

FCC PART 15 SUBPART C TEST REPORT

for

802.11a/n Wireless Outdoor CPE

Model No.: WNAP-7325

FCC ID: UL9WNAP7325

of

Applicant: **PLANET Technology Corp.**
Address: **10F., No.96, Minquan Rd., Xindian Dist.,
New Taipei City 231, Taiwan (R.O.C.)**

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.: W6D21409-14504-C-1

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

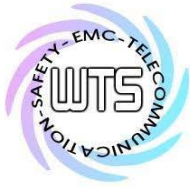
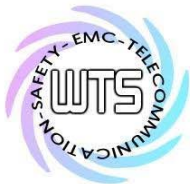


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1 General Information

1.1 Notes

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

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

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

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that 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.

The test sample is able to work according IEEE 802.11 a/n.

This report is related to FCC Part 15 C (OFDM device).

Tester:

January 14, 2015

Spencer Yang

Date

WTS-Lab.

Name

Signature

Technical responsibility for area of testing:

January 14, 2015

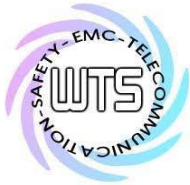
Kevin Wang

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: PLANET Technology Corp.

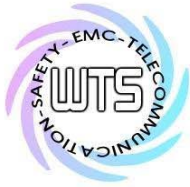
Street: 10F., No.96, Minquan Rd., Xindian Dist.,

Town: New Taipei City 231,

Country: Taiwan (R.O.C.)

Telephone: ./.

Fax: ./.



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1.4 Application details

Date of receipt of test item: ./.
Date of test (1st): from February 11, 2014 to March 18, 2014
Date of test (2nd): from October 08, 2014 to January 13, 2015

1.5 General information of Test item

Type of test item: 802.11a/n Wireless Outdoor CPE
Model Number: WNAP-7325
Brand Name: PLANET
Multi-listing model number: WNAP-7335
Photos: see Appendix

Technical data

Frequency band: 5.745 GHz-5.825GHz

802.11a

Frequency (ch 149): 5.745 GHz
Frequency (ch 157): 5.785 GHz
Frequency (ch 165): 5.825 GHz

802.11n 20MHz

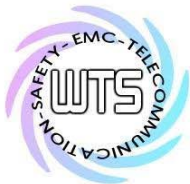
Frequency (ch 149): 5.745 GHz
Frequency (ch 157): 5.785 GHz
Frequency (ch 165): 5.825 GHz

802.11n 40MHz

Frequency (ch 151): 5.755 GHz
Frequency (ch 159): 5.795 GHz

Number of Channels: 11a, 11n 20MHz : 5 channels
11n 40MHz: 2 channels

Operation modes: duplex
Modulation Type: OFDM
Fixed point-to-point operation: ☐ Yes / ☒ No
Type of Antenna: PCB printed Antenna
Antenna gain: 14 dBi
Directional gain: 17.01 dBi



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According to KDB 662911 D01 Multiple Transmitter Output v02r01.

If any transmit signals are correlated with each other, Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi

Power supply: Adaptor: (I/P: 100-240Vac~50/60Hz, 0.75A
O/P: 24Vdc, 1000mA)

Emission designator: **5.8GHz**
802.11a: OFDM: 16M8D1D
802.11n 20MHz: OFDM: 18M8D1D
802.11n 40MHz: OFDM: 35M2D1D

Host device: none

Classification :

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

Transmitter

Unom

Antenna 0

Mode A (802.11a)

Power (ch 149 or A): Conducted: 25.29 dBm
Power (ch 157 or B): Conducted: 24.40 dBm
Power (ch 165 or C): Conducted: 25.24 dBm

Mode B (802.11n 20MHz)

Power (ch 149 or A): Conducted: 25.42 dBm
Power (ch 157 or B): Conducted: 24.79 dBm
Power (ch 165 or C): Conducted: 25.14 dBm

Mode C (802.11n 40MHz)

Power (ch 151 or A): Conducted: 25.09 dBm
Power (ch 159 or B): Conducted: 24.43 dBm

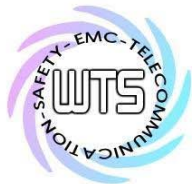
Antenna 1

Mode A (802.11a)

Power (ch 149 or A): Conducted: 25.49 dBm
Power (ch 157 or B): Conducted: 25.34 dBm
Power (ch 165 or C): Conducted: 24.33 dBm

Mode B (802.11n 20MHz)

Power (ch 149 or A): Conducted: 24.76 dBm
Power (ch 157 or B): Conducted: 24.66 dBm
Power (ch 165 or C): Conducted: 25.91 dBm



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Mode C (802.11n 40MHz)

Power (ch 151 or A):

Conducted: 25.02 dBm

Power (ch 159 or B):

Conducted: 24.77 dBm

Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	647.57	593.72	716.53	28.11	27.74	28.55
802.11n 40MHz	640.54	--	577.25	28.07	--	27.61

Manufacturer: (if applicable)

Name: ./.

Street: ./.

Town: ./.

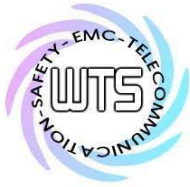
Country: ./.

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.247 (2011-10)

Special statement:

1. This test report is based on the original test report no.: W6M21402-13810-C-1.
2. The relevant Circuitry, PCB Layout, Inner element, and Function is exactly the same as the one in original test report. The differences are the applicant, the manufacturer, the product name, the model number, the multi-listing model number, the brand name and the appearance.



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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

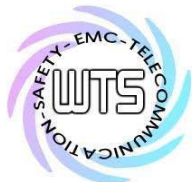
Temperature: 23 °C

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Power supply: Adaptor: (I/P: 100-240Vac~50/60Hz, 0.75A
O/P: 24Vdc, 1000mA)

Extreme conditions parameters: ./.



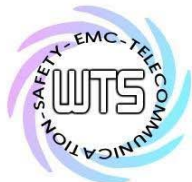
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

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	2014/9/2	2015/9/1
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 008	HF-EICHLITUNG 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	2014/7/8	2015/7/7
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2014/10/13	2015/10/12
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2014/9/2	2015/9/1
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2014/9/2	2015/9/1
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2014/10/15	2015/10/14
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2014/7/01	2015/6/30
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	ETS-Lindgren	2014/2/25	2015/2/24
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2014/2/18	2015/2/17
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2014/3/3	2015/3/2
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2014/3/3	2015/3/2
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2014/3/3	2015/3/2
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2014/6/05	2015/6/04
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2014/3/3	2015/3/2
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2014/11/26	2015/11/25
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	ETS-Lindgren	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2014/10/9	2015/10/8
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2014/9/22	2015/9/21
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2014/3/3	2015/3/2
ETSTW-RE 106	Humidity Temperature Meter	TES-1366	091011113	TES	2014/11/7	2015/11/6
ETSTW-RE 111	TRILOG Super Broadband test Antenna	VULB 9160	9160-3309	Schwarz beck	2014/12/5	2015/12/4
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	None	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2015/1/7	2016/1/6
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2014/6/11	2015/6/10
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2014/8/12	2015/8/11

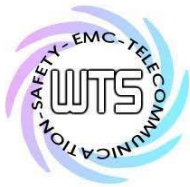


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ETSTW-RE 126	5GHz Notch filter	5NSL11-5800/E221.3-O/O	1	K&L Microwave	2014/8/12	2015/8/11
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2014/3/3	2015/3/2
ETSTW-RE 128	5.3GHz Notch filter	N0153001	SN487233	Microwave Circits	2014/8/12	2015/8/11
ETSTW-RE 129	5.5GHz Notch filter	N0555984	SN487234	Microwave Circits	2014/8/12	2015/8/11
ETSTW-RE 130	Handheld RF Spectrum Analyzer	N9340A	CN0147000204	Agilent	Pre-test Use	
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2014/10/20	2015/10/19
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2015/1/7	2016/1/6
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2015/1/7	2016/1/6
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2015/1/7	2016/1/6
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2015/1/7	2016/1/6
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2014/9/17	2015/9/16
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2014/10/15	2015/10/14
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	Pre-test Use NCR	
ETSTW-Cable 012	N TYPE To SMA Cable	Cable 012	None	JYE BAO CO.,LTD.	2014/10/15	2015/10/14
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2014/2/27	2015/2/26
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2014/2/27	2015/2/26
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2014/2/27	2015/2/26
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2014/2/27	2015/2/26
ETSTW-Cable 022	N TYPE Cable	5006	0002	JYE BAO CO.,LTD.	2014/2/19	2015/2/18
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2014/3/3	2015/3/2
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2014/3/3	2015/3/2
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2014/9/22	2015/9/21
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2014/9/22	2015/9/21
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	HUBER+SUHNER	2014/3/3	2015/3/2
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104 (S_Cable 10)	238092	HUBER+SUHNER	2014/11/26	2015/11/25
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2014/11/26	2015/11/25
ETSTW-Cable 047	Microwave Cable	SUCOFLEX 104	325518	HUBER+SUHNER	2014/11/26	2015/11/25
ETSTW-Cable 053	N TYPE To SMA Cable	RG142	None	JYE BAO CO.,LTD.	2014/2/19	2015/2/18
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2014/2/19	2015/2/18
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1	



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

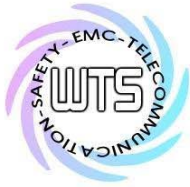
The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2009 6.3.1. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

- (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:

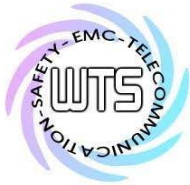
Average = Peak + Duty Factor

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.



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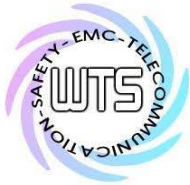
FCC ID: UL9WNAP7325

3 Test results (enclosure)

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

Note:

1. This EUT incorporates a MIMO function with IEEE 802.11a and 802.11n. Physically, this EUT includes two transmitters and two receivers with two incoherent streams. This device uses multiplexing and also employ cyclic delay diversity to improve range and throughput, and this device simultaneously operates on two adjacent channels.
2. This EUT is 2*2 spatial MIMO (2Tx&2Rx) without beam forming function. That operates dual chain configuration. The Pre-test was performed to determine the worst case mode from all possible combinations between all available modulations, data rates, bandwidths, and spatial stream modes.



Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

3.1 Peak Output Power (transmitter)

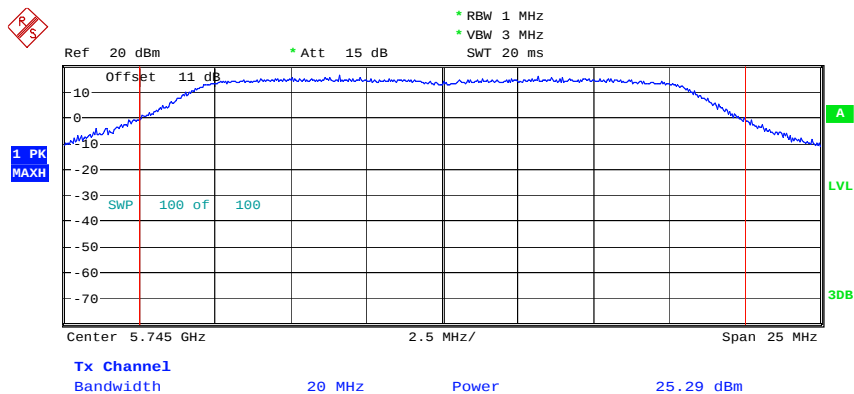
FCC Rule: 15.247(b)(3)

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).

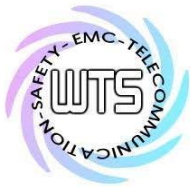
Antenna 0

Mode A



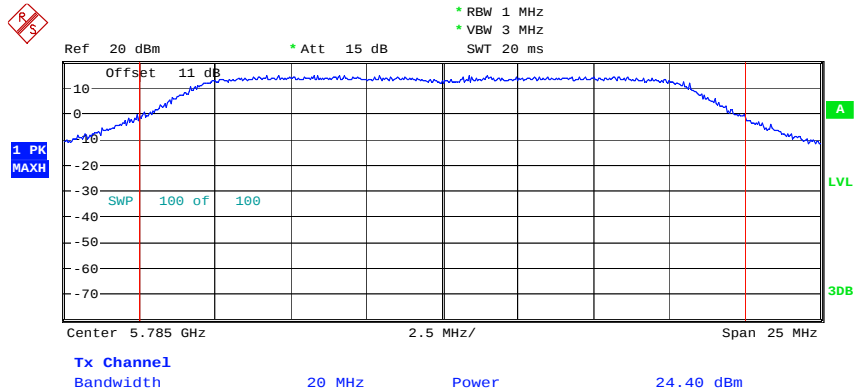
MAX OUTPUT POWER 802.11A CH149

Date: 27.FEB.2014 15:39:30

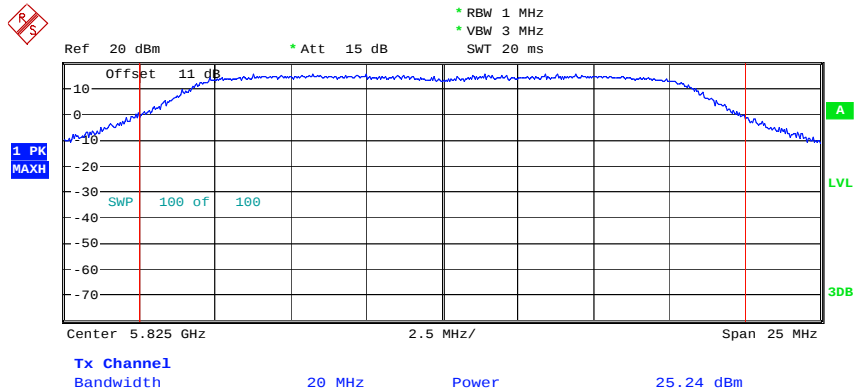


Worldwide Testing Services(Taiwan) Co., Ltd.

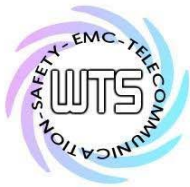
Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



MAX OUTPUT POWER 802.11A CH157
Date: 27.FEB.2014 15:40:20



MAX OUTPUT POWER 802.11A CH165
Date: 27.FEB.2014 15:42:28

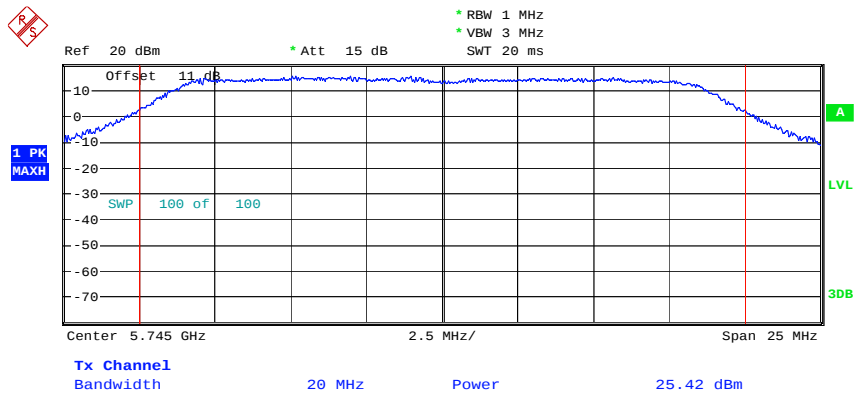


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

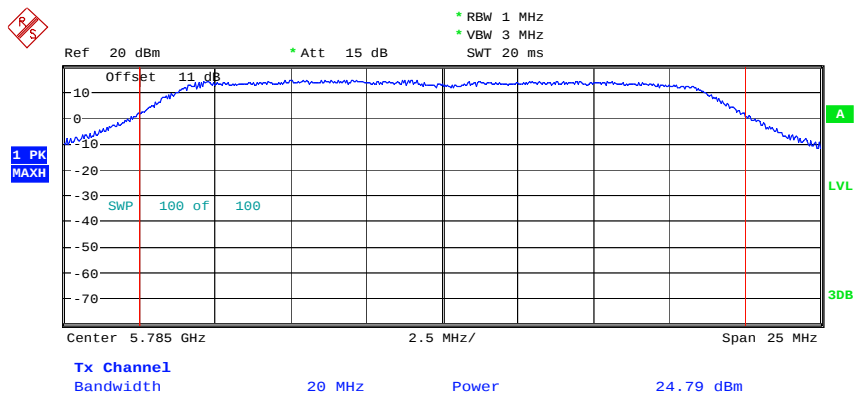
FCC ID: UL9WNAP7325

Mode B



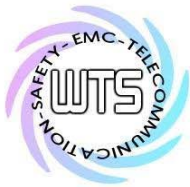
MAX OUTPUT POWER 802.11N 20MHZ CH149

Date: 27.FEB.2014 15:46:16

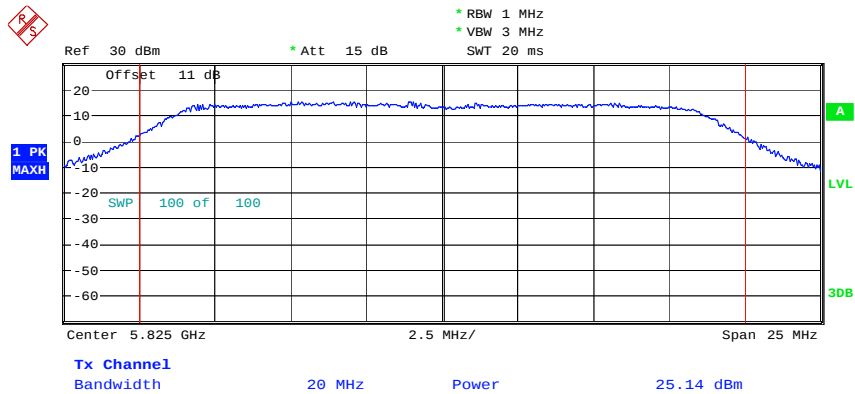


MAX OUTPUT POWER 802.11N 20MHZ CH157

Date: 27.FEB.2014 15:47:33

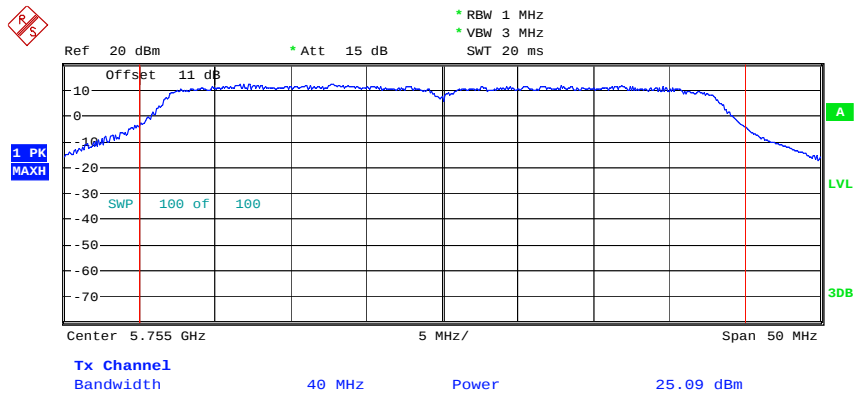


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

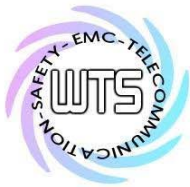


MAX OUTPUT POWER 802.11N 20MHZ CH165
Date: 27.FEB.2014 15:49:26

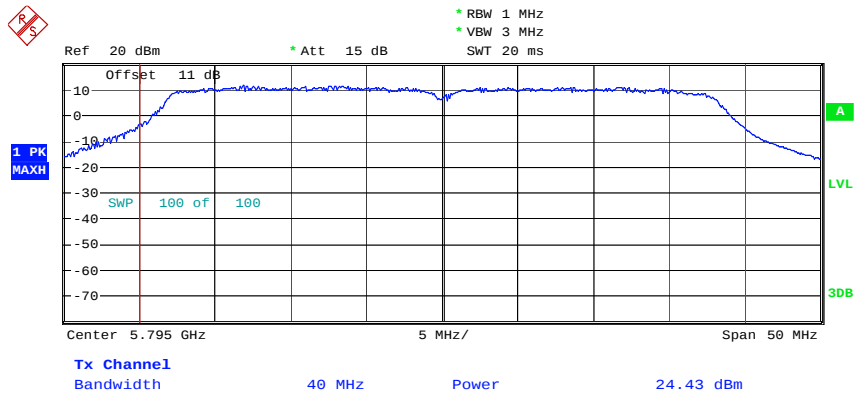
Mode C



MAX OUTPUT POWER 802.11N 40MHZ CH151
Date: 27.FEB.2014 15:58:08

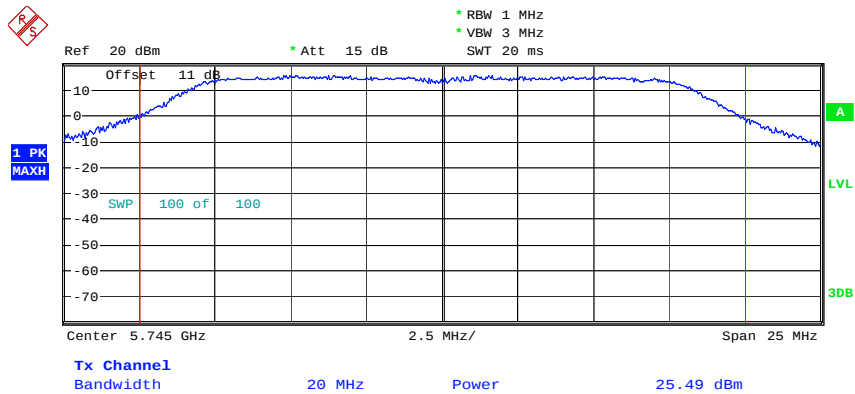


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

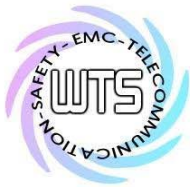


MAX OUTPUT POWER 802.11N 40MHZ CH159
Date: 27.FEB.2014 15:59:07

Antenna 1
Mode A

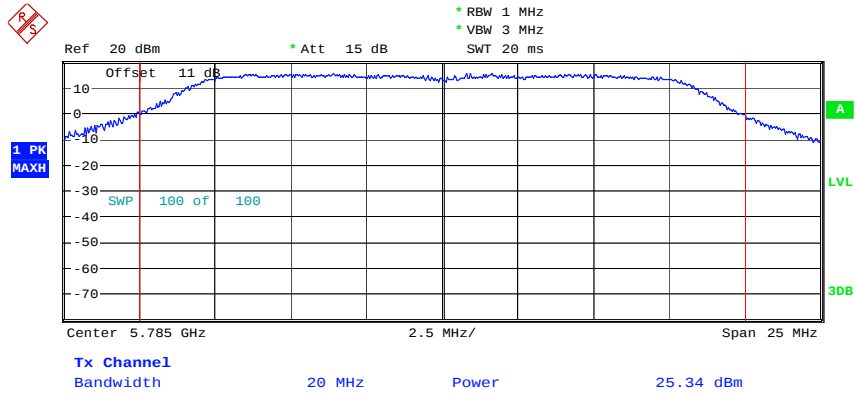


MAX OUTPUT POWER 802.11A CH149
Date: 27.FEB.2014 16:47:17

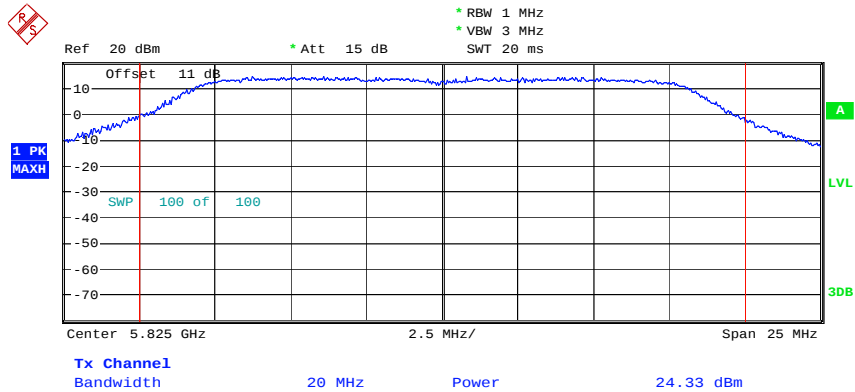


Worldwide Testing Services(Taiwan) Co., Ltd.

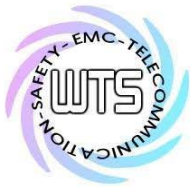
Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



MAX OUTPUT POWER 802.11A CH157
Date: 27.FEB.2014 16:48:32



MAX OUTPUT POWER 802.11A CH165
Date: 27.FEB.2014 17:01:21

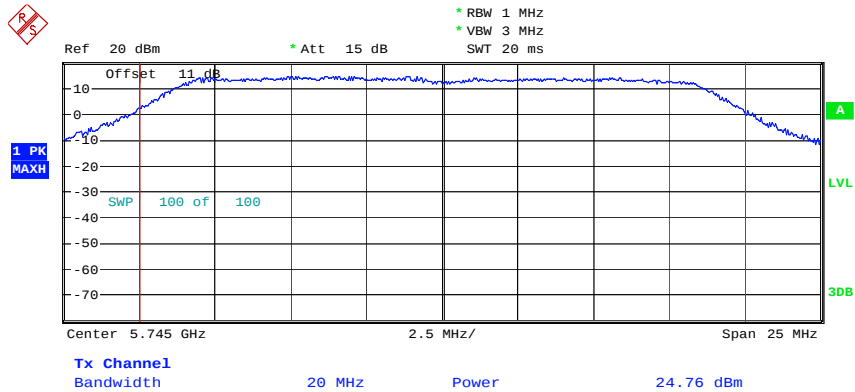


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

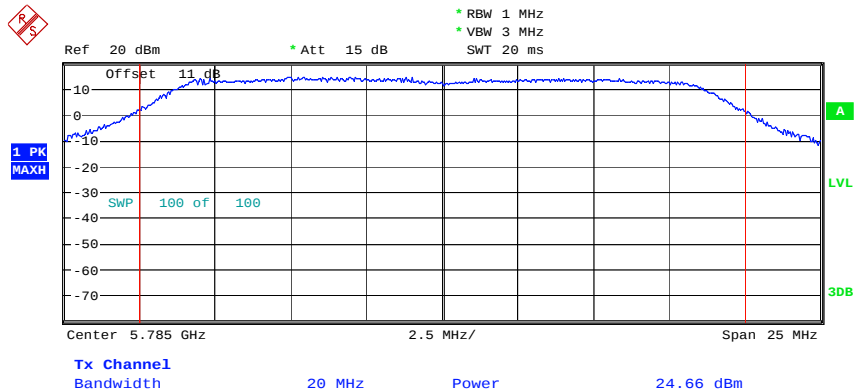
FCC ID: UL9WNAP7325

Mode B



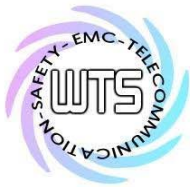
MAX OUTPUT POWER 802.11N 20MHZ CH149

Date: 27.FEB.2014 17:04:51



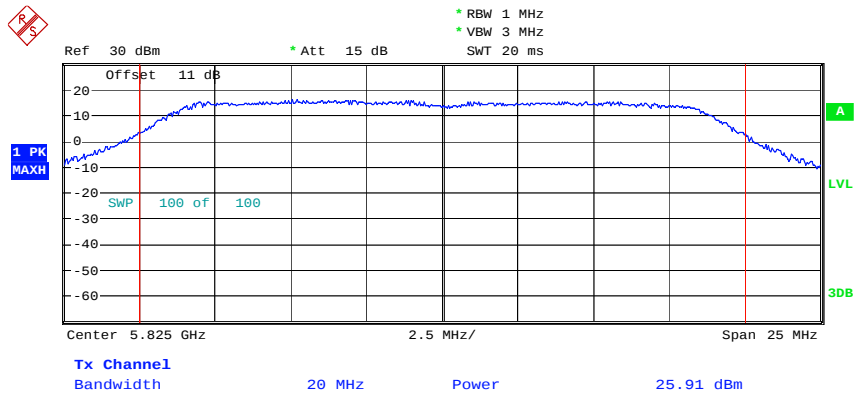
MAX OUTPUT POWER 802.11N 20MHZ CH157

Date: 27.FEB.2014 17:06:29



Registration number: W6D21409-14504-C-1

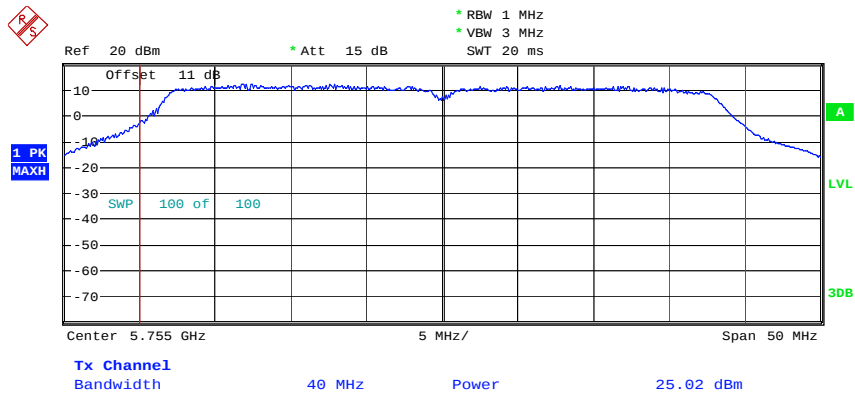
FCC ID: UL9WNAP7325



MAX OUTPUT POWER 802.11N 20MHZ CH165

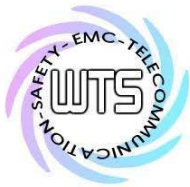
Date: 27.FEB.2014 17:07:39

Mode C



MAX OUTPUT POWER 802.11N 40MHZ CH151

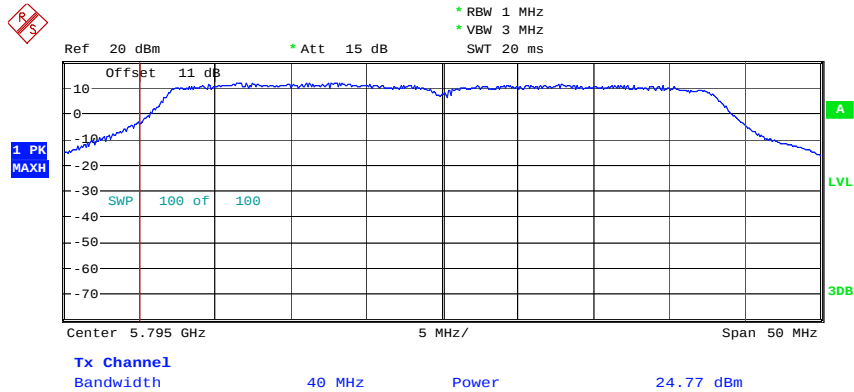
Date: 27.FEB.2014 17:10:21



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325



MAX OUTPUT POWER 802.11N 40MHZ CH159

Date: 27.FEB.2014 17:12:10

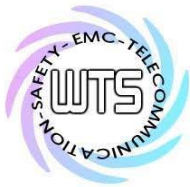
Antenna 0	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	348.34	301.3	326.59	25.42	24.79	25.14
802.11n 40MHz	322.85	--	277.33	25.09	--	24.43
Antenna 1	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	299.23	292.42	389.94	24.76	24.66	25.91
802.11n 40MHz	317.69	--	299.92	25.02	--	24.77
Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	647.57	593.72	716.53	28.11	27.74	28.55
802.11n 40MHz	640.54	--	577.25	28.07	--	27.61

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 dBi and using fixed point-to point operation consider §15.247 (b)(4)

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



Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

3.2 Equivalent isotropic radiated power

FCC Rule: 15.247(b)(3)

For systems using digital modulation in the 5725–5850 MHz bands: 1 Watt.

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test equipment used: ETSTW-RE 055

3.3 RF Exposure Compliance Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.6 m normally can be maintained between the user and the device.

3.3.1 MPE Calculation Method

(A) Limits for Occupational/Controlled Exposure

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

(B) Limits for General Population/Uncontrolled Exposure

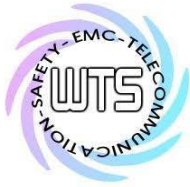
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

$$E \text{ (V/m)} \cdot \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} \cdot \frac{E^2}{377}$$



Registration number: W6D21409-14504-C-1
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E = Electric field (V/m) P = output power (W) G = EUT Antenna numeric gain (numeric)

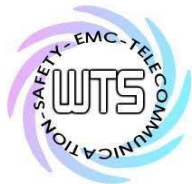
d = Separation distance between radiator and human body (m)

The formula can be changed to

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

Frequency	Max output power (W)	Antenna Gain	Power Density(S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
802.11 n 20MHz	0.716	17.01	0.80	1.0	Complies

From the peak EUT RF output power, the minimum mobile separation distance, d=0.6 m, as well as the gain of the used antenna, the RF power density can be obtained.



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FCC ID: UL9WNAP7325

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 26500 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:

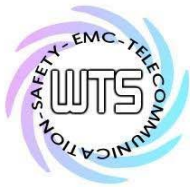
“If the emission is pulsed, modify the unit for continuous operation, use the setting shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

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: see attached diagrams in Appendix.



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FCC ID: UL9WNAP7325

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

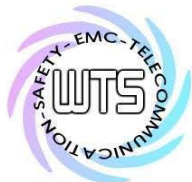
Guidance on Measurement of Digit Transmission Systems:

“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.



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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

Antenna 0

Model: WNAP-7325 Date: 2014/02/08
Mode: 802.11a 5745MHz Temperature: 24 °C Engineer: Leon
Polarization: Horizontal Humidity: 60 %

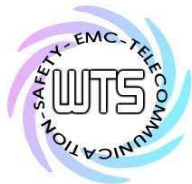
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	14.88	peak	12.41	27.29	40.00	-12.71	70	100
109.6994	21.21	peak	12.39	33.60	43.50	-9.90	135	100
292.4248	19.12	peak	15.84	34.96	46.00	-11.04	120	100
900.8617	9.94	peak	27.15	37.09	46.00	-8.91	140	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11490.0000	34.54	---	12.09	46.63	---	74.00	54.00	-27.37	155	100
17235.0000	28.45	---	20.39	48.84	---	74.00	54.00	-25.16	255	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
58.7200	24.11	QP	13.51	37.62	40.00	-2.38	220	100
74.7094	27.54	QP	10.67	38.21	40.00	-1.79	155	100
111.6433	27.54	peak	12.56	40.10	43.50	-3.40	90	100
138.8577	24.98	peak	14.83	39.81	43.50	-3.69	130	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11490.0000	34.93	---	12.09	47.02	---	74.00	54.00	-26.98	125	100
17235.0000	27.72	---	20.39	48.11	---	74.00	54.00	-25.89	160	100



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Mode: 802.11a 5785MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	16.35	peak	12.41	28.76	40.00	-11.24	95	100
105.8116	21.69	peak	11.79	33.48	43.50	-10.02	135	100
294.3687	20.35	peak	15.88	36.23	46.00	-9.77	210	100
900.8617	12.13	peak	27.15	39.28	46.00	-6.72	190	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11570.0000	34.92	---	12.47	47.39	---	74.00	54.00	-26.61	125	100
17355.0000	27.97	---	20.33	48.30	---	74.00	54.00	-25.70	230	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
47.4950	24.13	QP	14.20	38.33	40.00	-1.67	155	100
59.1583	25.11	QP	13.47	38.58	40.00	-1.42	90	100
109.6994	27.10	peak	12.39	39.49	43.50	-4.01	130	100
154.4088	24.61	peak	15.35	39.96	43.50	-3.54	145	100

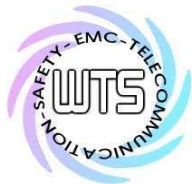
Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11570.0000	35.10	---	12.47	47.57	---	74.00	54.00	-26.43	140	100
17355.0000	27.52	---	20.33	47.85	---	74.00	54.00	-26.15	60	100

Mode: 802.11a 5825MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
74.7094	15.84	peak	10.67	26.51	40.00	-13.49	60	100
111.6433	19.86	peak	12.56	32.42	43.50	-11.08	170	100
150.5210	12.64	peak	15.31	27.95	43.50	-15.55	135	100
292.4248	19.99	peak	15.84	35.83	46.00	-10.17	225	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11650.0000	36.01	---	12.36	48.37	---	74.00	54.00	-25.63	125	100
17475.0000	27.24	---	20.23	47.47	---	74.00	54.00	-26.53	205	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
59.1583	24.39	QP	13.47	37.86	40.00	-2.14	95	100
76.6533	28.09	QP	10.37	38.46	40.00	-1.54	115	100
109.6994	27.62	peak	12.39	40.01	43.50	-3.49	120	100
156.3527	25.05	peak	15.37	40.42	43.50	-3.08	170	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11650.0000	34.55	---	12.36	46.91	---	74.00	54.00	-27.09	90	100
17475.0000	27.56	---	20.23	47.79	---	74.00	54.00	-26.21	75	100

Antenna 1

Mode: 802.11a 5745MHz

Polarization: Horizontal

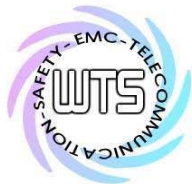
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	14.81	peak	12.41	27.22	40.00	-12.78	115	100
105.8115	20.94	peak	11.79	32.73	43.50	-10.77	85	100
142.7453	13.74	peak	15.03	28.77	43.50	-14.73	70	100
294.3686	19.34	peak	15.88	35.22	46.00	-10.78	60	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11490.0000	35.68	---	12.09	47.77	---	74.00	54.00	-26.23	175	100
17235.0000	28.08	---	20.39	48.47	---	74.00	54.00	-25.53	130	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
59.1583	24.77	QP	13.47	38.24	40.00	-1.76	75	100
74.7094	27.63	QP	10.67	38.30	40.00	-1.70	135	100
111.6433	27.79	peak	12.56	40.35	43.50	-3.15	60	100
156.3527	24.89	peak	15.37	40.26	43.50	-3.24	150	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11490.0000	36.26	---	12.09	48.35	---	74.00	54.00	-25.65	155	100
17235.0000	27.97	---	20.39	48.36	---	74.00	54.00	-25.64	230	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

Mode: 802.11a 5785MHz
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	15.10	peak	12.41	27.51	40.00	-12.49	50	100
109.6993	20.59	peak	12.39	32.98	43.50	-10.52	125	100
164.1282	12.28	peak	15.15	27.43	43.50	-16.07	110	100
290.4810	19.45	peak	15.80	35.25	46.00	-10.75	165	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11570.0000	34.98	---	12.47	47.45	---	74.00	54.00	-26.55	175	100
17355.0000	27.74	---	20.33	48.07	---	74.00	54.00	-25.93	230	100

Polarization: Vertical

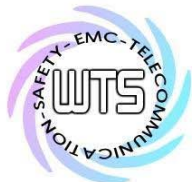
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
59.1583	24.73	QP	13.47	38.20	40.00	-1.80	75	100
74.7094	27.32	QP	10.67	37.99	40.00	-2.01	155	100
111.6433	26.98	peak	12.56	39.54	43.50	-3.96	90	100
154.4088	25.37	peak	15.35	40.72	43.50	-2.78	130	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11570.0000	35.69	---	12.47	48.16	---	74.00	54.00	-25.84	130	100
17355.0000	27.65	---	20.33	47.98	---	74.00	54.00	-26.02	90	100

Mode: 802.11a 5825MHz
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	14.94	peak	12.41	27.35	40.00	-12.65	135	100
111.6432	19.70	peak	12.56	32.26	43.50	-11.24	65	100
138.8576	12.65	peak	14.83	27.48	43.50	-16.02	140	100
300.2004	18.96	peak	16.00	34.96	46.00	-11.04	150	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11650.0000	34.88	---	12.36	47.24	---	74.00	54.00	-26.76	145	100
17475.0000	28.06	---	20.23	48.29	---	74.00	54.00	-25.71	130	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
53.3267	24.15	QP	13.97	38.12	40.00	-1.88	80	100
74.7094	27.39	QP	10.67	38.06	40.00	-1.94	115	100
111.6433	27.32	peak	12.56	39.88	43.50	-3.62	70	100
154.4088	25.75	peak	15.35	41.10	43.50	-2.40	40	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
11650.0000	36.10	---	12.36	48.46	---	74.00	54.00	-25.54	65	100
17475.0000	27.81	---	20.23	48.04	---	74.00	54.00	-25.96	145	100

Antenna 0 + Antenna 1

Mode: 802.11n 20MHz 5745MHz

Polarization: Horizontal

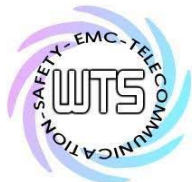
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
63.0461	13.32	peak	12.79	26.11	40.00	-13.89	90	100
109.6994	20.96	peak	12.39	33.35	43.50	-10.15	245	100
150.5210	12.35	peak	15.31	27.66	43.50	-15.84	130	100
294.3687	18.90	peak	15.88	34.78	46.00	-11.22	60	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
11490.0000	35.87	---	12.09	47.96	---	74.00	54.00	-26.04	155	100
17235.0000	27.74	---	20.39	48.13	---	74.00	54.00	-25.87	115	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
59.1583	25.00	QP	13.47	38.47	40.00	-1.53	135	100
74.7094	27.63	QP	10.67	38.30	40.00	-1.70	90	100
111.6433	28.04	peak	12.56	40.60	43.50	-2.90	110	100
156.3527	24.11	peak	15.37	39.48	43.50	-4.02	155	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
11490.0000	36.88	---	12.09	48.97	---	74.00	54.00	-25.03	75	100
17235.0000	27.90	---	20.39	48.29	---	74.00	54.00	-25.71	140	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

Mode: 802.11n 20MHz 5785MHz
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	14.67	peak	12.41	27.08	40.00	-12.92	170	100
107.7555	20.93	peak	12.09	33.02	43.50	-10.48	245	100
150.5210	12.76	peak	15.31	28.07	43.50	-15.43	80	100
294.3687	19.46	peak	15.88	35.34	46.00	-10.66	155	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11570.0000	35.04	---	12.47	47.51	---	74.00	54.00	-26.49	165	100
17355.0000	28.05	---	20.33	48.38	---	74.00	54.00	-25.62	140	100

Polarization: Vertical

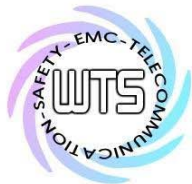
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
59.1583	24.62	QP	13.47	38.09	40.00	-1.91	65	100
76.6533	28.13	QP	10.37	38.50	40.00	-1.50	120	100
109.6994	27.91	peak	12.39	40.30	43.50	-3.20	75	100
158.2966	25.02	peak	15.38	40.40	43.50	-3.10	160	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11570.0000	34.94	---	12.47	47.41	---	74.00	54.00	-26.59	105	100
17355.0000	28.04	---	20.33	48.37	---	74.00	54.00	-25.63	230	100

Mode: 802.11n 20MHz 5825MHz
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
63.0461	13.71	peak	12.79	26.50	40.00	-13.50	140	100
109.6994	20.40	peak	12.39	32.79	43.50	-10.71	210	100
150.5210	12.54	peak	15.31	27.85	43.50	-15.65	75	100
292.4248	20.87	peak	15.84	36.71	46.00	-9.29	195	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11650.0000	34.98	---	12.36	47.34	---	74.00	54.00	-26.66	105	100
17475.0000	27.75	---	20.23	47.98	---	74.00	54.00	-26.02	230	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
55.2705	24.31	QP	13.81	38.12	40.00	-1.88	140	100
74.7094	27.51	QP	10.67	38.18	40.00	-1.82	120	100
109.6994	27.67	peak	12.39	40.06	43.50	-3.44	70	100
156.3527	24.97	peak	15.37	40.34	43.50	-3.16	160	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
11569.6390	37.74	---	12.47	50.21	---	74.00	54.00	-23.79	215	100
17475.0000	27.41	---	20.23	47.64	---	74.00	54.00	-26.36	210	100

Mode: 802.11n 40MHz 5755MHz

Polarization: Horizontal

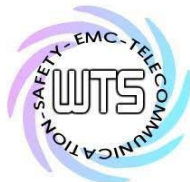
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
109.6994	21.14	peak	12.39	33.53	43.50	-9.97	45	100
224.3888	17.10	peak	13.46	30.56	46.00	-15.44	130	100
294.3687	20.15	peak	15.88	36.03	46.00	-9.97	185	100
900.8617	10.64	peak	27.15	37.79	46.00	-8.21	190	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
11510.0000	35.22	---	12.24	47.46	---	74.00	54.00	-26.54	160	100
17265.0000	28.67	---	20.77	49.44	---	74.00	54.00	-24.56	175	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
55.2705	24.29	QP	13.81	38.10	40.00	-1.90	55	100
76.6533	27.71	QP	10.37	38.08	40.00	-1.92	130	100
111.6433	27.29	peak	12.56	39.85	43.50	-3.65	115	100
150.5210	25.05	peak	15.31	40.36	43.50	-3.14	140	100

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
11510.0000	37.12	---	12.24	49.36	---	74.00	54.00	-24.64	80	100
17265.0000	28.71	---	20.77	49.48	---	74.00	54.00	-24.52	65	100



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

Mode: 802.11n 40MHz 5795MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
64.9900	14.81	peak	12.41	27.22	40.00	-12.78	30	100
109.6994	20.21	peak	12.39	32.60	43.50	-10.90	115	100
150.5210	12.75	peak	15.31	28.06	43.50	-15.44	120	100
294.3687	19.42	peak	15.88	35.30	46.00	-10.70	45	100

Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11590.0000	34.35	---	12.55	46.90	---	74.00	54.00	-27.10	105	100
17385.0000	28.82	---	19.85	48.67	---	74.00	54.00	-25.33	235	100

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
51.3828	24.35	QP	14.14	38.49	40.00	-1.51	95	100
74.7094	28.00	QP	10.67	38.67	40.00	-1.33	160	100
111.6433	27.34	peak	12.56	39.90	43.50	-3.60	145	100
156.3527	25.60	peak	15.37	40.97	43.50	-2.53	130	100

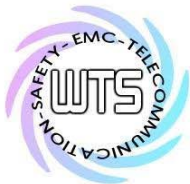
Frequency (MHz)	Reading (dBuV) Peak Ave.		Factor (dB) Corr.	Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
11579.1580	36.65	---	12.51	49.16	---	74.00	54.00	-24.84	75	100
17385.0000	29.12	---	19.85	48.97	---	74.00	54.00	-25.03	170	100

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.
5. Measurement uncertainty for 3m measurement: 30-1000 MHz = ± 3.68 dB, 1-18 GHz = ± 5.37 dB, 18-40 GHz = ± 3.43 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
6. See attached diagrams in appendix.

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

Test equipment used: ETSTW-RE 004, ETSTW-RE 030, ETSTW-RE 111,
ETSTW-RE 088, ETSTW-RE 018



Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

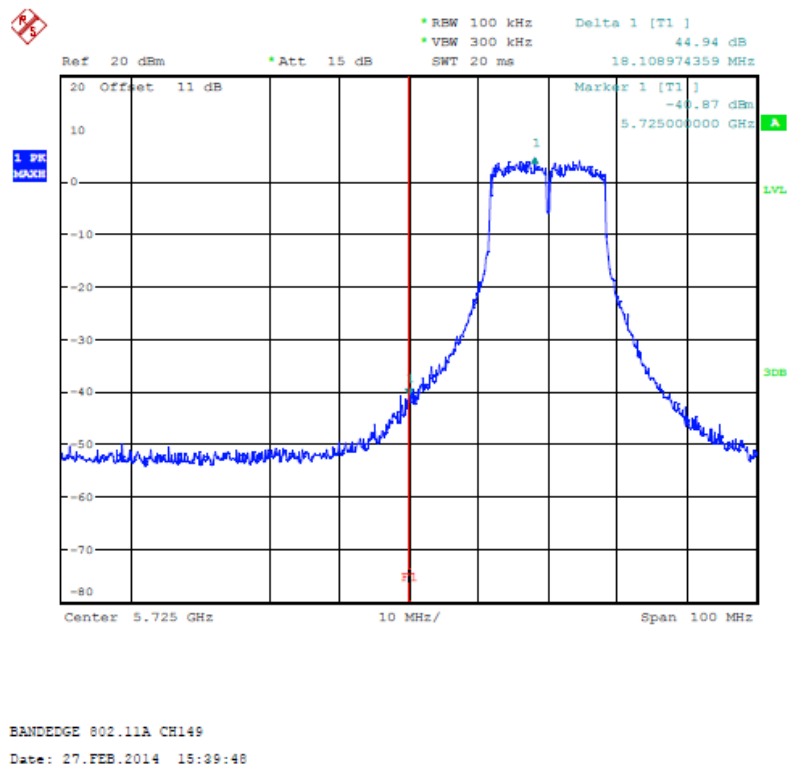
3.6 Radiated Emission on the band edge

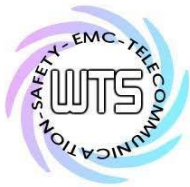
According to FCC rules part 15 subpart C §15.247(d) in any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100 kHz bandwidth within the band that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

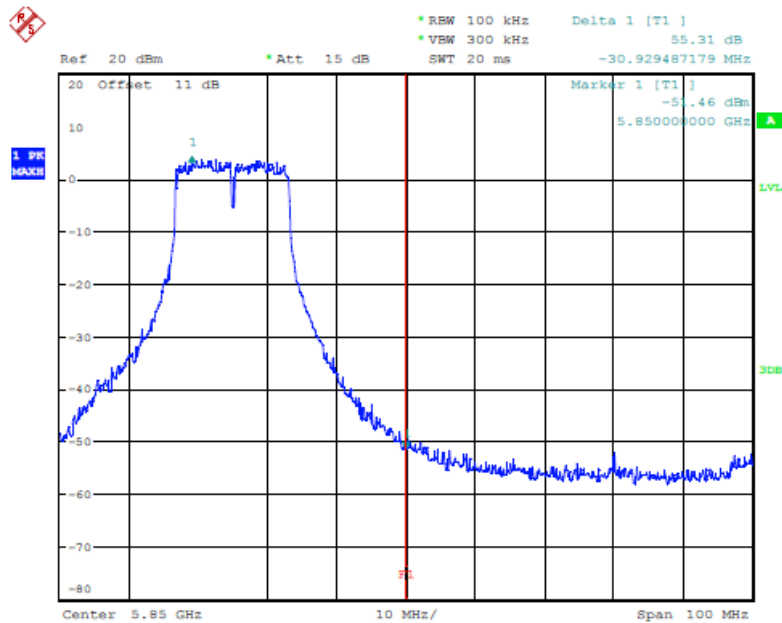
Antenna 0

Mode A



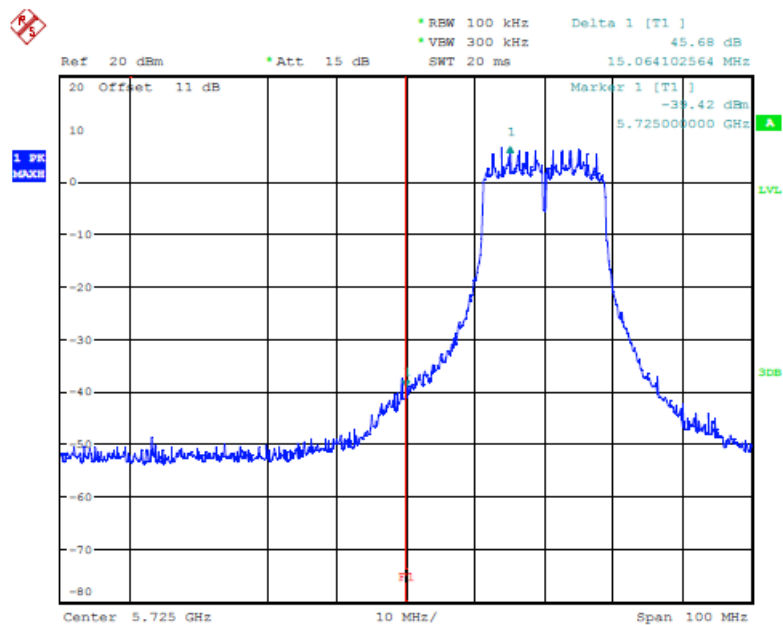


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

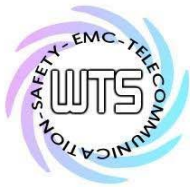


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Mode B

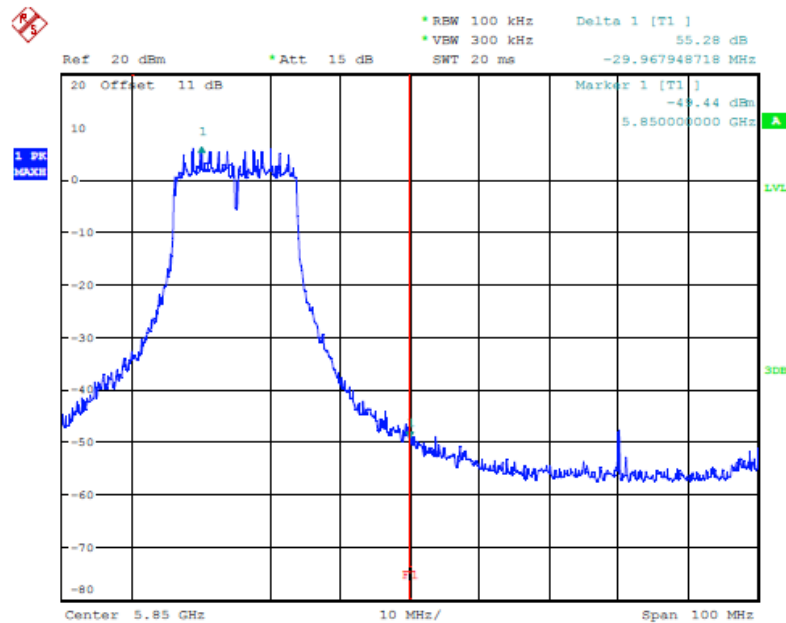


BANDEDGE 802.11N 20MHz CH149
Date: 27.FEB.2014 15:46:30



Registration number: W6D21409-14504-C-1

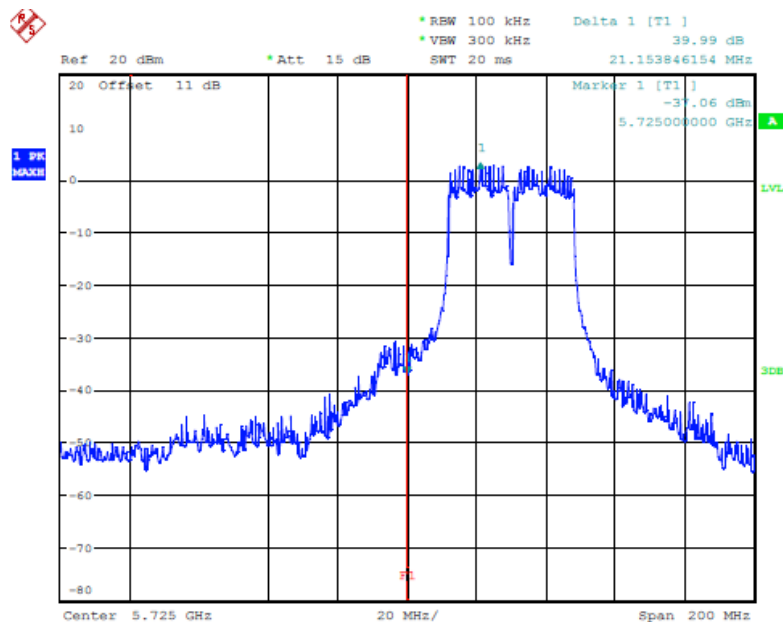
FCC ID: UL9WNAP7325



BANDEDGE 802.11N 20MHZ CH165

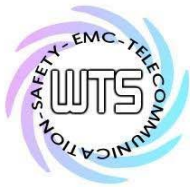
Date: 27.FEB.2014 15:49:40

Mode C



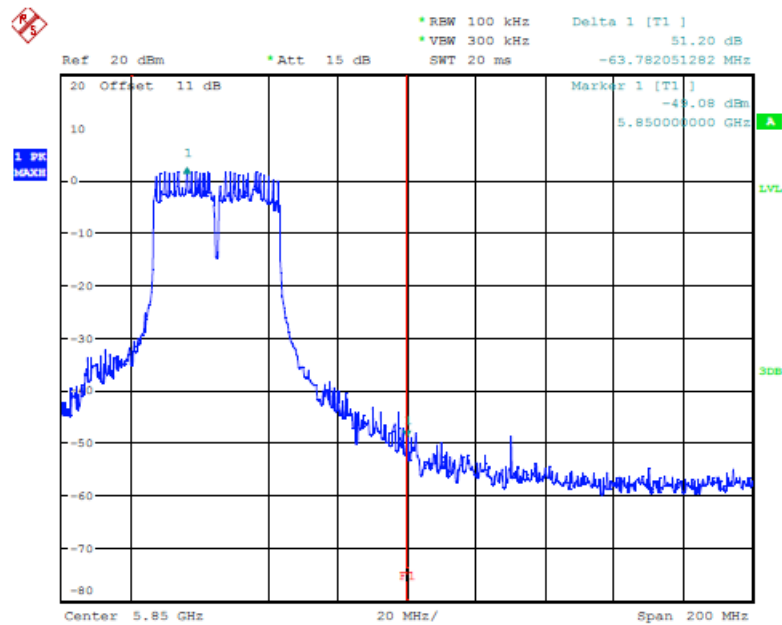
BANDEDGE 802.11N 40MHZ CH151

Date: 27.FEB.2014 15:58:23



Registration number: W6D21409-14504-C-1

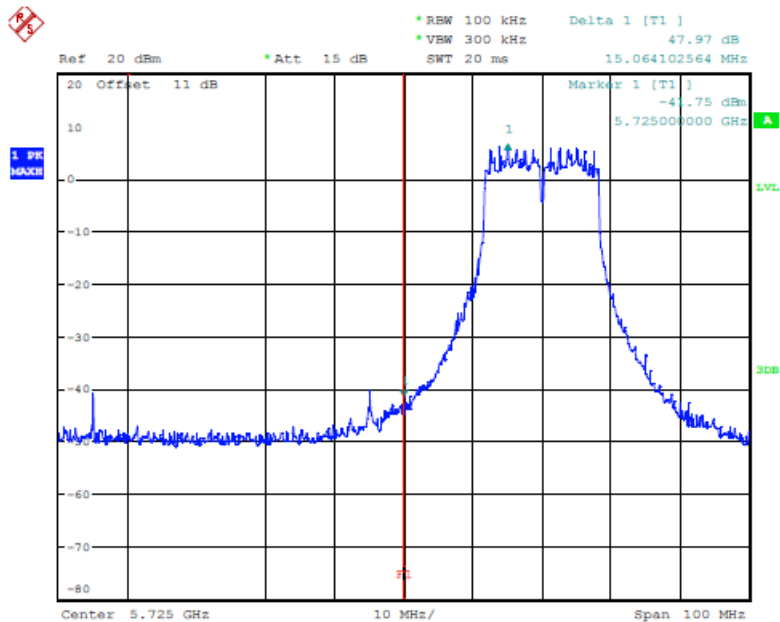
FCC ID: UL9WNAP7325



BANDEDGE 802.11N 40MHZ CH169

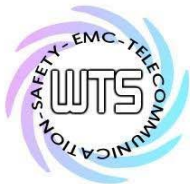
Date: 27.FEB.2014 15:59:21

Antenna 1
Mode A



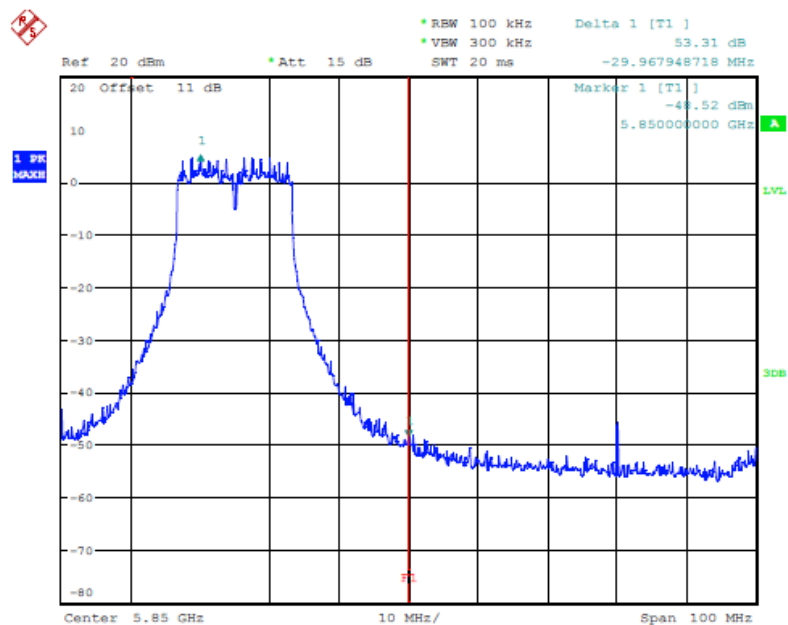
BANDEDGE 802.11A CH149

Date: 27.FEB.2014 16:47:31



Registration number: W6D21409-14504-C-1

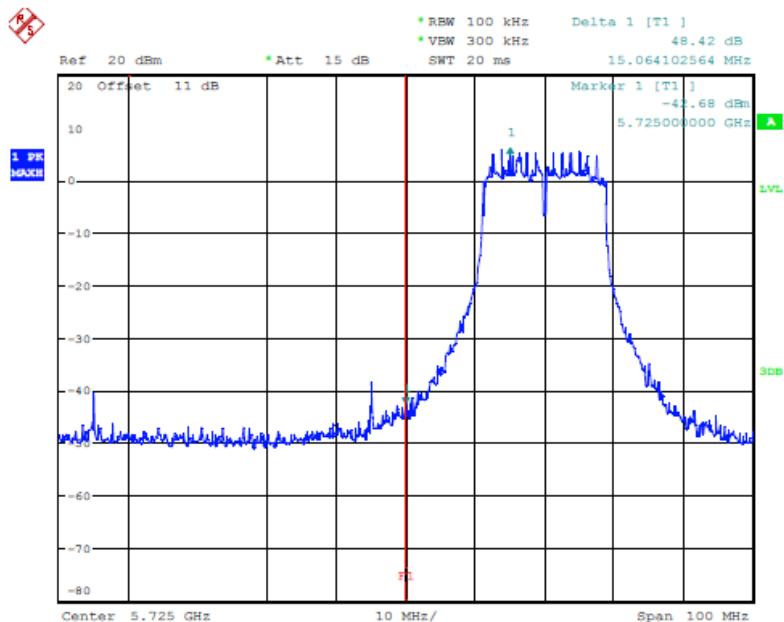
FCC ID: UL9WNAP7325



BANDEGE 802.11A CH16S

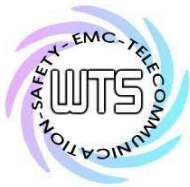
Date: 27.FEB.2014 17:01:35

Mode B



BANDEGE 802.11N 20MHZ CH149

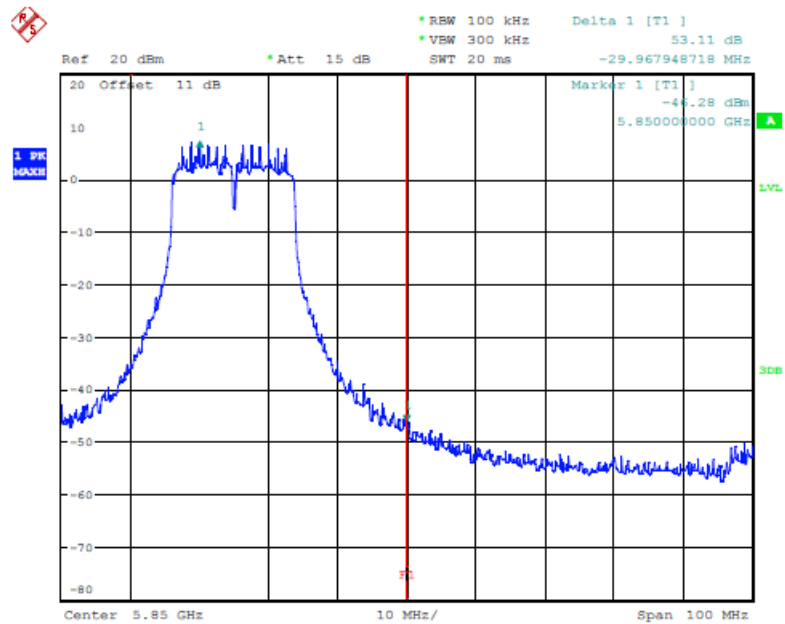
Date: 27.FEB.2014 17:05:05



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

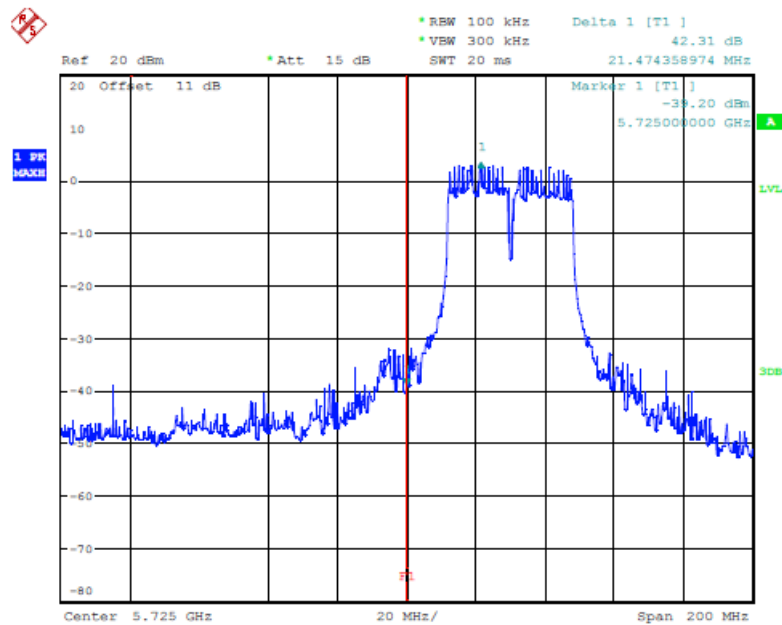
FCC ID: UL9WNAP7325



BANDEDGE 802.11N 20MHZ CH165

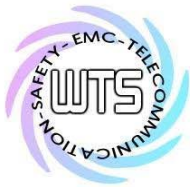
Date: 27.FEB.2014 17:07:53

Mode C



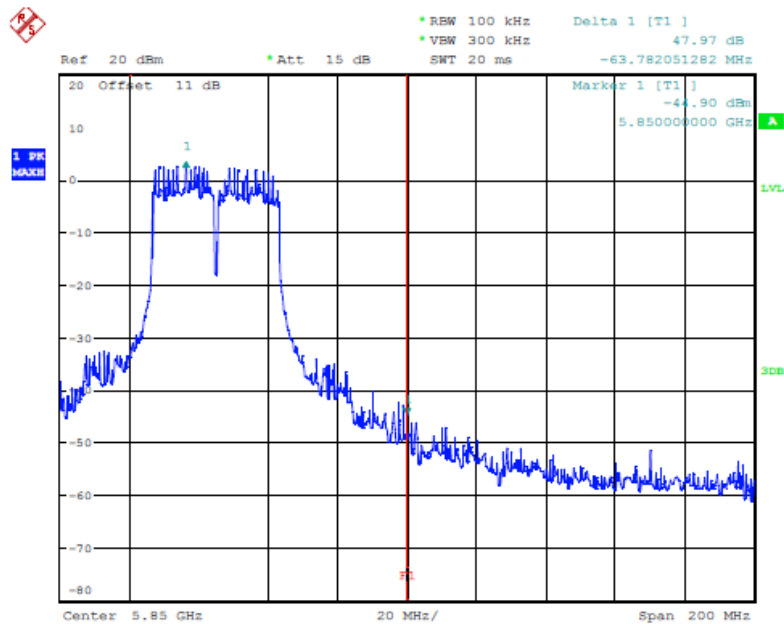
BANDEDGE 802.11N 40MHZ CH151

Date: 27.FEB.2014 17:10:36



Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

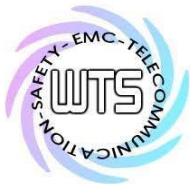


BANDEDGE 802.11N 40MHz CH169
Date: 27.FEB.2014 17:12:24

Limit:

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

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



Registration number: W6D21409-14504-C-1

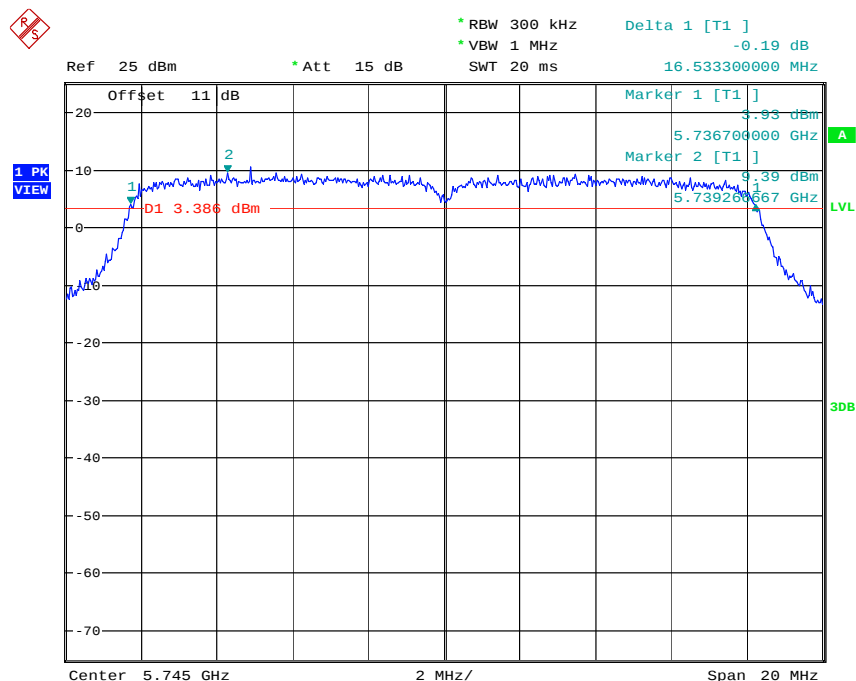
FCC ID: UL9WNAP7325

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.

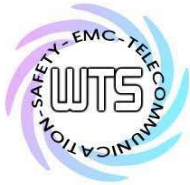
Antenna 0

Mode A

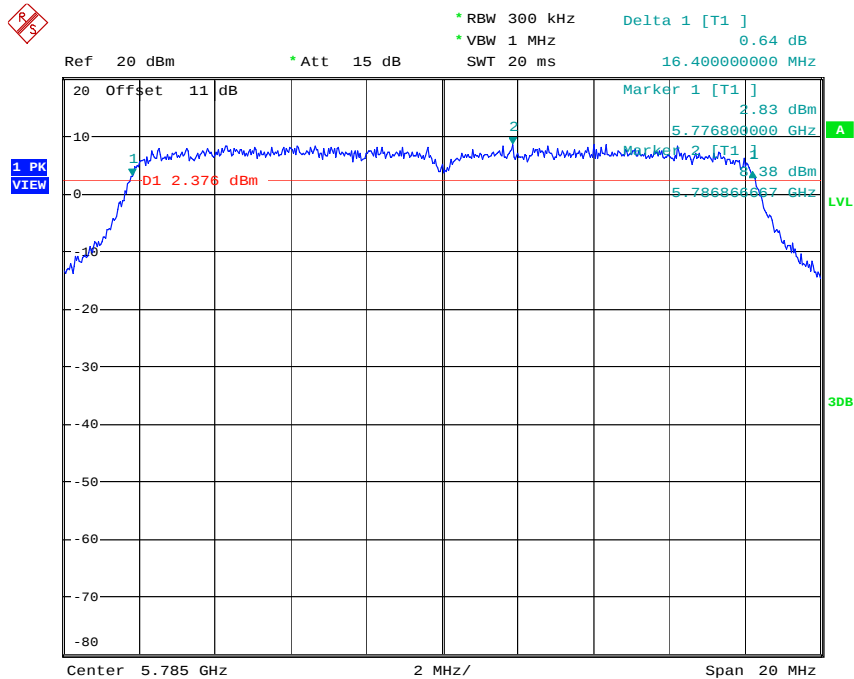


6DB BANDWIDTH 802.11A CH149

Date: 27.FEB.2014 15:39:38

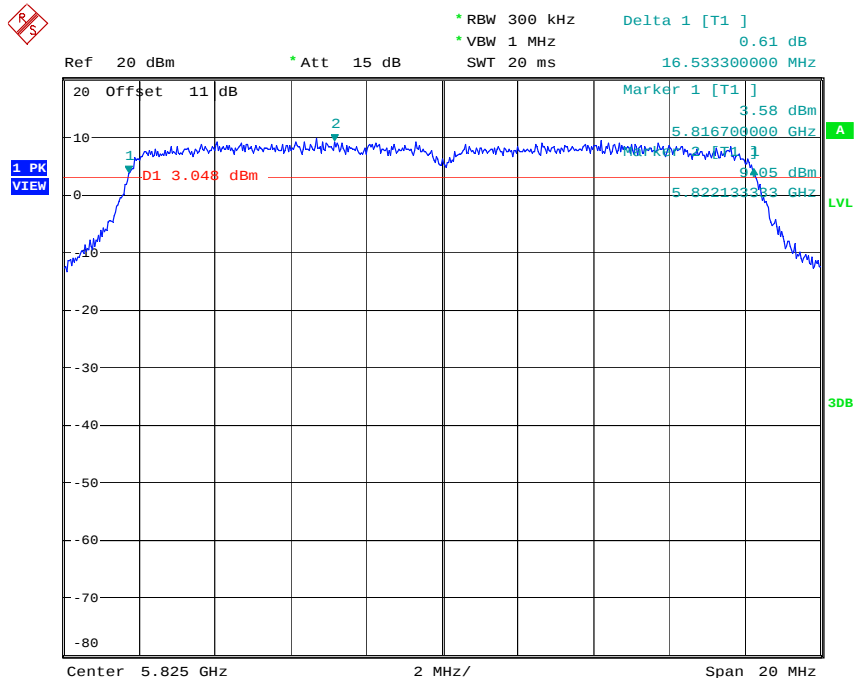


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



6DB BANDWIDTH 802.11A CH157

Date: 27.FEB.2014 15:40:26



6DB BANDWIDTH 802.11A CH165

Date: 27.FEB.2014 15:42:34

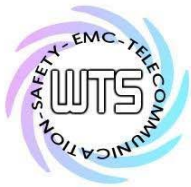


FCC ID: UL9WNAP7325

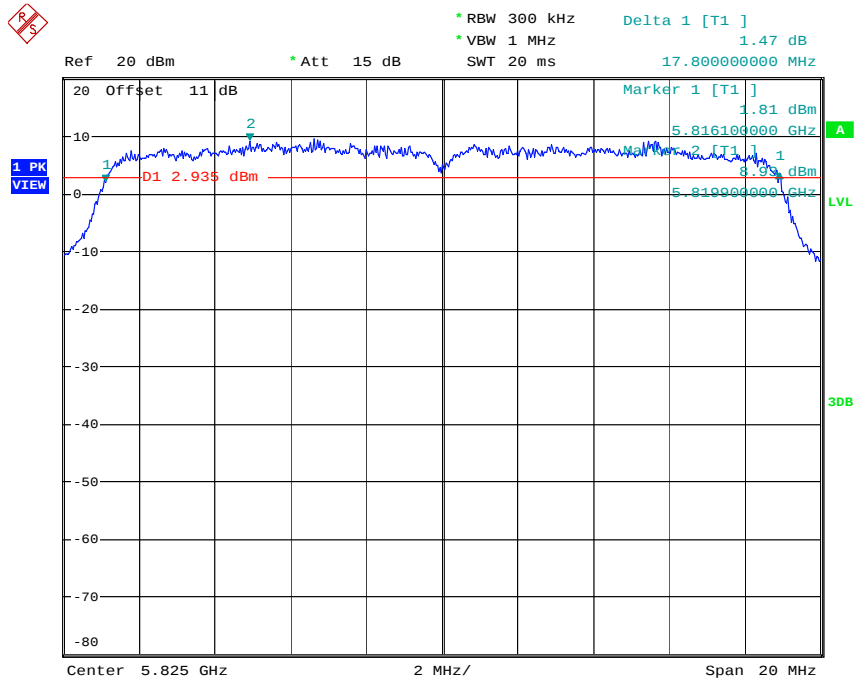
Mode B

Date: 27.FEB.2014 15:46:22

Date: 27.FEB.2014 15:47:39

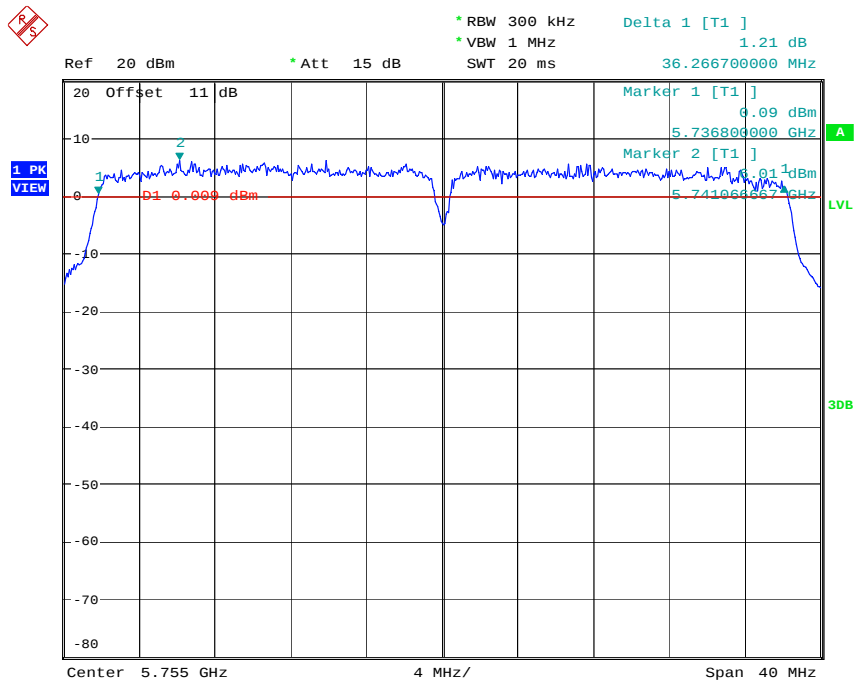


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

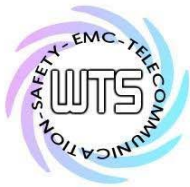


6DB BANDWIDTH 802.11N 20MHZ CH165
Date: 27.FEB.2014 15:49:32

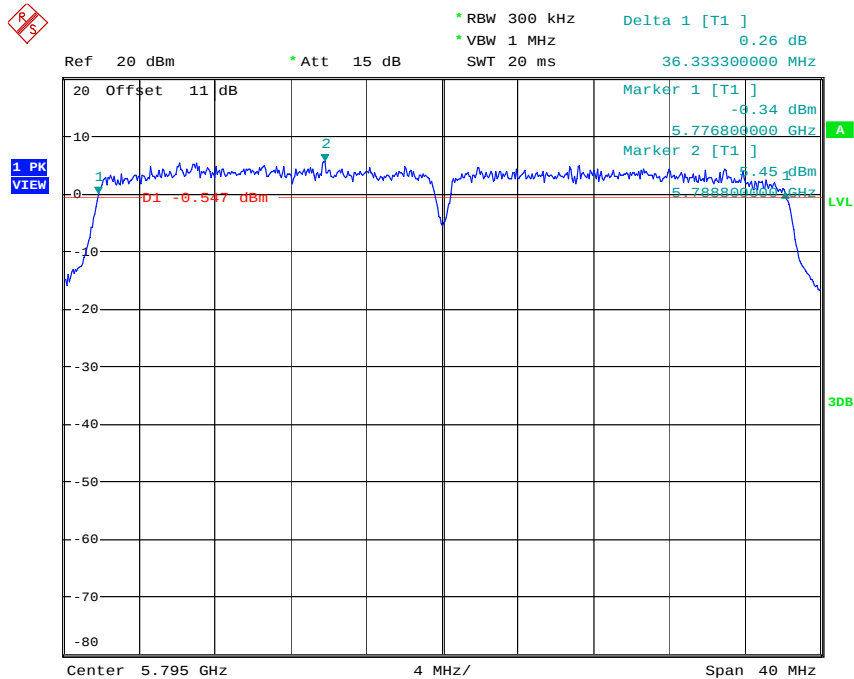
Mode C



6DB BANDWIDTH 802.11N 40MHZ CH151
Date: 27.FEB.2014 15:58:14

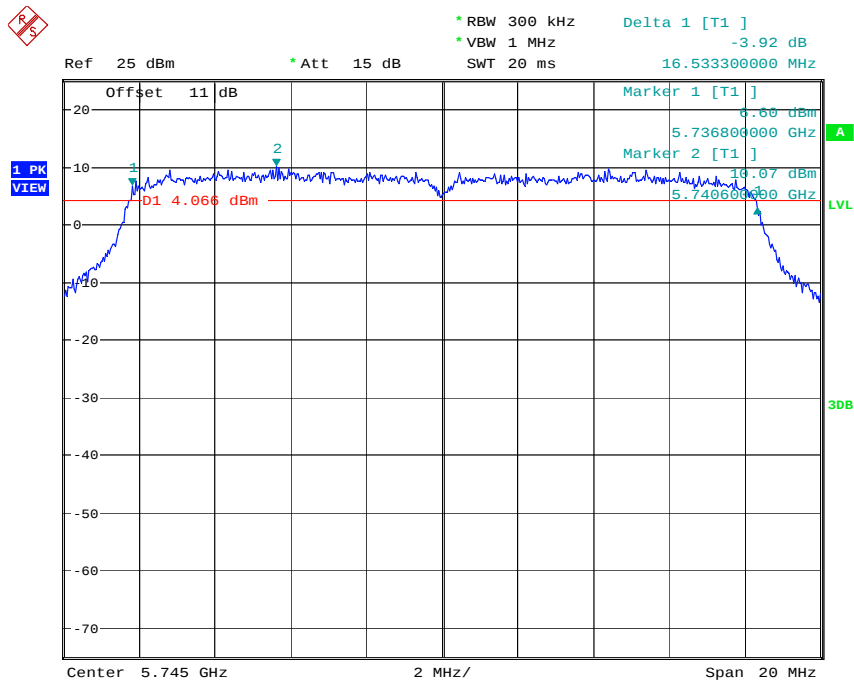


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

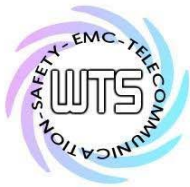


6DB BANDWIDTH 802.11N 40MHZ CH159
Date: 27.FEB.2014 15:59:13

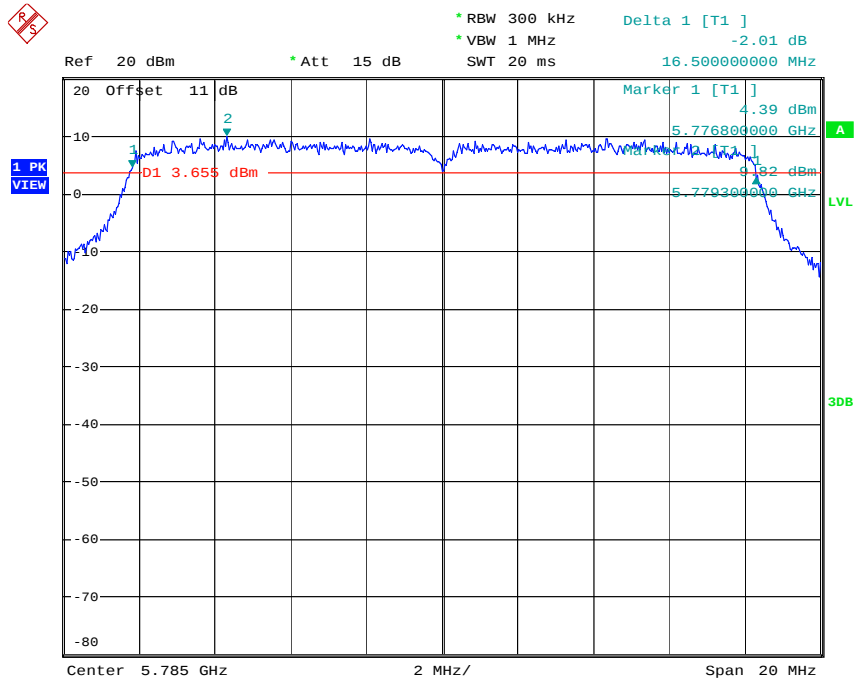
Antenna 1
Mode A



6DB BANDWIDTH 802.11A CH149
Date: 27.FEB.2014 16:47:23

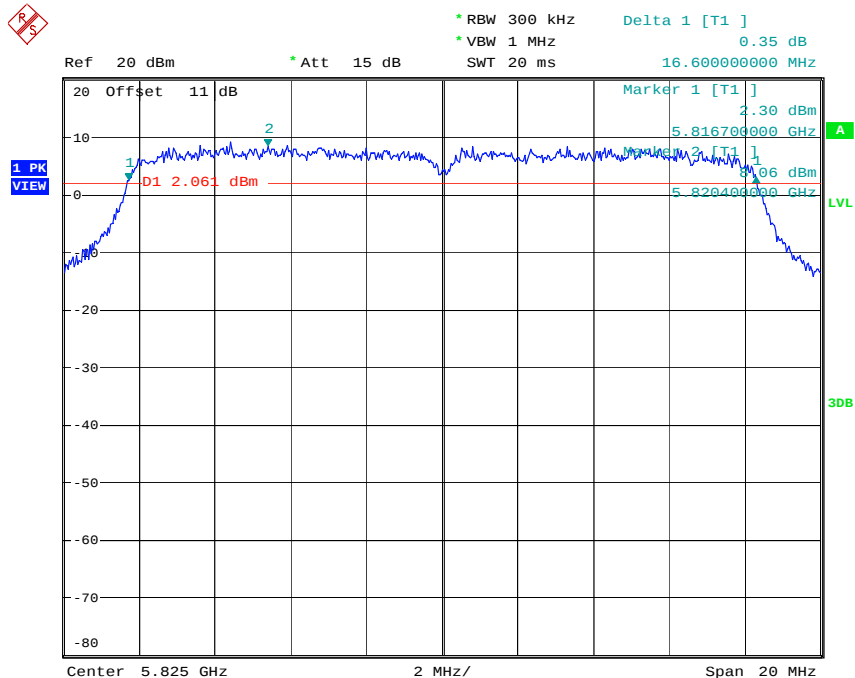


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



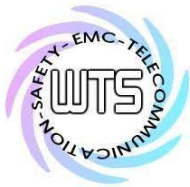
6DB BANDWIDTH 802.11A CH157

Date: 27.FEB.2014 16:48:38



6DB BANDWIDTH 802.11A CH165

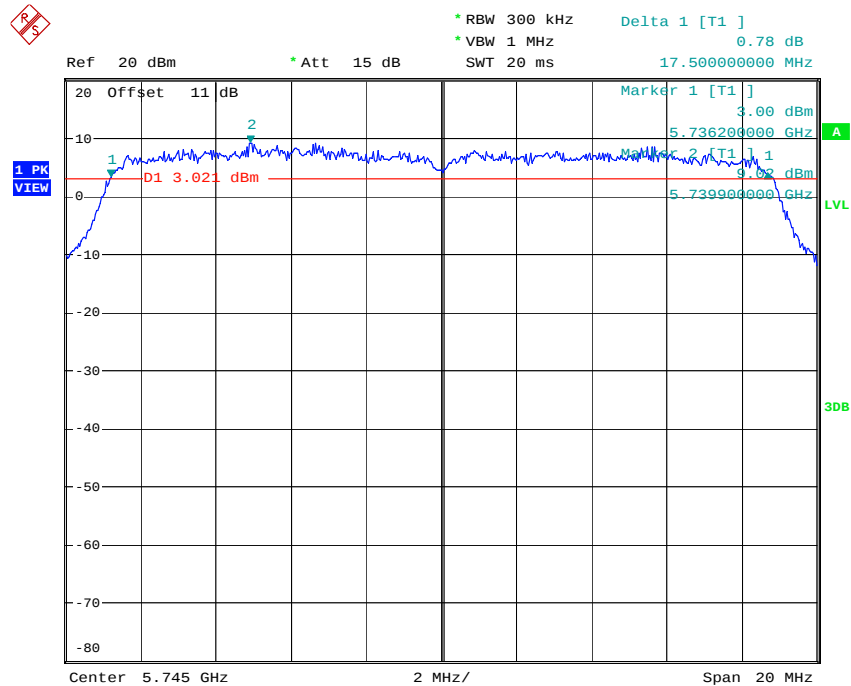
Date: 27.FEB.2014 17:01:27



Registration number: W6D21409-14504-C-1

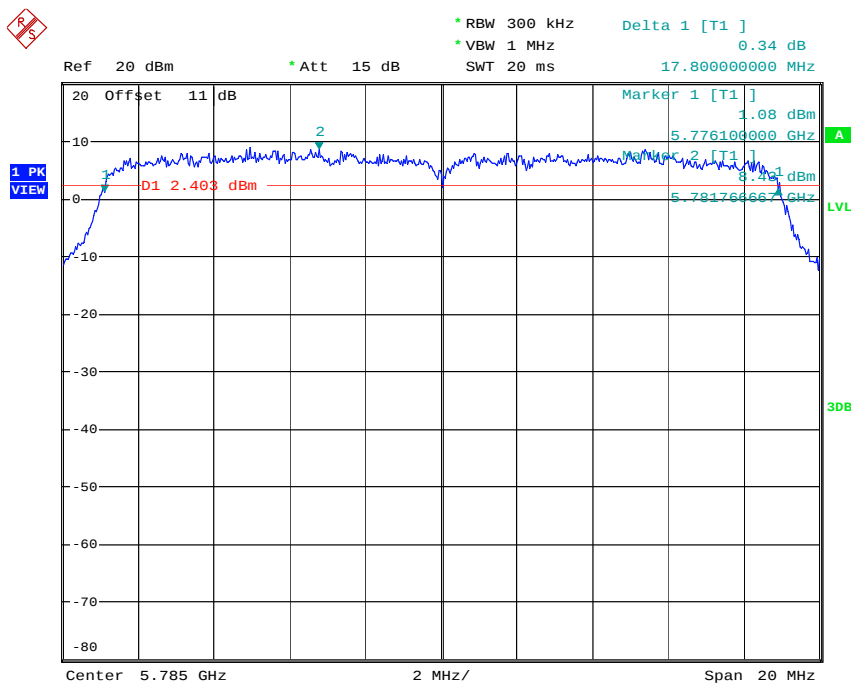
FCC ID: UL9WNAP7325

Mode B



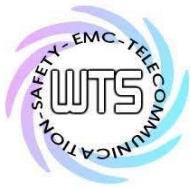
6DB BANDWIDTH 802.11N 20MHZ CH149

Date: 27.FEB.2014 17:04:57

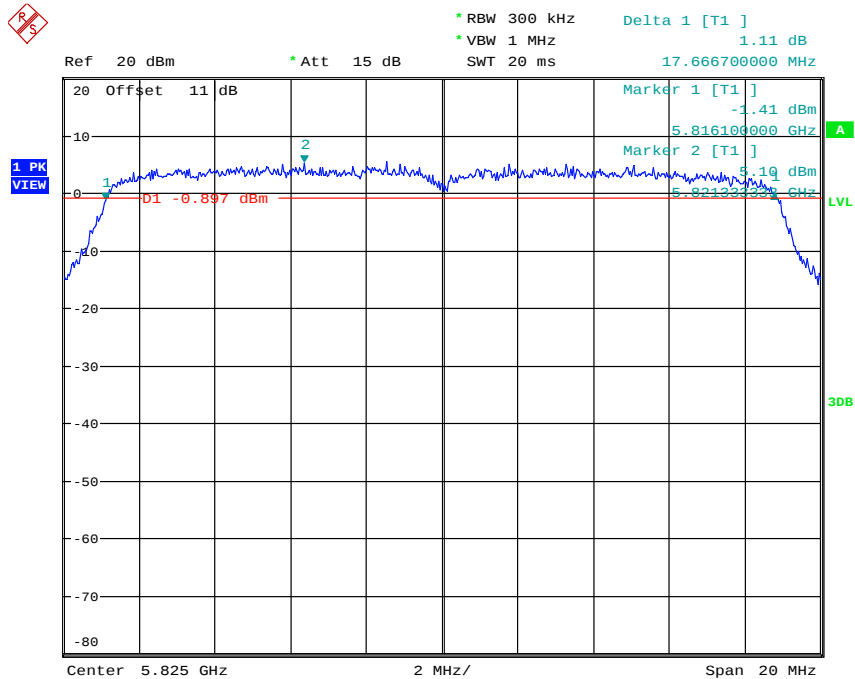


6DB BANDWIDTH 802.11N 20MHZ CH157

Date: 27.FEB.2014 17:06:35

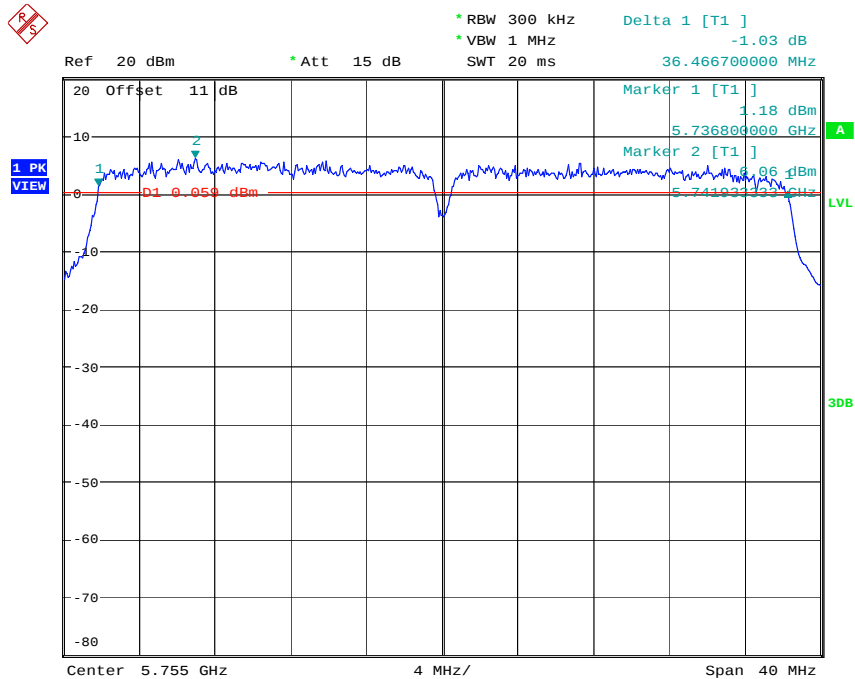


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

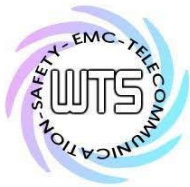


6DB BANDWIDTH 802.11N 20MHZ CH165
Date: 12.FEB.2014 12:03:25

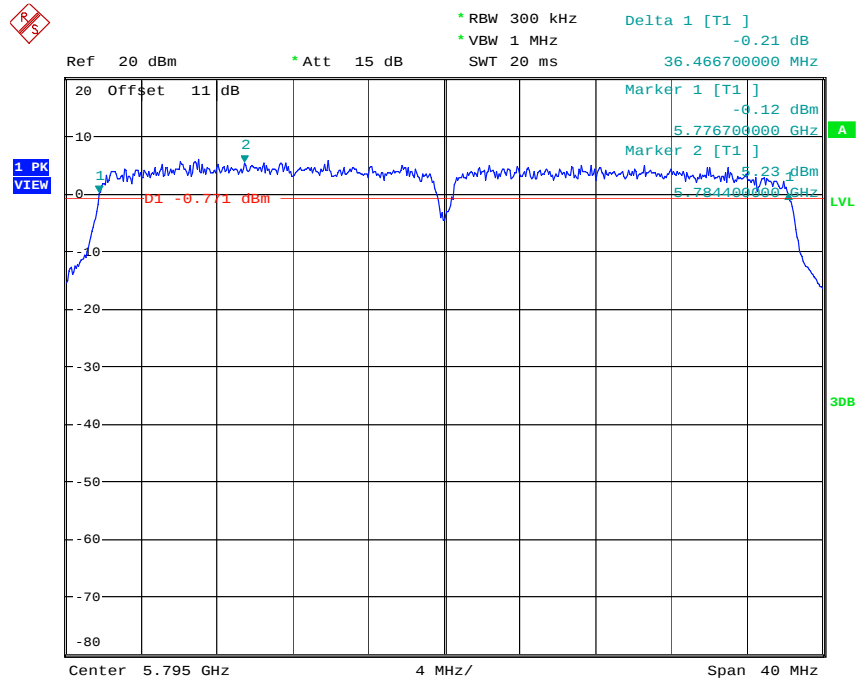
Mode C



6DB BANDWIDTH 802.11N 40MHZ CH151
Date: 27.FEB.2014 17:10:28



Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



6DB BANDWIDTH 802.11N 40MHZ CH159
Date: 27.FEB.2014 17:12:16

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, ETSTW-RE 050

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

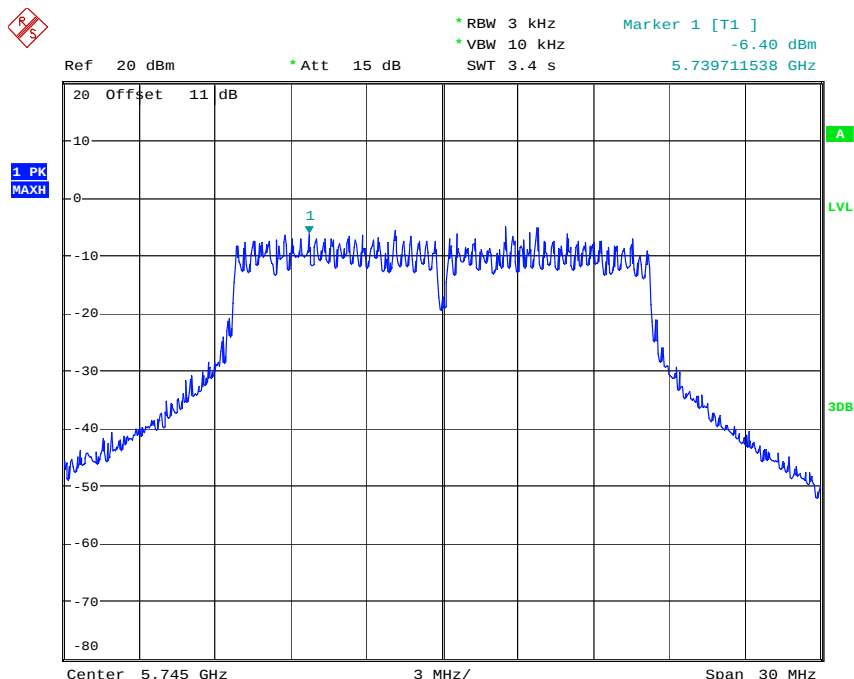
3.8 Peak Power Spectral Density

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.

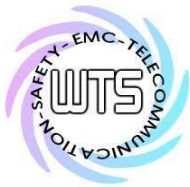
Antenna 0

Mode A

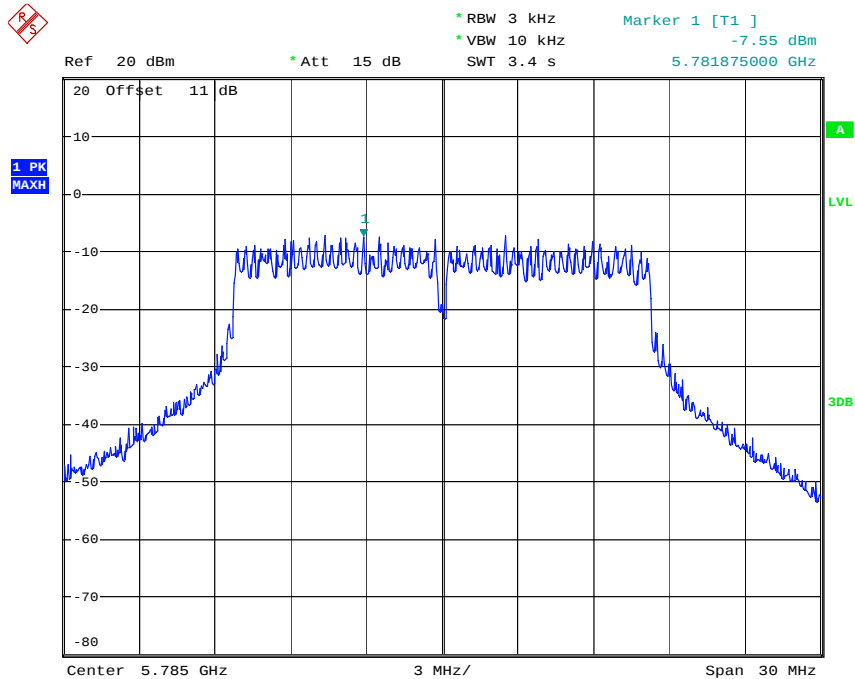


POWER DENSITY 802.11A CH149

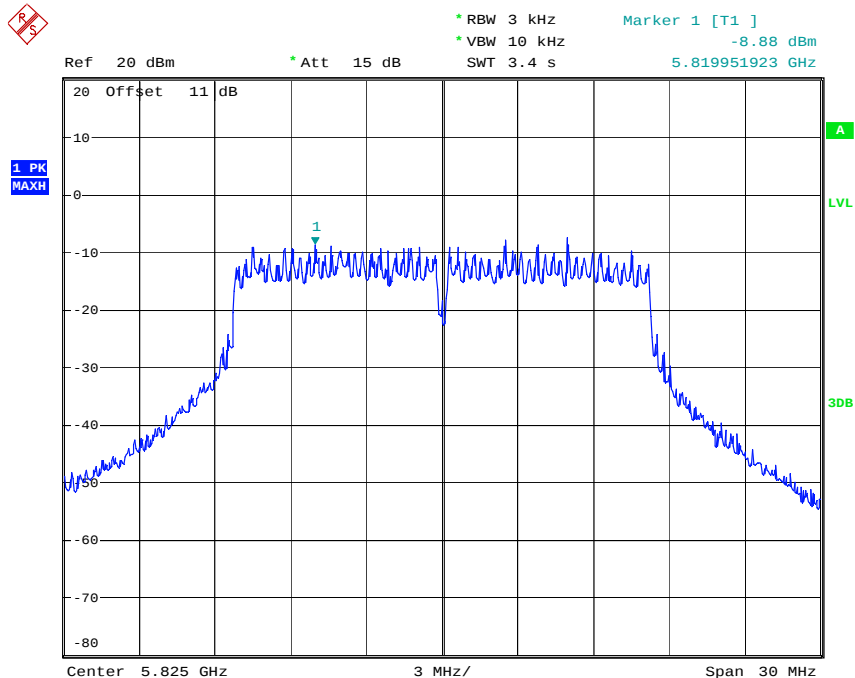
Date: 27.FEB.2014 17:44:56



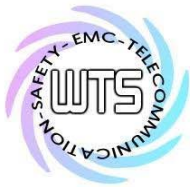
Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



POWER DENSITY 802.11A CH157
Date: 27.FEB.2014 17:44:11



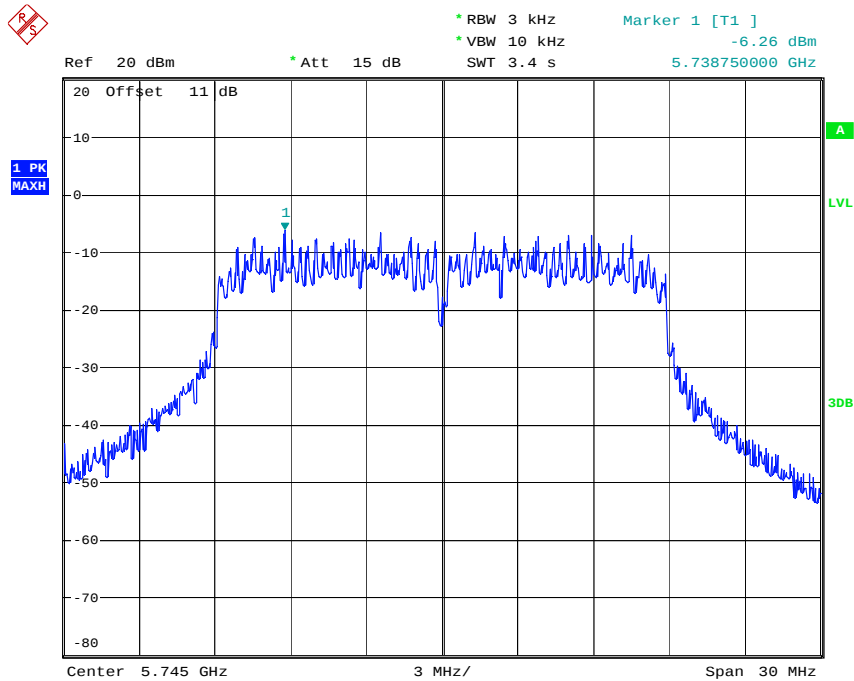
POWER DENSITY 802.11A CH165
Date: 27.FEB.2014 17:43:29



Registration number: W6D21409-14504-C-1

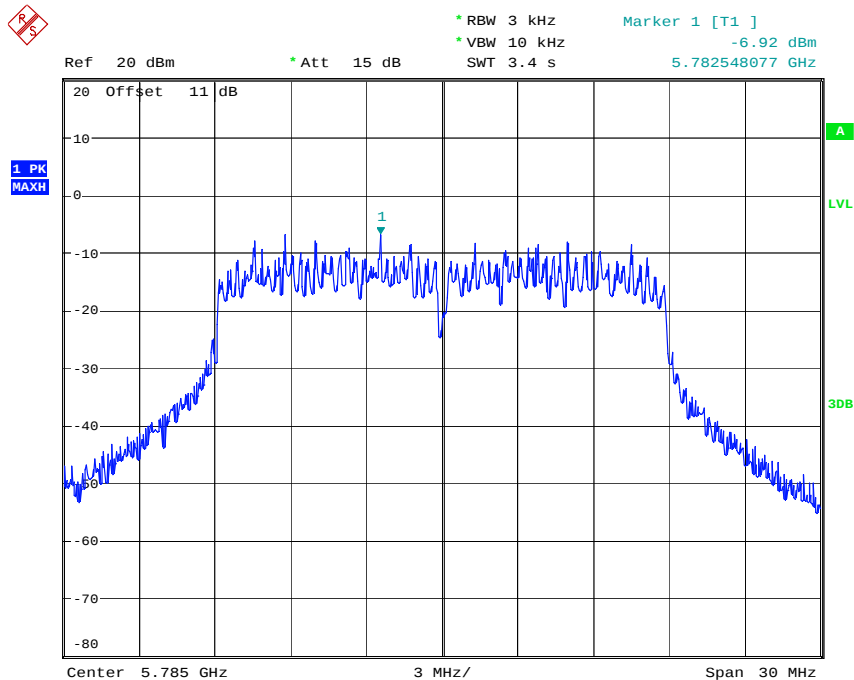
FCC ID: UL9WNAP7325

Mode B



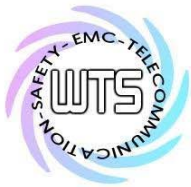
POWER DENSITY 802.11N 20MHZ CH149

Date: 27.FEB.2014 17:38:00

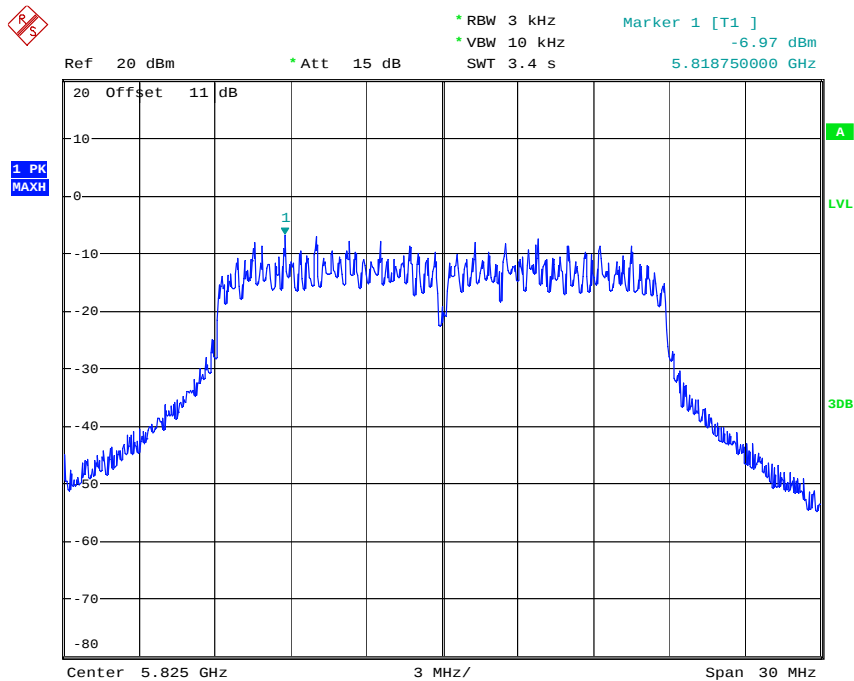


POWER DENSITY 802.11N 20MHZ CH157

Date: 27.FEB.2014 17:40:03

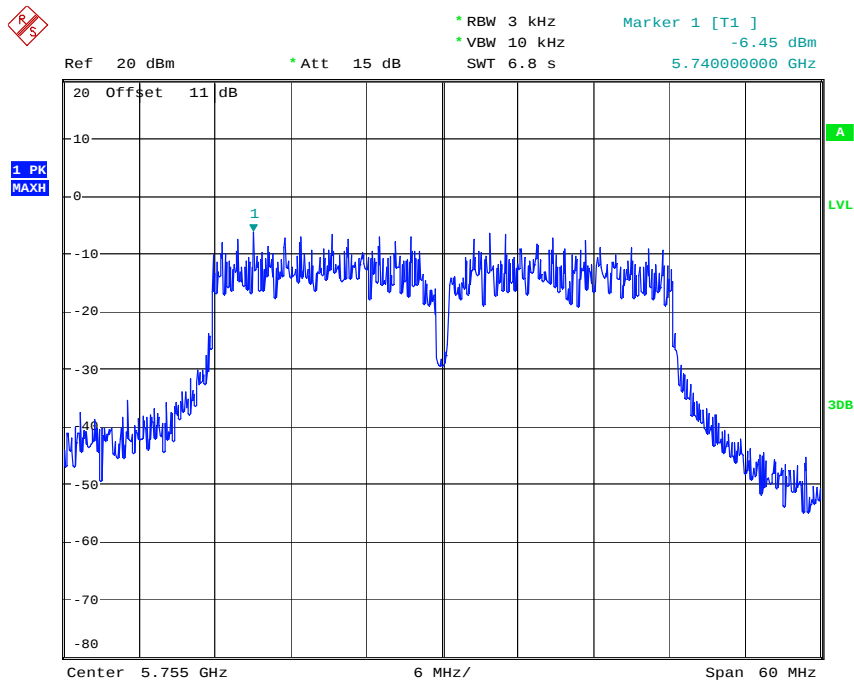


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

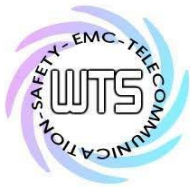


POWER DENSITY 802.11N 20MHZ CH165
Date: 27.FEB.2014 17:42:36

Mode C

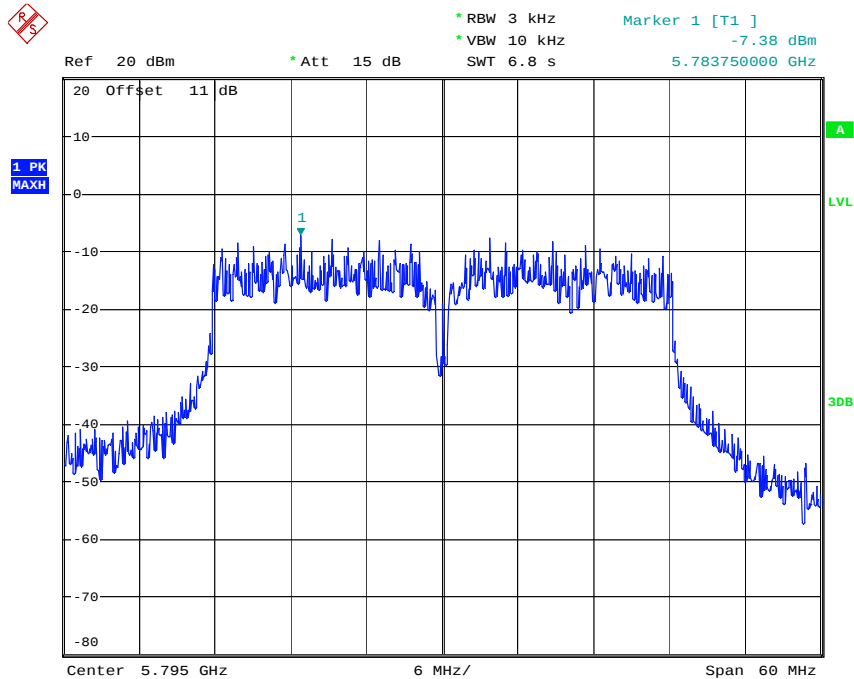


POWER DENSITY 802.11N 40MHZ CH151
Date: 27.FEB.2014 17:36:30



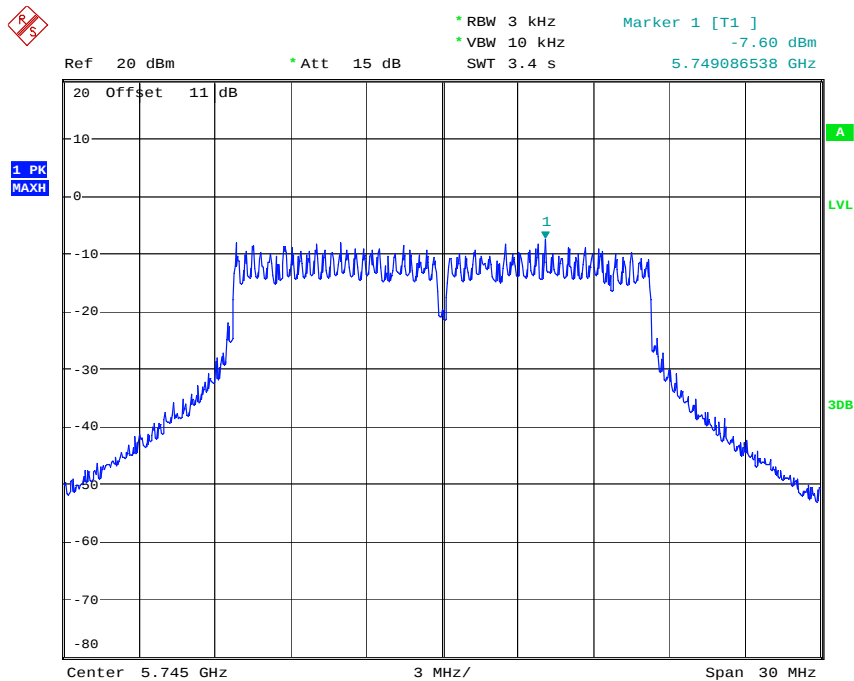
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

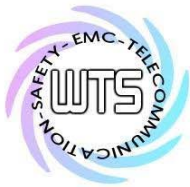


POWER DENSITY 802.11N 40MHZ CH159
Date: 27.FEB.2014 17:35:45

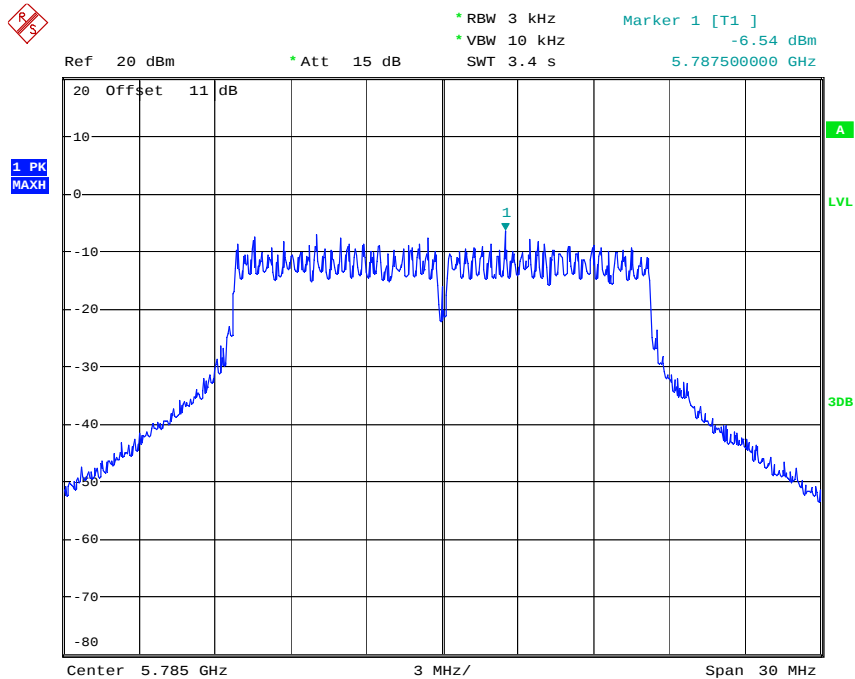
Antenna 1
Mode A



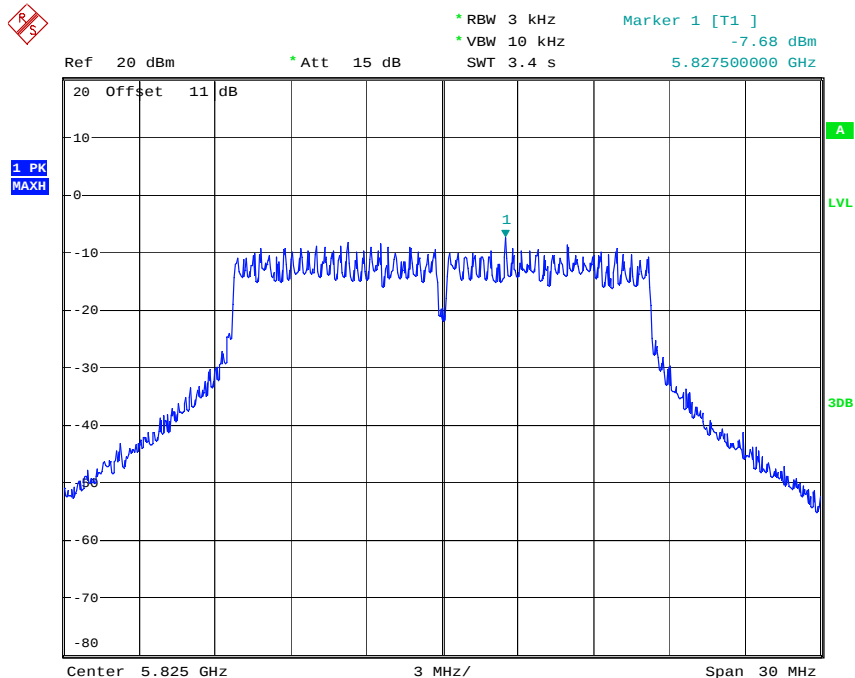
POWER DENSITY 802.11A CH149
Date: 27.FEB.2014 17:21:29



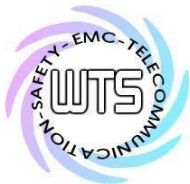
Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



POWER DENSITY 802.11A CH157
Date: 27.FEB.2014 17:23:17



POWER DENSITY 802.11A CH165
Date: 27.FEB.2014 17:24:06

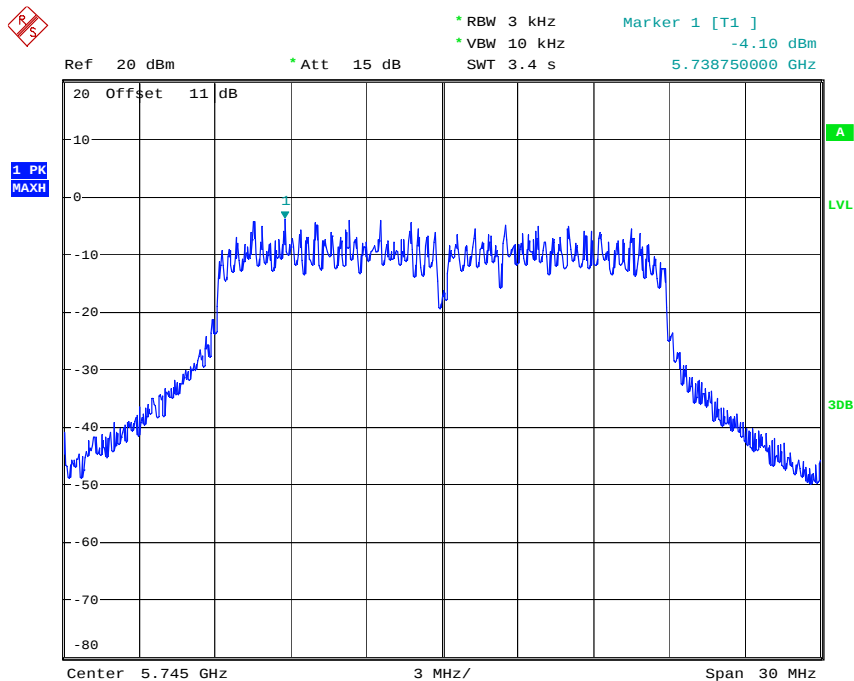


Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

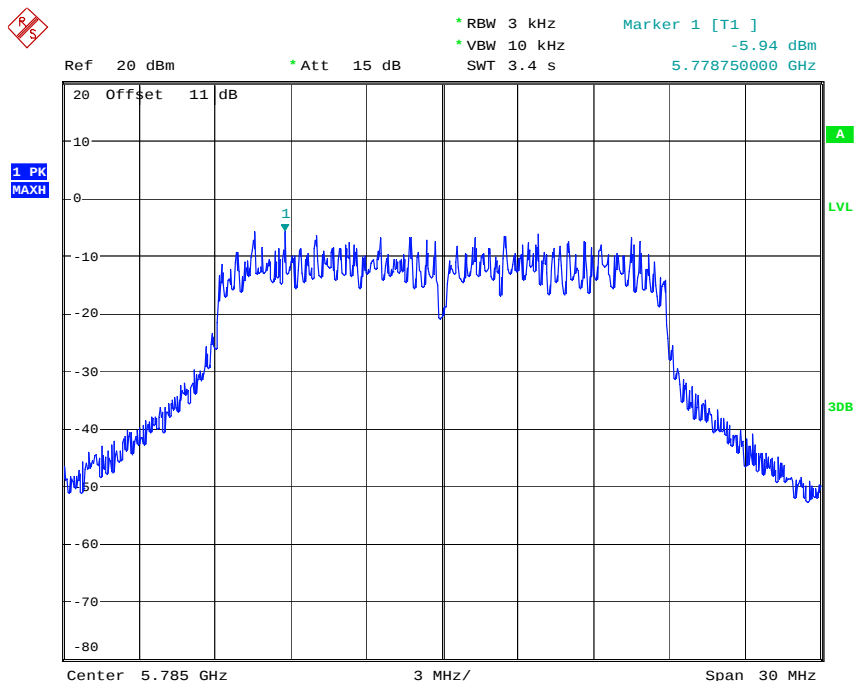
FCC ID: UL9WNAP7325

Mode B



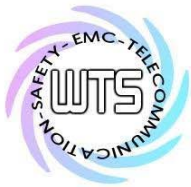
POWER DENSITY 802.11N 20MHZ CH149

Date: 27.FEB.2014 17:30:42

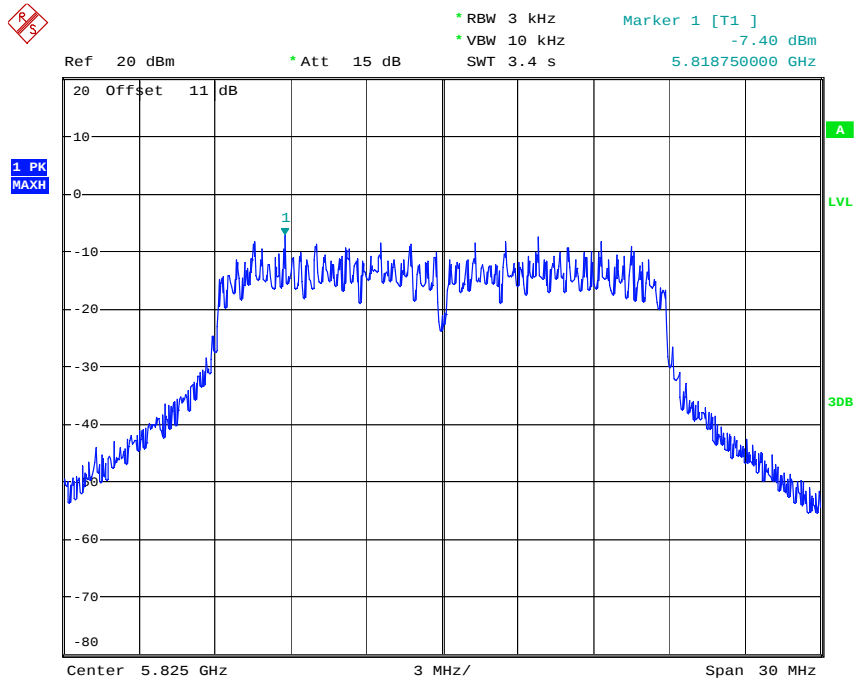


POWER DENSITY 802.11N 20MHZ CH157

Date: 27.FEB.2014 17:28:52

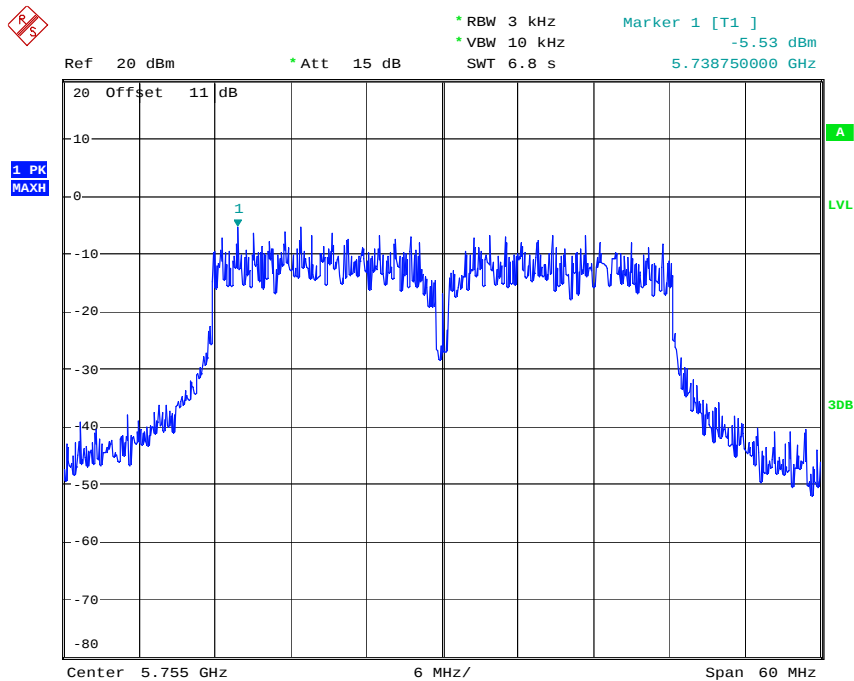


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

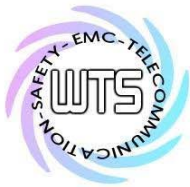


POWER DENSITY 802.11N 20MHZ CH165
Date: 27.FEB.2014 17:28:07

Mode C

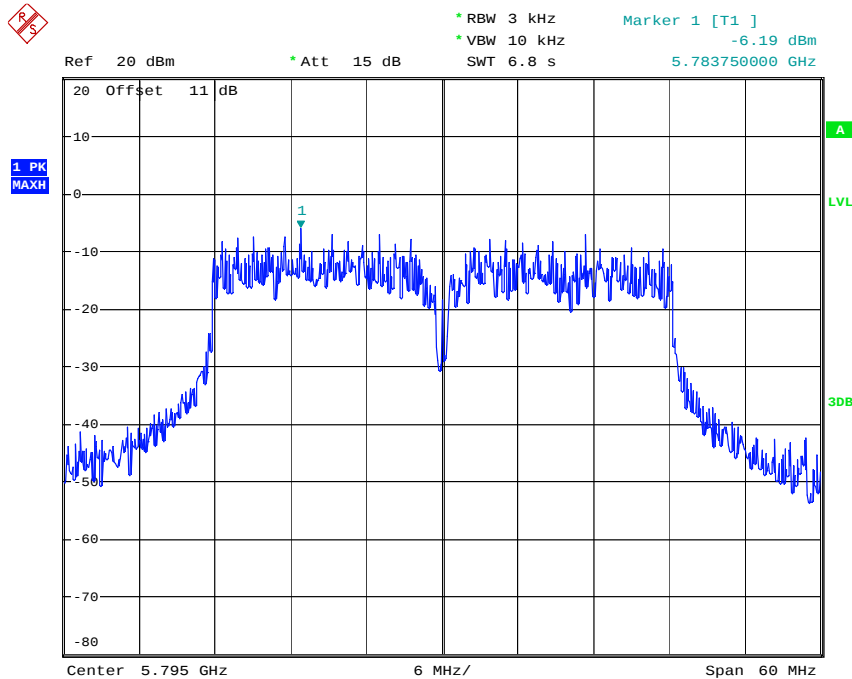


POWER DENSITY 802.11N 40MHZ CH151
Date: 27.FEB.2014 17:32:14



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325



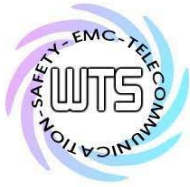
POWER DENSITY 802.11N 40MHZ CH159
Date: 27.FEB.2014 17:33:57

Antenna 0	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	0.237	0.203	0.201	-6.26	-6.92	-6.97
802.11n 40MHz	0.226	--	0.183	-6.45	--	-7.38
Antenna 1	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	0.389	0.255	0.182	-4.10	-5.94	-7.40
802.11n 40MHz	0.280	--	0.240	-5.53	--	-6.19
Combine	mW			dBm		
	Ch Low	Ch Mid	Ch High	Ch Low	Ch Mid	Ch High
802.11n 20MHz	0.626	0.458	0.383	-2.034	-3.391	-4.168
802.11n 40MHz	0.506	--	0.423	-2.958	--	-3.737

Limits:

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

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



Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

3.9 Radiated Emission from Digital Part

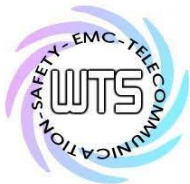
FCC Rule: 15.109

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 055, ETSTW-RE 064, ETSTW-RE 004, ETSTW-RE 030,
ETSTW-RE 111

Explanation: The test results are listed in the separated test report no.: W6M21402-13810-P-15B.



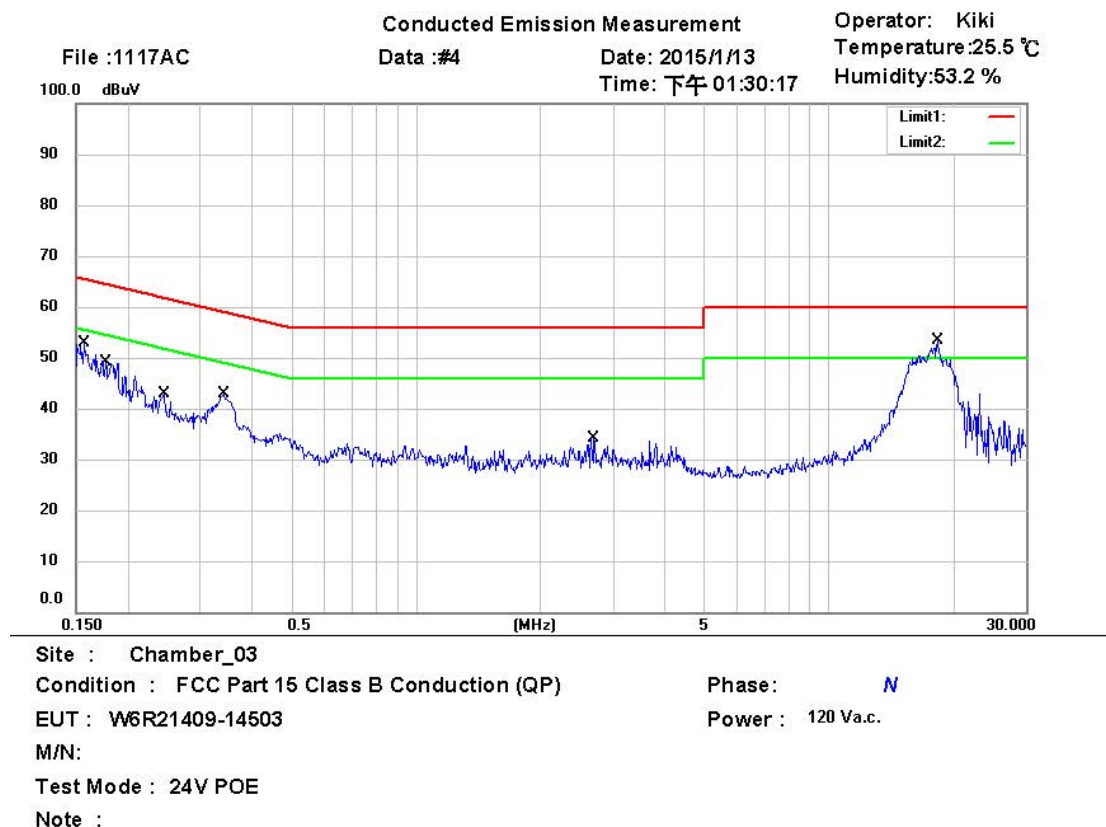
Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

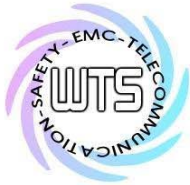
3.10 Power Line Conducted Emission

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.

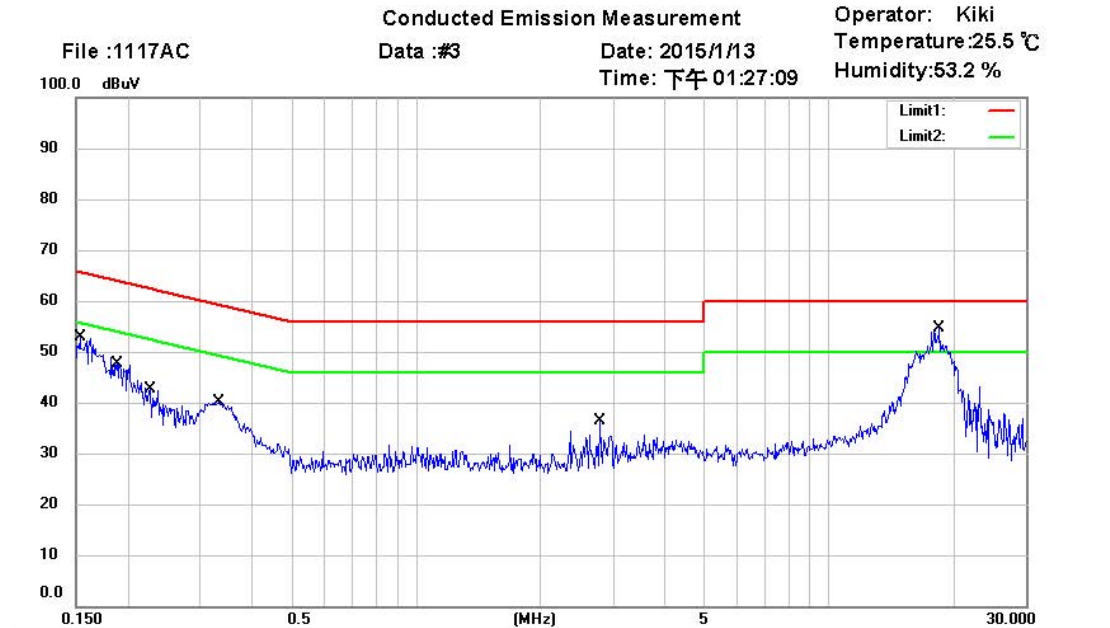


Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1541	37.78	QP	9.76	47.54	65.78	-18.24	
	0.1541	18.33	AVG	9.76	28.09	55.78	-27.69	
	0.1782	31.64	QP	9.76	41.40	64.57	-23.17	
	0.1782	13.80	AVG	9.76	23.56	54.57	-31.01	
	0.2468	26.05	QP	9.76	35.81	61.86	-26.05	
	0.2468	11.86	AVG	9.76	21.62	51.86	-30.24	
	0.3444	29.74	QP	9.76	39.50	59.10	-19.60	
	0.3444	13.61	AVG	9.76	23.37	49.10	-25.73	
	2.6881	11.67	QP	9.85	21.52	56.00	-34.48	
	2.6881	-0.02	AVG	9.85	9.83	46.00	-36.17	
	18.2451	38.78	QP	10.23	49.01	60.00	-10.99	
*	18.2451	34.44	AVG	10.23	44.67	50.00	-5.33	



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Site : Chamber_03

Condition : FCC Part 15 Class B Conduction (QP)

Phase: L1

EUT : W6R21409-14503

Power : 120 V.a.c.

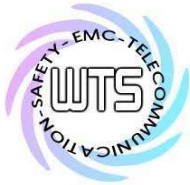
M/N:

Test Mode : 24V POE

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.1505	38.16	QP	9.70	47.86	65.97	-18.11	
	0.1505	17.36	AVG	9.70	27.06	55.97	-28.91	
	0.1876	31.66	QP	9.70	41.36	64.14	-22.78	
	0.1876	12.15	AVG	9.70	21.85	54.14	-32.29	
	0.2263	26.62	QP	9.70	36.32	62.58	-26.26	
	0.2263	9.19	AVG	9.70	18.89	52.58	-33.69	
	0.3327	26.97	QP	9.70	36.67	59.38	-22.71	
	0.3327	12.47	AVG	9.70	22.17	49.38	-27.21	
	2.7793	9.94	QP	9.78	19.72	56.00	-36.28	
	2.7793	-3.41	AVG	9.78	6.37	46.00	-39.63	
	18.4875	37.92	QP	10.08	48.00	60.00	-12.00	
*	18.4875	32.18	AVG	10.08	42.26	50.00	-7.74	

- 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 = ± 1.41 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.

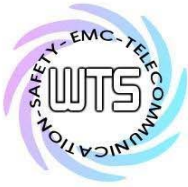


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

Limits:

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

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

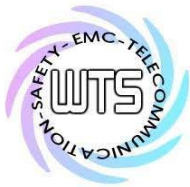


Registration number: W6D21409-14504-C-1
FCC ID: UL9WNAP7325

Appendix

Measurement diagrams

Spurious Emissions radiated



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

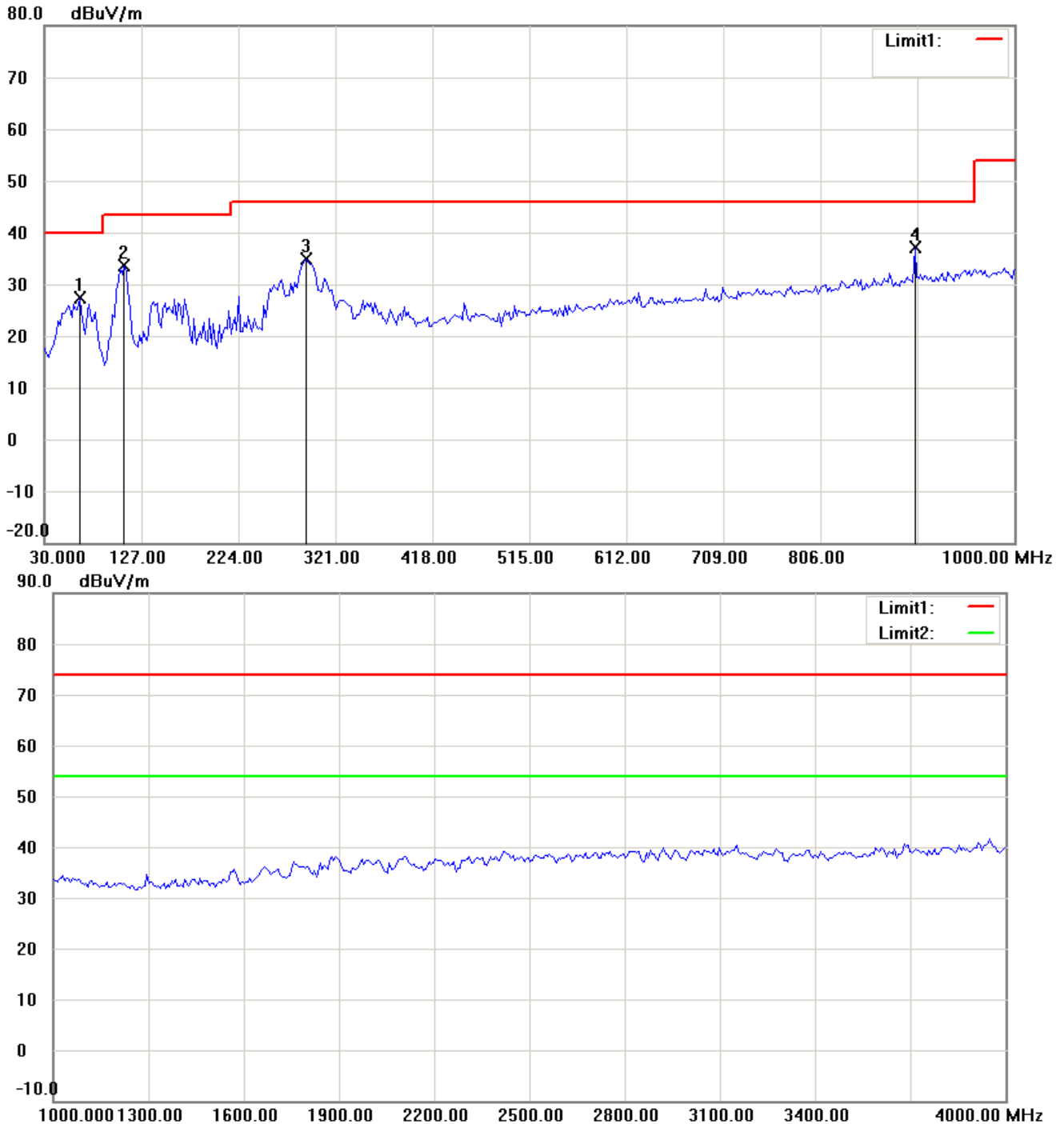
FCC ID: UL9WNAP7325

Radiated Emission-Transmitter

Antenna 0

802.11a 5745MHz

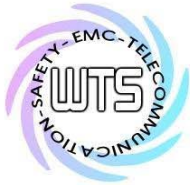
Antenna Polarization H



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

Note:

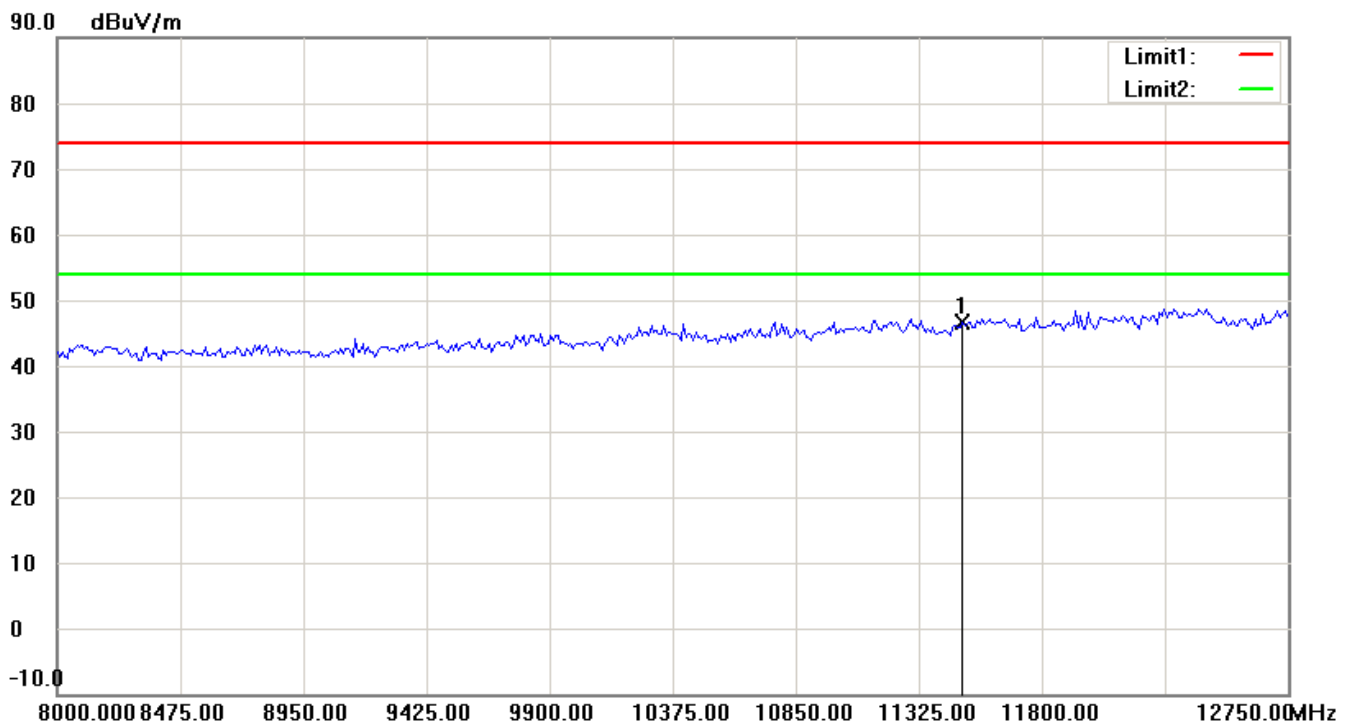
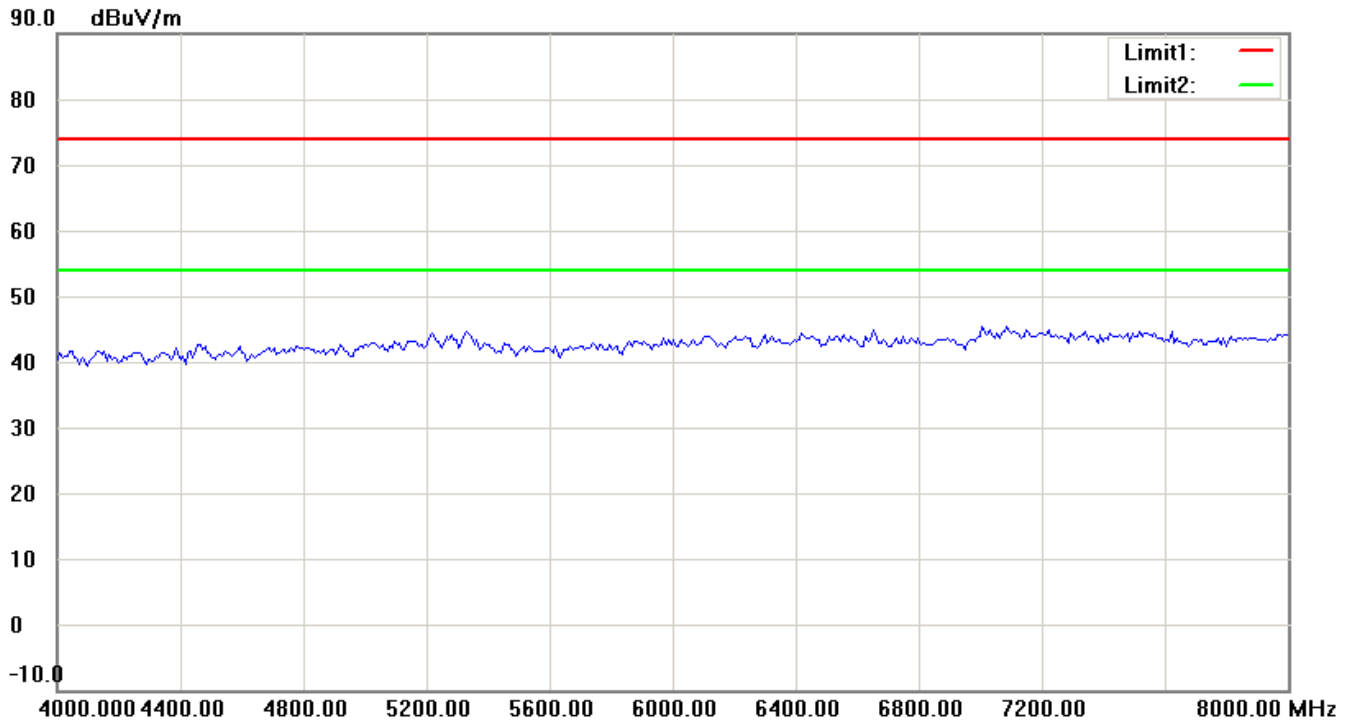
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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3. For corrected test results are listed in the relevant table of radiated test data of this test report.



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

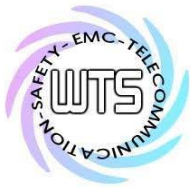
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

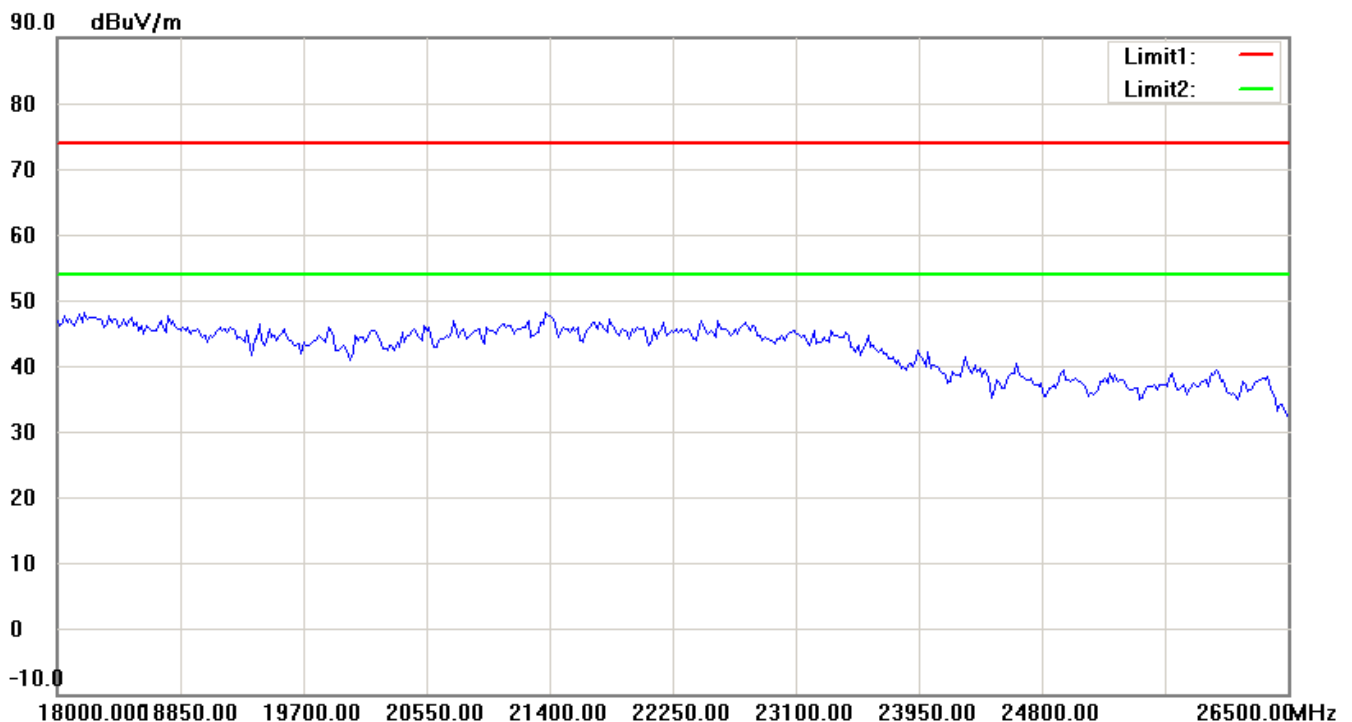
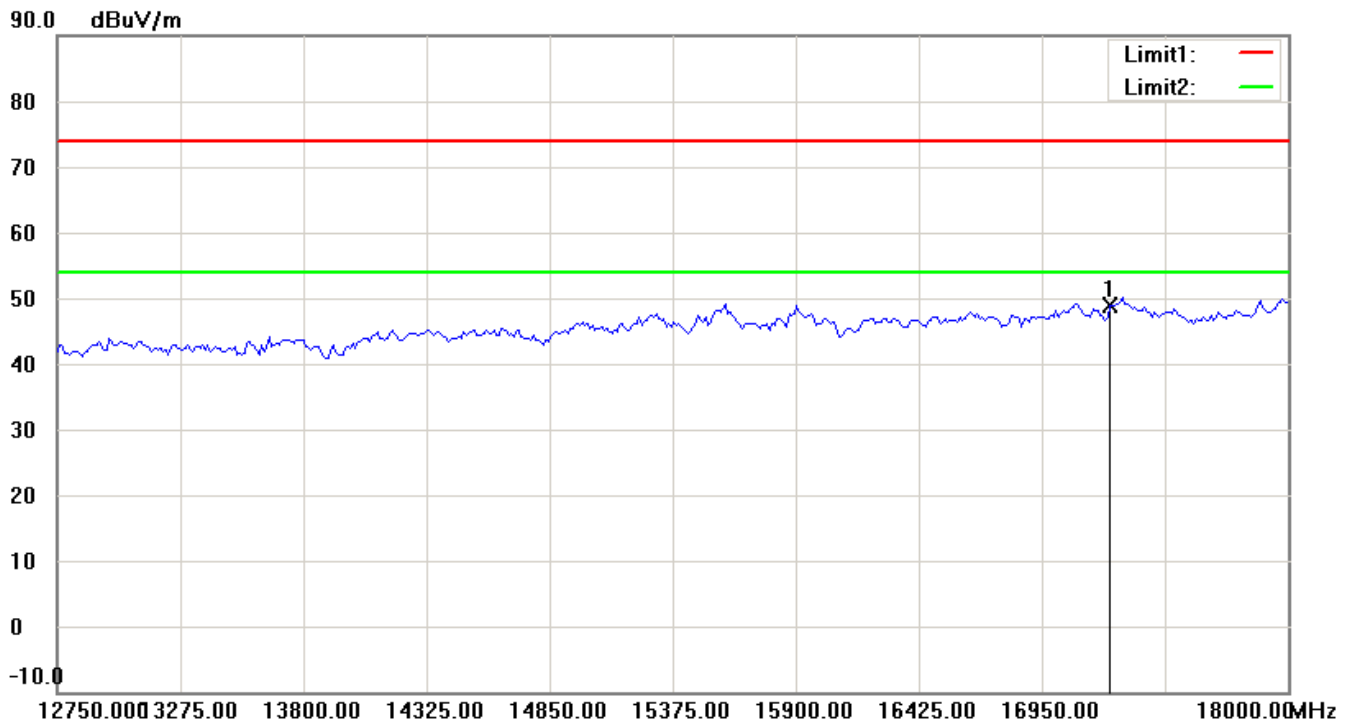
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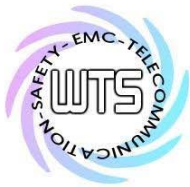
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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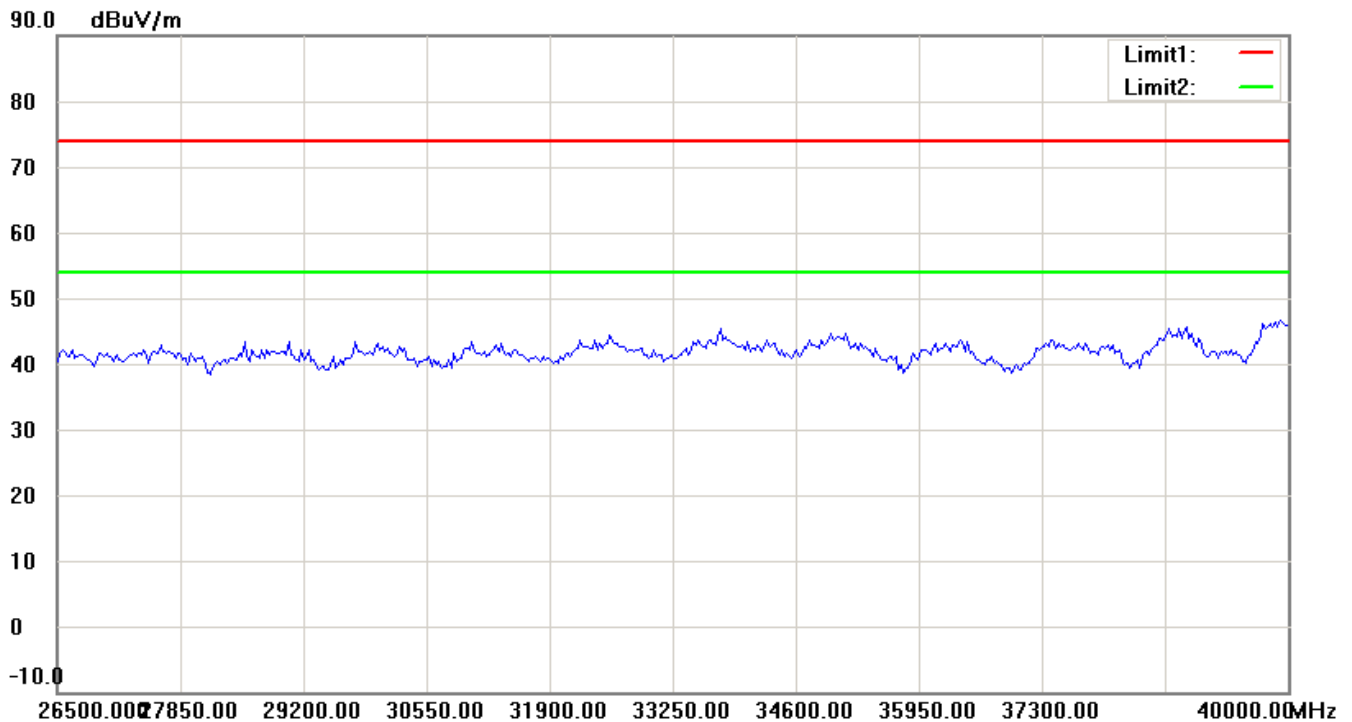
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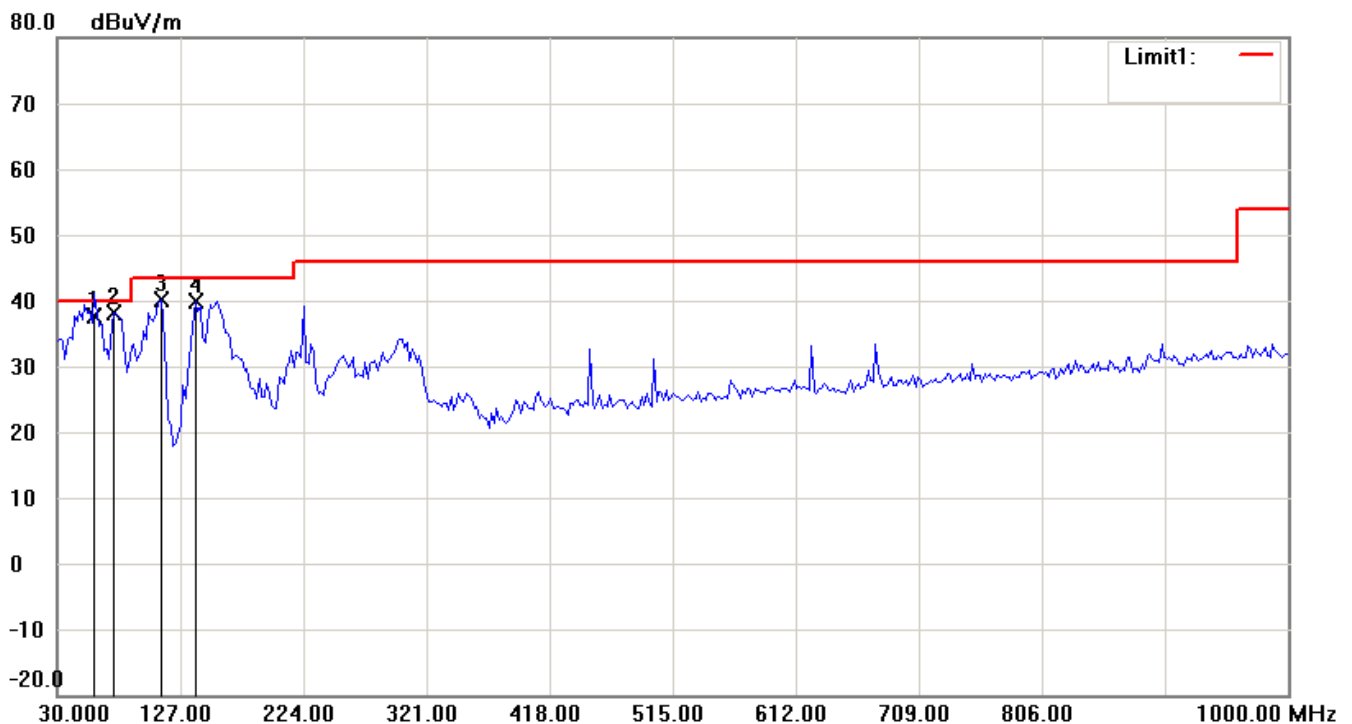
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

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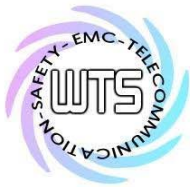
Antenna Polarization V



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

Note:

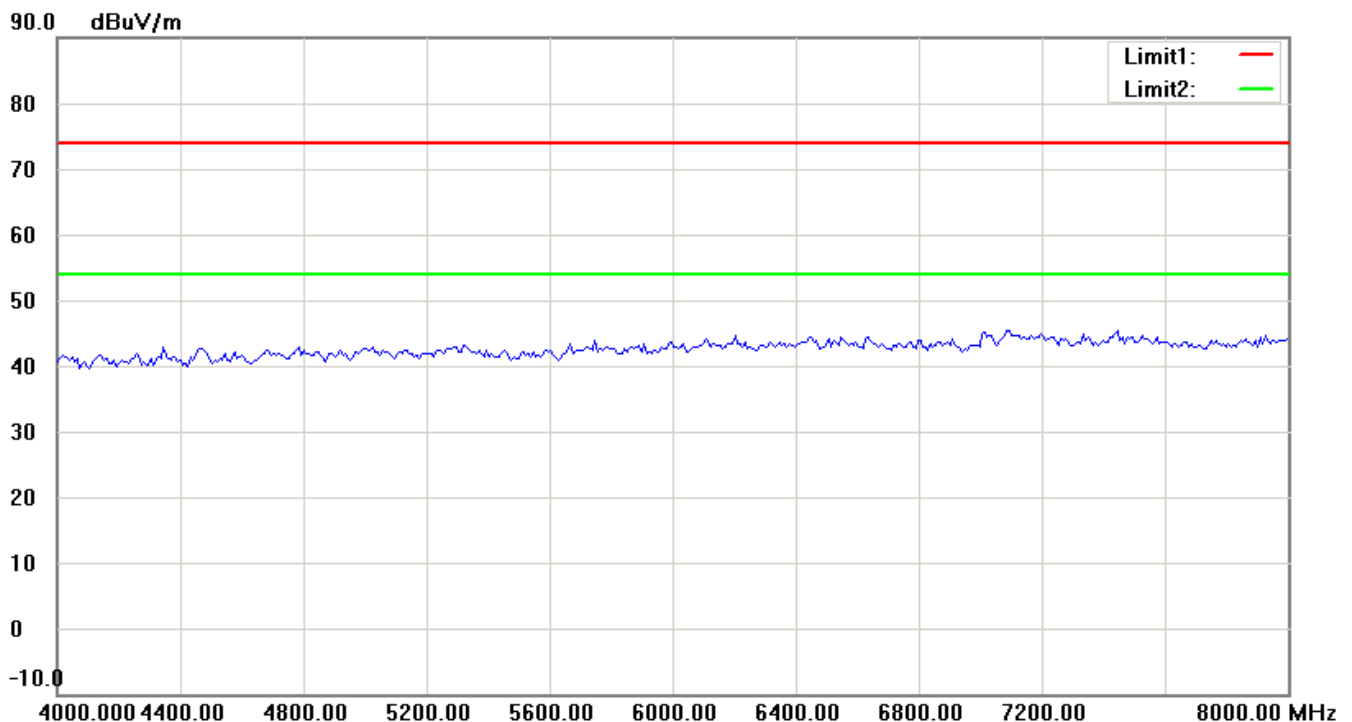
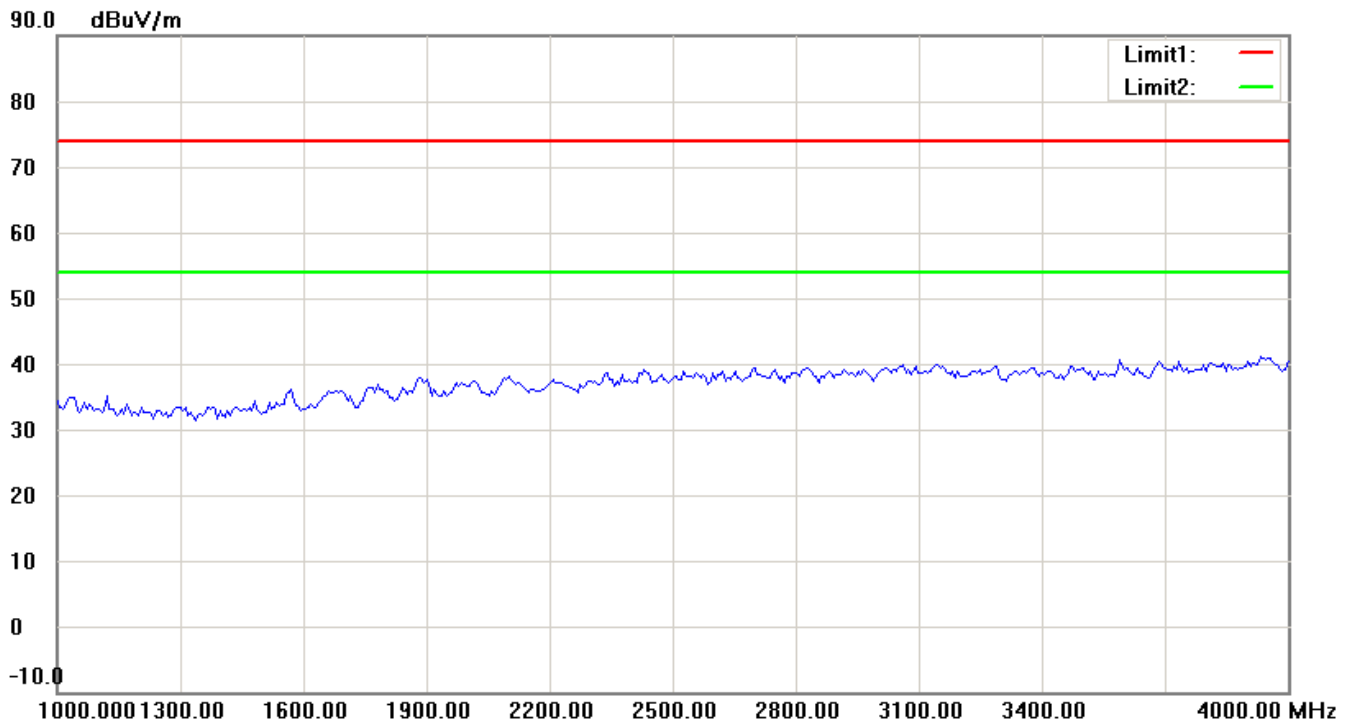
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Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

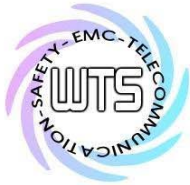
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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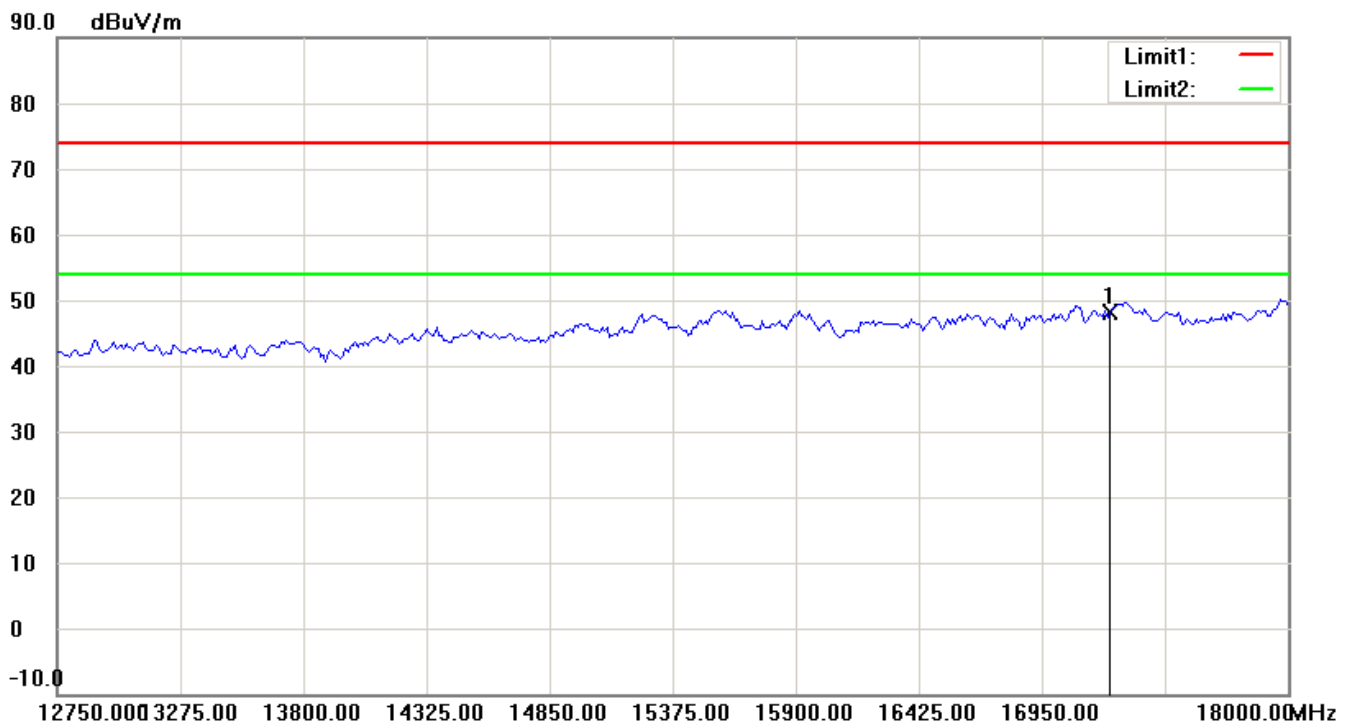
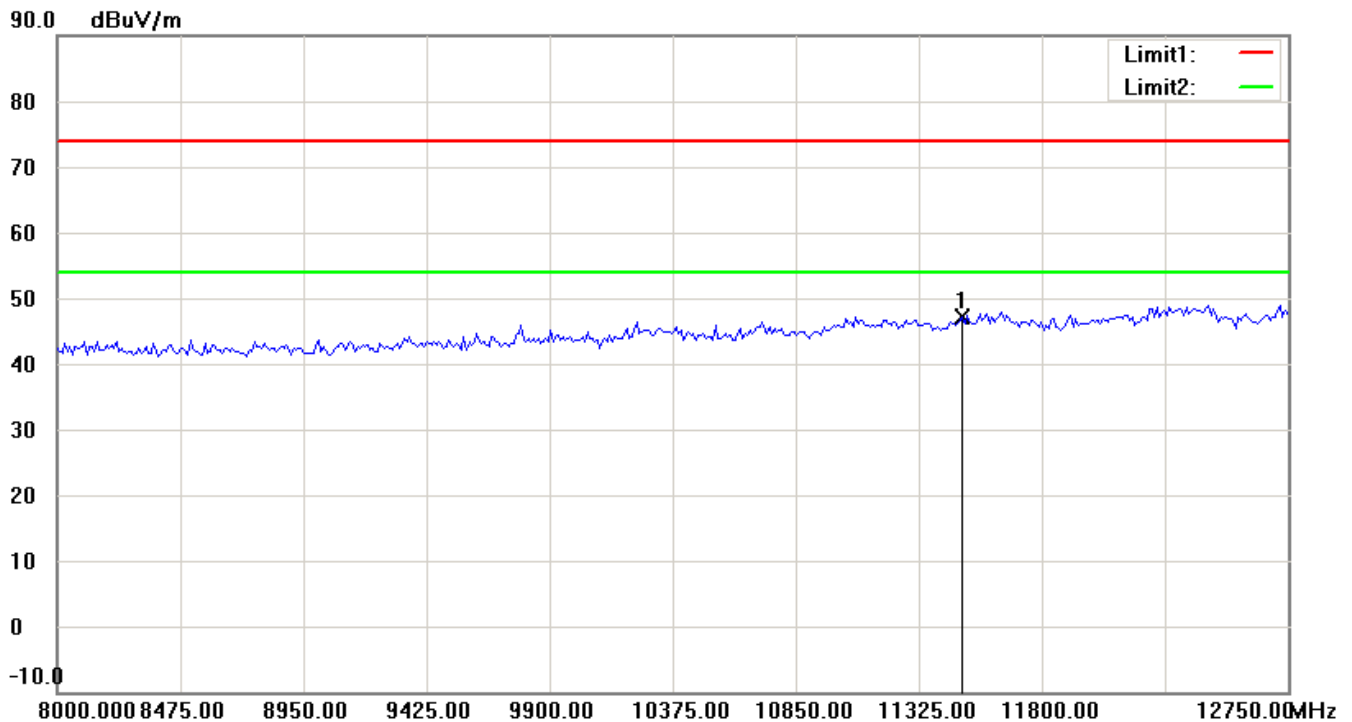
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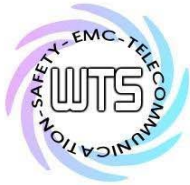
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

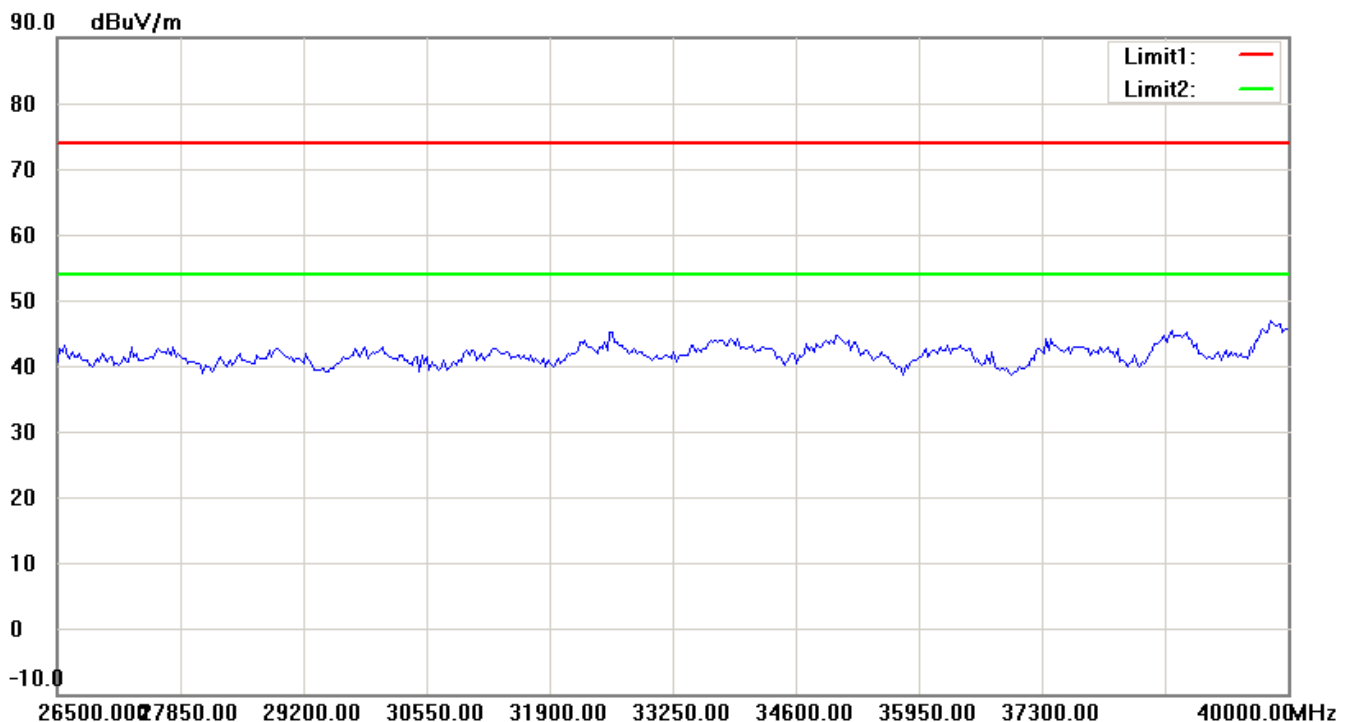
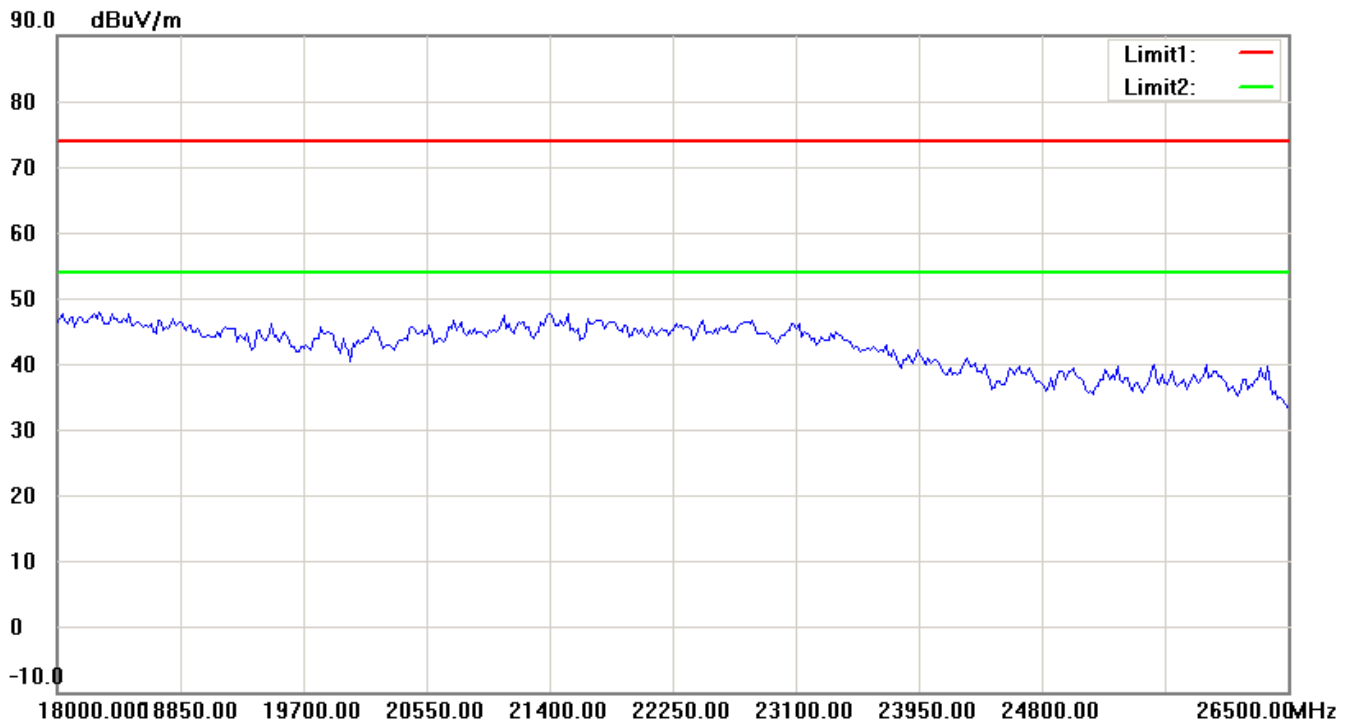
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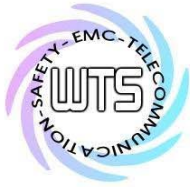
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

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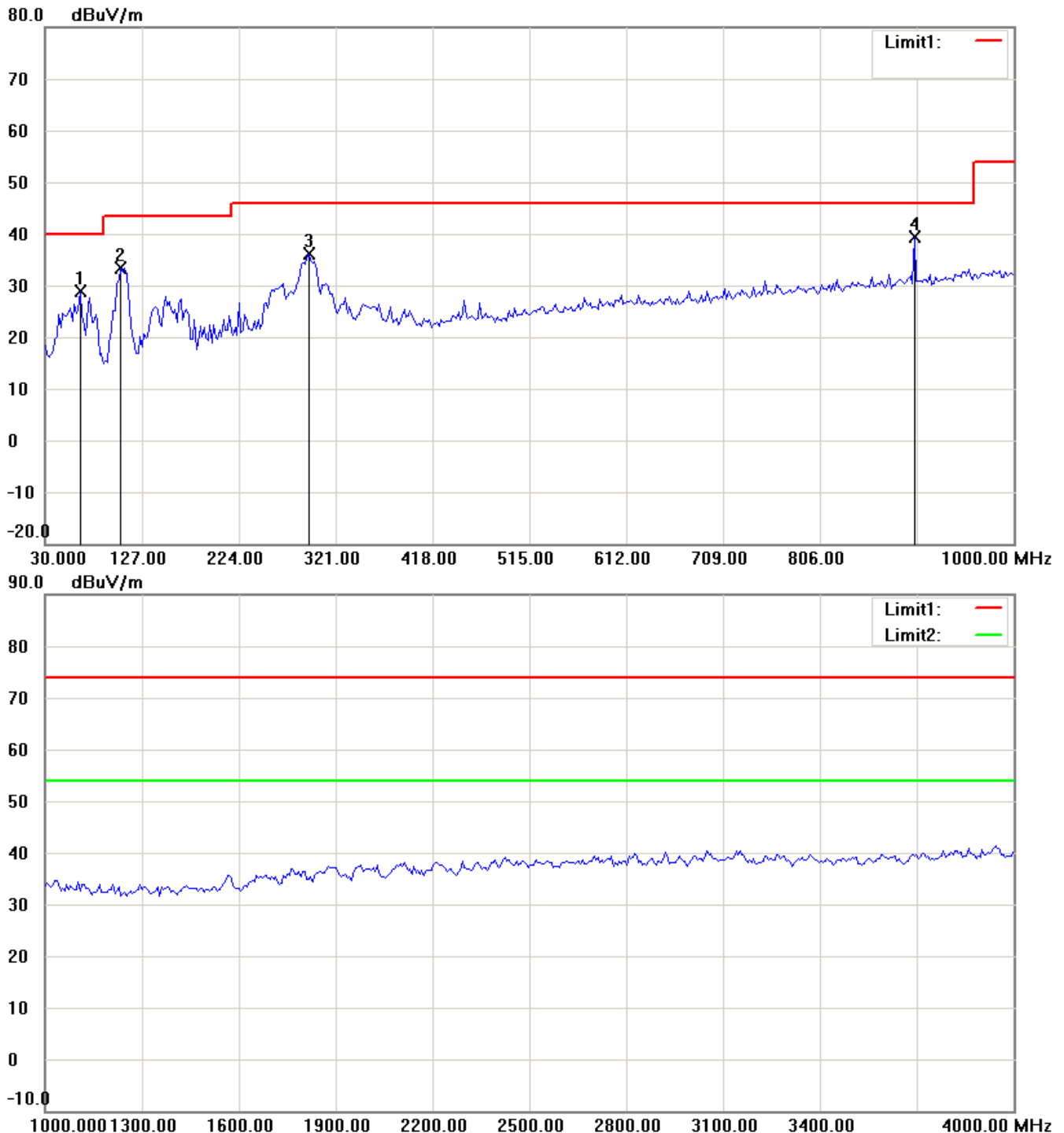
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11a 5785MHz

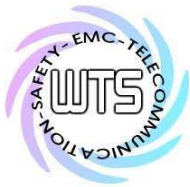
Antenna Polarization H



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

Note:

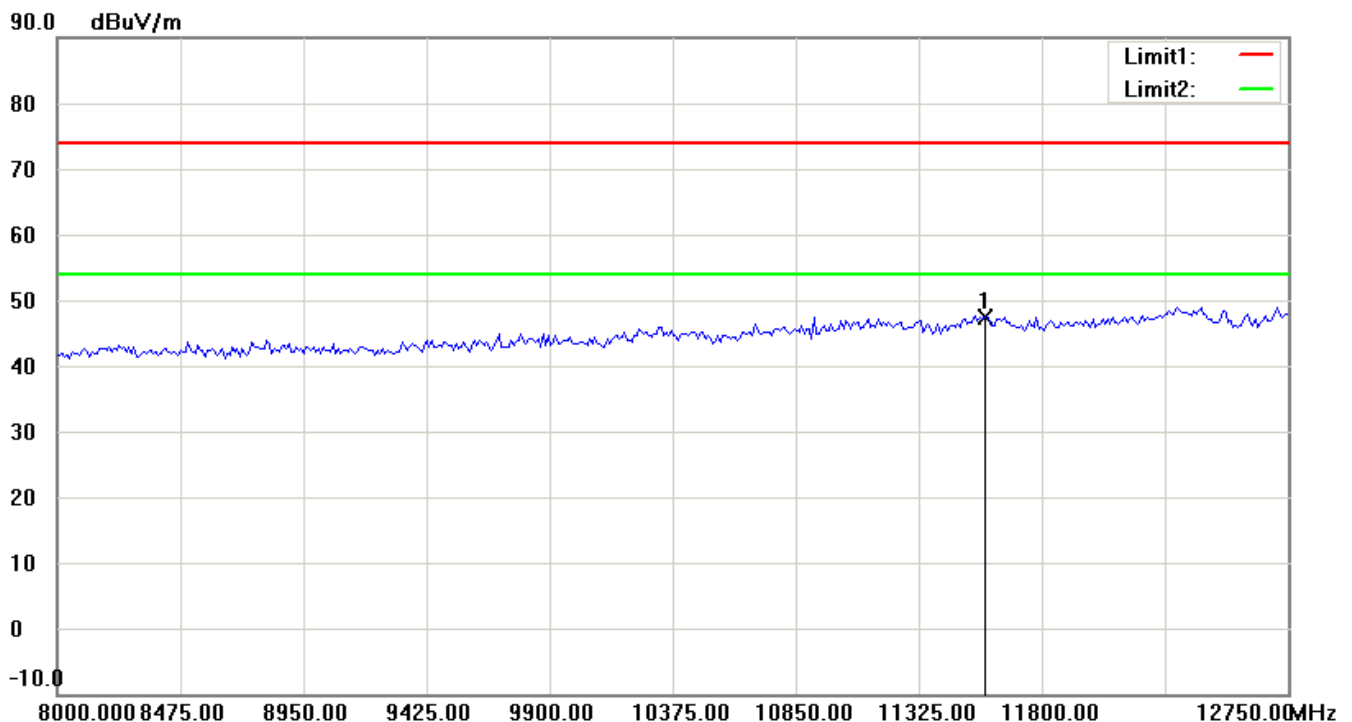
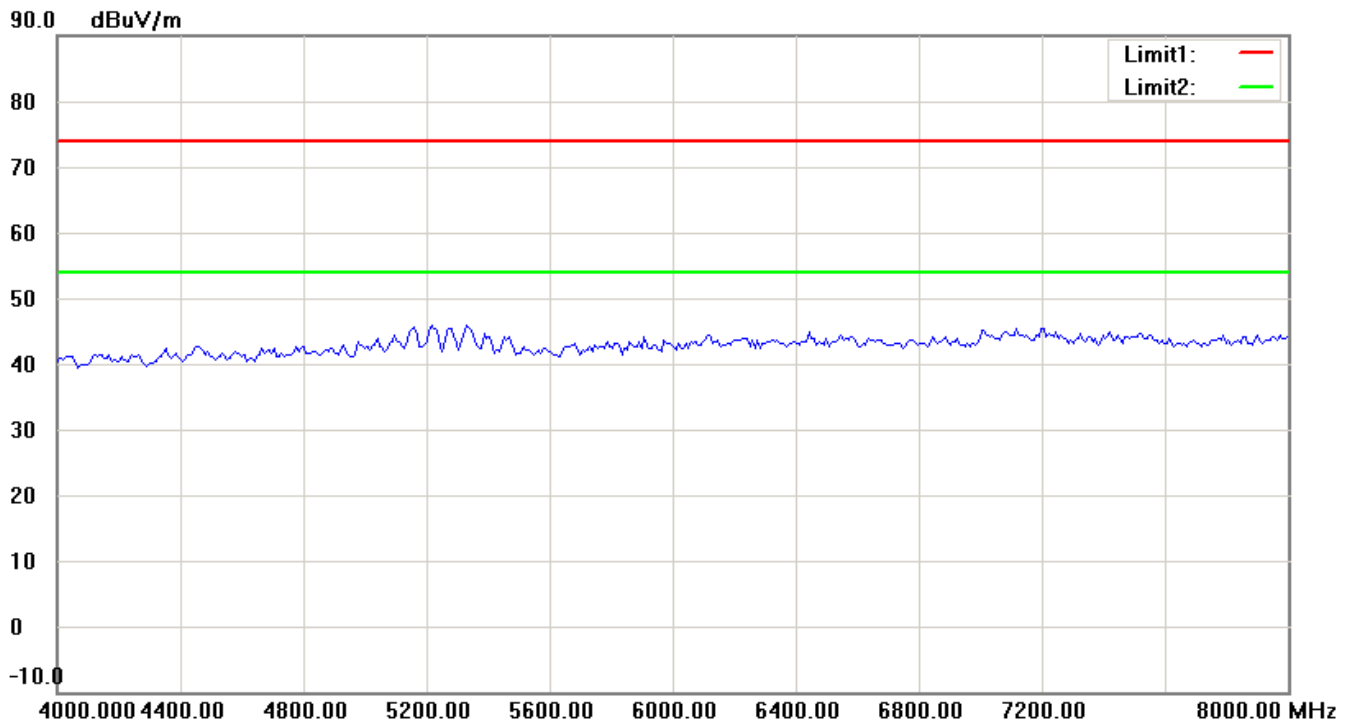
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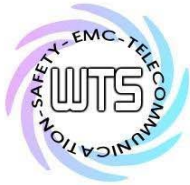
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

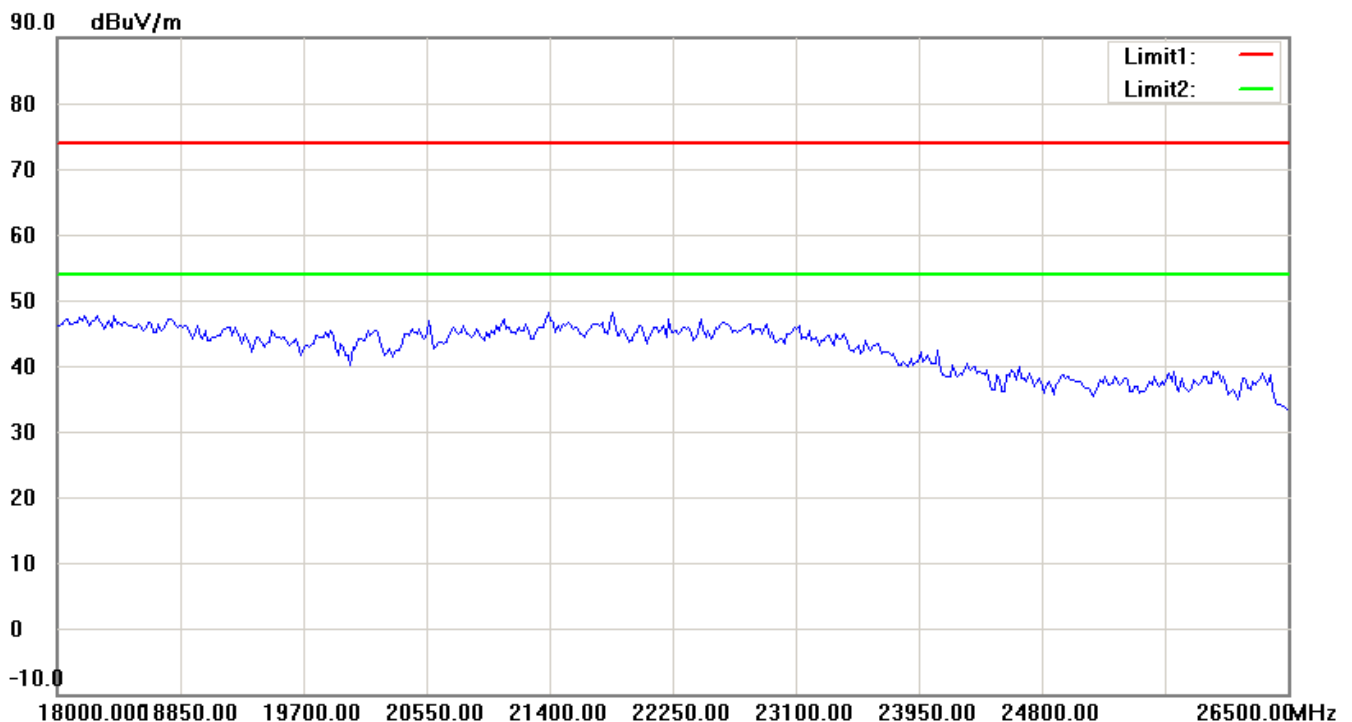
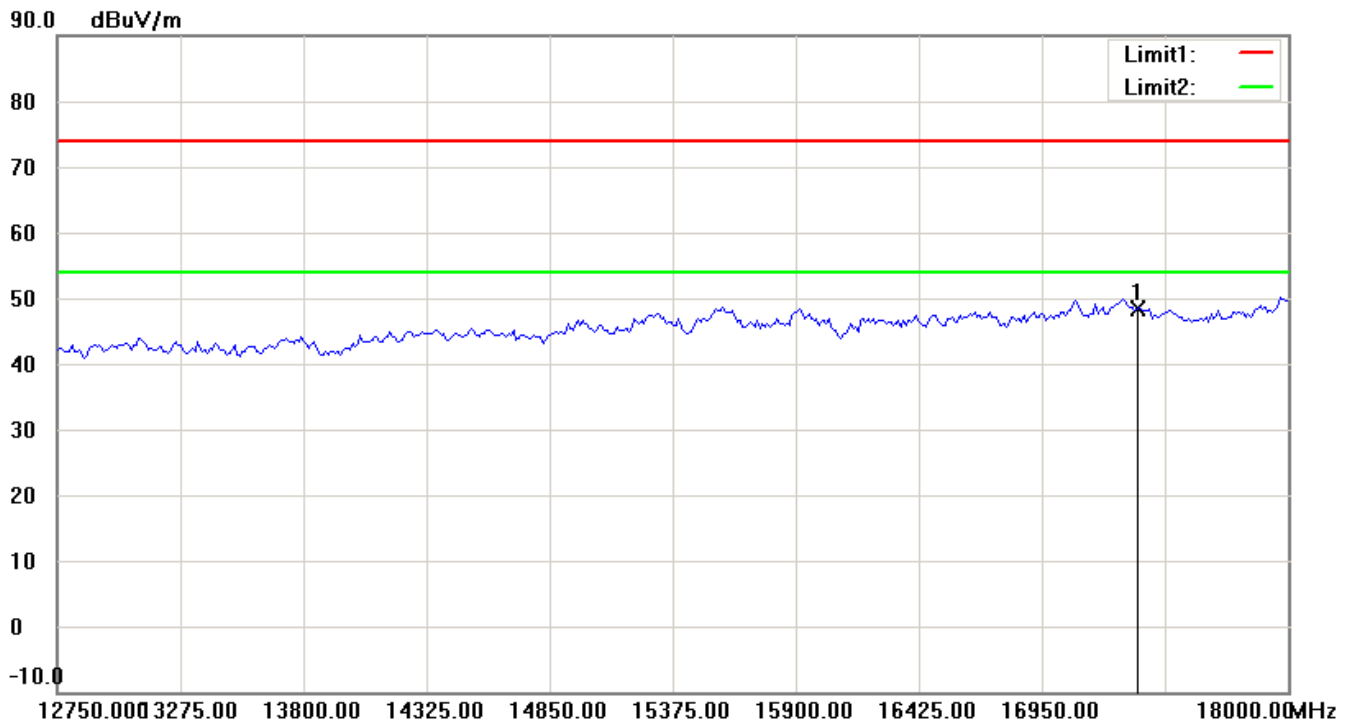
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Registration number: W6D21409-14504-C-1

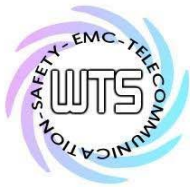
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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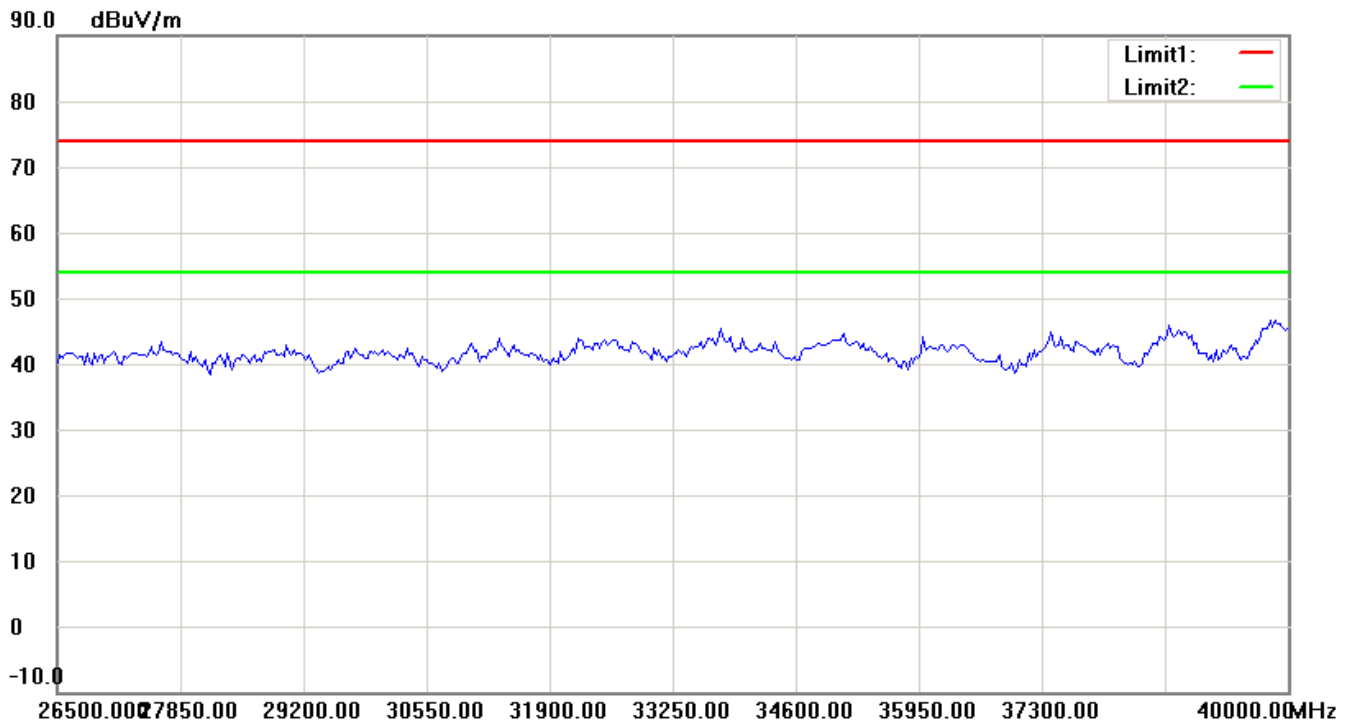
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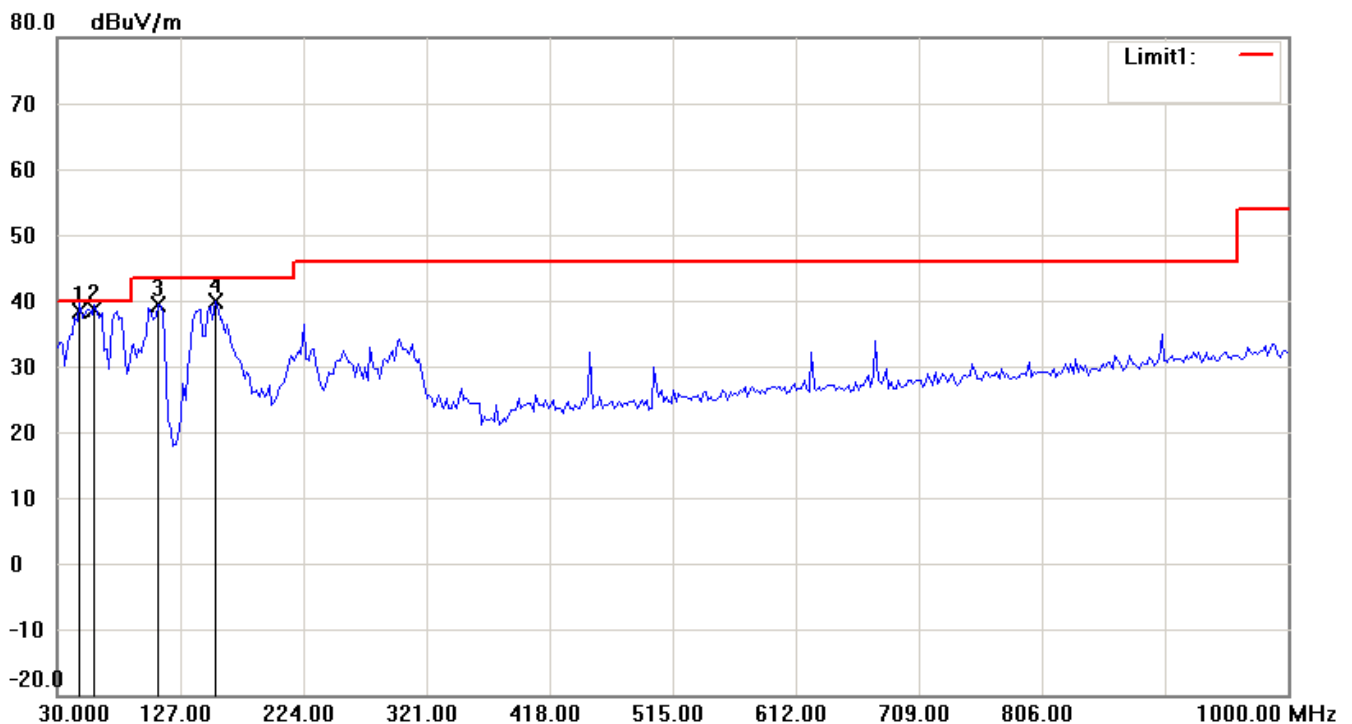
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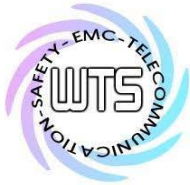
Antenna Polarization V



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

Note:

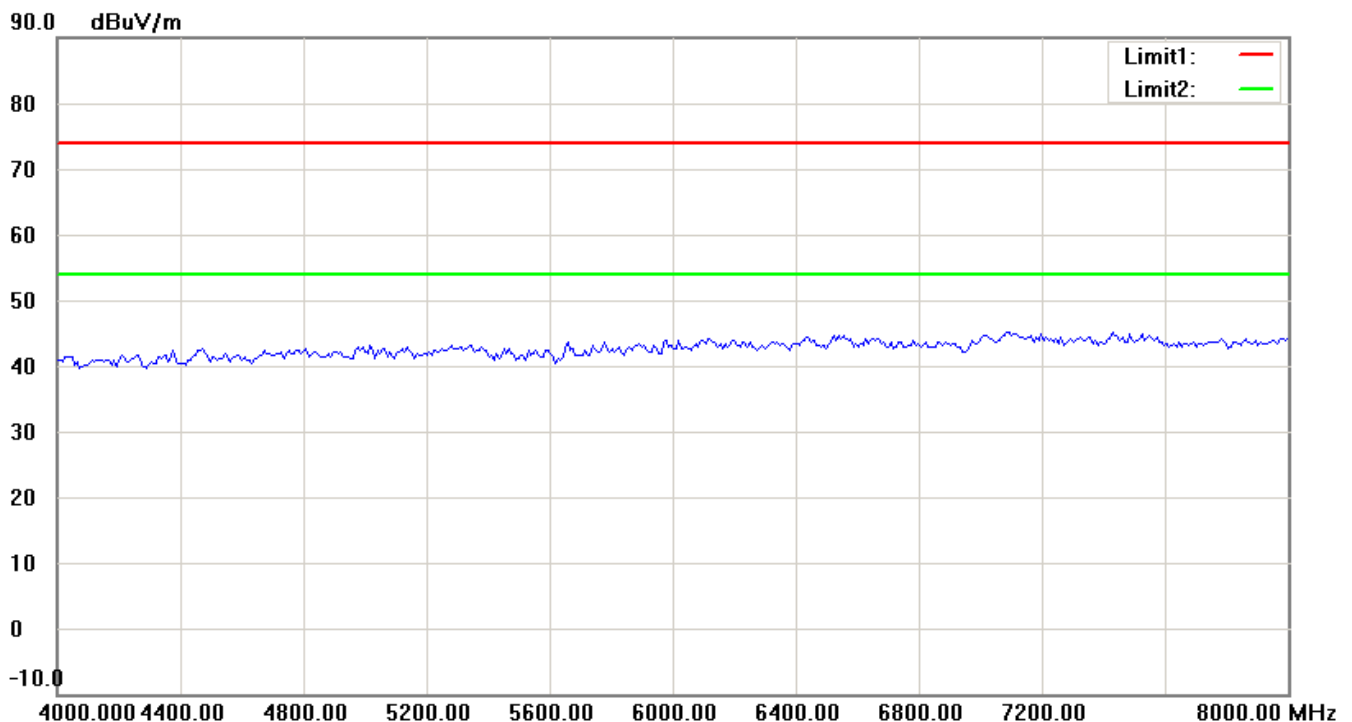
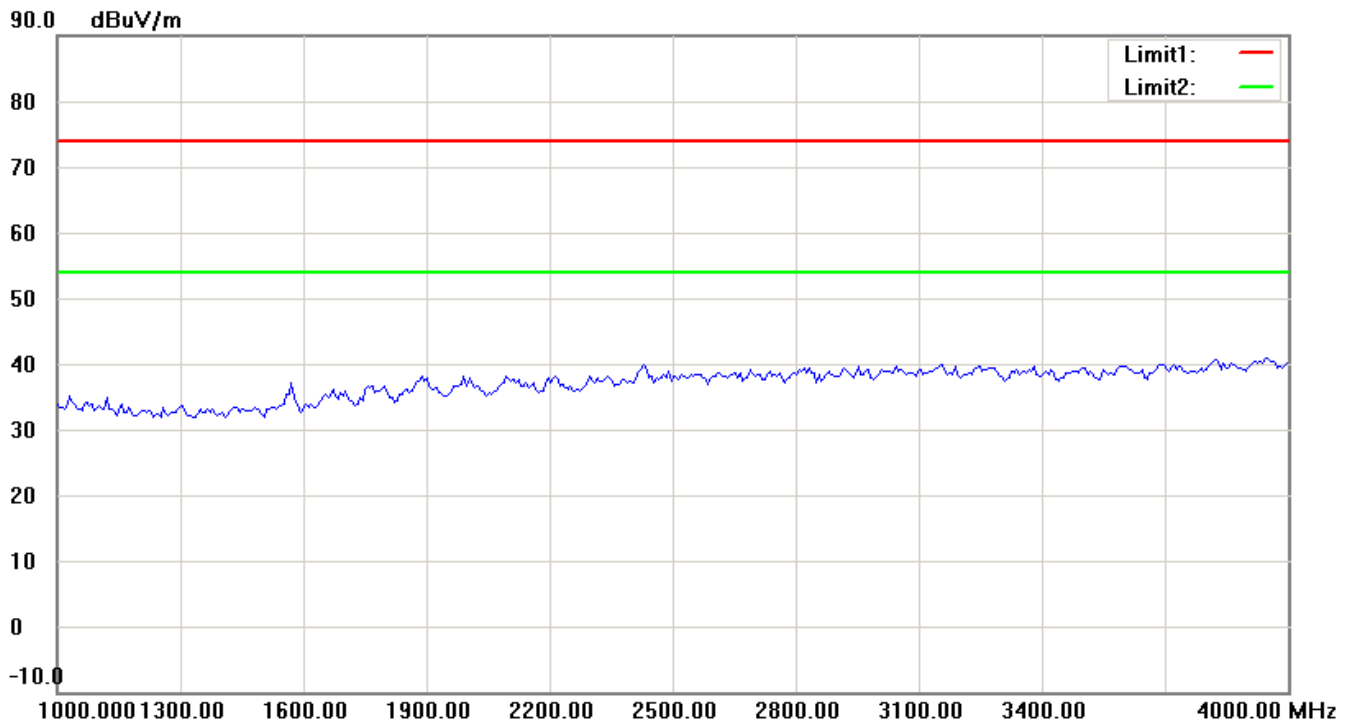
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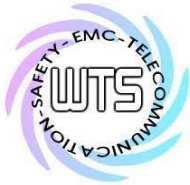
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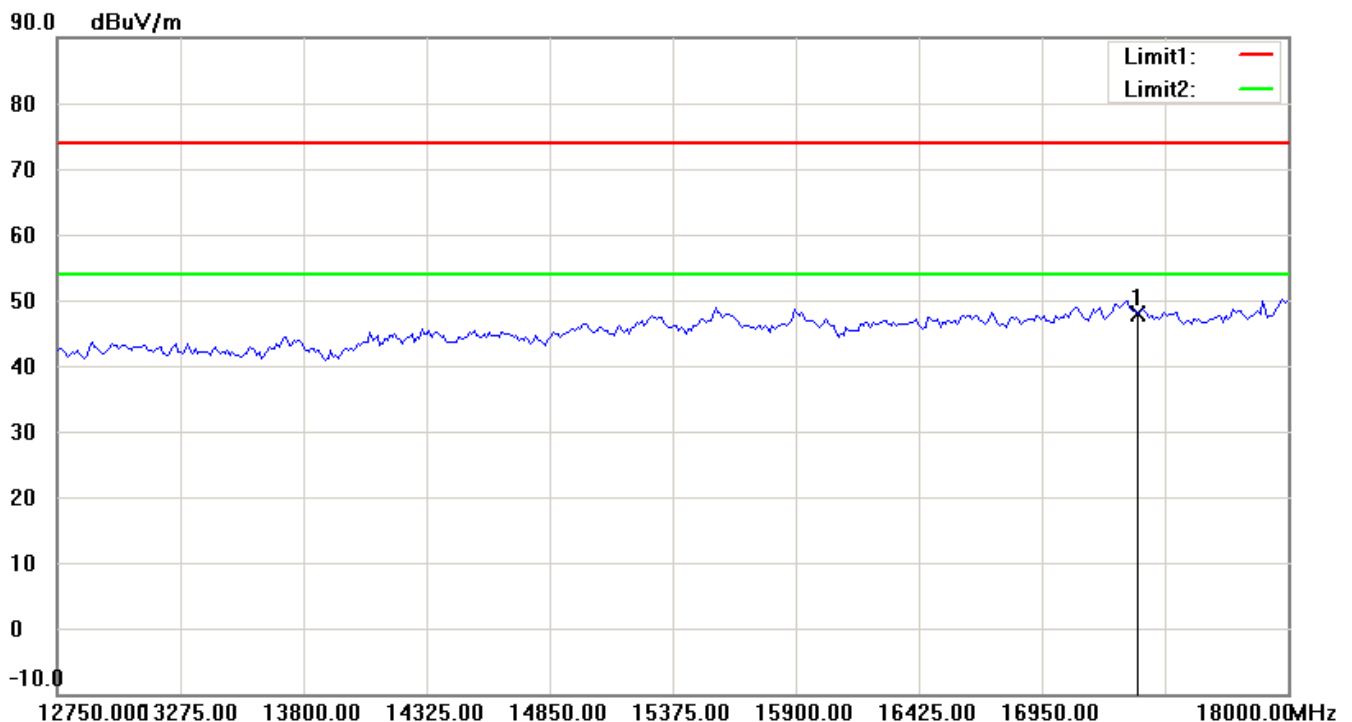
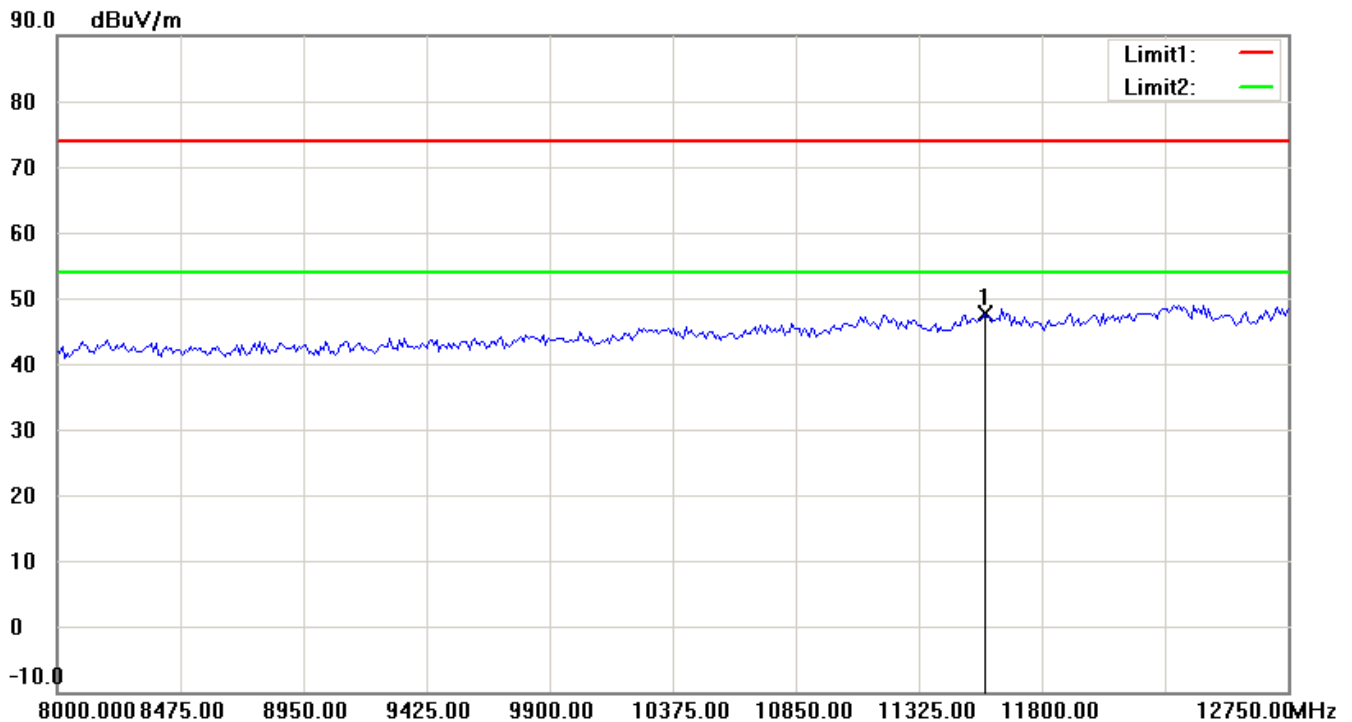
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Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

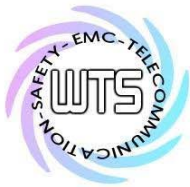
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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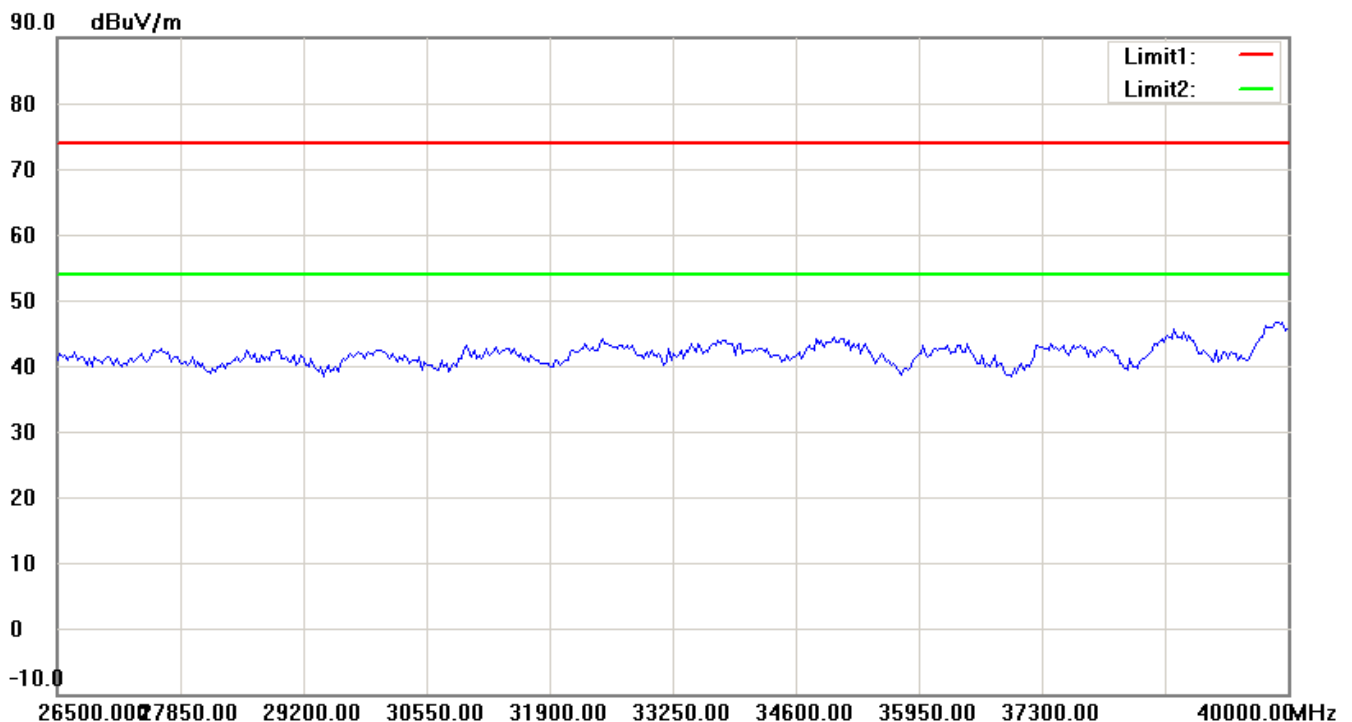
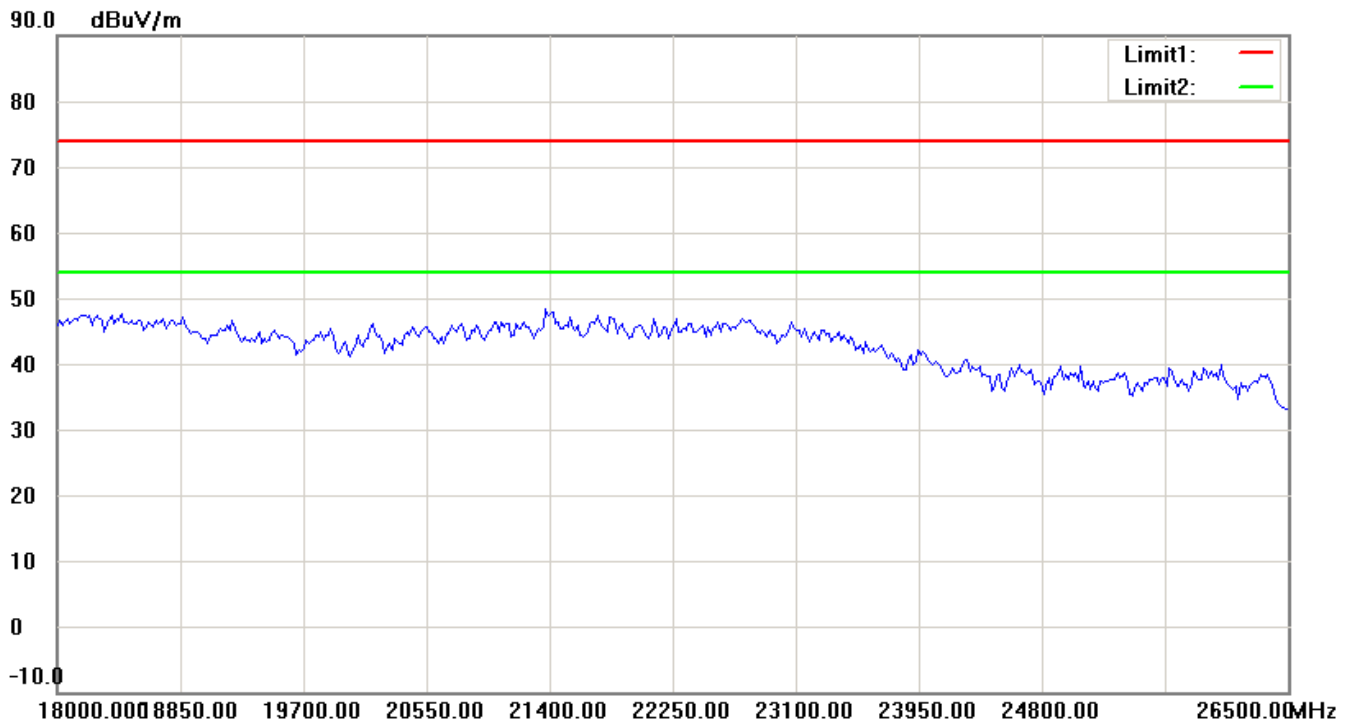
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Worldwide Testing Services(Taiwan) Co., Ltd.

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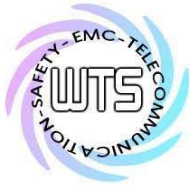
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

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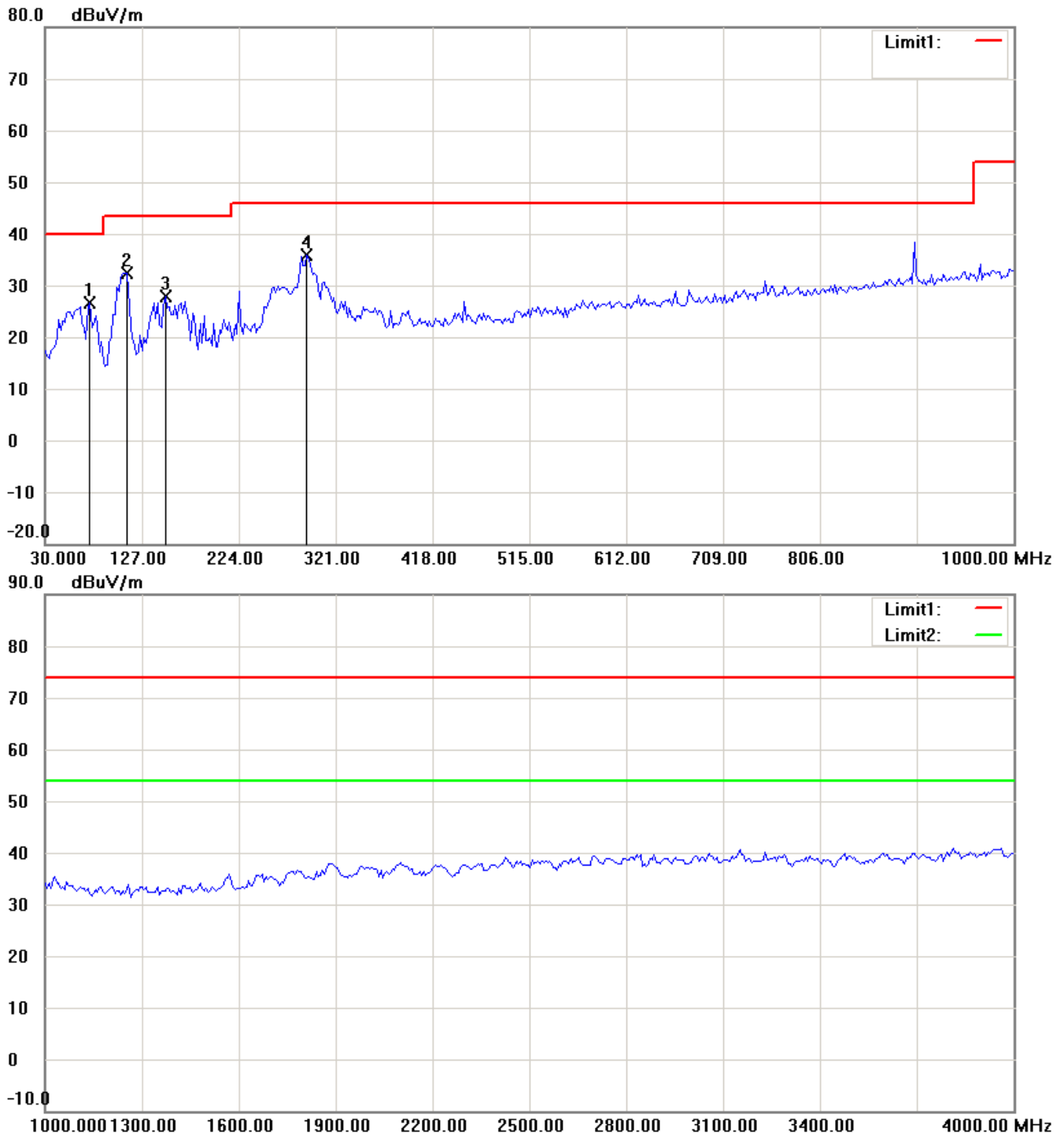
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11a 5825MHz

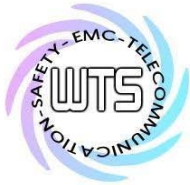
Antenna Polarization H



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

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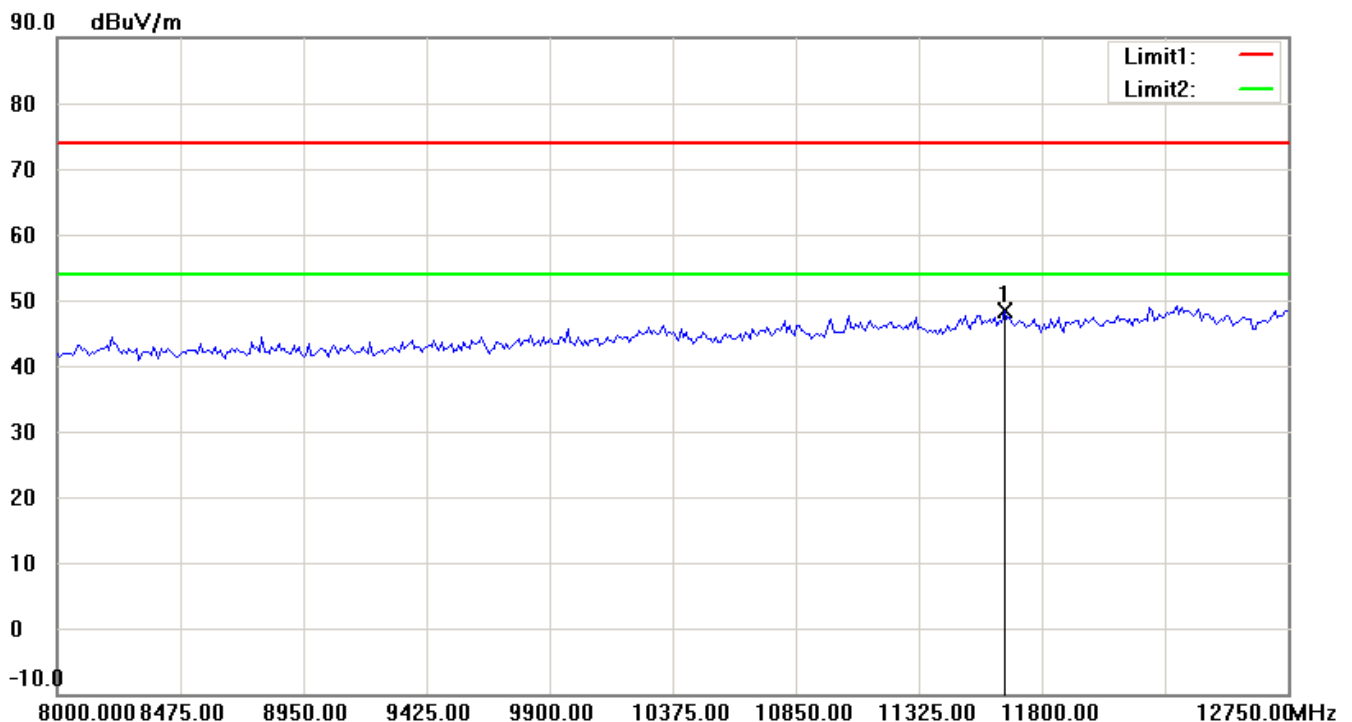
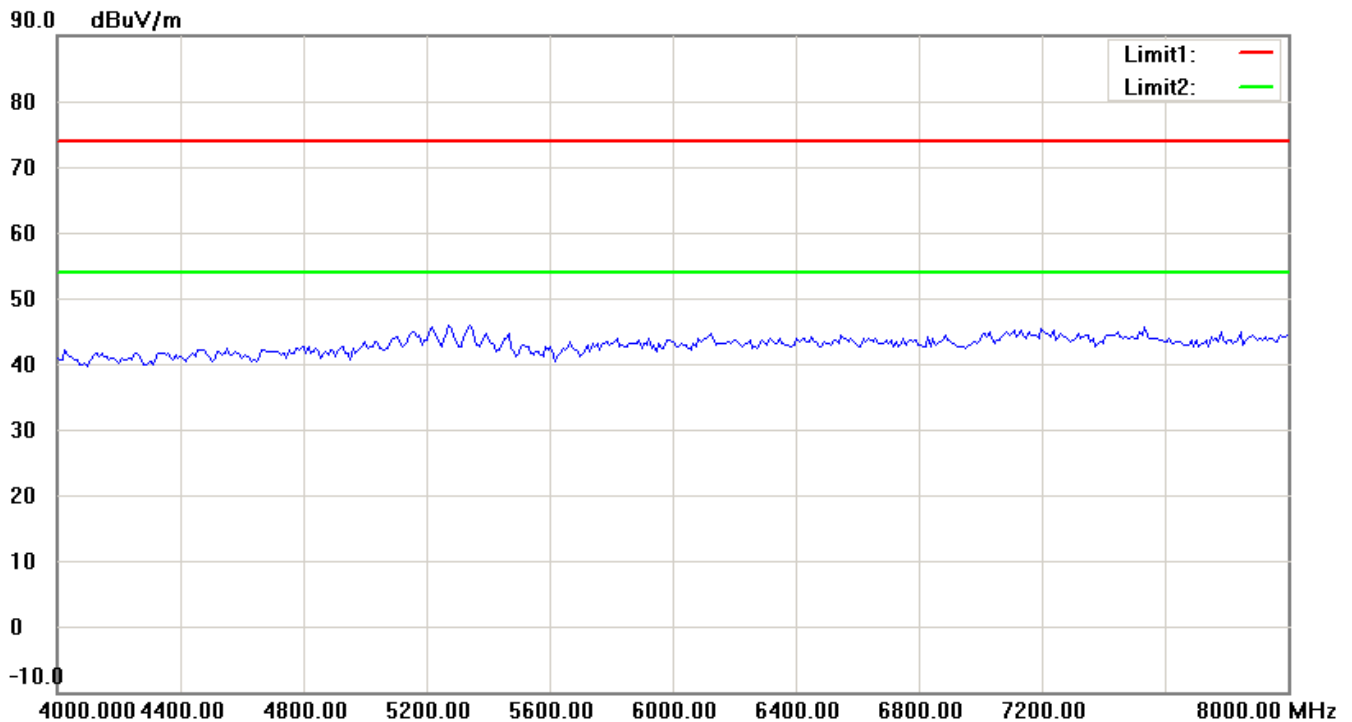
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Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

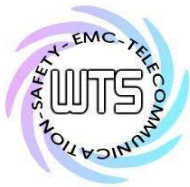
FCC ID: UL9WNAP7325



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

Note:

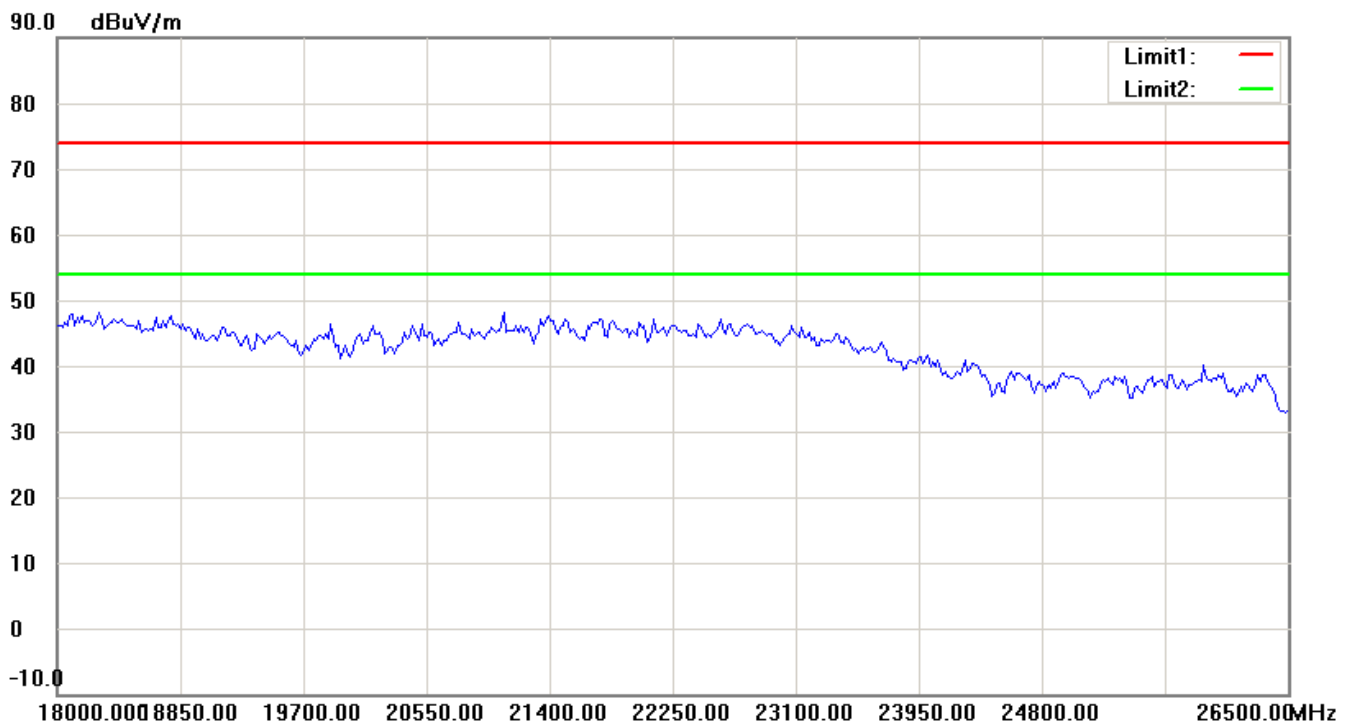
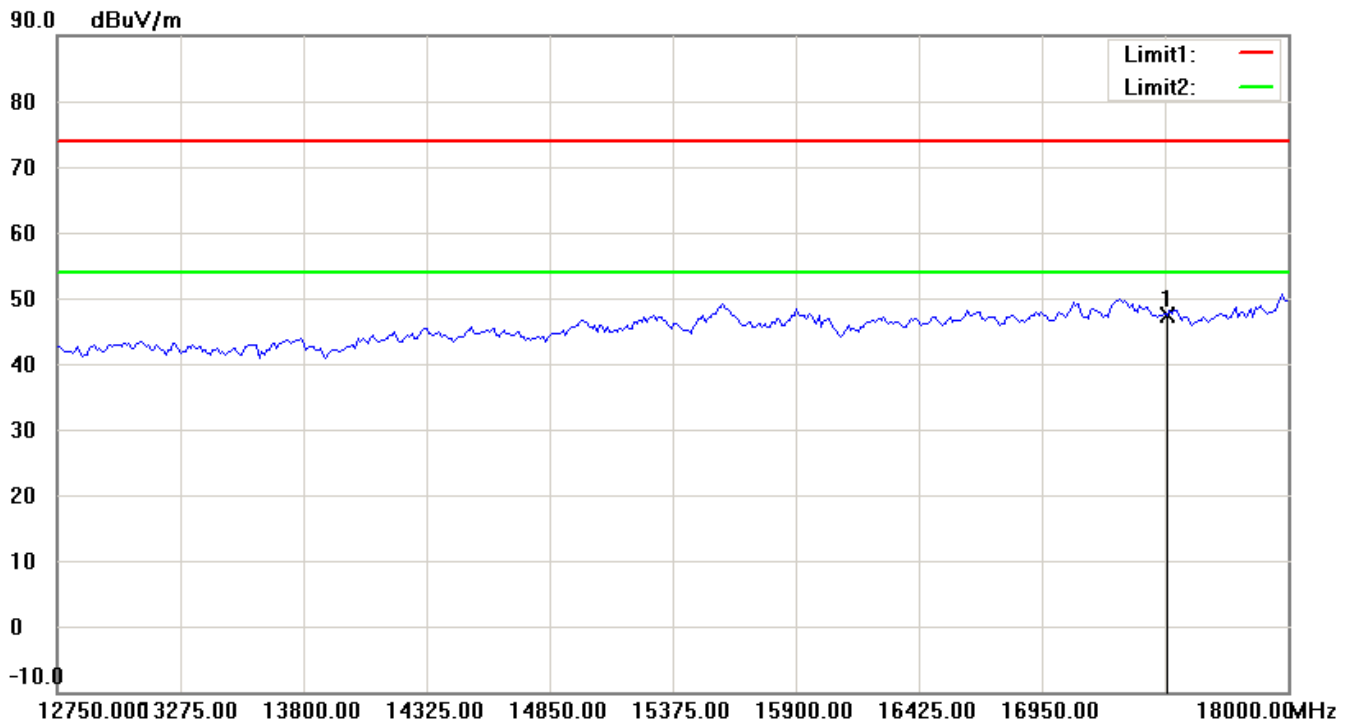
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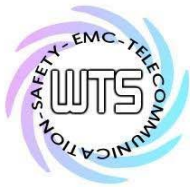
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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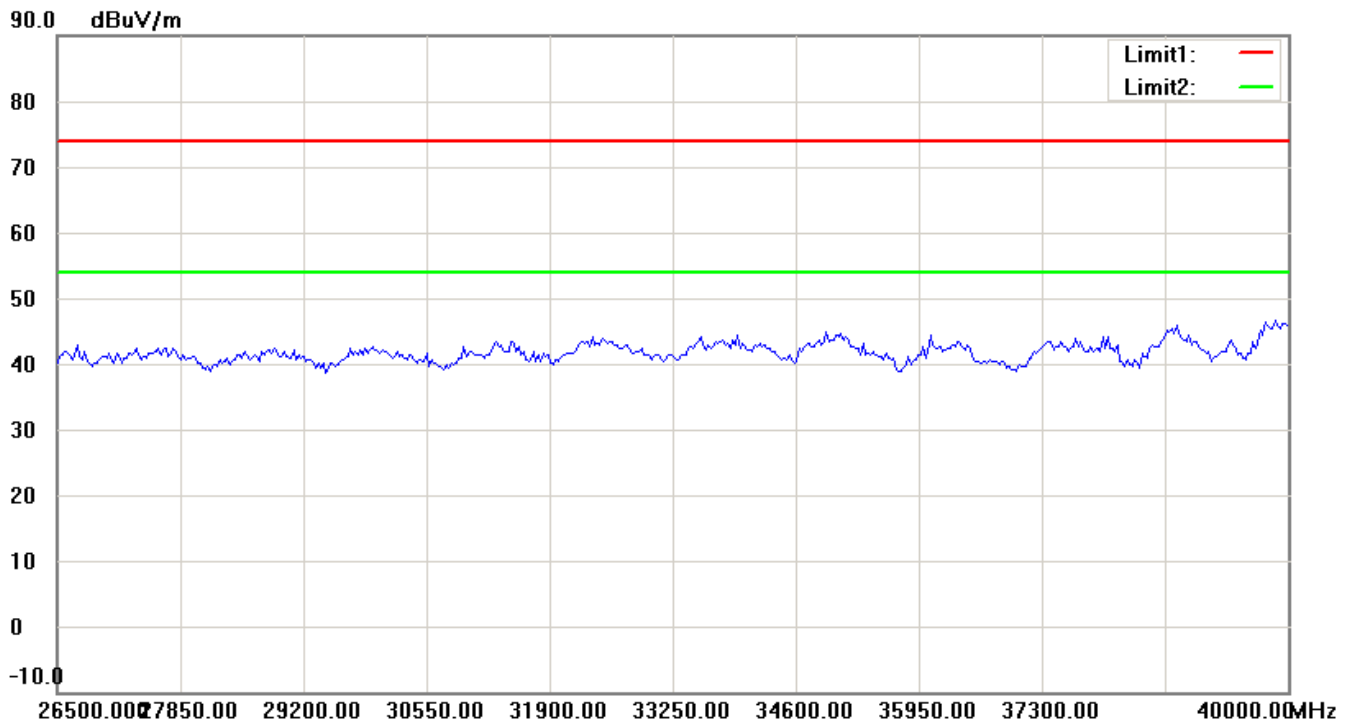
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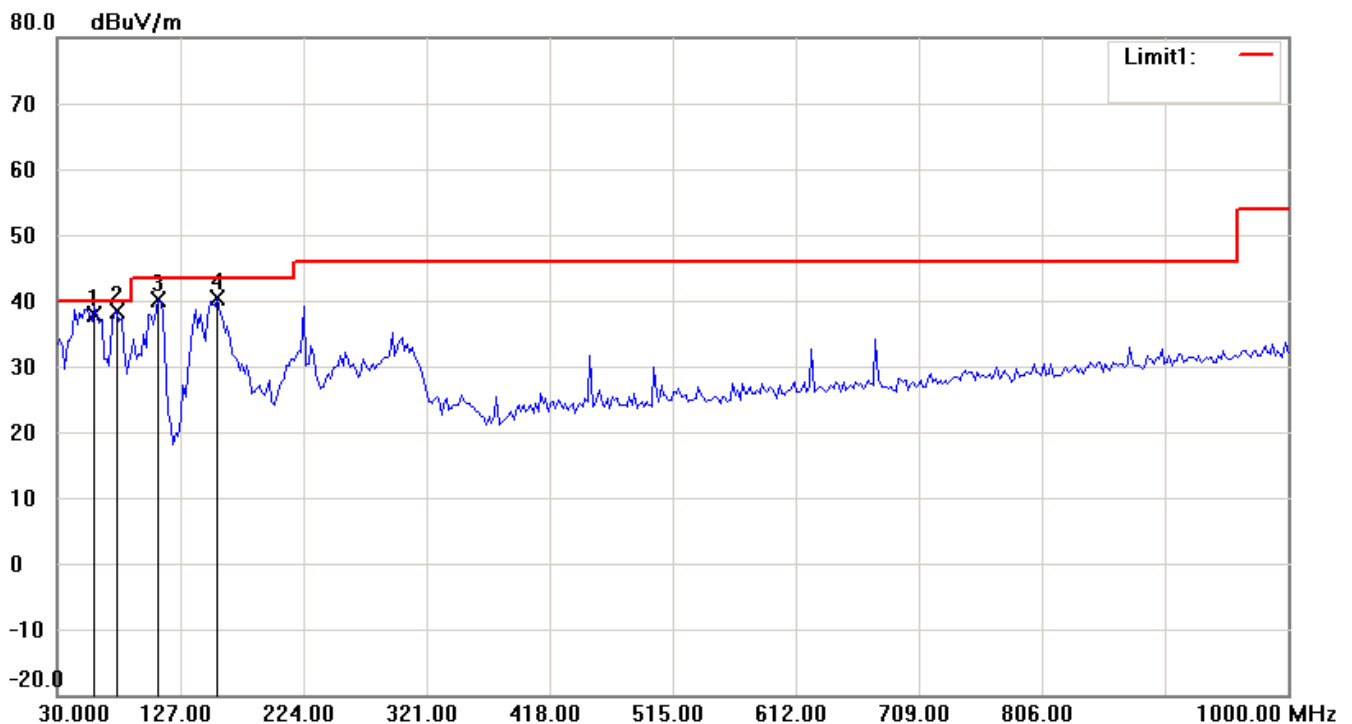
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

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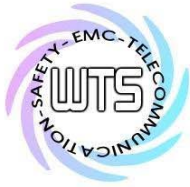
Antenna Polarization V



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

Note:

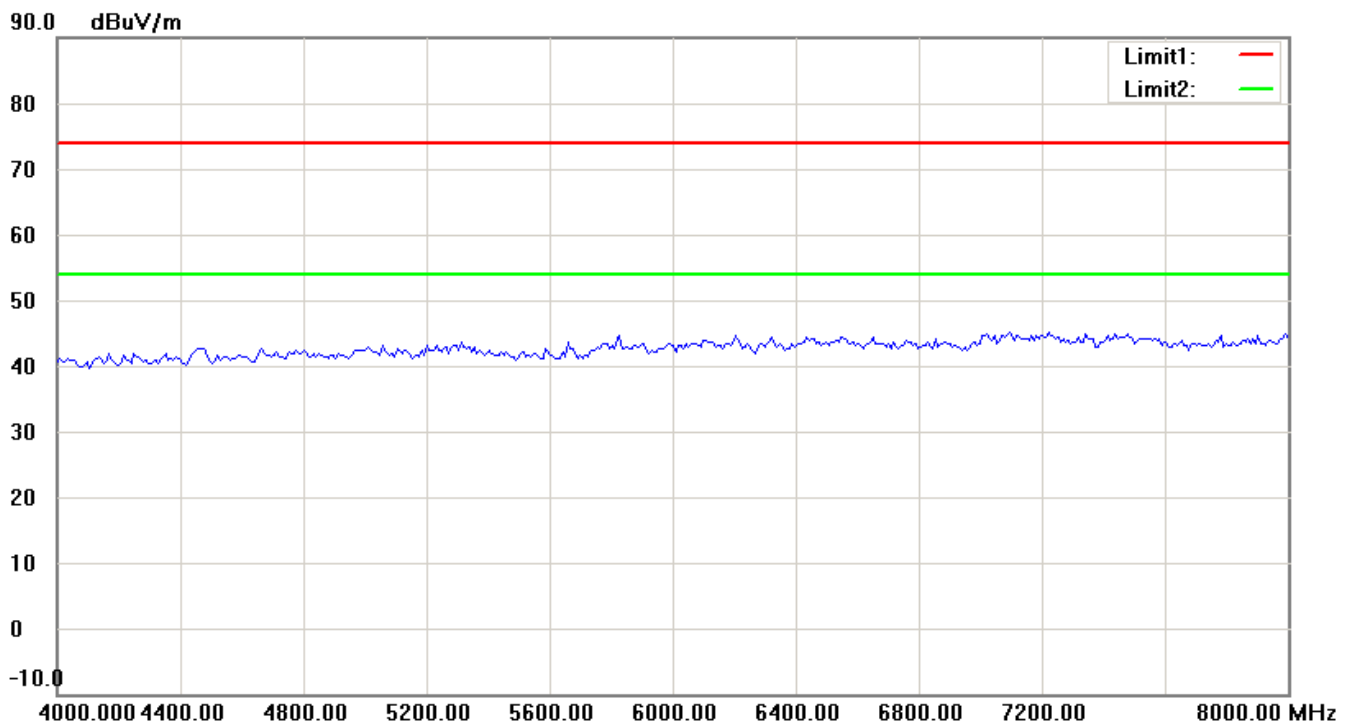
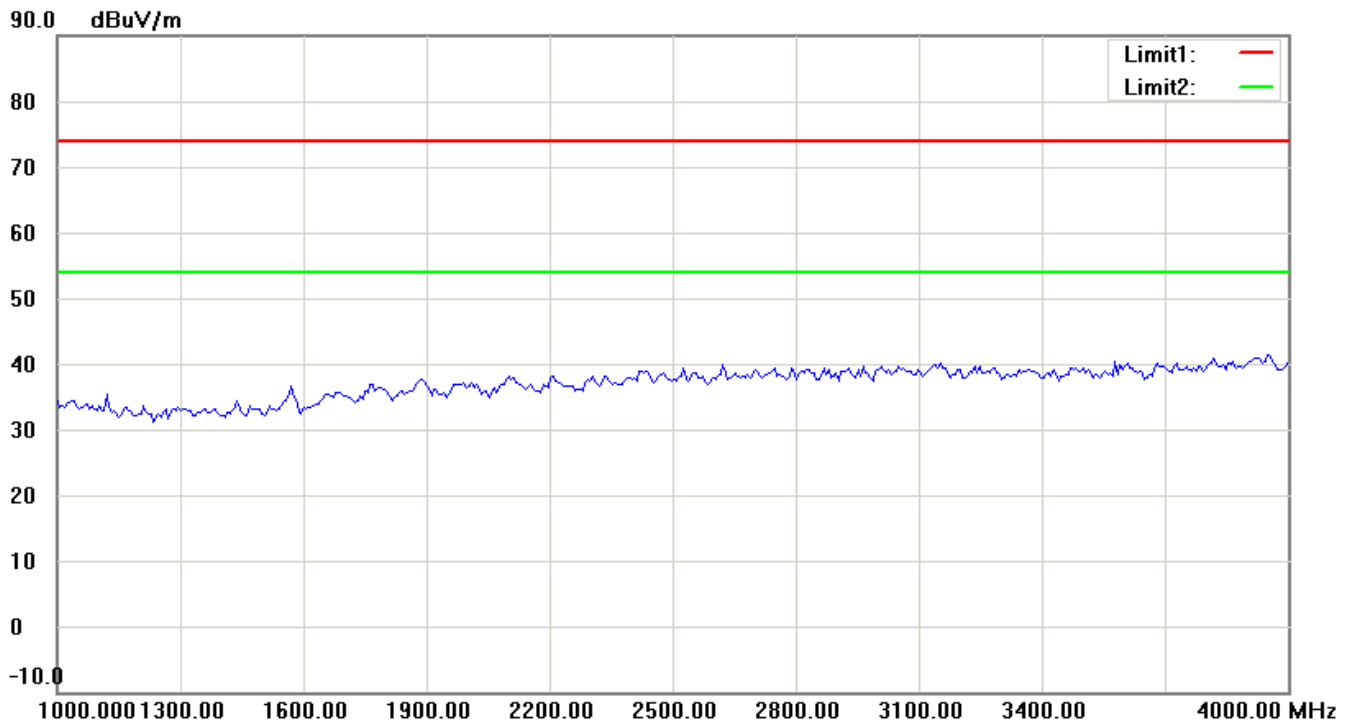
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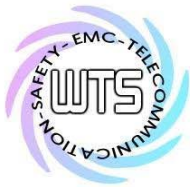
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

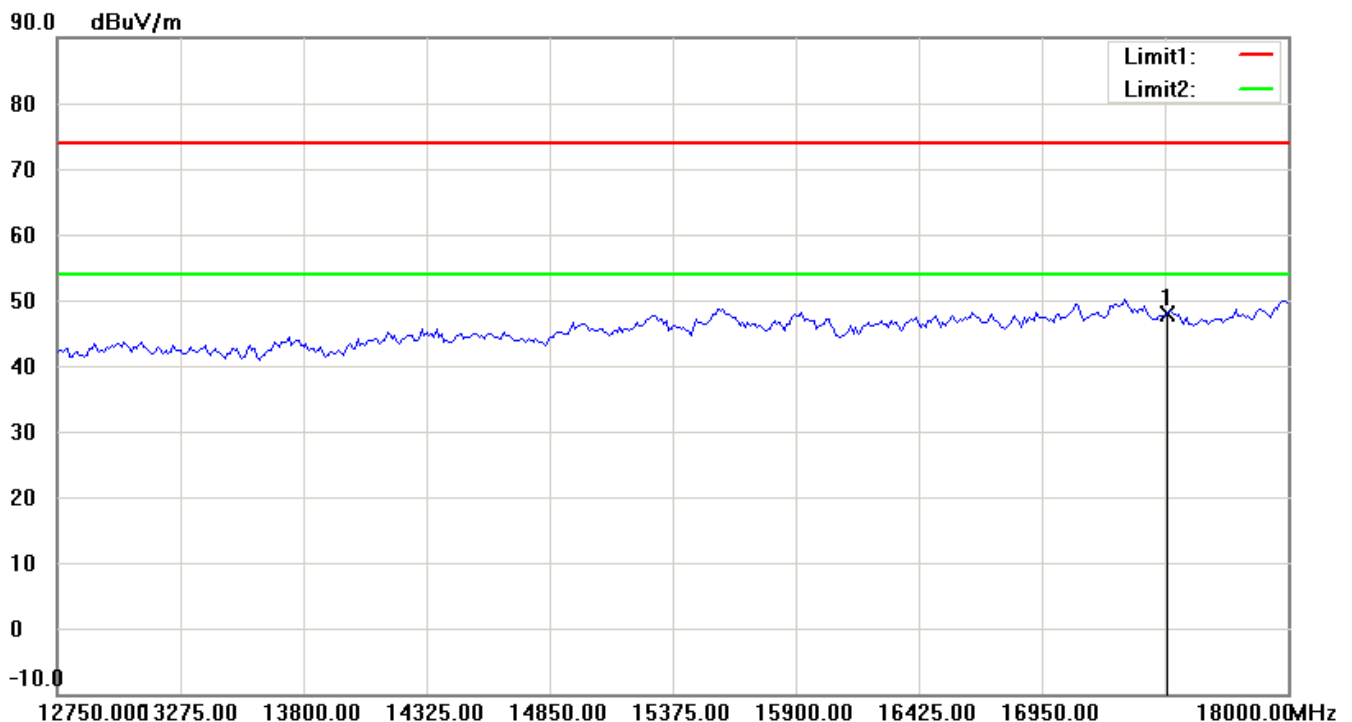
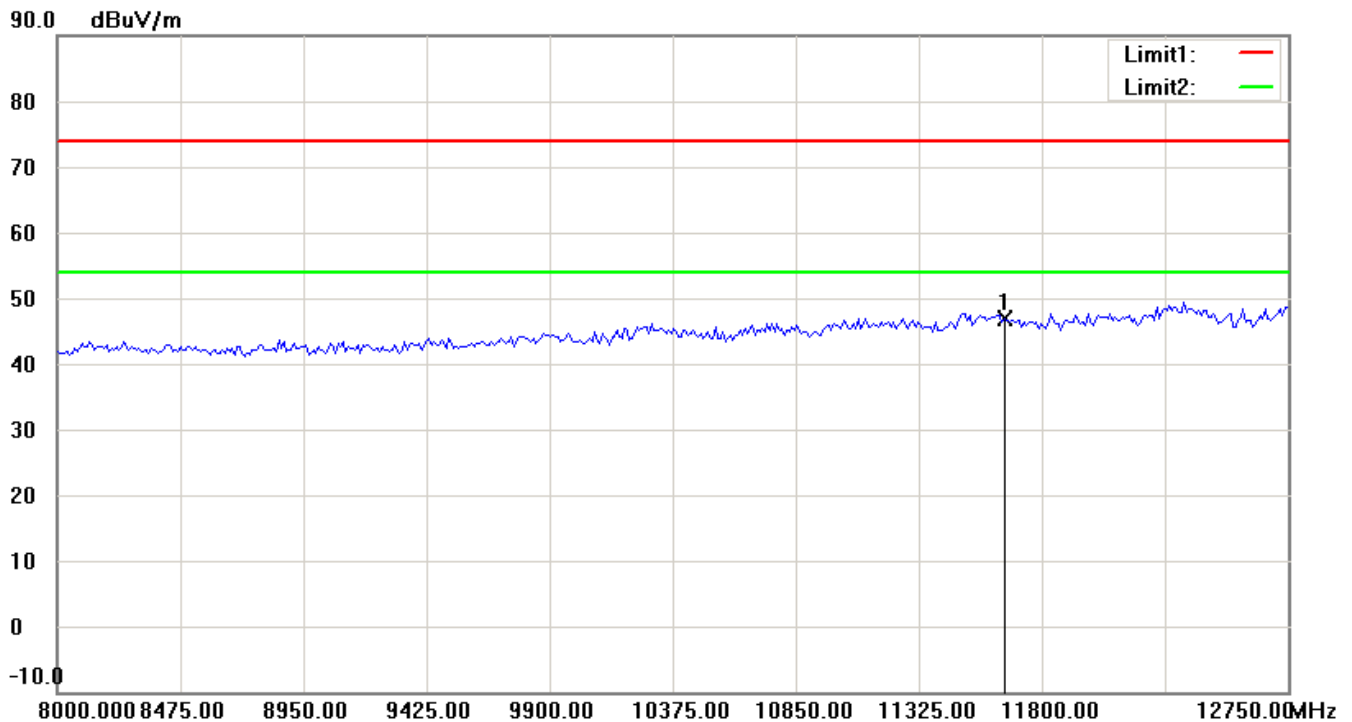
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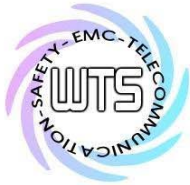
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

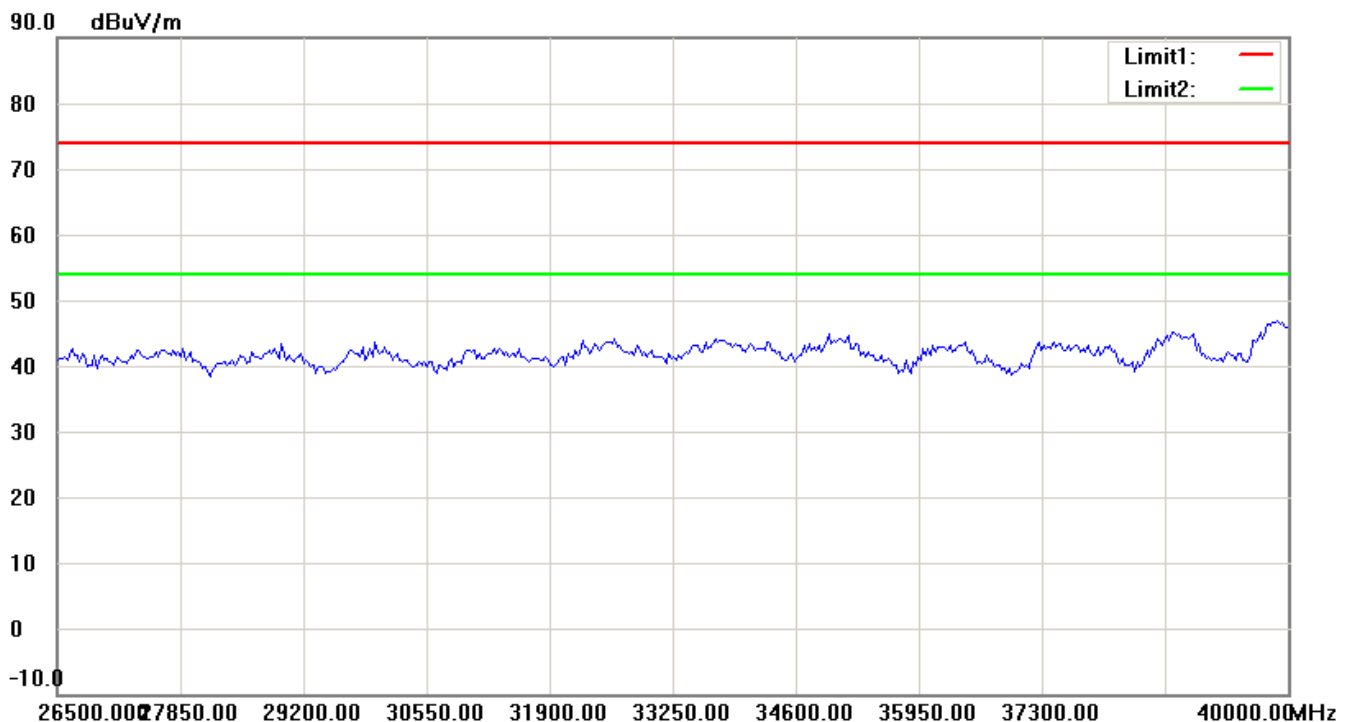
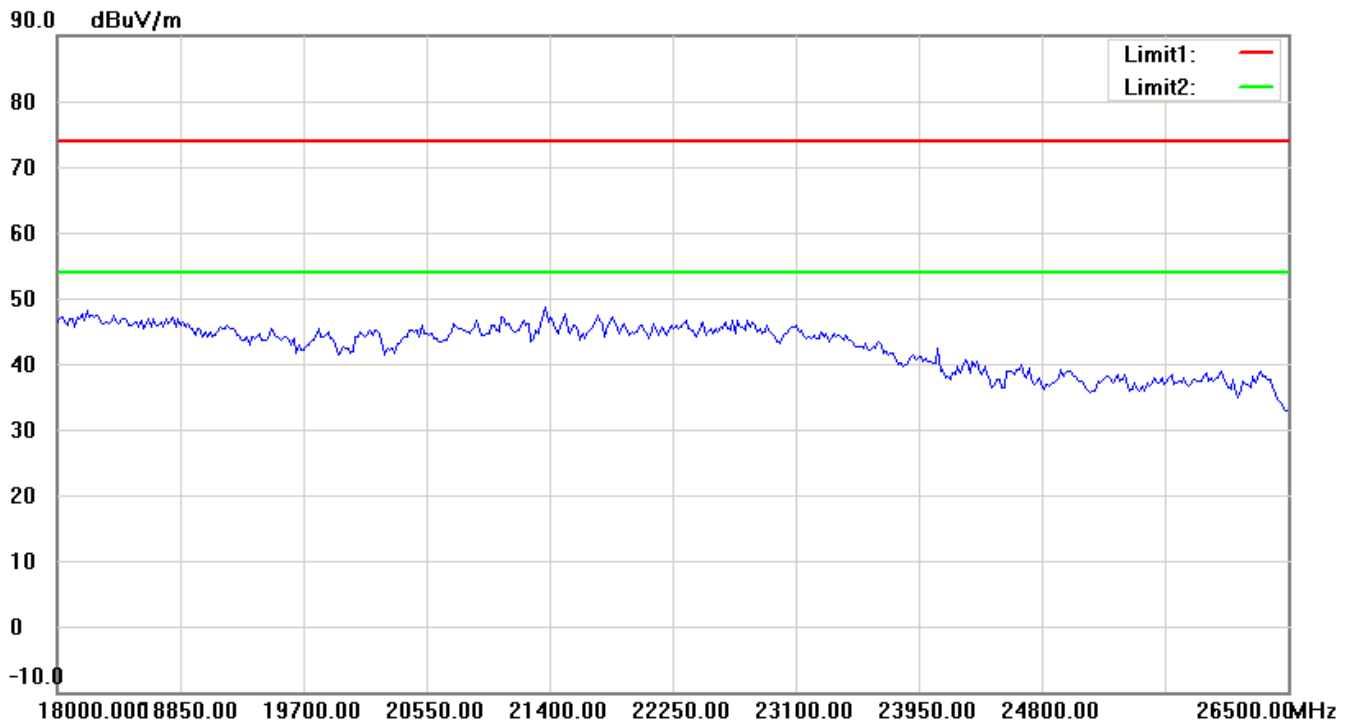
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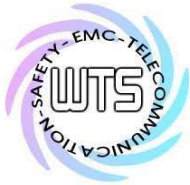
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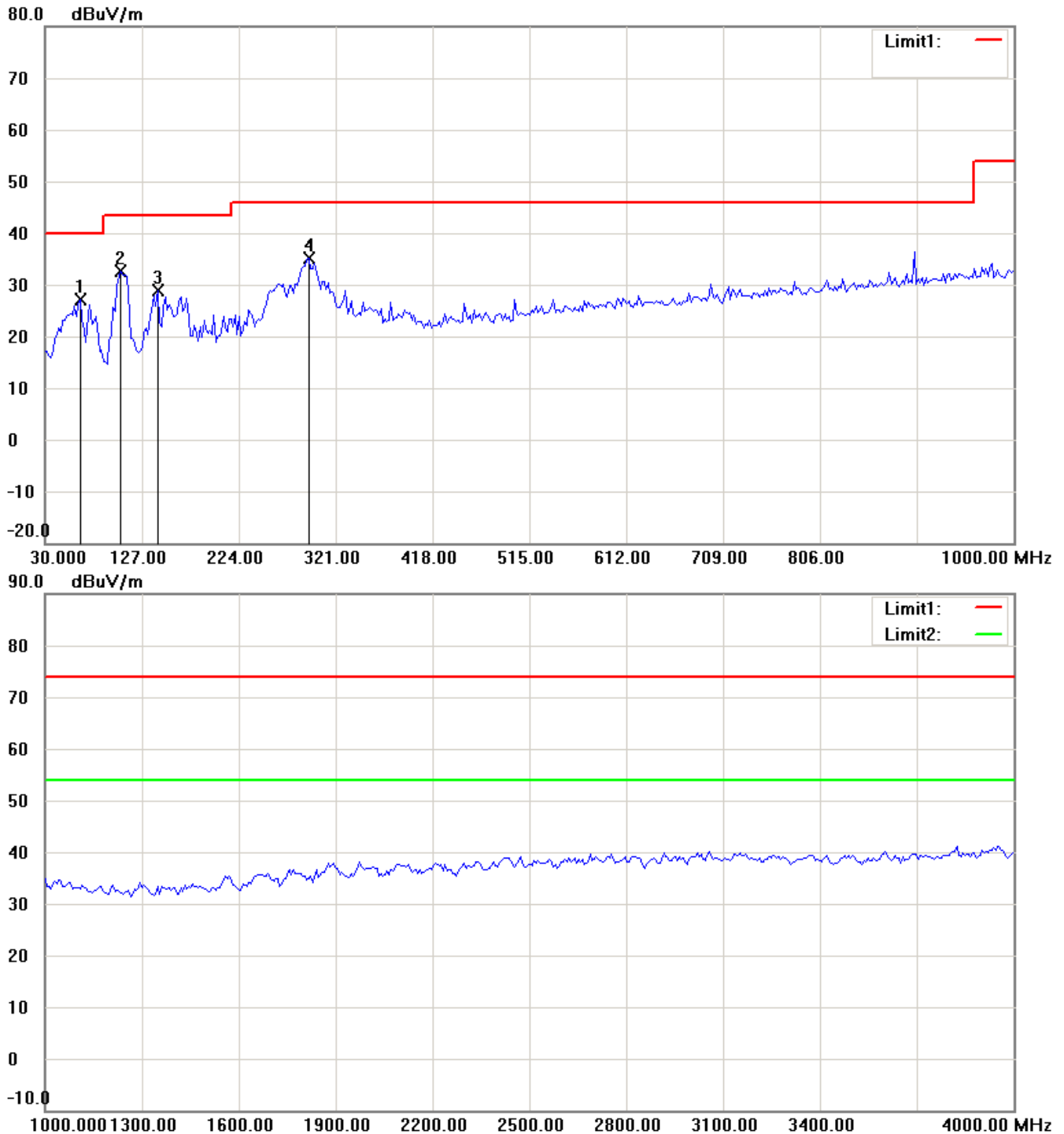
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FCC ID: UL9WNAP7325

Antenna 1

802.11a 5745MHz

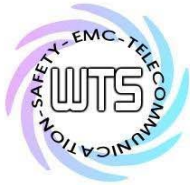
Antenna Polarization H



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

Note:

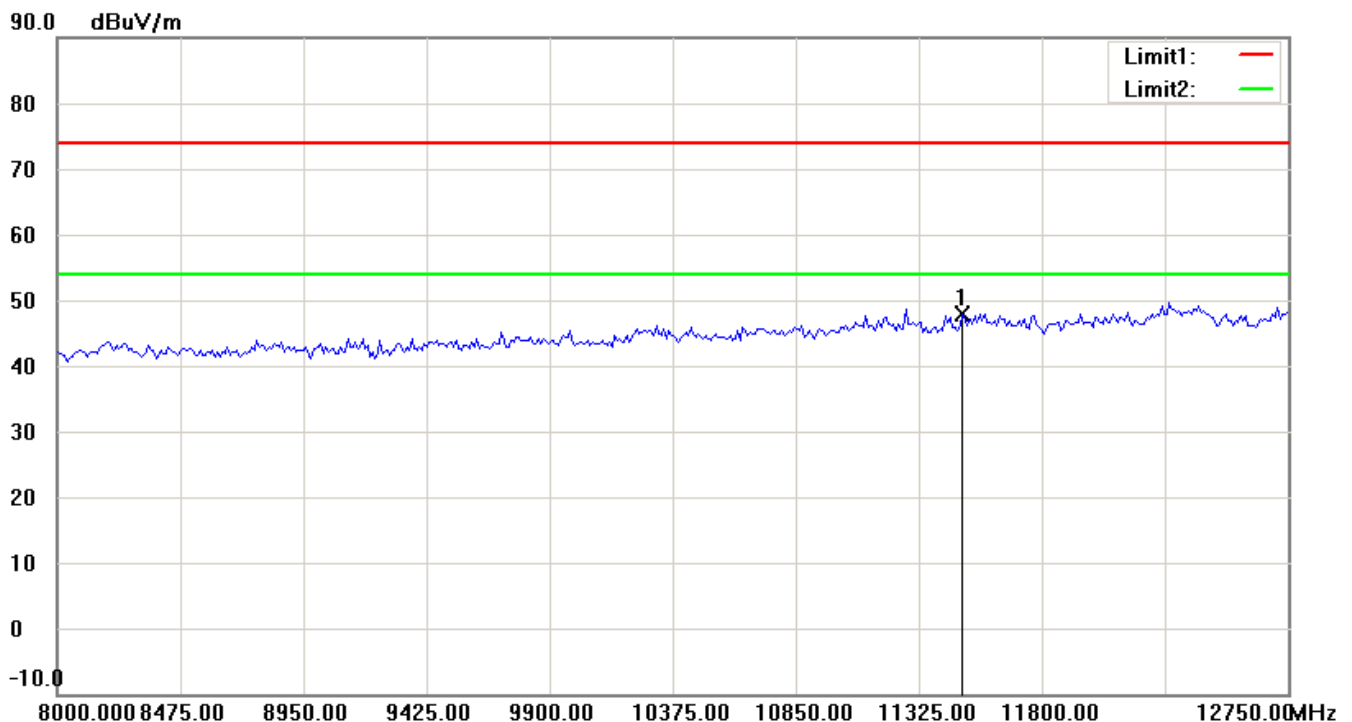
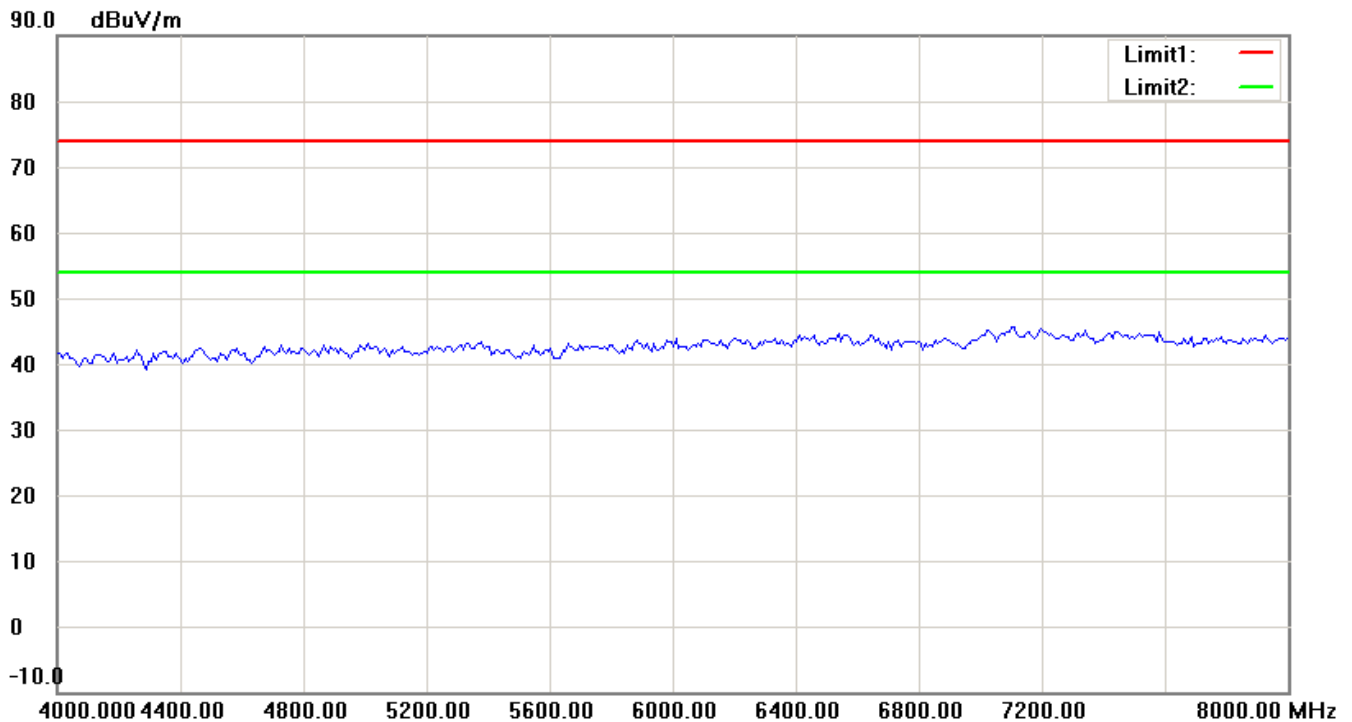
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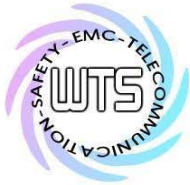
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

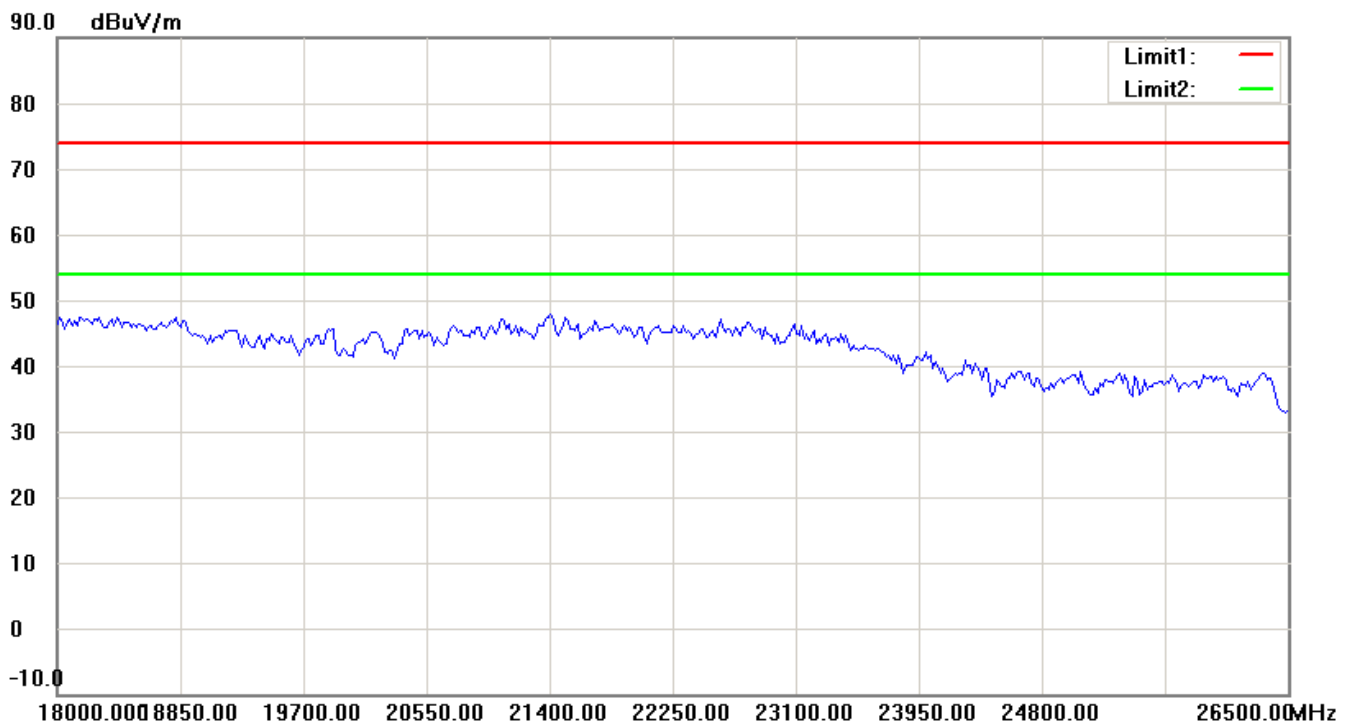
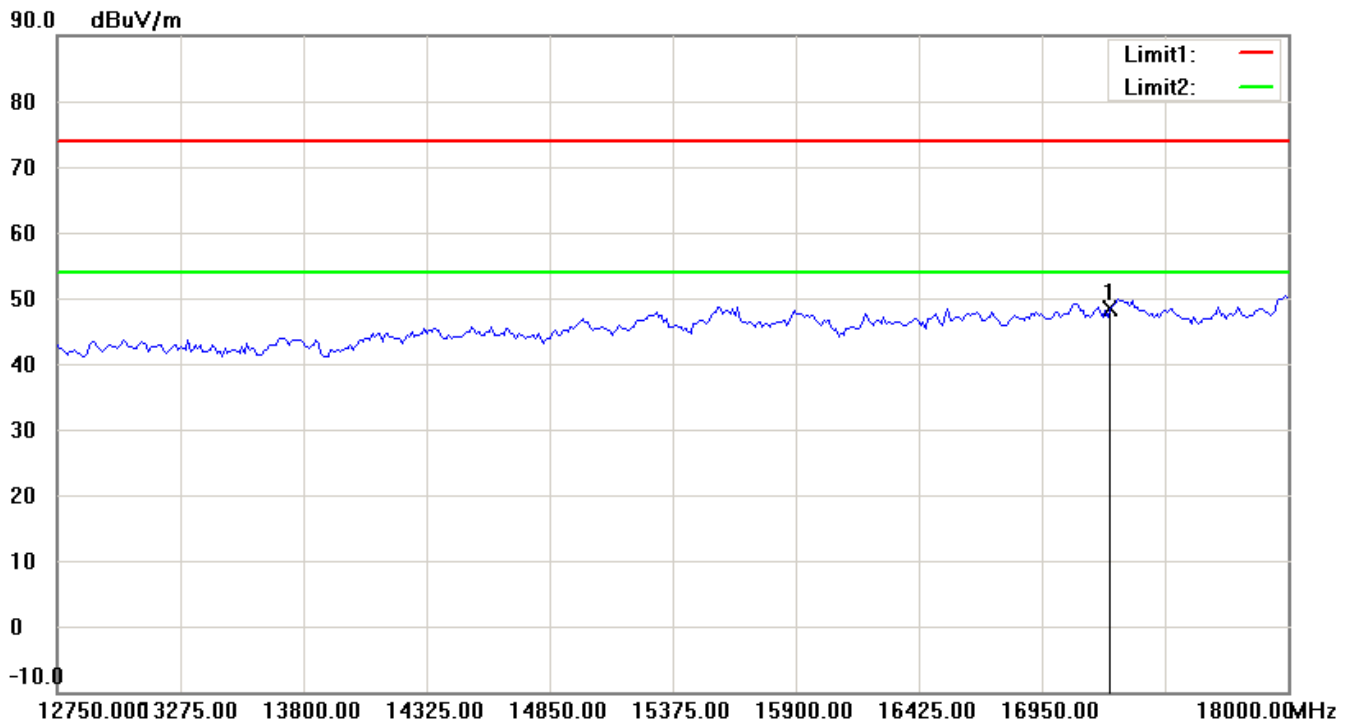
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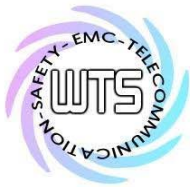
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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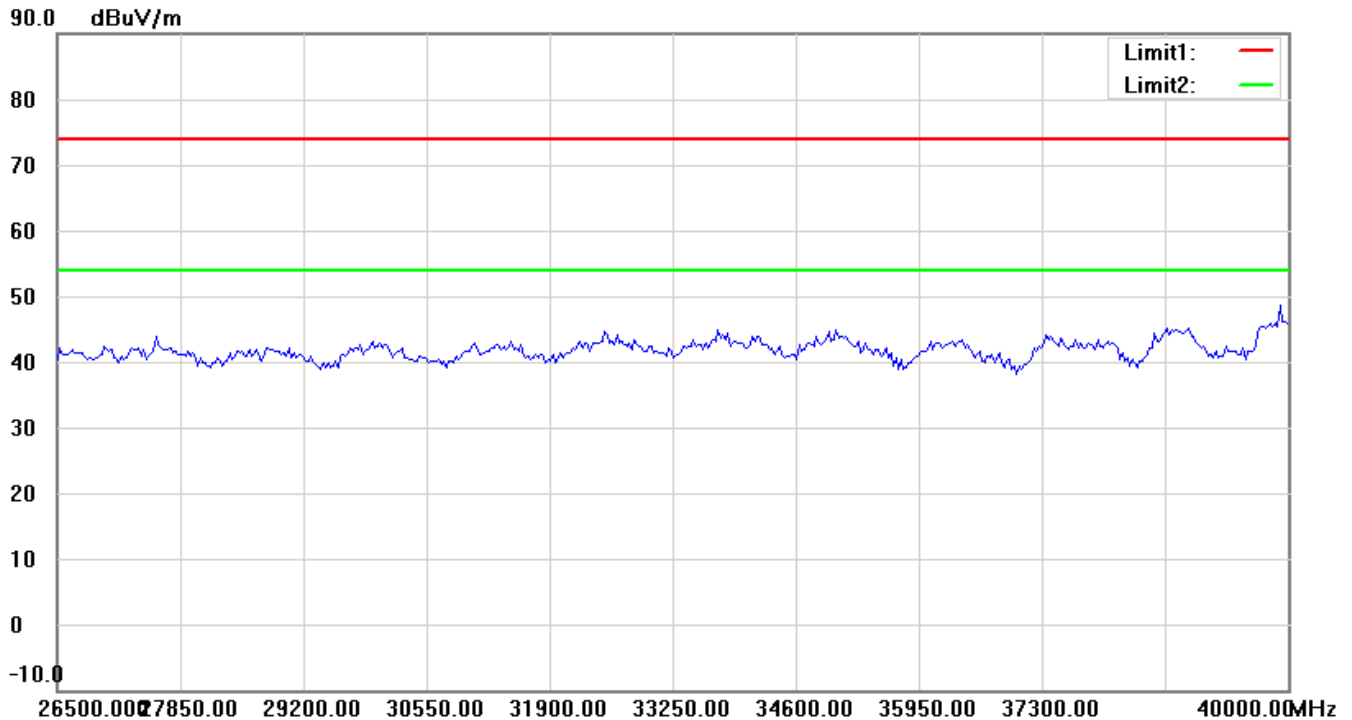
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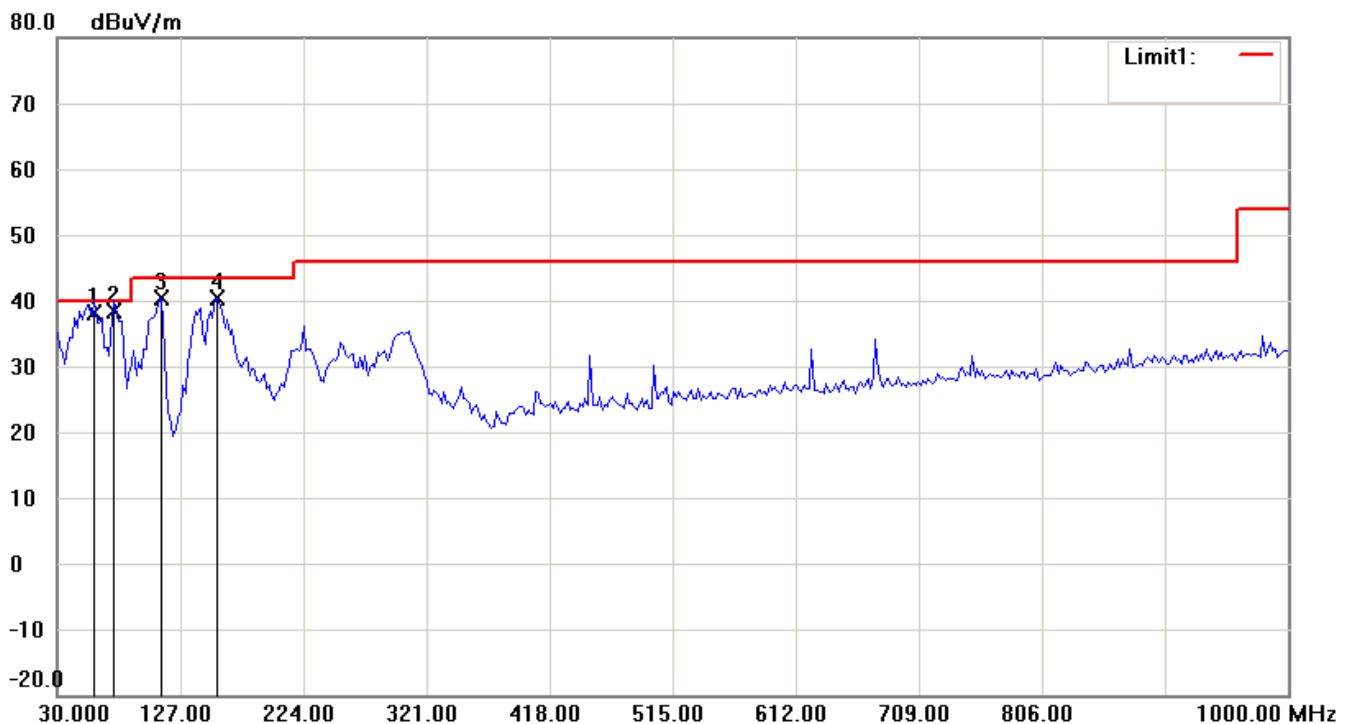
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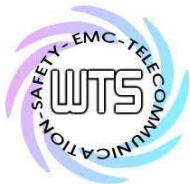
Antenna Polarization V



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

Note:

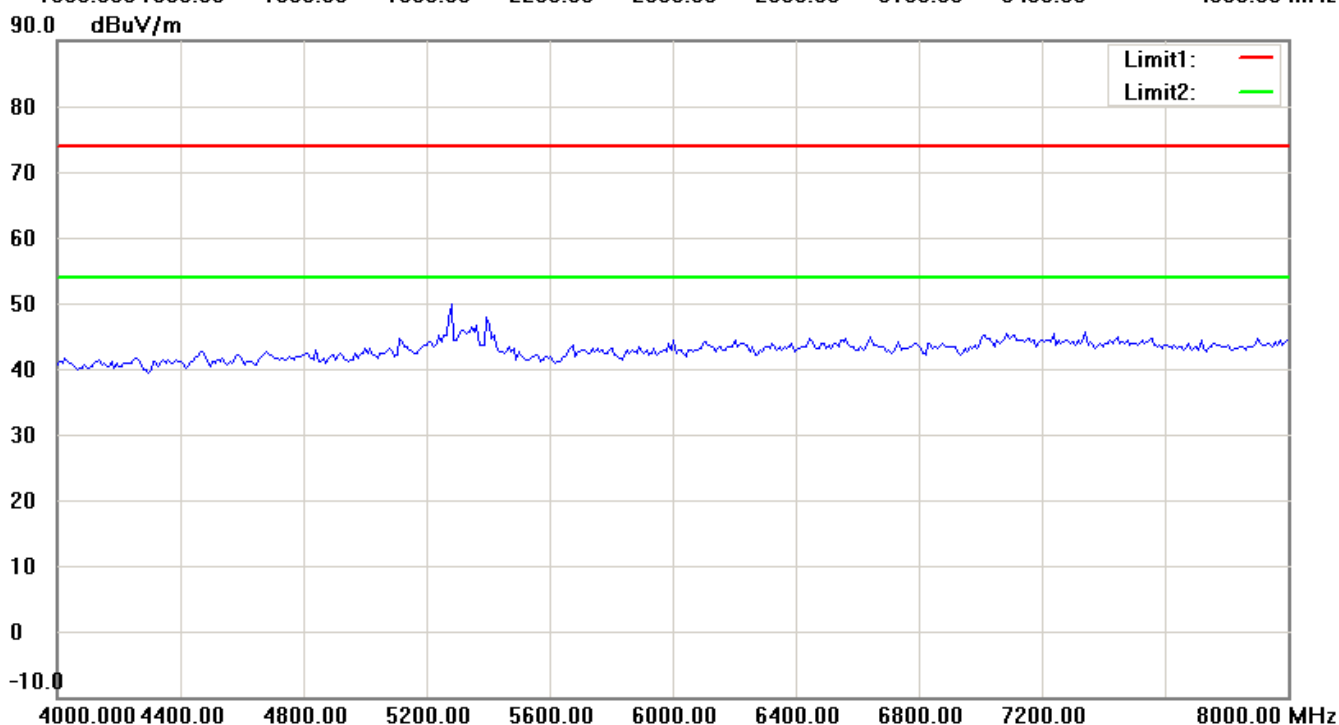
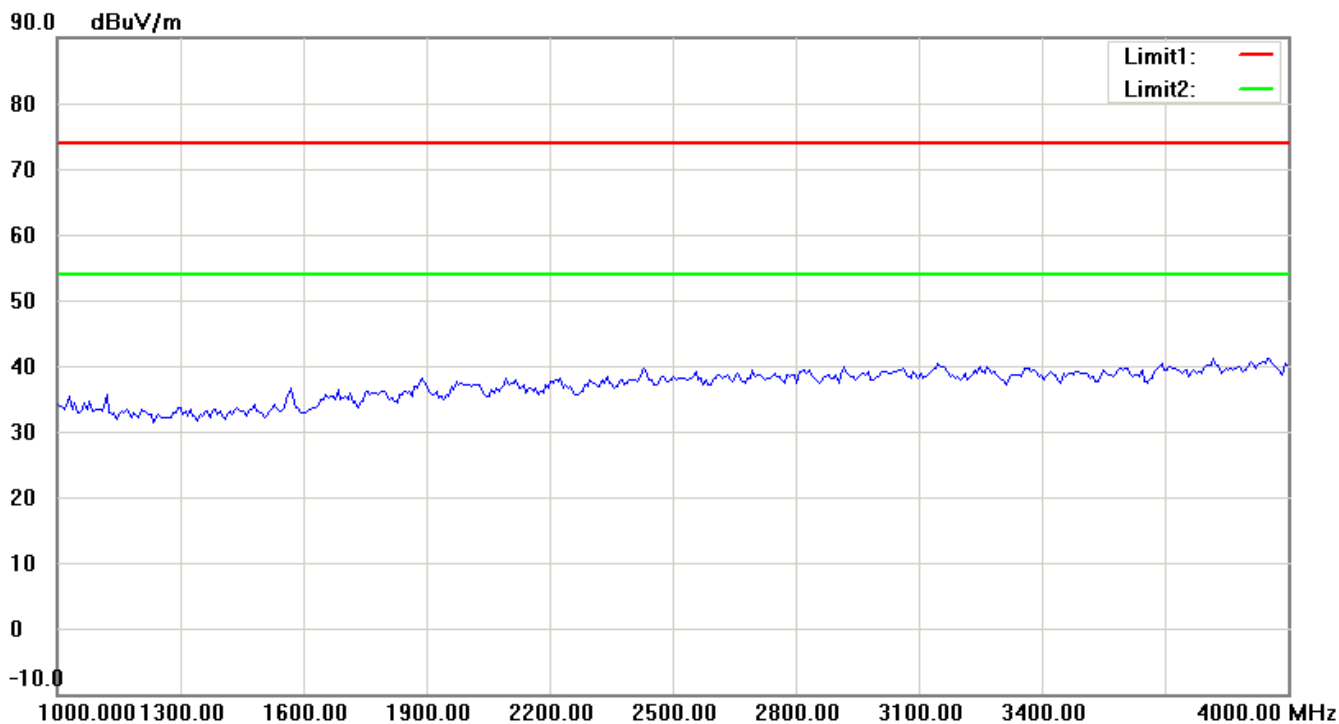
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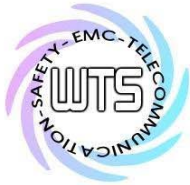
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

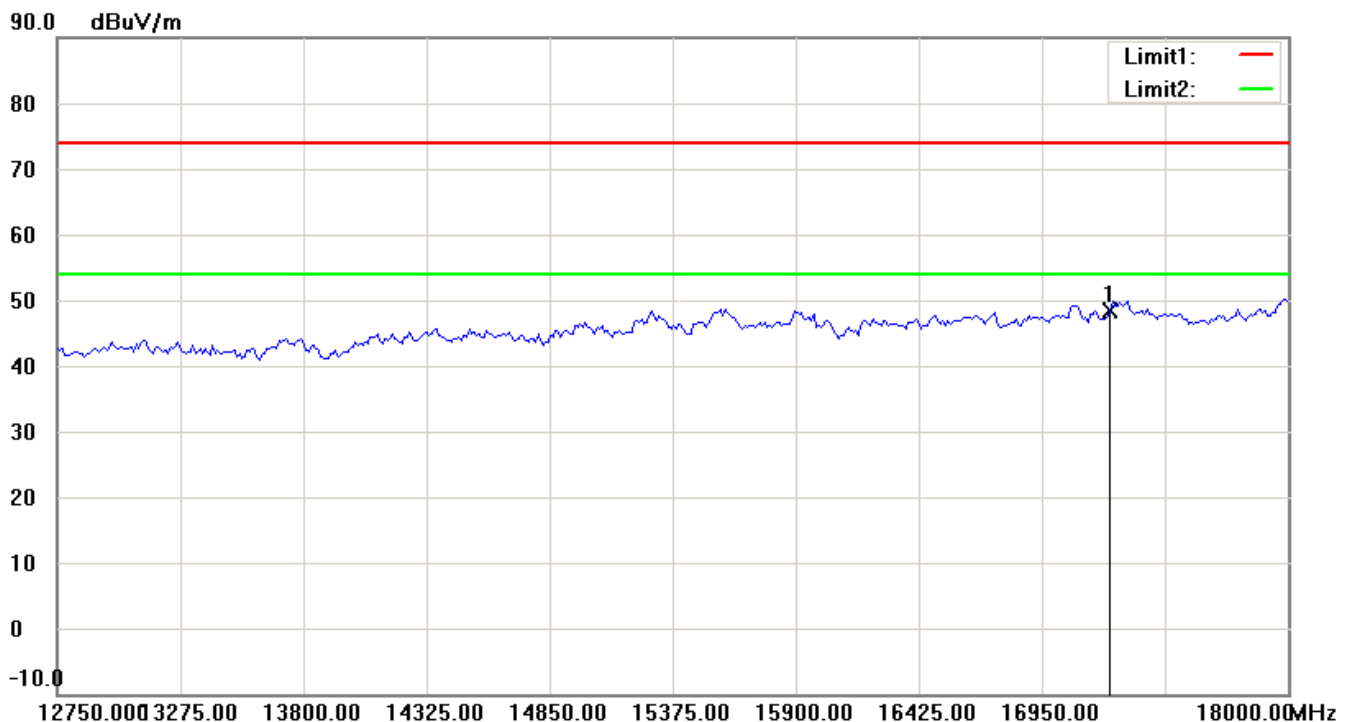
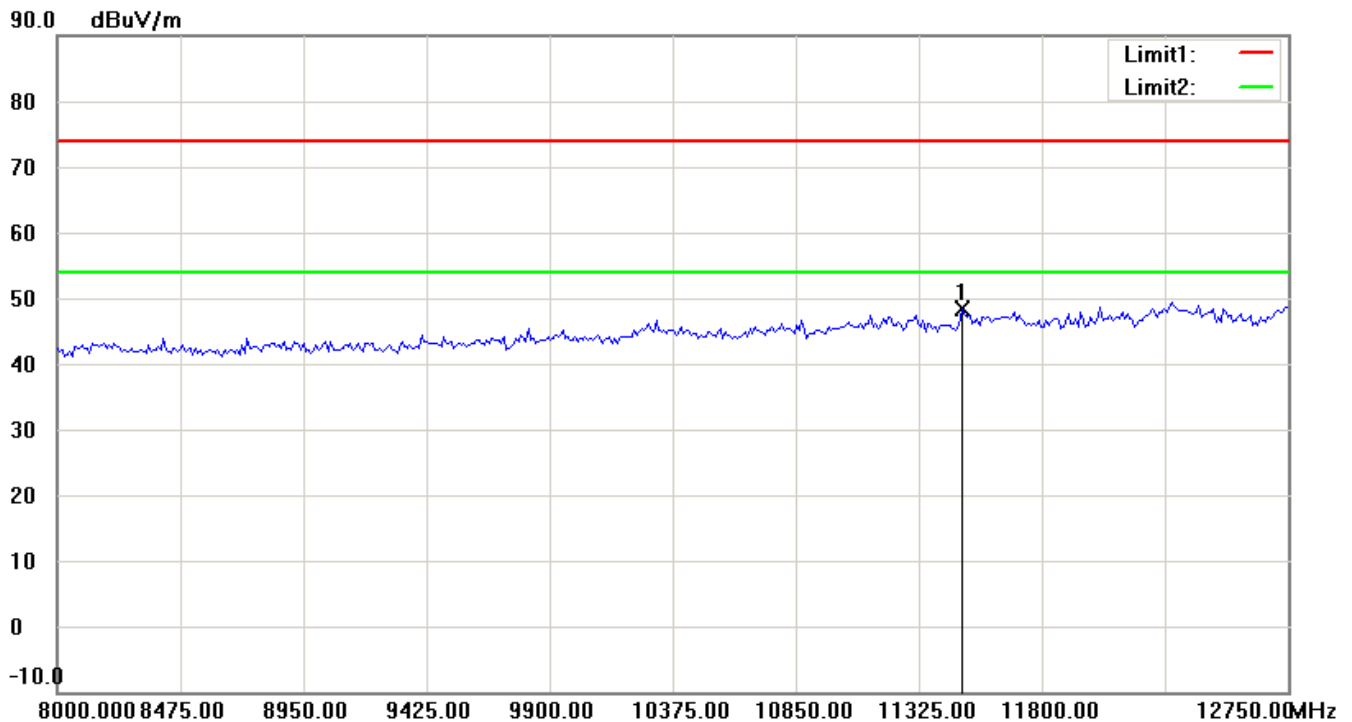
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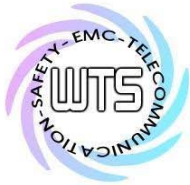
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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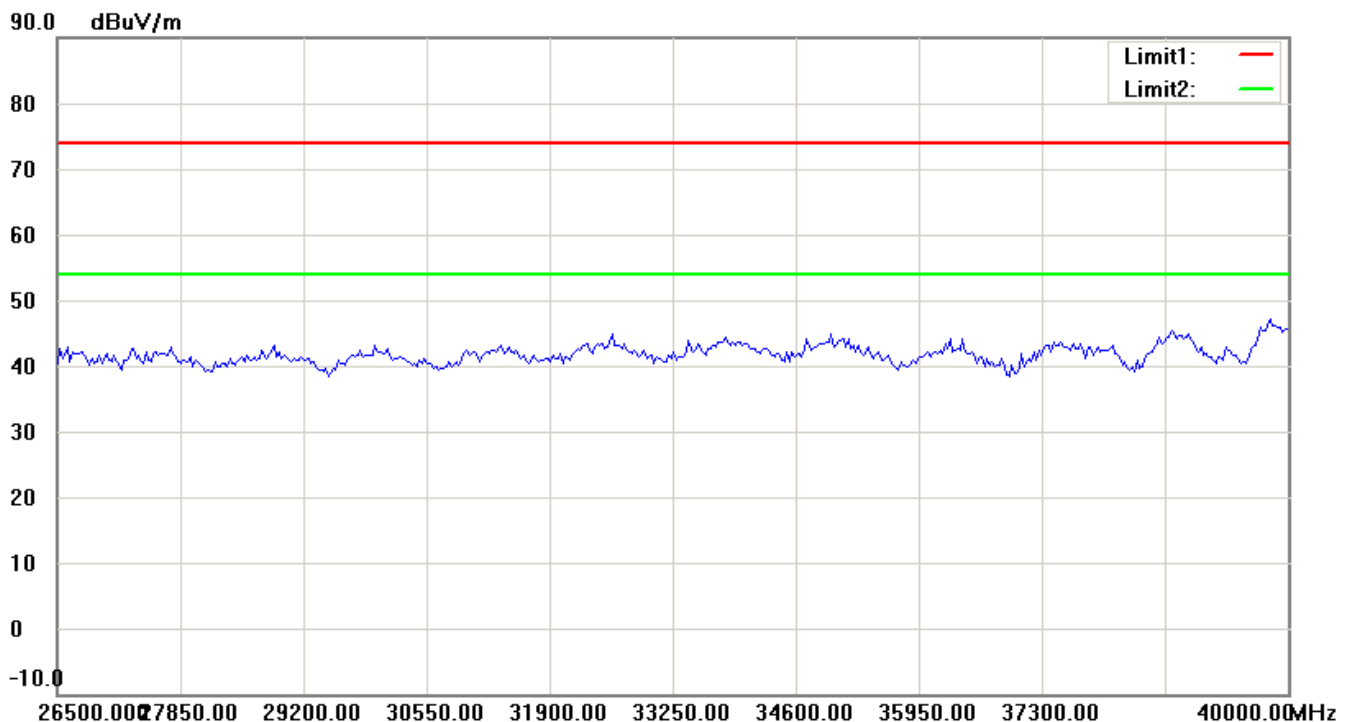
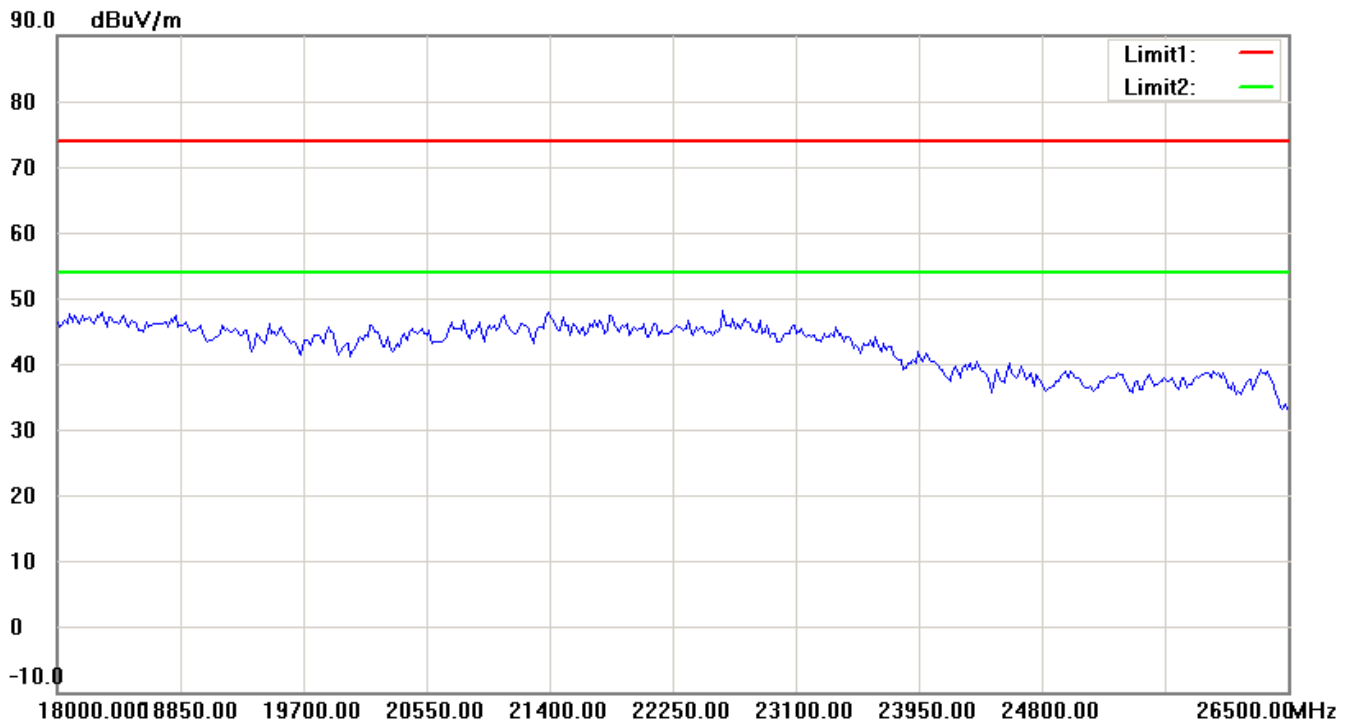
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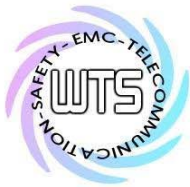
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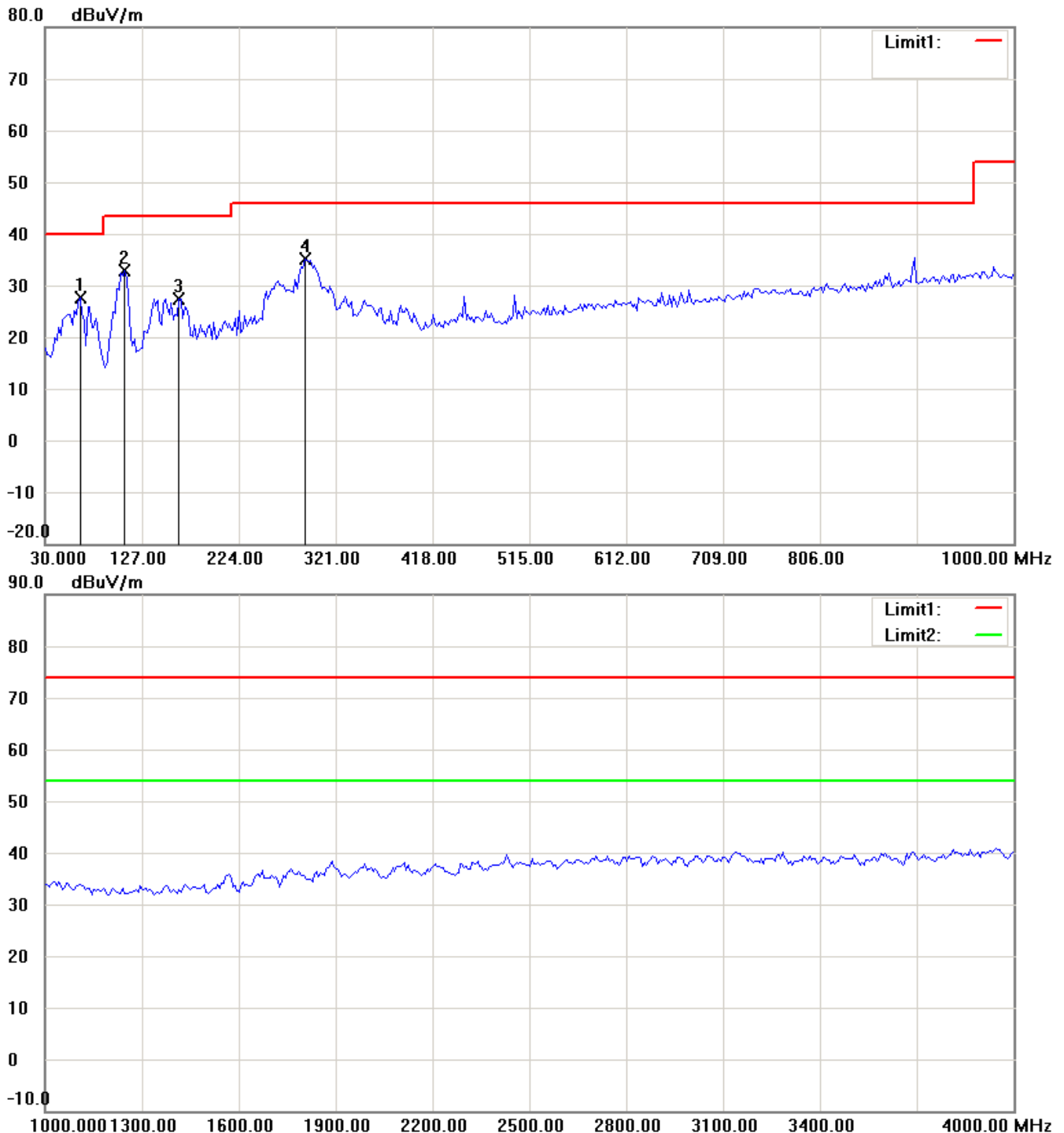
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Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11a 5785MHz

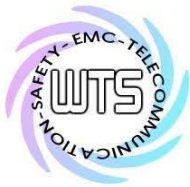
Antenna Polarization H



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

Note:

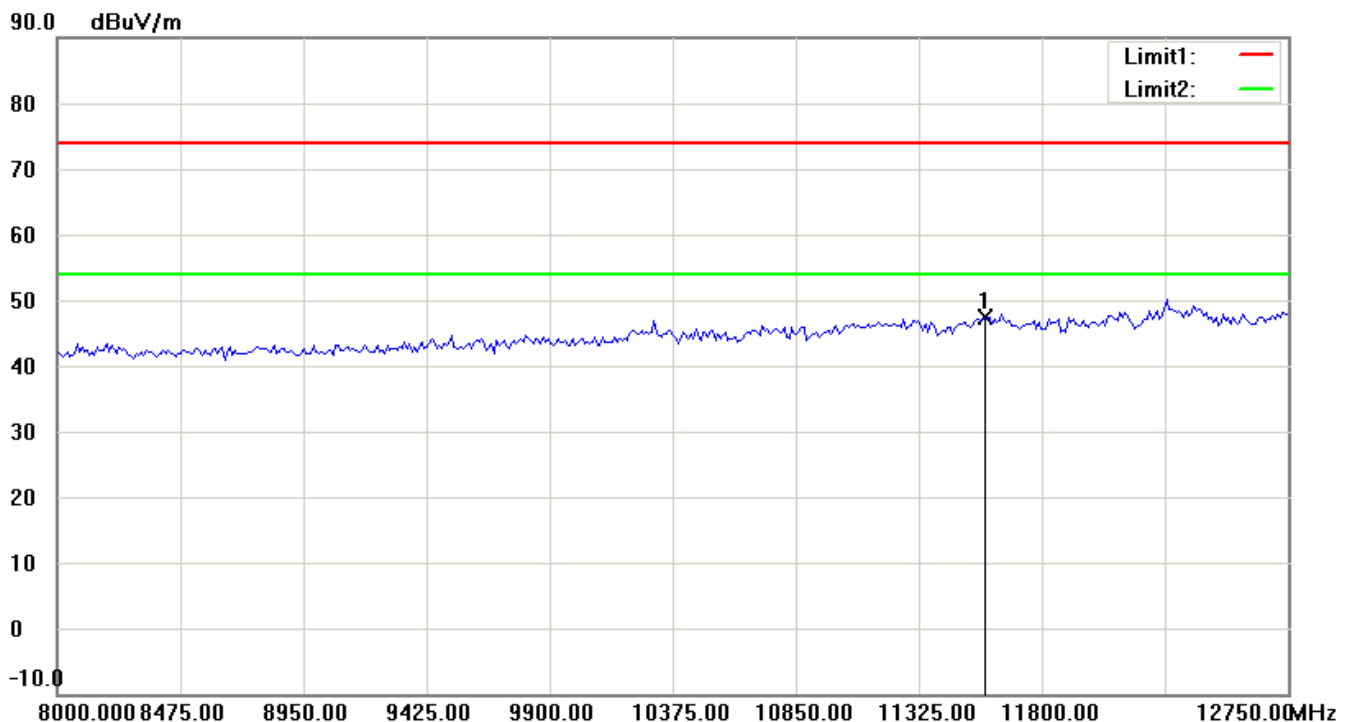
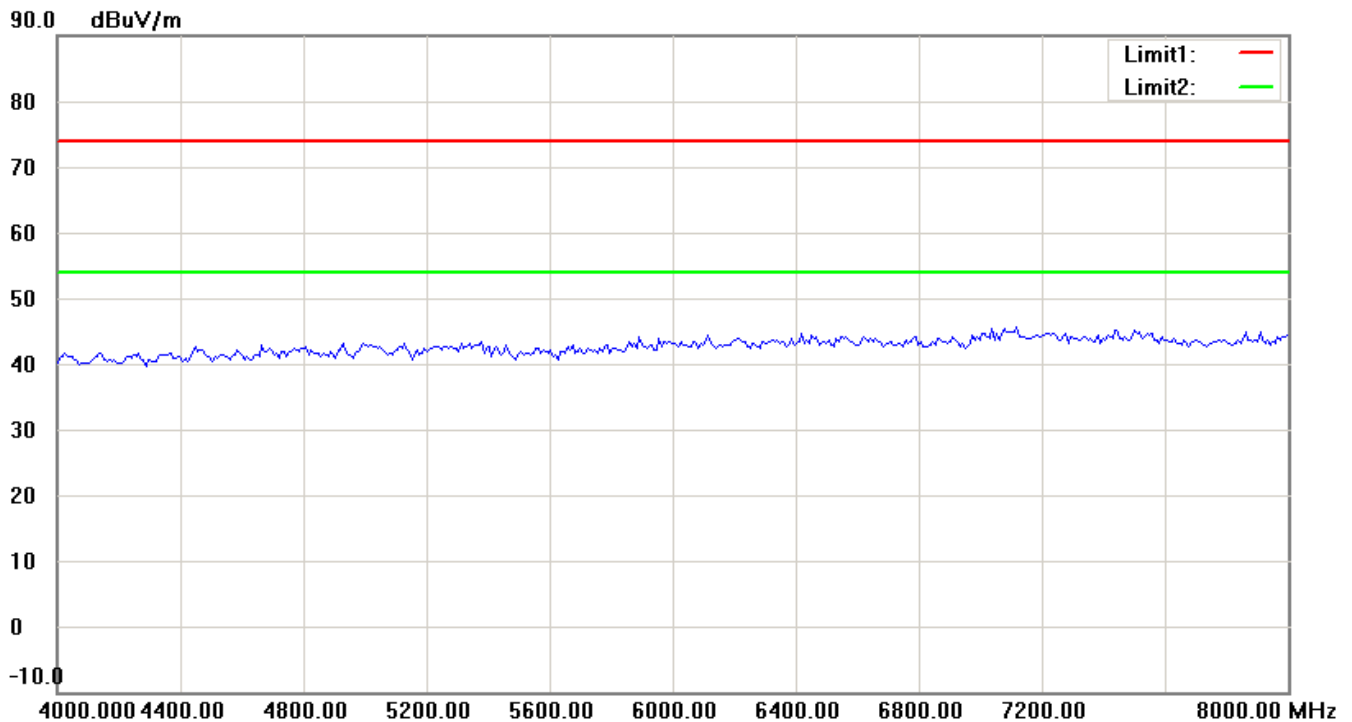
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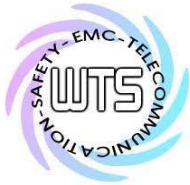
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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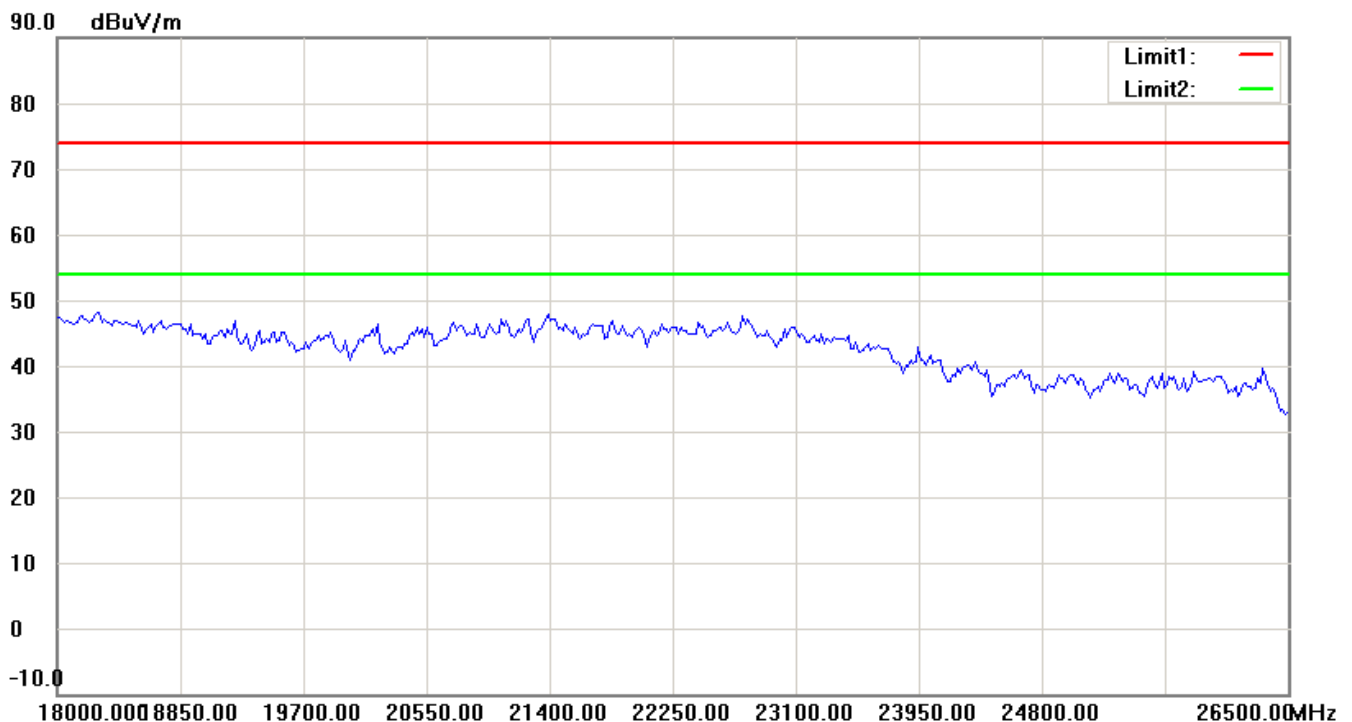
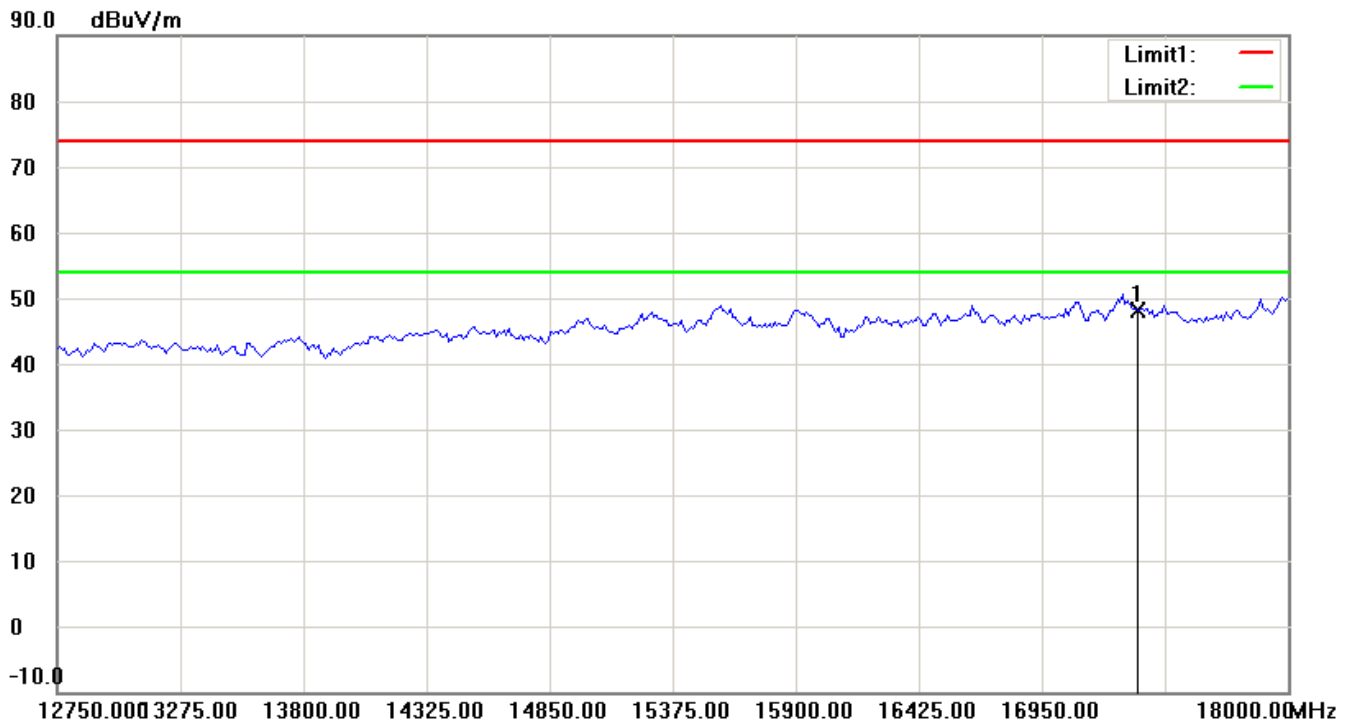
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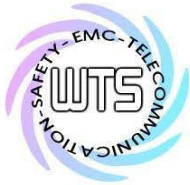
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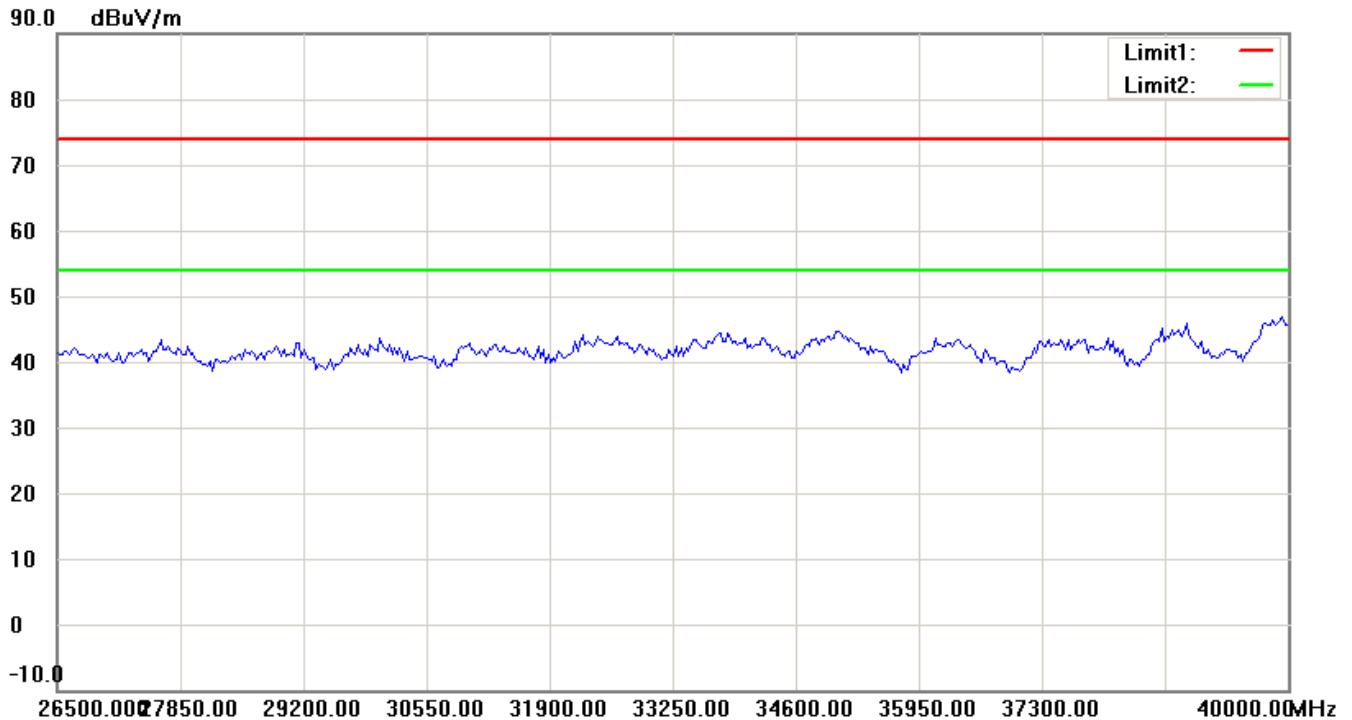
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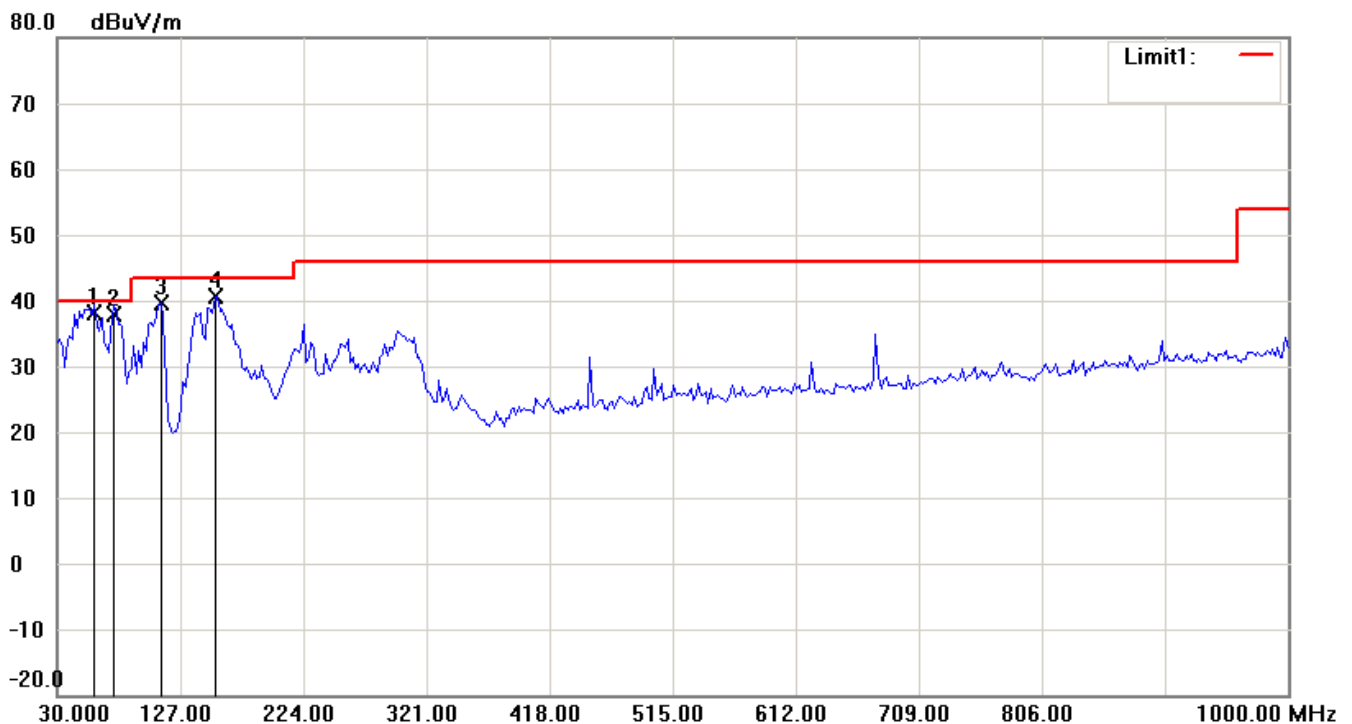
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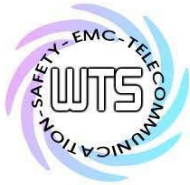
Antenna Polarization V



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

Note:

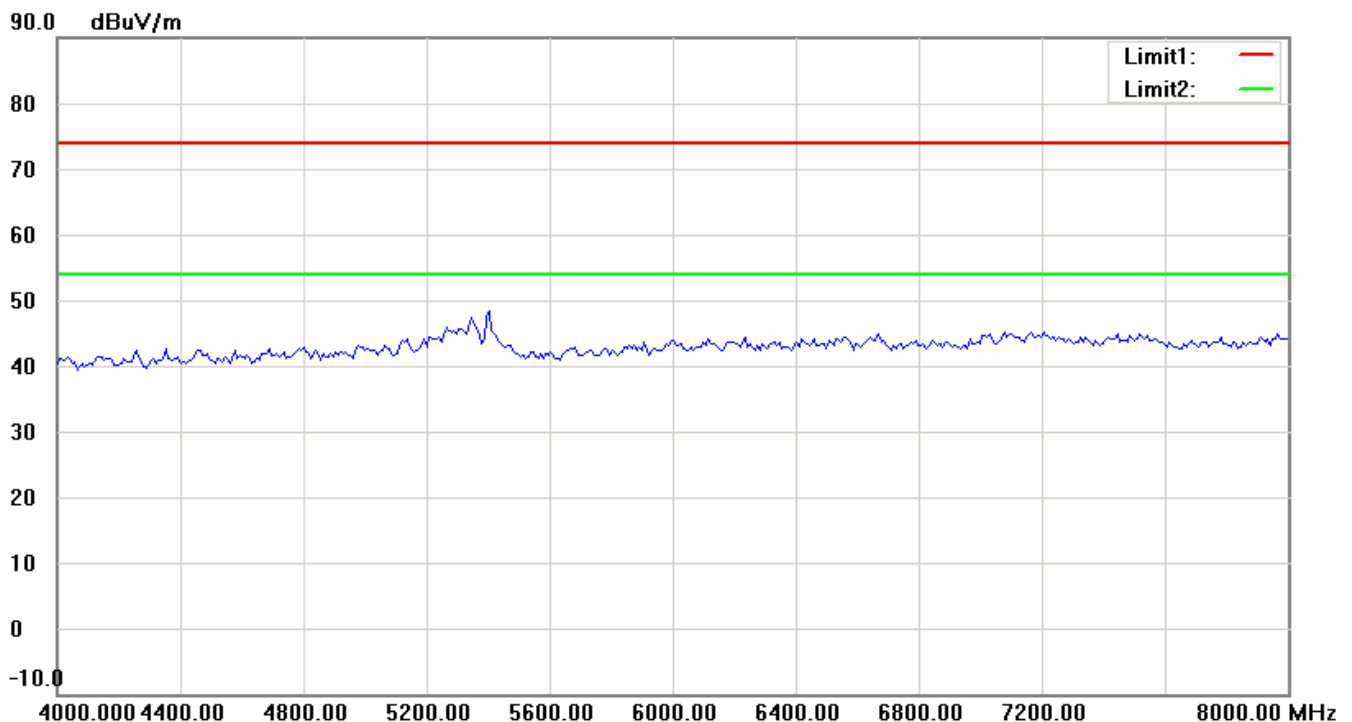
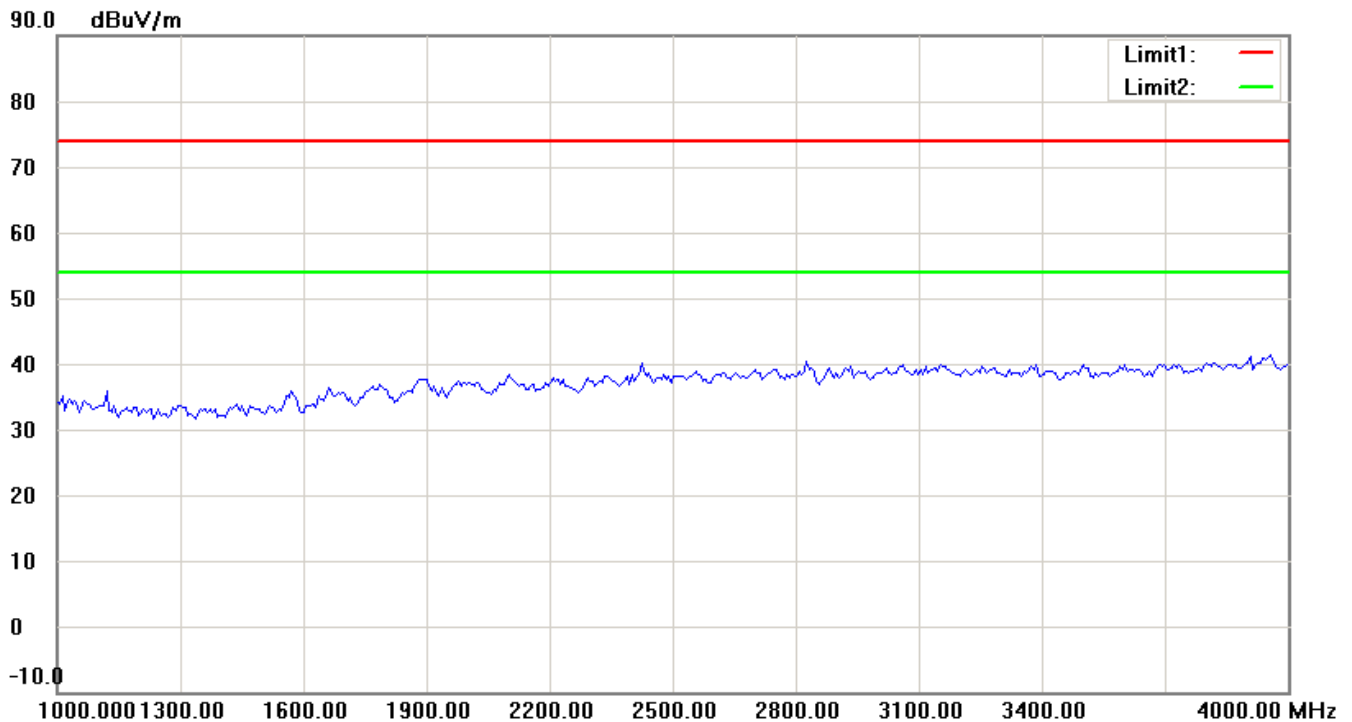
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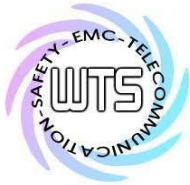
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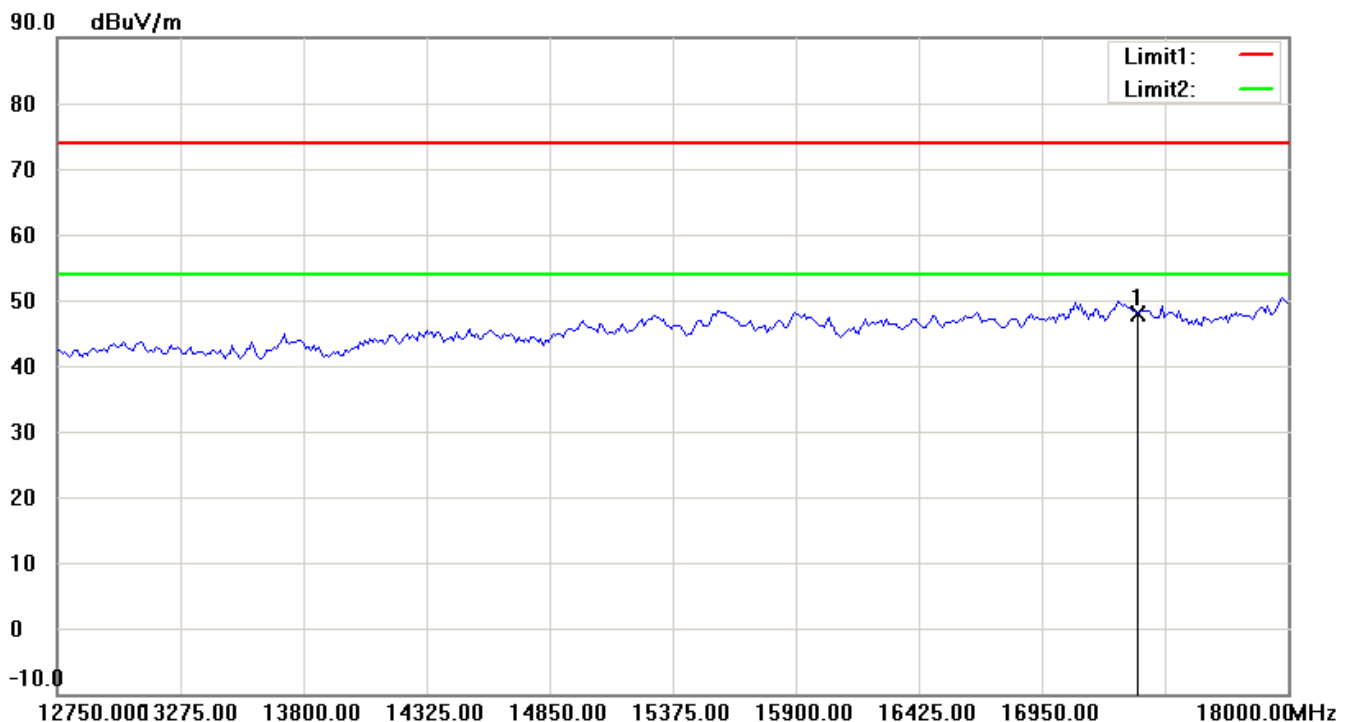
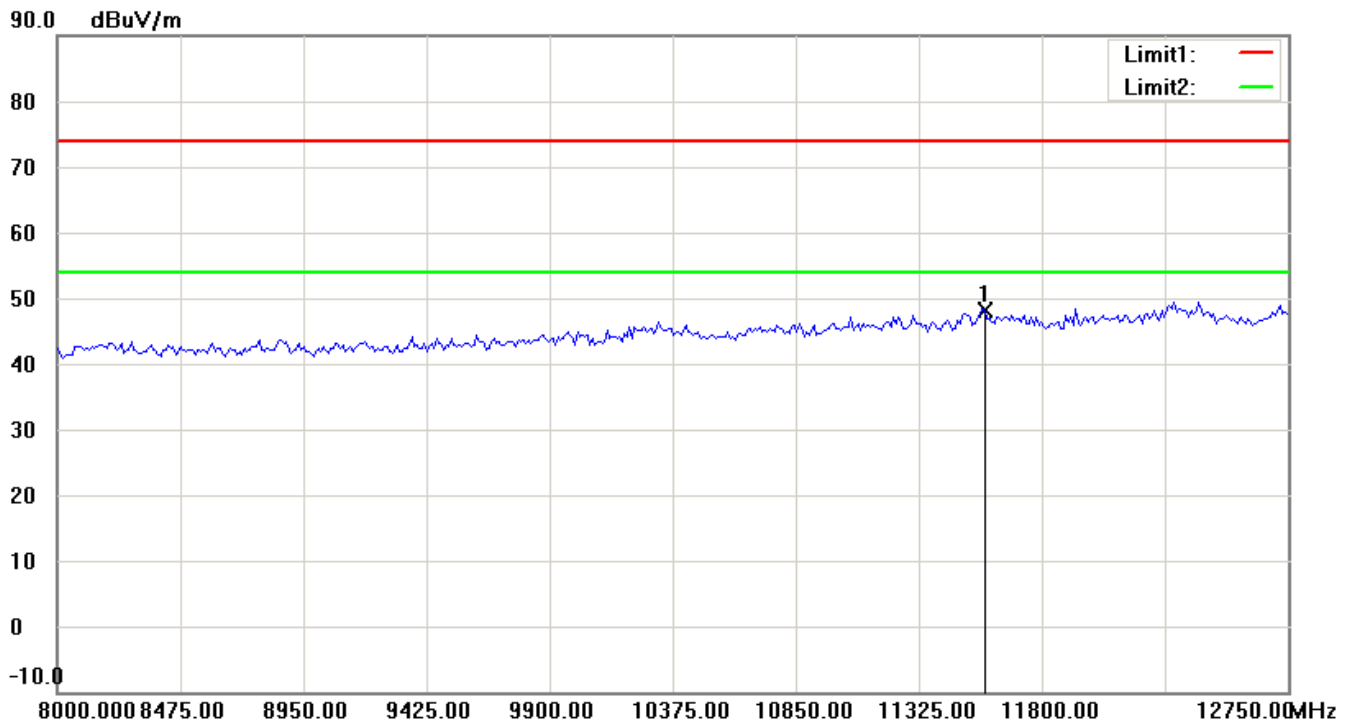
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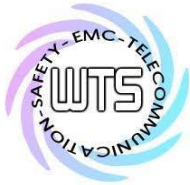
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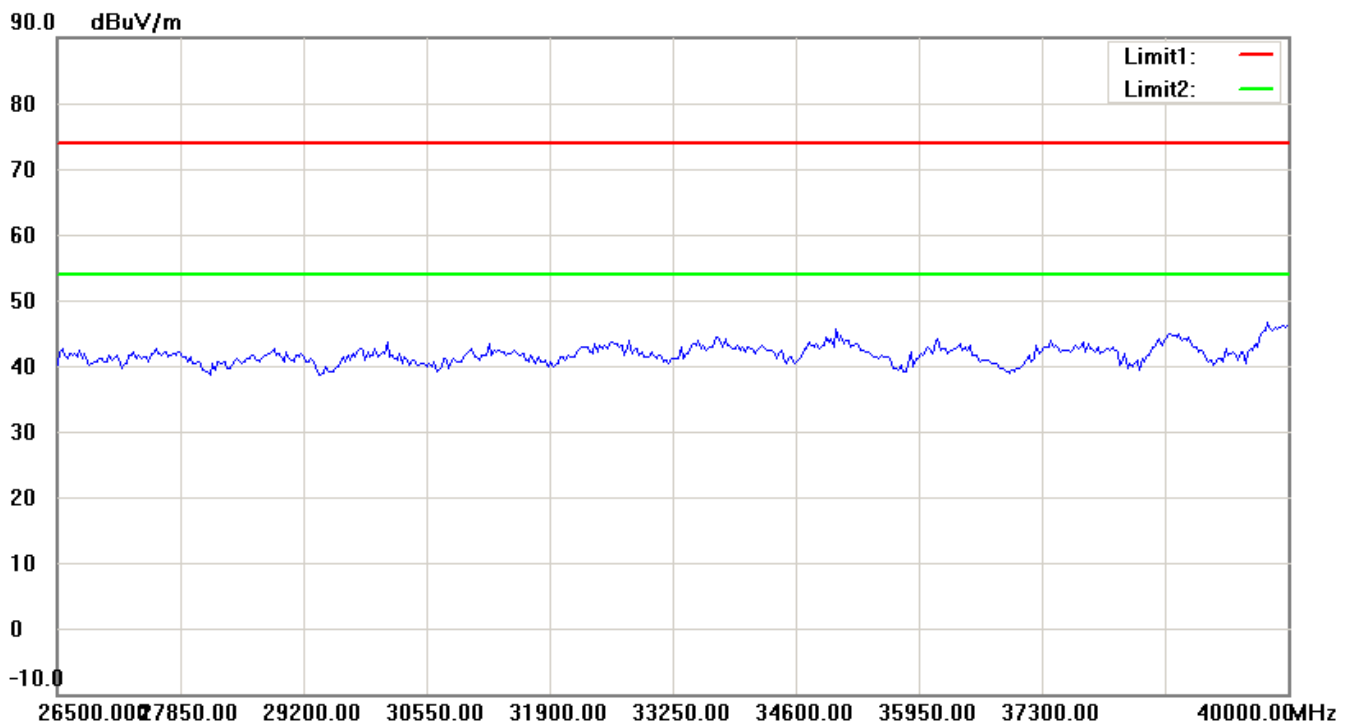
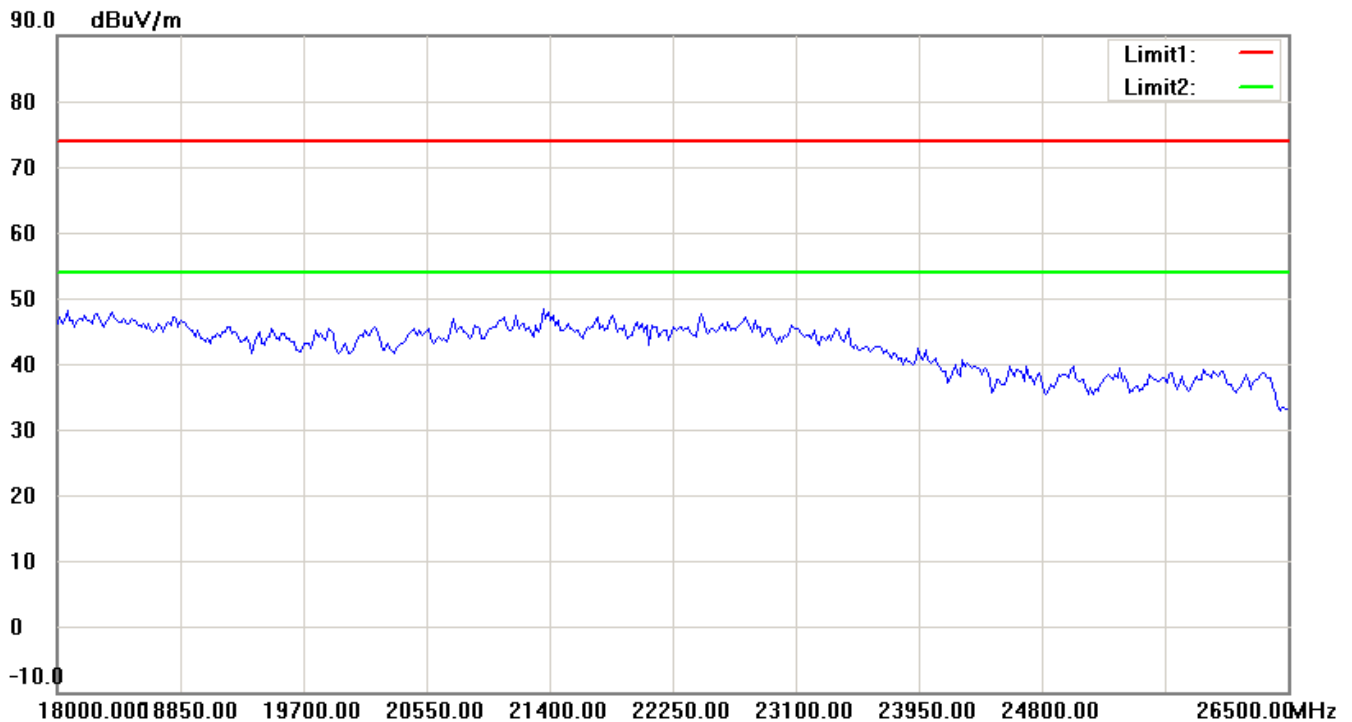
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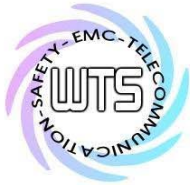
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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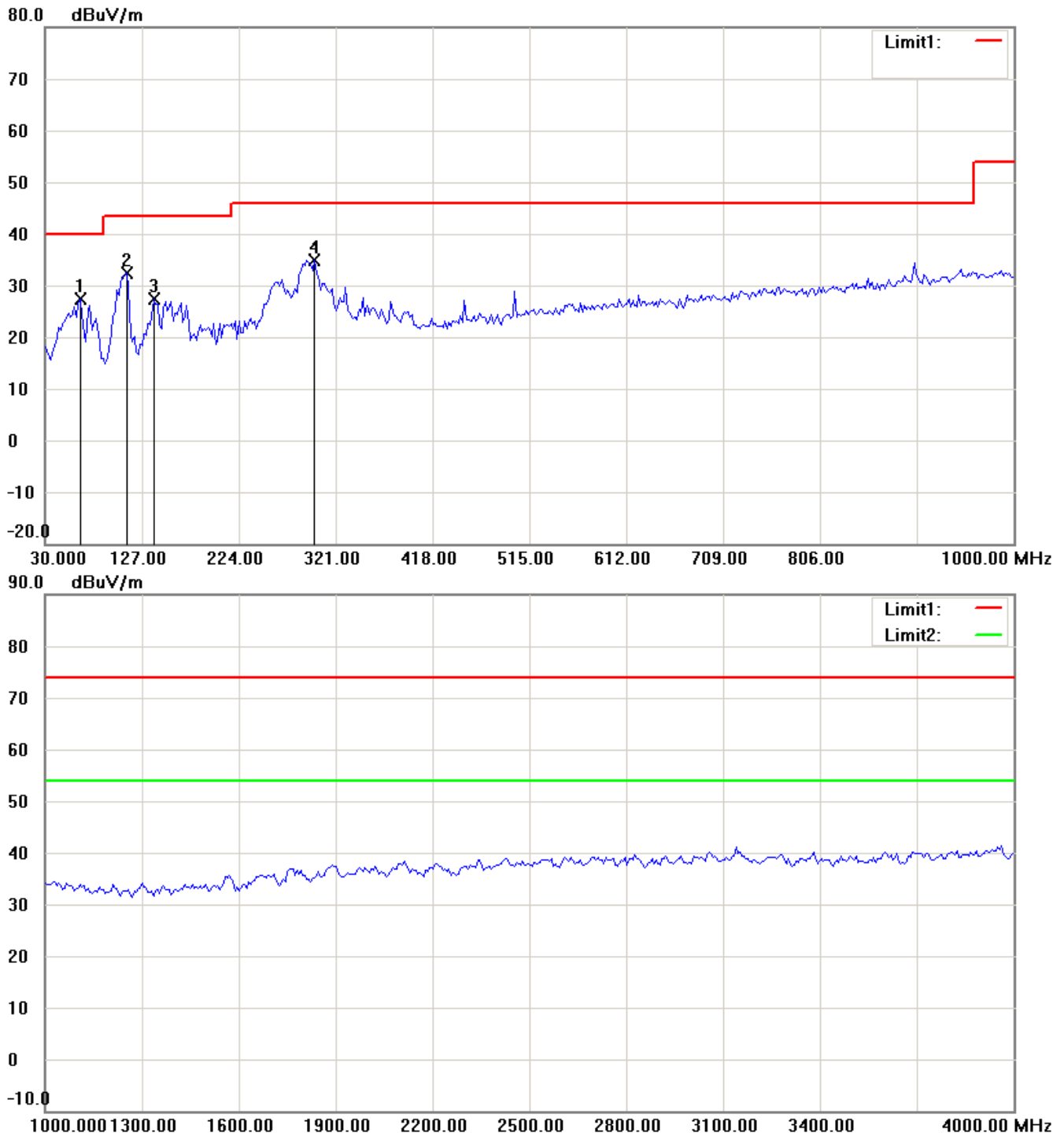
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11a 5825MHz

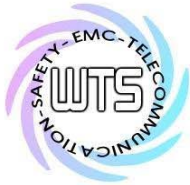
Antenna Polarization H



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

Note:

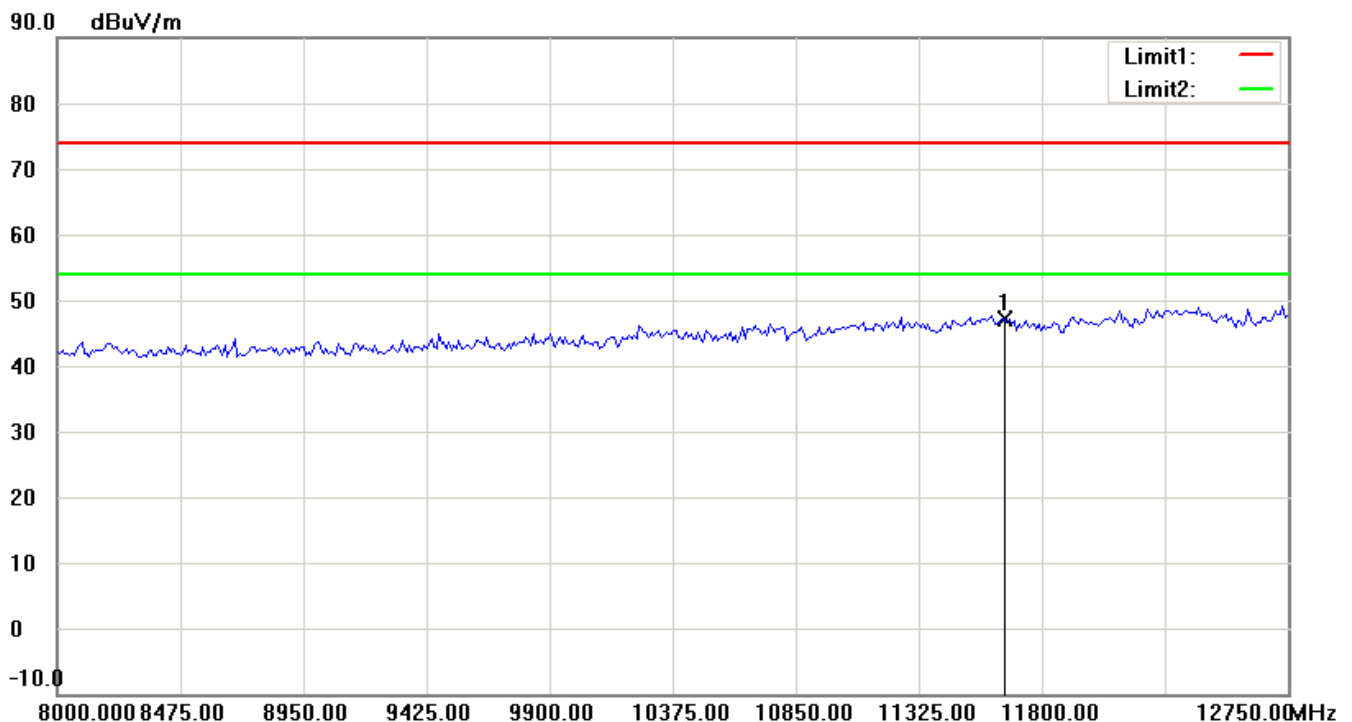
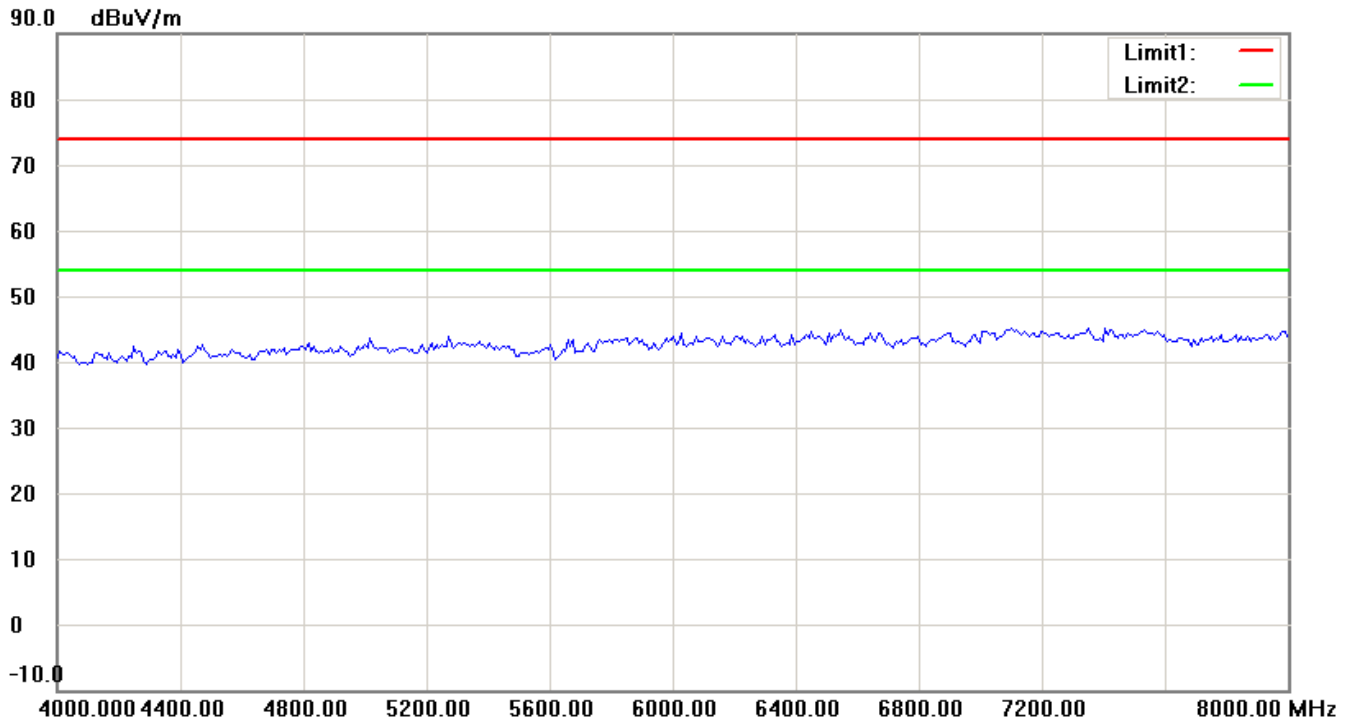
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Worldwide Testing Services(Taiwan) Co., Ltd.

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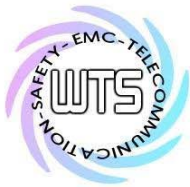
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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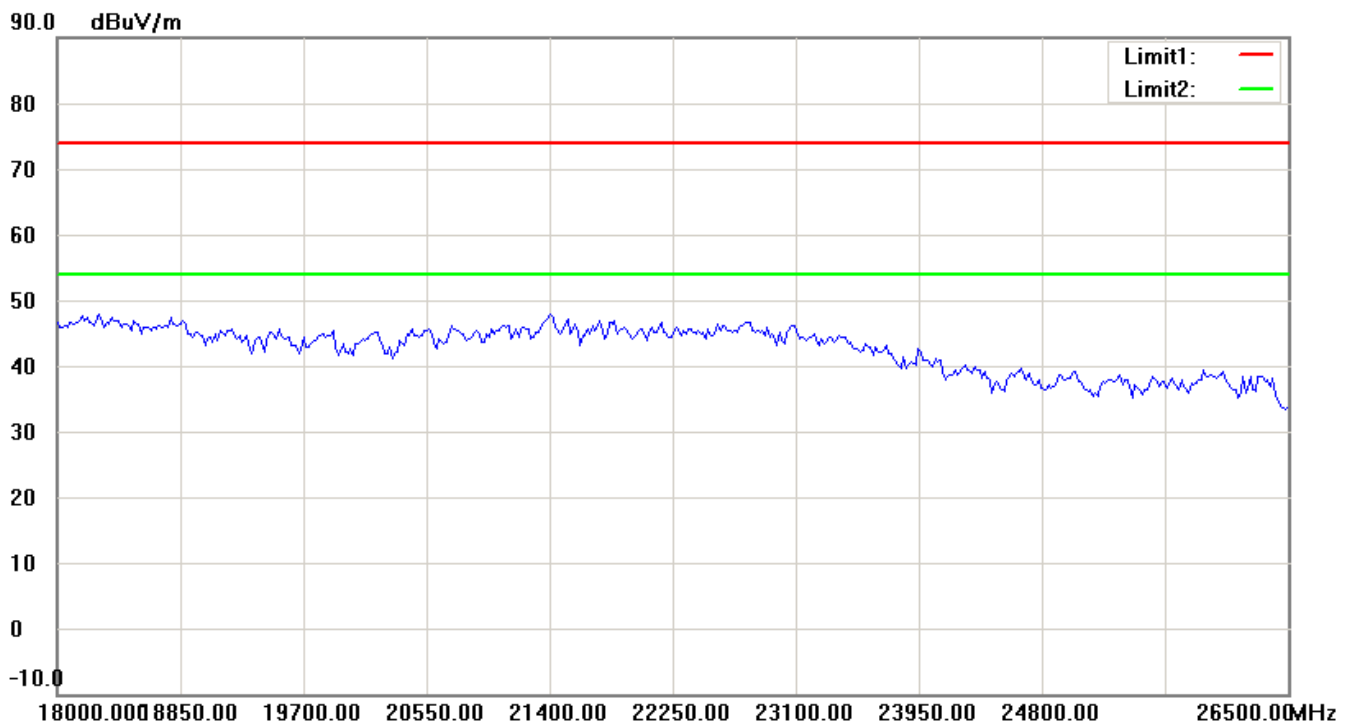
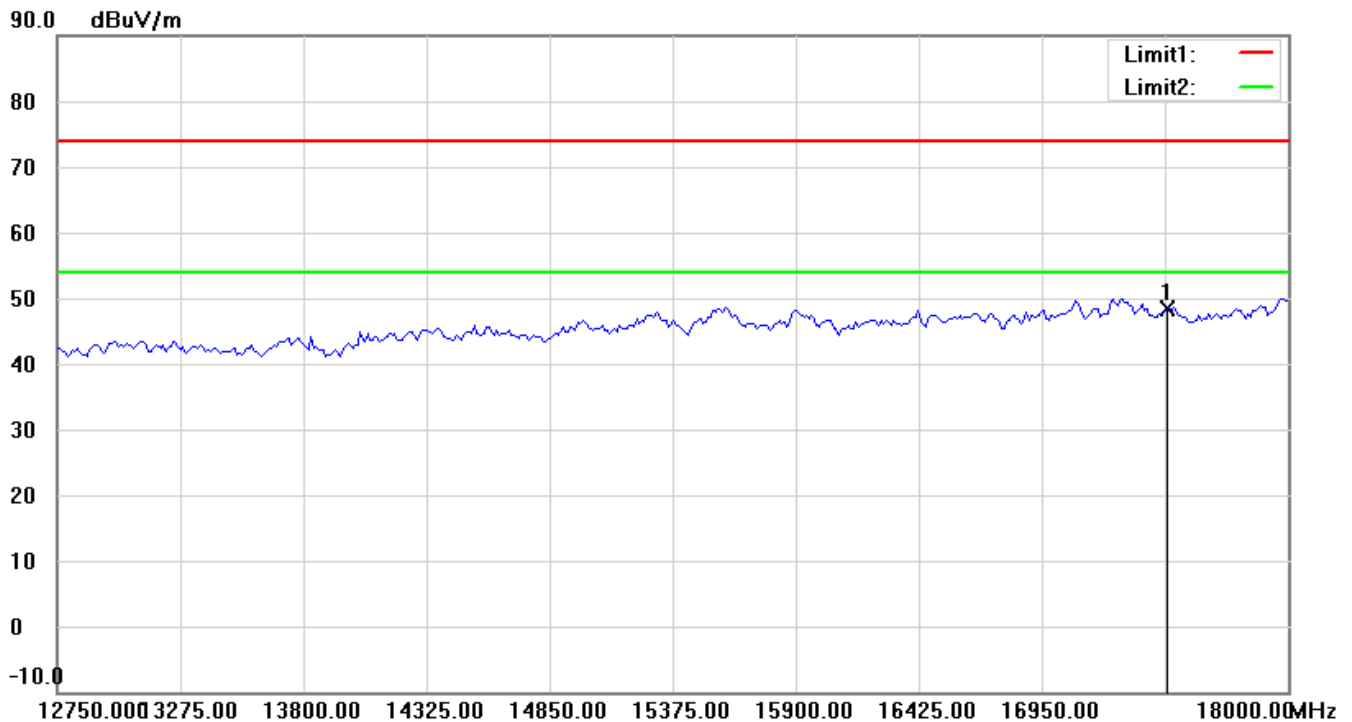
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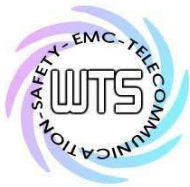
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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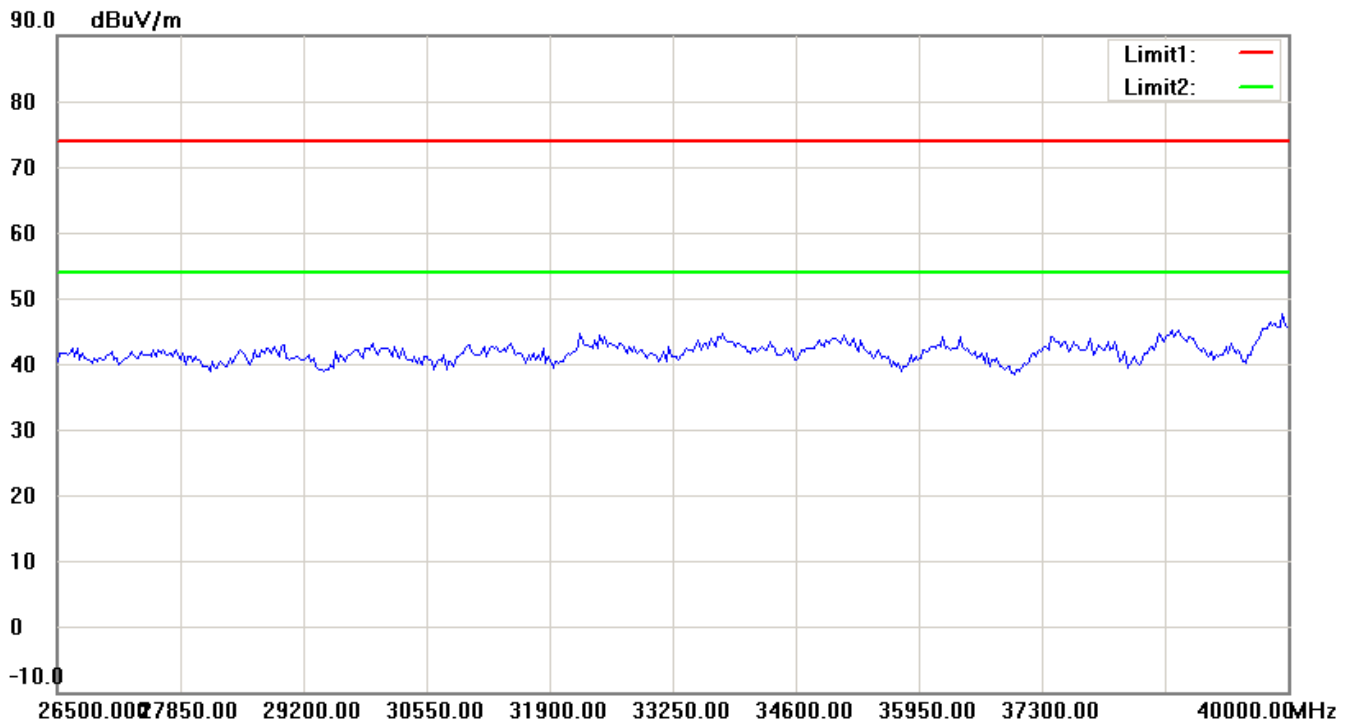
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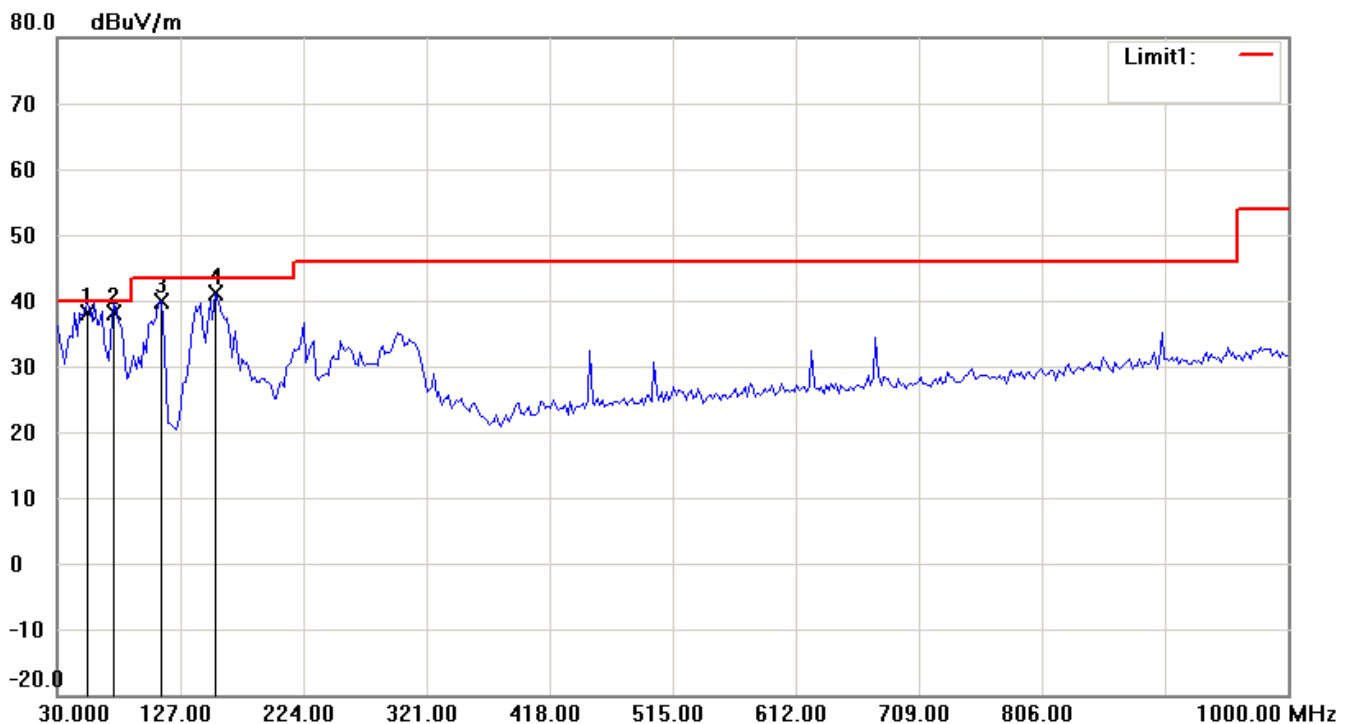
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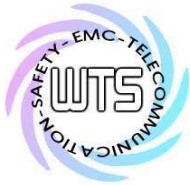
Antenna Polarization V



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

Note:

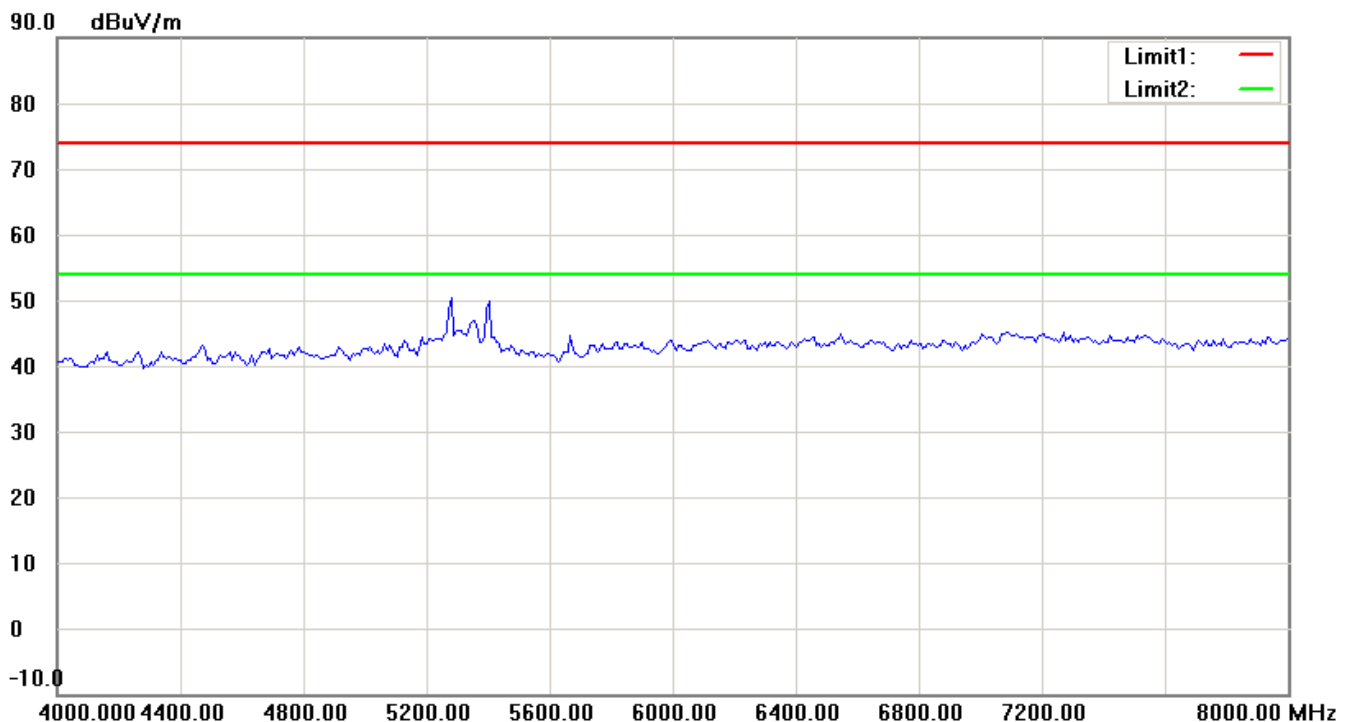
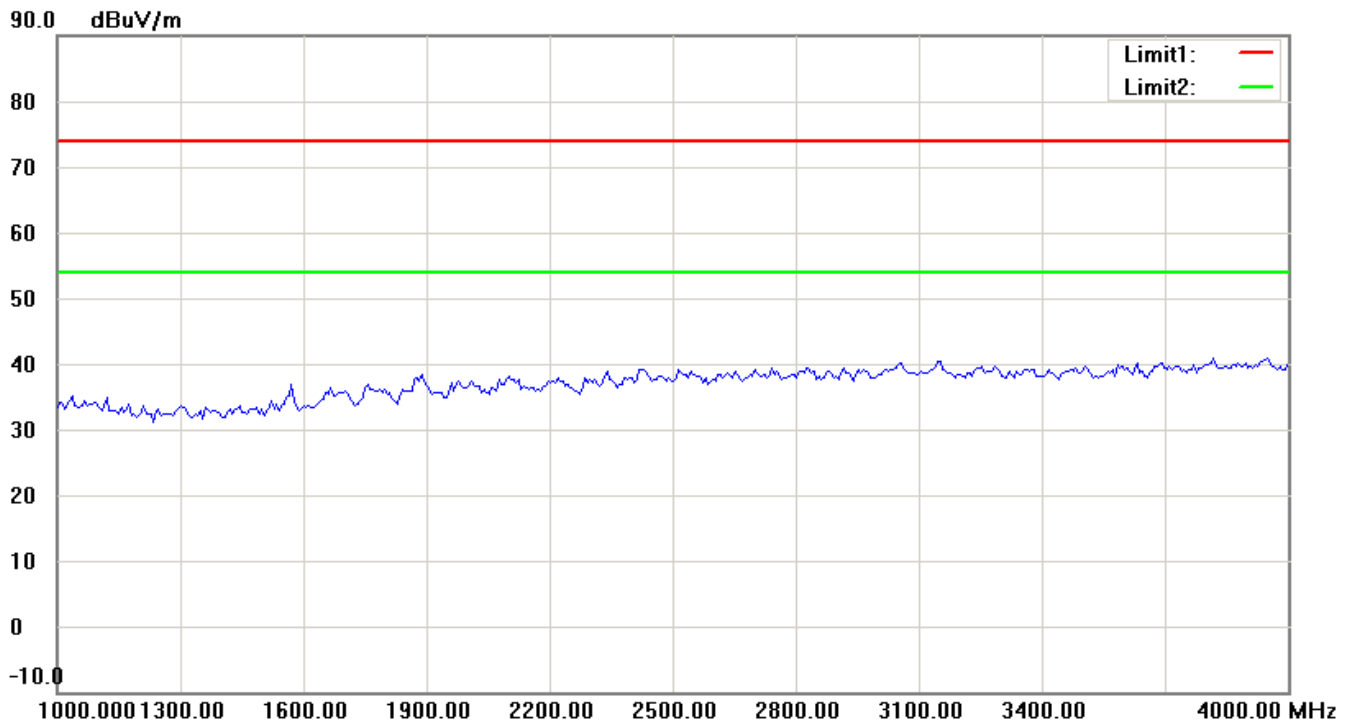
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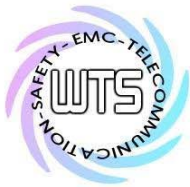
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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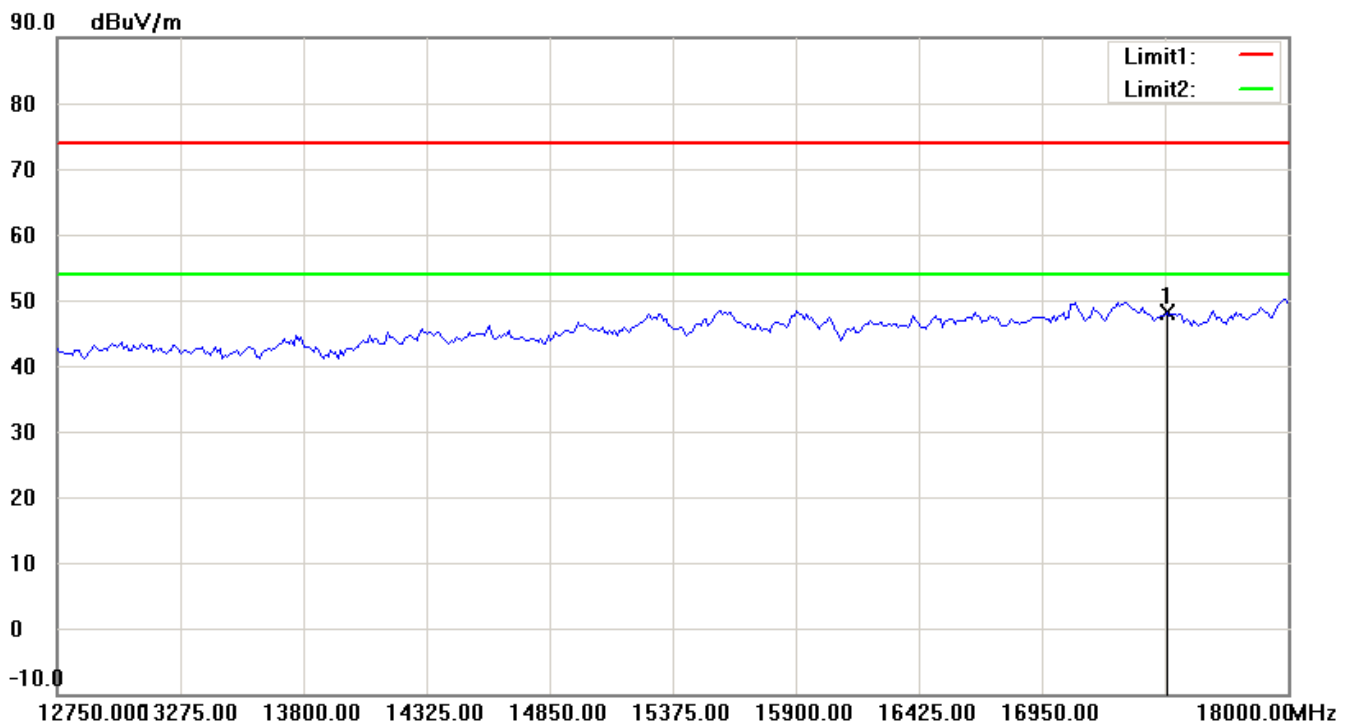
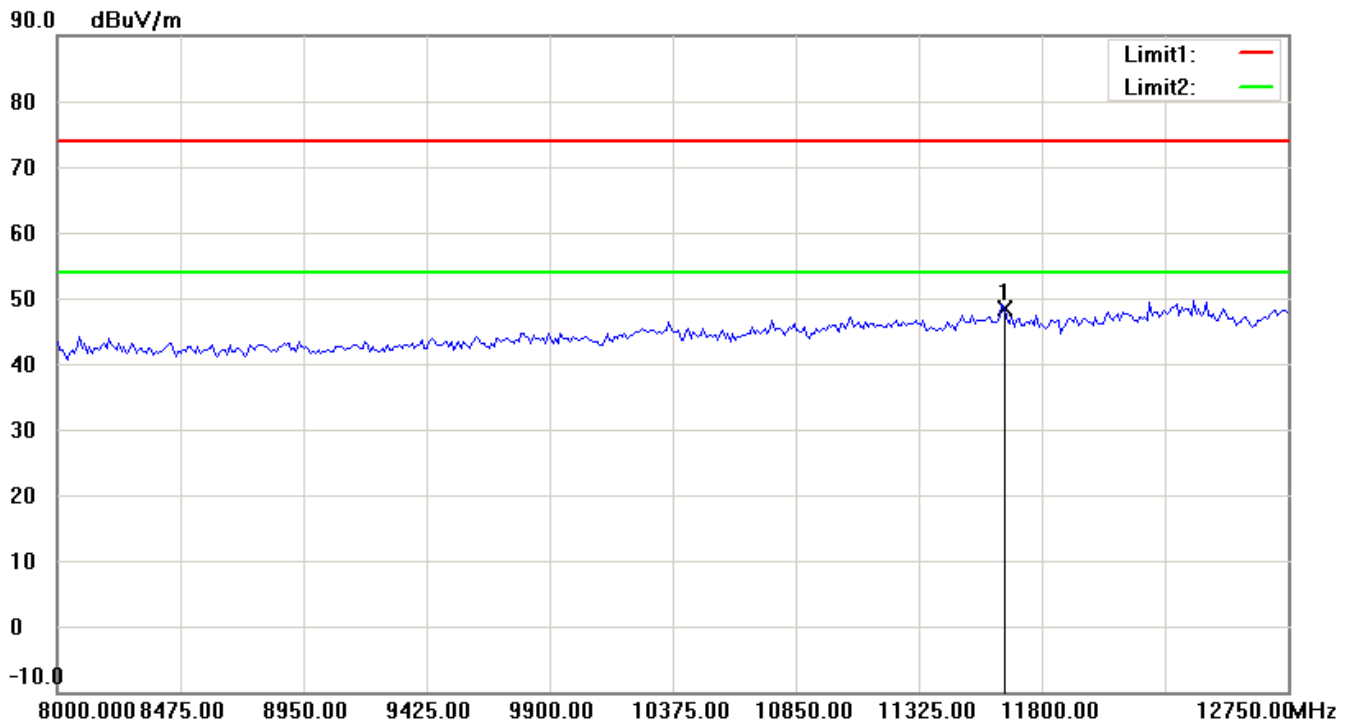
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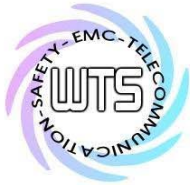
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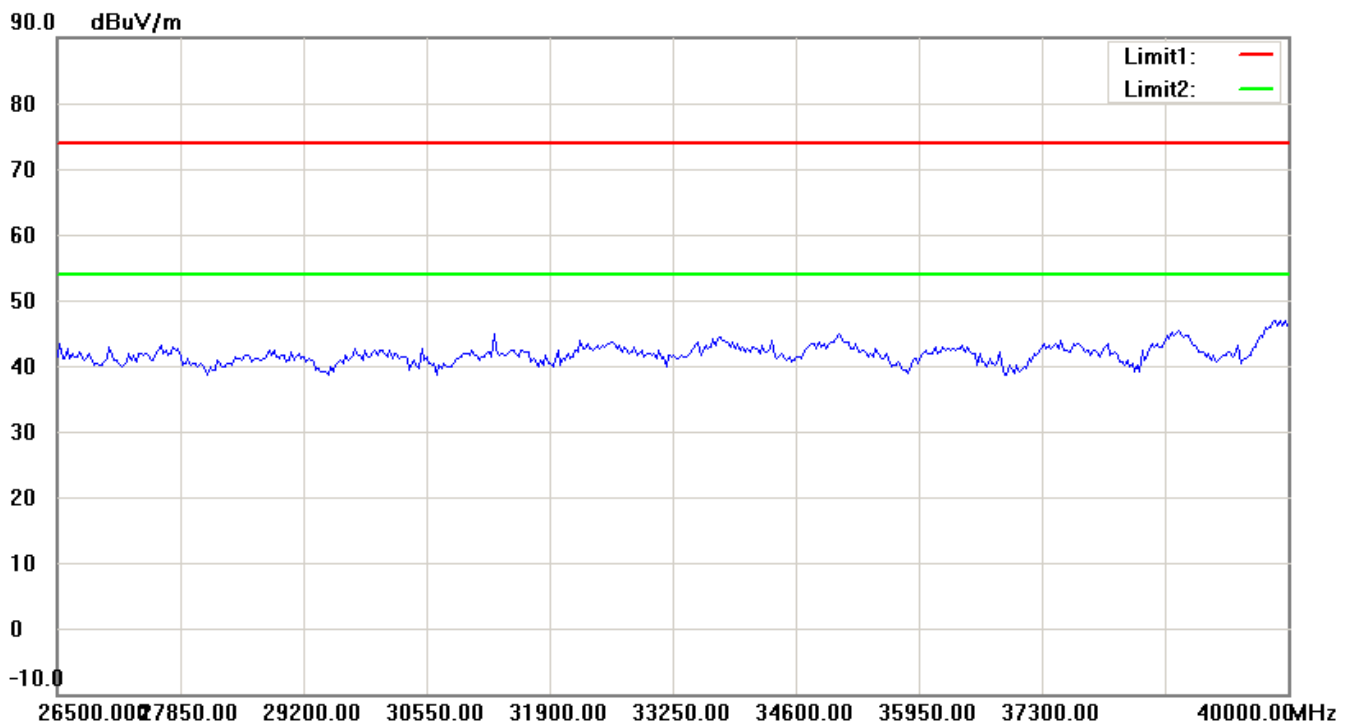
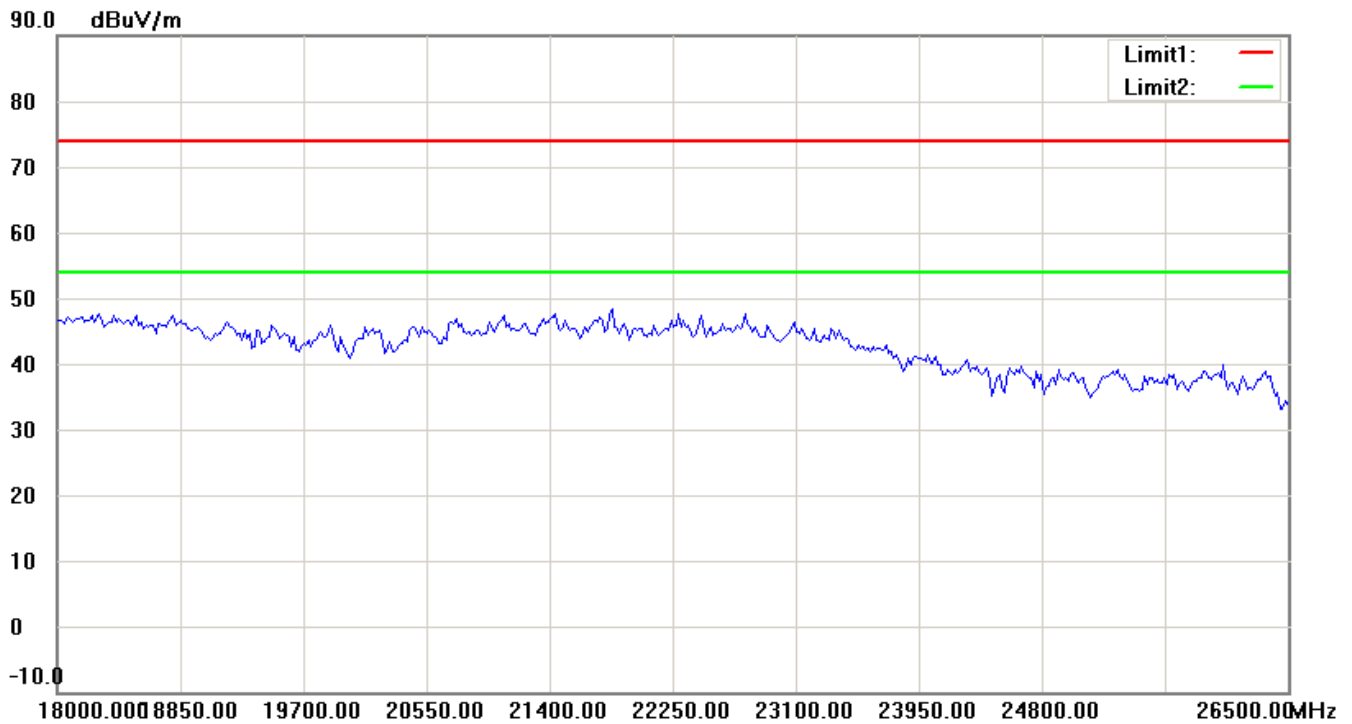
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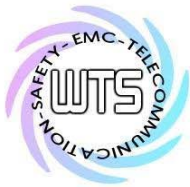
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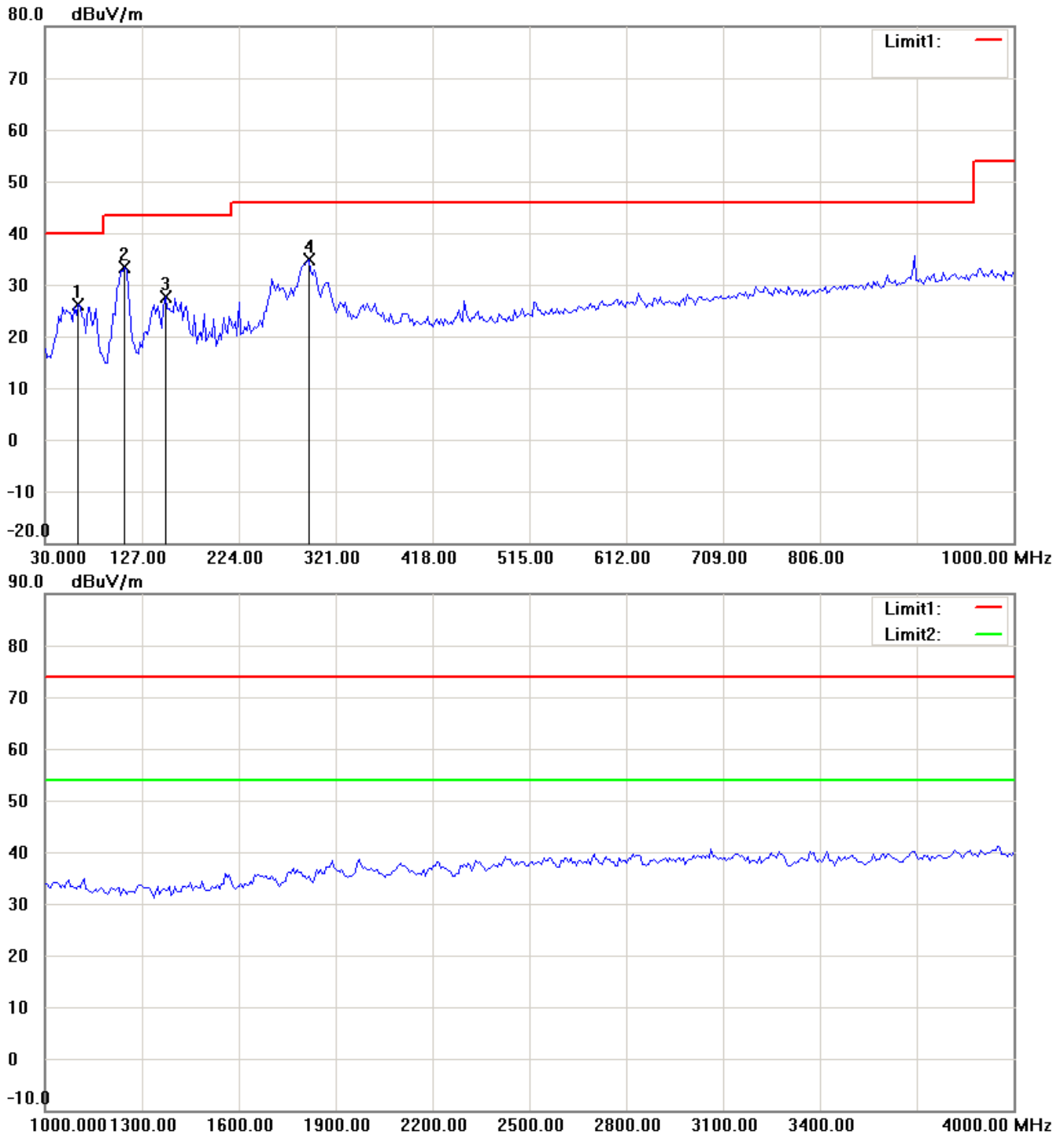
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FCC ID: UL9WNAP7325

Antenna 0 + Antenna 1

802.11n 20MHz 5745MHz

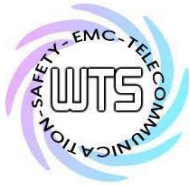
Antenna Polarization H



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

Note:

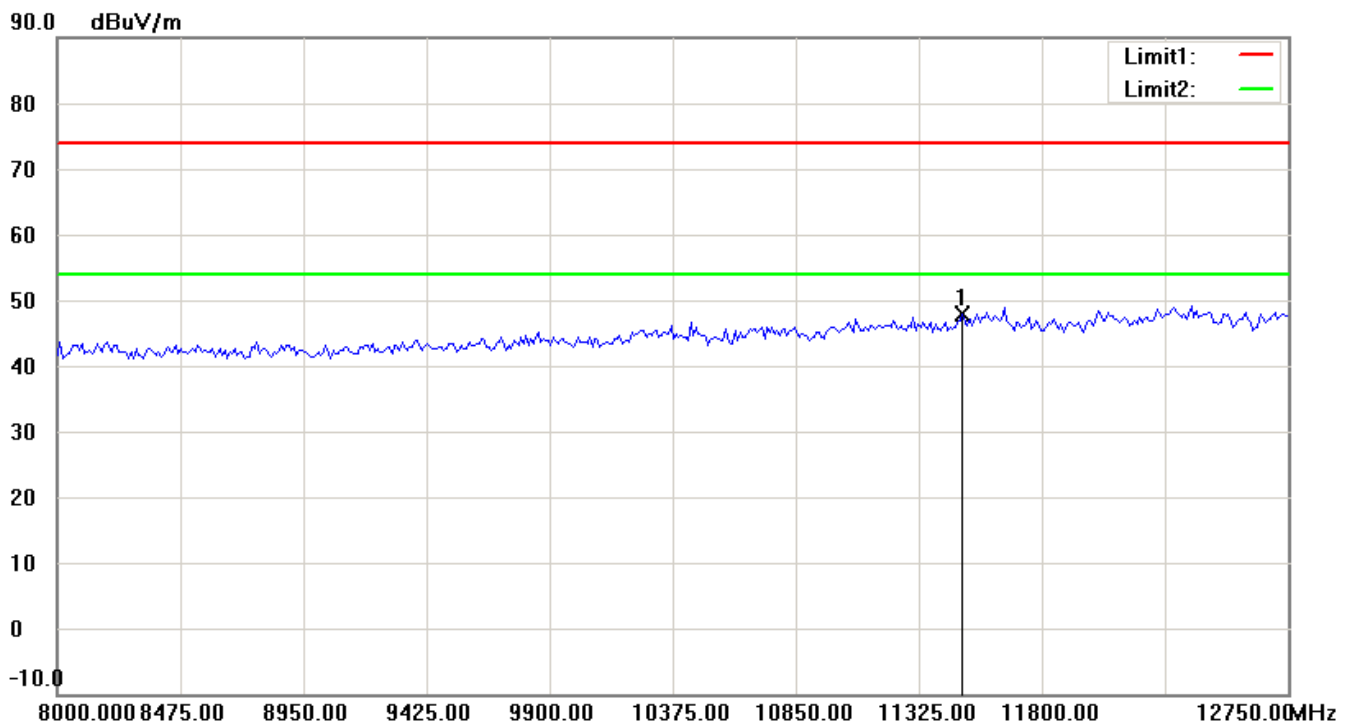
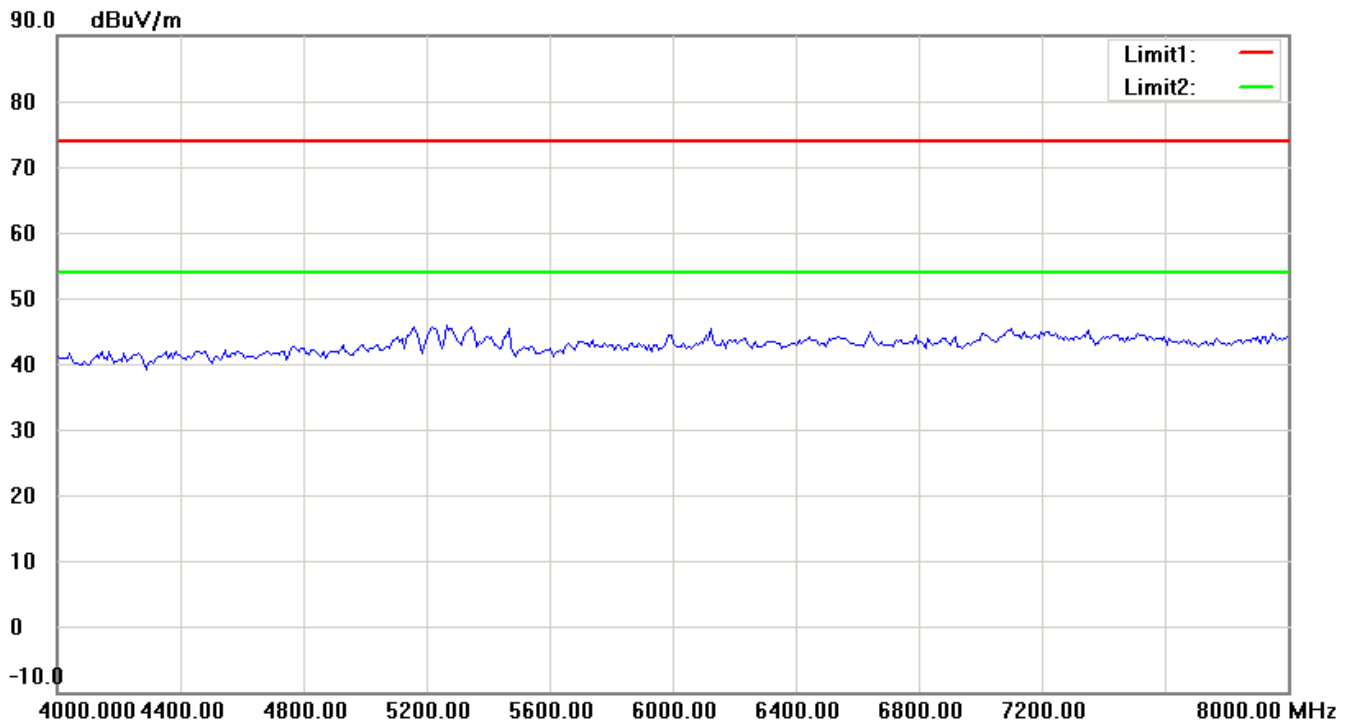
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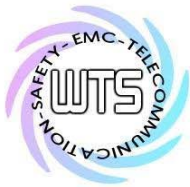
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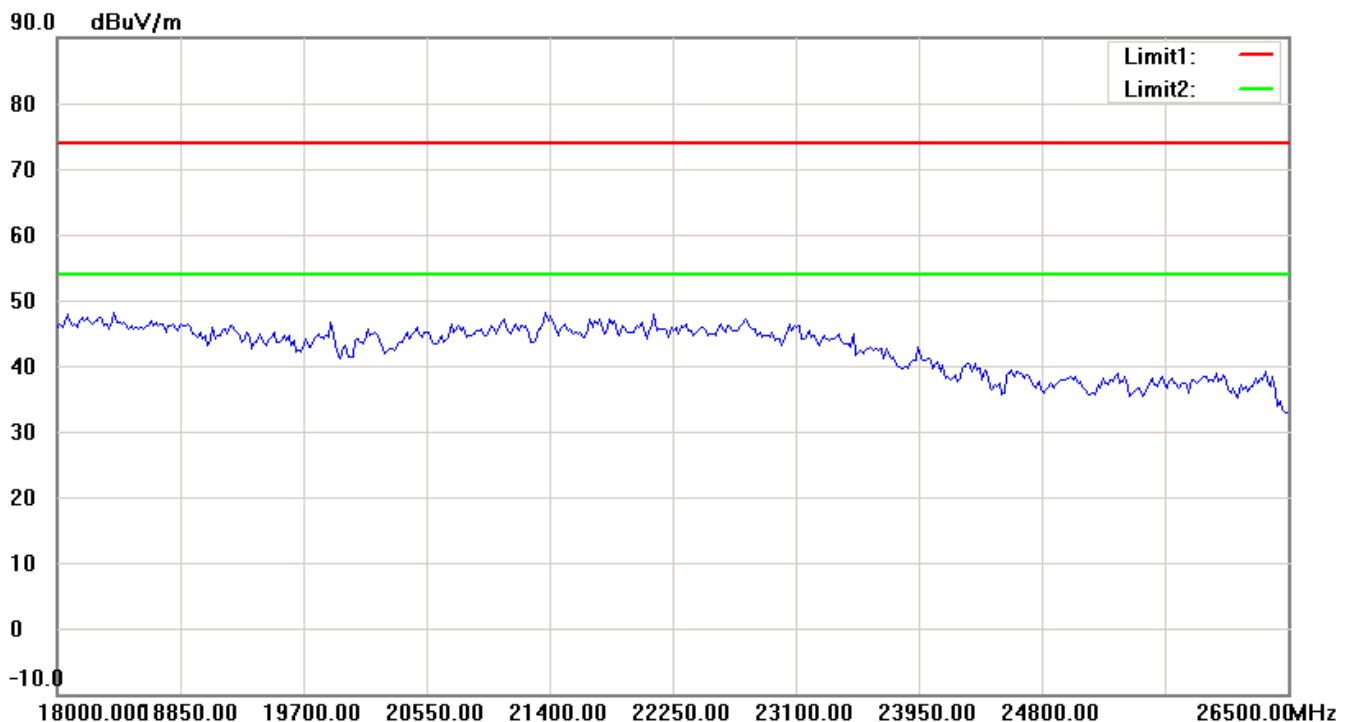
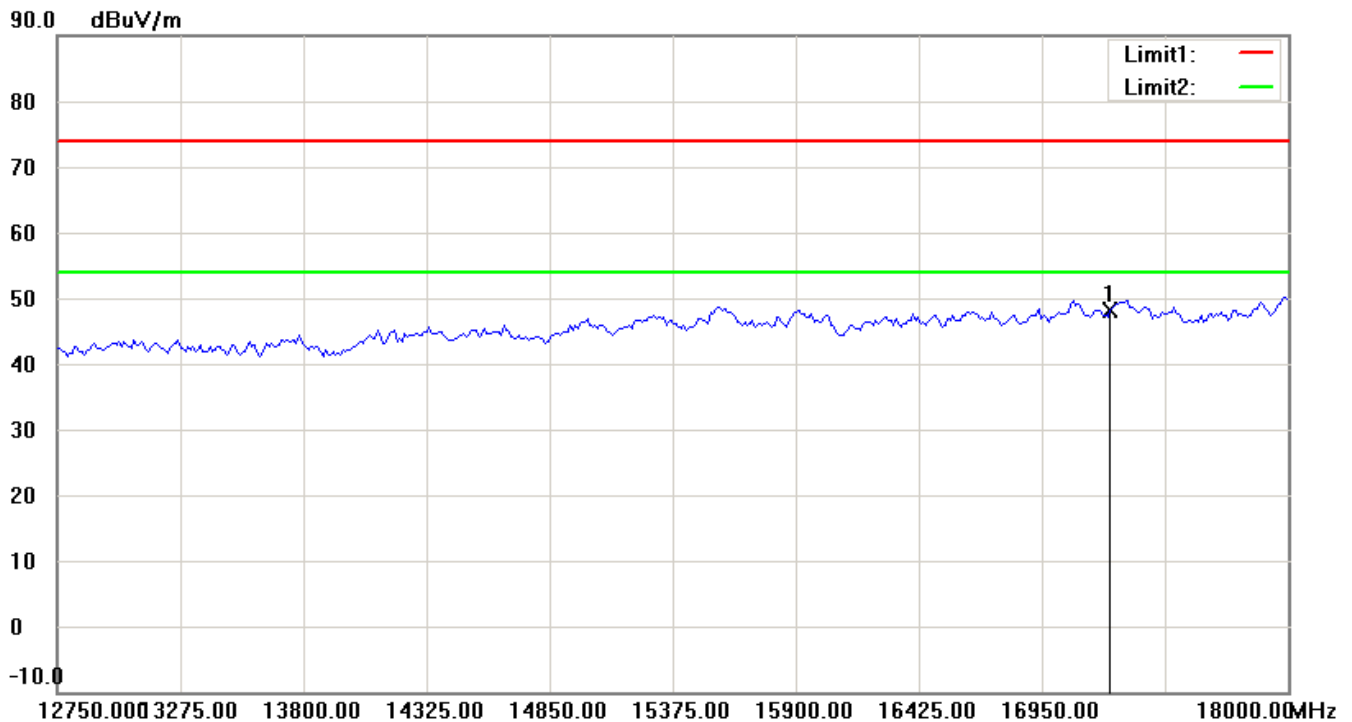
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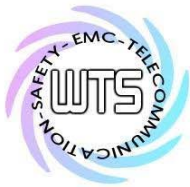
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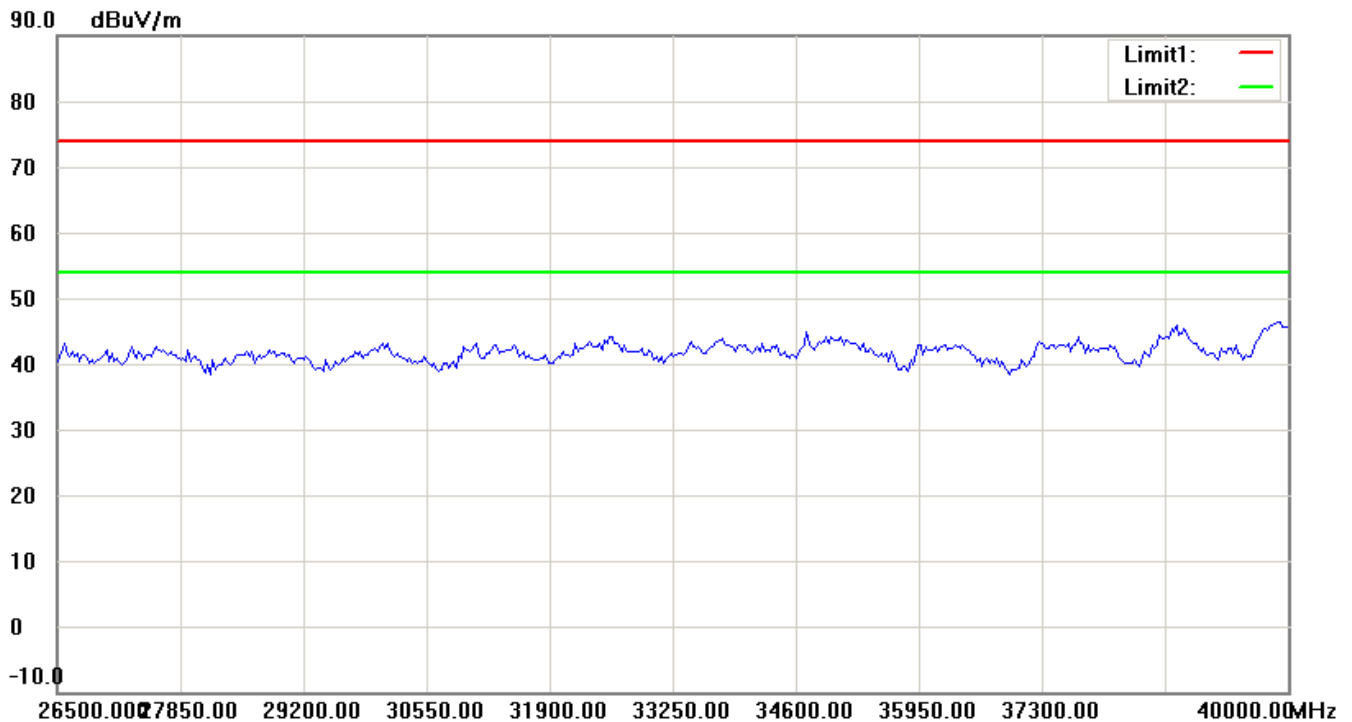
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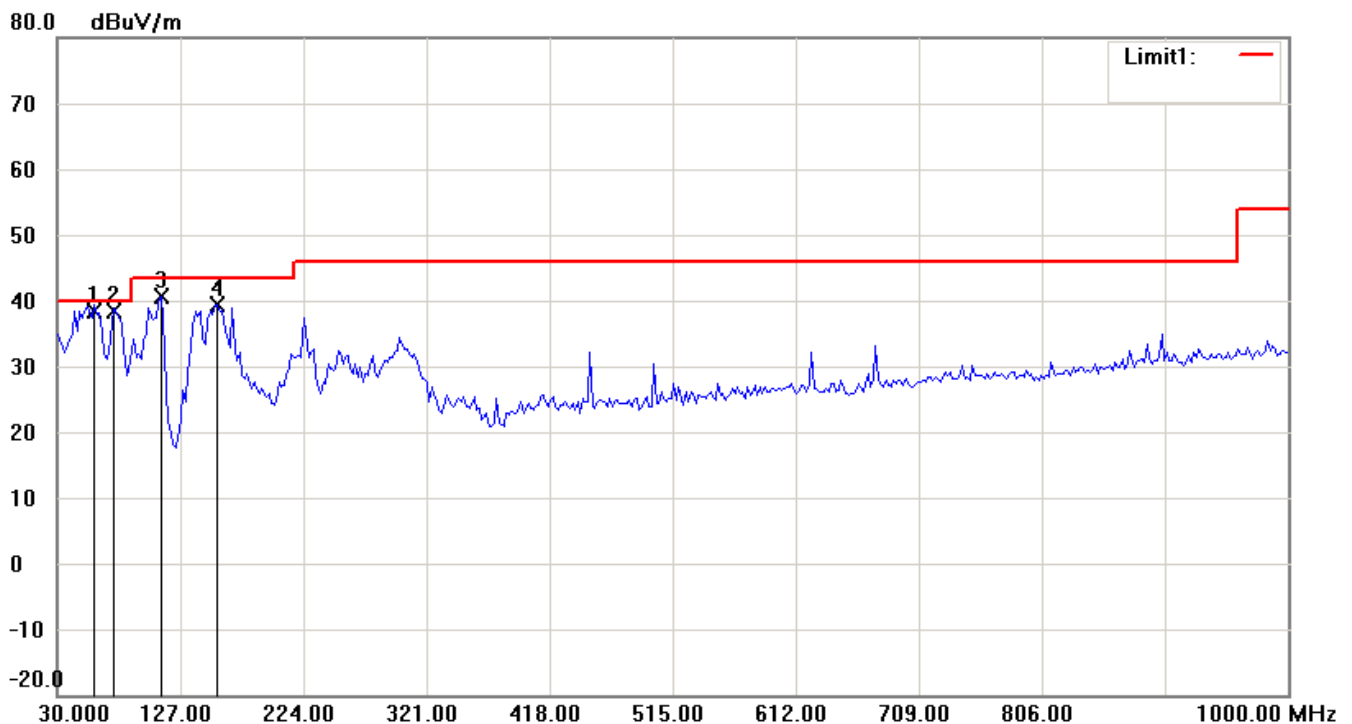
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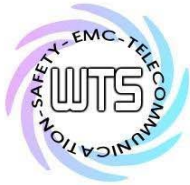
Antenna Polarization V



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

Note:

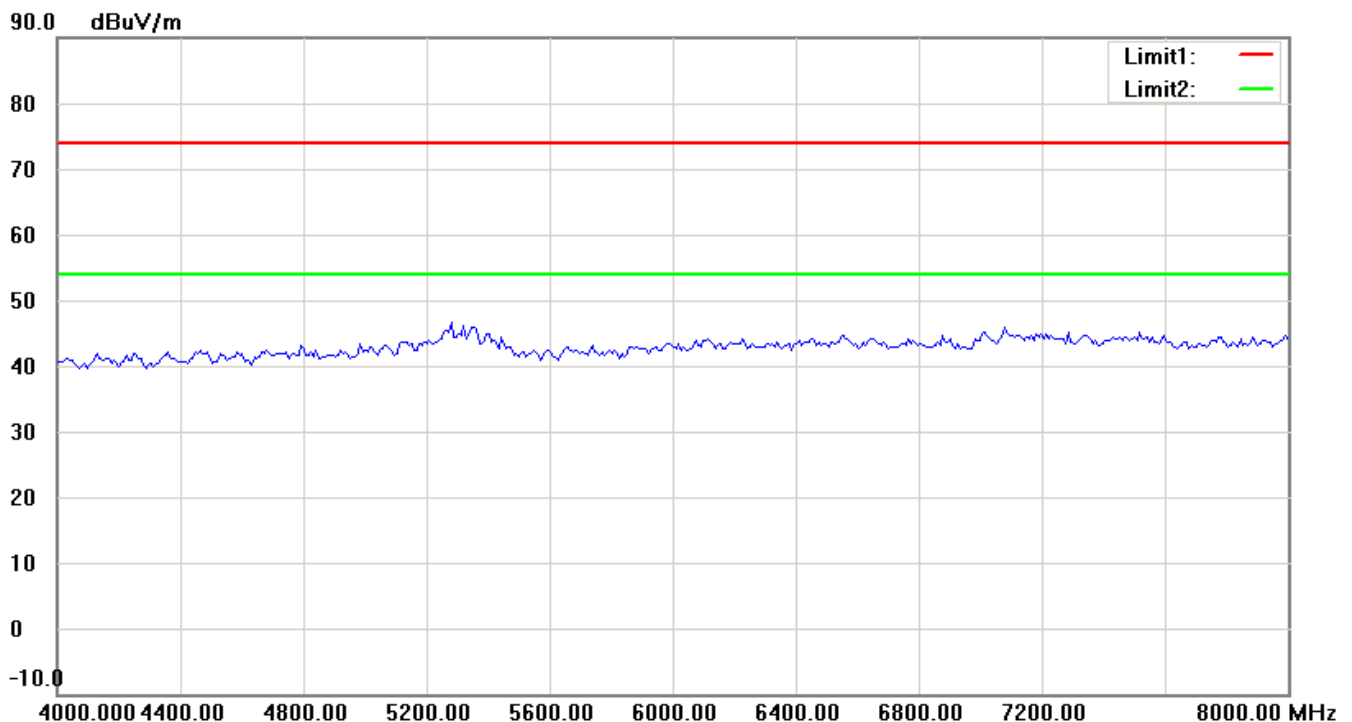
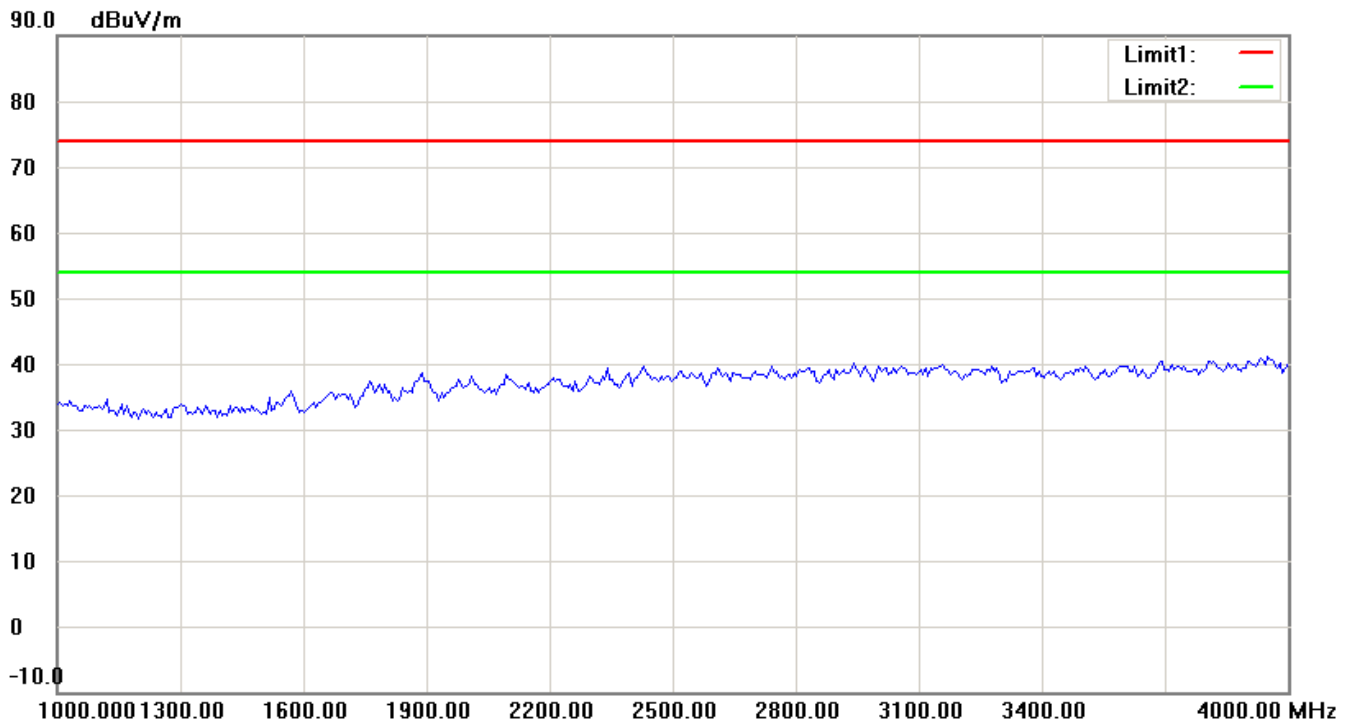
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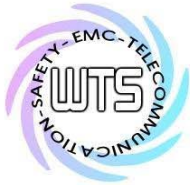
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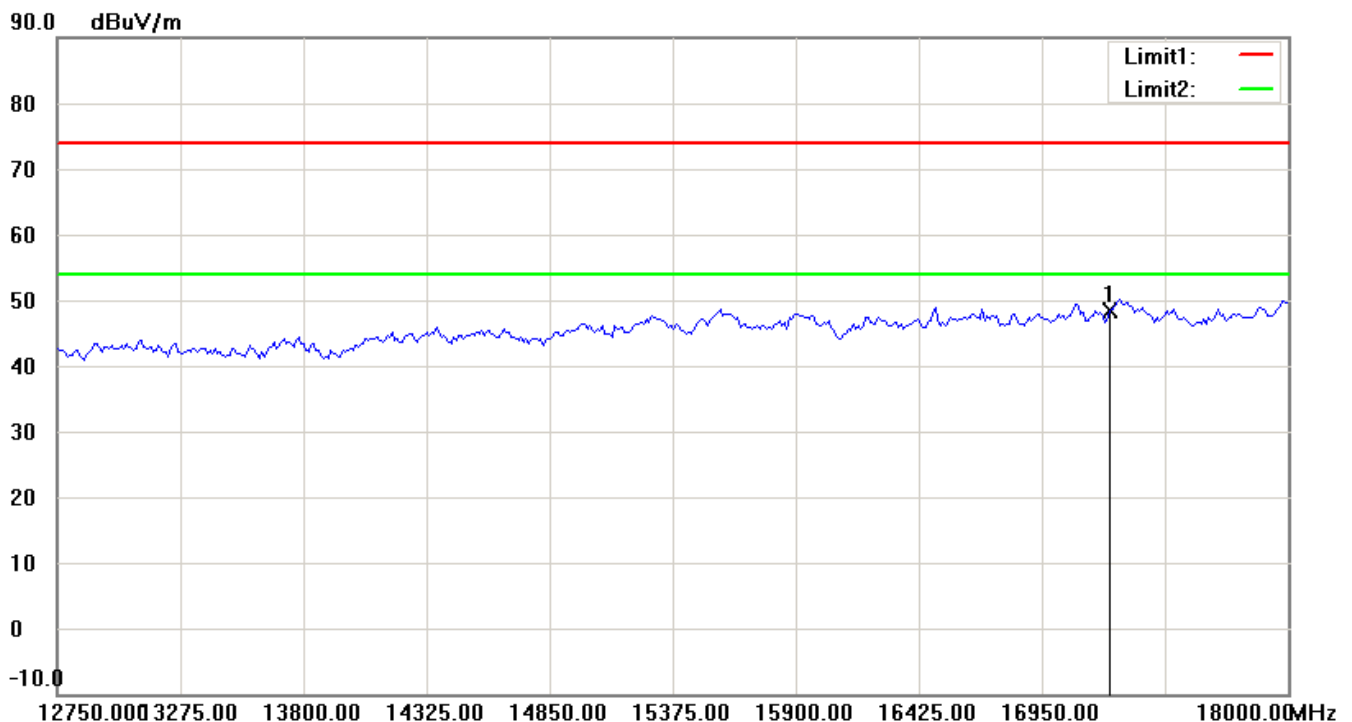
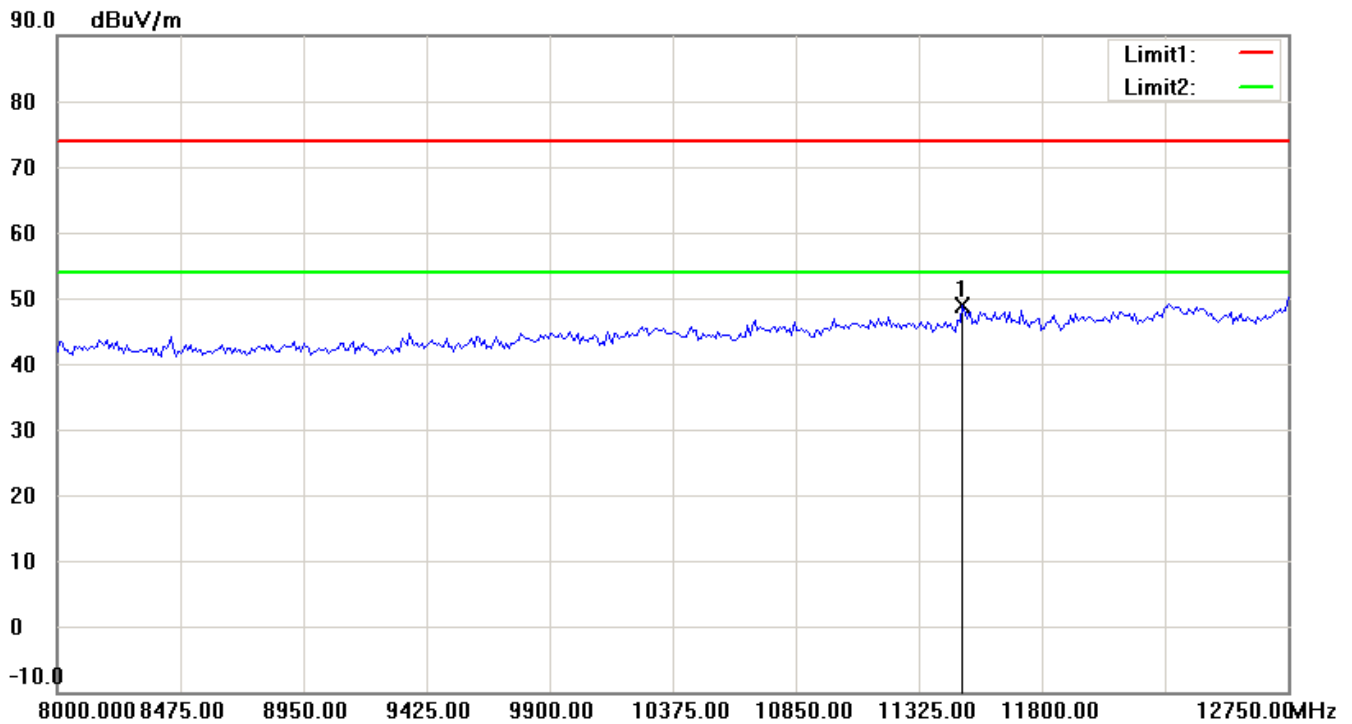
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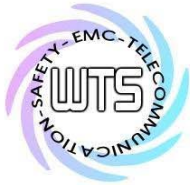
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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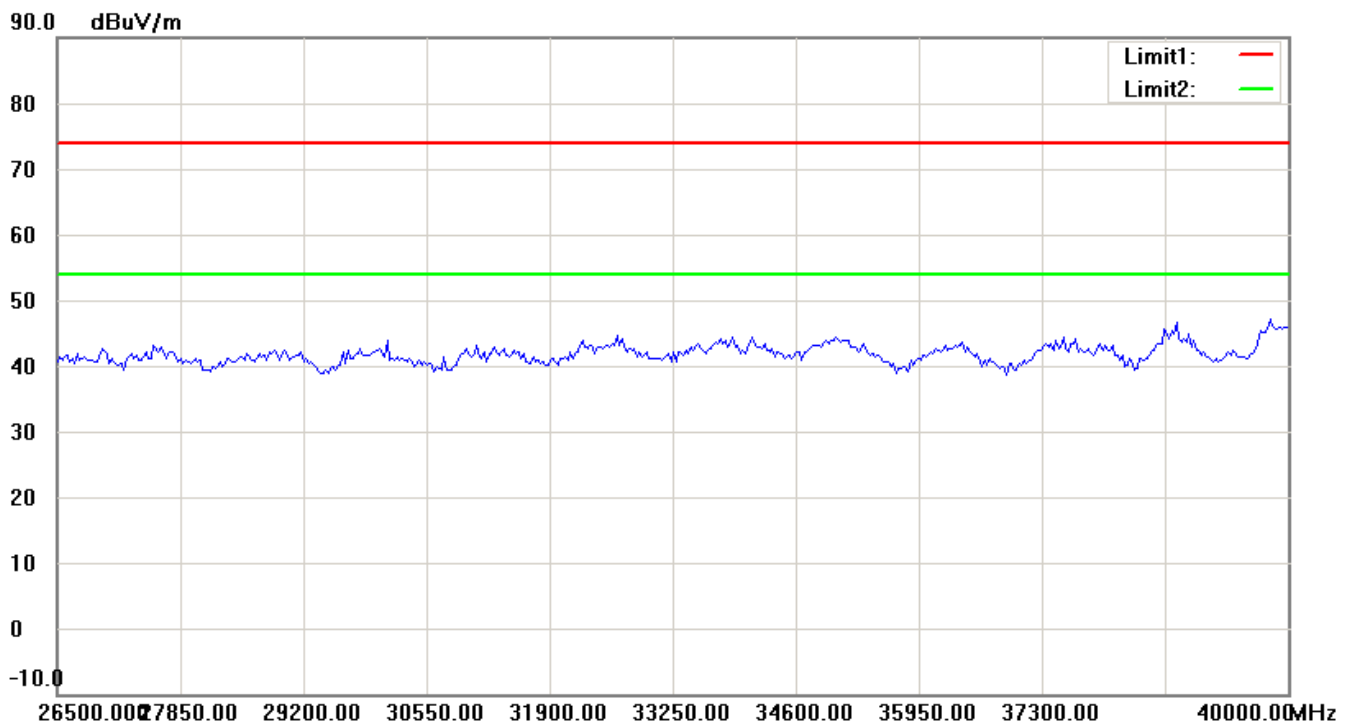
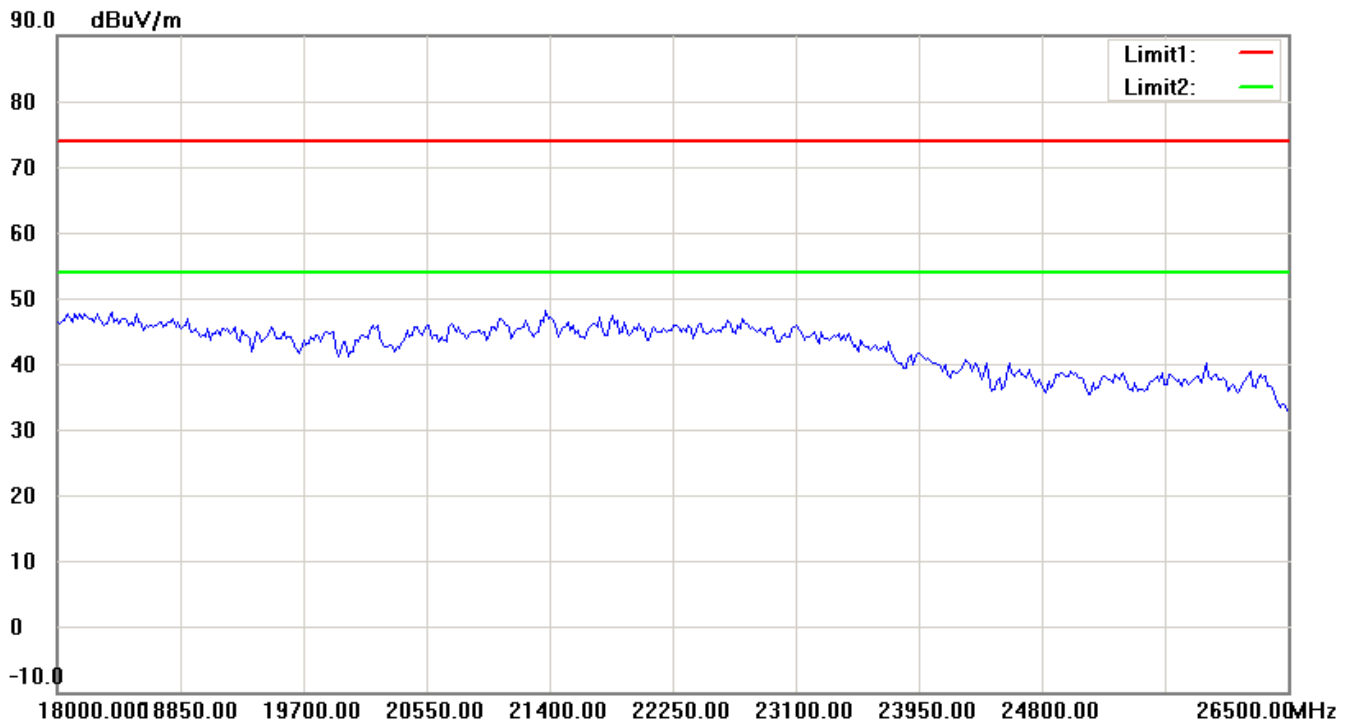
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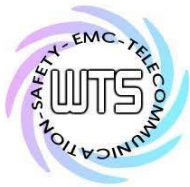
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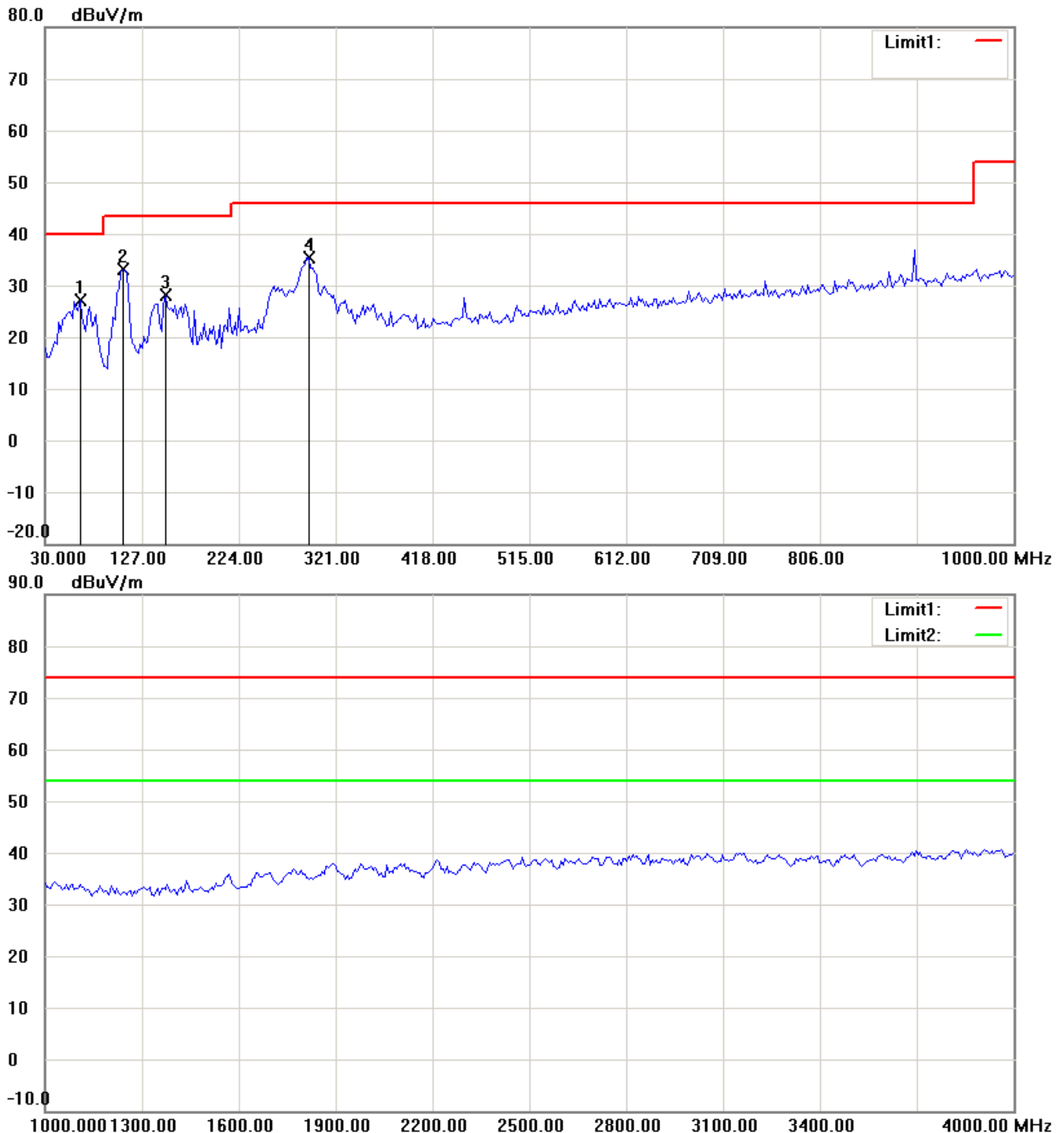
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11n 20MHz 5785MHz

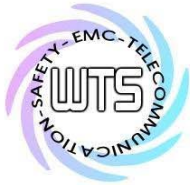
Antenna Polarization H



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

Note:

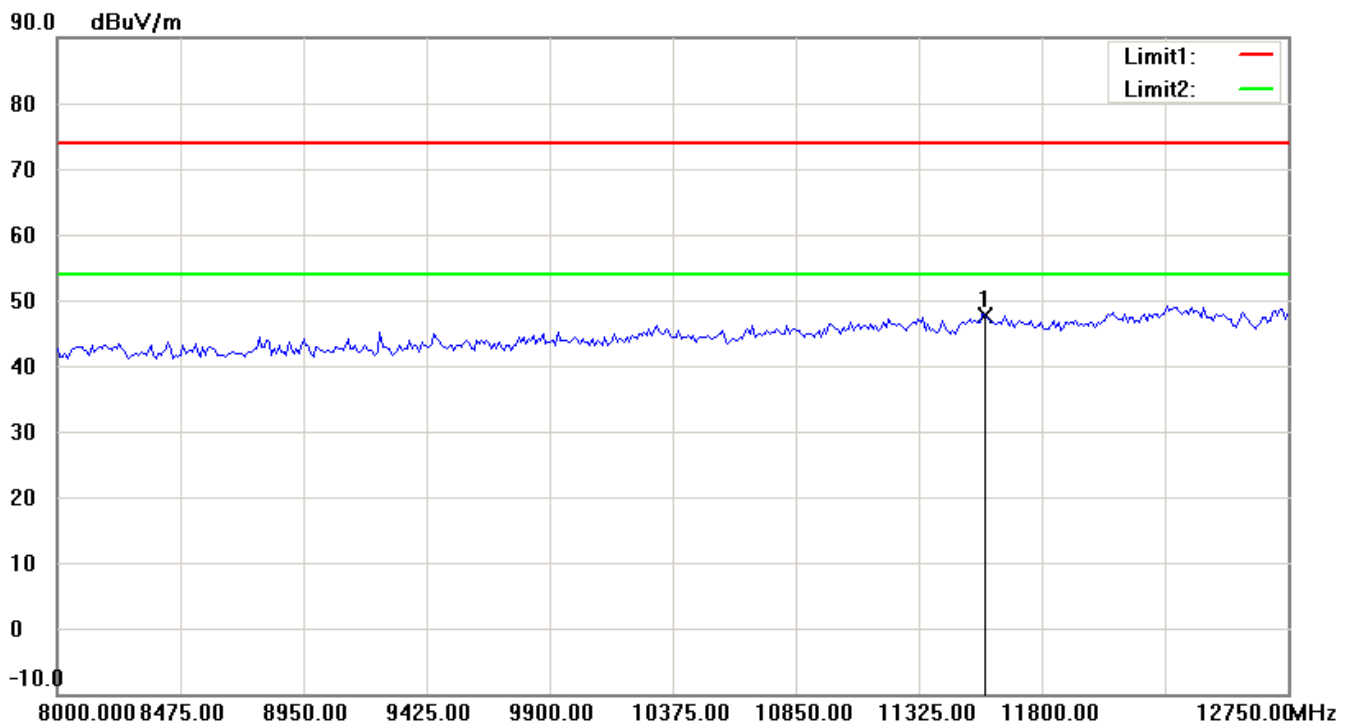
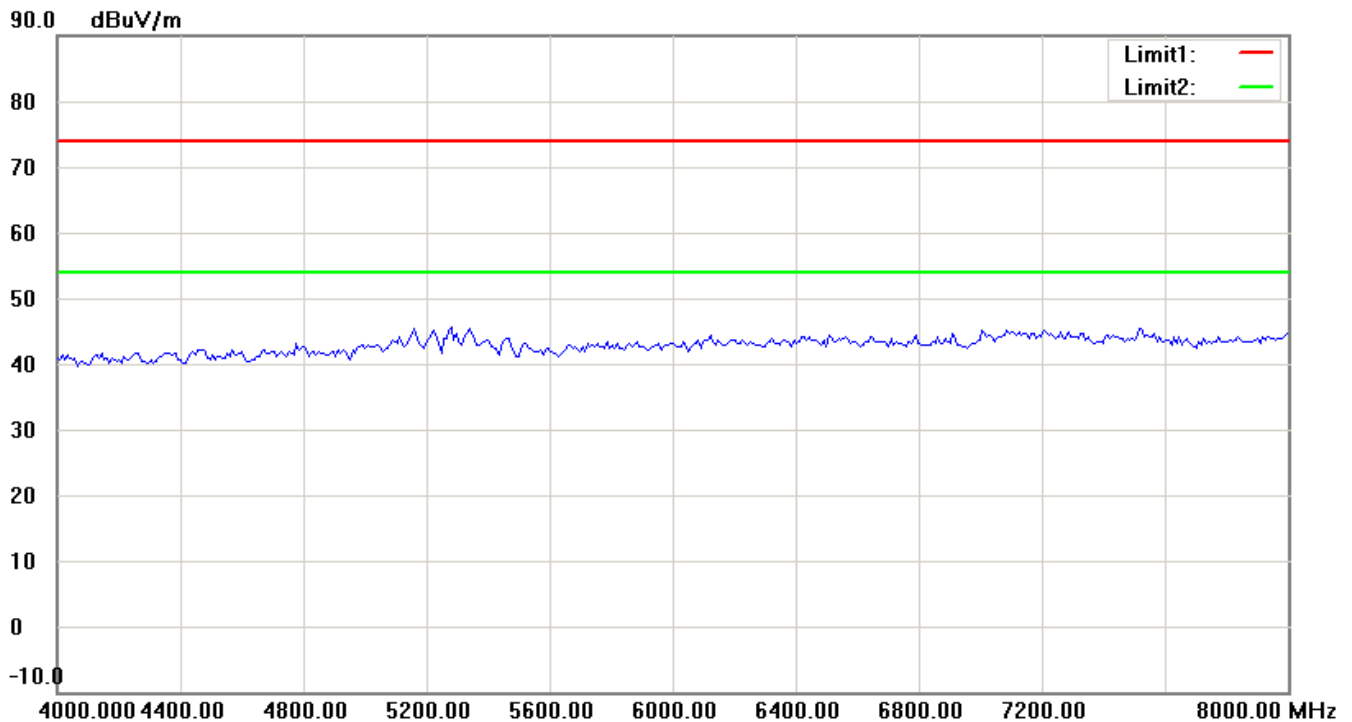
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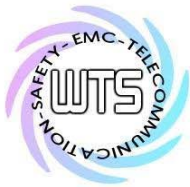
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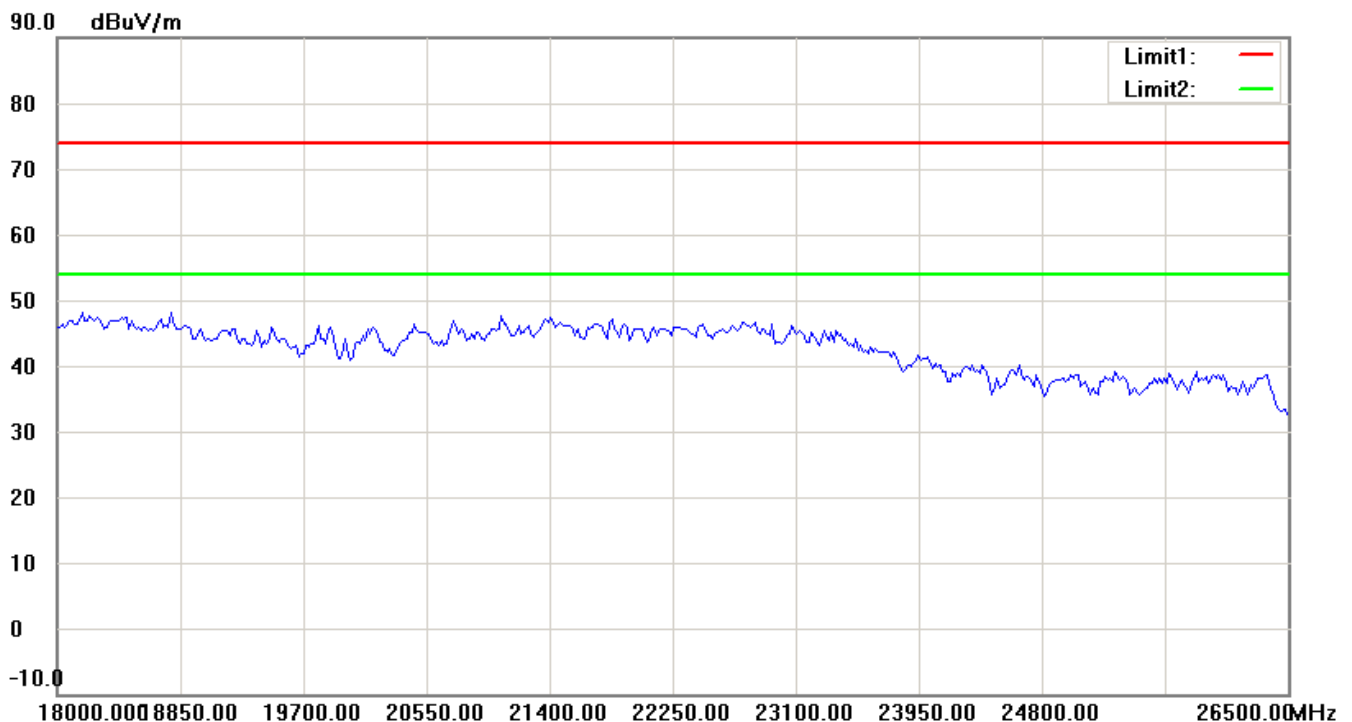
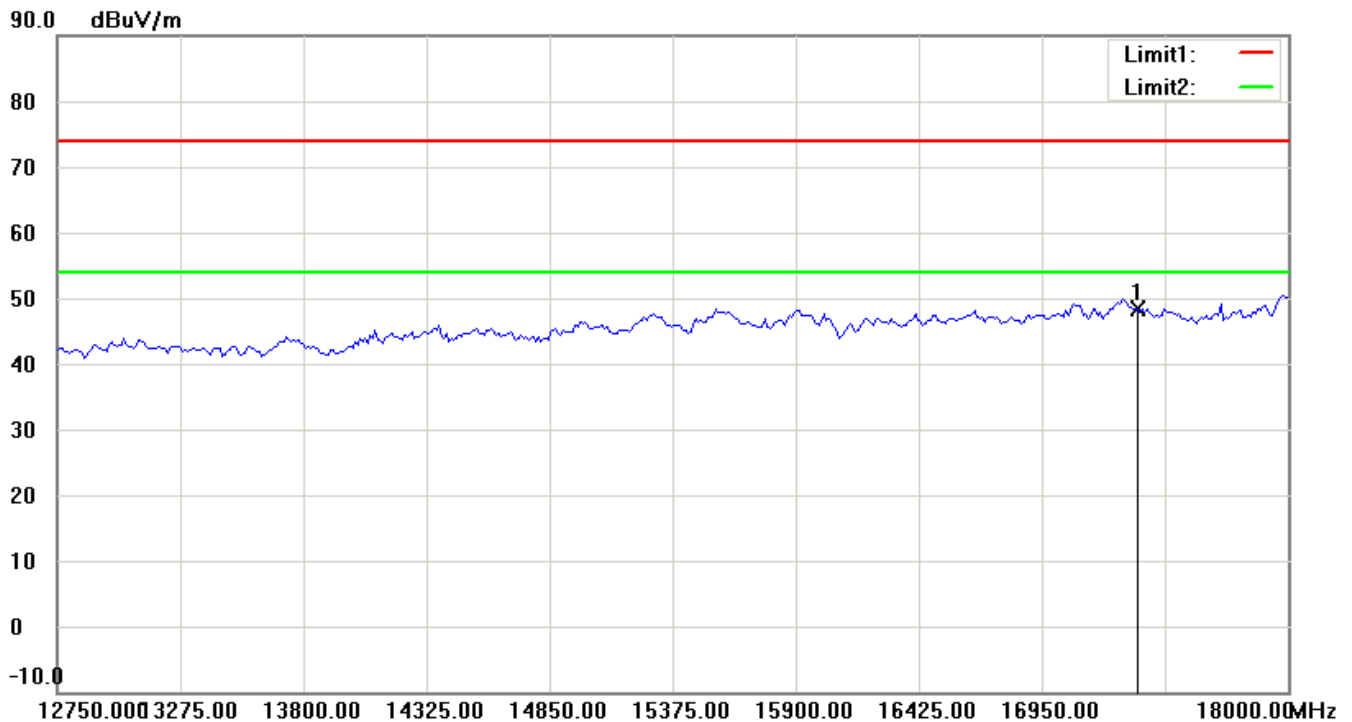
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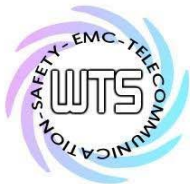
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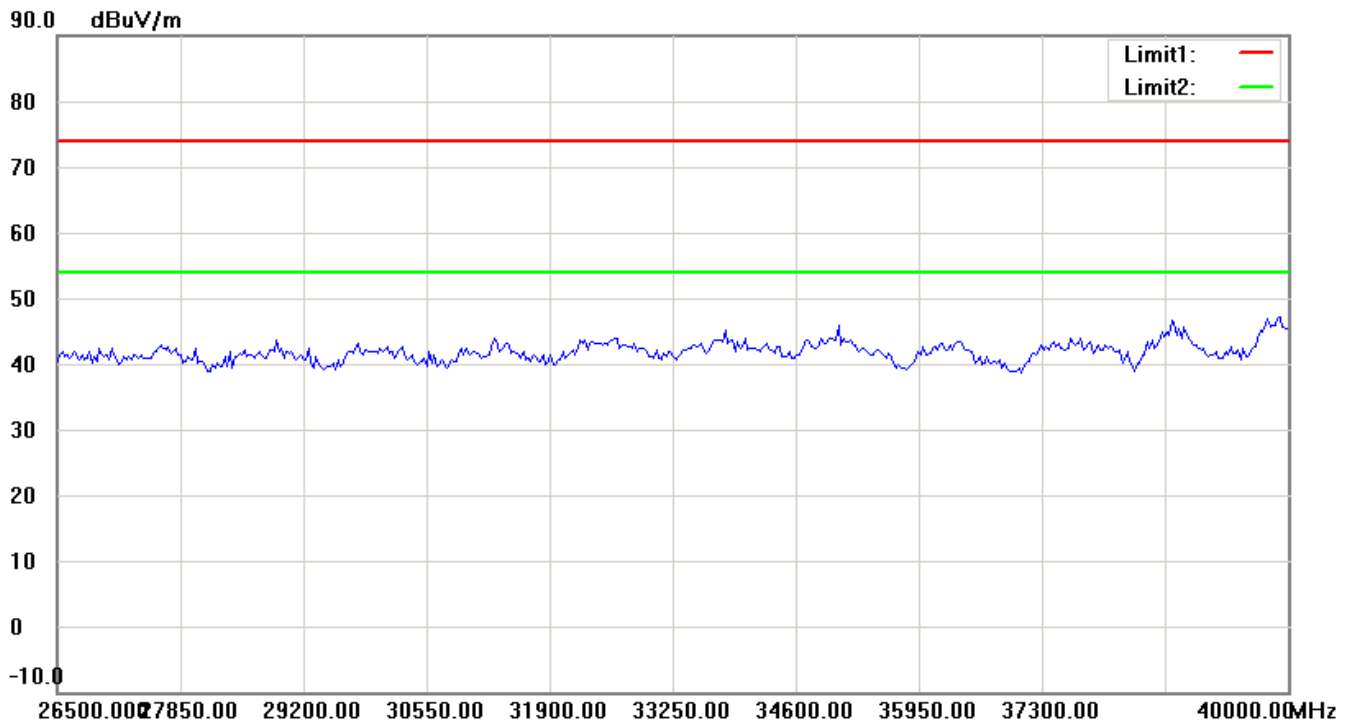
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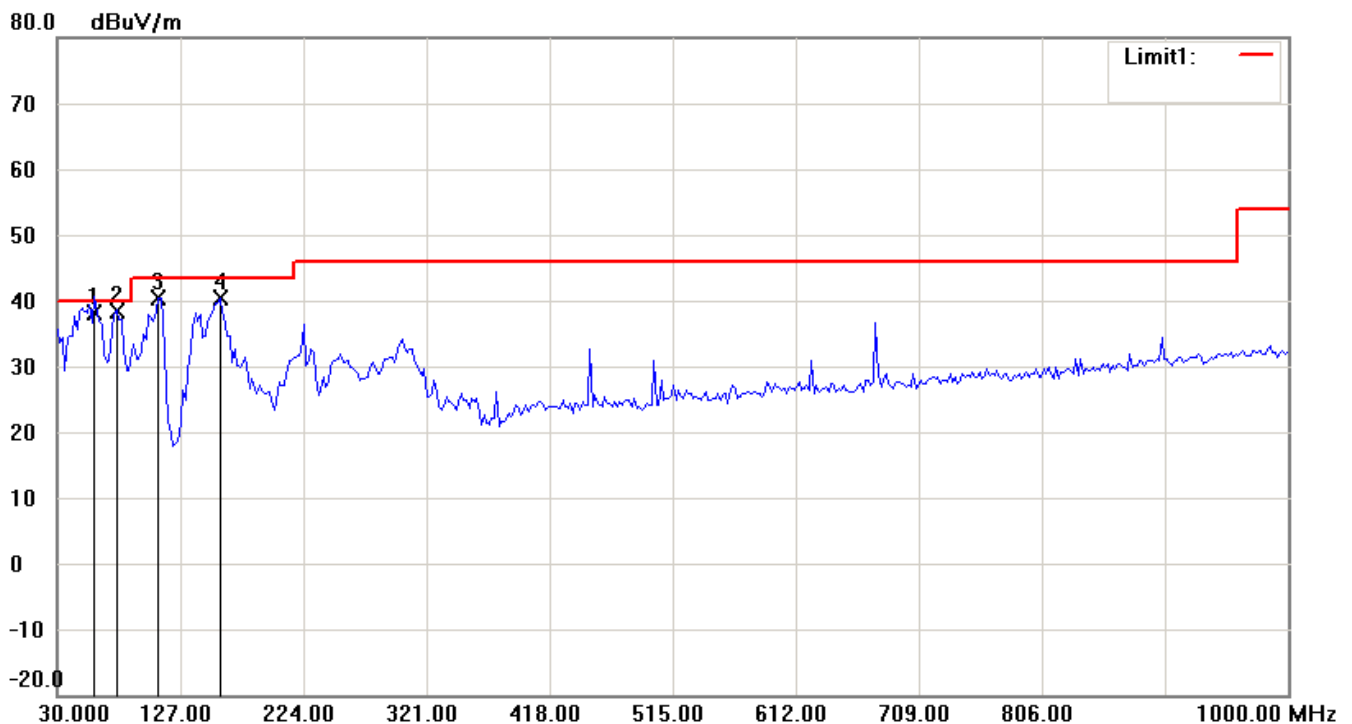
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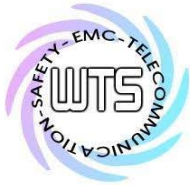
Antenna Polarization V



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

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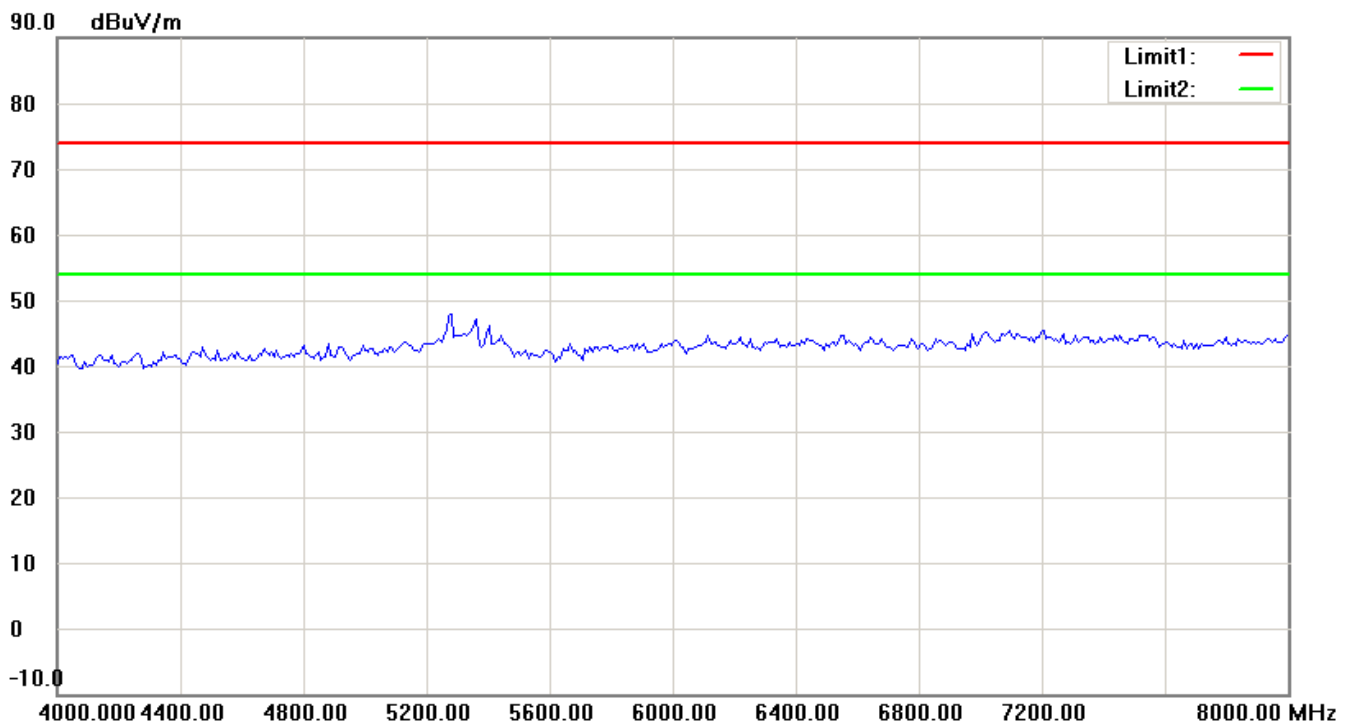
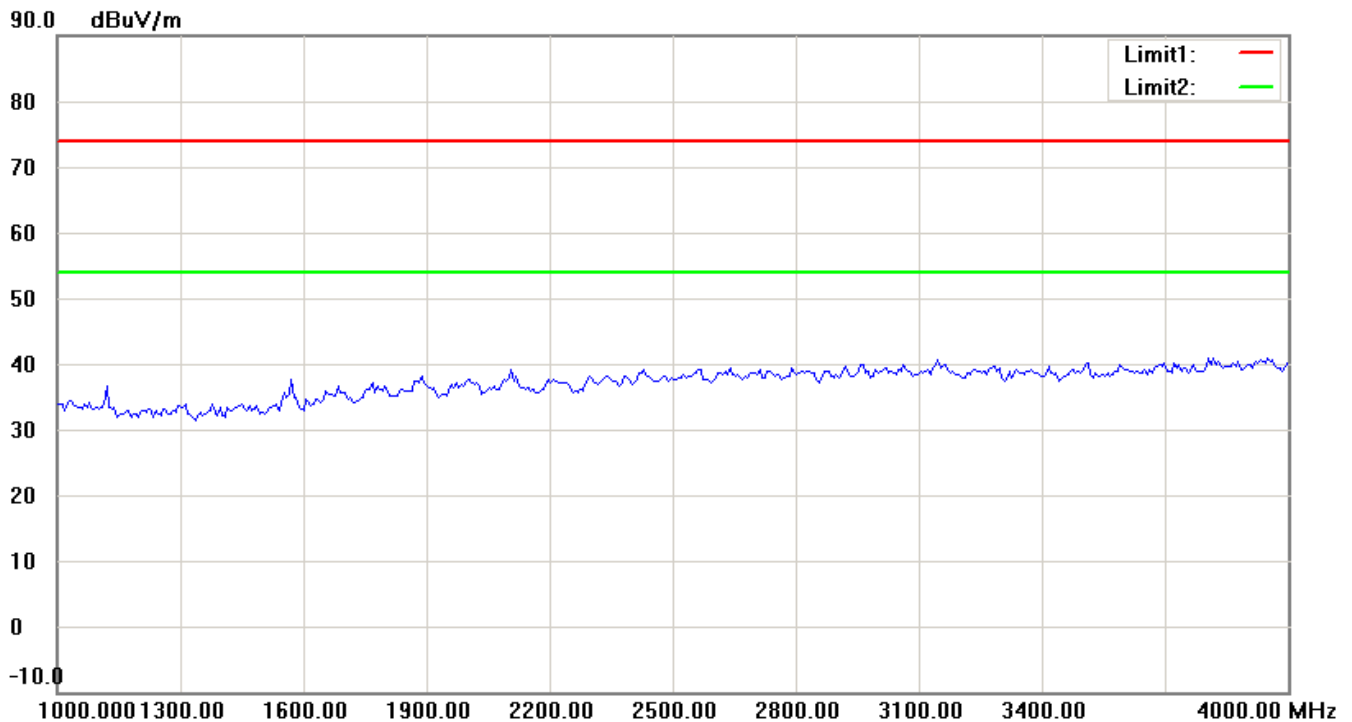
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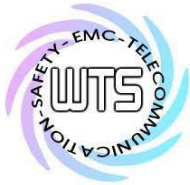
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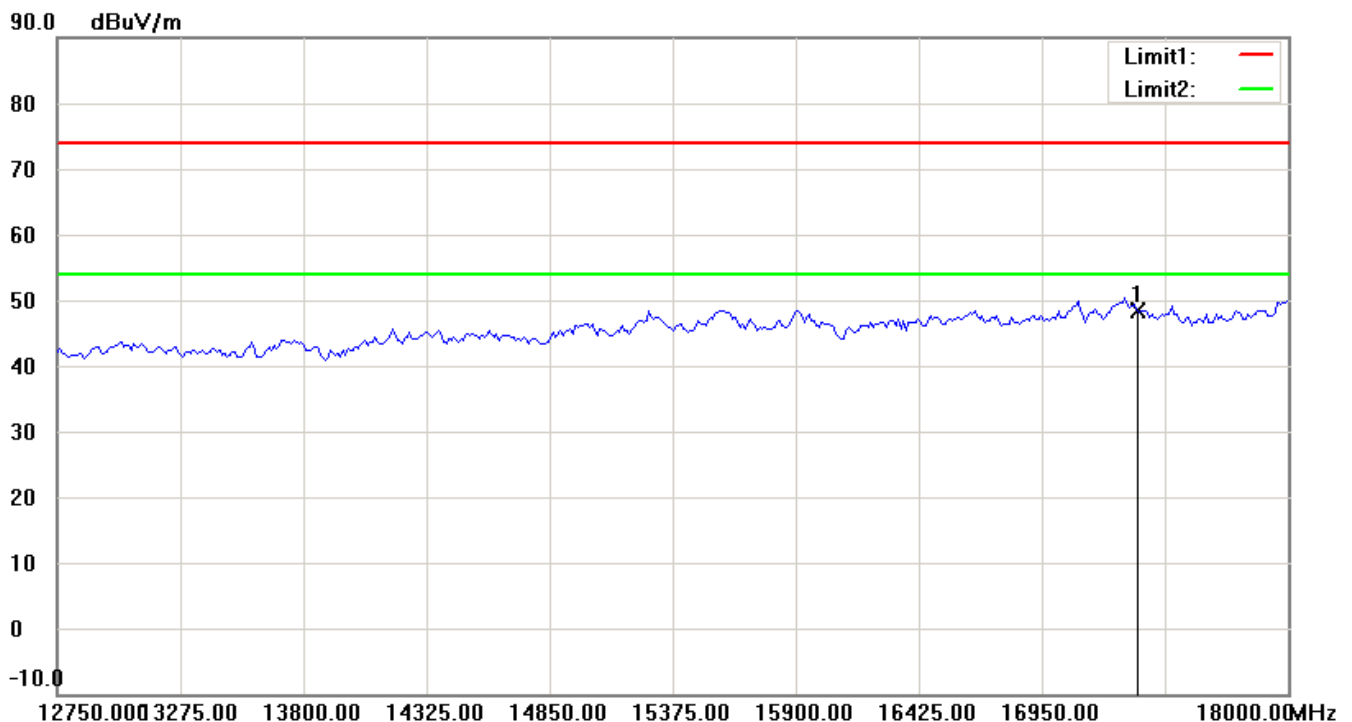
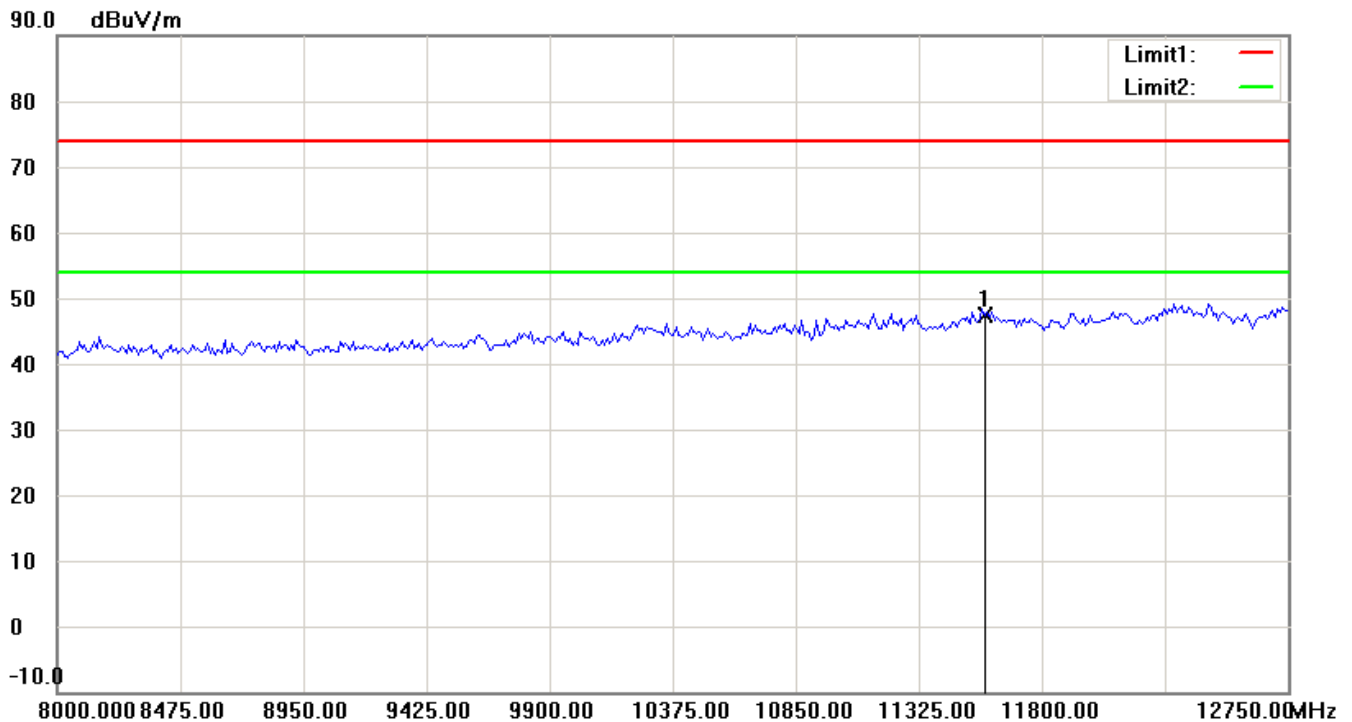
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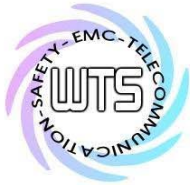
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

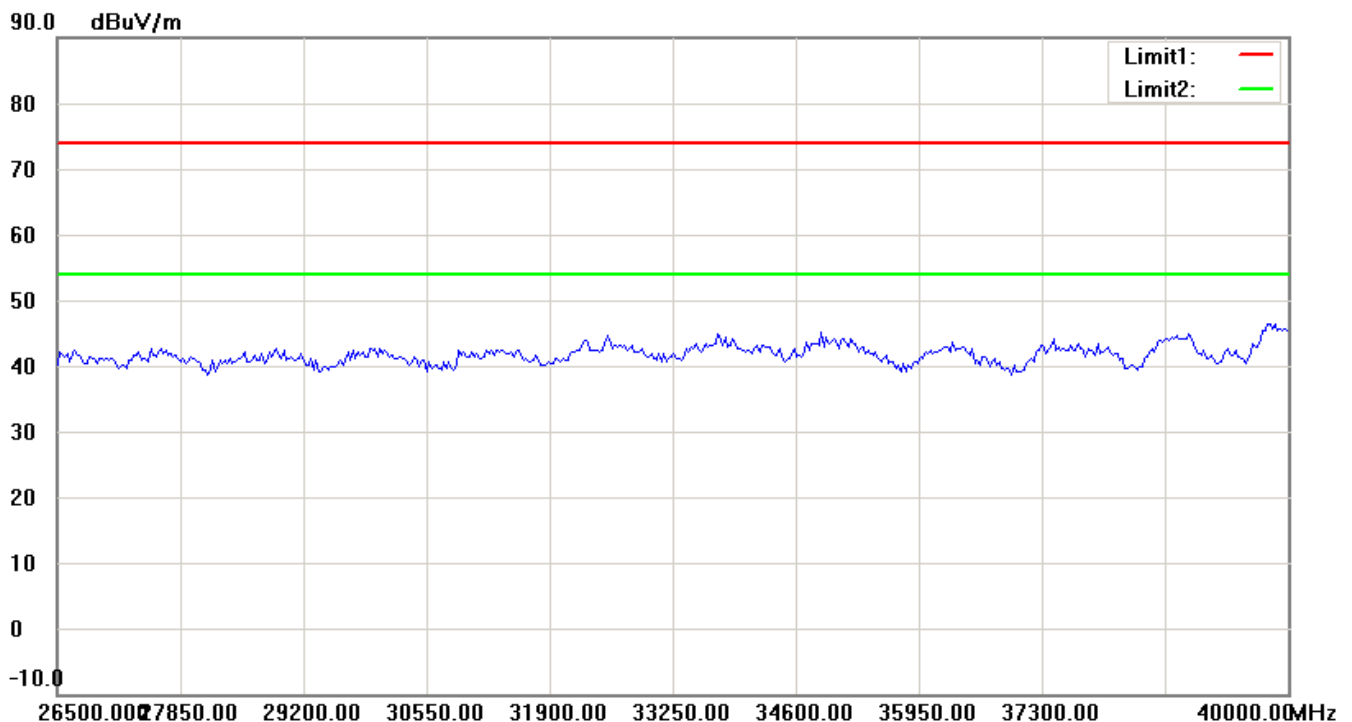
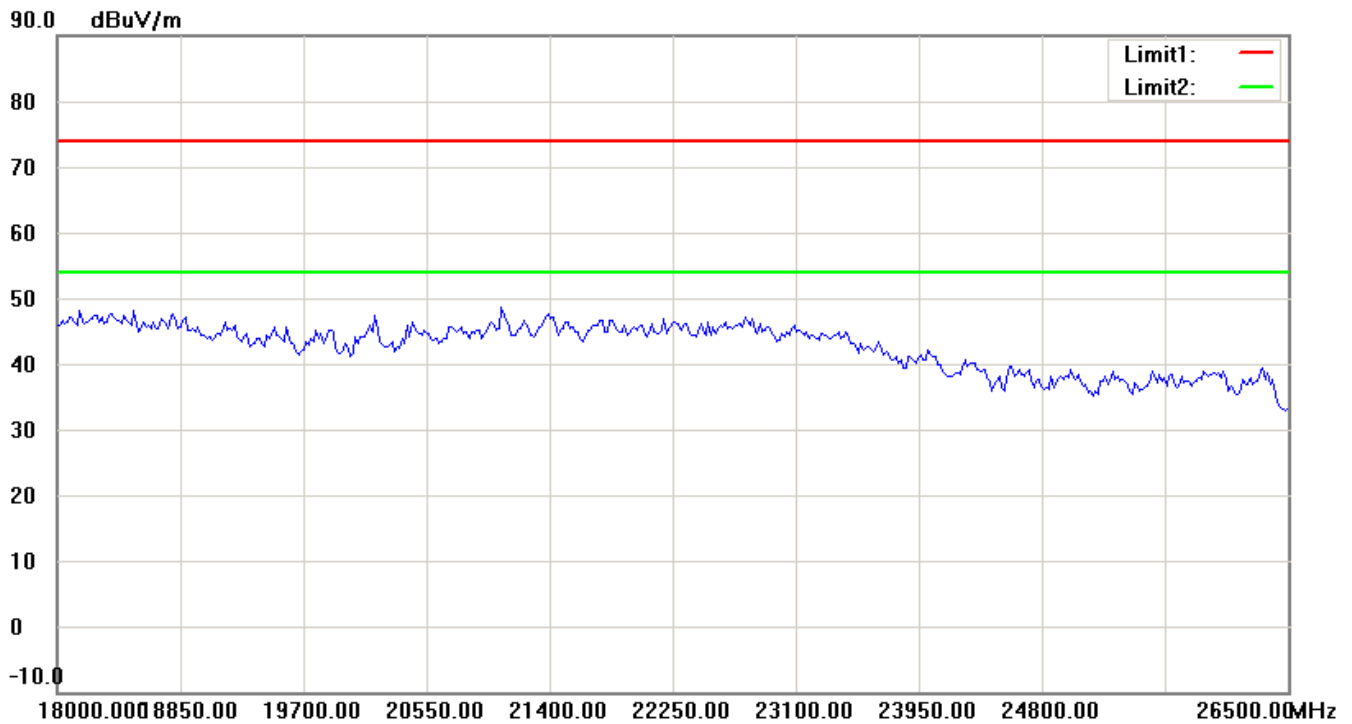
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Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

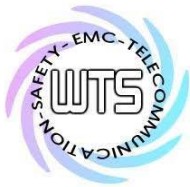
FCC ID: UL9WNAP7325



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

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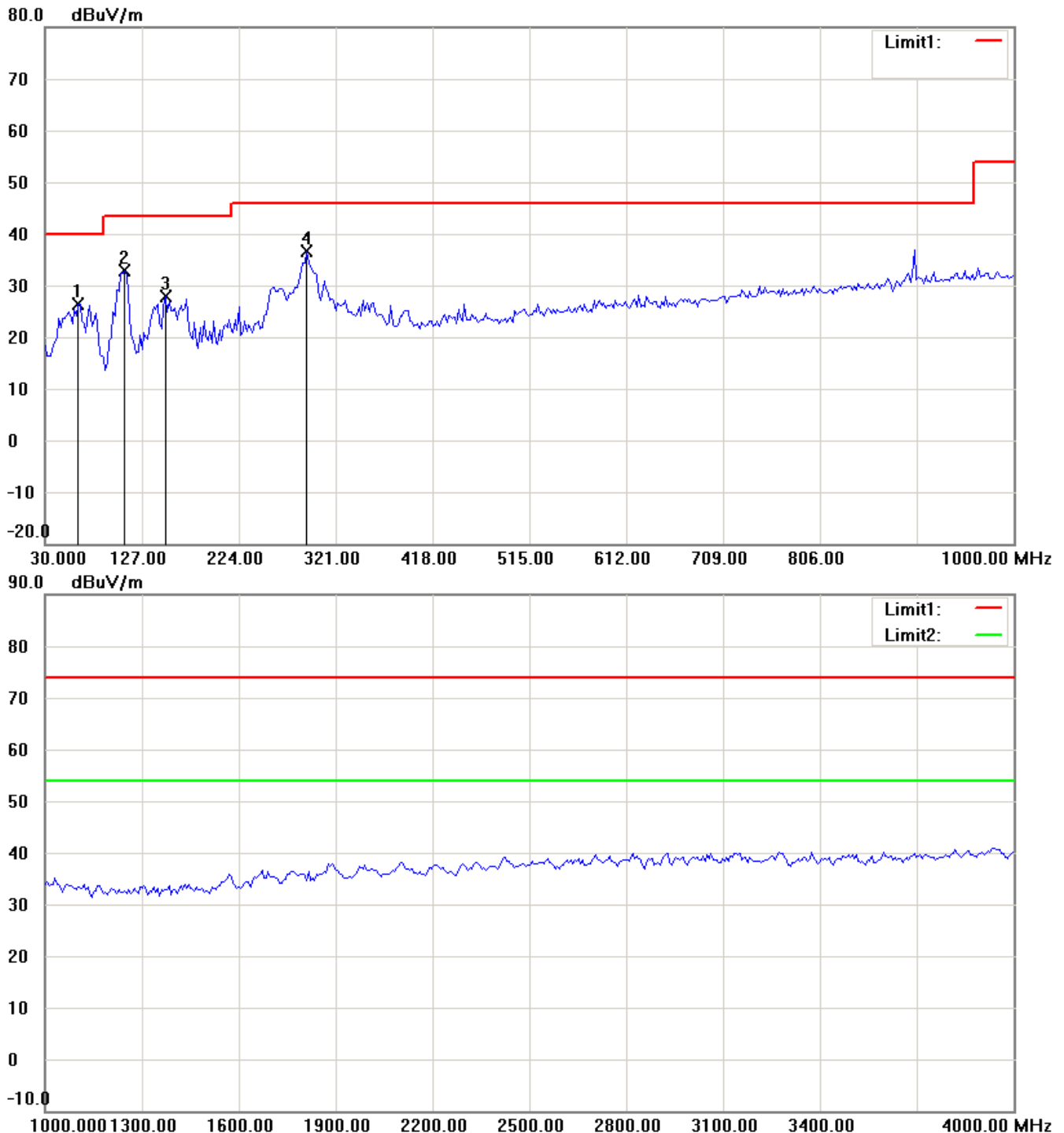
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Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11n 20MHz 5825MHz

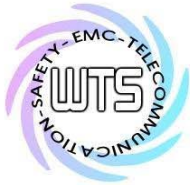
Antenna Polarization H



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

Note:

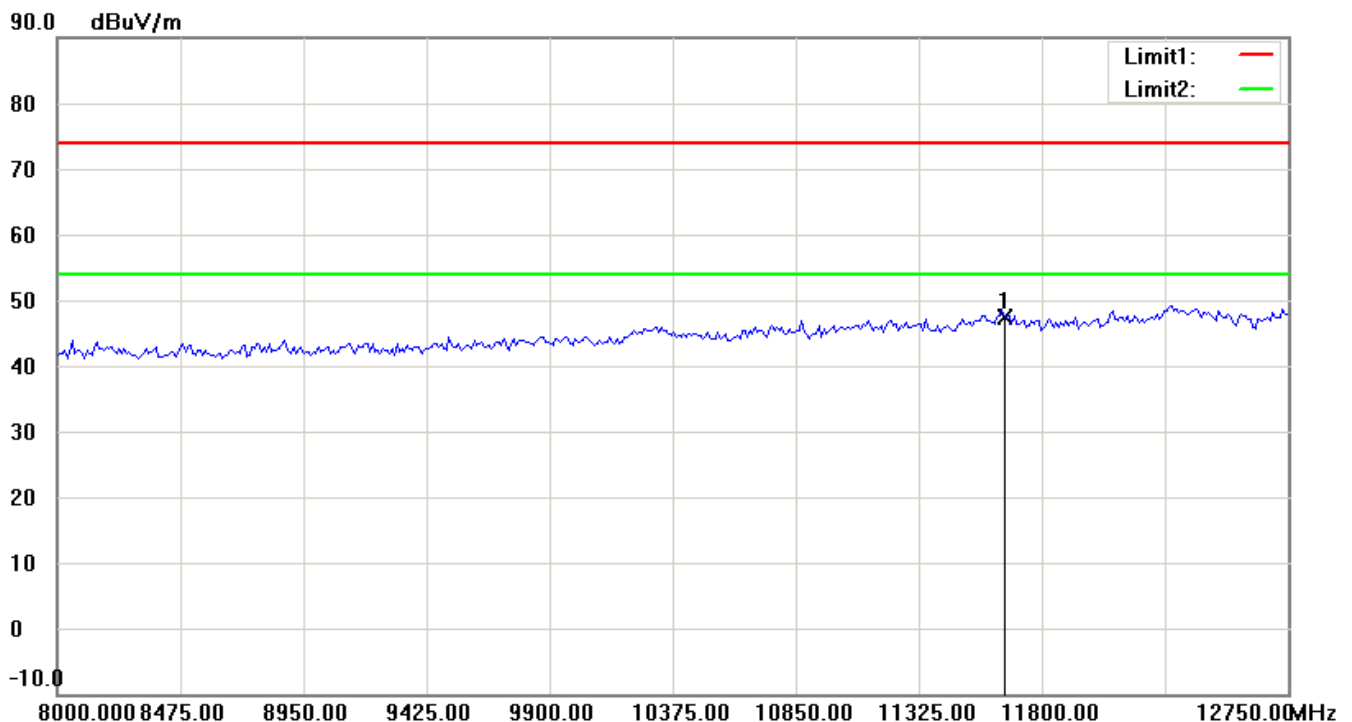
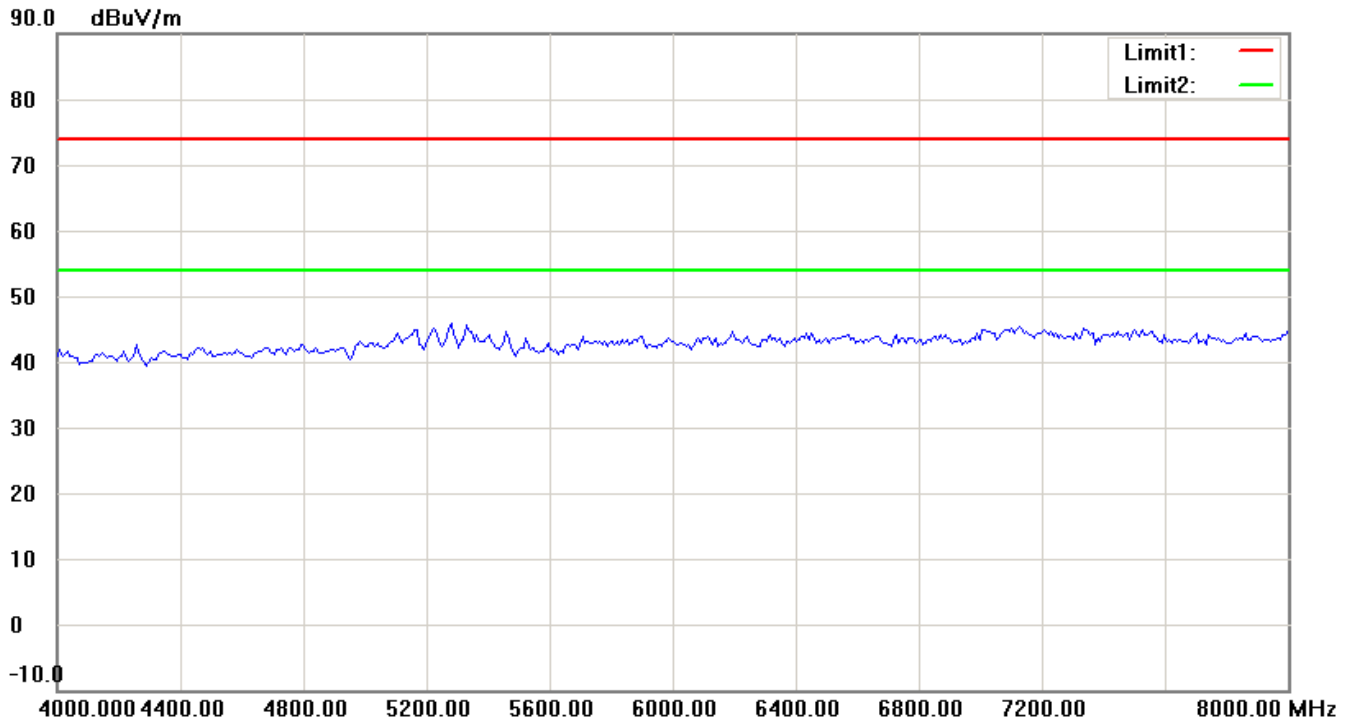
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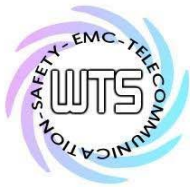
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

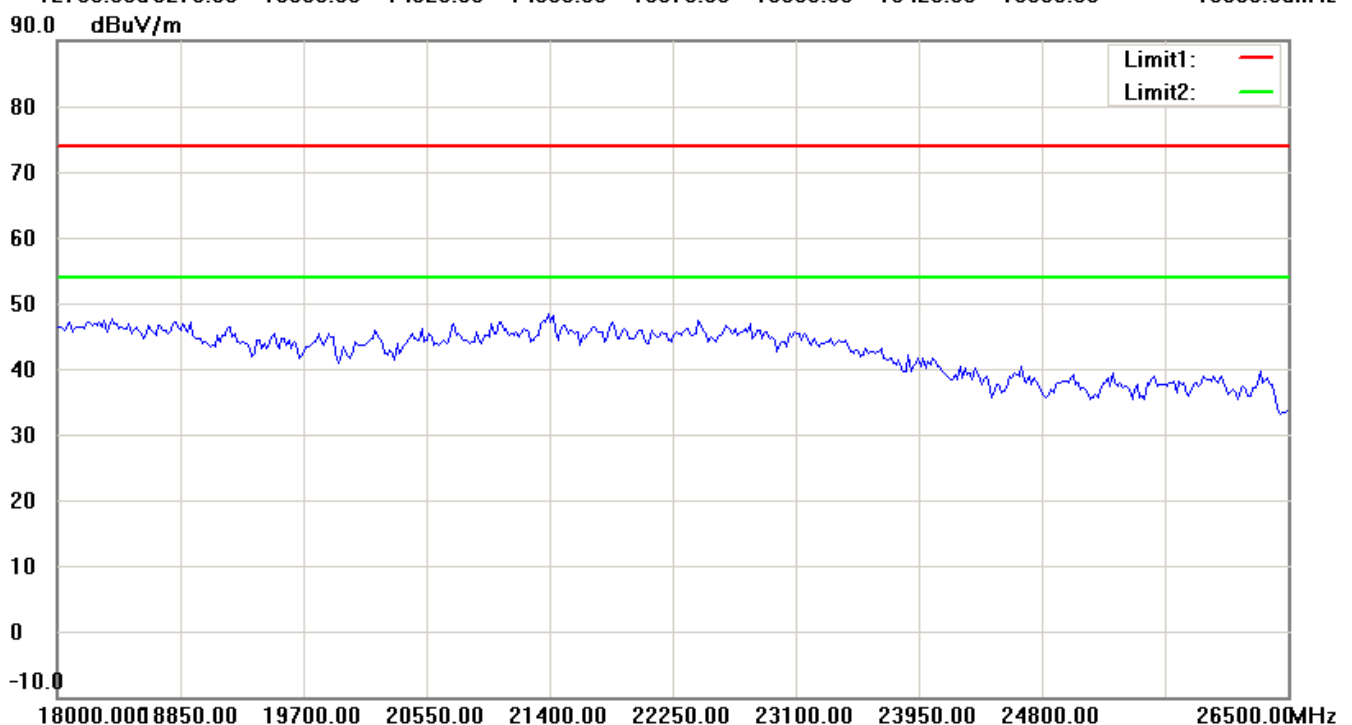
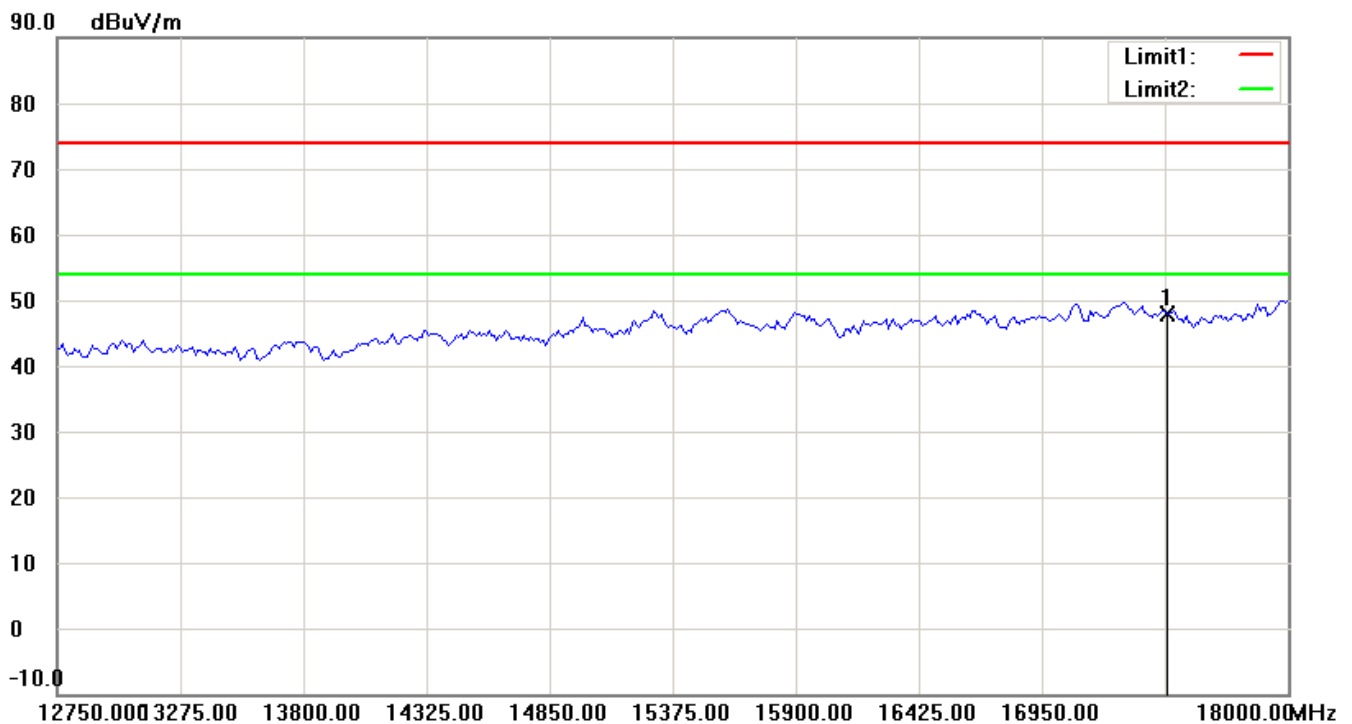
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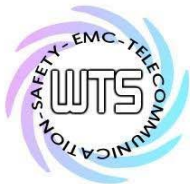
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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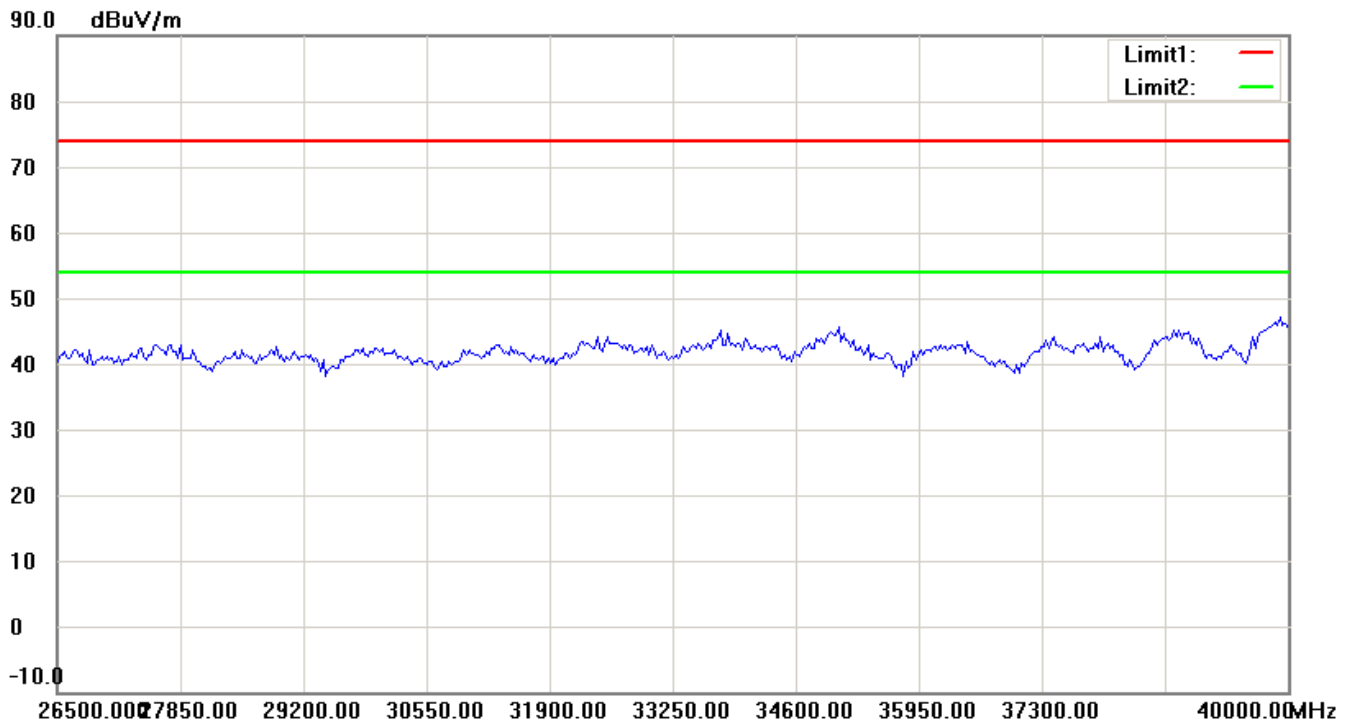
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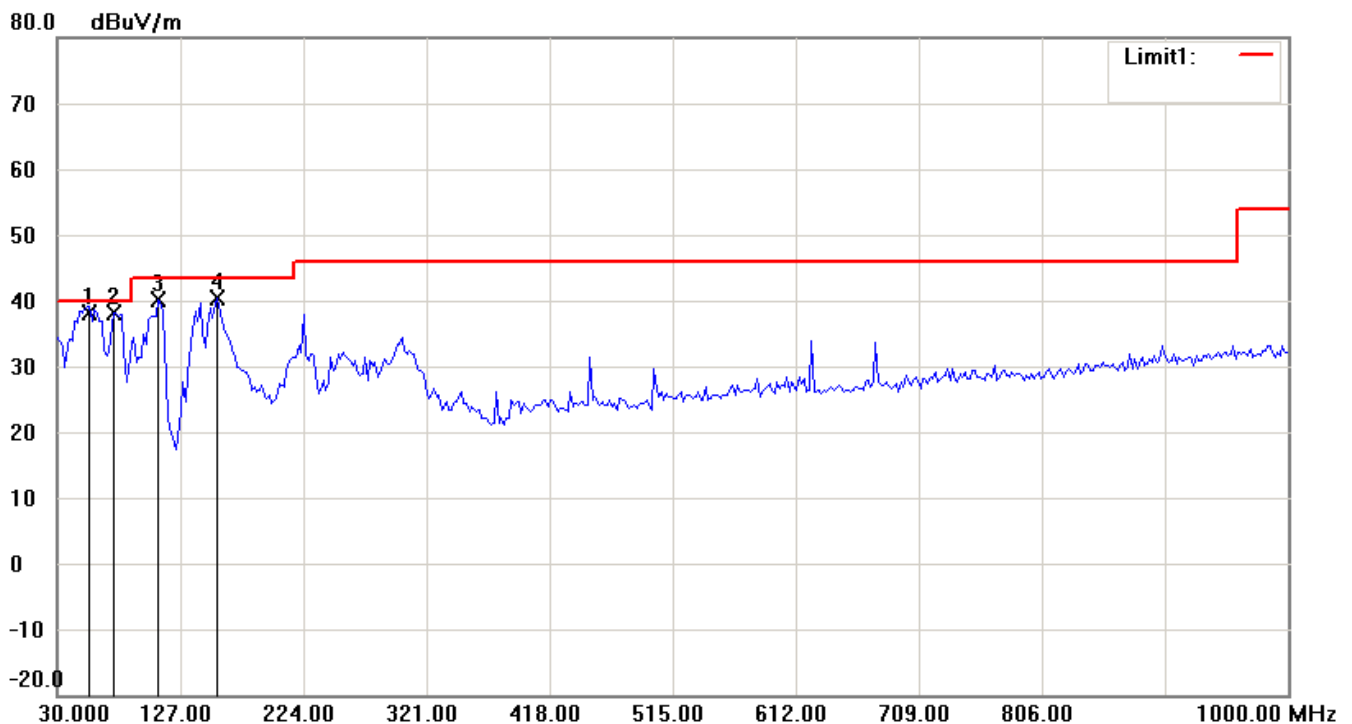
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

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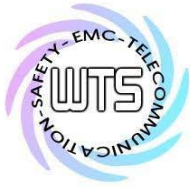
Antenna Polarization V



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

Note:

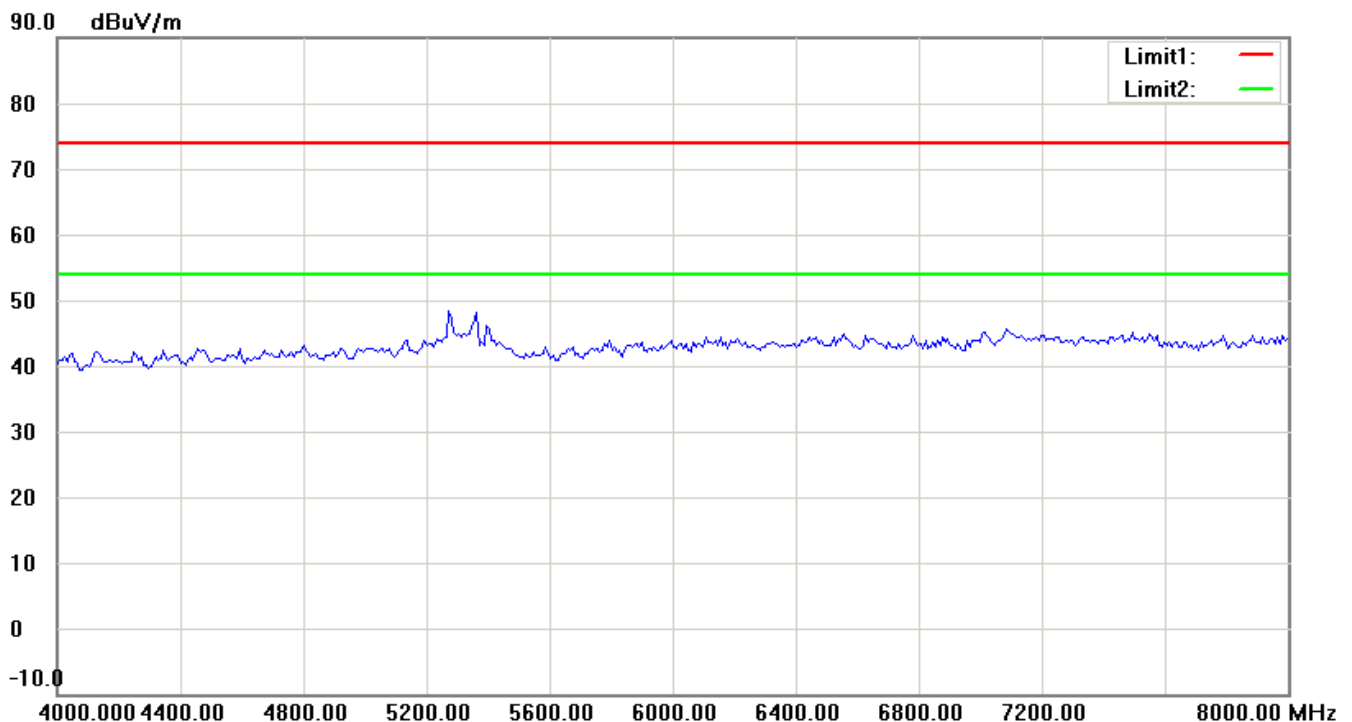
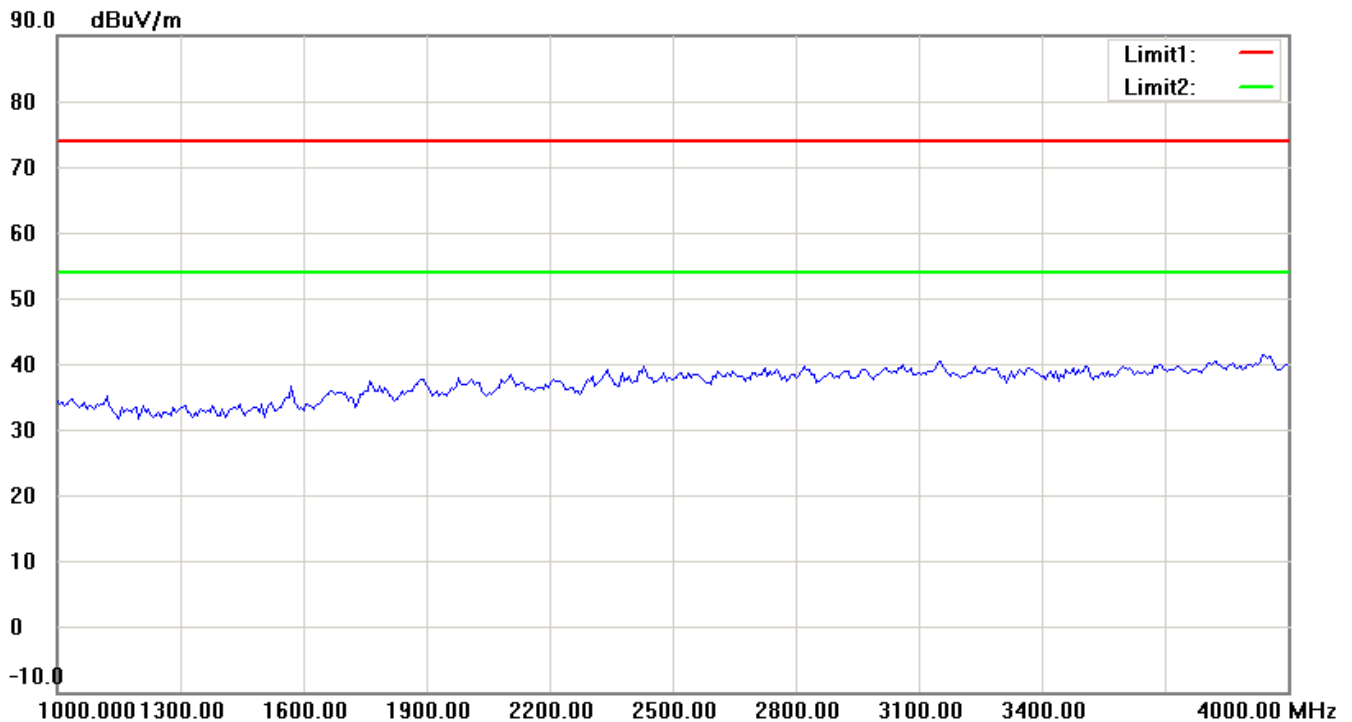
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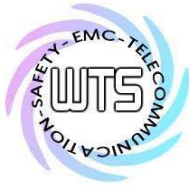
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

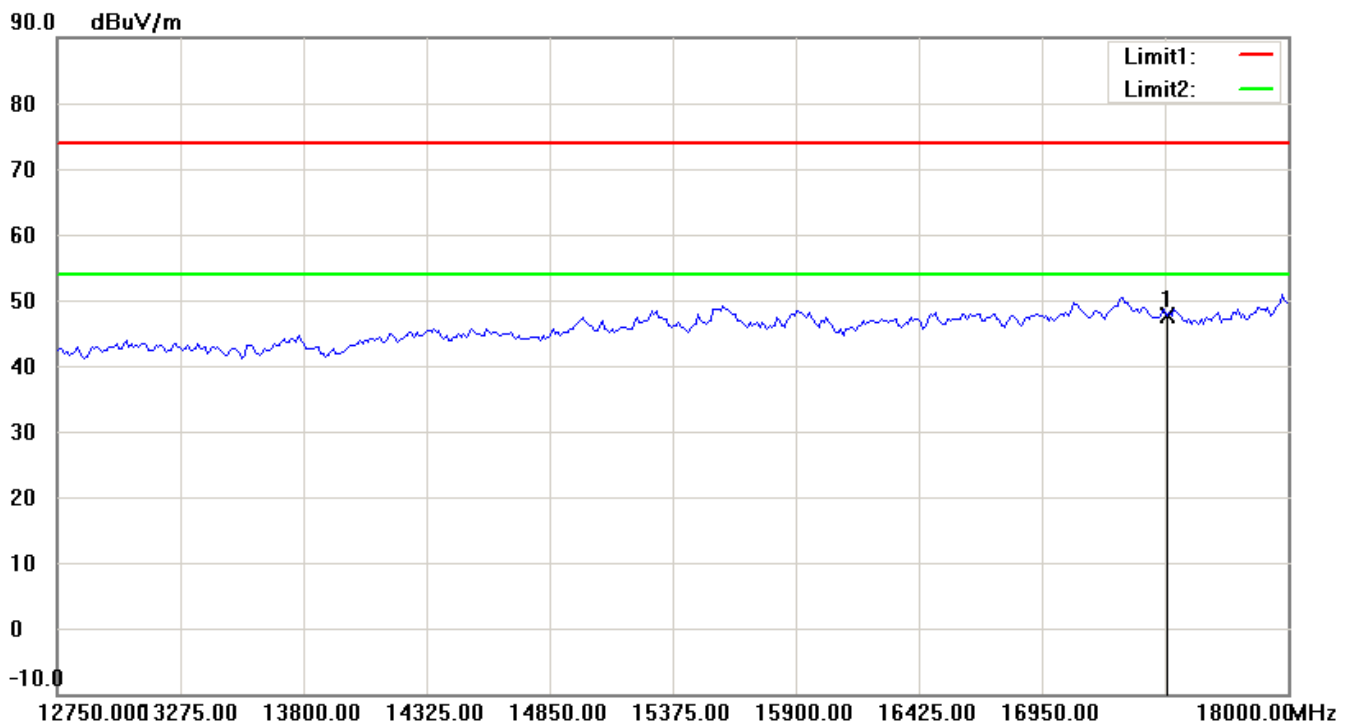
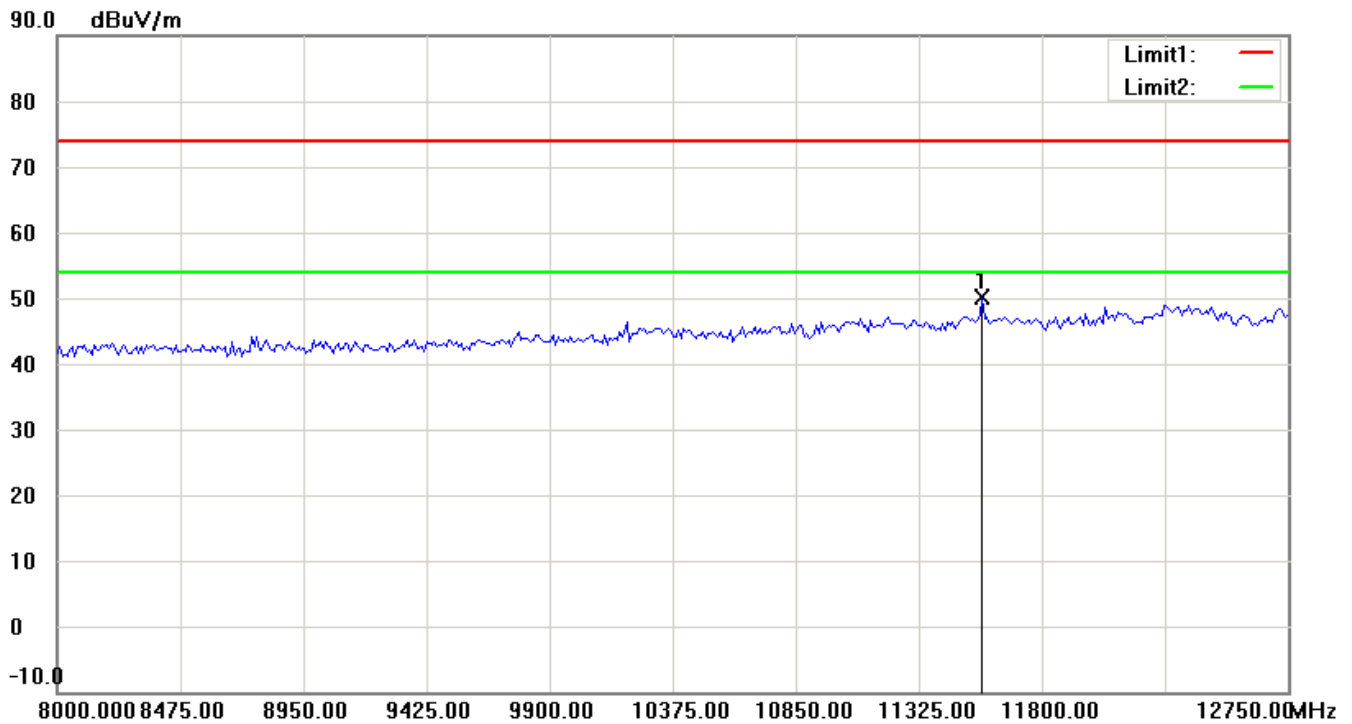
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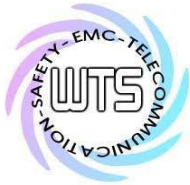
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

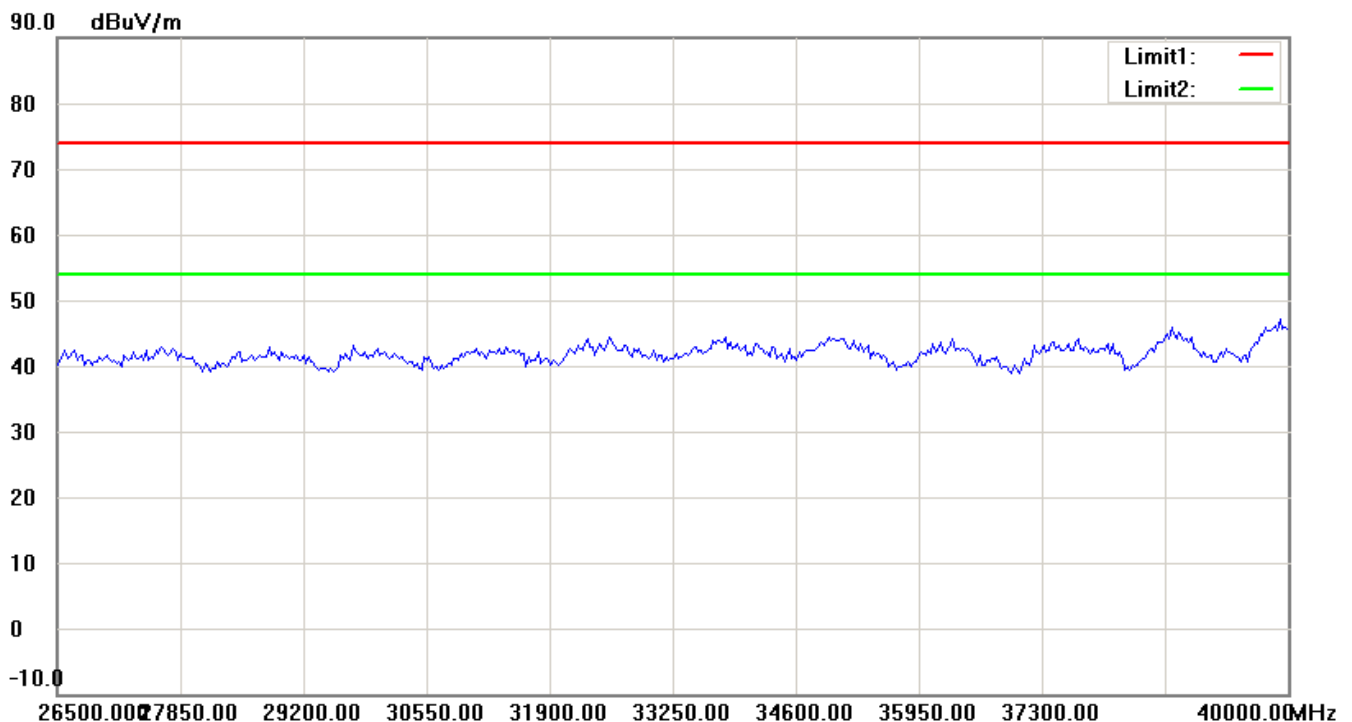
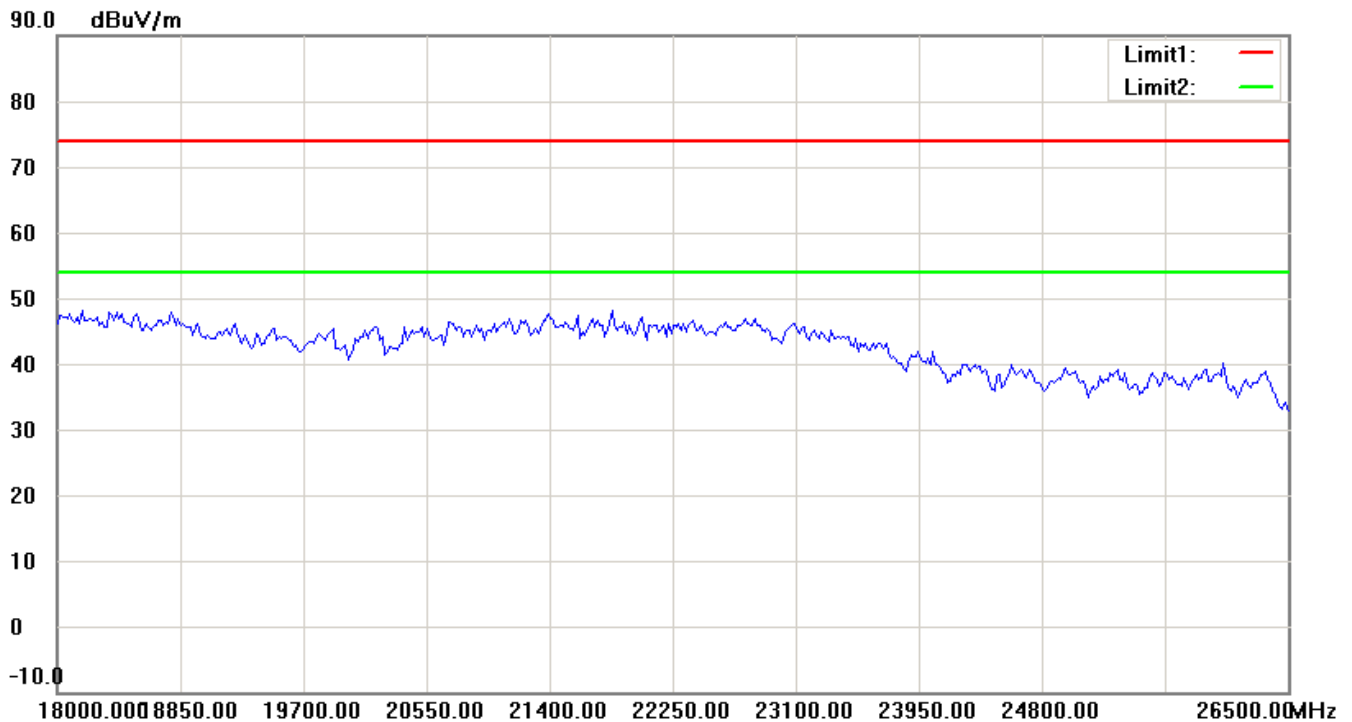
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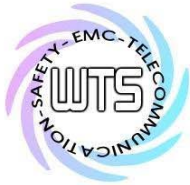
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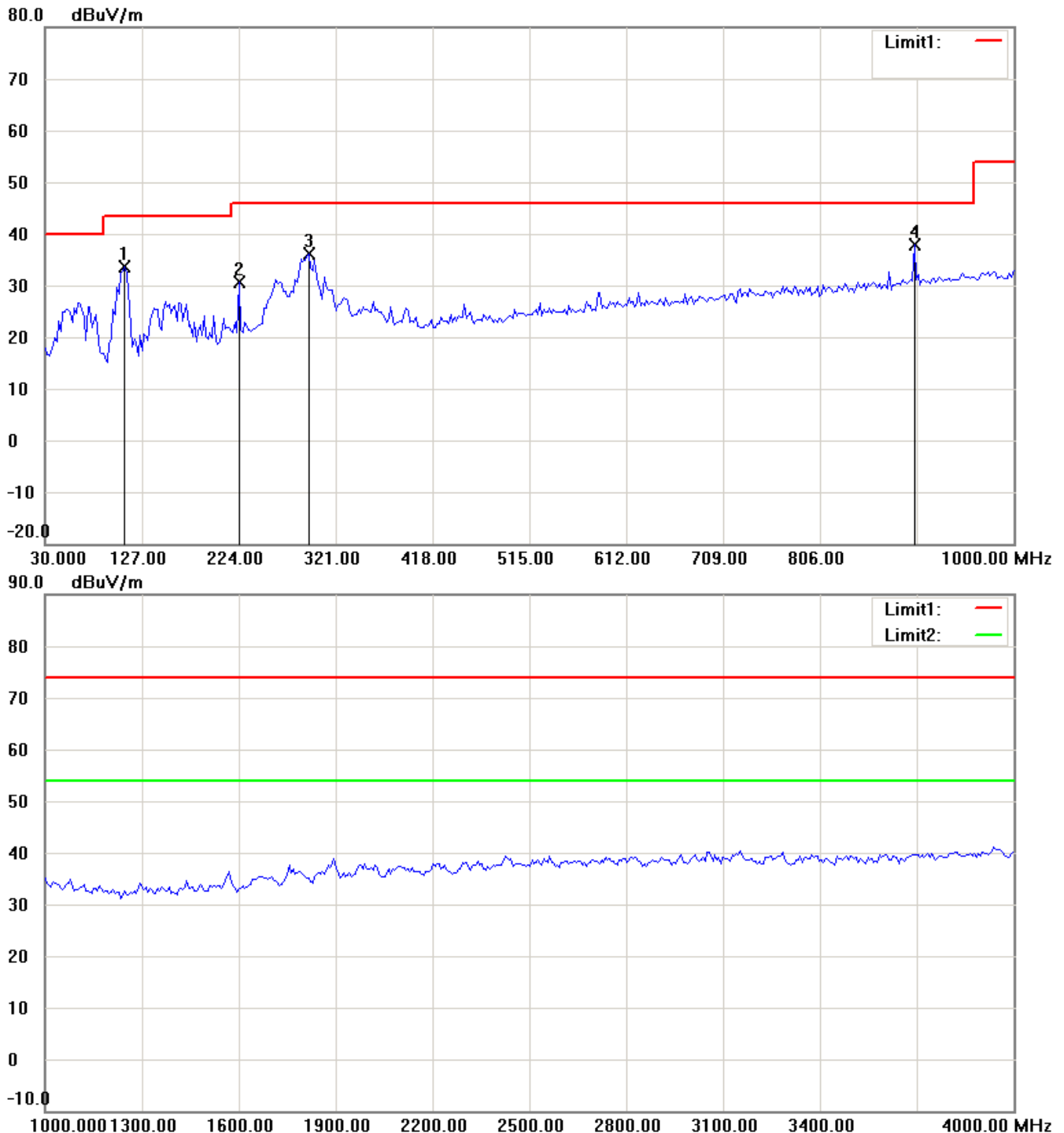
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11n 40MHz 5755MHz

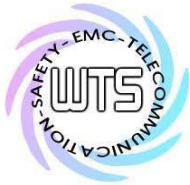
Antenna Polarization H



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

Note:

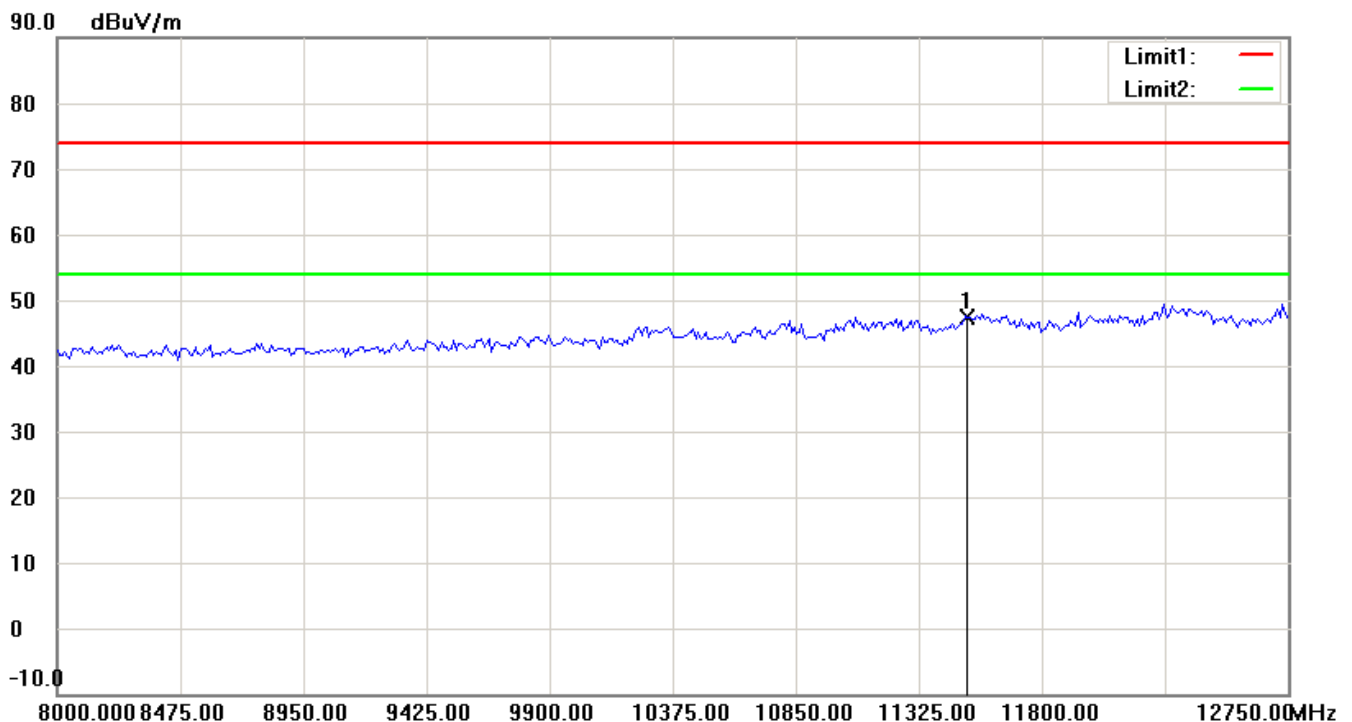
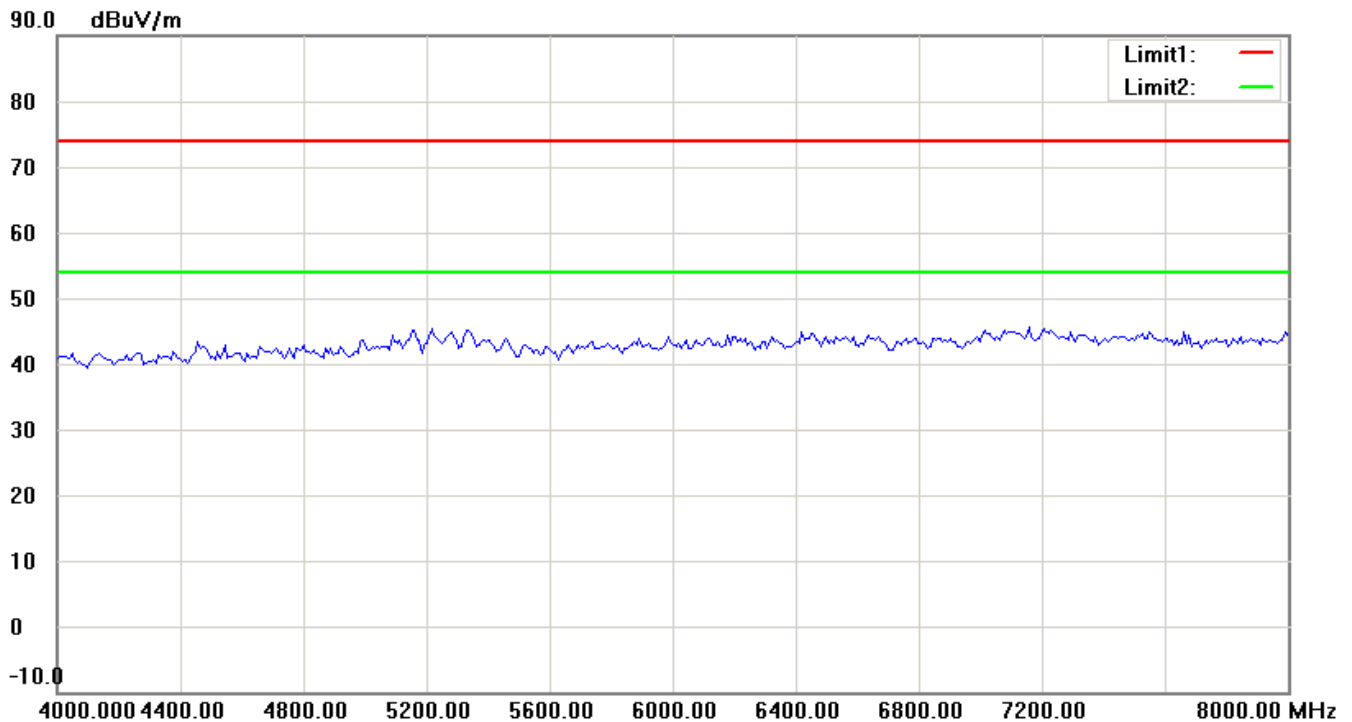
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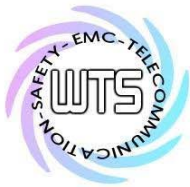
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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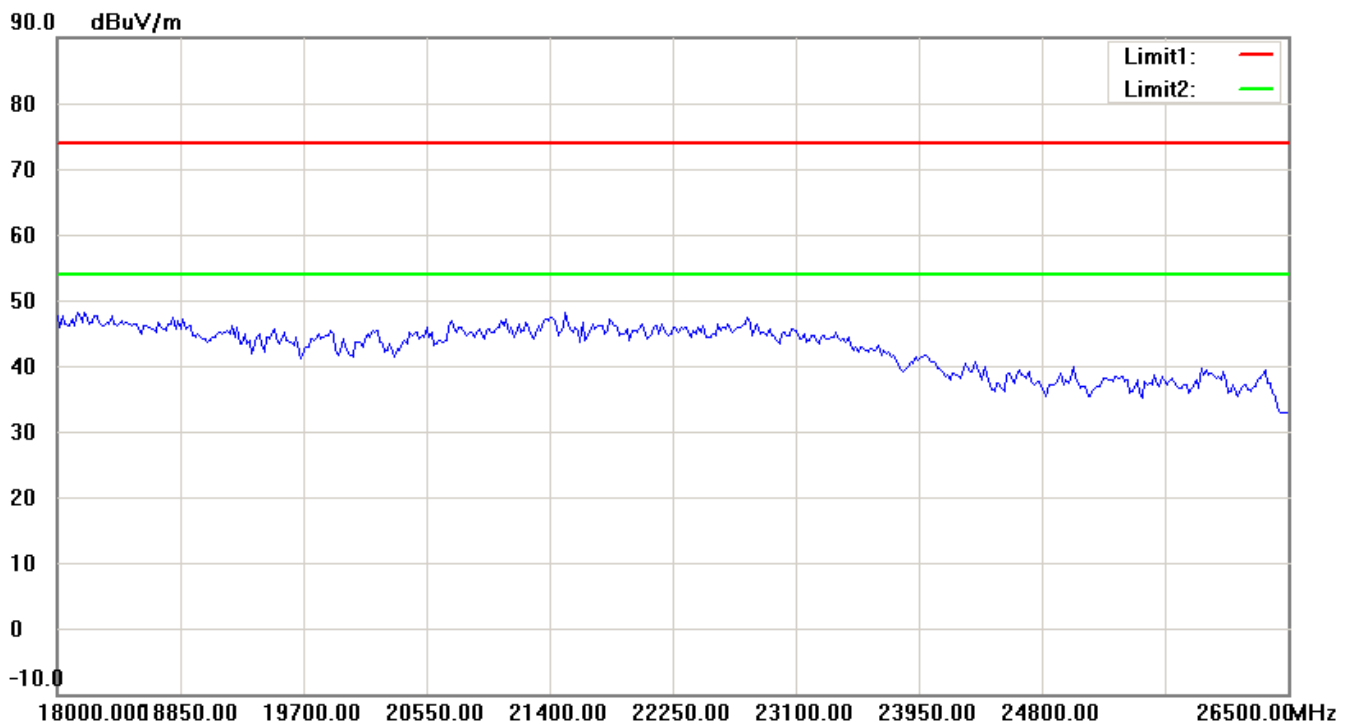
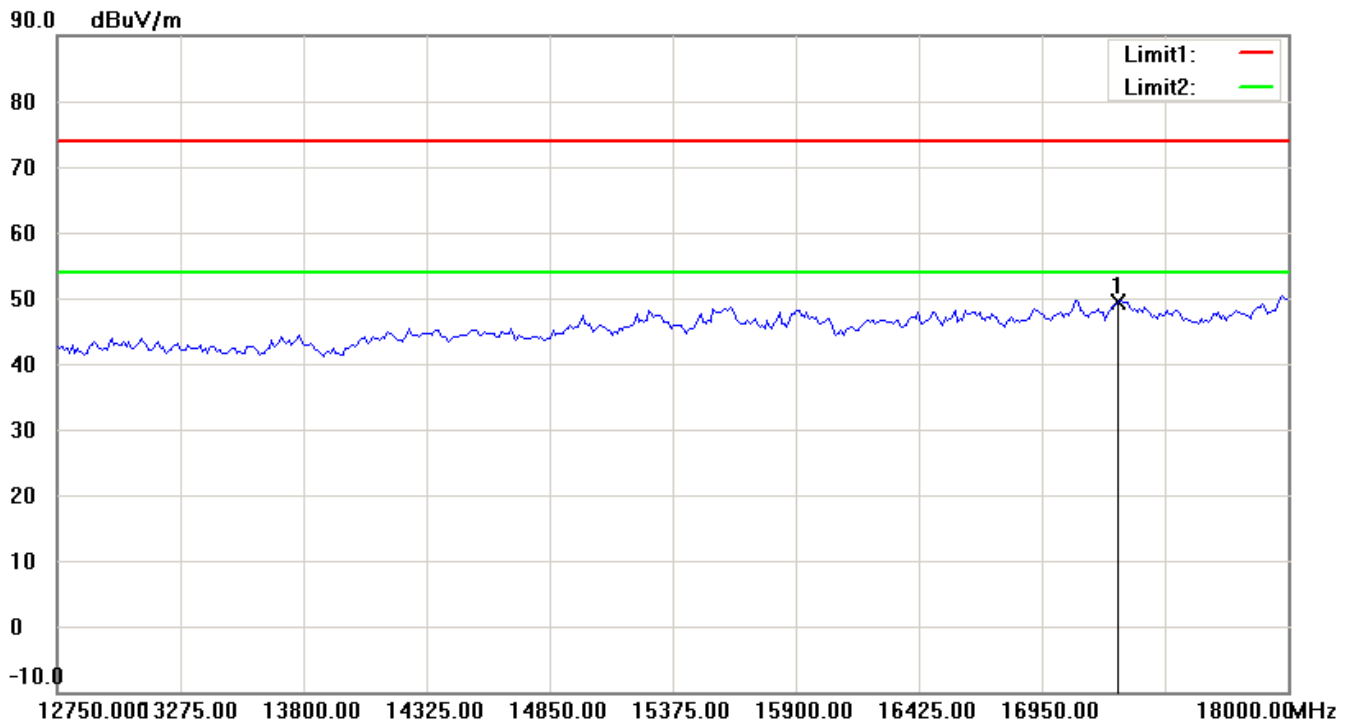
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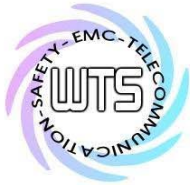
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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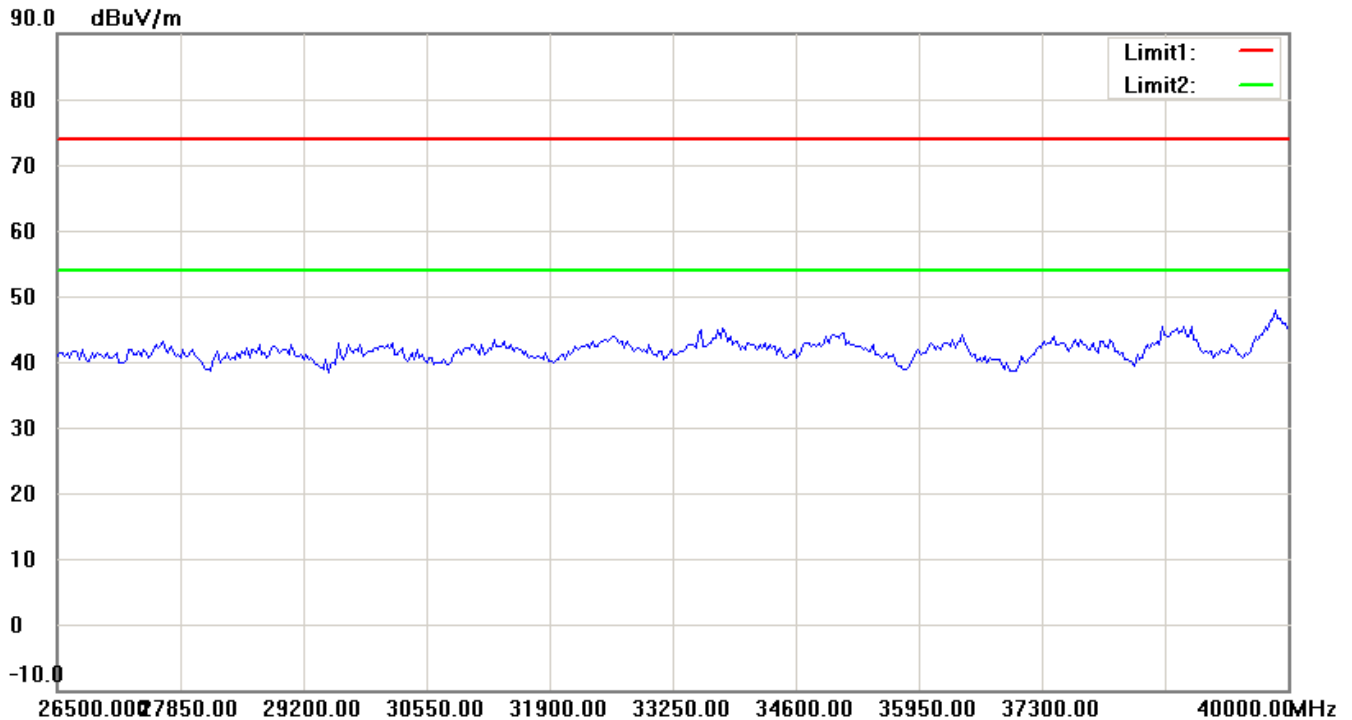
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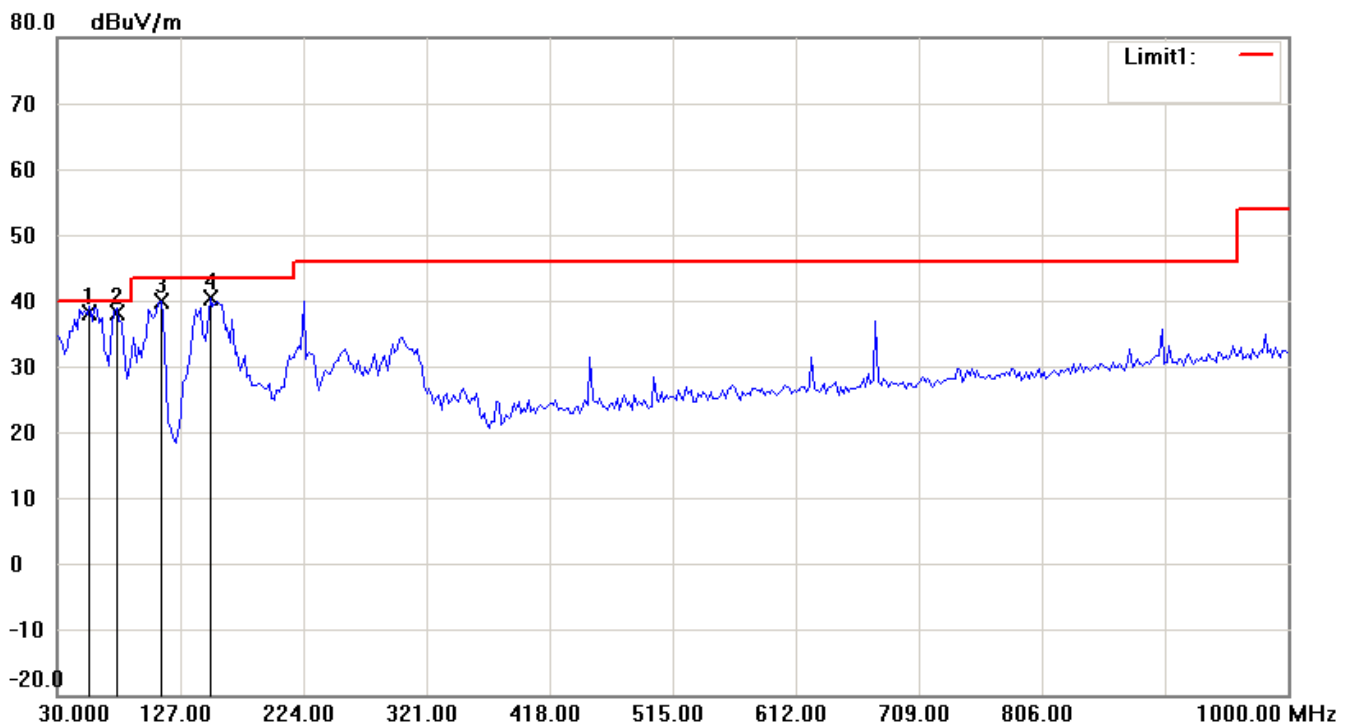
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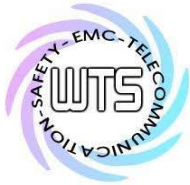
Antenna Polarization V



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

Note:

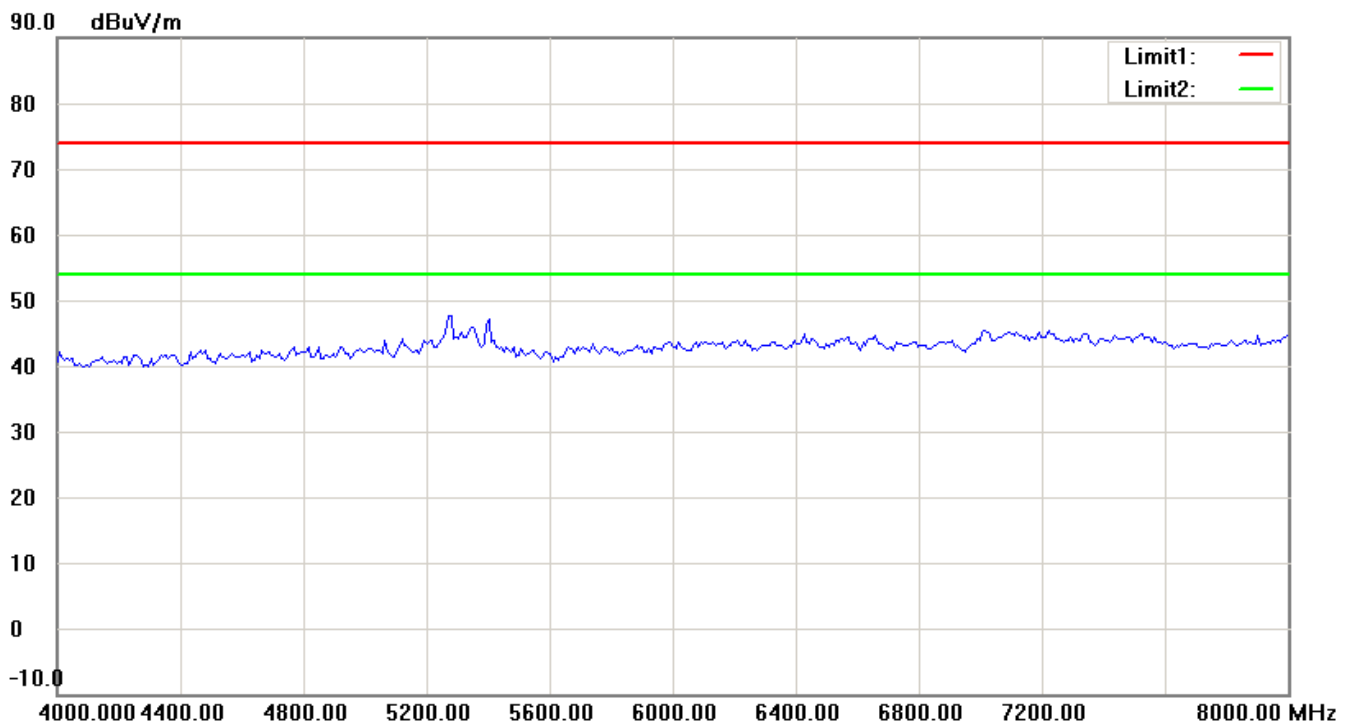
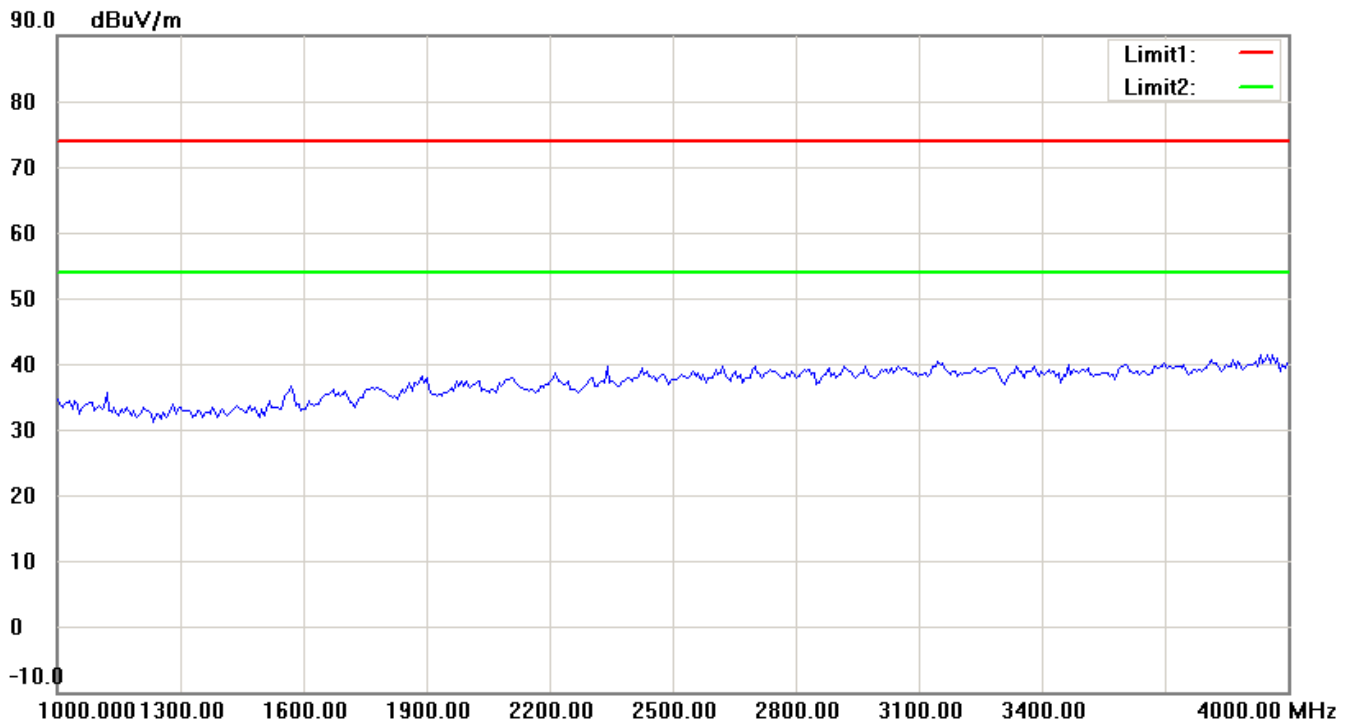
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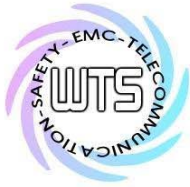
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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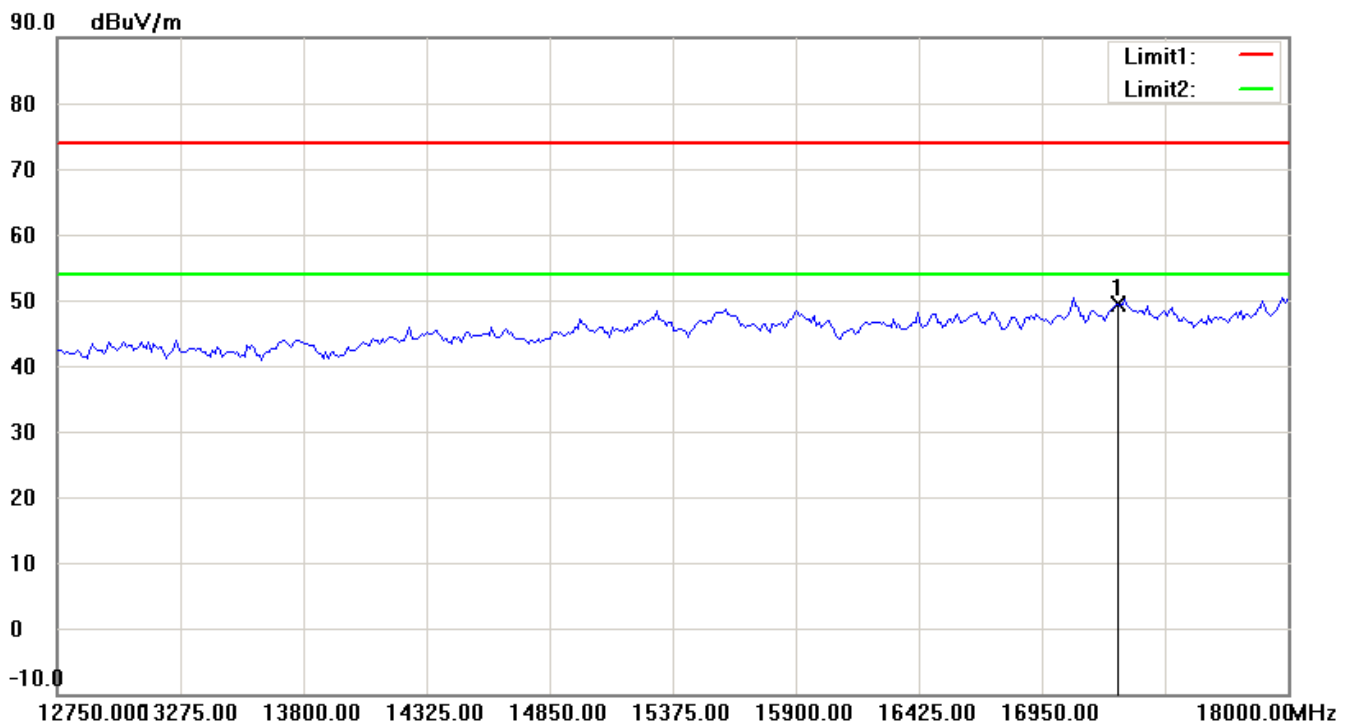
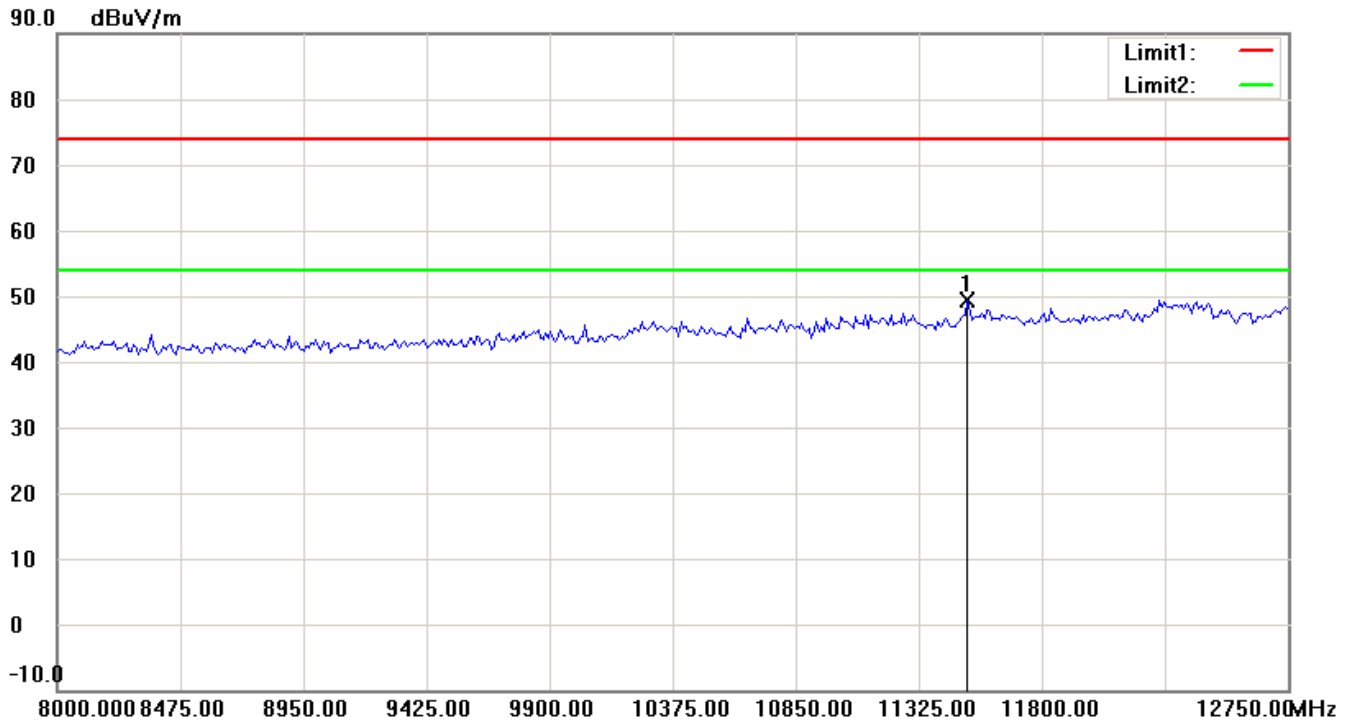
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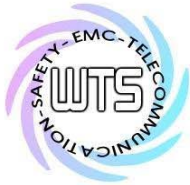
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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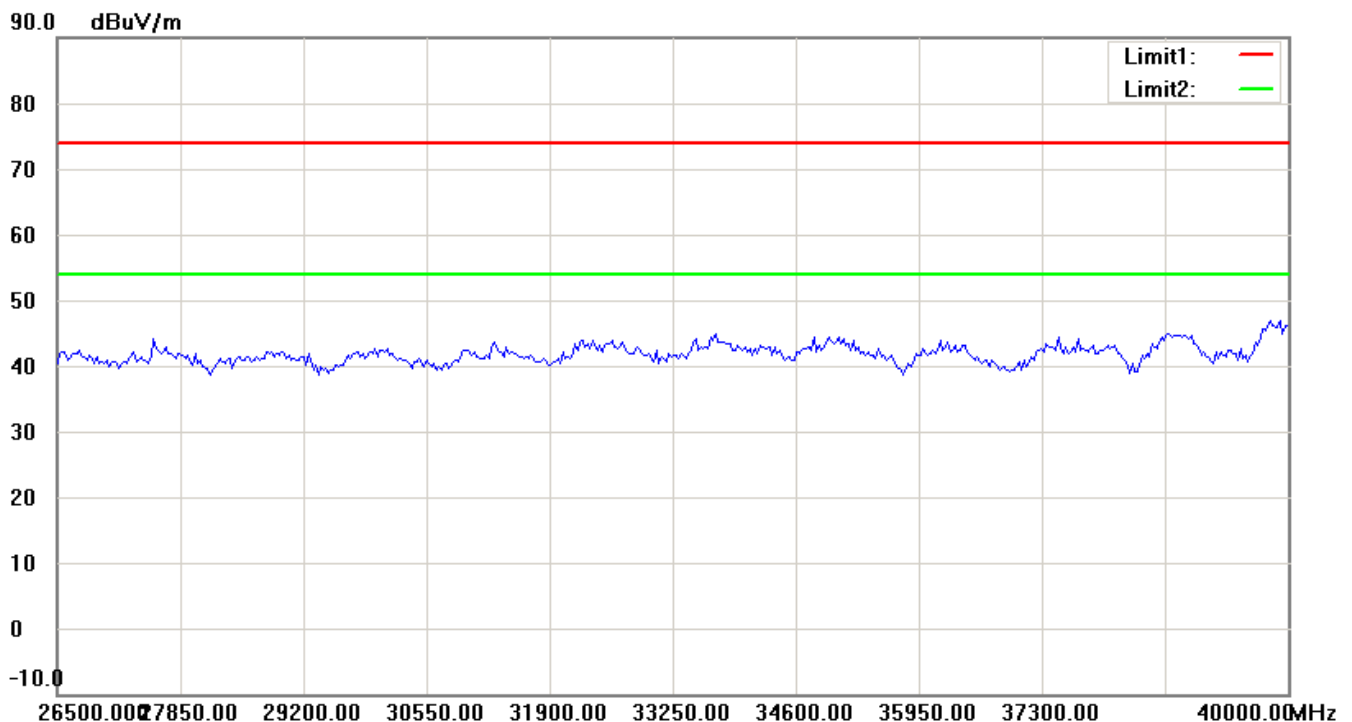
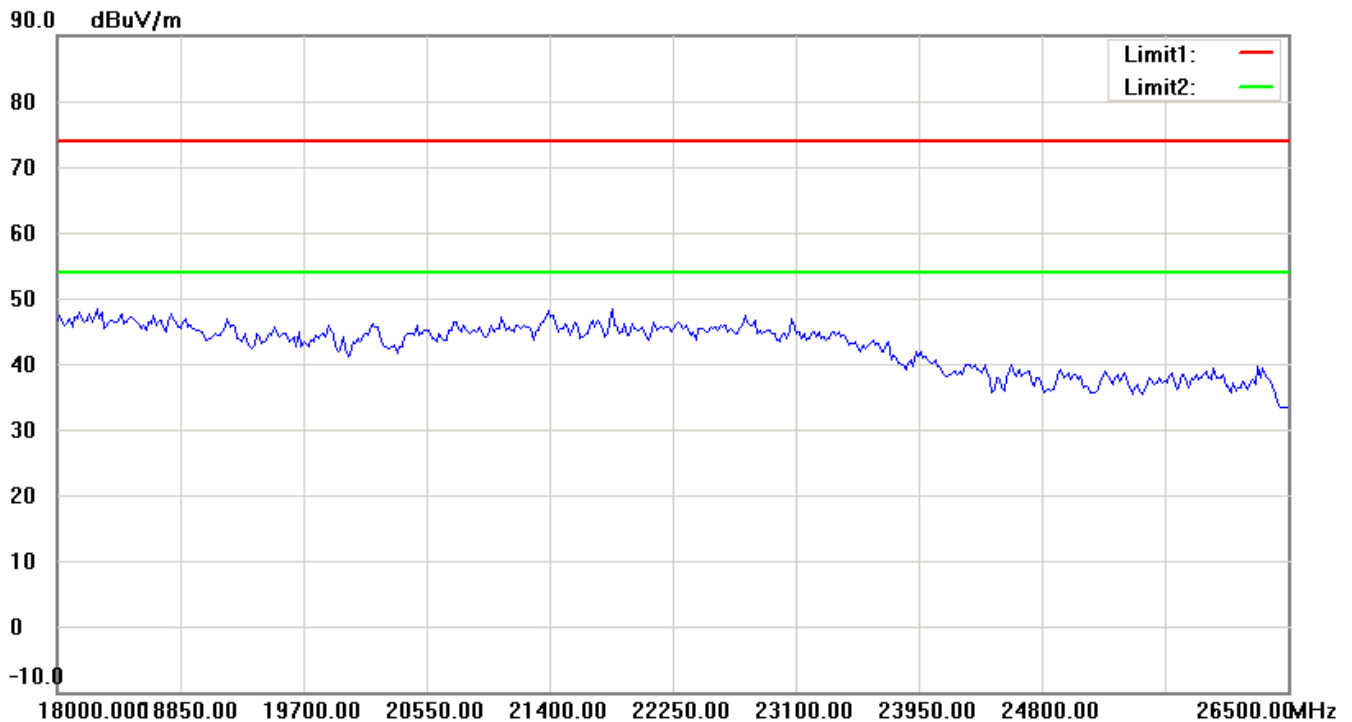
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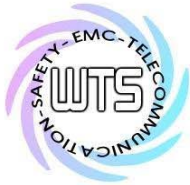
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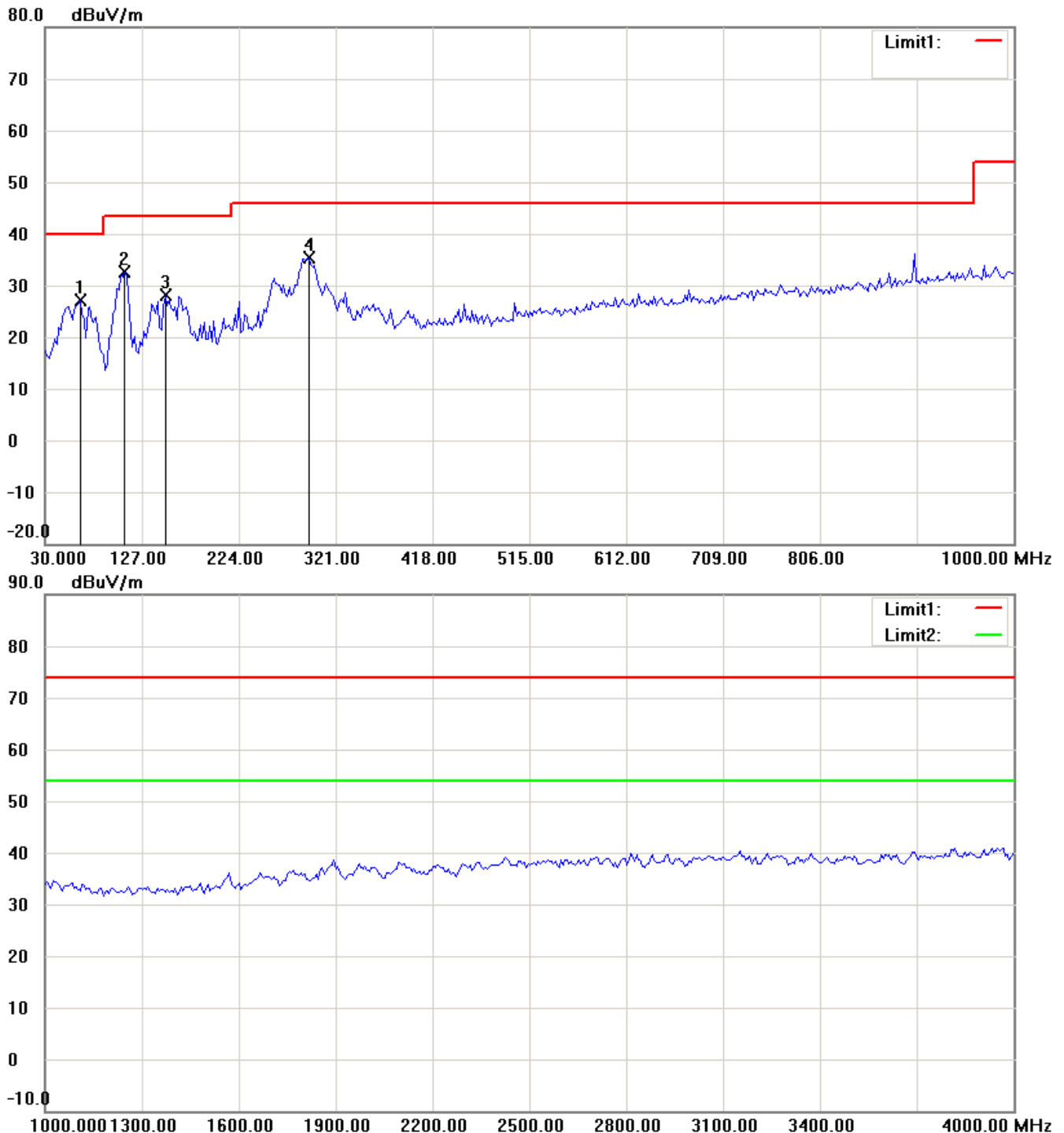
Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D21409-14504-C-1

FCC ID: UL9WNAP7325

802.11n 40MHz 5795MHz

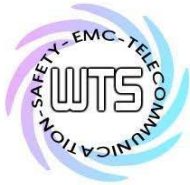
Antenna Polarization H



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

Note:

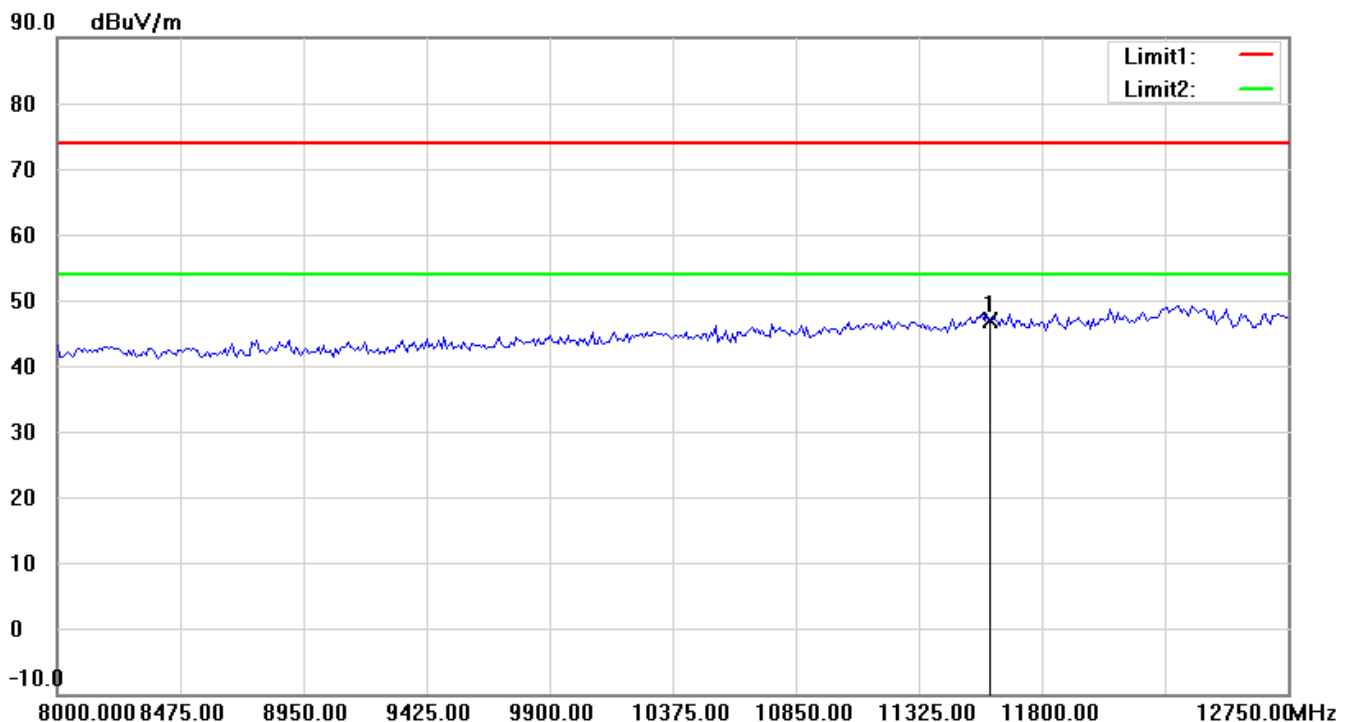
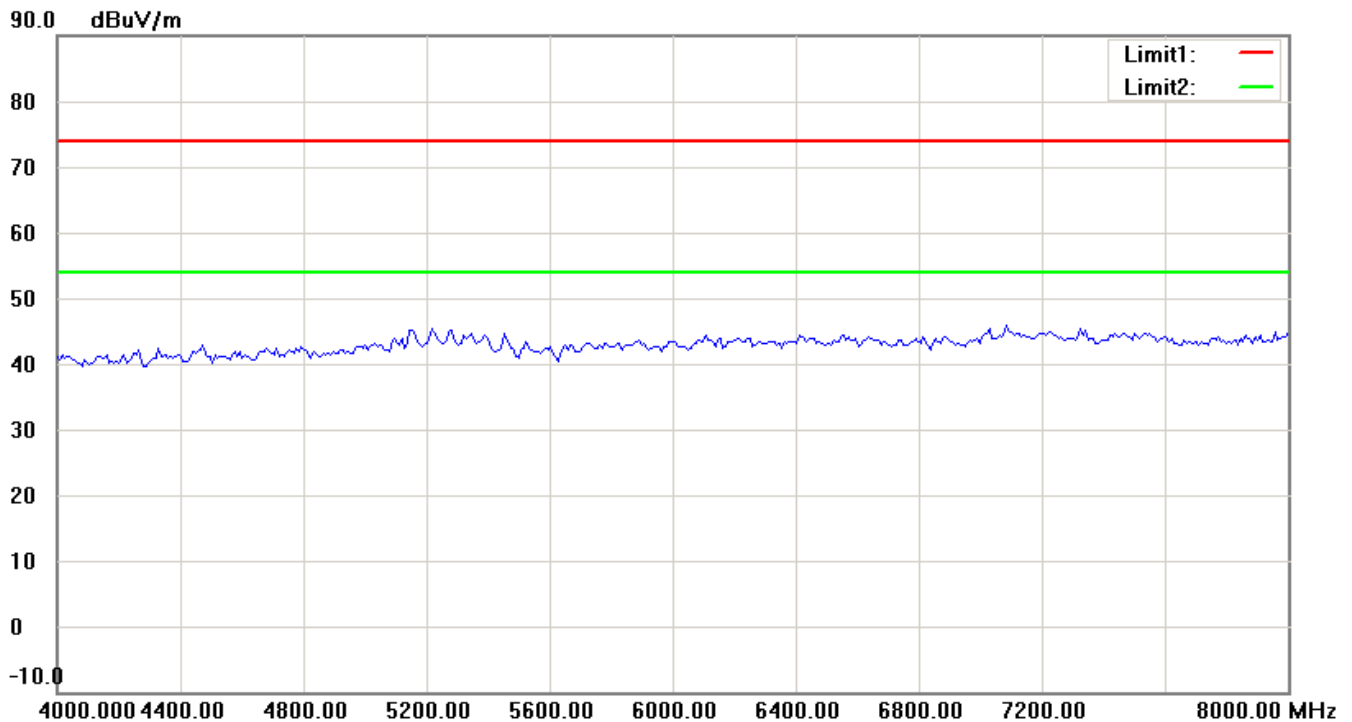
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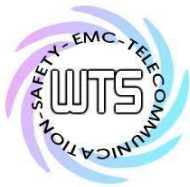
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Up Line: Peak Limit Line Down Line: Ave Limit Line

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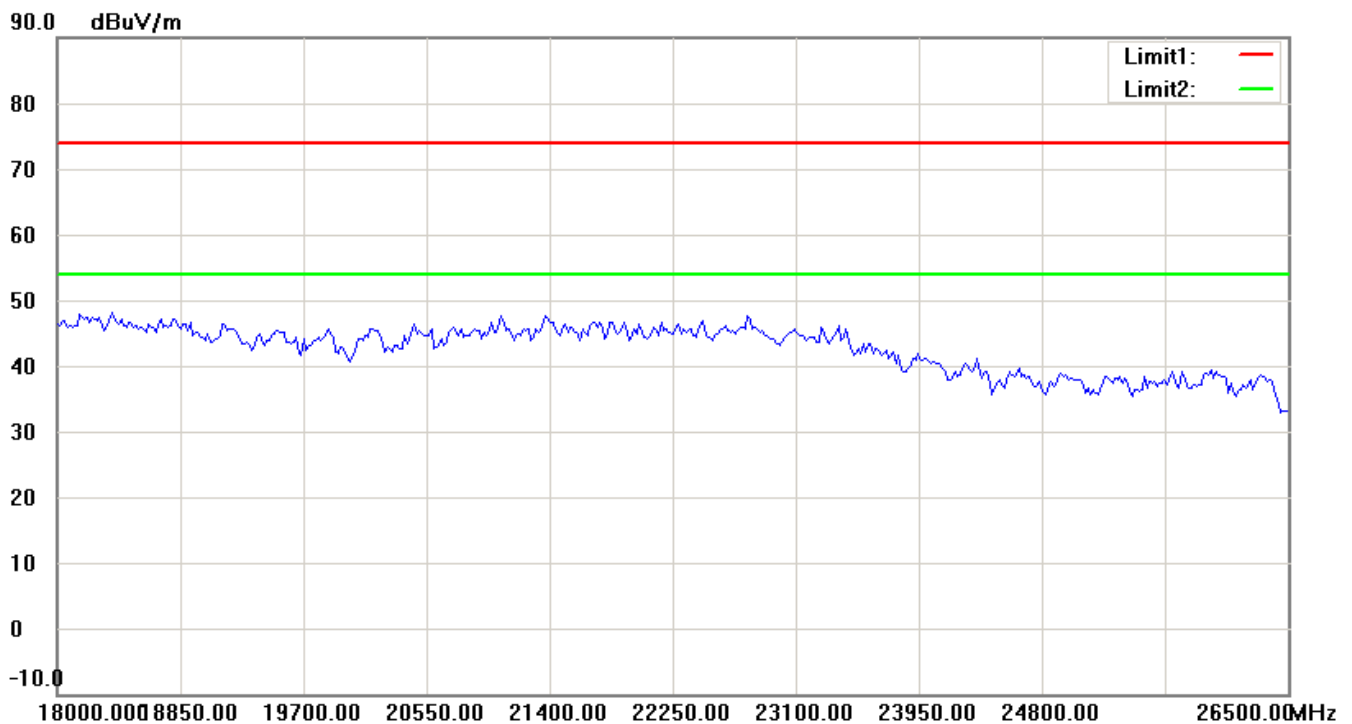
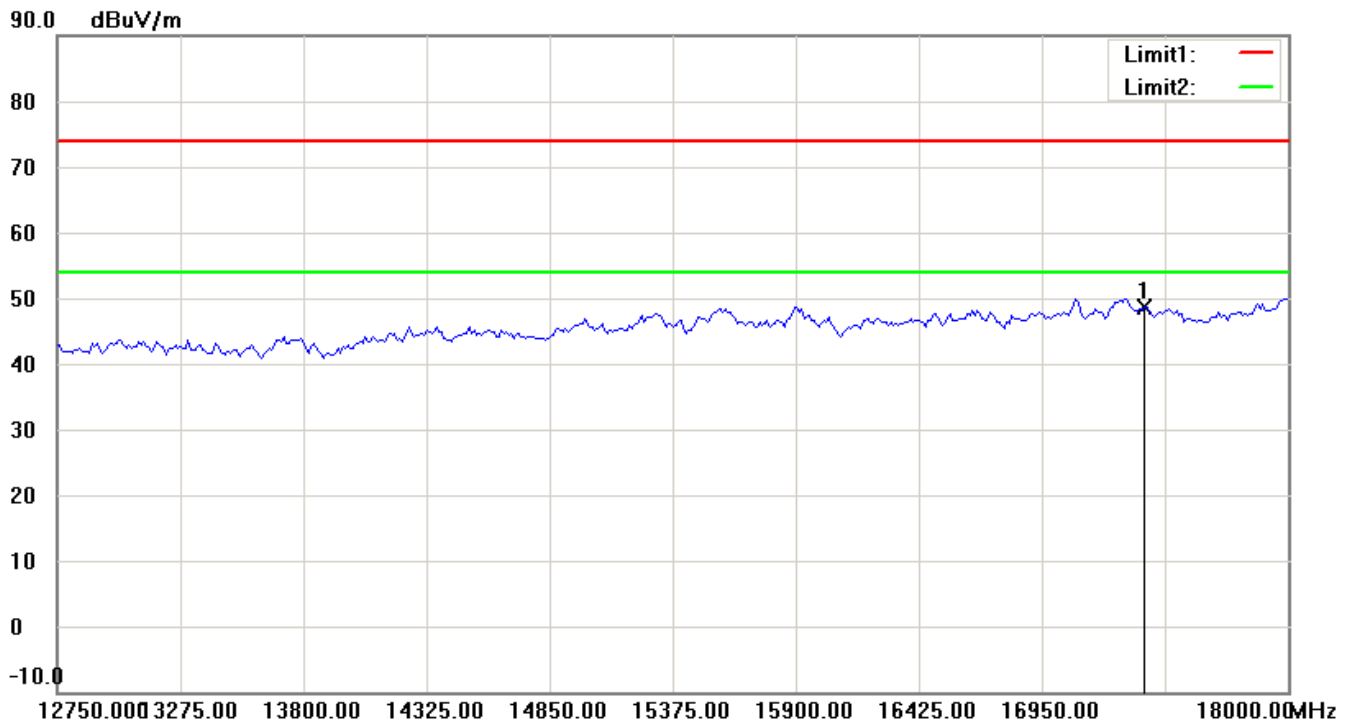
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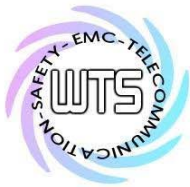
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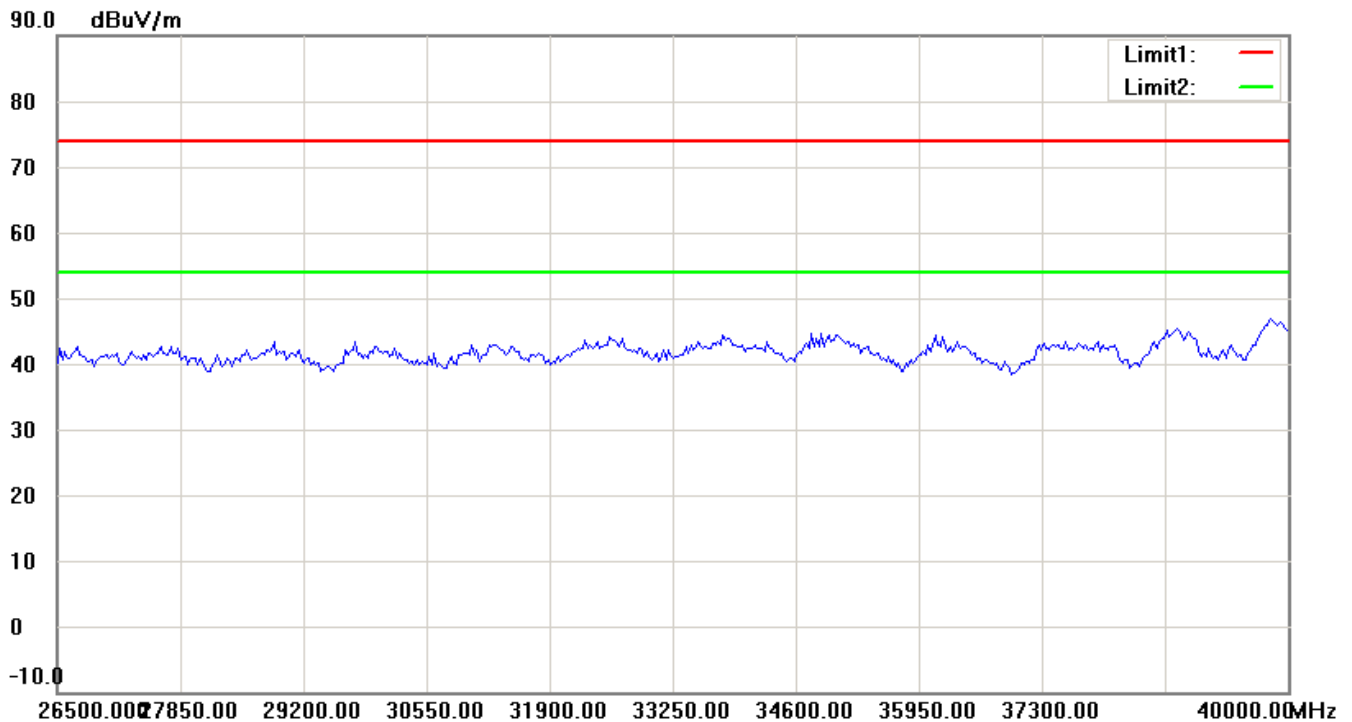
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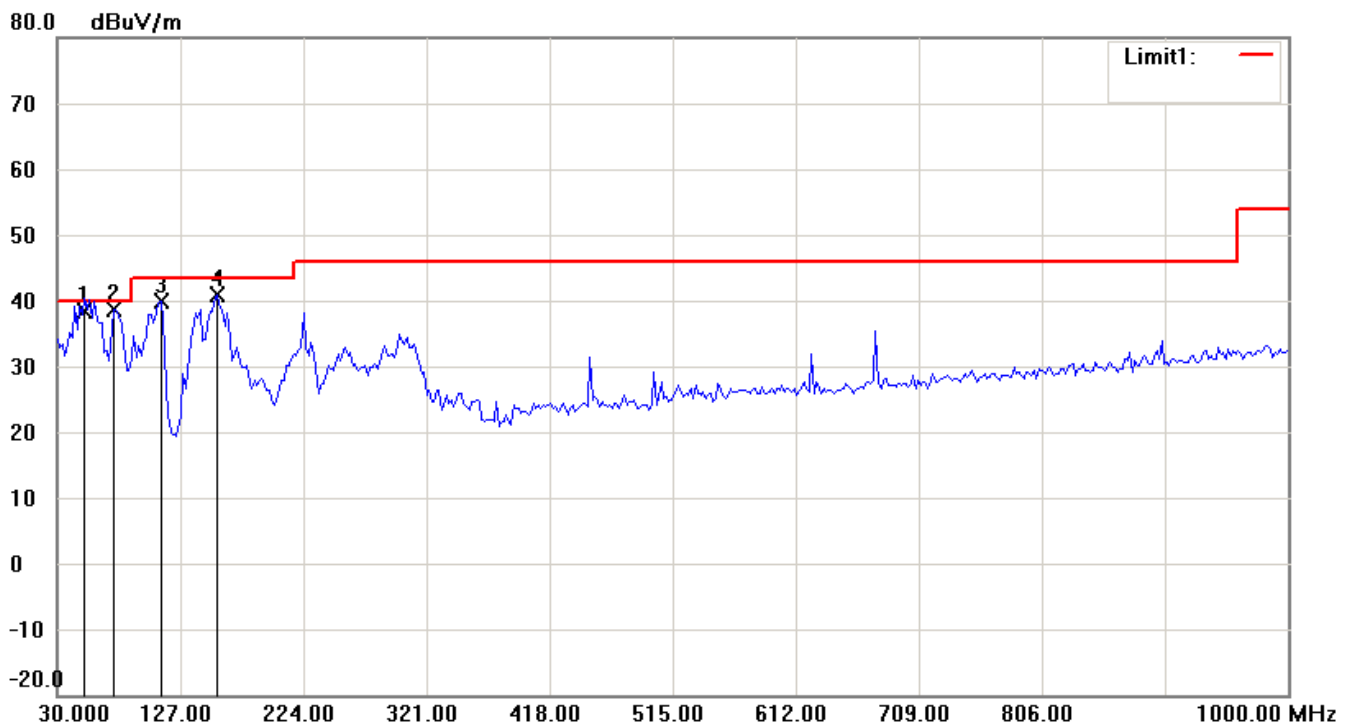
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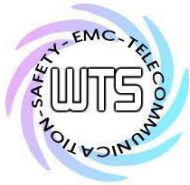
Antenna Polarization V



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

Note:

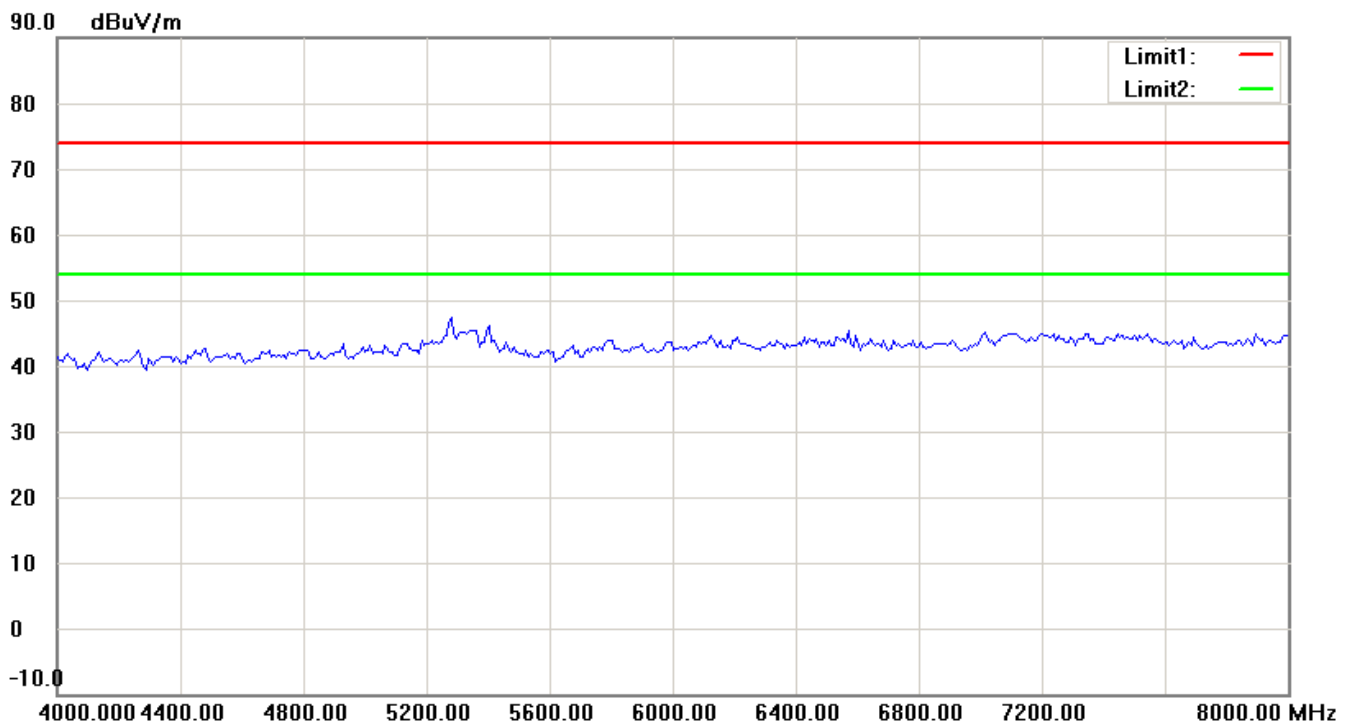
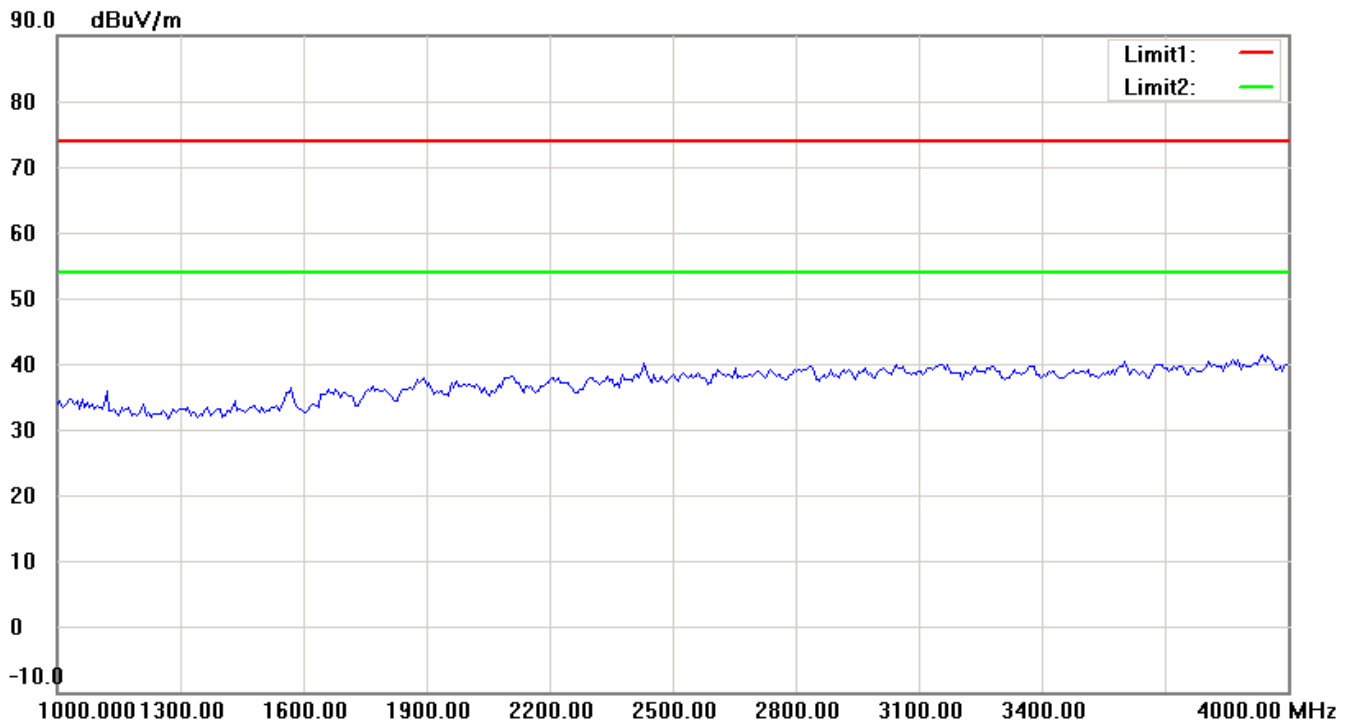
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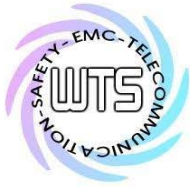
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Up Line: Peak Limit Line Down Line: Ave Limit Line

Note:

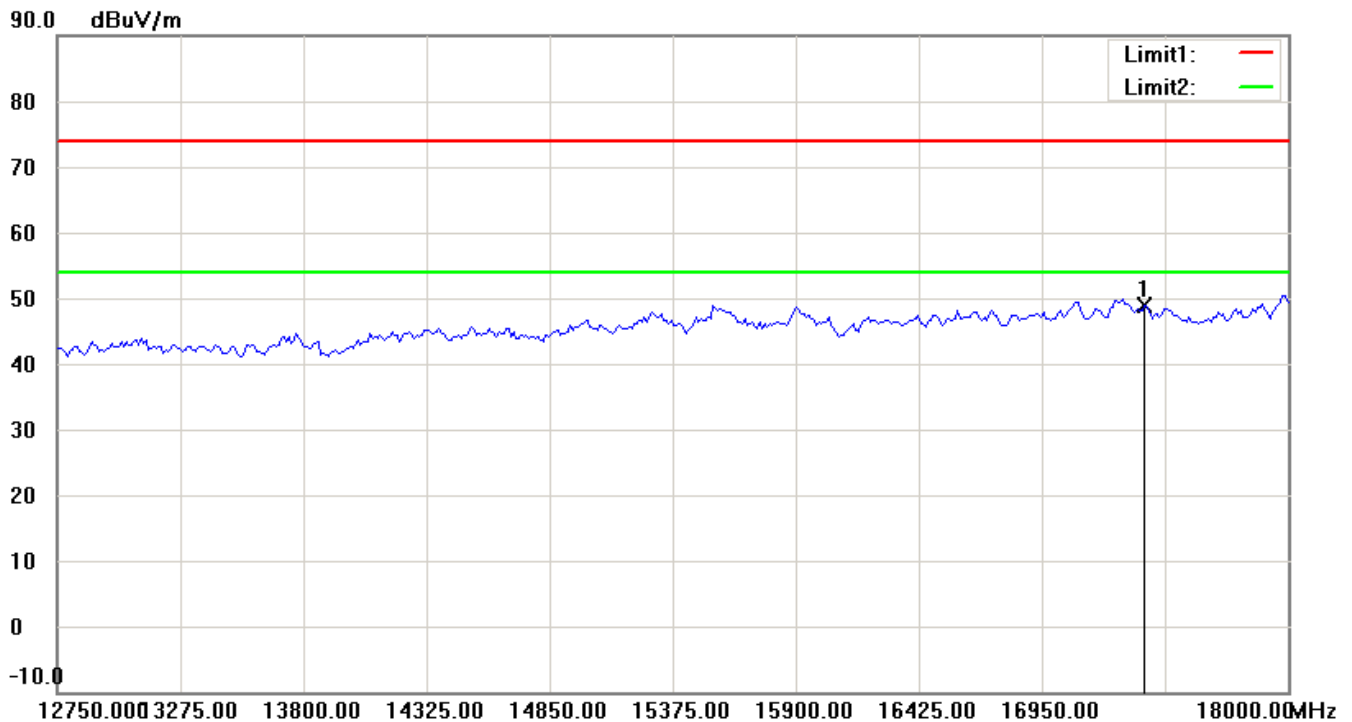
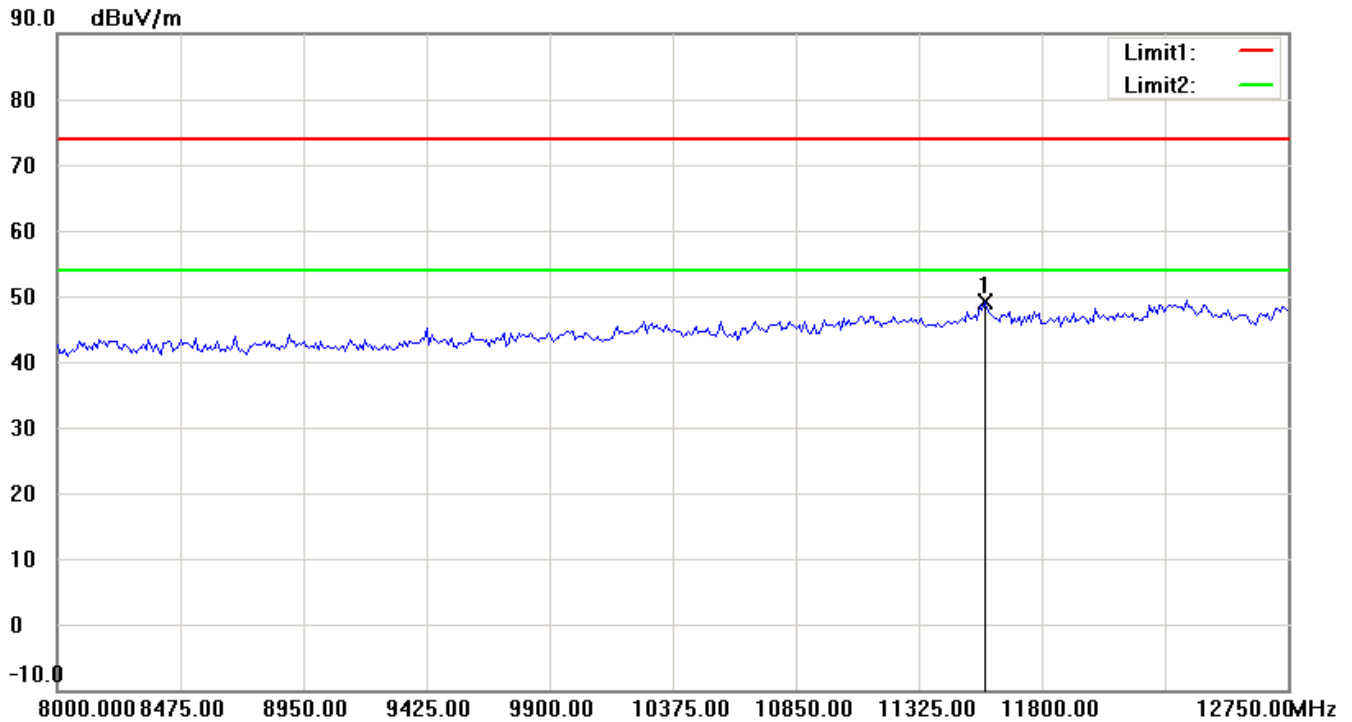
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification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



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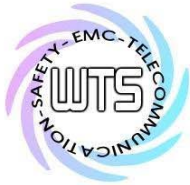
FCC ID: UL9WNAP7325



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

Note:

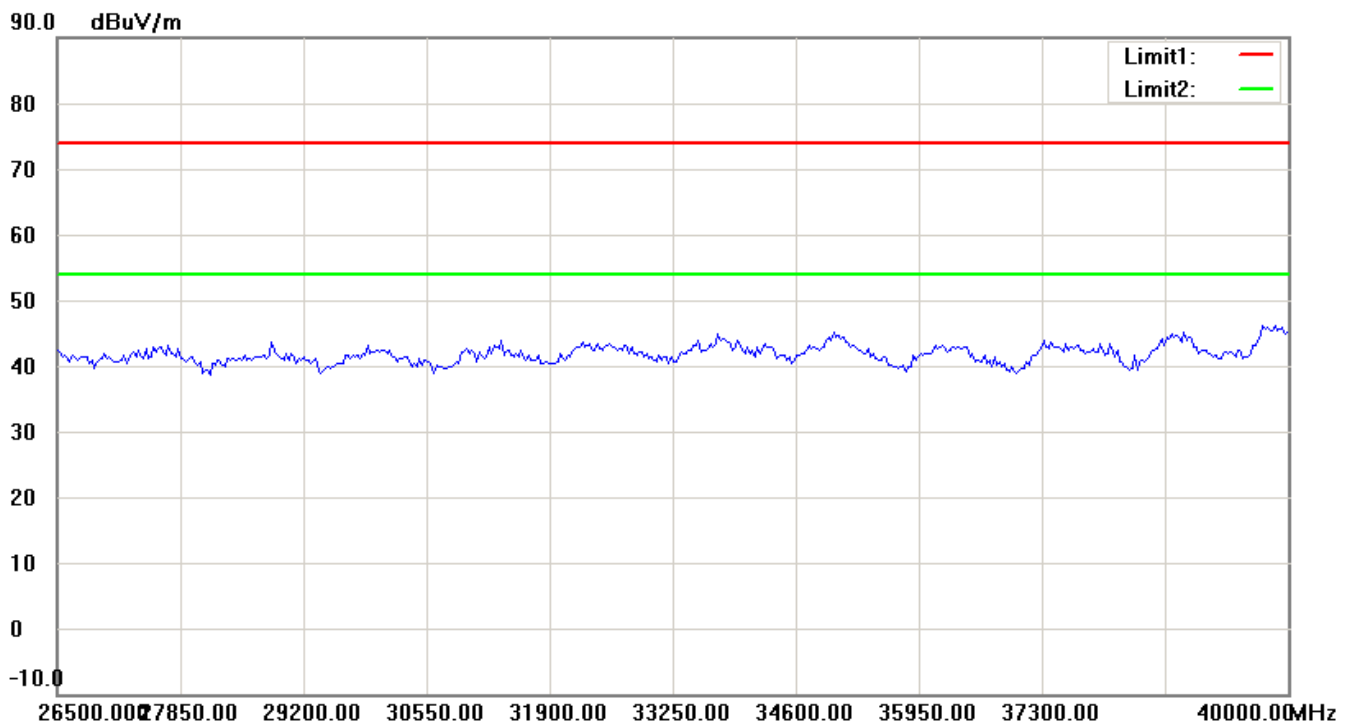
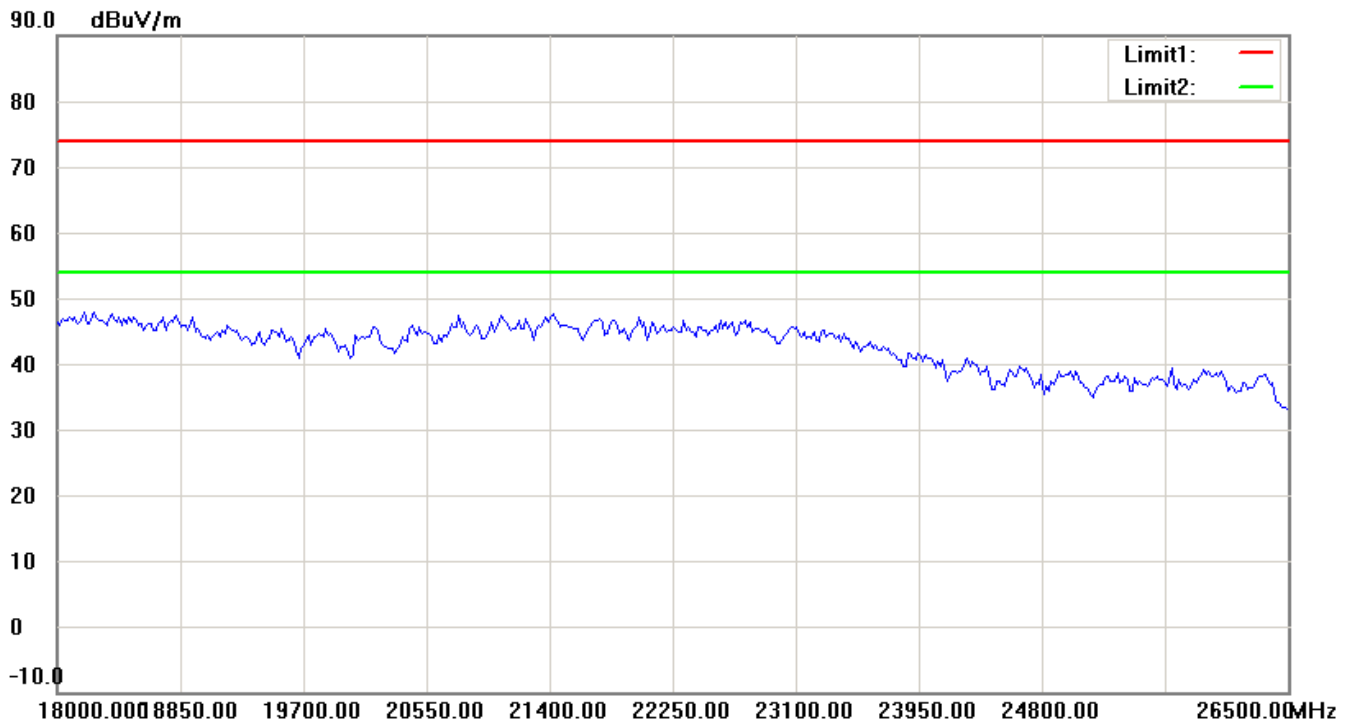
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