

47 CFR PART 15 SUBPART C TEST REPORT

for

Wireless Trackball Mouse

Model No.: MRT1D-1

FCC ID: YWO-MRT1D-1

of

Applicant: ELECOM CO., LTD.

Address: Fushimimachi 4-1-1, Chuo-ku, Osaka City, Osaka Japan 541-8765

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: TW1477, TW1072

Industry Canada filed test laboratory Reg. No.: 20037, 5107A



Report No.: W6M22312-23187-C-1



Registration number: W6M22312-23187-C-1

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1 General Information

1.1 Notes

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

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

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

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.

The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

Laboratory disclaimer-

1. The test results of this test report relate exclusively to the item tested as specified in 1.5.
2. The test report may only be reproduced or published in full.
3. Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.
4. Antenna gain is provided by applicant and laboratory issue relevant data and results.

Tester:

January 31, 2024

Sora Kuo

Sora

Date

WTS-Lab.

Name

Signature

Technical responsibility for area of testing:

January 31, 2024

Kevin Wang

Kevin Wang

Date

WTS

Name

Signature



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1.2 Testing laboratory

1.2.1 Location

10m OATS

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

3 meter semi-anechoic chamber

No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist.,
Taipei City 114, Taiwan (R.O.C.)
Tel: 886-2-6613-0228

Worldwide Testing Services (Taiwan) Co., Ltd.

6F., No. 58, Ln. 188, Ruiguang Rd., Neihu Dist.,
Taipei City 114, Taiwan (R.O.C.)
Tel: 886-2-6606-8877

1.2.2 Details of accreditation status

Accredited testing laboratory

FCC filed test laboratory Reg. No.: TW1477, TW1072

Industry Canada filed test laboratory Reg. No.: 20037, 5107A

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

Name: ./.

Accredited number: ./.

Street: ./.

Town: ./.

Country: ./.

1.3 Details of approval holder

Name: ELECOM CO., LTD.

Street: Fushimimachi 4-1-1, Chuo-ku,

Town: Osaka City, Osaka

Country: Japan 541-8765

1.4 Application details

Date of receipt of test item: January 05, 2024

Date of test: from January 08, 2024 to January 30, 2024



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1.5 General information of Test item

Type of test item: Wireless Trackball Mouse

Model number: MRT1D-1

Multi-listing model number: ./.

Sample no.: #03

Technical data

Frequency band: 2403- 2480MHz

Band	Channel	Power (dBm)
2.4GHz	2403 MHz	1.77
	2441 MHz	1.40
	2480 MHz	0.93

Power supply: Battery 1.5Vd.c.*2

Operation modes: Duplex

Modulation type: FHSS

Antenna type: PCB antenna

Antenna gain: 1.8 dBi

Host device: none

Manufacturer: (if applicable)

Name: ./.

Street: ./.

Town: ./.

Country: ./.

1.6 Test standards

47 CFR PART 15 SUBPART C § 15.247 (2021-10)



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2 Technical test

2.1 Summary of test results

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



or

The deviations were ascertained in the course of the tests performed.



2.2 Test environment

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Details of power supply: Battery 1.5Vd.c.*2

Extreme conditions parameters: test voltage : -- extreme
min : -- V
max : -- V

Test item Name	Uncertainty
Estimation Result of Uncertainty of Conducted Emission (Power Line Conducted Emission)	Expanded Uncertainty : AMN : 0.94 dB Voltage probe : 0.96 dB Include Pulse Limiter : 1.5 dB
Estimation Result of Uncertainty of Radiated Emission(3M) (Transmitter Radiated Emissions in restricted Bands, Spurious emissions (tx), Radiated Emissions from Digital Part)	Expanded Uncertainty : 0.009-30 MHz : 1.92 dB 30-1000 MHz : 3.96 dB 1-18 GHz : 2.98 dB 18-40 GHz : 2.44 dB
Estimation Result of Uncertainty of Bandwidth Measurement (20 dB Bandwidth)	Expanded Uncertainty : 0.45 kHz
Estimation Result of Uncertainty of Conducted Output Power Measurement (Peak Output Power (transmitter))	Expanded Uncertainty : 1.64 dB
Estimation Result of Uncertainty of Band Edge Measurement (Band-edge Compliance of RF Emissions)	Expanded Uncertainty : 0.67 dBc
Estimation Result of Uncertainty of Frequency Separation Measurement (Carrier Frequency Separation, Number of Hopping Frequencies)	Expanded Uncertainty : 554.14 Hz
Estimation Result of Uncertainty of Duty Cycle Measurement (Time of Occupancy (Dwell Time))	Expanded Uncertainty : 0.1 ms

The decision rule is: Measurement uncertainty is not included in the calculation of test results.



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2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2023/6/12	2024/6/11
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	2023/9/19	2024/9/18
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2023/9/25	2024/9/24
ETSTW-CE 008	HF-EICHLLEITUNG 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	2023/7/24	2024/7/23
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2023/10/26	2024/10/25
ETSTW-CE 028	MXE EMI Receiver	N9038A	MY53220110	Agilent	2023/7/17	2024/7/16
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2023/6/12	2024/6/11
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2023/10/19	2024/10/18
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	2023/7/21	2024/7/20
ETSTW-RE 019	MICROWAVE HORN ANTENNA	22240-25	121074	FM	2023/6/9	2024/6/8
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2023/6/28	2024/6/27
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	ETS-Lindgren	2023/5/5	2024/5/4
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2023/3/2	2024/3/1
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2023/7/28	2024/7/27
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2023/7/31	2024/7/30
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2023/2/17	2024/2/16
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2023/2/17	2024/2/16
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2023/2/17	2024/2/16
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2023/3/22	2024/3/21
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2023/2/17	2024/2/16
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2023/2/20	2024/2/19
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	2023/10/22	2024/10/21
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2023/9/15	2024/9/14
ETSTW-RE 091	Match Pad	MDCS1500	None	WOKEN	2023/5/25	2024/5/24
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2023/2/17	2024/2/16
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	T-0A023536	T-Power	Function test	



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ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2024/1/3	2025/1/2
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	2023/10/24	2024/10/23
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2023/6/7	2024/6/6
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2023/8/4	2024/8/3
ETSTW-RE 126	5GHz Notch filter	5NSL12-5800/E221.3-O/O	1	K&L Microwave	2023/8/4	2024/8/3
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2023/2/17	2024/2/16
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circuits	2023/8/4	2024/8/3
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circuits	2023/8/4	2024/8/3
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-RE 142	Amplifier	8447D	2805A03378	Agilent	2023/2/20	2024/2/19
ETSTW-RE 146	Preamplifier	JPA-10M1G	15090004	JPT	2023/5/26	2024/5/25
ETSTW-RE 152	Bi-log Hybrid Antenna	MCTD 2786B	BLB20J04029	ETC	2023/3/21	2024/3/20
ETSTW-RE 153	Signal Analyzer	FSV40	101929	R&S	2023/9/20	2024/9/19
ETSTW-RE 154	EMI Test Receiver	ESR3	102829	R&S	2023/4/13	2024/4/12
ETSTW-RE 159	Bi-log Hybrid Antenna (30M~1000 MHz)	MCTD 2786B	BLB21N04035	ETC	2023/12/27	2024/12/26
ETSTW-RE 160	Amplifier Module	CHC 3	None	WTS	2023/7/14	2024/7/13
ETSTW-RE 176	Loop Antenna	FMZB 1513-60	00039	SCHWARZBECK	2023/8/10	2024/8/9
ETSTW-RE 177	TRILOG Broadband Antenna	VULB 9168&EMCI-N-6-06	01380&AT-06007	SCHWARZBECK&EMC	2023/8/24	2024/8/23
ETSTW-RE 178	Double Ridged Guide Horn Antenna	DRH18-E	210505A18ES	RFSPIN	2023/8/17	2024/8/16
ETSTW-RF 002	Electromagnetic field probe	LF-30	K-0007	STT	2023/6/13	2024/6/12
ETSTW-EMI 011	USB Compact Modulator	SFC-U	101689	R&S	2023/5/28	2024/5/27
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2023/3/22	2024/3/21
ETSTW-GSM 003	Radio Communication Analyzer	MT8820C	6201342073	Anritsu	2023/5/10	2024/5/9
ETSTW-GSM 004	Wideband Radio Communication Tester	CMW500	128092	R&S	2023/10/18	2024/10/17
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40/12+9SS	3	WI	2024/1/3	2025/1/2
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2024/1/3	2025/1/2
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2024/1/3	2025/1/2
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2024/1/3	2025/1/2
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2023/8/28	2024/8/27
ETSTW-GSM 024	Radio Communication Analyzer	MT8821C	None	Anritsu	2023/4/24	2024/4/23
ETSTW-GSM 025	Band Reject Filter	BRM19835	001	Micro-Tronics	2023/8/4	2024/8/3
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2023/2/4	2024/2/3
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2023/2/4	2024/2/3
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2023/2/4	2024/2/3
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2023/2/4	2024/2/3
ETSTW-Cable 020	N TYPE Cable	OATS Cable 1	N30N30-L335-15M	JYE BAO CO.,LTD.	2023/6/26	2024/6/25



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ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2023/4/27	2024/4/26
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2023/9/15	2024/9/14
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2023/9/15	2024/9/14
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	HUBER+SUHNER	2023/02/17	2024/2/16
ETSTW-Cable 049	Microwave Cable	FA147A0015M2020	30064-1	UTIFLEX	2023/8/16	2024/8/15
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2023/5/26	2024/5/25
ETSTW-Cable 064	Microwave Cable	SUCOFLEX 104	MY28891	HUBER+SUHNER	2023/2/20	2024/2/19
ETSTW-Cable 071	N TYPE CABLE	EMCCFD400-NM- NM-25000	170239	EMCI	2023/5/26	2024/5/25
ETSTW-Cable 072	SMA type cable (8m)	SUCOFLEX 104	805800/4	HUBER+SUHNER	2023/2/20	2024/2/19
ETSTW-Cable 074	SMA type cable (2m)	SUCOFLEX 104	802563/4	HUBER+SUHNER	2023/2/20	2024/2/19
ETSTW-Cable 076	SMA type cable (1m)	N/A	812652/4	HUBER+SUHNER	2023/2/20	2024/2/19
ETSTW-Cable 077	SMA type cable (10m)	EMC104-SM- SM-10000	230511	EMCI	2023/7/14	2024/7/13
ETSTW-Cable 084	SMA type cable (1m)	SF104-11SMA-1000	816477/4	HONOVA	2023/7/14	2024/7/13
ETSTW-Cable 089	SMA type cable (2m)	SF104-11SMA-2000	SN 811889/4	HUBER+SUHNER	2023/7/14	2024/7/13
ETSTW-Cable 090	N type Cable (15m)	EMCCFD400- NM-NM-15000	230732	EMCI	2023/8/4	2024/8/3
ETSTW-Cable 091	N type Cable (15m)	EMCCFD400- NM-NM-15000	230733	EMCI	2023/8/4	2024/8/3
ETSTW-Cable 093	BNC Cable (3m)	EMCCFD-300 -BM-BM-3000	240109	EMCI	2024/1/10	2025/1/9
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1 Version EMEC-3A1+	
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	
ETSTW-TH 002	Thermohygrometer	608-H1	45204317	Testo	2023/7/21	2024/7/20
ETSTW-TH 003	Wireless weather station	GAIA	N/A	TFA	2023/10/20	2024/10/19
ETSTW-TH 004	Thermohygrometer	88163	2205131	AZ	2023/9/13	2024/9/12



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2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.10-2013 6.2 using a LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.10-2013 6.3 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 23°C with a humidity of 40 %.

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

Example:

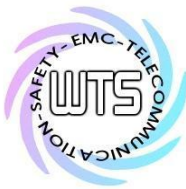
Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBμV + 10.36 dB + 6 dB = 36.36 dBμV/m @3m

The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.10-2013 6.2.2. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

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

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

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.



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When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

The formula is as follows:

Average = Peak + Duty Factor

Duty Factor = $20 \log (\text{dwell time}/T)$

$T = 100\text{ms}$ when the pulse train period is over 100 ms or the period of the pulse train.

Modified Limits for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

ANSI STANDARD C63.10-2013 B.2.7: Any measurements that utilize special test software shall be indicated and referenced in the test report. During testing, test software 'EZ EMC' was used for setting up different operation modes.



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3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)	☒	☒	☐
Equivalent radiated Power	15.247(b)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.247(d):15.209	☒	☒	☐
Spurious Emissions conducted – Transmitter operating	15.247	☐	☐	☐
Carrier Frequency Separation	15.247(a) (1)	☒	☒	☐
Number of Hopping Frequencies	15.247(a) (1)(i)	☒	☒	☐
Time of Occupancy (Dwell Time)	15.247(a) (1)(i)	☒	☒	☐
20 dB Bandwidth	15.247(a) (1)(i)	☒	☒	☐
Band-edge Compliance of RF Emission	15.247(d)	☒	☒	☐
Radiated Emission from Receiver Part	15.109	☒	☒	☐
Power Line Conducted Emission	15.207(a)	☐	☐	☐

The follows is intended to leave blank.



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3.1 Peak Output Power (transmitter)

FCC Rule: 15.247

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

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

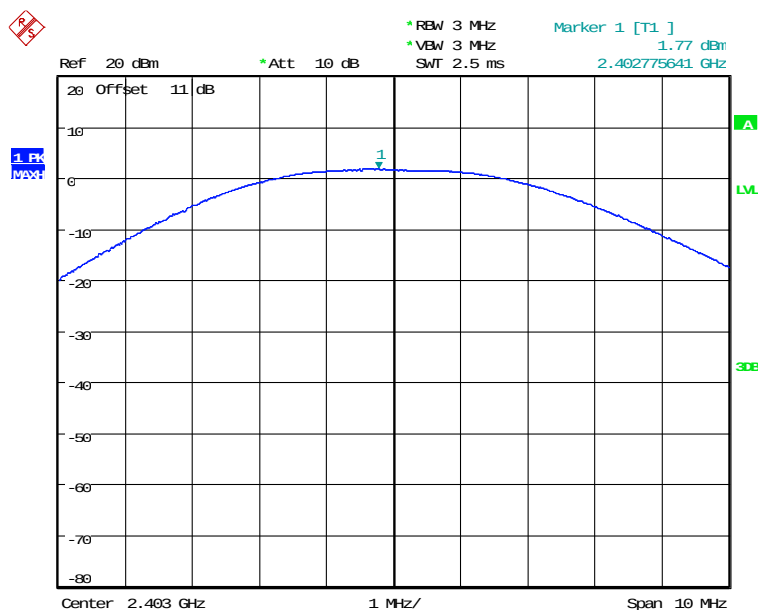
Test date: January 07, 2024

Temperature: 21.2°C

Humidity: 55.9 %

Tester: Sora

Band	Channel	Power (dBm)	Limit (dBm)
2.4GHz	2403 MHz	1.77	21
	2441 MHz	1.40	21
	2480 MHz	0.93	21

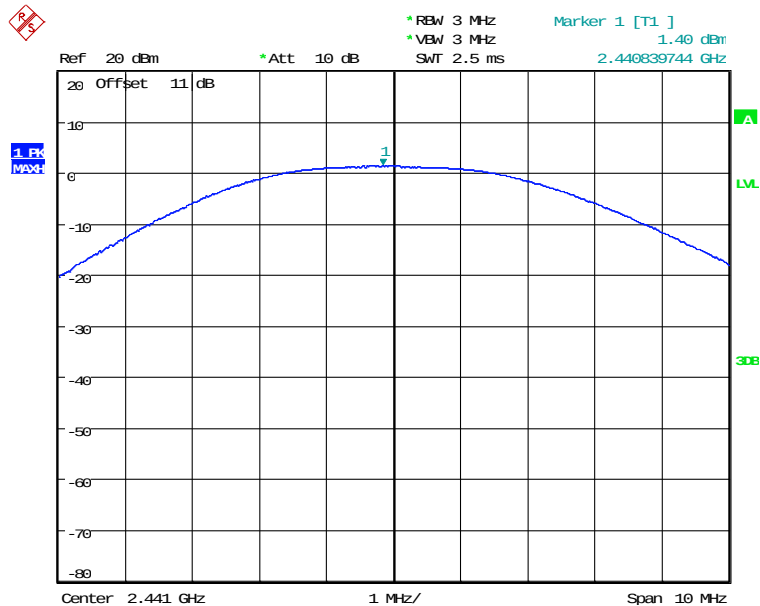


MAX OUTPUT POWER 2403MHz
Date: 7.JAN.2024 17:56:54

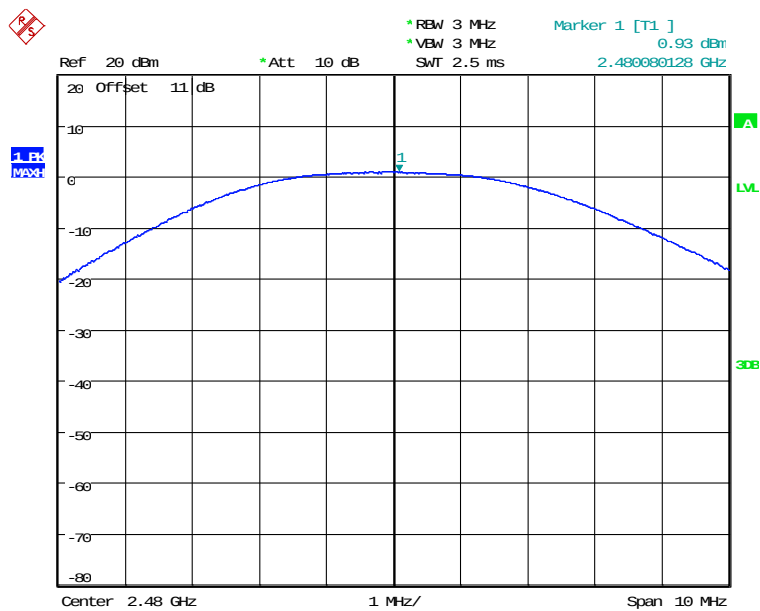


Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1



MAX OUTPUT POWER 2441MHz
Date: 7.JAN.2024 17:57:31



MAX OUTPUT POWER 2480MHz
Date: 7.JAN.2024 17:55:59



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

Limits:

Frequency (MHz)	Number of hopping channels			
	≥ 75	≥ 50	$49 \geq 25$	$74 \geq 15$
902-928	--	30 dBm	24 dBm	--
2400-2483.5 MHz	30 dBm	--	--	21 dBm
5725-5850 MHz	30 dBm	--	--	--

In case of employing transmitter antennas having antenna gain >dBi and using fixed point-to point operation consider §15.247 (b)(4).

Test equipment used: ETSTW-RE 055, ETSTW-RE 050, ETSTW-RE 064



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.2 Transmitter Radiated Emissions in restricted Bands

FCC Rules: 15.247 (d), 15.205, 15.209, 15.35

Radiated emission measurements were performed from 30 MHz to 26000 MHz.

For radiated emission tests, the analyzer setting was as followings:

RES BW VID BW

Frequency <1 GHz 100 kHz 100 kHz (Peak measurements)

Frequency >1 GHz 1 MHz 1 MHz (Peak measurements)

1 MHz 1 MHz (Average measurements)

Limits:

For frequencies below 1GHz :

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

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of FHSS Systems:

“If the emission is pulsed, modify the unit for continues operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.” Here the correction was added to the limit instead subtracted from the reading.

Duty cycle correction = $20 \log (\text{dwell time}/100\text{ms})$

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

54.0dB μ V/m

For frequencies above 1GHz (Peak measurements).

Limit + 20dB

54.0dB μ V/m + 20 dB= 74 dB μ V/m

Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 062, ETSTW-RE 142,
ETSTW-RE 152, ETSTW-RE 064

Explanation: See attached diagrams in appendix.



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.3 Spurious emissions (tx)

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

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c))

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

Calculation of test results:

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

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

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

If in the column's correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the "Marker-Delta-Method" or the „Duty-Cycle Correction Factor“.

Summary table with radiated data of the test plots

Model: MRT1D-1 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)
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--

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



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

Polarization: Vertical

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

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

- Note**
1. Correction Factor = Antenna factor + Cable loss - Preamplifier
 2. The formula of measured value as: Test Result = Reading + Correction Factor
 3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
 4. All not in the table noted test results are more than 20 dB below the relevant limits.
 5. After evaluated, the test result in this report adopt the worst case to measure, please see attached diagrams in appendix.

All other not noted test plots do not contain significant test results in relation to the limits.

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

Test equipment used: ETSTW-RE 004, ETSTW-RE 018, ETSTW-RE 019, ETSTW-RE 030, ETSTW-RE 062, ETSTW-RE 088, ETSTW-RE 142, ETSTW-RE 152, ETSTW-Cable 028, ETSTW-Cable 029, ETSTW-Cable 064, ETSTW-Cable 072, ETSTW-Cable 074, ETSTW-Cable 076



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.4 Carrier Frequency Separation

Carrier Frequency Separation was measured with modulation (declared by manufacturer).

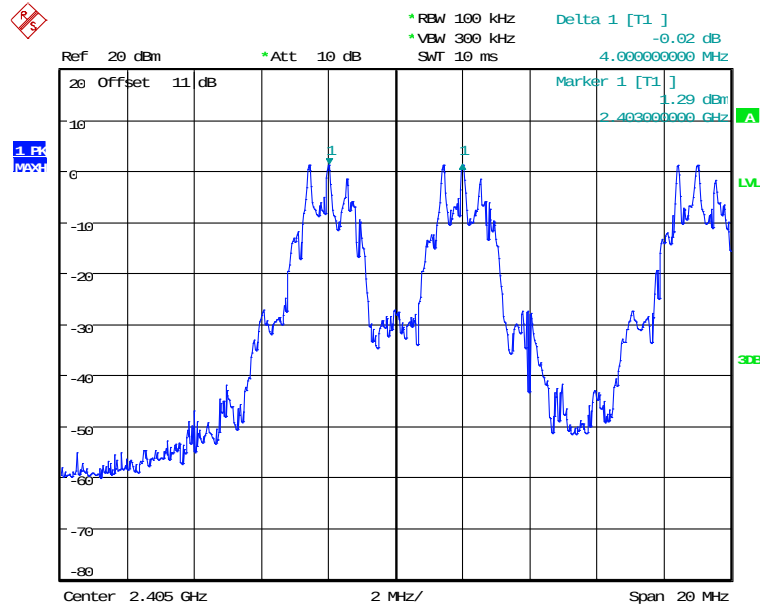
According to FCC rules part 15 subpart C §15.247 frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Test date: January 07, 2024

Temperature: 21.2°C

Humidity: 55.9 %

Tester: Sora

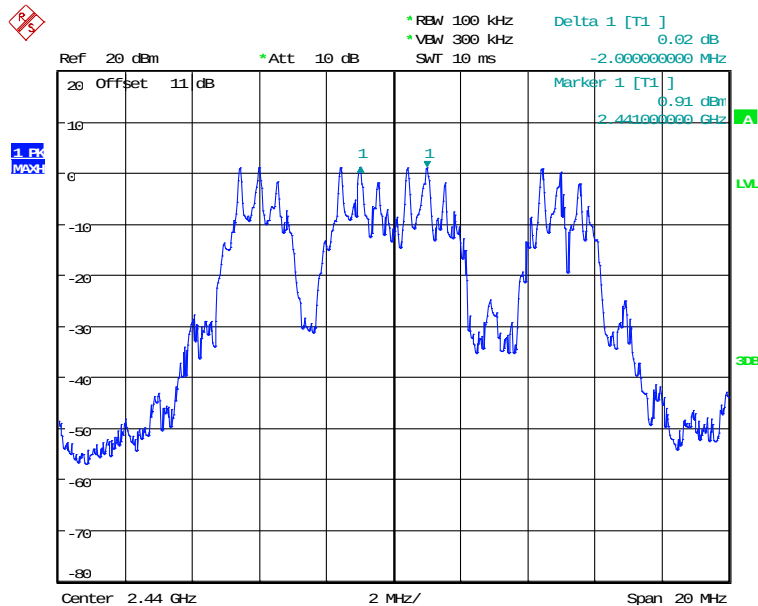


FREQUENCY SEPARATION 2403MHz
Date: 7.JAN.2024 19:18:35

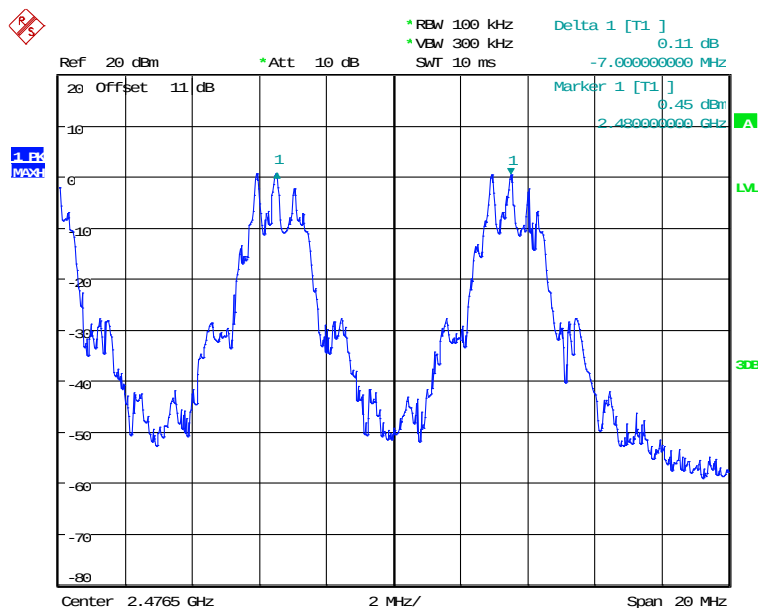


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M22312-23187-C-1
FCC ID: YWO-MRT1D-1



FREQUENCY SEPARATION 2441MHz
Date: 7.JAN.2024 19:35:08



FREQUENCY SEPARATION 2480MHz
Date: 7.JAN.2024 19:47:23

Limits:

Frequency (MHz)	20 dB bandwidth < 25 kHz	20 dB bandwidth > 25 kHz
902-928	25 kHz	20 dB bandwidth
2400-2483.5	25 kHz	20 dB bandwidth
5725-5850.0	25 kHz	20 dB bandwidth

Test equipment used: ETSTW-RE 055, ETSTW-RE 064

Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.5 Number of Hopping Frequencies

According to FCC rules part 15 subpart C §15.247 frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies. Frequency hopping systems in 5725-5850 MHz bands shall use least 75 hopping frequencies.

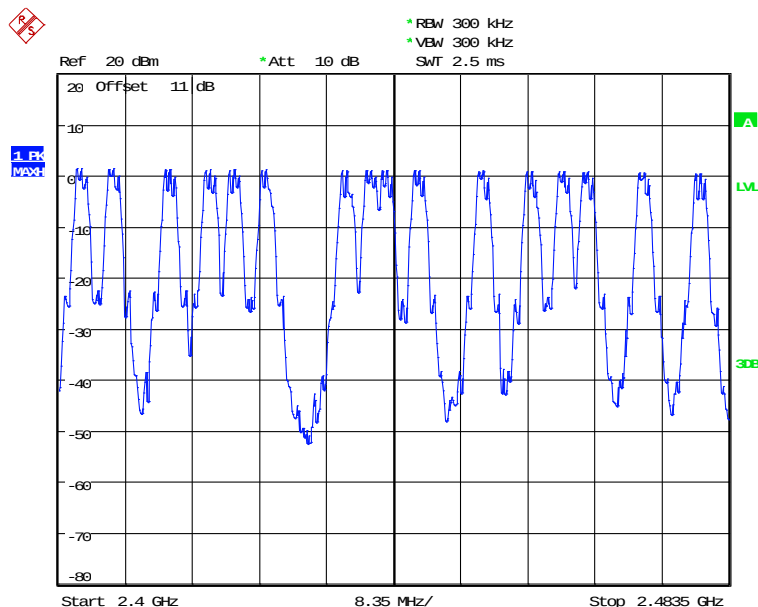
For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20dB bandwidth of the hopping channel 250 kHz or greater, the system shall use at least 25 hopping frequencies.

Test date: January 07, 2024

Temperature: 21.2°C

Humidity: 55.9 %

Tester: Sora



NUMBER OF HOPPING
Date: 7.JAN.2024 18:59:34

Limits:

Frequency (MHz)	20dB Bandwidth	Number of Channels
902-928 MHz	Bandwidth < 250 kHz	≥ 50
	Bandwidth ≥ 250 kHz	≥ 25
2400-2483.5	not defined	15
5725-5850.0 MHz	1 MHz	75

Test equipment used: ETSTW-RE 055, ETSTW-RE 064



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.5.1 Pseudorandom Frequency Hopping Sequence

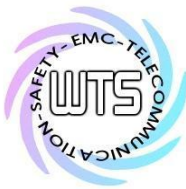
The generation of the hopping sequence is determined by the Bluetooth core specification and complies with the FCC requirements.

3.5.2 Coordination of hopping sequences to other transmitters

According to the Bluetooth core specification such a coordination is not possible. During scatternet function only one of the two hopping sequences will be used at a definite moment.

3.5.3 System Receiver Hopping Capability

According to the Bluetooth core specification. The system receivers shift frequencies in synchronization with the transmitted signals.



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.6 Time of Occupancy (Dwell Time)

Frequency hopping systems operating in the 5725-5850 MHz band shall use an average time of occupancy on any frequency not greater than 0.4 seconds within a 30 second period.

In 2400-2483.5 MHz band the average time of occupancy on any channel shall not be greater than 0.4 seconds multiplied by the number of hopping channels employed.

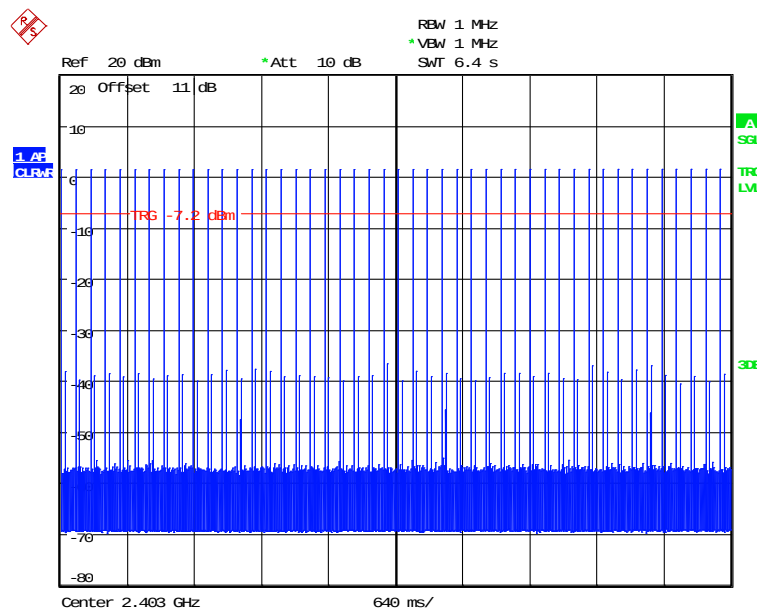
For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not greater than 0.4 seconds within a 20 second period; if the 20dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test date: January 09, 2024

Temperature: 21.0°C

Humidity: 52.3 %

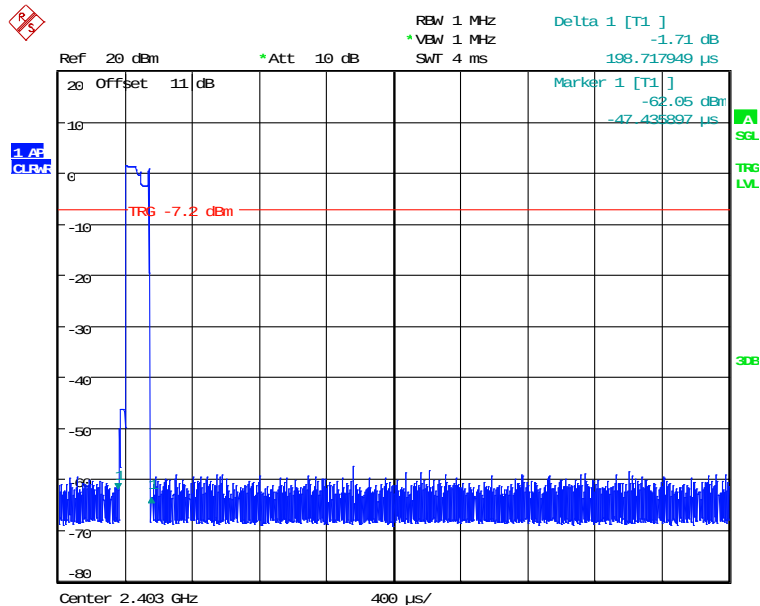
Tester: Sora



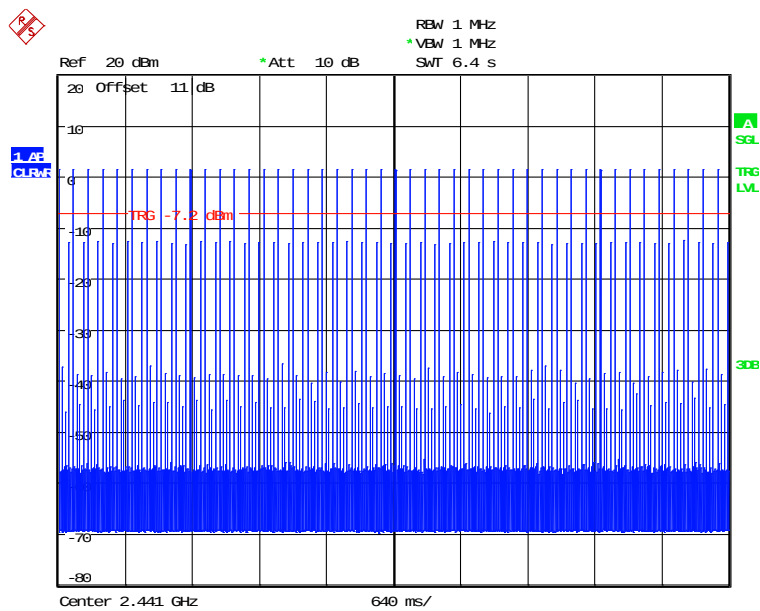
DWELL TIME 2403MHz
Date: 9.JAN.2024 12:56:57



Registration number: W6M22312-23187-C-1
FCC ID: YWO-MRT1D-1



DWELL TIME 2403MHZ (0.198ms * 46events = 9.108ms)
Date: 9.JAN.2024 12:58:37

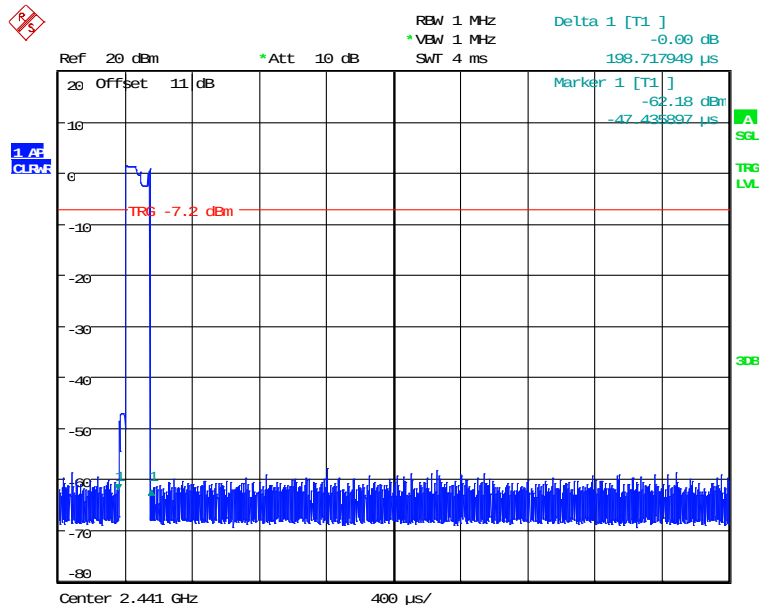


DWELL TIME 2441MHz
Date: 9.JAN.2024 12:56:23



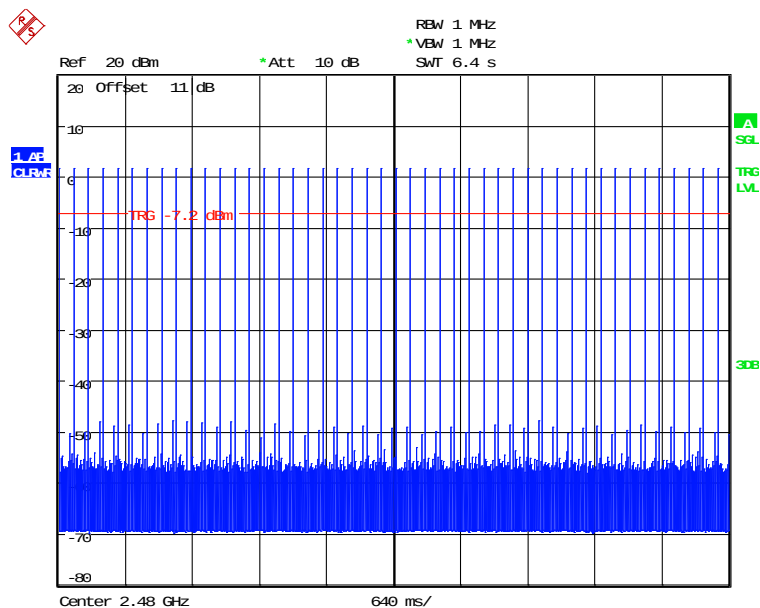
Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1



DWELL TIME 2441MHz (0.198ms * 46events = 9.108ms)

Date: 9.JAN.2024 12:58:56

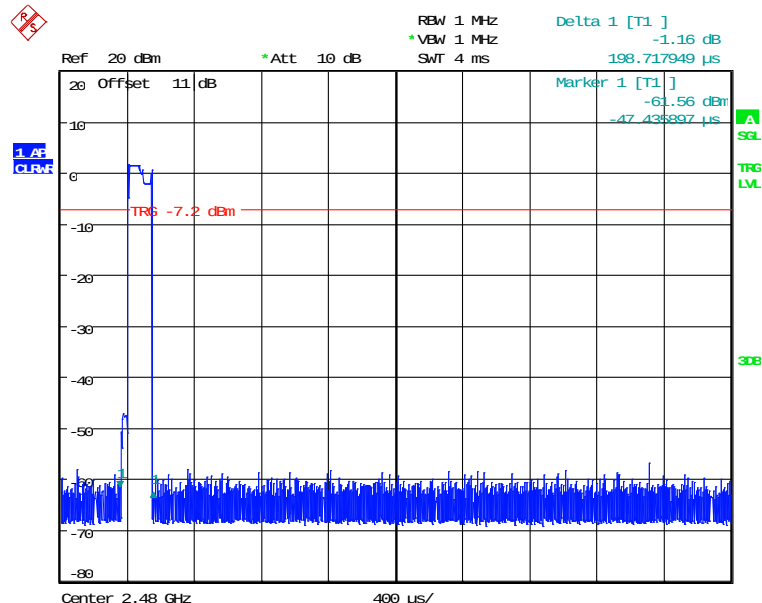


DWELL TIME 2480MHz

Date: 9.JAN.2024 12:56:40



Registration number: W6M22312-23187-C-1
FCC ID: YWO-MRT1D-1



DWELL TIME 2480MHz (0.198ms * 46events = 9.108ms)
Date: 9.JAN.2024 12:59:26

Limits and measurement periods:

Frequency (MHz)	Number of channels	Measurement Period	Limit
902 – 928	≥ 50	20 s	0.4 s
	$49 \geq 25$	10 s	0.4 s
2400 – 2483.5	≥ 15	0.4 s * number of used channels	0.4 s
5725- 5850	≥ 75	30 s	0.4s

Test equipment used: ETSTW-RE 055, ETSTW-RE 064



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.7 20dB Bandwidth

Frequency hopping systems operating in the 5725-5850 MHz bands shall use a maximum 20dB bandwidth of 1 MHz.

The 20dB bandwidth is measured on the lowest, middle and highest hopping channel.

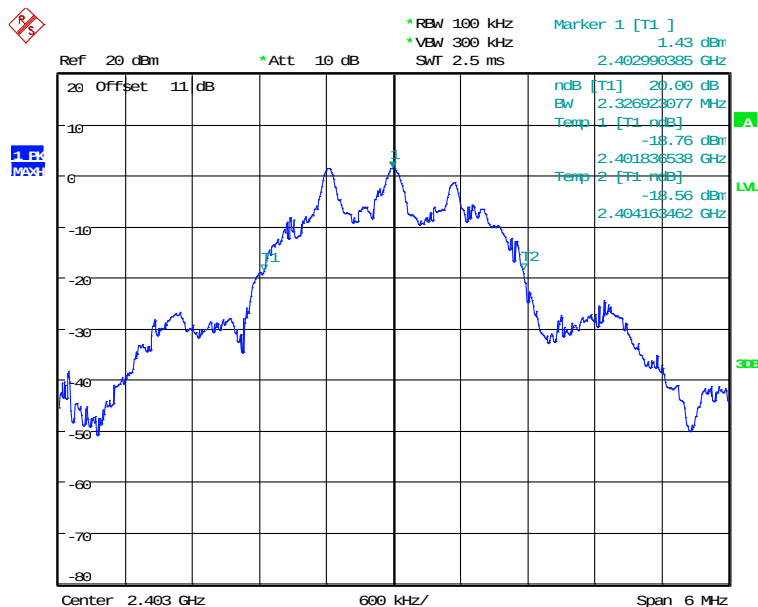
For frequency hopping systems operating in the 902-928 MHz band the maximum 20dB bandwidth of the hopping channel is 500 kHz.

Test date: January 07, 2024

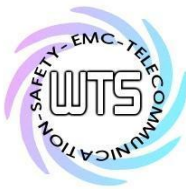
Temperature: 21.2°C

Humidity: 55.9 %

Tester: Sora



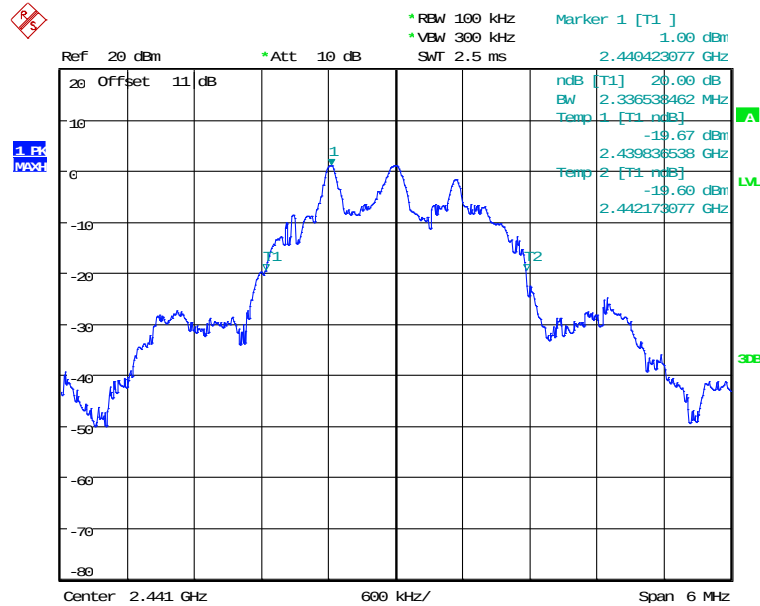
20dB BANDWIDTH 2403MHz
Date: 7.JAN.2024 17:44:10



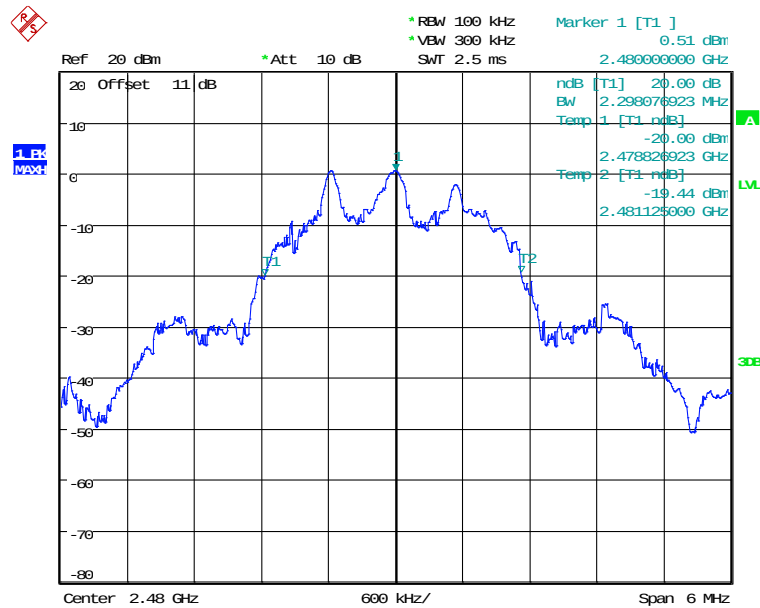
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1



20dB BANDWIDTH 2441MHz
Date: 7.JAN.2024 17:45:51



20dB BANDWIDTH 2480MHz
Date: 7.JAN.2024 17:54:32



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

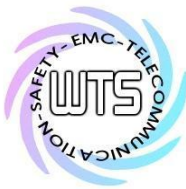
Limits:

Frequency (MHz)	Limit
902-928	≤ 500 kHz
2400-2483.5	not defined
5725-5850	≤ 1 MHz

Test equipment used: ETSTW-RE 055, ETSTW-RE 064

3.7.1 System Receiver Input Bandwidth

It is determined in the Bluetooth core specification. The value matches to the bandwidth of transmitter signal.



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.8 Band-edge Compliance of RF Emissions

According to FCC rules part 15 subpart C §15.247(c) in any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required.

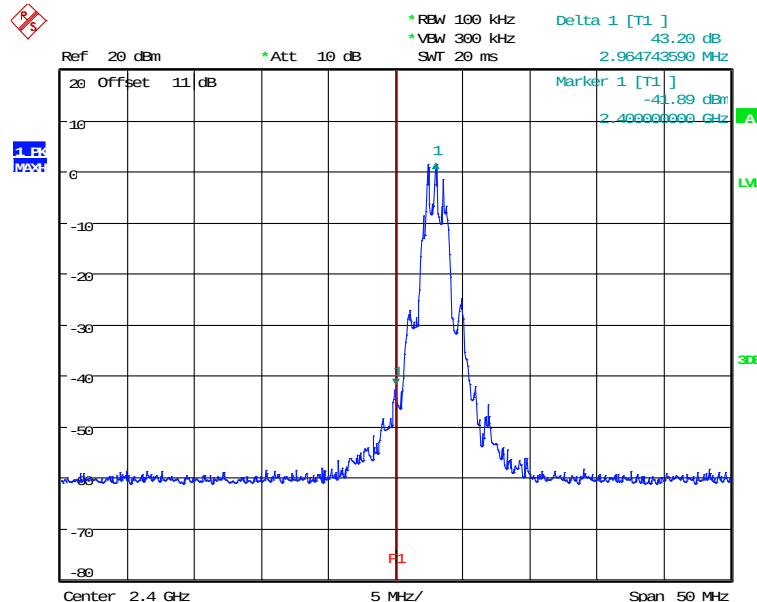
In addition radiated emission which fall in the restricted bands, as defined in section 15.205(a), must also with the radiated emission limits.

Test date: January 07, 2024

Temperature: 21.2°C

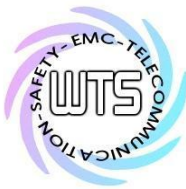
Humidity: 55.9 %

Tester: Sora



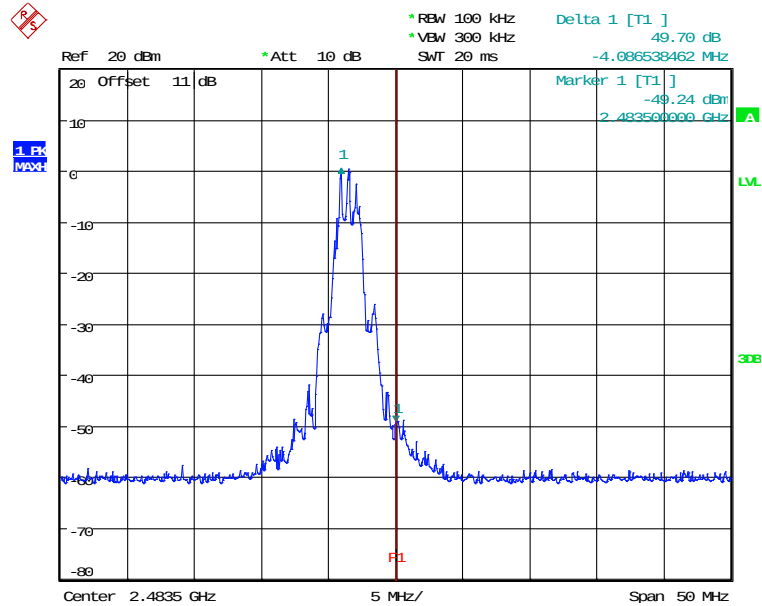
BANDEDGE 2403MHz

Date: 7. JAN. 2024 18:23:52



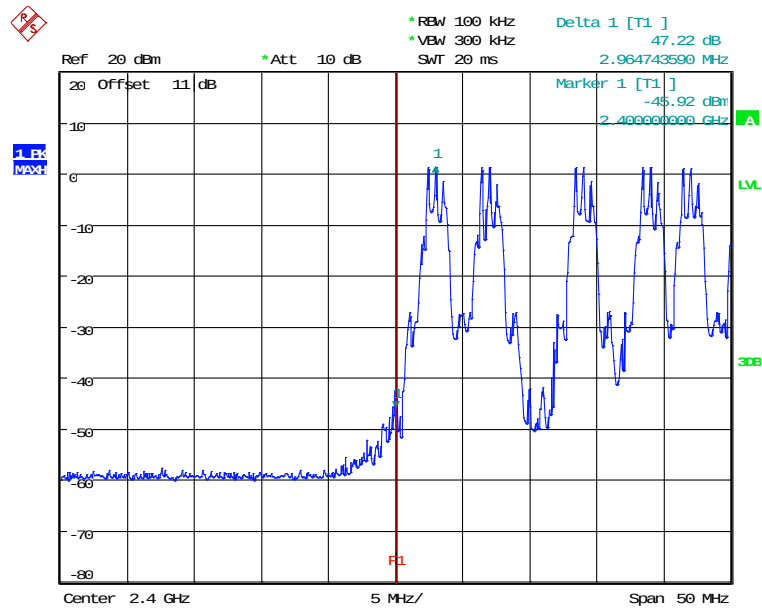
Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1



BANDEDGE 2480MHz

Date: 7.JAN.2024 18:26:04

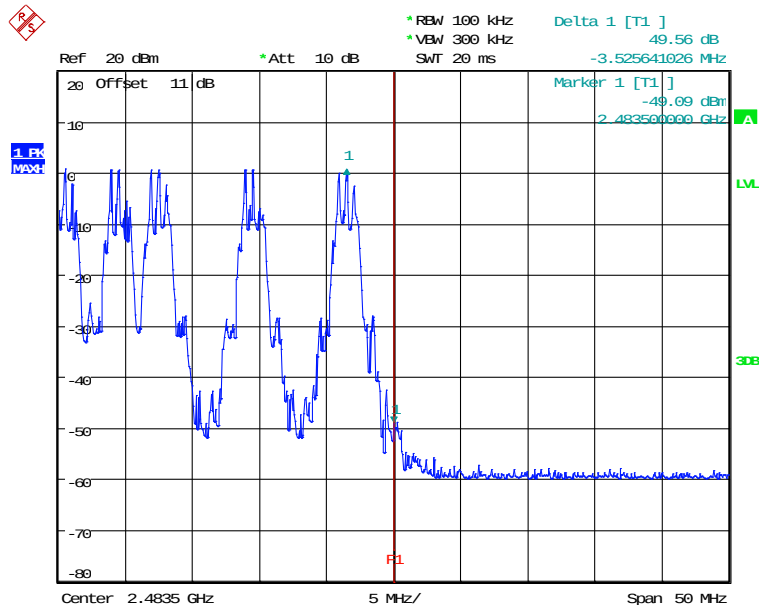


BANDEDGE 2403MHz HOPPING MODE

Date: 7.JAN.2024 18:49:41



Registration number: W6M22312-23187-C-1
FCC ID: YWO-MRT1D-1



BANDEDGE 2480MHz HOPPING MODE
Date: 7.JAN.2024 18:36:12

Limits:

Frequency (MHz)	Limit
902 – 928	- 20 dB
2400 – 2483.5	
5725 - 5850	

Test equipment used: ETSTW-RE 055, ETSTW-RE 050, ETSTW-RE 064



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.9 Radiated Emissions from Receiver Part

FCC Rule: 15.109

Summary table with radiated data of the test plots

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

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

Explanation: Please see attached diagrams in appendix.

Test equipment used: ETSTW-RE 004, ETSTW-RE 018, ETSTW-RE 019, ETSTW-RE 030, ETSTW-RE 062, ETSTW-RE 088, ETSTW-RE 142, ETSTW-RE 152, ETSTW-Cable 028, ETSTW-Cable 029, ETSTW-Cable 064, ETSTW-Cable 072, ETSTW-Cable 074, ETSTW-Cable 076



Registration number: W6M22312-23187-C-1

FCC ID: YWO-MRT1D-1

3.10 Power Line Conducted Emission

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

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

- Note:**
- 1. The formula of measured value as: Test Result = Reading + Correction Factor**
 - 2. The Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss**
 - 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. Up Line: QP Limit Line, Down Line: Ave Limit Line.**
 - 6. This test is not required because EUT is battery-used.**

Test equipment used: ETSTW-CE 001, ETSTW-CE 016, ETSTW-RE 045, ETSTW-Cable 093



Appendix

Measurement diagrams

Spurious Emissions radiated



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

Radiated Emission Measurement

Operator: Gino

File :3

Data :#1

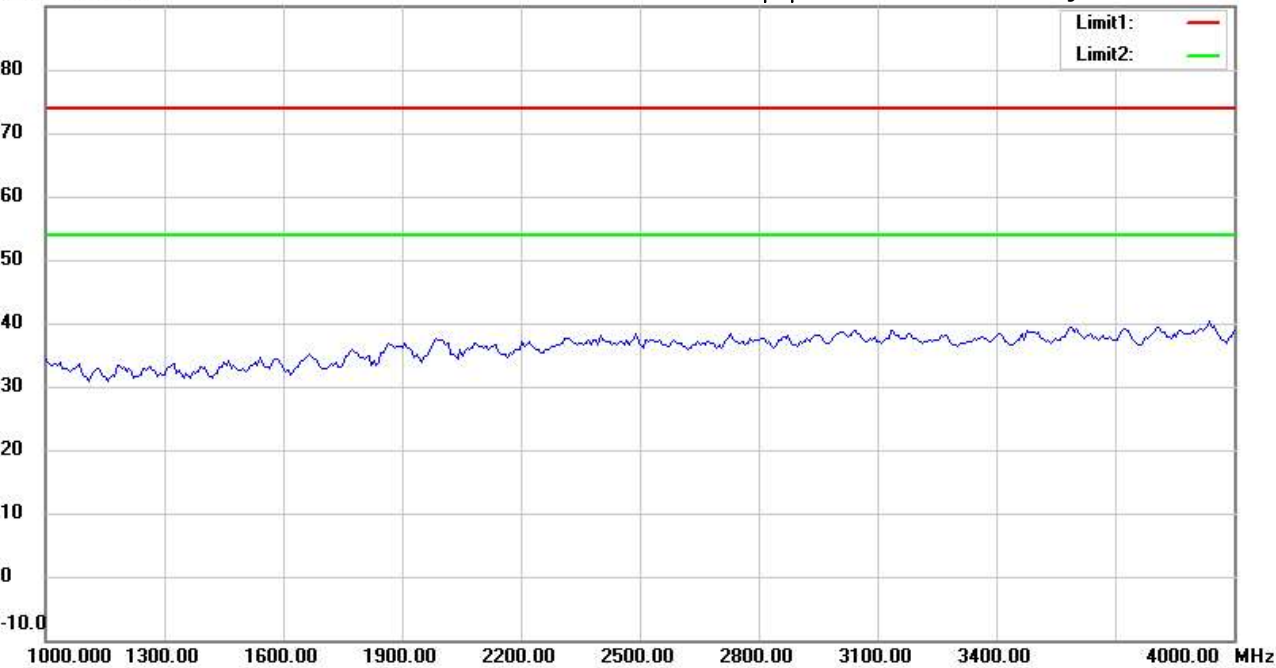
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:16:20

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: *Horizontal*

Power : 3 Vd.c.

Distance: 3m

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



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: Gino

File :3

Data :#6

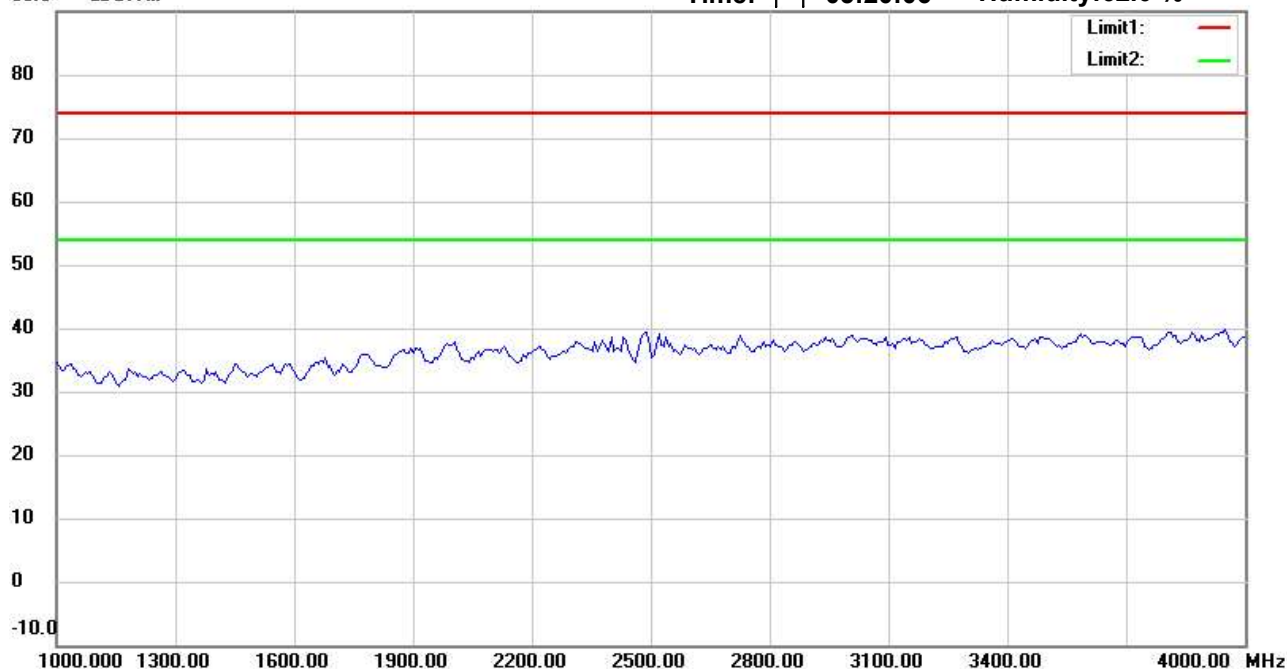
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:20:06

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: **Vertical**

Power : 3 Vd.c.

Distance: 3m

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

*: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: Gino

File :3

Data :#2

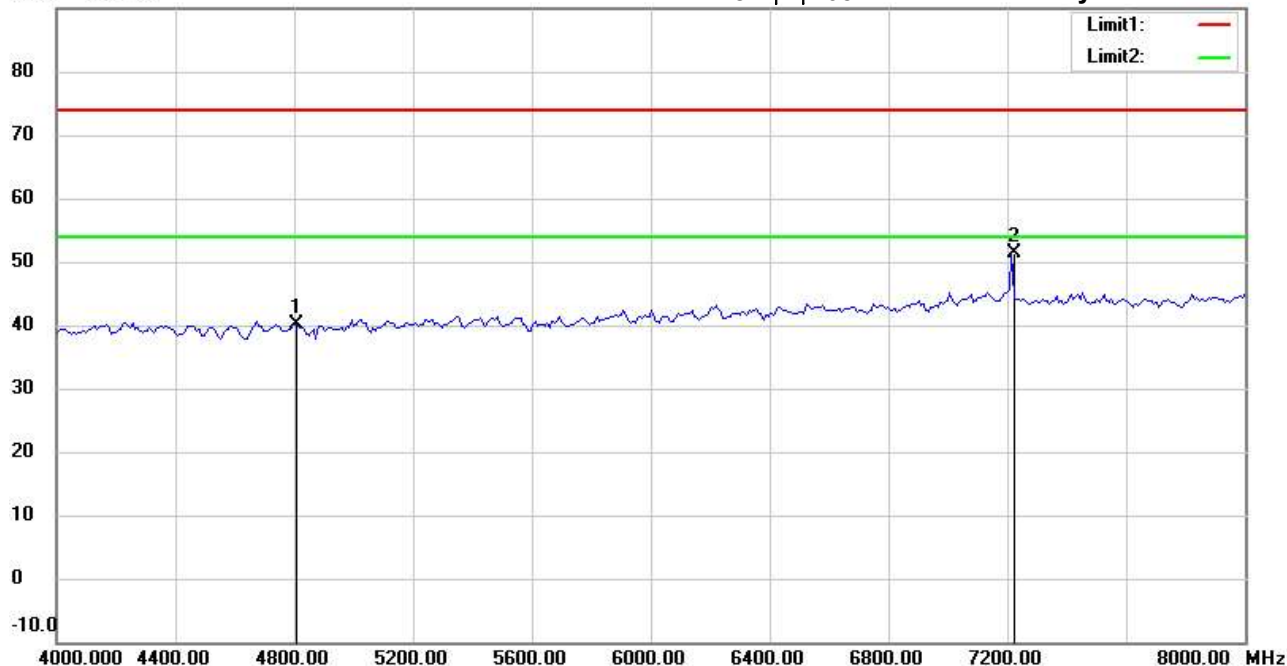
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:17:22

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: **Horizontal**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	4806.000	41.79	peak	-1.72	40.07	74.00	150	199	-33.93	
*	7214.429	47.39	peak	4.03	51.42	74.00	150	241	-22.58	

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



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

Operator: Gino

File : 3

Data : #7

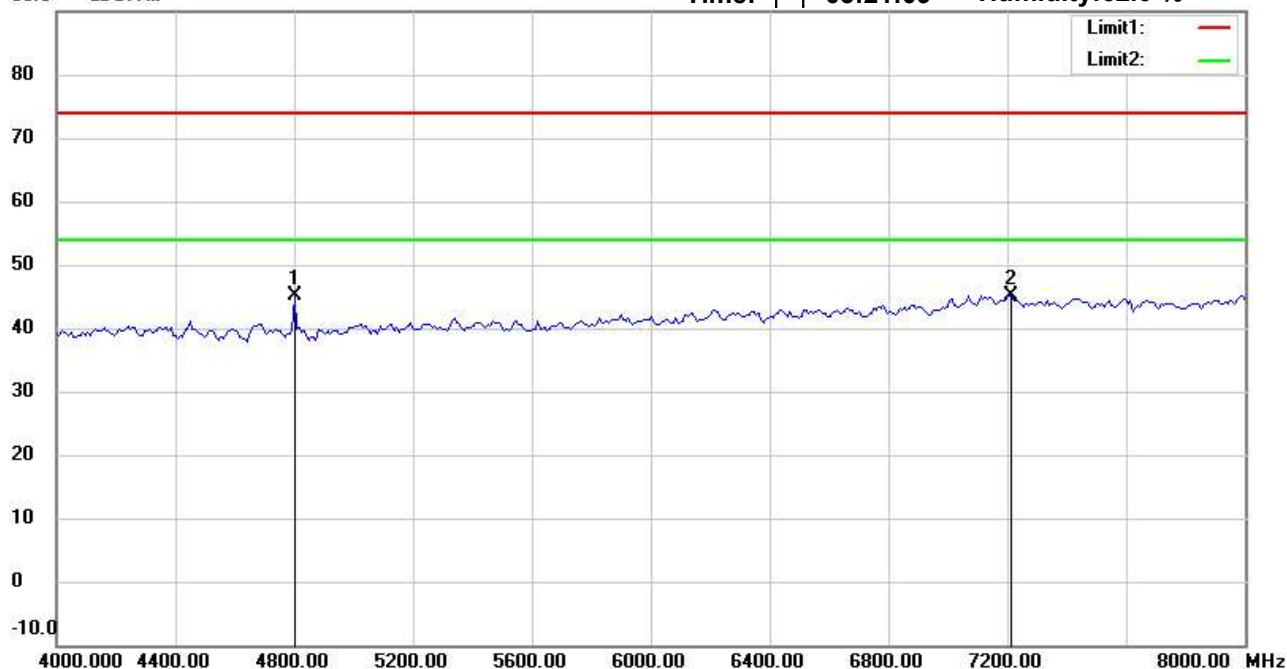
Date: 2024/1/9

Temperature: 22.6 °C

90.0 dBuV/m

Time: 下午 05:21:09

Humidity: 62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: Vertical

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
*	4801.603	46.98	peak	-1.74	45.24	74.00	150	228	-28.76	
	7209.000	41.01	peak	4.06	45.07	74.00	150	200	-28.93	

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



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File :3

Data :#3

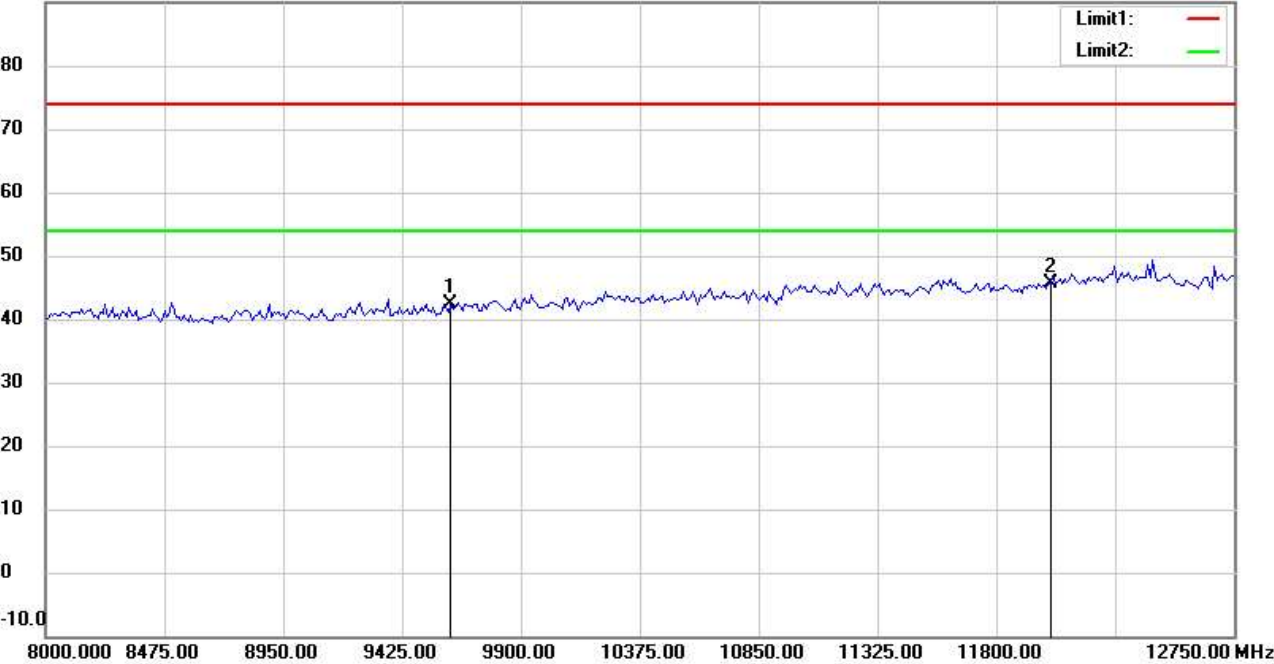
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:18:34

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: Horizontal

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	9612.000	35.39	peak	6.90	42.29	74.00	150	100	-31.71	
*	12015.000	33.41	peak	12.23	45.64	74.00	150	310	-28.36	

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



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File :3

Data :#8

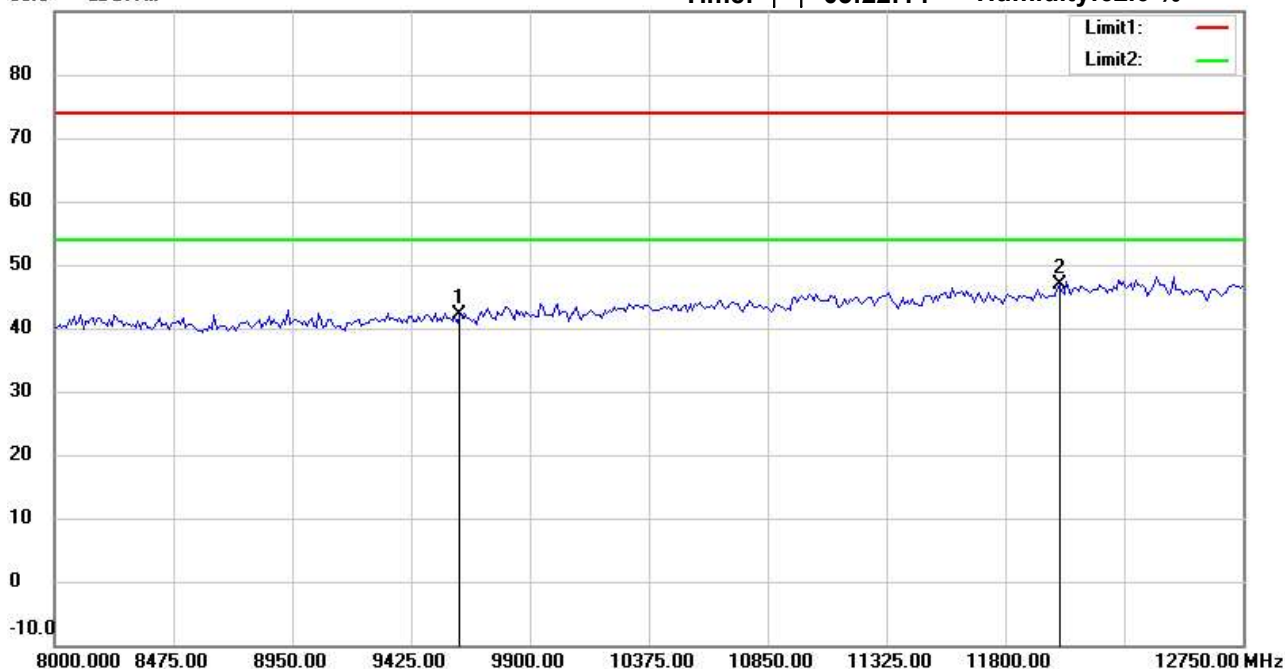
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:22:14

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: **Vertical**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	9612.000	35.15	peak	6.90	42.05	74.00	150	74	-31.95	
*	12015.000	34.72	peak	12.23	46.95	74.00	150	314	-27.05	

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



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

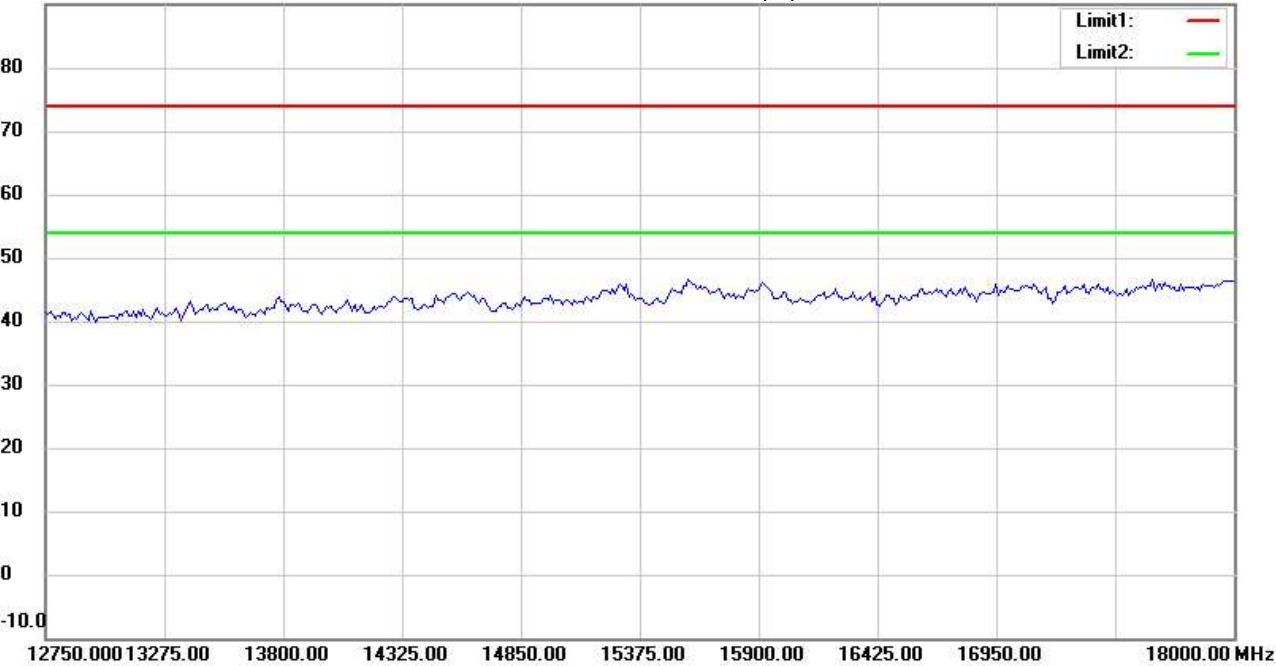
Operator: Gino
Temperature:22.6 °C
Humidity:62.0 %

File :3

Data :#4

Date: 2024/1/9
Time: 下午 05:18:50

90.0 dBuV/m



Site : Chamber
Condition : FCC_part 15 RE-Class C_Above 1GHz_PK
EUT : W6M22312-23187
M/N:
Test Mode : TX 2403 MHz
Note :

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

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File :3

Data :#9

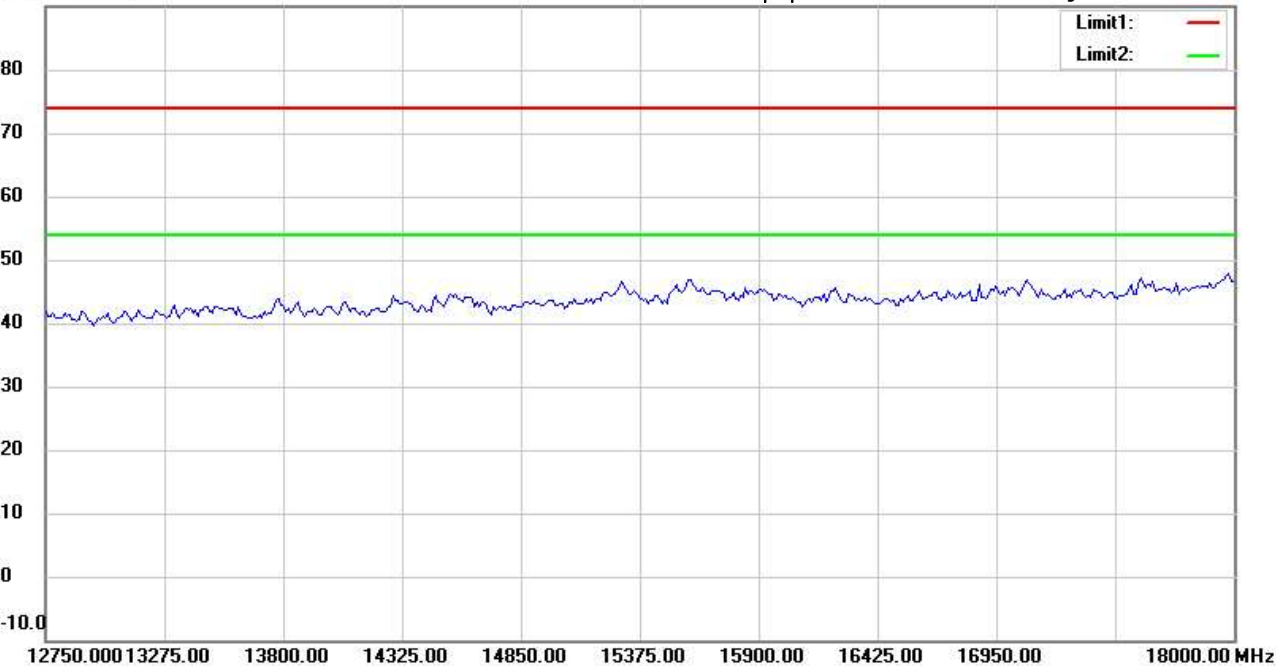
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:22:30

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: Vertical

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File :3

Data :#5

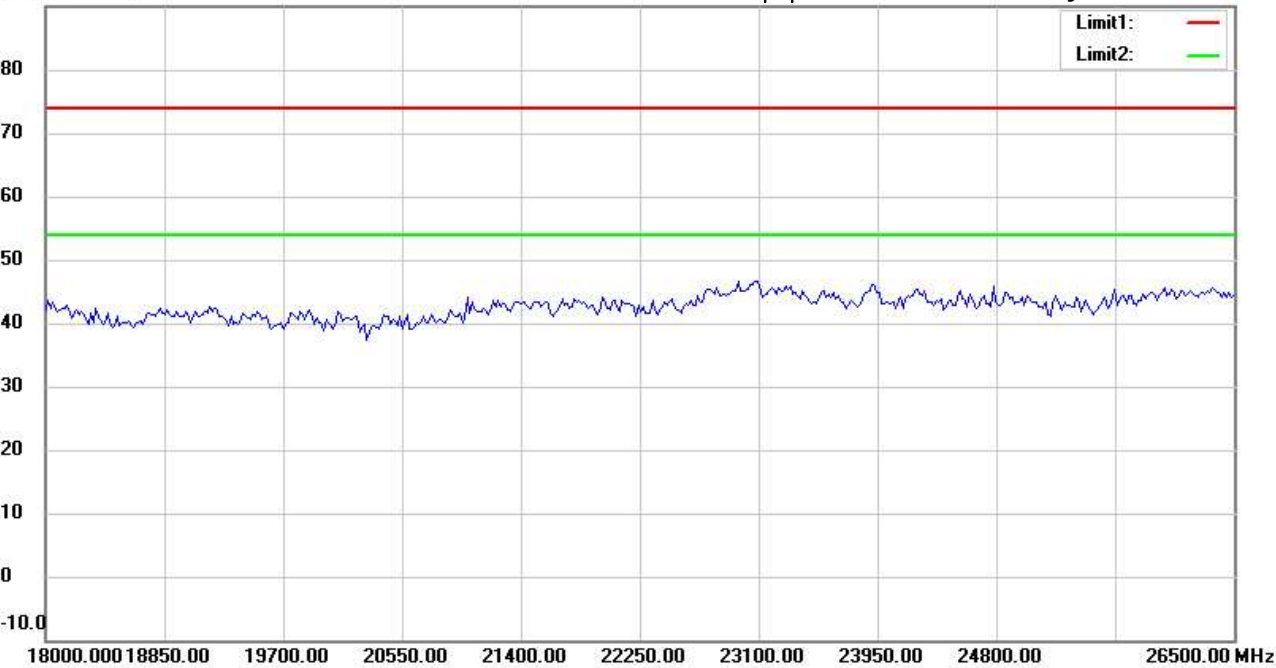
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:19:00

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: *Horizontal*

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Radiated Emission Measurement

Operator: Gino

File :3

Data :#10

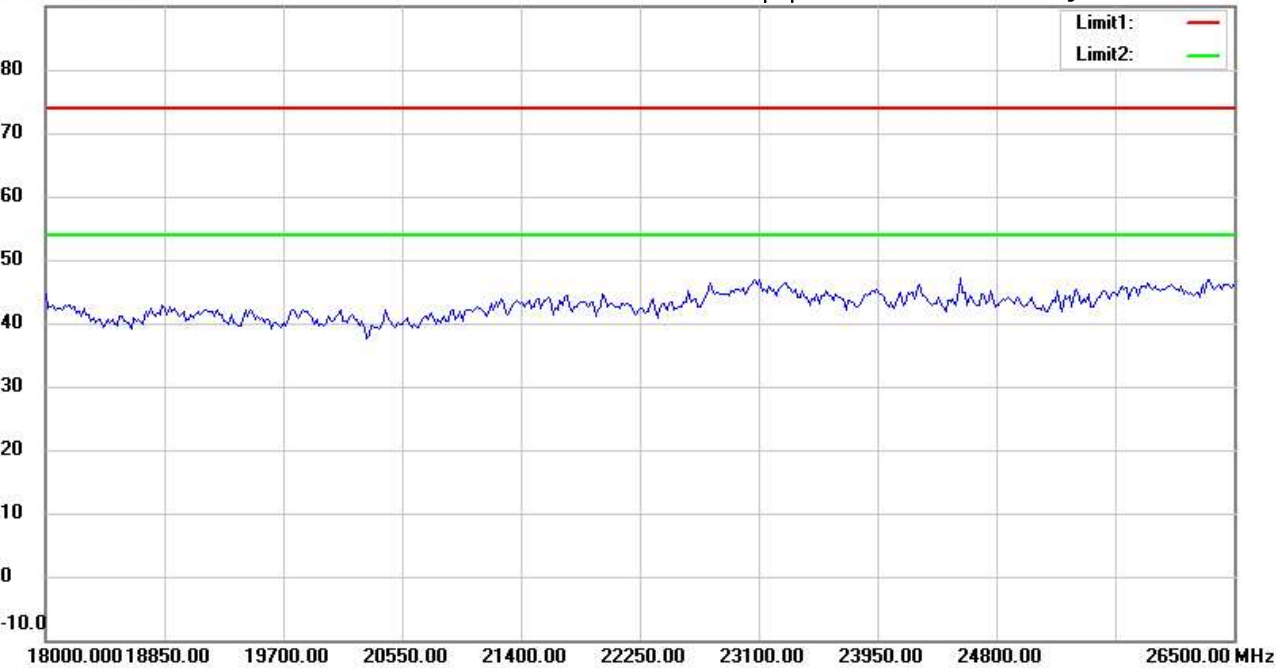
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:22:40

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: Vertical

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File :Bandedge

Data :#1

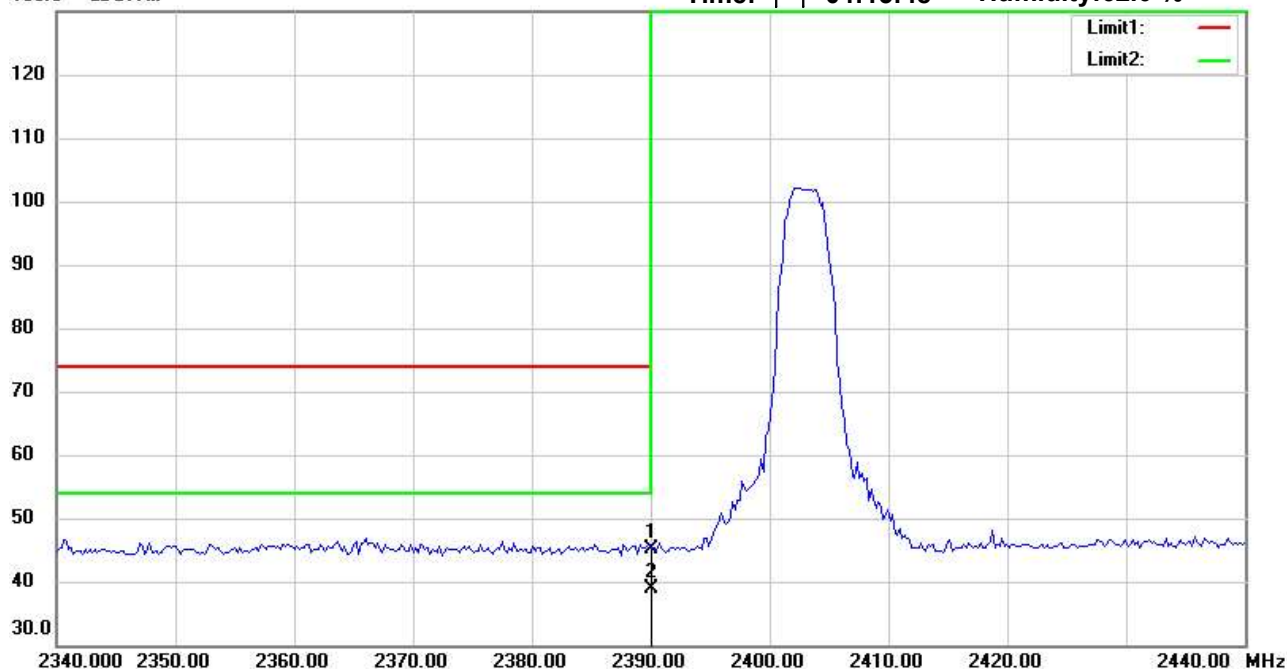
Date: 2024/1/9

Temperature:22.6 °C

130.0 dBuV/m

Time: 下午 04:15:48

Humidity:62.0 %



Site : Chamber

Condition : FCC 15.247 PK (Bandedge)

EUT : W6M22312-23187

M/N:

Test Mode : TX 2403 MHz

Note :

Polarization: **Horizontal**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2390.000	8.03	peak	37.04	45.07	74.00	150	182	-28.93	
*	2390.000	1.75	AVG	37.04	38.79	54.00	150	182	-15.21	

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



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Radiated Emission Measurement

Operator: Gino

File : Bandedge

Data : #2

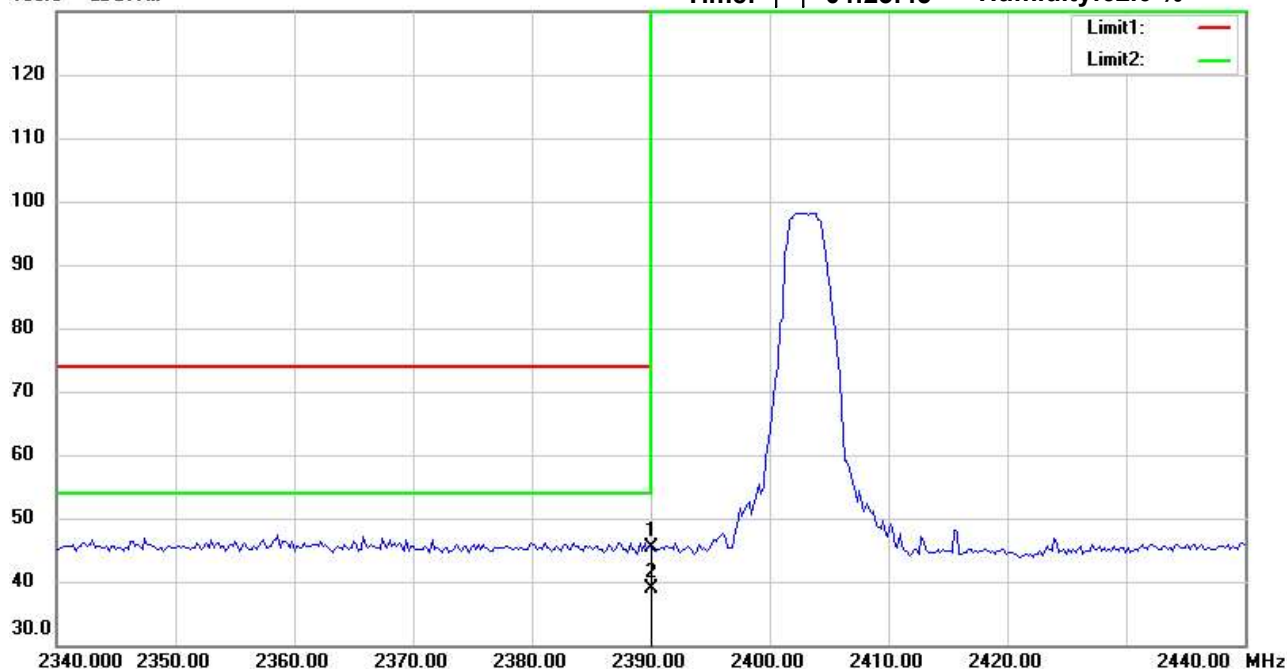
Date: 2024/1/9

Temperature: 22.6 °C

130.0 dBuV/m

Time: 下午 04:23:45

Humidity: 62.0 %



Site : Chamber

Condition : FCC 15.247 PK (Bandedge)

Polarization: **Vertical**

EUT : W6M22312-23187

Power : 3 Vd.c.

M/N:

Distance: 3m

Test Mode : TX 2403 MHz

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2390.000	8.37	peak	37.04	45.41	74.00	150	50	-28.59	
*	2390.000	1.73	AVG	37.04	38.77	54.00	150	50	-15.23	

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



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Radiated Emission Measurement

Operator: Gino

File :3

Data :#1

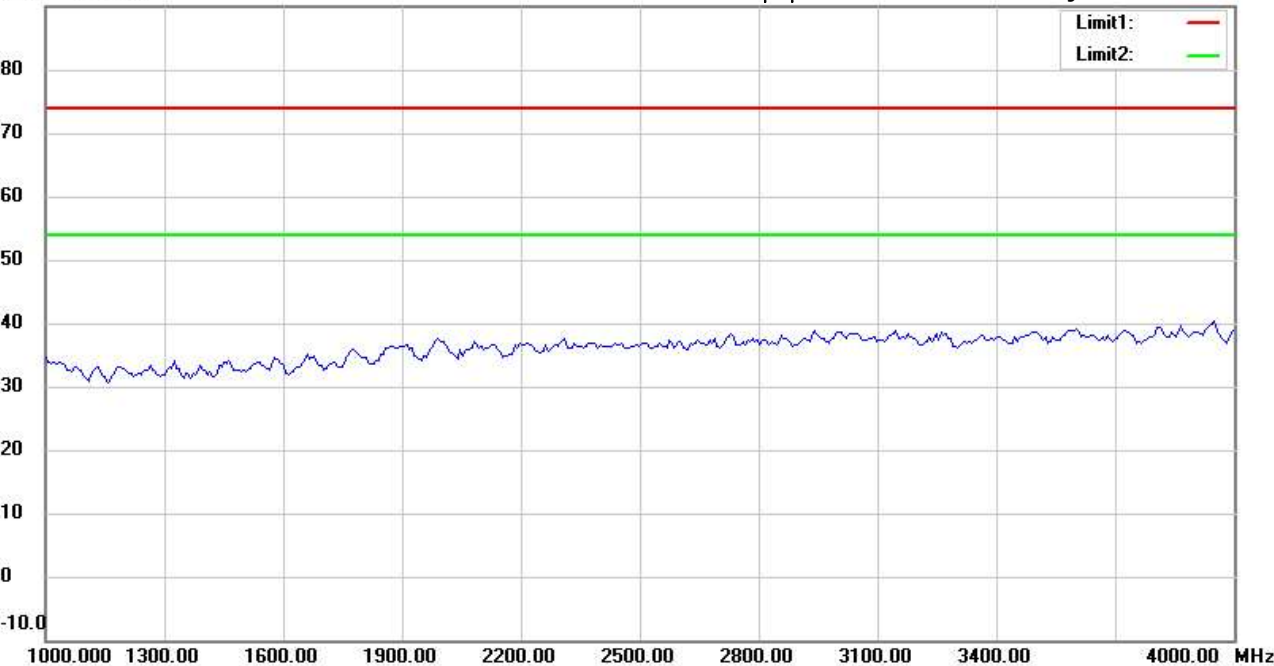
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:05:26

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: Horizontal

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Tel:+886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File :3

Data :#6

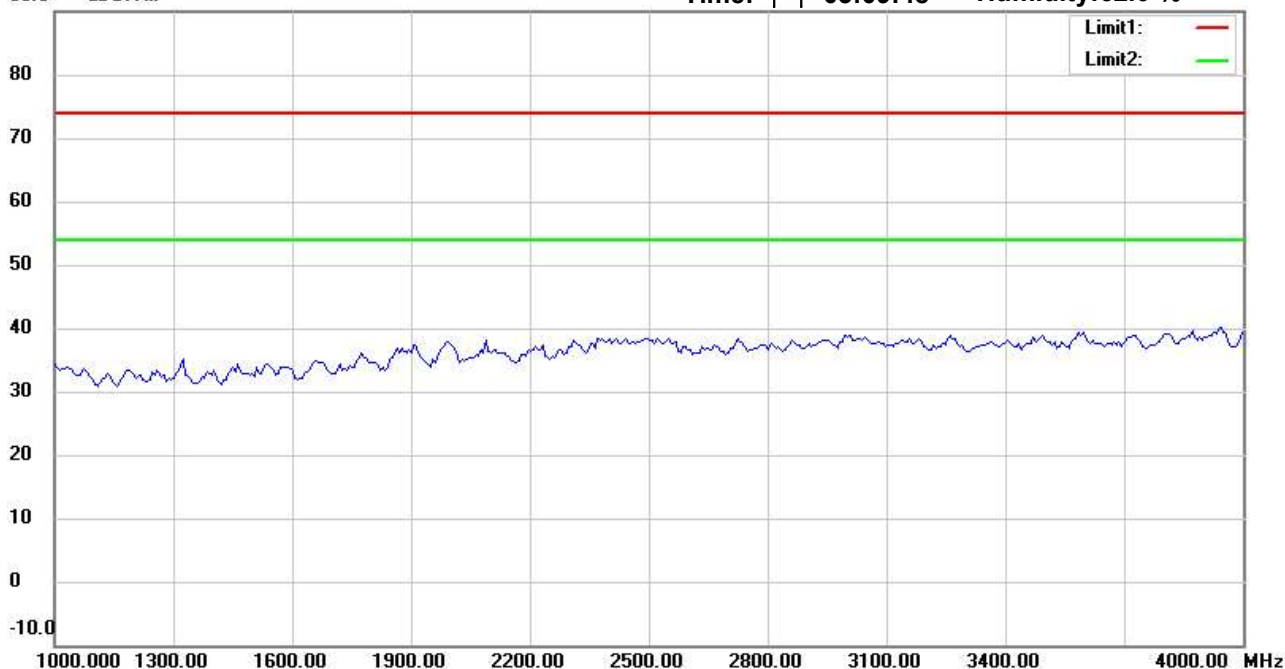
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:09:48

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: **Vertical**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Tel: +886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File : 3

Data : #2

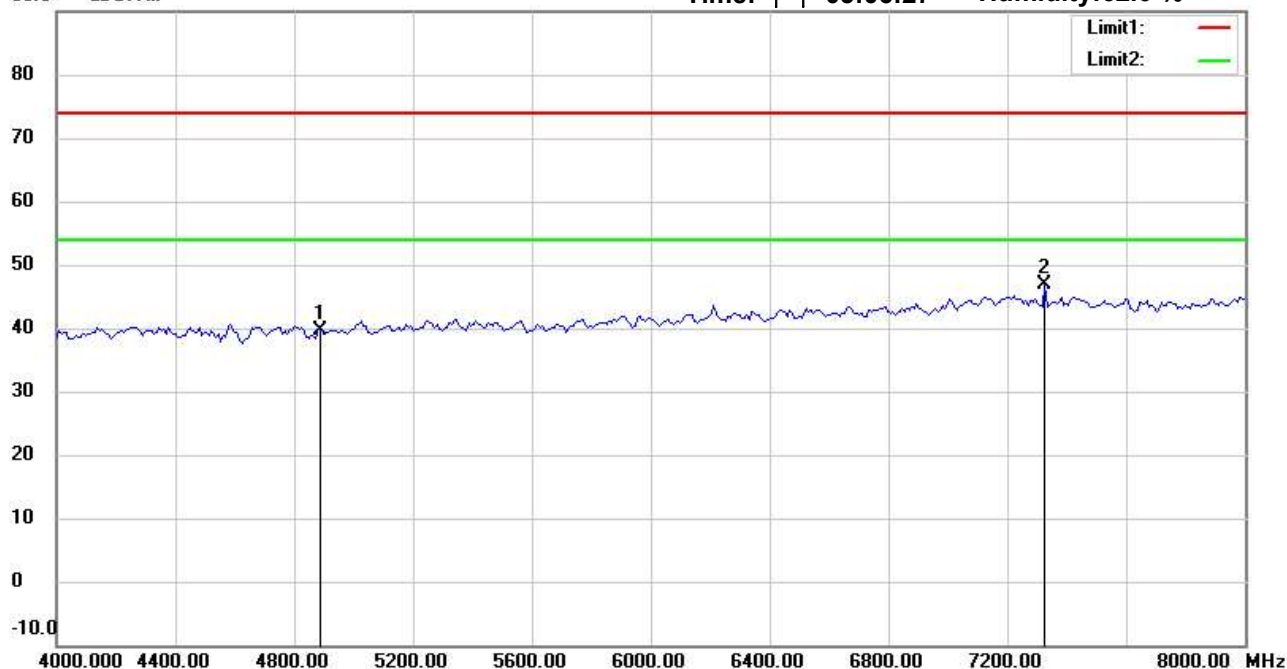
Date: 2024/1/9

Temperature: 22.6 °C

90.0 dBuV/m

Time: 下午 05:06:27

Humidity: 62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: **Horizontal**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	4882.000	41.11	peak	-1.40	39.71	74.00	150	208	-34.29	
*	7326.653	43.23	peak	3.62	46.85	74.00	150	163	-27.15	

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



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Tel: +886-2-6606-8877
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Radiated Emission Measurement

Operator: Gino

File : 3

Data : #7

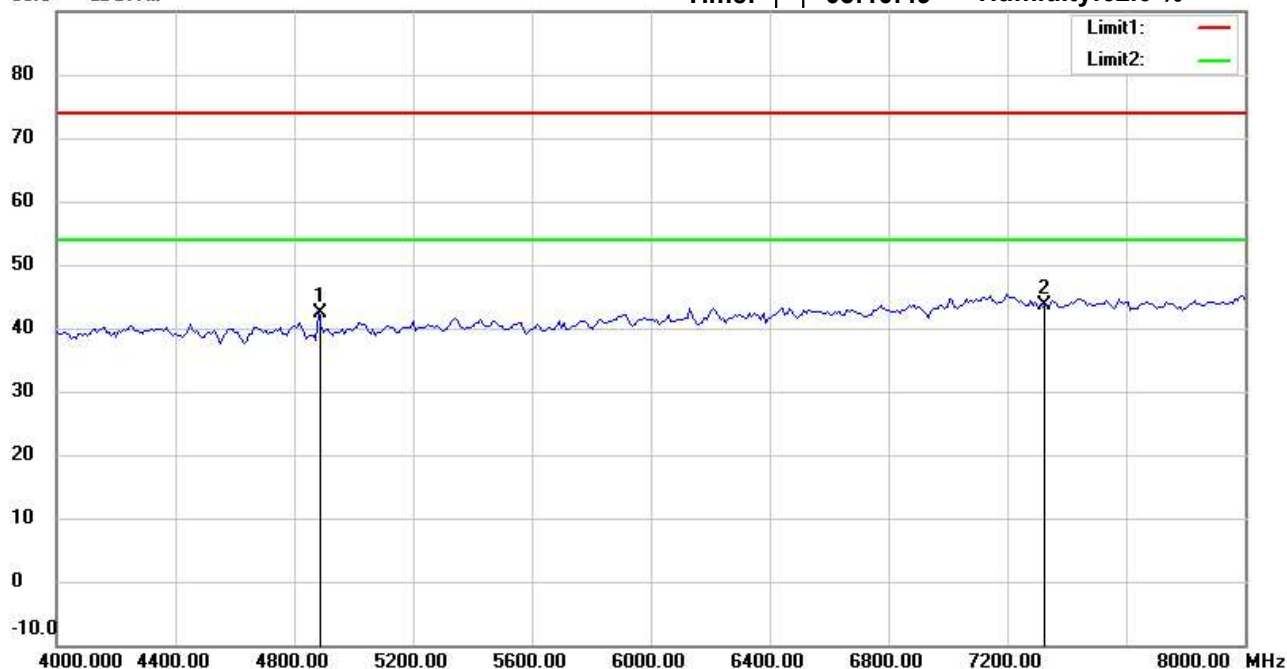
Date: 2024/1/9

Temperature: 22.6 °C

90.0 dBuV/m

Time: 下午 05:10:49

Humidity: 62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: Vertical

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	4881.764	43.81	peak	-1.40	42.41	74.00	150	123	-31.59	
*	7323.000	40.08	peak	3.60	43.68	74.00	150	209	-30.32	

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



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Radiated Emission Measurement

Operator: Gino

File : 3

Data : #3

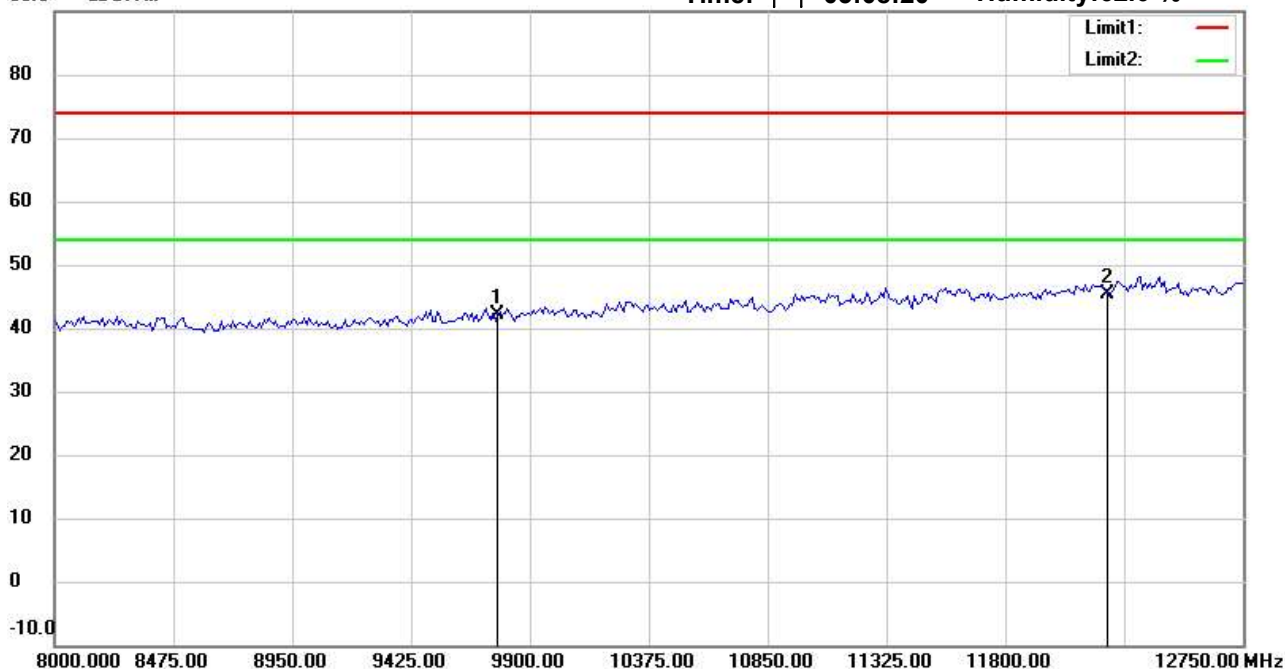
Date: 2024/1/9

Temperature: 22.6 °C

90.0 dBuV/m

Time: 下午 05:08:20

Humidity: 62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: **Horizontal**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	9764.000	34.81	peak	7.26	42.07	74.00	150	227	-31.93	
*	12205.000	31.92	peak	13.49	45.41	74.00	150	163	-28.59	

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



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Radiated Emission Measurement

Operator: Gino

File :3

Data :#8

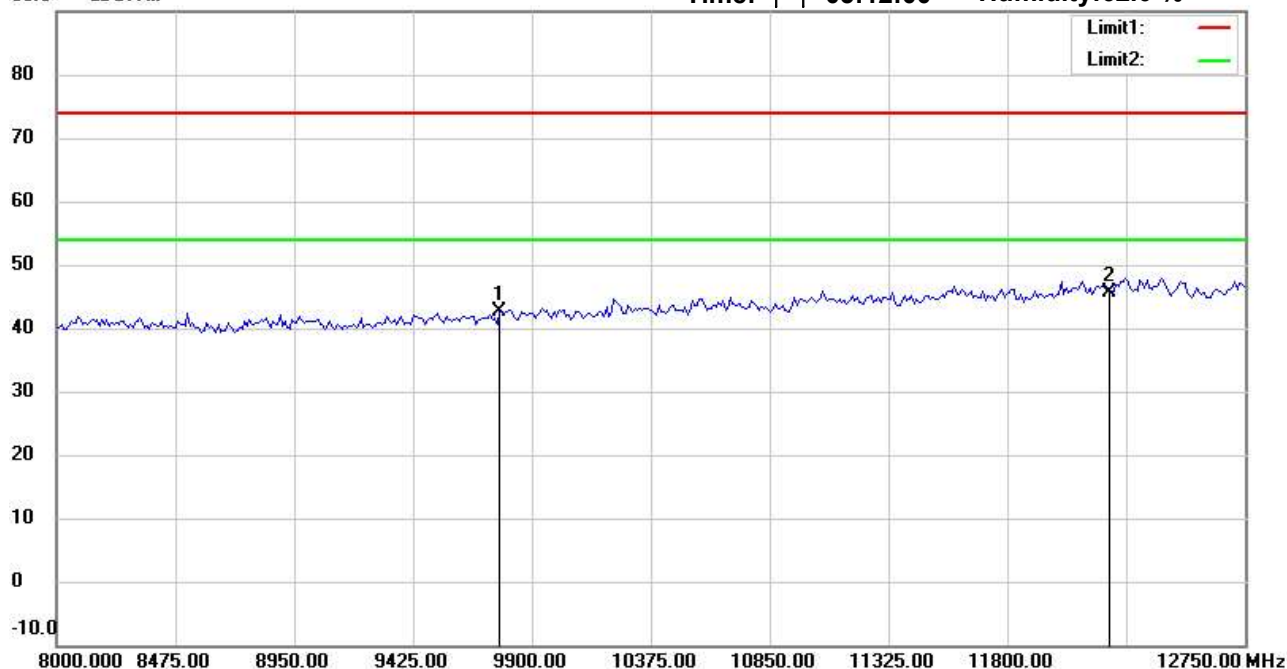
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:12:00

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: **Vertical**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	9764.000	35.47	peak	7.26	42.73	74.00	150	118	-31.27	
*	12205.000	32.22	peak	13.49	45.71	74.00	150	29	-28.29	

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



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Radiated Emission Measurement

Operator: Gino

File :3

Data :#4

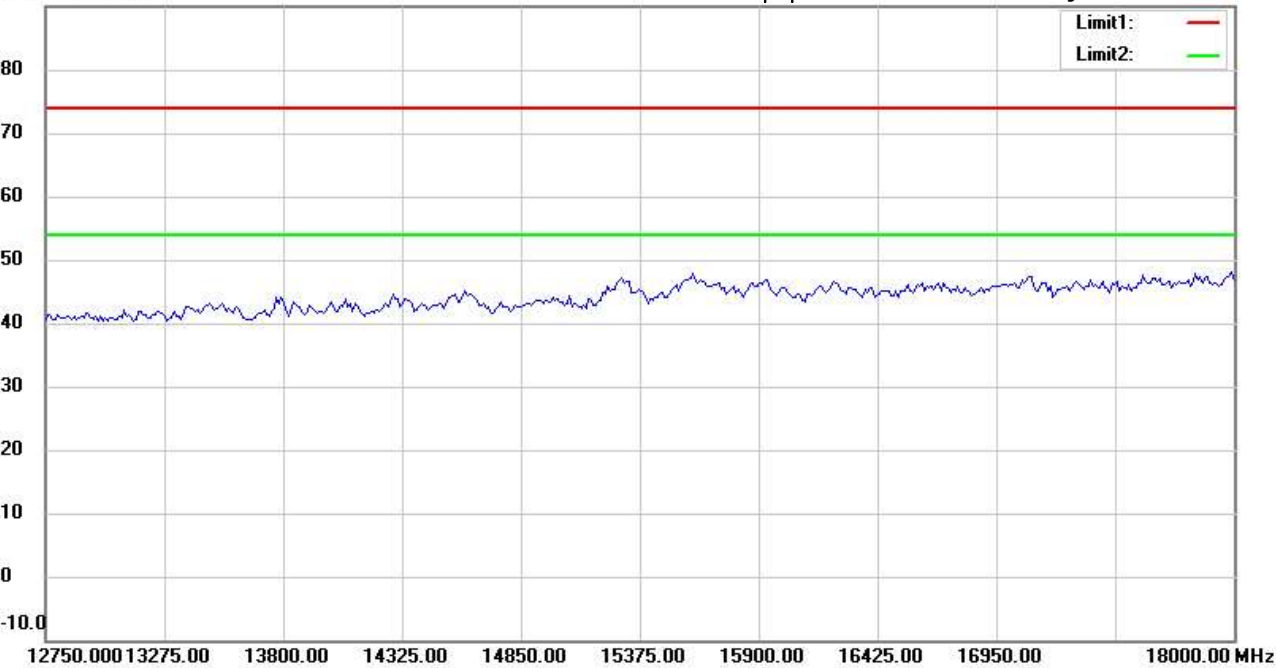
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:08:33

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: **Horizontal**

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin



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Radiated Emission Measurement

Operator: Gino

File :3

Data :#9

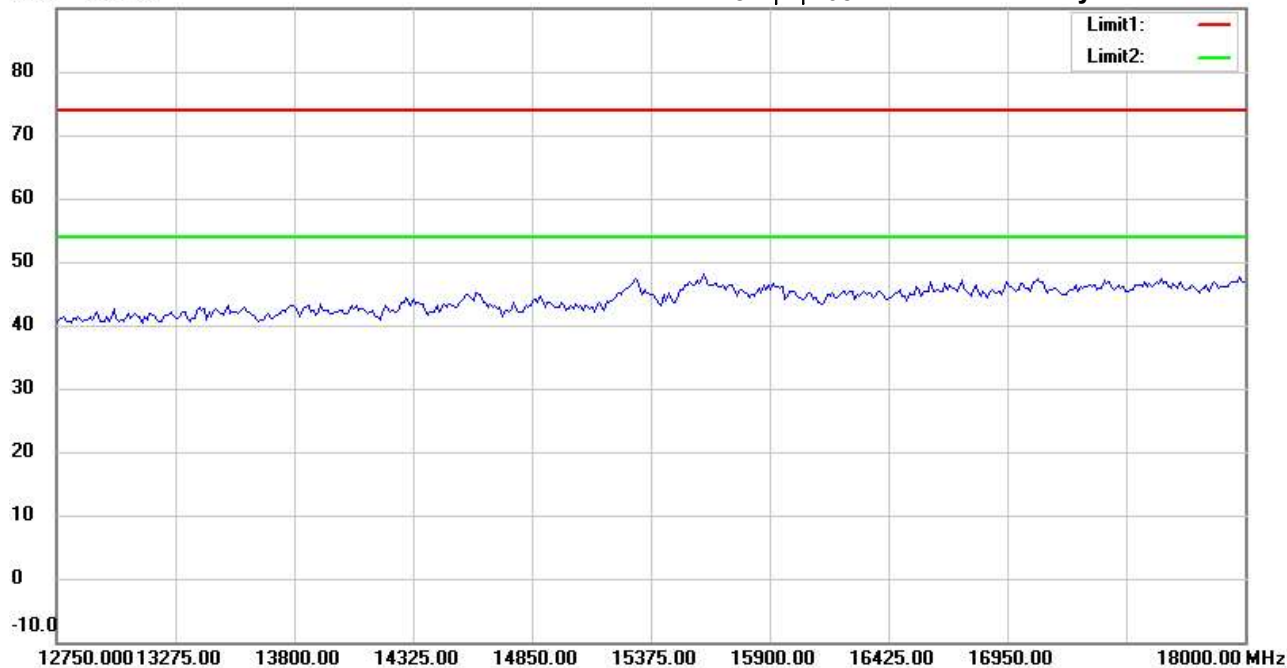
Date: 2024/1/9

Temperature:22.6 °C

90.0 dBuV/m

Time: 下午 05:12:14

Humidity:62.0 %



Site : Chamber

Condition : FCC_part 15 RE-Class C_Above 1GHz_PK

EUT : W6M22312-23187

M/N:

Test Mode : TX 2441 MHz

Note :

Polarization: Vertical

Power : 3 Vd.c.

Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
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*:Maximum data x:Over limit !:over margin