FCC PART 90 TEST REPORT

for

Push Button Transmitter

Model No.: JD-170

FCC ID: NDAJD-170

of

Applicant: Gold Apollo Co Ltd
Address: Rm 1, 3th Fl., No. 77 Sec 1 Hsin Tai Wu Rd, Hsi-Chih Dist
New Taipei city Taiwan 221

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.: W6M21612-16531-C-1

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

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 is 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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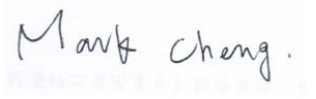
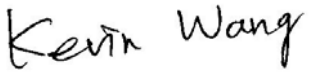
Tester:

March 03, 2017 Mark Cheng 

Date WTS-Lab. Name Signature

Technical responsibility for area of testing:

March 03, 2017 Kevin Wang 

Date WTS Name Signature

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.)
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:	./.

1.3 Details of approval holder

Name:	Gold Apollo Co Ltd
Street:	Rm 1, 3th Fl., No. 77 Sec 1 Hsin Tai Wu Rd, Hsi-Chih Dist
City:	New Taipei city
Country:	Taiwan 221
Telephone:	+886 2 2698 8888
Fax:	+886 2 2698 1750

1.4 Application details

Date of receipt of test item:	December 30, 2016
Date of test:	from January 02, 2017 to March 03, 2017

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

1.5 General information of Test item

Type of test item:	Push Button Transmitter
Model Number:	JD-170
Brand Name:	Apollo
Multi-listing model number:	./.
Photos:	See appendix

Technical data

Operating frequency band:	450-470 MHz
Sample tested frequency:	450.0125 MHz, 460 MHz, 469.9875 MHz
Type of modulation:	FM
Designation of emission:	4K90F1D
Antenna Type:	Wire Antenna
Connection of Antenna:	☐ detachable ☒ not detachable
Power Rating:	Battery 3 Vd.c.
Operation modes:	Simplex

Manufacturer: (if applicable)

Name:	./.
Street:	./.
Town:	./.
Country:	./.

1.6 Test standards

Technical standard: FCC RULES PART 90 (2015-10)

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 ºC

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.

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	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	2017/2/7	2018/2/6
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	2017/3/1	2018/2/28
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2017/3/1	2018/2/28
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2017/3/1	2018/2/28
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2017/2/18	2018/2/17
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2017/3/1	2018/2/28
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	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	2017/3/1	2018/2/28
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	T-0A023536	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2017/1/12	2018/1/11
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
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
ETSTW-RE 126	5GHz Notch filter	5NSL12-5800/E221.3-O/O	1	K&L Microwave	2016/8/10	2017/8/9
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2017/3/1	2018/2/28

ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2016/8/10	2017/8/9
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2016/8/10	2017/8/9
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	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	2017/2/10	2018/2/9
ETSTW-GSM 004	Wideband Radio Communication Tester	CMW500	128092	R&S	2016/12/15	2017/12/14
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2017/1/12	2018/1/11
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2017/1/12	2018/1/11
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2017/1/12	2018/1/11
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2017/1/12	2018/1/11
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2016/9/14	2017/9/13
ETSTW-Cable 010	BNC Cable	RGS-142	None	THERMAX	2016/9/12	2017/9/11
ETSTW-Cable 011	SMA to N type Cable	RGU-400	None	THERMAX	Pre-test Use NCR	
ETSTW-Cable 012	BNC Cable	RGS-400	None	THERMAX	2016/9/12	2017/9/11
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2017/2/18	2018/2/17
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2017/2/18	2018/2/17
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2017/2/18	2018/2/17
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2017/2/18	2018/2/17
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	2017/3/1	2018/2/28
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	2017/3/1	2018/2/28
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	2017/2/20	2018/2/19
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
ETSTW-Cable 071	N TYPE CABLE	EMCCFD400-NM-NM-25000	170239	EMCI	2017/2/20	2018/2/19
WTSTW-SW 002	EMI TEST SOFTWARE	EZ_EMC	None	Farad	Version ETS-03A1	
WTSTW-SW 006	EMI TEST SOFTWARE	e3	None	AUDIX	Version 9.161014	
WTSTW-SW 008	Signal studio	Agilent	None	AUDIX	Version 2.0.0.1	

2.5 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.10-2013 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 C63.10-2013 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 100 kHz 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.

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.

3. Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Modulation Characteristics	2.1047(a) (b); 2.1033(c)	☐	☐	☐
Frequency stability.	90.213	☒	☒	☐
Transmitter Output Power	90.205	☒	☒	☐
Emission masks	90.210	☒	☒	☐
Transmitter Spurious Radiated Emission	90.210	☒	☒	☐
Transmitter Spurious Conducted Emission	90.210	☒	☒	☐
Transient frequency behavior	90.214	☒	☒	☐
Receiver Radiated Spurious Emission	FCC part 15B	☐	☐	☐

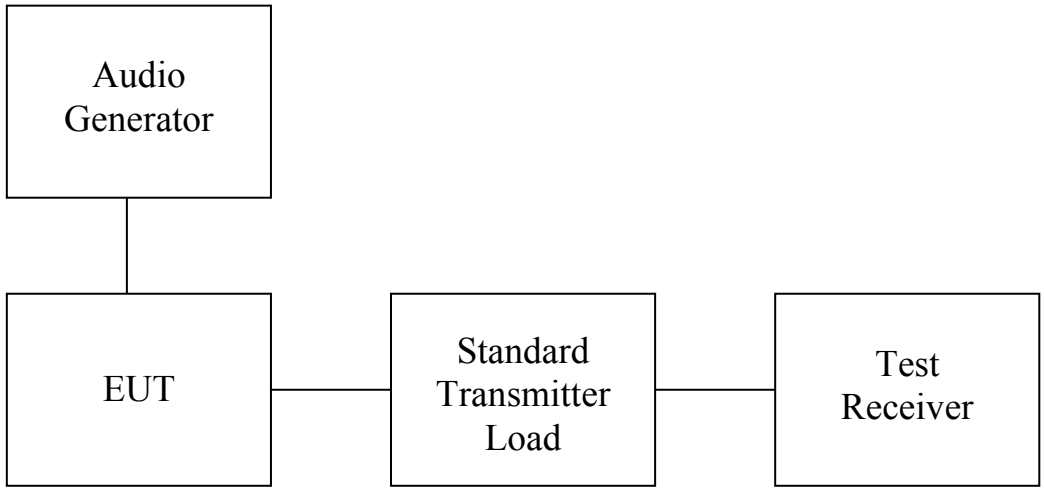
The following is intentionally left blank.

4. Modulation Characteristics

4.1 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. Tests are performed for positive and negative modulation.

4.2 Test Setup



4.3 Test results

4.3.1 Audio Frequency Response

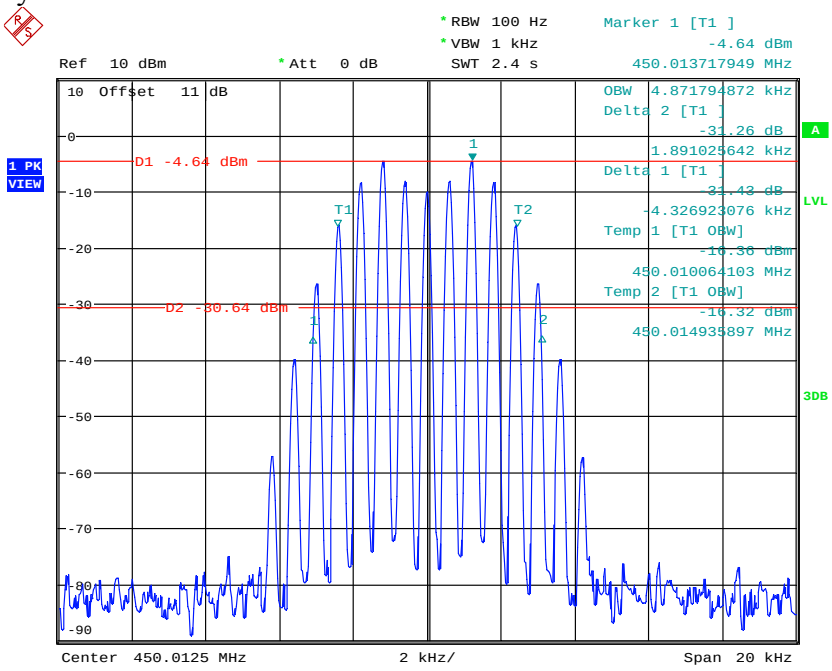
Rule Part No.: Part 2.1047(a)(b) Method of Measurement: The audio frequency response was measured in accordance with TIA/EIA Specification 603 with no exception. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 300 – 3000Hz shall be submitted. The audio frequency response curve is shown below.
Test Audio level (1kHz and 20% max. deviation): 25mV
Mode 1 & 2

Test equipment used: ETSTW-RE 072

Explanation: The EUT belongs to digital device so this test is not required.

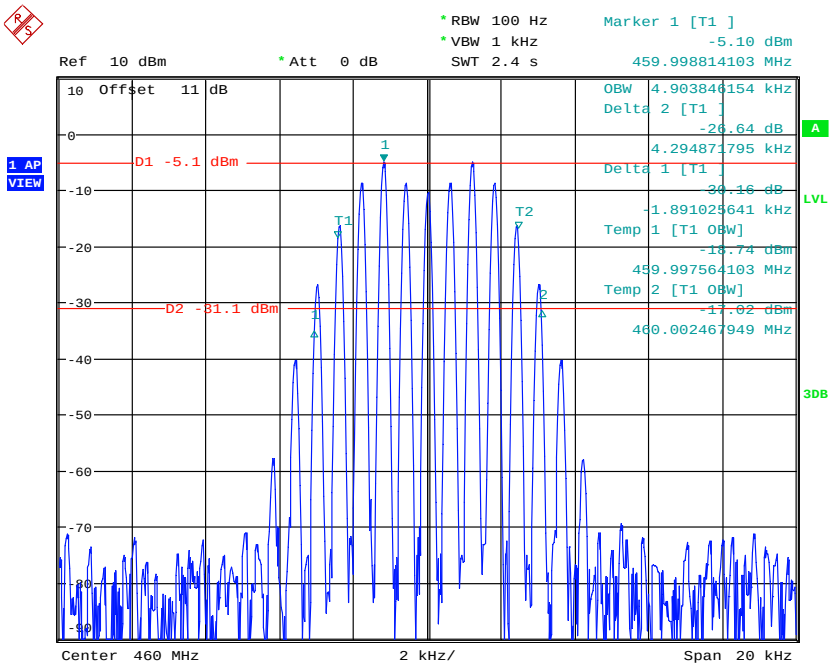
Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

4.3.3 Necessary Bandwidth



NECESSARY BANDWIDTH 450.0125MHZ

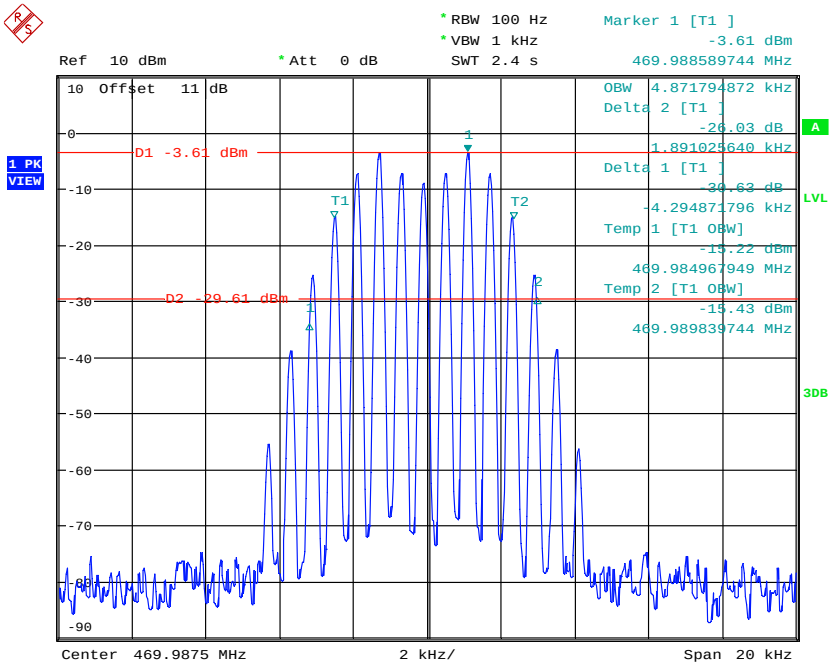
Date: 2.MAR.2017 09:53:37



NECESSARY BANDWIDTH 460MHZ

Date: 2.MAR.2017 09:44:45

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170



NECESSARY BANDWIDTH 469.9875MHZ
Date: 2.MAR.2017 09:50:32

Frequency (MHz)	26dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Max. Limit (kHz)
450.0125	1.89103	4.87179	11.25
460	4.29487	4.90385	11.25
460.9875	1.8910	4.87179	11.25

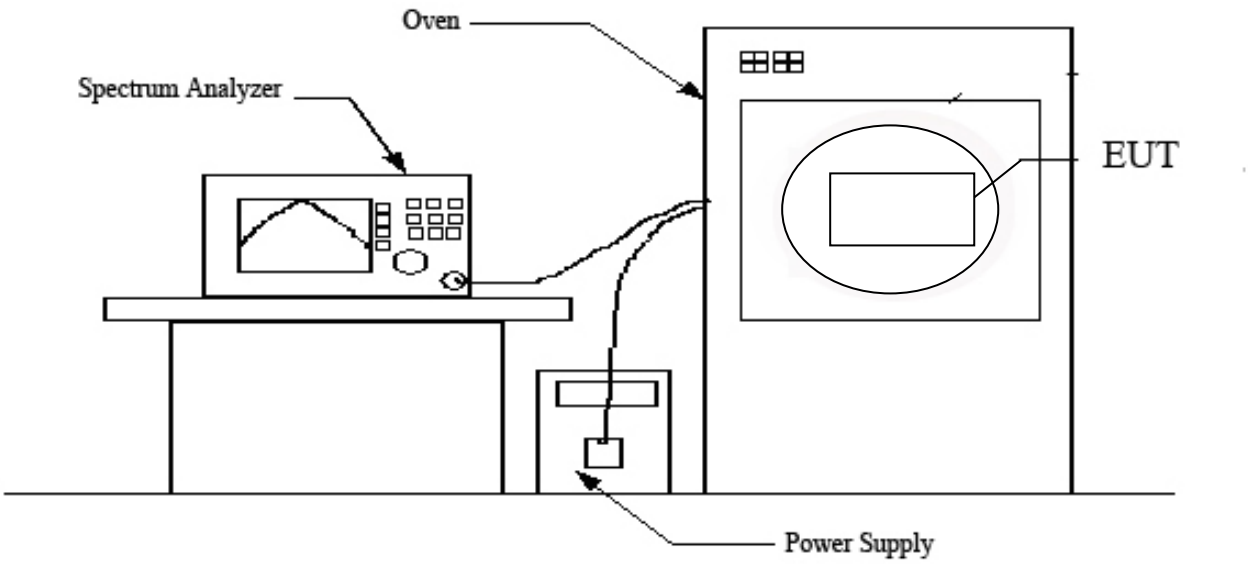
Test equipment used: ETSTW-RE 055, ETSTW-RE072

5. Frequency stability

5.1 Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 1kHz and VBW to 1kHz.
3. Use peak detector mode, Max-hold and search the peak of trace 1.
4. According to the part 2.1055(d)(1), the supply voltage has to be changed from 85 to 115 percent of the nominal value.
5. According to the part 2.1055(a)(1), extreme temperature has to be changed from -20℃ to 50℃.
6. Read the frequency of the carrier and calculate the deviation.

5.2 Test Setup



5.3 Test Result

o

Nominal Frequency : 450.0125MHz	
Voltage V.S Frequency Stability	
Voltage	Measurement Frequency
3 V	450.0125
3.3 V	450.012532
2.7 V	450.012532
Max Deviation (MHz)	0.000032
Max Deviation (ppm)	0.071109
Limit (ppm)	2.5
Temperature V.S Frequency Stability	
Temperature (˚C)	Measurement Frequency
-20	450.012532
-10	450.012532
0	450.012546
10	450.012546
20	450.012532
30	450.012532
40	450.012483
50	450.012483
60	450.0125
Max Deviation (MHz)	-0.000046
Max Deviation (ppm)	-0.10222
Limit (ppm)	2.5

Nominal Frequency : 460MHz	
Voltage V.S Frequency Stability	
Voltage	Measurement Frequency
3 V	460.000032
3.3 V	460.000051
2.7 V	460.000032
Max Deviation (MHz)	0.000051
Max Deviation (ppm)	0.11087
Limit (ppm)	2.5
Temperature V.S Frequency Stability	
Temperature (˚C)	Measurement Frequency
-20	460.000032
-10	460.000032
0	460.000048
10	460.000048
20	460.000032
30	460.000032
40	459.999887
50	459.999887
60	459.999807
Max Deviation (MHz)	-0.000193
Max Deviation (ppm)	-0.41957
Limit (ppm)	2.5

Nominal Frequency : 469.9875MHz	
Voltage V.S Frequency Stability	
Voltage	Measurement Frequency
3 V	469.987403
3.3 V	469.987403
2.7 V	469.987419
Max Deviation (MHz)	-0.000097
Max Deviation (ppm)	-0.20639
Limit (ppm)	2.5
Temperature V.S Frequency Stability	
Temperature (˚C)	Measurement Frequency
-20	469.987403
-10	469.987403
0	469.987385
10	469.987385
20	469.987403
30	469.987403
40	469.987339
50	469.987339
60	469.987307
Max Deviation (MHz)	-0.000193
Max Deviation (ppm)	-0.41065
Limit (ppm)	2.5

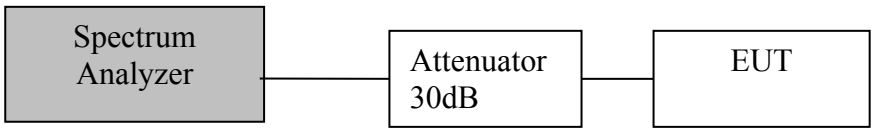
Test equipment used: ETSTW-RE 055

6. Transmitter Output Power

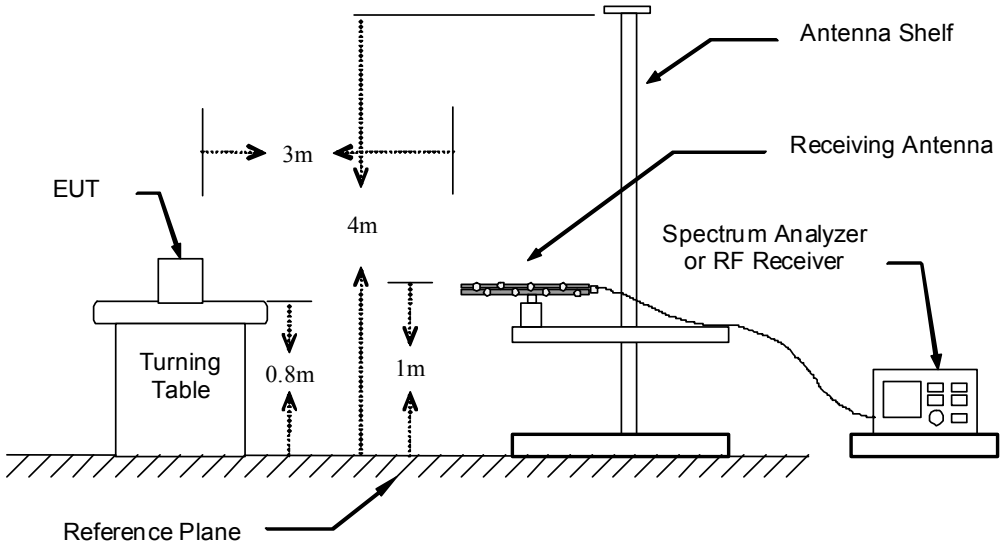
6.1 Test Procedures

1. The EUT was placed on the top of the turntable in semi-anechoic chamber.
2. The test shall be made in the transmitting mode. Antenna tower was scan (from 1 M to 4 M) and the turn table was rotated by 360 degrees to determine the position of the highest radiation.
3. The receiving Horn antenna was placed 0.5 meters far away from the turntable.
4. The receiving antenna was fixed on the same height with the EUT to find maximum suspected emissions. Recorded suspected value is indicated as Read Level (Raw).
5. Replace the EUT by standard antenna and feed the RF port by signal generator.
6. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
7. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
8. The level of the spurious emission is the power level of (7) plus the gain of the standard antenna in dBd and minus the loss of the cable used between the signal generator and the standard antenna.

6.2 Test Setup



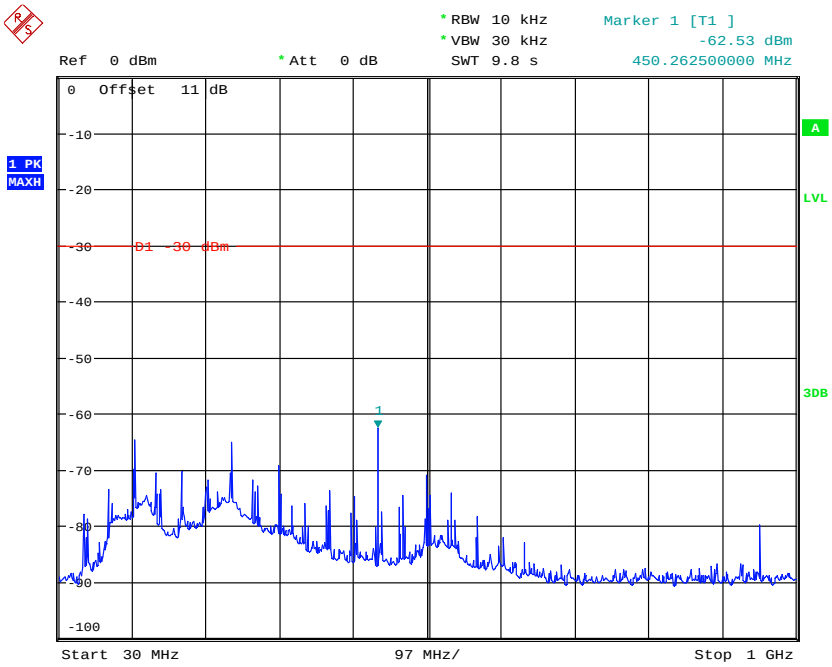
Setup for Conducted Power



Setup for Radiated Power

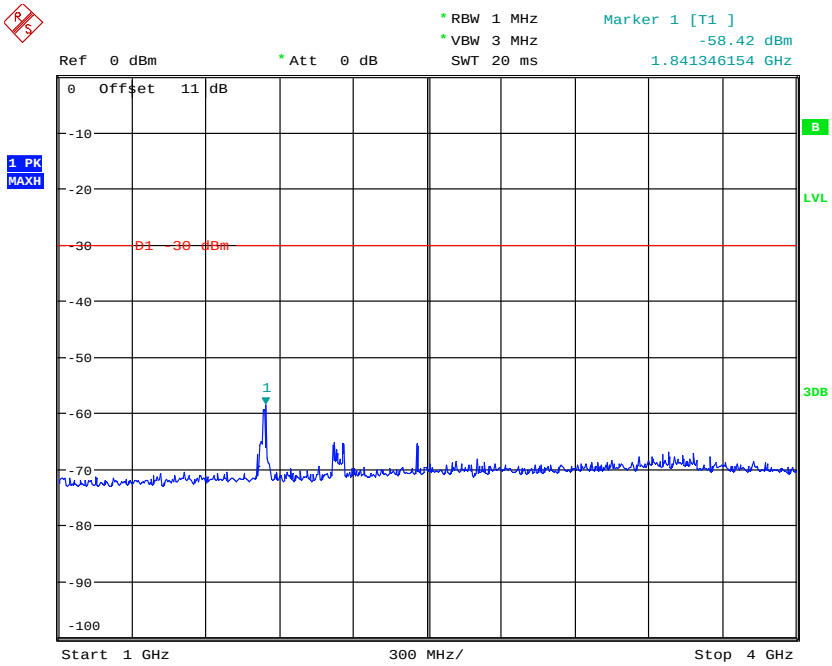
6.3 Test Result

6.3.1 Conducted Power



CONDUCTED SPURIOUS EMISSION BELOW 1G 450.0125MHZ

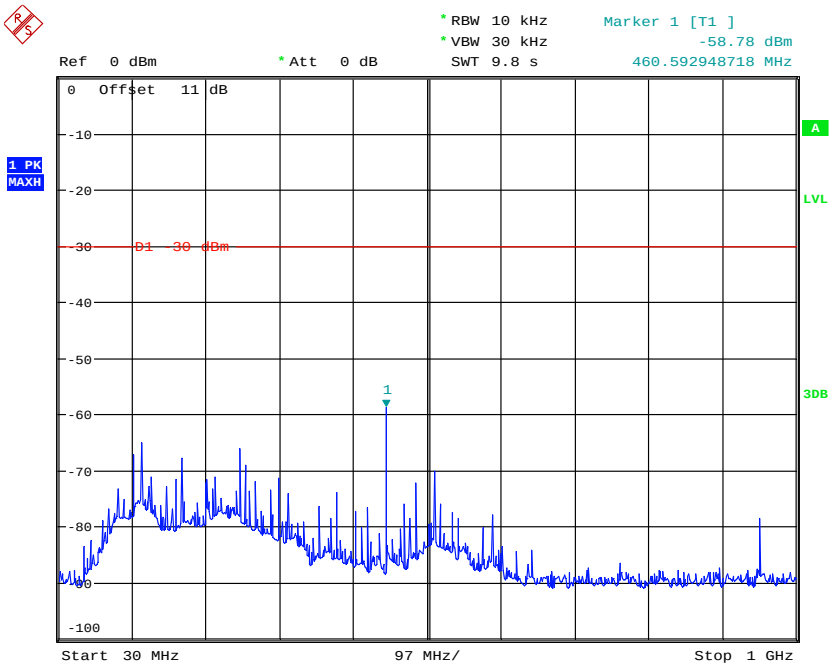
Date: 1.MAR.2017 17:29:03



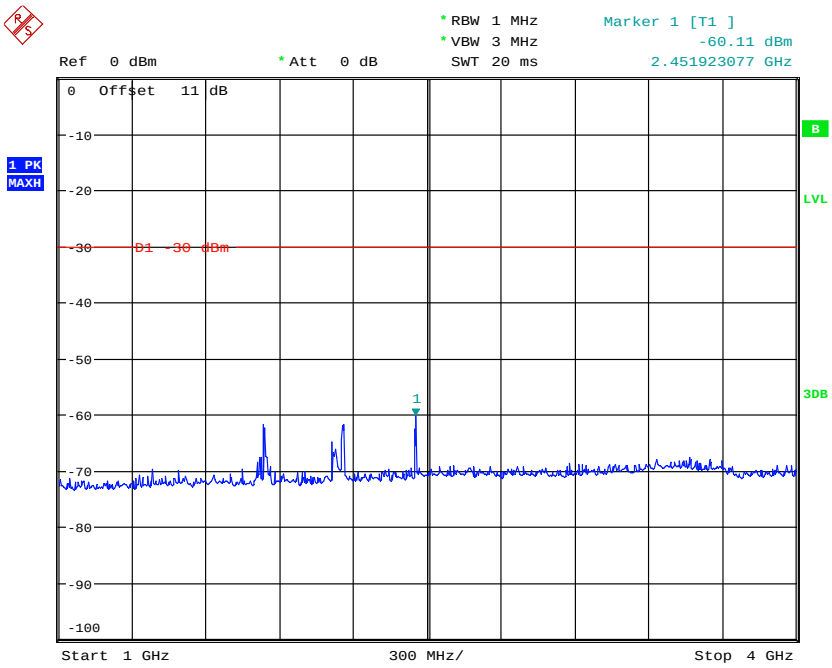
CONDUCTED SPURIOUS EMISSION ABOVE 1G 450.0125MHZ

Date: 1.MAR.2017 17:33:37

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

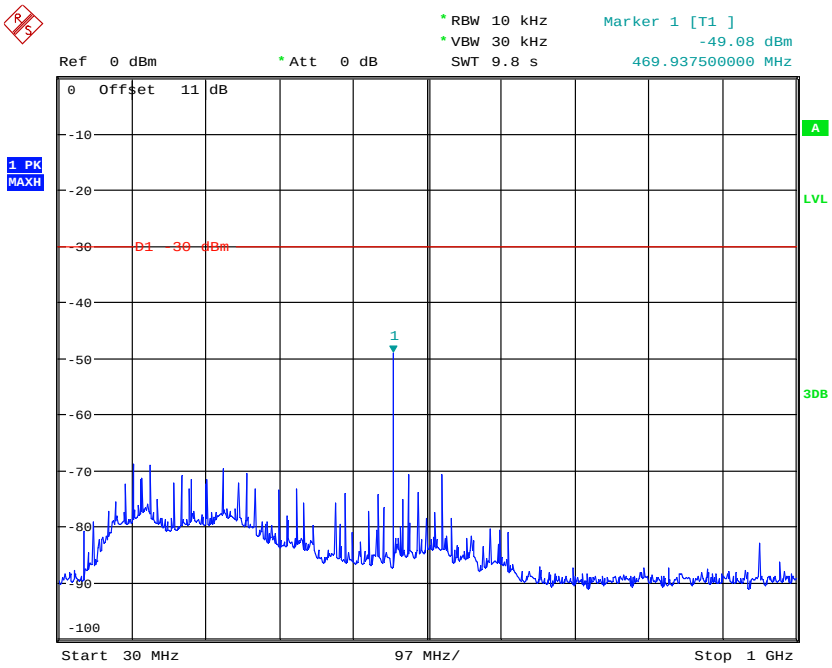


CONDUCTED SPURIOUS EMISSION BELOW 1G 460MHZ
Date: 1.MAR.2017 17:21:53

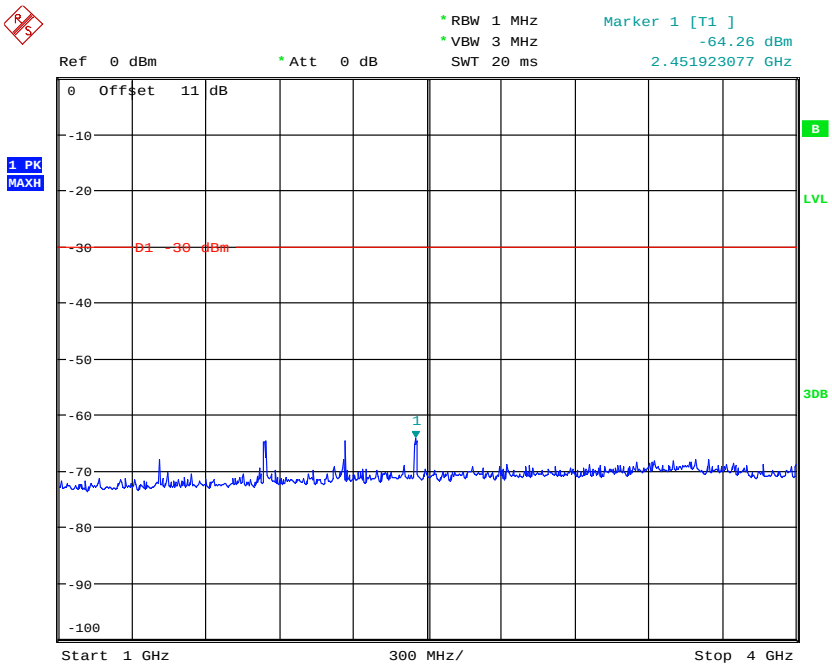


CONDUCTED SPURIOUS EMISSION ABOVE 1G 460MHZ
Date: 1.MAR.2017 17:25:02

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

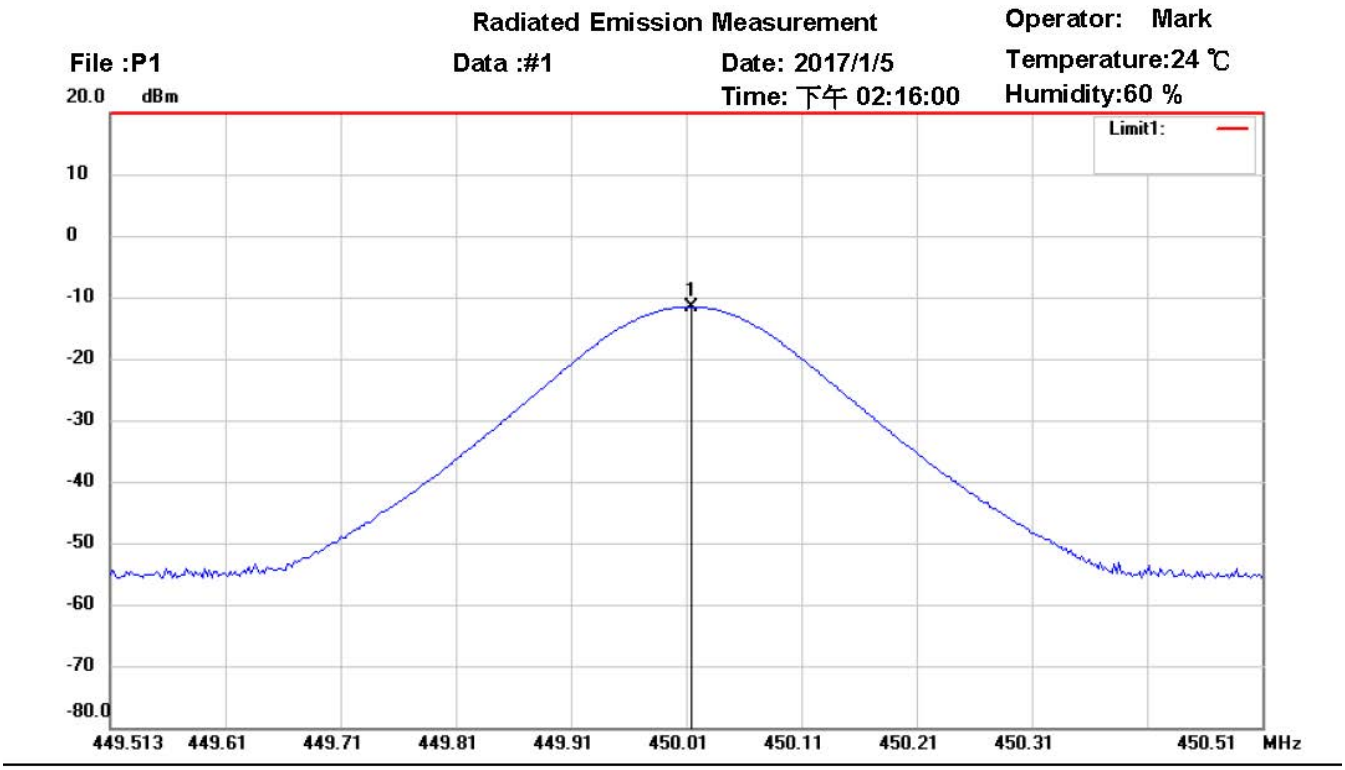


CONDUCTED SPURIOUS EMISSION BELOW 1G 469.9875MHZ
Date: 1.MAR.2017 17:40:05



CONDUCTED SPURIOUS EMISSION ABOVE 1G 469.9875MHZ
Date: 1.MAR.2017 17:37:27

6.3.2 Radiated Power

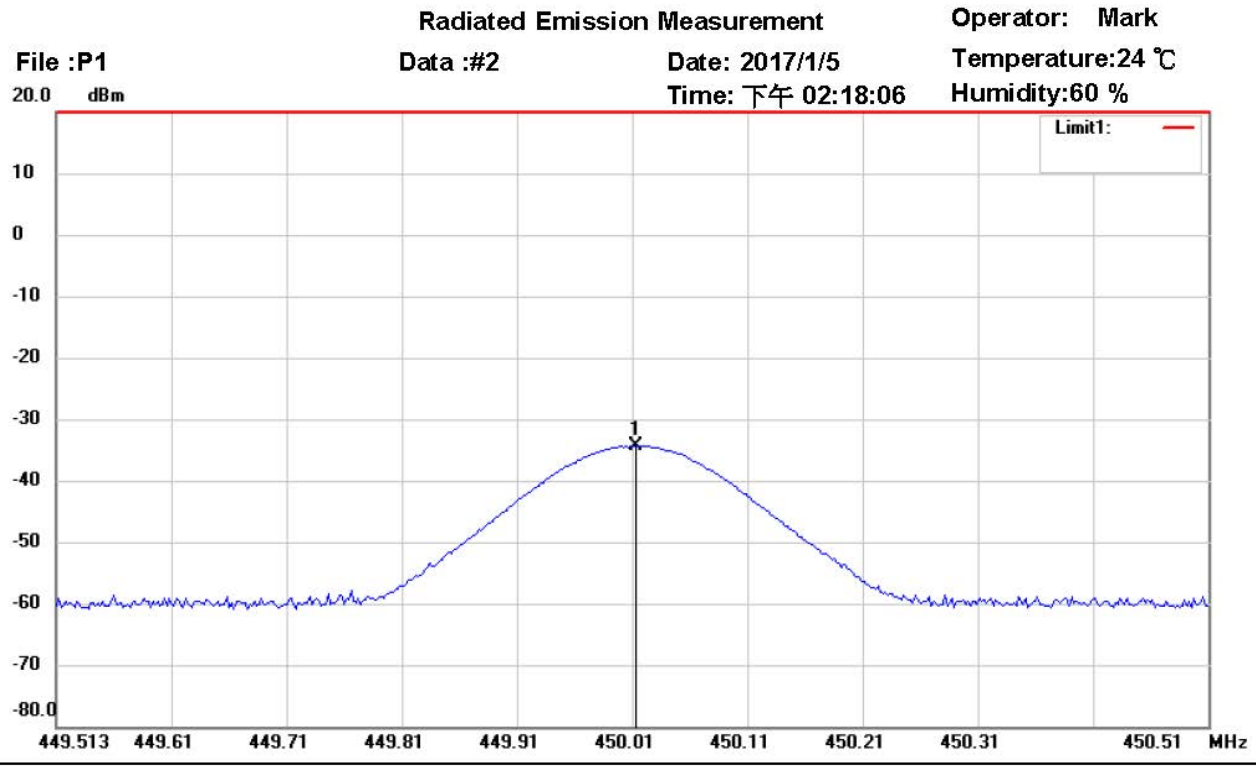


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 3 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
*	450.0175	-46.12	peak	34.48	-11.64	43.00	150	240	-54.64	

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

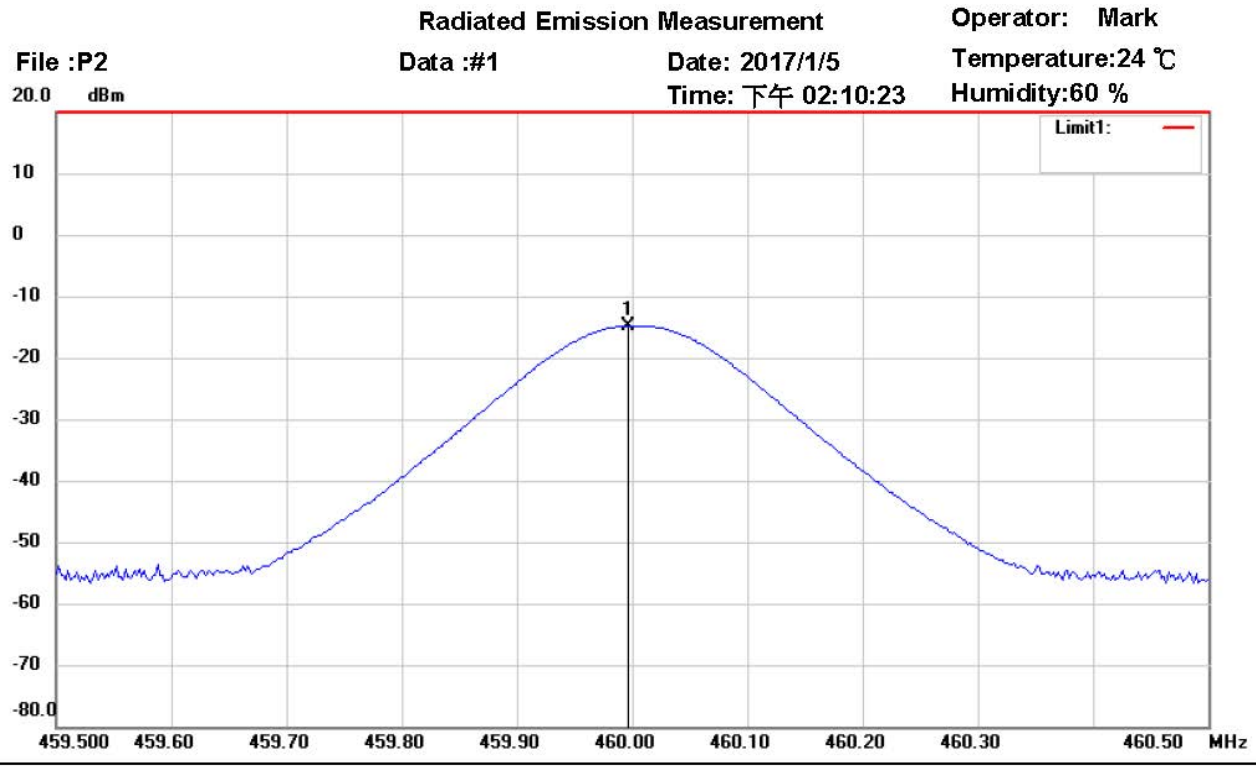


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Vertical*
Power : 3 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
*	450.0155	-64.31	peak	29.98	-34.33	43.00	150	200	-77.33	

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

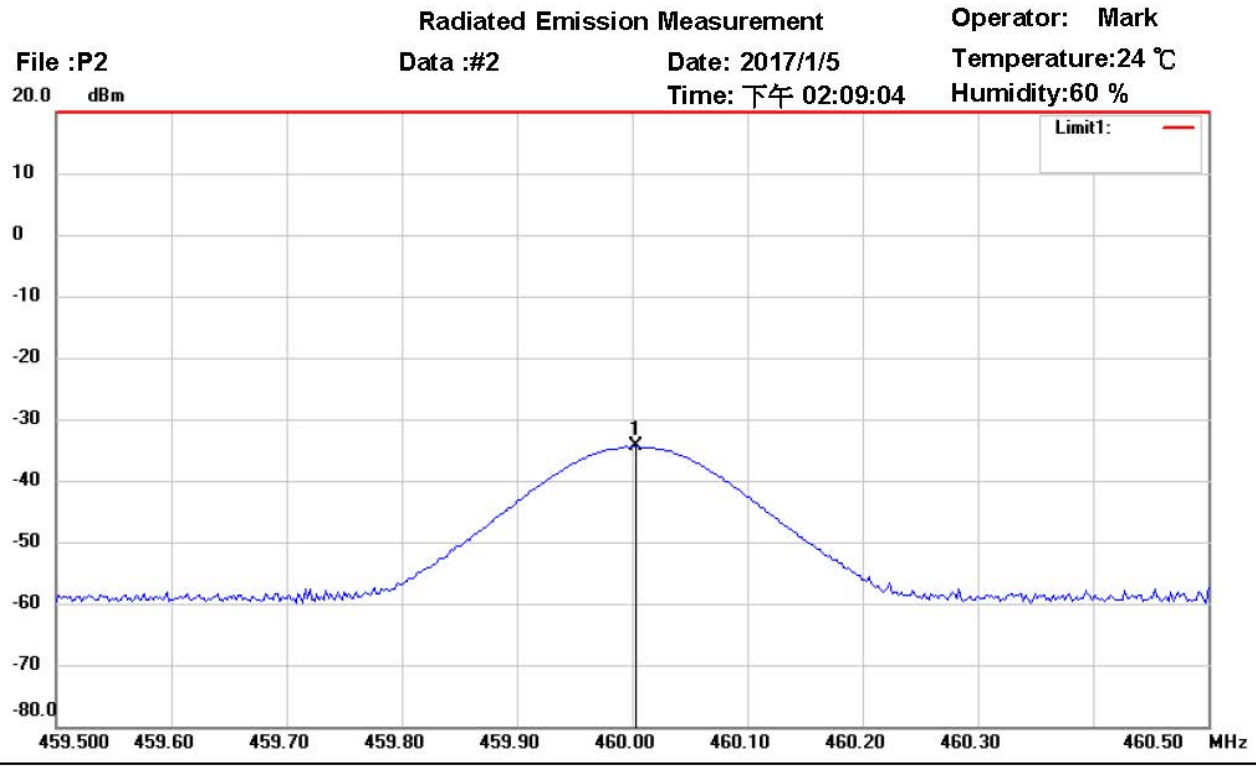


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21612-16531
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Horizontal*
Power : 3 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
*	459.9970	-48.89	peak	34.11	-14.78	43.00	150	200	-57.78	

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

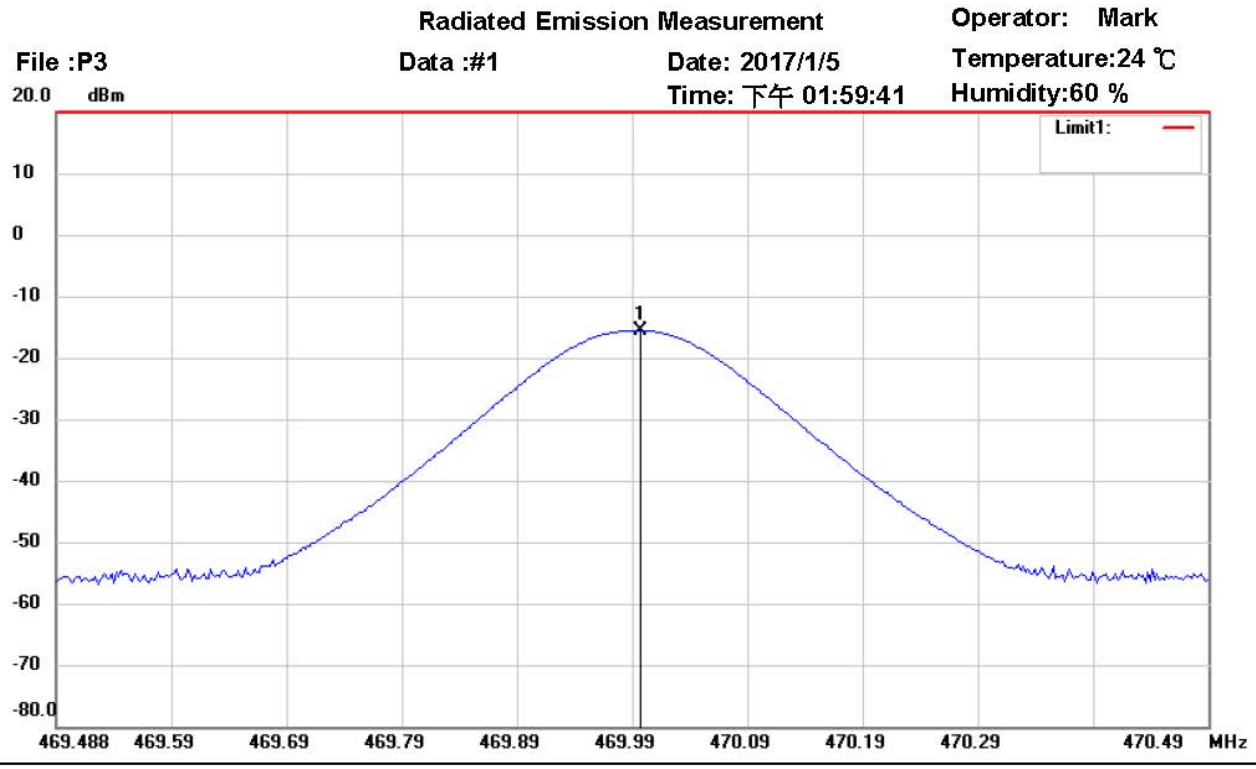


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21612-16531
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 3 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
*	460.0030	-64.86	peak	30.43	-34.43	43.00	150	140	-77.43	

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

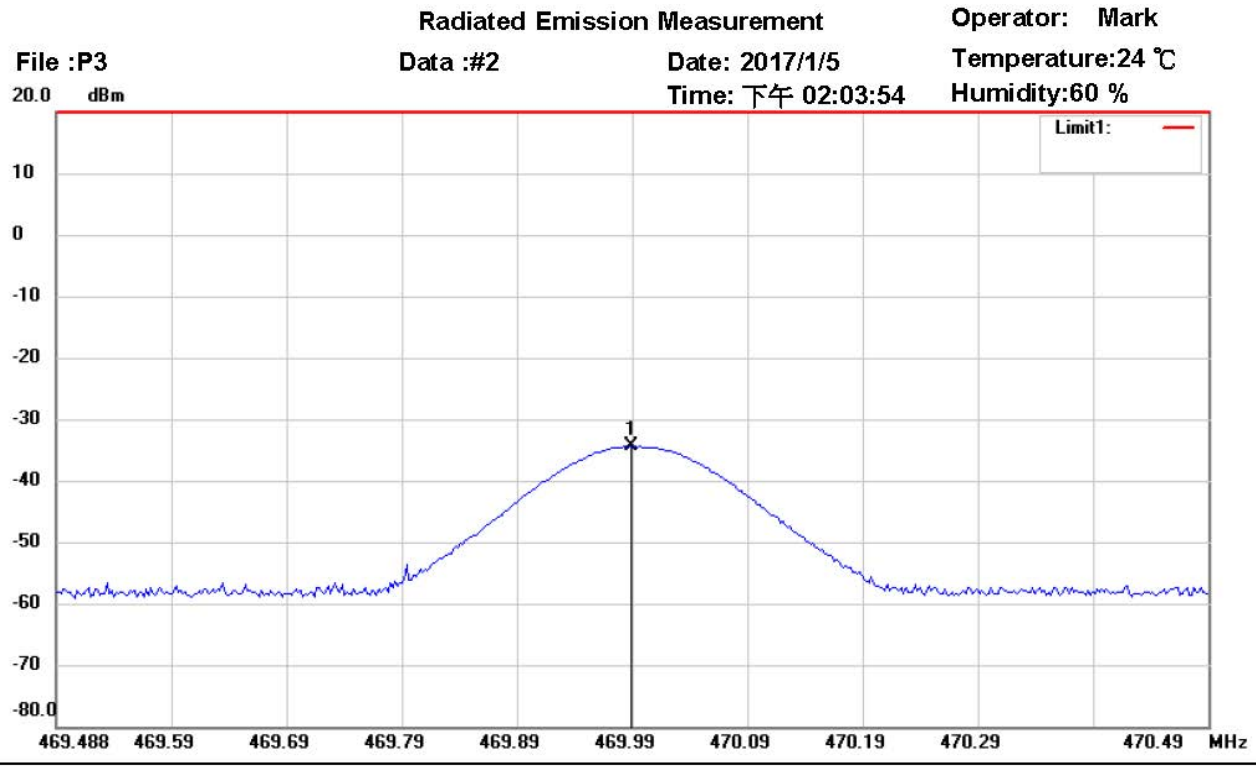


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21612-16531
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Horizontal*
Power : 3 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
*	469.9945	-49.30	peak	33.73	-15.57	43.00	150	140	-58.57	

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170



Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21612-16531
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Vertical*
Power : 3 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
*	469.9865	-65.34	peak	30.88	-34.46	43.00	150	150	-77.46	

Test equipment used: ETSTW-RE 055, ETSTW-RE 072

6.4 Limit

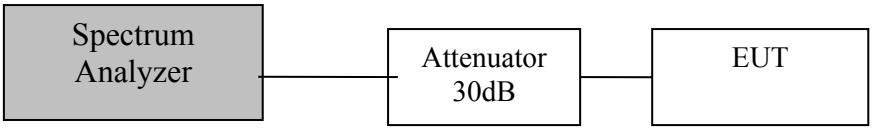
Power limit according to FCC § 90.261: 20 watts (43 dBm)

7. Emission masks

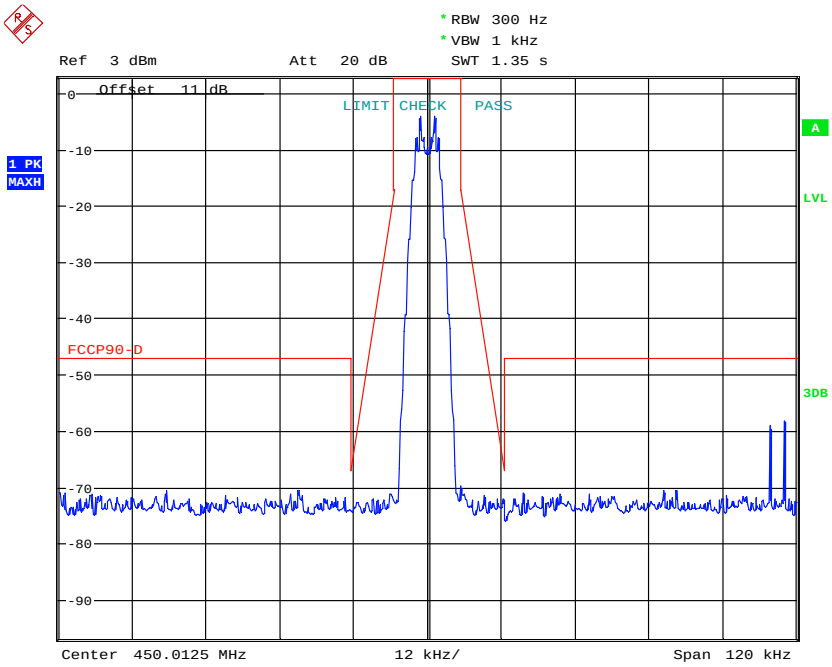
7.1 Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 300Hz and VBW to 1 kHz.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum
4. Set the span to 120 kHz and the sweep time to Auto.
5. Record the power spectral and compare to the Mask.

7.2 Test Setup

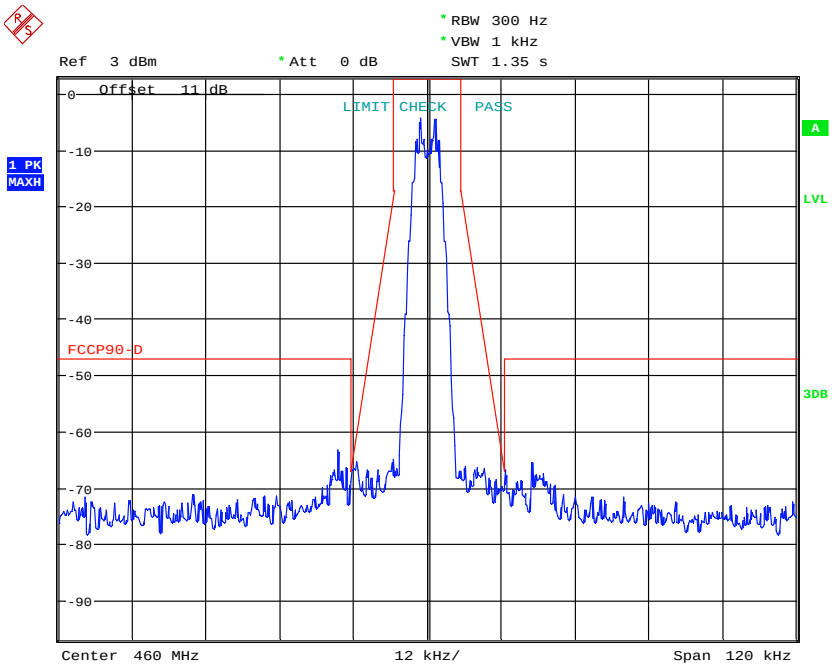


7.3 Test Result

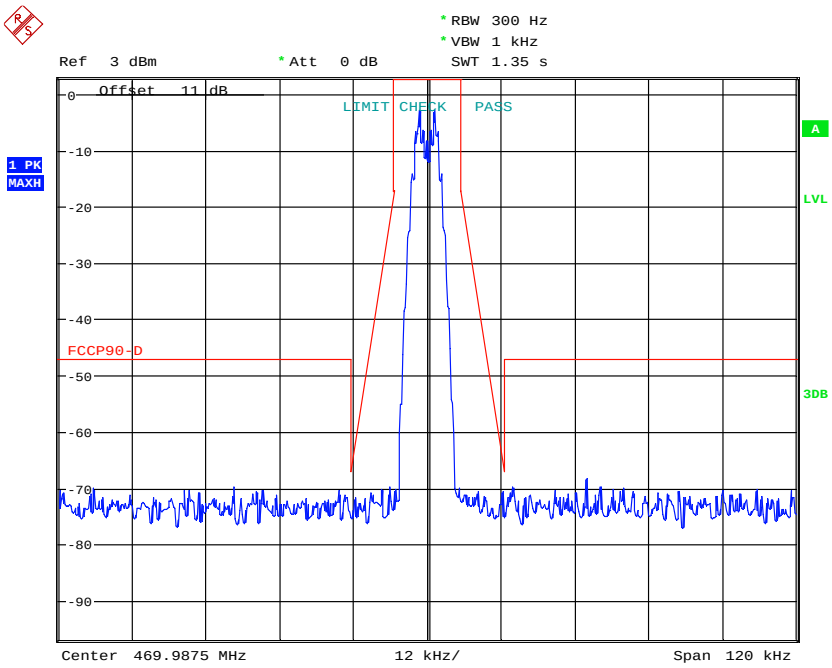


EMISSION MASK 450.0125MHZ
Date: 24.FEB.2017 17:04:44

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170



EMISSION MASK 460MHZ
Date: 24.FEB.2017 17:05:55



EMISSION MASK 469.9875MHZ
Date: 24.FEB.2017 17:06:40

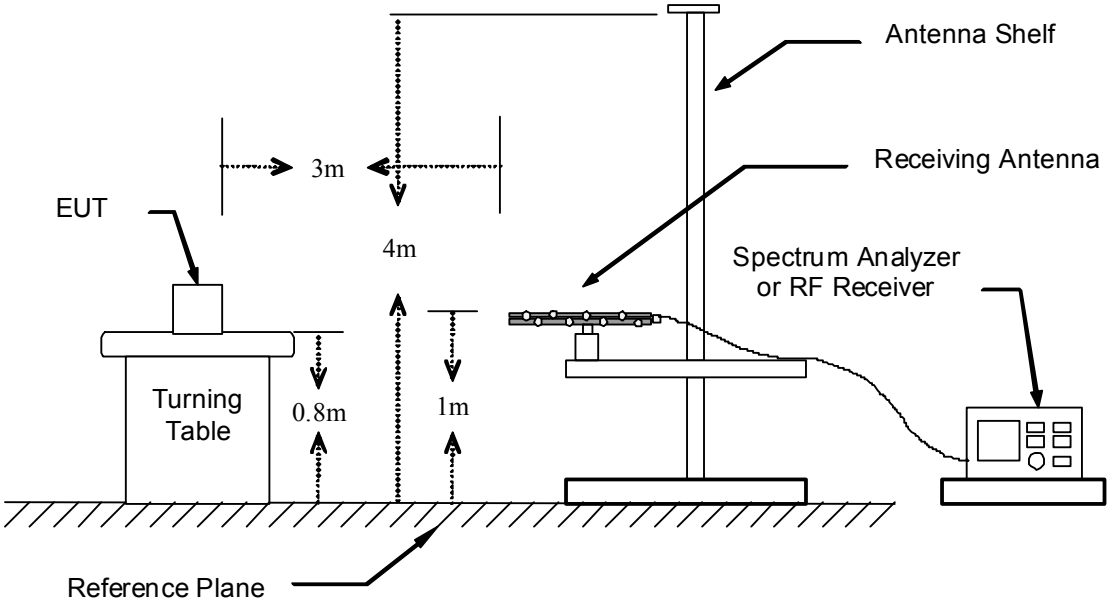
Limit according to FCC § 90.210: 12.5 kHz: Emission Mask D / 25 kHz: Emission Mask B.
Test equipment used: ETSTW-RE 055, ETSTW-RE072

8. Transmitter Spurious Radiated Emission

8.1 Test Procedures

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.

8.2 Test Setup



8.3 Test Result

Model: JD-170 Date: --
Mode: -- Temperature: -- °C Engineer: --
Polarization: Horizontal Humidity: -- %

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

Frequency (MHz)	Reading (dBm) Peak	Factor (dB) Corr.	Result (dBm)	Limit (dBm)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
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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 above 30-1000 MHz = ± 2.11 dB, 1-18 GHz = ± 2.09 dB, 18-40 GHz = ± 3.09 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.**
6. **See attached diagrams in appendix.**

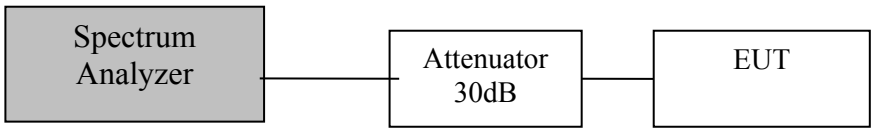
Test equipment used: ETSTW-RE 055, ETSTW-RE 072

9. Transmitter Spurious Conducted Emission

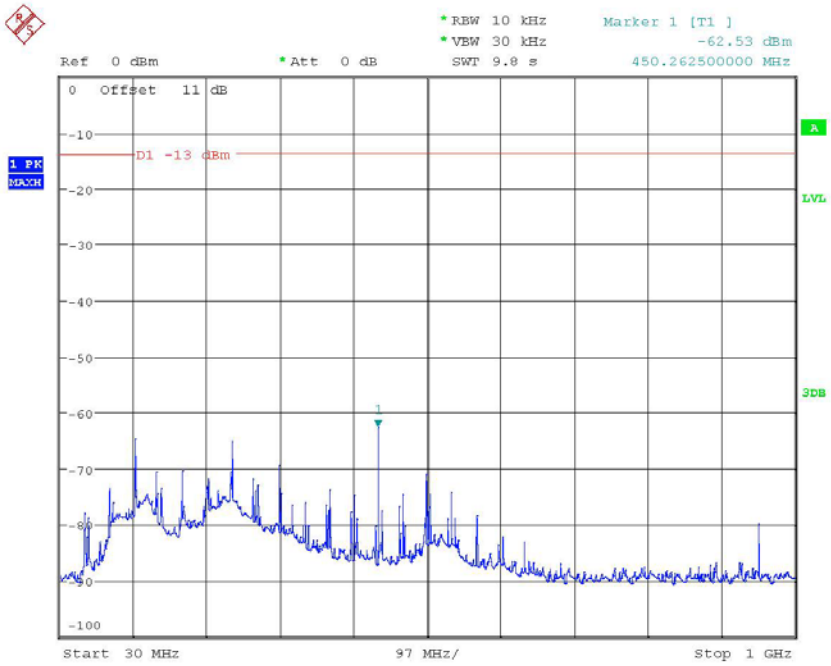
9.1 Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. 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.
3. Limits=P (dBm)+10log(P(W)) = -13dBm

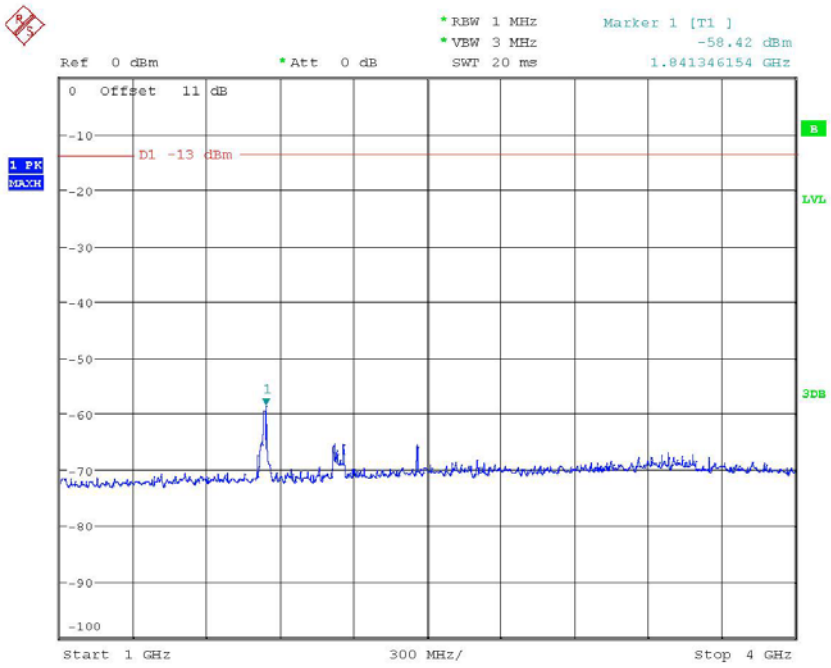
9.2 Test Setup



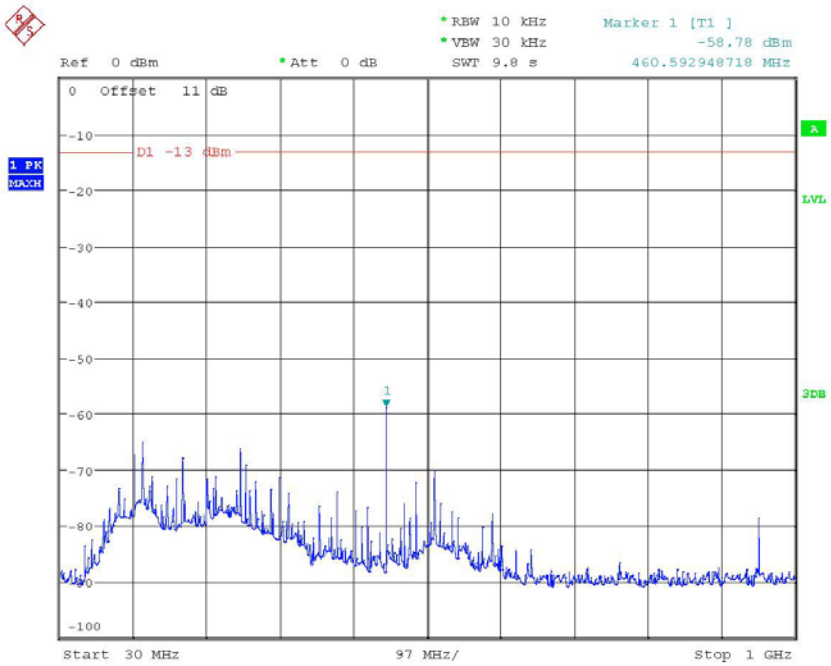
9.3 Test Result



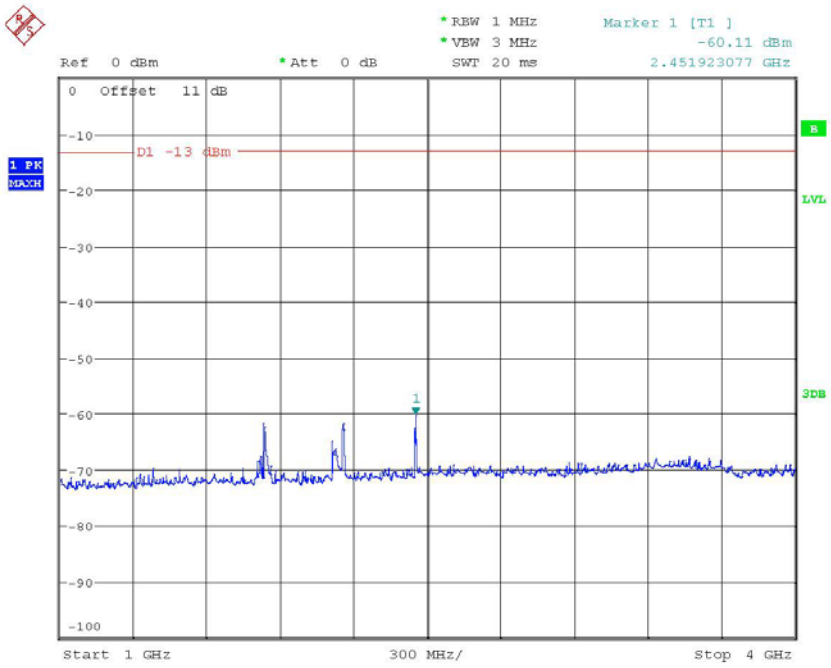
CONDUCTED SPURIOUS EMISSION BELOW 1G 450.0125MHZ
Date: 1.MAR.2017 17:29:03



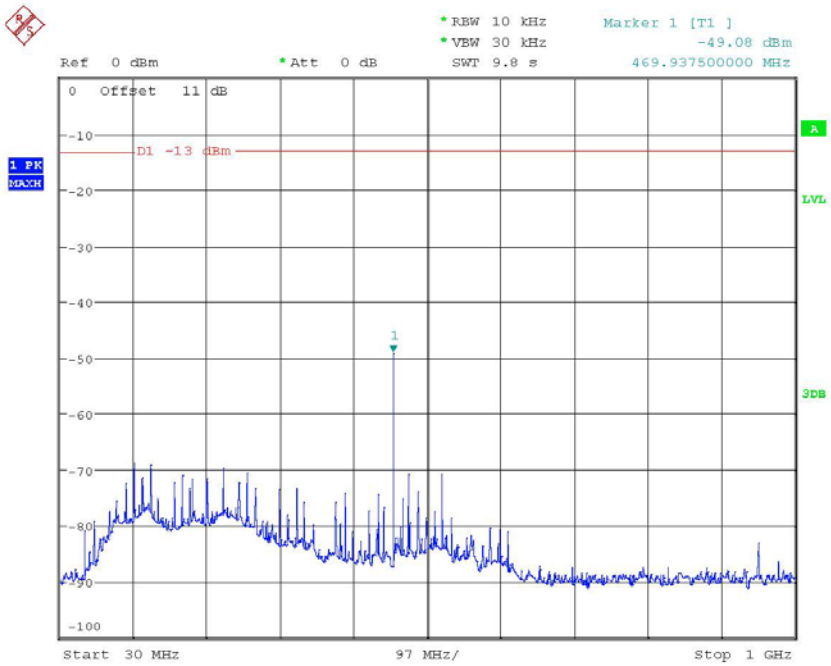
CONDUCTED SPURIOUS EMISSION ABOVE 1G 450.0125MHZ
Date: 1.MAR.2017 17:33:37



CONDUCTED SPURIOUS EMISSION BELOW 1G 460MHZ
Date: 1.MAR.2017 17:21:53

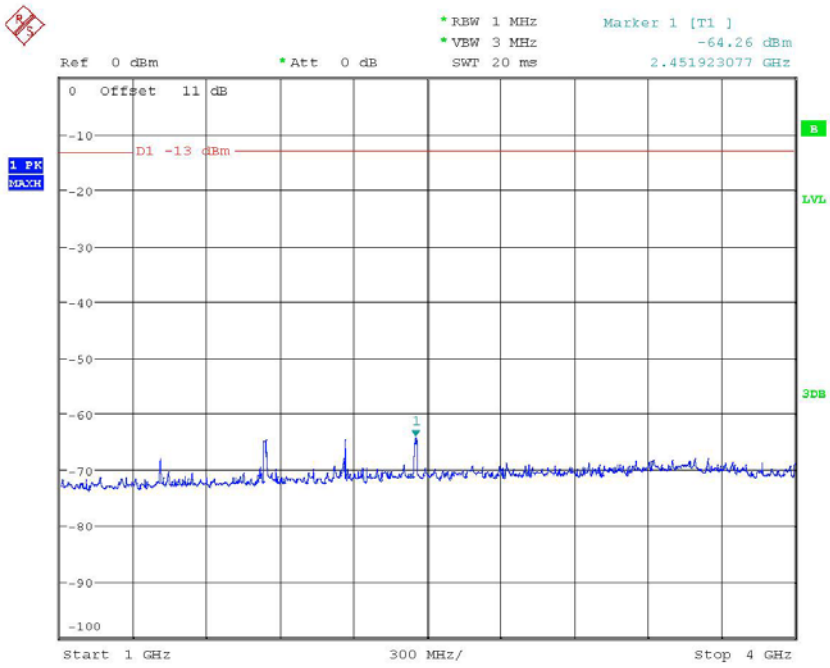


CONDUCTED SPURIOUS EMISSION ABOVE 1G 460MHZ
Date: 1.MAR.2017 17:25:02



CONDUCTED SPURIOUS EMISSION BELOW 1G 469.9875MHZ
Date: 1.MAR.2017 17:40:05

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170



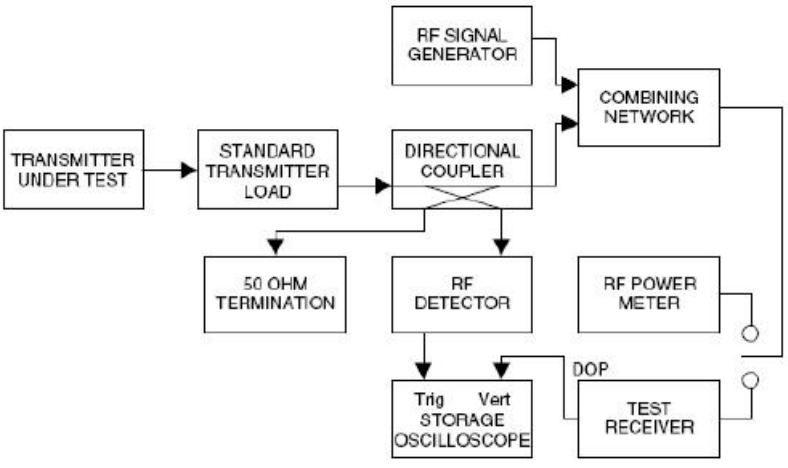
Test equipment used: ETSTW-RE 055, ETSTW-RE 072

10. Transient frequency behavior

10.1 Test Procedures

1. SG to the assigned transmitter frequency and modulate it with a 1 kHz tone at ±25 kHz deviation and set its output level to below 30dB of EUT signal level to receiver.
2. Set the horizontal sweep rate on the storageoscilloscope to 10 ms per division and adjust the display to continuously view the 1000 Hz tone from the DOP. Adjust the vertical amplitude control of the oscilloscope to display the 1000 Hz at ±4 divisions vertically centered on the display.
3. Transmitter on and observe the stored display. The output at the DOP, due to the change in the ratio of power between the signal generator input power and the transmitter output power will, because of the capture effect of the test receiver, produce a change in display: For the first part of the sweep it will show the 1 kHz test signal. Then once the receiver's demodulator has been captured by the transmitter power, the display will show the frequency difference from the assigned frequency to the actual transmitter frequency versus time. The instant when the 1 kHz test signal is completely suppressed (including any capture time due to phasing) is considered to be ton . The trace should be maintained within the allowed divisions during the period t1 and t2 . See the figure in the appropriate standards section.
4. During the time from the end of t2 to the beginning of t3 the frequency difference should not exceed the limits set by the FCC in 47 CFR 90.214 and outlined in 3.2.2. The allowed limit is equal to the transmitter frequency times its FCC frequency tolerance times ±4 display divisions divided by 25 kHz. For example, at a transmitter assigned frequency of 500 MHz and a frequency tolerance of 5 ppm. This would be 500 MHz times 5 ppm times ±4 divisions divided by 25 kHz. This equals ±0.4 divisions in this example. Greater vertical sensitivity may be required to view this accurately
5. Adjust the oscilloscope trigger controls so it will trigger on a decreasing magnitude from the RF peak detector, at 1 division from the right side of the display, when the transmitter is turned off. Set the controls to store the display. The moment when the 1 kHz test signal starts to rise is considered to provide toff.

10.2 Test Setup



10.3 Test Result

450.0125 MHz On

450.0125 MHz Off

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

460 MHz On

460 MHz Off

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

469.9875MHz On

469.9875 MHz Off

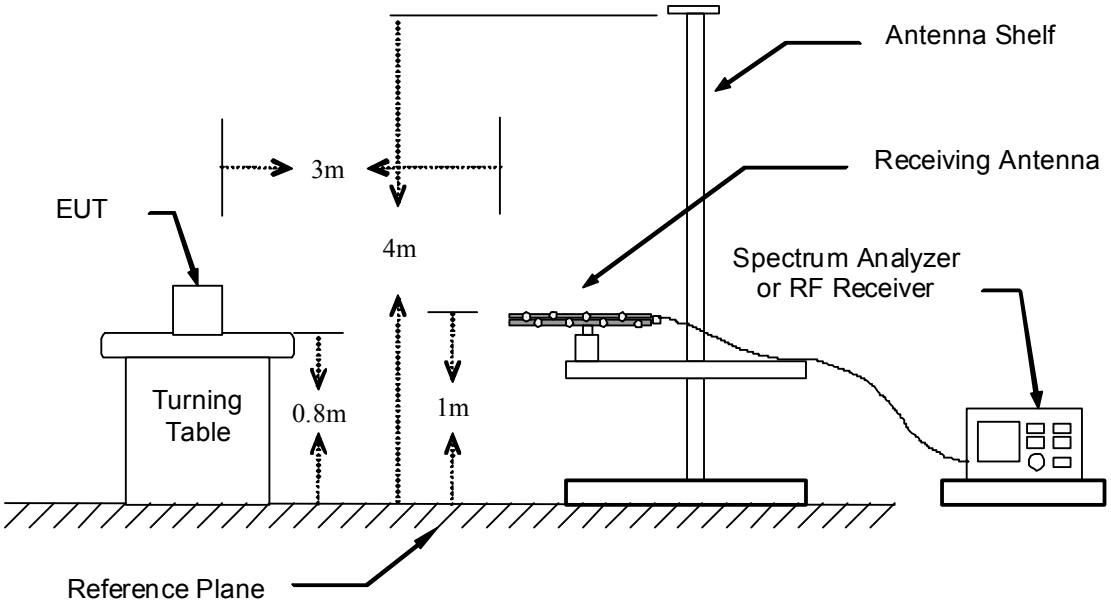
Test equipment used: ETSTW-RE 072

11. Receiver Radiated Spurious Emission

11.1 Test Procedures

1. Configure the EUT according to ANSI C63.4.
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.

11.2 Test Setup



11.3 Test Result

Model: JD-170 Date:--
Mode: -- Temperature: -- °C Engineer: --
Polarization: Horizontal Humidity: -- %

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

Polarization: Vertical

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

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. Measurement uncertainty: 30-1000 MHz：±3.30 dB, 1-18GHz：±2.28 dB, 18-40 GHz : ±2.19 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
5. All not in the table noted test results are more than 20 dB below the relevant limits.
6. Up Line: PK Limit Line, Down Line: Ave Limit Line.
7. This test is not required because the EUT is a transmitter only.

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:

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

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 062, ETSTW-RE 142, ETSTW-RE 147, ETSTW-RE 064

12. RF Exposure Compliance Requirements

FCC Rule: Part 90
Test exclusion = max. conducted output power + adjusted for tune-up tolerance
Test exclusion = 2.80 dBm

RESULT:
Test standard : FCC KDB Publication
447498 D01 General RF Exposure Guidance v05r02

According to 447498 D01 General RF Exposure Guidance v05r02:
SAR evaluation, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

The enclosure of the device provides ≥ 0.5 cm separation from the antenna elements to significant metal parts of the enclosure to minimize potential perturbations.

Frequency Band:450-469 MHz
Maximum Power fed to Antenna: 1.9055 mW

Separation distances:
Radiator to user: > 5 mm
Distance prescribed in user manual: > 5 mm

MHz	5	10	15	20	25	mm
450	22	45	67	89	112	SAR Test Exclusion Threshold (mW)

MHz	30	35	40	45	50	mm
450	134	157	179	201	224	SAR Test Exclusion Threshold (mW)

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	mW

Appendix

A Photos

1. External Photos
2. Internal Photos
3. Set Up Photo of Radiated Emission

B Measurement diagrams

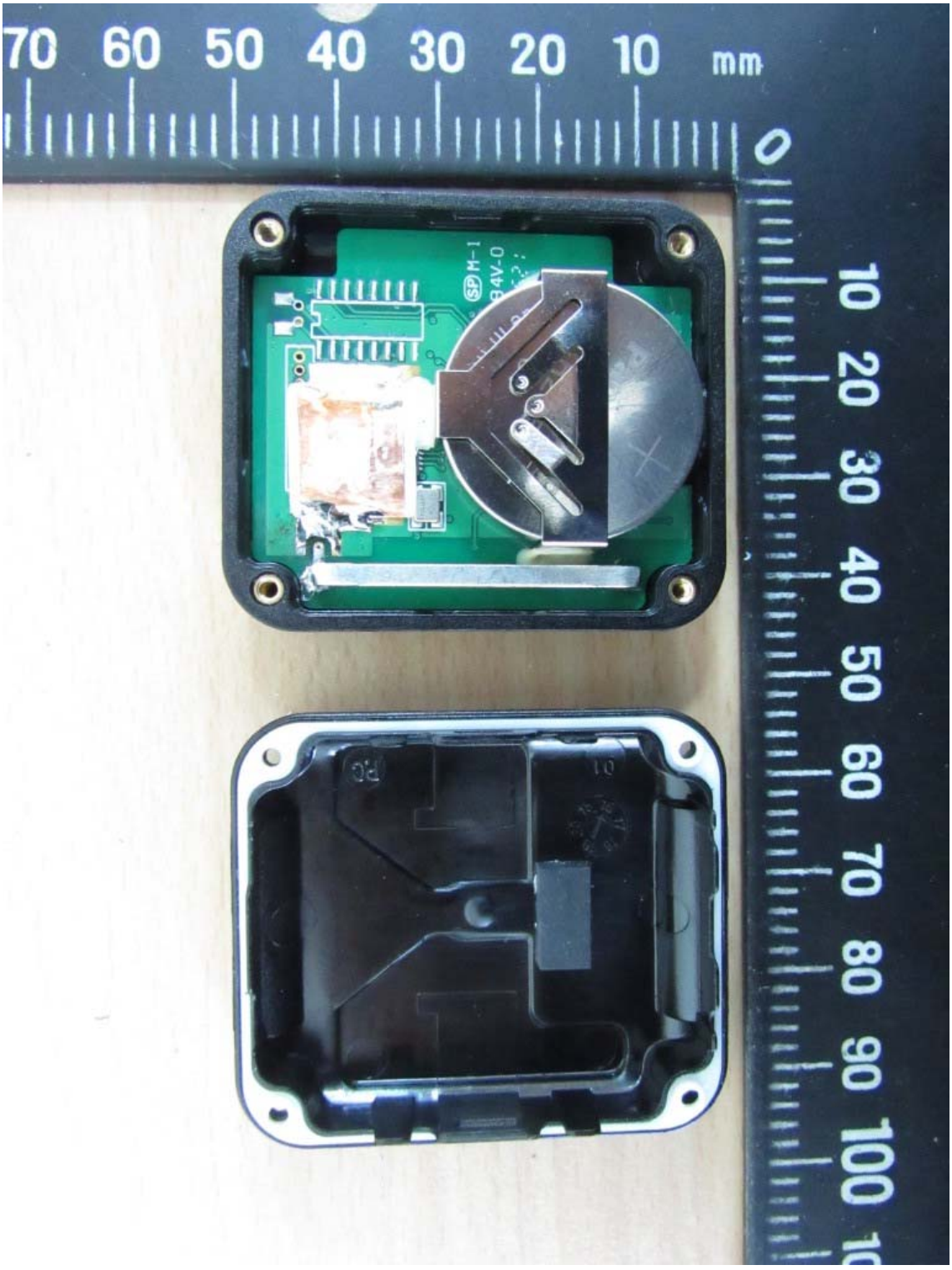
Radiated Spurious Emission

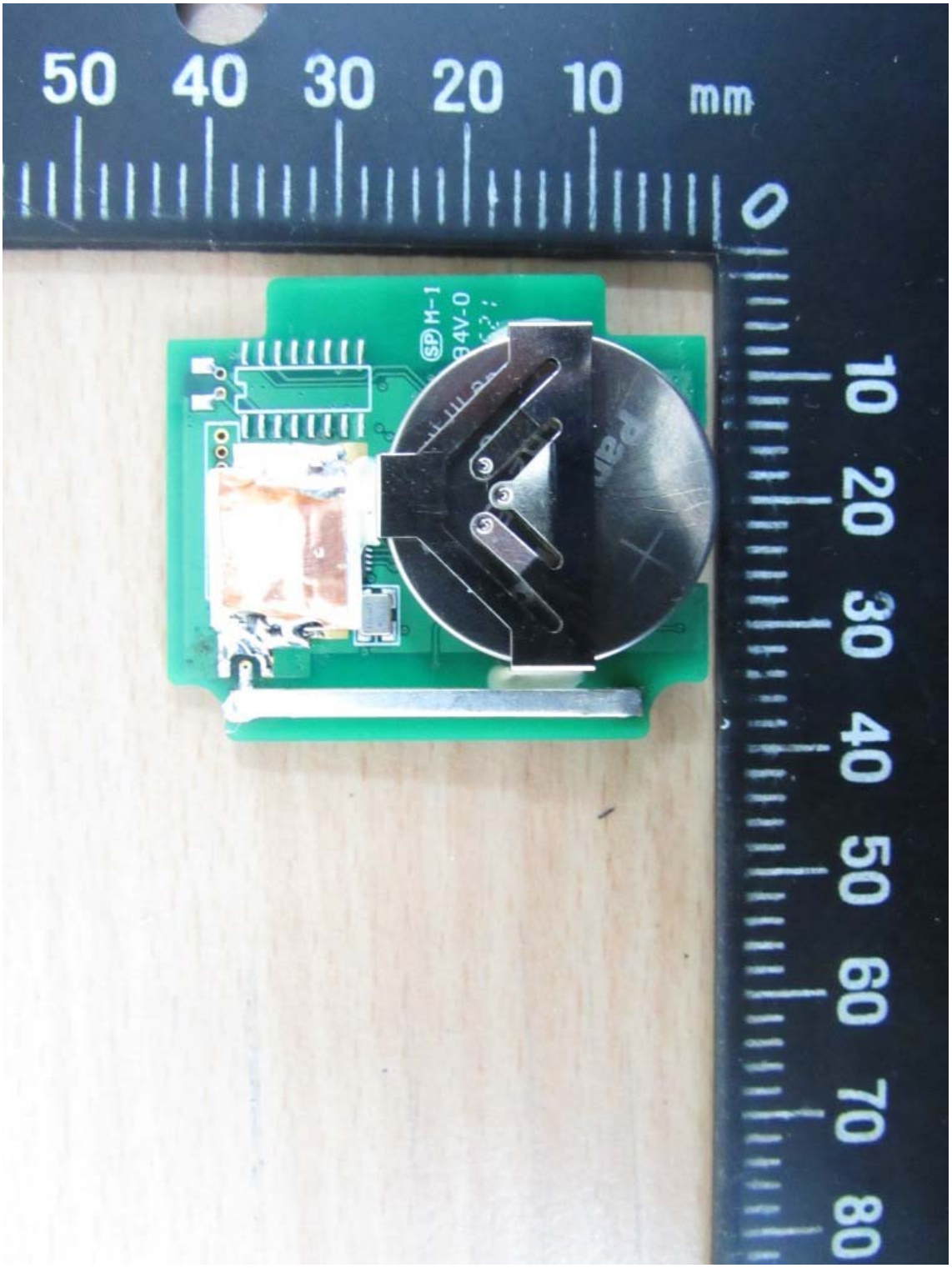
External Photos

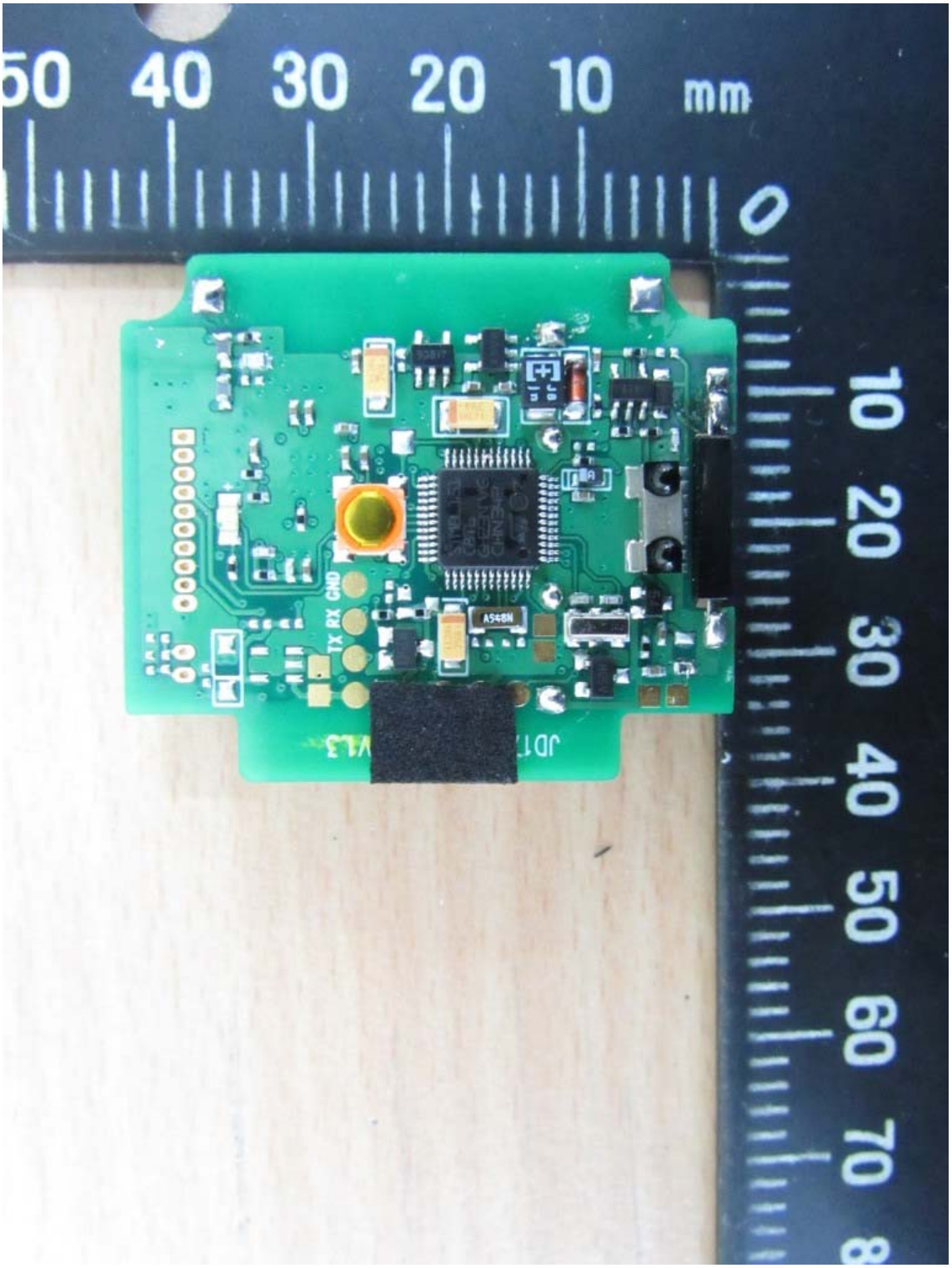

100 90 80 70 60
80 70 60 50 40 30 20 10 mm 0
10 20 30 40 50 60

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

Internal Photos




50 40 30 20 10 mm
0
10 20 30 40 50 60 70 80
SP H-1
94V-0


50 40 30 20 10 mm
0 10 20 30 40 50 60 70
TX RX GND
A548N

Registration number: W6M21612-16531-C-1
FCC ID: NDAJD-170

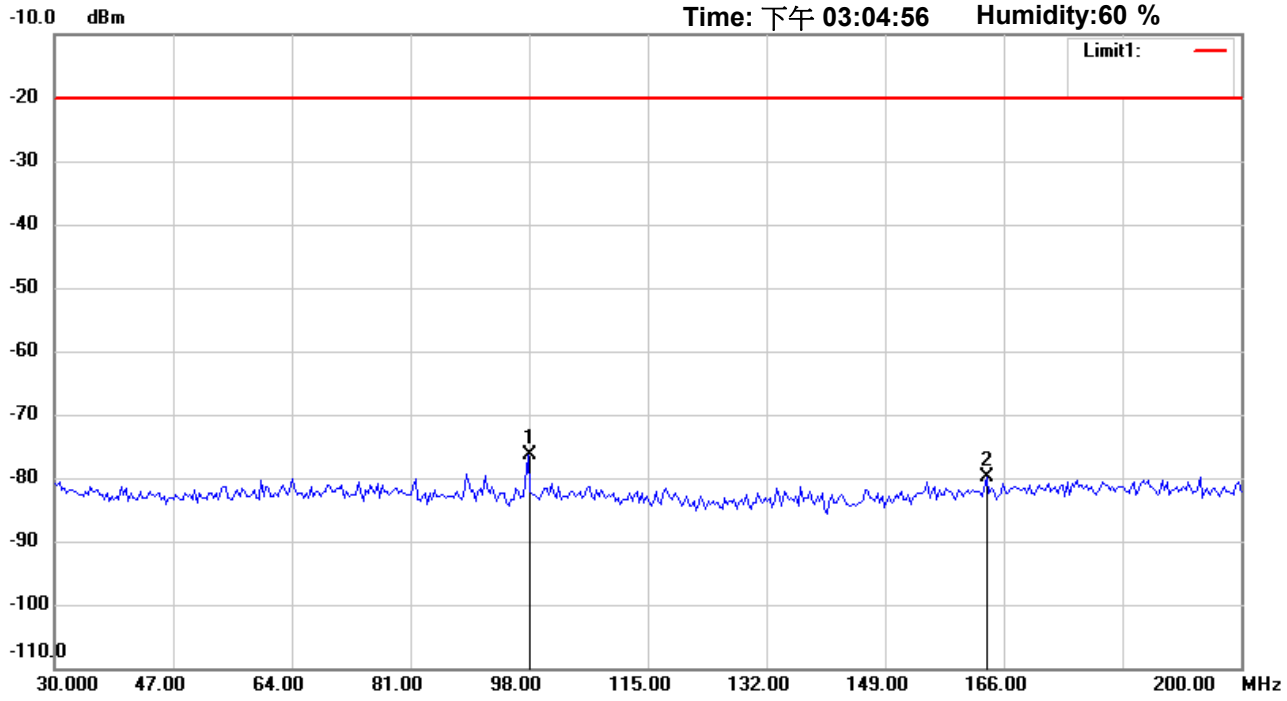
Set Up Photo of Radiated Emission

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

Radiated Emission Measurement

Operator: Mark

File :L1 Data :#1 Date: 2017/1/5 Time: 下午 03:04:56 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 3 Vd.c.
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	97.7957	-99.95	peak	23.64	-76.31	-20.00	150	150	-56.31	
	163.5471	-103.39	peak	23.52	-79.87	-20.00	150	240	-59.87	

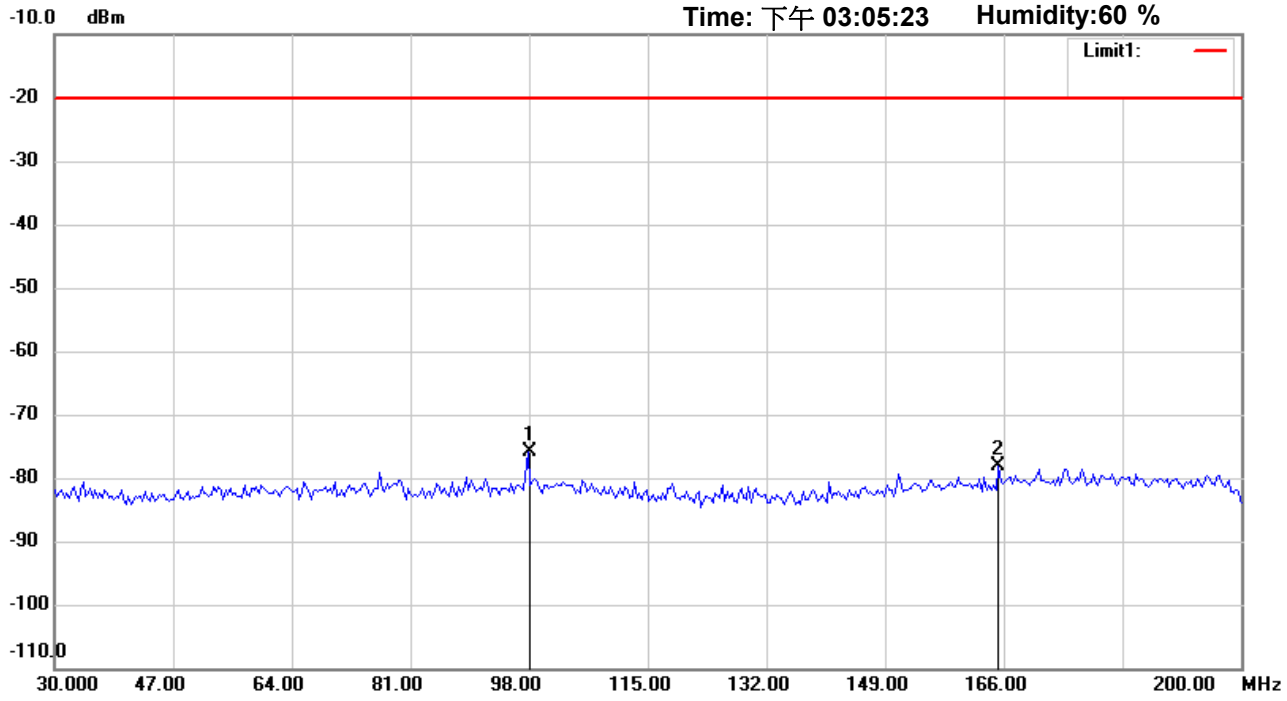
*:Maximum data x:Over limit !:over margin

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: Mark

File :L1 Data :#2 Date: 2017/1/5 Time: 下午 03:05:23 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Vertical*
Power : 3 Vd.c.
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	97.7957	-100.03	peak	24.20	-75.83	-20.00	150	140	-55.83	
	165.2505	-102.74	peak	24.50	-78.24	-20.00	150	200	-58.24	

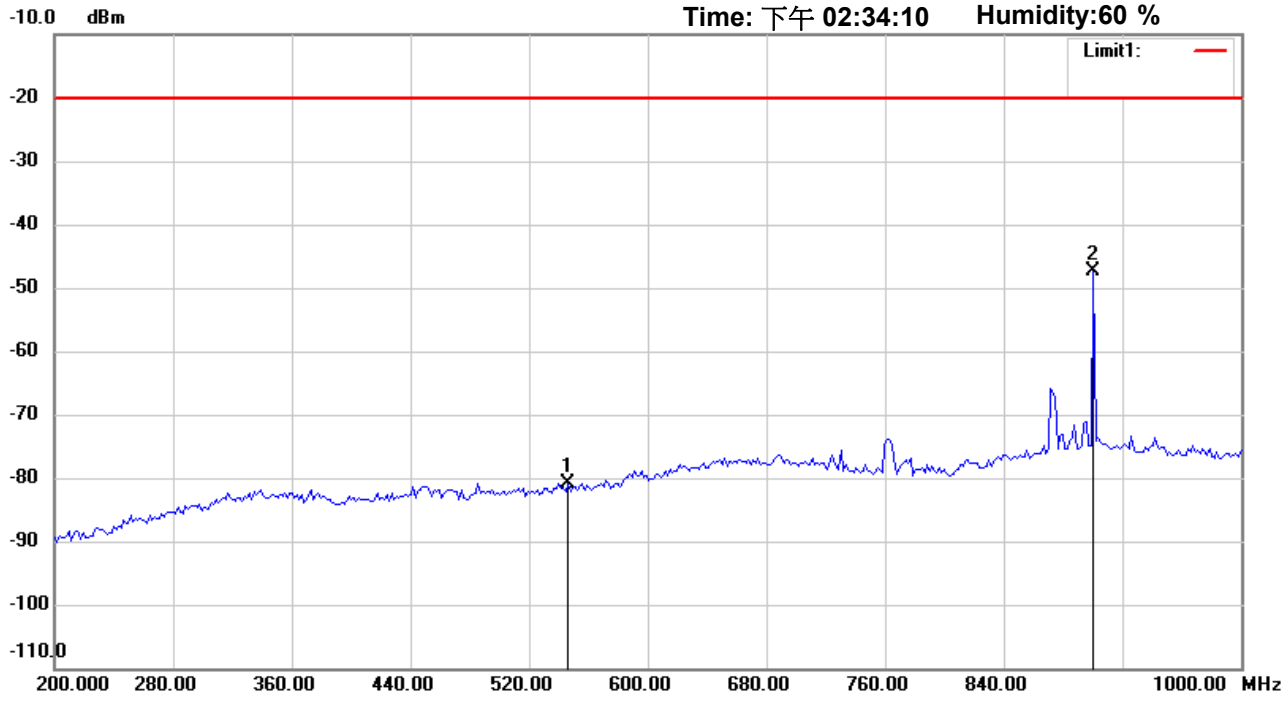
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :L2 Data :#1 Date: 2017/1/5 Time: 下午 02:34:10 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 3 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
	546.2926	-75.05	peak	-5.83	-80.88	-20.00	150	240	-60.88	
*	900.6012	-48.86	peak	1.43	-47.43	-20.00	150	100	-27.43	

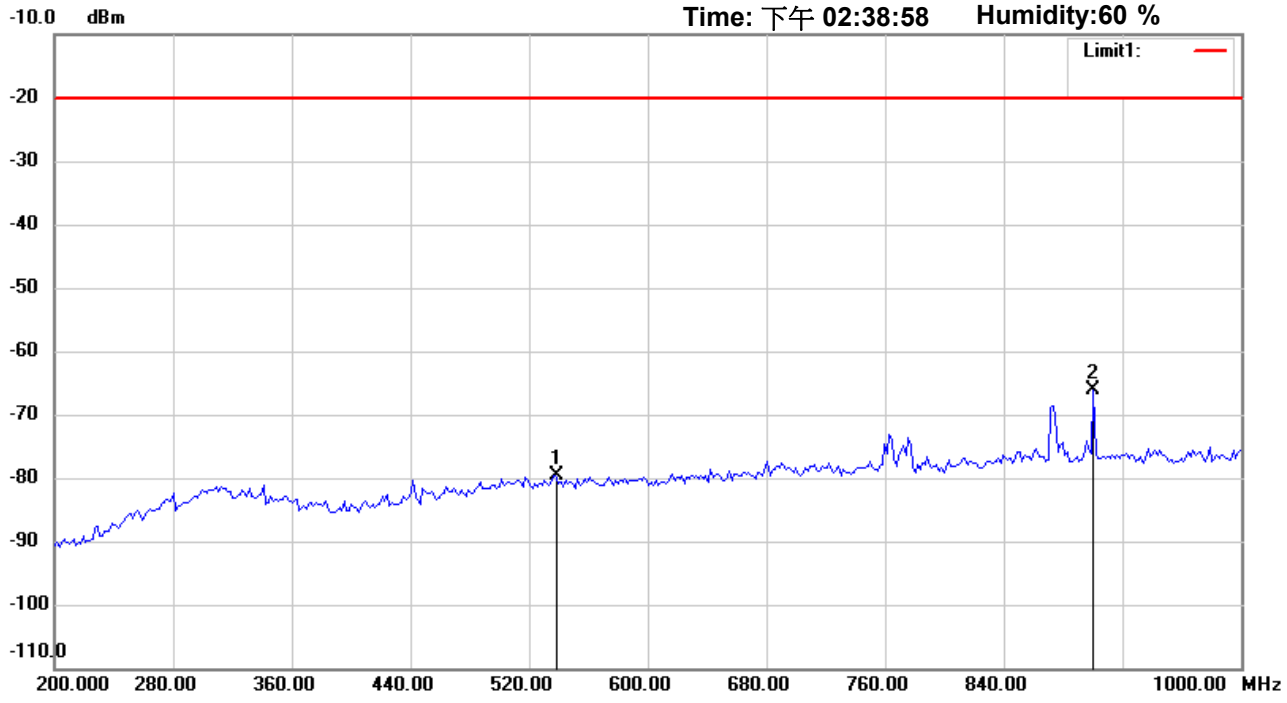
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :L2 Data :#2 Date: 2017/1/5 Time: 下午 02:38:58 Temperature:24 ℃ Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21612-16531

M/N:

Test Mode : Tx 450.0125MHz

Note :

Polarization: *Vertical*

Power : 3 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
	536.6734	-75.34	peak	-4.19	-79.53	-20.00	150	170	-59.53	
*	900.6012	-66.54	peak	0.36	-66.18	-20.00	150	200	-46.18	

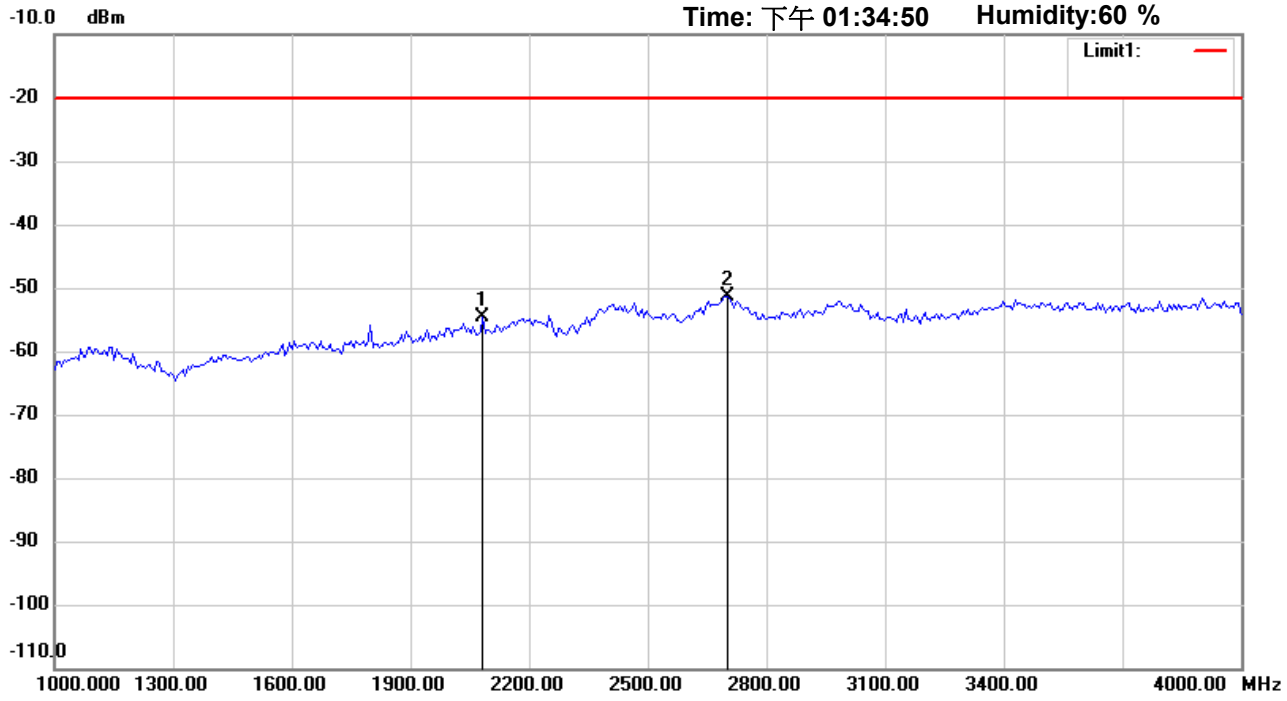
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :L3 Data :#1 Date: 2017/1/5 Time: 下午 01:34:50 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 3 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
	2082.164	-59.84	peak	5.22	-54.62	-20.00	150	140	-34.62	
*	2695.391	-62.58	peak	11.32	-51.26	-20.00	150	240	-31.26	

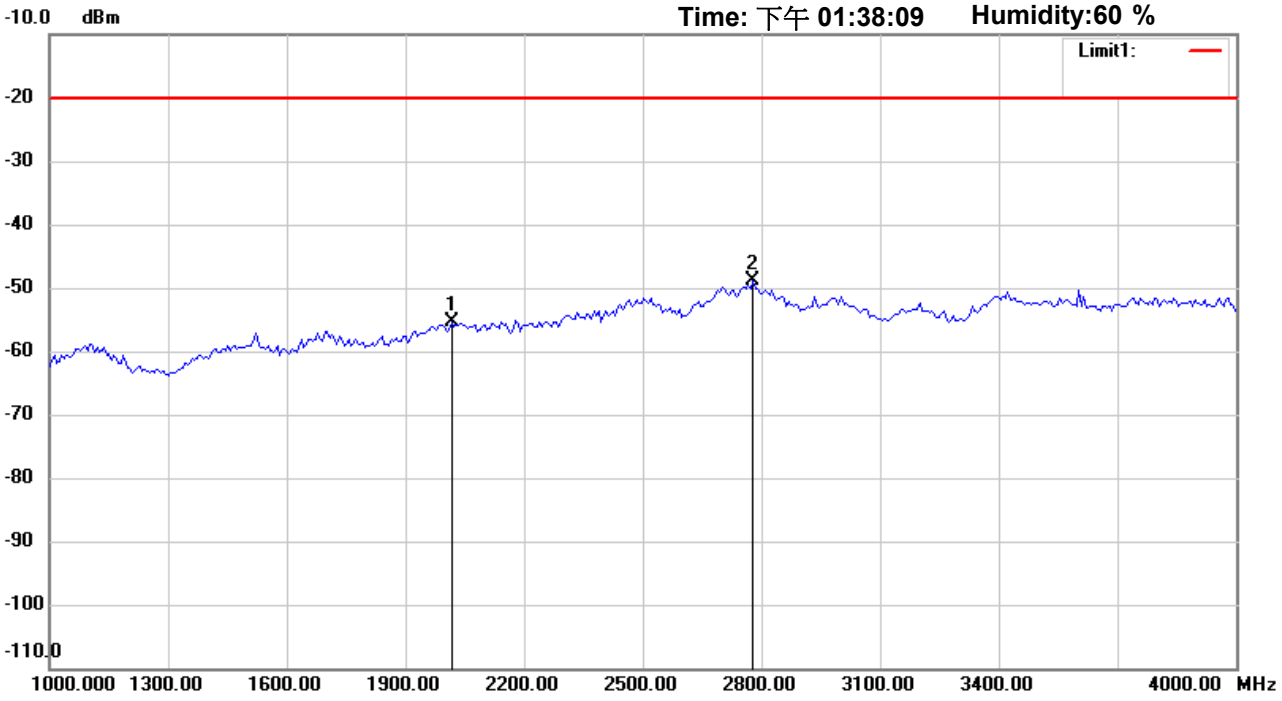
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :L3 Data :#2 Date: 2017/1/5 Time: 下午 01:38:09 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Vertical*
Power : 3 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
	2016.032	-61.56	peak	6.11	-55.45	-20.00	150	40	-35.45	
*	2779.559	-61.06	peak	12.07	-48.99	-20.00	150	140	-28.99	

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

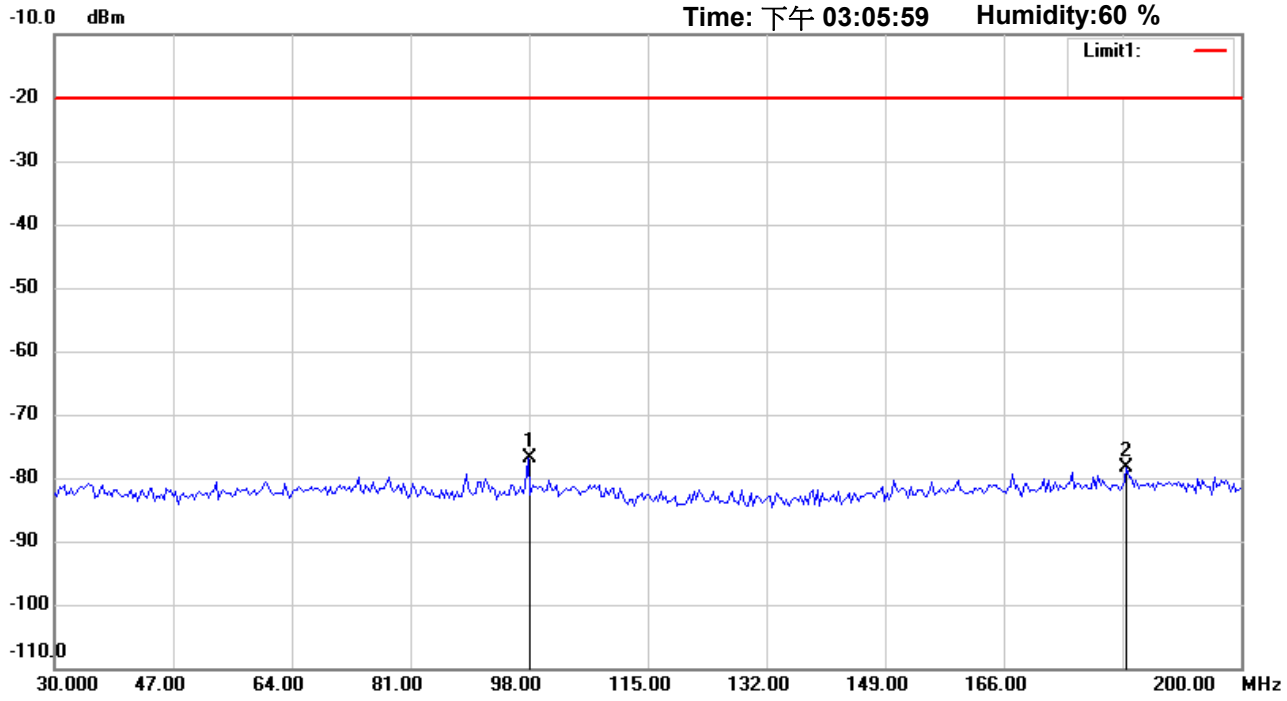
Address:6F.,No.58,Ln 188,Ruey Kuang Rd,Neihu,Taipei
Tel:+886-2-6606-8877
Fax:+886-2-6606-8875

Radiated Emission Measurement

Operator: Mark

File :M1 Data :#1 Date: 2017/1/5 Time: 下午 03:05:59

Temperature:24 ℃ Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21612-16531

M/N:

Test Mode : Tx 460MHz

Note :

Polarization: *Horizontal*

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	97.7957	-100.49	peak	23.64	-76.85	-20.00	150	170	-56.85	
	183.6473	-102.48	peak	24.07	-78.41	-20.00	150	40	-58.41	

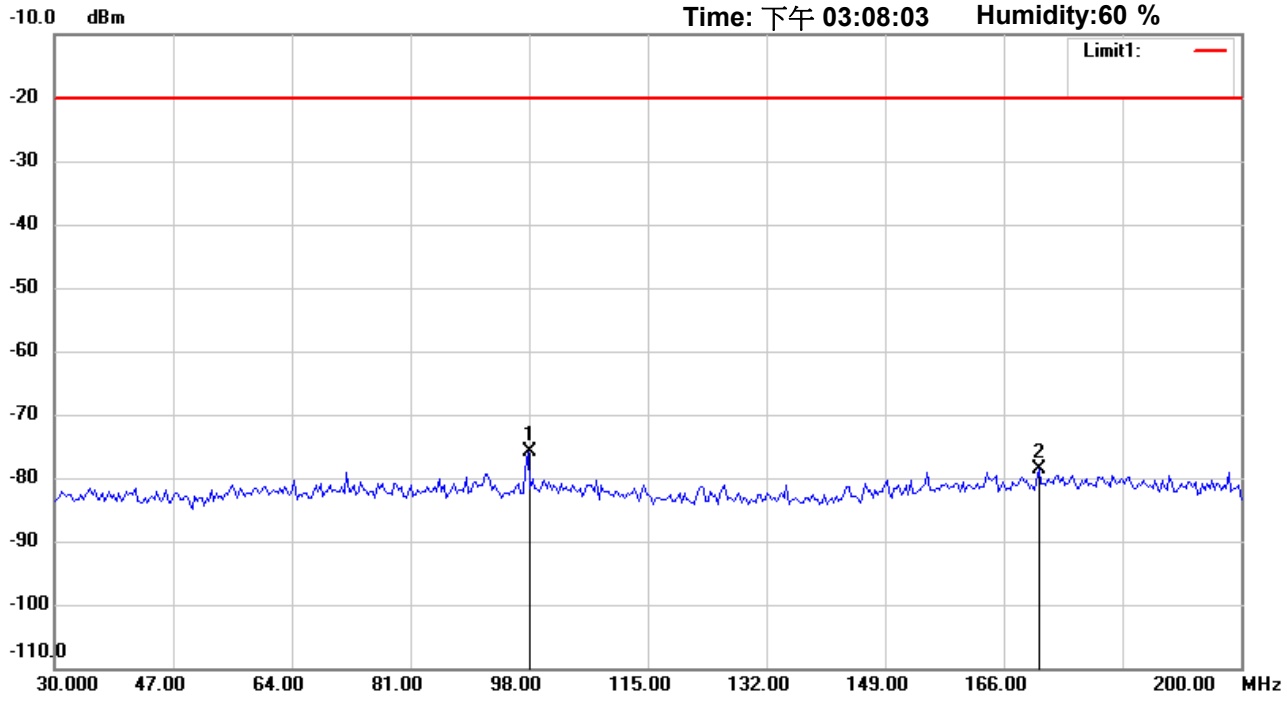
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :M1 Data :#2 Date: 2017/1/5 Time: 下午 03:08:03 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 3 Vd.c.
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	97.7957	-100.12	peak	24.20	-75.92	-20.00	150	40	-55.92	
	171.0421	-103.36	peak	24.63	-78.73	-20.00	150	100	-58.73	

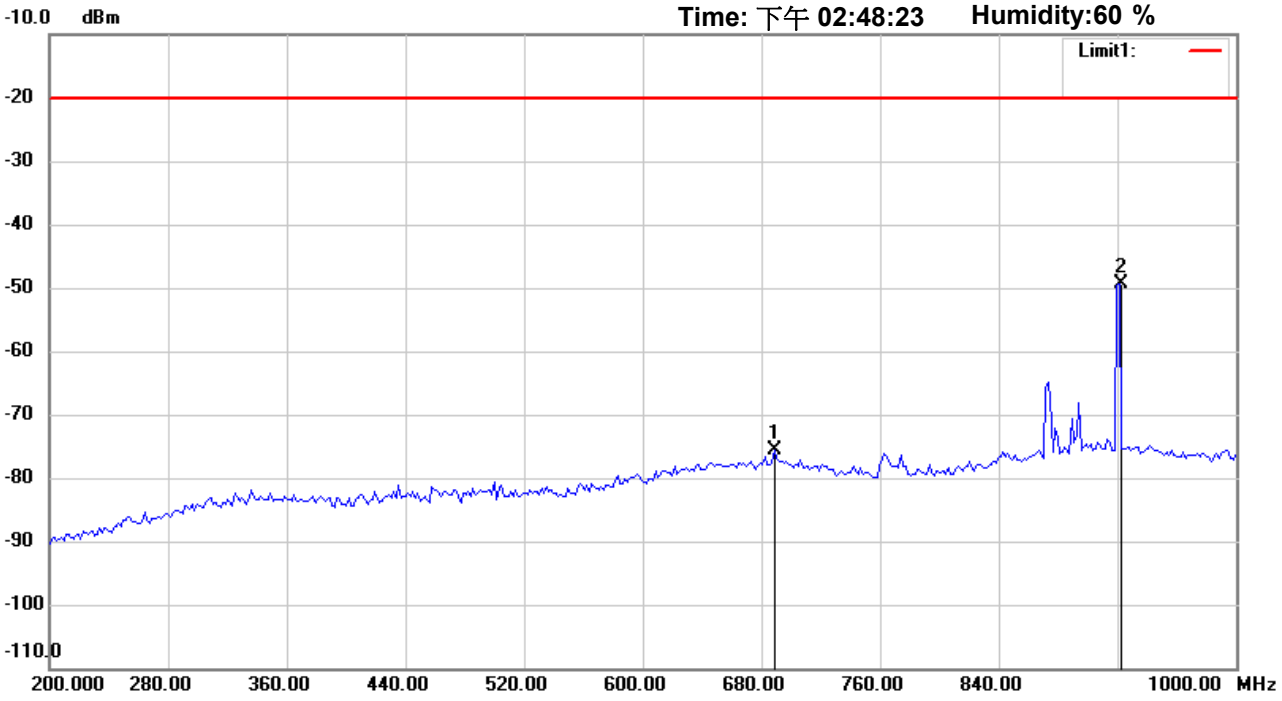
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :M2 Data :#1 Date: 2017/1/5 Time: 下午 02:48:23 Temperature:24 ℃ Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21612-16531

M/N:

Test Mode : Tx 460MHz

Note :

Polarization: *Horizontal*

Power : 3 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
	688.9780	-74.91	peak	-0.81	-75.72	-20.00	150	170	-55.72	
*	921.4430	-50.27	peak	0.82	-49.45	-20.00	150	240	-29.45	

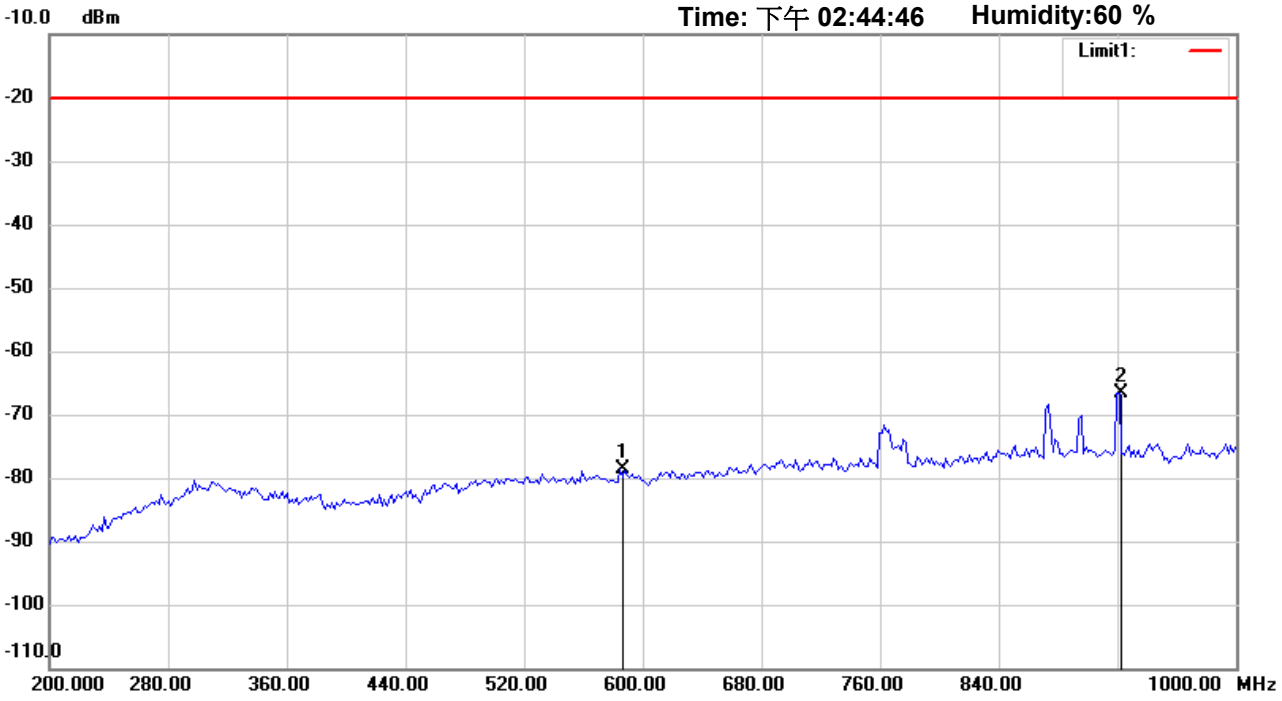
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :M2 Data :#2 Date: 2017/1/5 Time: 下午 02:44:46 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 3 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
	584.7696	-74.76	peak	-3.75	-78.51	-20.00	150	150	-58.51	
*	921.4430	-66.55	peak	0.05	-66.50	-20.00	150	100	-46.50	

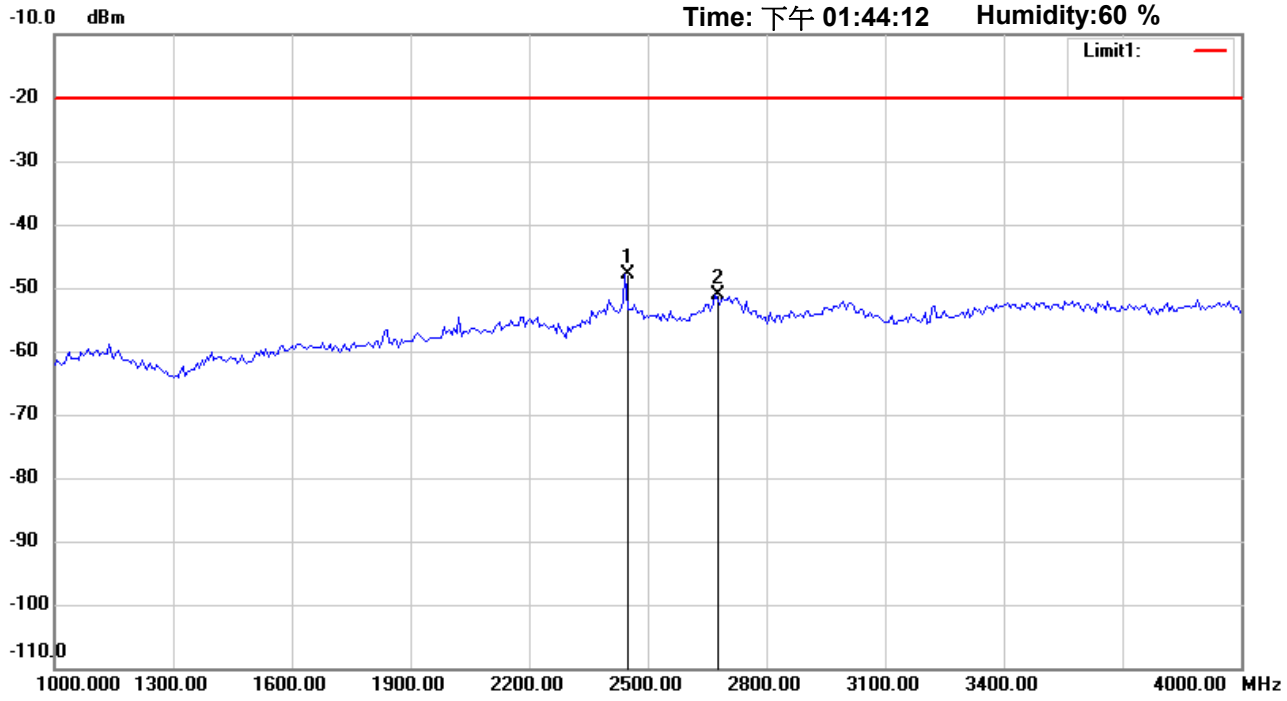
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :M3 Data :#1 Date: 2017/1/5 Time: 下午 01:44:12 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Horizontal*
Power : 3 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
*	2442.886	-56.41	peak	8.57	-47.84	-20.00	150	240	-27.84	
	2671.343	-61.56	peak	10.40	-51.16	-20.00	150	100	-31.16	

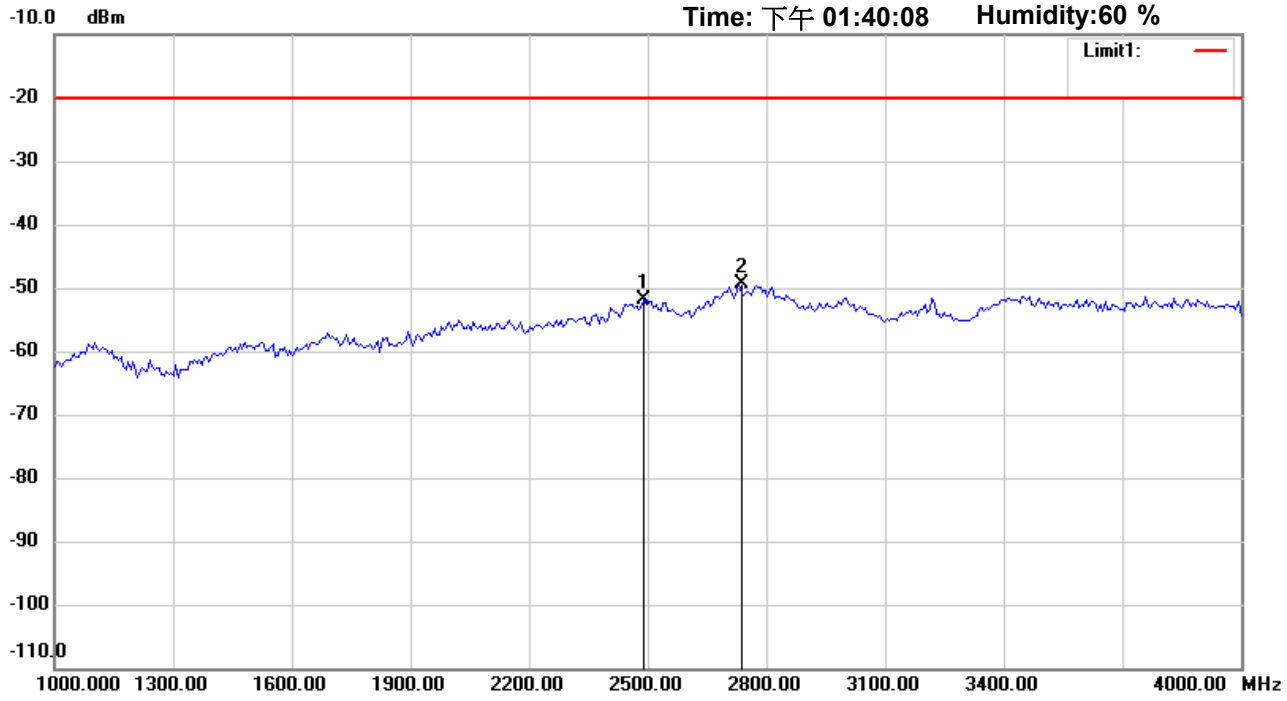
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :M3 Data :#2 Date: 2017/1/5 Time: 下午 01:40:08 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 3 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
	2490.982	-61.85	peak	9.92	-51.93	-20.00	150	100	-31.93	
*	2731.463	-61.50	peak	12.08	-49.42	-20.00	150	240	-29.42	

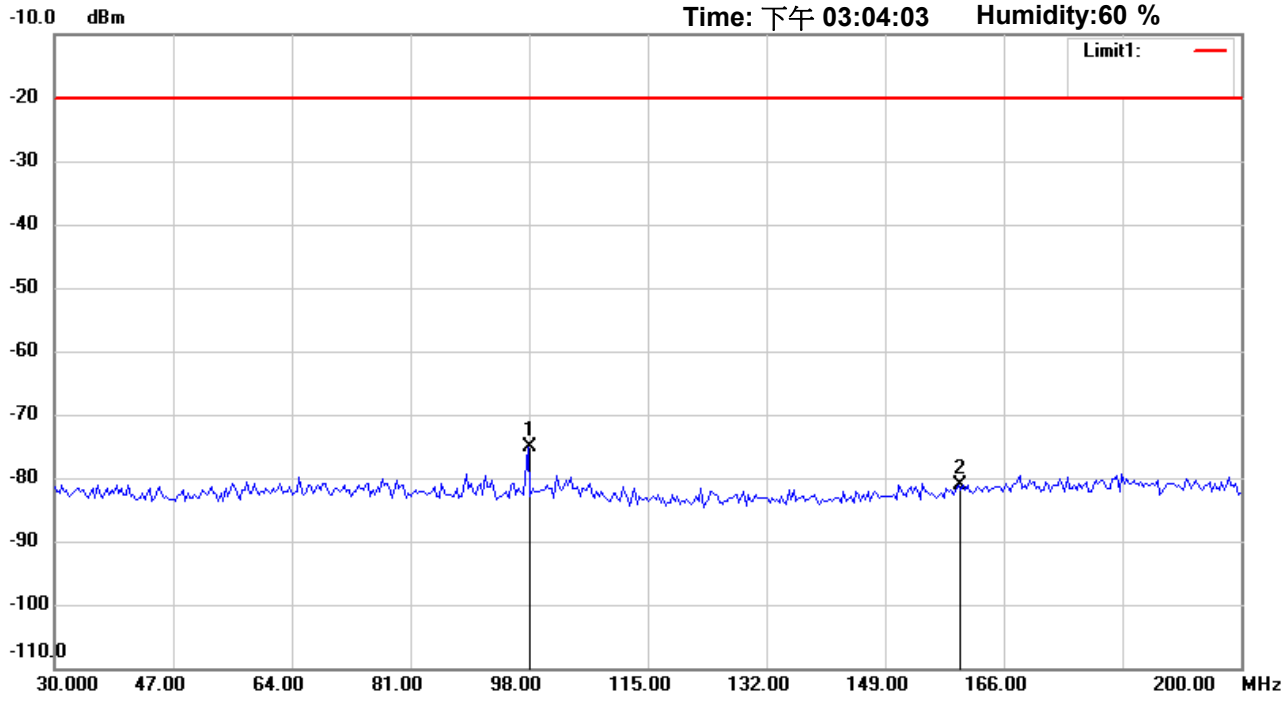
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :H1 Data :#1 Date: 2017/1/5 Time: 下午 03:04:03 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Horizontal*
Power : 3 Vd.c.
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	97.7957	-98.88	peak	23.64	-75.24	-20.00	150	240	-55.24	
	159.4590	-104.44	peak	23.34	-81.10	-20.00	150	200	-61.10	

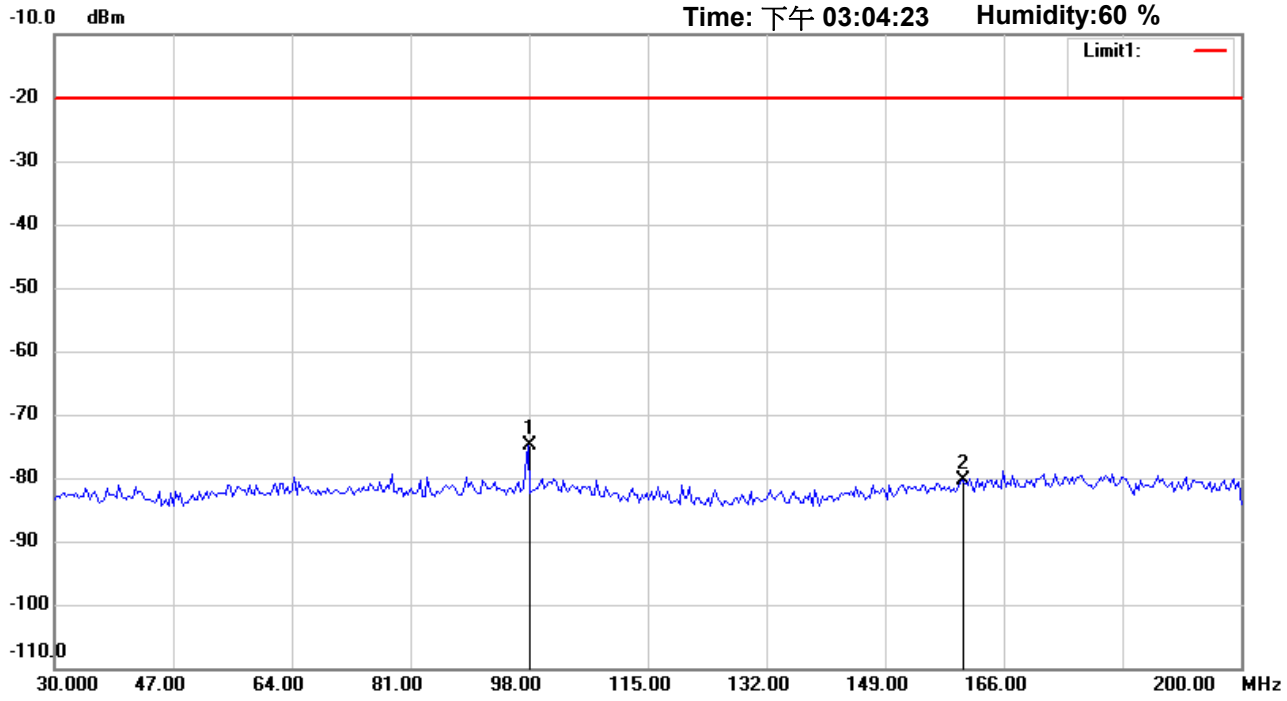
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :H1 Data :#2 Date: 2017/1/5 Time: 下午 03:04:23 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Vertical*
Power : 3 Vd.c.
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	97.7957	-98.96	peak	24.20	-74.76	-20.00	150	170	-54.76	
	160.1403	-104.76	peak	24.39	-80.37	-20.00	150	240	-60.37	

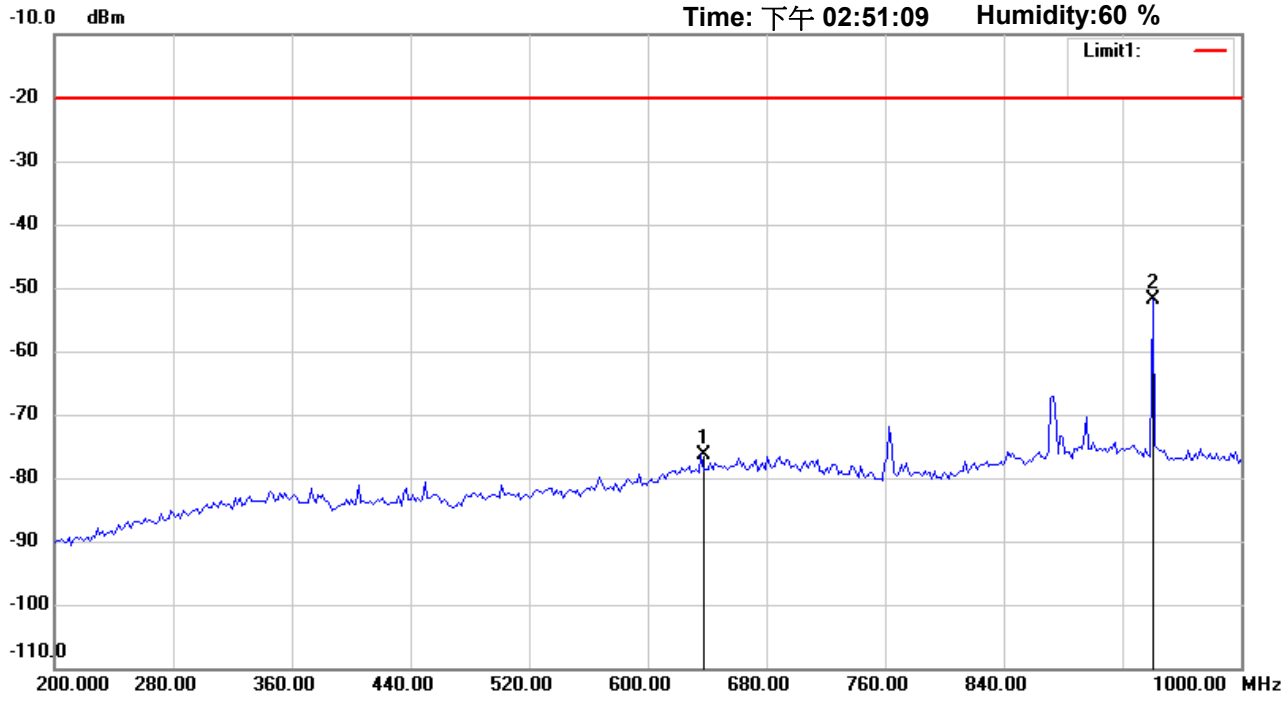
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :H2 Data :#1 Date: 2017/1/5 Time: 下午 02:51:09 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21612-16531
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Horizontal*
Power : 3 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
	636.0722	-74.67	peak	-1.67	-76.34	-20.00	150	240	-56.34	
*	940.6814	-52.16	peak	0.25	-51.91	-20.00	150	270	-31.91	

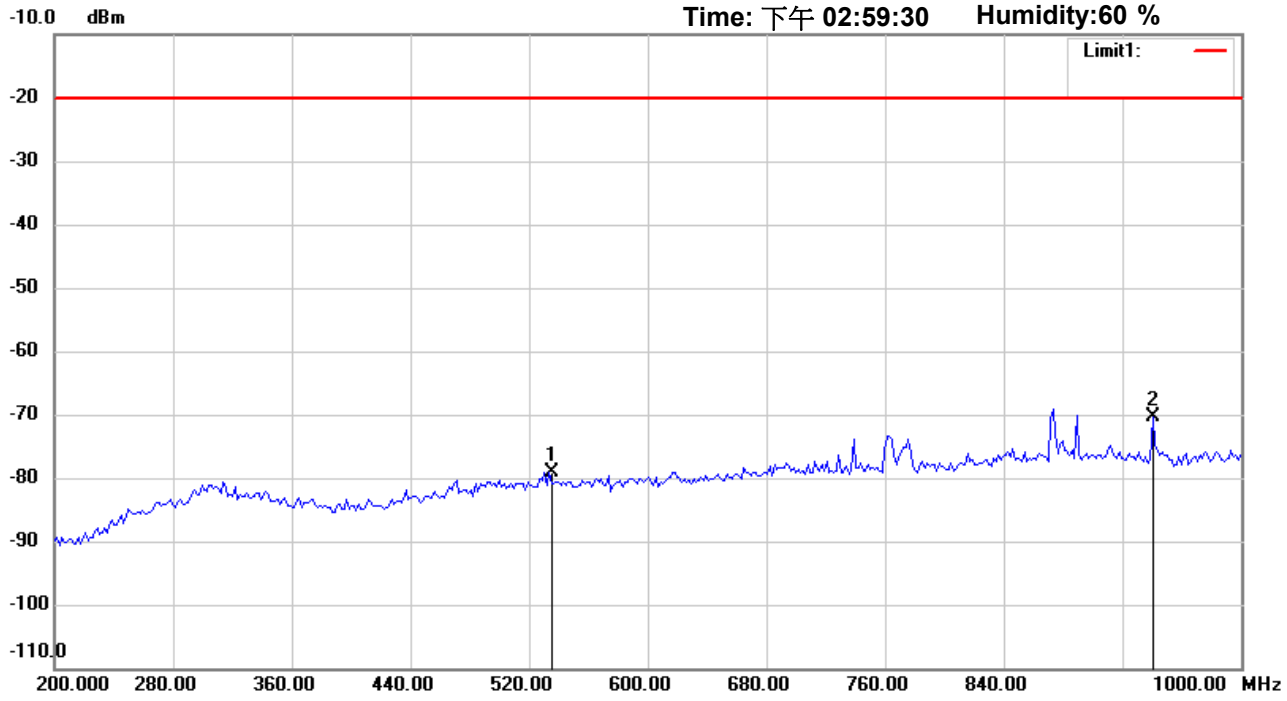
*:Maximum data x:Over limit !:over margin

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

Radiated Emission Measurement

Operator: Mark

File :H2 Data :#2 Date: 2017/1/5 Time: 下午 02:59:30 Temperature:24 ℃ Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21612-16531

M/N:

Test Mode : Tx 469.9875MHz

Note :

Polarization: *Vertical*

Power : 3 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
	533.4670	-74.77	peak	-4.24	-79.01	-20.00	150	240	-59.01	
*	940.6814	-70.11	peak	-0.23	-70.34	-20.00	150	270	-50.34	

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

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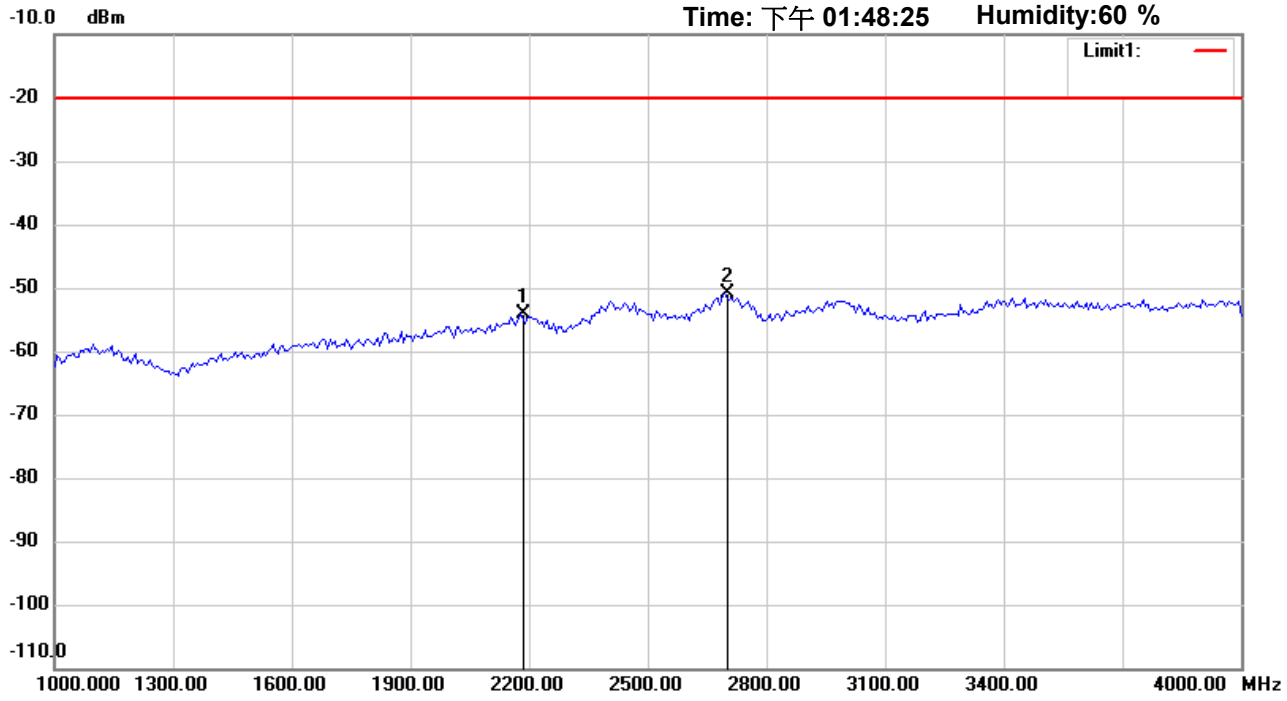
Radiated Emission Measurement

Operator: Mark

File :H3 Data :#1 Date: 2017/1/5 Temperature:24 ℃

Time: 下午 01:48:25 Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21612-16531

M/N:

Test Mode : Tx 469.9875MHz

Note :

Polarization: *Horizontal*

Power : 3 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
	2178.357	-60.69	peak	6.63	-54.06	-20.00	150	100	-34.06	
*	2695.391	-62.20	peak	11.32	-50.88	-20.00	150	140	-30.88	

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

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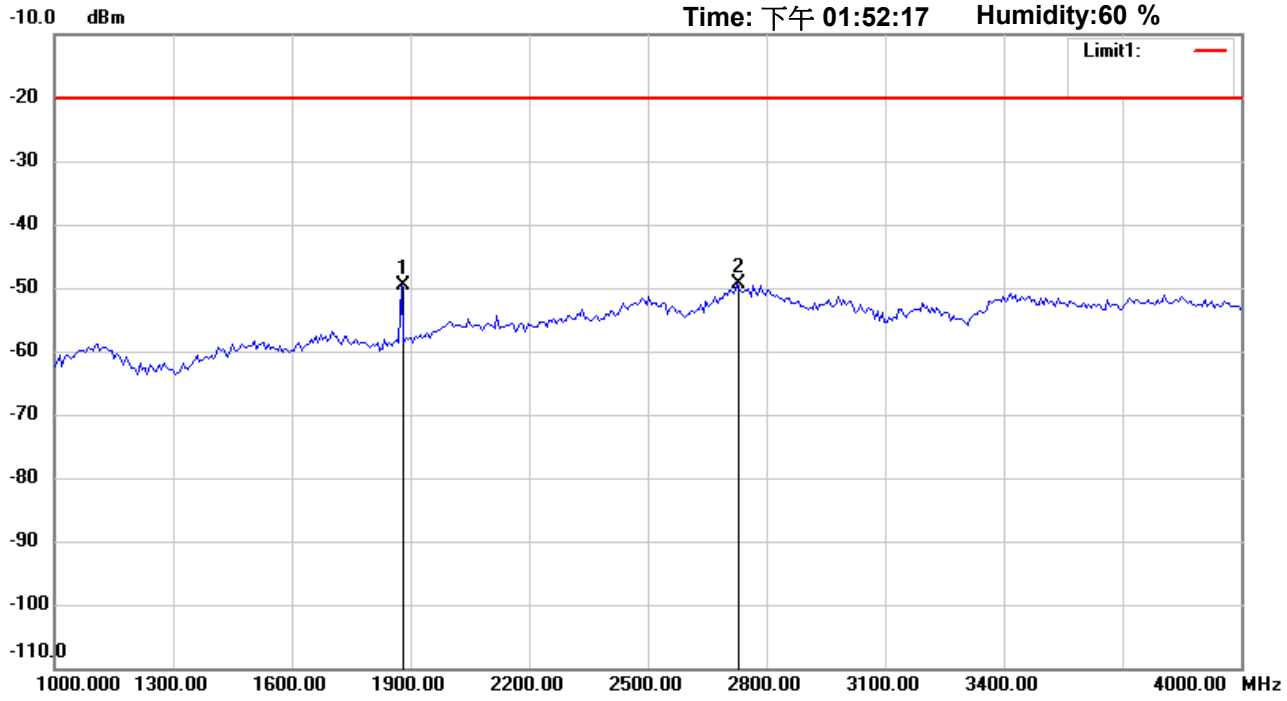
Radiated Emission Measurement

Operator: Mark

File :H3 Data :#2 Date: 2017/1/5 Temperature:24 ℃

Time: 下午 01:52:17 Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21612-16531

M/N:

Test Mode : Tx 469.9875MHz

Note :

Polarization: *Vertical*

Power : 3 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
	1877.756	-53.05	peak	3.45	-49.60	-20.00	150	240	-29.60	
*	2725.451	-61.35	peak	12.08	-49.27	-20.00	150	100	-29.27	

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