

FCC TEST REPORT
for
Wireless Free Wheel Mouse
Model No.: GM-322

of

Applicant: **Globlink Technology Inc.**

Address: **2F, No.101, Rui-Hu St, Nei-Hu 114 TAIPEI, TAIWAN**

Tested and Prepared
by



ETS Product Service (Taiwan) Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679

A2LA Accredited No.: 2300.01

PTCRB Accredited Type Certification Test House

FCC ID: OR7GM322

Report No.: W6M20708-8466-P-15

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Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

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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.

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Tester:

Sep 12, 2007

Jay Chaing



Date

ETS-Lab.

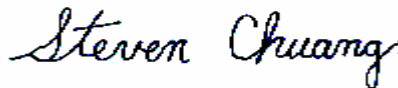
Name

Signature

Technical responsibility for area of testing:

Sep 12, 2007

Steven Chuang



Date

ETS

Name

Signature

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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

ETS Product Service (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: 2300.01

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679

PTCRB Accredited Type Certification Test House

1.3 Details of approval holder

Name:	Globlink Technology Inc.
Street:	2F, No.101, Rui-Hu St, Nei-Hu 114
Town:	Taipei
Country:	Taiwan
Telephone:	+886-2-87972919
Fax:	+886-2-87972918
Teletex:	./.

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1.4 Application details

Date of receipt of test item : August 28, 2007
Date of test : From August 29, 2007 to Sep 11, 2007

1.5 General information of Test item

Type of test item : Wireless Free Wheel Mouse

Model Number : GM-322

Multi-listing model number : ./.

Photos : see Appendix

Technical data

Frequency band : 2.400-2.4835 GHz

Operation Frequency : 2.423-2.477 GHz

Frequency 1 : 2.423 GHz

Frequency 2 : 2.447 GHz

Frequency 3 : 2.477 GHz

Operation modes : duplex

Modulation Type : GFSK

Antenna type : Printed Antenna

Power supply : 2.4 VDC (battery)

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Manufacturer:
(if different from applicant)

Name : ./.
Street : ./.
Town : ./.
Country : ./.

Additional information : --

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART B / SUBPART C § 15.249 : May 2007

Special statement:

**The standards applied to this test sample were under the demand of the applicant.
Any deviation from the applicable product standards is the responsibility of the applicant.**

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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 “**Special statement**” 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
Details Power supply	: 2.4 VDC (battery)
Extreme conditions parameters	: Not required

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2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2006/10/16	2007/10/15
ETSTW-CE 002	PREREGULATOR 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	2006/10/16	2007/10/15
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2006/10/16	2007/10/15
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	In House Certificate	
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2005/10/24	2007/10/23
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	2005/12/8	2007/12/7
ETSTW-CE 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2007/12/6
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	2006/11/21	2007/11/20
ETSTW-CS 003	COUPLING AND DECOUPLING NETWORK	CDN T400	19820	SCHAFFNER	2005/10/14	2007/10/13
ETSTW-CS 004	COUPLING AND DECOUPLING NETWORK	CDN M016	20053	SCHAFFNER	2006/10/11	2007/10/10
ETSTW-CS 005	RF Power Amplifier	100A250A	306547	AR	2006/10/11	2007/10/10
ETSTW-CS 008	6 dB Attenuator	HFP-5100-3/06 N M/F	2010876106		In House Certificate	
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2005/10/14	2007/10/13
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2006/10/20	2007/10/19
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2006/10/30	2007/10/29
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2006/10/12	2007/10/11
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	2004/11/8	2007/11/7
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2006/10/11	2007/10/10
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	EMCO	In House Certificate	
ETSTW-RE 028	Log-Periodic Dipole Array 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	2006/10/11	2007/10/10
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2005/10/17	2007/10/16

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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 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
ETSTW-EMI 001	HARMONICS 1000	HAR 1000-1P	093	EMC-PARTNER	2007/9/11	2008/9/10
ETSTW-EMS 001	BASELSTRASSE 160 CH-4242 LAUFEN	CN-EFT1000	354	EMC-PARTNER	2004/11/2	2007/11/1
ETSTW-EMS 002	Frequency Converter	YF-6020	308014	T-Power	Function Test	
ETSTW-EMS 003	EMC Immunity Test System	TRA2000IN6	579	EMC-PARTNER	2006/11/8	2007/11/7
ETSTW-EMS 004	ESD Simulator	ESD2000	16	EMC-PARTNER	2006/10/18	2007/10/17
ETSTW-EMS 008	Safety Test Solutions	ELT-400	E-0039	Narda	2005/5/4	2008/5/3
ETSTW-EMS 009	Magnetic Field Antenna	MF1000-1	104	EMC-PARTNER	2004/12/3	2007/12/2
ETSTW-EMS 010	Coupling De-coupling Network	CDN-UTP8	14	EMC-PARTNER	2005/9/1	2008/8/31
ETSTW-EMS 011	Calibration Fixture	F-203I-CF-23MM	451	FCC	2006/7/29	2008/7/28
ETSTW-EMS 012	EM Injection Clamp	F-203I-23MM	476	FCC	2006/7/29	2008/7/28
ETSTW-EMS 014	Digital Thermo-Hygro Meter	0507	02	WISEWIND	2005/11/15	2007/11/14
ETSTW-RS 003	RF Power Amplifier	30S1G3	306933	AR	2006/10/11	2007/10/10
ETSTW-RS 004	RF Power Amplifier	150W1000	307009	AR	2006/10/11	2007/10/10
ETSTW-RS 005	Electric Field Probe Type 8.3	2244/90.21	AF-0016	Narda	2007/9/6	2009/9/5
ETSTW-RS 006	SIGNAL GENERATOR	SML03	101551	R&S	2006/10/9	2007/10/8
ETSTW-RS 007	14" COLOR VIDEO MONITOR	HS-CM145A	0512011548		Function Test	

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2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 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 C63.4-2003 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. The ambient temperature of the EUT was 23°C with a humidity of 40 %.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB 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

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table). The EUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.

Measurements were made by ETS Dr. Genz GmbH 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.

ANTENNA & GROUND:

This unit uses Printed Antenna (see photo).

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3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.249 (a)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.249 (e)	☒	☒	☐
Spurious Emissions conducted – Transmitter operating	15.249 (e)	☐	☐	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Out of Band Spurious Emission, Band edge-Transmitter operating	15.249 (e)	☒	☒	☐
Power Line Conducted Emission	15.207	☐	☐	☐

The follows is intended to leave blank.

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3.1 Peak Output Power (transmitter)

FCC Rule: 15.249 (b)

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.

Model: GM-322 Date: 2007/9/7
Low Channel
Mode: Power Temperature: 26 °C Engineer: Catey
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)
2422.91	39.09	---	33.32	72.41	---	114	94	-41.59	300	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)
2422.898	27.26	---	33.32	60.58	---	114	94	-53.42	245	150

Mode: Middle Channel Power

Polarization: Horizontal

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)
2447.126	38.74	---	33.35	72.09	---	114	94	-41.91	275	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)
2447.03	24.87	---	33.35	58.22	---	114	94	-55.78	200	150

Mode: High Channel Power

Polarization: Horizontal

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)
2477.09	40.01	---	33.38	73.39	---	114	94	-40.61	270	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)
2477.114	23.99	---	33.38	57.37	---	114	94	-56.63	243	150

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

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Comments: Please see attached diagrams as appendix.

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3.2 Equivalent isotropic radiated power

Because using an permanent antenna there are no deviations from the radiated test results according 3.1.

3.2.1 Transmitter

Integral Antenna:

At the transmitter the measurement was transacted with the modulation declared by the manufacturer and the maximum available output power of the EUT.

In this arrangement the EUT fulfils the requirements of the FCC rules § 15.249, subpart C, This unit uses permanent antenna. There is no provision for an external antenna (see photo).

3.3 RF Exposure Compliance Requirements

Not applicable for this **Wireless Free Wheel Mouse** for the low power level.

3.4 Out of Band Radiated Emissions

FCC Rule: 15.249 (d)(e), 15.35(b)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequency above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

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	46.5
Above 960	500	54.0

For frequencies above 1 GHz (Peak measurements).

Limit + 20 dB

54.0 dBμV/m + 20 dB= 74dBμV/m

Or

Must be antenuatted at least 50dB below the level of fundament

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028
 ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043
 ETSTW-RE 044

Comment: Please see attached diagrams as appendix.

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3.5 Spurious emission (tx)

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

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

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

The peak and average spurious emission plots was measured with the average limits.
The critical peak value listed in the table agree with the above calculated limits.

Summary table with radiated data of the test plots

Model: GM-322 Date: 2007/9/7
Mode: TX Mode Low Channel Temperature: 26 °C Engineer: Catey
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)
30.541	9.14	peak	13.03	22.17	40	-17.83	300	334
293.507	13.93	peak	15.11	29.04	46	-16.96	244	197
607.214	6.53	peak	22.21	28.74	46	-17.26	150	237
978.958	4.46	peak	27.26	31.72	54	-22.28	245	198

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
2340.681	52.95	---	-5.40	47.55	---	74	54	-26.45	180	150
2719.439	58.51	40.49	-4.00	54.51	36.49	74	54	-17.51	200	150
4857.715	54.39	45.2	-1.30	53.09	43.9	74	54	-10.1	278	150
5434.87	43.47	---	2.05	45.52	---	74	54	-28.48	244	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
88.978	18.46	peak	10.43	28.89	43.5	-14.61	250	140
285.391	14.11	peak	14.95	29.06	46	-16.94	166	184
615.631	7.61	peak	22.25	29.86	46	-16.14	100	285
949.499	7.74	peak	27.24	34.98	46	-11.02	293	300

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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.			
2719.439	51.1	---	-4.00	47.1	---	74	54	-26.9	170	150
4857.715	49.97	---	-1.30	48.67	---	74	54	-25.33	240	150

Mode: TX Mode Middle Channel

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
34.870	8.52	peak	13.25	21.77	40	-18.23	180	342
295.130	13.78	peak	15.14	28.92	46	-17.08	270	295
626.854	7.38	peak	22.33	29.71	46	-16.29	310	233
970.541	5.09	peak	27.23	32.32	54	-21.68	220	200

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.			
2340.681	52.57	---	-5.40	47.17	---	74	54	-26.83	293	150
2509.018	53.44	---	-5.04	48.4	---	74	54	-25.6	180	150
2575.150	56.63	---	-4.57	52.06	---	74	54	-21.94	57	150
2719.439	58.64	40.04	-4.00	54.64	36.04	74	54	-17.96	268	150
4889.780	56.55	45.26	-1.30	55.25	43.96	74	54	-10.04	200	150
5434.870	44.68	---	2.05	46.73	---	74	54	-27.27	195	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
90.060	19.55	peak	10.58	30.13	43.5	-13.37	240	120
298.918	13.31	peak	15.22	28.53	46	-17.47	160	175
631.062	7.25	peak	22.41	29.66	46	-16.34	260	270
973.347	6.65	peak	27.23	33.88	54	-20.12	300	314

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.			
2719.439	50.23	---	-4.00	46.23	---	74	54	-27.77	220	150
4889.780	50.77	---	-1.30	49.47	---	74	54	-24.53	270	150

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Mode: TX Mode High Channel Temperature: 26 °C Engineer: Catey
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)
88.437	14.50	peak	10.36	24.86	43.5	-18.64	100	320
298.377	14.07	peak	15.21	29.28	46	-16.72	250	275
622.645	5.95	peak	22.28	28.23	46	-17.77	175	240
987.375	4.71	peak	27.31	32.02	54	-21.98	220	180

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.			
2509.018	52.46	---	-5.04	47.42	---	74	54	-26.58	310	150
2575.15	56.29	---	-4.57	51.72	---	74	54	-22.28	230	150
2719.439	57.93	41	-4.00	53.93	37	74	54	-17.00	175	150
4841.683	55.84	45	-1.30	54.54	43.7	74	54	-10.30	230	150
5434.870	45.47	---	2.05	47.52	---	74	54	-26.48	200	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
92.766	20.11	peak	10.81	30.92	43.5	-12.58	180	150
295.671	13.83	peak	15.15	28.98	46	-17.02	245	205
610.020	6.49	peak	22.22	28.71	46	-17.29	270	260
984.569	6.14	peak	27.30	33.44	54	-20.56	100	300

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.			
2719.439	50.47	---	-4.00	46.47	---	74	54	-27.53	180	150
4841.683	50.26	---	-1.30	48.96	---	74	54	-25.04	223	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. Please see attached diagrams as appendix.

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

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055

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3.6 Radiated Emissions from Digital Part

Explanation : This test is not required.

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE
029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

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3.7 Radiated Emission on the band edge

From the following plots, they show that the fundamental emissions are confined in the specified band and hey at least 50 dB below the carrier level at band edge (2400 and 2483.5 MHz). It meets the requirement of section 15.249(d).

Test conditions Tnom = 26°C, Vnom = 2.4V Frequency [MHz]	Transmitter field strength of Radiated Emission (Peak Detector)	Transmitter field strength of Radiated Emission (Average Detector)
	[dBμV/m]	
2400.000	46.71	--
2483.500	71.81	--

Limit:

Frequency Range (MHz)	Limit (dBμV/m)	
	Peak	Average
902 – 928	74	54
2400 – 2483.5		
5725 – 5875		
24000 - 24250		

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Comment: Please see attached diagram as appendix.

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3.8 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.

Frequency	Level (dBμV)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

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

Explanation : This test is not required because it uses battery.

Appendix

A Measurement diagrams

1. Peak Output Power (transmitter)
2. Spurious Emissions radiated
(The measurement diagrams plots attached below are preliminary wideband scan with a peak detector for reference only. The final test results are listed on section 3.5)
3. Radiated Emission on the band edge

B Photos

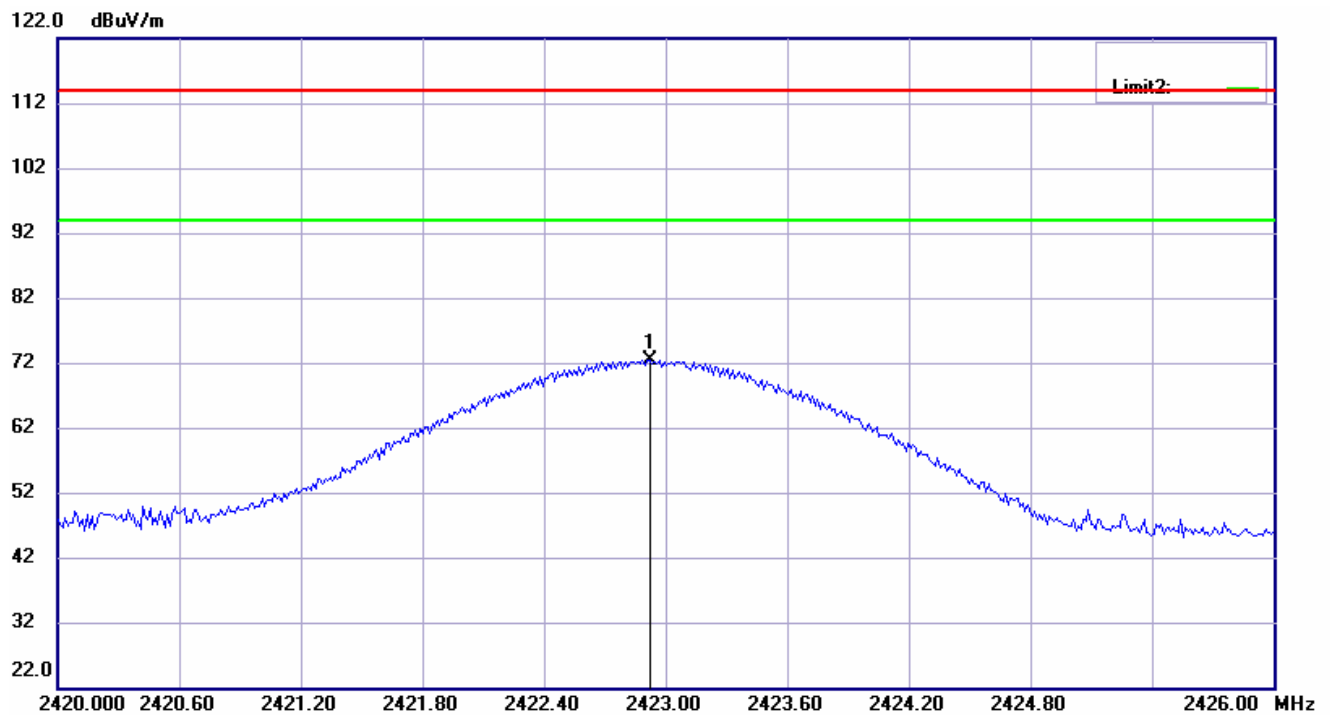
1. External Photos
2. Internal Photos
3. Set Up Photo of Radiated Emission

Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

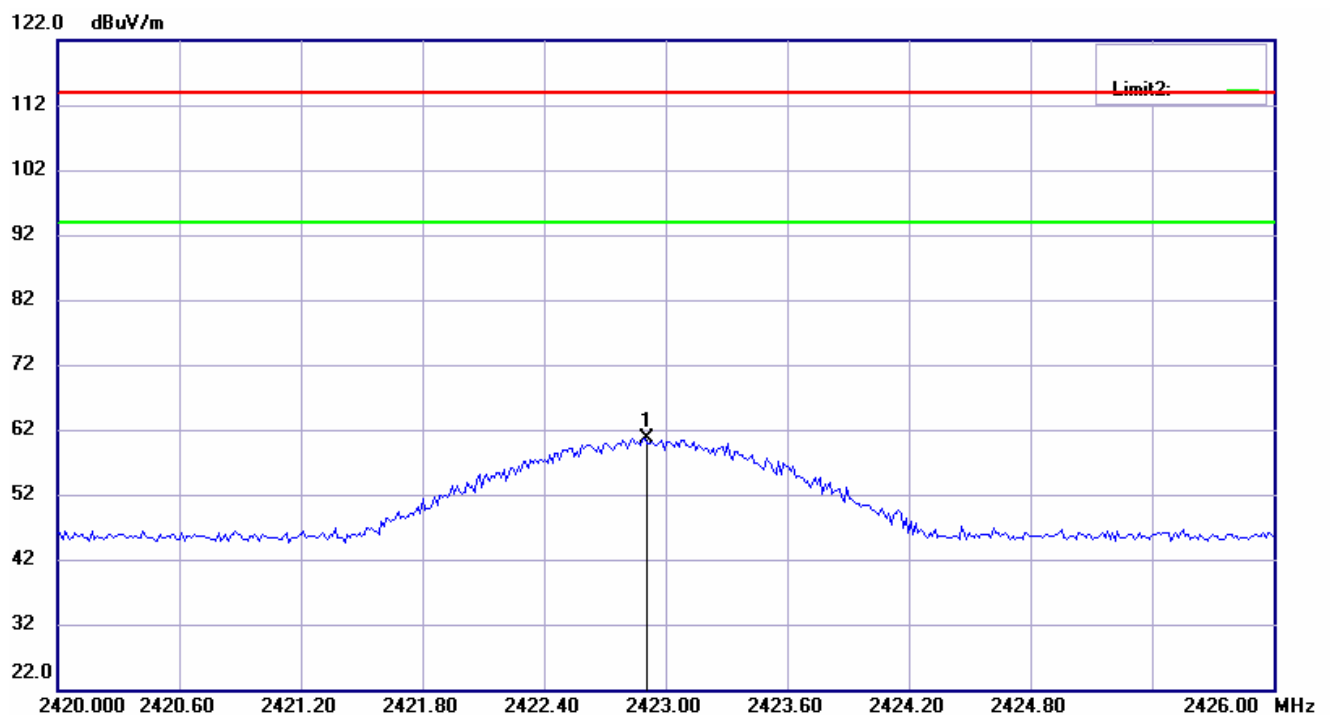
Peak Output Power (transmitter)

Low Channel

Antenna Polarization H

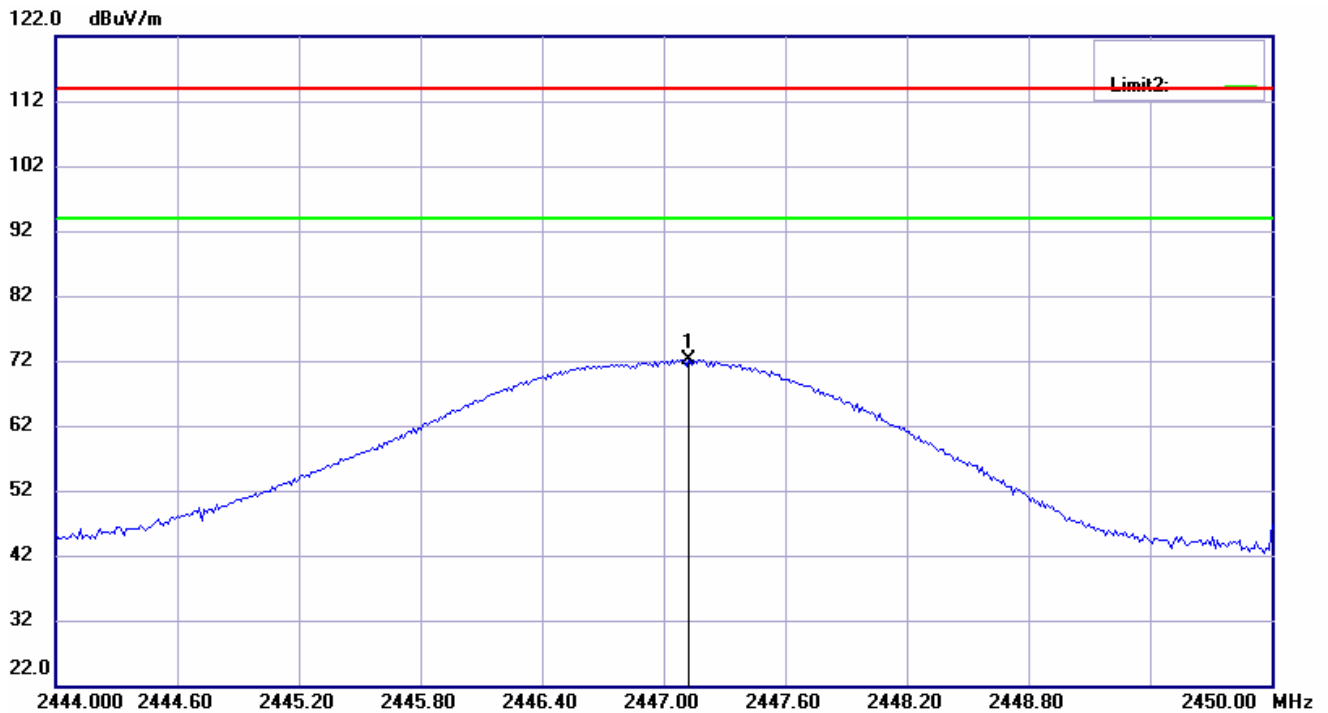


Antenna Polarization V

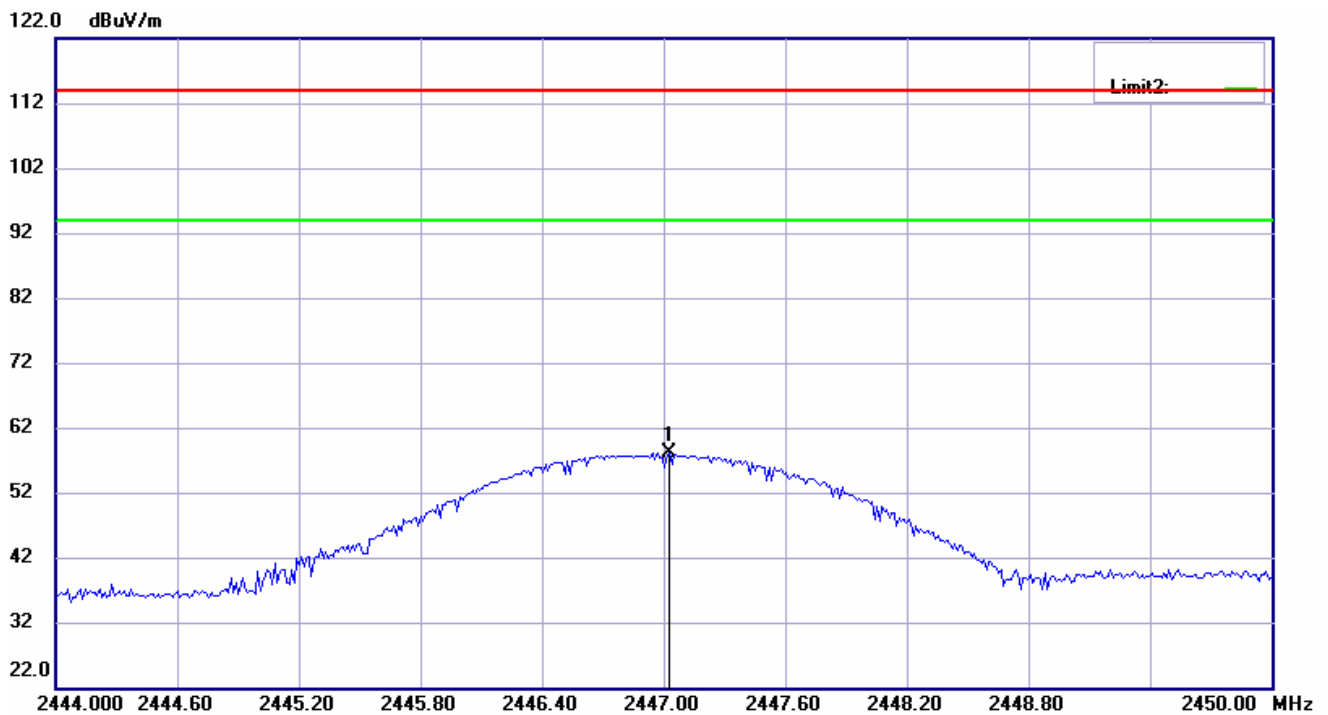


Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

Middle Channel Antenna Polarization H

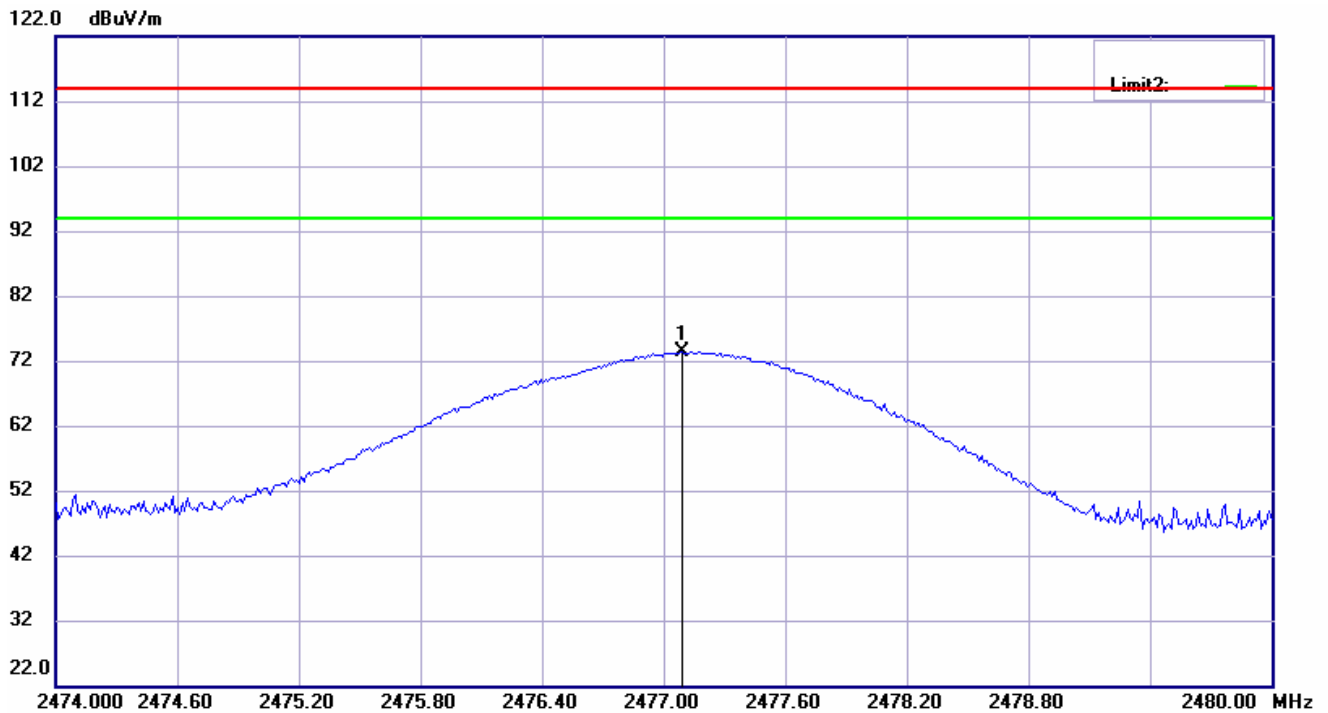


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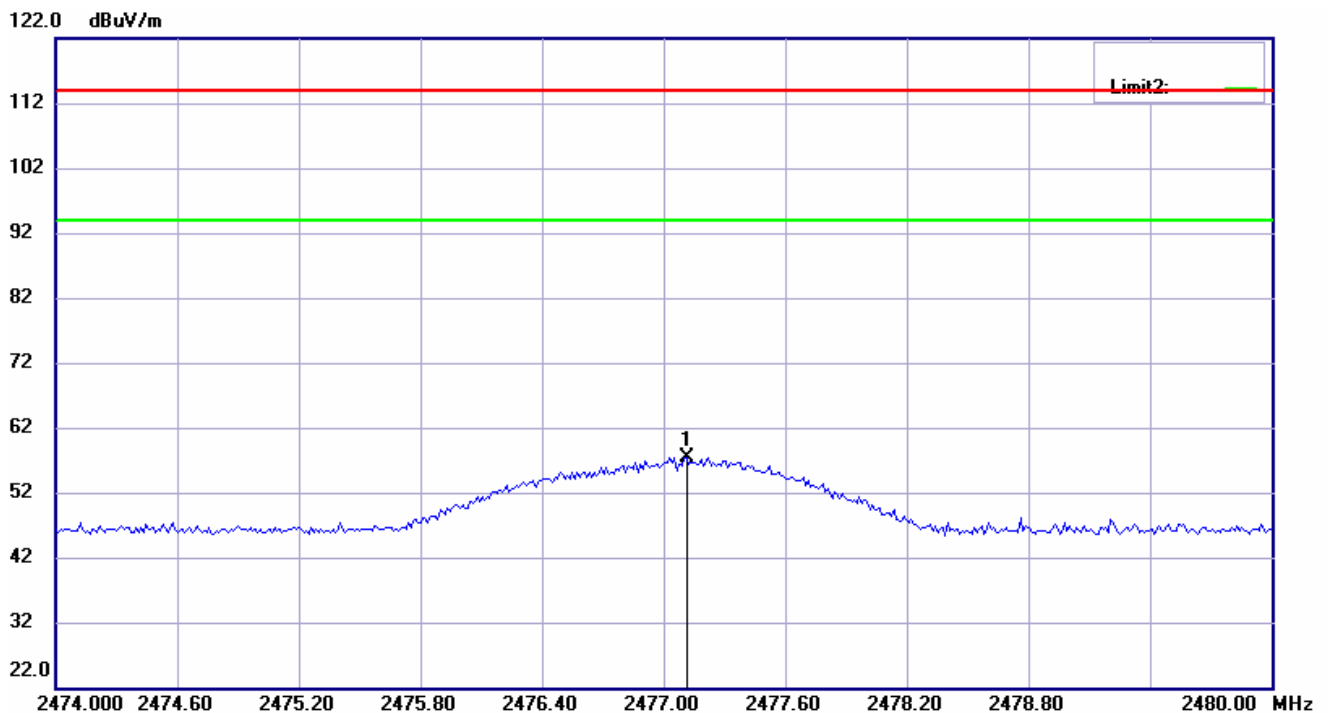


Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

High Channel Antenna Polarization H



Antenna Polarization V

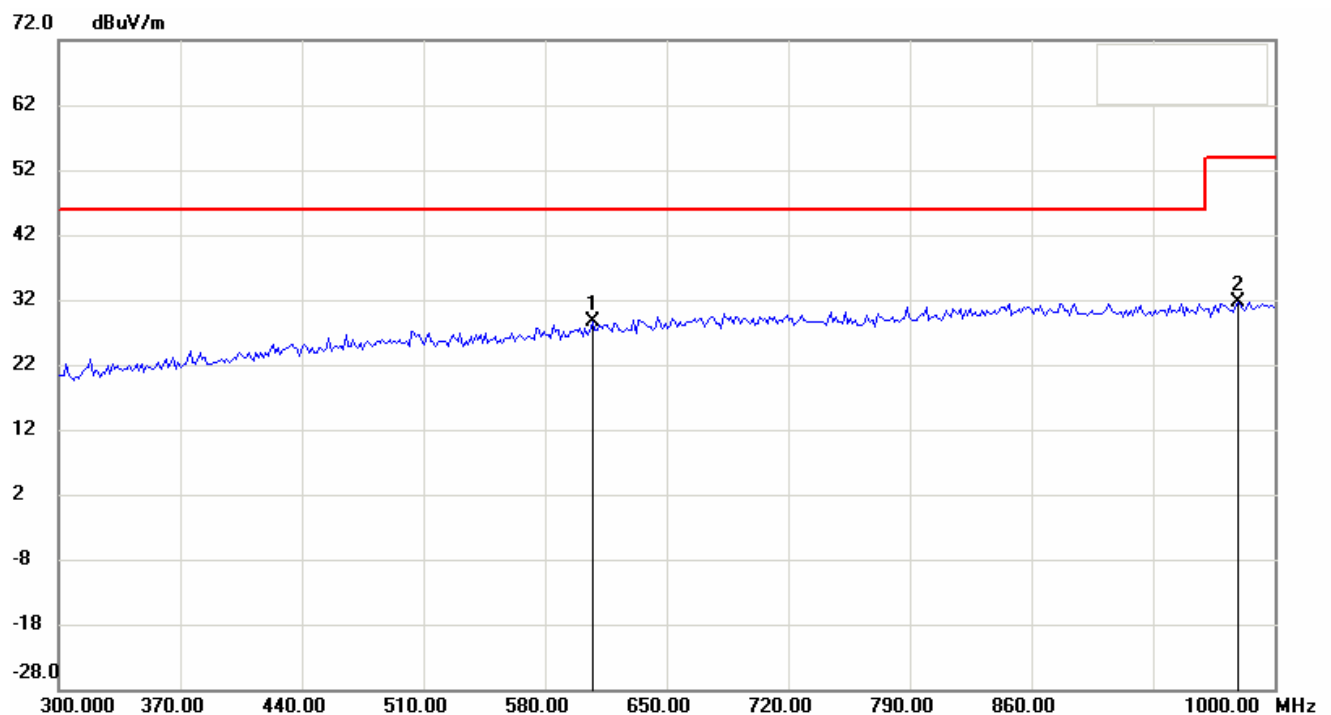
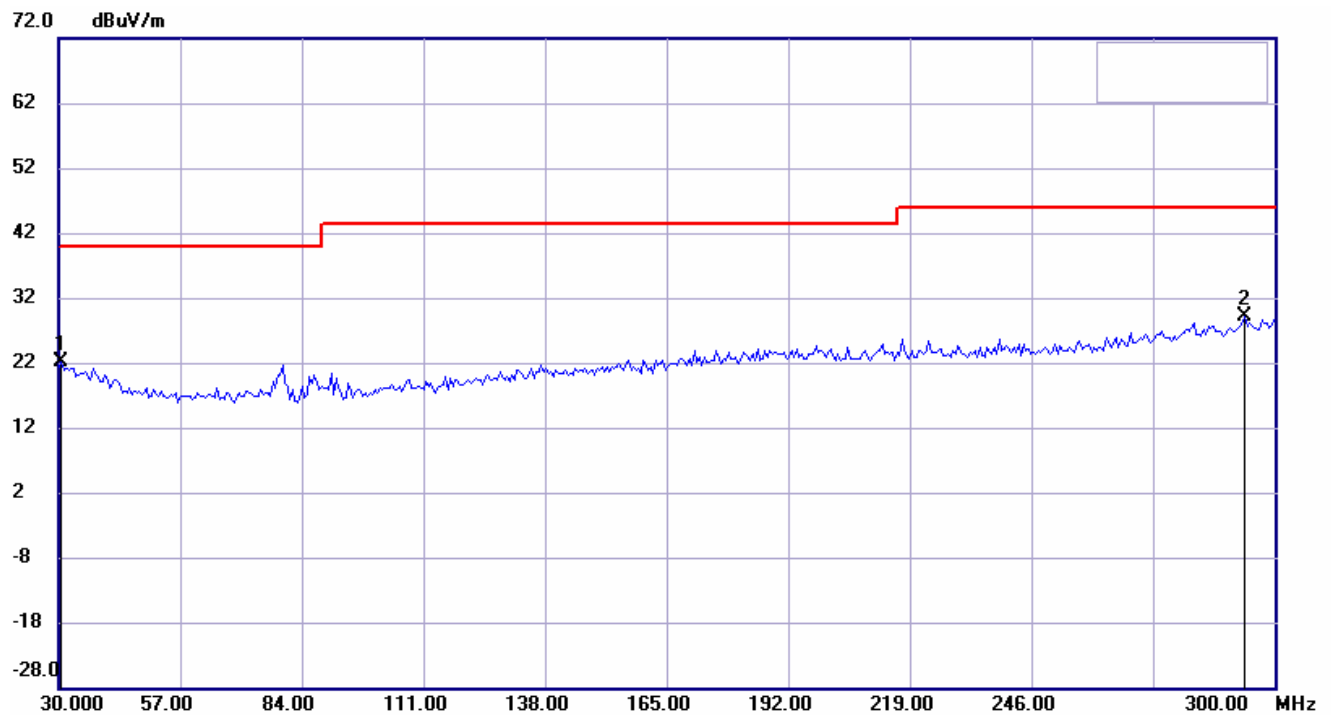


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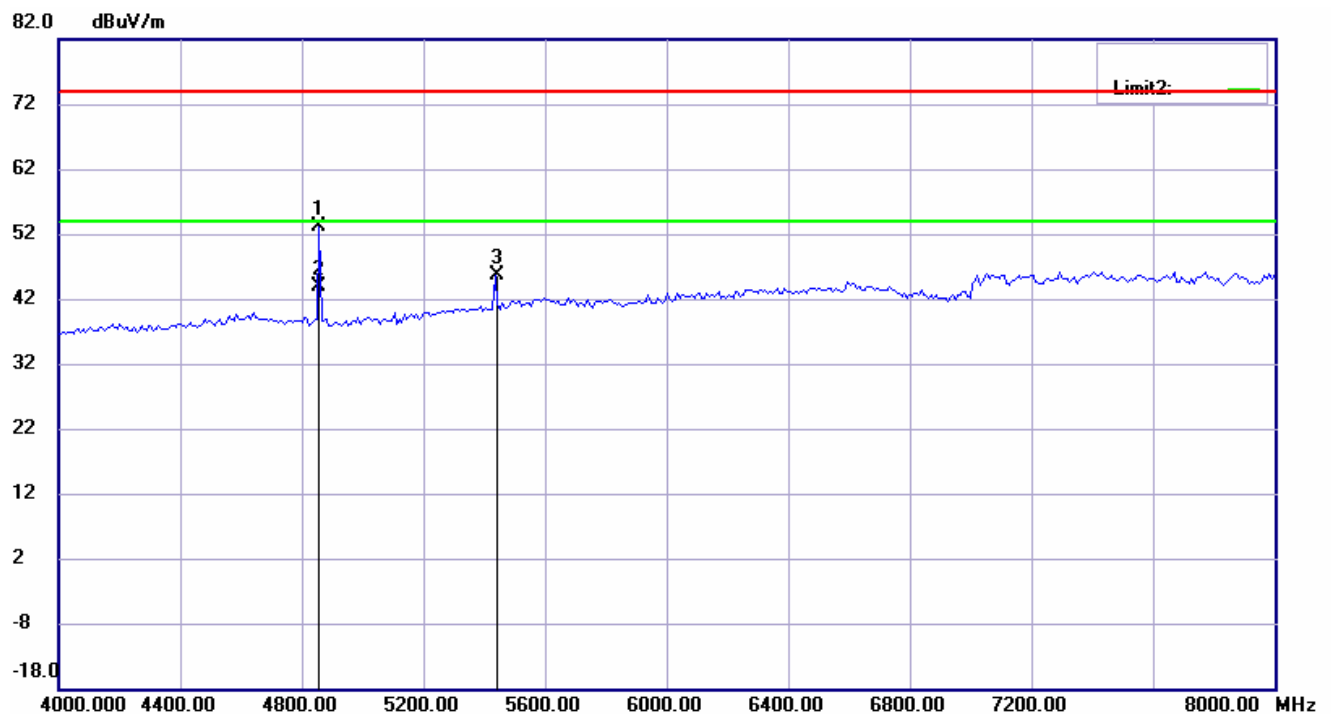
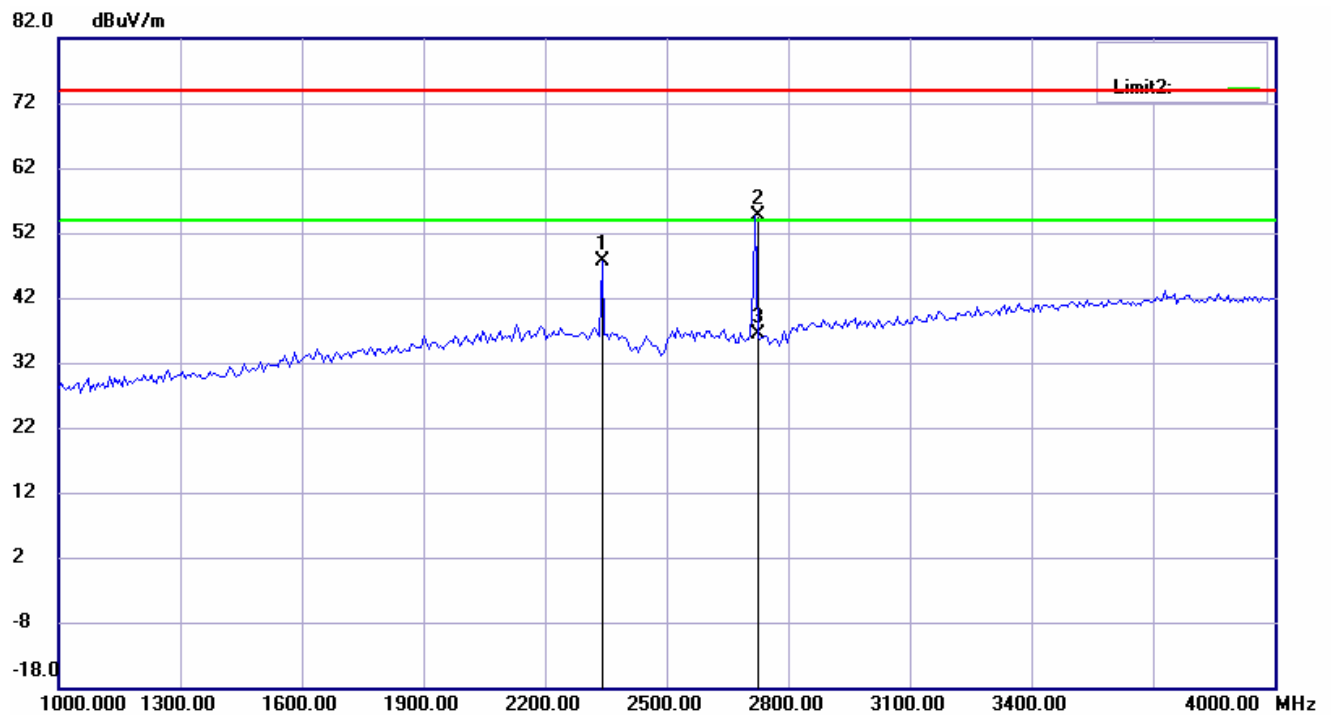
Spurious Emissions radiated

Low Channel

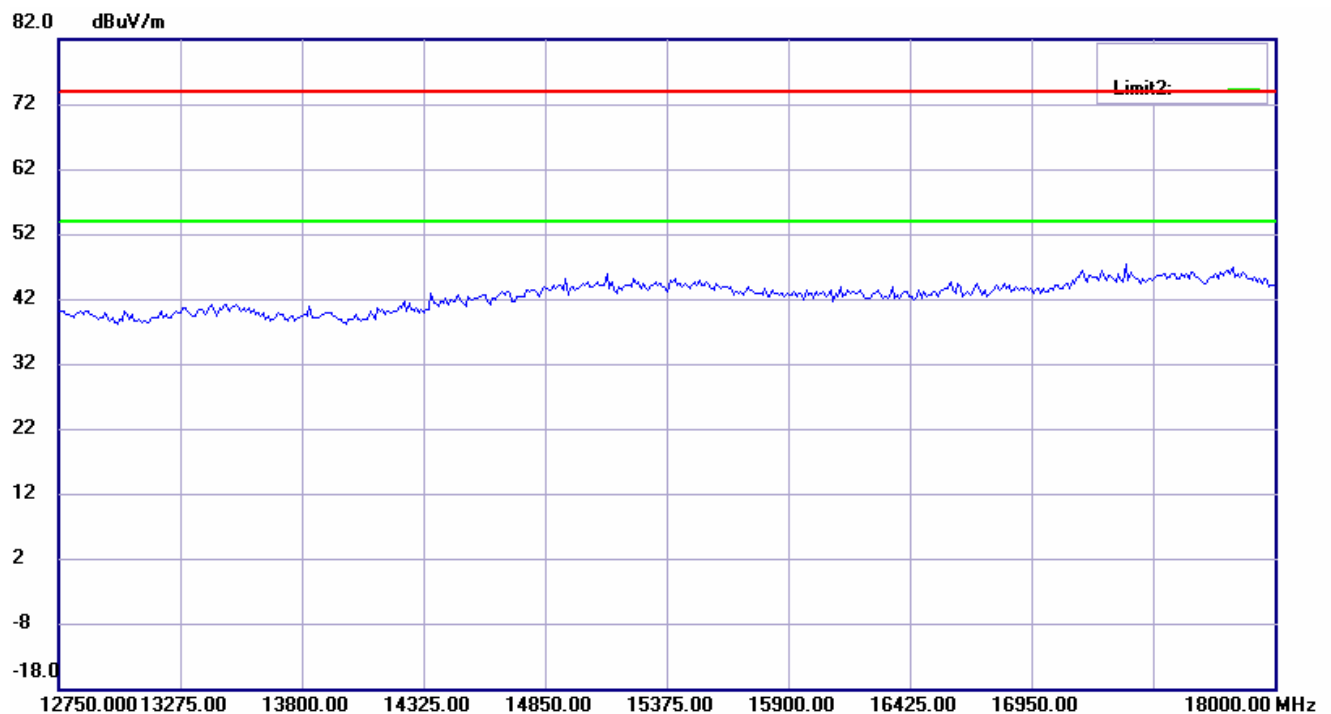
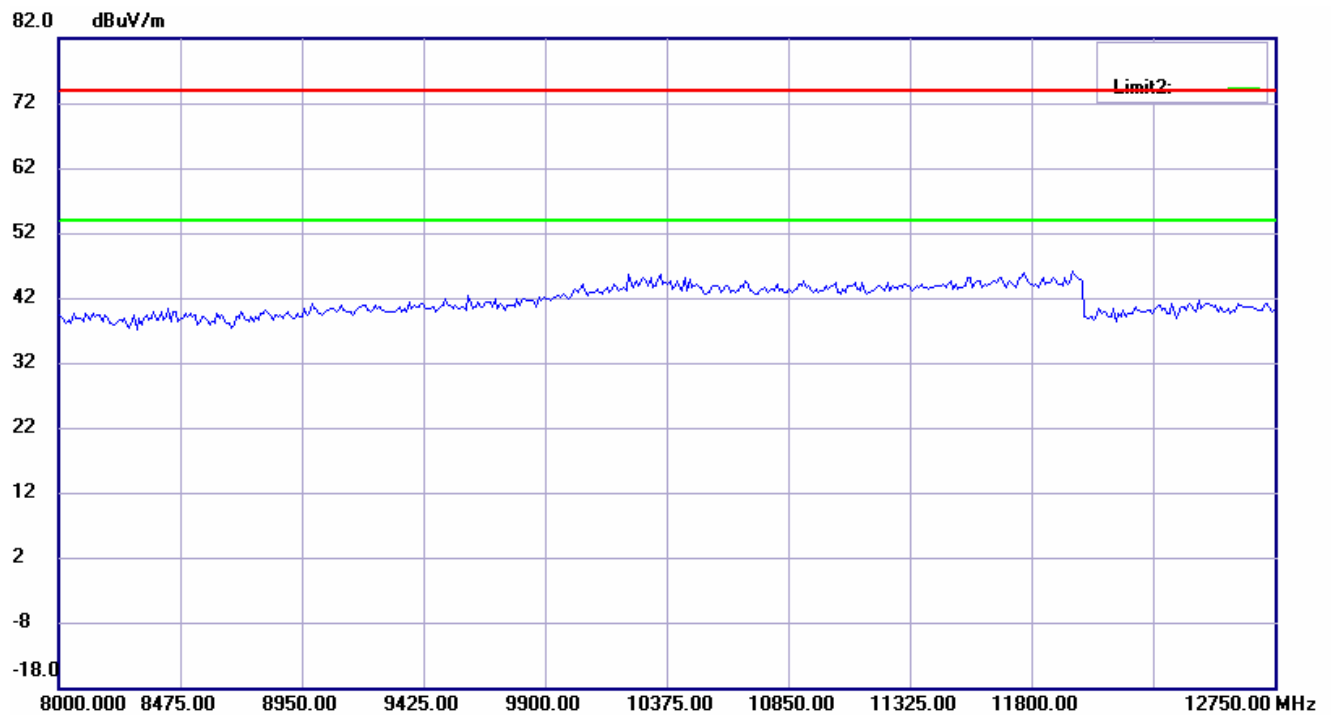
Antenna Polarization H



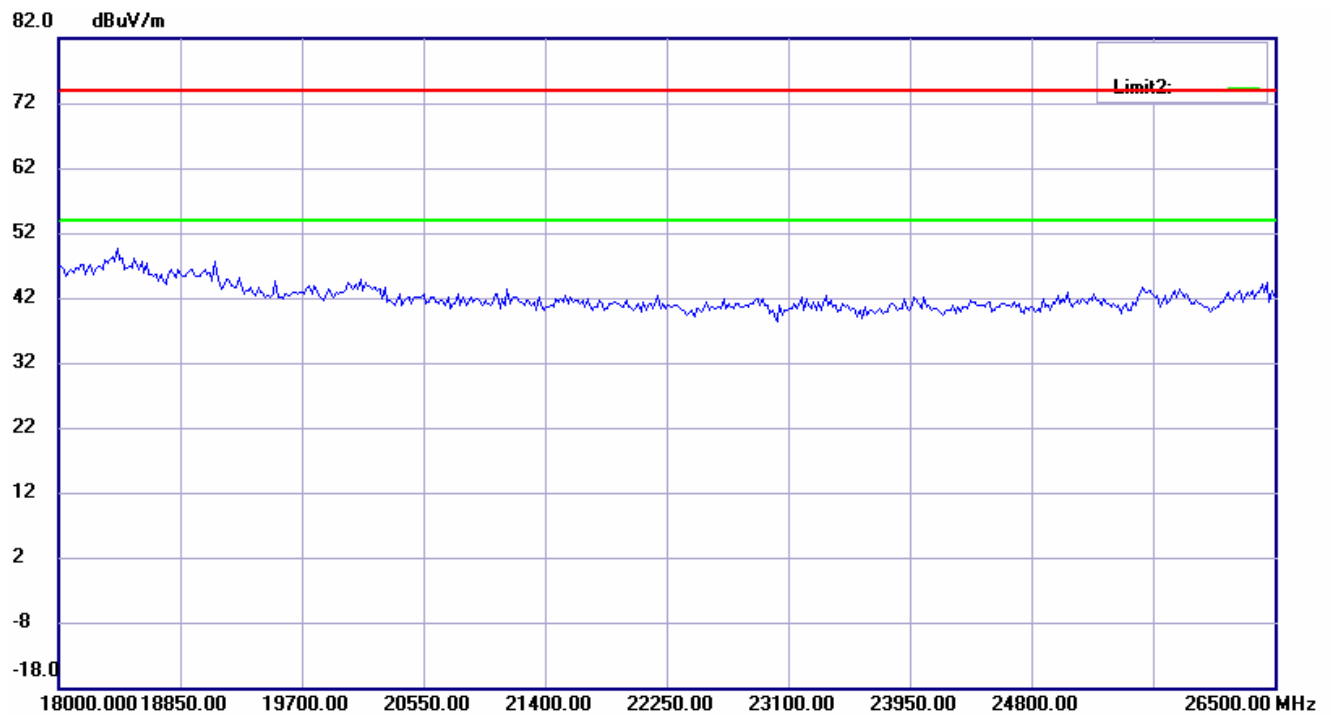
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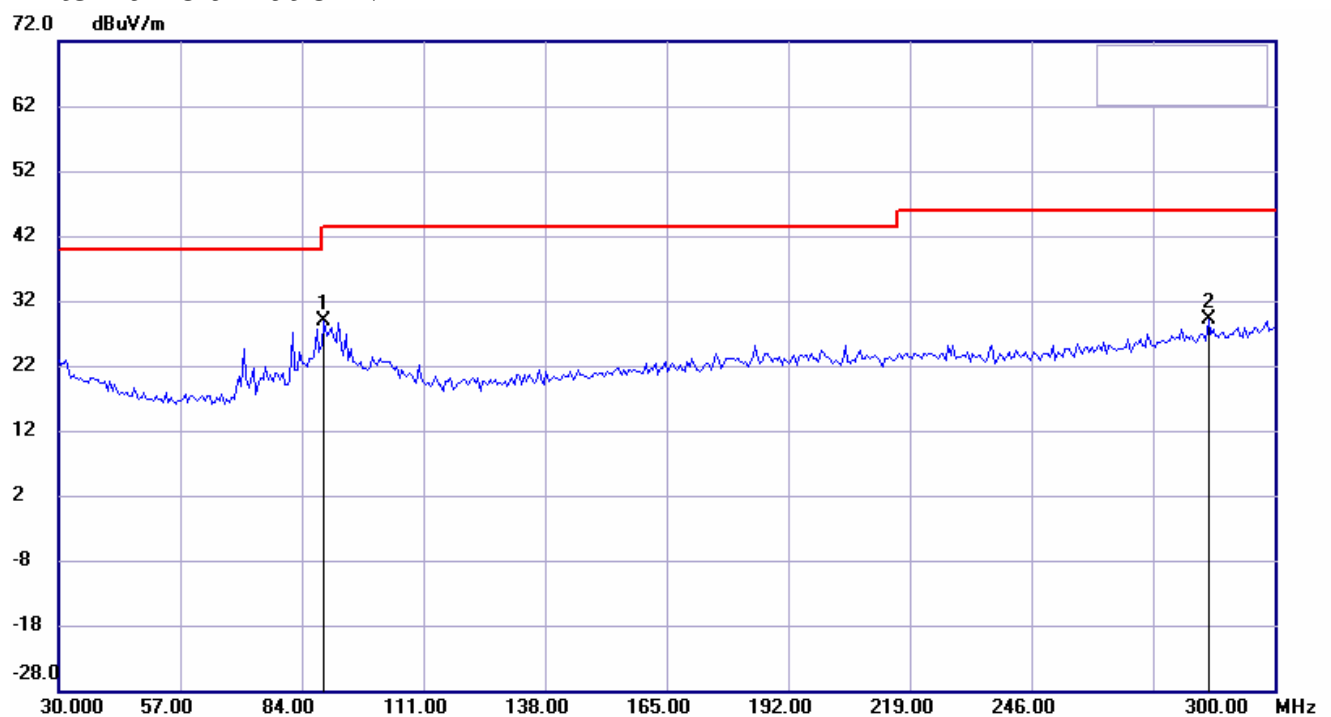
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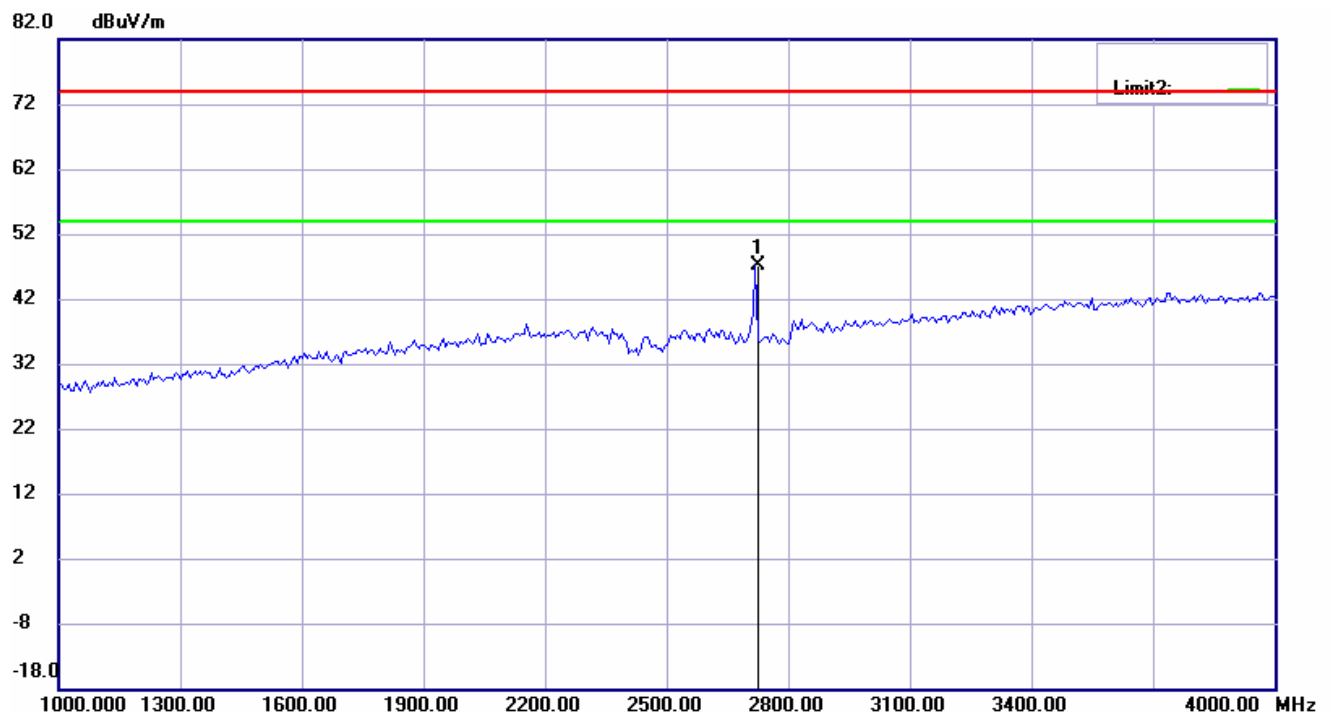
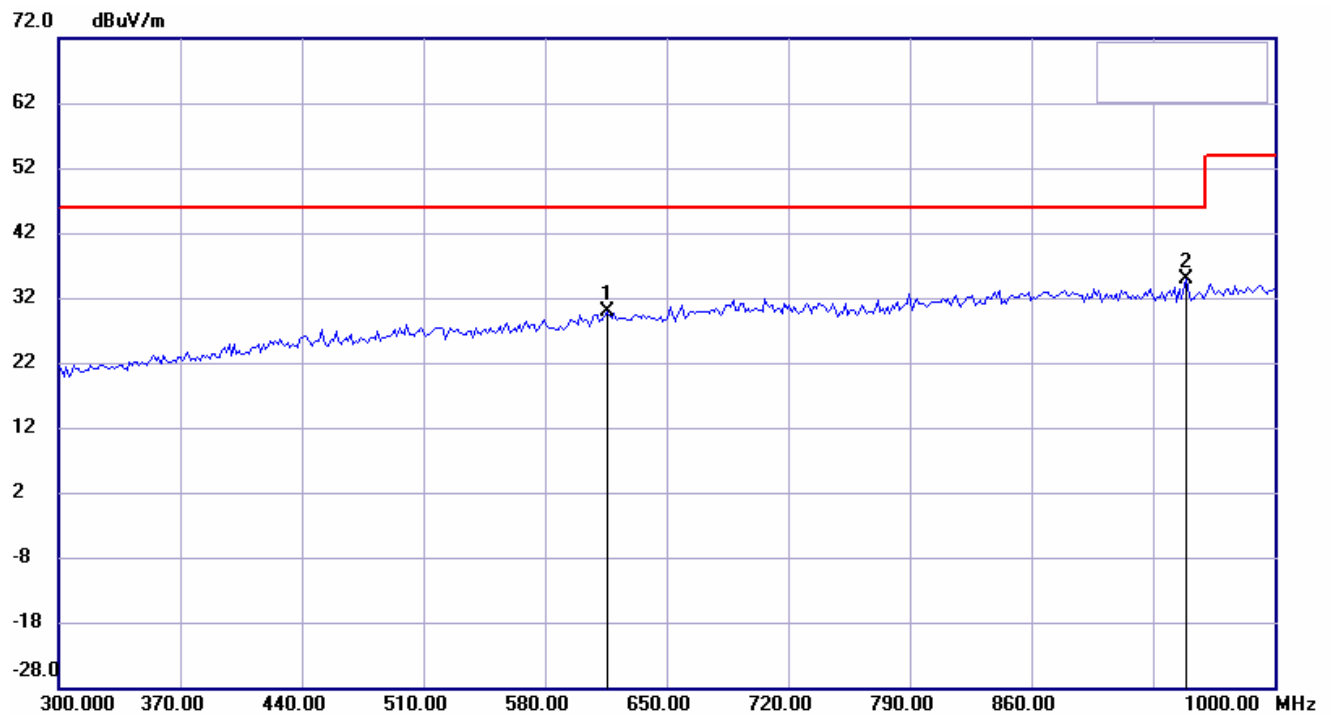
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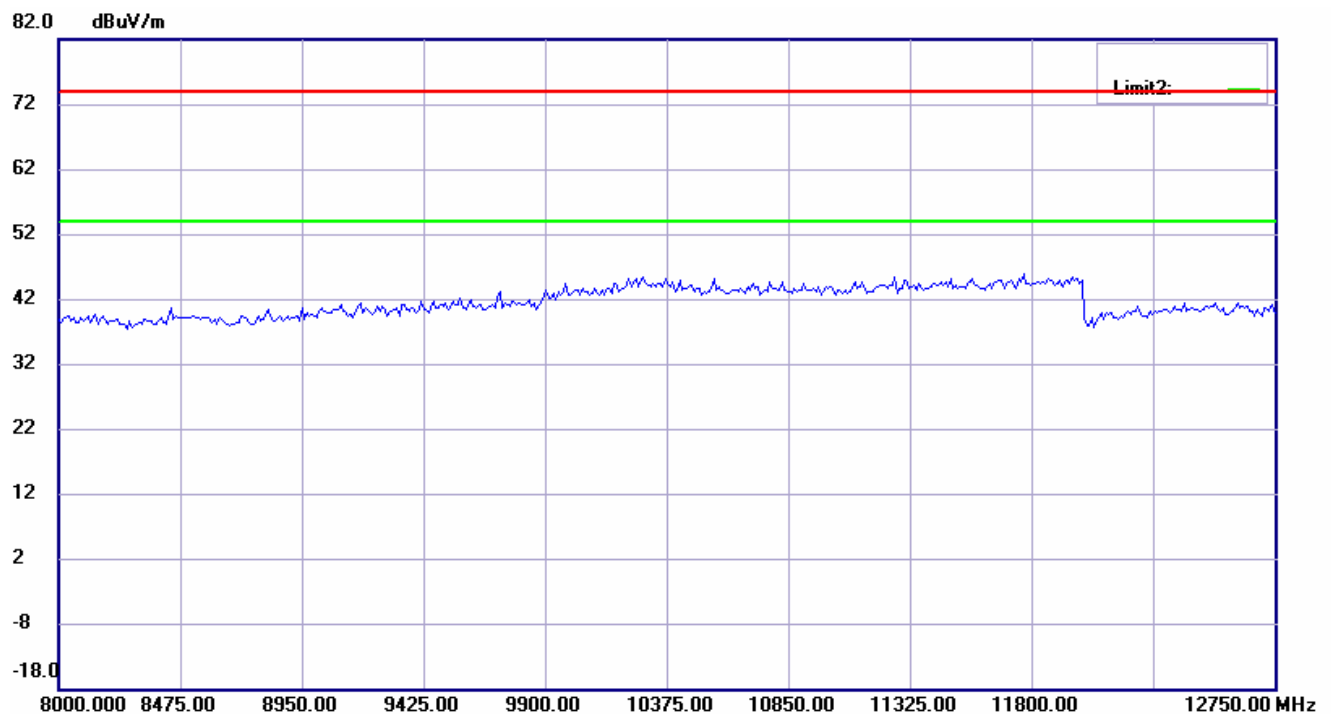
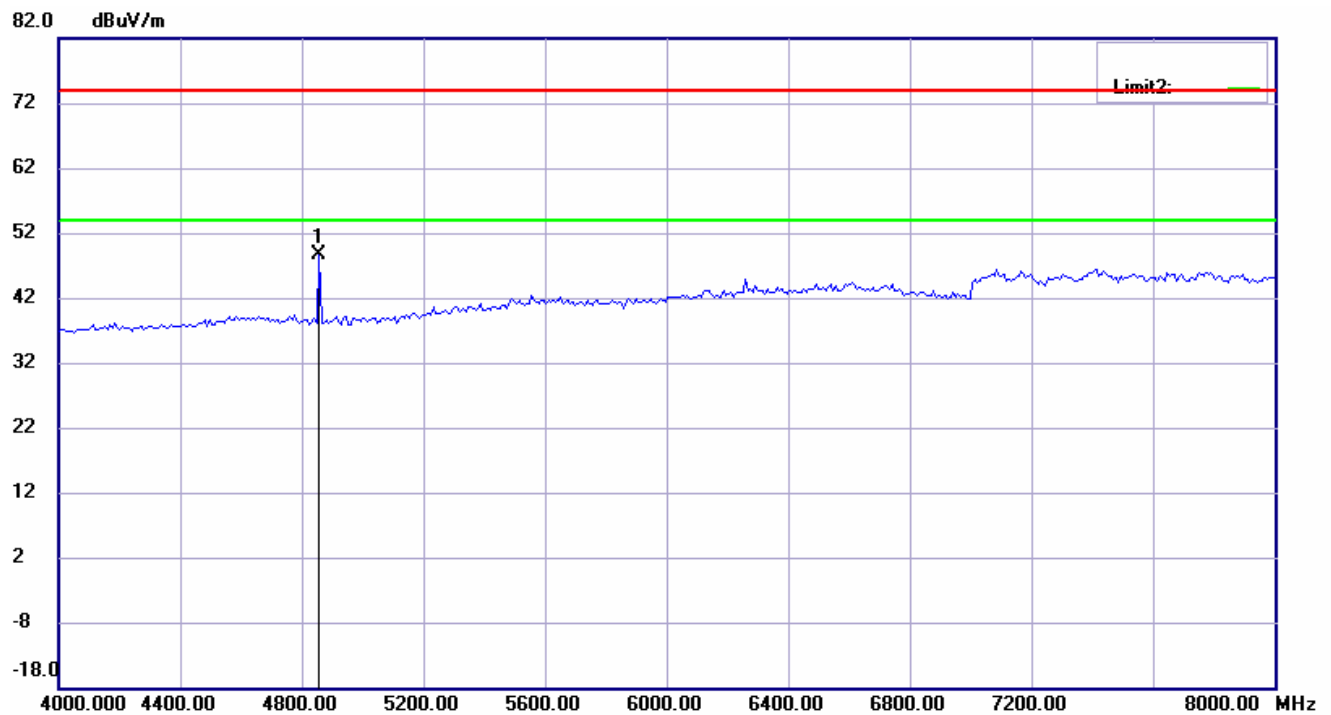
Antenna Polarization V



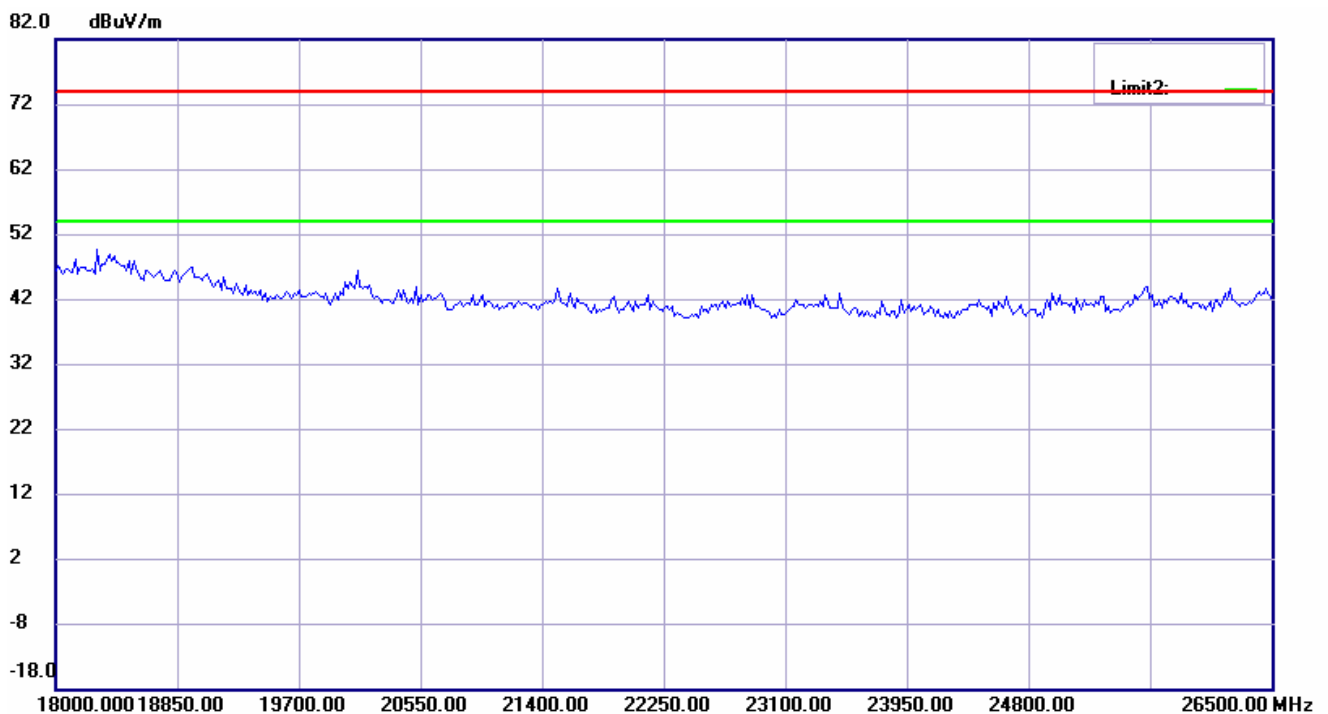
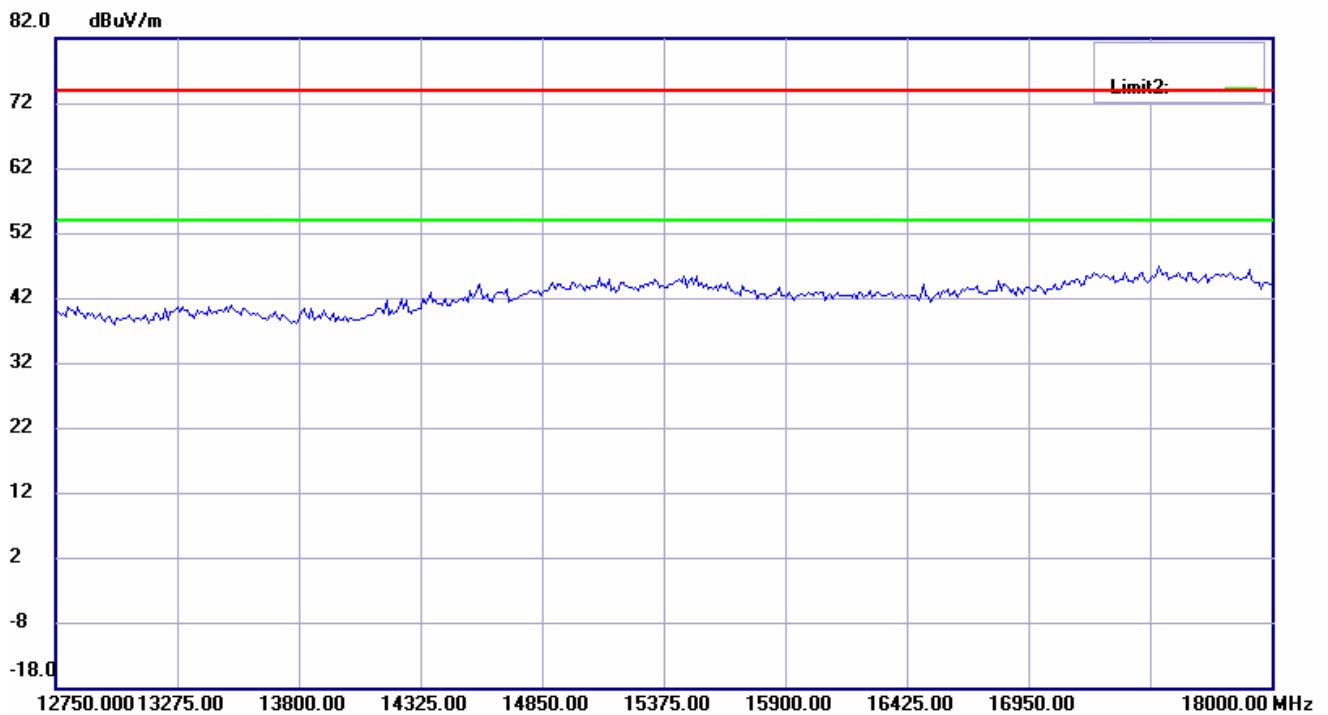
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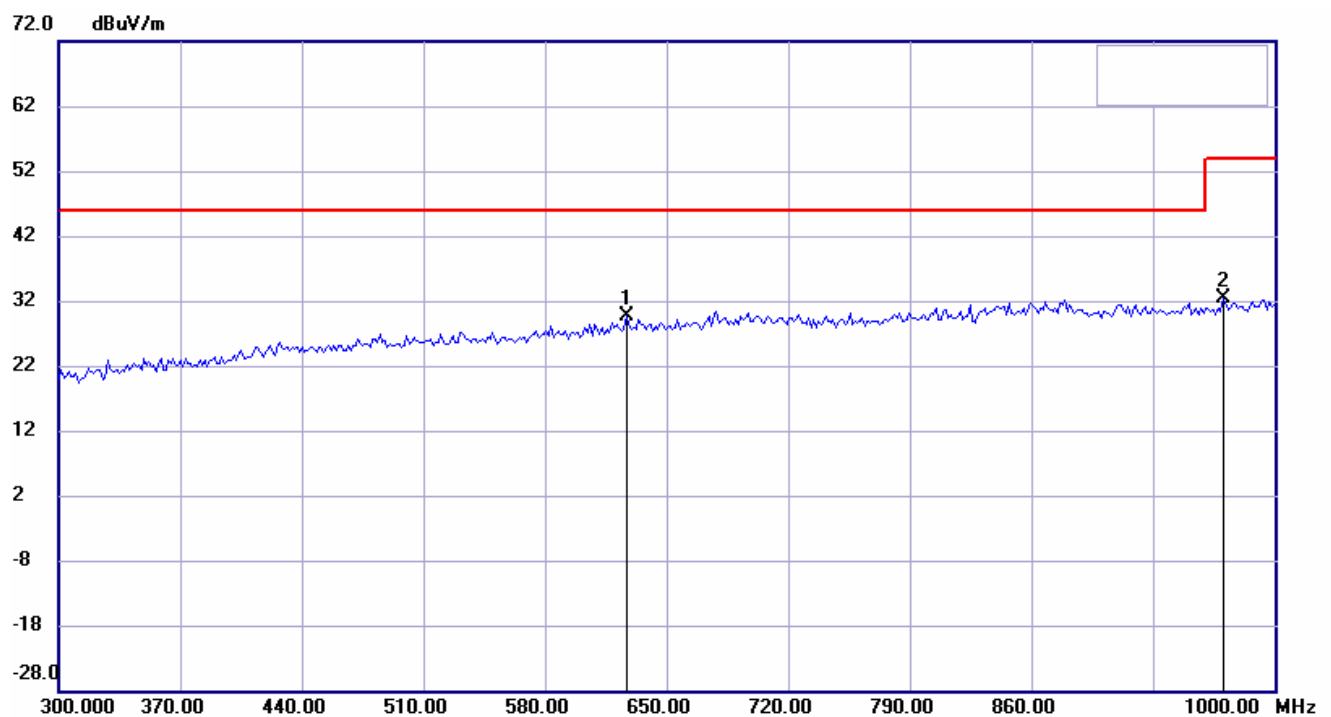
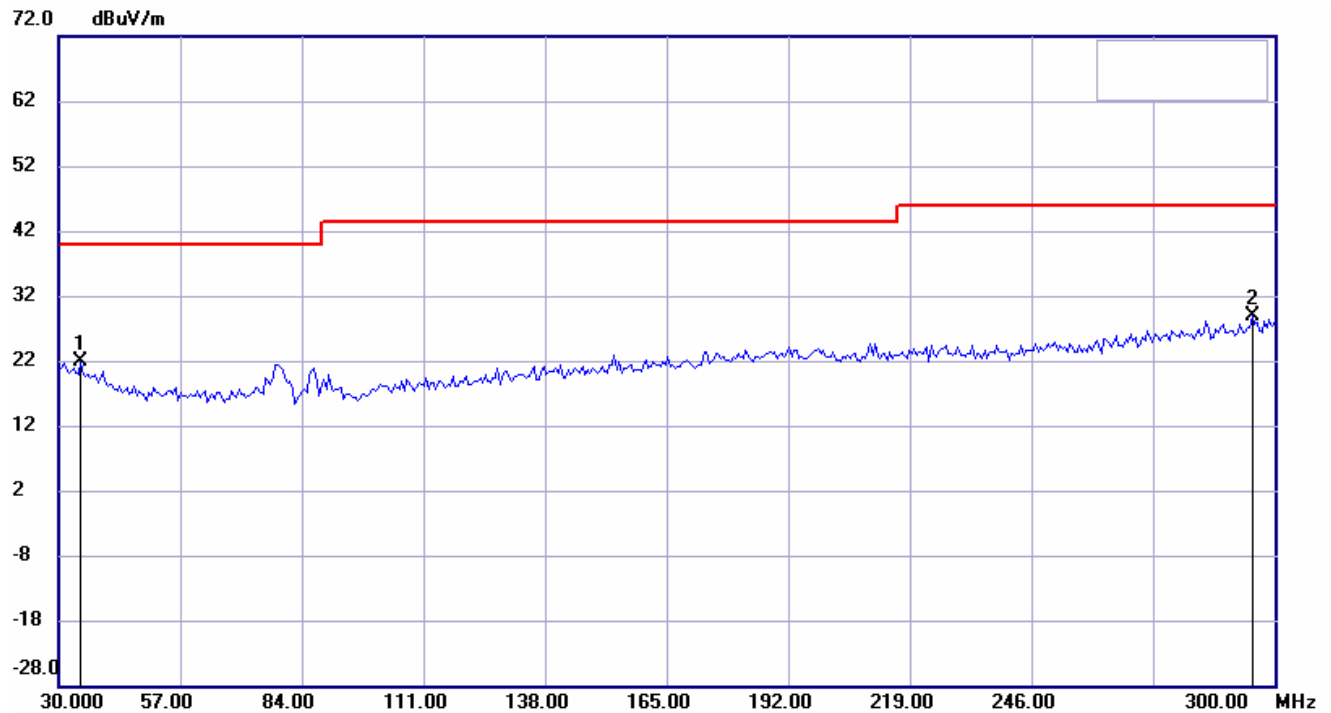


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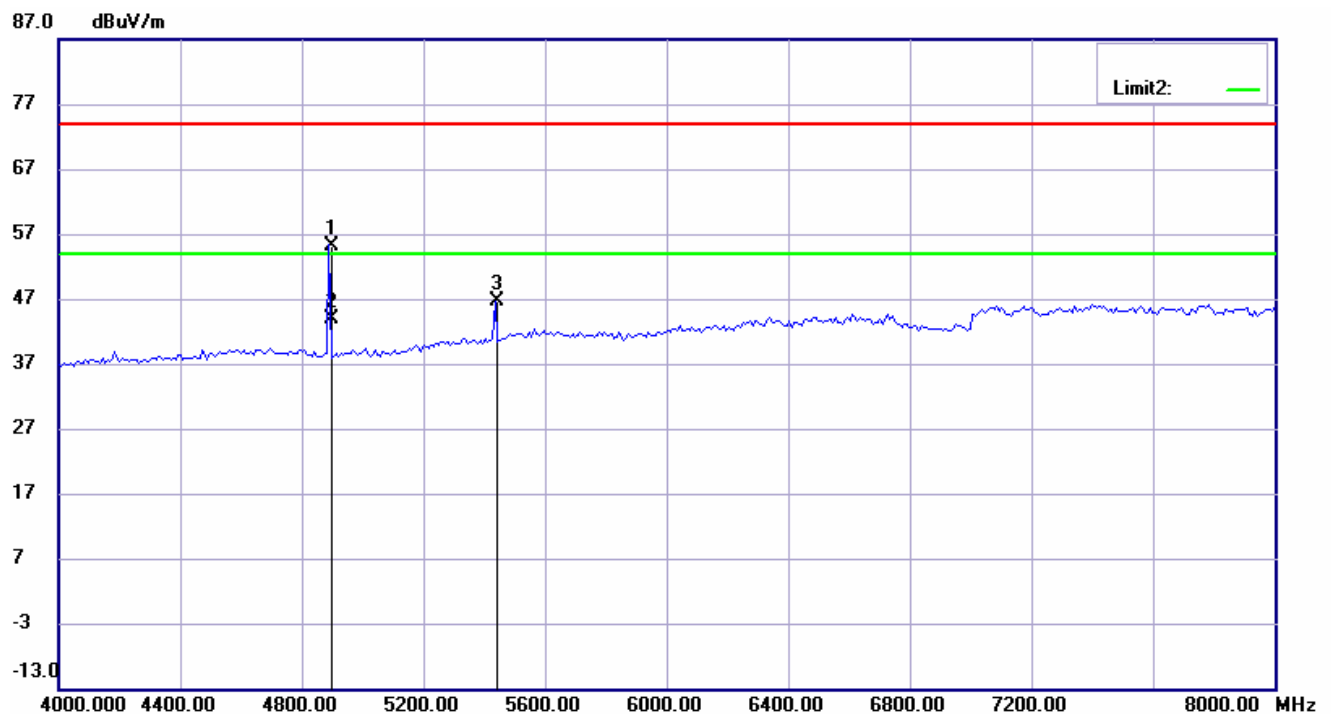
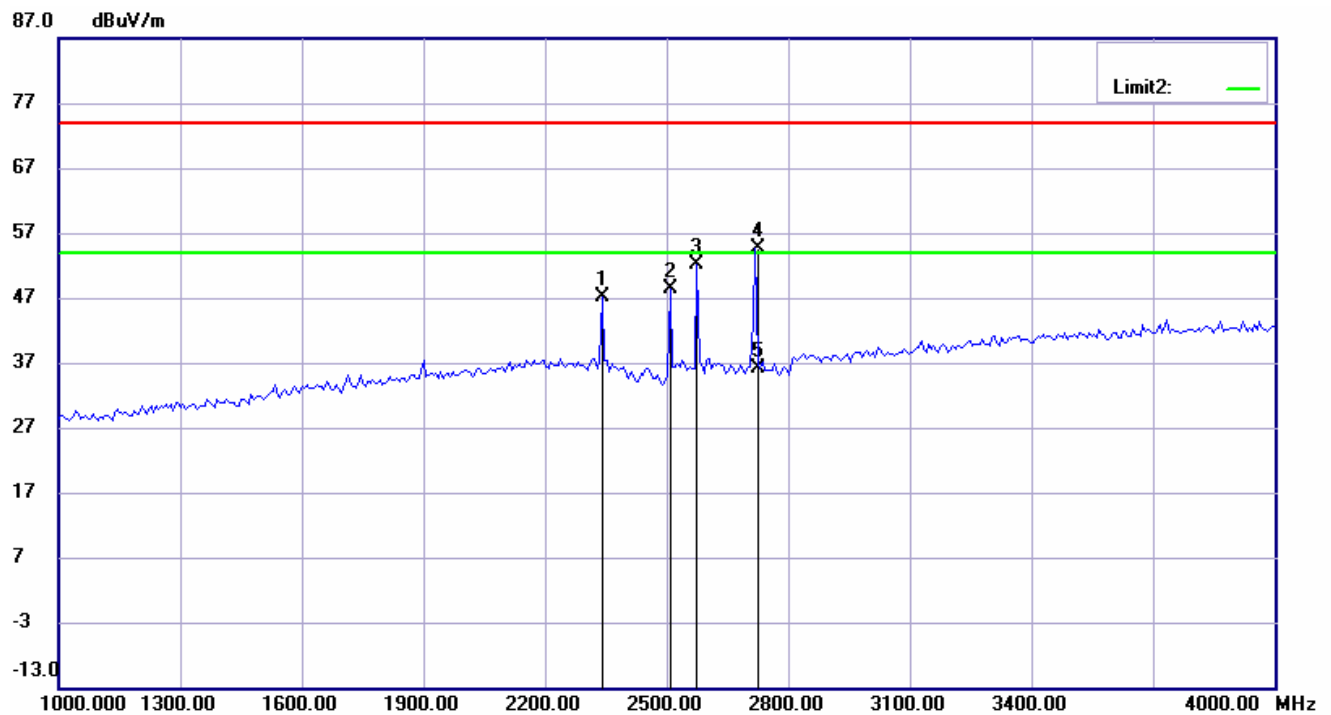


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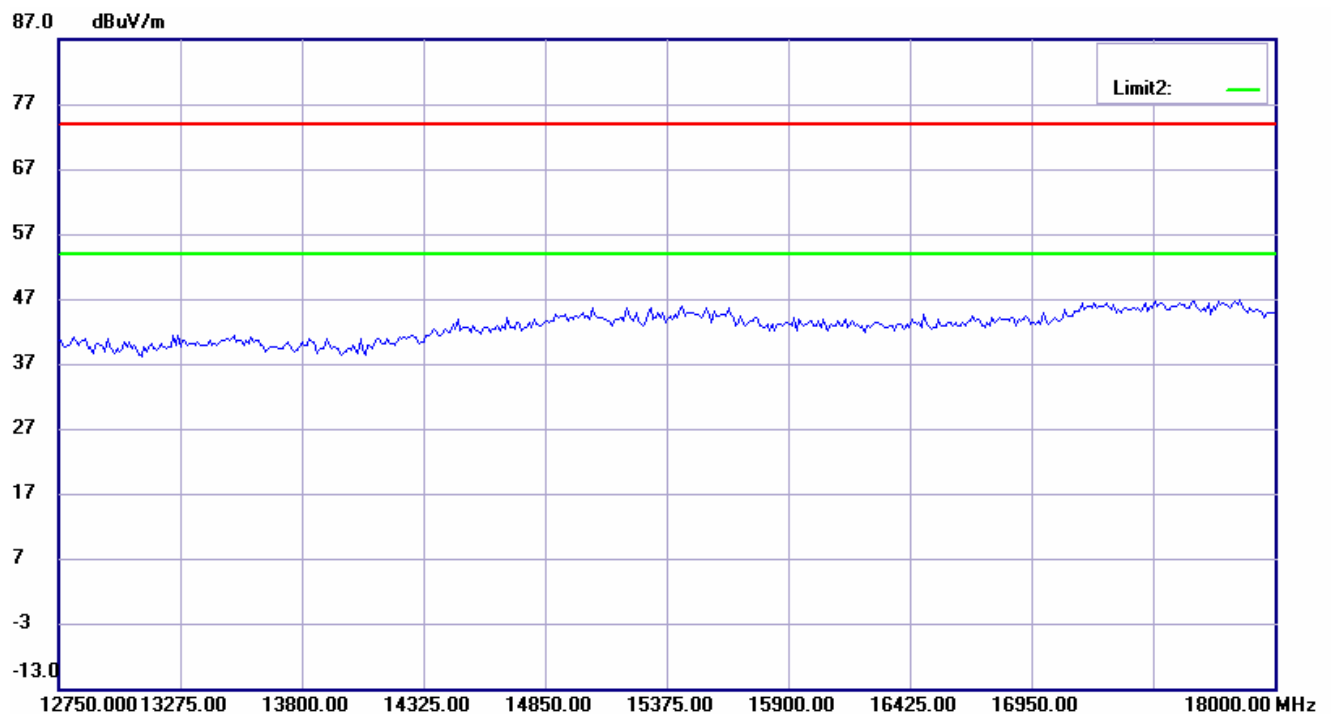
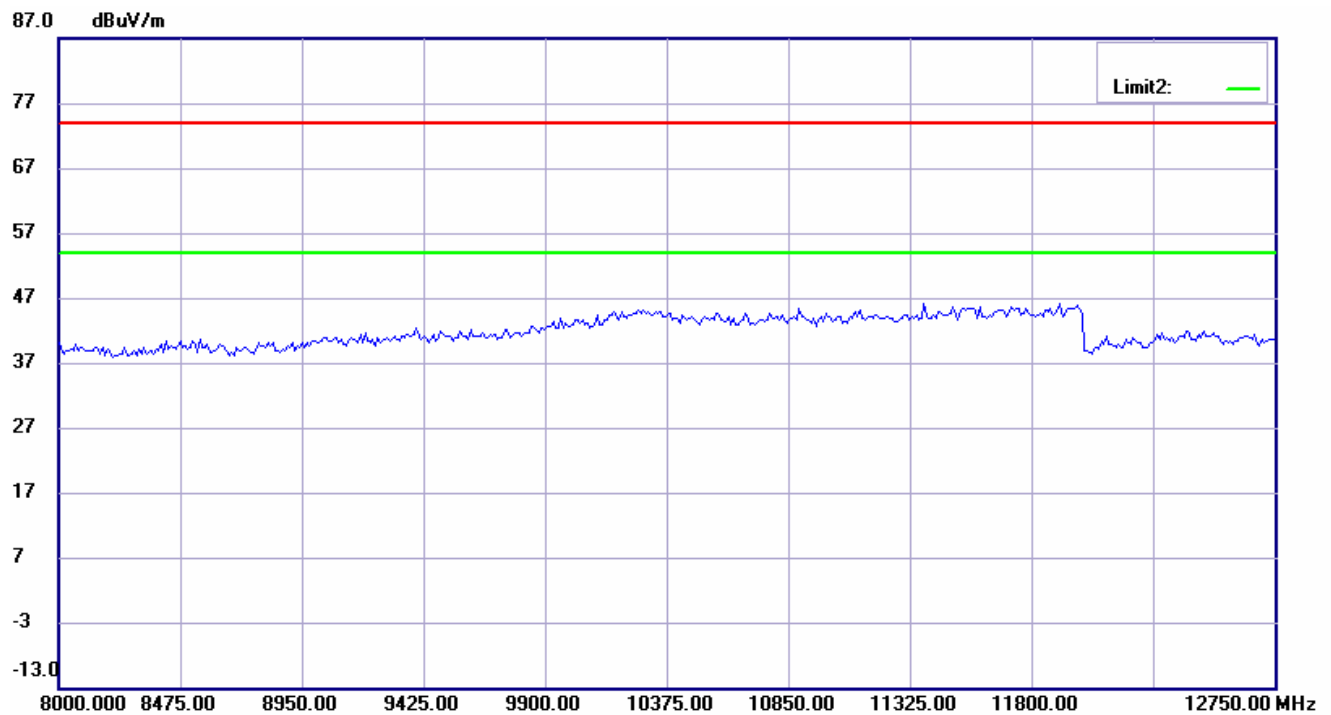
Middle Channel Antenna Polarization H



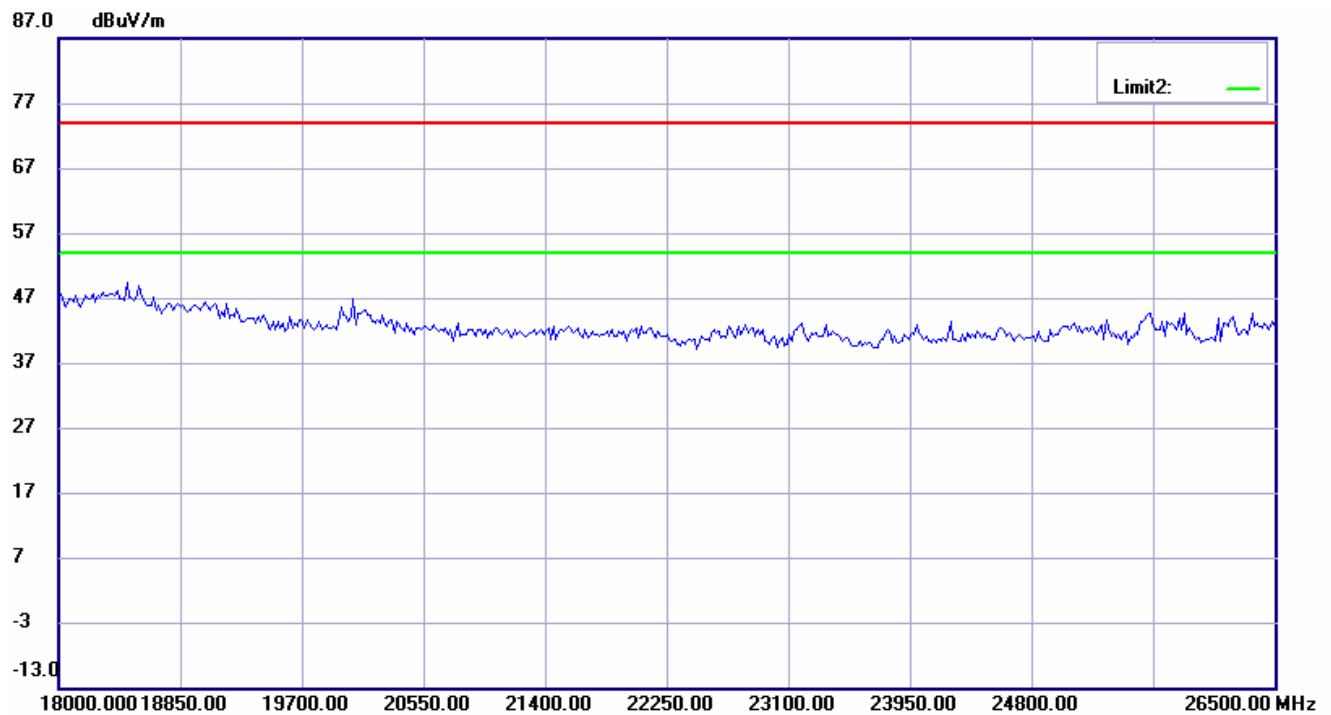
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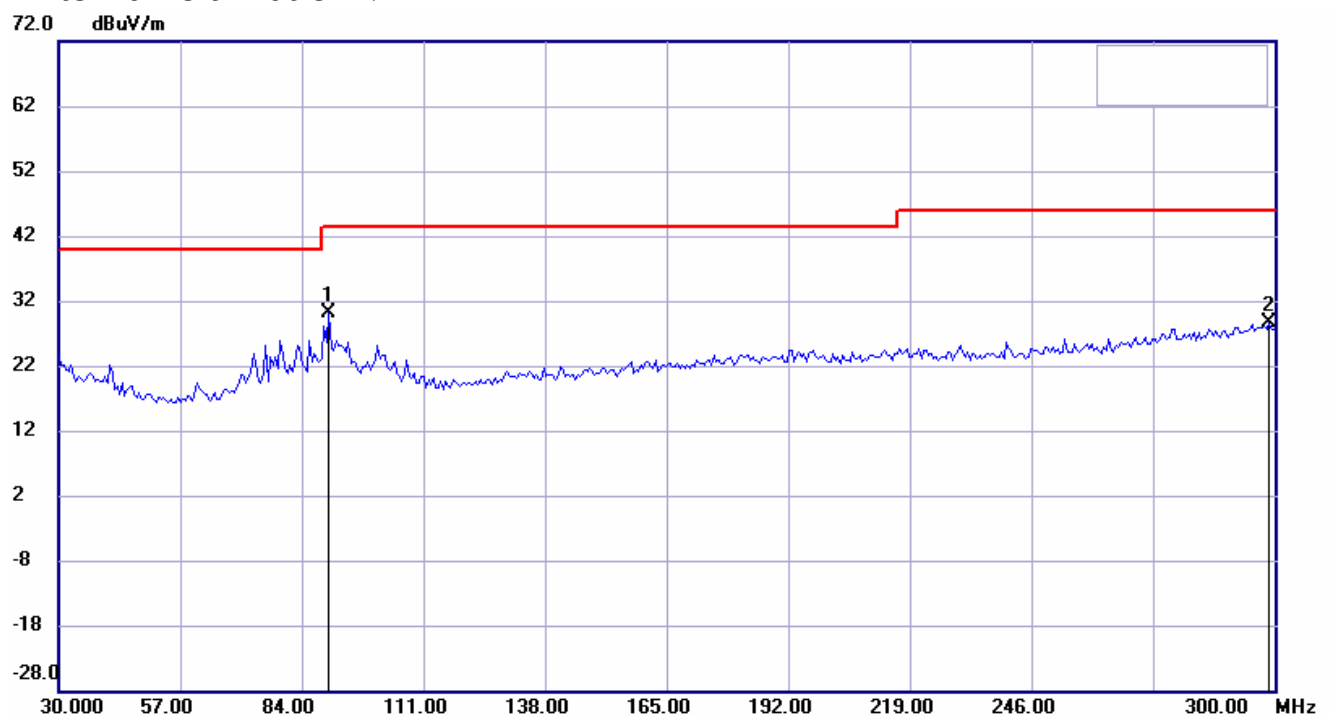
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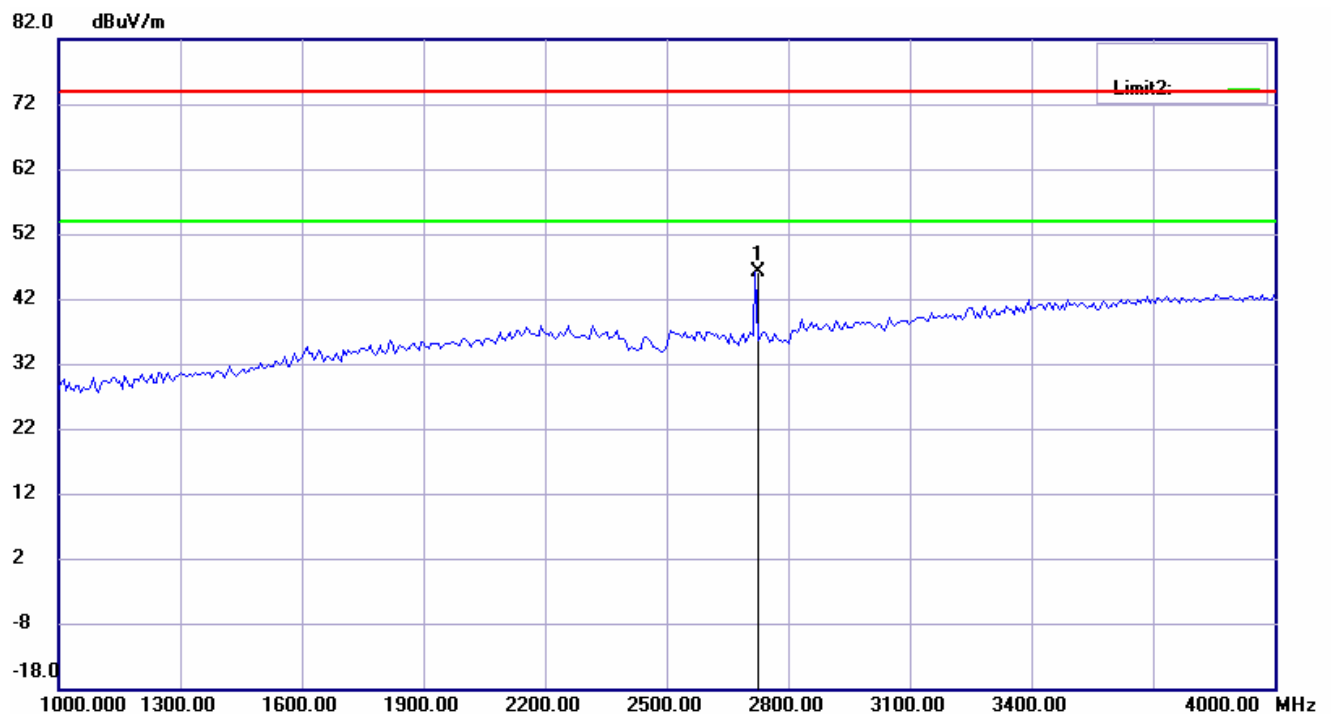
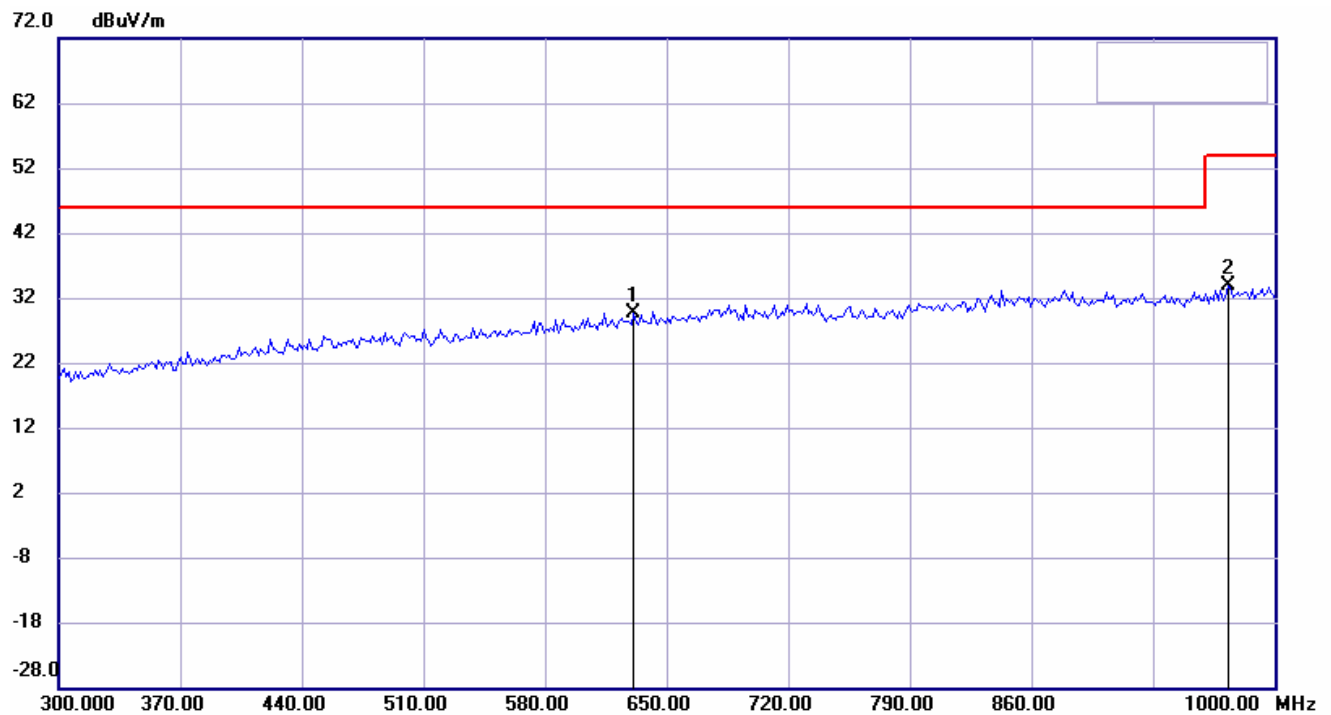
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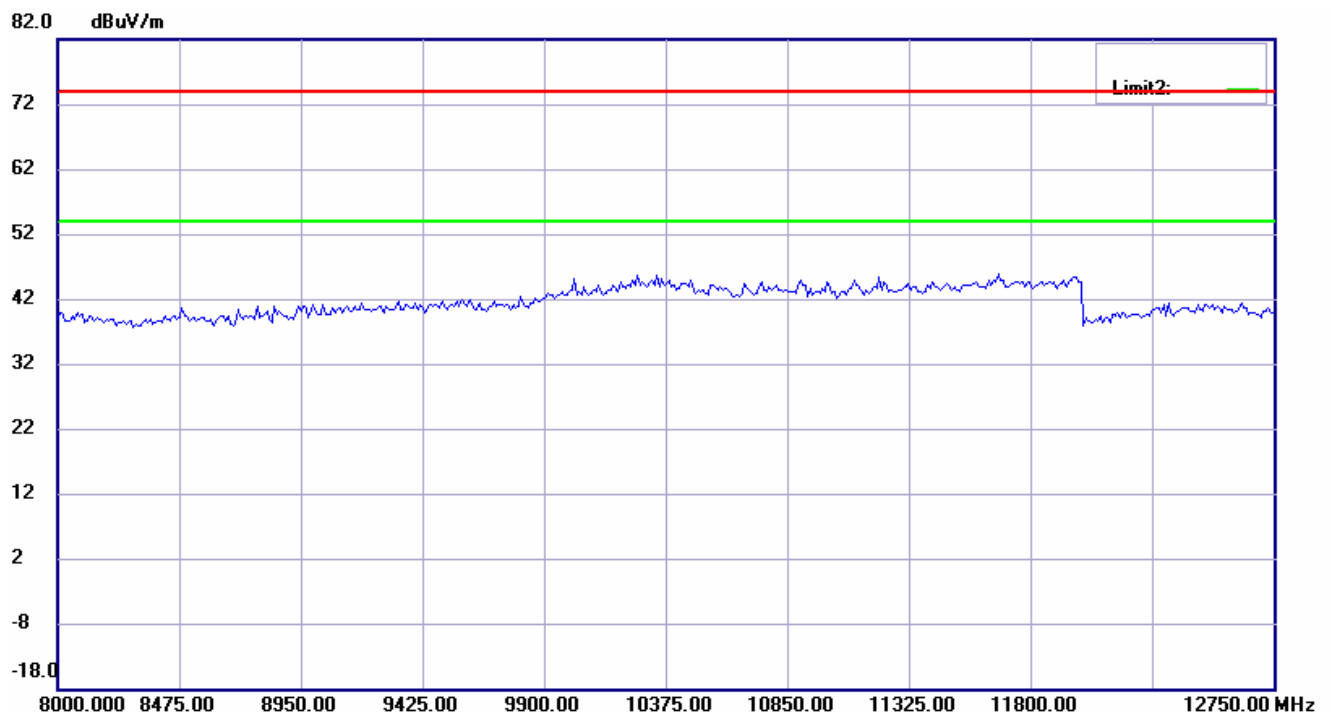
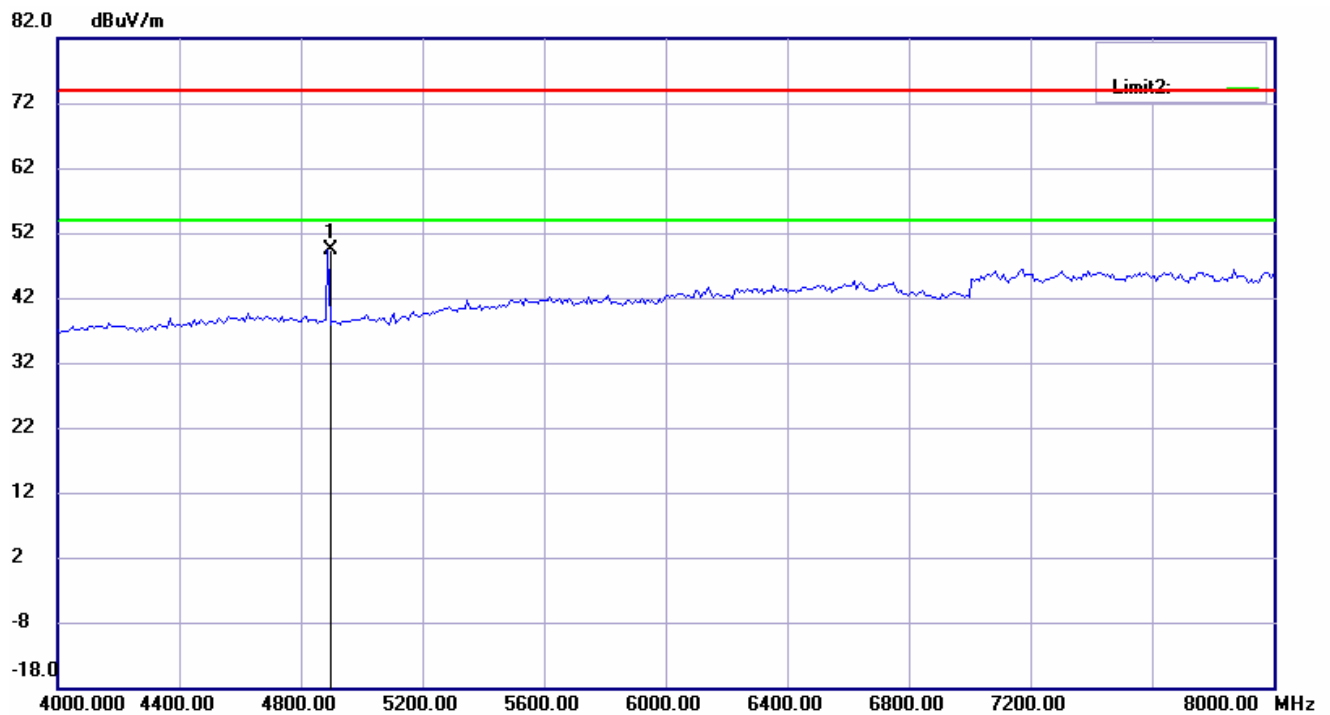
Antenna Polarization V



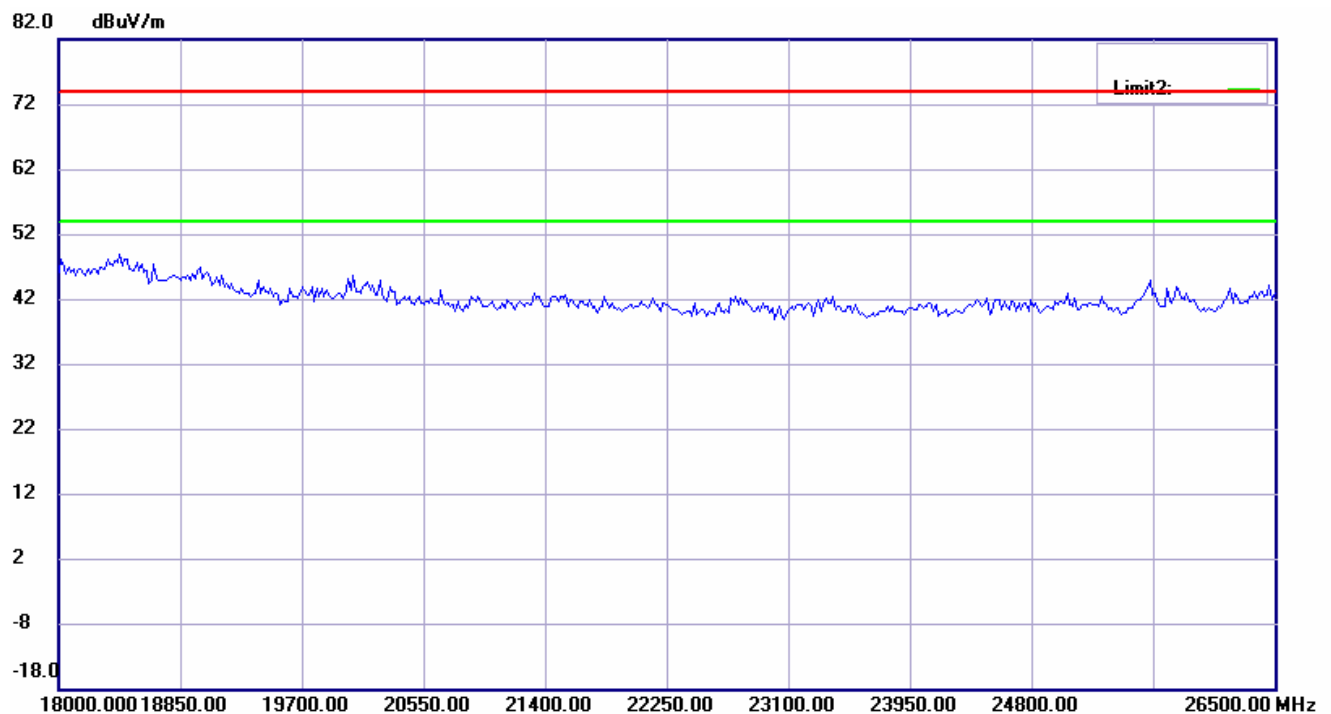
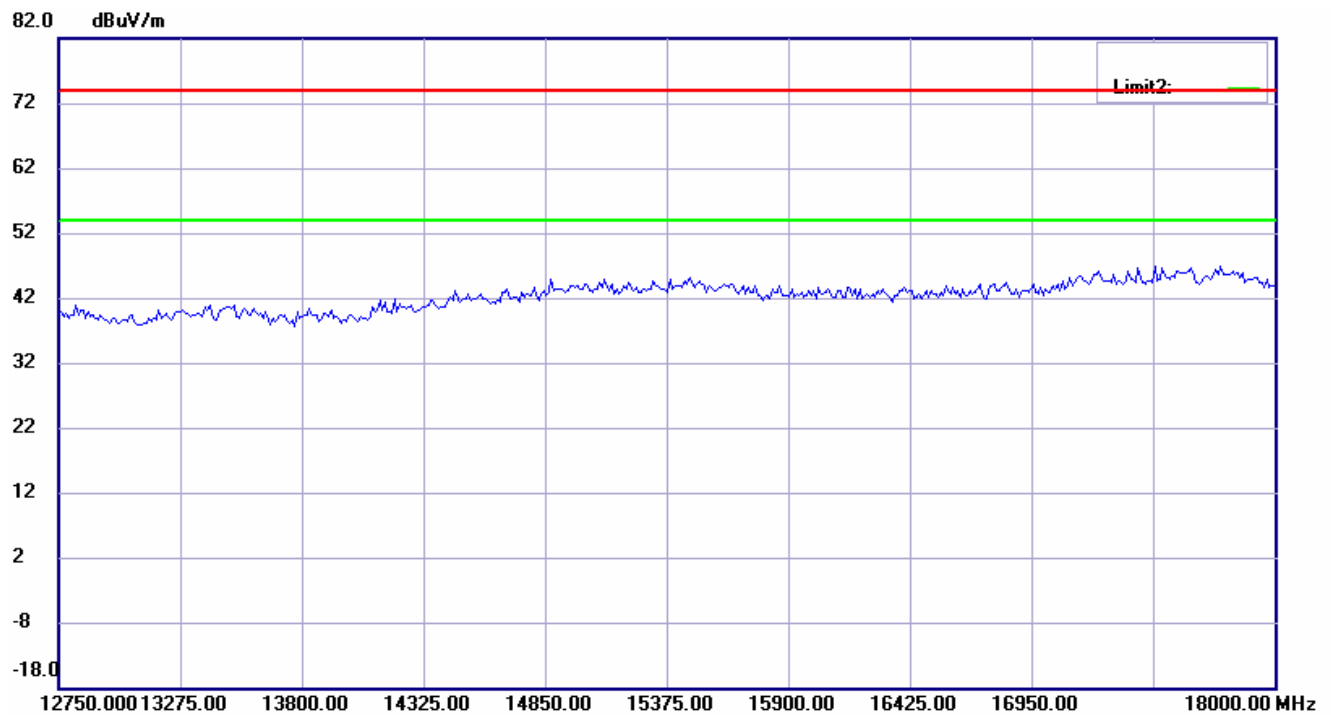
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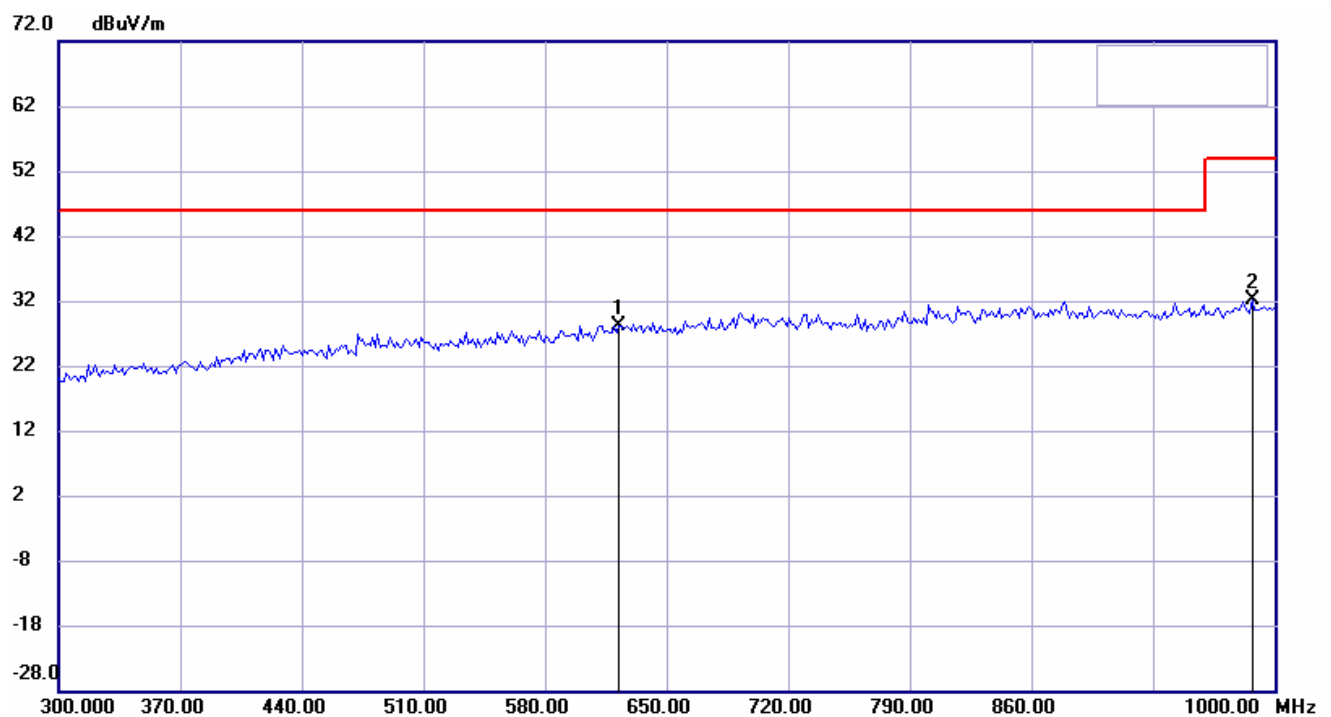
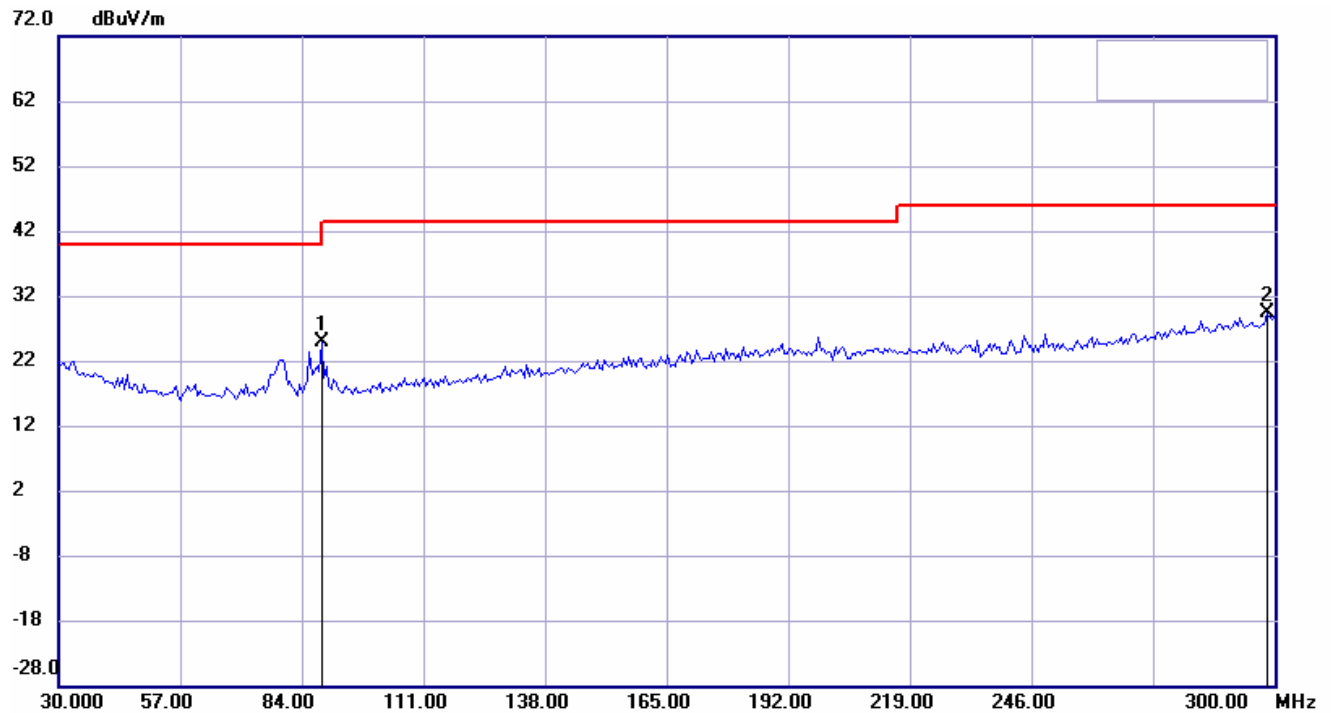


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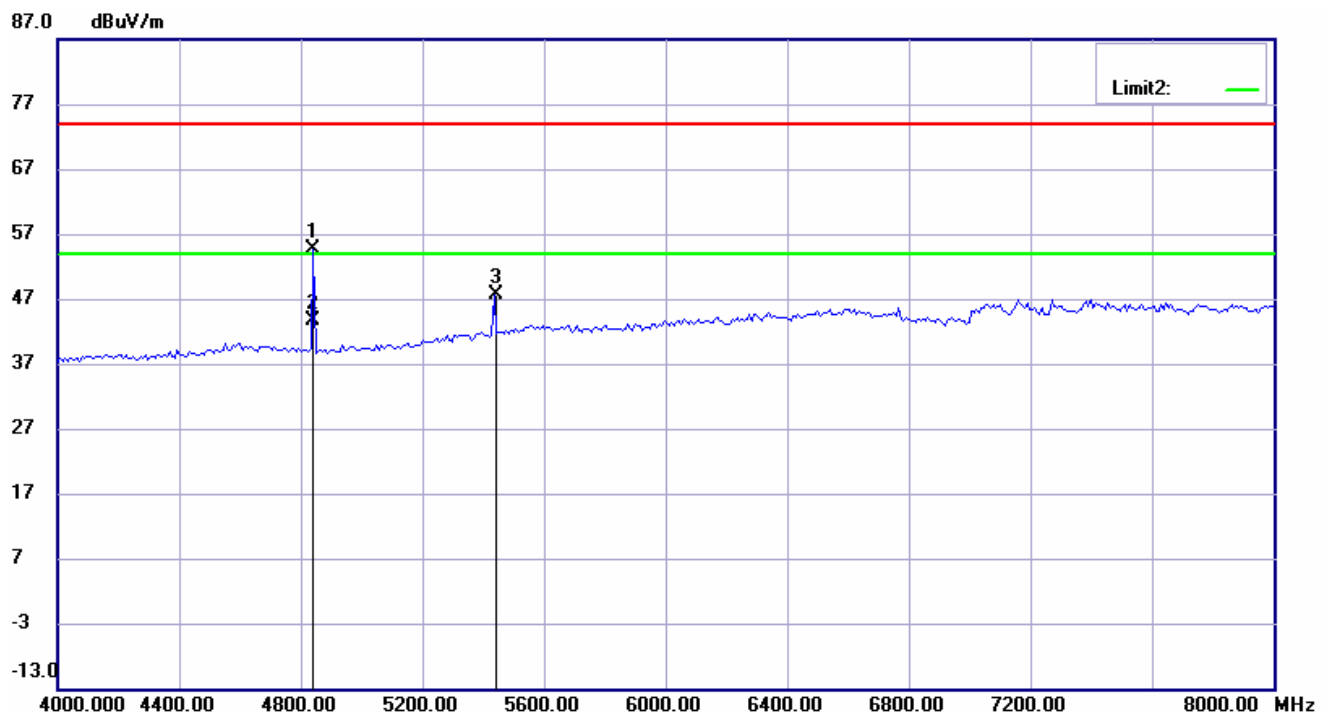
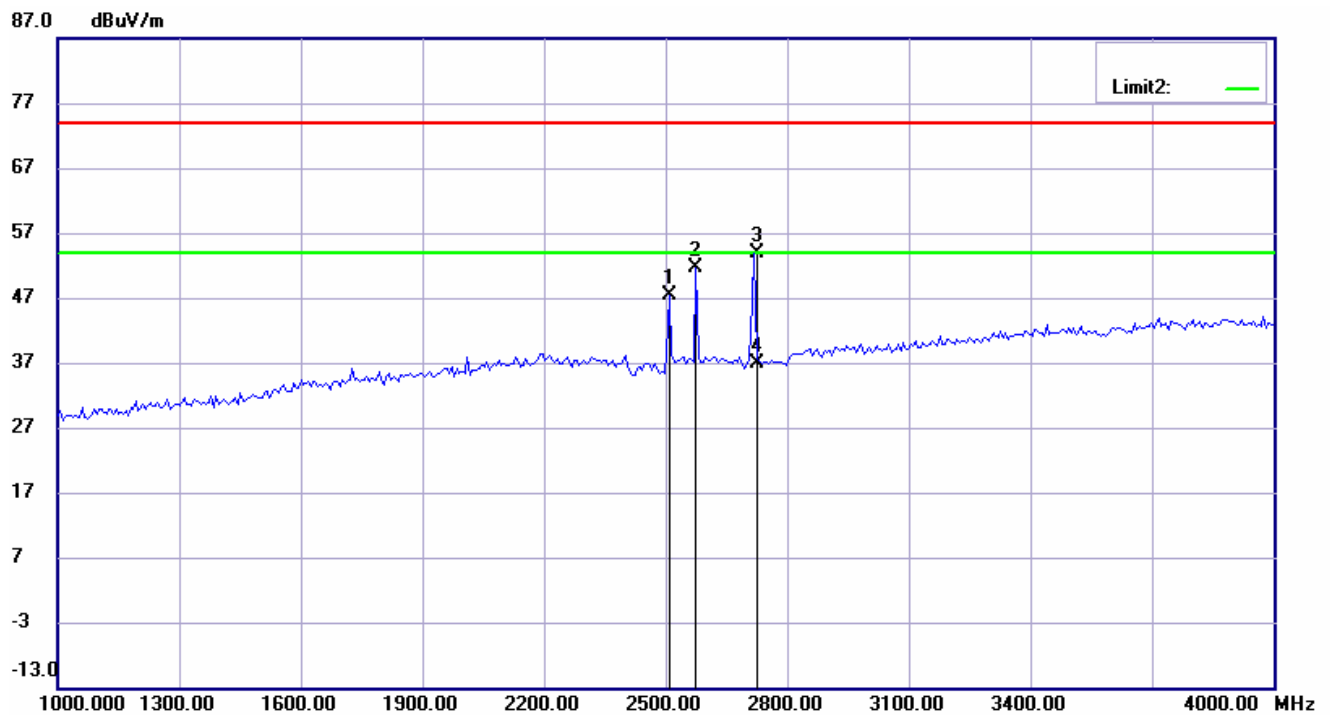


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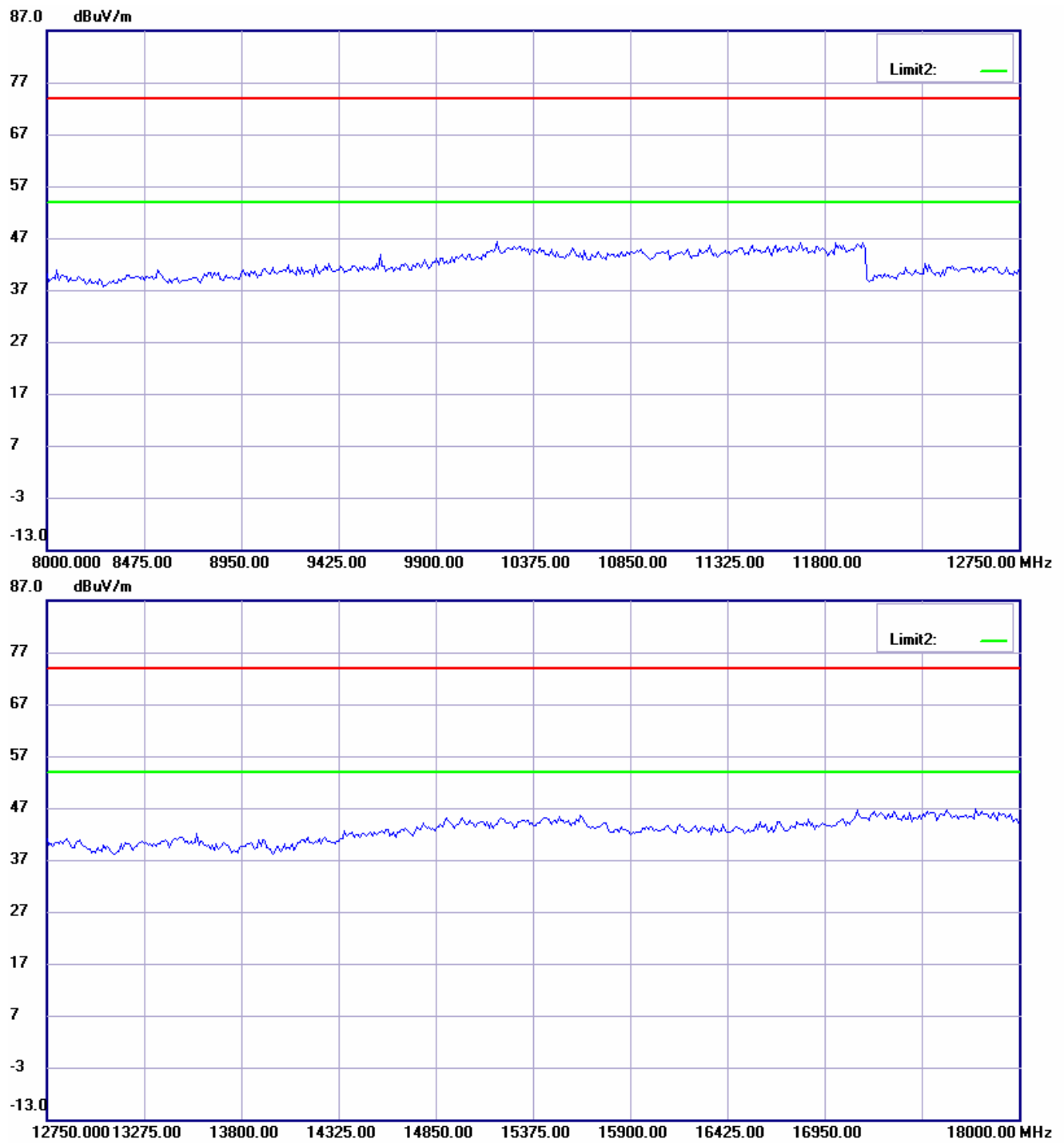
High Channel Antenna Polarization H



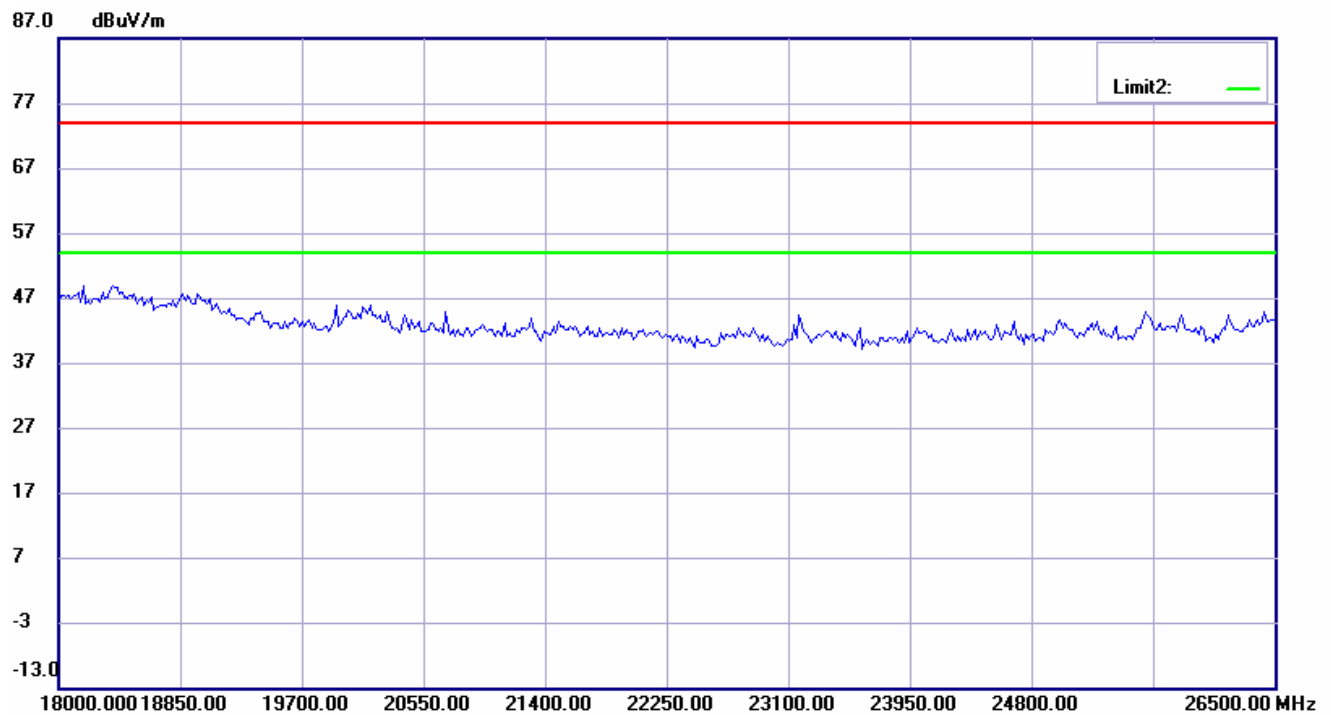
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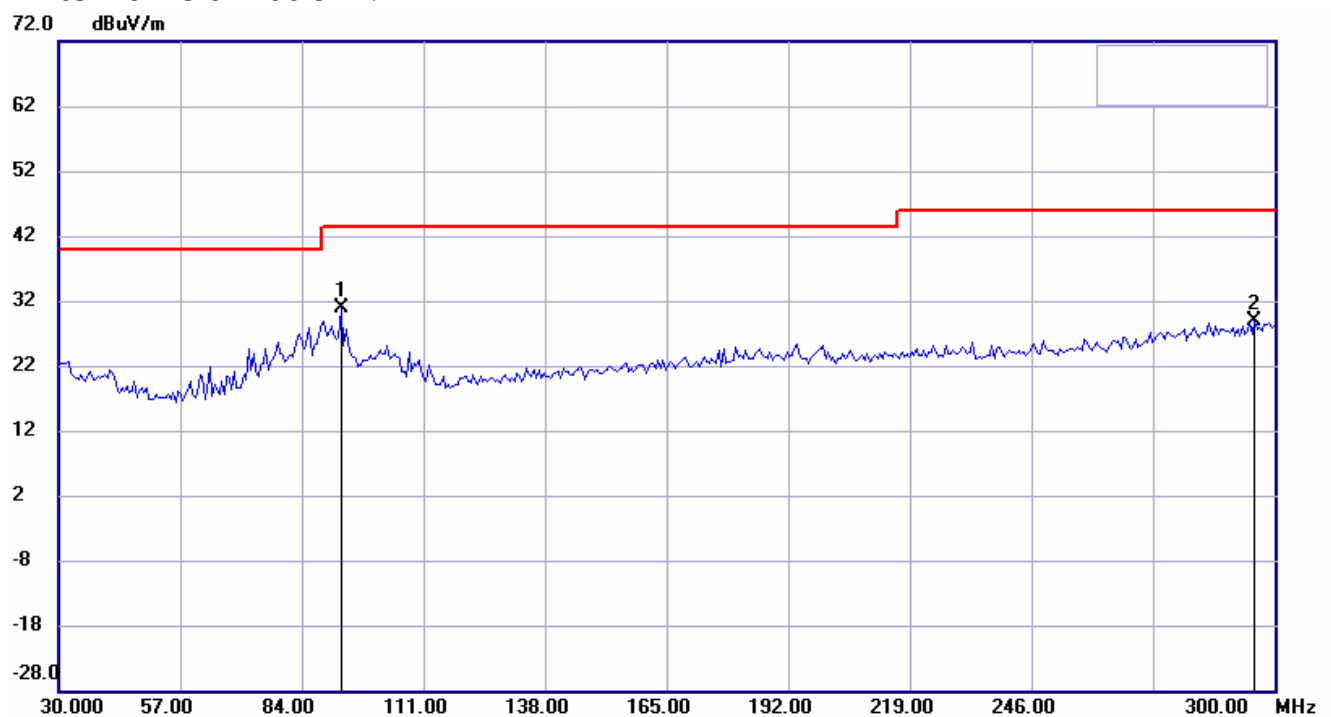
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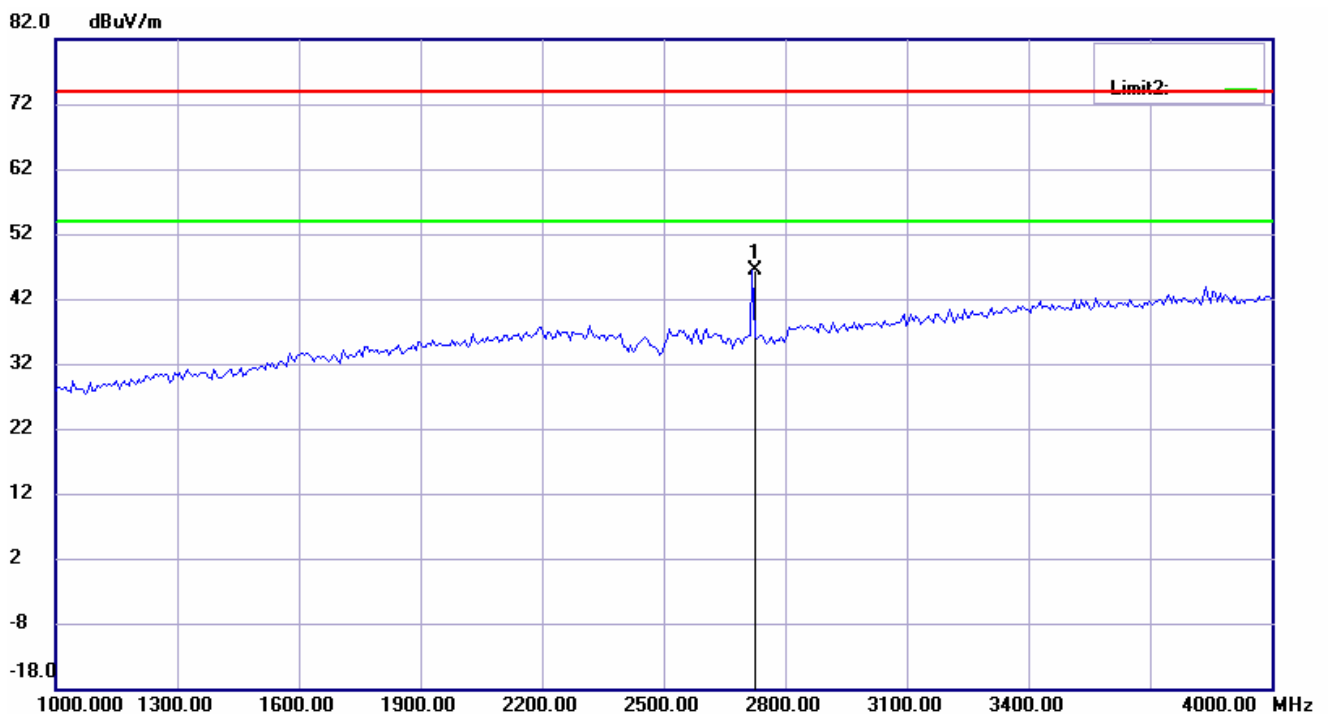
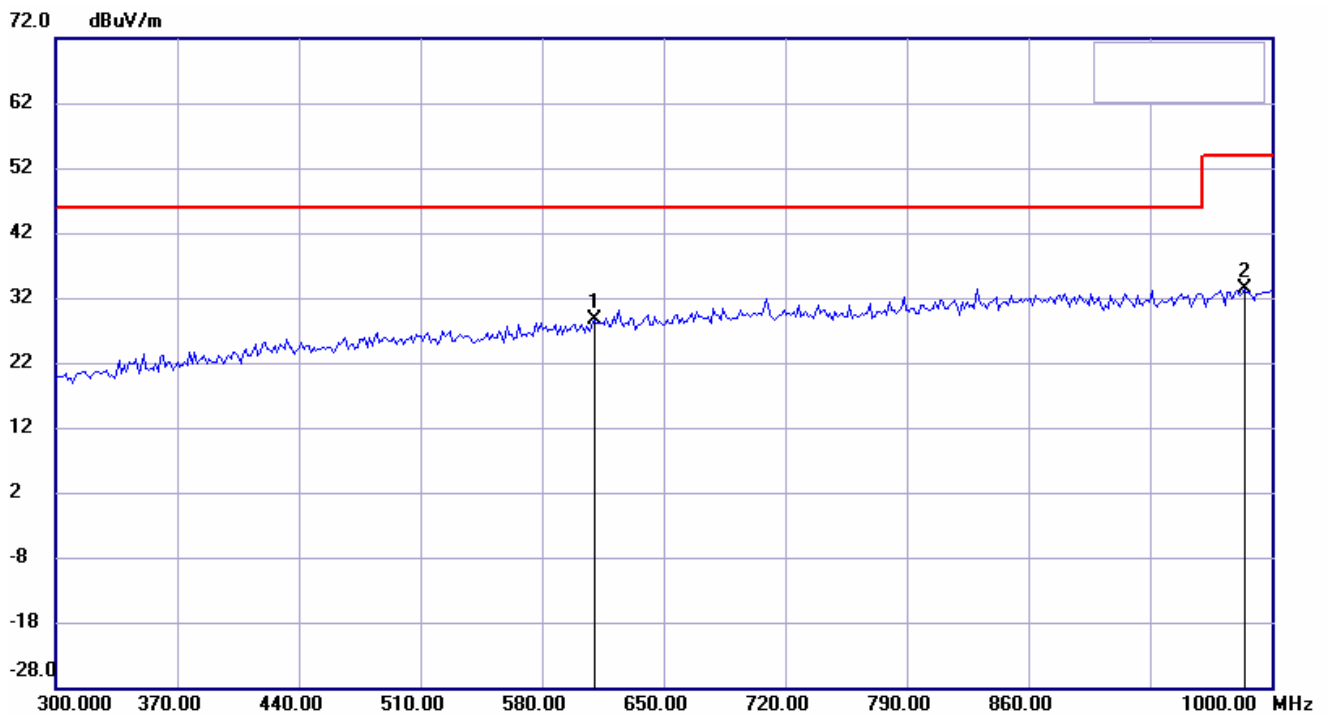
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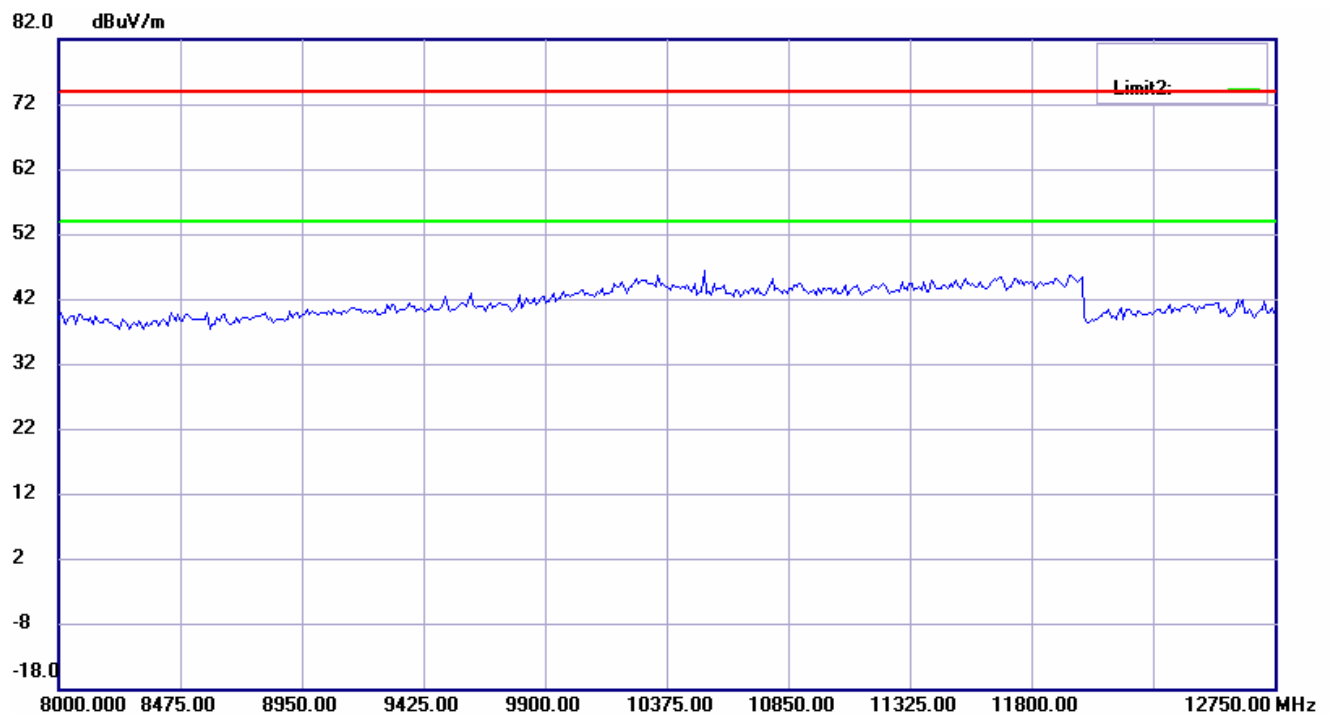
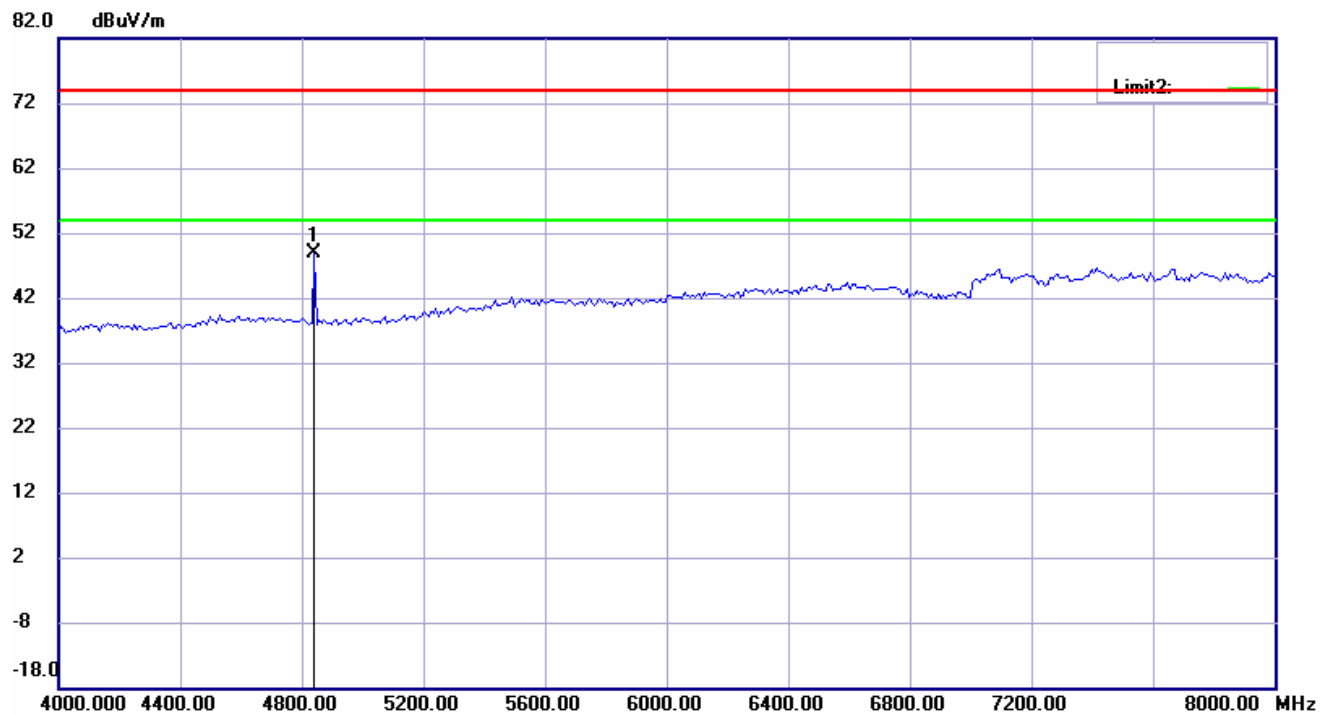
Antenna Polarization V



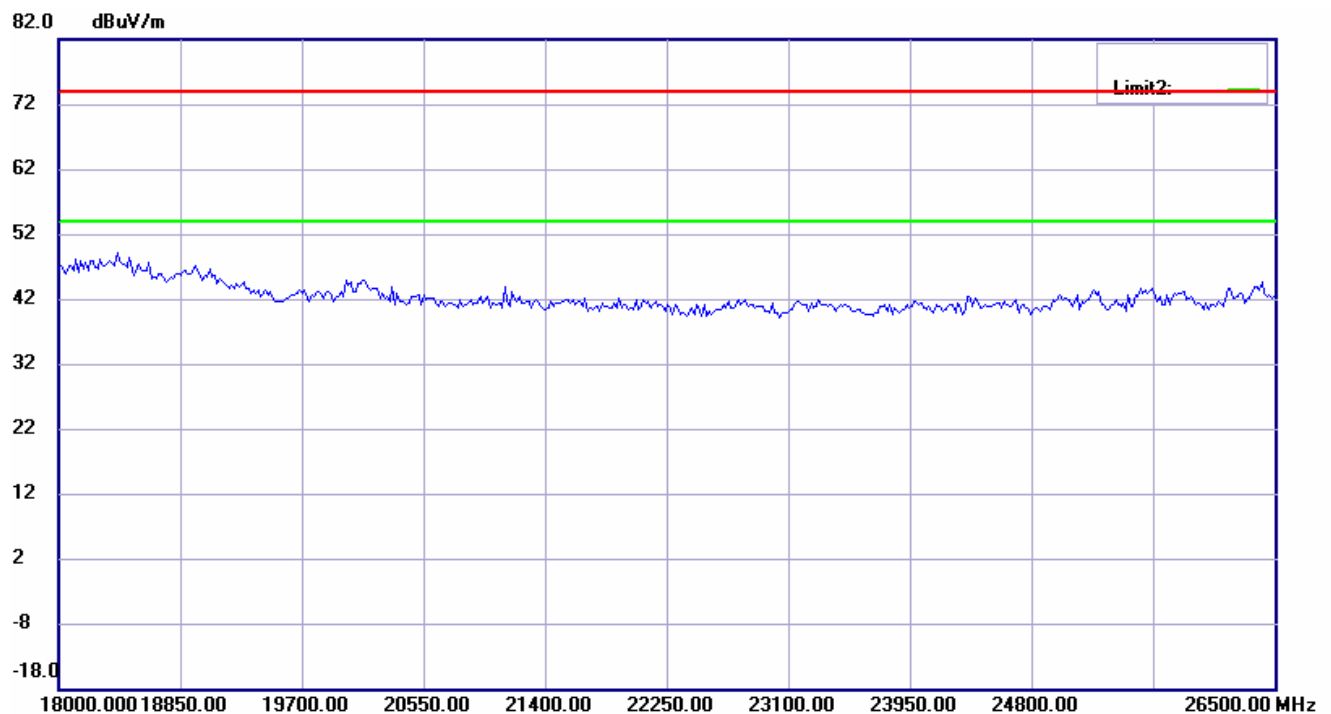
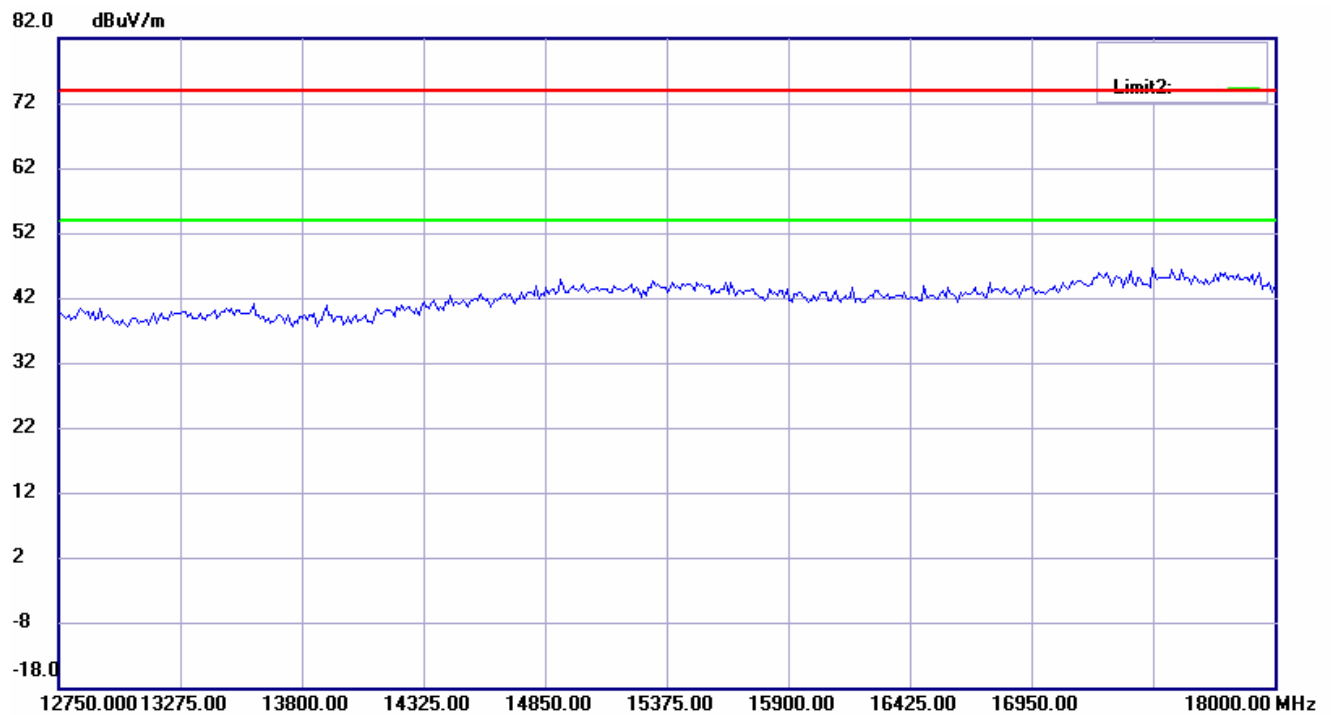
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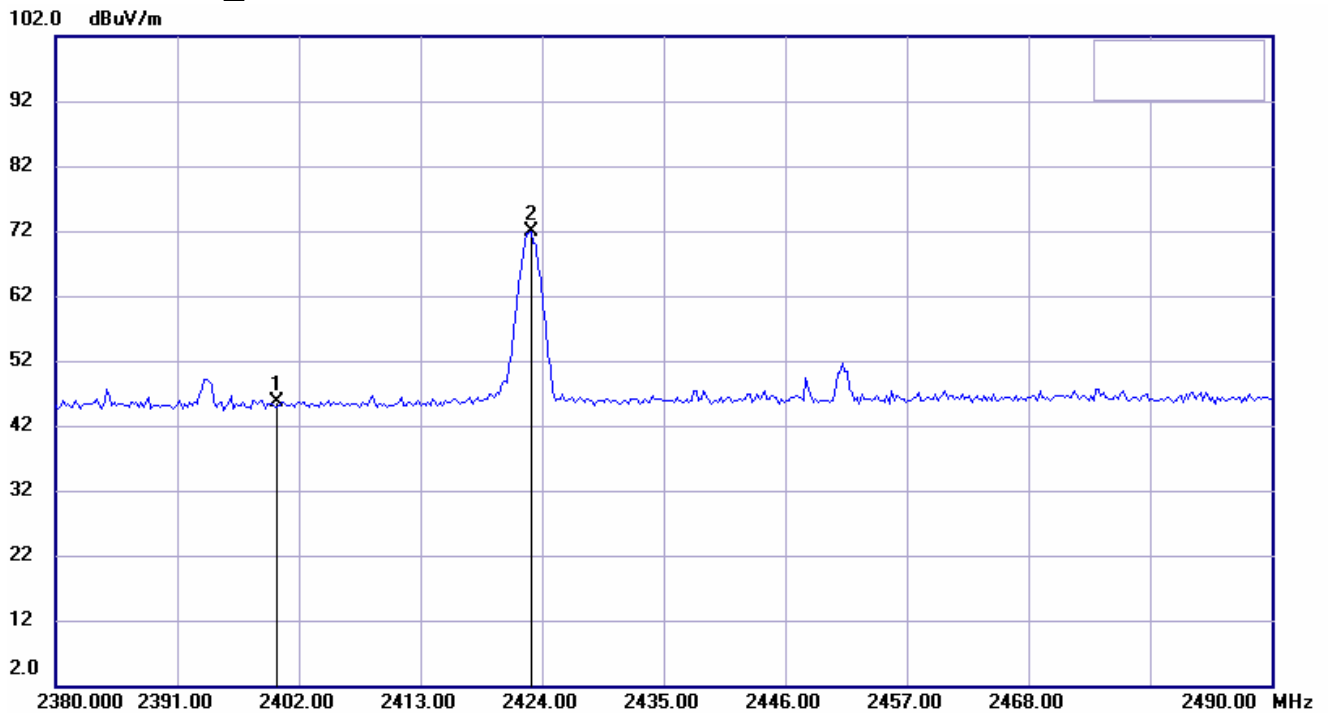


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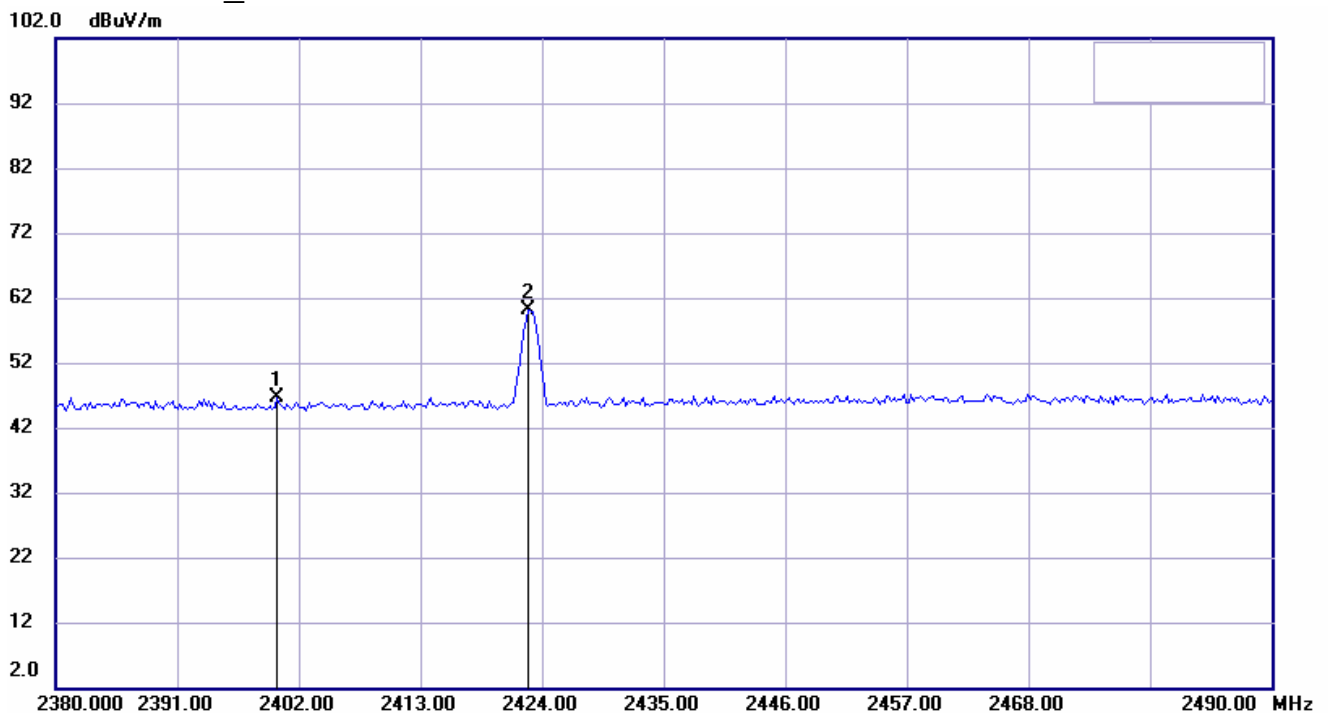


Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

Radiated Emission on the band edge Low Channel_ Antenna Polarization H

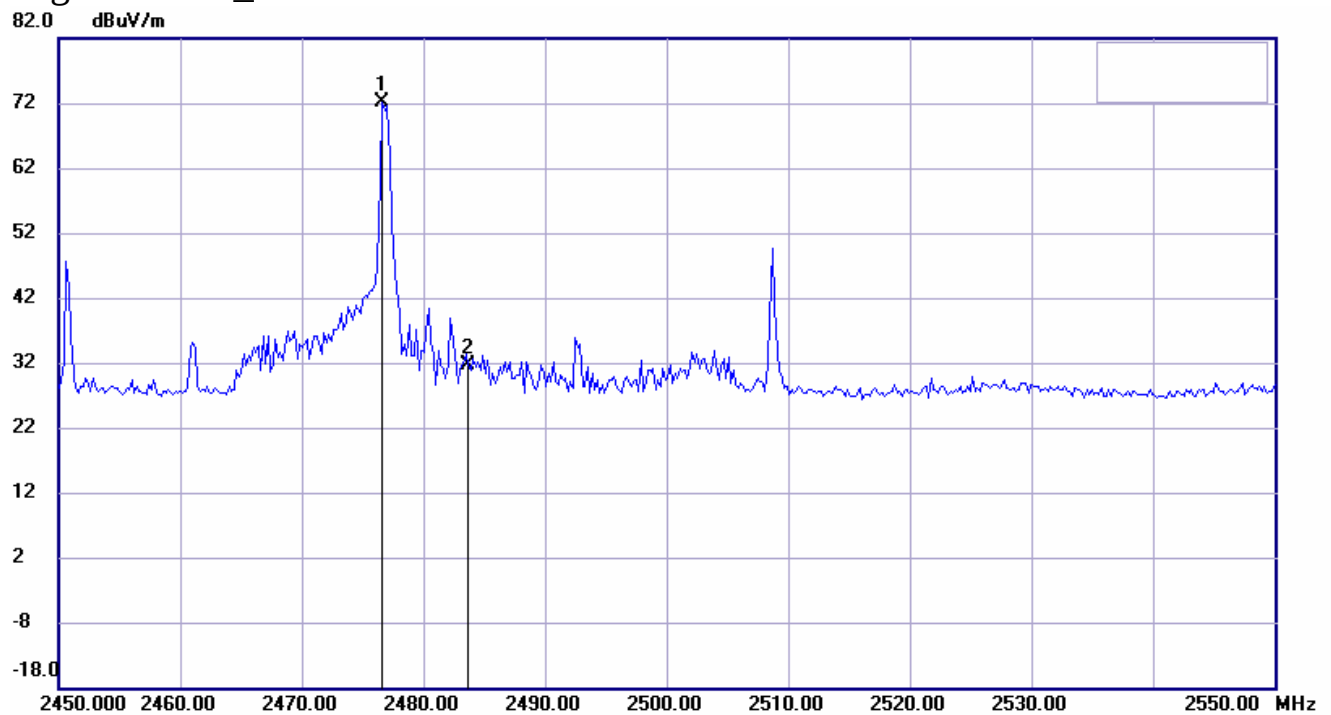


Low Channel_ Antenna Polarization V

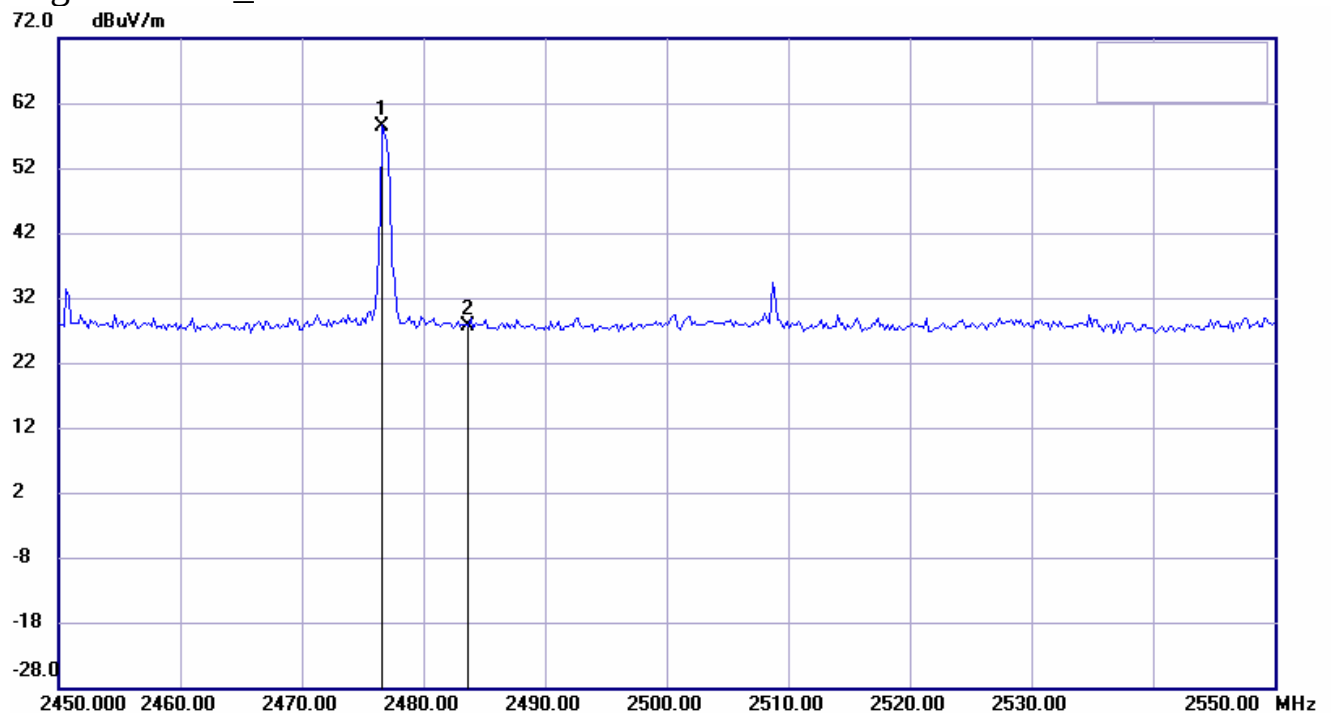


Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

High Channel_ Antenna Polarization H



High Channel_ Antenna Polarization V



Registration number: W6M20708-8466-P-15

FCC ID: OR7GM322

External Photos



Registration number: W6M20708-8466-P-15

FCC ID: OR7GM322



Registration number: W6M20708-8466-P-15

FCC ID: OR7GM322



Registration number: W6M20708-8466-P-15

FCC ID: OR7GM322



Registration number: W6M20708-8466-P-15

FCC ID: OR7GM322

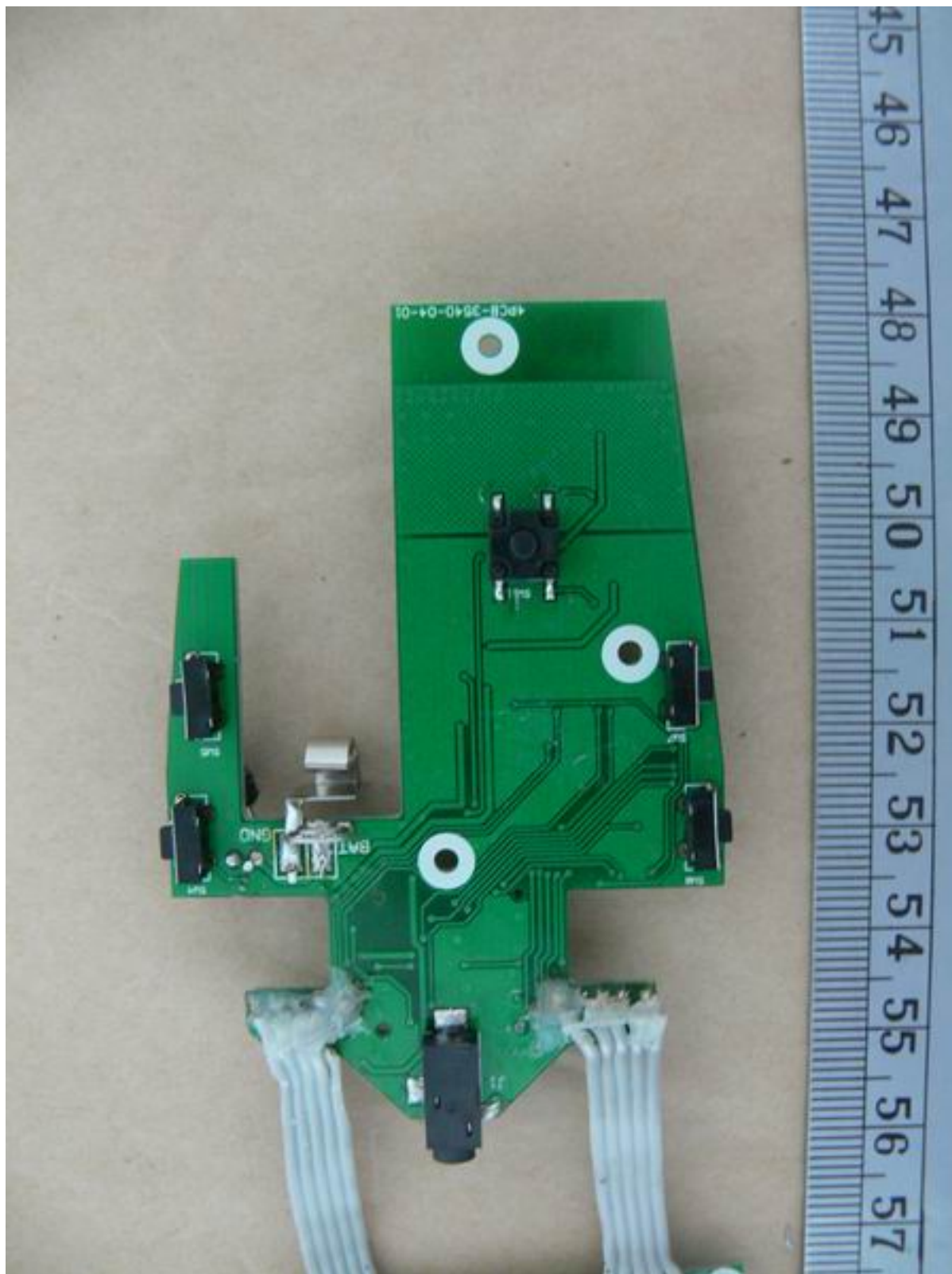
Internal photos



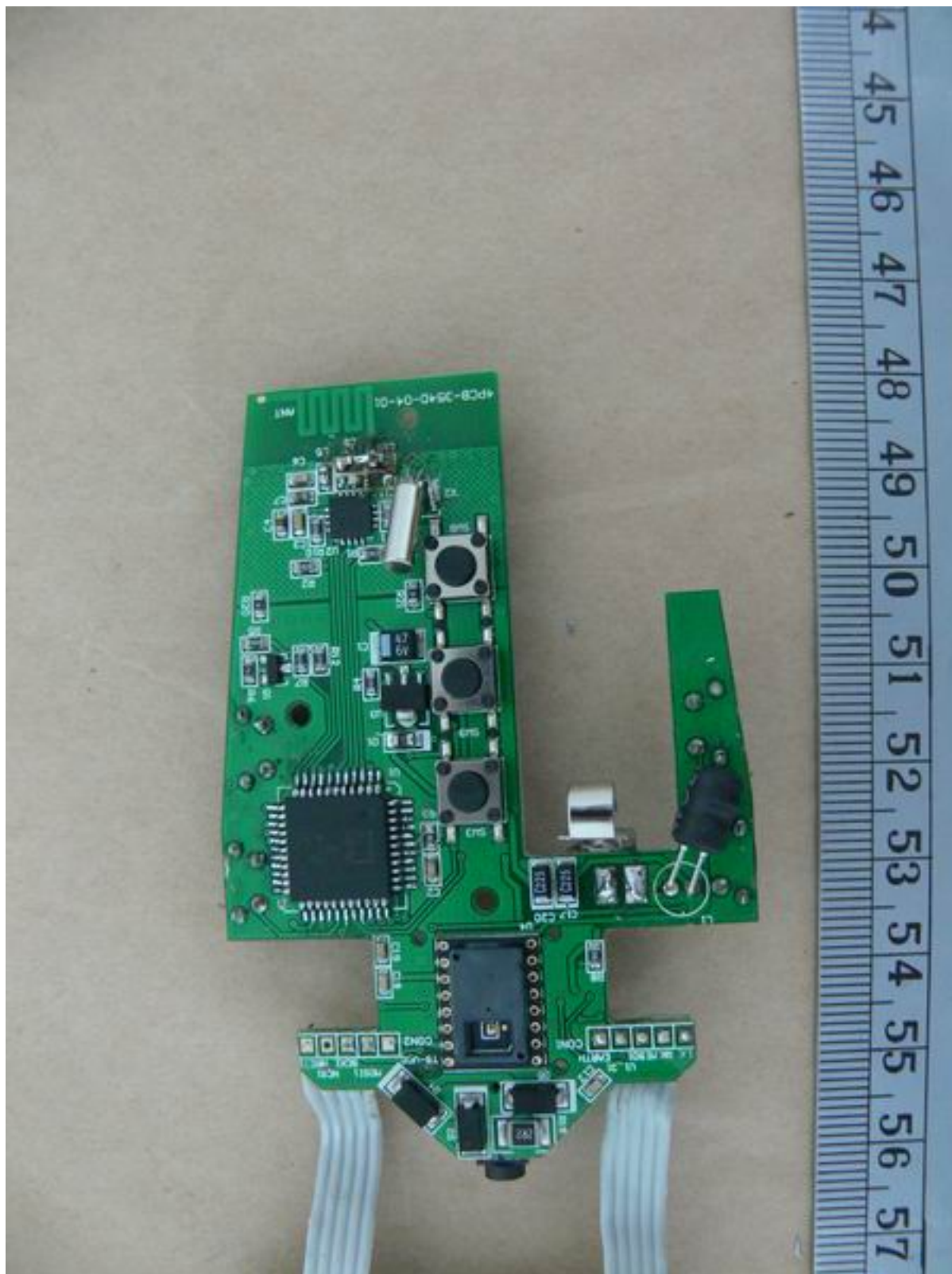
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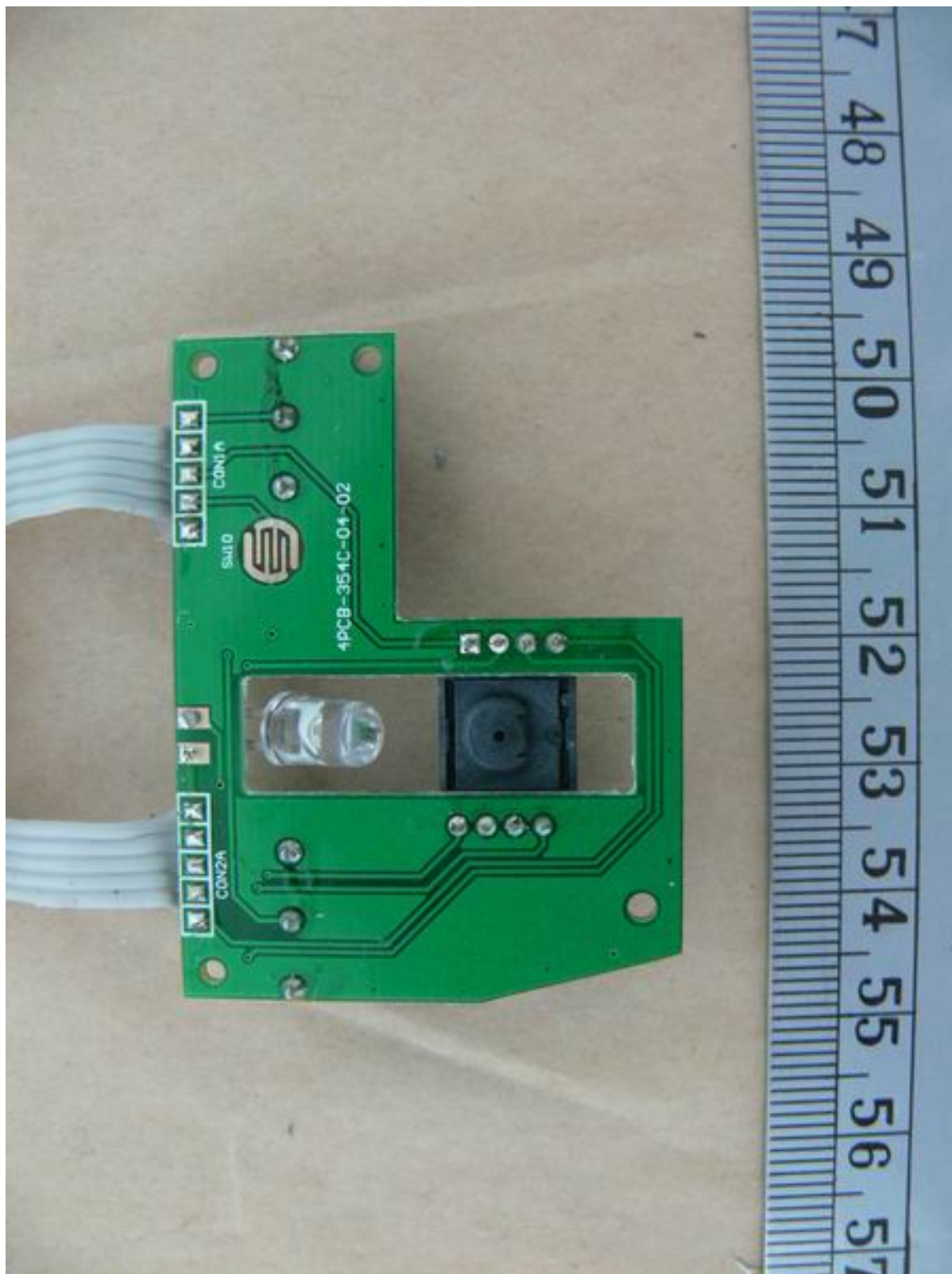
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FCC ID: OR7GM322



Registration number: W6M20708-8466-P-15
FCC ID: OR7GM322

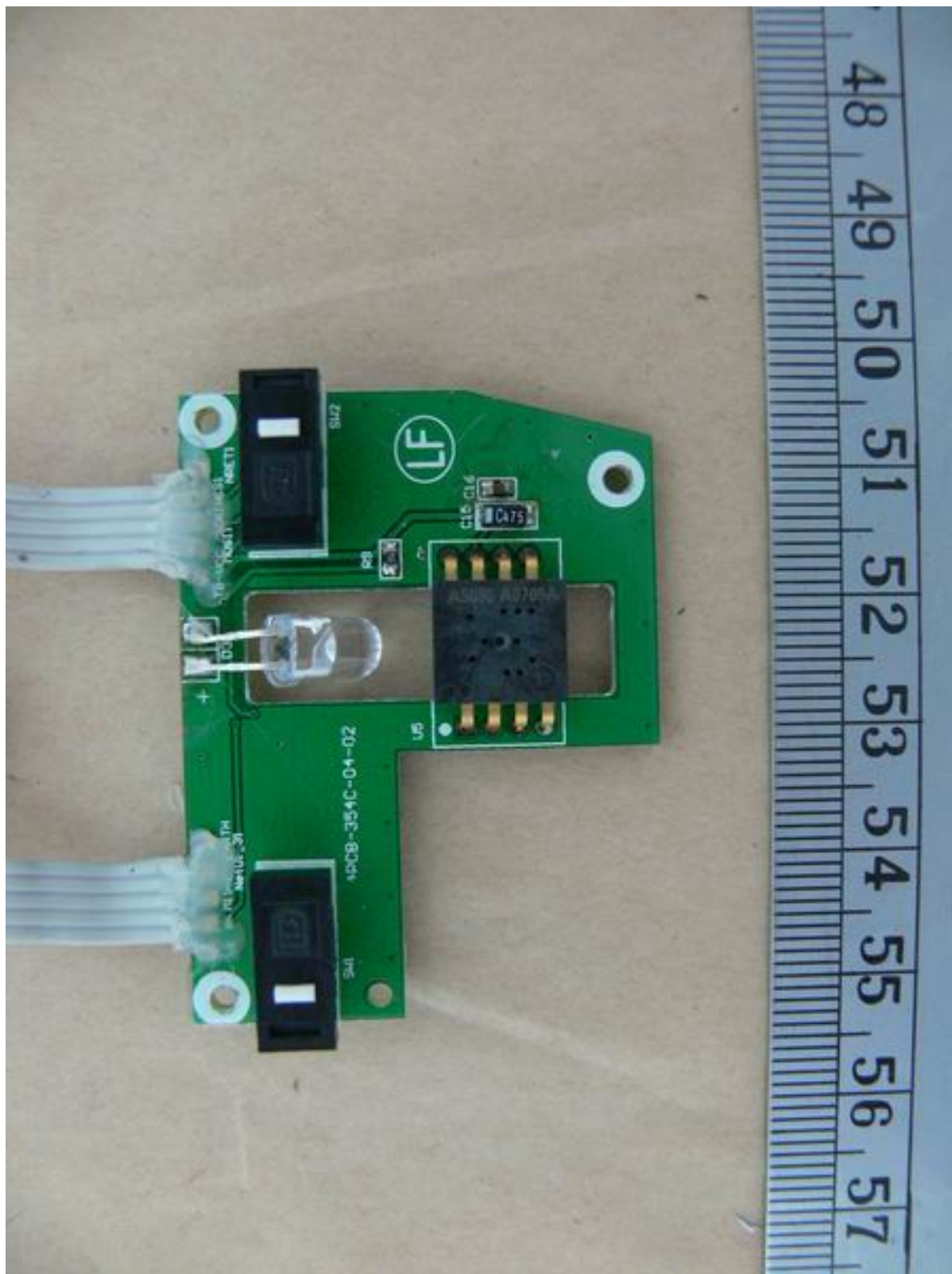


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Registration number: W6M20708-8466-P-15

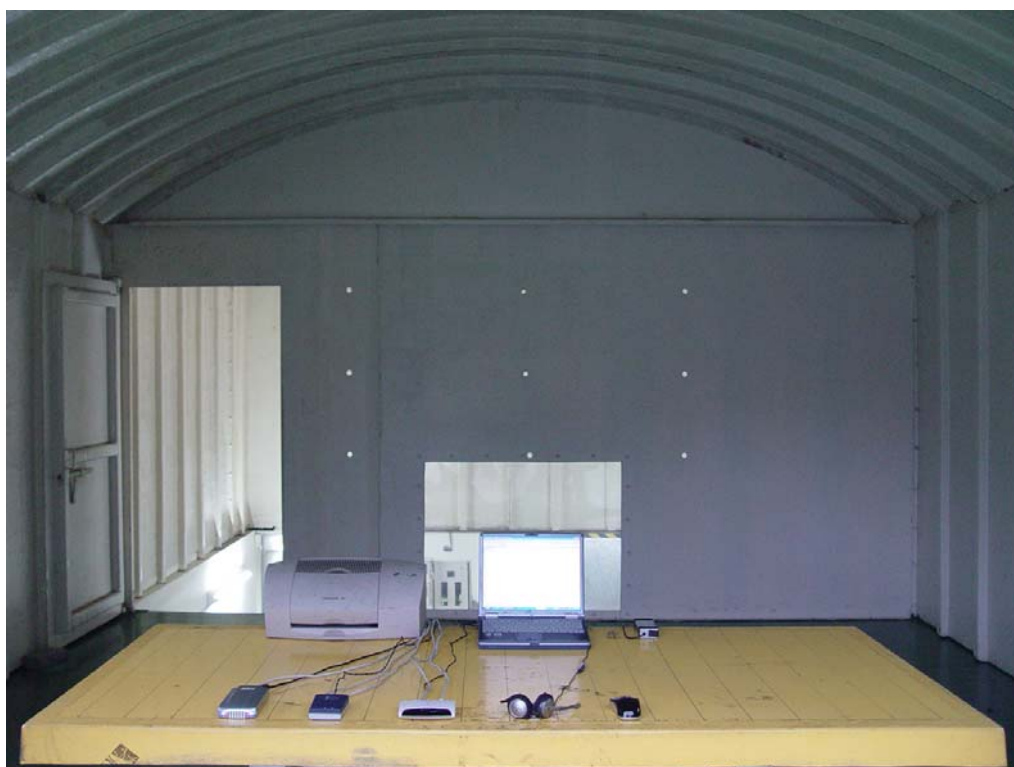
FCC ID: OR7GM322



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FCC ID: OR7GM322

Set Up Photo of Radiated Emission EMI mode



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FCC ID: OR7GM322

RF mode

