FCC PART 15 SUBPART C TEST REPORT

for

Ultra Rugged Mobile Computer

Model No.: PWS-8101M Series

FCC ID: M82-PWS-8101M

of

Applicant: **Advantech Co., Ltd**

Address: **1, Alley 20, Lane 26, Rueiguang Rd, Neihu District, Taipei, Taiwan**

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.: W6D20812-9514-C-1

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
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 b/g.
This report is related to FCC Part 15 C (DSSS and OFDM device).

Tester:

January 7, 2009		Danny Sung	Danny
Date	WTS-Lab.	Name	Signature

Technical responsibility for area of testing:

January 7, 2009		Chang Tse-Ming	Chang Tse-ming
Date	WTS	Name	Signature

1.2 Testing laboratory

1.2.1 Location

OATS
No.5-1, Shuang Sing Village,
LiShuei Rd., Wanli Township,
Taipei County 207, Taiwan (R.O.C.)

Company
Worldwide Testing Services (Taiwan) Co., Ltd.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA accredited number: 2732.01

FCC filed test laboratory Reg. No. 930600

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

1.3 Details of approval holder

Name:	Advantech Co., Ltd
Street:	1, Alley 20, Lane 26, Rueiguang Rd, Neihu District,
Town:	Taipei
Country:	TAIWAN
Telephone:	+886-2-2792-7818
Fax:	+886-2-2794-7333

1.4 Application details

Date of receipt of test item:	./.
Date of test:	from November 01, 2007 to January 2, 2008

1.5 General information of Test item

Type of test item:	Ultra Rugged Mobile Computer
Model Number:	PWS-8101M Series
Brand Name:	./.
Multi-listing model number:	./.
Photos:	See Appendix

Technical data

Frequency band:	2.4 GHz – 2.4835 GHz
Frequency (ch 1 or A):	2.412 GHz
Frequency (ch 6 or B):	2.437 GHZ
Frequency (ch 11 or C):	2.462 GHz
Number of Channels:	11
Operation modes:	duplex
Modulation Type:	DSSS / OFDM
Fixed point-to-point operation:	☐ Yes / ☒ No
Type of Antenna:	Embedded Antenna
Antenna gain:	7 dBi
Power supply:	DC 3.3 V from PC
Emission designator:	DSSS: 16M3G1D OFDM: 16M6W7D

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Host device: none

Classification:

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

Transmitter **Unom**

Mode A (DSSS)
Power (ch 1 or A): Conducted: 20.87 dBm
Power (ch 6 or B): Conducted: 20.11 dBm
Power (ch 11 or C): Conducted: 20.19 dBm

Mode B (OFDM)
Power (ch 1 or A): Conducted: 17.36 dBm
Power (ch 6 or B): Conducted: 16.63 dBm
Power (ch 11 or C): Conducted: 16.80 dBm

Manufacturer: (if applicable)

Name: ACA Digital Corporation
Street: 17F, NO. 866-7 Zhongzheng Rd.,
Town: Zhonghe City Taipei county, 235
Country: Taiwan, R.O.C.

Additional information: The sample is using WLAN technology according IEEE 802.11 b/g. There are two testing modes in the test report.

Mode A: IEEE 802.11b
Mode B: IEEE 802.11g

The scheme for frequency generation, spectrum spreading, receiver parameters, synchronization procedure, and other parameters are determined by the mentioned standard above.

1.6 Test standards

Technical standard : FCC RULES SUBPART C § 15.247 (2007-10)

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:	DC 3.3 V from PC
Extreme conditions parameters:	./.

Note: This report is for WLAN part only.

Special statement: This test report is based on test report no.: W6M20710-8597-C-1.
(Model no.: WMIR-168AG/E, FCC ID: UVZWMIR-168) The relevant Circuitry, PCB Layout, Inner element, Function, and Appearance of PWS-8101M Series are exactly the same as the original model no. WMIR-168AG/E.
Therefore the test result is also based on the original test report no.: W6M20710-8597-C-1 without re-testing.

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	2007/10/15	2008/10/14
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None		Function Test	
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2007/10/15	2008/10/14
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2007/10/15	2008/10/14
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2007/5/11	2008/5/10
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2007/10/23	2009/10/22
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2007/8/2	2008/8/1
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2007/11/2	2009/11/1
ETSTW-CE 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2008/12/6
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2006/11/7	2008/11/6
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2007/10/29	2008/10/28
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2007/10/12	2009/10/11
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2007/10/29	2008/10/28
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2007/10/11	2008/10/12
ETSTW-RE 010	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070181	MOTECH	Function Test	
ETSTW-RE 011	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070165	MOTECH	Function Test	
ETSTW-RE 017	Log-Periodic Antenna	HL025	352886/001	R&S	2006/5/4	2008/5/3
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2007/11/7	2010/11/6
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2007/10/9	2008/10/8
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	EMCO	2007/6/28	2010/6/27
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2006/5/26	2008/5/25
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2006/5/26	2008/5/25
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2006/5/3	2008/5/2
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2007/10/9	2008/10/8
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2007/7/9	2008/7/8
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2007/10/16	2009/10/15
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2007/1/11	2009/1/10
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2006/5/8	2008/5/7

ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2006/5/29	2008/5/28
ETSTW-RE 047	ESA-E SERIES SPECTRUM ANALYZER	E4445A	MY46181369	Agilent	2007/7/19	2008/7/18
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2005/3/22	2008/3/21
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/2	2009/5/1
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2007/7/16	2008/7/15
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2007/7/2	2009/7/1

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 using a 50µH 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 C63.4-2003 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 dBµV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

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

The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2003 Section 13.1.2. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

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

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.
Measurements were made by Worldwide Testing Services (Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 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.

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

The formula is as follows:
Average = Peak + Duty Factor
Duty Factor = 20 log (dwell time/T)
T = 100ms when the pulse train period is over 100 ms or the period of the pulse train.

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

3 Test results (enclosure)

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

The follows is intended to leave blank.

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).

Mode A

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
T_{nom}= 23°C	V_{nom} = 3.3 V	[dBm]	[dBm]	[dBm]
		20.87	20.11	20.19

Mode B

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
T_{nom}= 23°C	V_{nom} = 3.3 V	[dBm]	[dBm]	[dBm]
		17.36	16.63	16.80

Mode A

Test condition T_{nom}= 23°C, V_{nom} = 3.3 V	Signal Field strength TX highest power mode dB μ V/m
Frequency [MHz]	--
--	

Mode B

Test condition T_{nom}= 23°C, V_{nom} = 3.3 V	Signal Field strength TX highest power mode dB μ V/m
Frequency [MHz]	--
--	

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 004 ETSTW-RE 055
Explanation: The diagrams for the peak output power measurements are included in Appendix.

3.2 Equivalent isotropic radiated power

FCC Rule: 15.247(b)(3)

EIRP = max. conducted output power + antenna gain
EIRP = 20.87 dBm + 7dBi
= 27.87 dBm
Limit: EIRP = +36 dBm

Test equipment used: ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 021 ETSTW-RE 028
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

3.3 RF Exposure Compliance Requirements

FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.
The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a “worst case” or conservative prediction.

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

S – Power Density
P – Output power ERP
R – Distance
D – Cable Loss
AG – Antenna Gain

Item	Unit	Value	Remarks
P	mW	122.17997	Peak value
D	dB		
AG	dBi	7	
G		5.0	Calculated Value
R	cm	20	Assumed value
S	mW/cm^2	0.1215	Calculated value

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm^2)
1500 – 100.000	1,0

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 ≦ 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.

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 (dwell time/ 100ms)

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

Explanation: See attached diagrams in Appendix.

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 (dwell time/100ms)

Test equipment used: ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

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

Model: PWS-8101M Series Date: 2007/12/17
Mode: 802.11b ch1 Tx Temperature: 26 °C Engineer: Derek
Polarization: Horizontal Humidity: 60 %

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3214.429	53.52	---	-2.20	51.32	---	74	54	-22.68	210	150
4817.635	61.21	53.71	-1.30	59.91	52.41	74	54	-1.59	210	150
6436.874	49.77	---	4.06	53.83	---	74	54	-20.17	205	150
7236.000	42.61	---	1.86	44.47	---	74	54	-29.53	205	150
9648.000	24.03	---	25.06	43.09	---	74	54	-30.91	200	150
12060.000	23.34	---	29.44	40.78	---	74	54	-33.22	200	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3218.437	49.20	---	-2.17	47.03	---	74	54	-26.97	200	150
4817.635	50.87	---	-1.30	49.57	---	74	54	-24.43	205	150
6436.874	44.43	---	4.06	48.49	---	74	54	-25.51	205	150
7236.000	41.76	---	1.86	43.62	---	74	54	-30.38	205	150
9648.000	23.85	---	25.06	42.91	---	74	54	-31.09	205	150
12060.000	23.75	---	29.44	41.19	---	74	54	-32.81	205	150

Registration number: W6D20812-9514-C-1
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Mode: 802.11b ch6 Tx Temperature: 26 °C Engineer: Derek
Polarization: Horizontal Humidity: 60 %

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3250.501	48.71	---	-1.95	46.76	---	74	54	-27.24	200	150
4873.748	57.86	52.71	-1.30	56.56	51.41	74	54	-2.59	200	150
6501.002	51.70	---	4.50	56.2	---	74	54	-17.80	200	150
7311.000	42.87	---	1.82	44.69	---	74	54	-29.31	200	150
9748.000	24.29	---	24.94	43.23	---	74	54	-30.77	210	150
12185.000	24.29	---	29.74	42.03	---	74	54	-31.97	210	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3250.501	47.38	---	-1.95	45.43	---	74	54	-28.57	205	150
4873.748	49.41	---	-1.30	48.11	---	74	54	-25.89	210	150
6501.002	46.20	---	4.50	50.70	---	74	54	-23.30	210	150
7311.000	42.61	---	1.82	44.43	---	74	54	-29.57	210	150
9748.000	24.27	---	24.94	43.21	---	74	54	-30.79	210	150
12185.000	23.70	---	29.74	41.44	---	74	54	-32.56	210	150

Mode: 802.11b ch11 Tx Temperature: 26 °C Engineer: Derek
Polarization: Horizontal Humidity: 60 %

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3282.565	48.72	---	-1.72	47.00	---	74	54	-27.00	200	150
4921.844	55.56	52.71	-1.21	54.35	51.50	74	54	-2.50	200	150
6565.130	51.88	---	4.70	56.58	---	74	54	-17.42	205	150
7386.000	42.74	---	1.97	44.71	---	74	54	-29.29	205	150
9848.000	23.53	---	25.49	43.02	---	74	54	-30.98	200	150
12310.000	23.85	---	30.04	41.89	---	74	54	-32.11	200	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV) Peak	Reading (dBuV) Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Result @3m (dBuV/m) Ave.	Limit @3m (dBuV/m) Peak	Limit @3m (dBuV/m) Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
3282.565	46.16	---	-1.72	44.44	---	74	54	-29.56	210	150
4921.844	49.60	---	-1.21	48.39	---	74	54	-25.61	205	150
6565.130	46.39	---	4.70	51.09	---	74	54	-22.91	205	150
7386.000	42.52	---	1.97	44.49	---	74	54	-29.51	205	150
9848.000	23.99	---	25.49	43.48	---	74	54	-30.52	210	150
12310.000	24.41	---	30.04	42.45	---	74	54	-31.55	210	150

Mode: 802.11g ch1 Tx Temperature: 26 °C Engineer: Derek
Polarization: Horizontal Humidity: 60 %

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)
3214.429	49.60	---	-2.20	47.40	---	74	54	-26.60	200	150
4825.651	55.58	52.26	-1.30	54.28	50.96	74	54	-3.04	205	150
6436.874	49.64	---	4.06	53.70	---	74	54	-20.30	200	150
7236.000	42.57	---	1.86	44.43	---	74	54	-29.57	200	150
9648.000	24.64	---	25.06	43.70	---	74	54	-30.30	200	150
12060.000	24.56	---	29.44	42.00	---	74	54	-32.00	200	150

Polarization: Vertical

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)
3218.437	47.51	---	-2.17	45.34	---	74	54	-28.66	200	150
4817.635	46.14	---	-1.30	44.84	---	74	54	-29.16	200	150
6436.874	45.16	---	4.06	49.22	---	74	54	-24.78	200	150
7236.000	41.80	---	1.86	43.66	---	74	54	-30.34	200	150
9648.000	24.21	---	25.06	43.27	---	74	54	-30.73	200	150
12060.000	23.76	---	29.44	41.20	---	74	54	-32.80	200	150

Mode: 802.11g ch6 Tx Temperature: 26 °C Engineer: Derek
Polarization: Horizontal Humidity: 60 %

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)
3250.501	49.44	---	-1.95	47.49	---	74	54	-26.51	200	150
4873.748	51.80	---	-1.30	50.50	---	74	54	-23.50	200	150
6501.002	52.25	---	4.50	56.75	---	74	54	-17.25	200	150
7311.000	42.77	---	1.82	44.59	---	74	54	-29.41	200	150
9748.000	23.95	---	24.94	42.89	---	74	54	-31.11	205	150
12185.000	23.76	---	29.74	41.50	---	74	54	-32.50	205	150

Polarization: Vertical

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)
3250.501	47.08	---	-1.95	45.13	---	74	54	-28.87	205	150
4873.748	44.33	---	-1.30	43.03	---	74	54	-30.97	200	150
6501.002	46.34	---	4.50	50.84	---	74	54	-23.16	200	150
7311.000	42.59	---	1.82	44.41	---	74	54	-29.59	200	150
9748.000	23.69	---	24.94	42.63	---	74	54	-31.37	200	150
12185.000	24.01	---	29.74	41.75	---	74	54	-32.25	200	150

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Mode: 802.11g ch11 Tx Temperature: 26 °C Engineer: Derek
Polarization: Horizontal Humidity: 60 %

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)
3282.565	50.12	---	-1.72	48.40	---	74	54	-25.60	205	150
4921.844	50.25	---	-1.21	49.04	---	74	54	-24.96	200	150
6565.130	52.94	---	4.70	57.64	---	74	54	-16.36	200	150
7386.000	42.83	---	1.97	44.80	---	74	54	-29.20	200	150
9848.000	23.35	---	25.49	42.84	---	74	54	-31.16	210	150
12310.000	24.56	---	30.04	42.60	---	74	54	-31.40	210	150

Polarization: Vertical

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)
3282.565	46.57	---	-1.72	44.85	---	74	54	-29.15	210	150
4921.844	44.03	---	-1.21	42.82	---	74	54	-31.18	210	150
6565.130	47.24	---	4.70	51.94	---	74	54	-22.06	210	150
7386.000	42.81	---	1.97	44.78	---	74	54	-29.22	210	150
9848.000	23.63	---	25.49	43.12	---	74	54	-30.88	210	150
12310.000	24.11	---	30.04	42.15	---	74	54	-31.85	210	150

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. See attached diagrams in Appendix.

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

Test equipment used: ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE029
ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

3.6 Radiated Emission on the band edge

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

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

Mode A

Test conditions		Attenuation at or outside band-edges	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 3.3 V	38.93 dB	50.90 dB

Mode B

Test conditions		Attenuation at or outside band-edges	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 3.3 V	37.43 dB	48.48 dB

Limit:

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

Test equipment used: ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Explanation: Please see attached diagram as appendix.

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.

Mode A

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T_{nom}= 23°C	V_{nom} = 3.3 V	10.929487179 MHz	10.512820513 MHz	10.929487179 MHz

Mode B

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T_{nom}= 23°C	V_{nom} = 3.3 V	16.602564103 MHz	16.570512821 MHz	16.602564103 MHz

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 004 ETSTW-RE 055

Explanation: See attached diagrams in Appendix.

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.

Mode A

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
T_{nom}= 23°C	V_{nom} = 3.3 V	-11.17	-11.87	-11.82

Mode B

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
T_{nom}= 23°C	V_{nom} = 3.3 V	-16.49	-17.22	-17.14

Limits:

Frequency Range MHz	dBm
902-928	8
2400-2483,5	8
5725-5850	8

Test equipment used: ETSTW-RE 004 ETSTW-RE 055

Explanation: See attached diagrams in Appendix.

3.9 Radiated Emission from Digital Part

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

Model: PWS-8101M Series Date: 2007/12/18
Mode: 802.11b ch1 Tx Mode Temperature: 26 °C Engineer: Derek
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)
266.994	13.05	peak	14.35	27.40	46.00	-18.60	225	150
401.002	18.81	peak	17.81	36.62	46.00	-9.38	215	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
172.305	11.88	peak	14.75	26.63	43.50	-16.87	250	150
401.002	14.38	peak	17.81	32.19	46.00	-13.81	220	150

Mode: 802.11b ch6 Tx Mode Temperature: 26 °C Engineer: Derek
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)
267.535	13.48	peak	14.37	27.85	46.00	-18.15	220	150
401.002	18.25	peak	17.81	36.06	46.00	-9.94	215	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
172.305	10.50	peak	14.75	25.25	43.50	-18.25	250	150
401.002	14.70	peak	17.81	32.51	46.00	-13.49	250	150

Mode: 802.11b ch11 Tx Mode Temperature: 26 °C Engineer: Derek
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)
266.453	14.30	peak	14.33	28.63	46.00	-17.37	225	150
401.002	18.38	peak	17.81	36.19	46.00	-9.81	250	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
277.274	12.94	peak	14.74	27.68	46.00	-18.32	250	150
401.002	14.57	peak	17.81	32.38	46.00	-13.62	225	150

Mode: 802.11g ch1 Tx Mode Temperature: 26 °C Engineer: Derek
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)
272.405	11.91	peak	14.55	26.46	46.00	-19.54	215	150
401.002	14.47	peak	17.81	32.28	46.00	-13.72	225	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.599	11.11	peak	14.99	26.10	43.50	-17.40	220	150
612.826	10.83	peak	22.24	33.07	46.00	-12.93	205	150

Mode: 802.11g ch6 Tx Mode Temperature: 26 °C Engineer: Derek
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)
266.453	13.06	peak	14.33	27.39	46.00	-18.61	215	150
401.002	15.09	peak	17.81	32.90	46.00	-13.10	215	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
172.305	11.52	peak	14.75	26.27	43.50	-17.23	215	150
401.002	14.60	peak	17.81	32.41	46.00	-13.59	220	150

Mode: 802.11g ch11 Tx Mode Temperature: 26 °C Engineer: Derek
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)
277.274	12.96	peak	14.74	27.70	46.00	-18.30	220	150
401.002	17.46	peak	17.81	35.27	46.00	-10.73	235	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
169.058	10.53	peak	15.02	25.55	43.50	-17.95	215	150
401.002	14.58	peak	17.81	32.39	46.00	-13.61	215	150

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. See attached diagrams in Appendix.

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

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

Test equipment used: ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

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.

Model: PWS-8101M Series Date: 2007/12/10
Mode: Temperature: 26 °C Engineer:
Polarization: N Humidity: 60 % Brian

Frequency	Reading (dBuV)		Factor (dB)	Result (dBuV)		Limit (dBuV)		Margin
(MHz)	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	(dB)
0.1733	26.03	19.47	10.10	36.13	29.57	64.8	54.8	-25.23
0.4063	26.21	14.66	10.10	36.31	24.76	57.72	47.72	-21.41
0.8100	20.41	13.10	10.10	30.51	23.20	56.00	46.00	-22.8
2.2150	26.61	2.62	10.10	36.71	12.72	56.00	46.00	-19.29
3.6600	18.62	7.55	10.10	28.72	17.65	56.00	46.00	-27.28
19.7778	15.82	5.98	10.10	25.92	16.08	60.00	50.00	-33.92

Polarization: L1

Frequency	Reading (dBuV)		Factor (dB)	Result (dBuV)		Limit (dBuV)		Margin
(MHz)	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	(dB)
0.1504	11.61	8.24	10.10	21.71	18.34	65.98	55.98	-37.64
0.4662	28.51	20.05	10.10	38.61	30.15	56.58	46.58	-16.43
0.6400	25.92	19.61	10.10	36.02	29.71	56.00	46.00	-16.29
2.1650	27.80	1.04	10.10	37.90	11.14	56.00	46.00	-18.10
3.5490	26.42	14.24	10.10	36.52	24.34	56.00	46.00	-19.48
19.5833	14.53	5.41	10.10	24.63	15.51	60.00	50.00	-34.49

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, AVG = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. See attached diagrams in Appendix.

Limits:

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

Test equipment used:ETSTW-CE 001 ETSTW-CE 003 ETSTW-CE 004 ETSTW-CE 006 ETSTW-CE 011

Appendix

A Measurement diagrams

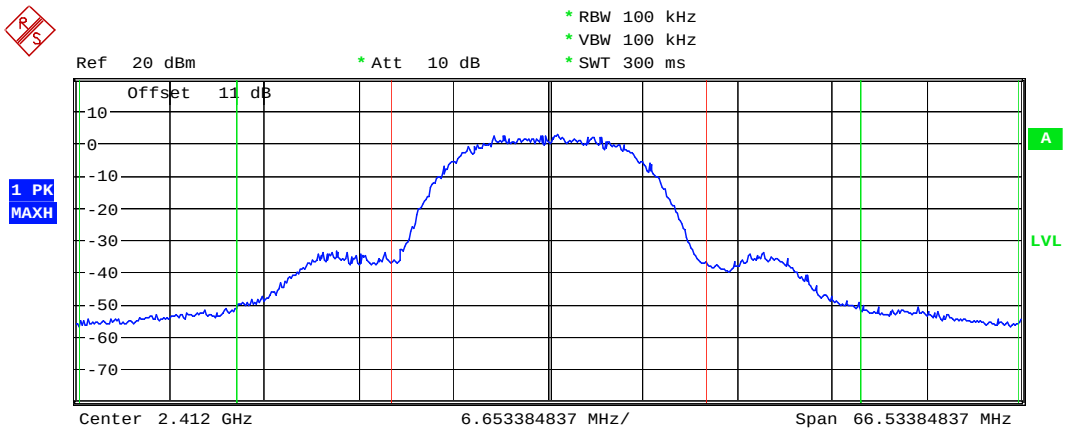
1. Peak Output Power
2. Spurious Emission Radiated
3. Band Edge Measurement
4. Minimum 6dB Bandwidth
5. Peak Power Spectral Density
6. Power Line Conducted Emission

B Photos

1. EUT Photos
2. Set Up Photo of Radiated Emission
3. Set Up Photo of Conducted Emission

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Peak Output Power

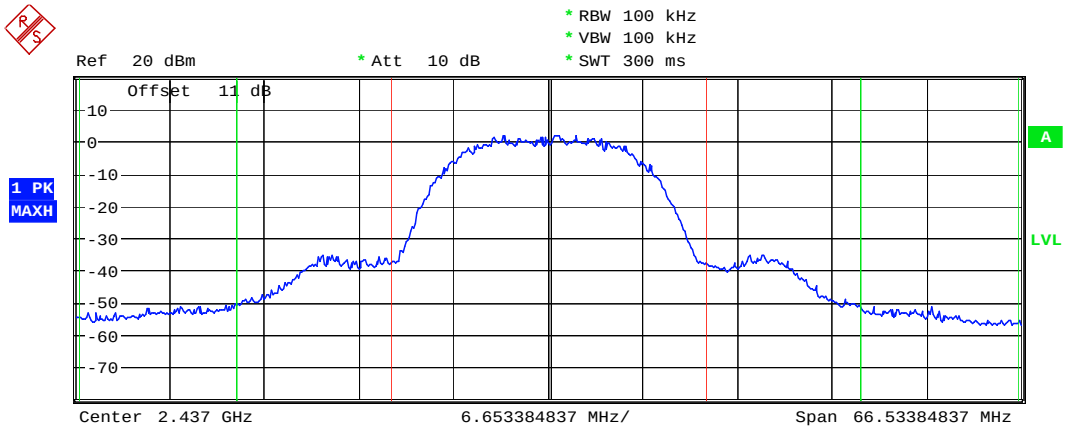


Tx Channel		**WLAN 802.11B**	
Bandwidth	22 MHz	Power	20.87 dBm
Adjacent Channel			
Bandwidth	11 MHz	Lower	-38.82 dB
Spacing	16.5 MHz	Upper	-39.78 dB
Alternate Channel			
Bandwidth	11 MHz	Lower	-55.08 dB
Spacing	27.5 MHz	Upper	-54.61 dB

MAX OUTPUT POWER 802.11B CH1

Date: 7.NOV.2007 05:40:08

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

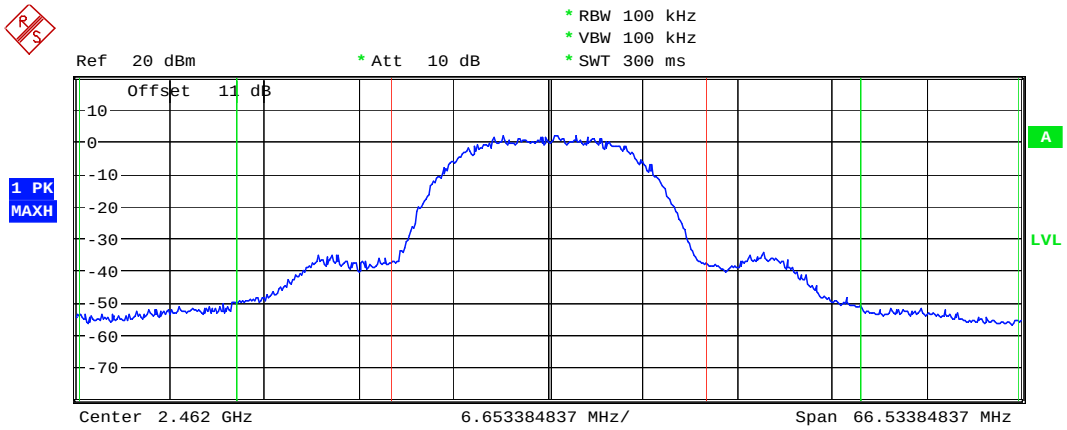


Tx Channel		**WLAN 802.11B**	
Bandwidth	22 MHz	Power	20.11 dBm
Adjacent Channel		Lower	-39.64 dB
Bandwidth	11 MHz	Upper	-39.97 dB
Spacing	16.5 MHz		
Alternate Channel		Lower	-53.42 dB
Bandwidth	11 MHz	Upper	-54.43 dB
Spacing	27.5 MHz		

MAX OUTPUT POWER 802.11B CH6

Date: 7.NOV.2007 05:40:35

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

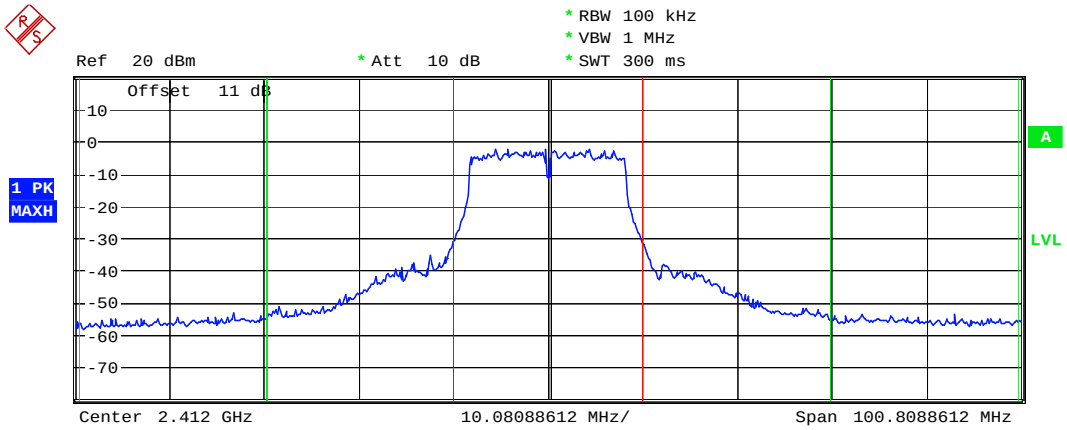


Tx Channel		**WLAN 802.11B**	
Bandwidth	22 MHz	Power	20.19 dBm
Adjacent Channel		Lower	-39.85 dB
Bandwidth	11 MHz	Upper	-39.74 dB
Spacing	16.5 MHz		
Alternate Channel		Lower	-53.49 dB
Bandwidth	11 MHz	Upper	-54.30 dB
Spacing	27.5 MHz		

MAX OUTPUT POWER 802.11B CH11

Date: 7.NOV.2007 05:41:04

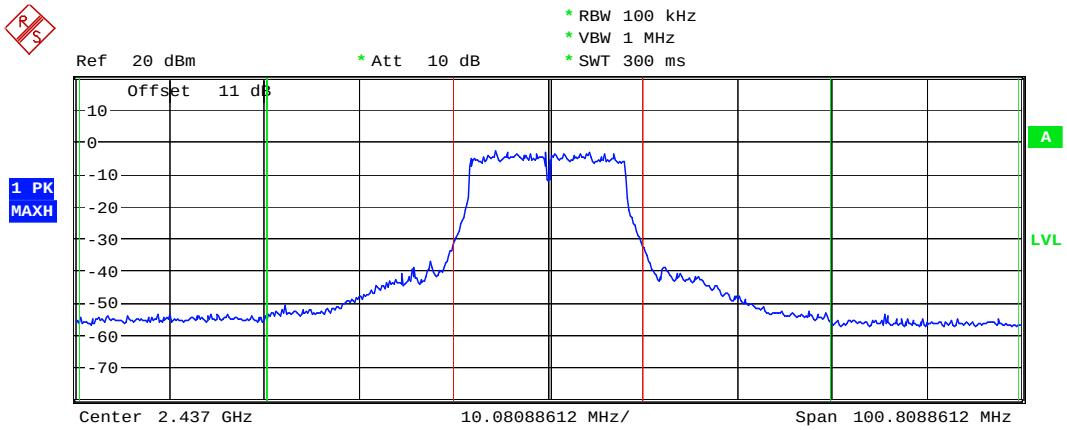
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



Tx Channel		**WLAN 802.11A**	
Bandwidth	20 MHz	Power	17.36 dBm
Adjacent Channel		Lower	-36.92 dB
Bandwidth	20 MHz	Upper	-37.65 dB
Spacing	20 MHz		
Alternate Channel		Lower	-50.95 dB
Bandwidth	20 MHz	Upper	-50.58 dB
Spacing	40 MHz		

MAX OUTPUT POWER 802.11G CH1
Date: 7.NOV.2007 05:36:52

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

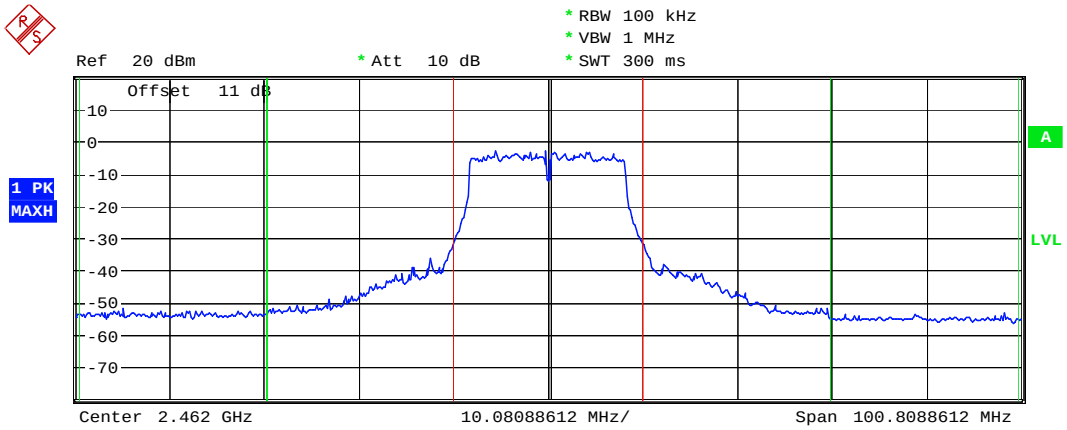


Tx Channel		**WLAN 802.11A**	
Bandwidth	20 MHz	Power	16.63 dBm
Adjacent Channel		Lower	-37.62 dB
Bandwidth	20 MHz	Upper	-37.83 dB
Spacing	20 MHz		
Alternate Channel		Lower	-49.26 dB
Bandwidth	20 MHz	Upper	-50.37 dB
Spacing	40 MHz		

MAX OUTPUT POWER 802.11G CH6

Date: 7.NOV.2007 05:36:30

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

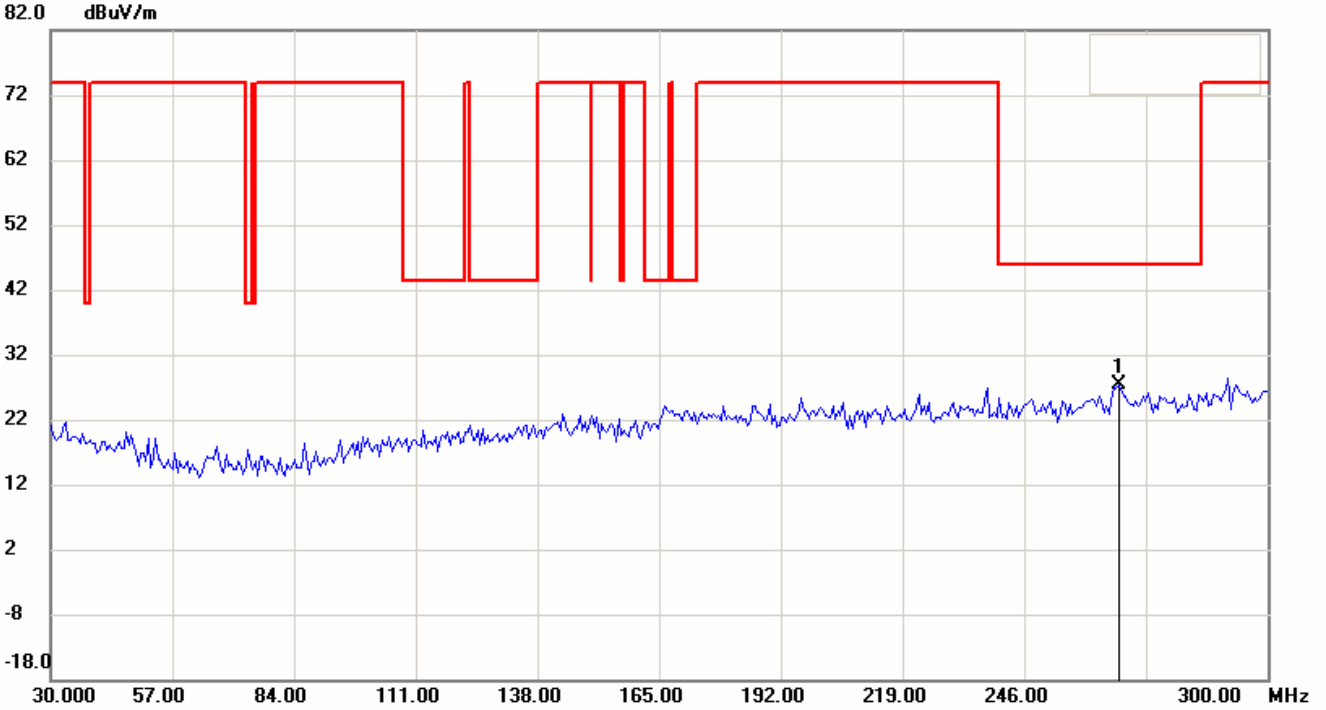


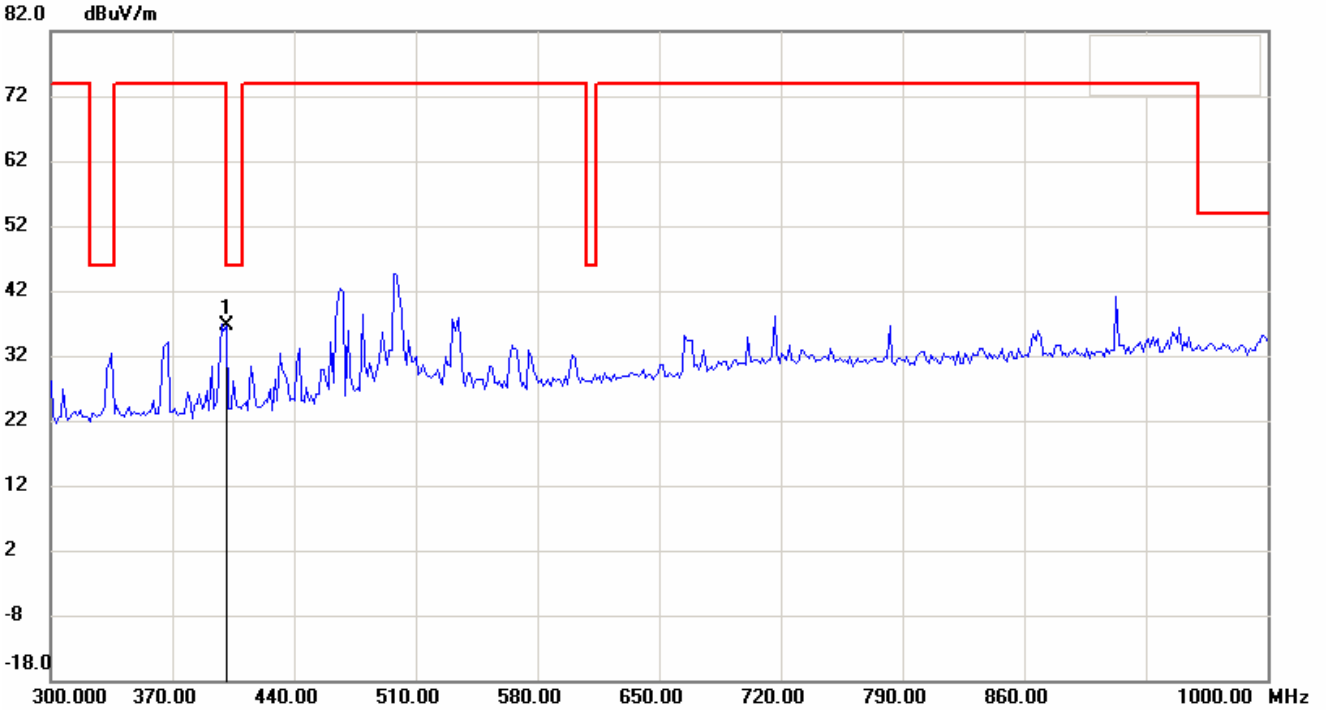
Tx Channel		**WLAN 802.11A**	
Bandwidth	20 MHz	Power	16.80 dBm
Adjacent Channel			
Bandwidth	20 MHz	Lower	-37.31 dB
Spacing	20 MHz	Upper	-37.19 dB
Alternate Channel			
Bandwidth	20 MHz	Lower	-48.08 dB
Spacing	40 MHz	Upper	-49.29 dB

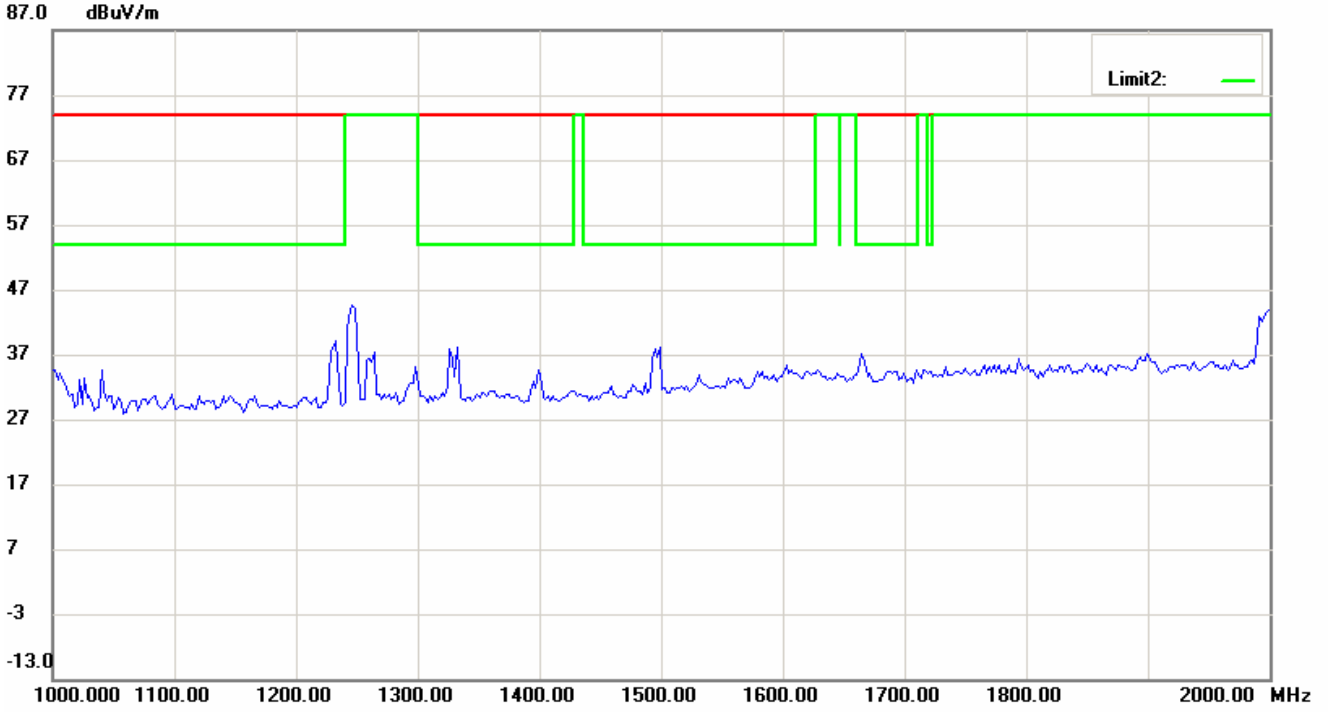
MAX OUTPUT POWER 802.11G CH11
Date: 7.NOV.2007 05:36:07

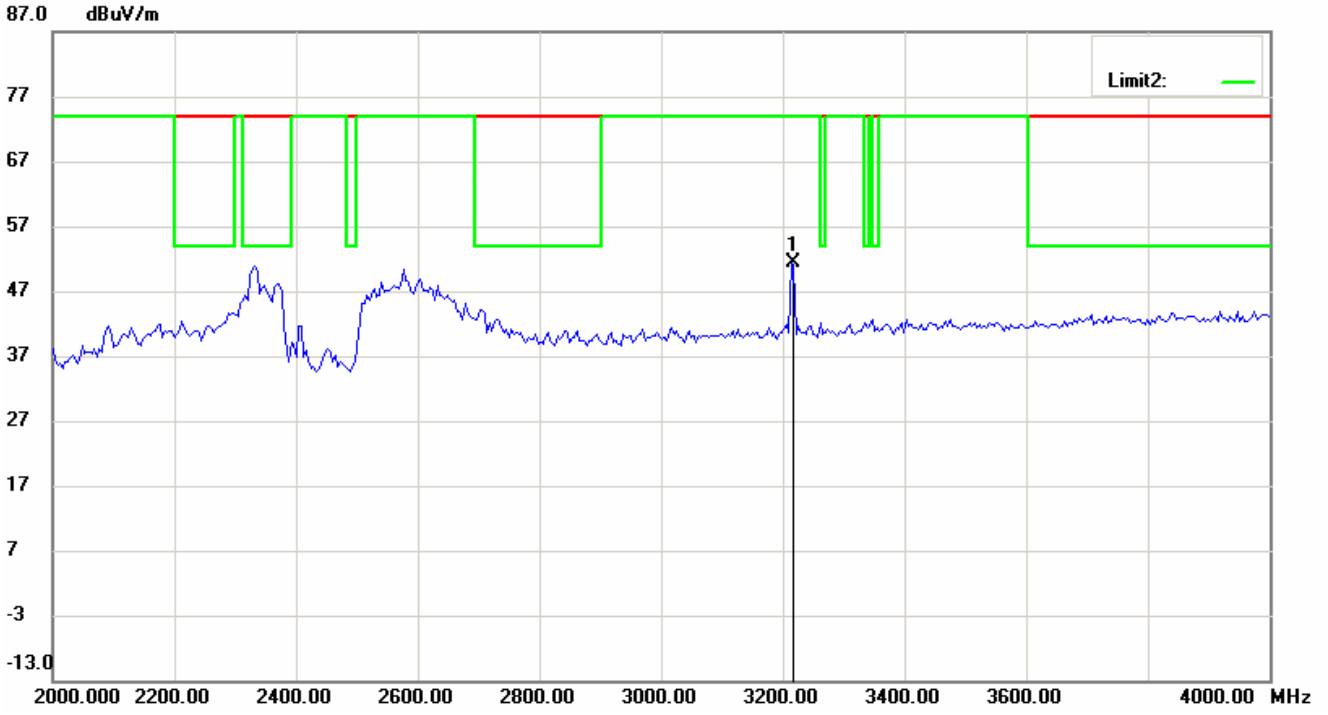
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Spurious Emission Radiated
Mode A Low channel
Antenna Polarization H

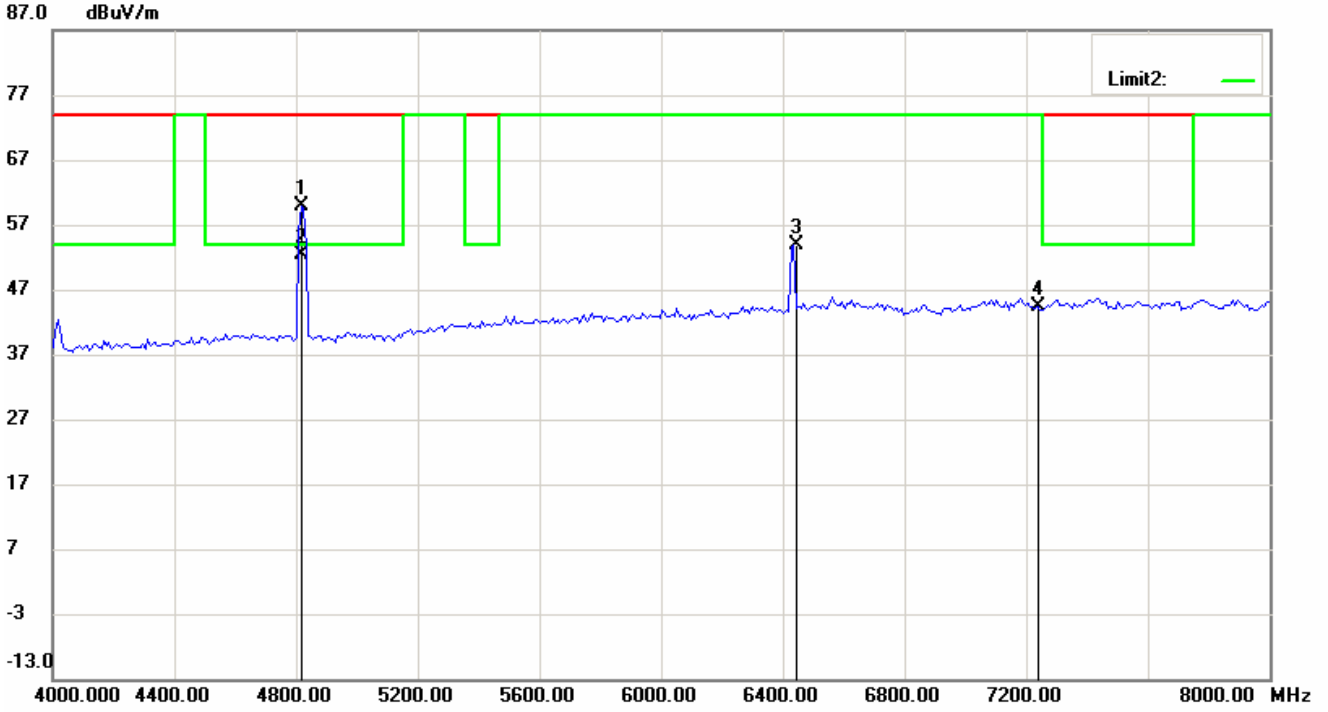


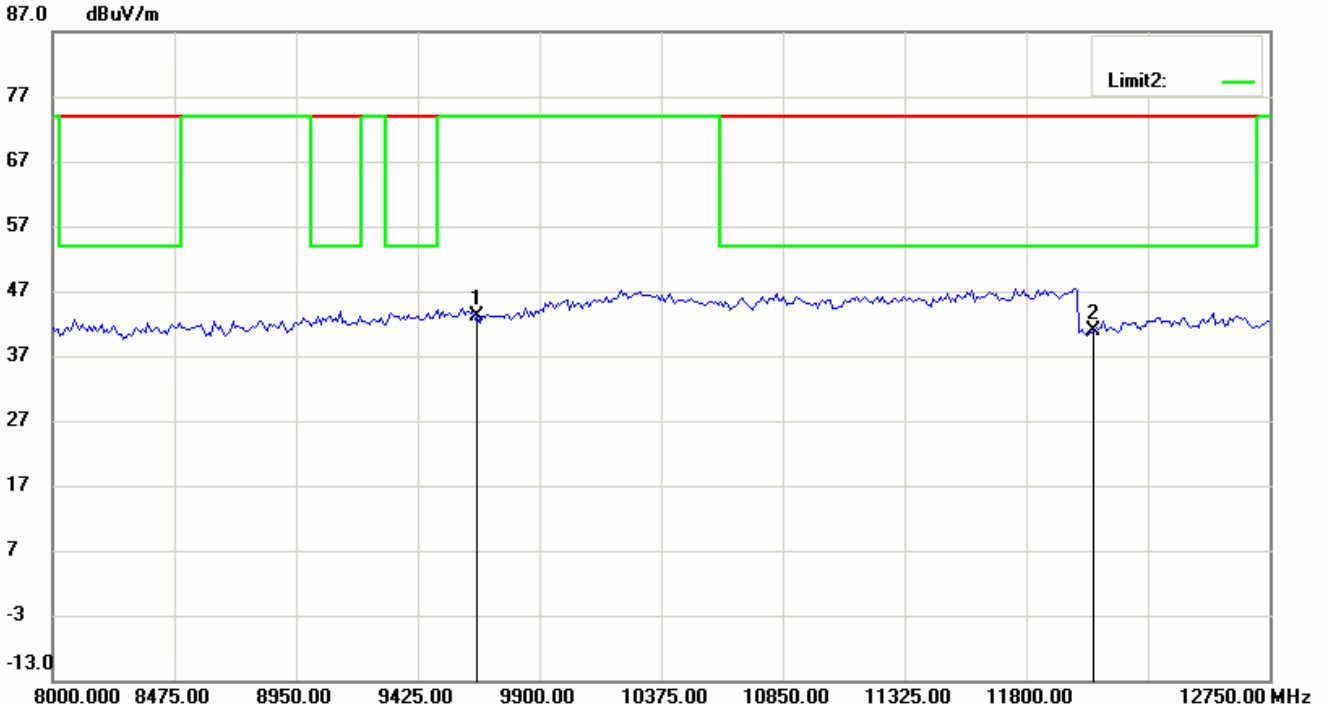



87.0 dBuV/m
Limit2:
77
67
57
47
37
27
17
7
-3
-13.0
1000.000 1100.00 1200.00 1300.00 1400.00 1500.00 1600.00 1700.00 1800.00 2000.00 MHz

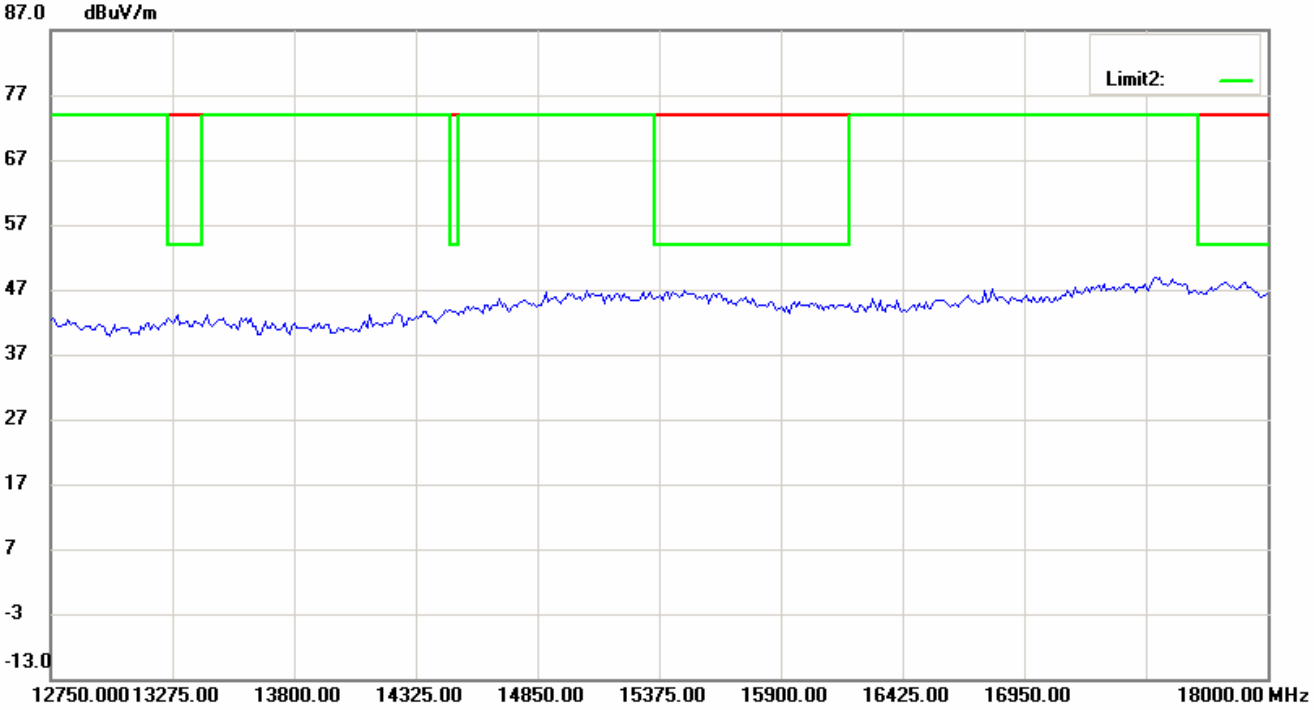

87.0 dBuV/m
Limit2:
1
77
67
57
47
37
27
17
7
-3
-13.0
2000.000 2200.00 2400.00 2600.00 2800.00 3000.00 3200.00 3400.00 3600.00 4000.00 MHz

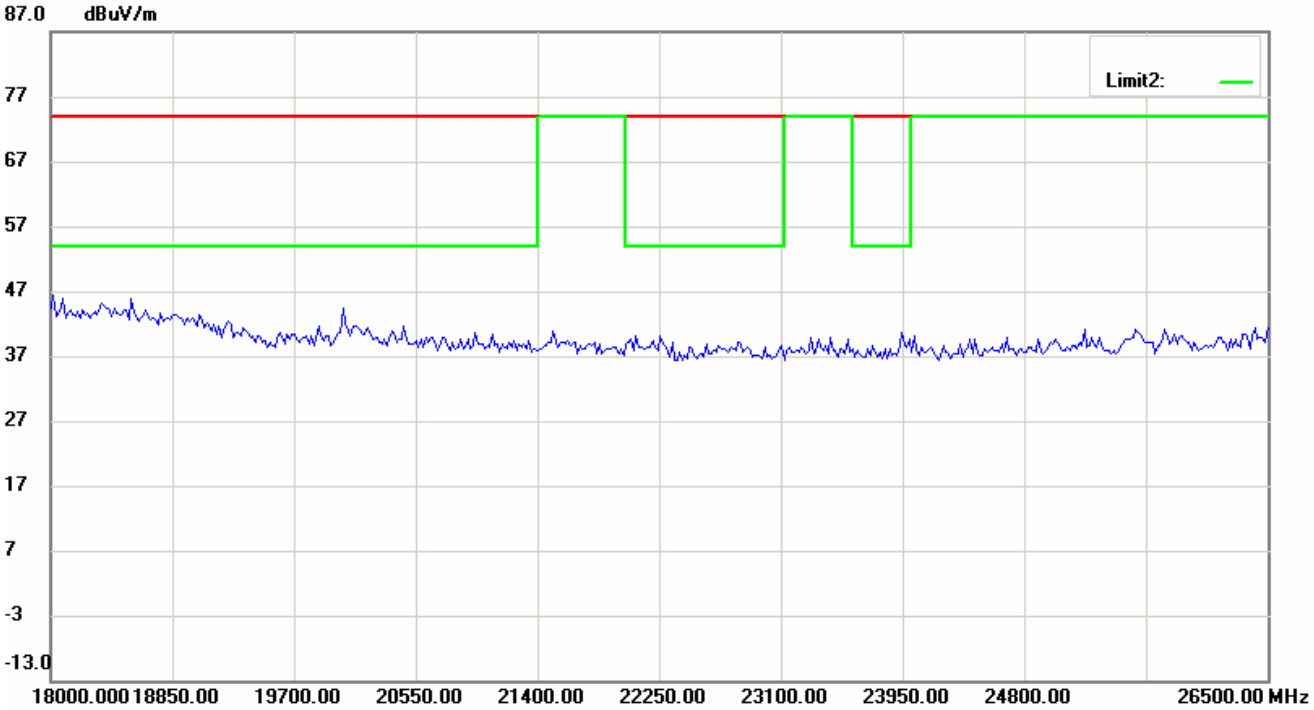
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M





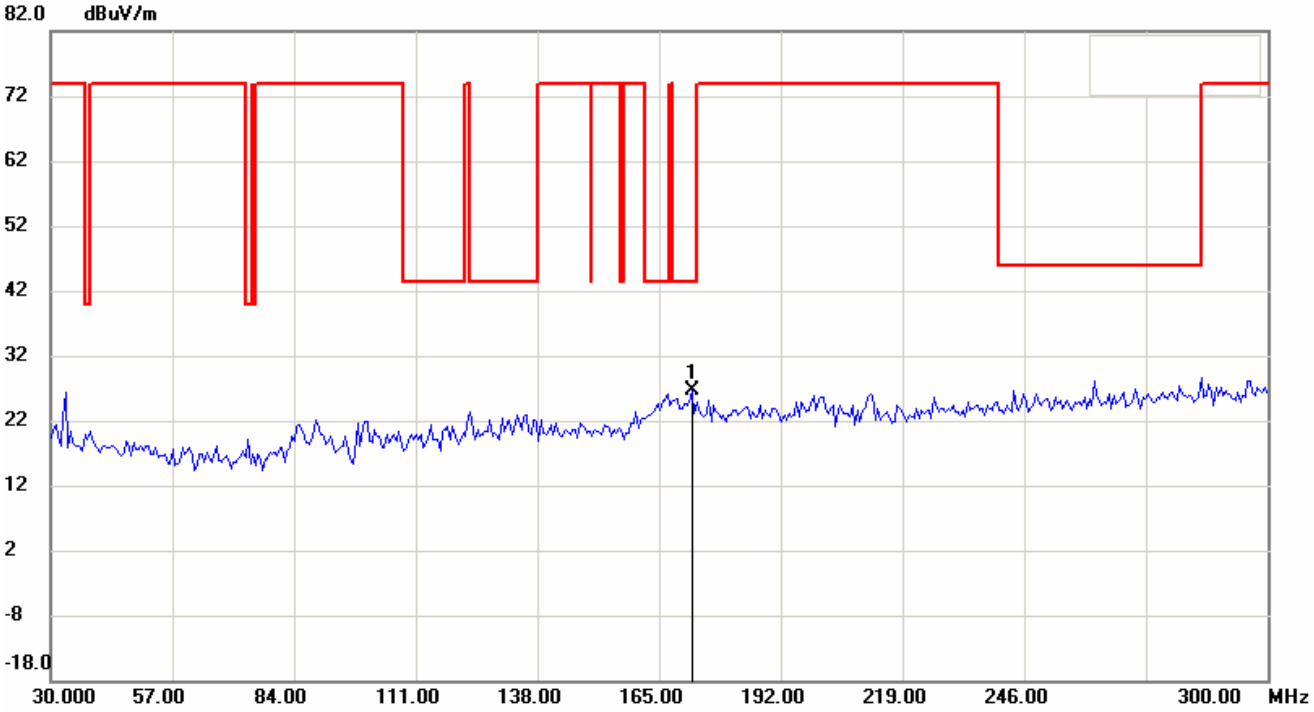
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

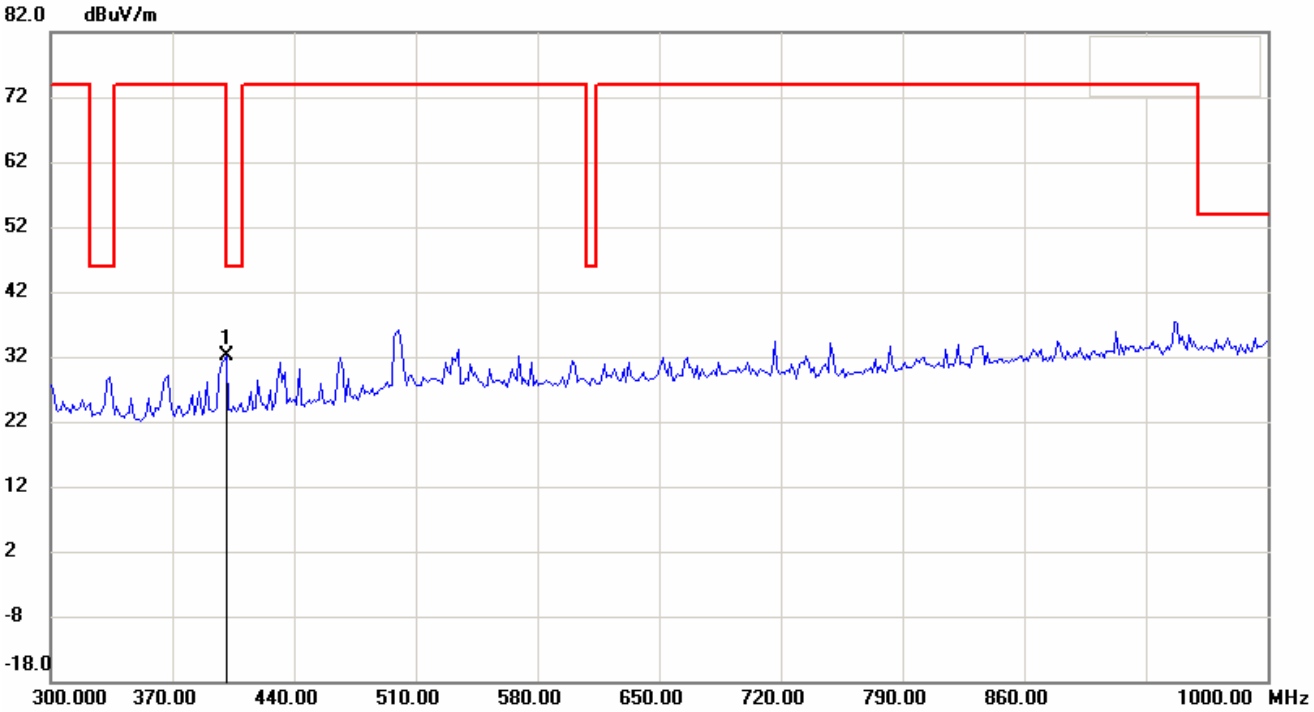




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Antenna Polarization V





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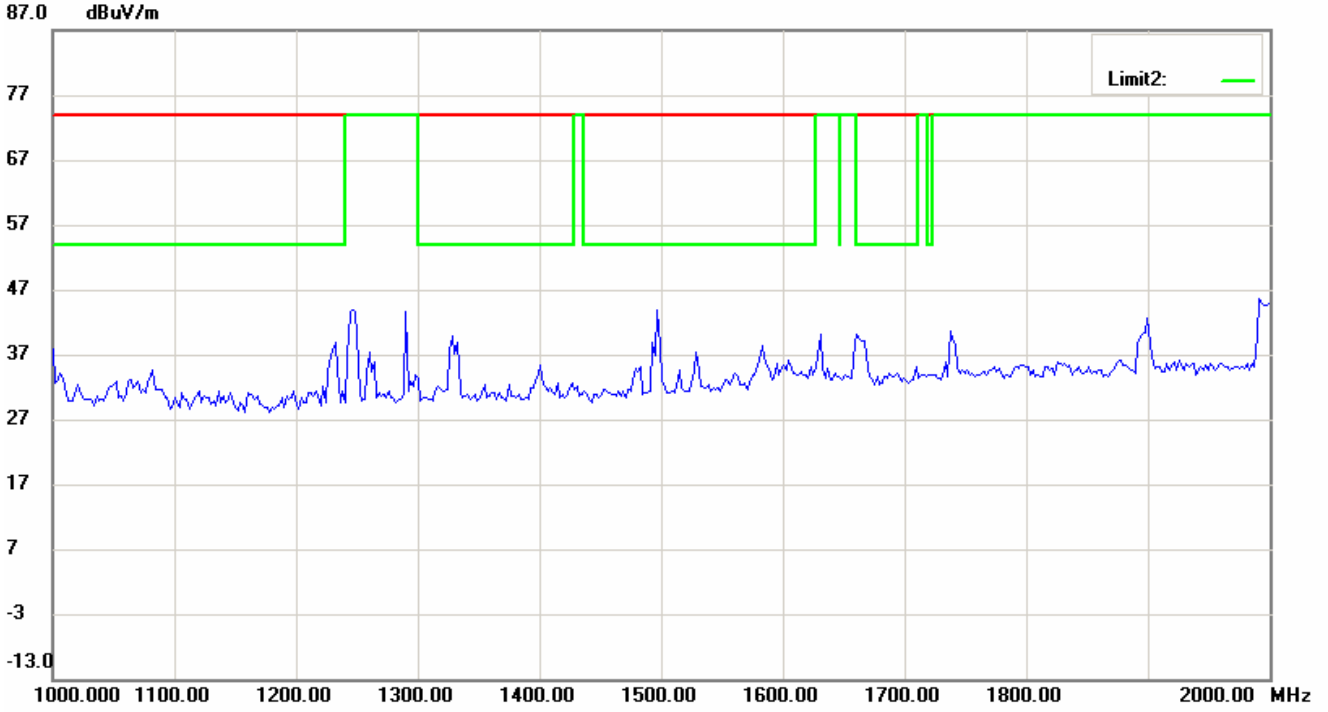

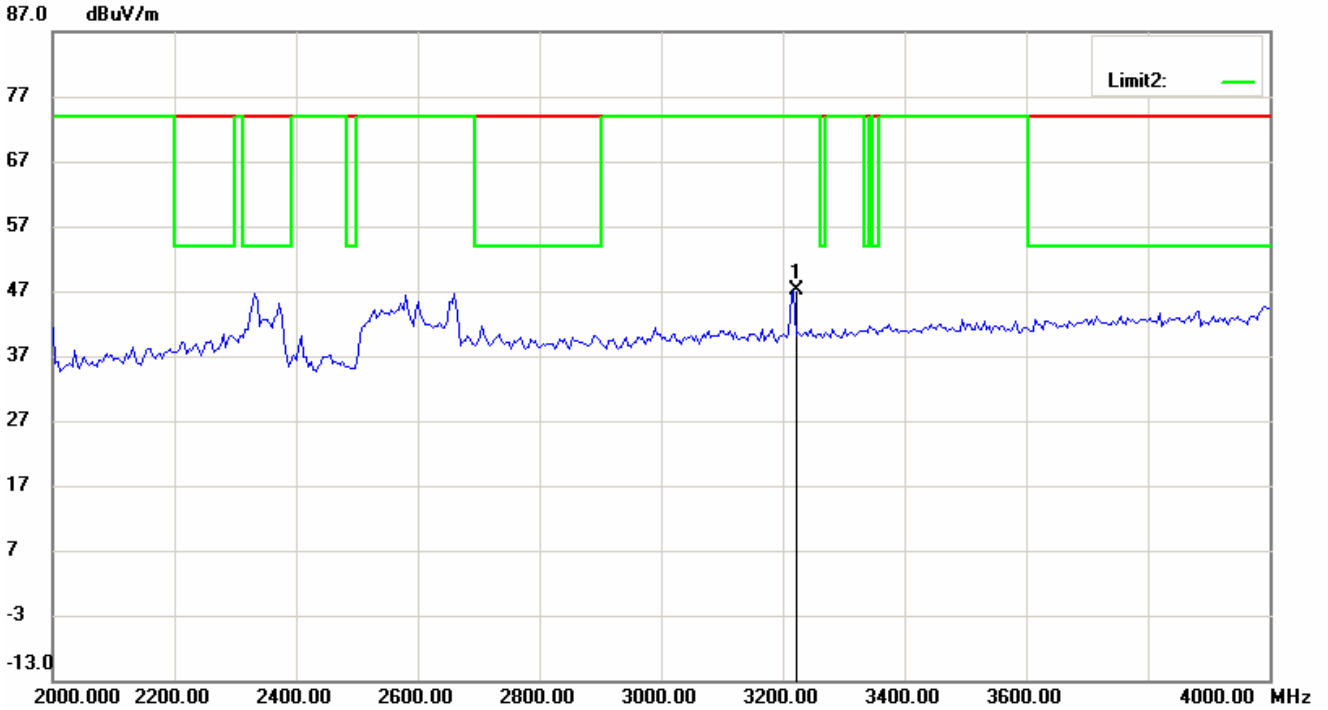

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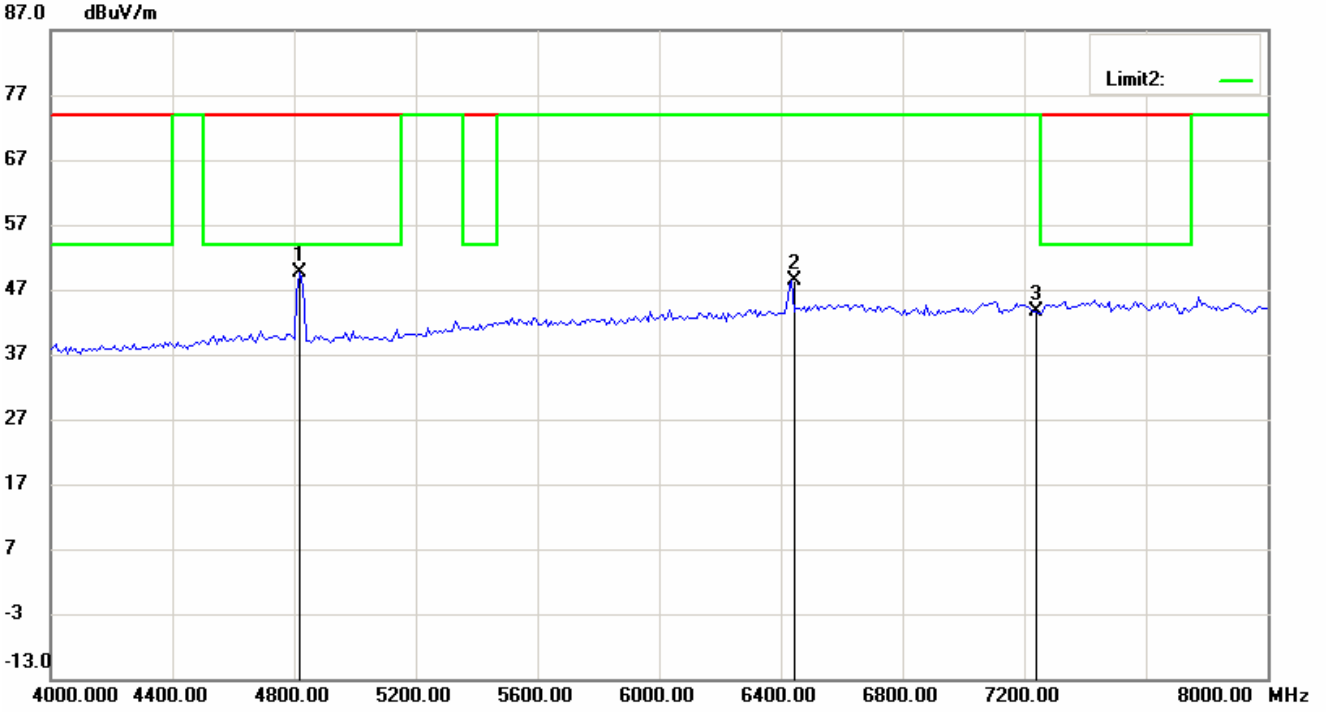

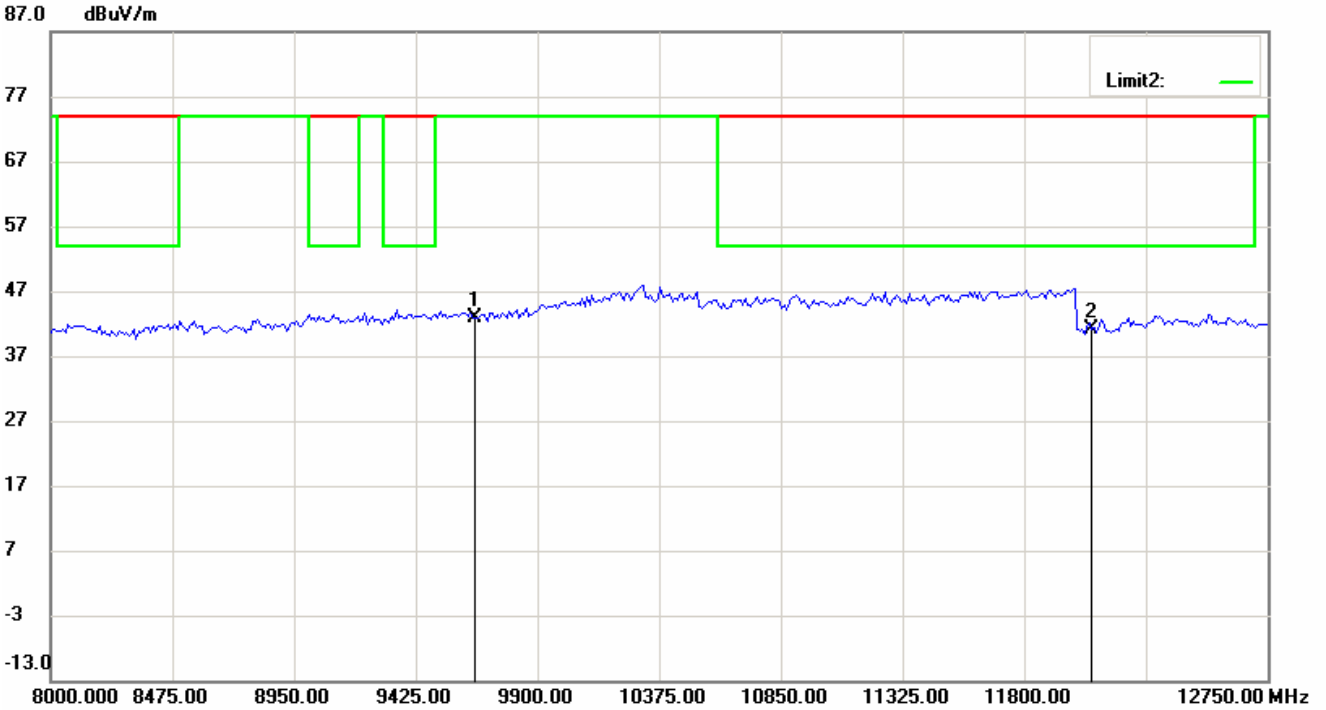

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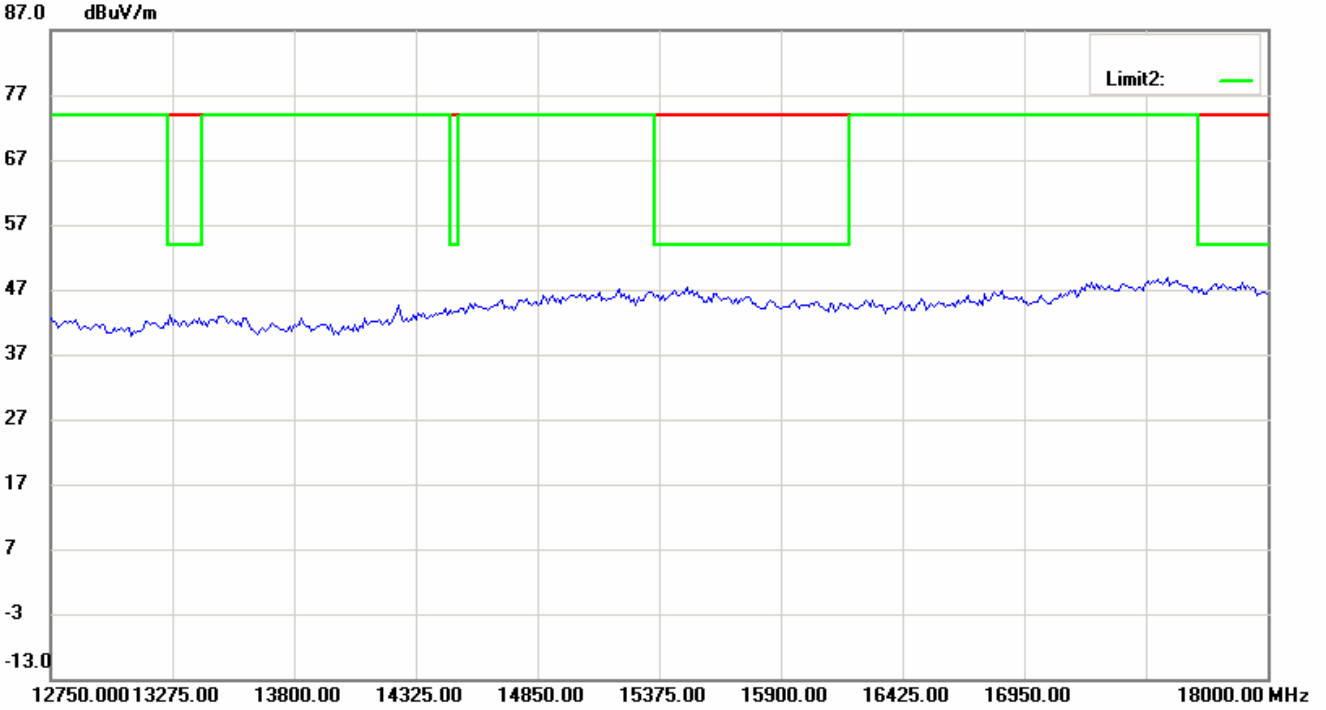
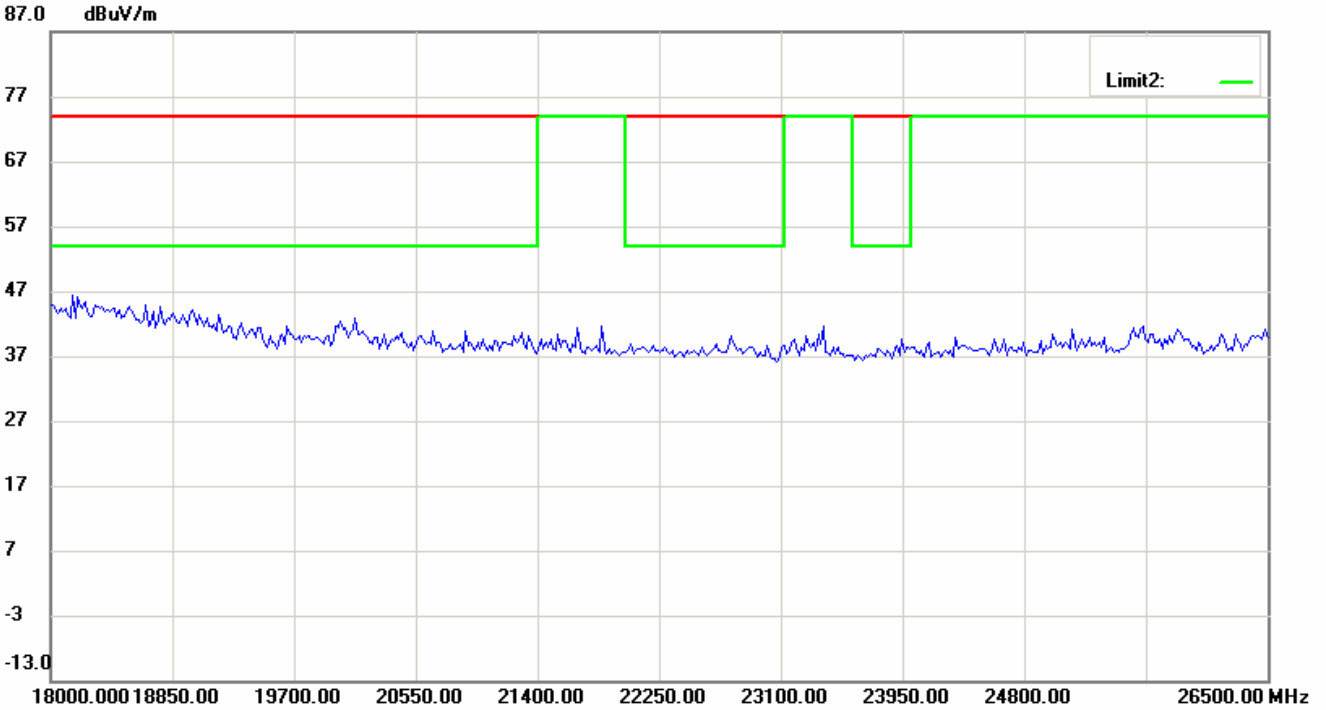
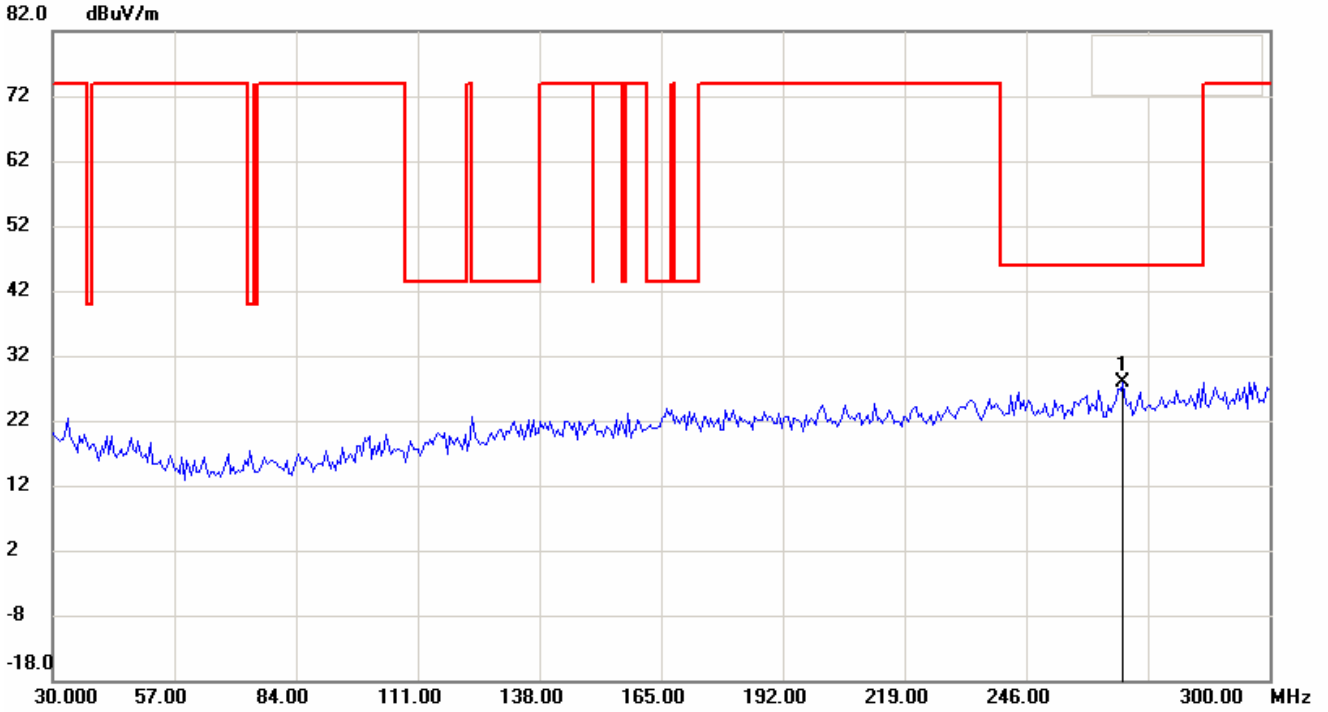


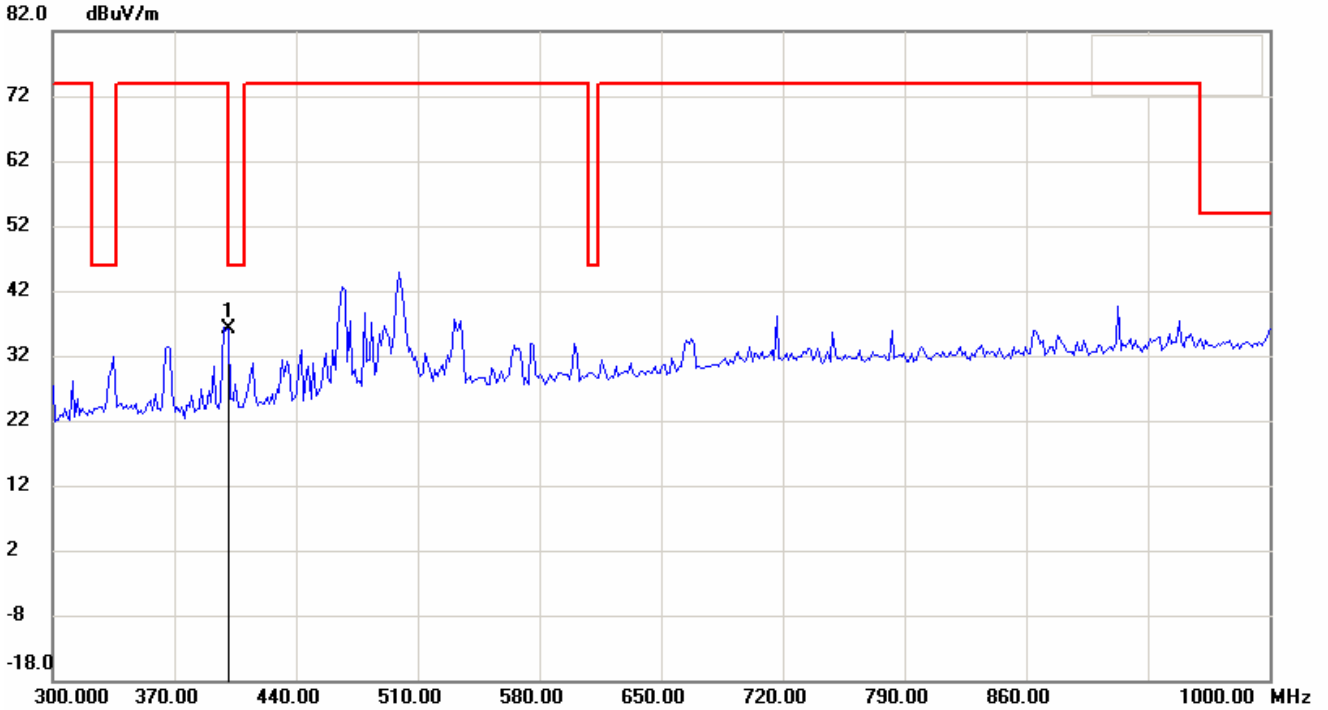


Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Middle channel

Antenna Polarization H





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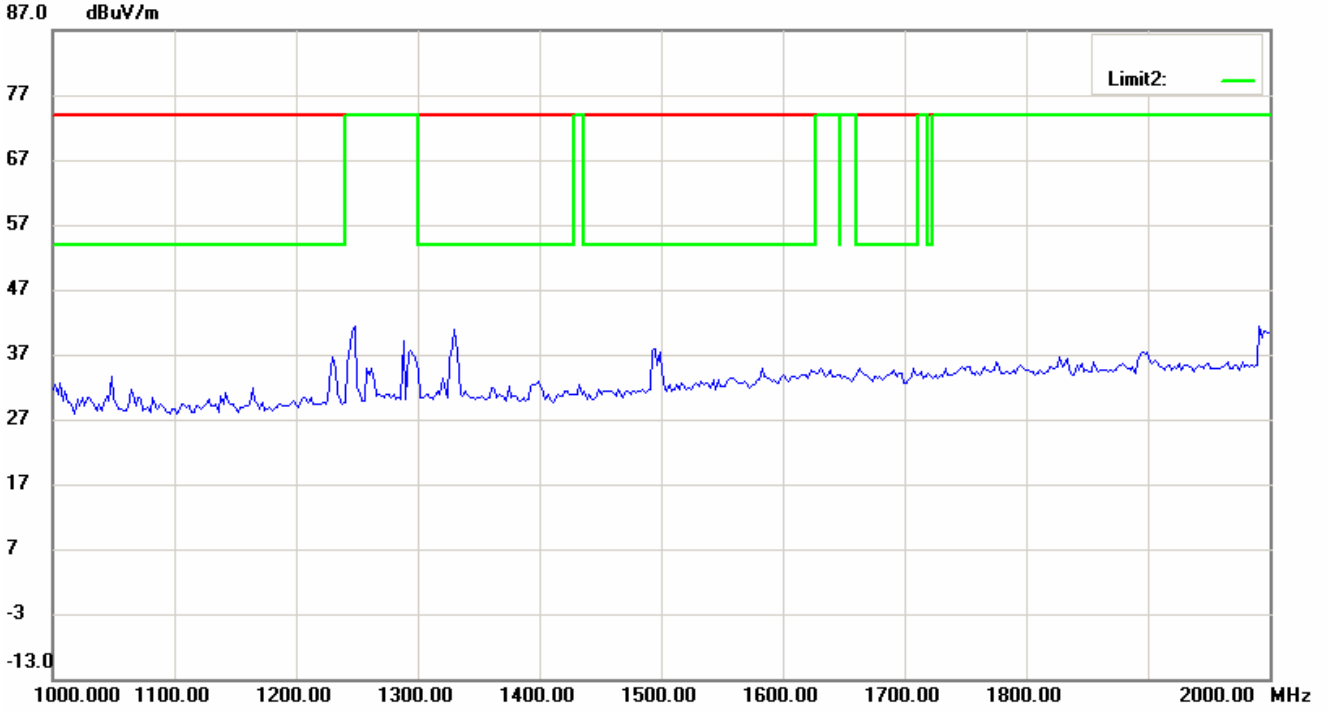

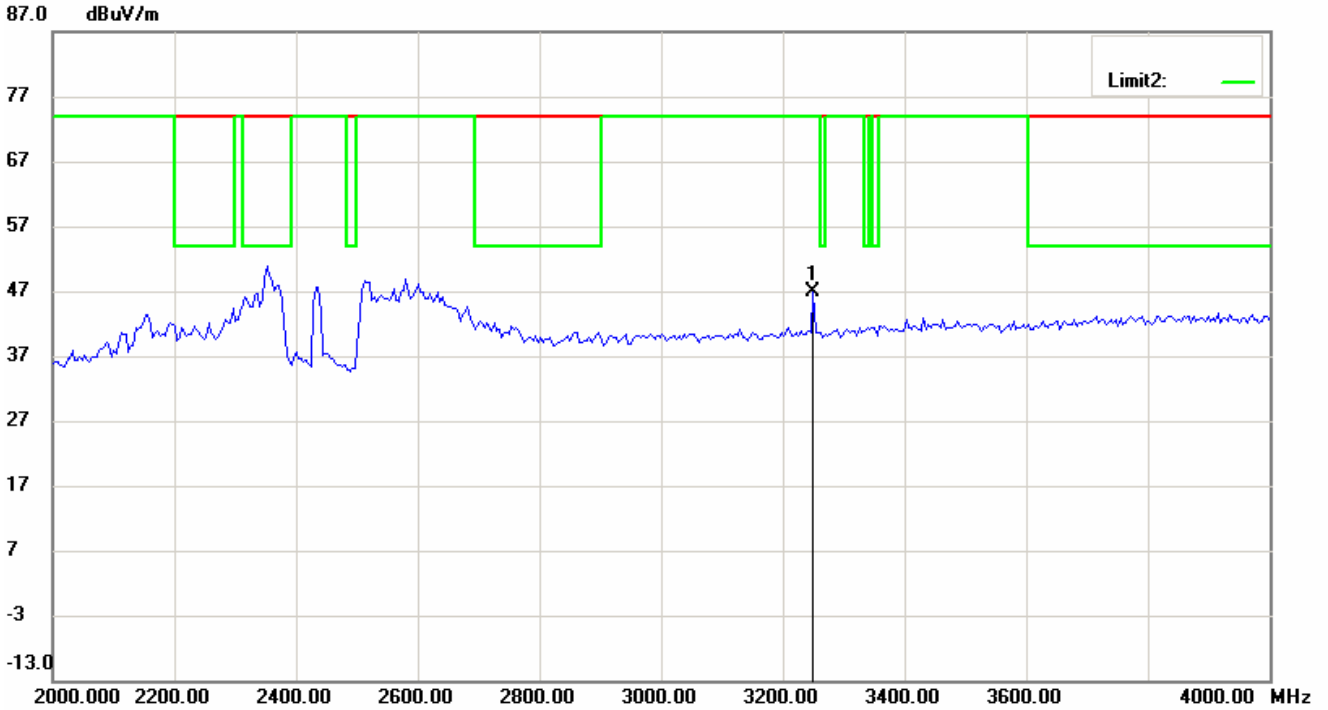

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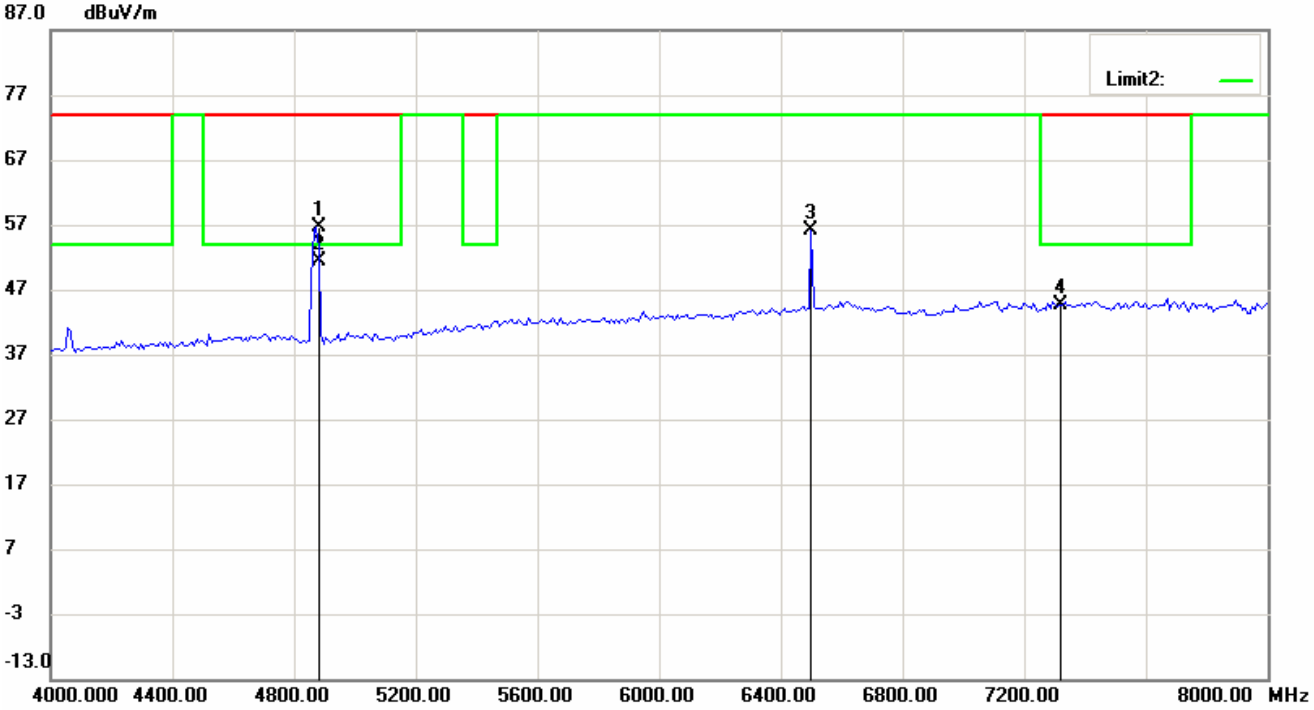

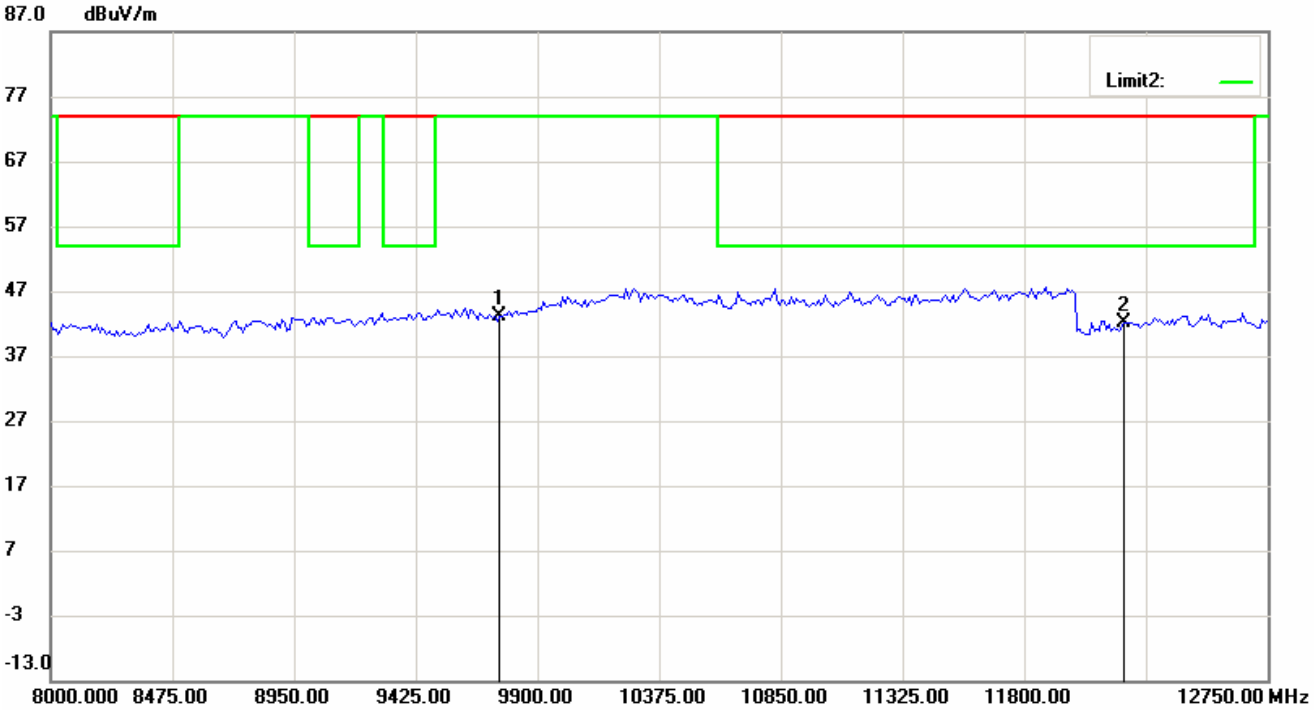

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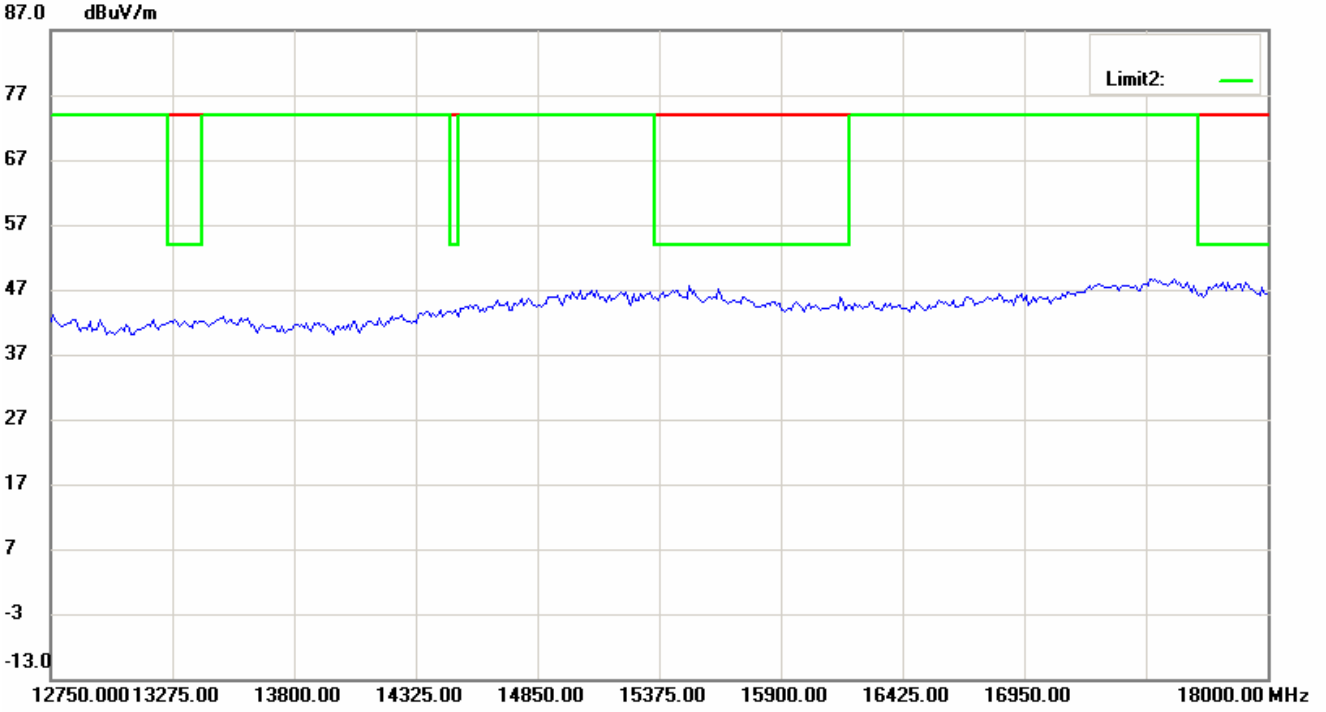
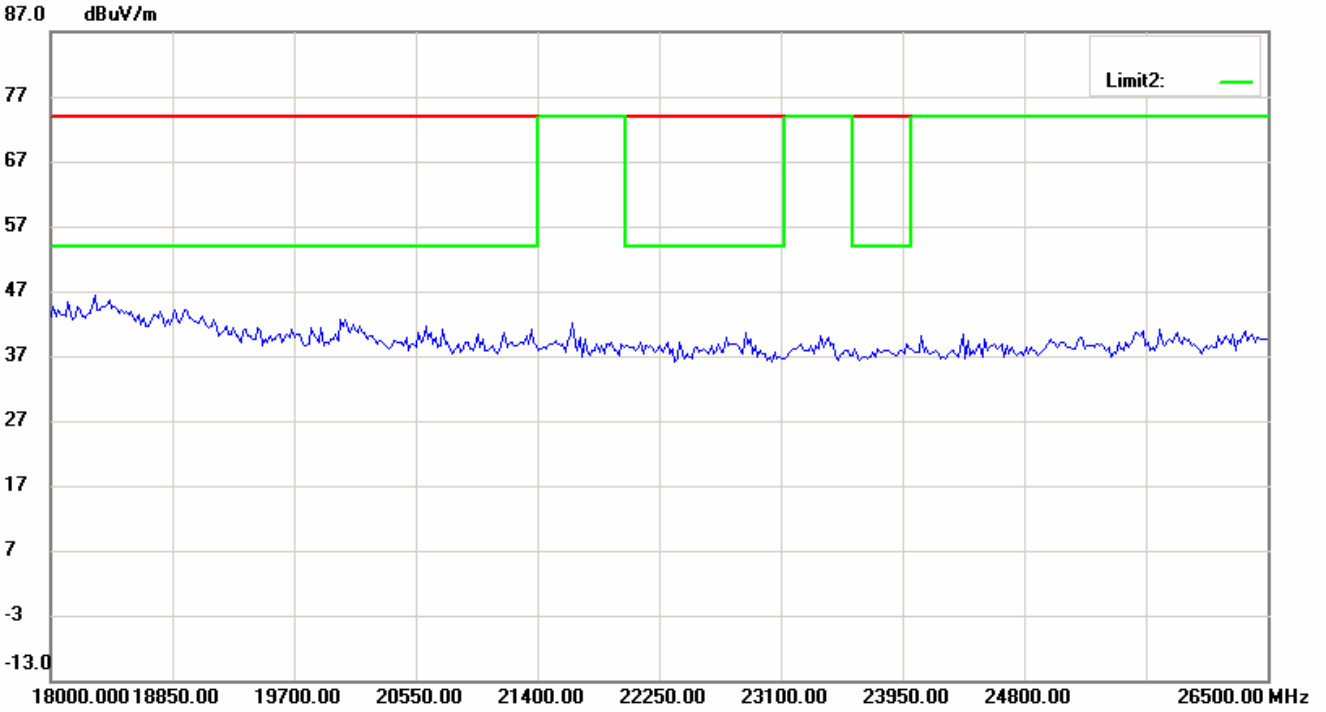
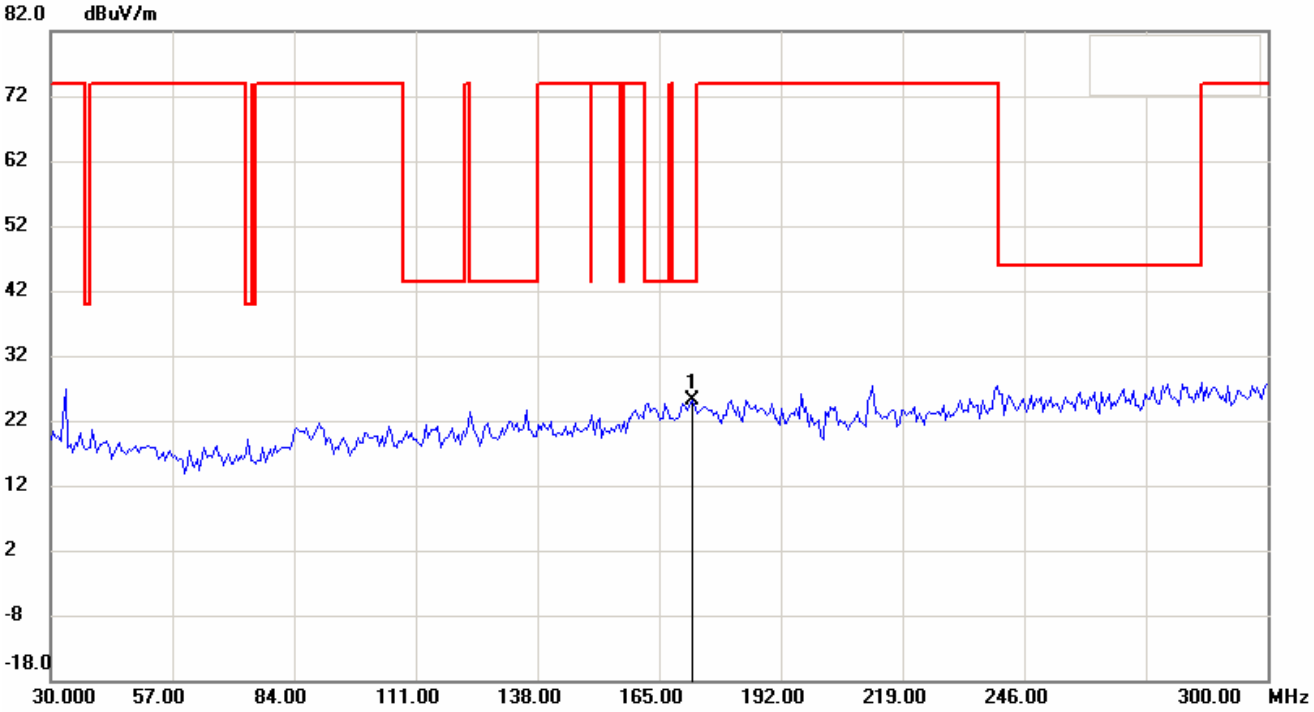
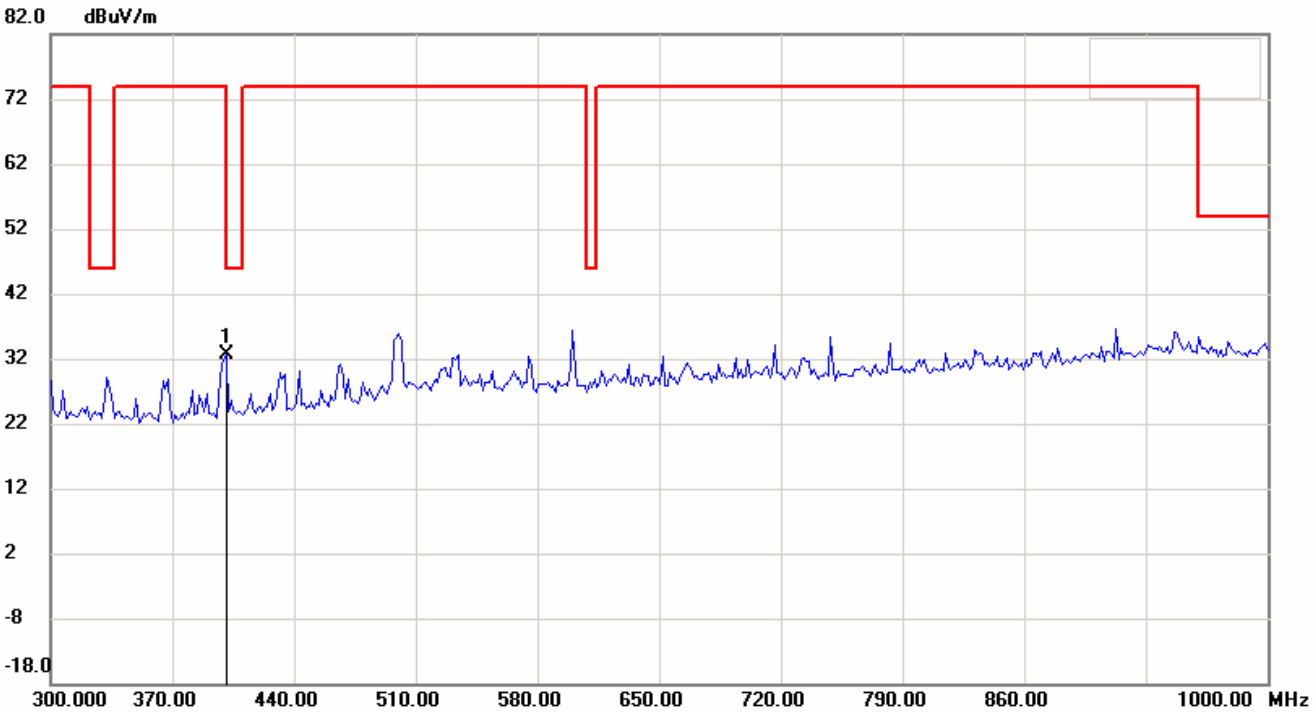




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Antenna Polarization V





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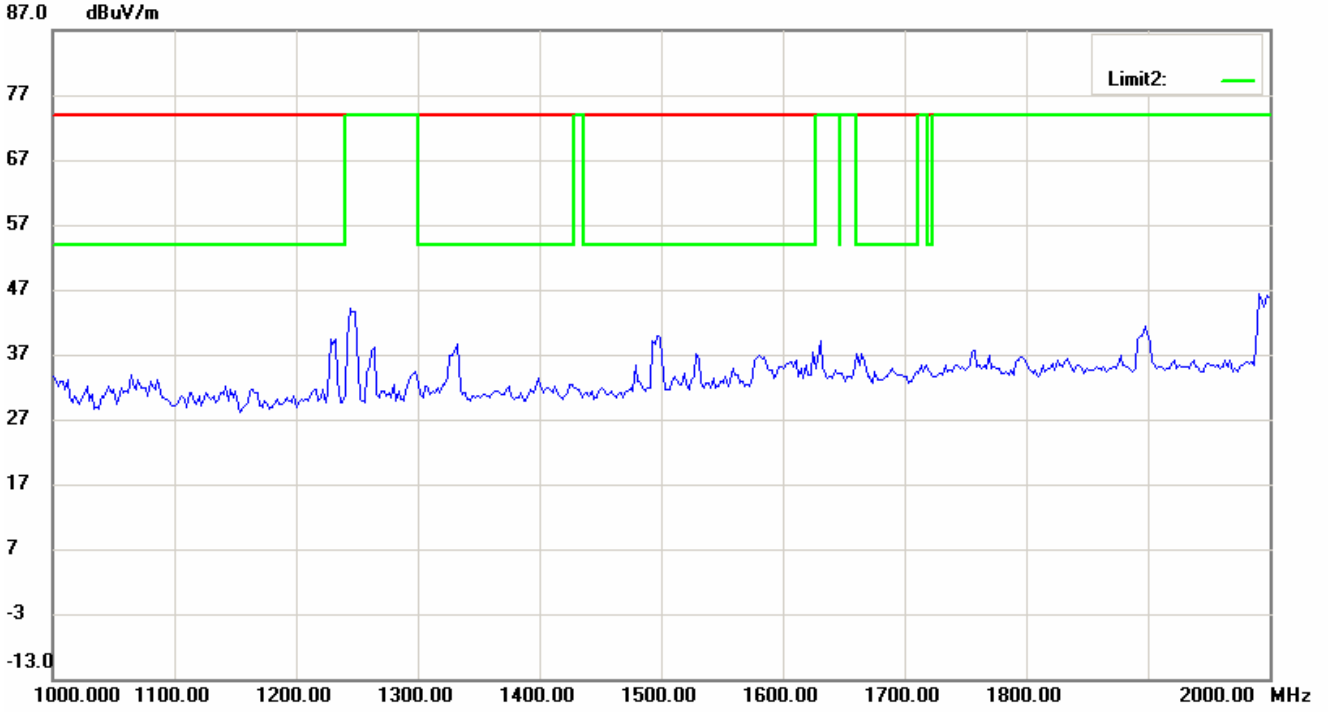

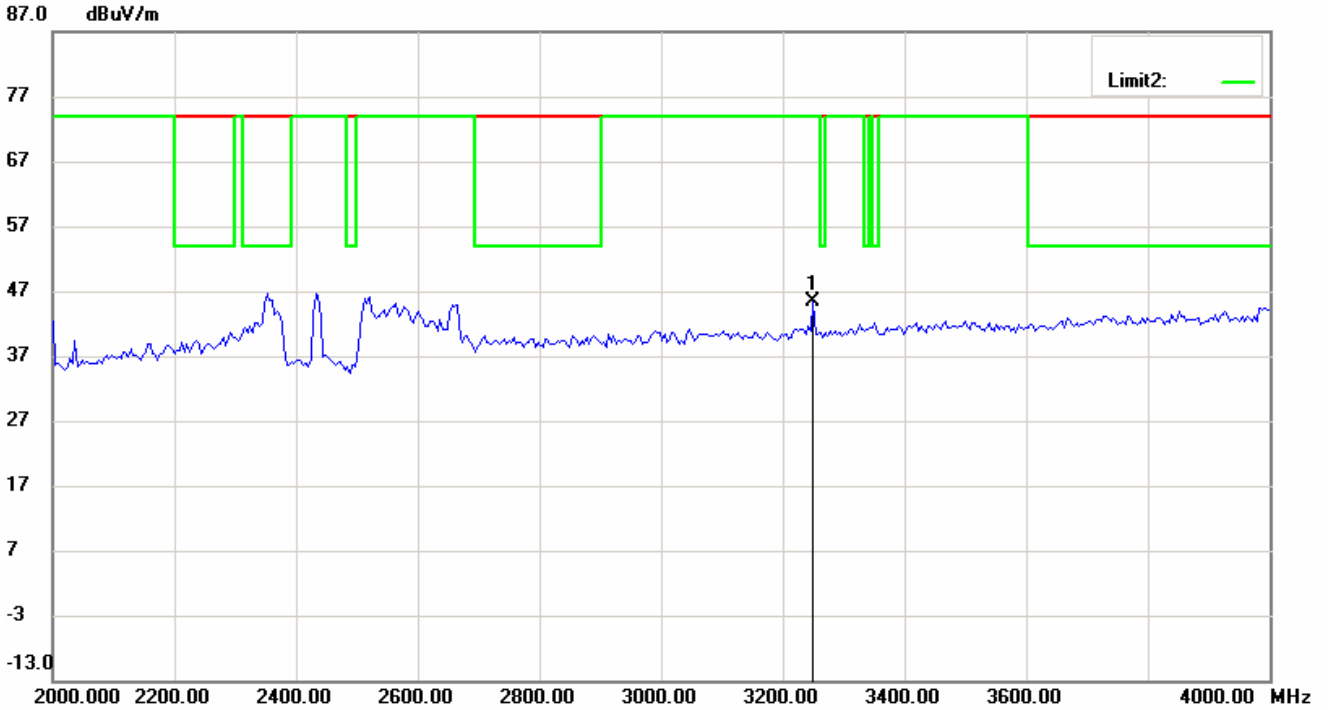

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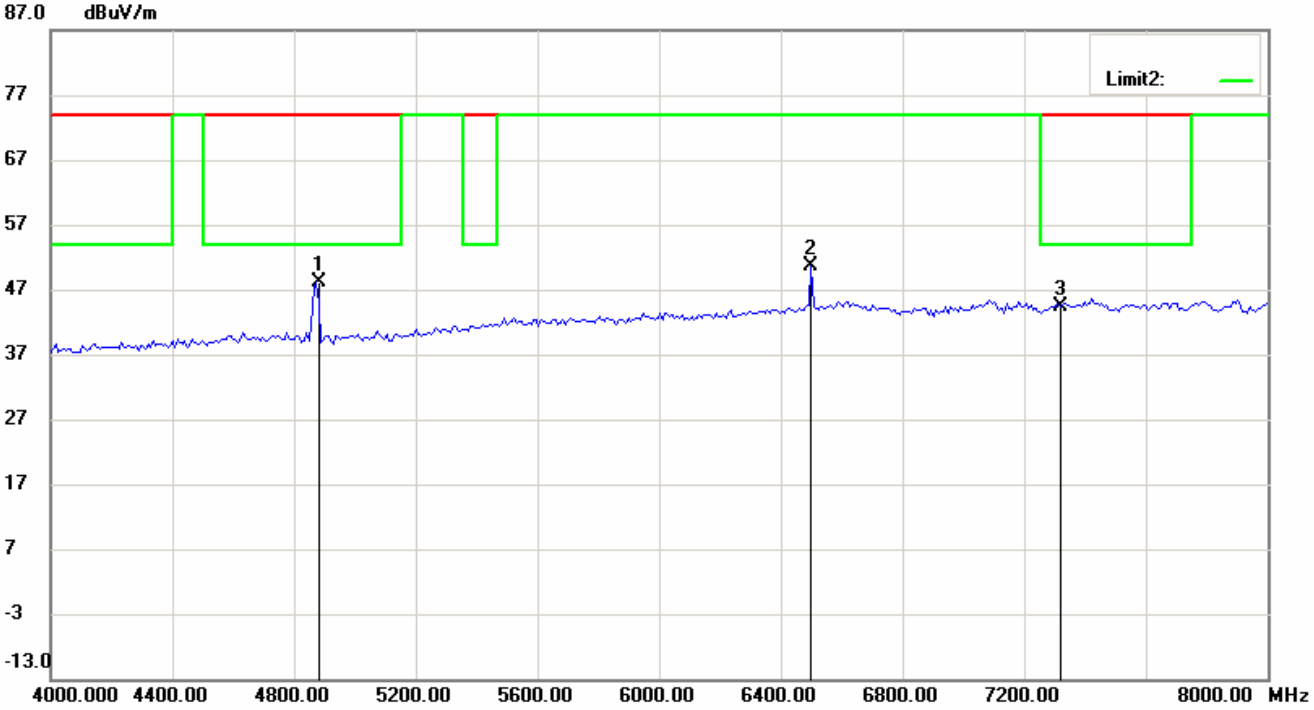

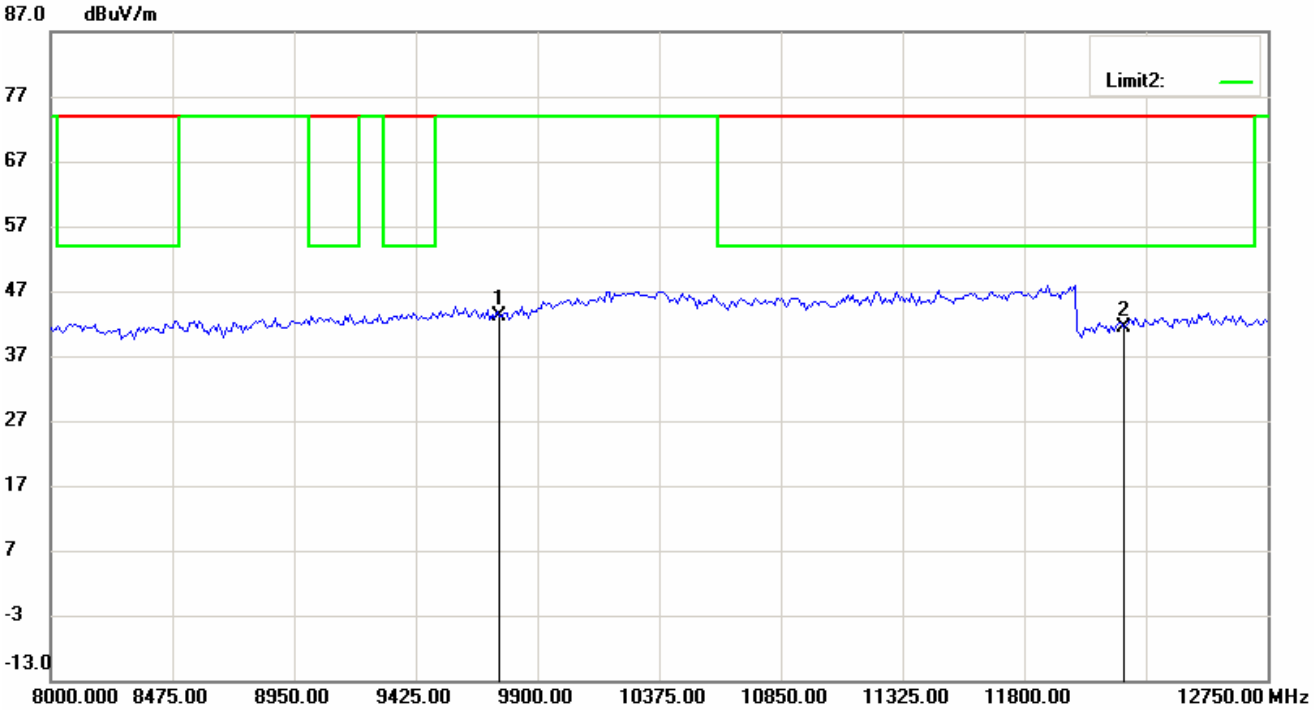

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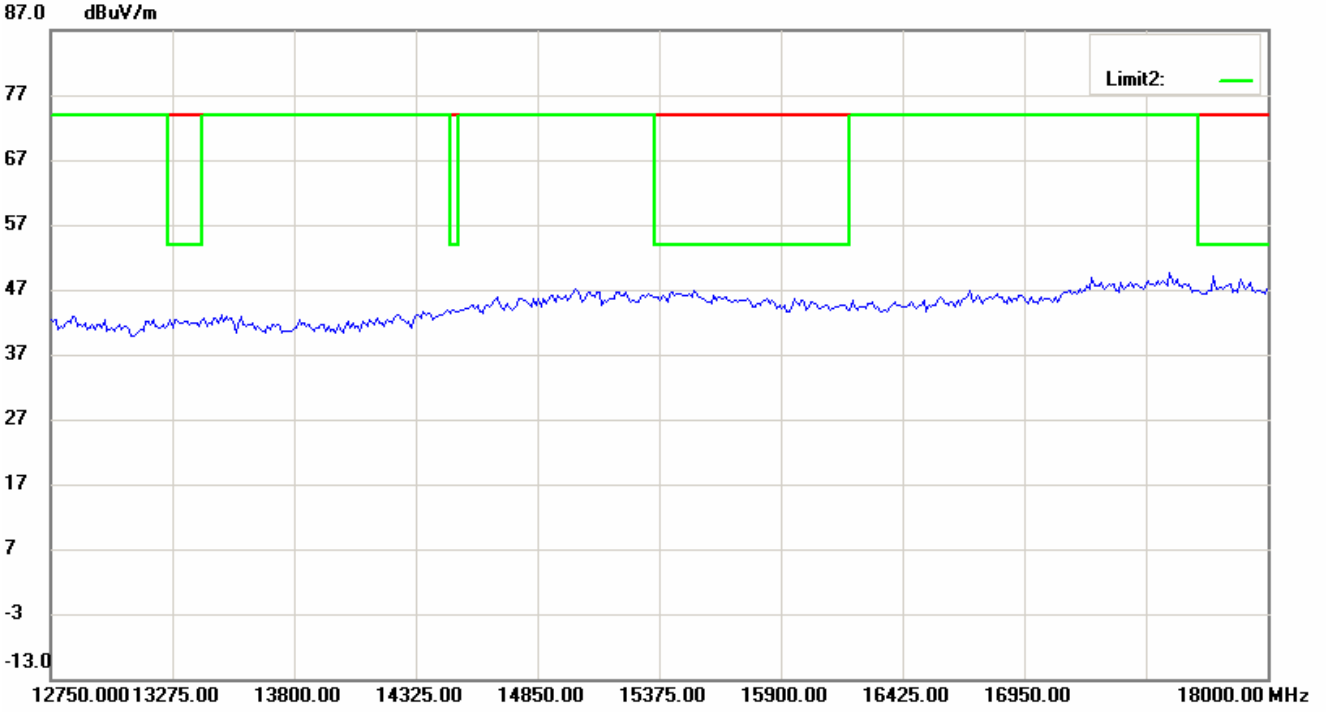
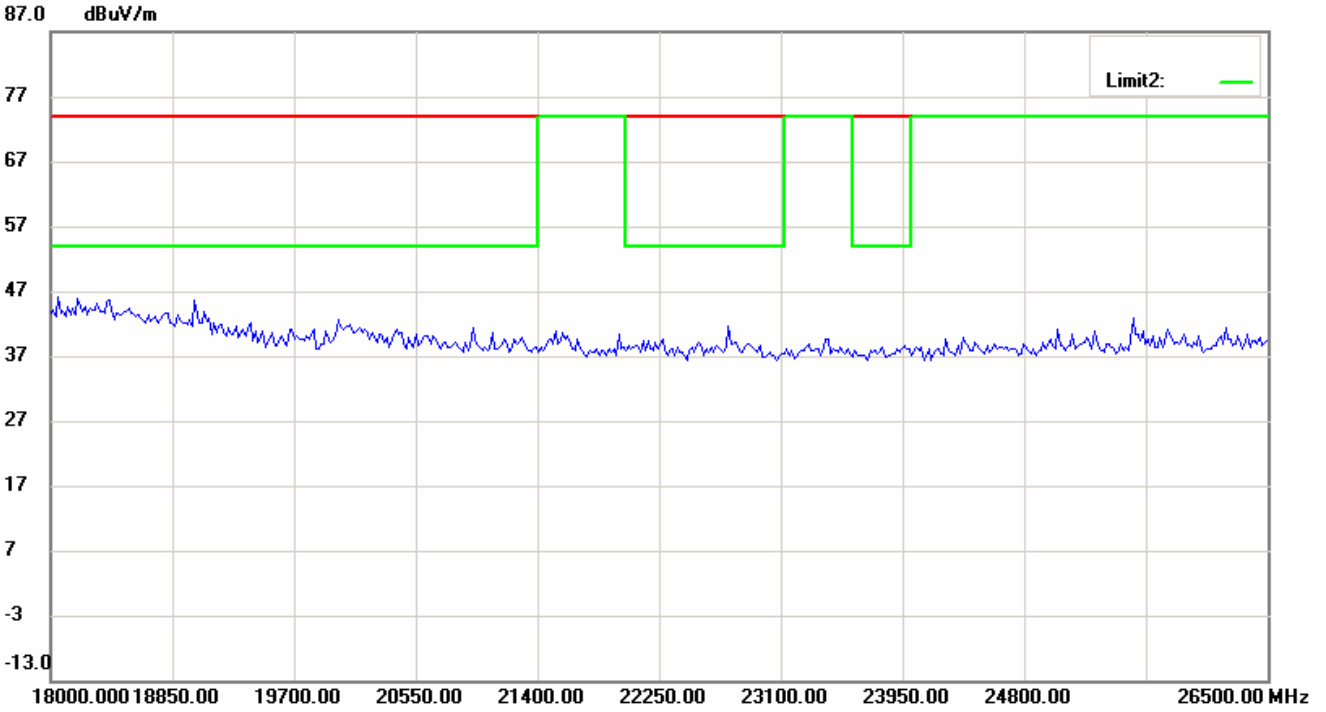
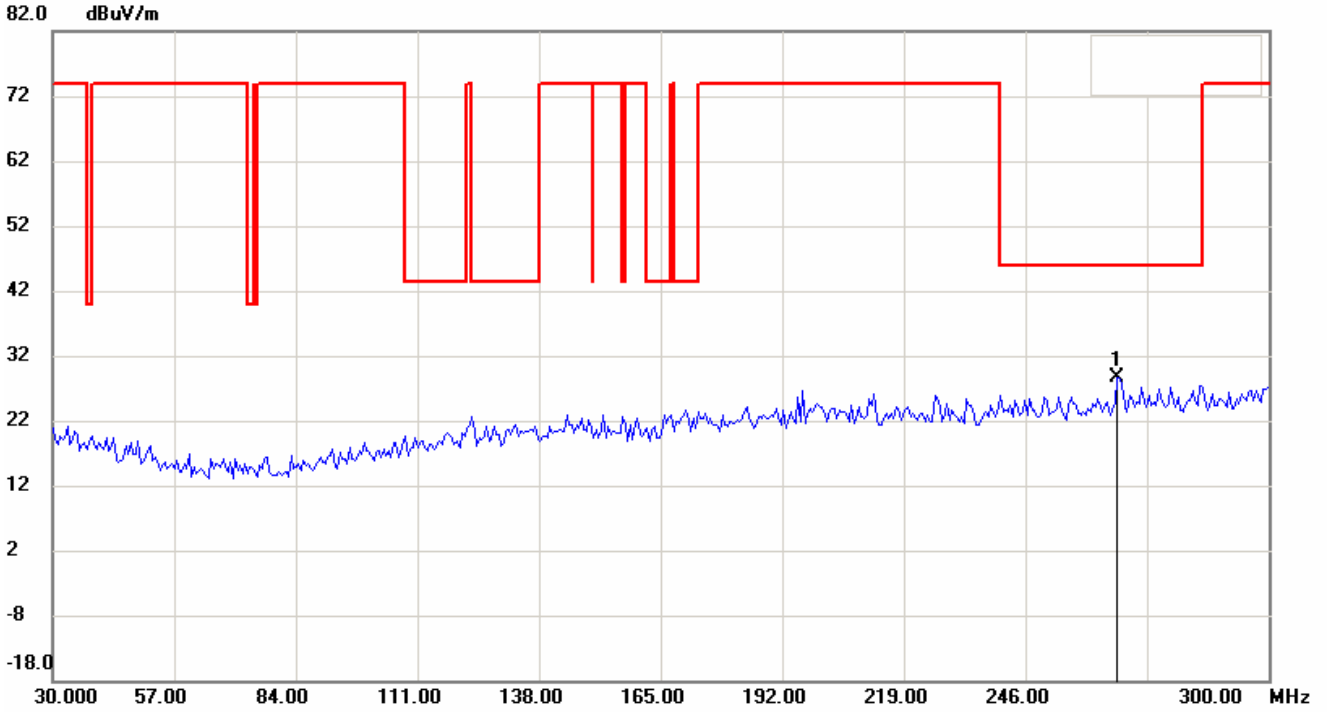


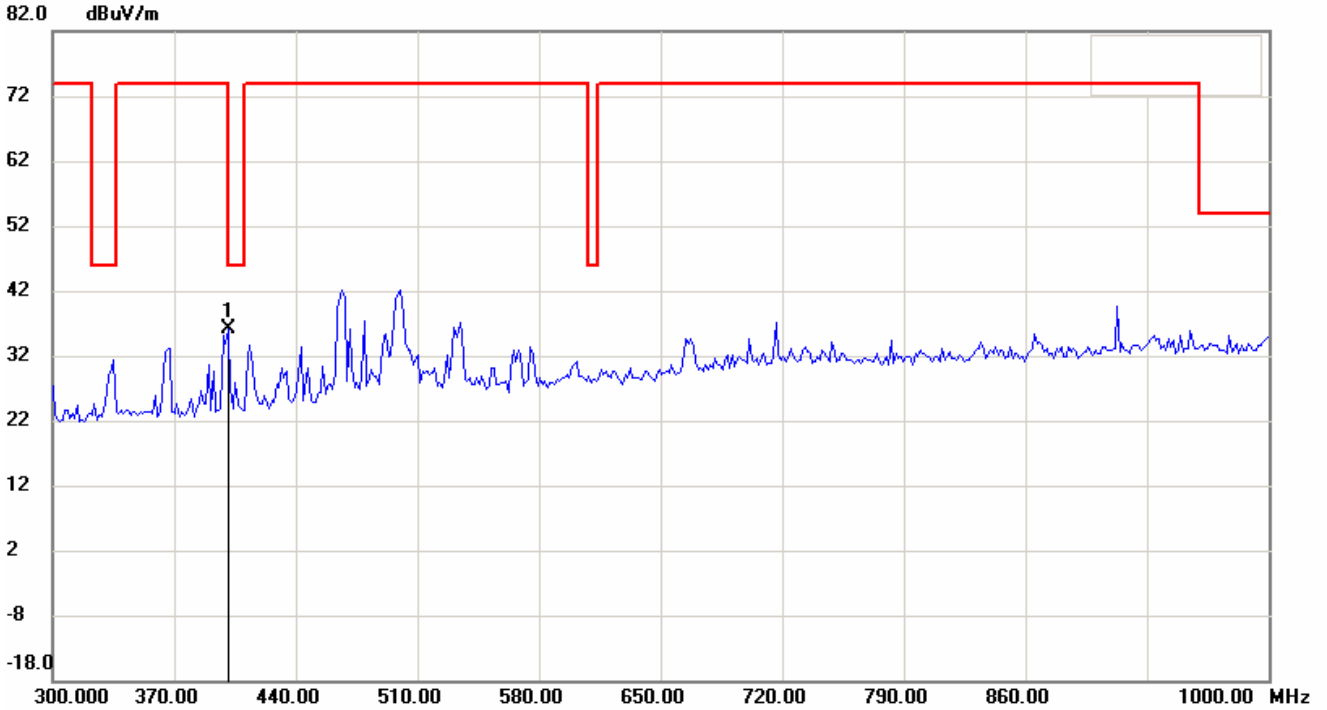


Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

High channel

Antenna Polarization H





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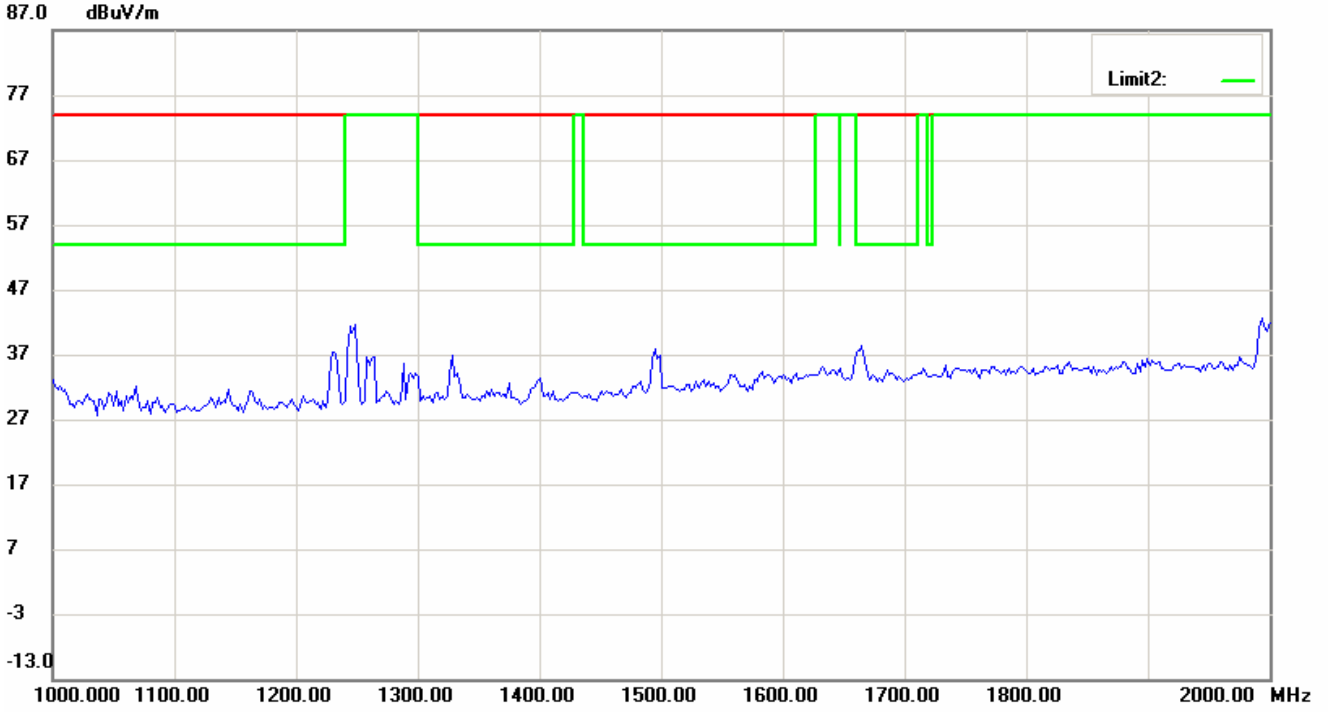
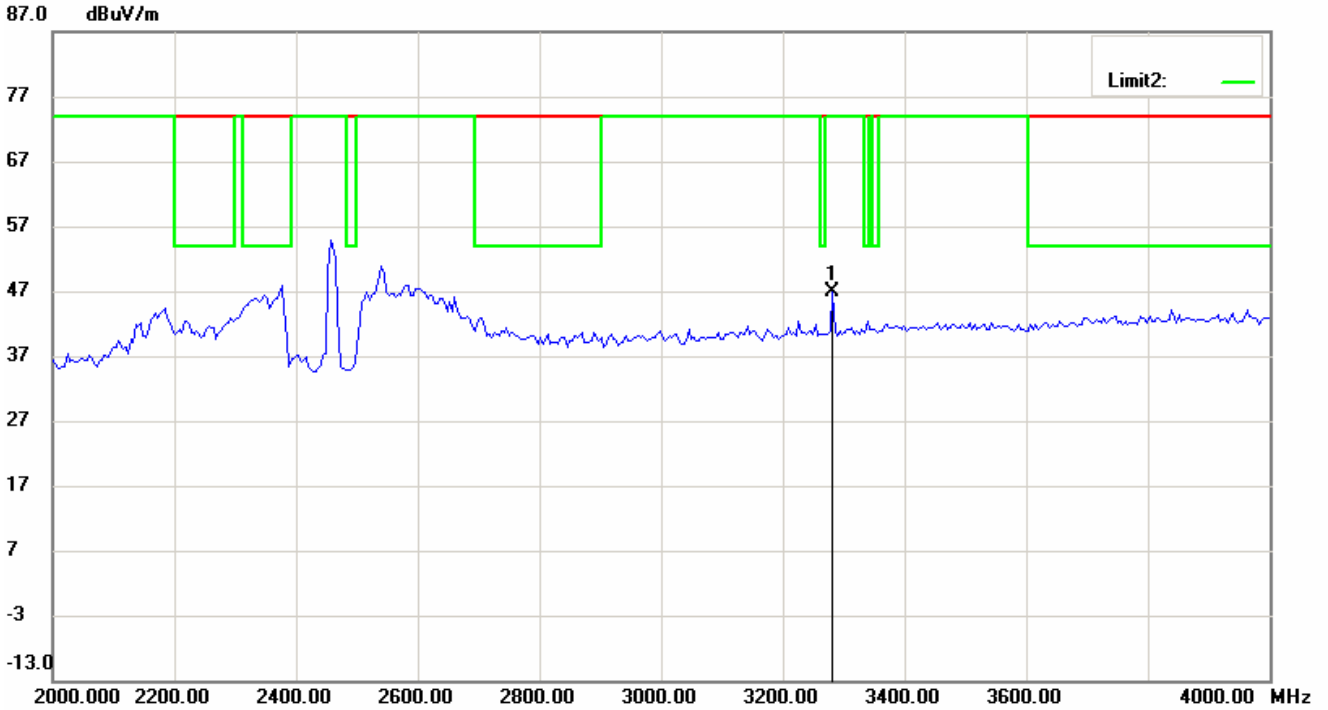
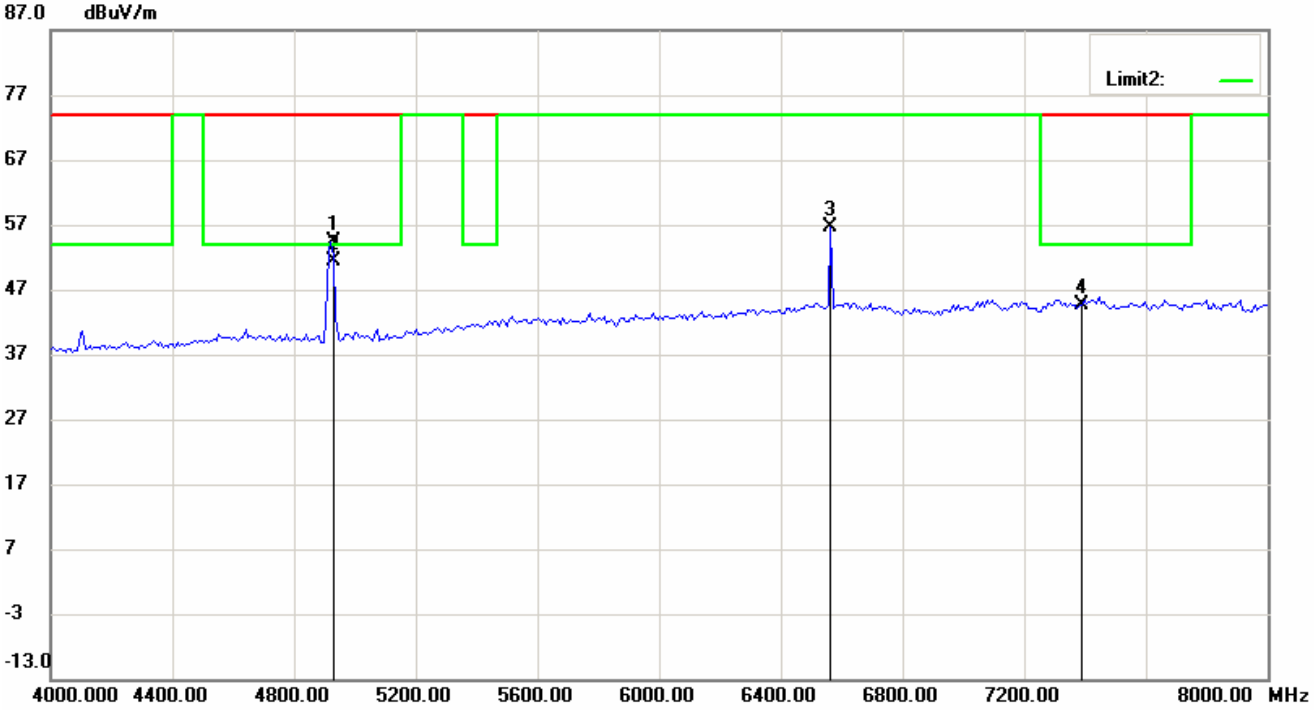
FCC ID: M82-PWS-8101M






87.0 dBuV/m
Limit2:
77
67
57
47
37
27
17
7
-3
-13.0
1
3
4
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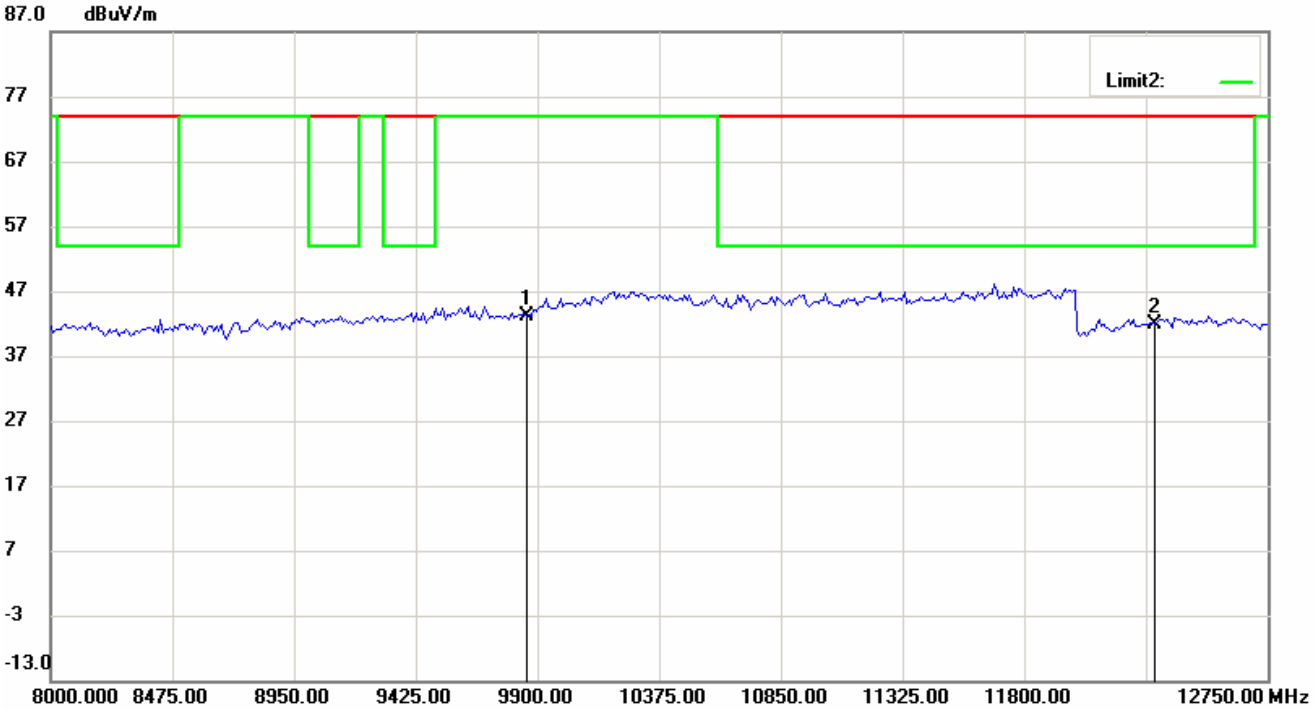
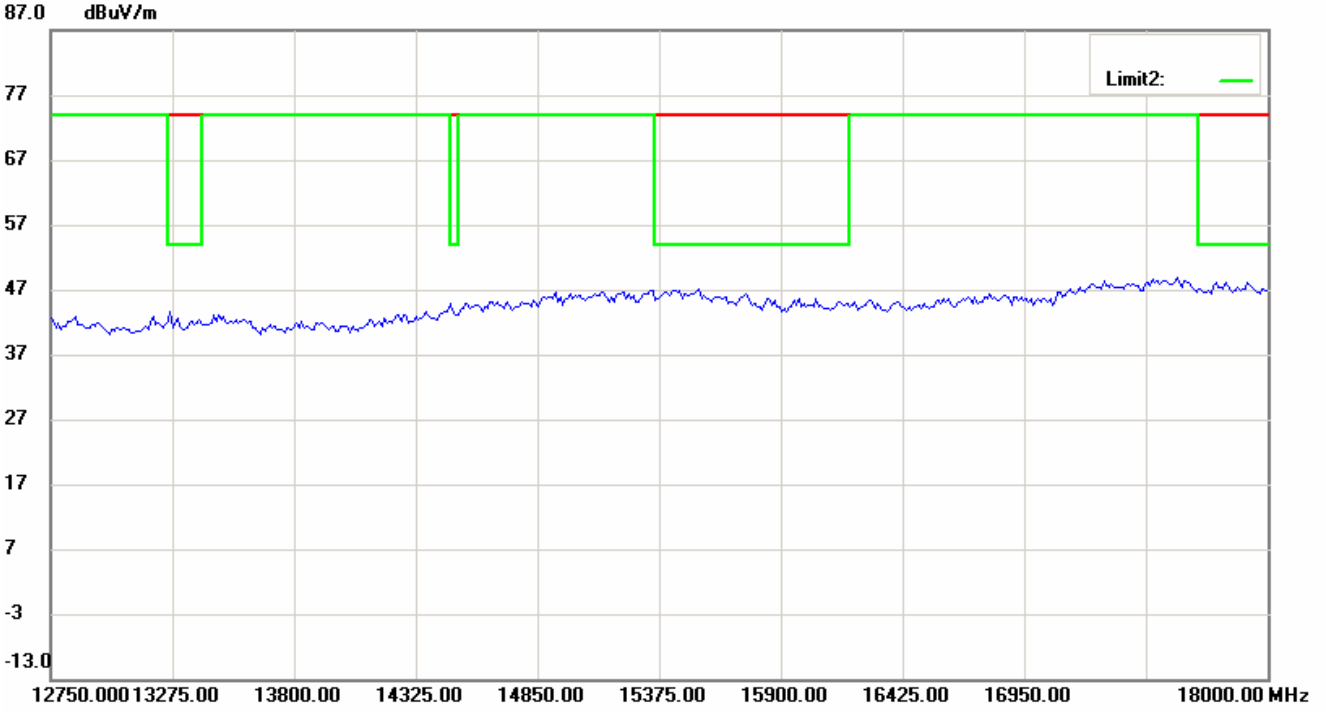
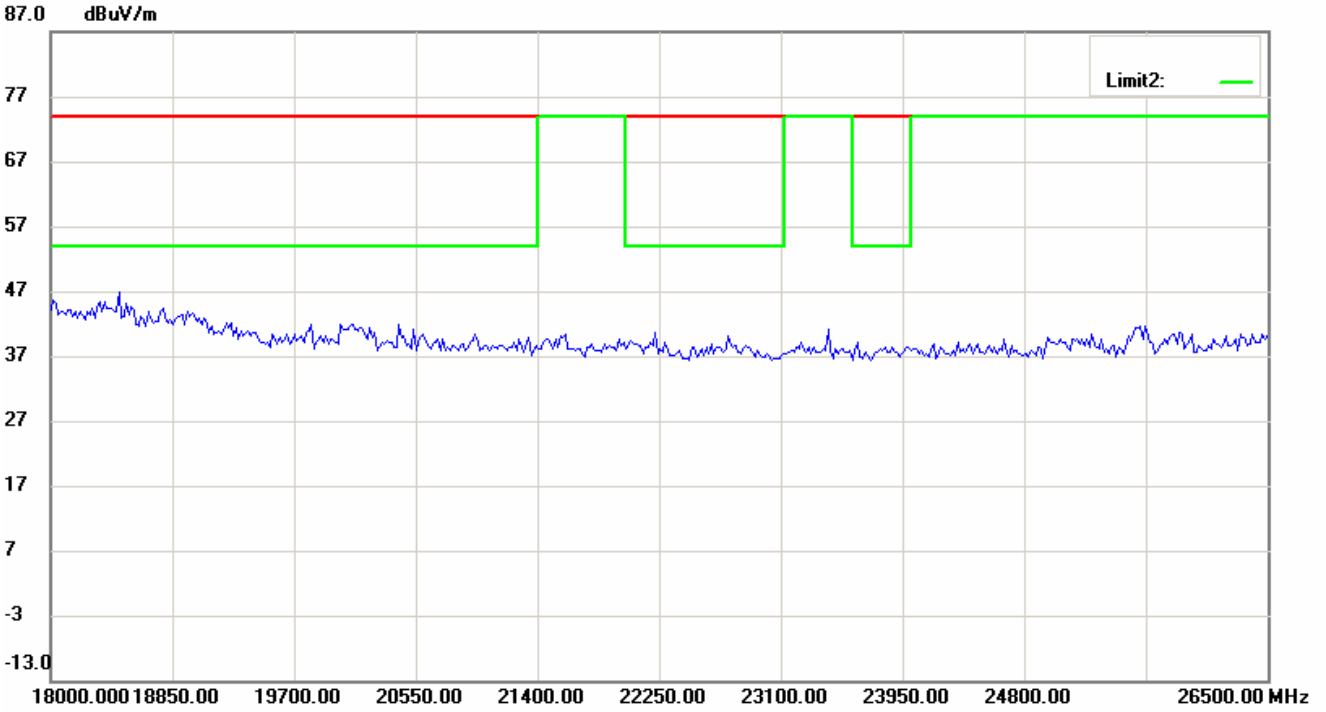

87.0 dBuV/m
Limit2:
77
67
57
47
37
27
17
7
-3
-13.0
1
2
8000.000 8475.00 8950.00 9425.00 9900.00 10375.00 10850.00 11325.00 11800.00 12750.00 MHz

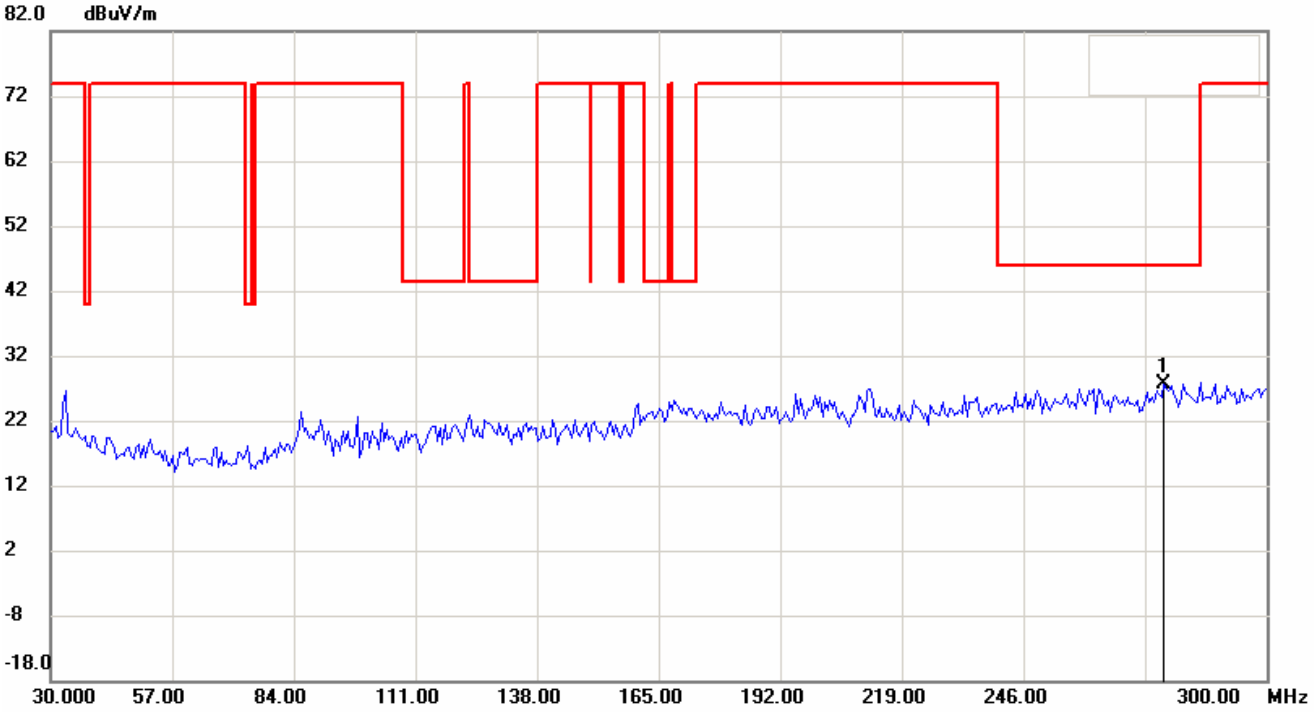
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

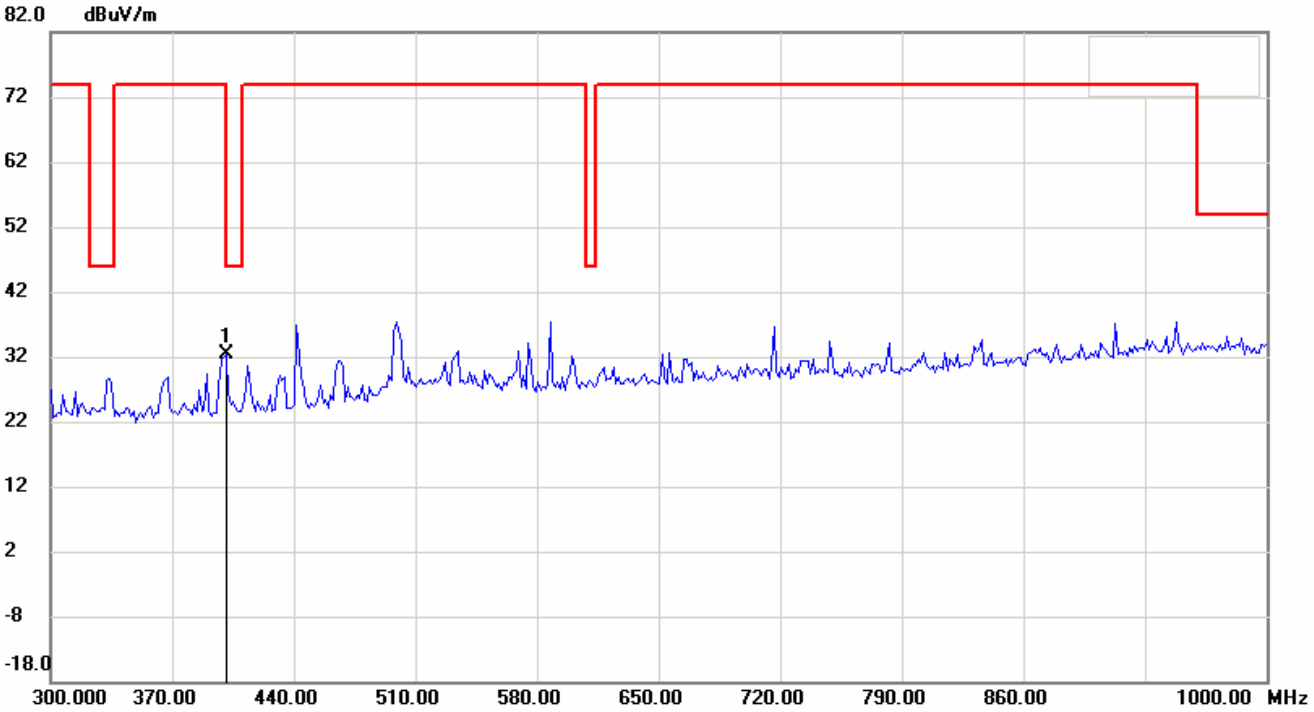




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Antenna Polarization V





Registration number: W6D20812-9514-C-1
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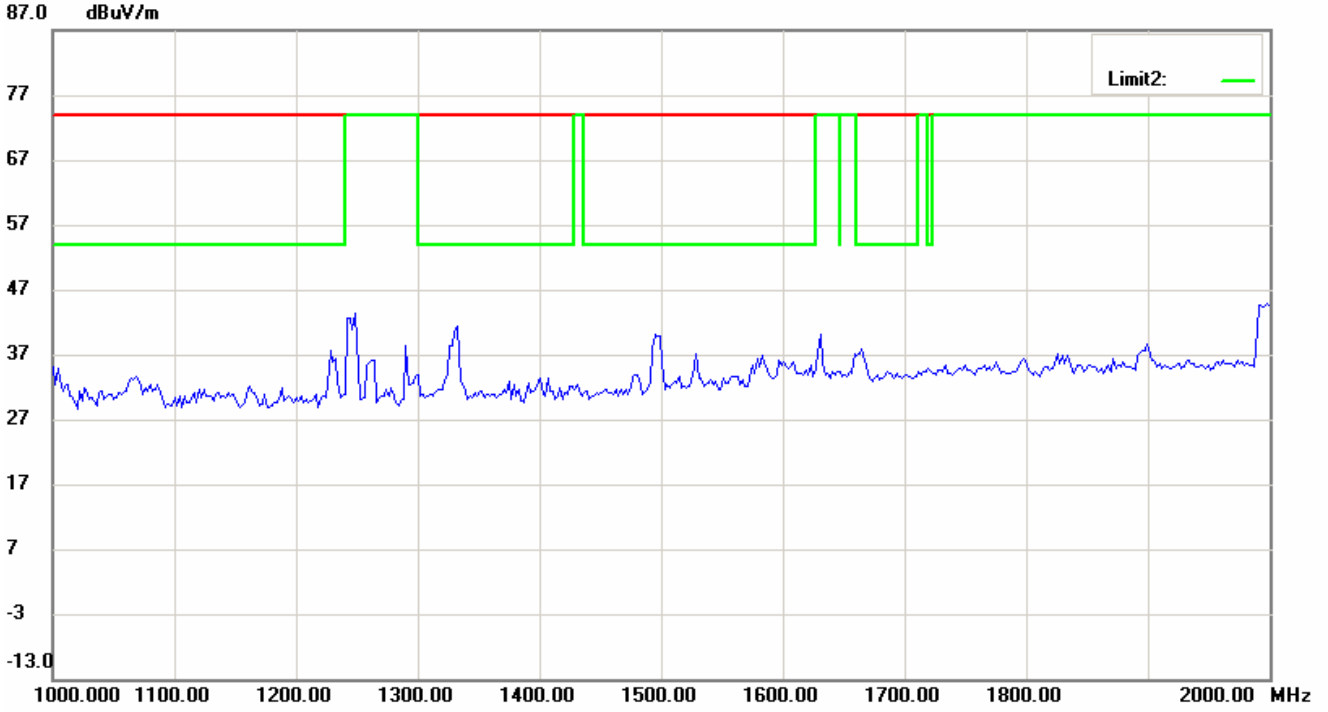

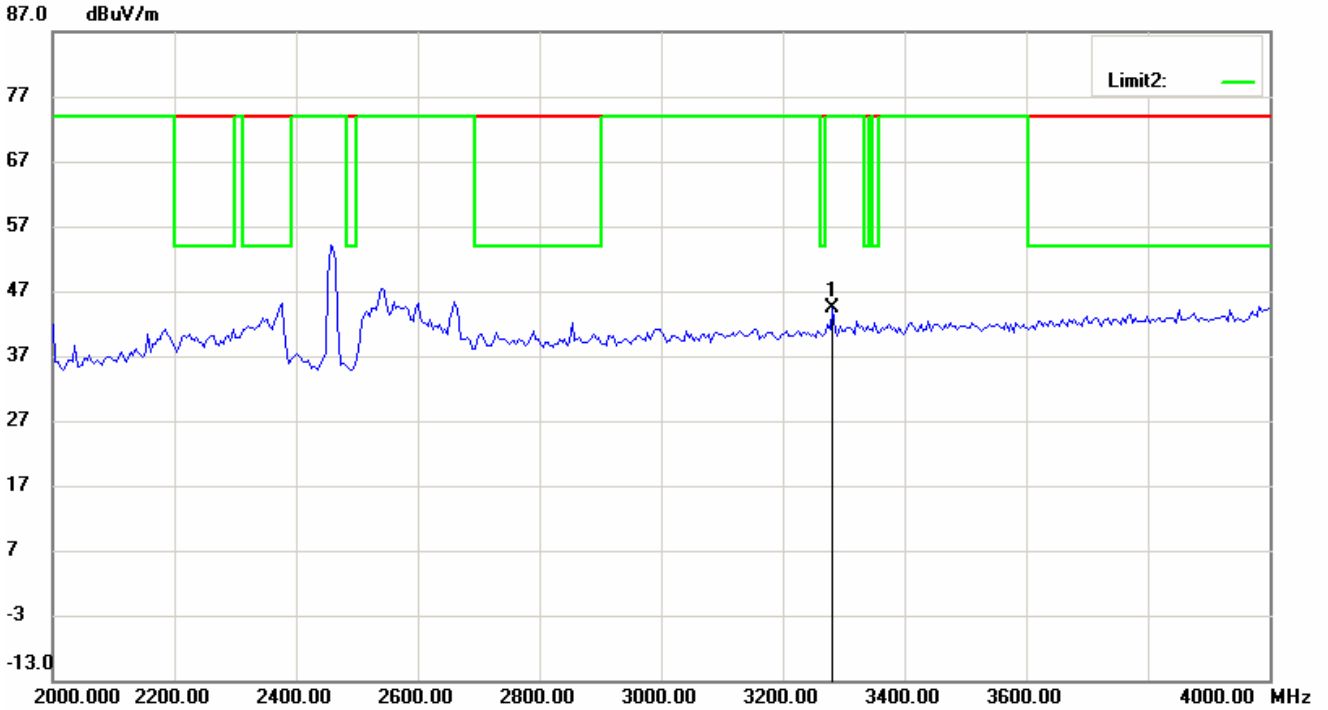

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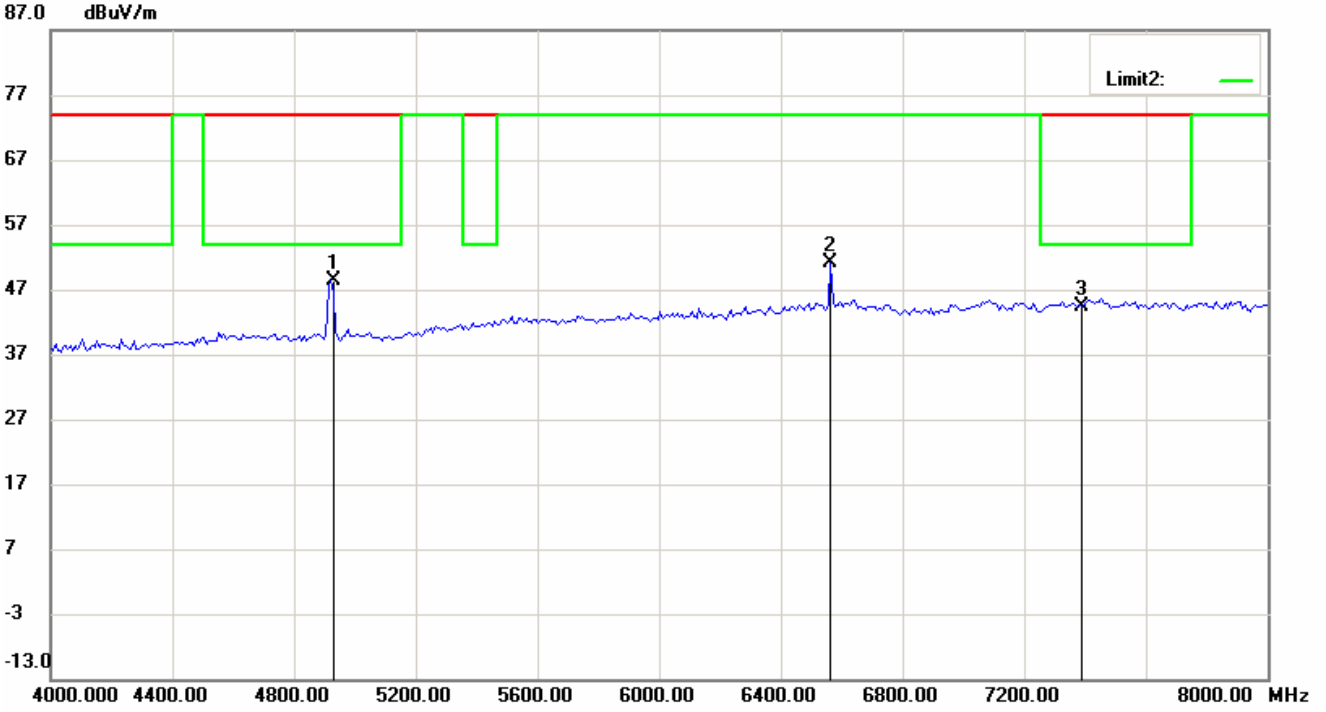
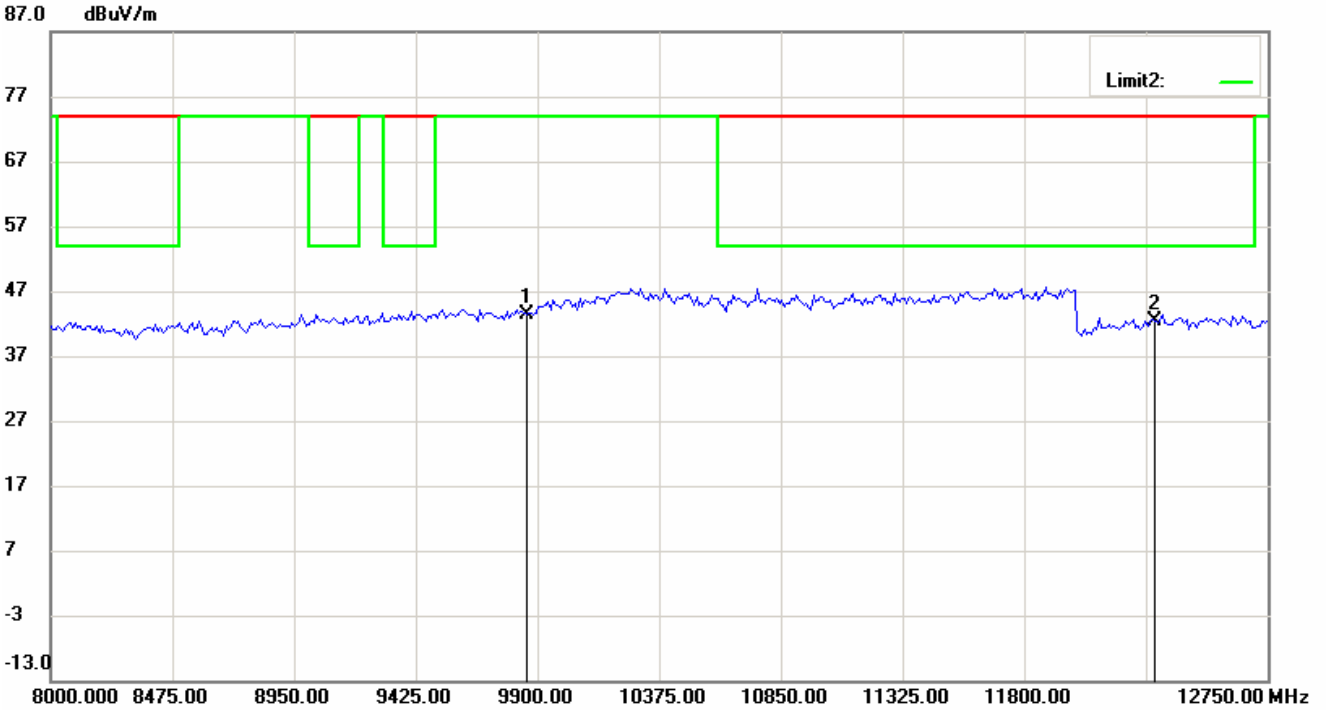
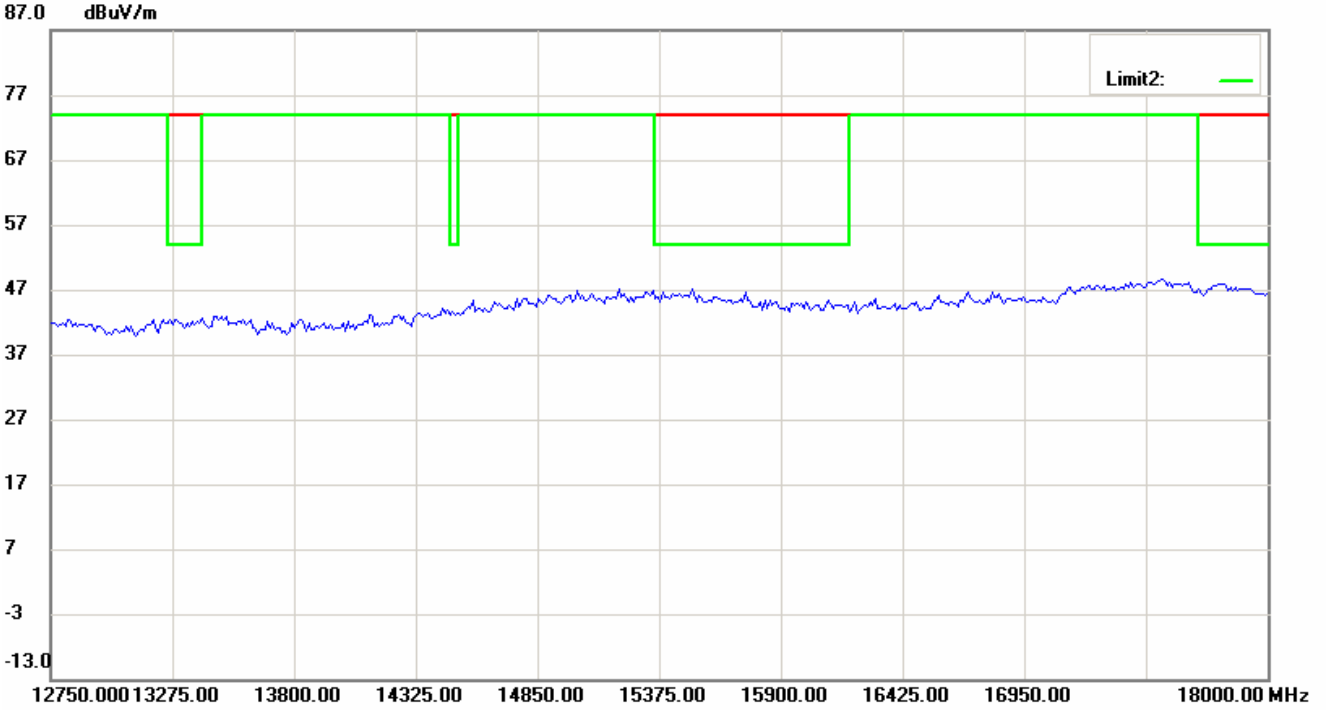
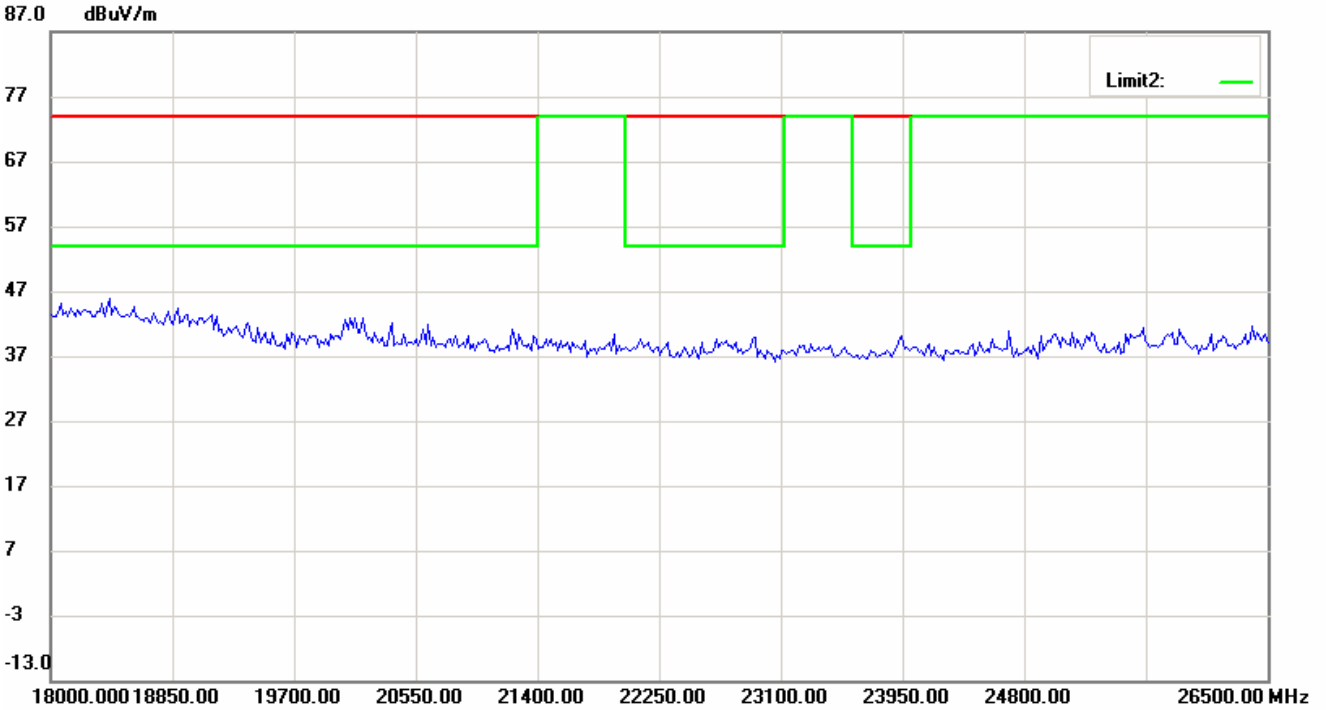




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

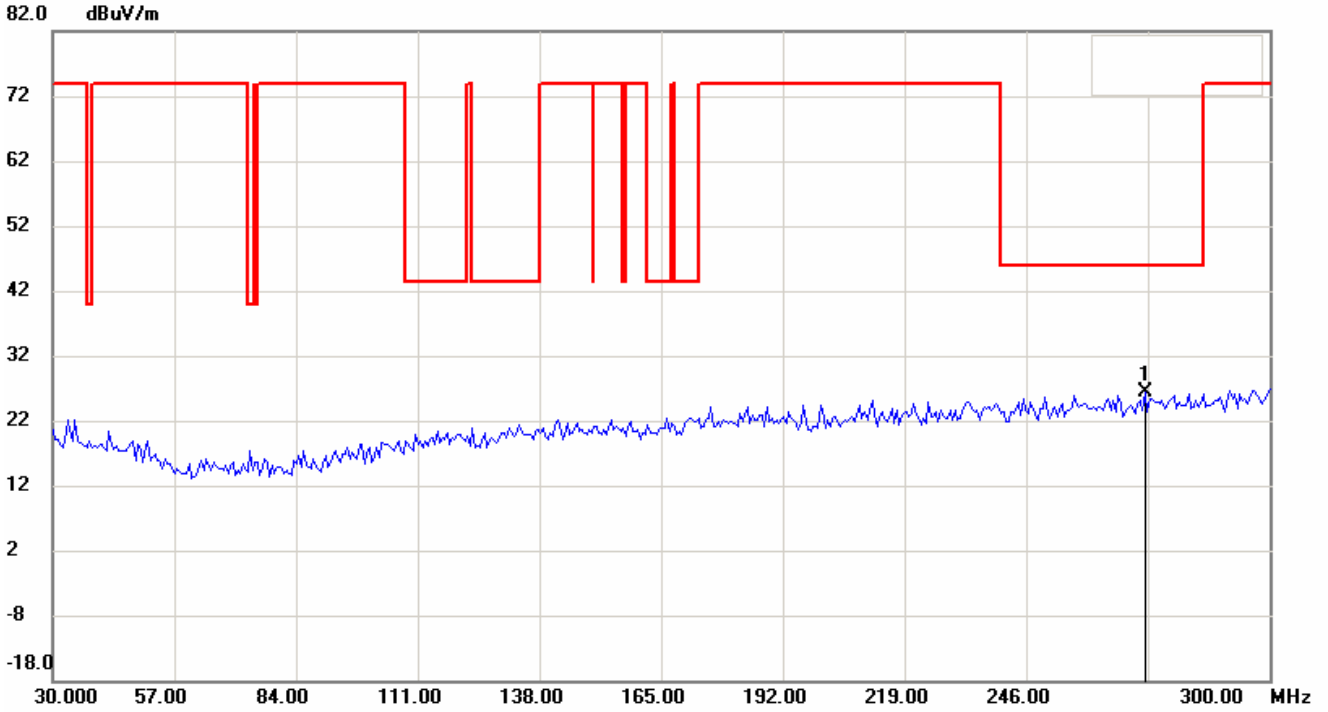


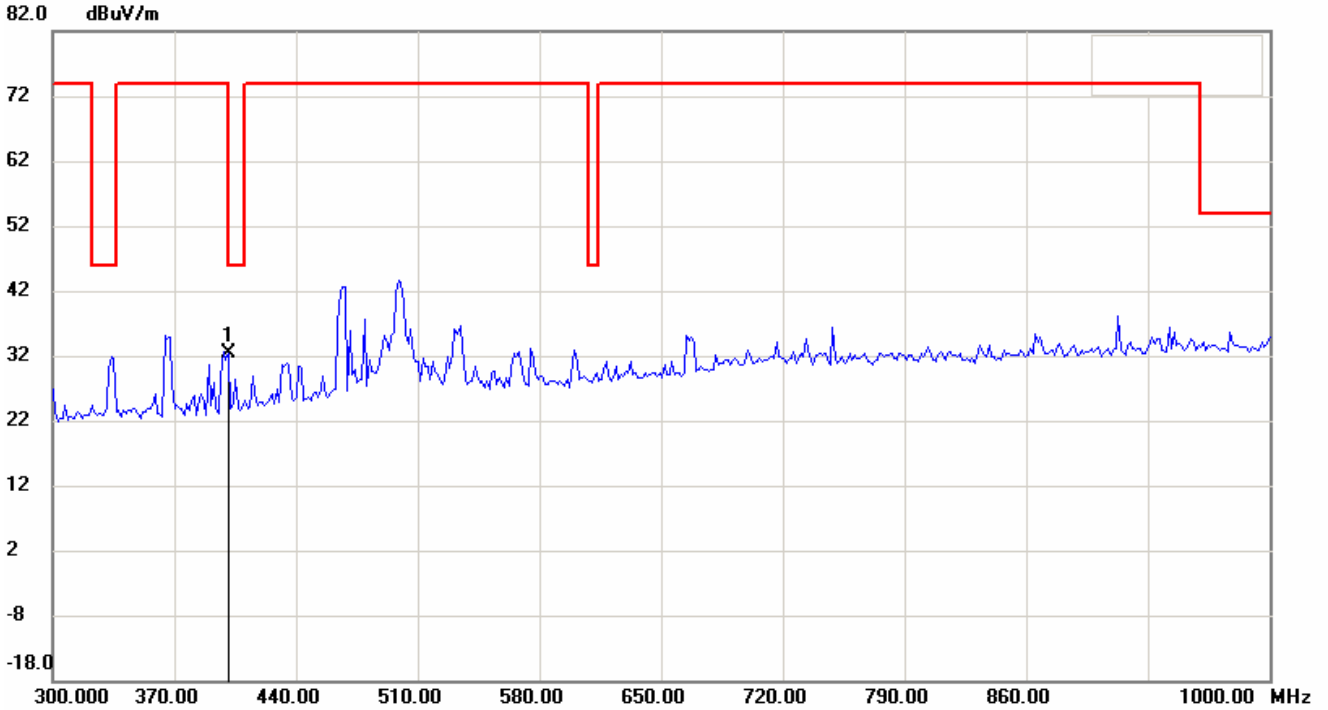


Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

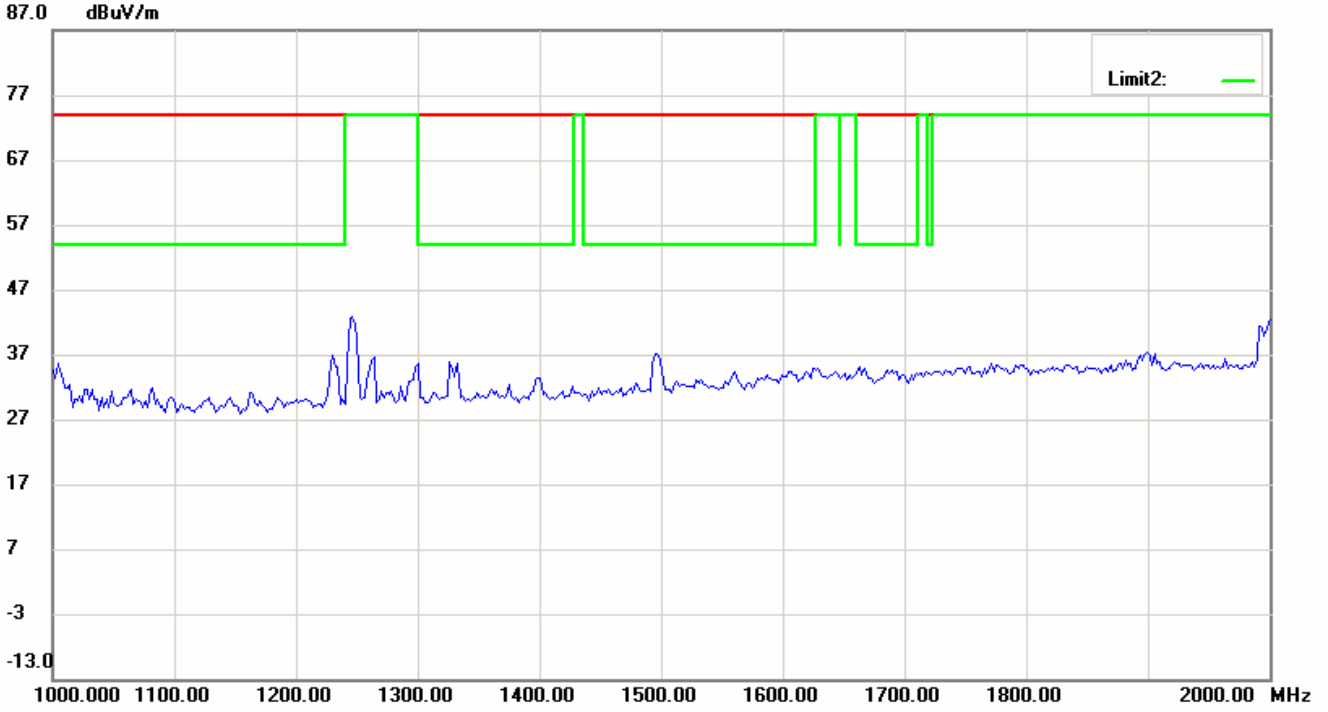
Mode B Low channel

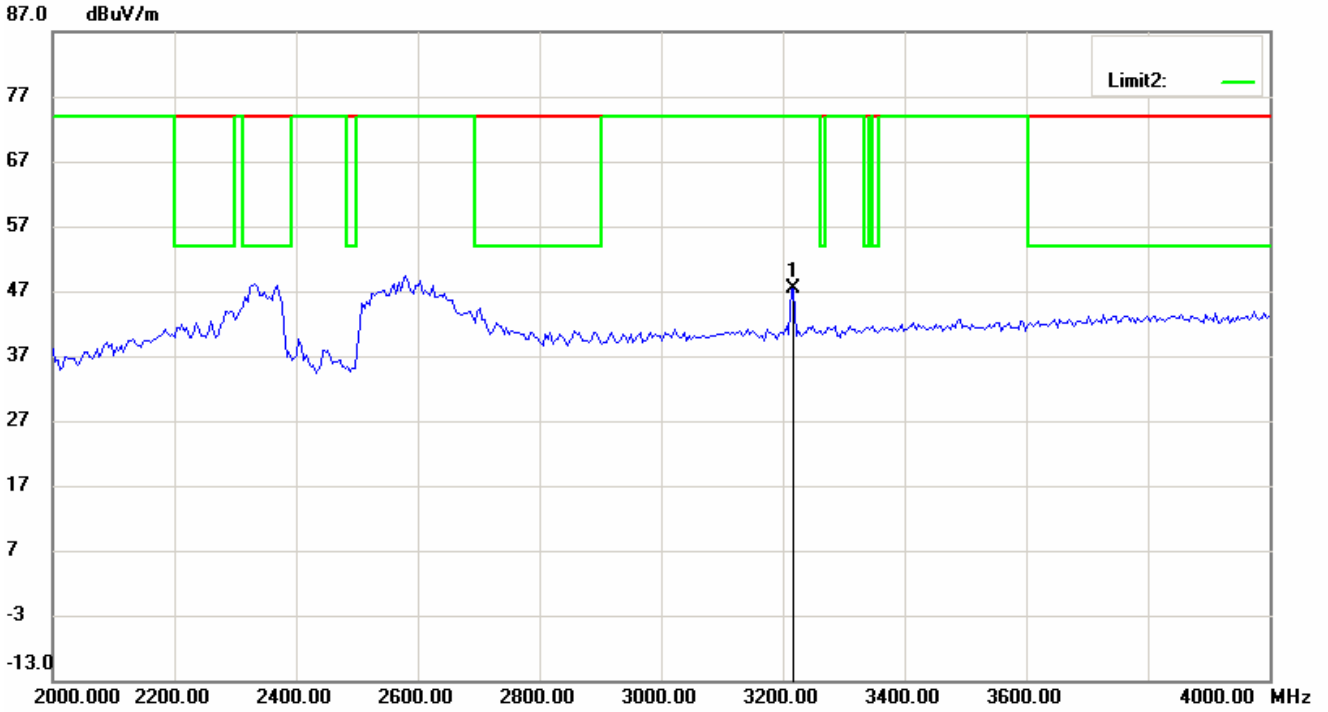
Antenna Polarization H



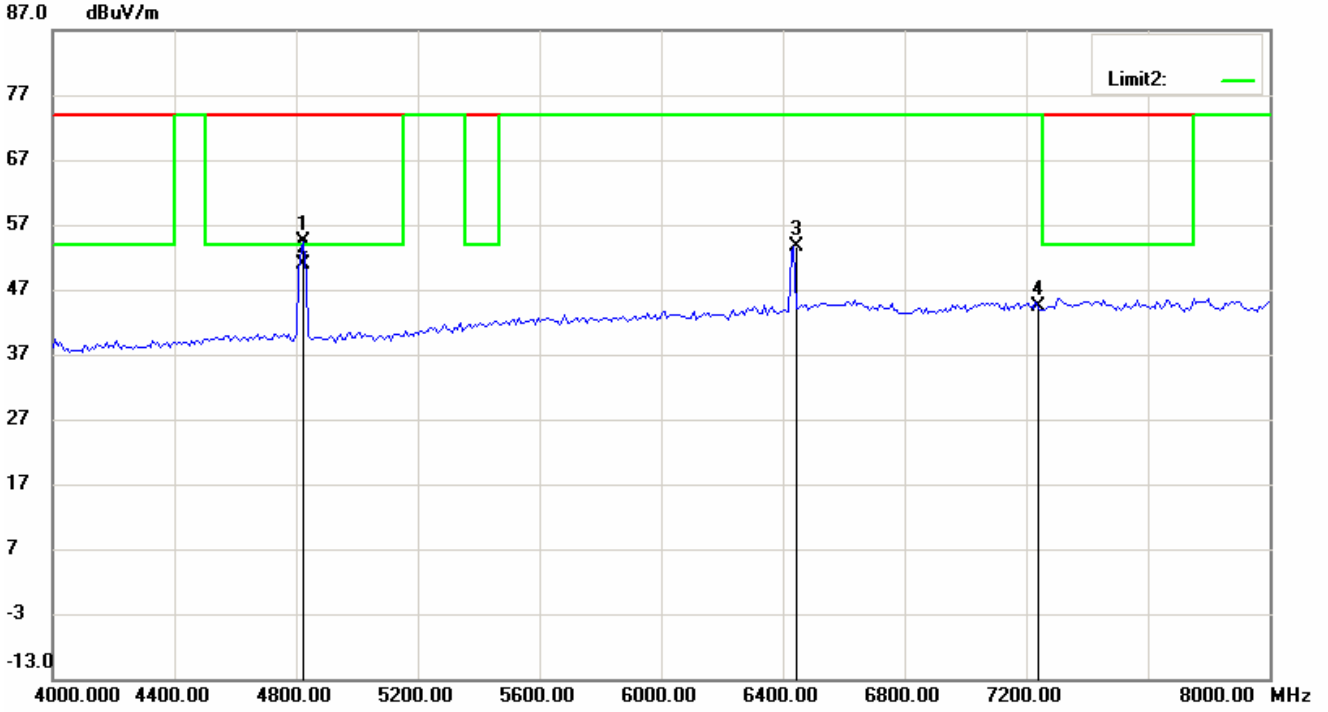


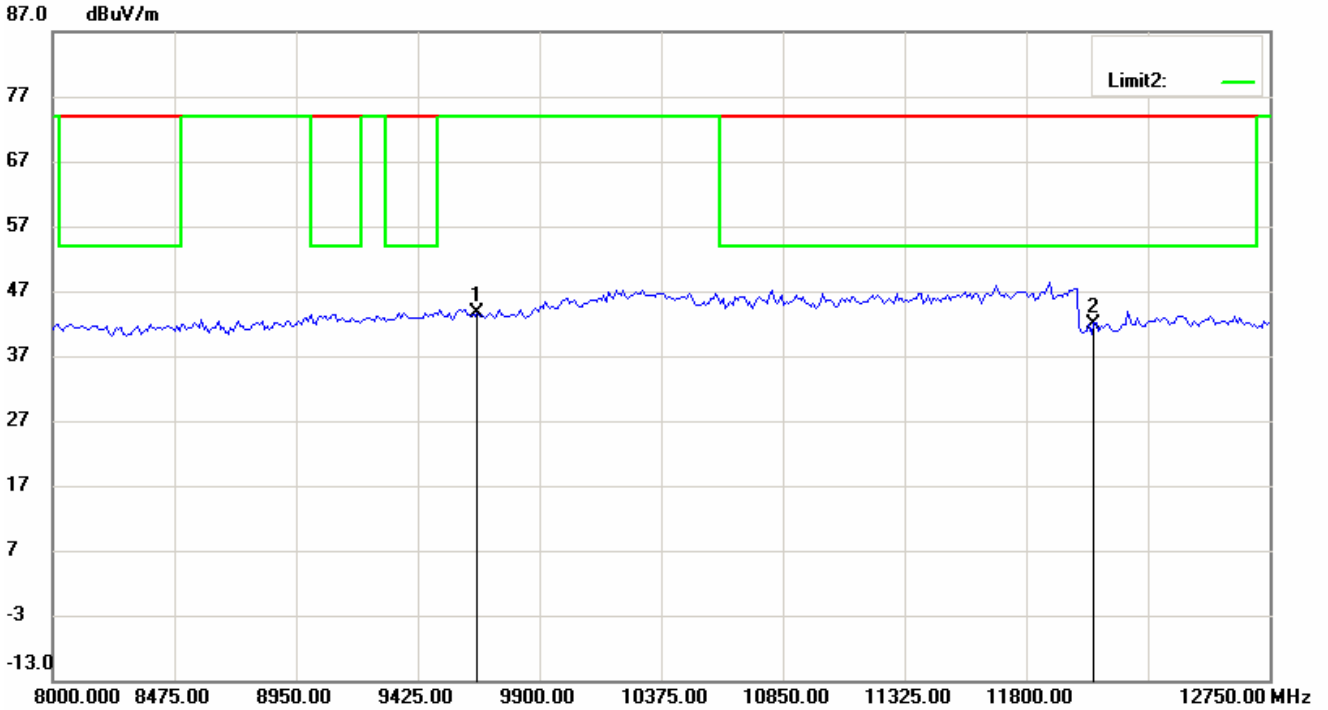
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M





Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M





Registration number: W6D20812-9514-C-1
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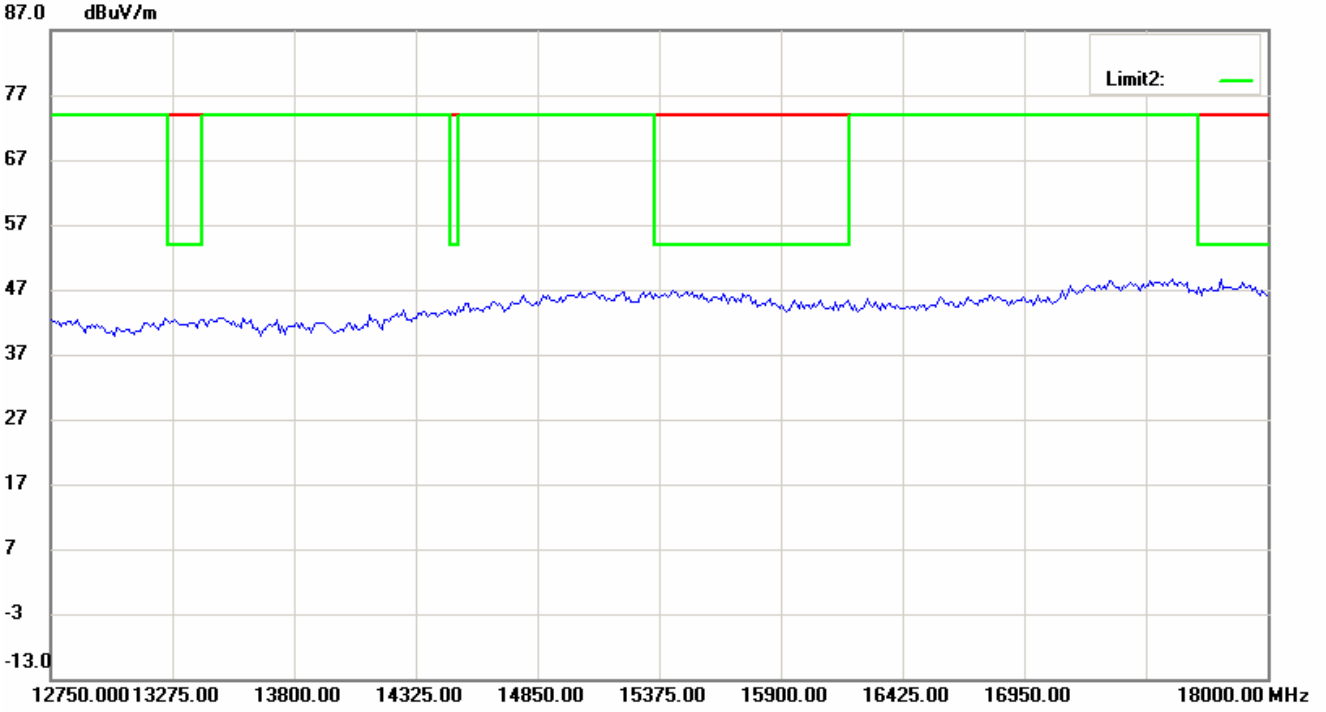
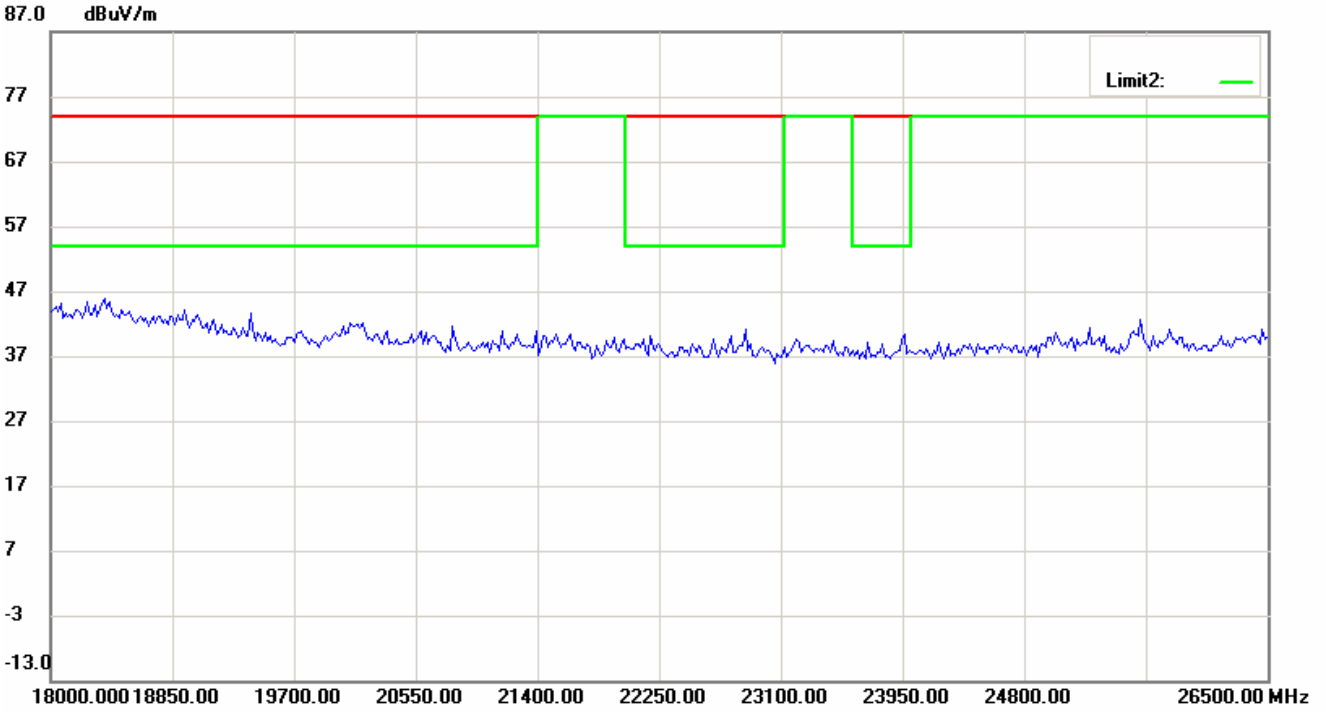
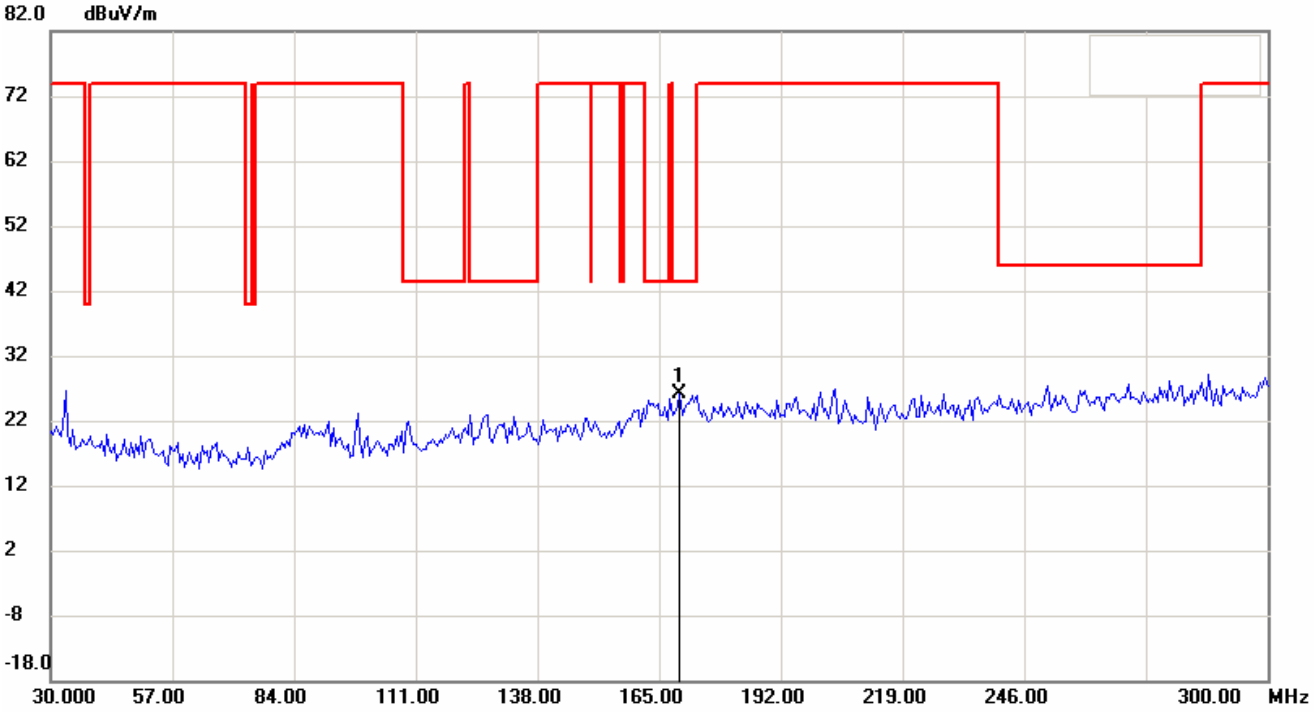
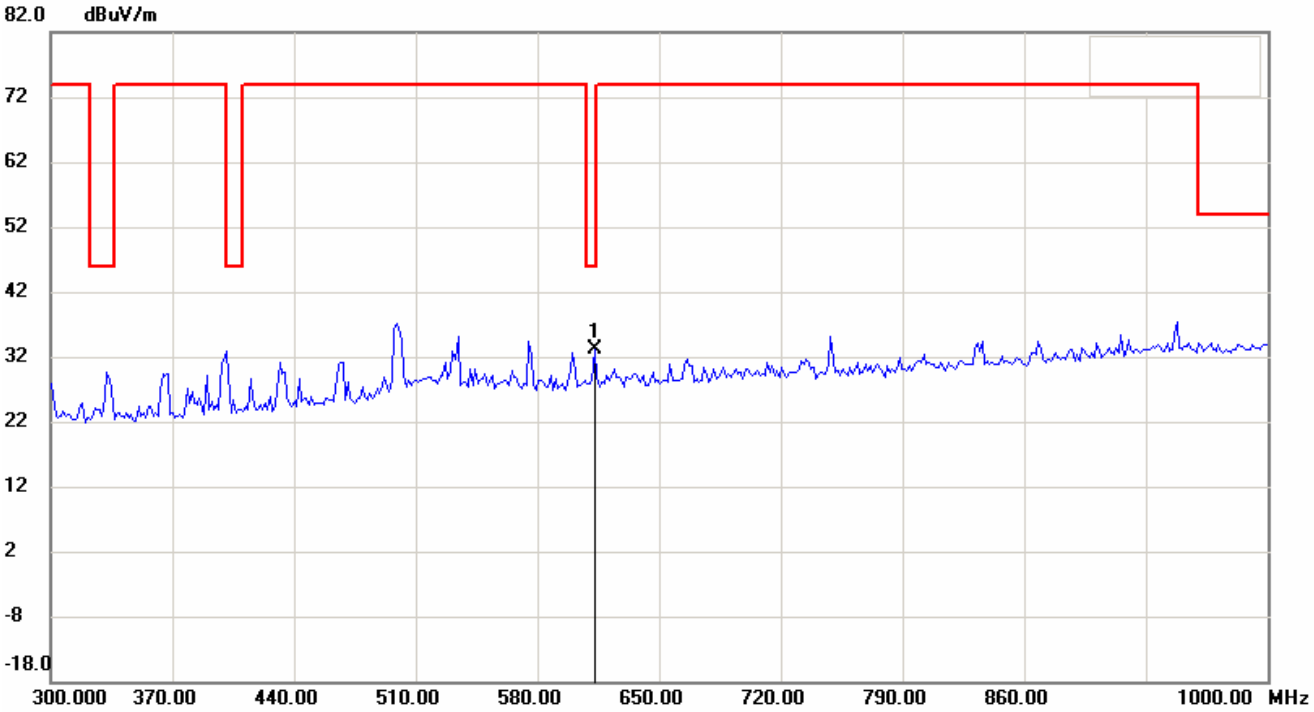




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Antenna Polarization V





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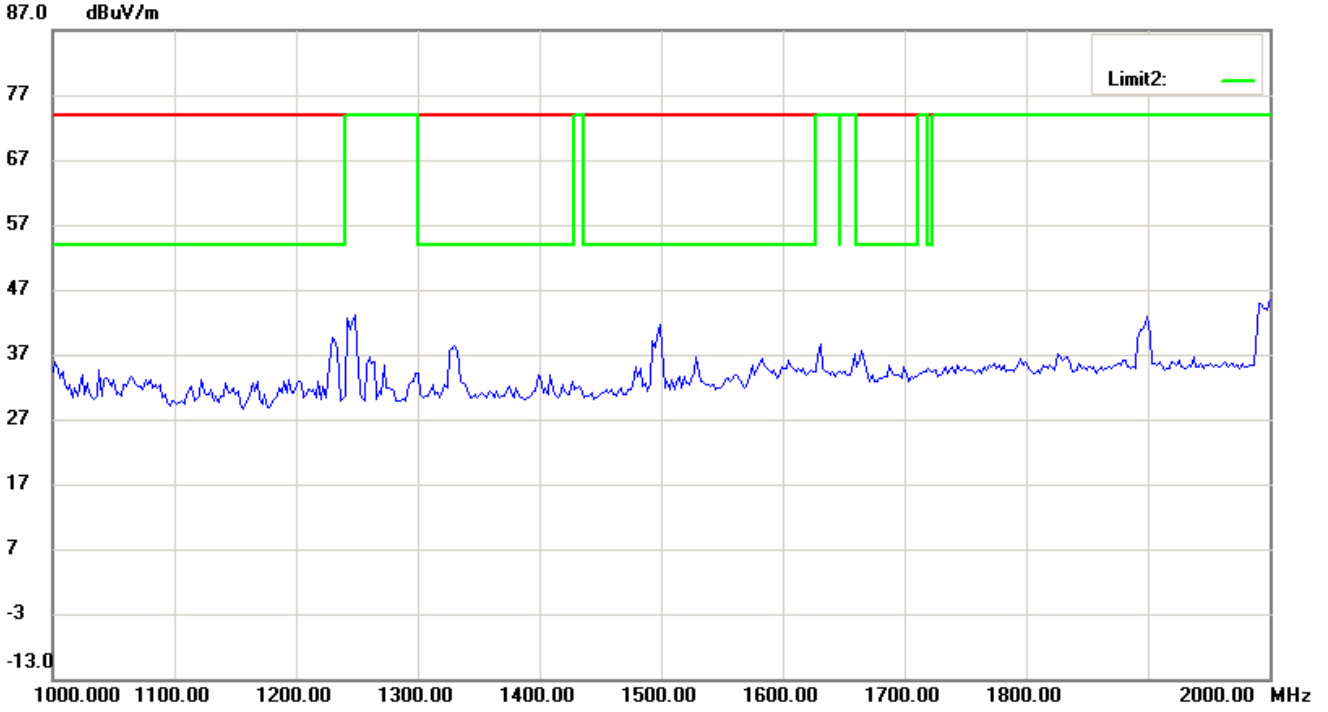
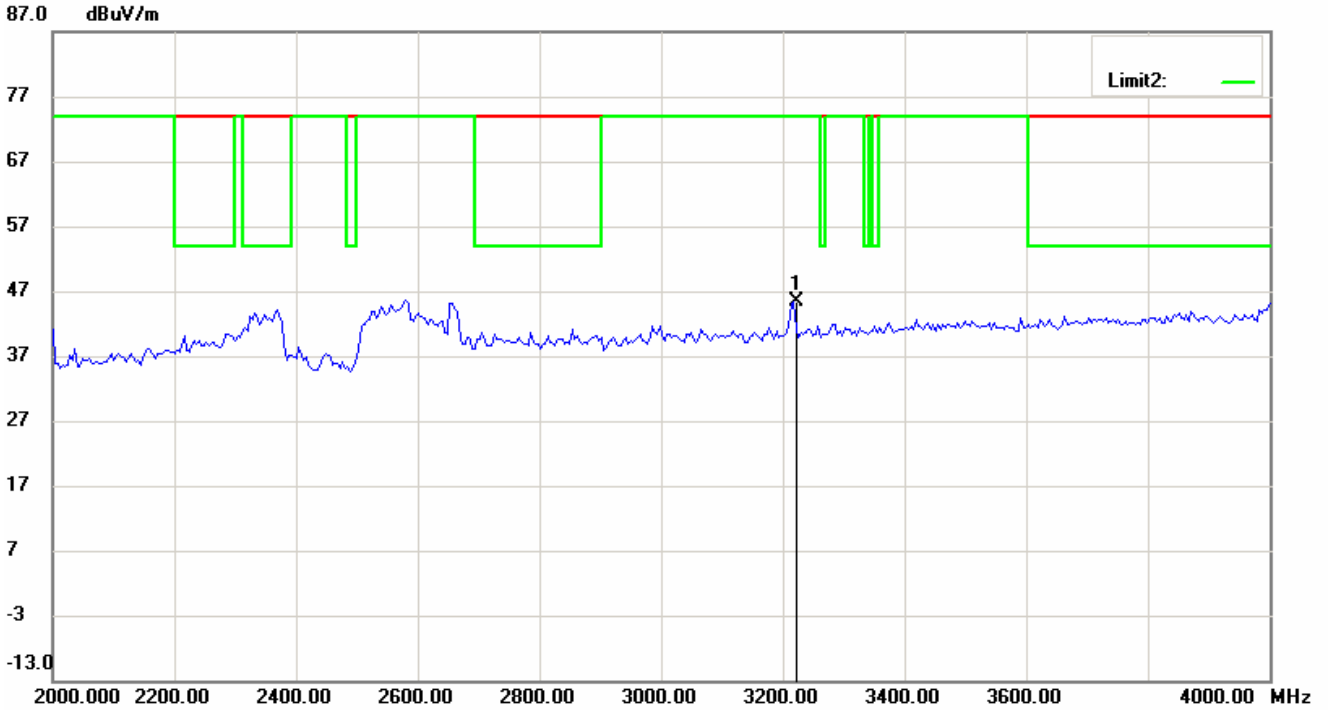
FCC ID: M82-PWS-8101M





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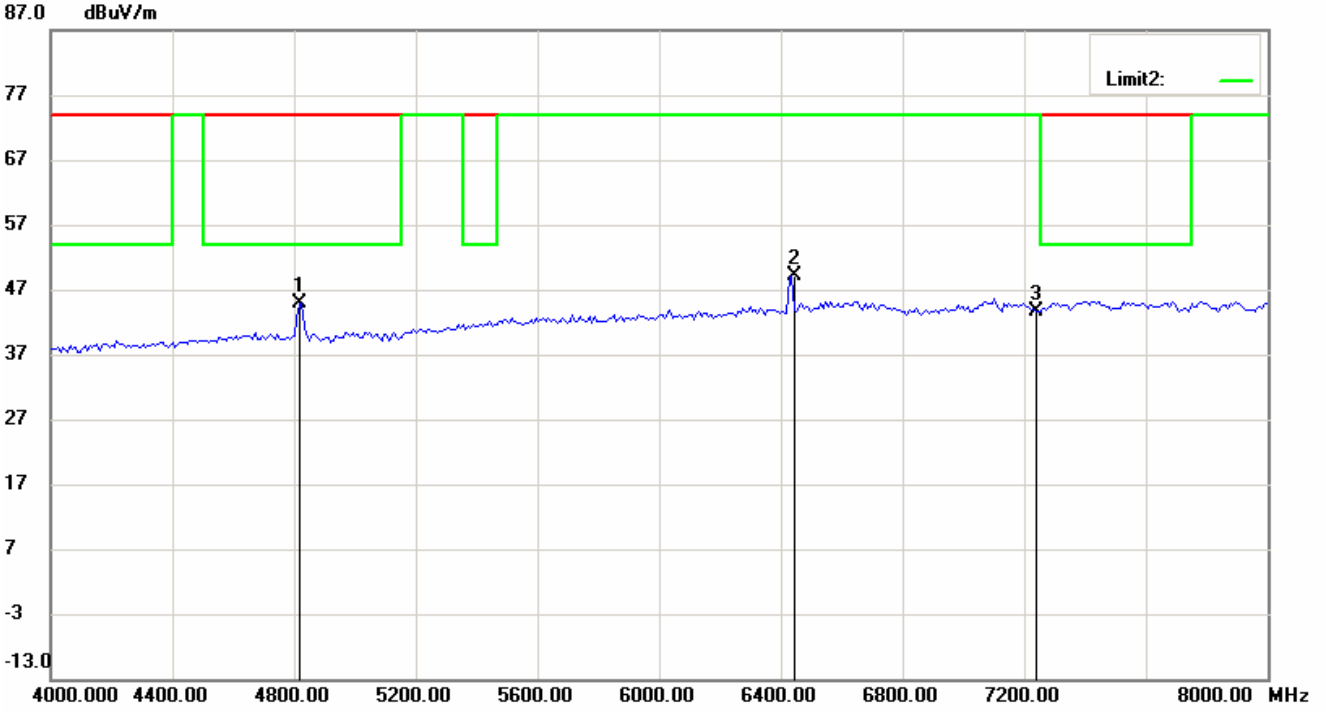

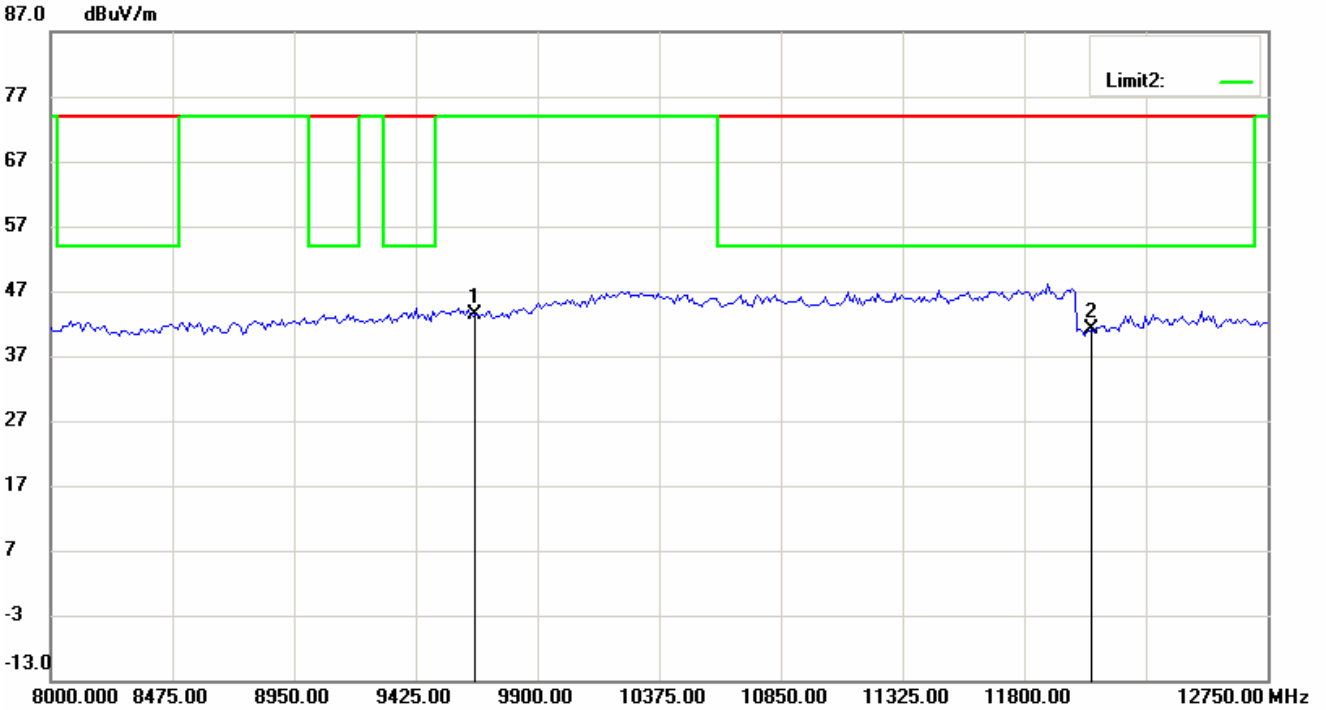

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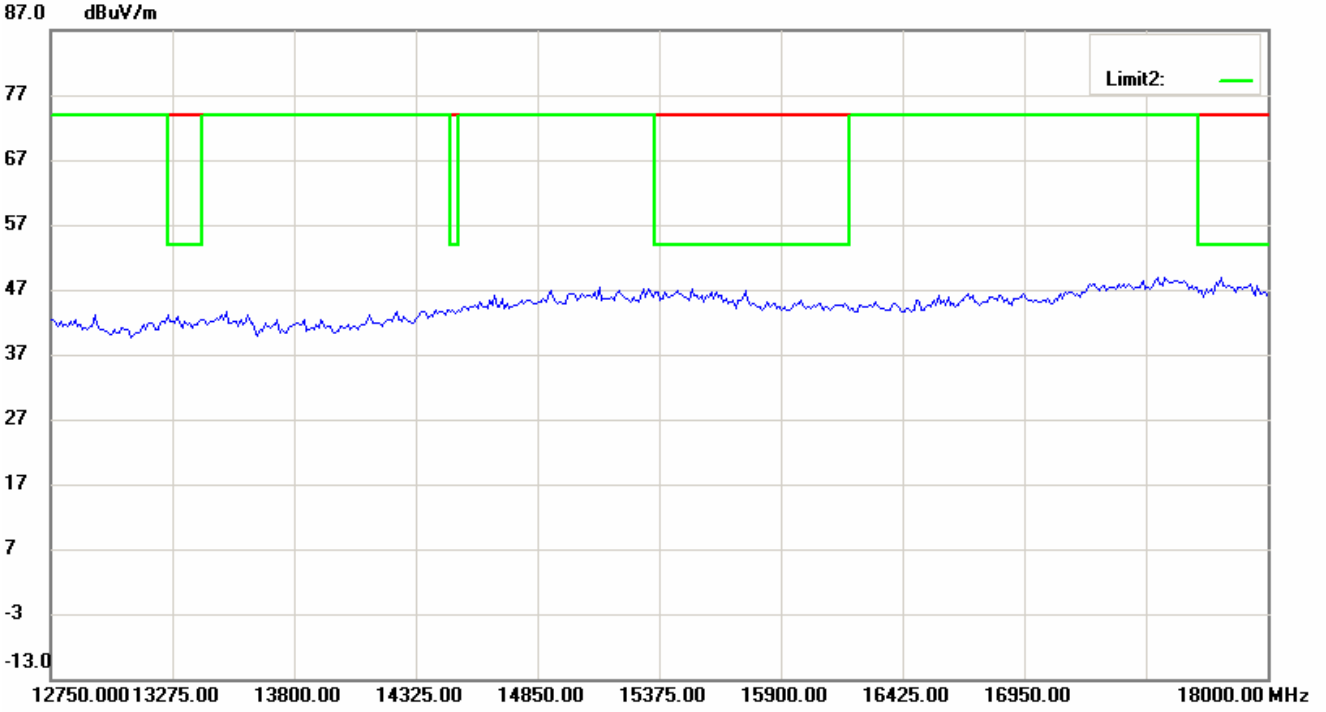
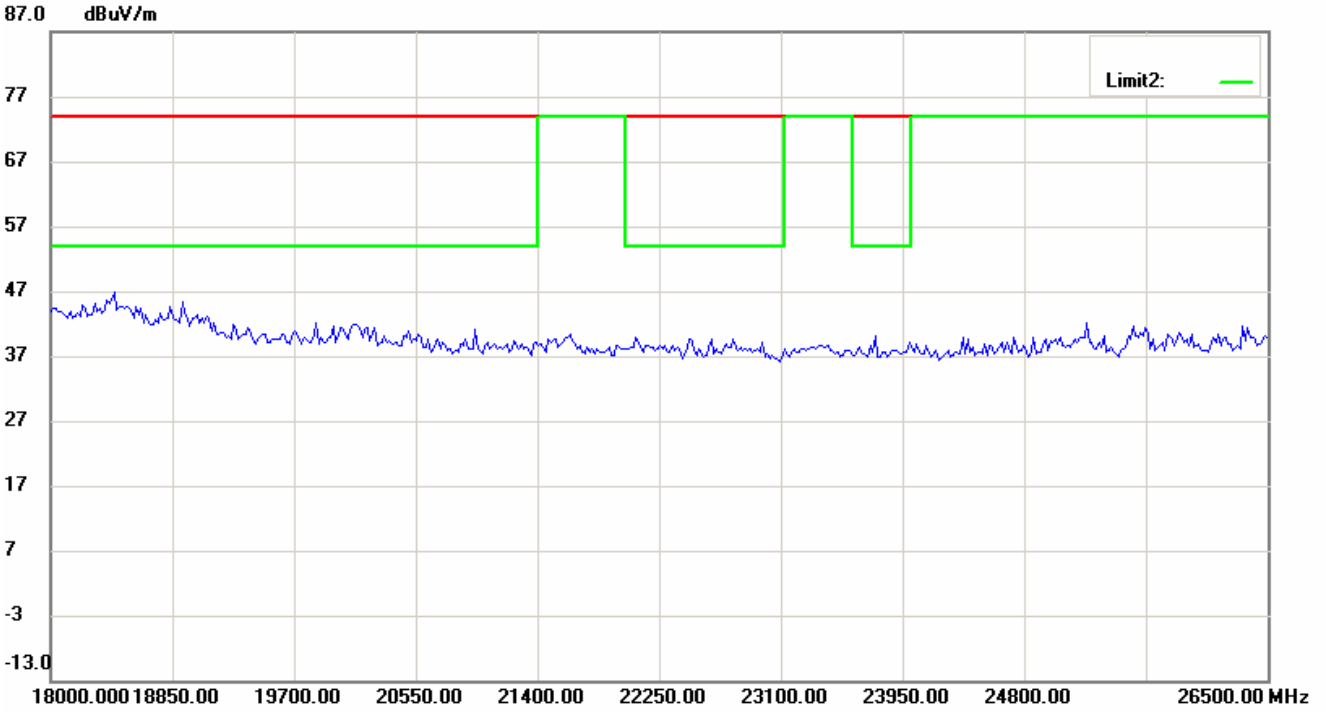
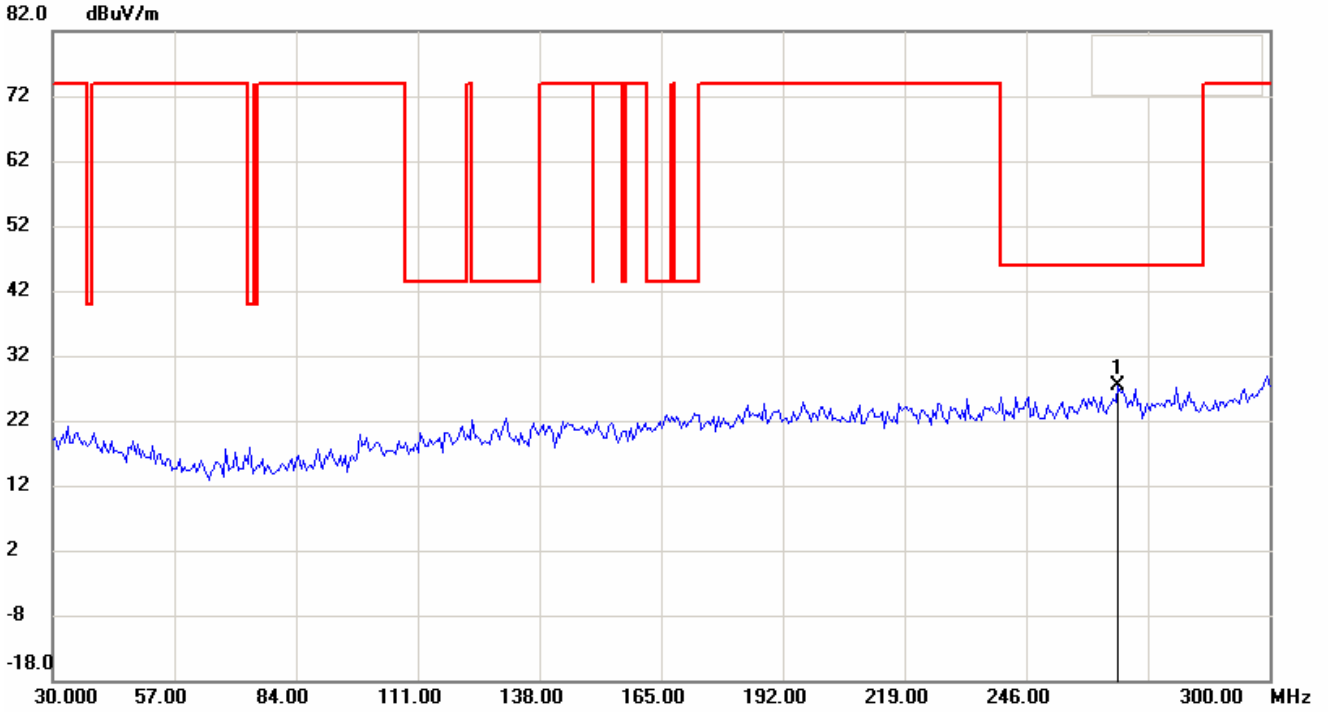


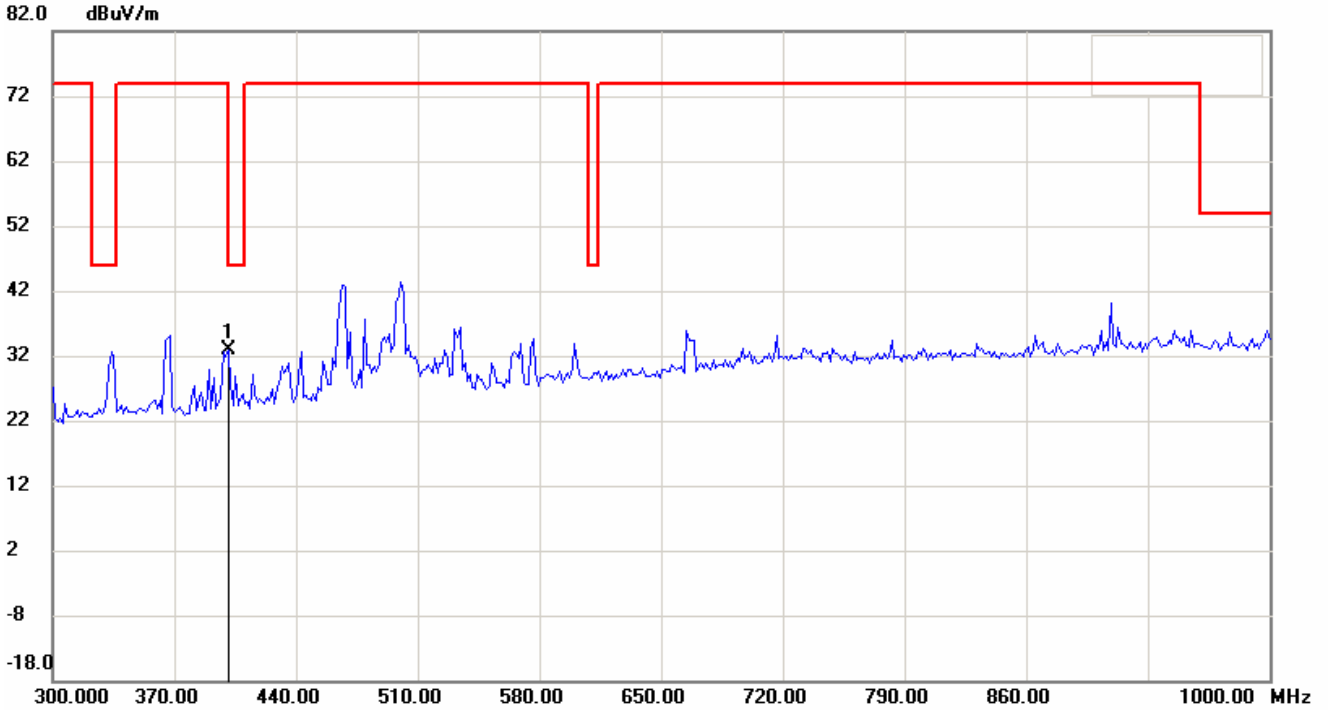


Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

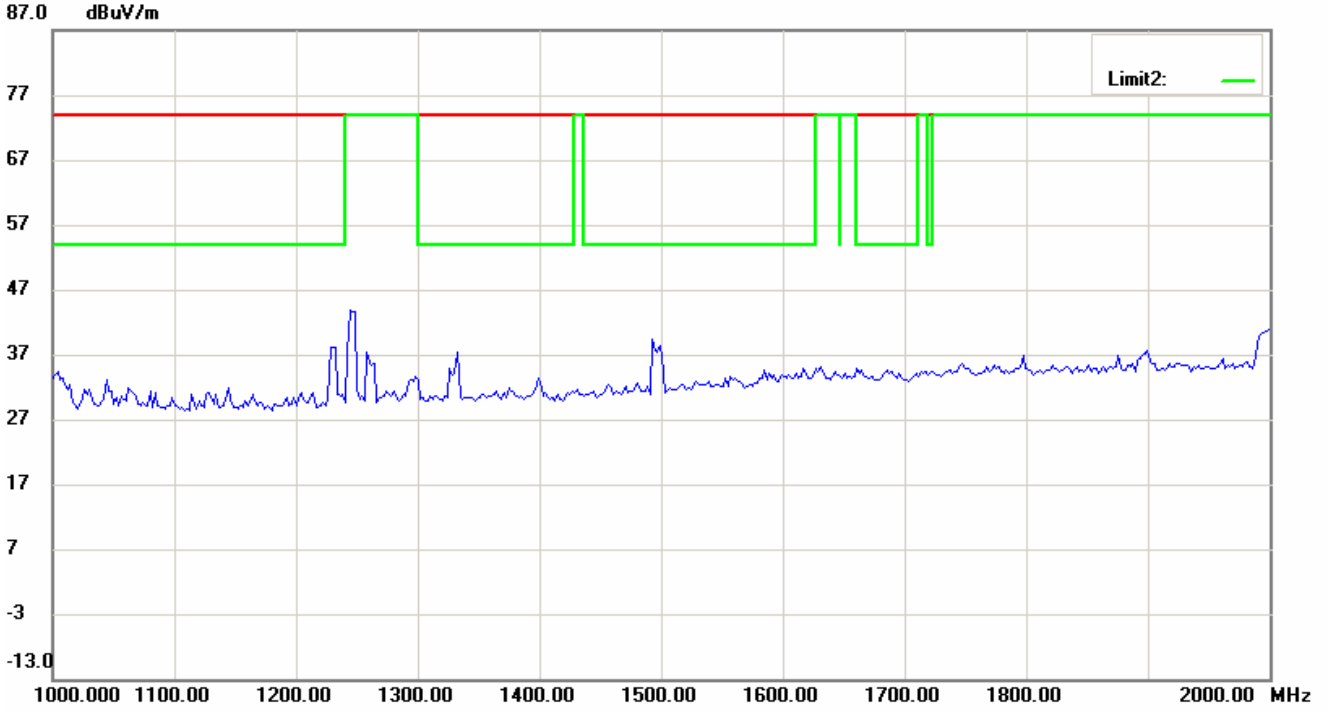
Middle channel

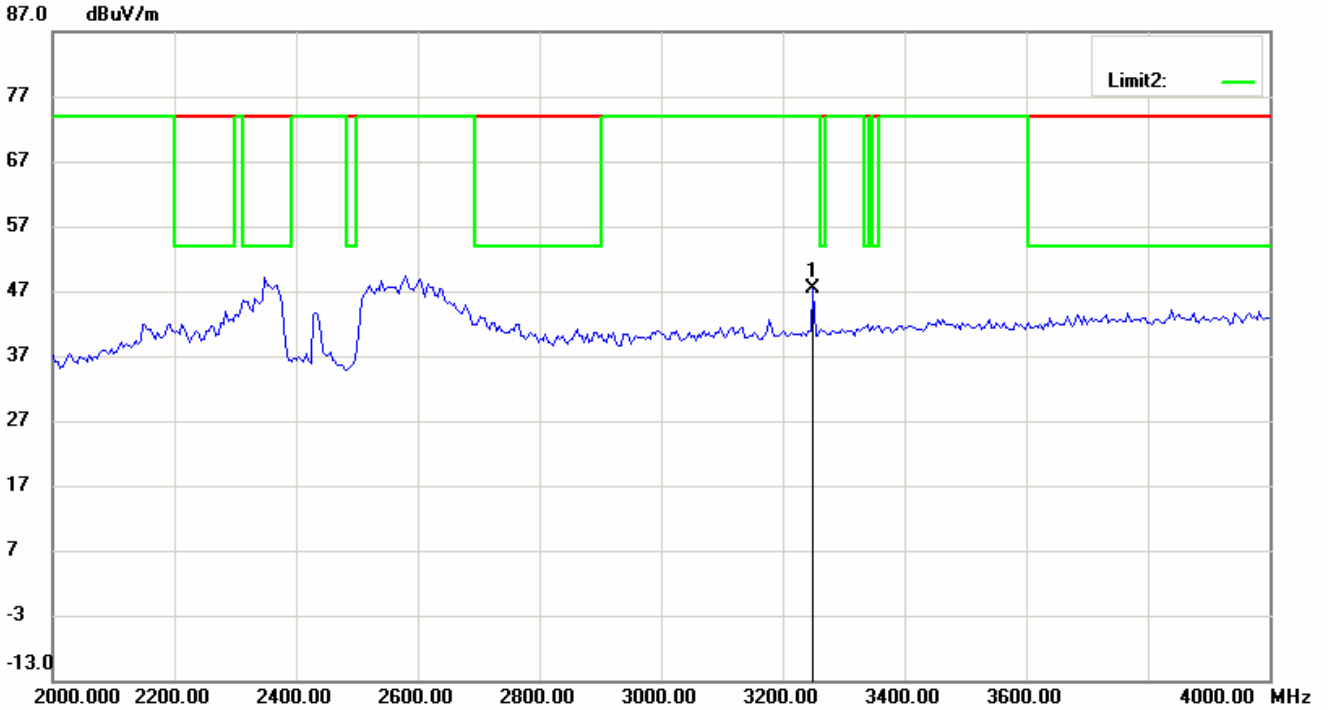
Antenna Polarization H



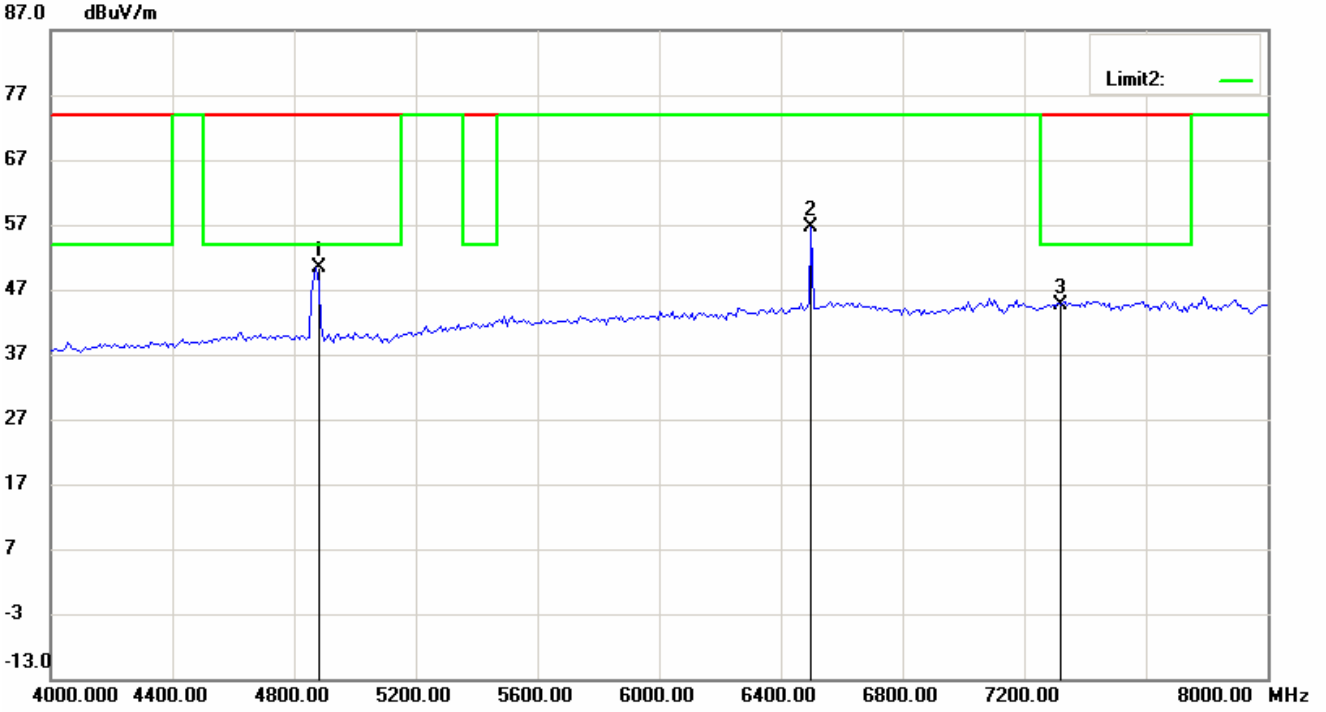


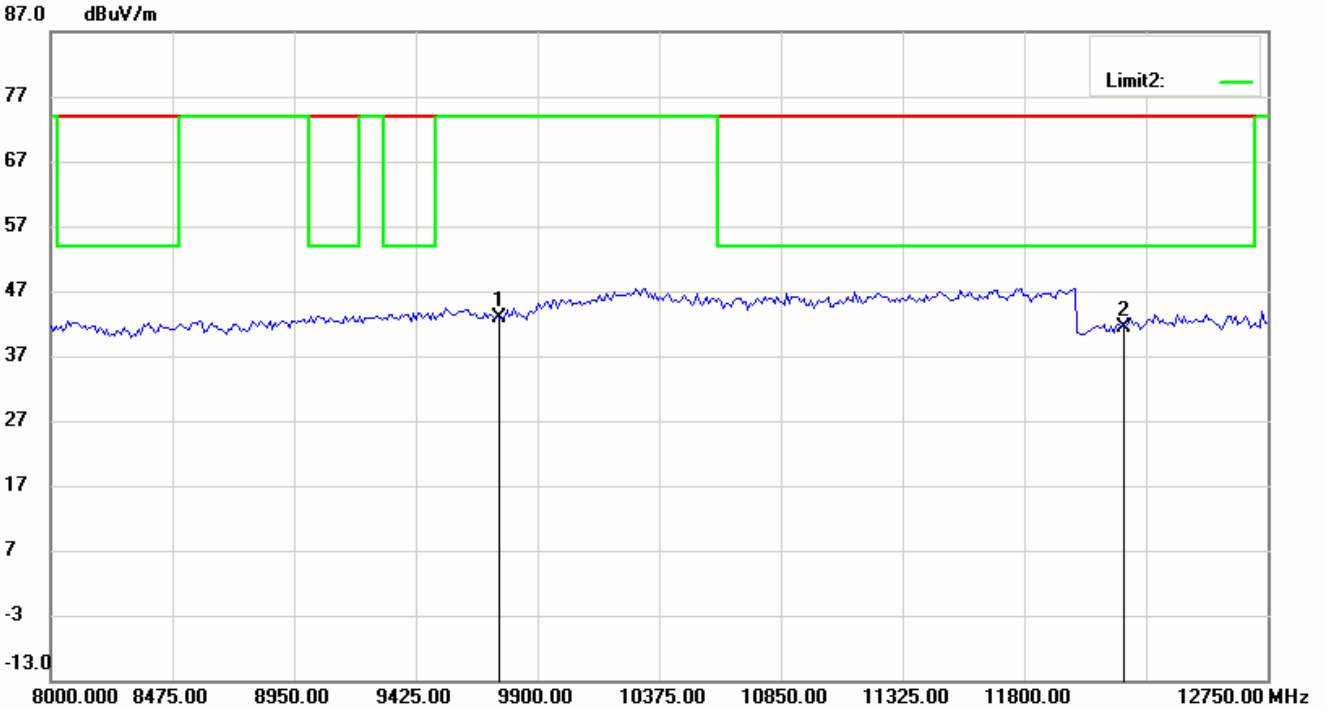
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M





Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M





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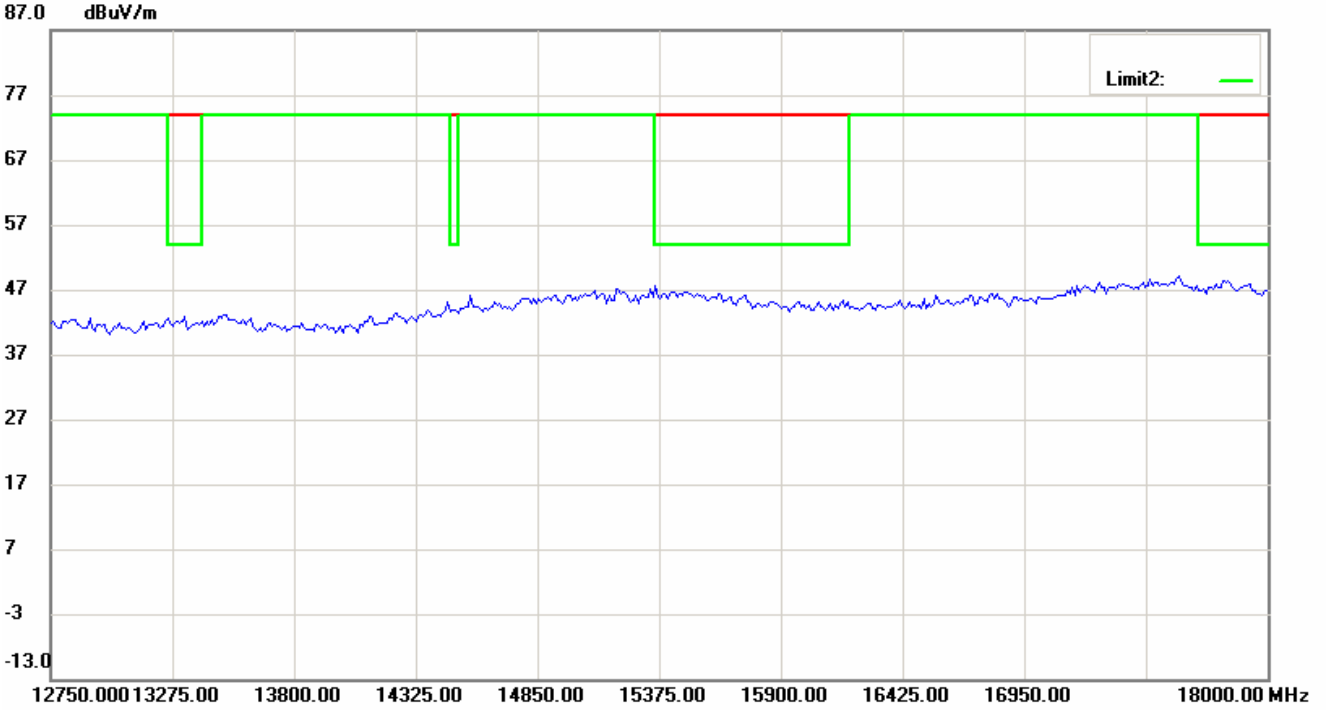
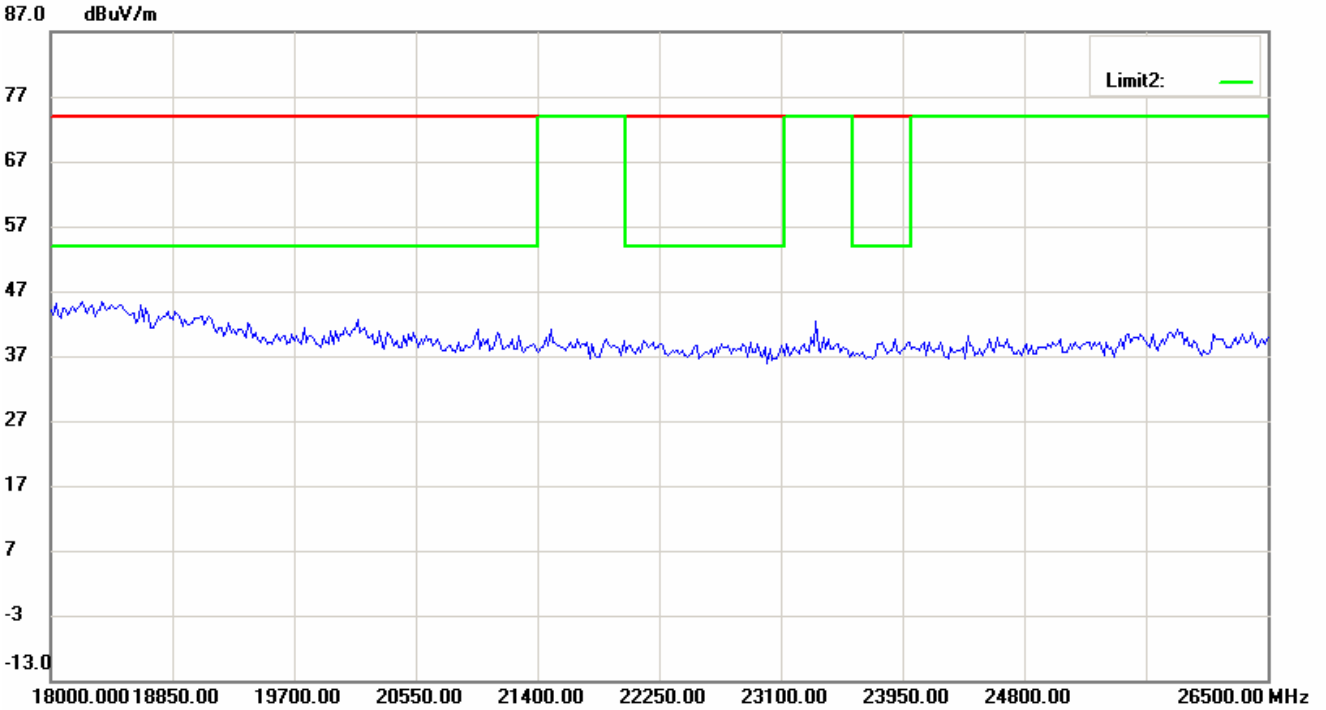
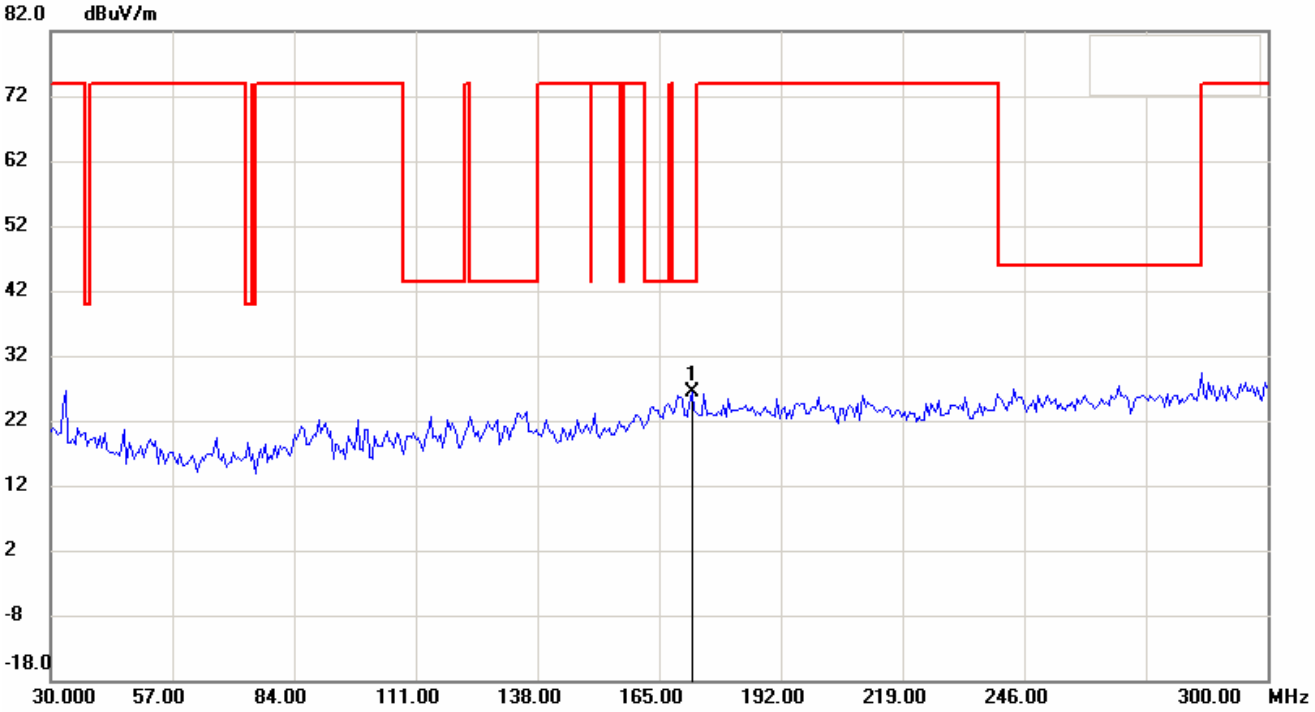
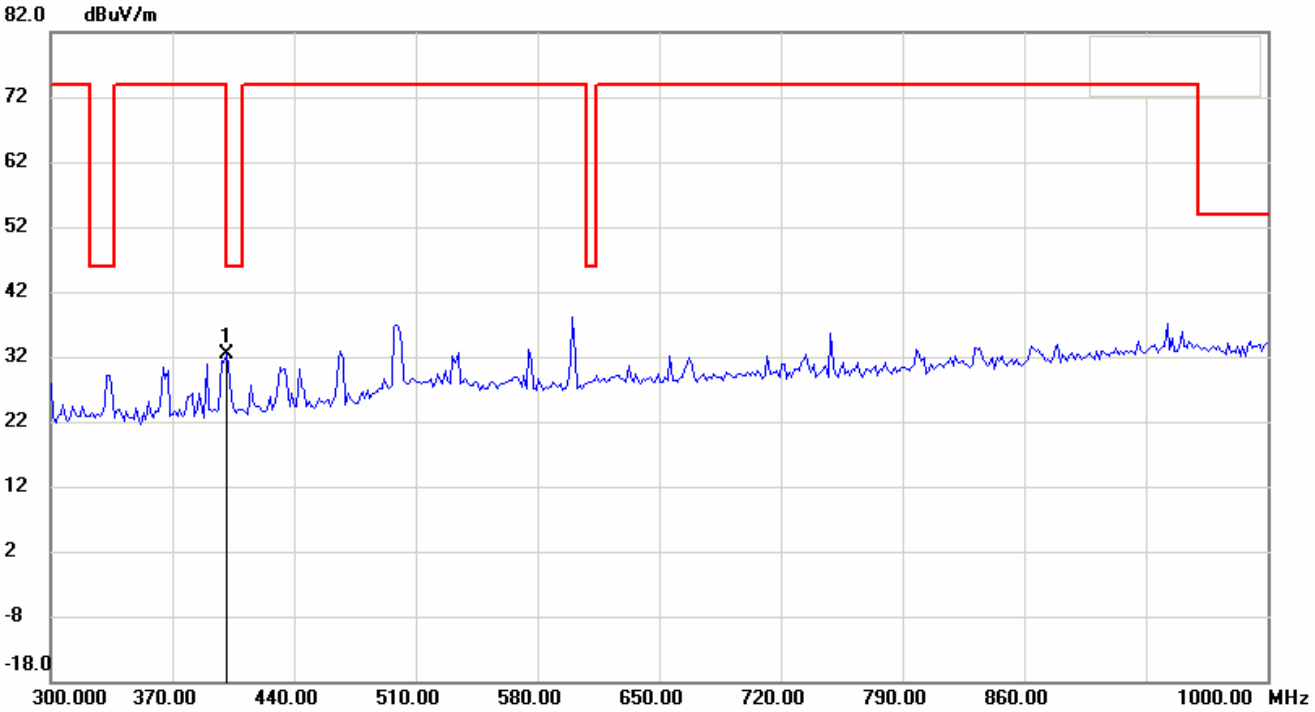




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Antenna Polarization V





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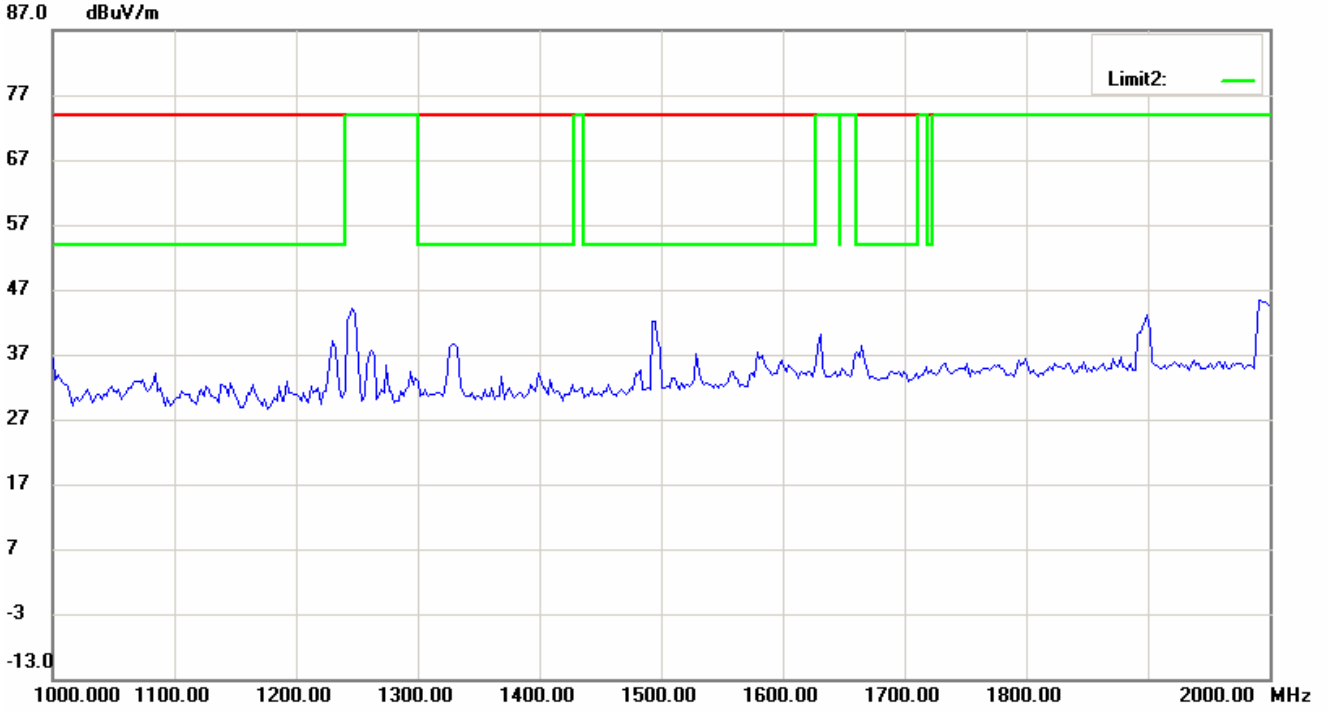

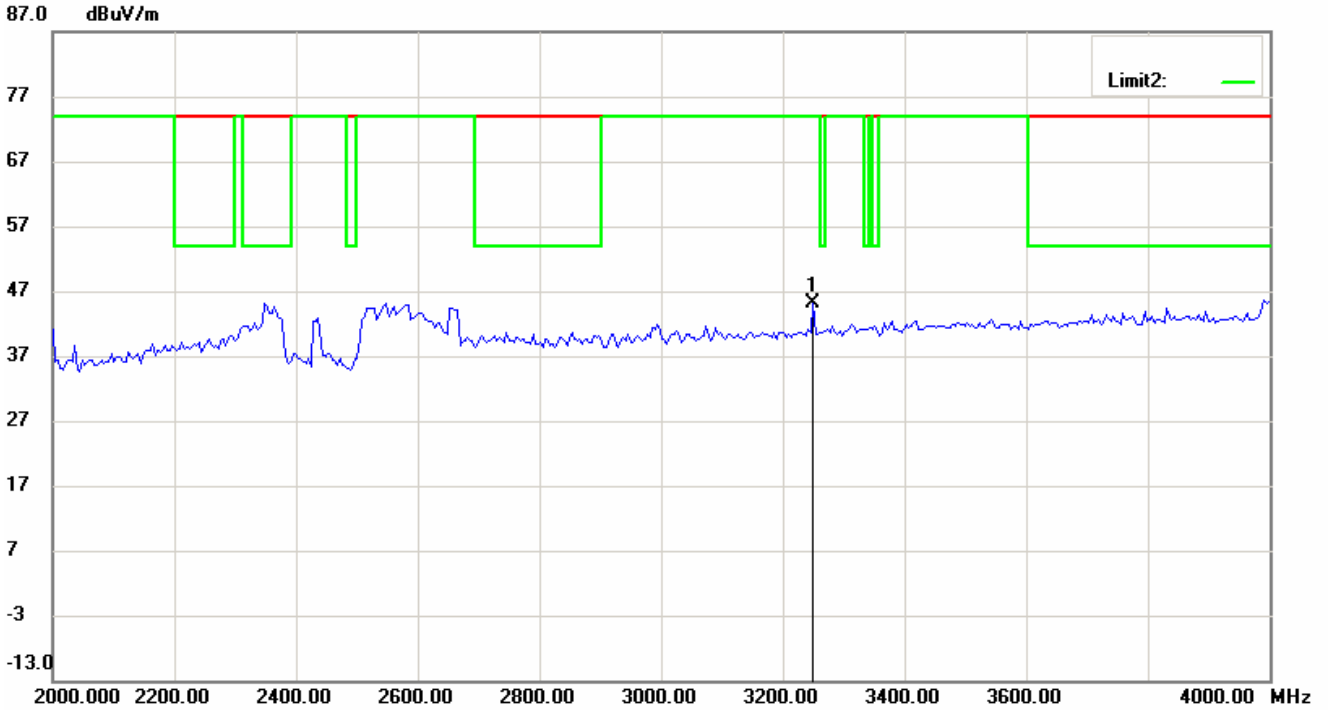

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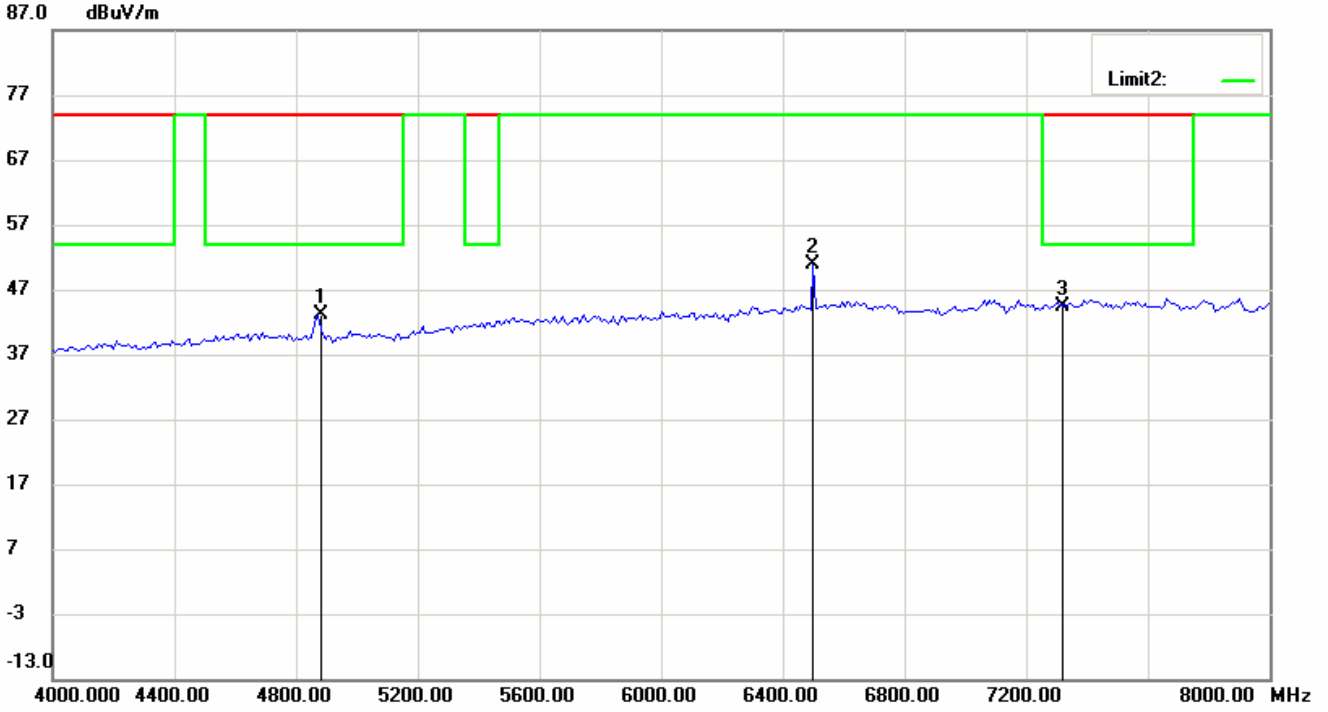

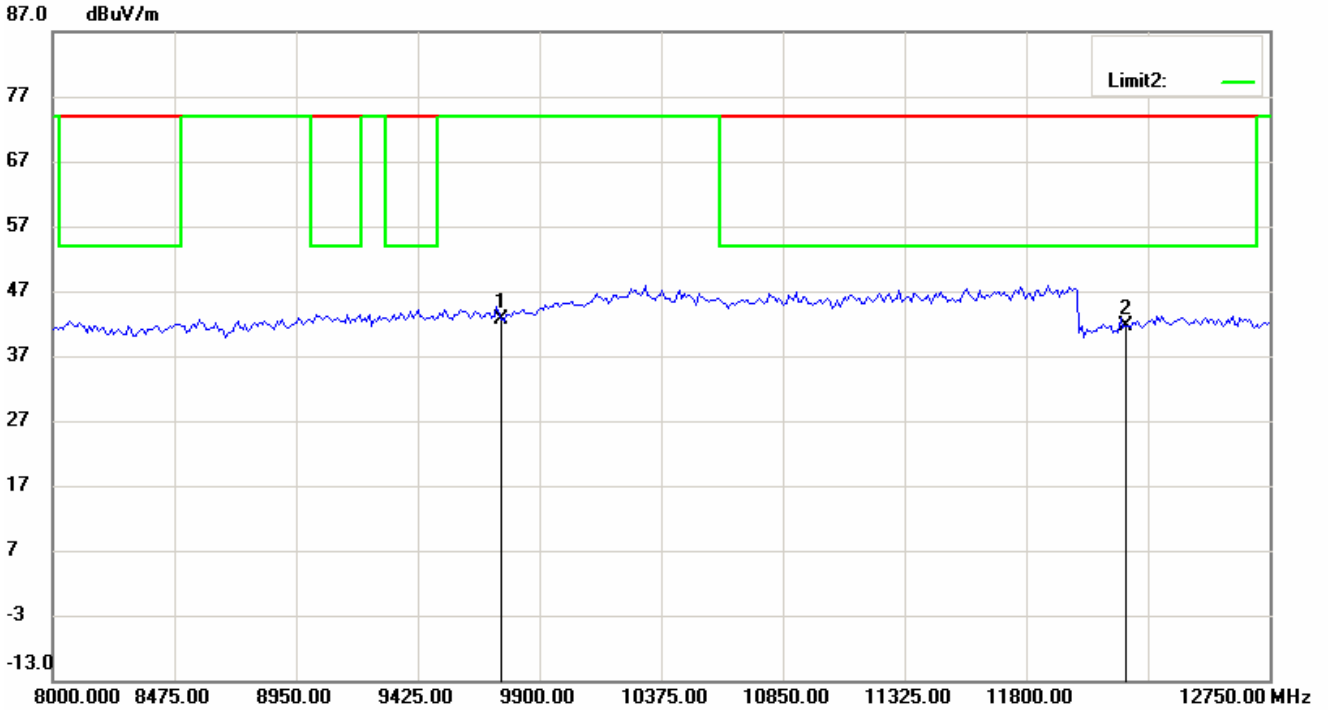

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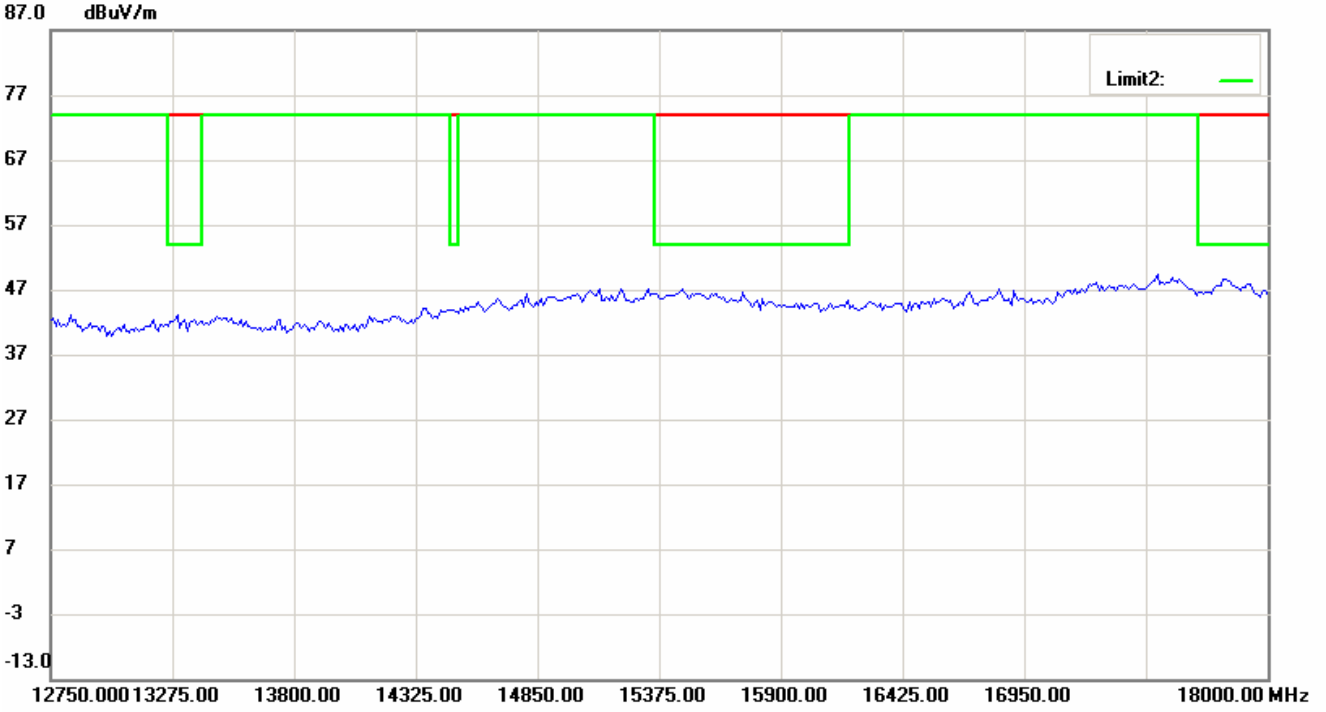
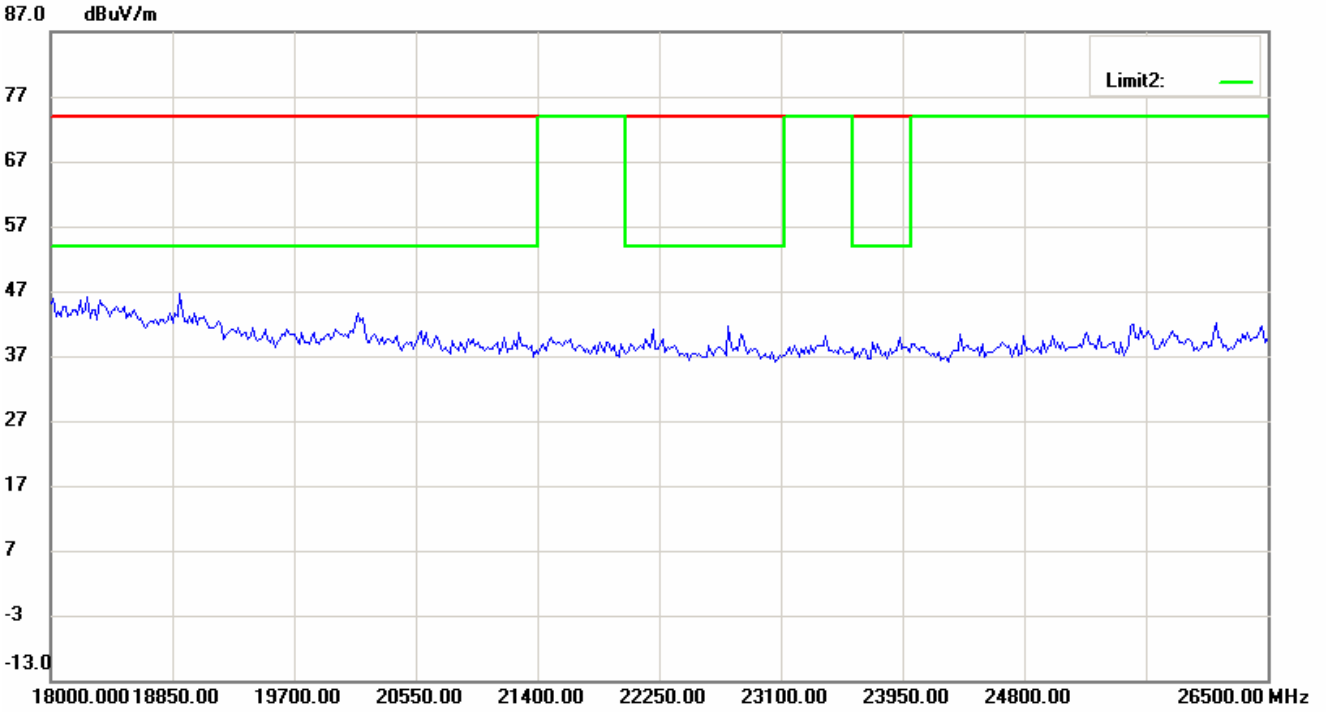
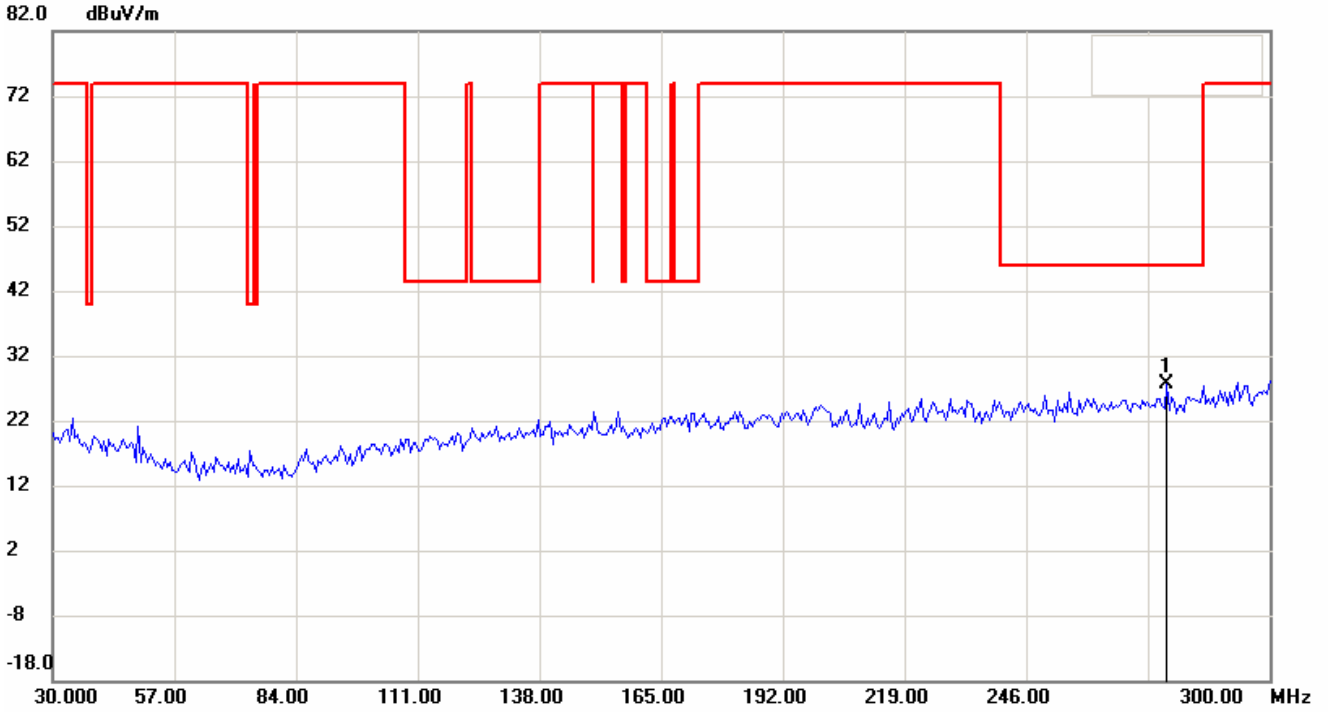


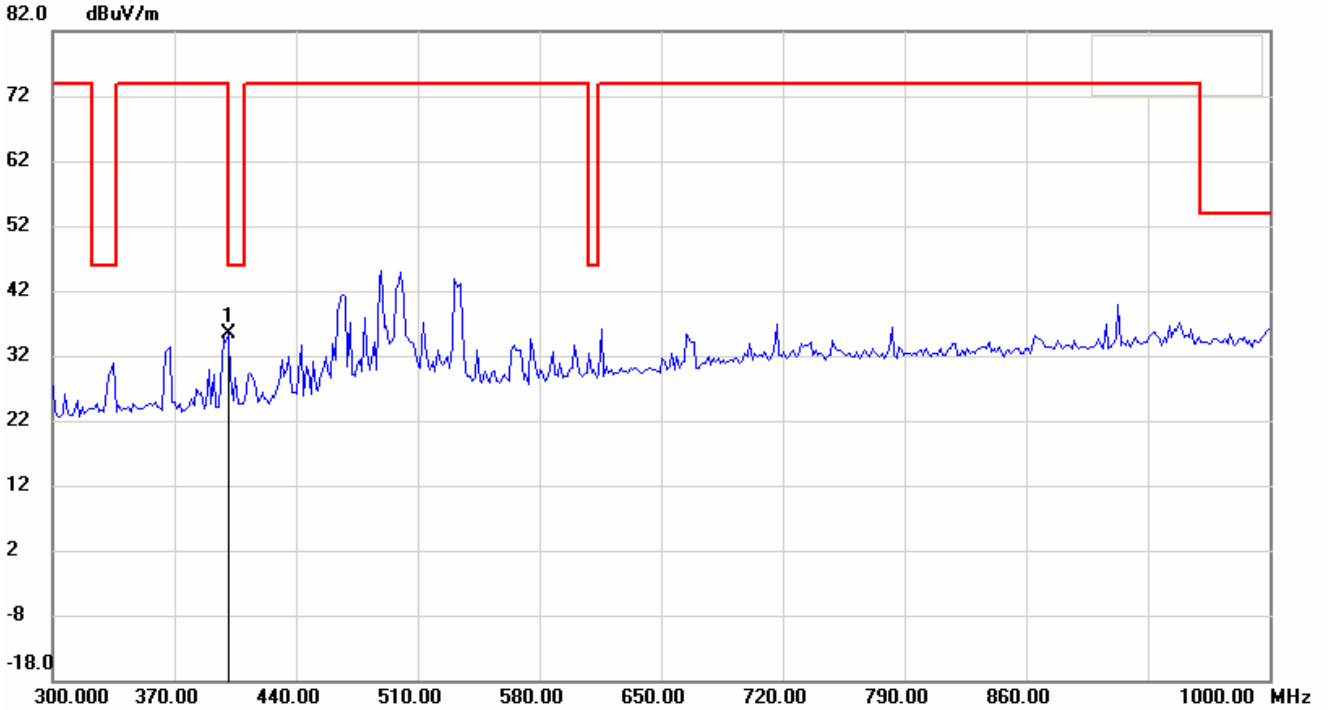


Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

High channel

Antenna Polarization H





Registration number: W6D20812-9514-C-1
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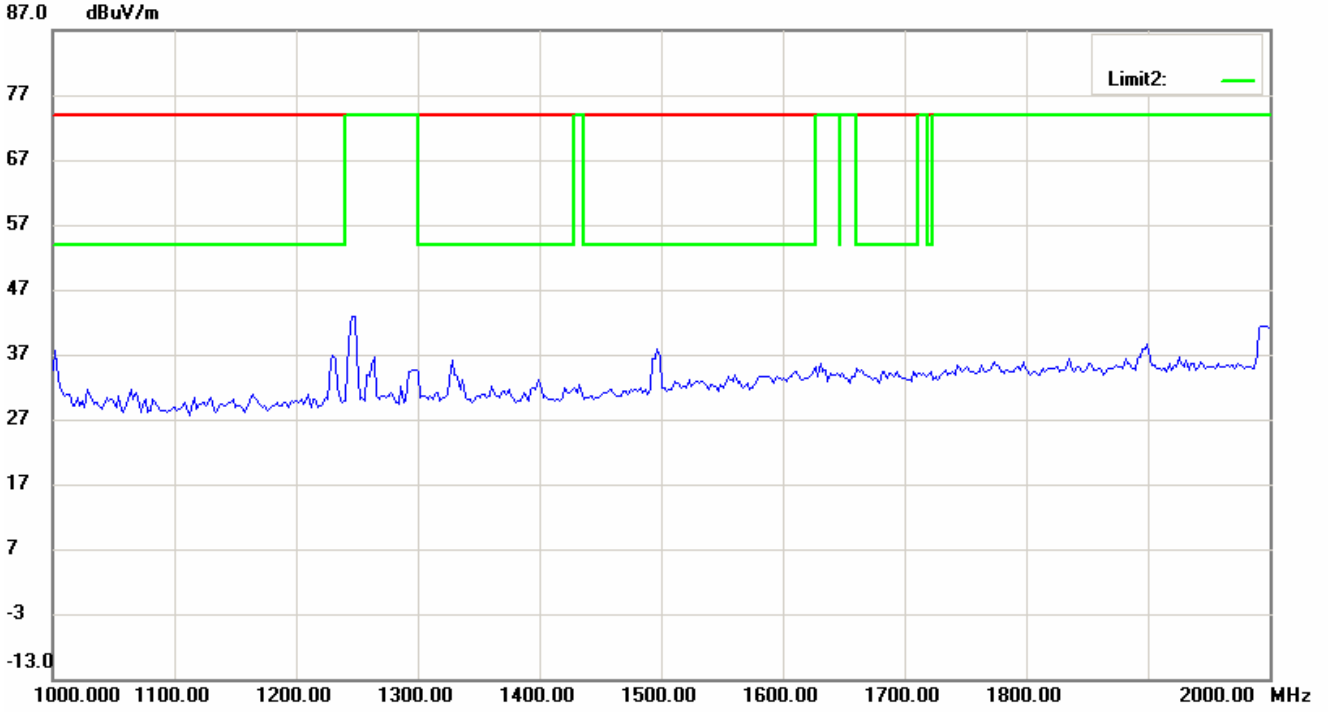

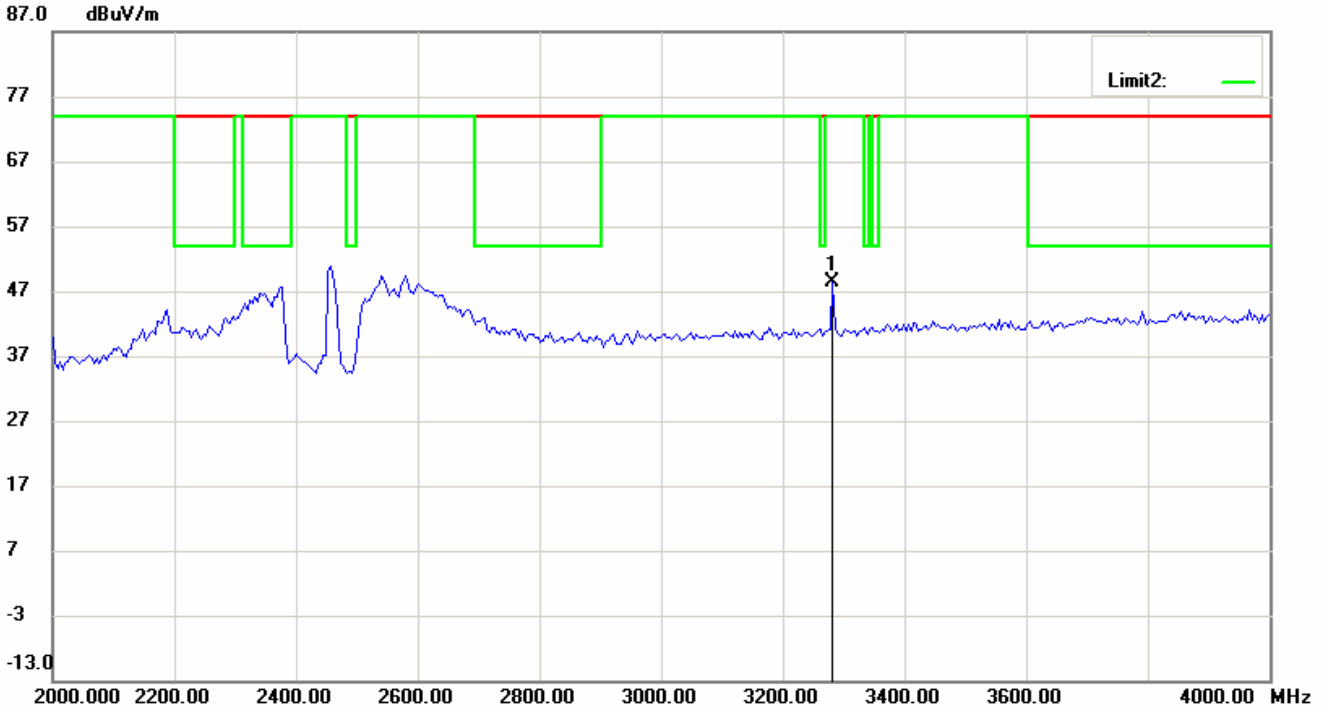

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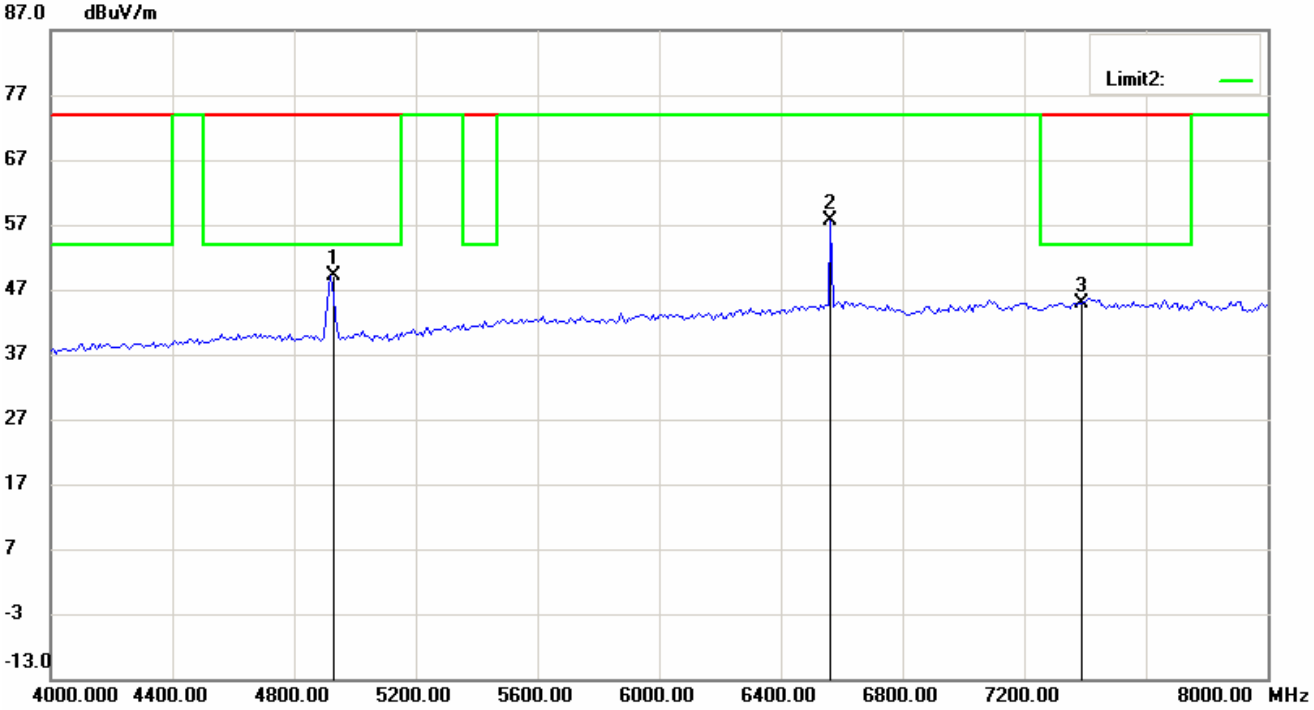

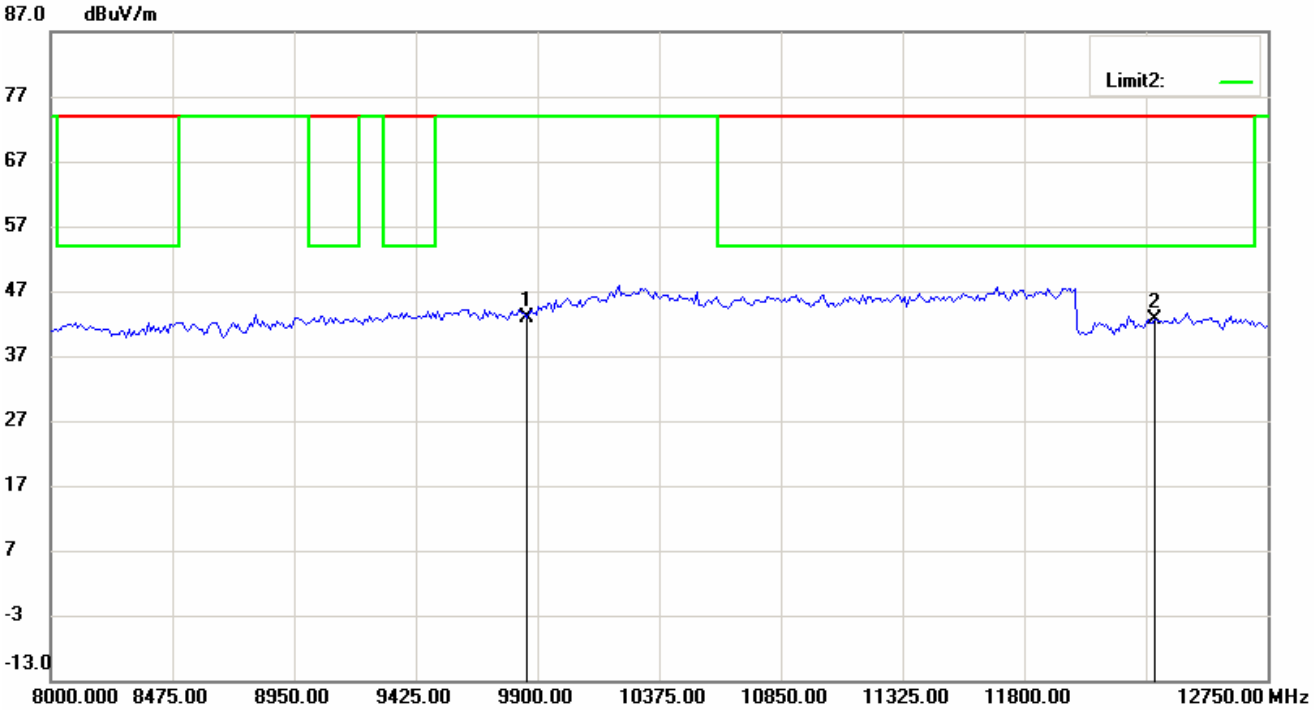

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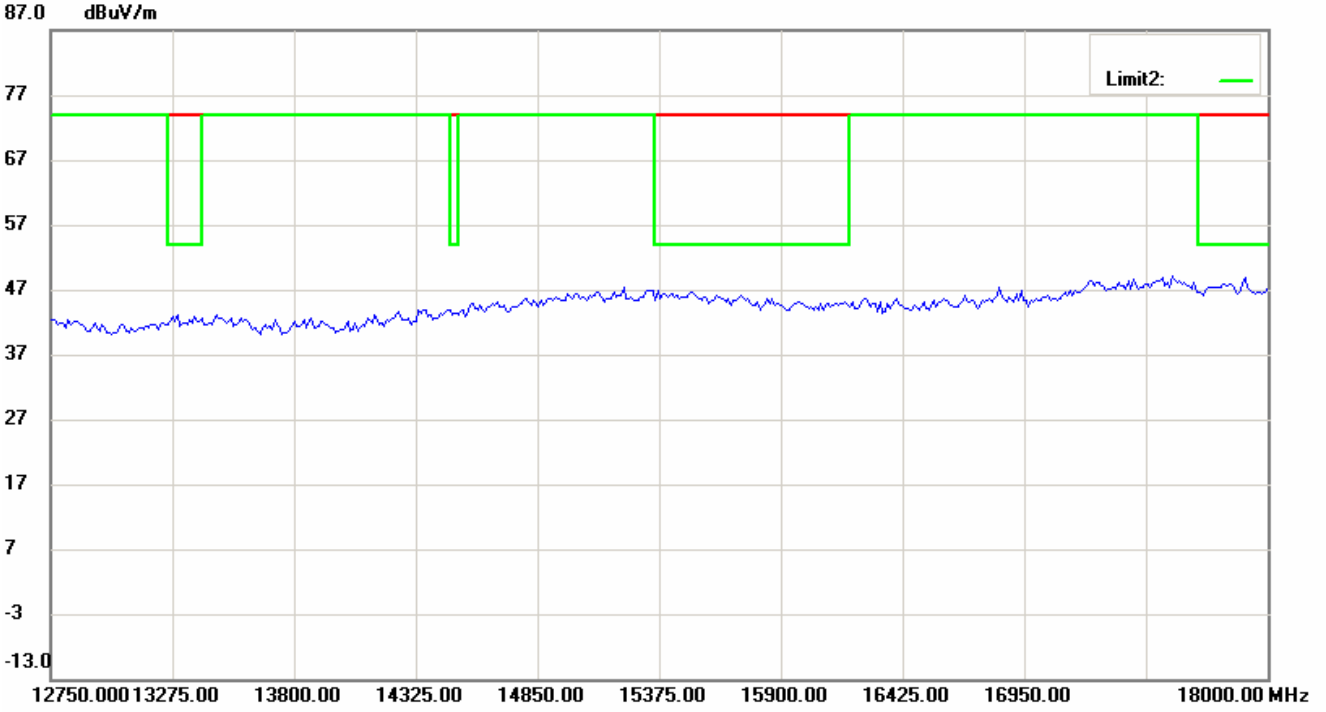
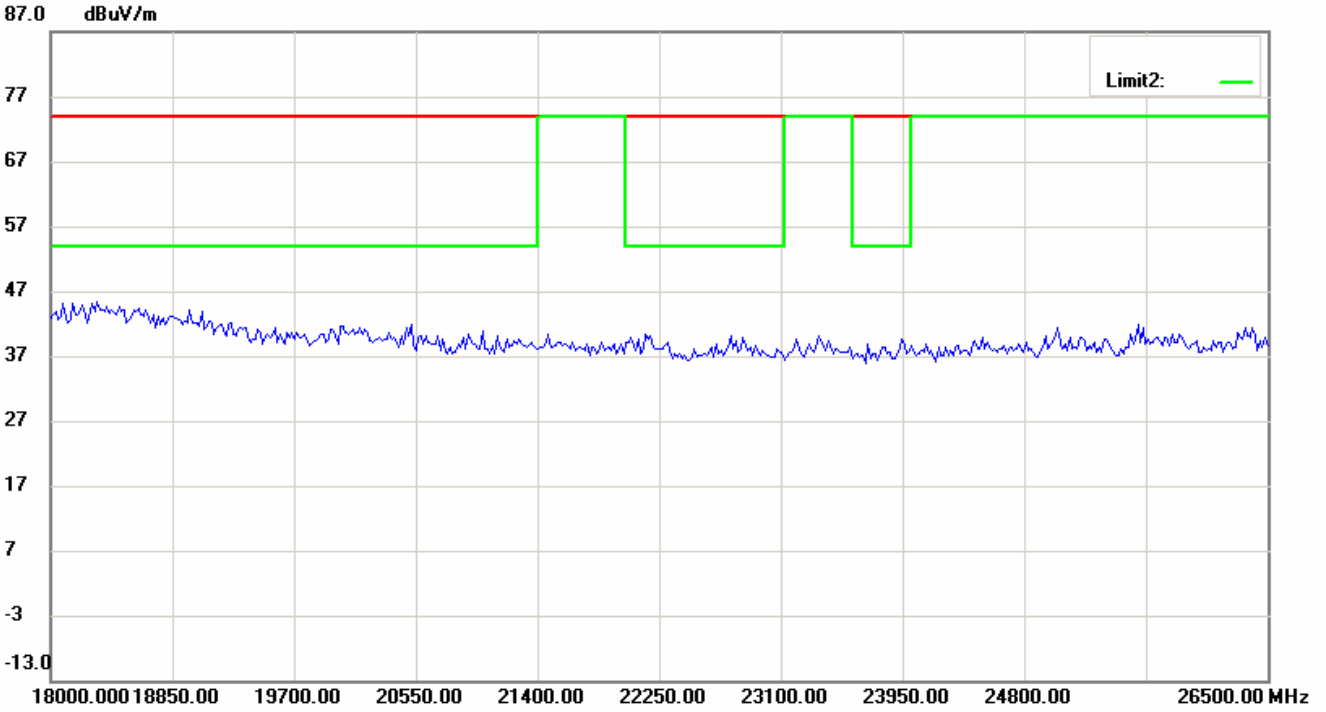
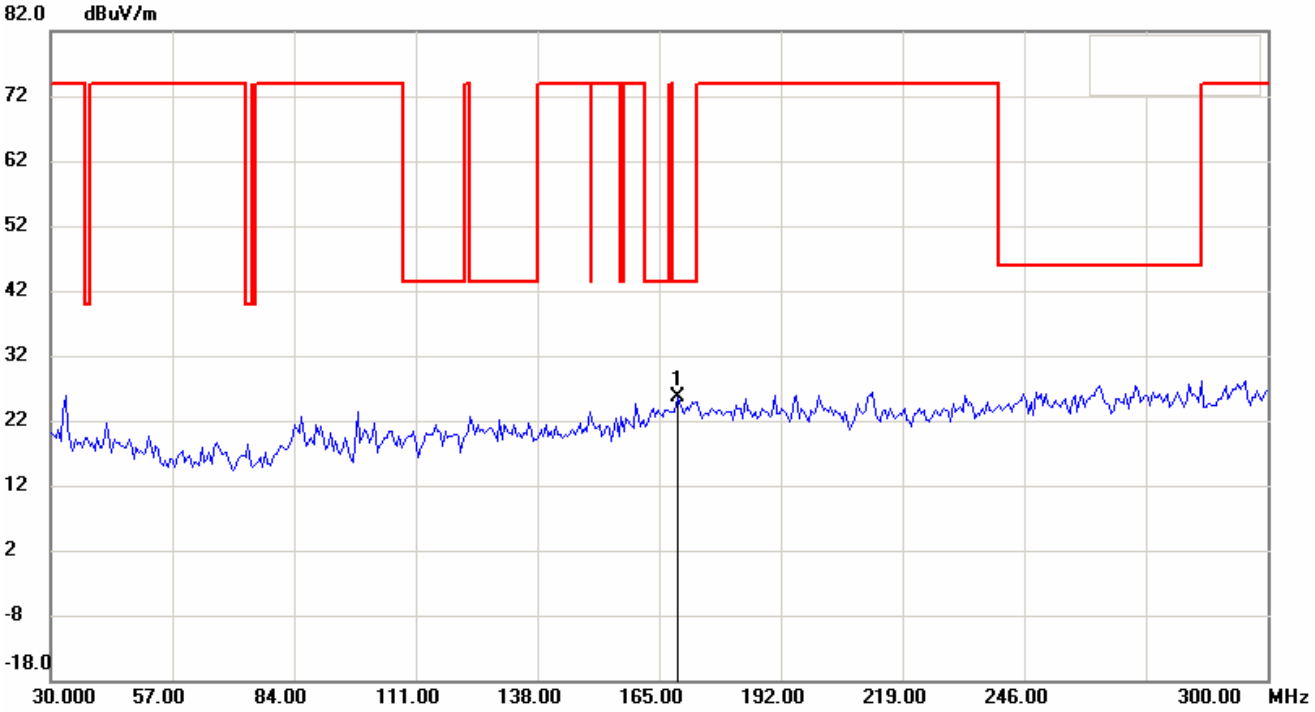
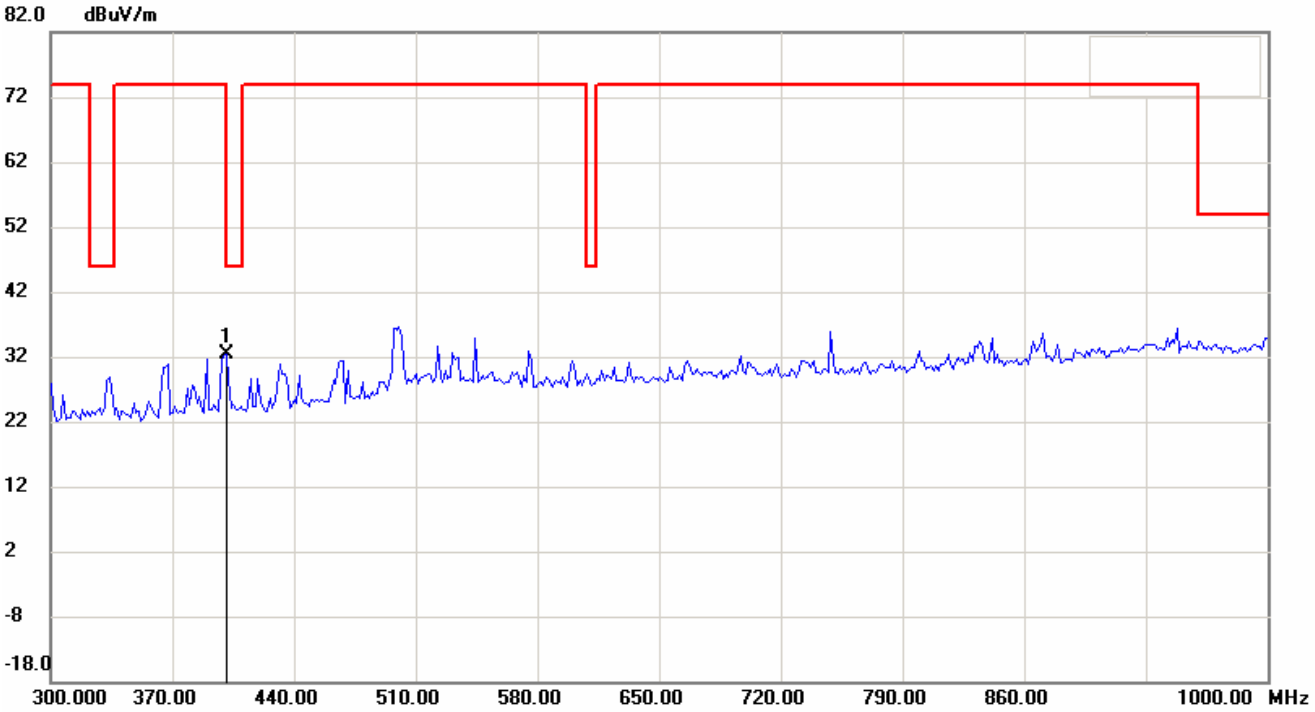




Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Antenna Polarization V





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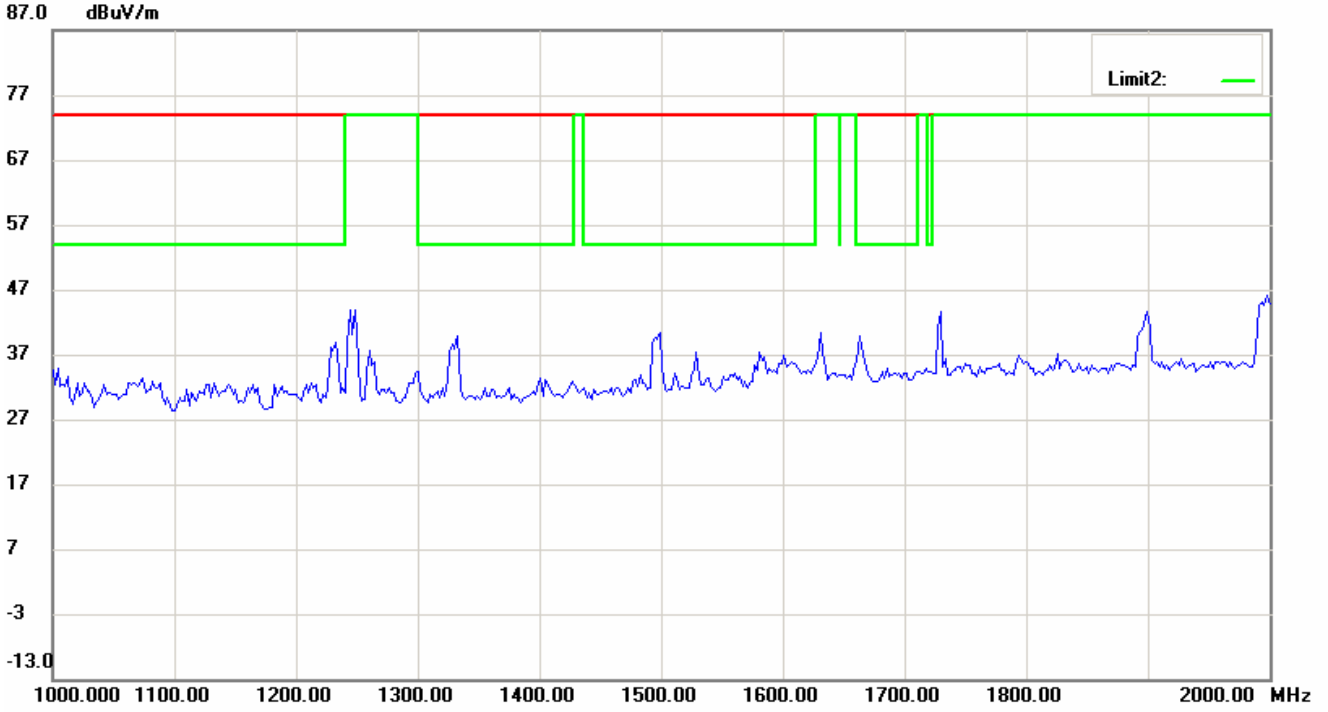

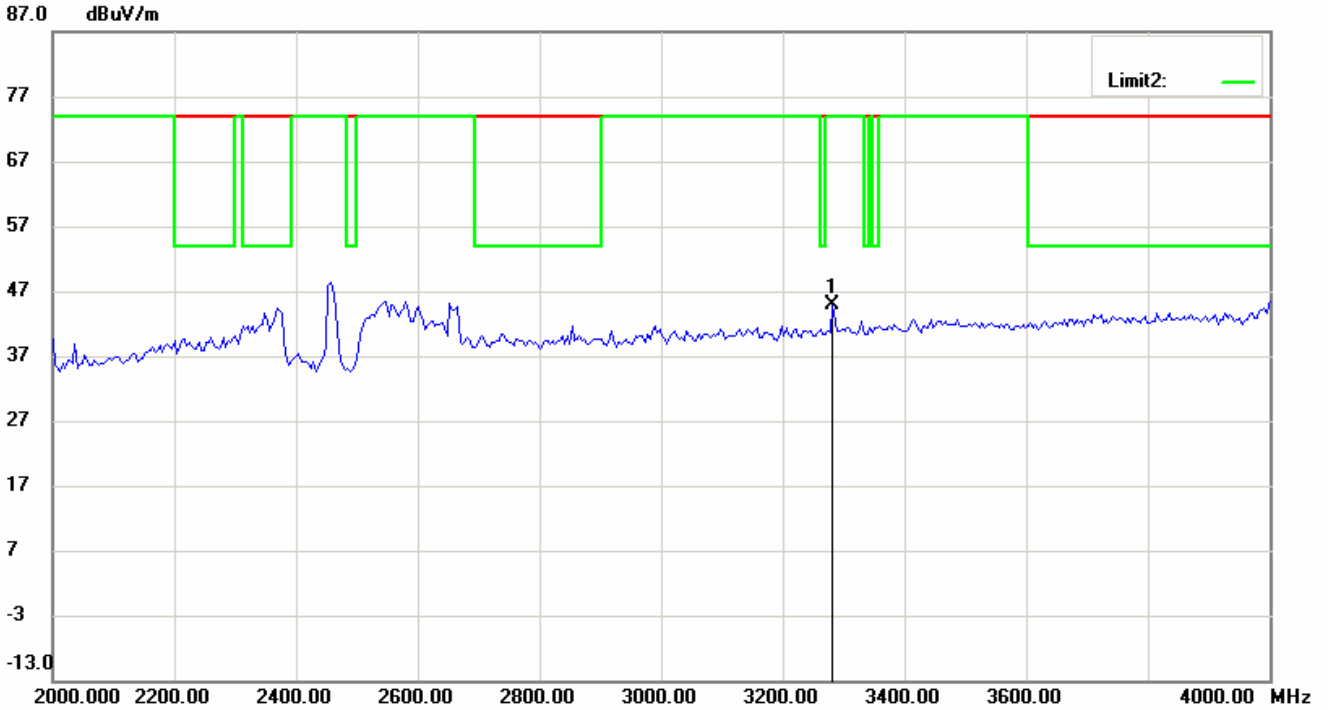

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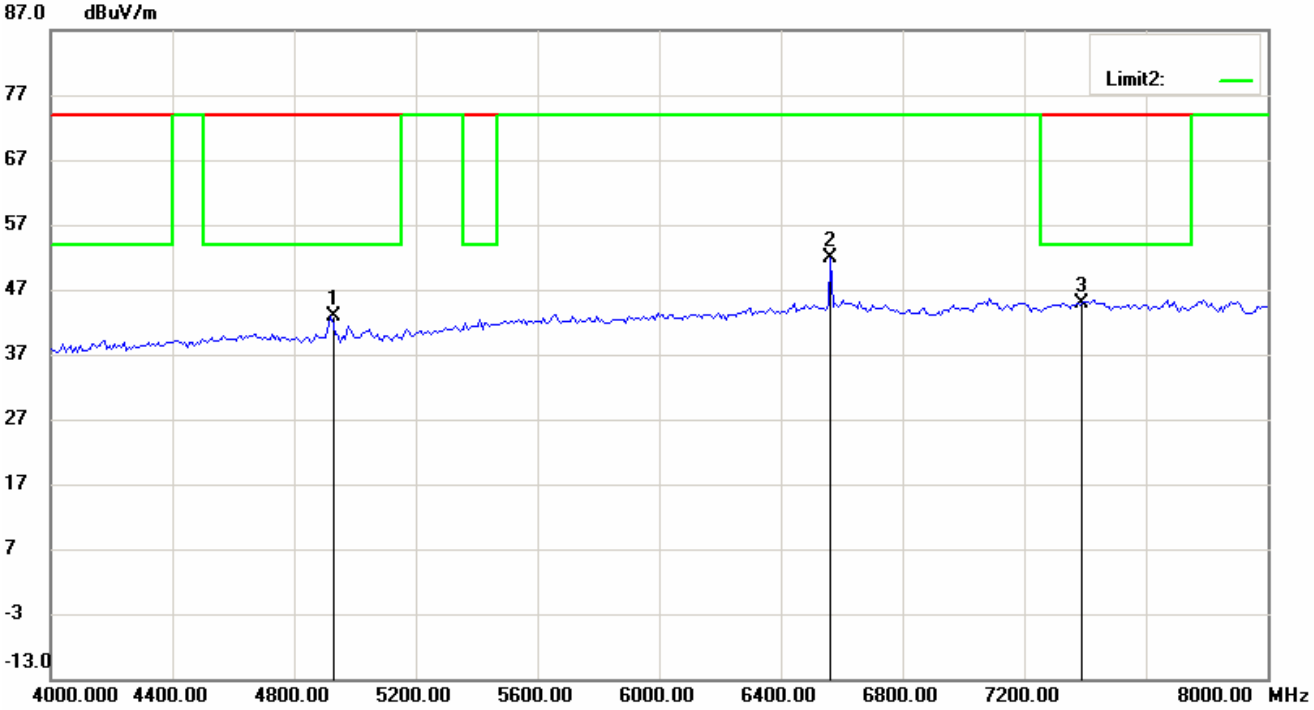

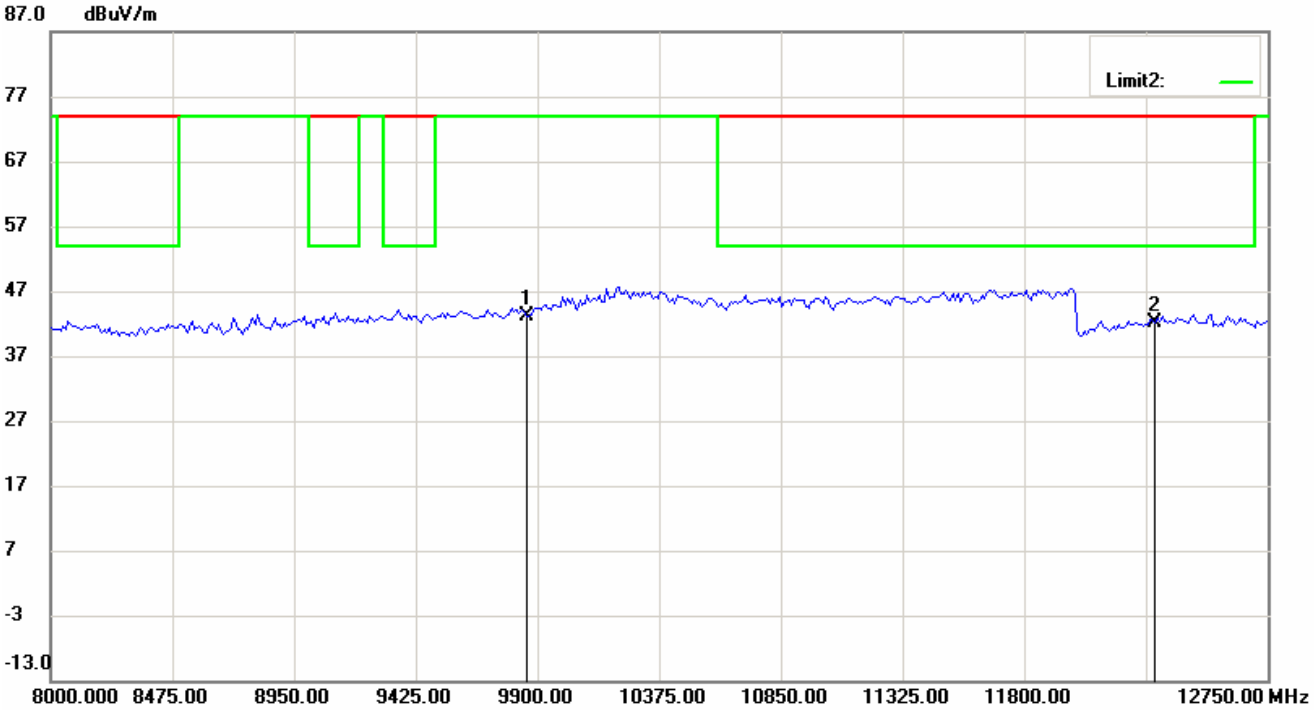

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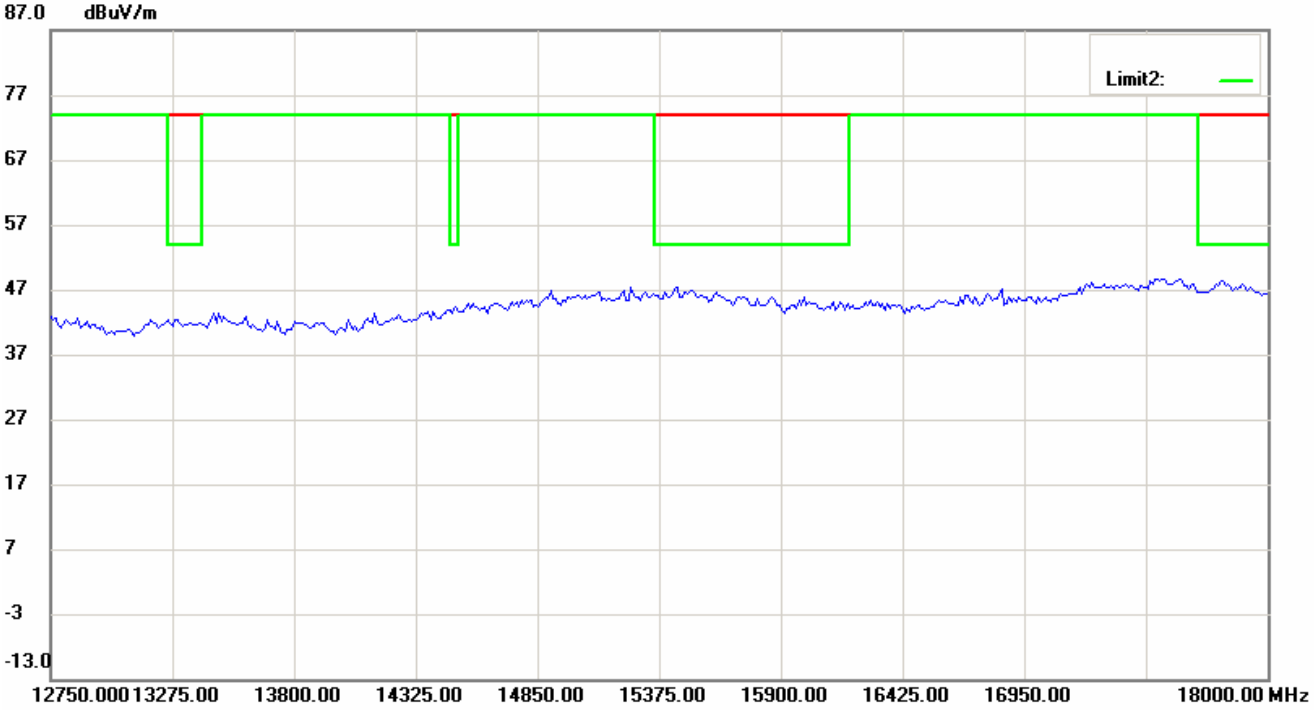
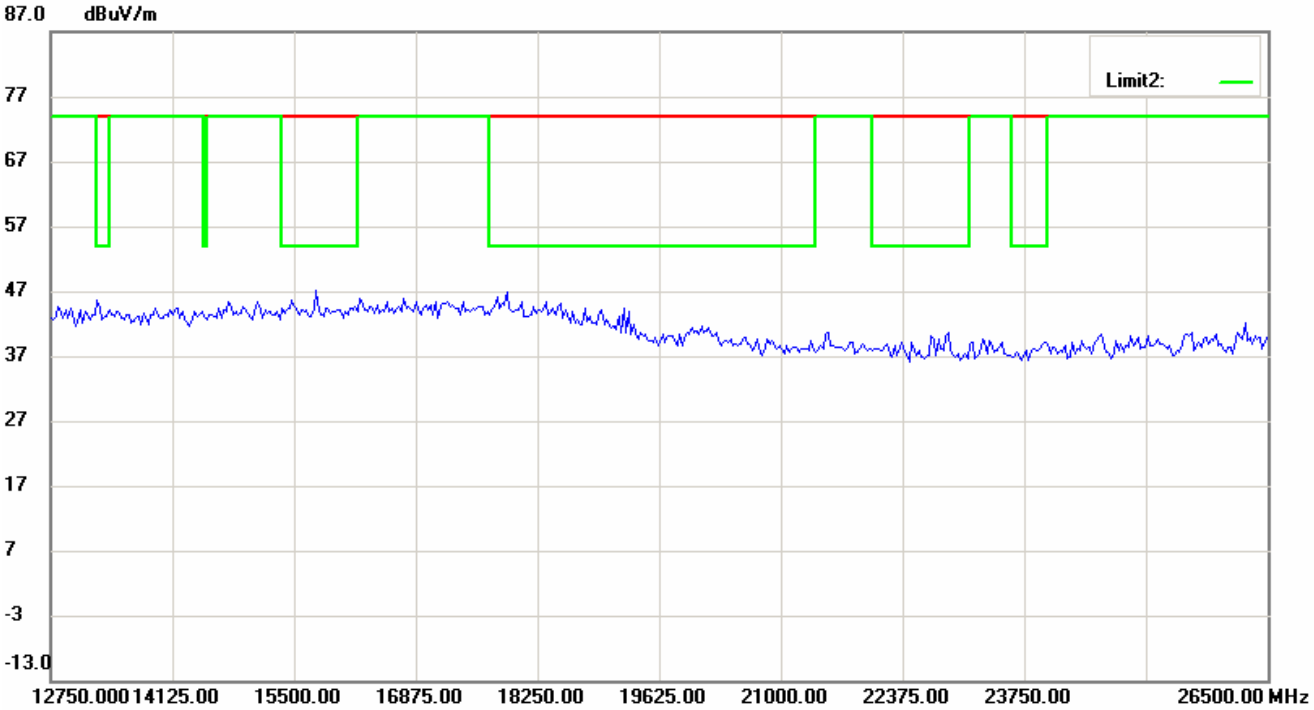
FCC ID: M82-PWS-8101M



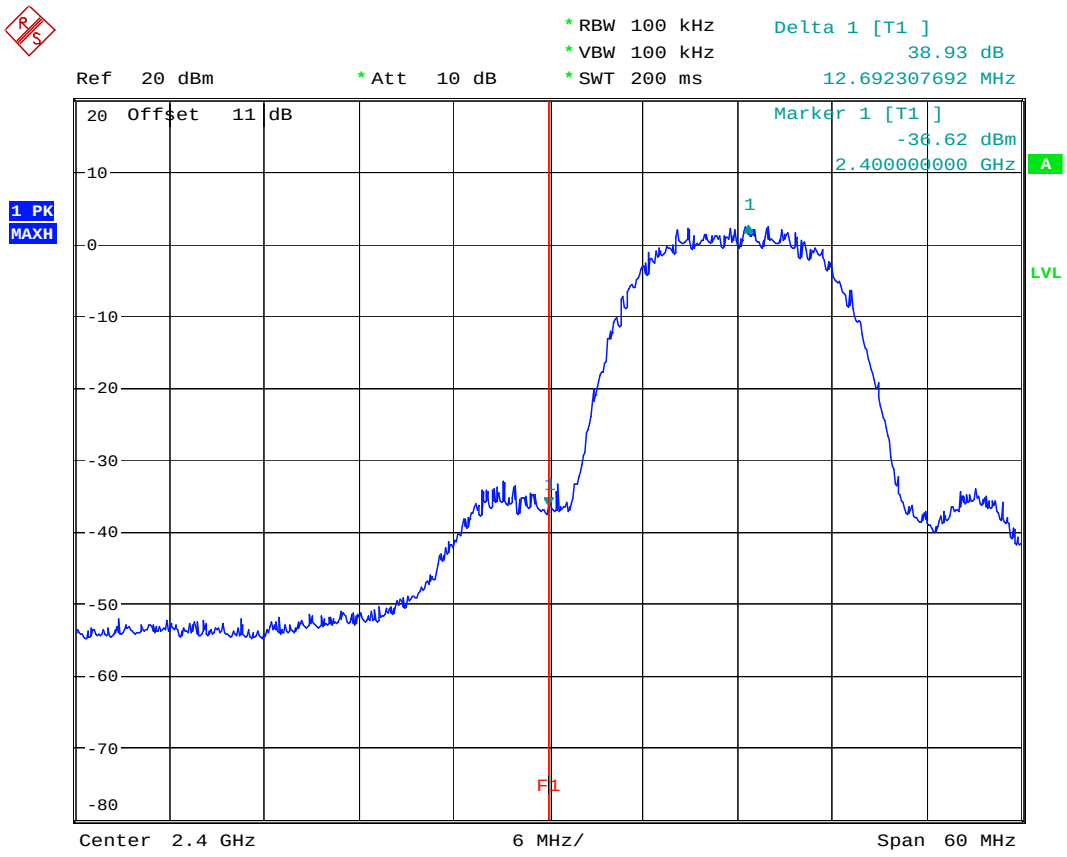


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The plots are pre-scanned data for determining the tested points and for reference only.**
2. **The exact test result is shown in the data table of Radiated emission test of this test report.**

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

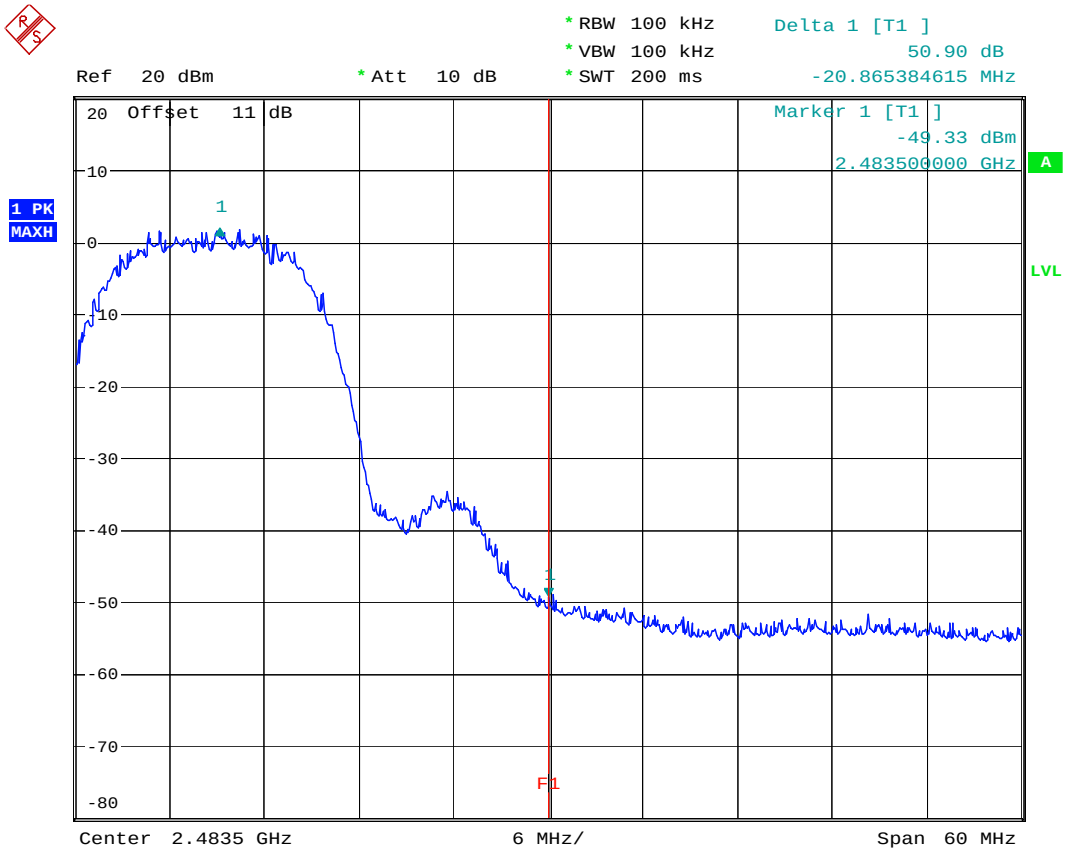
Band Edge Measurement



BANDEDGE 802.11B CH1

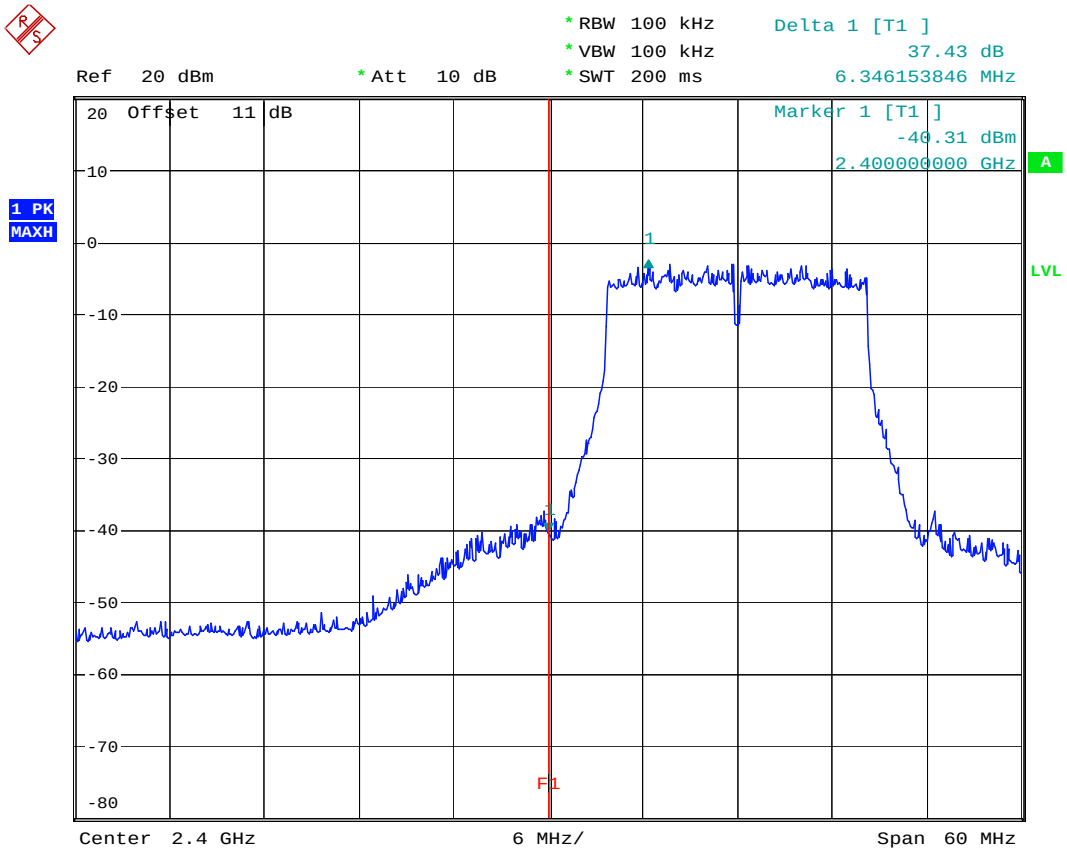
Date: 7.NOV.2007 08:01:50

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



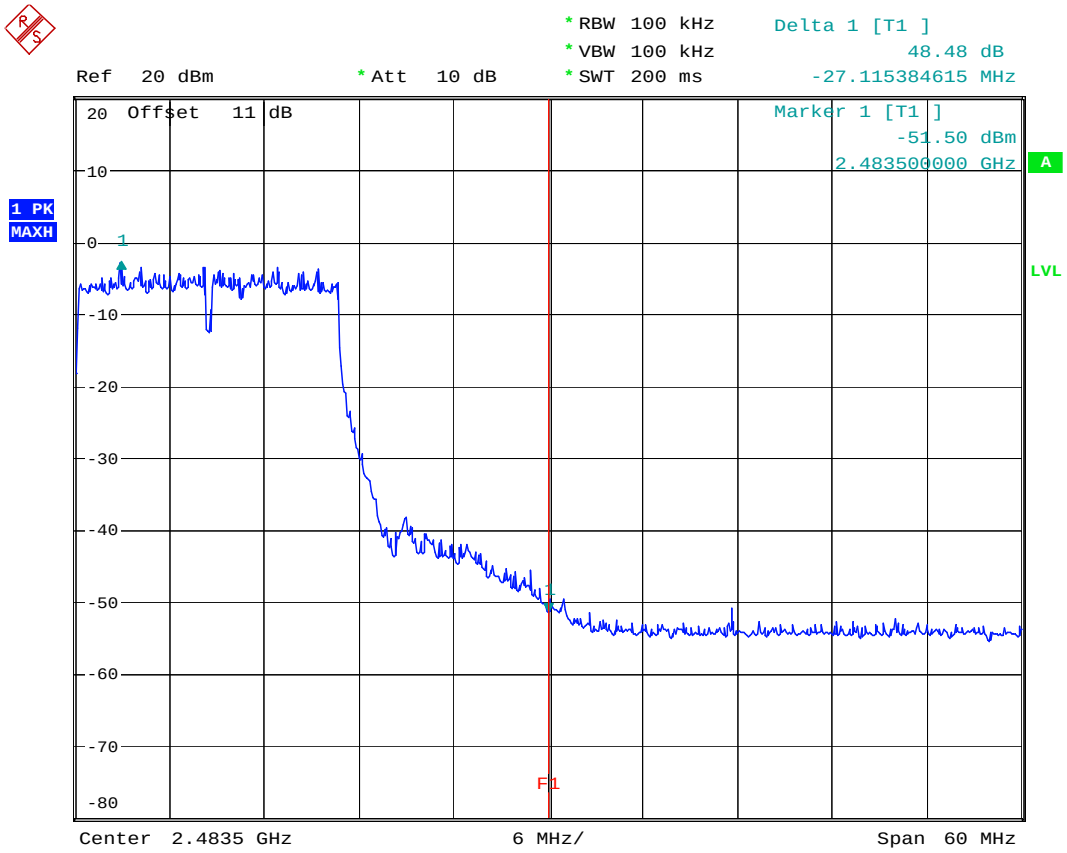
BANDEDGE 802.11B CH11
Date: 7.NOV.2007 08:02:17

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



BANDEDGE 802.11G CH1
Date: 7.NOV.2007 08:01:15

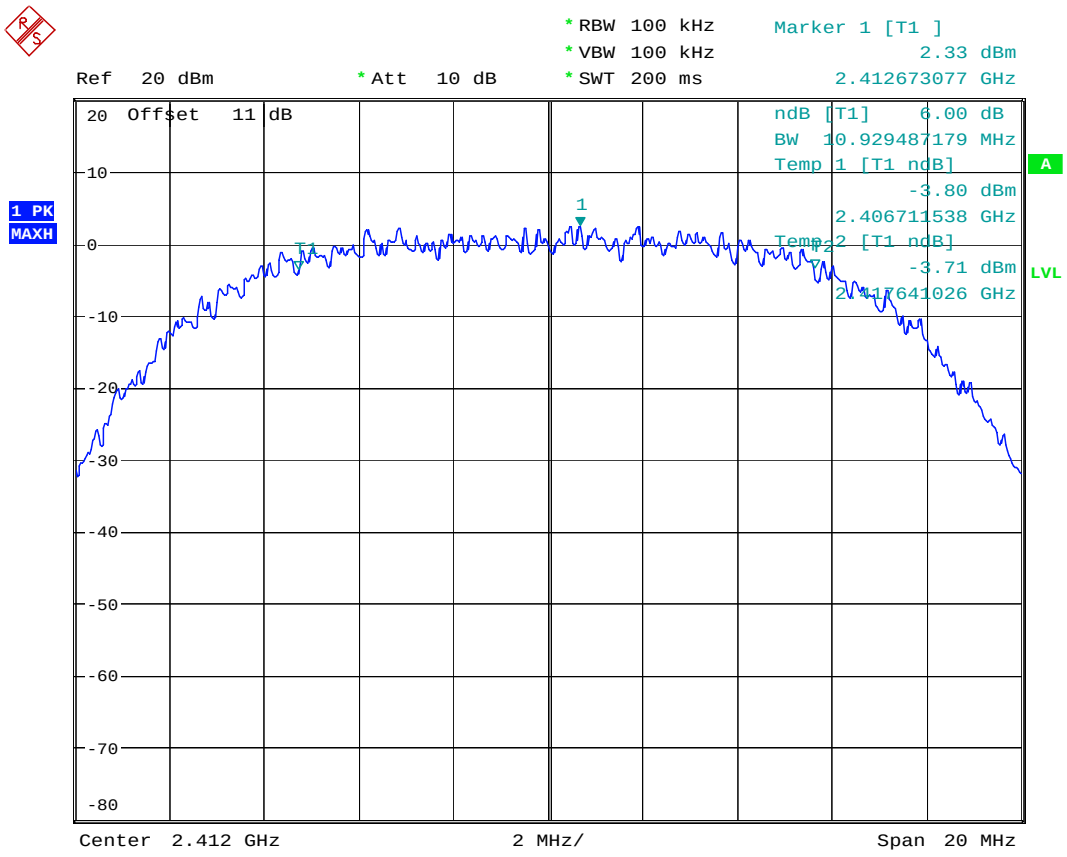
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



BANDEDGE 802.11G CH11
Date: 7.NOV.2007 08:08:25

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

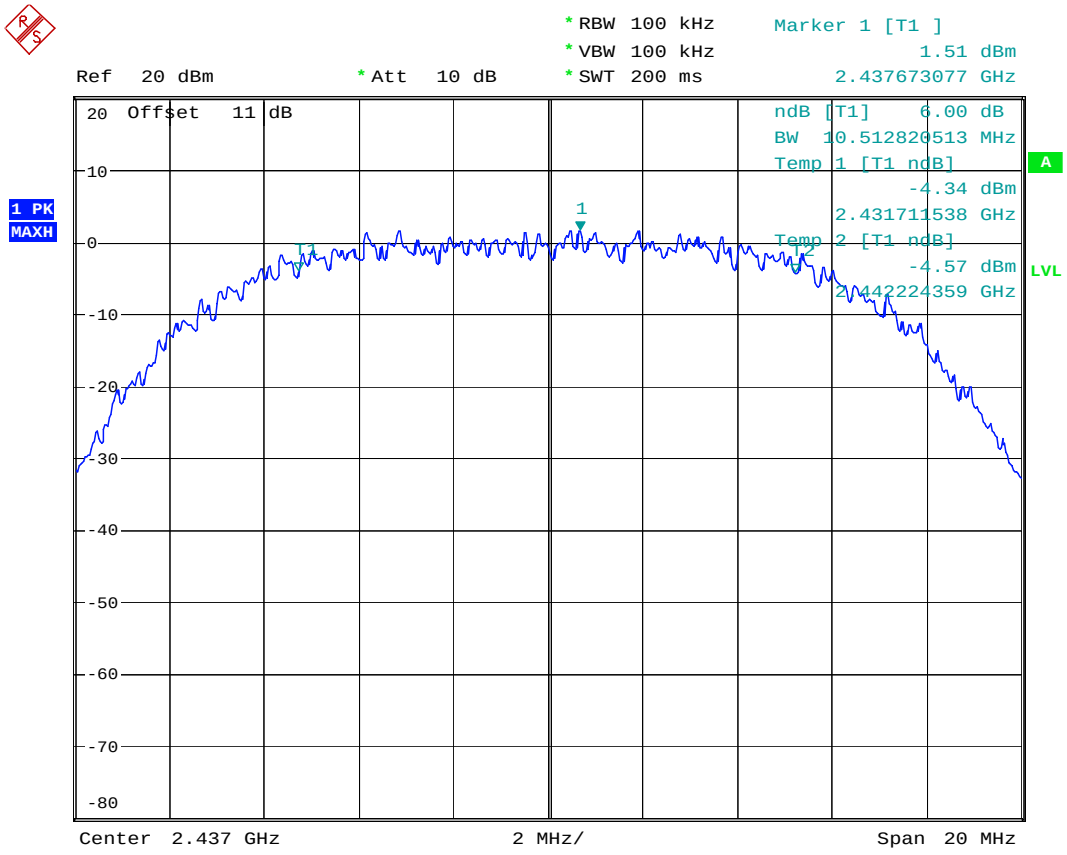
Minimum 6dB Bandwidth



6dB BANDWIDTH 802.11B CH1

Date: 7.NOV.2007 08:15:42

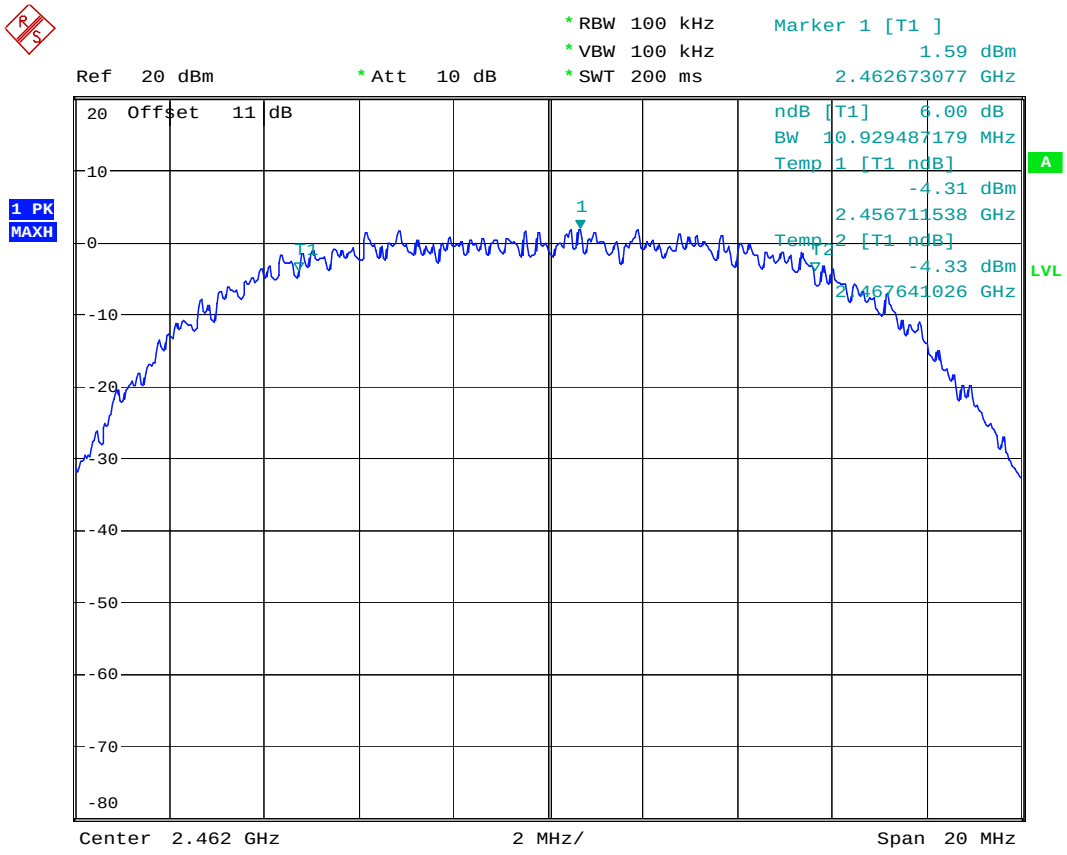
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



6dB BANDWIDTH 802.11B CH6

Date: 7.NOV.2007 08:16:01

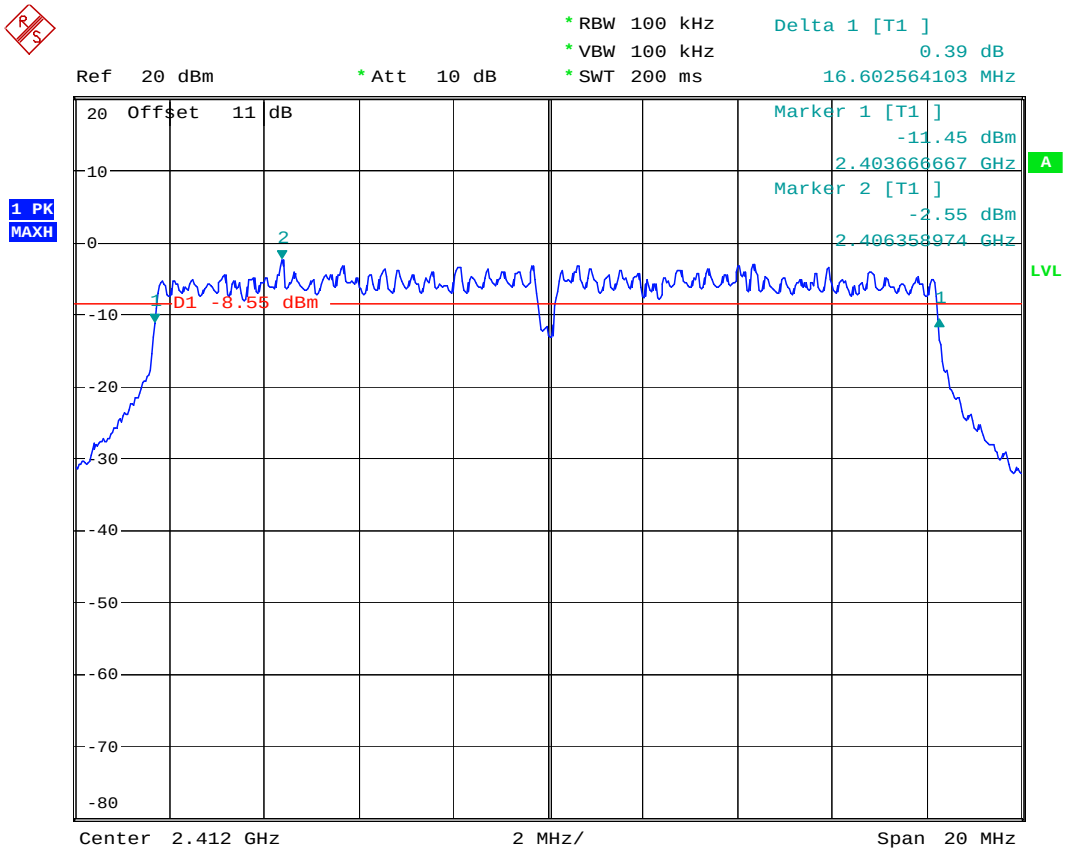
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



6dB BANDWIDTH 802.11B CH11

Date: 7.NOV.2007 08:16:20

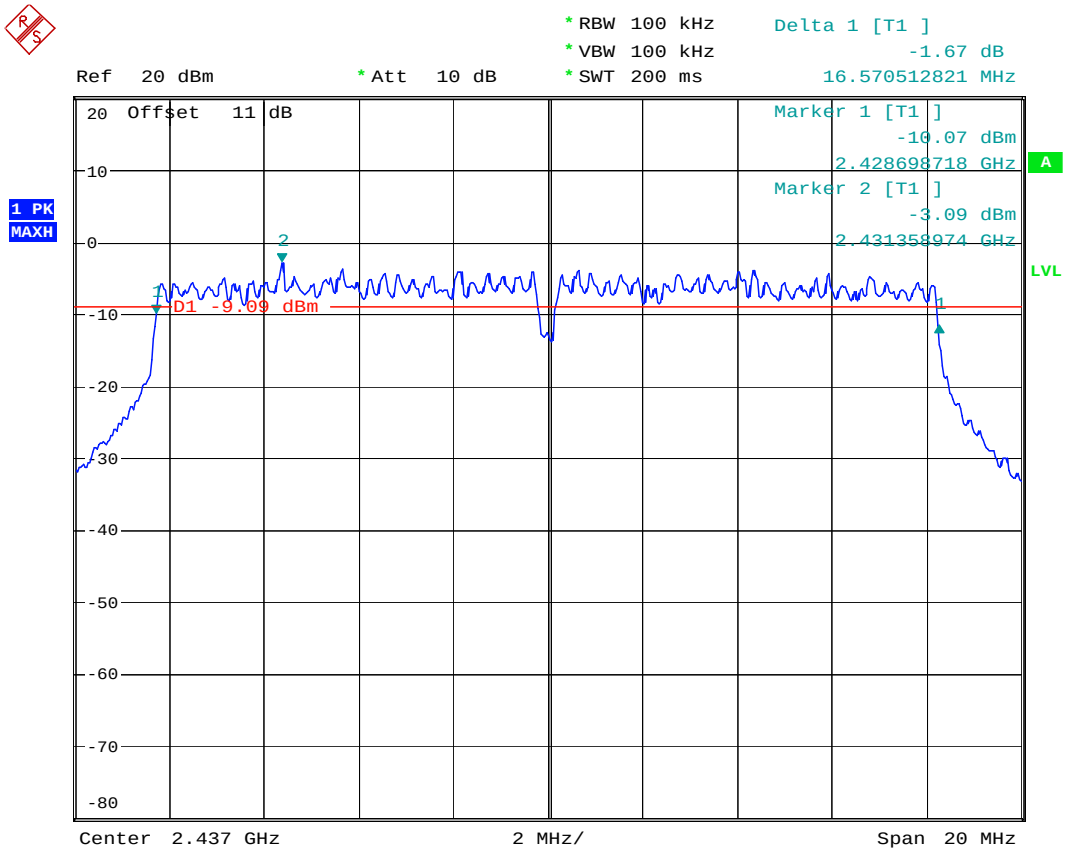
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



6dB BANDWIDTH 802.11G CH1

Date: 7.NOV.2007 08:14:54

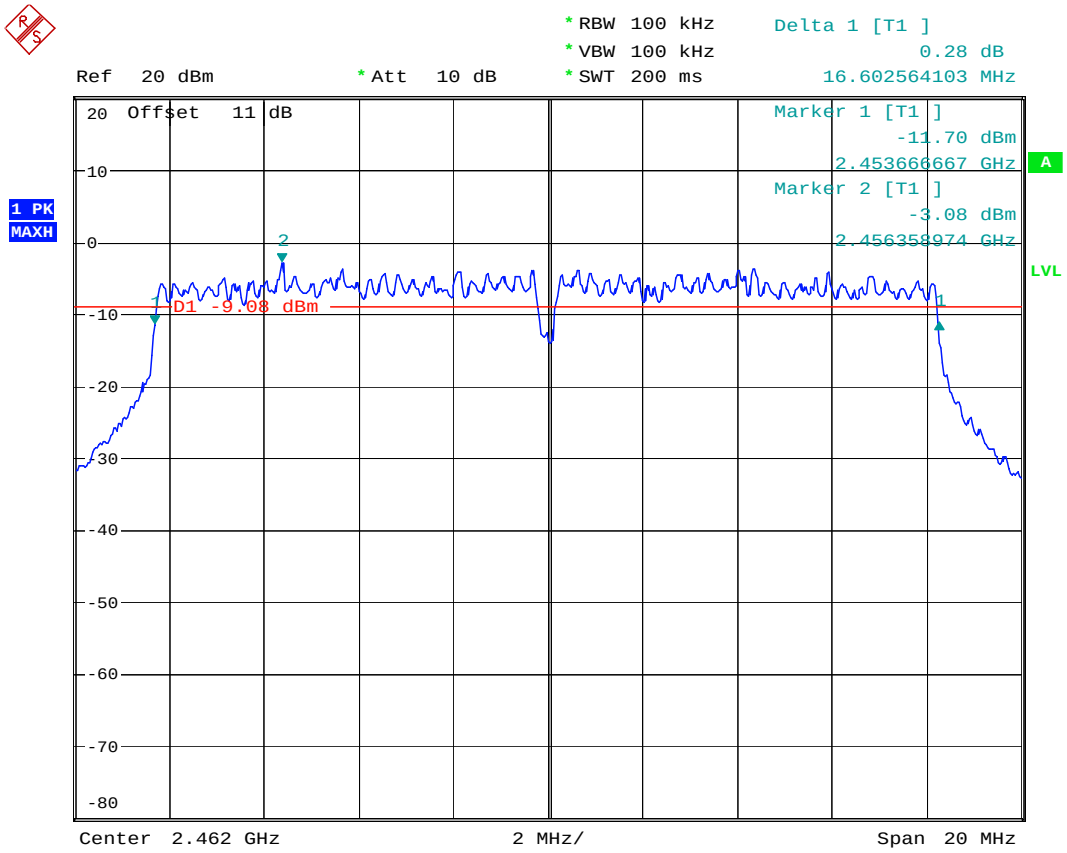
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



6dB BANDWIDTH 802.11G CH6

Date: 7.NOV.2007 08:13:52

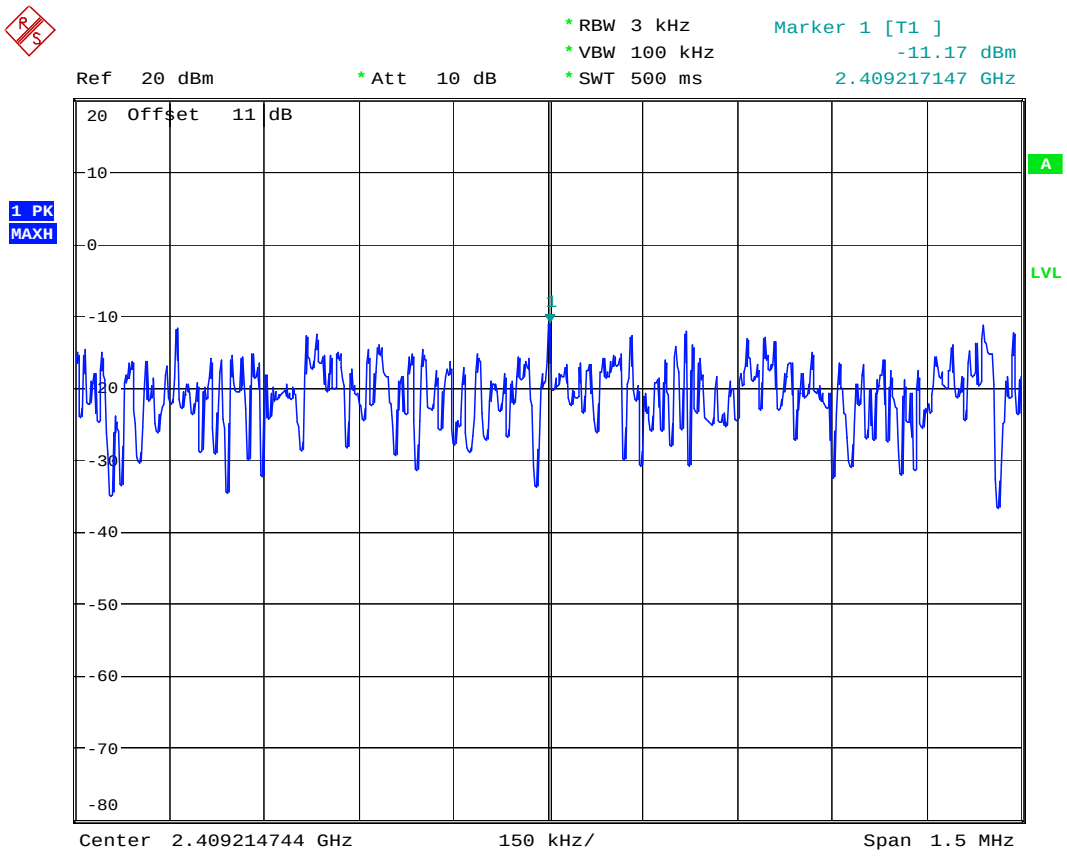
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



6dB BANDWIDTH 802.11G CH11
Date: 7.NOV.2007 08:12:33

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

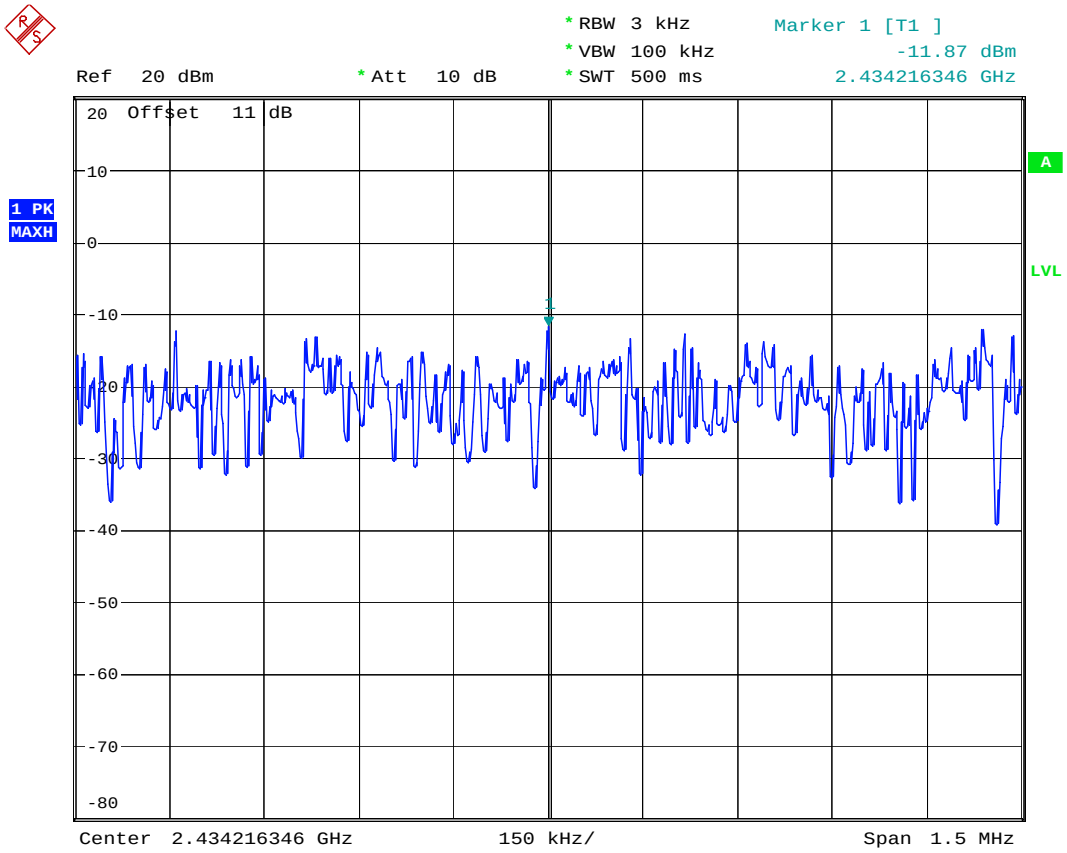
Peak Power Spectral Density



POWER DENSITY 802.11B CH1

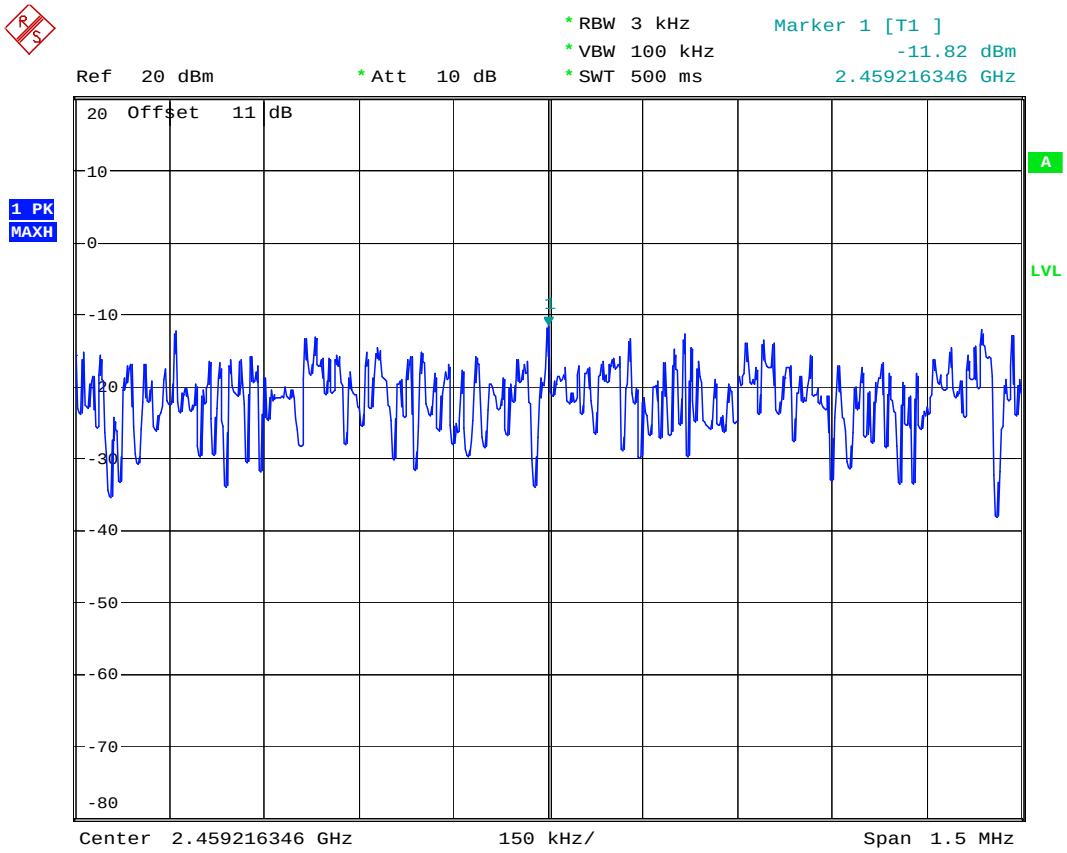
Date: 7.NOV.2007 05:44:14

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



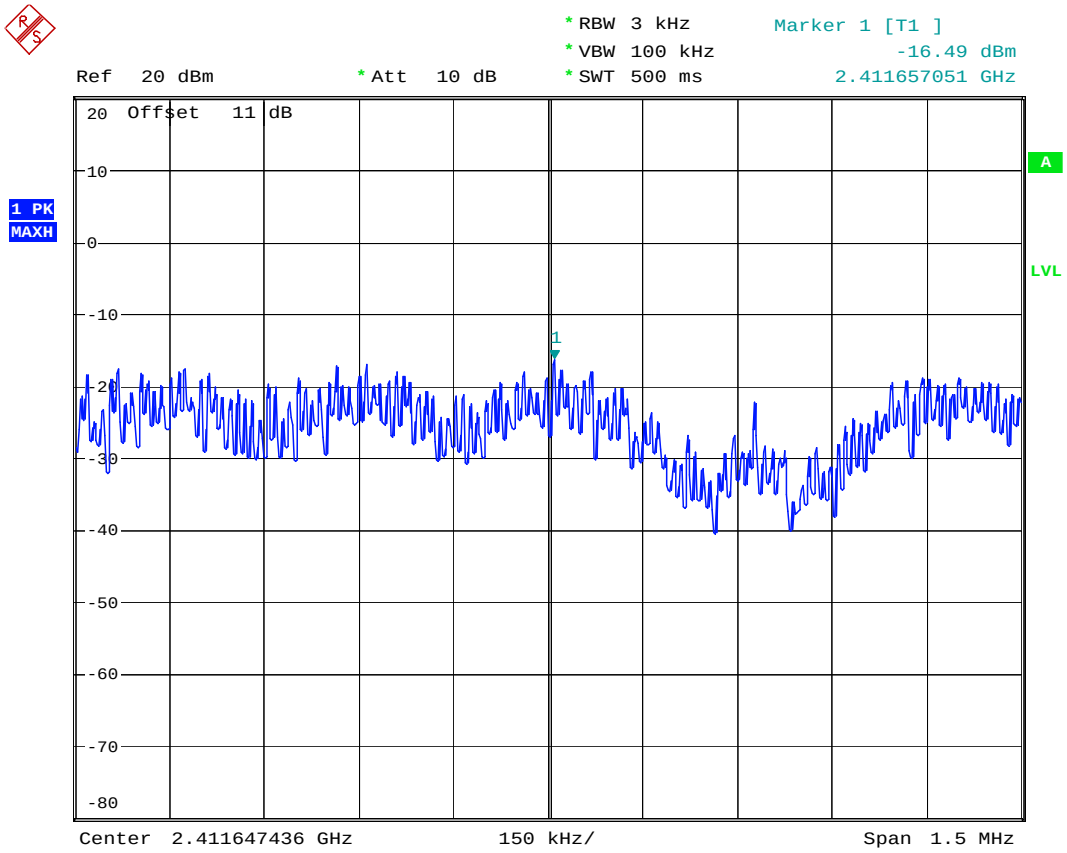
POWER DENSITY 802.11B CH6
Date: 7.NOV.2007 05:43:31

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



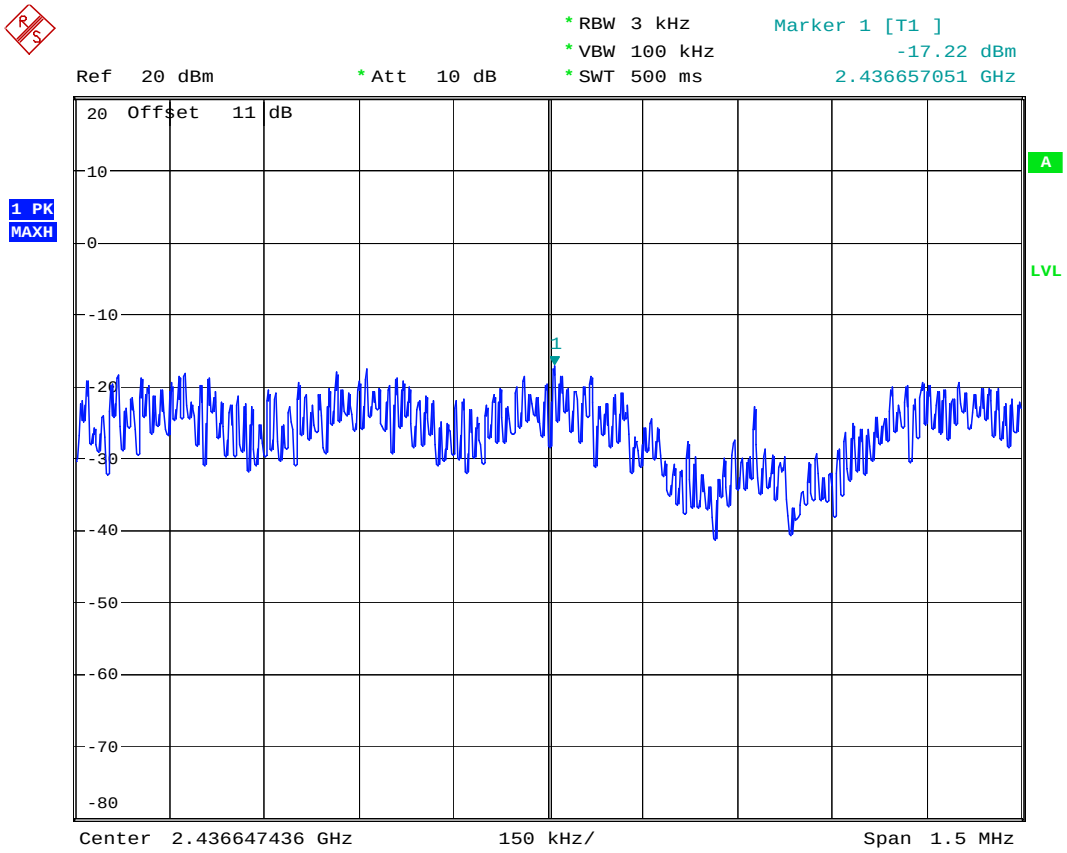
POWER DENSITY 802.11B CH11
Date: 7.NOV.2007 05:42:48

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



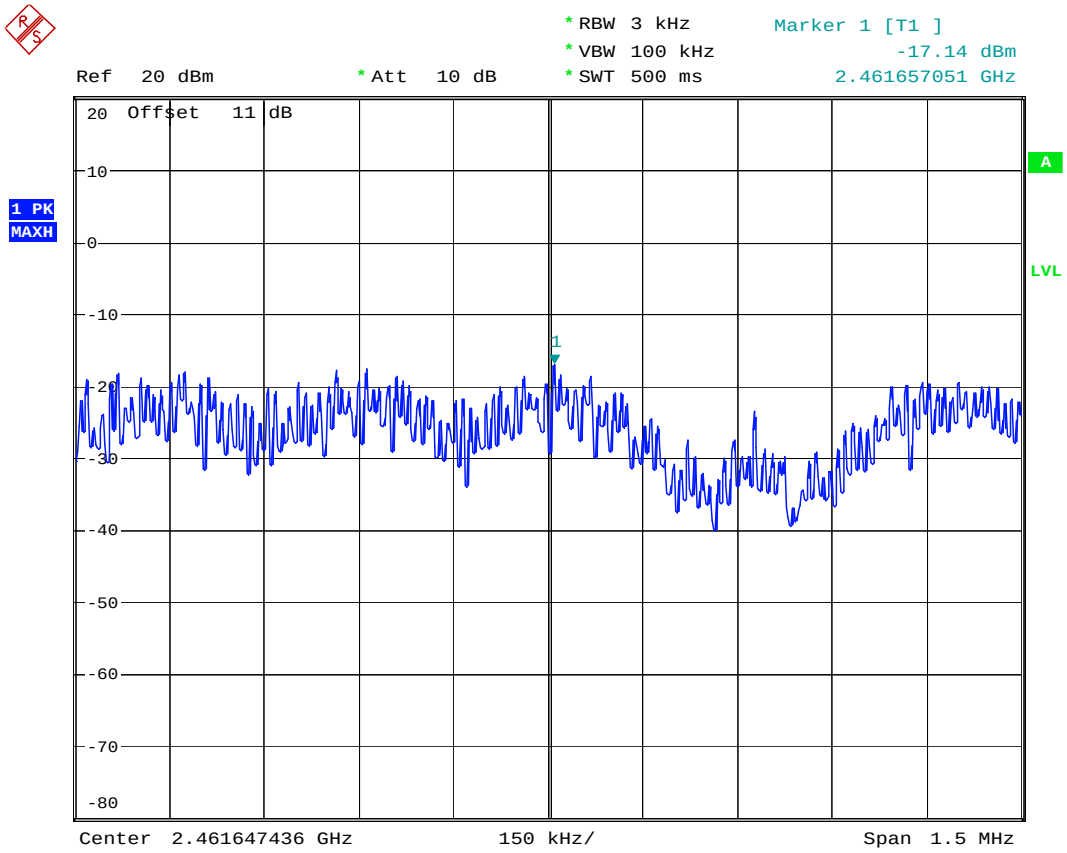
POWER DENSITY 802.11G CH1
Date: 7.NOV.2007 05:45:13

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



POWER DENSITY 802.11G CH6
Date: 7.NOV.2007 05:45:46

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

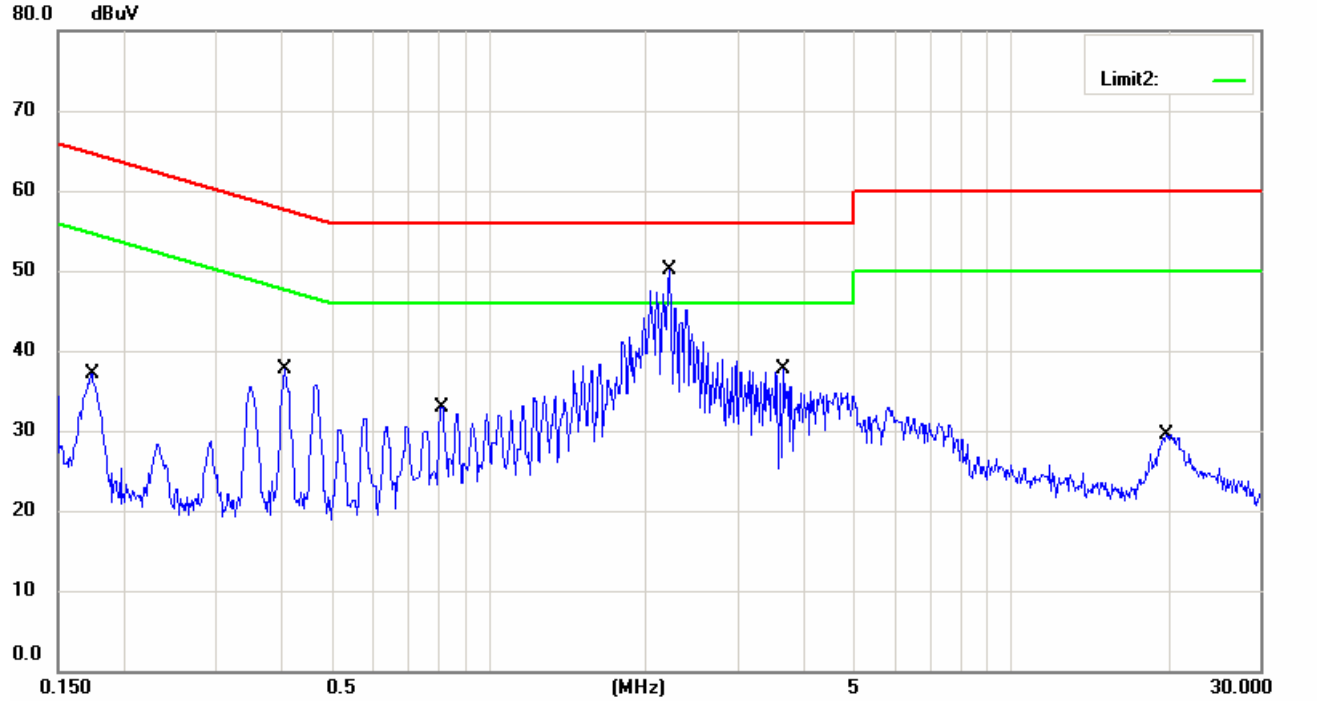


POWER DENSITY 802.11G CH11
Date: 7.NOV.2007 05:46:23

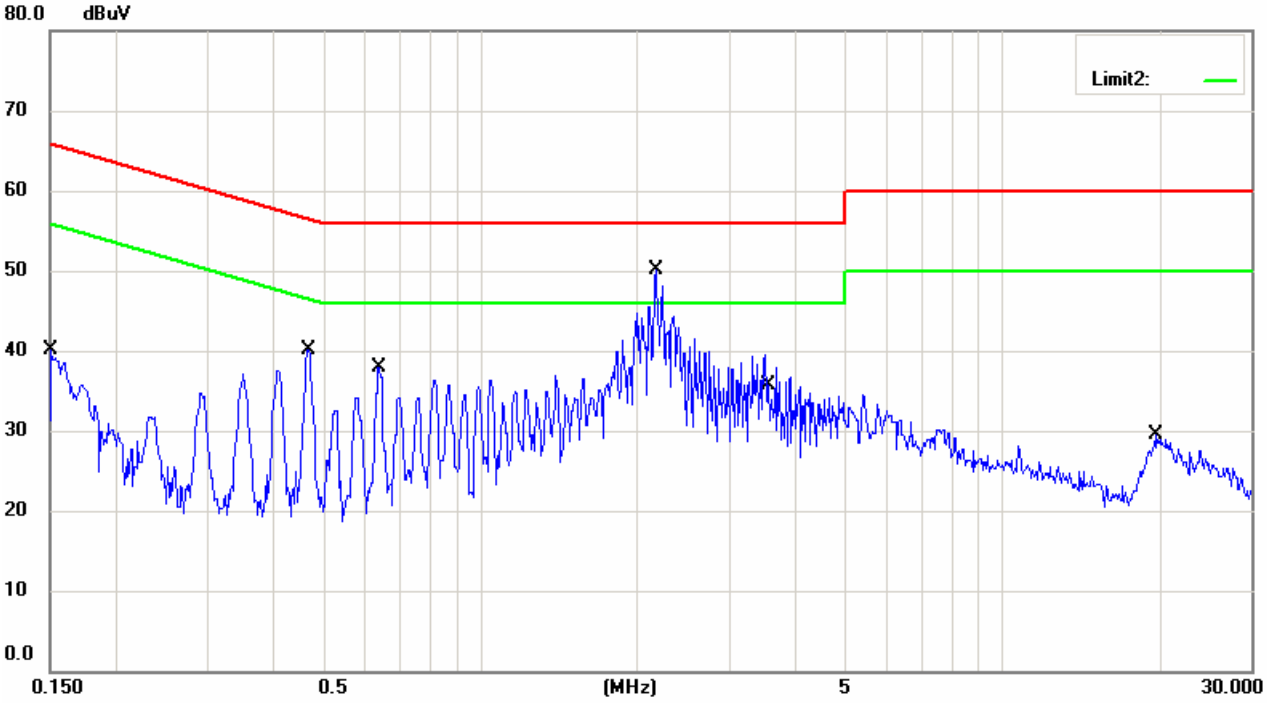
Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Power Line Conducted Emission

LISN N



LISN L1

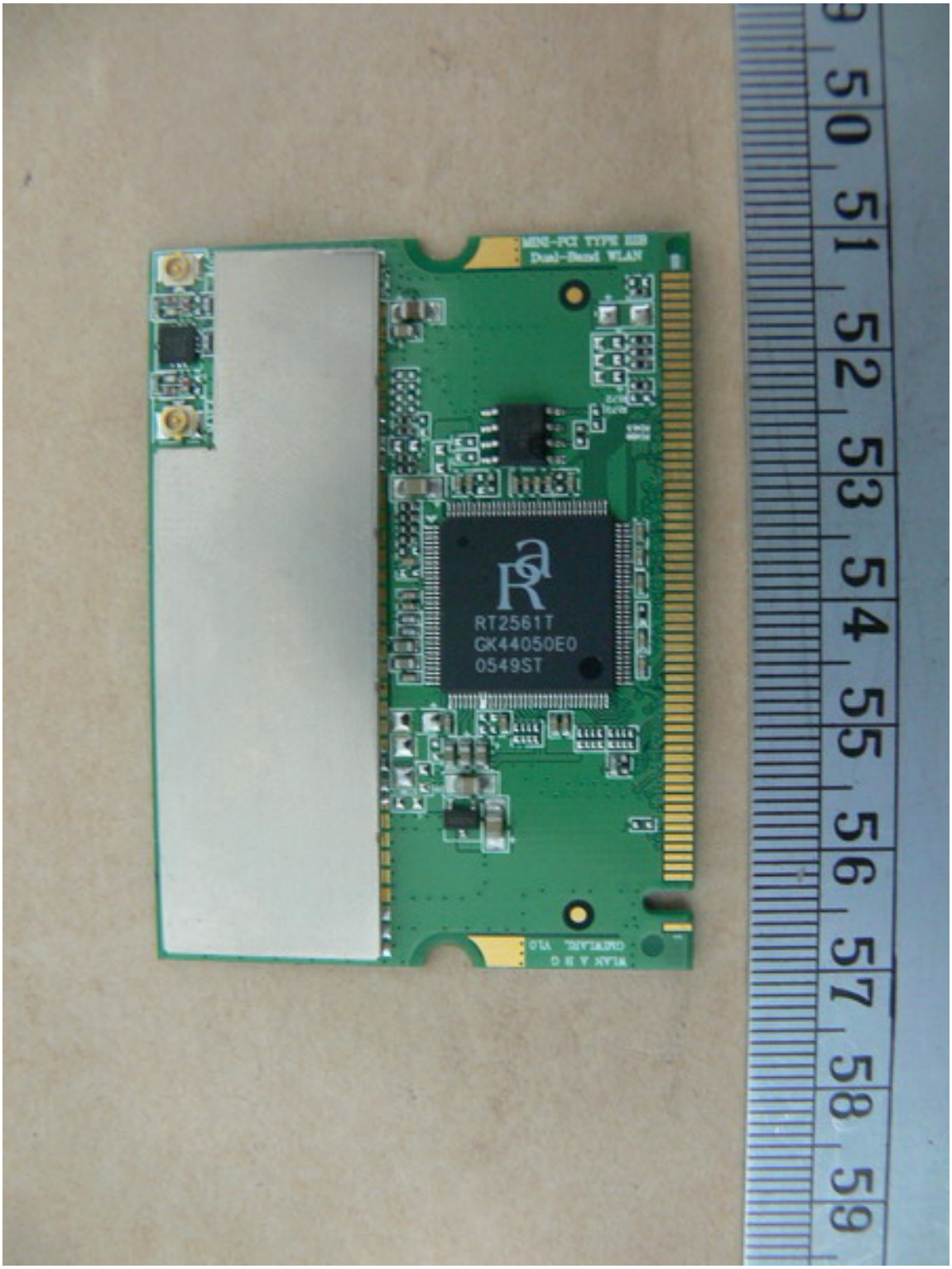


Up Line: QP Limit Line
Down Line: Ave Limit Line
Note:

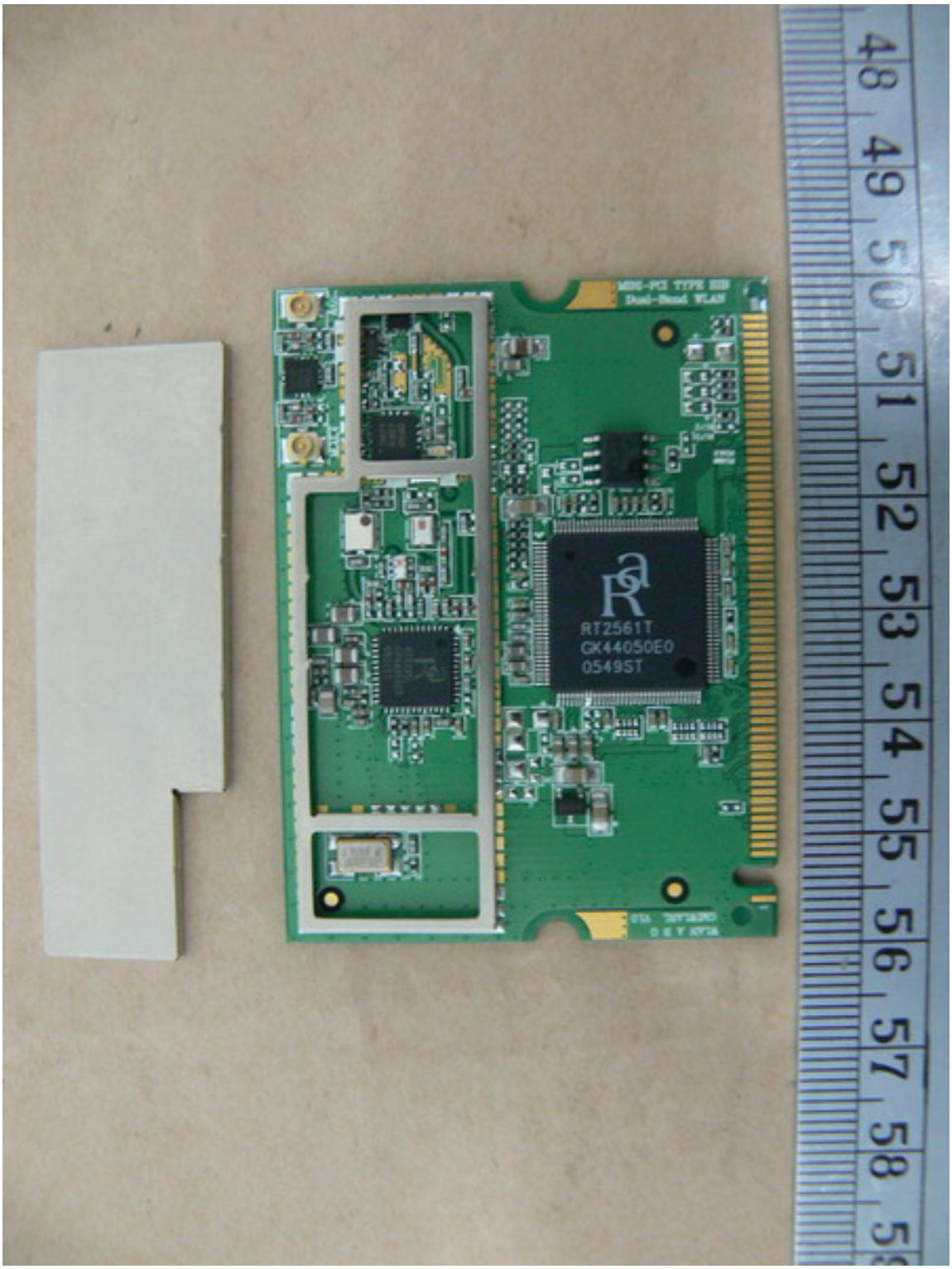
1. **The plots are pre-scanned data for determining the tested points and for reference only.**
2. **The exact test result is shown in the data table of AC conducted emission test of this test report.**

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

EUT Photos



Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M



Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Set Up Photo of Radiated Emission

Registration number: W6D20812-9514-C-1
FCC ID: M82-PWS-8101M

Set Up Photo of Conducted Emission