



FCC Test Report

Report No: FCS202108034W02

Issued for

Applicant:	Shenzhen Guang Xin Yi Electronics Co., Ltd.
Address:	501,Yufeng ind Area,Shangtang,Longhua New Area,Shenzhen
Product Name:	Car FM Transmitter
Brand Name:	N/A
Model Name:	G61
Series Model:	G41,G45,G24,G21,G11,G11S,G13,G15,G32,G33,G41,G52,G57,ER9,AP02,AP06,Q7,Q8,Q7S,Q8S,G7,G7S,G61,G63,G35,G37,G65,G67,G68,G81,GR01,GR05,GR06,GR07,G29
FCC ID:	2AIFL-G61
Issued By: Flux Compliance Service Laboratory Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan Tel: 769-27280901 Fax:769-27280901 http://www.fcs-lab.com	

TEST RESULT CERTIFICATION

Applicant's Name.....: Shenzhen Guang Xin Yi Electronics Co., Ltd.

Address.....: 501,Yufeng ind Area,Shangtang,Longhua New Area,Shenzhen

Manufacture's Name.....: Shenzhen GXY Electronic Co.,Ltd

Address.....: 502.No.3 Yufeng Industrial Area,Xitou New Village,Shangfen Community,Minzhi Str.,Longhua District,Shenzhen

Product Description

Product Name.....: Car FM Transmitter

Brand Name: N/A

Model Name.....: G61

Series Model.....: Refer to page 1

Test Standards.....: FCC Part 15.239

Test Procedure.....: ANSI C63.10:2013

This device described above has been tested FCS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....:

Date (s) of performance of tests.: August 19, 2021 ~ August 23, 2021

Date of Issue.....: August 23, 2021

Test Result.....: Pass

Tested by

:

Scott Shen

(Scott Shen)

Reviewed by

:

Duke Qian

(Duke Qian)

Approved by

:

Kait Chen

(Kait Chen)

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Revision History

Rev.	Issue Date	Effect Page	Contents
00	August 23, 2021	All	Initial Issue

1. SUMMARY OF TEST RESULTS

FCC Part 15.239			
Standard Section	Test Item	Judgment	Remark
FCC Part 15, Paragraph 15.207	Conducted Emission	N/A	--
FCC Part 15, Paragraph 15.209	Radiated Spurious Emission	PASS	--
FCC Part 15 subpart C Paragraph 15.239	Field strength of fundamental	PASS	
15.239 (a)	20dB Bandwidth	PASS	--
15.203	Antenna Requirement	PASS	--

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) All tests are according to ANSI C63.10-2013

1.1 TEST FACTORY

Company Name:	Flux Compliance Service Laboratory
Address:	Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Telephone:	+86-769-27280901
Fax:	+86-769-27280901
FCC Test Firm Registration Number: 514908 Designation number: CN0127 A2LA accreditation number: 5545.01	

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	RF output power, conducted	± 0.71 dB
2	Unwanted Emissions, conducted	± 2.98 dB
3	Conducted Emission (9KHz-150KHz)	± 4.13 dB
4	Conducted Emission (150KHz-30MHz)	± 4.74 dB
5	All emissions,radiated(<1G) 30MHz-1000MHz	± 3.2 dB
6	All emissions,radiated (1GHz -18GHz)	± 3.66 dB
7	All emissions,radiated (18GHz -40GHz)	± 4.31 dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Car FM Transmitter
Trade Name	N/A
Model Name	G61
Series Model	Refer to page 1
Model Difference	The above product with same circuit, PCB layout, electrical parts, materials and wiring structures, the materials of decorative accessories is same, only different appearance shape and different color.
Channel List	199(Channel spacing 100kHz)
Specification	Frequency:88.1-107.9MHz Modulation: FM
Power Supply	Working Voltage: DC 12V-24V
Hardware version number	V1.0
Software version number	V1.0
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	NA	NA	Spring Antenna	N/A	1.0	Antenna

2.2 DESCRIPTION OF THE TEST MODES

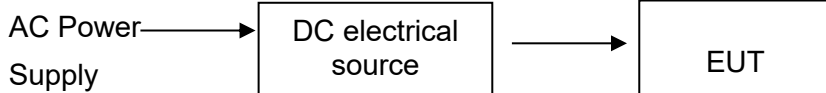
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

The test software was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table

No.	Test model descrption
1	Transmitting mode(Low channel)
2	Transmitting mod(Middle channel)
3	Transmitting mode(High channel)
Note: 1. All the requirements have been tested by modulating the transmitter with a 2.5 kHz tone at a fixed level which set to the manufacturer's maximum rated input to the modulator. 2. Only the result of the worst case was recorded in the report, if no other cases.	

Configuration and peripherals

Mode 1:



2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
1	DC electrical source	FLIKE	PS-1305D	N/A	this adapter is for testing only in repor

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.4 EQUIPMENTS LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESRP 3	FCS-E001	2021. 05.26	2022. 05.25
Signal Analyzer	R&S	FSV40-N	FCS-E012	2021. 05.26	2022. 05.25
Active loop Antenna	ZHINAN	ZN30900C	FCS-E013	2021. 05.26	2022. 05.25
Bilog Antenna	SCHWARZBECK	VULB 9168	FCS-E002	2021. 05.26	2022. 05.25
Horn Antenna	SCHWARZBECK	BBHA 9120D	FCS-E003	2021. 05.26	2022. 05.25
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	FCS-E018	2021. 05.26	2022. 05.25
Pre-Amplifier(0.1M-3G Hz)	EMCI	EM330N	FCS-E004	2021. 05.26	2022. 05.25
Pre-Amplifier (1G-18GHz)	N/A	TSAMP-0518SE	FCS-E014	2021. 05.26	2022. 05.25
Pre-Amplifier (18G-40GHz)	TERA-MW	TRLA-0400	FCS-E019	2021. 05.26	2022. 05.25
Temperature & Humidity	HTC-1	victor	FCS-E005	2021. 05.26	2022. 05.25

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	FCS-E020	2021. 05.26	2022. 05.25
LISN	R&S	ENV216	FCS-E007	2021. 05.26	2022. 05.25
LISN	ETS	3810/2NM	FCS-E009	2021. 05.26	2022. 05.25
Temperature & Humidity	HTC-1	victor	FCS-E008	2021. 05.26	2022. 05.25

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
Spectrum Analyzer	Keysight	N9020A	FCS-E015	2021. 05.26	2022. 05.25
Spectrum Analyzer	Agilent	E4447A	MY50180039	2021. 05.26	2022. 05.25
Spectrum Analyzer	R&S	FSV-40	101499	2021. 05.26	2022. 05.25

3 .CONDUCTED EMISSION MEASUREMENT

3.1 LIMIT

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

FREQUENCY (MHz)	Conducted Emissionlimit (dBUV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

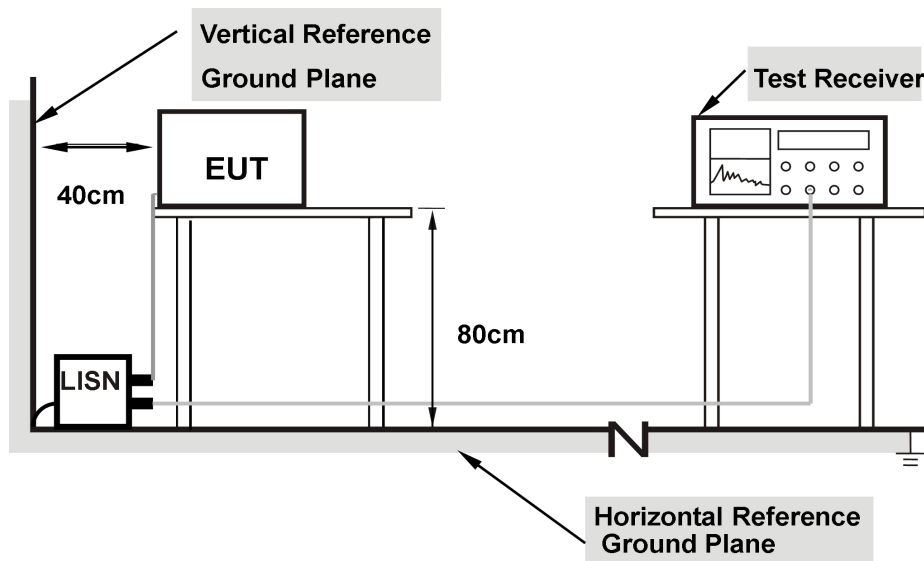
3.2 TEST PROCEDURE

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.4 TEST RESULTS

Temperature:	25℃	Relative Humidity:	50%
Test Mode:	N/A	Test Voltage:	N/A
Phase:	N/A	Result:	N/A

4. RADIATED EMISSION MEASUREMENT

4.1 LIMIT

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009mhz - 1000mhz)

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

LIMITS OF RADIATED EMISSION MEASUREMENT (1GHz-25 GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

LIMITS OF FIELD STRENGTH OF THE FUNDAMENTAL SIGNAL

FREQUENCY (MHz)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
88-108	67.94	47.96

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted band)	PK=1MHz / 1MHz, AV=1 MHz /10 Hz (Peak detector is for Both)

- The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then QuasiPeak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

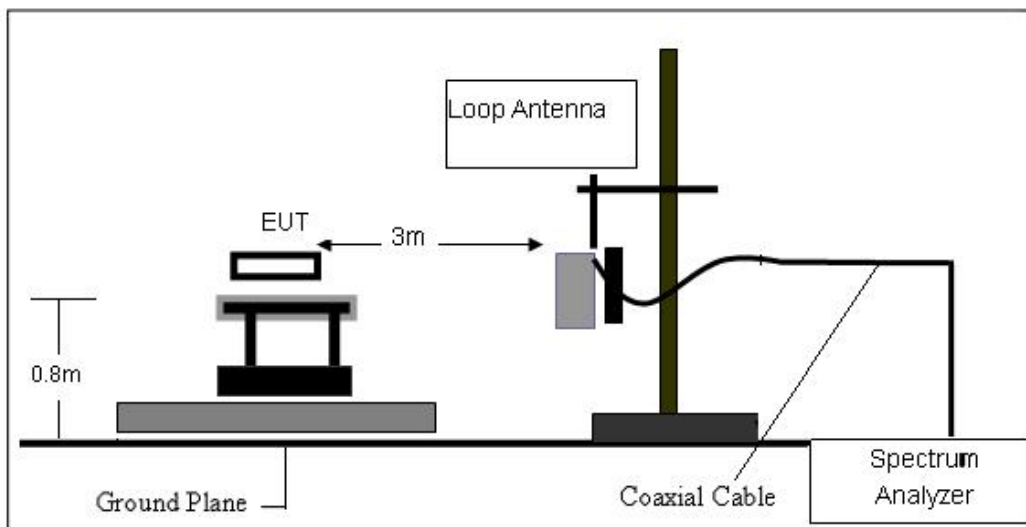
Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

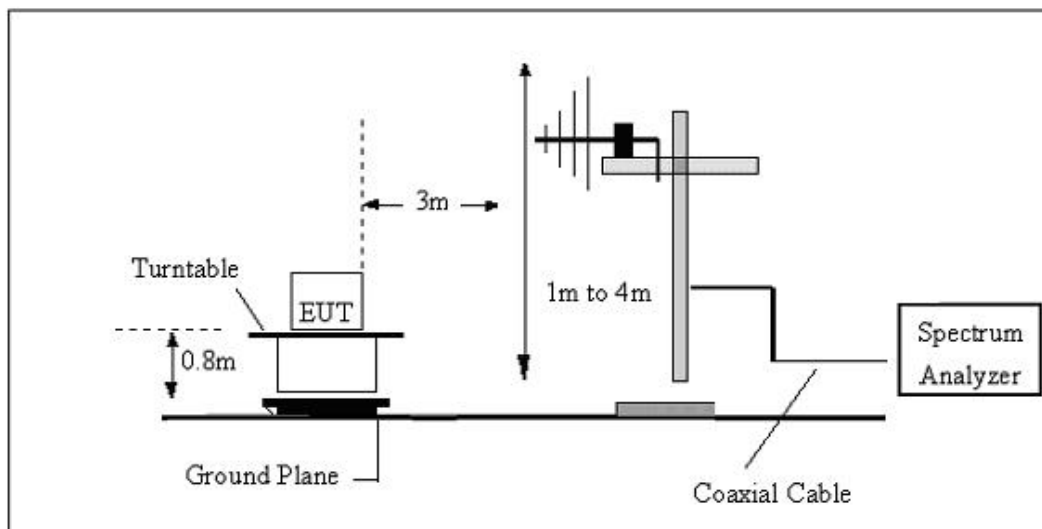
For fundamental frequency ,RBW>20dB BW ,VBW>RBW,PK detector for PK value, RMS detector for AV value.

4.3 TEST SETUP

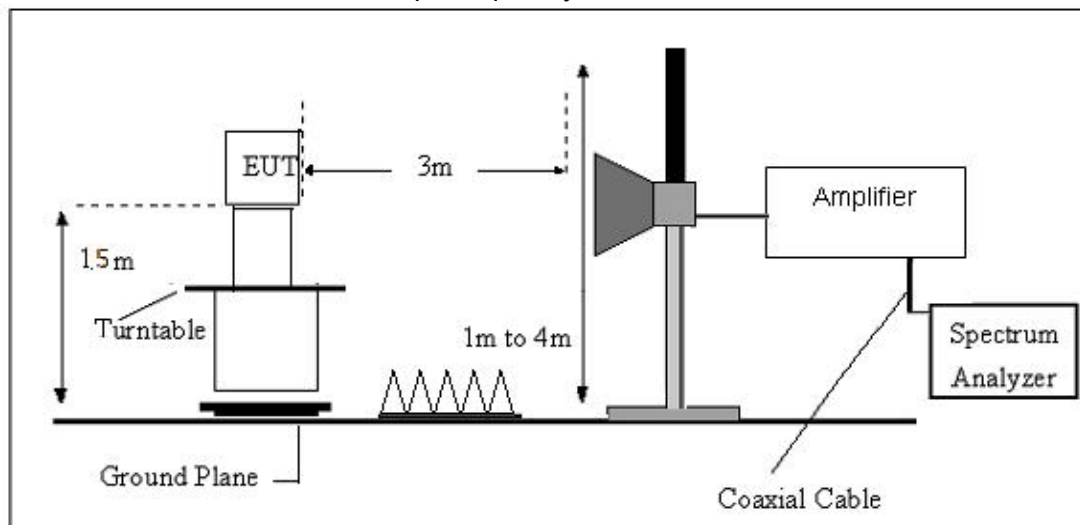
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.4 TEST RESULTS

Temperature:	25.3℃	Relative Humidity:	59%
Test Mode:	FM	Test Voltage:	DC 12V

For field strength of the fundamental signal

Frequency MHz	Polarization	Level dB(uV/m) PK	Limit dB(uV/m) PK	Margin dB	Pass/Fail	Detector
88.10	H	36.57	67.96	-31.39	Pass	PK
88.10	V	36.32	67.96	-31.64	Pass	PK
98.00	H	33.25	67.96	-34.71	Pass	PK
98.00	V	30.17	67.96	-37.79	Pass	PK
107.90	H	32.52	67.96	-35.44	Pass	PK
107.90	V	33.29	67.96	-34.67	Pass	PK
Frequency MHz	Polarization	Level dB(uV/m) AV	Limit dB(uV/m) AV	Margin dB	Pass/Fail	Detector
88.10	H	32.59	47.96	-15.37	Pass	AV
88.10	V	30.18	47.96	-17.78	Pass	AV
98.000	H	34.29	47.96	-13.67	Pass	AV
98.000	V	33.42	47.96	-14.54	Pass	AV
107.90	H	35.38	47.96	-12.58	Pass	AV
107.90	V	32.14	47.96	-15.82	Pass	AV

4.5 TEST RESULT FOR FIELD STRENGTH OF BAND EDGE EMISSION

Temperature:	25.3℃	Relative Humidity:	59%
Test Mode:	FM	Test Voltage:	DC 12V

Frequency MHz	Polarization	Level dB(uV/m) QP	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Detector
88	H	36.69	40.00	-3.31	Pass	QP
88	V	35.58	40.00	-4.42	Pass	QP
108	H	32.78	43.50	-10.72	Pass	QP
108	V	33.45	43.50	-9.05	Pass	QP

Note: The above two frequencies are the worst case for the band edge emission test.

4.6 For spurious emission

(9KHz-30MHz)

Freq.	Reading	Limit	Margin	State	Test Result
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	
--	--	--	--	--	PASS
--	--	--	--	--	PASS

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

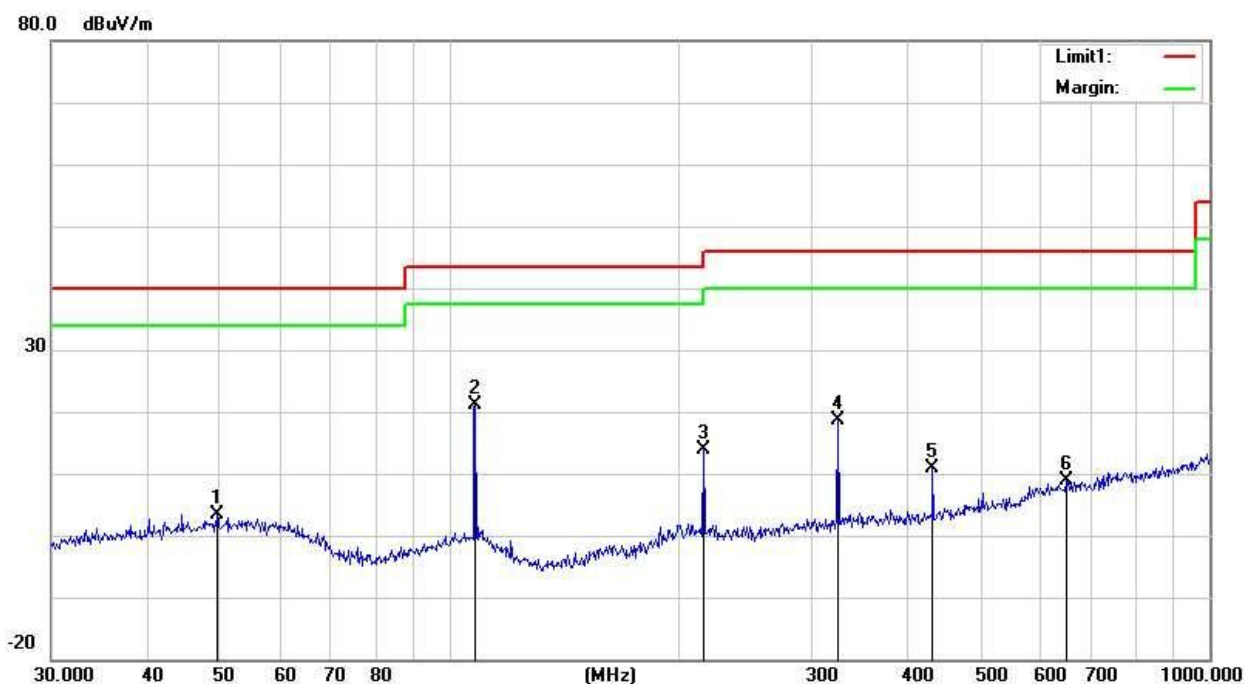
Distance extrapolation factor = $40 \log (\text{specific distance/test distance})(\text{dB})$;

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7 RADIATED SPURIOUS EMISSION

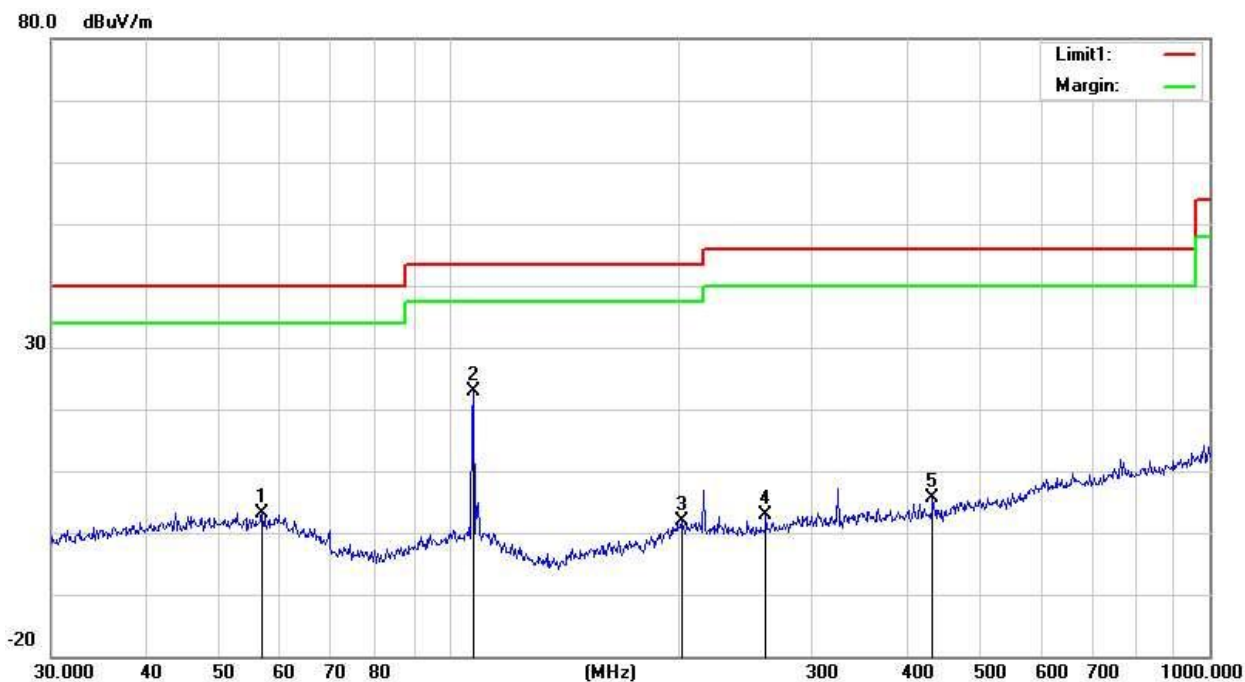
(30MHZ-1000MHZ)

Temperature:	25.7°C	Relative Humidity:	60%
Test Voltage:	DC 12V	Phase:	Horizontal
Test Mode:	FM		



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	49.5328	19.82	-16.47	3.35	40.00	-36.65	QP
2	108.2667	38.76	-17.71	21.05	43.50	-22.45	QP
3	216.0240	31.72	-17.88	13.84	46.00	-32.16	QP
4	324.4561	34.04	-15.50	18.54	46.00	-27.46	QP
5	432.5457	25.28	-14.48	10.80	46.00	-35.20	QP
6	647.3856	19.51	-10.58	8.93	46.00	-37.07	QP

Temperature:	22.7°C	Relative Humidity:	61%
Test Voltage:	DC 12V	Phase:	Vertical
Test Mode:	FM		



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	56.7917	29.90	-26.71	3.19	40.00	-36.81	QP
2	100.2286	28.28	-28.52	-0.24	43.50	-43.74	QP
3	107.8877	38.09	-27.75	10.34	43.50	-33.16	QP
4	202.1005	29.73	-27.93	1.80	43.50	-41.70	QP
5	261.0583	30.28	-27.36	2.92	46.00	-43.08	QP
6	432.5457	30.11	-24.48	5.63	46.00	-40.37	QP

Remarks:

1. Margin = Result (Result =Reading + Factor) – Limit

6. 20 DB BANDWIDTH TEST

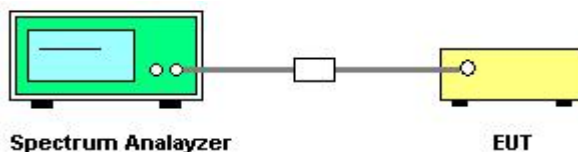
6.1 LIMIT

According to is 15.239 (a) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz

6.2 TEST PROCEDURE

- Check the calibration of the measuring instrument using either an internal calibrator or a
- a. known signal from an external generator
 - b. Position the EUT without connection to measurement instrument. 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.
 - c. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
 - 1.Span equal to approximately two times to three times the EBW, centered on the carrier frequency.
 - 2.RBW, as specified in the requirement.
 - 3.VBW, as specified in the requirement, or $VBW \geq RBW$ if not specified
 - 4.Sweep = auto.
 - 5.Detector function = peak.
 - 6.Trace = max hold.
 - 7.Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the "N dB down" function of SPA to define the bandwidth.
 - 8.Record the plots and Reported.

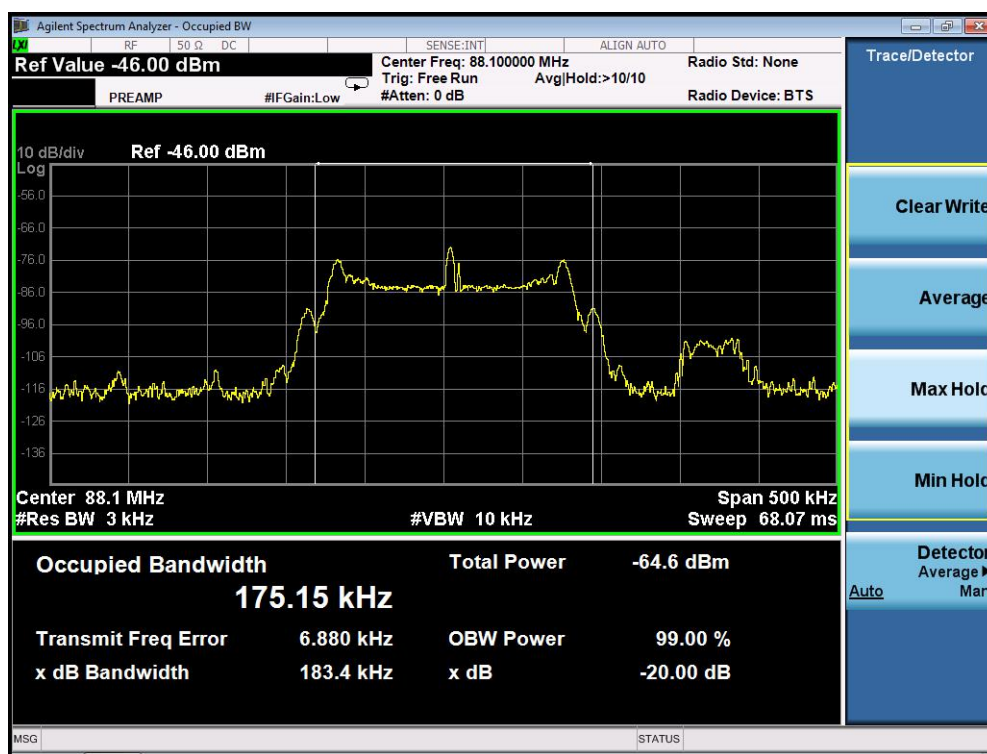
6.3 TEST SETUP



6.4 TEST RESULTS

Temperature:	25°C	Relative Humidity:	50%
Test Mode:	FM	Test Voltage:	DC 12V

Frequency	20dB Bandwidth (KHz)	Result
88.10 MHz	183.4	PASS
98.00 MHz	188.9	PASS
107.90 MHz	176.6	PASS





7. ANTENNA REQUIREMENT

6.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

6.2 EUT ANTENNA

The antennas used for this product are Spring antenna and other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 1.0dBi.

*****END OF THE REPORT*****