FCC PART 90 TEST REPORT

for

TRANSMITTER POCSAG ENCODER

Model No.: TX-200EN

FCC ID: NDATX200EN

of

Applicant: **Gold Apollo Co., Ltd.**
Address: **Rm 1,3rd Fl.,No. 77, Sec. 1, Hsin Tai Wu Rd.,Hsi-Chih Dist, New Taipei City, Taiwan, R.O.C. 221**

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: TW1477, TW0020, TW1072

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

A2LA Accredited No.: 2732.01

Report No.: W6M21807-18297-C-1

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 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:

October 04, 2018	Robert Ren	Robert Ren
Date	Name	Signature

Technical responsibility for area of testing:

October 04, 2018	Kevin Wang	Kevin Wang
Date	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. TW1477, TW0020, TW1072

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 1,3rd Fl.,No. 77, Sec. 1, Hsin Tai Wu Rd.,Hsi-Chih Dist,
City:	New Taipei City,
Country:	Taiwan, R.O.C. 221
Telephone:	+886 2 2698 8888
Fax:	+886 2 2698 1750

1.4 Application details

Date of receipt of test item:	August 17, 2018
Date of test:	from August 20, 2018 to October 03, 2018

1.5 General information of Test item

Type of test item:	TRANSMITTER POCSAG ENCODER
Model Number:	TX-200EN
Brand Name:	Apollo
Multi-listing model number:	TX-200, TX-200ENT, TX-200ENA, TX-200ENI, TX-200RP
Photos:	See appendix

Technical data

Operating frequency band:	450-470 MHz
Sample tested frequency:	450.0125 MHz, 460 MHz, 469.9875 MHz
Channel spacing:	12.5 kHz
Type of modulation:	FM, 2FSK
Designation of emission:	5K96F3D, 5K96F3E
Antenna Type / Gain:	Dipole antenna / -0.25 dBi
Connection of Antenna:	☒ detachable ☐ not detachable
Power Rating:	Adaptor I/P: 100-240V~50-60Hz 1A MAX. O/P: 12V, 3A
Operation modes:	Simplex

Manufacturer: (if applicable)

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

1.6 Test standards

Technical standard: FCC RULES PART 90 (2017-10)

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

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

Relative humidity content: 20 ... 75 %
Air pressure: 86-103 KPa

Test item Name	Uncertainty
Estimation Result of Uncertainty of Conducted Emission	Expanded Uncertainty：1.54 dB
Estimation Result of Uncertainty of Radiated Emission(3M)	Expanded Uncertainty： 0.009-30 MHz：2.17 dB 30-1000 MHz：3.57 dB 1-18 GHz：2.60 dB 18-40 GHz：2.58 dB
Estimation Result of Uncertainty of Bandwidth Measurement 20 dB Bandwidth, Occupied bandwidth, Channel bandwidth, Necessary Bandwidth	Expanded Uncertainty：0.45 kHz
Estimation Result of Uncertainty of Conducted Output Power Measurement Output power	Expanded Uncertainty：1.01 dB
Estimation Result of Uncertainty of Conducted Spurious Emission Measurement Conducted spurious emission、Spectrum emission mask	Expanded Uncertainty：1.01 dB
Estimation Result of Uncertainty of Conducted Spurious Emission Measurement Conducted spurious emission	Expanded Uncertainty：1.01 dB
Estimation Result of Uncertainty of EIRP Measurement EIRP、ERP、Output power(dBm)、Radiated spurious emission(dBm), Receiver spurious radiations (≥30 MHz)	Expanded Uncertainty： 30-200MHz：2.32 dB 200-1000MHz：2.30 dB 1-18GHz：3.25 dB 18-40GHz：2.89 dB

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
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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	2018/5/30	2019/5/29
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2017/10/26	2018/10/25
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2018/8/21	2019/8/20
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	2018/7/13	2019/7/12
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2018/8/21	2019/8/20
ETSTW-CE 028	MXE EMI Receiver	N9038A	MY53220110	Agilent	2018/7/16	2019/7/15
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2018/5/30	2019/5/29
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2018/5/21	2019/5/20
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	2018/7/13	2019/7/12
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2018/7/12	2019/7/11
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	ETS-Lindgren	2018/3/26	2019/3/25
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2018/1/23	2019/1/22
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2018/4/13	2019/4/12
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2018/4/26	2019/4/25
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2018/3/1	2019/2/28
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2018/3/1	2019/2/28
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2018/3/1	2019/2/28
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2018/3/6	2019/3/5
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2018/3/1	2019/2/28
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2018/3/30	2019/3/29
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	2018/9/7	2019/9/6
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2018/9/17	2019/9/16
ETSTW-RE 091	Match Pad	MDCS1500	None	WOKEN	2018/4/16	2019/4/15
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2018/2/23	2019/2/22
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	T-0A023536	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE	2018/1/15	2019/1/14

				CIRCUITS		
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2018/5/29	2019/5/28
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2018/8/8	2019/8/7
ETSTW-RE 126	5GHz Notch filter	5NSL12-5800/E221.3-O/O	1	K&L Microwave	2018/8/8	2019/8/7
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2018/2/27	2019/2/26
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2018/8/8	2019/8/7
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2018/8/8	2019/8/7
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	2018/3/30	2019/3/29
ETSTW-RE 147	Bi-log Hybrid Antenna	MCTD 2786B	BLB16M04005	ETC	2018/3/23	2019/3/22
ETSTW-RE 151	Thermohygrometer	608-h1	45104376	TESTO	2018/8/17	2019/8/16
ETSTW-EMI 011	USB Compact Modulator	SFC-U	101689	R&S	2018/5/10	2019/5/9
ETSTW-EMS 008	Exposure Level Tester	ELT-400	G-0009	Narda	2018/7/17	2019/7/16
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2018/2/27	2019/2/26
ETSTW-GSM 003	Radio Communication Analyzer	MT8820C	6201342073	Anritsu	2018/3/2	2019/3/1
ETSTW-GSM 004	Wideband Radio Communication Tester	CMW500	128092	R&S	2017/10/16	2018/10/15
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2018/1/11	2019/1/10
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2018/1/11	2019/1/10
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2018/1/11	2019/1/10
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2018/1/11	2019/1/10
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2018/9/7	2019/9/6
ETSTW-GSM 024	Radio Communication Analyzer	MT8821C	None	Anritsu	2018/3/7	2019/3/6
ETSTW-GSM 025	Band Reject Filter	BRM19835	001	Micro-Tronics	2018/8/9	2019/8/8
ETSTW-Cable 011	SMA to N type Cable	RGU-400	None	THERMAX	Pre-test Use NCR	
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2018/2/22	2019/2/21
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2018/2/22	2019/2/21
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2018/2/22	2019/2/21
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2018/2/22	2019/2/21
ETSTW-Cable 020	N TYPE Cable	OATS Cable 1	N30N30-L335-15M	JYE BAO CO.,LTD.	2018/7/2	2019/7/1
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2018/2/27	2019/2/26
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2018/5/14	2019/5/13
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2018/9/17	2019/9/16
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2018/9/17	2019/9/16
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104（S_Cable 9）	279067	HUBER+SUHNER	2018/2/27	2019/2/26

ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104（S_Cable 10）	238092	HUBER+SUHNER	2018/3/30	2019/3/29
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2018/3/30	2019/3/29
ETSTW-Cable 048	Microwave Cable	SUCOFLEX 104	325519	HUBER+SUHNER	2018/3/30	2019/3/29
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2018/6/9	2019/6/8
ETSTW-Cable 064	Microwave Cable	SUCOFLEX 104	MY28891	HUBER+SUHNER	2018/3/30	2019/3/29
ETSTW-Cable 066	SMA type cable	32022	None	ASTROLAB	2018/8/30	2019/8/29
ETSTW-Cable 071	N TYPE CABLE	EMCCFD400-NM-NM-25000	170239	EMCI	2018/6/9	2019/6/8
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.

3. Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Modulation Characteristics	2.1047(a) (b); 2.1033(c)	☐	☐	☐
Necessary Bandwidth	90.209	☒	☒	☐
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	☐	☐	☐

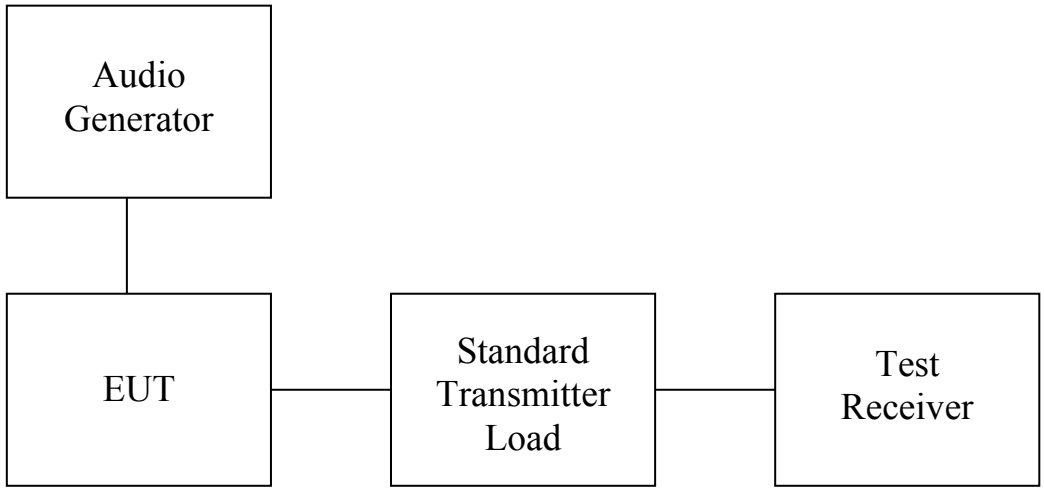
The following is intentionally left blank.

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 20mV

Test equipment used: ETSTW-RE 072

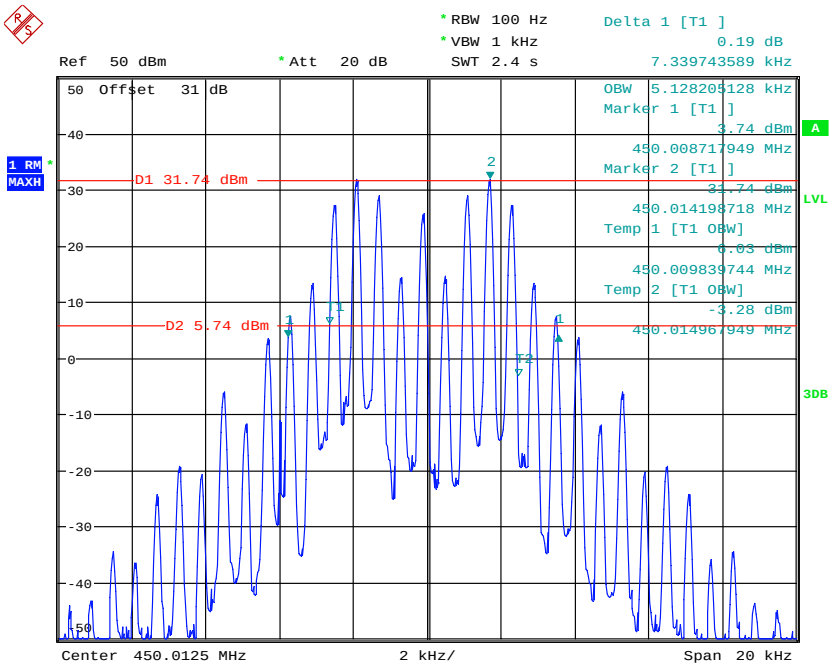
Explanation: The EUT belongs to digital device so this test is not required.

4.3.2 Necessary Bandwidth

12.5 kHz

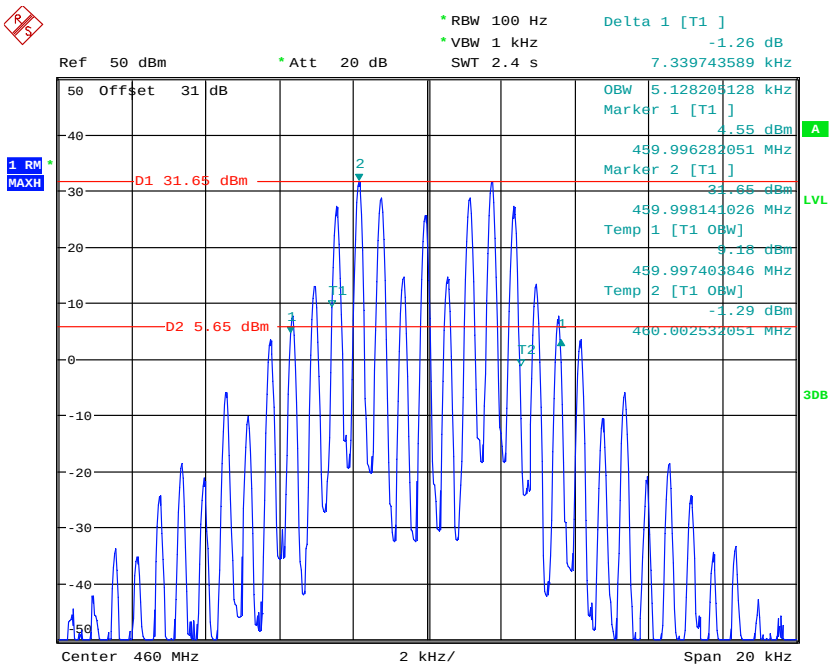
Frequency (MHz)	26dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Max. Limit (kHz)
450.0125	7.339743589	5.128205128	8.5
460	7.339743589	5.128205128	8.5
469.9875	7.307692307	5.961538462	8.5

450.0125 MHz



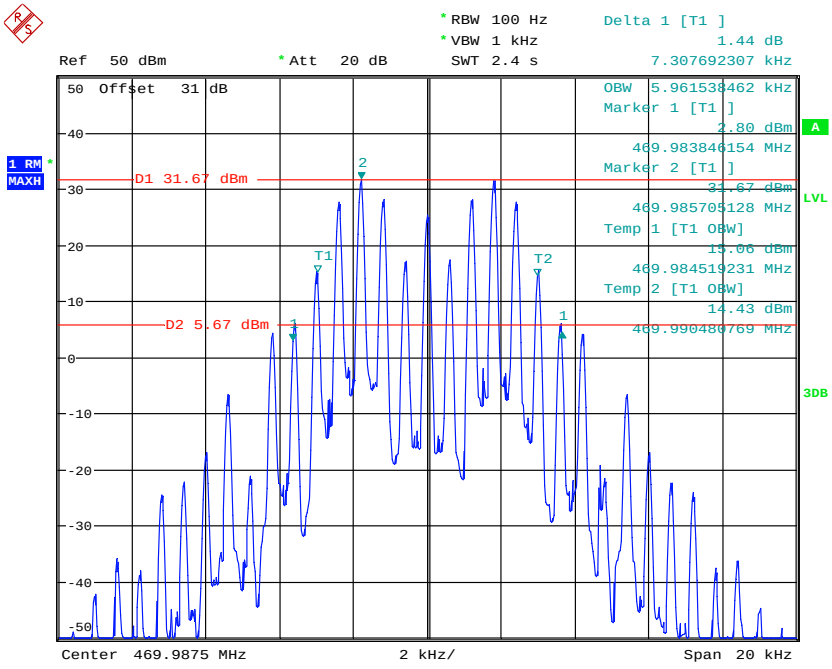
Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

460 MHz



NECESSARY BANDWIDTH
Date: 19.SEP.2018 11:13:40

469.9875 MHz



NECESSARY BANDWIDTH
Date: 19.SEP.2018 11:10:33

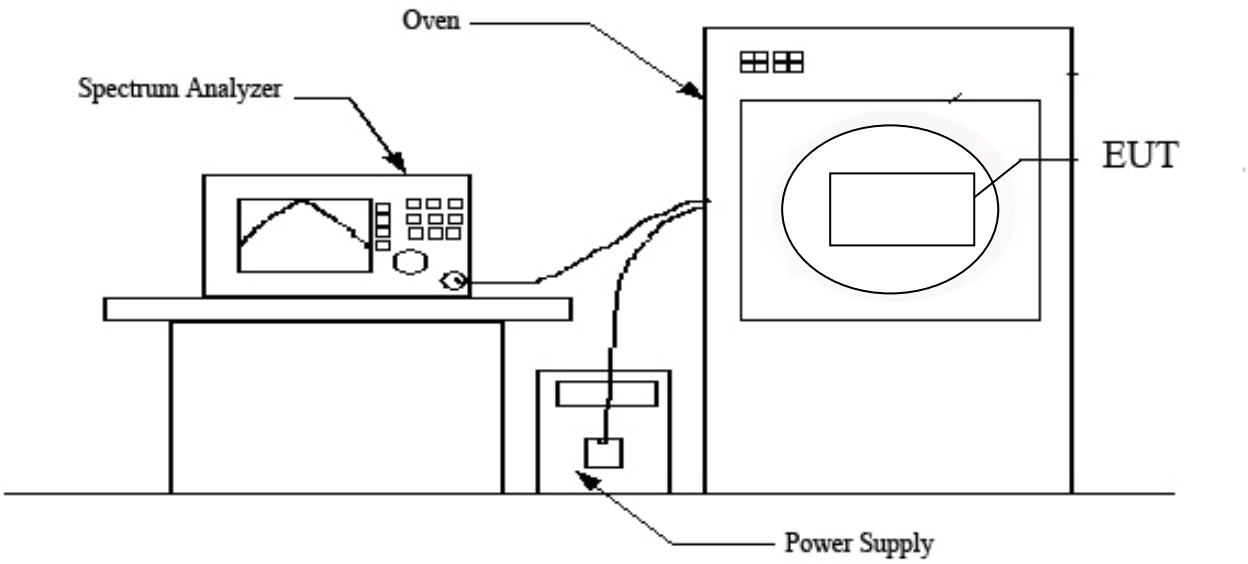
Test equipment used: ETSTW-RE 055, ETSTW-RE072

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

Nominal Frequency: 450.0125MHz		Nominal Frequency: 460MHz		Nominal Frequency: 469.9875MHz	
Voltage V.S Frequency Stability		Voltage V.S Frequency Stability		Voltage V.S Frequency Stability	
Voltage	Measurement Frequency	Voltage	Measurement Frequency	Voltage	Measurement Frequency
120 V	450.0123462	120 V	459.9999768	120 V	469.9875393
132 V	450.0123462	132 V	459.9999768	132 V	469.9875393
108 V	450.0123462	108 V	459.9999768	108 V	469.9875393
Max Deviation (MHz)	-0.000153846	Max Deviation (MHz)	-0.0000232370	Max Deviation (MHz)	0.0000392630
Max Deviation (ppm)	-0.341870504	Max Deviation (ppm)	-0.050515217	Max Deviation (ppm)	0.08354052
Limit (ppm)	2.5	Limit (ppm)	2.5	Limit (ppm)	2.5
Temperature V.S Frequency Stability		Temperature V.S Frequency Stability		Temperature V.S Frequency Stability	
Temperature	Measurement Frequency	Temperature	Measurement Frequency	Temperature	Measurement Frequency
-20	450.0125513	-20	459.9999079	-20	469.9874784
-10	450.0125489	-10	459.999903	-10	469.9875497
0	450.0125465	0	459.9999559	0	469.9875513
10	450.0124808	10	459.9999808	10	469.9875617
20	450.0123462	20	459.999984	20	469.9875192
30	450.0123462	30	459.999984	30	469.9875192
40	450.0123782	40	459.9999359	40	469.9875088
50	450.0123325	50	459.9999583	50	469.987476
60	450.0123149	60	459.9999463	60	469.9874511
Max Deviation (MHz)	-0.000185	Max Deviation (MHz)	-0.000097	Max Deviation (MHz)	0.000062
Max Deviation (ppm)	-0.411313019	Max Deviation (ppm)	-0.210771739	Max Deviation (ppm)	0.13127796
Limit (ppm)	2.5	Limit (ppm)	2.5	Limit (ppm)	2.5

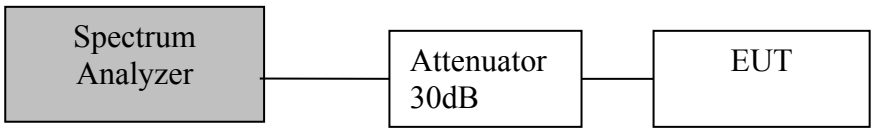
Test equipment used: ETSTW-RE 055

6. Transmitter Output Power

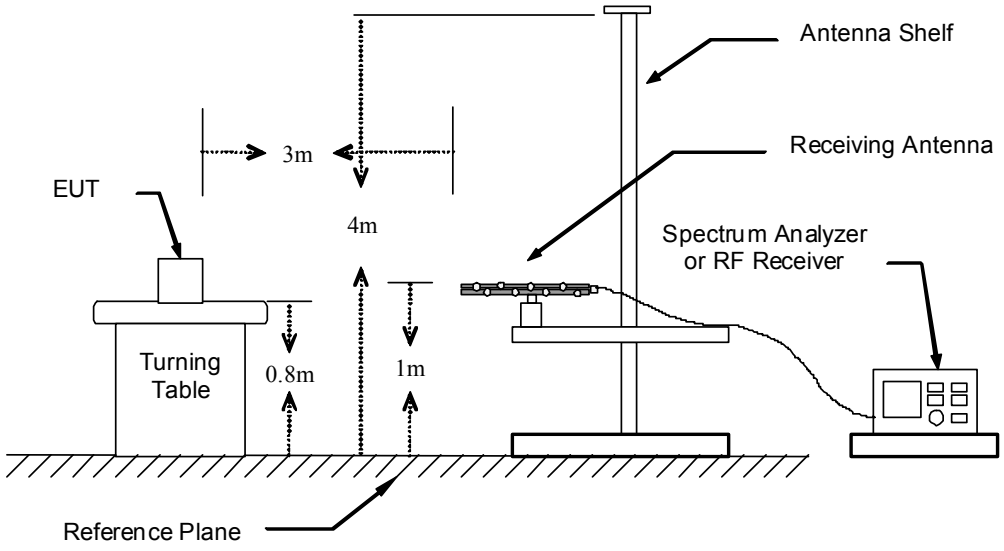
6.1 Test Procedures

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

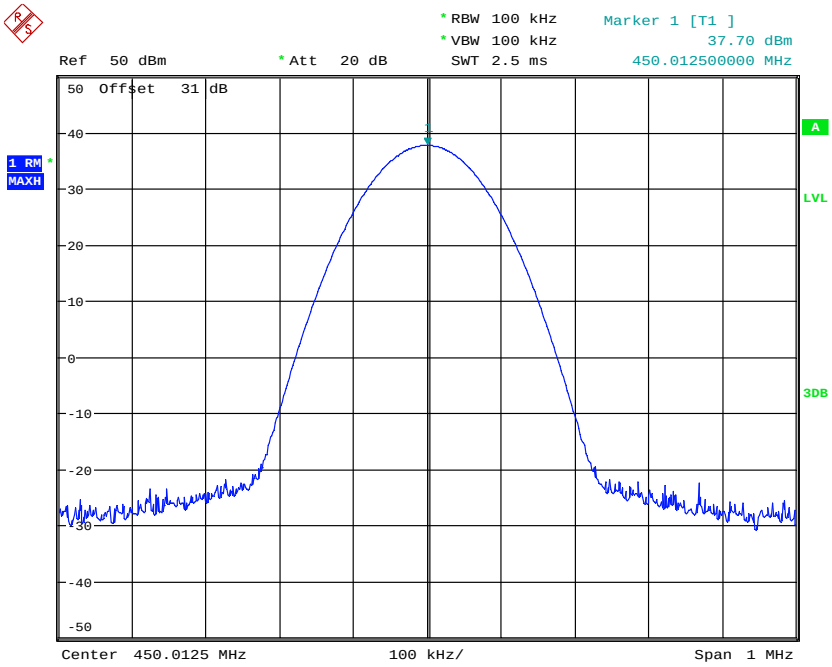


Setup for Radiated Power

6.3 Test Result

6.3.1 Conducted Power

450.0125 MHz

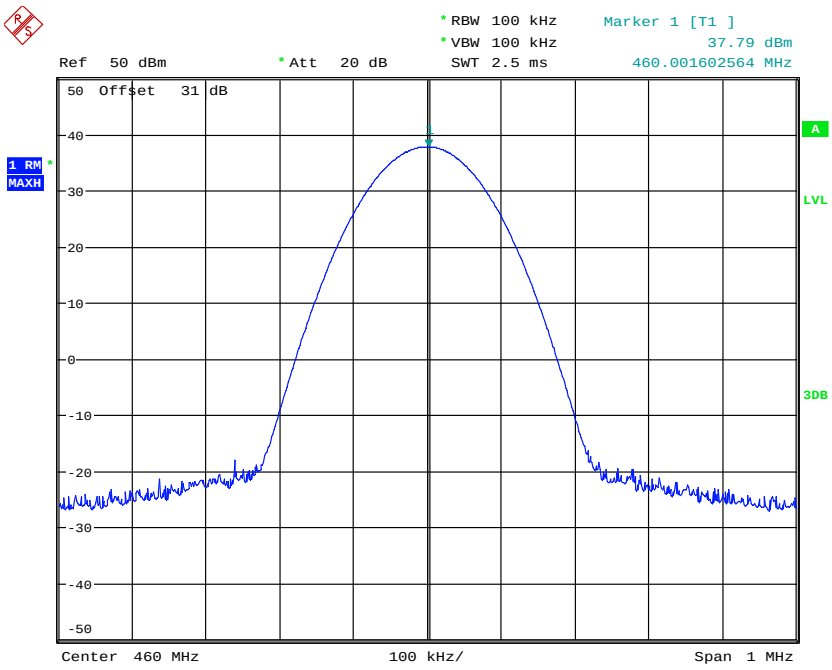


MAX OUTPUT POWER

Date: 19.SEP.2018 11:22:52

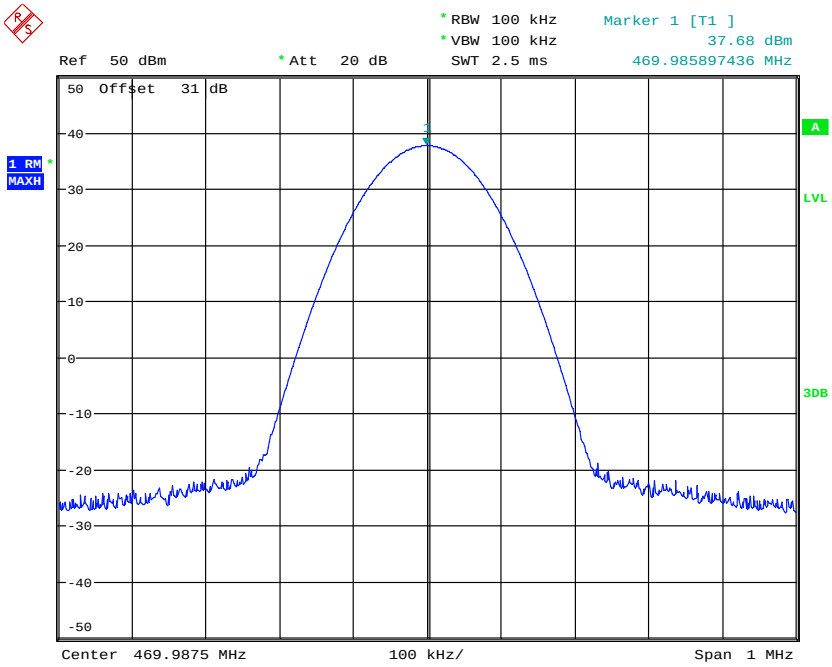
Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

460 MHz



MAX OUTPUT POWER
Date: 19.SEP.2018 11:20:22

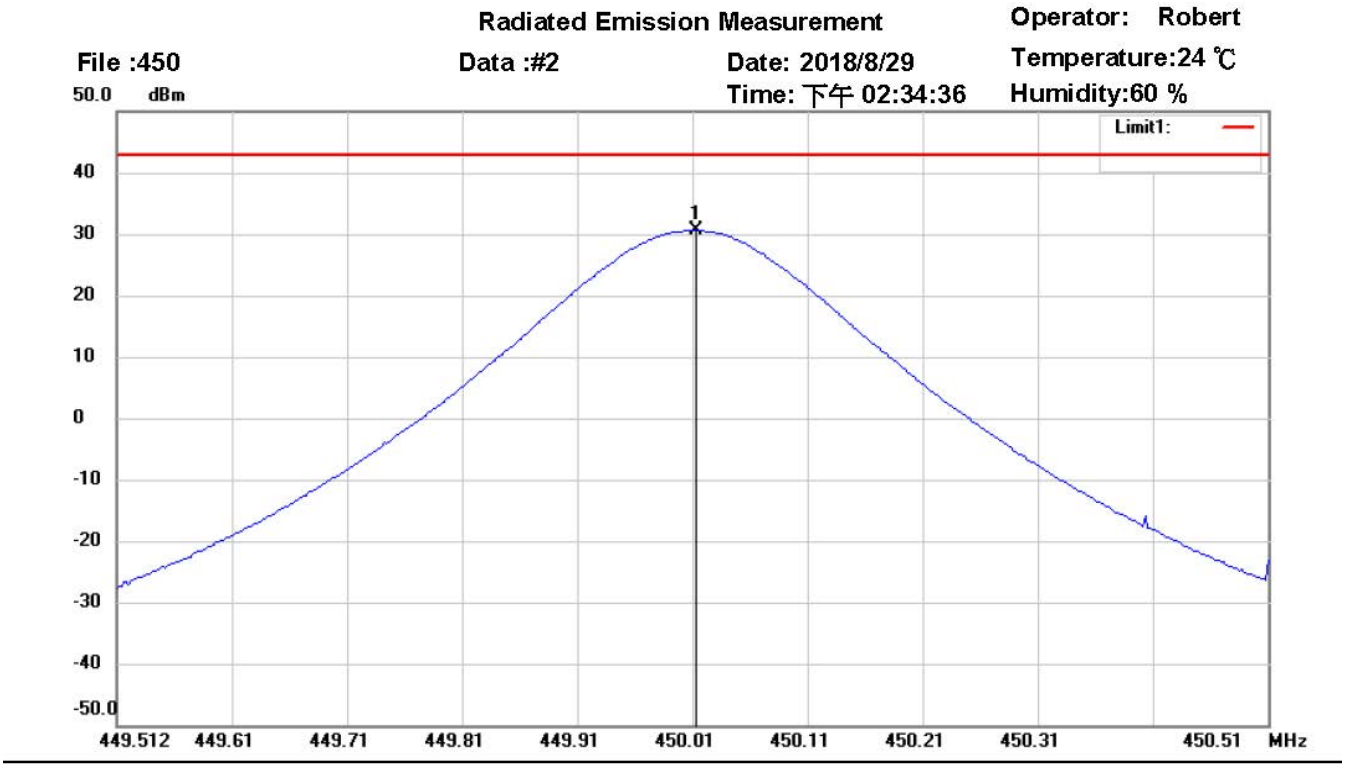
469.9875 MHz



MAX OUTPUT POWER
Date: 19.SEP.2018 11:21:42

6.3.2 Radiated Power

450.0125 MHz

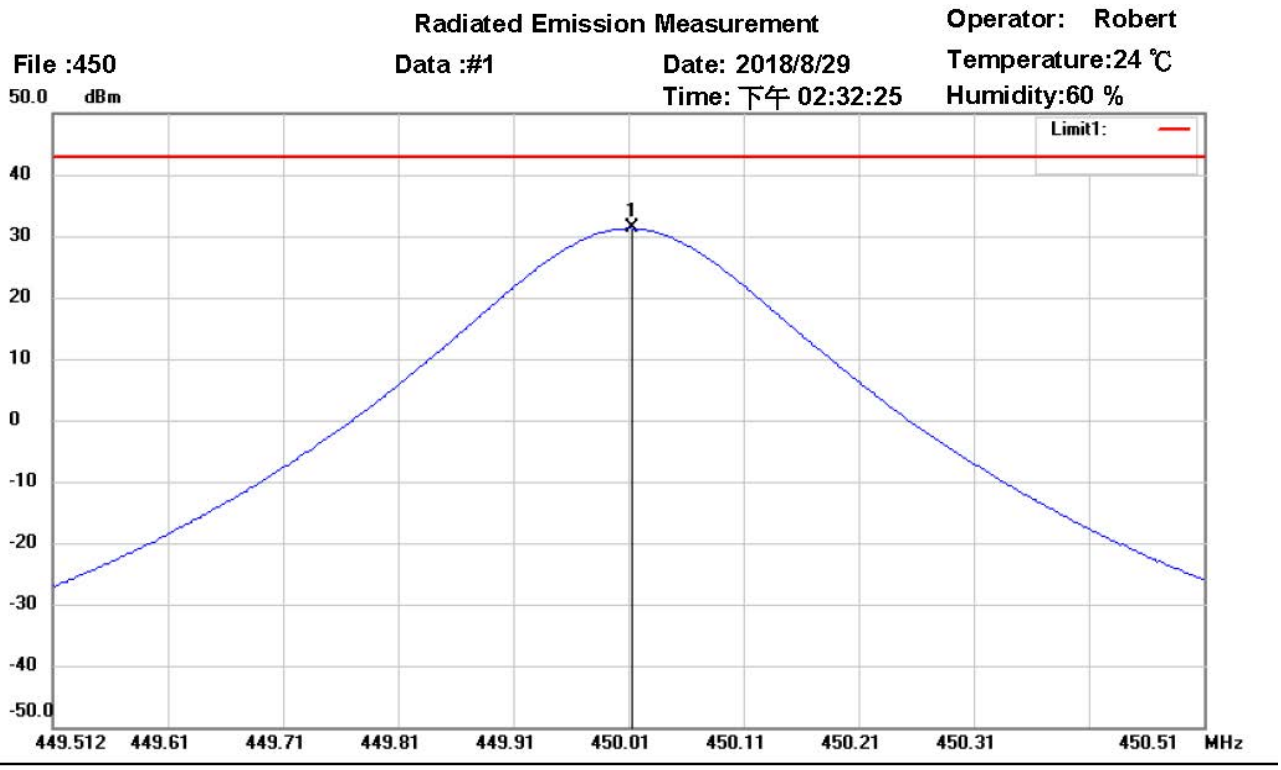


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21807-18297
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.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
*	450.0135	-1.71	peak	32.33	30.62	43.00	150	240	-12.38	

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN



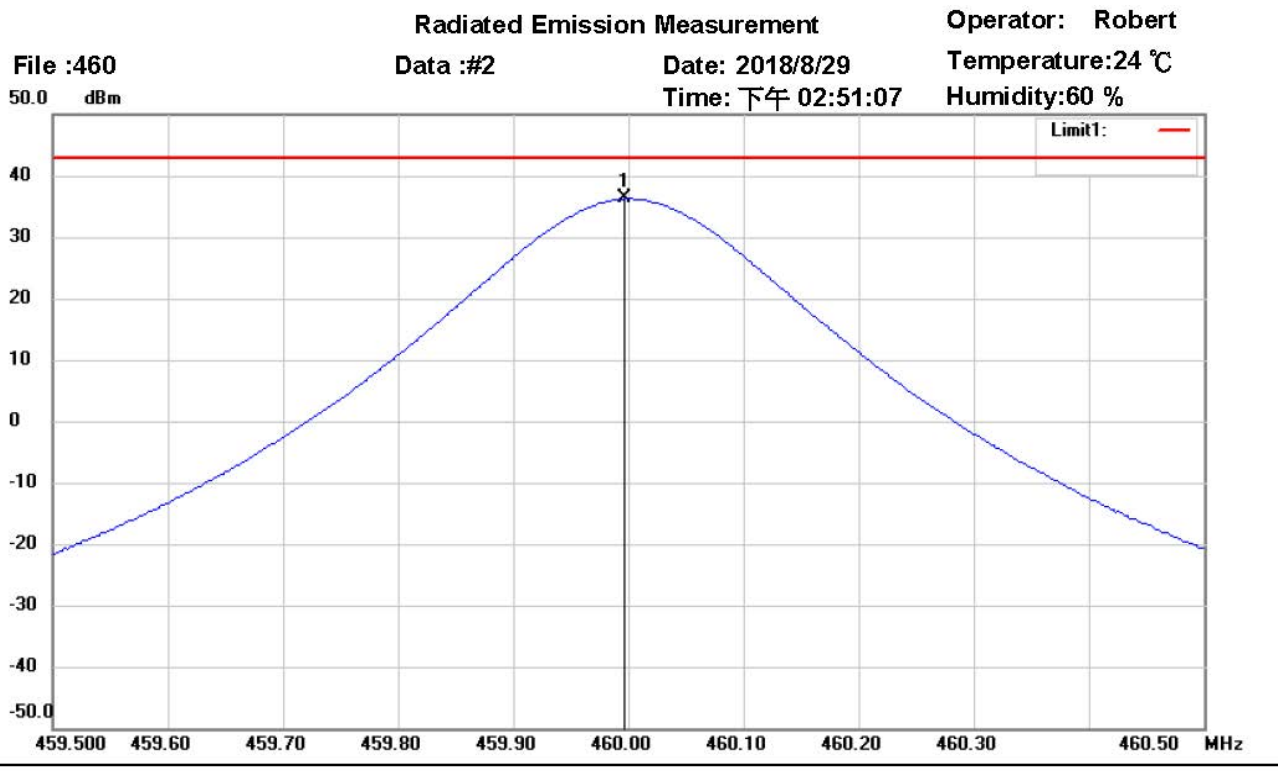
Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21807-18297
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Vertical*
Power : 120 Va.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
*	450.0135	3.43	peak	27.83	31.26	43.00	150	100	-11.74	

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

460 MHz

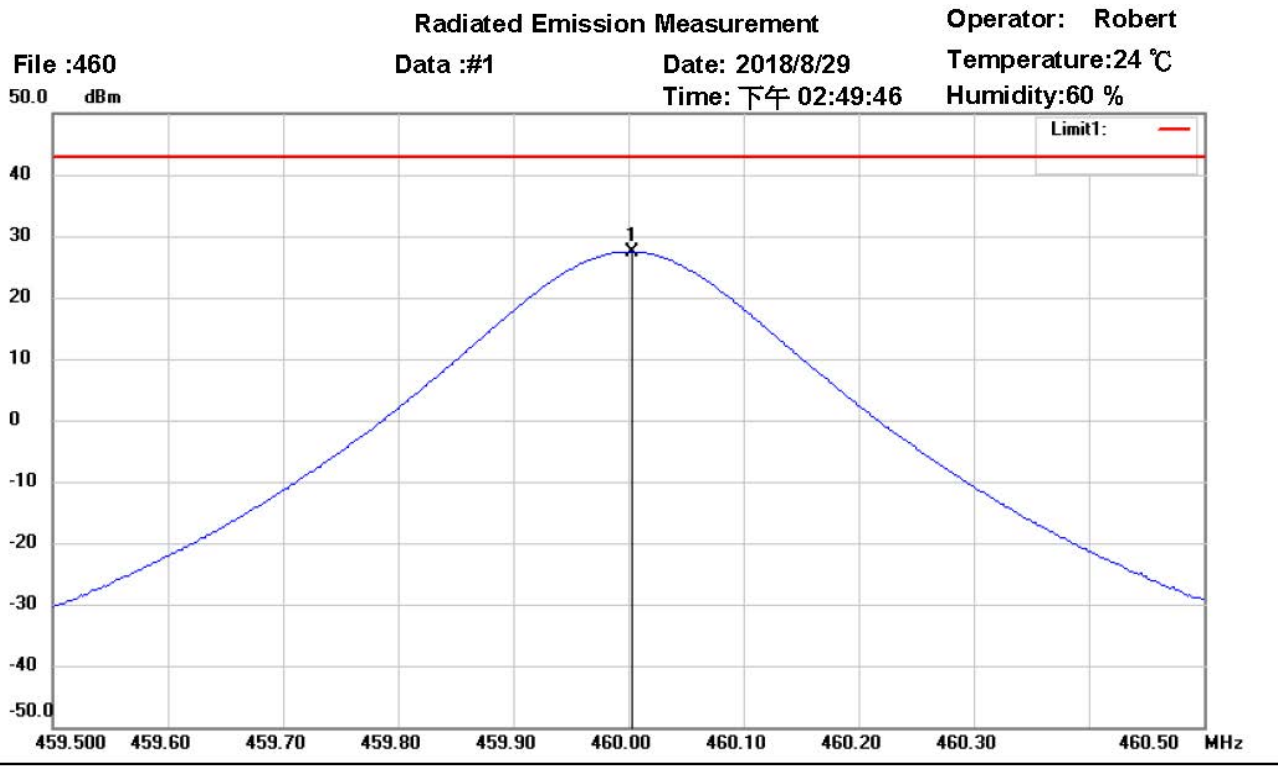


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.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	4.33	peak	31.96	36.29	43.00	150	240	-6.71	

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN



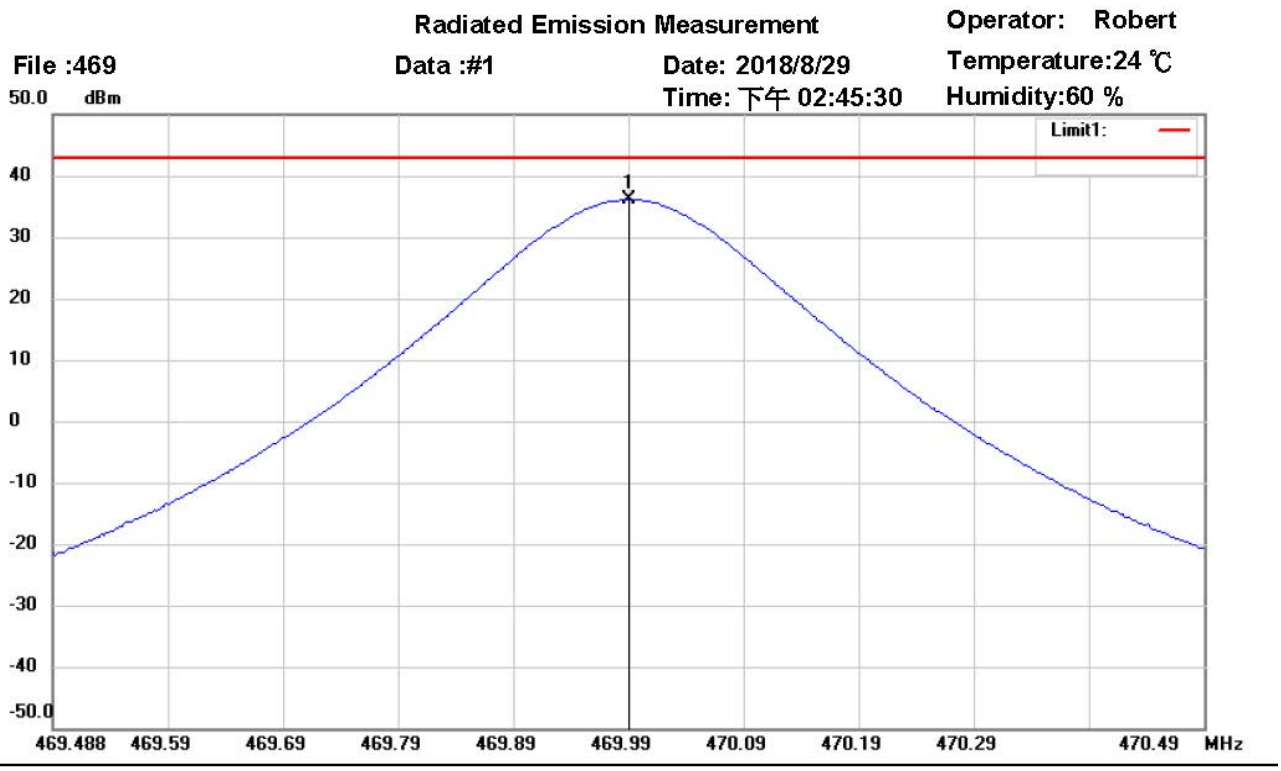
Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 120 Va.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	-0.78	peak	28.28	27.50	43.00	150	100	-15.50	

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

469.9875 MHz

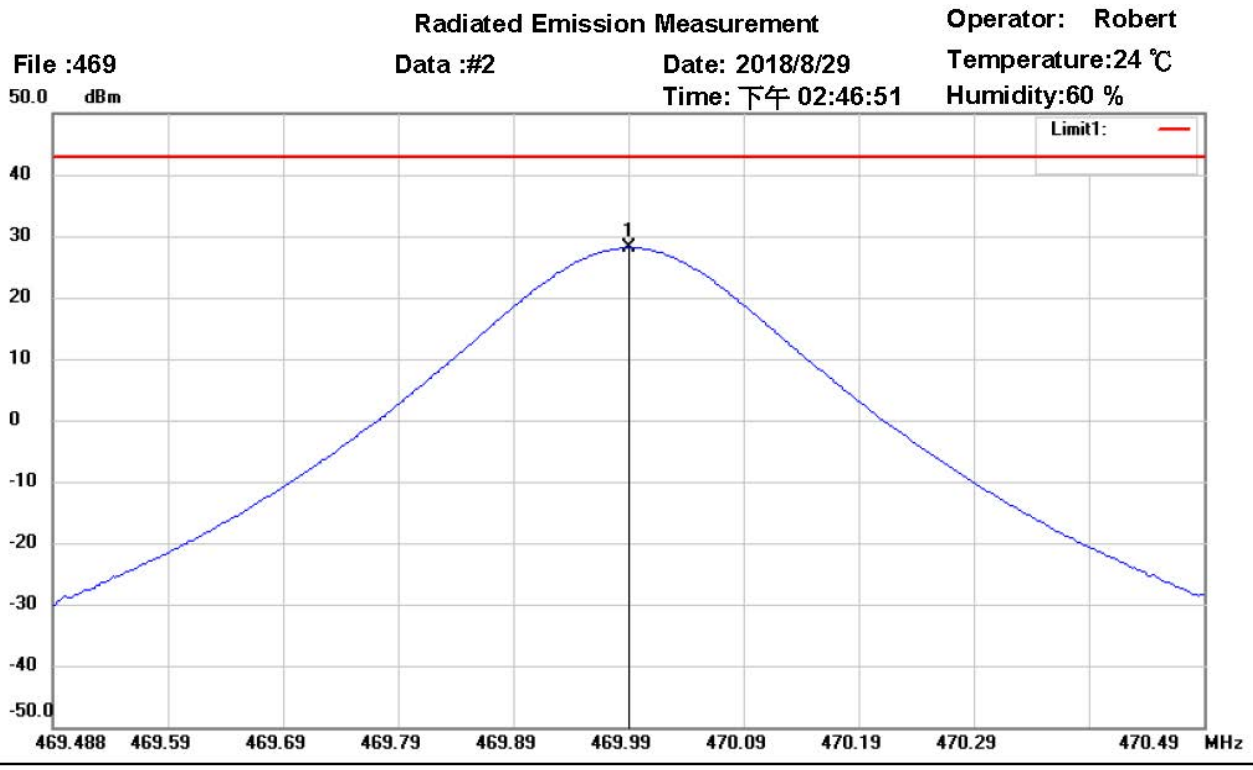


Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21807-18297
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.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
*	469.9885	4.55	peak	31.58	36.13	43.00	150	240	-6.87	

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN



Site : Chamber
Condition : FCC_part 90 POWER
EUT : W6M21807-18297
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Vertical*
Power : 120 Va.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
*	469.9885	-0.60	peak	28.73	28.13	43.00	150	100	-14.87	

Test equipment used: ETSTW-RE 003, ETSTW-RE 042, ETSTW-RE 055, ETSTW-RE 072

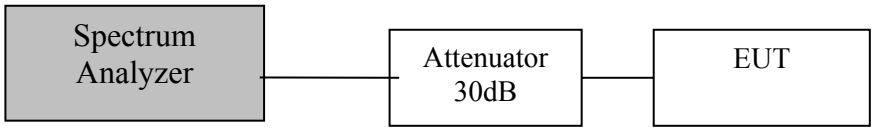
Note: The decision rule is “false acceptance”.

7. Emission masks

7.1 Test Procedures

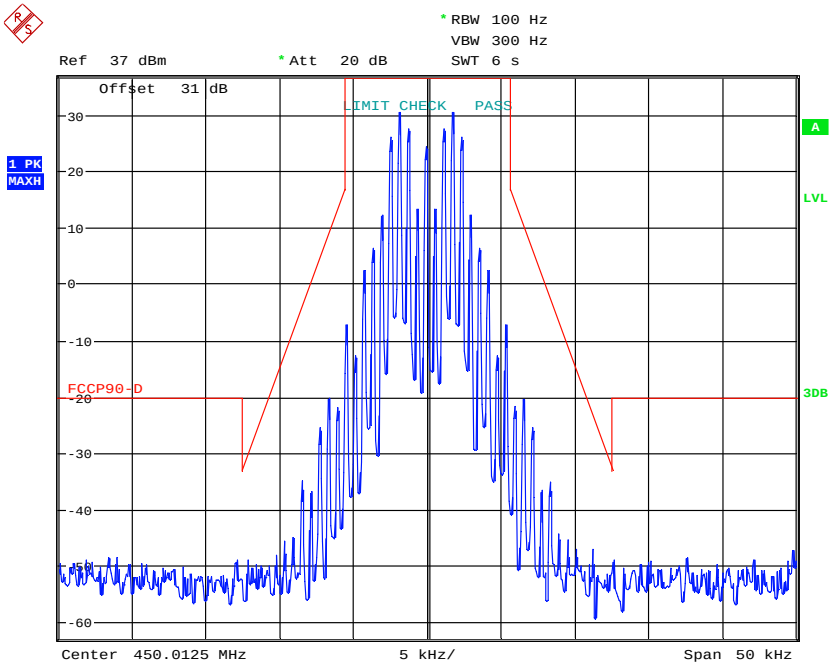
1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100Hz and VBW to 1 kHz.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum
4. Set the span to 50 kHz and the sweep time to Auto.
5. Record the power spectral and compare to the Mask.

7.2 Test Setup



7.3 Test Result

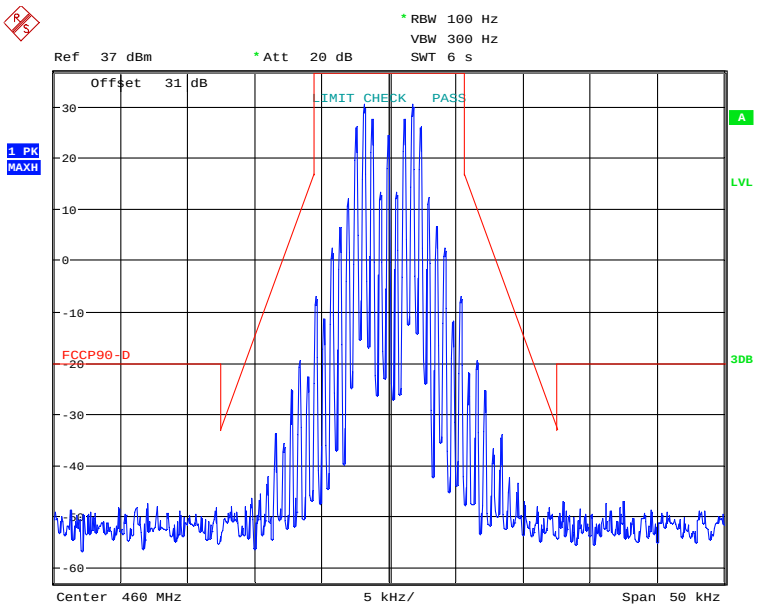
450.0125 MHz



EMISSION MASK
Date: 19.SEP.2018 14:26:36

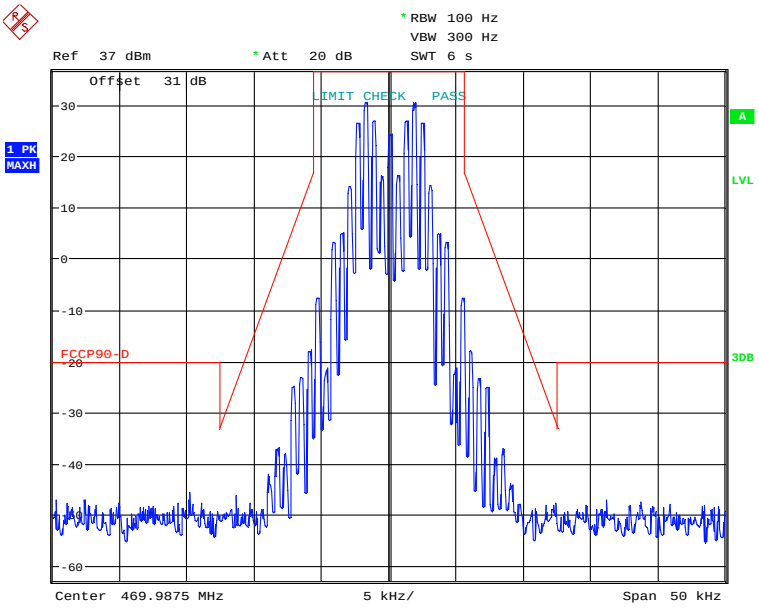
Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

460 MHz



EMISSION MASK
Date: 19.SEP.2018 14:28:00

469.9875 MHz



EMISSION MASK
Date: 19.SEP.2018 14:29:32

Limit according to FCC § 90.210: 12.5 kHz: Emission Mask D

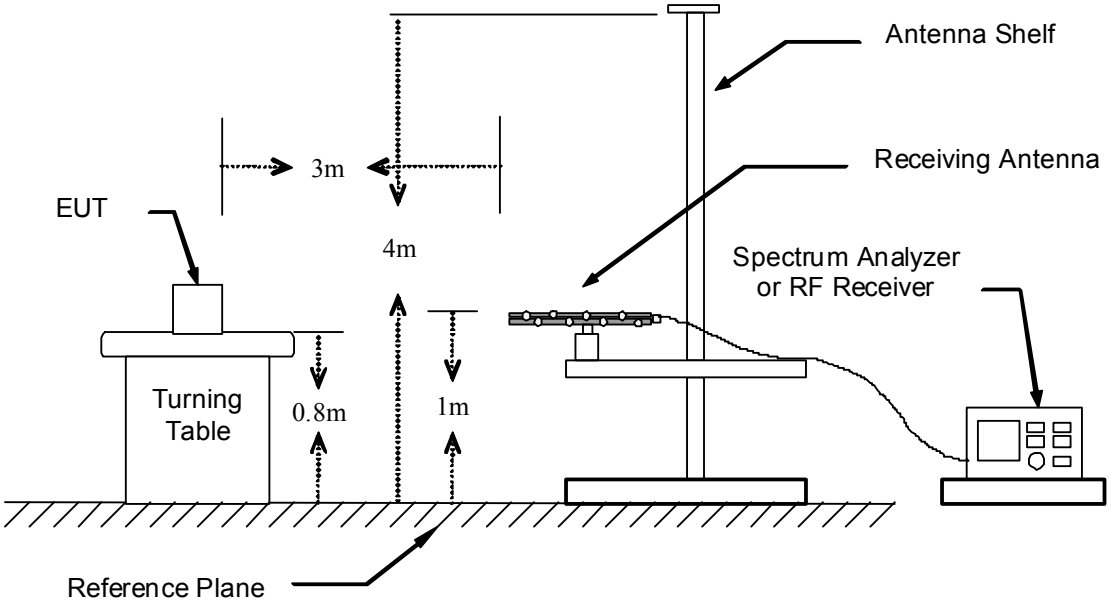
Test equipment used: ETSTW-RE 055, ETSTW-RE072

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:	TX-200EN	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)
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -

Polarization: Vertical

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

Note
1. **Correction Factor = Antenna factor + Cable loss - Preamplifier**
2. **The formula of measured value as: Test Result = Reading + Correction Factor**
3. **Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average**
4. **All not in the table noted test results are more than 20 dB below the relevant limits.**
5. **Measurement uncertainty above 30-1000 MHz = ± 3.57 dB, 1-18 GHz = ± 2.60 dB, 18-40 GHz = ± 2.58 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.**
6. **The decision rule is "false acceptance".**
7. **See attached diagrams in appendix.**

Test equipment used: ETSTW-RE 003, ETSTW-RE 042, ETSTW-RE 043, ETSTW-RE 044, ETSTW-RE 072

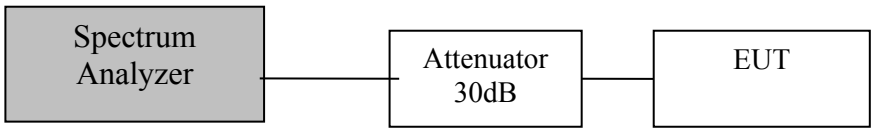
Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

9. Transmitter Spurious Conducted Emission

9.1 Test Procedures

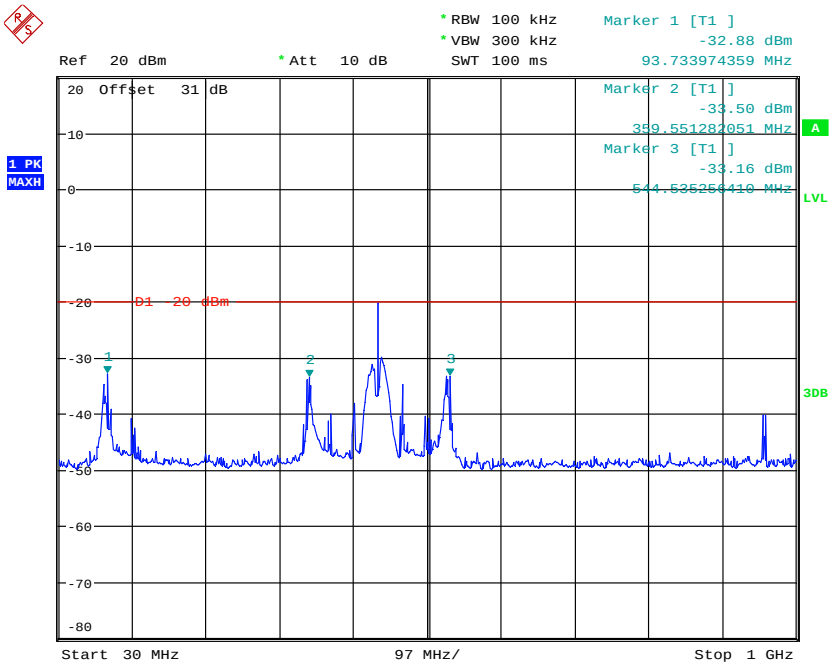
1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Adjust the spectrum analyzer for the following settings:
   - Resolution Bandwidth = 10 kHz for spurious emissions below 1 GHz and 1 MHz for spurious emissions above 1GHz.
   - Video Bandwidth = 30 kHz for spurious emissions below 1 GHz, and 3 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



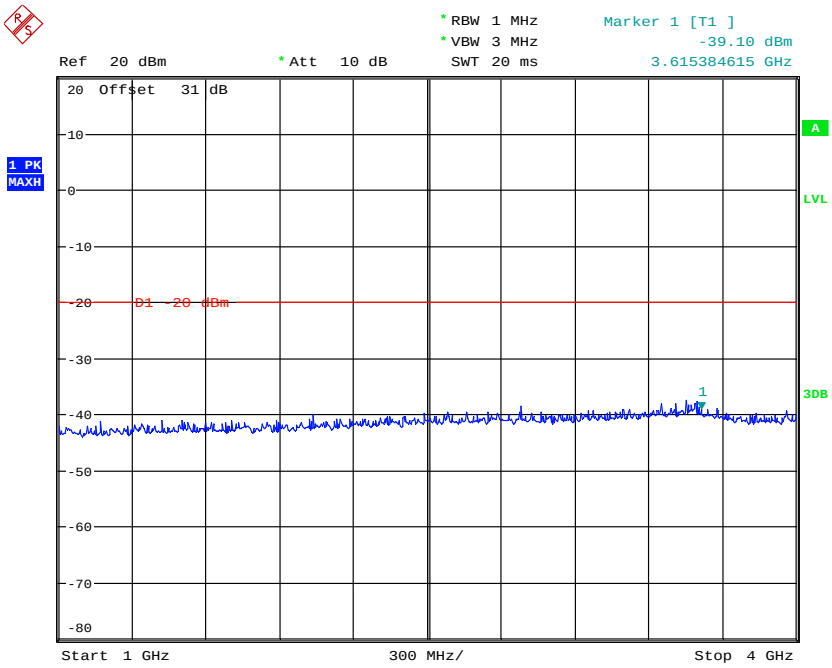
9.3 Test Result

450.0125 MHz



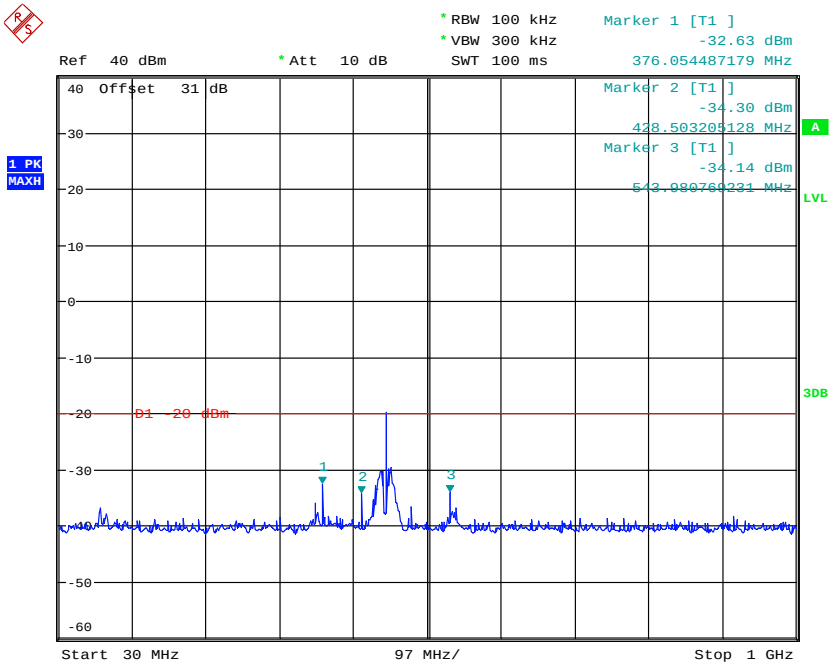
CONDUCTED SPURIOUS EMISSION 450.0125MHz
Date: 19.SEP.2018 14:50:28

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN



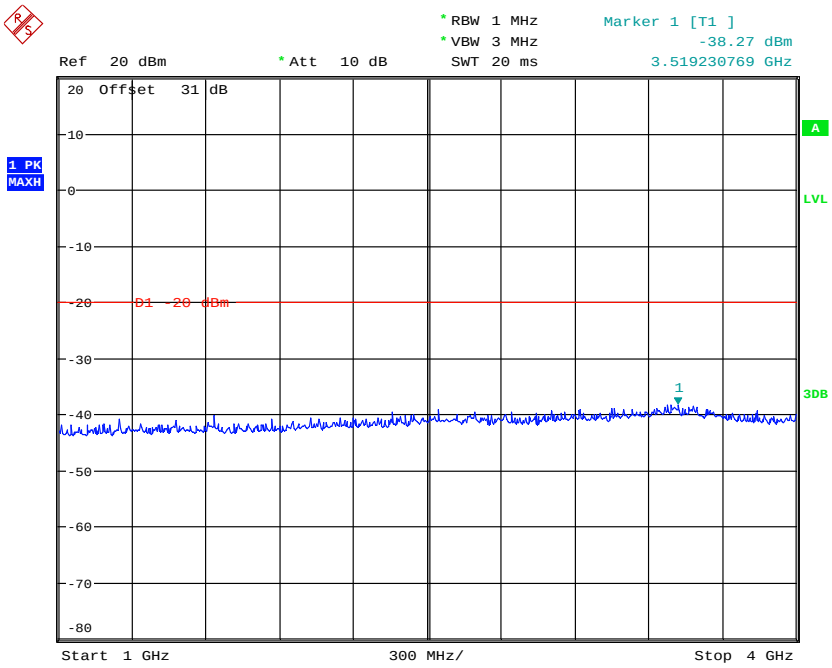
CONDUCTED SPURIOUS EMISSION 450.0125MHz
Date: 19.SEP.2018 14:47:22

460 MHz



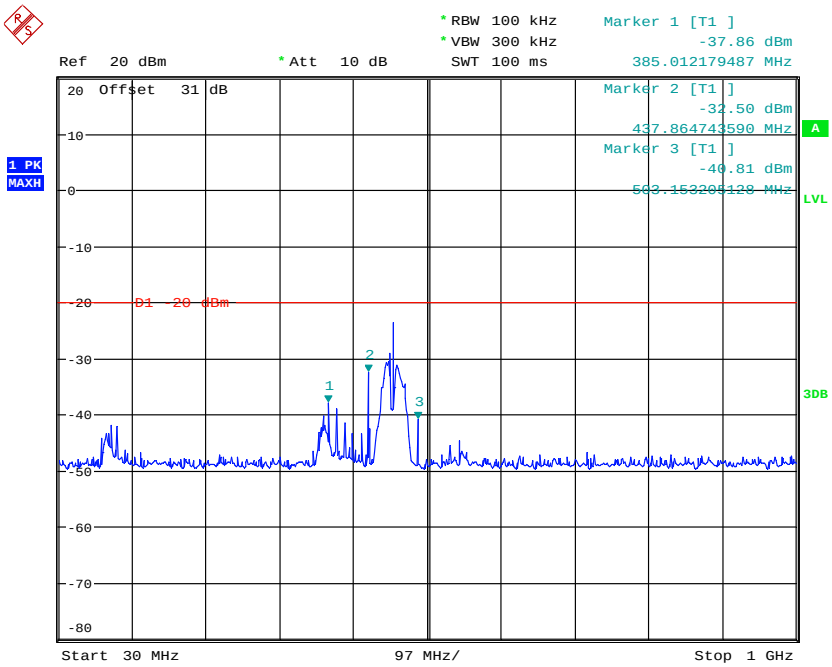
CONDUCTED SPURIOUS EMISSION 460MHz
Date: 19.SEP.2018 14:52:21

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN



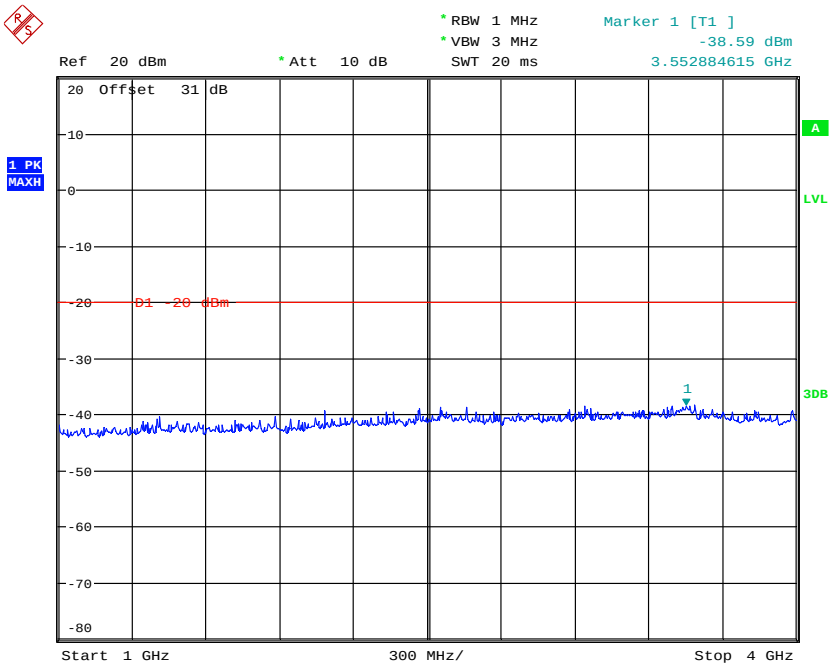
CONDUCTED SPURIOUS EMISSION 460MHz
Date: 19.SEP.2018 14:45:32

469.9875 MHz



CONDUCTED SPURIOUS EMISSION 469.9875MHz
Date: 19.SEP.2018 15:02:33

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN



CONDUCTED SPURIOUS EMISSION 469.9875MHz
Date: 19.SEP.2018 14:39:33

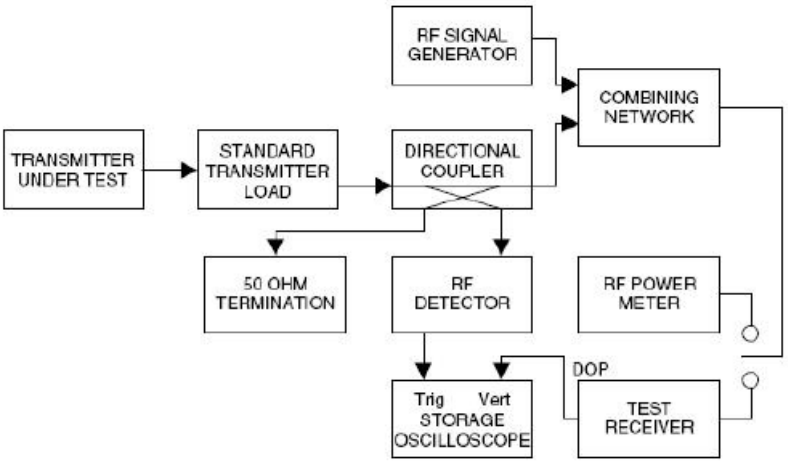
Test equipment used: ETSTW-RE 055, ETSTW-RE 072

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.

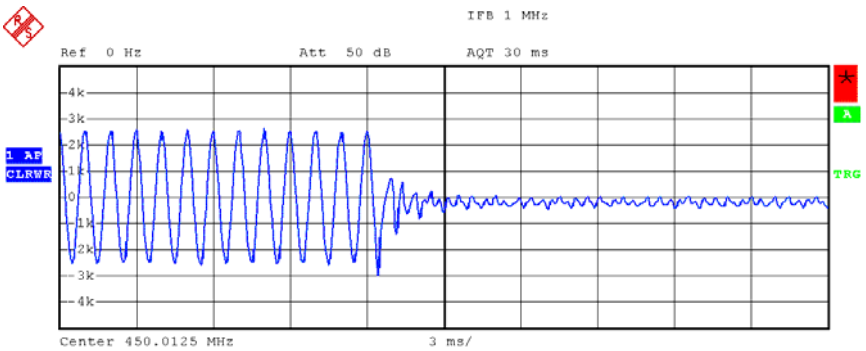
10.2 Test Setup



Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

10.3 Test Result

450.0125 MHz Off to On

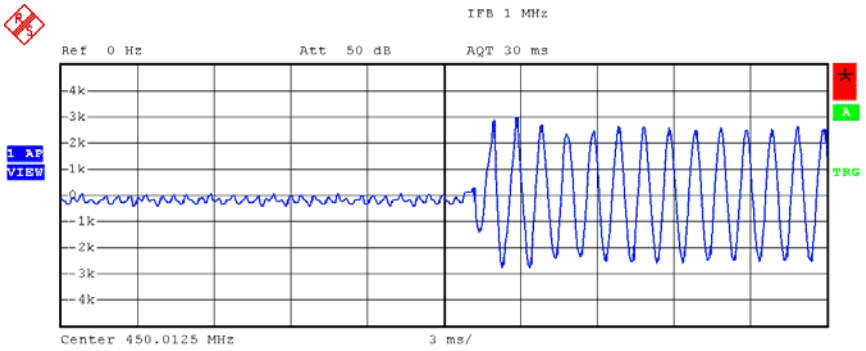


Frequency Modulation Summary

Coupling	DC		Carrier Offset	-134.20 Hz
Deviation	+peak	2.608 kHz	Carrier Power	--- dBm
	-peak	-2.997 kHz	Modulation Frequency	--- Hz
	±peak/2	2.802 kHz	Sampling Rate	62.5 kHz
	RMS	1.146 kHz	Record Length	1876
			Demod Bandwidth	50 kHz

Date: 27.SEP.2018 14:40:59

450.0125 MHz On to Off



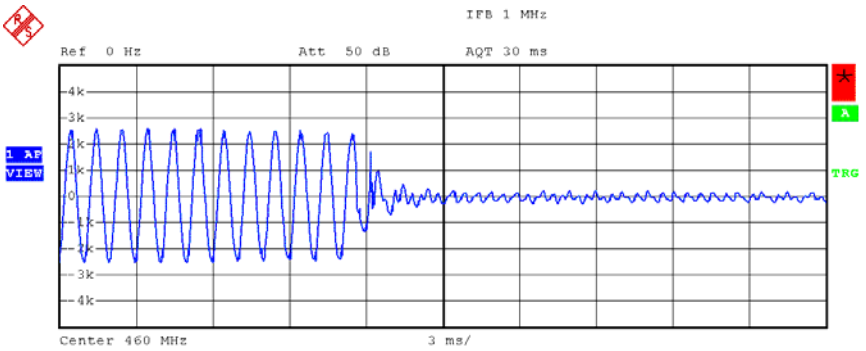
Frequency Modulation Summary

Coupling	DC		Carrier Offset	-98.418 Hz
Deviation	+peak	3.009 kHz	Carrier Power	--- dBm
	-peak	-2.761 kHz	Modulation Frequency	1.00145 kHz
	±peak/2	2.885 kHz	Sampling Rate	62.5 kHz
	RMS	1.746 kHz	Record Length	1876
			Demod Bandwidth	50 kHz

Date: 27.SEP.2018 14:41:53

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

460 MHz Off to On

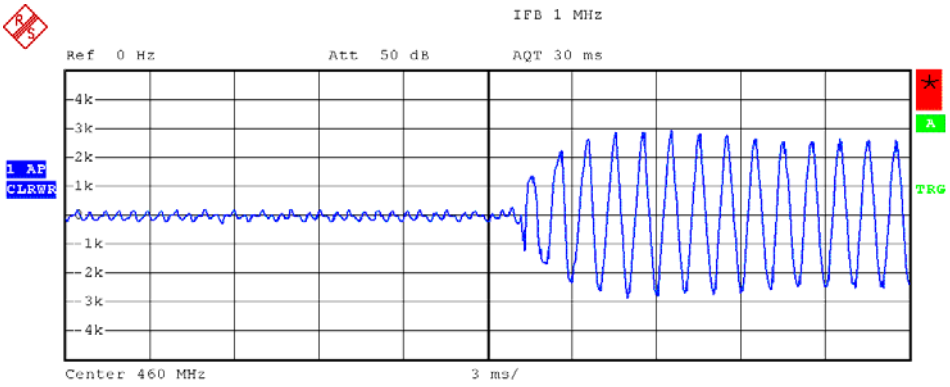


Frequency Modulation Summary

Coupling	DC		Carrier Offset	-25.136 Hz
Deviation	+peak	2.601 kHz	Carrier Power	--- dBm
	-peak	-2.535 kHz	Modulation Frequency	1.00893 kHz
	±peak/2	2.568 kHz	Sampling Rate	62.5 kHz
	RMS	1.655 kHz	Record Length	1876
			Demod Bandwidth	50 kHz

Date: 27.SEP.2018 14:44:50

460 MHz On to Off



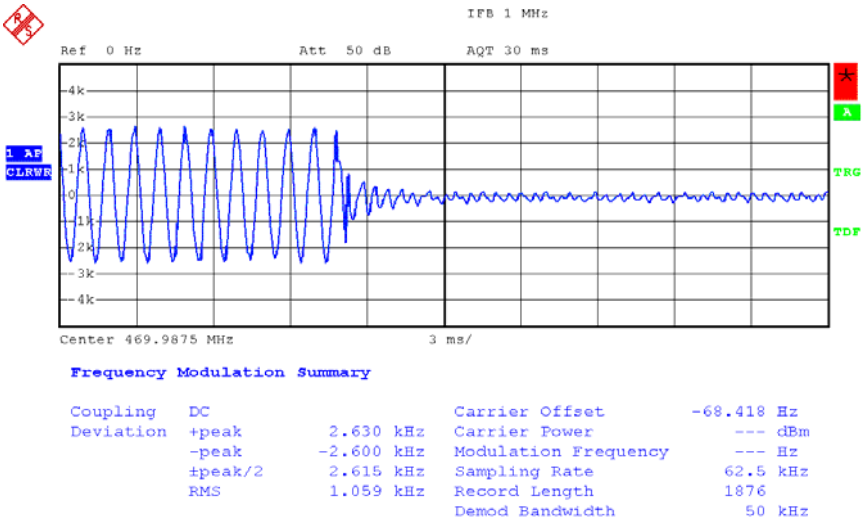
Frequency Modulation Summary

Coupling	DC		Carrier Offset	-10.819 Hz
Deviation	+peak	2.903 kHz	Carrier Power	--- dBm
	-peak	-2.854 kHz	Modulation Frequency	1.00764 kHz
	±peak/2	2.878 kHz	Sampling Rate	62.5 kHz
	RMS	1.732 kHz	Record Length	1876
			Demod Bandwidth	50 kHz

Date: 27.SEP.2018 14:45:40

Registration number: W6M21807-18297-C-1
FCC ID: NDATX200EN

469.9875 MHz Off to On

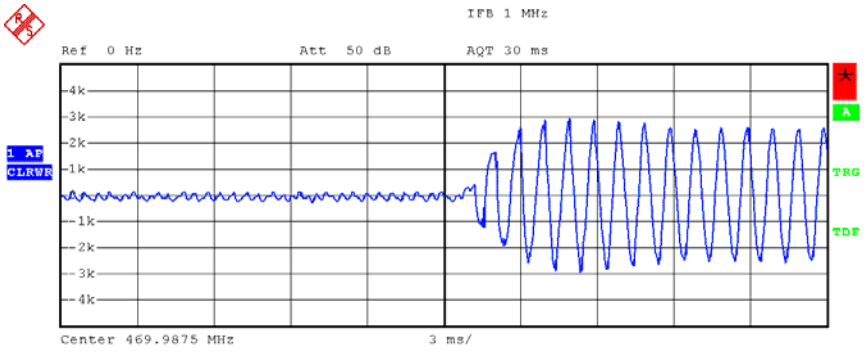


Frequency Modulation Summary

Coupling	DC		Carrier Offset	-68.418 Hz
Deviation	+peak	2.630 kHz	Carrier Power	--- dBm
	-peak	-2.600 kHz	Modulation Frequency	--- Hz
	±peak/2	2.615 kHz	Sampling Rate	62.5 kHz
	RMS	1.059 kHz	Record Length	1876
			Demod Bandwidth	50 kHz

Date: 27.SEP.2018 14:53:35

469.9875 MHz On to Off



Frequency Modulation Summary

Coupling	DC		Carrier Offset	-22.257 Hz
Deviation	+peak	2.941 kHz	Carrier Power	--- dBm
	-peak	-2.907 kHz	Modulation Frequency	1.00161 kHz
	±peak/2	2.924 kHz	Sampling Rate	62.5 kHz
	RMS	1.739 kHz	Record Length	1876
			Demod Bandwidth	50 kHz

Date: 27.SEP.2018 14:53:57

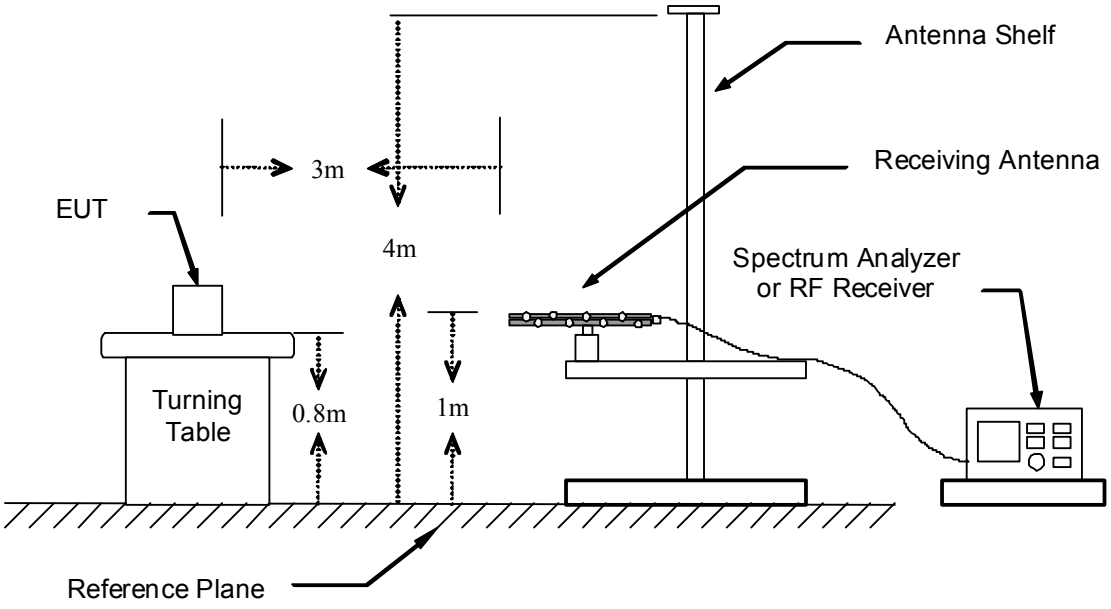
Test equipment used: ETSTW-RE 072, ETSTW-RE 033

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:	TX-200EN	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)
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -
- -	- -	- -	- -	- -	- -	- -	- -

Polarization: Vertical

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

Note

1. Correction Factor = Antenna factor + Cable loss - Preamplifier
2. The formula of measured value as: Test Result = Reading + Correction Factor
3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
4. Measurement uncertainty: 30-1000 MHz：±3.57 dB, 1-18 GHz：±2.60 dB, 18-40 GHz: ±2.58 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. The decision rule is “false acceptance”.
8. 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:

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

12. Maximum Permissible Exposure

12.1 Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.5 m normally can be maintained between the user and the device.

12.2 MPE Calculation Method

(A) Limits for Occupational/Controlled Exposure

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

(B) Limits for General Population/Uncontrolled Exposure

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

f = frequency in MHz *Plane-wave equivalent power density

$$E\ (V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd\ (W/m^2) = \frac{E^2}{377}$$

E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to

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

Max output power (W)	Antenna numeric Gain	Power Density(S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
6.01174	-0.25	0.18	0.2	Complies

From the peak EUT RF output power, the minimum mobile separation distance, d= 0.5 m as well as the gain of the used antenna, the RF power density can be obtained.

Appendix

A. Photos

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

B. Measurement diagrams

Spurious Emissions radiated

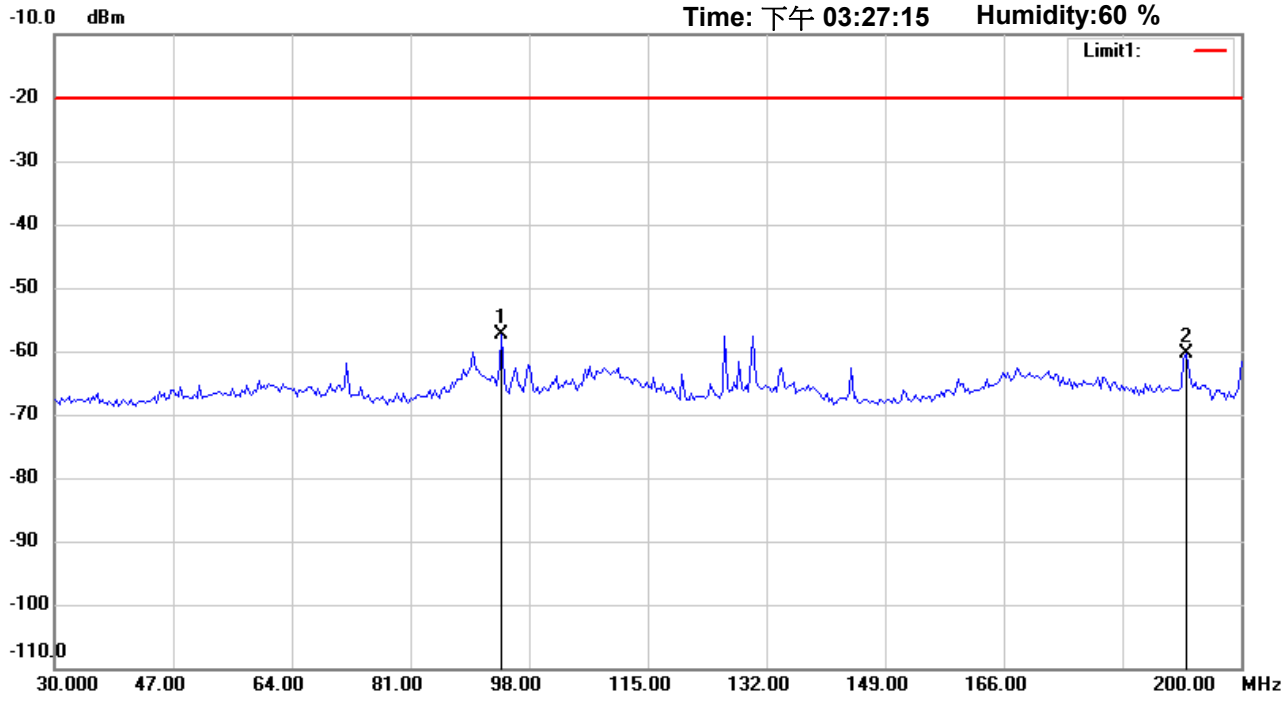
Address:6F.,No.58,Ln 188,Ruey Kuang Rd,Neihu,Taipei
Tel:+886-2-6606-8877
Fax:+886-2-6606-8875

Radiated Emission Measurement

Operator: Robert

File :1 Data :#1 Date: 2018/8/29 Temperature:24 ℃

Time: 下午 03:27:15 Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21807-18297

M/N:

Test Mode : Tx 450.0125MHz

Note :

Polarization: *Horizontal*

Power : 120 Va.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
*	94.0480	-78.72	peak	21.33	-57.39	-20.00	150	50	-37.39	
	192.1643	-82.11	peak	21.66	-60.45	-20.00	150	130	-40.45	

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

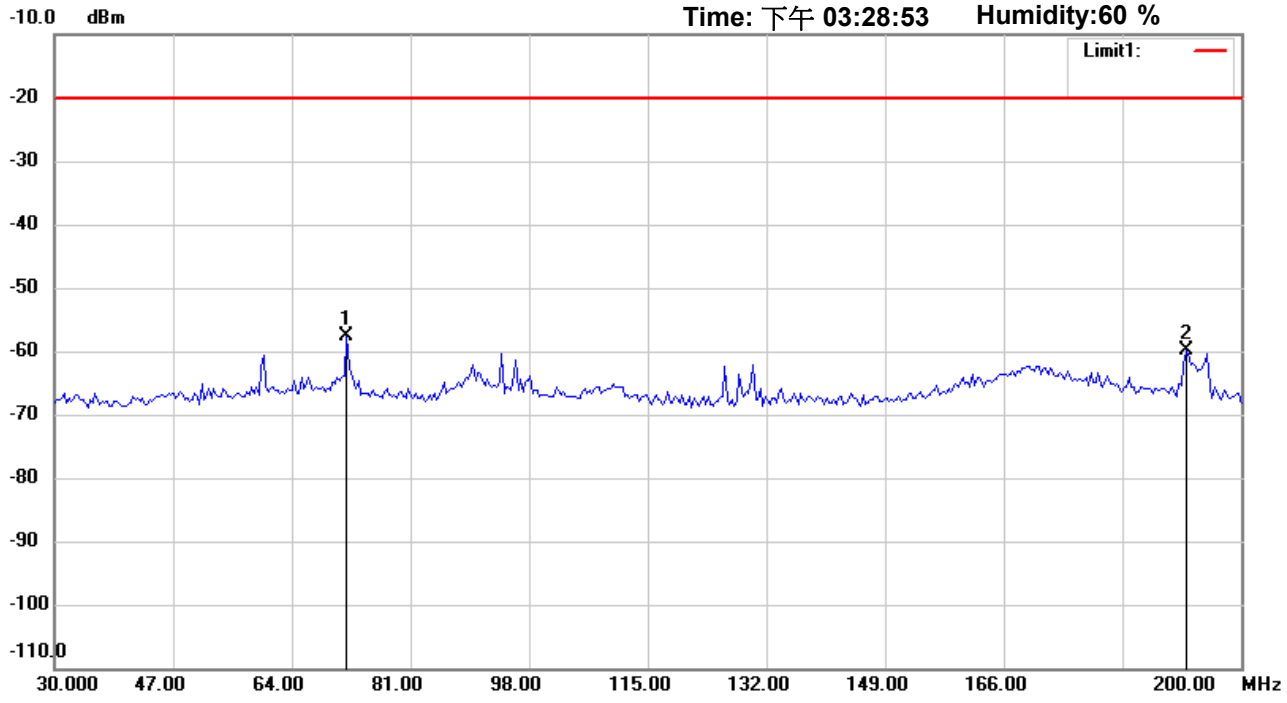
Address:6F.,No.58,Ln 188,Ruey Kuang Rd,Neihu,Taipei
Tel:+886-2-6606-8877
Fax:+886-2-6606-8875

Radiated Emission Measurement

Operator: Robert

File :1 Data :#2 Date: 2018/8/29 Time: 下午 03:28:53

Temperature:24 ℃ Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21807-18297

M/N:

Test Mode : Tx 450.0125MHz

Note :

Polarization: *Vertical*

Power : 120 Va.c.

Distance: 3m

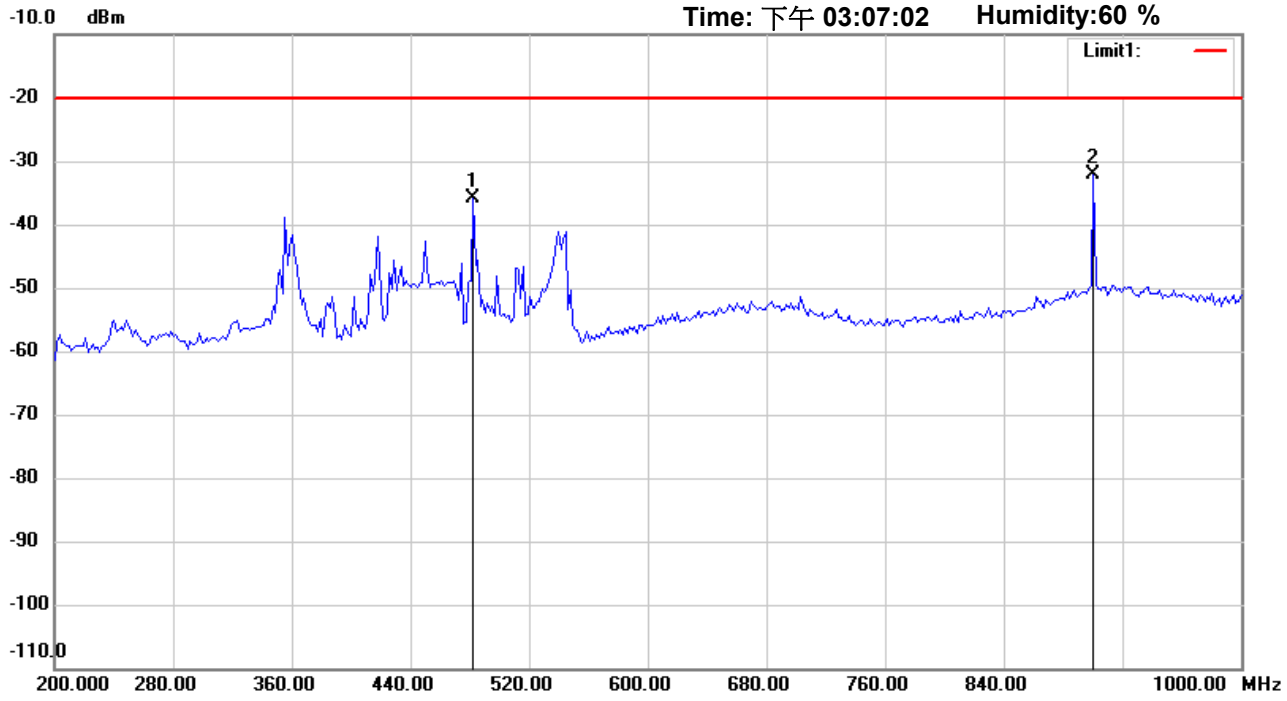
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	71.9038	-79.41	peak	21.80	-57.61	-20.00	150	90	-37.61	
	192.1643	-81.62	peak	21.86	-59.76	-20.00	150	300	-39.76	

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

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

Radiated Emission Measurement

Operator: Robert
File :2 Data :#2 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:07:02 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.c.
Distance: 3m

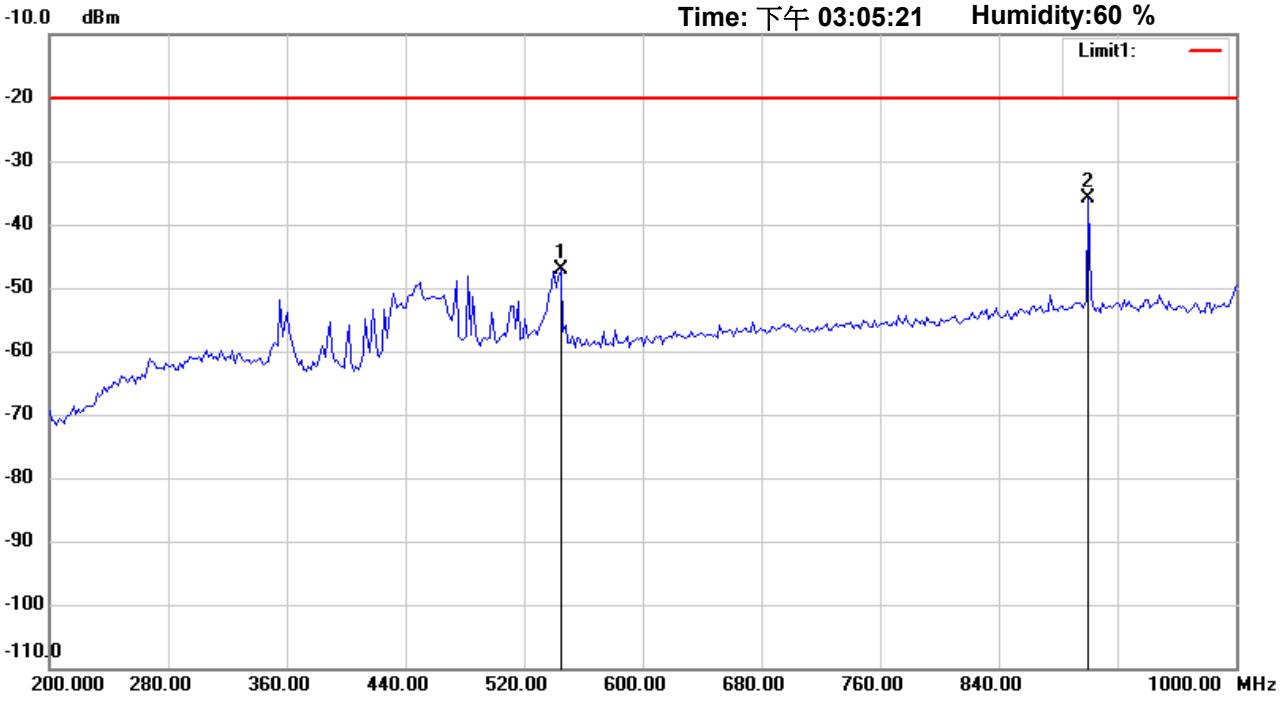
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	482.1643	-67.05	peak	31.13	-35.92	-20.00	150	90	-15.92	
*	900.6012	-69.16	peak	36.95	-32.21	-20.00	150	250	-12.21	

*: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: Robert
File :2 Data :#1 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:05:21 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Vertical*
Power : 120 Va.c.
Distance: 3m

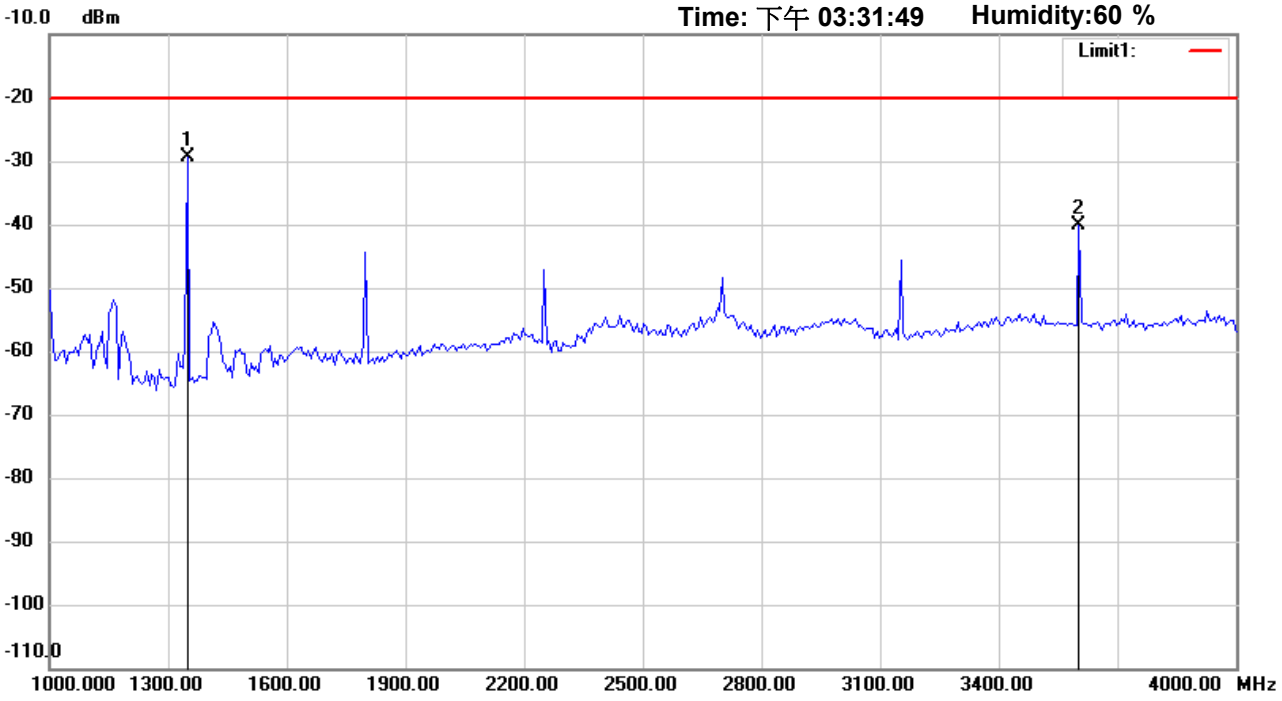
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	544.6893	-77.08	peak	29.90	-47.18	-20.00	150	90	-27.18	
*	900.6012	-70.38	peak	34.42	-35.96	-20.00	150	130	-15.96	

*: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: Robert
File :3 Data :#1 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:31:49 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.c.
Distance: 3m

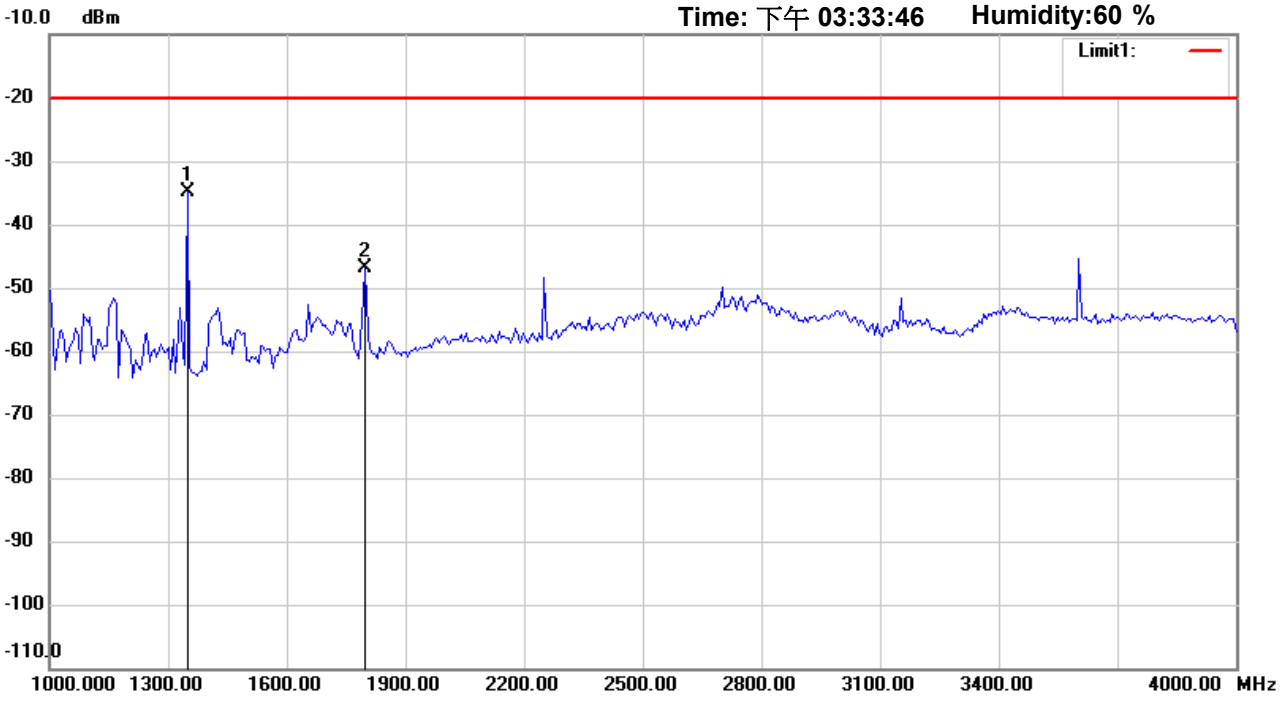
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	1348.697	-26.76	peak	-2.57	-29.33	-20.00	150	90	-9.33	
	3603.206	-47.68	peak	7.67	-40.01	-20.00	150	160	-20.01	

*: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: Robert
File :3 Data :#2 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:33:46 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 450.0125MHz
Note :

Polarization: *Vertical*
Power : 120 Va.c.
Distance: 3m

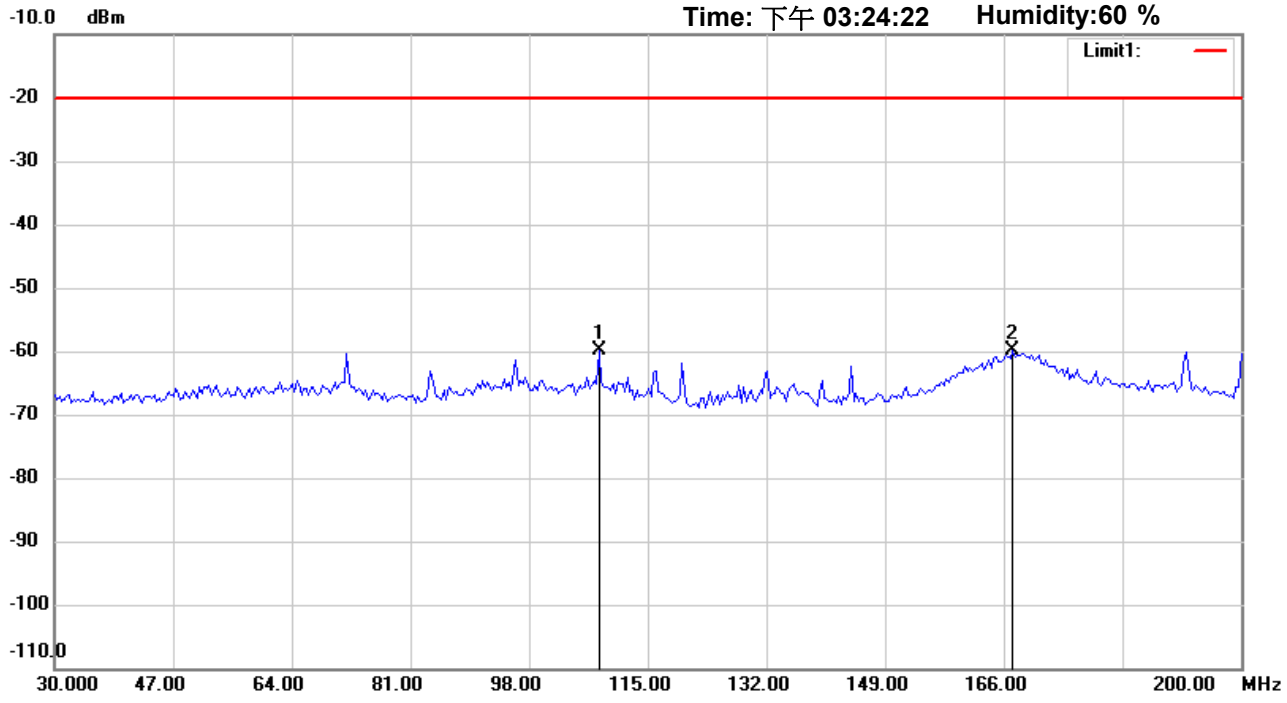
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	1348.697	-32.84	peak	-2.04	-34.88	-20.00	150	100	-14.88	
	1799.599	-47.24	peak	0.37	-46.87	-20.00	150	60	-26.87	

*: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: Robert
File :1 Data :#2 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:24:22 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.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
	108.0160	-80.67	peak	20.73	-59.94	-20.00	150	90	-39.94	
*	167.2946	-81.54	peak	21.71	-59.83	-20.00	150	140	-39.83	

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

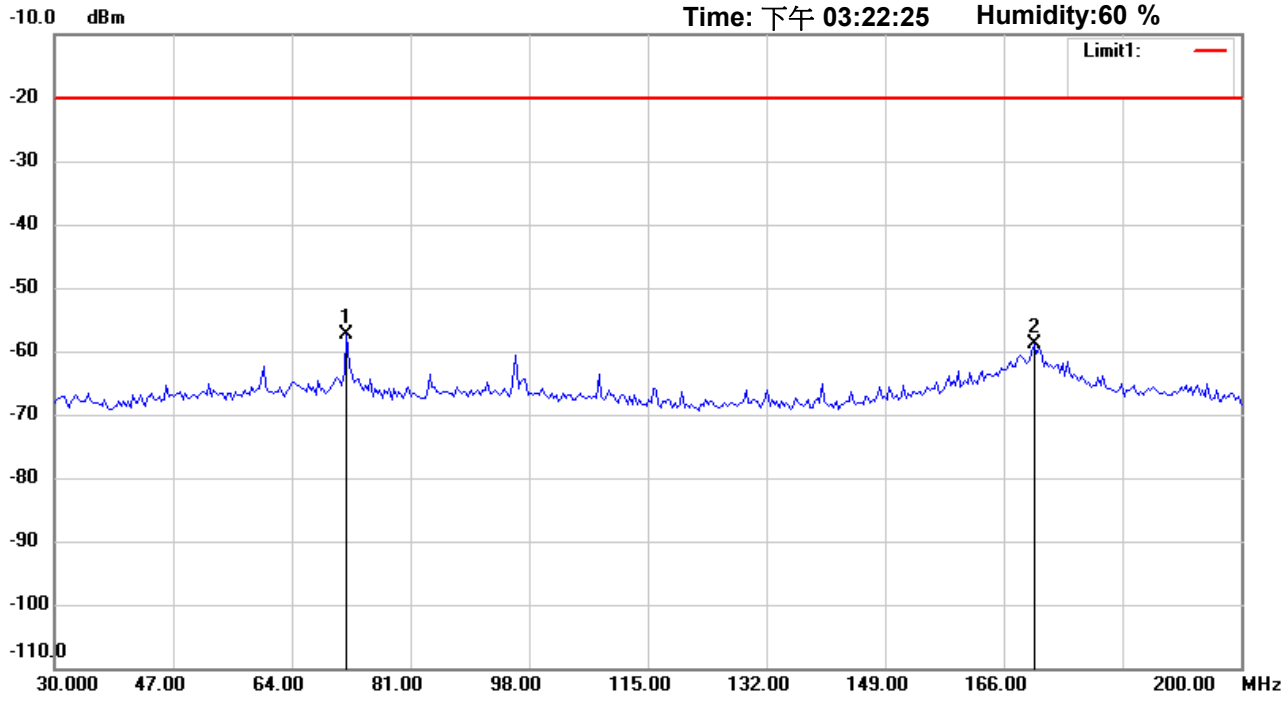
Address:6F.,No.58,Ln 188,Ruey Kuang Rd,Neihu,Taipei
Tel:+886-2-6606-8877
Fax:+886-2-6606-8875

Radiated Emission Measurement

Operator: Robert

File :1 Data :#1 Date: 2018/8/29 Temperature:24 ℃

Time: 下午 03:22:25 Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21807-18297

M/N:

Test Mode : Tx 460MHz

Note :

Polarization: *Vertical*

Power : 120 Va.c.

Distance: 3m

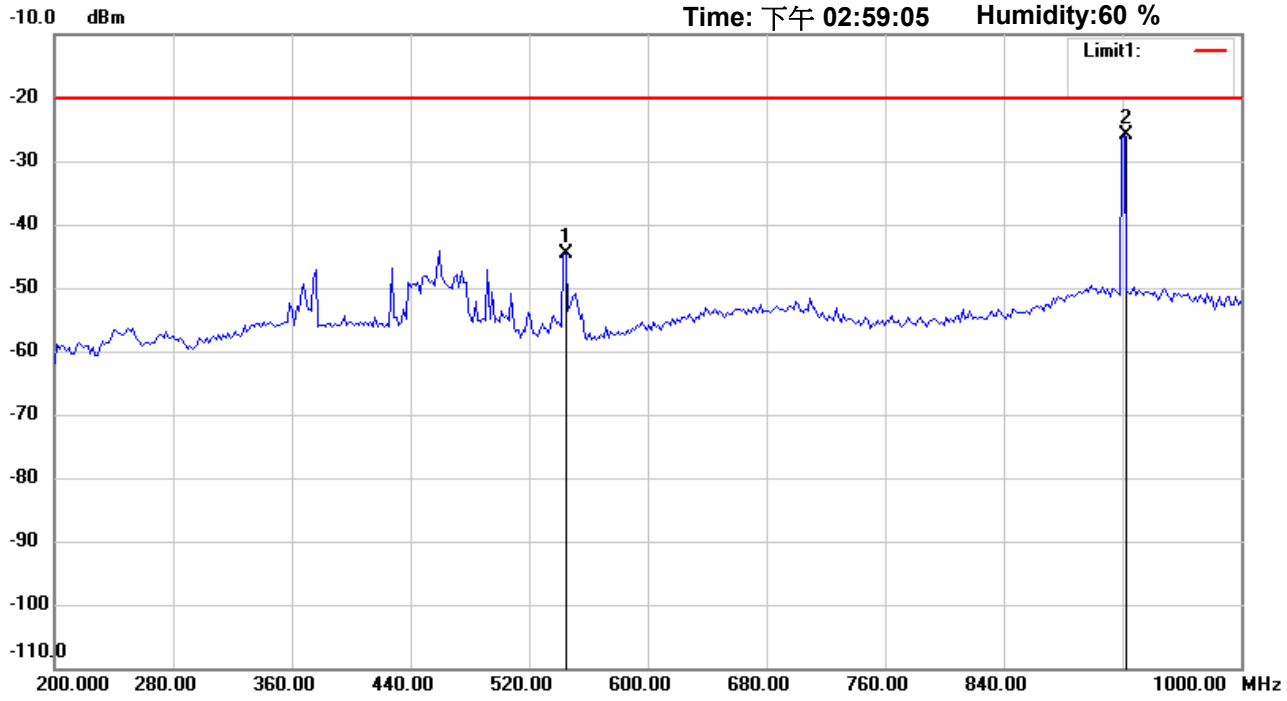
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	71.9038	-79.13	peak	21.80	-57.33	-20.00	150	160	-37.33	
	170.3607	-81.39	peak	22.40	-58.99	-20.00	150	280	-38.99	

*: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: Robert
File :2 Data :#1 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 02:59:05 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.c.
Distance: 3m

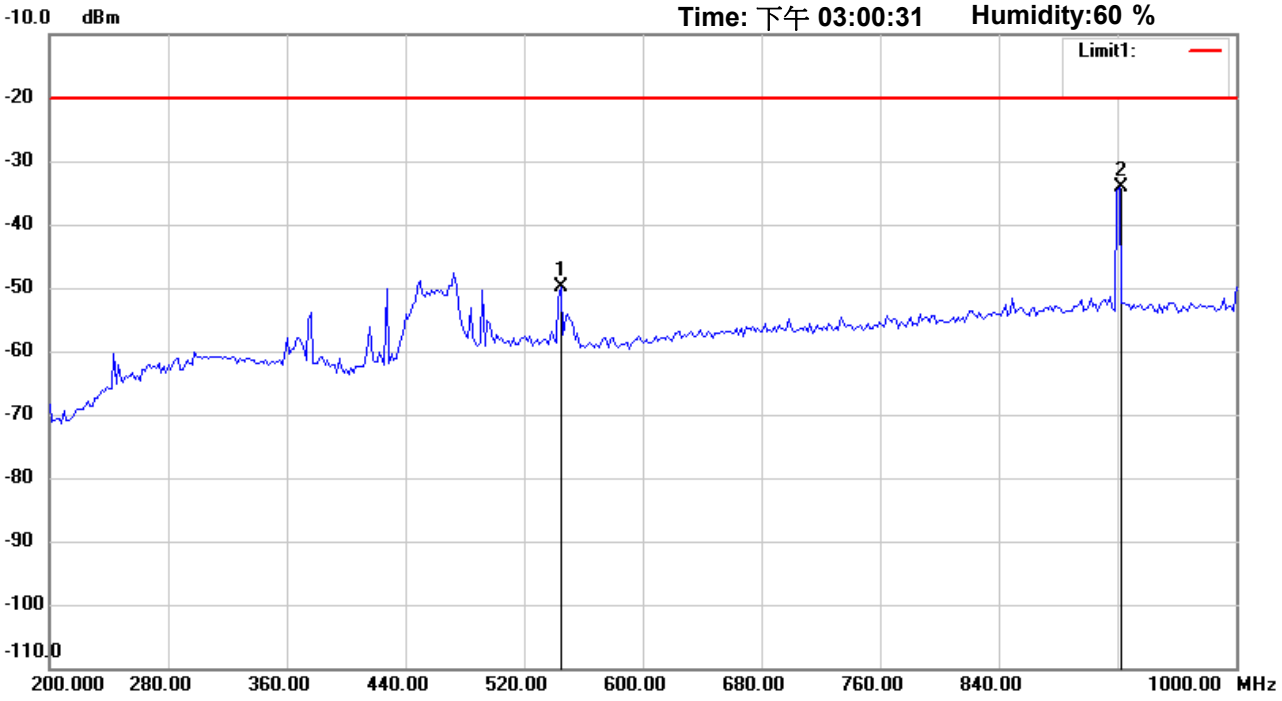
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	544.6893	-75.03	peak	30.46	-44.57	-20.00	150	250	-24.57	
*	921.4430	-62.55	peak	36.56	-25.99	-20.00	150	90	-5.99	

*: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: Robert
File :2 Data :#2 Date: 2018/8/29
Temperature:24 ℃
Time: 下午 03:00:31 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 120 Va.c.
Distance: 3m

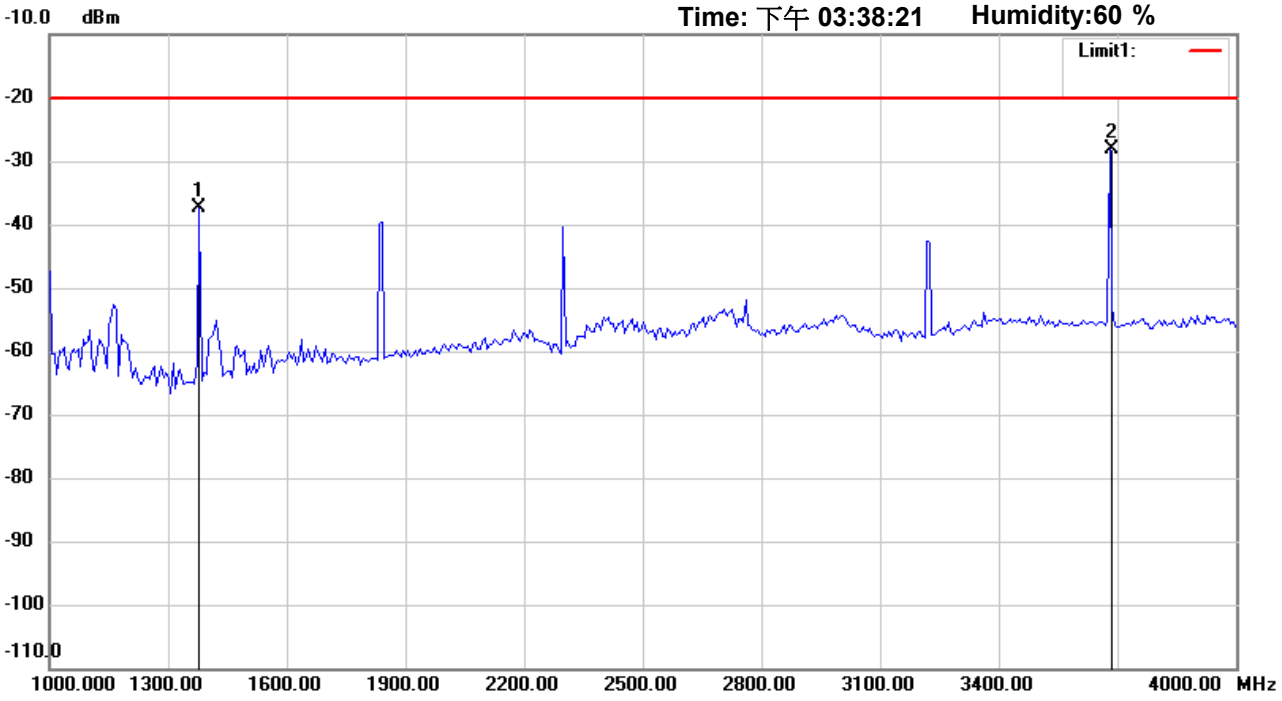
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	544.6893	-79.88	peak	29.90	-49.98	-20.00	150	90	-29.98	
*	921.4430	-68.44	peak	34.27	-34.17	-20.00	150	140	-14.17	

*: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: Robert
File :3 Data :#2 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:38:21 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.c.
Distance: 3m

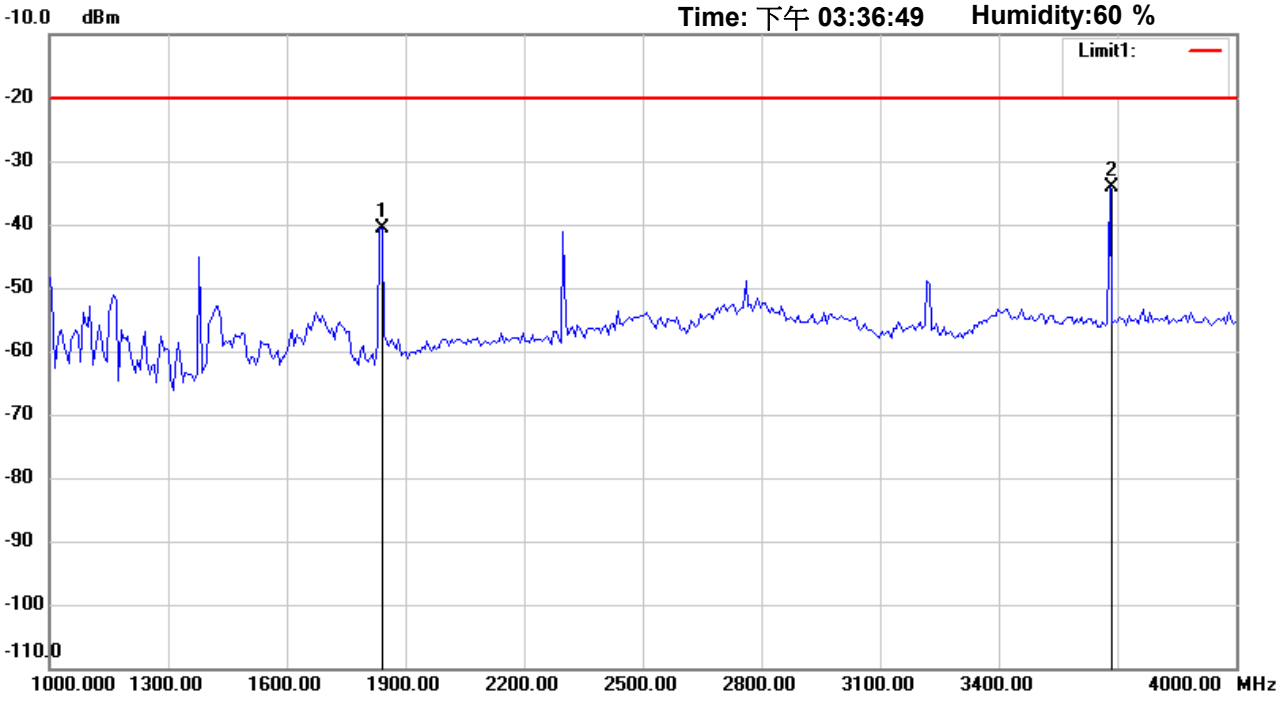
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	1378.757	-35.55	peak	-1.84	-37.39	-20.00	150	240	-17.39	
*	3681.363	-35.95	peak	7.84	-28.11	-20.00	150	60	-8.11	

*: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: Robert
File :3 Data :#1 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:36:49 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 460MHz
Note :

Polarization: *Vertical*
Power : 120 Va.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
	1841.683	-41.53	peak	0.86	-40.67	-20.00	150	200	-20.67	
*	3681.363	-42.19	peak	8.13	-34.06	-20.00	150	70	-14.06	

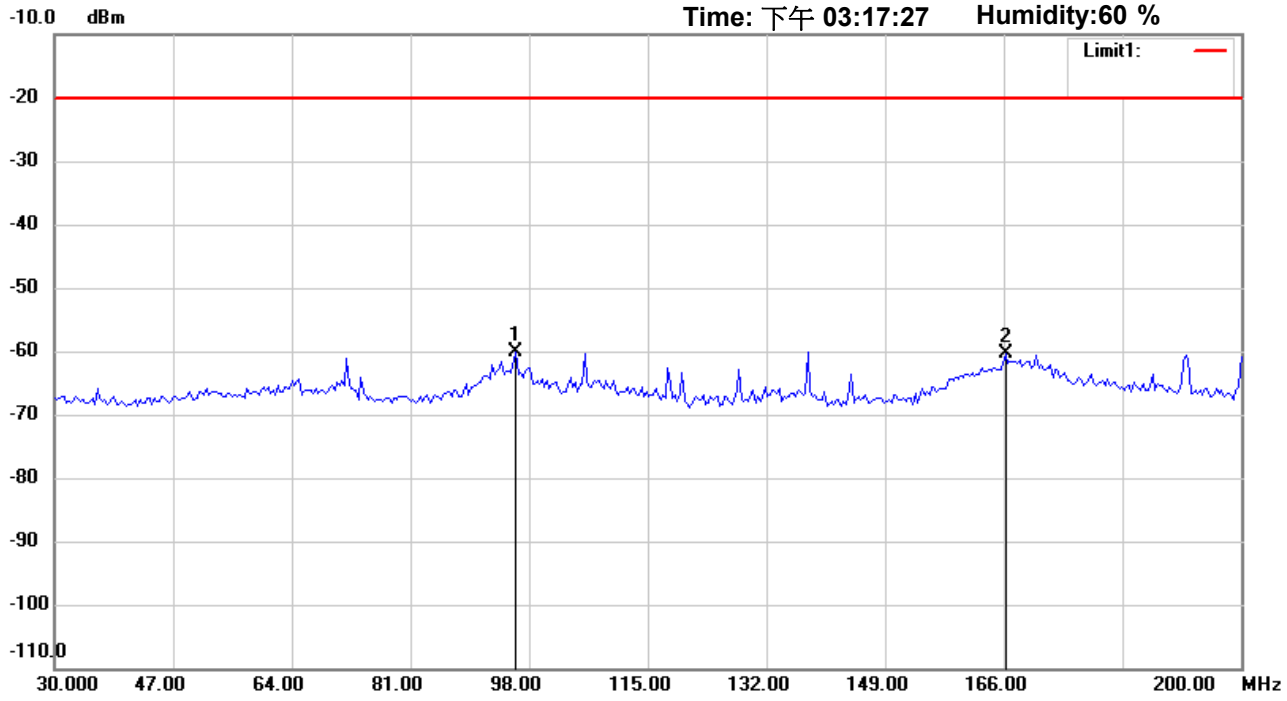
*:Maximum data x:Over limit !:over margin

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: Robert
Temperature:24 ℃
Humidity:60 %

File :1 Data :#1 Date: 2018/8/29 Time: 下午 03:17:27



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.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
*	96.0922	-81.48	peak	21.32	-60.16	-20.00	150	90	-40.16	
	166.2725	-81.94	peak	21.66	-60.28	-20.00	150	140	-40.28	

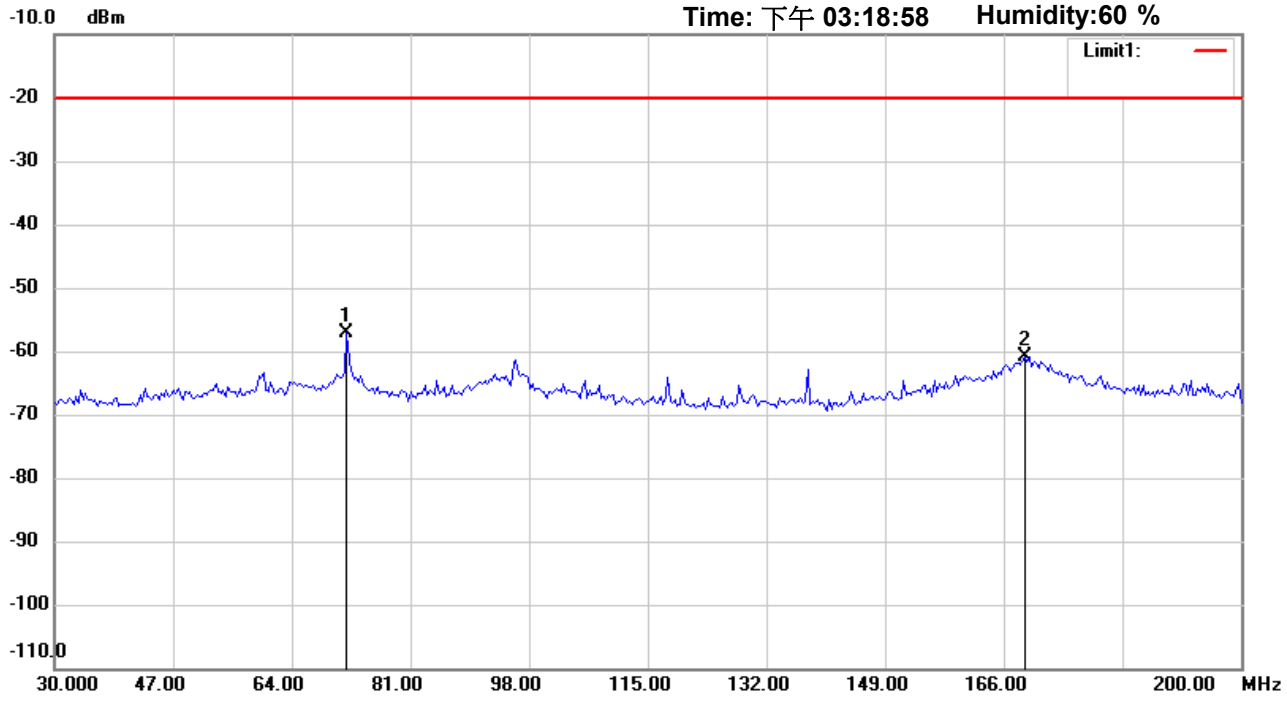
*:Maximum data x:Over limit !:over margin

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: Robert

File :1 Data :#2 Date: 2018/8/29 Time: 下午 03:18:58 Temperature:24 ℃ Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Vertical*
Power : 120 Va.c.
Distance: 3m

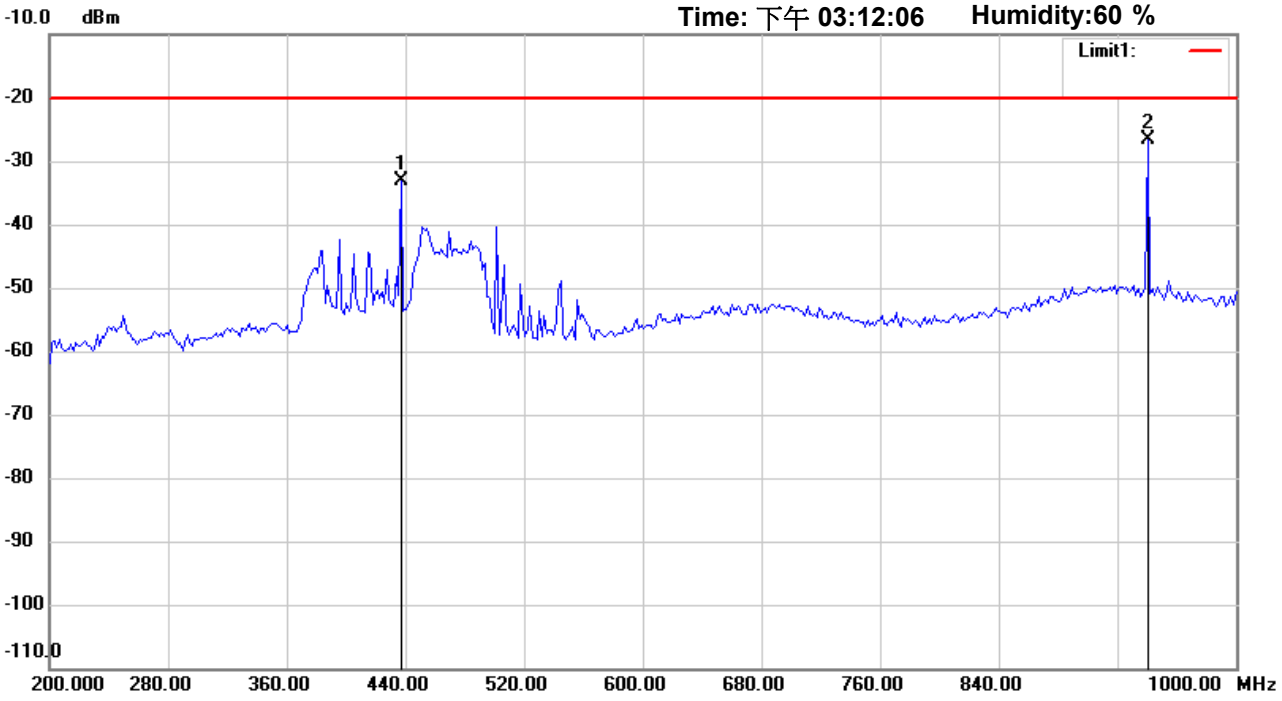
Mk.	Frequency (MHz)	Reading (dBm)	Detector	Corr. factor (dB)	Result (dBm)	Limit (dBm)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	71.9038	-78.96	peak	21.80	-57.16	-20.00	150	60	-37.16	
	168.9980	-83.18	peak	22.37	-60.81	-20.00	150	250	-40.81	

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

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

Radiated Emission Measurement

Operator: Robert
File :2 Data :#1 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:12:06 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Horizontal*
Power : 120 Va.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
	437.2744	-64.95	peak	31.85	-33.10	-20.00	150	140	-13.10	
*	940.6814	-62.81	peak	36.20	-26.61	-20.00	150	90	-6.61	

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

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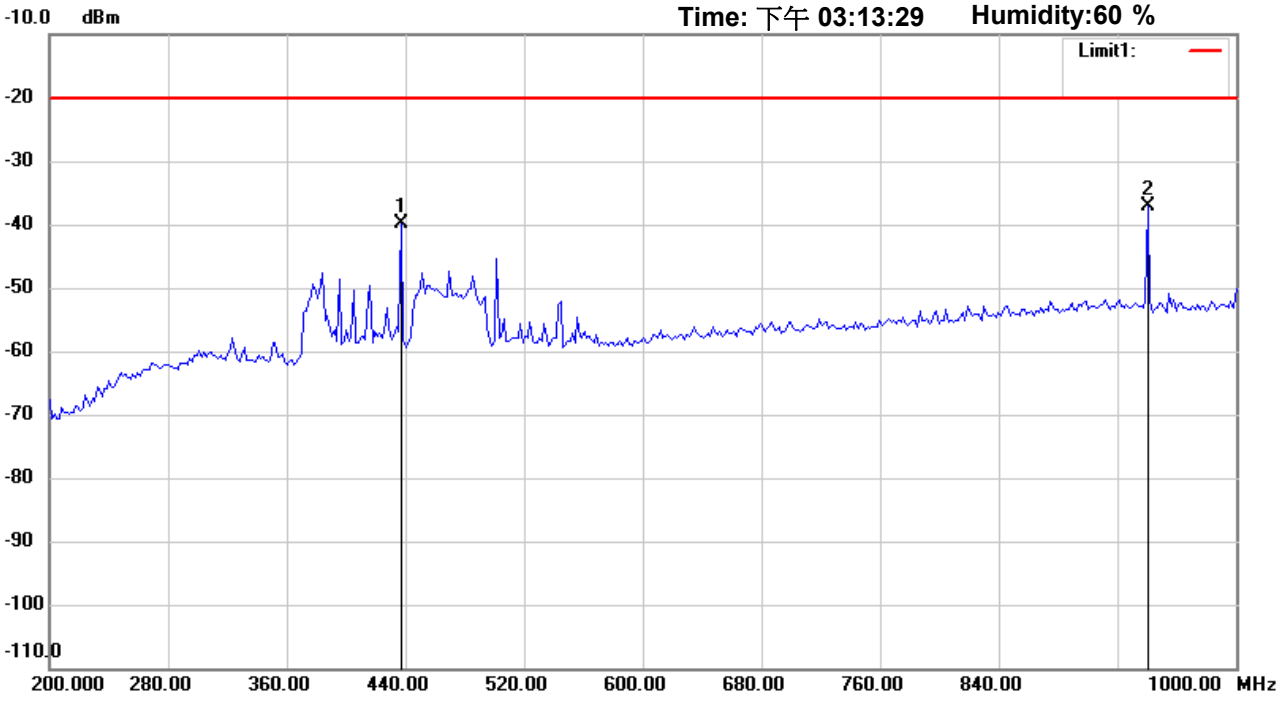
Radiated Emission Measurement

Operator: Robert
File :2 Data :#2 Date: 2018/8/29 Temperature:24 ℃
Time: 下午 03:13:29 Humidity:60 %



Site : Chamber
Condition : FCC_part 90 RE
EUT : W6M21807-18297
M/N:
Test Mode : Tx 469.9875MHz
Note :

Polarization: *Vertical*
Power : 120 Va.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
	437.2744	-67.28	peak	27.36	-39.92	-20.00	150	90	-19.92	
*	940.6814	-71.31	peak	34.14	-37.17	-20.00	150	120	-17.17	

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

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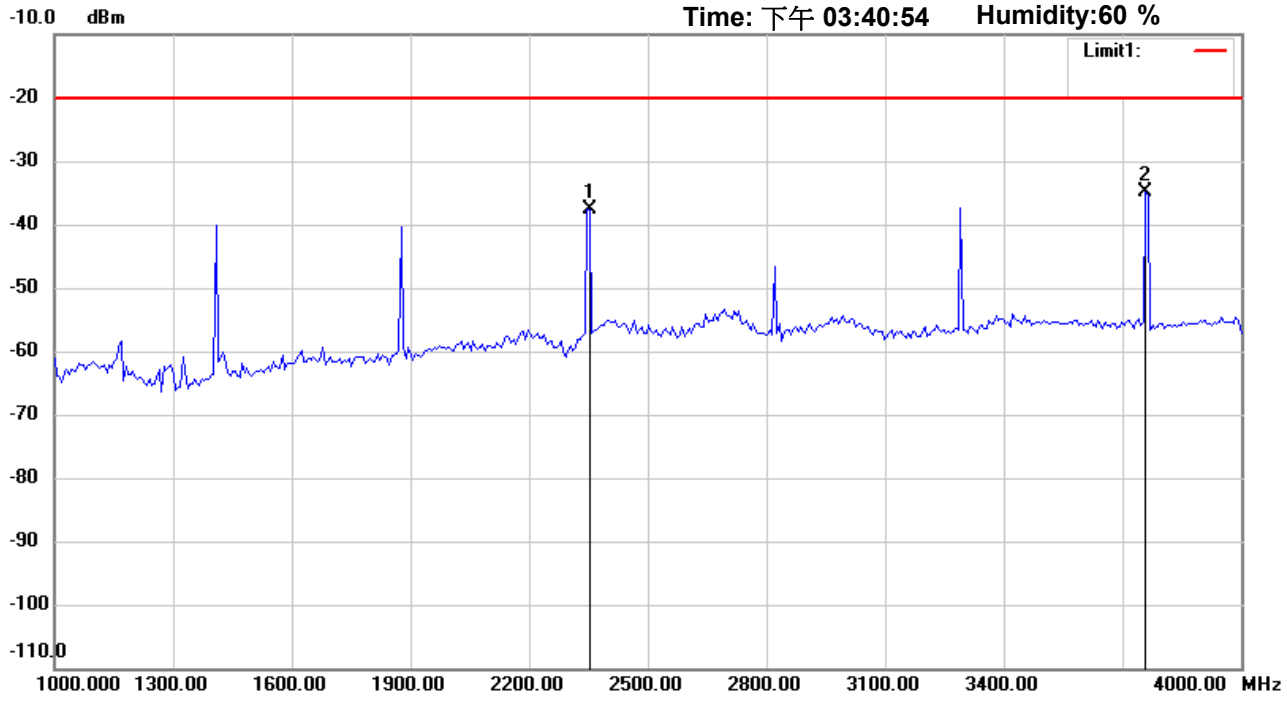
Tel:+886-2-6606-8877
Fax:+886-2-6606-8875

Radiated Emission Measurement

Operator: Robert

File :3 Data :#1 Date: 2018/8/29 Temperature:24 ℃

Time: 下午 03:40:54 Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21807-18297

M/N:

Test Mode : Tx 469.9875MHz

Note :

Polarization: *Horizontal*

Power : 120 Va.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
	2352.705	-42.43	peak	4.81	-37.62	-20.00	150	190	-17.62	
*	3759.519	-42.76	peak	7.77	-34.99	-20.00	150	20	-14.99	

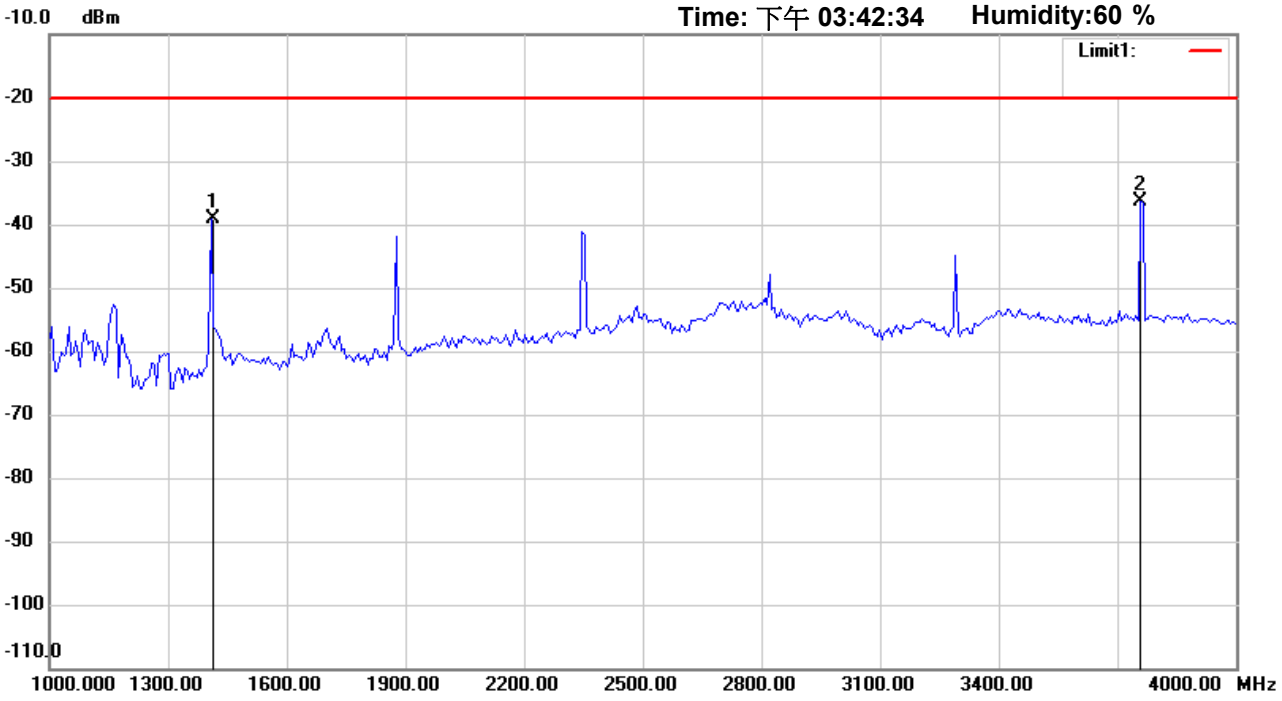
*:Maximum data x:Over limit !:over margin

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: Robert

File :3 Data :#2 Date: 2018/8/29 Time: 下午 03:42:34 Temperature:24 ℃ Humidity:60 %



Site : Chamber

Condition : FCC_part 90 RE

EUT : W6M21807-18297

M/N:

Test Mode : Tx 469.9875MHz

Note :

Polarization: *Vertical*

Power : 120 Va.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
	1408.818	-38.59	peak	-0.55	-39.14	-20.00	150	140	-19.14	
*	3759.519	-44.94	peak	8.56	-36.38	-20.00	150	60	-16.38	

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