ETS Dr.Genz Taiwan PS Co., LTD

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679

A2LA Cert.No.: 2300.01

PCTRB Accredited Type Certification Test House

FCC

TEST - REPORT

FCC RULES PART 15 / SUBPART C

FCC ID: UK9SPICA

Test report no.: W6M20607-7234-P-15

ETS DR.GENZ TAIWAN PS CO., LTD.
6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU, TAIPEI 114, TAIWAN, R.O.C.
PHONE 886-2-66068877 FAX 886-2-66068879

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1 General Information

1.1 Notes

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

The test results of this test report relate exclusively to the item tested as specified in 1.5.
The test report may only be reproduced or published in full.
Reproduction or publication of extracts from the report requires the prior written approval of the ETS DR. GENZ TAIWAN PS CO., LTD.

Tester:

December 07, 2006		Jay Chaing	Jay Chaing
Date	ETS-Lab.	Name	Signature

Technical responsibility for area of testing:

December 07, 2006		Steven Chuang	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 DR. GENZ TAIWAN PS 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-registration number: 2300.01

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679

PCTRB Accredited Type Certification Test House

1.3 Details of approval holder

Name	: Mobinnova Corp.
Street	: 11F, 845, CHUNG SHAN RD.
Town	: TAOYUAN 33059
Country	: TAIWAN, R.O.C.
Telephone	: +886-3-3699098
Fax	: +886-3-3699099

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1.4 Application details

Date of receipt of application : August 30, 2006
Date of receipt of test item : September 01, 2006
Date of test : from September 02, 2006 to December 07, 2006

1.5 General information of Test item

Type of test item : Wireless Pocket PC
Model Number : GP3000
Brand Name : Mobinnova
Hardware : MV
Software : 1.0.0.91 (WWE)、1.0.0.92 (Chinese)
Serial number : without
Photos : see Annex

Technical data

Frequency band : 2.4 GHz – 2.4835 GHz
Frequency (ch A or ch 0) : 2.402GHz
Frequency (ch B or ch 39) : 2.441 GHZ
Frequency (ch C or ch 78) : 2.480 GHz

Transmitter **Unom**

Normal Mode
Power (ch A or ch 0) : Conducted: -7.10 dBm
Power (ch B or ch 39) : Conducted: -6.87 dBm
Power (ch C or ch 78) : Conducted: -6.55 dBm

EDR Mode
Power (ch A or ch 0) : Conducted: -7.46 dBm
Power (ch B or ch 39) : Conducted: -7.24 dBm
Power (ch C or ch 78) : Conducted: -7.15 dBm

Power supply adaptor	Input	: 100 ~ 240 VAC, 50 ~ 60Hz
	Output	: 5VDC, 1 A
battery		: 3.7 ~ 4.2 VDC

Operation modes : duplex

Modulation Type : FHSS

Antenna Type : Printed PIFA Antenna

Antenna gain : 1.27 dBi

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Host device : none

Classification :

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

Manufacturer:
(if applicable)

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

Additional information : ./.

1.6 Test standards

Technical standard : FCC RULES PART 15 Subpart B / SUBPART C § 15.247 : February, 2006

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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 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

Power supply adaptor
Input : 100 ~ 240 VAC, 50 ~ 60Hz
Output : 5VDC, 1 A

Power supply battery : 3.7 ~ 4.2 VDC

Extreme conditions parameters : test voltage : -- extreme
min : -- V
max :-- V

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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	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	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	IMPULS-BEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	In House Certificate	
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	ABSORPTIONS-MESSWANDLER-ZANGE	2005/10/24	2007/10/23
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2006/8/17	2007/8/16
ETSTW-CE 012	Dual-Phase-V-Network	NNB-2/16Z	03/10201	Telemeter	2006/6/13	2007/6/12
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	ANTENNA	HL025	352886/001	R&S	2006/5/4	2008/5/3
ETSTW-RE 018	ANTENNA	AT4560	27212	AR	2004/11/8	2007/11/7
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2006/10/11	2007/10/10
ETSTW-RE 027	Passive Loop Antenna	6512	34563	EMCO	2004/6/30	2007/6/29
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2006/5/26	2008/5/25
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2006/5/26	2008/5/25
ETSTW-RE 030	Double-Ridged Waveguide Horm Antenna	3117	35224	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 033	4CH 1GHz 5GS/s DSO	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2006/7/27	2007/7/26
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2006/10/11	2007/10/10
ETSTW-RE 042	ANTENNA	HK116	100172	R&S	2005/1/14	2007/1/13
ETSTW-RE 043	ANTENNA	HL223	100166	R&S	2006/5/8	2008/5/7
ETSTW-RE 044	ANTENNA	HL050	100094	R&S	2006/5/29	2008/5/28

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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	2005/5/19	2007/5/18
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2006/7/28	2007/7/27
ETSTW-EMS 002	Frequency Converter	YF-6020	308014	T-Power	Function Test	
ETSTW-EMS 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2005/12/8	2008/12/8
ETSTW-EMS 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2007/12/7
ETSTW-GSM 01	SIM Simulator	IT3	B2004-50106	ORGA	2006/7/26	2007/7/25
ETSTW-GSM 02	Universal Radio Communication Tester	CMU 200	109439	R&S	2006/10/18	2007/10/17
ETSTW-GSM 03	Agilent 8960 Test Set 1	E5515C	GB44052675	Agilent	2006/6/26	2008/6/25
ETSTW-GSM 04	Agilent 8960 Test Set 2	E5515C	GB44052665	Agilent	2006/7/13	2008/7/12
ETSTW-GSM 05	Agilent 8960 Test Set 3	E5515C	GB44052652	Agilent	2006/7/16	2008/7/15
ETSTW-GSM 06	Agilent 8960 Test Set 4	E5515C	GB44052684	Agilent	2006/7/4	2008/4/3
ETSTW-GSM 07	Agilent 8960 Test Set 5	E5515C	GB44052658	Agilent	2006/7/12	2008/7/11
ETSTW-GSM 08	Agilent 8960 Test Set 6	E5515C	GB44052666	Agilent	2006/7/6	2008/7/5
ETSTW-GSM 09	Controller PC	Dell GX 270	700F61J	Dell	Function Test	
ETSTW-GSM 10	Combiner Wessex / Anite	B4605/100	0053	Wessex / Anite	2006/7/13	2008/7/12
ETSTW-GSM 11	GSM 850,900,1800,1900 Test system	TS8950G	101087	R&S	2005/11/1	2007/4/30
ETSTW-GSM 12	Acoustical Calibrator	4231	2463874	Brüel&Kjær	2006/7/26	2007/7/25
ETSTW-GSM 13	Conditioning Amplifier	2690	2437856	Brüel&Kjær	2006/7/26	2007/7/25
ETSTW-GSM 15	Mouth Simulator	4227	2462516	Brüel&Kjær	2006/7/26	2007/7/25
ETSTW-GSM 16	TEMP.&HUMIDITY CHAMBER	GTH-120-40-1P-U	MAA0501002	GIANT FORCE	2005/12/29	2006/12/28
ETSTW-GSM 18	AUDIO ANALYZER	UPL16	100173	R&S	2006/10/28	2007/10/27
ETSTW-GSM 23	SPLITTER	4901.19.A	None	SUHNER	Function Test	
ETSTW-GSM 24	Vibration Testing System	VS-100V	5494	Vibration	2005/12/20	2006/12/19
ETSTW-GSM 29	Microphone	4192	2458739	Brüel&Kjær	2006/7/26	2007/7/25
ETSTW-GSM 30	Ear Simulator	4195	2457416	Brüel&Kjær	2006/7/26	2007/7/25

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 UUT 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 ETS Dr. Genz Taiwan PS 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

ANTENNA & GROUND:
This unit uses Printed PIFA Antenna.

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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 And Receiver L.O.	15.109	☒	☒	☐
Power Line Conducted Emission	15.207(a)	☒	☒	☐

The follows is intended to leave blank.

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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 0 [dBm]	**Channel 39** [dBm]	**Channel 78** [dBm]
T_{nom}= 23°C	V_{nom} = 120 V	-7.10	-6.87	-6.55
Measurement uncertainty		< 3 dB		

(EDR Mode)

Test conditions		**Conducted Power**		
		Channel 0 [dBm]	**Channel 39** [dBm]	**Channel 78** [dBm]
T_{nom}= 23°C	V_{nom} = 120 V	-7.46	-7.24	-7.15
Measurement uncertainty		< 3 dB		

Test conditions		**Radiated Power**		
		Channel 0 [dBm]	**Channel 39** [dBm]	**Channel 78** [dBm]
T_{nom}= 23°C	V_{nom} = 120 V	--	--	--
Measurement uncertainty		< 3 dB		

Test conditions T_{nom}= 23°C, V_{nom}= 120 V	Signal Field strength TX highest power mode
Frequency[MHz]	dBµV/m
2441	89.08
Measurement uncertainty	< 3 dB

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Limits:

Frequency MHz	Number of hopping channels			
	≥ 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

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

3.2 Equivalent isotropic radiated power

FCC Rule: 15.239(b), 15.35

Because using an internal 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 manufactrer and the maximum available output power of the EUT.

In this arrangement the EUT fulfils the requirements of the FCC rules § 15.247, subpart C, section b. This unit uses an internal antenna. There is no provision for an external antenna (see photo).

3.3 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.

3.4 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

89.08 dBµV/m- 20 dB= 69.08 dBµV/m

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)

89.08 dBµV/m

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

No duty cycle correction was added to the reading

89.08 dBµV/m- 20 dB= 69.08 dBµV/m

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

Comment: See attached diagrams in Appendix A.

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3.5 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

Comment: See attached diagrams in Appendix B.

3.6 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“.

Summary table with radiated data of the test plots

Channel 0

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	1604.3172	53.39	-6.98	PK	46.41	54	7.59	150	199
	2400.0000	60.55	2.06	PK	62.61	69.08	26.47	180	216
	4804.0064	52.04	4.49	PK	56.53	74	17.47	165	208
	4804.0064	35.57	4.49	AV	40.06	54	13.94	165	208

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	1604.3172	53.29	-6.98	PK	46.31	54	7.69	145	201
	2400.0000	58.11	2.06	PK	60.17	69.08	8.91	180	216
	4804.0064	44.78	4.49	PK	49.27	54	4.73	160	210

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Channel 39

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	1001.2161	55.98	-10.02	PK	45.96	54	8.04	180	166
	1628.1461	54.19	-6.85	PK	47.34	69.08	21.74	160	189
	4881.9200	51.90	4.82	PK	56.72	74	17.28	155	216
	4881.9200	34.35	4.82	AV	39.17	54	14.83	155	216

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2763.2146	48.68	-0.22	PK	48.46	54	5.54	155	261
	4881.9200	45.00	4.82	PK	49.82	54	4.18	150	220
	6327.0876	46.63	6.09	PK	52.72	69.08	16.36	140	224

Channel 78

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	1655.3750	53.83	-6.78	PK	47.05	69.08	22.03	186	172
	2483.5000	38.81	-0.74	AV	38.07	54	15.93	145	196
	2483.5000	58.41	-0.74	PK	57.67	74	16.33	145	196
	4953.2171	46.89	4.42	PK	51.31	54	2.69	160	223

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2483.5241	51.78	-0.74	PK	51.04	69.08	18.04	145	196
	5947.1268	45.84	5.5	PK	51.34	69.08	17.74	165	208
	7533.9671	44.28	6.82	PK	51.10	54	2.90	125	276

Note
1. **Correction Factor = Antenna factor + Cable loss - Preamplifier**
2. **The formula of measured value as: Test Result = Corrected Reading + Correction Factor**
3. **Detector function in the form : P = Peak, QP = Quasi Peak, AV = Average**

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 055

Comment: See attached diagrams in Appendix B.

3.7 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} = 120 V	0.9936 MHz	
Measurement uncertainty		< 10 Hz	

Test conditions		**Channel Separation**	
		Channel 39	**Channel 39+1**
T_{nom}= 23°C	V_{nom} = 120 V	0.9952 MHz	
Measurement uncertainty		< 10 Hz	

Test conditions		**Channel Separation**	
		Channel 78	**Channel 78+1**
T_{nom}= 23°C	V_{nom} = 120 V	0.9936 MHz	
Measurement uncertainty		< 10 Hz	

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

Comment: See attached diagrams in Appendix C.

3.8 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}= 120 V	normal transmitting	79

Limits:

Frequency Range MHz	Limit			
	20dB Bandwidth		20dB Bandwidth < 250 kHz	20dB Bandwidth ≥ 250 kHz
	≤ 1MHz			
902-928 MHz	--	--	≥ 50	≥ 25
2400-2483.5	≥ 15	≥ 15	--	--
5725-5850.0 MHz	≥ 75	--	--	--

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

Comment: See attached diagrams in Appendix D.

3.8.1 Pseudorandom Frequency Hopping Sequence

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

3.8.2 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.

3.8.3 System Receiver Hopping Capability

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

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FCC ID : UK9SPICA

3.9 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 periode**	**Time of Occupancy**
T_{nom}= 23°C V_{nom} = 120 V Channel 0	normal transmitting-DH 1		146.179 ms
	normal transmitting-DH 3		209.962 ms
	normal transmitting-DH 5		152.082 ms
Measurement uncertainty	< 1 µs		

Test conditions	**Operating mode**	**Measurement periode**	**Time of Occupancy**
T_{nom}= 23°C V_{nom} = 120 V Channel 39	normal transmitting-DH 1		140.672 ms
	normal transmitting-DH 3		214.956 ms
	normal transmitting-DH 5		155.870 ms
Measurement uncertainty	< 1 µs		

Test conditions	**Operating mode**	**Measurement periode**	**Time of Occupancy**
T_{nom}= 23°C V_{nom} = 120 V Channel 78	normal transmitting-DH 1		139.279 ms
	normal transmitting-DH 3		214.956 ms
	normal transmitting-DH 5		150.552 ms
Measurement uncertainty	< 1 µs		

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FCC ID : UK9SPICA

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

Comment: See attached diagram in Appendix E, which show the On-time and the number of counted events during the measurement period.

3.10 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 0	**Channel 39**	**Channel 78**
T_{nom}= 23°C	V_{nom} = 120 V	0.95513 MHz	0.96154 MHz	0.95513 MHz
Measurement uncertainty		< 10 Hz		

(EDR Mode)

Test conditions		**20 dB Bandwidth**		
		Channel 0	**Channel 39**	**Channel 78**
T_{nom}= 23°C	V_{nom} = 120 V	1.27564 MHz	1.27564 MHz	1.27564 MHz
Measurement uncertainty		< 10 Hz		

Limits:

Frequency Range / MHz	Number of channels	Limit
902-928	< 50	< 250 kHz
	49 ≥ 25	500 kHz ≥ 250 kHz
2400-2483.5	≥ 15	not determined
5725-5850	75	≤ 1 MHz

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

Comment: See attached diagrams in Appendix F.

3.10.1 System Receiver Input Bandwidth

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

3.11 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} = 120 V	-- dB	-- dB
Measurement uncertainty		< 100 Hz	

Test conditions		Attenuation at or outside band-edges Hopping Fequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 120 V	38.34 dB	41.17 dB
Measurement uncertainty		< 100 Hz	

(EDR Mode)

Test conditions		Attenuation at or outside band-edges Single Frequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 120 V	-- dB	-- dB
Measurement uncertainty		< 100 Hz	

Test conditions		Attenuation at or outside band-edges Hopping Fequency	
		Lower Band-edge	Upper Band-edge
T_{nom}= 23°C	V_{nom} = 120 V	40.13 dB	39.18 dB
Measurement uncertainty		< 100 Hz	

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FCC ID : UK9SPICA

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

Comment: See attached diagrams in Appendix G.

Registration number: W6M20607-7234-P-15
FCC ID : UK9SPICA

3.12 Radiated Emission from Digital Part And Receiver L.O.

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

Comment: The final test result and referable diagrams are listed on the test report number W6M20607-7234-P-15B.

3.13 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

Adaptor 1 mode

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
N	0.380	26.07	17.89	10.10	36.17	27.99	58.28	48.28	22.11	20.29
	1.940	32.77	22.64	10.10	42.87	32.74	56.00	46.00	13.13	13.26
	23.210	29.47	14.79	10.10	39.57	24.89	60.00	50.00	20.43	25.11

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
L1	0.270	26.70	17.08	10.10	36.80	27.18	61.11	51.11	24.31	23.93
	1.940	32.37	22.15	10.10	42.47	32.25	56.00	46.00	13.53	13.75
	23.530	24.37	13.68	10.10	34.47	23.78	60.00	50.00	25.53	26.22

Registration number: W6M20607-7234-P-15
FCC ID : UK9SPICA

Adaptor 2 mode

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
N	0.175	29.99	11.25	10.10	40.09	21.35	65.28	55.28	25.19	33.93
	0.650	25.91	8.62	10.10	36.01	18.72	56.00	46.00	19.99	27.28
	28.145	24.26	8.55	10.10	34.36	18.65	60.00	50.00	25.64	31.35

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
L1	0.175	31.12	11.91	10.10	41.22	22.01	65.28	55.28	24.06	33.27
	0.585	26.21	11.85	10.10	36.31	21.95	56.00	46.00	19.69	24.05
	25.325	18.75	15.04	10.10	28.85	25.14	60.00	50.00	31.15	24.86

USB mode

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
N	0.270	37.38	31.80	10.10	47.48	41.90	61.1	51.1	13.62	9.20
	0.470	32.52	28.67	10.10	42.62	38.77	56.5	46.5	13.88	7.73
	1.475	25.14	21.45	10.10	35.24	31.55	56.0	46.0	20.76	14.45
	12.935	21.89	19.05	10.10	31.99	29.15	60.0	50.0	28.01	20.85

LISN type	Frequency Marker	Corrected Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
L1	0.205	37.77	28.07	10.10	47.87	38.17	63.4	53.4	15.53	15.23
	0.470	32.32	27.63	10.10	42.42	37.73	56.5	46.5	14.08	8.77
	1.405	23.89	20.64	10.10	33.99	30.74	56.0	46.0	22.01	15.26
	14.885	23.19	13.37	10.10	33.29	23.47	60.0	50.0	26.71	26.53

Note: 1. The formula of measured value as: Test Result = Corrected Reading + Correction Factor
2. The Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss
3. Detector function in the form : P = Peak, QP = Quasi Peak, AV = Average

Registration number: W6M20607-7234-P-15
FCC ID : UK9SPICA

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

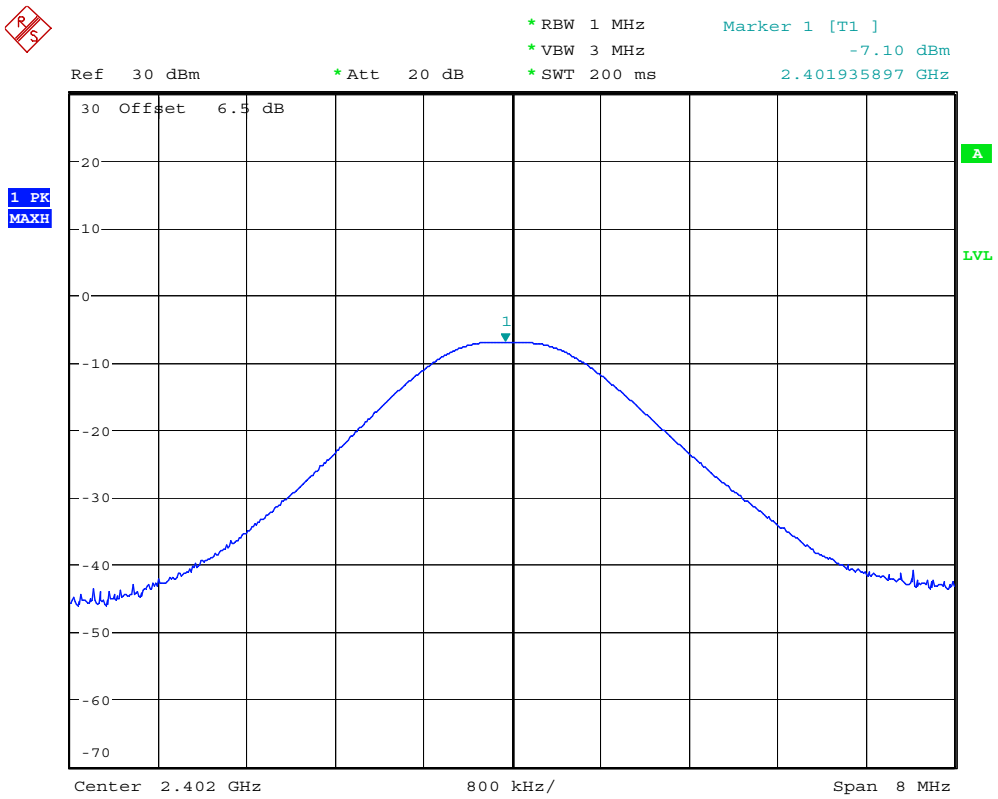
Comment: see attached diagrams in Appendix H.

Appendix

A Peak Output Power
B Spurious Emissions radiated
C Carrier Frequency Separation
D Number of Hopping Frequencies
E Time of Occupancy (Dwell Time)
F 20dB Bandwidth
G Band-edge Compliance of RF Conducted Emissions
H Power Line Conducted Emission

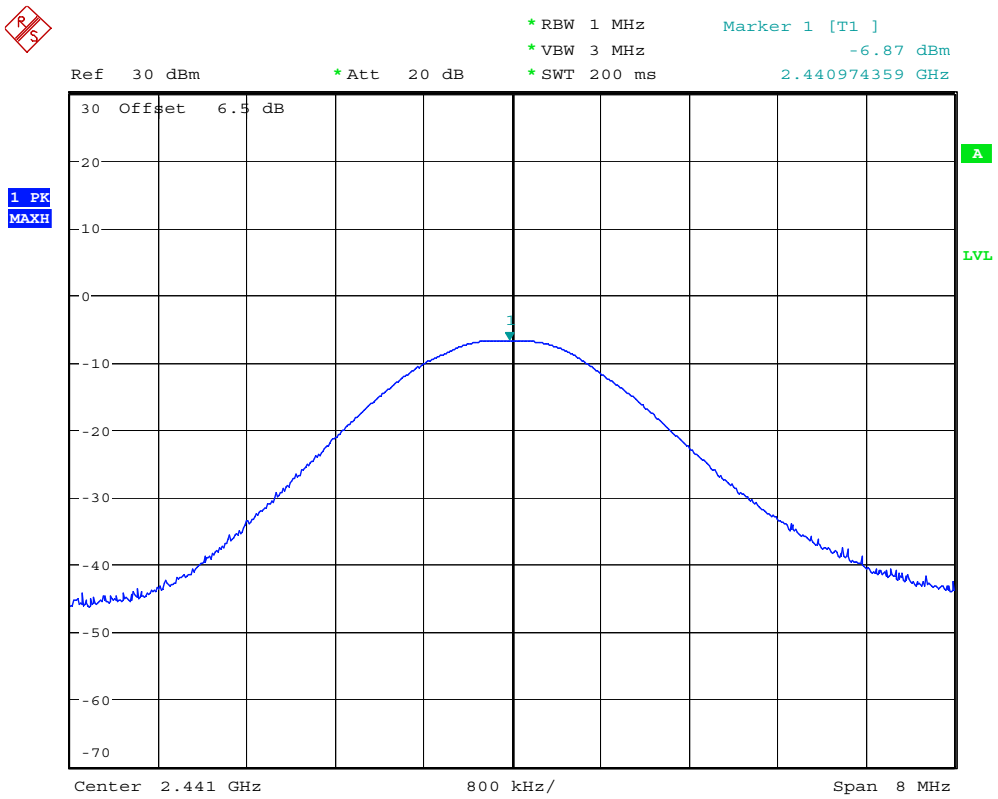
Appendix A

Peak Output Power



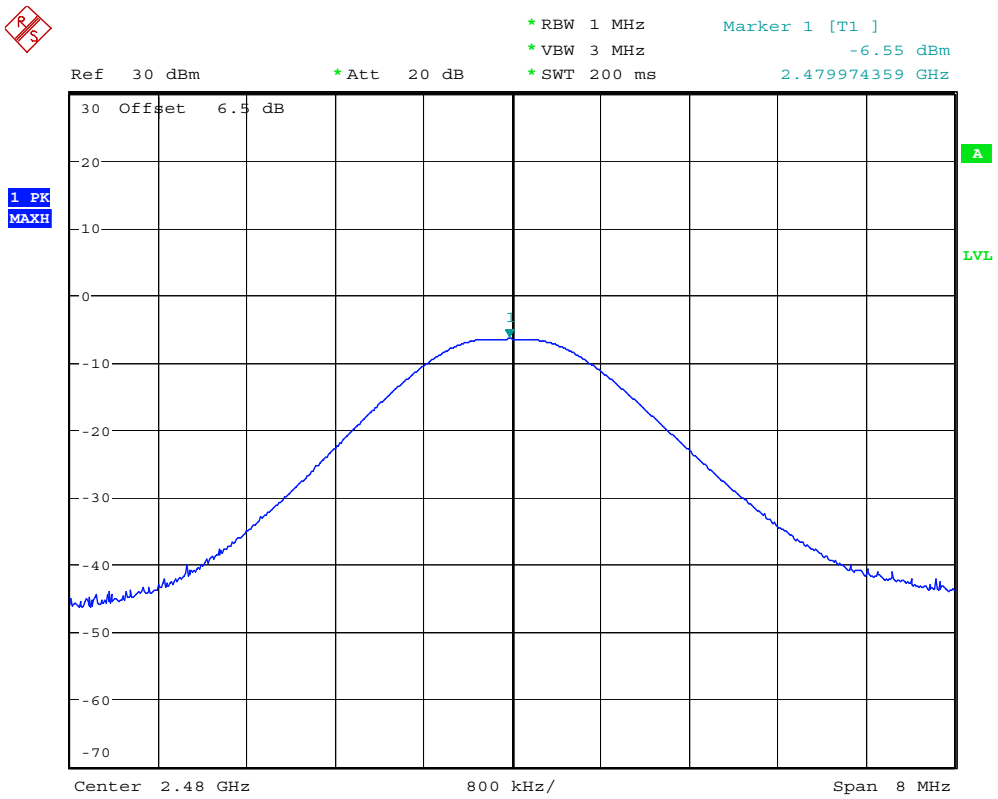
MAX OUTPUT POWER CH0

Date: 19.SEP.2006 14:18:33



MAX OUTPUT POWER CH39

Date: 19.SEP.2006 14:18:53



MAX OUTPUT POWER CH78

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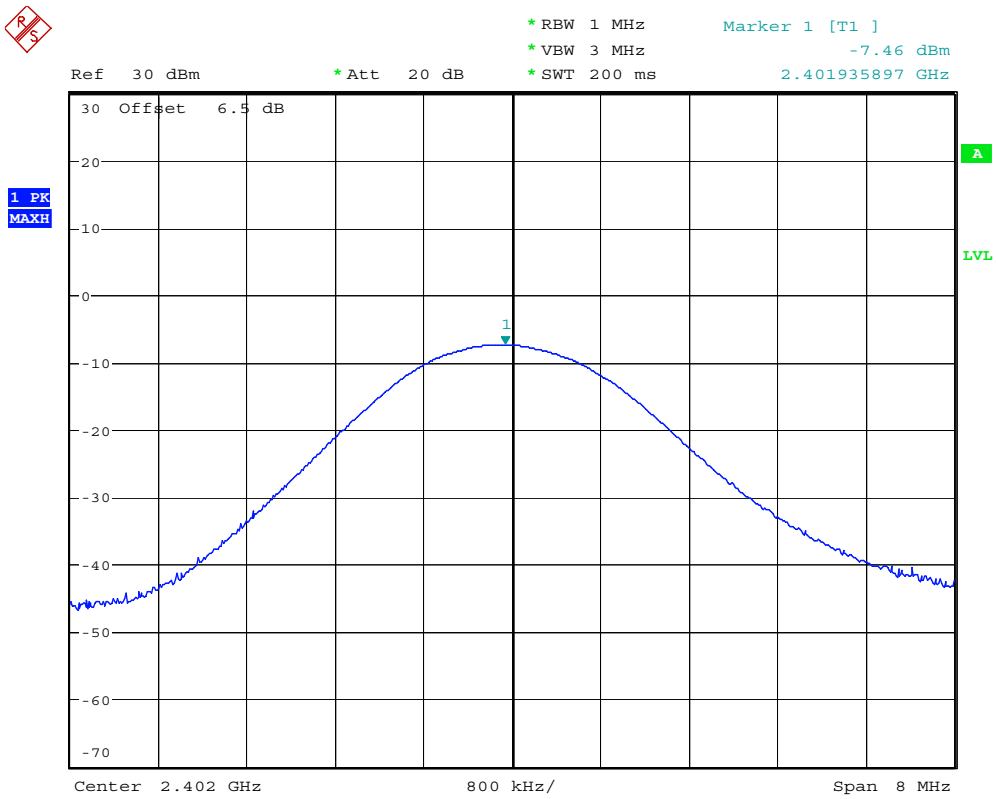
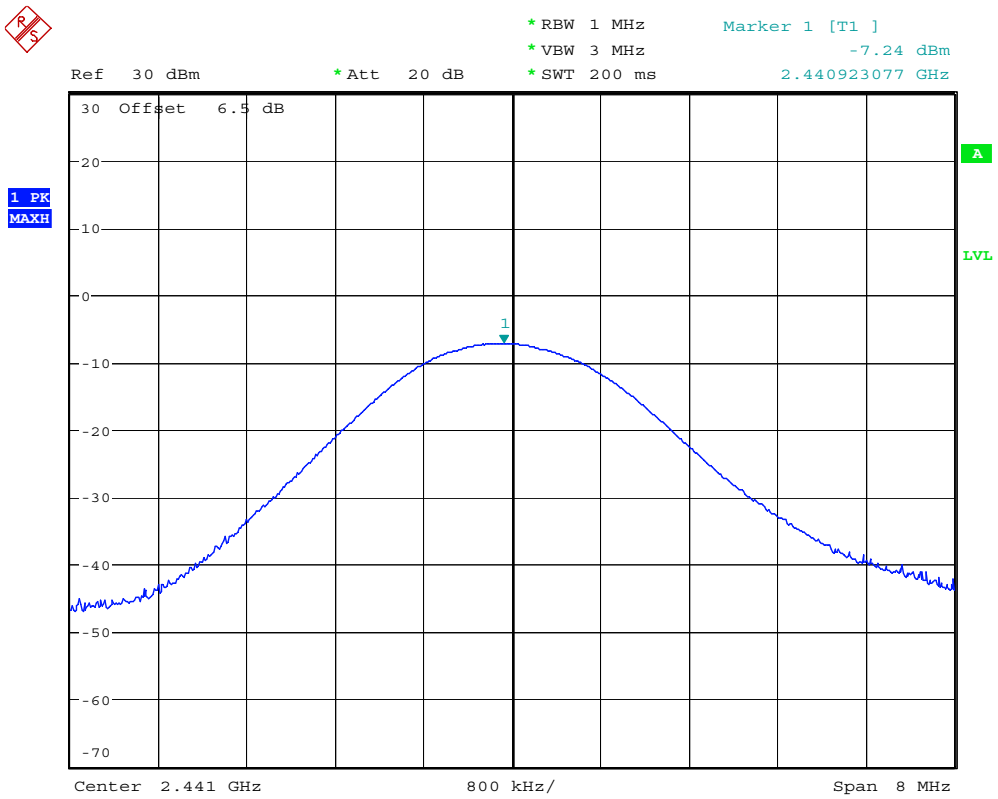


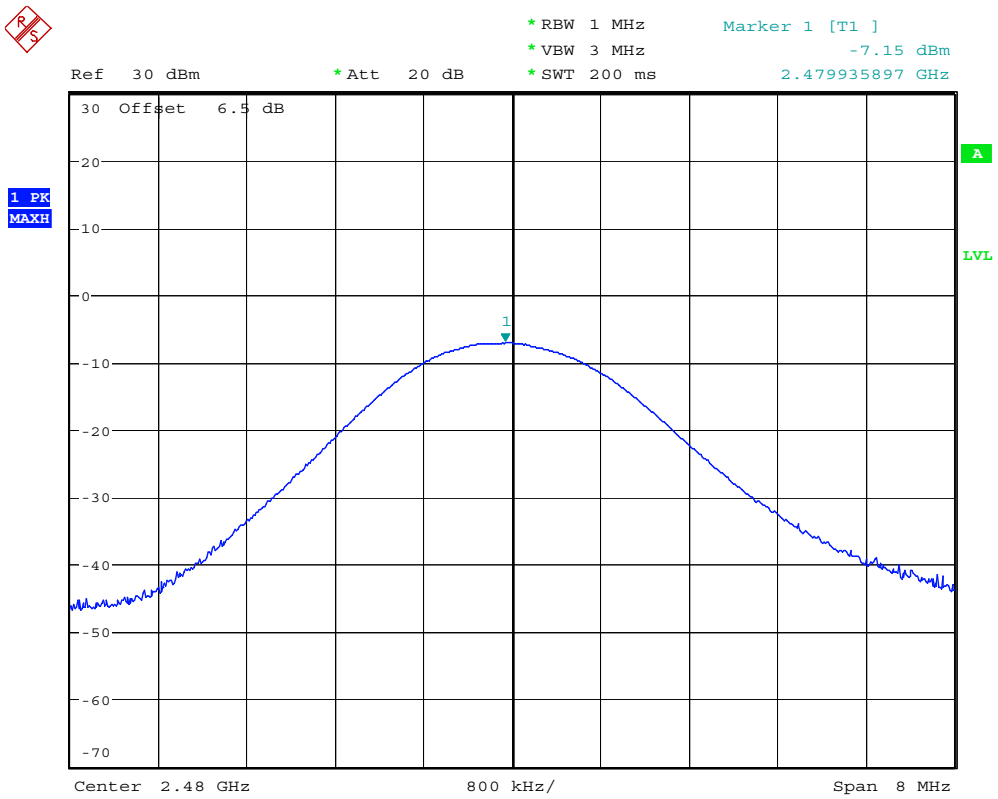
MAX OUTPUT POWER CH0 EDR MODE

Date: 19.SEP.2006 14:18:05



MAX OUTPUT POWER CH39 EDR MODE

Date: 19.SEP.2006 14:19:10



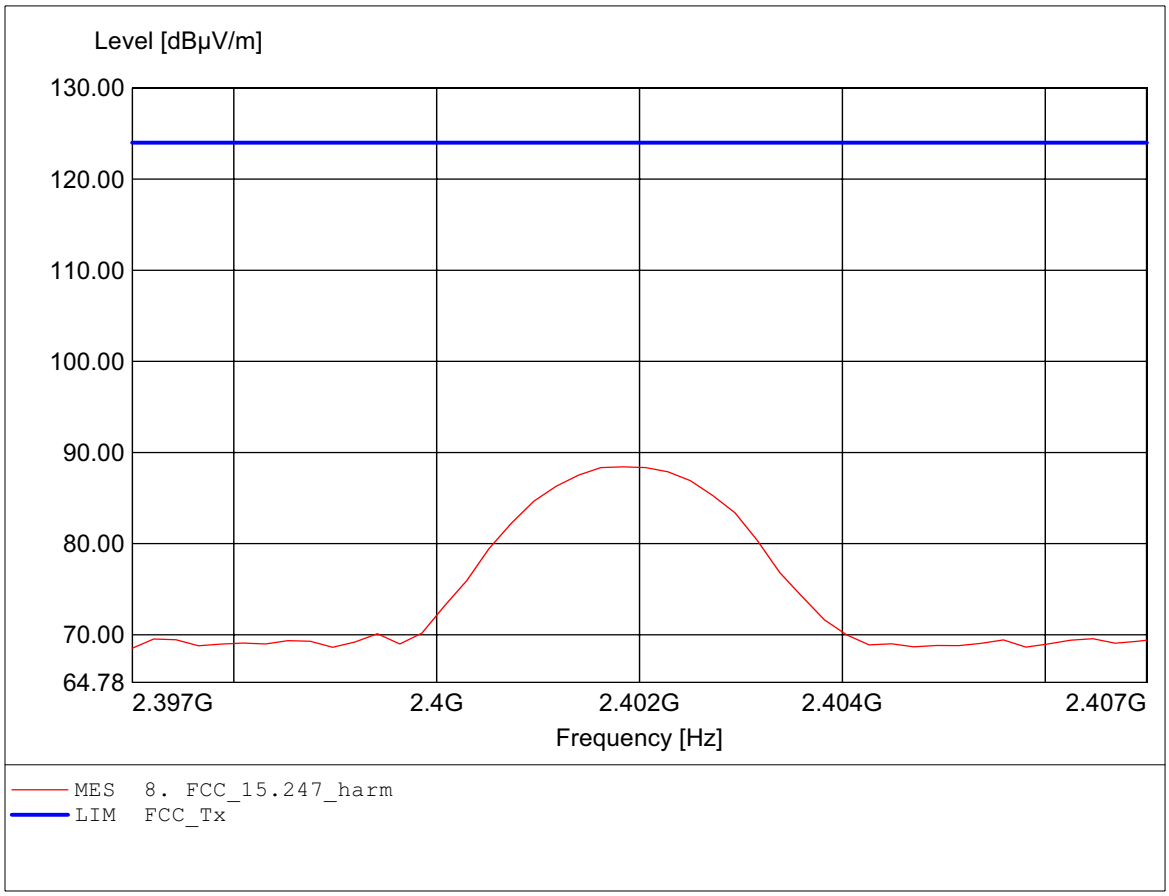
MAX OUTPUT POWER CH78 EDR MODE

Date: 19.SEP.2006 14:19:28

Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C / LP002

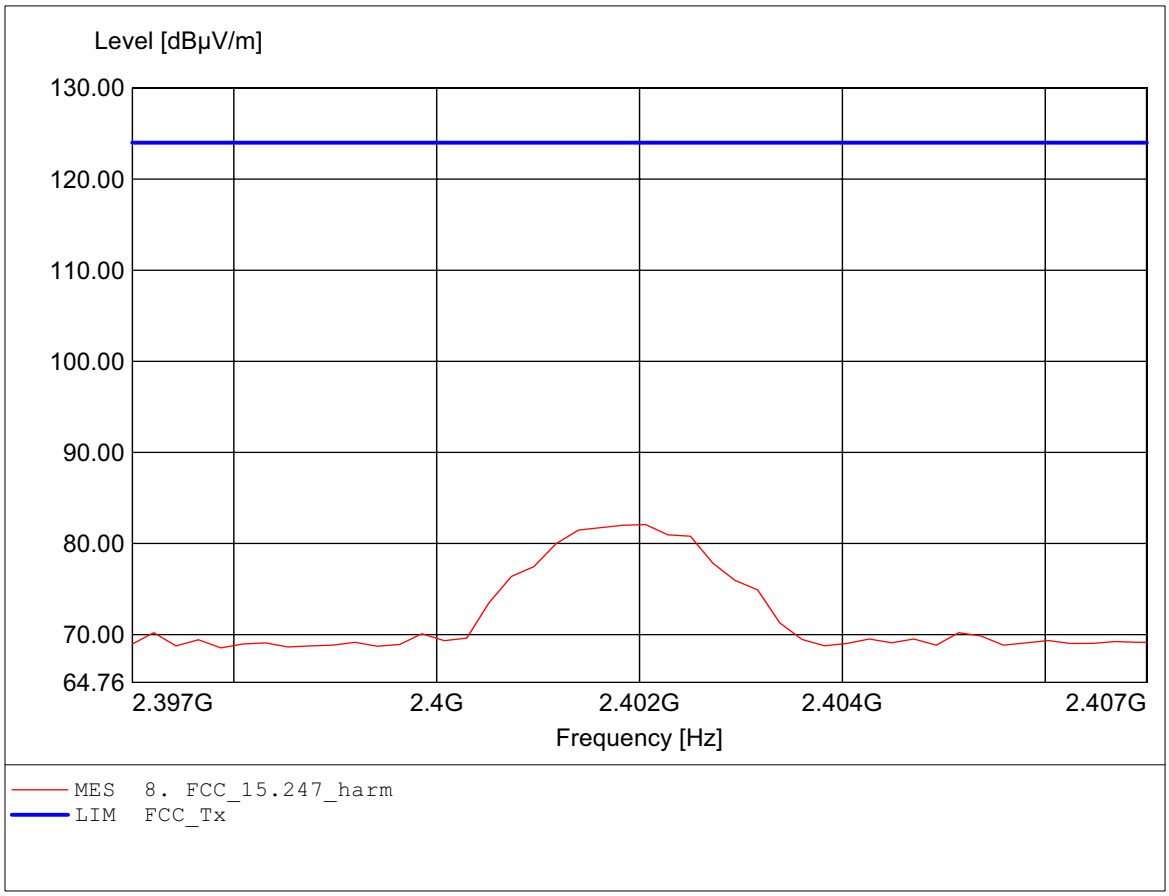
```
Order Number:          W6M20607-7234          ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247
Comment 1:             Dist.: 3m, Ant.: HL025
                       Freq: 2.402GHz, Emax: 88.42dBµV/m, RBW: 1MHz
```



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C / LP002

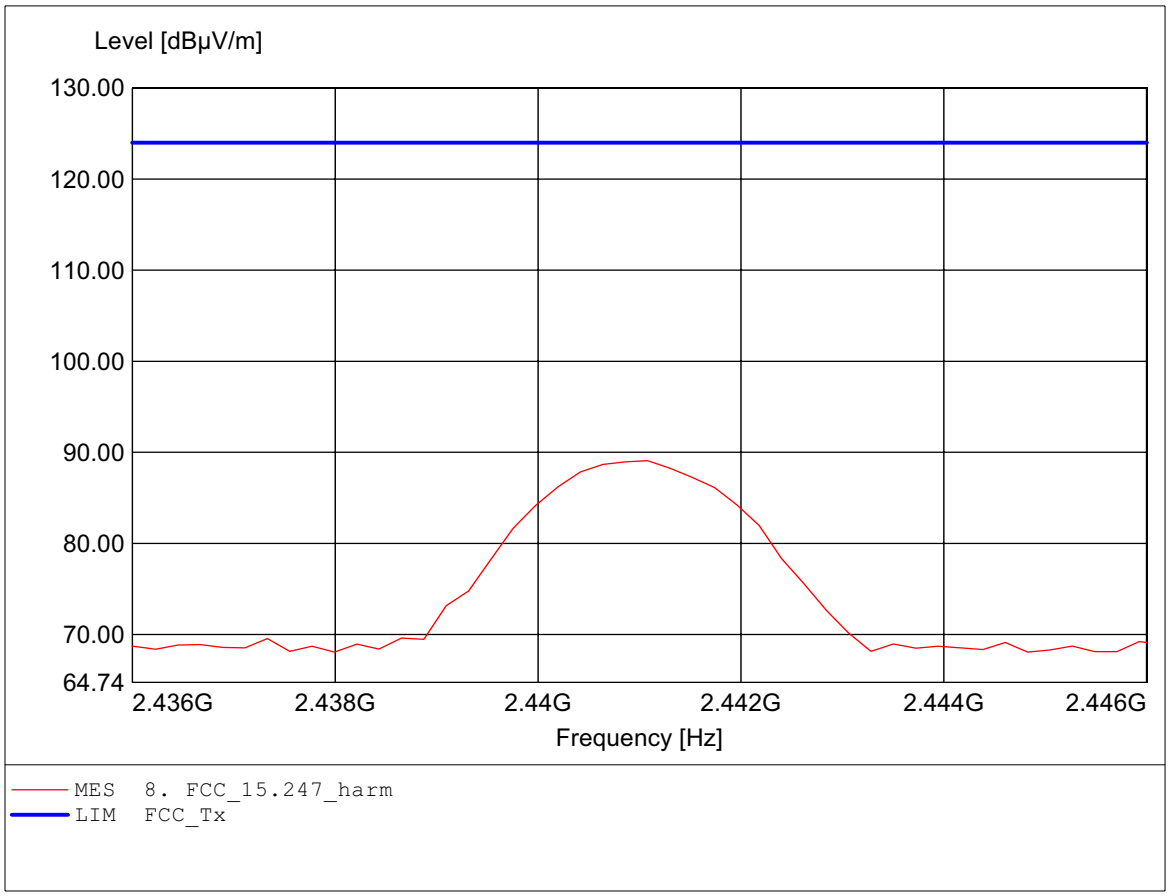
```
Order Number:          W6M20607-7234          ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247
Comment 1:             Dist.: 3m, Ant.: HL025
                       Freq: 2.402GHz, Emax: 82.07dBµV/m, RBW: 1MHz
```



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C / LP002

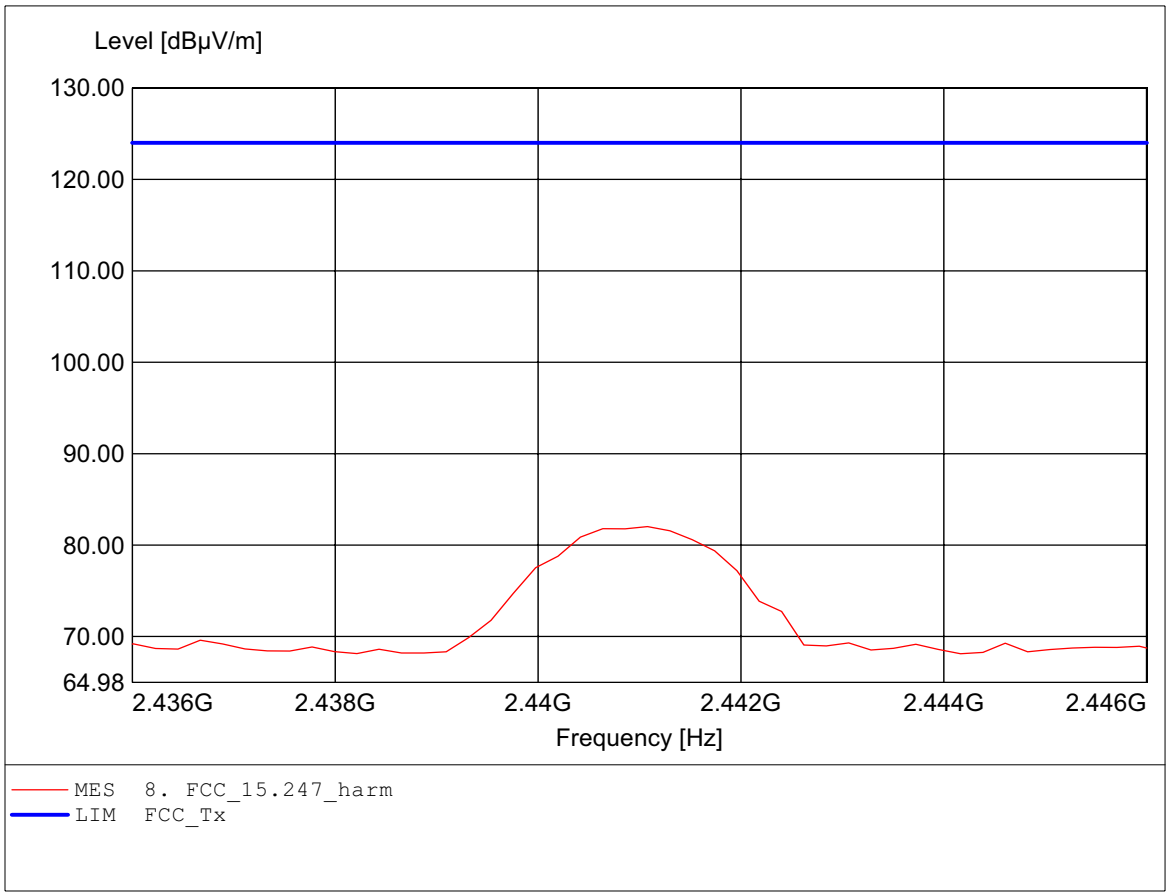
```
Order Number:          W6M20607-7234          ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247
Comment 1:             Dist.: 3m, Ant.: HL025
                       Freq: 2.441GHz, Emax: 89.08dBµV/m, RBW: 1MHz
```



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C / LP002

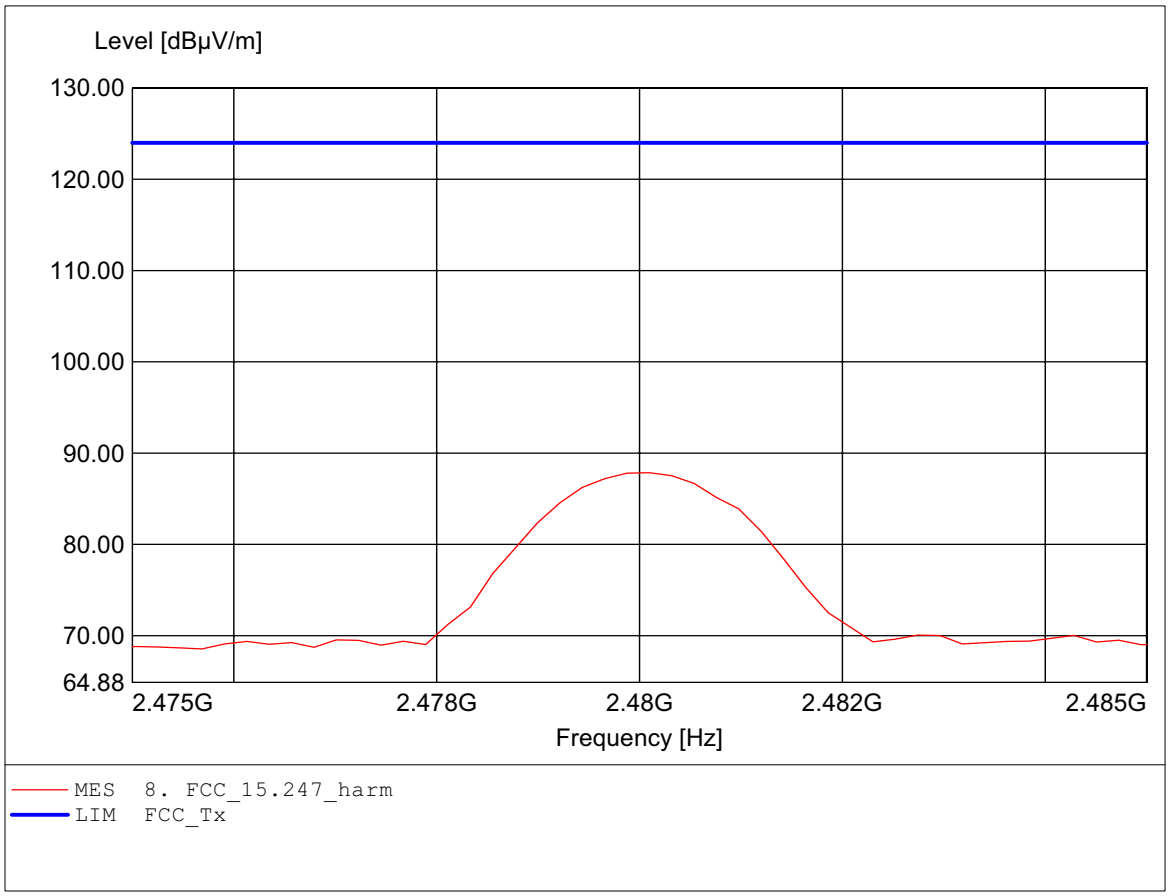
```
Order Number:          W6M20607-7234          ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247
Comment 1:             Dist.: 3m, Ant.: HL025
                       Freq: 2.441GHz, Emax: 82.02dBµV/m, RBW: 1MHz
```



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C / LP002

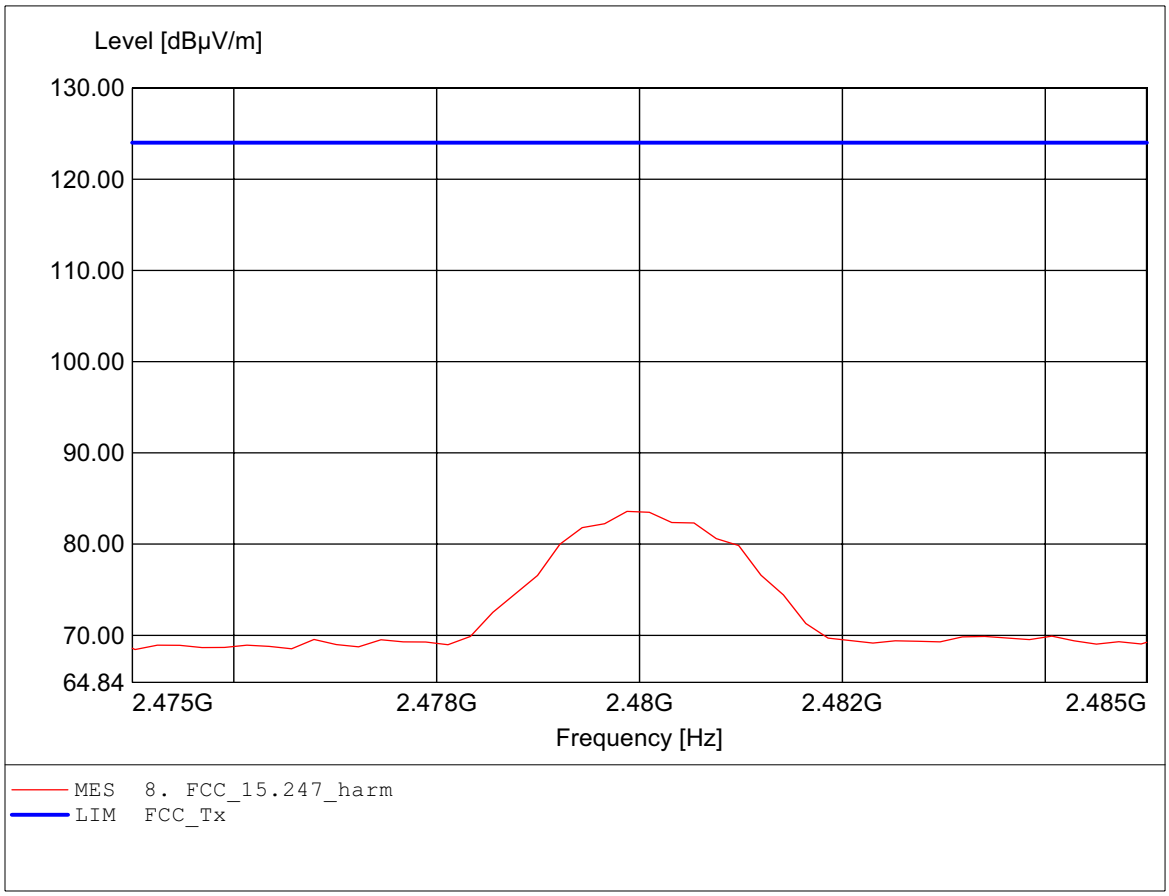
```
Order Number:          W6M20607-7234          ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247
Comment 1:             Dist.: 3m, Ant.: HL025
                       Freq: 2.480GHz, Emax: 87.86dBµV/m, RBW: 1MHz
```



Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C / LP002

```
Order Number:          W6M20607-7234          ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247
Comment 1:             Dist.: 3m, Ant.: HL025
                       Freq: 2.480GHz, Emax: 83.59dBµV/m, RBW: 1MHz
```



Appendix B

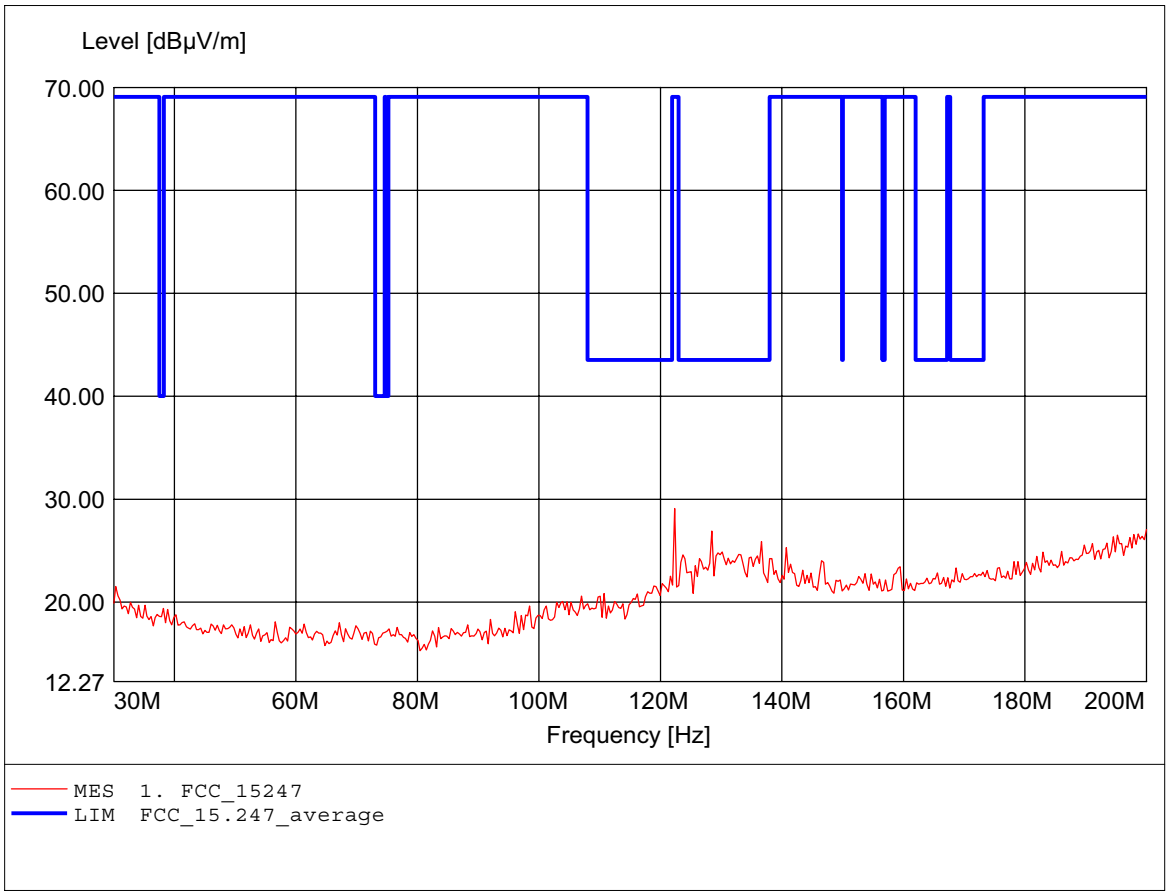
Spurious Emissions radiated

The measurement diagrams plots attached below are preliminary wideband scan with a peak detector and for reference only. The final test results are listed on section 3.6

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

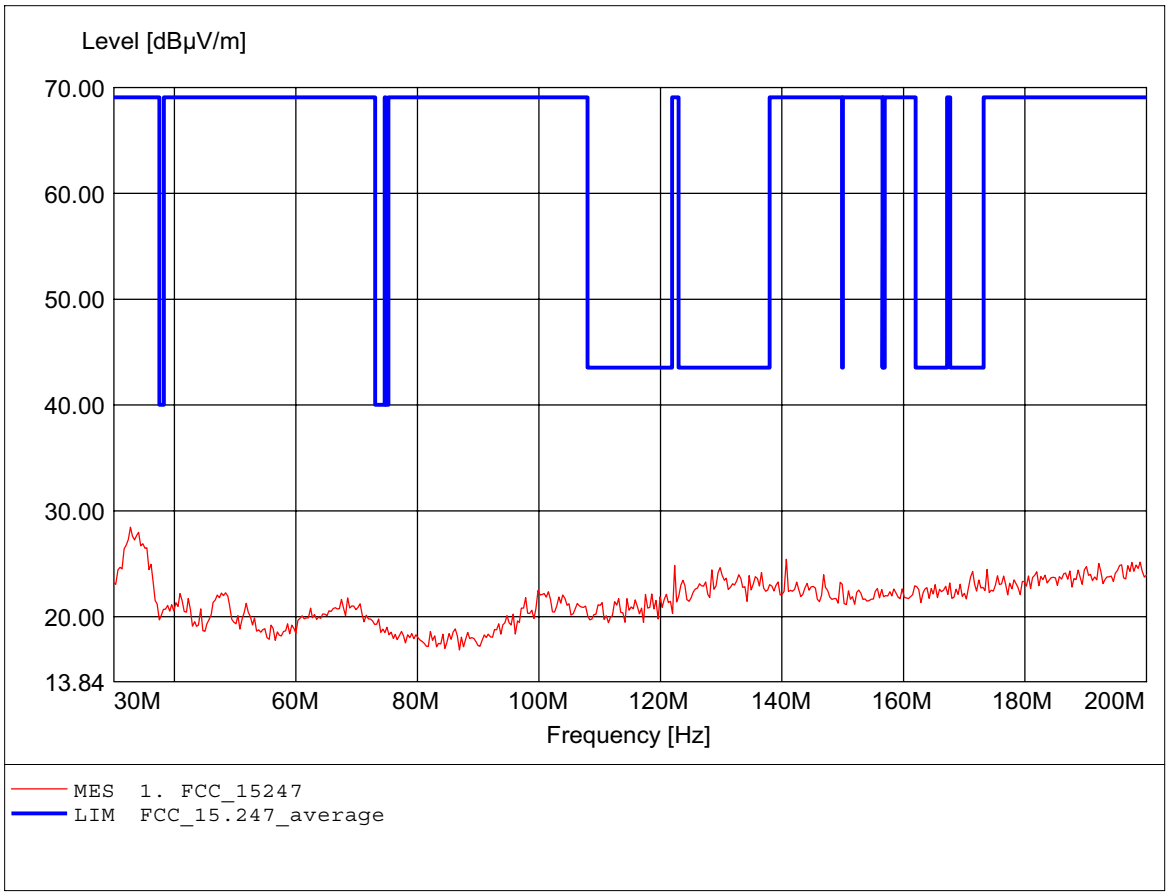
```
Order Number :          W6M20607-7234          ch0
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HK 116
                        Freq: 122.325MHz, Emax: 29.10dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

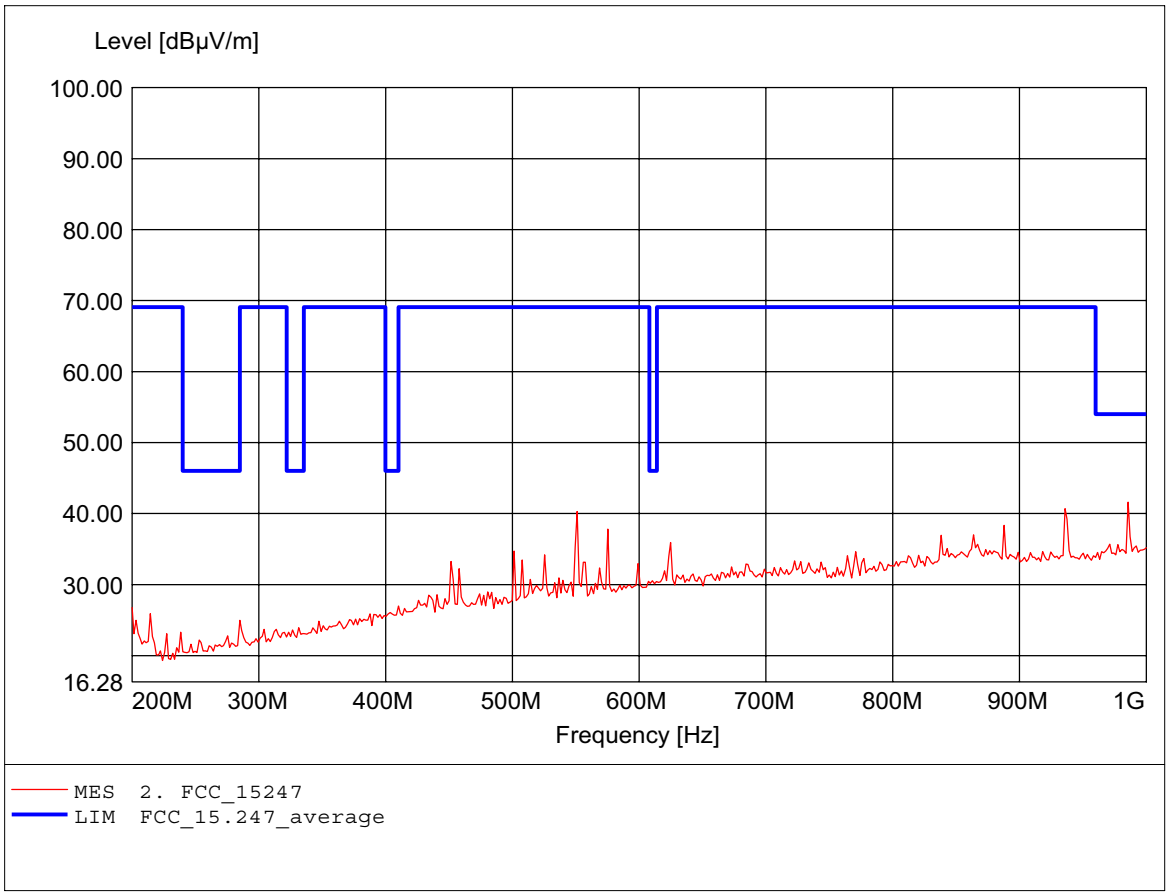
```
Order Number :          W6M20607-7234          ch0
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HK 116
                        Freq: 32.725MHz, Emax: 28.46dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

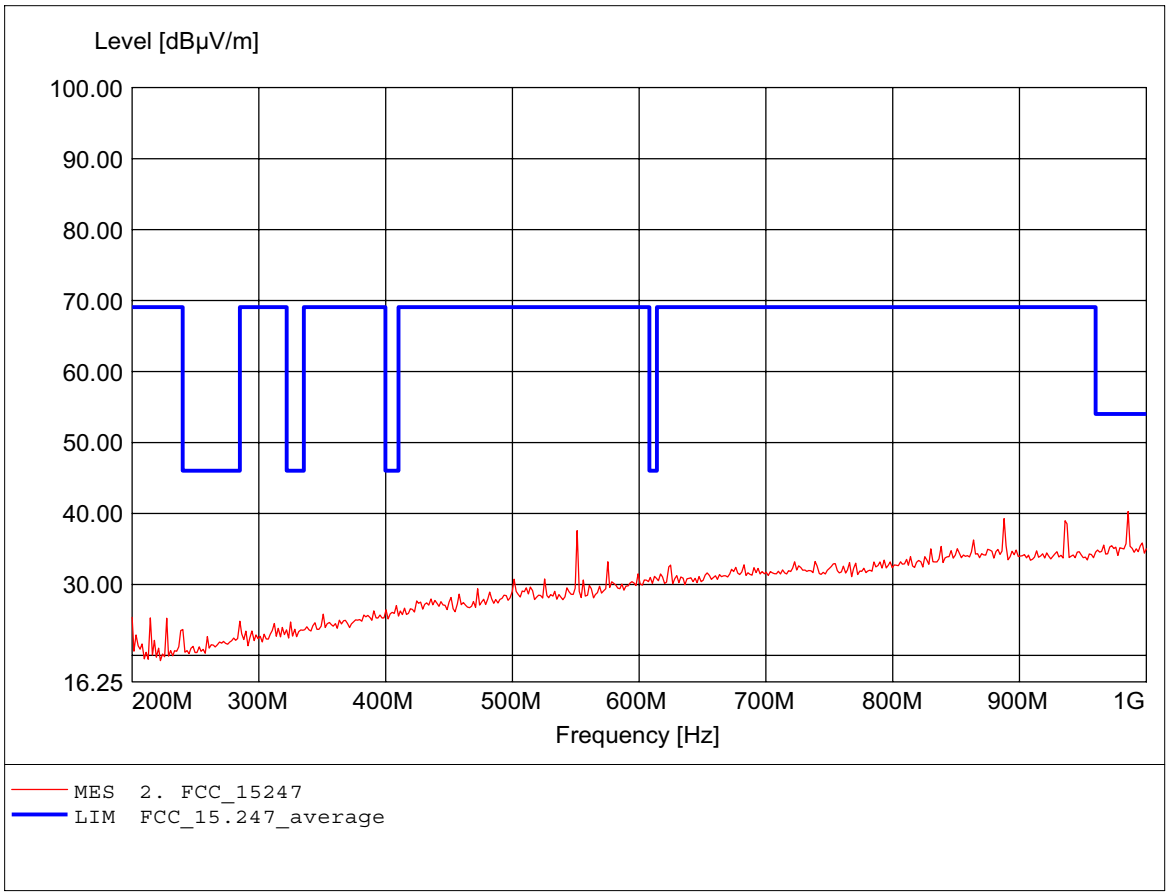
```
Order Number :          W6M20607-7234          ch0
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HL 223,
                        Freq: 985.571MHz, Emax: 41.58dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

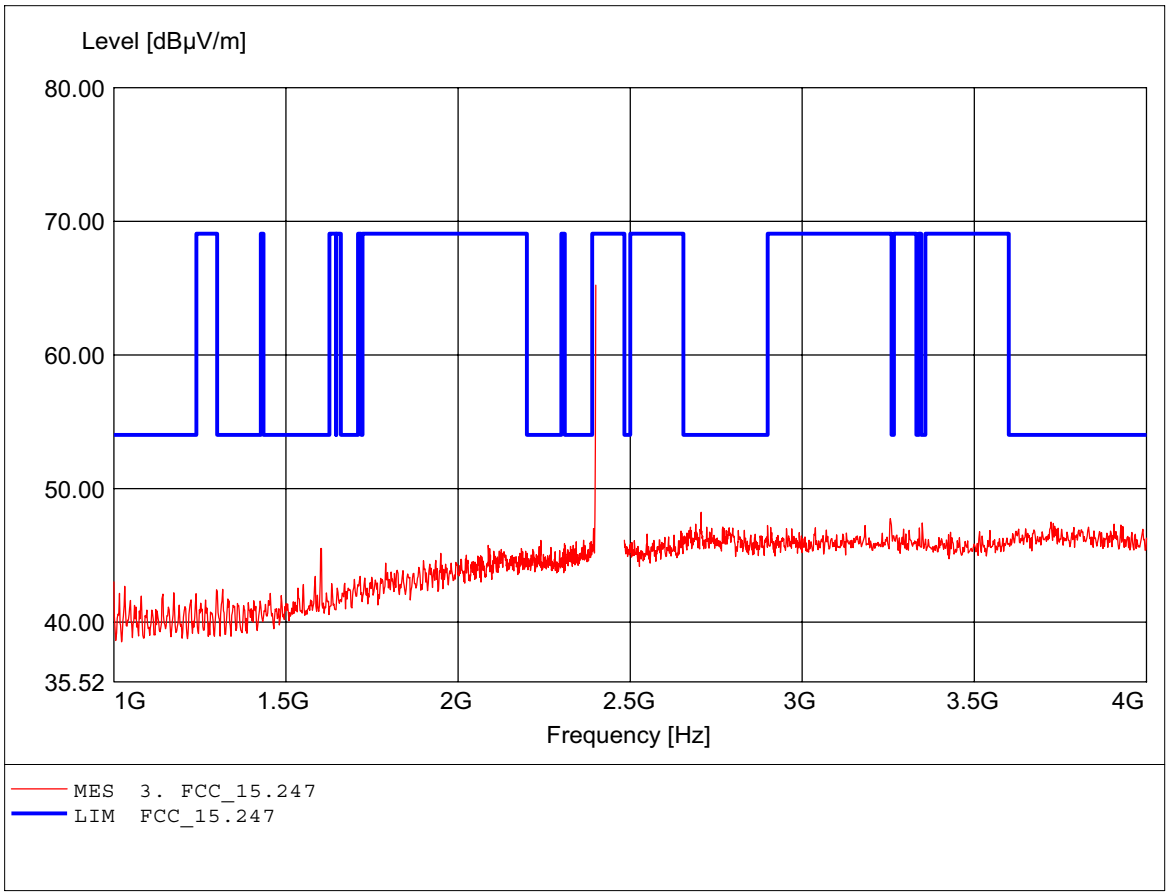
```
Order Number :          W6M20607-7234          ch0
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HL 223,
                        Freq: 985.571MHz, Emax: 40.29dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

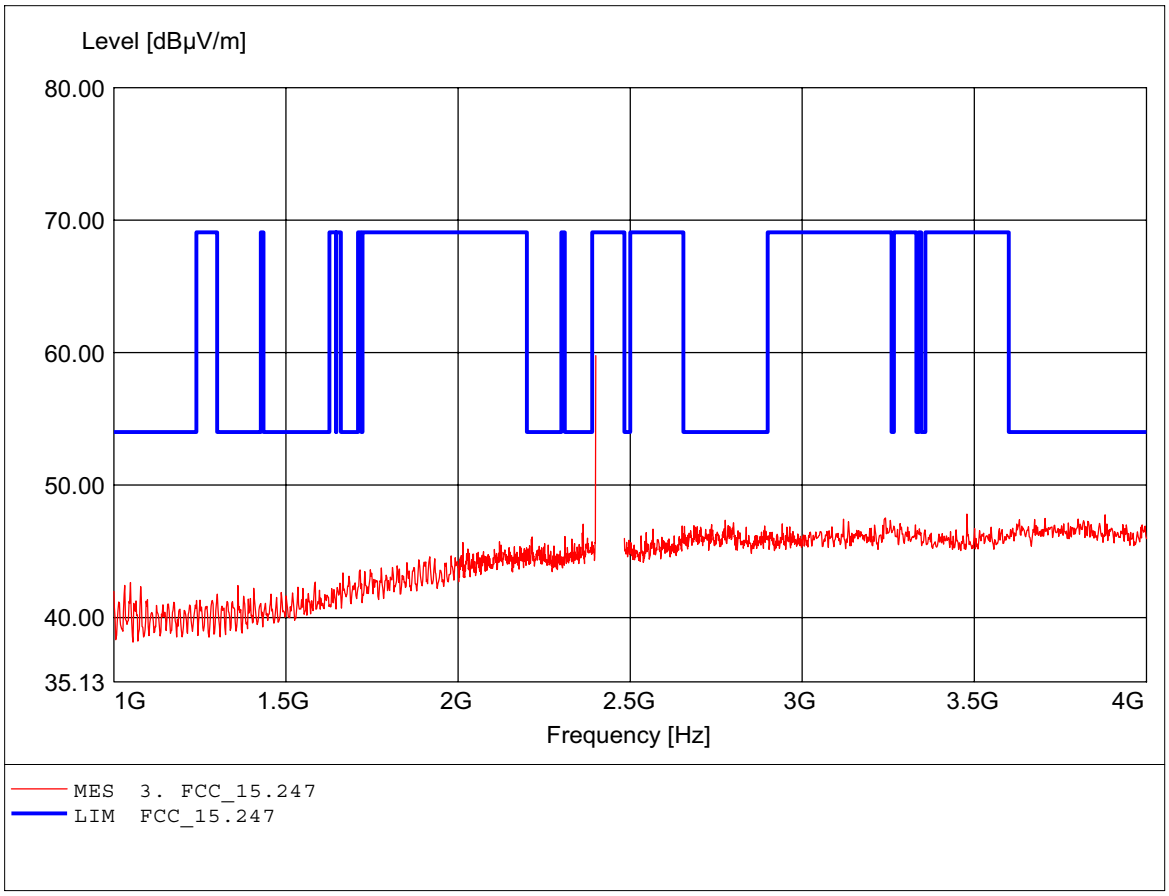
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, amplif.
                       Freq: 2.400GHz, Emax: 68.22dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

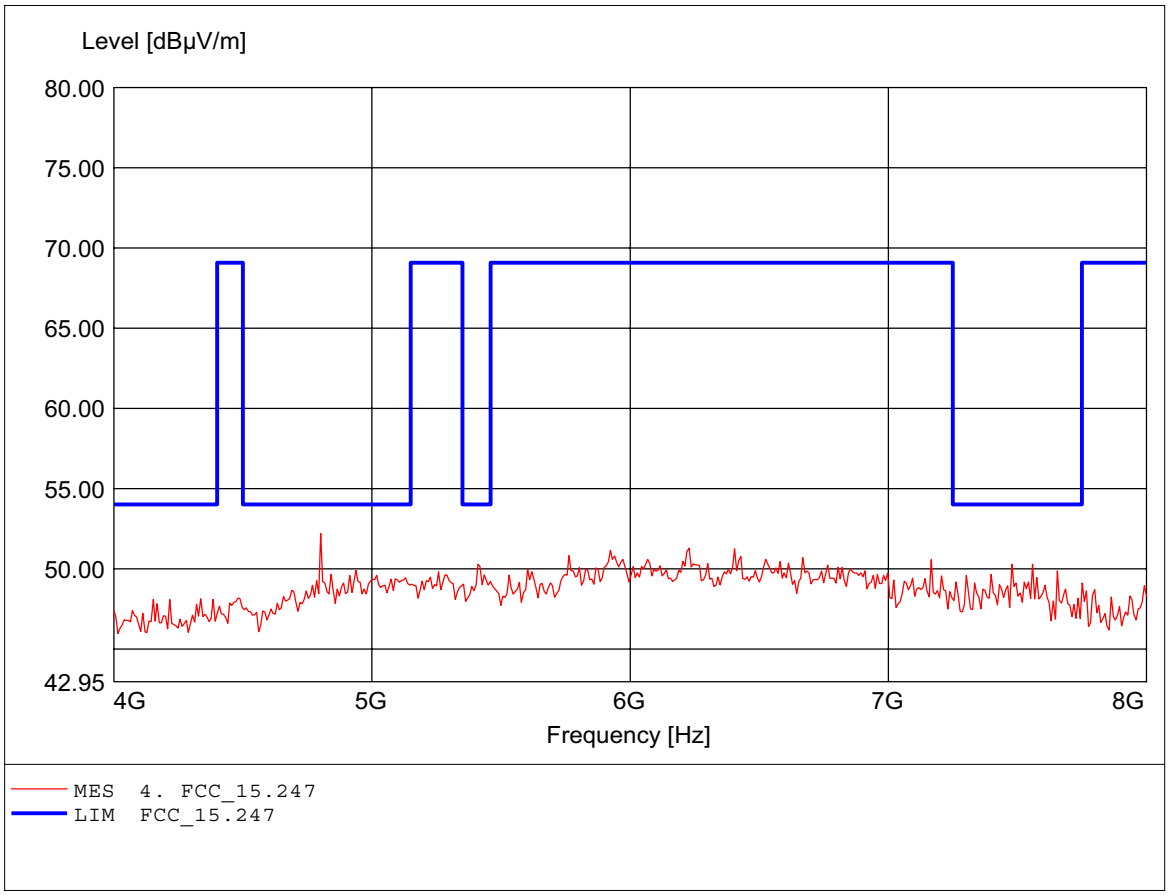
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, amplif.
                       Freq: 2.400GHz, Emax: 59.78dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

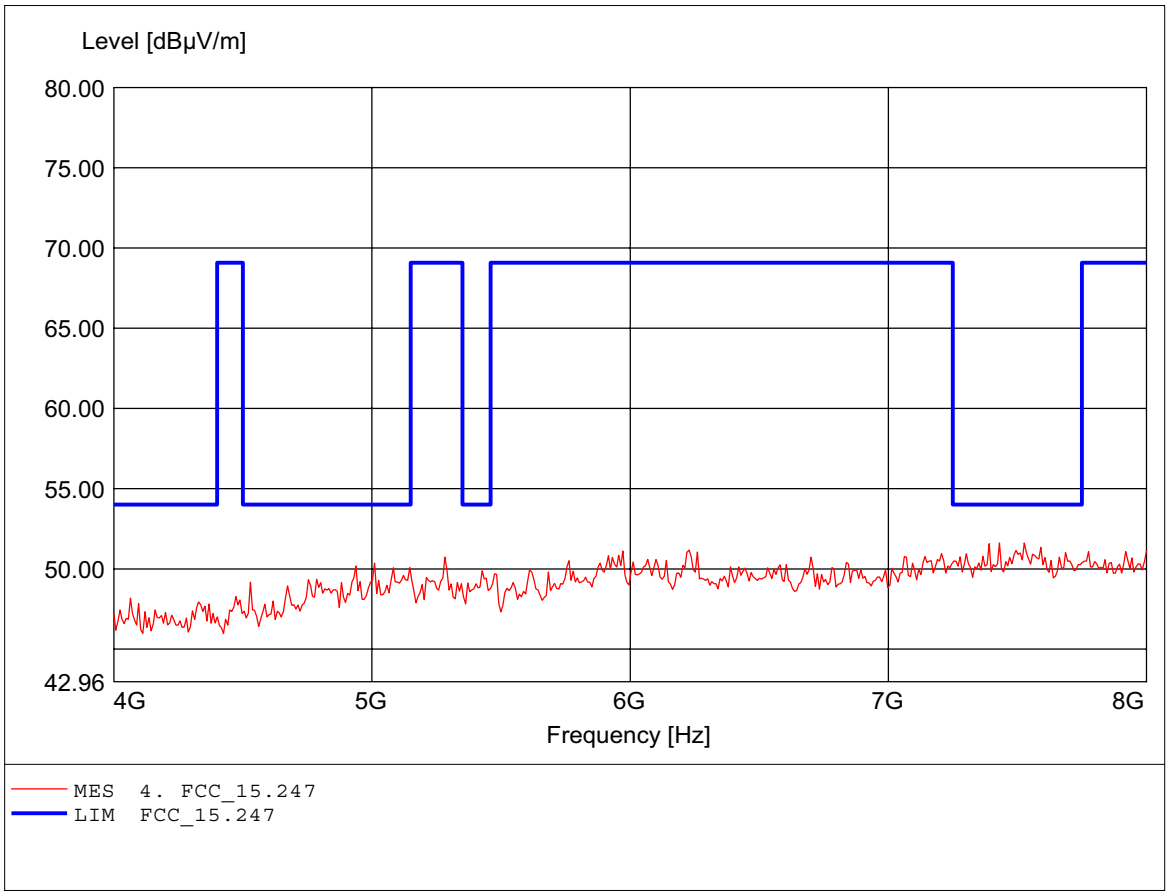
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 4.802GHz, Emax: 55.20dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

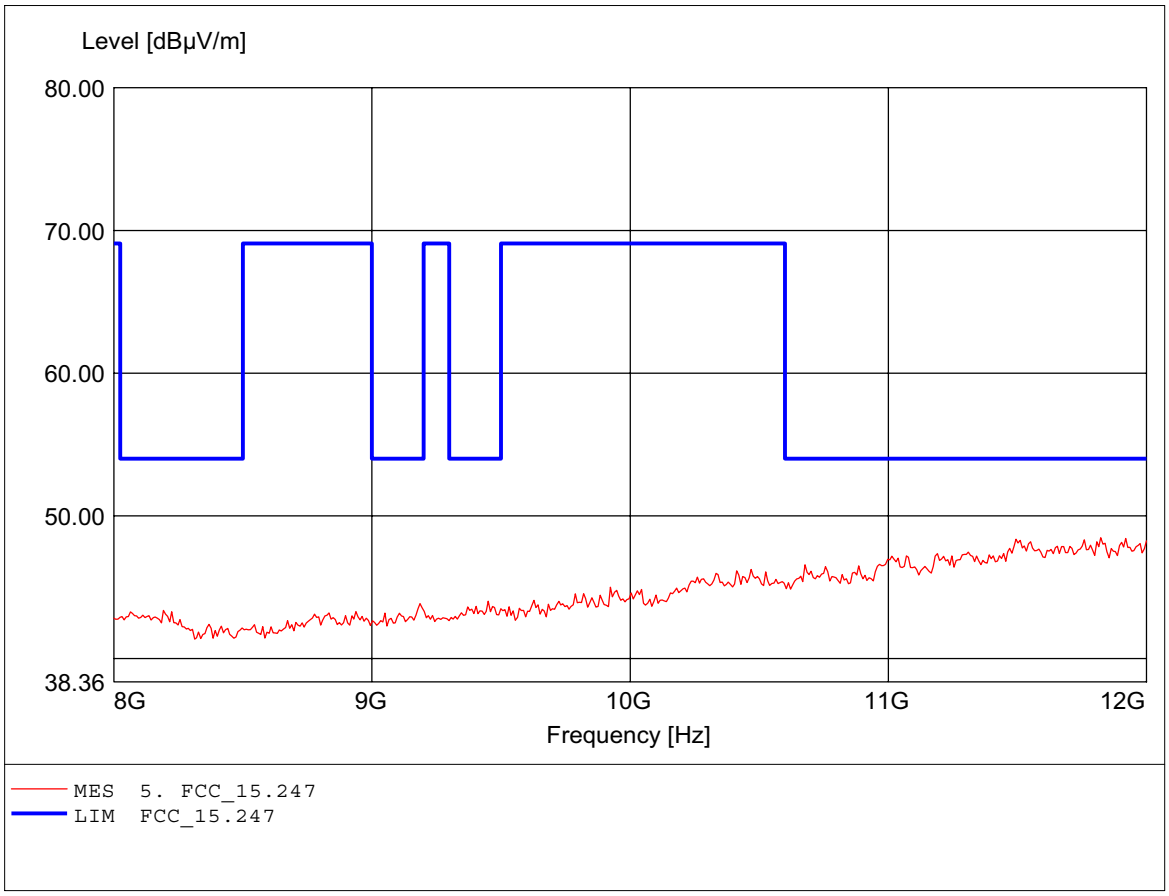
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 7.527GHz, Emax: 51.61dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

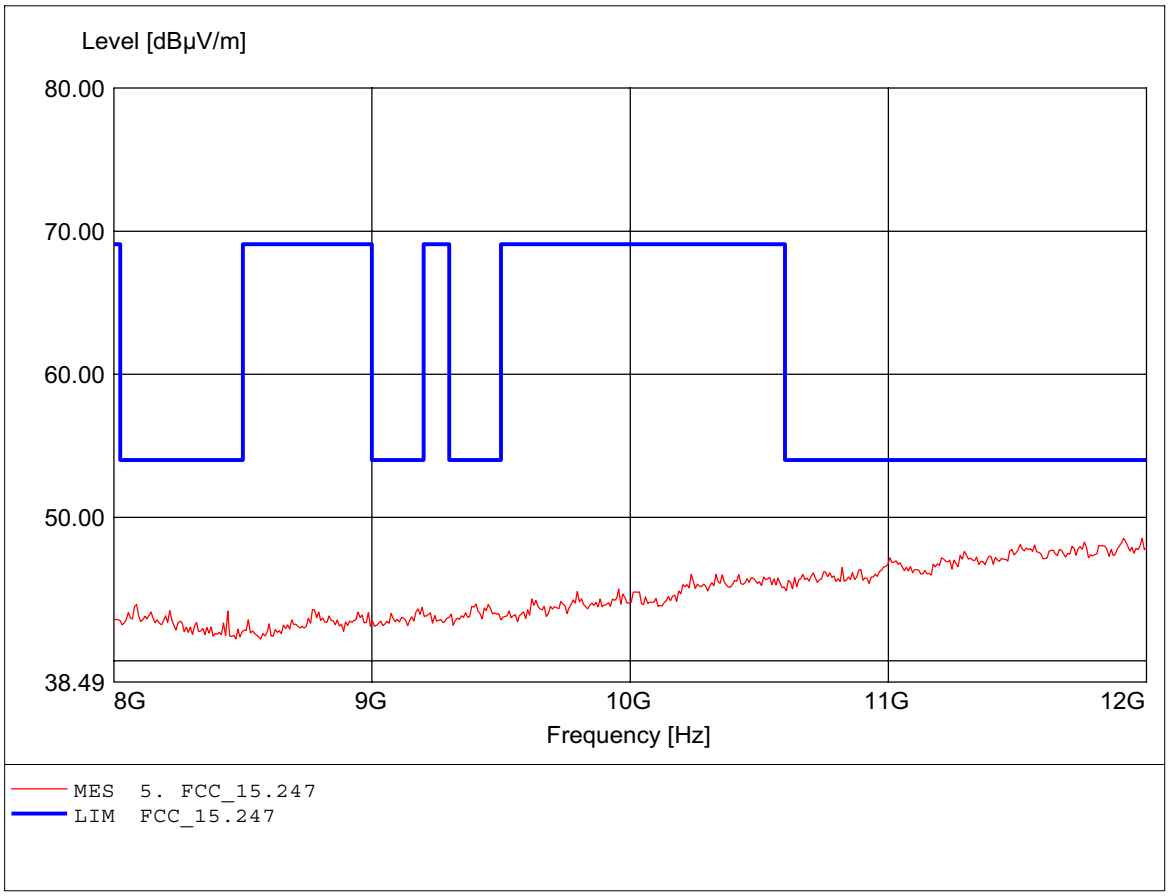
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 11.824GHz, Emax: 48.47dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

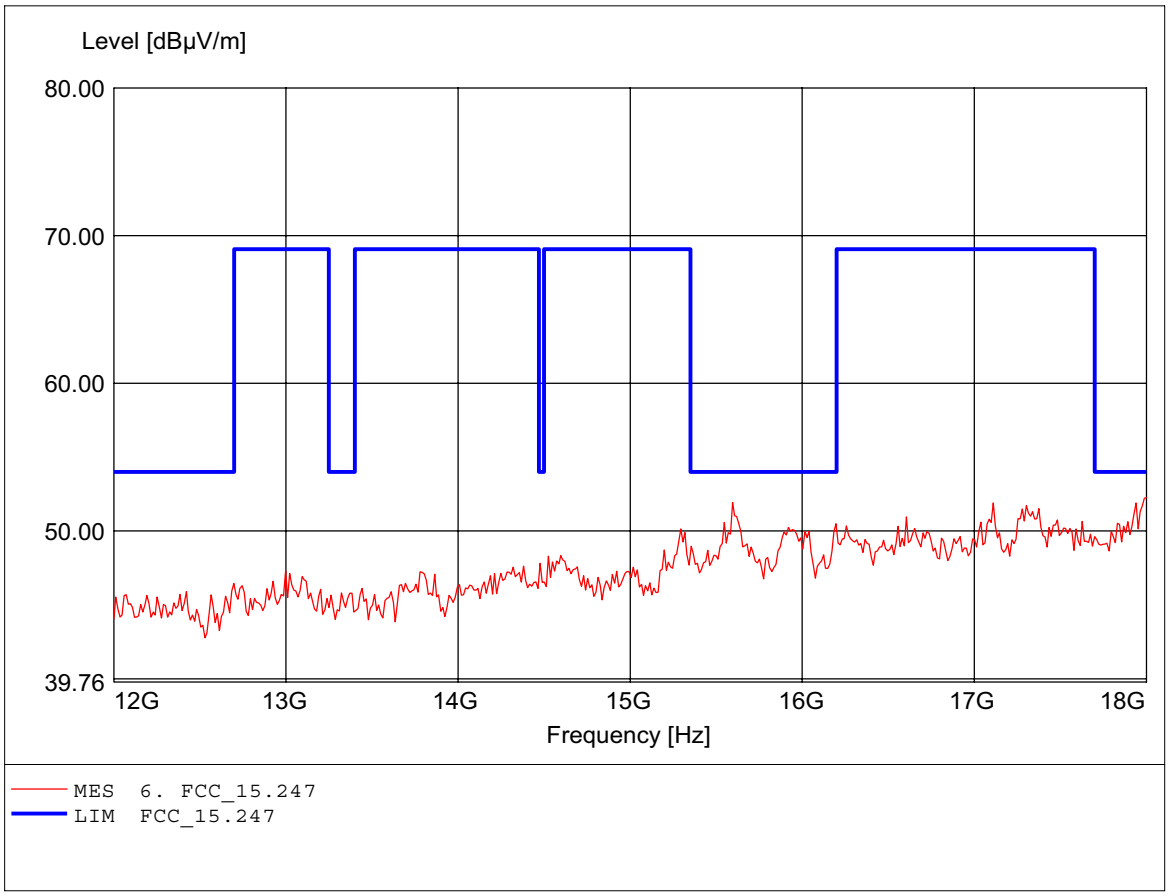
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 11.984GHz, Emax: 48.54dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

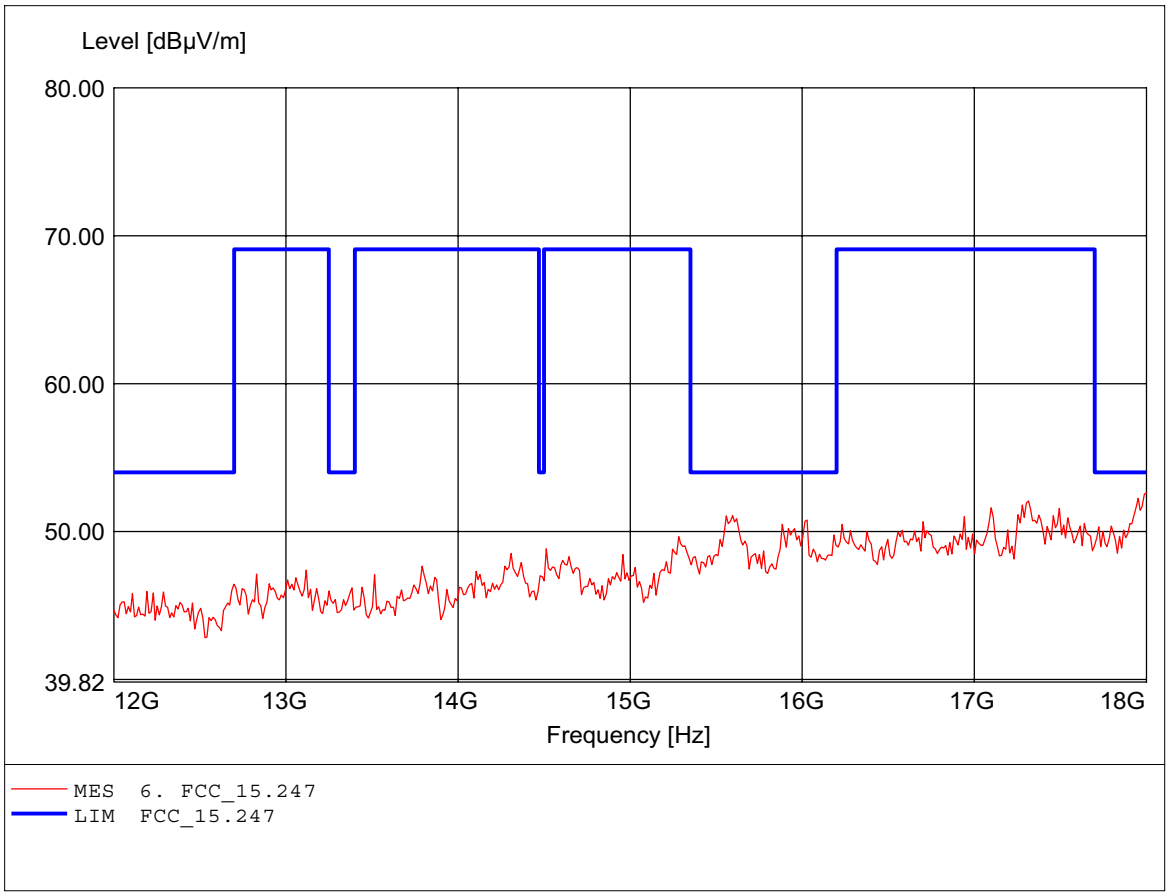
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 18.000GHz, Emax: 52.26dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

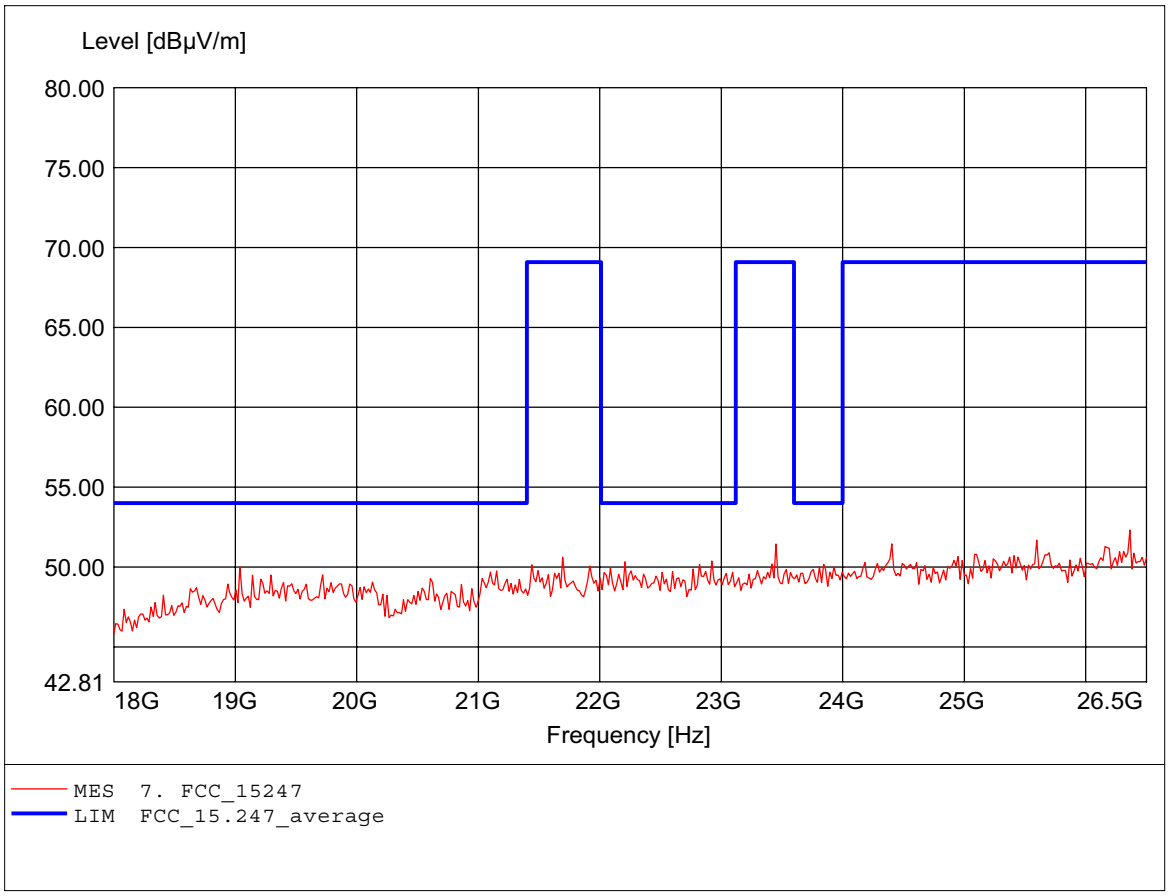
```
Order Number:          W6M20607-7234        ch0
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 18.000GHz, Emax: 52.62dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

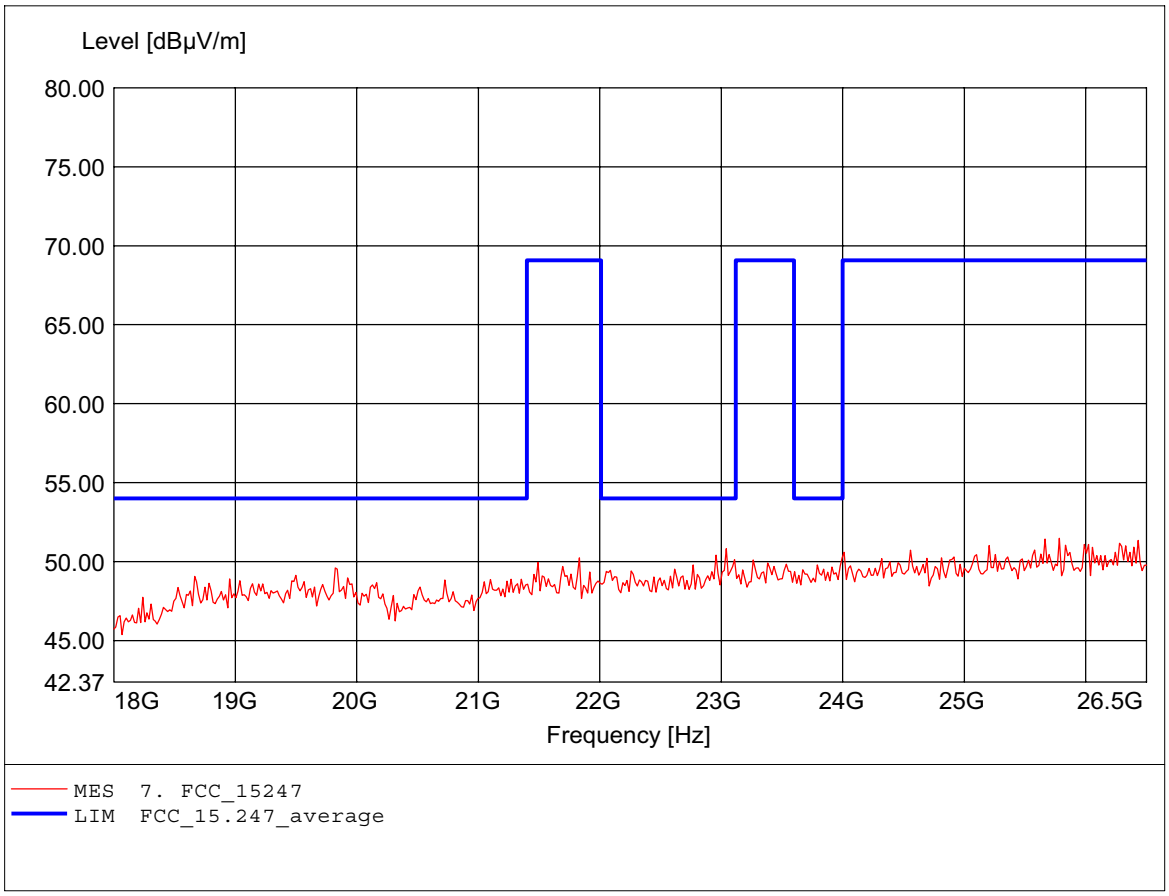
```
Order Number :          W6M20607-7234          ch0
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
Test Specification:     according to §15.247, peak detector
Comment 1:              Dist.: 3m, Ant.: HL025, amplif.
                        Freq: 26.364GHz, Emax: 52.32dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

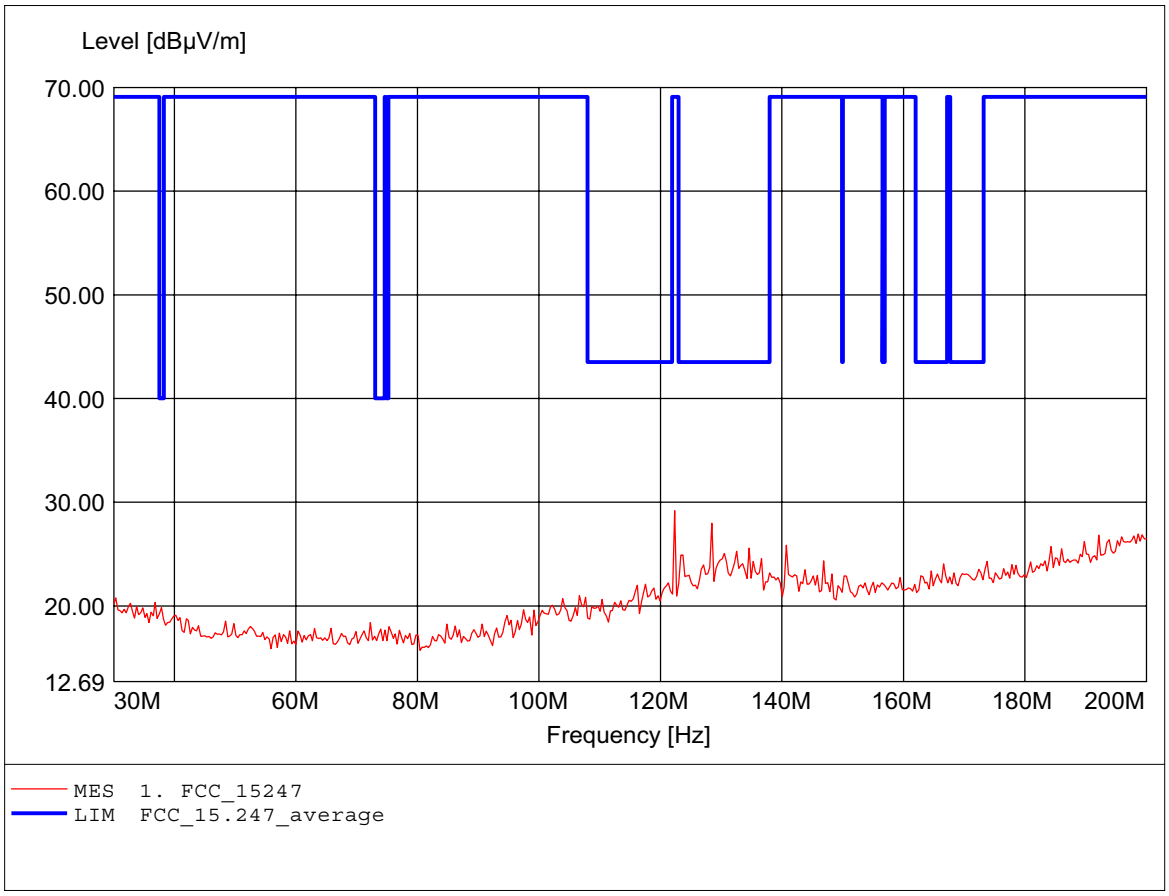
```
Order Number :          W6M20607-7234          ch0
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
Test Specification:     according to §15.247, peak detector
Comment 1:              Dist.: 3m, Ant.: HL025, amplif.
                        Freq: 25.785GHz, Emax: 51.47dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

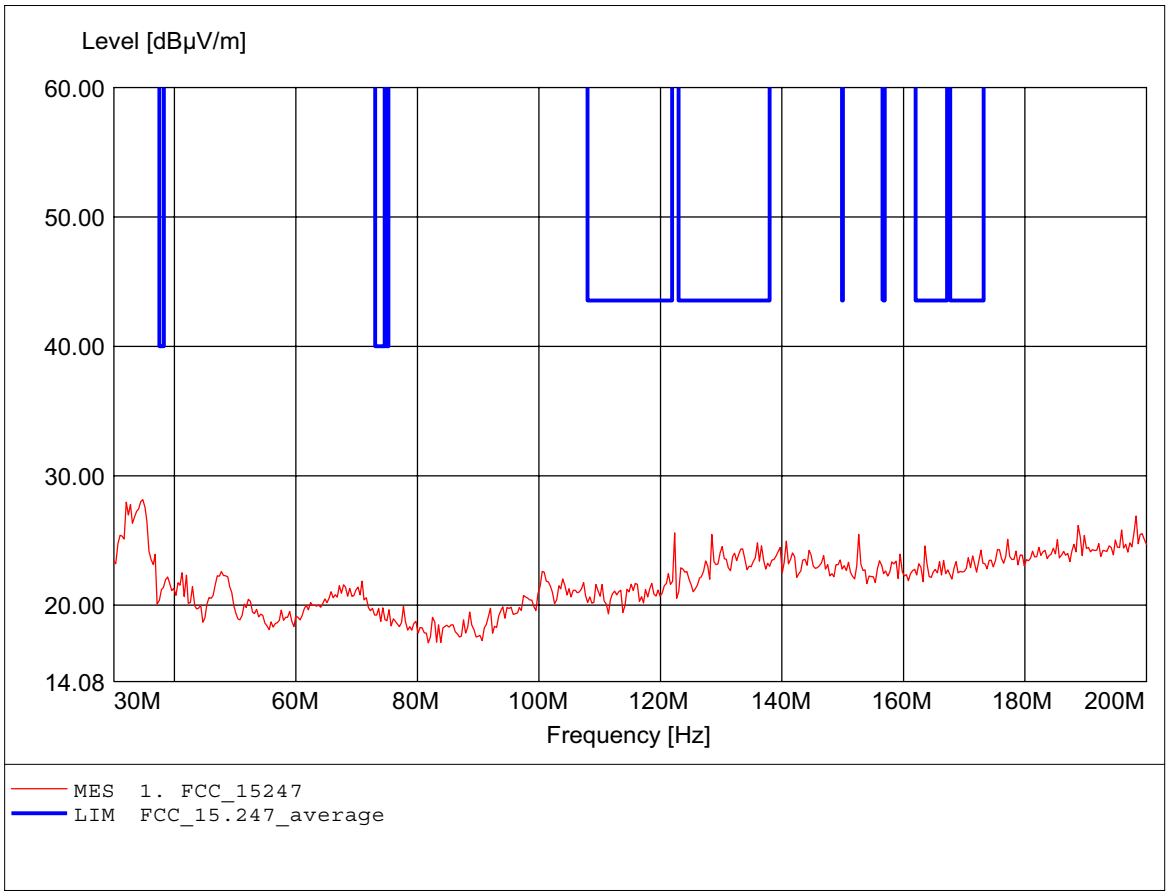
```
Order Number :         W6M20607-7234         ch39
Test Site / Operator: ETS / Michael
Temperature:          Temp.: 23.9°C
                      according to §15.247
Comment 1:            Dist.: 3m, Ant.: HK 116
                      Freq: 122.325MHz, Emax: 29.18dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

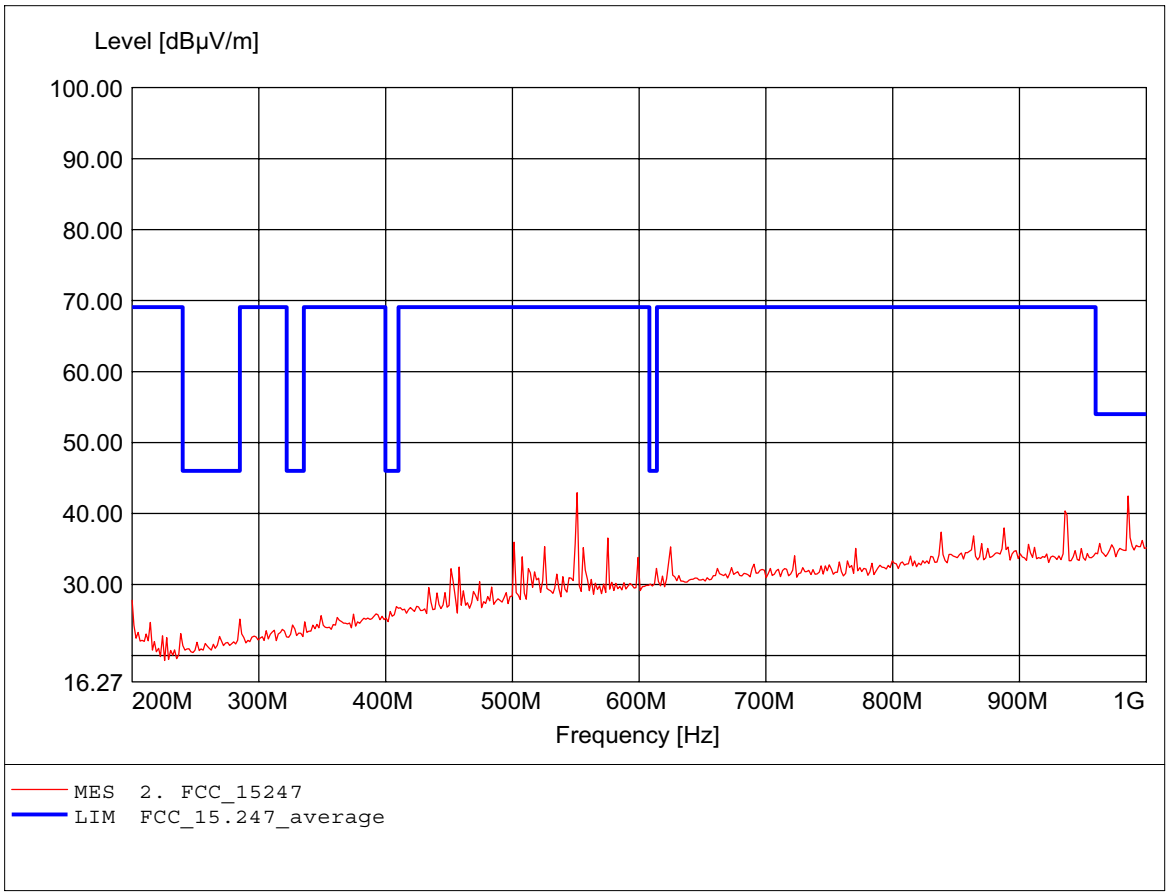
```
Order Number :          W6M20607-7234          ch39
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HK 116
                        Freq: 34.770MHz, Emax: 28.15dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

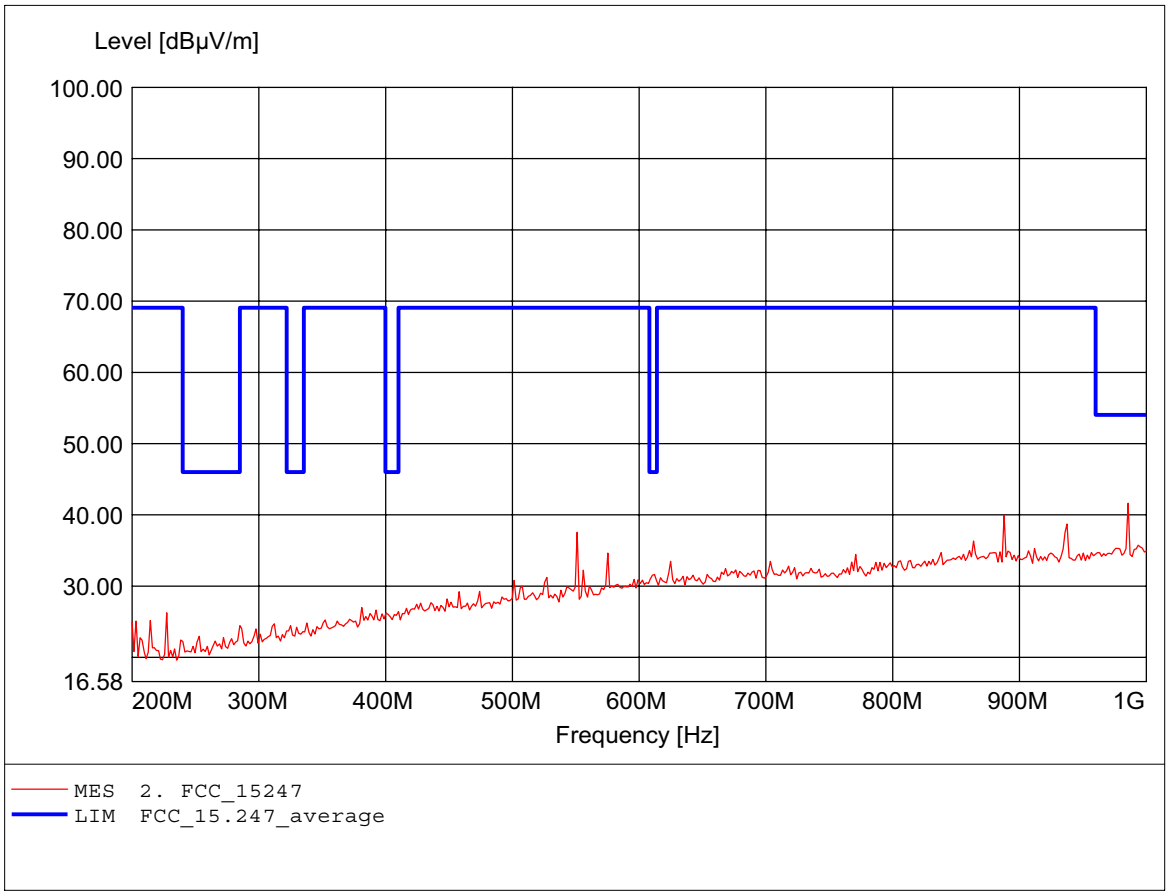
```
Order Number :         W6M20607-7234         ch39
Test Site / Operator: ETS / Michael
Temperature:          Temp.: 23.9°C
                      according to §15.247
Comment 1:            Dist.: 3m, Ant.: HL 223,
                      Freq: 551.102MHz, Emax: 42.94dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

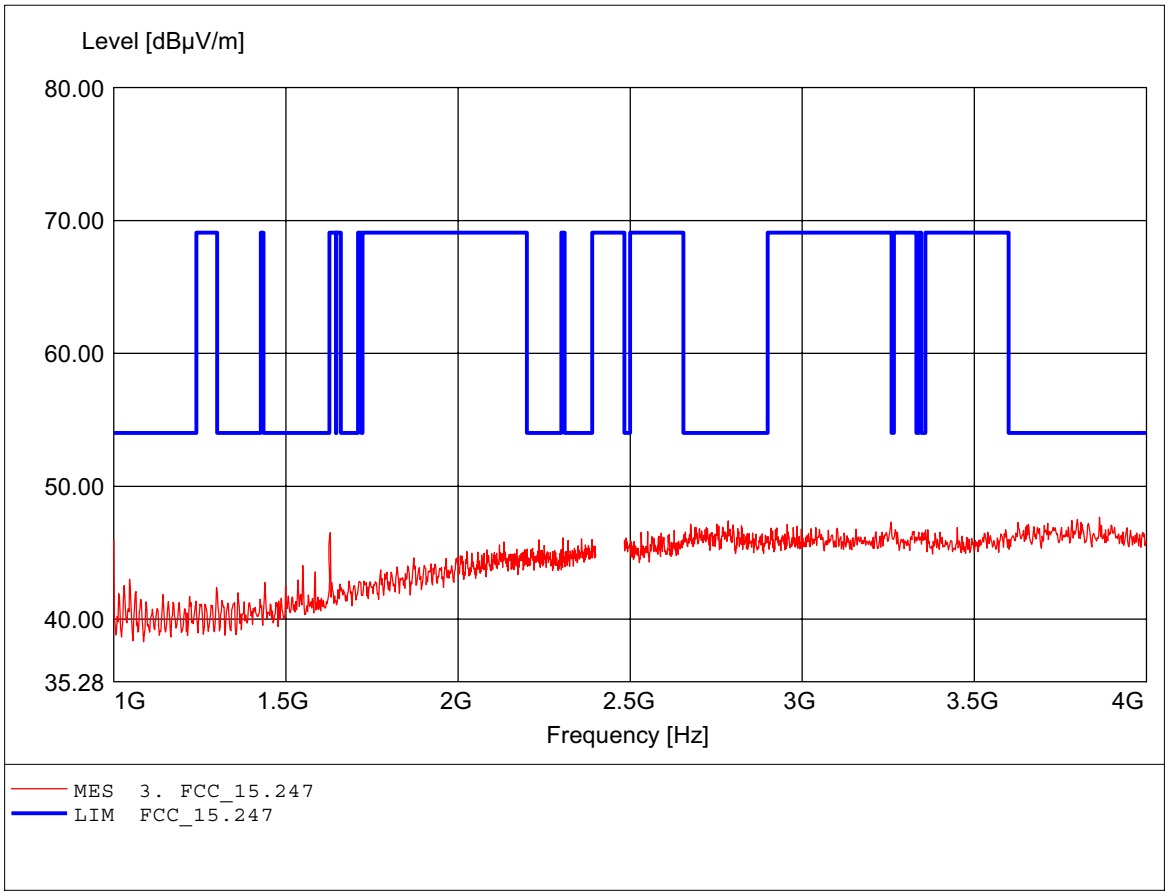
```
Order Number :         W6M20607-7234         ch39
Test Site / Operator: ETS / Michael
Temperature:          Temp.: 23.9°C
                      according to §15.247
Comment 1:            Dist.: 3m, Ant.: HL 223,
                      Freq: 985.571MHz, Emax: 41.62dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

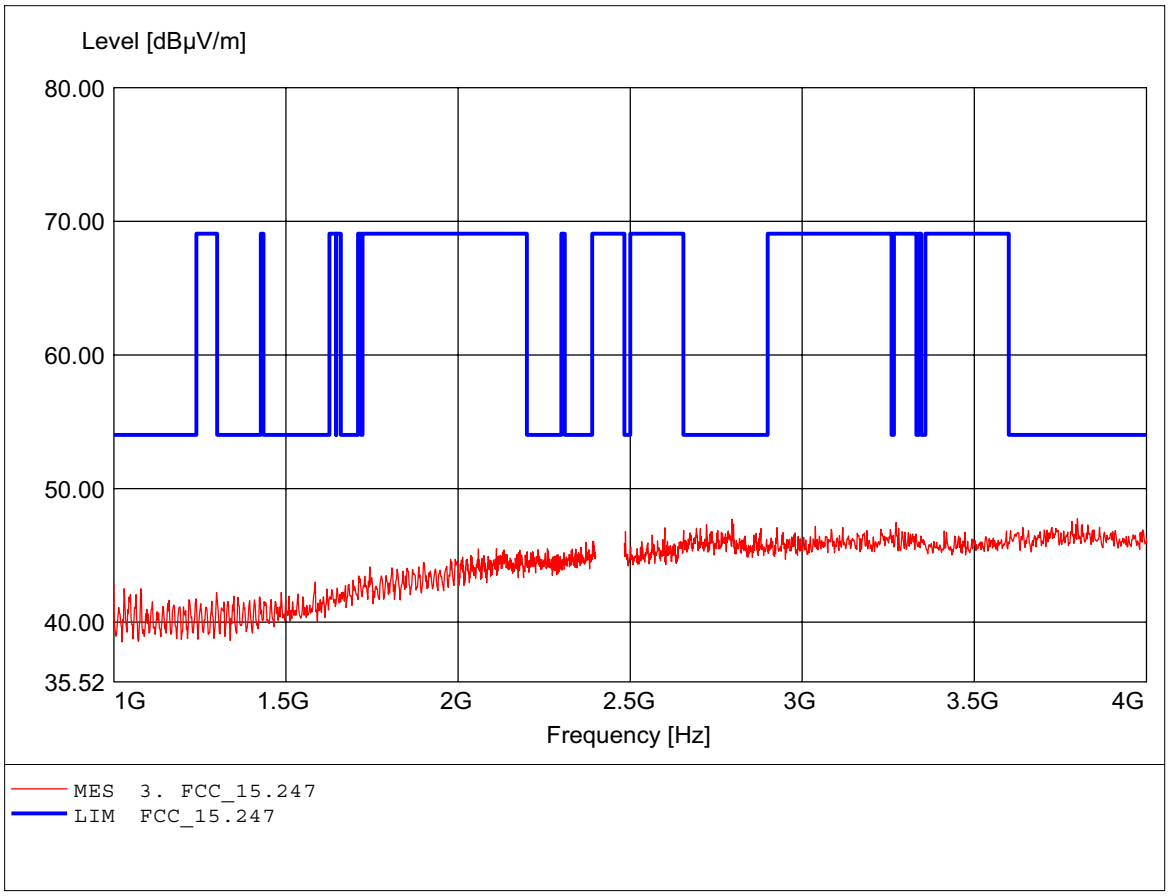
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, amplif.
                       Freq: 3.864GHz, Emax: 47.67dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

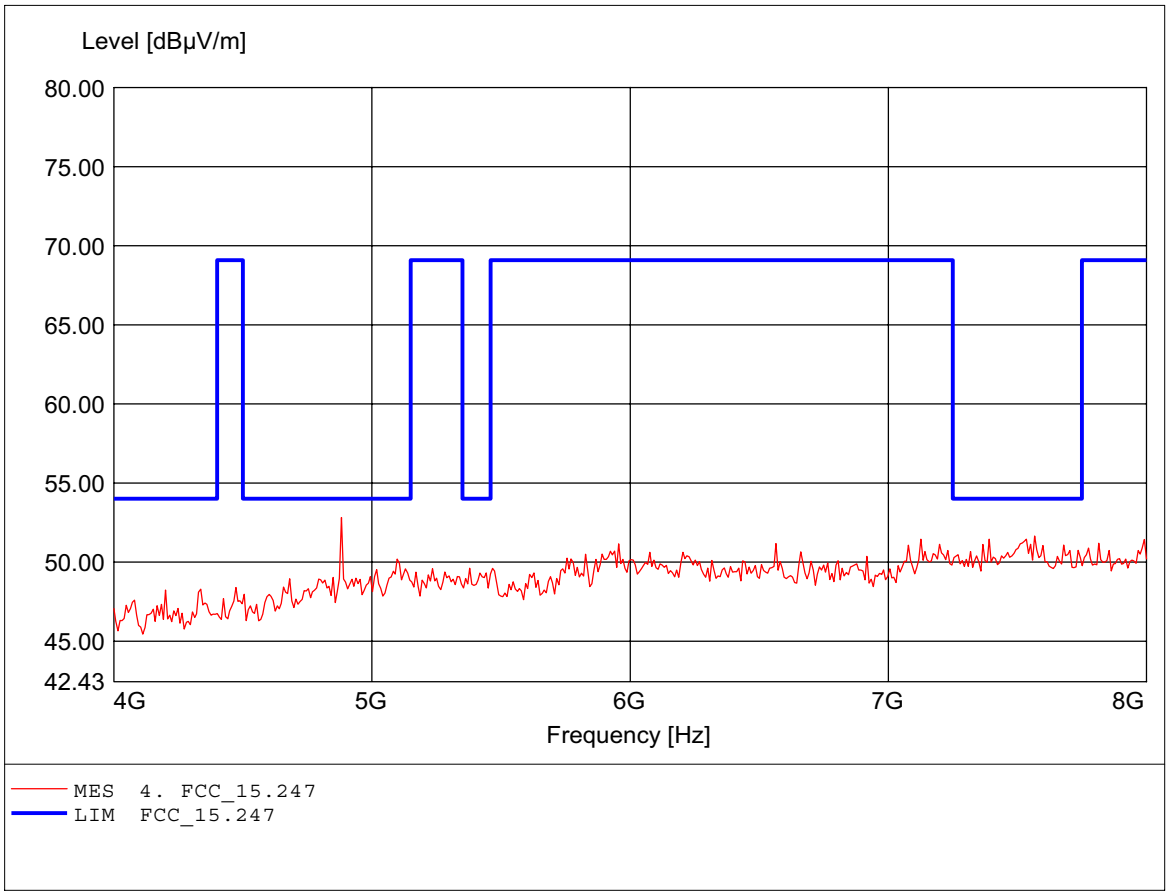
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, amplif.
                       Freq: 3.800GHz, Emax: 47.74dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

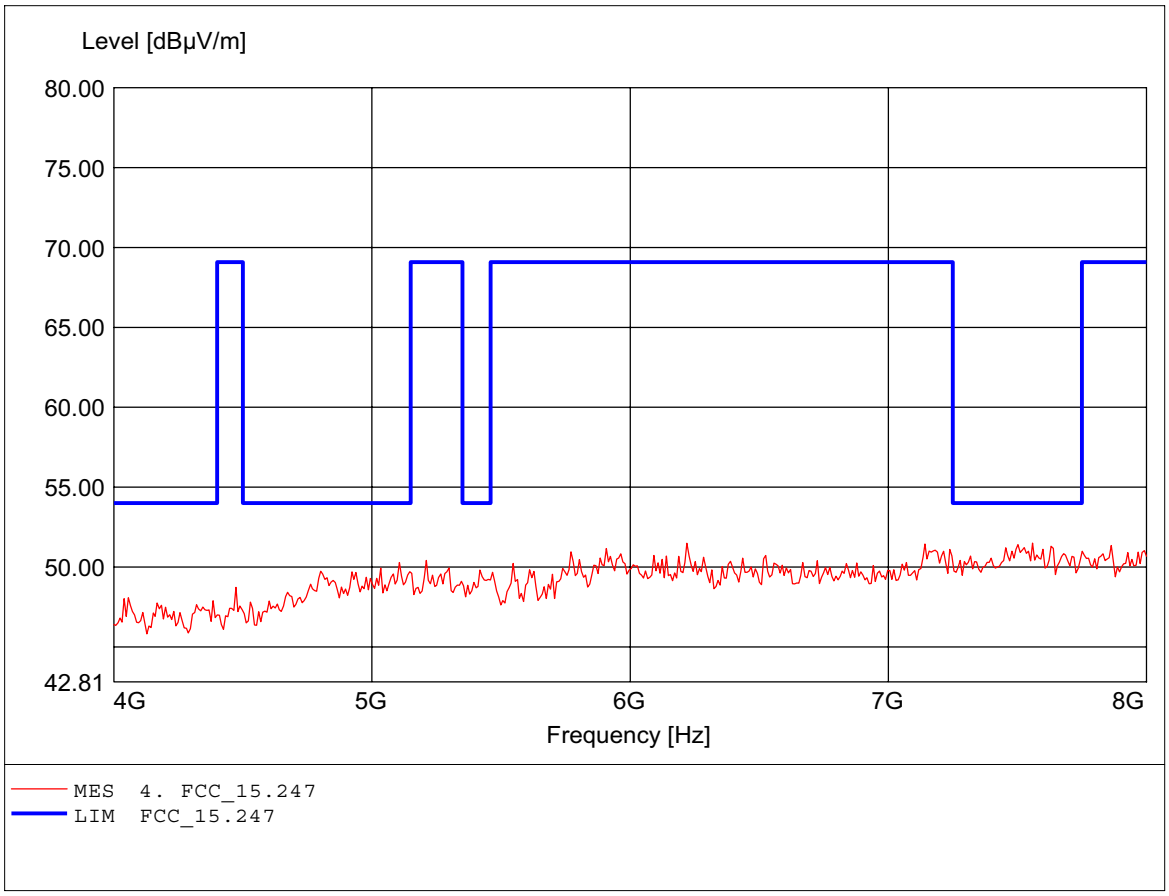
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 4.882GHz, Emax: 52.82dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

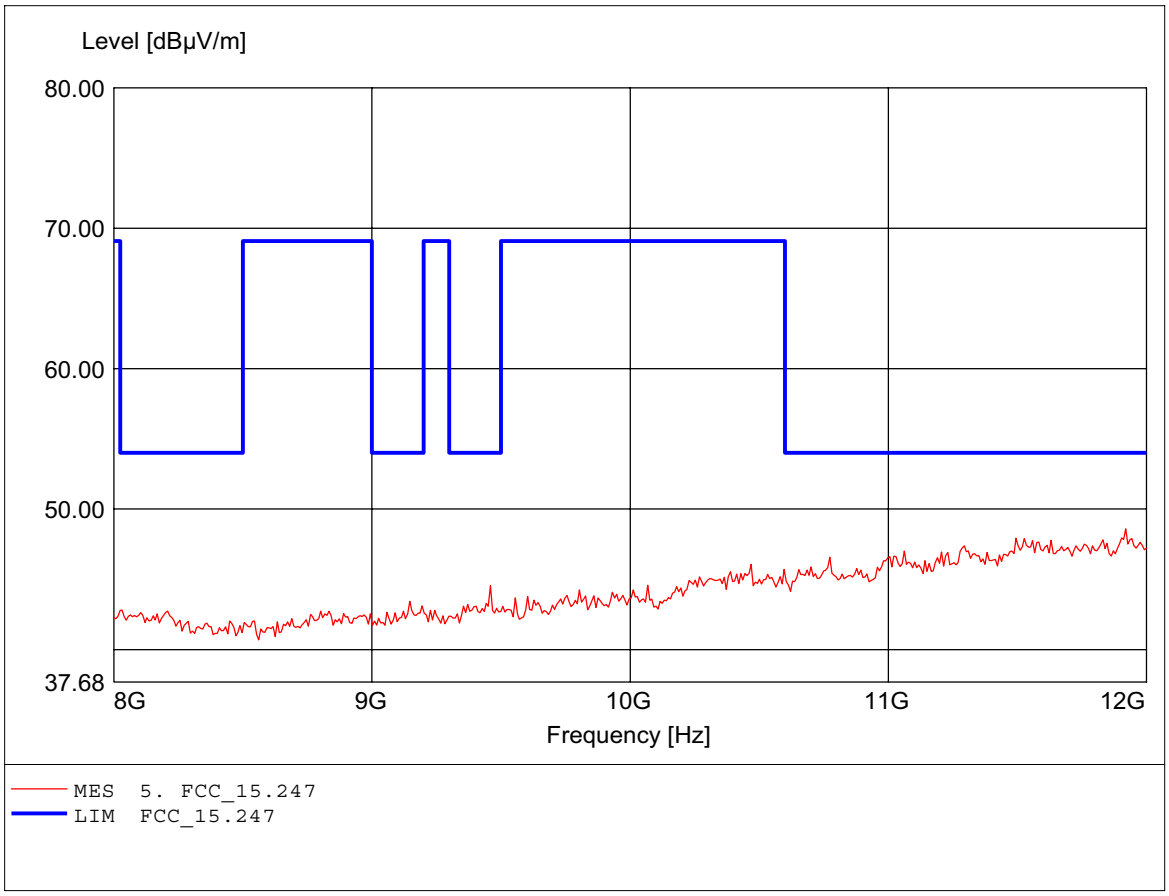
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 7.559GHz, Emax: 51.50dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

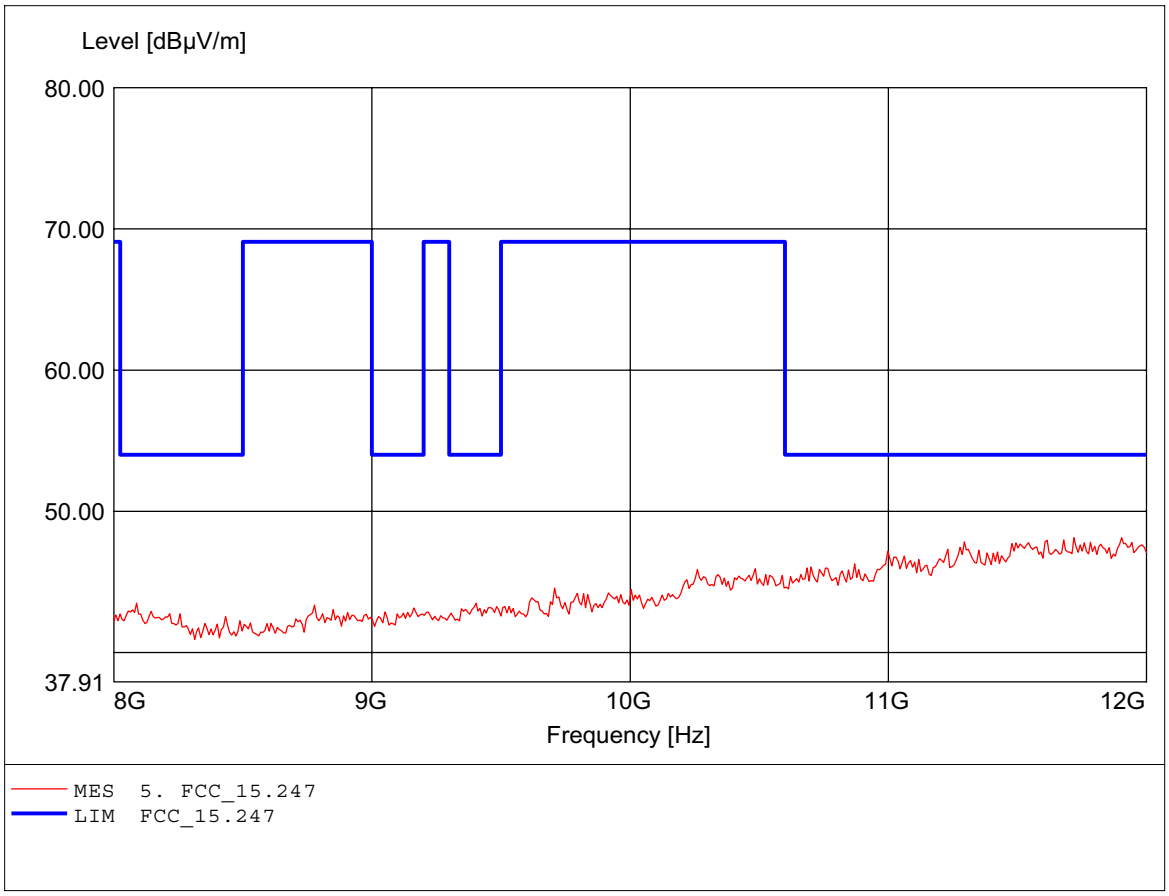
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 11.920GHz, Emax: 48.60dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

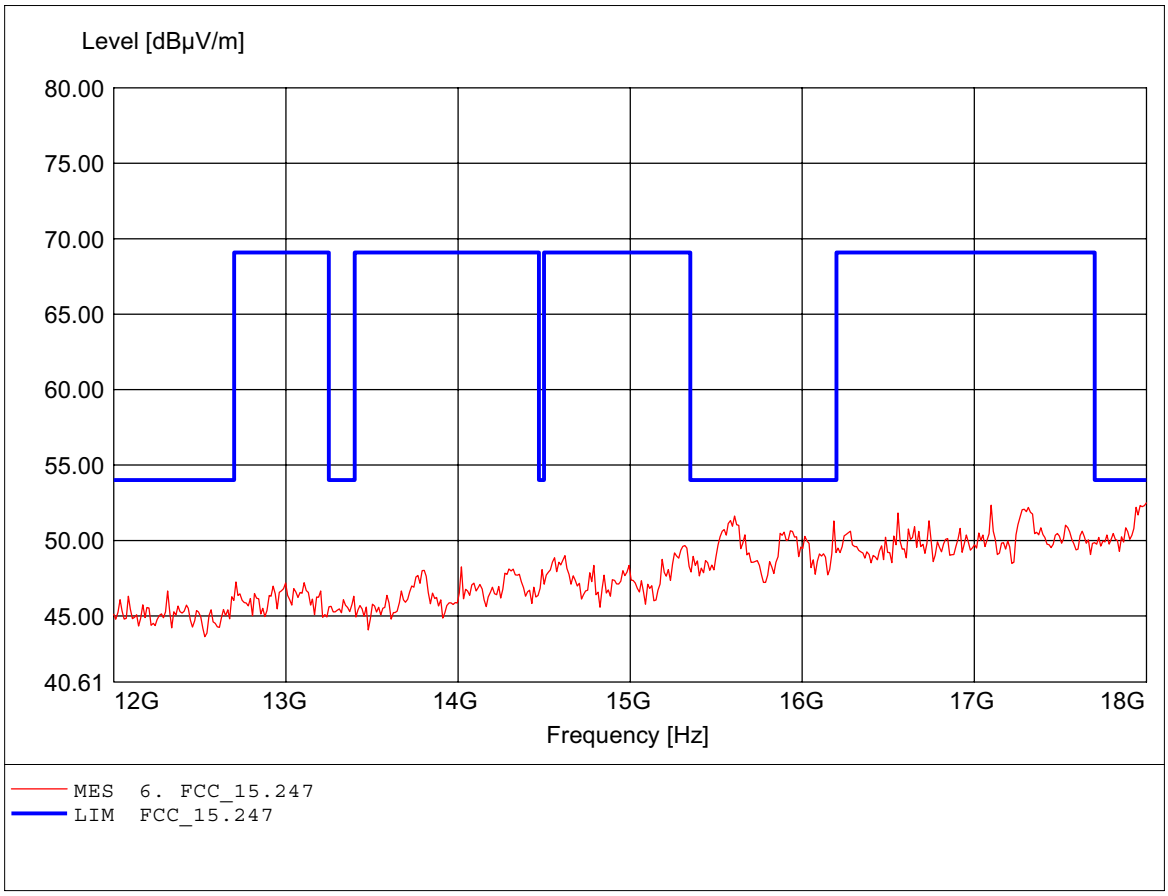
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 11.719GHz, Emax: 48.13dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

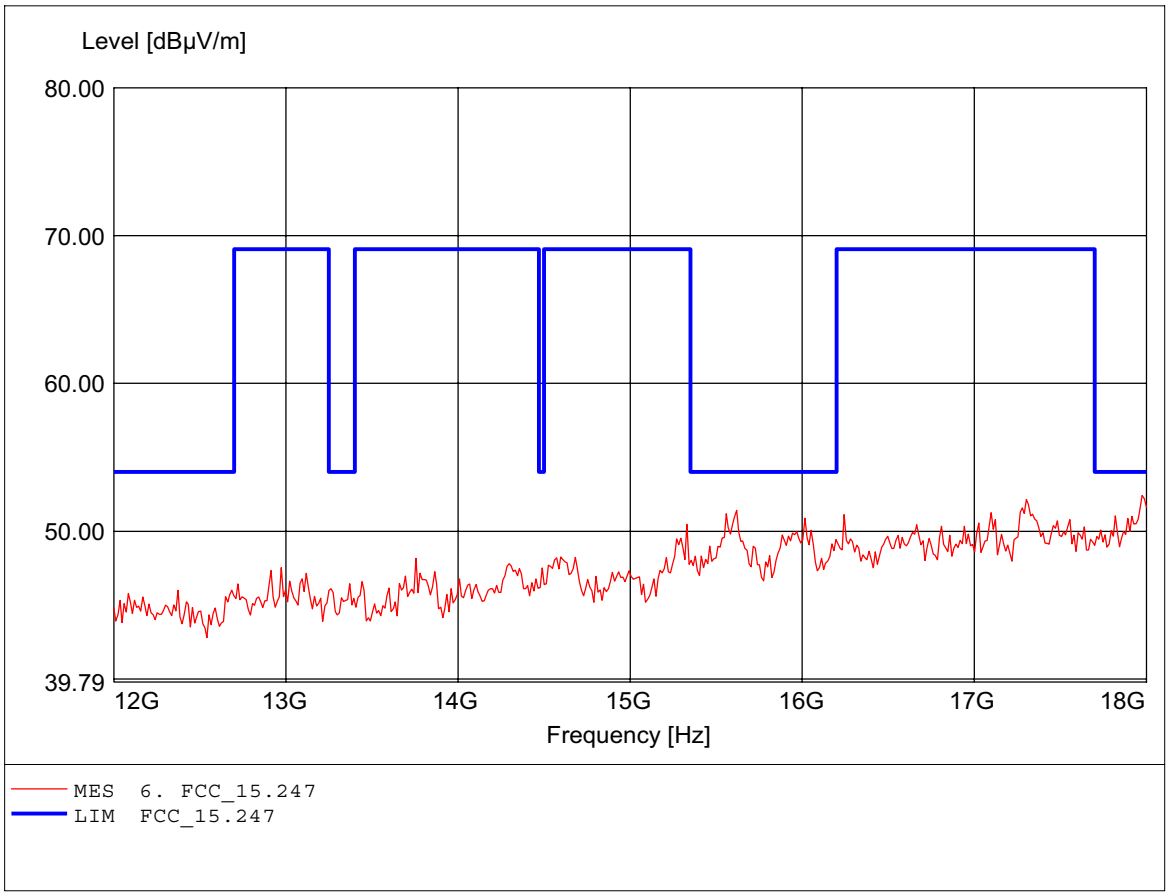
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 18.000GHz, Emax: 52.48dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

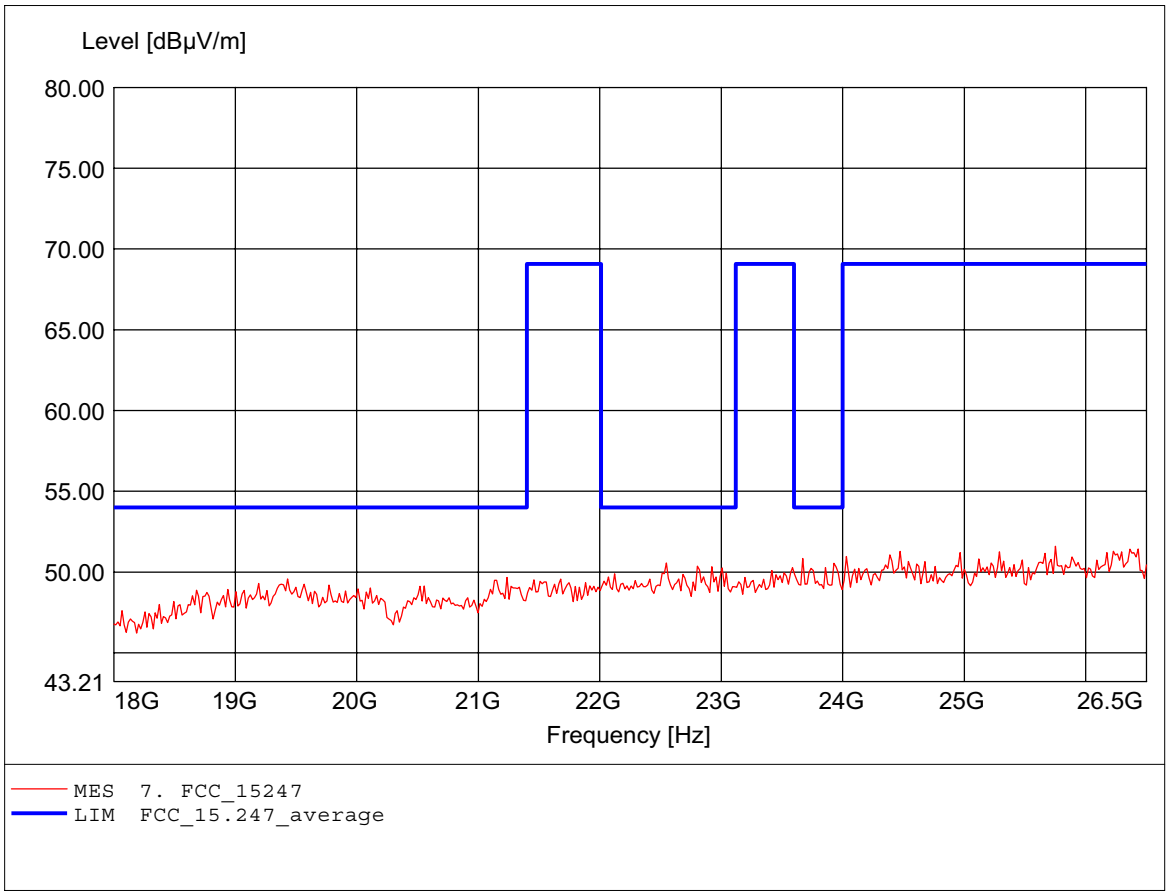
```
Order Number:          W6M20607-7234        ch39
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 17.976GHz, Emax: 52.43dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

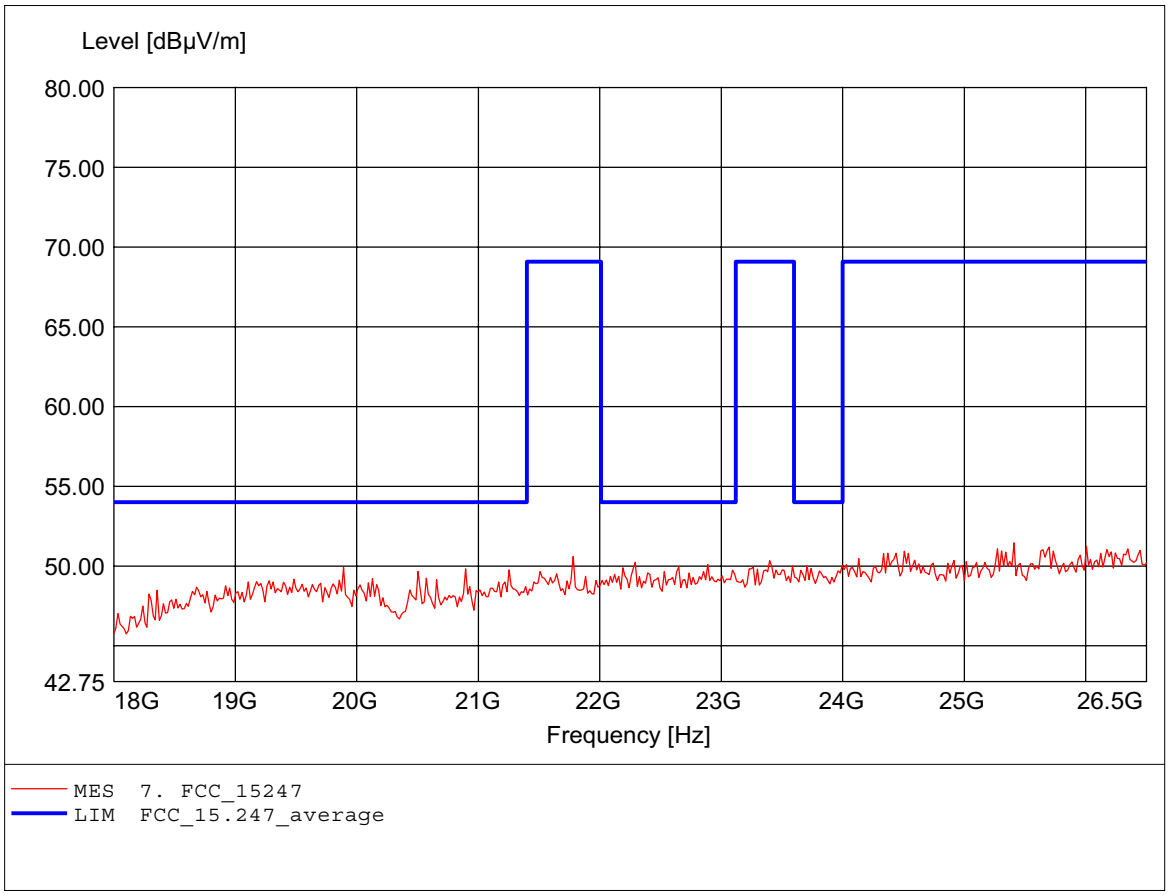
```
Order Number :          W6M20607-7234          ch39
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
Test Specification:     according to §15.247, peak detector
Comment 1:              Dist.: 3m, Ant.: HL025, amplif.
                        Freq: 25.751GHz, Emax: 51.60dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

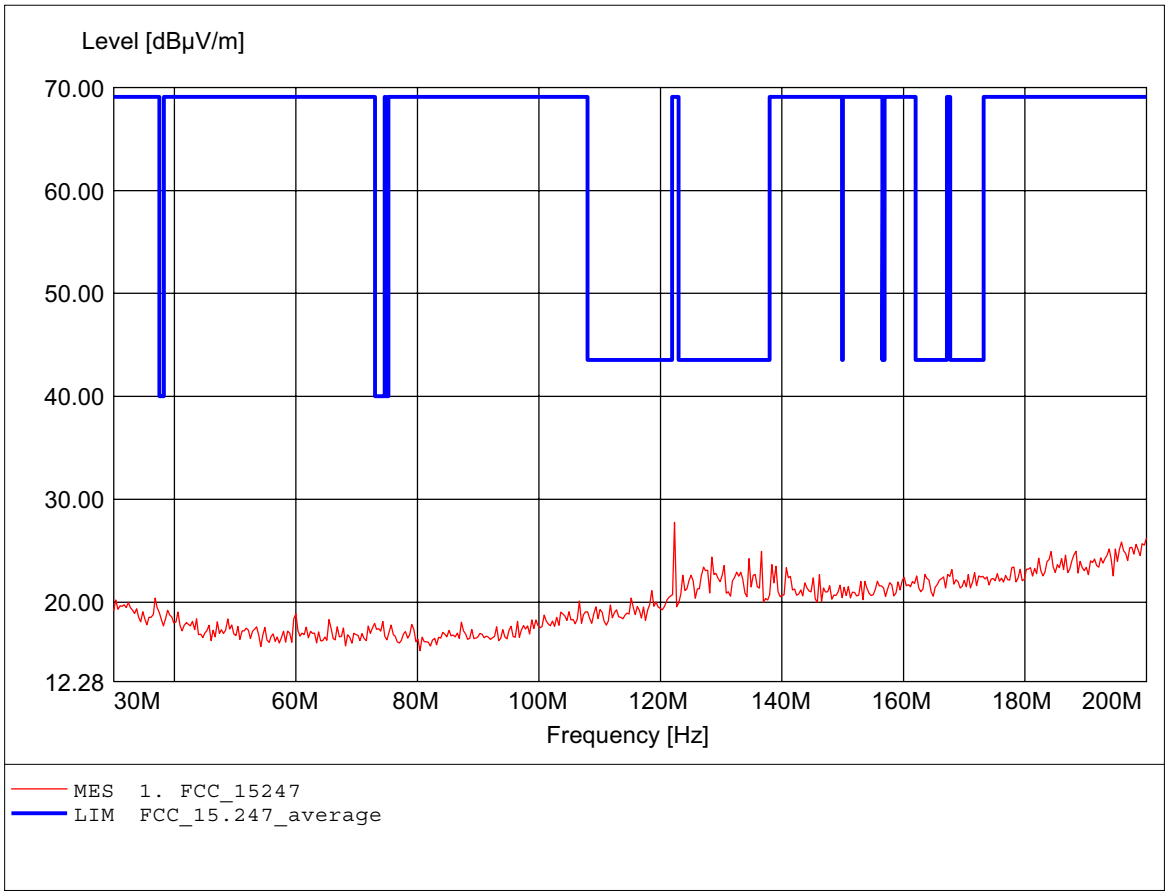
```
Order Number :          W6M20607-7234          ch39
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
Test Specification:     according to §15.247, peak detector
Comment 1:              Dist.: 3m, Ant.: HL025, amplif.
                        Freq: 25.410GHz, Emax: 51.47dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

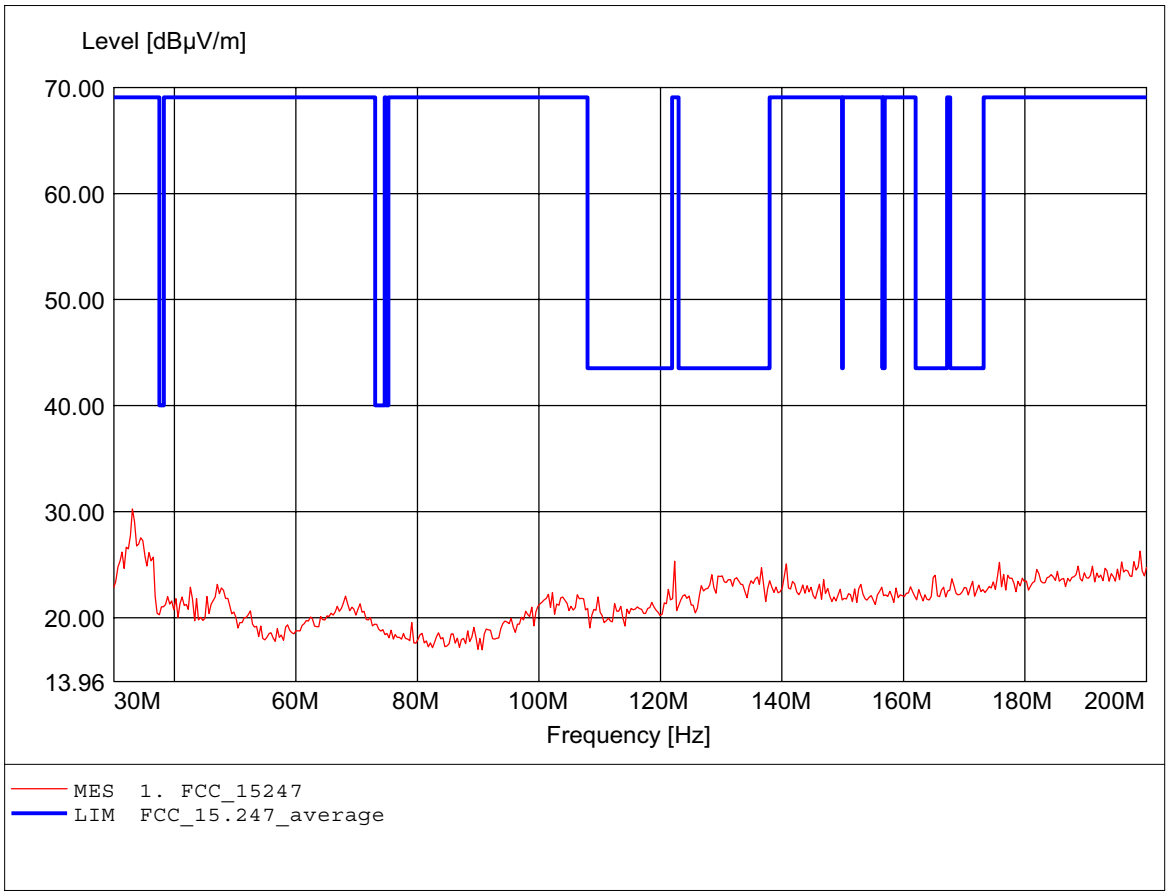
```
Order Number :          W6M20607-7234          ch78
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HK 116
                        Freq: 122.325MHz, Emax: 27.76dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

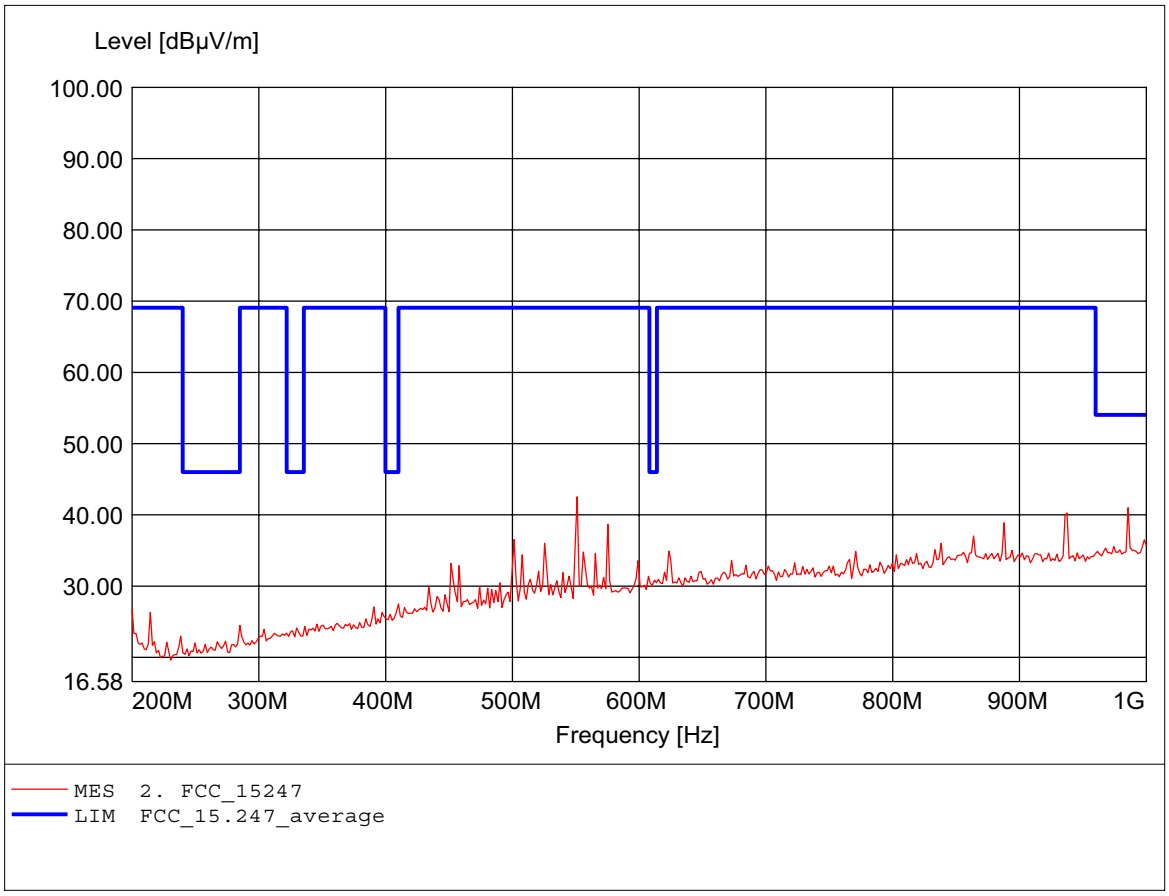
```
Order Number :          W6M20607-7234          ch78
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HK 116
                        Freq: 33.066MHz, Emax: 30.25dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

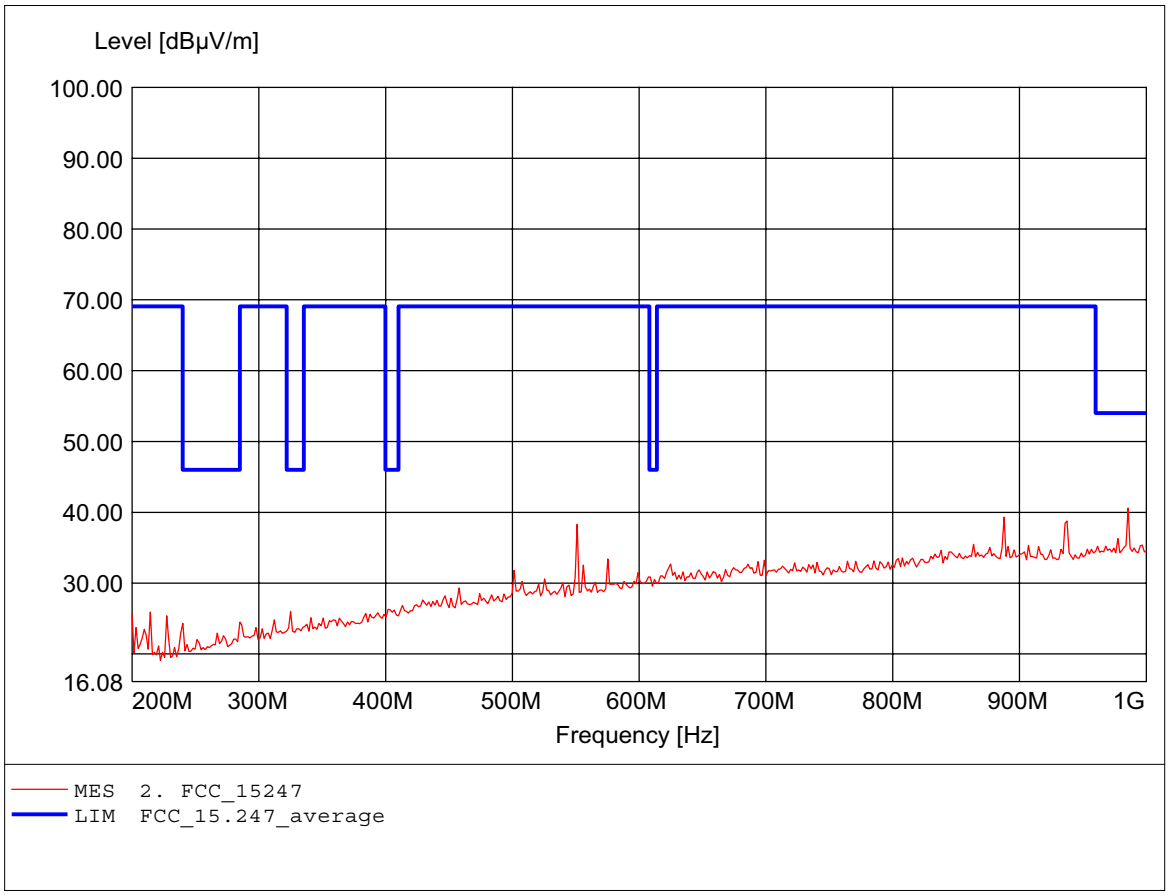
```
Order Number :          W6M20607-7234          ch78
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HL 223,
                        Freq: 551.102MHz, Emax: 42.54dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

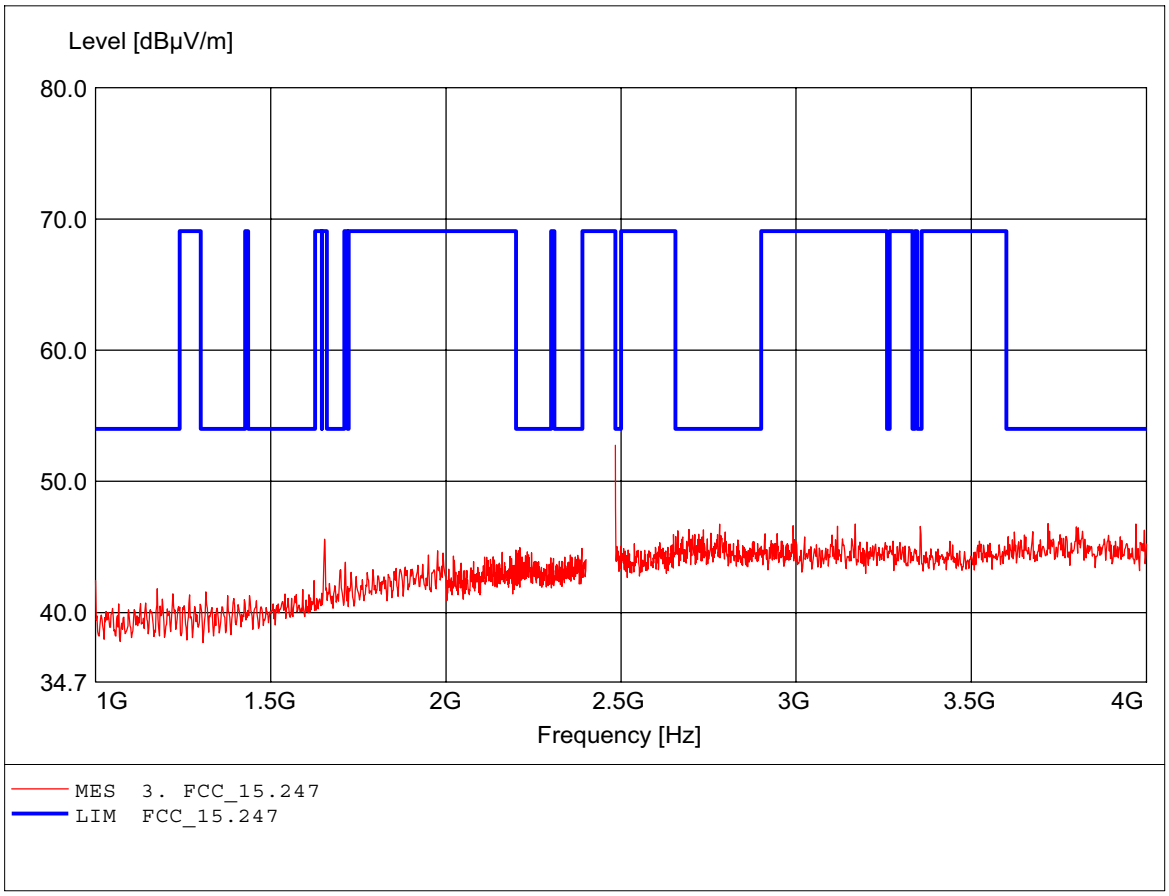
```
Order Number :          W6M20607-7234          ch78
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
                        according to §15.247
Comment 1:              Dist.: 3m, Ant.: HL 223,
                        Freq: 985.571MHz, Emax: 40.62dBµV/m, RBW: 100kHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

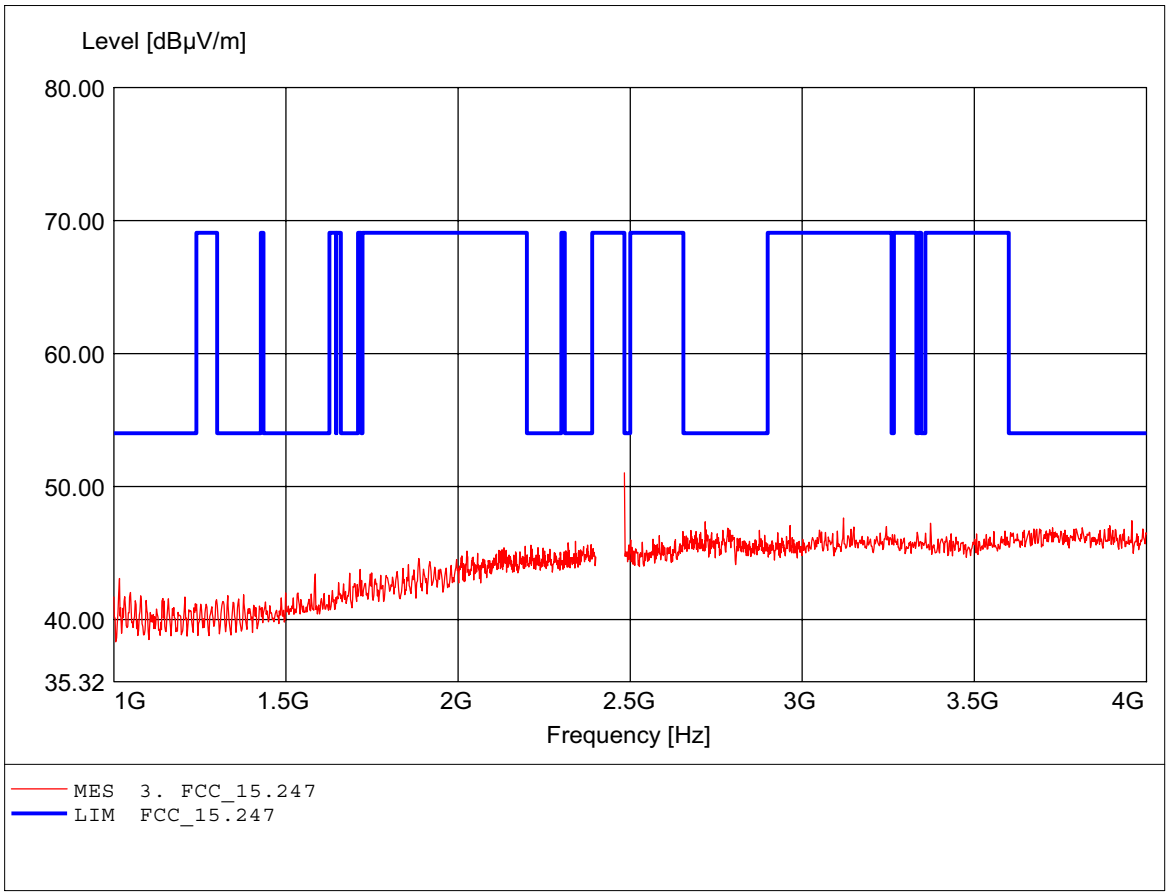
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, amplif.
                       Freq: 2.484GHz, Emax: 53.74dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

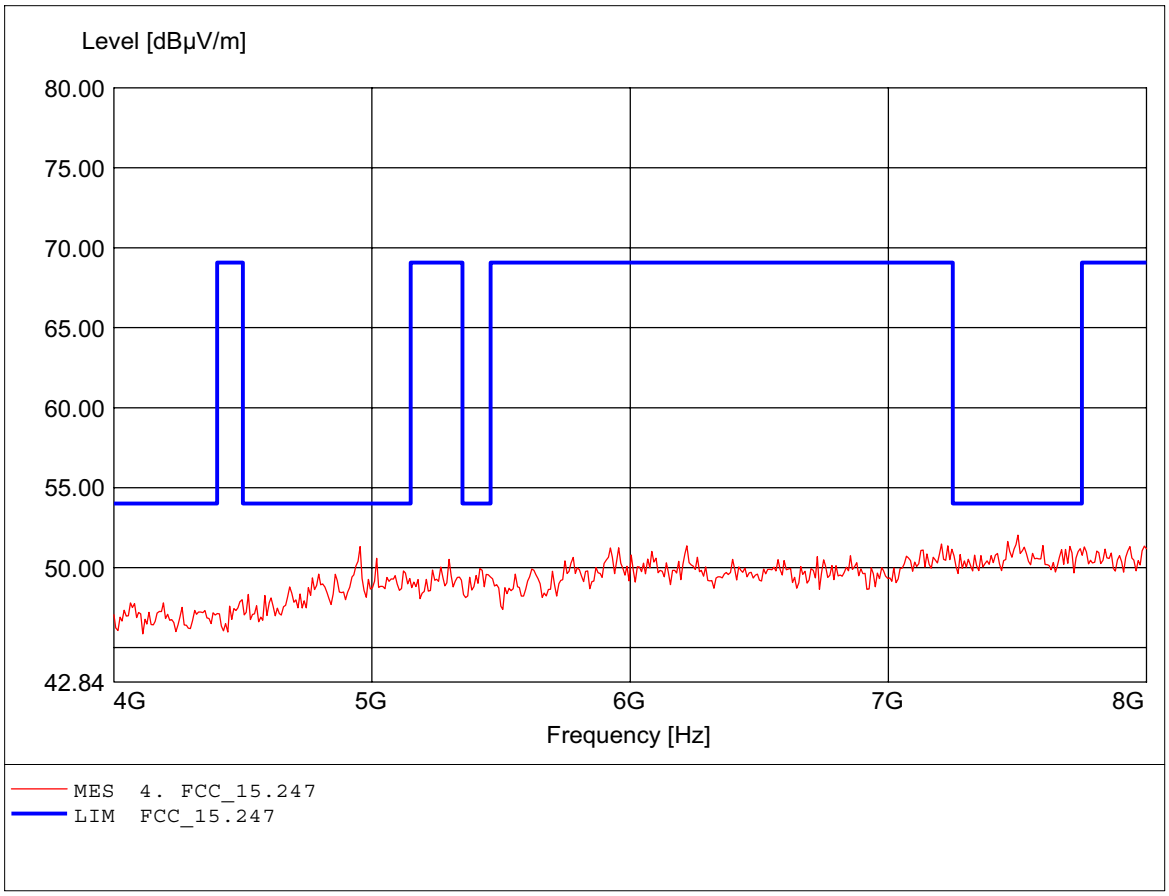
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, amplif.
                       Freq: 2.484GHz, Emax: 51.04dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

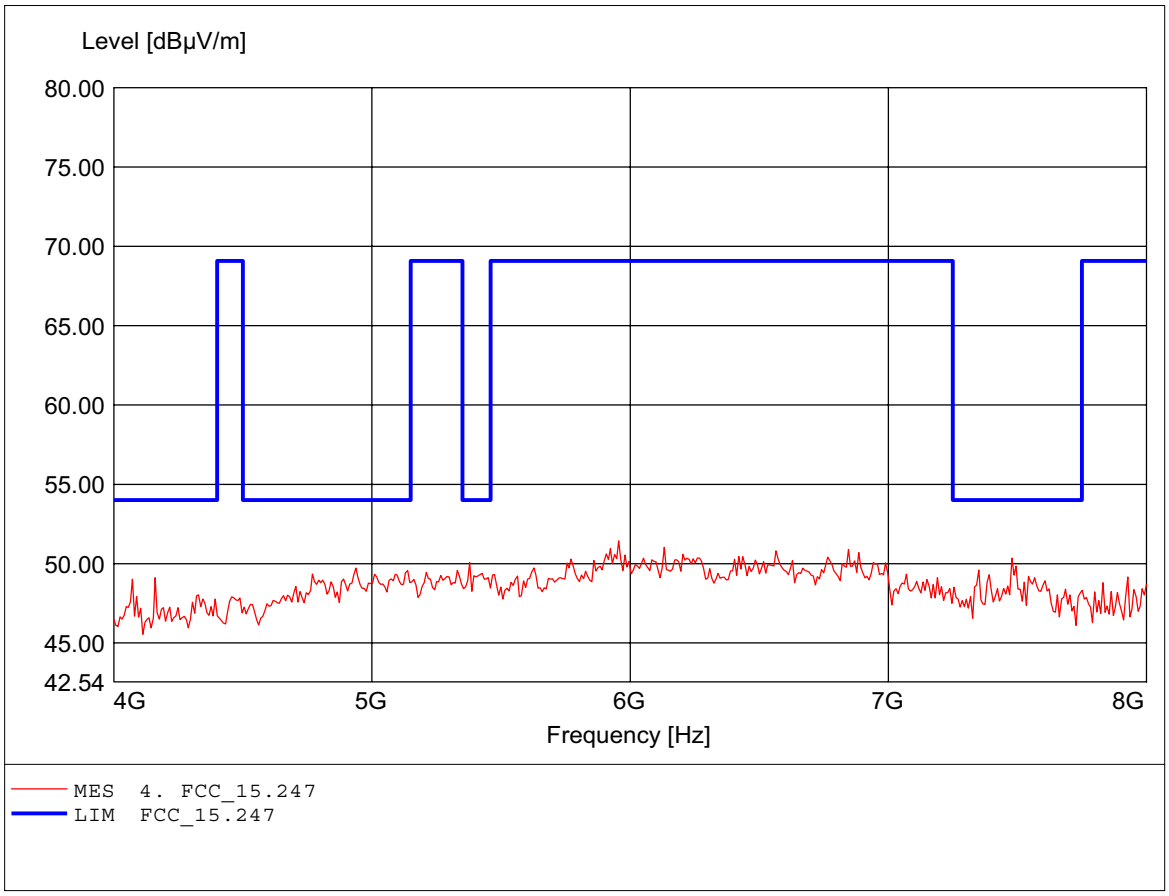
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 7.503GHz, Emax: 52.04dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

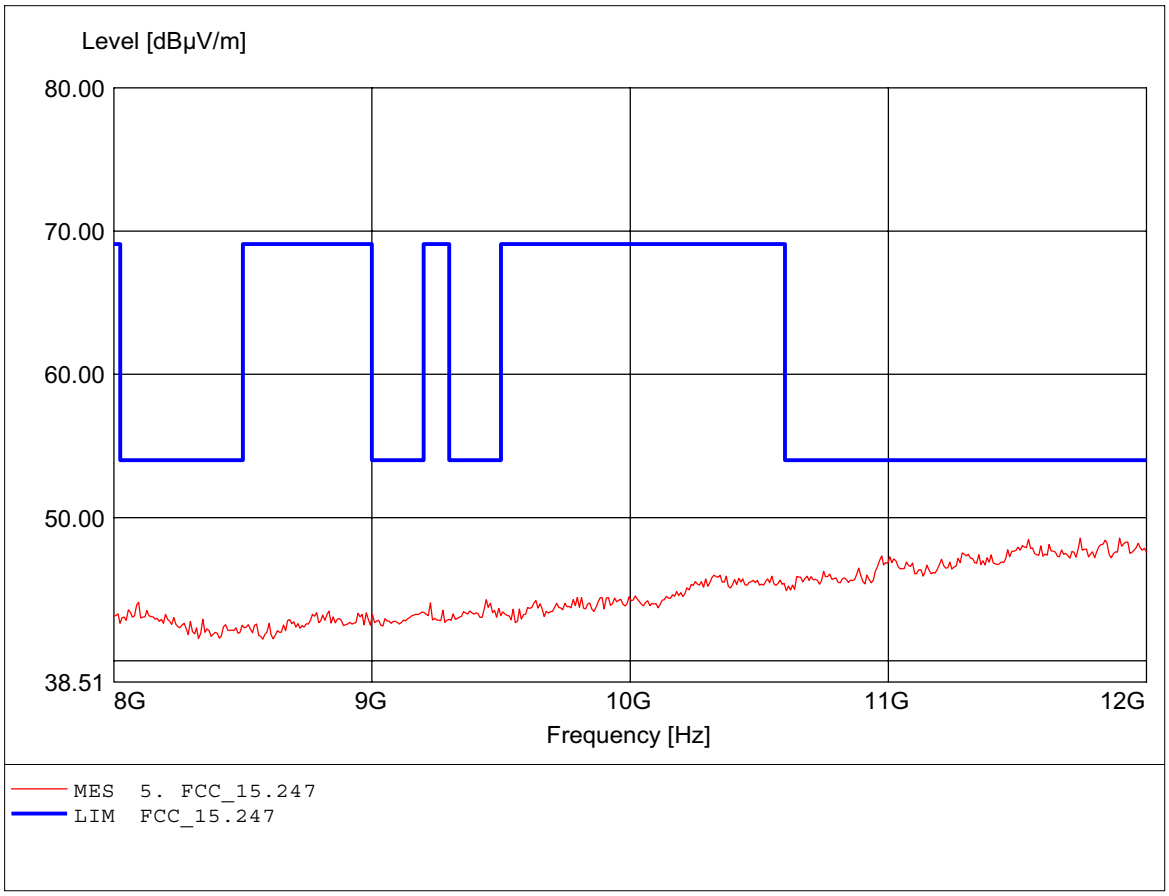
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 5.956GHz, Emax: 51.44dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

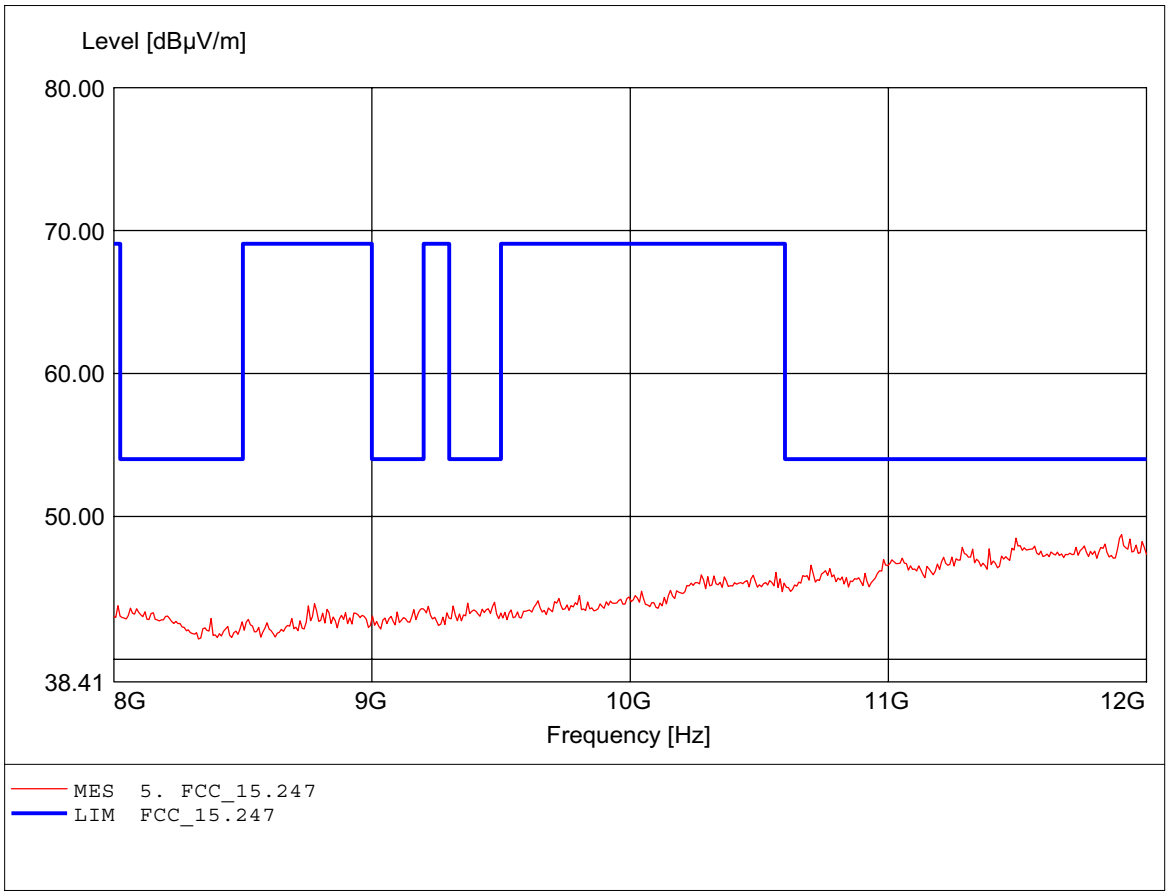
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 11.896GHz, Emax: 48.58dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

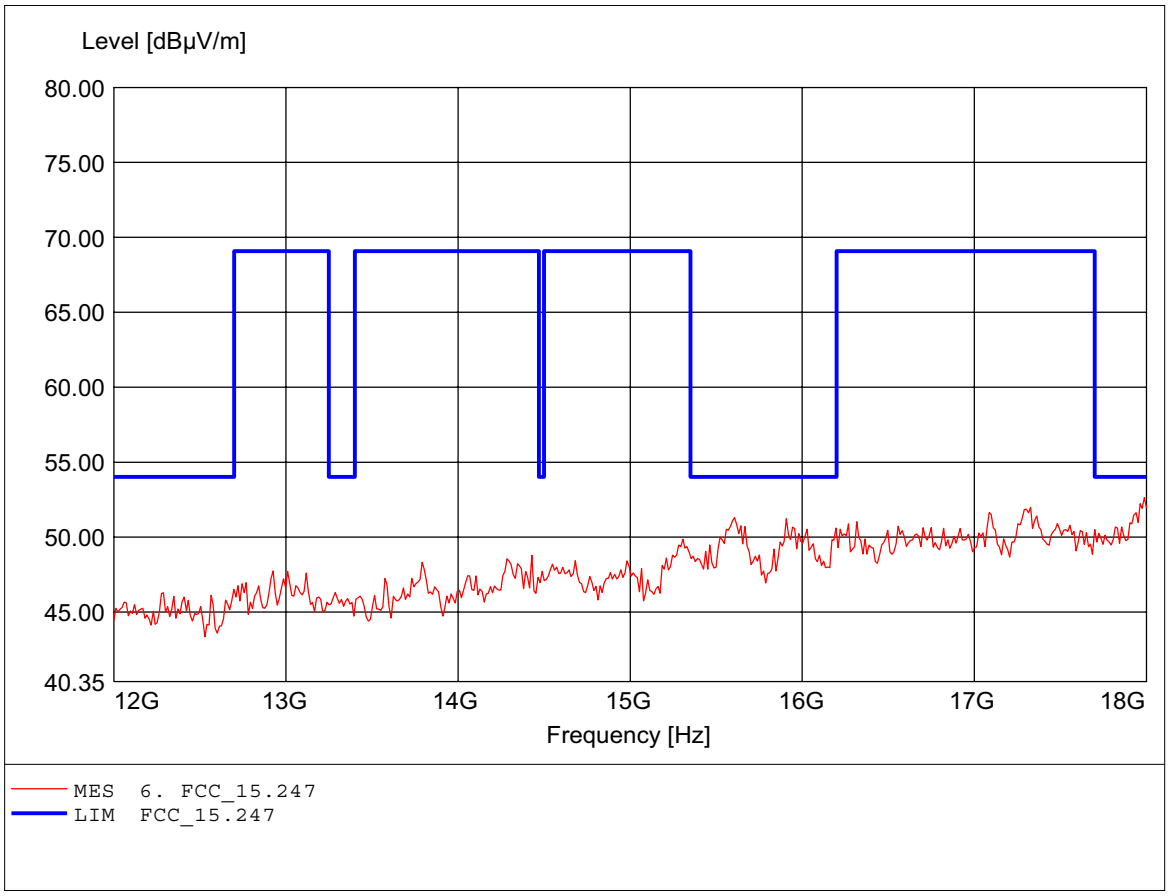
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 11.904GHz, Emax: 48.73dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

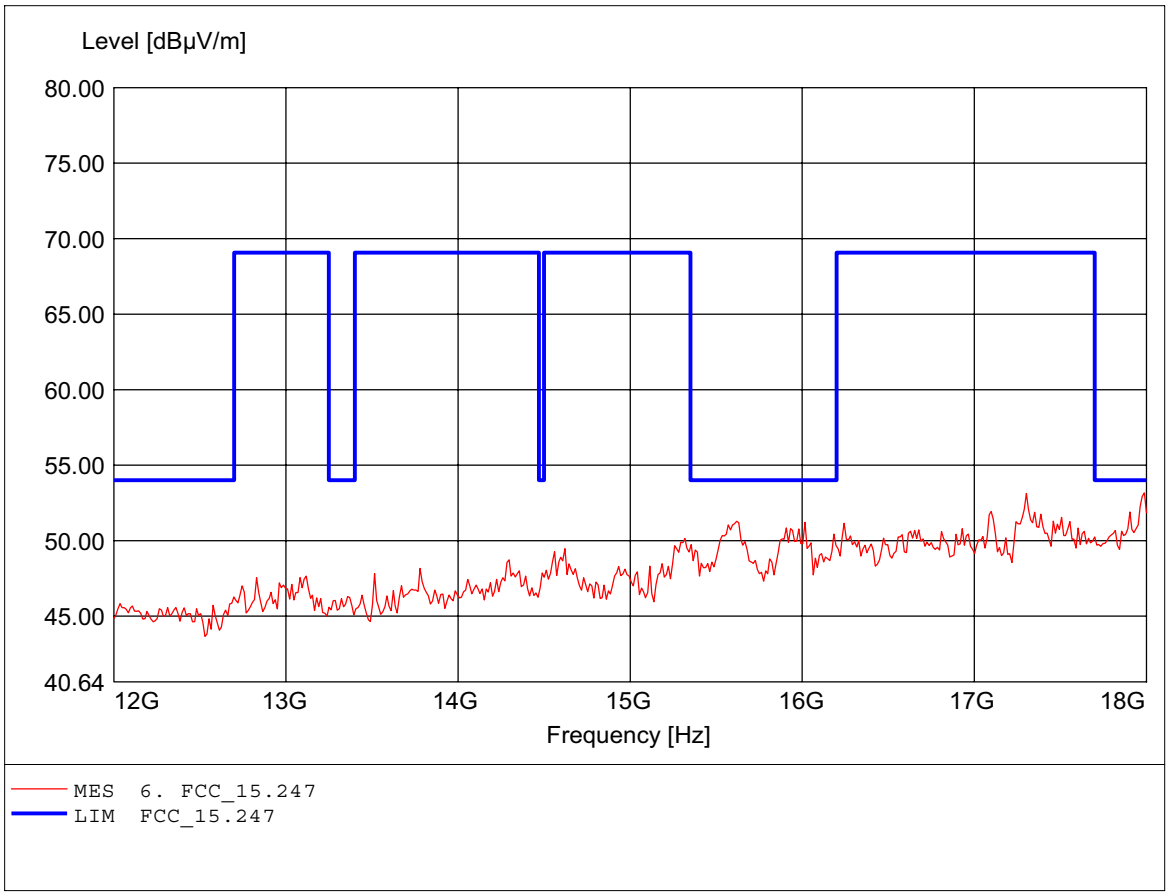
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 17.988GHz, Emax: 52.63dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

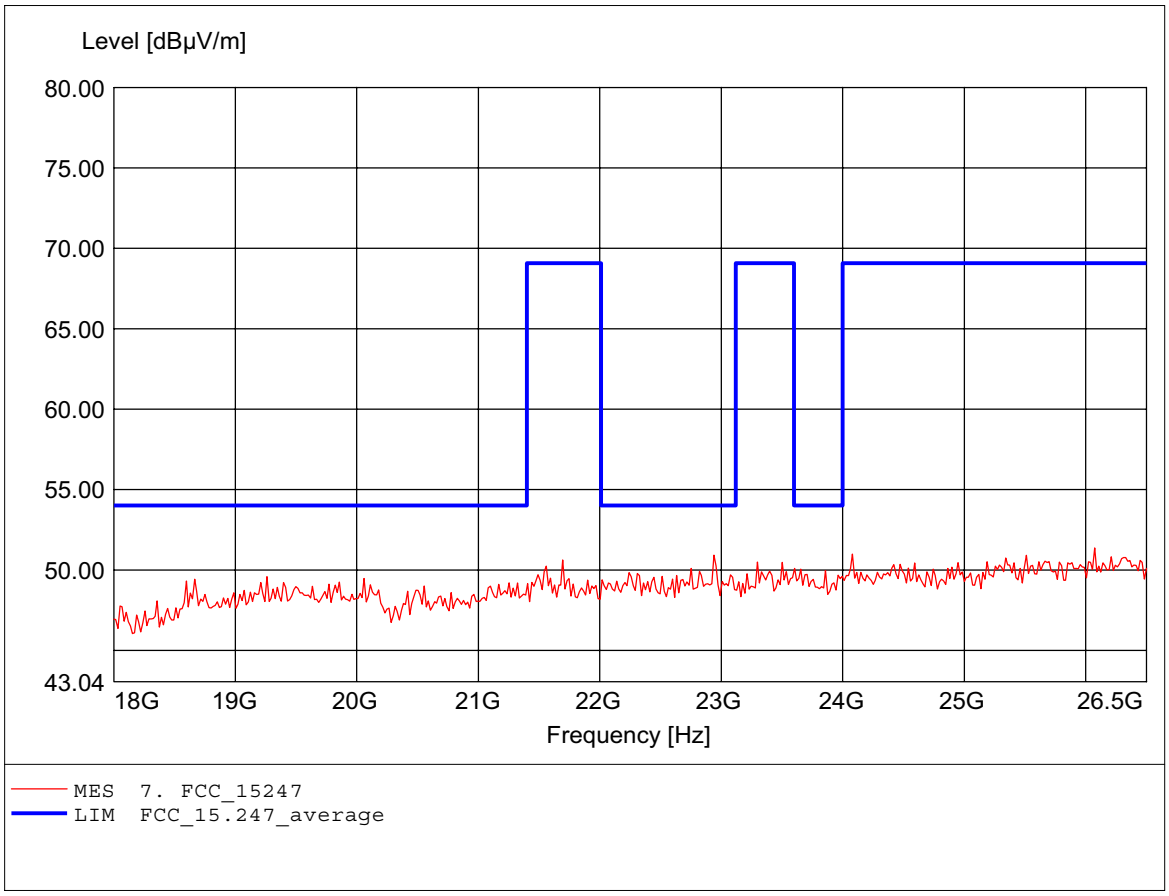
```
Order Number:          W6M20607-7234        ch78
Test Site / Operator:  ETS / Michael
Temperature:           Temp.: 23.9°C
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.+HP.
                       Freq: 17.988GHz, Emax: 53.17dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C / LP0002

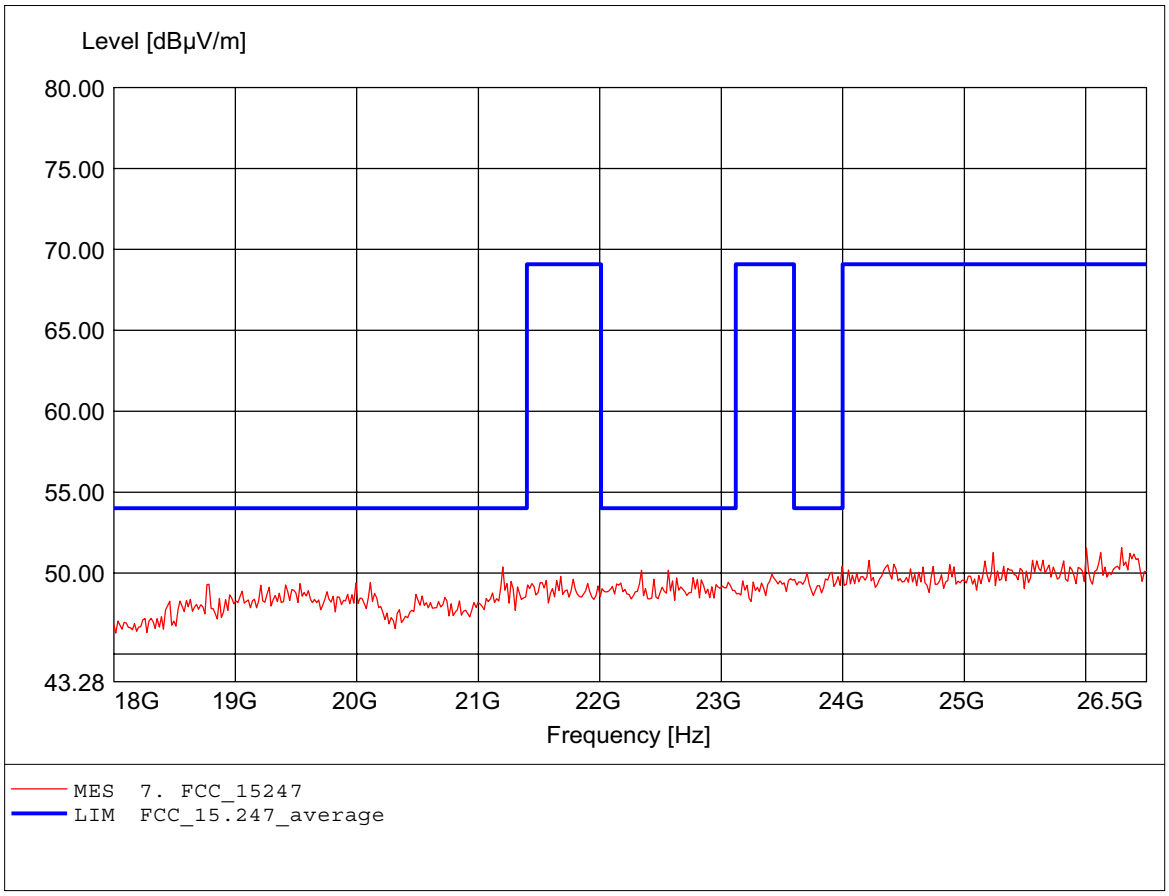
```
Order Number :          W6M20607-7234          ch78
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
Test Specification:     according to §15.247, peak detector
Comment 1:              Dist.: 3m, Ant.: HL025, amplif.
                        Freq: 26.074GHz, Emax: 51.38dBµV/m, RBW: 1MHz
```



Spurious emissions Field Strength

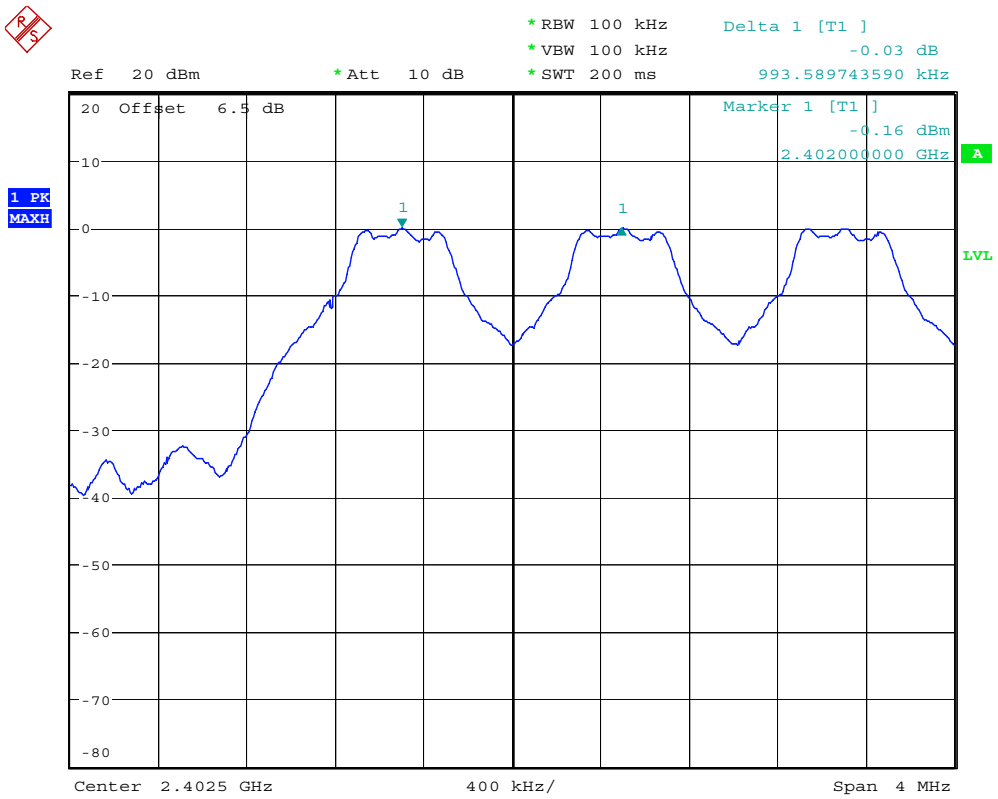
FCC RULES PART 15, SUBPART C / LP0002

```
Order Number :          W6M20607-7234          ch78
Test Site / Operator:   ETS / Michael
Temperature:            Temp.: 23.9°C
Test Specification:     according to §15.247, peak detector
Comment 1:              Dist.: 3m, Ant.: HL025, amplif.
                        Freq: 26.296GHz, Emax: 51.57dBµV/m, RBW: 1MHz
```



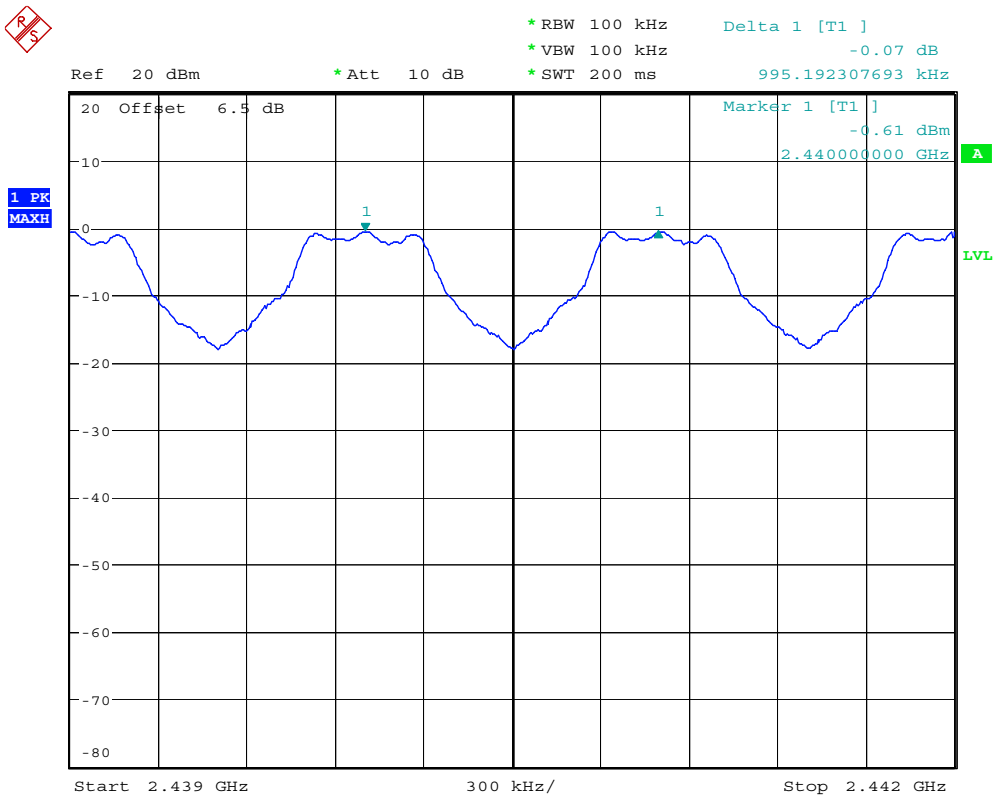
Appendix C

Carrier Frequency Separation



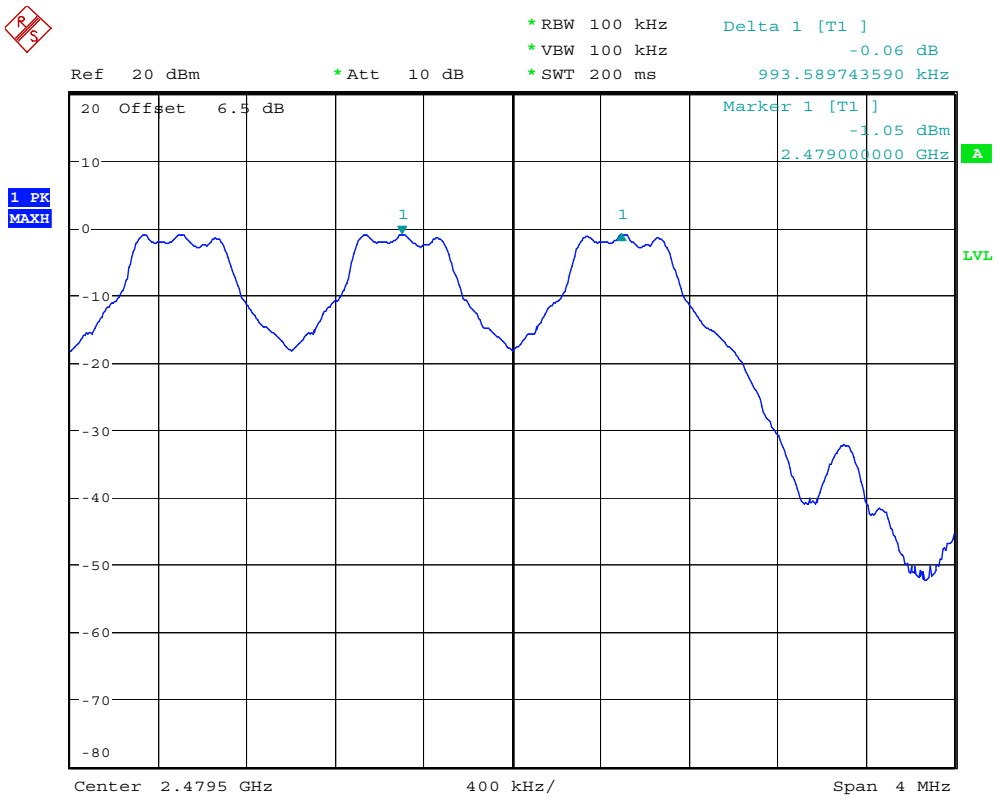
FREQUENCY SEPARATION CH0-CH1

Date: 19.SEP.2006 12:52:40



FREQUENCY SEPARATION CH39-CH40

Date: 19.SEP.2006 12:45:45

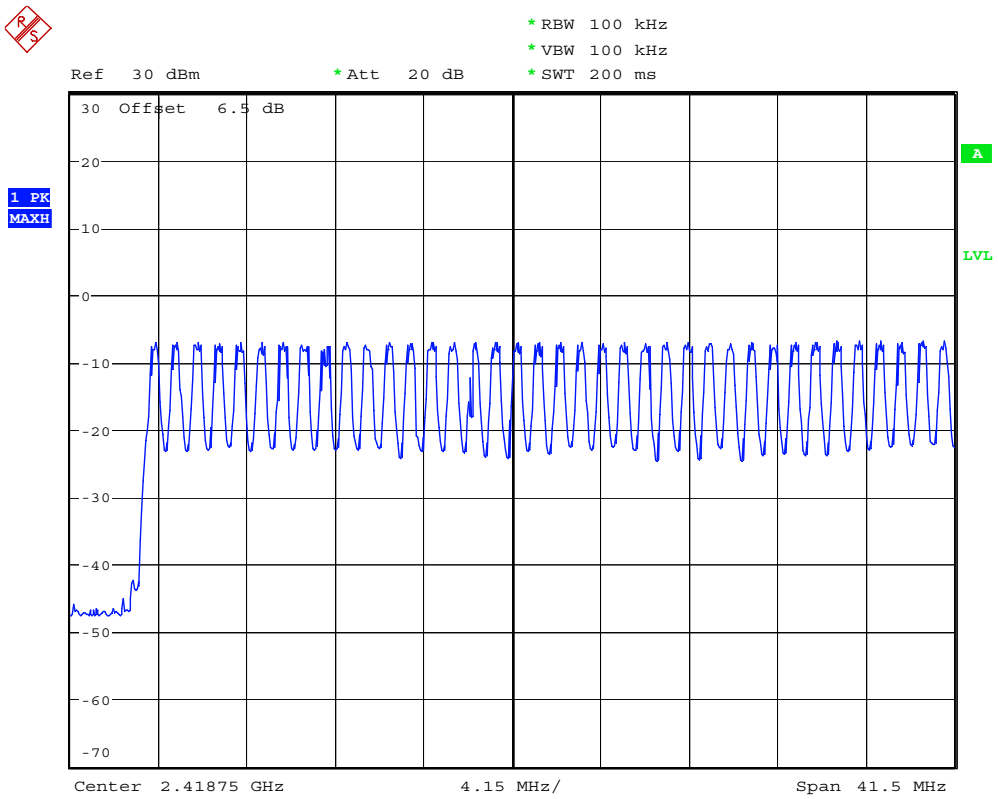


FREQUENCY SEPARATION CH78-CH79

DDate: 19.SEP.2006 12:59:23

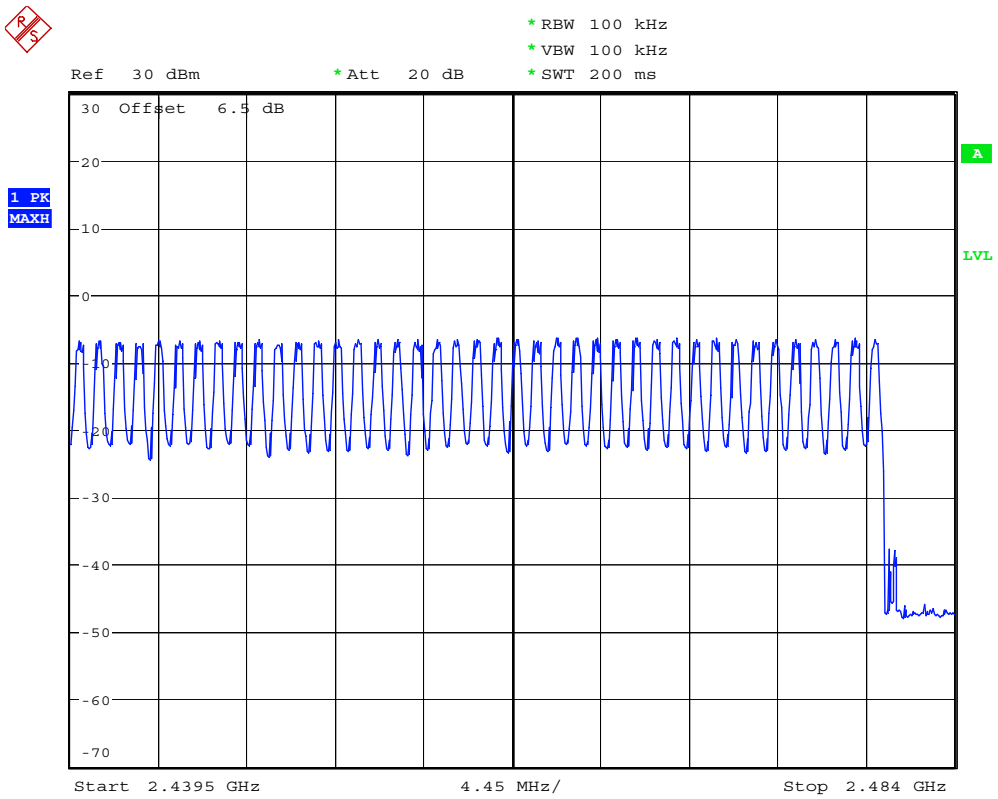
Appendix D

Number of Hopping Frequencies



NUMBER OF HOPPING CH0-CH37

Date: 19.SEP.2006 14:32:49

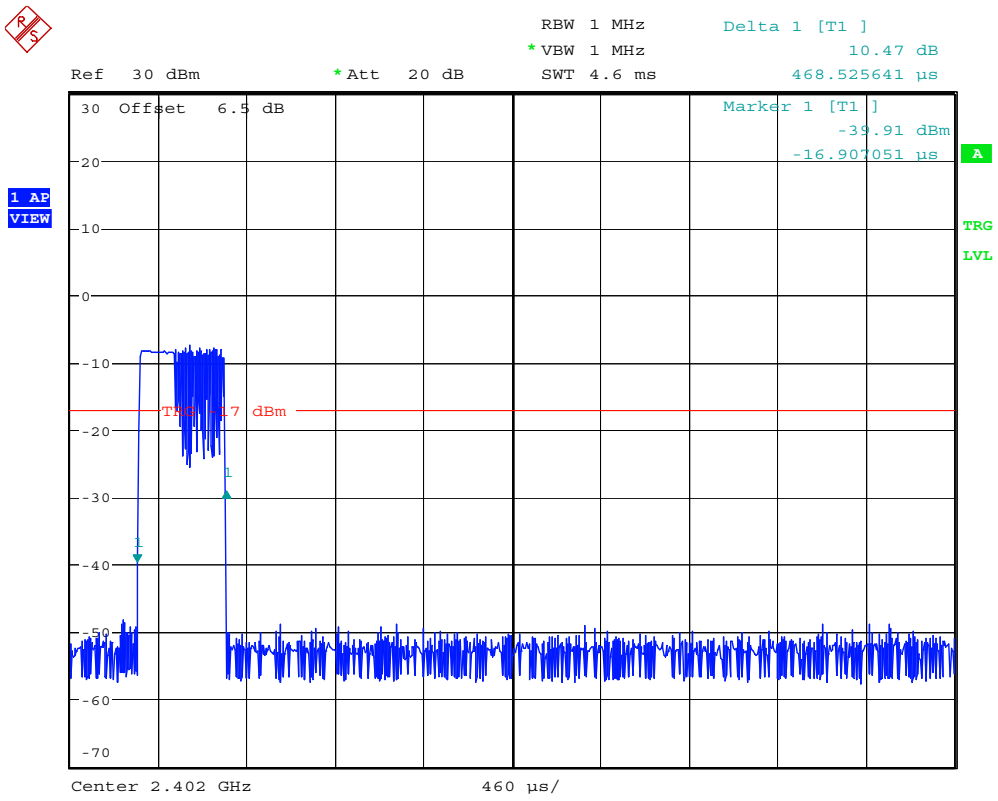


NUMBER OF HOPPING CH38-CH78

Date: 19.SEP.2006 14:39:01

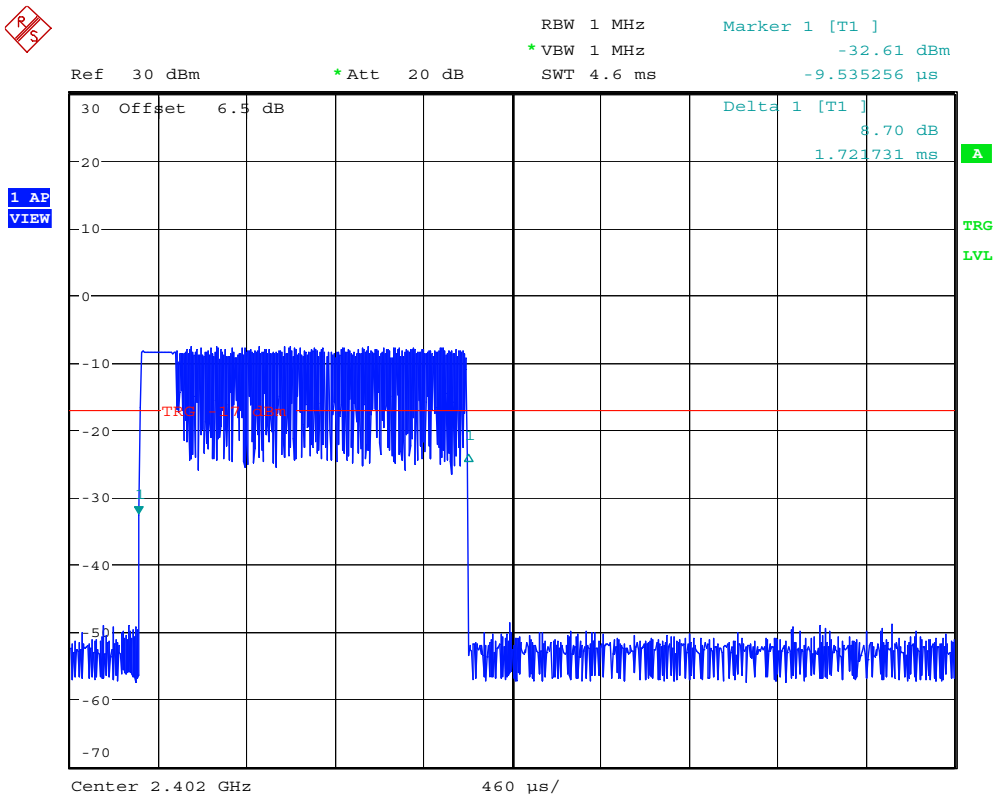
Appendix E

Time of Occupancy (Dwell Time)



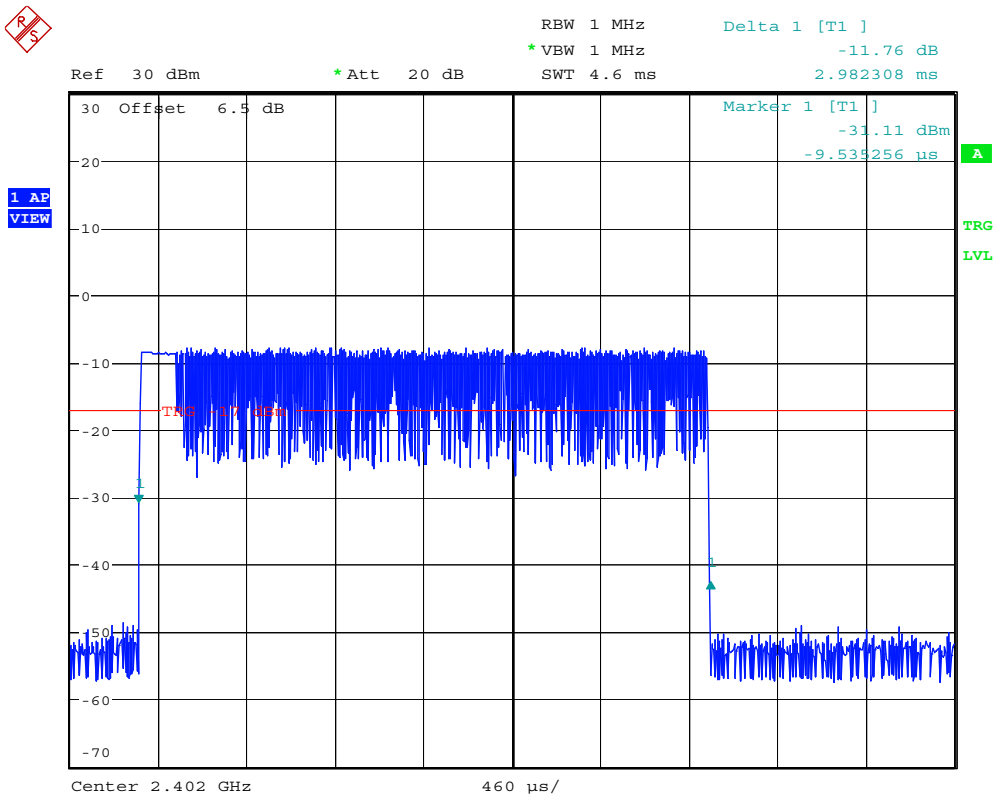
Time of occupancy (Hopping DH1) = 468.525 us * 312 ev ents = 146.179 ms

Date: 25.SEP.2006 15:23:16



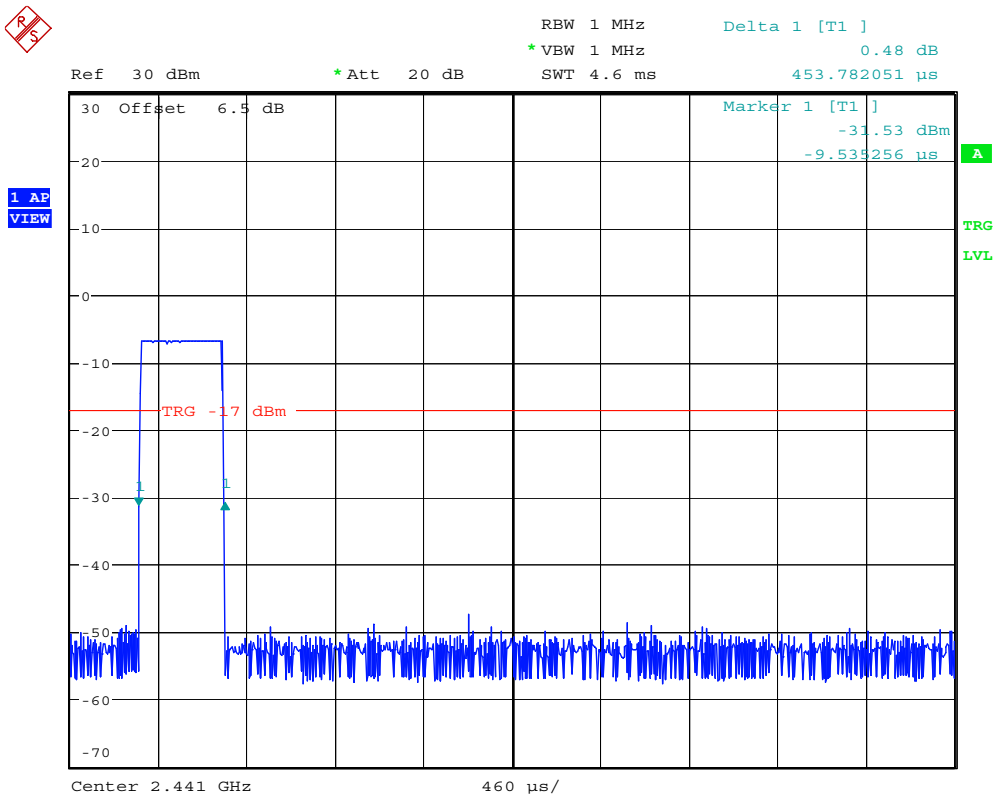
Time of occupancy (Hopping DH3) = 1.721731ms * 122 ev ents = 209.962 ms

Date: 25.SEP.2006 15:25:06



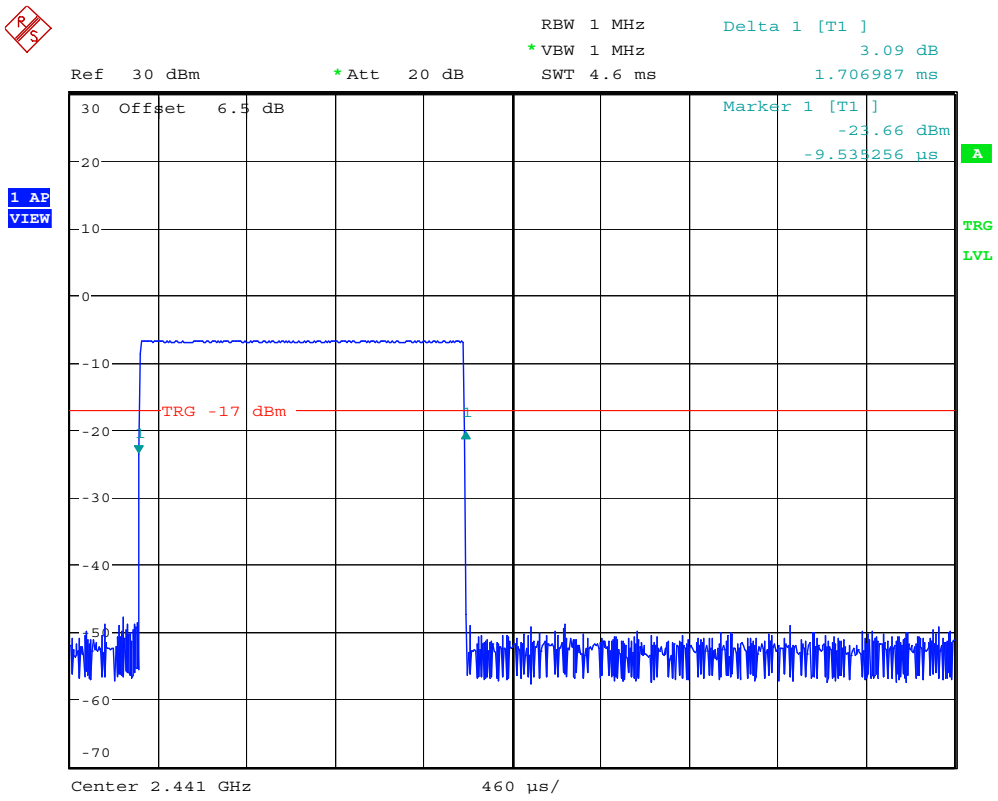
Time of occupancy (Hopping DH5) = 2.982308 ms * 51 ev ents = 152.082 ms

Date: 25.SEP.2006 15:26:31



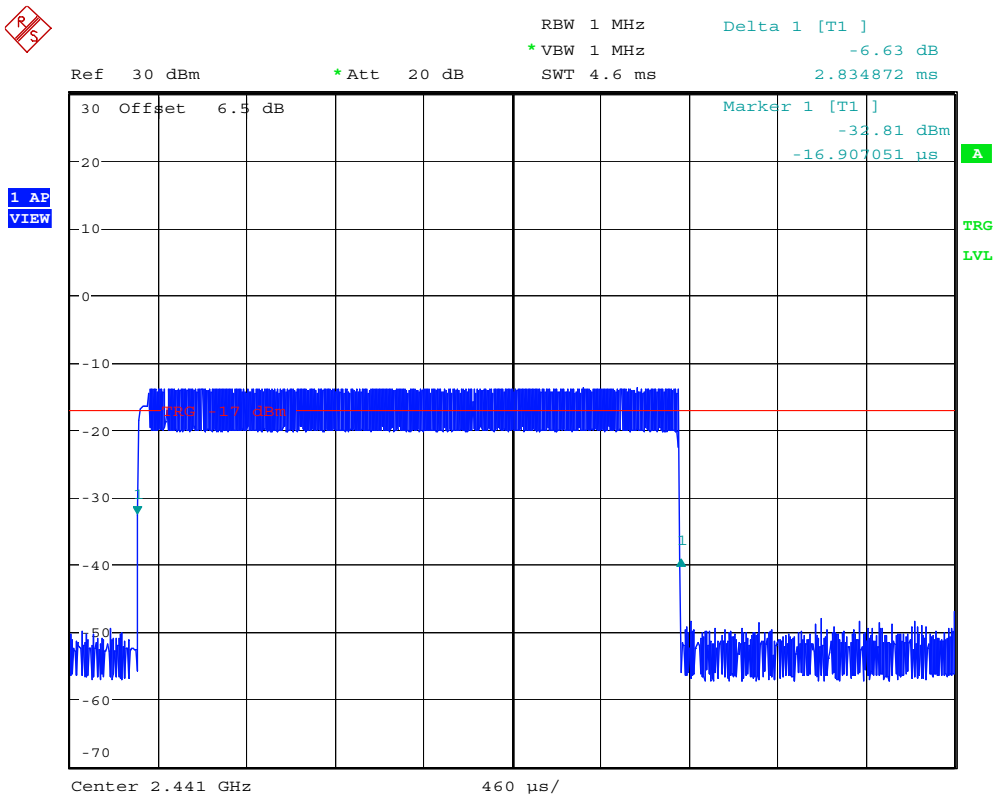
Time of occupancy (Hopping DH1) = 453.782051 us * 310 ev ents = 140.672 ms

Date: 25.SEP.2006 15:15:42



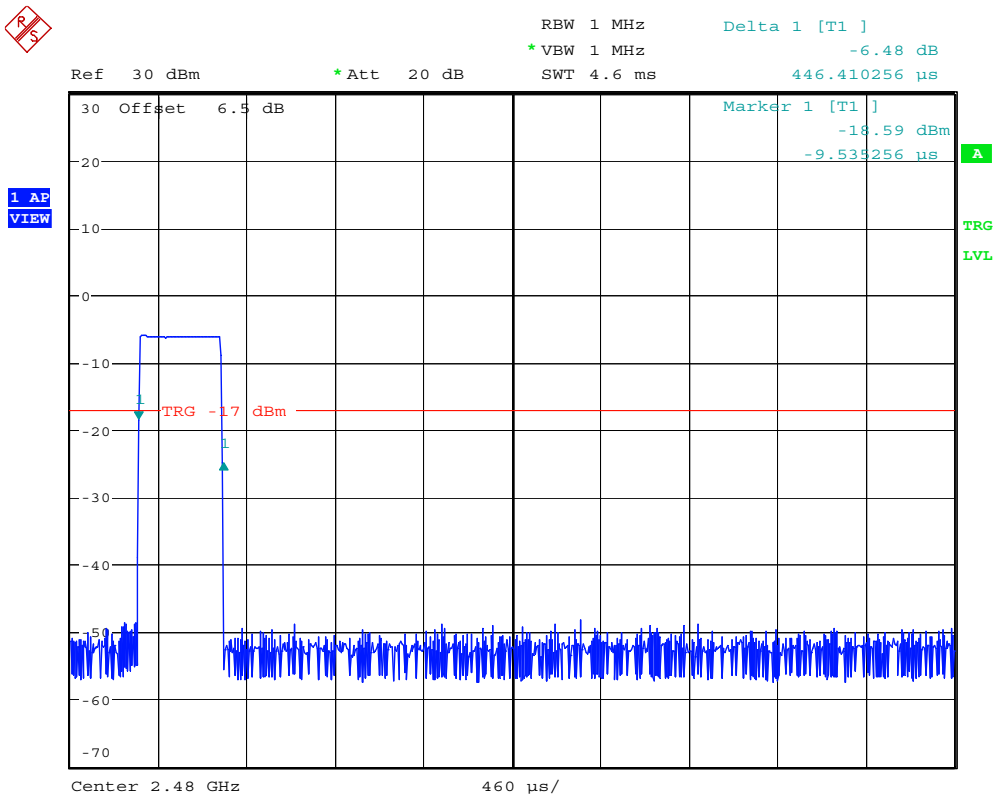
Time of occupancy (Hopping DH3) = 1.706987 ms * 126 ev ents = 214.956 ms

Date: 25.SEP.2006 15:14:10



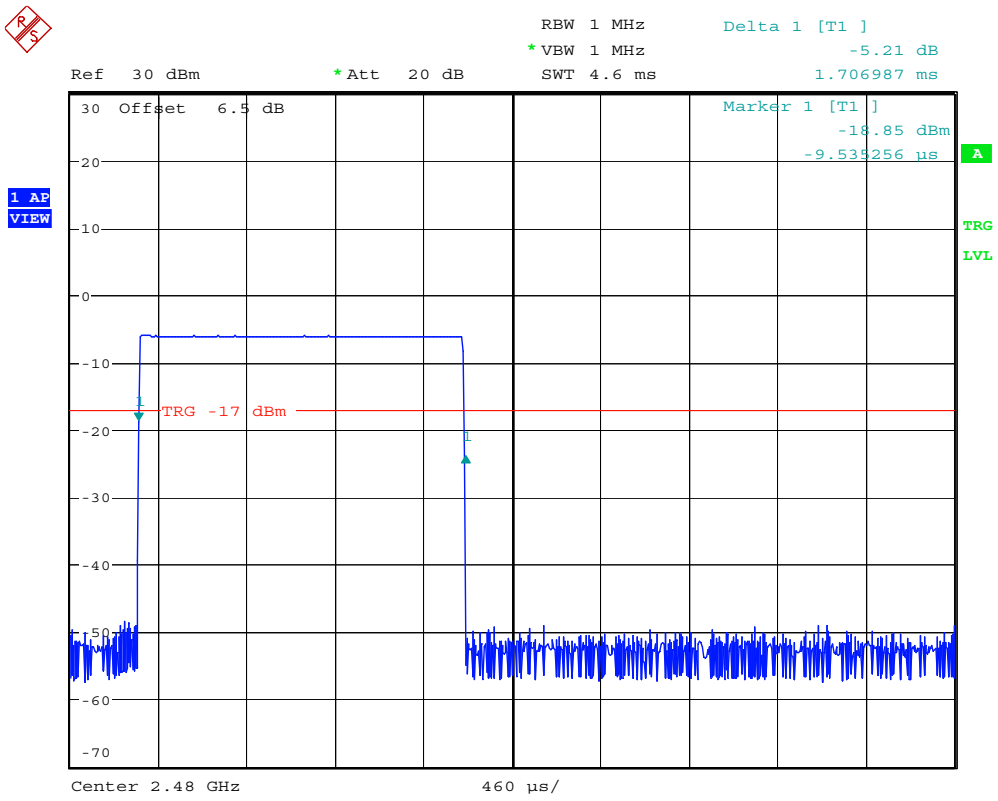
Time of occupancy (Hopping DH5) = 2.834872 ms * 55 ev ents = 155.87 ms

Date: 25.SEP.2006 14:58:18



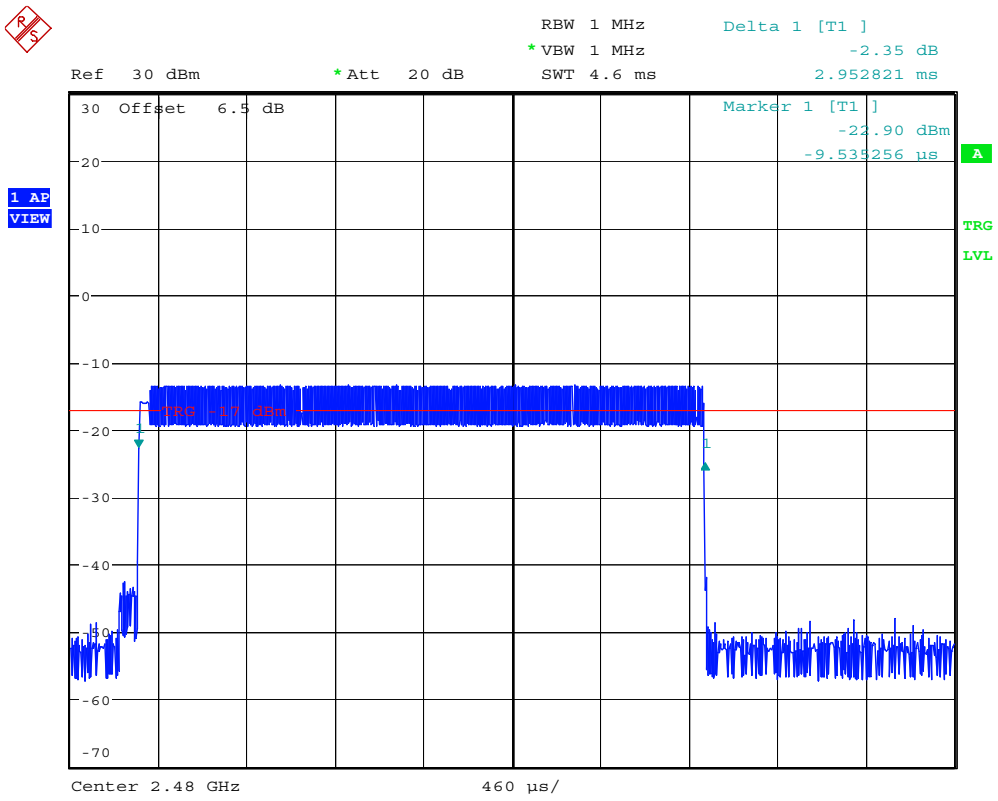
Time of occupancy (Hopping DH1) = 446.410256 us * 312 ev ents = 139.279 ms

Date: 25.SEP.2006 09:21:54



Time of occupancy (Hopping DH3) = 1.706987 ms * 126 ev ents = 214.956 ms

Date: 25.SEP.2006 09:20:05

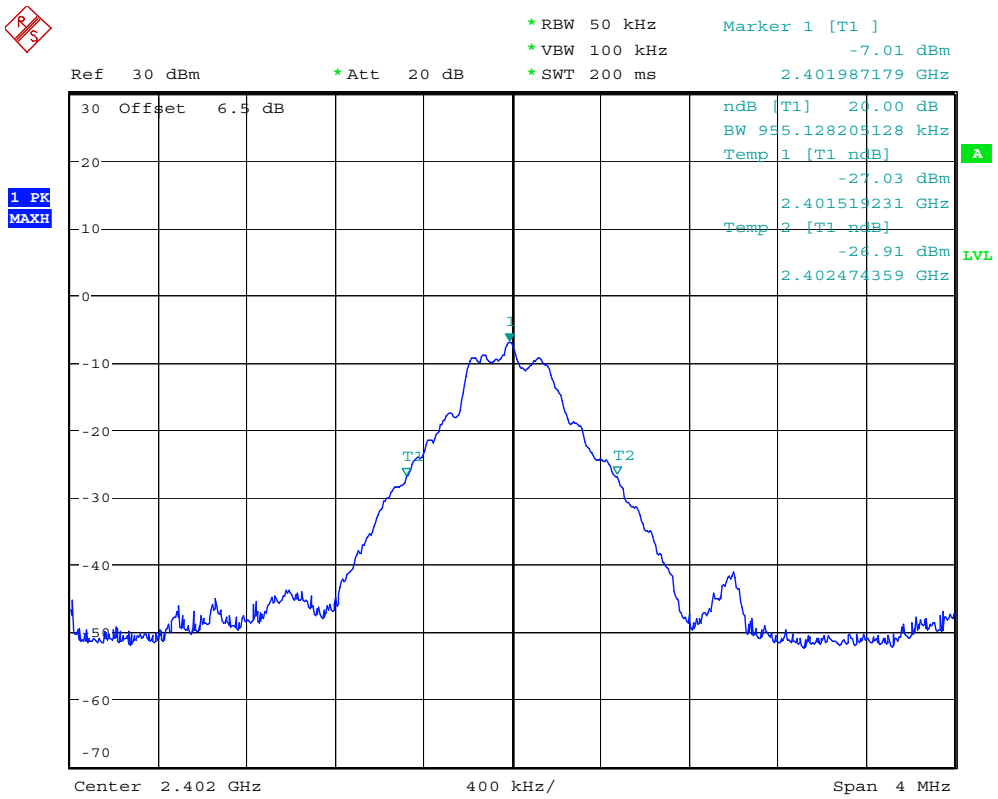


Time of occupancy (Hopping DH5) = 2.952821 ms * 51 ev ents = 150.552 ms

Date: 25.SEP.2006 09:18:09

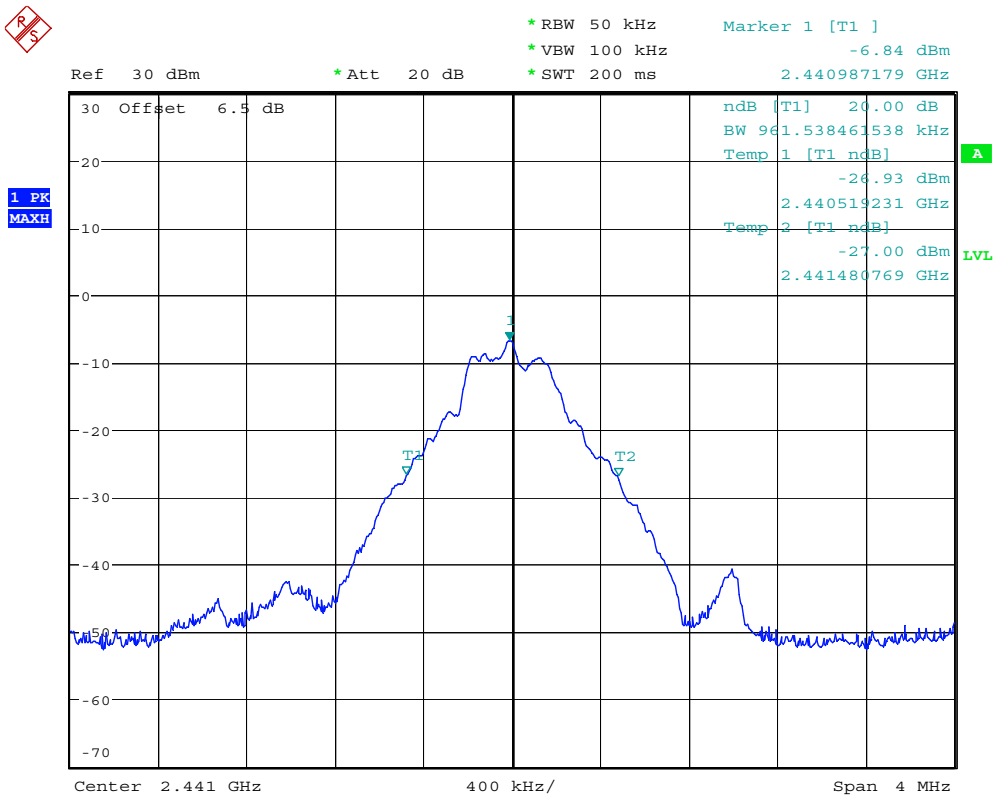
Appendix F

20dB Bandwidth



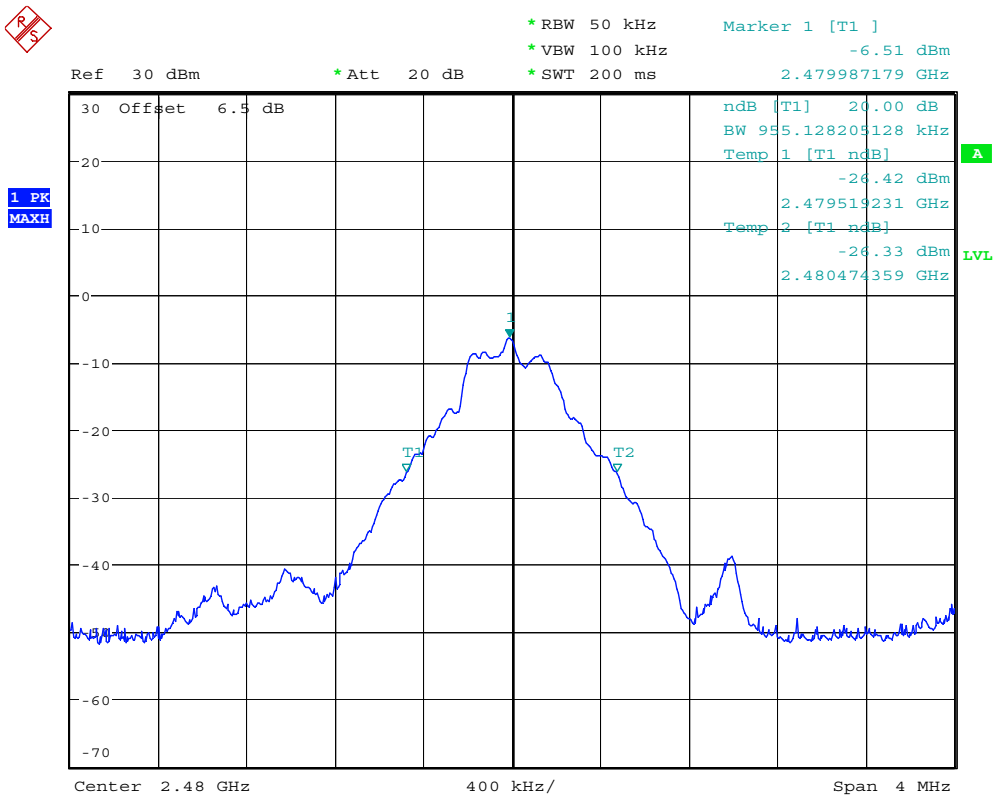
20dB BANDWIDTH CH0

Date: 19.SEP.2006 14:25:21



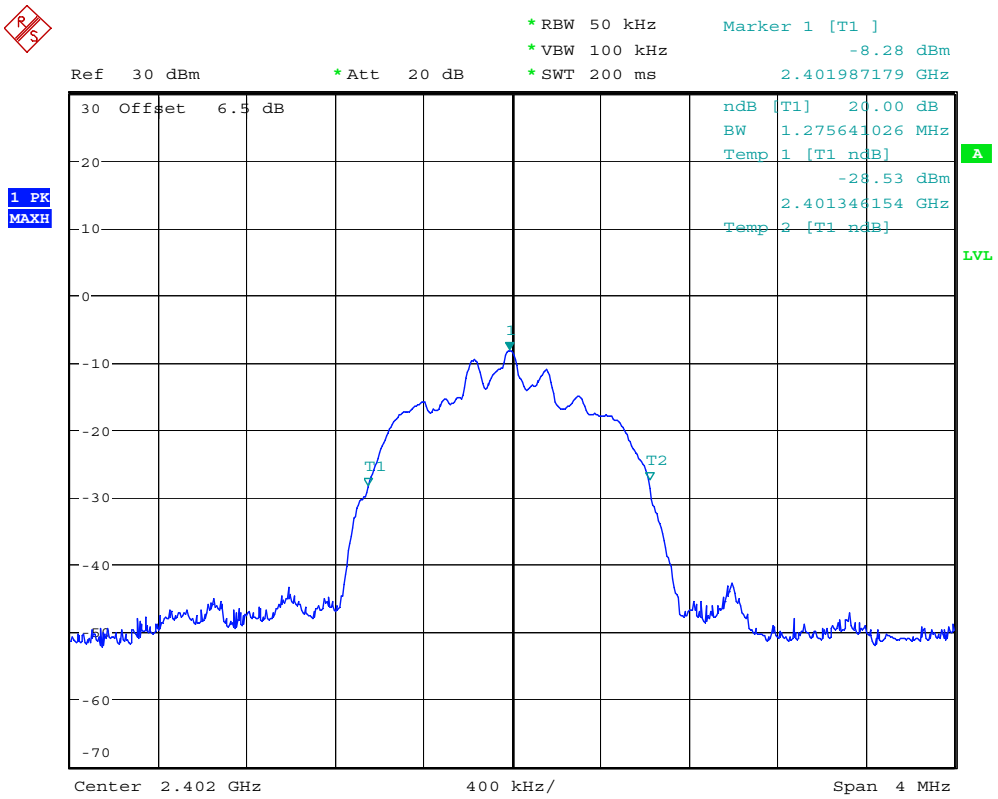
20dB BANDWIDTH CH39

Date: 19.SEP.2006 14:25:00



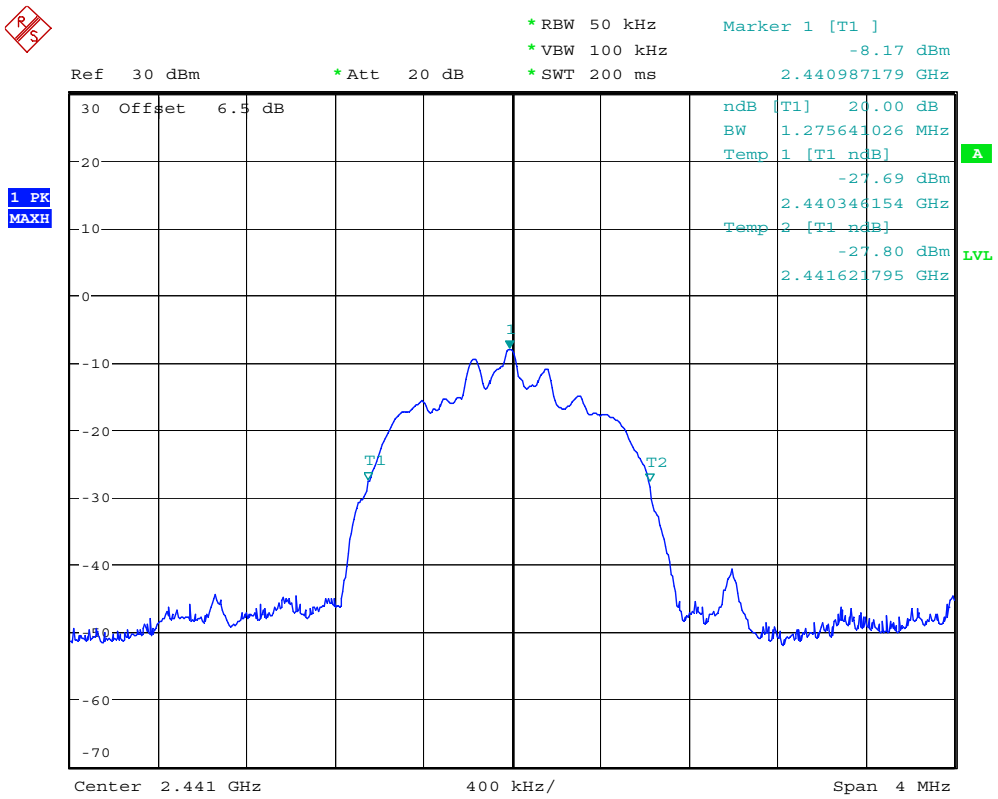
20dB BANDWIDTH CH78

Date: 19.SEP.2006 14:23:50



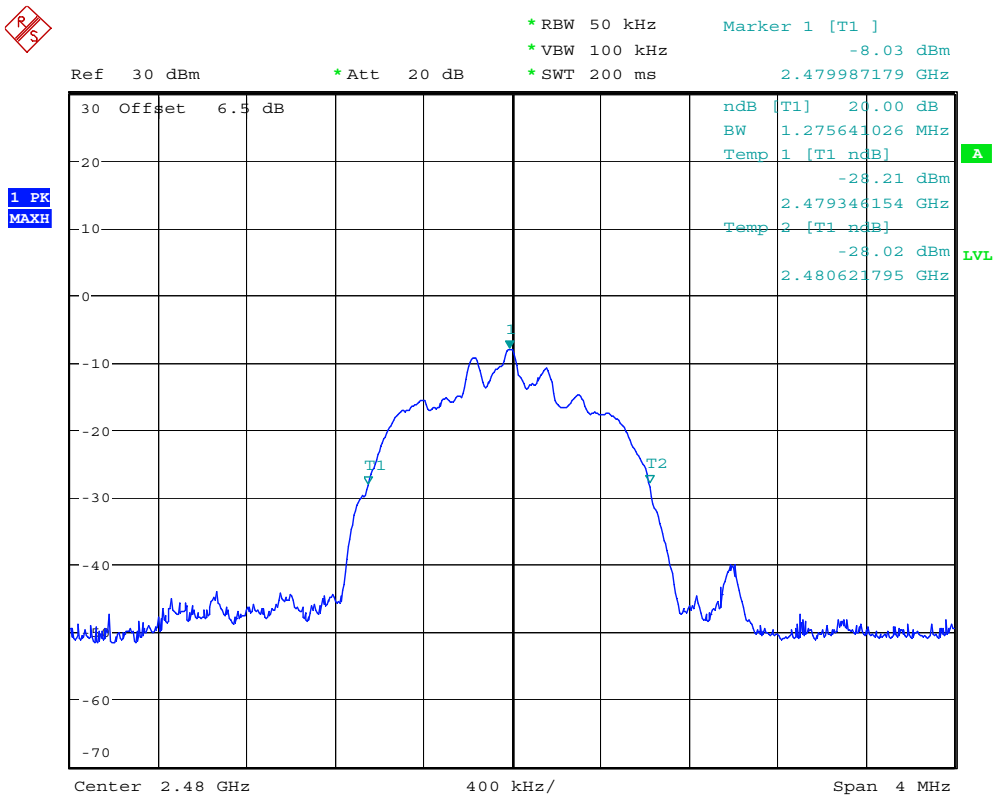
20dB BANDWIDTH CH0 EDR MODE

Date: 19.SEP.2006 14:24:38



20dB BANDWIDTH CH39 EDR MODE

Date: 19.SEP.2006 14:24:44

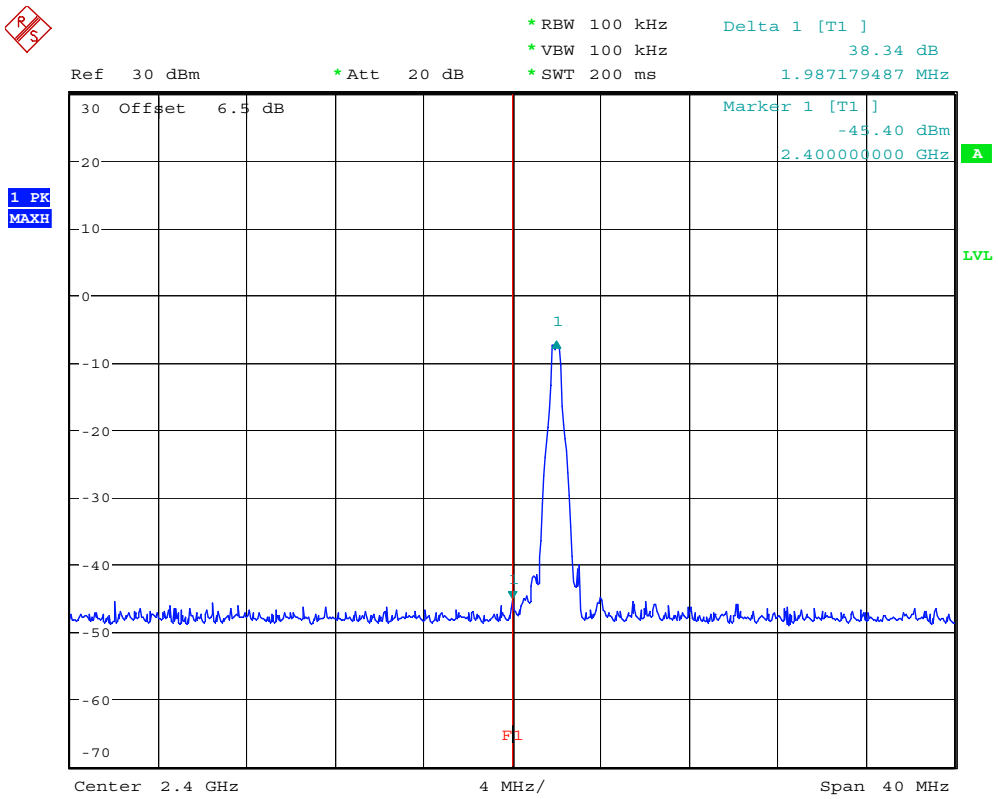


20dB BANDWIDTH CH78 EDR MODE

Date: 19.SEP.2006 14:24:17

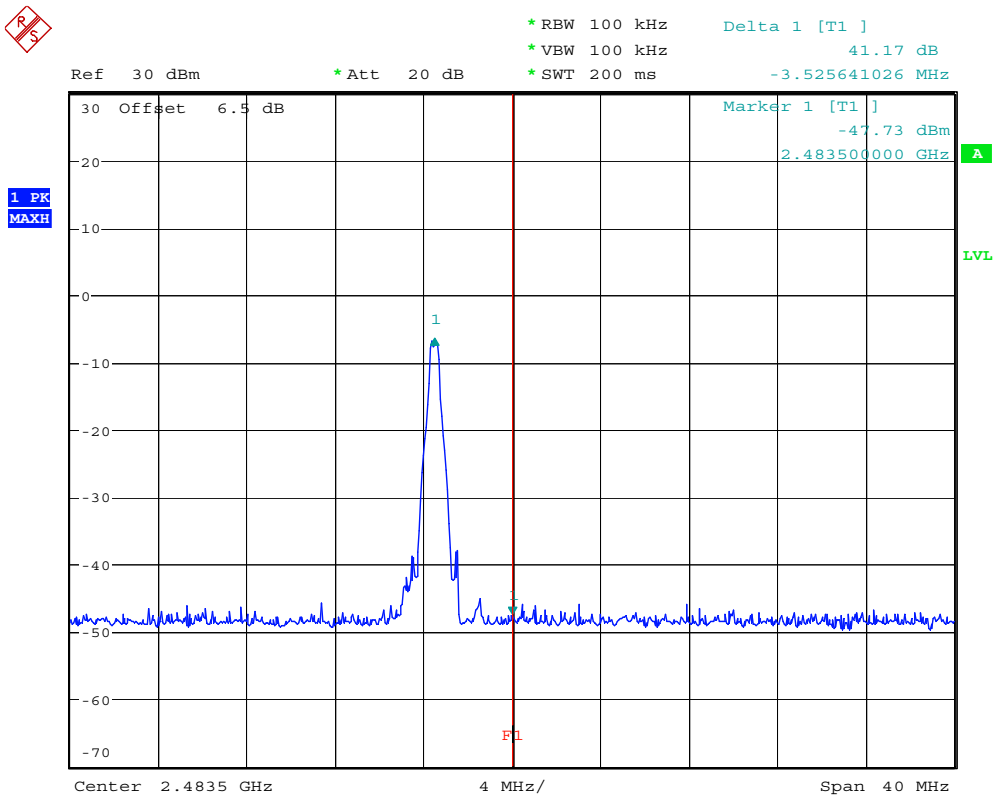
Appendix G

Band-edge Compliance of RF Conducted Emissions



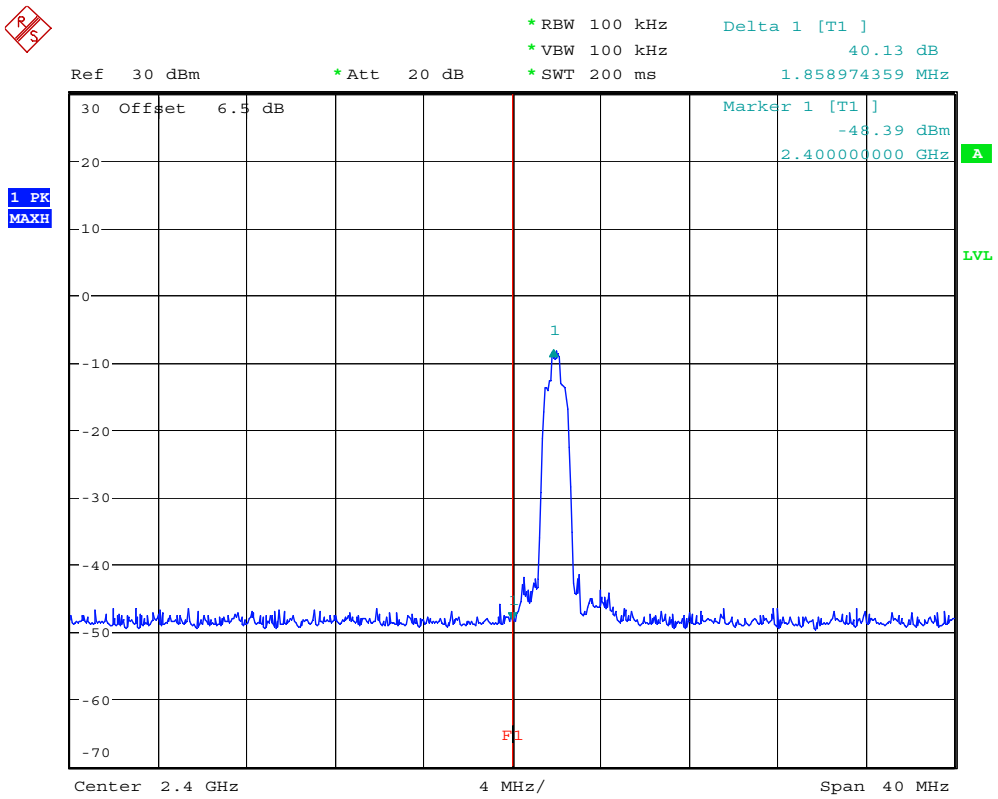
BANDEDGE CH0

Date: 19.SEP.2006 14:21:02



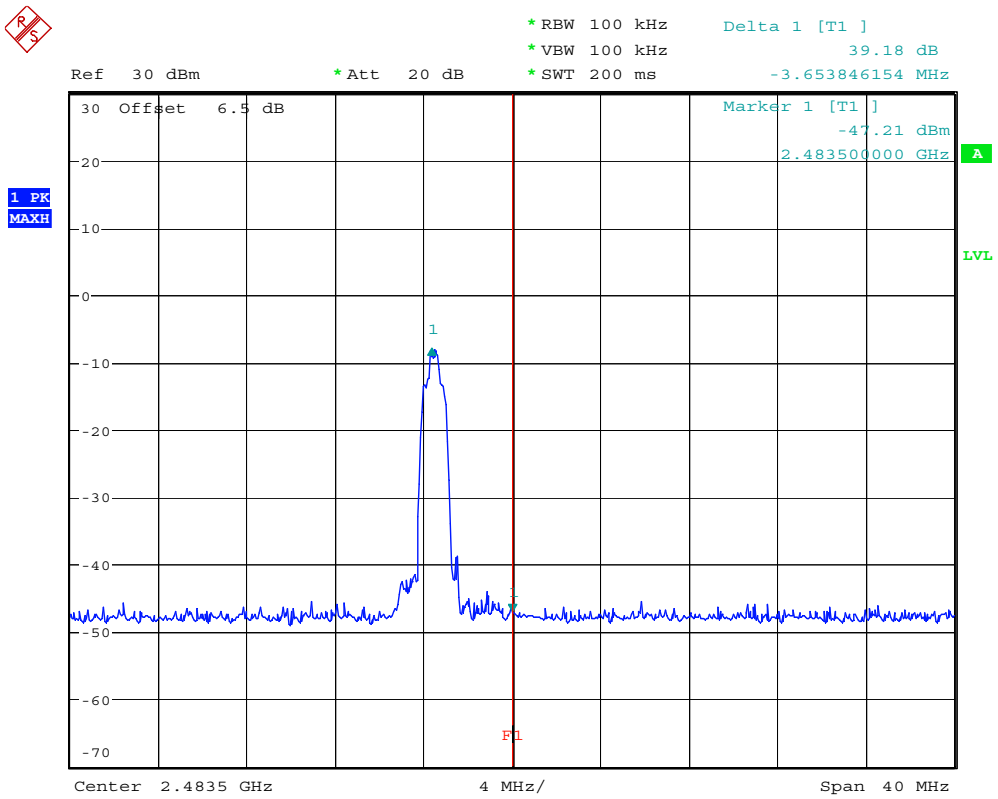
BANDEDGE CH78

Date: 19.SEP.2006 14:22:38



BANDEDGE CH0 EDR MODE

Date: 19.SEP.2006 14:21:22



BANDEDGE CH78 EDR MODE

Date: 19.SEP.2006 14:22:18

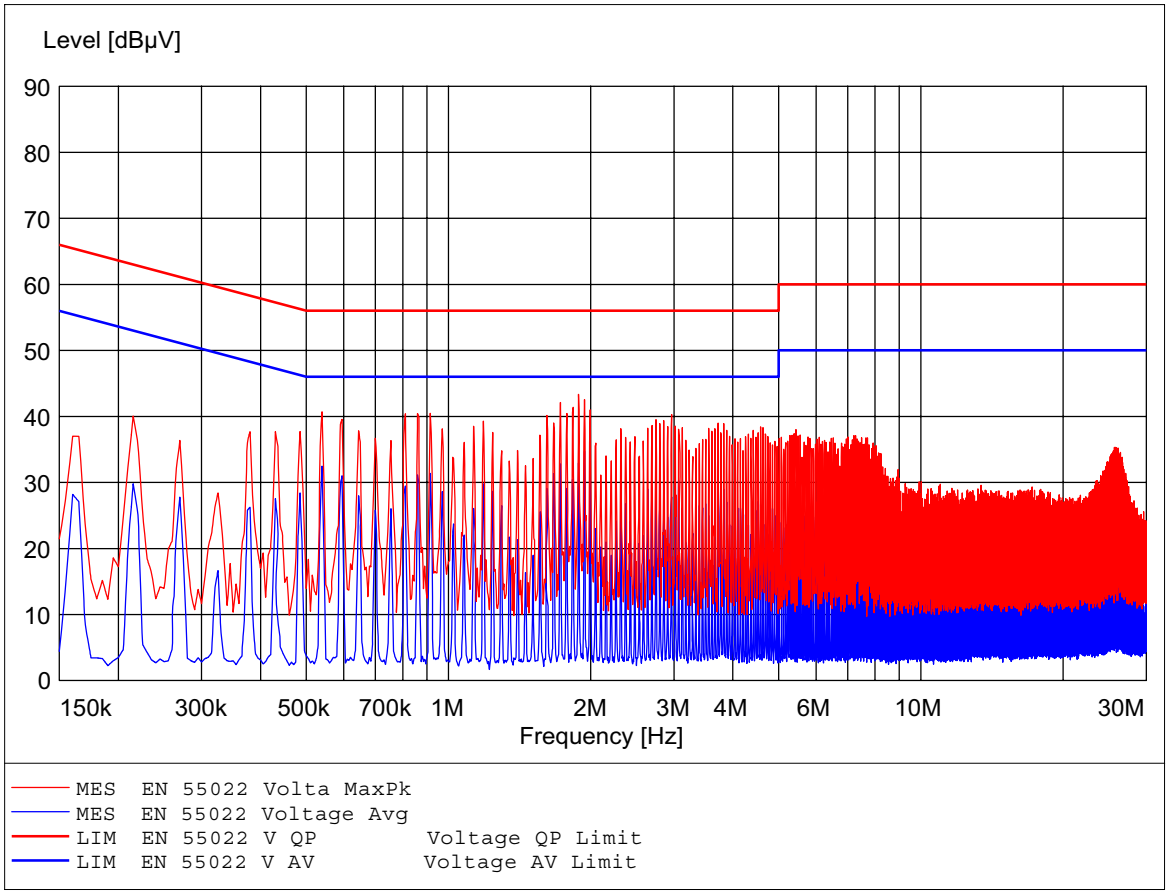
Appendix H

Power Line Conducted Emission

The measurement diagrams plots attached below are preliminary wideband scan with a quasi peak and average detector for reference only. The final test results are listed on section 3.13

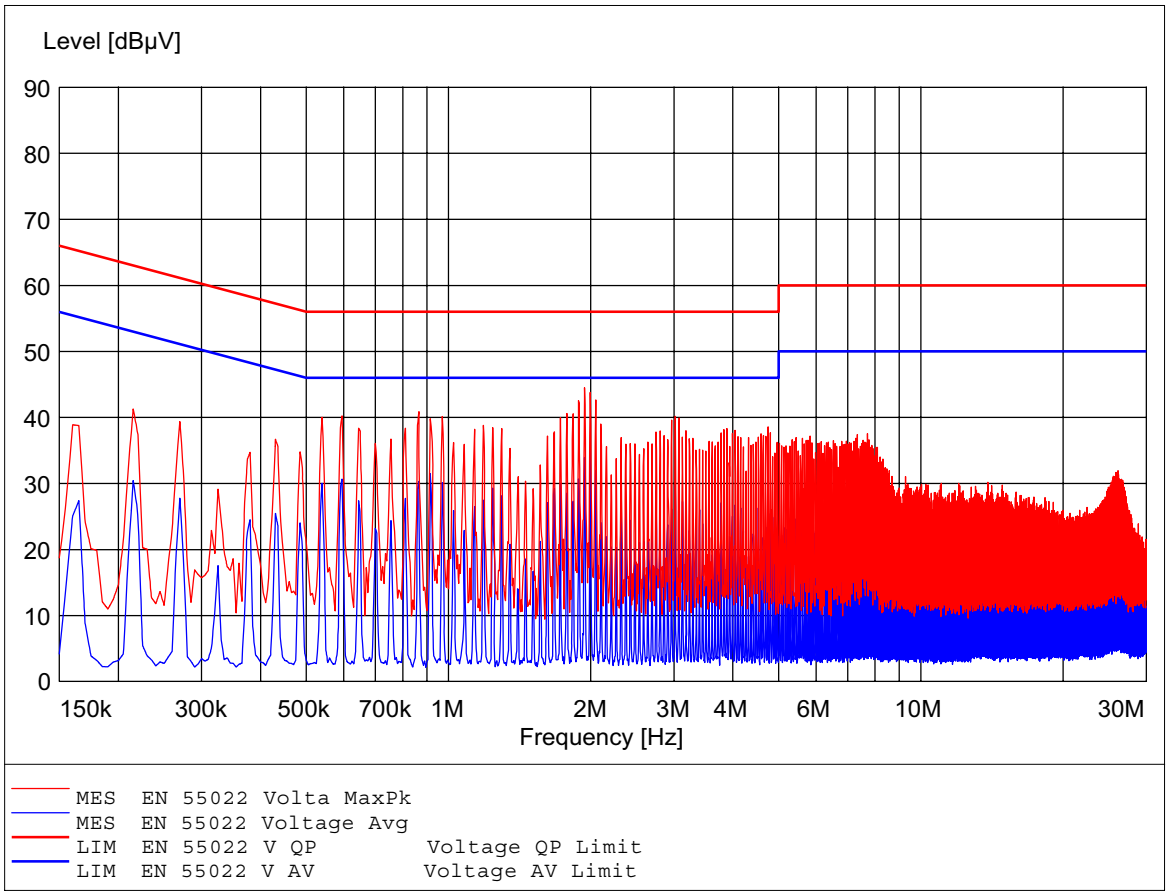
EMI voltage test in the ac-mains according to FCC PART 15 CLASS B

```
Order Number:          W6M20607-7234     ADAPTOR 1 MODE
Operating Condition:   Tnom: 23.9°C
Test Site:             ETS
Operator:              Jason
Test Specification:    V-network: ESH3-Z5   N
```



EMI voltage test in the ac-mains according to FCC PART 15 CLASS B

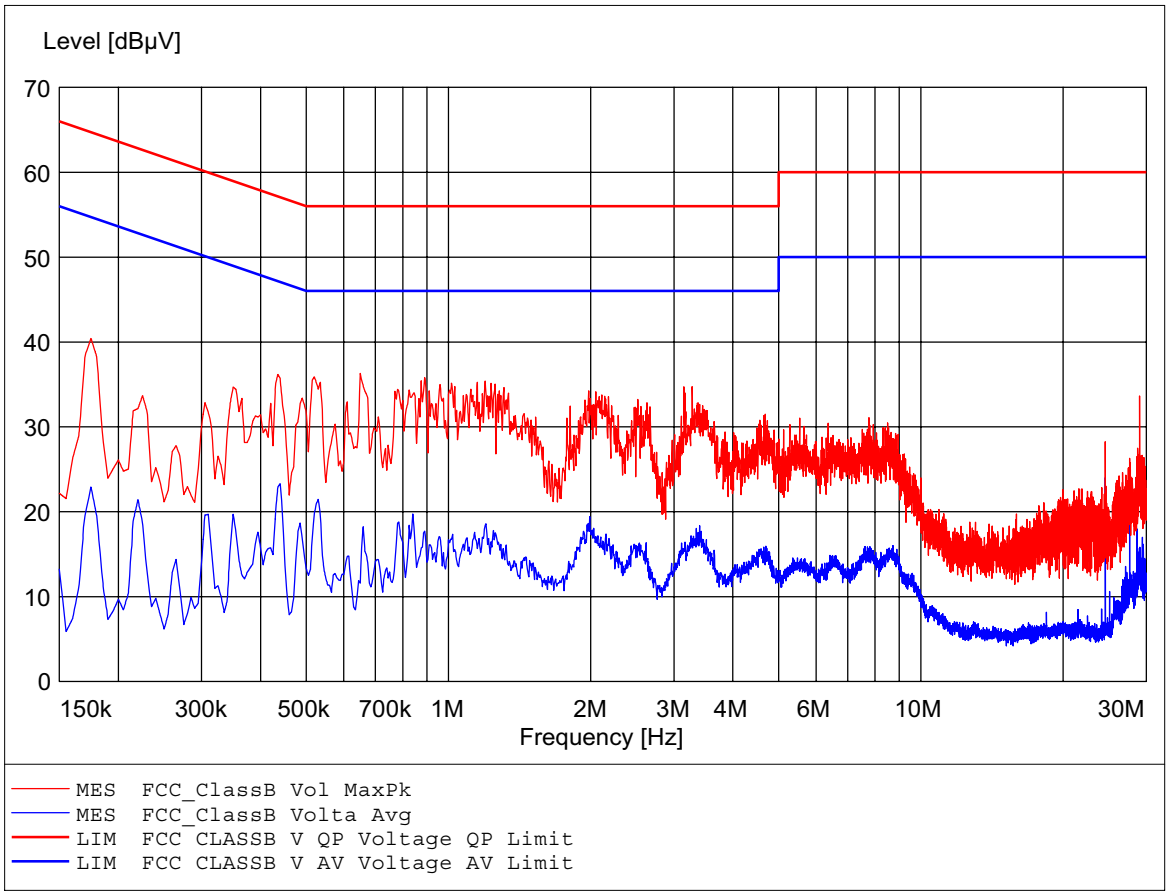
Order Number: W6M20607-7234 ADAPTOR 1 MODE
Operating Condition: Tnom: 23.9°C
Test Site: ETS
Operator: Jason
Test Specification: V-network: ESH3-Z5 L1



EMI voltage test in the ac-mains according to FCC PART 15

CLASS B

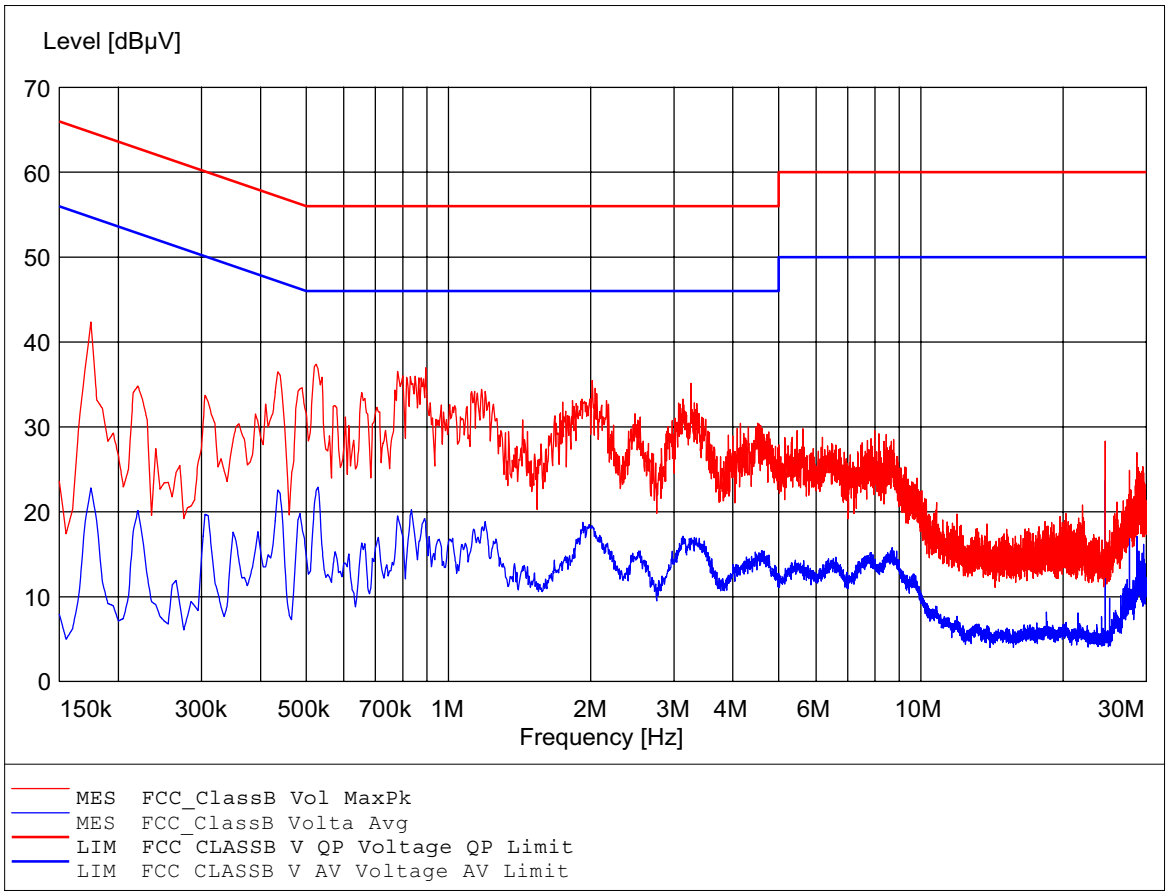
```
Order Number:         W6M20607-7234       ADAPTOR 2 MODE
Operating Condition:  Tnom: 23.9°C
Test Site:            ETS
Operator:             Danny
Test Specification:   V-network: ESH3-Z5  N
```



EMI voltage test in the ac-mains according to FCC PART 15

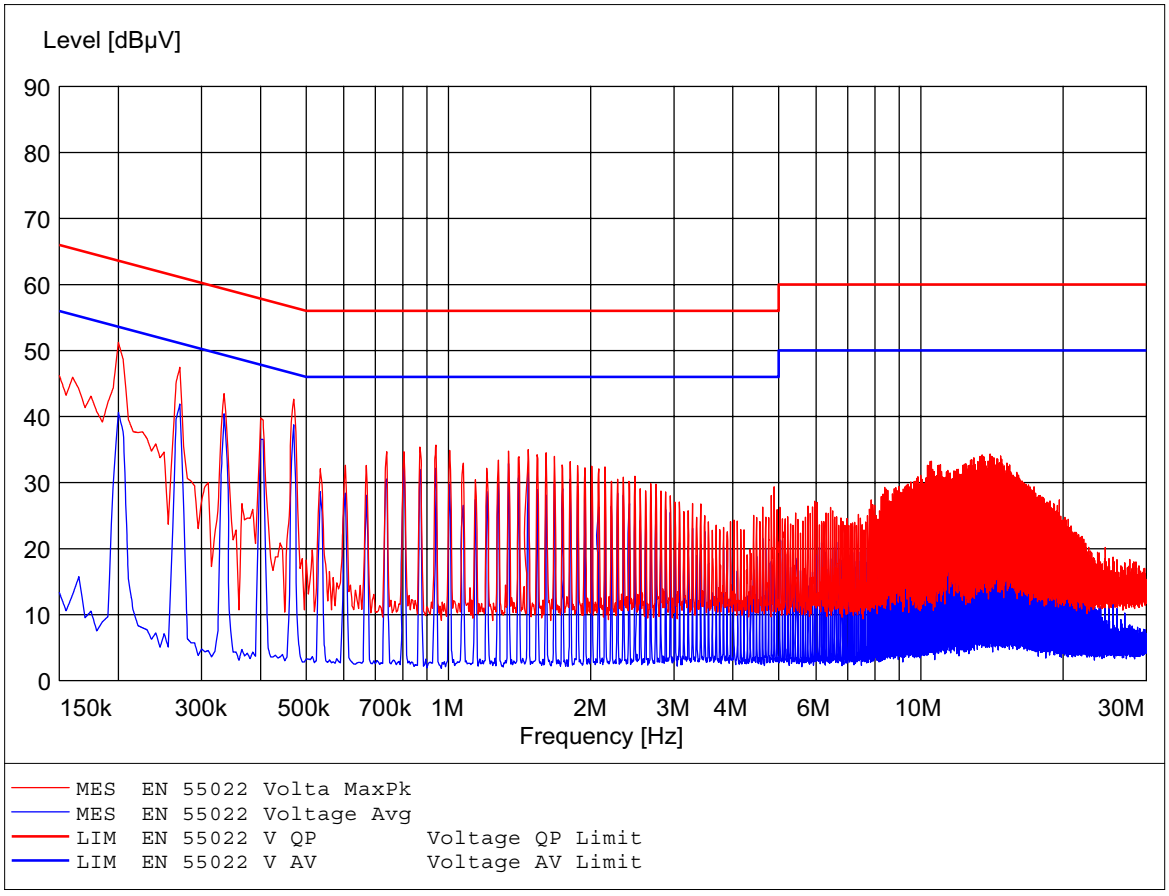
CLASS B

```
Order Number:          W6M20607-7234       ADAPTOR 2 MODE
Operating Condition:   Tnom: 23.9°C
Test Site:             ETS
Operator:              Danny
Test Specification:    V-network: ESH3-Z5  L1
```



EMI voltage test in the ac-mains according to FCC PART 15 CLASS B

Order Number: W6M20607-7234 USB mode
Operating Condition: Tnom: 23.9°C
Test Site: ETS
Operator: Jason
Test Specification: V-network: ESH3-Z5 N



EMI voltage test in the ac-mains according to FCC PART 15 CLASS B

```
Order Number:          W6M20607-7234    USB mode
Operating Condition:   Tnom: 23.9°C
Test Site:             ETS
Operator:              Jason
Test Specification:    V-network: ESH3-Z5   L1
```