FCC PART 15 SUBPART C TEST REPORT

for

UHF RFID Reader

Model No.: MU400

FCC ID: WXAMU400

of

Applicant: GIGA-TMS INC.

Address: 8F, NO.31, LANE 169, KANG-NING ST., HSI-CHIH,

NEW TAIPEI CITY, 22180 TAIWAN

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.: W6M21805-18090-C-1

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Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

TABLE OF CONTENTS

1	GENERAL INFORMATION	2
1.1	Notes	2
1.2	Testing laboratory	3
1.3	Details of approval holder.	3
1.4	Application details	4
1.5	General information of Test item	4
1.6	Test standards	5
2	TECHNICAL TEST	6
2.1	Summary of test results.	6
2.2	Test environment.	6
2.3	Test Equipment List.	7
2.4	General Test Procedure.	10
3	TEST RESULTS (ENCLOSURE)	12
3.1	Peak Output Power (transmitter)	13
3.2	RF Exposure Compliance Requirements	16
3.3	Transmitter Radiated Emissions in Restricted Bands	17
3.4	Transmitter Radiated Emissions in restricted Bands	18
3.5	Spurious emissions (tx)	19
3.6	Carrier Frequency Separation.	20
3.7	Number of Hopping Frequencies	
3.8	Time of Occupancy (Dwell Time)	
3.9	20dB Bandwidth	
3.10	Band-edge Compliance of RF Emissions	
3.11	Radiated Emissions from Digital Part	
3.12	Power Line Conducted Emission	36

FCC ID: WXAMU400

1 General Information

1.1 Notes

Tester:

Date

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.

The test report may only be reproduced or published in full.

Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.

Signature

September 04, 2018	Sora Kuo	Jora,
Date	WTS-Lab. Name	Signature
Technical respons	bility for area of testin	
September 04, 2018	Kevin Wang	Kevir Wang

Name

WTS



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

1.2 Testing laboratory

1.2.1 Location

OATS

No.5-1, Lishui, Shuang Sing Village, Wanli Dist., New Taipei City 207,

Taiwan (R.O.C.)

3 meter semi-anechoic chamber

No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

TEL:886-2-6613-0228 FAX:886-2-2791-5046

Company

Worldwide Testing Services(Taiwan) Co., Ltd. 6F, NO. 58, LANE 188, RUEY-KUANG RD. NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877 Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA accredited number: 2732.01

FCC filed test laboratory Reg. No. 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:	./.
Γown:	./.
Country:	./.
Telephone:	./.
Fav:	/

1.3 Details of approval holder

Name: GIGA-TMS INC.

Street: 8F, NO.31, LANE 169, KANG-NING ST., HSI-CHIH,

Town: NEW TAIPEI CITY, 22180

Country: TAIWAN

Telephone: +886-2-26954214 Fax: +886-2-26954213



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

1.4 Application details

Date of receipt of test item: June 14, 2018

Date of test: from June 15, 2018 to August 29, 2018

1.5 General information of Test item

Type of test item: UHF RFID Reader

Model Number: MU400

Multi-listing model number: ./.

Photos: see Annex

Technical data

Frequency band: 902 - 928 MHz
Frequency (ch A): 902.75 MHz
Frequency (ch B): 915.25 MHz
Frequency (ch C): 927.25 MHz

<u>Transmitter</u> <u>Unom</u>

Power (ch A): Conducted: 12.38 dBm
Power (ch B): Conducted: 12.50 dBm
Power (ch C): Conducted: 12.61 dBm

Power supply: I/P: 5 Vd.c. (USB)

Operation modes: Half-duplex

Modulation Type: PRASK

Antenna Type: Chip Antenna

Antenna gain: -1 dBi

Host device: none

Classification:

Fixed Device	
Mobile Device (Human Body distance > 20cm)	
Portable Device (Human Body distance < 20cm)	
Modular Radio Device	



FCC ID: WXAMU400

Manufacturer: (if applicable)

Name: GIGATEK INC.

Street: No. 47, Hsiang Ho Road, Tantzu District,

Town: Taichung City 42741,

Country: Taiwan, R.O.C.

Additional information: ./.

1.6 Test standards

Technical standard: FCC RULES PART 15 SUBPART C § 15.247 (2017-10)

FCC ID: WXAMU400 **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

Details of power supply I/P: 5 Vd.c. (USB)

Extreme conditions parameters: ./.

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 Power Density Measurement Power density	Expanded Uncertainty: 1.73 dB
Estimation Result of Uncertainty of Band Edge Measurement	Expanded Uncertainty: 0.98 dBc
Estimation Result of Uncertainty of Frequency Separation Measurement Hopping channel separation	Expanded Uncertainty: 552.91 Hz
Estimation Result of Uncertainty of Duty Cycle Measurement Dwell time	Expanded Uncertainty : 0.099 ms



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

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	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	Functi	on 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	Functi	on Test
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Functi	on 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-te	st 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	Functi	on Test
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	ETS-Lindgren	Functi	on Test
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	НР	2017/9/11	2018/9/10
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2017/9/19	2018/9/18
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	Functi	on test



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

FCC ID: WX	AMU400					
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2018/1/15	2019/1/14
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-te	st 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	2017/9/13	2018/9/12
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 U	Jse 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	2017/9/7	2018/9/6
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2017/9/7	2018/9/6
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	HUBER+SUHNER	2018/2/27	2019/2/26



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

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	2018/8/21	2019/8/20
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 I	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	

FCC ID: WXAMU400

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 $dB\mu V$) 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

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.



FCC ID: WXAMU400

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 (dwell time/T)

T = 100ms 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.



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

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(c)	×	×	
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.



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

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).

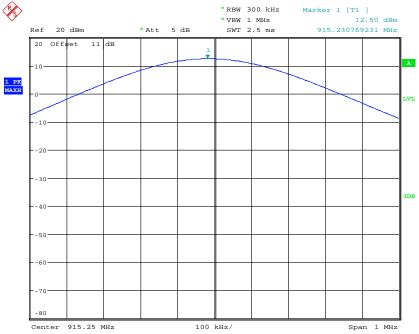


MAX OUTPUT POWER 902.75MHz
Date: 15.JUN.2018 17:54:46

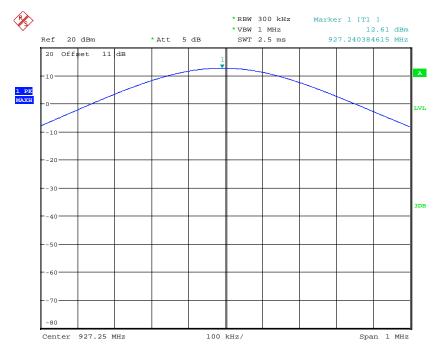


Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



MAX OUTPUT POWER 915.25MHz
Date: 19.JUN.2018 10:27:59



MAX OUTPUT POWER 927.25MHz
Date: 19.JUN.2018 13:09:06



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

Maximum Peak Output Power

Limits:

Frequency	Number of hopping channels				
MHz	≥ 75	≥ 50	49 ≥ 25	74 ≥ 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 poin-to point operation consider §15.247 (b)(4).

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



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

3.2 Equivalent isotropic radiated power

FCC Rule: 15.247(b)(3)

Test exclusion = max. conducted output power

Test exclusion = 12.61 dBm

RESULT:

Test standard : FCC KDB Publication

447498 D01 General RF Exposure Guidance v06

RF Exposure Compliance Requirements

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits

The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a "worst case" or conservative prediction.

$$S = \frac{PG}{4 \pi R^2}$$

S – Power Density

P – Output power ERP

R – Distance

D – Cable Loss

AG – Antenna Gain

Item	Unit	Value	Remarks
P	mW	18.24	Peak value
D	dB		
AG	dBi	-1	
G		0.79	Calculated Value
R	cm	20	Assumed value
S	mW/cm ²	0.0029	Calculated value

Limits:

Limit for General Population / Uncontrolled Exposure					
Frequency (MHz)	Power Density (mW/cm ²)				
1500 – 100.000	1.0				

FCC ID: WXAMU400

3.3 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 26500 MHz.

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

Frequency ≤ 1 GHz, RBW:100 kHz, VBW: 100 kHz (Peak measurements)
Frequency > 1 GHz, RBW: 1 MHz, VBW: 1 MHz (Peak measurements)
Frequency > 1 GHz, RBW:1 MHz, VBW: 10 Hz (Average measurements)

Limits.

For frequencies below 1GHz:

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

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of Digit Transmission Systems:

"If the emission is pulsed, modify the unit for continuous operation, use the setting shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation."

The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

Duty cycle correction = 20 log (dwell time/ 100ms)

Note: No duty cycle correction was added to the reading of this EUT.

Explanation: See attached diagrams in Appendix.

FCC ID: WXAMU400

3.4 Transmitter Radiated Emissions in restricted Bands

FCC Rules: 15.247 (c), 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 = $20 \log (dwell time/100ms)$

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

 $54.0dB\mu V/m$

For frequencies above 1GHz (Peak measurements).

Limit + 20dB

 $54.0 dB \mu V/m + 20 dB = 74 dB \mu V/m$

Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 062, ETSTW-RE 142, ETSTW-RE 147, ETSTW-RE 064

Explanation: See attached diagrams in appendix.



FCC ID: WXAMU400

3.5 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:		MU400		Date:				
Mode:				Temperature:	°C		Engineer:	
Polarization:				Humidity:		%		
Frequency (MHz)	Reading (dBuV)	Detector	Detector Factor (dB)		Limit (dBuV/m)	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 1GHz: 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. See attached diagrams in appendix.

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

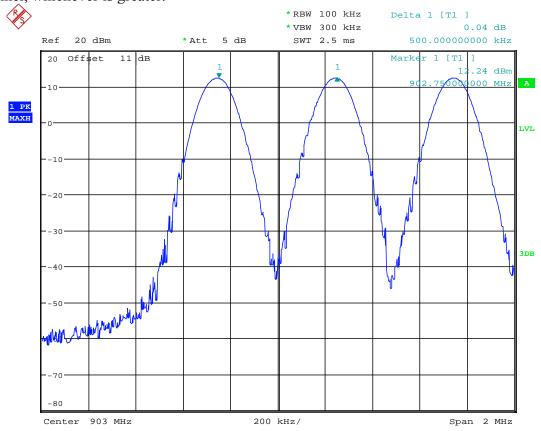
TEST RESULT (Transmitter): The unit DOES meet the FCC requirements. Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 062, ETSTW-RE 142, ETSTW-RE 147, ETSTW-RE 064, ETSTW-RE 088, ETSTW-RE 018

FCC ID: WXAMU400

3.6 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.



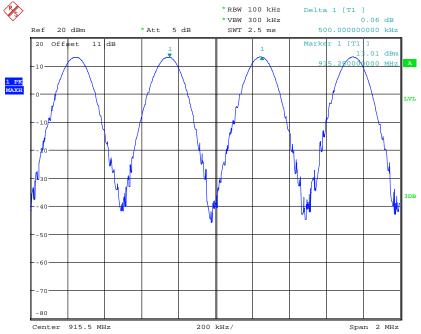
FREQUENCY SEPARATION

Date: 15.JUN.2018 18:14:56



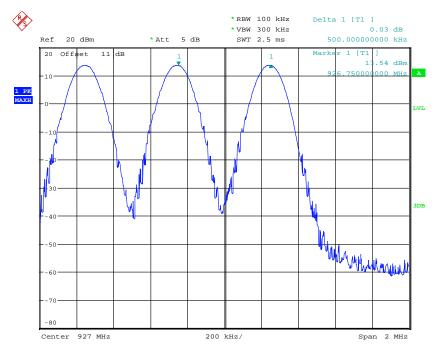
Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



FREQUENCY SEPARATION

Date: 15.JUN.2018 18:13:23



FREQUENCY SEPARATION

Date: 15.JUN.2018 18:12:21



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

Limits:

Frequency Range	Lin	nits
MHz	20 dB bandwidth < 25 kHz	20 dB bandwidth > 25 kHz
902-928	25 kHz	20 dB bandwidth
2400-2483.5 5725-5850.0	75 kHz 1 $70 dR handwidth$	

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

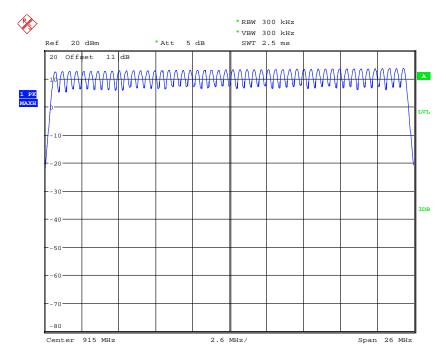


FCC ID: WXAMU400

3.7 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.



NUMBER OF HOPPING
Date: 15.JUN.2018 18:01:33

Limits:

Zimits.		
Frequency Range	Limit	
MHz	20dB Bandwidth	Number of Channels
002 028 MHz	Bandwidth < 250 kHz	≥ 50
902-928 MHz	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

FCC ID: WXAMU400

3.7.1 Pseudorandom Frequency Hopping Sequence

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

3.7.2 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.

3.7.3 System Receiver Hopping Capability

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

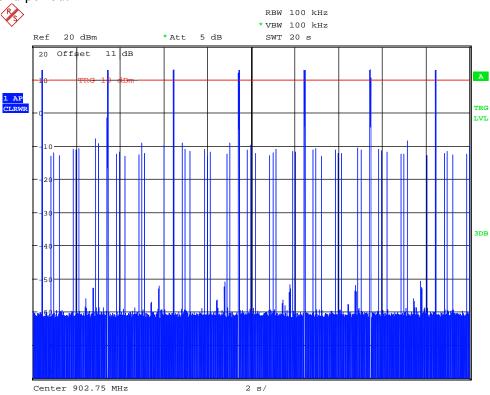
FCC ID: WXAMU400

3.8 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.



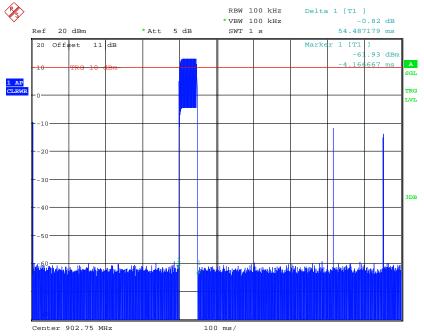
DWELL TIME 902.75MHz

Date: 15.JUN.2018 19:02:41

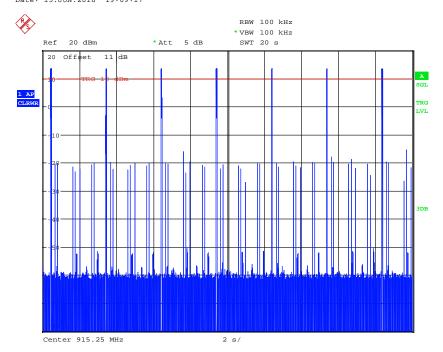


Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



DWELL TIME 902.75MHz (54.487ms * 7events = 381.409ms)
Date: 15.JUN.2018 19:09:17



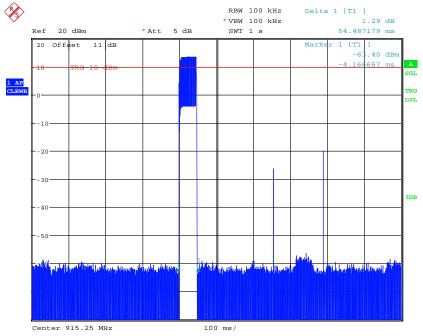
DWELL TIME 915.25MHz

Date: 15.JUN.2018 19:10:29

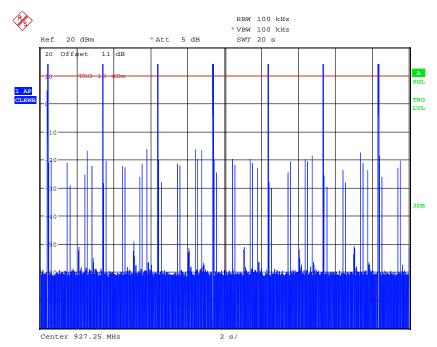


Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



DWELL TIME 915.25MHz (54.487ms * 7events = 381.409ms)
Date: 15.JUN.2018 19:07:57



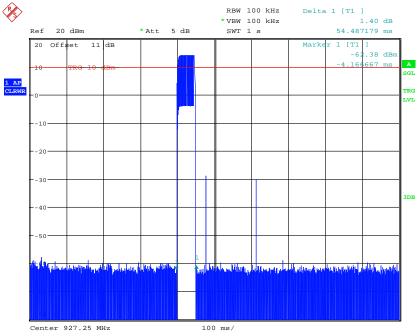
DWELL TIME 927.25MHz

Date: 15.JUN.2018 19:11:12



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



DWELL TIME 927.25MHz (54.487ms * 7events = 381.409ms)
Date: 15.JUN.2018 19:07:25

Limits and measurement periods:

Frequency MHz	Number of channels	Measurement Periode	Limit
902 – 928	≥50	20 s	0.4 s
902 – 928	49 ≥ 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



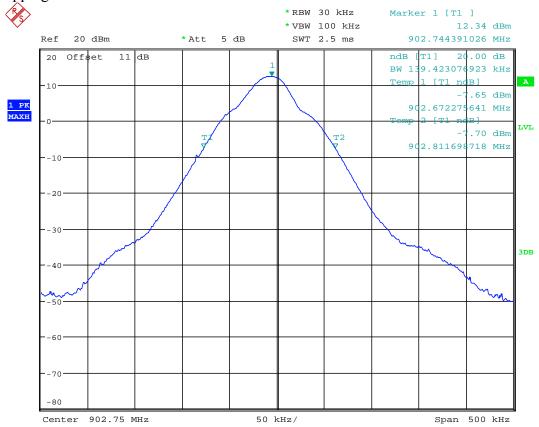
Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400 **3.9 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.

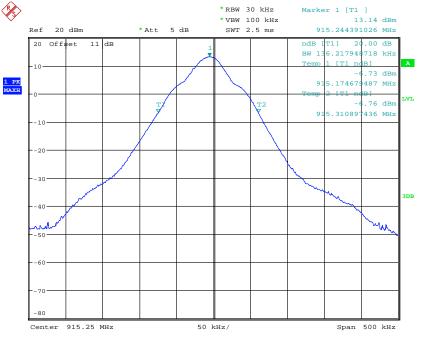


20DB BANDWIDTH 902.75MHz
Date: 15.JUN.2018 17:49:59

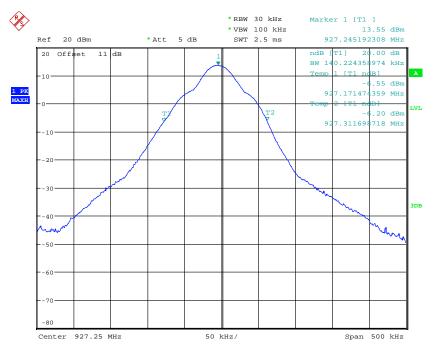


Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



20DB BANDWIDTH 915.25MHz Date: 15.JUN.2018 17:50:44



20DB BANDWIDTH 927.25MHz Date: 15.JUN.2018 17:51:27



FCC ID: WXAMU400

Limits:

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

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

3.9.1 System Receiver Input Bandwidth

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

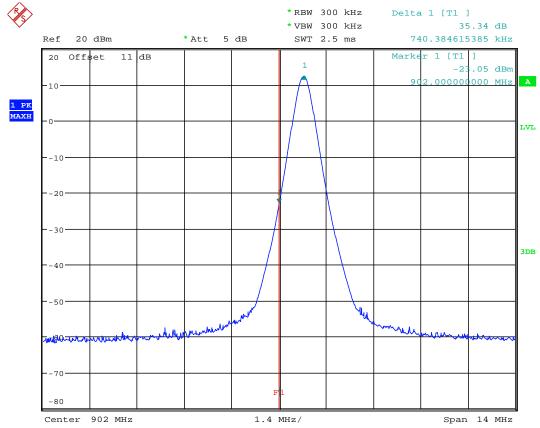


FCC ID: WXAMU400

3.10 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.



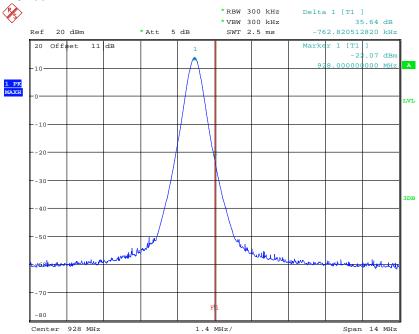
BANDEDGE 902.75MHz

Date: 15.JUN.2018 17:56:57



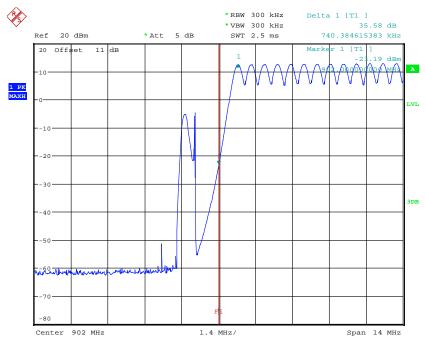
Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



BANDEDGE 927.25MHz

Date: 15.JUN.2018 17:58:06

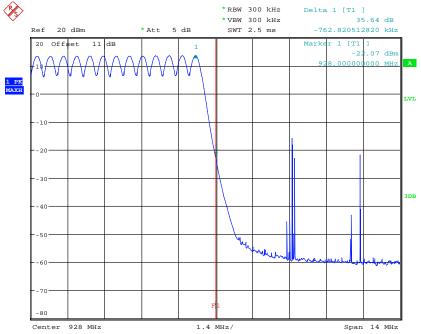


BANDEDGE HOPPING MODE 902.75MHz Date: 15.JUN.2018 18:00:18



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



BANDEDGE HOPPING MODE 927.25MHz Date: 15.JUN.2018 17:59:15

Limits:

Frequency Range / MHz	Limit
902 –928	
2400 – 2483.5	- 20 dB
5725 - 5850	

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



Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

3.11 Radiated Emissions from Receiver Part

Model:	MU400	Date:	
MIOUCI.	1410-100	Date.	

Mode: -- Temperature: -- °C Engineer: -- Polarization: Horizontal Humidity: -- %

_	i olarization.	1.	IOHZOHIAH		munity.		70		
	Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	-								
ſ									

Frequency (MHz)	Readi (dBu ^v Peak	Factor (dB) Corr.	t @3m ıV/m) Ave.	@3m V/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)

Polarization: Vertical

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

Frequency (MHz)	Read (dB) Peak	_	Factor (dB) Corr.	t @3m iV/m) Ave.	@3m V/m) Ave.	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 1GHz: 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. Please refer to the attached report number: W6M21805-18090-P-15B.



Worldwide Testing Services(Taiwan) Co., Ltd.

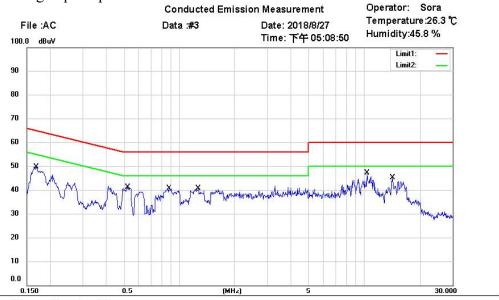
Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

3.12 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.



Site: Chamber_03

Condition: FCC Part 15 Class B Conduction (QP)

Phase: N Power: 120 Va.c.

EUT: W6M21805-18090

M/N: Test Mode: Note:

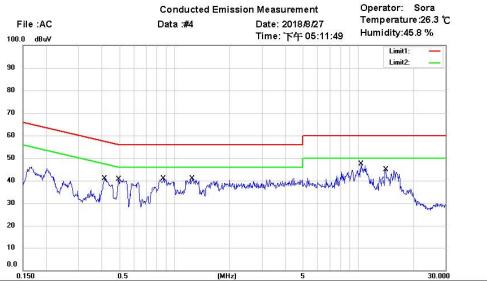
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1666	36.25	QP	9.74	45.99	65.13	-19.14	
	0.1666	29.21	AVG	9.74	38.95	55.13	-16.18	
	0.5225	27.42	QP	9.74	37.16	56.00	-18.84	
	0.5225	15.52	AVG	9.74	25.26	46.00	-20.74	
	0.8802	26.04	QP	9.76	35.80	56.00	-20.20	
	0.8802	12.26	AVG	9.76	22.02	46.00	-23.98	
	1.2650	25.23	QP	9.77	35.00	56.00	-21.00	
	1.2650	14.16	AVG	9.77	23.93	46.00	-22.07	
	10.3288	31.48	QP	10.10	41.58	60.00	-18.42	
*	10.3288	24.89	AVG	10.10	34.99	50.00	-15.01	
	14.1957	29.48	QP	10.16	39.64	60.00	-20.36	
	14.1957	23.52	AVG	10.16	33.68	50.00	-16.32	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400



Site: Chamber_03

Condition: FCC Part 15 Class B Conduction (QP)

Phase: 120 Va.c.

EUT: W6M21805-18090

Test Mode :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.4163	26.22	QP	9.73	35.95	57.52	-21.57	
	0.4163	19.42	AVG	9.73	29.15	47.52	-18.37	
	0.4963	27.47	QP	9.73	37.20	56.06	-18.86	
	0.4963	13.57	AVG	9.73	23.30	46.06	-22.76	
	0.8757	26.61	QP	9.74	36.35	56.00	-19.65	
	0.8757	12.35	AVG	9.74	22.09	46.00	-23.91	
	1.2515	26.00	QP	9.75	35.75	56.00	-20.25	
	1.2515	16.39	AVG	9.75	26.14	46.00	-19.86	
	10.3291	32.38	QP	10.05	42.43	60.00	-17.57	
*	10.3291	25.79	AVG	10.05	35.84	50.00	-14.16	
	14.1912	30.11	QP	10.08	40.19	60.00	-19.81	
	14.1912	23.13	AVG	10.08	33.21	50.00	-16.79	

Limits:

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

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.Measurement uncertainty = ± 1.54 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

6.Up Line: QP Limit Line, Down Line: Ave Limit Line.

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

Registration number: W6M21805-18090-C-1

FCC ID: WXAMU400

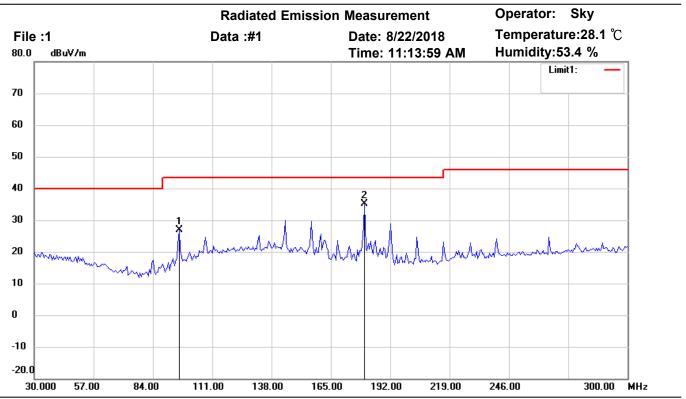
Appendix

Measurement diagrams

Spurious Emissions radiated



Tel:+886-2-6606-8877 Fax:+886-2-6606-8879



Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

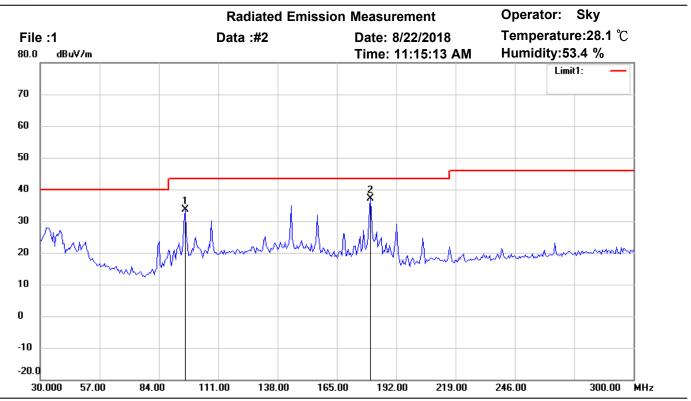
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
	96.0120	38.21	peak	-11.35	26.86	43.50	100	225	-16.64	
*	180.4207	45.98	peak	-10.79	35.19	43.50	100	95	-8.31	



Tel:+886-2-6606-8877 Fax:+886-2-6606-8879



Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

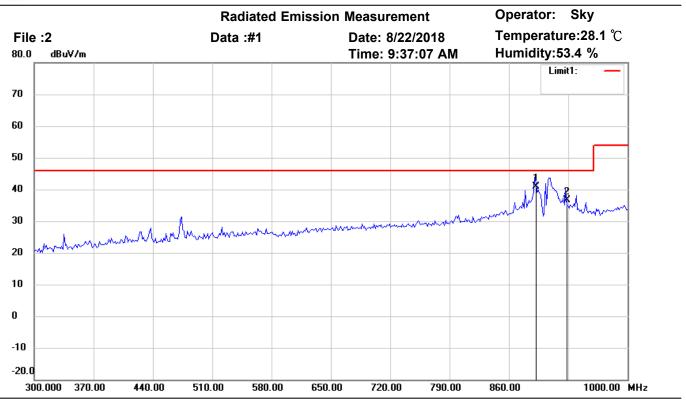
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
	96.0120	45.05	peak	-11.35	33.70	43.50	100	215	-9.80	
*	180.4207	47.84	peak	-10.79	37.05	43.50	100	35	-6.45	



Tel:+886-2-6606-8877 Fax:+886-2-6606-8879



Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

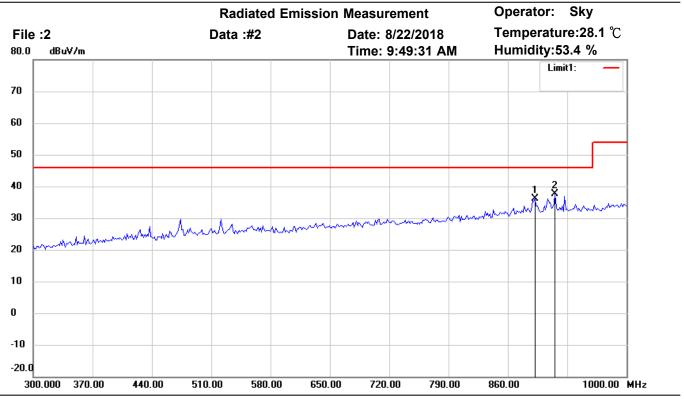
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
*	890.6693	36.21	QP	4.70	40.91	46.00	100	200	-5.09	
	928.0000	31.20	QP	5.33	36.53	46.00	100	180	-9.47	



Tel:+886-2-6606-8877 Fax:+886-2-6606-8879



Site: Chamber

Condition: LP0002 3.10節 RE (2.4GHz) Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

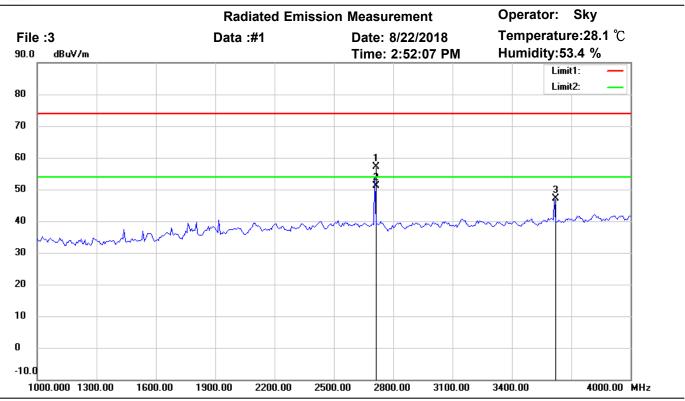
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
	891.9840	31.52	peak	4.72	36.24	46.00	100	255	-9.76	
*	915.8317	32.37	peak	5.14	37.51	46.00	100	160	-8.49	



Tel:+886-2-6606-8877 Fax:+886-2-6606-8879



Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

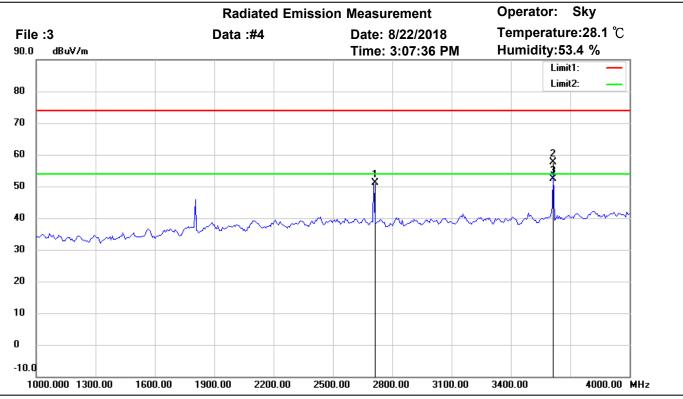
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
	2708.116	61.01	peak	-3.83	57.18	74.00	150	315	-16.82	
*	2708.116	55.01	AVG	-3.83	51.18	54.00	150	315	-2.82	
	3615.231	48.39	peak	-1.23	47.16	74.00	150	25	-26.84	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

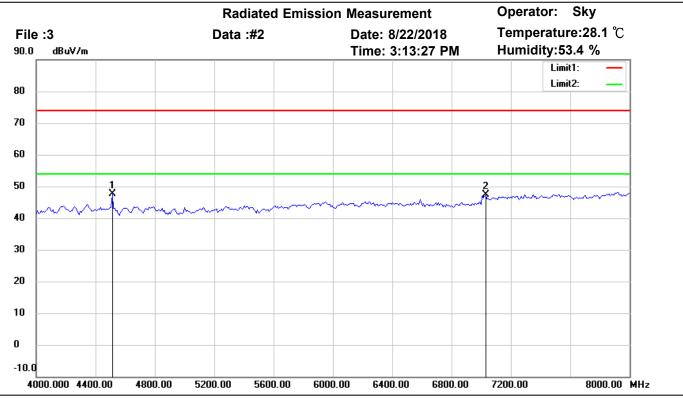
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
	2707.415	55.03	peak	-3.83	51.20	74.00	150	45	-22.80	
	3610.988	58.75	peak	-1.24	57.51	74.00	150	230	-16.49	
*	3610.988	53.52	AVG	-1.24	52.28	54.00	150	230	-1.72	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

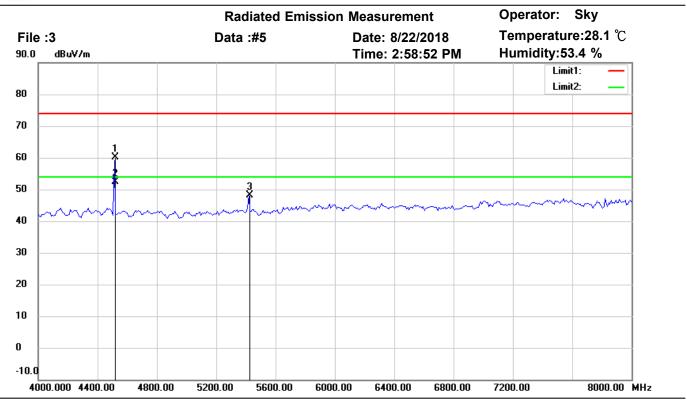
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
*	4513.026	46.73	peak	0.85	47.58	74.00	150	220	-26.42	
	7030.060	42.05	peak	5.40	47.45	74.00	150	125	-26.55	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

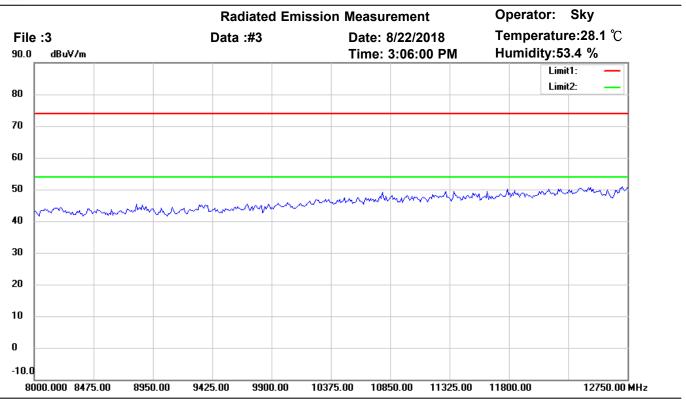
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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
	4513.908	59.17	peak	0.85	60.02	74.00	165	60	-13.98	
*	4513.908	51.63	AVG	0.85	52.48	54.00	165	60	-1.52	
	5418.838	45.75	peak	2.47	48.22	74.00	150	240	-25.78	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

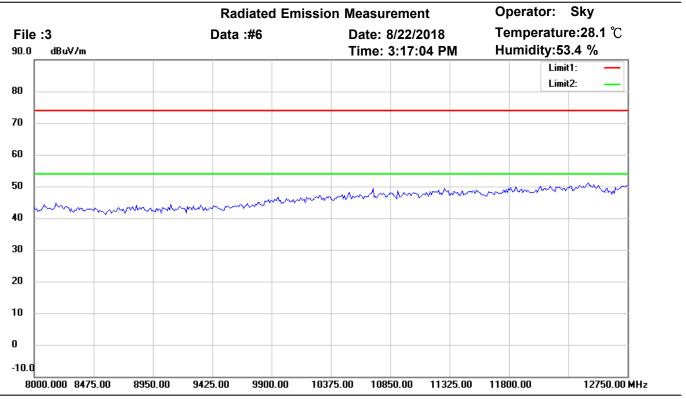
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

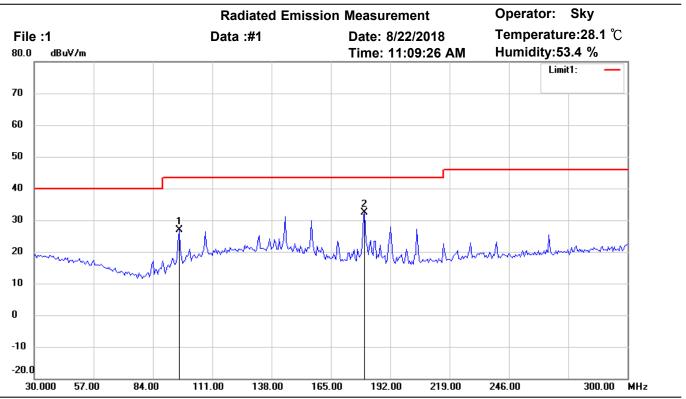
M/N: Distance: 3m

Test Mode: TX 902.75MHz

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



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Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

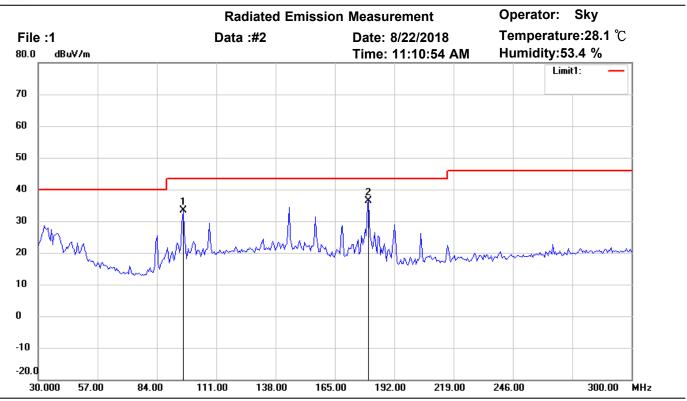
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
	96.0120	38.26	peak	-11.35	26.91	43.50	100	240	-16.59	
*	180.4207	43.26	peak	-10.79	32.47	43.50	100	25	-11.03	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

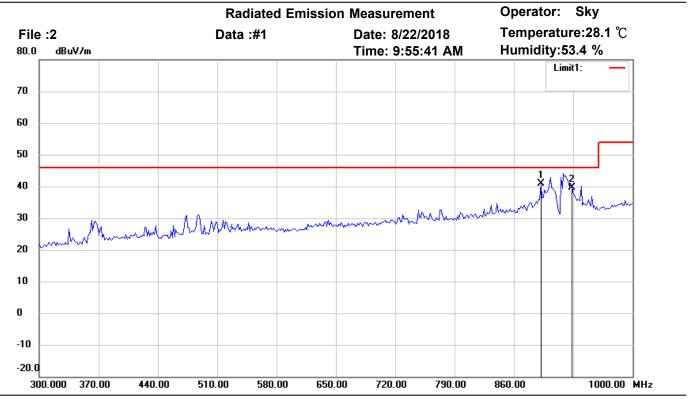
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
	96.0120	44.74	peak	-11.35	33.39	43.50	100	240	-10.11	
*	180.4207	47.24	peak	-10.79	36.45	43.50	100	190	-7.05	



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Site: Chamber

Condition: LP0002 3.10節 RE (2.4GHz) Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

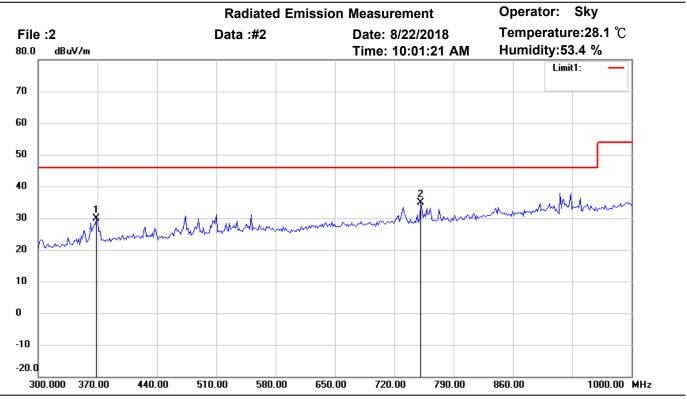
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
*	891.9840	36.25	peak	4.72	40.97	46.00	100	50	-5.03	
	928.0041	34.18	QP	5.33	39.51	46.00	100	170	-6.49	



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Site: Chamber

Condition: LP0002 3.10節 RE (2.4GHz) Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

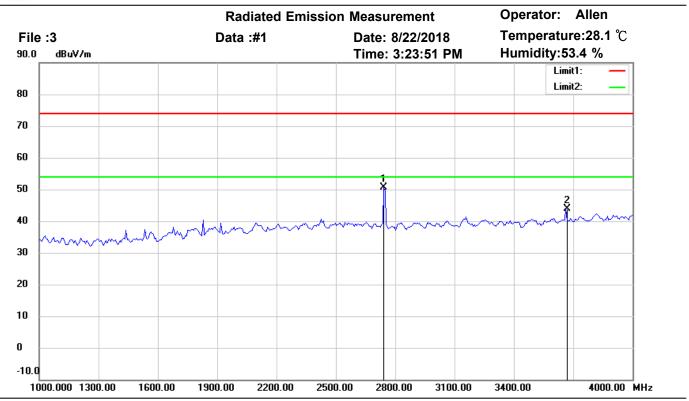
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
	368.7375	33.87	peak	-4.05	29.82	46.00	100	135	-16.18	
*	751.7034	33.17	peak	1.65	34.82	46.00	100	95	-11.18	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

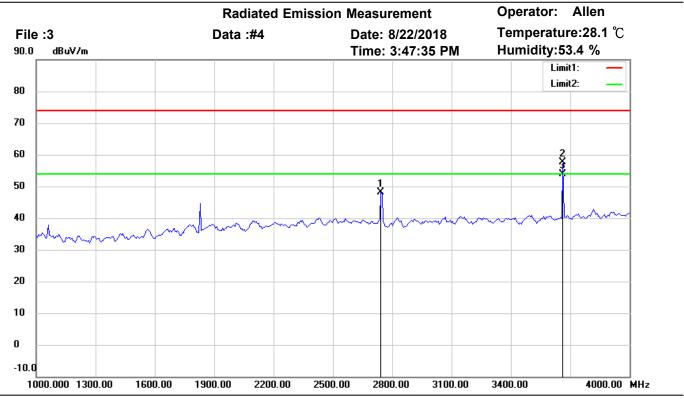
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
*	2743.487	54.40	peak	-3.84	50.56	74.00	150	330	-23.44	
	3663.327	45.01	peak	-1.12	43.89	74.00	150	180	-30.11	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

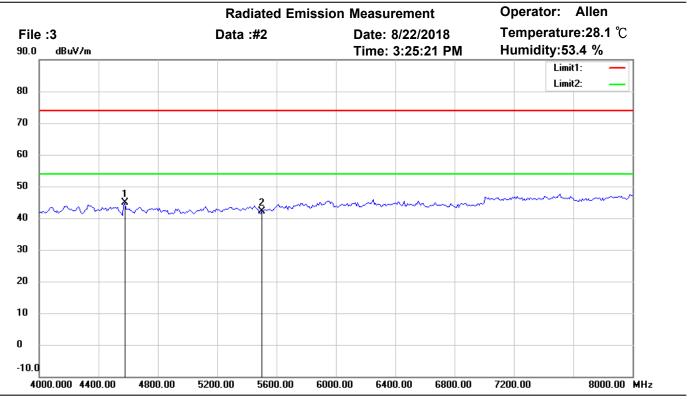
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
	2743.487	51.99	peak	-3.84	48.15	74.00	150	135	-25.85	
	3661.047	58.75	peak	-1.13	57.62	74.00	155	270	-16.38	
*	3661.047	55.08	AVG	-1.13	53.95	54.00	155	270	-0.05	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

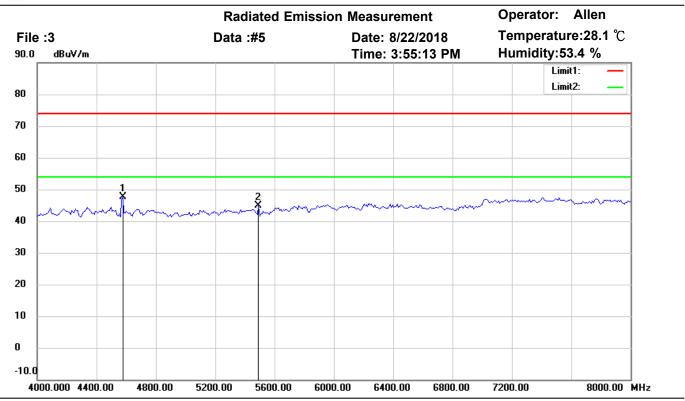
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
*	4577.154	44.28	peak	0.67	44.95	74.00	150	135	-29.05	
	5494.500	39.91	peak	2.21	42.12	74.00	150	200	-31.88	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

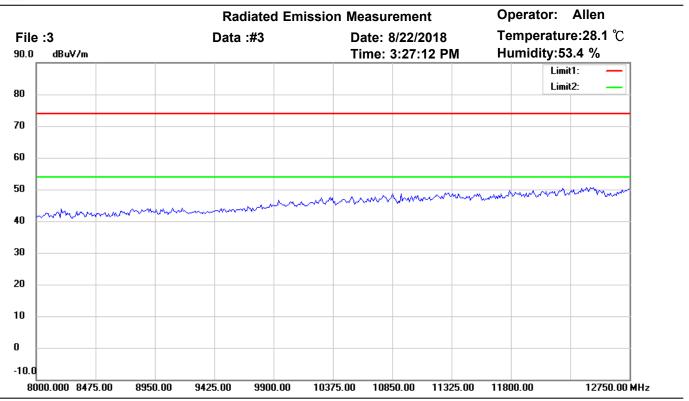
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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
*	4577.154	47.06	peak	0.67	47.73	74.00	150	330	-26.27	
	5490.982	42.74	peak	2.22	44.96	74.00	150	115	-29.04	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

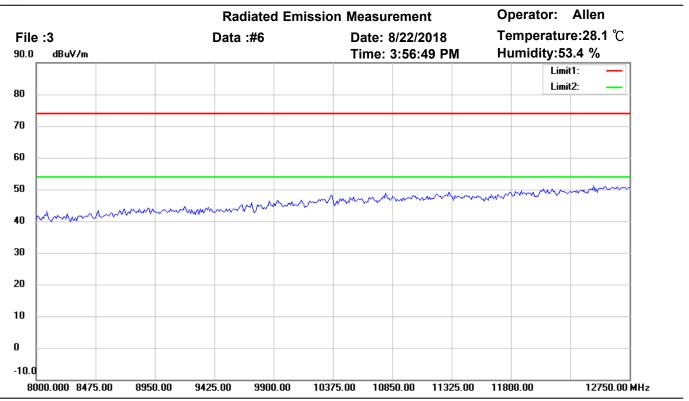
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

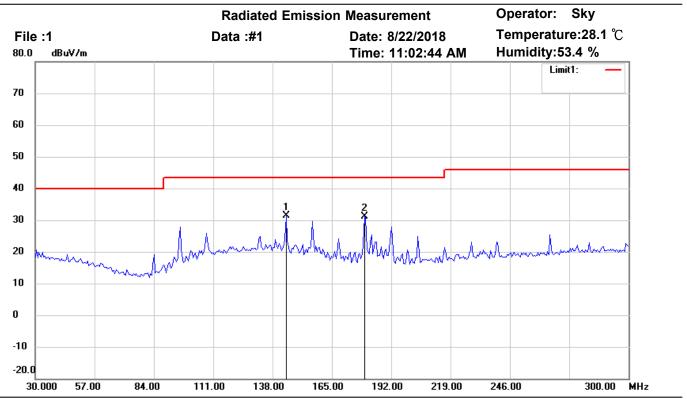
M/N: Distance: 3m

Test Mode: TX 915.25MHz

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



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Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

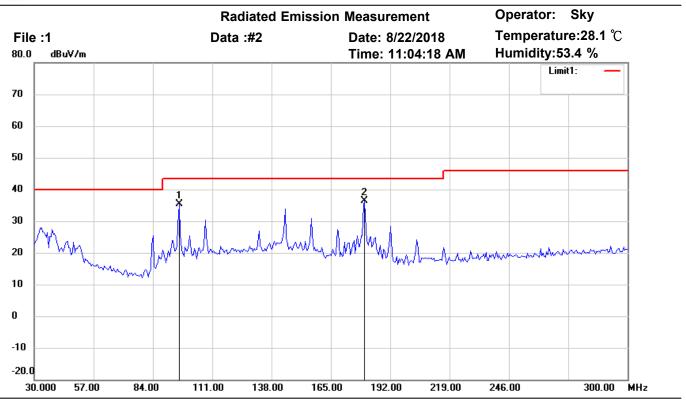
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
*	144.1683	38.22	peak	-6.80	31.42	43.50	100	25	-12.08	
	179.8798	42.02	peak	-10.78	31.24	43.50	100	280	-12.26	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

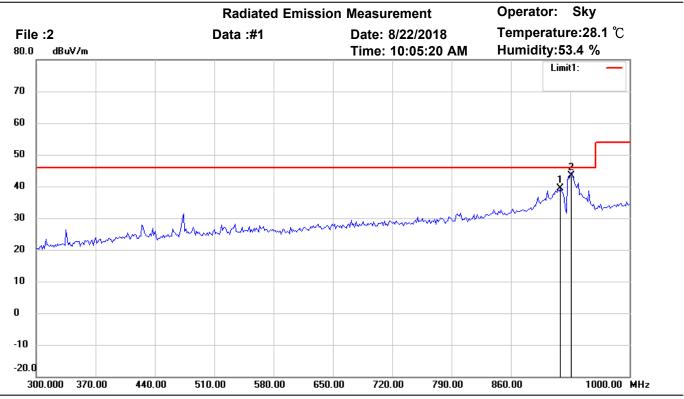
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	96.0120	46.63	peak	-11.35	35.28	43.50	100	295	-8.22	
*	180.4207	47.19	peak	-10.79	36.40	43.50	100	35	-7.10	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

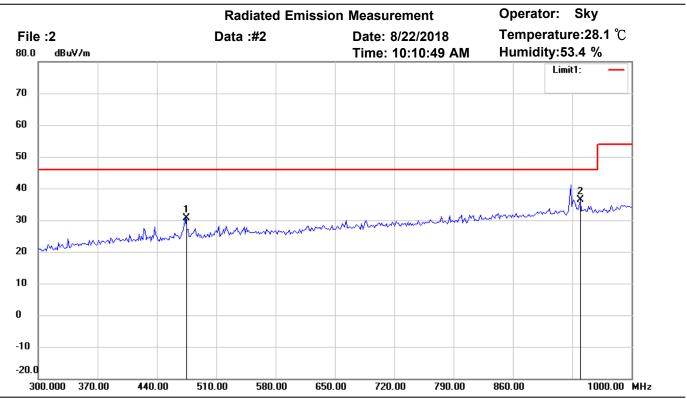
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	918.6373	34.10	peak	5.18	39.28	46.00	100	255	-6.72	
*	930.9236	38.11	QP	5.38	43.49	46.00	100	179	-2.51	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_30-1000MHz Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

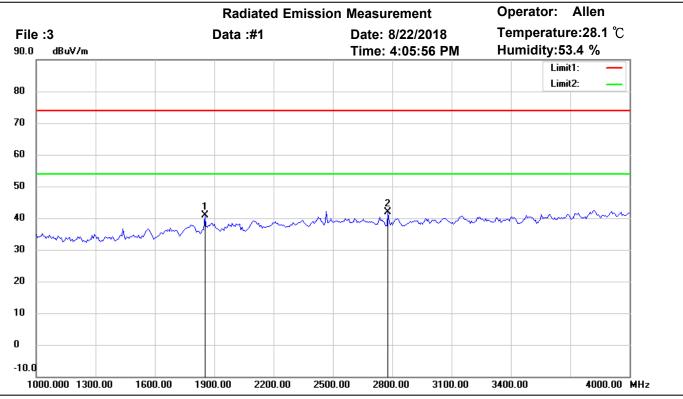
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	473.9480	33.29	peak	-2.61	30.68	46.00	100	190	-15.32	
*	939.6794	30.83	peak	5.52	36.35	46.00	100	55	-9.65	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

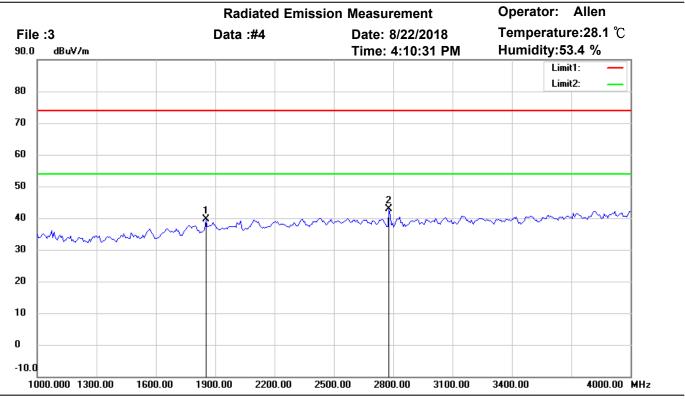
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	1853.707	47.16	peak	-6.28	40.88	74.00	150	40	-33.12	
*	2779.559	45.69	peak	-3.85	41.84	74.00	150	320	-32.16	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

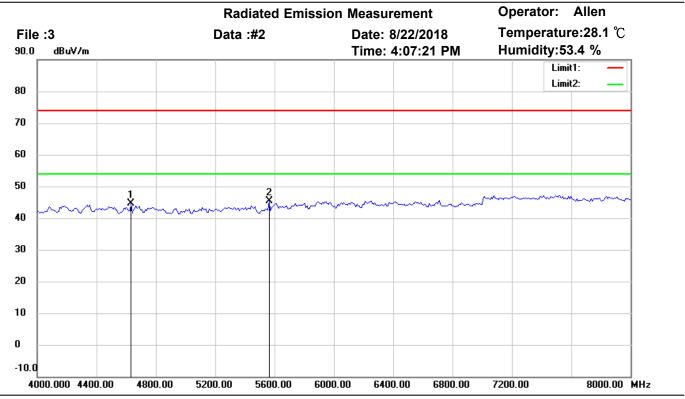
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	1853.707	45.98	peak	-6.28	39.70	74.00	150	80	-34.30	
*	2779.559	46.71	peak	-3.85	42.86	74.00	150	245	-31.14	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

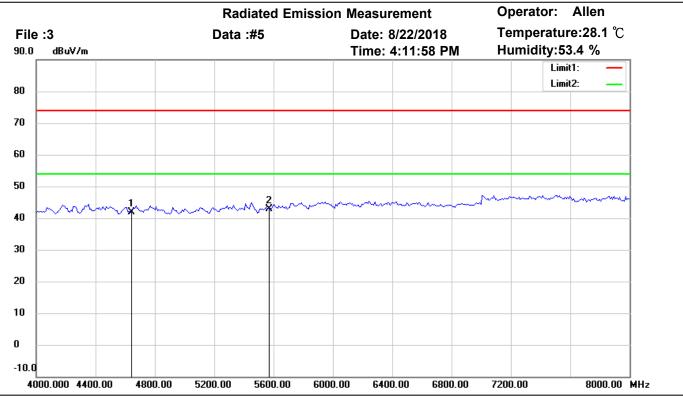
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	4633.266	44.08	peak	0.57	44.65	74.00	150	205	-29.35	
*	5563.126	42.95	peak	2.38	45.33	74.00	150	110	-28.67	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

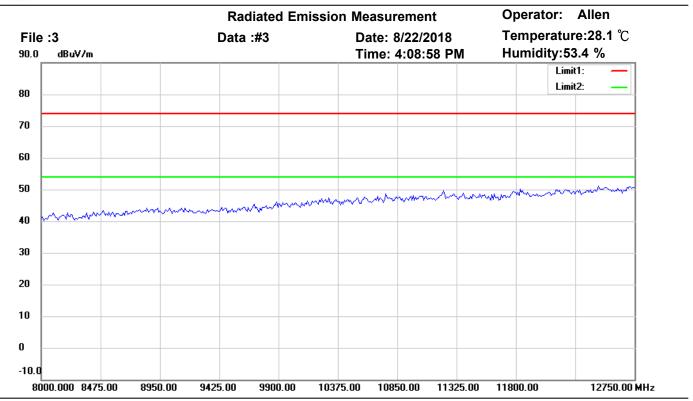
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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
	4636.250	41.24	peak	0.57	41.81	74.00	150	140	-32.19	
*	5563.500	40.58	peak	2.38	42.96	74.00	150	285	-31.04	



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Horizontal

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

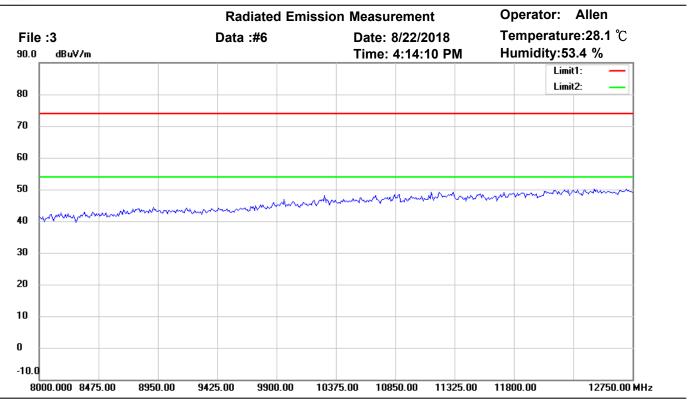
M/N: Distance: 3m

Test Mode: TX 927.25MHz

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



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Site: Chamber

Condition: FCC_part 15 RE-Class C_Above 1GHz_PK Polarization: Vertical

EUT: W6M21805-18090 Power: 5 Vd.c.(USB)

M/N: Distance: 3m

Test Mode: TX 927.25MHz

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