FCC PART 15 SUBPART C TEST REPORT

for

Bluetooth(class I)

Model No.: BU-2096-1

FCC ID: QQGBU-2096-1

of

Applicant: J-THREE INTERNATIONAL HOLDING CO., LTD.
Address: No. 23-7, Dungshyh 12 Lirn, Dungshyh Lii Pingchien City Taoyuan Hsien 324, 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.: W6M20805-9068-P-15

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.
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Tester:

Date	WTS-Lab.	Name	Signature
May 23, 2008		Jay Chaing	Jay Chaing

Technical responsibility for area of testing:

Date	WTS	Name	Signature
May 23, 2008		Steven Chuang	Steven Chuang

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:	J-THREE INTERNATIONAL HOLDING CO., LTD.
Street:	No. 23-7, Dungshyh 12 Lirn, Dungshyh Lii Pingchien City
Town:	Taoyuan Hsien, 324
Country:	Taiwan
Telephone:	+886-2-8227-5069
Fax:	+886-2-3234-4064

1.4 Application details

Date of receipt of test item: May 5, 2008
Date of test: from May 6, 2008 to May 16, 2008

1.5 General information of Test item

Type of test item: Bluetooth(class I)

Model Number: BU-2096-1

Multi-listing model number: ./.

Photos: see Annex

Technical data

Frequency band: 2402 - 2480 MHz
Frequency (ch A): 2.402 GHz
Frequency (ch B): 2.441 GHz
Frequency (ch C): 2.480 GHz

Transmitter **Unom**

Normal Mode
Power (ch A or ch 0): Conducted: 8.22 dBm
Power (ch B or ch 39): Conducted: 7.27 dBm
Power (ch C or ch 78): Conducted: 6.91 dBm

EDR Mode
Power (ch A or ch 0): Conducted: 10.43 dBm
Power (ch B or ch 39): Conducted: 9.77 dBm
Power (ch C or ch 78): Conducted: 9.40 dBm

Power supply: 5 Vdc (Power from PC)

Operation modes: duplex

Modulation Type: FHSS

Antenna Type: Printed Antenna

Antenna gain: -2.84 dBi

Host device: none

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Classification:

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

Manufacturer: (if applicable)

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

Additional information: ./.

1.6 Test standards

Technical standard : FCC RULES PART 15 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 3 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 of power supply	5 Vdc (Power from PC)
Extreme conditions parameters:	test voltage : -- extreme min : -- V max : -- V

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	2008/5/10	2009/5/09
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 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2007/12/3	2008/12/2
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	2008/5/3	2010/5/2
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	2007/6/29	2008/6/28
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2008/4/23	2010/4/22
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2008/4/23	2010/4/22
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2008/3/26	2010/3/25
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2007/10/9	2008/10/8

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

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	2008/5/7	2010/5/6
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	2009/3/21
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. The ambient. temperature of the UUT was 23°C with a humidity of 40 %.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of 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 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)	☒	☒	☐
Equivalent radiated Power	15.247(b)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.247(c)	☒	☒	☐
Spurious Emissions conducted – Transmitter operating	15.247	☐	☐	☐
Carrier Frequency Separation	15.247(a) (1)	☒	☒	☐
Number of Hopping Frequencies	15.247(a) (1)(i)	☒	☒	☐
Time of Occupancy (Dwell Time)	15.247(a) (1)(i)	☒	☒	☐
20 dB Bandwidth	15.247(a) (1)(i)	☒	☒	☐
Band-edge Compliance of RF Emission	15.247(c)	☒	☒	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Power Line Conducted Emission	15.207(a)	☒	☒	☐

The follows is intended to leave blank.

3.1 Peak Output Power (transmitter)

FCC Rule: 15.247

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

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

Normal mode

Test conditions		Conducted Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23°C	V_{nom} = 5 V	8.22	7.27	6.91

EDR mode

Test conditions		Conducted Power		
		Channel A [dBm]	**Channel B** [dBm]	**Channel C** [dBm]
T_{nom}= 23°C	V_{nom} = 5 V	10.43	9.77	9.40

Test conditions T_{nom}= --°C, V_{nom}= -- V Frequency[MHz]	Signal Field strength TX highest power mode dBµV/m
--	--
Measurement uncertainty	< 3 dB

The diagrams for the field strength measurements are included in Appendix.

Maximum Peak Output Power

Limits:

Frequency	Number of hopping channels			
MHz	≥ 75	≥ 50	49 ≥ 25	74 ≥ 15
902-928		30 dBm	24 dBm	
2400-2483.5 MHz	30 dBm	-		21 dbm
5725-5850 MHz	30 dBm	-		

In case of employing transmitter antennas having antenna gain >dBi and using fixed poin-to point operation consider §15.247 (b)(4).

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.

3.2 RF Exposure Compliance Requirements

According to Supplement C, Edition 01-01 to OET Bulletin 65, Edition 97-01 this spread spectrum transmitter is categorically excluded from routine environmental evaluation because of the low power level, where there is a high likelihood of compliance with RF exposure standards.
The antenna used for this Bluetooth transceiver module must not be co-located or operating in conjunction with any other antenna or transmitter.

3.3 Out of Band Radiated Emissions

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 below 1GHz :
Max. reading – 20 dB

Guidance on Measurement of FHSS 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." Here the correction was added to the limit instead subtracted from the reading.

Duty Cycle correction = 20 log (dwell time/100ms)
For frequencies above 1GHz (Peak measurements).
Limit = max. aver. reading-20dB +20dB(because Peak detector is used)

For frequencies above 1GHz (Average measurements).
Max. reading – 20 dB - duty cycle correction:

No duty cycle correction was added to the reading

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 021 ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044 ETSTW-RE 064

Explanation: See attached diagrams in appendix.

3.4 Transmitter Radiated Emissions in restricted Bands

FCC Rules: 15.247 (c), 15.205, 15.209, 15.35
Radiated emission measurements were performed from 30 MHz to 26000 MHz.
For radiated emission tests, the analyzer setting was as followings:
RES BW VID BW
Frequency <1 GHz 100 kHz 100 kHz (Peak measurements)
Frequency >1 GHz 1 MHz 1 MHz (Peak measurements)
1 MHz 1 MHz (Average measurements)
Limits:

For frequencies below 1GHz :

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

For frequencies above 1GHz (Average measurements).
Guidance on Measurement of FHSS Systems:
“If the emission is pulsed, modify the unit for continues operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.” Here the correction was added to the limit instead subtracted from the reading.

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

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

54.0dBµV/m

For frequencies above 1GHz (Peak measurements).

Limit + 20dB

54.0dBµV/m + 20 dB= 74 dBµV/m

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017ETSTW-RE 028
ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043
ETSTW-RE 044 ETSTW-RE 064

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))
SAMPLE CALCULATION OF LIMIT. All results will be updated by an automatic measuring system in accordance to point 2.3.
Calculation of test results:
Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.
The peak and average spurious emission plots was measured with the average limits.
In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.
If in the column‘s correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the “Marker-Delta-Method“ or the „Duty-Cycle Correction Factor“.

Model:	BU-2096-1	Date:	2008/5/15		
Mode:	Tx Mode CH0	Temperature:	26 ˚C	Engineer:	
Polarization:	Horizontal	Humidity:	60 %	Jay Chaing	

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
283.125	20.65	peak	14.73	35.38	46	-10.62	224	150
609.750	13.60	peak	22.62	36.22	46	-9.78	345	150

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result @3m (dBuV/m)		Limit @3m (dBuV/m)Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.					
1997.996	52.51	---	-8.51	44.00	---	74	54	-30.00	332	150
2725.451	51.87	---	-6.76	45.11	---	74	54	-28.89	198	150
4801.603	58.70	53.85	-2.51	56.19	51.34	74	54	-2.66	155	150
7206.413	58.01	---	2.00	60.01	---	74	54	-13.99	328	150
11836.172	36.87	---	11.44	48.31	---	74	54	-25.69	179	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
163.650	16.86	peak	15.28	32.14	43.5	-11.36	126	150
612.826	7.17	peak	22.24	29.41	46.0	-16.59	158	150

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)
2000.000	52.90	---	-8.50	44.4	---	74	54	-29.60	229	150
2785.571	51.35	---	-6.61	44.74	---	74	54	-29.26	154	150
4801.603	53.19	---	-2.51	50.68	---	74	54	-23.32	326	150
7206.413	55.06	---	2.00	57.06	---	74	54	-16.94	221	150
12226.453	36.21	---	11.60	47.81	---	74	54	-26.19	115	150

Mode: Tx Mode CH39

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
284.475	21.69	peak	14.93	36.62	46	-9.38	225	150
613.250	13.79	peak	22.24	36.03	46	-9.97	245	150

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)
1997.996	52.54	---	-8.51	44.03	---	74	54	-29.97	112	150
3847.695	50.72	---	-4.67	46.05	---	74	54	-27.95	326	150
4881.764	58.10	52.36	-2.14	55.96	50.22	74	54	-3.78	265	150
7326.653	54.34	49.83	2.28	56.62	52.11	74	54	-1.89	278	150
12340.681	37.31	---	11.60	48.91	---	74	54	-25.09	324	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
162.975	17.20	peak	15.31	32.51	43.5	-10.99	120	150
612.826	7.46	peak	22.24	29.70	46.0	-16.30	314	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)
2000.000	52.42	---	-8.50	43.92	---	74	54	-30.08	240	150
3763.527	49.27	---	-4.83	44.44	---	74	54	-29.56	140	150
4882.065	54.15	43.19	-2.14	52.01	41.05	74	54	-12.95	360	150
7327.034	52.79	39.20	2.28	55.07	41.48	74	54	-12.52	360	150
12350.200	37.33	---	11.60	48.93	---	74	54	-25.07	336	150

Mode: Tx Mode CH78

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
278.400	20.67	peak	14.78	35.45	46	-10.55	140	150
993.000	12.41	peak	27.35	39.76	54	-14.24	300	150

Polarization: Horizontal

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)
1873.747	52.18	---	-9.36	42.82	---	74	54	-31.18	255	150
3727.455	49.03	---	-4.89	44.14	---	74	54	-29.86	345	150
4953.908	59.91	54.76	-1.81	58.10	52.95	74	54	-1.05	170	150
7446.894	53.98	46.58	2.57	56.55	49.15	74	54	-4.85	176	150
11940.882	36.04	---	11.54	47.58	---	74	54	-26.42	160	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
279.075	19.93	peak	14.80	34.73	46	-11.27	321	150
608.617	7.91	peak	22.22	30.13	46	-15.87	180	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)
2000.000	51.93	---	-8.50	43.43	---	74	54	-30.57	221	150
3815.631	49.41	---	-4.73	44.68	---	74	54	-29.32	190	150
4953.908	53.95	48.40	-1.81	52.14	46.59	74	54	-7.41	160	150
7453.006	52.63	45.99	2.59	55.22	48.58	74	54	-5.42	200	150
12331.162	36.06	---	11.60	47.66	---	74	54	-26.34	114	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 the attached diagram as appendix.

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

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

Test equipment used: ETSTW-RE 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 ETSTW-RE 064

3.6 Carrier Frequency Separation

Carrier Frequency Separation was measured with modulation (declared by manufacturer).

According to FCC rules part 15 subpart C §15.247 frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Test conditions		Channel Separation	
		Channel 0	Channel 0+1
T_{nom}= 23°C	V_{nom} = 5V	1000.000000 kHz	

Test conditions		Channel Separation	
		Channel 39	Channel 39+1
T_{nom}= 23°C	V_{nom} = 5 V	1000.000000 kHz	

Test conditions		Channel Separation	
		Channel 78	Channel 78+1
T_{nom}= 23°C	V_{nom} = 5 V	1000.000000 kHz	

Limits:

Frequency Range MHz	Limits	
	20 dB bandwidth < 25 kHz	20 dB bandwidth > 25 kHz
902-928	25 kHz	20 dB bandwidth
2400-2483.5 5725-5850.0	25 kHz	20 dB bandwidth

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.

3.7 Number of Hopping Frequencies

According to FCC rules part 15 subpart C §15.247 frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies. Frequency hopping systems in 5725-5850 MHz bands shall use least 75 hopping frequencies.

For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20dB bandwidth of the hopping channel 250 kHz or greater, the system shall use at least 25 hopping frequencies.

Test conditions		Operating Mode	Number of Channels
T_{nom}= 23°C	V_{nom}= 5 V	normal transmitting	79

Limits:

Frequency Range MHz	Limit	
	20dB Bandwidth	Number of Channels
902-928 MHz	Bandwidth < 250 kHz	≥ 50
	Bandwidth ≥ 250 kHz	≥ 25
2400-2483.5	not defined	15
5725-5850.0 MHz	1 MHz	75

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.

3.7.1 Pseudorandom Frequency Hopping Sequence

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

3.7.2 Coordination of hopping sequences to other transmitters

According to the Bluetooth core specification V1.1 such a coordination is not possible. During scatternet function only one of the two hopping sequences will be used at a definite moment.

3.7.3 System Receiver Hopping Capability

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

3.8 Time of Occupancy (Dwell Time)

Frequency hopping systems operating in the 5725-5850 MHz band shall use an average time of occupancy on any frequency not greater than 0.4 seconds within a 30 second period.

In 2400-2483,5 MHz band the average time of occupancy on any channel shall not be greater than 0,4 seconds multiplied by the number of hopping channels employed.

For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not greater than 0.4 seconds within a 20 second period; if the 20dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test conditions	Operating mode	Measurement period	Time of Occupancy
T_{nom}= 23°C V_{nom} = 5 V Channel 0	normal transmitting-DH 1	31.6 s	128.51 ms
	normal transmitting-DH 3	31.6 s	266.24 ms
	normal transmitting-DH 5	31.6 s	320.54 ms

Test conditions	Operating mode	Measurement period	Time of Occupancy
T_{nom}= 23°C V_{nom} = 5 V Channel 39	normal transmitting-DH 1	31.6 s	126.46 ms
	normal transmitting-DH 3	31.6 s	266.24 ms
	normal transmitting-DH 5	31.6 s	320.54 ms

Test conditions	Operating mode	Measurement period	Time of Occupancy
T_{nom}= 23°C V_{nom} = 5 V Channel 78	normal transmitting-DH 1	31.6 s	126.46 ms
	normal transmitting-DH 3	31.6 s	265.28 ms
	normal transmitting-DH 5	31.6 s	320.54 ms

Limits and measurement periods:

Frequency MHz	Number of channels	Measurement Periode	Limit
902 – 928	≥50	20 s	0,4 s
	49 ≥ 25	10 s	0,4 s
2400 – 2483,5	≥ 15	0,4 s * number of used channels	0,4 s
5725- 5850	≥ 75	30 s	0,4s

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix, which show the On-time and the number of counted events during the measurement period

3.9 20dB Bandwidth

Frequency hopping systems operating in the 5725-5850 MHz bands shall use a maximum 20dB bandwidth of 1 MHz.
The 20dB bandwidth is measured on the lowest, middle and highest hopping channel.

For frequency hopping systems operating in the 902-928 MHz band the maximum 20dB bandwidth of the hopping channel is 500 kHz.

Normal mode

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
T_{nom}= 23°C	V_{nom} = 5 V	961.538461538 kHz	961.538461538 kHz	961.538461538 kHz

EDR mode

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
T_{nom}= 23°C	V_{nom} = 5 V	1.352564103 MHz	1.352564103 MHz	1.352564103 MHz

Limits:

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

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.

3.9.1 System Receiver Input Bandwidth

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

3.10 Band-edge Compliance of RF Emissions

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

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

Normal mode

Test conditions		Attenuation at or outside band-edges Single Frequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 5 V	41.40 dB	53.57 dB

Test conditions		Attenuation at or outside band-edges Hopping Frequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 5 V	45.38 dB	49.17 dB

EDR mode

Test conditions		Attenuation at or outside band-edges Single Frequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 5 V	34.66 dB	53.05 dB

Test conditions		Attenuation at or outside band-edges Hopping Frequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 5 V	36.08 dB	48.40 dB

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Limits:

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

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017ETSTW-RE 028
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044 ETSTW-RE 064

Explanation: See attached diagrams in appendix.

3.11 Radiated Emission from Digital Part

FCC Rule: 15.109

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

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

Test equipment used: ETSTW-RE 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 ETSTW-RE 064

Explanation: The test results are listed in the separated test report no. W6M20802-8867-P-15B.

3.12 Power Line Conducted Emission

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

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

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

Model: BU-2096-1 Date: 2008/5/8
Mode: Temperture: 26 ˚C Engineer:
Polarization: N Humidity: 60 % Jay Chaing

Frequency	Reading (dBuV)		Factor (dB)	Result (dBuV)		Limit (dBuV)		Margin
(MHz)	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	(dB)
0.1716	36.46	8.34	10.10	46.56	18.44	64.88	54.88	-18.32
0.1998	40.99	25.93	10.10	51.09	36.03	63.62	53.62	-12.53
0.2686	34.41	21.73	10.10	44.51	31.83	61.16	51.16	-16.65
0.3332	26.56	13.87	10.10	36.66	23.97	59.37	49.37	-22.71
4.9511	13.40	11.31	10.10	23.50	21.41	56.00	46.00	-24.59
15.4965	21.32	19.89	10.10	31.42	29.99	60.00	50.00	-20.01

Polarization: L1

Frequency	Reading (dBuV)		Factor (dB)	Result (dBuV)		Limit (dBuV)		Margin
(MHz)	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	(dB)
0.2033	43.66	27.36	10.10	53.76	37.46	63.47	53.47	-9.71
0.2698	35.88	21.07	10.10	45.98	31.17	61.12	51.12	-15.14
0.3347	28.22	13.61	10.10	38.32	23.71	59.33	49.33	-21.01
0.4014	28.33	13.55	10.10	38.43	23.65	57.82	47.82	-19.39
3.6288	12.62	11.33	10.10	22.72	21.43	56.00	46.00	-24.57
15.3615	22.15	20.63	10.10	32.25	30.73	60.00	50.00	-19.27

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Note: 1.The formula of measured value as: Test Result = Reading + Correction Factor
2.The Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss
3.Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
4.All not in the table noted test results are more than 20 dB below the relevant limits.
5.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-RE 064

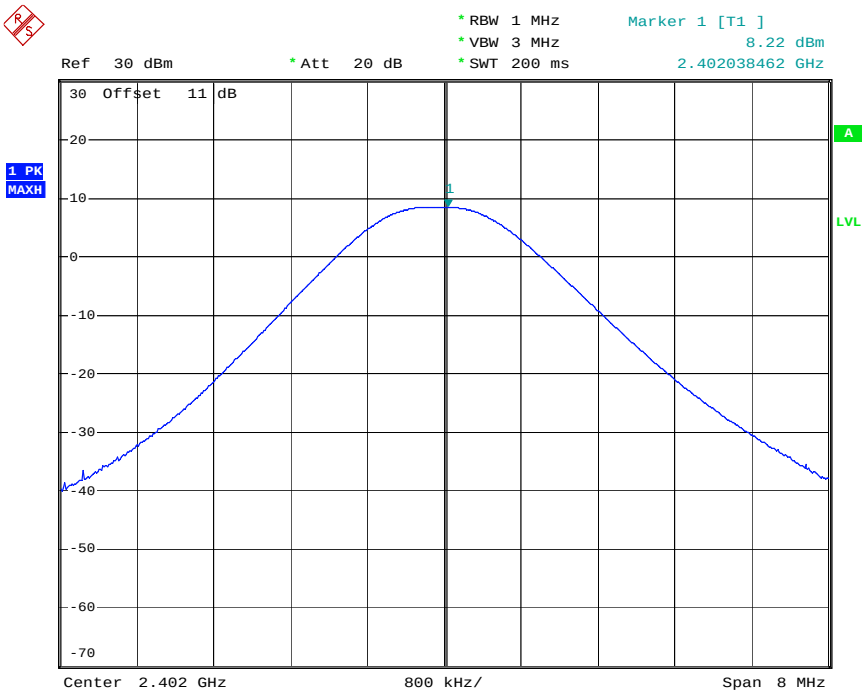
Appendix

Measurement diagrams

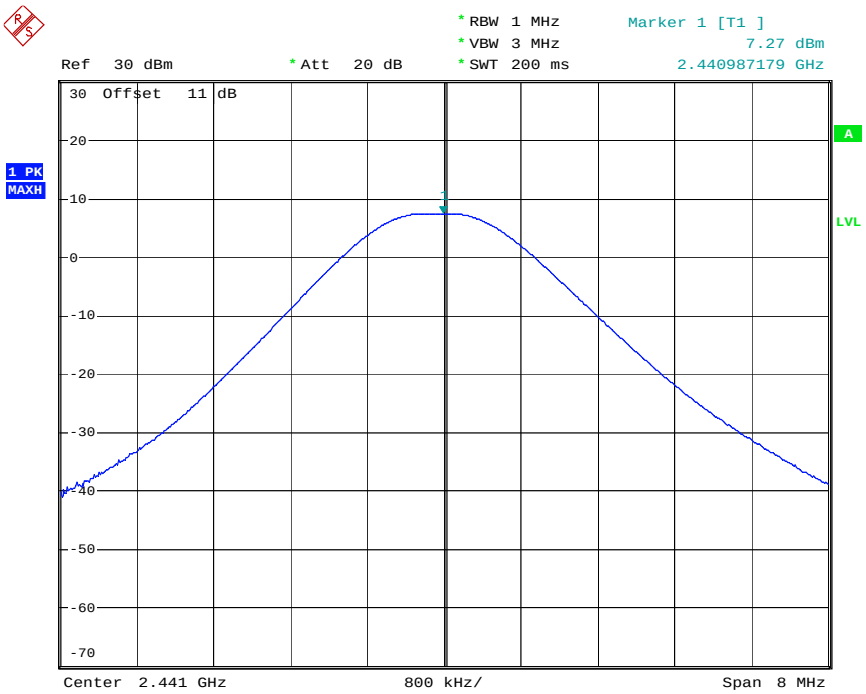
1. Peak Output Power
2. Spurious Emissions radiated
3. Carrier Frequency Separation
4. Number of Hopping Frequencies
5. Time of Occupancy (Dwell Time)
6. 20dB Bandwidth
7. Band-edge Compliance of RF Conducted Emissions
8. Power Line Conducted Emission

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Peak Output Power



MAX OUTPUT POWER CH0
Date: 22.MAY.2008 15:36:34



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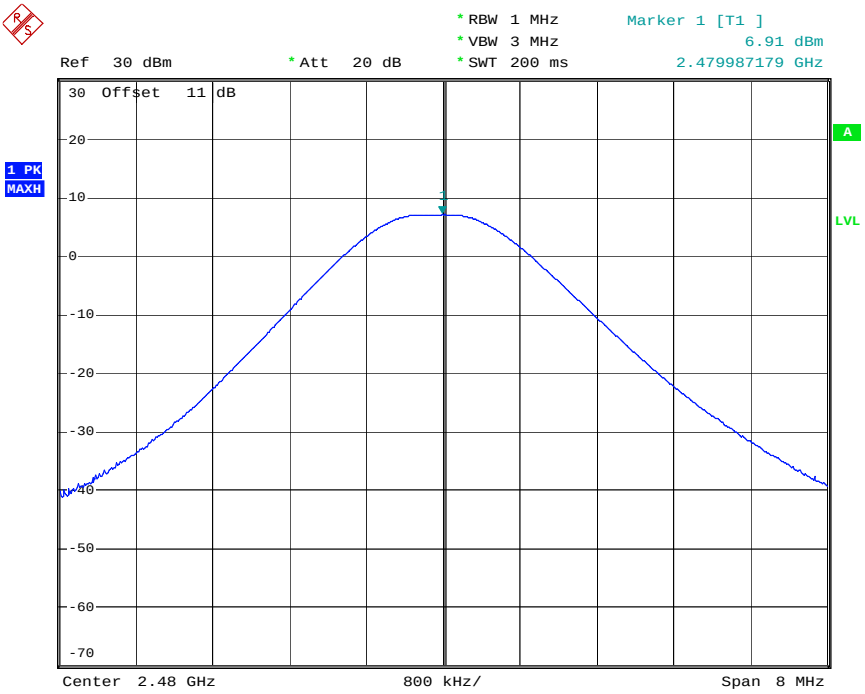
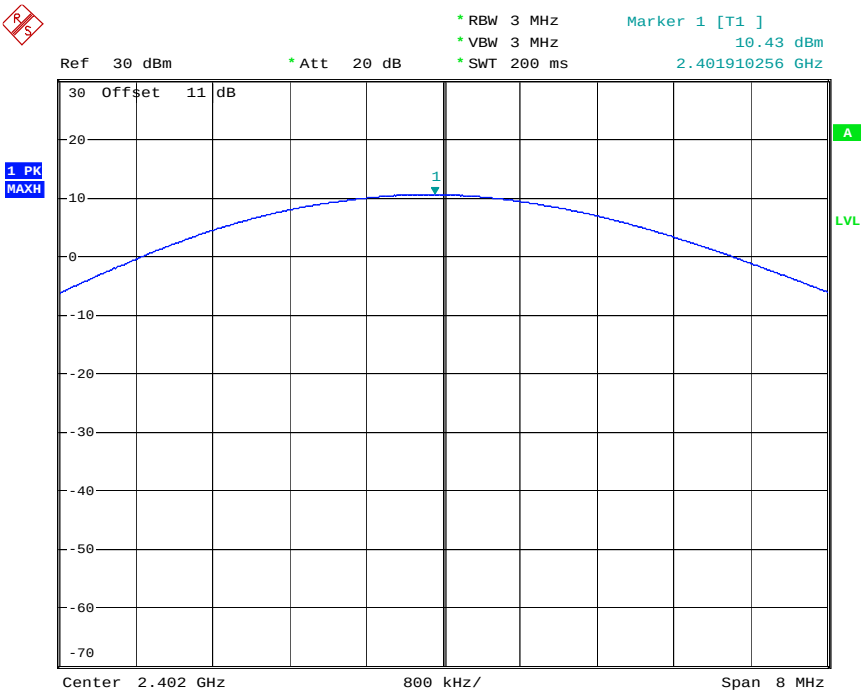
Date: 22.MAY.2008 15:40:31

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



MAX OUTPUT POWER CH78

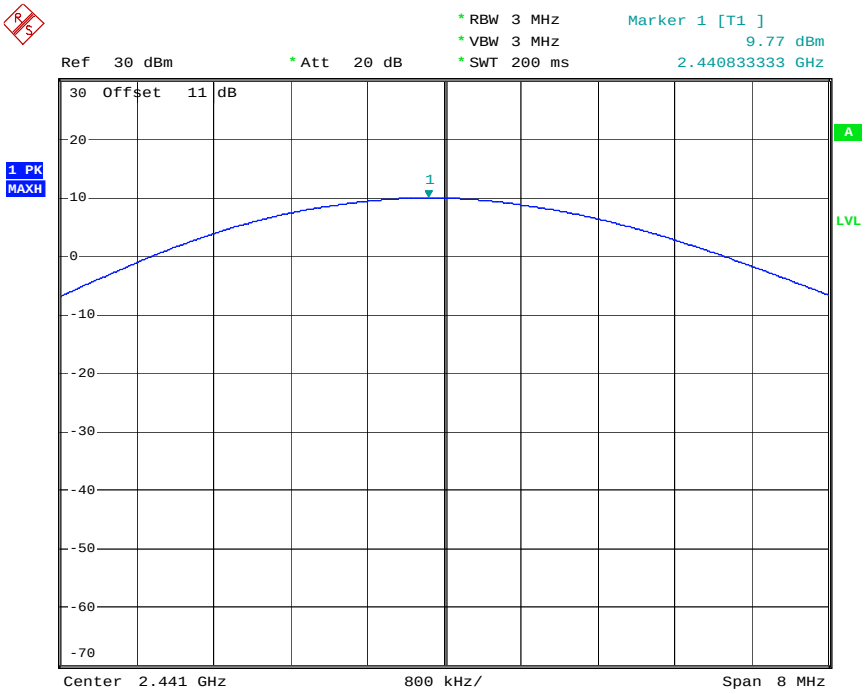
Date: 22.MAY.2008 15:41:21



MAX OUTPUT POWER CH0 EDR MODE

Date: 22.MAY.2008 15:39:07

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



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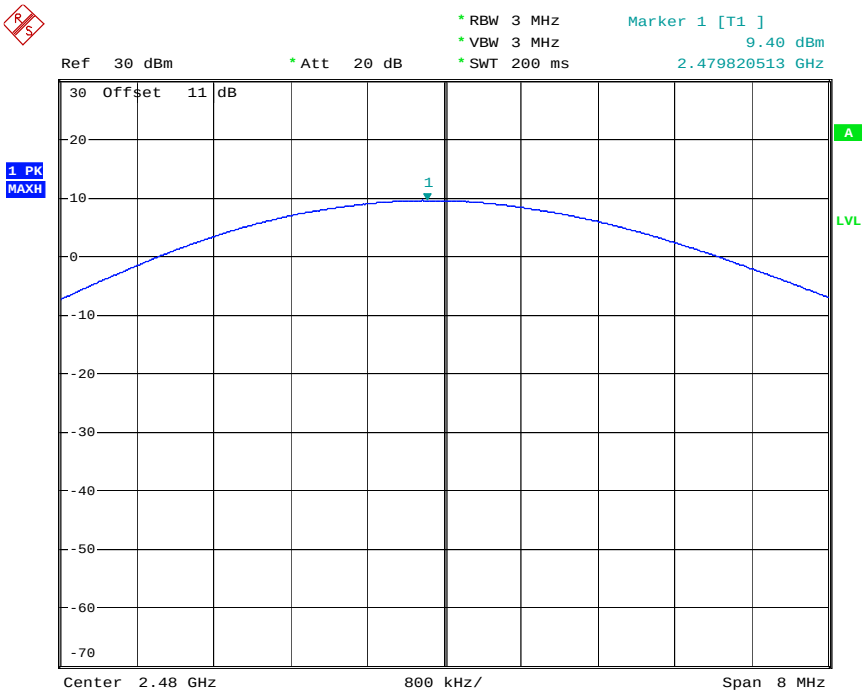
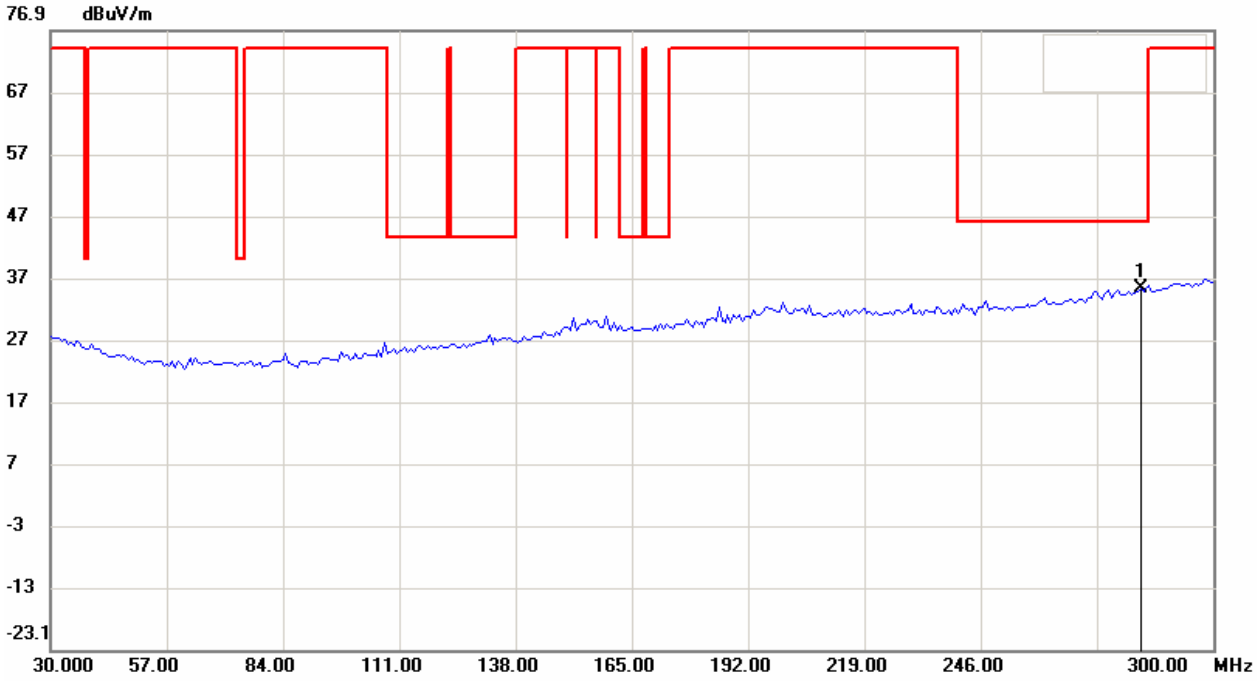
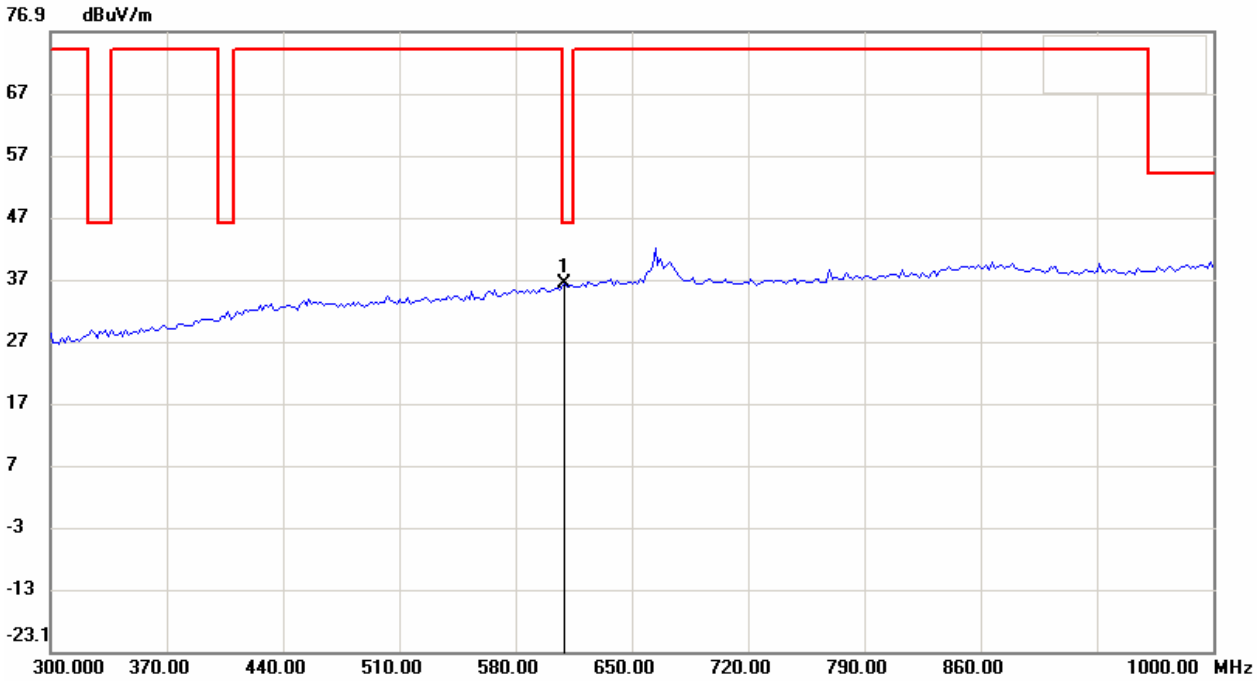


MAX OUTPUT POWER CH78 EDR MODE
Date: 22.MAY.2008 15:41:47

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Spurious Emissions radiated
CH 0
Antenna Polarization H

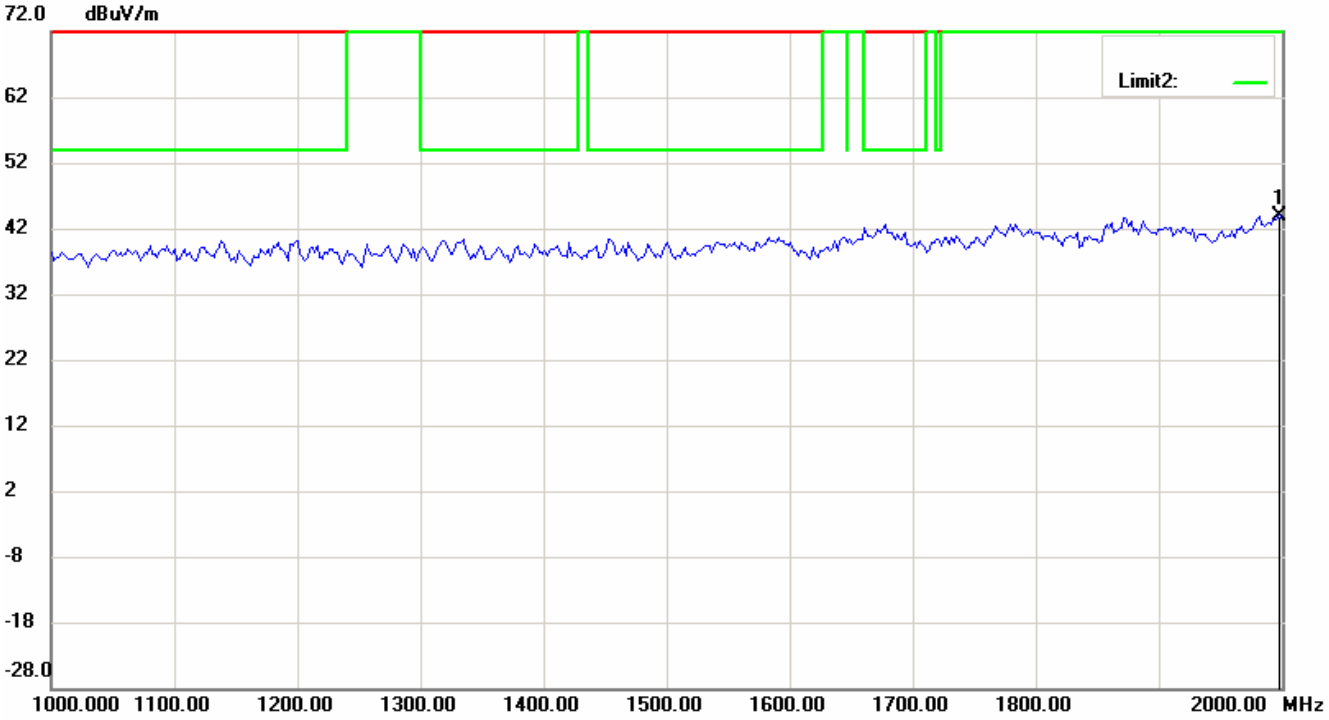


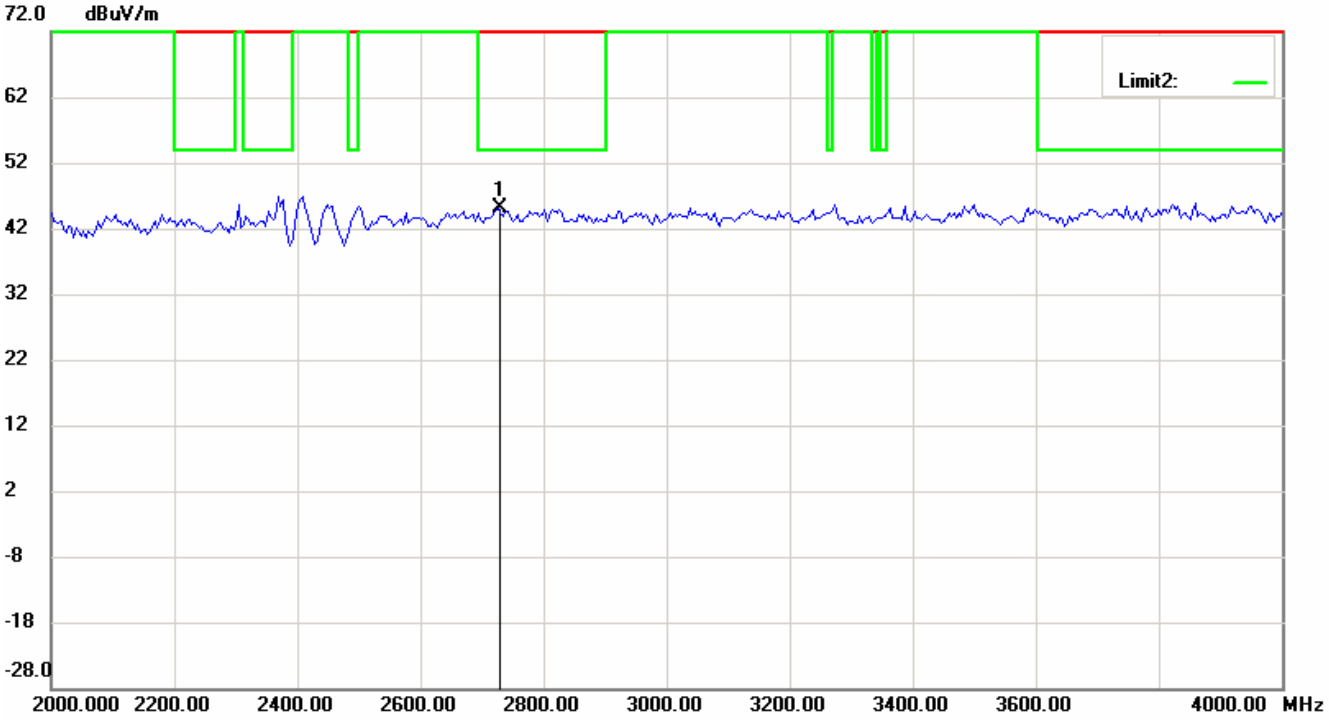


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

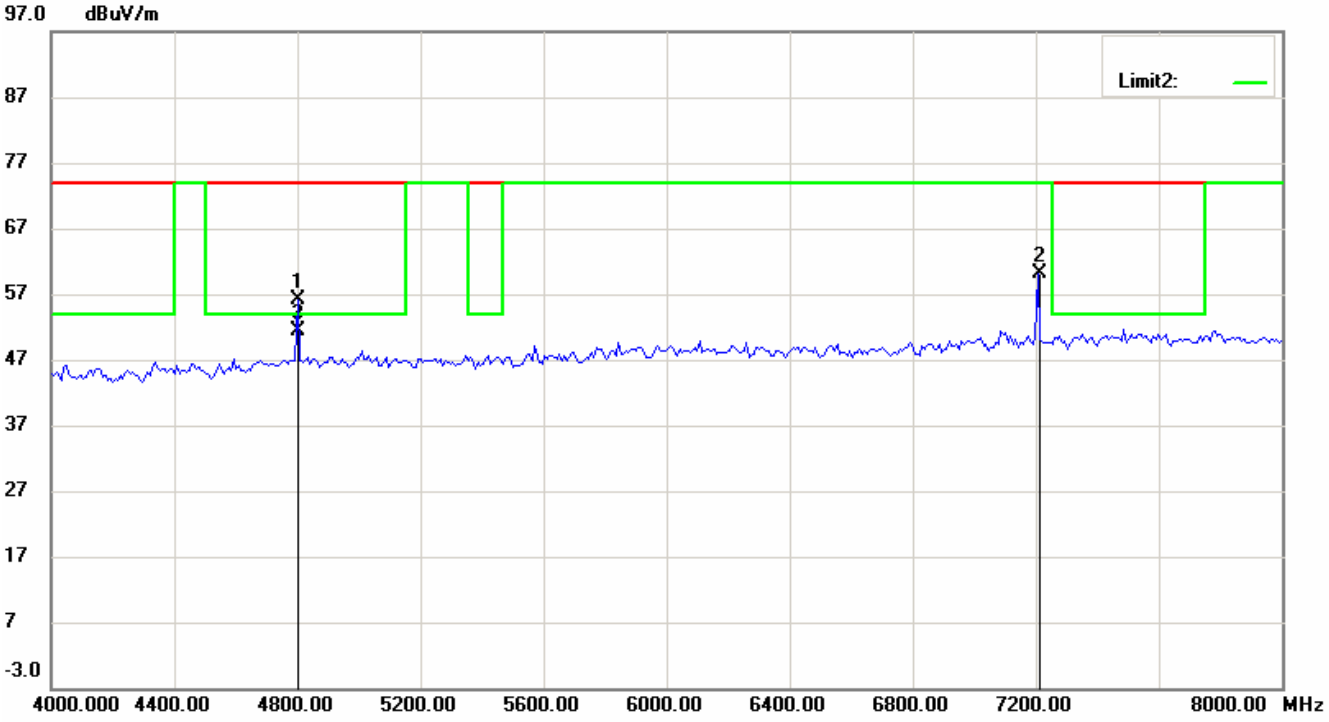


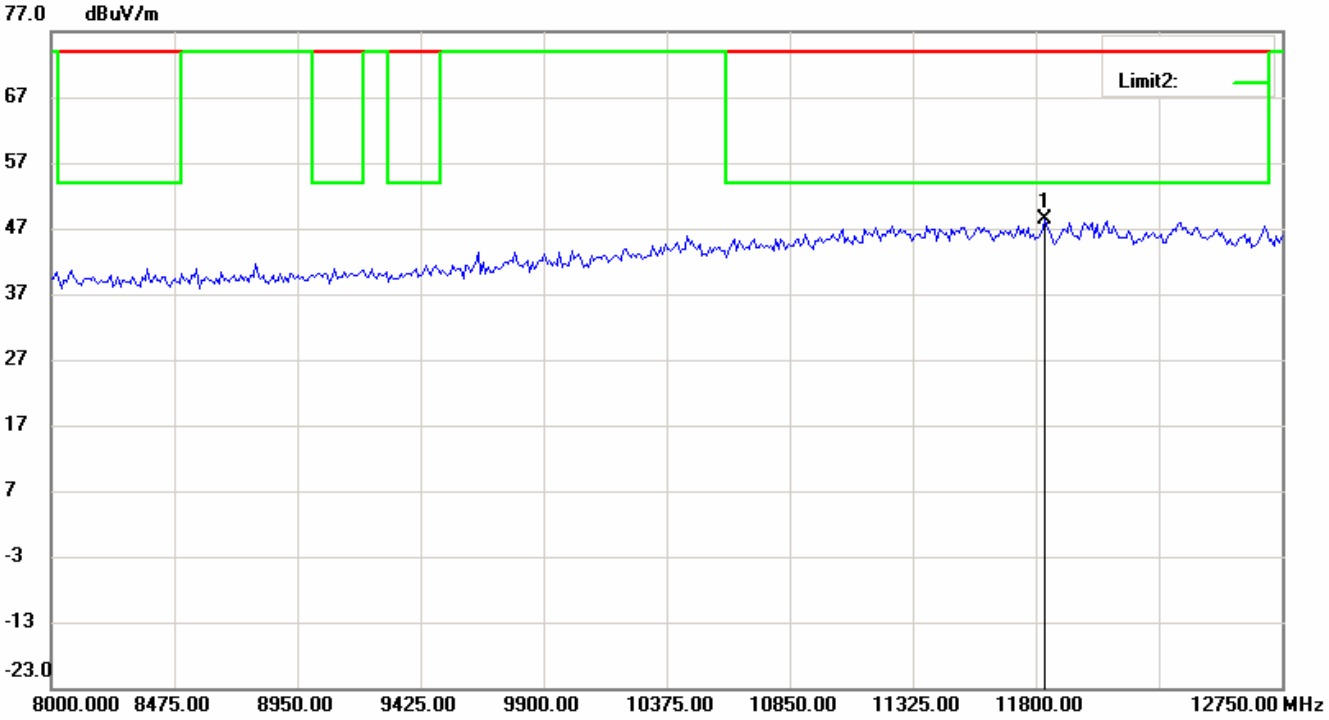


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

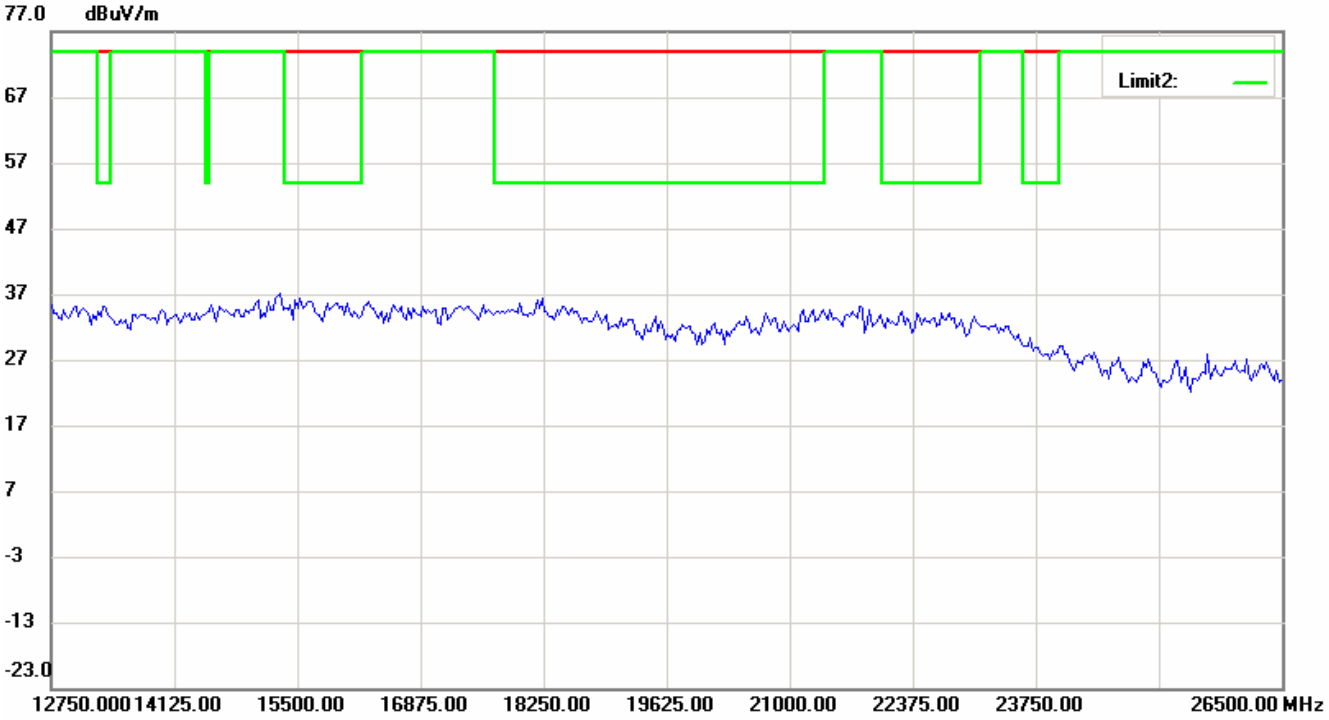




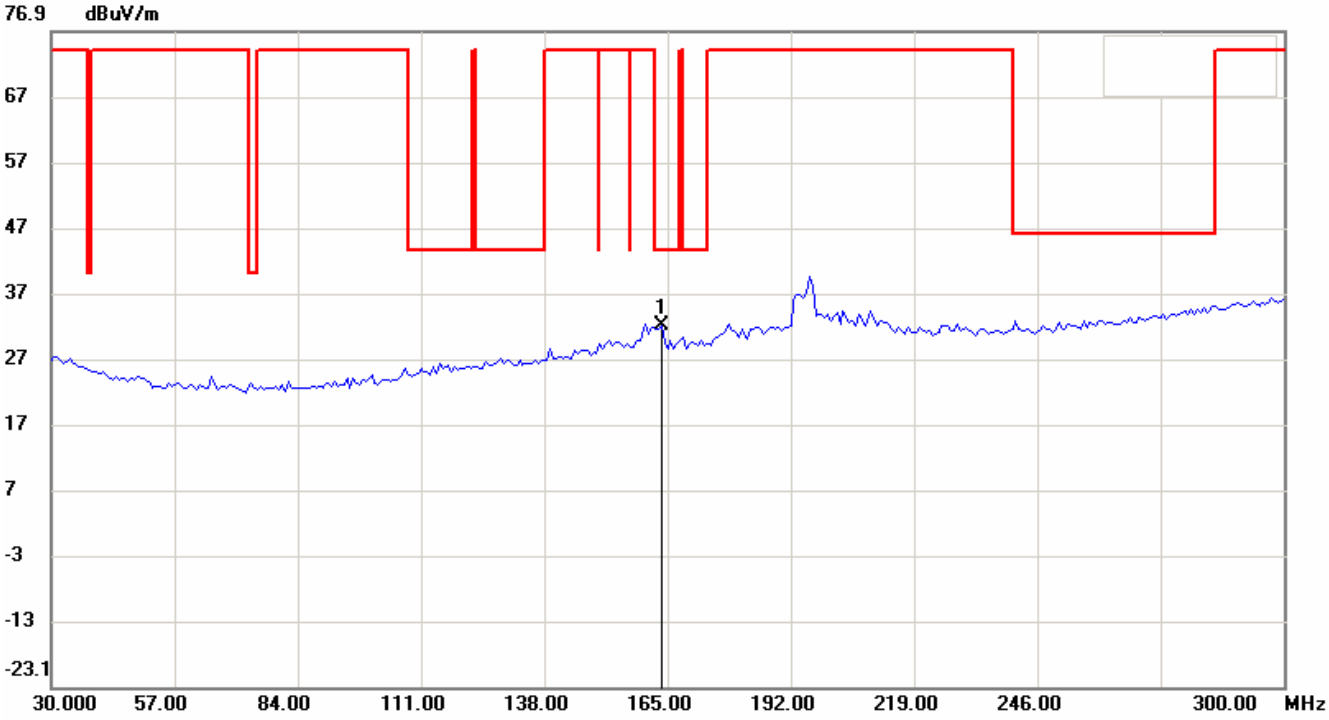
Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



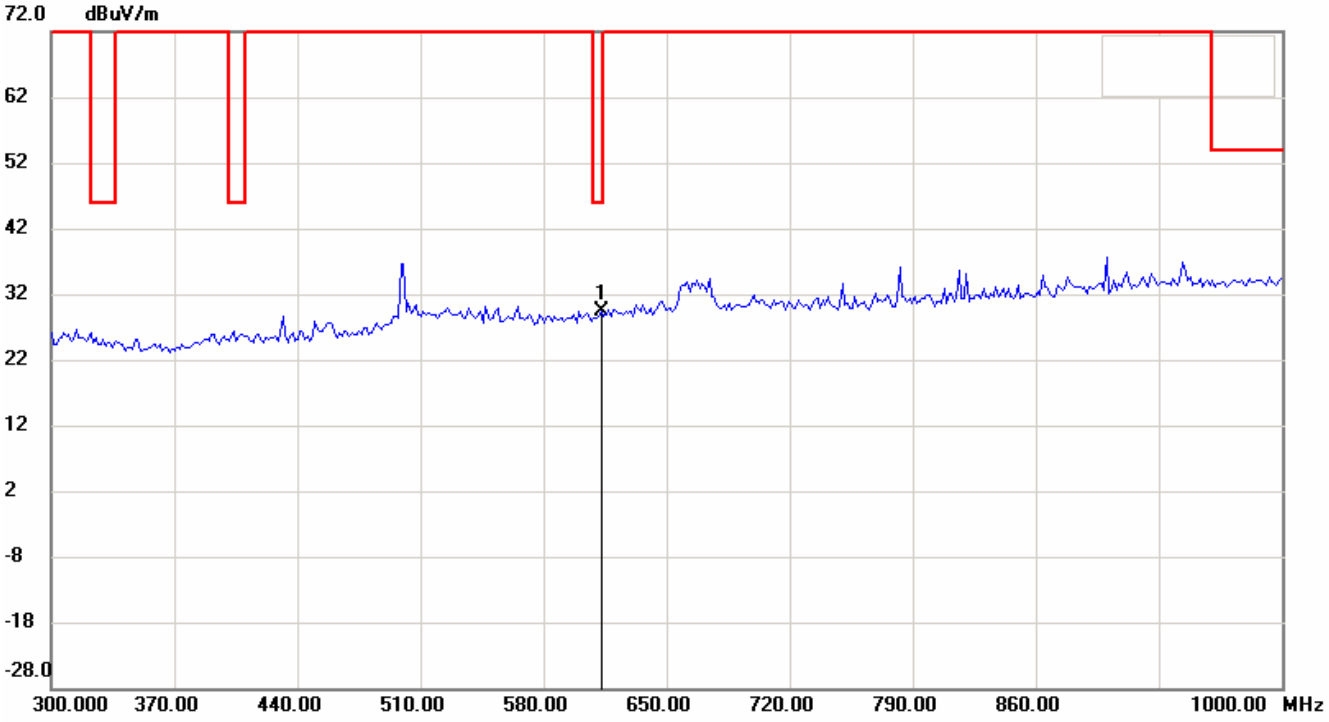
Antenna Polarization V

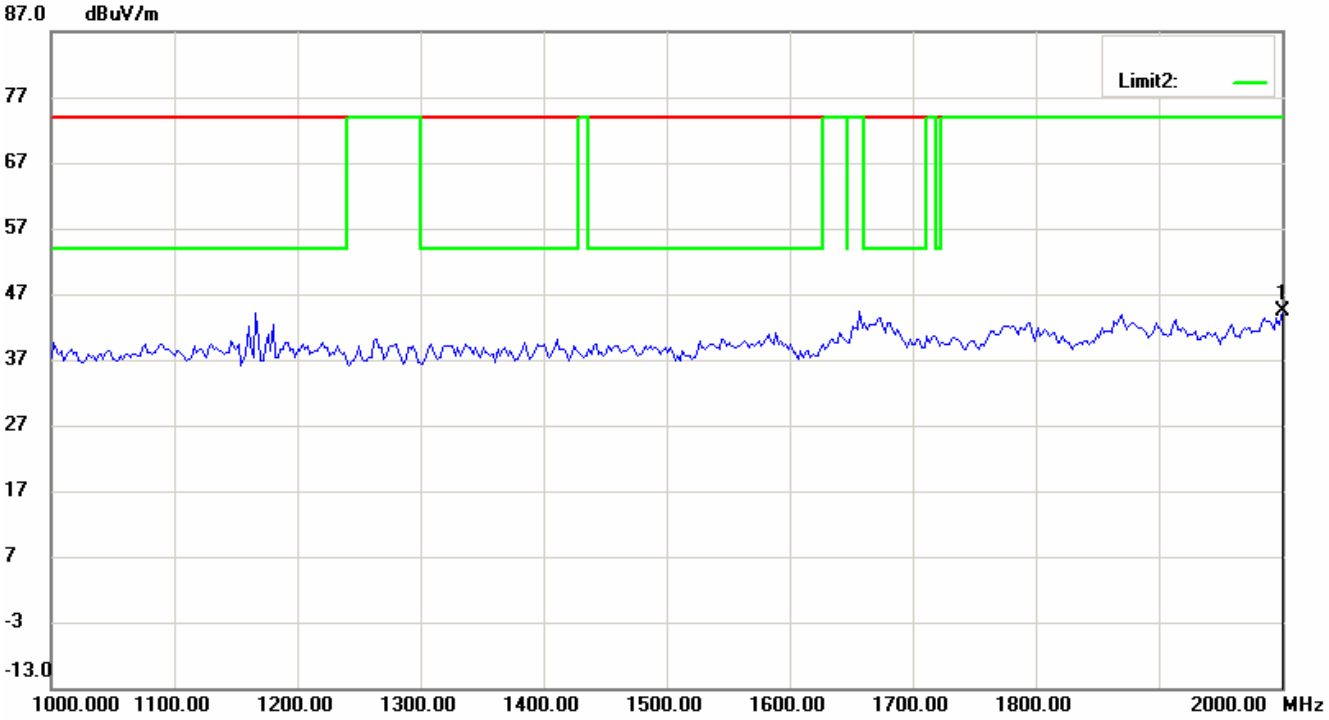


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

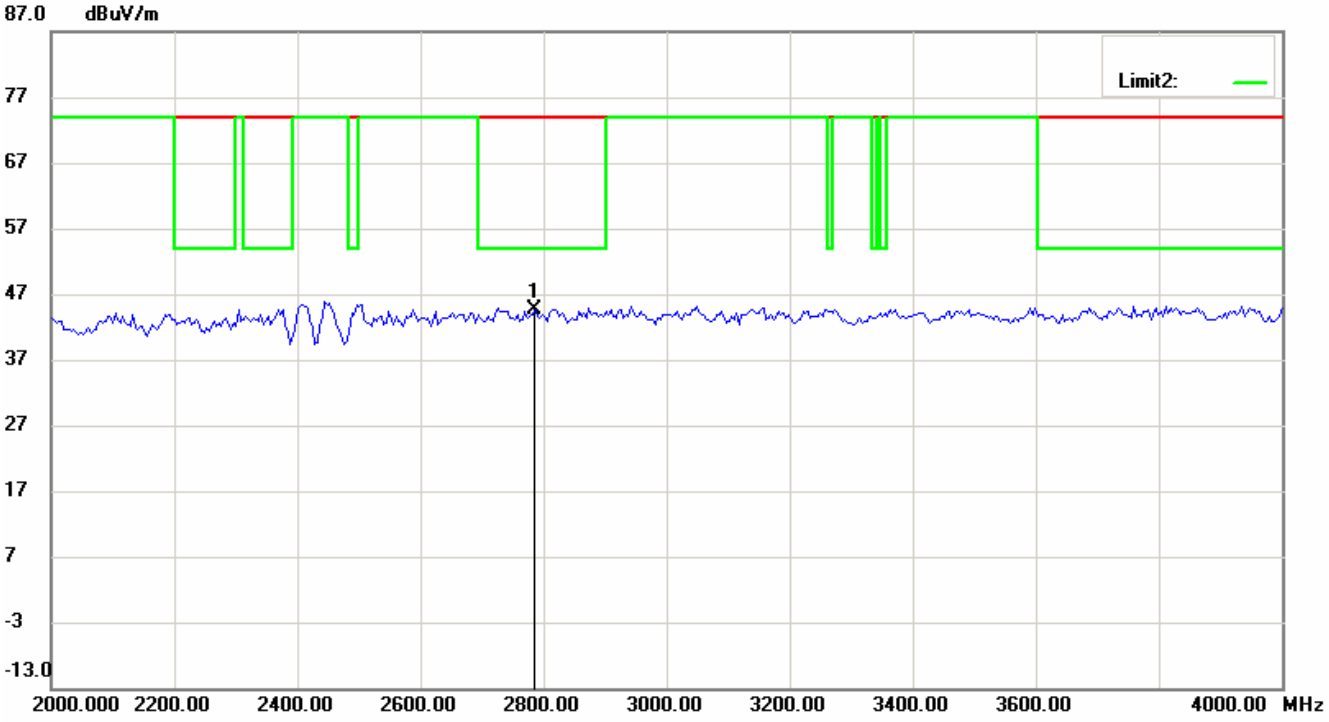


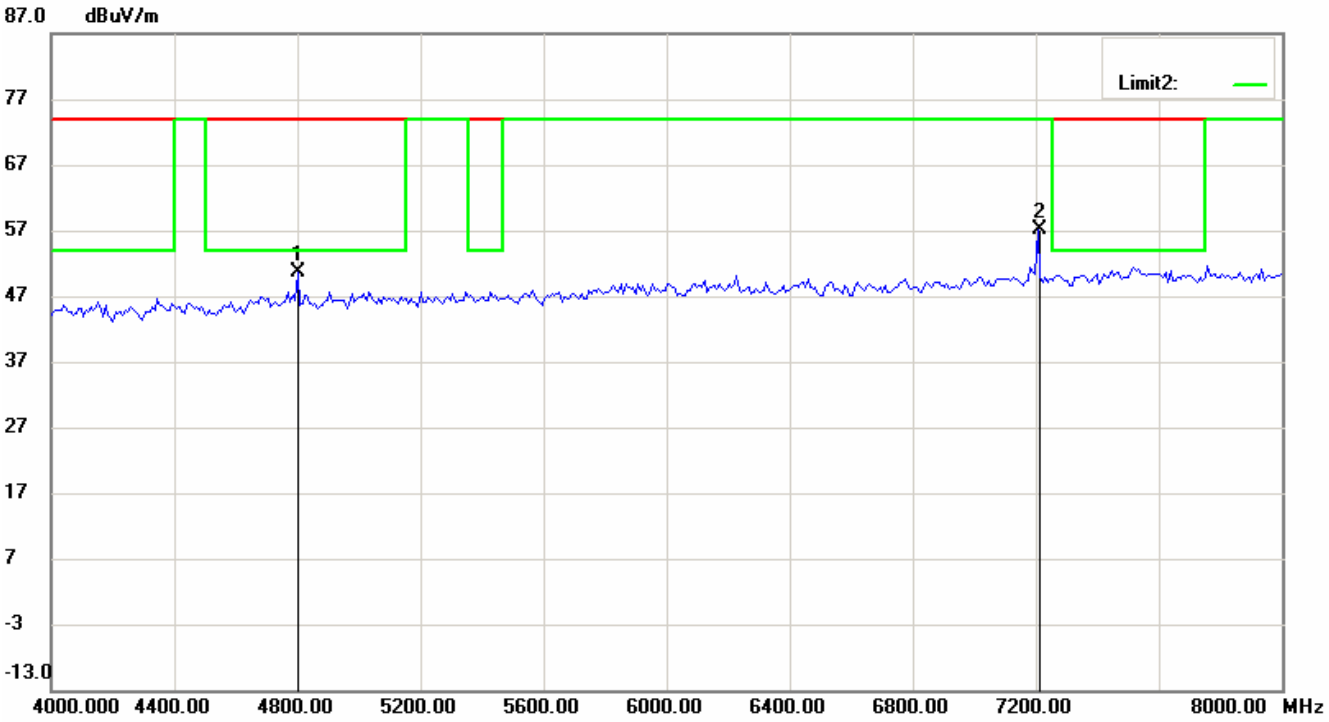


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

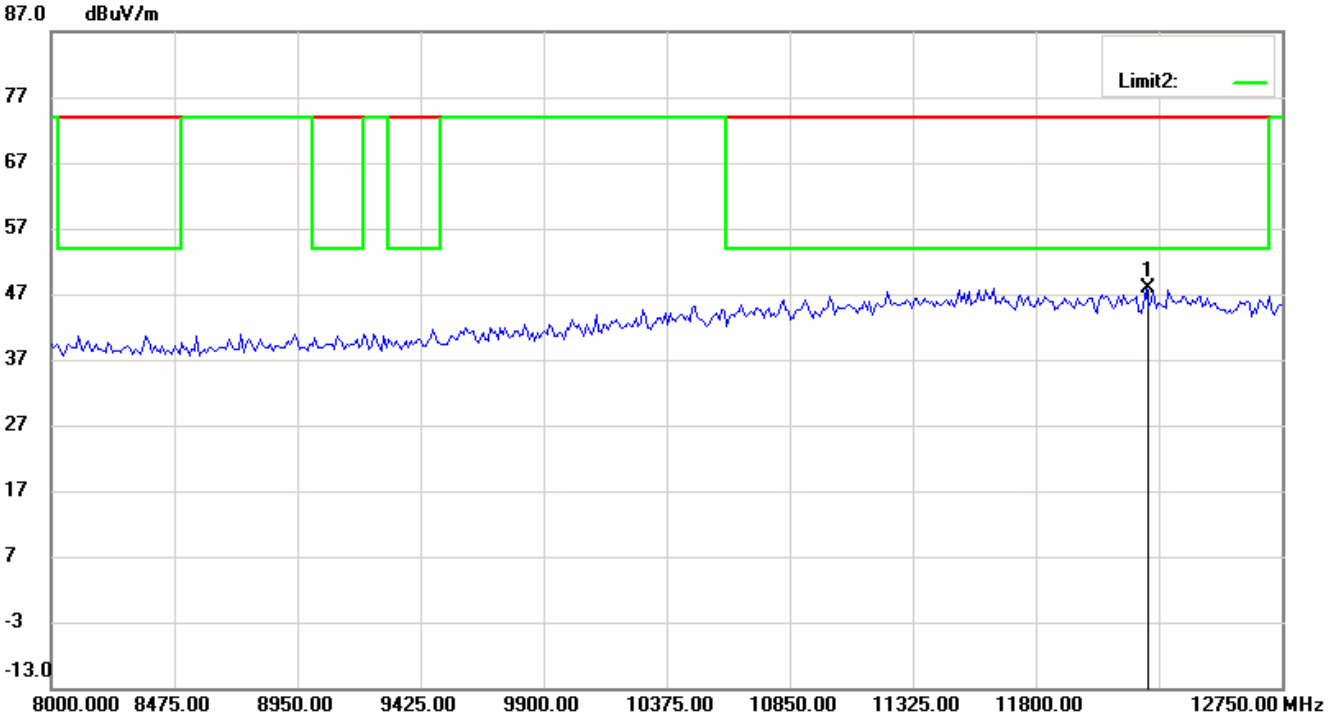


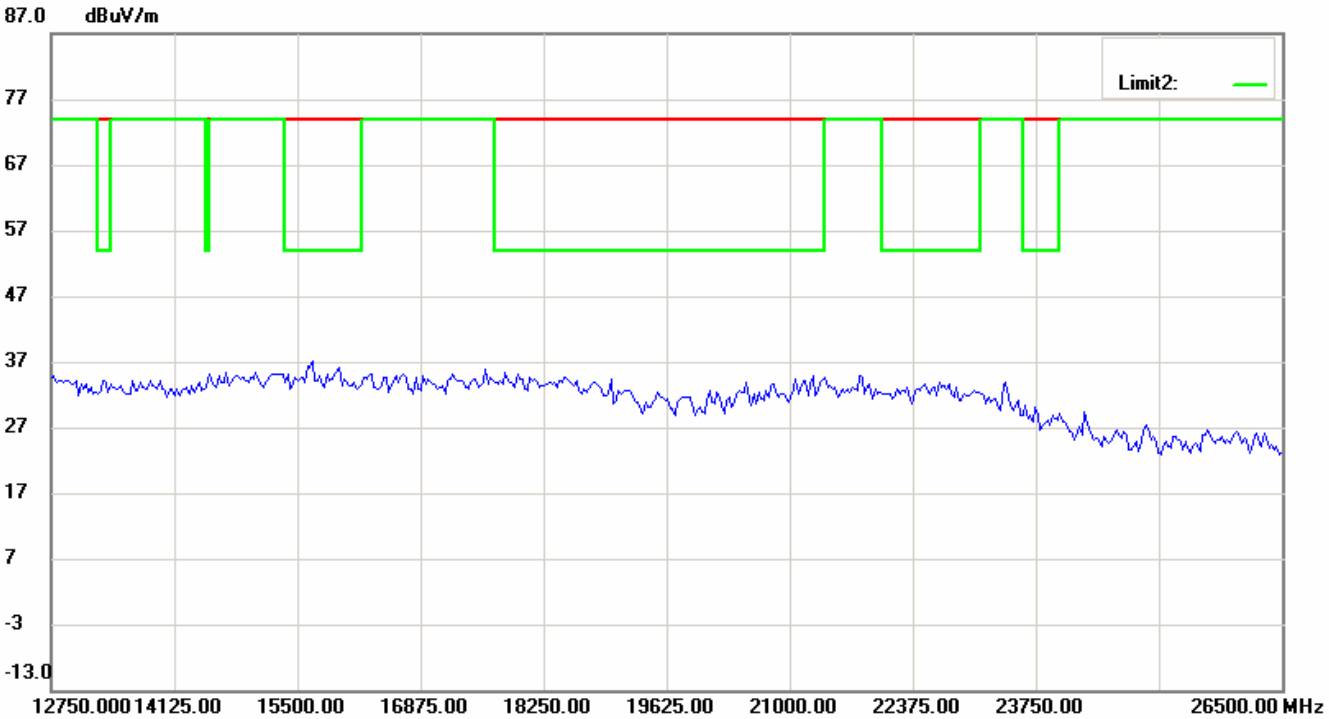


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1





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

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
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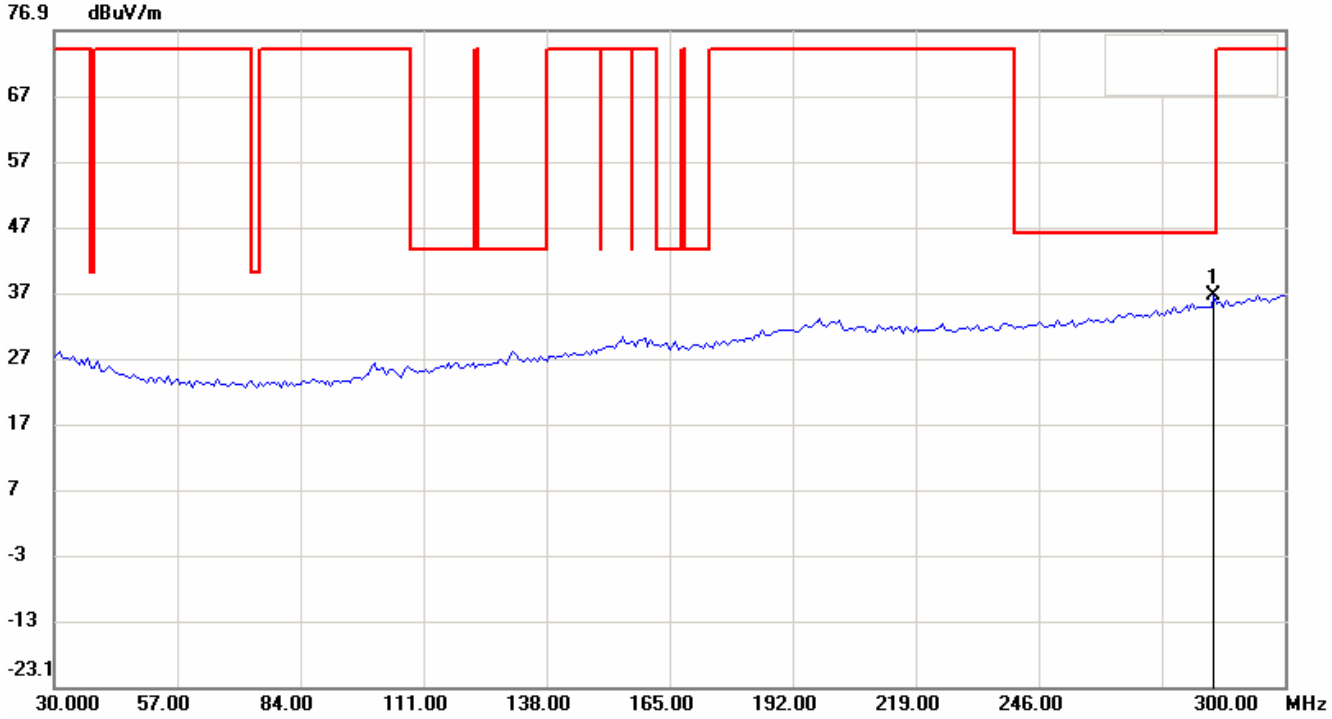
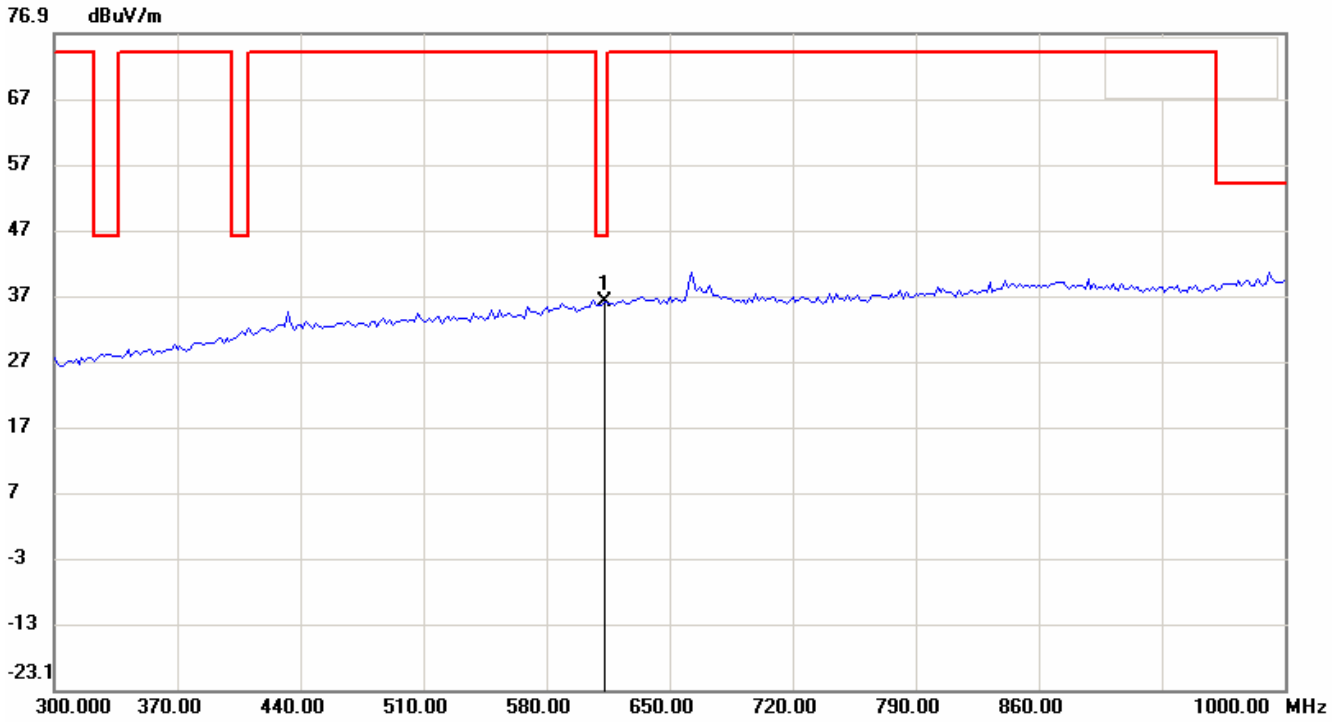
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

CH 39

Antenna Polarization H





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

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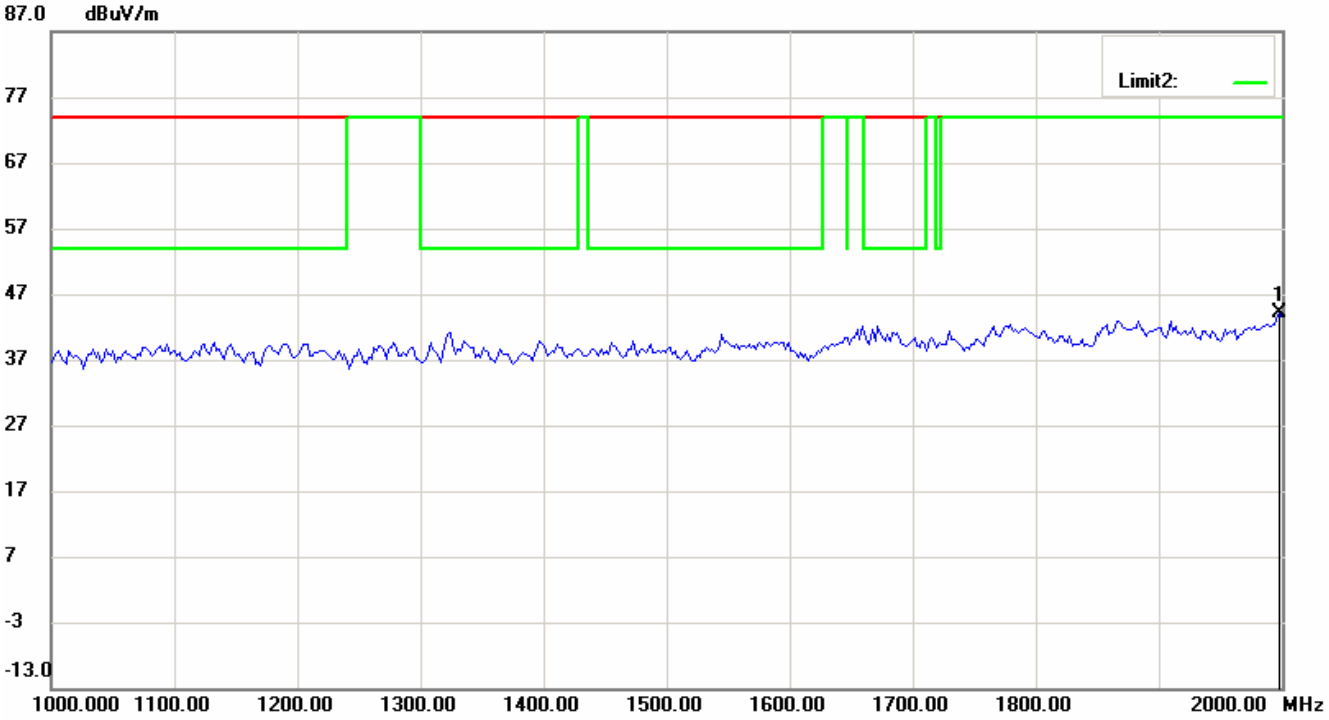
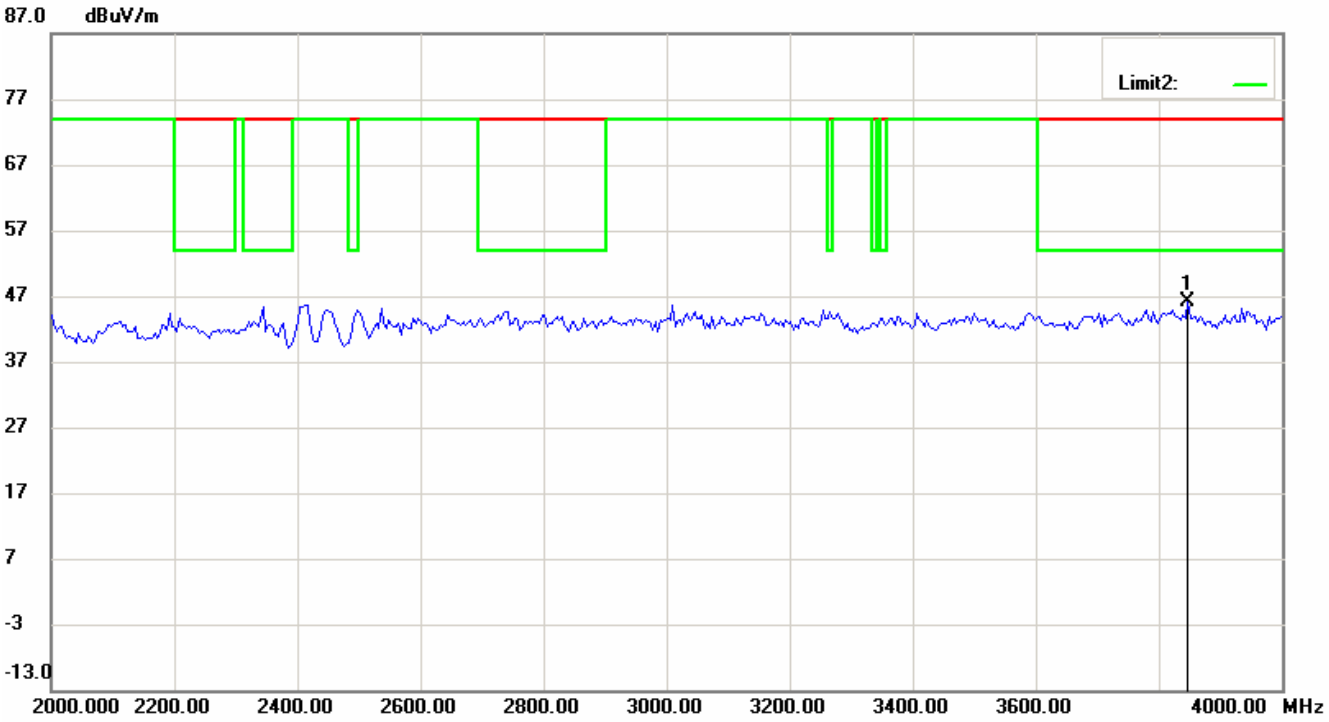
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1





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

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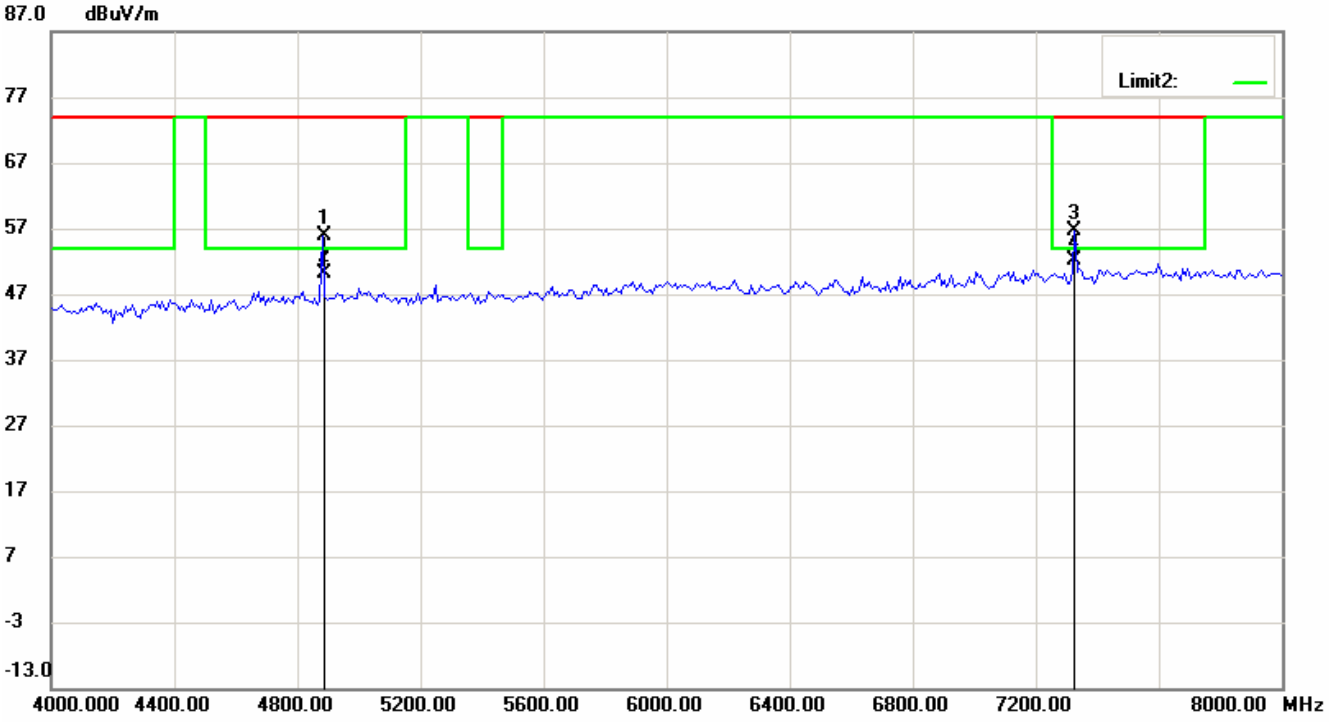
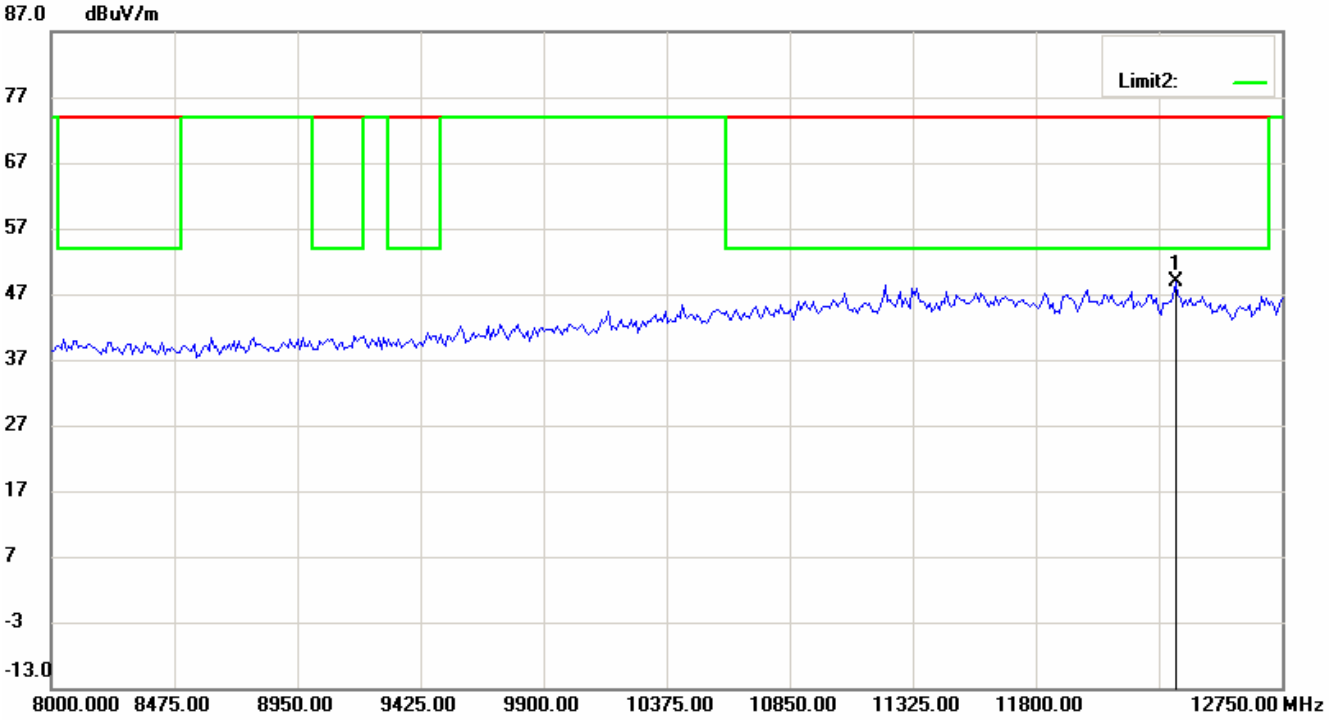
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

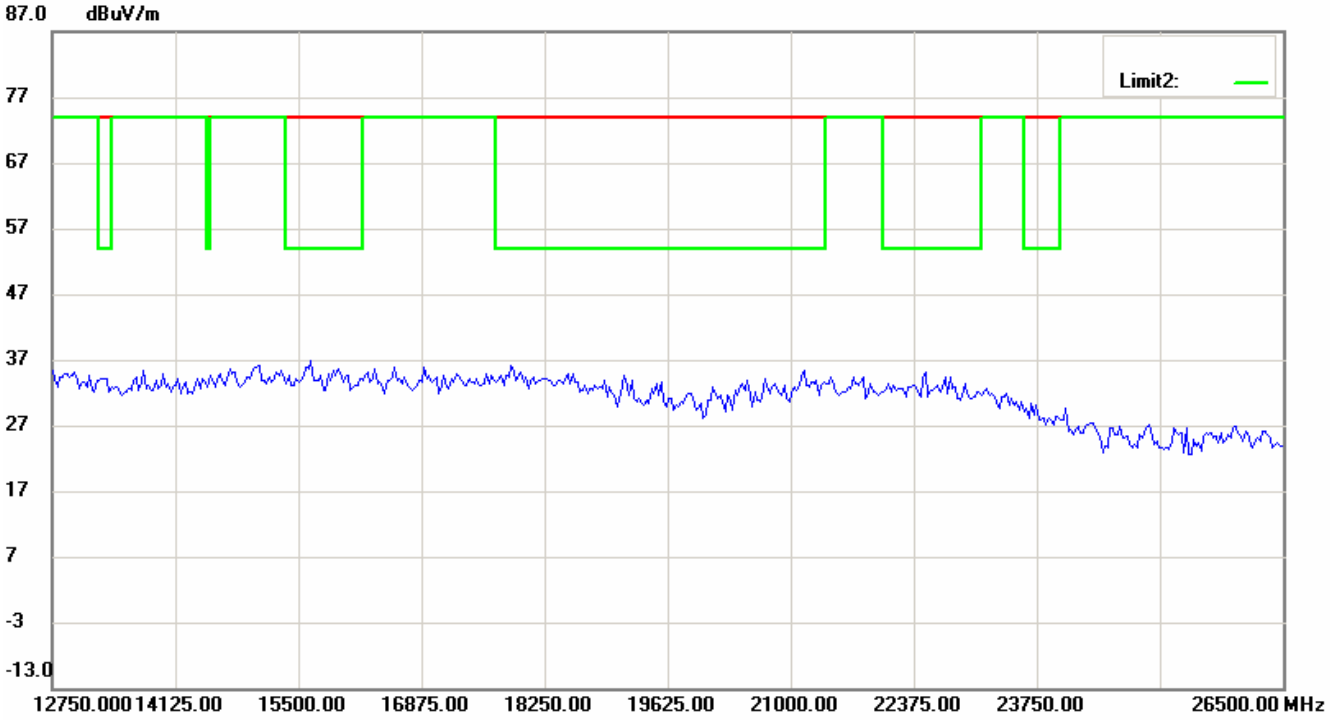




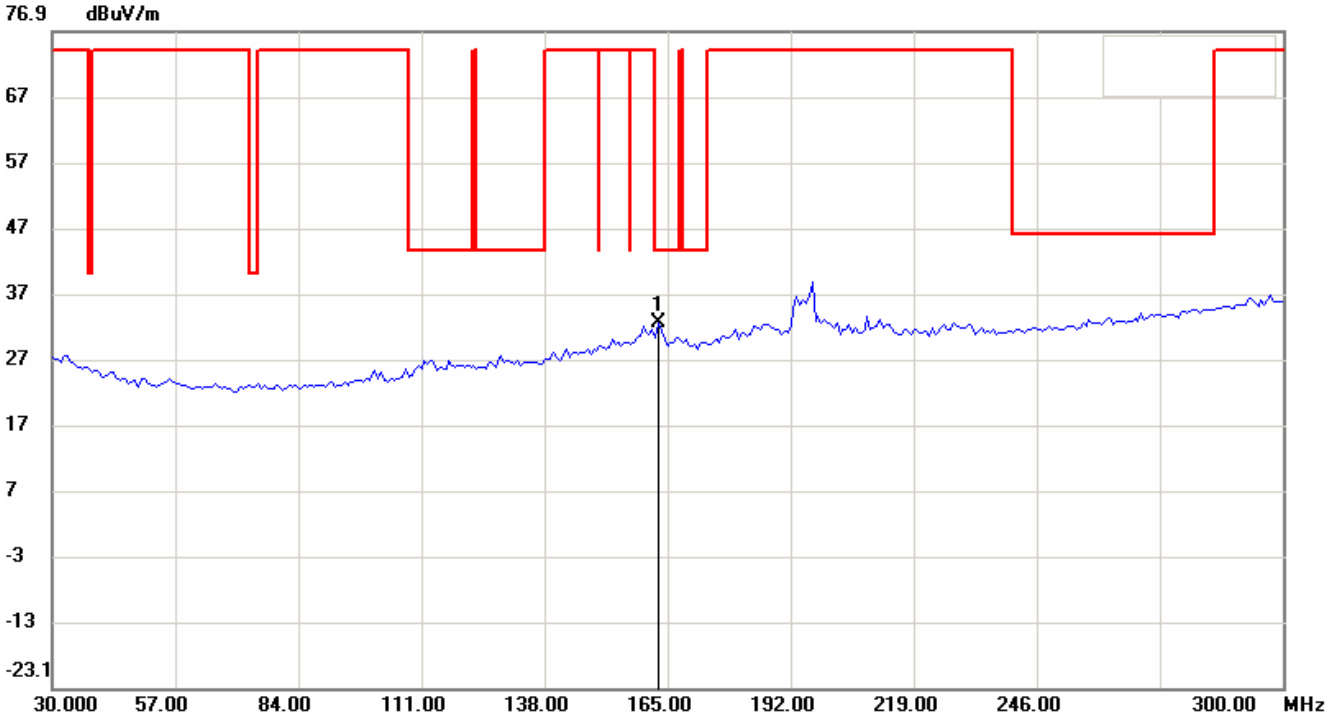
Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



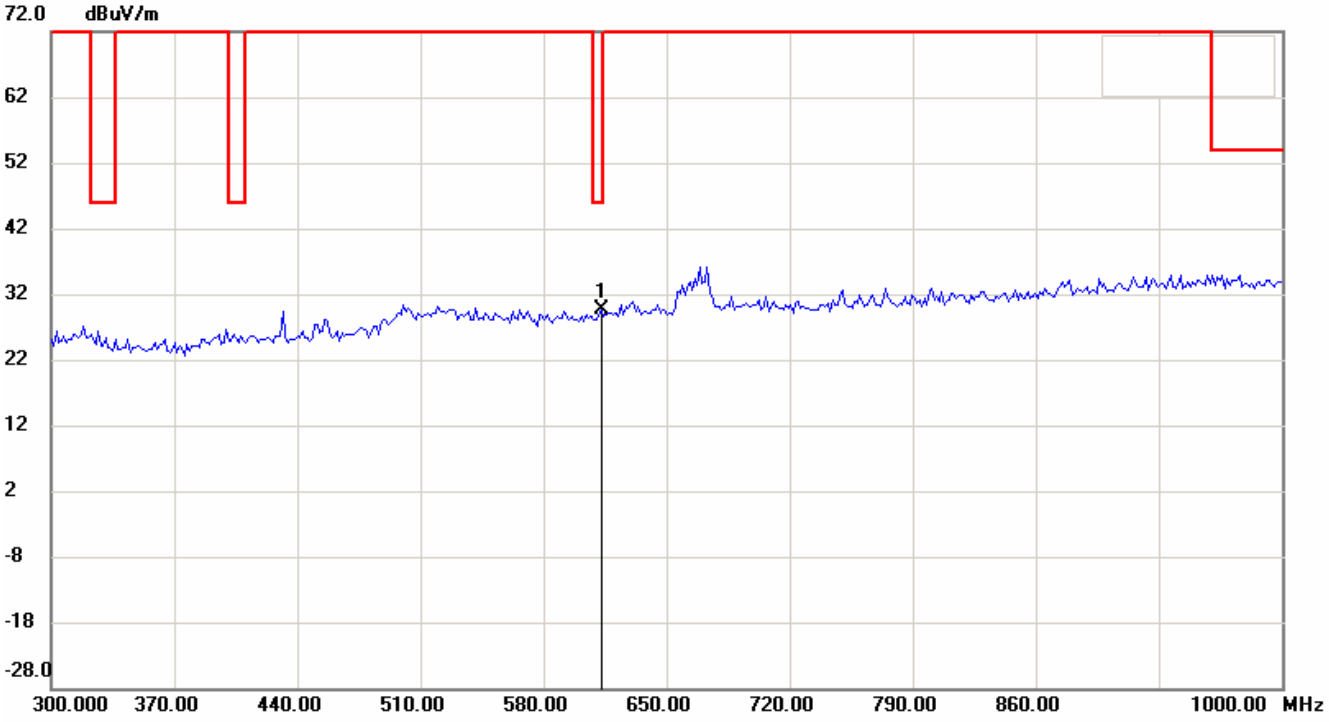
Antenna Polarization V

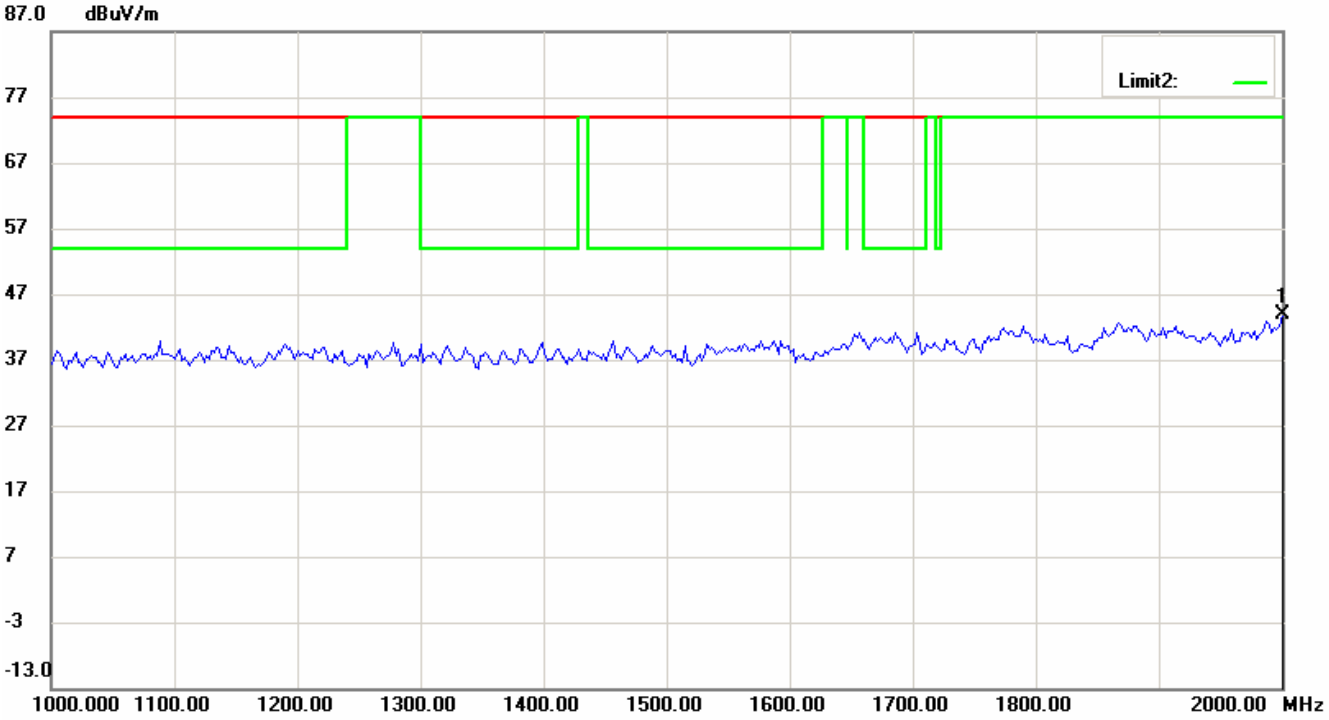


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

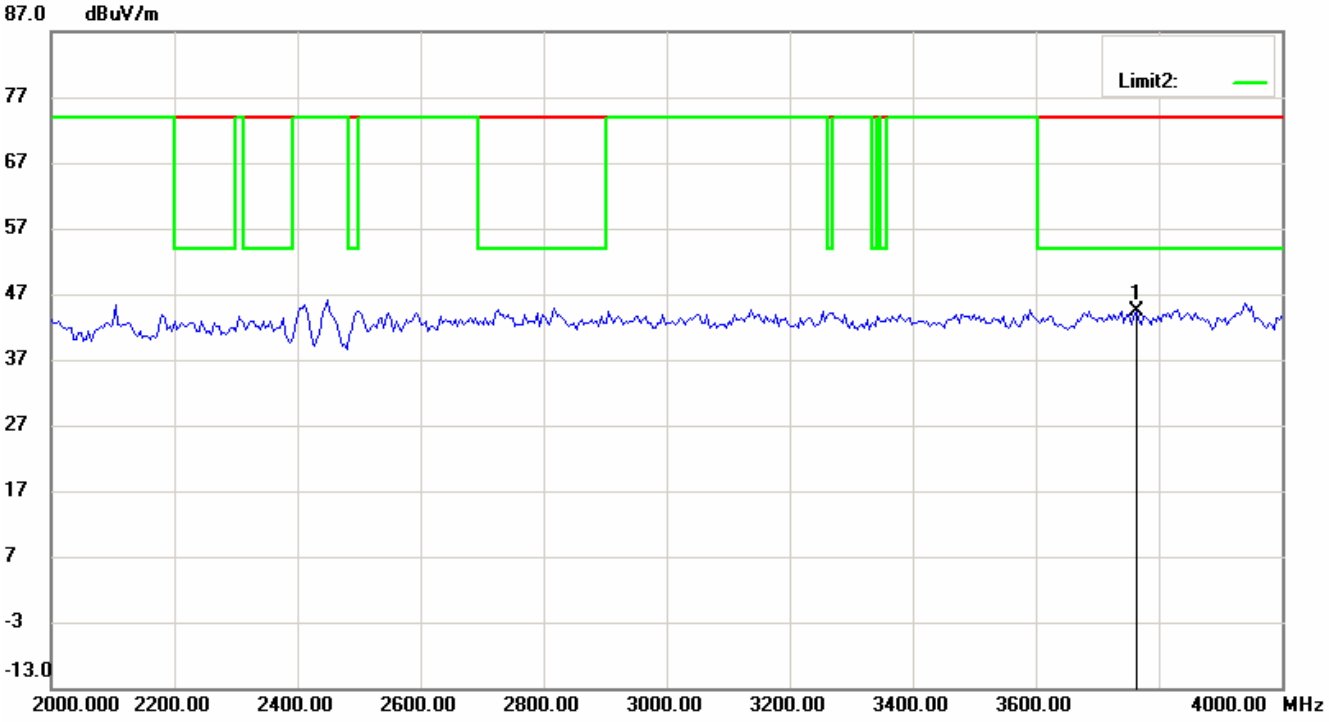


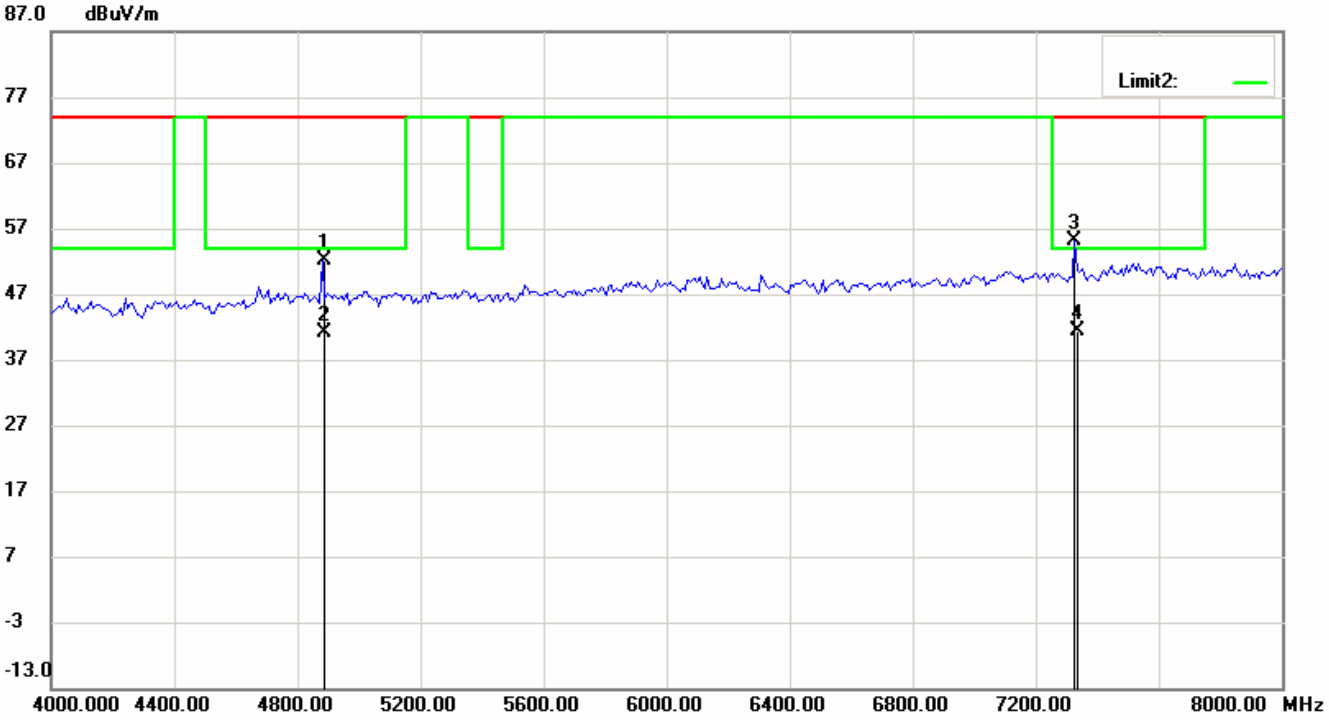


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1





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

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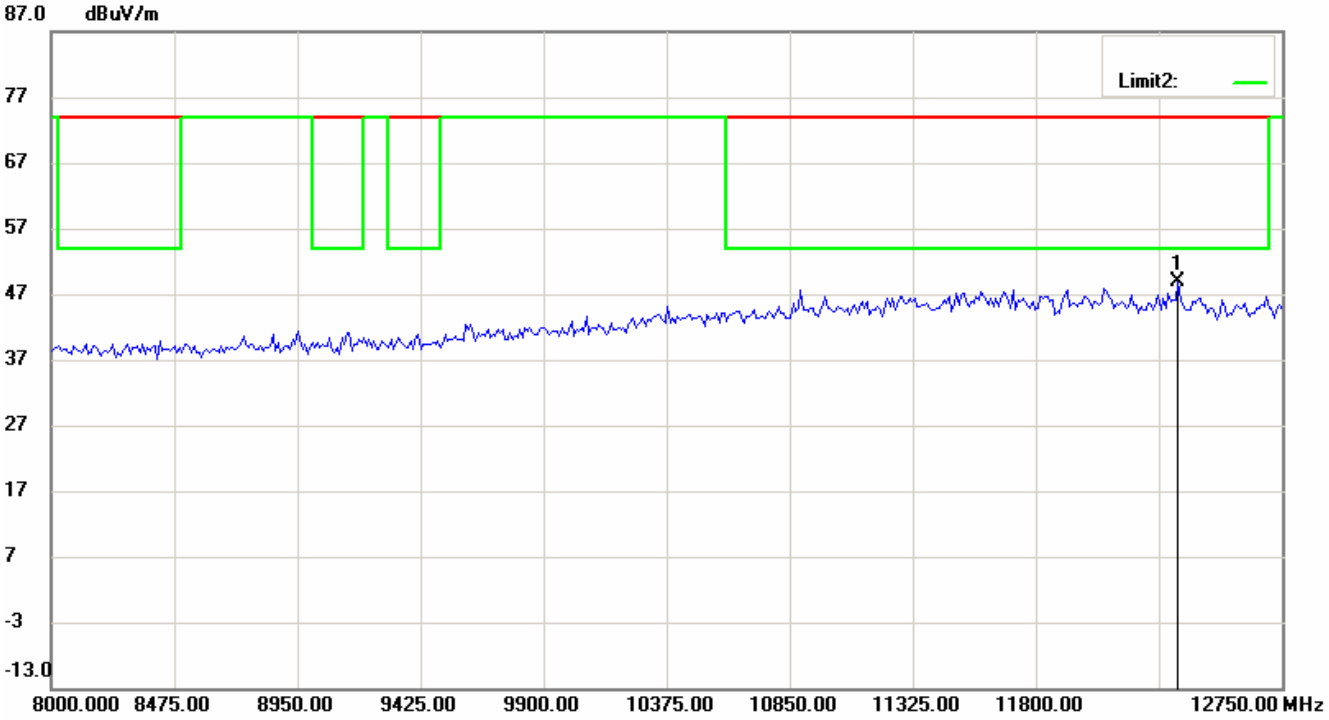
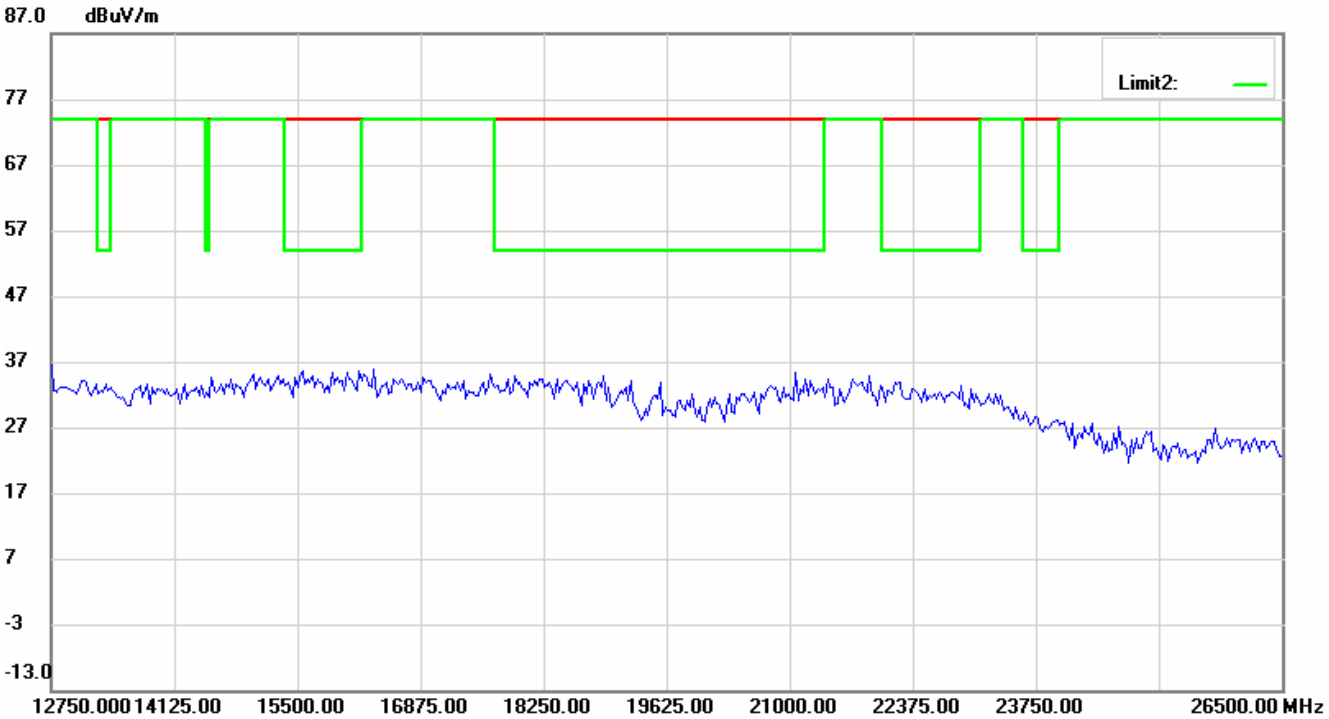
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1





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

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
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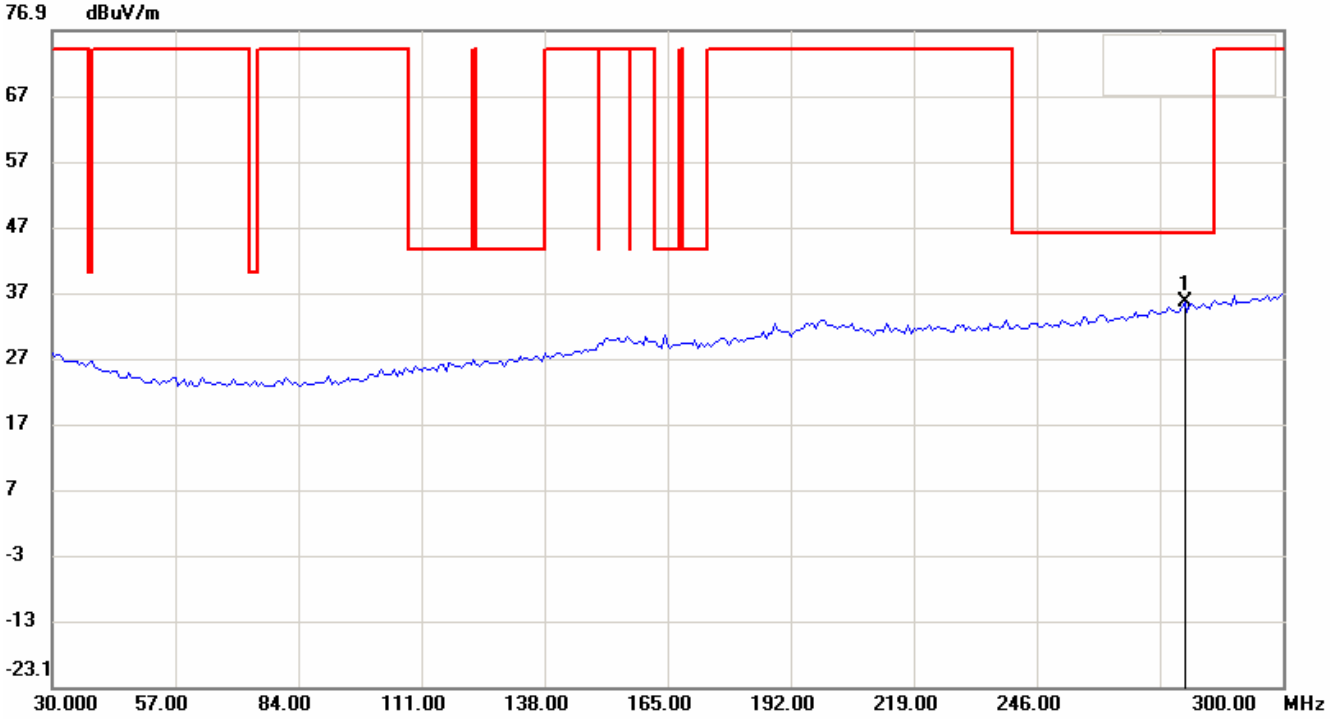
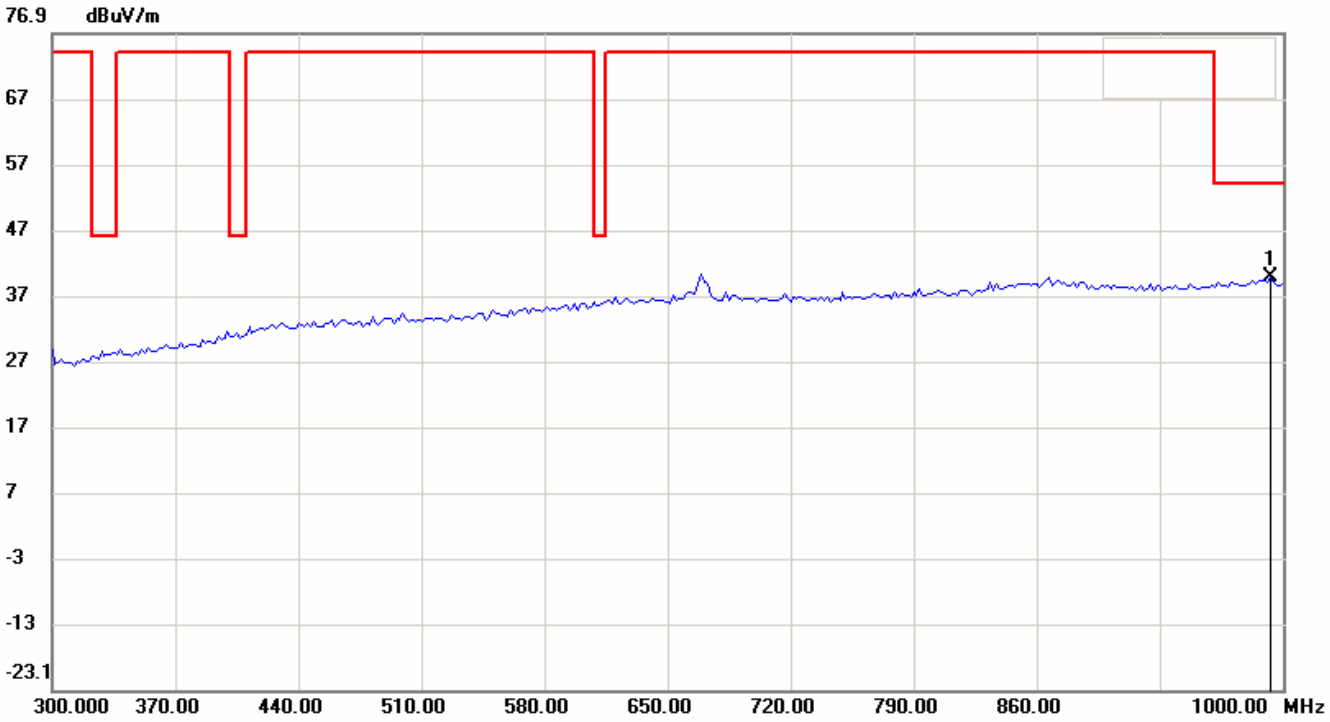
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

CH 78

Antenna Polarization H

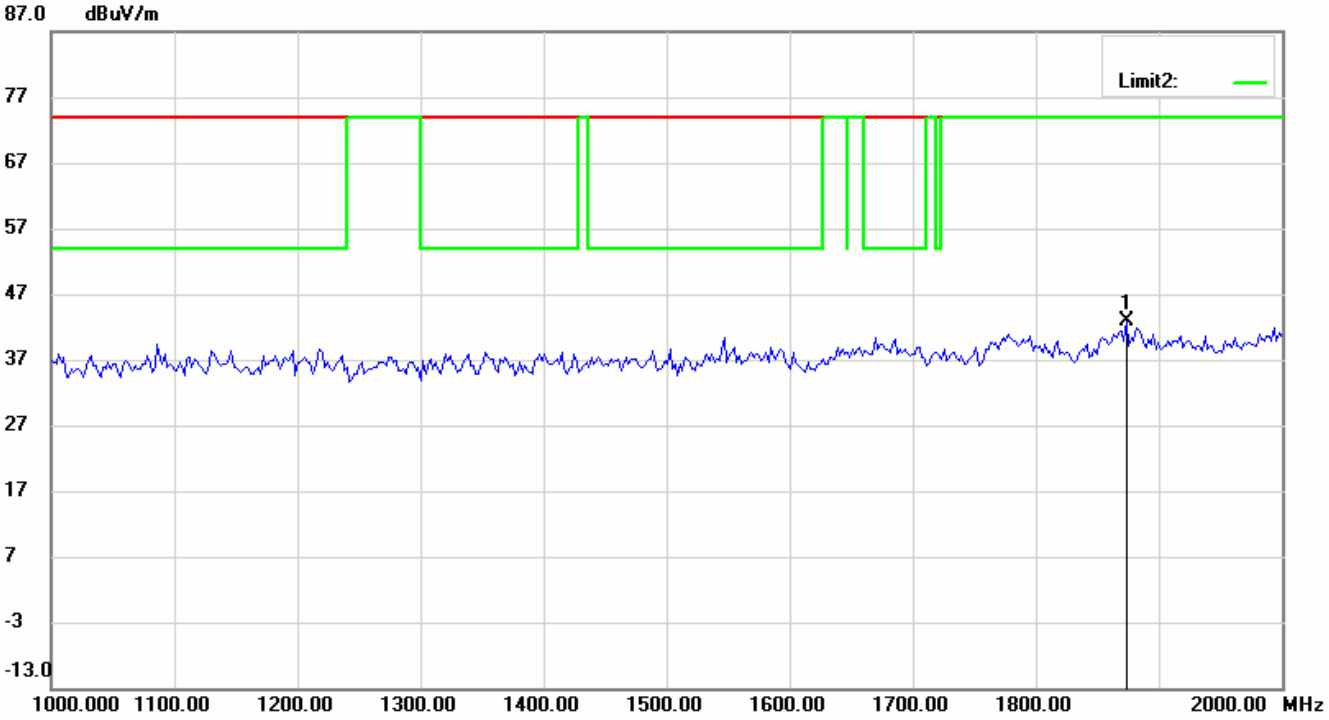


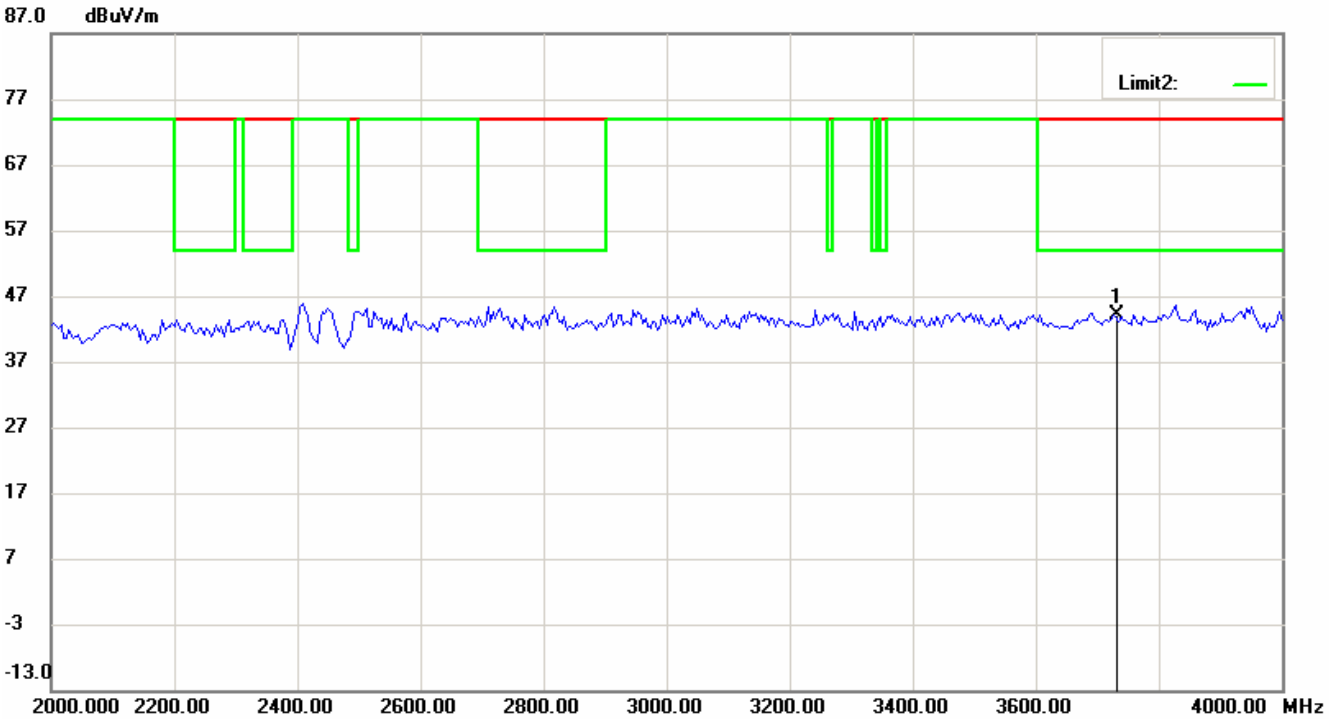


Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1





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

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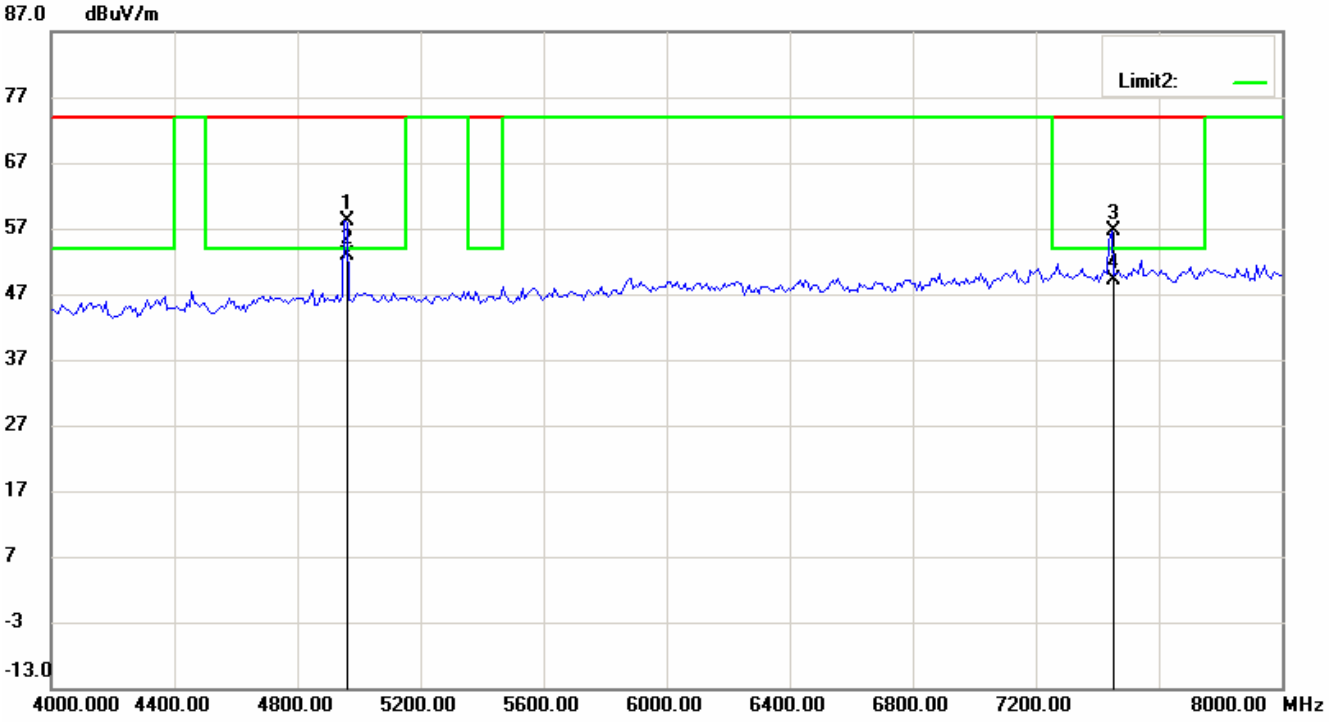
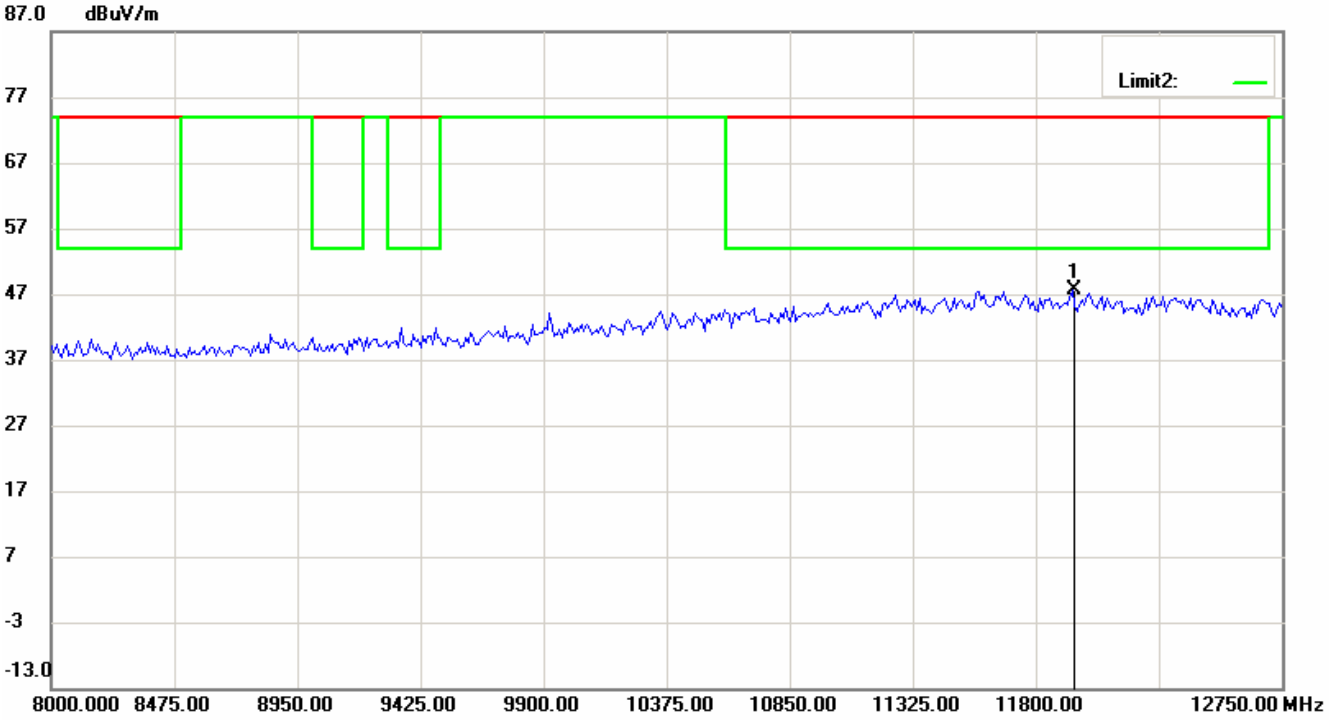
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1





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Down Line: Ave Limit Line
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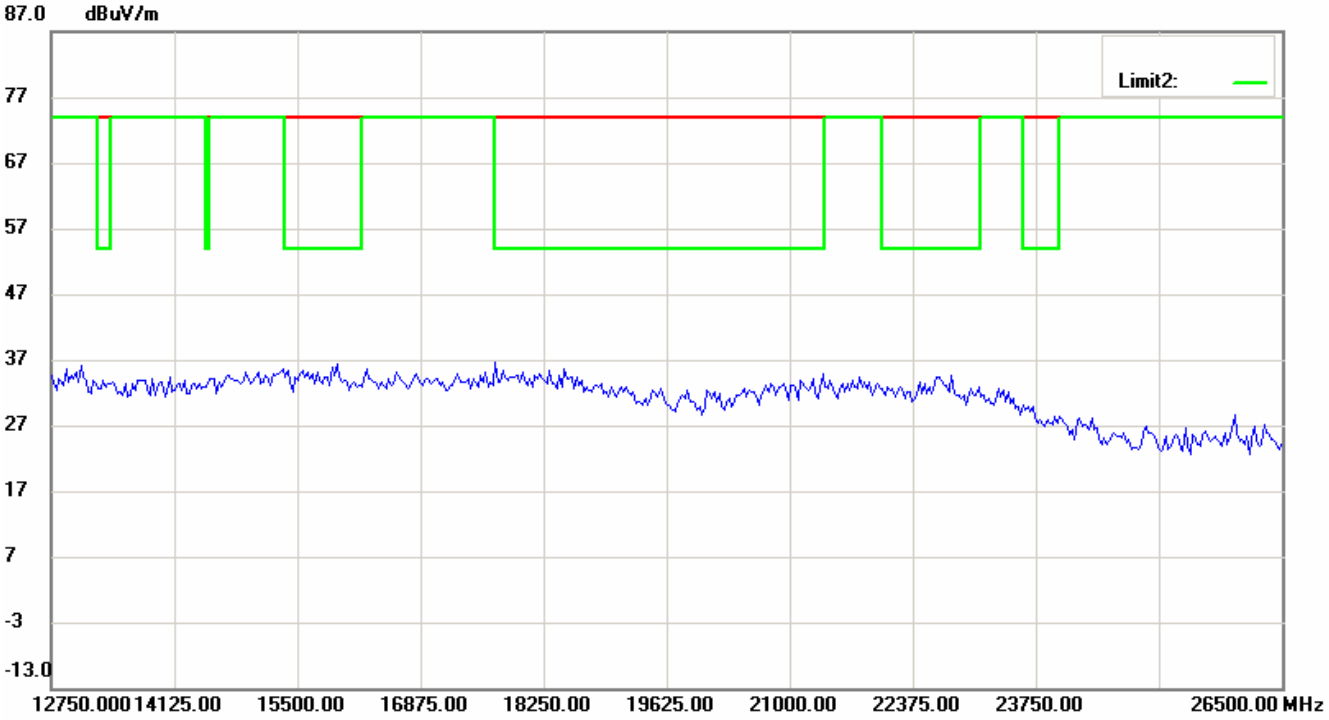
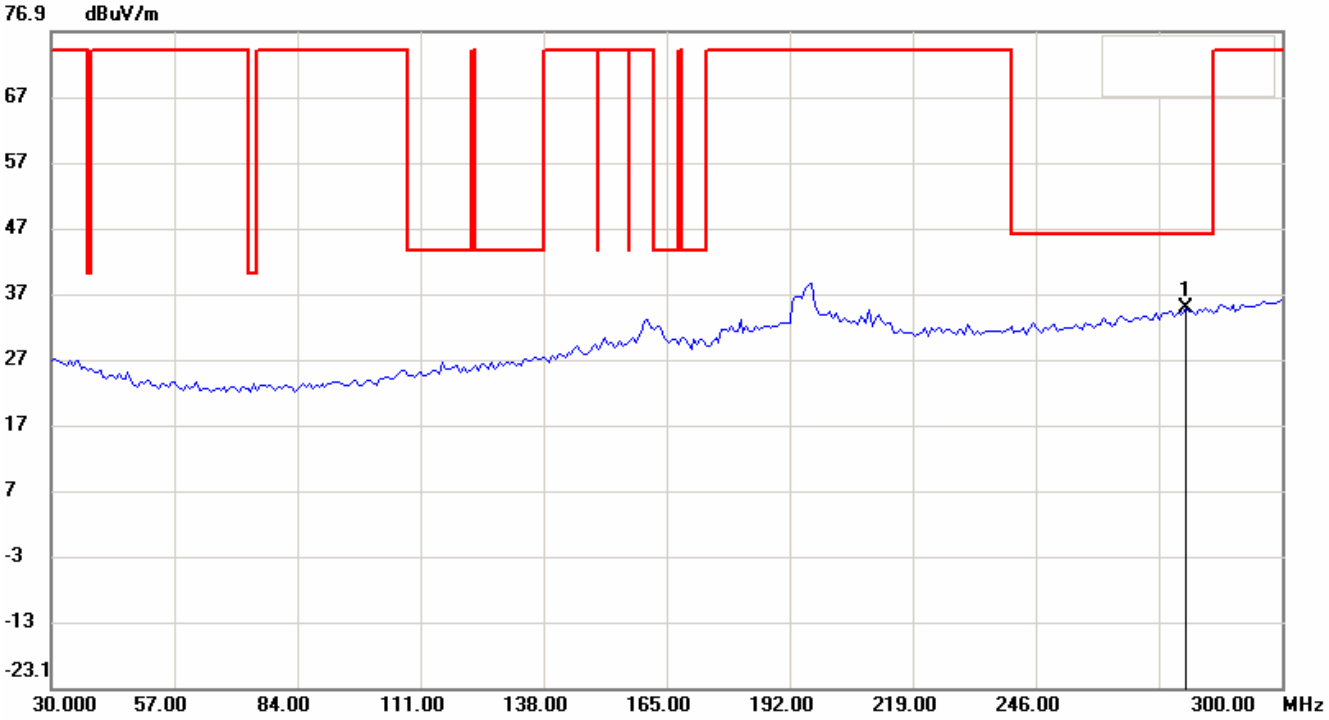
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



Antenna Polarization V



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

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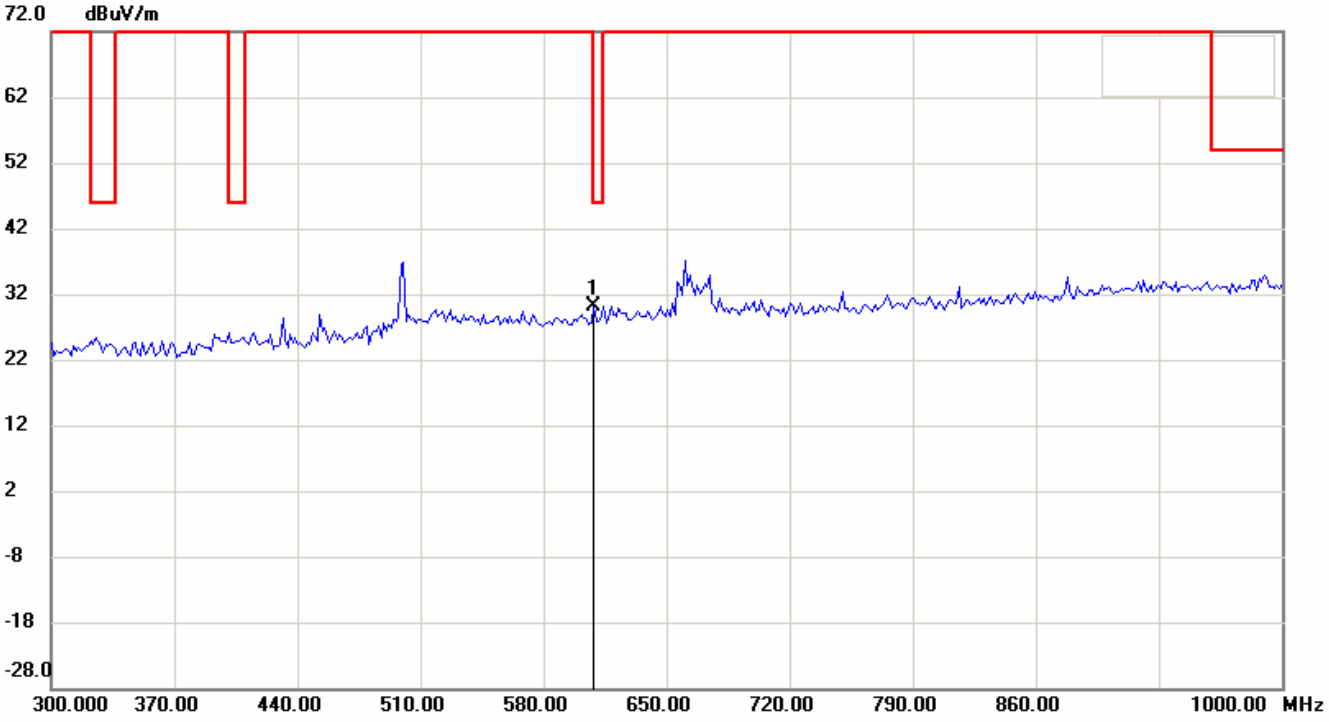
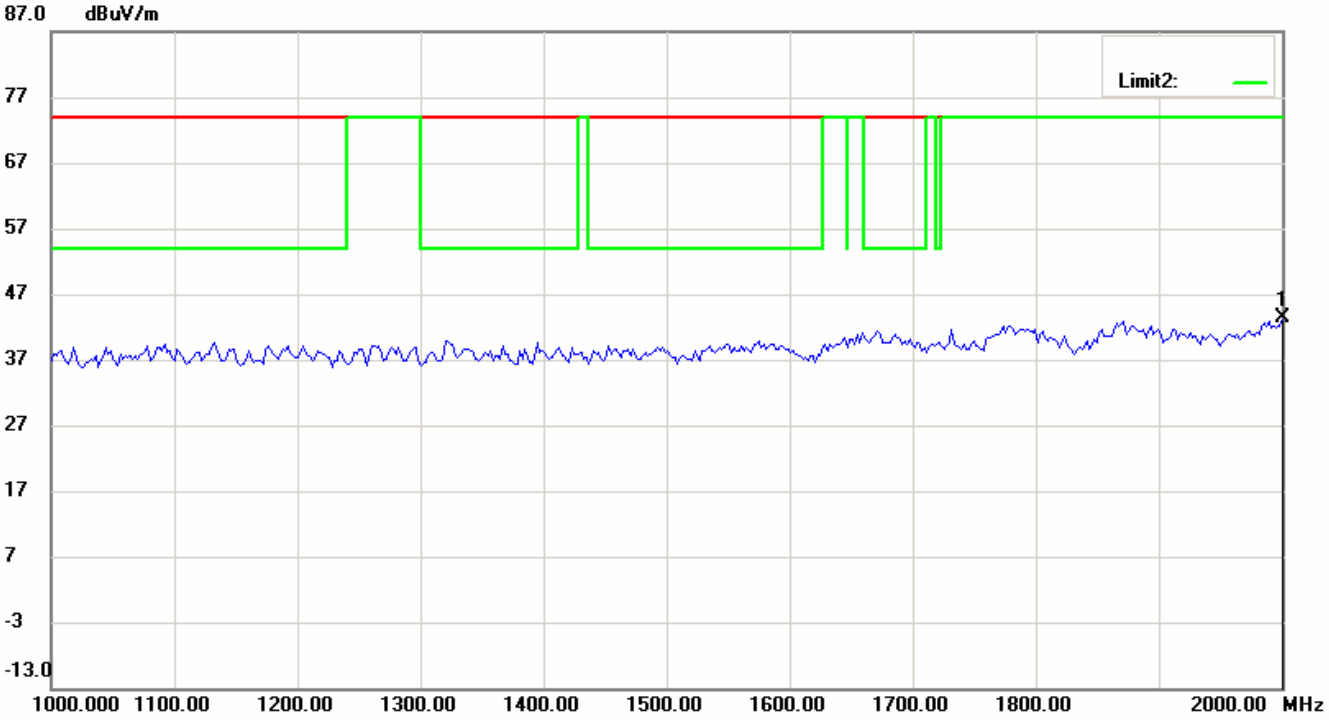
FCC ID: QQGBU-2096-1





Up Line: Peak Limit Line
Down Line: Ave Limit Line
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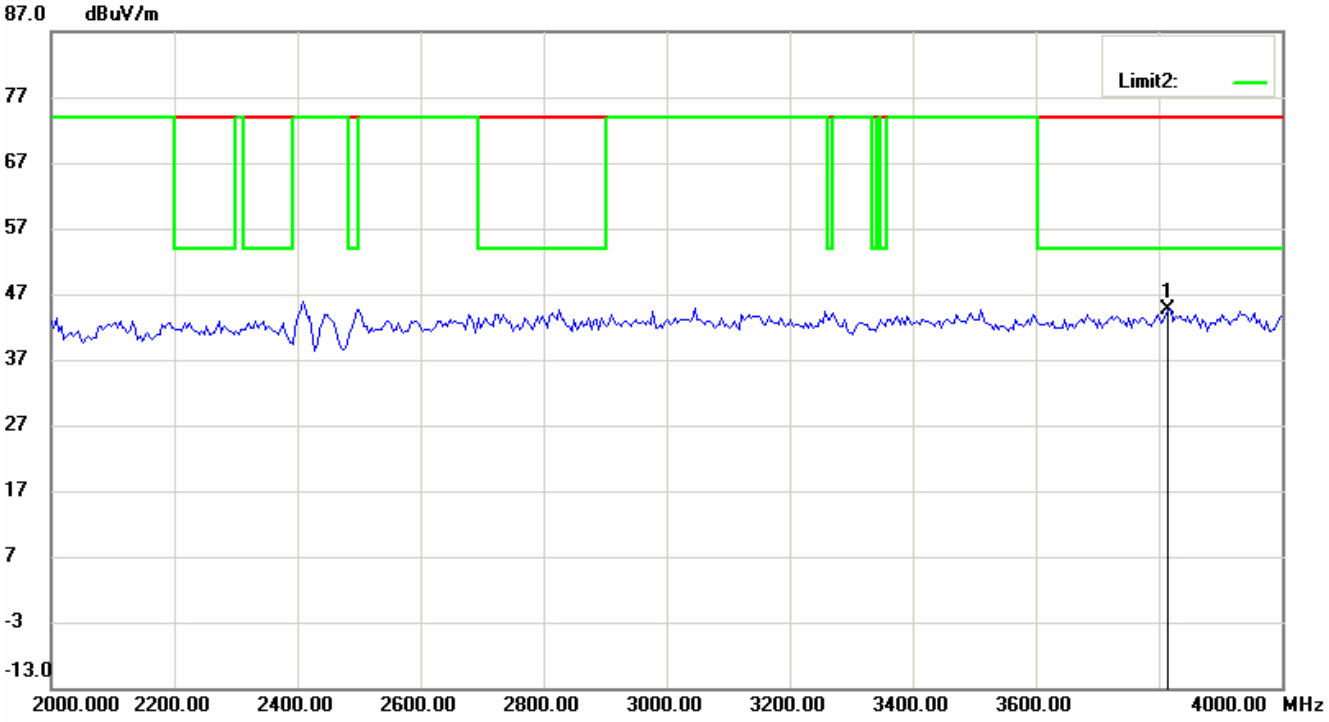
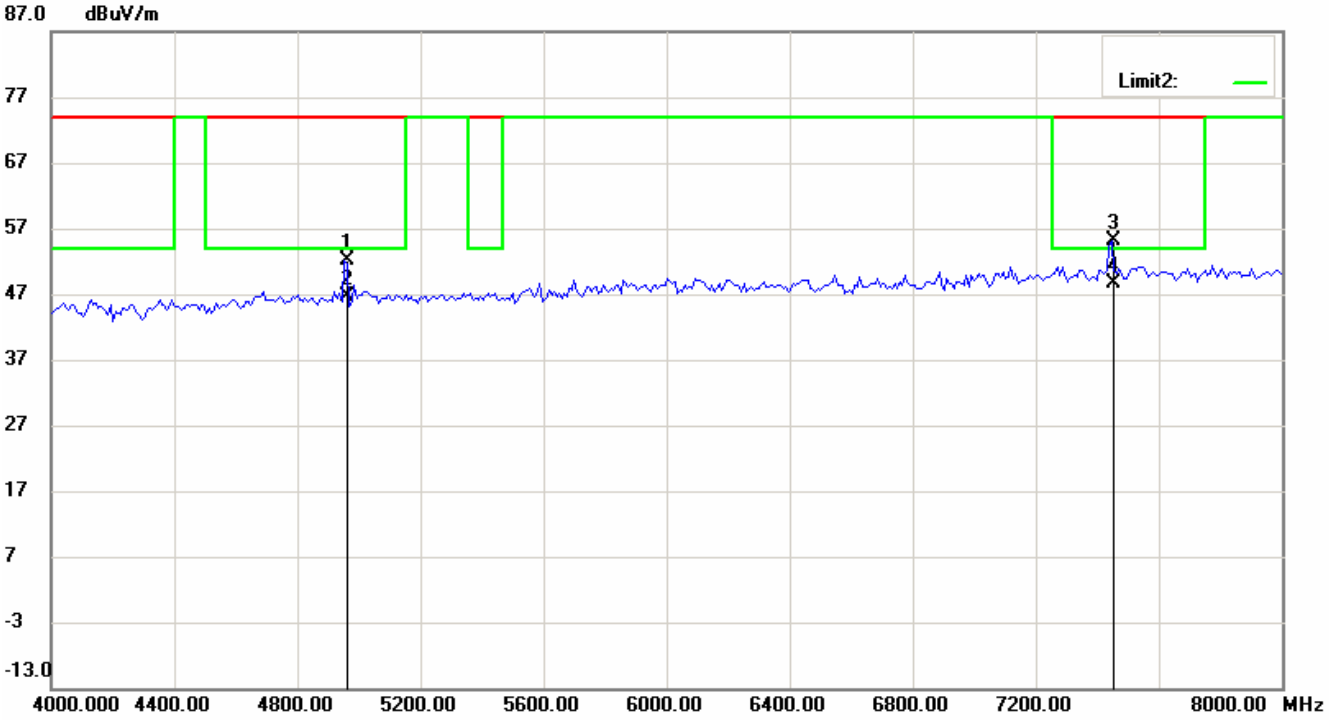
FCC ID: QQGBU-2096-1





Up Line: Peak Limit Line
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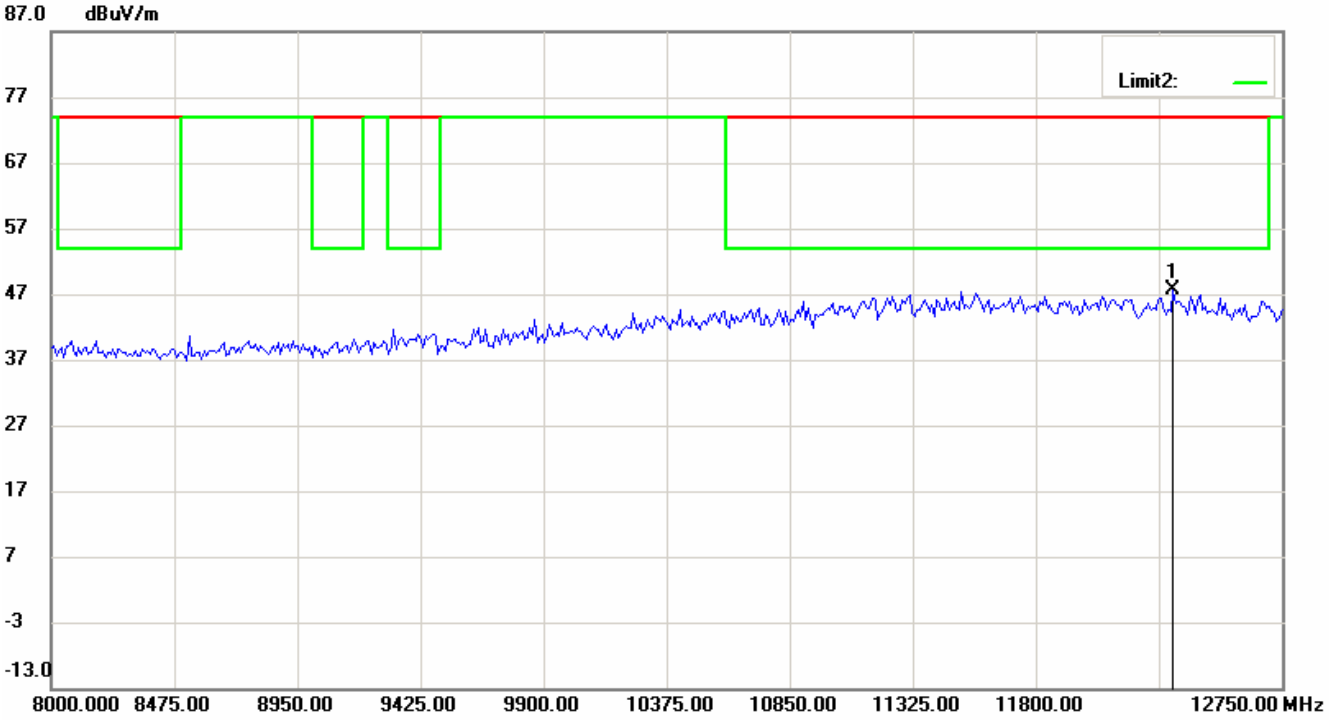
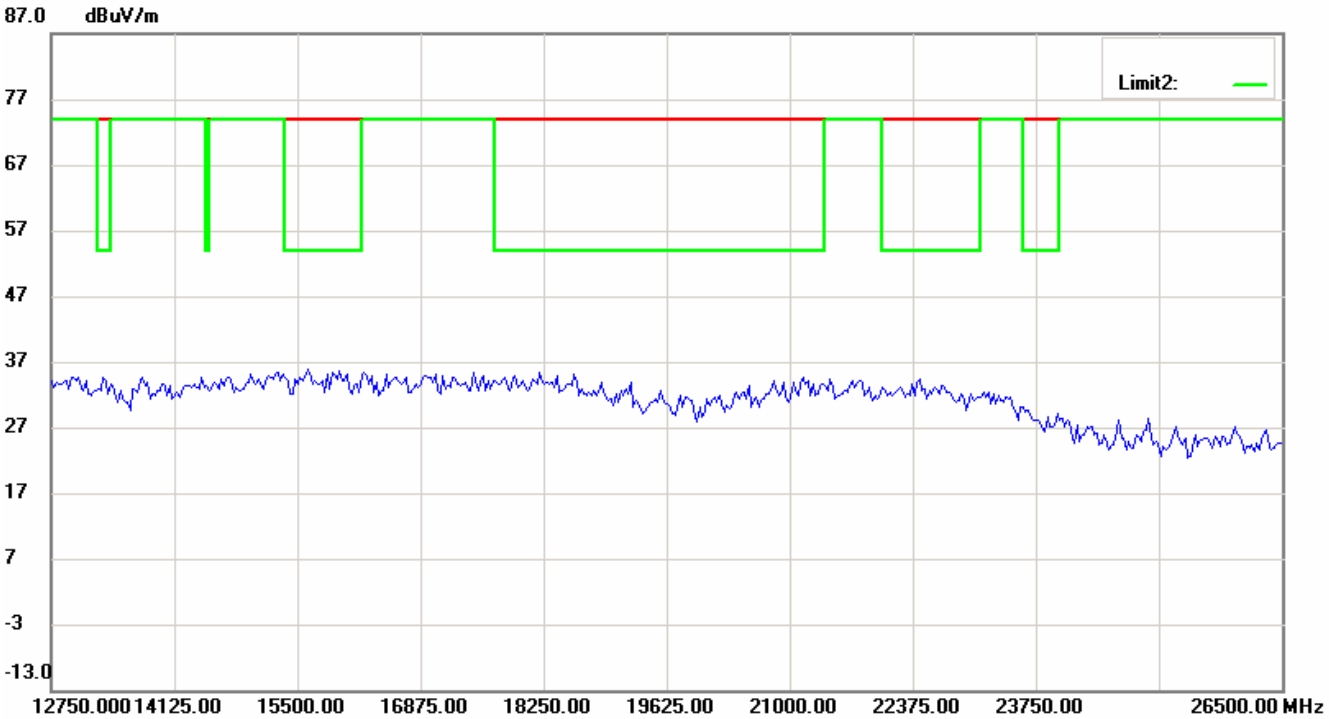
FCC ID: QQGBU-2096-1





Up Line: Peak Limit Line
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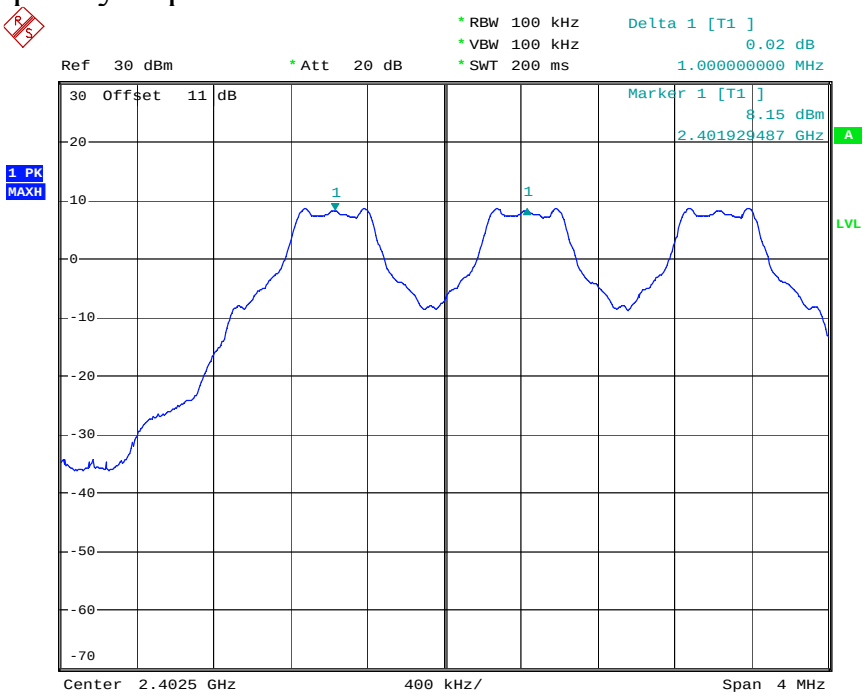
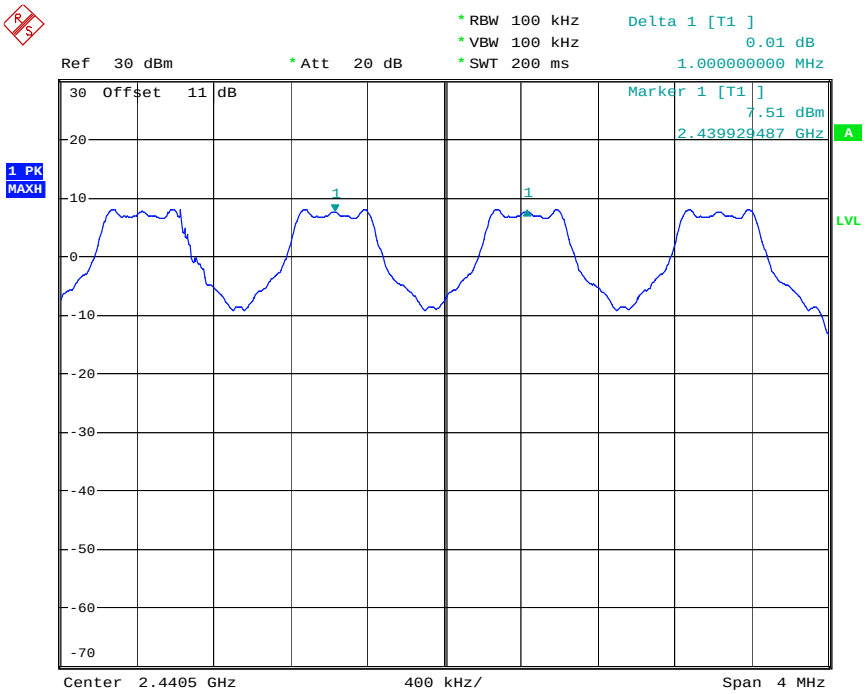
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Carrier Frequency Separation



FREQUENCY SEPARATION

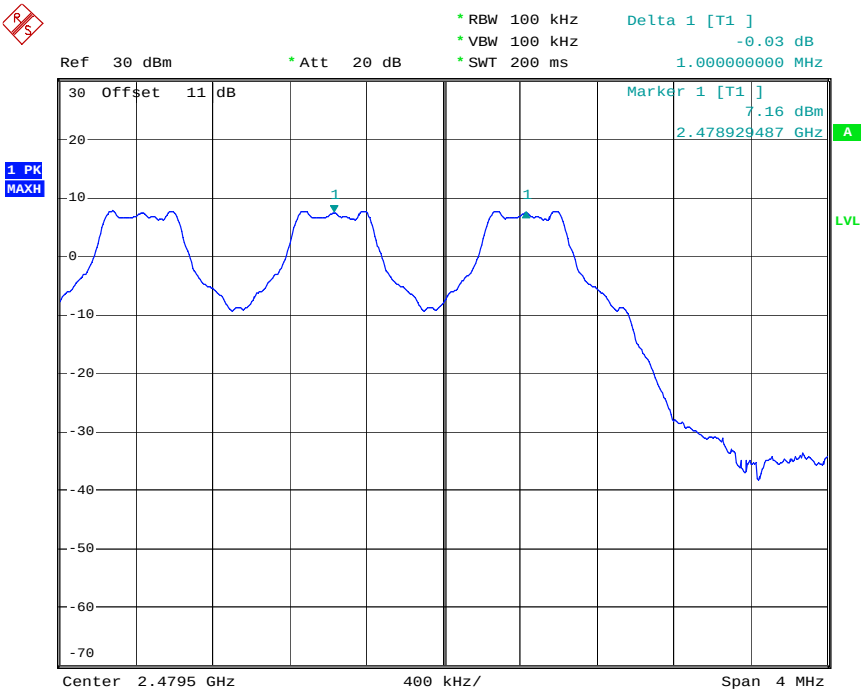
Date: 22.MAY.2008 16:32:33



FREQUENCY SEPARATION

Date: 22.MAY.2008 16:30:19

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

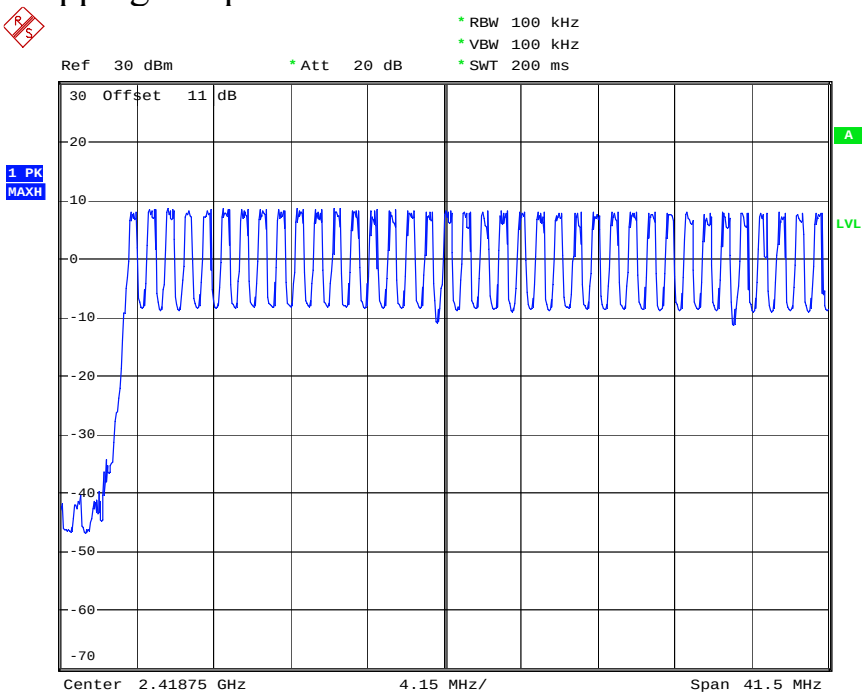


FREQUENCY SEPARATION

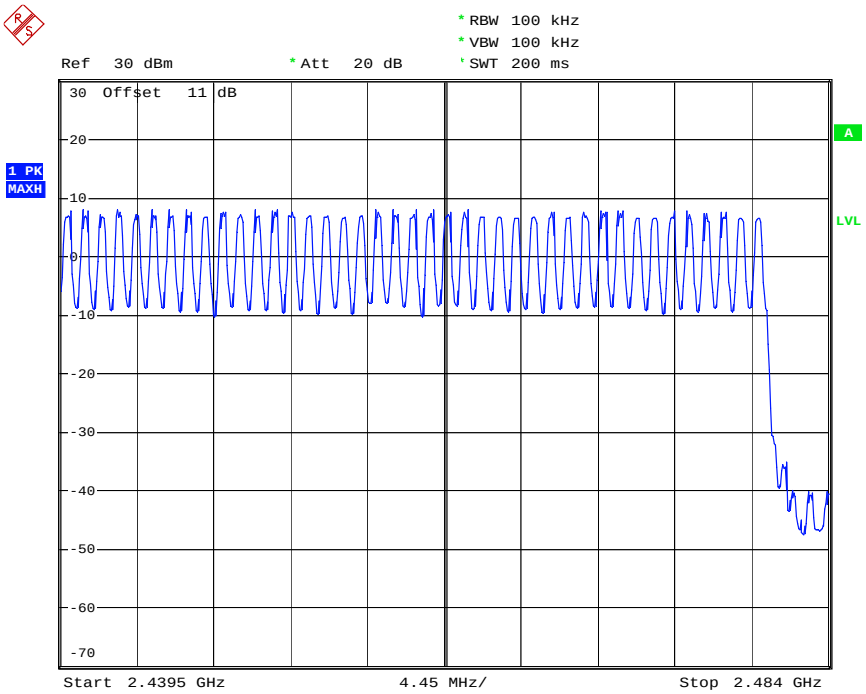
Date: 22.MAY.2008 16:28:07

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Number of Hopping Frequencies



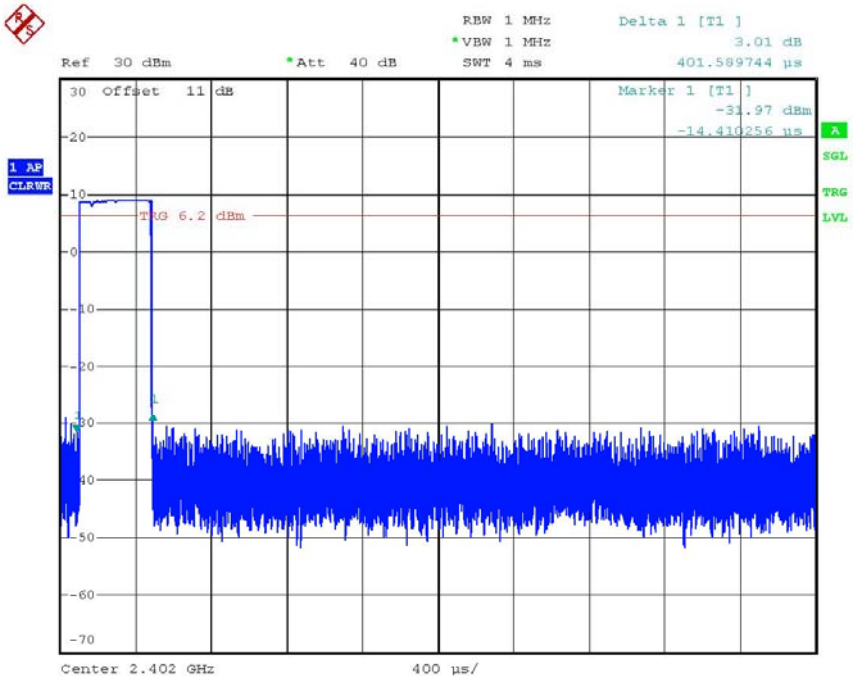
NUMBER OF HOPPING
Date: 22.MAY.2008 15:58:46



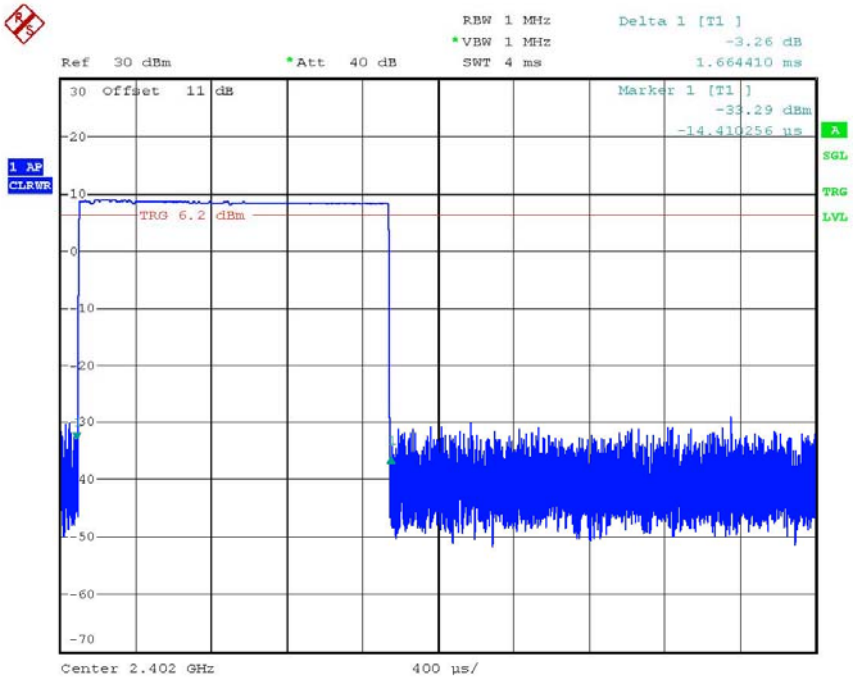
NUMBER OF HOPPING
Date: 22.MAY.2008 16:14:41

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

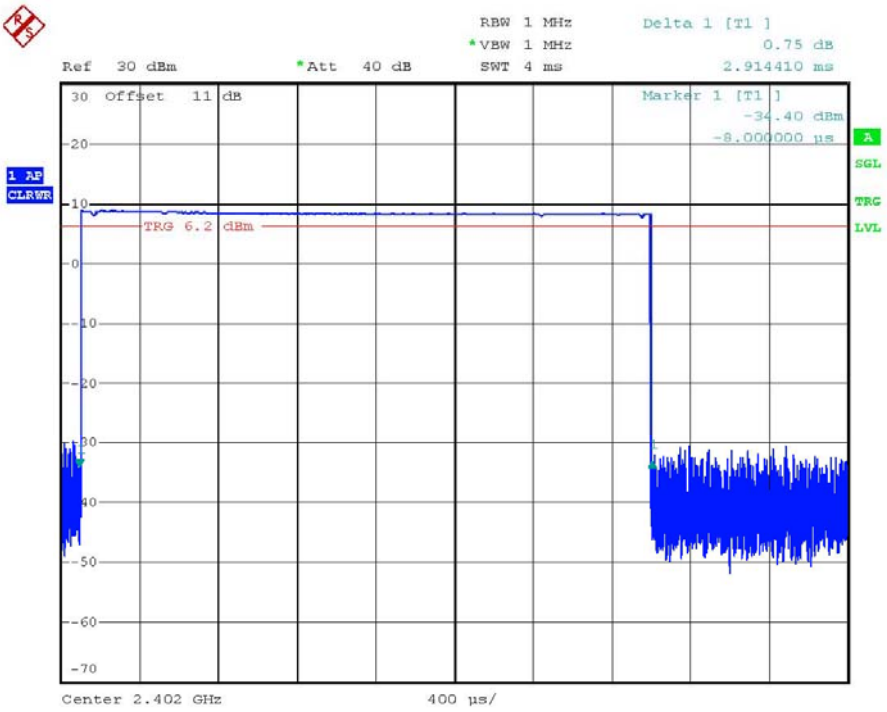
Time of Occupancy (Dwell Time)



DWELL TIME CH0 DH1 0.40159ms * 320= 128.5088ms
Date: 22.MAY.2008 16:03:24

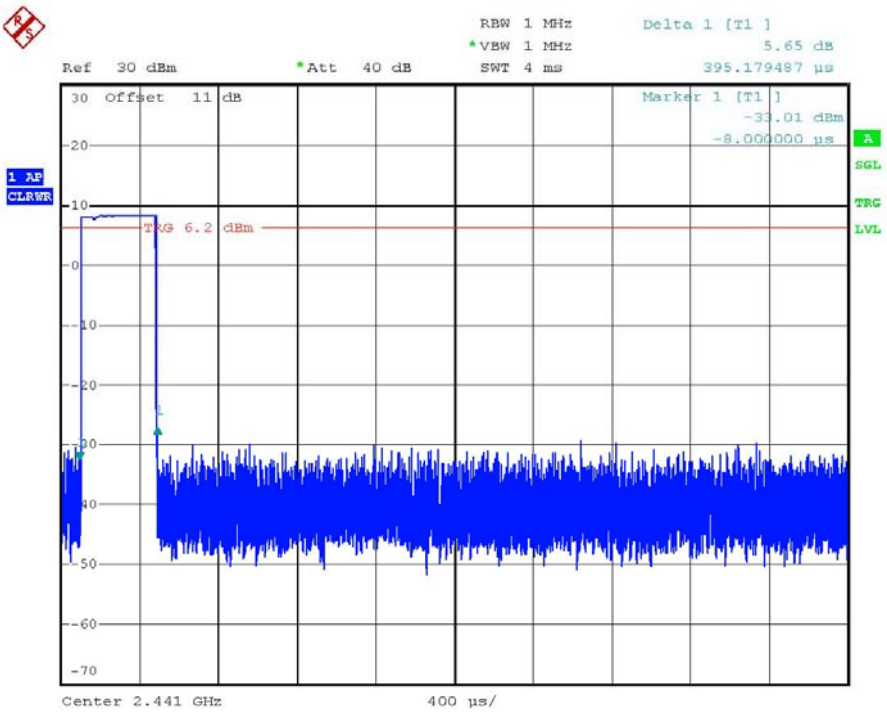


DWELL TIME CH0 DH3 1.664ms * 160= 266.24ms
Date: 22.MAY.2008 16:07:34



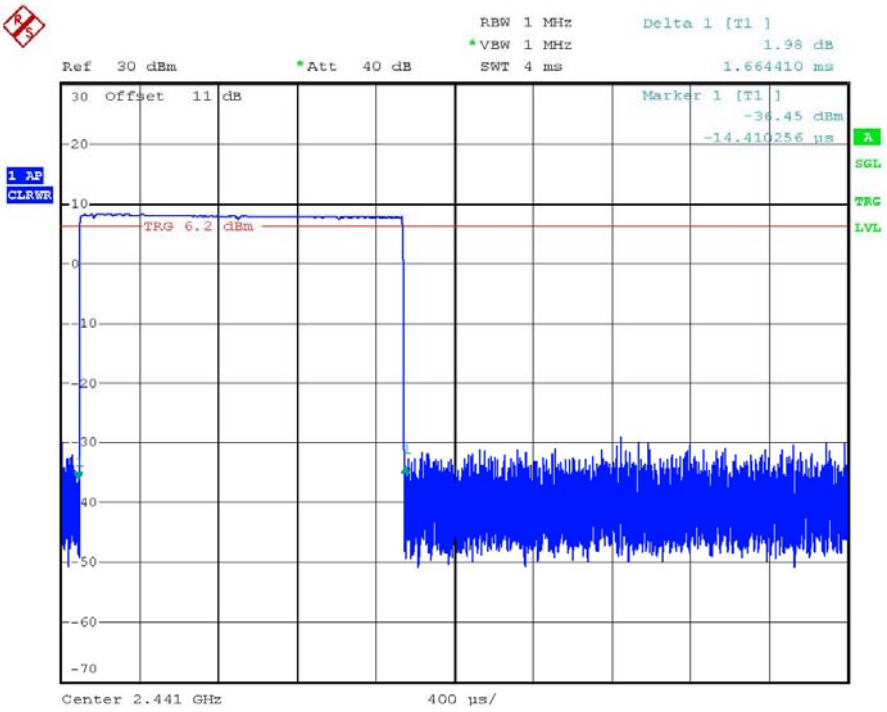
DWELL TIME CH0 DH5 2.914ms * 110= 320.54ms

Date: 22.MAY.2008 16:08:18



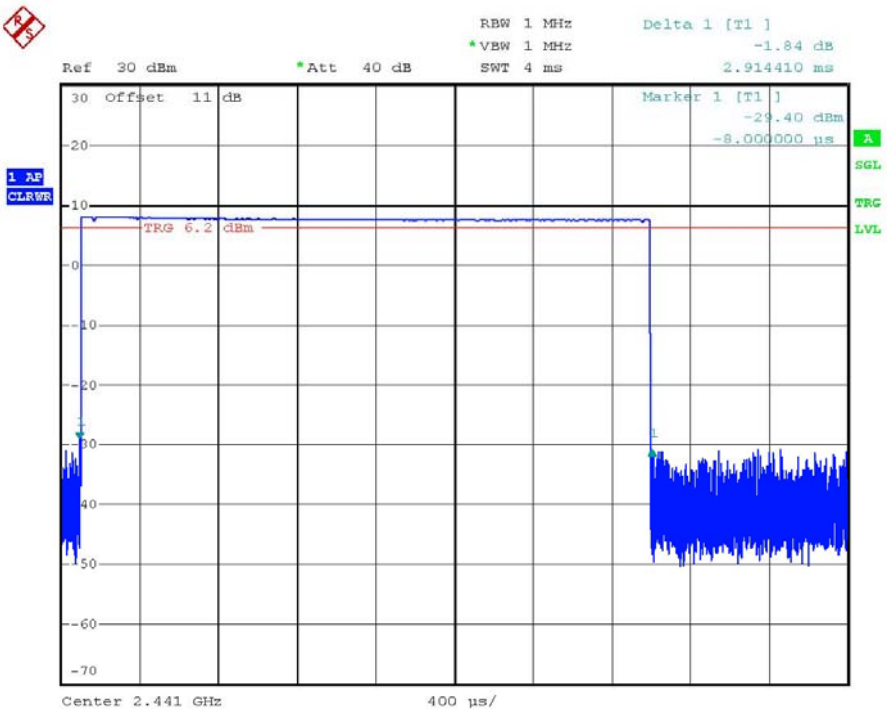
DWELL TIME CH39 DH1 0.39518ms * 320= 126.4576ms

Date: 22.MAY.2008 16:03:50



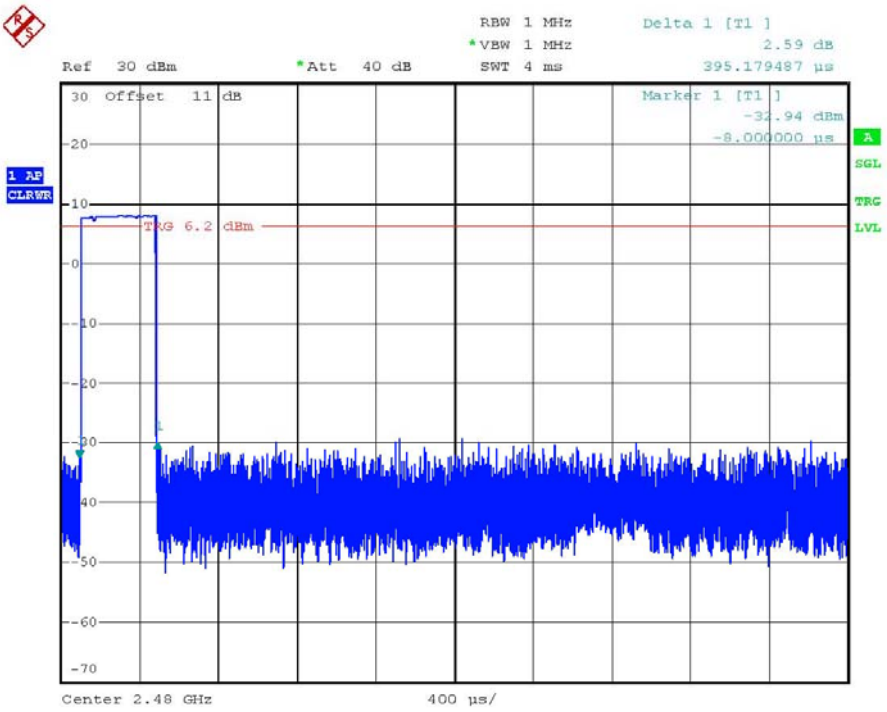
DWELL TIME CH39 DH3 1.664ms * 160= 266.24ms

Date: 22.MAY.2008 16:07:17



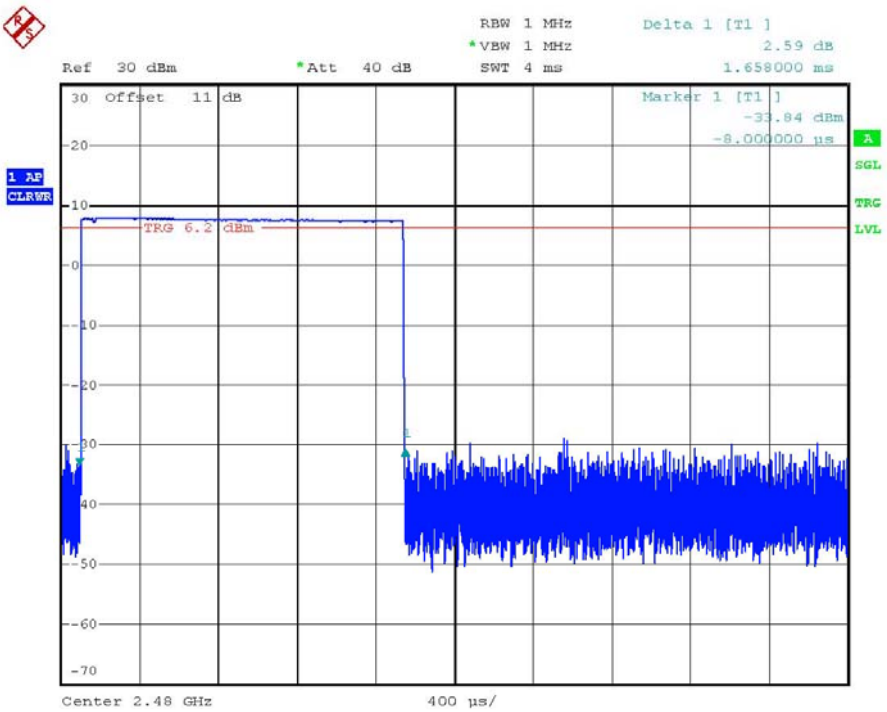
DWELL TIME CH39 DH5 2.914ms * 110= 320.54ms

Date: 22.MAY.2008 16:08:40



DWELL TIME CH78 DH1 0.39518ms * 320= 126.4576ms

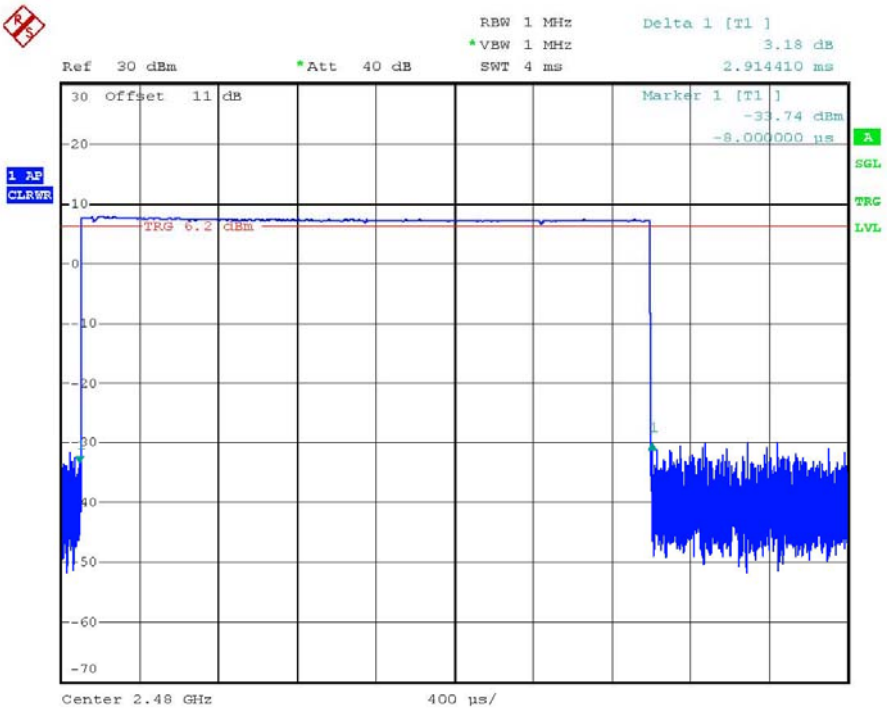
Date: 22.MAY.2008 16:04:10



DWELL TIME CH78 DH3 1.658ms * 160= 265.28ms

Date: 22.MAY.2008 16:06:58

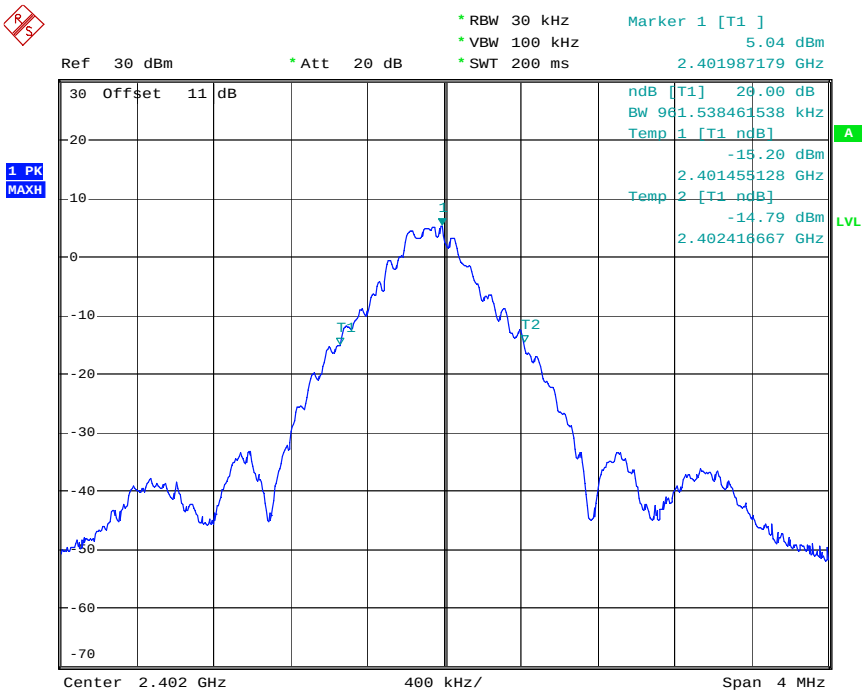
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



DWELL TIME CH78 DH5 2.914ms * 110= 320.54ms
Date: 22.MAY.2008 16:08:59

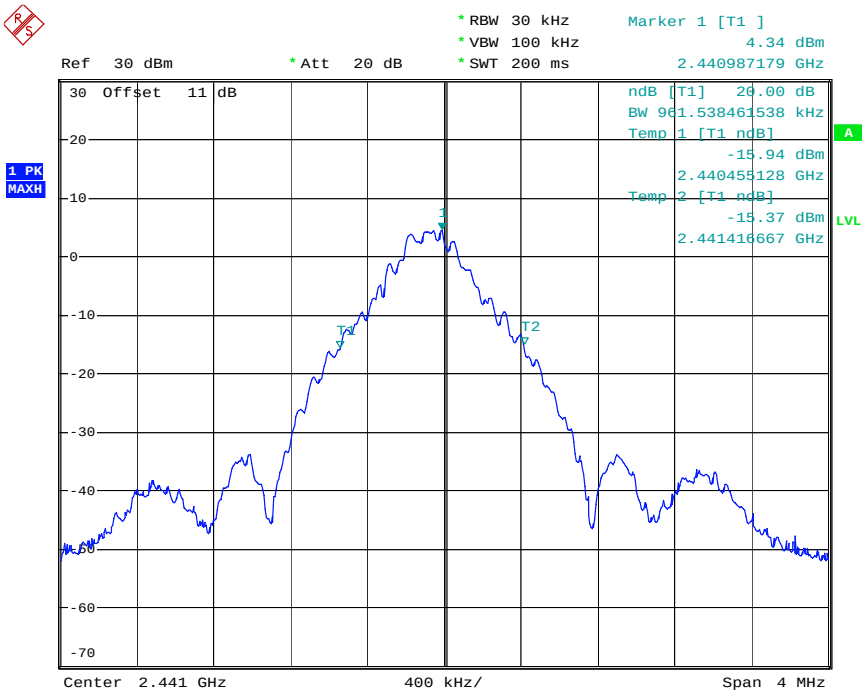
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

20dB Bandwidth



20dB BANDWIDTH CH0

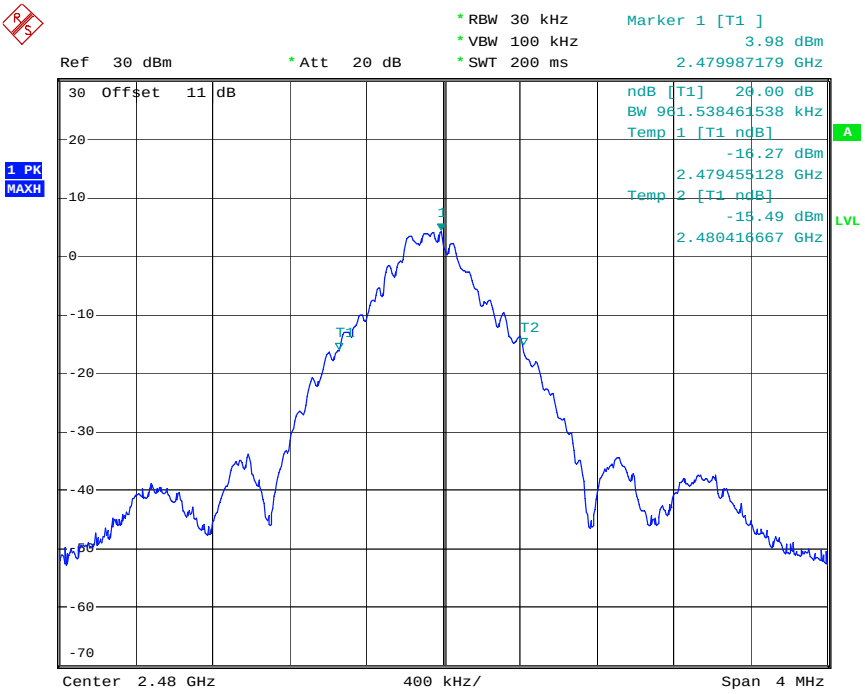
Date: 22.MAY.2008 16:34:37



20dB BANDWIDTH CH39

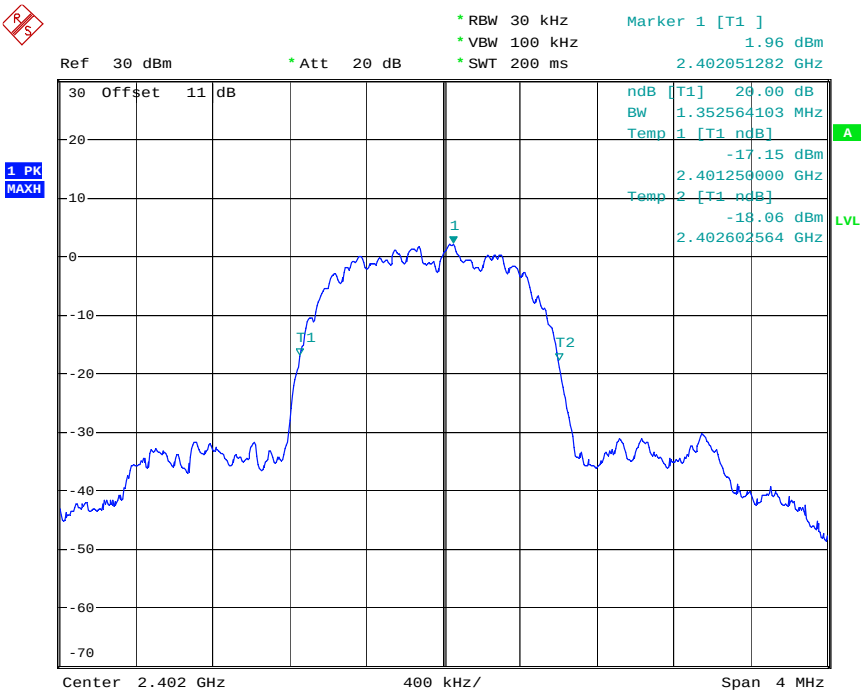
Date: 22.MAY.2008 16:48:47

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



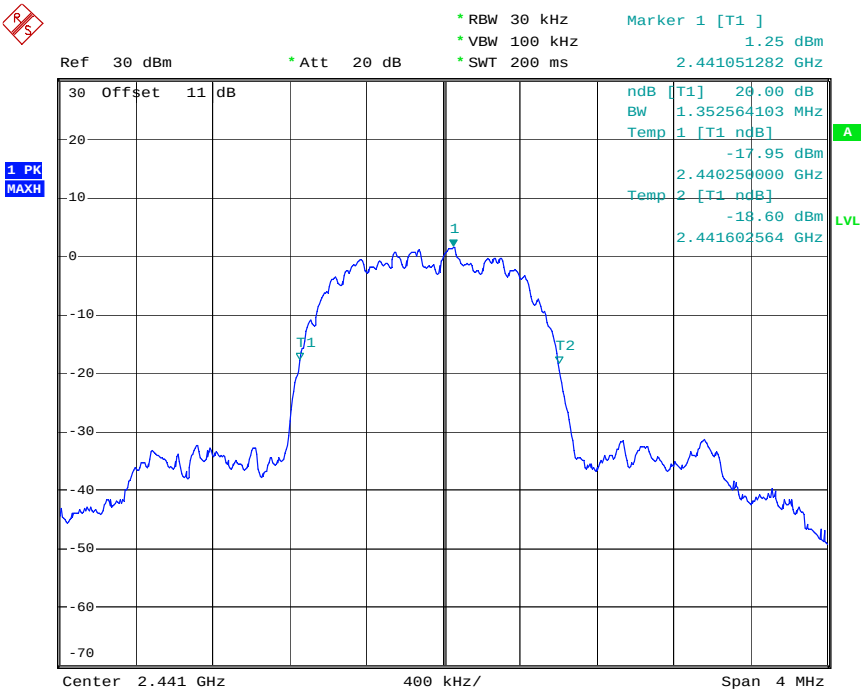
20dB BANDWIDTH CH78

Date: 22.MAY.2008 16:49:08



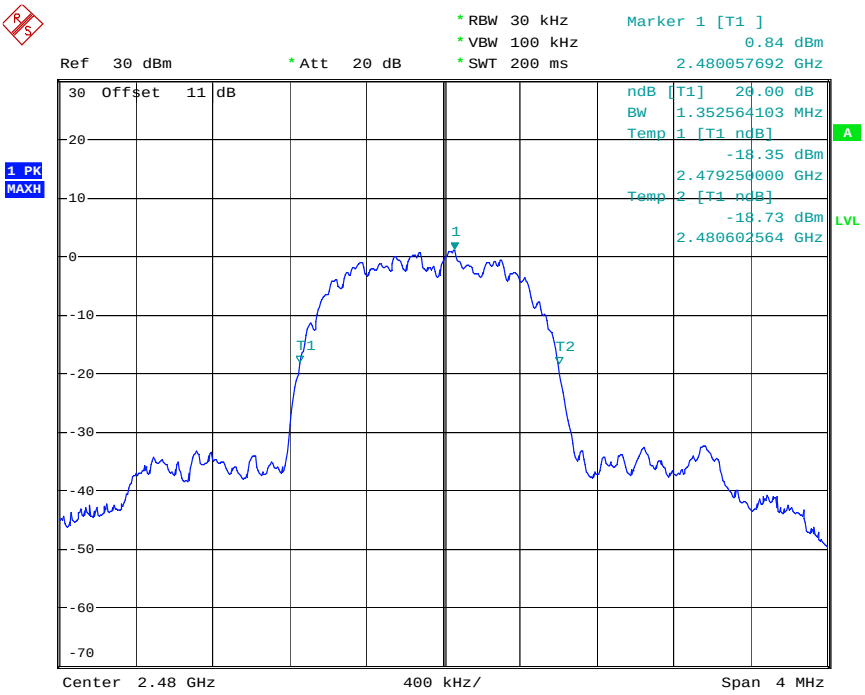
20dB BANDWIDTH CH0 EDR MODE

Date: 22.MAY.2008 16:35:07



20dB BANDWIDTH CH39 EDR MODE

Date: 22.MAY.2008 16:48:30

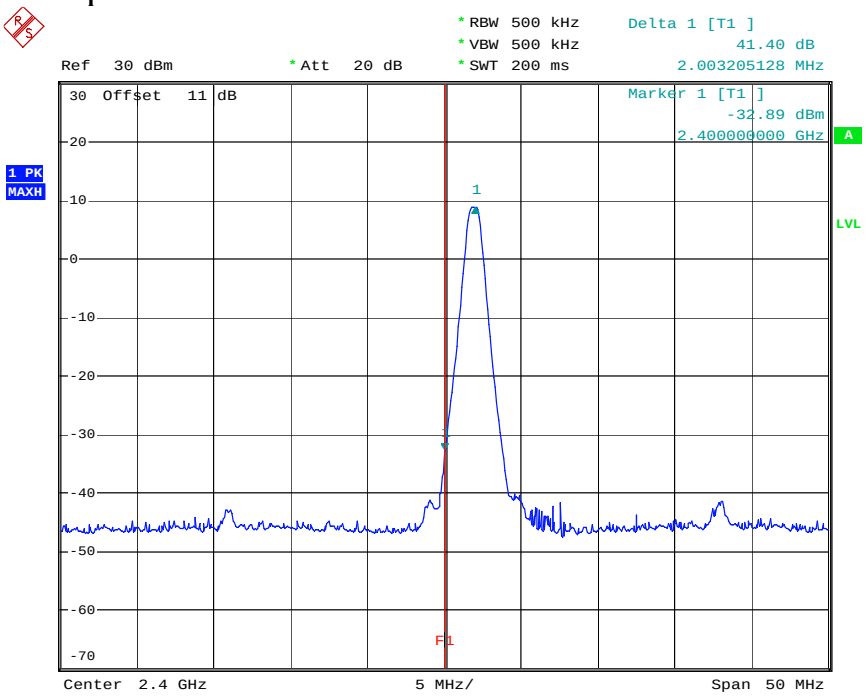


20dB BANDWIDTH CH78 EDR MODE

Date: 22.MAY.2008 16:49:33

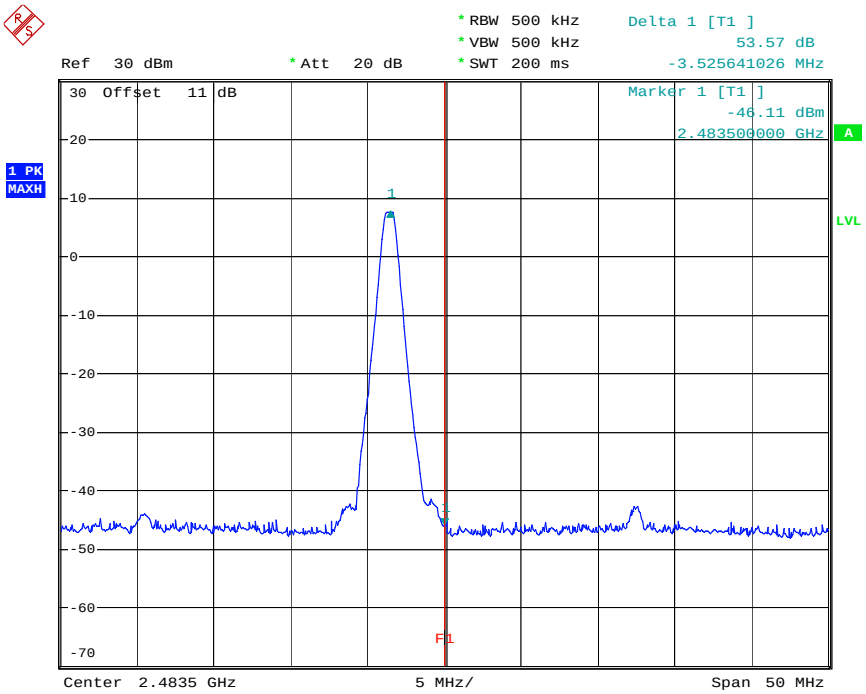
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Band-edge Compliance of RF Conducted Emissions



BANDEDGE CH0

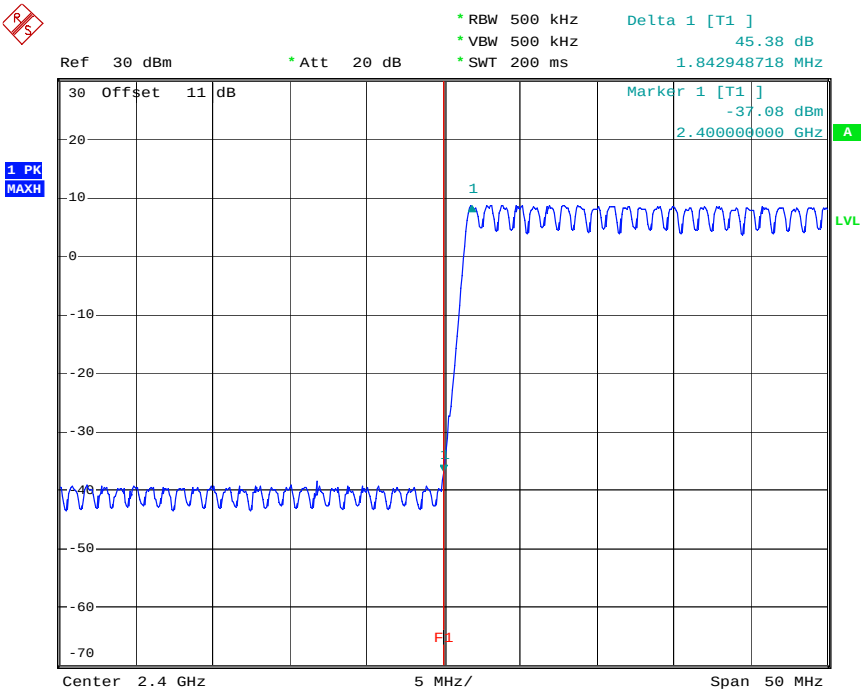
Date: 22.MAY.2008 16:53:12



BANDEDGE CH78

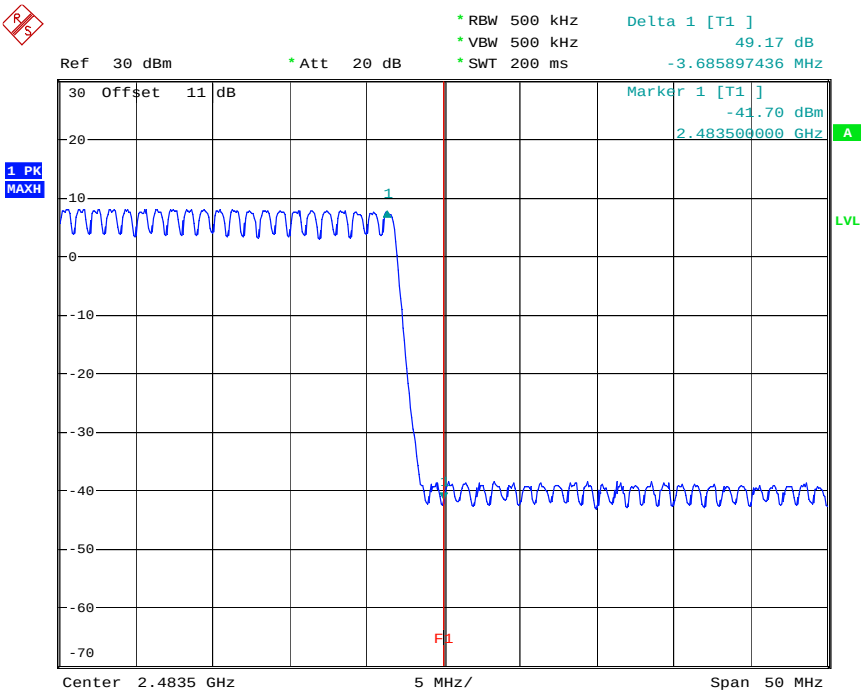
Date: 22.MAY.2008 17:04:56

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



BANDEDGE CH0 HOPPING MODE

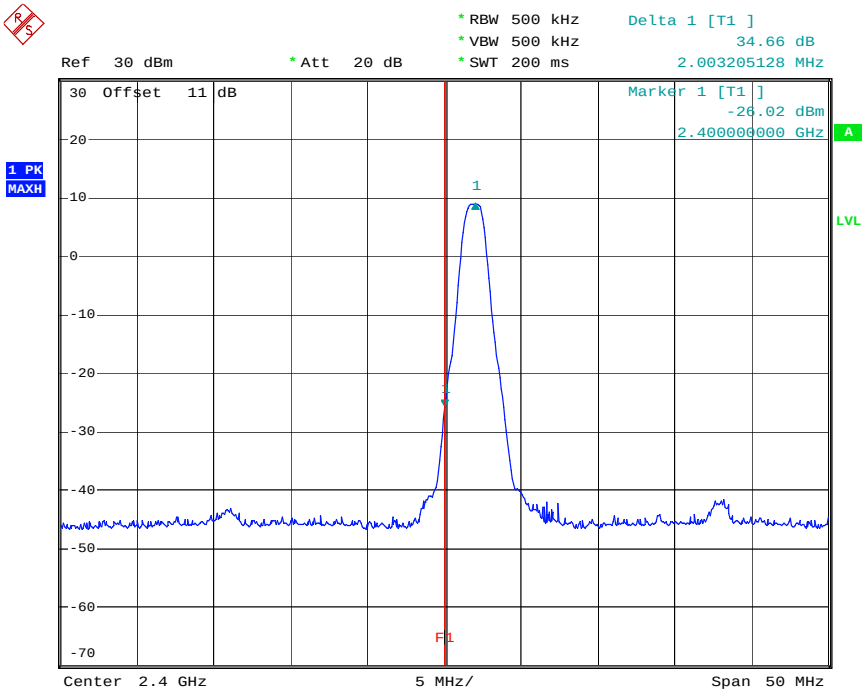
Date: 22.MAY.2008 16:58:51



BANDEDGE CH78 HOPPING MODE

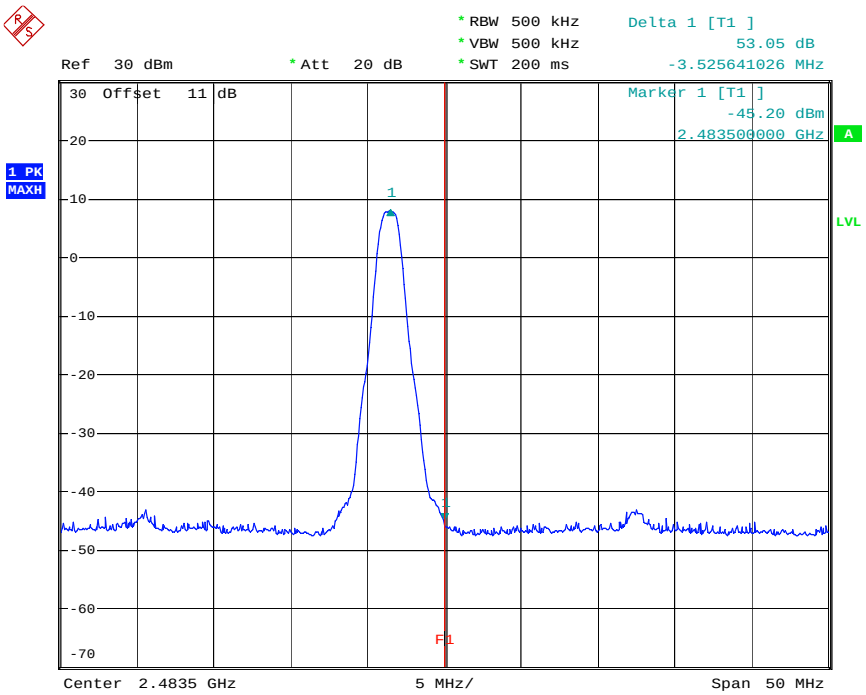
Date: 22.MAY.2008 17:00:36

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



BANDEDGE CH0 EDR MODE

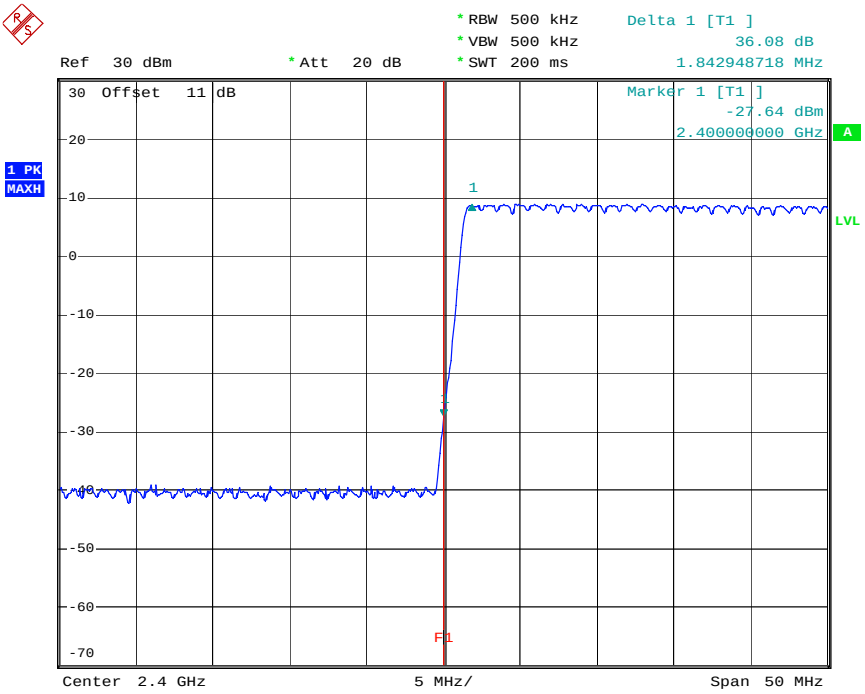
Date: 22.MAY.2008 16:54:38



BANDEDGE CH78 EDR MODE

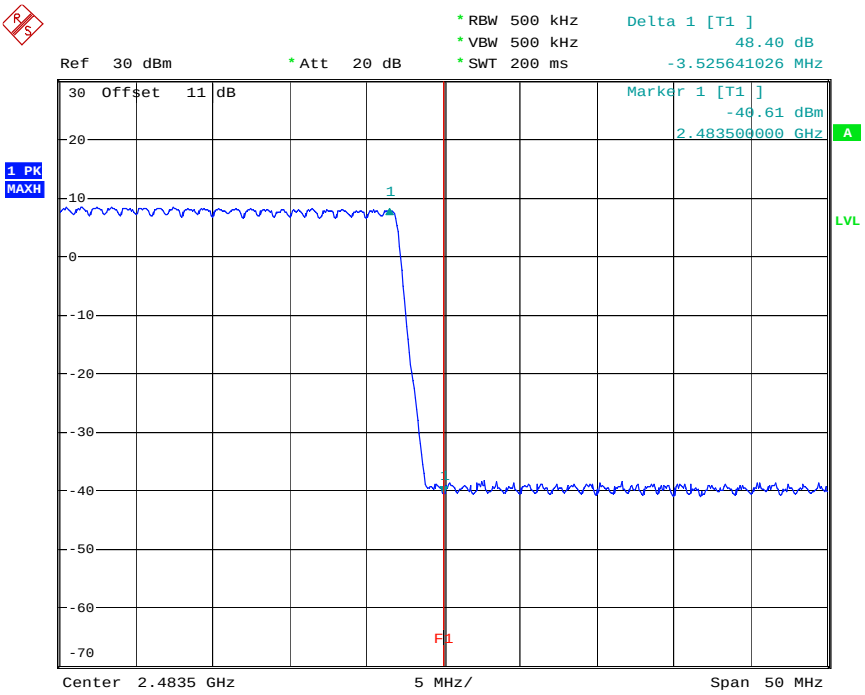
Date: 22.MAY.2008 17:04:36

Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1



BANDEDGE CH0 EDR HOPPING MODE

Date: 22.MAY.2008 16:57:18



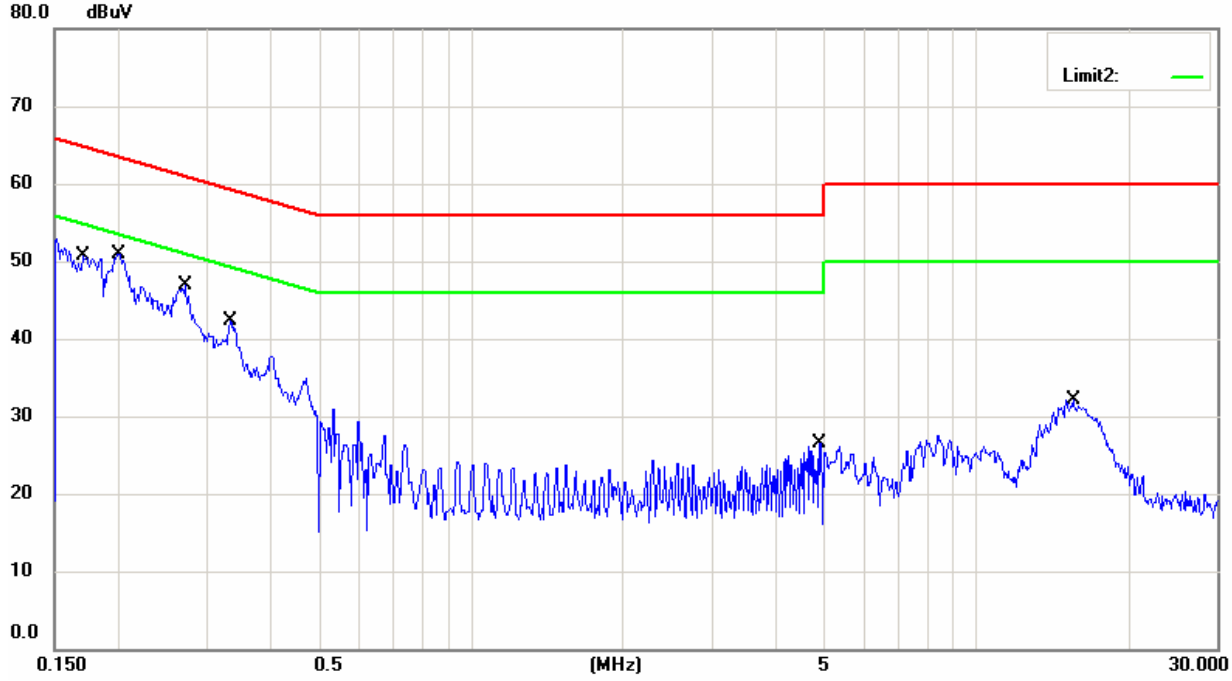
BANDEDGE CH78 EDR HOPPING MODE

Date: 22.MAY.2008 17:03:24

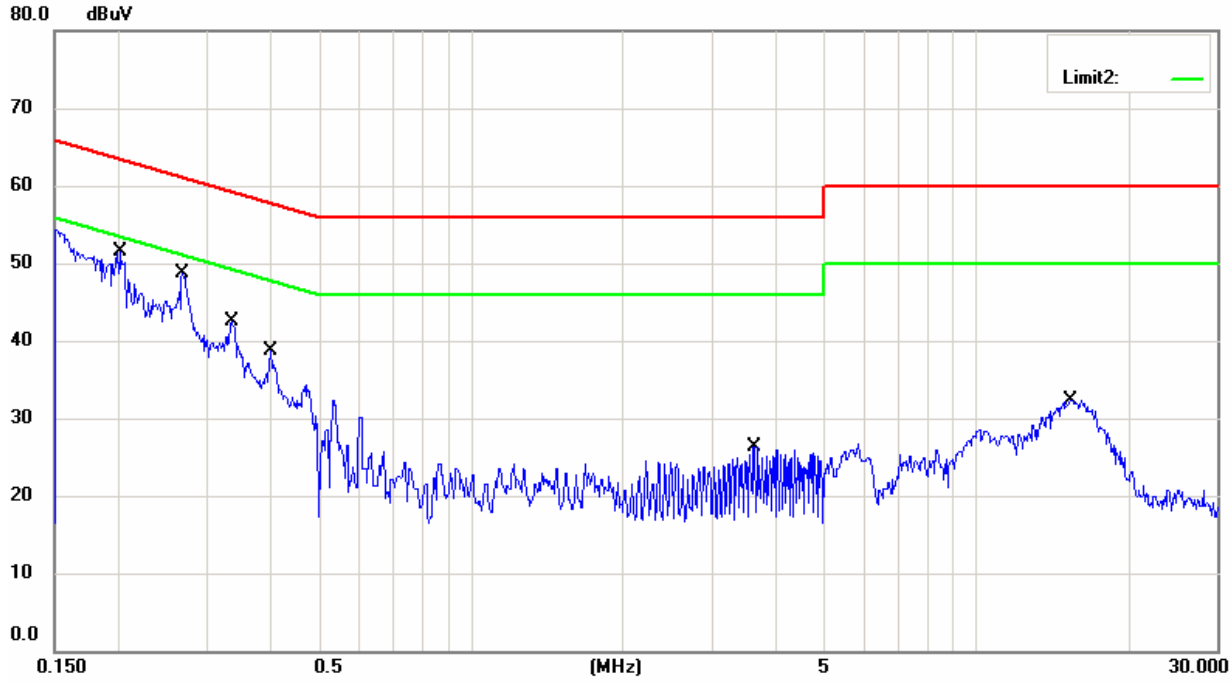
Registration number: W6M20805-9068-P-15
FCC ID: QQGBU-2096-1

Power Line Conducted Emission

LISN N



LISN L1



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

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