

FCC PART 15 SUBPART C TEST REPORT

for

Soundbar home theater system

Model No.: SB 30

FCC ID: TN5SB30CME

of

Applicant: Harman Consumer, Inc.

Address: 8500 Balboa Boulevard, Northridge, CA 91329, USA.

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

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

A2LA Accredited No.: 2732.01



Report No.: W6M21108-11752-C-1-T

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

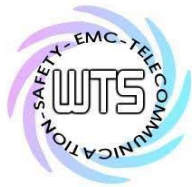
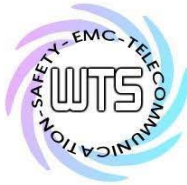


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1 General Information

1.1 Notes

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

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

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

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

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

The test results of this test report relate exclusively to the item tested as specified in 1.5.

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.

Specific Conditions:

Usage of the hereunder tested device in combination with other integrated or external antennas requires at least additional output power measurements, spurious emission measurements, conducted emission measurements (AC supply lines) and radio frequency exposure evaluations for each individual configuration performed, for certification by FCC.

Tester:

November 23, 2011

Rick Chen

Rick Chen.

Date

WTS-Lab.

Name

Signature

Technical responsibility for area of testing:

November 23, 2011

Chang Tse-Ming

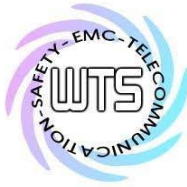
Chang Tse-Ming

Date

WTS

Name

Signature



Worldwide Testing Services(Taiwan) Co., Ltd.

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1.2 Testing laboratory

1.2.1 Location

OATS

No.5-1, Lishui, Shuang Sing Village,

Wanli Dist., New Taipei City 207,

Taiwan (R.O.C.)

3 meter semi-anechoic chamber

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

TEL:886-2-6613-0228

FAX:886-2-2791-5046

Company

Worldwide Testing Services(Taiwan) Co., Ltd.

6F, NO. 58, LANE 188, RUEY-KUANG RD.

NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877

Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA accredited number: 2732.01

FCC filed test laboratory Reg. No. 930600

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



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

Name: ./.

Accredited number: ./.

Street: ./.

Town: ./.

Country: ./.

Telephone: ./.

Fax: ./.

1.3 Details of approval holder

Name: Harman Consumer, Inc.

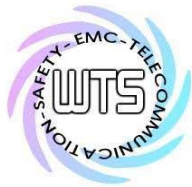
Street: 8500 Balboa Boulevard, Northridge,

Town: CA 91329,

Country: USA.

Telephone: + 1 (818) 895 8173

Fax: + 1 (818) 892 0325



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1.4 Application details

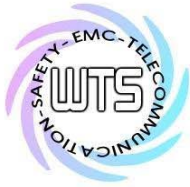
Date of receipt of test item: August 03, 2011
Date of test: from August 03, 2011 to November 21, 2011

1.5 General information of Test item

Type of test item: Soundbar home theater system
Model Number: SB 30
Brand Name: harman/kardon
Multi-listing model number: ./.
Photos: See Appendix

Technical data

Frequency band: 2.4 GHz – 2.4835 GHz
Frequency (ch low): 2.403 GHz
Frequency (ch middle): 2.439 GHz
Frequency (ch high): 2.478 GHz
Number of Channels: 26
Operation modes: Duplex
Modulation Type: GFSK
Fixed point-to-point operation: ☐ Yes / ☒ No
Type of Antenna: $1/2 \lambda$ Dipole Antenna
Antenna gain: 1.53 dBi
Power supply: AC 110-120V / 60Hz / 4A
Emission designator: 3M15F1D



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Host device: none

Classification:

Fixed Device	☒
Mobile Device (Human Body distance > 20cm)	☐
Portable Device (Human Body distance < 20cm)	☐

Transmitter

Unom

GFSK

Power (ch low): Conducted: 8.65 dBm

Power (ch middle): Conducted: 9.26 dBm

Power (ch high): Conducted: 9.03 dBm

Manufacturer: (if applicable)

Name: ./.

Street: ./.

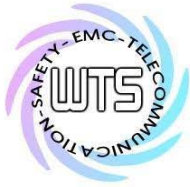
Town: ./.

Country: ./.

Additional information: ./.

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.247 (2010-10)



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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 as specified in 2.5 were ascertained in the course of the tests performed.



2.2 Test environment

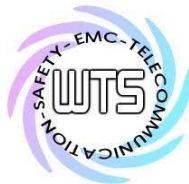
Temperature: 23 °C

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Power supply: AC 110-120V / 60Hz / 4A

Extreme conditions parameters: ./.



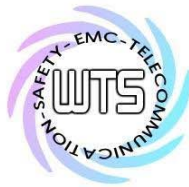
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2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2011/9/2	2012/9/1
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	2011/3/10	2012/3/9
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2011/9/5	2012/9/4
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2011/3/8	2012/3/7
ETSTW-CE 007	SPECTRUM ANALYZER 5GHz	FSB	849670/001	R&S	Pre-test Use	
ETSTW-CE 008	HF-EICHLEITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2011/7/13	2012/7/12
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2011/9/6	2012/9/5
ETSTW-CE 024	IMPEDANCE STABILIZATION NETWORK	ISN T800	29454	TESEQ	2011/1/10	2012/1/9
ETSTW-CS 004	COUPLING AND DECOUPLING NETWORK	CDN M016	20053	SCHAFFNER	2011/8/12	2012/8/11
ETSTW-CS 005	RF Power Amplifier	100A250A	306547	AR	Function Test	
ETSTW-CS 010	6 dB Attenuator	SA3N1007-06	None	AISI	2011/7/29	2012/7/28
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2011/8/16	2012/8/15
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2011/9/5	2012/9/4
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2011/9/2	2012/9/1
ETSTW-RE 010	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2011/9/7	2012/9/6
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 019	MICROWAVE HORN ANTENNA	22240-25	121074	FM	2011/4/25	2012/4/24
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2011/7/19	2012/7/18
ETSTW-RE 028	Log-Periodic Dipole Array Antenna	3148	34429	EMCO	Function Test	
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	Function Test	
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2011/2/25	2012/2/24
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2011/10/4	2012/10/3
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	Function Test	
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2011/10/4	2012/10/3
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2011/1/14	2012/1/13
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2011/4/26	2012/4/25
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2011/4/25	2012/4/24
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	

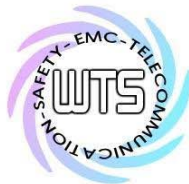


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ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2011/8/29	2012/8/28
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2011/4/8	2012/4/7
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2011/3/4	2012/3/3
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2011/3/4	2012/3/3
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2011/3/4	2012/3/3
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2011/5/30	2012/5/29
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2011/3/4	2012/3/3
ETSTW-RE 061	Amplifier Module	CHC 1	None	ETS	2011/5/18	2012/5/17
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2010/11/30	2011/11/29
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 065	Amplifier	AMF-6F-18002650-25-10P	941608	MITEQ	2011/4/8	2012/4/7
ETSTW-RE 066	Highpass Filter	H1G013G1	206015	MICROWAVE CIRCUITS, INC.	2011/3/4	2012/3/3
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	EMCO	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2011/10/5	2012/10/4
ETSTW-RE 073	Power Meter	N1911A	MY45100769	Agilent	2011/1/10	2012/1/9
ETSTW-RE 074	Power Sensor	N1921A	MY45241198	Agilent	2011/1/10	2012/1/9
ETSTW-RE 081	Highpass Filter	H03G13G1	4260-02 DC0428	MICROWAVE CIRCUITS, INC.	2011/3/4	2012/3/3
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2011/3/10	2012/3/9
ETSTW-RE 105	2.4GHz Notch Filter	NO124411	39555	MICROWAVE CIRCUITS, INC.	2011/3/11	2012/3/10
ETSTW-RE 106	Humidity Temperature Meter	TES-1366	091011113	TES	2011/3/24	2012/3/23
ETSTW-RE 111	Log-Periodic Dipole Array Antenna	VULB 9160	9160-3309	Schwarz beck	2010/12/17	2011/12/16
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	None	T-Power	Function test	
ETSTW-RE 114	2.4GHz Notch Filter	N0124411	473873	MICROWAVE CIRCUITS	2011/1/13	2012/1/12
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 121	SPECTRUM ANALYZER	FSU43	100013	R&S	2011/6/23	2012/6/22
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2011/7/4	2012/7/3
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2011/8/19	2012/8/18
ETSTW-RE 126	5GHz Notch filter	5NSL11-5800/E221.3-O/O	1	K&L Microwave	2011/8/19	2012/8/18
ETSTW-EMI 001	HARMONICS 1000	HAR1000-1P	093	EMC-PARTNER	2011/9/1	2012/8/31
ETSTW-EMS 001	BASELSTRASSE 160 CH-4242 LAUFEN	CN-EFT1000	354	EMC-PARTNER	Function Test	
ETSTW-EMS 002	Frequency Converter	YF-6020	0308014	None	Function Test	
ETSTW-EMS 003	EMC Immunity Test System	TRA2000IN6	579	EMC-PARTNER	2011/11/2	2012/11/1
ETSTW-EMS 009	Magnetic Field Antenna	MF1000-1	104	EMC-PARTNER	Function Test	
ETSTW-EMS 010	Coupling De-coupling Network	CDN-UTP8	014	EMC-PARTNER	Function Test	
ETSTW-EMS 012	EM Injection Clamp	F-203I-23MM	476	FCC	2011/6/1	2012/5/31
ETSTW-EMS 015	HVAC Trms Power Clamp Meter	3079K	070800649	TES	2011/10/6	2012/10/5

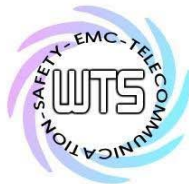


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ETSTW-EMS 016	EMF Tester	1390	071208732	TES	2011/10/6	2012/10/5
ETSTW-EMS 017	Multimeter	DM-1220	518614	HOLA	2011/8/11	2012/8/10
ETSTW-EMS 019	Electrostatic Discharge Simulator	ESS-2002	ESS06Y6300	NoiseKen	2011/10/31	2012/10/30
ETSTW-EMS 020	Humidity Temperature Meter	TES-1366	091011116	TES	2011/3/24	2012/3/23
ETSTW-RS 003	RF Power Amplifier	30S1G3	306933	AR	Function Test	
ETSTW-RS 004	RF Power Amplifier	150W1000	307009	AR	Function Test	
ETSTW-RS 006	SIGNAL GENERATOR	SML03	101551	R&S	2011/3/7	2012/3/6
ETSTW-RS 007	14" COLOR VIDEO MONITOR	HS-CM145A	0512011548	None	Function Test	
ETSTW-RS 009	SIGNAL GENERATOR	8648C	3642U01656	HP	2011/2/23	2012/2/22
ETSTW-RS 010	Broadband Field Meter	NBM-520	C-0195	Narda	2011/9/8	2012/9/7
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2011/10/4	2012/10/3
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2011/1/14	2012/1/13
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2011/1/14	2012/1/13
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2011/1/14	2012/1/13
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2011/1/14	2012/1/13
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2011/9/19	2012/9/18
ETSTW-Cable 002	Microwave Cable	SUCOFLEX 104 (S_Cable 7)	238093	HUBER+SUHNER	2011/5/18	2012/5/17
ETSTW-Cable 003	Microwave Cable	SUCOFLEX 104 (S_Cable 11)	209953	HUBER+SUHNER	2011/5/18	2012/5/17
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2011/3/8	2012/3/7
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	Pre-test Use NCR	
ETSTW-Cable 012	BNC Cable	BNC Cable 2	None	JYE BAO CO.,LTD.	2011/3/8	2012/3/7
ETSTW-Cable 013	Microwave Cable	SUCOFLEX 104 (S_Cable 5)	232345	HUBER+SUHNER	Function Test	
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2011/3/4	2012/3/3
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2011/3/4	2012/3/3
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2011/3/4	2012/3/3
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2011/3/4	2012/3/3
ETSTW-Cable 022	N TYPE Cable	OATS Cable 3	0002	JYE BAO CO.,LTD.	2011/3/4	2012/3/3
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2011/3/10	2012/3/9
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2011/3/10	2012/3/9
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2011/4/26	2012/4/25
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2011/4/26	2012/4/25
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	SPECTRUM	2011/3/10	2012/3/9
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104 (S_Cable 10)	238092	HUBER+SUHNER	2010/11/30	2011/11/29
ETSTW-Cable 032	Microwave Cable	SUCOFLEX 104 (S_Cable 12)	237301	HUBER+SUHNER	Function Test	
ETSTW-Cable 039	Microwave Cable	SUCOFLEX 104 (S_Cable 19)	316739	HUBER+SUHNER	2011/5/18	2012/5/17
ETSTW-Cable 040	Microwave Cable	SUCOFLEX 104 (S_Cable 20)	316738	HUBER+SUHNER	Function Test	

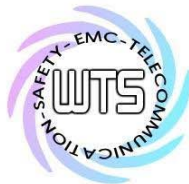


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ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2010/11/30	2011/11/29
ETSTW-Cable 047	Microwave Cable	SUCOFLEX 104	325518	HUBER+SUHNER	2010/11/30	2011/11/29
ETSTW-Cable 051	BNC Cable	BNC Cable 6	None	JYE BAO CO.,LTD.	2011/3/31	2012/3/30
ETSTW-Cable 052	BNC Cable	Clamp Cable	None	Schwarz beck	2011/3/31	2012/3/30
ETSTW-Cable 053	N TYPE To SMA Cable	OATS Cable 4	None	JYE BAO CO.,LTD.	2011/3/4	2012/3/3
ETSTW-Cable 054	BNC To SMA Cable	OATS Cable 5	None	JYE BAO CO.,LTD.	2011/3/4	2012/3/3
ETSTW-Cable 055	NTYPE Cable	N30N30-JBY240-80CM	20110621-1.1	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 056	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.0	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 057	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.1	JYE BAO CO.,LTD.	Function Test	
WTSTW-SW 001	EMI TEST SOFTWARE	Harmonics-1000	None	EMC PARTNER	HARCS Version 4.16 Firmware Version 2.18	
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1	
WTSTW-SW 003	EMS TEST SOFTWARE	i2	None	AUDIX	Version 3.2007-8-17b	



Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2009 5.2 using a 50 μ H LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.4-2009 6.4 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB μ 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
33	20 dB μ V + 10.36 dB + 6 dB = 36.36 dB μ V/m @3m

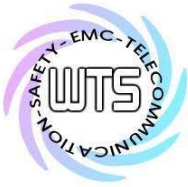
The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2009 6.3.1. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

- (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.

Measurements were made by Worldwide Testing Services(Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Lishui, Shuang Sing Village, Wanli Dist., New Taipei City 207, Taiwan (R.O.C.). The Registration Number: 930600.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.



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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:

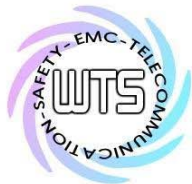
Average = Peak + Duty Factor

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

T = 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 C63.4-2009 10.2.7: Any measurements that utilize special test software shall be indicated and referenced in the test report. During testing, test software 'EZ EMC' was used for setting up different operation modes.



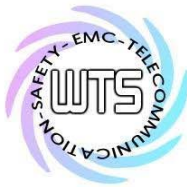
Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)(3)	☒	☒	☐
Equivalent radiated Power	15.247(b)(3)	☐	☐	☐
Spurious Emissions radiated – Transmitter operating	15.247(c): 15.209	☒	☒	☐
Band Edge Measurement	15.247(c)	☒	☒	☐
Minimum 6 dB Bandwidth	15.247(a)(2)	☒	☒	☐
Peak Power Spectral Density	15.247(d)	☒	☒	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Power Line Conducted Emission	15.207	☒	☒	☐

The follows is intended to leave blank.



Registration number: W6M21108-11752-C-1-T

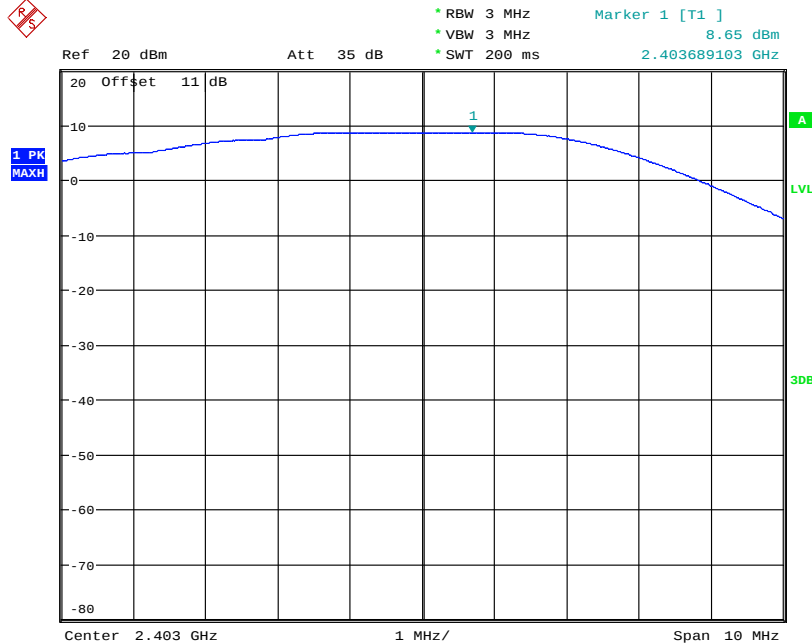
FCC ID: TN5SB30CME

3.1 Peak Output Power (transmitter)

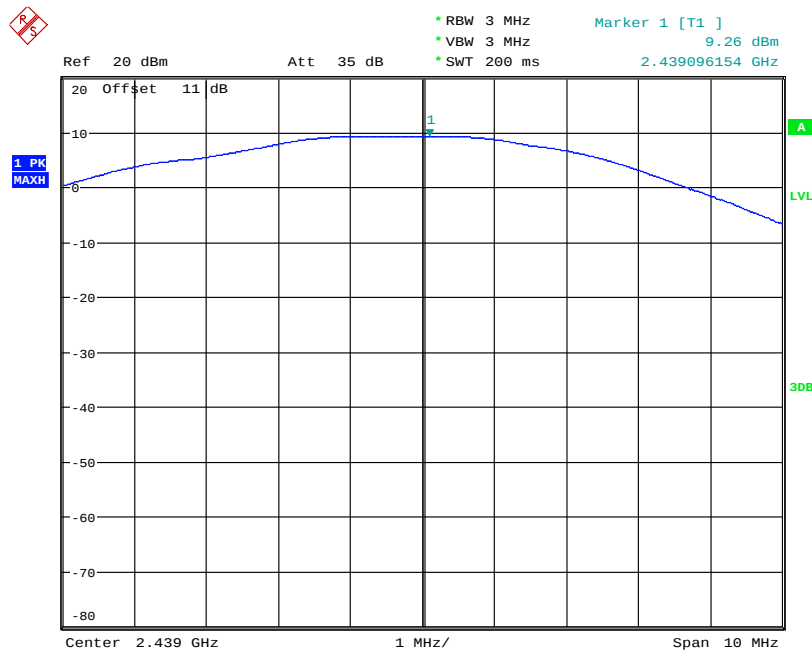
FCC Rule: 15.247(b)(3)

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.

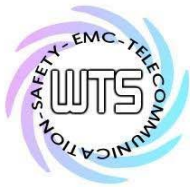
The power was measured with modulation (declared by the applicant).



MAX OUTPUT POWER 2403MHz
Date: 8.NOV.2011 15:59:54

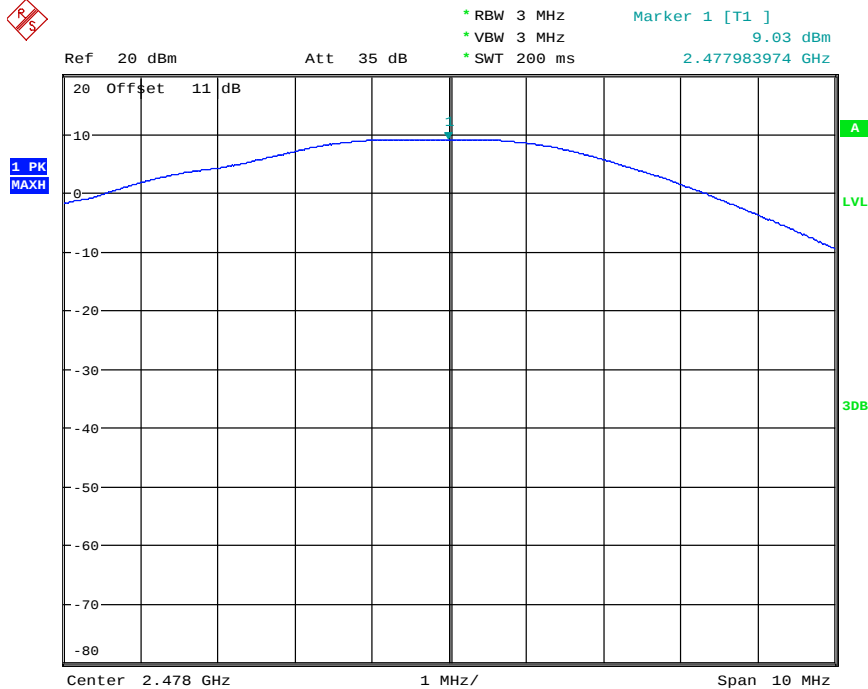


MAX OUTPUT POWER 2439MHz
Date: 8.NOV.2011 15:40:02



Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME



MAX OUTPUT POWER 2478MHZ

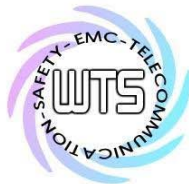
Date: 8.NOV.2011 15:40:29

Limits:

Frequency MHz	Power dBm
902 - 928	30
2400 – 2483.5	30
5725 – 5850	30

In case of employing transmitter antennas having antenna gain $> 6\text{dBi}$ and using fixed point-to point operation consider §15.247 (b)(4)

Test equipment used: ETSTW-RE 055



Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

3.2 Equivalent isotropic radiated power

FCC Rule: 15.247(b)(3)

EIRP = max. conducted output power + antenna gain

EIRP = 9.26 dBm + 1.53 dBi

= 10.79 dBm

Limit: EIRP = +36 dBm for Antenna gain <6dBi

Test equipment used: ETSTW-RE 055

3.3 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

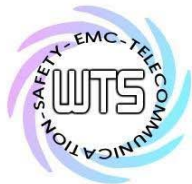
D – Cable Loss

AG – Antenna Gain

Item	Unit	Value	Remarks
P	mW	8.4334	Peak value
D	dB		
AG	dBi	1.53	
G		1.422	Calculated Value
R	cm	20	Assumed value
S	mW/cm ²	0.00239	Calculated value

Limits:

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



Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

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 12750 MHz.

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

Frequency $\leq$ 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 (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	500	54.0

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of Digit Transmission Systems:

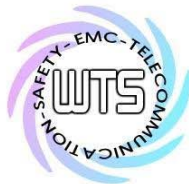
“If the emission is pulsed, modify the unit for continuous operation, use the setting shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

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

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

Explanation: Please see attached diagrams in appendix.



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FCC ID: TN5SB30CME

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))

FCC Rule: 15.247(c), 15.35

For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Limits:

For frequencies above 1GHz (Peak measurements).

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

For frequencies above 1GHz (Average measurements).

Max. reading – 20dB

Max. reading – 20 dB

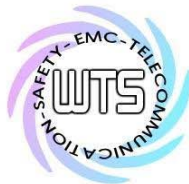
Guidance on Measurement of Digit Transmission Systems:

“If the emission is pulsed, modify the unit for continuous operation, use the settings 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 = $20 \log (\text{dwell time}/100\text{ms})$

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



Worldwide Testing Services(Taiwan) Co., Ltd.

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SAMPLE CALCULATION OF LIMIT. All results will be updated by an automatic measuring system in accordance with 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 and 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 "Correction Factor".

Summary table with radiated data of the test plots

Model: SB 30

Date: 2011/11/07

Mode: 2403MHz

Temperature: 24 °C

Engineer: Terry

Polarization: Horizontal

Humidity: 60 %

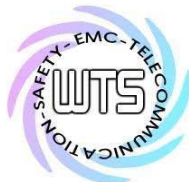
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
258.3367	25.49	peak	13.66	39.15	46.00	-6.85	230	100
405.2102	17.59	peak	17.39	34.98	46.00	-11.02	220	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
4809.6190	58.25	44.58	4.56	62.81	49.14	74.00	54.00	-4.86	60	100
7206.4130	55.71	39.22	6.93	62.64	46.15	74.00	54.00	-7.85	175	100
9612.0000	35.62	---	9.48	45.10	---	74.00	54.00	-28.90	80	100
12015.0000	34.30	---	13.29	47.59	---	74.00	54.00	-26.41	250	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
73.8276	20.42	peak	10.94	31.36	40.00	-8.64	250	100
405.2104	11.31	peak	17.39	28.70	46.00	-17.30	30	120

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
2739.1220	56.74	41.68	2.22	58.96	43.90	74.00	54.00	-10.10	50	100
4801.6030	57.81	44.87	4.56	62.37	49.43	74.00	54.00	-4.57	75	100
7214.4290	57.36	40.56	6.93	64.29	47.49	74.00	54.00	-6.51	220	100
9612.0000	36.87	---	9.48	46.35	---	74.00	54.00	-27.65	210	100
12015.0000	34.30	---	13.29	47.59	---	74.00	54.00	-26.41	50	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Mode: 2439MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
111.7034	24.45	peak	12.23	36.68	43.50	-6.82	230	100
405.2102	17.34	peak	17.39	34.73	46.00	-11.27	250	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
2781.5630	55.85	39.88	2.26	58.11	42.14	74.00	54.00	-11.86	210	100
4873.7480	59.30	42.90	4.59	63.89	47.49	74.00	54.00	-6.51	70	100
7310.6210	55.75	40.44	6.93	62.68	47.37	74.00	54.00	-6.63	230	100
9756.0000	34.92	---	9.65	44.57	---	74.00	54.00	-29.43	100	100
12195.0000	34.27	---	14.75	49.02	---	74.00	54.00	-24.98	250	100

Polarization: Vertical

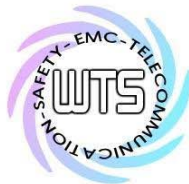
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
73.8276	19.21	peak	10.94	30.15	40.00	-9.85	240	100
405.2102	10.59	peak	17.39	27.98	46.00	-18.02	260	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
2780.5670	57.95	40.53	2.26	60.21	42.79	74.00	54.00	-11.21	50	100
4881.7640	55.16	44.60	4.59	59.75	49.19	74.00	54.00	-4.81	225	100
7318.6370	53.42	42.18	6.92	60.34	49.10	74.00	54.00	-4.90	150	100
9756.0000	34.93	---	9.65	44.58	---	74.00	54.00	-29.42	300	100
12195.0000	33.76	---	14.75	48.51	---	74.00	54.00	-25.49	185	100

Mode: 2478MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
114.4088	24.94	peak	12.50	37.44	43.50	-6.06	230	100
405.2102	17.91	peak	17.39	35.30	46.00	-10.70	230	110



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
4956.0000	55.90	41.89	4.78	60.68	46.67	74.00	54.00	-7.33	310	100
7438.8780	54.86	38.87	6.70	61.56	45.57	74.00	54.00	-8.43	10	100
9912.0000	36.13	---	9.83	45.96	---	74.00	54.00	-28.04	90	100
12390.0000	34.77	---	14.34	49.11	---	74.00	54.00	-24.89	185	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
73.8276	21.51	peak	10.94	32.45	40.00	-7.55	20	100
405.2104	10.78	peak	17.39	28.17	46.00	-17.83	75	100

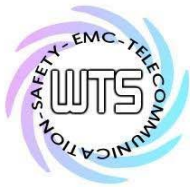
Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV/m)		Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
2825.6510	58.94	40.28	2.31	61.25	42.59	74.00	54.00	-11.41	230	100
4953.9080	56.31	43.27	4.77	61.08	48.04	74.00	54.00	-5.96	135	100
7438.8780	53.82	41.32	6.70	60.52	48.02	74.00	54.00	-5.98	80	100
9912.0000	36.54	---	9.83	46.37	---	74.00	54.00	-27.63	35	100
12390.0000	34.17	---	14.34	48.51	---	74.00	54.00	-25.49	60	100

- 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.**

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

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 042,
ETSTW-RE 043, ETSTW-RE 044

Explanation: Please see attached diagrams in appendix.



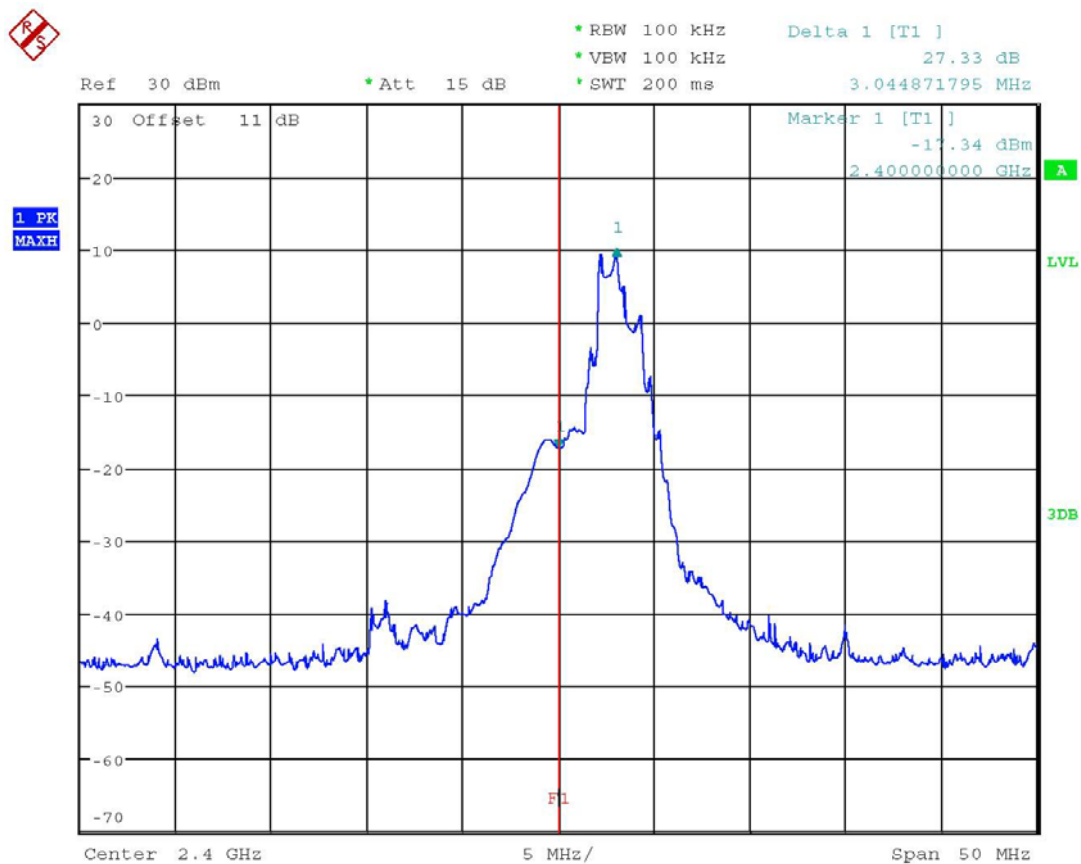
Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

3.6 Radiated Emission on the band edge

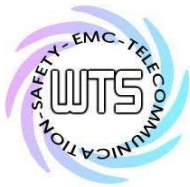
According to FCC rules part 15 subpart C §15.247(c) in any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that 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.



BANDEGE 2403MHz

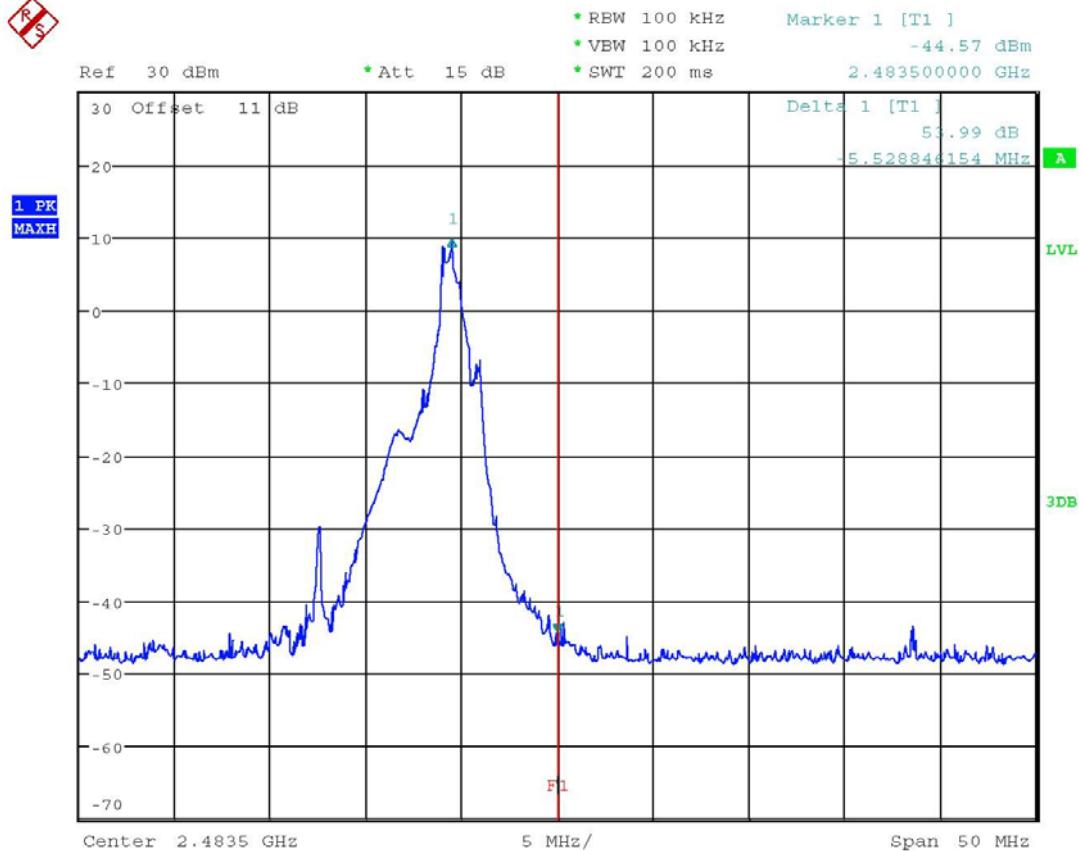
Date: 14.NOV.2011 12:57:47



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME



BANDEDGE 2478MHz

Date: 14.NOV.2011 13:00:25

Limit:

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

Test equipment used: ETSTW-RE 055

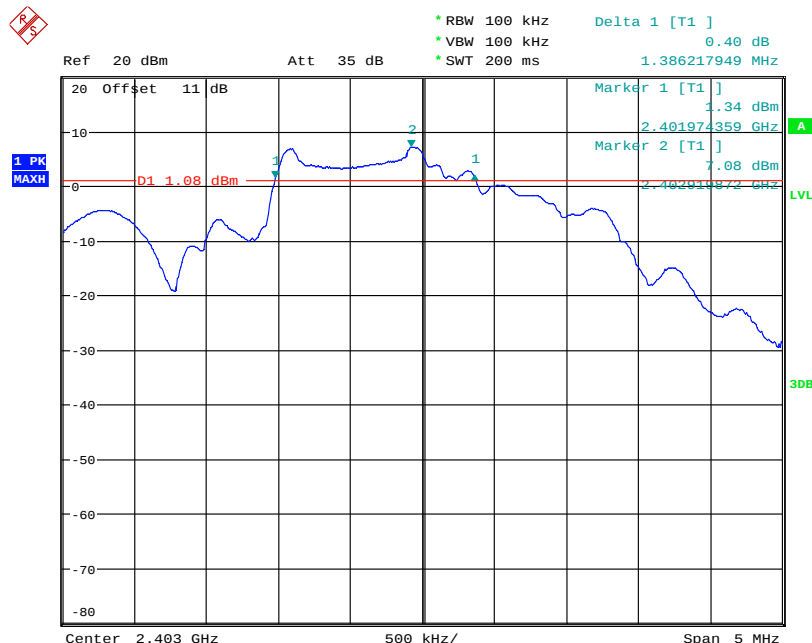
Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

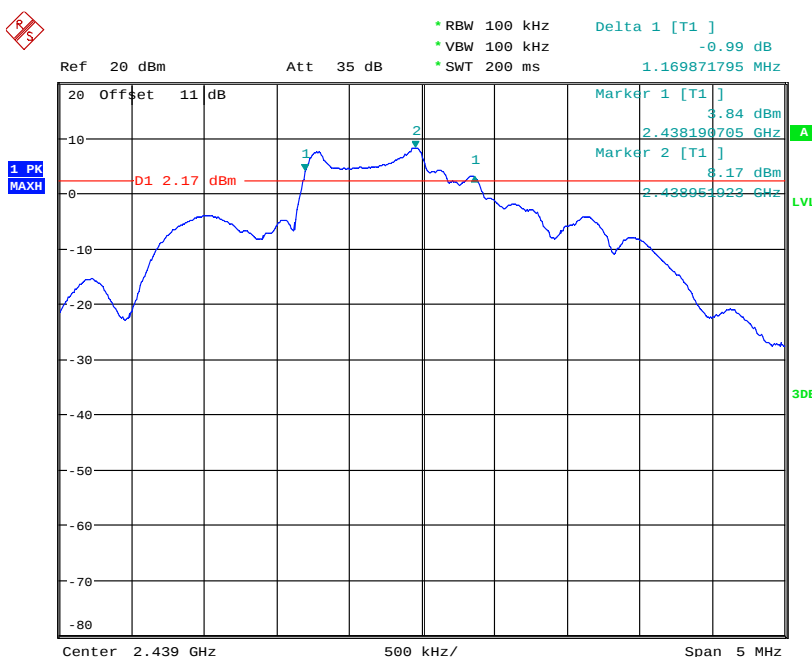
3.7 Minimum 6 dB Bandwidth

The analyzer ResBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK reading was taken, two markers were set 6 dB below the maximum level on the right and the left side of the emission.

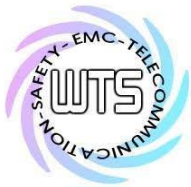
The 6 dB bandwidth is the frequency difference between the two markers.



6DB BANDWIDTH 2403MHz
 Date: 8.NOV.2011 16:03:06

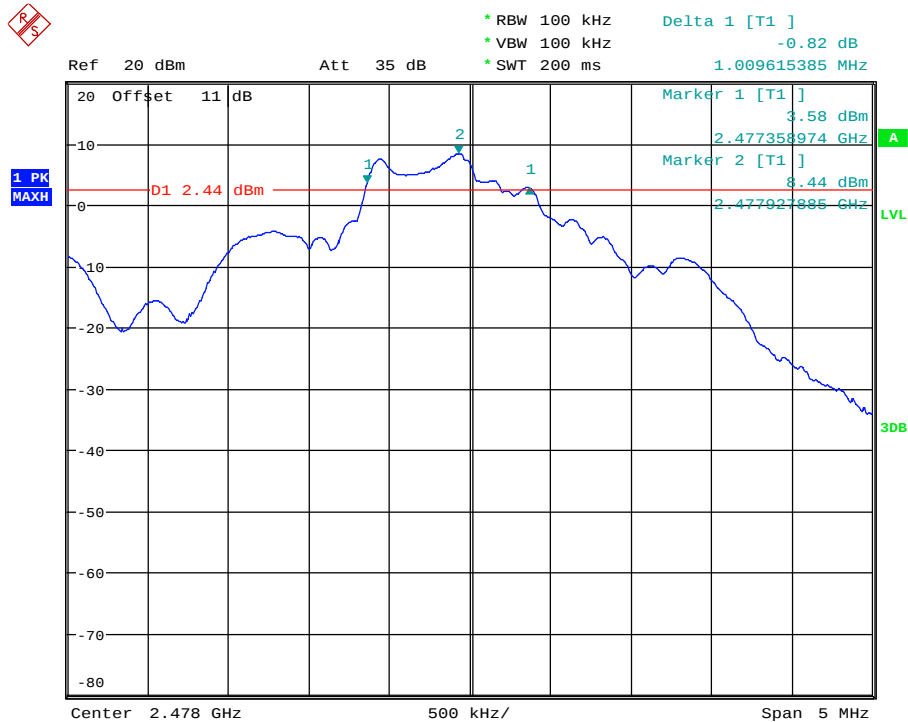


6DB BANDWIDTH 2439MHz
 Date: 8.NOV.2011 16:03:55



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T
FCC ID: TN5SB30CME



6DB BANDWIDTH 2478MHz
Date: 8.NOV.2011 16:04:44

Limits:

Frequency Range MHz	Limits
902-928	min 500 kHz
2400-2483.5	min 500 kHz
5725-5850	min 500 kHz

Test equipment used: ETSTW-RE 055

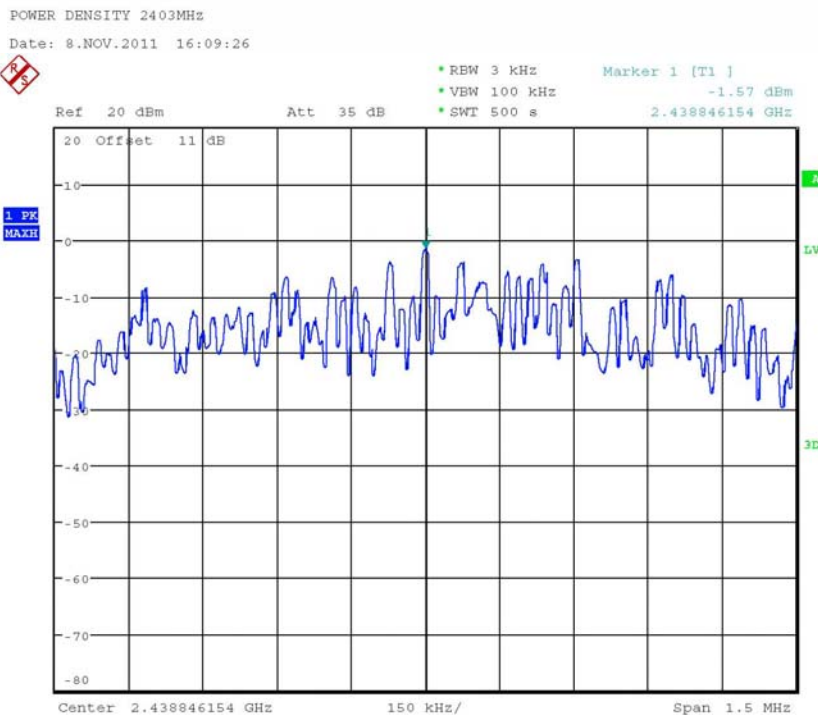
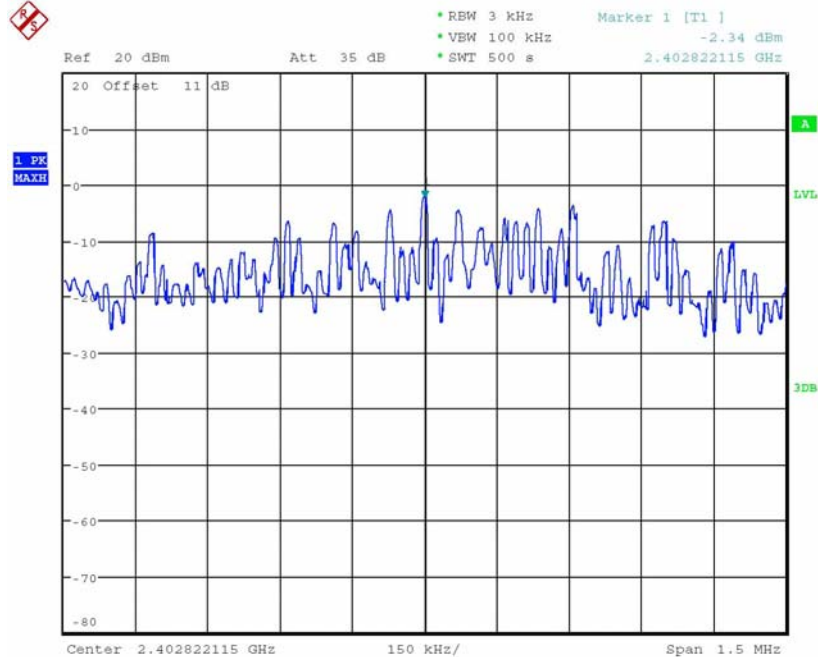
Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

3.8 Peak Power Spectral Density

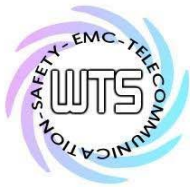
Peak Power Spectral density is a measured at low, middle and high channel.

The peak output power is measured with a measurement bandwidth of 10 MHz and displayed on diagram together with Peak Power Spectral Density result which was measured with a bandwidth of 3 kHz, appreciate frequency span and sweep time.



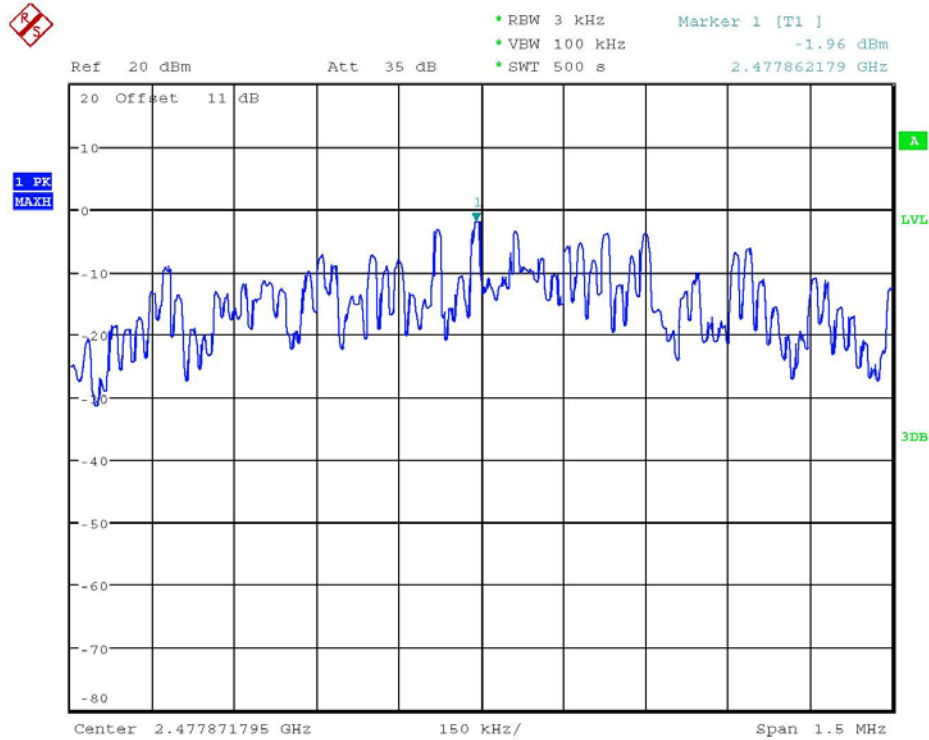
POWER DENSITY 2439MHz

Date: 8.NOV.2011 16:12:42



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T
FCC ID: TN5SB30CME

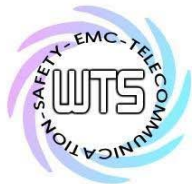


POWER DENSITY 2478MHz
Date: 8.NOV.2011 16:05:55

Limits:

Frequency Range MHz	dBm
902-928	8
2400-2483.5	8
5725-5850	8

Test equipment used: ETSTW-RE 055



Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

3.9 Radiated Emission from Digital Part

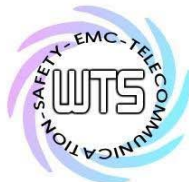
According to FCC part 15.109 (g), digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement".

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

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

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 042,
ETSTW-RE 043, ETSTW-RE 044

Explanation: The test results are listed in the separated test report no.: W6M21108-11752-P-15B-T.



Registration number: W6M21108-11752-C-1-T

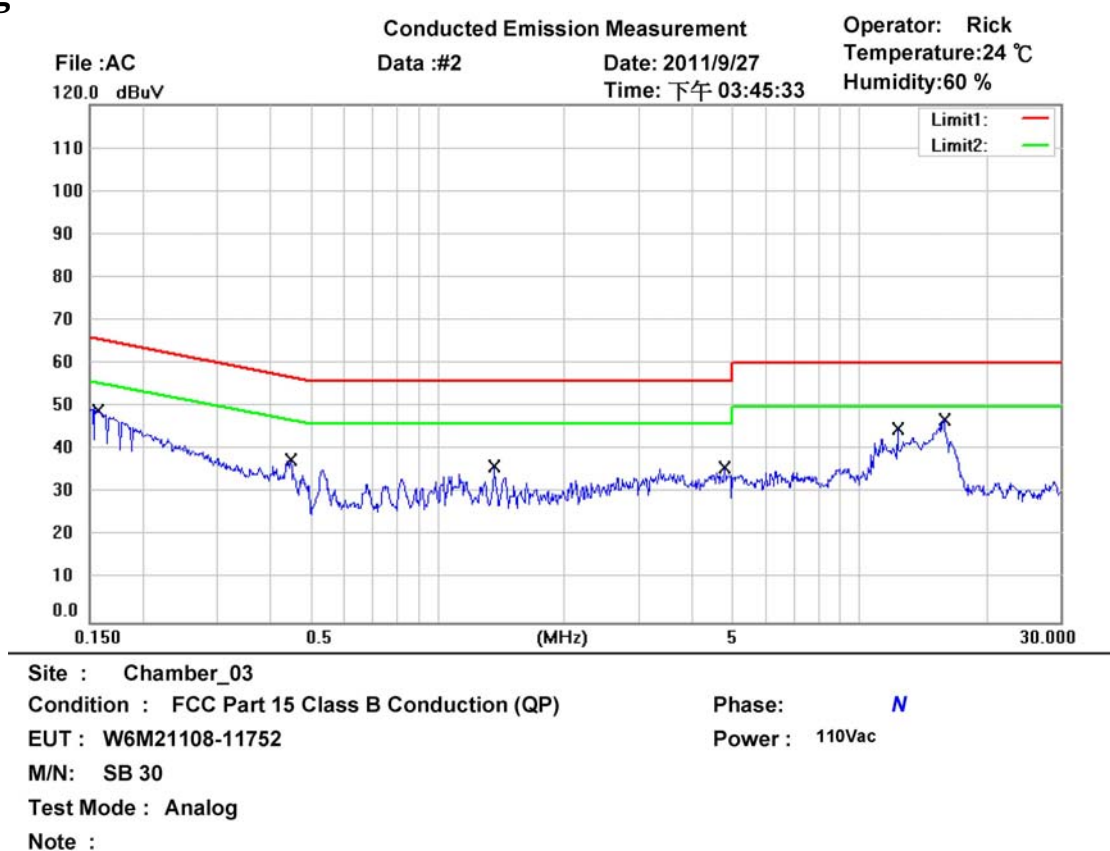
FCC ID: TN5SB30CME

3.10 Power Line Conducted Emission

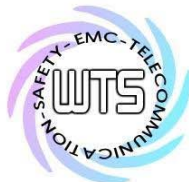
For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision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

Analog



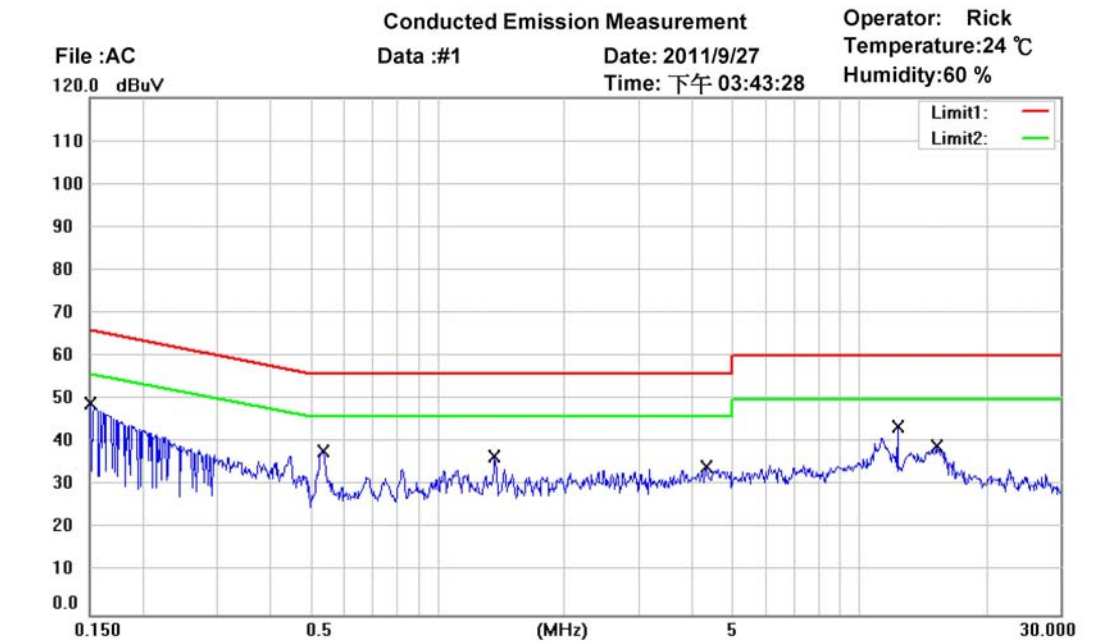
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1563	29.49	QP	9.93	39.42	65.66	-26.24	
	0.1563	9.29	AVG	9.93	19.22	55.66	-36.44	
	0.4477	21.96	QP	9.93	31.89	56.92	-25.03	
	0.4477	20.68	AVG	9.93	30.61	46.92	-16.31	
	1.3618	23.69	QP	9.97	33.66	56.00	-22.34	
	1.3618	12.82	AVG	9.97	22.79	46.00	-23.21	
	4.7908	21.15	QP	10.15	31.30	56.00	-24.70	
	4.7908	10.01	AVG	10.15	20.16	46.00	-25.84	
	12.2875	35.28	QP	10.61	45.89	60.00	-14.11	
*	12.2875	33.50	AVG	10.61	44.11	50.00	-5.89	
	15.8125	30.10	QP	10.84	40.94	60.00	-19.06	
	15.8125	17.67	AVG	10.84	28.51	50.00	-21.49	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME



Site : Chamber_03

Condition : FCC Part 15 Class B Conduction (QP)

EUT : W6M21108-11752

M/N: SB 30

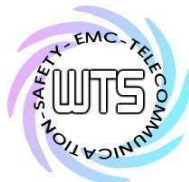
Test Mode : Analog

Note :

Phase: L1

Power : 110Vac

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1500	30.32	QP	10.00	40.32	66.00	-25.68	
	0.1500	15.61	AVG	10.00	25.61	56.00	-30.39	
	0.5360	28.37	QP	10.00	38.37	56.00	-17.63	
	0.5360	26.84	AVG	10.00	36.84	46.00	-9.16	
	1.3640	25.74	QP	10.04	35.78	56.00	-20.22	
	1.3640	16.37	AVG	10.04	26.41	46.00	-19.59	
	4.3250	19.31	QP	10.22	29.53	56.00	-26.47	
	4.3250	8.97	AVG	10.22	19.19	46.00	-26.81	
	12.2875	34.16	QP	10.78	44.94	60.00	-15.06	
*	12.2875	33.14	AVG	10.78	43.92	50.00	-6.08	
	15.1750	25.38	QP	11.01	36.39	60.00	-23.61	
	15.1750	14.03	AVG	11.01	25.04	50.00	-24.96	

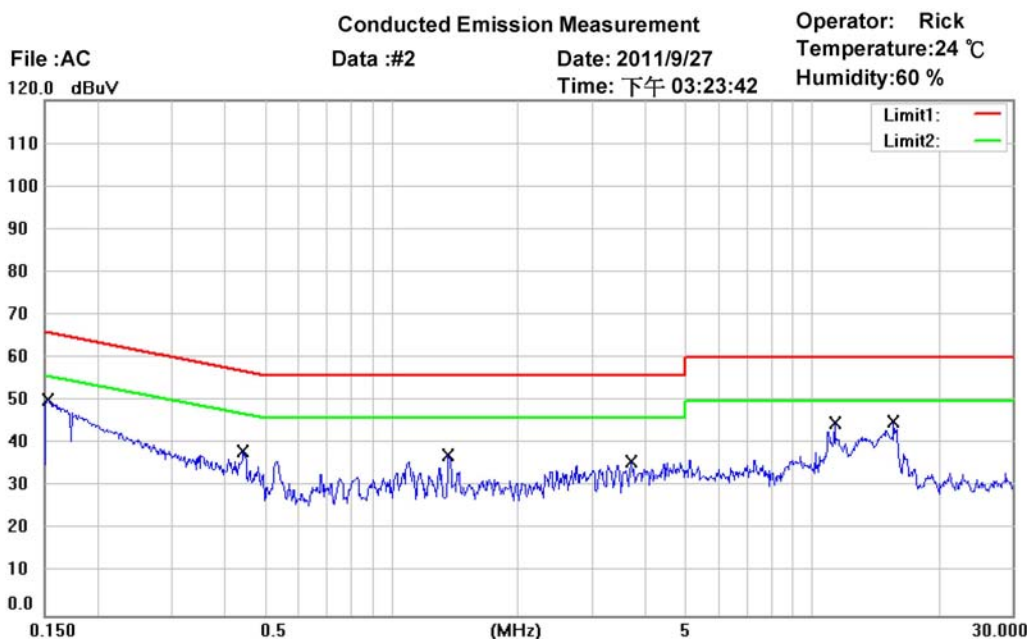


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Coaxial



Site : Chamber_03

Condition : FCC Part 15 Class B Conduction (QP)

Phase: N

EUT : W6M21108-11752

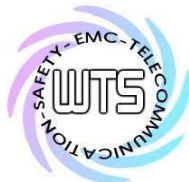
Power : 110Vac

M/N: SB 30

Test Mode : Coaxial

Note :

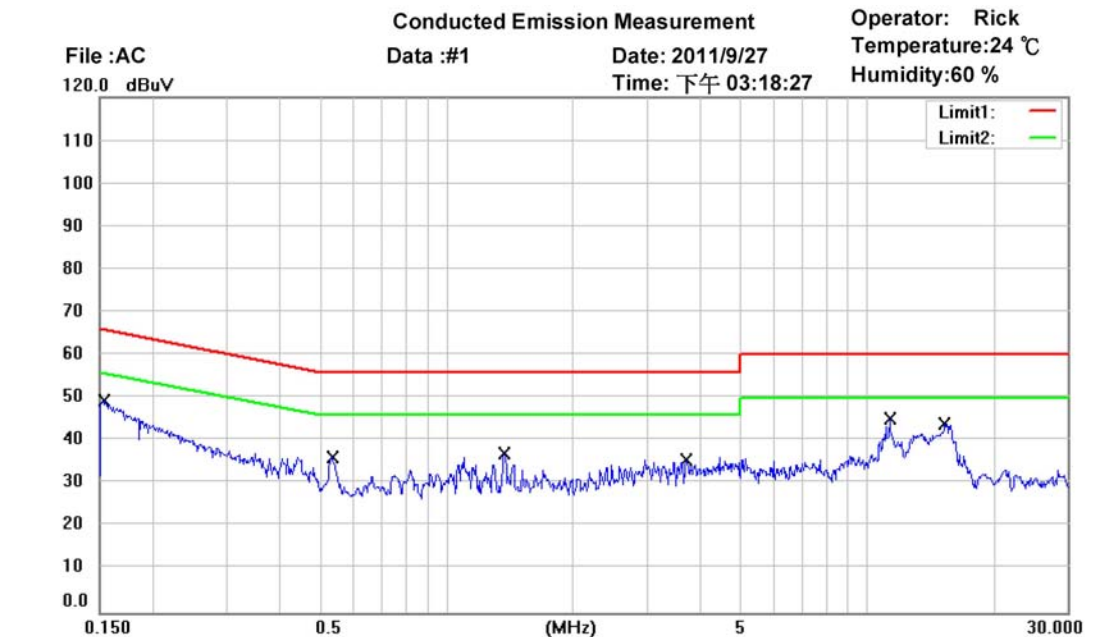
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1522	29.40	QP	9.94	39.34	65.88	-26.54	
	0.1522	10.09	AVG	9.94	20.03	55.88	-35.85	
	0.4440	24.62	QP	9.93	34.55	56.99	-22.44	
*	0.4440	23.49	AVG	9.93	33.42	46.99	-13.57	
	1.3662	25.90	QP	9.97	35.87	56.00	-20.13	
	1.3662	14.80	AVG	9.97	24.77	46.00	-21.23	
	3.7198	21.41	QP	10.10	31.51	56.00	-24.49	
	3.7198	9.73	AVG	10.10	19.83	46.00	-26.17	
	11.3000	26.82	QP	10.54	37.36	60.00	-22.64	
	11.3000	15.84	AVG	10.54	26.38	50.00	-23.62	
	15.6125	28.64	QP	10.83	39.47	60.00	-20.53	
	15.6125	17.45	AVG	10.83	28.28	50.00	-21.72	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME



Site : Chamber_03

Condition : FCC Part 15 Class B Conduction (QP)

EUT : W6M21108-11752

M/N: SB 30

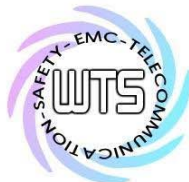
Test Mode : Coaxial

Note :

Phase: L1

Power : 110Vac

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1530	29.21	QP	10.00	39.21	65.84	-26.63	
	0.1530	8.23	AVG	10.00	18.23	55.84	-37.61	
	0.5336	25.93	QP	10.00	35.93	56.00	-20.07	
	0.5336	25.18	AVG	10.00	35.18	46.00	-10.82	
	1.3708	22.87	QP	10.04	32.91	56.00	-23.09	
	1.3708	12.94	AVG	10.04	22.98	46.00	-23.02	
	3.7198	19.88	QP	10.19	30.07	56.00	-25.93	
	3.7198	9.63	AVG	10.19	19.82	46.00	-26.18	
	11.2875	33.34	QP	10.70	44.04	60.00	-15.96	
*	11.2875	31.03	AVG	10.70	41.73	50.00	-8.27	
	15.2875	29.28	QP	11.01	40.29	60.00	-19.71	
	15.2875	17.19	AVG	11.01	28.20	50.00	-21.80	

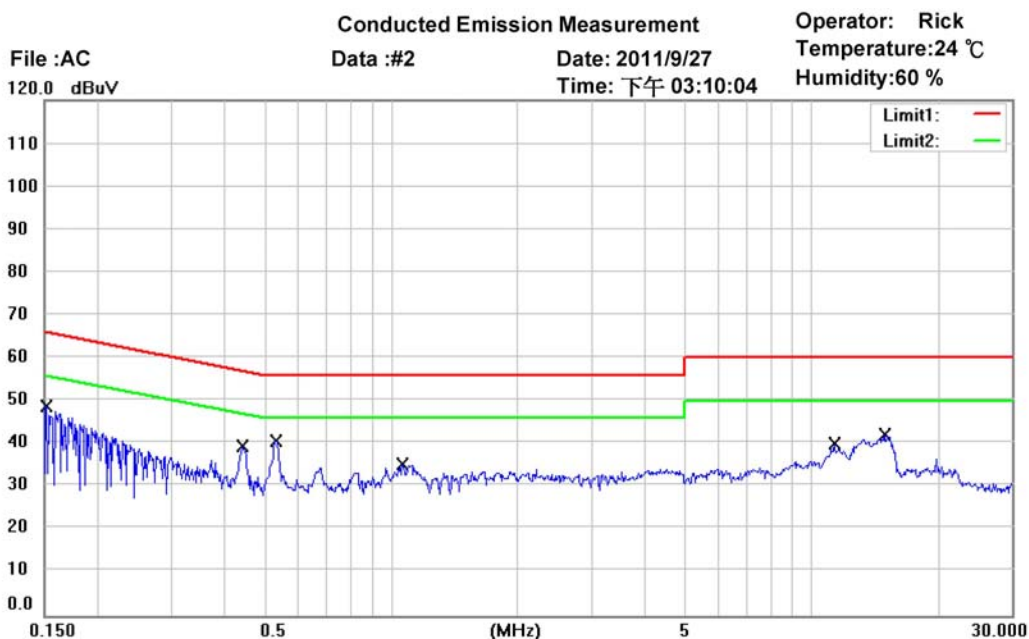


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Optical



Site : Chamber_03

Condition : FCC Part 15 Class B Conduction (QP)

Phase: N

EUT : W6M21108-11752

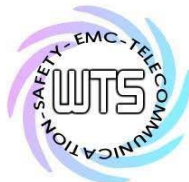
Power : 110Vac

M/N: SB 30

Test Mode : Optical

Note :

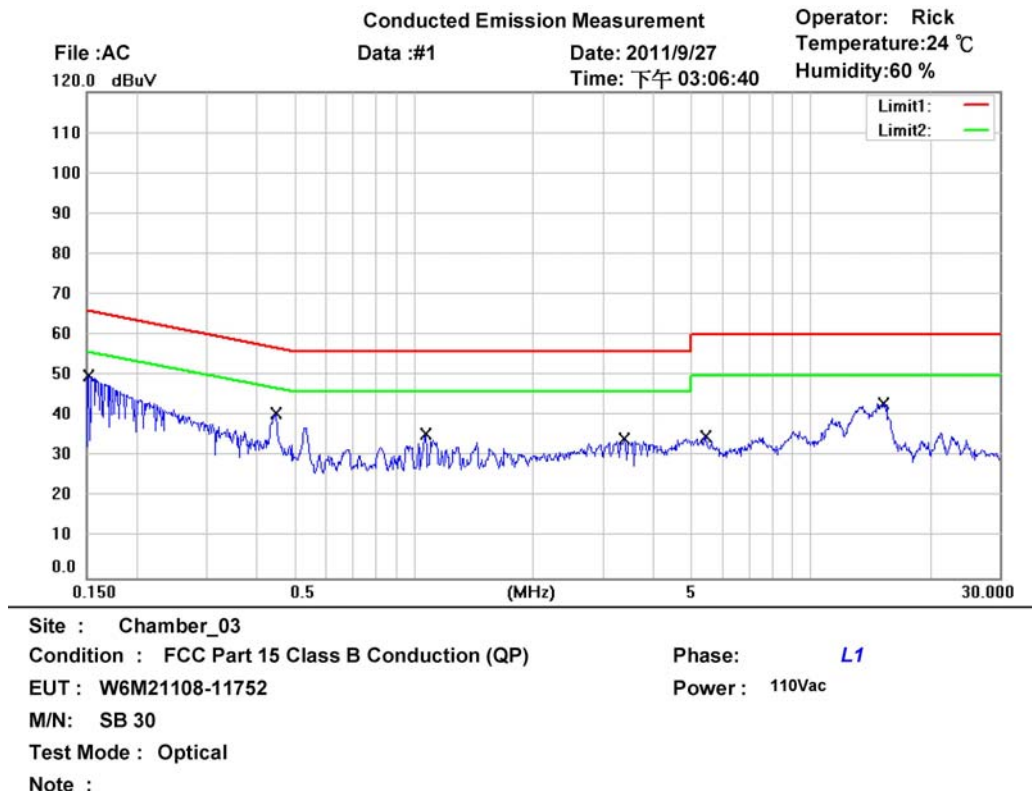
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1508	29.90	QP	9.94	39.84	65.96	-26.12	
	0.1508	14.87	AVG	9.94	24.81	55.96	-31.15	
	0.4440	30.31	QP	9.93	40.24	56.99	-16.75	
*	0.4440	29.35	AVG	9.93	39.28	46.99	-7.71	
	0.5315	29.70	QP	9.93	39.63	56.00	-16.37	
	0.5315	27.93	AVG	9.93	37.86	46.00	-8.14	
	1.0647	18.97	QP	9.96	28.93	56.00	-27.07	
	1.0647	17.93	AVG	9.96	27.89	46.00	-18.11	
	11.3000	26.31	QP	10.54	36.85	60.00	-23.15	
	11.3000	10.71	AVG	10.54	21.25	50.00	-28.75	
	14.8625	27.45	QP	10.80	38.25	60.00	-21.75	
	14.8625	15.70	AVG	10.80	26.50	50.00	-23.50	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

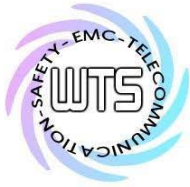
FCC ID: TN5SB30CME



Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1511	29.86	QP	10.00	39.86	65.94	-26.08	
	0.1511	15.18	AVG	10.00	25.18	55.94	-30.76	
	0.4480	25.72	QP	10.00	35.72	56.91	-21.19	
*	0.4480	24.68	AVG	10.00	34.68	46.91	-12.23	
	1.0692	19.01	QP	10.02	29.03	56.00	-26.97	
	1.0692	18.08	AVG	10.02	28.10	46.00	-17.90	
	3.3958	21.36	QP	10.17	31.53	56.00	-24.47	
	3.3958	7.45	AVG	10.17	17.62	46.00	-28.38	
	5.4250	21.93	QP	10.29	32.22	60.00	-27.78	
	5.4250	7.93	AVG	10.29	18.22	50.00	-31.78	
	15.2125	26.68	QP	11.01	37.69	60.00	-22.31	
	15.2125	14.69	AVG	11.01	25.70	50.00	-24.30	

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 = ± 1.28 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.



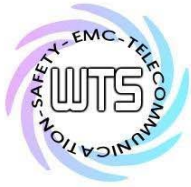
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T
FCC ID: TN5SB30CME

Limits:

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

Test equipment used:ETSTW-CE 001, ETSTW-CE 004, ETSTW-CE 006

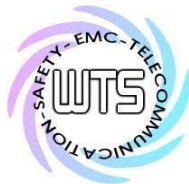


Registration number: W6M21108-11752-C-1-T
FCC ID: TN5SB30CME

Appendix

Measurement diagrams

Spurious Emissions radiated



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

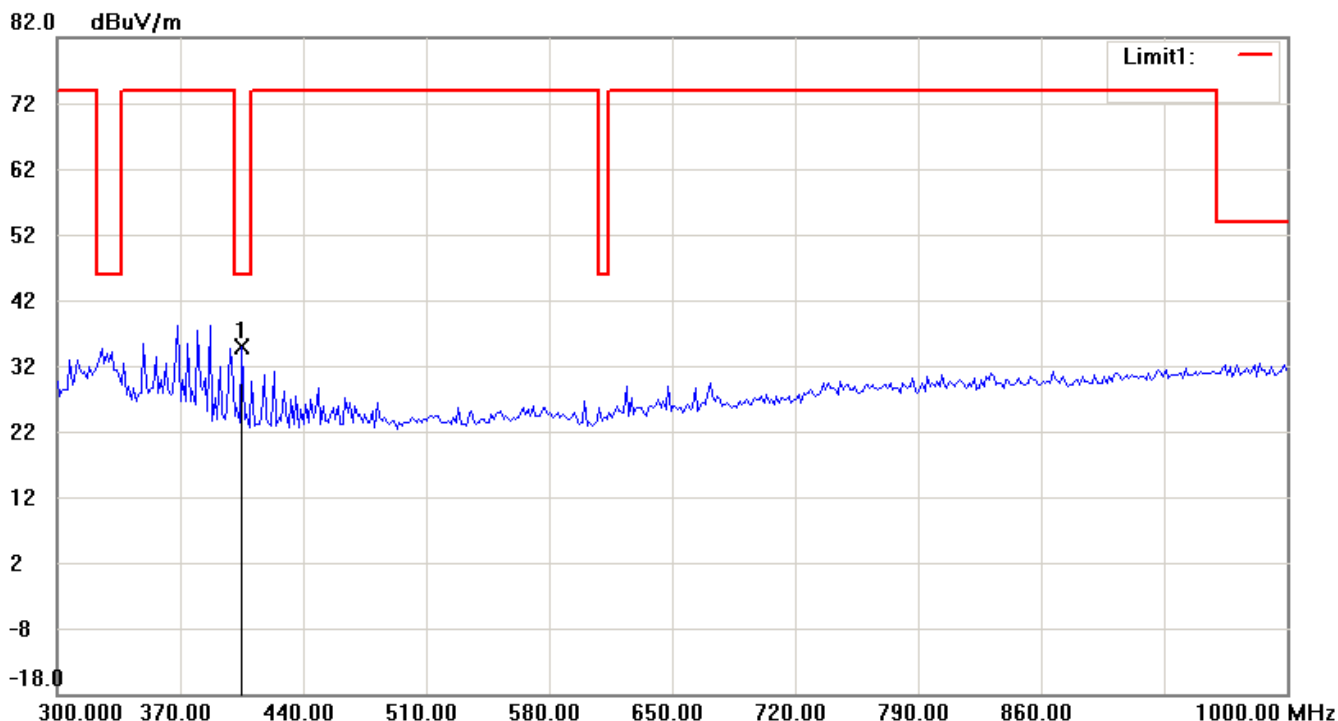
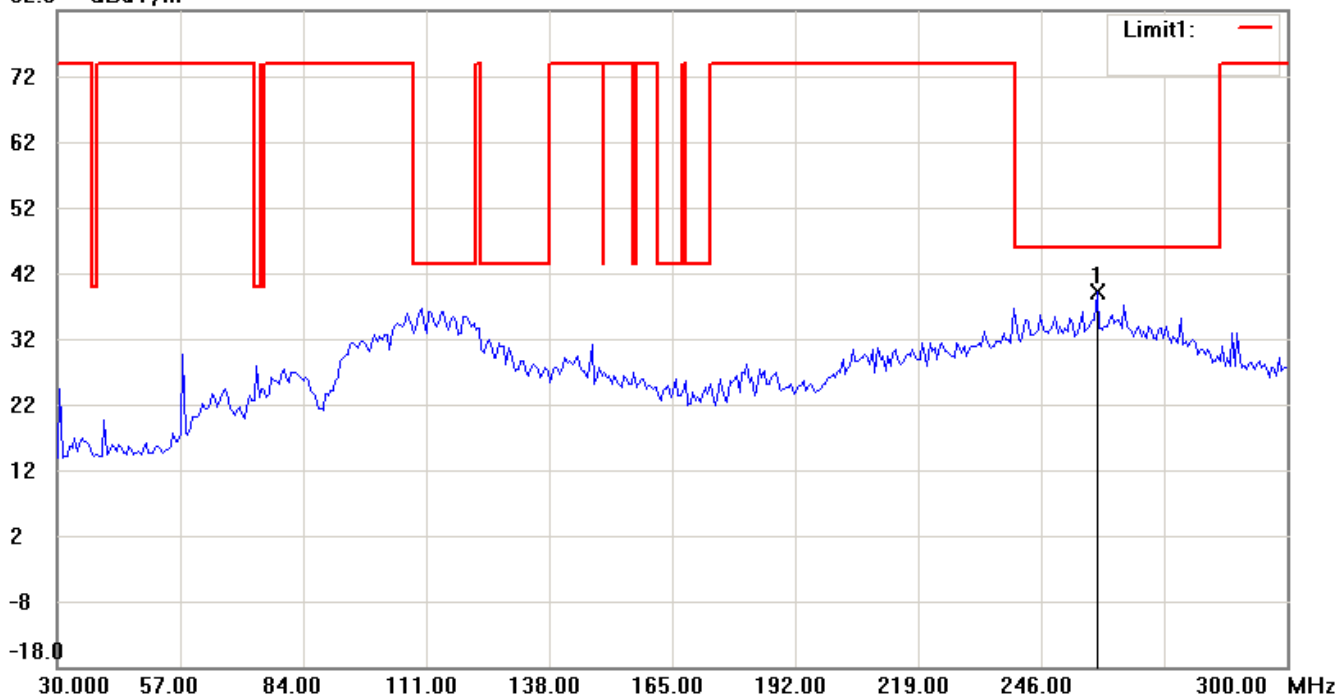
FCC ID: TN5SB30CME

Spurious Emissions radiated

Tx_2403 MHz

Antenna Polarization H

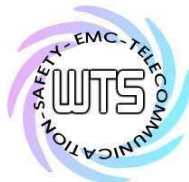
82.0 dBuV/m



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

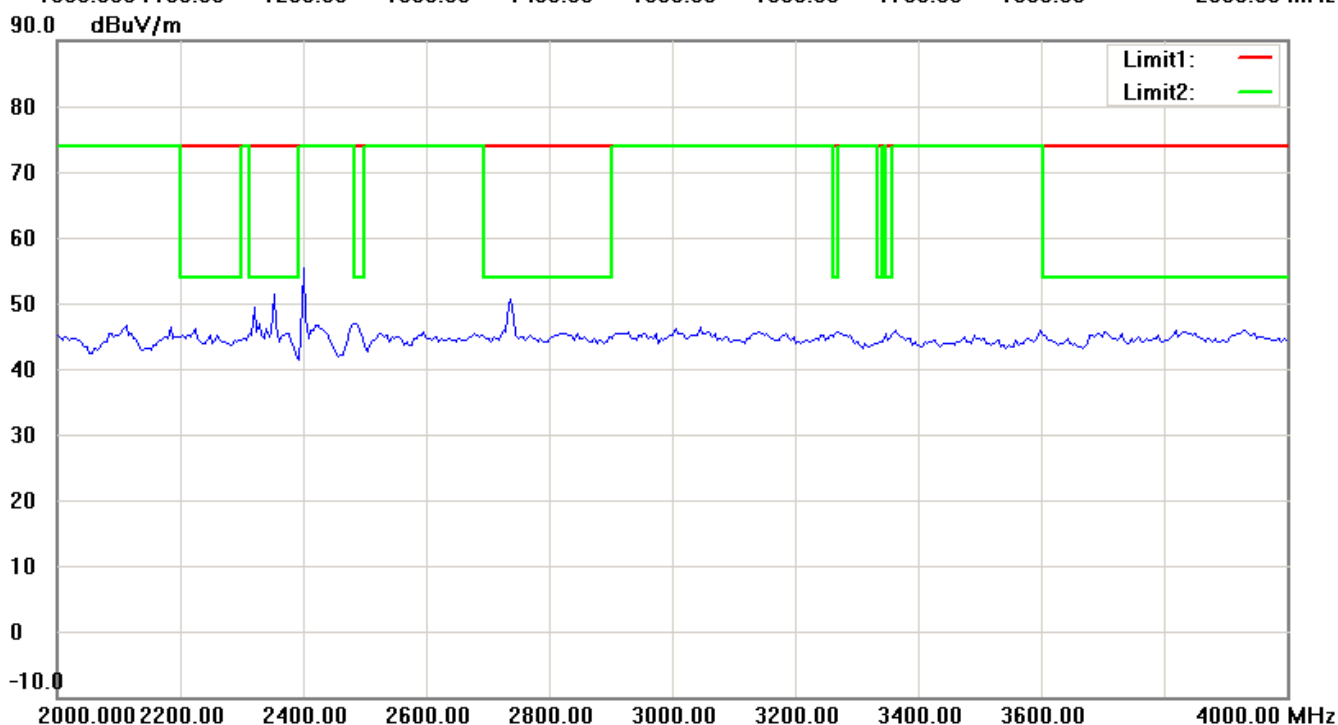
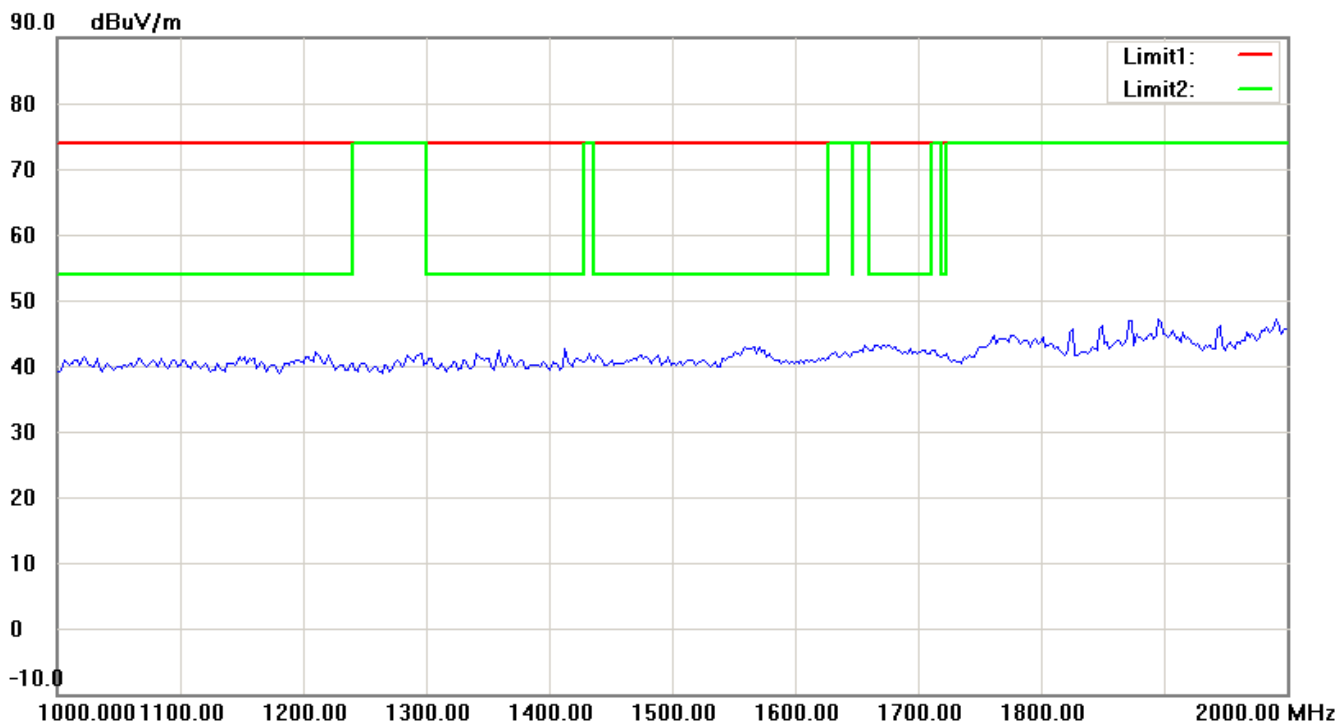
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
3. For corrected test results are listed in the relevant table of radiated test data of this test report.



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

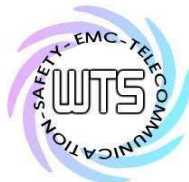
FCC ID: TN5SB30CME



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

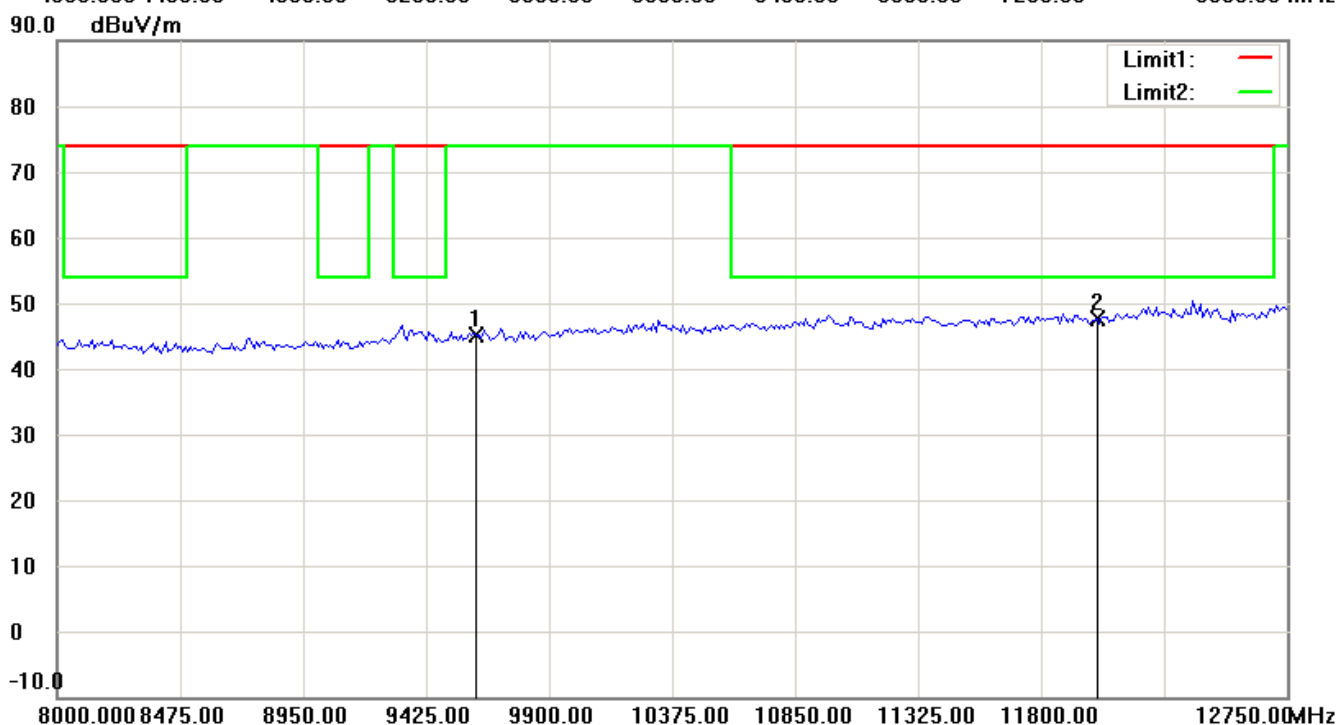
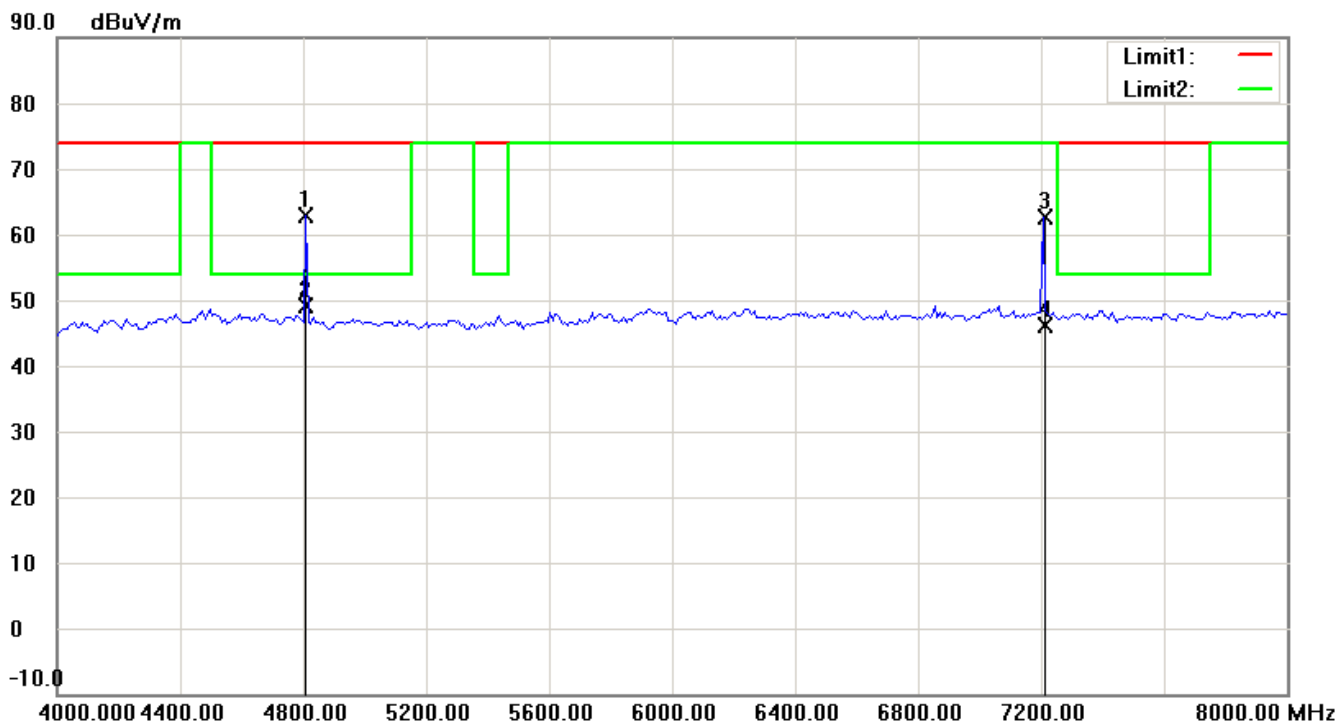
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
3. For corrected test results are listed in the relevant table of radiated test data of this test report.



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

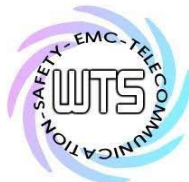
FCC ID: TN5SB30CME



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

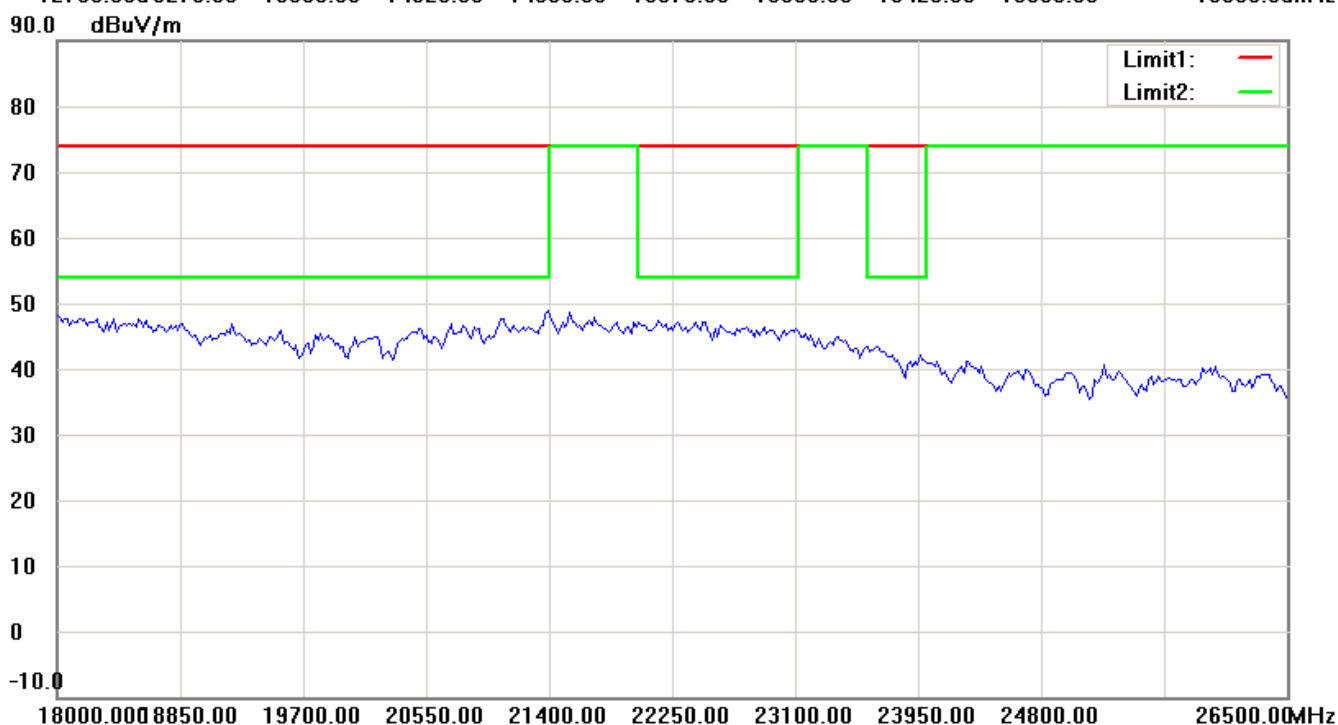
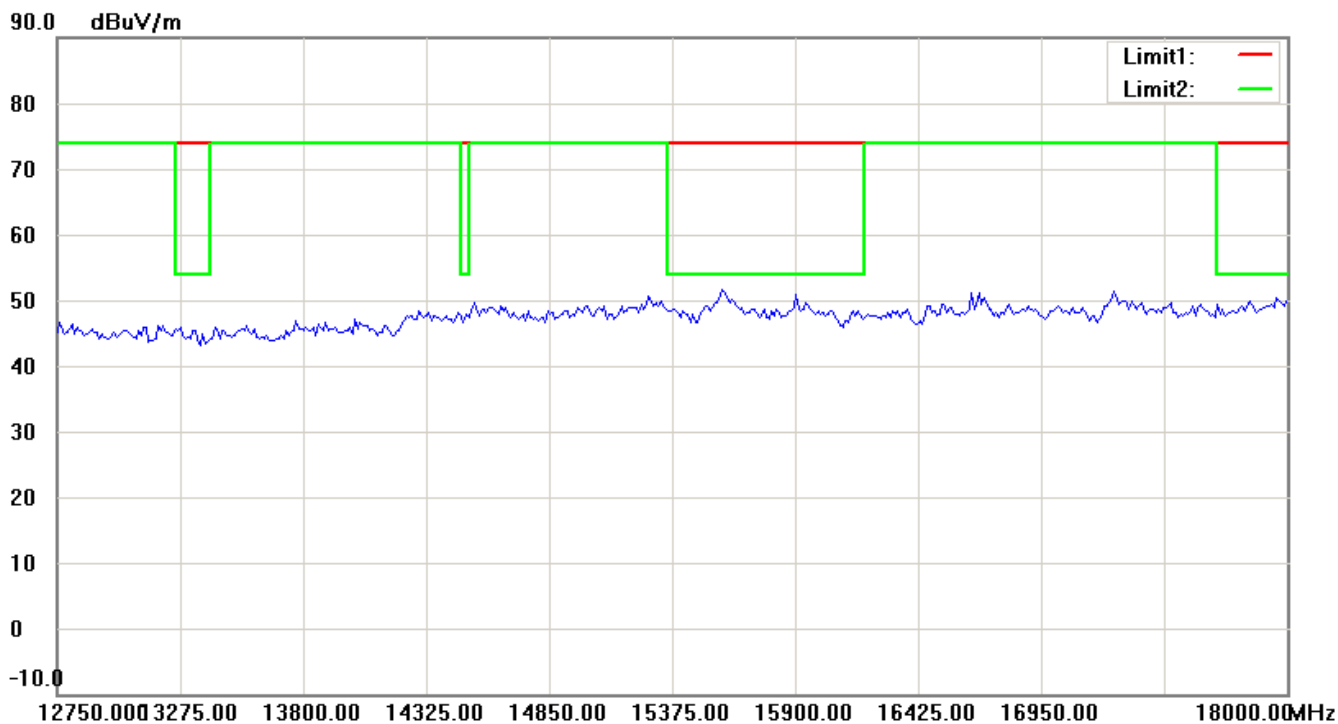
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
3. For corrected test results are listed in the relevant table of radiated test data of this test report.



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

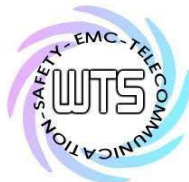
FCC ID: TN5SB30CME



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
3. For corrected test results are listed in the relevant table of radiated test data of this test report.



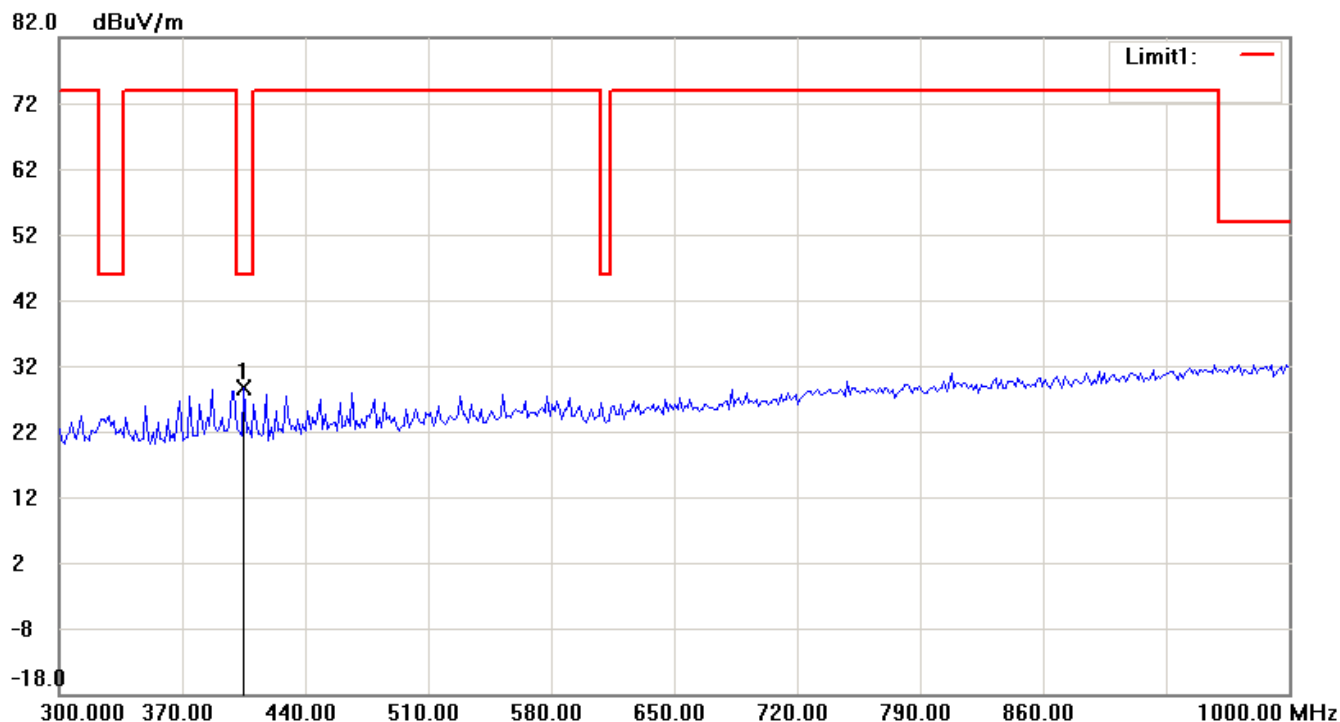
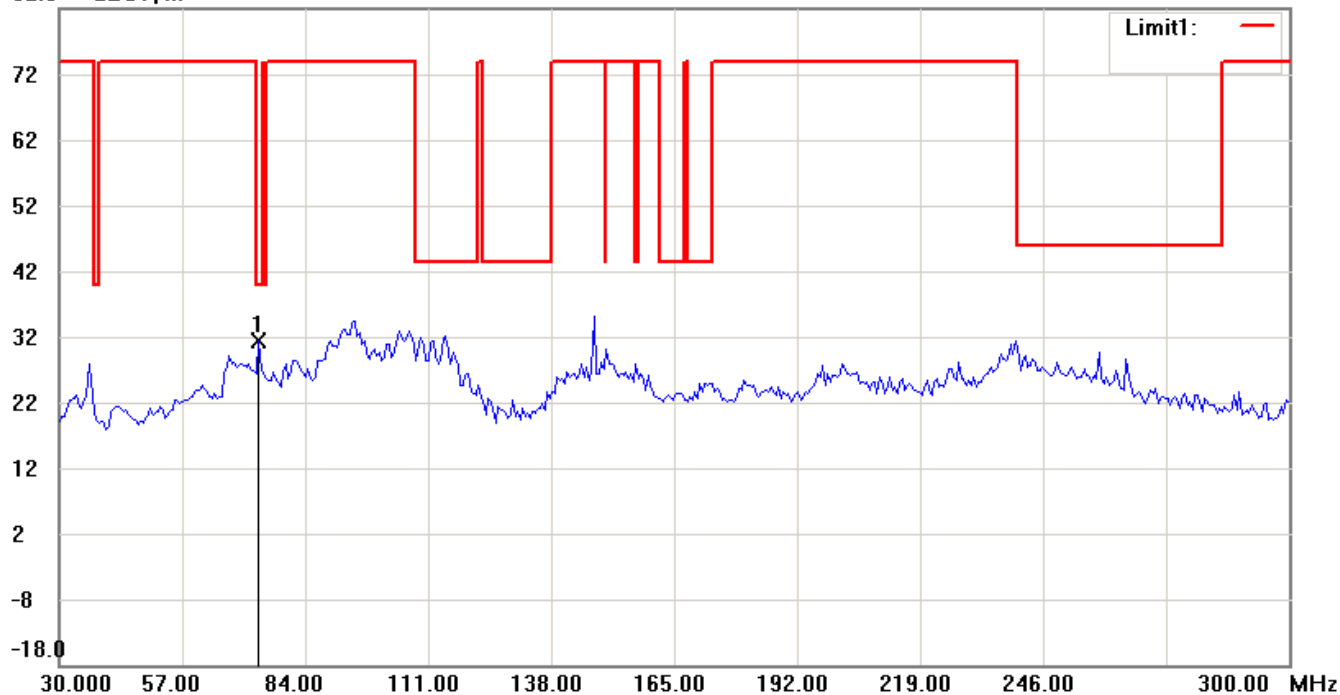
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Antenna Polarization V

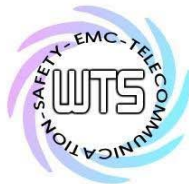
82.0 dBuV/m



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

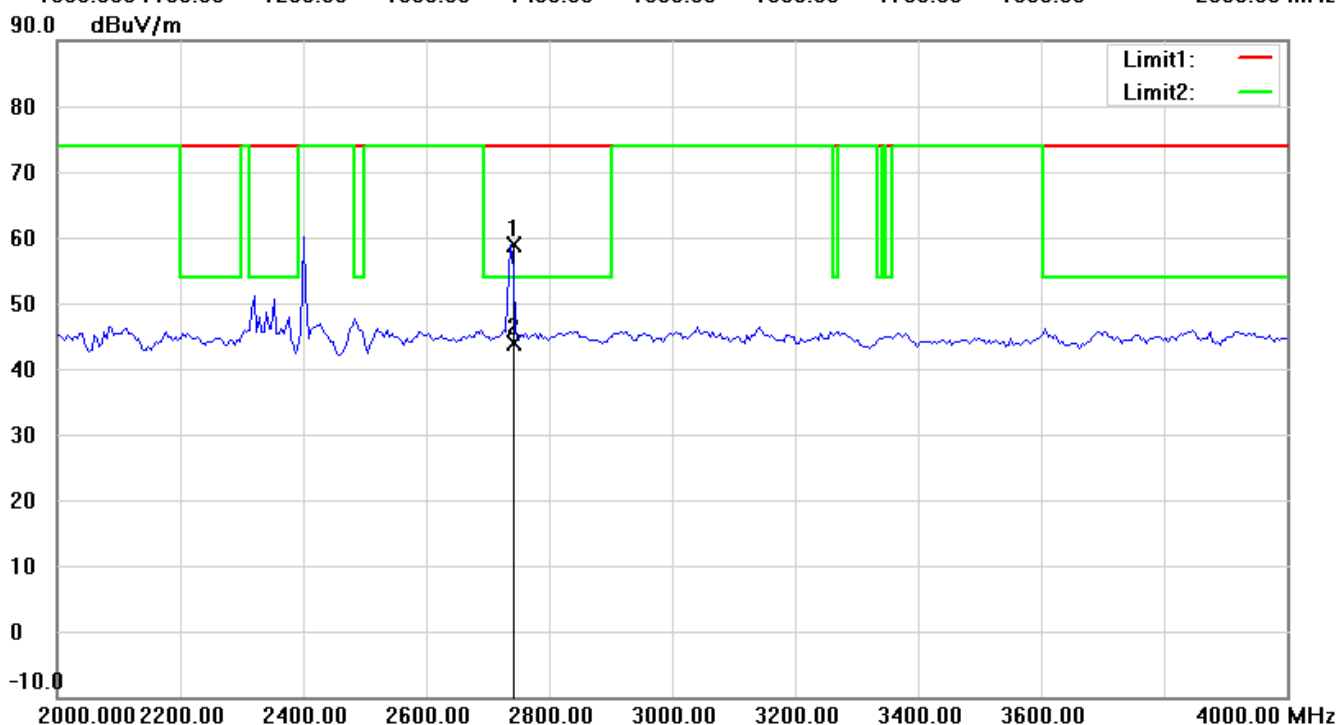
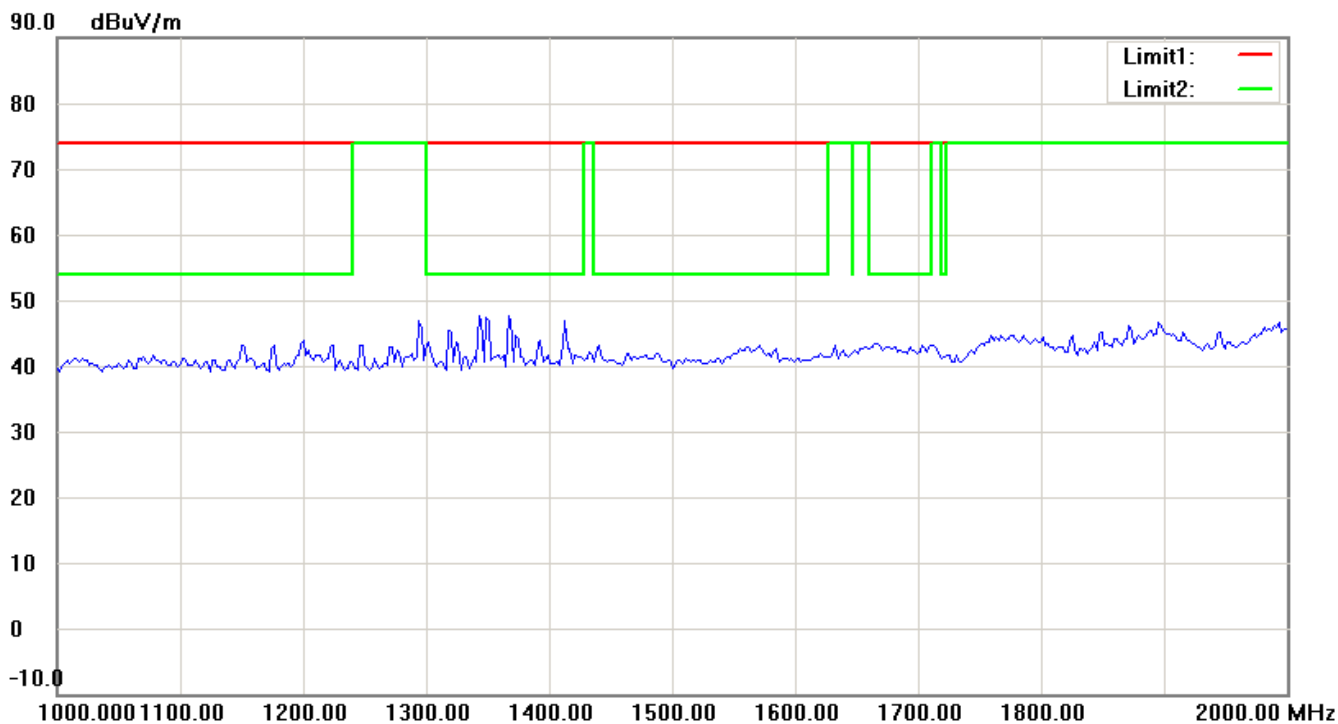
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Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

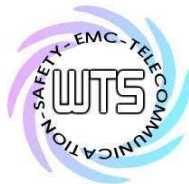
FCC ID: TN5SB30CME



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

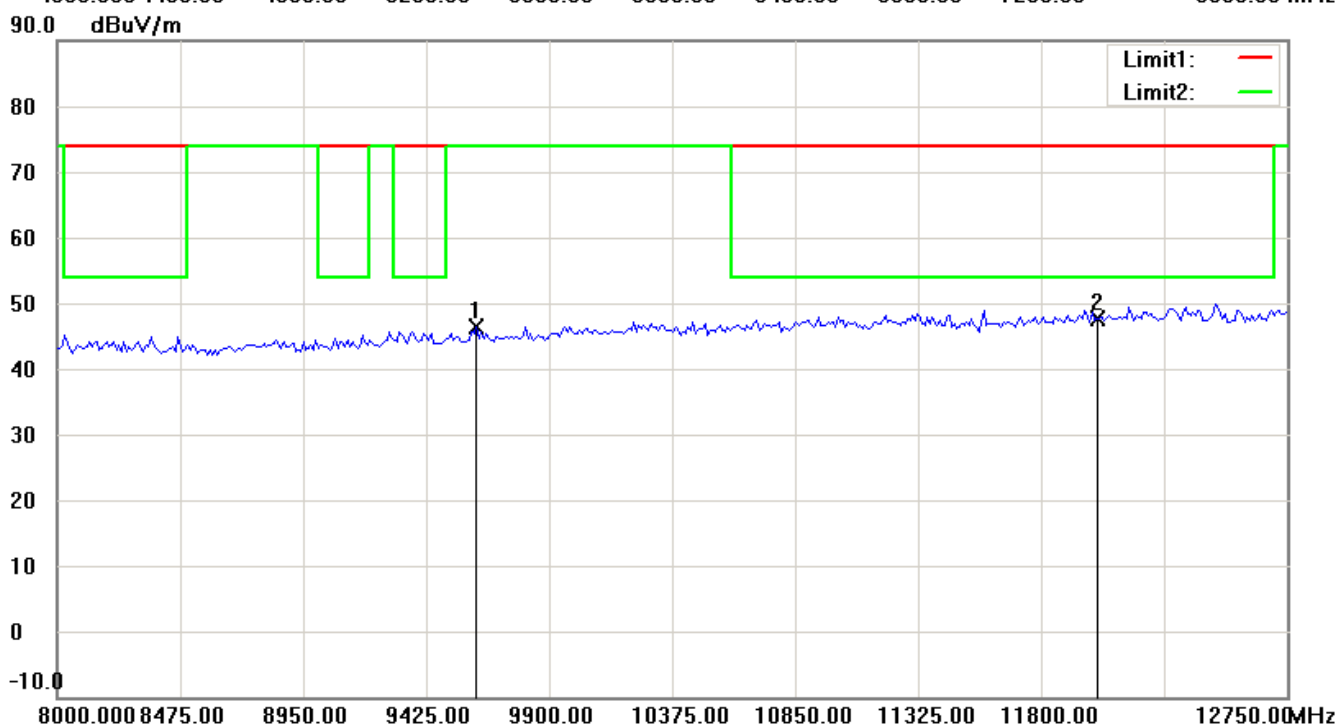
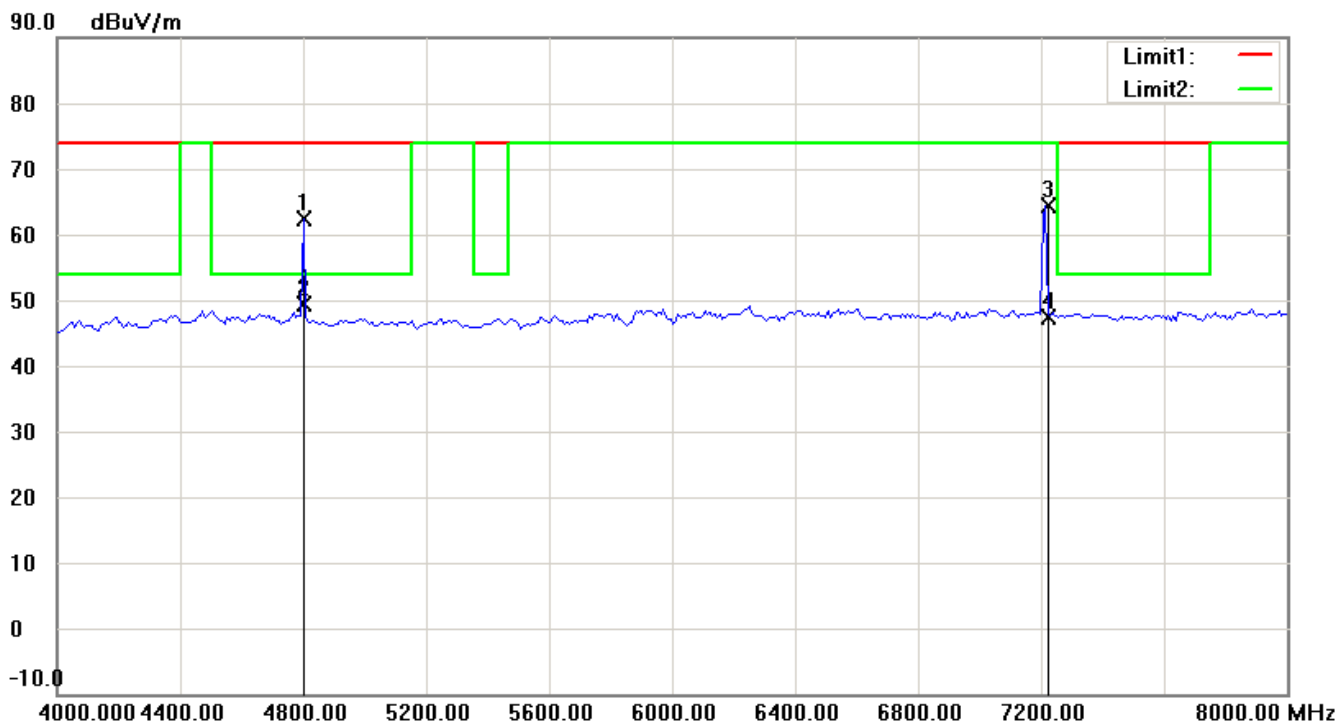
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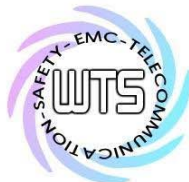
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

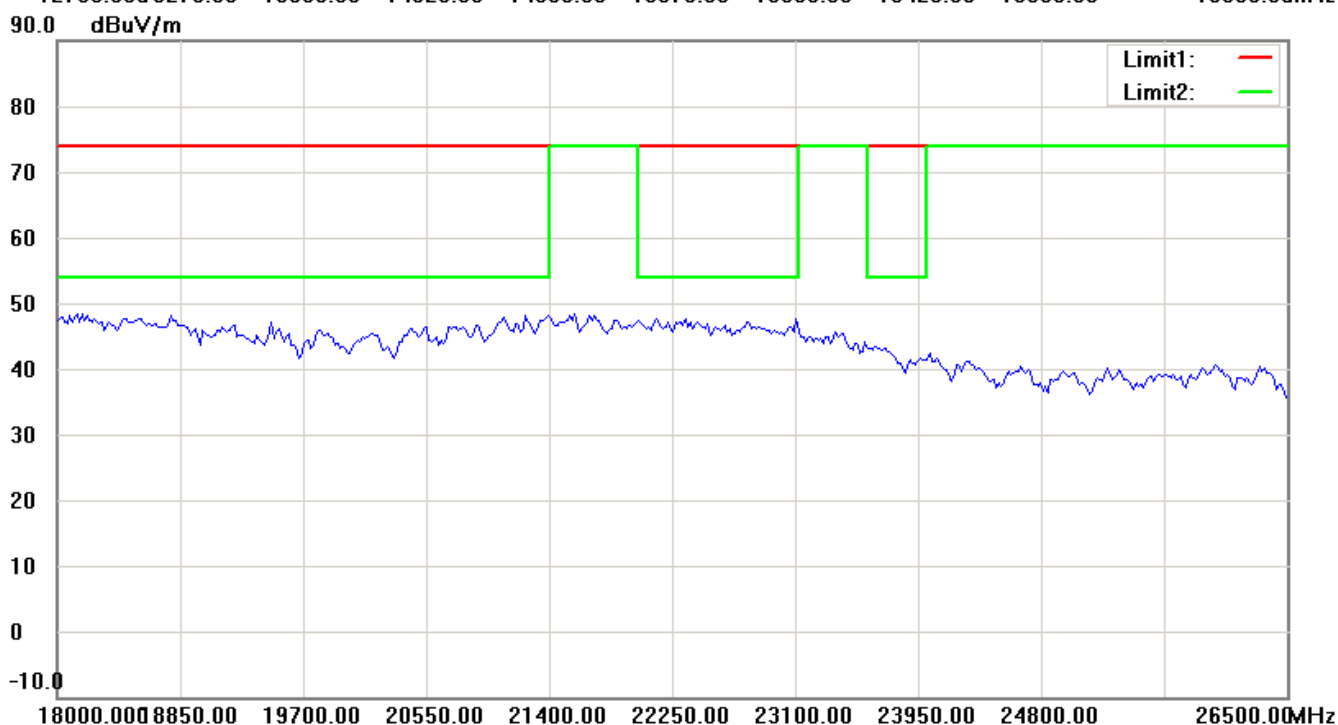
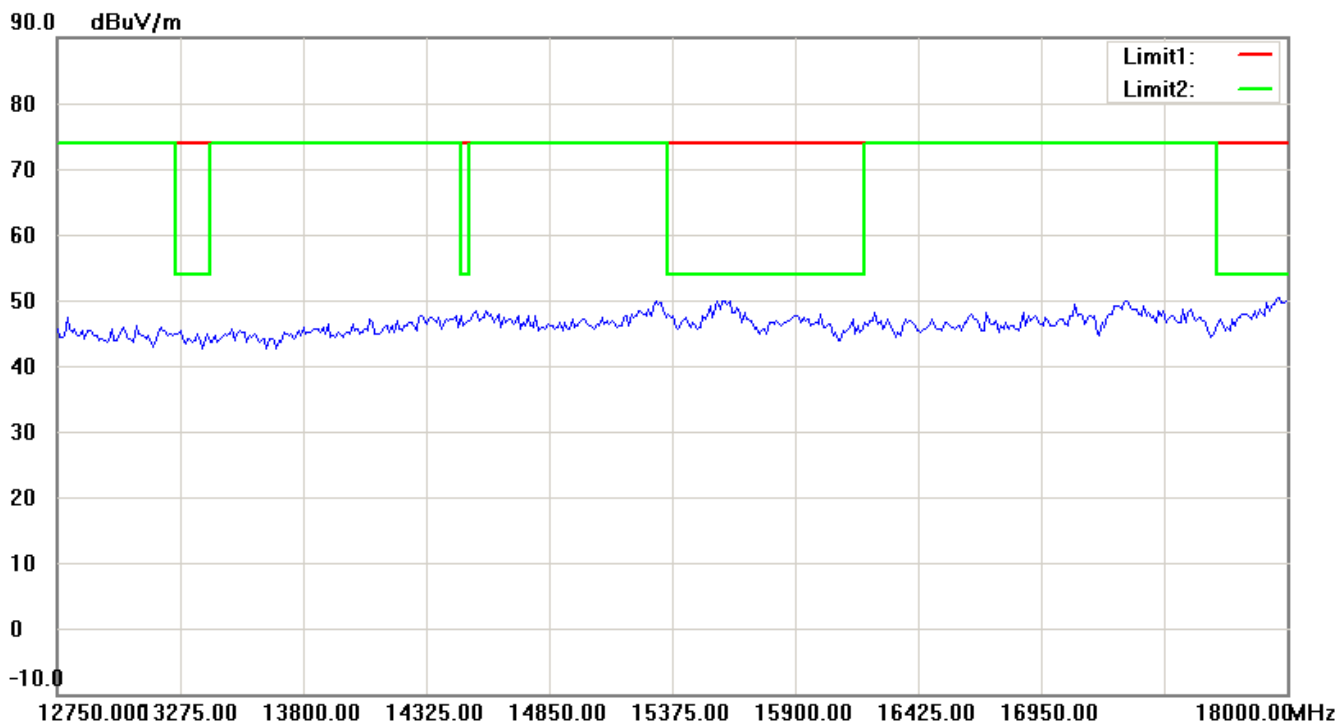
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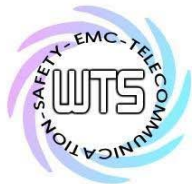
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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Worldwide Testing Services(Taiwan) Co., Ltd.

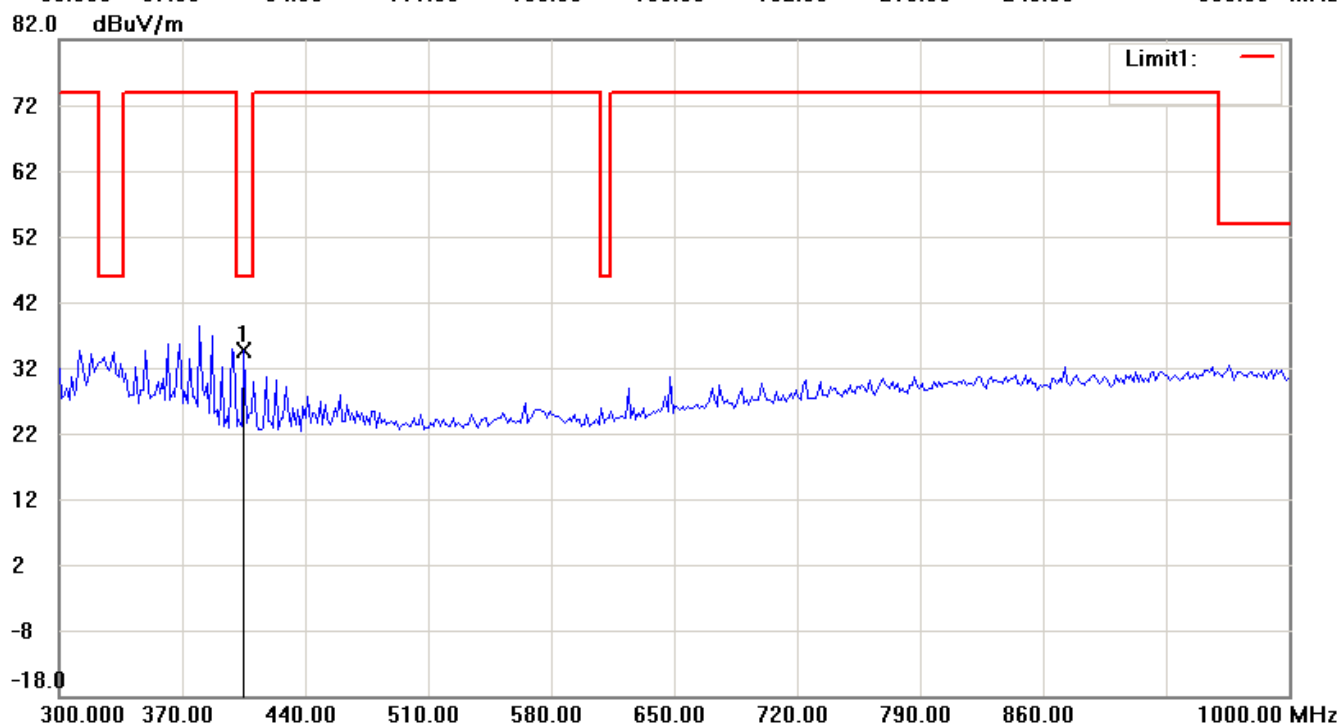
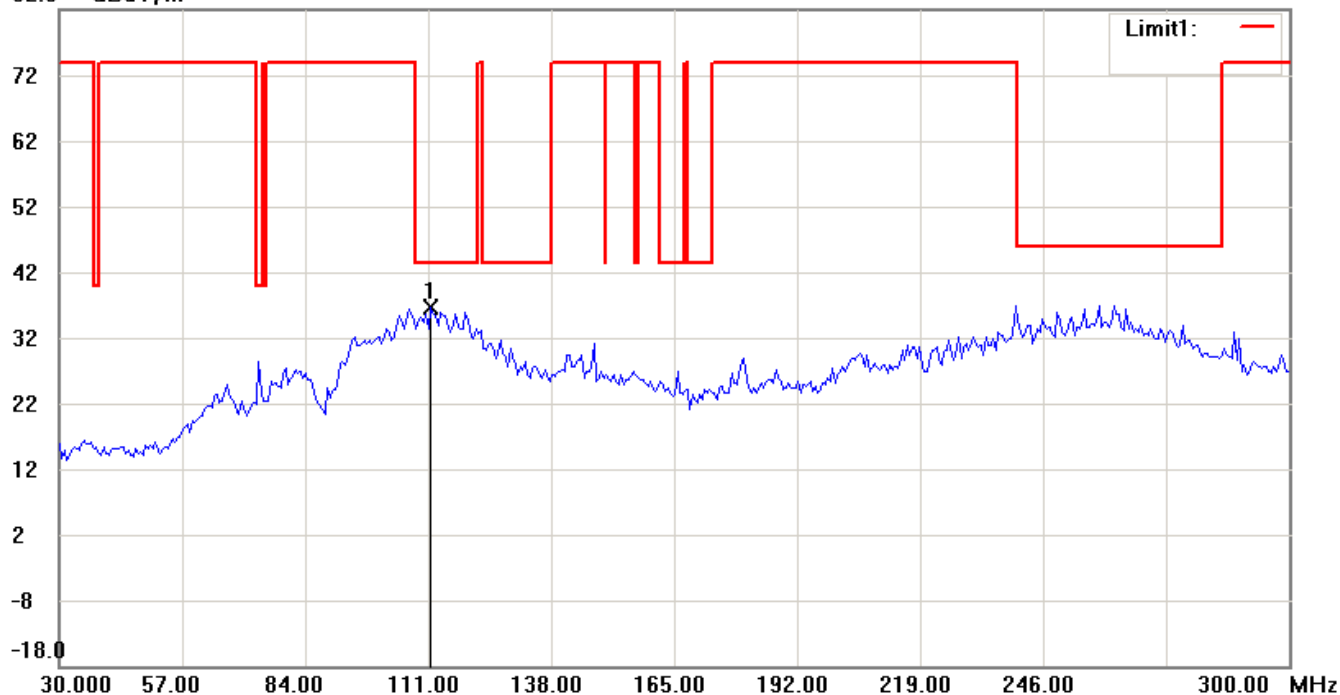
Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Tx_2439 MHz

Antenna Polarization H

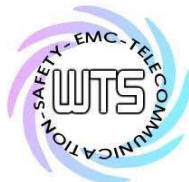
82.0 dBuV/m



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

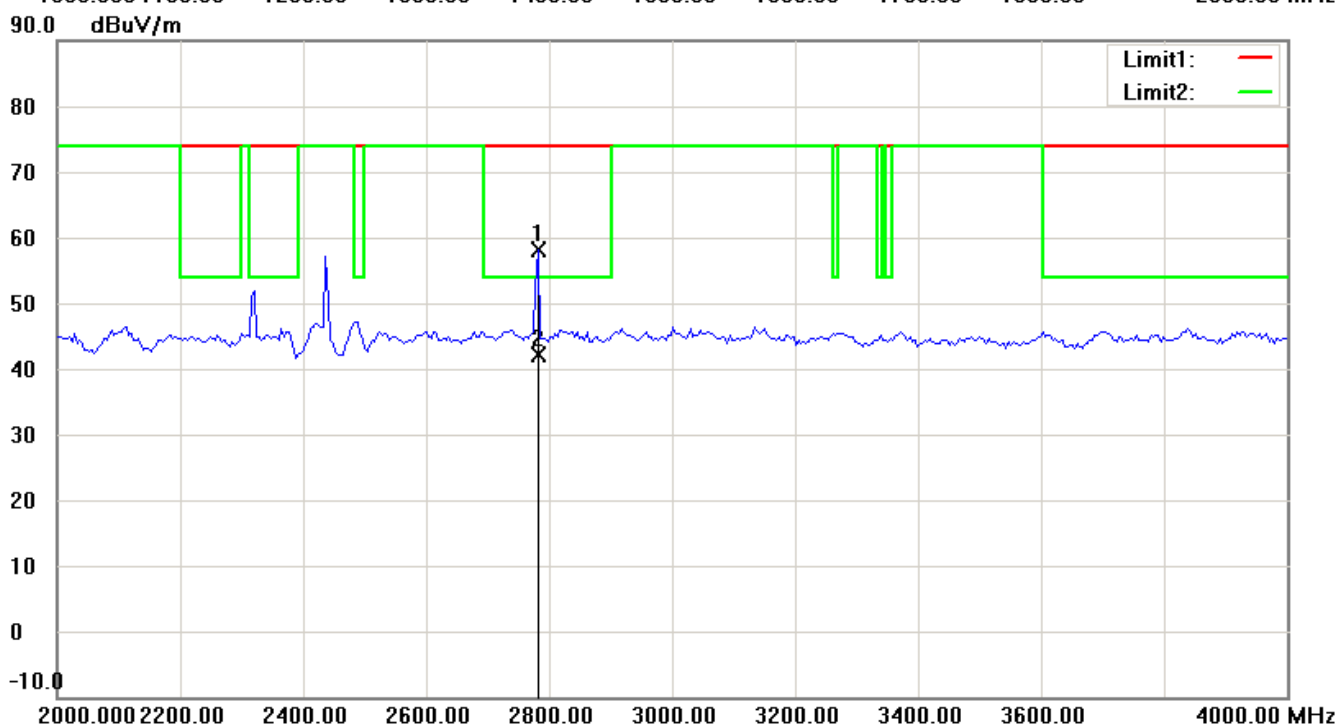
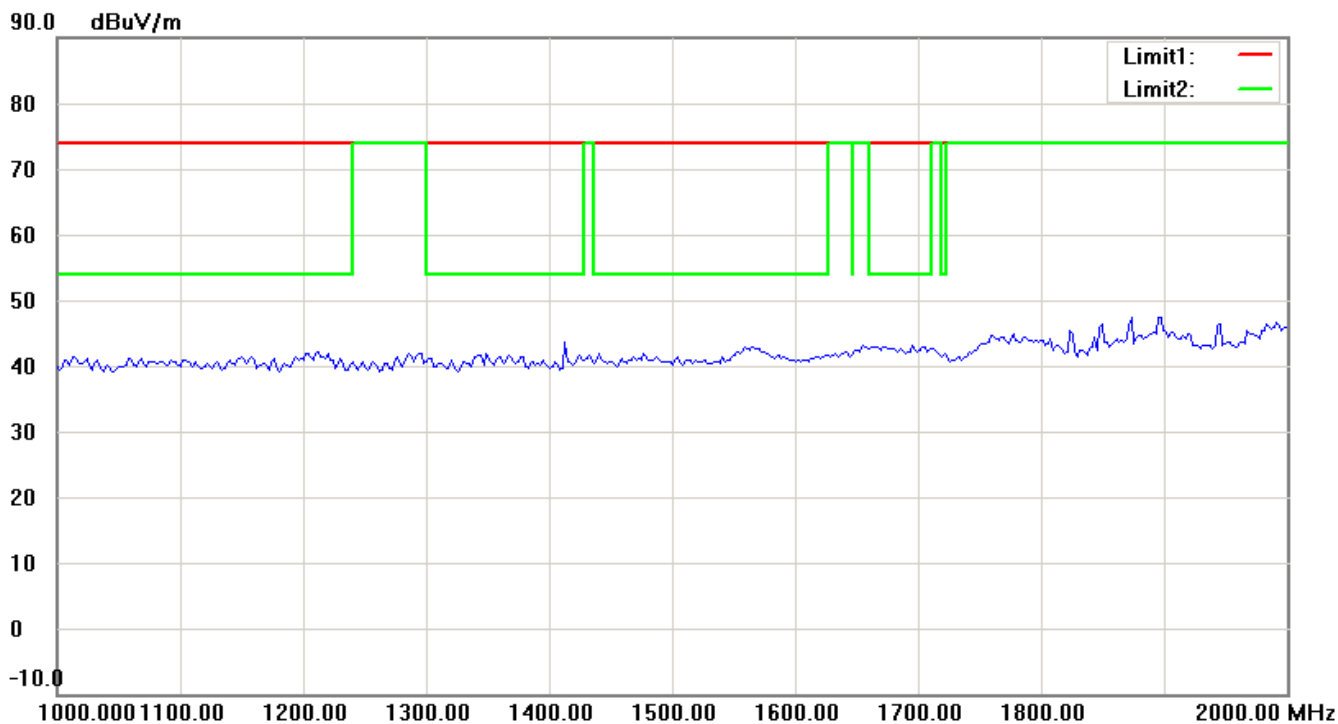
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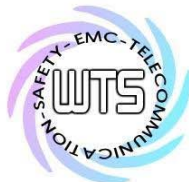
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

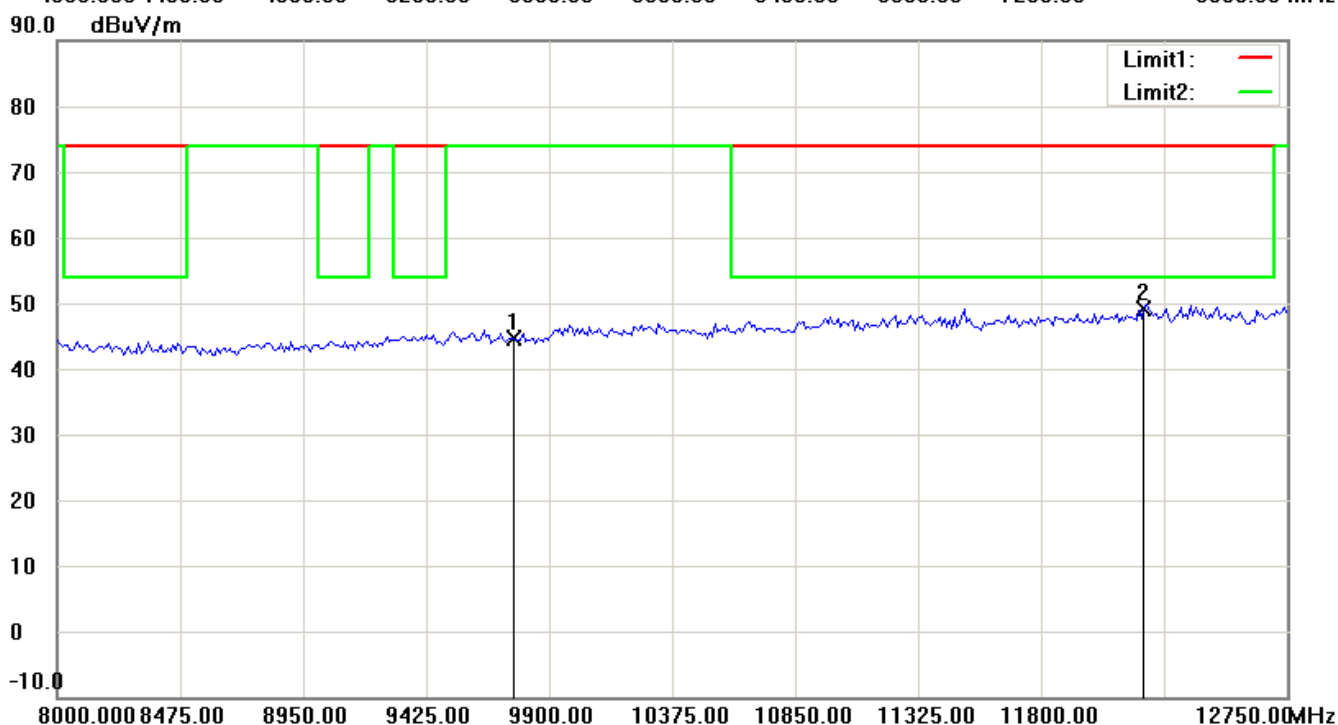
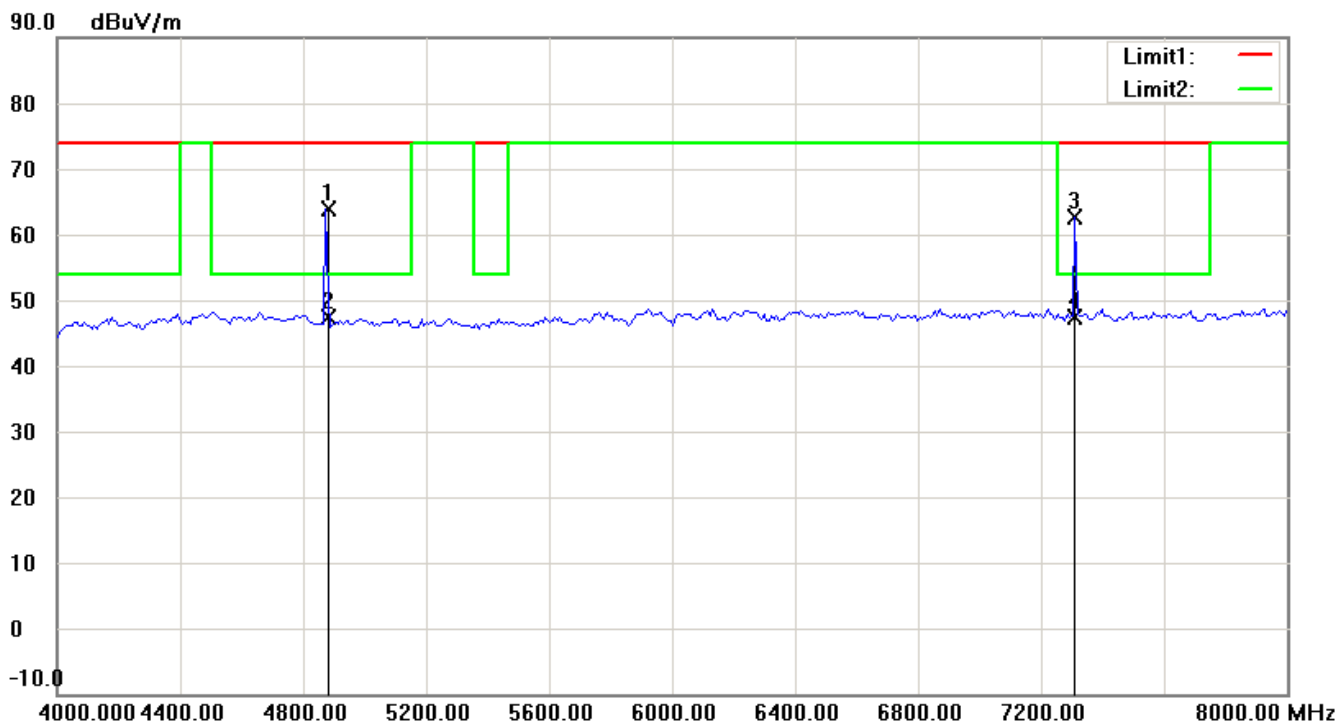
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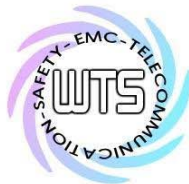
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

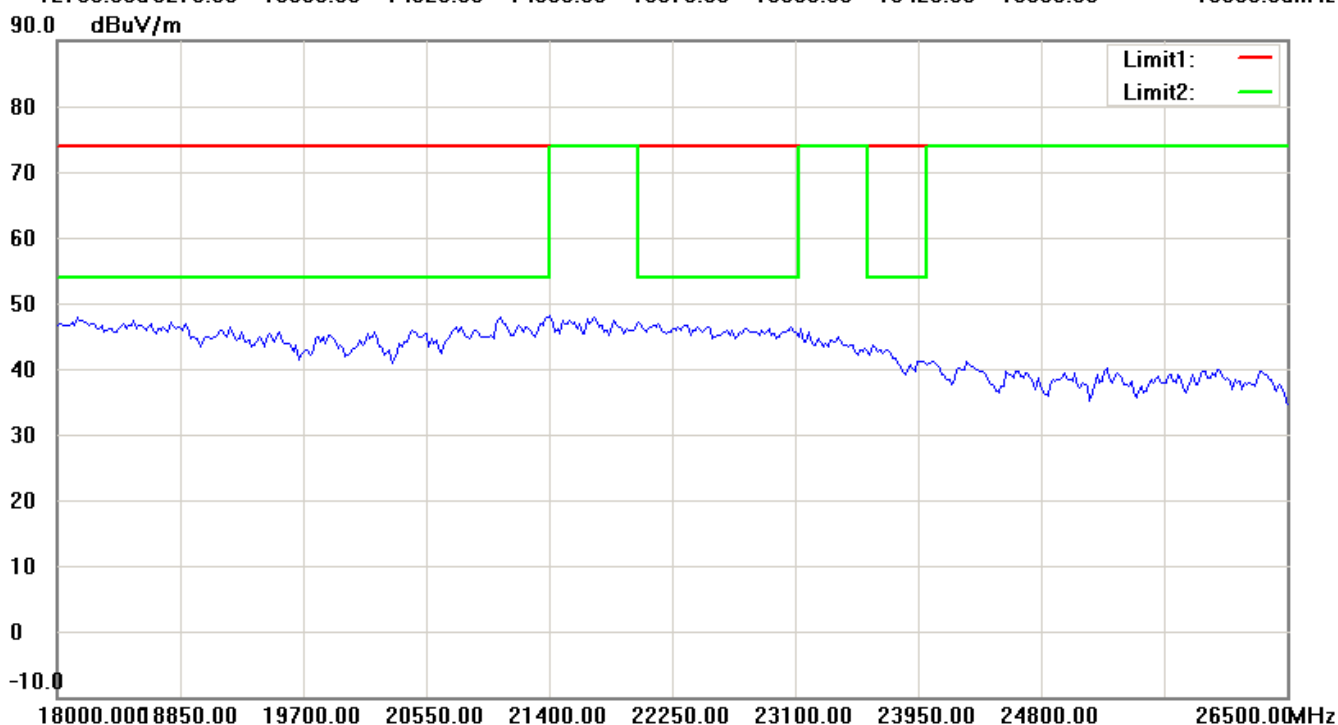
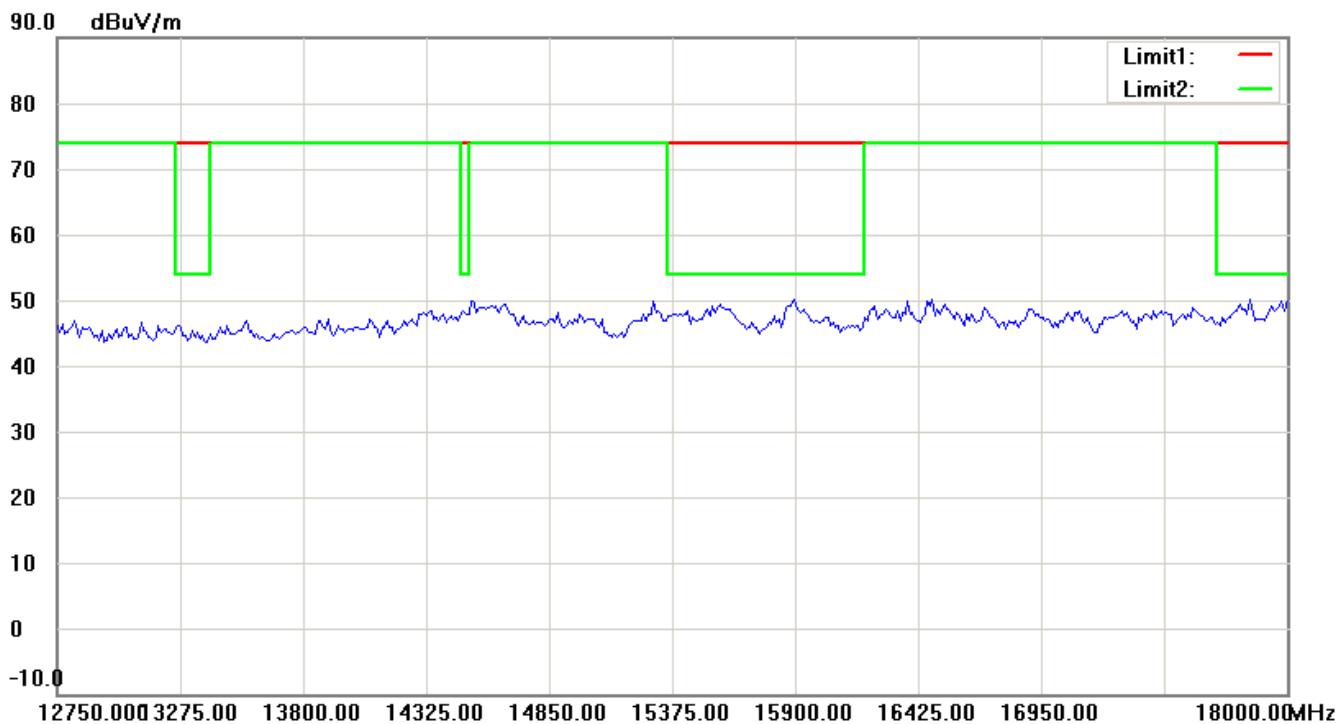
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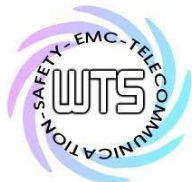
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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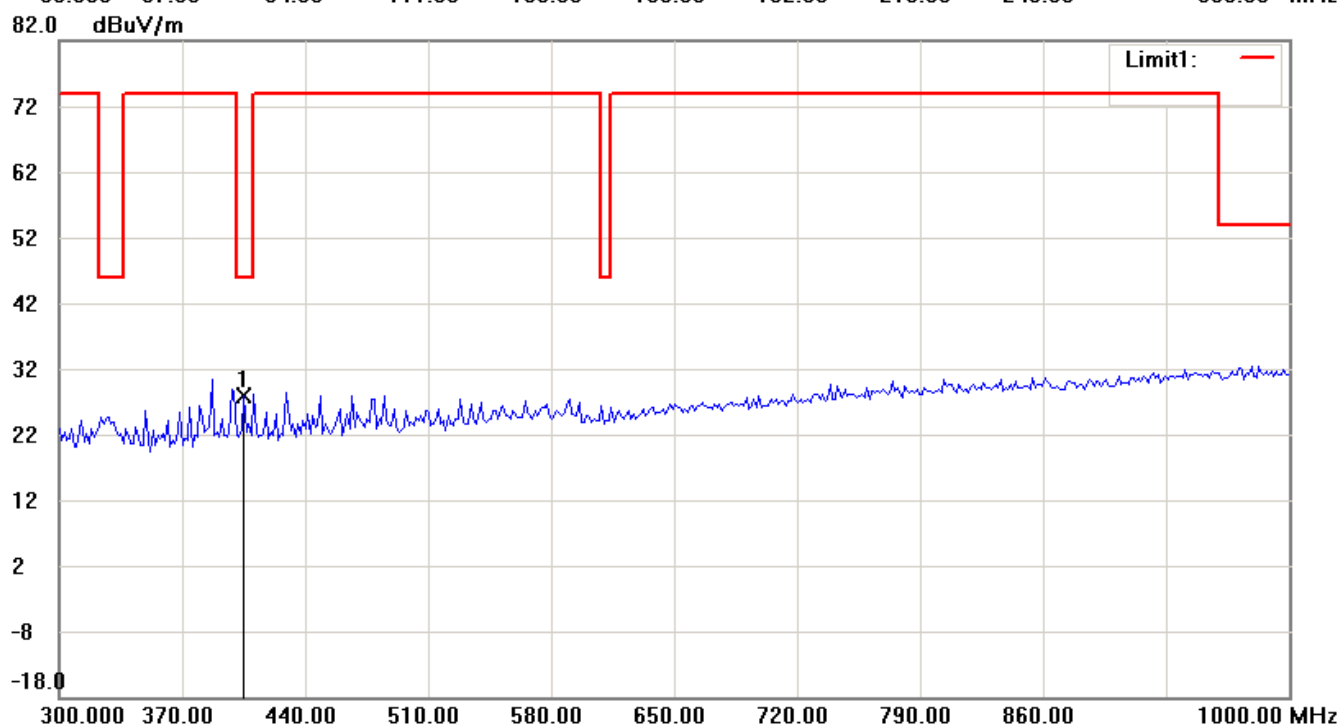
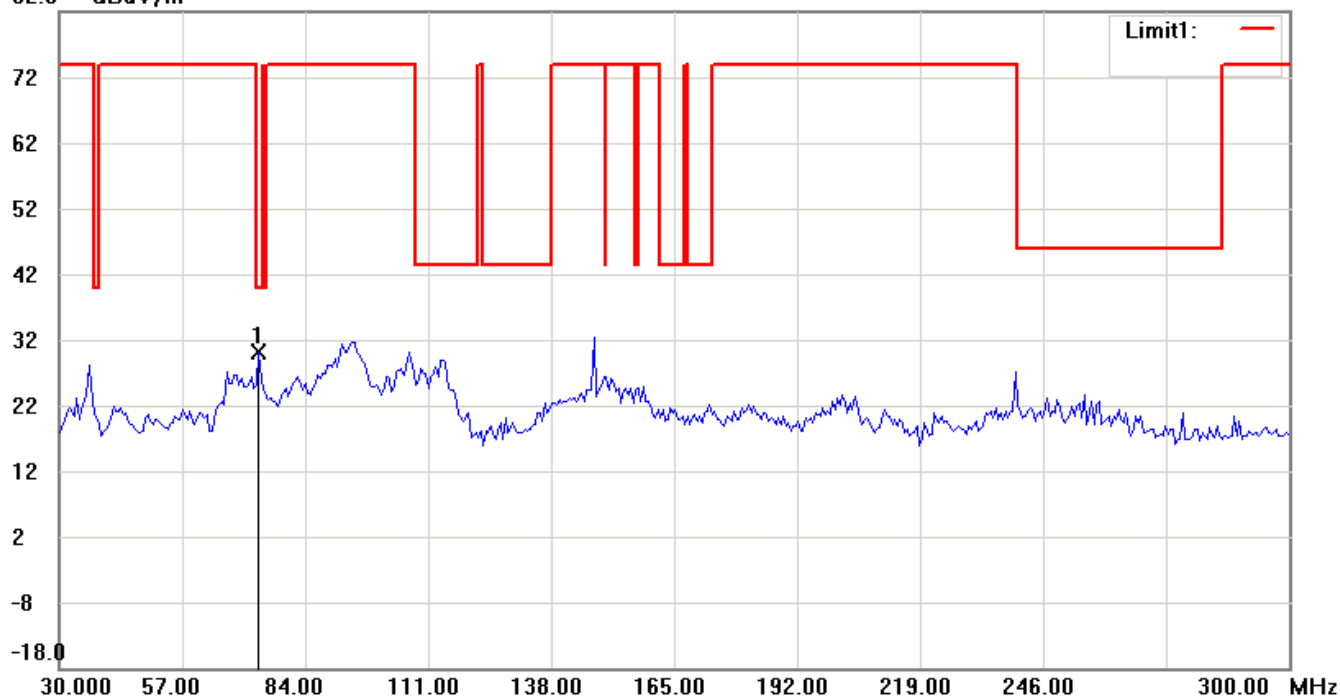


Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Antenna Polarization V

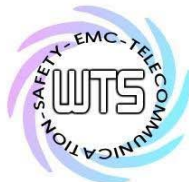
82.0 dBuV/m



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

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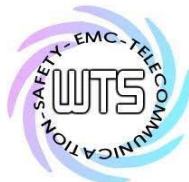
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

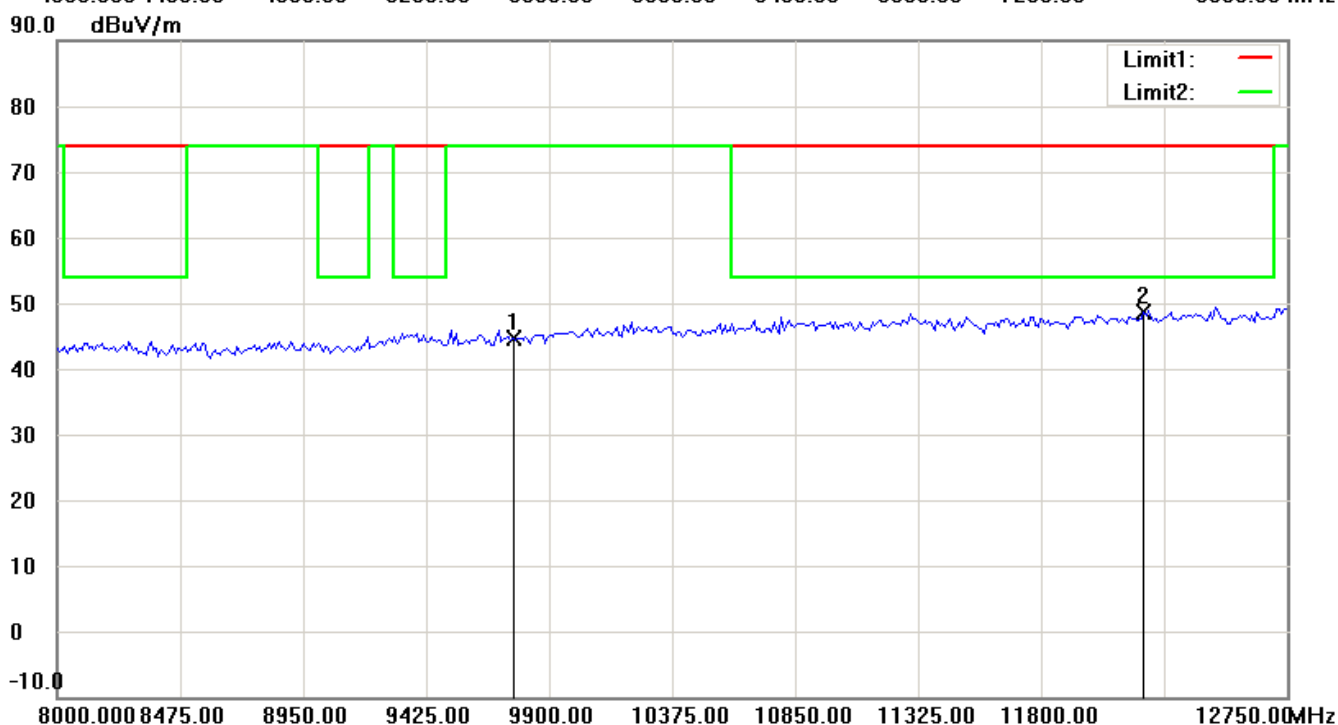
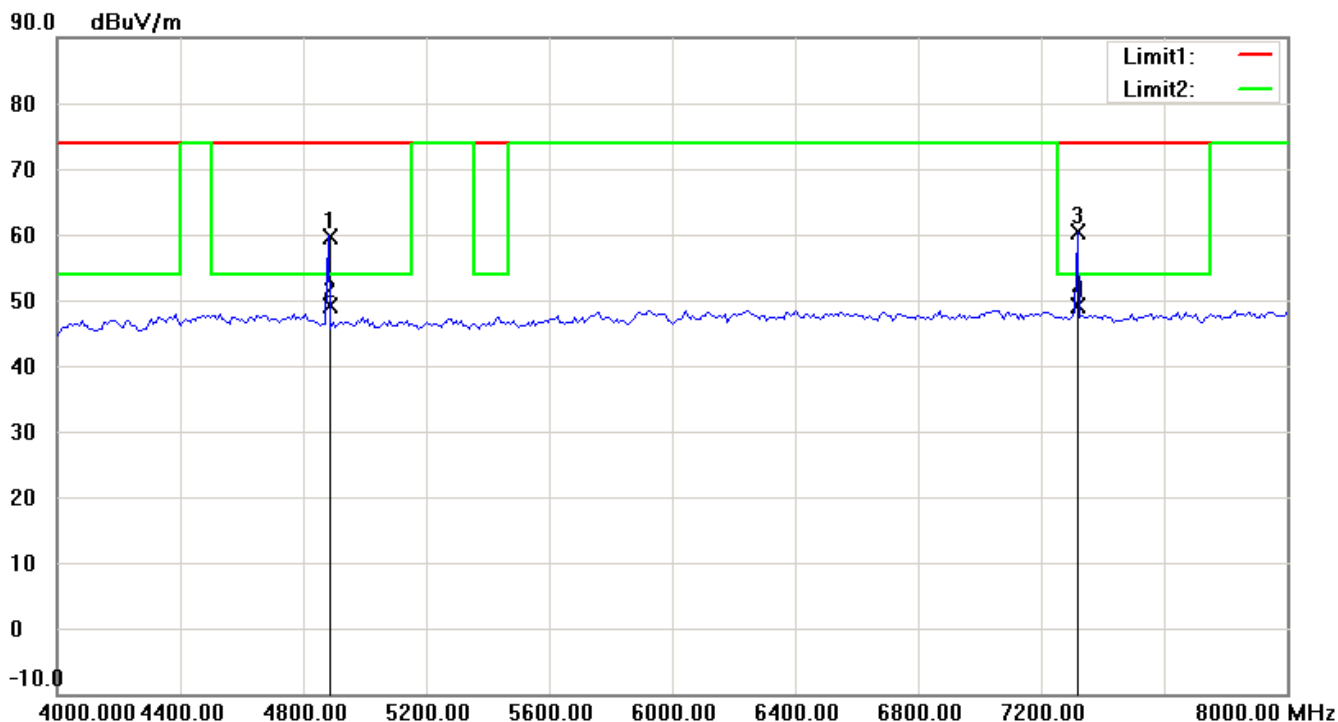
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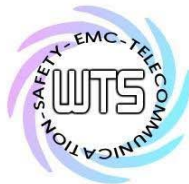
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

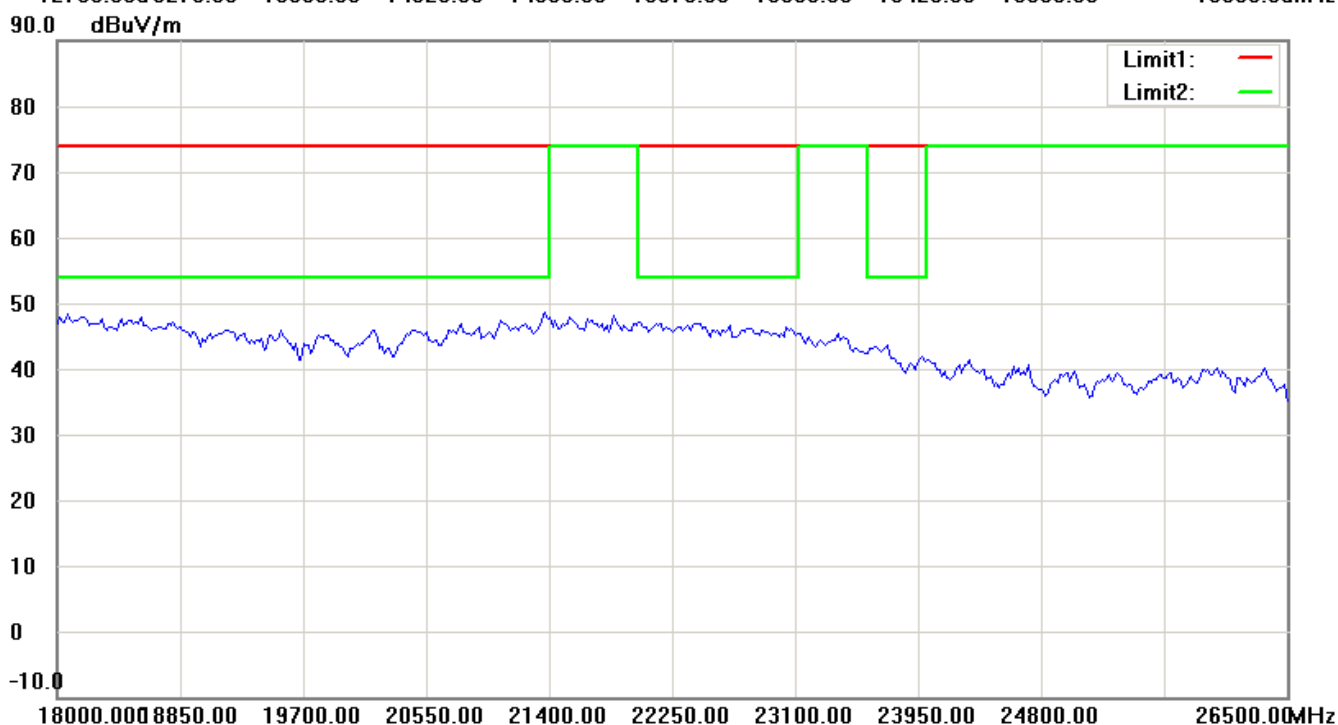
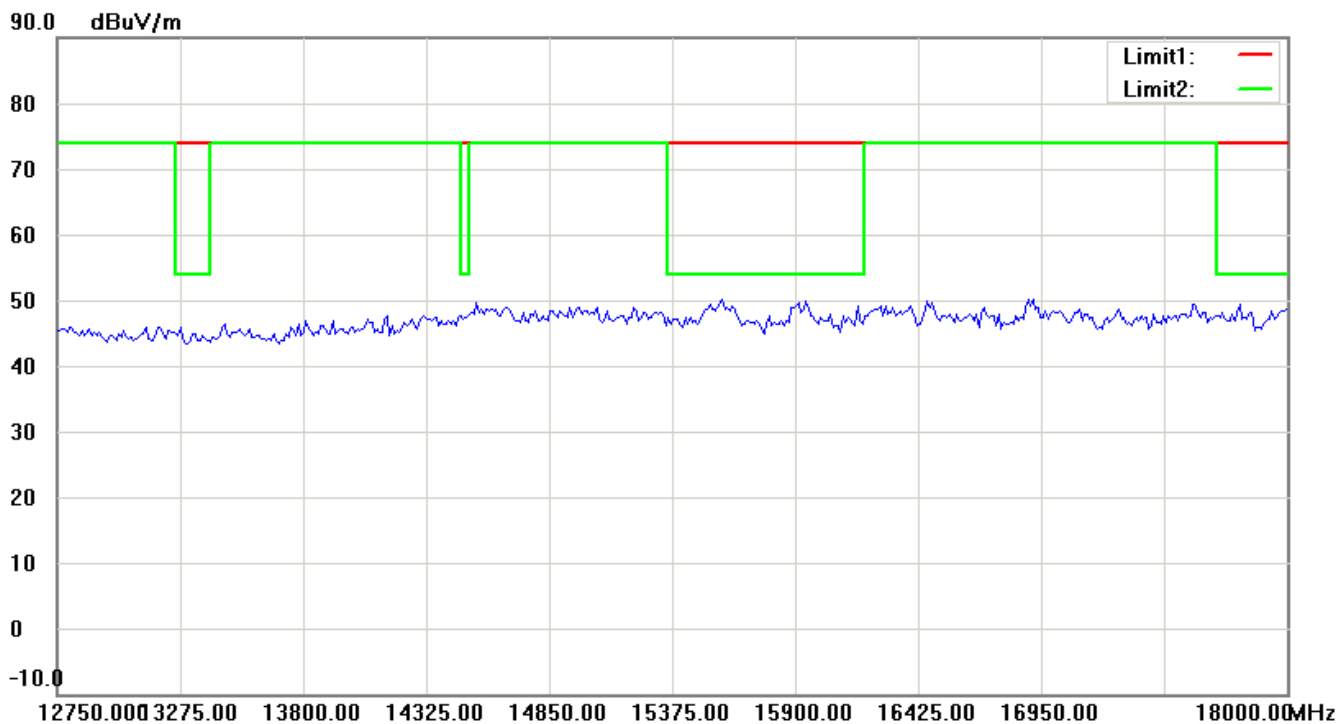
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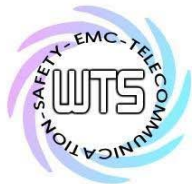
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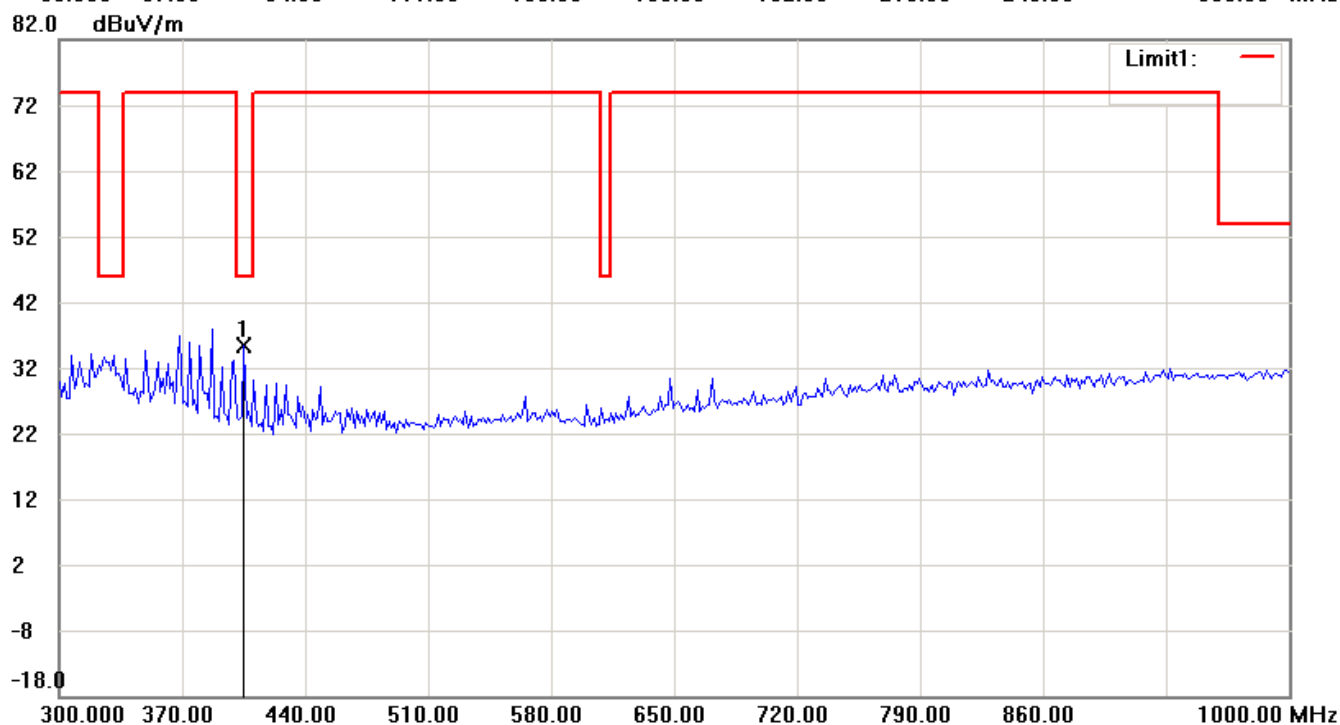
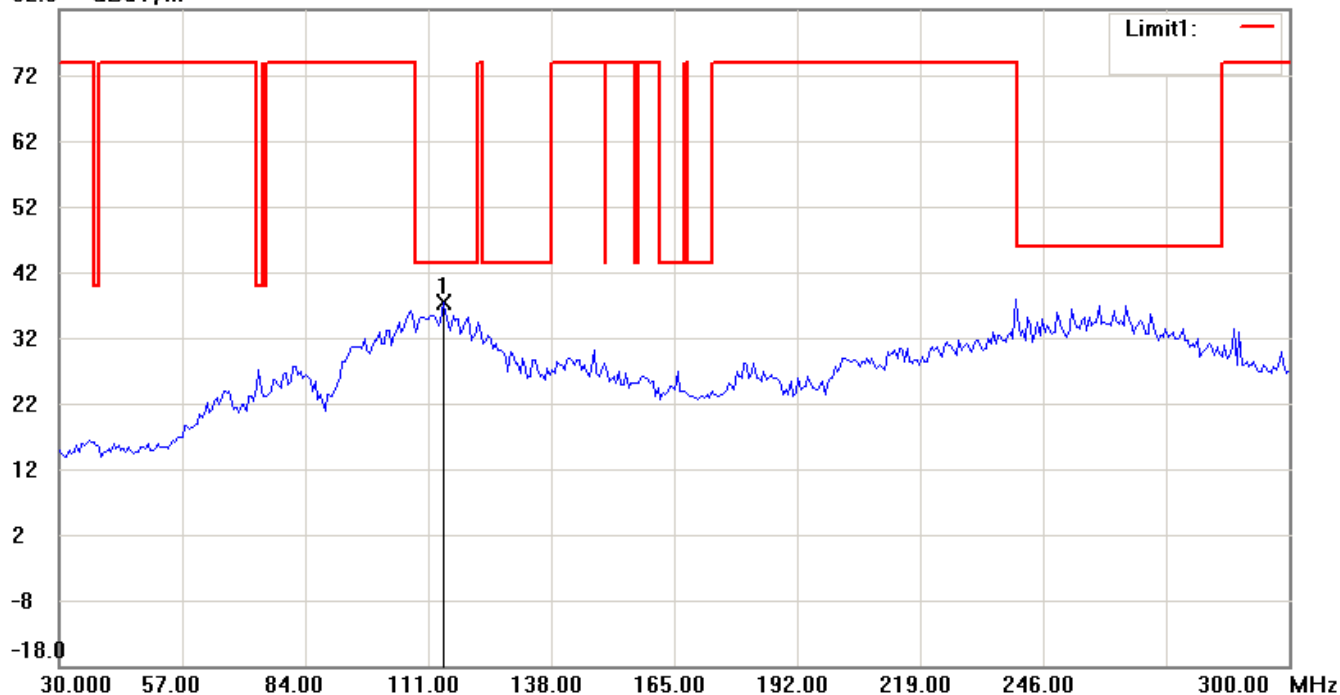
Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Tx_2478 MHz

Antenna Polarization H

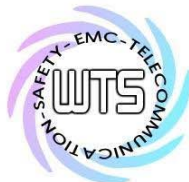
82.0 dBuV/m



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

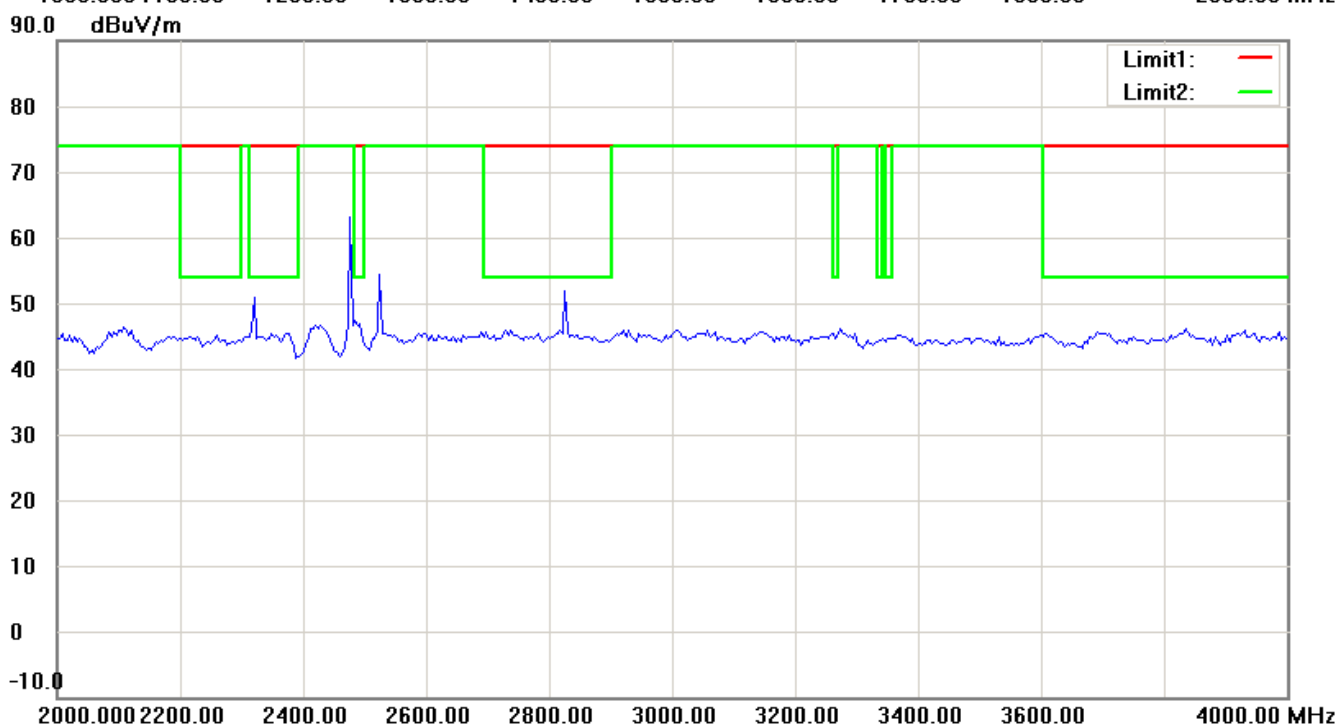
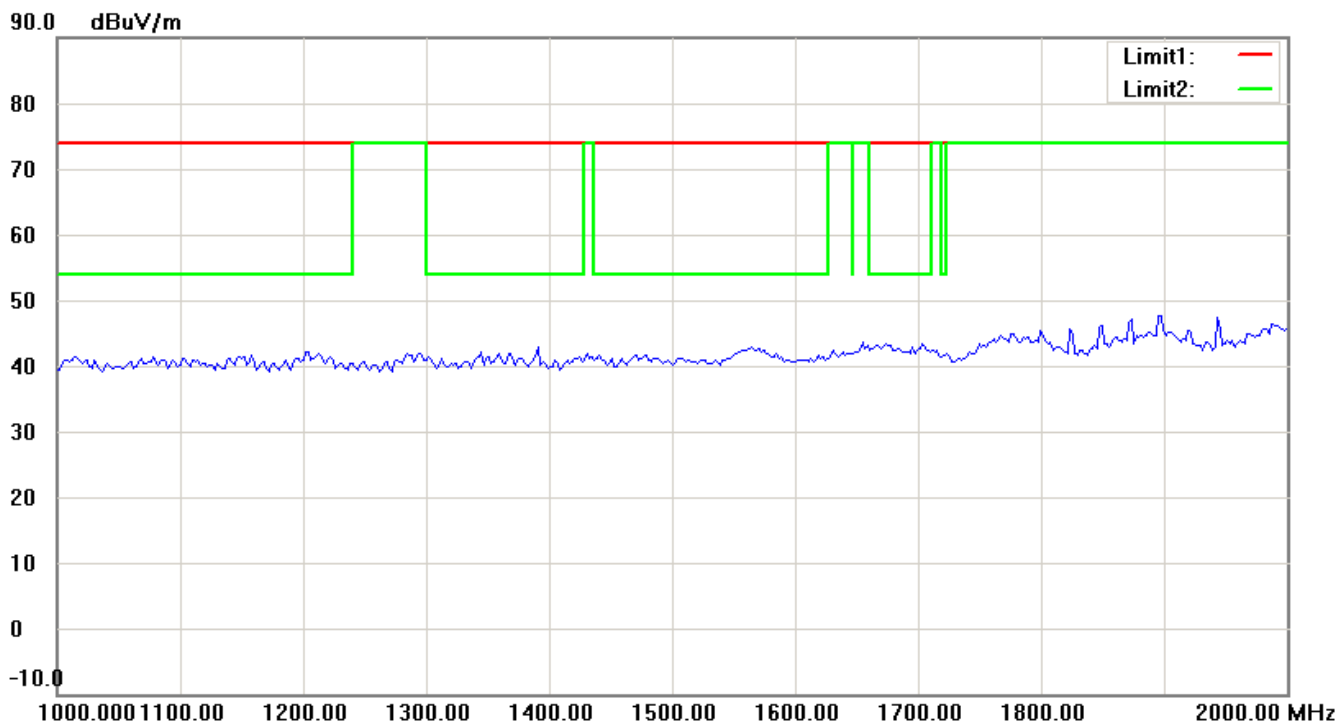
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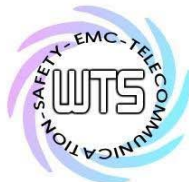
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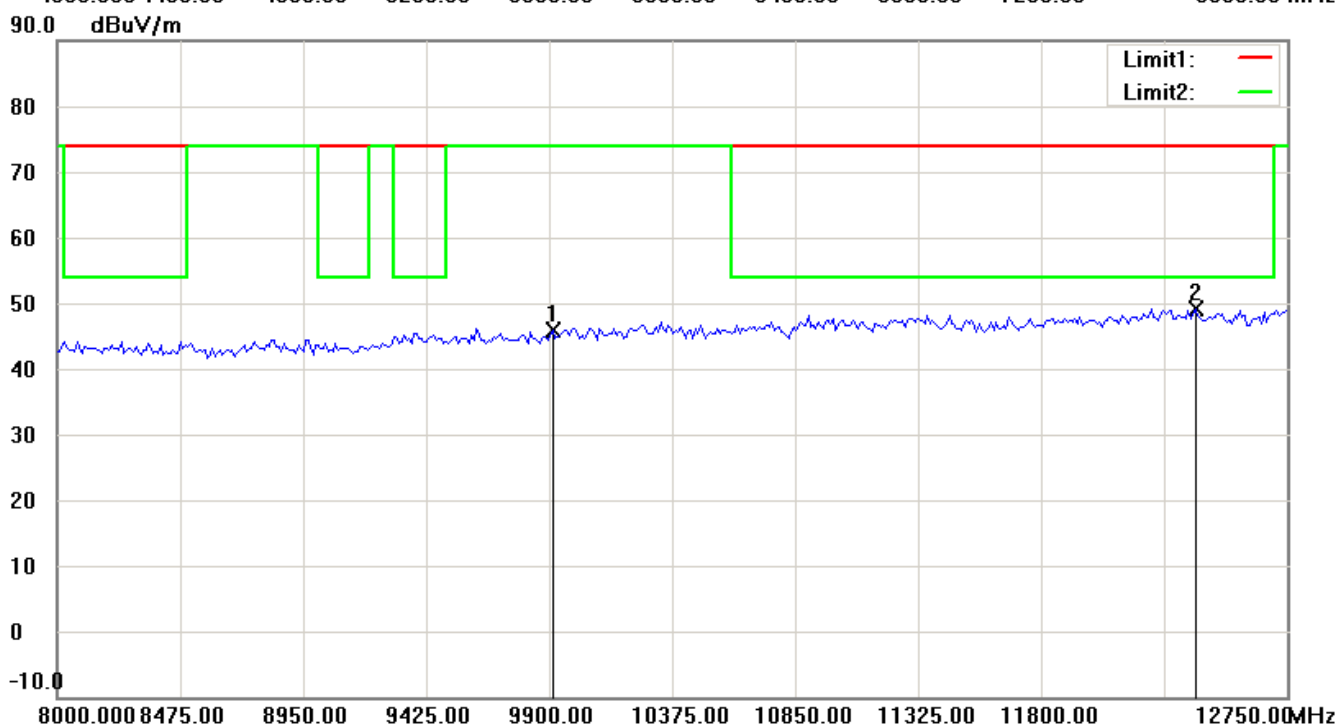
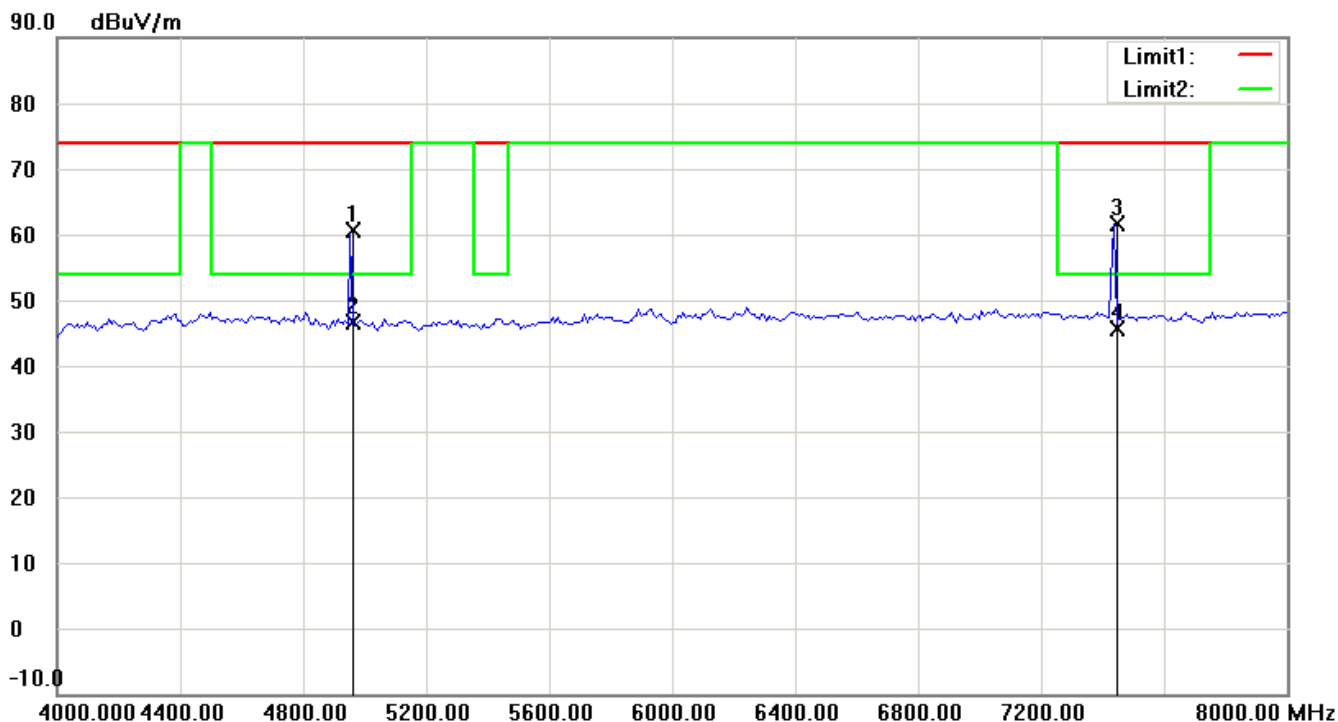
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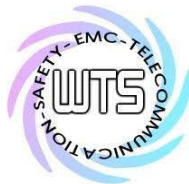
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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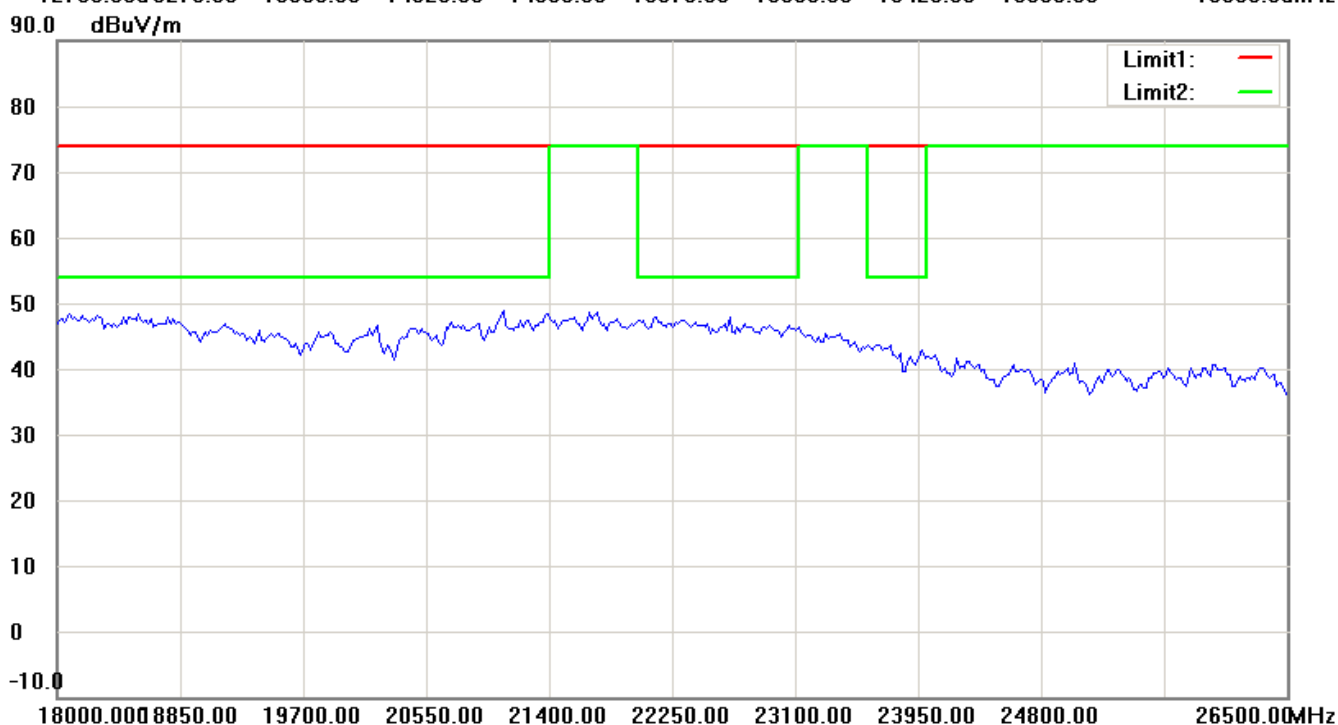
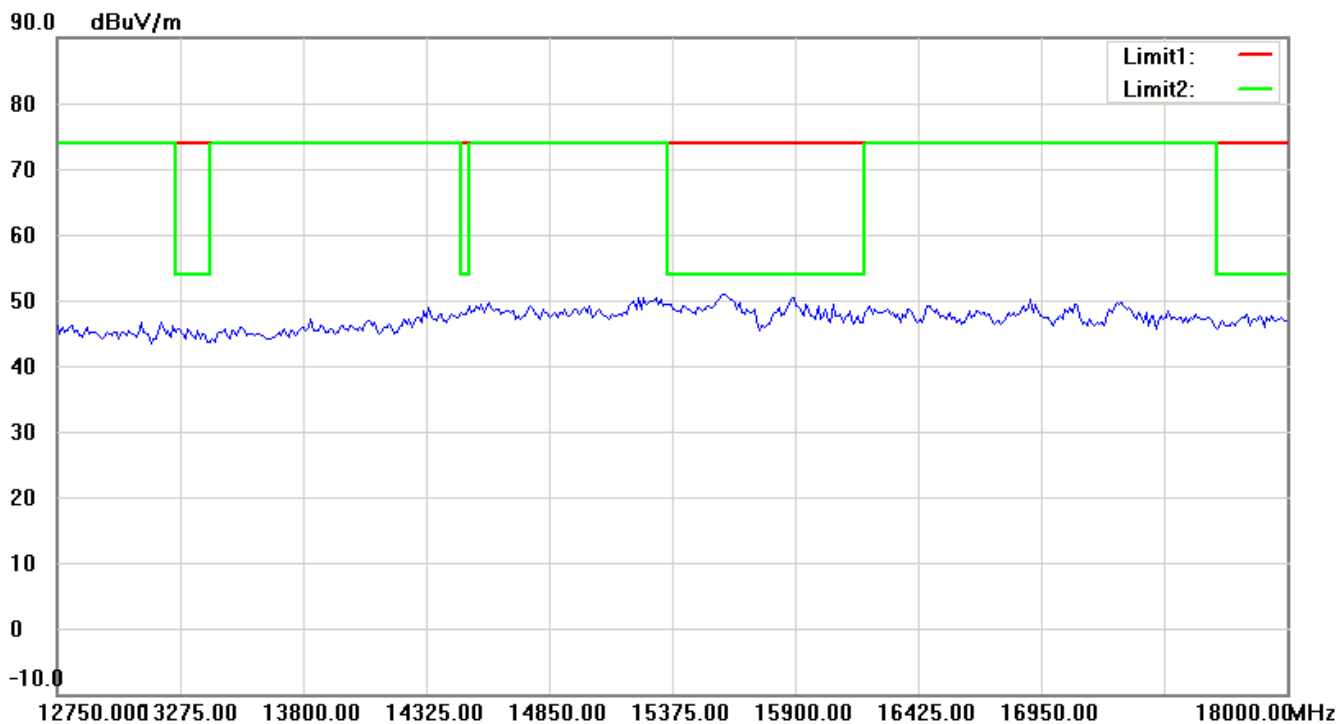
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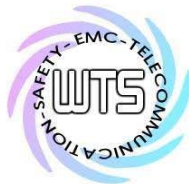
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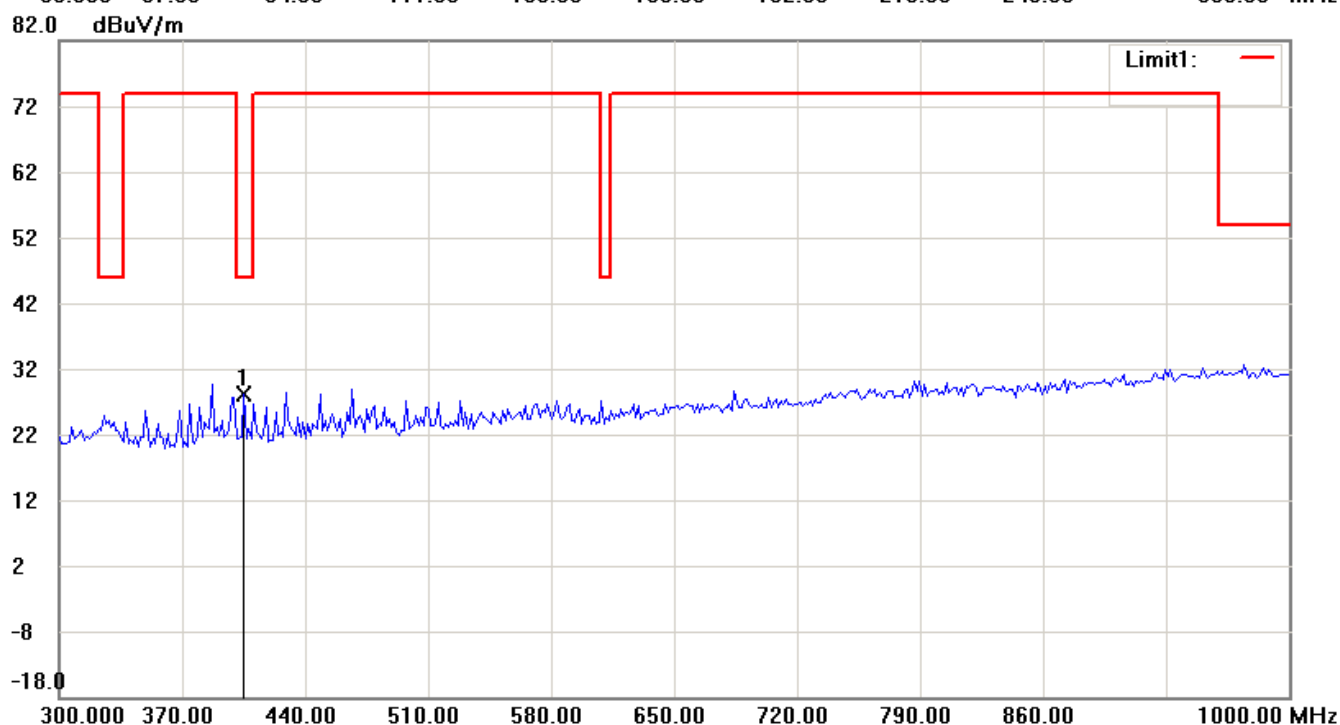
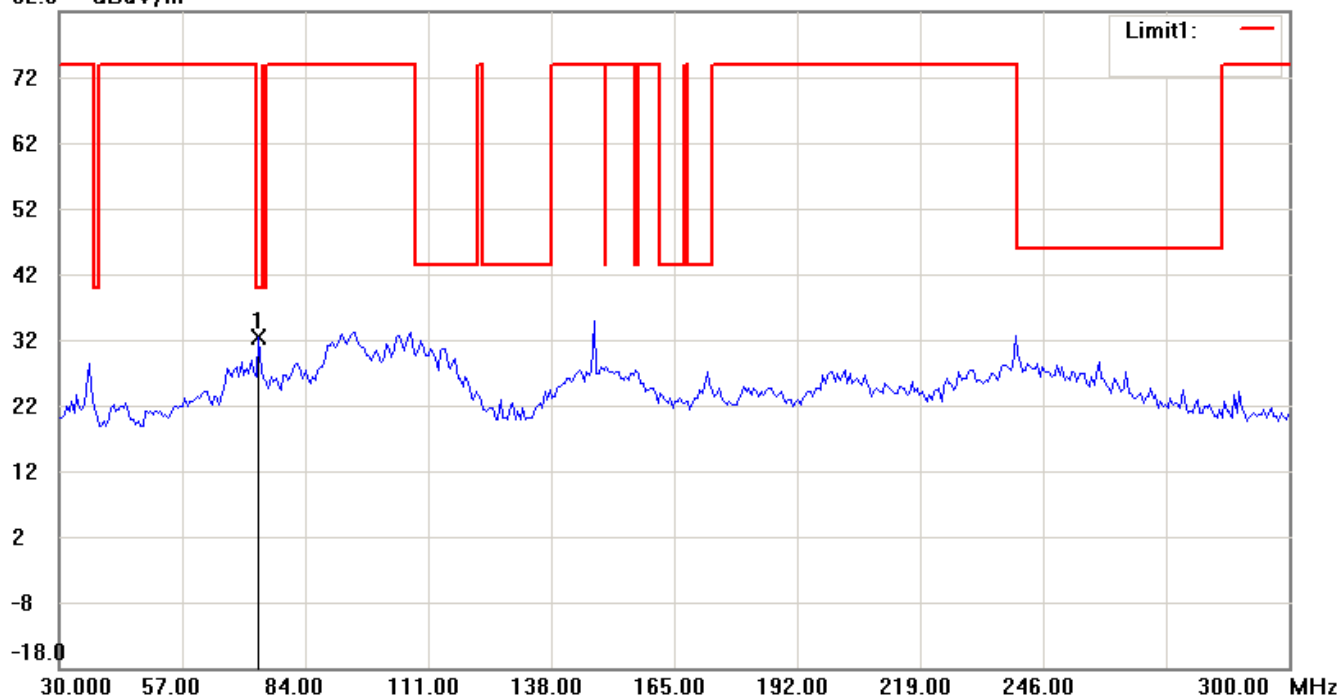
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21108-11752-C-1-T

FCC ID: TN5SB30CME

Antenna Polarization V

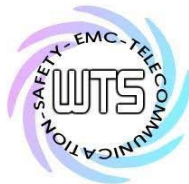
82.0 dBuV/m



Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

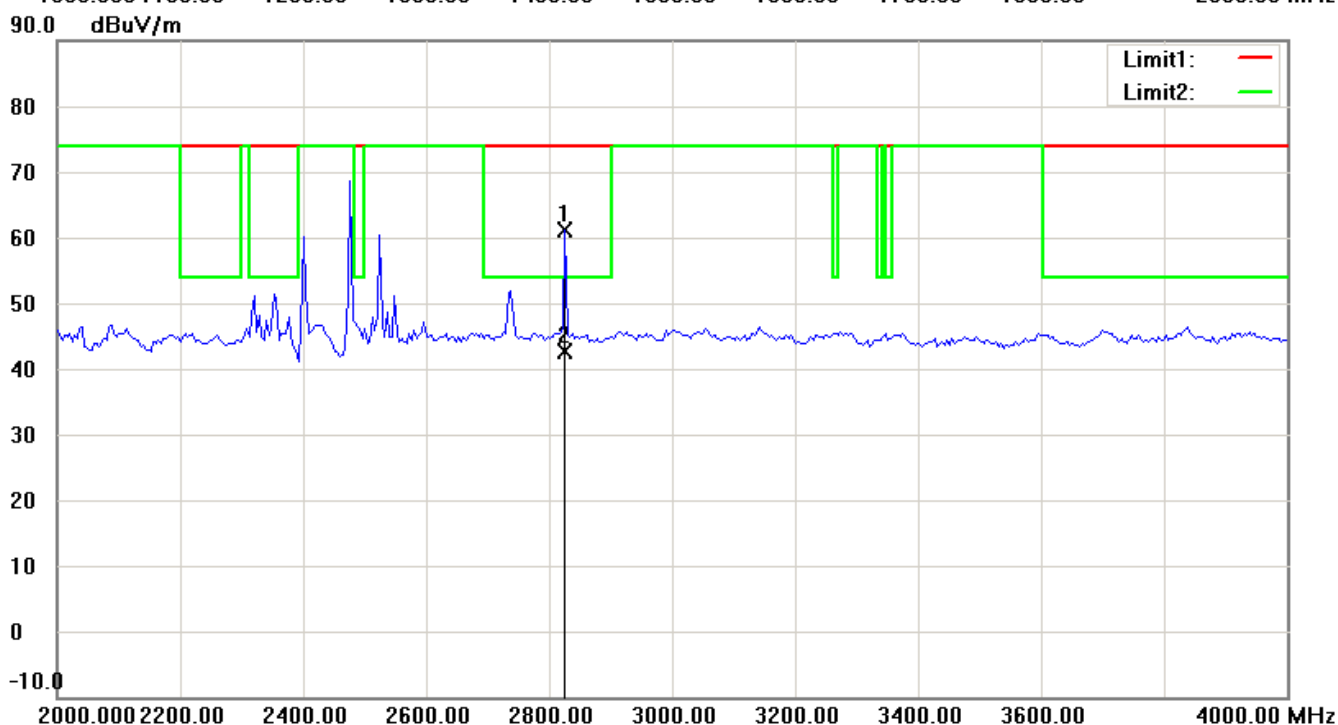
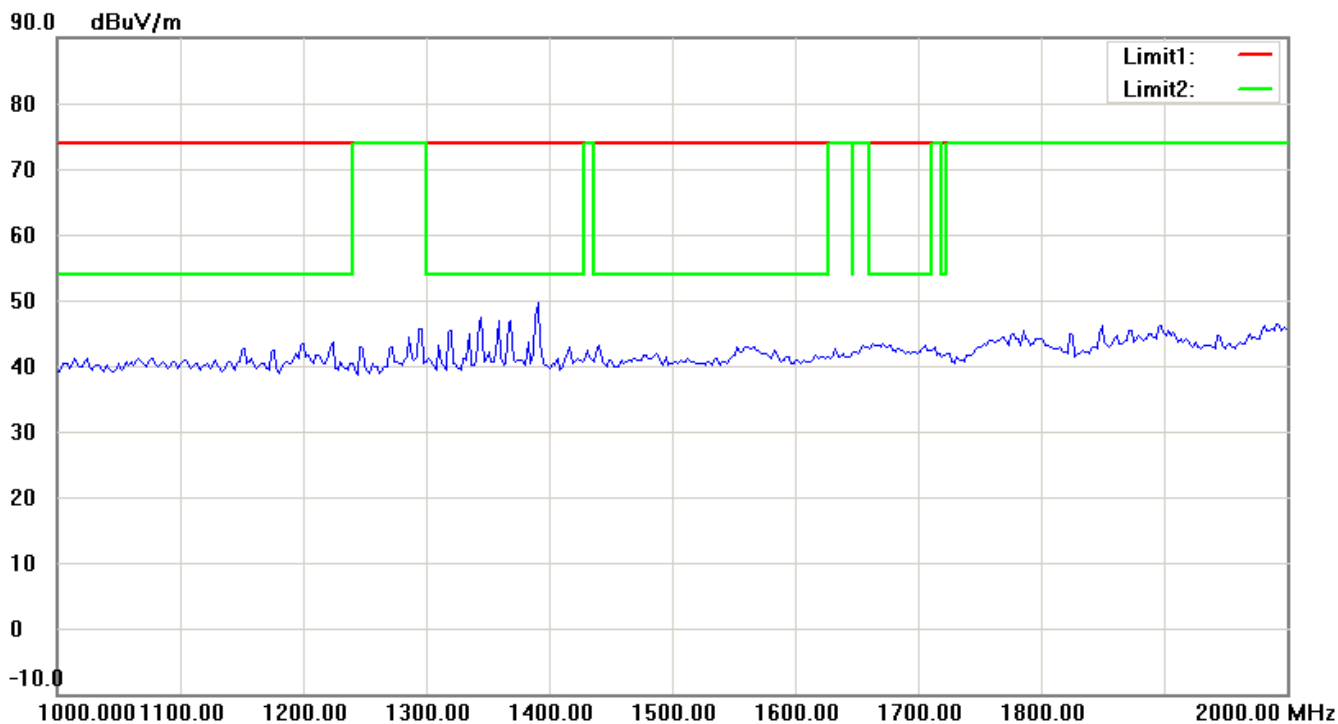
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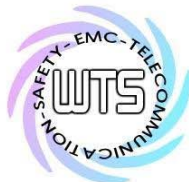
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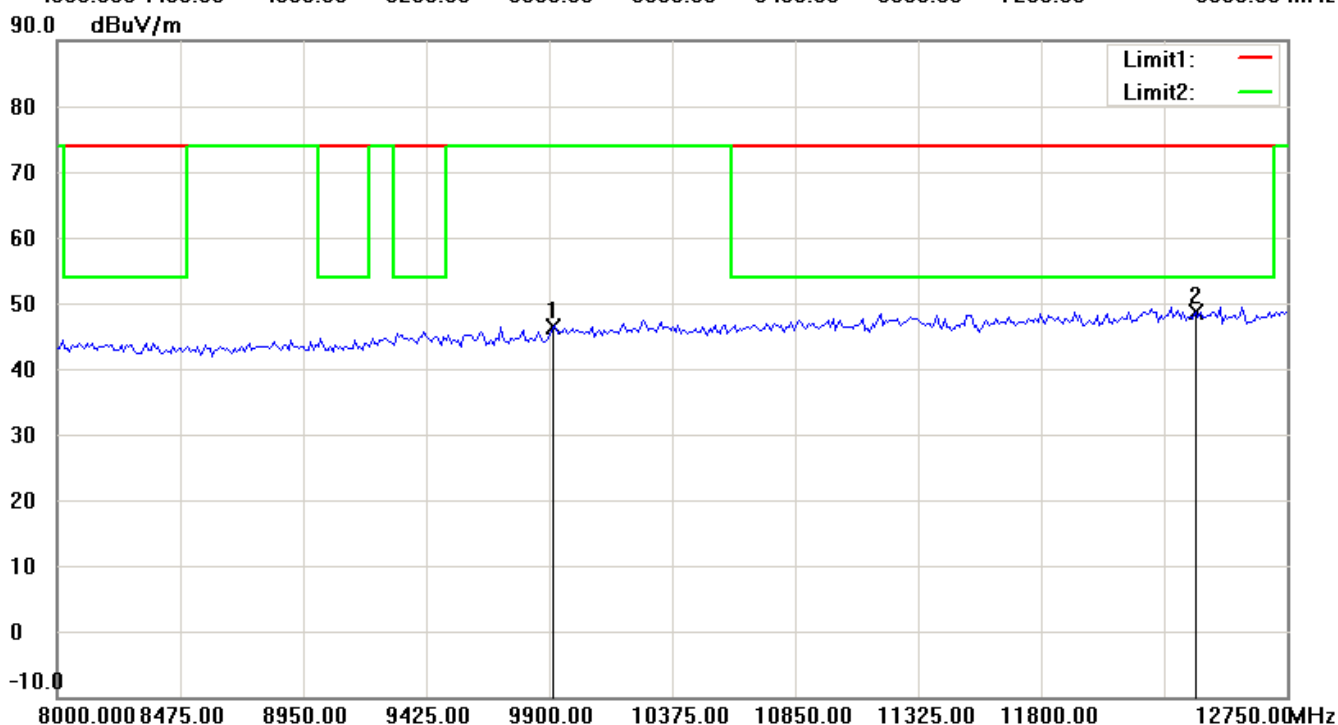
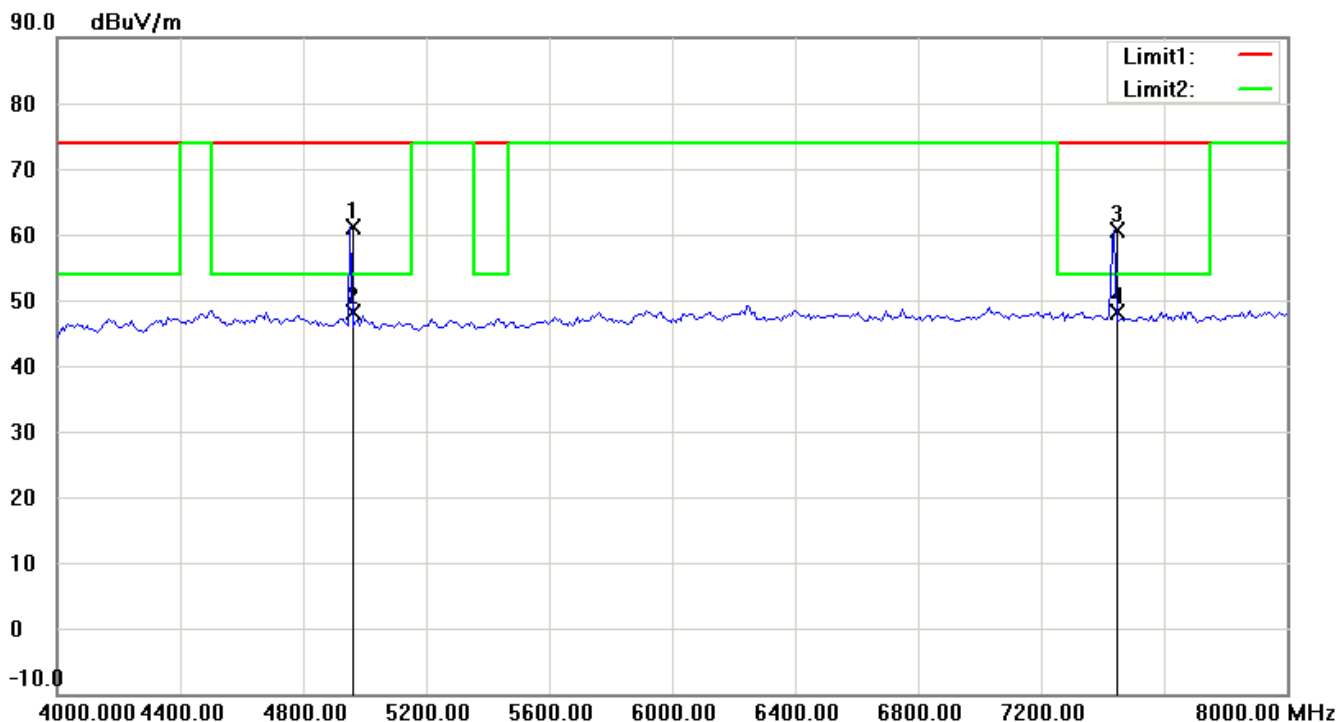
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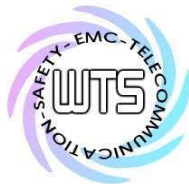
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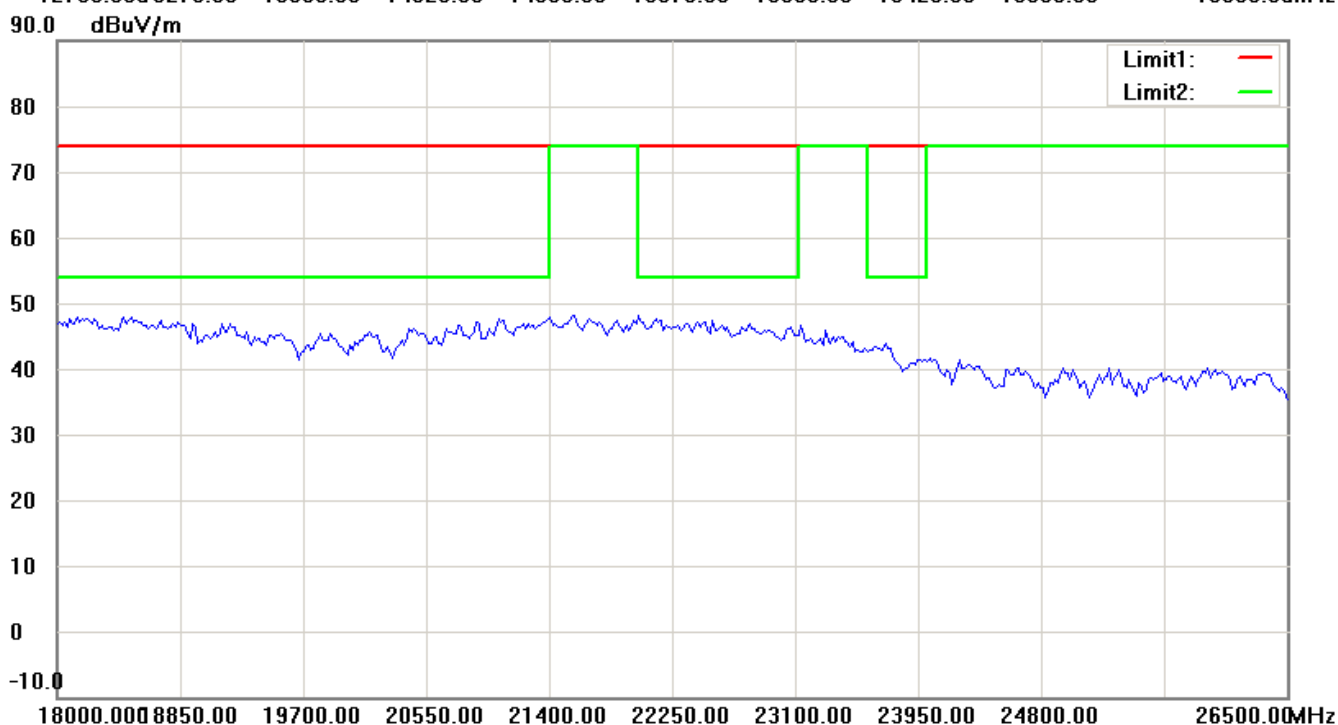
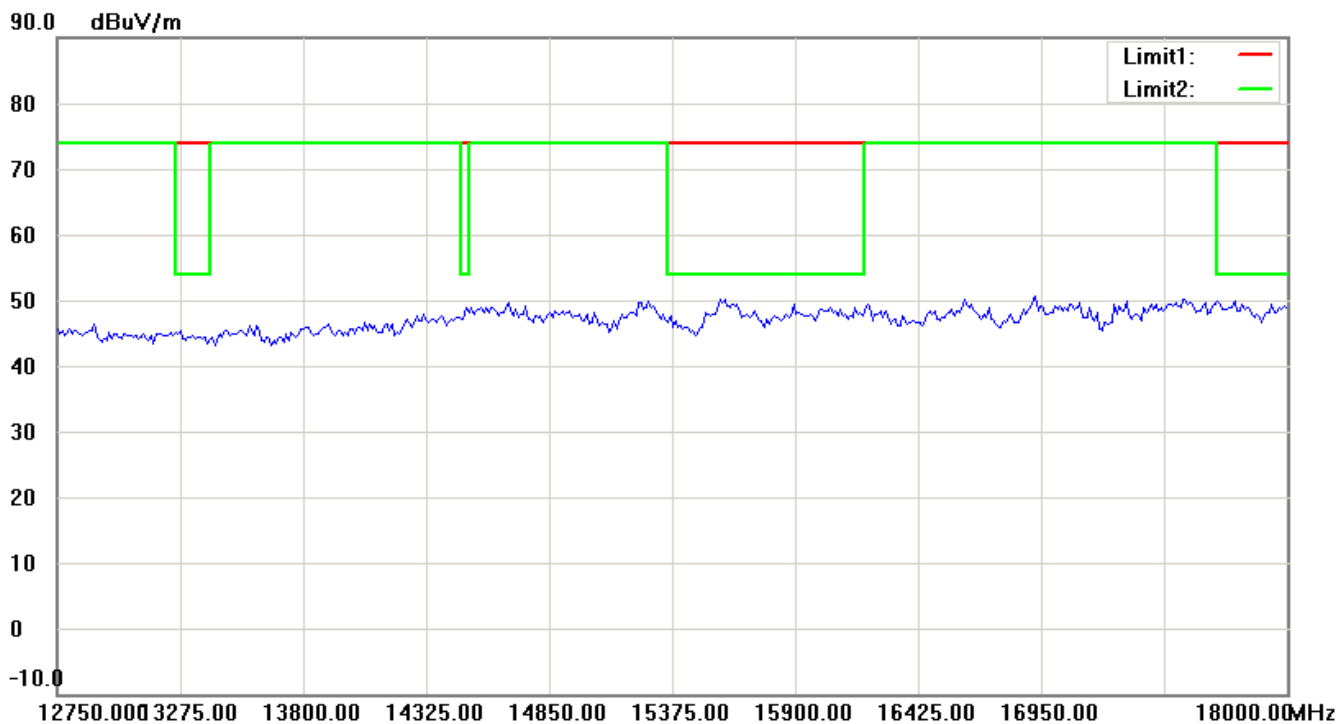
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