FCC Test Report

FCC Part 15.247 for FHSS systems/ CANADA RSS-210

FOR:

VX3X Vehicle Mount Computer
MX3X Handheld Computer

125 Technology Parkway
Norcross, GA 30092
U.S.A

FCC ID: KDZLXE4830P
IC ID: 1995B-4830

TEST REPORT #: EMC_LXEIN_005_07002_15.247WLAN_VX3X_MX3X
DATE: 2007-11-29

ACCREDITED
Certificate # 2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

FCC listed
A2LA Accredited

IC recognized # 3462B

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecomusa.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

TABLE OF CONTENTS

1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.247 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS210.

Company	Description	Model #
LXE Inc.	**Vehicle Mount Computer / Handheld Computer**	**VX3X, MX3X**

Technical responsibility for area of testing:

Date	Section	Name	Signature
2007-11-29	EMC & Radio	Jusn Martinez (EMC Project Engineer)	Juan Martinez I am approving this document

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. 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 CETECOM Inc USA.

This report is prepared by:

Date	Section	Name	Signature
2007-11-29	EMC & Radio	Peter Mu (EMC Project Engineer)	 I am the author of this document

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	**CETECOM Inc.**
Department:	**EMC**
Address:	**411 Dixon Landing Road Milpitas, CA 95035 U.S.A.**
Telephone:	**+1 (408) 586 6200**
Fax:	**+1 (408) 586 6299**
Responsible Test Lab Manager:	**Lothar Schmidt**
Responsible Project Leader:	**Peter Mu**
Date of test:	**2007-9-18 to 2007-10-15**

2.2 Identification of the Client

APPLICANT	
Applicant (Company Name)	**LXE, Inc**
Street Address	**125 Technology Parkway**
City/Zip Code	**Norcross, Georgia, US 30092**
Country	**USA**
Contact Person	**Cyril Binnom Jr.**
Telephone	**(770) 447-4224 x3240**
Fax	**(770) 447-6928**
e-mail	**Binnom_c@lxe.com**

2.3 Identification of the Manufacturer

MANUFACTURER	
Manufacturer	**LXE, Inc**
Street Address	**125 Technology Parkway**
City/Zip Code	**Norcross, Georgia, US 30092**
Country	**U.S.A**

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	**VX3X, MX3X**
Description:	**Vehicle Mount Computer / Handheld Computer**
Model No:	**VX3X, MX3X**
Antenna Type:	**0 dBi**
Type(s) of Modulation:	**CCK, OFDM**
Frequency Band(s) of Operation:	**2412~2462MHz**
Numbers of Channels:	**11**
Equipment Classification: (CLASS)	☐FIXED ■VEHICULAR ☐PORTABLE ☐MODULE
Equipment Classification: (POWER(AC MAINS))	☐230VAC *(GROUND)* ☐230VAC *(NO GROUND)* ■10.8VDC ☐ 24VDC

3.2 Identification of the Equipment Under Test (EUT)

EUT #	TYPE	MANF.	MODEL	SERIAL #
1	EUT	**LXE Inc**	**VX3X**	001
2	EUT	**LXE Inc**	**MX3X**	001

3.3 Identification of Accessory equipment

AE #	TYPE	MANF.	MODEL	SERIAL #
1	VX3X AC/DC Adaptor	GLOBTEK, INC	GT-21089-1512-T3	RoHS01366615/06
2	MX3X AC/DC Adaptor	GLOBTEK, INC	GT-21089-1512-T3	RoHS01780318/06

4 Subject Of Investigation

This test report is to support the class II permissive change to add the stated hosts to the FCC approved WLAN module under FCC I: KDZLXE4830P. All testing was performed on the product referred to in Section 3 as EUT. This test report contains full radiated testing as per FCC15.247 on the EUT with the WLAN module. For conducted measurement results please refer to the conducted test report in the original filing of the module.

Transmitter Radiated Spurious Emission testing were done on both the VX3X and the MX3X model with both WLAN and BT module transmitting at the same time. The results show that the MX3X model with the internal integrated keyboard has worse-case emission signature. Furthermore, the WLAN modules themselves used in the two models are identical and have been approved by the FCC and Industry Canada. Therefore radiated measurements are done on the MX3X model and apply to both models.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS210. The maximization of portable equipment is conducted in accordance with ANSI C63.4.

5 Measurements (Radiated)

5.1 MAXIMUM PEAK OUTPUT POWER

EIRP 802.11b

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2412	2437	2462
T_{nom}(23)°C	V_{nom}VDC	19.71	19.50	18.06
Measurement uncertainty		±0.5dBm		

EIRP: 802.11g

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2412	2437	2462
T_{nom}(23)°C	V_{nom}VDC	23.32	23.65	23.12
Measurement uncertainty		±0.5dBm		

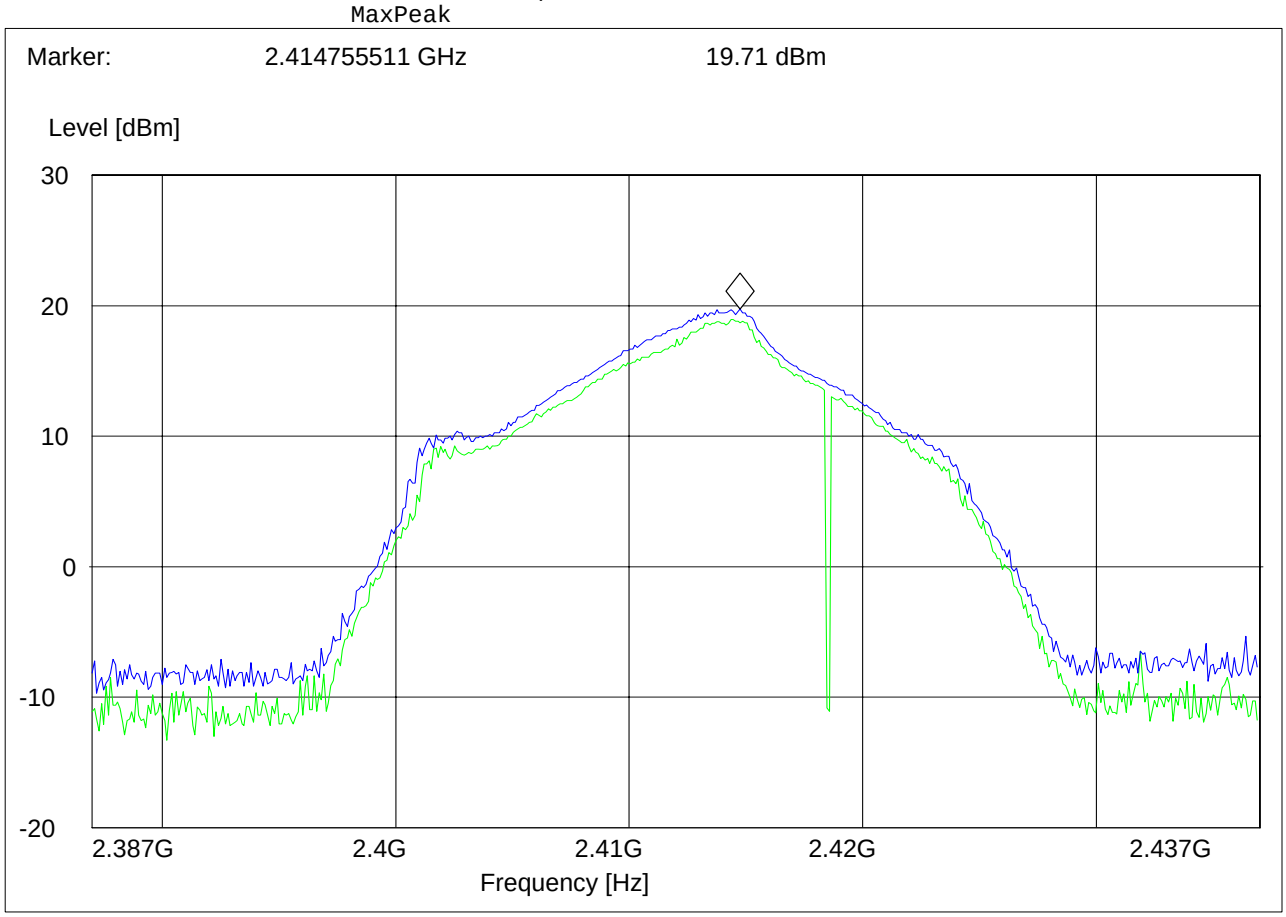
EIRP LOW CHANNEL-802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "EIRP RLAN CH1"

Short Description: EIRP RLAN channel-2412 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.4 GHz	MaxPeak MaxPeak	Coupled	10 MHz	DUMMY-DBM



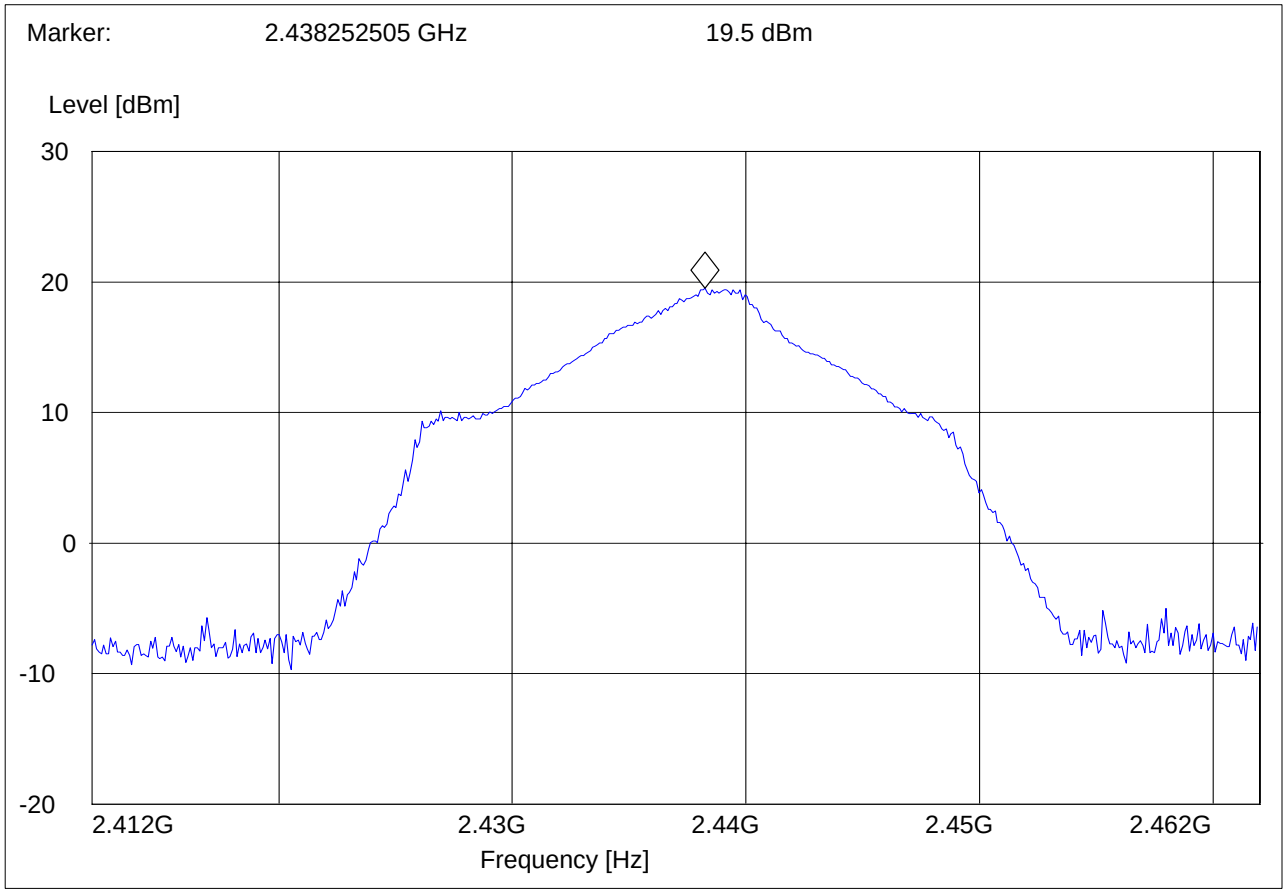
EIRP MIDDLE CHANNEL-802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "EIRP RLAN CH6"

Short Description: EIRP RLAN channel-2437 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.5 GHz	MaxPeak MaxPeak	Coupled	10 MHz	DUMMY-DBM



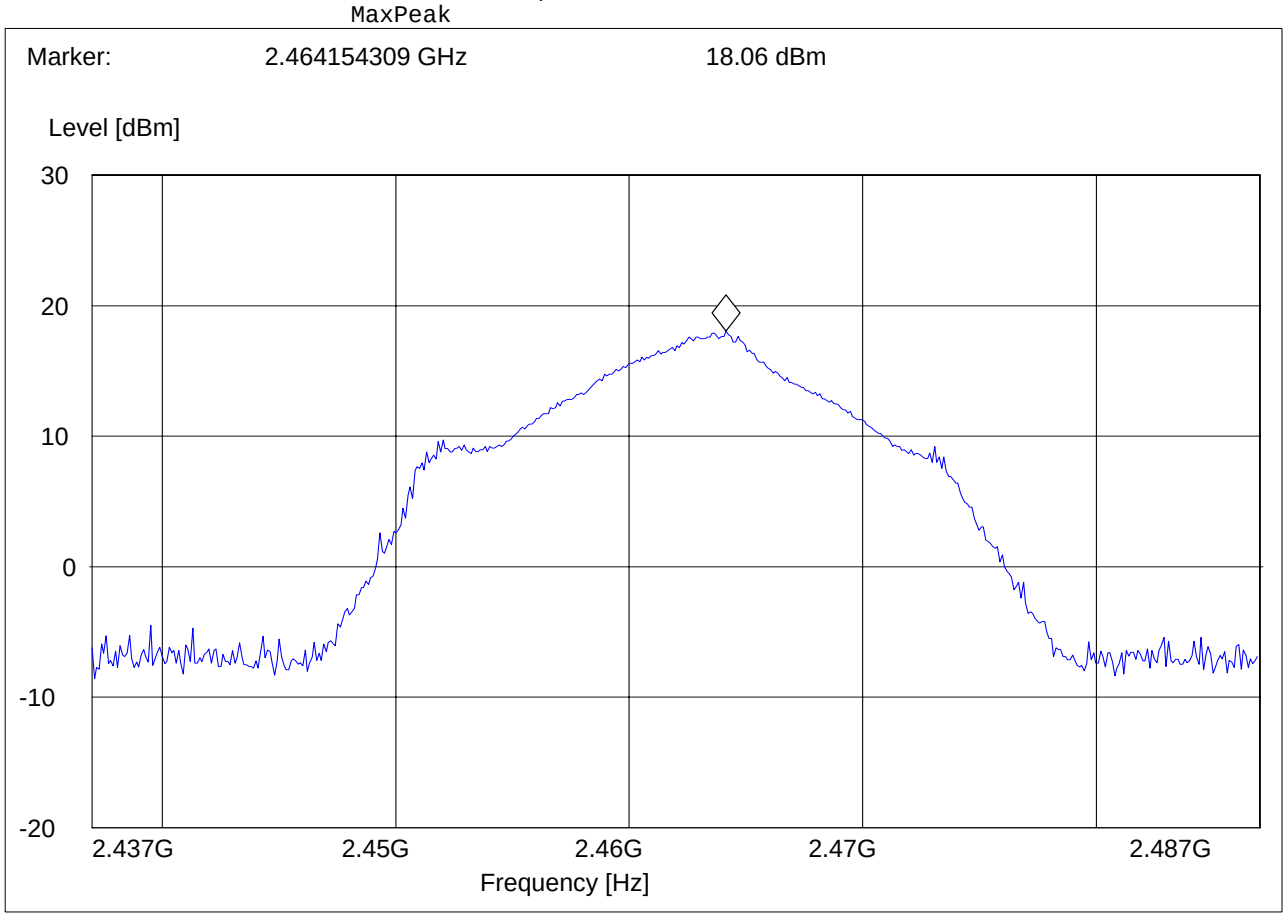
EIRP HIGH CHANNEL- 802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "EIRP RLAN CH11"

Short Description: EIRP RLAN channel-2462 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.5 GHz	MaxPeak MaxPeak	Coupled	10 MHz	DUMMY-DBM



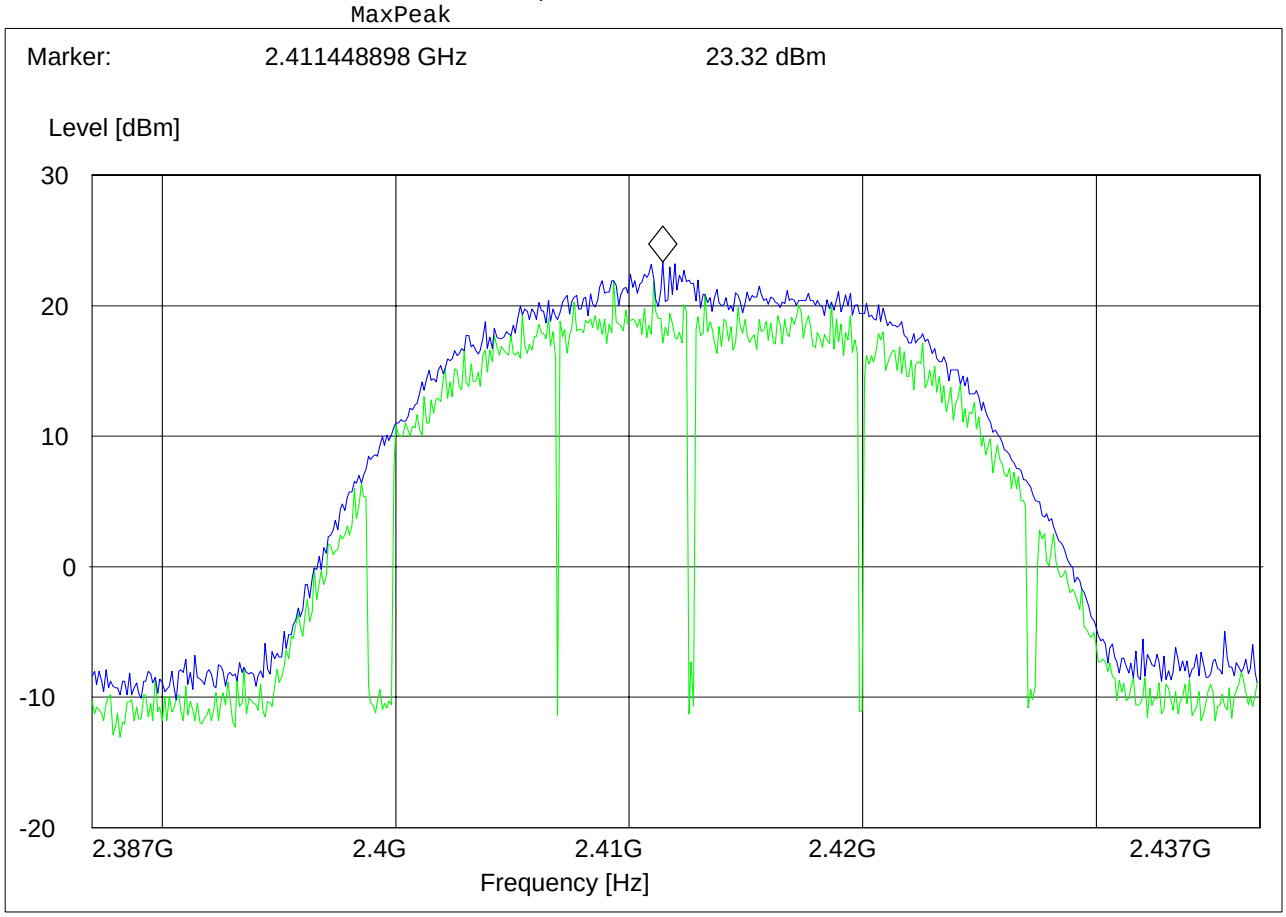
EIRP LOW CHANNEL- 802.11g

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11G
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT254°

SWEEP TABLE: "EIRP RLAN CH1"

Short Description: EIRP RLAN channel-2412 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.4 GHz	MaxPeak MaxPeak	Coupled	10 MHz	DUMMY-DBM



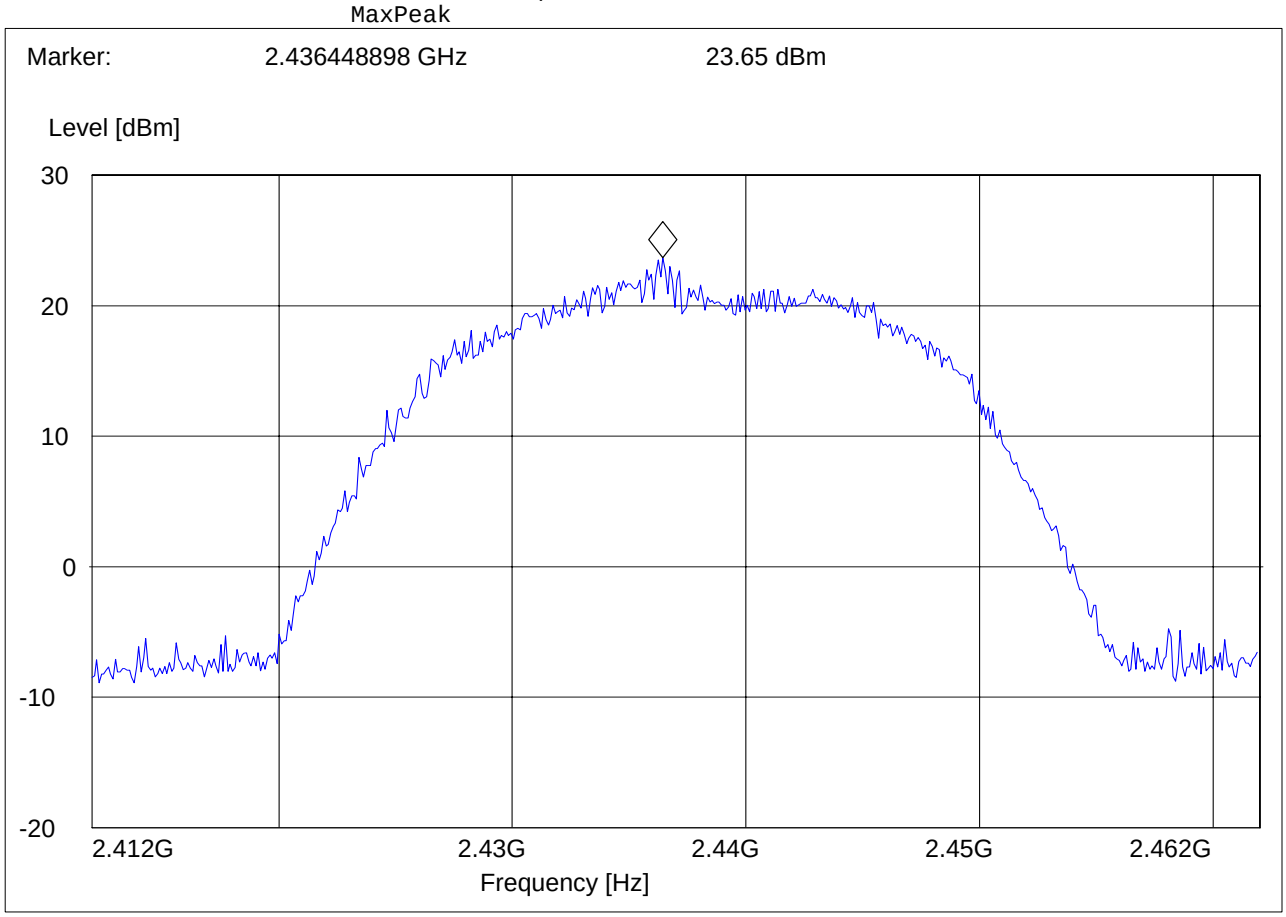
EIRP MIDDLE CHANNEL- 802.11g

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11G
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "EIRP RLAN CH6"

Short Description: EIRP RLAN channel-2437 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.5 GHz	MaxPeak MaxPeak	Coupled	10 MHz	DUMMY-DBM



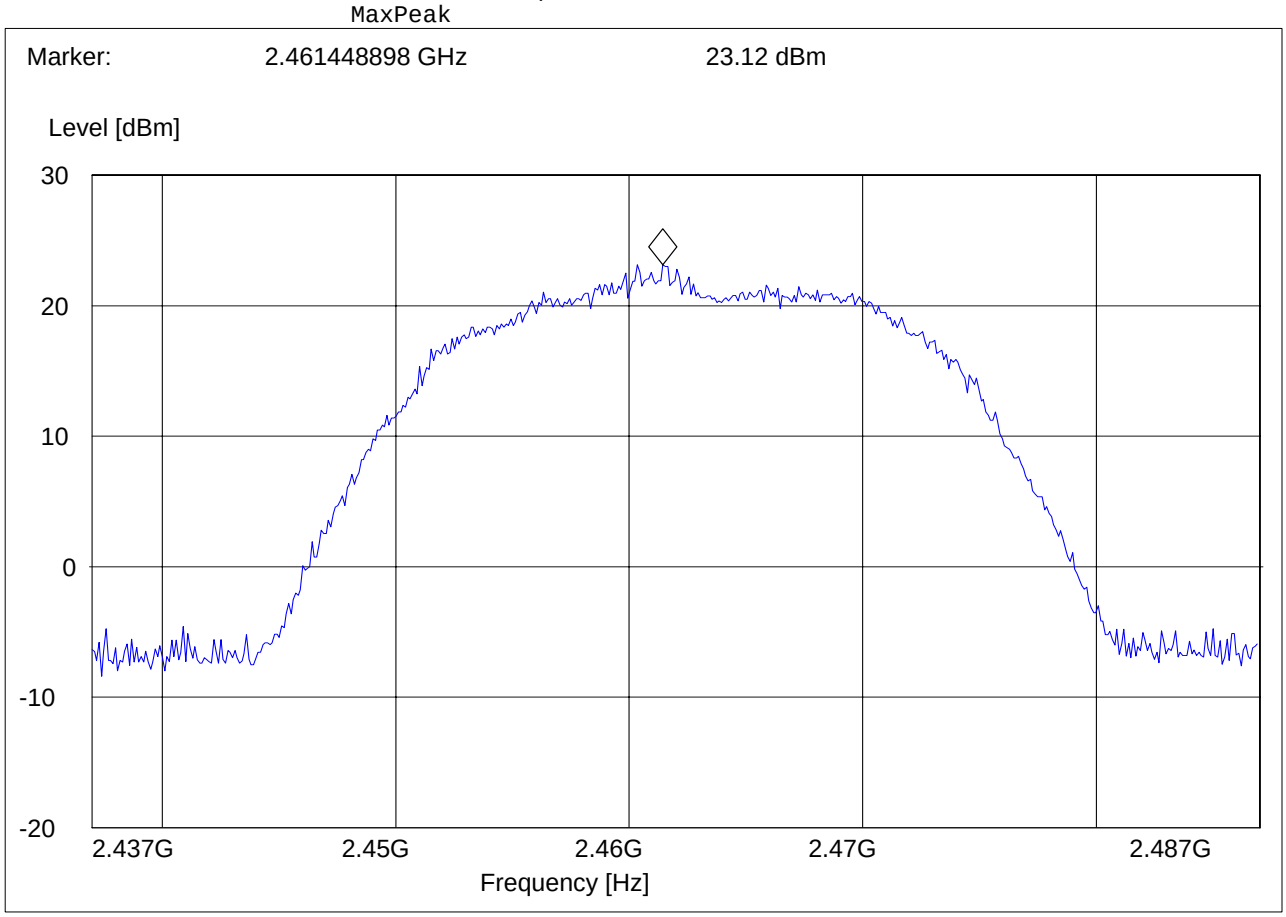
EIRP HIGH CHANNEL- 802.11g

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11G
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "EIRP RLAN CH11"

Short Description: EIRP RLAN channel-2462 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.4 GHz	2.5 GHz	MaxPeak MaxPeak	Coupled	10 MHz	DUMMY-DBM



5.2 RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.247/15.205

5.2.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**
***AVG. LIMIT= 54dBuV/m**

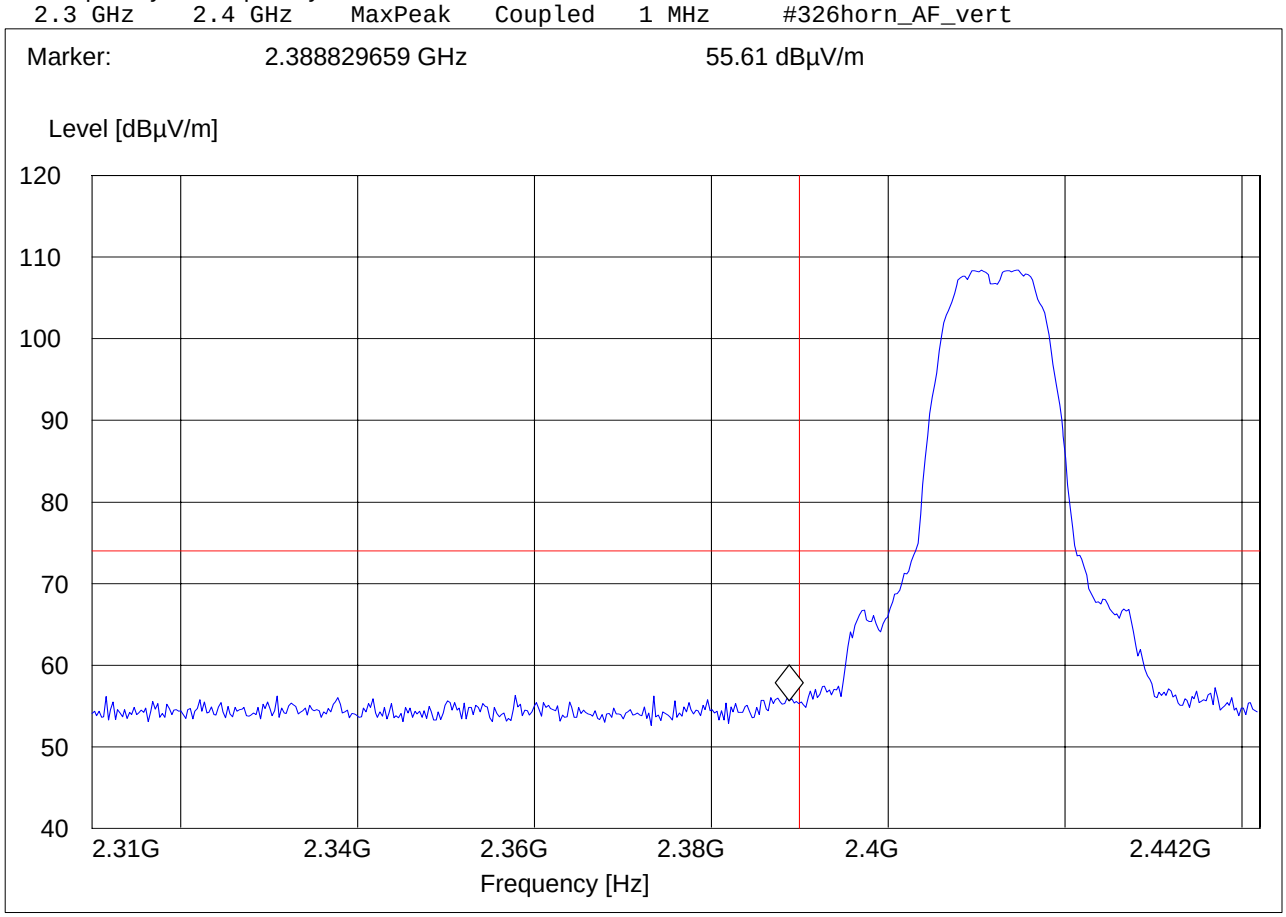
5.2.2 RESULTS: 802.11b

(2412MHz) LOWER BAND EDGE PEAK – 802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

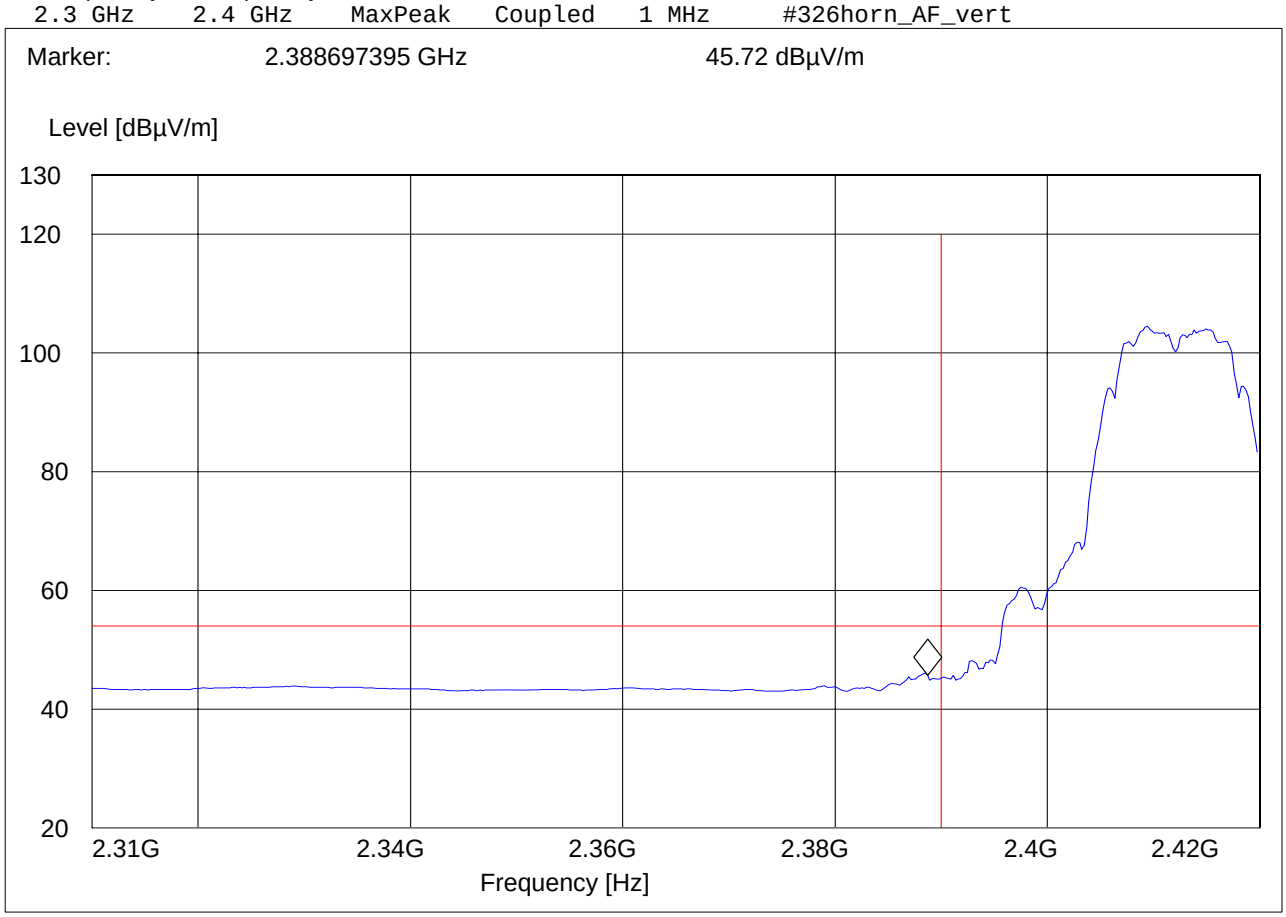


(2412MHz) LOWER BAND EDGE AVERAGE – 802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

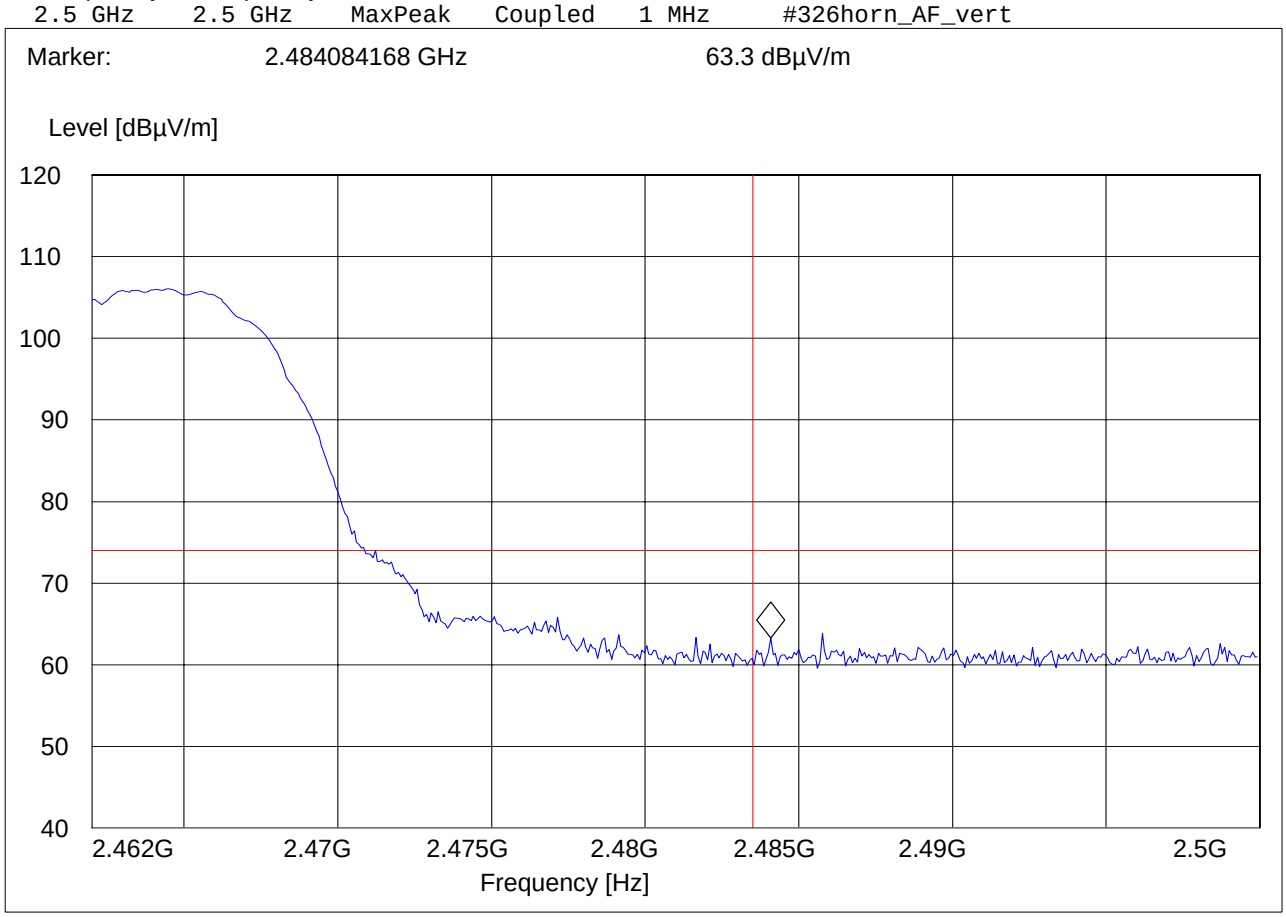


(2462MHz) HIGHER BAND EDGE PEAK -802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

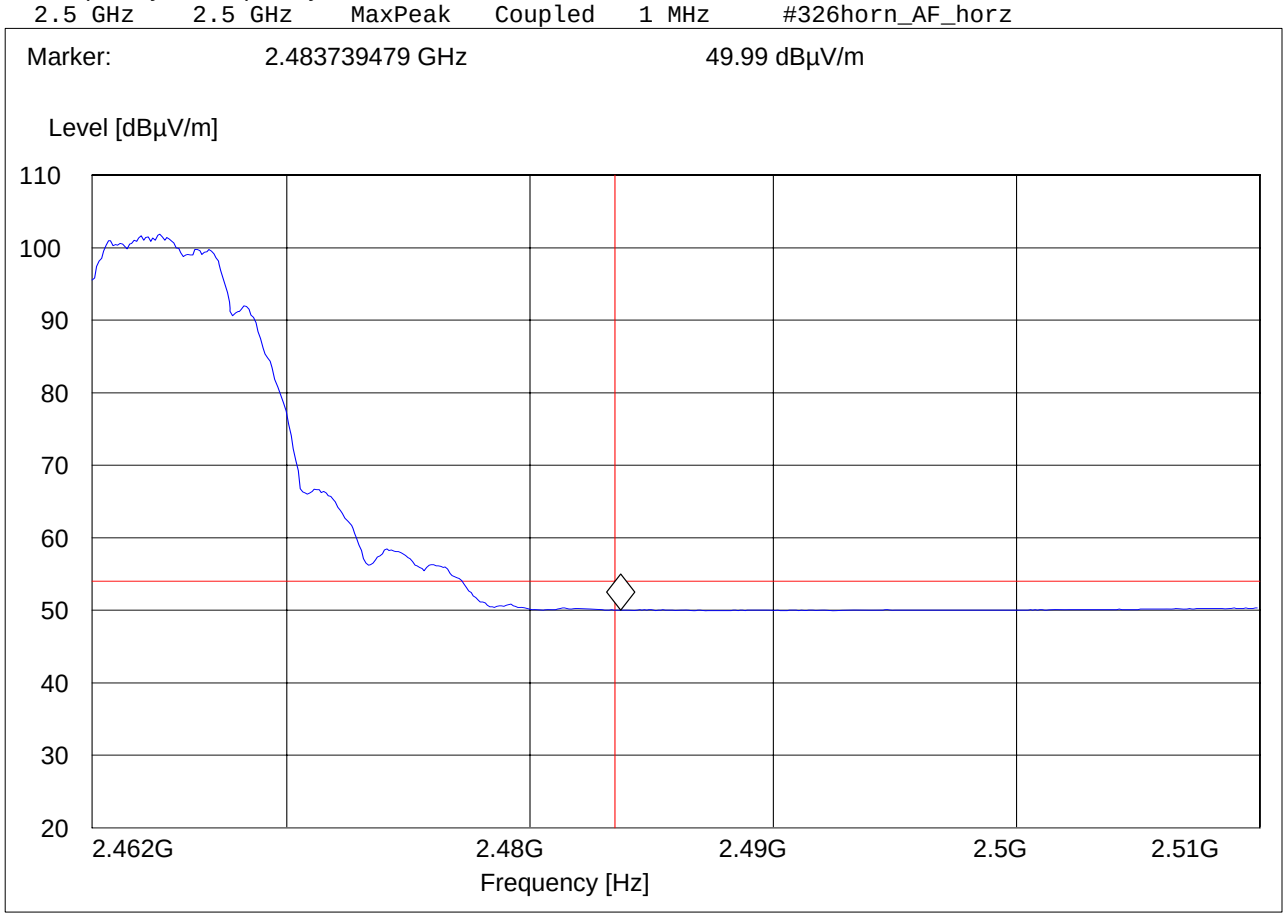


(2462MHz)HIGHER BAND EDGE AVERAGE-802.11b

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11B
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



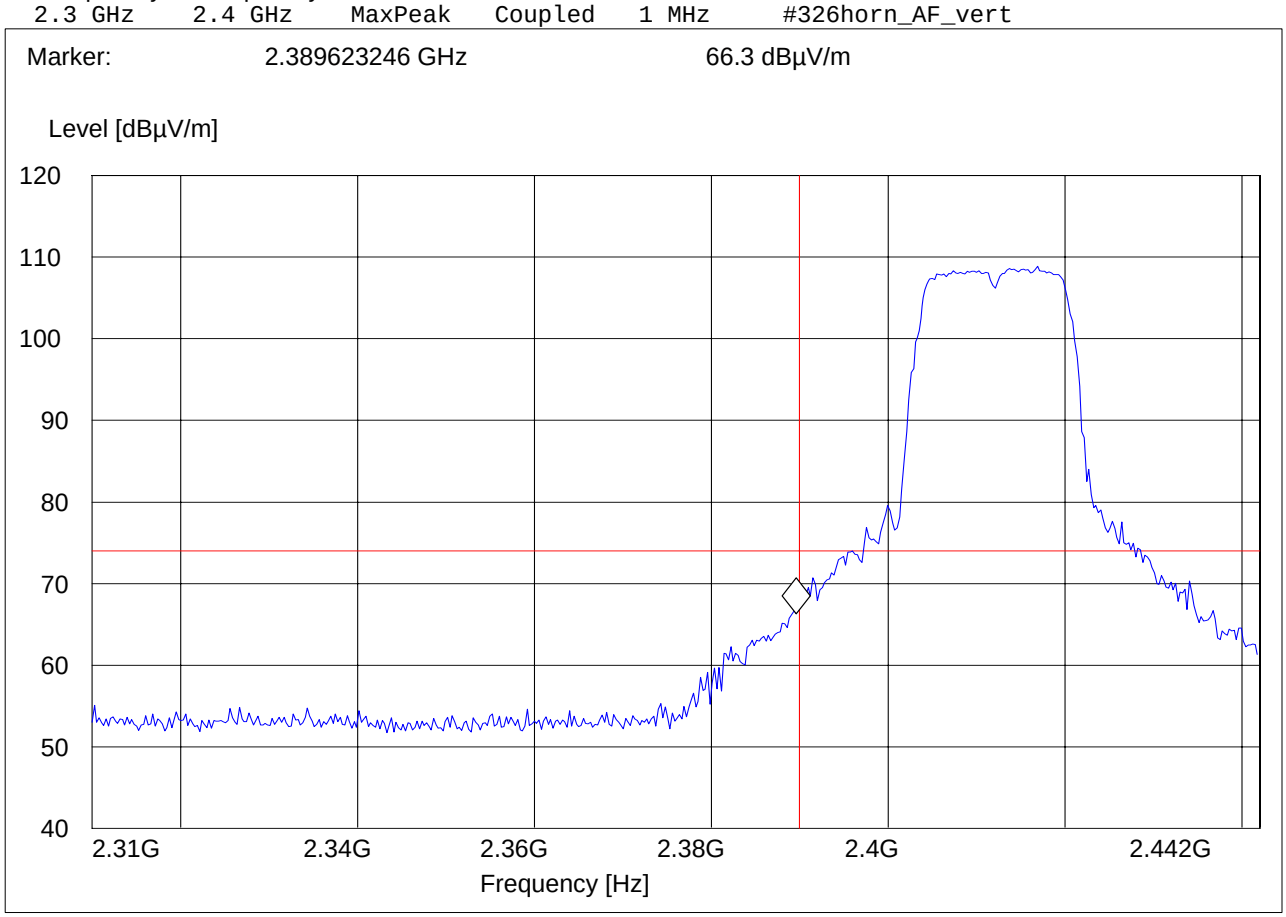
5.2.3 RESULTS: 802.11g

(2412MHz) LOWER BAND EDGE PEAK – 802.11g

```
EUT:              MX3X
Customer::        LXE
Test Mode:        WLAN 802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    Peter
Voltage:          Battery
Comments:         TT264°
```

SWEEP TABLE: "FCC15.247 LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

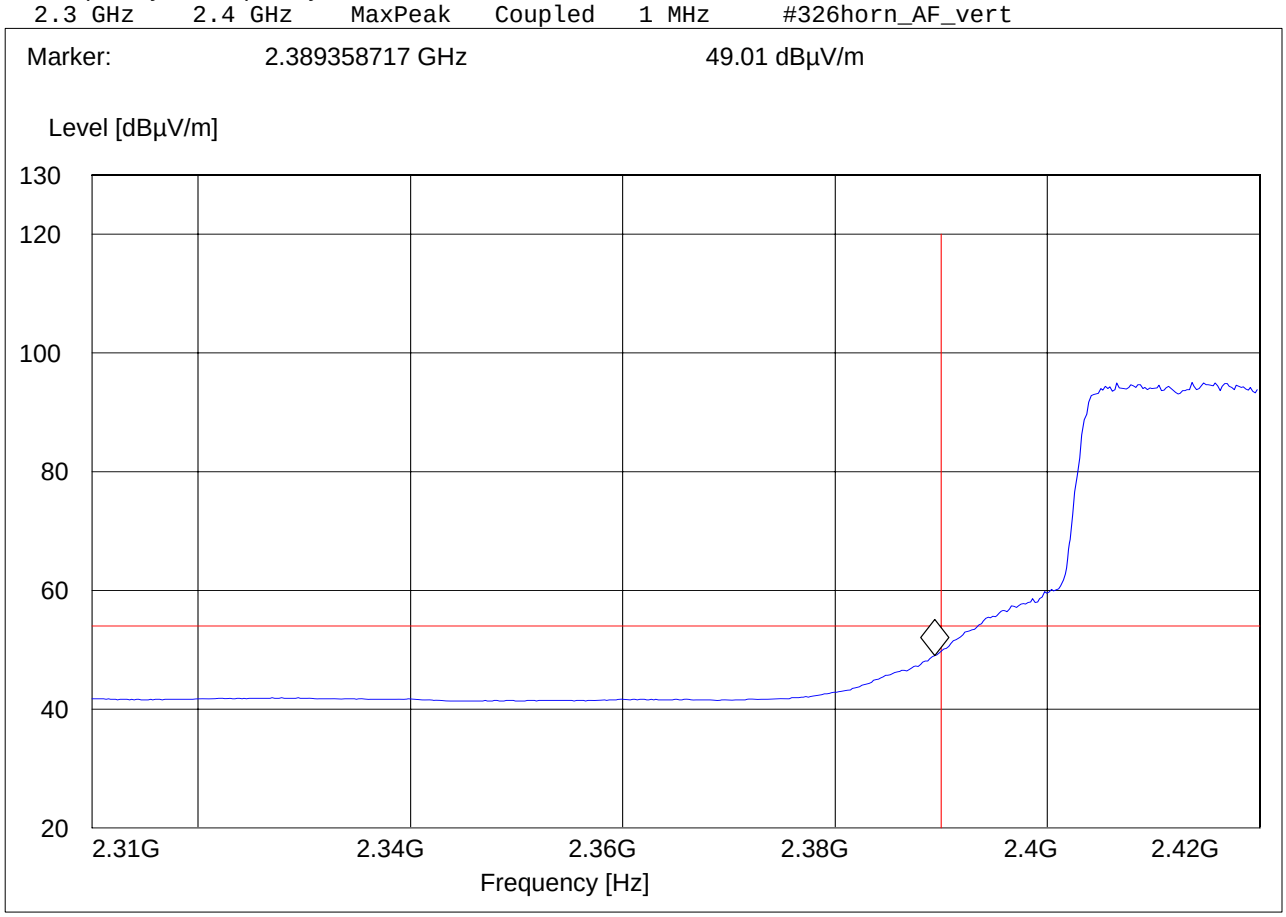


(2412MHz) LOWER BAND EDGE AVERAGE -802.11g

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11G
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

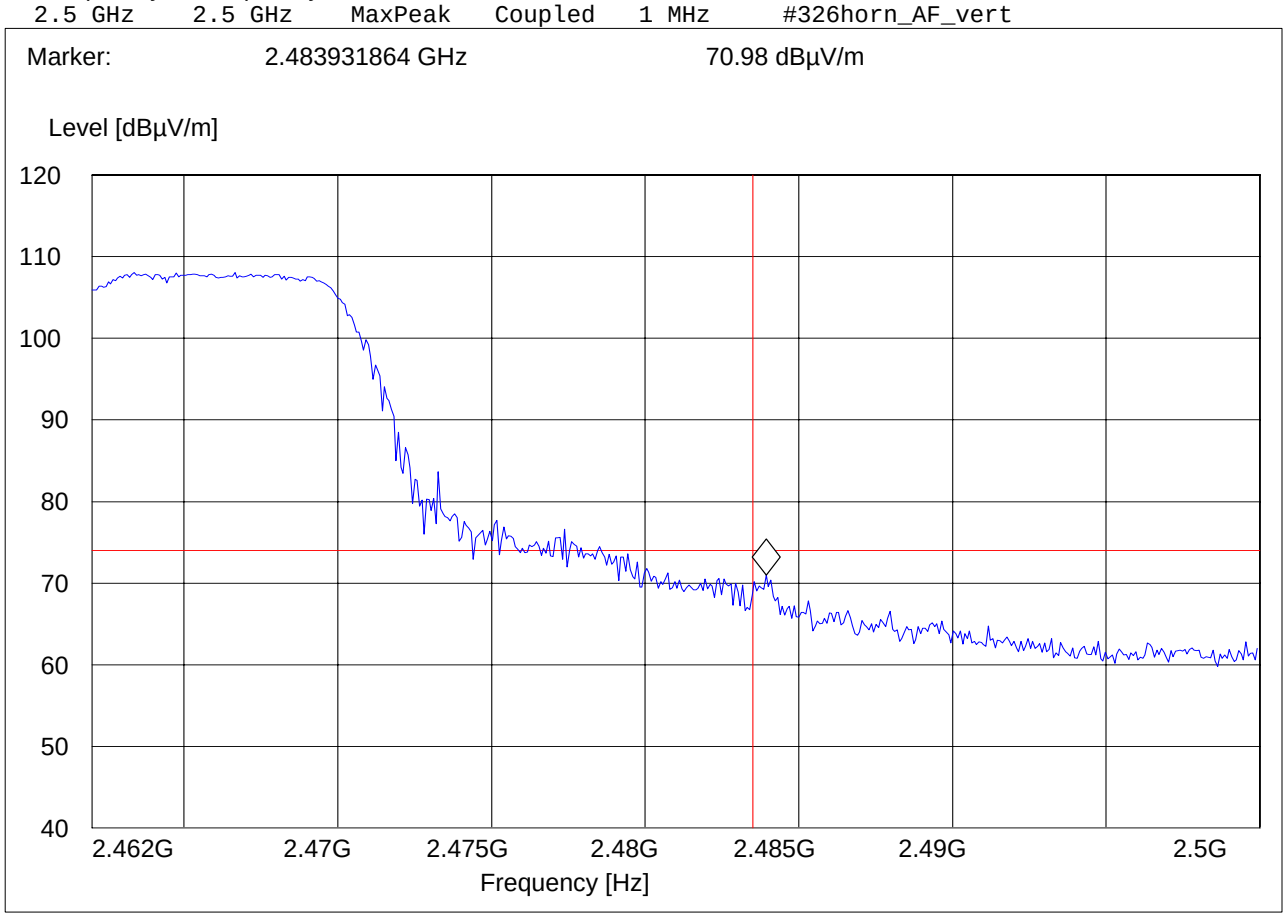


(2462MHz) HIGHER BAND EDGE PEAK -802.11g

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11G
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

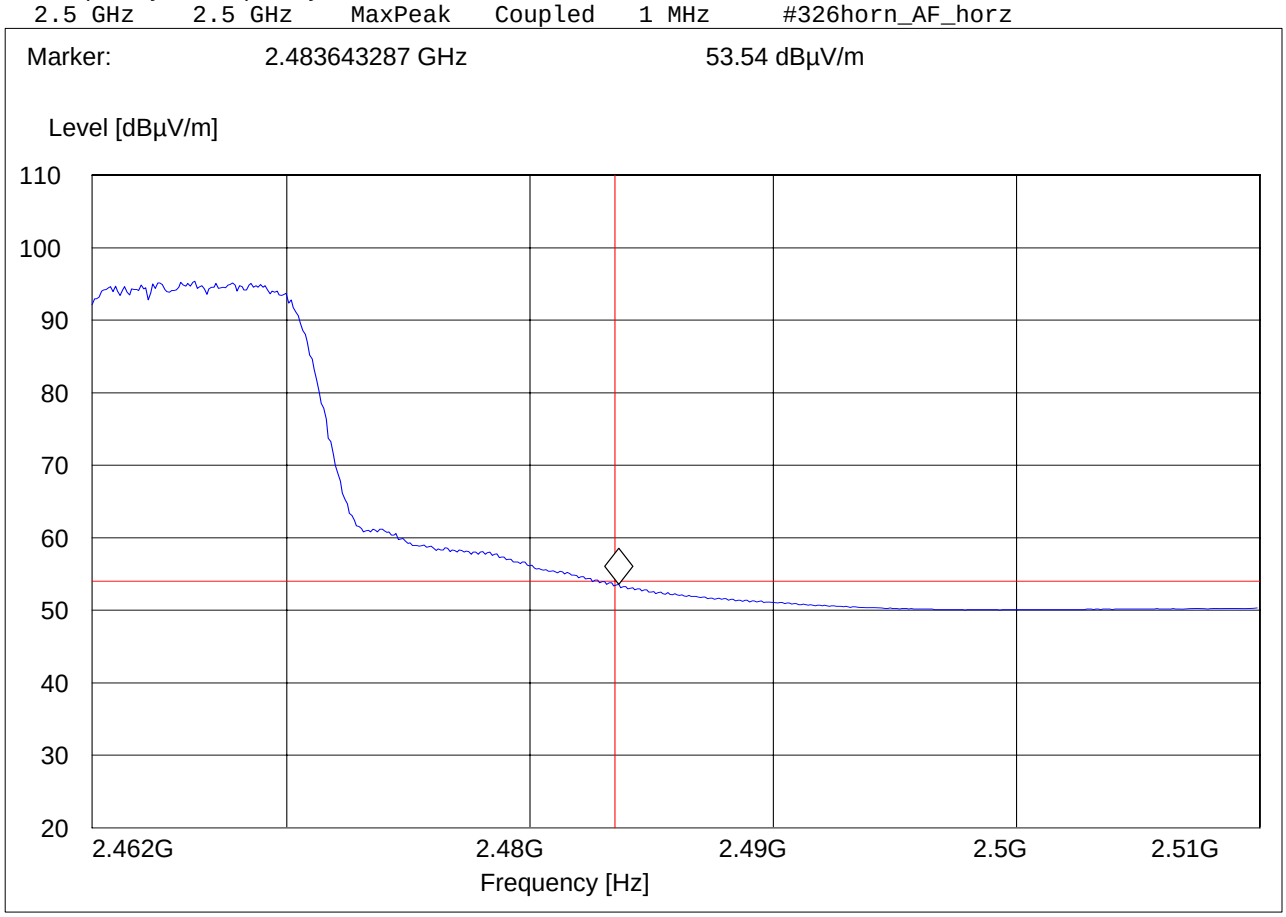


(2462MHz) HIGHER BAND EDGE AVERAGE- 802.11g

EUT: MX3X
Customer:: LXE
Test Mode: WLAN 802.11G
ANT Orientation: H
EUT Orientation: V
Test Engineer: Peter
Voltage: Battery
Comments: TT264°

SWEEP TABLE: "FCC15.247 HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



5.3 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.247/15.205/15.209

5.3.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**
***AVG. LIMIT= 54dBuV/m**

NOTE:
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit , unless specified with the plots.

Results for the radiated measurements below 30MHz according § 15.33

Frequency	Measured values	Remarks
9KHz – 30MHz	No emissions found, caused by the EUT	This is valid for all the tested channels

5.3.2 RESULTS

Quasipeak measurements of radiated spurious emission shows that all emissions are below the limit.

Highest measured radiated spurious emissions are at least 20dB below the field strength of the fundamental transmission. These emissions from the end product that are over the 15.209 limits are non-restricted. The limit for these non-restricted emissions is calculated as follows: Lowest measured EIRP is 18.06dBm + 95.2dB = 113.26dBuV/m at 3 meters. Per FCC rule 15.247 (d) out of band emission are to be 20dB below the fundamental which is 93.26dBuV/m.

Additional test results have been included to show that the hosts themselves pass class A emission limit and therefore satisfy FCC 15.109 requirements.

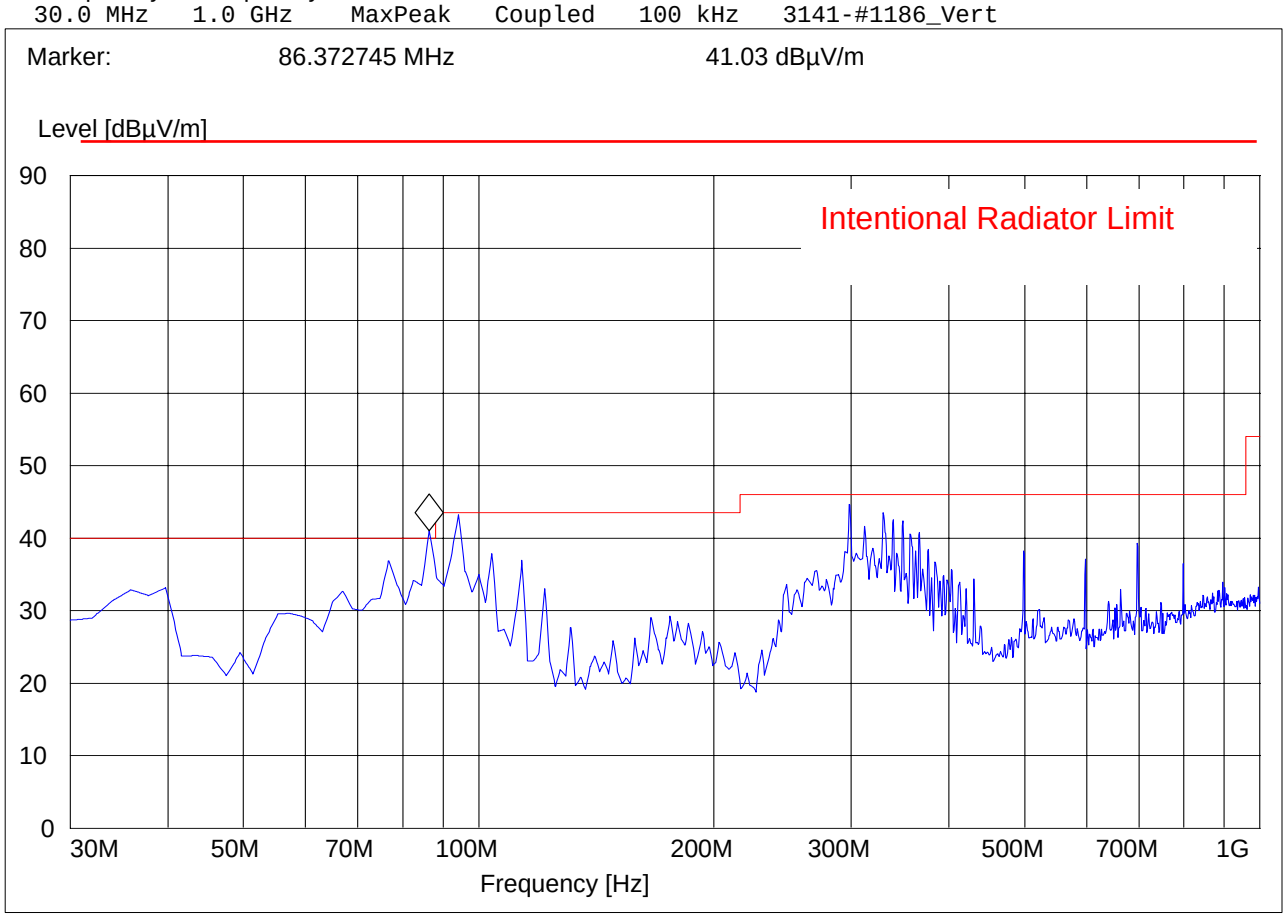
30MHz – 1GHz

Antenna: vertical

EUT: MX3X
Customer:: LXE
Test Mode: WLAN
ANT Orientation: V
EUT Orientation: V
Test Engineer: PETER
Voltage: AC ADAPTOR
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



QUASIPEAK MEASUREMENTS:

298.256513MHz: 42.73dBuV/m
86.37274MHz: 36.34dBuV/m

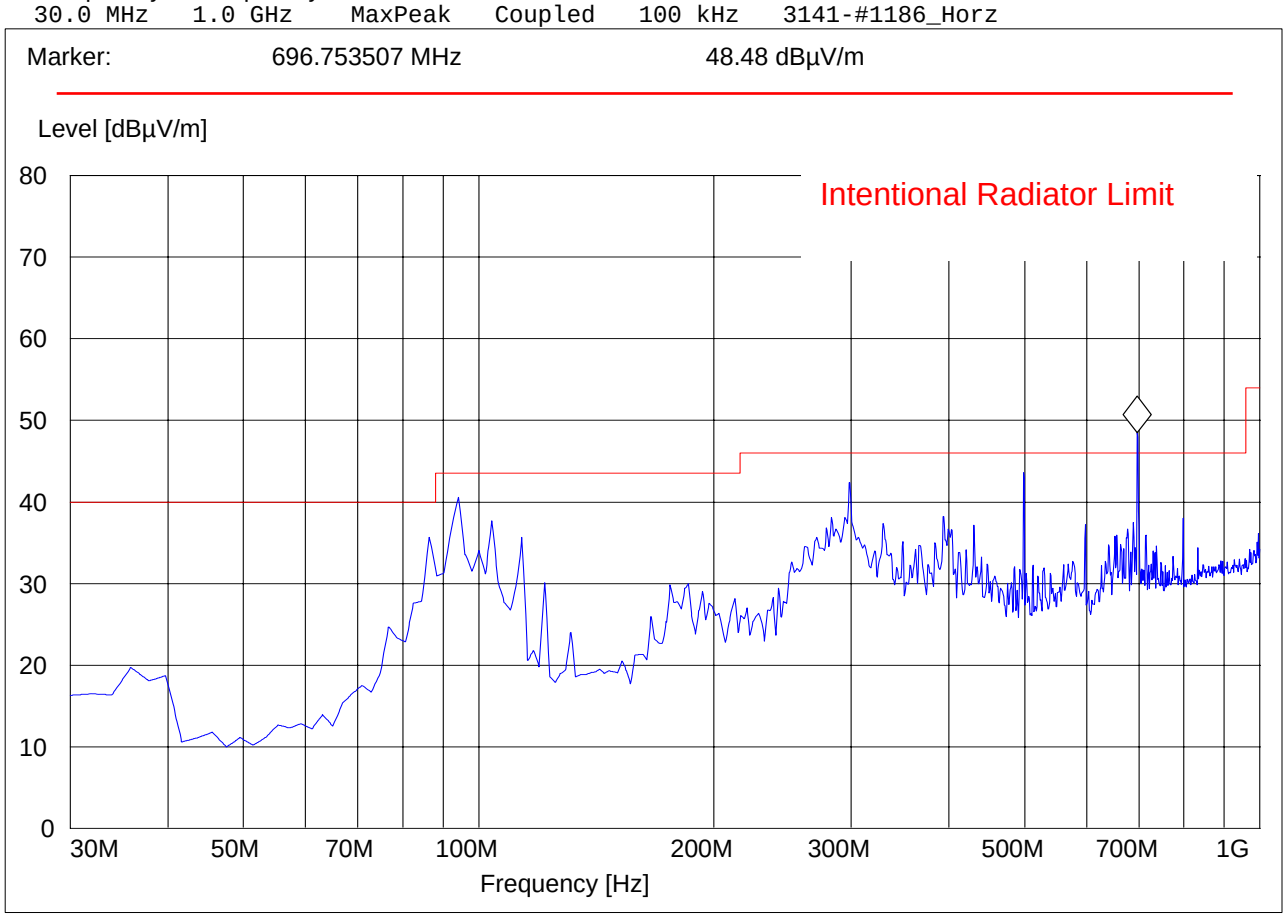
30MHz – 1GHz

Antenna: horizontal

EUT: MX3X
Customer:: LXE
Test Mode: WLAN
ANT Orientation: H
EUT Orientation: V
Test Engineer: PETER
Voltage: AC ADAPTOR
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



QUASIPEAK MEASUREMENTS:

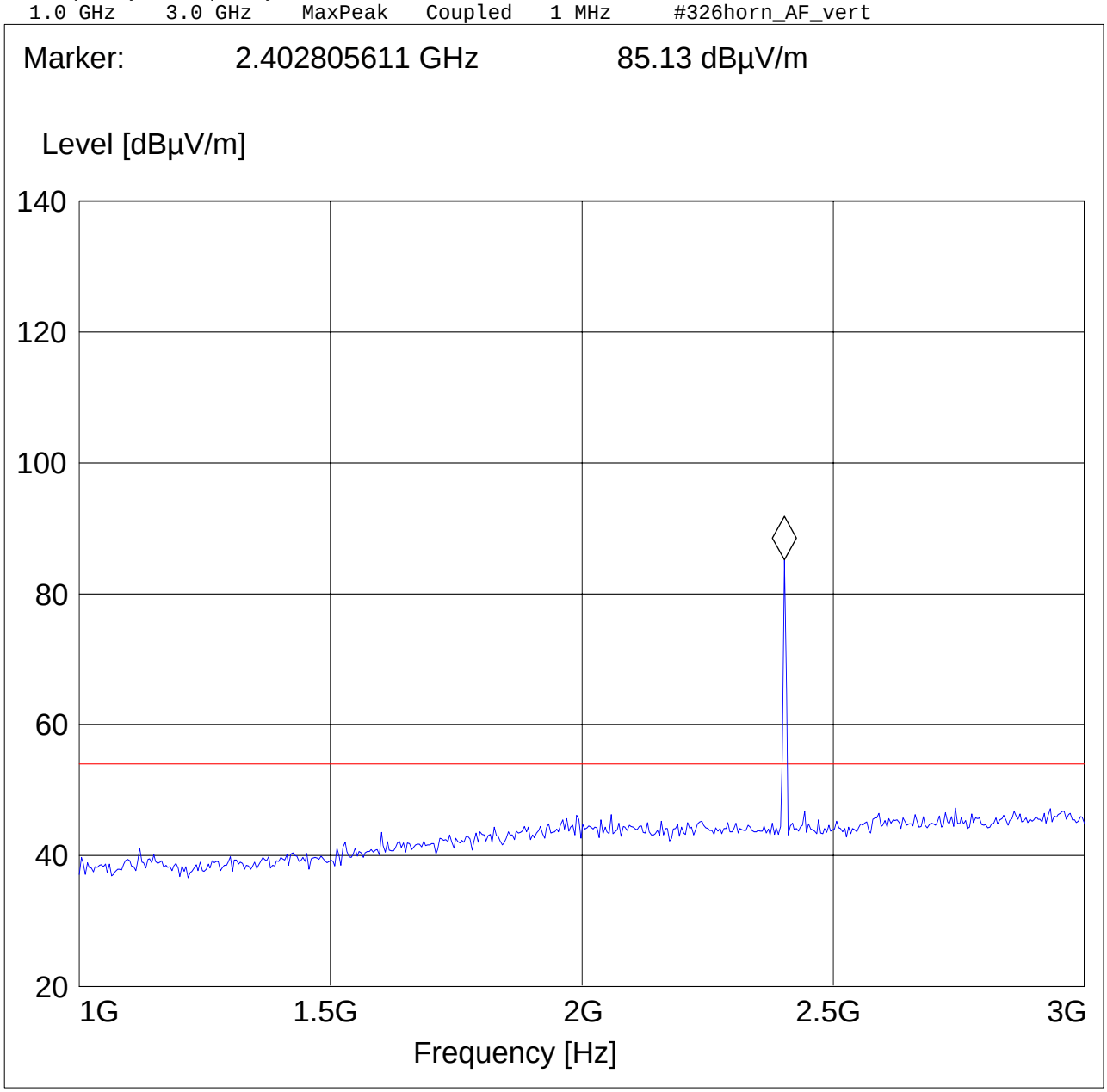
696.753507MHz: 42.98dBuV/m

1-3GHz Low Channel
Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              MX3X
Customer:         LXE
Test Mode:        WLAN
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Power Supply:     AC ADAPTER
Comments:         Marker placed on BT GFSK CH 0
```

SWEEP TABLE: "FCC15.247_1-3G"

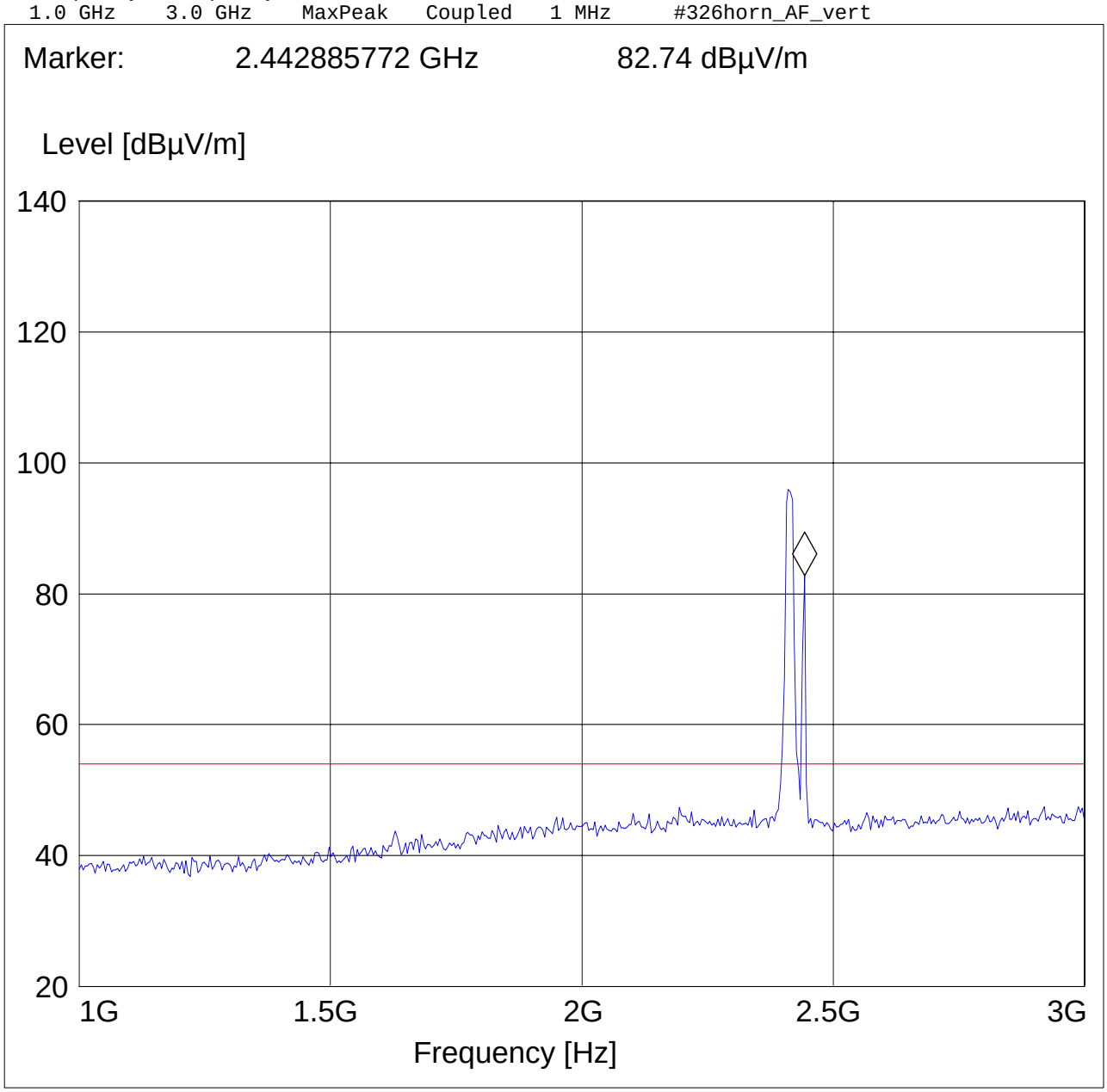
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



1-3GHz Mid Channel
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              MX3X
Customer:         LXE
Test Mode:        WLAN
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Power Supply:     AC ADAPTER
Comments:         Unmarked peak is WLAN CH 1;Peak marked is BT GFSK CH 39
SWEEP TABLE: "FCC15.247_1-3G"

  Start      Stop       Detector  Meas.      IF         Transducer
  Frequency  Frequency             Time       Bandw.
  1.0 GHz    3.0 GHz    MaxPeak   Coupled    1 MHz      #326horn_AF_vert
```

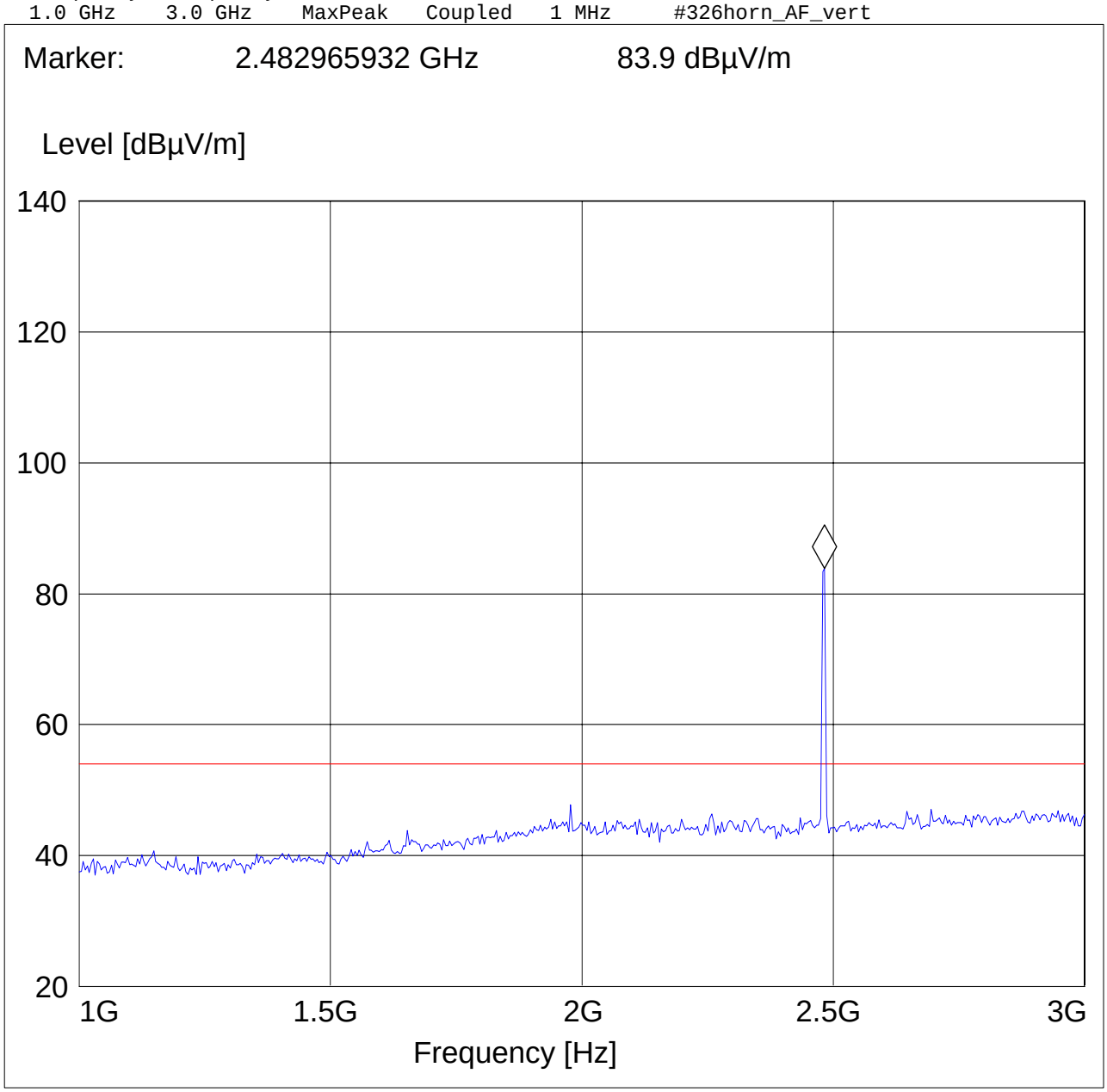


1-3GHz High Channel
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              MX3X
Customer:         LXE
Test Mode:        WLAN
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Power Supply:     AC ADAPTER
Comments:          Marker placed on BT GFSK CH78
```

SWEEP TABLE: "FCC15.247_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



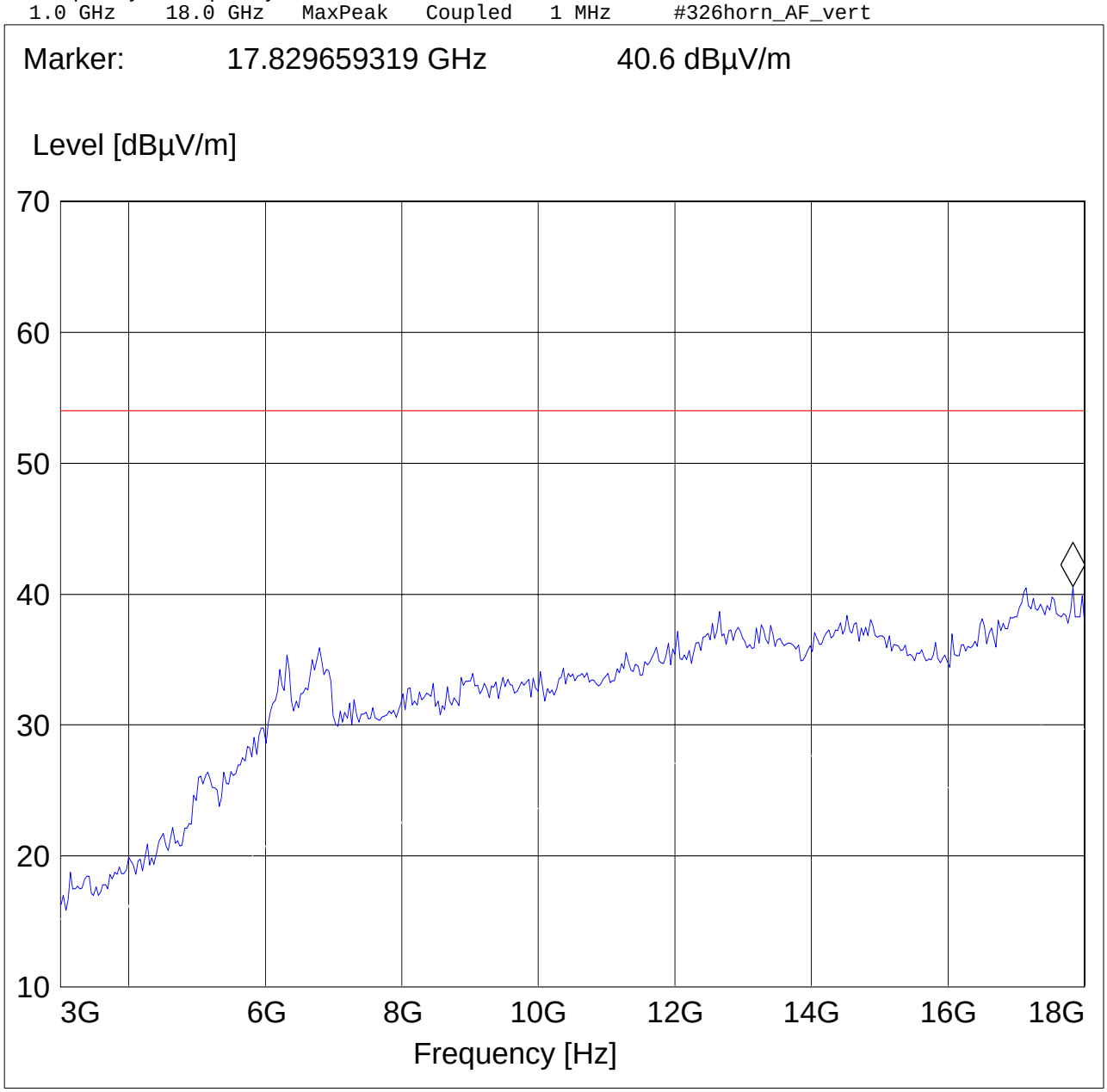
3-18GHz Low Channel

Note: Peak Reading vs. Average limit

EUT: MX3X
Customer: LXE
Test Mode: WLAN
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Power Supply: AC ADAPTER
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



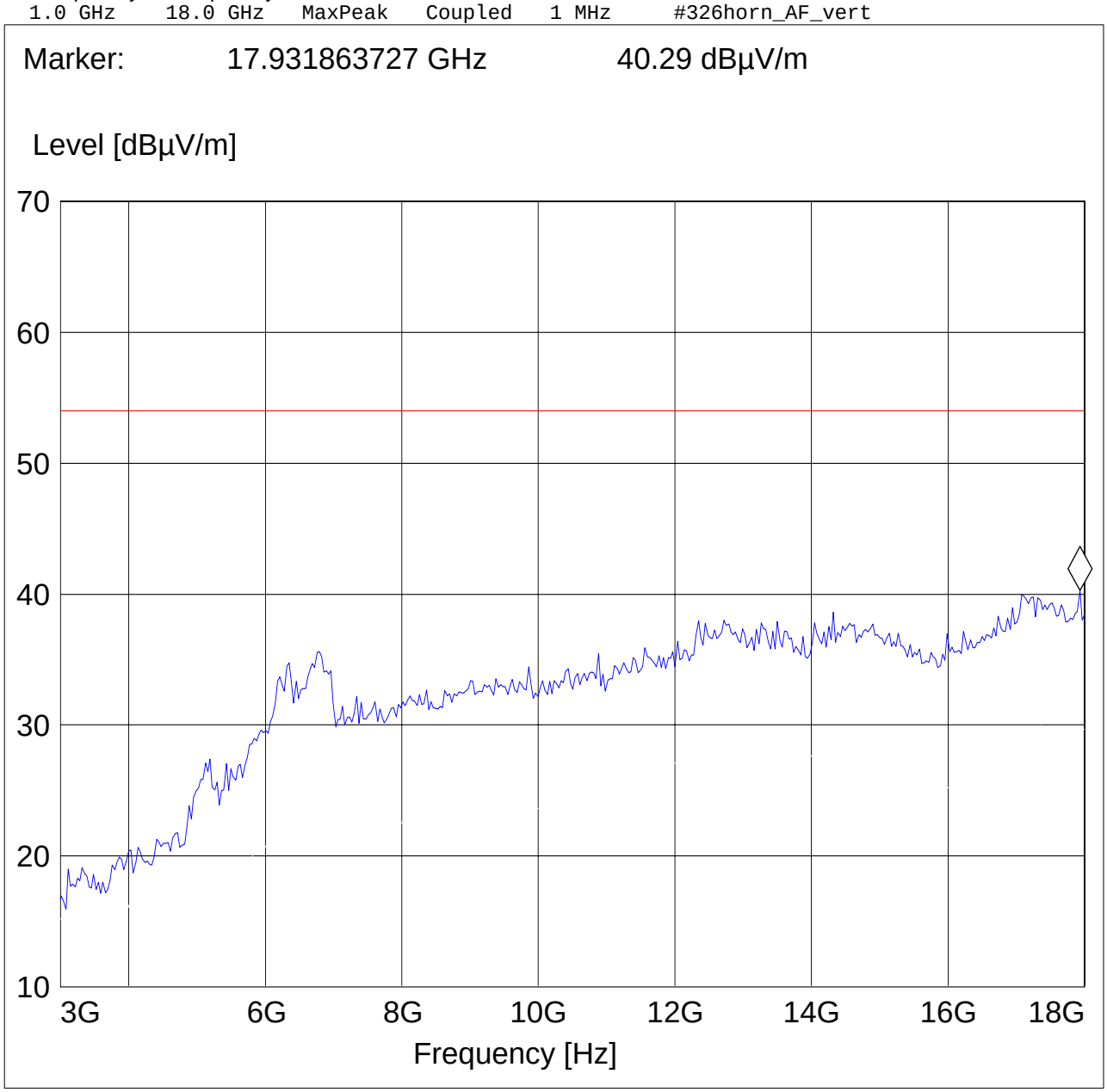
3-18GHz Mid Channel

Note: Peak Reading vs. Average limit

```
EUT:              MX3X
Customer:         LXE
Test Mode:        WLAN
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Power Supply:     AC ADAPTER
Comments:
```

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



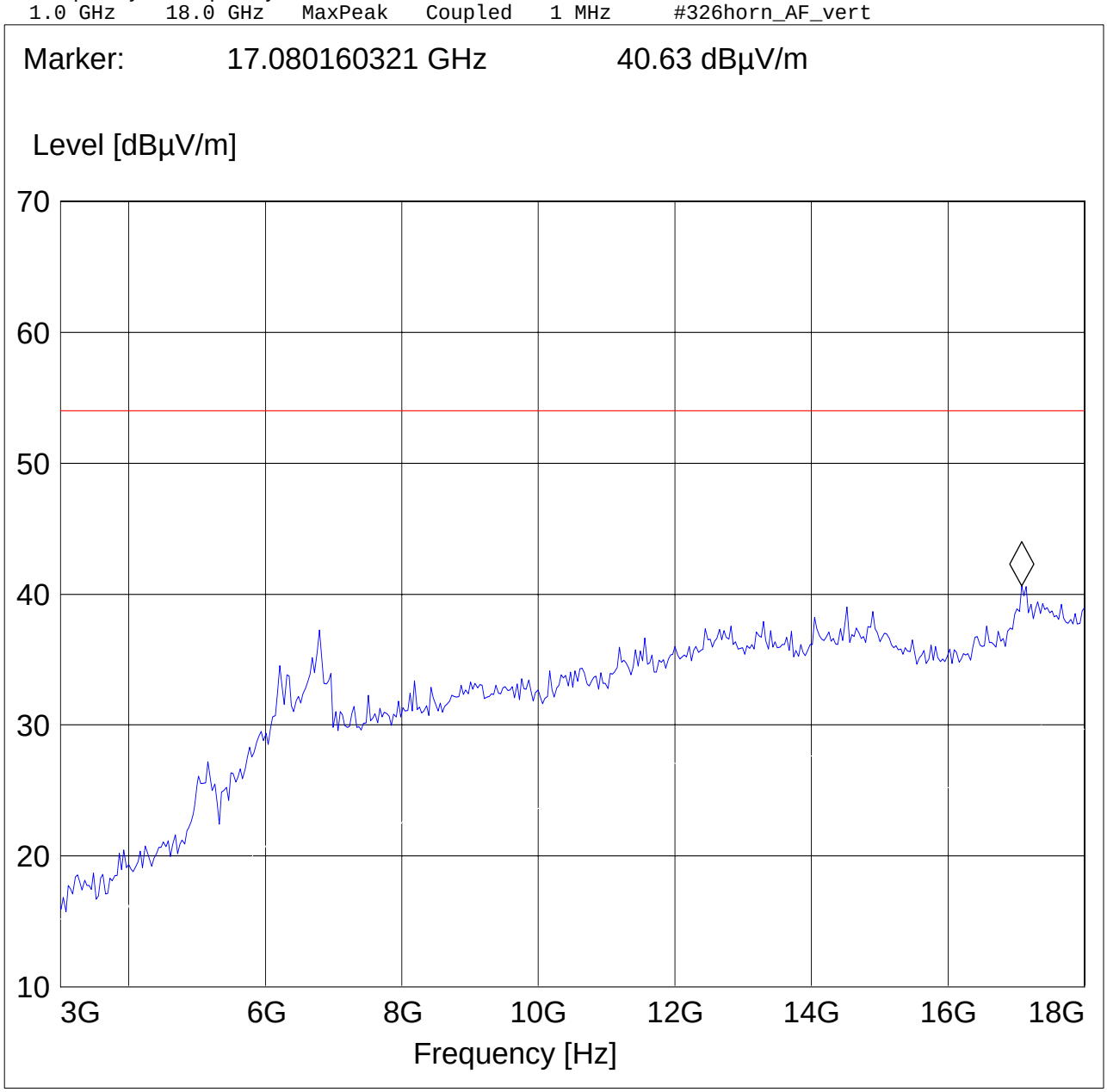
3-18GHz Highr Channel

Note: Peak Reading vs. Average limit

EUT: MX3X
Customer: LXE
Test Mode: WLAN
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Power Supply: AC ADAPTER
Comments:

SWEEP TABLE: "FCC15.247_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

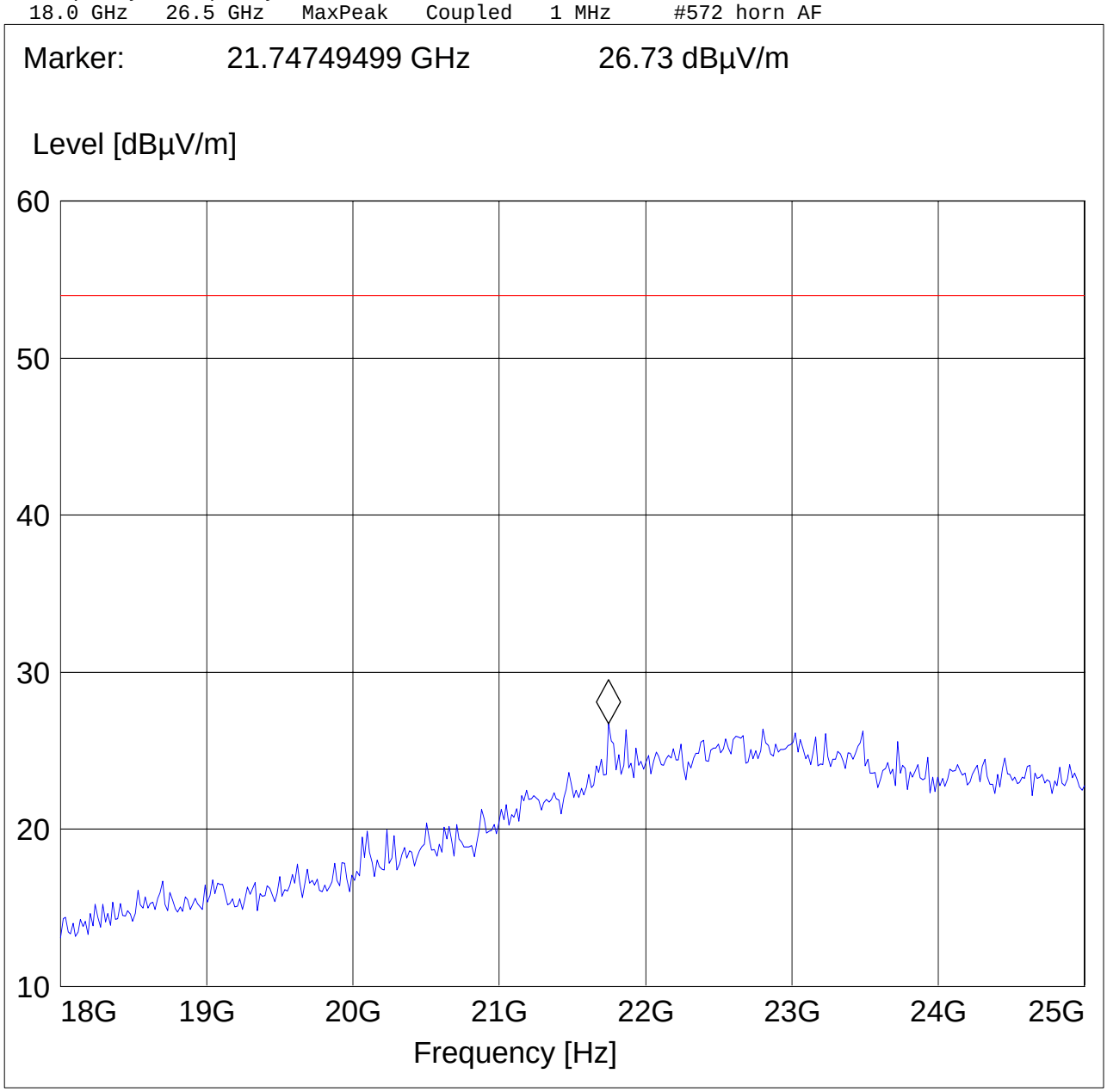


18-25GHz
Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              MX3X
Customer:         LXE
Test Mode:        WLAN
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Power Supply:     AC ADAPTER
Comments:
```

SWEEP TABLE: "FCC15.247_18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	#572 horn AF



5.4 RECEIVER RADIATED EMISSIONS § 2.1053 / RSS-132 & 133

NOTE:

1. **The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3GHz and 26.5GHz very short cable connections to the antenna was used to minimize the noise level.**

Limits **SUBCLAUSE § RSS-133**

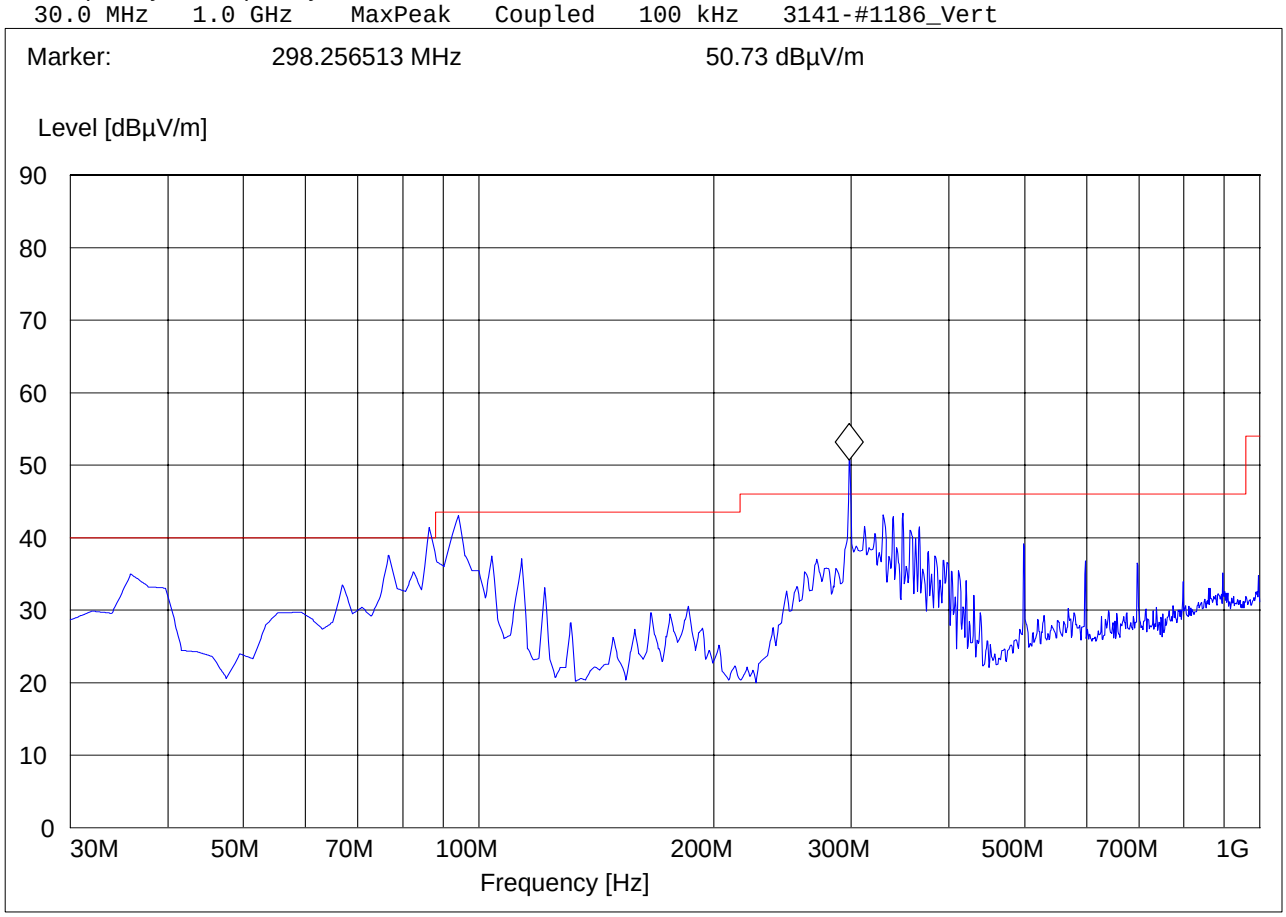
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

30MHz – 1GHz
Antenna: vertical
Note: This plot is valid for low, mid, high channels (worst-case plot)

```
EUT:              MX3X
Customer::        LXE
Test Mode:        WLAN
ANT Orientation:  V
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          AC ADAPTOR
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



QUASIPEAK MEASUREMENTS:

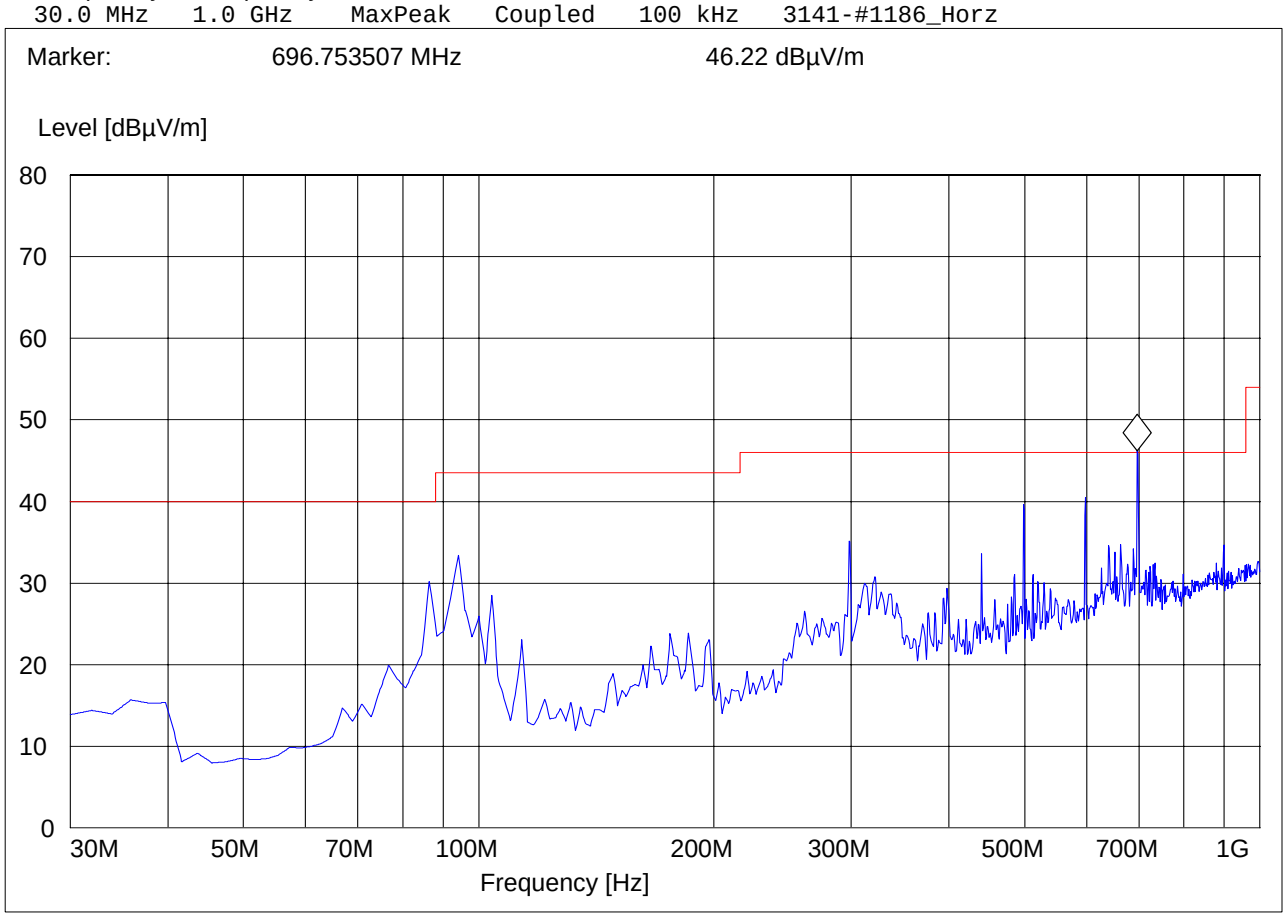
298.256513MHz: 42.73dBuV/m
86.37274MHz: 36.34dBuV/m

30MHz – 1GHz
Antenna: horizontal
Note: This plot is valid for low, mid, high channels (worst-case plot)

```
EUT:              MX3X
Customer::        LXE
Test Mode:        WLAN
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          AC ADAPTOR
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



QUASIPEAK MEASUREMENTS:

696.753507MHz: 41.52dBuV/m

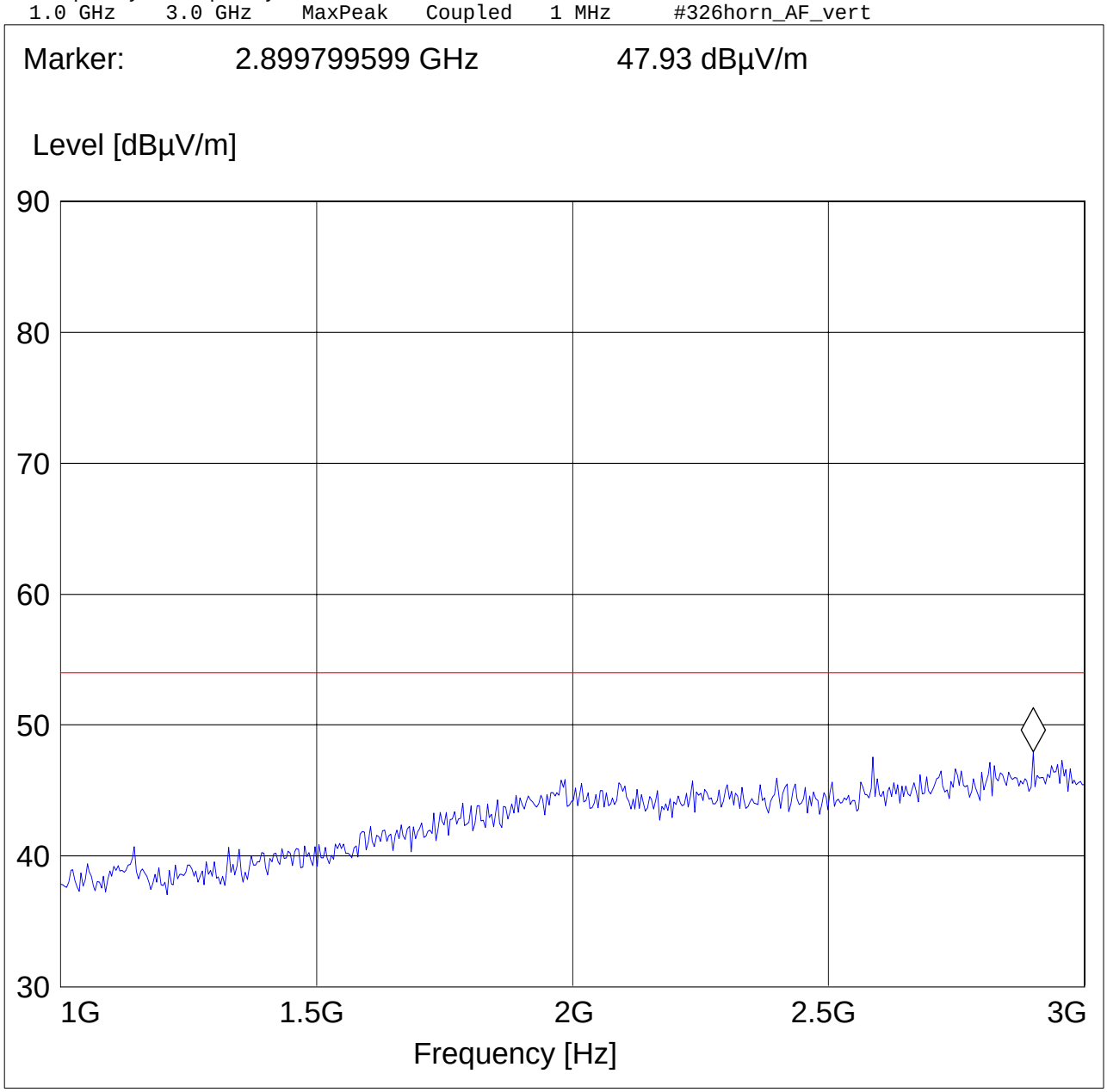
1-3GHz

Note: Peak Reading vs. Average limit

EUT: MX3X
Customer: LXE
Test Mode: WLAN
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Power Supply: AC ADAPTER
Comments: STANDBY MODE

SWEEP TABLE: "CANADA RE_1-3G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



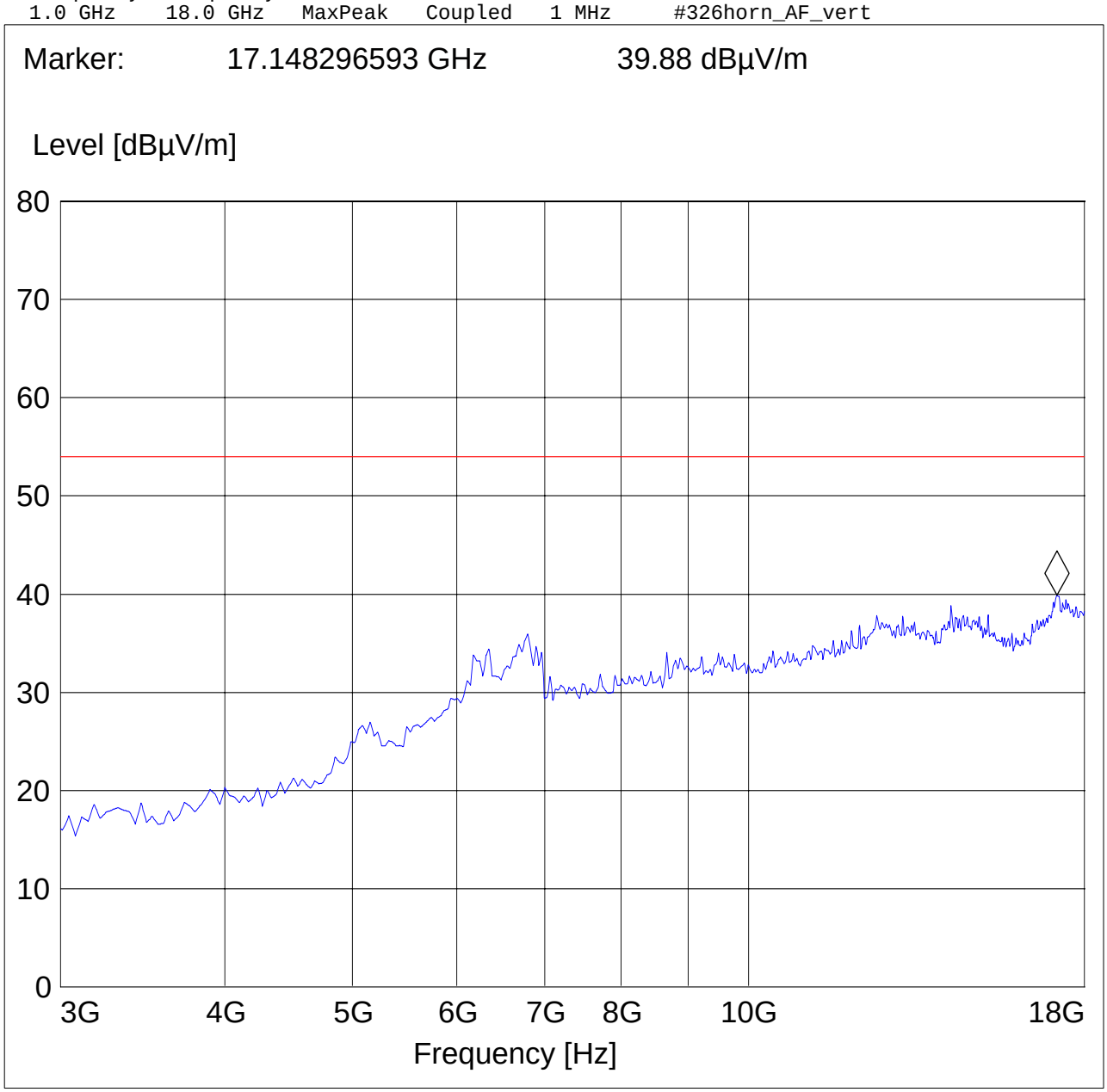
3-18GHz

Note: Peak Reading vs. Average limit

EUT: MX3X
Customer: LXE
Test Mode: WLAN
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Power Supply: AC ADAPTER
Comments: STANDBY MODE

SWEEP TABLE: "CANADA RE_3-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



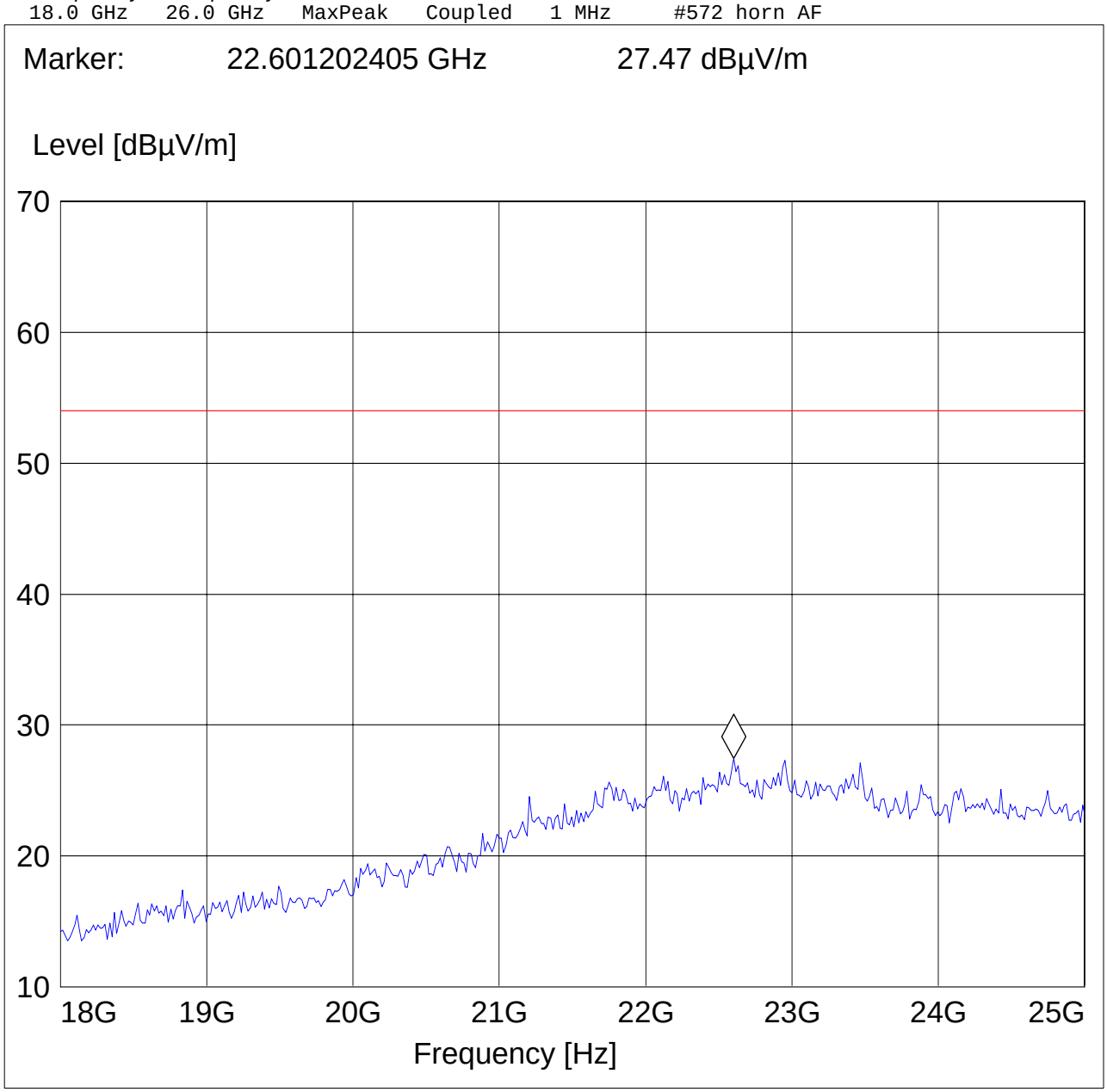
18-25GHz

Note: Peak Reading vs. Average limit

EUT: MX3X
Customer: LXE
Test Mode: WLAN
ANT Orientation: H
EUT Orientation: H
Test Engineer: SAM
Power Supply: AC ADAPTER
Comments: STANDBY MODE

SWEEP TABLE: "CANADA RE_18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.0 GHz	MaxPeak	Coupled	1 MHz	#572 horn AF



6 Measurements (Conducted)

6.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (CONDUCTED)

6.1.1 LIMIT SUB CLAUSE § 15.247 (b) (1)

Frequency range	RF power output
2412-2462 MHz	30dBm

***limit is based upon antenna gain of less than or equal to 6dBi.**

6.1.2 RESULTS:

Test not conducted.

6.2 20dB BANDWIDTH

6.2.1 LIMIT SUB CLAUSE § 15.247 (a) (1) (i) (ii) (iii)

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

6.2.2 RESULTS:

Test not conducted.

6.3 CARRIER FREQUENCY SEPARATION

6.3.1 LIMIT SUB CLAUSE § 15.247 (a) (1) (i) (ii) (iii)

SEPARATION
> 25 KHz or > 20 dB BANDWIDTH

6.3.2 RESULTS:

Test not conducted.

6.4 NUMBER OF HOPPING CHANNELS

6.4.1 LIMIT SUB CLAUSE § 15.247 (a) (1) (iii)

NUMBER OF CHANNELS
> 15

6.4.2 RESULTS:

Test not conducted.

6.5 TIME OF OCCUPANCY (DWELL TIME)

6.5.1 LIMIT SUB CLAUSE § 15.247 (a) (1) (i) (ii) (iii)

FREQUENCY RANGE	AVERAGE TIME OF OCCUPANCY PER 31.6 SECONDS (LIMIT)
2412-2462 MHz	0.4 SECONDS

6.5.2 RESULTS:

Test not conducted.

6.6 CONDUCTED SPURIOUS EMISSION

6.6.1 LIMIT SUB CLAUSE § 15.247 (d)

FREQUENCY RANGE	limit
30M-25GHz	-20dBc

6.6.2 RESULTS: Tnom(23)°C VnomVDC

Test not conducted.

6.7 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207

6.7.1 LIMITS

Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)
Limit

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz

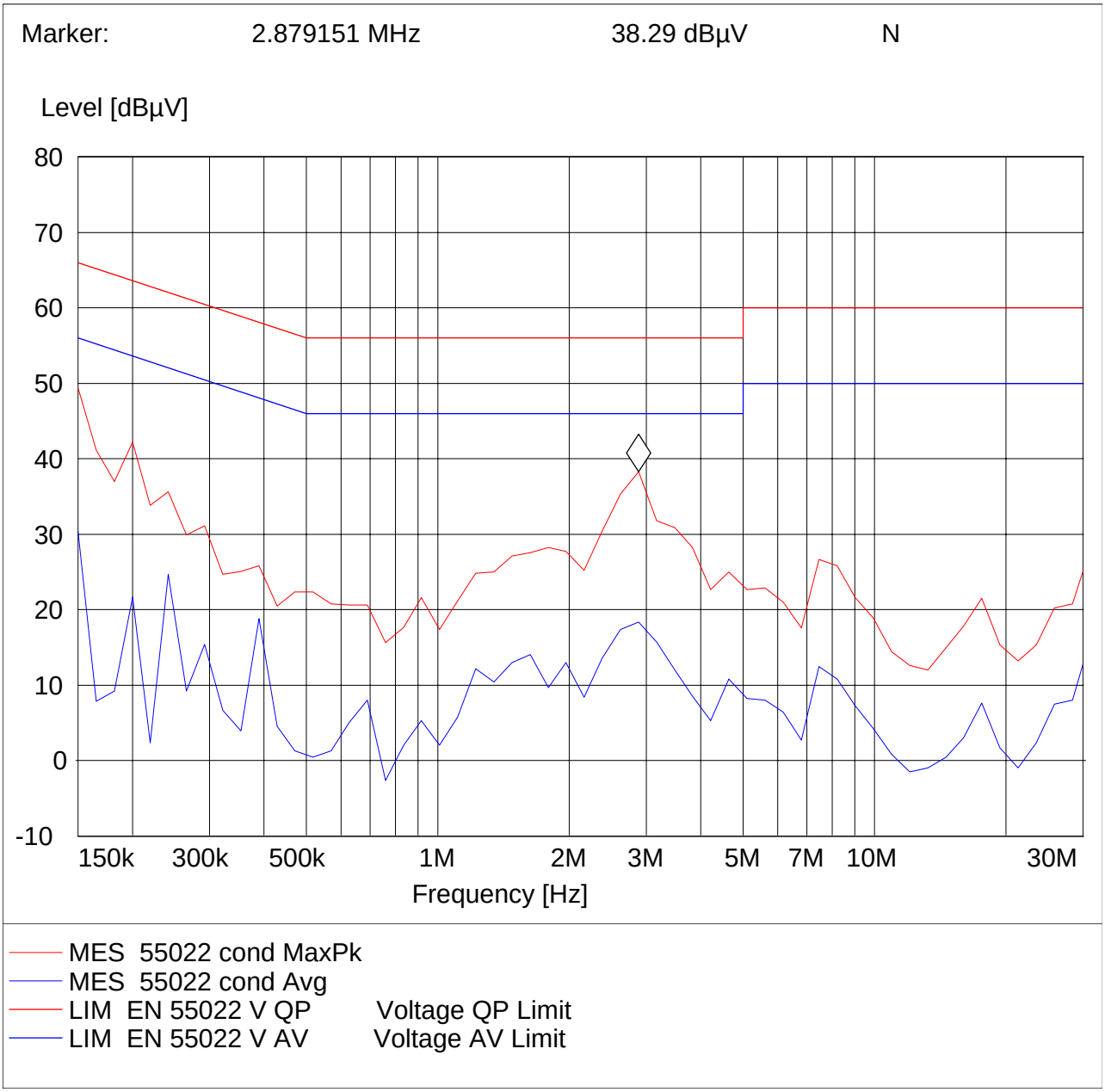
6.7.2 Results: Line

```
EUT:                    MX3X
Manufacturer:           LXE
Operating Condition:    WLAN
ANT Orientation::       Conducted
EUT Orientation::       H
Test Engineer::         CHRIS
Power Supply: :         110V Line
Comments:  :
```

SWEEP TABLE: "55022 cond"

```
  Short Description:            EN 55022 for 150KHz-30MHz
Unit:     dBµV

          Detector:         Mode:
```



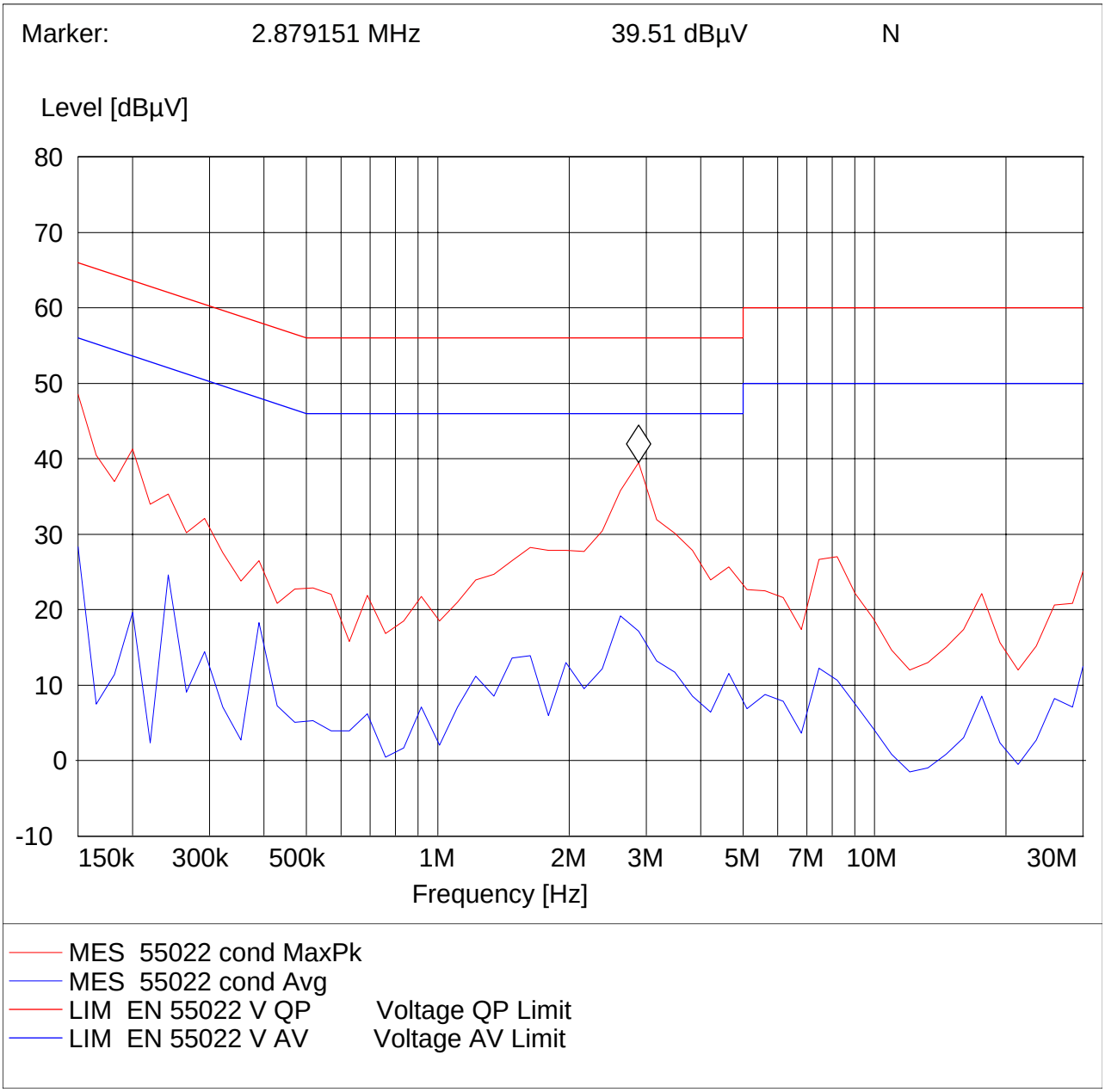
6.7.3 Results: Neutral

```
EUT:                    MX3X
Manufacturer:           LXE
Operating Condition:    WLAN
ANT Orientation::       Conducted
EUT Orientation::       H
Test Engineer::         CHRIS
Power Supply: :         110N Line
Comments:  :
```

SWEEP TABLE: "55022 cond"

```
  Short Description:              EN 55022 for 150KHz-30MHz
Unit:     dBµV

          Detector:         Mode:
```

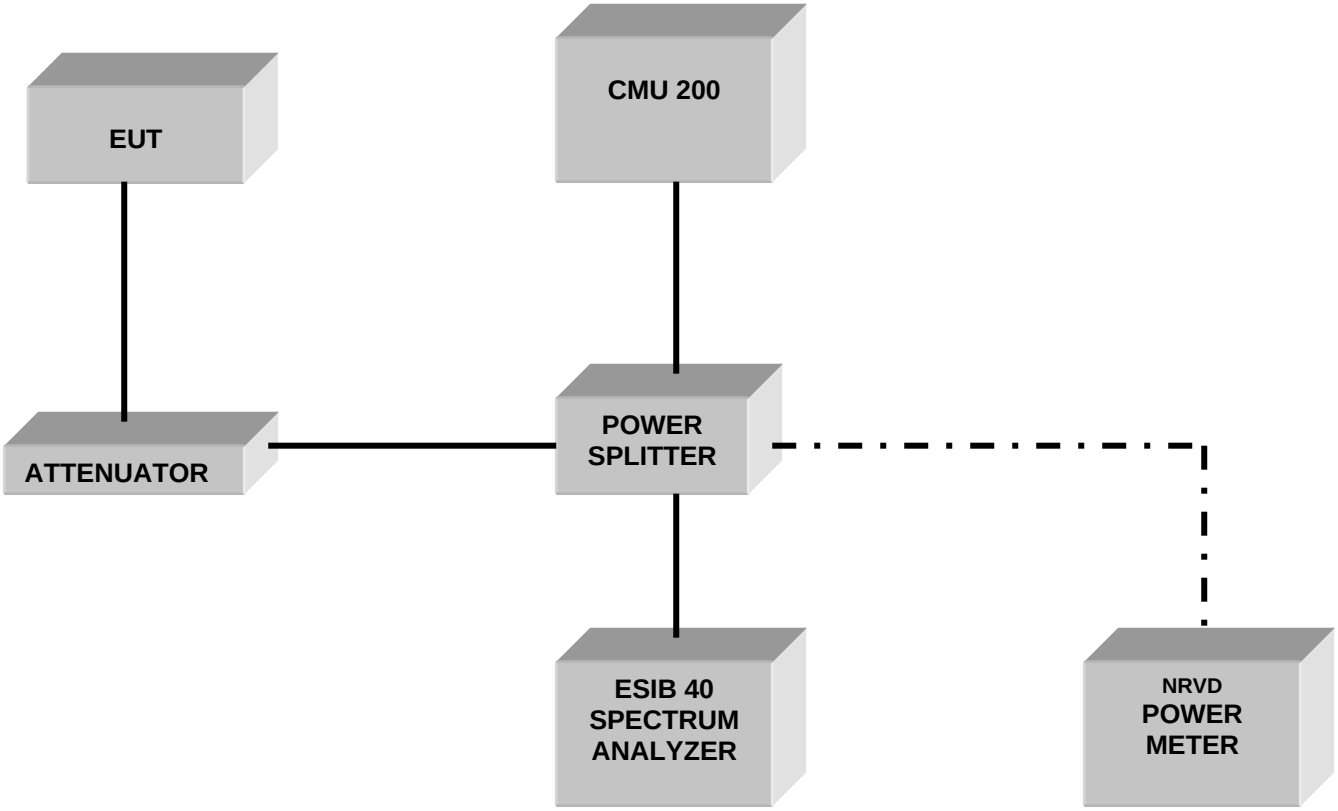


7 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2008	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2008	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2008	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2008	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2008	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2008	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2008	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2008	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2008	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2008	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2008	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2008	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2008	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2008	2 years

8 BLOCK DIAGRAMS

Conducted Testing



Radiated Testing