

**FCC PART 95 TEST REPORT**  
**for**  
**Handheld UHF Two-way radio with GPS**  
**Model No.: A02963**  
**FCC ID: IPH-02963**

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**

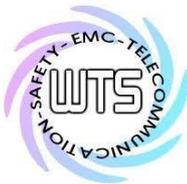
**Industry Canada filed test laboratory Reg. No. IC 5679A-1, IC 5107A-1**

**A2LA Accredited No.: 2732.01**



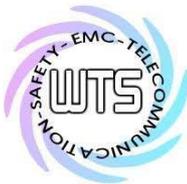
**Report No.: W6M21604-15784-C-95**

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.  
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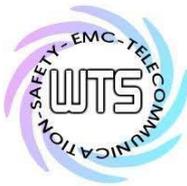


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# Worldwide Testing Services(Taiwan) Co., Ltd.

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## 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.

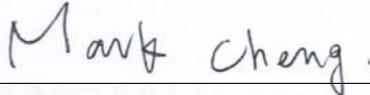
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications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

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

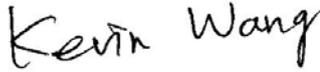
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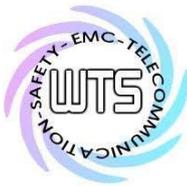
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### Tester:

June 20, 2016	Mark Cheng	
_____	_____	_____
Date	WTS-Lab. Name	Signature

### Technical responsibility for area of testing:

June 20, 2016	Kevin Wang	
_____	_____	_____
Date	WTS Name	Signature



# **Worldwide Testing Services(Taiwan) Co., Ltd.**

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## **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: ./.

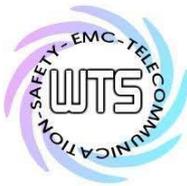
Street: ./.

Town: ./.

Country: ./.

Telephone: ./.

Fax: ./.



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**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**

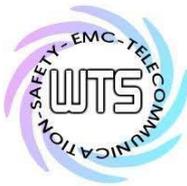
Date of receipt of test item: April 27, 2016  
Date of test: from April 28, 2016 to June 20, 2016

**1.5 General information of Test item**

Type of test item: Handheld UHF Two-way radio with GPS  
Model Number: A02963  
Multi-listing model number: B02963  
Brand Name: Garmin  
Photos: See appendix

**Technical data**

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



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Power supply Adapter (I/P: 100-240V~0.3A, 50-60Hz, 21-29VA ;  
O/P: 5V, 2.0A MAX.)  
Battery 7.4V, 2400mAh, 17.8Wh

End point of Battery voltage: nom: 7.4V / min: 6.29 V / max: 8.51V

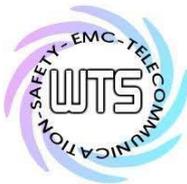
Operation modes: Half-duplex

**Manufacturer:** (if applicable)

Name: Garmin Corporation  
Street: No.68, Zhangshu 2nd Rd., Xizhi Dist.,  
Town: New Taipei City 221,  
Country: Taiwan (R.O.C.)

## **1.6 Test standards**

Technical standard:  
FCC RULES PART 95.621 - Personal Radio Service (2015-10) GMRS  
Subpart E - Technical Regulations  
FCC RULES PART 2 - Frequency Allocations General Rules and Regulations  
(2015-10)



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**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.



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## 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	2016/5/20	2017/5/19
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 008	HF-EICHLEITUNG 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	2015/7/13	2016/7/12
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2015/9/7	2016/9/6
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2016/5/20	2017/5/19
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2016/5/25	2017/5/24
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2015/8/14	2016/8/13
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	2016/6/15	2017/6/14
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2016/6/15	2017/6/14
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	ETS-Lindgren	2016/3/23	2017/3/22
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2016/1/25	2017/1/24
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2016/3/28	2017/3/27
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2016/4/14	2017/4/13
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2016/2/25	2017/2/24
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2016/2/25	2017/2/24
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2016/2/25	2017/2/24
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2016/2/27	2017/2/26
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2016/2/25	2017/2/24
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2016/4/13	2017/4/12
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	2015/9/6	2016/9/5
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2015/9/21	2016/9/20
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2016/2/25	2017/2/24
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	2016/1/13	2017/1/12
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2016/5/23	2017/5/22
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2015/8/11	2016/8/10



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ETSTW-RE 126	5GHz Notch filter	5NSL11-5800/E221.3-O/O	1	K&L Microwave	2015/8/11	2016/8/10
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2016/2/25	2017/2/24
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2015/8/11	2016/8/10
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2015/8/11	2016/8/10
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	2016/4/13	2017/4/12
ETSTW-RE 143	Humidity Temperature Meter	TES-1260	110104623	TES	2015/9/9	2016/9/8
ETSTW-RE 147	Bi-log Hybrid Antenna	MCTD 2786B	BLB16M04005	ETC	2016/3/31	2017/3/30
ETSTW-EMI 011	USB Compact Modulator	SFC-U	101689	R&S	2016/5/4	2017/5/3
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2016/3/4	2017/3/3
ETSTW-GSM 003	Radio Communication Analyzer	MT8820C	6201342073	Anritsu	2016/2/3	2017/2/2
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2016/1/13	2017/1/12
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2016/1/13	2017/1/12
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2016/1/13	2017/1/12
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2016/1/13	2017/1/12
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2015/9/16	2016/9/15
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2015/9/11	2016/9/10
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	Pre-test Use NCR	
ETSTW-Cable 012	N TYPE To SMA Cable	Cable 012	None	JYE BAO CO.,LTD.	2015/9/11	2016/9/10
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2016/2/24	2017/2/23
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2016/2/24	2017/2/23
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2016/2/24	2017/2/23
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2016/2/24	2017/2/23
ETSTW-Cable 020	N TYPE Cable	OATS Cable 1	N30N30-L335-15M	JYE BAO CO.,LTD.	2016/4/22	2017/4/21
ETSTW-Cable 022	N TYPE Cable	5006	0002	JYE BAO CO.,LTD.	2016/4/7	2017/4/6
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2016/2/25	2017/2/24
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2016/5/13	2017/5/12
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2015/9/21	2016/9/20
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2015/9/21	2016/9/20
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	HUBER+SUHNER	2016/2/25	2017/2/24
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104 (S_Cable 10)	238092	HUBER+SUHNER	2016/4/13	2017/4/12
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2016/4/13	2017/4/12
ETSTW-Cable 048	Microwave Cable	SUCOFLEX 104	325518	HUBER+SUHNER	2016/4/13	2017/4/12
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2016/4/7	2017/4/6
ETSTW-Cable 064	Microwave Cable	SUCOFLEX 104	MY28891	HUBER+SUHNER	2016/4/13	2017/4/12
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1	



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## 2.5 General Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI STANDARD C63.4-2009 5.2 using a 50 $\mu$ 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 C63.4-2009 6.4 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 %.

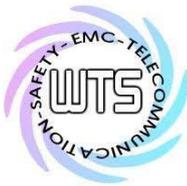
The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

- (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 C63.4-2009 10.2.7: 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.



# Worldwide Testing Services(Taiwan) Co., Ltd.

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### 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)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Modulation Deviation	FCC Part 95.637(b), FCC part 2.1047(a)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Audio Frequency Response	2.1047 (a) 95.631 (j)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Occupied Bandwidth / Emission Mask	FCC part 95.633 (a)&(c) FCC part 95.635 (b)(1)(3)(7)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Spurious Emission Transmitter	2.1053 95.635 (e)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Spurious Emission Receiver	Part 15B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frequency Stability vs. Temperature	FCC part 95.621 (b)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frequency Stability vs. Voltage	FCC part 95.621 (b)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The following is intentionally left blank.



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

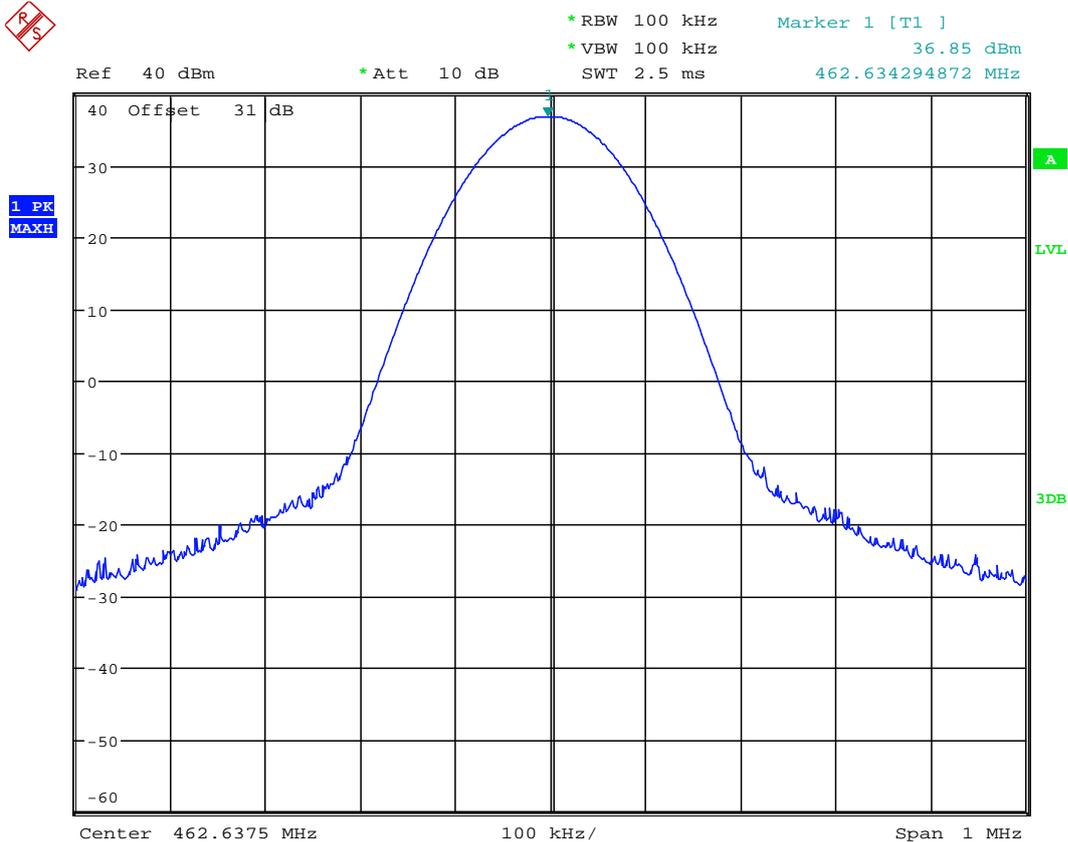
### 4.1 Test procedure

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.

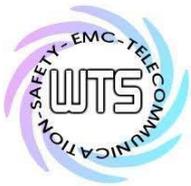
Tests were performed with an un-modulated carrier at three frequencies (low, middle and high channels) and on all power levels, which can be set-up on the transmitters, if applicable.

### 4.2 Test Results



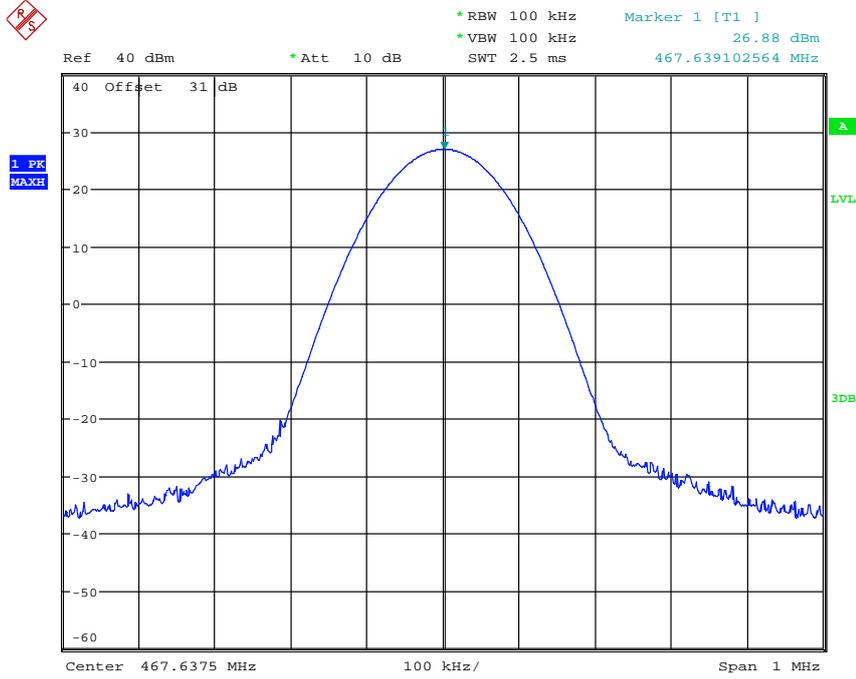
MAX OUTPUT POWER CH4 462.6375MHZ

Date: 26.APR.2016 16:37:27

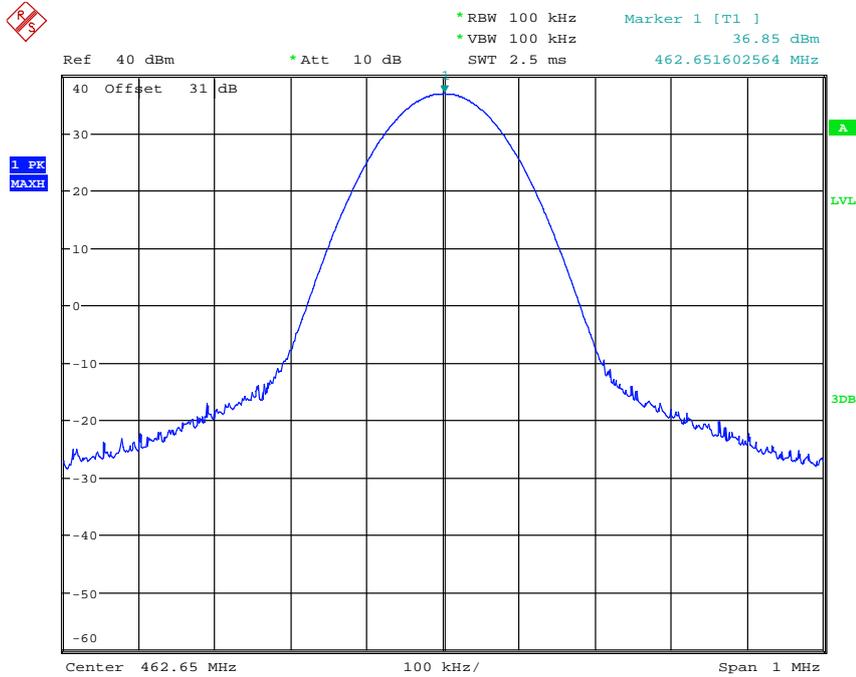


# Worldwide Testing Services(Taiwan) Co., Ltd.

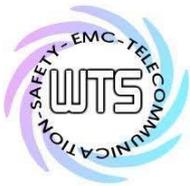
Registration number: W6M21604-15784-C-95  
FCC ID: IPH-02963



MAX OUTPUT POWER CH11 467.6375MHZ  
Date: 26.APR.2016 16:53:49



MAX OUTPUT POWER CH19 462.65MHZ  
Date: 26.APR.2016 16:34:06



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95

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Average Power= Peak Power - Duty factor of 50%

Peak Power	Duty factor of 50%	Average Power
36.85 dBm	-3 dB	33.85 dBm
26.88 dBm	-3 dB	23.88 dBm
36.85 dBm	-3 dB	33.85 dBm

### 4.3 Limits:

FCC Part 95.639(a):

A GMRS transmitter may transmit with a maximum power of 5.0W e.r.p (37 dBm).

FCC Part 95.639(d): 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

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**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.

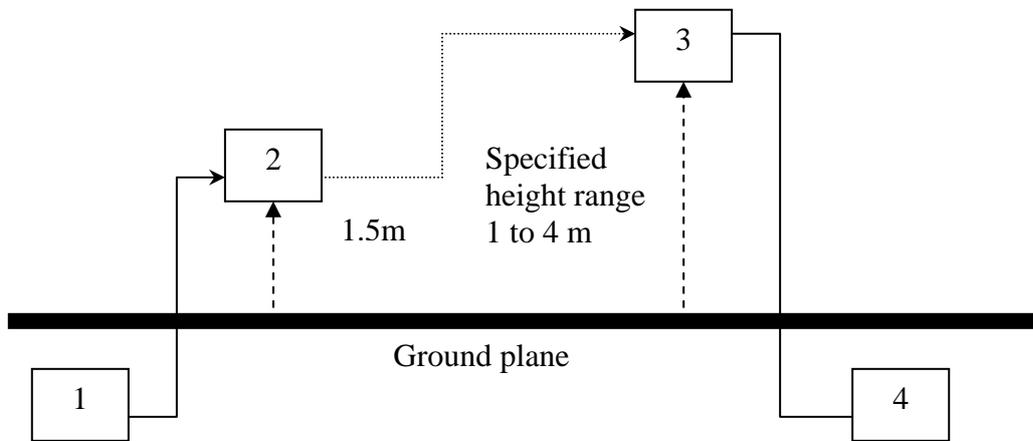
Worst case emission was recorded with the rotation of the turntable and the rising and lowering of the test antenna.

**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.

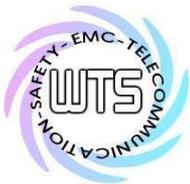
The actual signal generated by the EUT can be determined by means of a substitution measurement in which a known signal source replaces the device to be measured.



- 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.



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### 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.

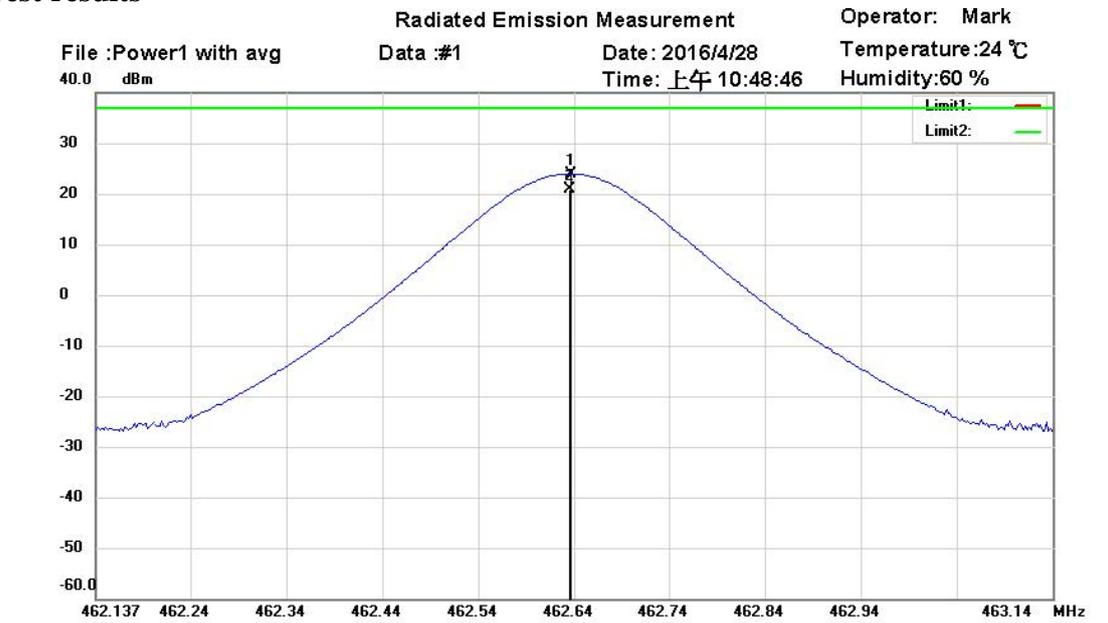
### Testing:

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



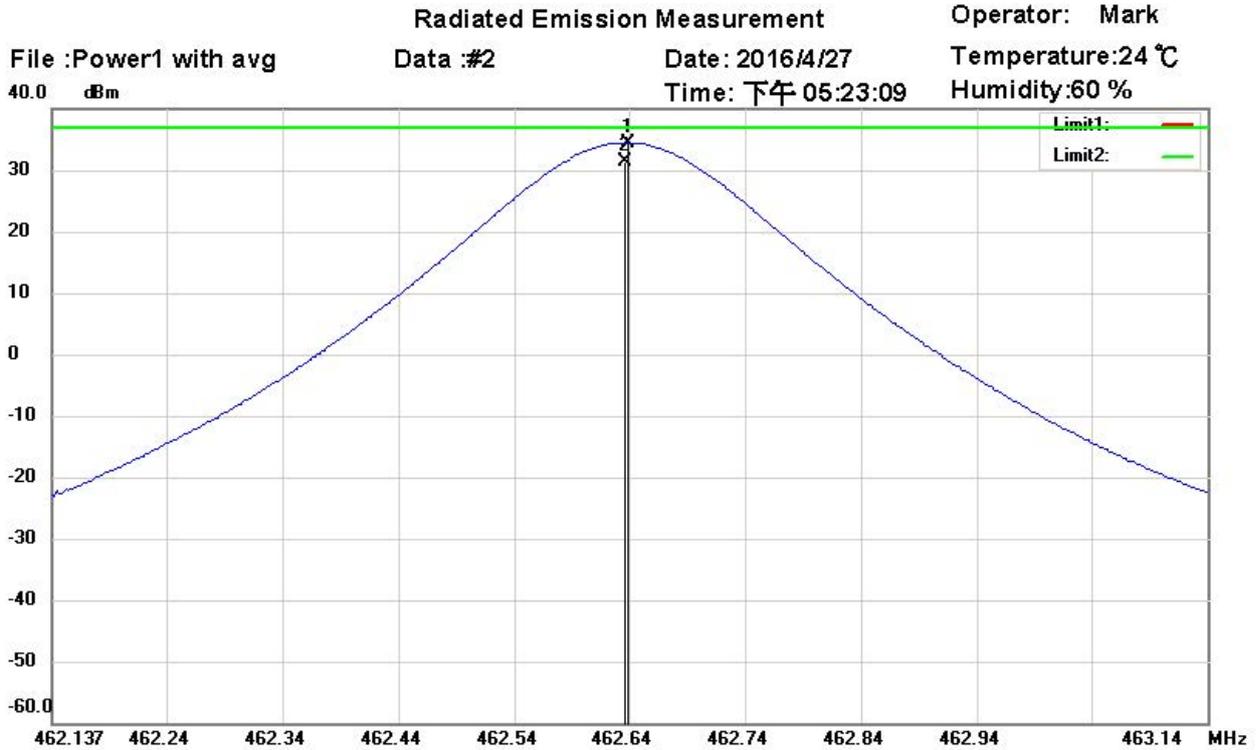
Site : Chamber  
 Condition : FCC\_part 95 GMRS Power      Polarization: *Horizontal*  
 EUT : W6M21604-15784      Power : 7.4 Vd.c.  
 M/N:  
 Test Mode : Power Tx Ch4      Distance: 3m  
 Note :

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6325	-7.88	peak	31.86	23.98	37.00	150	100	-13.02	
	462.6320	-10.88	AVG	31.86	20.98	37.00	150	100	-16.02	



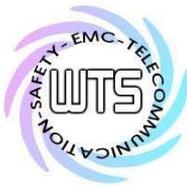
# Worldwide Testing Services(Taiwan) Co., Ltd.

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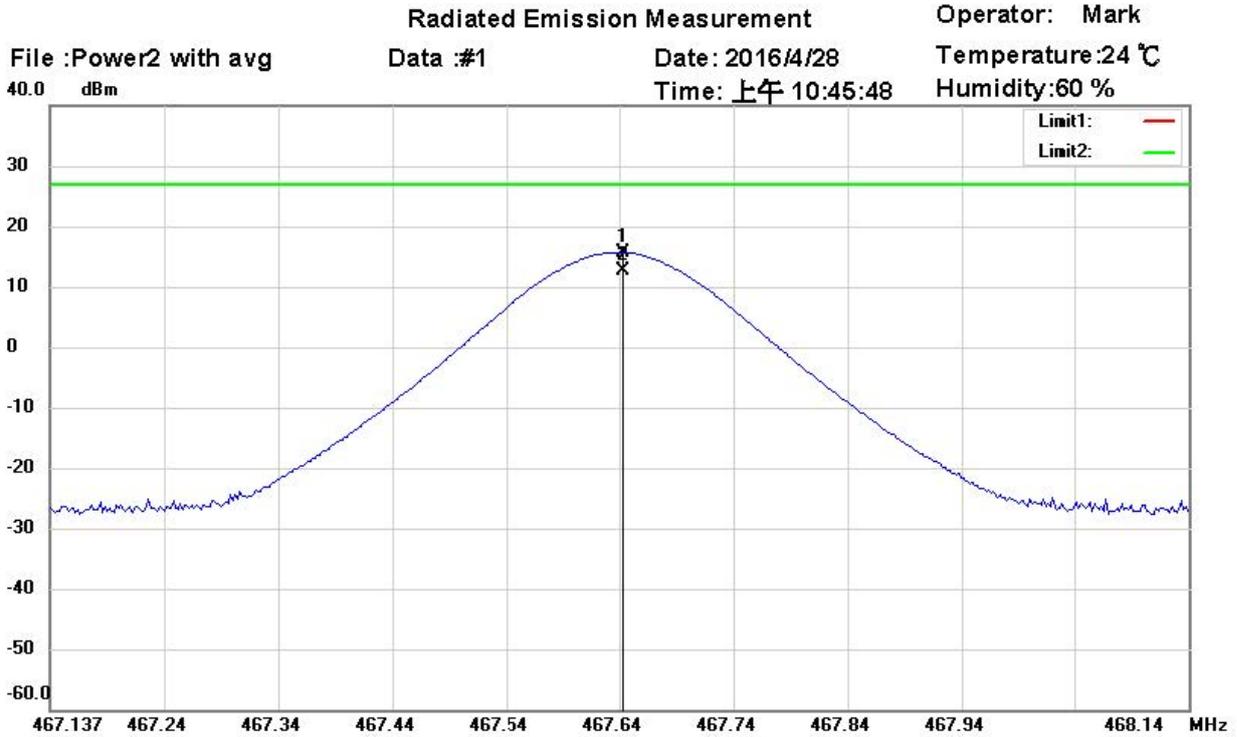
Site : Chamber  
 Condition : FCC\_part 95 GMRS Power      Polarization: *Vertical*  
 EUT : W6M21604-15784      Power : 7.4 Vd.c.  
 M/N:  
 Test Mode : Power Tx Ch4      Distance: 3m  
 Note :

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6345	6.10	peak	28.40	34.50	37.00	150	200	-2.50	
	462.6340	3.10	AVG	28.40	31.50	37.00	150	200	-5.50	



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



Site : Chamber

Condition : FCC\_part 95 FRS Power

EUT : W6M21604-15784

M/N:

Test Mode : Power Tx Ch11

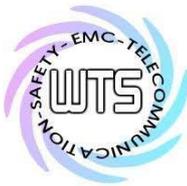
Note :

Polarization: *Horizontal*

Power : 7.4 Vd.c.

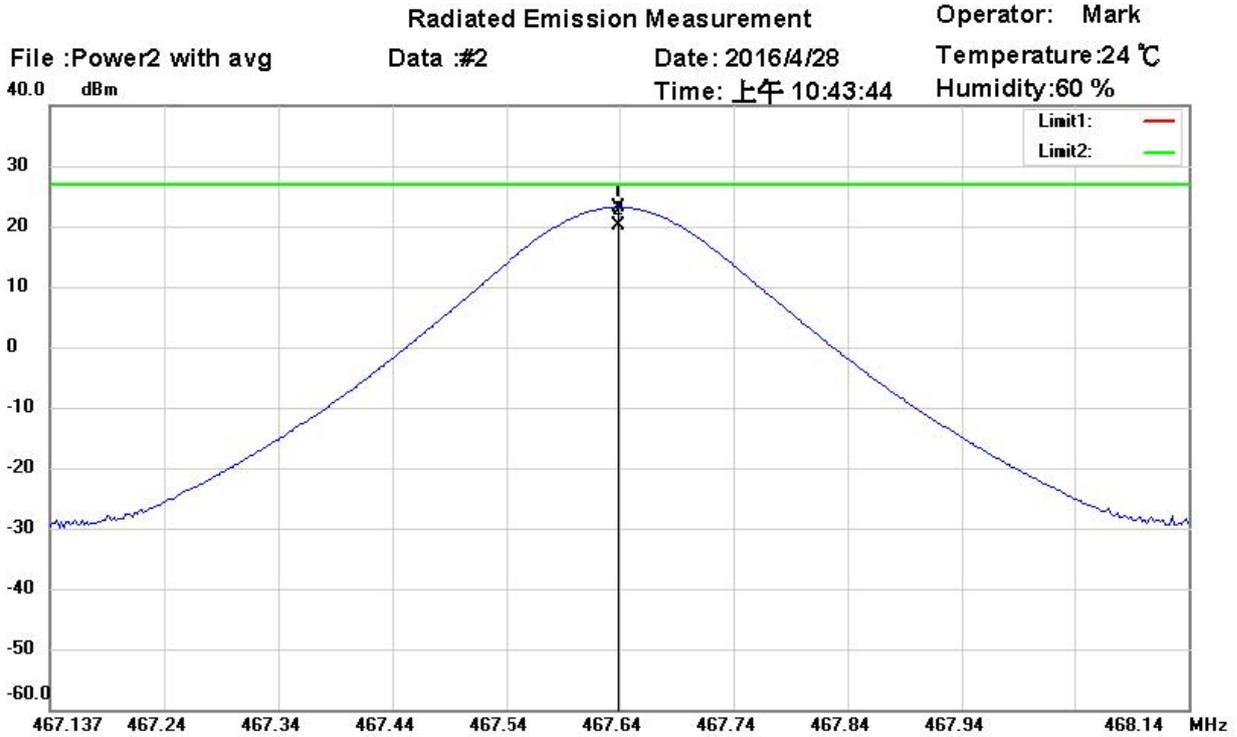
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	467.6385	-15.95	peak	31.67	15.72	27.00	150	240	-11.28	
	467.6385	-18.95	AVG	31.67	12.72	27.00	150	240	-14.28	



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



Site : Chamber

Condition : FCC\_part 95 FRS Power

EUT : W6M21604-15784

M/N:

Test Mode : Power Tx Ch11

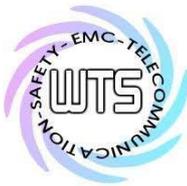
Note :

Polarization: *Vertical*

Power : 7.4 Vd.c.

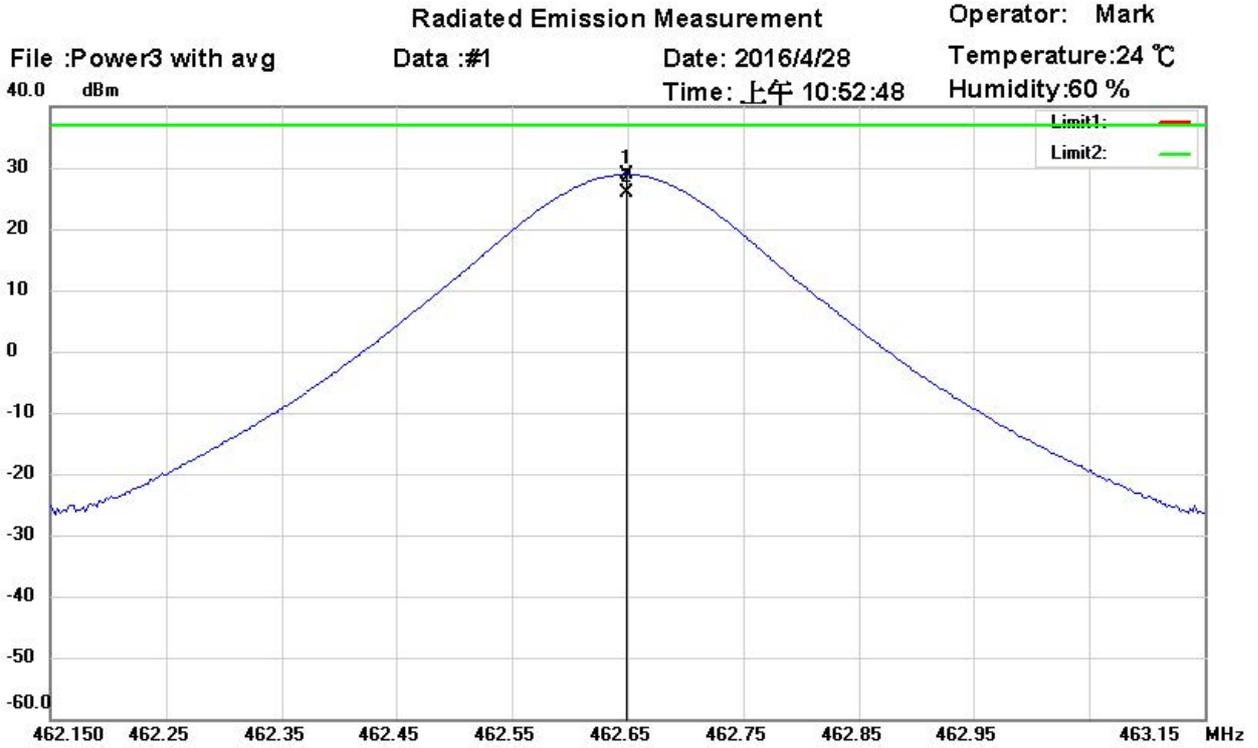
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	467.6345	-5.42	peak	28.62	23.20	27.00	150	170	-3.80	
	467.6345	-8.42	AVG	28.62	20.20	27.00	150	170	-6.80	



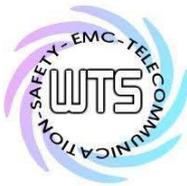
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

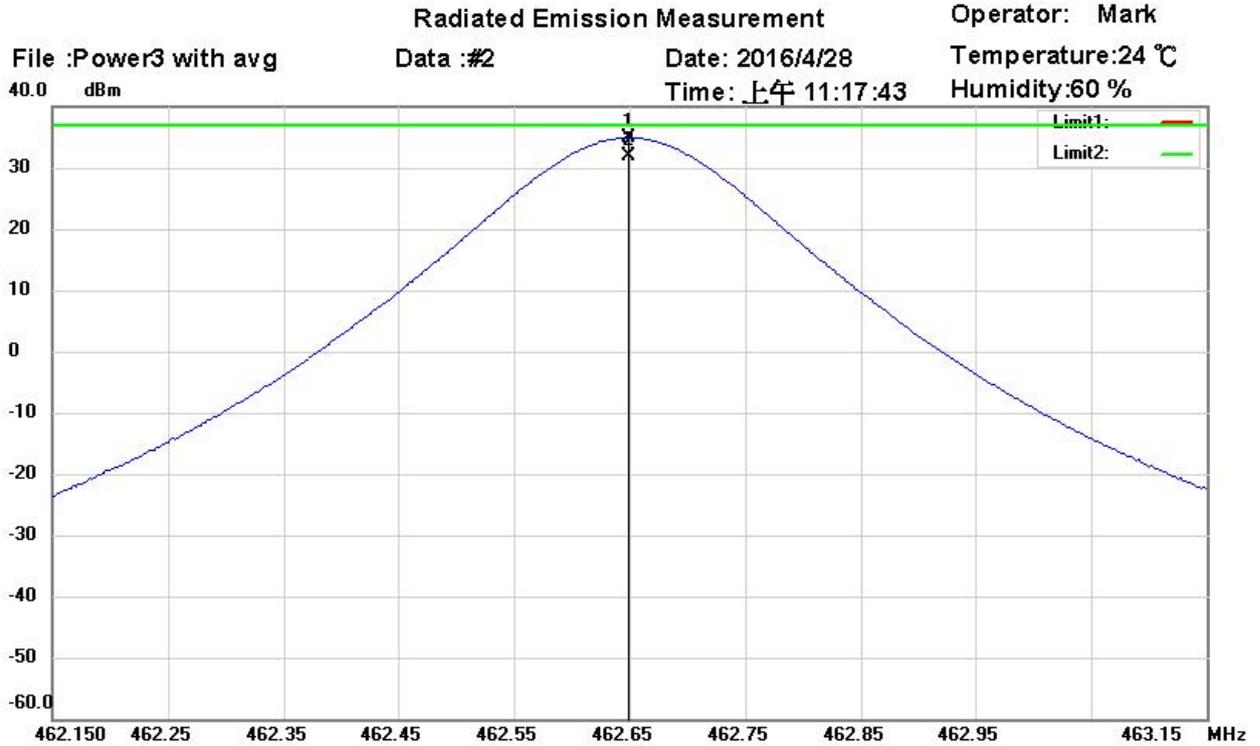


Site : Chamber  
 Condition : FCC\_part 95 GMRS Power      Polarization: *Horizontal*  
 EUT : W6M21604-15784      Power : 7.4 Vd.c.  
 M/N:  
 Test Mode : Power Tx Ch19      Distance: 3m  
 Note :

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6490	-2.95	peak	31.86	28.91	37.00	150	180	-8.09	
	462.6490	-5.95	AVG	31.86	25.91	37.00	150	180	-11.09	



Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



Site : Chamber  
 Condition : FCC\_part 95 GMRS Power      Polarization: **Vertical**  
 EUT : W6M21604-15784      Power : 7.4 Vd.c.  
 M/N:  
 Test Mode : Power Tx Ch19      Distance: 3m  
 Note :

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	462.6490	6.51	peak	28.40	34.91	37.00	150	80	-2.09	
	462.6490	3.51	AVG	28.40	31.91	37.00	150	80	-5.09	

Test equipment used: ETSTW-RE 004, ETSTW-RE 122, ETSTW-RE 030, ETSTW-RE 042, ETSTW-RE 043, ETSTW-RE 044

### 5.3 Limits:

FCC Part 95.639(d) / FCC part 95.135 (e):

A GMRS transmitter may transmit with a maximum power of 5.0W e.r.p (37 dBm).

FCC Part 95.639(d): 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.

Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

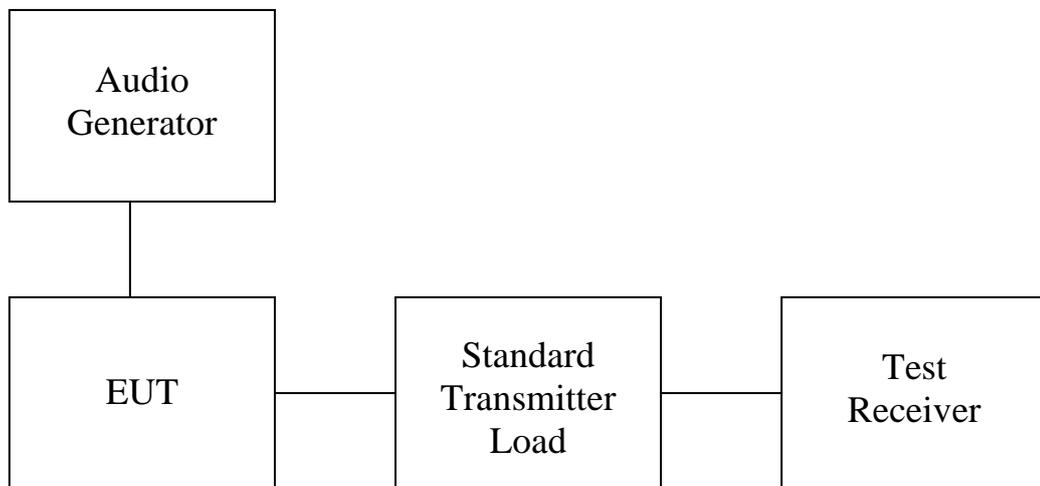
**6. Modulation Deviation, FCC Part 95.637(a)**

**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.

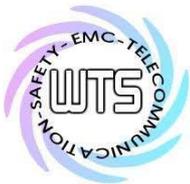
The modulation response is measured at certain modulation frequencies, related to 1000Hz reference signal. Test are performed repeatedly with input frequency 300Hz, 1kHz, 3kHz in sequence.



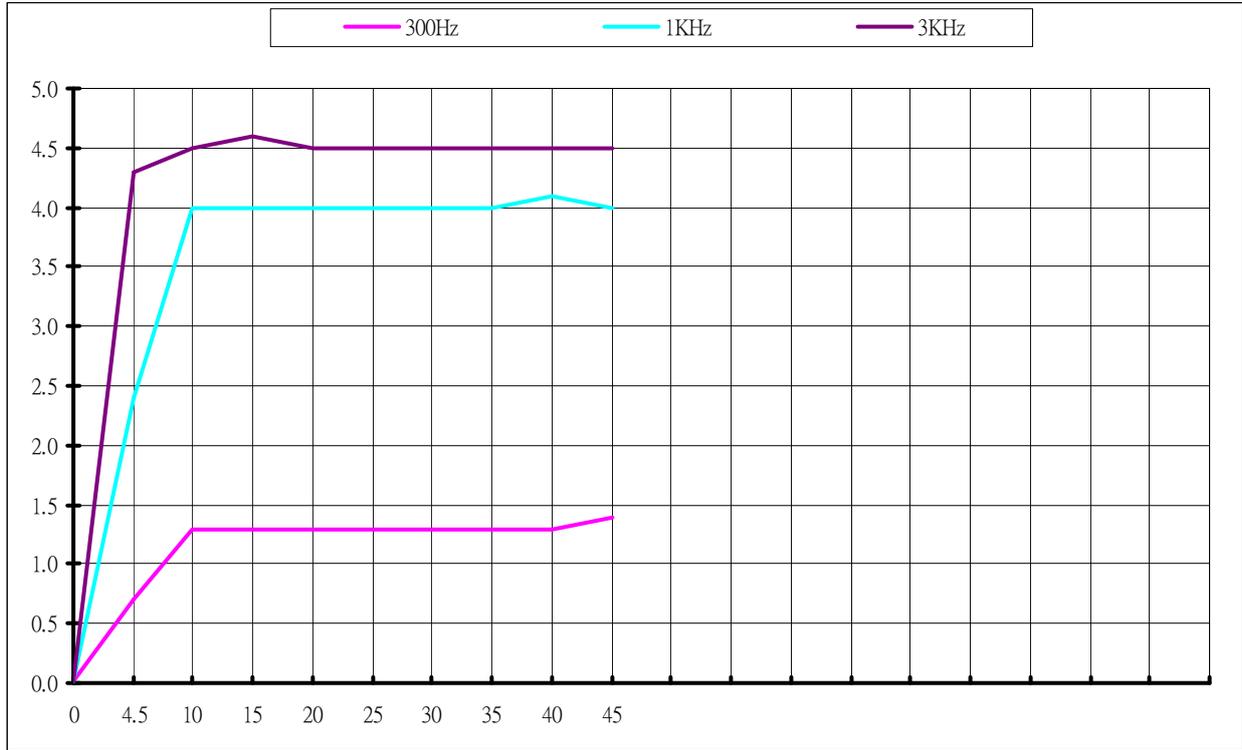
**6.2 Test results:**

Modulation Characteristics

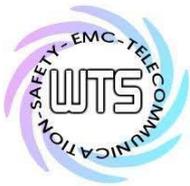
Input Audio Level (mV)	300Hz	1kHz	3kHz
462.6375 MHz			
0	0.0	0.0	0.0
4.5	0.7	2.4	4.3
10	1.3	4.0	4.5
15	1.3	4.0	4.6
20	1.3	4.0	4.5
25	1.3	4.0	4.5
30	1.3	4.0	4.5
35	1.3	4.0	4.5
40	1.3	4.1	4.5
45	1.4	4.0	4.5



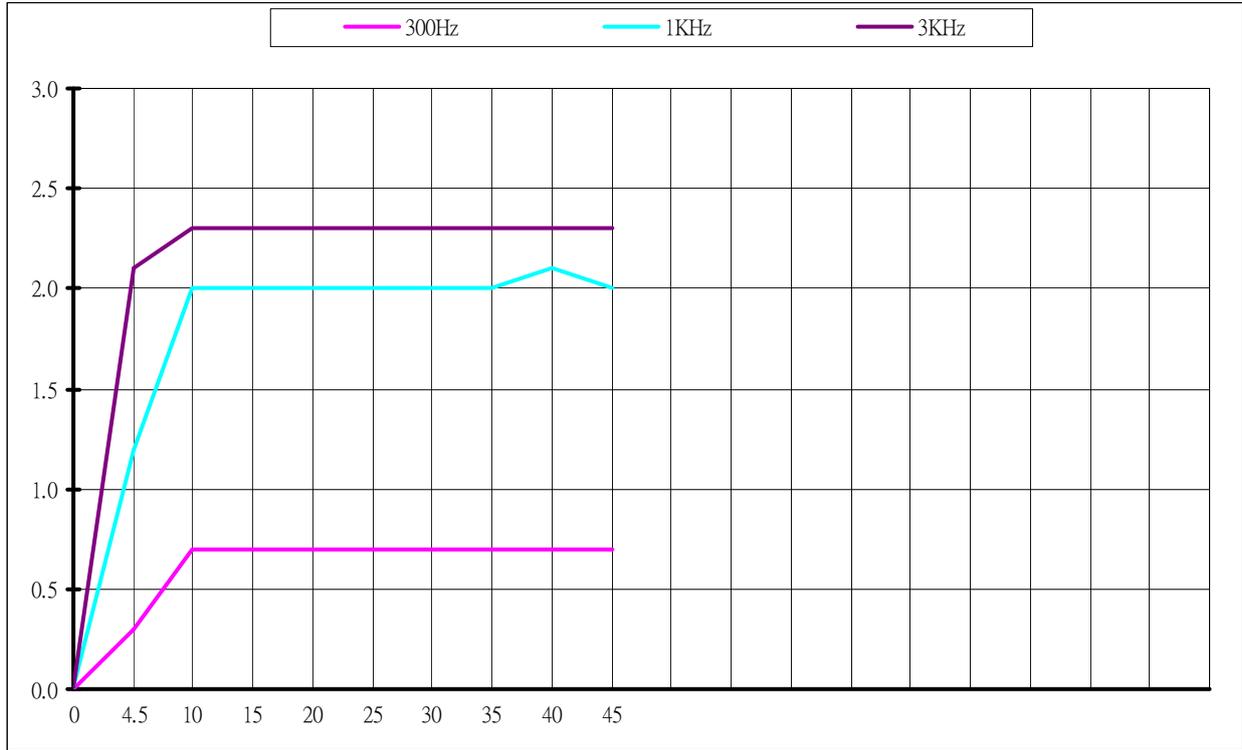
Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



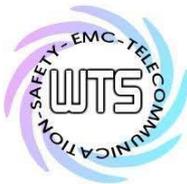
Input Audio Level (mV)	300Hz	1kHz	3kHz
467.6375 MHz			
0	0.0	0.0	0.0
4.5	0.3	1.2	2.1
10	0.7	2.0	2.3
15	0.7	2.0	2.3
20	0.7	2.0	2.3
25	0.7	2.0	2.3
30	0.7	2.0	2.3
35	0.7	2.0	2.3
40	0.7	2.1	2.3
45	0.7	2.0	2.3



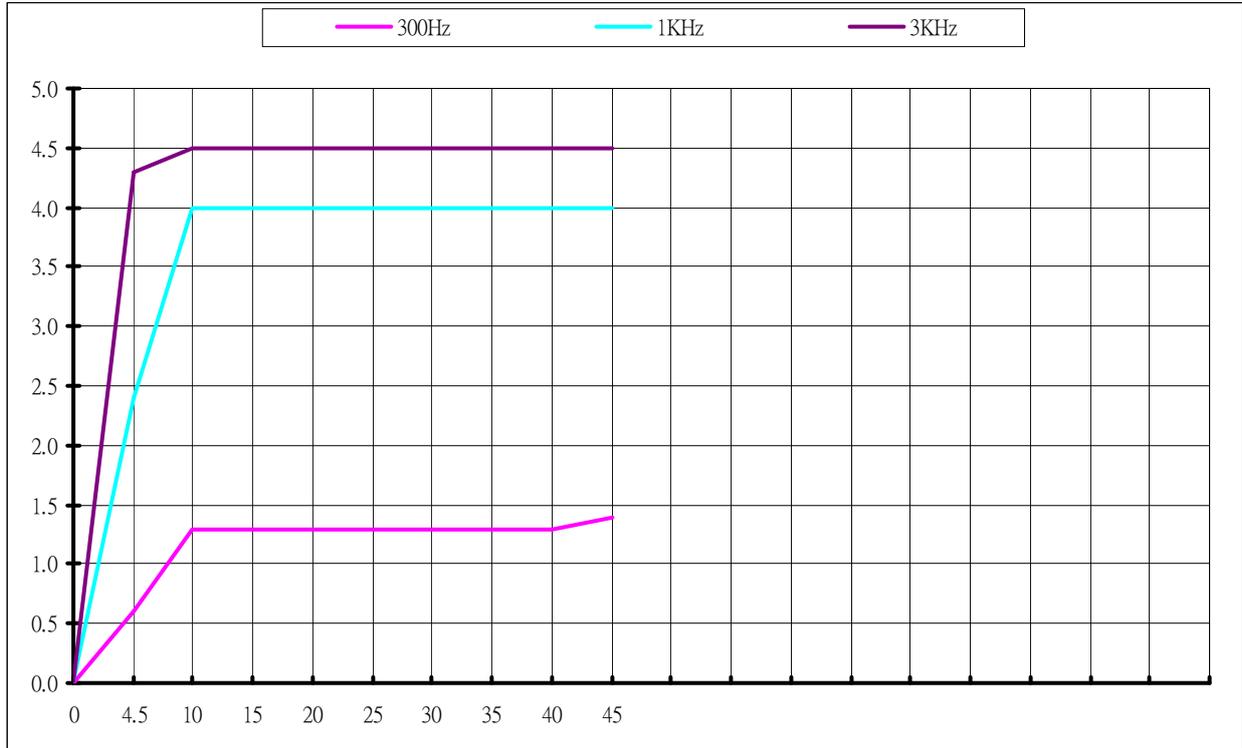
Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



Input Audio Level (mV)	300Hz	1kHz	3kHz
462.65 MHz			
0	0.0	0.0	0.0
4.5	0.6	2.4	4.3
10	1.3	4.0	4.5
15	1.3	4.0	4.5
20	1.3	4.0	4.5
25	1.3	4.0	4.5
30	1.3	4.0	4.5
35	1.3	4.0	4.5
40	1.3	4.0	4.5
45	1.4	4.0	4.5



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### 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 055, ETSTW-RE 060

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**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.

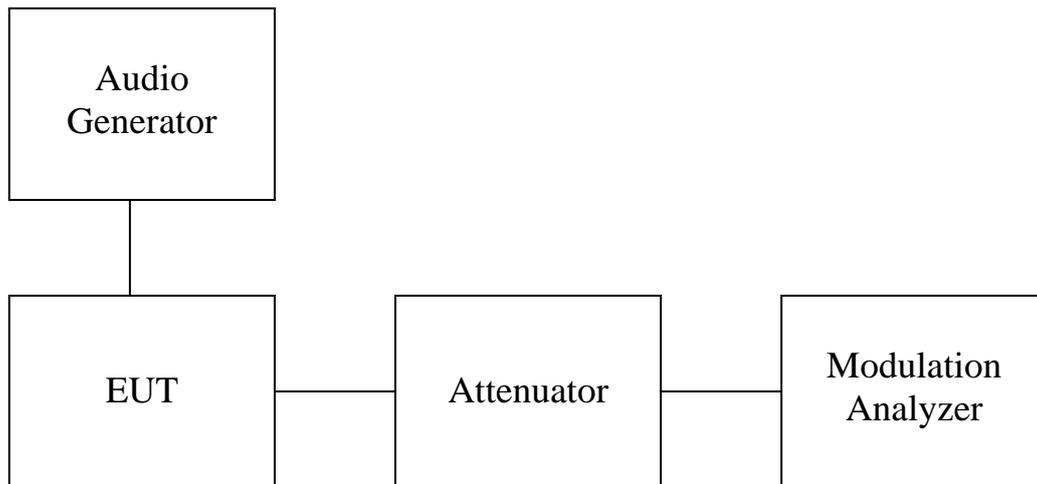
For 1000Hz tone reference signal the audio generator level is adjusted to get 20% of the rated system deviation.

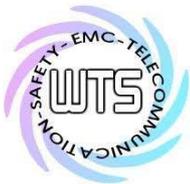
The deviations obtained over the frequency range from 100Hz to 5000Hz are recorded and compared with the reference deviation as follows:

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

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  $\text{LEV}_{\text{REF}}$ .
3. Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass filter limit.
4. Record the dB level at the test frequency as  $\text{LEV}_{\text{FREQ}}$ .
5. Calculate the audio frequency response at the test frequency as:  $\text{low pass filter response} = \text{LEV}_{\text{FREQ}} - \text{LEV}_{\text{REF}}$



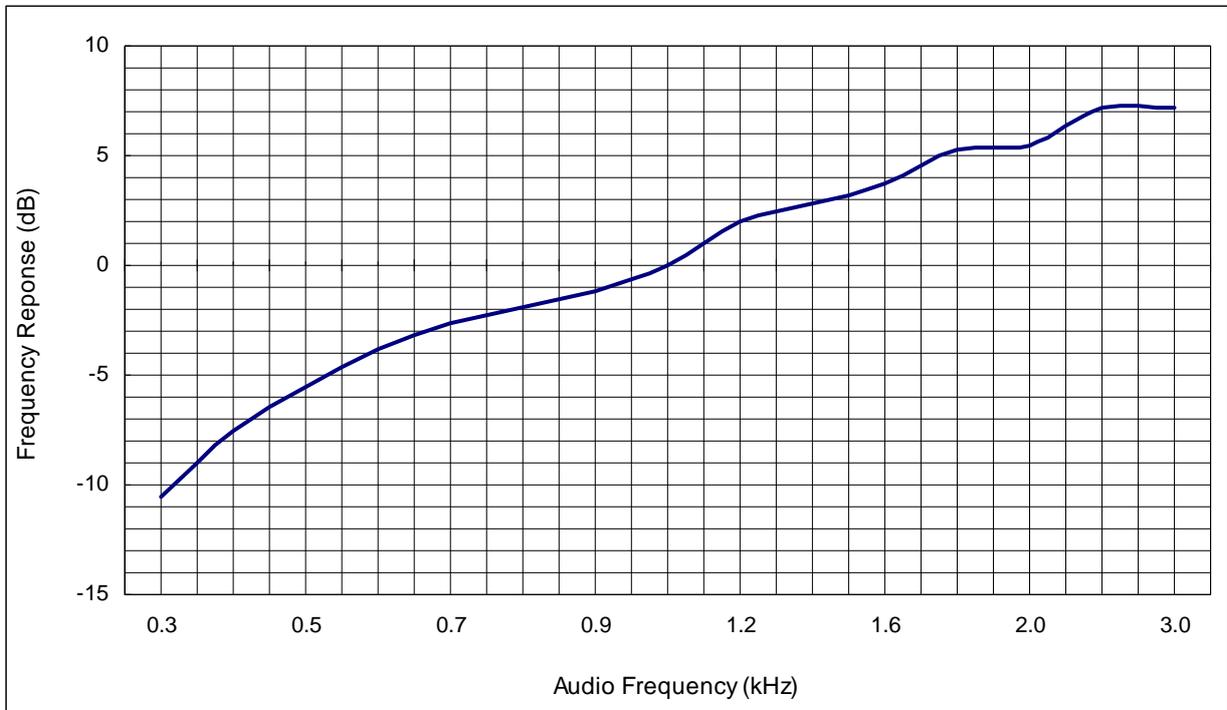


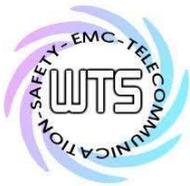
Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

**7.2 Test results:**

Audio Frequency Response

Audio Frequency (kHz)	A.R (dB)	F.D.
462.6375 MHz		
0.3	-10.565	0.24
0.4	-7.540	0.34
0.5	-5.500	0.43
0.6	-3.850	0.52
0.7	-2.607	0.60
0.8	-1.911	0.65
0.9	-1.145	0.71
1.0	0.000	0.81
1.2	2.002	1.02
1.4	2.815	1.12
1.6	3.768	1.25
1.8	5.236	1.48
2.0	5.467	1.52
2.5	7.174	1.85
3.0	7.221	1.86

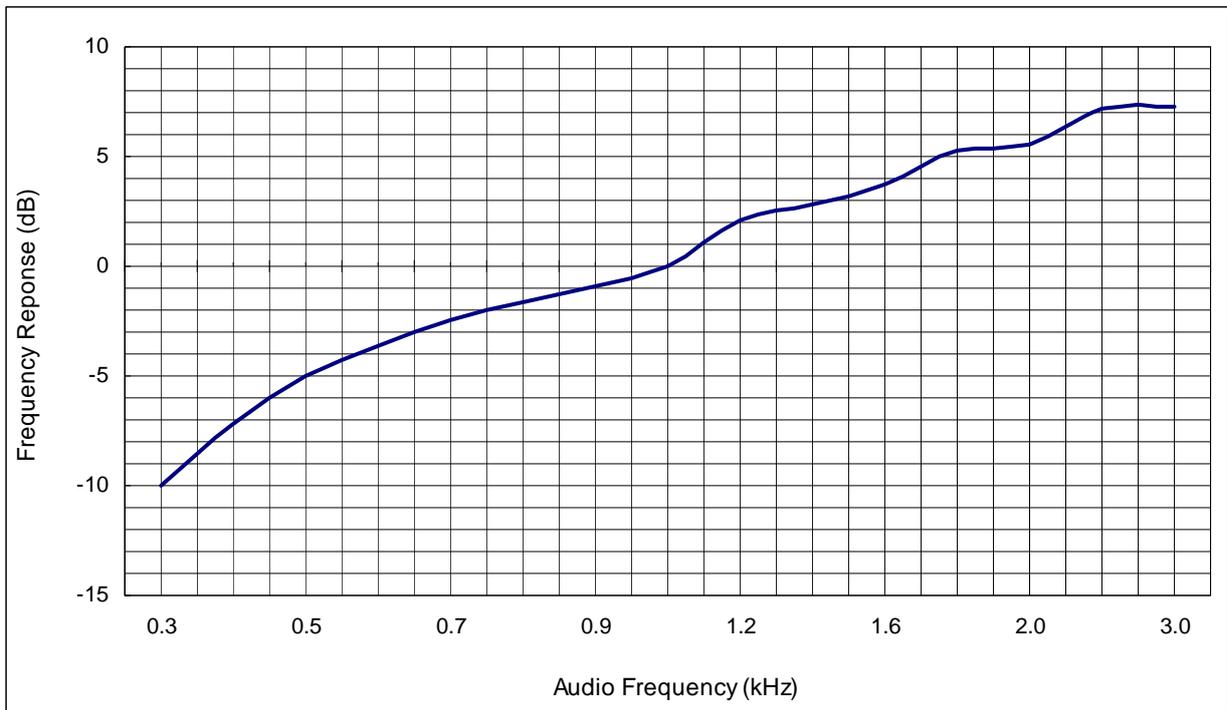


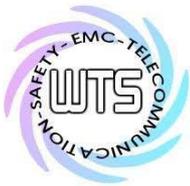


# Worldwide Testing Services(Taiwan) Co., Ltd.

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 FCC ID: IPH-02963

Audio Frequency (kHz)	A.R (dB)	F.D.
467.6375 MHz		
0.3	-9.977	0.13
0.4	-7.150	0.18
0.5	-5.021	0.23
0.6	-3.628	0.27
0.7	-2.428	0.31
0.8	-1.626	0.34
0.9	-0.892	0.37
1.0	0.000	0.41
1.2	2.064	0.52
1.4	2.862	0.57
1.6	3.731	0.63
1.8	5.246	0.75
2.0	5.586	0.78
2.5	7.207	0.94
3.0	7.299	0.95

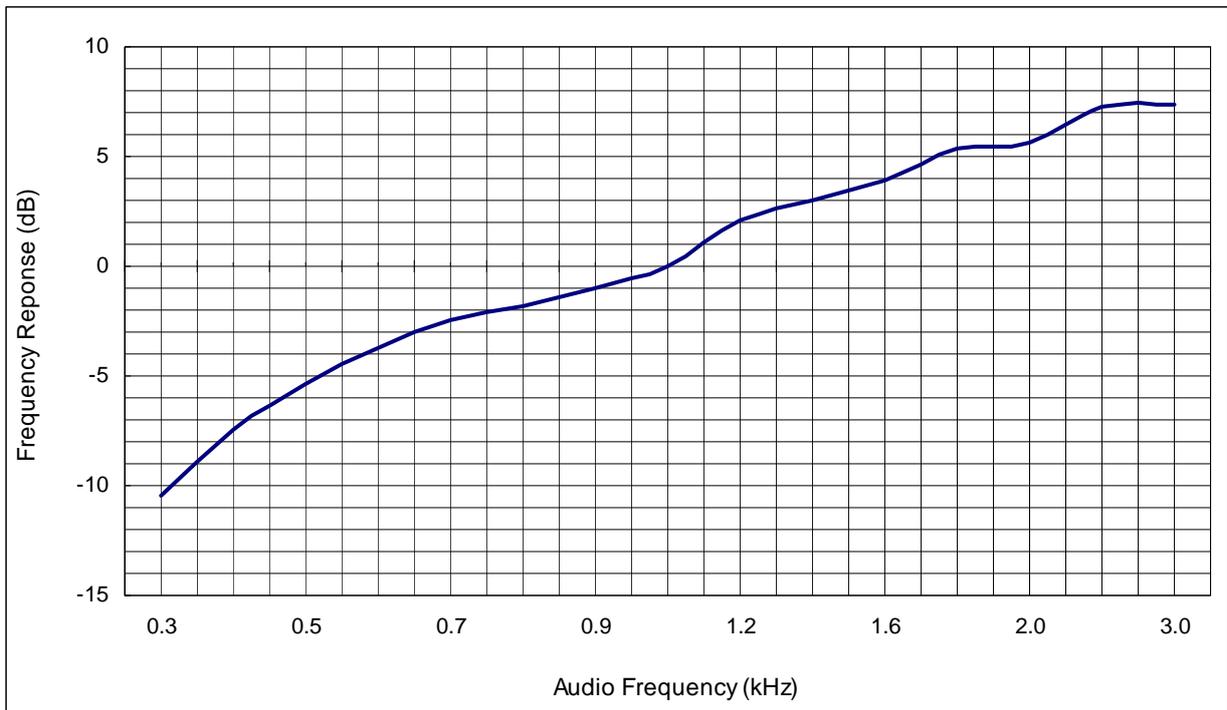




# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95  
FCC ID: IPH-02963

Audio Frequency (kHz)	A.R (dB)	F.D.
462.65 MHz		
0.3	-10.458	0.24
0.4	-7.432	0.34
0.5	-5.392	0.43
0.6	-3.742	0.52
0.7	-2.499	0.60
0.8	-1.804	0.65
0.9	-1.037	0.71
1.0	0.000	0.80
1.2	2.110	1.02
1.4	3.000	1.13
1.6	3.876	1.25
1.8	5.343	1.48
2.0	5.632	1.53
2.5	7.282	1.85
3.0	7.328	1.86

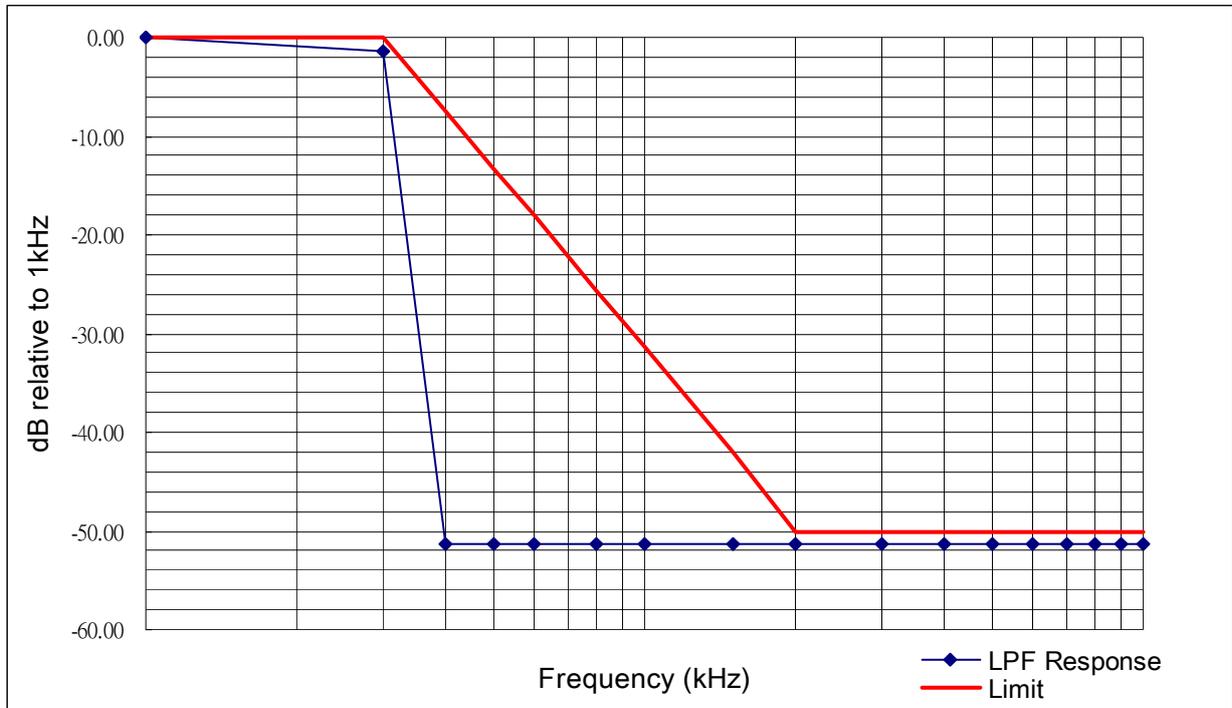


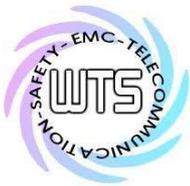


Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

Audio Low Pass Filter Response

Audio Frequency (kHz)	Response Attenuation (dB)	Limit
462.6375 MHz		
1.0	0.00	0
3.0	-1.38	0
4.0	-51.34	-7.50
5.0	-51.34	-13.31
6.0	-51.34	-18.06
8.0	-51.34	-25.56
10.0	-51.34	-31.37
15.0	-51.34	-41.94
20.0	-51.34	-50
30.0	-51.34	-50
40.0	-51.34	-50
50.0	-51.34	-50
60.0	-51.34	-50
70.0	-51.34	-50
80.0	-51.34	-50
90.0	-51.34	-50
100.0	-51.34	-50

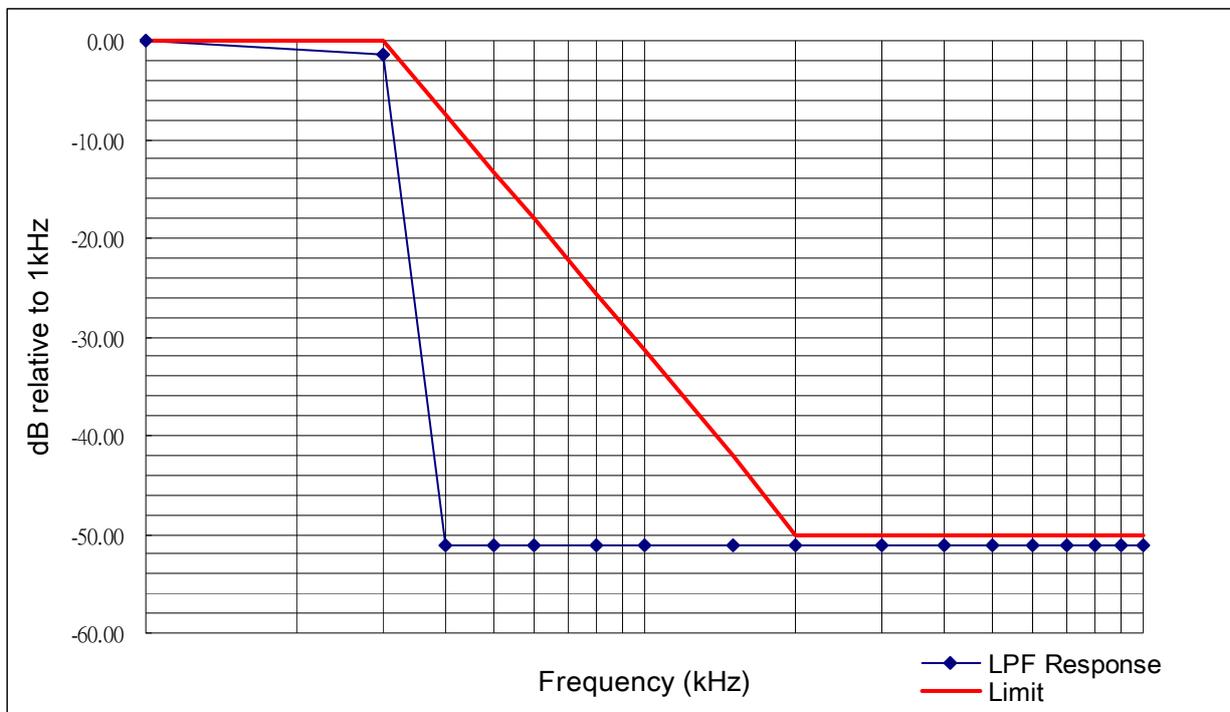




# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

Audio Frequency (kHz)	Response Attenuation (dB)	Limit
467.6375 MHz		
1.0	0.00	0
3.0	-1.42	0
4.0	-51.17	-7.50
5.0	-51.17	-13.31
6.0	-51.17	-18.06
8.0	-51.17	-25.56
10.0	-51.17	-31.37
15.0	-51.17	-41.94
20.0	-51.17	-50
30.0	-51.17	-50
40.0	-51.17	-50
50.0	-51.17	-50
60.0	-51.17	-50
70.0	-51.17	-50
80.0	-51.17	-50
90.0	-51.17	-50
100.0	-51.17	-50





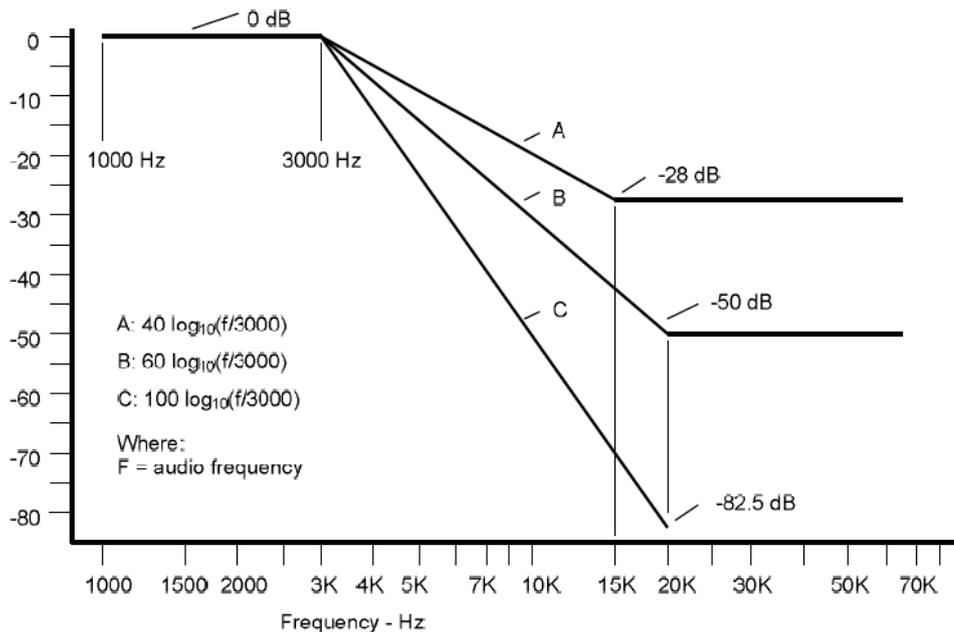
Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

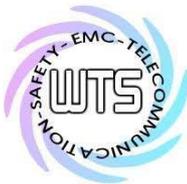
Audio Frequency (kHz)	Response Attenuation (dB)	Limit
462.65 MHz		
1.0	0.00	0
3.0	-1.28	0
4.0	-50.91	-7.50
5.0	-50.91	-13.31
6.0	-50.91	-18.06
8.0	-50.91	-25.56
10.0	-50.91	-31.37
15.0	-50.91	-41.94
20.0	-50.91	-50
30.0	-50.91	-50
40.0	-50.91	-50
50.0	-50.91	-50
60.0	-50.91	-50
70.0	-50.91	-50
80.0	-50.91	-50
90.0	-50.91	-50
100.0	-50.91	-50

**7.3 Limits:**

According to TIA TIA-603

Recommended Standard (refer to the following figure)





Registration number: W6M21604-15784-C-95  
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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.

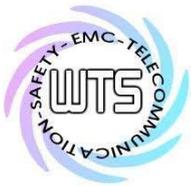
At frequencies above 20,000 Hz the attenuation shall be greater than the attenuation at 1000 Hz by at least: 50 dB.

- 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.

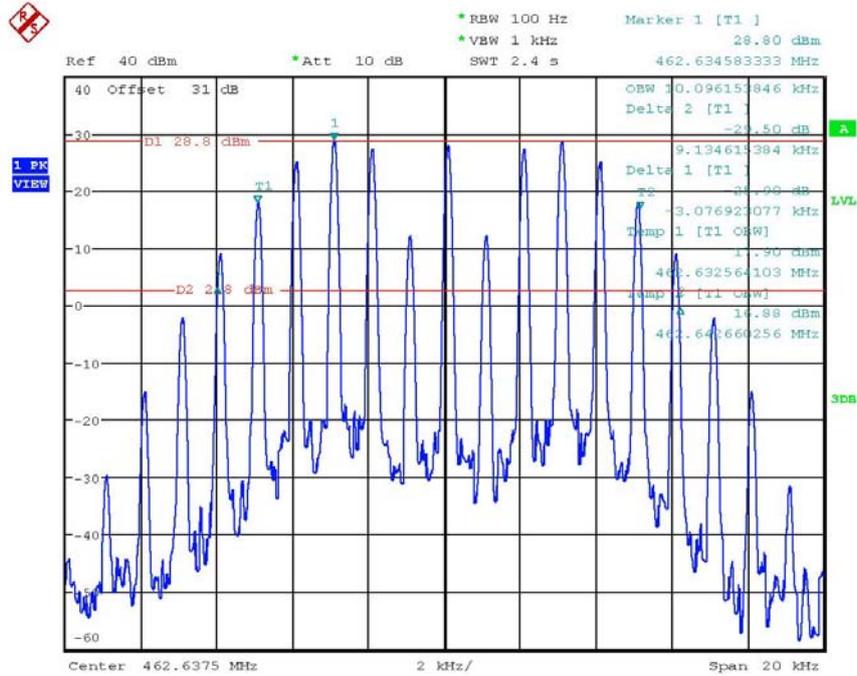
Test equipment used: ETSTW-RE 072



Registration number: W6M21604-15784-C-95  
FCC ID: IPH-02963

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

### 8.1 Test Results

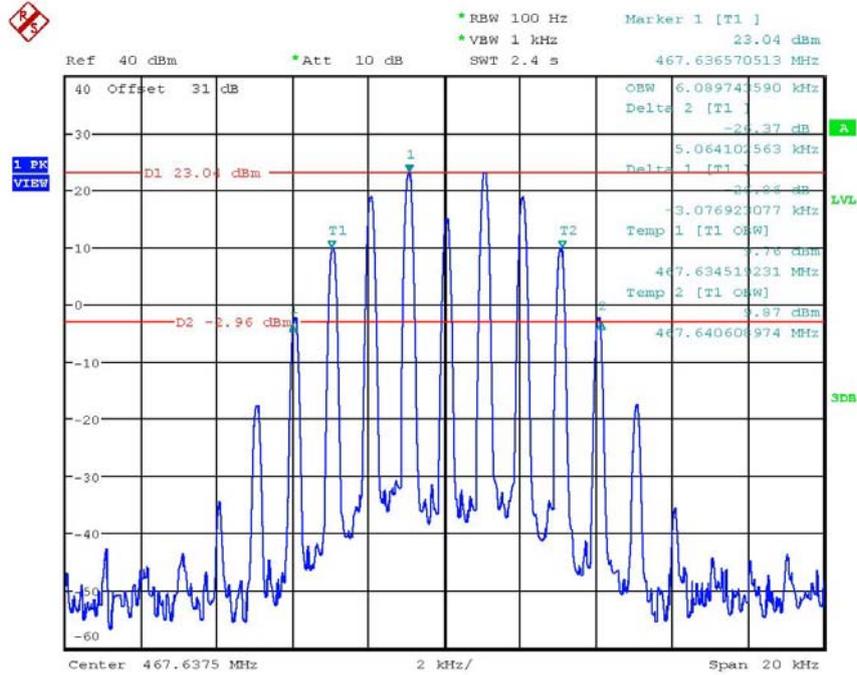


Emission bandwidth CH4 462.6375MHz  
Date: 28.APR.2016 13:33:41

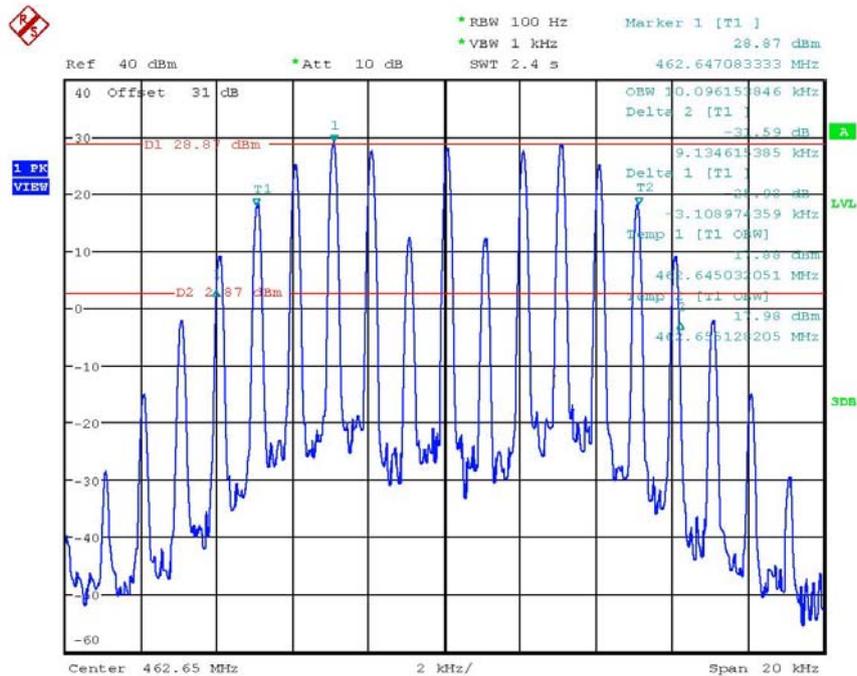


# Worldwide Testing Services(Taiwan) Co., Ltd.

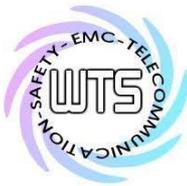
Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



Emission bandwidth CH11 467.6375MHZ  
 Date: 28.APR.2016 13:39:51

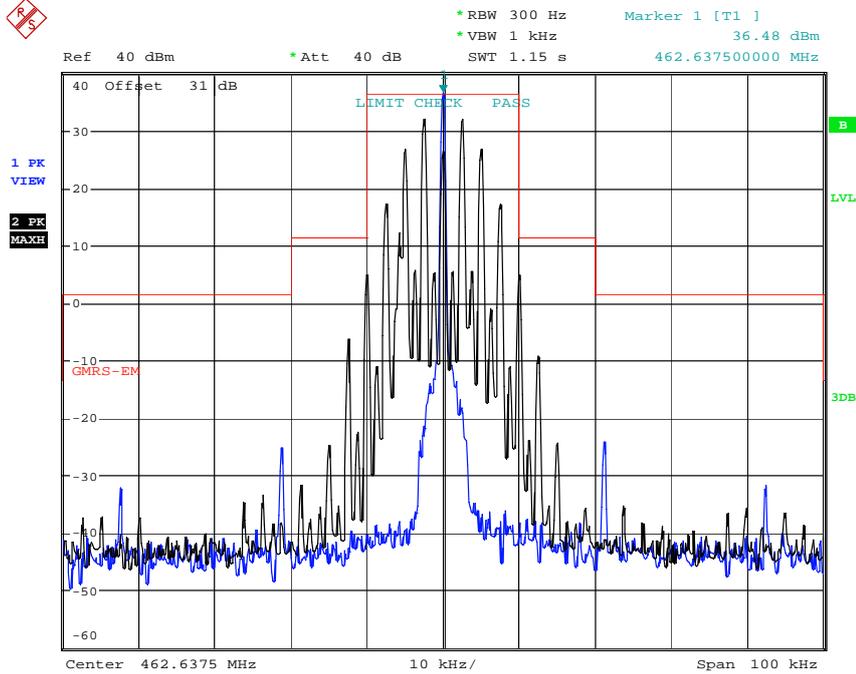


Emission bandwidth CH19 462.65MHZ  
 Date: 28.APR.2016 13:36:39

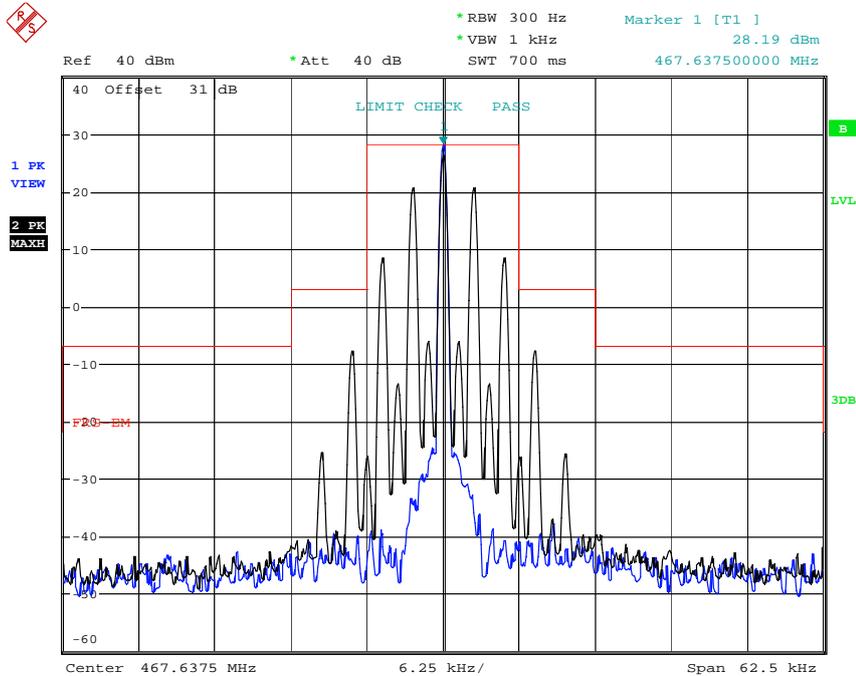


Registration number: W6M21604-15784-C-95  
FCC ID: IPH-02963

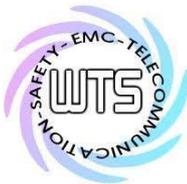
## Emission Mask



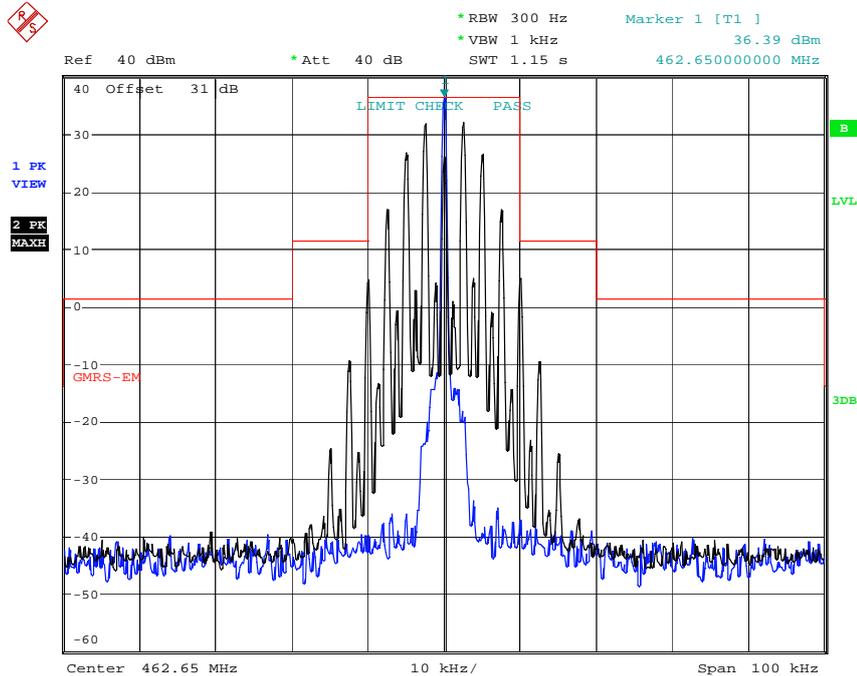
EMISSION MASK CH4 462.6375MHZ  
Date: 29.APR.2016 12:13:28



EMISSION MASK CH11 467.6375MHZ  
Date: 29.APR.2016 12:21:21



Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963



EMISSION MASK CH19 462.65MHZ  
 Date: 29.APR.2016 12:15:18

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

## 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.

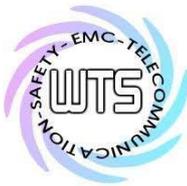
FCC Part 95.633(c): FRS: The authorized bandwidth for an FRS unit is 12.5 kHz.

### ■ 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: W6M21604-15784-C-95  
FCC ID: IPH-02963

## 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:

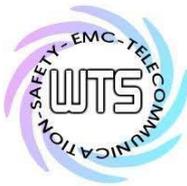
Model:	A02963	Date:	--
Mode:	--	Temperature:	-- °C    Engineer: --
Polarization:	--	Humidity:	-- %

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 Gain + Cable Loss + Amplifier Gain
2. The formula of measured value as: Test Result = Reading + Correction Factor
3. Detector function in the form : PK = Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. Measurement uncertainty: 30-200MHz : ±2.04 dB, 200-1000MHz : ±2.04 dB, 1-18GHz : ±2.66 dB  
Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
6. See the attached diagram as appendix.

Test equipment used: ETSTW-RE 004, ETSTW-RE 122, ETSTW-RE 030,  
ETSTW-RE 042, ETSTW-RE 043, ETSTW-RE 044



Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

**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	36.85 dBm
Required attenuation	$43 + 10 \times \text{Log}(4.8417) = 49.85$ dBm
Maximum transmitter output power	36.85 dBm
Required attenuation	49.85 dB
Compliance limit	-13 dBm



Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

**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**

Temperature V.S Frequency Stability		Temperature V.S Frequency Stability		Temperature V.S Frequency Stability	
Temperature °C	Measurement Frequency	Temperature °C	Measurement Frequency	Temperature °C	Measurement Frequency
-20	462.637532	-20	467.637801	-20	462.650032
-10	462.637532	-10	467.637516	-10	462.650016
0	462.637516	0	467.637516	0	462.650048
10	462.637516	10	467.637516	10	462.650048
20	462.637564	20	467.637532	20	462.650064
30	462.637564	30	467.637532	30	462.650064
40	462.637564	40	467.637548	40	462.650064
50	462.637582	50	467.637564	50	462.650082
Max Deviation (MHz)	0.000082	Max Deviation (MHz)	0.000064	Max Deviation (MHz)	0.000082
Max Deviation (ppm)	0.177244	Max Deviation (ppm)	0.136858	Max Deviation (ppm)	0.177239
Limit (ppm)	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  $\pm 5$  ppm.

FRS: The carrier frequency tolerance shall be better than  $\pm 2.5$  ppm.

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



Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

**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 )	
Voltage V.S Frequency Stability		Voltage V.S Frequency Stability		Voltage V.S Frequency Stability	
Voltage	Measurement Frequency	Voltage	Measurement Frequency	Voltage	Measurement Frequency
7.4 V	462.637564	7.4 V	467.637532	7.4 V	462.650064
8.51 V	462.637581	8.51 V	467.637556	8.51 V	462.650096
6.29 V	462.637564	6.29 V	467.637532	6.29 V	462.650064
Max Deviation (MHz)	0.000081	Max Deviation (MHz)	0.000056	Max Deviation (MHz)	0.000096
Max Deviation (ppm)	0.175083	Max Deviation (ppm)	0.119751	Max Deviation (ppm)	0.2075
Limit (ppm)	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  $\pm 5$  ppm.

FRS: The carrier frequency tolerance shall be better than  $\pm 2.5$  ppm.

Test equipment used: ETSTW-RE 055

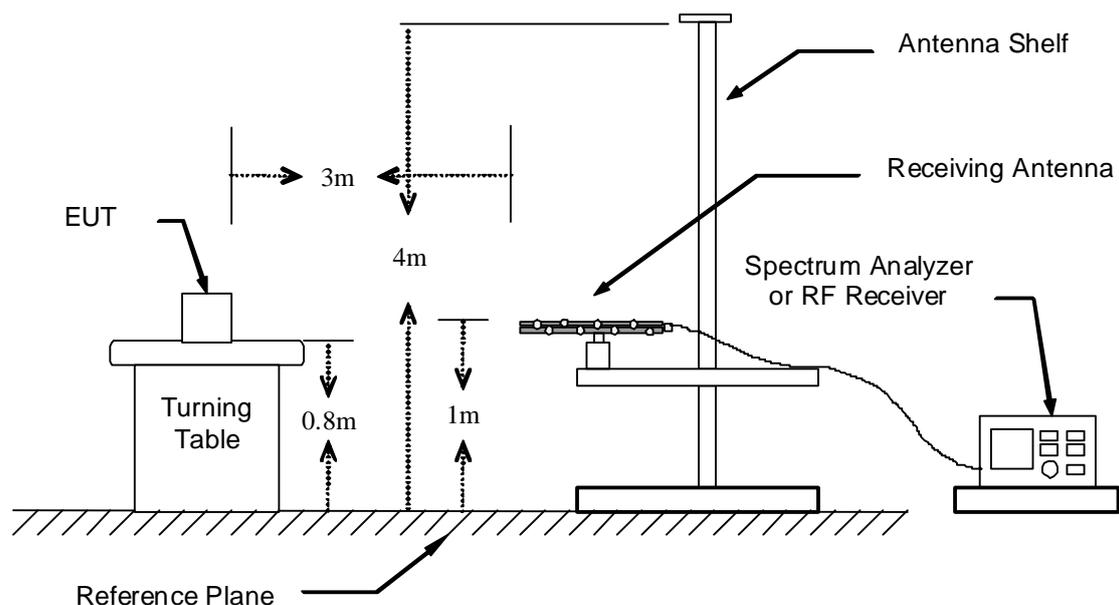
Registration number: W6M21604-15784-C-95  
 FCC ID: IPH-02963

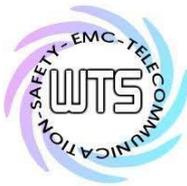
## 12. Receiver Radiated Spurious Emission

### 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: W6M21604-15784-C-95  
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**12.3 Test Result**

Model: A02963 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)
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

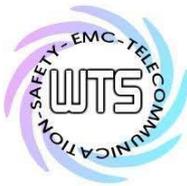
**Note**

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.  
 Measurement uncertainty for 3m measurement: 30-1000 MHz = ± 4.69 dB, 1-18 GHz = ± 4.78 dB, 18-40 GHz = ± 2.44 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
5. See the attached diagram as appendix.

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 030, ETSTW-RE 042,  
 ETSTW-RE 043, ETSTW-RE 044, ETSTW-RE 122



Registration number: W6M21604-15784-C-95  
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**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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	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

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

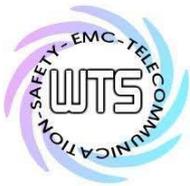
$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} \cdot \frac{E^2}{377}$$

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

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



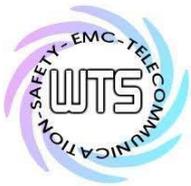
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21604-15784-C-95  
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Max output power (W)	Antenna Gain	Power Density(S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
--	--	--	--	Complies

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

Explanation: Please refer to the SAR test report.



Registration number: W6M21604-15784-C-95  
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## **Appendix**

### **Measurement diagrams**

Radiation Spurious Emission



Radiated Emission Measurement

Operator: Mark

File :1-1  
 0.0 dBm

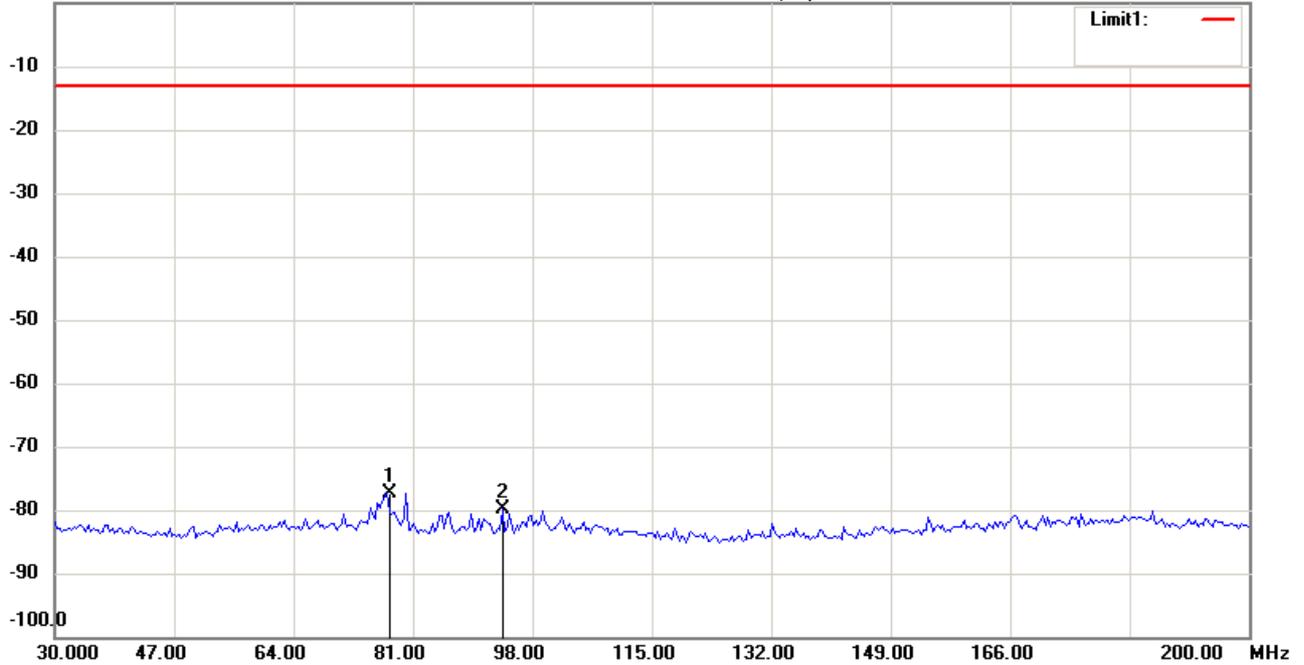
Data :#1

Date: 2016/4/28

Temperature:24 °C

Time: 下午 02:52:50

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	77.3548	-99.06	peak	21.73	-77.33	-13.00	150	140	-64.33	
	93.7074	-101.37	peak	21.46	-79.91	-13.00	150	240	-66.91	



Radiated Emission Measurement

Operator: Mark

File :1-1  
 0.0 dBm

Data :#2

Date: 2016/4/28

Temperature:24 °C

Time: 下午 02:59:59

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	83.8277	-94.71	peak	21.71	-73.00	-13.00	150	270	-60.00	
	90.9820	-96.22	peak	21.80	-74.42	-13.00	150	210	-61.42	



Radiated Emission Measurement

Operator: Mark

File :2-1

Data :#1

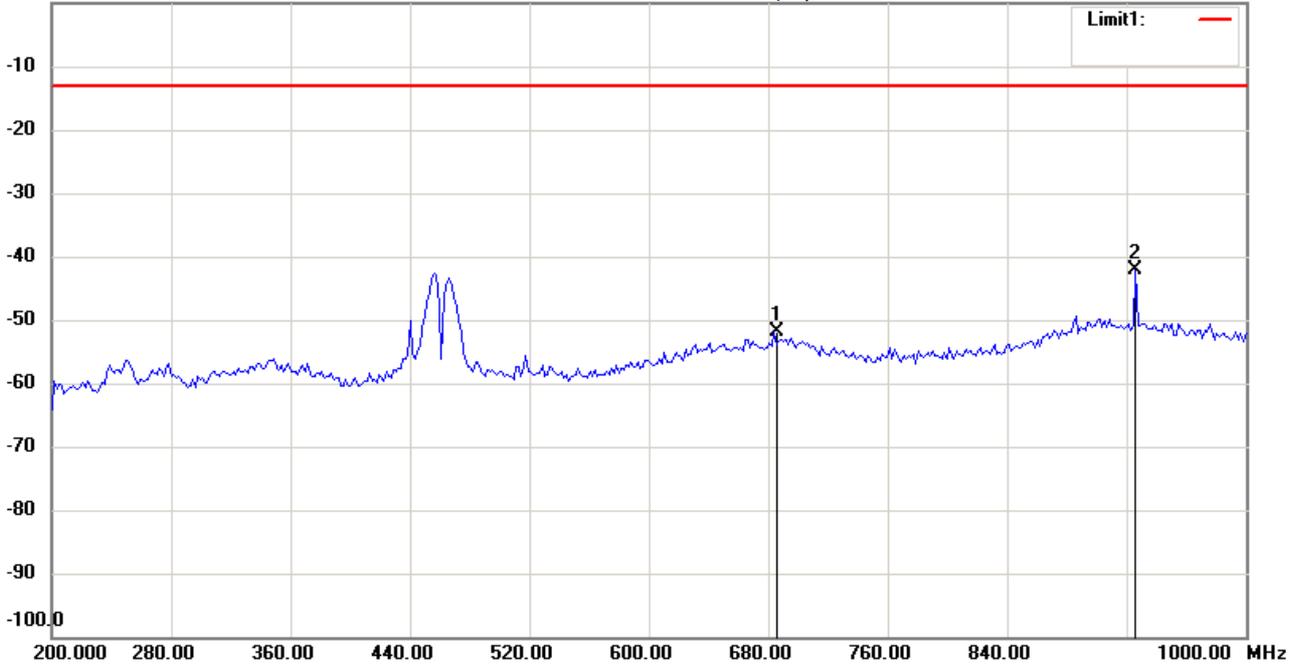
Date: 2016/4/27

Temperature:24 °C

0.0 dBm

Time: 下午 04:20:46

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	684.1684	-87.02	peak	35.14	-51.88	-13.00	150	50	-38.88	
*	926.2525	-78.66	peak	36.47	-42.19	-13.00	150	150	-29.19	



Radiated Emission Measurement

Operator: Mark

File :2-1

Data :#2

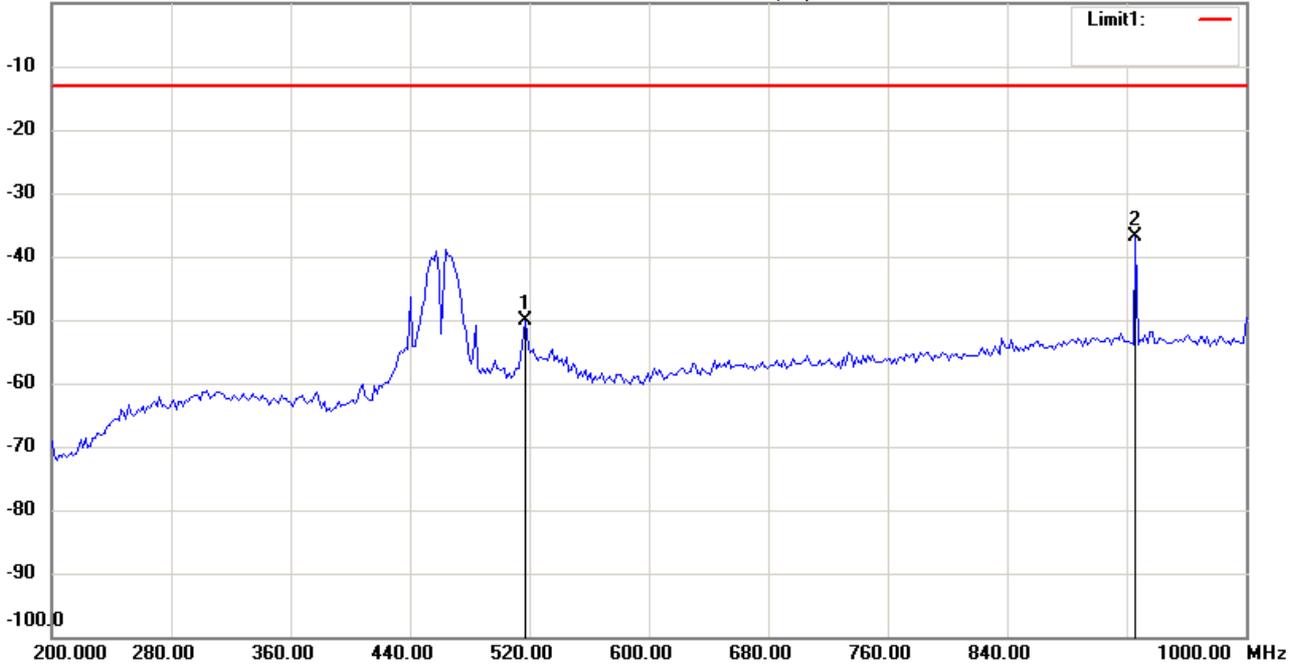
Date: 2016/4/27

Temperature:24 °C

0.0 dBm

Time: 下午 04:21:57

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	517.4346	-80.05	peak	30.01	-50.04	-13.00	150	150	-37.04	
*	926.2525	-71.12	peak	34.24	-36.88	-13.00	150	230	-23.88	



Radiated Emission Measurement

Operator: Mark

File :3-1  
 0.0 dBm

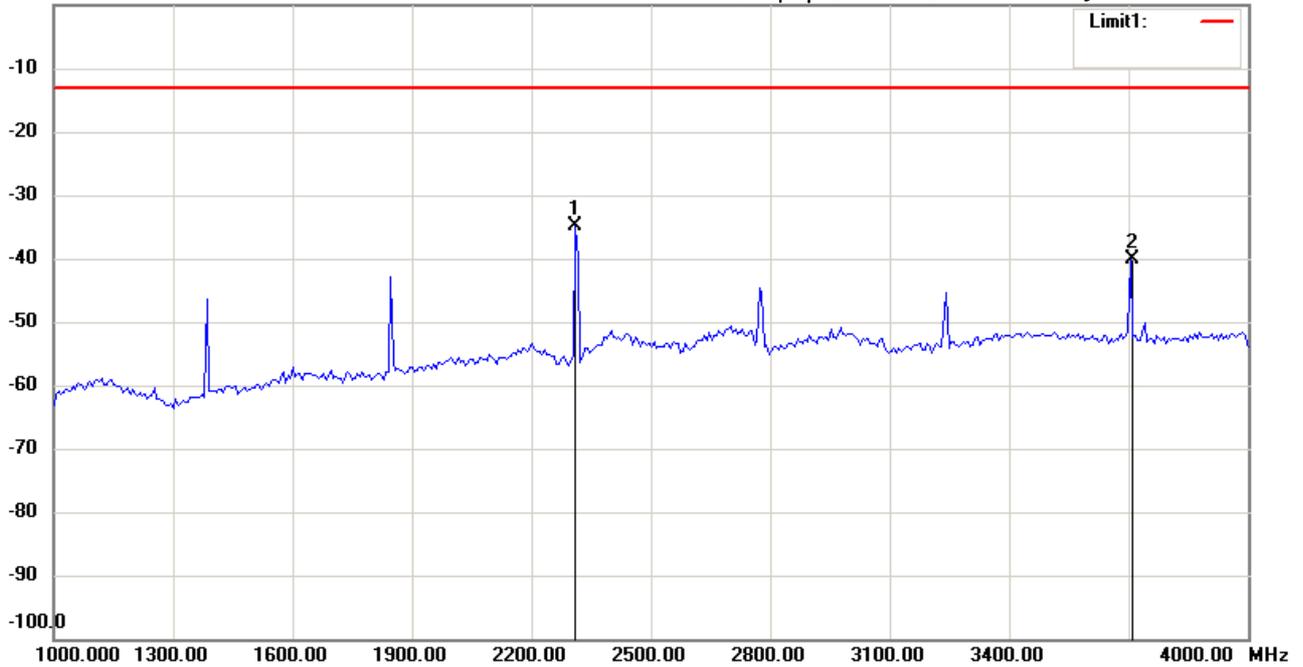
Data :#1

Date: 2016/4/27

Temperature:24 °C

Time: 下午 04:45:46

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	2310.621	-39.83	peak	5.06	-34.77	-13.00	150	240	-21.77	
	3705.411	-50.17	peak	10.02	-40.15	-13.00	150	100	-27.15	



Radiated Emission Measurement

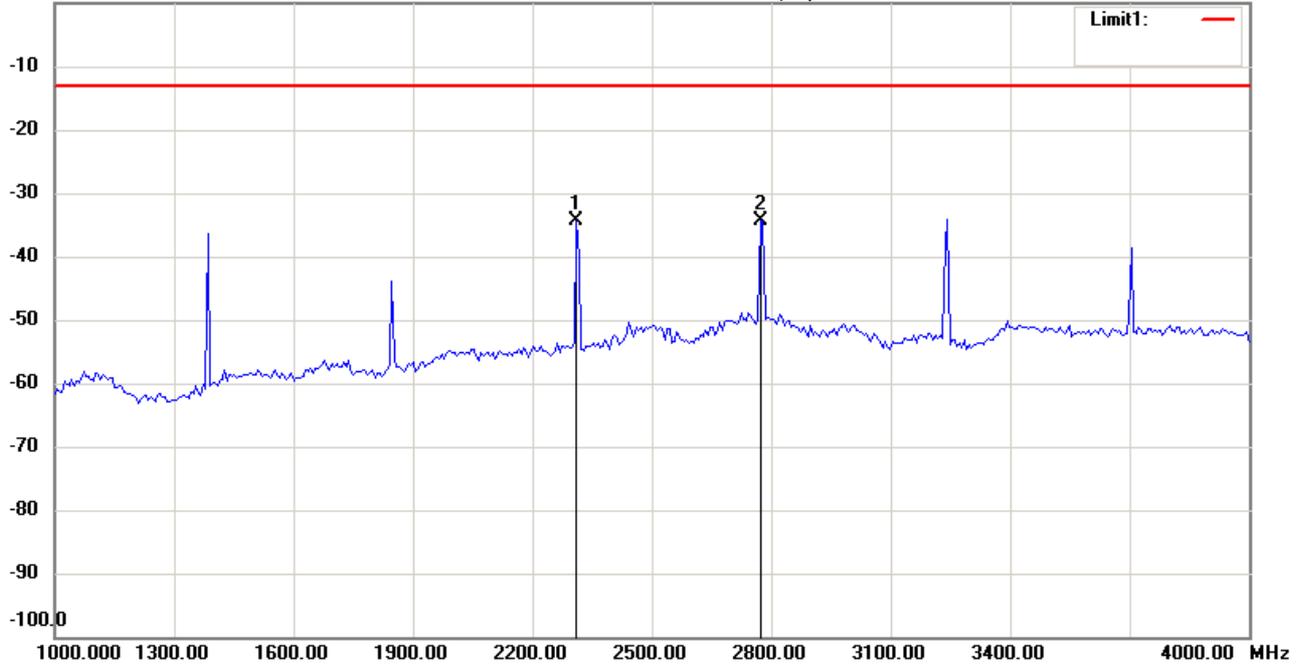
Operator: Mark

File :3-1  
 0.0 dBm

Data :#2

Date: 2016/4/27  
 Time: 下午 04:44:41

Temperature:24 °C  
 Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	2310.621	-41.13	peak	6.84	-34.29	-13.00	150	240	-21.29	
*	2773.547	-46.34	peak	12.08	-34.26	-13.00	150	20	-21.26	



Radiated Emission Measurement

Operator: Mark

File :1-2  
 0.0 dBm

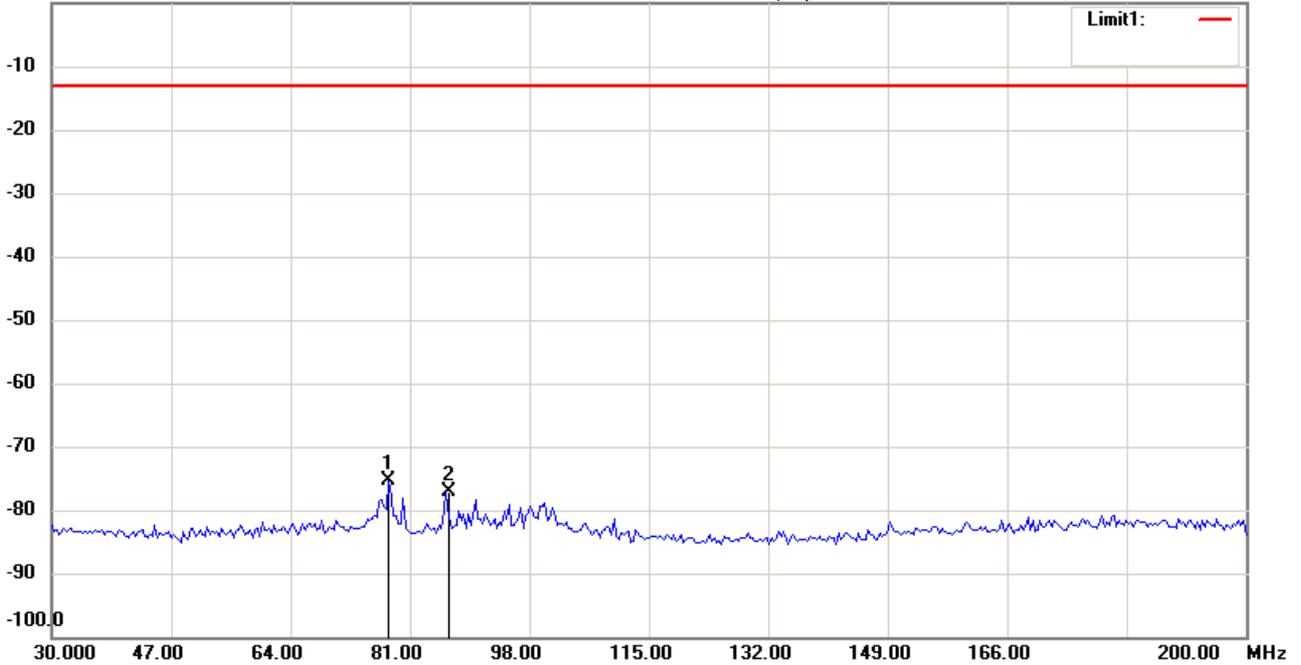
Data :#1

Date: 2016/4/28

Temperature:24 °C

Time: 下午 02:53:49

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	78.0361	-96.97	peak	21.72	-75.25	-13.00	150	180	-62.25	
	86.2125	-98.76	peak	21.53	-77.23	-13.00	150	240	-64.23	



Radiated Emission Measurement

Operator: Mark

File :1-2  
 0.0 dBm

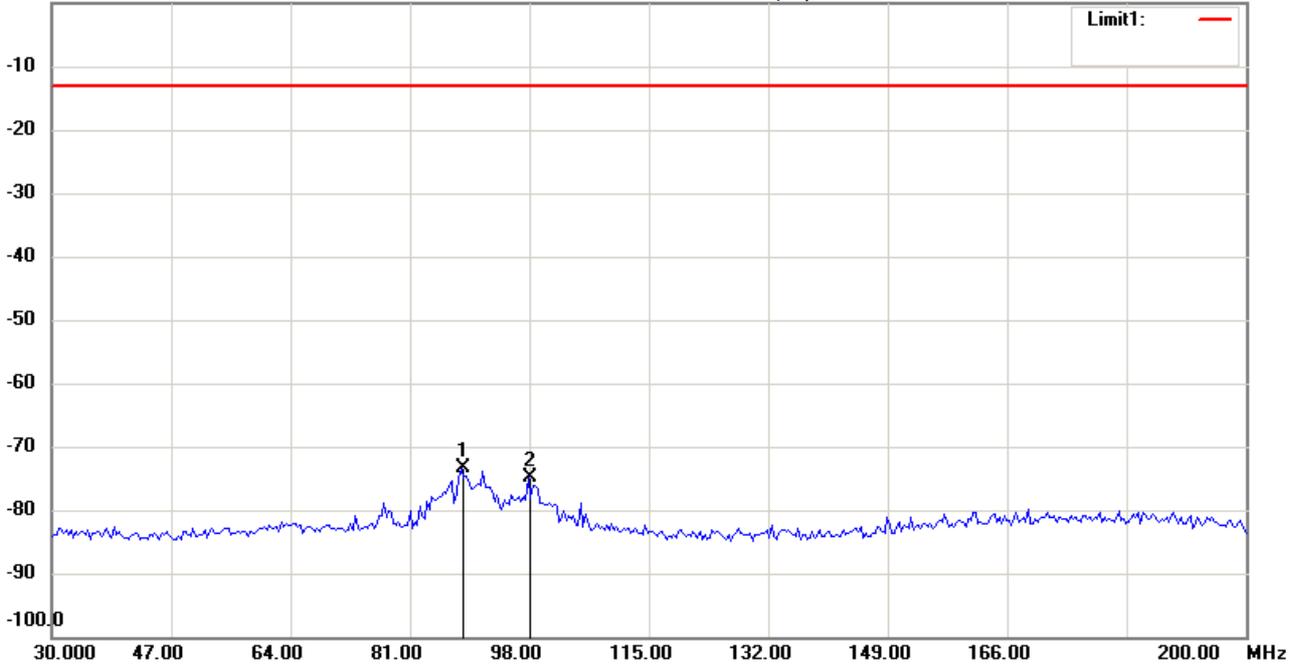
Data :#2

Date: 2016/4/28

Temperature:24 °C

Time: 下午 02:58:52

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	88.2566	-95.20	peak	21.75	-73.45	-13.00	150	280	-60.45	
	97.7957	-96.94	peak	22.05	-74.89	-13.00	150	210	-61.89	



Radiated Emission Measurement

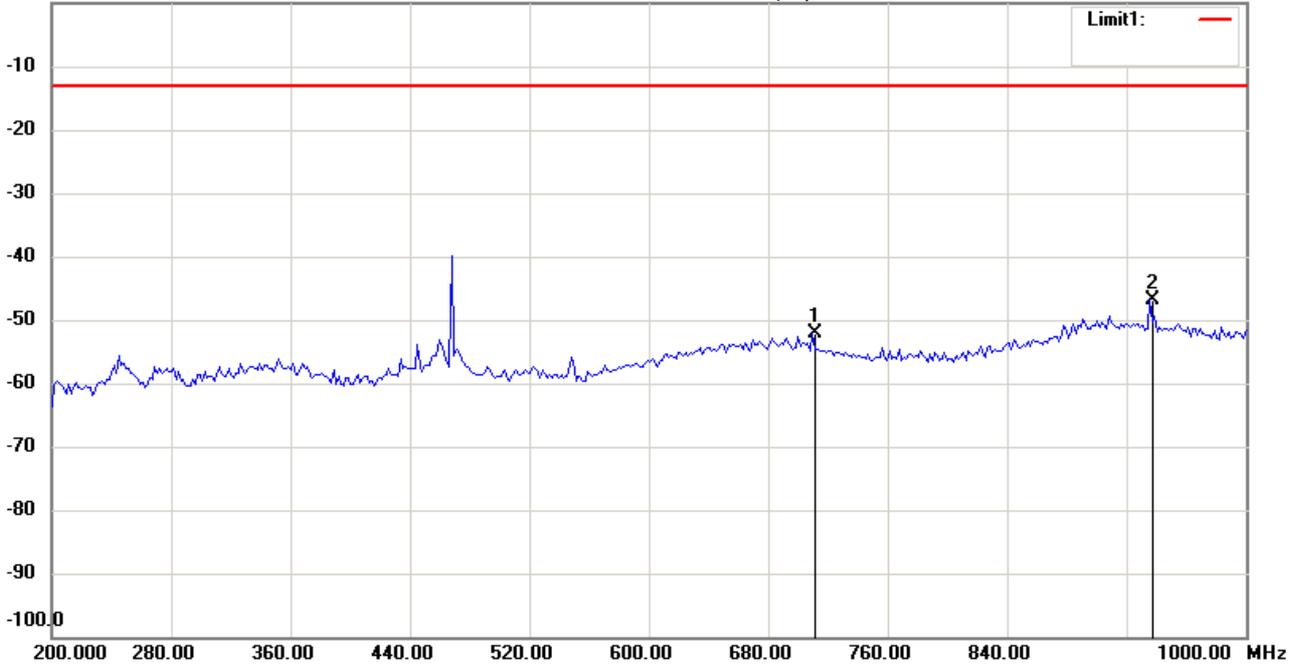
Operator: Mark

File :2-2  
 0.0 dBm

Data :#1

Date: 2016/4/27  
 Time: 下午 04:34:55

Temperature:24 °C  
 Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	709.8197	-87.04	peak	34.95	-52.09	-13.00	150	70	-39.09	
*	935.8718	-83.08	peak	36.29	-46.79	-13.00	150	240	-33.79	



Radiated Emission Measurement

Operator: Mark

File :2-2  
 0.0 dBm

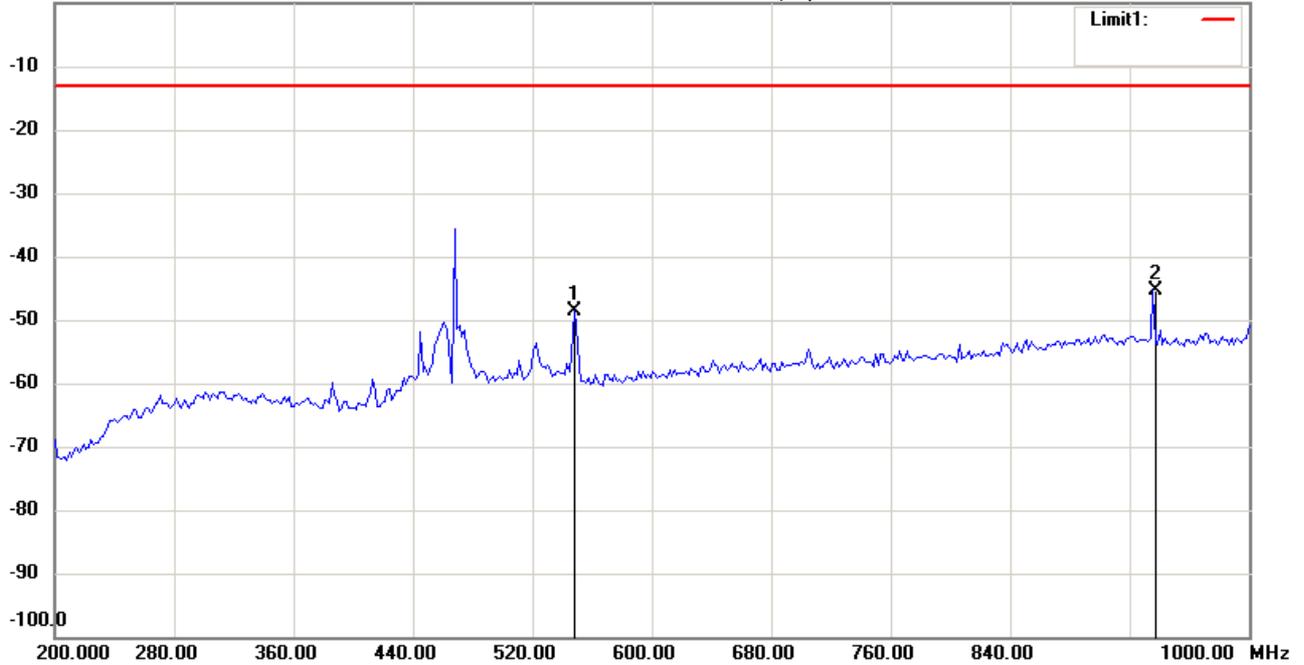
Data :#2

Date: 2016/4/27

Temperature:24 °C

Time: 下午 04:33:47

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	547.8958	-78.52	peak	29.89	-48.63	-13.00	150	40	-35.63	
*	935.8718	-79.45	peak	34.18	-45.27	-13.00	150	150	-32.27	



Radiated Emission Measurement

Operator: Mark

File :3-2

Data :#1

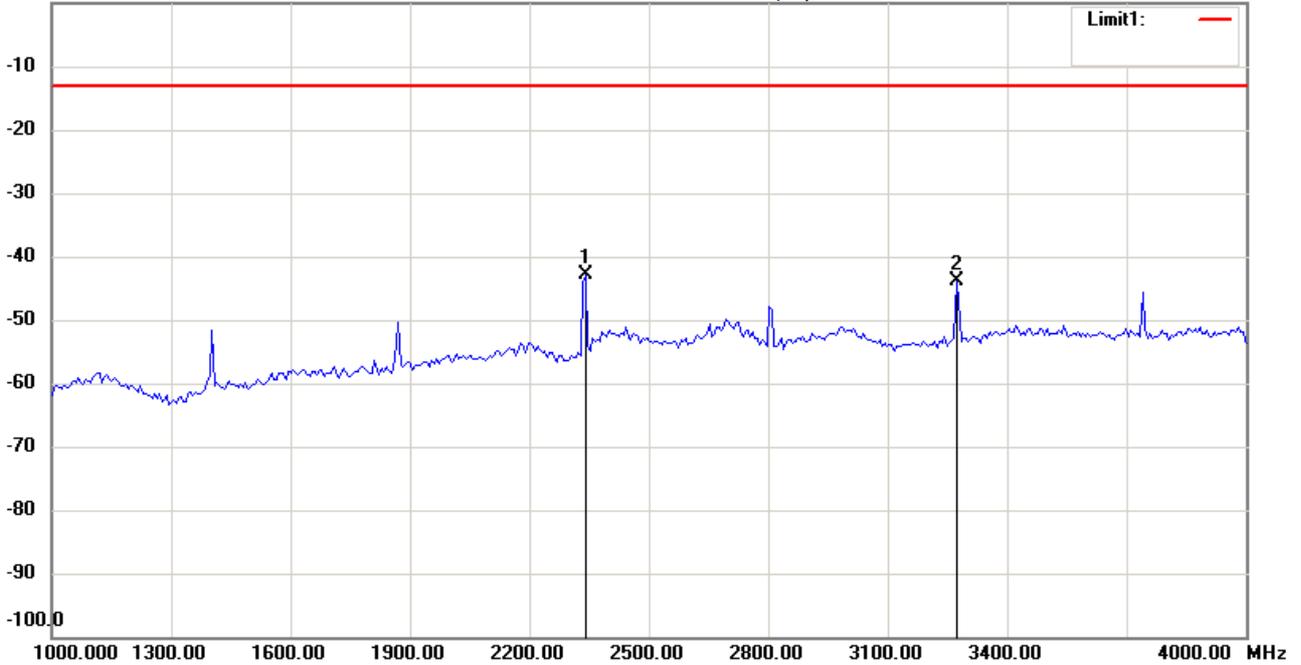
Date: 2016/4/27

Temperature:24 °C

0.0 dBm

Time: 下午 04:57:47

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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	-49.21	peak	6.41	-42.80	-13.00	150	170	-29.80	
	3272.545	-52.08	peak	8.22	-43.86	-13.00	150	40	-30.86	



Radiated Emission Measurement

Operator: Mark

File :3-2  
 0.0 dBm

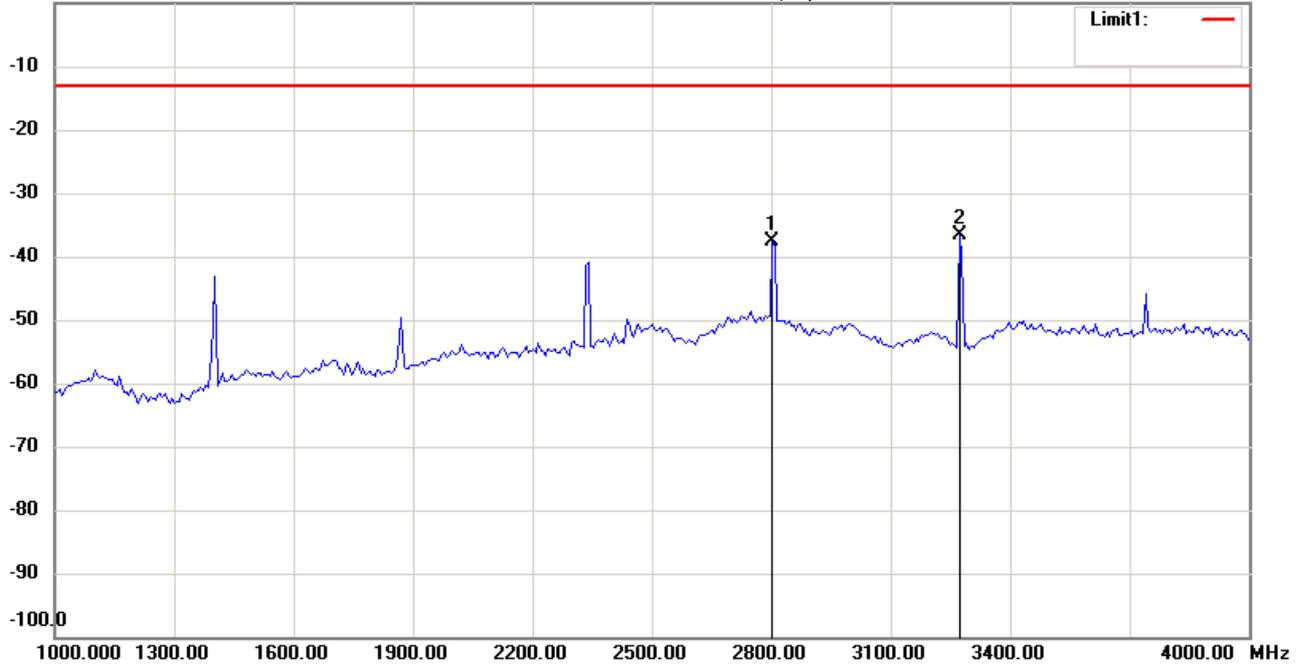
Data :#2

Date: 2016/4/27

Temperature:24 °C

Time: 下午 04:56:05

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	2803.607	-49.57	peak	11.97	-37.60	-13.00	150	140	-24.60	
*	3272.545	-44.58	peak	7.91	-36.67	-13.00	150	150	-23.67	



Radiated Emission Measurement

Operator: Mark

File :1-3  
 0.0 dBm

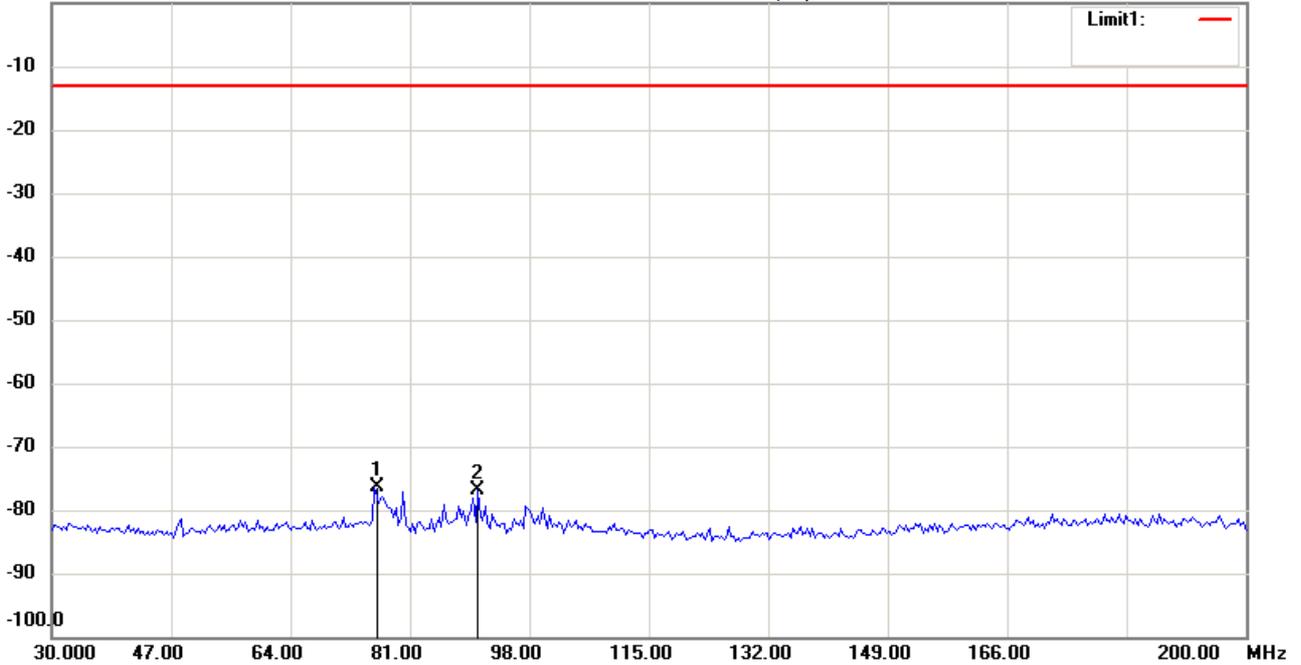
Data :#1

Date: 2016/4/28

Temperature:24 °C

Time: 下午 02:55:45

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	75.9921	-98.15	peak	21.75	-76.40	-13.00	150	180	-63.40	
	90.6413	-98.31	peak	21.44	-76.87	-13.00	150	250	-63.87	



Radiated Emission Measurement

Operator: Mark

File :1-3  
 0.0 dBm

Data :#2

Date: 2016/4/28

Temperature:24 °C

Time: 下午 02:57:08

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	90.3007	-95.17	peak	21.77	-73.40	-13.00	150	180	-60.40	
*	96.4330	-93.01	peak	22.00	-71.01	-13.00	150	240	-58.01	



Radiated Emission Measurement

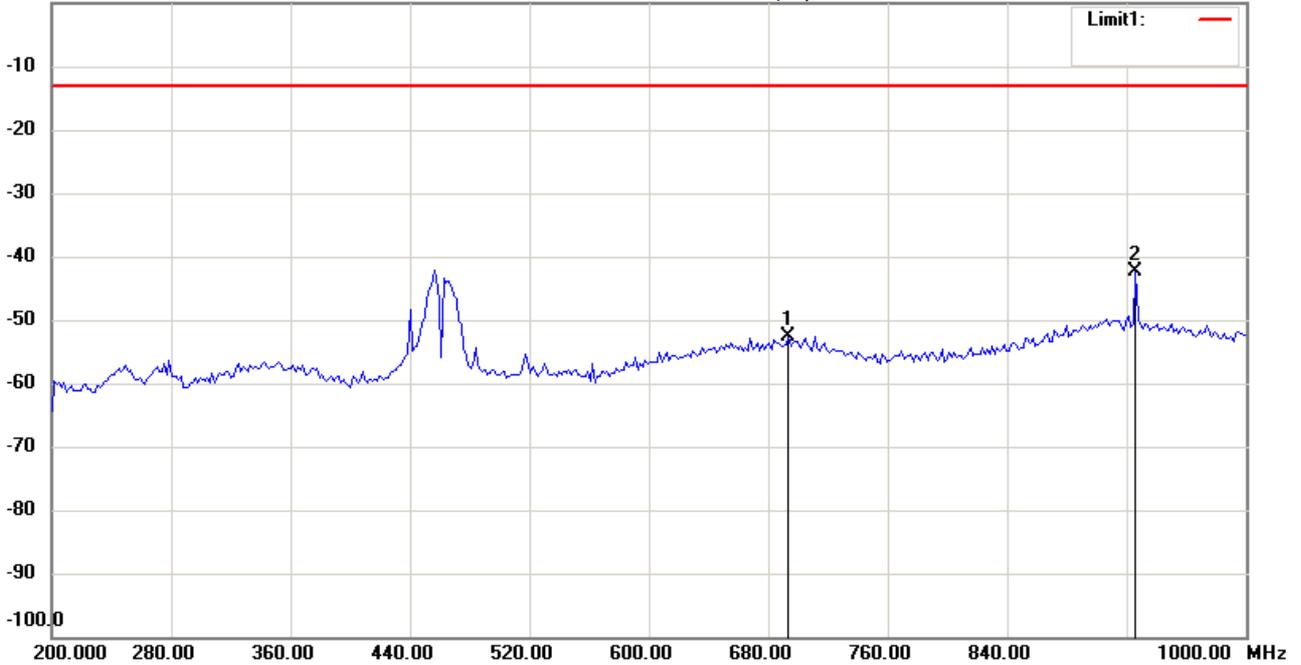
Operator: Mark

File :2-3  
 0.0 dBm

Data :#1

Date: 2016/4/27  
 Time: 下午 04:27:10

Temperature:24 °C  
 Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	693.7875	-87.97	peak	35.36	-52.61	-13.00	150	170	-39.61	
*	926.2525	-78.75	peak	36.47	-42.28	-13.00	150	150	-29.28	



Radiated Emission Measurement

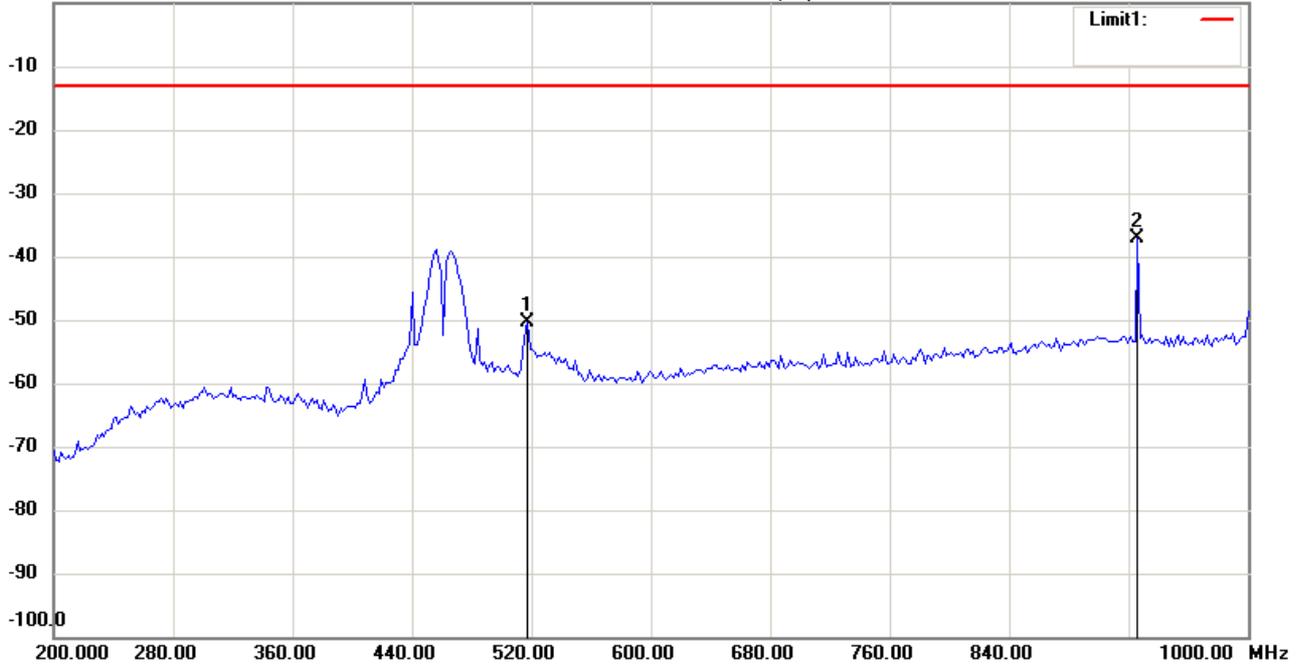
Operator: Mark

File :2-3  
 0.0 dBm

Data :#2

Date: 2016/4/27  
 Time: 下午 04:26:01

Temperature:24 °C  
 Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
	517.4346	-80.35	peak	30.01	-50.34	-13.00	150	80	-37.34	
*	926.2525	-71.35	peak	34.24	-37.11	-13.00	150	150	-24.11	



Radiated Emission Measurement

Operator: Mark

File :3-3  
 0.0 dBm

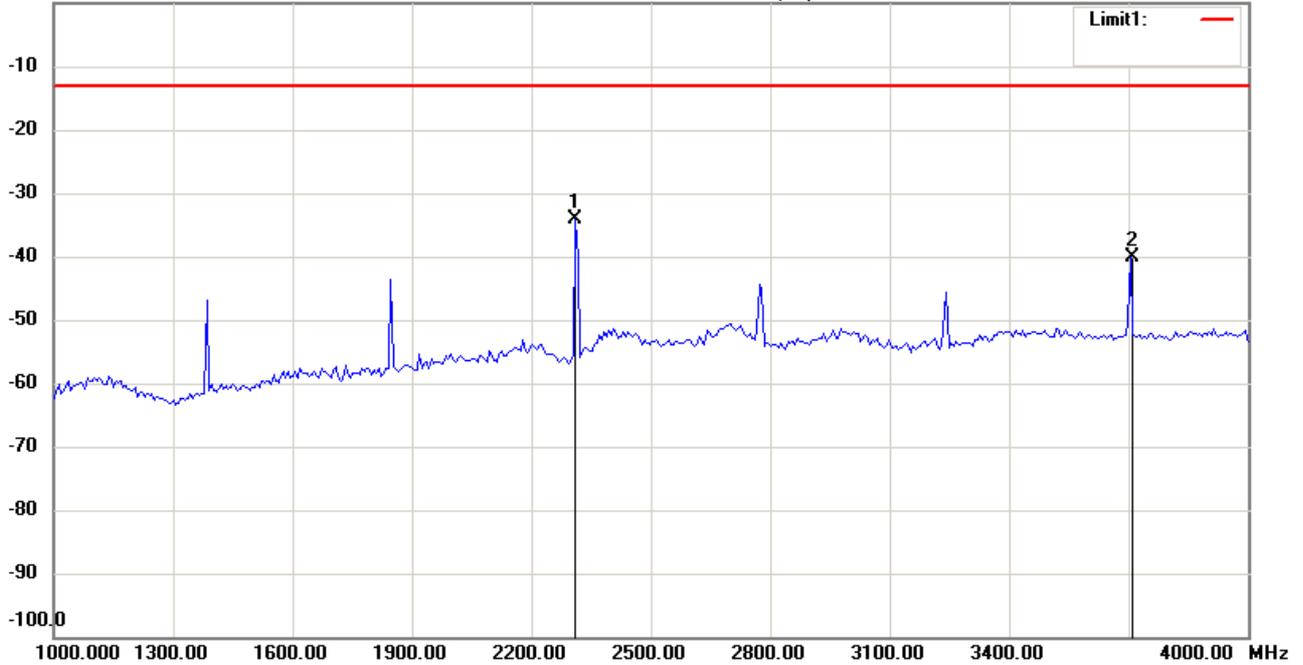
Data :#1

Date: 2016/4/27

Temperature:24 °C

Time: 下午 04:48:38

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	2310.621	-39.19	peak	5.06	-34.13	-13.00	150	170	-21.13	
	3705.411	-50.19	peak	10.02	-40.17	-13.00	150	150	-27.17	



Radiated Emission Measurement

Operator: Mark

File :3-3

Data :#2

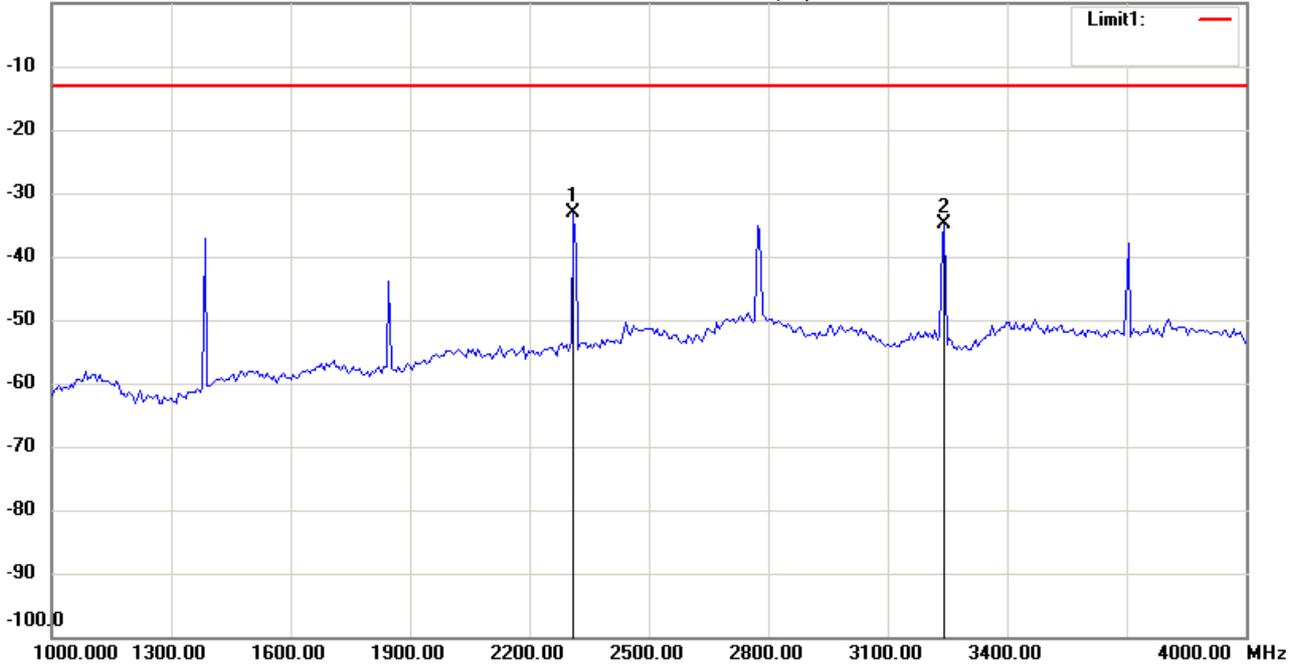
Date: 2016/4/27

Temperature:24 °C

0.0 dBm

Time: 下午 04:49:56

Humidity:60 %



Site : Chamber

Condition : FCC\_part 95 RE

EUT : W6M21604-15784

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
*	2310.621	-39.87	peak	6.84	-33.03	-13.00	150	50	-20.03	
	3242.485	-43.36	peak	8.50	-34.86	-13.00	150	170	-21.86	



Radiated Emission Measurement

Operator: Leon

File :1

Data :#1

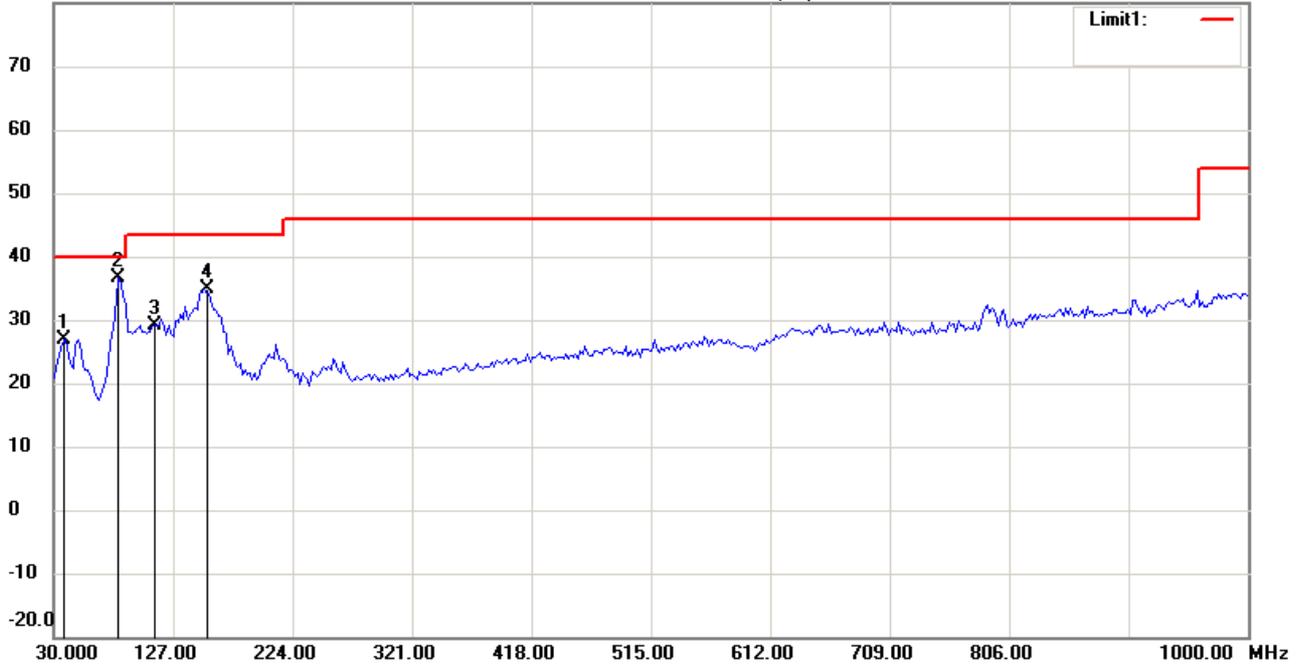
Date: 2016/5/11

Temperature:24 °C

80.0 dBuV/m

Time: 下午 11:30:13

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_30-1000MHz

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	37.7754	34.83	peak	-7.87	26.96	40.00	100	105	-13.04	
*	82.4850	49.76	peak	-13.07	36.69	40.00	100	130	-3.31	
	111.6431	36.10	peak	-6.85	29.25	43.50	100	300	-14.25	
	152.4650	42.73	peak	-7.93	34.80	43.50	100	315	-8.70	



Radiated Emission Measurement

Operator: Leon

File :1

Data :#2

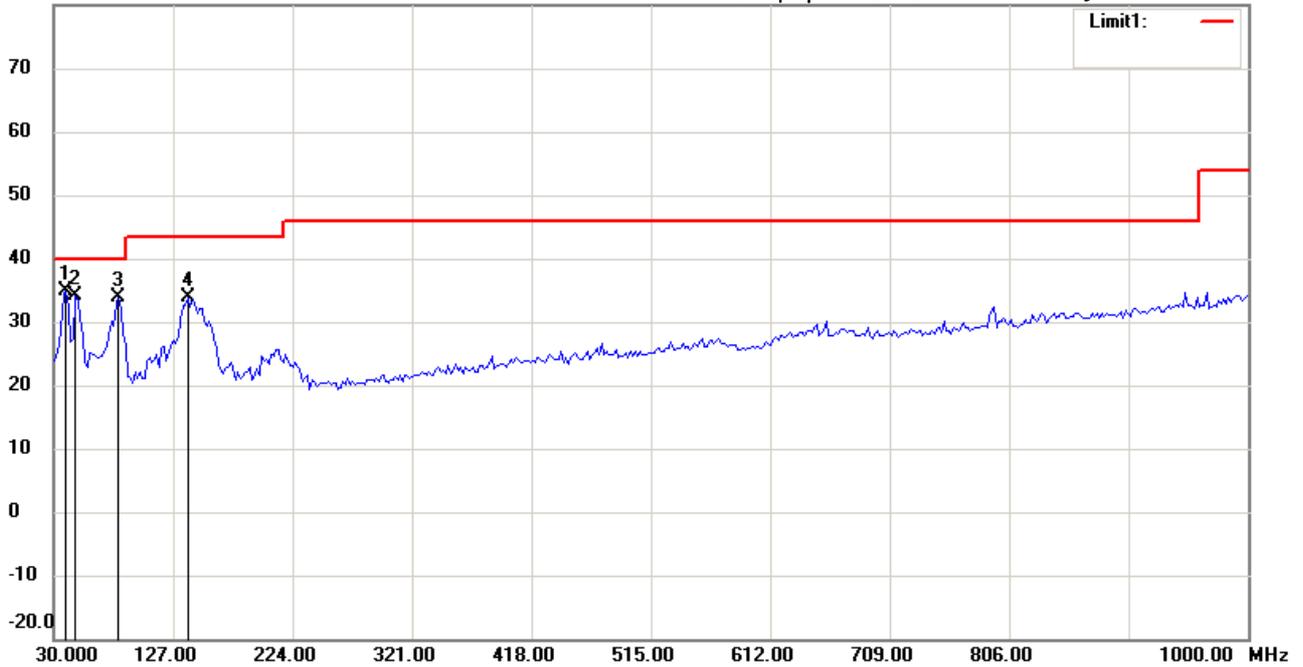
Date: 2016/5/11

Temperature:24 °C

80.0 dBuV/m

Time: 下午 11:34:54

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_30-1000MHz

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	39.7194	42.91	peak	-8.15	34.76	40.00	100	120	-5.24	
	47.4950	43.45	peak	-9.26	34.19	40.00	100	200	-5.81	
	82.4850	46.97	peak	-13.07	33.90	40.00	100	180	-6.10	
	138.8574	40.55	peak	-6.65	33.90	43.50	100	165	-9.60	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#1

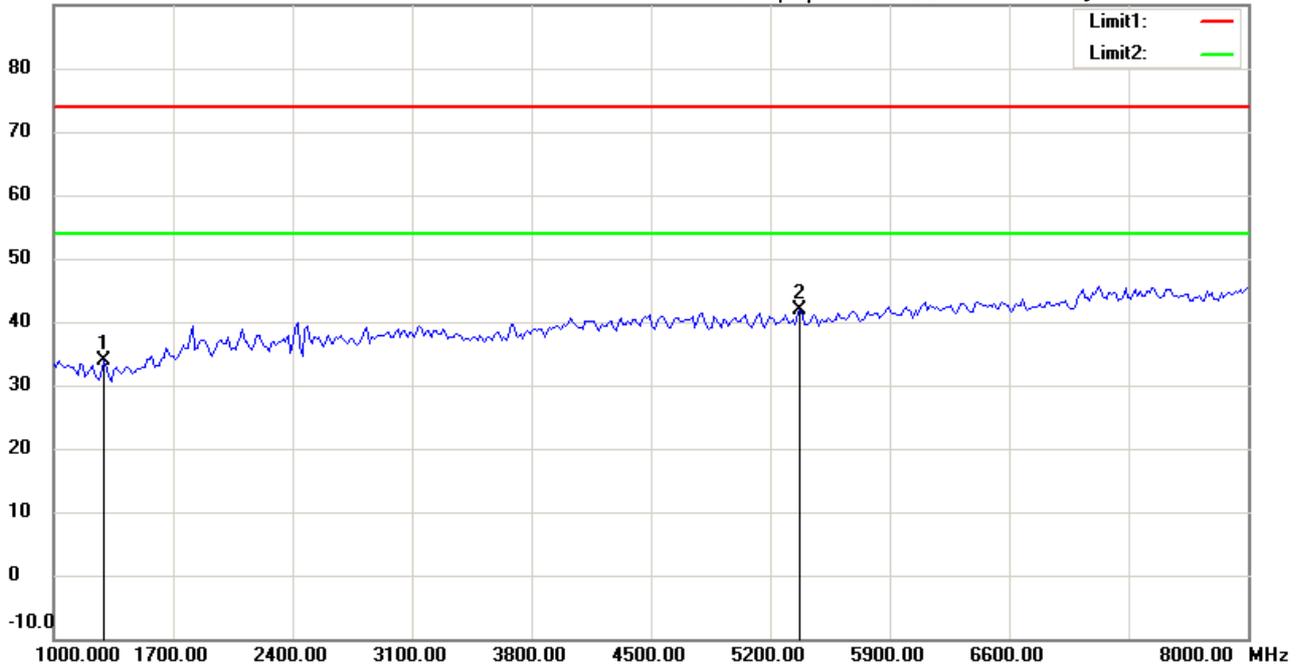
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:56:50

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	1294.589	43.23	peak	-9.34	33.89	74.00	100	75	-40.11	
*	5376.753	41.28	peak	0.70	41.98	74.00	100	230	-32.02	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#5

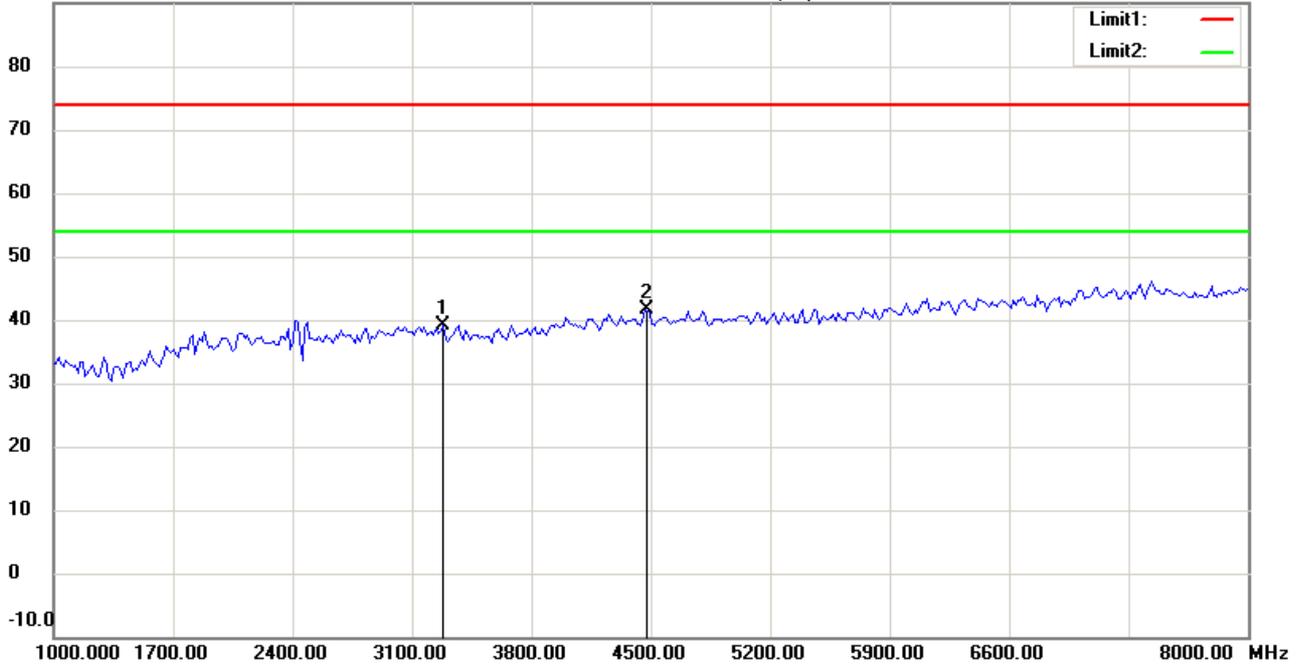
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:57:44

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RXCh4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	3286.573	42.08	peak	-2.87	39.21	74.00	100	180	-34.79	
*	4464.930	42.49	peak	-0.79	41.70	74.00	100	245	-32.30	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#2

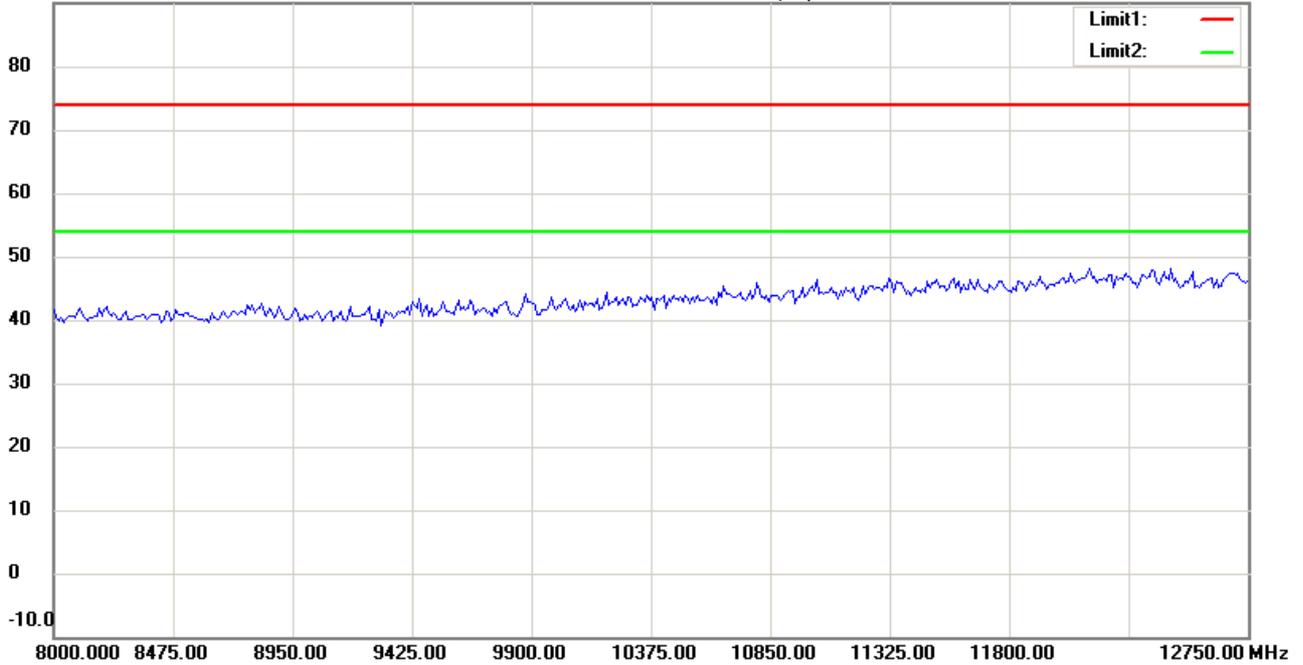
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:57:01

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#6

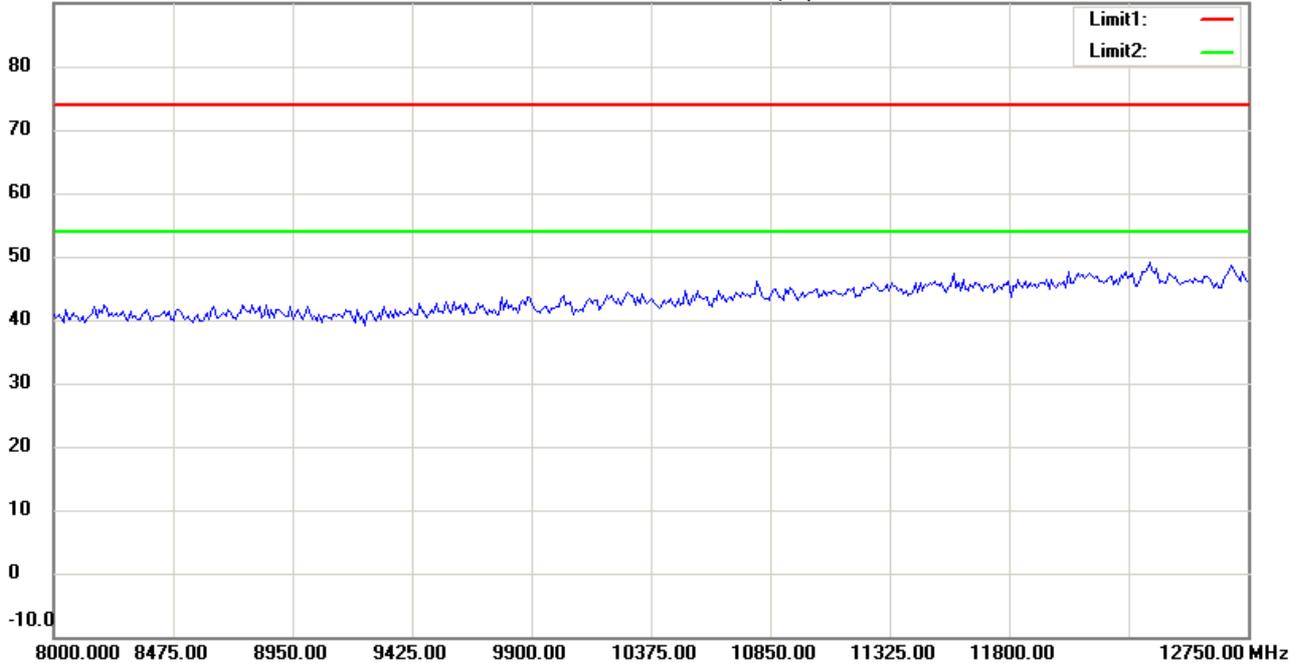
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:57:56

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch4 462.6375MHz

Note :

Polarization: *Vertical*

Power : 120 V.a.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#3

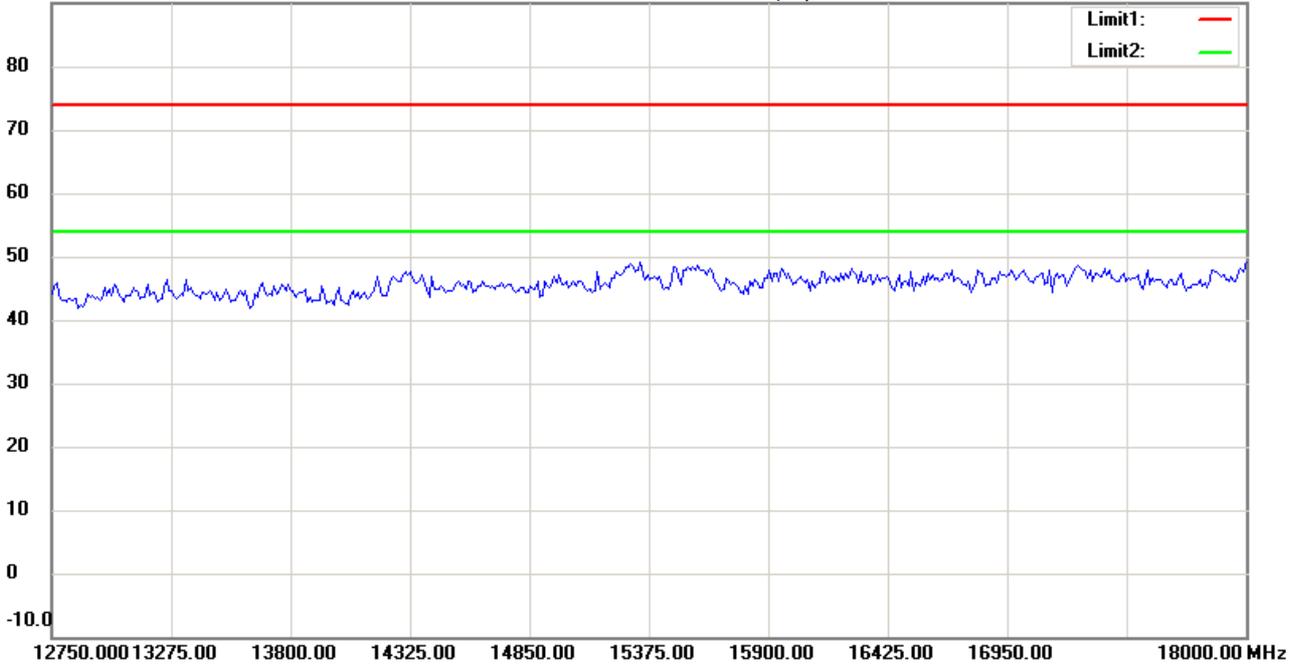
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:57:26

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#7

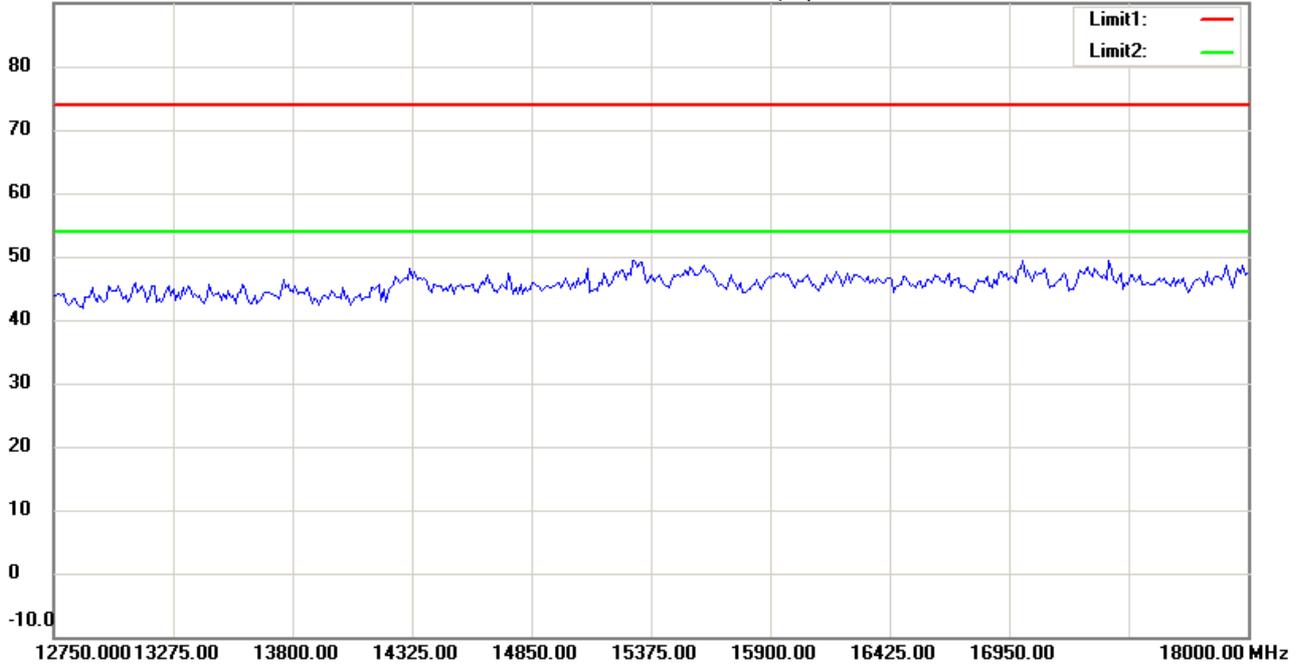
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:58:21

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#4

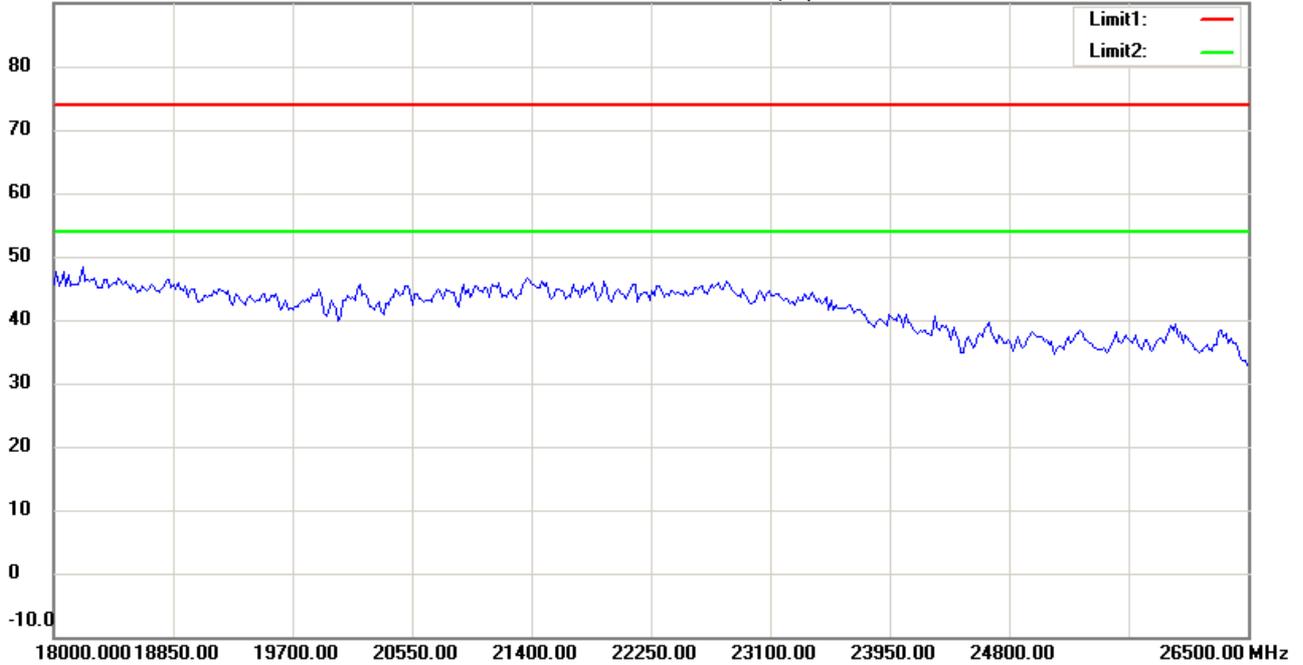
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:57:37

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#8

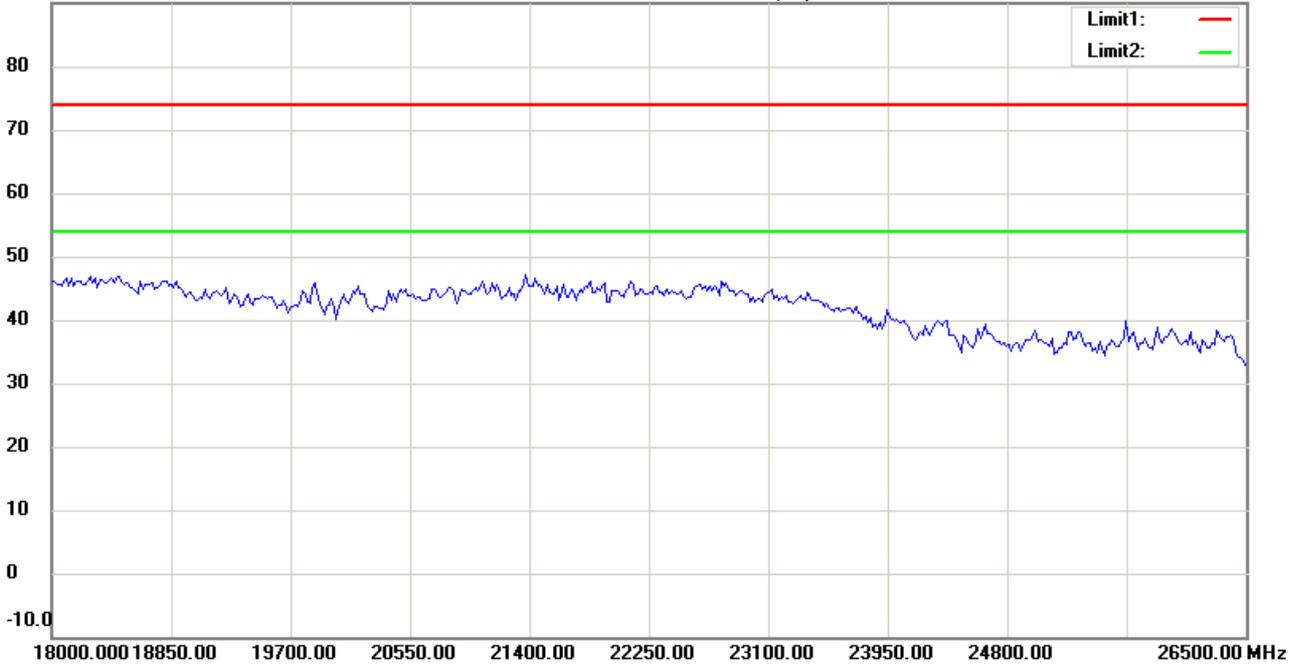
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 11:58:31

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch4 462.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :1

Data :#1

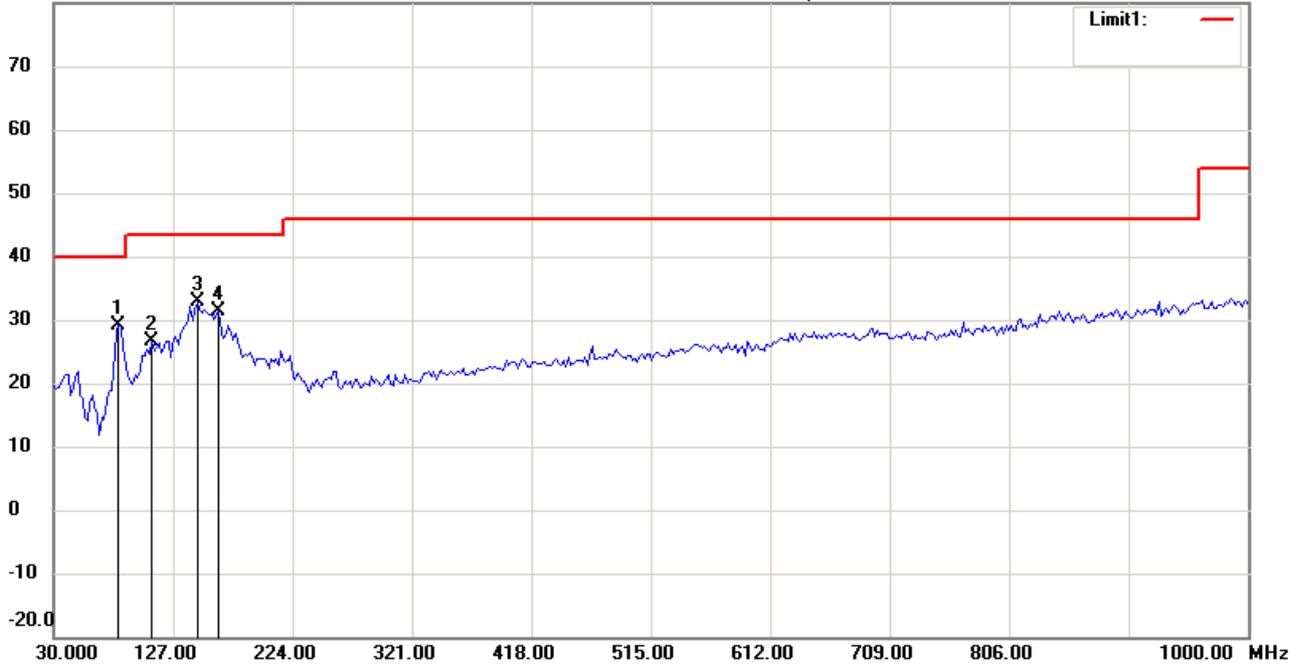
Date: 2016/5/12

Temperature:24 °C

80.0 dBuV/m

Time: 上午 00:17:30

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_30-1000MHz

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch11 467.6375MHz

Note :

Polarization: *Horizontal*

Power : 120 Va.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	82.4850	42.27	peak	-13.07	29.20	40.00	100	130	-10.80	
	109.6992	33.63	peak	-7.04	26.59	43.50	100	280	-16.91	
*	146.6331	40.22	peak	-7.33	32.89	43.50	100	150	-10.61	
	164.1280	40.75	peak	-9.30	31.45	43.50	100	330	-12.05	



Radiated Emission Measurement

Operator: Leon

File :1

Data :#2

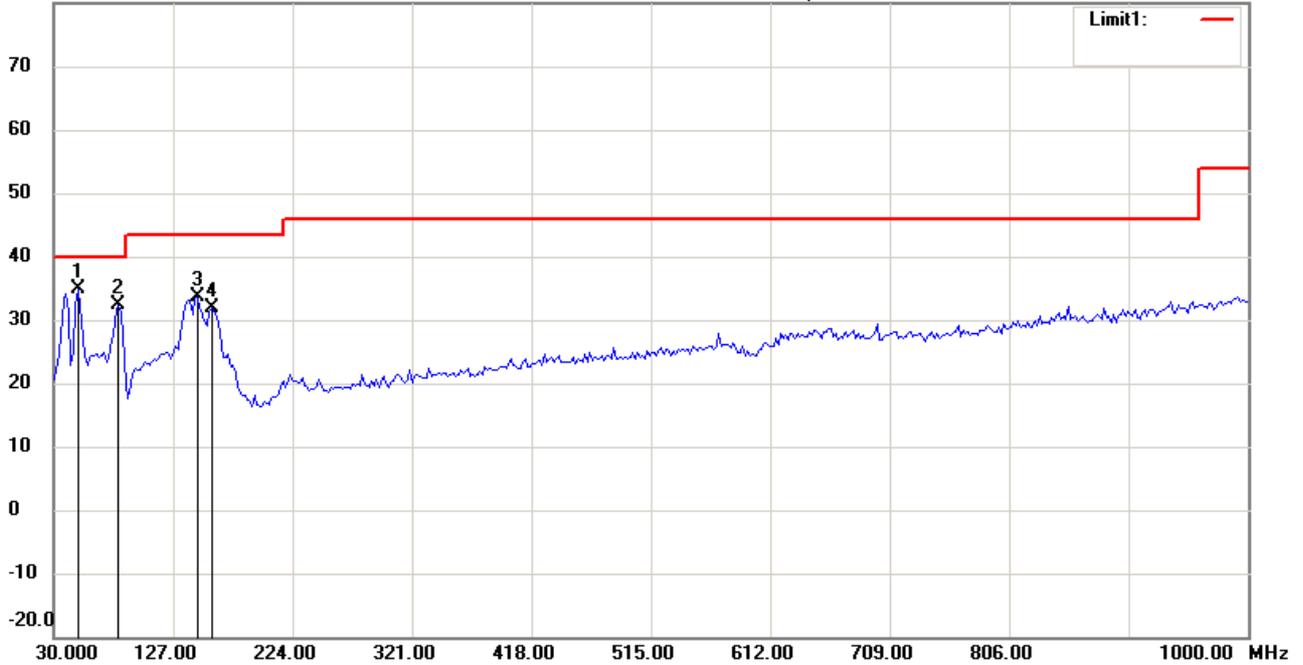
Date: 2016/5/12

Temperature:24 °C

80.0 dBuV/m

Time: 上午 00:19:30

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_30-1000MHz

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch11 467.6375MHz

Note :

Polarization: *Vertical*

Power : 120 V.a.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	49.4388	44.76	peak	-9.78	34.98	40.00	100	130	-5.02	
	82.4850	45.57	peak	-13.07	32.50	40.00	100	30	-7.50	
	146.6331	41.00	peak	-7.33	33.67	43.50	100	260	-9.83	
	158.2966	40.59	peak	-8.63	31.96	43.50	100	45	-11.54	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#1

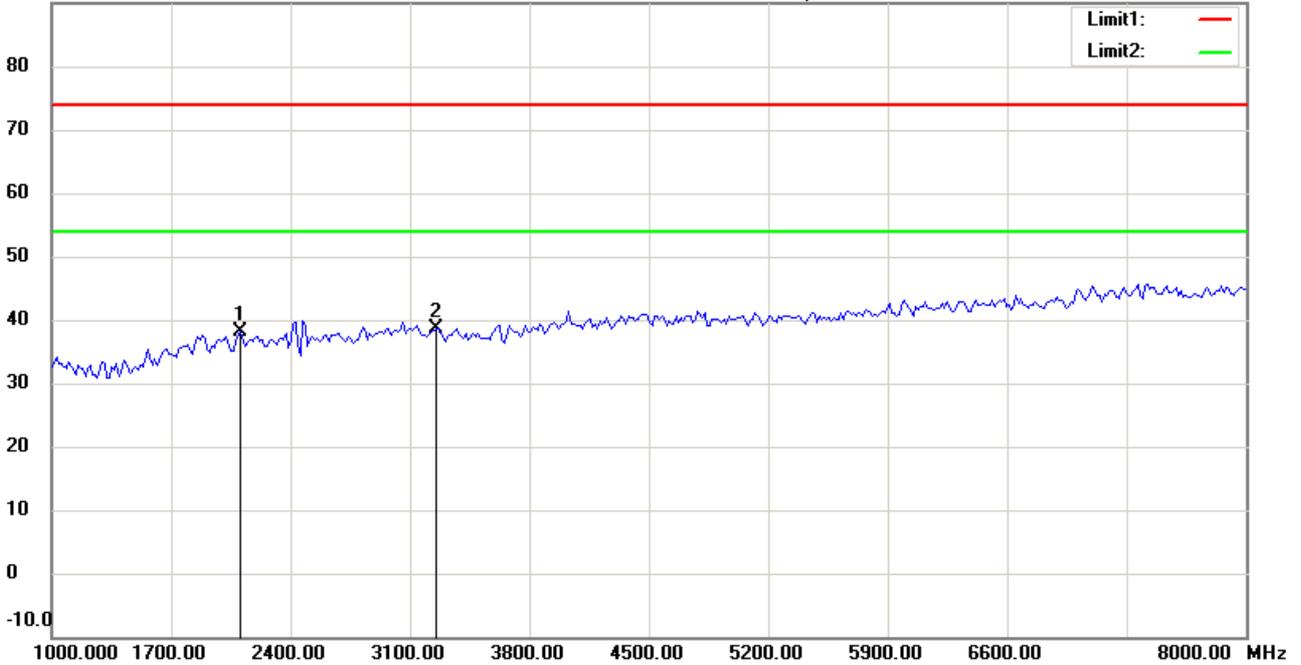
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:46:25

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2108.216	43.59	peak	-5.45	38.14	74.00	100	130	-35.86	
*	3258.517	41.53	peak	-2.83	38.70	74.00	100	145	-35.30	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#5

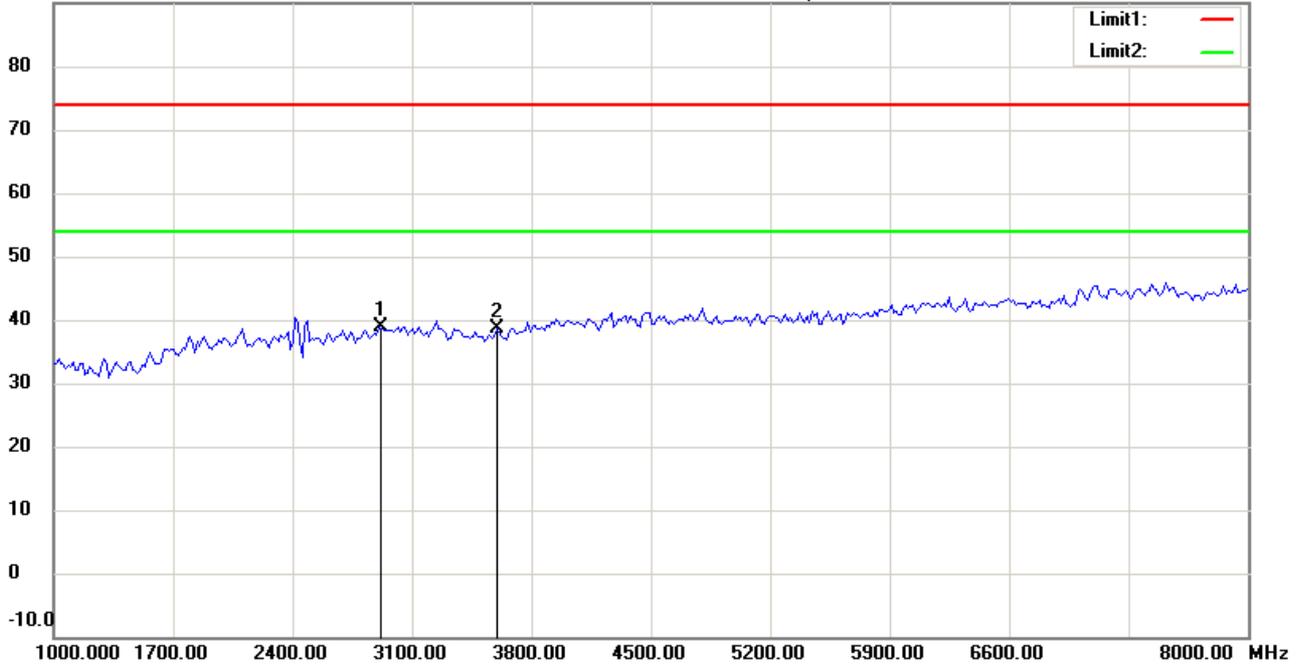
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:47:18

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	2907.816	42.21	peak	-3.43	38.78	74.00	100	140	-35.22	
	3595.190	41.22	peak	-2.60	38.62	74.00	100	170	-35.38	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#2

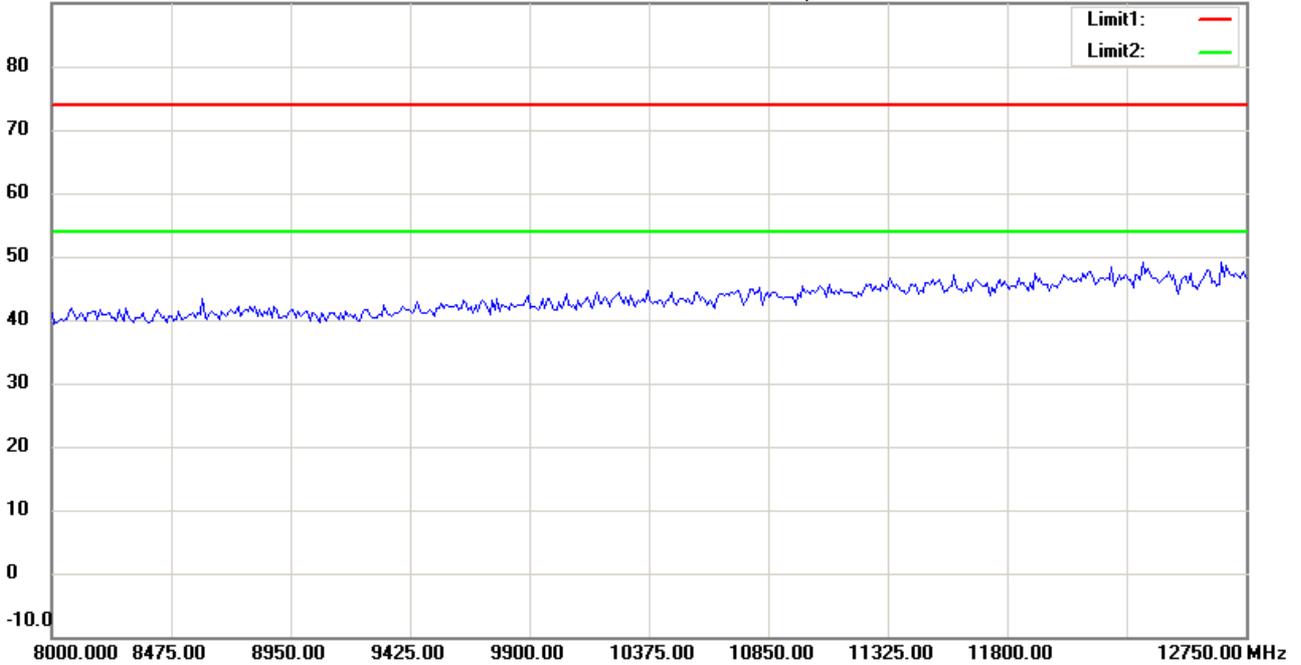
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:46:36

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#6

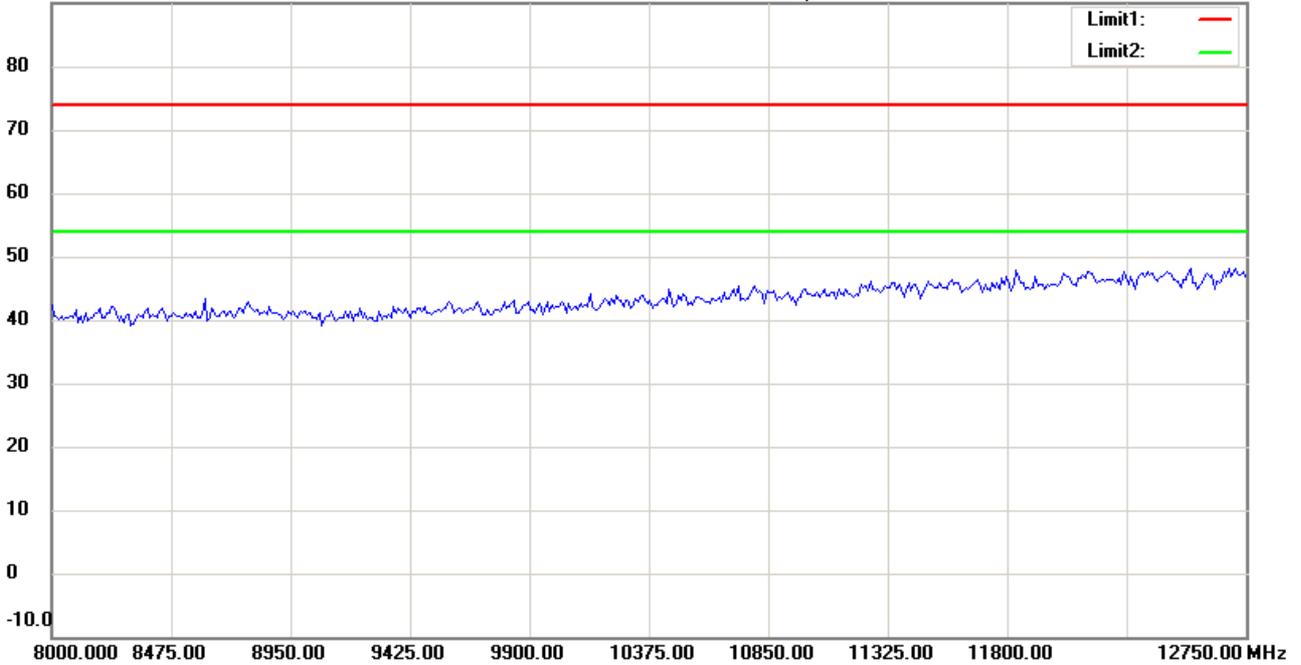
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:47:30

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#3

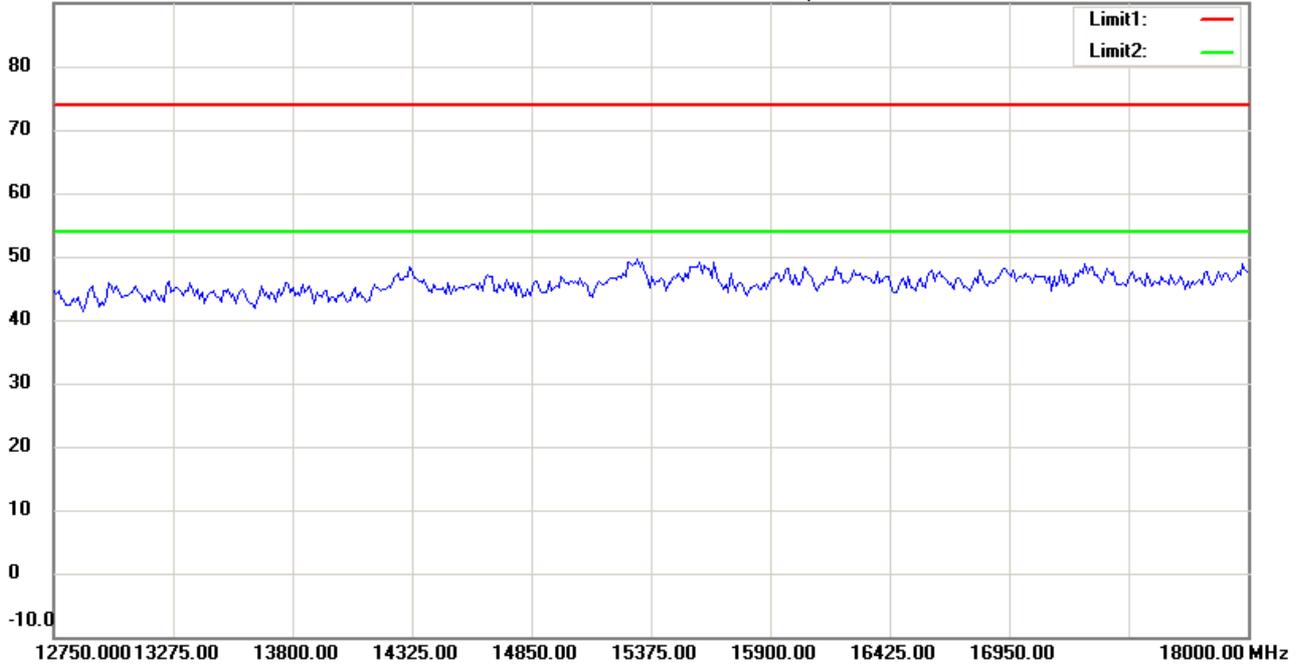
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:47:00

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#7

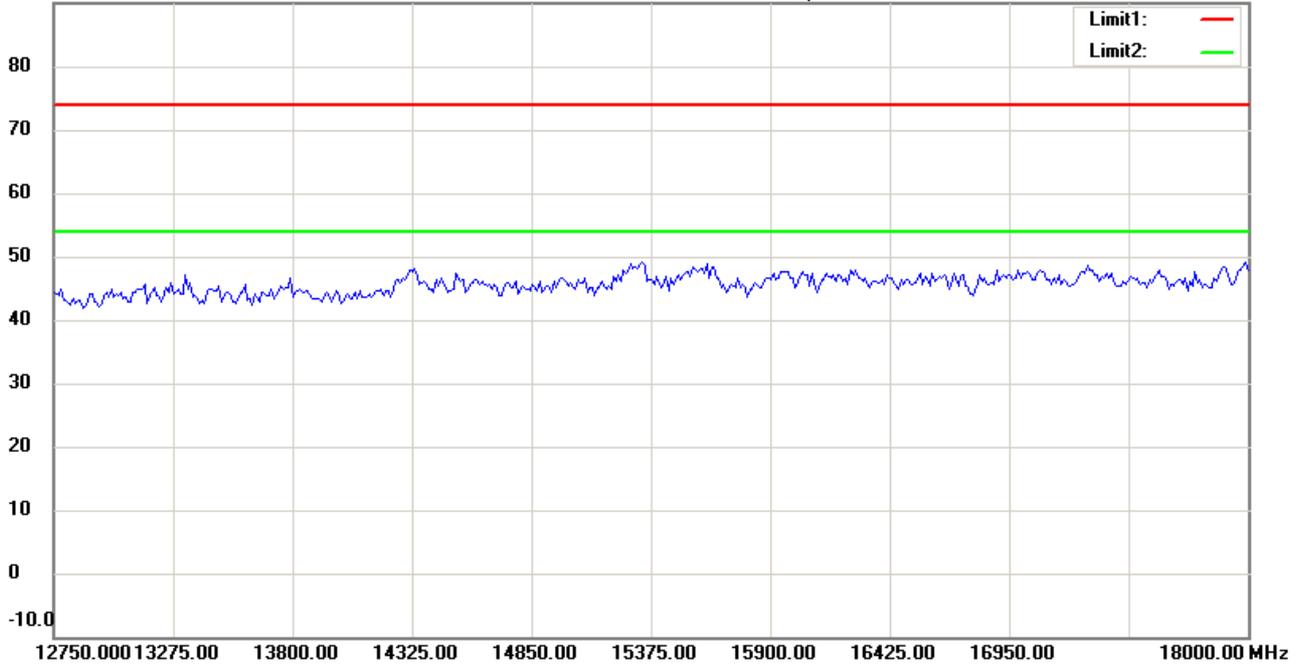
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:47:54

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#4

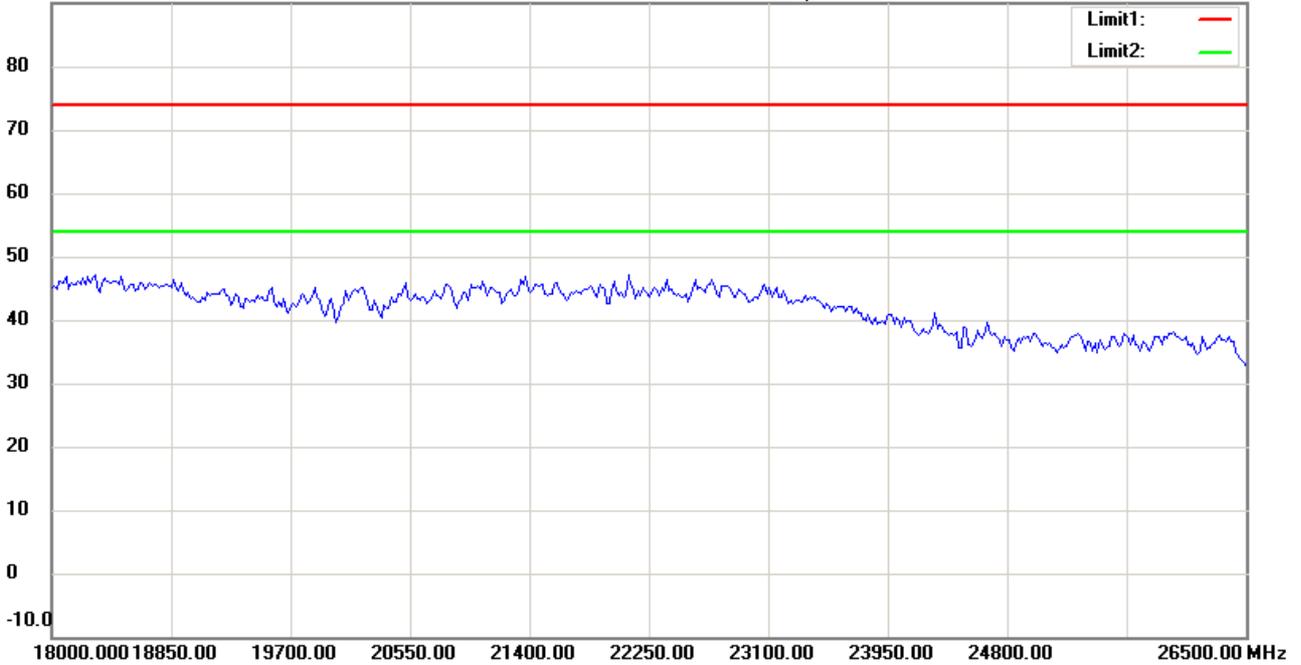
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:47:11

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch11 467.6375MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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**Radiated Emission Measurement**

Operator: Leon

File :3

Data :#8

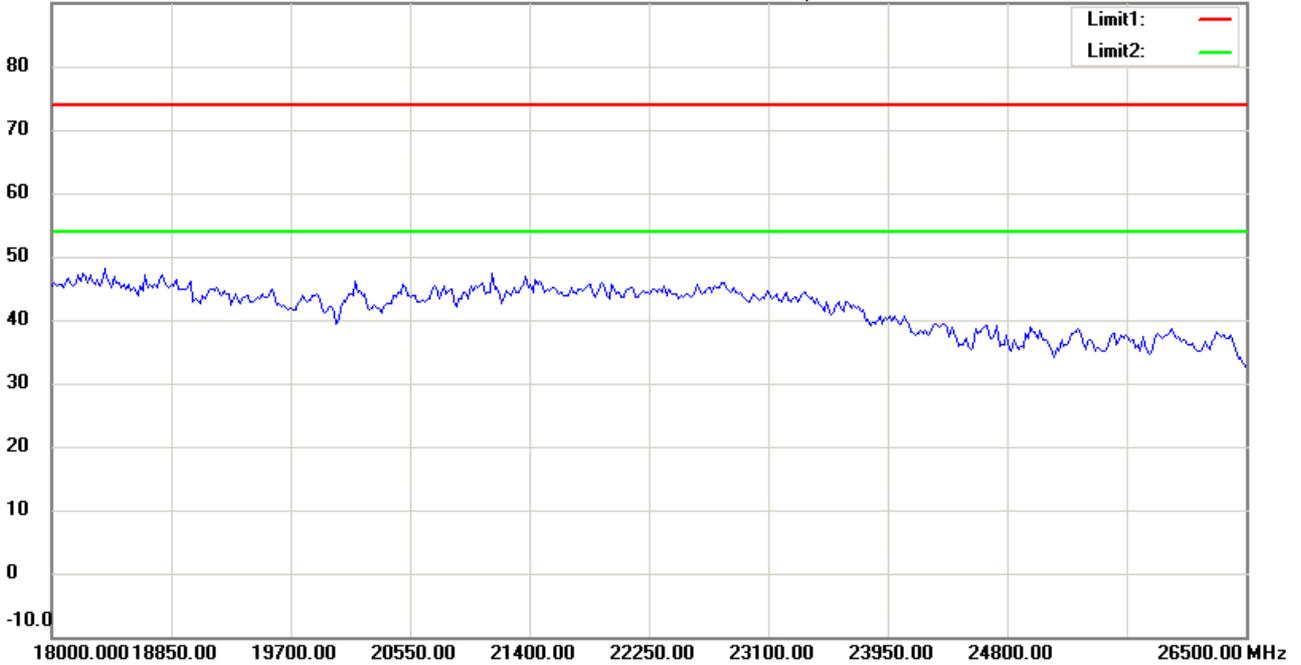
Date: 2016/5/12

Temperature:24 °C

90.0 dBuV/m

Time: 上午 00:48:04

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch11 467.6375MHz

Note :

Polarization: *Vertical*

Power : 120 V.a.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :1

Data :#1

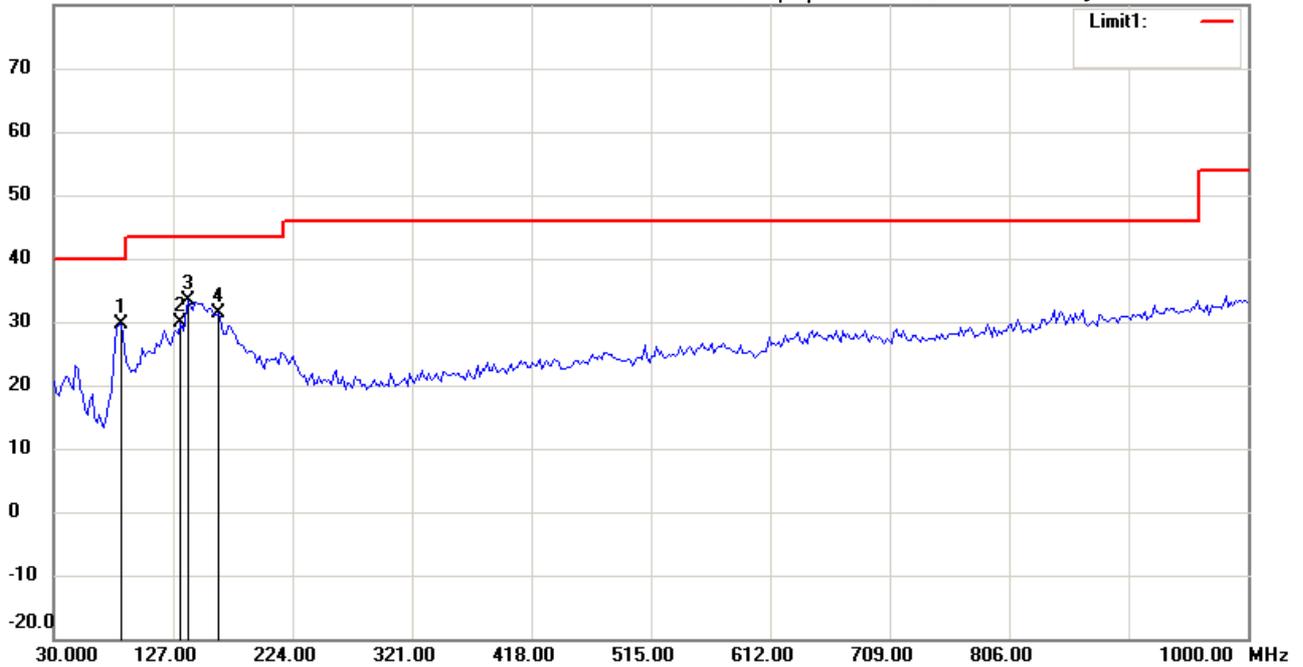
Date: 2016/5/11

Temperature:24 °C

80.0 dBuV/m

Time: 下午 11:13:36

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_30-1000MHz

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch19 462.65MHz

Note :

Polarization: *Horizontal*

Power : 120 Va.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	84.4287	42.76	peak	-13.07	29.69	40.00	100	110	-10.31	
	133.0261	36.10	peak	-6.33	29.77	43.50	100	200	-13.73	
*	138.8575	40.04	peak	-6.65	33.39	43.50	100	50	-10.11	
	164.1281	40.65	peak	-9.30	31.35	43.50	100	235	-12.15	



Radiated Emission Measurement

Operator: Leon

File :1

Data :#2

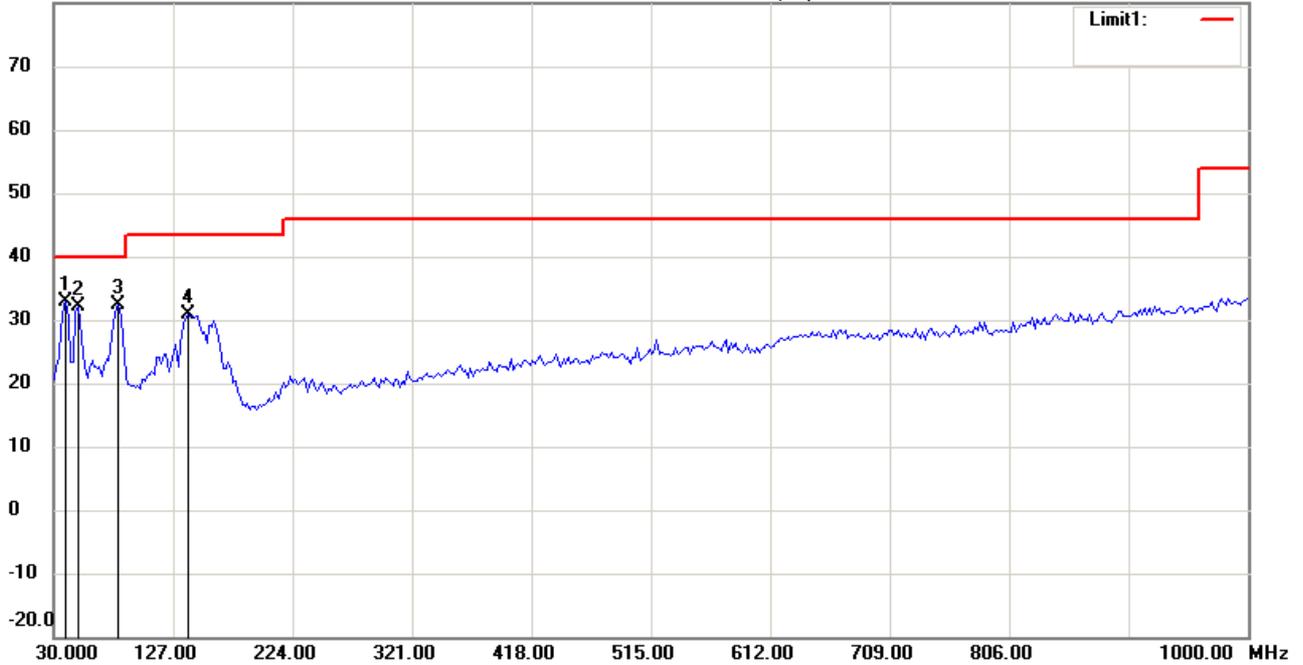
Date: 2016/5/11

Temperature:24 °C

80.0 dBuV/m

Time: 下午 11:14:20

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_30-1000MHz

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch19 462.65MHz

Note :

Polarization: *Vertical*

Power : 120 Va.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	39.7194	40.98	peak	-8.15	32.83	40.00	100	160	-7.17	
	49.4388	41.90	peak	-9.78	32.12	40.00	100	210	-7.88	
	82.4850	45.38	peak	-13.07	32.31	40.00	100	80	-7.69	
	138.8575	37.45	peak	-6.65	30.80	43.50	100	120	-12.70	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#1

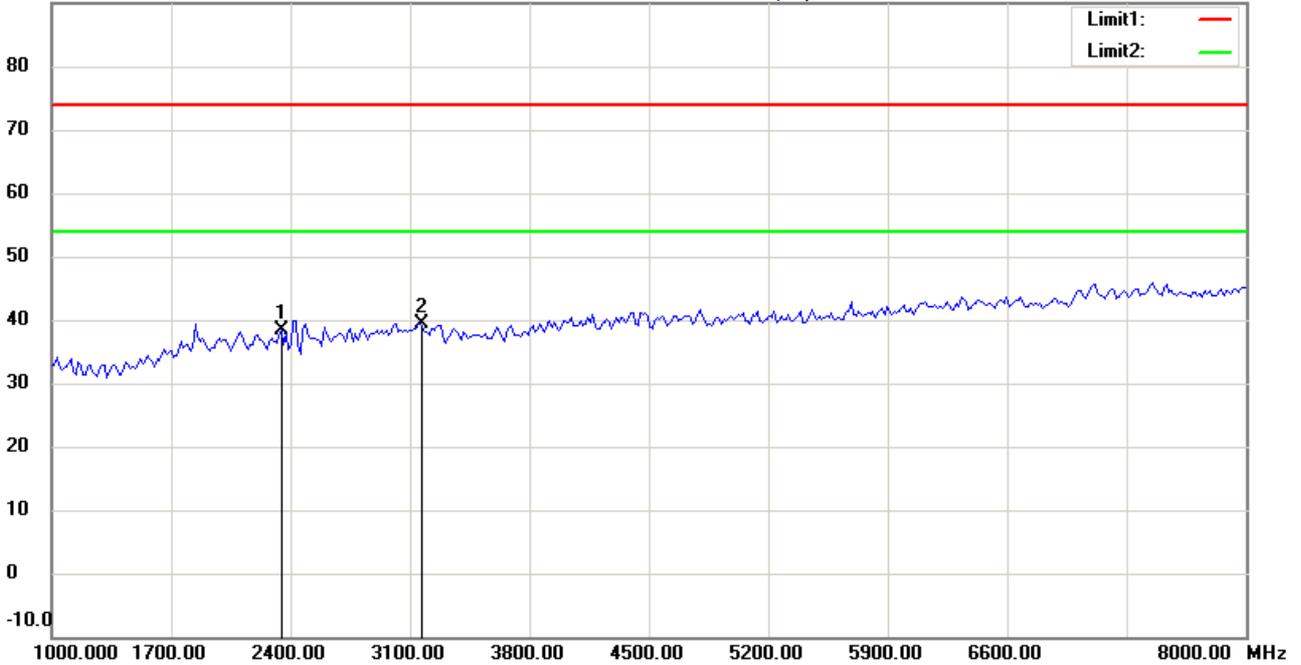
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:27:19

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch19 462.65MHz

Note :

Polarization: *Horizontal*

Power : 120 V.a.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2346.693	43.36	peak	-4.89	38.47	74.00	100	140	-35.53	
*	3160.321	42.21	peak	-2.79	39.42	74.00	100	120	-34.58	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#5

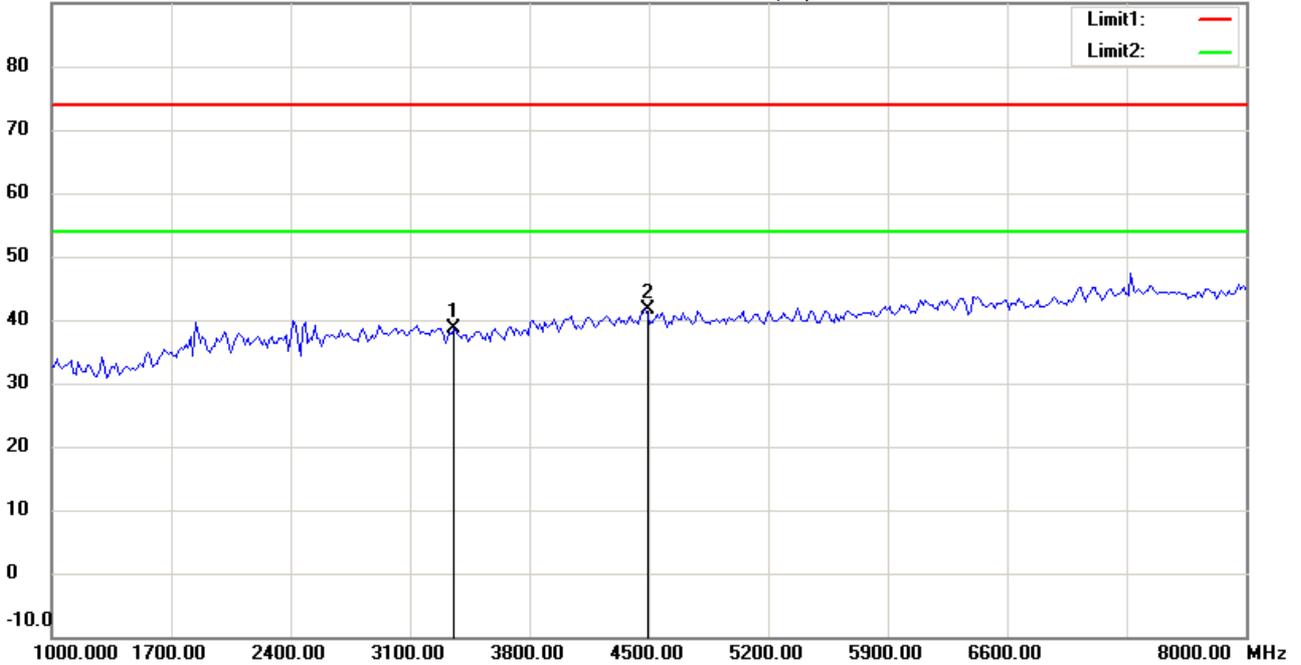
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:28:13

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch19 462.65MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	3356.713	41.72	peak	-3.03	38.69	74.00	100	190	-35.31	
*	4478.958	42.24	peak	-0.70	41.54	74.00	100	135	-32.46	



Radiated Emission Measurement

Operator: Leon

File :3

Data :#2

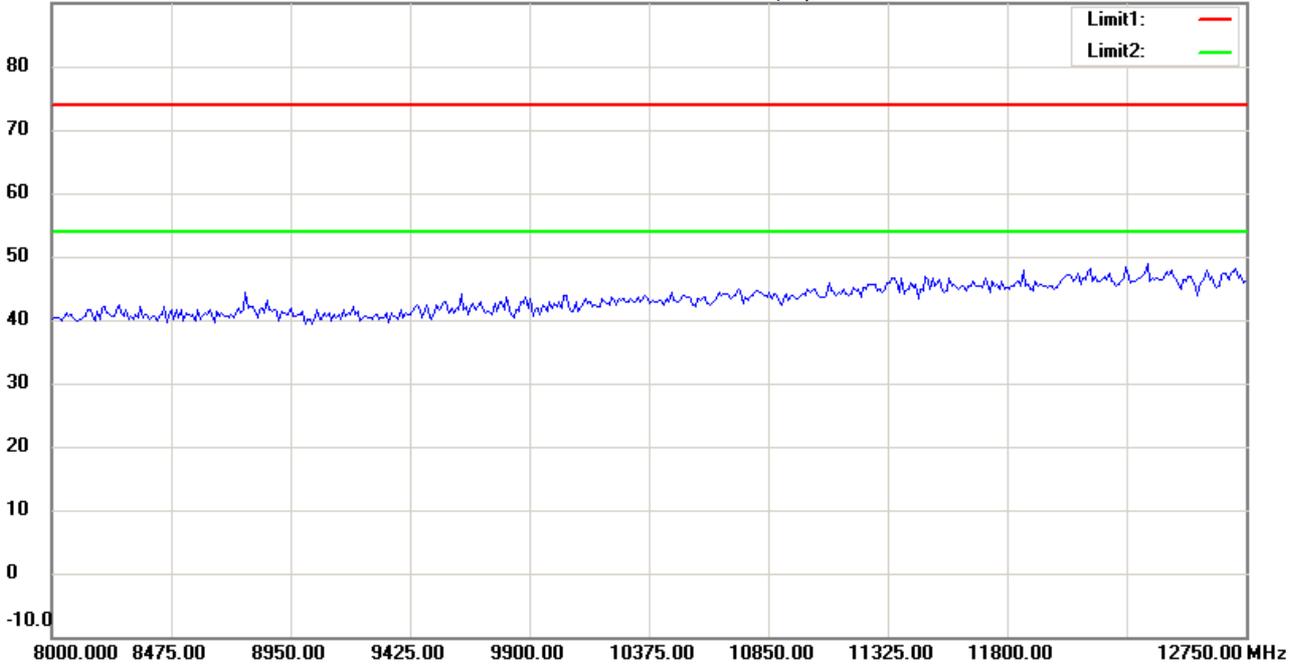
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:27:30

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch19 462.65MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#6

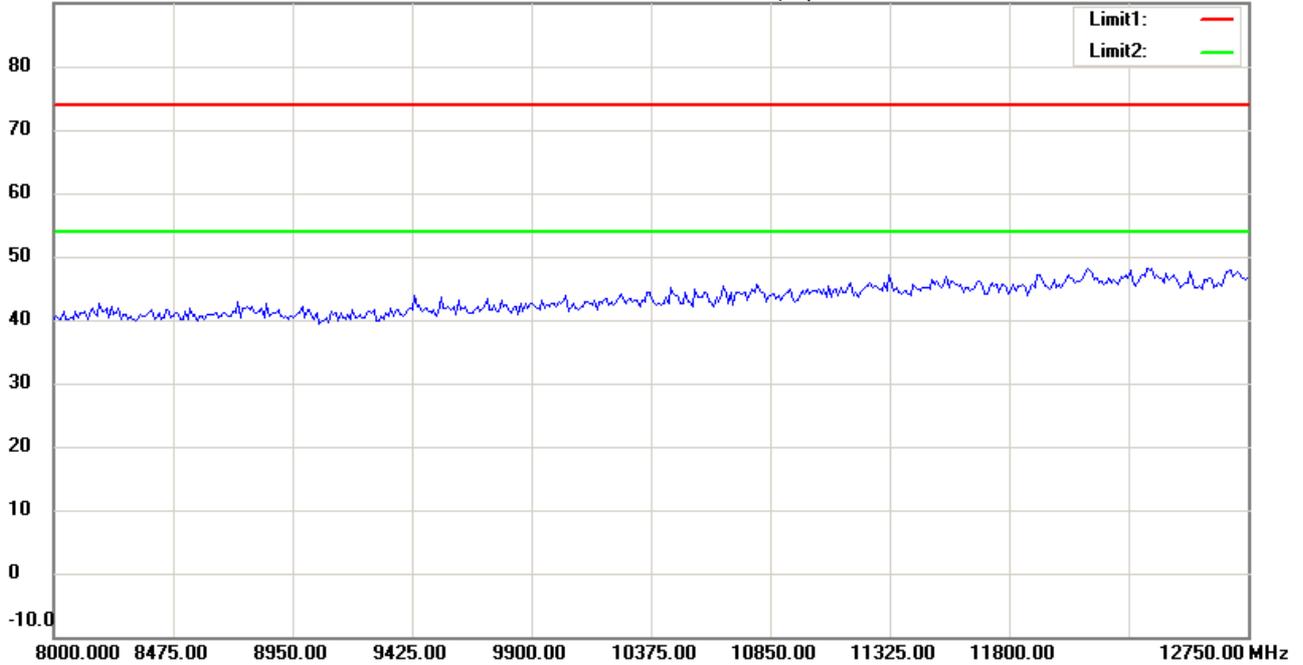
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:28:25

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RX Ch19 462.65MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#3

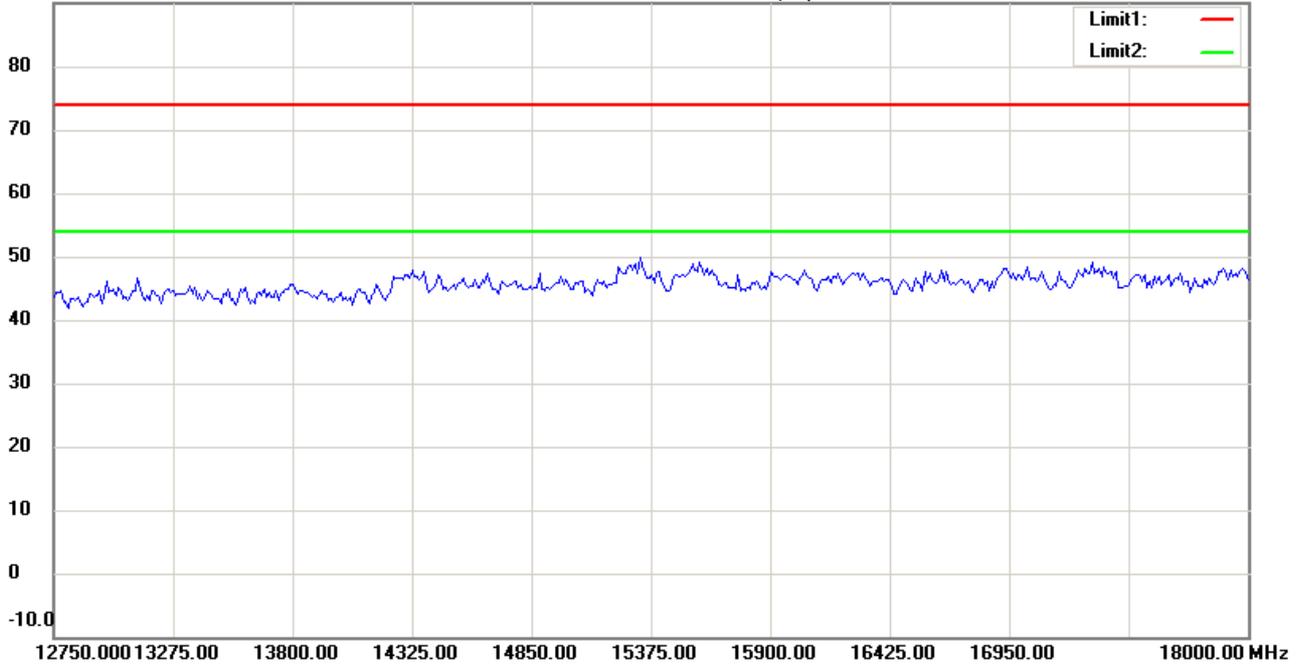
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:27:55

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch19 462.65MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#7

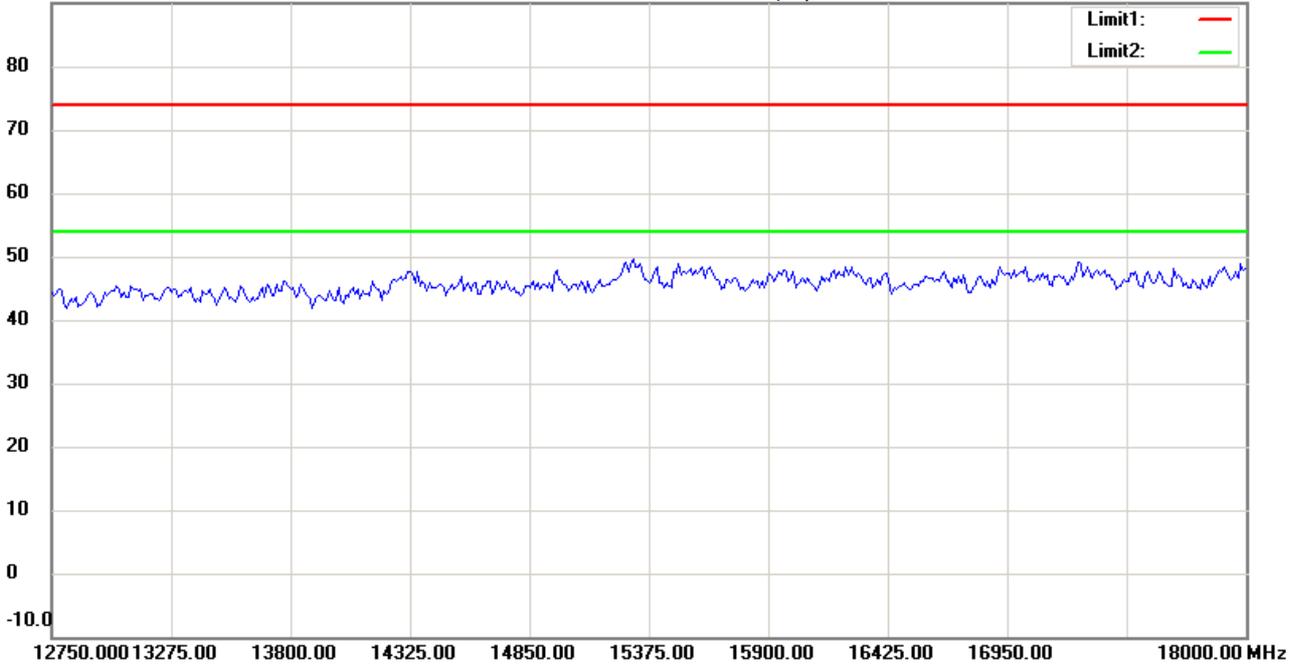
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:28:50

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Vertical*

EUT : W6M21604-15784

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : RX Ch19 462.65MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#4

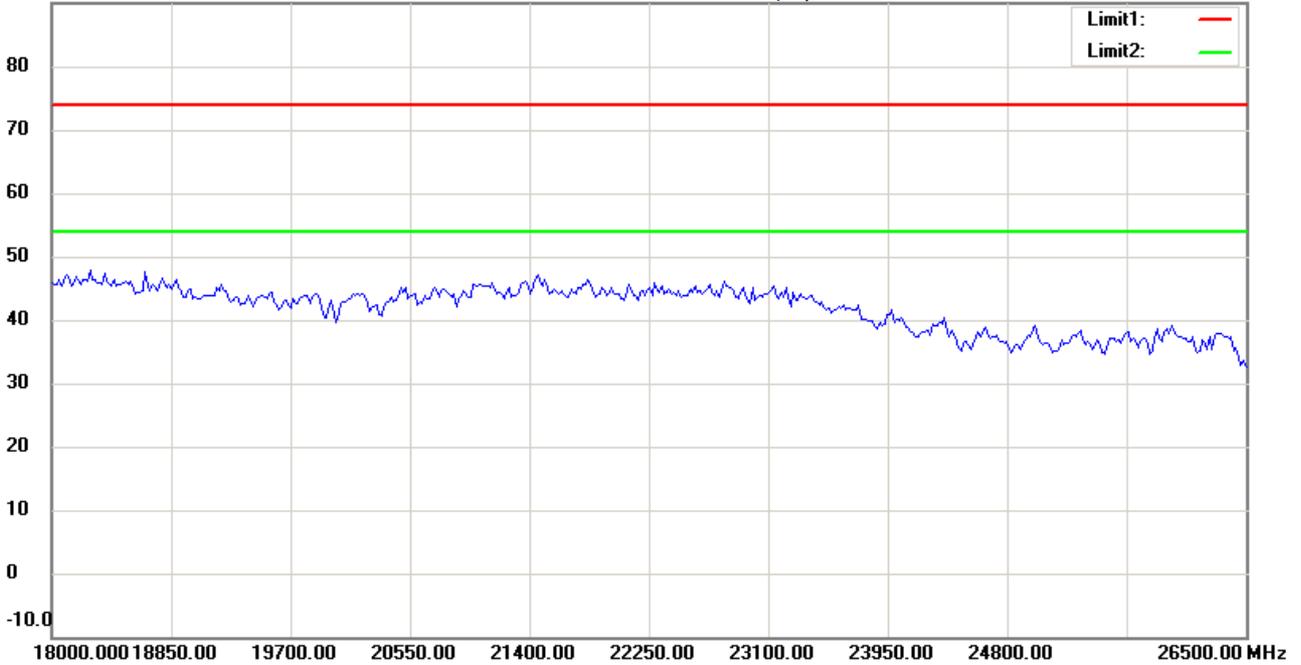
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:28:05

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

Polarization: *Horizontal*

EUT : W6M21604-15784

Power : 120 V.a.c.

M/N:

Distance: 3m

Test Mode : RXCh19 462.65MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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Radiated Emission Measurement

Operator: Leon

File :3

Data :#8

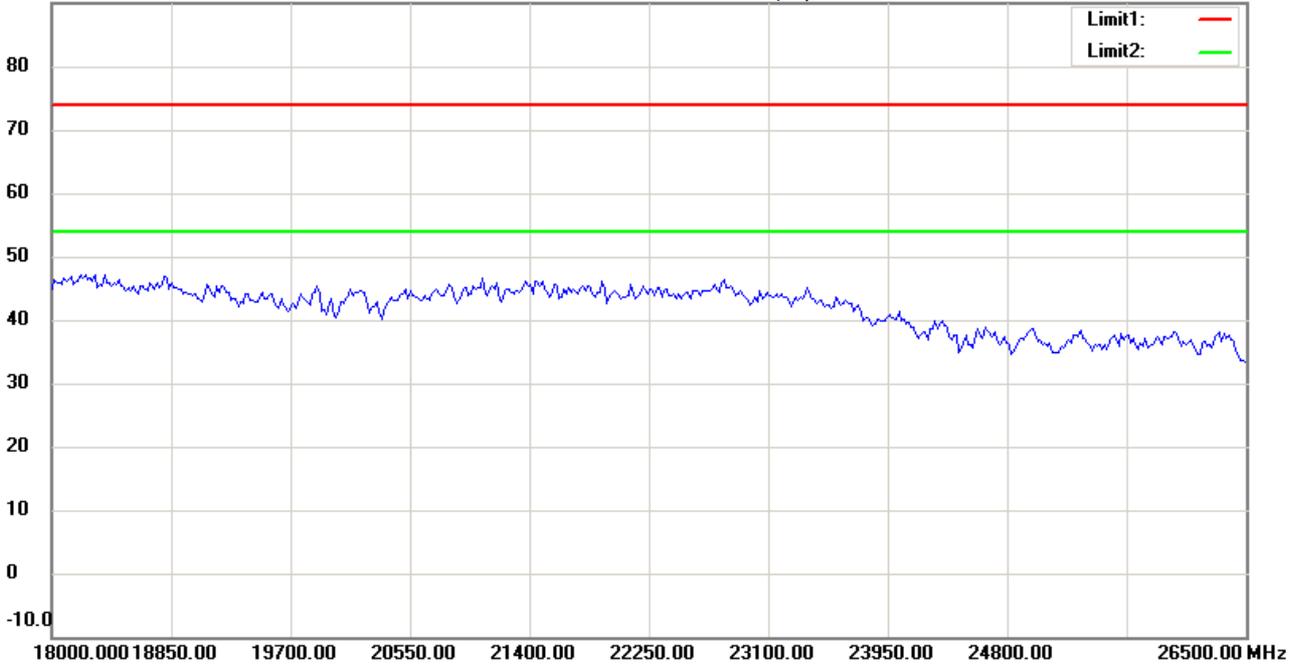
Date: 2016/5/11

Temperature:24 °C

90.0 dBuV/m

Time: 下午 12:29:00

Humidity:60 %



Site : Chamber

Condition : FCC\_part 15 RE-Class B\_Above 1GHz\_PK

EUT : W6M21604-15784

M/N:

Test Mode : RX Ch19 462.65MHz

Note :

Polarization: *Vertical*

Power : 120 V.a.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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