

FCC SUBPART C PART 15.249 TEST REPORT

for

Smart Home Alarm System

Model No.: HPGW_x-xxxxx-xxxxx Series

(x=0~9, A~Z or blank)

FCC ID: GX9HPGWG5DT16

of

Applicant: Climax Technology Co Ltd

Address: No. 258, Sinhu 2nd Rd., Neihu District

Taipei City 114 Taiwan (R.O.C.)

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.: W6R21610-16279-C-9

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

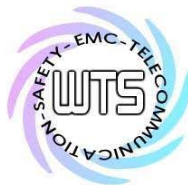
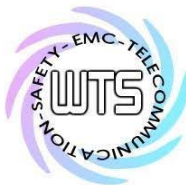


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1 General Information

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.

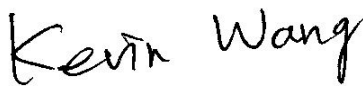
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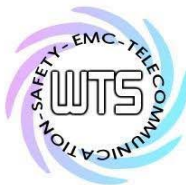
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Tester:

January 03, 2017	Kent Lin	
Date	WTS-Lab. Name	Signature

Technical responsibility for area of testing:

January 03, 2017	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: 2730.01

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: ./.

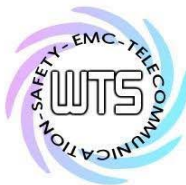
Street: ./.

Town: ./.

Country: ./.

Telephone: ./.

Fax: ./.



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6R21610-16279-C-9

FCC ID: GX9HPGWG5DT16

1.3 Details of approval holder

Name: Climax Technology Co Ltd
Street: No. 258, Sinhu 2nd Rd., Neihs District
Town: Taipei City 114
Country: Taiwan (R.O.C.)
Telephone: +886-2-2794-0001
Fax: +886-2-2792-6618

1.4 Application details

Date of receipt of test item (1st): July 23, 2015
Date of test (1st): from July 24, 2015 to September 15, 2015
Date of receipt of test item (2nd): October 11, 2016
Date of test (2nd): from October 12, 2016 to January 03, 2017

1.5 General information of Test item

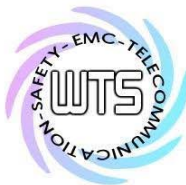
Type of test item: Smart Home Alarm System
Model Number: HPGWx-xxxxxx-xxxxxx Series (x=0~9, A~Z or blank)
Multi-listing model number: ./.
Brand Name: ./.
Photos: see Annex

Technical data

Frequency band: 908.42 MHz
Operation Frequency: 908.42 MHz
Operation modes: Duplex
Modulation Type: GFSK
Antenna type: Monopole Antenna
Power supply: Adapter: AC 100-240V~ 50/60Hz, 0.6A
DC 12V, 2A
Battery: 1.2*6 VDC, 1600 mAh

Manufacturer: (if different from applicant)

Name: ./.
Street: ./.
Town: ./.
Country: ./.
Additional information: ./.



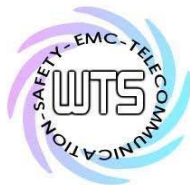
Registration number: W6R21610-16279-C-9
FCC ID: GX9HPGWG5DT16

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.249 (2015-10)

Special statement:

1. This test report is valid in connection to the model has been tested, any modification to the product which is different from the test model will avoid the certification of the test report.
2. This test report shall always be duplicated in full pages unless the written approval of the testing laboratory is obtained.
3. The x in model number is representing different case shape, case colors, led mask color, and control ID.
4. The model number of EUT is HPGW-G5-DT16. This model does not contain logo.
5. This test report is based on the original test report no.: W6M21507-15160-C-9.
6. Z-wave module is the same as the one in original report. The differences are the model name, the multi-listing model number, the product name, the brand name, new AC conducted test data and the version of standard.



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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 2.5 were ascertained in the course of the tests performed.



2.2 Test environment

Temperature: 23 °C

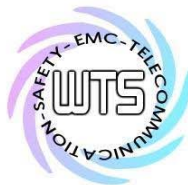
Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Details Power supply: Adapter: AC 100-240V~ 50/60Hz, 0.6A
DC 12V, 2A

Battery: 1.2*6 VDC, 1600 mAh

Extreme conditions parameters: ./.



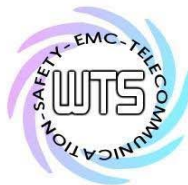
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FCC ID: GX9HPGWG5DT16

2.3 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-EICHLITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2016/7/15	2017/7/14
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2016/9/12	2017/9/11
ETSTW-CE 028	MXE EMI Receiver	N9038A	MY53220110	Agilent	2016/8/26	2017/8/25
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	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	2016/7/4	2017/7/3
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2016/6/24	2017/6/23
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2016/6/29	2017/6/28
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	2016/9/8	2017/9/7
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2016/9/20	2017/9/19
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	2016/8/10	2017/8/9



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ETSTW-RE 126	5GHz Notch filter	5NSL12-5800/E221.3-O/O	1	K&L Microwave	2016/8/10	2017/8/9
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2016/2/25	2017/2/24
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2016/8/10	2017/8/9
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2016/8/10	2017/8/9
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	2016/4/13	2017/4/12
ETSTW-RE 143	Humidity Temperature Meter	TES-1260	110104623	TES	2016/8/19	2017/8/18
ETSTW-RE 147	Bi-log Hybrid Antenna	MCTD 2786B	BLB16M04005	ETC	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	2016/9/14	2017/9/13
ETSTW-Cable 010	BNC Cable	RGS-142	None	THERMAX	2016/9/12	2017/9/11
ETSTW-Cable 011	SMA to N type Cable	RGU-400	None	THERMAX	Pre-test Use NCR	
ETSTW-Cable 012	BNC Cable	RGS-400	None	THERMAX	2016/9/12	2017/9/11
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	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	2016/9/20	2017/9/19
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2016/9/20	2017/9/19
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S Cable 9)	279067	HUBER+SUHNER	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
ETSTW-Cable 066	SMA type cable	32022	None	ASTROLAB	2016/9/12	2017/9/11
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1	

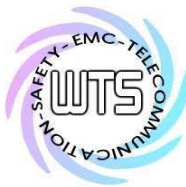


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WTSTW-SW 006	EMI TEST SOFTWARE	e3	None	AUDIX	Version 9.161014
WTSTW-SW 008	Signal studio	Agilent	None	AUDIX	Version 2.0.0.1



Registration number: W6R21610-16279-C-9
FCC ID: GX9HPGWG5DT16

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2009 5.2 using a 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.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBμV + 10.36 dB + 6 dB = 36.36 dBμV/m @3m

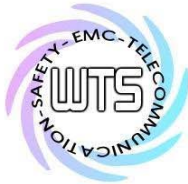
ANSI STANDARD C63.4-2009 6.3.1 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm height and with dimensions of 1m by 1.5m (non metallic table). The EUT was placed in the centre of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.

Measurements were made by Worldwide Testing Services(Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Lishui, Shuang Sing Village, Wanli Dist., New Taipei City 207, Taiwan (R.O.C.). 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.

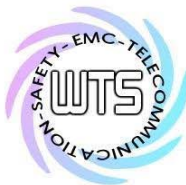


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3 Test results (enclosure)

Test case	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.249 (a)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.249 (e)	☒	☒	☐
Spurious Emissions conducted – Transmitter operating	15.249 (e)	☐	☐	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Out of Band Spurious Emission, Band edge-Transmitter operating	15.249 (e)	☒	☒	☐
Power Line Conducted Emission	15.207	☒	☒	☐

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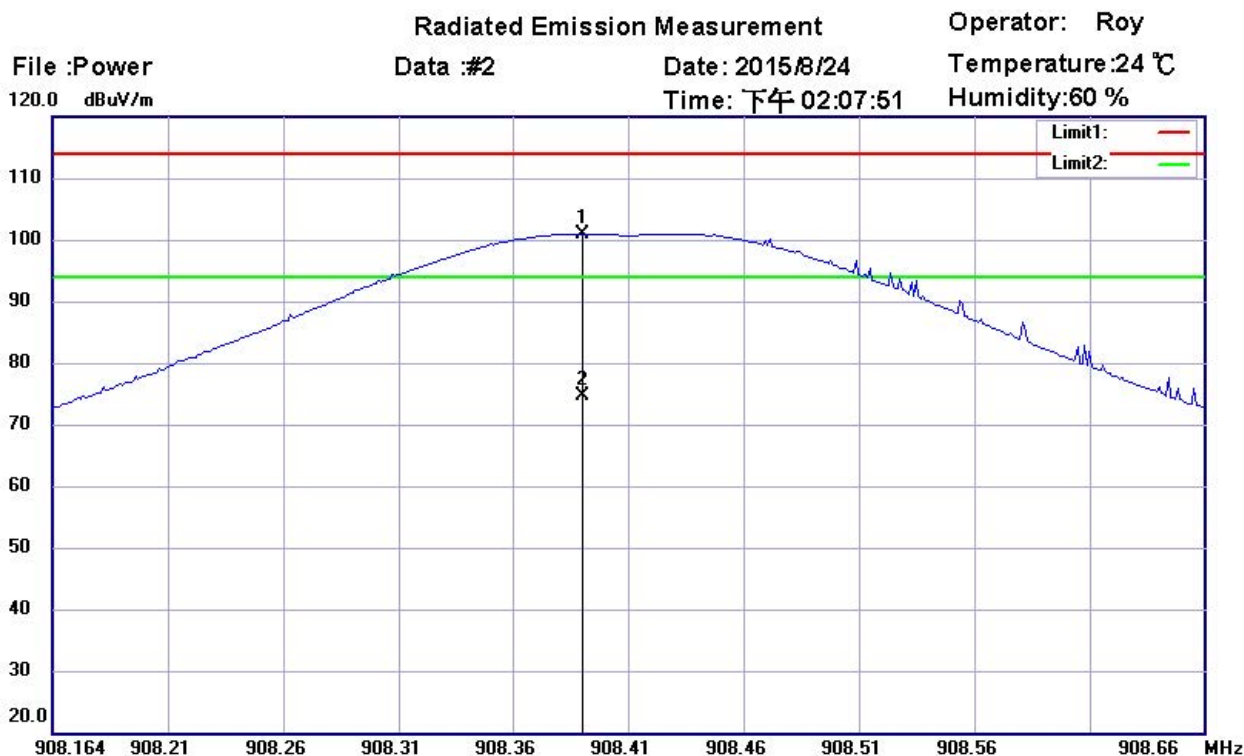
FCC ID: GX9HPGWG5DT16

3.1 Peak Output Power (transmitter)

FCC Rule: 15.249 (b)

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).



Site : Chamber

Condition : FCC 15.249 power(902-928)_PEAK

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

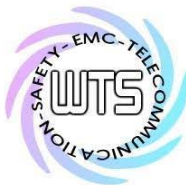
Note :

Polarization: *Horizontal*

Power : 120 V.a.c.

Distance: 3m

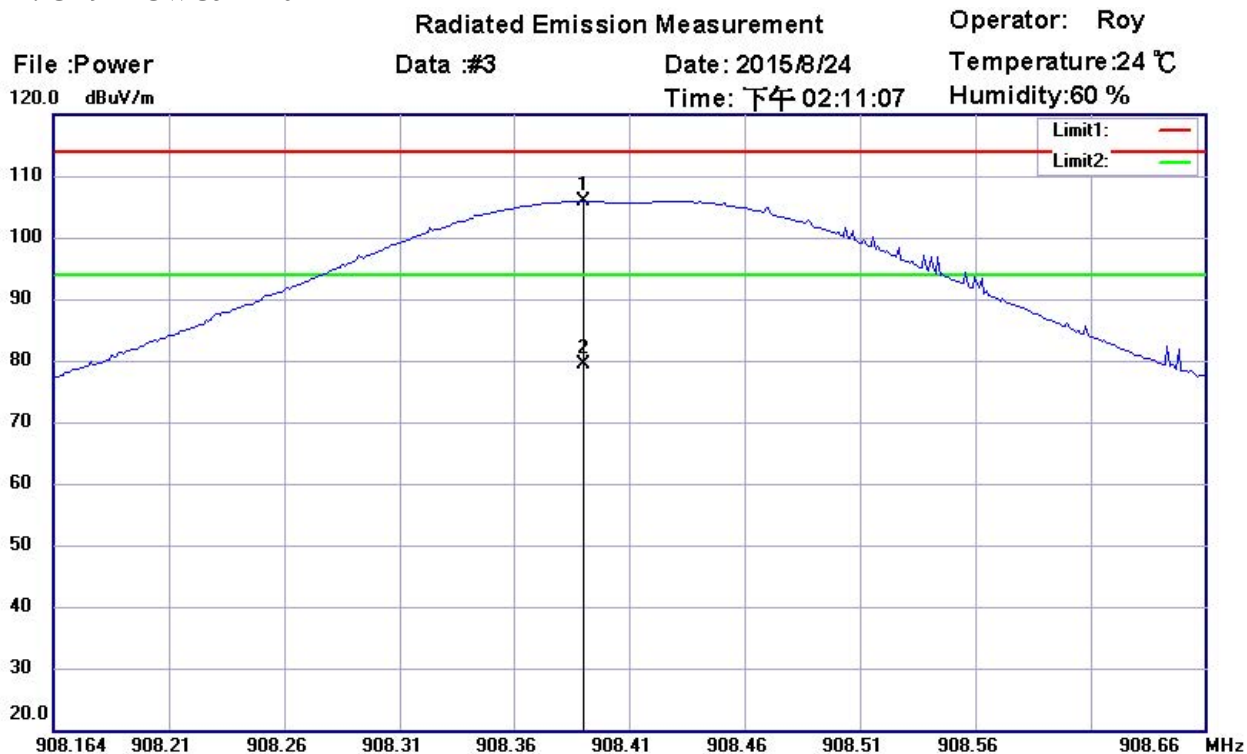
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	908.3938	72.55	peak	28.38	100.93	114.00	100	295	-13.07	
	908.3938	46.17	AVG	28.38	74.55	94.00	100	295	-19.45	



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Site : Chamber

Condition : FCC 15.249 power(902-928)_PEAK

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

Note :

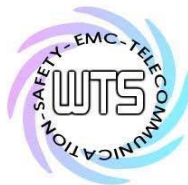
Polarization: **Vertical**

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
*	908.3938	77.46	peak	28.38	105.84	114.00	100	170	-8.16	
	908.3938	51.08	AVG	28.38	79.46	94.00	100	170	-14.54	

Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 044



Registration number: W6R21610-16279-C-9

FCC ID: GX9HPGWG5DT16

3.2 Equivalent isotropic radiated power

Because using an permanent antenna there are no deviations from the radiated test results according 3.1.

3.3 RF Exposure Compliance Requirements

Not applicable for this EUT for the low power level.

3.4 Out of Band Radiated Emissions

FCC Rule: 15.249 (d)(e), 15.35(b)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequency above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Limits:

Frequency of Emission (MHz)	Field strength (microvolts/meter)	Field Strength (dB microvolts/meter)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.5
Above 960	500	54.0

For frequencies above 1 GHz (Peak measurements).

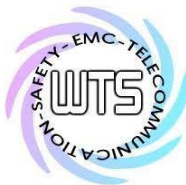
Limit + 20 dB $54.0 \text{ dB}\mu\text{V/m} + 20 \text{ dB} = 74 \text{ dB}\mu\text{V/m}$

Or

Must be attenuated at least 50dB below the level of fundament

Test equipment used: ETSTW-RE 004, ETSTW-RE 111, ETSTW-RE 030, ETSTW-RE 044

Explanation: Please see attached diagram as appendix.



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6R21610-16279-C-9

FCC ID: GX9HPGWG5DT16

3.5 Spurious emission (tx)

Spurious emission was measured with modulation (declared by manufacturer).

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

SAMPLE CALCULATION OF LIMIT. ALL results will be updated by an automatic measuring system in accordance with point 2.3.

The peak and average spurious emission plots was measured with the average limits.

The critical peak value listed in the table agree with the above calculated limits.

Summary table with radiated data of the test plots

HPGWx-xxxxx-xxxxx

Series (x=0~9, A~Z or

Model: blank)

Date: --

Mode: --

Temperature: -- °C Engineer: --

Polarization: --

Humidity: -- %

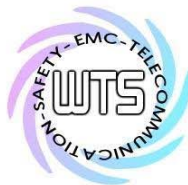
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

- Note**
1. Correction Factor = Antenna factor + Cable loss - Preamplifier
 2. The formula of measured value as: Test Result = Reading + Correction Factor
 3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
 4. All not in the table noted test results are more than 20 dB below the relevant limits.
 5. Measurement uncertainty for 3m measurement: 30-1000 MHz = ± 4.32 dB, 1-18 GHz = ± 4.95 dB, 18-40 GHz = ± 2.94 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
 6. Up Line: PK Limit Line, Down Line: Ave Limit Line.
 7. See attached diagrams in appendix.

TEST RESULT (Transmitter): The unit DOES meet the FCC requirements.

Test equipment used: ETSTW-RE 004, ETSTW-RE 111, ETSTW-RE 030,
ETSTW-RE 044, ETSTW-RE 088, ETSTW-RE 018



Registration number: W6R21610-16279-C-9
FCC ID: GX9HPGWG5DT16

3.6 Radiated Emissions from Digital Part

Summary table with radiated data of the test plots

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

Note:

- 1. Correction Factor = Antenna factor + Cable loss - Preamplifier**
- 2. The formula of measured value as: Test Result = Reading + Correction Factor**
- 3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average**
- 4. All not in the table noted test results are more than 20 dB below the relevant limits.**
- 5. Measurement uncertainty for 3m measurement : 30-1000 MHz = ± 4.32 dB, 1-18 GHz = ± 4.95 dB, 18-40 GHz = ± 2.94 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.**

Test equipment used: ETSTW-RE 004, ETSTW-RE 111, ETSTW-RE 030,
ETSTW-RE 044

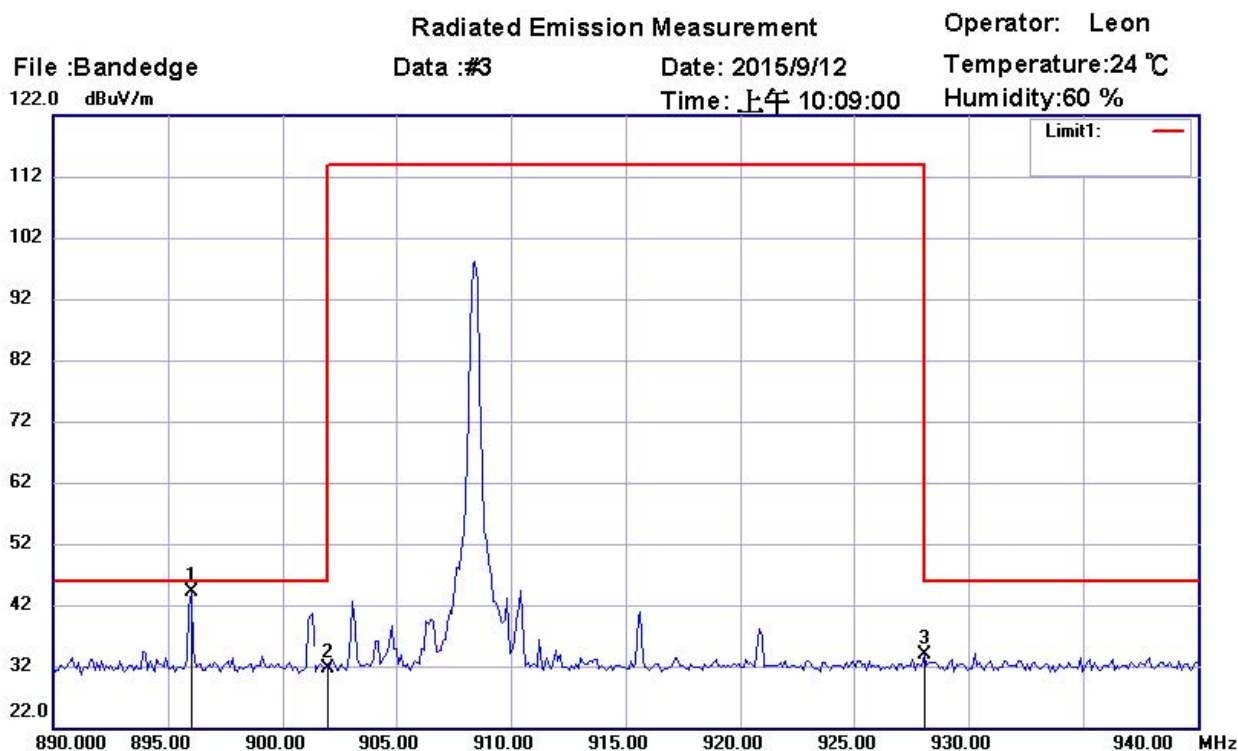
Explanation: The test results are listed in the separated test report no.: W6R21610-16279-P-15B.



Registration number: W6R21610-16279-C-9
FCC ID: GX9HPGWG5DT16

3.7 Radiated Emission on the band edge

From the following plots, they show that the fundamental emissions are confined in the specified band and they are at least 50 dB below the carrier level at band edge (2400 and 2483.5 MHz). It meets the requirement of section 15.249(d).



Site : Chamber

Condition : FCC 15.249 Bandedge(902-928)_QP

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

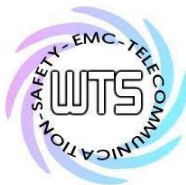
Note :

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
*	896.0120	15.75	peak	28.31	44.06	46.00	100	170	-1.94	
	902.0000	3.36	peak	28.38	31.74	46.00	100	170	-14.26	
	928.0000	5.49	peak	28.39	33.88	46.00	100	170	-12.12	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6R21610-16279-C-9

FCC ID: GX9HPGWG5DT16

Radiated Emission Measurement

Operator: Leon

File :Bandedge

Data :#4

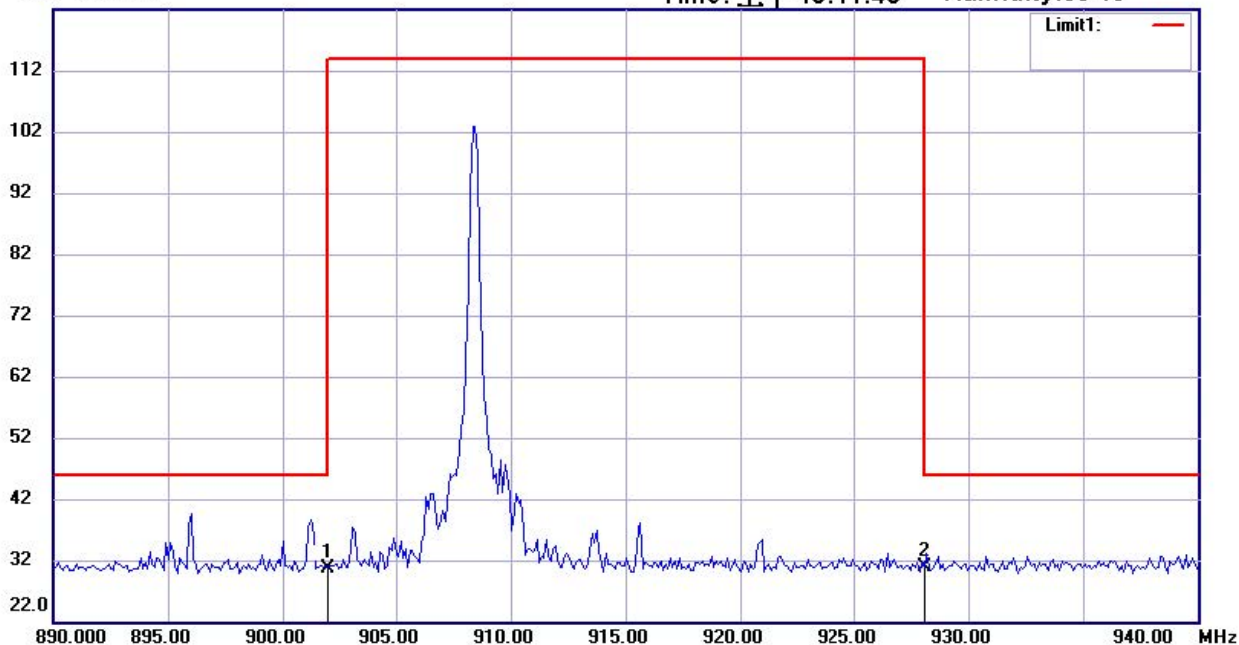
Date: 2015/9/12

Temperature:24 °C

122.0 dBuV/m

Time: 上午 10:11:40

Humidity:60 %



Site : Chamber

Condition : FCC 15.249 Bandedge(902-928)_QP

Polarization: *Vertical*

EUT : W6M21507-15160

Power : 120 Va.c.

M/N:

Distance: 3m

Test Mode : TX 908.42MHz

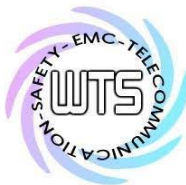
Note :

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
	902.0000	2.17	peak	28.38	30.55	46.00	100	295	-15.45	
*	928.0000	2.59	peak	28.39	30.98	46.00	100	295	-15.02	

Limit:

Frequency Range (MHz)	Limit (dBμV/m)	
	Peak	Average
902 – 928	114	94
2400 – 2483.5	74	54
5725 – 5875	74	54

Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 044



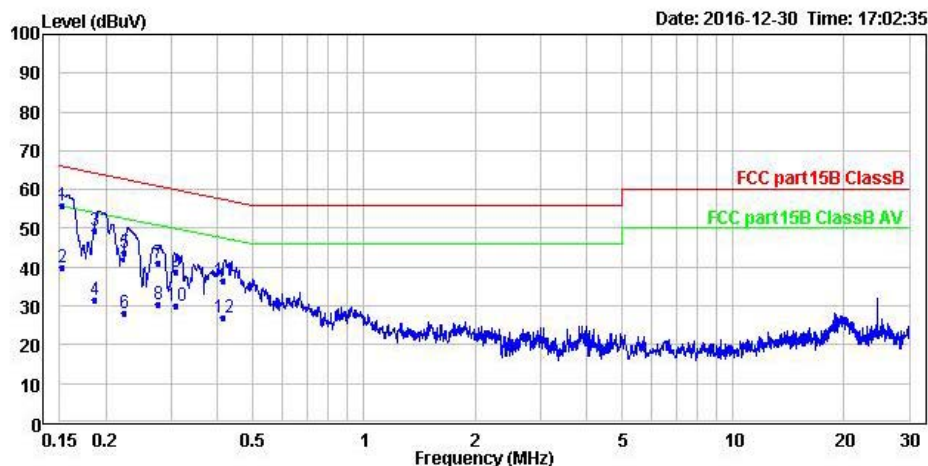
Registration number: W6R21610-16279-C-9

FCC ID: GX9HPGWG5DT16

3.8 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.



Condition: FCC part15B ClassB ENV216 neutral

EUT : W6R21610-16279

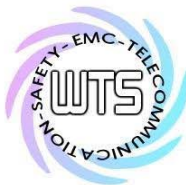
Mode :

Power : 120 V.a.c.

Operator : Kent

Note :

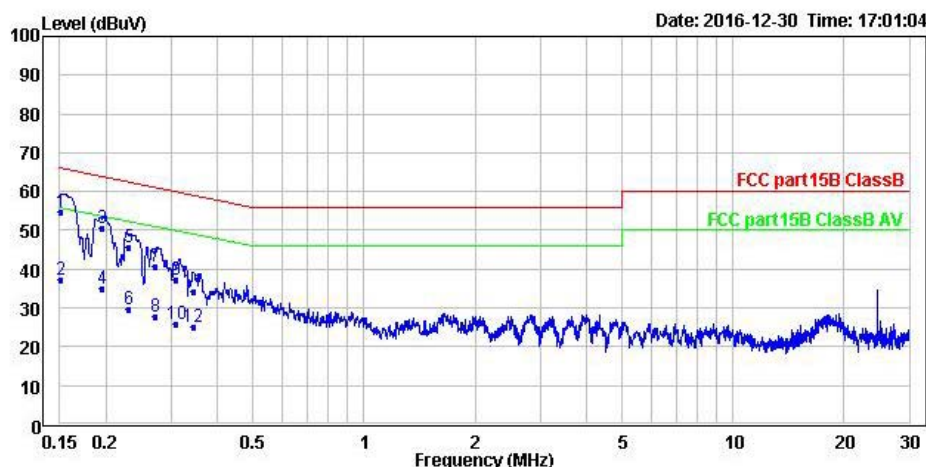
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB		
1 *	0.153	56.00	46.20	9.80	65.85	-9.85	neutral	QP
2	0.153	39.88	30.08	9.80	55.85	-15.97	neutral	Average
3	0.187	49.41	39.64	9.77	64.19	-14.78	neutral	QP
4	0.187	31.74	21.97	9.77	54.19	-22.45	neutral	Average
5	0.224	43.58	33.81	9.77	62.66	-19.08	neutral	QP
6	0.224	28.05	18.28	9.77	52.66	-24.61	neutral	Average
7	0.277	41.05	31.27	9.78	60.91	-19.86	neutral	QP
8	0.277	30.23	20.45	9.78	50.91	-20.68	neutral	Average
9	0.309	38.84	29.06	9.78	60.00	-21.16	neutral	QP
10	0.309	30.15	20.37	9.78	50.00	-19.85	neutral	Average
11	0.416	36.51	26.71	9.80	57.53	-21.02	neutral	QP
12	0.416	27.16	17.36	9.80	47.53	-20.37	neutral	Average



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6R21610-16279-C-9

FCC ID: GX9HPGWG5DT16



Condition: FCC part15B ClassB ENV216 line
 EUT : W6R21610-16279
 Mode :
 Power : 120 Va.c.
 Operator : Kent
 Note :

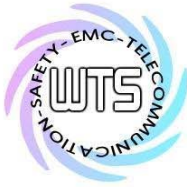
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB		
1 *	0.150	54.88	45.04	9.84	65.97	-11.09	line	QP
2	0.150	37.12	27.28	9.84	55.97	-18.85	line	Average
3	0.195	50.38	40.57	9.81	63.83	-13.45	line	QP
4	0.195	35.00	25.19	9.81	53.83	-18.83	line	Average
5	0.230	45.60	35.79	9.81	62.45	-16.85	line	QP
6	0.230	29.80	19.99	9.81	52.45	-22.65	line	Average
7	0.272	40.79	30.98	9.81	61.06	-20.27	line	QP
8	0.272	27.91	18.10	9.81	51.06	-23.15	line	Average
9	0.310	37.20	27.40	9.80	59.97	-22.77	line	QP
10	0.310	25.86	16.06	9.80	49.97	-24.11	line	Average
11	0.344	34.28	24.48	9.80	59.11	-24.83	line	QP
12	0.344	24.92	15.12	9.80	49.11	-24.19	line	Average

- Note:**
1. The formula of measured value as: Test Result = Reading + Correction Factor
 2. The Correction Factor = Cable Loss + LISN Insertion Loss
 3. Detector function in the form : PK = Peak, QP = Qusai Peak, AV = Average
 4. All not in the table noted test results are more than 20 dB below the relevant limits.
 5. Measurement uncertainty = ± 1.14 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.
 6. Up Line: QP Limit Line, Down Line: Ave Limit Line.

Limits:

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test equipment used: ETSTW-CE 001, ETSTW-CE 016, ETSTW-RE 045



Registration number: W6R21610-16279-C-9
FCC ID: GX9HPGWG5DT16

Appendix

Measurement diagrams

Spurious Emissions radiated



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

Radiated Emission Measurement

Operator: Roy

File :1

Data :#1

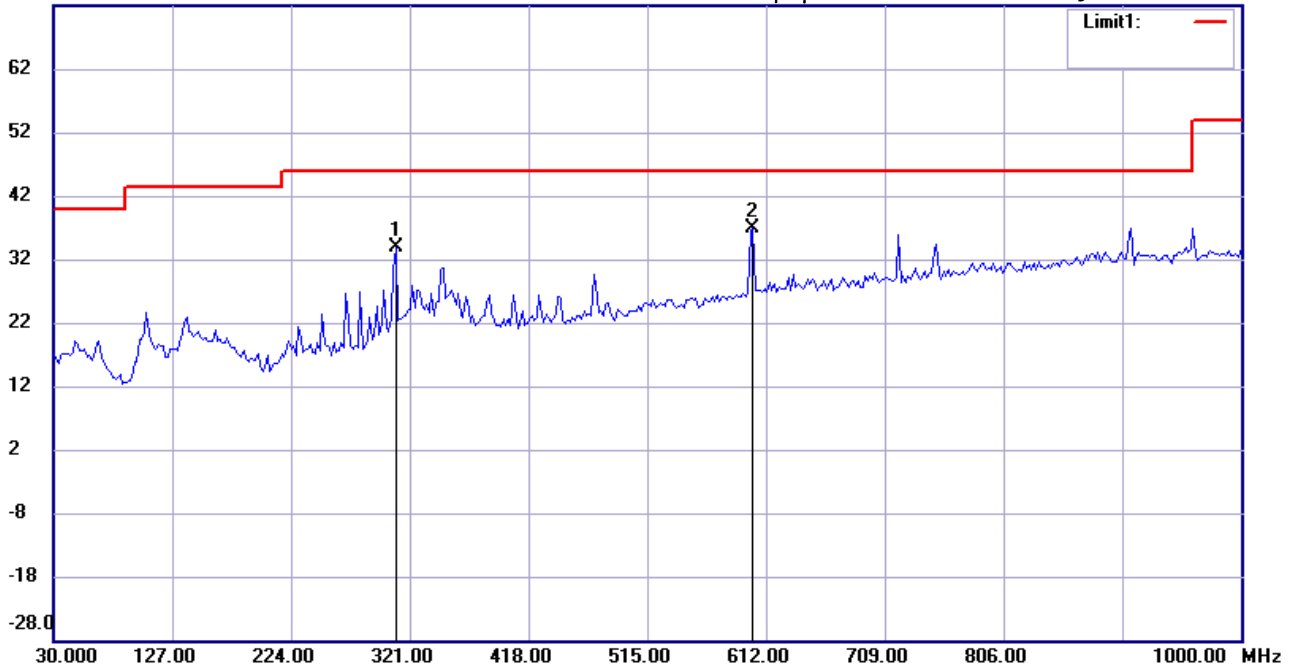
Date: 2015/9/10

Temperature:24 °C

72.0 dBuV/m

Time: 下午 10:56:08

Humidity:60 %



Site : Chamber

Condition : FCC 15.249<1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
	309.9198	17.49	peak	16.30	33.79	46.00	100	310	-12.21	
*	601.5030	13.43	peak	23.43	36.86	46.00	100	245	-9.14	

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



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

Radiated Emission Measurement

Operator: Roy

File :1

Data :#2

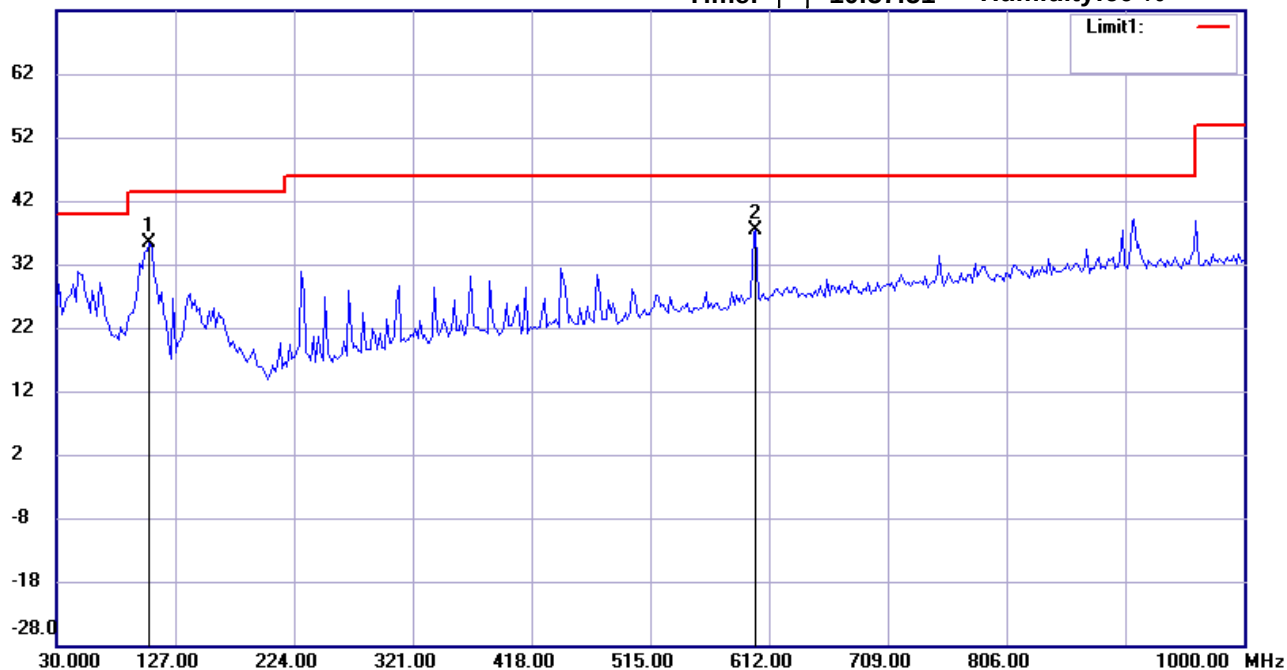
Date: 2015/9/10

Temperature:24 °C

72.0 dBuV/m

Time: 下午 10:57:51

Humidity:60 %



Site : Chamber

Condition : FCC 15.249<1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
*	105.8115	23.00	peak	12.50	35.50	43.50	100	150	-8.00	
	601.5030	13.83	peak	23.43	37.26	46.00	100	220	-8.74	

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



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

Radiated Emission Measurement

Operator: Roy

File : 3

Data : #1

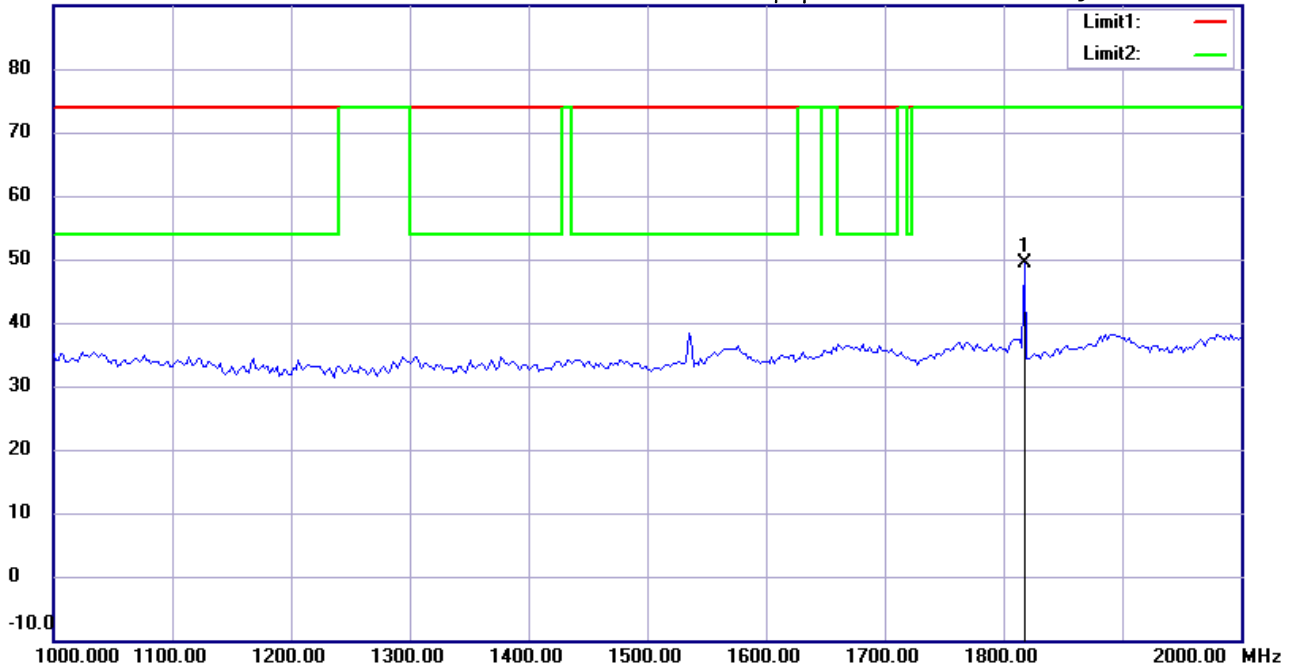
Date: 2015/9/10

Temperature: 24 °C

90.0 dBuV/m

Time: 下午 07:41:16

Humidity: 60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
*	1817.635	56.42	peak	-7.04	49.38	74.00	100	30	-24.62	

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



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

Radiated Emission Measurement

Operator: Roy

File : 3

Data : #5

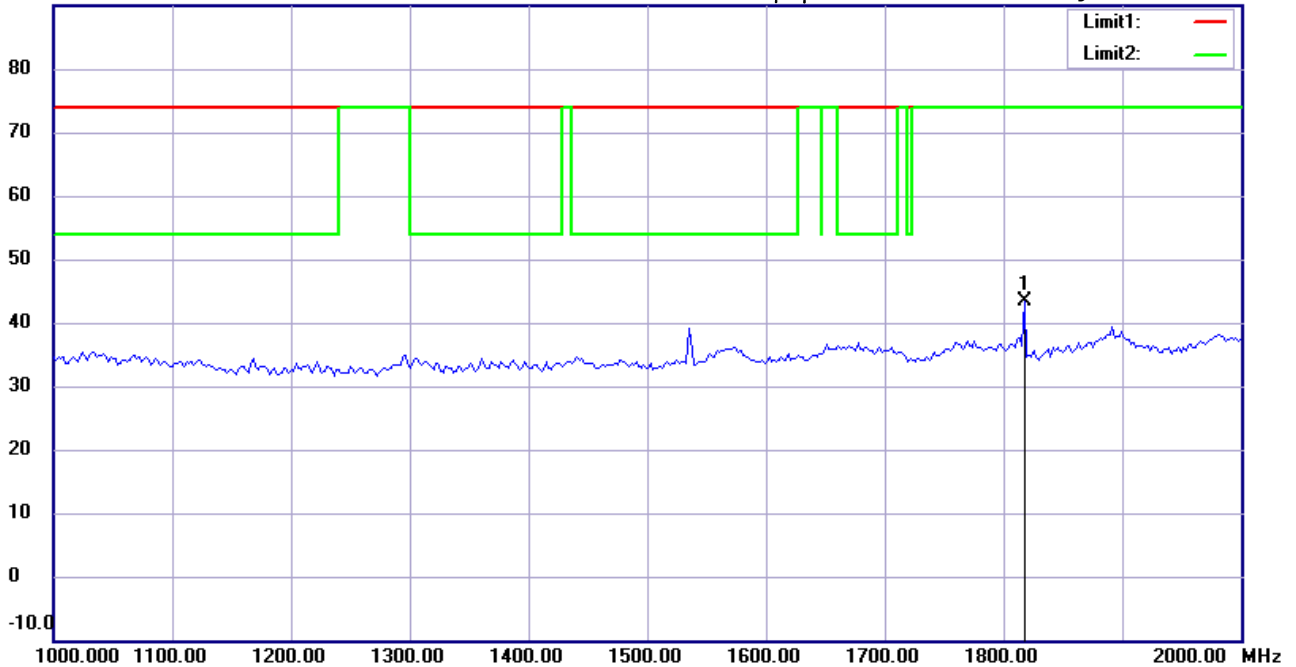
Date: 2015/9/10

Temperature: 24 °C

90.0 dBuV/m

Time: 下午 07:46:50

Humidity: 60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
*	1817.635	50.39	peak	-7.04	43.35	74.00	100	60	-30.65	

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



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

Radiated Emission Measurement

Operator: Roy

File : 3

Data : #2

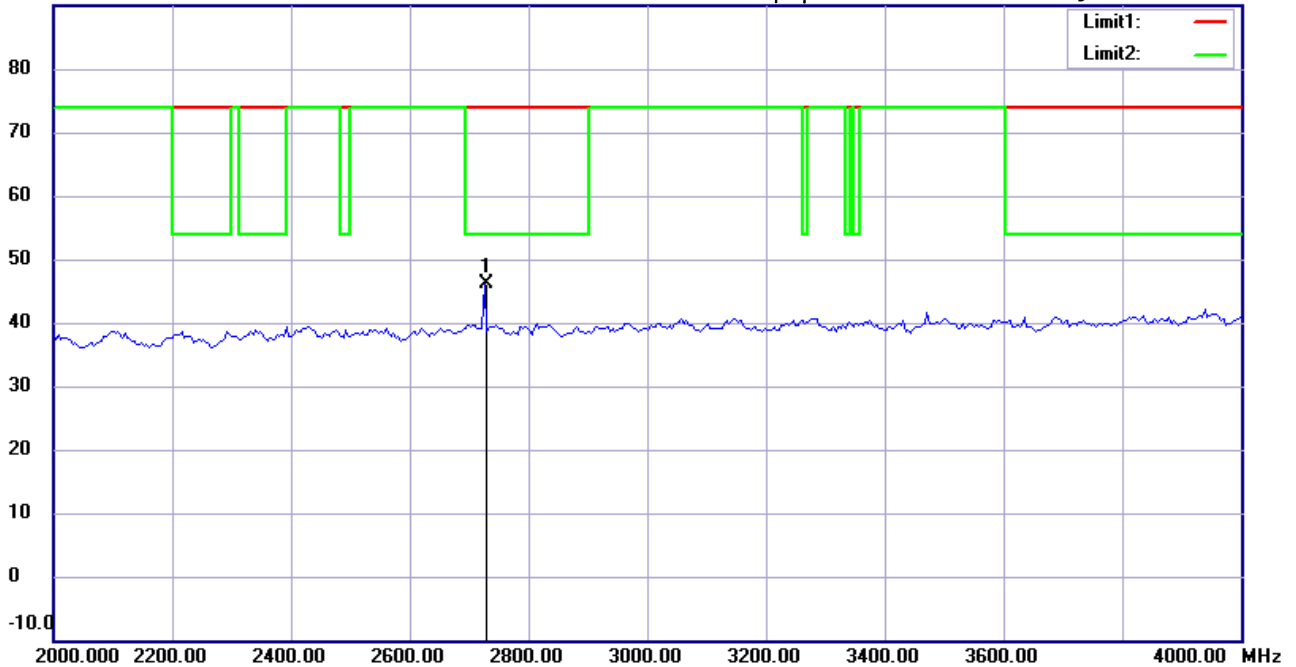
Date: 2015/9/10

Temperature: 24 °C

90.0 dBuV/m

Time: 下午 07:42:15

Humidity: 60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
*	2725.451	49.16	peak	-3.03	46.13	74.00	100	125	-27.87	

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



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

Radiated Emission Measurement

Operator: Roy

File :3

Data :#6

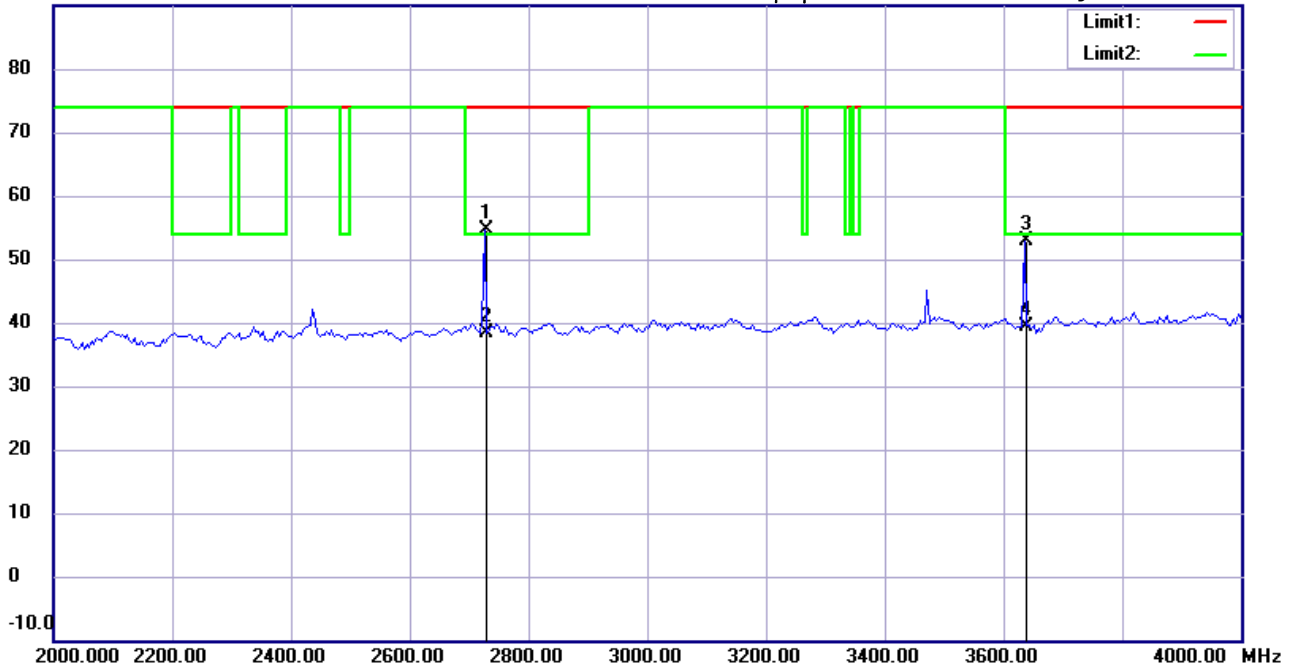
Date: 2015/9/10

Temperature:24 °C

90.0 dBuV/m

Time: 下午 08:33:09

Humidity:60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
	2725.451	57.73	peak	-3.03	54.70	74.00	100	270	-19.30	
	2725.451	41.35	AVG	-3.03	38.32	54.00	100	270	-15.68	
	3635.271	53.96	peak	-1.17	52.79	74.00	100	155	-21.21	
*	3635.271	40.58	AVG	-1.17	39.41	54.00	100	155	-14.59	

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



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

Radiated Emission Measurement

Operator: Roy

File :3

Data :#3

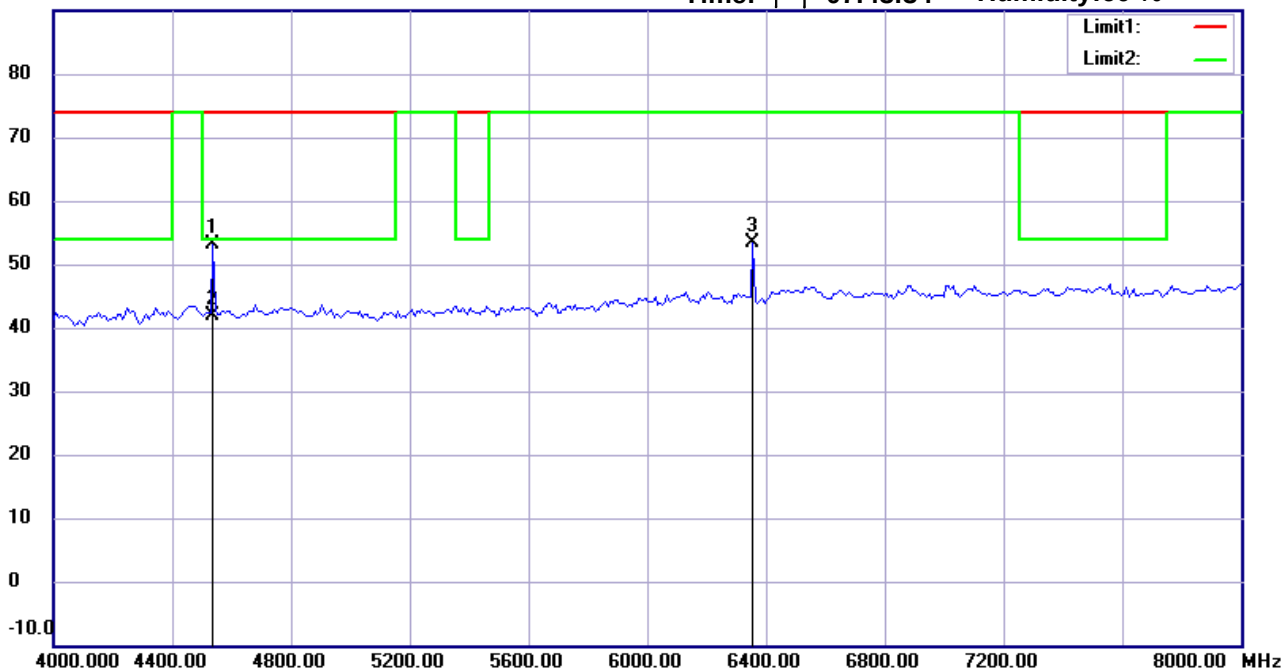
Date: 2015/9/10

Temperature:24 °C

90.0 dBuV/m

Time: 下午 07:43:34

Humidity:60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
	4537.074	52.20	peak	1.00	53.20	74.00	100	320	-20.80	
*	4537.074	40.82	AVG	1.00	41.82	54.00	100	320	-12.18	
	6356.713	48.61	peak	4.77	53.38	74.00	100	85	-20.62	

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



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

Radiated Emission Measurement

Operator: Roy

File :3

Data :#7

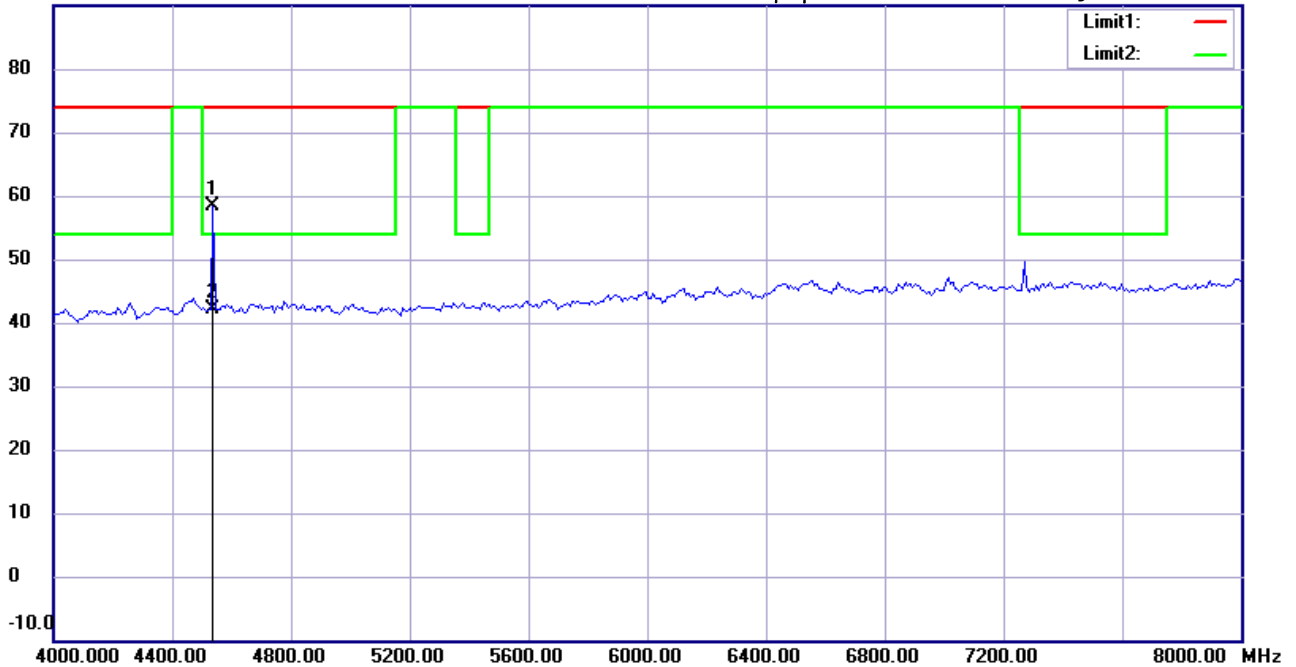
Date: 2015/9/10

Temperature:24 °C

90.0 dBuV/m

Time: 下午 08:34:32

Humidity:60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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
	4537.074	57.46	peak	1.00	58.46	74.00	100	95	-15.54	
*	4537.074	41.08	AVG	1.00	42.08	54.00	100	95	-11.92	

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



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

Radiated Emission Measurement

Operator: Roy

File :3

Data :#4

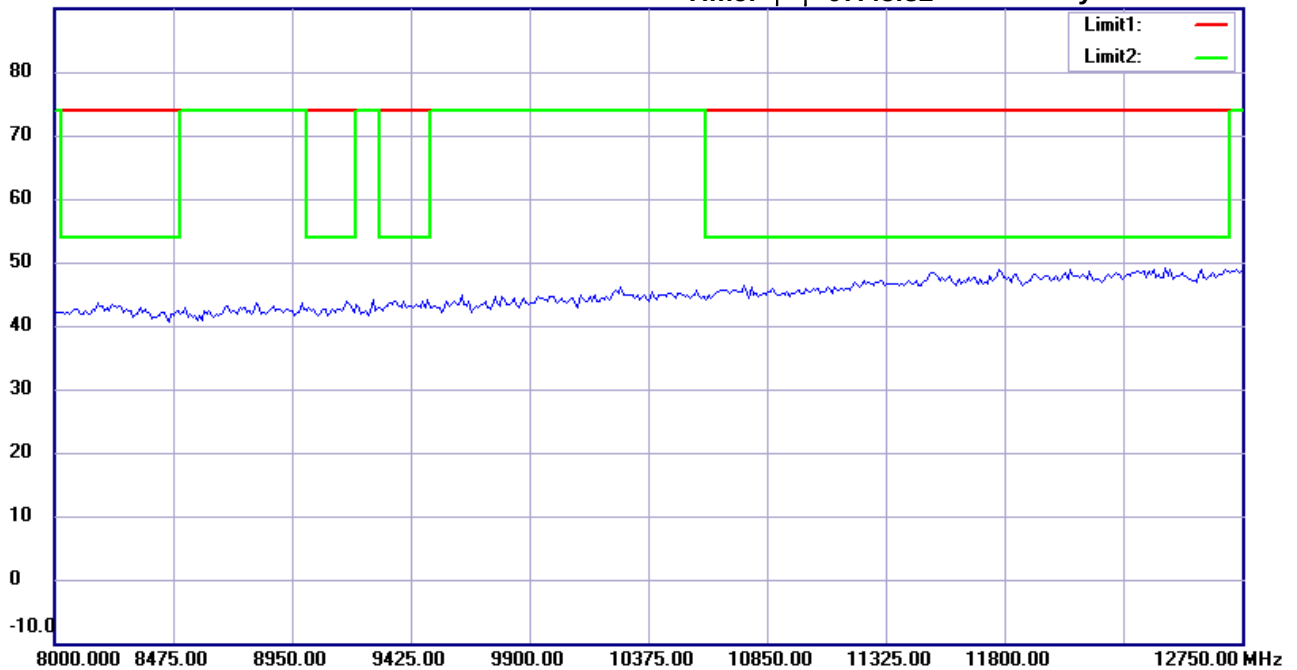
Date: 2015/9/10

Temperature:24 °C

90.0 dBuV/m

Time: 下午 07:45:32

Humidity:60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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



Address: 6F., No. 58, Ln 188, Ruey Kuang Rd, Neihu, Taipei
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Radiated Emission Measurement

Operator: Roy

File : 3

Data : #8

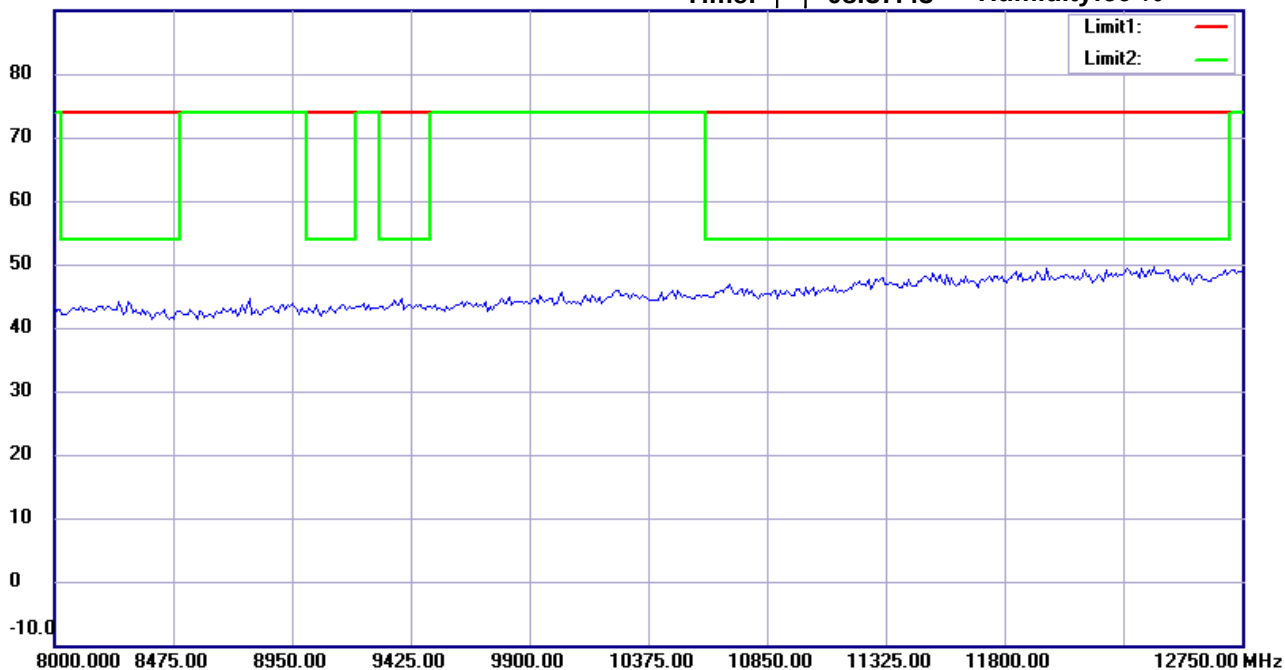
Date: 2015/9/10

Temperature: 24 °C

90.0 dBuV/m

Time: 下午 08:37:43

Humidity: 60 %



Site : Chamber

Condition : FCC 15.249 PK >1G

EUT : W6M21507-15160

M/N:

Test Mode : TX 908.42MHz

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