

FCC PART 95 TEST REPORT

for

GPS & Two-Way Radio

Model No.: A03250

FCC ID: IPH-03250

of

Applicant: **Garmin International Inc**

Address: **1200 E. 151st. Street Olathe Kansas 66062 United States**

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1, IC 5107A-1

A2LA Accredited No.: 2732.01



Report No.: W6M21703-16679-C-95

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: wts@wts-lab.com

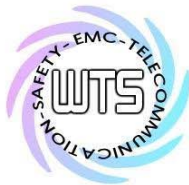
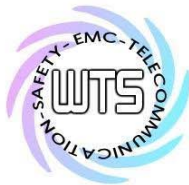


TABLE OF CONTENTS

1.	General Information.....	3
1.1	NOTES.....	3
1.2	TESTING LABORATORY	4
1.2.1	LOCATION.....	4
1.2.2	DETAILS OF ACCREDITATION STATUS.....	4
1.3	DETAILS OF APPROVAL HOLDER.....	5
1.4	APPLICATION DETAILS	5
1.5	GENERAL INFORMATION OF TEST ITEM.....	5
1.6	TEST STANDARDS.....	6
2.	Technical test	7
2.1	SUMMARY OF TEST RESULTS	7
2.2	TEST ENVIRONMENT	7
2.3	DESCRIPTION OF TESTED SYSTEM.....	7
2.4	TEST EQUIPMENT LIST	8
2.5	GENERAL TEST PROCEDURE	11
3.	Test results (enclosure)	12
4.	RF Power Output (conducted), FCC 2.1046; 95.639	13
4.1	TEST PROCEDURE.....	13
4.2	TEST RESULTS	13
4.3	LIMITS:	15
5.	Radiated Power	16
5.1	TEST PROCEDURE	16
5.2	TEST RESULTS.....	17
5.3	LIMITS:	24
6.	Modulation Deviation, FCC 2.1047 (b), 95.631(j)	25
6.1	TEST PROCEDURE.....	25
6.2	TEST RESULTS:.....	25
6.3	LIMITS:	29
7.	Audio frequency response, FCC 2.1047 (a)	30
7.1	TEST PROCEDURE.....	30
7.2	TEST RESULTS:.....	31
7.3	LIMITS:	39
8.	Occupied Bandwidth/Emission Mask, FCC 2.1049 (c) ; 95.632	41
8.1	TEST RESULTS	41
8.2	LIMIT	45
9.	Radiated Spurious Emission, FCC 2.1053; 95.635	46
9.1	TEST PROCEDURE.....	46
9.2	TEST RESULTS	46
9.2.1	SPURIOUS EMISSION NEAR THE CARRIER:	46

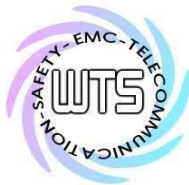


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

9.2.2	SPURIOUS EMISSION NOT NEAR THE CARRIER:.....	46
9.3	EXPLANATION OF TEST RESULT.....	47
9.4	LIMITS	47
10.	Frequency Stability vs. Temperature, FCC 2.1055, 95.632	48
10.1	TEST PROCEDURE.....	48
10.2	TEST RESULTS	48
10.3	LIMITS:	48
11.	Frequency Stability vs. Voltage, FCC 2.1055 (d) ; 95.632	49
11.1	TEST PROCEDURE.....	49
11.2	TEST RESULTS	49
11.3	LIMITS:	49
12.	Receiver Radiated Spurious Emission	50
12.1	TEST PROCEDURES.....	50
12.2	TEST SETUP	50
12.3	TEST RESULT	51
13.	Maximum Permissible Exposure.....	52
13.1	APPLICABLE STANDARD	52
13.2	MPE CALCULATION METHOD	52

Appendix



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

1. General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

The test report may only be reproduced or published in full.

Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.

Tester:

June 29, 2017

Mark Cheng

Date

WTS-Lab.

Name

Signature

Technical responsibility for area of testing:

June 29, 2017

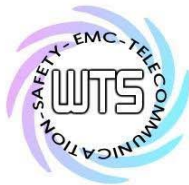
Kevin Wang

Date

WTS

Name

Signature



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

1.2 Testing laboratory

1.2.1 Location

OATS

No.5-1, Lishui, Shuang Sing Village,
Wanli Dist., New Taipei City 207,
Taiwan (R.O.C.)

3 meter semi-anechoic chamber

No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

TEL:886-2-6613-0228

FAX:886-2-2791-5046

Company

Worldwide Testing Services(Taiwan) Co., Ltd.

6F, NO. 58, LANE 188, RUEY-KUANG RD.

NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877

Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA accredited number: 2732.01

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1, IC 5107A-1

Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :

Name: ./.

Accredited number: ./.

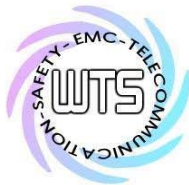
Street: ./.

Town: ./.

Country: ./.

Telephone: ./.

Fax: ./.



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

1.3 Details of approval holder

Name: Garmin International Inc
Street: 1200 E. 151st. Street
City: Olathe Kansas 66062
Country: United States
Telephone: (913) 397-8448
Fax: (913) 397-8282

1.4 Application details

Date of receipt of test item: May 02, 2017
Date of test: from May 02, 2017 to June 28, 2017

1.5 General information of Test item

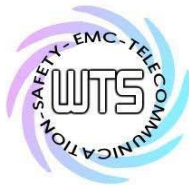
Type of test item: GPS & Two-Way Radio
Model Number: A03250
Multi-listing model number: ./.
Brand Name: Garmin
Photos: See appendix

Technical data

Operating frequency band: GMRS / FRS: 462.5625-462.7125 MHz
FRS: 467.5625-467.7125 MHz
GMRS: 462.5500-462.7250 MHz
GMRS: 467.5500-467.7250 MHz
Sample tested frequency: 462.6375 MHz 、 462.6500 MHz 、 467.6375 MHz
、 467.65 MHz
Number of RF-channels: GMRS: 15 Ch / FRS: 7Ch
Type of modulation: FM
Designation of emission: 10K10F3E
Channel spacing: GMRS: 25 / FRS: 12.5 kHz
Antenna Type: Coil antenna / -1 dBi
Connection of Antenna: ☐ detachable ☒ not detachable



Page 6 of 53



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

2. Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified in 3 were ascertained in the course of the tests performed.



2.2 Test environment

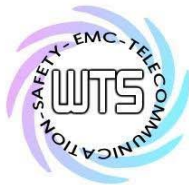
Temperature: 23 °C
Relative humidity content: 20 ... 75 %
Air pressure: 86-103 KPa

2.3 Description of Tested System

The EUT was tested with the Accessories or Peripherals Listed below:

Equipment	Model No.	Series No.	Software	Cable information	Note
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

Explanation: The EUT was configured as stand alone device, and there are no accessories or peripherals during the test.

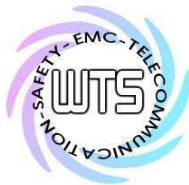


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

2.4 Test Equipment List

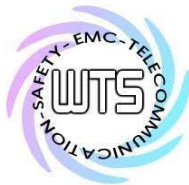
No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2017/5/26	2018/5/25
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 008	HF-EICHLITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2016/7/15	2017/7/14
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2016/9/12	2017/9/11
ETSTW-CE 028	MXE EMI Receiver	N9038A	MY53220110	Agilent	2016/8/26	2017/8/25
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2017/5/26	2018/5/25
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2017/5/17	2018/5/16
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2016/7/4	2017/7/3
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2017/6/23	2018/6/22
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2017/6/23	2018/6/22
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	ETS-Lindgren	2017/3/22	2018/3/21
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2017/2/7	2018/2/6
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2017/4/10	2018/4/9
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2017/4/27	2018/4/26
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2017/3/1	2018/2/28
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2017/3/1	2018/2/28
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2017/3/1	2018/2/28
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2017/3/1	2018/2/28
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2017/3/1	2018/2/28
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2017/4/12	2018/4/11
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	ETS-Lindgren	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2016/9/8	2017/9/7
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2016/9/20	2017/9/19
ETSTW-RE 091	Match Pad	MDCS1500	None	WOKEN	2017/4/6	2018/4/5
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2017/3/1	2018/2/28
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	T-0A023536	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2017/1/12	2018/1/11
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2017/5/26	2018/5/25
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2016/8/10	2017/8/9
ETSTW-RE 126	5GHz Notch filter	5NSL12-5800/E221.3-O/O	1	K&L Microwave	2016/8/10	2017/8/9
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2017/3/1	2018/2/28
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2016/8/10	2017/8/9
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2016/8/10	2017/8/9
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	2017/4/12	2018/4/11
ETSTW-RE 143	Humidity Temperature Meter	TES-1260	110104623	TES	2016/8/19	2017/8/18
ETSTW-RE 147	Bi-log Hybrid Antenna	MCTD 2786B	BLB16M04005	ETC	2017/3/22	2018/3/21
ETSTW-EMI 011	USB Compact Modulator	SFC-U	101689	R&S	2017/5/10	2018/5/9
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2017/2/24	2018/2/23
ETSTW-GSM 003	Radio Communication Analyzer	MT8820C	6201342073	Anritsu	2017/2/10	2018/2/9
ETSTW-GSM 004	Wideband Radio Communication Tester	CMW500	128092	R&S	2016/12/15	2017/12/14
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40/12+9SS	3	WI	2017/1/12	2018/1/11
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2017/1/12	2018/1/11
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2017/1/12	2018/1/11
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2017/1/12	2018/1/11
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2016/9/14	2017/9/13
ETSTW-Cable 010	BNC Cable	RGS-142	None	THERMAX	2016/9/12	2017/9/11
ETSTW-Cable 011	SMA to N type Cable	RGU-400	None	THERMAX	Pre-test Use NCR	
ETSTW-Cable 012	BNC Cable	RGS-400	None	THERMAX	2016/9/12	2017/9/11
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2017/2/23	2018/2/22
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2017/2/23	2018/2/22
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2017/2/23	2018/2/22
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2017/2/23	2018/2/22
ETSTW-Cable 020	N TYPE Cable	OATS Cable 1	N30N30-L335-15M	JYE BAO CO.,LTD.	2017/4/21	2018/4/20
ETSTW-Cable 022	N TYPE Cable	5006	0002	JYE BAO CO.,LTD.	2017/4/6	2018/4/5
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2017/3/1	2018/2/28
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2017/5/12	2018/5/11
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2016/9/20	2017/9/19
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2016/9/20	2017/9/19
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S Cable 9)	279067	HUBER+SUHNER	2017/3/1	2018/2/28
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104 (S Cable 10)	238092	HUBER+SUHNER	2017/4/12	2018/4/11
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2017/4/12	2018/4/11
ETSTW-Cable 048	Microwave Cable	SUCOFLEX 104	325519	HUBER+SUHNER	2017/4/12	2018/4/11

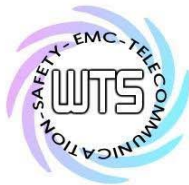


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2017/2/20	2018/2/19
ETSTW-Cable 064	Microwave Cable	SUCOFLEX 104	MY28891	HUBER+SUHNER	2017/4/12	2018/4/11
ETSTW-Cable 066	SMA type cable	32022	None	ASTROLAB	2016/9/12	2017/9/11
ETSTW-Cable 071	N TYPE CABLE	EMCCFD400-NM-NM-25000	170239	EMCI	2017/2/20	2018/2/19
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1	
WTSTW-SW 006	EMI TEST SOFTWARE	e3	None	AUDIX	Version 9.161014	
WTSTW-SW 008	Signal studio	Agilent	None	AUDIX	Version 2.0.0.1	



2.5 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.10-6.2 using a 50 μ H LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.10-6.3 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 23°C with a humidity of 40 %.

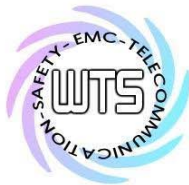
The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

- (1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
- (2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
- (3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
- (4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1)-(a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this Section, whichever is the higher frequency range of investigation.

For hand-held devices, an exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.

Measurements were made by at the registered open field test site located at The Registration Number: 930600. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

ANSI STANDARD C63.10 B.2.7 Any measurements that utilize special test software shall be indicated and referenced in the test report. During testing, test software 'EZ EMC' was used for setting up different operation modes.

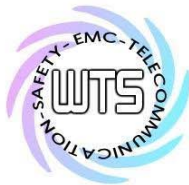


Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

3. Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
RF Power Output	FCC part 95.135 (e) FCC part 95.639 (d)	☒	☒	☐
Modulation Deviation	FCC Part 95.637(b), FCC part 2.1047(a)	☒	☒	☐
Audio Frequency Response	2.1047 (a) 95.631 (j)	☒	☒	☐
Occupied Bandwidth / Emission Mask	FCC part 95.633 (a)&(c) FCC part 95.635 (b)(1)(3)(7)	☒	☒	☐
Radiated Spurious Emission Transmitter	2.1053 95.635 (e)	☒	☒	☐
Radiated Spurious Emission Receiver	Part 15B	☒	☒	☐
Frequency Stability vs. Temperature	FCC part 95.621 (b)	☒	☒	☐
Frequency Stability vs. Voltage	FCC part 95.621 (b)	☒	☒	☐

The following is intentionally left blank.



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

4. RF Power Output (conducted), FCC part 95.639 (a) & (d)

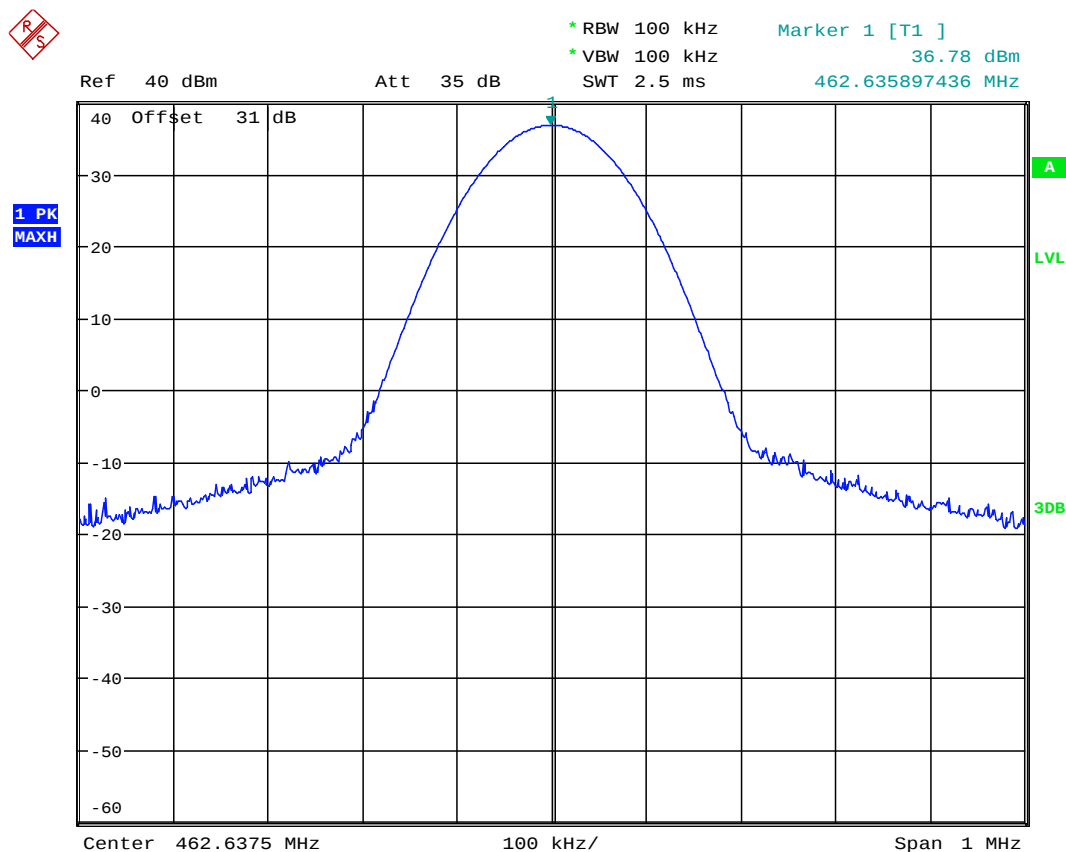
4.1 Test procedure

This transmitter output was connected to a calibrated coaxial attenuator, the other end of which was connected to a spectrum analyzer. Transmitter output was derived with the spectrum analyzer in dBm. The power output at the transmitter antenna port was determined by assign the value of the attenuator to the spectrum analyzer reading.

An HP power meter was also used to measure the RF power.

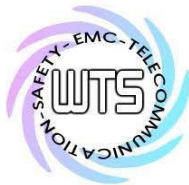
Tests were performed with an un-modulated carrier at three frequencies (low, middle and high channels) and on all power levels, which can be set-up on the transmitters, if applicable.

4.2 Test Results



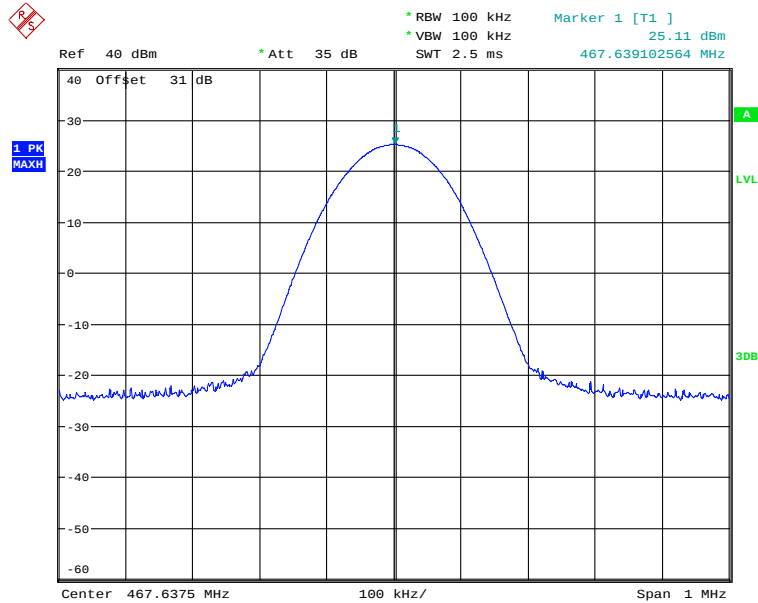
MAX OUTPUT POWER CH4 462.6375MHZ

Date: 2.MAY.2017 10:02:40

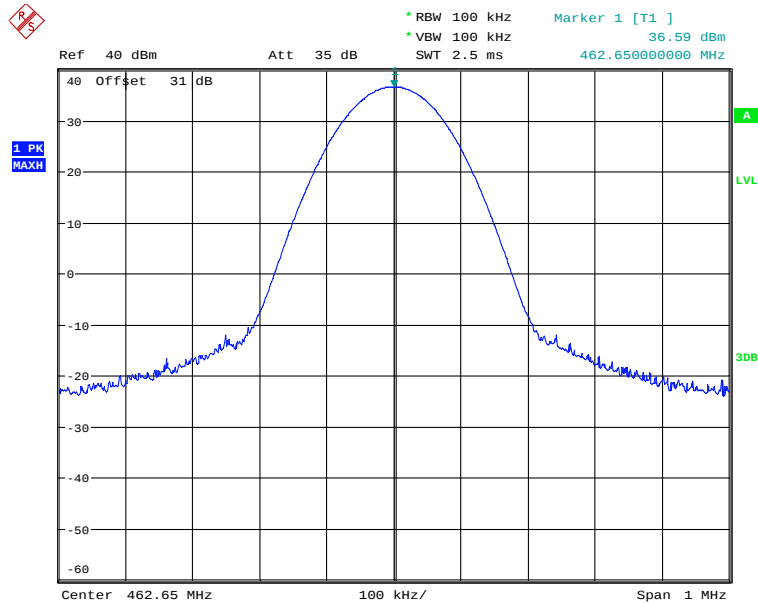


Worldwide Testing Services(Taiwan) Co., Ltd.

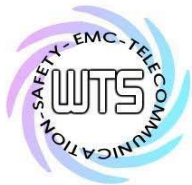
Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



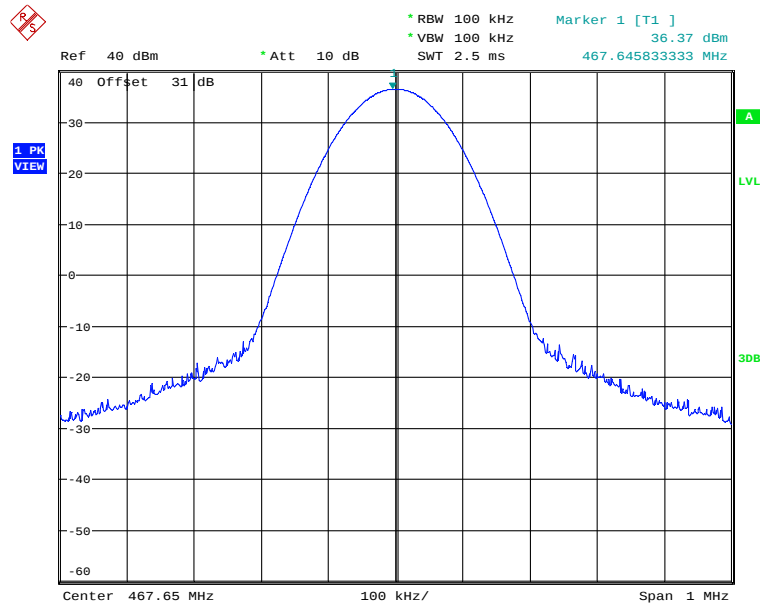
MAX OUTPUT POWER CH11 467.6375MHZ
Date: 28.JUN.2017 13:26:57



MAX OUTPUT POWER CH19 462.65MHZ
Date: 2.MAY.2017 10:42:49



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



MAX OUTPUT POWER CH19R 467.65MHZ
Date: 13.JUN.2017 10:03:17

Average Power= Peak Power - Duty factor of 50%

Frequency band	Peak Power	Duty factor of 50%	Average Power
GMRS / FRS: 462.5625-462.7125 MHz	36.78 dBm	-3 dB	33.78 dBm
FRS: 467.5625-467.7125 MHz	25.11 dBm	-3 dB	22.11 dBm
GMRS: 462.5500-462.7250 MHz	36.59 dBm	-3 dB	33.59 dBm
GMRS: 467.5500-467.7250 MHz	36.37 dBm	-3 dB	33.37 dBm

4.3 Limits:

FCC Part 95.639(d):

GMARS: The maximum permissible transmitter output power under any operating conditions is 50 W e.r.p. (47 dBm). The radio shall be equipped with an integral antenna.

FRS: The maximum permissible transmitter output power under any operating conditions is 0.5 W e.r.p. (27 dBm). The radio shall be equipped with an integral antenna.

Test equipment used: ETSTW-RE 060, ETSTW-RE 055

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

5. Radiated Power

5.1 Test Procedure

The EUT was positioned on a non-conductive turntable, 0.8m above the ground on an open test site. The radiated emission at the fundamental frequency was measured at 3m distance with a test antenna and spectrum analyzer.

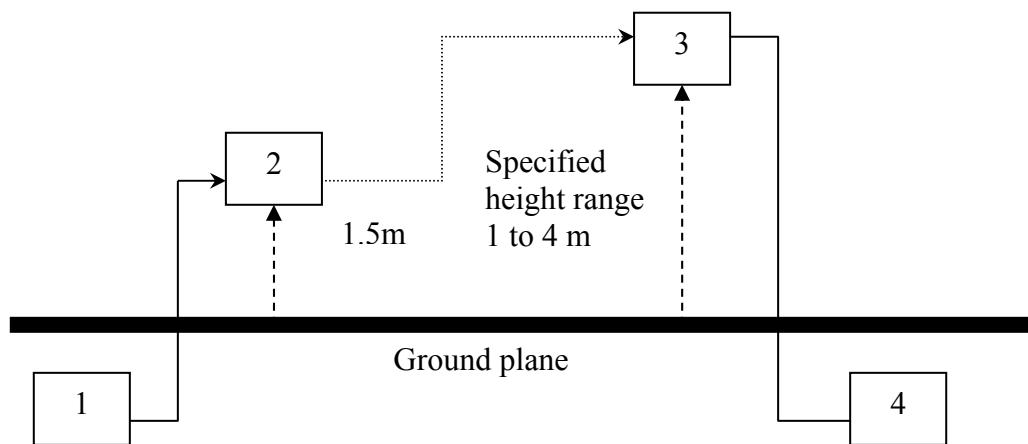
Worst case emission was recorded with the rotation of the turntable and the rising and lowering of the test antenna.

Substitution RF power Measurement at WTS

General:

The applied substitution method follows ANSI/TIA/EIA-603, ANSI/TIA/EIA-102.CAAA or the appropriate ETSI rules respectively.

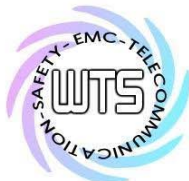
The actual signal generated by the EUT can be determined by means of a substitution measurement in which a known signal source replaces the device to be measured.



- 1) Signal generator ;
- 2) Substitution antenna ;
- 3) Test antenna ;
- 4) Spectrum analyzer or selective voltmeter.

The substitution antenna replaces the transmitter antenna at the same position and in vertical polarization. The frequency of the signal generator shall be adjusted to the measurement frequency. The test antenna shall be raised or lowered, if necessary, to ensure that the maximum signal is still received. The input signal to the substitution antenna shall be adjusted in level until an equal or a known related level to that detected from the transmitter is obtained in the measurement receiver. If a fully anechoic chamber is used as test site in order to provide free space conditions there is no need to change the height of the antenna.

The measurement will be repeated in horizontal position.



Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

Calibration:

In order to make this kind of measurement more effective and to avoid subjective measurement faults ETS has installed automatic computer controlled measurement procedures.

With the above described substitution method a test site is calibrated over the full frequency range which is used in suitable frequency steps. For a certain power level on the substitution antenna the received power over the whole frequency range is documented. All necessary antenna gains, cable losses, filter losses and amplifications of preamplifiers are taken in consideration. The summary of this calibration measurement performs a transducer factor that is related to the considered test site and a certain measurement distance. Differences of the radiated power levels of different test samples are determined by internal attenuation of measurement receiver. The proper function of such test site will be maintained by short term plausibility checks and periodical re-calibration.

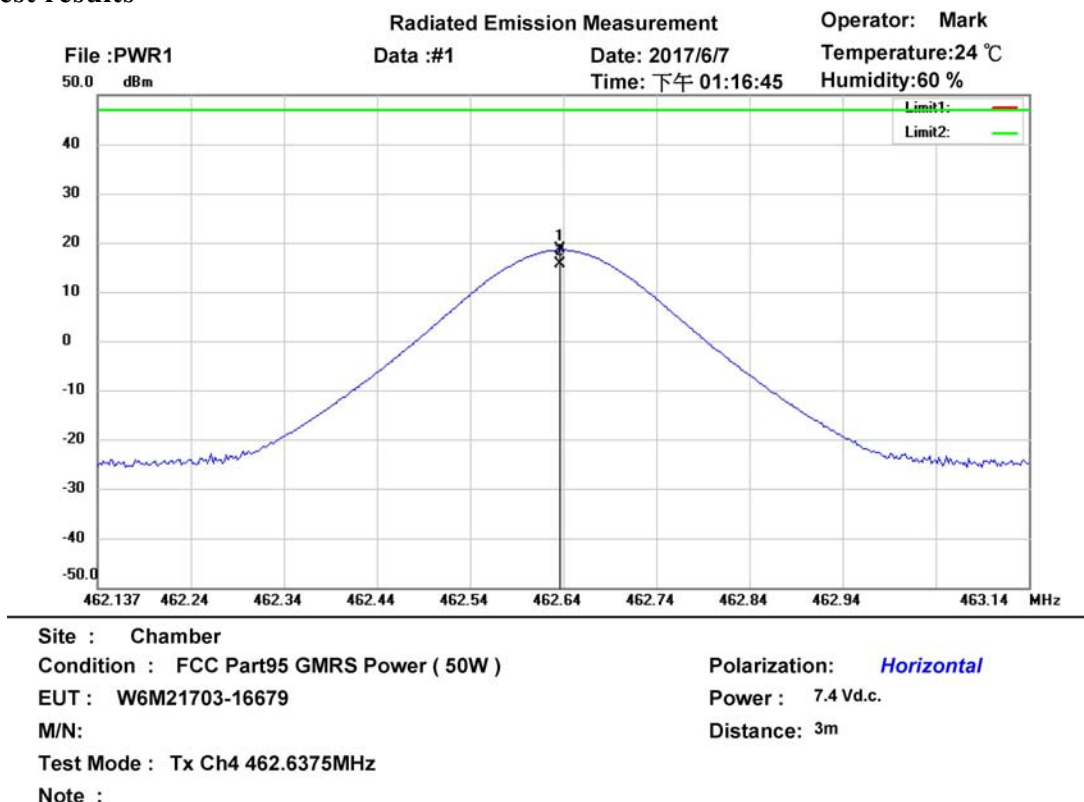
Testing:

Now the test sample will be putted on the table at the defined position and the radiated power will be receiver and documented by the measurement receiver.

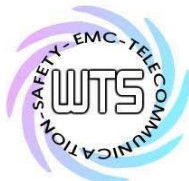
On test sites with ground plane the measurement antenna will be lowered and raised to maximum values at significant frequencies.

For peak power measurements the sample is turned by the turntable over 360 degree in order to find the direction with the maximum radiation or to document the max reading with the MAXHOLD function during the rotation.

5.2 Test results



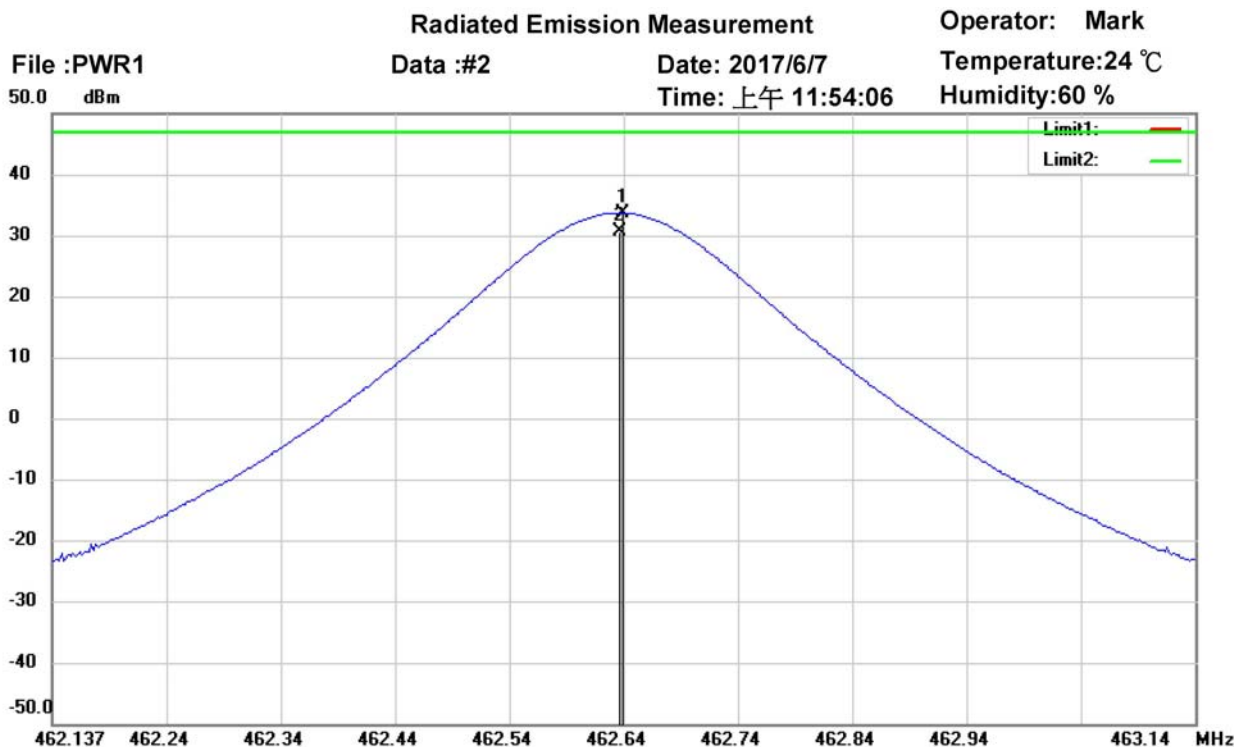
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6340	-15.44	peak	34.01	18.57	47.00	150	100	-28.43	
	462.6340	-18.44	AVG	34.01	15.57	47.00	150	200	-31.43	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250



Site : Chamber

Condition : FCC Part95 GMRS Power (50W)

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

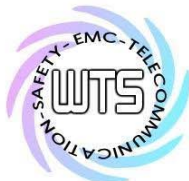
Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6345	3.19	peak	30.55	33.74	47.00	150	240	-13.26	
	462.6340	0.19	AVG	30.55	30.74	47.00	150	100	-16.26	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

Radiated Emission Measurement

Operator: Mark

File :PWR2

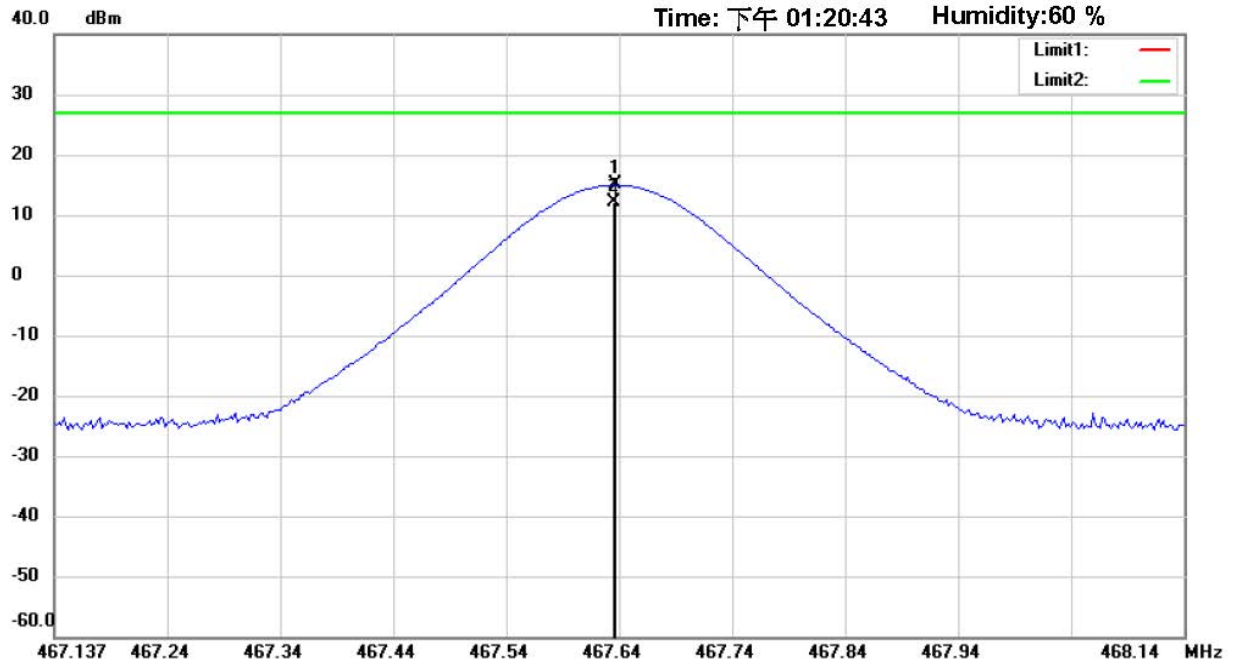
Data :#1

Date: 2017/6/7

Temperature:24 °C

Time: 下午 01:20:43

Humidity:60 %



Site : Chamber

Condition : FCC Part95 FRS Power (0.5W)

Polarization: *Horizontal*

EUT : W6M21703-16679

Power : 7.4 Vd.c.

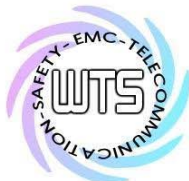
M/N:

Distance: 3m

Test Mode : Tx Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	467.6325	-18.79	peak	33.82	15.03	27.00	150	100	-11.97	
	467.6320	-21.79	AVG	33.82	12.03	27.00	150	200	-14.97	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

Radiated Emission Measurement

Operator: Mark

File :PWR2

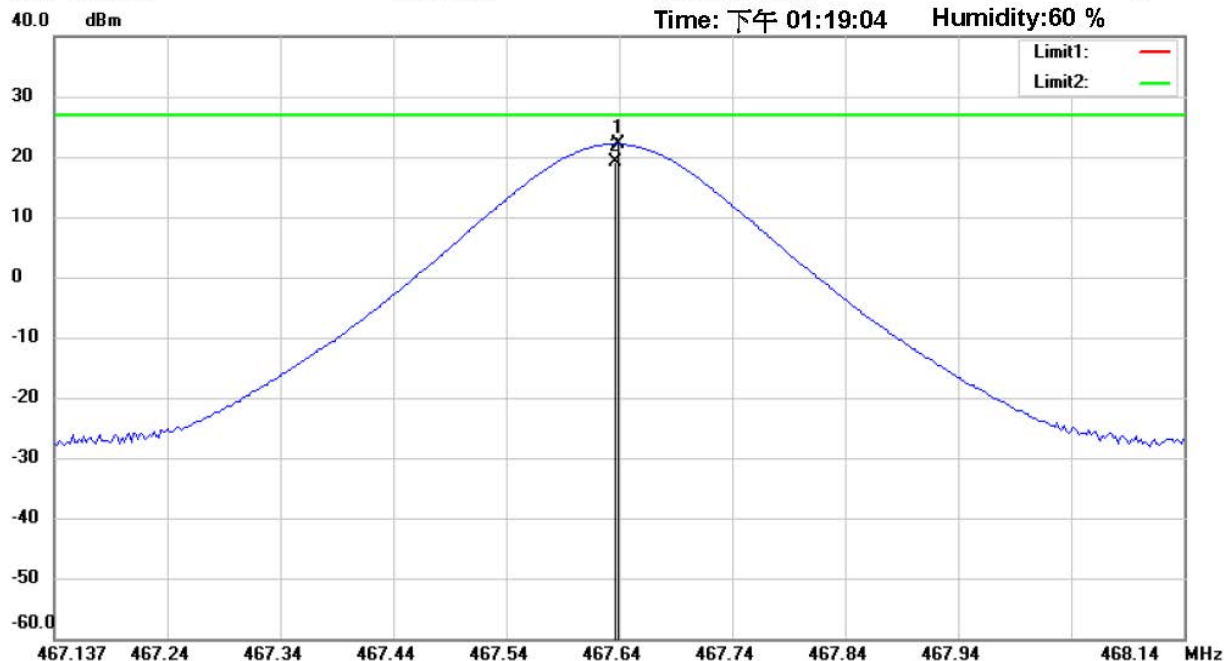
Data :#2

Date: 2017/6/7

Temperature:24 °C

Time: 下午 01:19:04

Humidity:60 %



Site : Chamber

Condition : FCC Part95 FRS Power (0.5W)

Polarization: *Vertical*

EUT : W6M21703-16679

Power : 7.4 Vd.c.

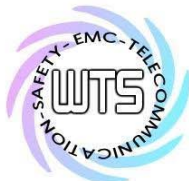
M/N:

Distance: 3m

Test Mode : Tx Ch11 467.6375MHz

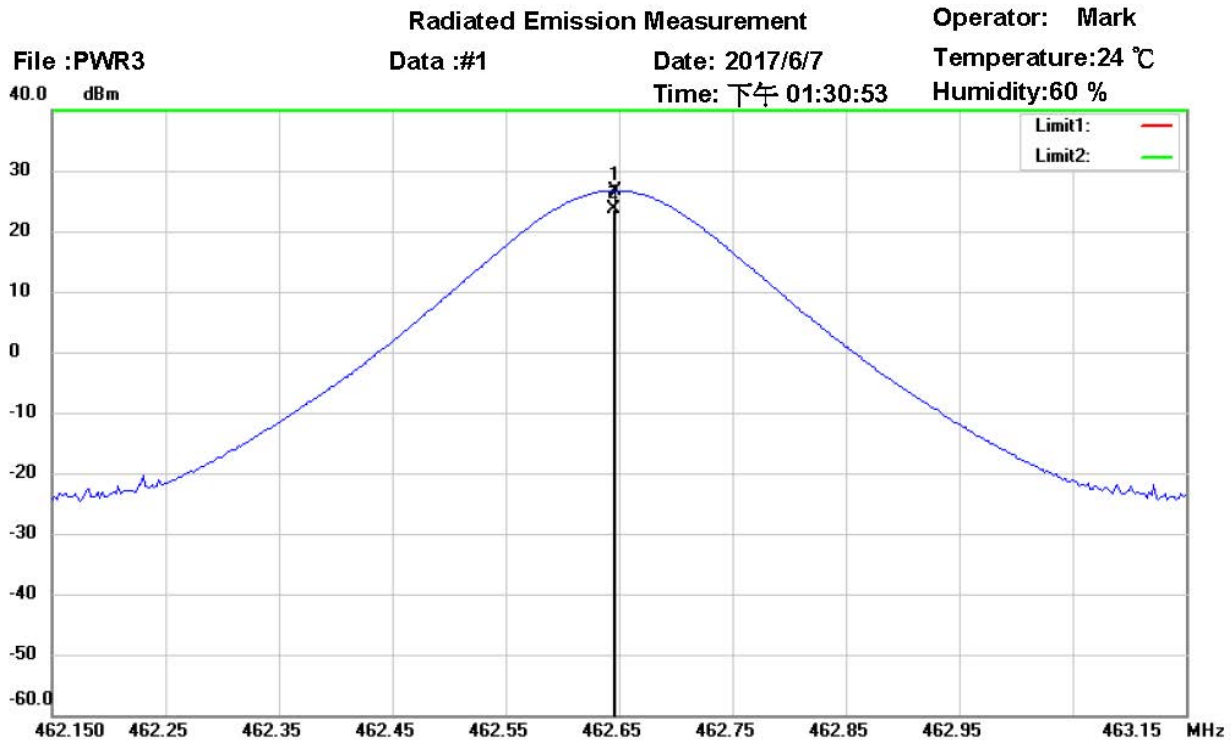
Note :

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	467.6345	-8.64	peak	30.77	22.13	27.00	150	240	-4.87	
	467.6340	-11.64	AVG	30.77	19.13	27.00	150	100	-7.87	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



Site : Chamber

Condition : FCC Part95 GMRS Power (50W)

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

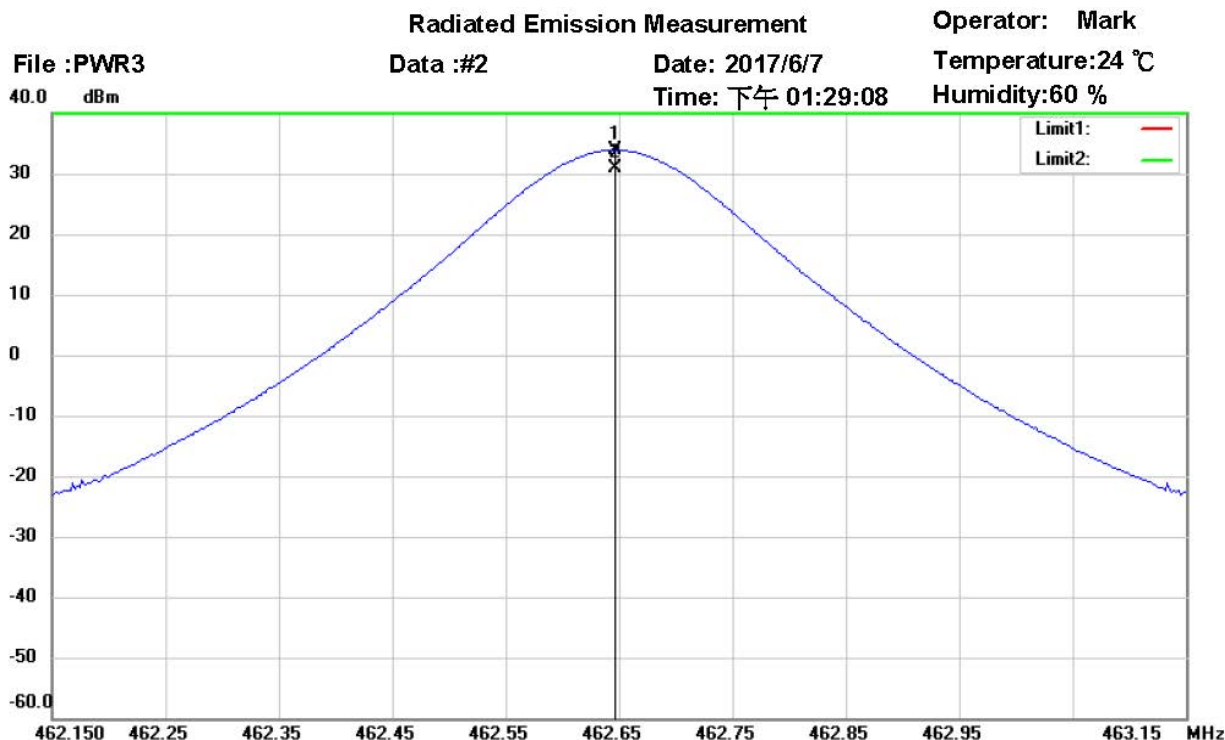
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6470	-7.26	peak	34.01	26.75	47.00	150	100	-20.25	
	462.6450	-10.26	AVG	34.01	23.75	47.00	150	200	-23.25	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250



Site : Chamber

Condition : FCC Part95 GMRS Power (50W)

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

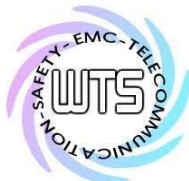
Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

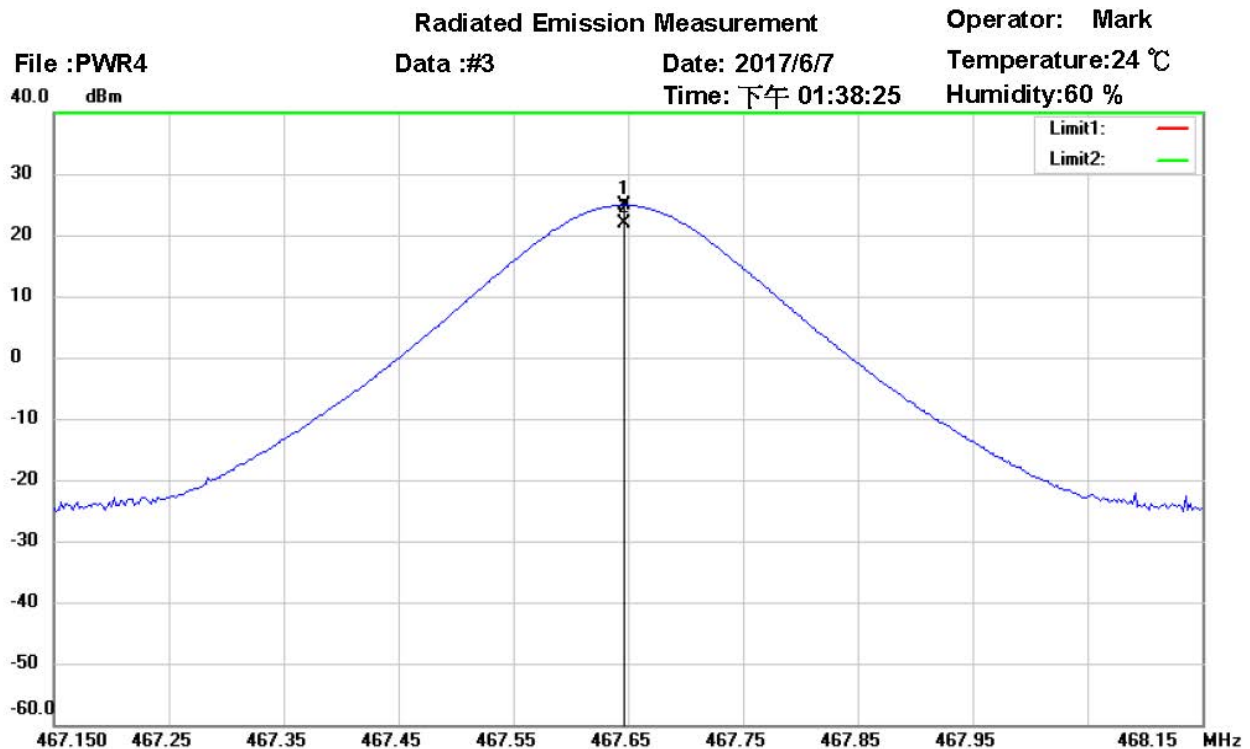
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6470	3.35	peak	30.55	33.90	47.00	150	240	-13.10	
	462.6470	0.35	AVG	30.55	30.90	47.00	150	100	-16.10	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250



Site : Chamber

Condition : FCC Part95 GMRS Power (50W)

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

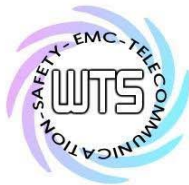
Note :

Polarization: Horizontal

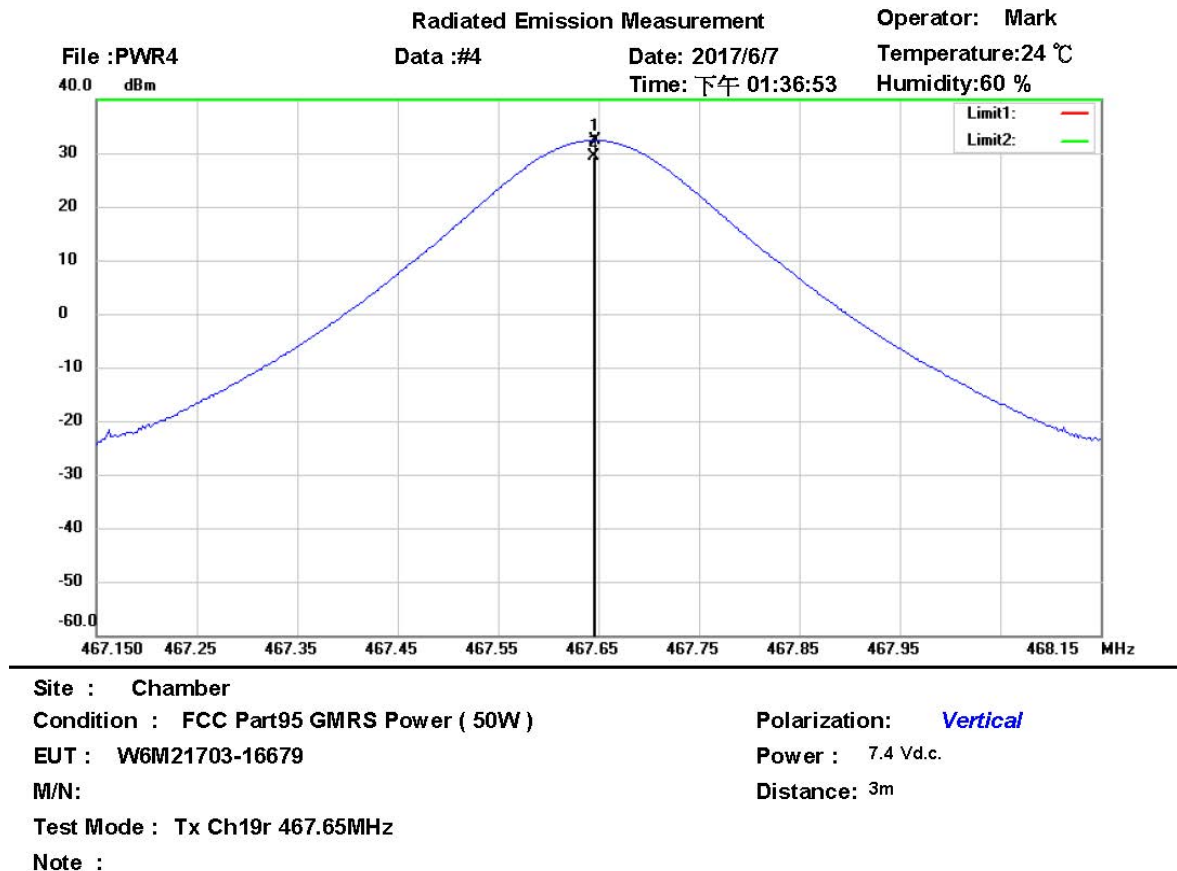
Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	467.6470	-8.93	peak	33.82	24.89	47.00	150	100	-22.11	
	467.6470	-11.93	AVG	33.82	21.89	47.00	150	200	-25.11	



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	467.6470	1.60	peak	30.77	32.37	47.00	150	40	-14.63	
	467.6450	-1.40	AVG	30.77	29.37	47.00	150	100	-17.63	

Test equipment used: ETSTW-RE 004, ETSTW-RE 122, ETSTW-RE 042,
ETSTW-RE 043, ETSTW-RE 044

5.3 Limits:

FCC Part 95.639(d):

GMARS: The maximum permissible transmitter output power under any operating conditions is 50 W e.r.p. (47 dBm). The radio shall be equipped with an integral antenna.

FRS: The maximum permissible transmitter output power under any operating conditions is 0.5 W e.r.p. (27 dBm). The radio shall be equipped with an integral antenna.

Test equipment used: ETSTW-RE 060, ETSTW-RE 055

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

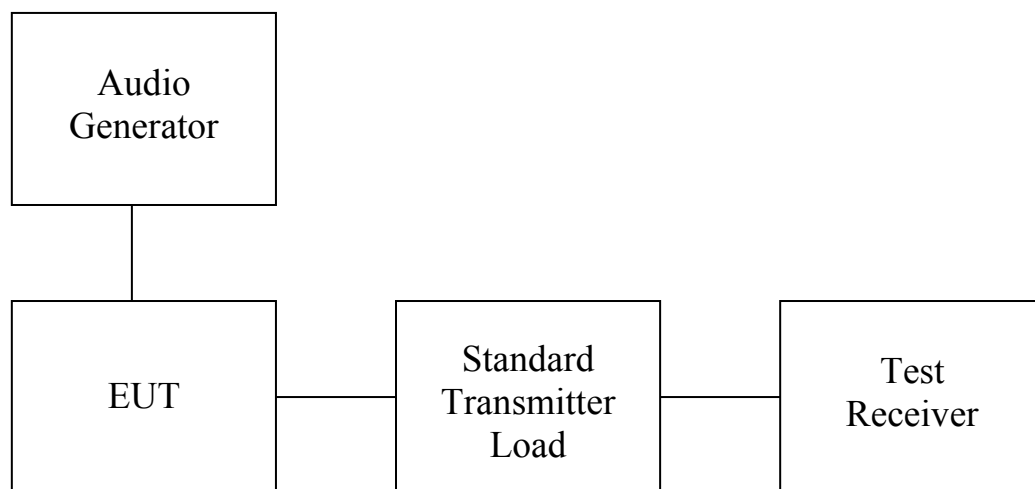
6. Modulation Deviation, FCC Part 95.637(a)

6.1 Test procedure

Modulation limiting is the transmitter circuit's ability to limit the transmitter from producing deviations in excess of rated system deviation.

The audio signal generator is connected to the audio input of the EUT with its full rating.

The modulation response is measured at certain modulation frequencies, related to 1000Hz reference signal. Test are performed repeatedly with input frequency 300Hz, 1kHz, 3kHz in sequence.

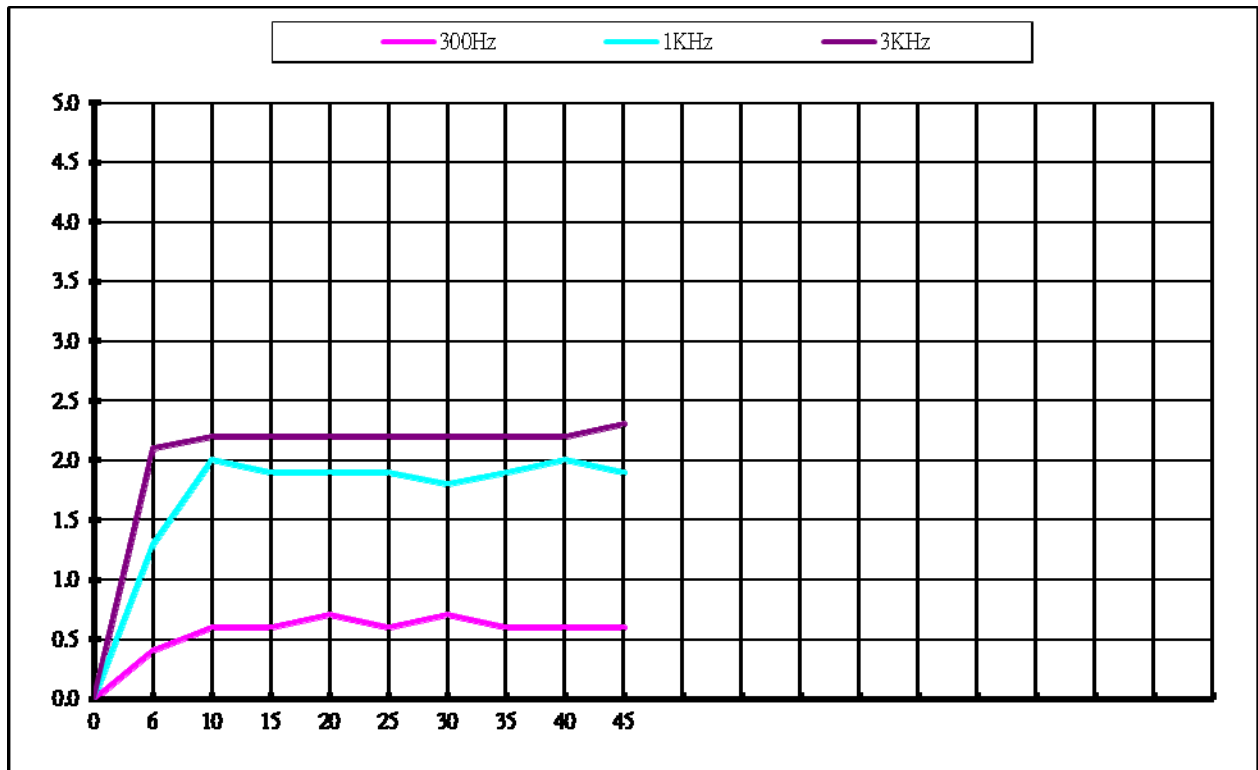


6.2 Test results:

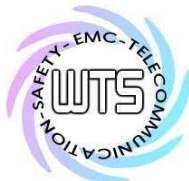
Modulation Characteristics

Ch4 462.6375 MHz			
Input Audio Level (mV)	300Hz	1kHz	3kHz
0	0.0	0.0	0.0
6	0.4	1.3	2.1
10	0.6	2.0	2.2
15	0.6	1.9	2.2
20	0.7	1.9	2.2
25	0.6	1.9	2.2
30	0.7	1.8	2.2
35	0.6	1.9	2.2
40	0.6	2.0	2.2
45	0.6	1.9	2.3

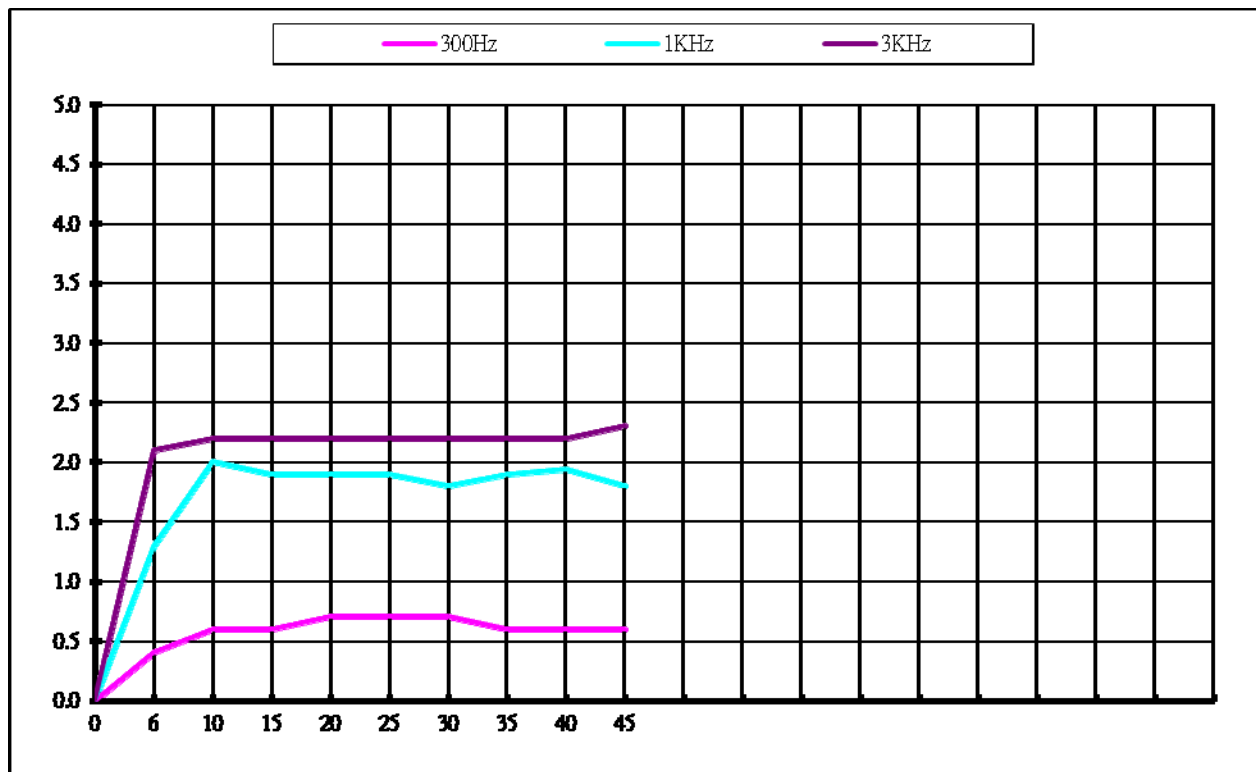
Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



Ch11 467.6375 MHz			
Input Audio Level (mV)	300Hz	1kHz	3kHz
0	0.0	0.0	0.0
6	0.4	1.3	2.1
10	0.6	2.0	2.2
15	0.6	1.9	2.2
20	0.7	1.9	2.2
25	0.7	1.9	2.2
30	0.7	1.8	2.2
35	0.6	1.9	2.2
40	0.6	1.9	2.2
45	0.6	1.8	2.3

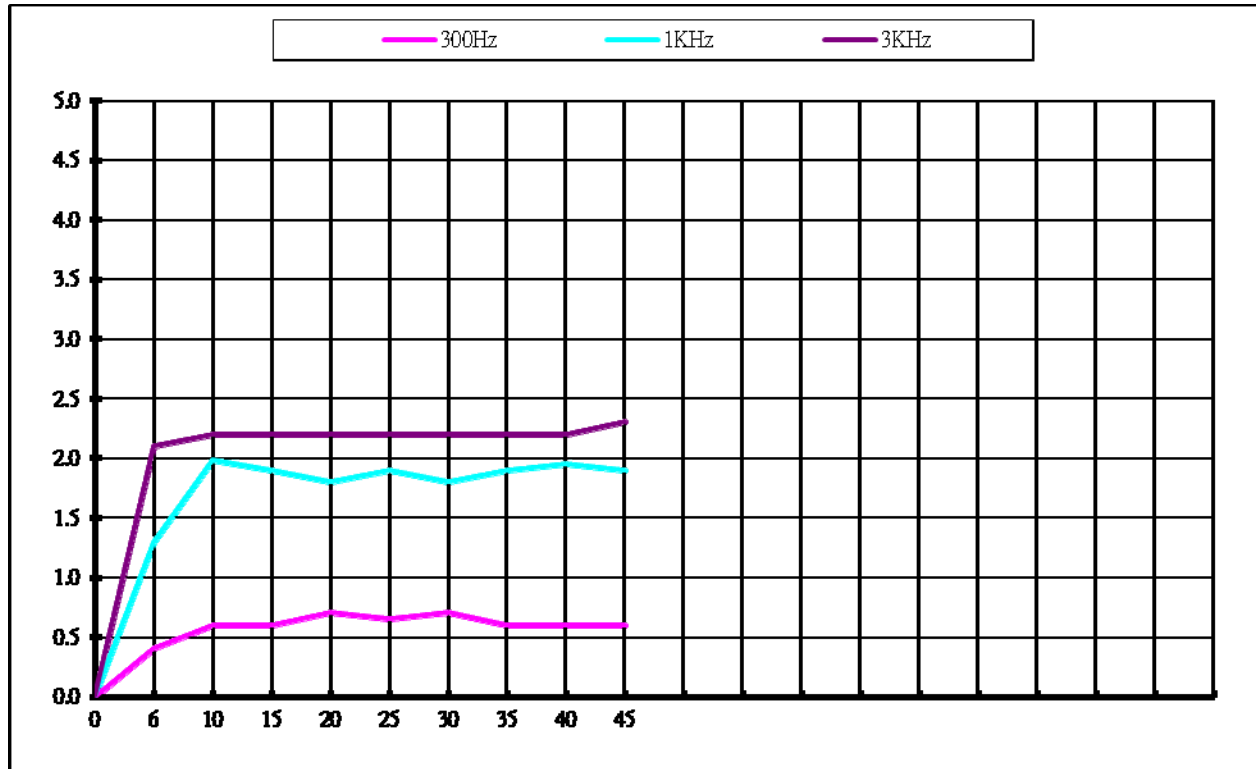


Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

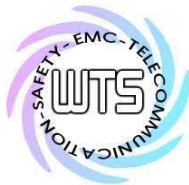


Ch19 462.65 MHz			
Input Audio Level (mV)	300Hz	1kHz	3kHz
0	0.0	0.0	0.0
6	0.4	1.3	2.1
10	0.6	2.0	2.2
15	0.6	1.9	2.2
20	0.7	1.8	2.2
25	0.7	1.9	2.2
30	0.7	1.8	2.2
35	0.6	1.9	2.2
40	0.6	2.0	2.2
45	0.6	1.9	2.3

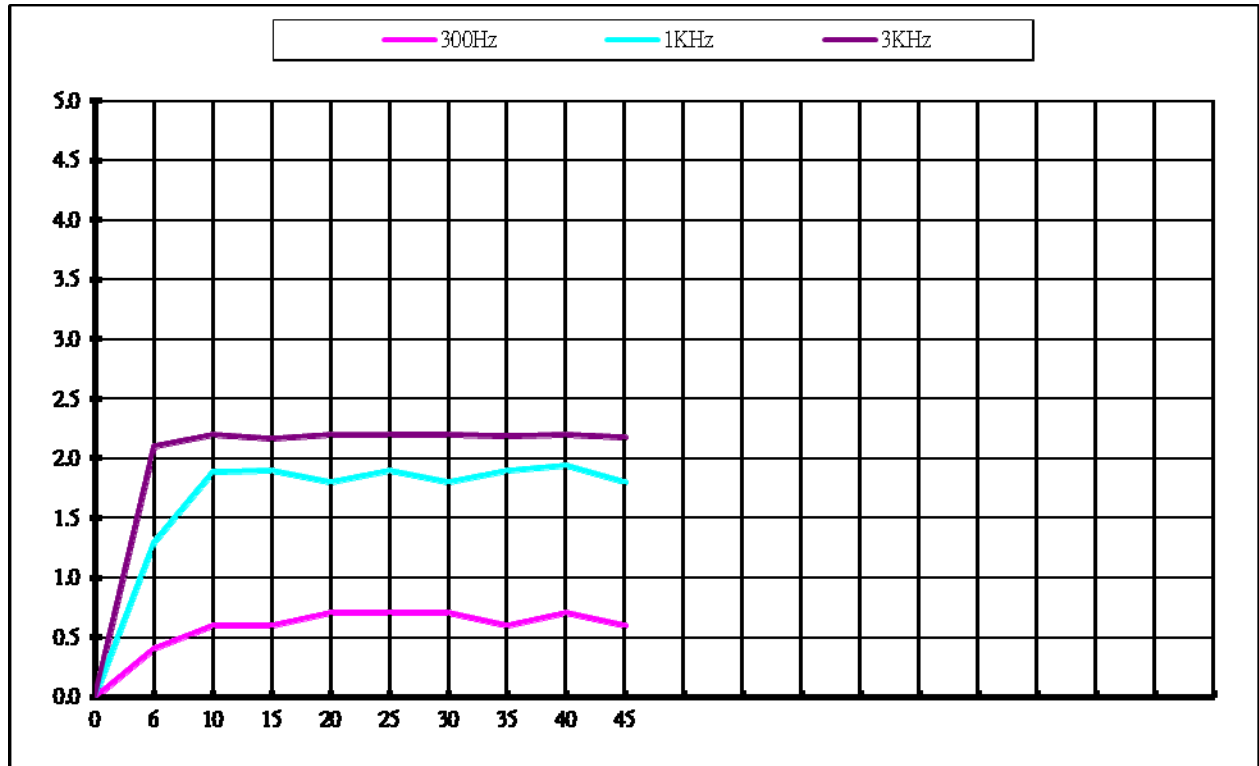
Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



Ch19r 467.65 MHz			
Input Audio Level (mV)	300Hz	1kHz	3kHz
0	0.0	0.0	0.0
6	0.4	1.3	2.1
10	0.6	1.9	2.2
15	0.6	1.9	2.2
20	0.7	1.8	2.2
25	0.7	1.9	2.2
30	0.7	1.8	2.2
35	0.6	1.9	2.2
40	0.7	1.9	2.2
45	0.6	1.8	2.2



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

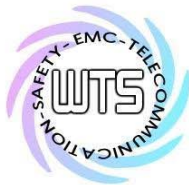


6.3 Limits:

FCC Part 95.637(b), FCC part 2.1047(a)

Each GMRS transmitter, except a mobile station transmitter with a power output of 2.5 W or less, must automatically prevent a greater than normal audio level from causing overmodulation. The transmitter also must include audio frequency low pass filtering, unless it complies with the applicable paragraphs of §95.631 (without filtering.) The filter must be between the modulation limiter and the modulated stage of the transmitter. At any frequency (f in kHz) between 3 and 20 kHz, the filter must have an attenuation of at least $60 \log_{10} (f/3)$ dB greater than the attenuation at 1 kHz. Above 20 kHz, it must have an attenuation of at least 50 dB greater than the attenuation at 1 kHz.

Test equipment used: ETSTW-RE 072



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

7. Audio frequency response, FCC 2.1047 (a)

7.1 Test procedure

The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic.

The frequency response of the audio modulation part is measured over a frequency range of 100 Hz to 5000Hz.

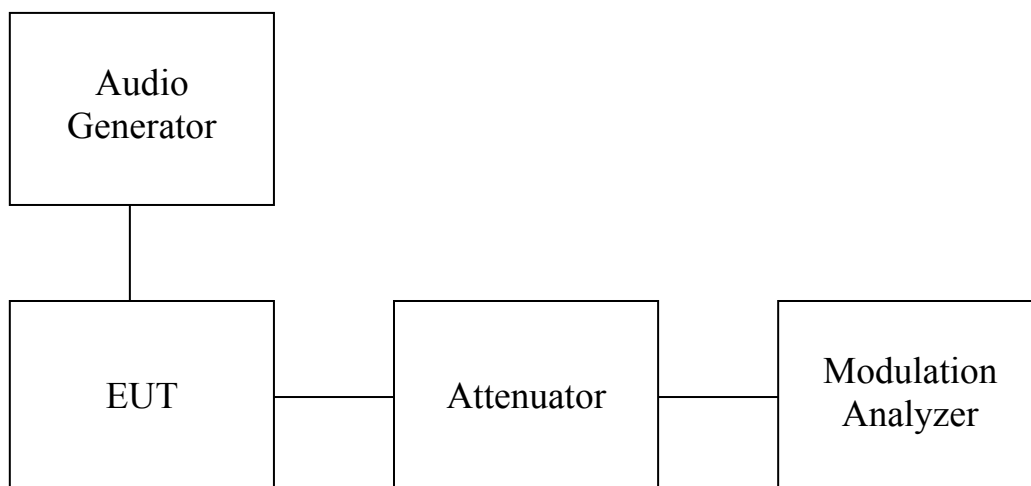
For 1000Hz tone reference signal the audio generator level is adjusted to get 20% of the rated system deviation.

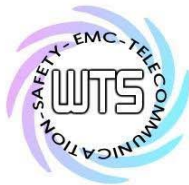
The deviations obtained over the frequency range from 100Hz to 5000Hz are recorded and compared with the reference deviation as follows:

$$\text{Audio Frequency Response} = 20 \log [\text{DEV}_{\text{Freq}} / \text{DEV}_{\text{ref}}].$$

Audio Low Pass Filter Response:

1. Configure the EUT as shown in figure.
2. Apply a 1000 Hz tone from the audio signal generator and adjust the level per manufacturer's specifications. Record the dB level of the 1000 Hz tone as LEV_{REF} .
3. Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass
4. filter limit. Record the dB level at the test frequency as LEV_{FREQ} .
5. Calculate the audio frequency response at the test frequency as: low pass filter response = $\text{LEV}_{\text{FREQ}} - \text{LEV}_{\text{REF}}$





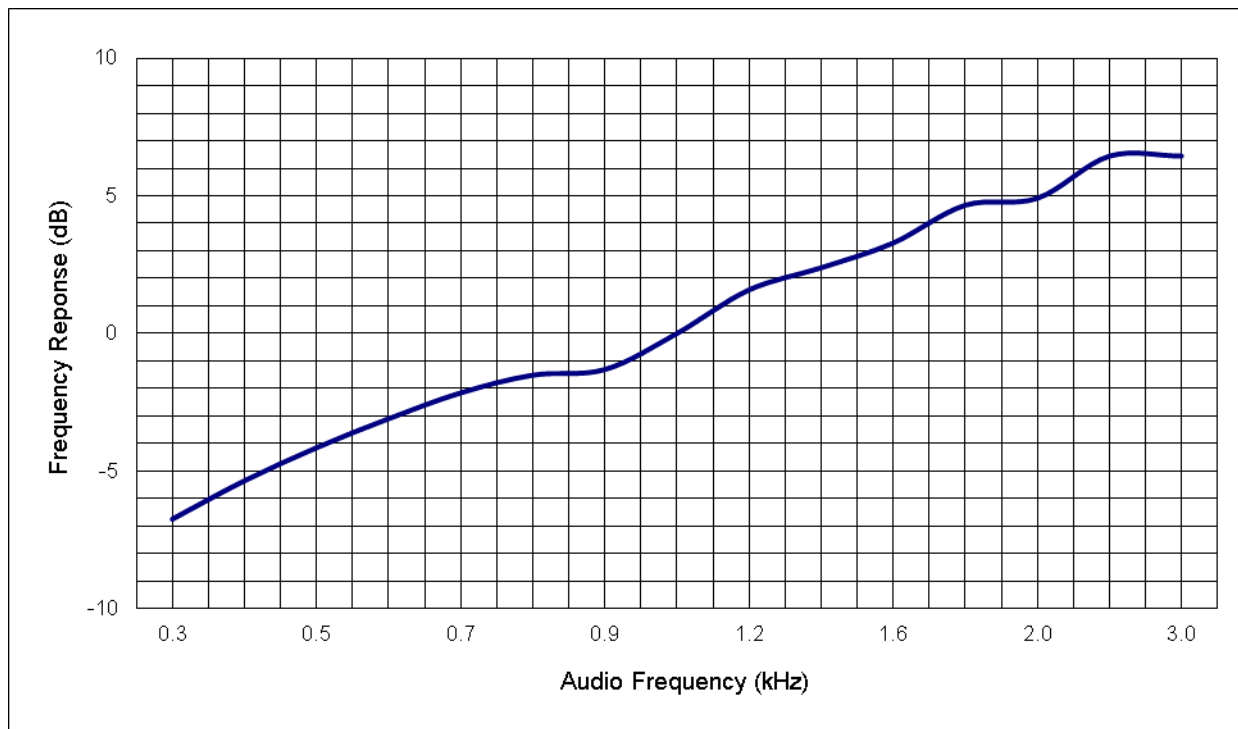
Registration number: W6M21703-16679-C-95

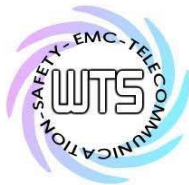
FCC ID: IPH-03250

7.2 Test results:

Audio Frequency Response

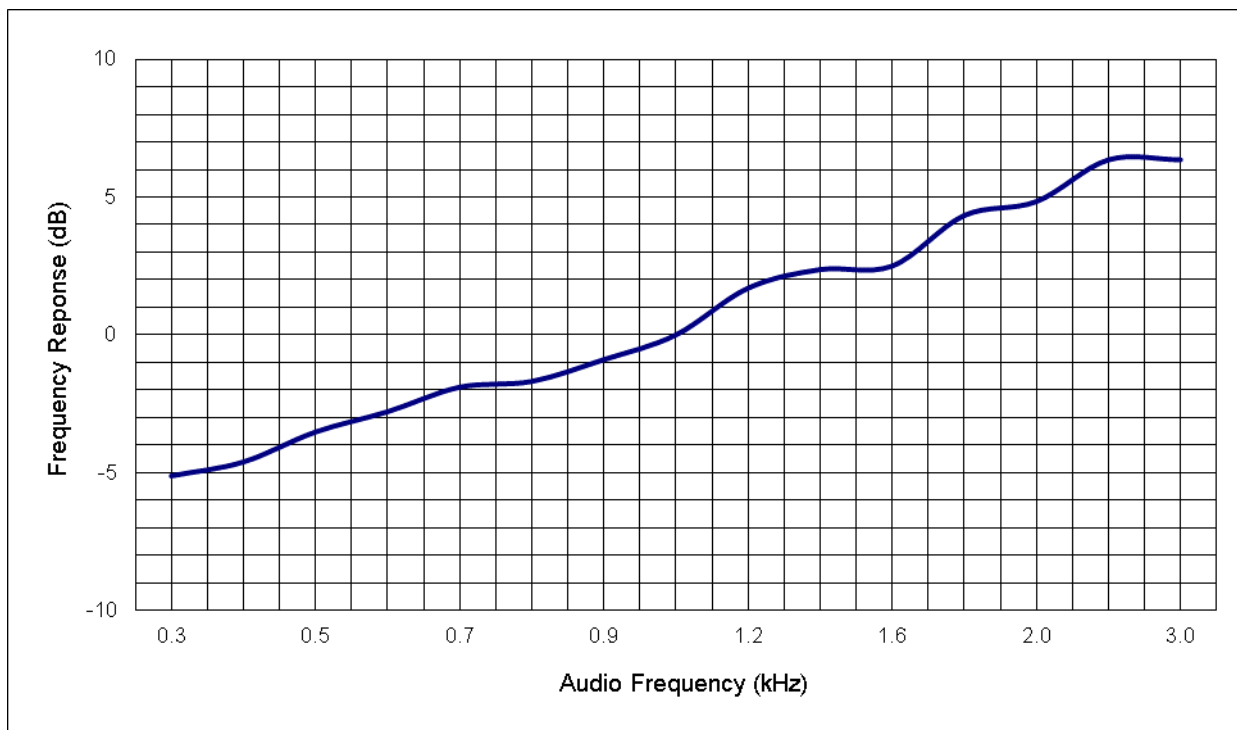
Ch4 462.6375 MHz		
Audio Frequency (kHz)	A.R (dB)	F.D.
0.3	-6.745	0.23
0.4	-5.352	0.27
0.5	-4.152	0.31
0.6	-3.098	0.35
0.7	-2.158	0.39
0.8	-1.514	0.42
0.9	-1.310	0.43
1.0	0.000	0.50
1.2	1.584	0.60
1.4	2.385	0.66
1.6	3.287	0.73
1.8	4.660	0.86
2.0	4.910	0.88
2.5	6.444	1.05
3.0	6.444	1.05

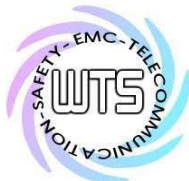




Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

Ch11 467.6375 MHz		
Audio Frequency (kHz)	A.R (dB)	F.D.
0.3	-5.116	0.28
0.4	-4.609	0.30
0.5	-3.522	0.34
0.6	-2.787	0.37
0.7	-1.896	0.41
0.8	-1.686	0.42
0.9	-0.896	0.46
1.0	0.000	0.51
1.2	1.696	0.62
1.4	2.370	0.67
1.6	2.499	0.68
1.8	4.334	0.84
2.0	4.836	0.89
2.5	6.355	1.06
3.0	6.355	1.06

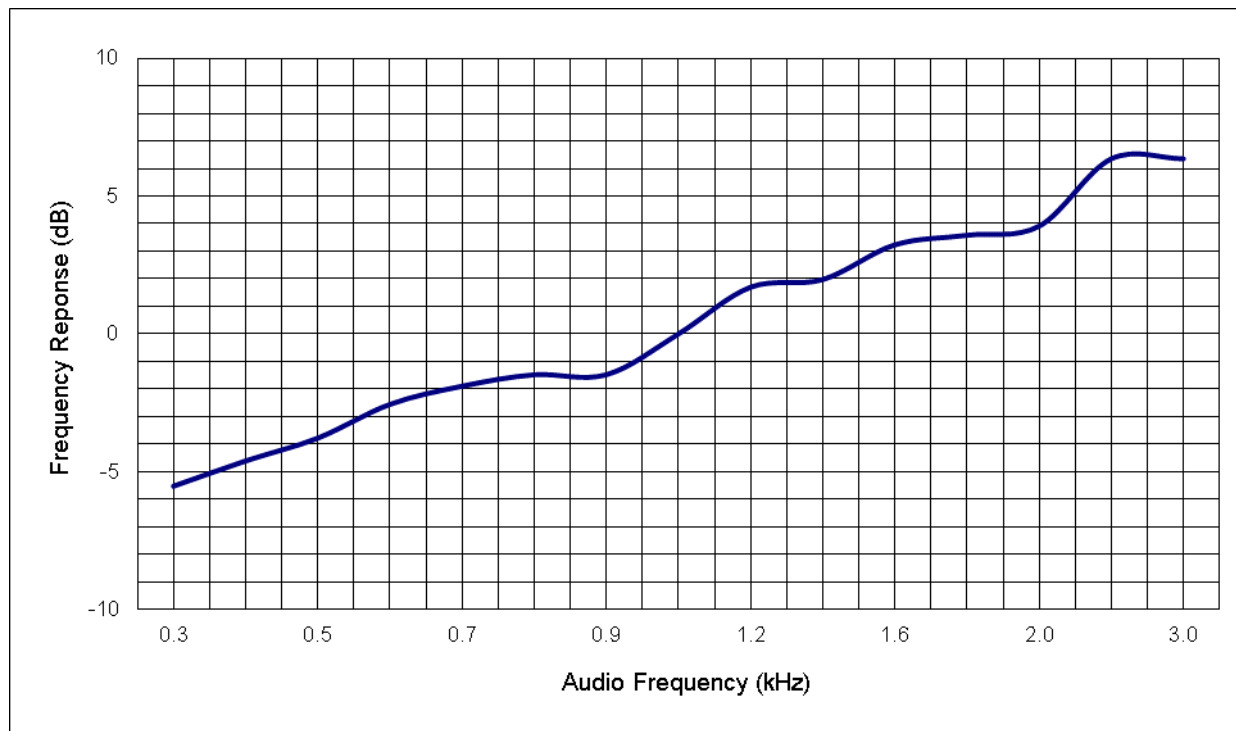


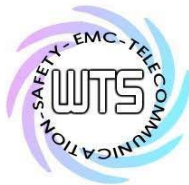


Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

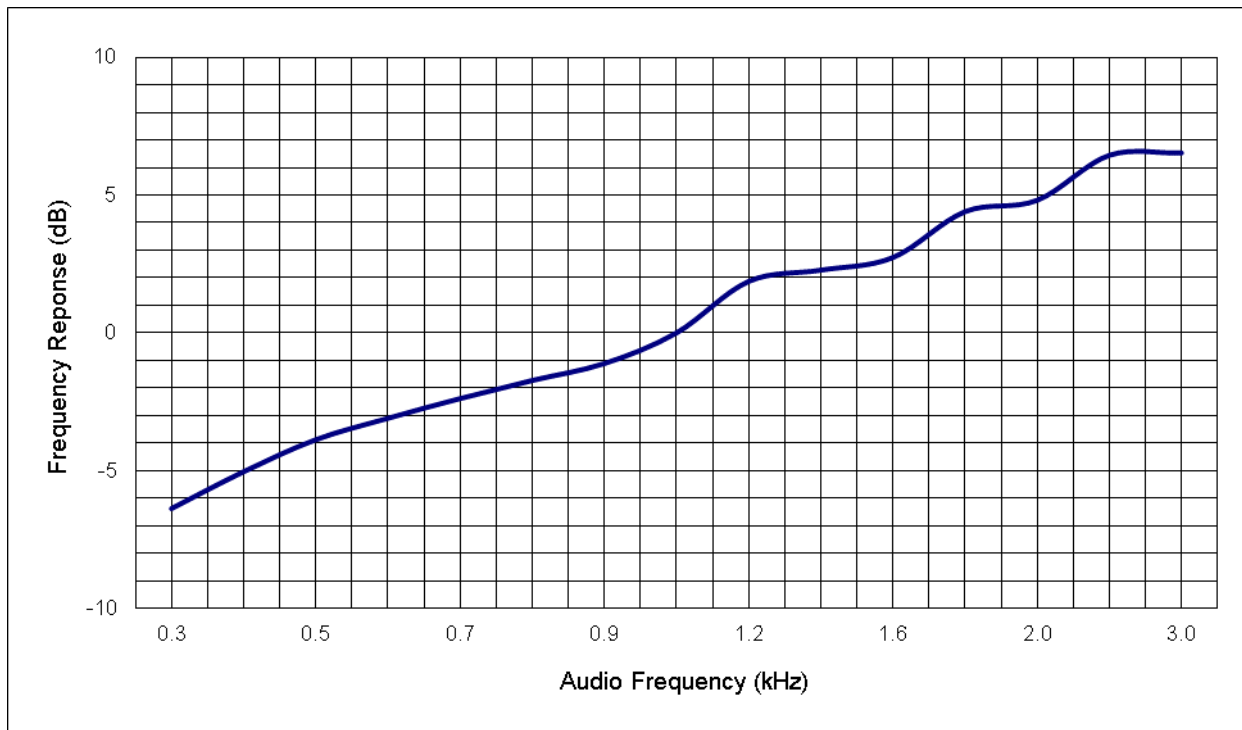
Ch19 462.65 MHz		
Audio Frequency (kHz)	A.R (dB)	F.D.
0.3	-5.524	0.27
0.4	-4.609	0.30
0.5	-3.781	0.33
0.6	-2.556	0.38
0.7	-1.896	0.41
0.8	-1.482	0.43
0.9	-1.482	0.43
1.0	0.000	0.51
1.2	1.696	0.62
1.4	1.972	0.64
1.6	3.233	0.74
1.8	3.578	0.77
2.0	3.910	0.80
2.5	6.355	1.06
3.0	6.355	1.06

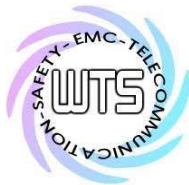




Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

Ch19r 467.65 MHz		
Audio Frequency (kHz)	A.R (dB)	F.D.
0.3	-6.375	0.24
0.4	-5.036	0.28
0.5	-3.876	0.32
0.6	-3.098	0.35
0.7	-2.384	0.38
0.8	-1.724	0.41
0.9	-1.110	0.44
1.0	0.000	0.50
1.2	1.868	0.62
1.4	2.279	0.65
1.6	2.734	0.69
1.8	4.402	0.83
2.0	4.811	0.87
2.5	6.444	1.05
3.0	6.527	1.06



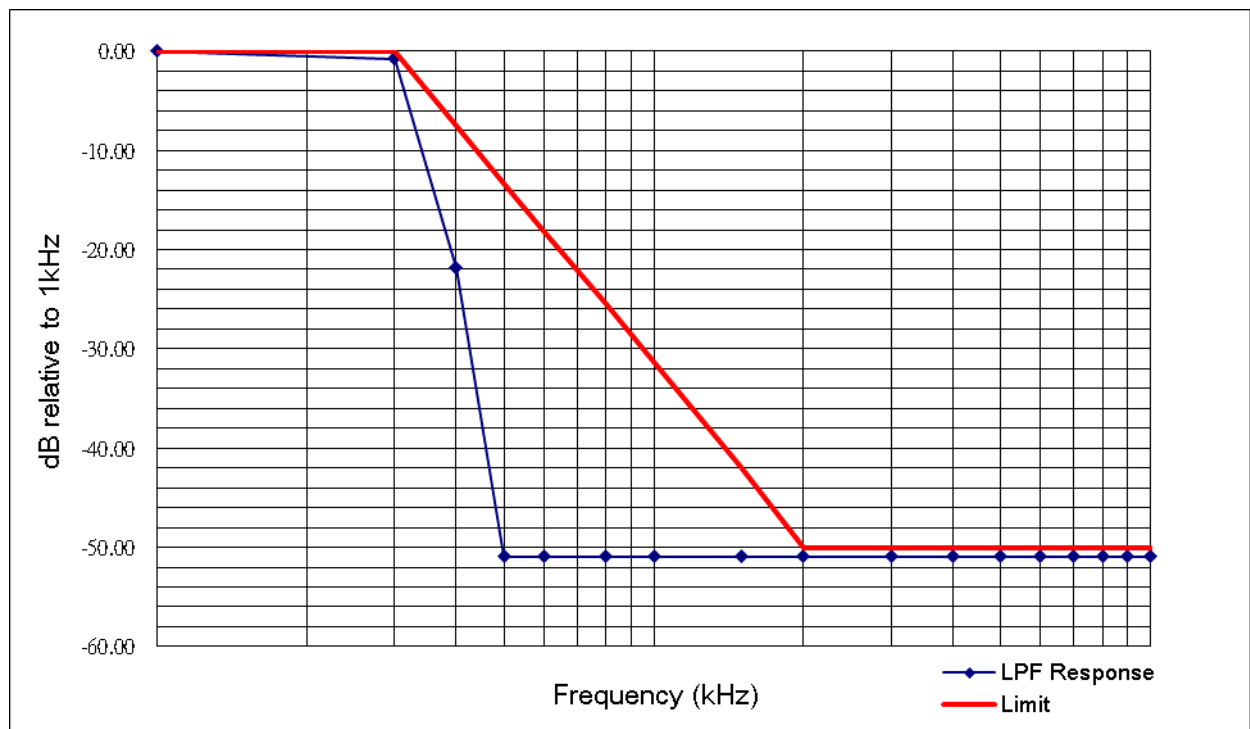


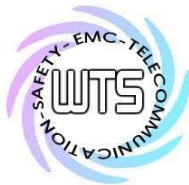
Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

Audio Low Pass Filter Response

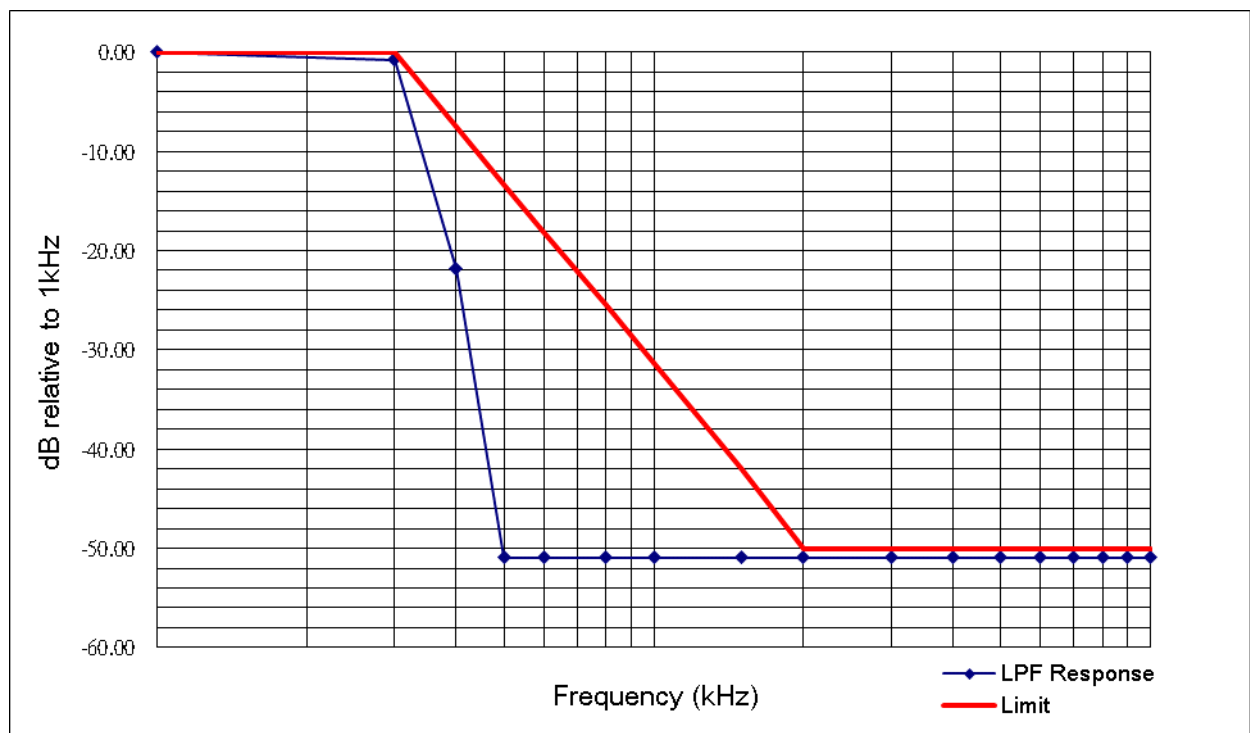
Ch4 462.6375 MHz		
Audio Frequency (kHz)	Response Attenuation (dB)	Limit
1.0	0.00	0
3.0	-0.75	0
4.0	-21.86	-7.50
5.0	-50.94	-13.31
6.0	-50.94	-18.06
8.0	-50.94	-25.56
10.0	-50.94	-31.37
15.0	-50.94	-41.94
20.0	-50.94	-50
30.0	-50.94	-50
40.0	-50.94	-50
50.0	-50.94	-50
60.0	-50.94	-50
70.0	-50.94	-50
80.0	-50.94	-50
90.0	-50.94	-50
100.0	-50.94	-50

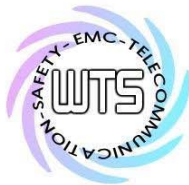




Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

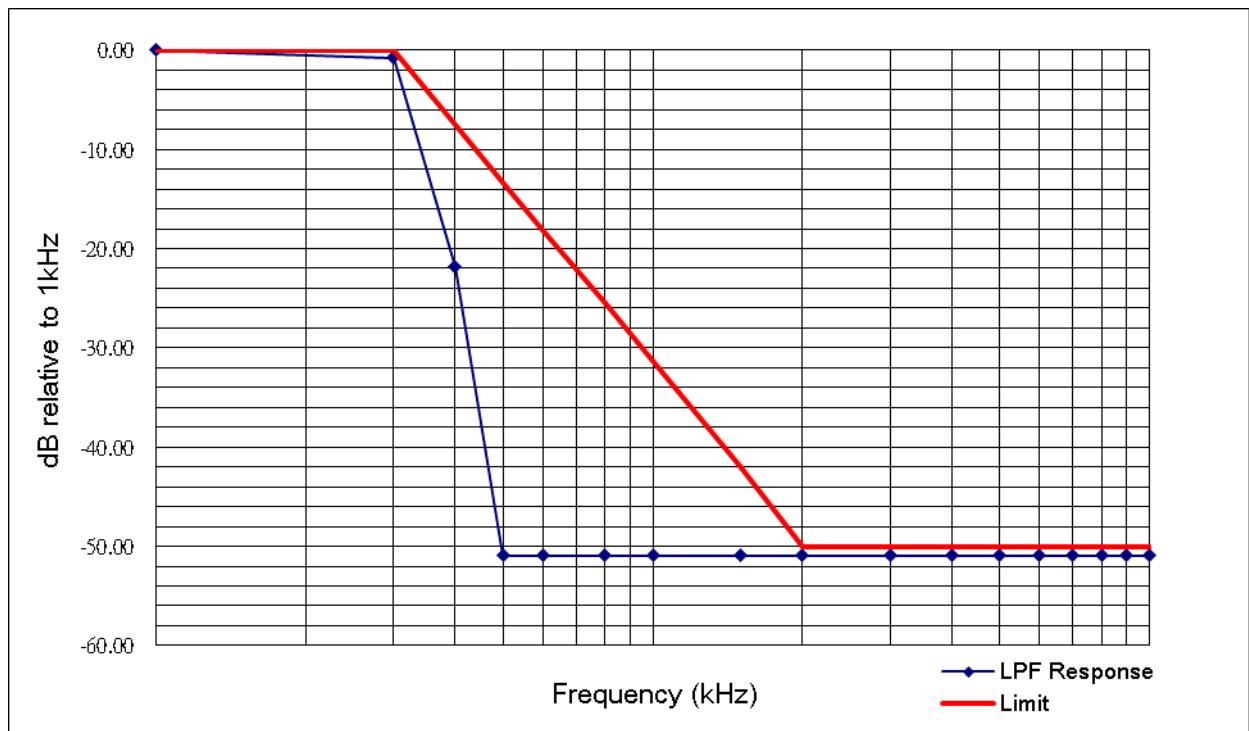
Ch11 467.6375 MHz		
Audio Frequency (kHz)	Response Attenuation (dB)	Limit
1.0	0.00	0
3.0	-0.75	0
4.0	-21.86	-7.50
5.0	-50.94	-13.31
6.0	-50.94	-18.06
8.0	-50.94	-25.56
10.0	-50.94	-31.37
15.0	-50.94	-41.94
20.0	-50.94	-50
30.0	-50.94	-50
40.0	-50.94	-50
50.0	-50.94	-50
60.0	-50.94	-50
70.0	-50.94	-50
80.0	-50.94	-50
90.0	-50.94	-50
100.0	-50.94	-50

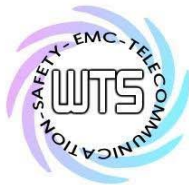




Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

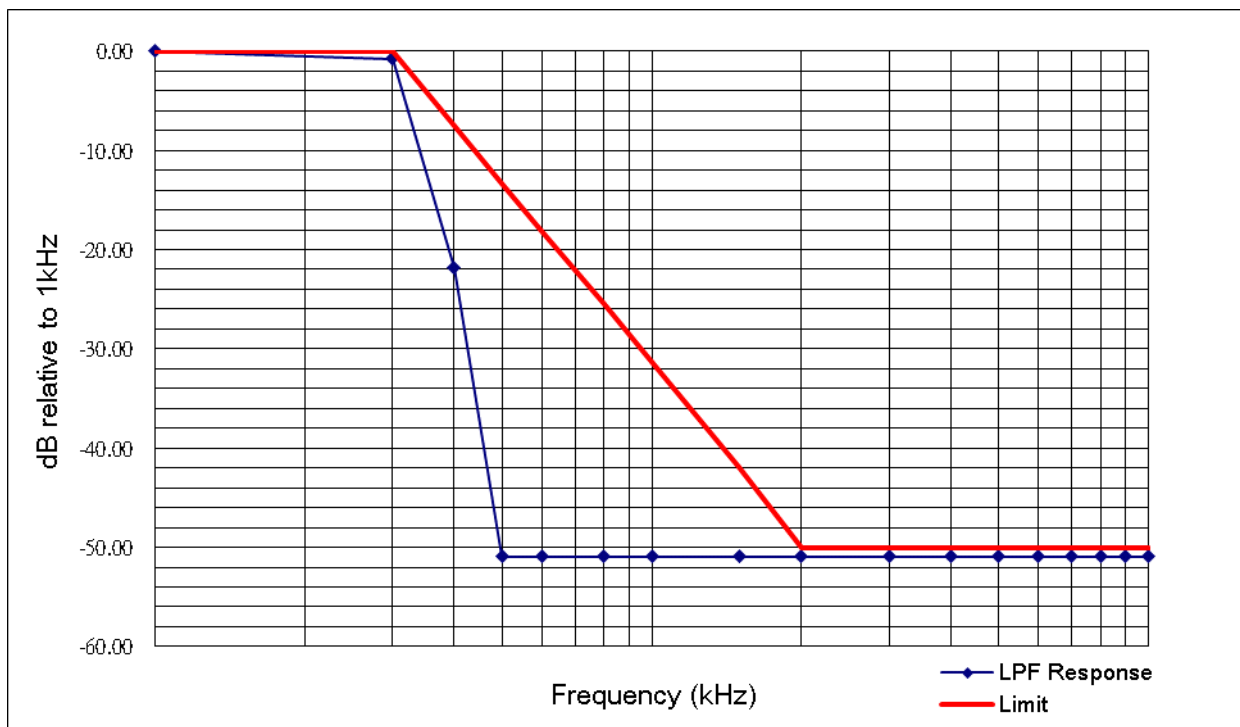
Ch19 462.65 MHz		
Audio Frequency (kHz)	Response Attenuation (dB)	Limit
1.0	0.00	0
3.0	-0.75	0
4.0	-21.86	-7.50
5.0	-50.94	-13.31
6.0	-50.94	-18.06
8.0	-50.94	-25.56
10.0	-50.94	-31.37
15.0	-50.94	-41.94
20.0	-50.94	-50
30.0	-50.94	-50
40.0	-50.94	-50
50.0	-50.94	-50
60.0	-50.94	-50
70.0	-50.94	-50
80.0	-50.94	-50
90.0	-50.94	-50
100.0	-50.94	-50





Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

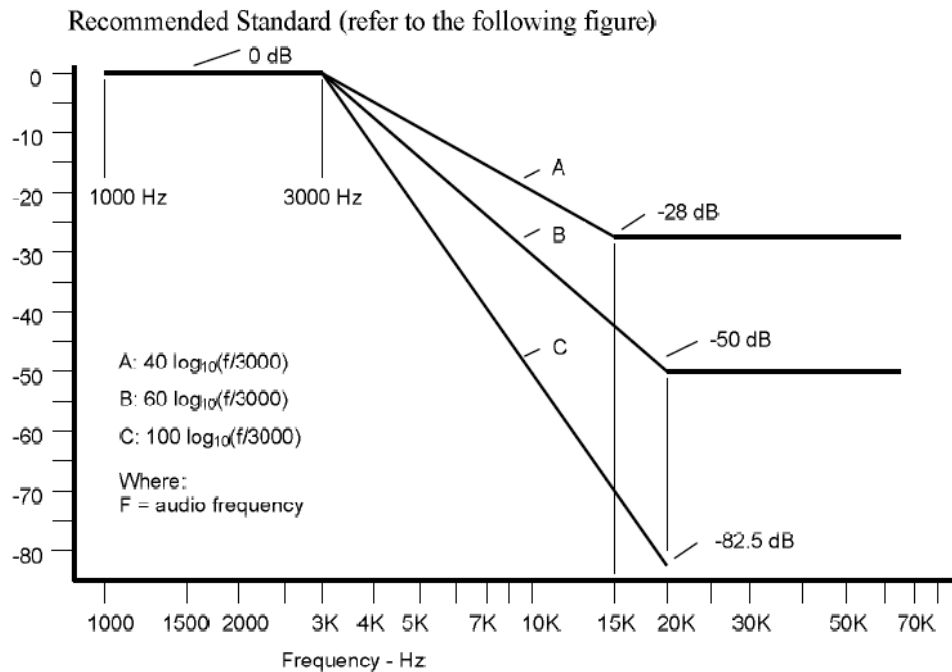
Ch19r 467.65 MHz		
Audio Frequency (kHz)	Response Attenuation (dB)	Limit
1.0	0.00	0
3.0	-0.75	0
4.0	-21.86	-7.50
5.0	-50.94	-13.31
6.0	-50.94	-18.06
8.0	-50.94	-25.56
10.0	-50.94	-31.37
15.0	-50.94	-41.94
20.0	-50.94	-50
30.0	-50.94	-50
40.0	-50.94	-50
50.0	-50.94	-50
60.0	-50.94	-50
70.0	-50.94	-50
80.0	-50.94	-50
90.0	-50.94	-50
100.0	-50.94	-50

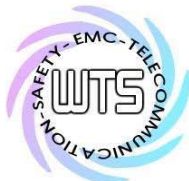


Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

7.3 Limits:

According to TIA TIA-603





For audio frequencies above 3000 Hz, the audio response of the post limiter low-pass filter shall meet or exceed the following requirements:

- a) For equipment operating on 20, 25 or 30 kHz channel bandwidth in the 25 MHz to 174 MHz range:

At frequencies from 3000 Hz through 15,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least: $40 \log_{10}(f/3000)$ dB

where: f is the audio frequency in Hz.

At frequencies above 15,000 Hz, the attenuation shall be greater than the attenuation at 1000 Hz, by at least: 28 dB.

- b) For equipment operating with 25 kHz bandwidth channels between 406 and 512 MHz through 896 MHz, and between 929 MHz through 930 MHz:

At frequencies from 3000 Hz through 20,000 Hz, the attenuation shall be greater than the attenuation at 1000 Hz by at least: $60 \log_{10}(f/3000)$ dB

where: f is the audio frequency in Hz.

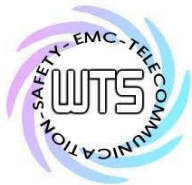
At frequencies above 20,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least: 50 dB.

- c) For equipment operating on channels between 896 MHz through 901 MHz, between 935 MHz through 940 MHz, and 12.5 or 15 kHz spaced channels in the frequency range 138-174 MHz and 406-512 MHz.

At frequencies from 3000 Hz through 20,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least: $100 \log_{10}(f/3000)$ dB

where: f is the audio frequency in Hz.

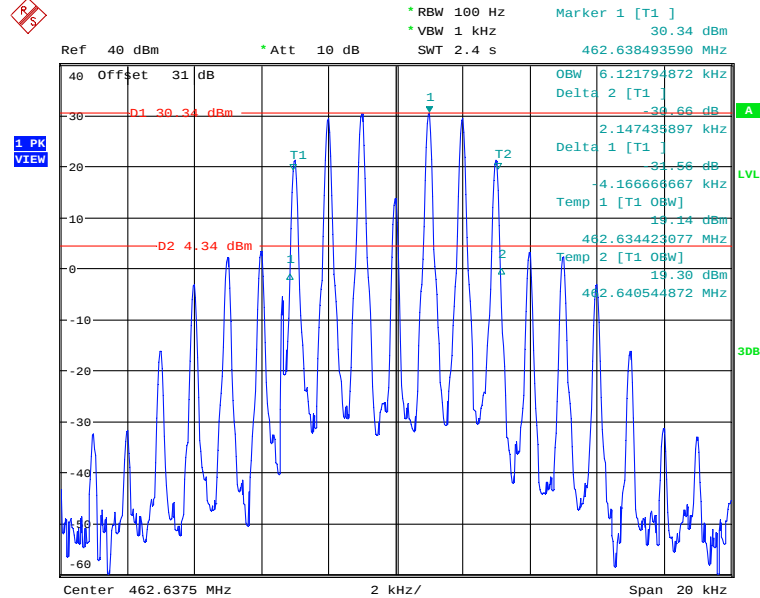
Test equipment used: ETSTW-RE 072



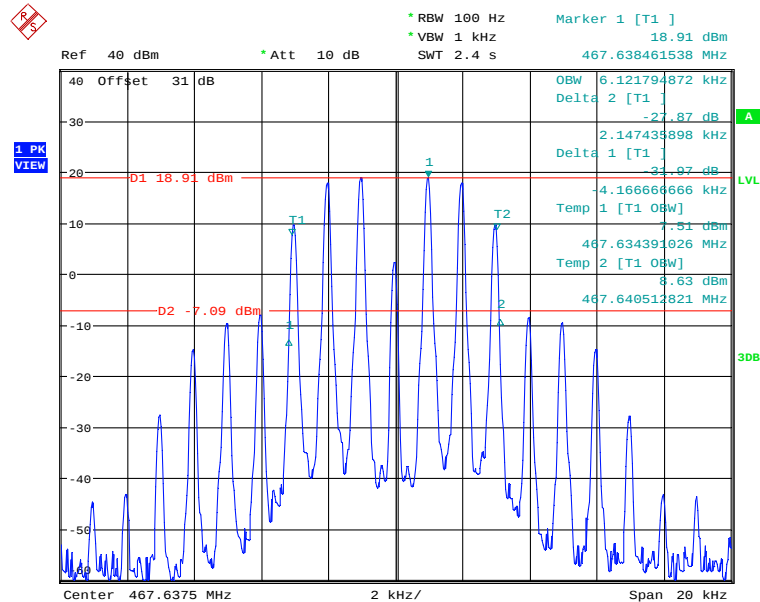
Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

8. Occupied Bandwidth/Emission Mask, FCC part 95.633 (a)&(c), FCC part 95.635 (b)(1)(3)(7)

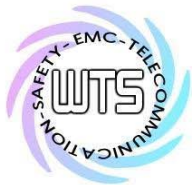
8.1 Test Results



NECESSARY BANDWIDTH CH4 462.6375MHZ
Date: 8.JUN.2017 13:34:06

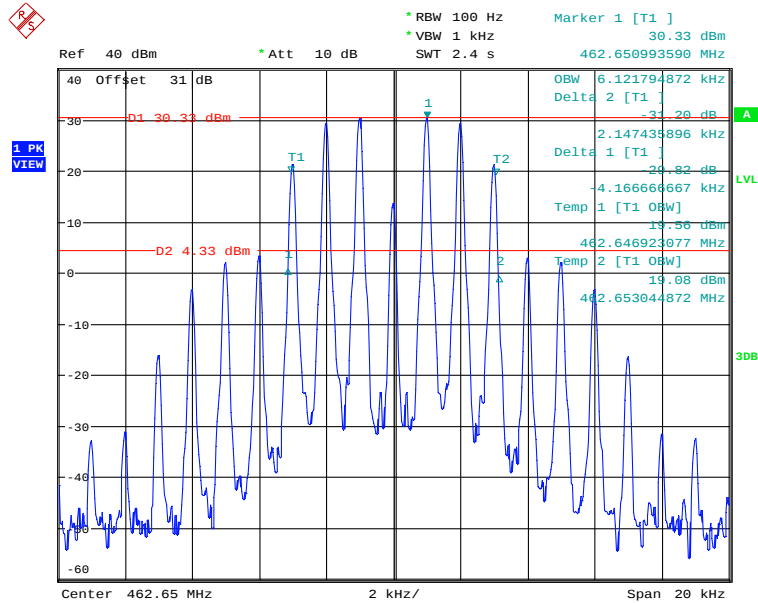


NECESSARY BANDWIDTH CH11 467.6375MHZ
Date: 8.JUN.2017 13:52:05

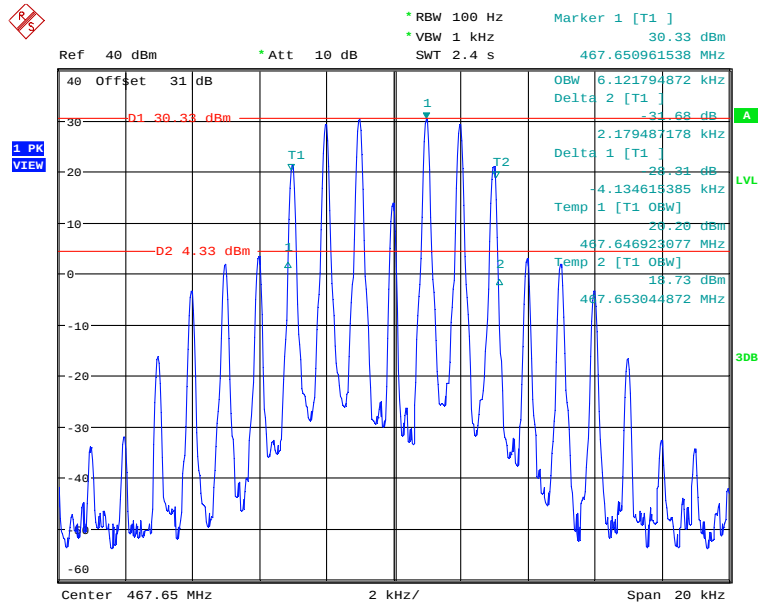


Worldwide Testing Services(Taiwan) Co., Ltd.

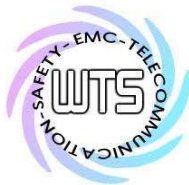
Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250



NECESSARY BANDWIDTH CH19 462.65MHZ
Date: 8.JUN.2017 13:38:25

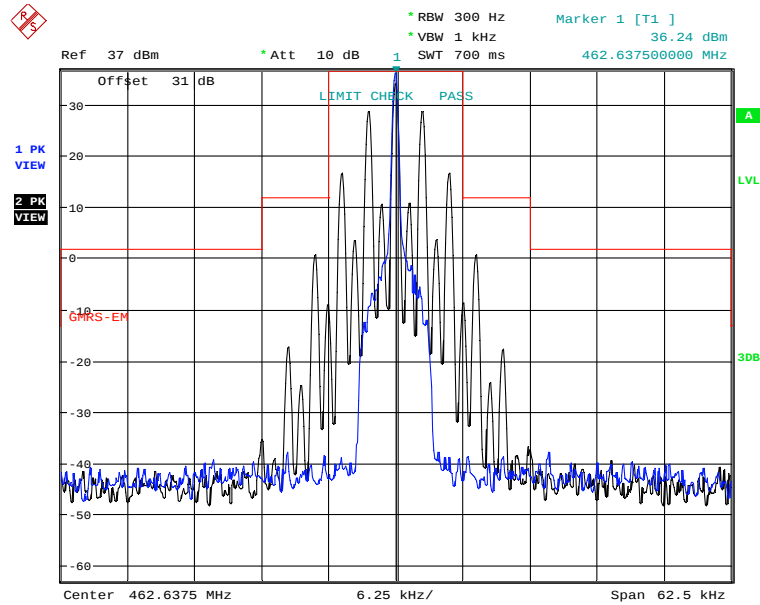


NECESSARY BANDWIDTH CH19R 467.65MHZ
Date: 8.JUN.2017 13:48:18

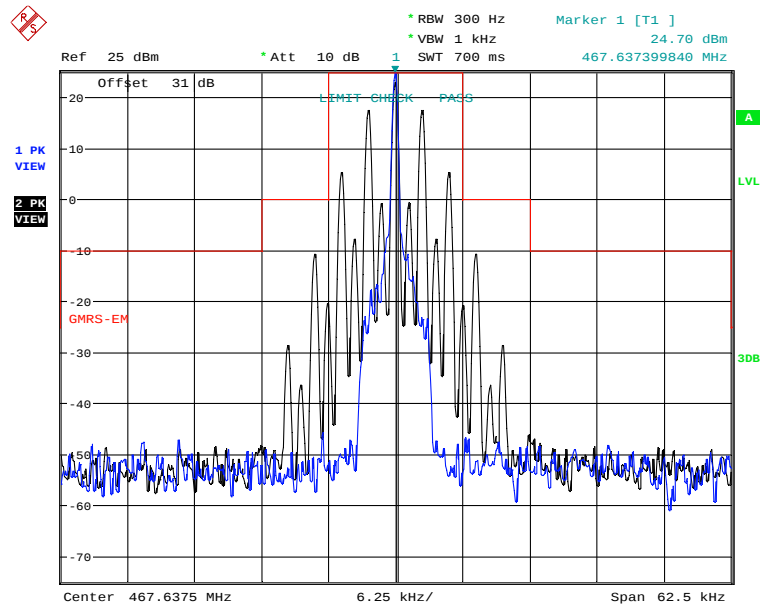


Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

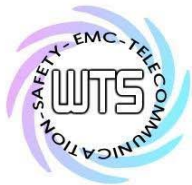
Emission Mask



EMISSION MASK CH4 462.6375MHZ
Date: 8.JUN.2017 14:18:20

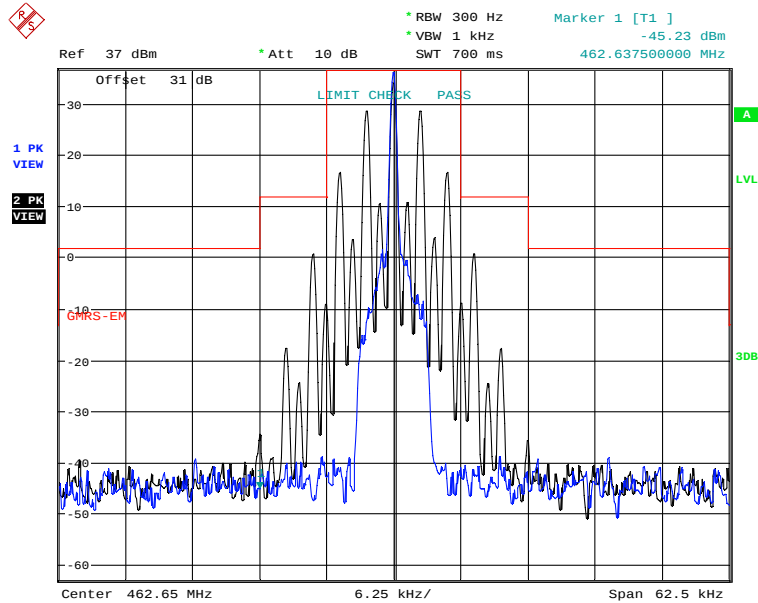


EMISSION MASK CH11 467.6375MHZ
Date: 8.JUN.2017 14:16:12

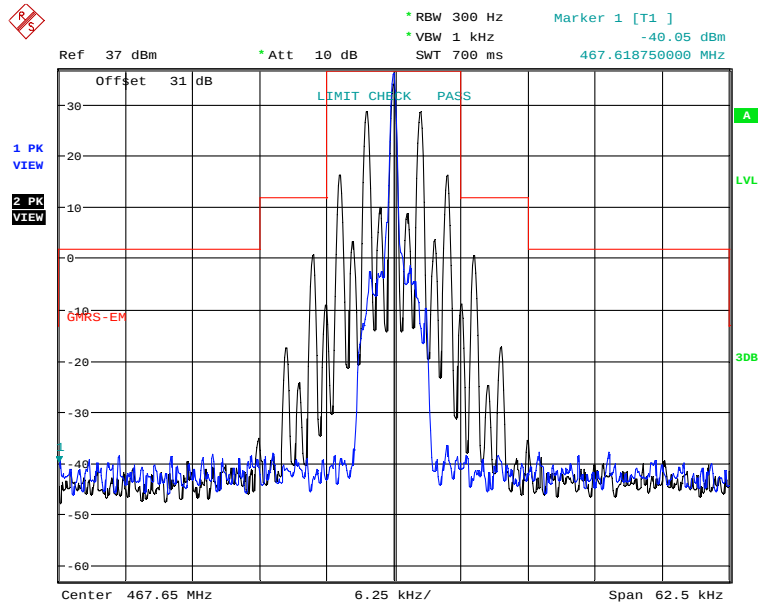


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

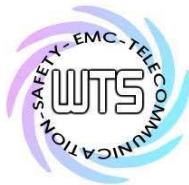


EMISSION MASK CH19 462.65MHZ
Date: 8.JUN.2017 14:19:51



EMISSION MASK CH19R 467.65MHZ
Date: 8.JUN.2017 14:22:27

Test equipment used: ETSTW-RE 055, ETSTW-RE 060



Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

8.2 Limit

■ Occupied Bandwidth

FCC Part 95.633(a): GMRS: The authorized bandwidth for emission types H1D, J1D, R1D, H3E, J3E and R3E is 4 kHz; for emission types A1D and A3E, it is 8 kHz; and for emission types F1D, G1D, F3E, G3E and F2D, it is 20 kHz.

FCC Part 95.633(c): FRS: The authorized bandwidth for an FRS unit is 12.5 kHz.

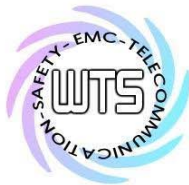
■ Emission Mask

Transmitter	Emission type	Applicable paragraphs 95.635 (b)
GMRS	A1D, A3E, F1D, G1D, F3E, G3E with filtering	(1), (3)
FRS	F3E with filtering	(1), (3)

GMRS&FRS: Unwanted emissions shall be attenuated below the unmodulated carrier power in accordance with the following:

(1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.

(3) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth.



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

9. Radiated Spurious Emission, FCC 2.1053; 95.635

9.1 Test procedure

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane.

The radiated emission at the fundamental frequency was measured at 3 m distance with a test antenna and spectrum analyzer.

Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna.

ERP was measured using a substitution method. The EUT was replaced by reference antenna connected to a signal generator.

The test of spurious radiated emission has been carried out with the validated test software. The measurements below 1GHz were performed with a measurement bandwidth of 100 kHz, above 1GHz with a bandwidth of 1MHz.

Spurious emission limits near the carrier are defined by a emission mask.

9.2 Test Results

The measurements of the spurious emission at the upper, center and lower channel, if applicable.

The measurement diagrams show that all significant spurious emissions are well below the limit line.

9.2.1 Spurious emission near the carrier:

The Results of Emission Mask: ☒ PASSED ☐ NOT PASSED

9.2.2 Spurious emission not near the carrier:

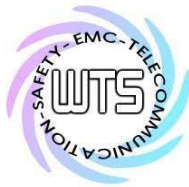
Model: A03250 Date: --
Mode: -- Temperature: -- °C Engineer: --
Polarization: -- Humidity: -- %

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

Note:

1. Correction Factor = Antenna factor + Cable loss - Preamplifier
2. The formula of measured value as: Test Result = Reading + Correction Factor
3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. Measurement uncertainty for 3m measurement: 30-200 MHz = ± 2.11 dB, 200-1000MHz = ± 2.09 dB, 1-18 GHz = ± 3.09 dB, 18-40 GHz = ± 2.71 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
6. See attached diagrams in appendix.

Test equipment used: ETSTW-RE 004, ETSTW-RE 122, ETSTW-RE 042,
ETSTW-RE 043, ETSTW-RE 044



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

9.3 Explanation of test result

The measurements of the spurious emissions at the equipment output terminals were performed pursuant to the test procedure above in order to verify that any emissions are below the limits given by § 95.635(b).

Calculation of test results:

Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

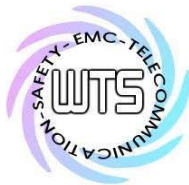
In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.

9.4 Limits

Transmitter	Emission type	Applicable paragraphs 95.635 (b)
GMRS	A1D, A3E, F1D, G1D, F3E, G3E with filtering	(1), (3), (7).
FRS	F3E with filtering	(1), (3), (7).

At least $43 + 10 \log_{10}(T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

Maximum transmitter output power	36.78 dBm
Required attenuation	$43 + 10 \times \text{Log}(4.7643) = 49.78 \text{ dBm}$
Maximum transmitter output power	36.78 dBm
Required attenuation	49.78 dB
Compliance limit	-13 dBm



Registration number: W6M21703-16679-C-95

FCC ID: IPH-03250

10. Frequency Stability vs. Temperature, FCC part 95.621 (b)

10.1 Test procedure

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable, exited the chamber through an opening made for that purpose.

After the temperature stabilized the frequency output was recorded from the counter.

10.2 Test Results

Nominal Frequency : 462.6375MHz (Ch4)		Nominal Frequency : 467.6375MHz (Ch11)		Nominal Frequency : 462.65MHz (Ch19)		Nominal Frequency : 467.65MHz (Ch19r)	
Temperature V.S Frequency Stability		Temperature V.S Frequency Stability		Temperature V.S Frequency Stability		Temperature V.S Frequency Stability	
Temperature	Measurement Frequency	Temperature	Measurement Frequency	Temperature	Measurement Frequency	Temperature	Measurement Frequency
-20	462.637543	-20	467.637509	-20	462.650043	-20	467.650056
-10	462.637543	-10	467.637514	-10	462.650043	-10	467.650041
0	462.637532	0	467.637514	0	462.650038	0	467.650041
10	462.637532	10	467.637514	10	462.650038	10	467.650044
20	462.637548	20	467.637529	20	462.650016	20	467.650044
30	462.637548	30	467.637529	30	462.650016	30	467.650052
40	462.637548	40	467.637543	40	462.650016	40	467.650052
50	462.637556	50	467.637572	50	462.650078	50	467.650063
Max Deviation (MHz)	0.000056	Max Deviation (MHz)	0.000072	Max Deviation (MHz)	0.000078	Max Deviation (MHz)	0.000063
Max Deviation (ppm)	0.121045	Max Deviation (ppm)	0.153965	Max Deviation (ppm)	0.168594	Max Deviation (ppm)	0.134716
Limit (ppm)	5	Limit (ppm)	2.5	Limit (ppm)	2.5	Limit (ppm)	5

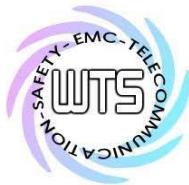
10.3 Limits:

FCC Part 95.621(b):

GMRS: The carrier frequency tolerance shall be better than ± 5 ppm.

FRS: The carrier frequency tolerance shall be better than ± 2.5 ppm.

Test equipment used: ETSTW-RE 055, ETSTW-CE 009



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

11. Frequency Stability vs. Voltage, FCC part 95.621 (b)

11.1 Test procedure

An external variable DC power supply was connected to the battery terminals of the equipment under test.

For hand carried, battery powered equipment primary supply voltage was reduced to the battery operating end point as specified by the manufacturer. The output frequency was recorded for each battery voltage.

11.2 Test Results

Nominal Frequency : 462.6375MHz (Ch4)		Nominal Frequency : 467.6375MHz (Ch11)		Nominal Frequency : 462.65MHz (Ch19)		Nominal Frequency : 467.65MHz (Ch19r)	
Voltage V.S Frequency Stability		Voltage V.S Frequency Stability		Voltage V.S Frequency Stability		Voltage V.S Frequency Stability	
Voltage	Measurement Frequency	Voltage	Measurement Frequency	Voltage	Measurement Frequency	Voltage	Measurement Frequency
7.4 V	462.637532	7.4 V	467.637538	7.4 V	462.650033	7.4 V	467.650042
8.51 V	462.637548	8.51 V	467.637538	8.51 V	462.650018	8.51 V	467.650028
6.29 V	462.637532	6.29 V	467.637514	6.29 V	462.650033	6.29 V	467.650042
Max Deviation (MHz)	0.000048	Max Deviation (MHz)	0.000038	Max Deviation (MHz)	0.000033	Max Deviation (MHz)	0.000042
Max Deviation (ppm)	0.103753	Max Deviation (ppm)	0.081260	Max Deviation (ppm)	0.071328	Max Deviation (ppm)	0.089811
Limit (ppm)	5	Limit (ppm)	2.5	Limit (ppm)	2.5	Limit (ppm)	5

11.3 Limits:

FCC Part 95.621(b):

GMRS: The carrier frequency tolerance shall be better than ± 5 ppm.

FRS: The carrier frequency tolerance shall be better than ± 2.5 ppm.

Test equipment used: ETSTW-RE 055

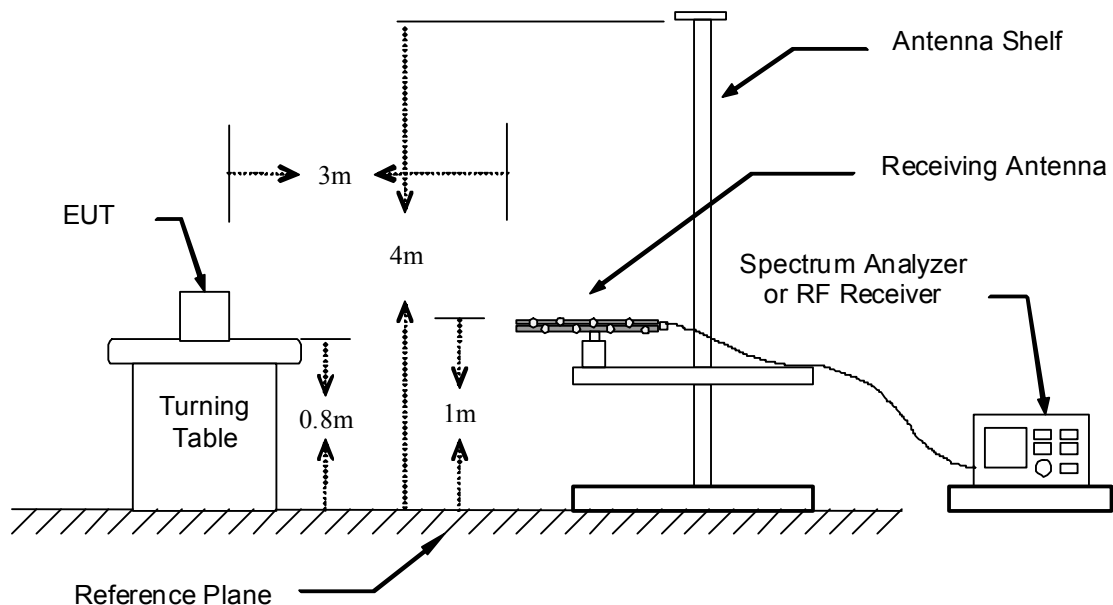
Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

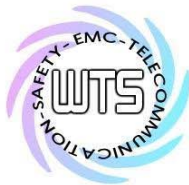
12. Receiver Radiated Spurious Emission

12.1 Test Procedures

1. Configure the EUT according to ANSI/TIA-603-D.
2. The EUT was placed on the top of the turn table 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turn table.
4. Power on the EUT and all the supporting units.
5. The turn table was rotated 360 degrees to determine the position of the highest radiation.
6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
7. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Adjust the spectrum analyzer for the following settings:
 - Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz and 1 MHz for spurious emissions above 1GHz.
 - Video Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1 GHz.
 - Sweep Speed slow enough to maintain measurement calibration.
 - Detector Mode = Positive Peak.

12.2 Test Setup





Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

12.3 Test Result

Model: A03250 Date: --
Mode: -- Temperature: -- °C Engineer: --
Polarization: -- Humidity: -- %

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

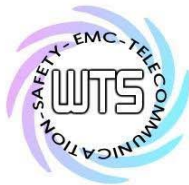
Note

1. Correction Factor = Antenna factor + Cable loss - Preamplifier
2. The formula of measured value as: Test Result = Reading + Correction Factor
3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. Measurement uncertainty for 3m measurement: 30-200 MHz = ± 2.11 dB, 200-1000MHz = ± 2.09 dB, 1-18 GHz = ± 3.09 dB, 18-40 GHz = ± 2.71 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.
6. This test is not required.

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)	Field Strength (dBmicrovolts/meter)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

Test equipment used: ETSTW-RE 004, ETSTW-RE 042, ETSTW-RE 043,
ETSTW-RE 044, ETSTW-RE 122



Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

13. Maximum Permissible Exposure

13.1 Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

13.2 MPE Calculation Method

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

$$E \text{ (V/m)} \cdot \frac{\sqrt{30 \times P \times G}}{d}$$

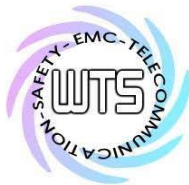
$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} \cdot \frac{E^2}{377}$$

E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd \cdot \frac{30 \times P \times G}{377 \times d^2}$$

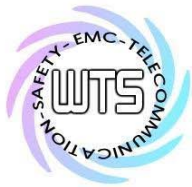


Registration number: W6M21703-16679-C-95
FCC ID: IPH-03250

Max output power (W)	Antenna Gain	Power Density(S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
- -	- -	- -	- -	Complies

From the peak EUT RF output power, the minimum mobile separation distance, $d = - -$ m,
as well as the gain of the used antenna, the RF power density can be obtained.

Explanation: Please refer to the SAR test report.



Appendix

Measurement diagrams

Radiation Spurious Emission



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 1-1

Data : #1

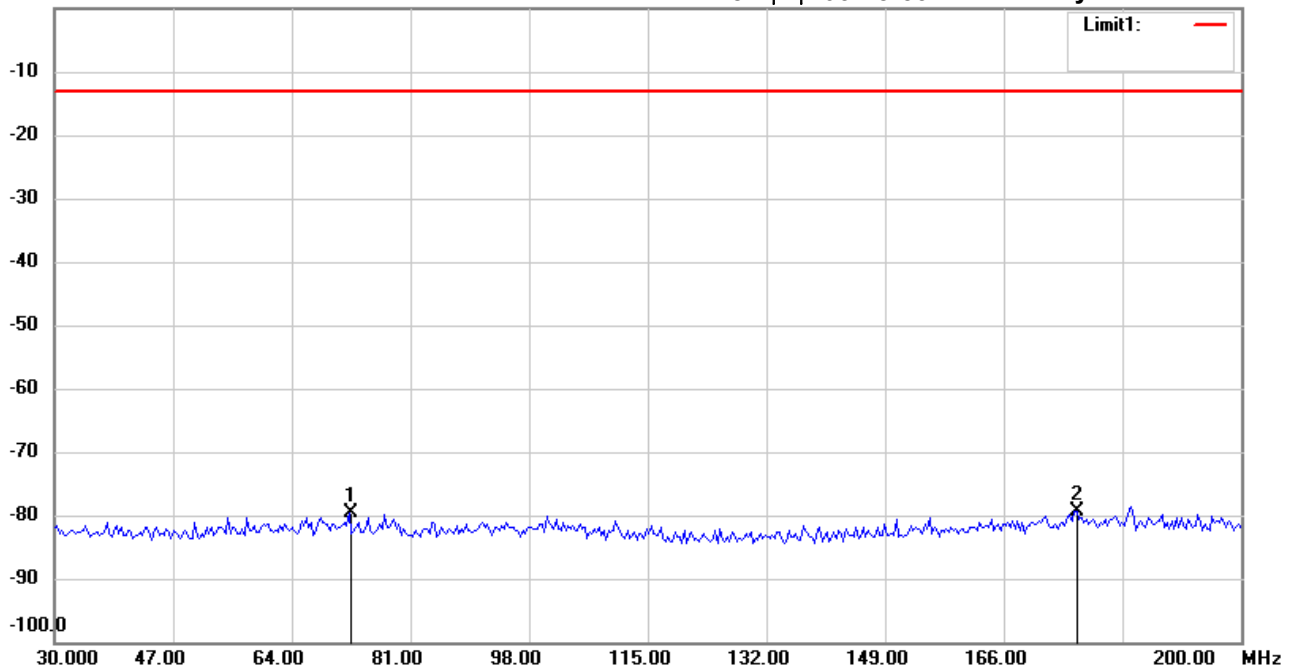
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:28:53

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

Note :

Polarization: **Horizontal**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	72.2446	-103.63	peak	23.96	-79.67	-13.00	150	100	-66.67	
*	176.4930	-103.40	peak	24.07	-79.33	-13.00	150	150	-66.33	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihsu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 1-1

Data : #2

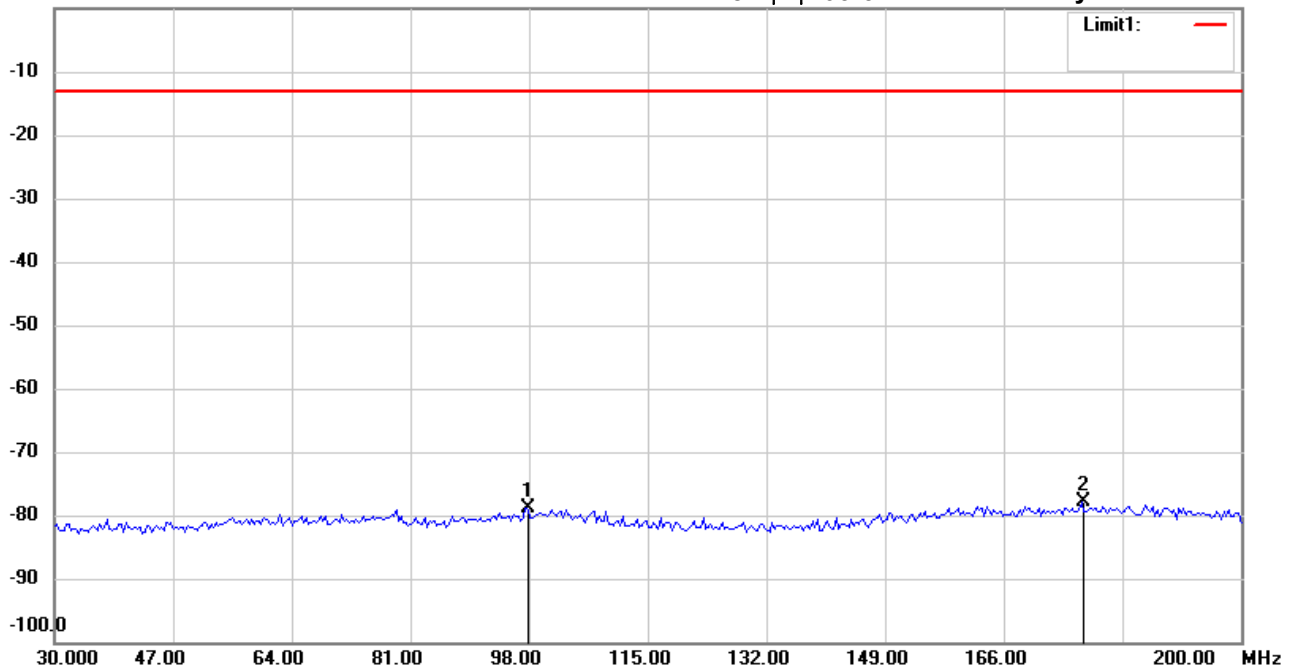
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:31:12

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

Note :

Polarization: Vertical

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	97.4550	-103.11	peak	24.19	-78.92	-13.00	150	140	-65.92	
*	177.1744	-102.62	peak	24.76	-77.86	-13.00	150	270	-64.86	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 1-2

Data : #1

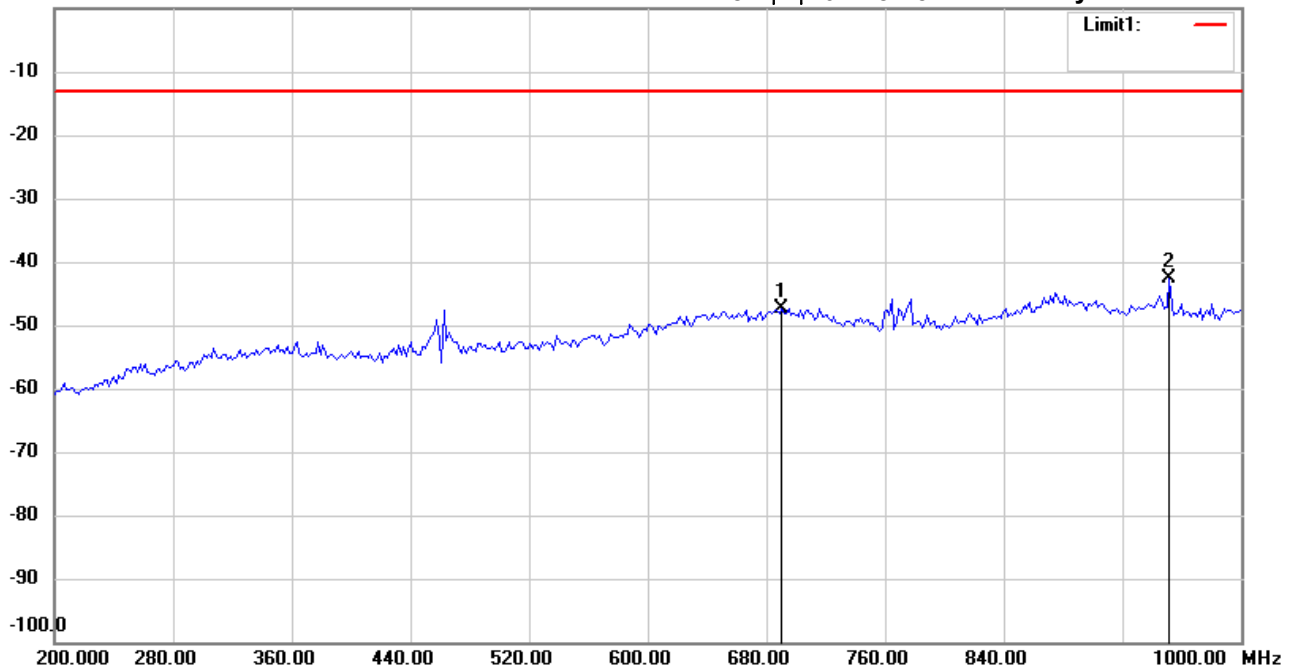
Date: 2017/6/9

Temperature: 24 °C

0.0 dBm

Time: 下午 01:48:15

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

Note :

Polarization: **Horizontal**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	690.5811	-46.48	peak	-0.81	-47.29	-13.00	150	240	-34.29	
*	951.9038	-42.68	peak	-0.05	-42.73	-13.00	150	100	-29.73	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 1-2

Data : #2

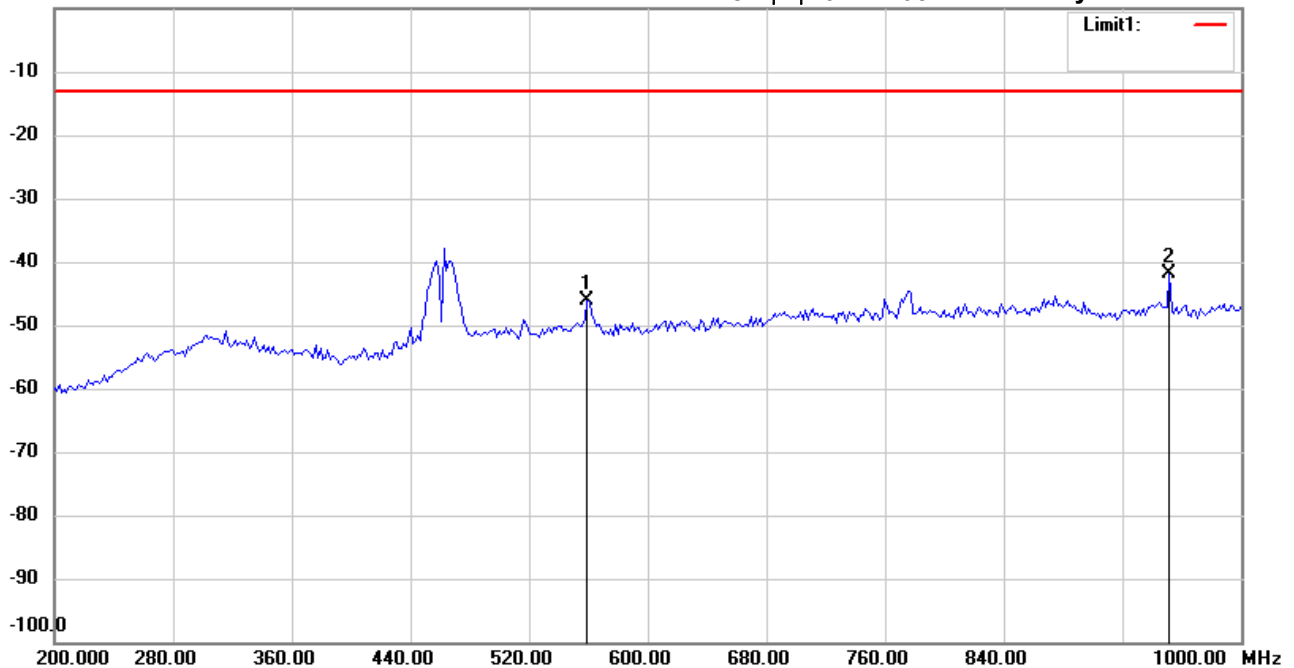
Date: 2017/6/9

Temperature: 24 °C

0.0 dBm

Time: 下午 01:47:05

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	559.1182	-42.15	peak	-3.94	-46.09	-13.00	150	240	-33.09	
*	951.9038	-41.46	peak	-0.35	-41.81	-13.00	150	170	-28.81	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 1-3

Data : #1

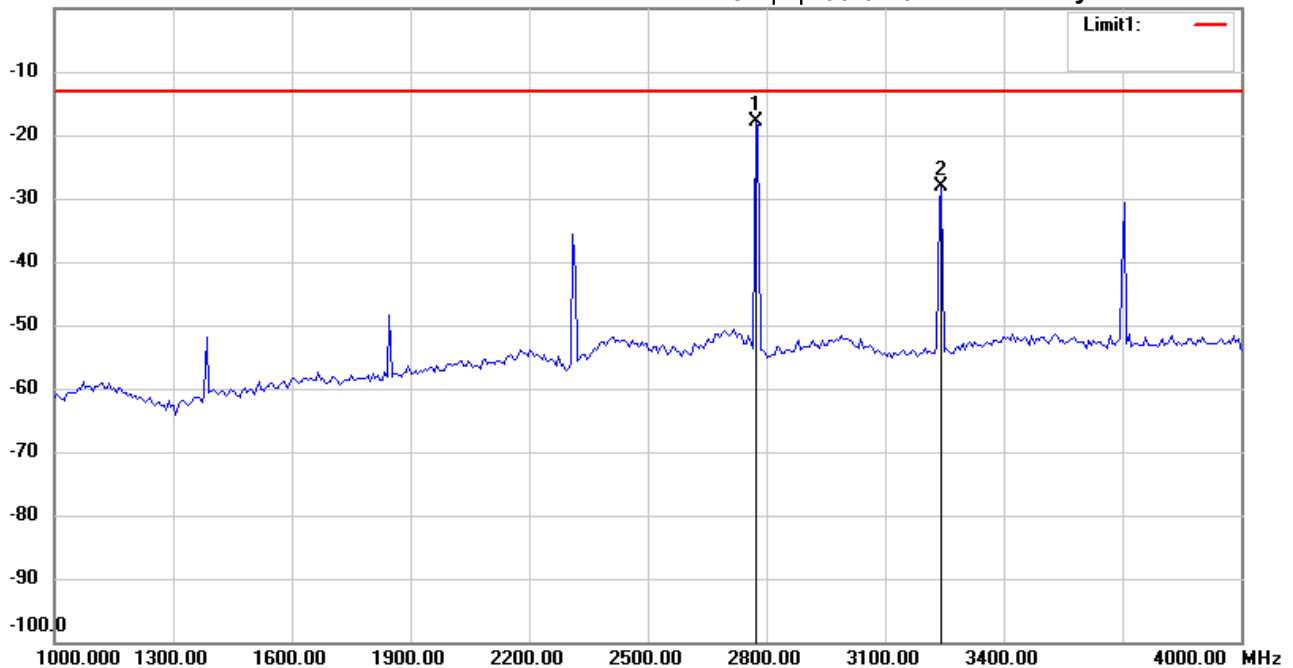
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:02:02

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2773.547	-26.54	peak	8.57	-17.97	-13.00	150	100	-4.97	
	3242.485	-36.22	peak	7.98	-28.24	-13.00	150	200	-15.24	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 1-3

Data : #2

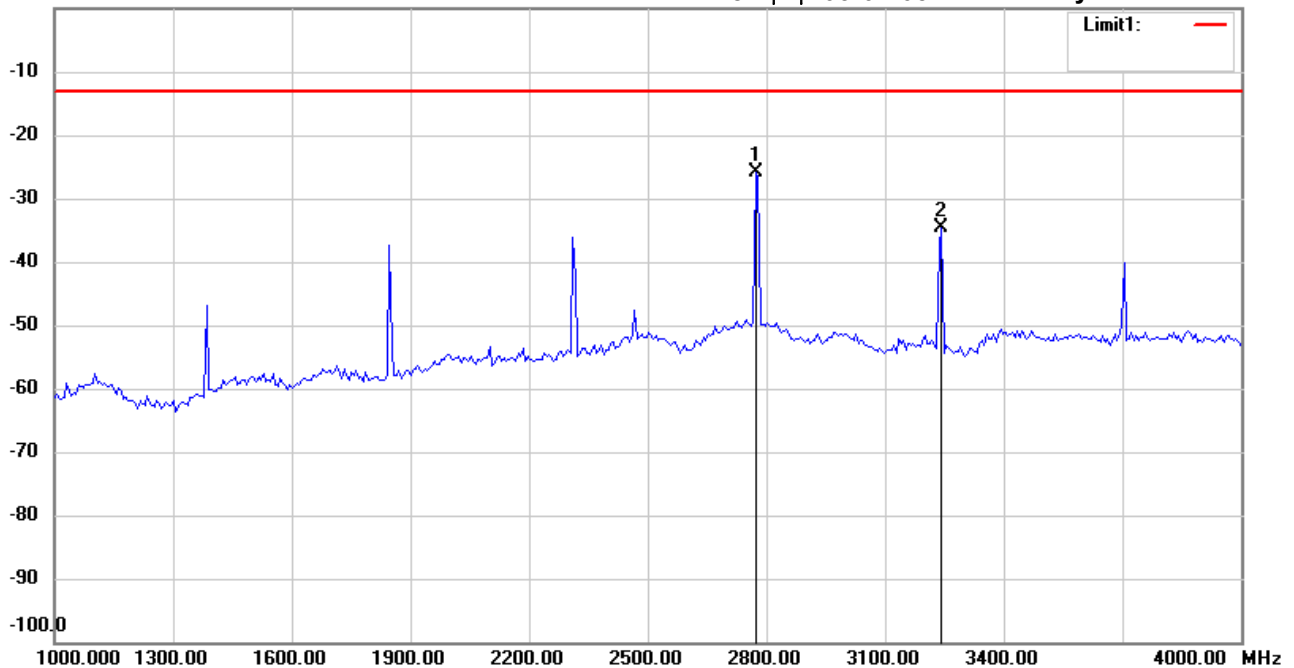
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:04:05

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch4 462.6375MHz

Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2773.547	-37.99	peak	12.08	-25.91	-13.00	150	200	-12.91	
	3242.485	-43.22	peak	8.50	-34.72	-13.00	150	300	-21.72	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 2-1

Data : #1

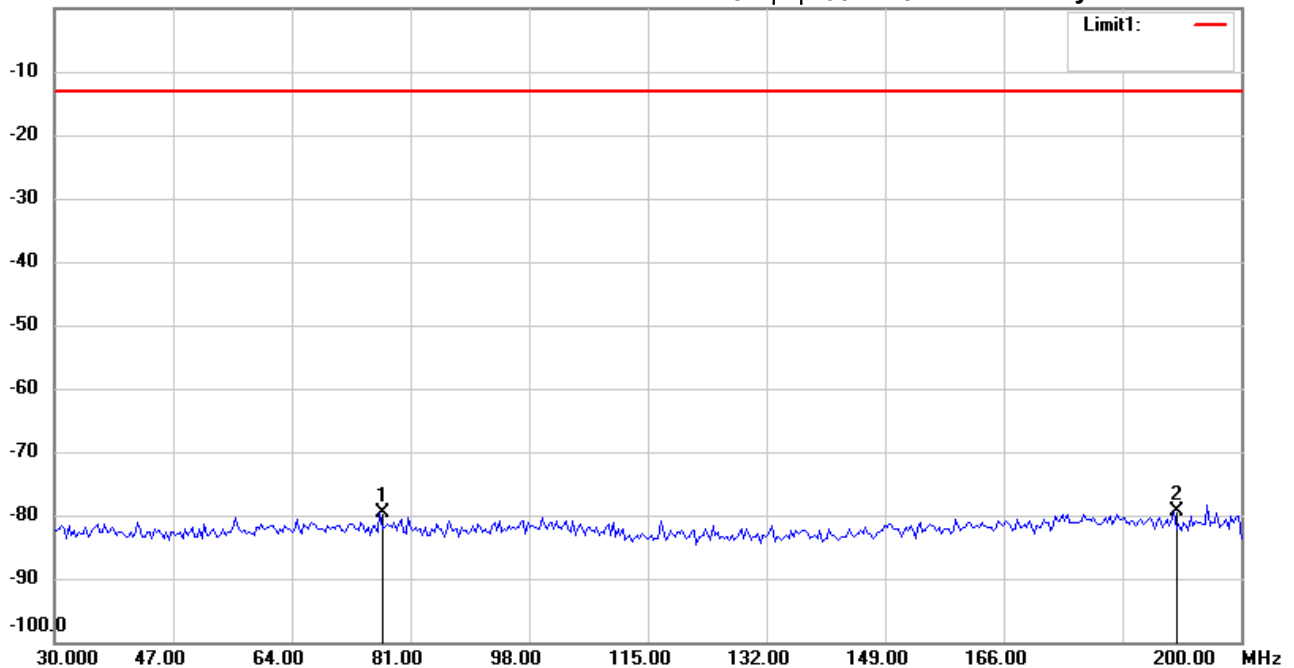
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:27:52

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch11 467.6375MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	76.6734	-103.43	peak	23.89	-79.54	-13.00	150	100	-66.54	
*	190.4610	-103.13	peak	23.79	-79.34	-13.00	150	200	-66.34	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 2-1

Data : #2

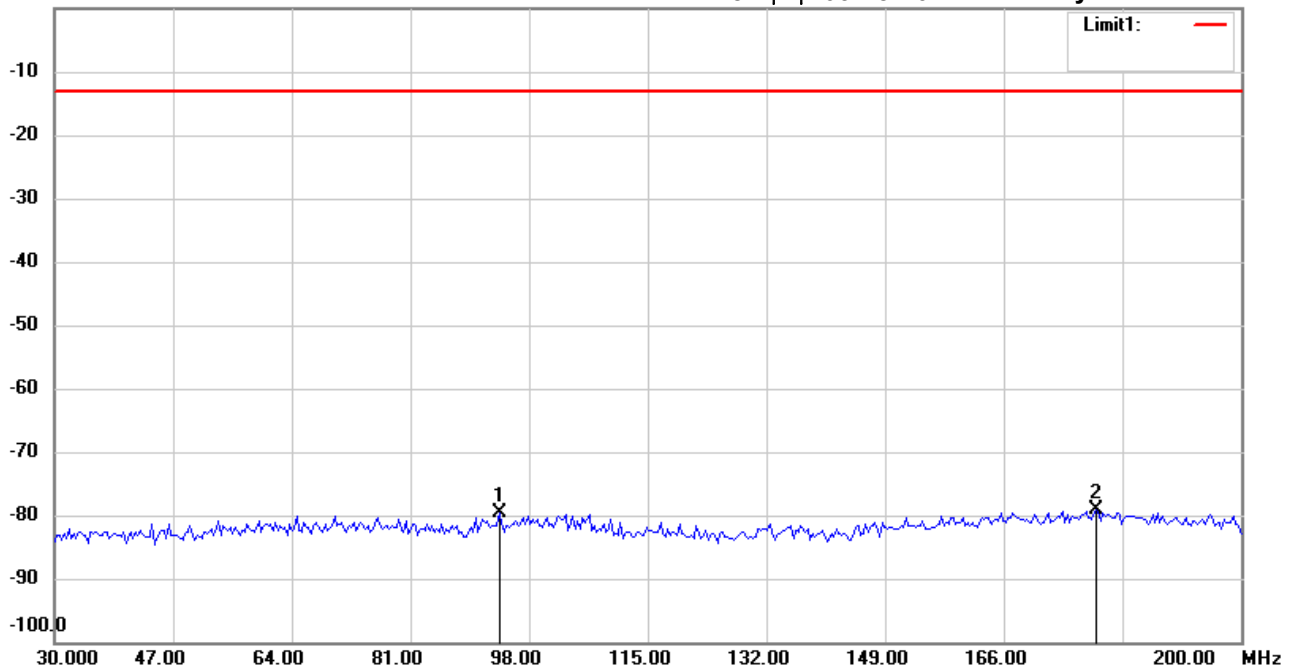
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:28:16

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch11 467.6375MHz

Note :

Polarization: Vertical

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	93.7074	-103.59	peak	24.05	-79.54	-13.00	150	140	-66.54	
*	179.2184	-103.89	peak	24.80	-79.09	-13.00	150	240	-66.09	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 2-2

Data : #1

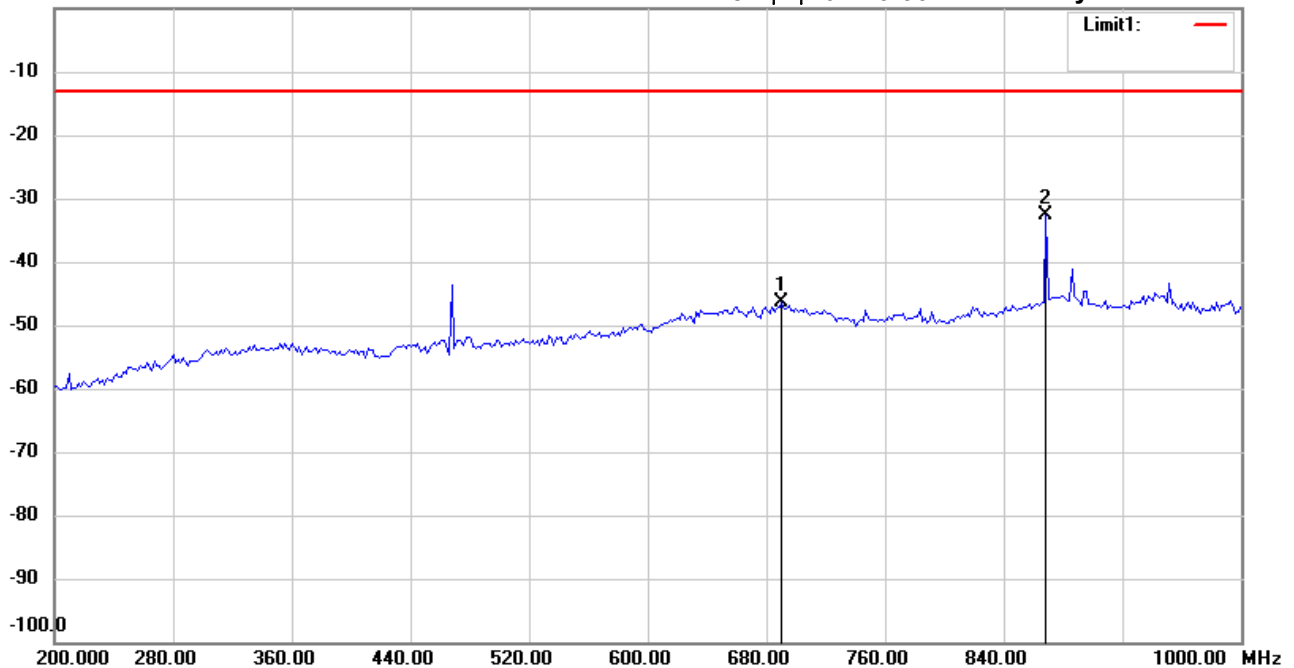
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 02:26:36

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch11 467.6375MHz

Note :

Polarization: **Horizontal**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	690.5812	-45.65	peak	-0.81	-46.46	-13.00	150	200	-33.46	
*	868.5371	-33.14	peak	0.46	-32.68	-13.00	150	300	-19.68	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 2-2

Data : #2

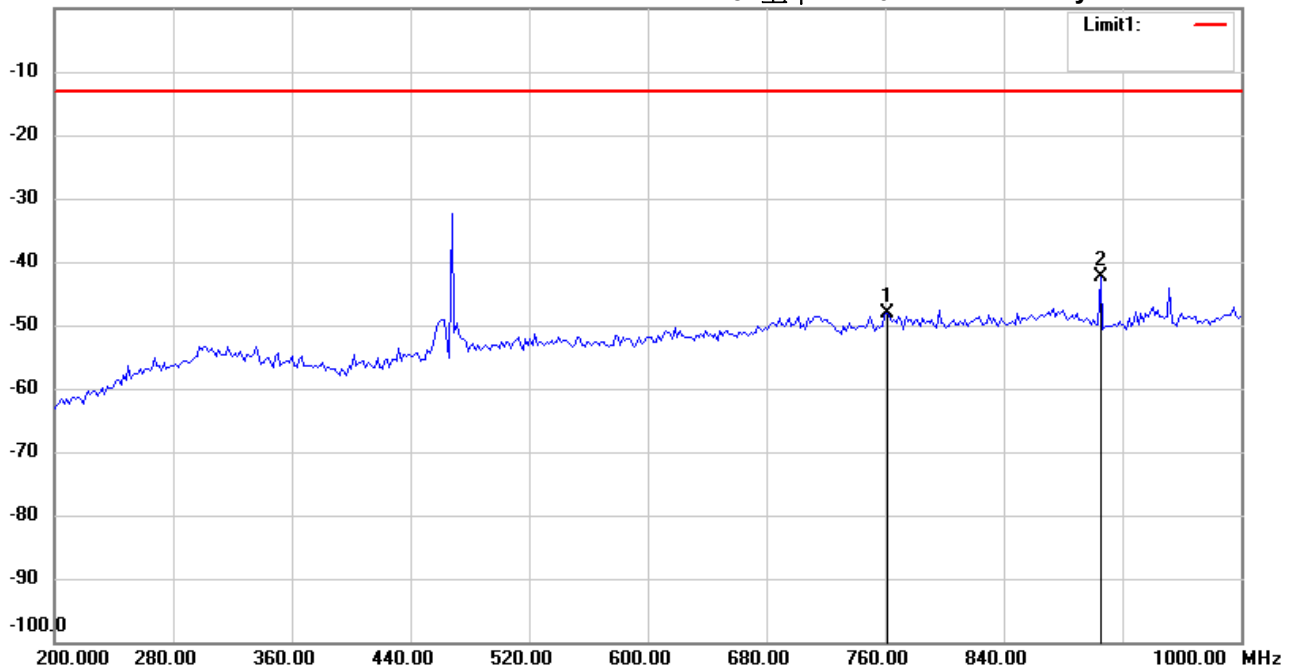
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 上午 11:16:14

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch11 467.6375MHz

Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	761.1221	-46.80	peak	-1.44	-48.24	-13.00	150	100	-35.24	
*	905.4107	-42.74	peak	0.29	-42.45	-13.00	150	60	-29.45	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 2-3

Data : #1

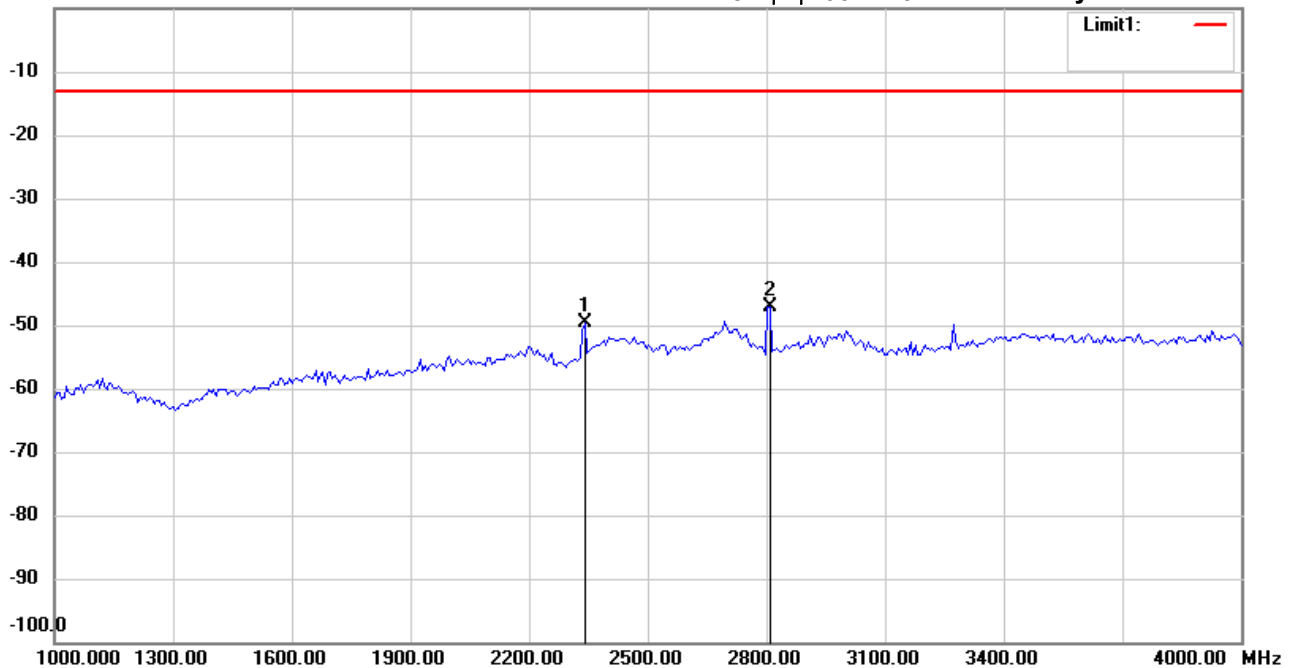
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:11:34

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch11 467.6375MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2340.681	-56.14	peak	6.41	-49.73	-13.00	150	140	-36.73	
*	2809.619	-54.73	peak	7.60	-47.13	-13.00	150	230	-34.13	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 2-3

Data : #2

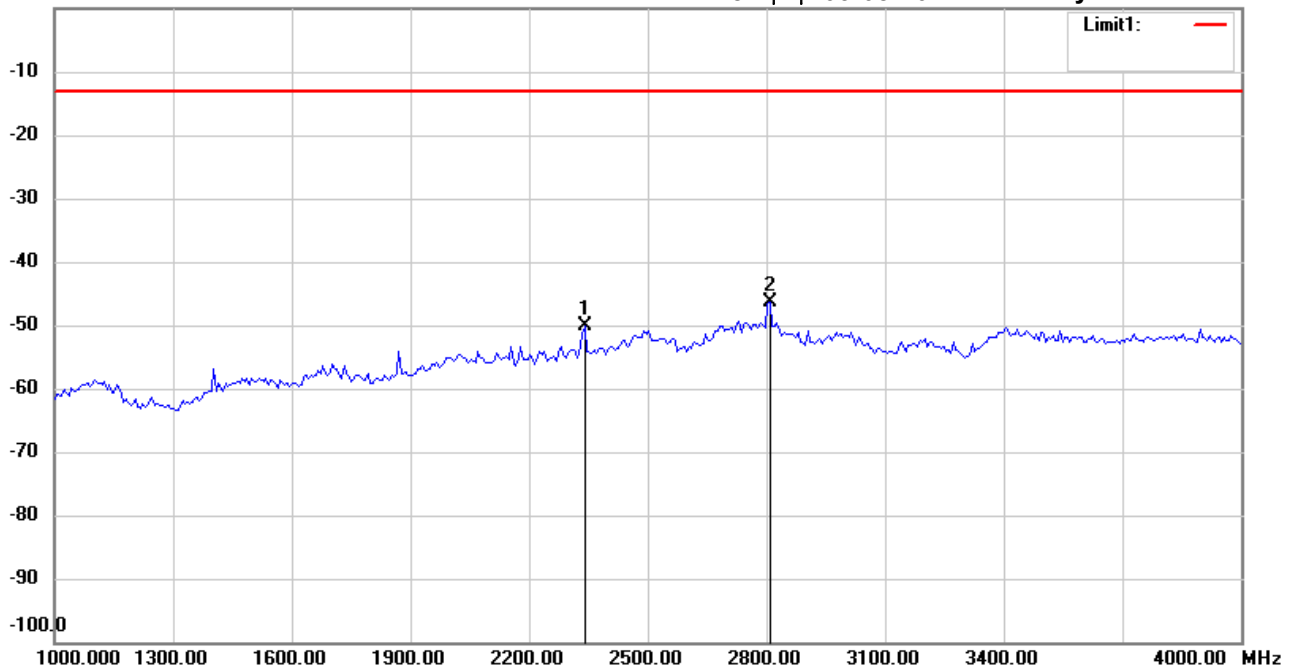
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:08:40

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch11 467.6375MHz

Note :

Polarization: Vertical

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2340.681	-57.24	peak	7.08	-50.16	-13.00	150	200	-37.16	
*	2809.619	-58.13	peak	11.79	-46.34	-13.00	150	300	-33.34	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 3-1

Data : #1

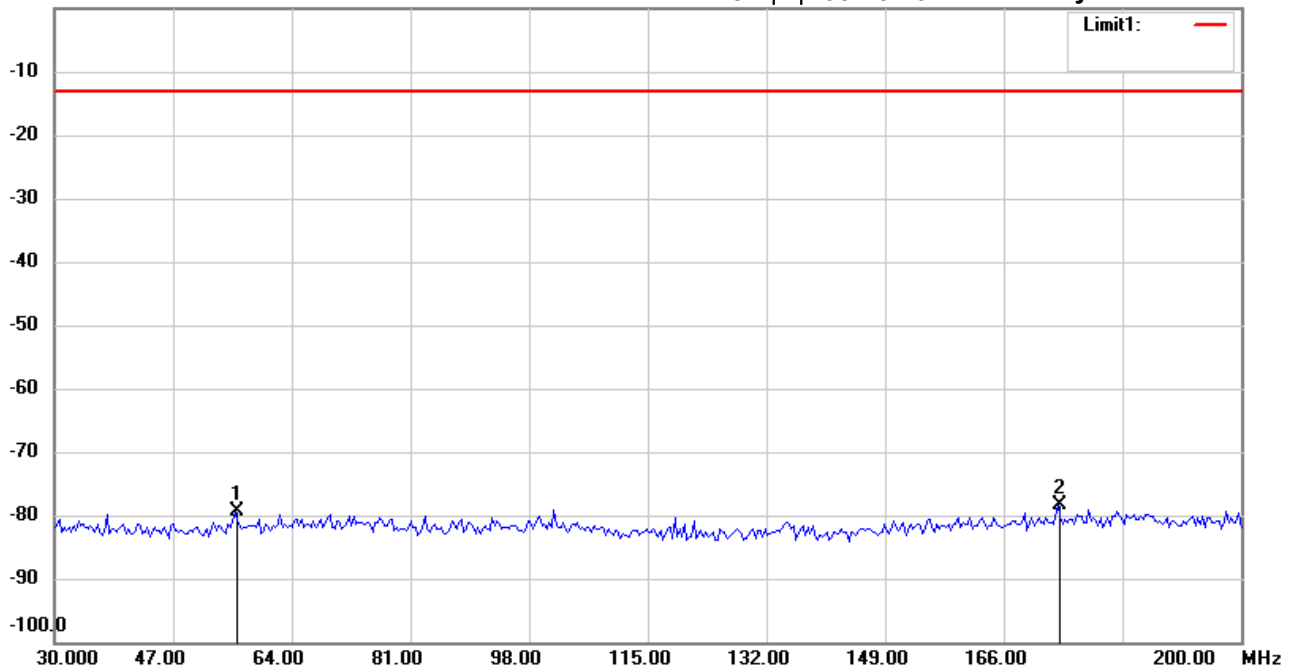
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:25:49

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	55.8920	-103.16	peak	23.84	-79.32	-13.00	150	240	-66.32	
*	173.7676	-102.21	peak	23.96	-78.25	-13.00	150	170	-65.25	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 3-1

Data : #2

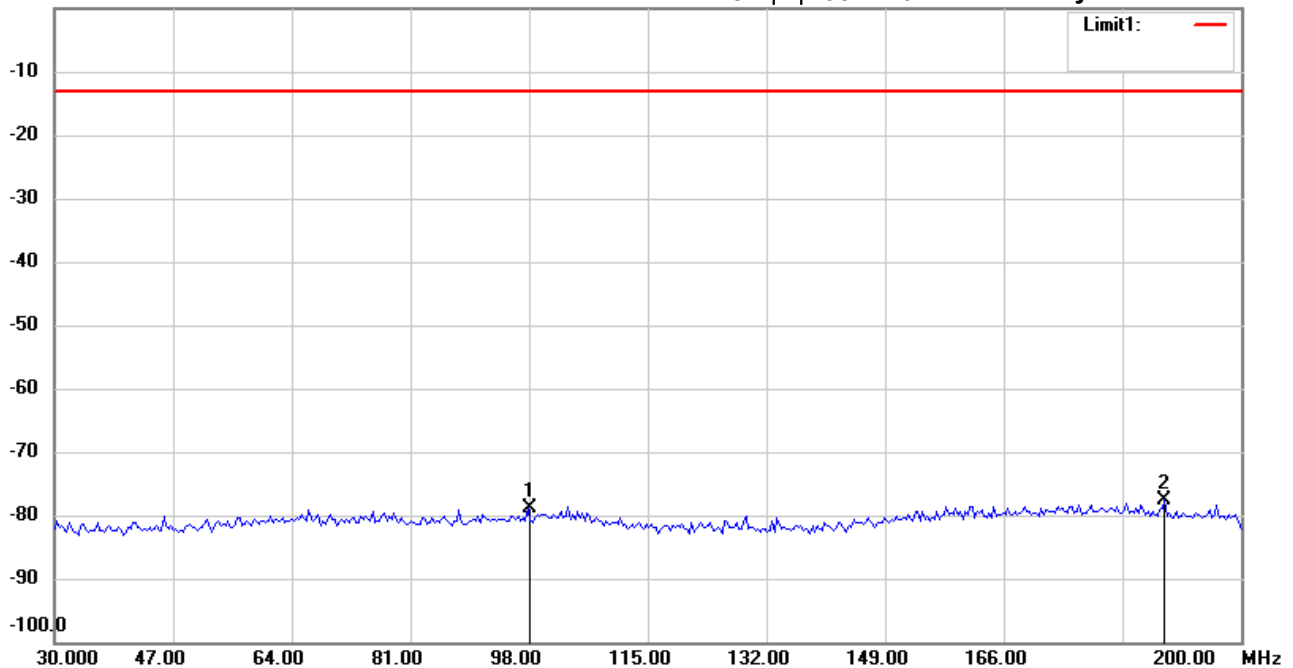
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:27:02

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	97.7957	-103.17	peak	24.20	-78.97	-13.00	150	240	-65.97	
*	189.0982	-101.98	peak	24.26	-77.72	-13.00	150	170	-64.72	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 3-2

Data : #1

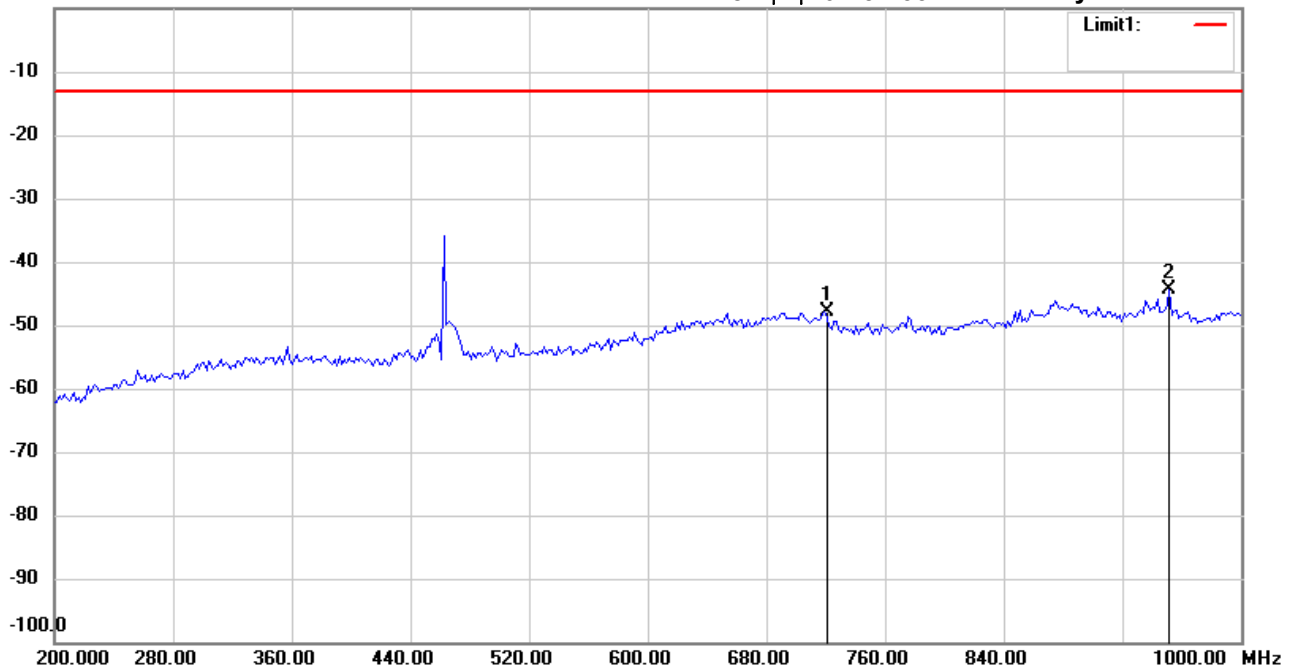
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 01:57:33

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	719.4390	-46.29	peak	-1.54	-47.83	-13.00	150	240	-34.83	
*	951.9038	-44.35	peak	-0.05	-44.40	-13.00	150	100	-31.40	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 3-2

Data : #2

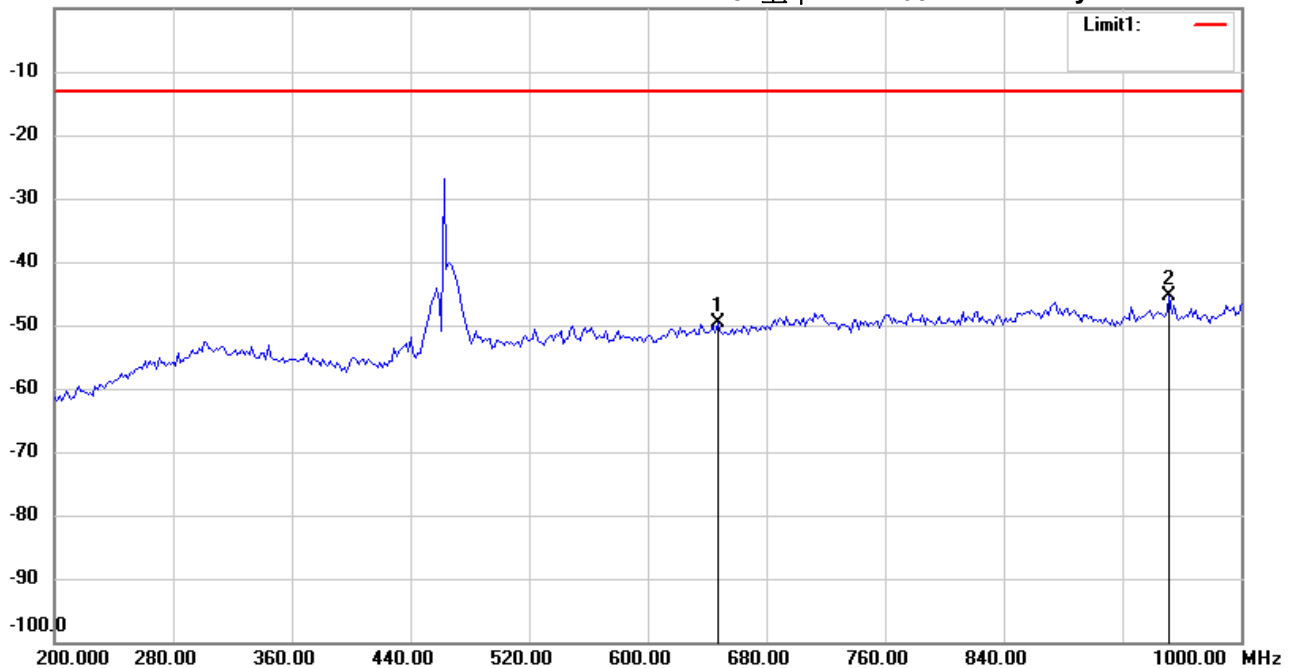
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 上午 11:27:05

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	647.2944	-47.20	peak	-2.50	-49.70	-13.00	150	240	-36.70	
*	951.9038	-45.10	peak	-0.35	-45.45	-13.00	150	100	-32.45	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 3-3

Data : #1

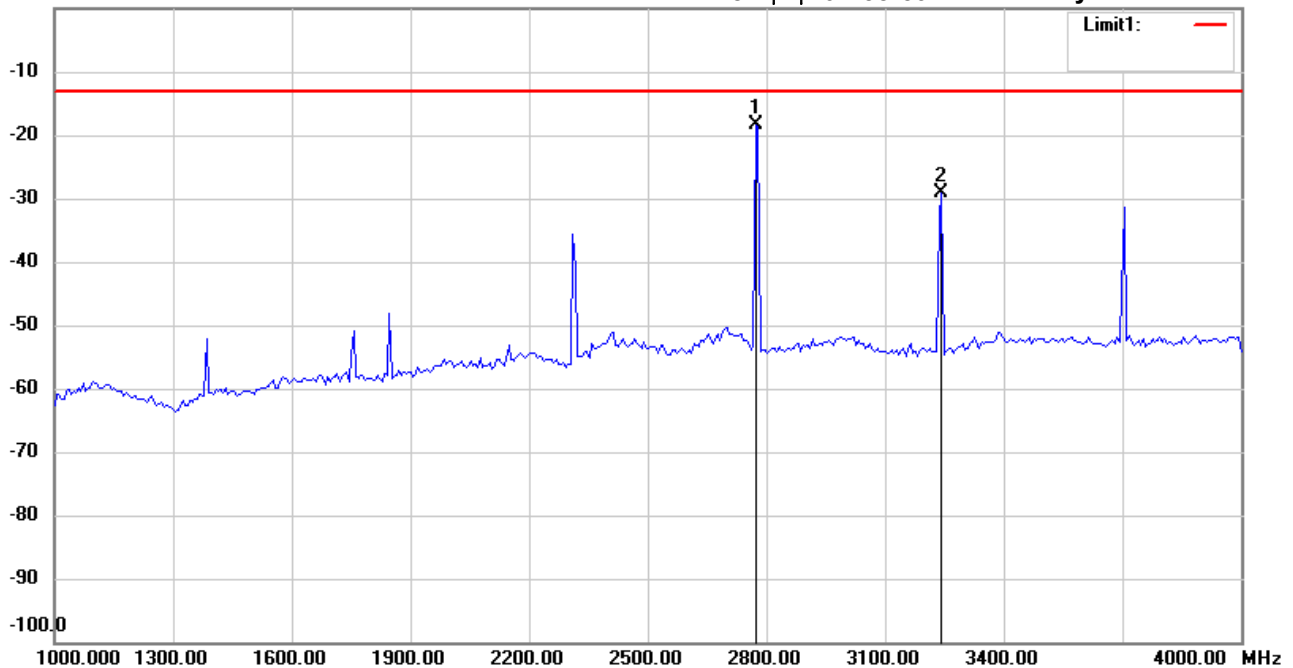
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 02:58:59

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2773.547	-26.89	peak	8.57	-18.32	-13.00	150	240	-5.32	
	3242.485	-37.14	peak	7.98	-29.16	-13.00	150	270	-16.16	

*:Maximum data x:Over limit !:over margin



Address:6F.,No.58,Ln 188,Ruey Kuang Rd,Neihu,Taipei
Tel:+886-2-6606-8877
Fax:+886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File :3-3

Data :#2

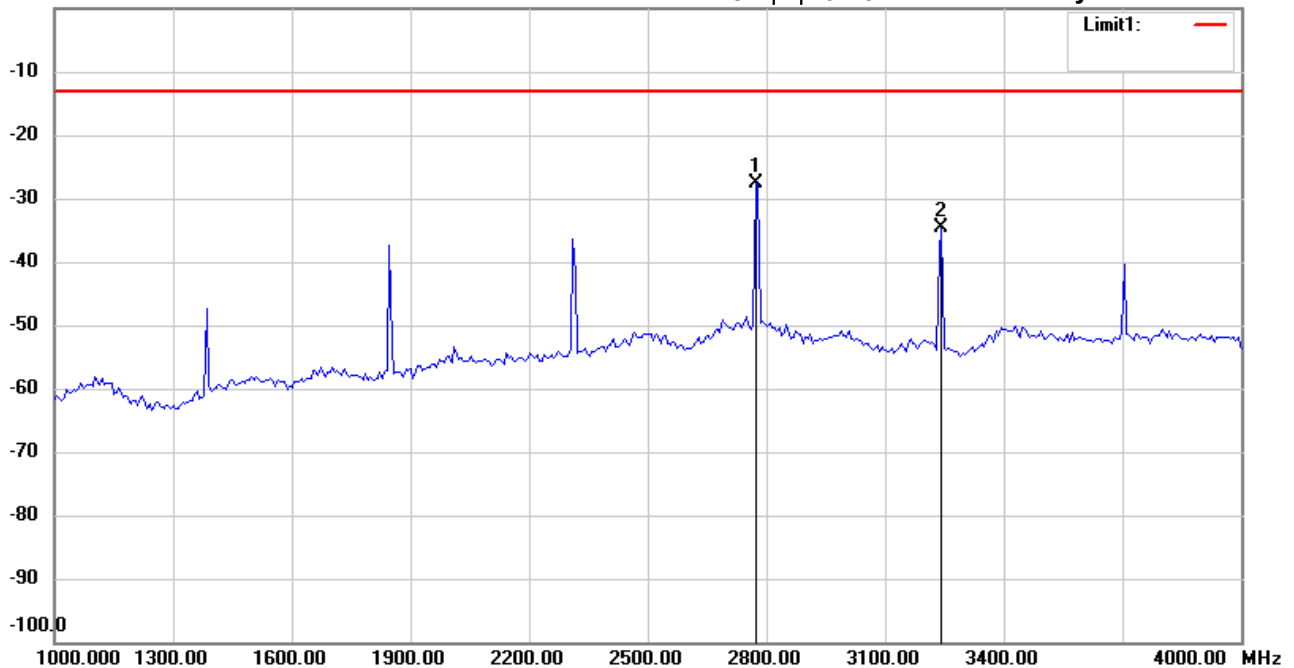
Date: 2017/6/12

Temperature:24 °C

0.0 dBm

Time: 下午 02:57:27

Humidity:60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19 462.65MHz

Note :

Polarization: **Vertical**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2773.547	-39.61	peak	12.08	-27.53	-13.00	150	100	-14.53	
	3242.485	-43.24	peak	8.50	-34.74	-13.00	150	200	-21.74	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 4-1

Data : #1

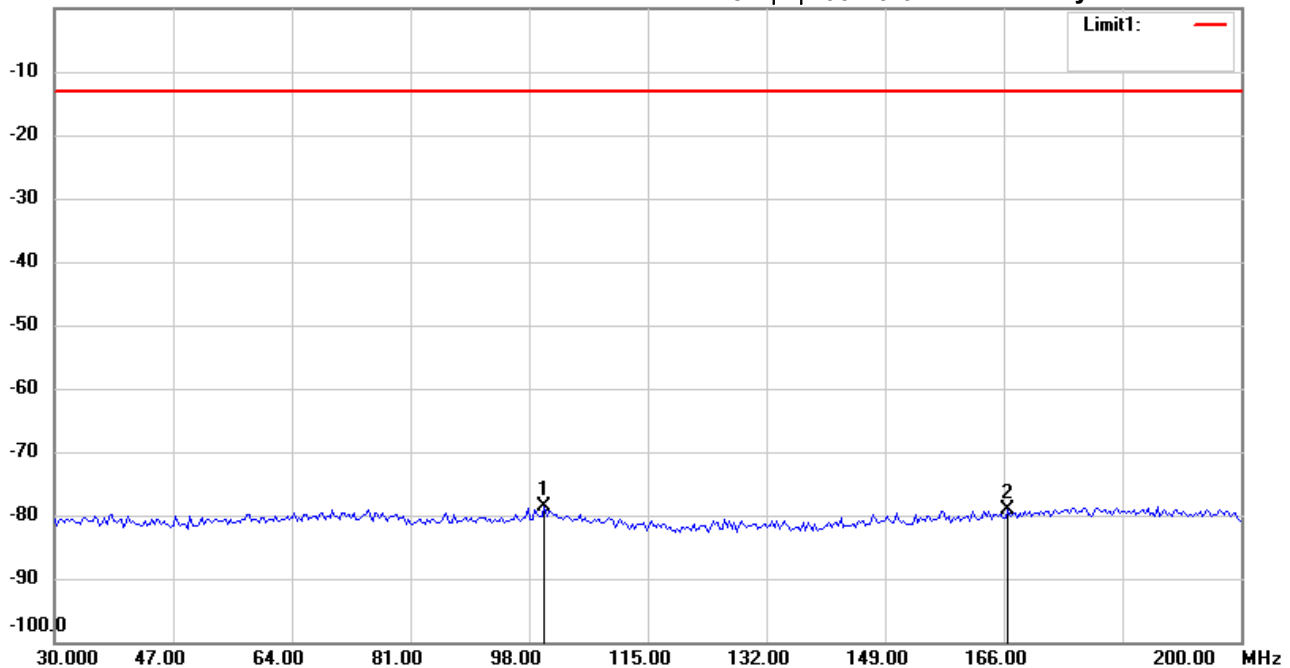
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:23:02

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	100.1804	-102.25	peak	23.65	-78.60	-13.00	150	240	-65.60	
	166.6132	-102.72	peak	23.65	-79.07	-13.00	150	100	-66.07	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihsu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 4-1

Data : #2

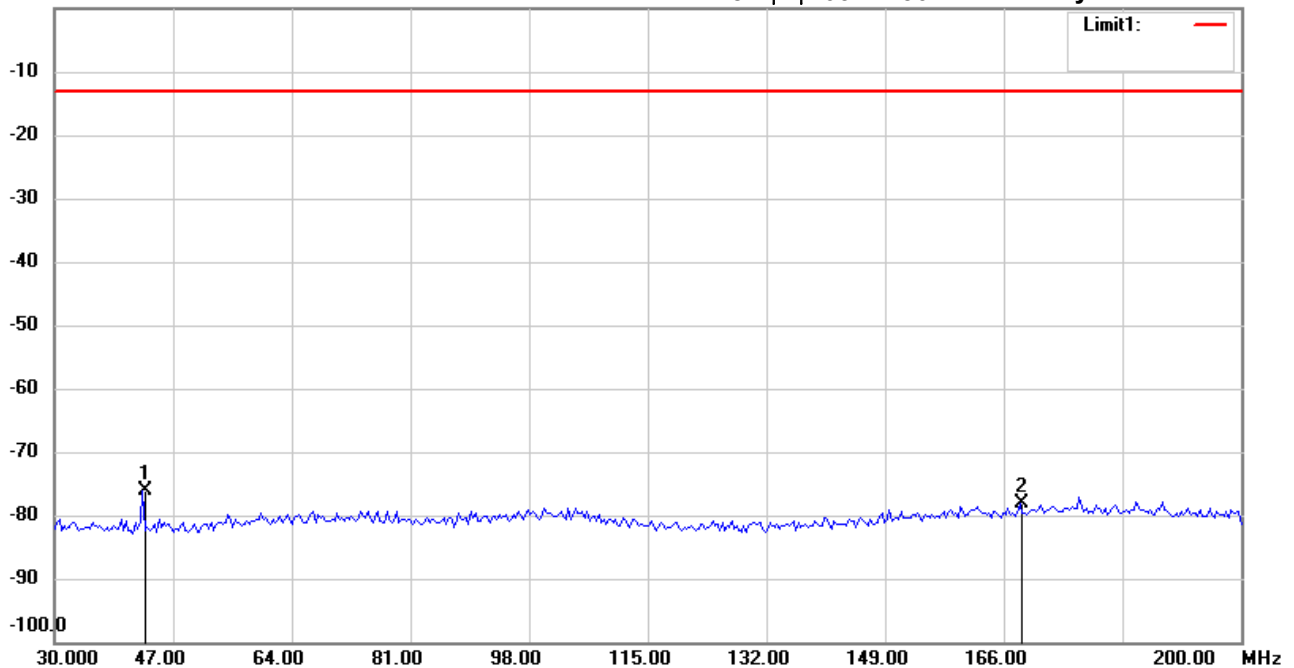
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 03:24:56

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

Note :

Polarization: Vertical

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	42.6053	-99.58	peak	23.39	-76.19	-13.00	150	170	-63.19	
	168.3167	-102.75	peak	24.57	-78.18	-13.00	150	200	-65.18	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihsu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 4-2

Data : #1

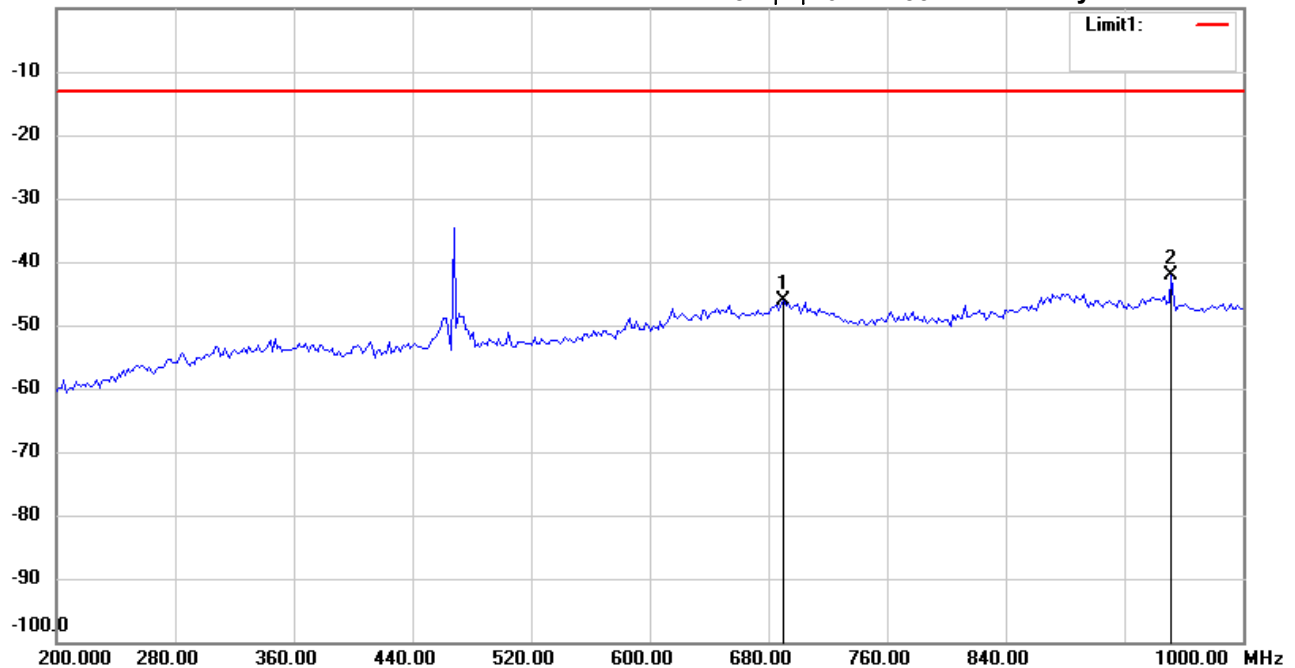
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 02:22:53

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

Note :

Polarization: **Horizontal**

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	690.5812	-45.27	peak	-0.81	-46.08	-13.00	150	240	-33.08	
*	951.9038	-41.96	peak	-0.05	-42.01	-13.00	150	200	-29.01	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihsu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 4-2

Data : #2

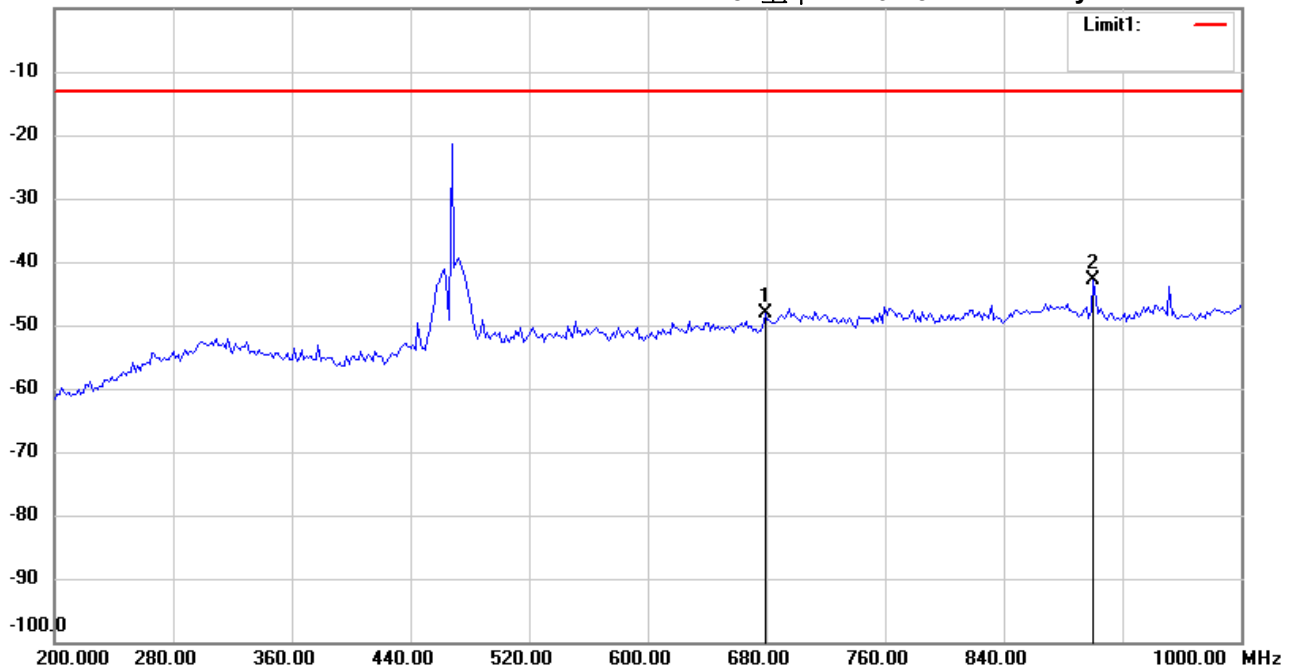
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 上午 11:19:28

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

Note :

Polarization: Vertical

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	679.3585	-46.53	peak	-1.71	-48.24	-13.00	150	240	-35.24	
*	900.6010	-43.12	peak	0.36	-42.76	-13.00	150	100	-29.76	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 4-3

Data : #1

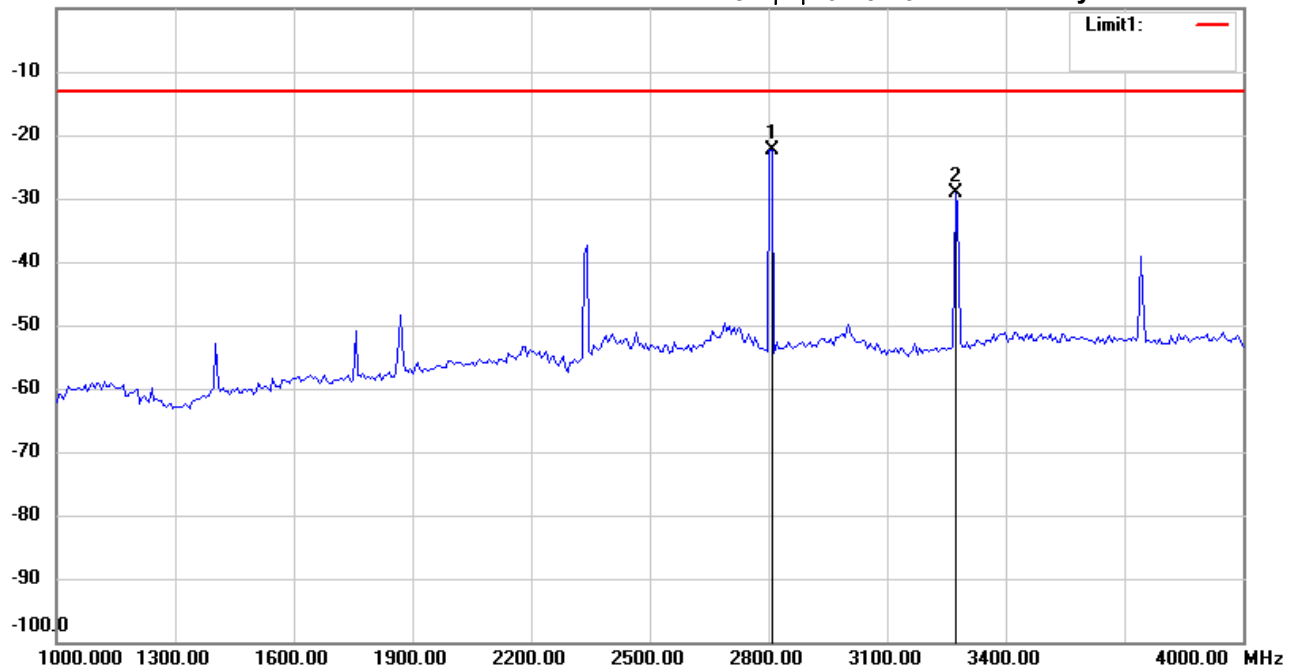
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 02:52:34

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2809.619	-29.97	peak	7.60	-22.37	-13.00	150	240	-9.37	
	3272.545	-37.42	peak	8.22	-29.20	-13.00	150	170	-16.20	

*:Maximum data x:Over limit !:over margin



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, NeiHu, Taipei
Tel: +886-2-6606-8877
Fax: +886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File : 4-3

Data : #2

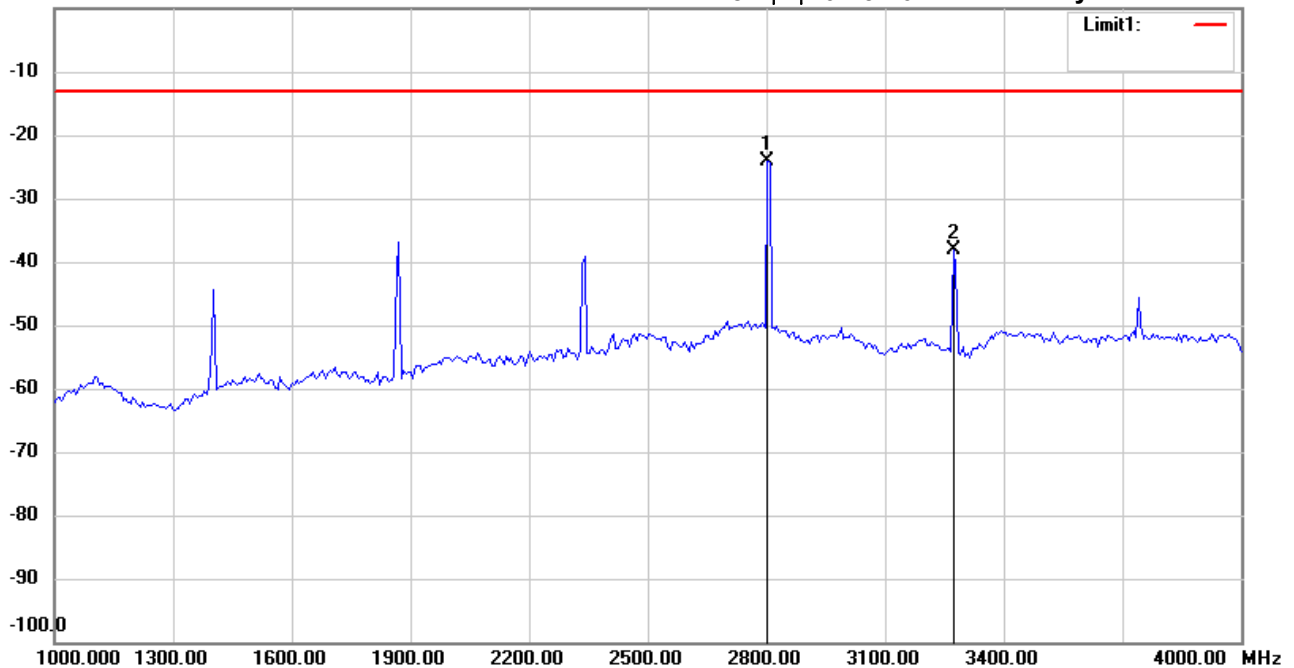
Date: 2017/6/12

Temperature: 24 °C

0.0 dBm

Time: 下午 02:54:02

Humidity: 60 %



Site : Chamber

Condition : FCC_part 95 RE

EUT : W6M21703-16679

M/N:

Test Mode : Tx Ch19r 467.65MHz

Note :

Polarization: *Vertical*

Power : 7.4 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2803.607	-35.97	peak	11.97	-24.00	-13.00	150	240	-11.00	
	3272.545	-46.05	peak	7.91	-38.14	-13.00	150	100	-25.14	

*:Maximum data x:Over limit !:over margin