FCC/IC - TEST REPORT

Report Number	:	**65.920.15.003.01**	Date of Issue:	April 22, 2015

Model	:	**NS-M35FMT, NS-M35FMT-C**
Product Type	:	FM Transmitter
Applicant	:	AnFair Electronics Plastic Factory
Address	:	No. 182, Qingzhang Road, Chang shaotou, Qingxi Town, 523660 Dongguan, Guangdong, PEOPLE'S REPUBLIC OF CHINA
Production Facility	:	AnFair Electronics Plastic Factory
Address	:	No. 182, Qingzhang Road, Chang shaotou, Qingxi Town, 523660 Dongguan, Guangdong, PEOPLE'S REPUBLIC OF CHINA
Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	22

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1 Table of Contents

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China
FCC Registration Number:	502708
IC Registration Number:	10320A
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3 Description of the Equipment Under Test

Product:	FM Transmitter
Model no.:	NS-M35FMT, NS-M35FMT-C
FCC ID:	2AEI7M35
IC ID:	9697AM35
Brand Name:	INSIGNIA
Options and accessories:	NIL
Rating:	DC 12.0V by Battery
RF Transmission Frequency:	88.1MHz-107.9MHz
Modulation:	FM
Antenna Type:	Internal Antenna
Antenna Gain:	-2dBi
Description of the EUT:	The Equipment Under Test (EUT) is a FM Transmitter.

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2014 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 4 November 2014	General Requirements for the Certification of Radio Apparatus
RSS-210 Issue 8 December 2010	RSS-210 — Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

All the test methods were according to ANSI C63.10 (2013).

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5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C, RSS-210						
Test Condition			Pages	Test Result		
				Pass	Fail	N/A
§15.207	RSS-GEN A8.8	Conducted emission AC power port	---	☐	☐	☒
§15.239(b)	RSS-210 A2.8(a)	Field strength of fundamental	11	☒	☐	☐
§15.239(c) & §15.209	RSS-210 A2.8	Spurious radiated emissions for transmitter	12	☒	☐	☐
§15.239(a)	RSS-210 A2.8	20dB&99% bandwidth	19	☒	☐	☐
§15.203	RSSGEN 8.3	Antenna requirement	See note 2	☒	☐	☐

Note 1: N/A=Not Applicable.
Note 2: The EUT uses a permanently ceramic antenna, which gain is -2dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AEI7M35, IC ID: 9697AM35 complies with Section 15.207, 15.209, 15.239 of the FCC Part 15, Subpart C Rules and RSS-210.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: April 16, 2015

Testing Start Date: April 17, 2015

Testing End Date: April 17, 2015

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Reviewed by:

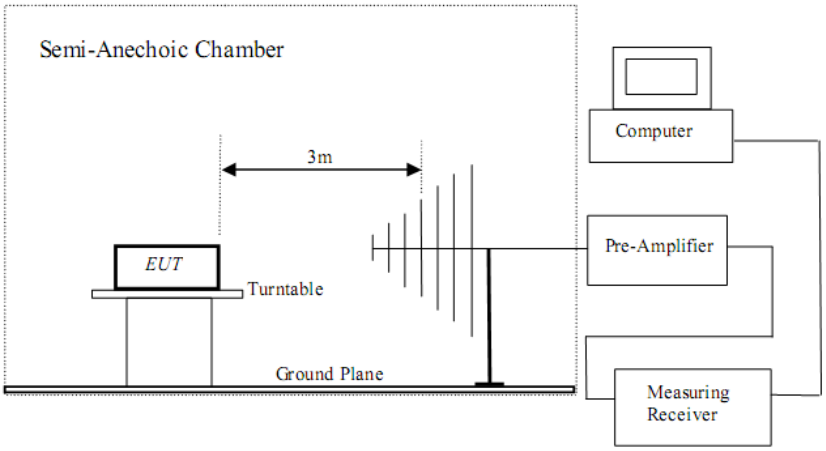
John Zhi
EMC Project Manager

Prepared by:

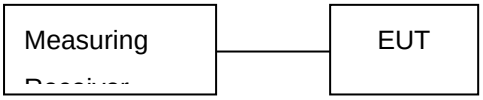
Alan Xiong
EMC Project Engineer

7 Test Setups

7.1 Radiated test setups



7.2 Conducted RF test setups



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8 Test Methodology

8.1 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. 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, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*On a standard emission test site with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules.

8.2 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + System Factor
System Factor = AF + CF + FA – PA

Where FS = Net Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer / Test Receiver in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

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9 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Mobile Phone	HUAWEI	G610	--

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10 Technical Requirement

10.1 Radiated Emission of Fundamental Frequency

Test Requirement:	FCC part 15 section 15.239(b) & RSS-210 A2.8(a)
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode.
Detector Function	Average and Peak
Measurement BW	120 kHz

Results: PASS

Radiated Emissions							
Value	Emissions Frequency **MHz**	E-Field Polarity	Field Strength at 3m **dBµV/m**	Average Factor **dB**	Net Field Strength at 3m **dBµV/m**	Limit **dBµV/m**	Delta to Limit **dBµV/m**
AV	88.100	H	45.17	0.00	45.17	47.96	-2.79
PK	88.100	H	45.17	0.00	45.17	67.96	-22.79
AV	88.100	V	34.04	0.00	34.04	47.96	-13.92
PK	88.100	V	34.04	0.00	34.04	67.96	-33.92
AV	98.100	H	41.82	0.00	41.82	47.96	-6.14
PK	98.100	H	41.82	0.00	41.82	67.96	-26.14
AV	98.100	V	33.23	0.00	33.23	47.96	-14.73
PK	98.100	V	33.23	0.00	33.23	67.96	-34.73
AV	107.900	H	42.57	0.00	42.57	47.96	-5.39
PK	107.900	H	42.57	0.00	42.57	67.96	-25.39
AV	107.900	V	34.91	0.00	34.91	47.96	-13.05
PK	107.900	V	34.91	0.00	34.91	67.96	-33.05

Remark:
-Calculated measurement uncertainty: 4.83dB(H)&4.91dB(V)
-Duty Cycle is 100% declared by the client.

Limits for Fundamental Frequency: [Section 15.239(b)]:

Fundamental Frequency	Field Strength of Fundamental	Field Strength of Fundamental	Detector
[MHz]	[µV/m]	[dBµV/m]	
88-108	250	47.96	Average Detector
88-108	2500	67.96	Peak Detector

Compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR peak and average detector.

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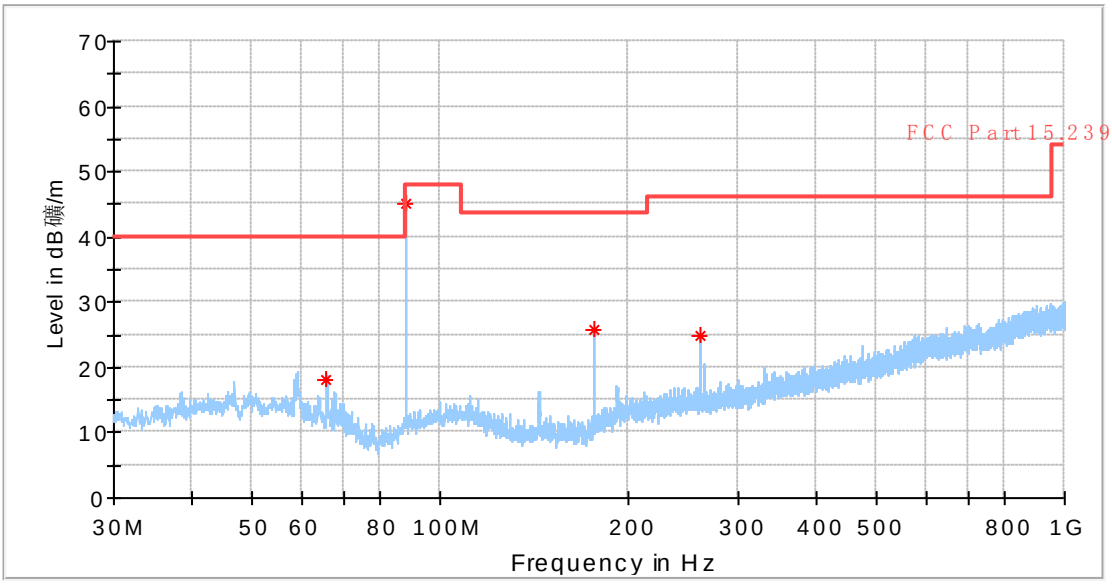
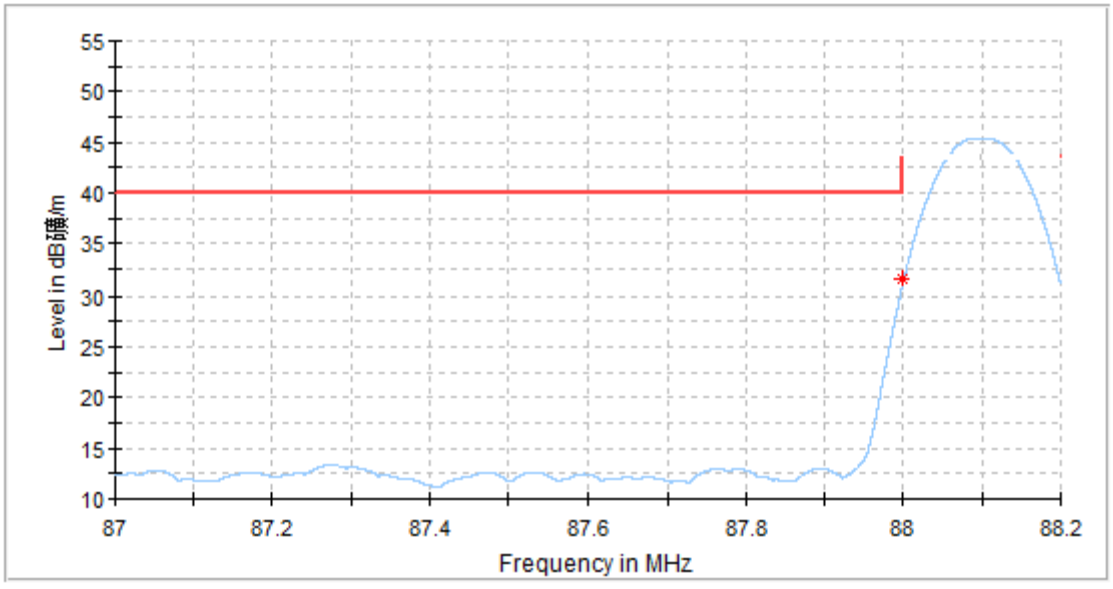
10.2 Spurious Radiated Emission

Test Requirement:	FCC part 15 section 15.239(c) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode-FM 88.1MHz.
Detector Function	Quasi-peak
Measurement BW	120 kHz
Test Specification	Horizontal





Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
65.829375	18.08	40.00	21.92	---	---	200.0	H	0.0	12.8
88.000000	31.47	40.00	12.03	---	---	200.0	H	60.0	11.4
176.166875	25.69	43.50	17.81	---	---	200.0	H	266.0	11.0
260.375000	24.77	46.00	21.23	---	---	200.0	H	245.0	14.6

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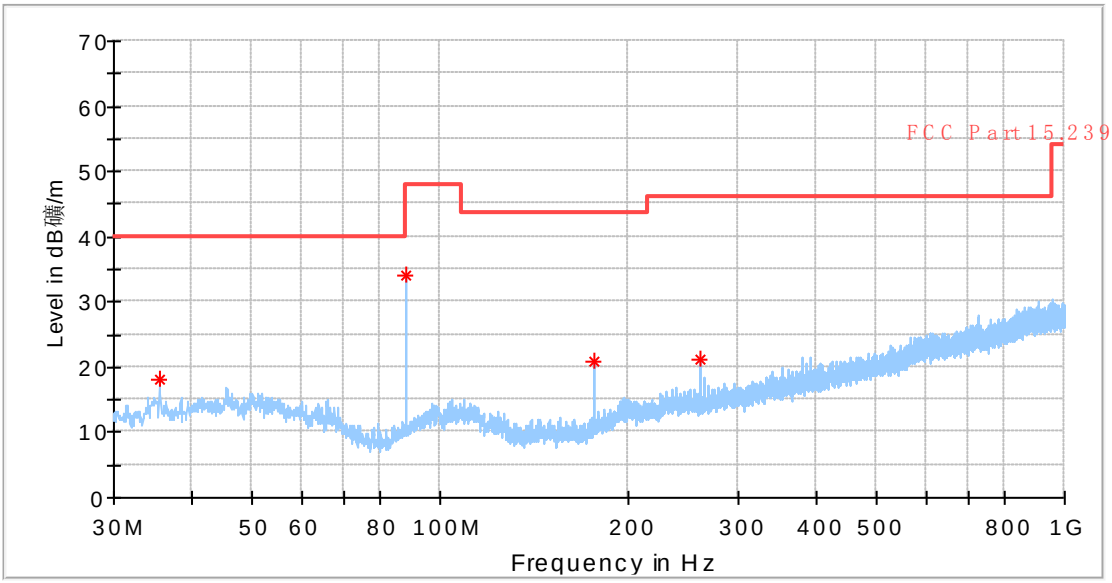
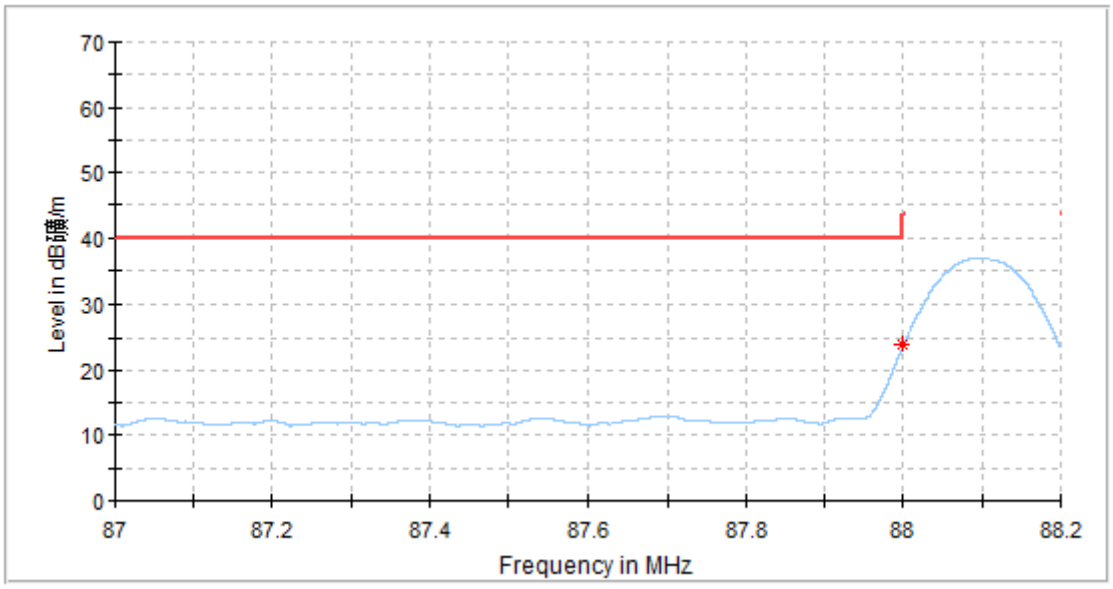
Test Requirement:	FCC part 15 section 15.239(c) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode-FM 88.1MHz.
Detector Function	Quasi-peak
Measurement BW	120 kHz
Test Specification	Vertical





Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
35.516875	18.15	40.00	21.85	---	---	200.0	V	328.0	12.9
88.000000	23.96	40.00	16.04	---	---	200.0	V	0.0	11.4
176.166875	20.86	43.50	22.64	---	---	200.0	V	161.0	11.0
260.314375	21.21	46.00	24.79	---	---	200.0	V	287.0	14.6

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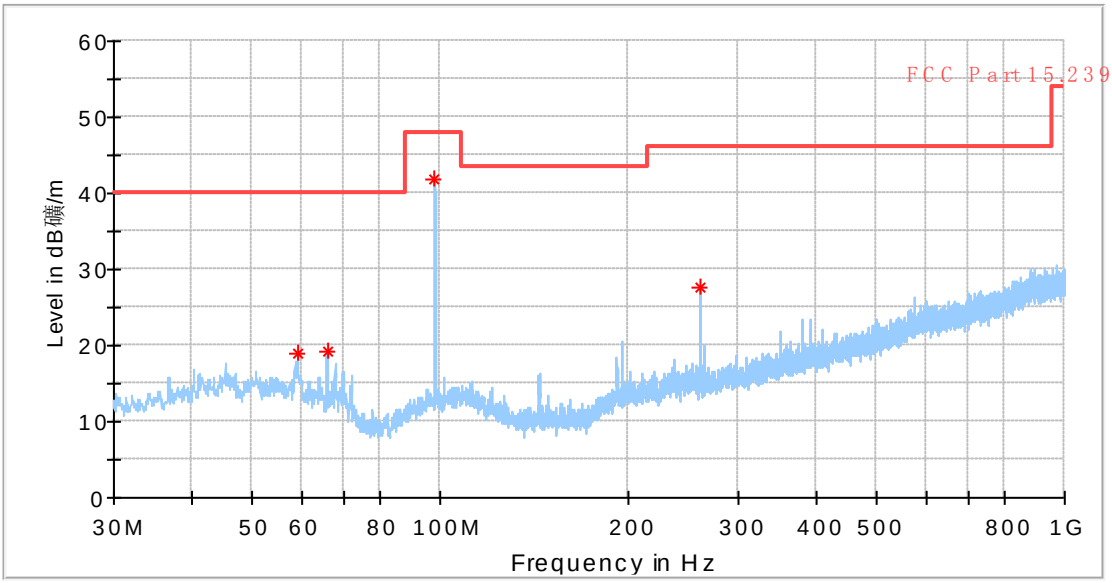
Test Requirement:	FCC part 15 section 15.239(c) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode-FM 98.1MHz.
Detector Function	Quasi-peak
Measurement BW	120 kHz
Test Specification	Horizontal



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
59.100000	18.83	40.00	21.17	---	---	100.0	H	0.0	14.0
66.011250	19.30	40.00	20.70	---	---	200.0	H	0.0	12.7
260.375000	27.71	46.00	18.29	---	---	100.0	H	245.0	14.6

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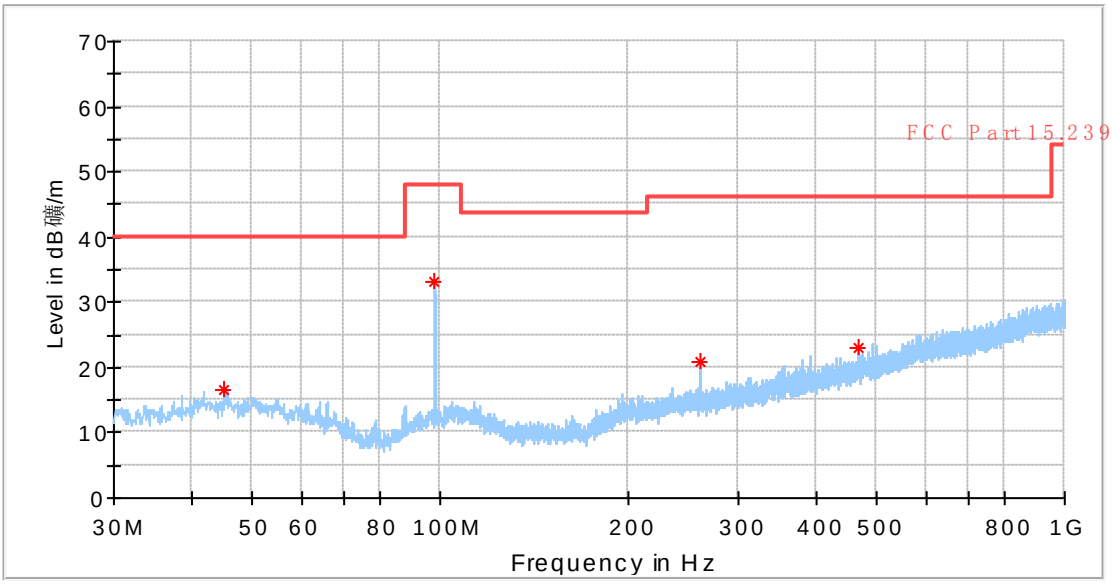
Test Requirement:	FCC part 15 section 15.239(c) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode-FM 98.1MHz.
Detector Function	Quasi-peak
Measurement BW	120 kHz
Test Specification	Vertical



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
45.156250	16.67	40.00	23.33	---	---	200.0	V	307.0	15.4
260.375000	20.89	46.00	25.11	---	---	200.0	V	307.0	14.6
468.925000	22.95	46.00	23.05	---	---	200.0	V	67.0	19.0

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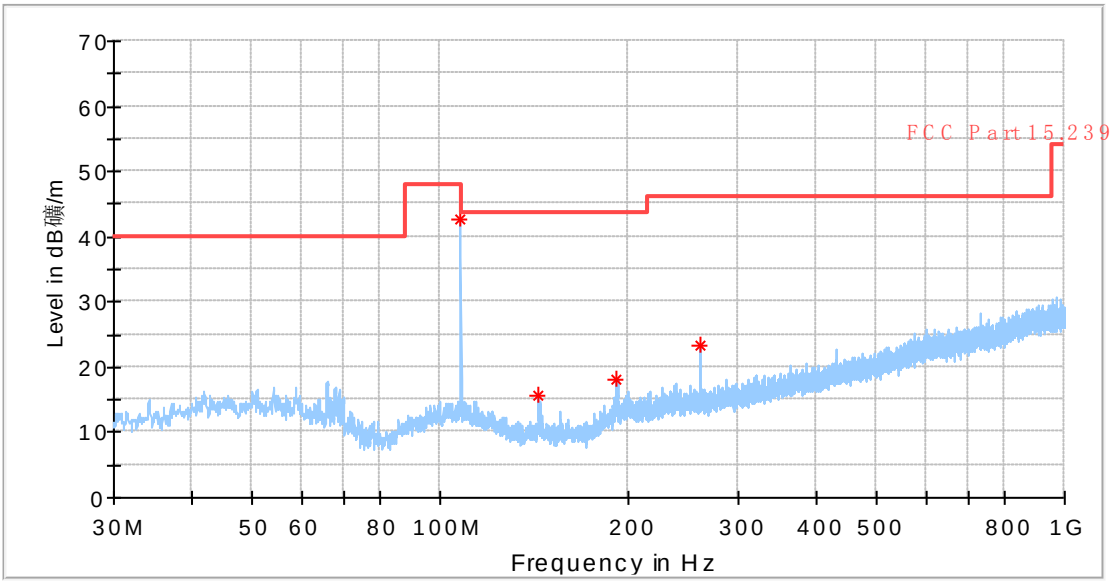
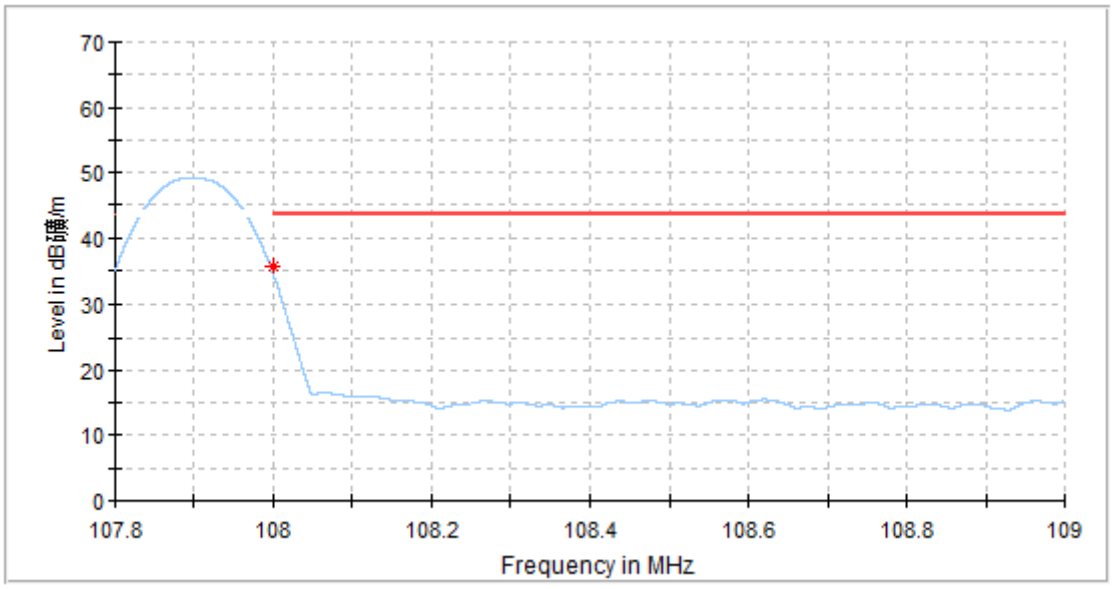
Test Requirement:	FCC part 15 section 15.239(c) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode-FM 107.9MHz.
Detector Function	Quasi-peak
Measurement BW	120 kHz
Test Specification	Horizontal





Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
143.793125	15.81	43.50	27.69	---	---	200.0	H	87.0	10.3
108.000000	35.63	43.50	7.87	---	---	200.0	H	254.0	13.7
191.747500	18.17	43.50	25.33	---	---	200.0	H	244.0	12.8
260.375000	23.45	46.00	22.55	---	---	200.0	H	233.0	14.6

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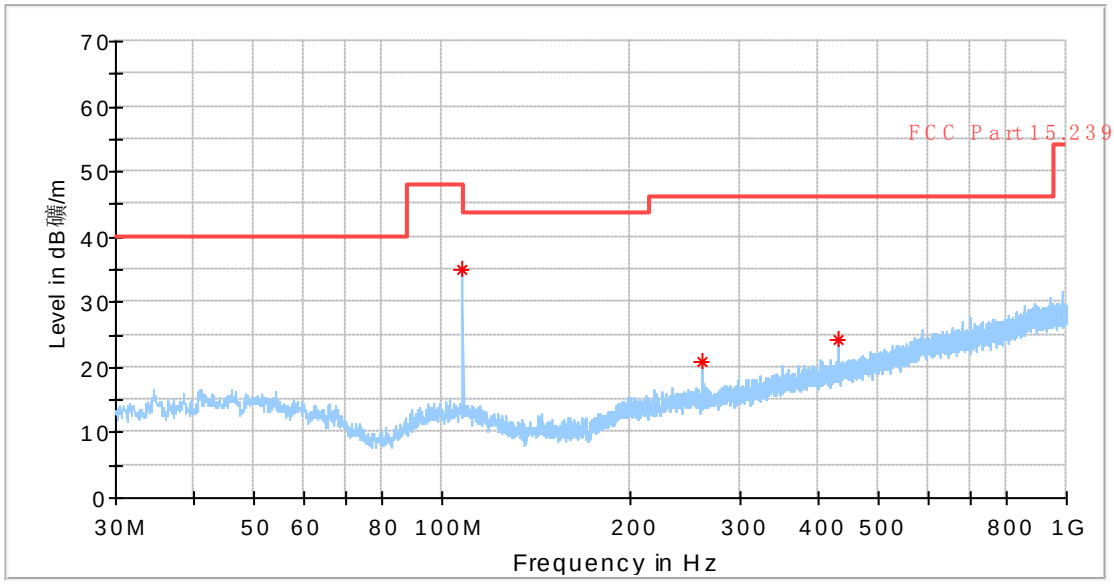
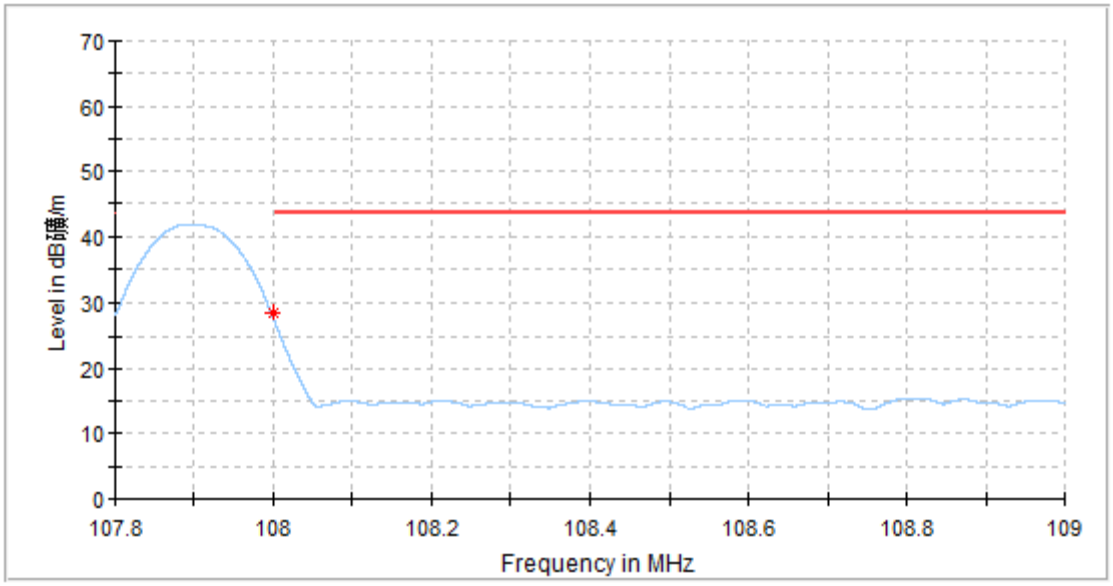
Test Requirement:	FCC part 15 section 15.239(c) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode-FM 107.9MHz.
Detector Function	Quasi-peak
Measurement BW	120 kHz
Test Specification	Vertical





Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
108.000000	28.43	43.50	15.07	---	---	200.0	V	13.0	13.7
260.375000	20.83	46.00	25.17	---	---	100.0	V	319.0	14.6
431.580000	24.16	46.00	21.84	---	---	100.0	V	0.0	18.4

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Limit for Radiated Emission Falling in Restricted Bands [Section 15.209]:

Frequency (MHz)	Field Strength [μV/m]	Field Strength [dBμV/m]
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in §15.209.

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10.3 20dB Bandwidth and 99% Bandwidth Measurement

Test Requirement:	FCC part 15 section 15.239 (a) & RSS-210 A2.8
Test Date:	2015-04-17
Mode of Operation:	Transmitting mode.
Detector Function:	Peak

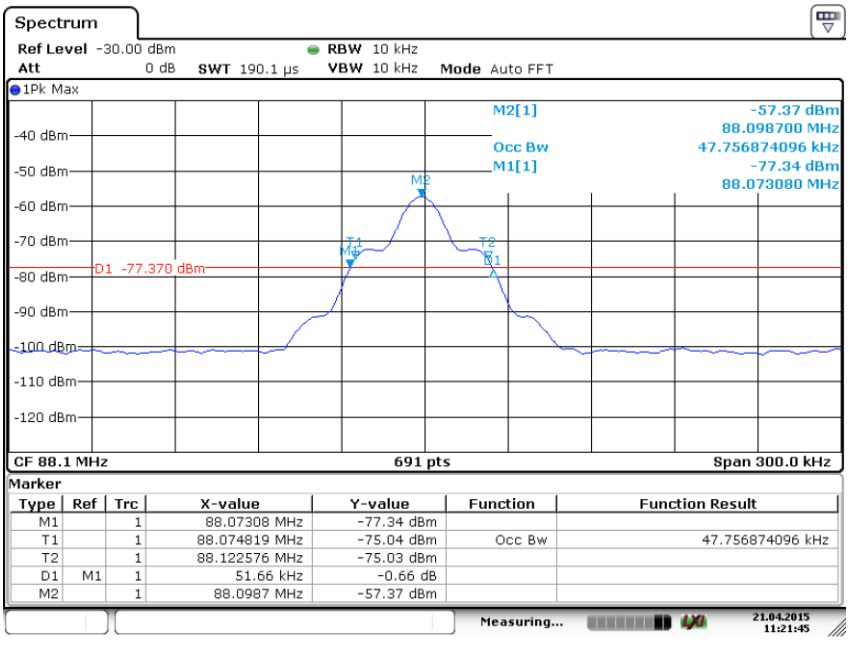
Results: PASS

Limit for Bandwidth [Section 15.239 (a)]

The occupied bandwidth shall not exceed 200 kHz.

Test Result: Result data graph is shown in the following for reference.

Frequency MHz	20 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz	Result
88.1	51.66	47.76	200	Pass
98.1	51.66	47.76	200	Pass
107.9	52.10	47.76	200	Pass



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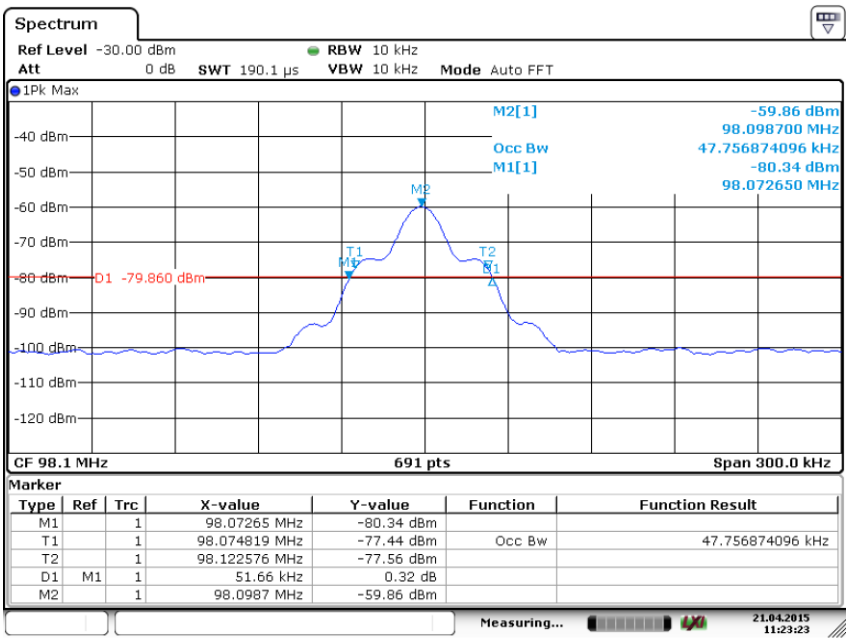

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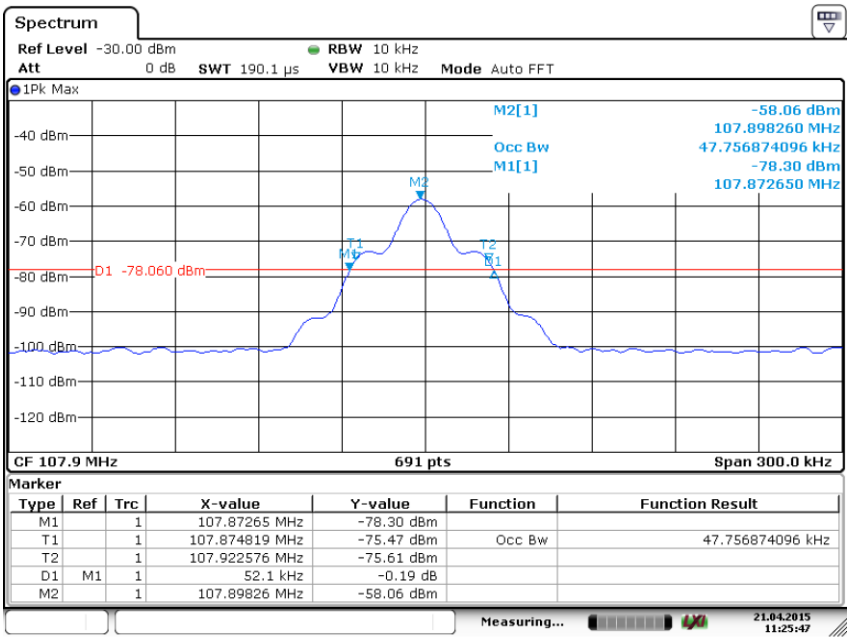

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11 Test Equipment List

List of Test Instruments

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
C	Signal Analyzer	Rohde & Schwarz	FSV40	101031	2015-8-17
RE	EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2015-8-17
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2017-8-17
	Horn Antenna	Rohde & Schwarz	HF907	102294	2017-8-17
	Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2015-8-17
	3m Semi-anechoic chamber	TDK	9X6X6	----	2019-5-29

C - Conducted RF tests

- 20dB bandwidth and 99% bandwidth

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12 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items	Extended Uncertainty
Radiated spurious emission	Horizontal: U=±4.83dB（30MHz~1GHz） Vertical: U=±4.91dB（30MHz~1GHz） Horizontal: U=±4.89dB（1GHz~18GHz） Vertical: U=±4.88dB（1GHz~18GHz）

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