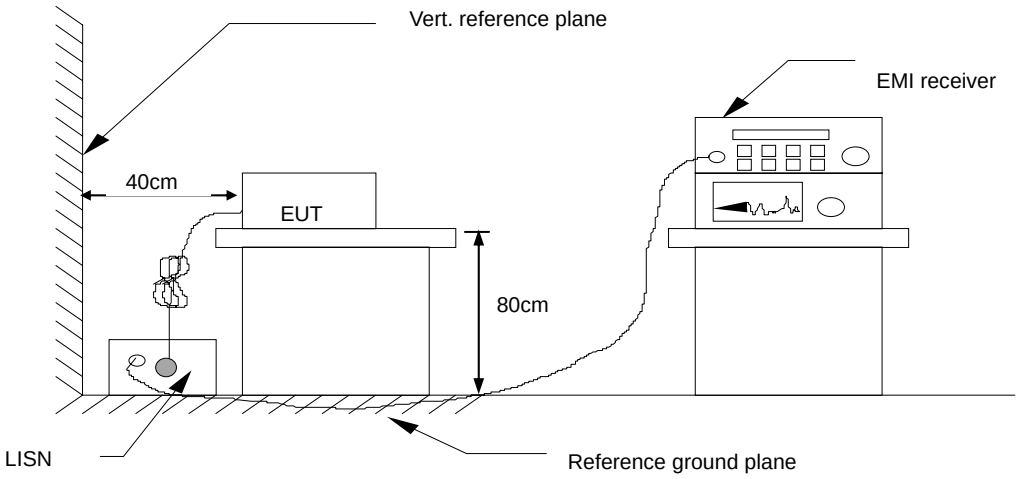
Procedure of Preliminary Test

- The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- All support equipment power received from a second LISN.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

7.1.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.5.Test Result

*Not applicable. Because the EUT was powered by battery only.*N/A

7.2. RADIATED EMISSION MEASUREMENT

7.2.1. LIMITS

1) Fundamental emission limits: Section 15.239(b)

PK:68dBuv/m AV:48dBuv/m

2)Spurious emission limits: Section 15.209

Frequency (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

7.2.2. TEST INSTRUMENTS

Open Area Test Site G				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI	100005	06/23/2010
Spectrum Analyzer	R&S	FSU	100114	04/21/2010
Pre Amplifier	H.P.	HP8447E	2945A02715	06/15/2010
Bilog Antenna	SUNOL Sciences	JB3	A021907	06/10/2010
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	06/09/2010
System-Controller	CCS	N/A	N/A	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

2. N.C.R = No Calibration Request.

7.2.3. TEST PROCEDURE

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band of 30MHz to 1GHz,The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The broadband antenna (calibrated by dipole antenna) was used as a receiving antenna. At the frequency band of 1GHz to 25GHz,The measuring antenna moved from 1 to 4 m for horizontal and vertical polarization. The horn antenna was used as a receiving antenna.

The resolution bandwidth and video bandwidth of the test receiver was 120 KHz and 300KHz for Quasi-peak detection at frequency below 1GHz.

The resolution bandwidth and video bandwidth of the test receiver was1MHz and 3MHz for Peak detection at frequency above 1GHz.

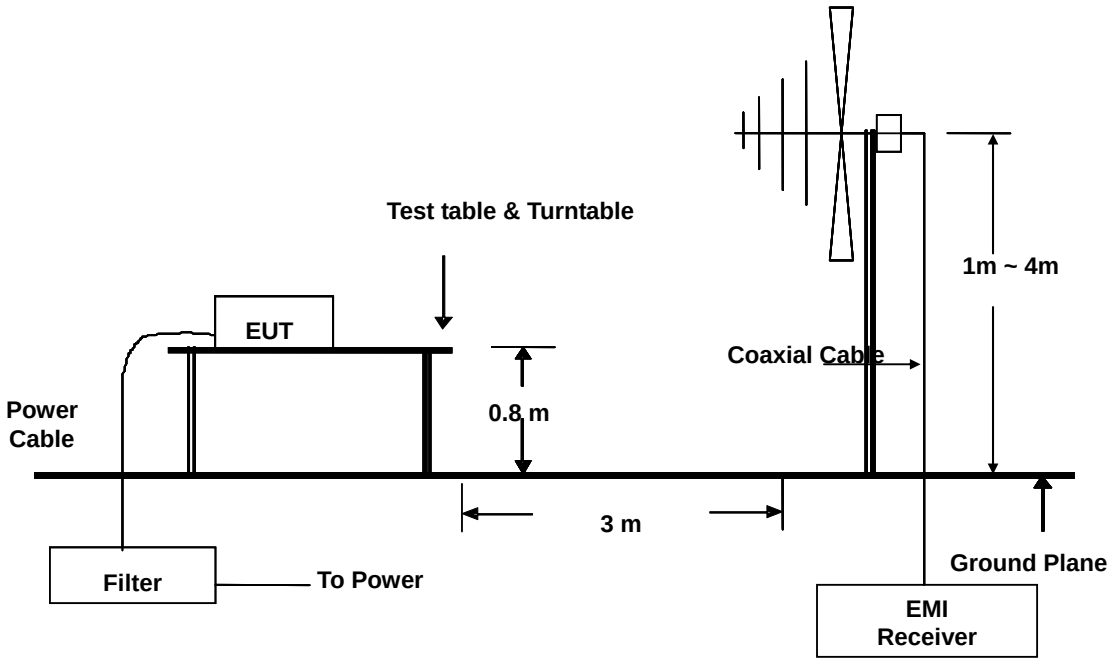
The resolution bandwidth of the test receiver was1MHz and the video bandwidth are 10Hz for Average detection at frequency above 1GHz.

The EUT was tested in Chamber Site.

Audio input signal were turned up the highest volume output.

The test data of the worst case condition(s) was reported on the following pages.

7.2.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.2.5. Test Result

EUT:	FM Modulator	Temperature:	25℃
M/N:	F-190	Humidity:	55%
Test Mode:	Tx 88.1MHz	Test Engineer:	Joe

Frequency	Factor	Meter Reading	Emission Level	Over Limits	Limits	Polarity	Detector
MHz	dB	dBμV	dBμV/m	dB	dBμV/m		
88.10	-10.3	56.00	46.30	-21.70	68.0	H	PK
88.10	-10.3	55.50	45.80	-2.20	48.0	H	AV
58.60	-12.61	49.80	37.19	-2.81	40.0	H	QP
285.60	-2.76	43.50	41.26	-4.64	46.0	H	QP
315.40	-1.70	40.39	38.69	-7.31	46.0	H	QP
359.60	-1.68	46.78	45.10	-0.90	46.0	H	QP
384.69	0.22	44.53	44.75	-1.25	46.0	H	QP
442.72	-0.93	41.05	40.12	-5.88	46.0	H	QP
88.10	-10.3	57.10	46.80	-21.20	68.0	V	PK
88.10	-10.3	54.80	44.50	-3.50	48.0	V	AV
59.12	-12.61	47.71	35.10	-4.90	40.0	V	QP
215.65	-6.61	45.65	39.04	-4.46	43.5	V	QP
288.83	-2.83	43.98	41.15	-4.85	46.0	V	QP
312.17	-2.97	46.42	43.45	-2.55	46.0	V	QP
359.61	-2.61	44.85	42.24	-3.76	46.0	V	QP
620.27	2.88	37.94	40.82	-5.18	46.0	V	QP

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading

2. Test uncertainty: ±5.04dB at a level of confidence of 95%.

EUT:	FM Modulator	Temperature:	25℃
M/N:	F-190	Humidity:	55%
Test Mode:	Tx 98.1MHz	Test Engineer:	Joe

Frequency	Factor	Meter Reading	Emission Level	Over Limits	Limits	Polarity	Detector
MHz	dB	dBμV	dBμV/m	dB	dBμV/m		
98.10	-9.00	53.50	43.50	-24.50	68.0	H	PK
98.10	-9.00	52.30	43.30	-4.70	48.0	H	AV
57.50	-12.50	51.00	38.50	-1.50	40.0	H	QP
285.00	-2.76	45.82	43.06	-2.94	46.0	H	QP
313.45	-1.70	43.80	42.10	-3.90	46.0	H	QP
357.20	-1.68	37.28	35.60	-10.40	46.0	H	QP
385.60	0.22	38.92	38.70	-7.30	46.0	H	QP
444.12	-0.93	36.93	36.00	-10.00	46.0	H	QP
98.10	-9.00	52.85	43.85	-24.15	68.0	V	PK
98.10	-9.00	51.90	42.90	-5.10	48.0	V	AV
55.40	-12.20	48.21	36.01	-3.99	40.0	V	QP
215.64	-6.61	40.96	34.35	-9.15	43.5	V	QP
359.60	-2.61	39.90	37.29	-8.71	46.0	V	QP
384.69	-2.92	40.55	37.63	-8.37	46.0	V	QP
409.22	-3.74	29.97	26.23	-19.77	46.0	V	QP
489.84	-0.69	36.61	35.92	-10.08	46.0	V	QP

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading

2. Test uncertainty: ±5.03dB at a level of confidence of 95%.

EUT:	FM Modulator	Temperature:	25℃
M/N:	F-190	Humidity:	55%
Test Mode:	Tx 107.9MHz	Test Engineer:	Joe

Frequency	Factor	Meter Reading	Emission Level	Over Limits	Limits	Polarity	Detector
MHz	dB	dBμV	dBμV/m	dB	dBμV/m		
107.9	-6.55	56.00	49.45	-18.55	68.0	H	PK
107.9	-6.55	53.00	46.45	-1.55	48.0	H	AV
59.88	-12.61	50.59	37.98	-2.02	40.0	H	QP
168.41	-6.94	47.37	40.43	-3.07	43.5	H	QP
191.64	-6.86	42.86	36.00	-10.00	46.0	H	QP
325.01	-2.00	42.84	40.84	-5.16	46.0	H	QP
359.61	-1.68	42.70	41.02	-4.98	46.0	H	QP
384.69	0.22	41.44	41.66	-4.34	46.0	H	QP
107.9	-6.55	56.50	49.95	-18.05	68.0	V	PK
107.9	-6.55	52.60	46.05	-1.95	48.0	V	AV
168.15	-7.04	43.93	36.89	-6.61	43.5	V	QP
215.64	-6.61	43.09	36.48	-7.02	43.5	V	QP
288.80	-2.83	39.78	36.95	-9.05	46.0	V	QP
312.40	-2.97	46.53	43.56	-2.44	46.0	V	QP
325.00	-2.54	47.47	44.93	-1.07	46.0	V	QP
759.30	3.47	37.28	40.75	-5.25	46.0	V	QP

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading

2. Test uncertainty: ±5.03dB at a level of confidence of 95%.

3. *P= Peak Reading; Q= Quasi-peak Reading A= Average Reading.*

7.3. Bandwidth Measurement

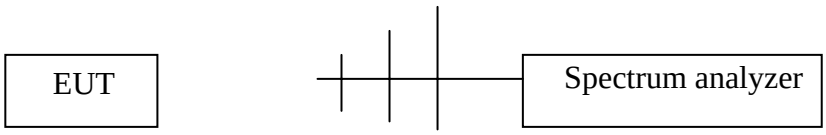
7.3.1. Limits:

The bandwidth is 200kHz, is the difference of two frequencies from the highest level measuring frequency down 20dB.

7.3.2. Test procedure

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 ,set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer(SA) on any frequency be measured, measure the frequency difference of two frequencies that were attenuated 20dB from the highest peak level. record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies were completed.

7.3.3. Test setup

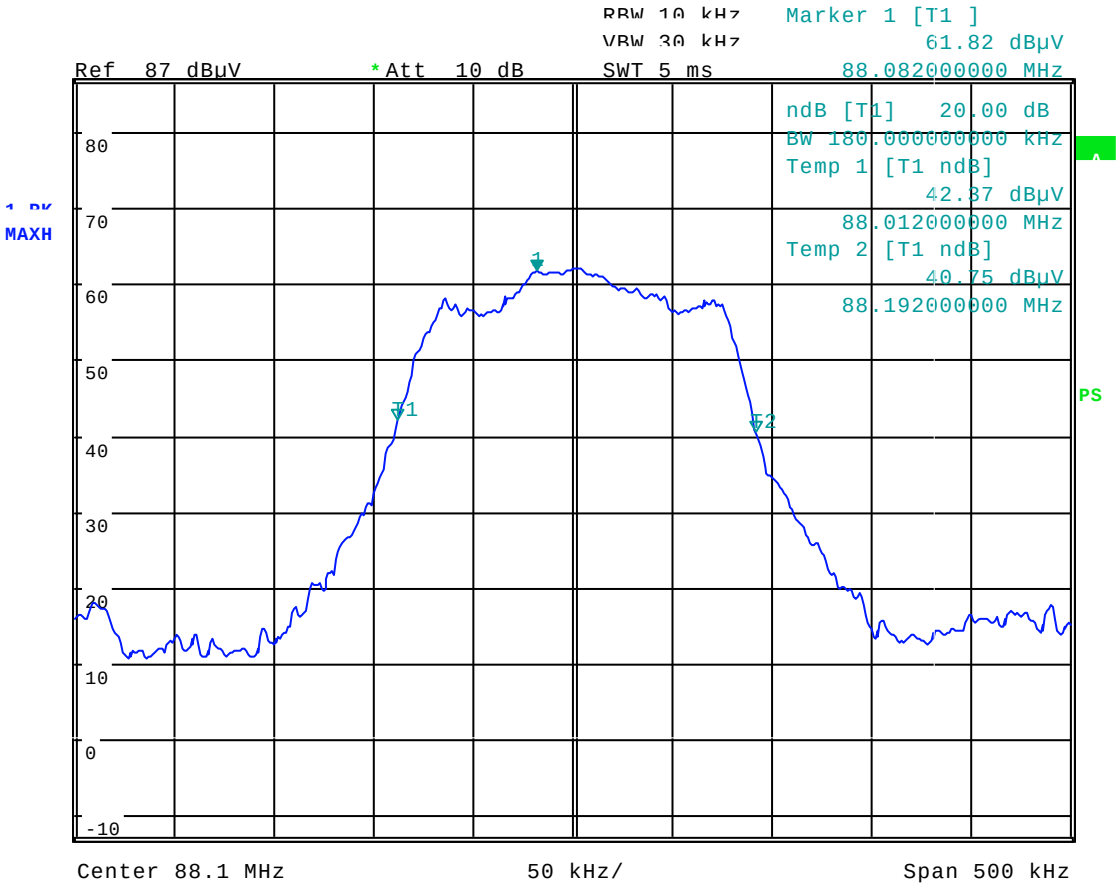


7.3.4. Test result

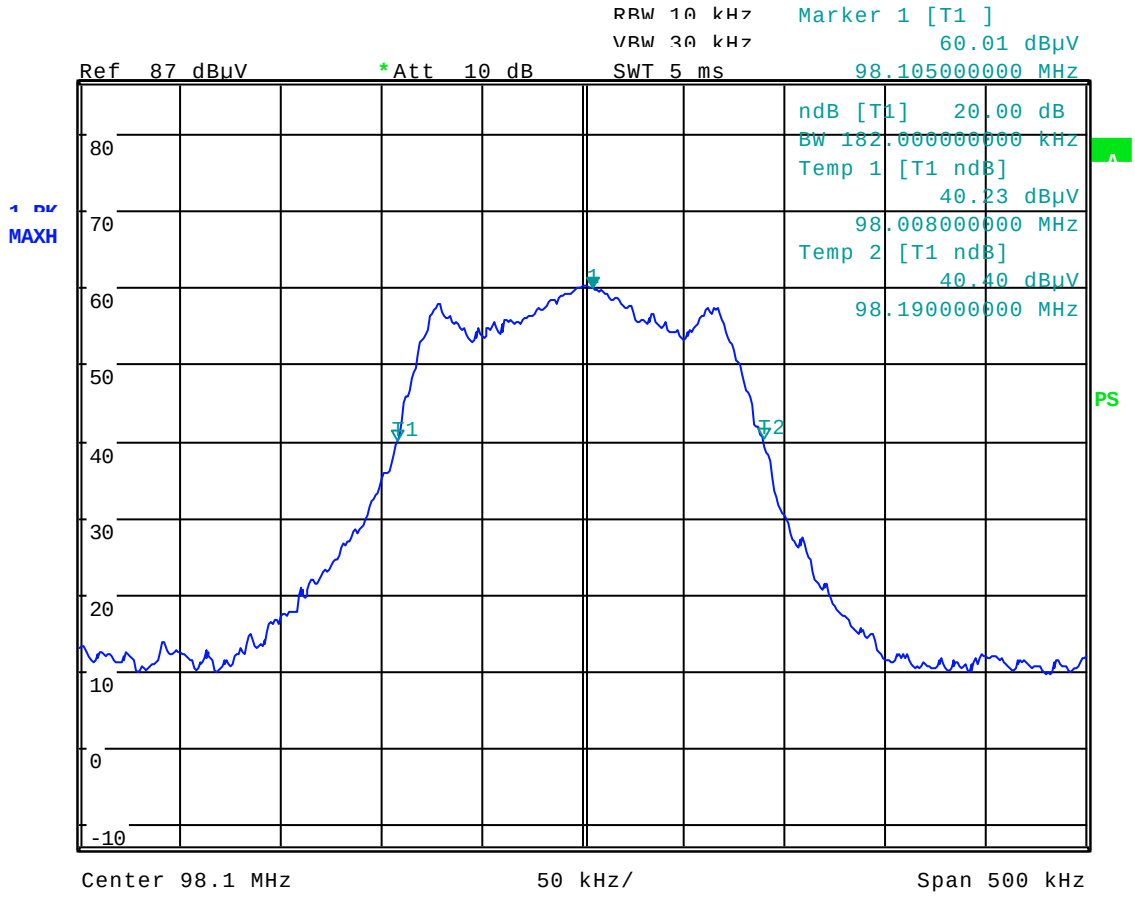
Frequency (MHz)	Bandwidth down 20dB level (KHz)	Limit (KHz)	Result
88.10	180	200	Pass
98.1	182		Pass
107.9	173		Pass

Detail see the following plots.

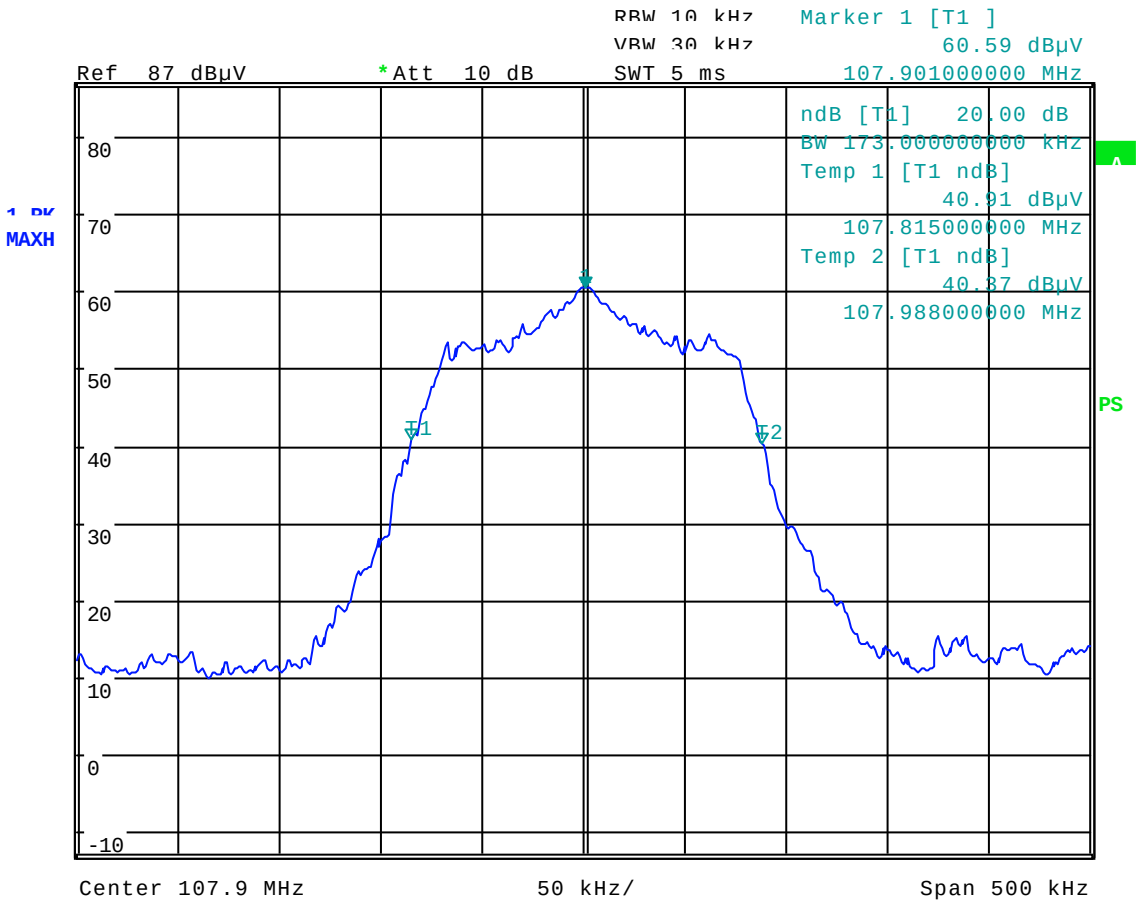
TX 88.1MHz



TX 98.1MHz



TX 107.9MHz



7.4. Frequency Range Measurement

7.4.1 Limits

Emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88-108MHz.

7.4.2. Test procedure

same as 7.3.2

7.4.3. Test setup

same as 7.3.3

7.4.4. Test Result:

Pass.

Details see the Page 19 and Page 20