



**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: GX9BTX**

**Test report no.: W6M20611-7543-P-15**

Registration number: W6M20611-7543-P-15

FCC ID : GX9BTX

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**1 General Information****1.1 Notes**

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

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

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

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.

The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

The test report may only be reproduced or published in full.

Reproduction or publication of extracts from the report requires the prior written approval of the ETS DR. GENZ TAIWAN PS CO., LTD.

**Tester:**

Dec 07, 2006

Jay Chaing



Date

ETS-Lab.

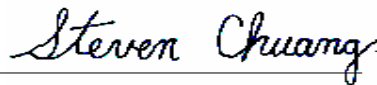
Name

Signature

**Technical responsibility for area of testing:**

Dec 07, 2006

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      | : CLIMAX TECHNOLOGY CO., LTD.            |
| Street    | : No. 258, Sinhu 2nd Rd., Neihu District |
| Town      | : Taipei City 114                        |
| Country   | : Taiwan ( R.O.C.)                       |
| Telephone | : +886-2-2794-0001                       |
| Fax       | : +886-2-2794-5512                       |

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## 1.4 Application details

Date of receipt of application : Nov 16, 2006  
Date of receipt of test item : Dec 01, 2006  
Date of test : from Dec 02, 2006 to Dec 07, 2006

## 1.5 General information of Test item

Type of test item : BTX Ankle Tether  
Model Number : BTX  
Hardware : V1.0  
Software : 1024E0301\_8-2-06  
Brand name : Climax  
Photos : see Appendix

### 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

Power ( ch A or ch 0) : Conducted: -6.82 dBm  
Power ( ch B or ch 39) : Conducted: -7.77 dBm  
Power ( ch C or ch 78) : Conducted: -8.56 dBm

Power supply : 1.5 VDC (battery)

Operation modes : duplex

Modulation Type : GFSK

Antenna Type : PCB antenna

Antenna gain : 0 dBi

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Host device : none

Classification :

|                                              |                                     |
|----------------------------------------------|-------------------------------------|
| Fixed Device                                 | <input type="checkbox"/>            |
| Mobile Device (Human Body distance > 20cm)   | <input type="checkbox"/>            |
| Portable Device (Human Body distance < 20cm) | <input checked="" type="checkbox"/> |

**Manufacturer: (if different from applicant in point 1.3)**

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

Additional information : The test sample is designed as BTX device. Its pseudorandom hopping scheme, authentication, receiver parameters, synchronization procedure and other parameters are determined by BTX Specification.

**1.6 Test standards**

Technical standard : FCC RULES PART 15 Subpart B / SUBPART C § 15.247 : August, 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 |

|                         |                     |
|-------------------------|---------------------|
| Details of power supply | : 1.5 VDC (battery) |
|-------------------------|---------------------|

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Extreme conditions parameters | : test voltage : -- extreme<br>min :-- V<br>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 Horn 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  |

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## 2.4 General Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI STANDARD C63.4-2003 using a 50 $\mu$ H LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

**RADIATION INTERFERENCE:** The test procedure used was according to ANSI STANDARD C63.4-2003 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the 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 dB $\mu$ V) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

|            |                                                          |
|------------|----------------------------------------------------------|
| Freq (MHz) | METER READING + ACF + CABLE LOSS (to the receiver) = FS  |
| 33         | 20 dB $\mu$ V + 10.36 dB + 6 dB = 36.36 dB $\mu$ V/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.

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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 =  $20 \log (\text{dwell time}/T)$

T = 100ms when the pulse train period is over 100 ms or the period of the pulse train.

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

ANTENNA & GROUND:

**This unit uses PCB antenna.**

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**3 Test results (enclosure)**

| TEST CASE                                             | Para. Number     | Required                            | Test passed                         | Test failed              |
|-------------------------------------------------------|------------------|-------------------------------------|-------------------------------------|--------------------------|
| Peak Output Power                                     | 15.247(b)        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Equivalent radiated Power                             | 15.247(b)        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Spurious Emissions radiated – Transmitter operating   | 15.247(c)        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Spurious Emissions conducted – Transmitter operating  | 15.247           | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| Carrier Frequency Separation                          | 15.247(a) (1)    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Number of Hopping Frequencies                         | 15.247(a) (1)(i) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Time of Occupancy (Dwell Time)                        | 15.247(a) (1)(i) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 20 dB Bandwidth                                       | 15.247(a) (1)(i) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Band-edge Compliance of RF Emission                   | 15.247(c)        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Radiated Emission from Digital Part And Receiver L.O. | 15.109           | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Power Line Conducted Emission                         | 15.207(a)        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |

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).

| Test conditions              |                        | Conducted Power    |                    |                    |
|------------------------------|------------------------|--------------------|--------------------|--------------------|
|                              |                        | Channel A<br>[dBm] | Channel B<br>[dBm] | Channel C<br>[dBm] |
| $T_{nom}=23^{\circ}\text{C}$ | $V_{nom}=1.5\text{ V}$ | -6.82              | -7.77              | -8.56              |
| Measurement uncertainty      |                        | < 3 dB             |                    |                    |

| Test conditions              |                        | Radiated Power     |                    |                    |
|------------------------------|------------------------|--------------------|--------------------|--------------------|
|                              |                        | Channel A<br>[dBm] | Channel B<br>[dBm] | Channel C<br>[dBm] |
| $T_{nom}=23^{\circ}\text{C}$ | $V_{nom}=1.5\text{ V}$ | --                 | --                 | --                 |
| Measurement uncertainty      |                        | < 3 dB             |                    |                    |

| Test conditions                                       | Signal Field strength TX highest power mode |
|-------------------------------------------------------|---------------------------------------------|
| $T_{nom}=23^{\circ}\text{C}$ , $V_{nom}=1.5\text{ V}$ | dB $\mu\text{V/m}$                          |
| Frequency[MHz]                                        |                                             |
| 2480                                                  | 79.88                                       |
| Measurement uncertainty                               | < 3 dB                                      |

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

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### Maximum Peak Output Power

Limits:

| Frequency<br>MHz | Number of hopping channels |           |              |              |
|------------------|----------------------------|-----------|--------------|--------------|
|                  | $\geq 75$                  | $\geq 50$ | $49 \geq 25$ | $74 \geq 15$ |
| 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

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### **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 manufacturer 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

$79.88 \text{ dB}\mu\text{V/m} - 20 \text{ dB} = 59.88 \text{ dB}\mu\text{V/m}$

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 =  $20 \log (\text{dwell time}/100\text{ms})$

For frequencies above 1GHz (Peak measurements).

Limit = max. aver. reading-20dB +20dB(because Peak detector is used)

$59.88 \text{ dB}\mu\text{V/m}$

For frequencies above 1GHz (Average measurements).

Max. reading – 20 dB - duty cycle correction:

No duty cycle correction was added to the reading

$79.88 \text{ dB}\mu\text{V/m} - 20 \text{ dB} = 59.88 \text{ dB}\mu\text{V/m}$

Comments: See attached diagrams.

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

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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<br>(MHz) | Field strength<br>(microvolts/meter) | Field Strength<br>(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 =  $20 \log (\text{dwell time}/100\text{ms})$

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

54.0dB $\mu$ V/m

For frequencies above 1GHz (Peak measurements).

Limit + 20dB

54.0dB $\mu$ V/m + 20 dB= 74 dB $\mu$ V/m

Comments: See attached diagrams.

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

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### 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

##### Low Channel

| 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                    | 672.412                | 15.21                    | 22.91                  | QP       | 38.12                | 59.88                     | 21.76       | 245                 | 124                    |
|                      | 1368.735               | 47.59                    | -8.47                  | PK       | 39.12                | 54.00                     | 14.88       | 105                 | 75                     |
|                      | 1501.412               | 47.12                    | -7.20                  | PK       | 39.92                | 54.00                     | 14.08       | 100                 | 80                     |
|                      | 4803.891               | 49.00                    | 4.42                   | PK       | 53.42                | 74.00                     | 20.58       | 100                 | 0                      |
|                      | 4803.891               | 37.01                    | 4.42                   | AV       | 41.43                | 54.00                     | 12.57       | 100                 | 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) |
|----------------------|------------------------|--------------------------|------------------------|----------|----------------------|---------------------------|-------------|---------------------|------------------------|
| V                    | 672.412                | 13.51                    | 22.91                  | QP       | 36.42                | 59.88                     | 23.46       | 355                 | 120                    |
|                      | 1368.735               | 50.61                    | -8.47                  | PK       | 42.14                | 54.00                     | 11.86       | 105                 | 78                     |
|                      | 2000.982               | 47.12                    | -3.40                  | PK       | 43.72                | 59.88                     | 16.16       | 100                 | 75                     |
|                      | 4803.891               | 53.20                    | 4.42                   | PK       | 57.62                | 74.00                     | 16.38       | 105                 | 85                     |
|                      | 4803.891               | 39.89                    | 4.42                   | AV       | 44.31                | 54.00                     | 9.69        | 105                 | 85                     |

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## Middle Channel

| 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                    | 672.412                | 15.61                    | 22.91                  | QP       | 38.52                | 59.88                     | 21.36       | 245                 | 121                    |
|                      | 1368.735               | 47.41                    | -8.47                  | PK       | 38.94                | 54.00                     | 15.06       | 105                 | 78                     |
|                      | 1502.413               | 48.02                    | -7.20                  | PK       | 40.82                | 54.00                     | 13.18       | 100                 | 82                     |
|                      | 4881.733               | 51.27                    | 4.85                   | PK       | 56.12                | 74.00                     | 17.88       | 110                 | 0                      |
|                      | 4881.733               | 37.93                    | 4.85                   | AV       | 42.78                | 54.00                     | 11.22       | 110                 | 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) |
|----------------------|------------------------|--------------------------|------------------------|----------|----------------------|---------------------------|-------------|---------------------|------------------------|
| V                    | 672.412                | 11.22                    | 22.91                  | QP       | 34.13                | 59.88                     | 25.75       | 350                 | 119                    |
|                      | 1368.735               | 49.81                    | -8.47                  | PK       | 41.34                | 54.00                     | 12.66       | 105                 | 74                     |
|                      | 2001.412               | 45.53                    | -3.39                  | PK       | 42.14                | 59.88                     | 17.74       | 100                 | 74                     |
|                      | 4881.733               | 54.27                    | 4.85                   | PK       | 59.12                | 74.00                     | 14.88       | 105                 | 90                     |
|                      | 4881.733               | 41.06                    | 4.85                   | AV       | 45.91                | 54.00                     | 8.09        | 105                 | 90                     |

## High Channel

| 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                    | 672.412                | 17.40                    | 22.91                  | QP       | 40.31                | 59.88                     | 19.57       | 250                 | 119                    |
|                      | 1368.735               | 47.39                    | -8.47                  | PK       | 38.92                | 54.00                     | 15.08       | 110                 | 74                     |
|                      | 1517.411               | 48.00                    | -7.18                  | PK       | 40.82                | 54.00                     | 13.18       | 105                 | 78                     |
|                      | 4960.233               | 52.48                    | 4.36                   | PK       | 56.84                | 74.00                     | 17.16       | 100                 | 0                      |
|                      | 4960.233               | 39.65                    | 4.36                   | AV       | 44.01                | 54.00                     | 9.99        | 100                 | 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) |
|----------------------|------------------------|--------------------------|------------------------|----------|----------------------|---------------------------|-------------|---------------------|------------------------|
| V                    | 672.412                | 12.91                    | 22.91                  | QP       | 35.82                | 59.88                     | 24.06       | 345                 | 124                    |
|                      | 1368.735               | 49.39                    | -8.47                  | PK       | 40.92                | 54.00                     | 13.08       | 110                 | 42                     |
|                      | 1983.472               | 44.52                    | -3.71                  | PK       | 40.81                | 59.88                     | 19.07       | 100                 | 72                     |
|                      | 4960.233               | 55.65                    | 4.36                   | PK       | 60.01                | 74.00                     | 13.99       | 100                 | 90                     |
|                      | 4960.233               | 43.46                    | 4.36                   | AV       | 47.82                | 54.00                     | 6.18        | 100                 | 90                     |
|                      | 9921.435               | 36.93                    | 10.89                  | PK       | 47.82                | 59.88                     | 12.06       | 105                 | 111                    |

- 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

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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.

Comment: see attached diagrams

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

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### 3.7 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 |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5\text{ V}$ | 0.9936 MHz         |             |
| Measurement uncertainty        |                          | < 10 Hz            |             |

| Test conditions                |                          | Channel Separation |              |
|--------------------------------|--------------------------|--------------------|--------------|
|                                |                          | Channel 39         | Channel 39+1 |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5\text{ V}$ | 0.9936 MHz         |              |
| Measurement uncertainty        |                          | < 10 Hz            |              |

| Test conditions                |                          | Channel Separation |              |
|--------------------------------|--------------------------|--------------------|--------------|
|                                |                          | Channel 78         | Channel 78+1 |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5\text{ V}$ | 0.9936 MHz         |              |
| Measurement uncertainty        |                          | < 10 Hz            |              |

#### Limits:

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

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

Comment: see attached diagram

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### 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 |
|--------------------------------|--------------------------|---------------------|--------------------|
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5\text{ V}$ | normal transmitting | 79                 |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5\text{ V}$ | Inquiry mode        | 32                 |

#### Limits:

| Frequency Range<br>MHz | Limit          |      |                             |                             |
|------------------------|----------------|------|-----------------------------|-----------------------------|
|                        | 20dB Bandwidth |      | 20dB Bandwidth<br>< 250 kHz | 20dB Bandwidth<br>≥ 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

#### 3.8.1 Pseudorandom Frequency Hopping Sequence

The generation of the hopping sequence is determined by the Bluetooth core 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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### 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 |
|--------------------------------------------------------------------------|--------------------------|---------------------|-------------------|
| $T_{nom} = 23^{\circ}\text{C}$<br>$V_{nom} = 1.5 \text{ V}$<br>Channel 0 | normal transmitting-DH 1 |                     | 146.179 ms        |
|                                                                          | normal transmitting-DH 3 |                     | 154.955 ms        |
|                                                                          | normal transmitting-DH 5 |                     | 152.082 ms        |
| Measurement uncertainty                                                  | < 1 $\mu\text{s}$        |                     |                   |

| Test conditions                                                           | Operating mode           | Measurement periode | Time of Occupancy |
|---------------------------------------------------------------------------|--------------------------|---------------------|-------------------|
| $T_{nom} = 23^{\circ}\text{C}$<br>$V_{nom} = 1.5 \text{ V}$<br>Channel 39 | normal transmitting-DH 1 |                     | 140.672 ms        |
|                                                                           | normal transmitting-DH 3 |                     | 157.042 ms        |
|                                                                           | normal transmitting-DH 5 |                     | 155.870 ms        |
| Measurement uncertainty                                                   | < 1 $\mu\text{s}$        |                     |                   |

| Test conditions                                                           | Operating mode           | Measurement periode | Time of Occupancy |
|---------------------------------------------------------------------------|--------------------------|---------------------|-------------------|
| $T_{nom} = 23^{\circ}\text{C}$<br>$V_{nom} = 120 \text{ V}$<br>Channel 78 | normal transmitting-DH 1 |                     | 139.279 ms        |
|                                                                           | normal transmitting-DH 3 |                     | 158.749 ms        |
|                                                                           | normal transmitting-DH 5 |                     | 150.552 ms        |
| Measurement uncertainty                                                   | < 1 $\mu\text{s}$        |                     |                   |

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**Limits and measurement periods:**

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

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

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

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### 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.

| Test conditions                |                          | 20 dB Bandwidth |               |               |
|--------------------------------|--------------------------|-----------------|---------------|---------------|
|                                |                          | Channel A       | Channel B     | Channel C     |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5\text{ V}$ | 929.48718 kHz   | 935.89744 kHz | 929.48718 kHz |
| Measurement uncertainty        |                          | < 10 Hz         |               |               |

#### Limits:

| Frequency Range / MHz | Number of channels | Limit                                |
|-----------------------|--------------------|--------------------------------------|
| 902-928               | < 50               | < 250 kHz                            |
|                       | $49 \geq 25$       | $500\text{ kHz} \geq 250\text{ kHz}$ |
| 2400-2483.5           | $\geq 15$          | not determined                       |
| 5725-5850             | 75                 | $\leq 1\text{ MHz}$                  |

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

Comment: see attached diagram

#### 3.10.1 System Receiver Input Bandwidth

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

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### 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.

| Test conditions                |                           | Attenuation at or outside band-edges<br>Single Frequency |                 |
|--------------------------------|---------------------------|----------------------------------------------------------|-----------------|
|                                |                           | Lower Band-edge                                          | Upper Band-edge |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5 \text{ V}$ | -- dB                                                    | -- dB           |
| Measurement uncertainty        |                           | < 100 Hz                                                 |                 |

| Test conditions                |                           | Attenuation at or outside band-edges<br>Hopping Frequency |                 |
|--------------------------------|---------------------------|-----------------------------------------------------------|-----------------|
|                                |                           | Lower Band-edge                                           | Upper Band-edge |
| $T_{nom} = 23^{\circ}\text{C}$ | $V_{nom} = 1.5 \text{ V}$ | 45.07 dB                                                  | 51.71 dB        |
| Measurement uncertainty        |                           | < 100 Hz                                                  |                 |

#### Limits:

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

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

Comment: see attached diagrams

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**3.12 Radiated Emissions from Receiver Section of Transceiver**

FCC Rule: 15.109

**Summary table with radiated data of the test plots**

(RX)

Low Channel

| 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                    | 30.000                 | 17.39                    | 13.03                  | QP       | 30.42                | 40.00                     | 9.58        | 355                 | 41                     |
|                      | 195.981                | 21.87                    | 12.44                  | QP       | 34.31                | 43.50                     | 9.19        | 345                 | 98                     |
|                      | 672.412                | 12.20                    | 22.91                  | QP       | 35.11                | 46.00                     | 10.89       | 240                 | 124                    |
|                      | 2400.142               | 36.08                    | 2.06                   | PK       | 38.14                | 54.00                     | 15.86       | 100                 | 143                    |

| 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                    | 30.000                 | 22.78                    | 13.03                  | QP       | 35.81                | 40.00                     | 4.19        | 245                 | 43                     |
|                      | 195.981                | 21.68                    | 12.44                  | QP       | 34.12                | 43.50                     | 9.38        | 215                 | 142                    |
|                      | 672.412                | 11.20                    | 22.91                  | QP       | 34.11                | 46.00                     | 11.89       | 355                 | 121                    |
|                      | 1156.141               | 43.30                    | -8.18                  | PK       | 35.12                | 54.00                     | 18.88       | 105                 | 41                     |
|                      | 2400.142               | 33.26                    | 2.06                   | PK       | 35.32                | 54.00                     | 18.68       | 100                 | 140                    |

Middle Channel

| 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                    | 30.000                 | 17.89                    | 13.03                  | QP       | 30.92                | 40.00                     | 9.08        | 345                 | 49                     |
|                      | 195.981                | 22.38                    | 12.44                  | QP       | 34.82                | 43.50                     | 8.68        | 350                 | 155                    |
|                      | 672.412                | 14.91                    | 22.91                  | QP       | 37.82                | 46.00                     | 8.18        | 255                 | 124                    |
|                      | 1214.892               | 39.97                    | -7.83                  | PK       | 32.14                | 54.00                     | 21.86       | 105                 | 120                    |
|                      | 2436.812               | 36.63                    | 0.79                   | PK       | 37.42                | 54.00                     | 16.58       | 100                 | 119                    |

| 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                    | 30.000                 | 22.79                    | 13.03                  | QP       | 35.82                | 40.00                     | 4.18        | 245                 | 47                     |
|                      | 195.981                | 22.05                    | 12.44                  | QP       | 34.49                | 43.50                     | 9.01        | 245                 | 149                    |
|                      | 672.412                | 12.92                    | 22.91                  | QP       | 35.83                | 46.00                     | 10.17       | 350                 | 121                    |
|                      | 1601.492               | 41.85                    | -7.04                  | PK       | 34.81                | 54.00                     | 19.19       | 105                 | 172                    |
|                      | 2436.812               | 36.33                    | 0.79                   | PK       | 37.12                | 54.00                     | 16.88       | 100                 | 114                    |

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FCC ID : GX9BTX

## High Channel

| 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                    | 30.000                 | 17.79                    | 13.03                  | QP       | 30.82                | 40.00                     | 9.18        | 355                 | 45                     |
|                      | 195.981                | 21.87                    | 12.44                  | QP       | 34.31                | 43.50                     | 9.19        | 345                 | 72                     |
|                      | 672.412                | 15.21                    | 22.91                  | QP       | 38.12                | 46.00                     | 7.88        | 245                 | 114                    |
|                      | 1234.812               | 38.68                    | -7.86                  | PK       | 30.82                | 54.00                     | 23.18       | 105                 | 142                    |
|                      | 2478.812               | 40.26                    | -0.94                  | PK       | 39.32                | 54.00                     | 14.68       | 100                 | 140                    |

| 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                    | 30.000                 | 22.78                    | 13.03                  | QP       | 35.81                | 40.00                     | 4.19        | 240                 | 42                     |
|                      | 195.981                | 22.68                    | 12.44                  | QP       | 35.12                | 43.50                     | 8.38        | 245                 | 152                    |
|                      | 672.412                | 16.80                    | 22.91                  | QP       | 39.71                | 46.00                     | 6.29        | 345                 | 116                    |
|                      | 1173.812               | 45.19                    | -8.07                  | PK       | 37.12                | 46.00                     | 8.88        | 100                 | 140                    |
|                      | 2478.812               | 39.35                    | -0.94                  | PK       | 38.41                | 46.00                     | 7.59        | 105                 | 141                    |

- 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

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: see attached diagram

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### 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 (dB $\mu$ V) |                  |
|-----------|--------------------|------------------|
|           | quasi-peak         | average          |
| 150 kHz   | lower limit line   | Lower limit line |

#### Limits:

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

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

ETSTW-EMS 013 ETSTW-EMS 014

Comment: This test is not required because there is no AC power line or signal line for this EUT.

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

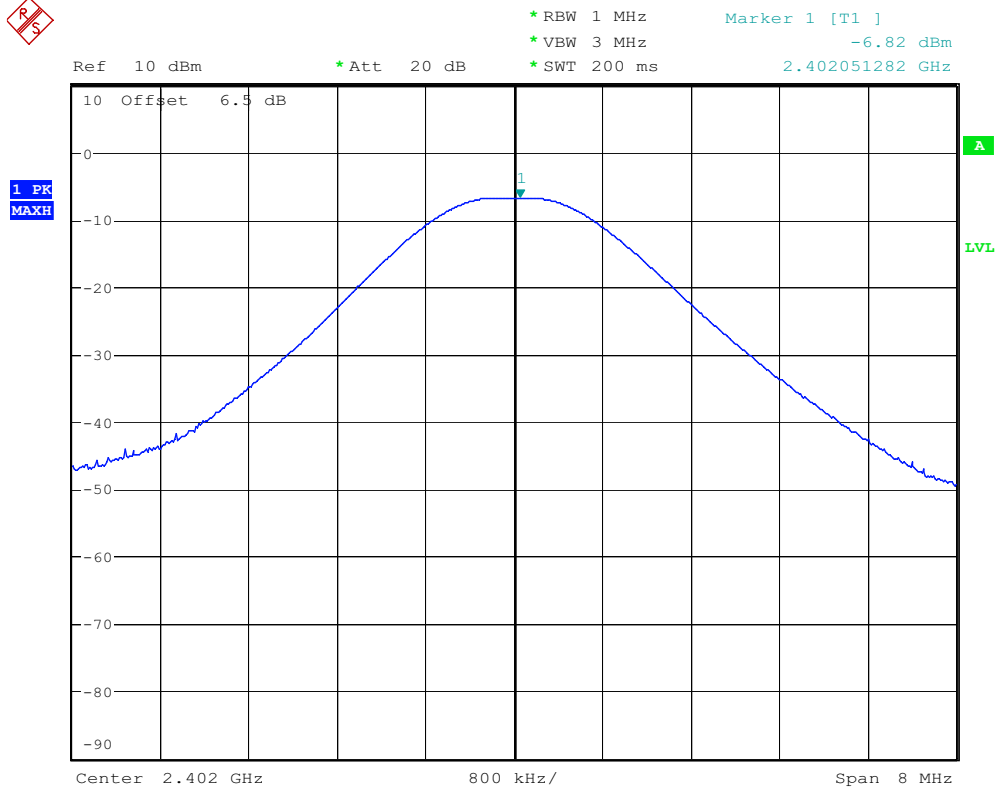
**Appendix**

- 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 Radiated Emissions from Receiver Section of Transceiver
- I Pictures

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

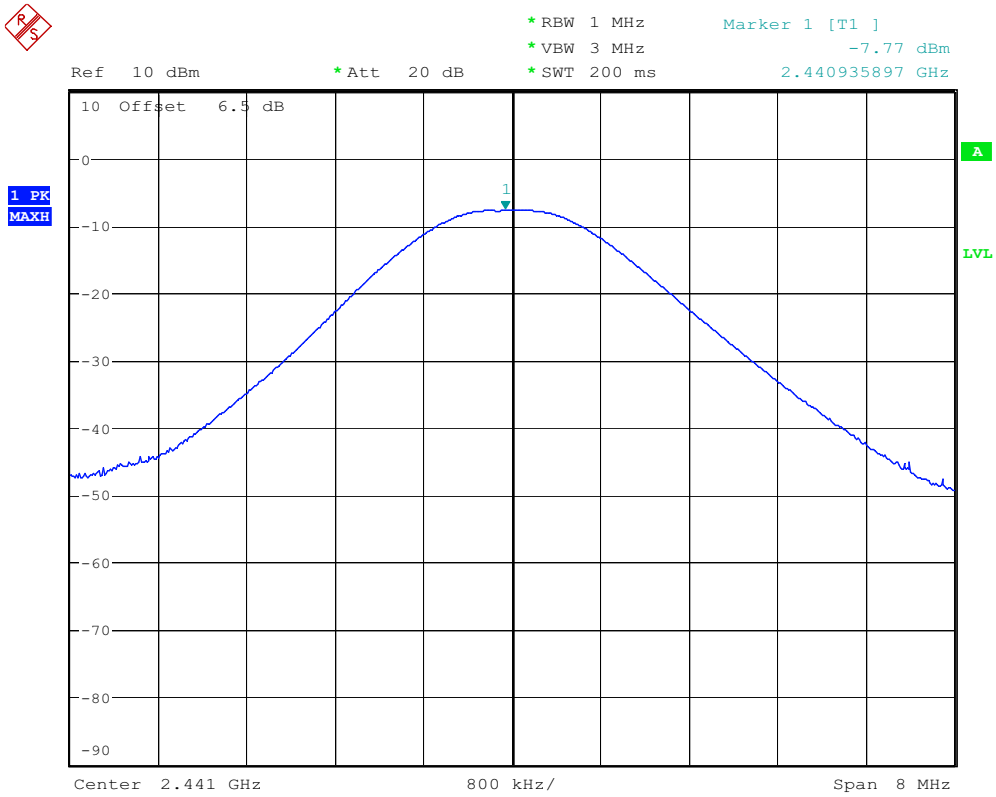
## **Appendix A**

### Peak Output Power



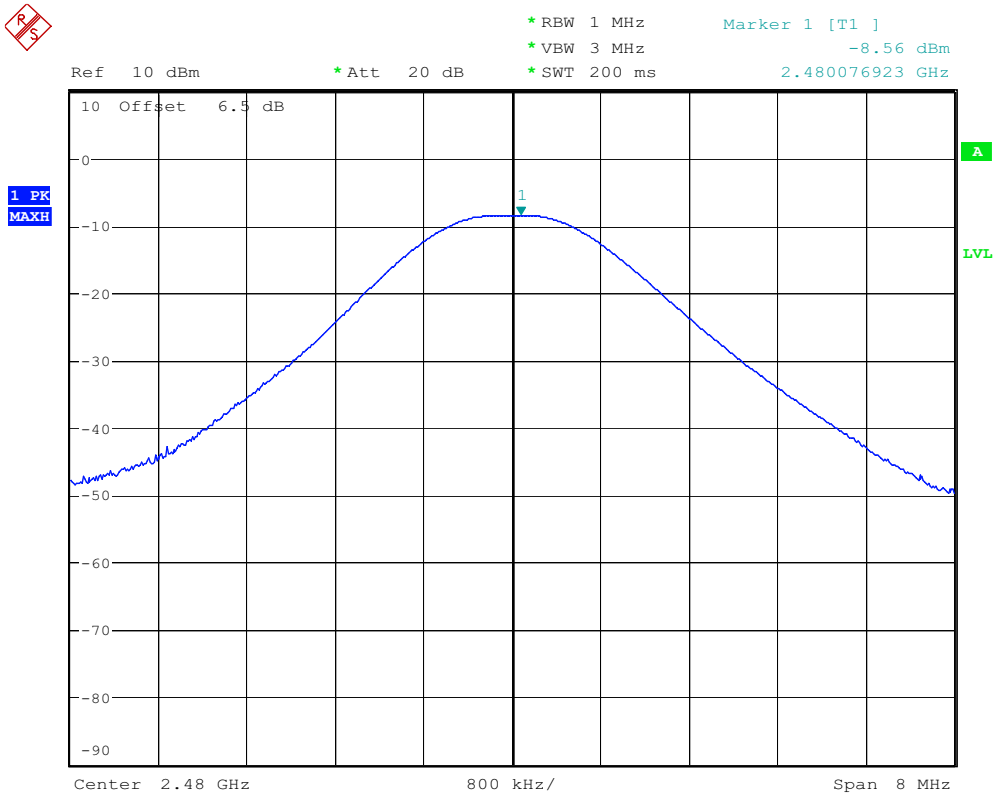
Max output power CH0

Date: 5.DEC.2006 08:52:55



Max output power CH39

Date: 5.DEC.2006 08:48:51

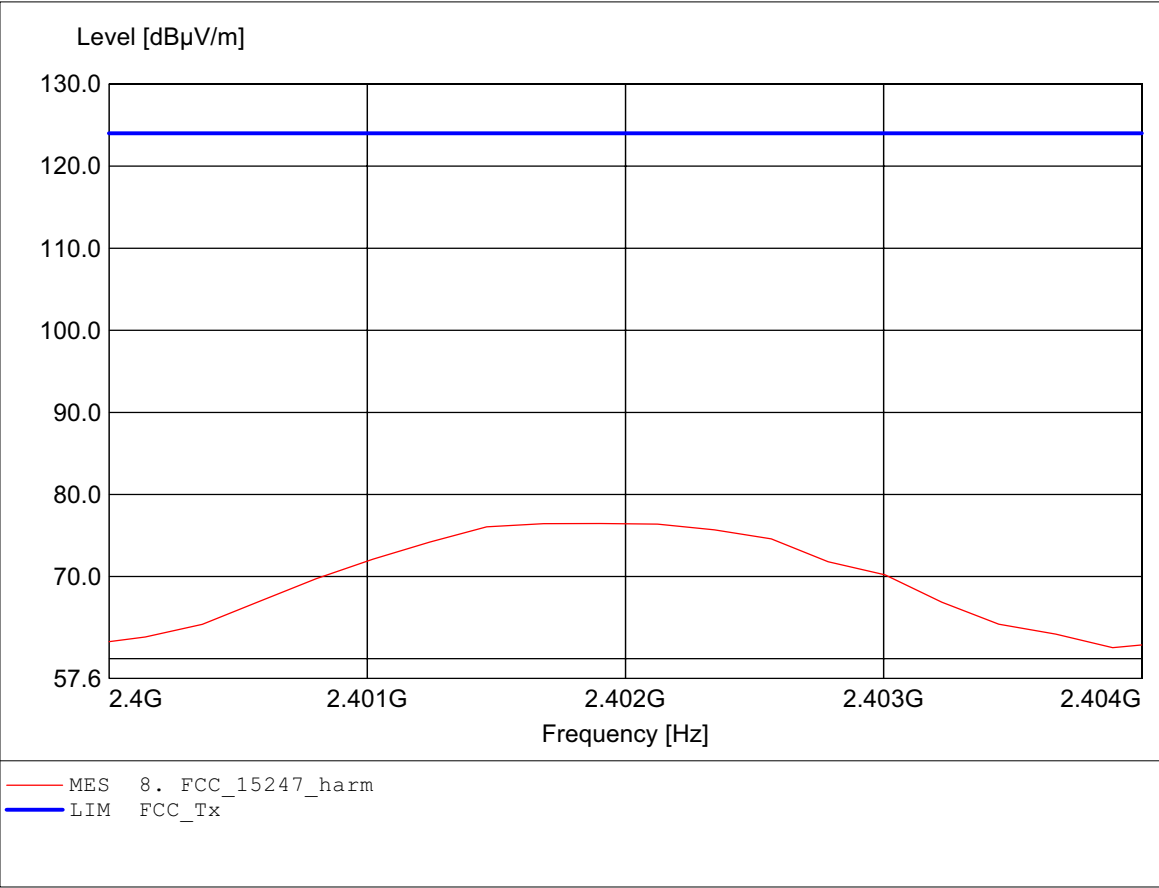


Max output power CH78

Date: 5.DEC.2006 08:53:43

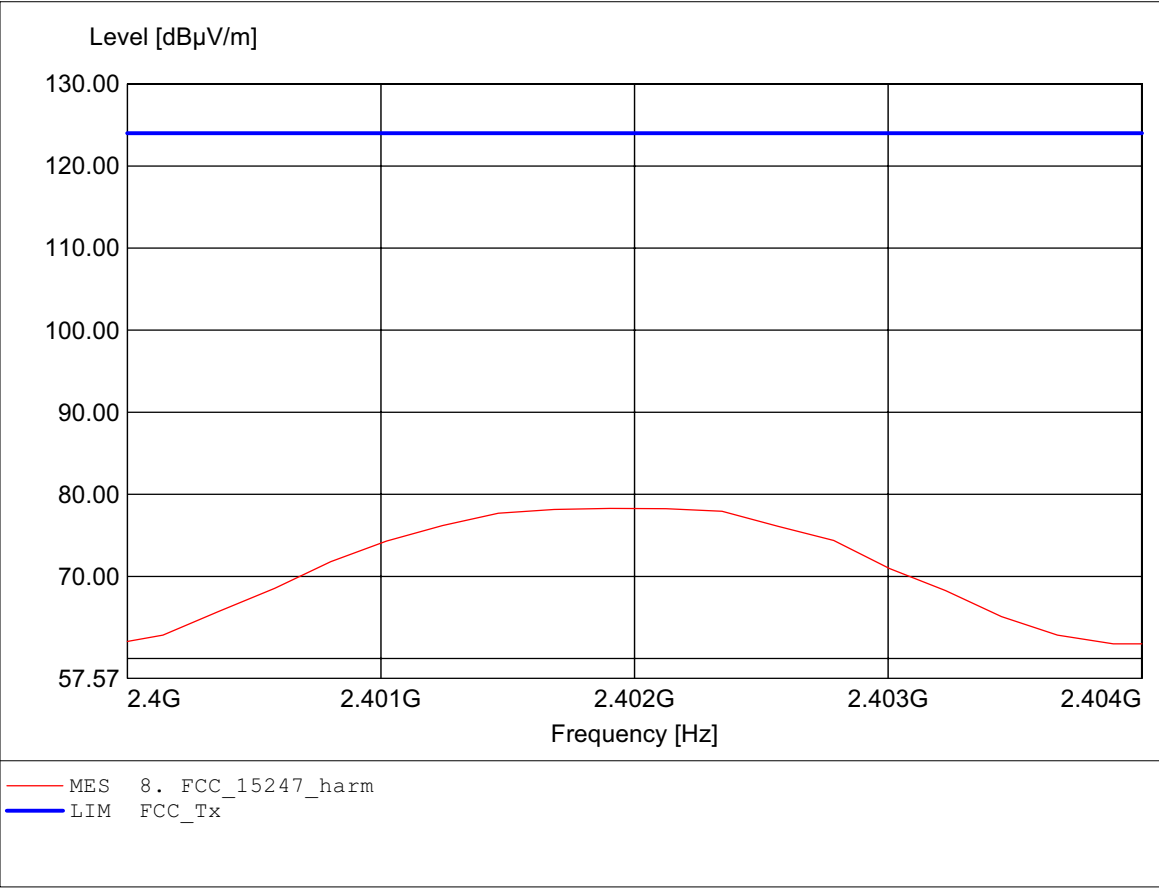
Carrier power (Field Strength)  
FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL025  
Freq: 2.402GHz, Emax: 76.47dBµV/m, RBW: 1MHz



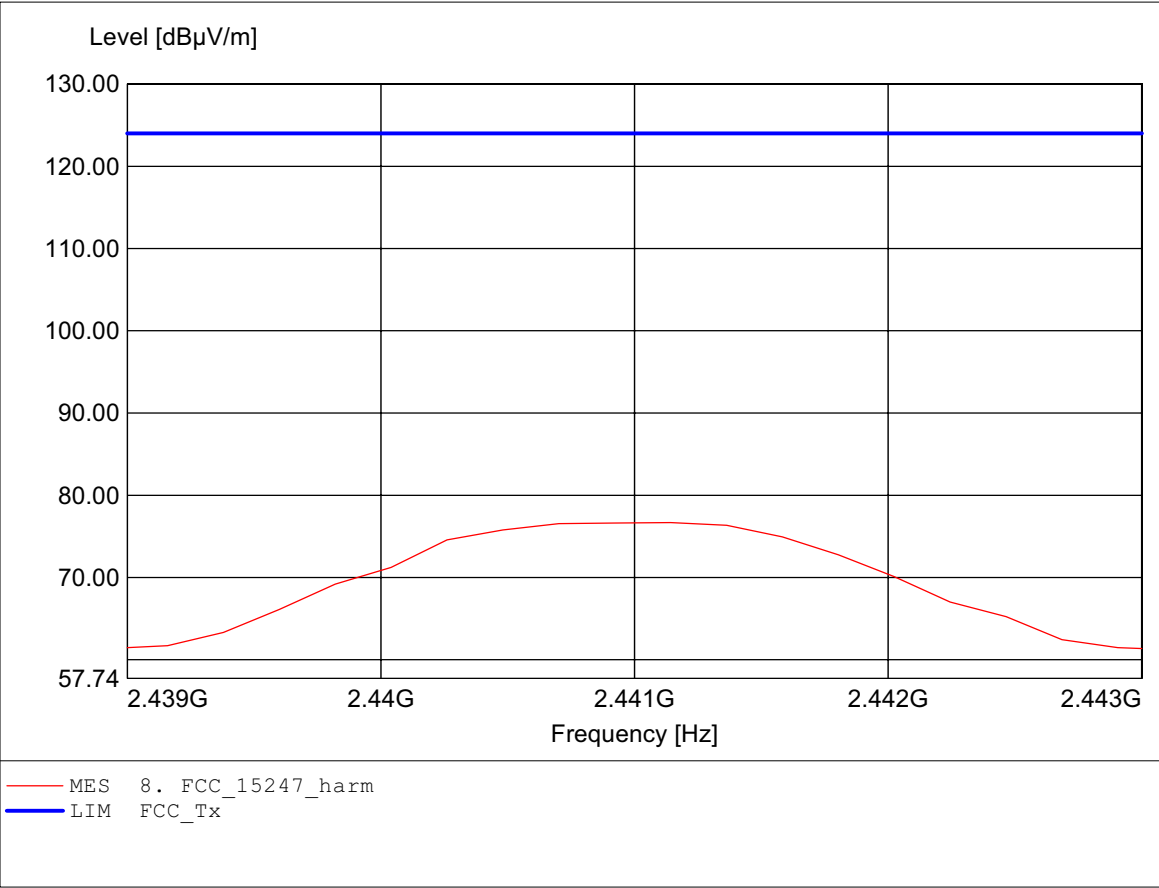
Carrier power (Field Strength)  
FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL025  
Freq: 2.402GHz, Emax: 78.29dBµV/m, RBW: 1MHz



Carrier power (Field Strength)  
FCC RULES PART 15, SUBPART C / LP0002

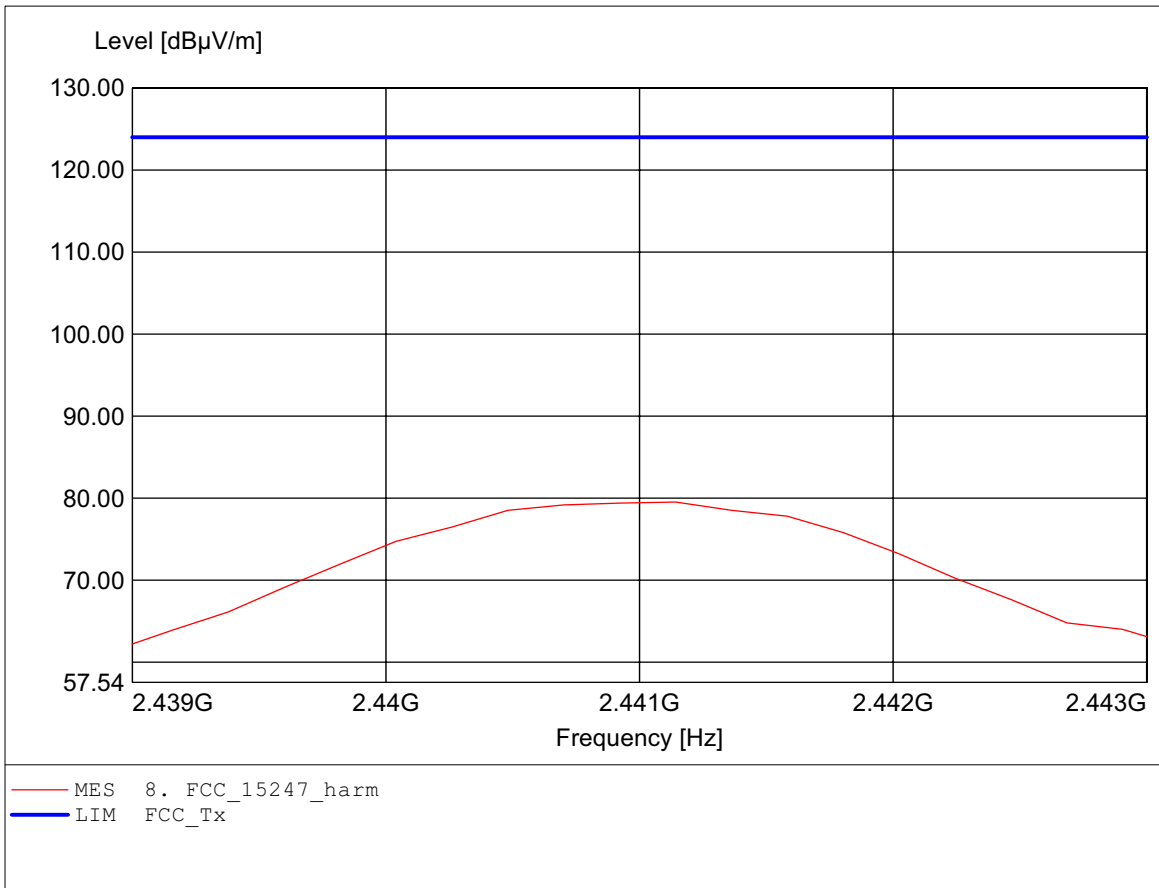
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL025  
Freq: 2.441GHz, Emax: 76.68dBµV/m, RBW: 1MHz



# Carrier power (Field Strength)

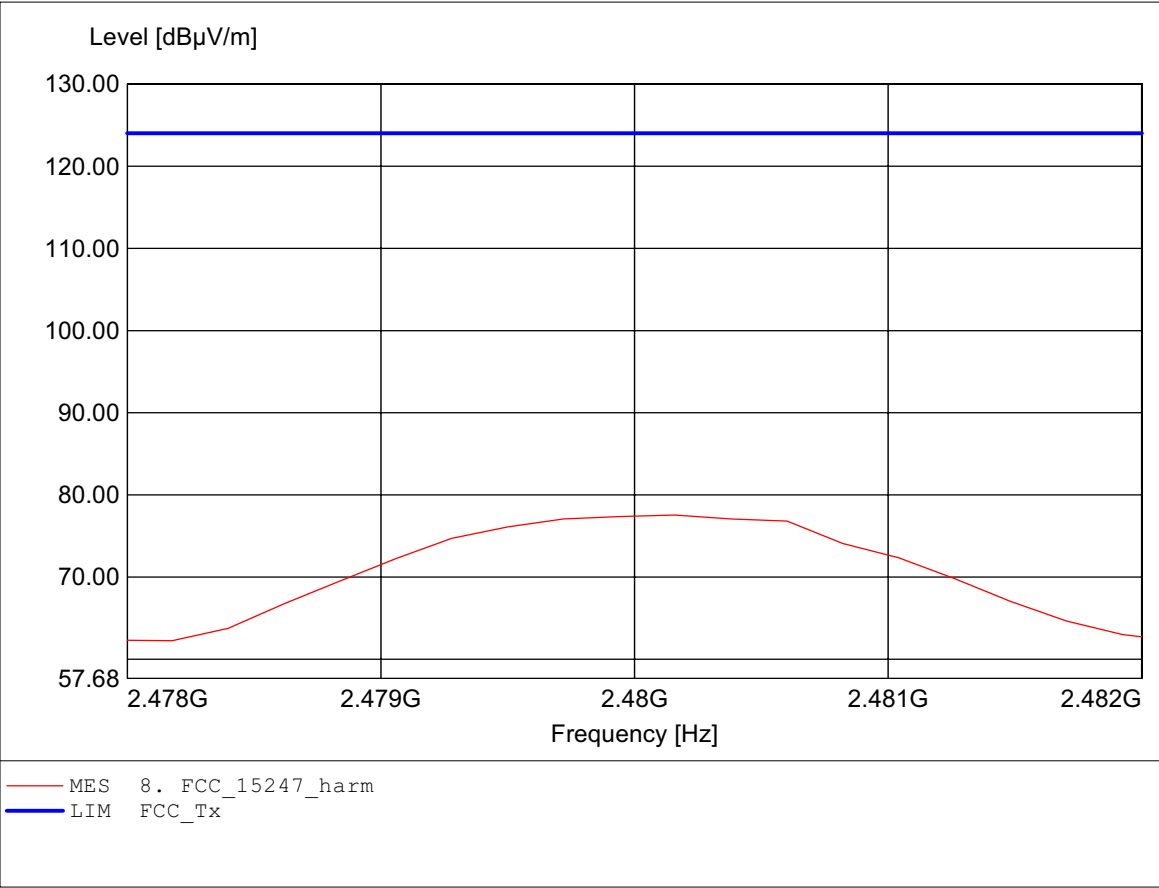
FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL025  
Freq: 2.441GHz, Emax: 79.52dBμV/m, RBW: 1MHz



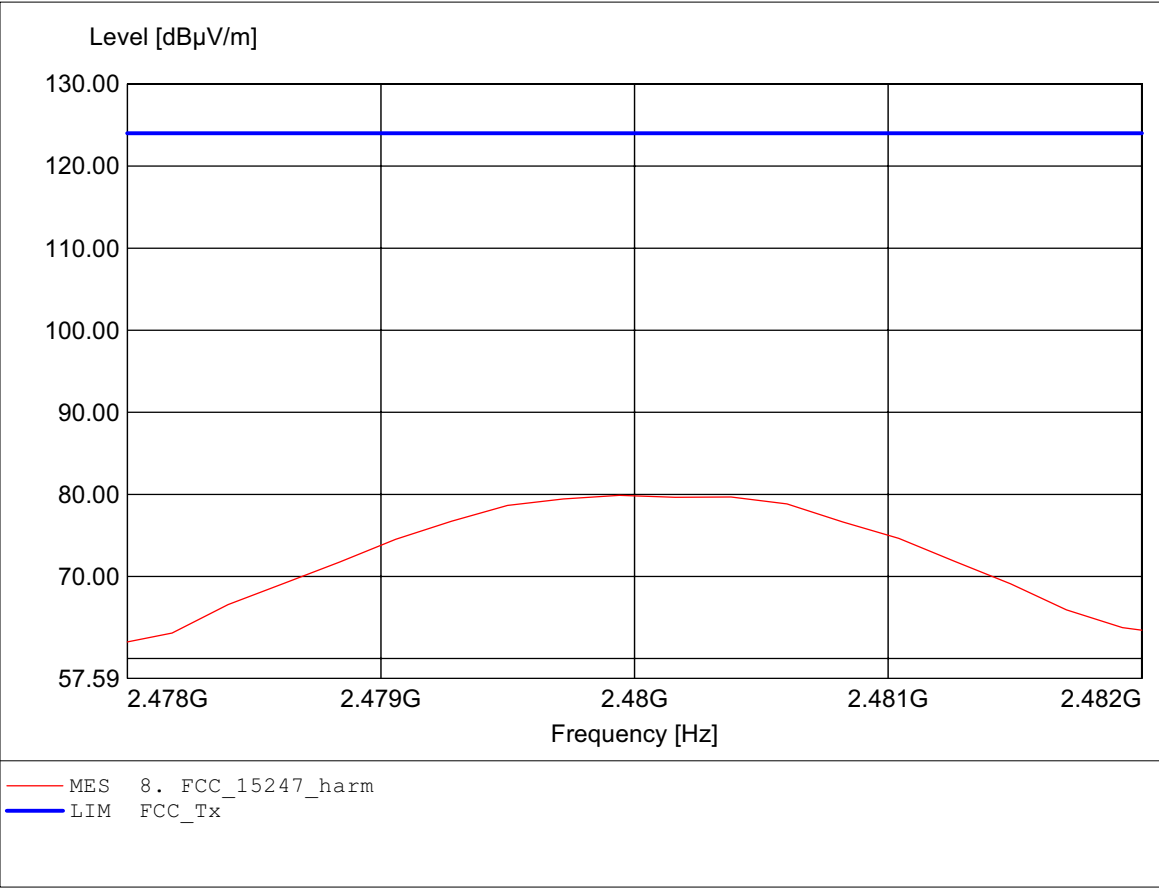
Carrier power (Field Strength)  
FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL025  
Freq: 2.480GHz, Emax: 77.55dBµV/m, RBW: 1MHz



Carrier power (Field Strength)  
FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL025  
Freq: 2.480GHz, Emax: 79.88dBµV/m, RBW: 1MHz



Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

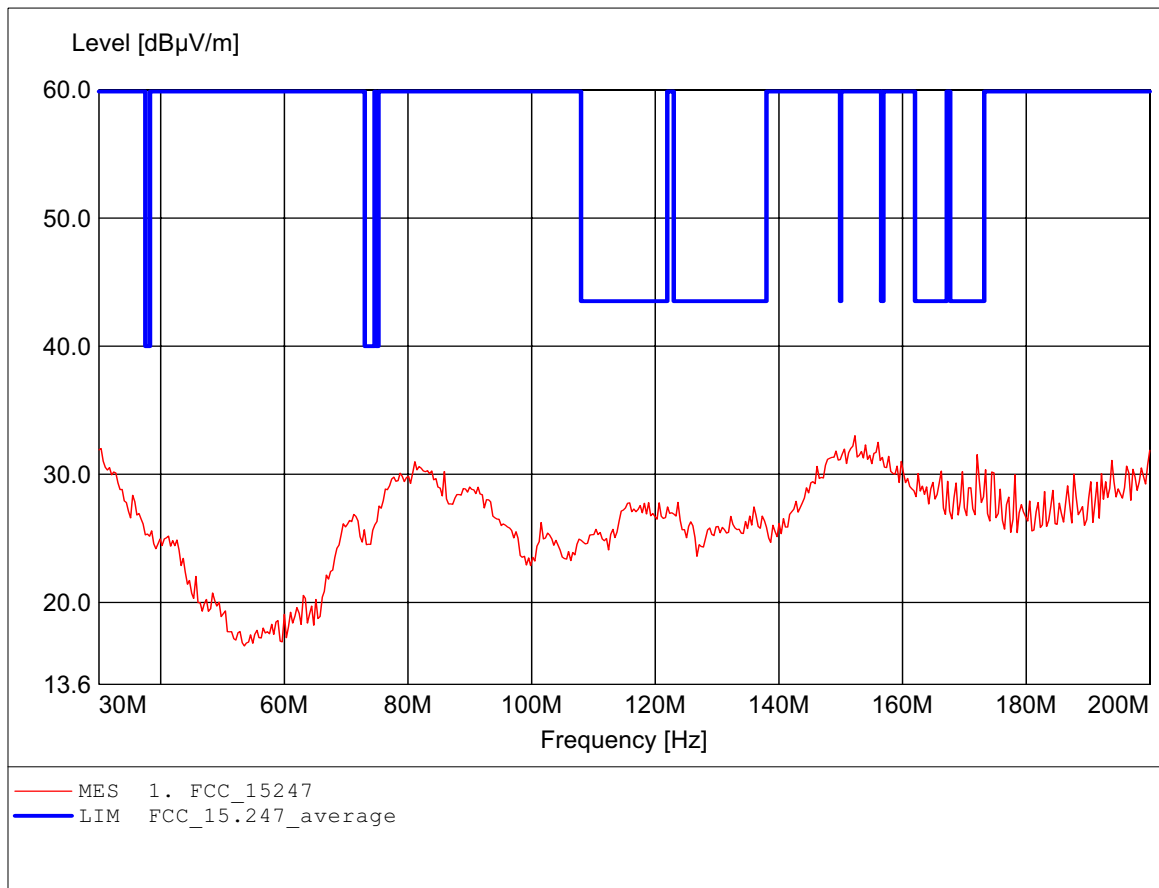
## **Appendix B**

### 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**

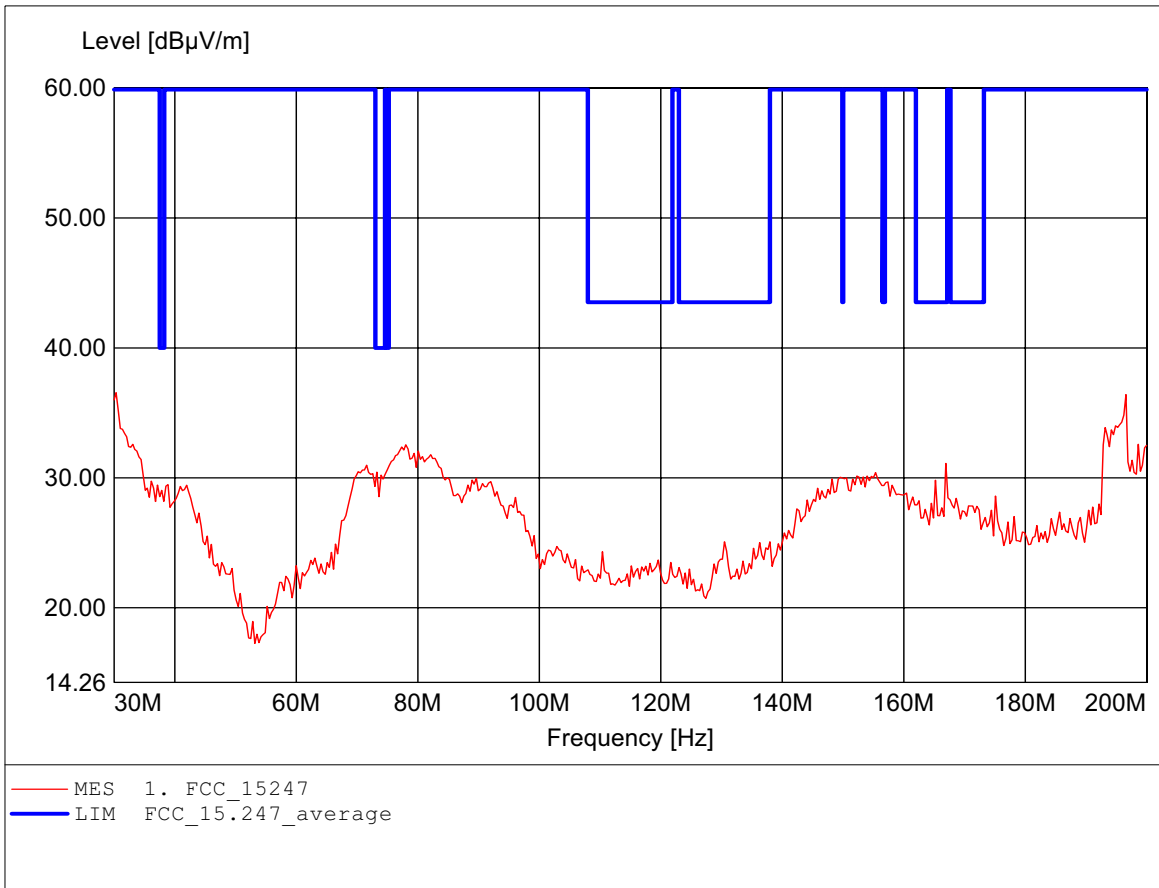
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq: 152.305MHz, Emax: 33.01dBμV/m, RBW: 100kHz



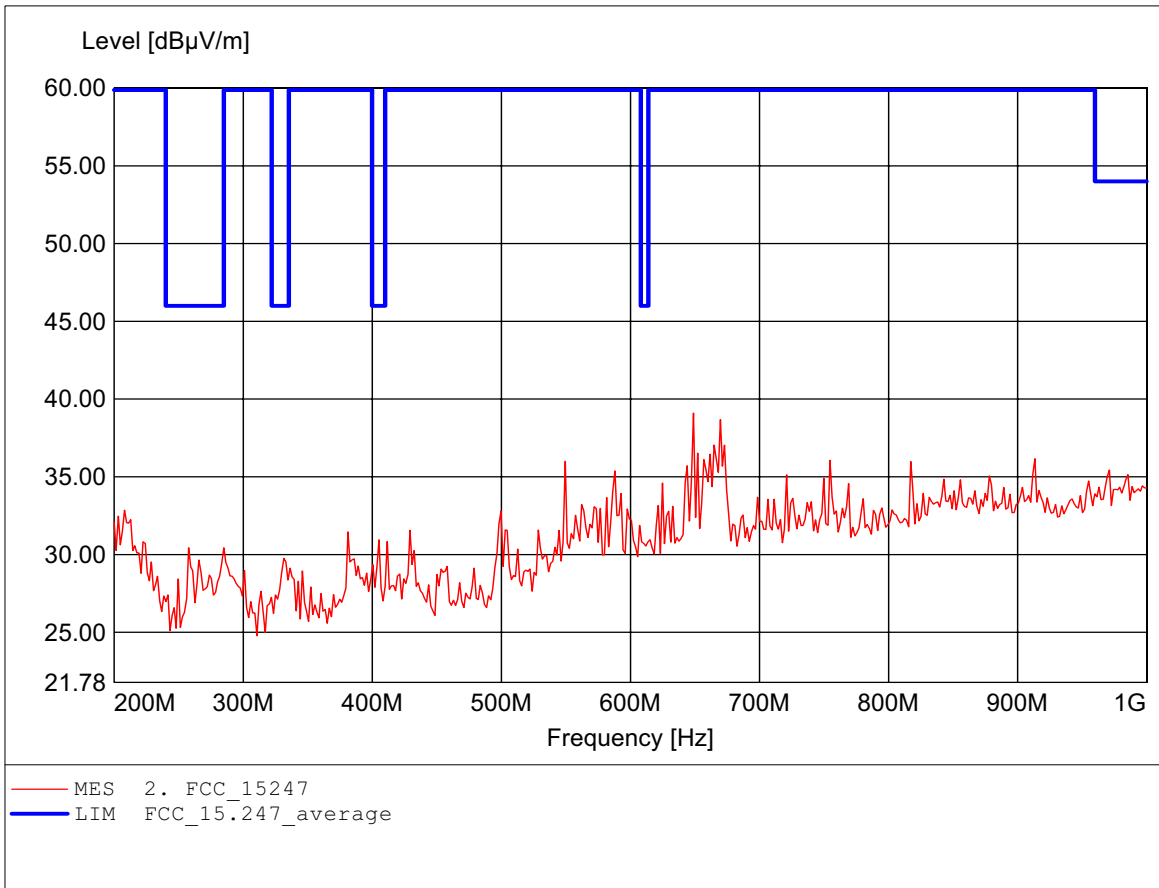
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq: 30.341MHz, Emax: 36.56dBµV/m, RBW: 100kHz



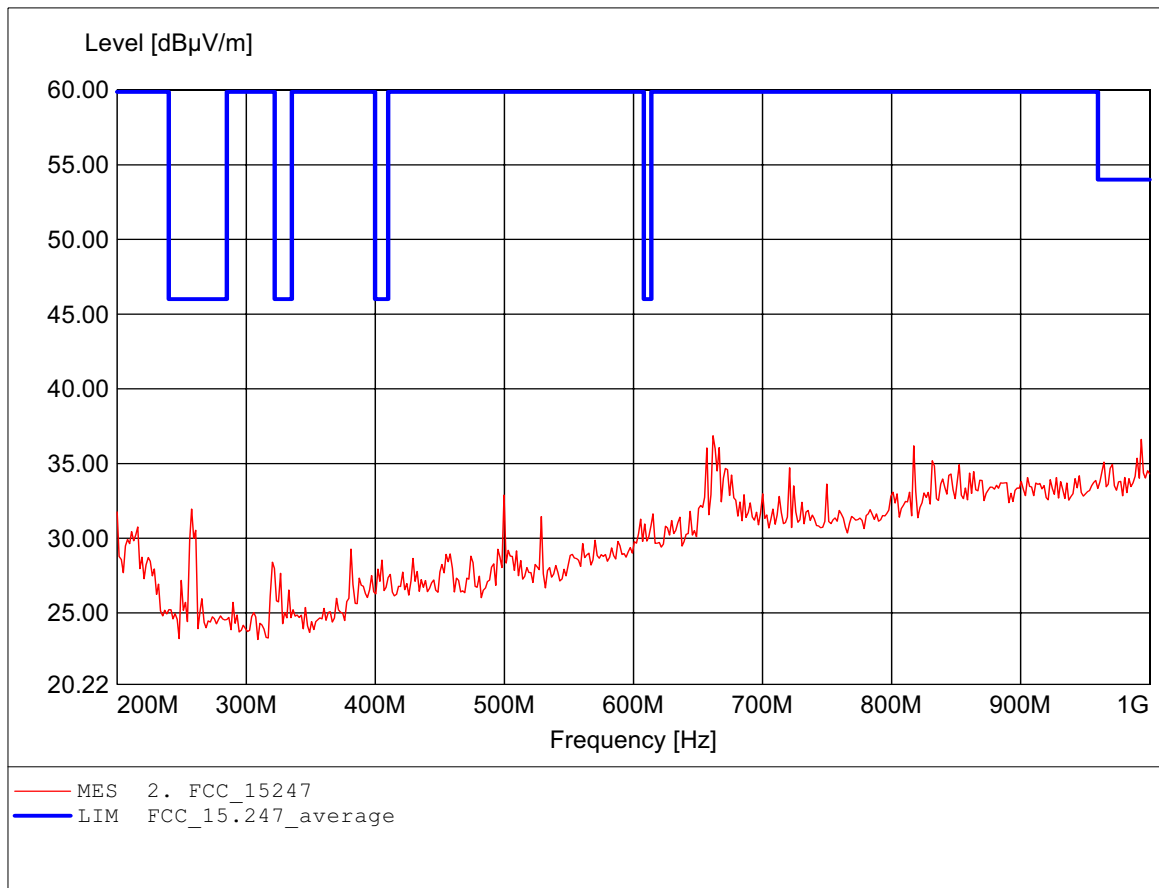
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223,  
Freq: 648.898MHz, Emax: 39.09dBµV/m, RBW: 100kHz



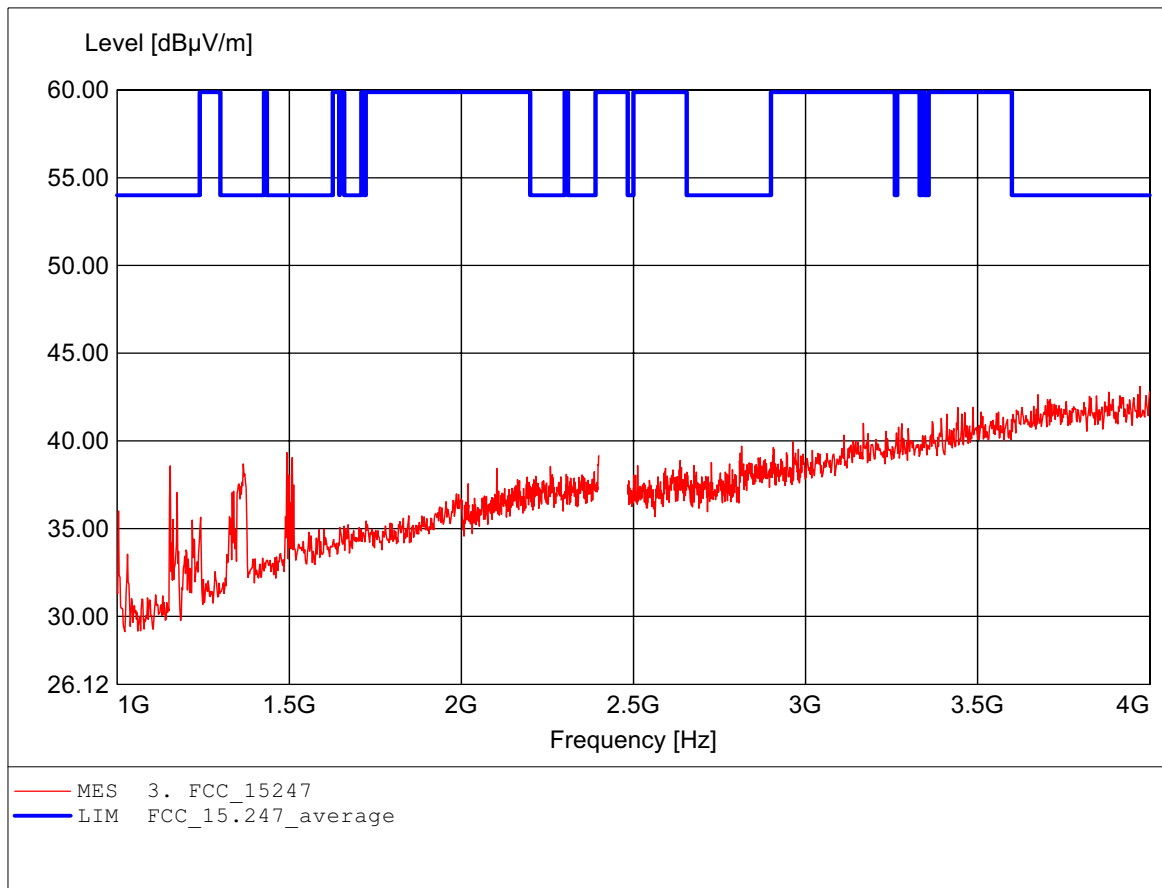
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223,  
Freq: 661.723MHz, Emax: 36.86dBμV/m, RBW: 100kHz



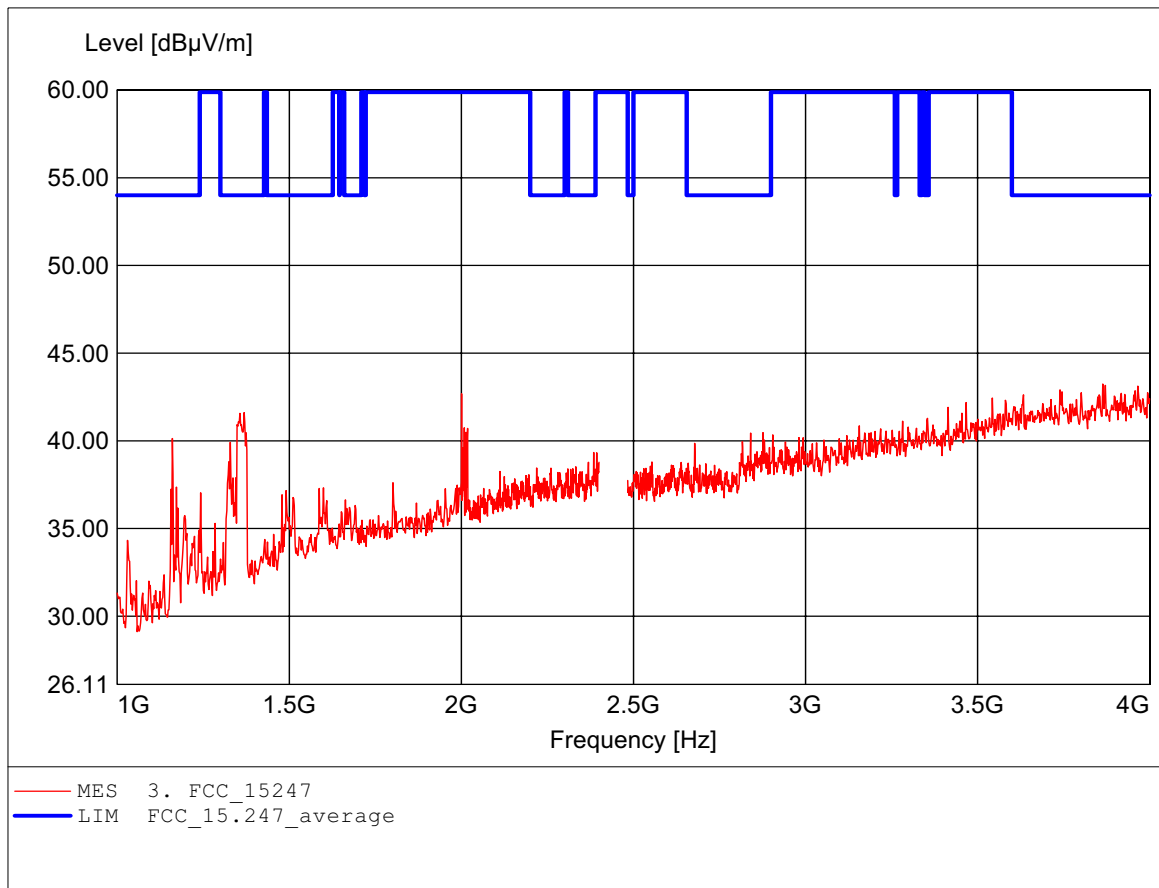
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 3.972GHz, Emax: 43.11dBµV/m, RBW: 1MHz



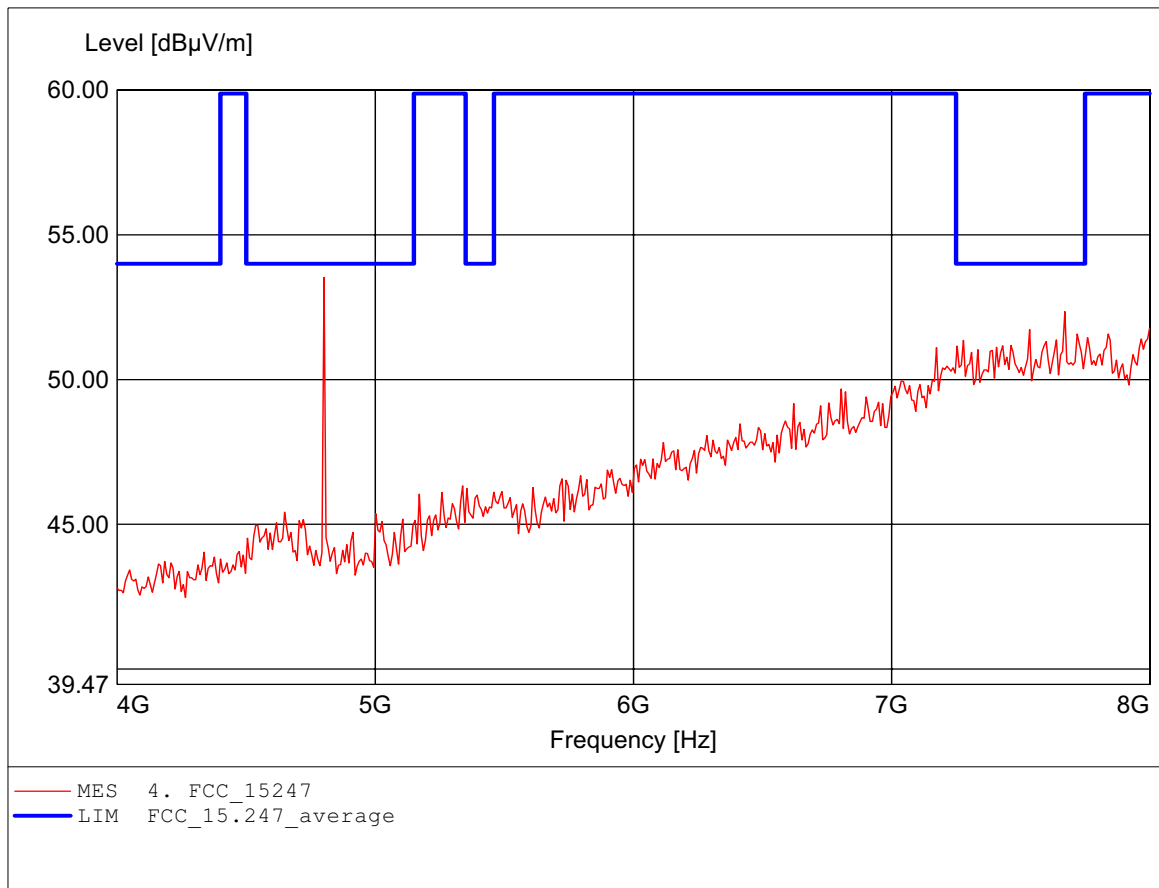
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 3.864GHz, Emax: 43.24dBμV/m, RBW: 1MHz



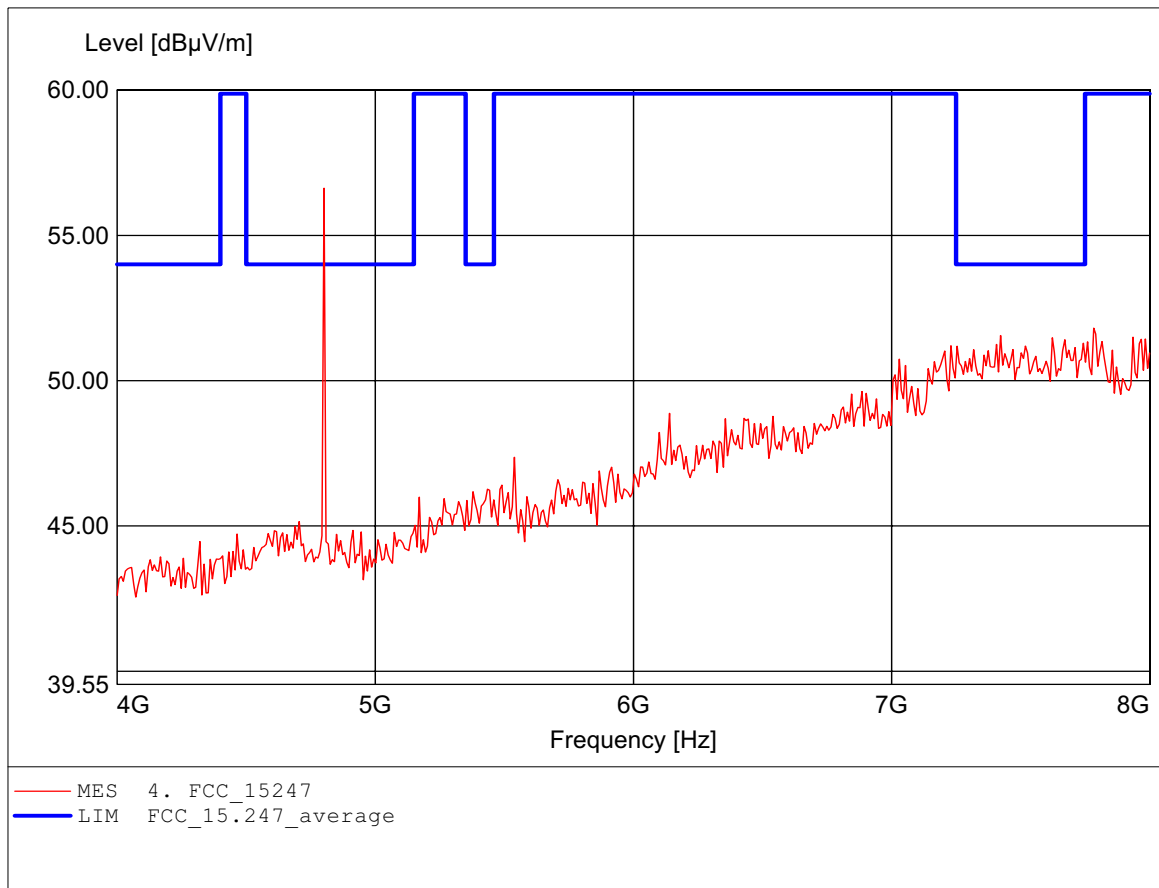
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**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 4.802GHz, Emax: 53.53dBμV/m, RBW: 1MHz



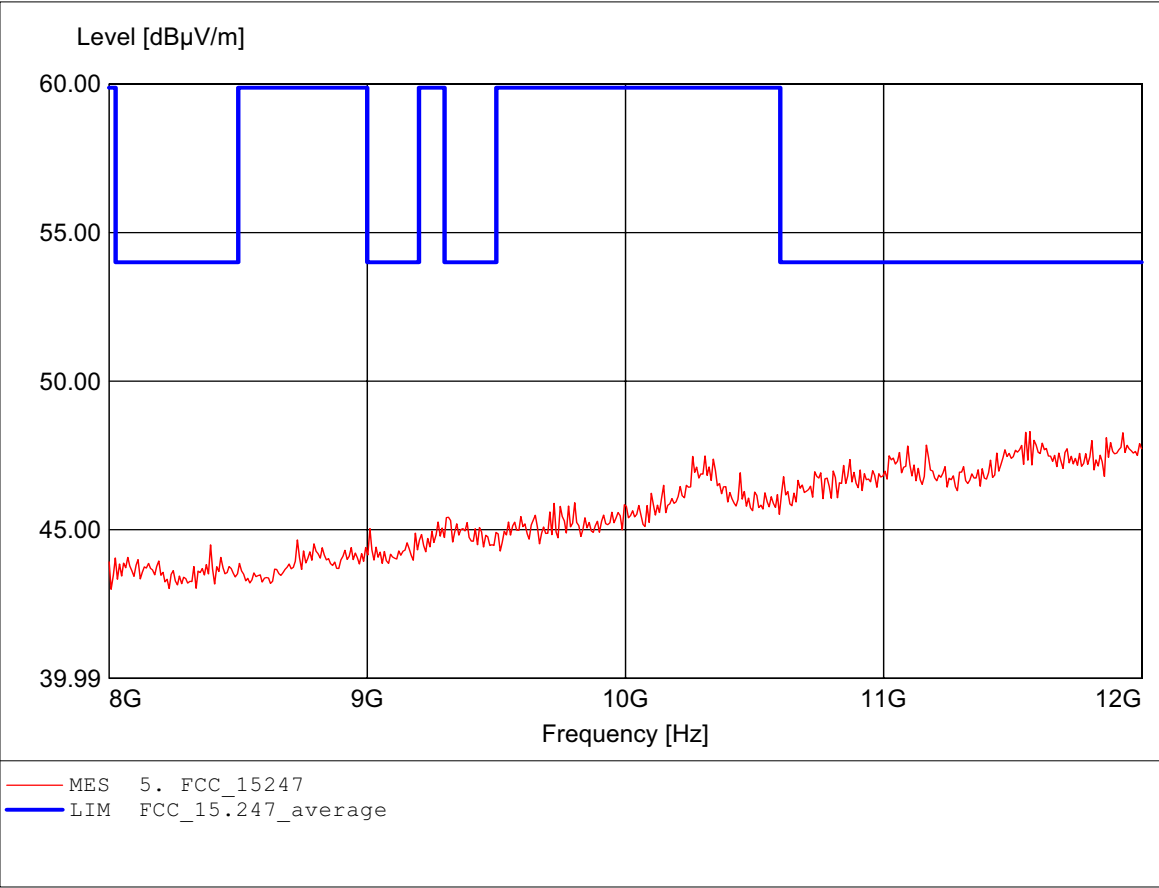
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 4.802GHz, Emax: 56.63dBμV/m, RBW: 1MHz



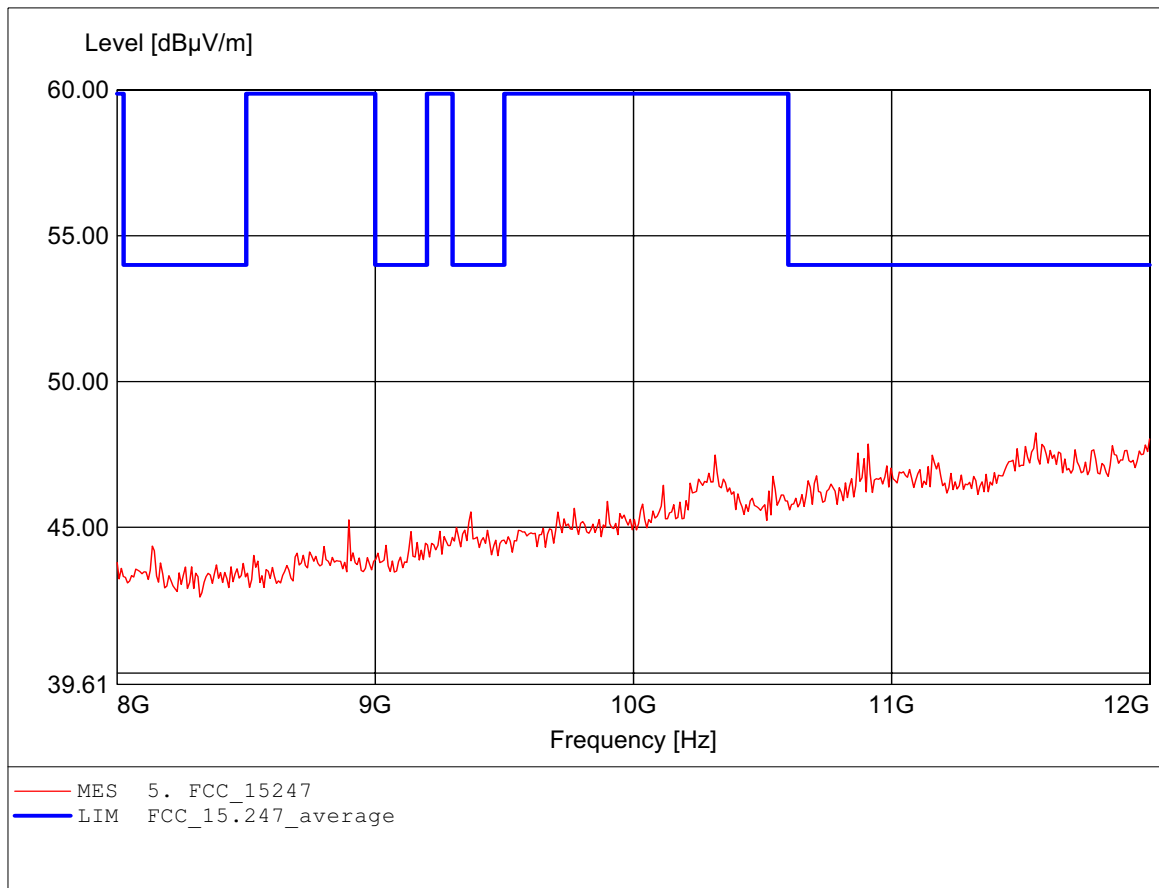
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 11.567GHz, Emax: 48.30dBµV/m, RBW: 1MHz



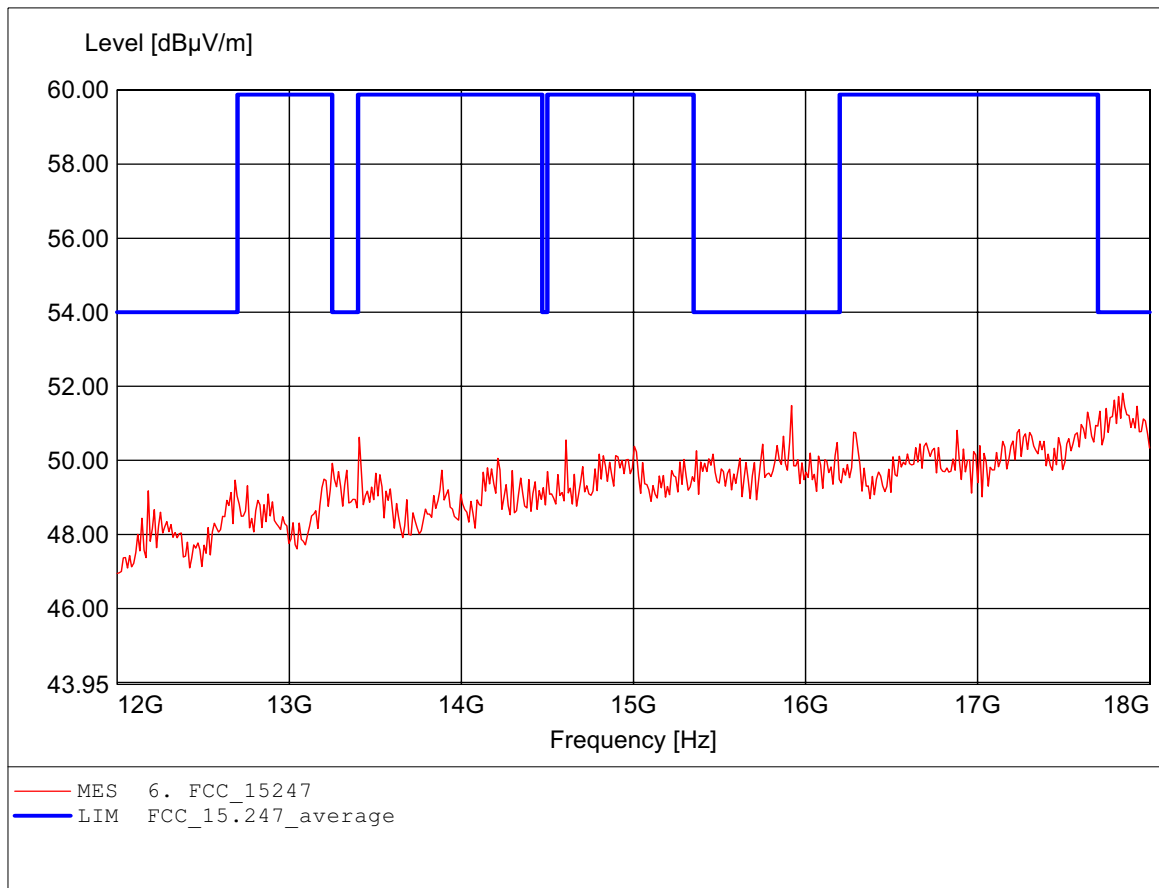
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 11.559GHz, Emax: 48.24dBµV/m, RBW: 1MHz



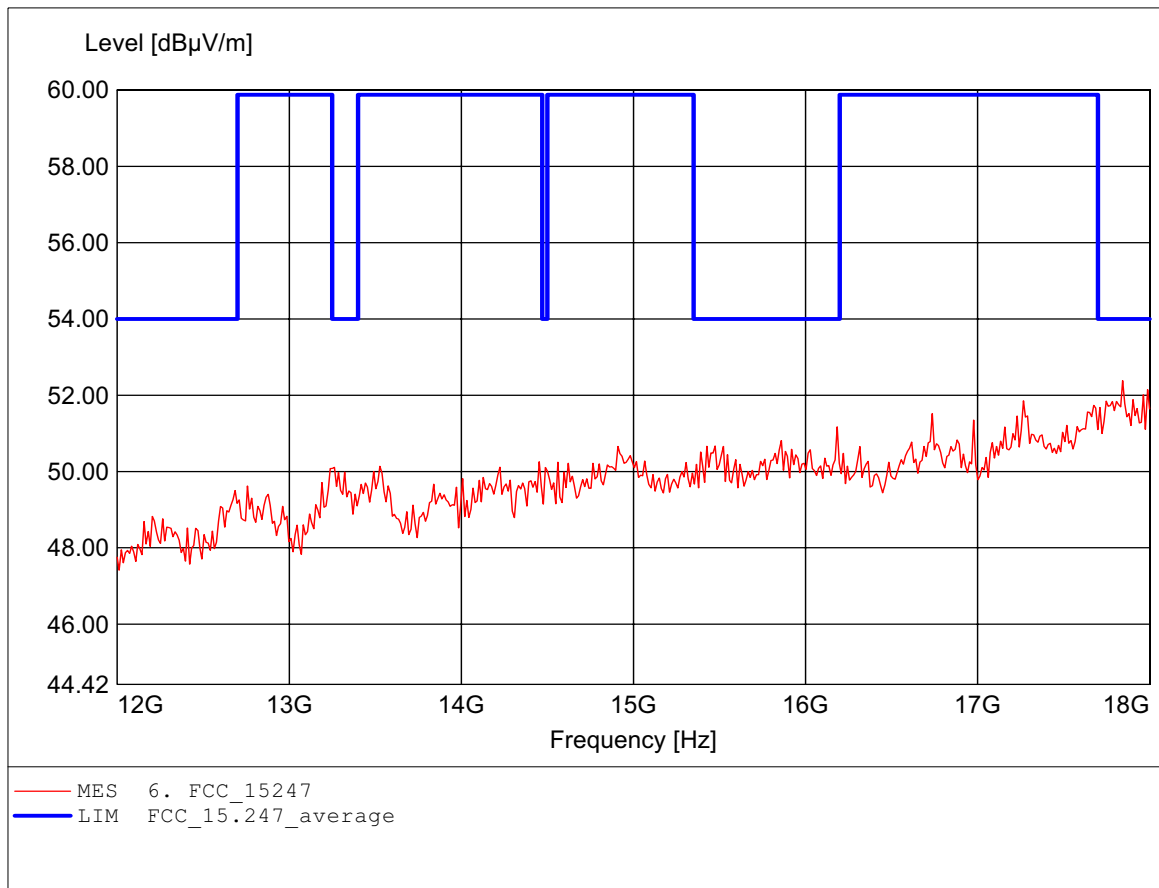
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 17.844GHz, Emax: 51.81dBµV/m, RBW: 1MHz



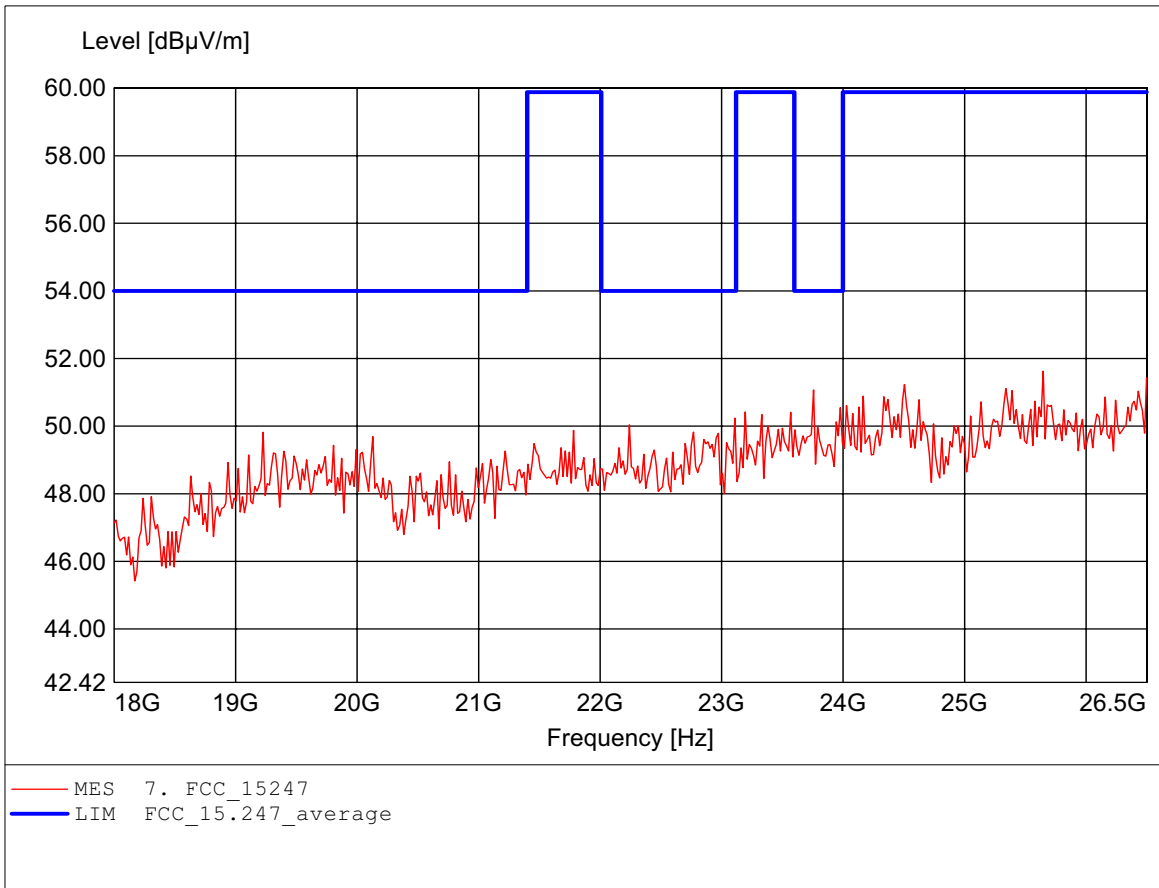
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 17.844GHz, Emax: 52.38dBµV/m, RBW: 1MHz



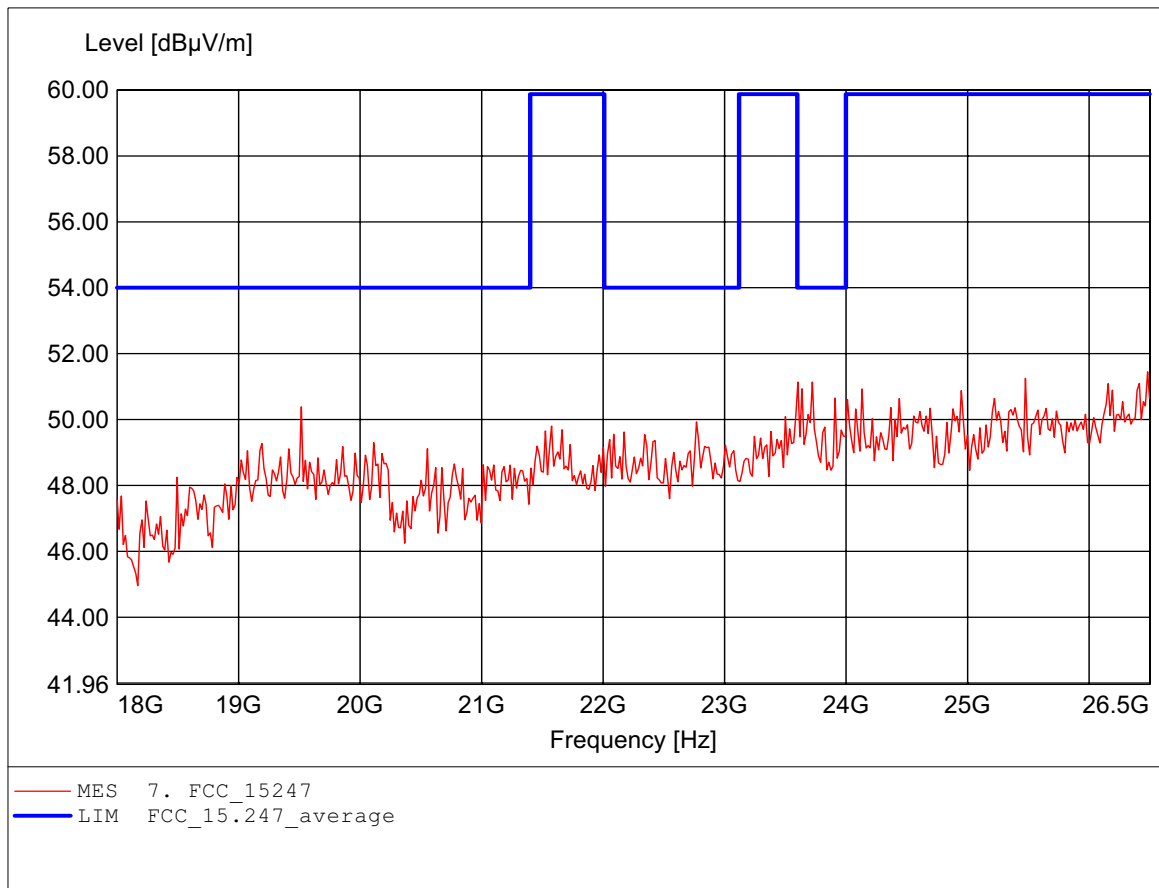
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 25.648GHz, Emax: 51.63dBµV/m, RBW: 1MHz



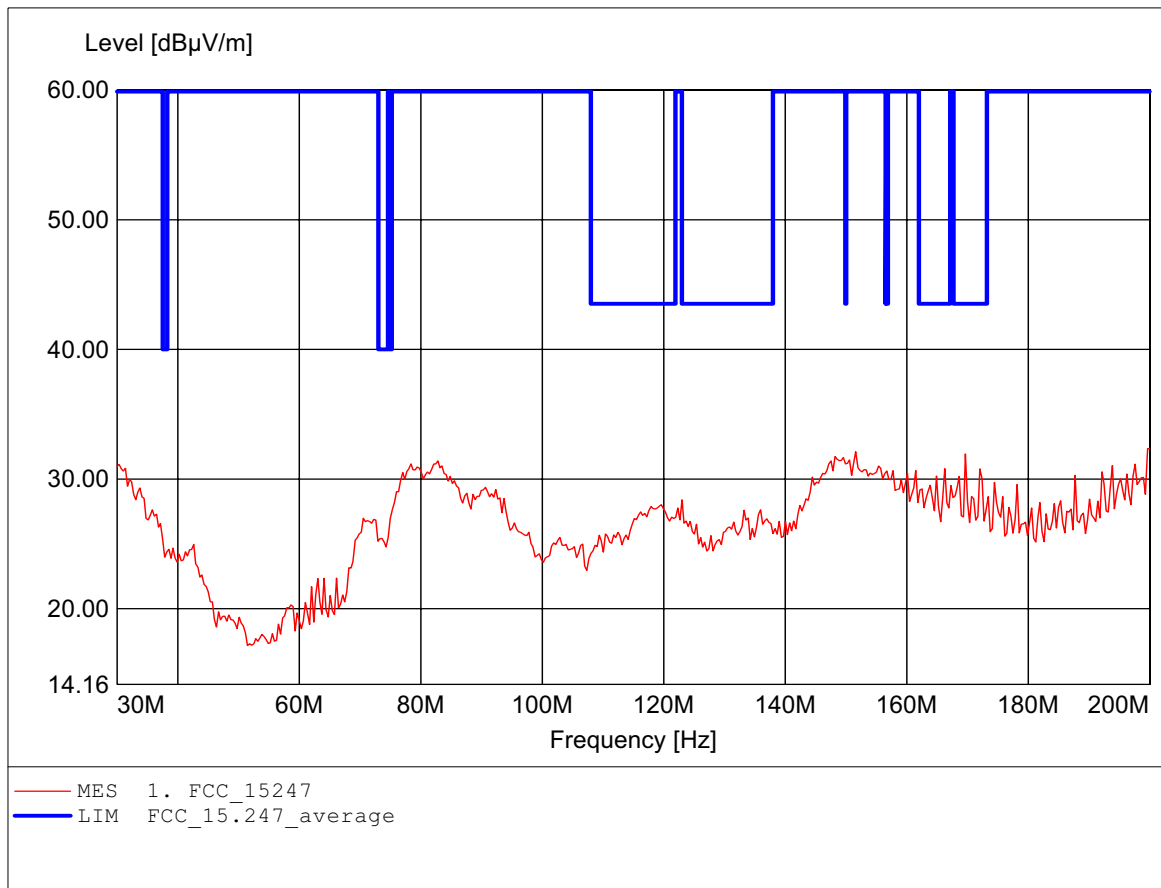
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**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 26.483GHz, Emax: 51.45dBµV/m, RBW: 1MHz



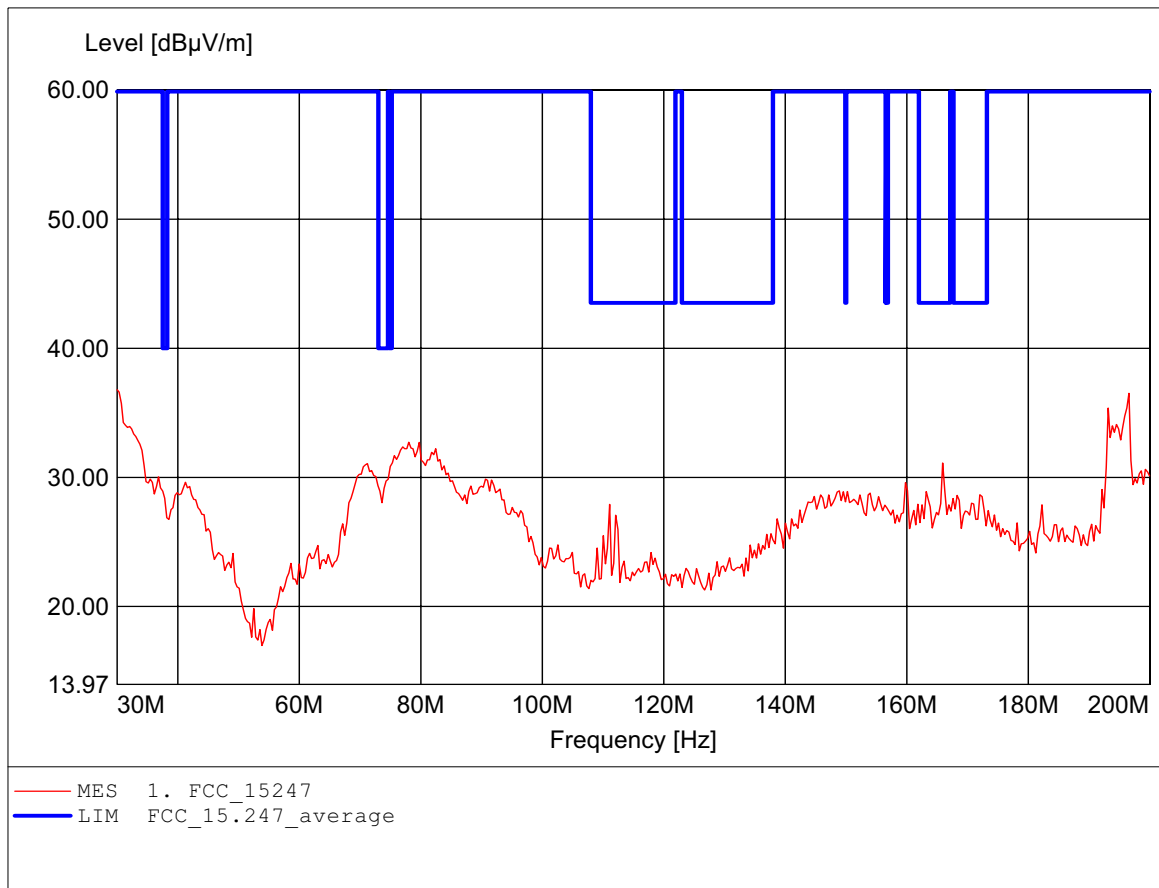
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq: 199.659MHz, Emax: 32.35dBµV/m, RBW: 100kHz



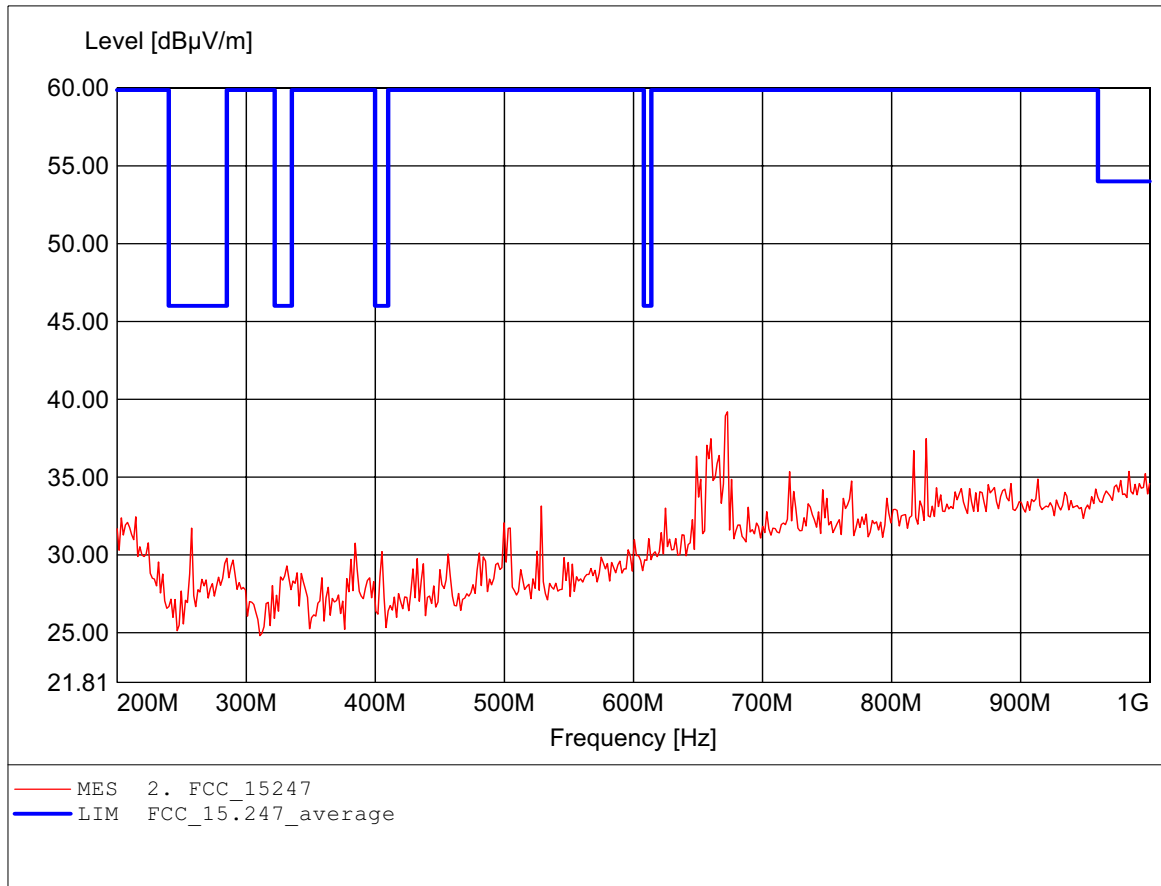
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq: 30.000MHz, Emax: 36.79dBµV/m, RBW: 100kHz



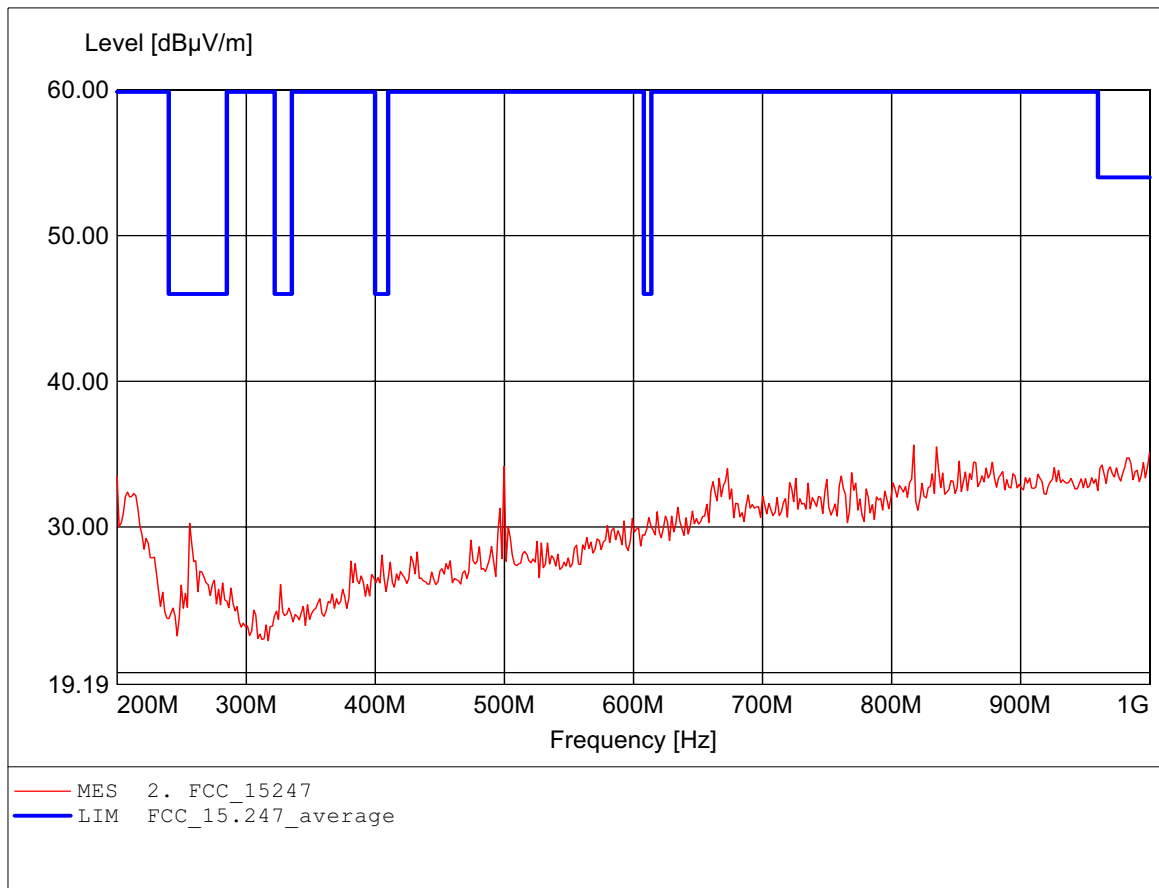
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223,  
Freq: 672.946MHz, Emax: 39.20dBµV/m, RBW: 100kHz



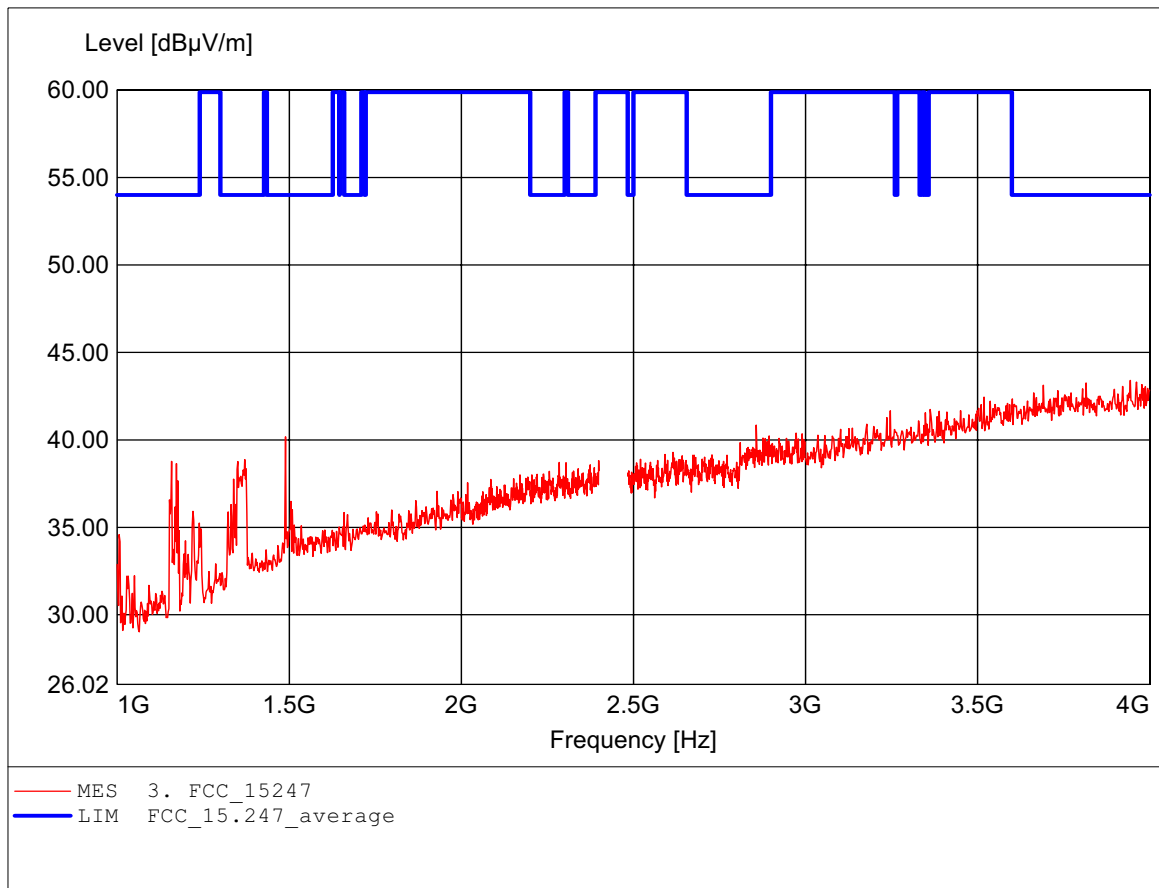
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223,  
Freq: 817.234MHz, Emax: 35.62dBμV/m, RBW: 100kHz



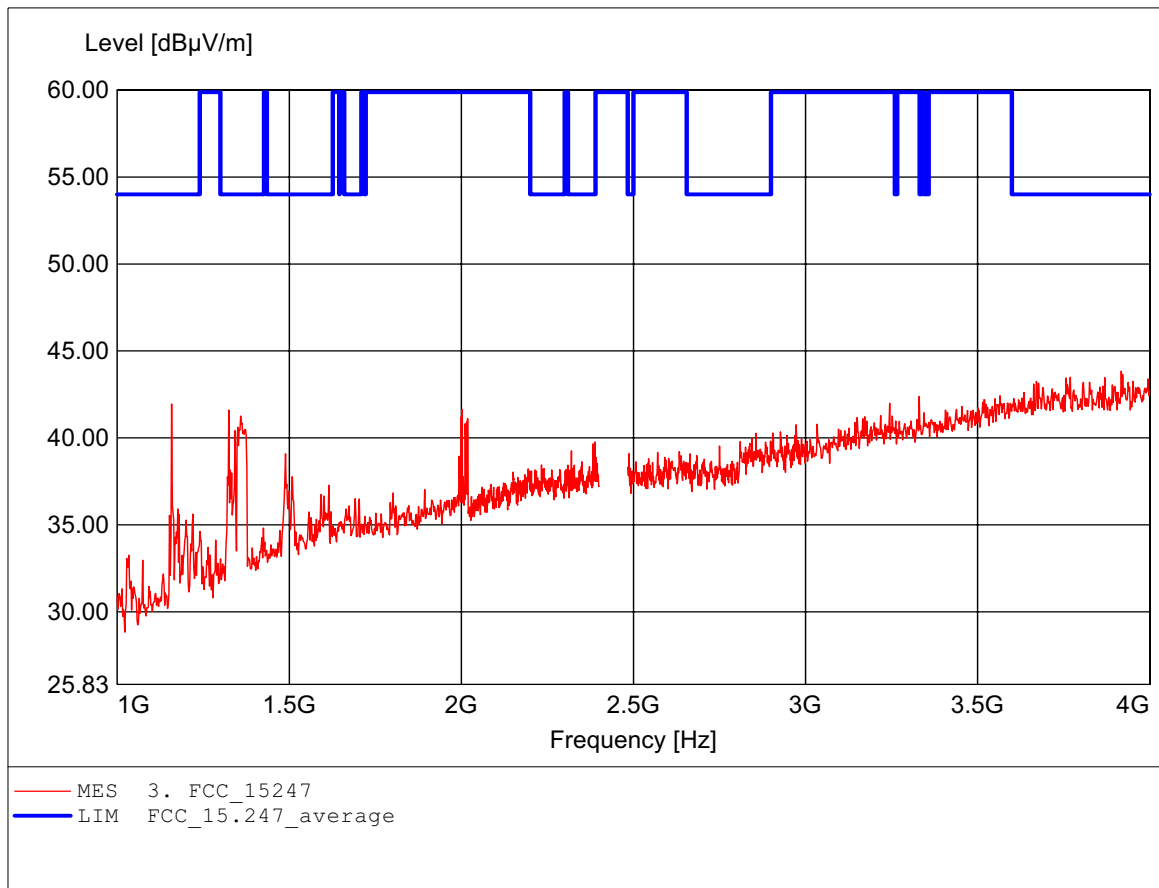
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 3.944GHz, Emax: 43.40dBµV/m, RBW: 1MHz



**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

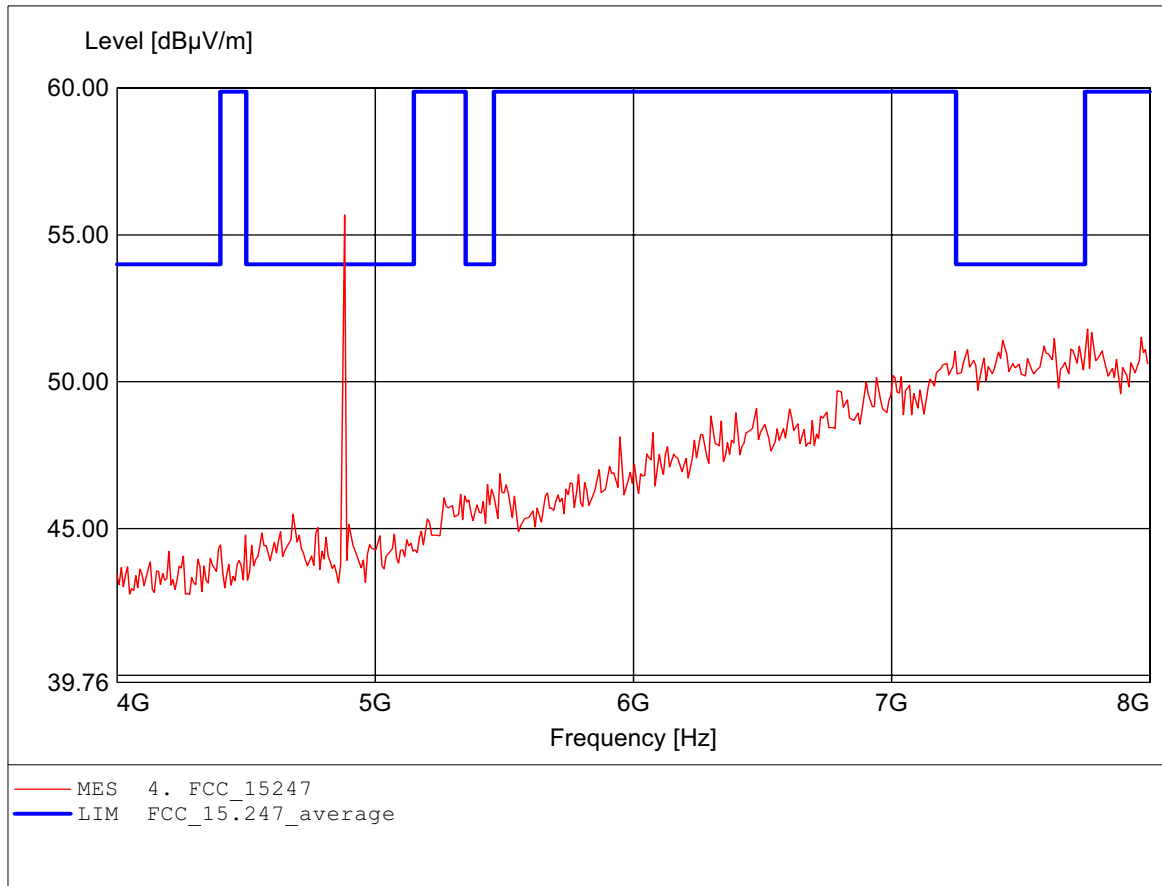
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 3.918GHz, Emax: 43.84dBµV/m, RBW: 1MHz



# Spurious emissions Field Strength

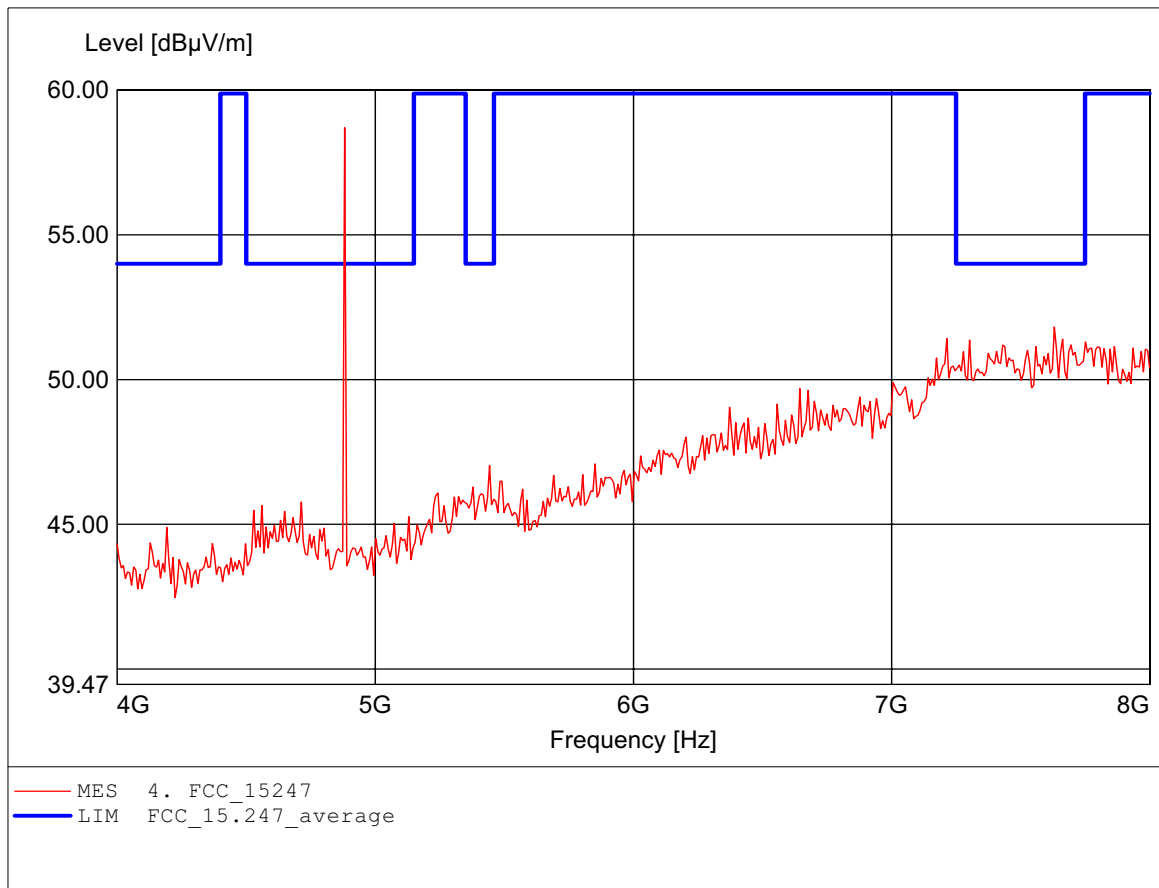
## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 4.882GHz, Emax: 55.68dBμV/m, RBW: 1MHz



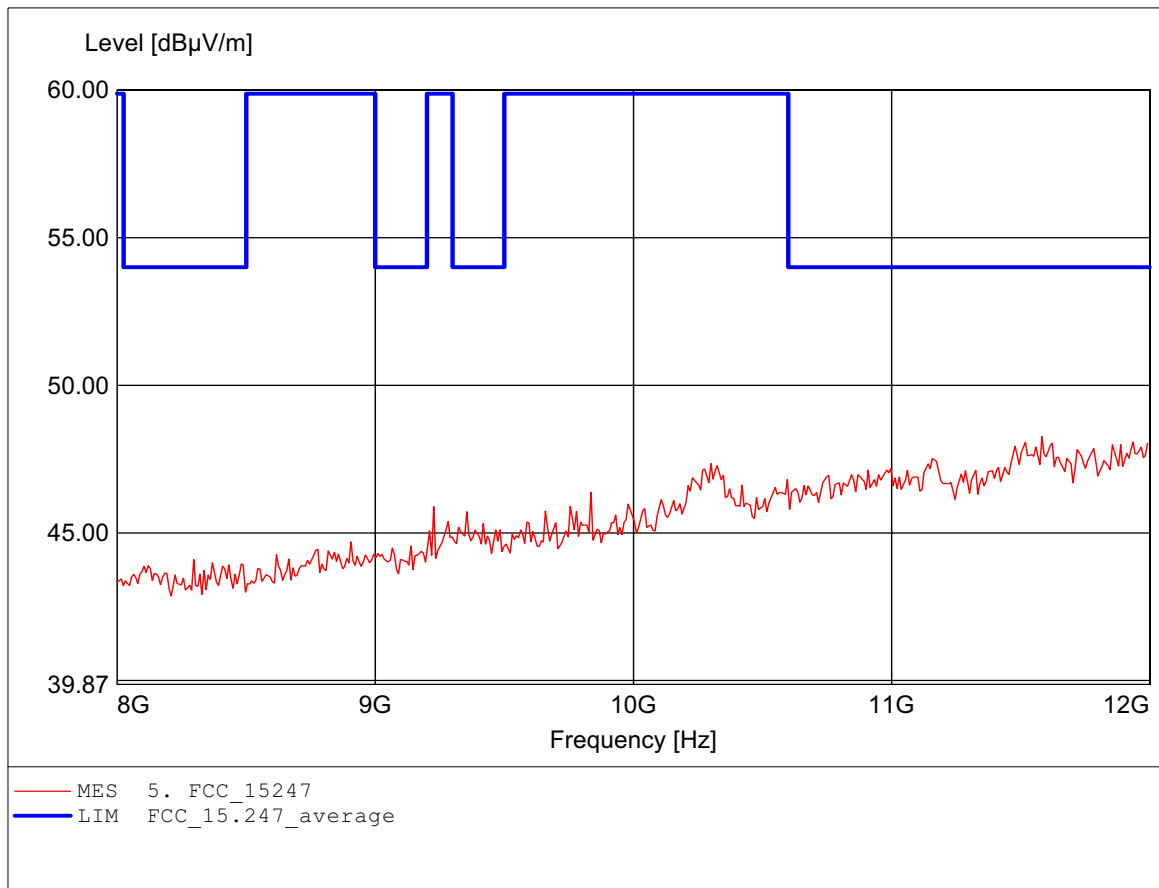
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 4.882GHz, Emax: 58.70dBμV/m, RBW: 1MHz



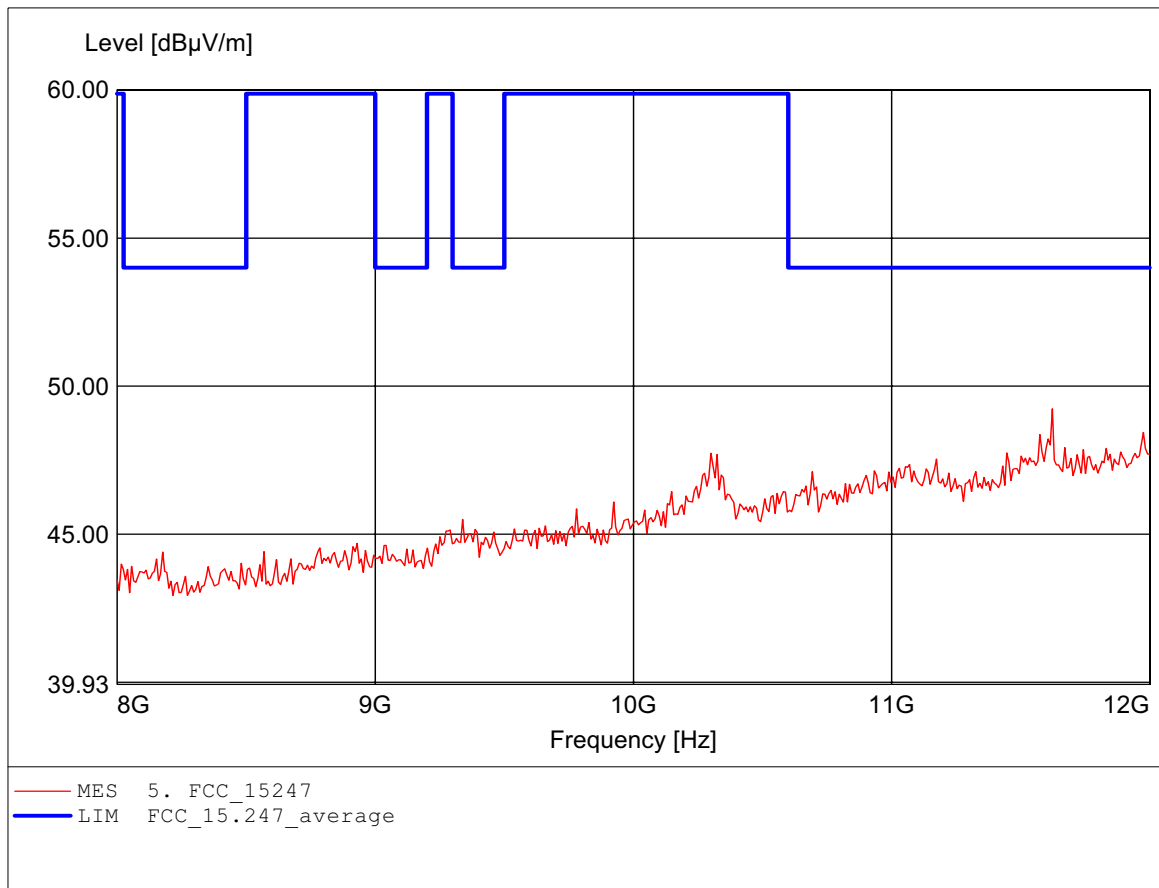
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 11.583GHz, Emax: 48.26dBµV/m, RBW: 1MHz



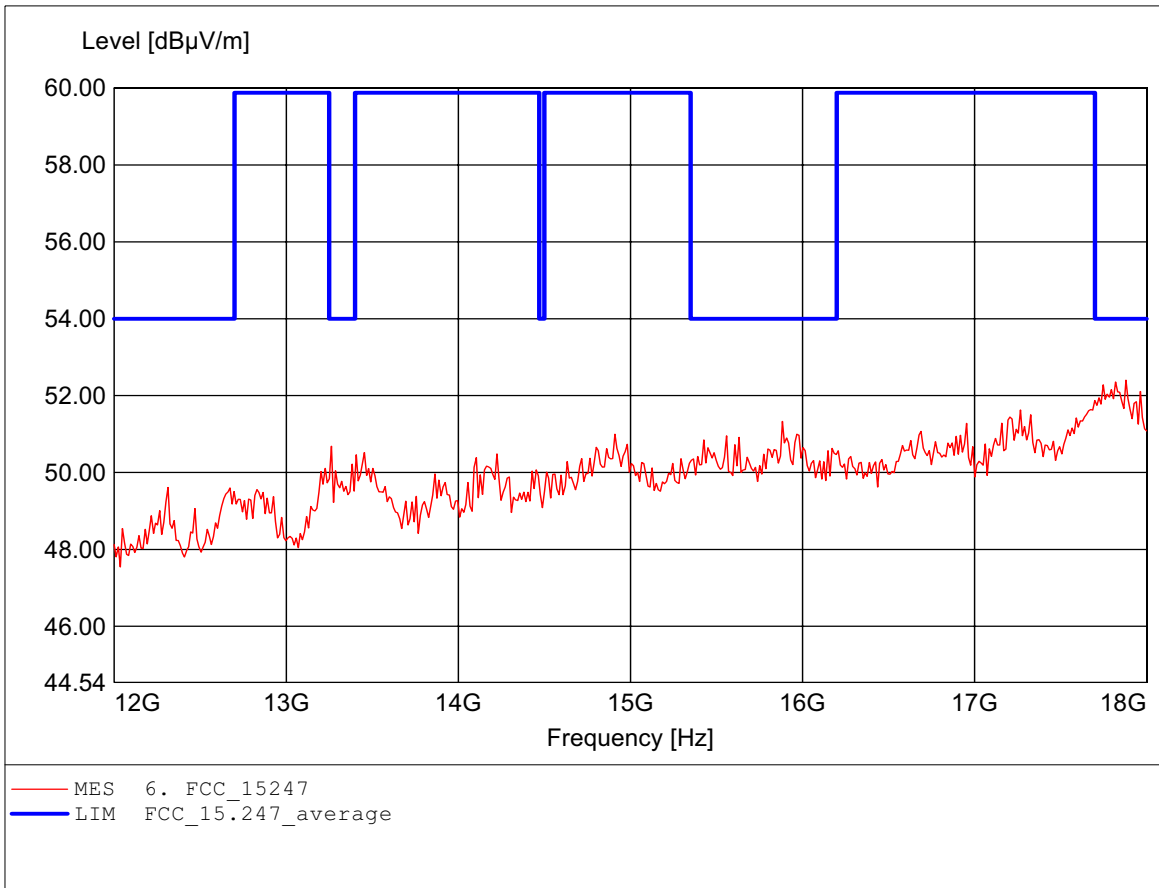
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 11.623GHz, Emax: 49.24dBµV/m, RBW: 1MHz



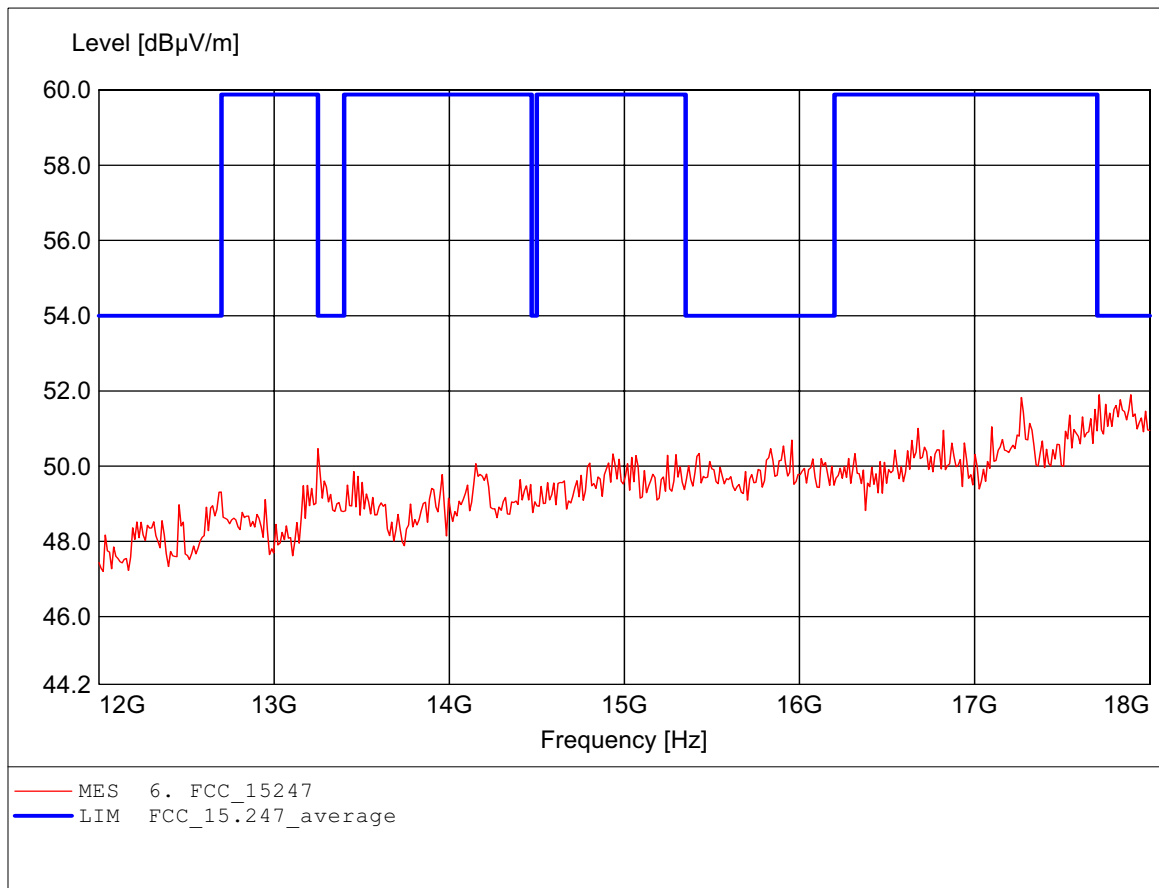
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 17.880GHz, Emax: 52.40dBμV/m, RBW: 1MHz



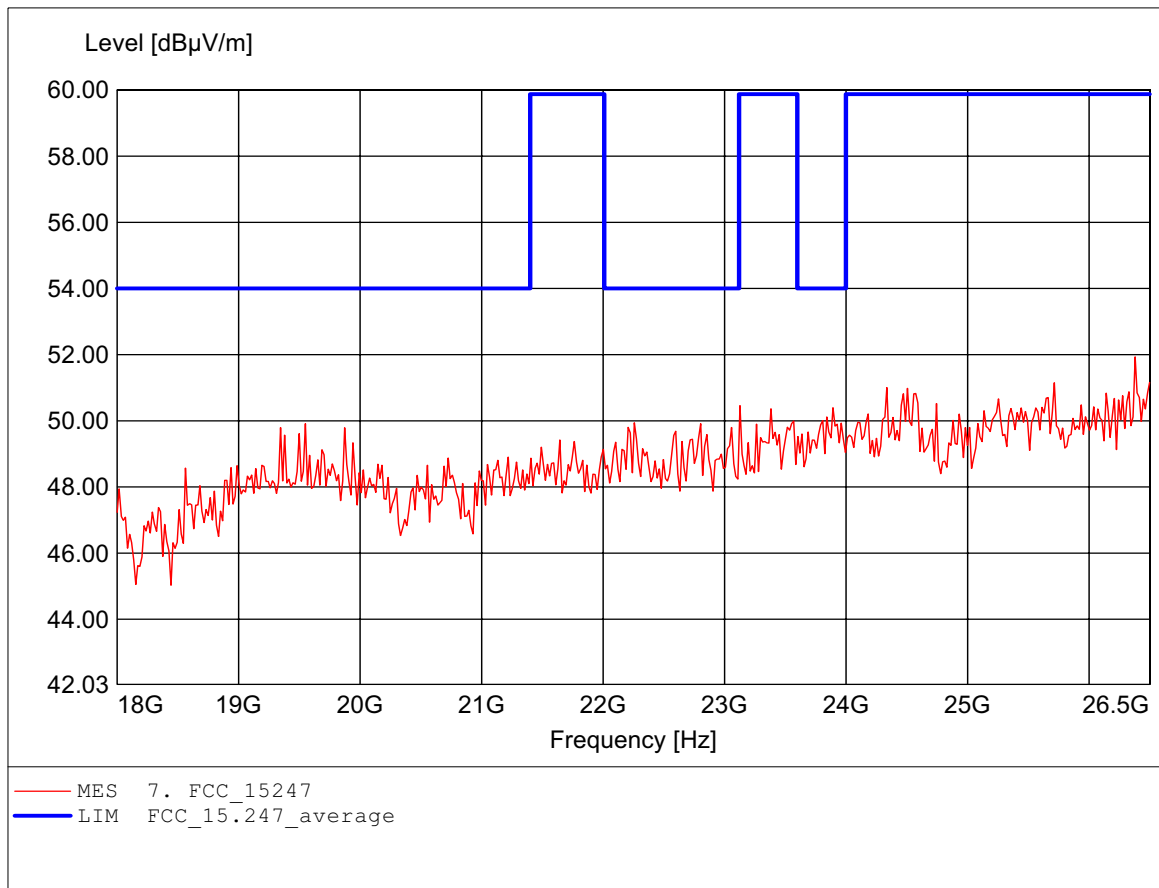
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 17.711GHz, Emax: 51.90dBµV/m, RBW: 1MHz



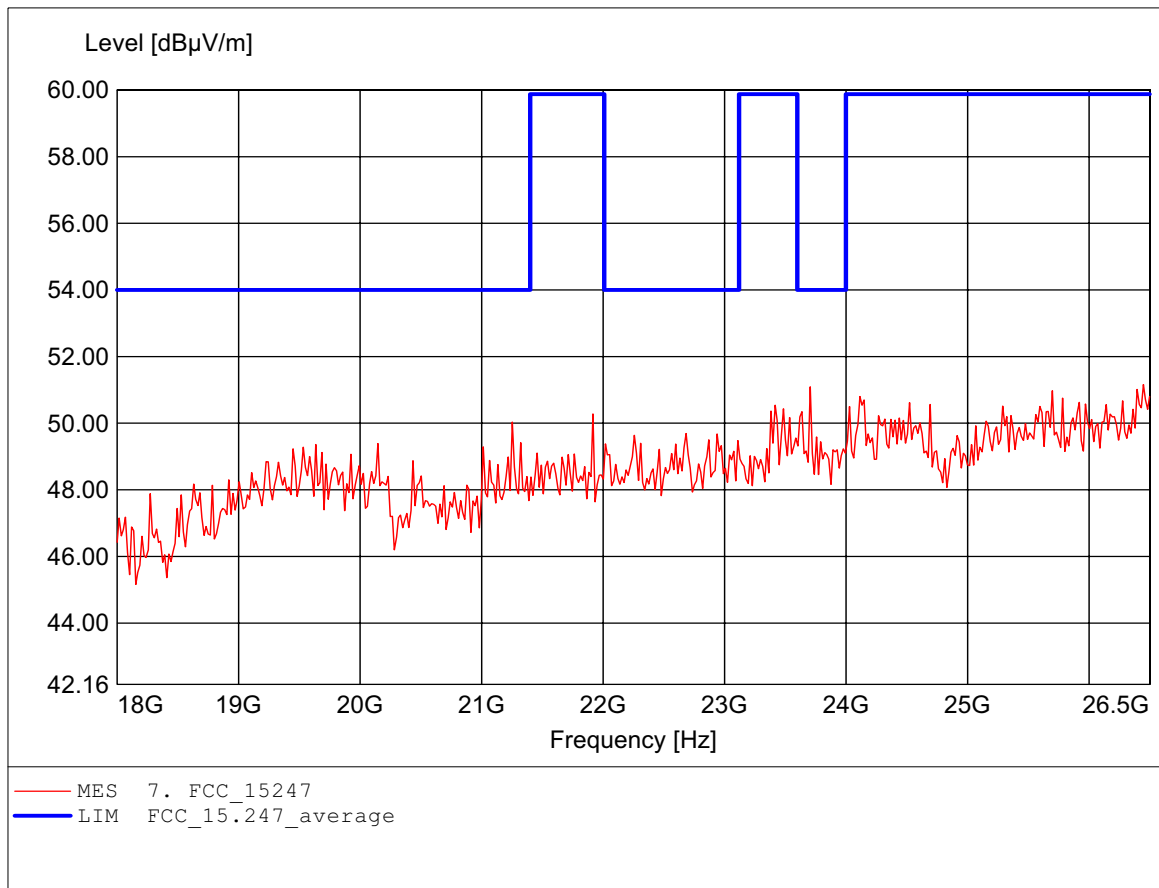
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 26.381GHz, Emax: 51.93dBµV/m, RBW: 1MHz



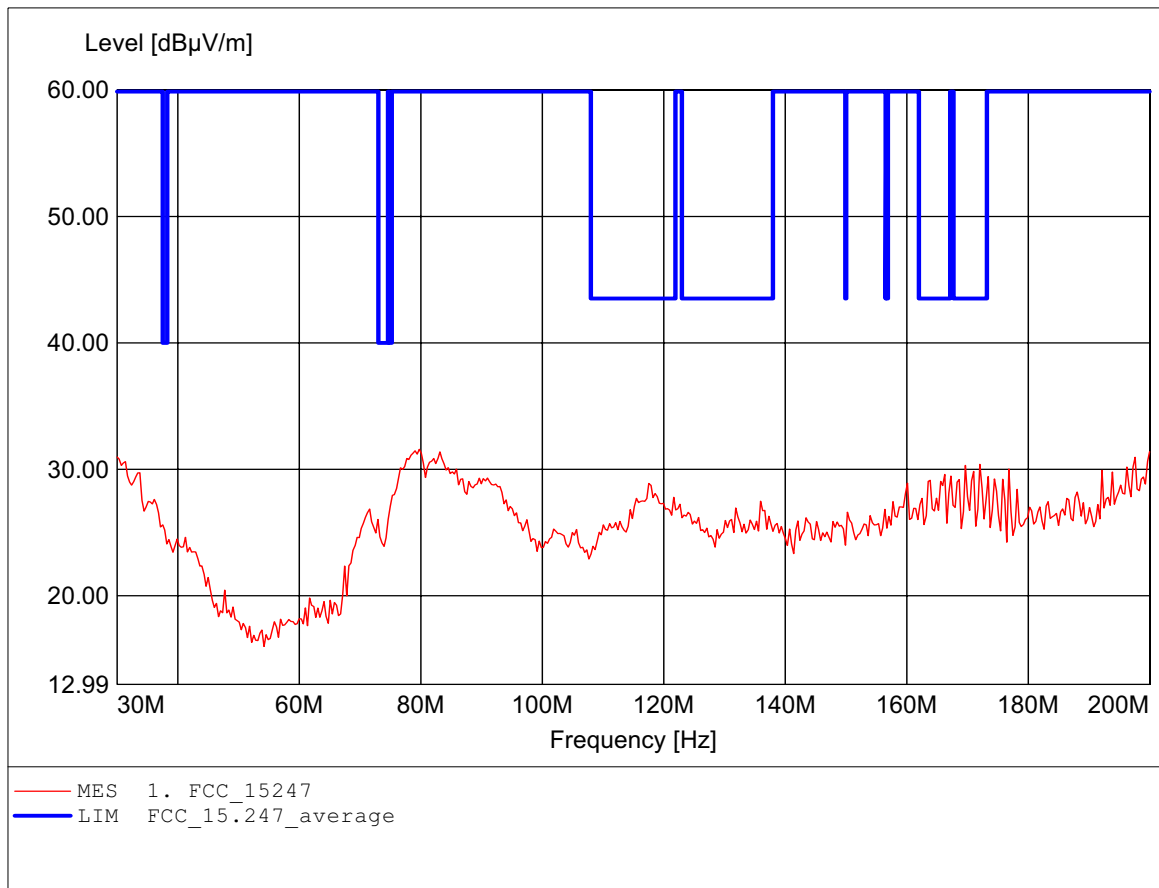
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 26.449GHz, Emax: 51.16dBµV/m, RBW: 1MHz



**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

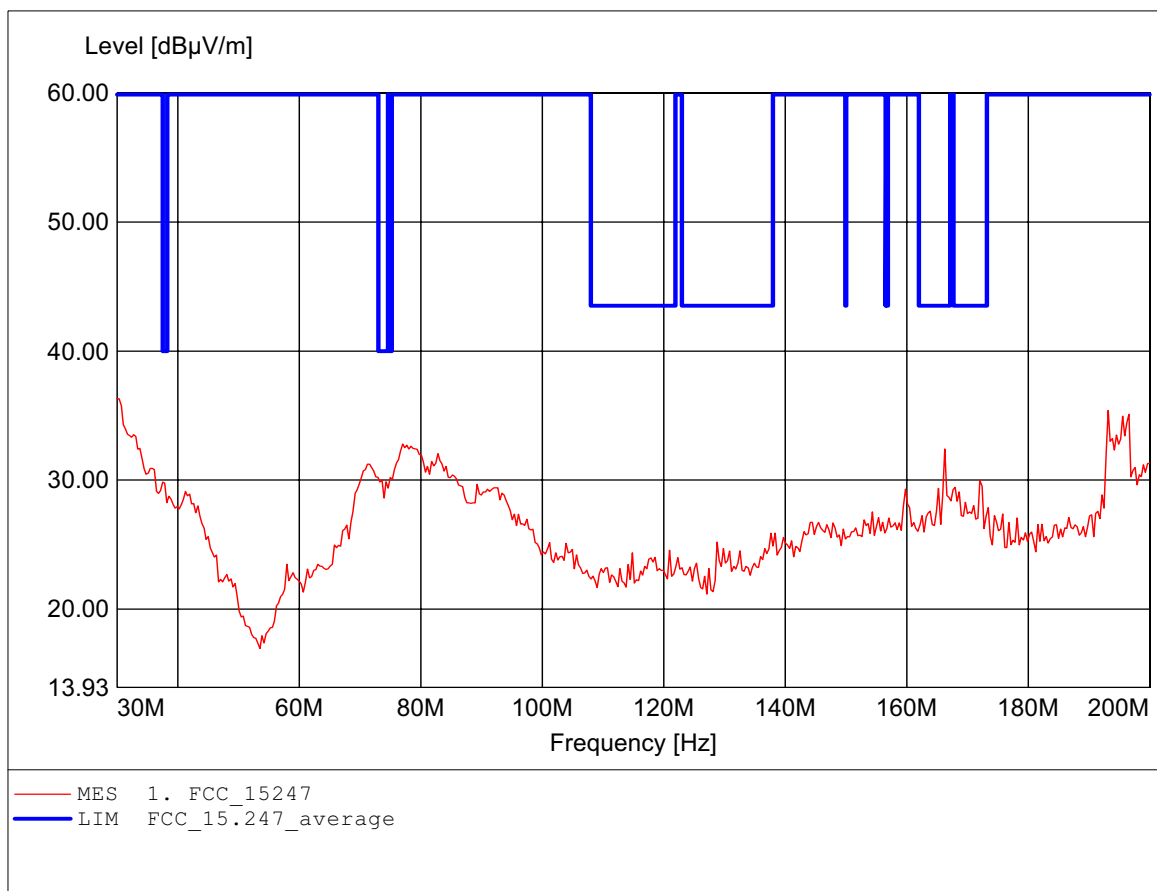
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq: 79.739MHz, Emax: 31.58dBµV/m, RBW: 100kHz



# Spurious emissions Field Strength

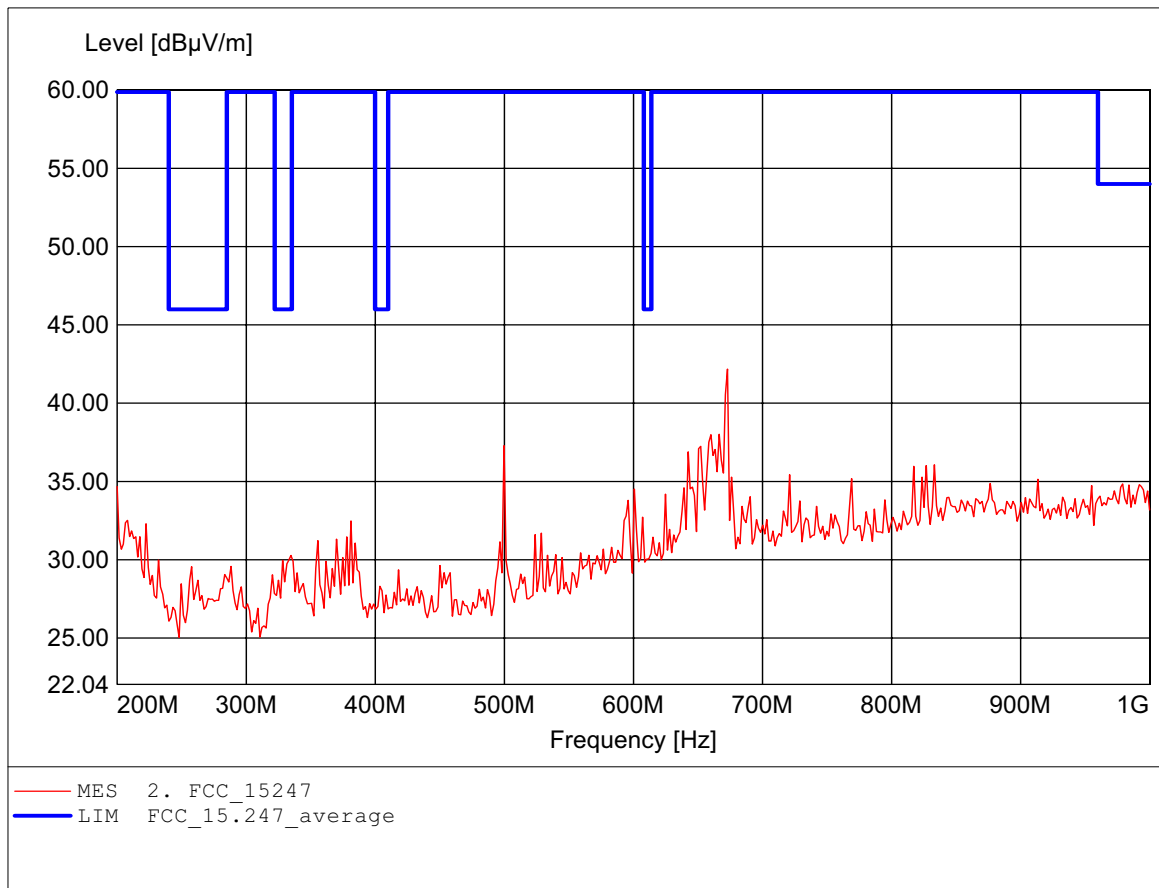
## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq: 30.000MHz, Emax: 36.31dBµV/m, RBW: 100kHz



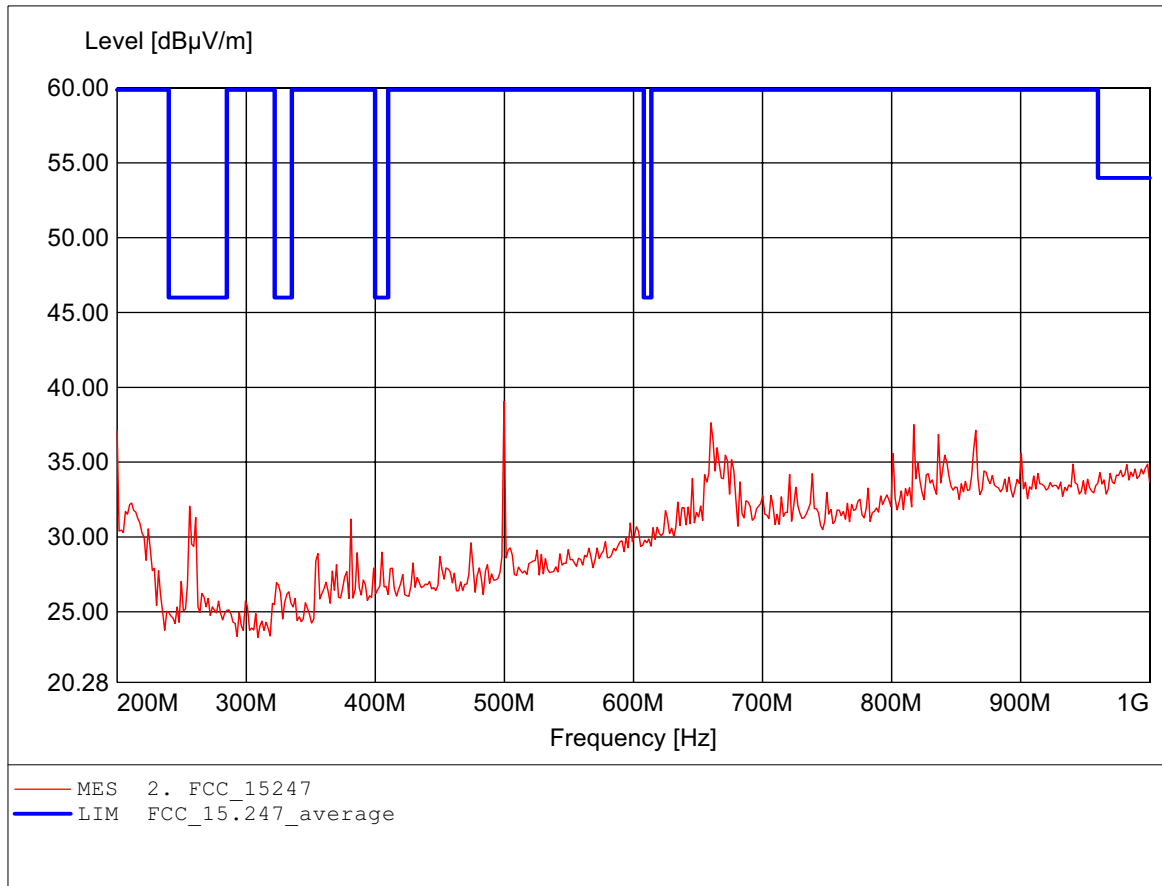
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223,  
Freq: 672.946MHz, Emax: 42.18dBµV/m, RBW: 100kHz



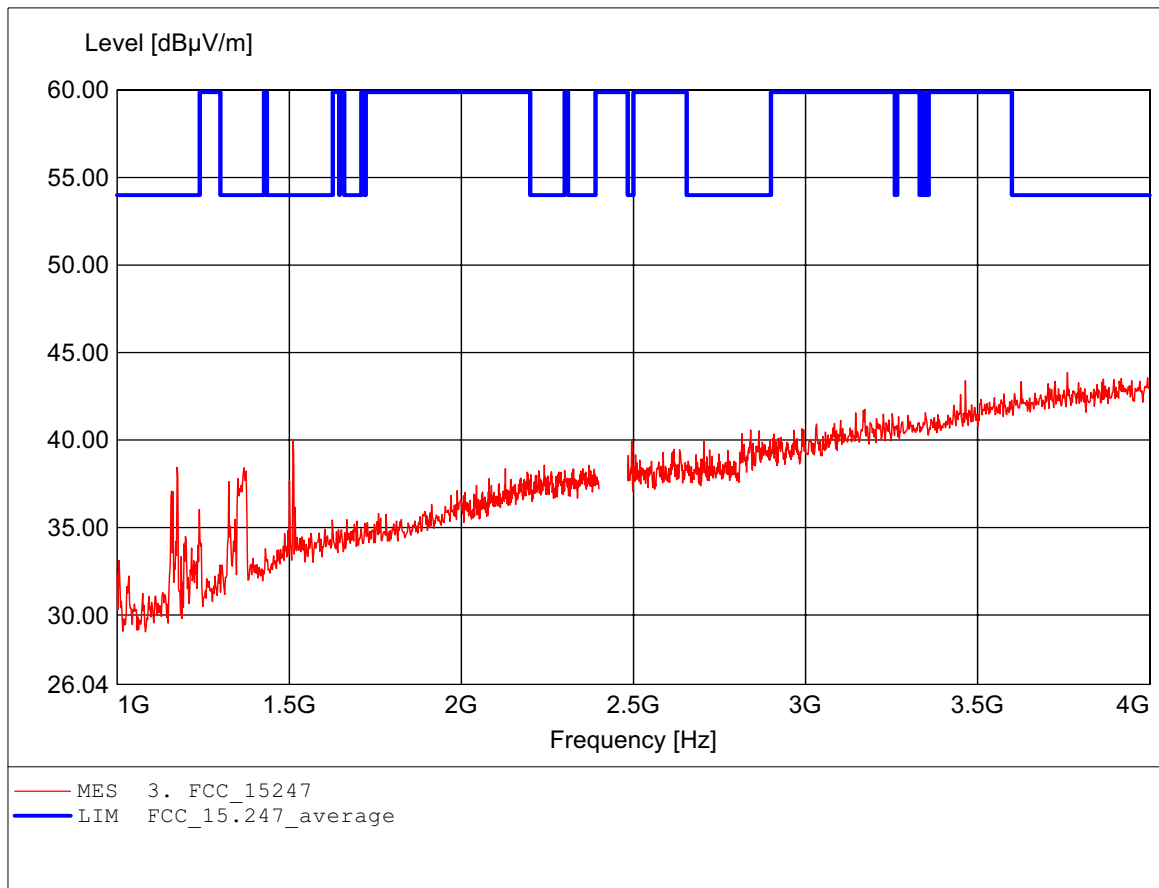
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247  
Comment 1: Dist.: 3m, Ant.: HL 223,  
Freq: 499.800MHz, Emax: 39.05dBµV/m, RBW: 100kHz



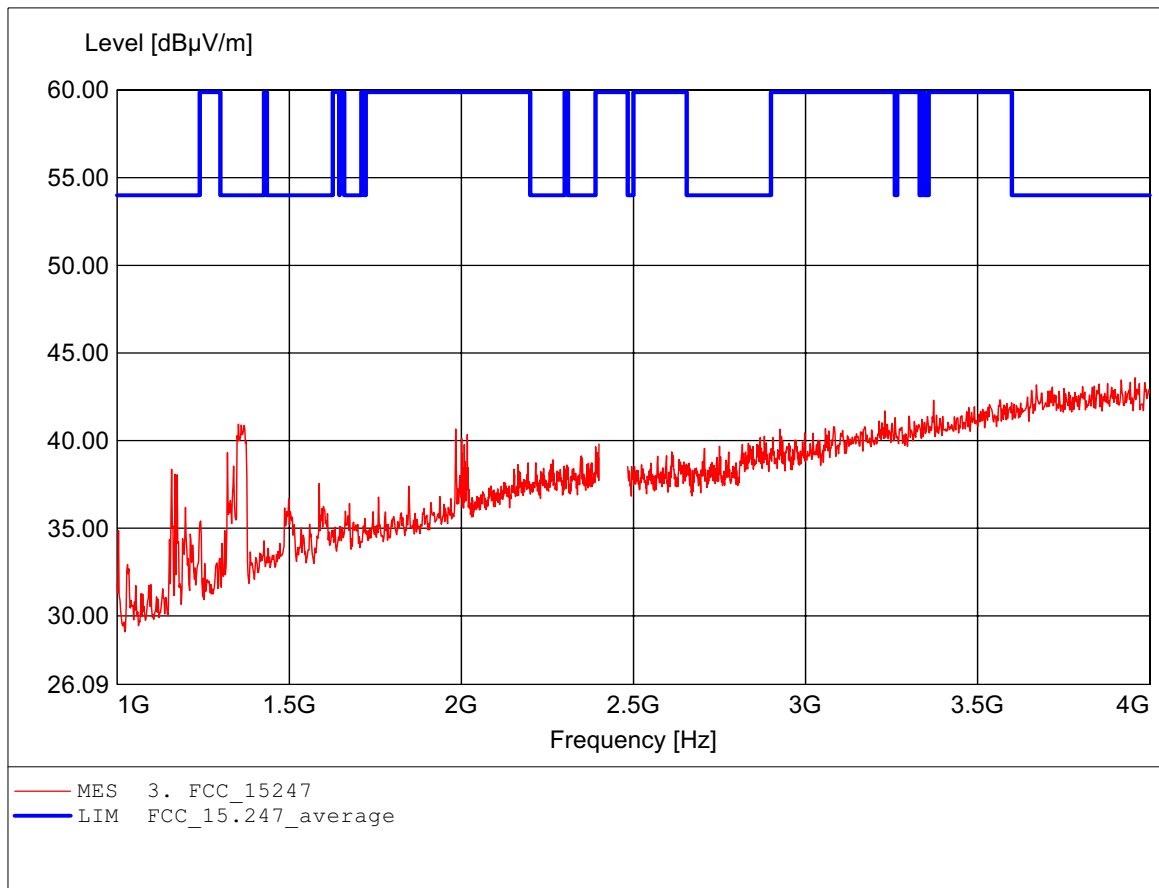
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 3.762GHz, Emax: 43.86dBµV/m, RBW: 1MHz



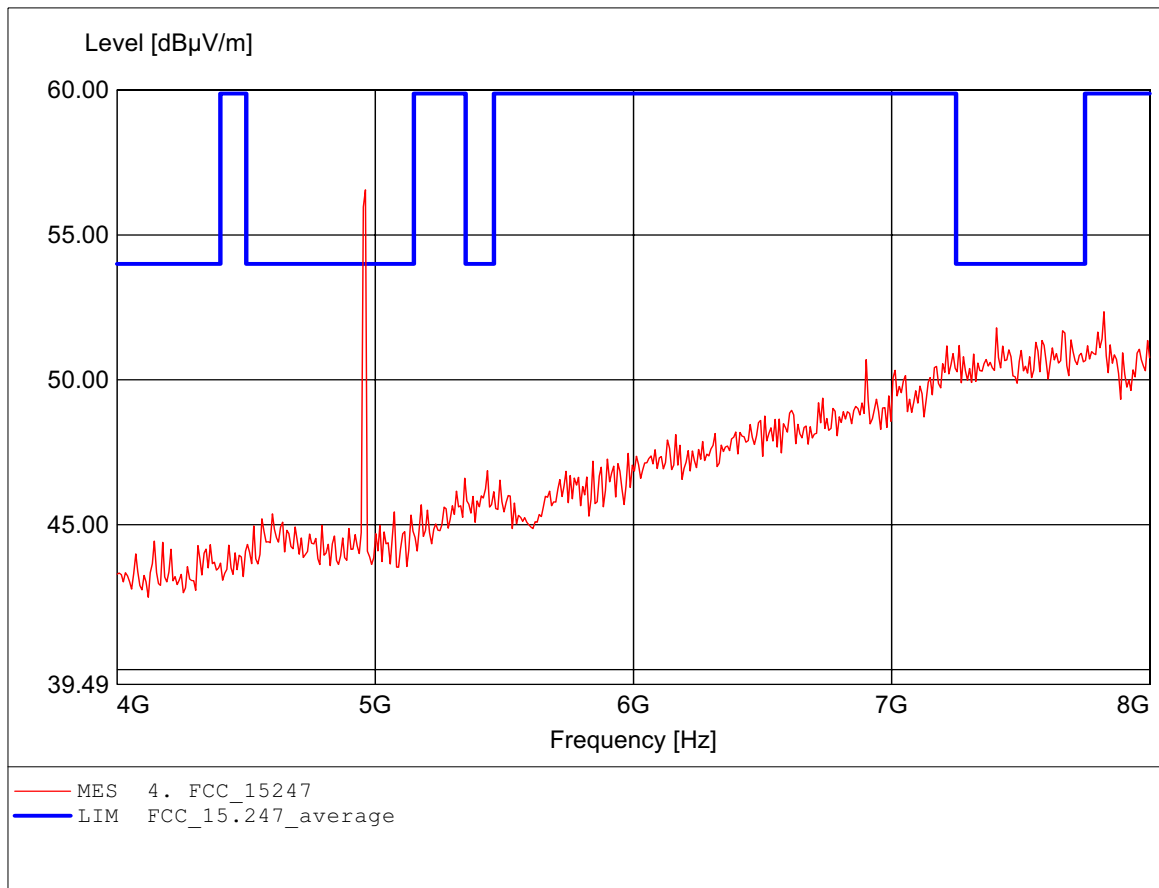
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 3.958GHz, Emax: 43.59dBμV/m, RBW: 1MHz



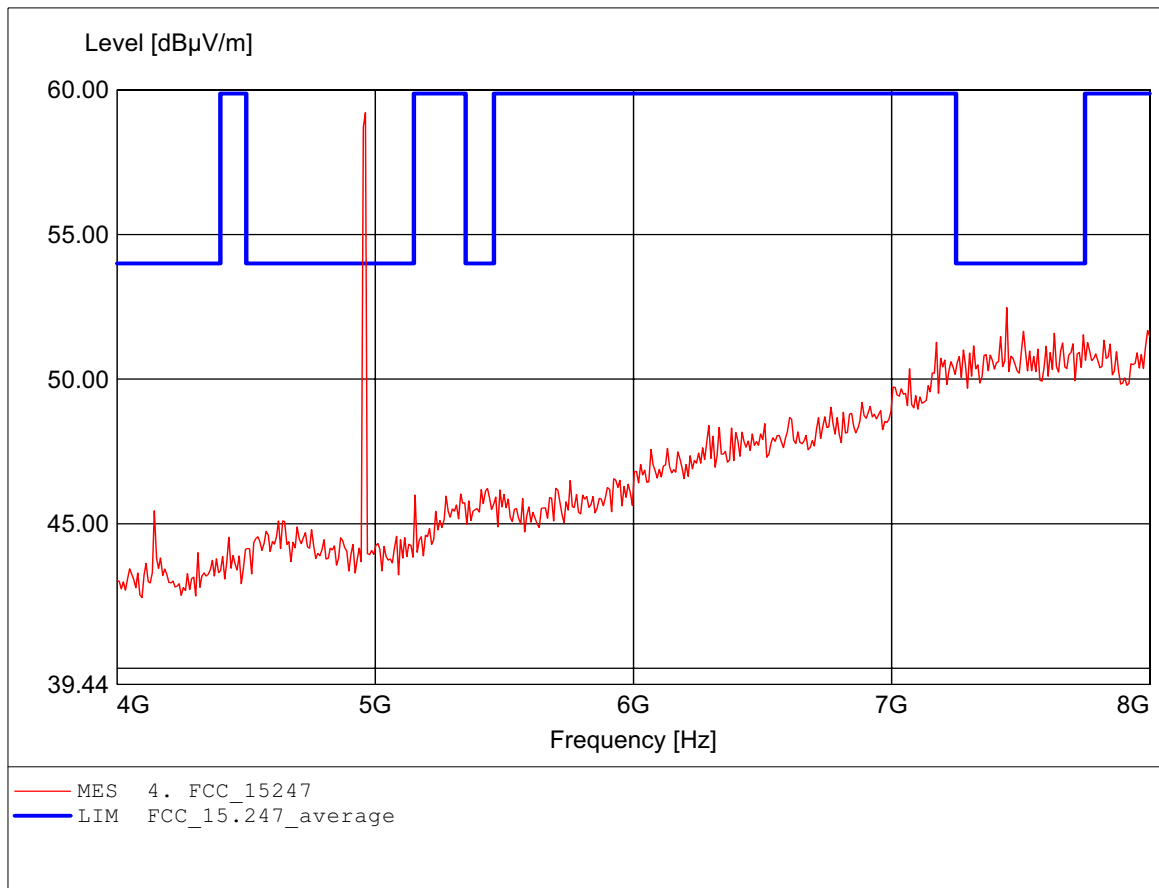
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 4.962GHz, Emax: 56.55dBμV/m, RBW: 1MHz



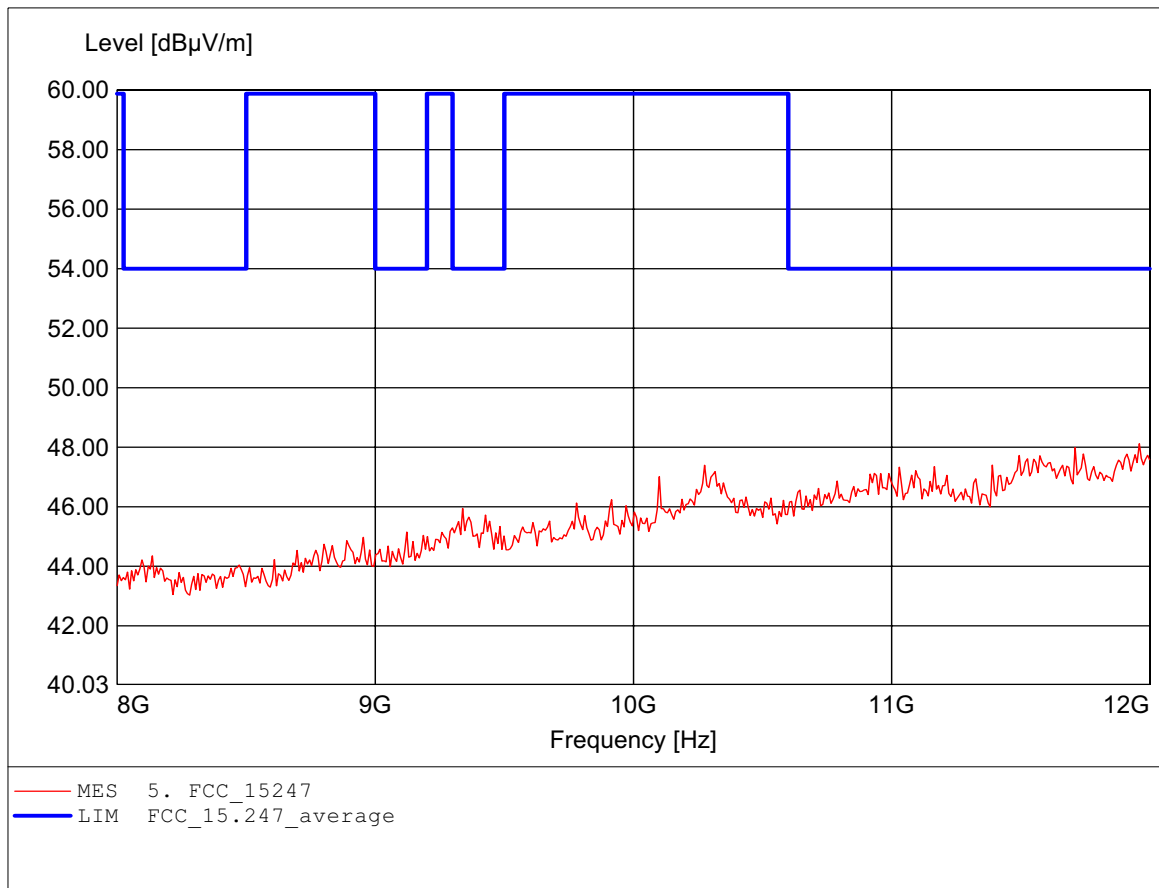
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 4.962GHz, Emax: 59.22dBμV/m, RBW: 1MHz



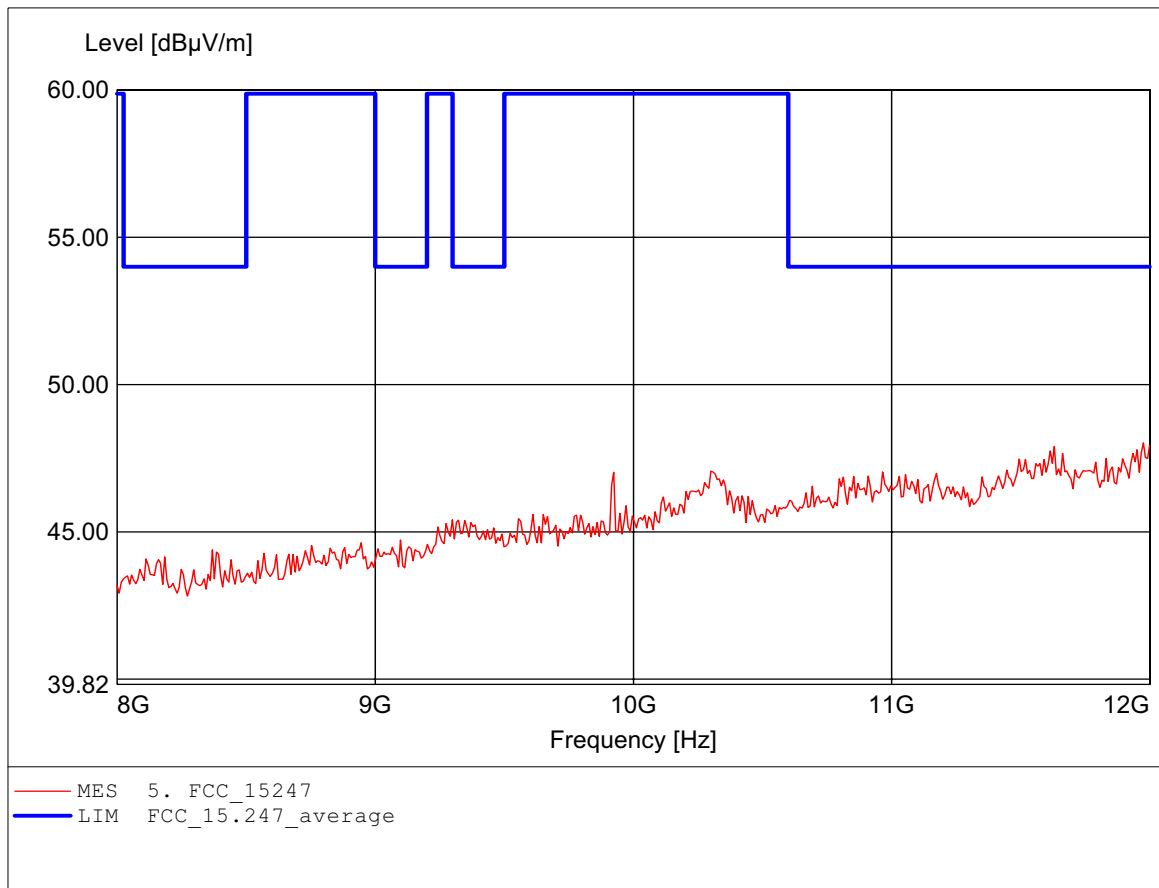
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 11.960GHz, Emax: 48.12dBµV/m, RBW: 1MHz



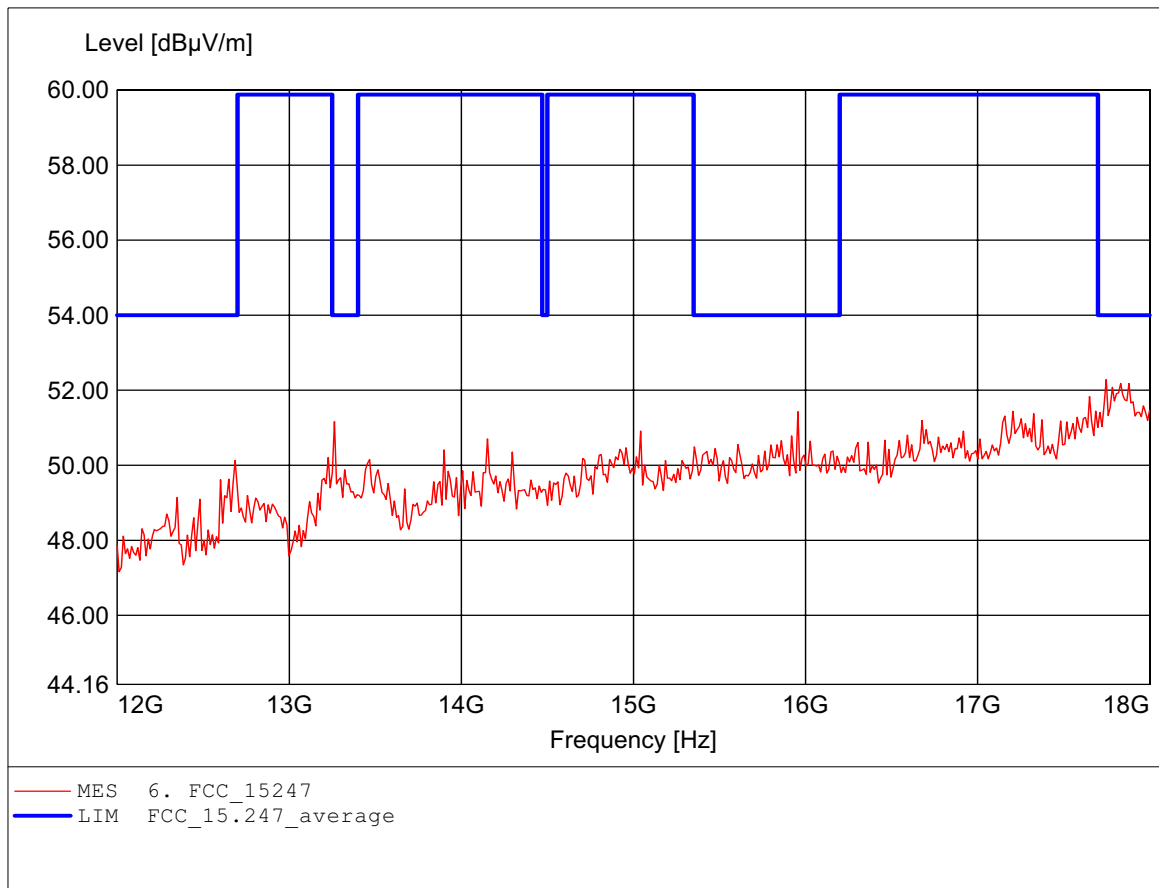
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 11.976GHz, Emax: 48.02dBμV/m, RBW: 1MHz



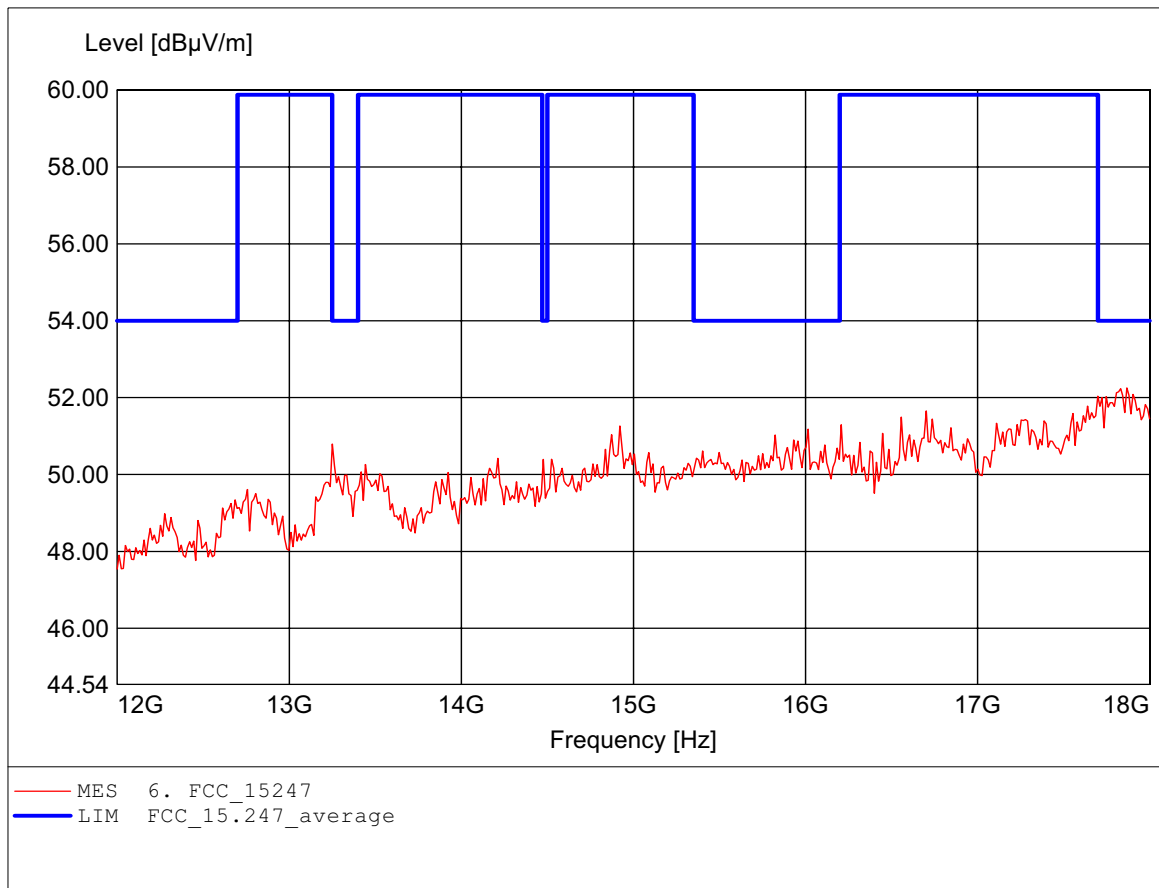
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 17.747GHz, Emax: 52.29dBµV/m, RBW: 1MHz



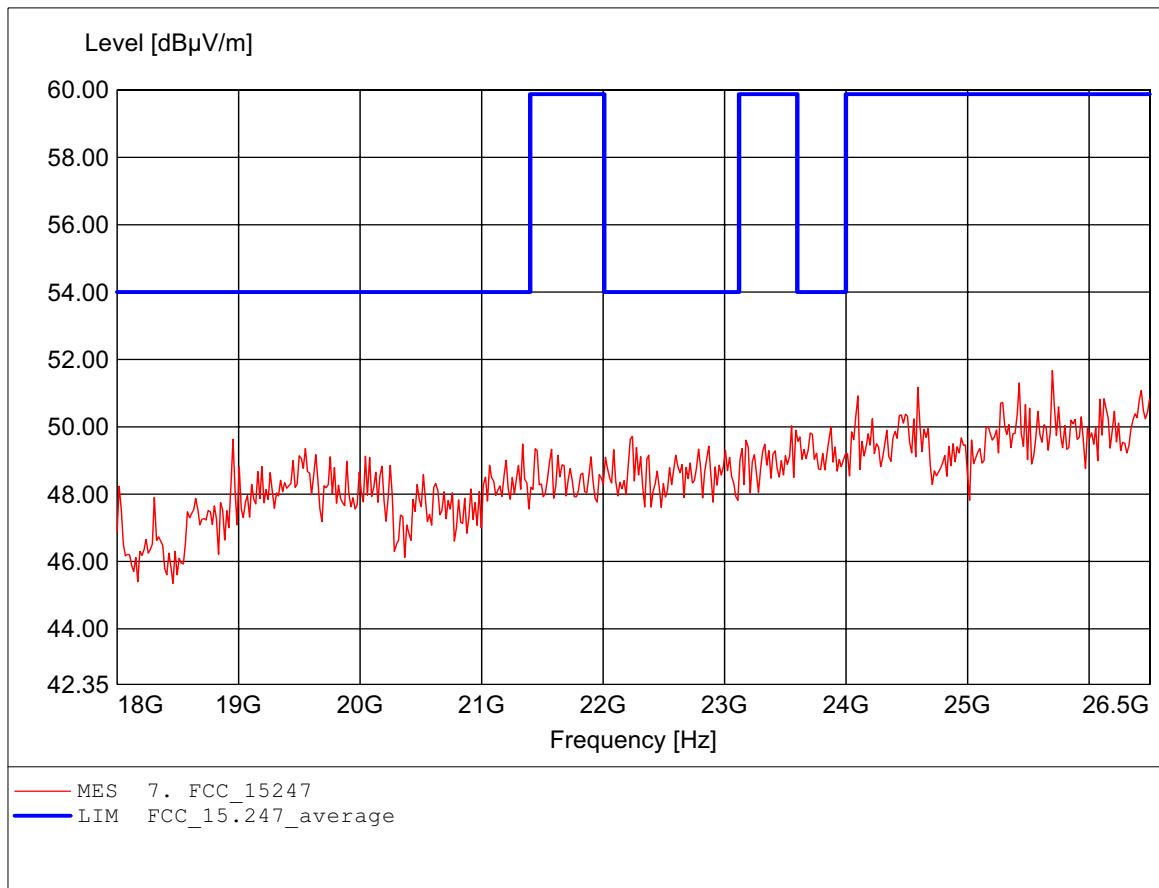
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 17.868GHz, Emax: 52.25dBµV/m, RBW: 1MHz



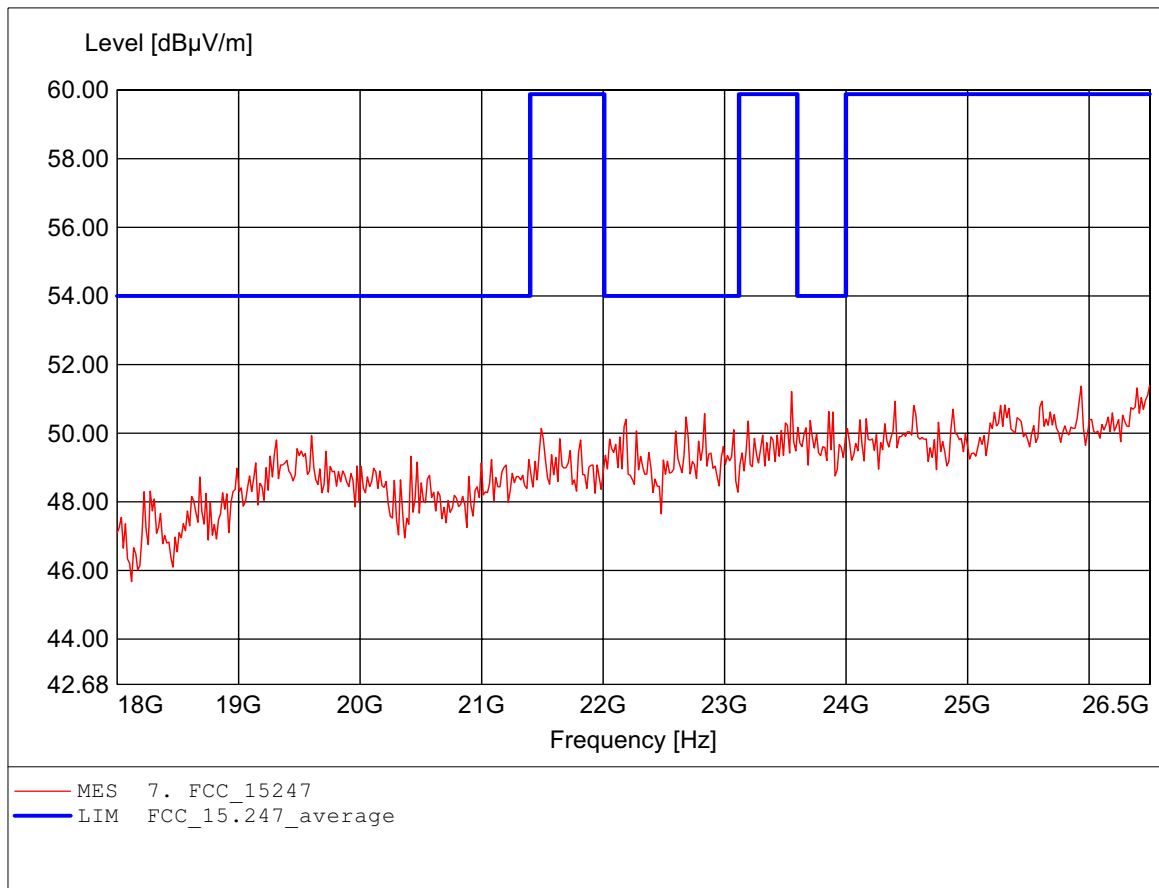
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 25.699GHz, Emax: 51.67dBµV/m, RBW: 1MHz



**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP0002**

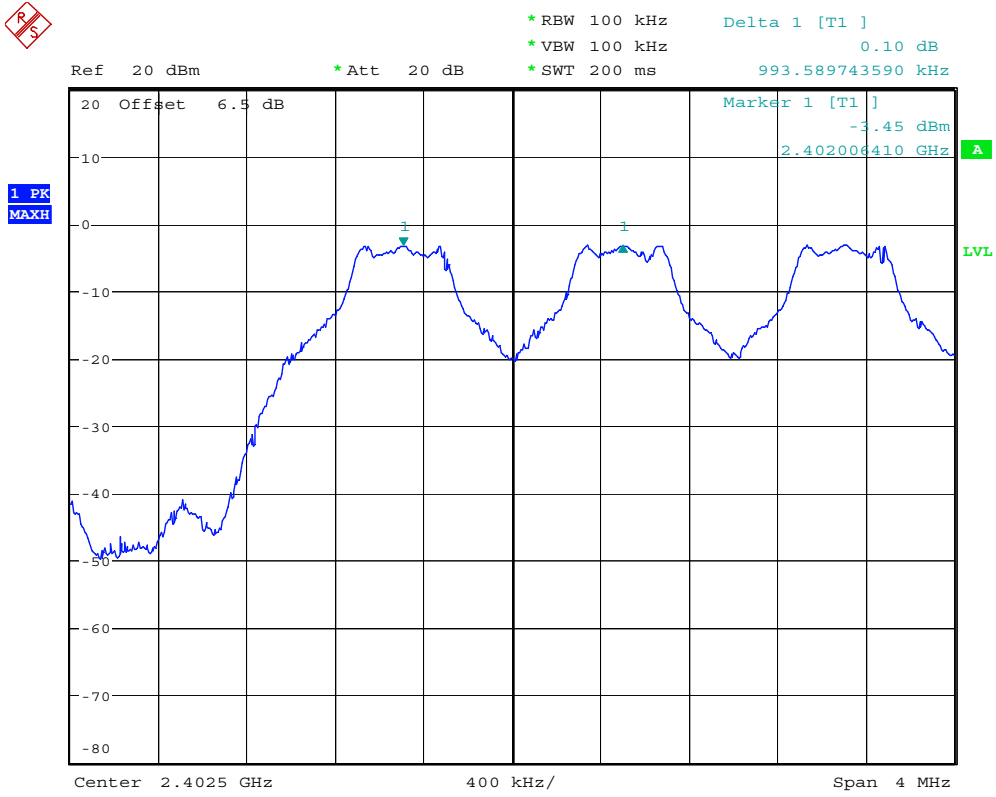
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 26.500GHz, Emax: 51.39dBµV/m, RBW: 1MHz



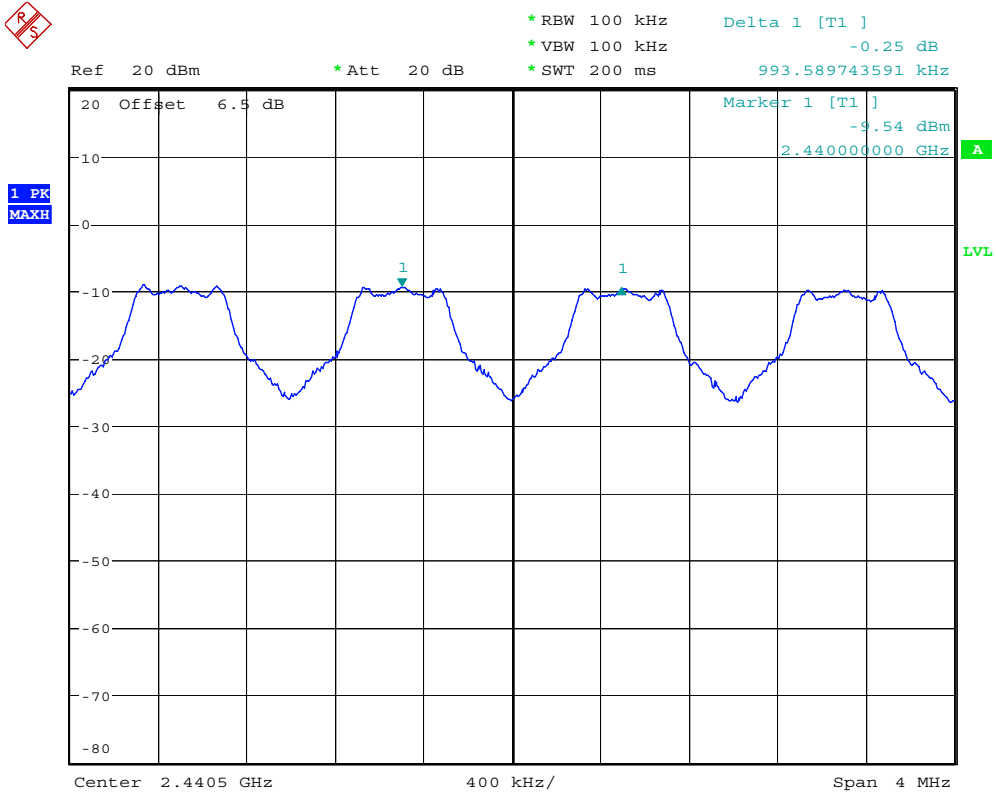
Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

## **Appendix C**

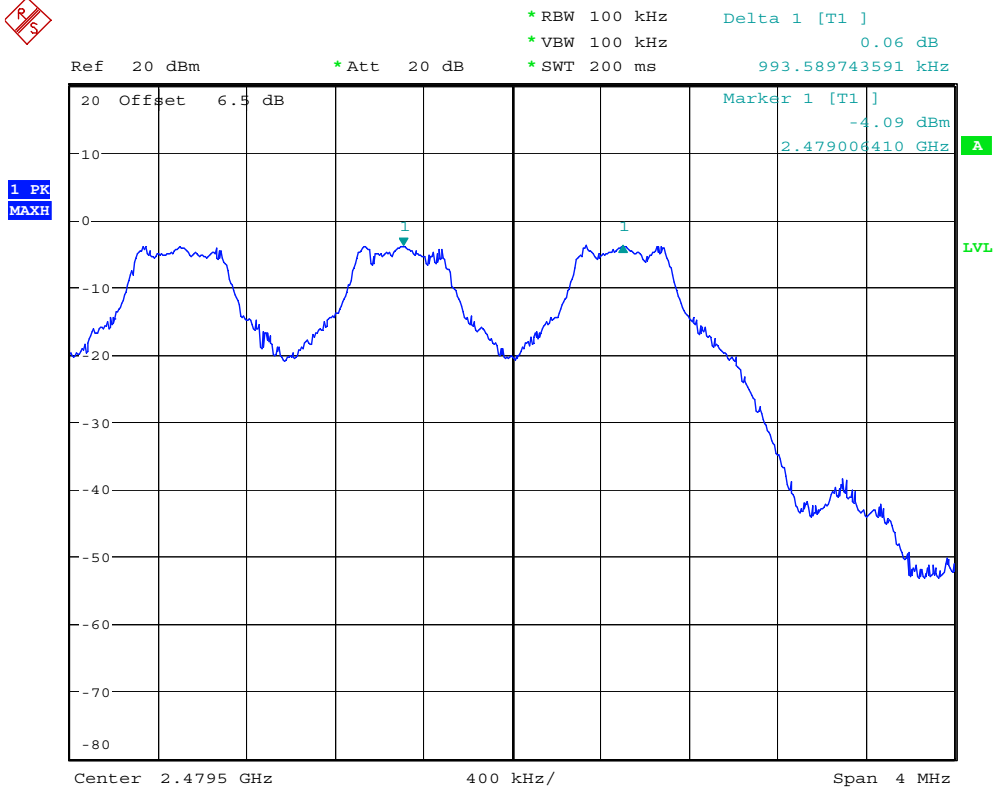
### Carrier Frequency Separation



FREQUENCY SEPARATION CH0  
Date: 5.DEC.2006 15:51:20



FREQUENCY SEPARATION CH39  
Date: 5.DEC.2006 16:04:57

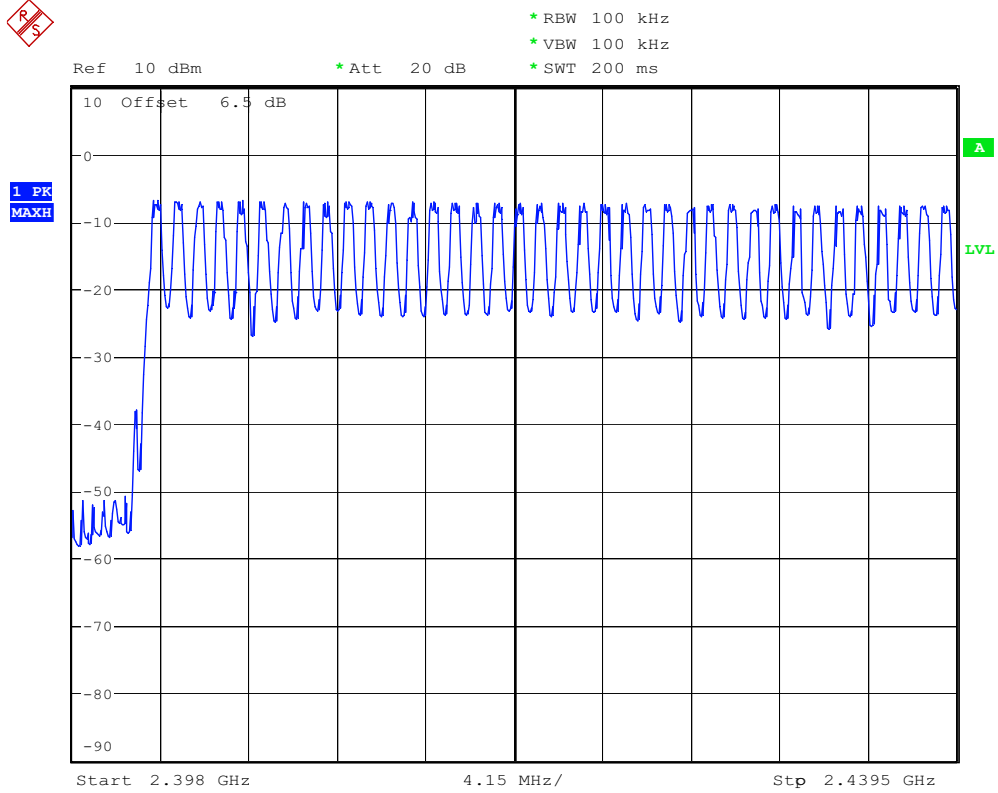


FREQUENCY SEPARATION CH78  
Date: 5.DEC.2006 15:55:10

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

## **Appendix D**

### Number of Hopping Frequencies



Nbr 6 HpingCH0-CH37

Date: 5.DEC.2006 09:19:18

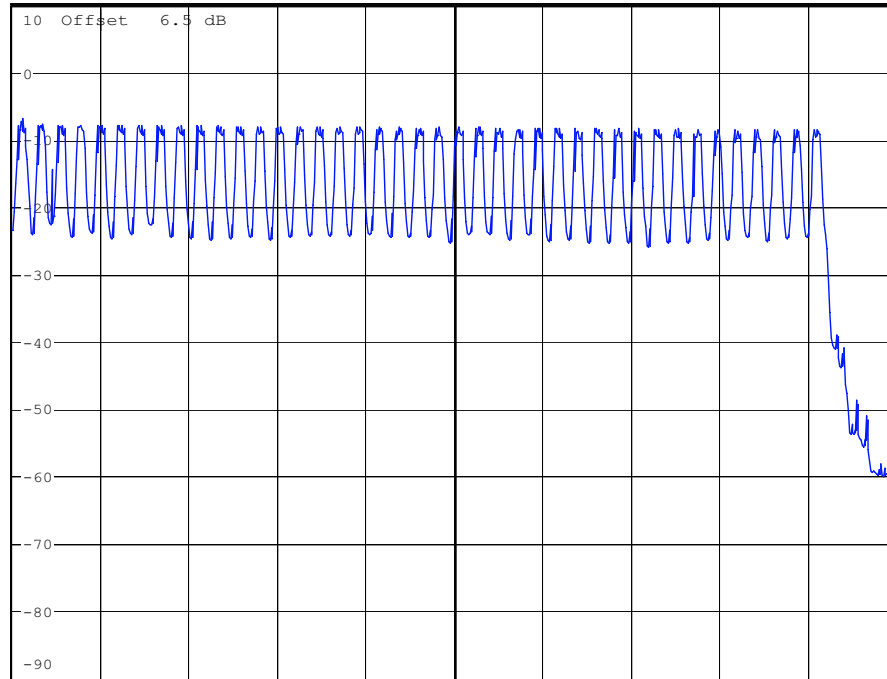


\* RBW 100 kHz  
\* VBW 100 kHz  
\* SWT 200 ms

Ref 10 dBm

\* Att 20 dB

1 PK  
MAXH



Start 2.4395 GHz

4.45 MHz/

Stp 2.484 GHz

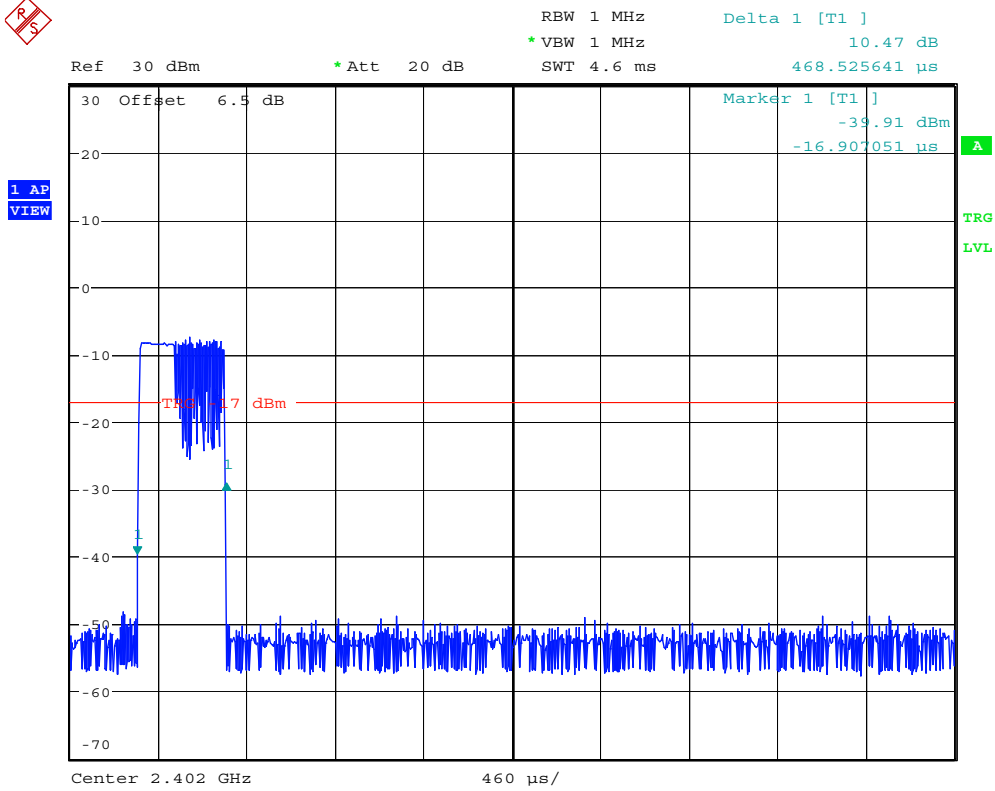
Nbr 6 HpingCH38-CH78

Date: 5.DEC.2006 09:24:45

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

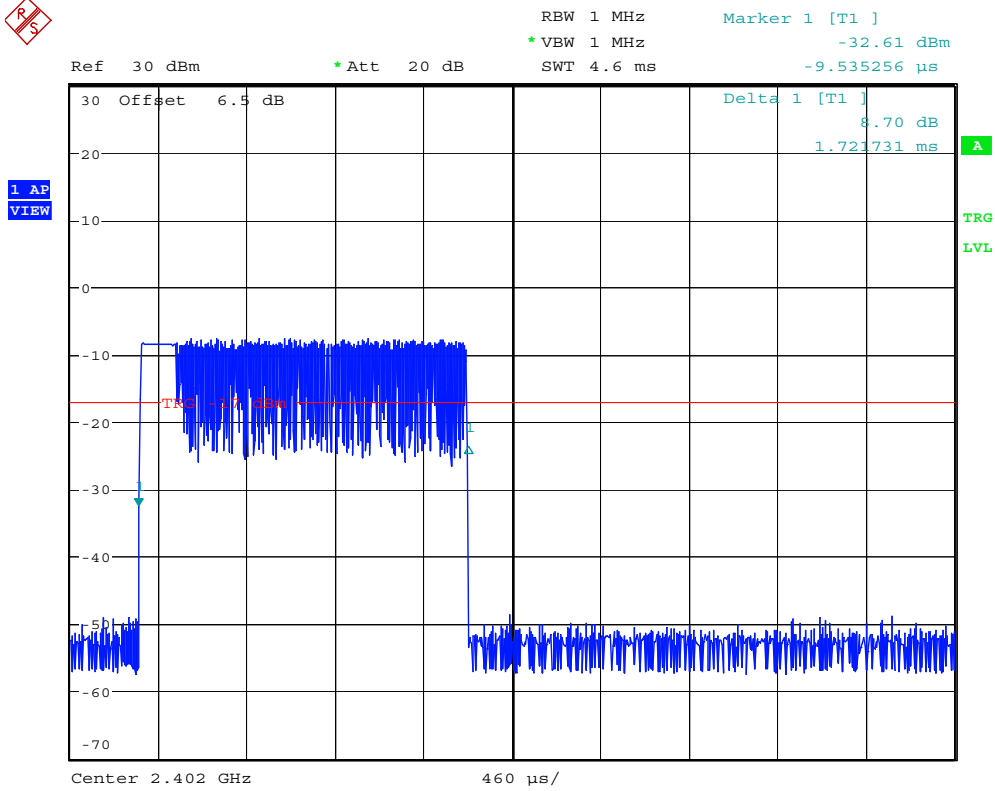
## **Appendix E**

Time of Occupancy (Dwell Time)



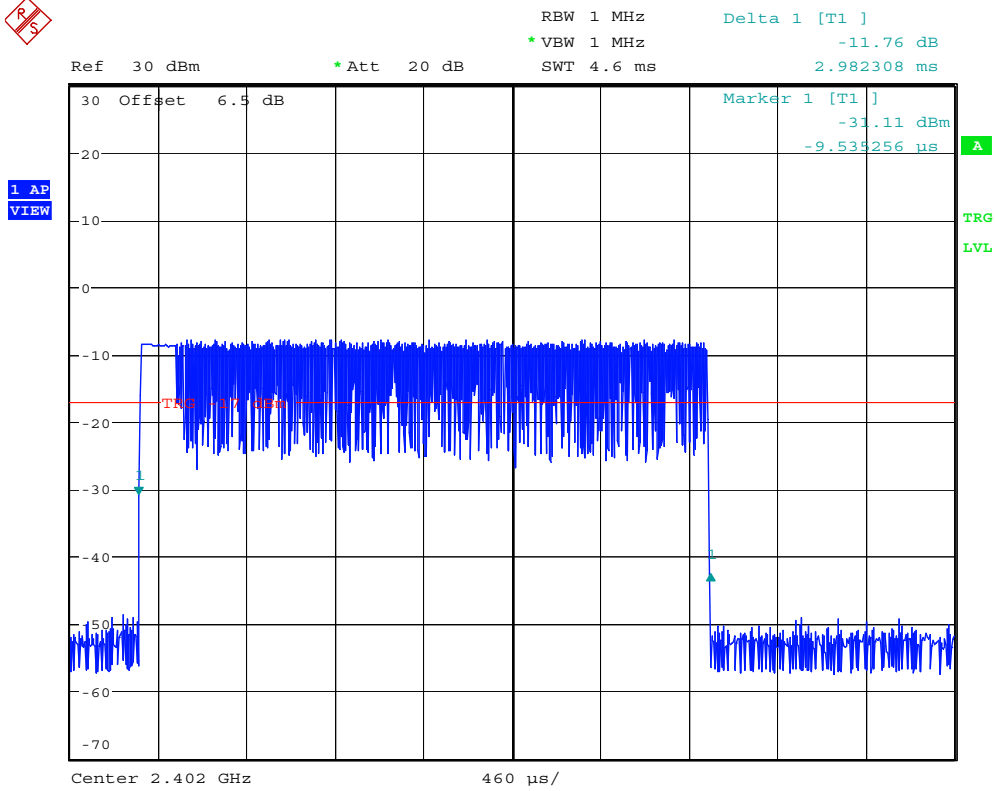
Time of occup ancy ( Hopping DH1) = 468.525  $\mu$ s \* 312 events = 146.179 ms

Date: 5.DEC.2006 15:23:16



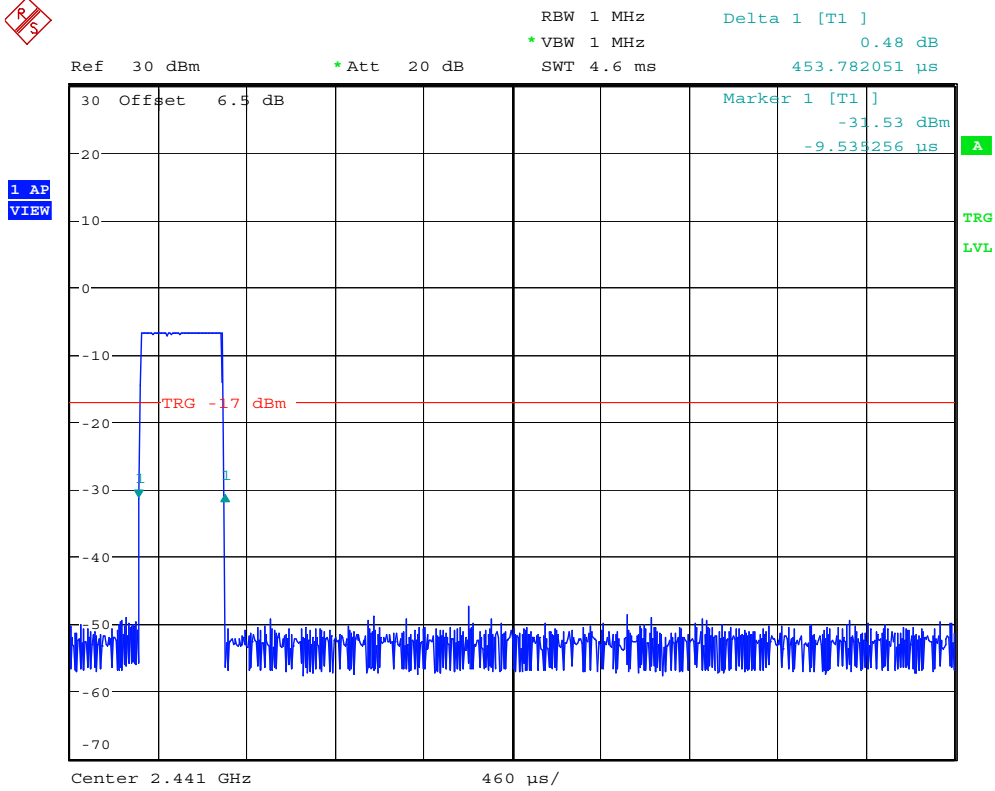
Time of occup ancy ( Hopping DH3) = 1.721731ms \* 90 events = 154.955 ms

Date: 5.DEC.2006 15:25:06



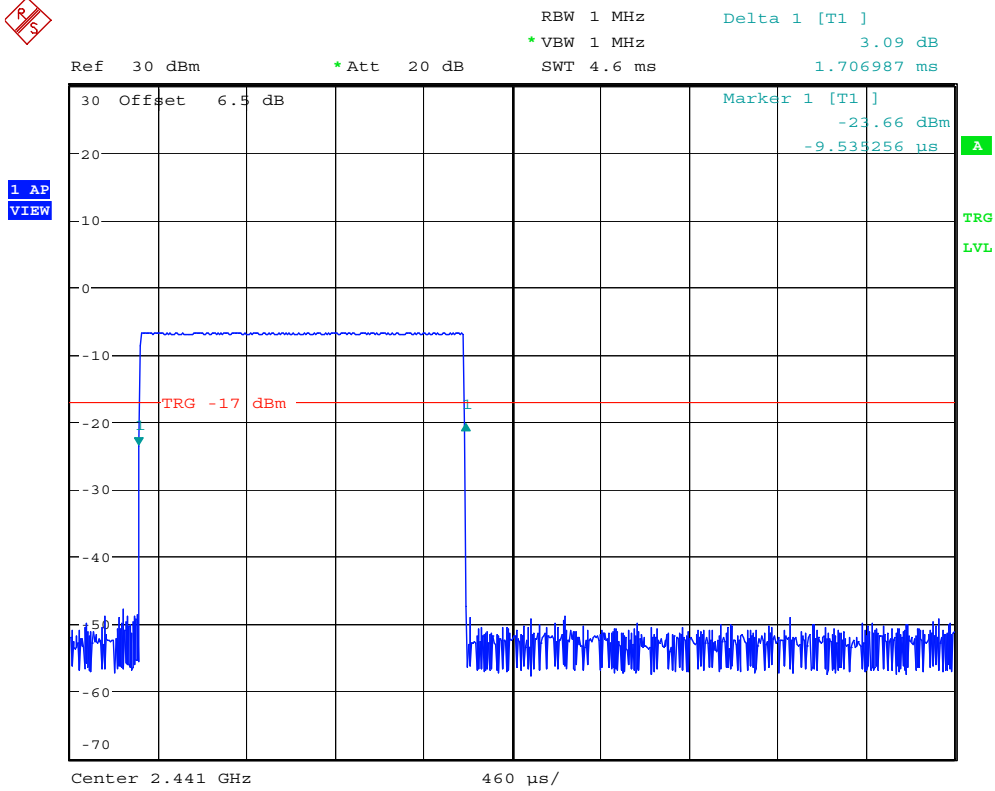
Time of occup ancy ( Hopping DH5) = 2.982308 ms \* 51 events = 152.082 ms

Date: 5.DEC.2006 15:26:31



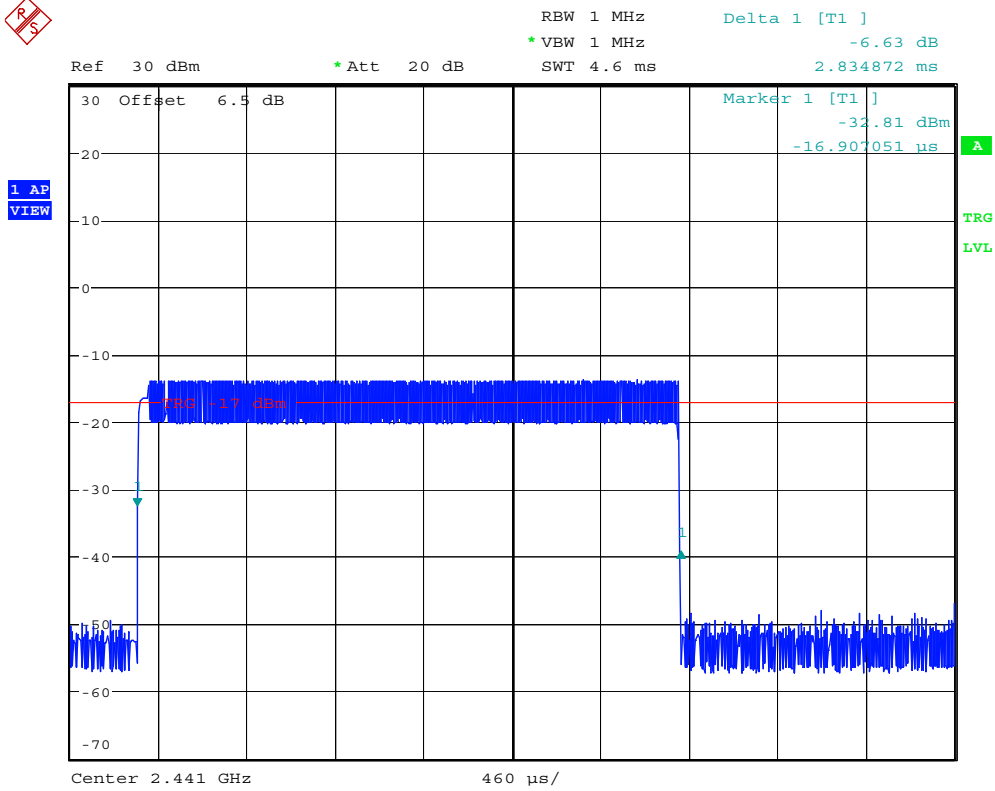
Time of occup ancy ( Hopping DH1) = 453.782051  $\mu$ s \* 310 events = 140.672 ms

Date: 5.DEC.2006 15:15:42



Time of occup ancy ( Hopping DH3) = 1.706987 ms \* 92 events = 157.042 ms

Date: 5.DEC.2006 15:14:10

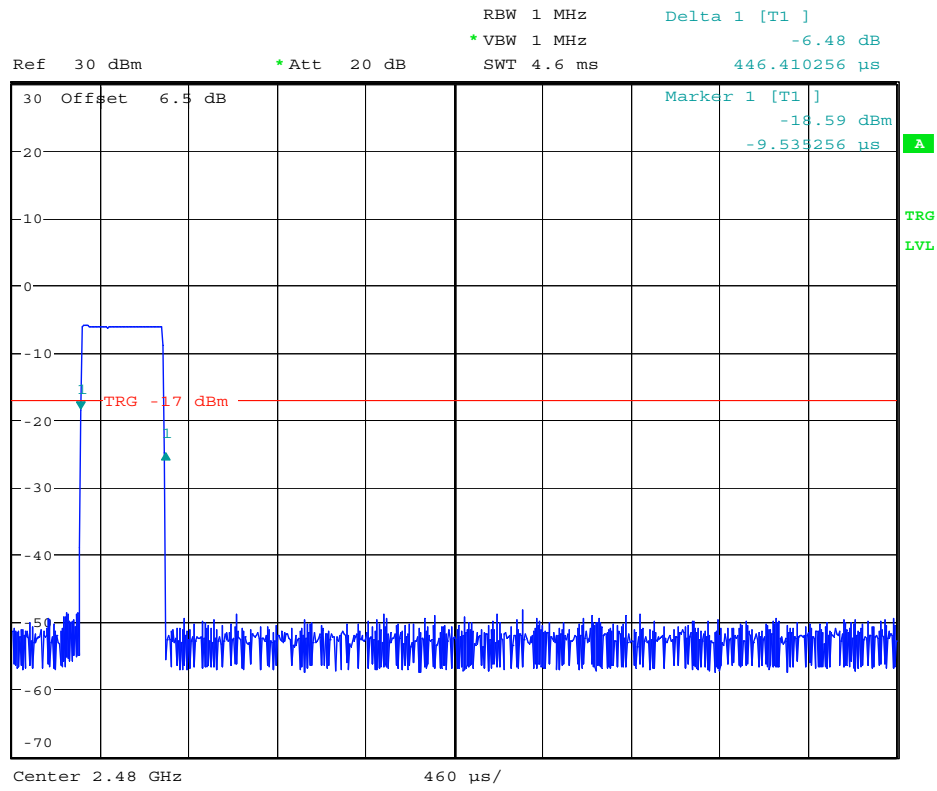


Time of occup ancy ( Hopping DH5) = 2.834872 ms \* 55 events = 155.87 ms

Date: 5.DEC.2006 14:58:18

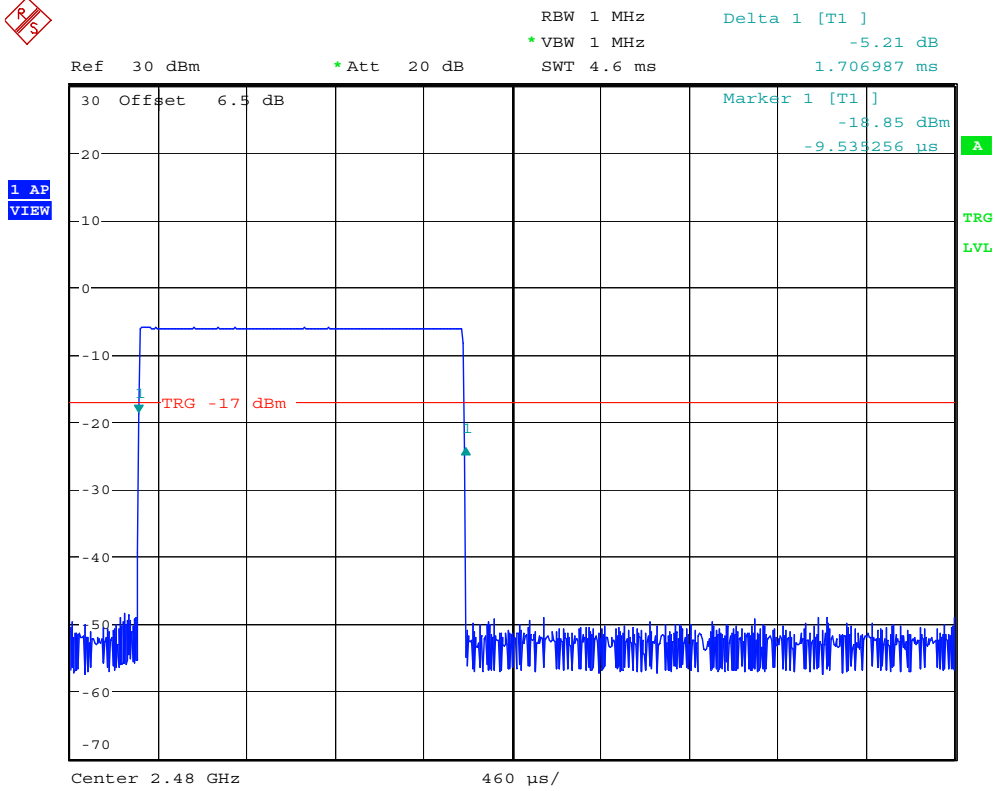


1 AP  
VIEW



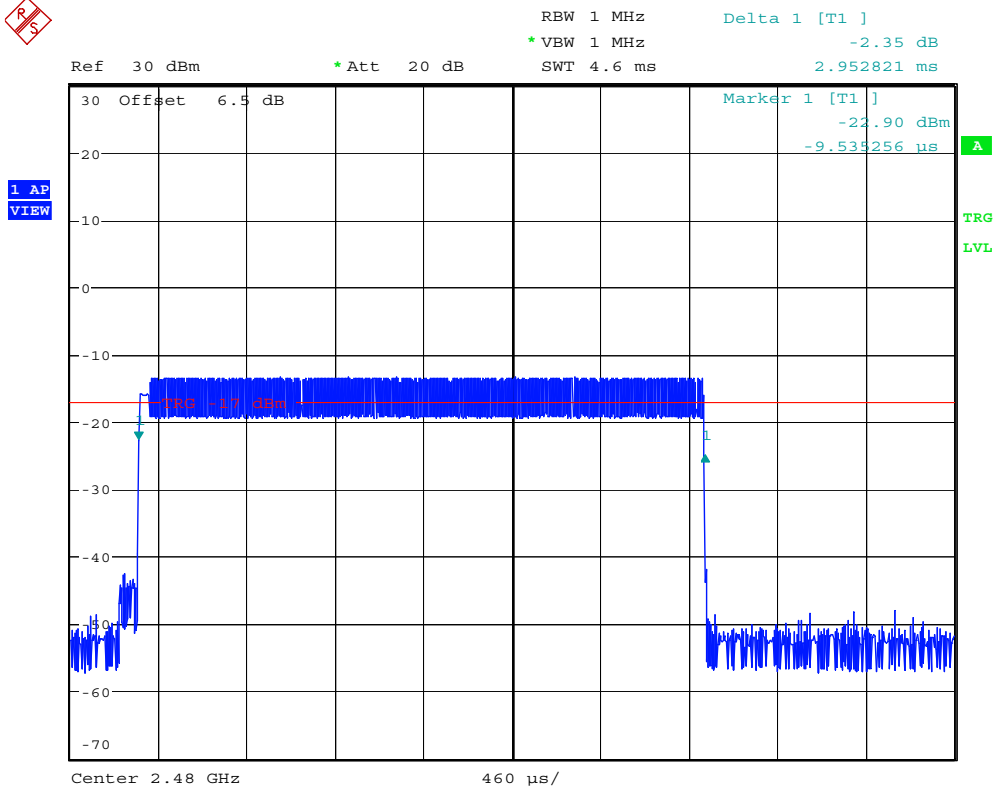
Time of occup ancy ( Hopping DH1) = 446.410256 us \* 312 events = 139.279 ms

Date: 5.DEC.2006 09:21:54



Time of occup ancy ( Hopping DH3) = 1.706987 ms \* 93 events = 158.749 ms

Date: 5.DEC.2006 09:20:05



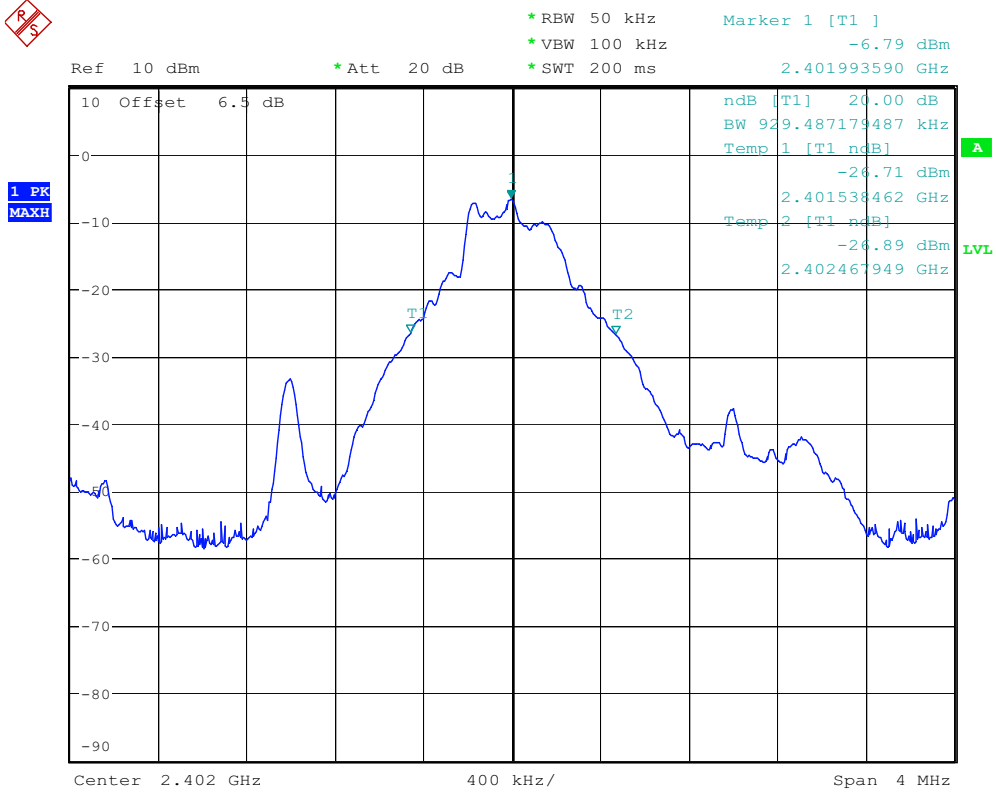
Time of occup ancy ( Hopping DH5) = 2.952821 ms \* 51 events = 150.552 ms

Date: 5.DEC.2006 09:18:09

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

## **Appendix F**

### 20dB Bandwidth

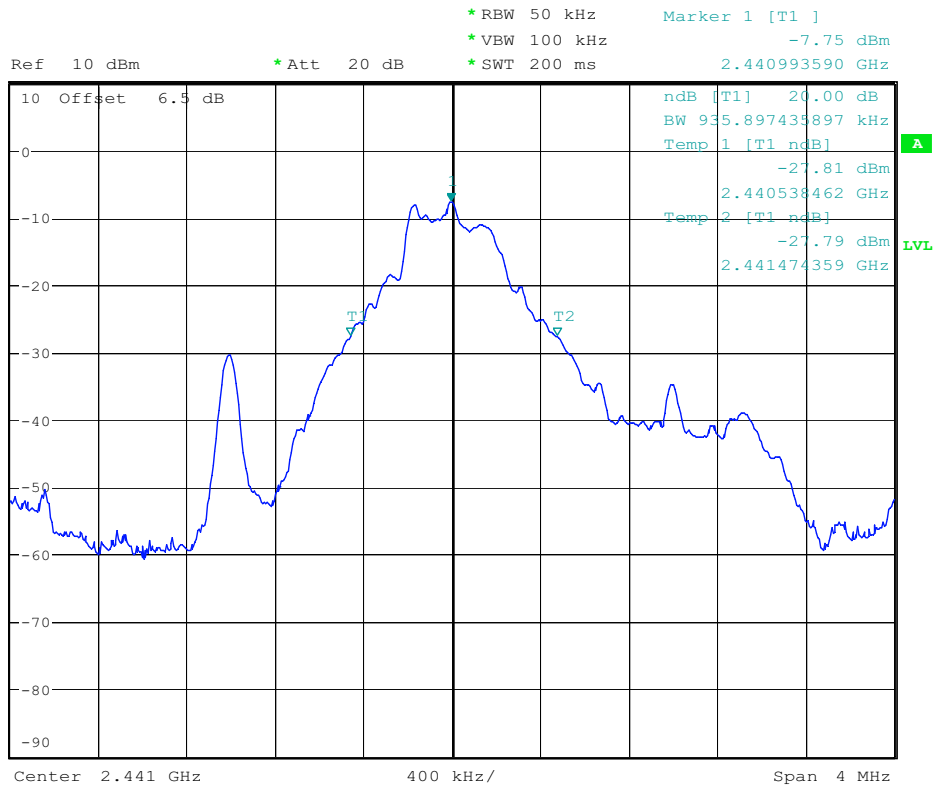


20dB Bandwidth CH0

Date: 5.DEC.2006 08:29:21

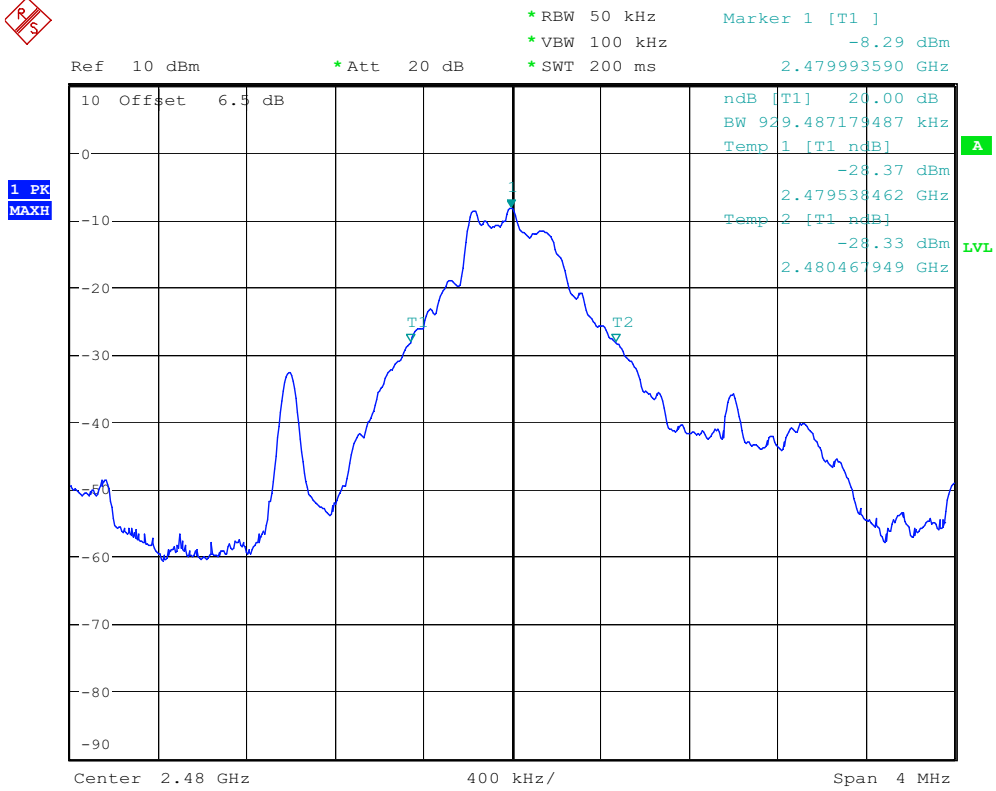


1 PK  
MAXH



20dB Bandwidth CH39

Date: 5.DEC.2006 08:30:56



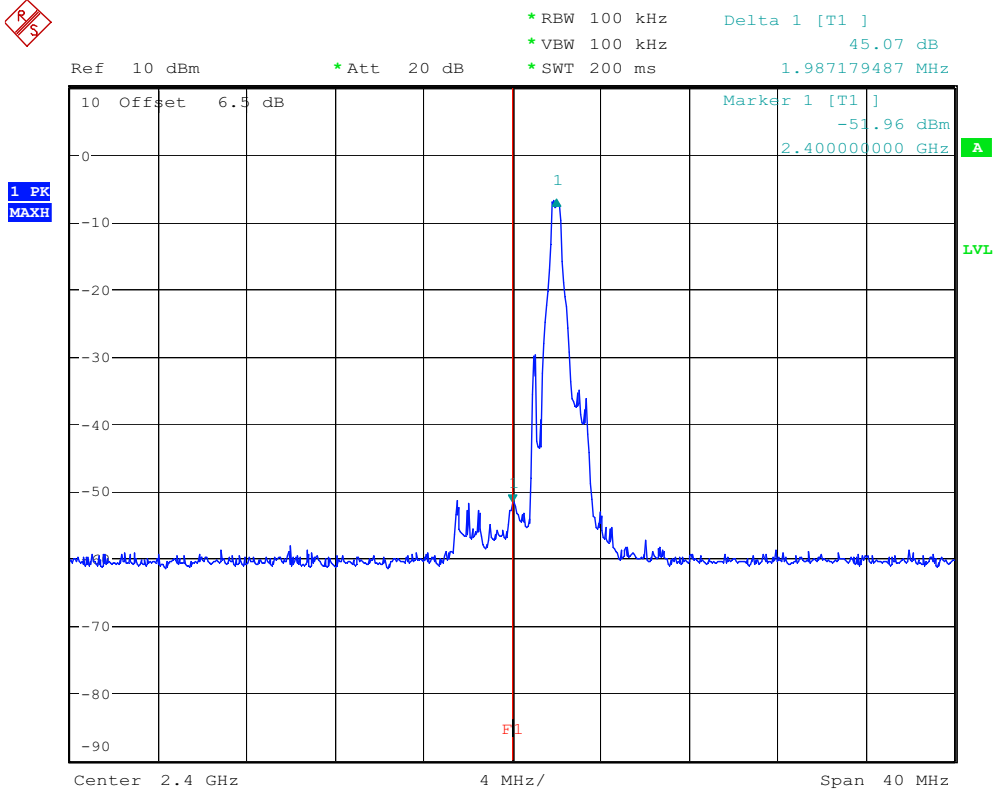
20dB Bandwidth CH78

Date: 5.DEC.2006 08:32:33

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

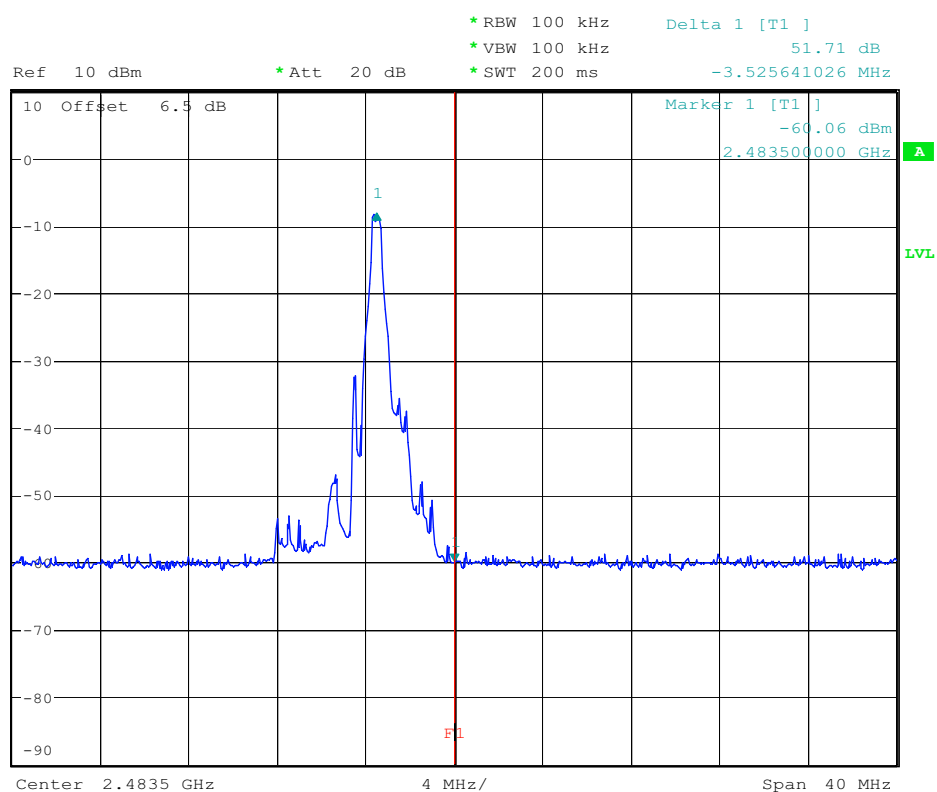
## **Appendix G**

### Band-edge Compliance of RF Conducted Emissions



Bandedge CH0

Date: 5.DEC.2006 08:37:23



Date: 5.DEC.2006 08:35:03

Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

## **Appendix H**

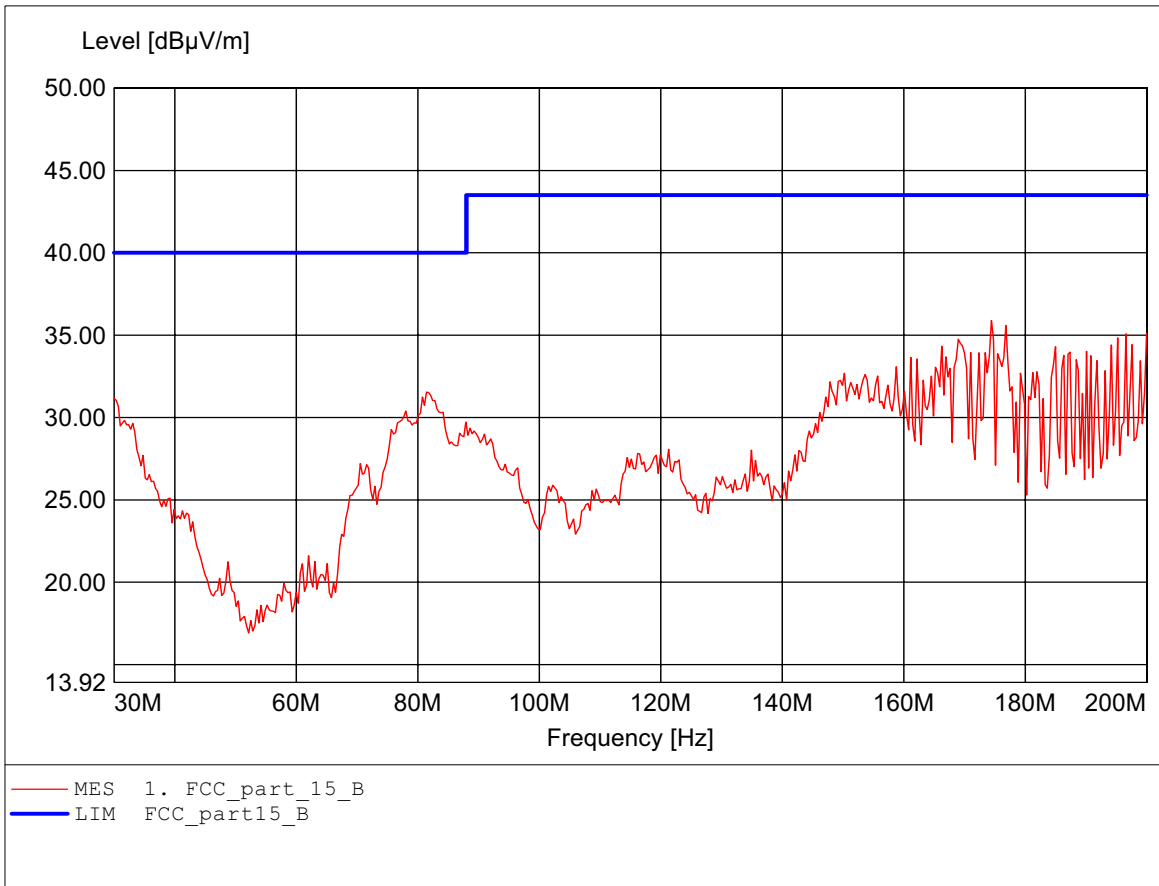
### **Radiated Emissions from Receiver Section of Transceiver**

**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 3.12**

**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

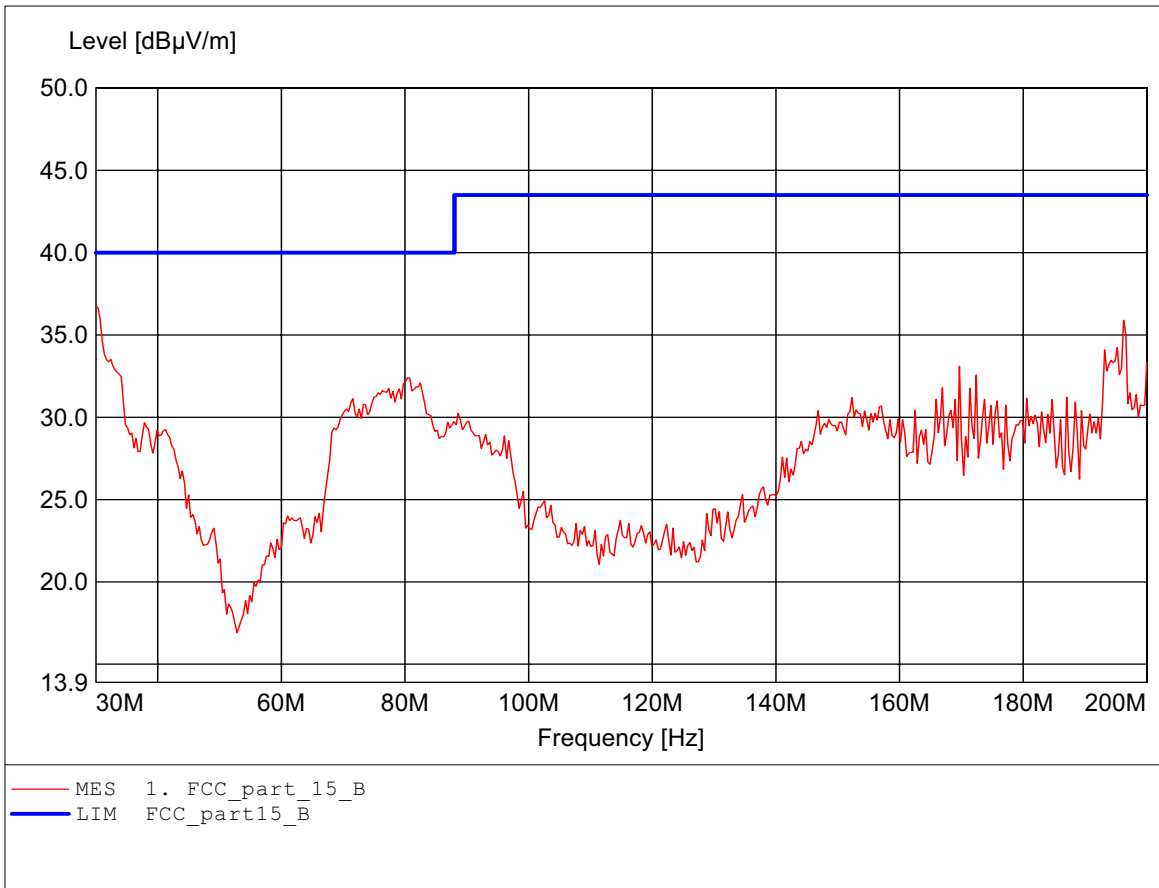
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq:174.449MHz Emax:35.89dBμV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

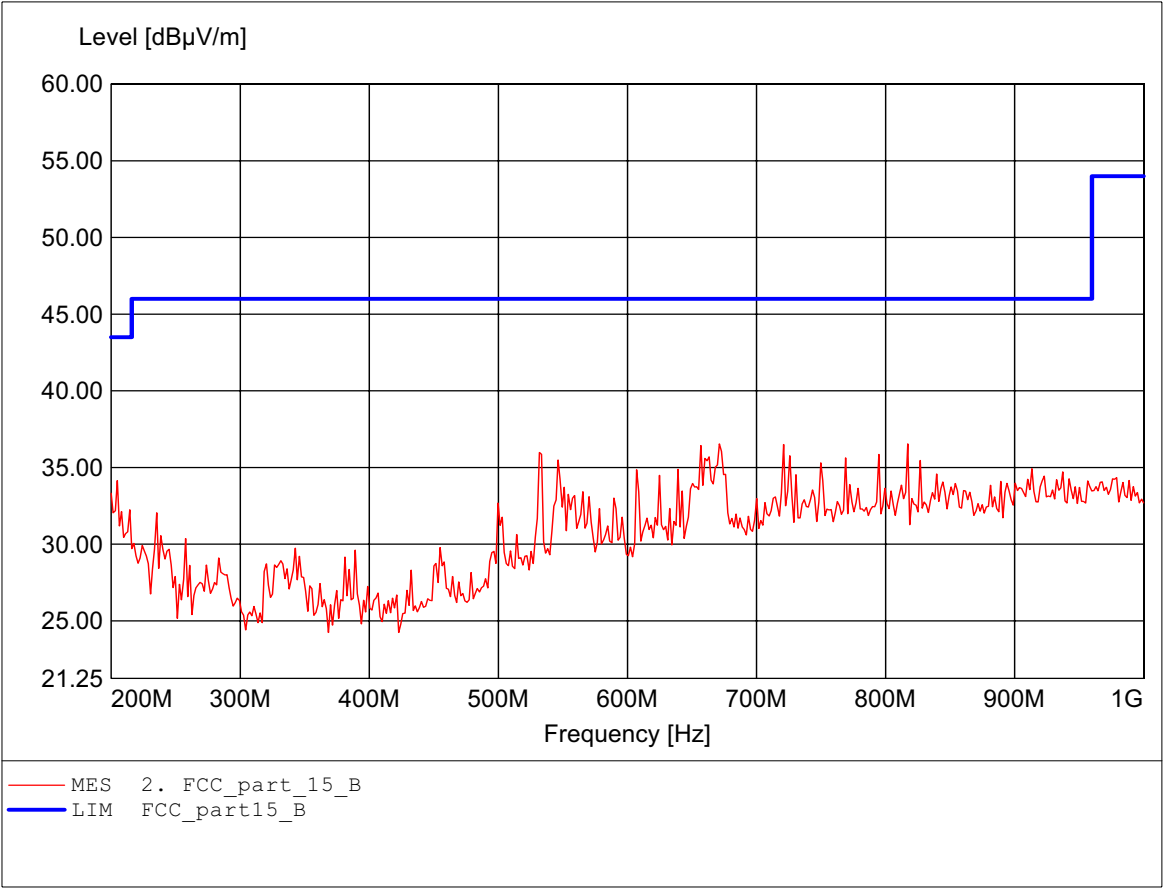
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq:30.000MHz Emax:36.76dBμV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

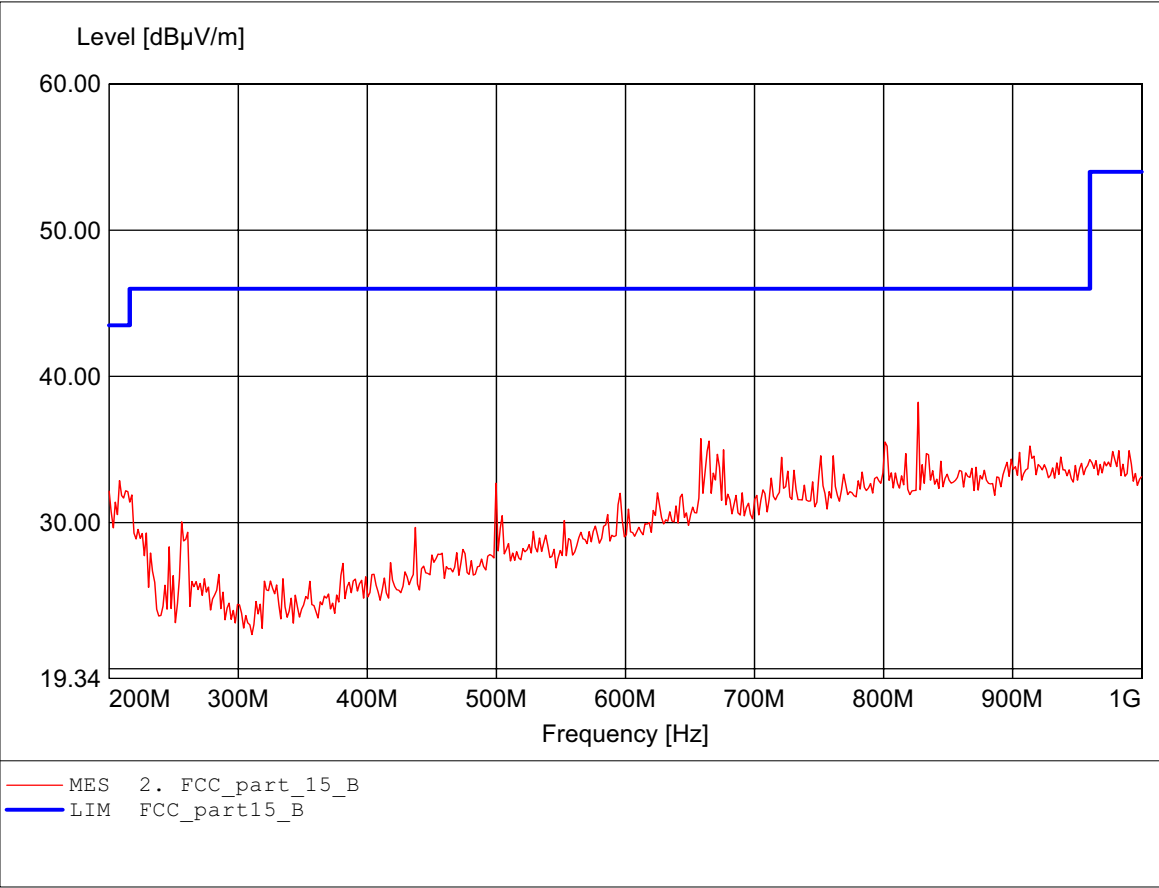
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.  
Freq:817.234MHz Emax:36.54dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

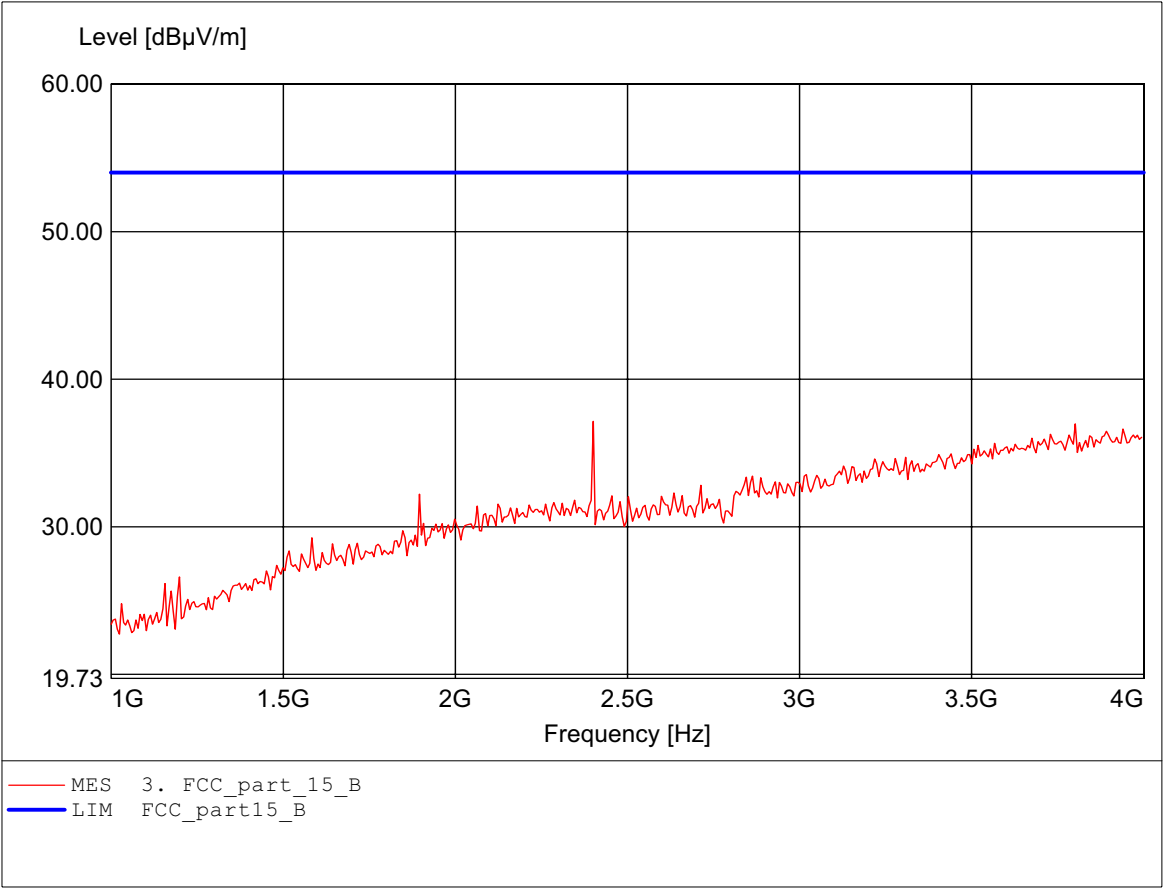
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.  
Freq:826.854MHz Emax:38.24dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

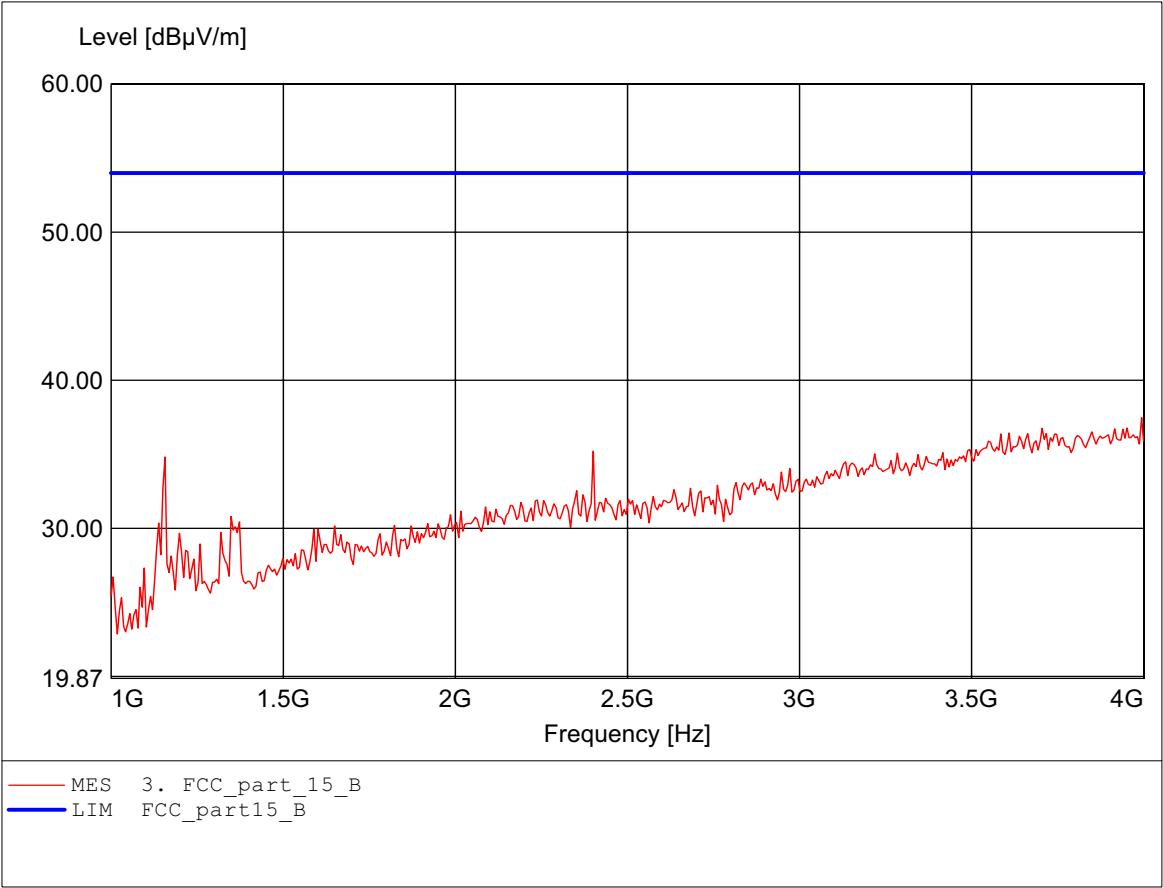
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:2.401GHz Emax:37.15dBμV/m RBW: 1 MHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

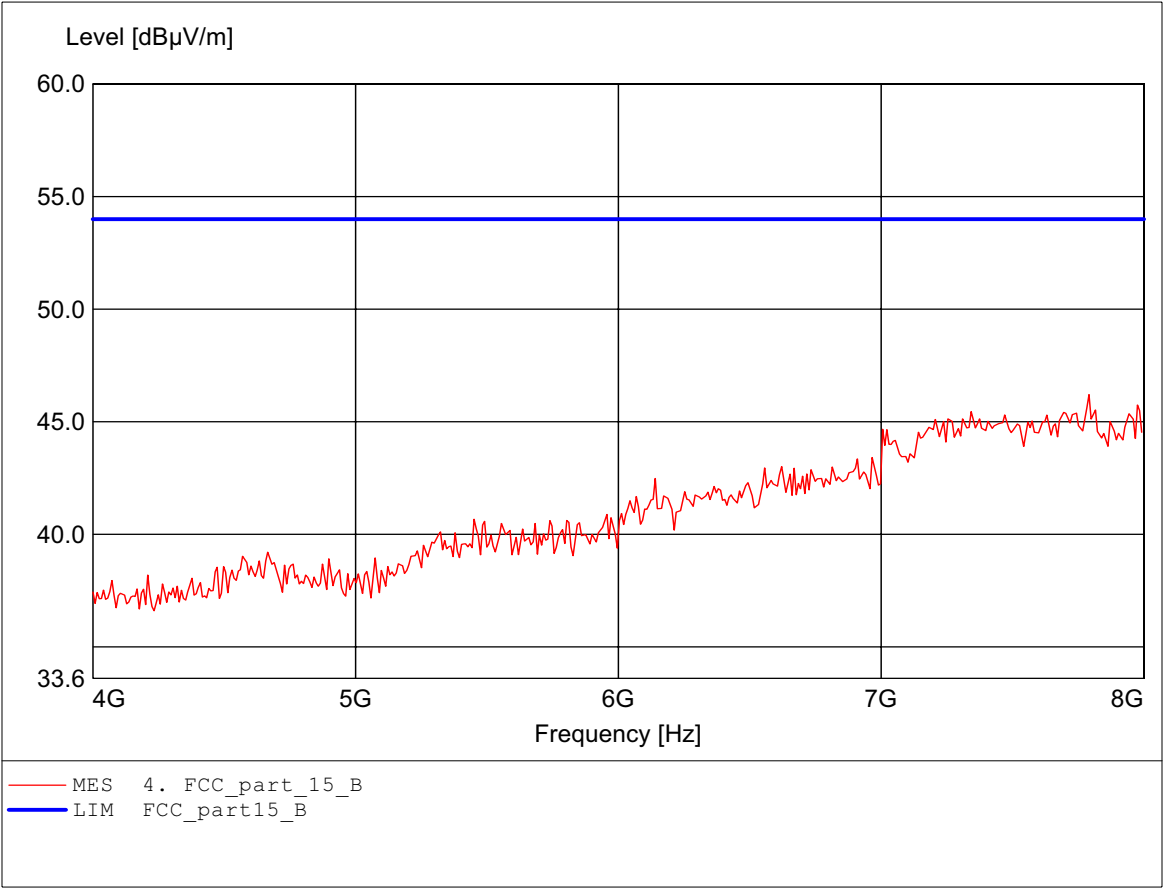
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:3.994GHz Emax:37.47dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

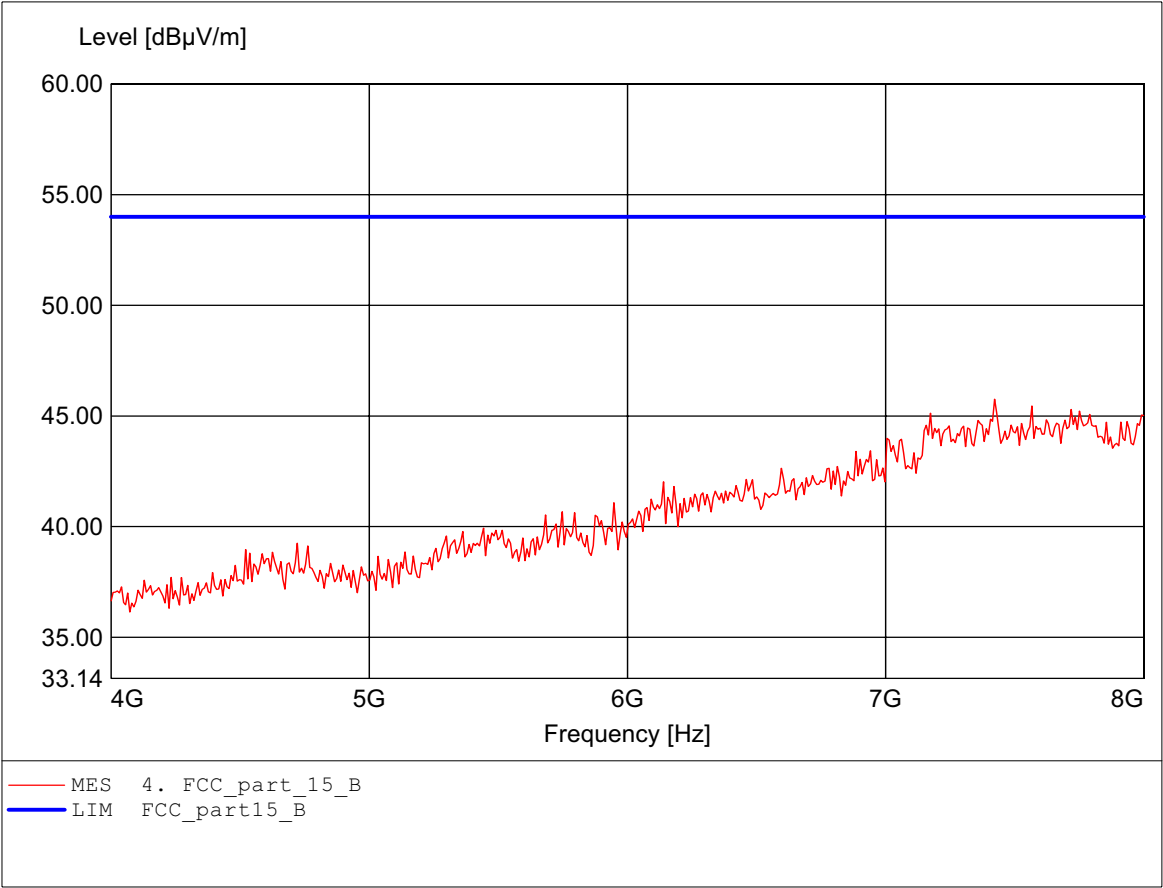
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:7.792GHz Emax:46.20dBμV/m RBW: 1 MHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

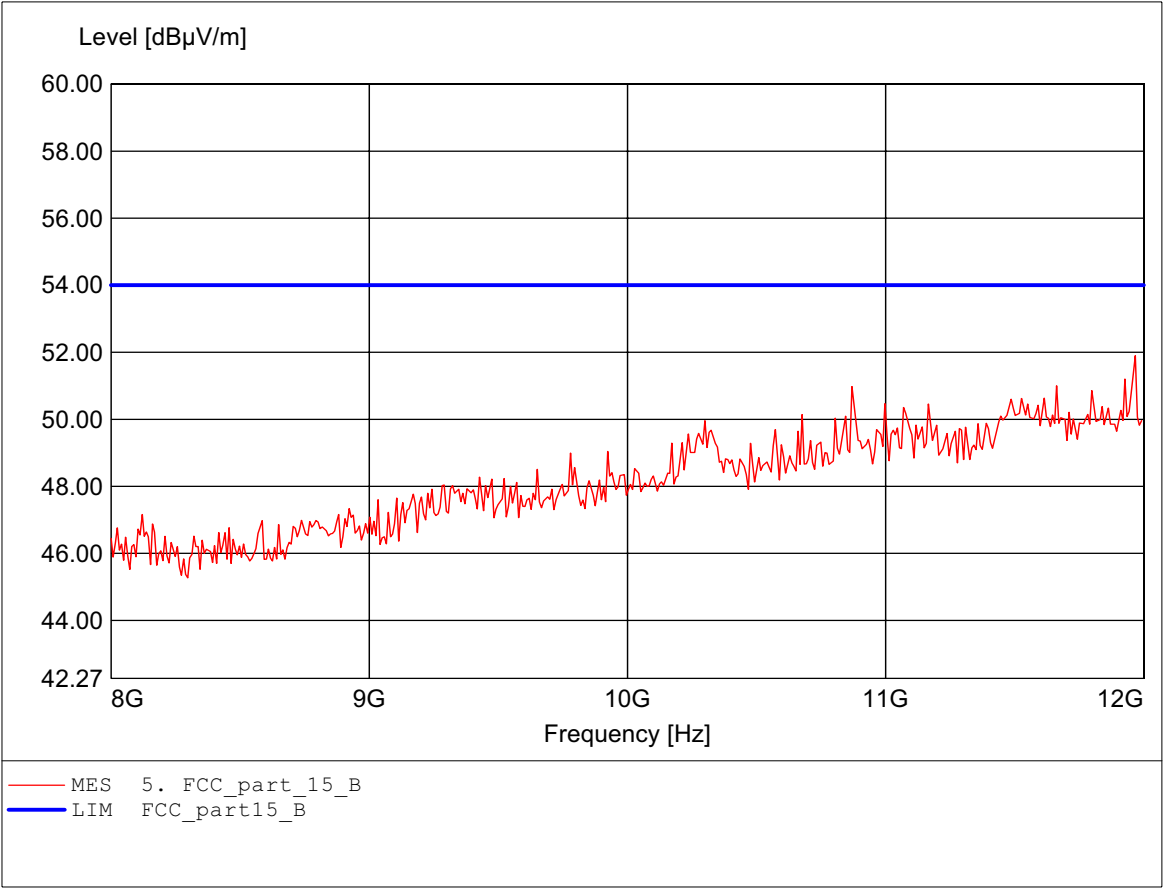
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:7.423GHz Emax:45.75dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

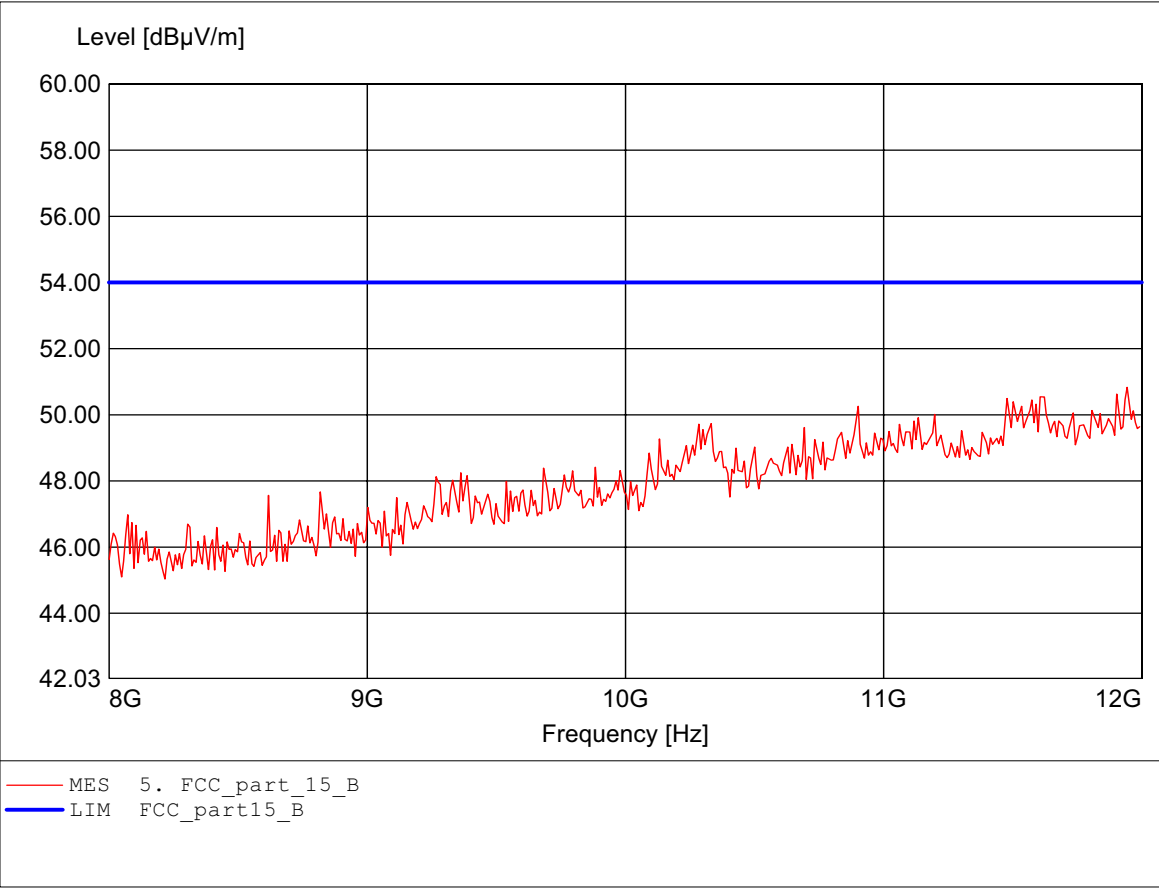
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:11.968GHz Emax:51.90dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

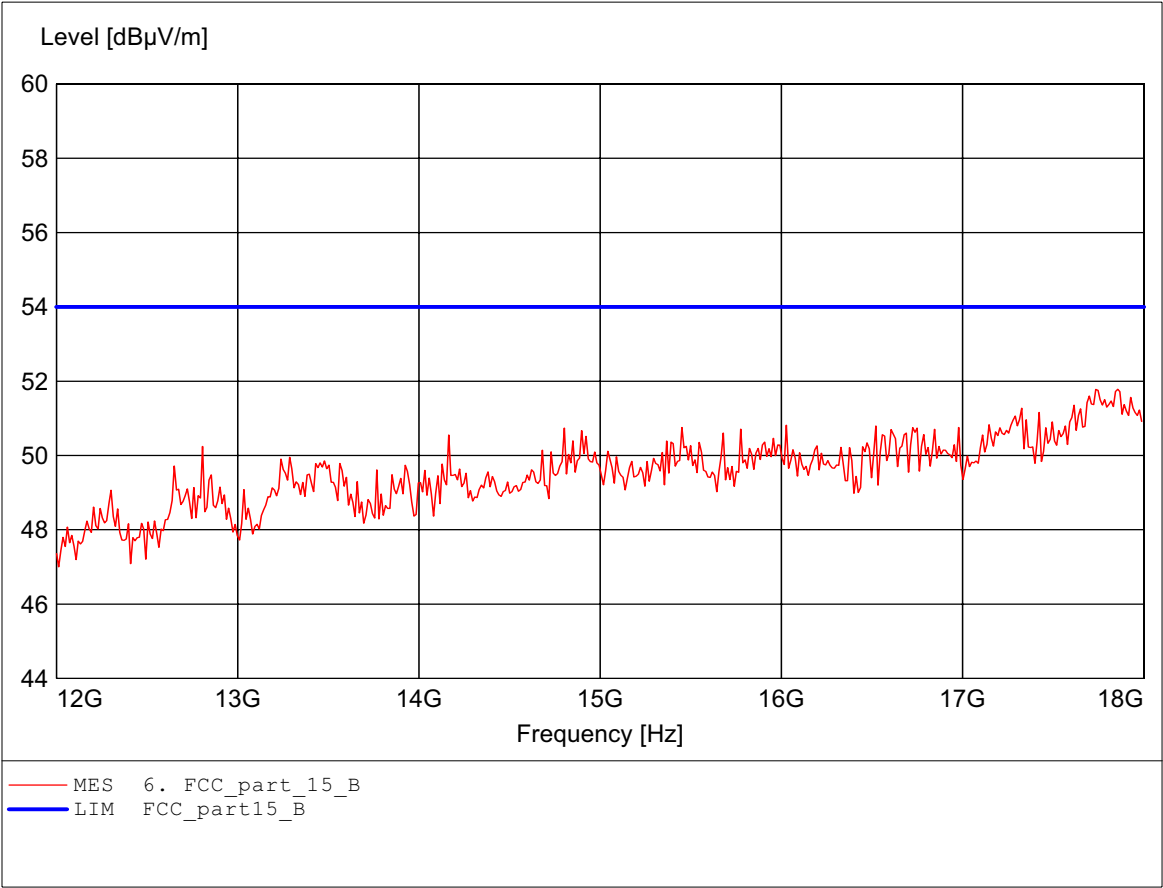
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:11.944GHz Emax:50.83dBµV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

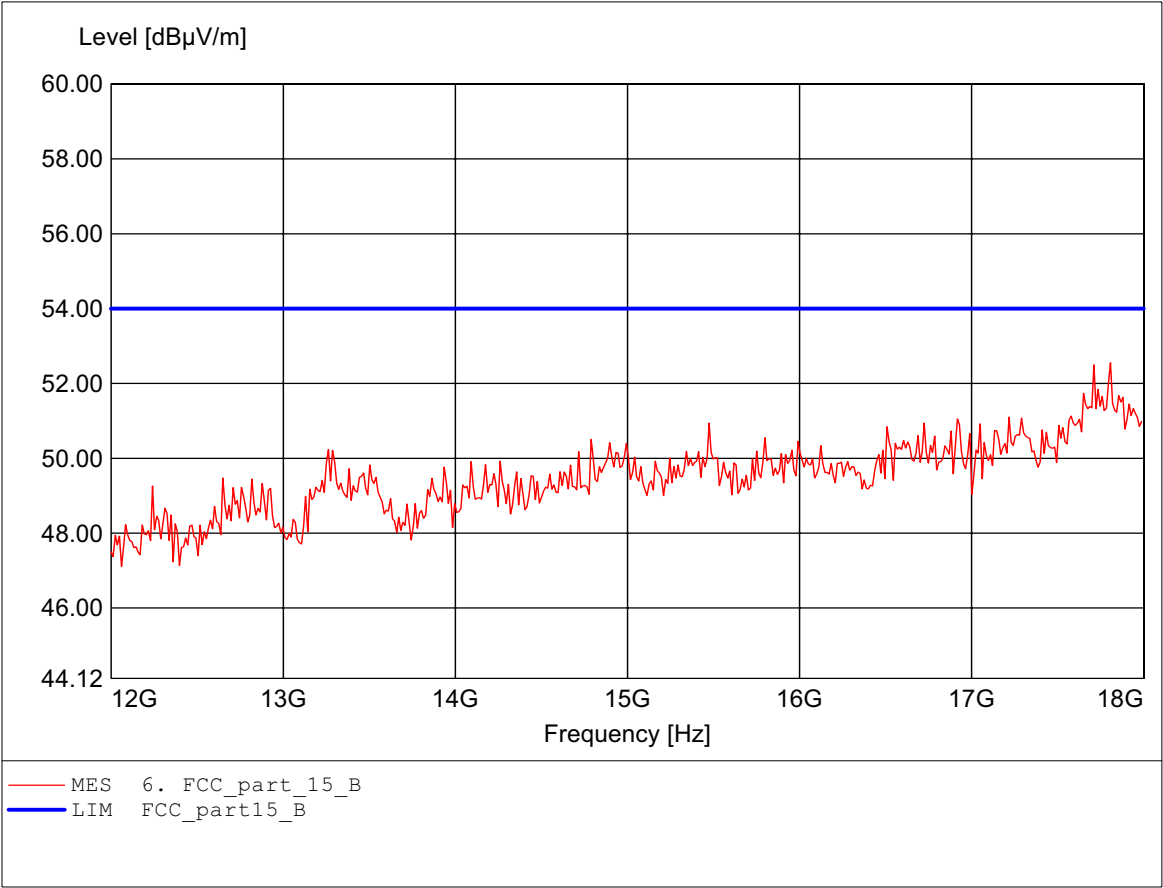
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:17.856GHz Emax:51.78dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

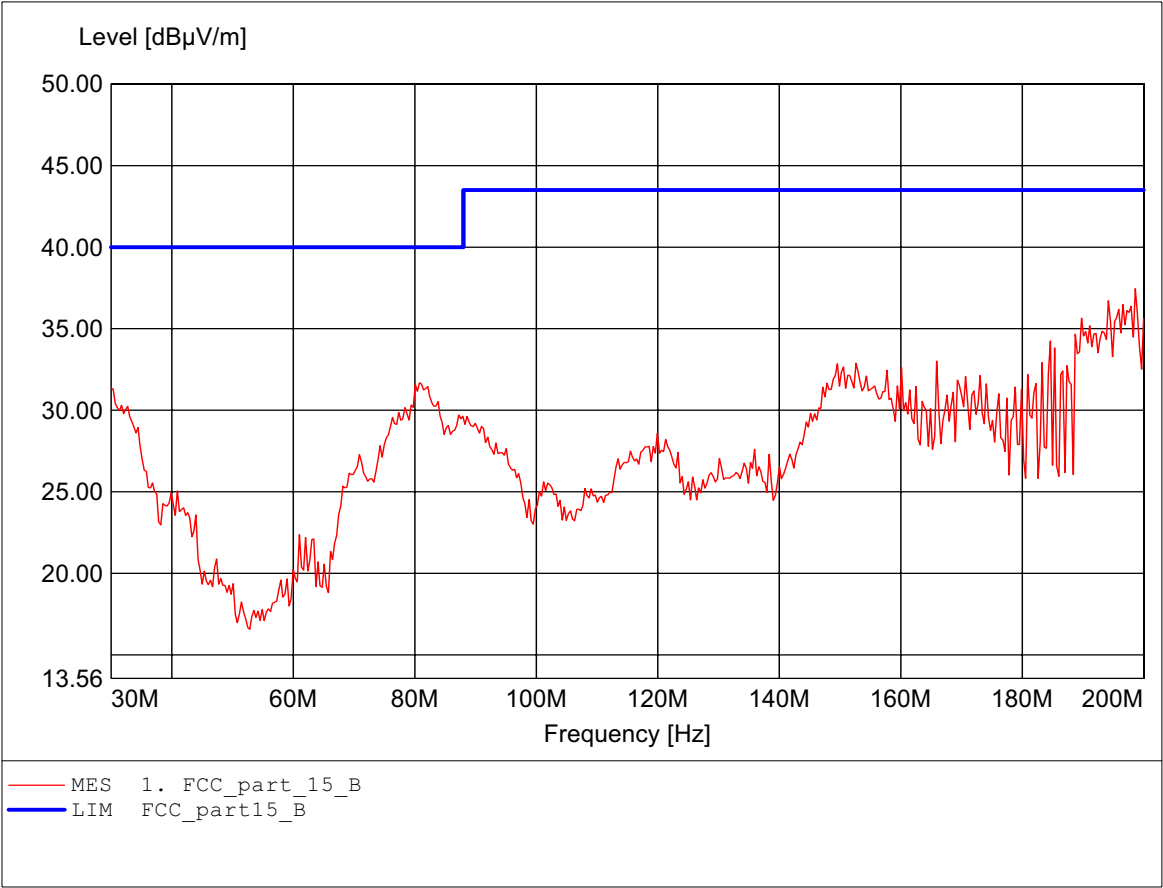
Order Number : W6M20611-7543 ch0  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:17.808GHz Emax:52.55dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

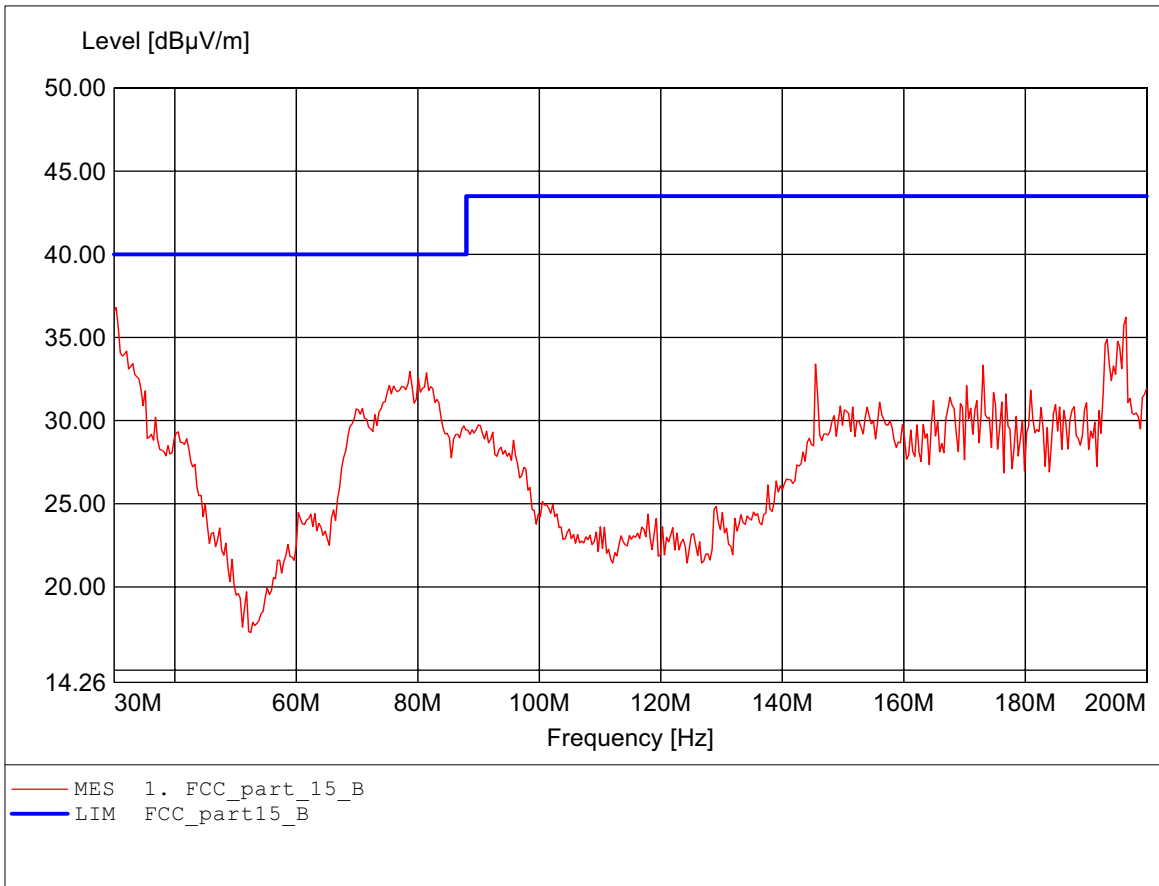
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq:198.637MHz Emax:37.46dBμV/m RBW: 100 kHz



# Field Strength under normal conditions

## FCC RULES PART 15, SUBPART B

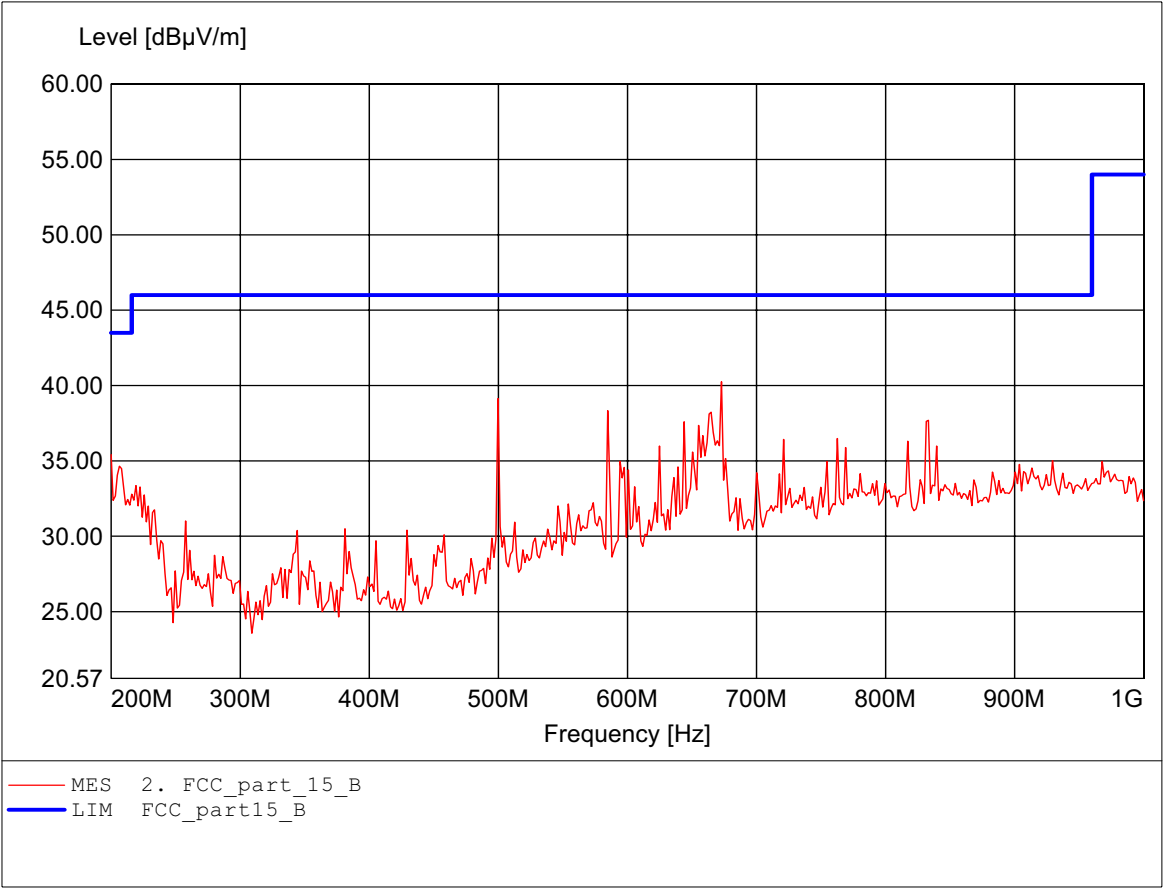
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq:30.341MHz Emax:36.81dBµV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

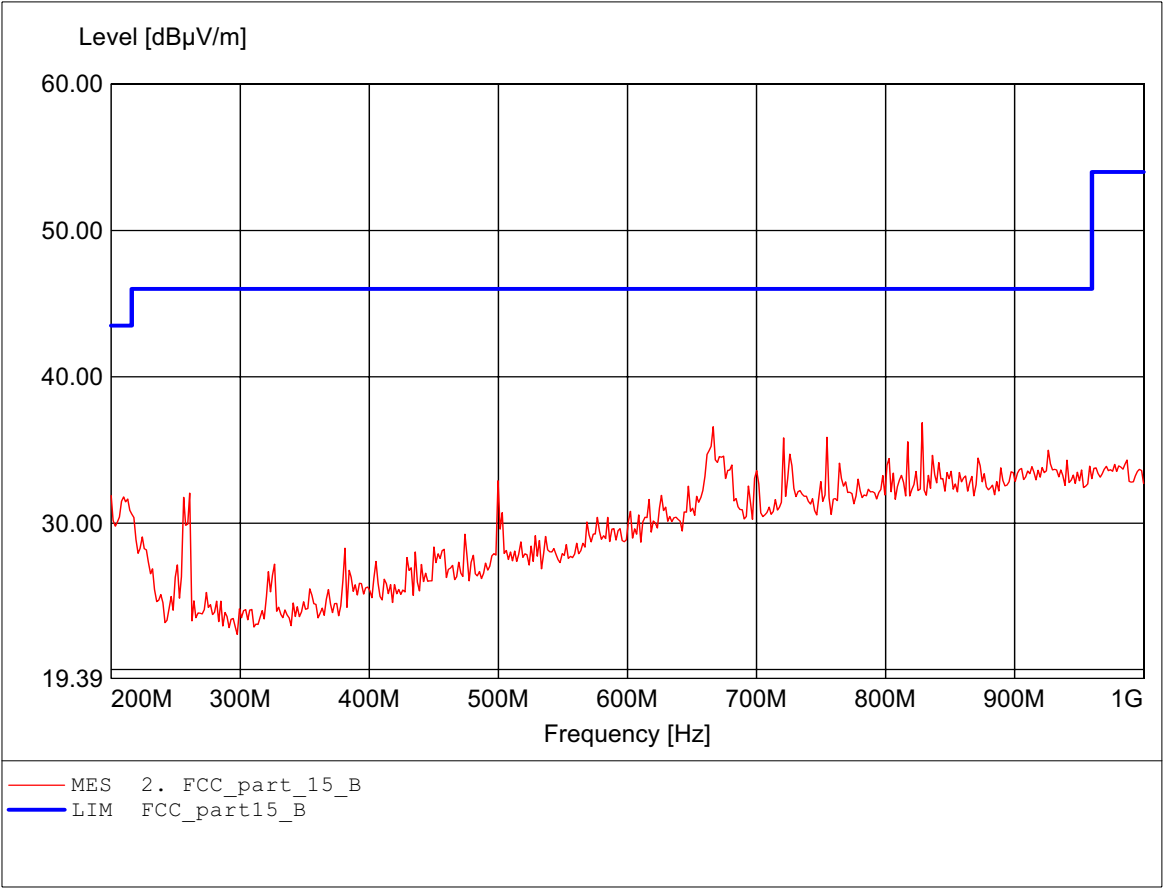
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.  
Freq:672.946MHz Emax:40.25dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

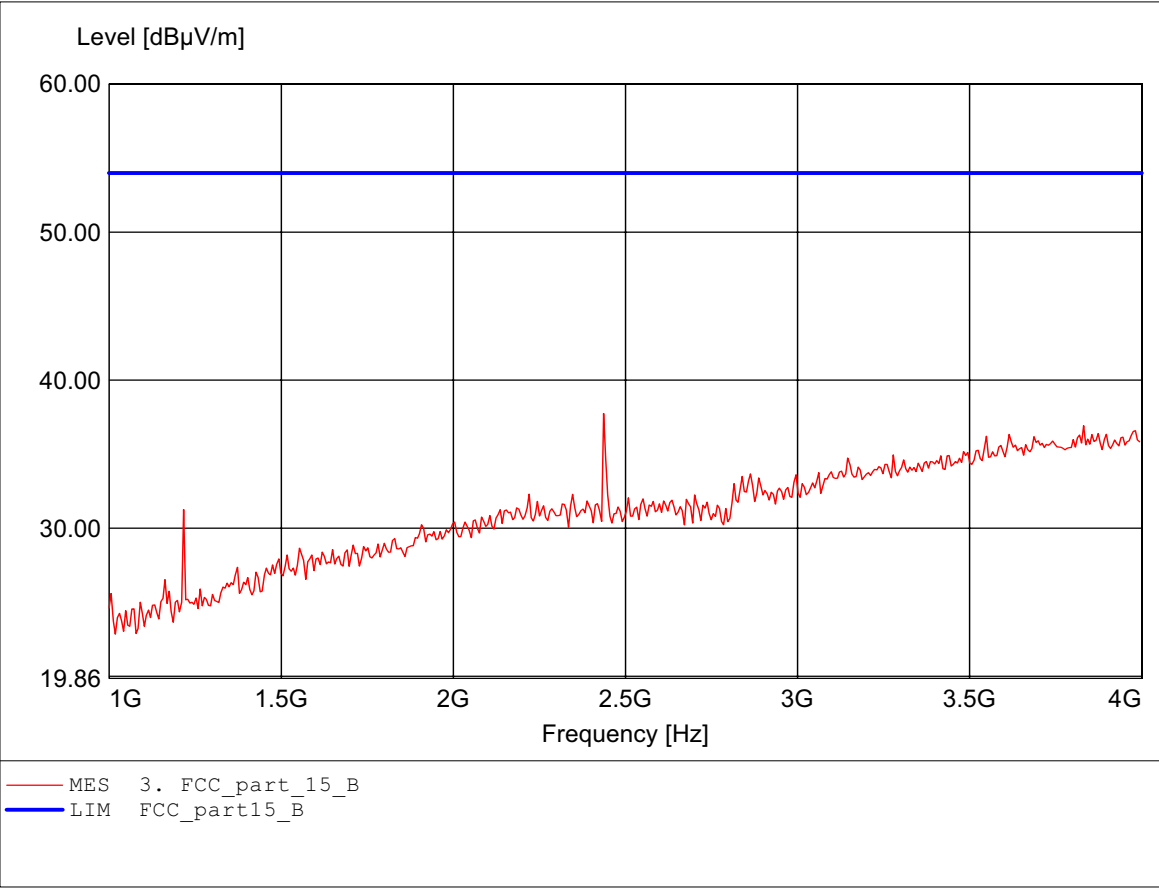
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.  
Freq:828.457MHz Emax:36.86dBµV/m RBW: 100 kHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

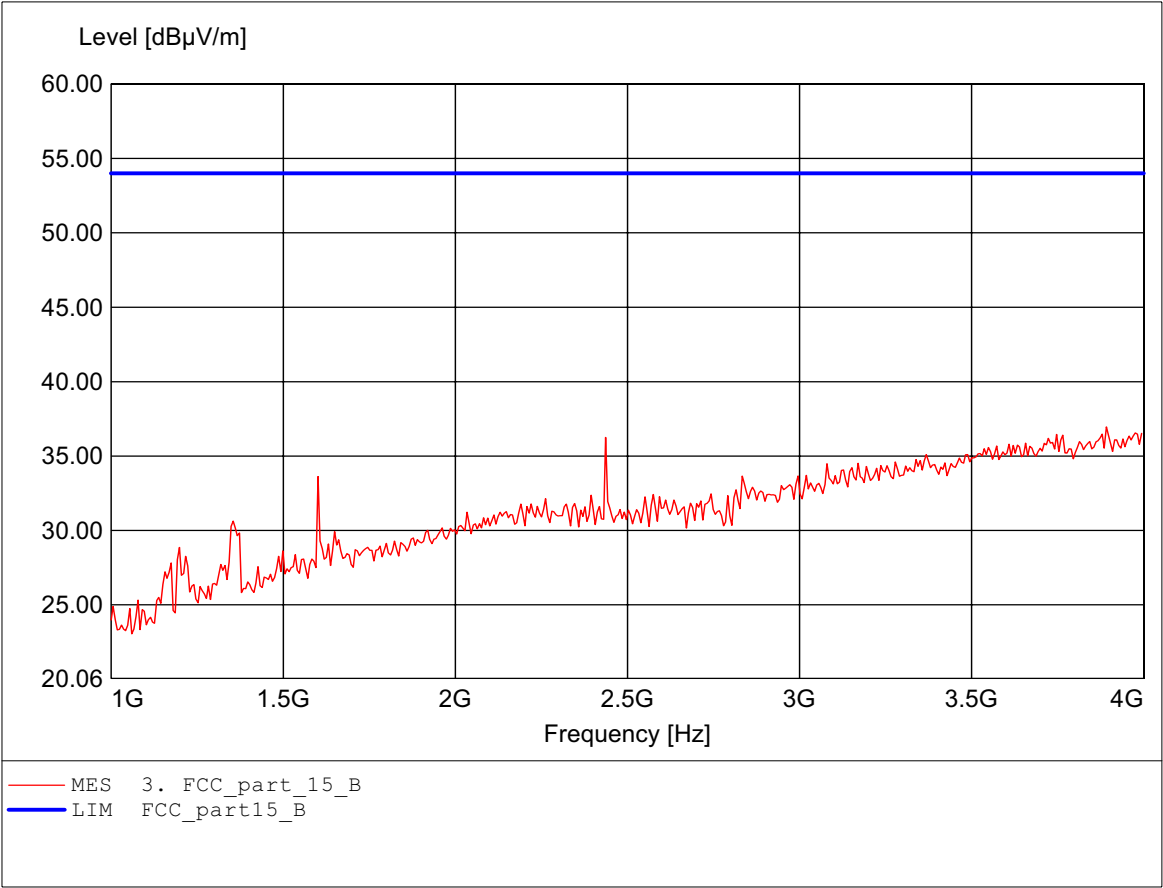
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:2.437GHz Emax:37.75dBμV/m RBW: 1 MHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

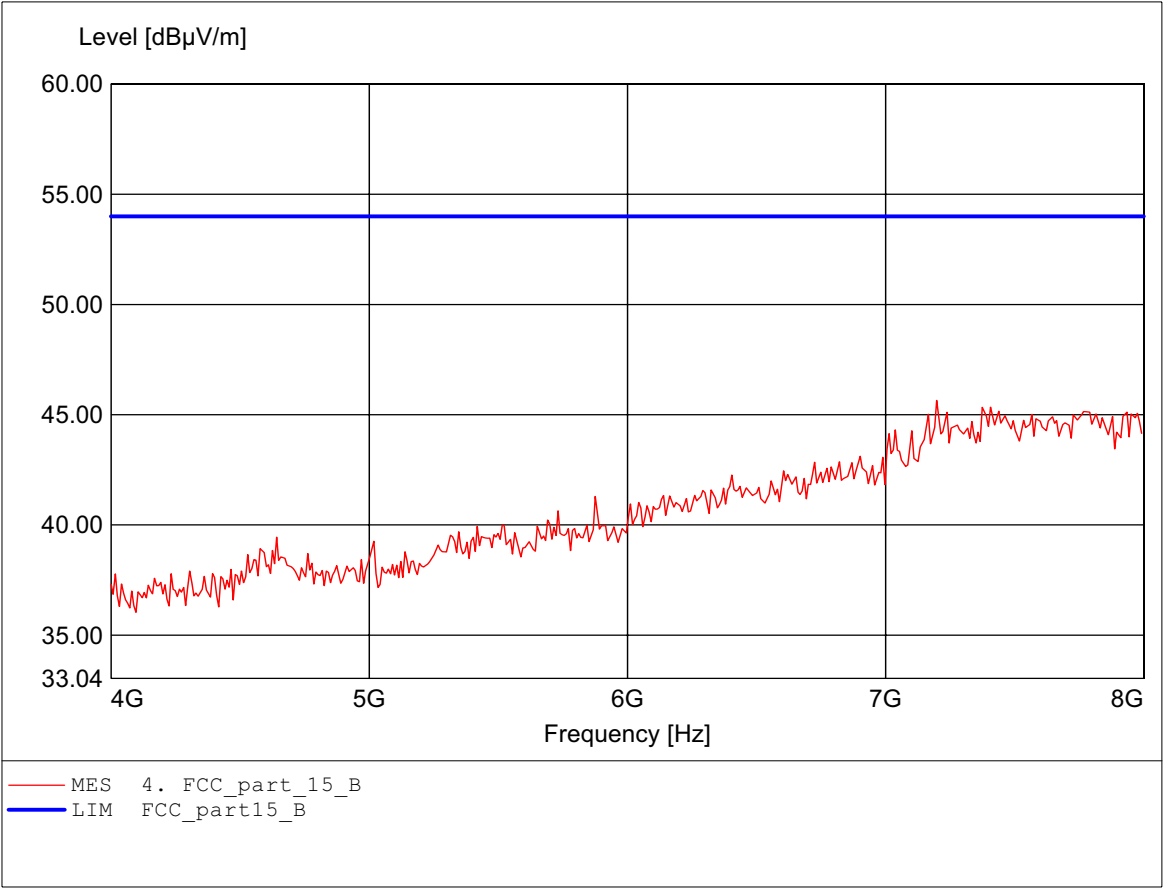
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:3.892GHz Emax:36.96dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

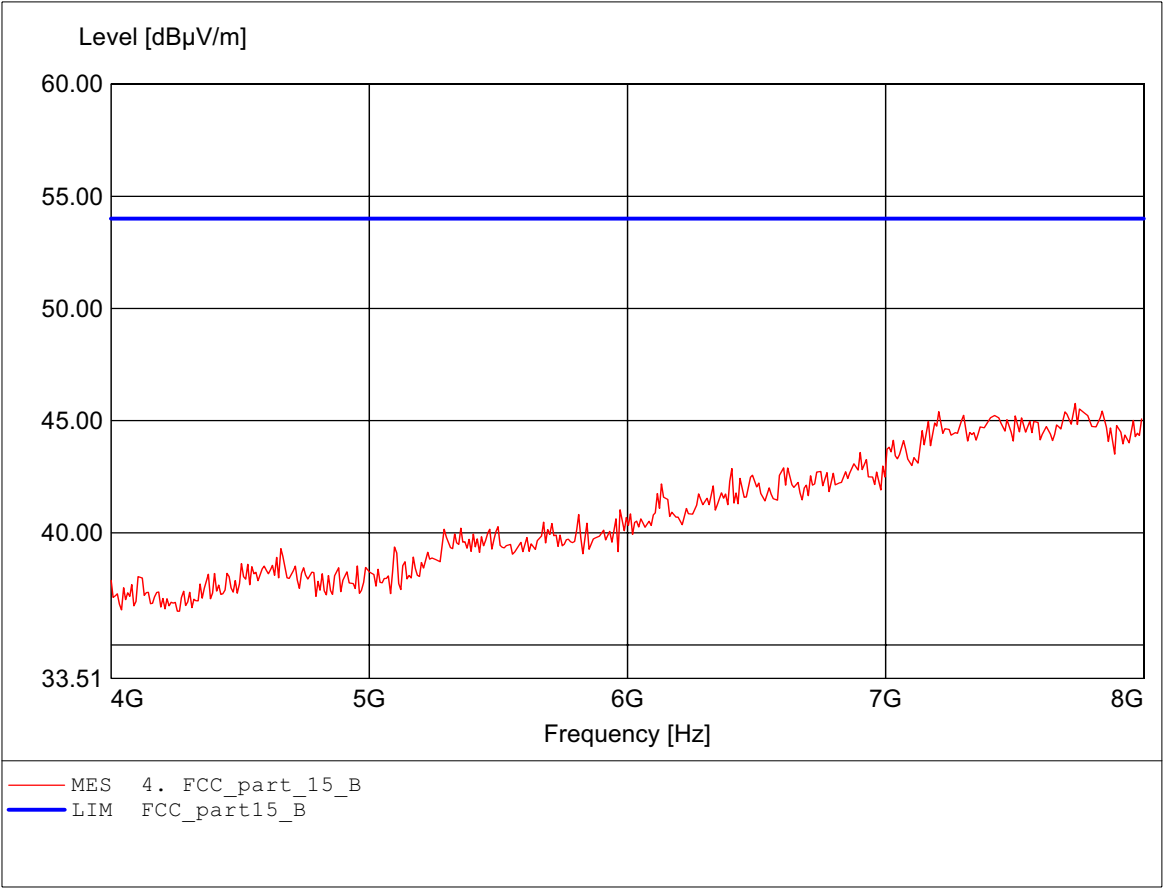
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:7.198GHz Emax:45.65dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

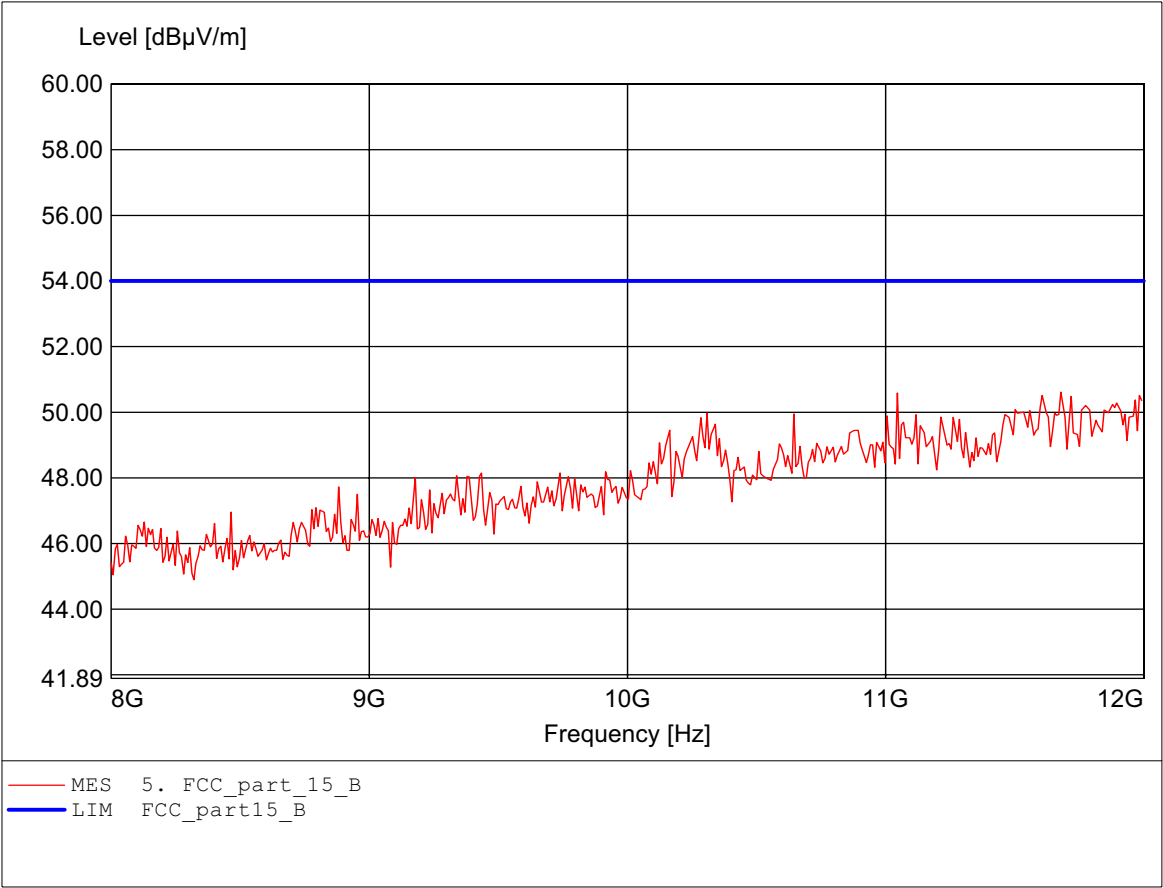
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:7.735GHz Emax:45.77dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:11.679GHz Emax:50.61dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

Order Number : W6M20611-7543 ch39

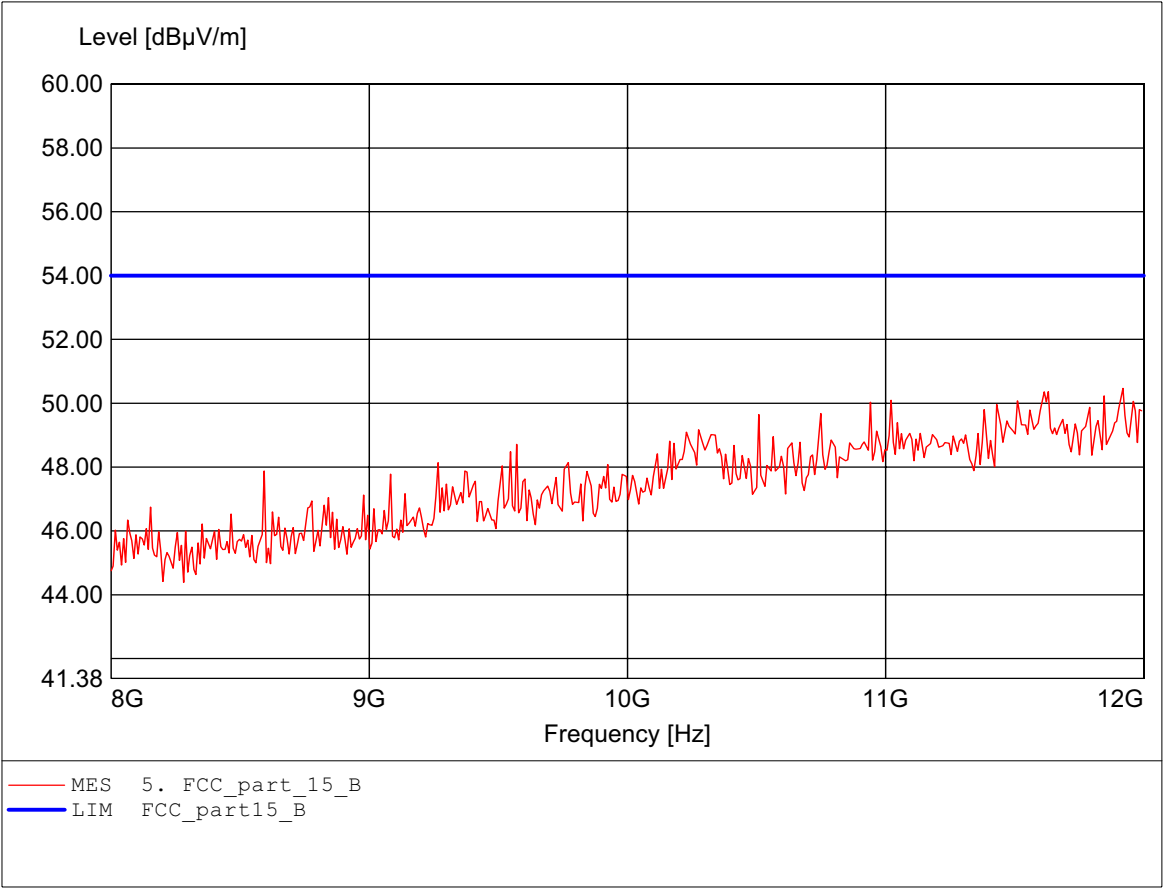
Test Site / Operator: ETS / Charles

Temp.: 23.9°C

according to subpart B

Comment 1: Dist.: 3m, Ant.: HL25, ampl.

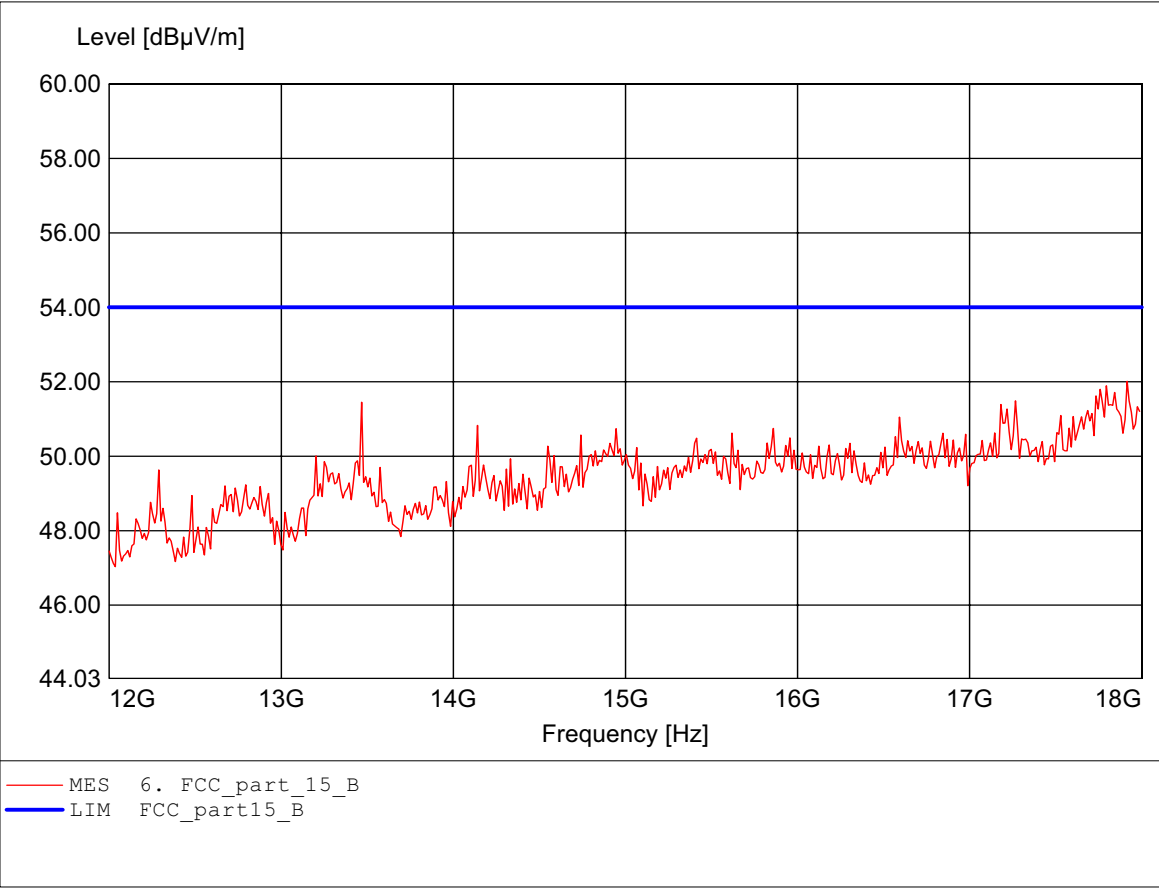
Freq:11.920GHz Emax:50.47dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

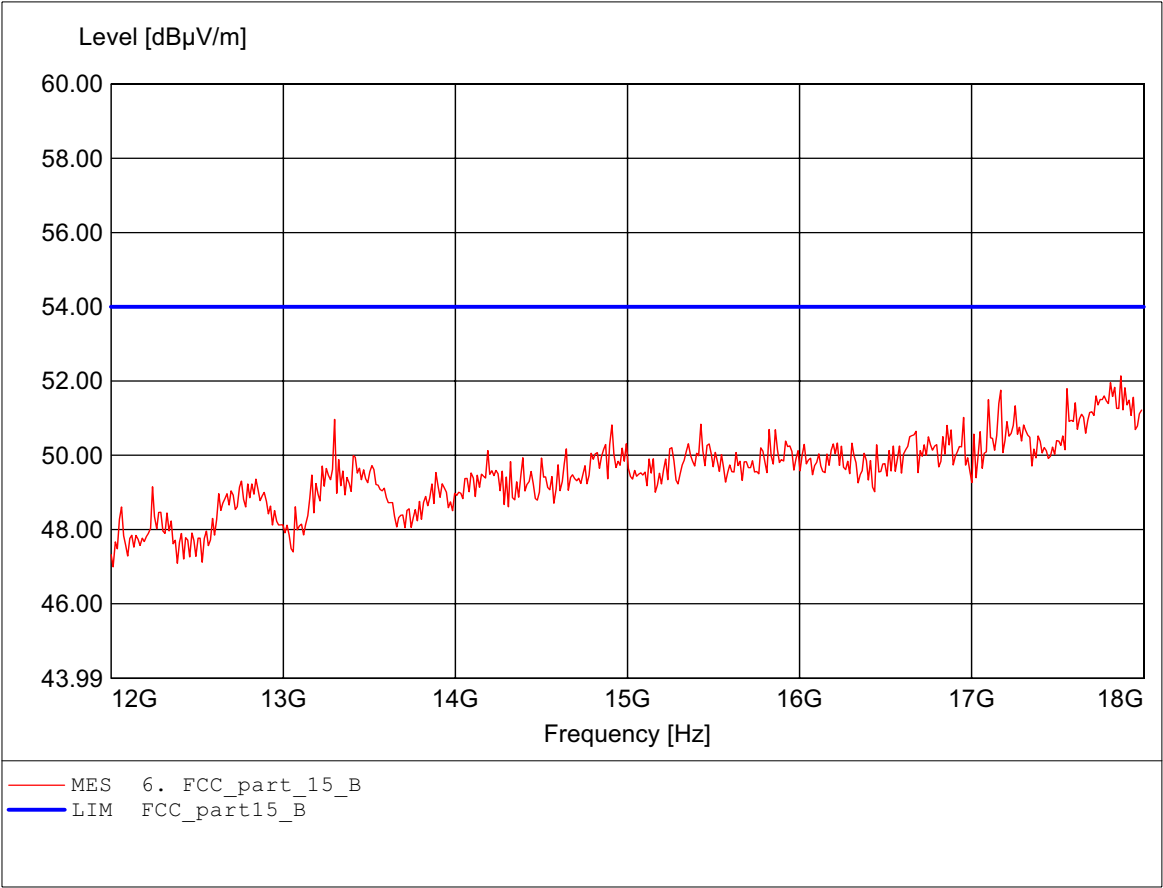
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:17.916GHz Emax:52.01dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

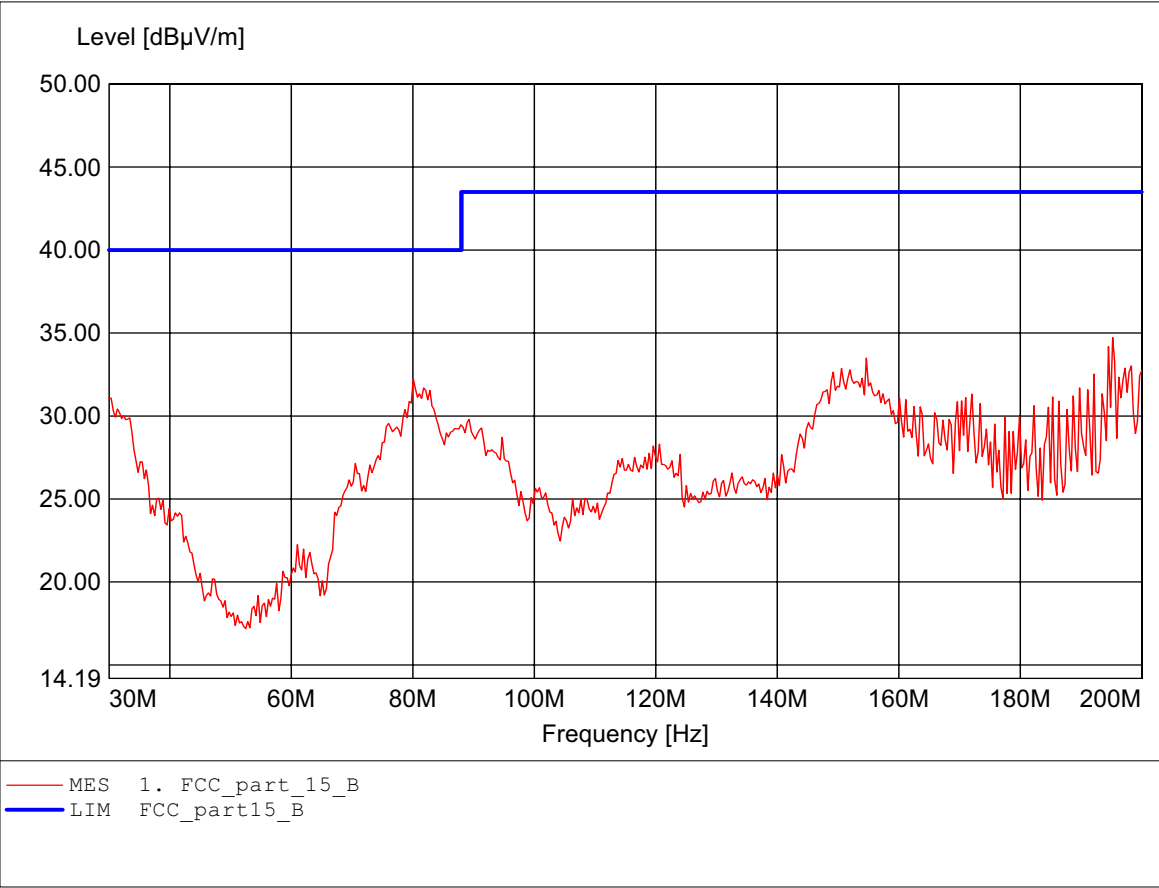
Order Number : W6M20611-7543 ch39  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:17.868GHz Emax:52.14dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

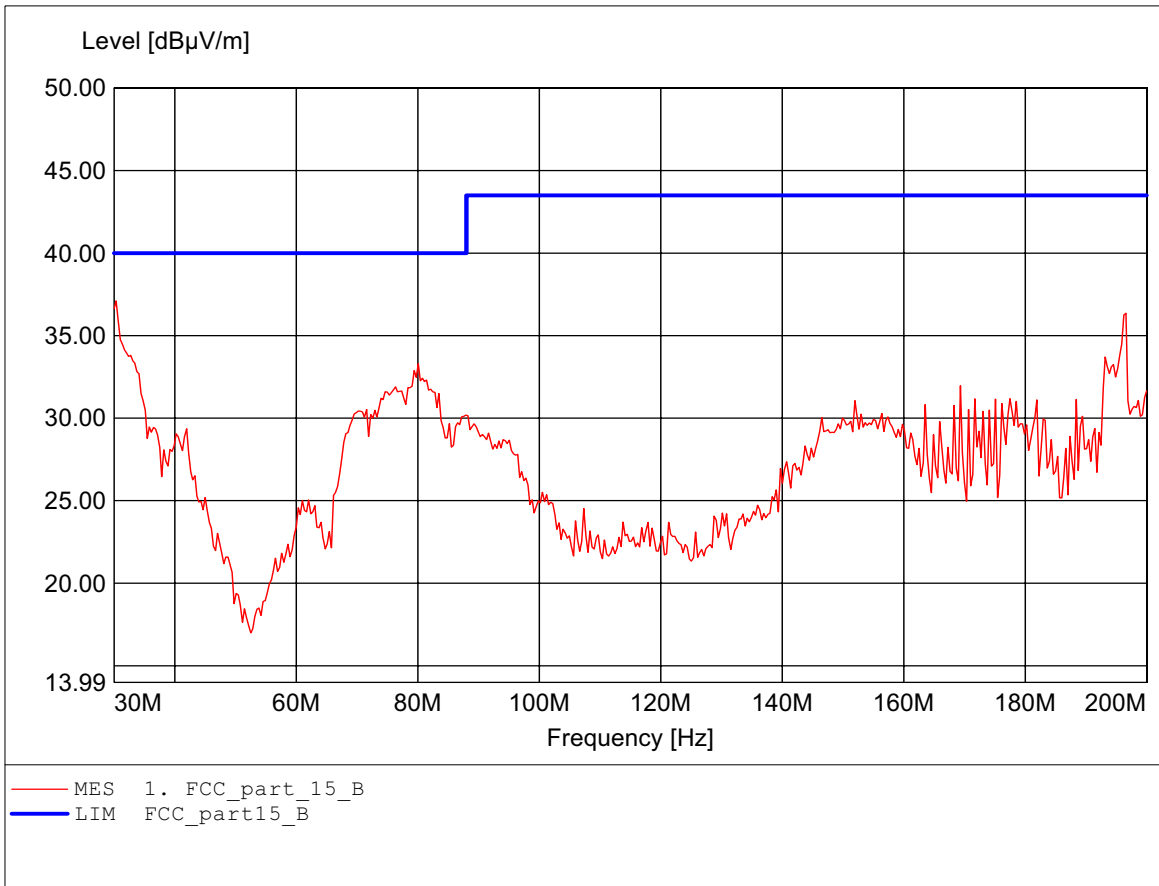
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq:195.230MHz Emax:34.73dBµV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

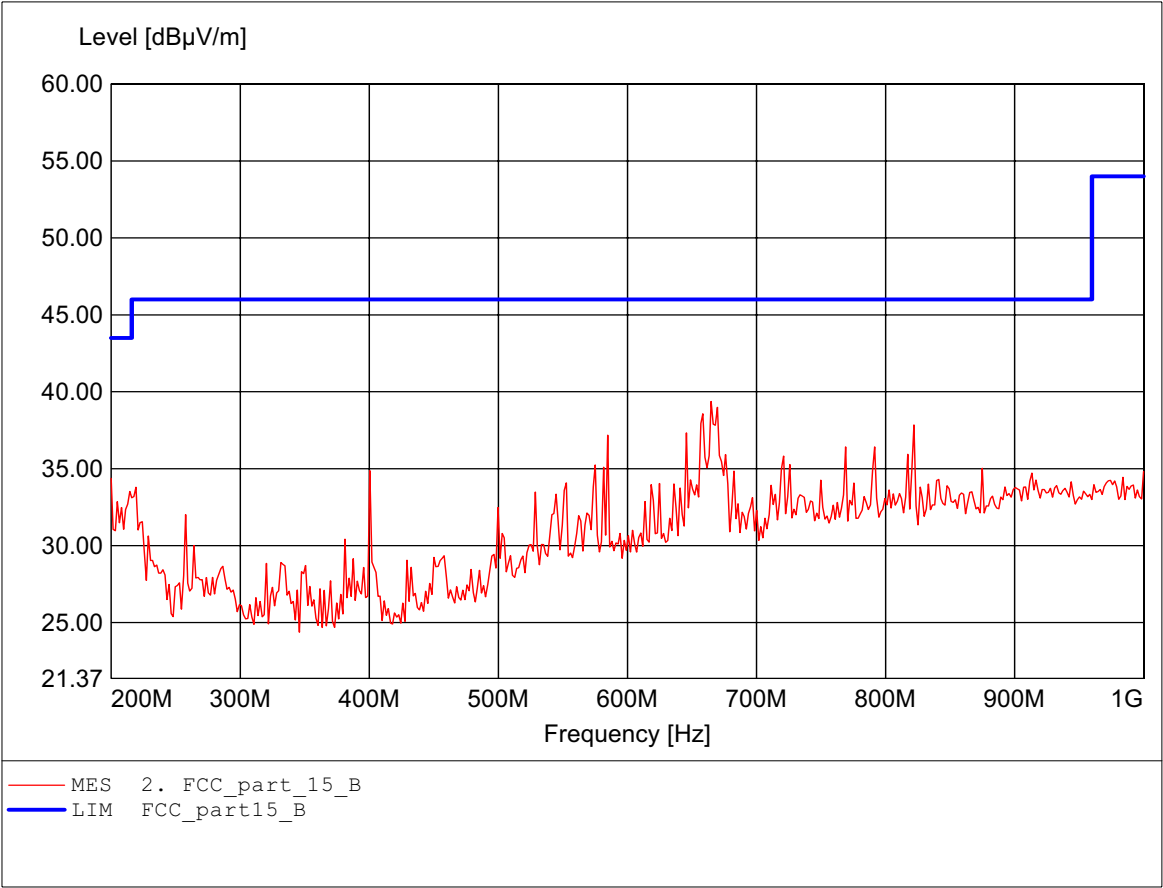
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HK 116  
Freq:30.341MHz Emax:37.11dBµV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.  
Freq:664.930MHz Emax:39.36dBµV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

Order Number : W6M20611-7543 ch78

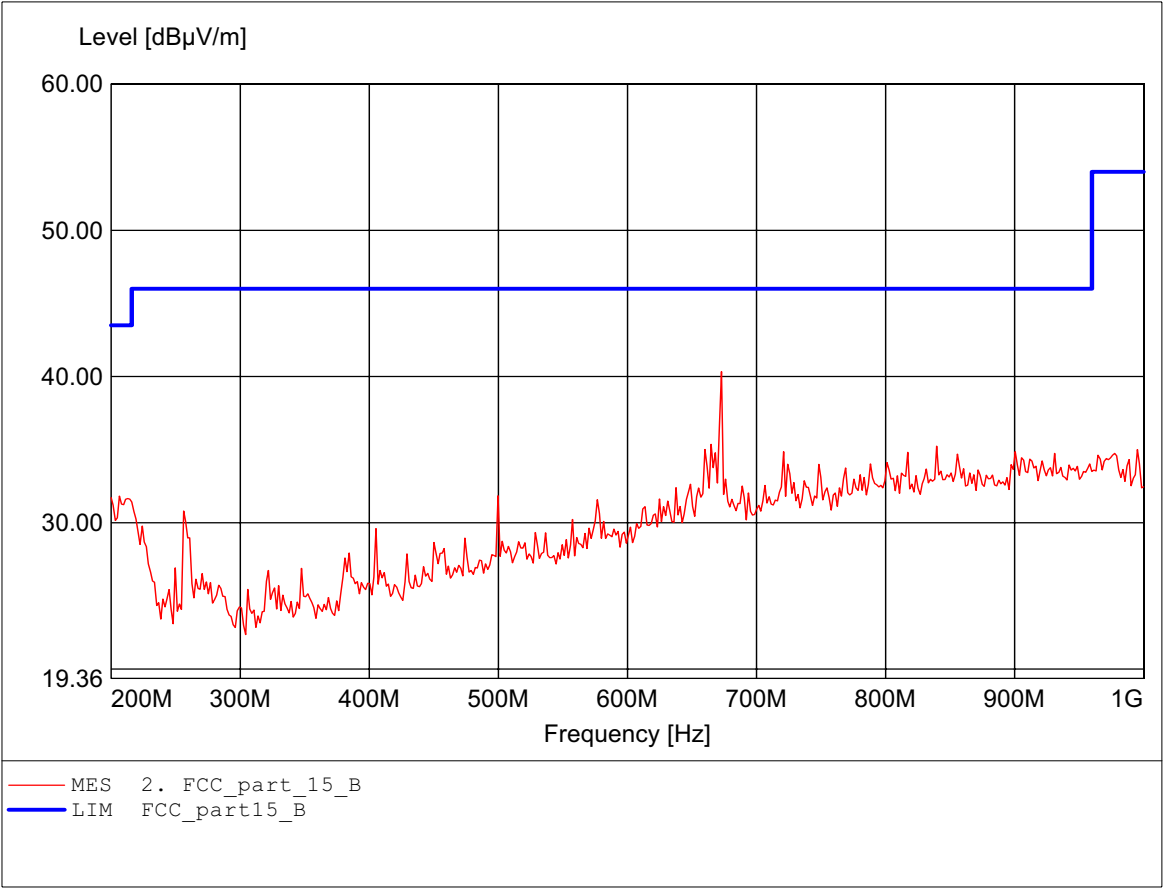
Test Site / Operator: ETS / Charles

Temp.: 23.9°C

according to subpart B

Comment 1: Dist.: 3m, Ant.: HL 223, ampl.

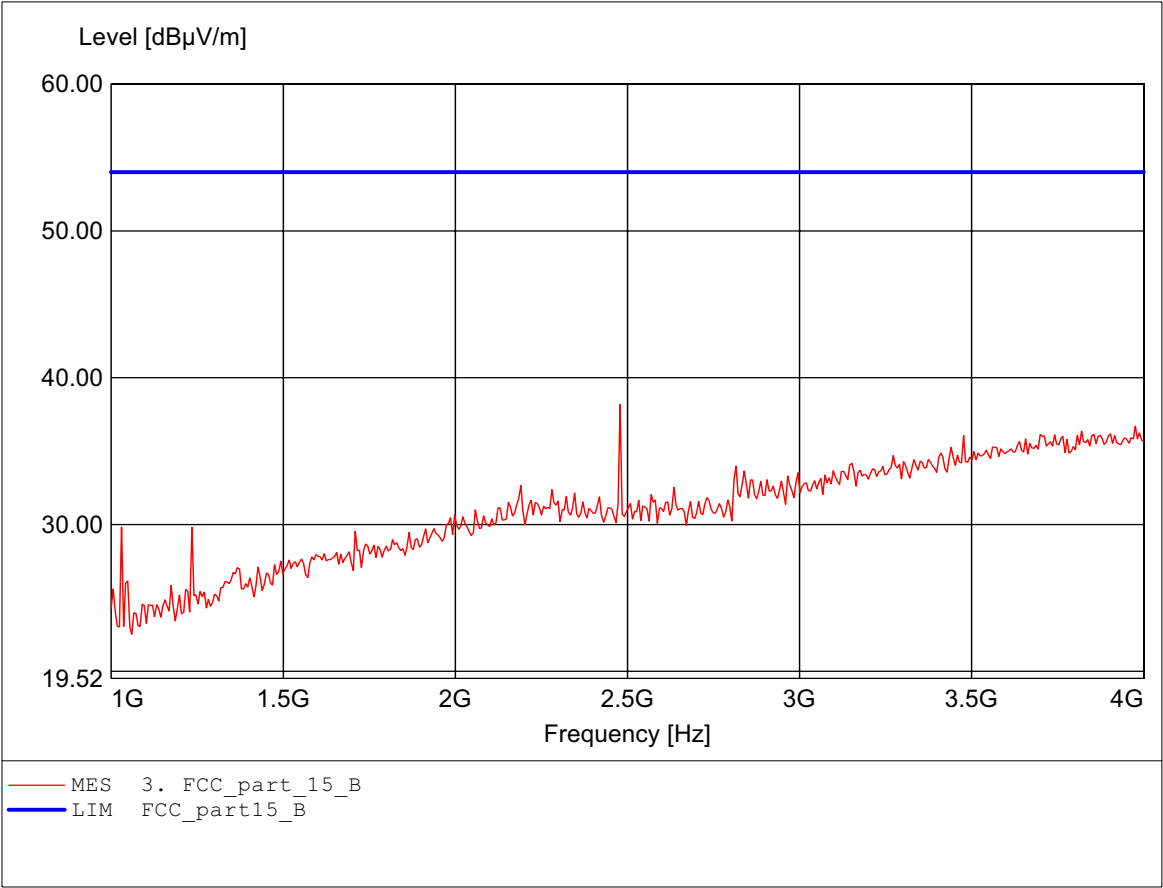
Freq:672.946MHz Emax:40.33dBμV/m RBW: 100 kHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

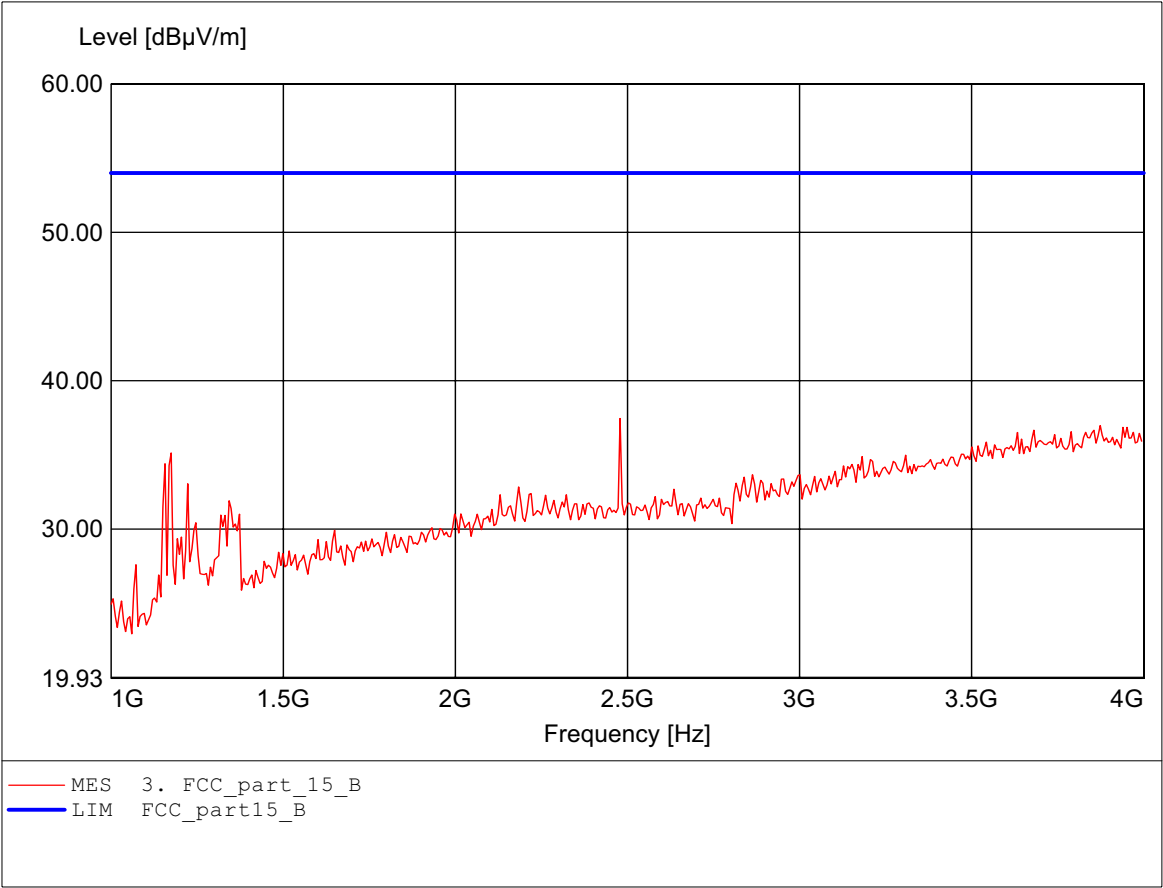
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:2.479GHz Emax:38.17dBμV/m RBW: 1 MHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

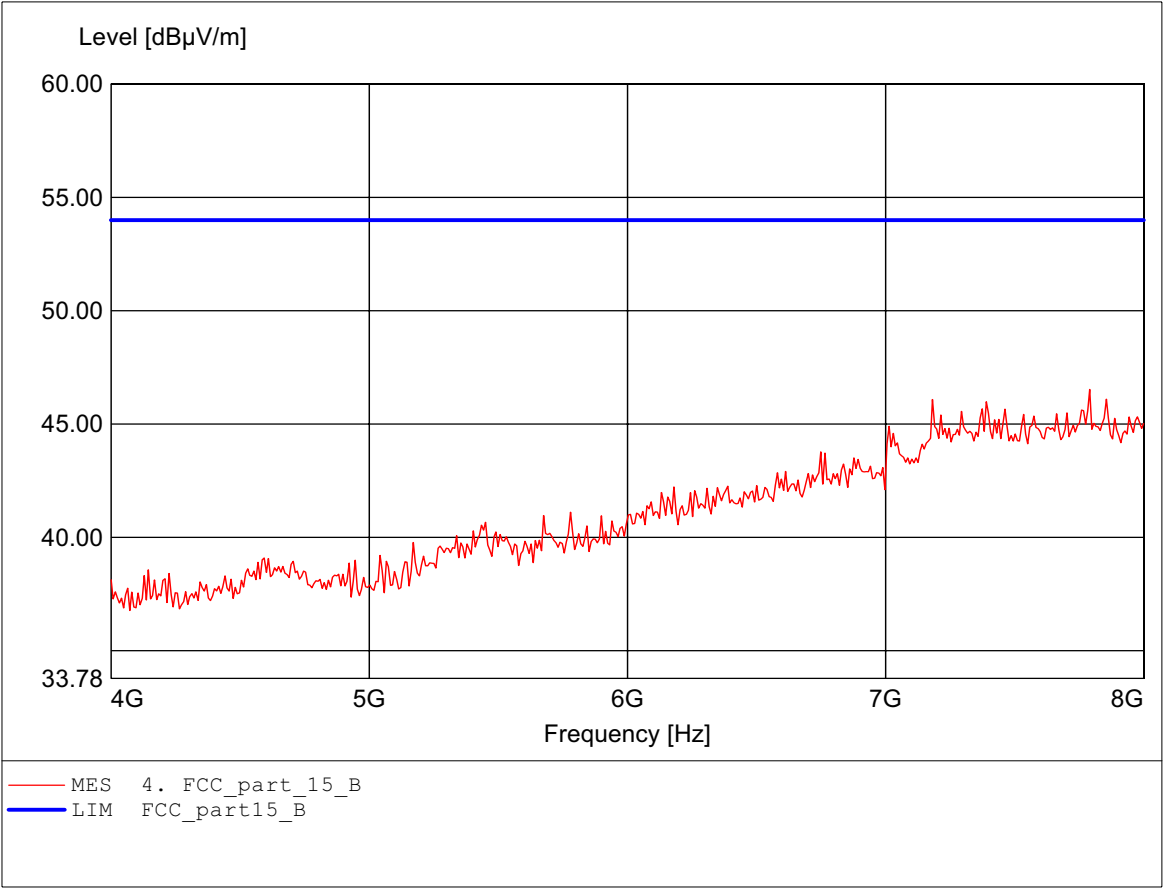
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:2.479GHz Emax:37.46dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:7.792GHz Emax:46.53dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

Order Number : W6M20611-7543 ch78

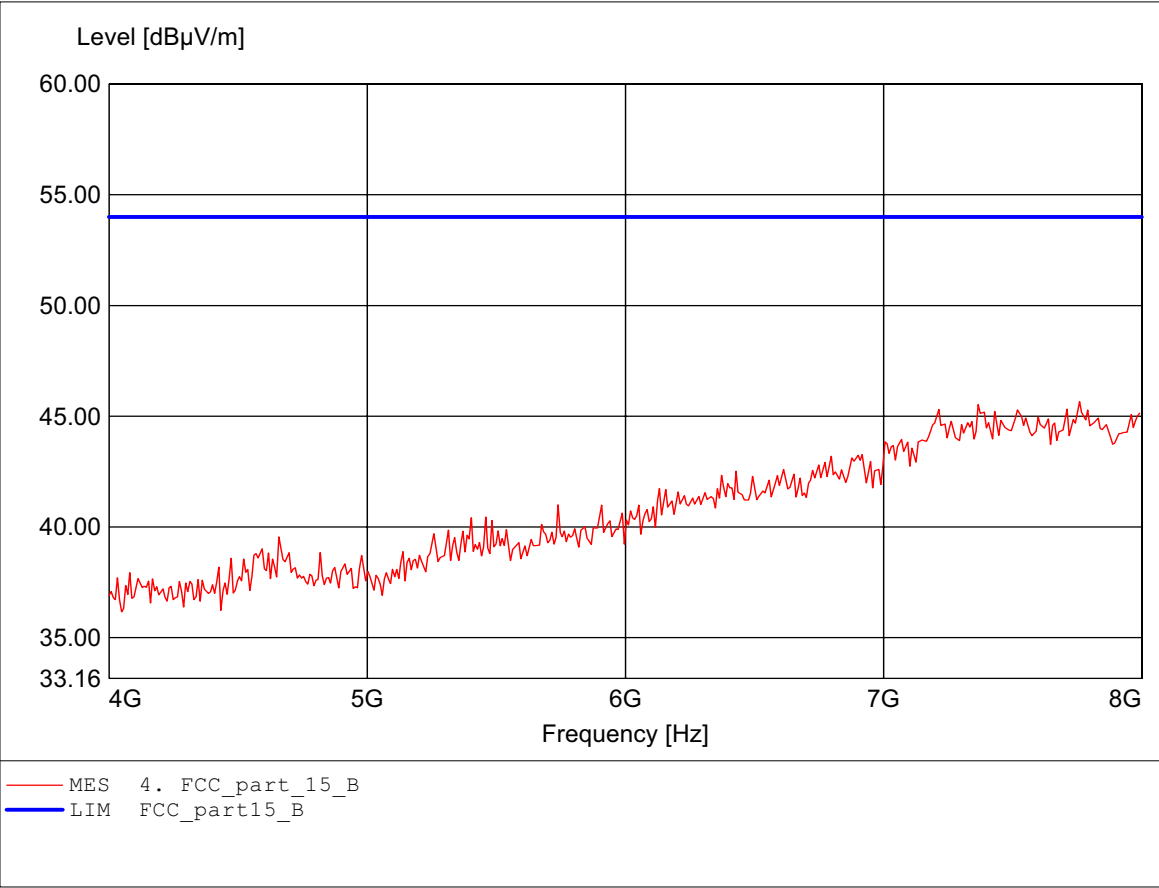
Test Site / Operator: ETS / Charles

Temp.: 23.9°C

according to subpart B

Comment 1: Dist.: 3m, Ant.: HL25, ampl.

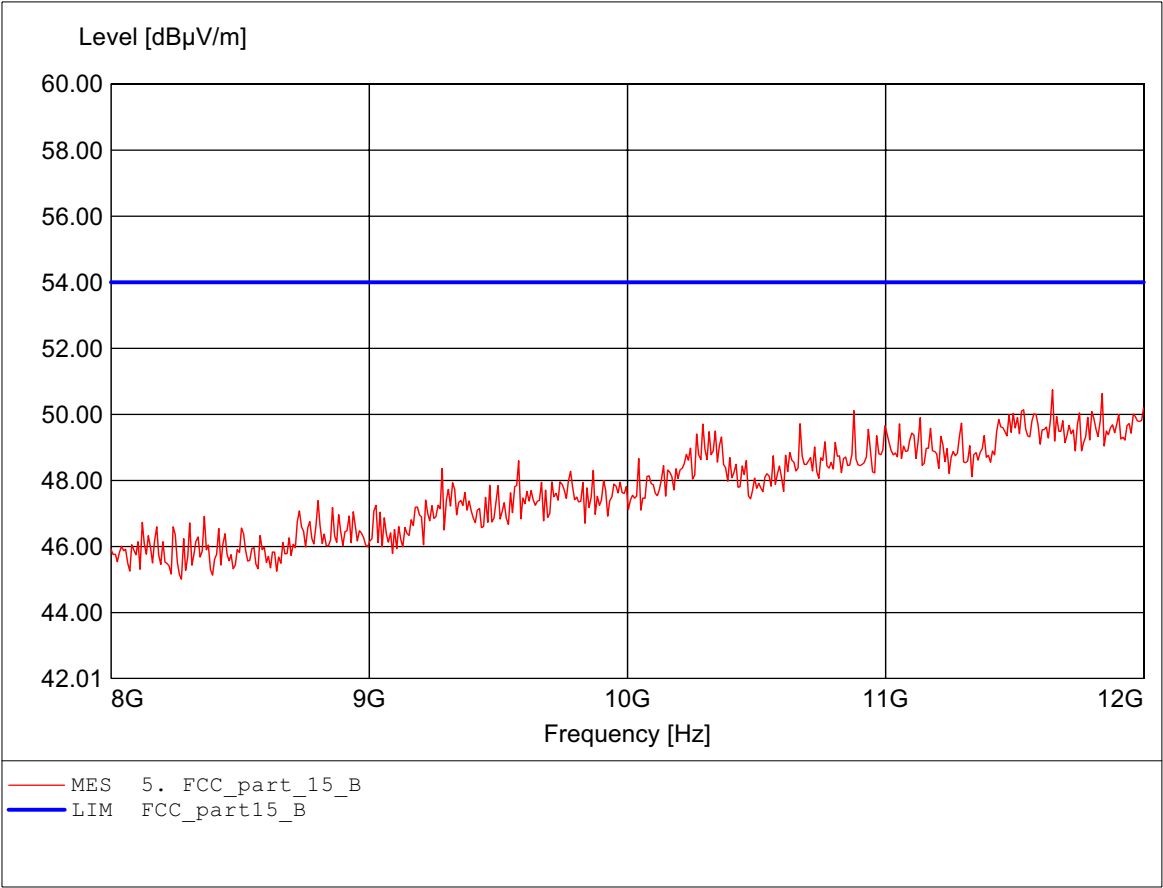
Freq:7.760GHz Emax:45.66dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:11.647GHz Emax:50.75dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

Order Number : W6M20611-7543 ch78

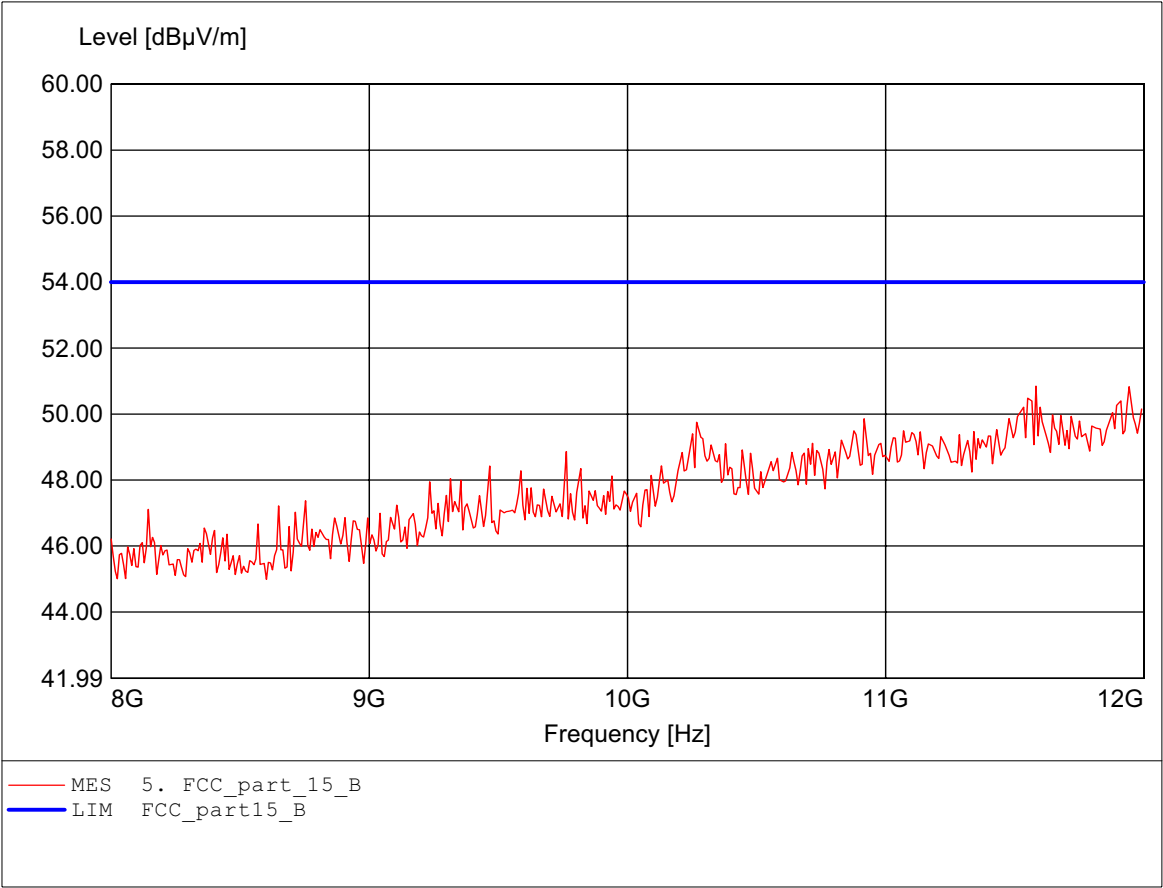
Test Site / Operator: ETS / Charles

Temp.: 23.9°C

according to subpart B

Comment 1: Dist.: 3m, Ant.: HL25, ampl.

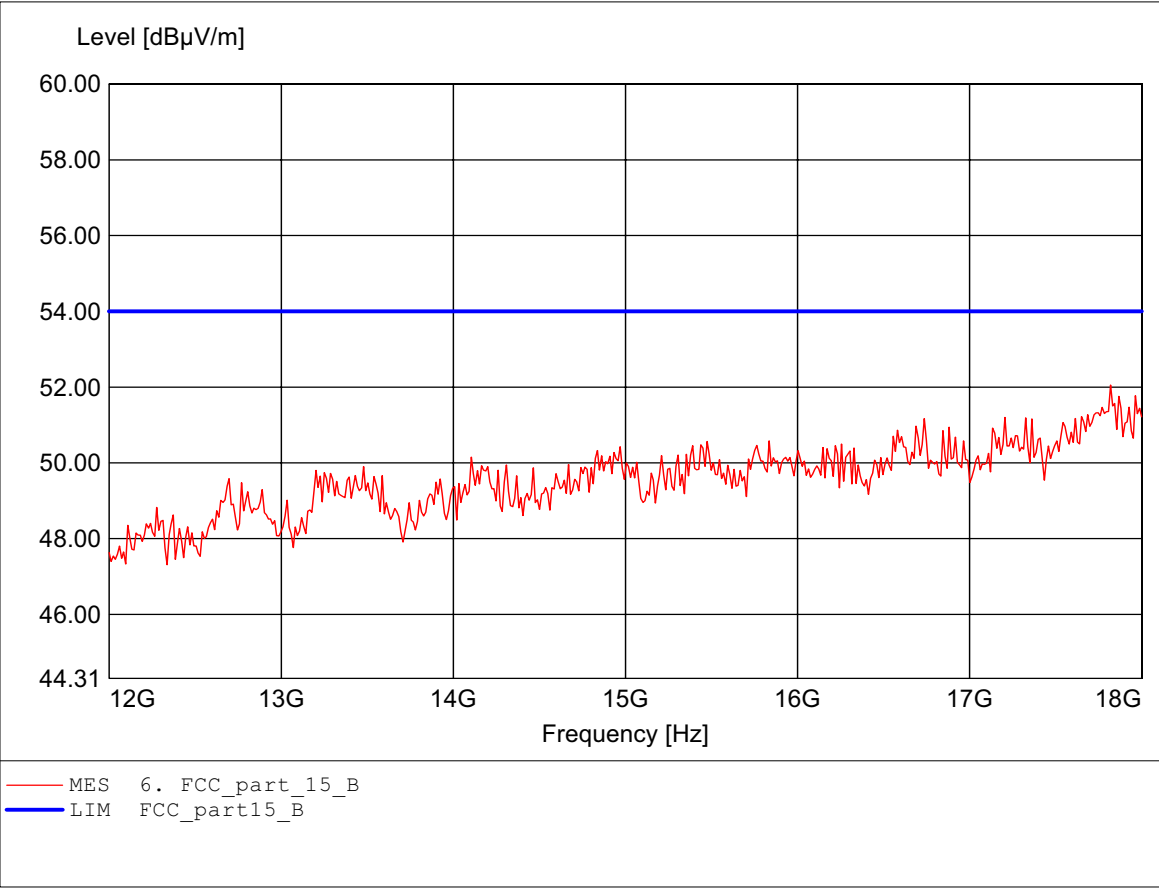
Freq:11.583GHz Emax:50.85dBμV/m RBW: 1 MHz



Field Strength under normal conditions

FCC RULES PART 15, SUBPART B

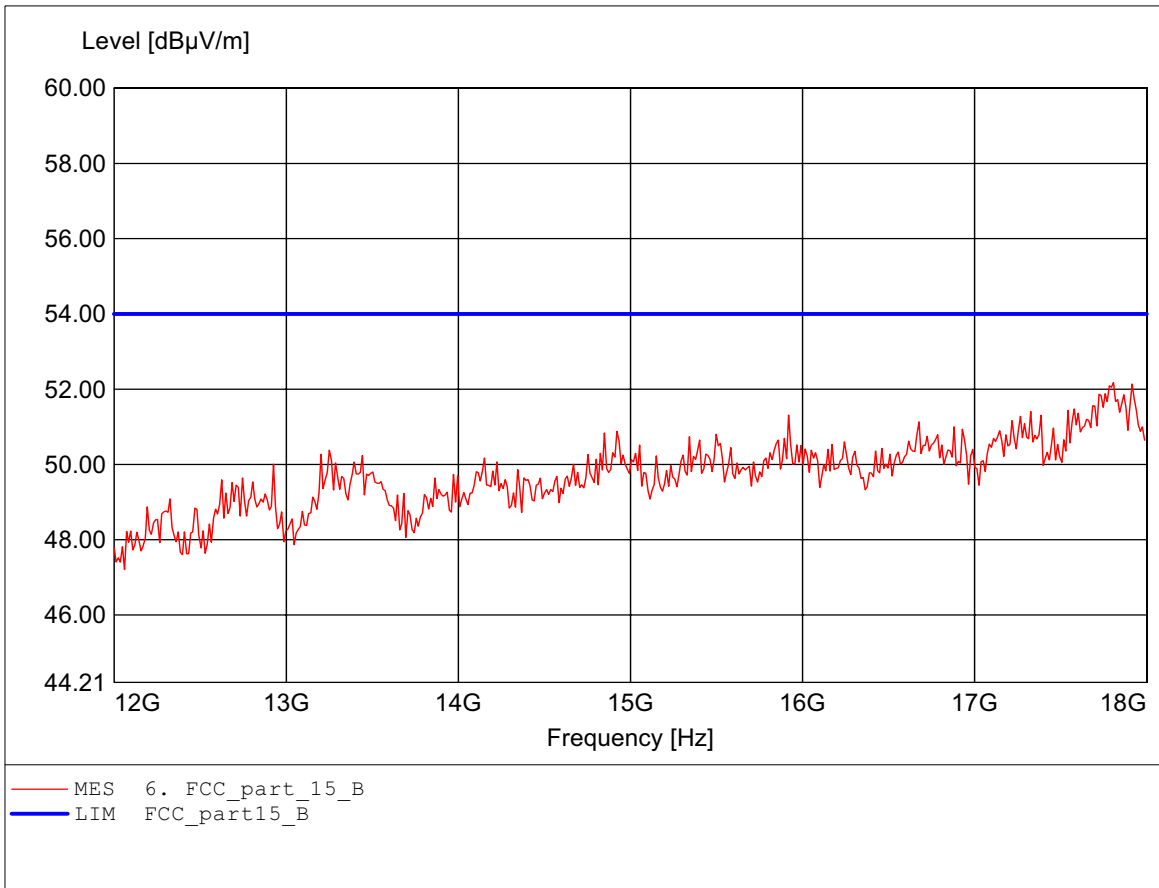
Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:17.820GHz Emax:52.06dBμV/m RBW: 1 MHz



**Field Strength under normal conditions**

**FCC RULES PART 15, SUBPART B**

Order Number : W6M20611-7543 ch78  
Test Site / Operator: ETS / Charles  
Temp.: 23.9°C  
according to subpart B  
Comment 1: Dist.: 3m, Ant.: HL25, ampl.  
Freq:17.808GHz Emax:52.18dBμV/m RBW: 1 MHz



Registration number: W6M20611-7543-P-15  
FCC ID : GX9BTX

## **Appendix I**

### Pictures