Test Report

FCC Part 15.247 for DSSS systems/ CANADA RSS-210

Model #: A1241

Apple Inc.
1 Infinite Loop Mail Stop26A
Cupertino, California 95014
U.S.A

TEST REPORT #: EMC_A1241_15.247_DSSS_M_rev1
DATE: 2008-6-6

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

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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 #
Apple Inc.	**Handheld 3G mobile phone with iPod functions.**	**A1241**

Technical responsibility for area of testing:

Date	Section	Name	Signature
2008-6-6	EMC & Radio	Val Tankov (EMC Project Engineer)	Ivaylo Tankov 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
2008-6-6	EMC & Radio	Peter Mu (EMC Project Engineer)	Peter Mu 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:	**2008-4-22 to 2008-5-19**

2.2 Identification of the Client

APPLICANT	
Applicant (Company Name)	**Apple Inc.**
Street Address	**1 Infinite Loop Mail Stop26A**
City/Zip Code	**Cupertino, California 95014**
Country	**USA**
Contact Person	**Robert Steinfeld**
Telephone	**408-974-2618**
Fax	**408-862-5061**
e-mail	**steinfe1@apple.com**

2.3 Identification of the Manufacturer

Same as above applicant.

3 Equipment Under Test (EUT)

3.1 Specification of the Equipment under Test

EUT	
Marketing Name of EUT (if not same as Model No.)	**iPhone**
Description	**Handheld 3G mobile phone with iPod functions.**
Model No.	**A1241**
H/W	**REV14 (DVTB)**
	01.34.02 (5A240d)
FCC-ID:	**BCGA1241**
IC-ID (Industry Canada):	**579C-A1241**

Frequency Range:	**2400MHz – 2483.5MHz**
Type(s) of Modulation:	**CCK, OFDM**
Number of Channels:	**11**
Antenna Type:	**IFA - inverted F Antenna 2dBi gain, internal cable loss 0.3dBi**
Output Power:	**Conducted 802.11b: 16.89dBm, 48.86mW** **Conducted 802.11g: 16.88dBm, 48.75mW** **Radiated 802.11b: 18.59dBm, 72.27mW** **Radiated 802.11g: 18.58dBm, 72.11mW**

3.2 Identification of the Equipment under Test (EUT)

EUT #	TYPE	MANF.	MODEL	SERIAL #
1	EUT	Apple Inc	A1241	04ET10o
1	EUT	Apple Inc	A1241	8881606UY7K

3.3 Identification of Accessory equipment

AE #	TYPE	MANF.	MODEL	SERIAL #
1	AC/DC ADAPTER	Flextronix	A1265	1X8100000307

4 Subject Of Investigation

During the testing process the EUT was tested in b mode with 11Mbps data rate and in g mode with 54Mbps data rate which yielded the worst case results. All data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The EUT in section 3 has a Murata WLAN radio.

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.

5 Measurements (Radiated)

5.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (RADIATED)

5.1.1 LIMIT SUB CLAUSE § 15.247 (b) (1) (2) (3) (4)

Frequency range	RF power output
2400-2483.5 MHz	36dBm EIRP

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

5.1.2 EIRP

EIRP = Conducted Output Power + Antenna Gain (2dBi) – Internal Cable Loss (0.3dBi)

TEST CONDITIONS	MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)	2412	2437	2462
802.11b	18.42	18.59	18.57
802.11g	18.38	18.58	18.35
Measurement uncertainty	±0.5dBm		

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			

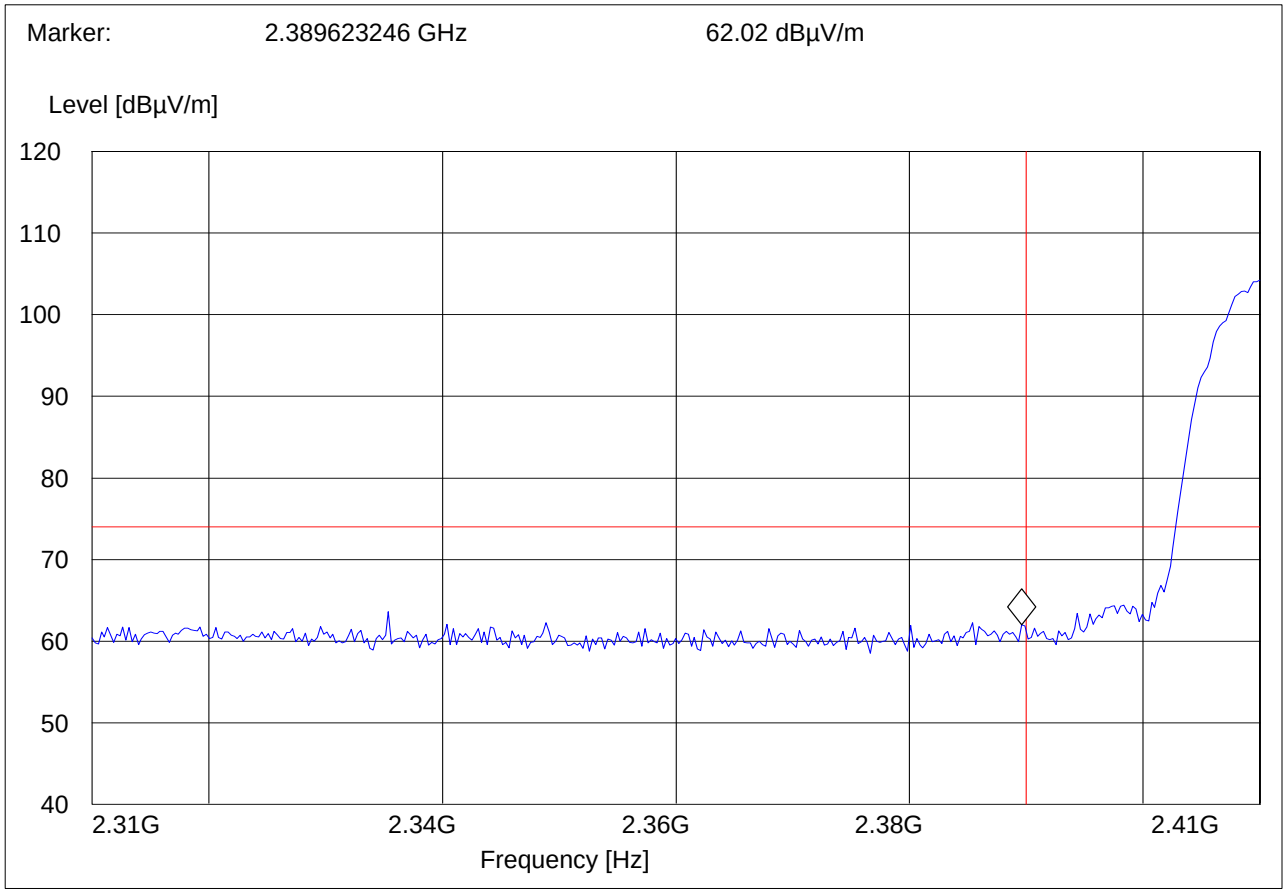
***PEAK LIMIT= 74dBuV/m**
***AVG. LIMIT= 54dBuV/m**

PEAK, 802.11 b MODE (2412MHz)

EUT: 8881606UY7K
Customer:: ACI
Test Mode: Wifi CH 1
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: USB
Comments: TT@177°

SWEEP TABLE: "FCC15.247 LBE_PK"

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

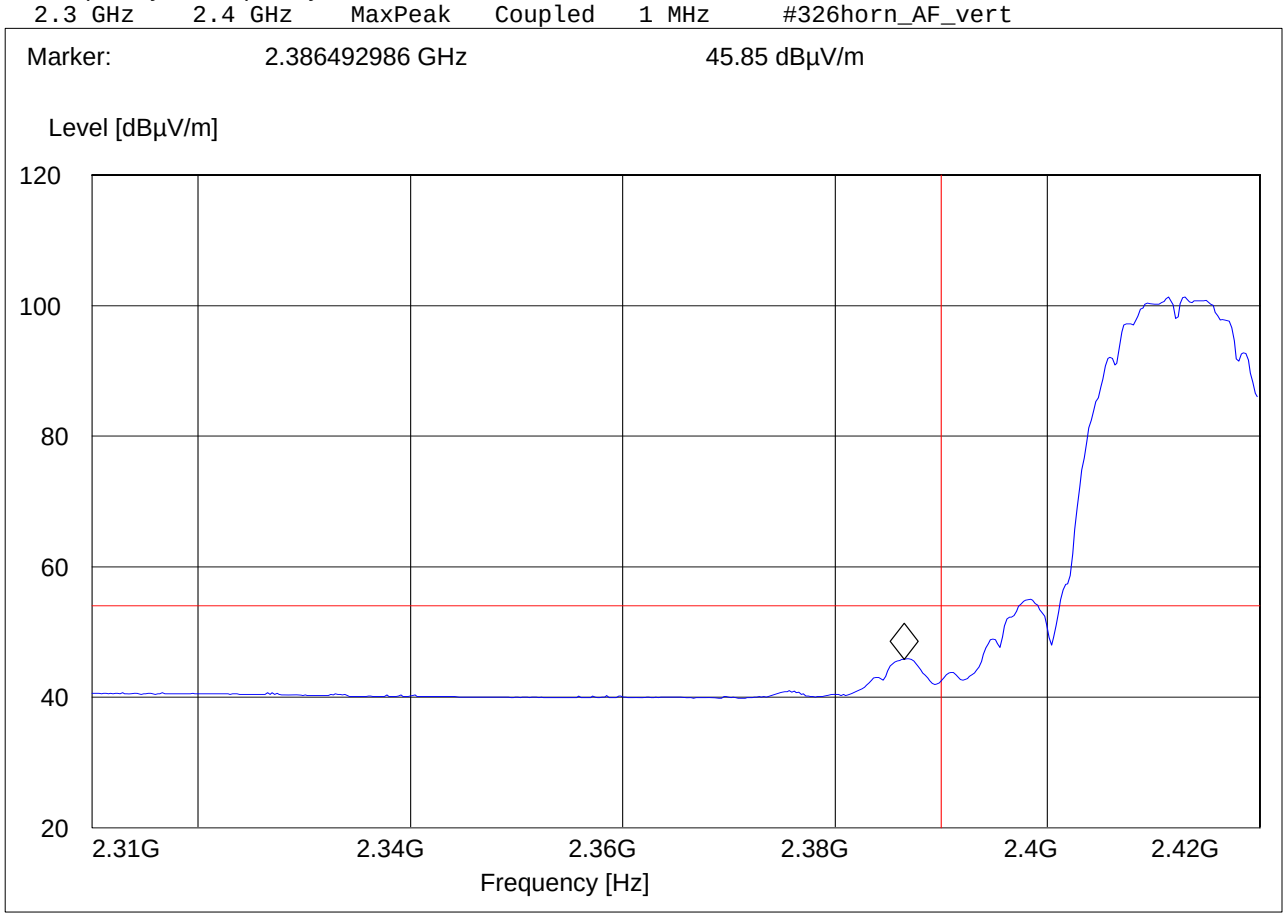


AVG, 802.11 b MODE (2412MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        Wifi CH 1
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    Chris
Voltage:          USB
Comments:         TT@177°
```

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

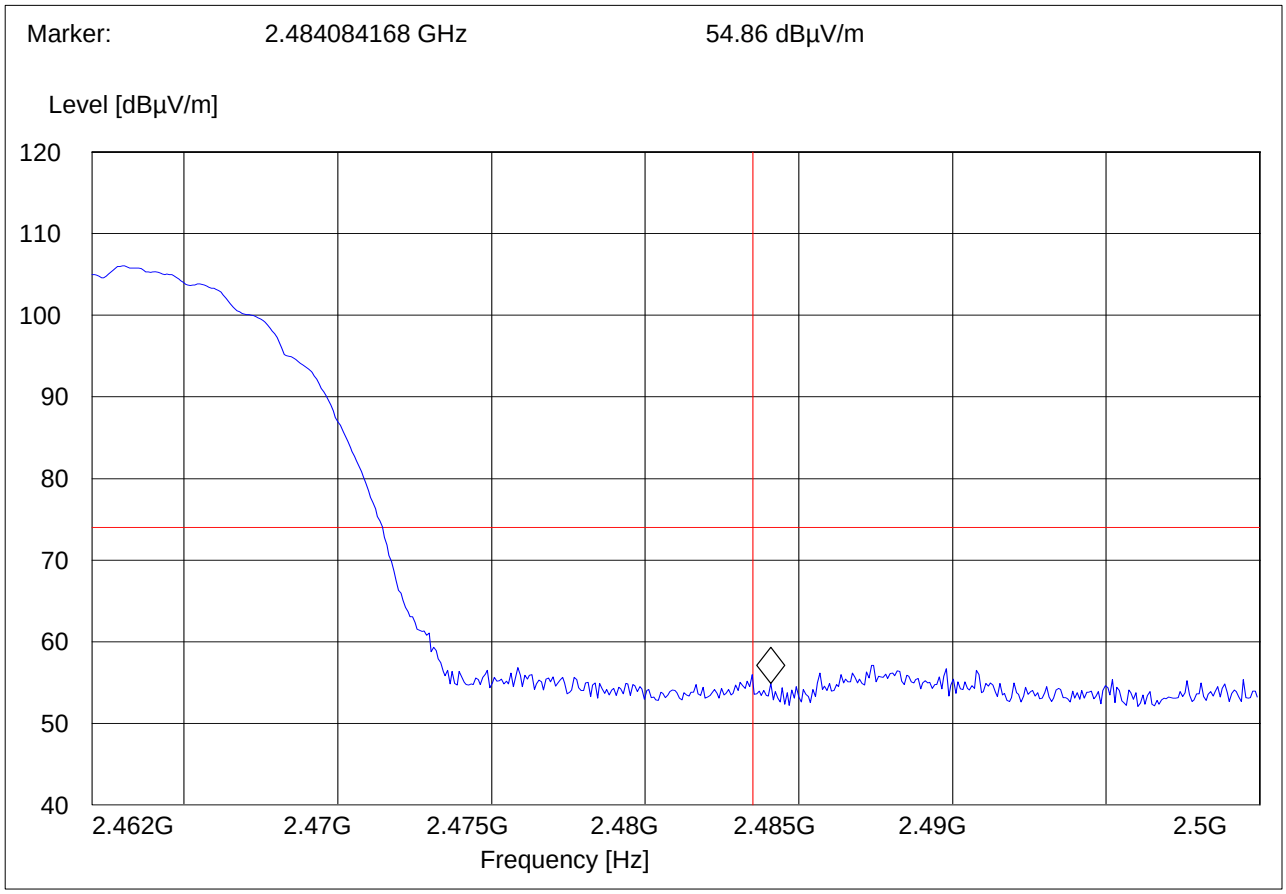


PEAK, 802.11 b MODE (2462MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        Wifi CH 11
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    Chris
Voltage:          USB
Comments:         TT@177°
```

SWEEP TABLE: "FCC15.247 HBE_PK"

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

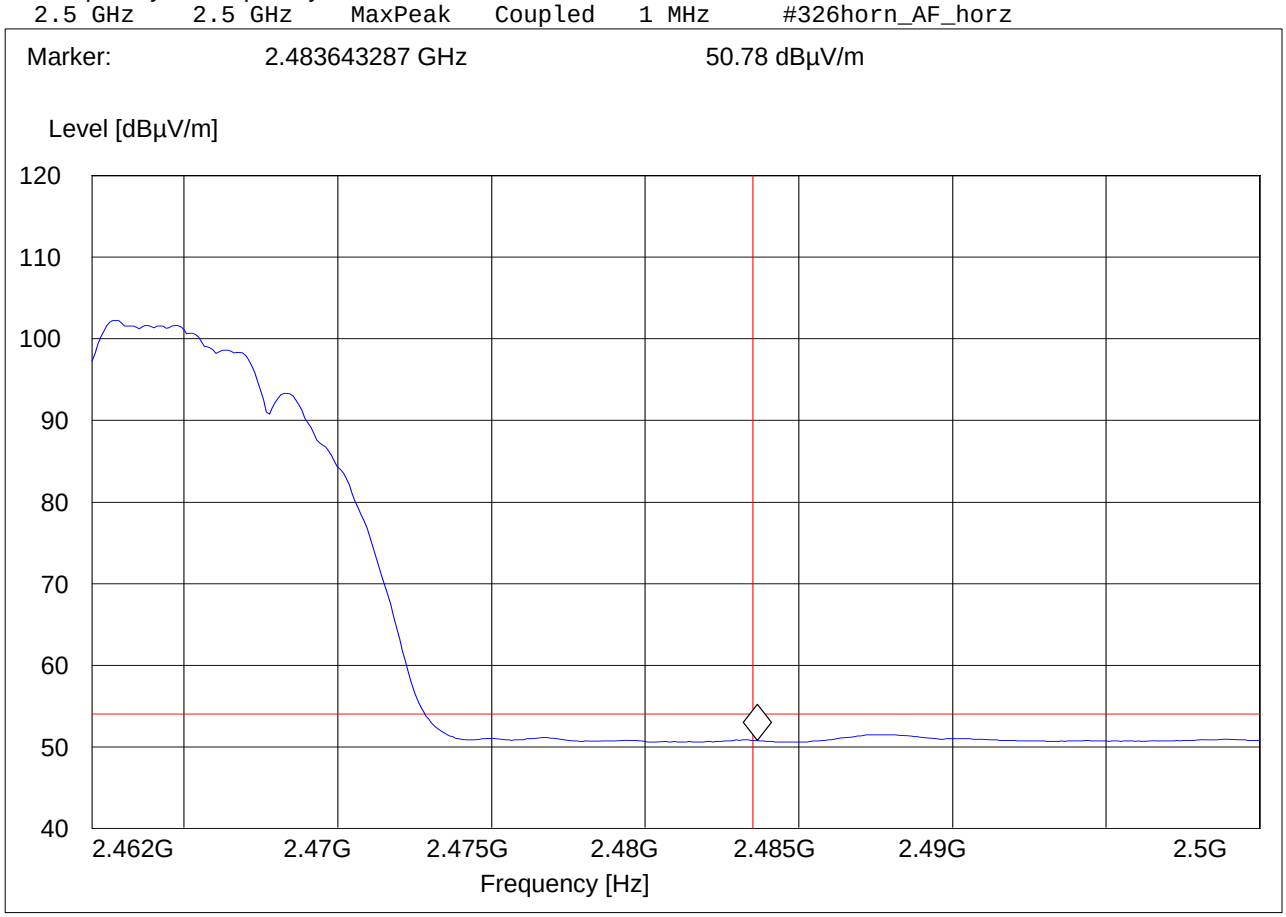


AVG, 802.11 b MODE (2462MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        Wifi CH 11
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    Chris
Voltage:          USB
Comments:         TT@177°
```

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

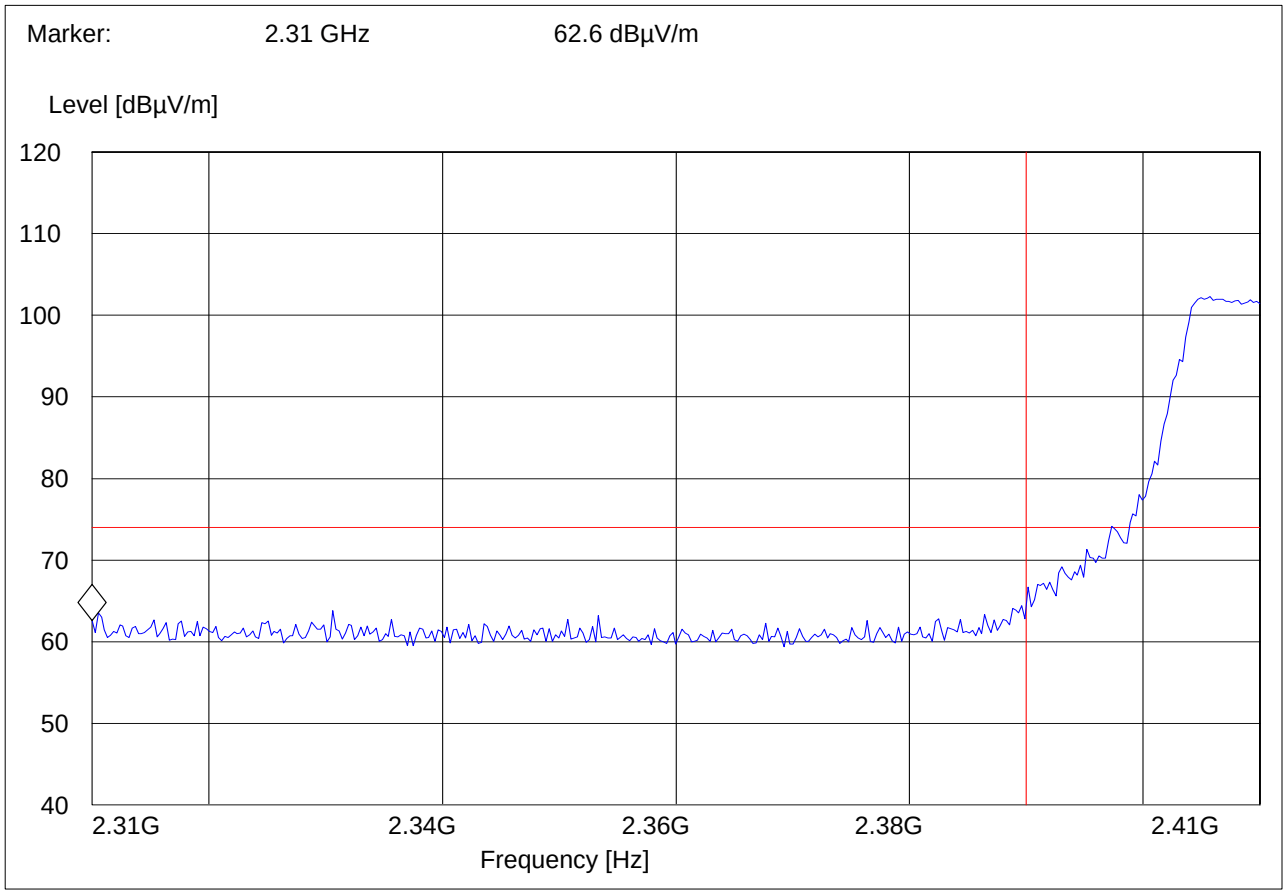


PEAK, 802.11g MODE (2412MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

SWEEP TABLE: "FCC15.247 LBE_PK"

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

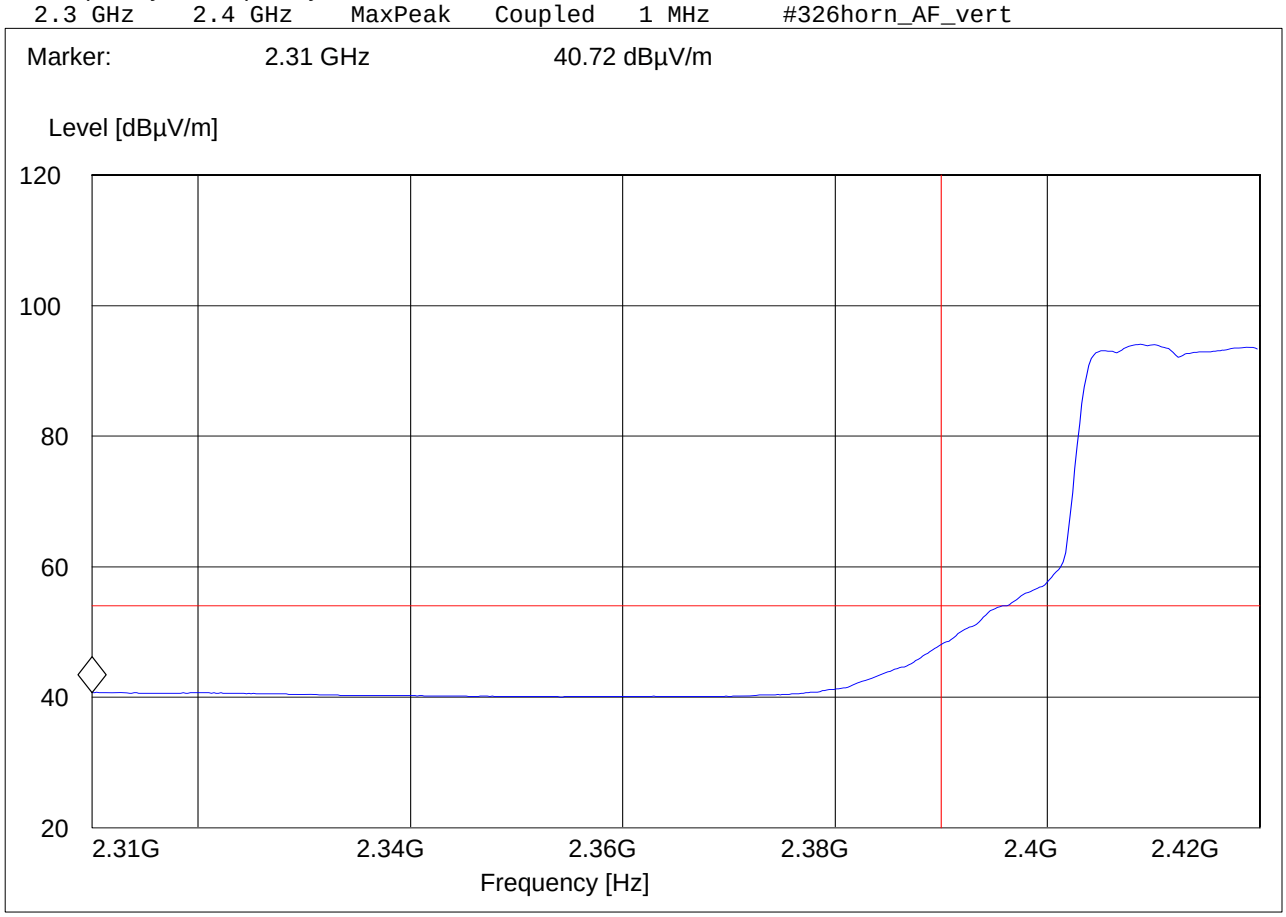


AVG, 802.11g MODE (2412MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

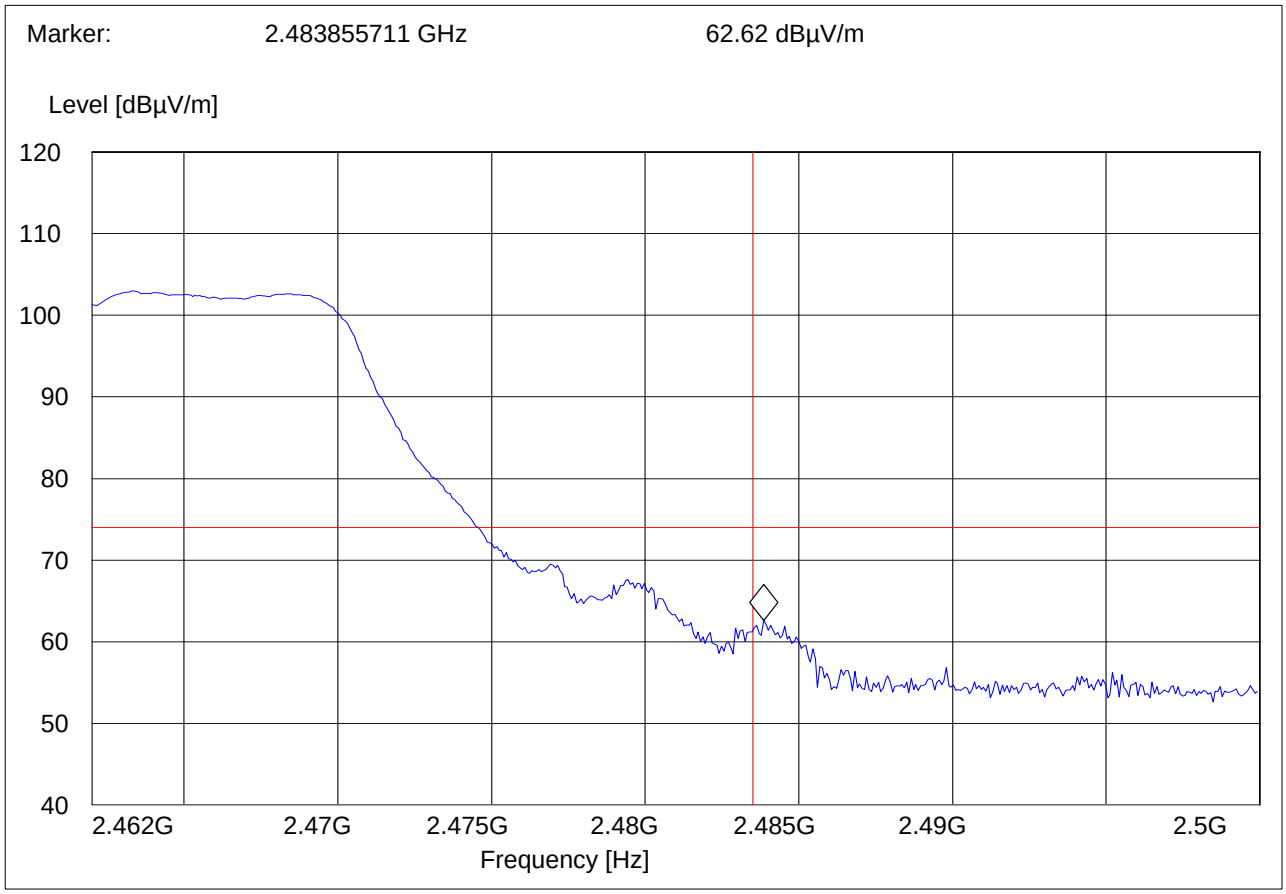


PEAK, 802.11g MODE (2462MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

SWEEP TABLE: "FCC15.247 HBE_PK"

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

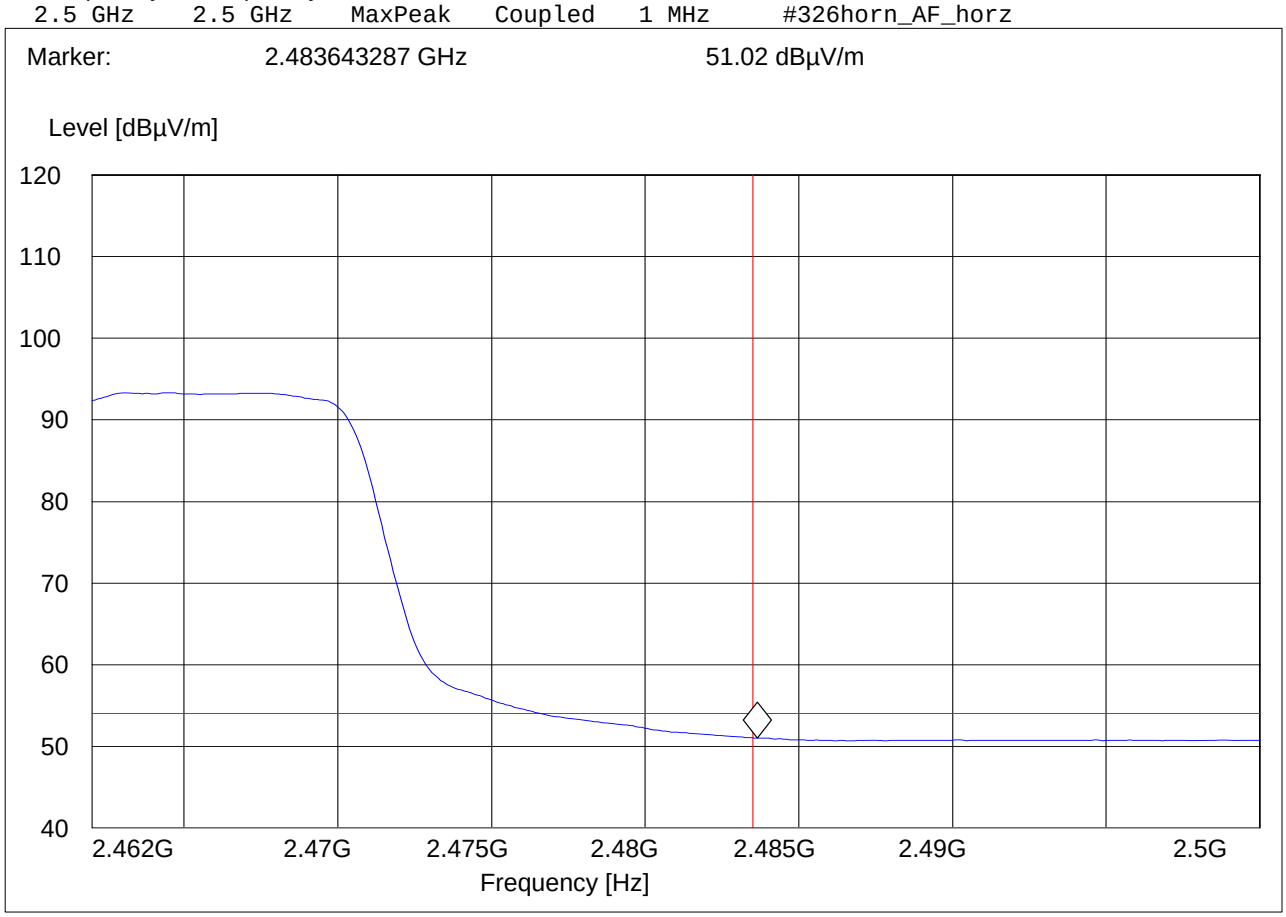


AVG, 802.11g MODE (2462MHz)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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 802.11g (worst case)

30MHz – 1GHz

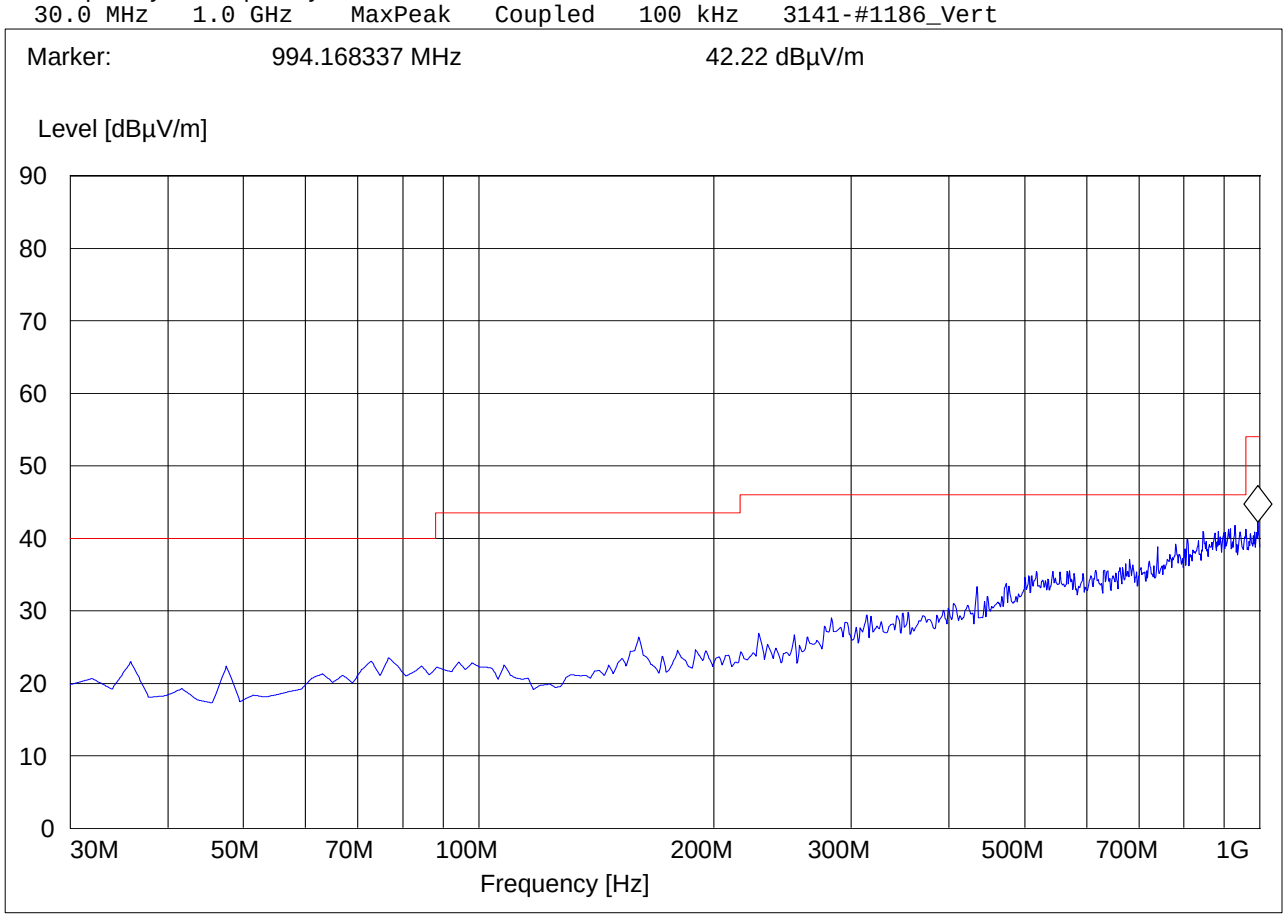
Antenna: vertical

Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
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

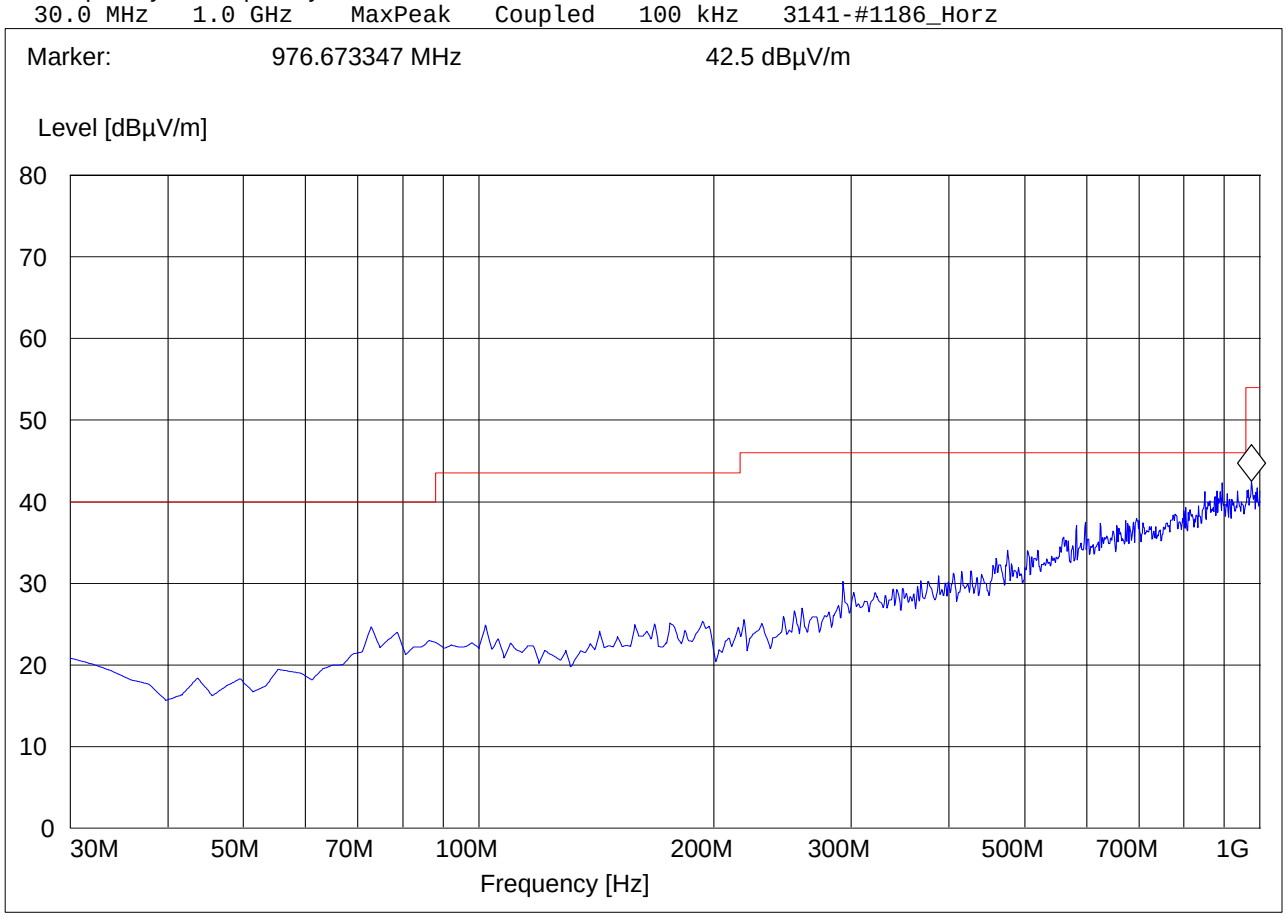


30MHz – 1GHz
Antenna: Horizontal
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
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

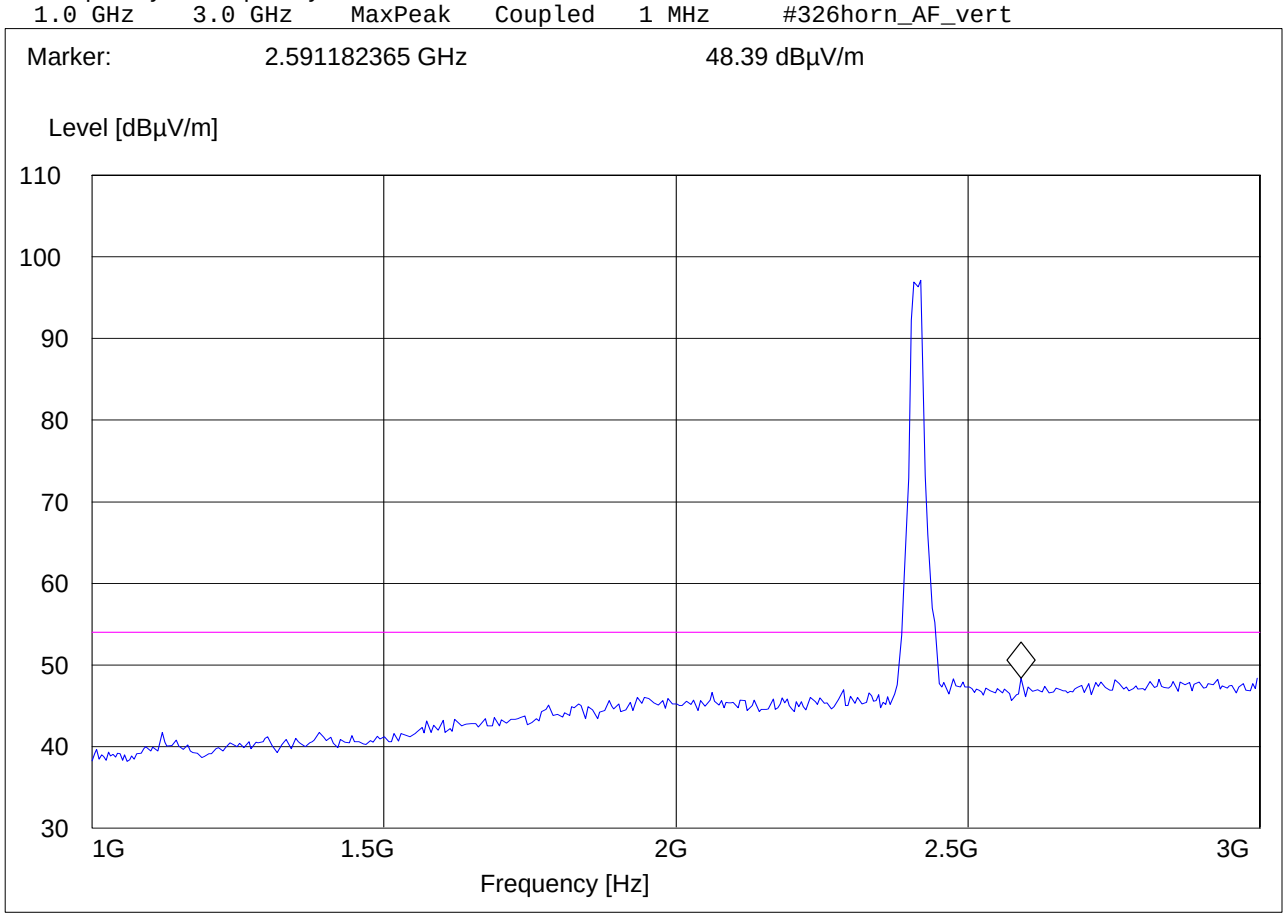


1-3GHz (2412MHz)
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

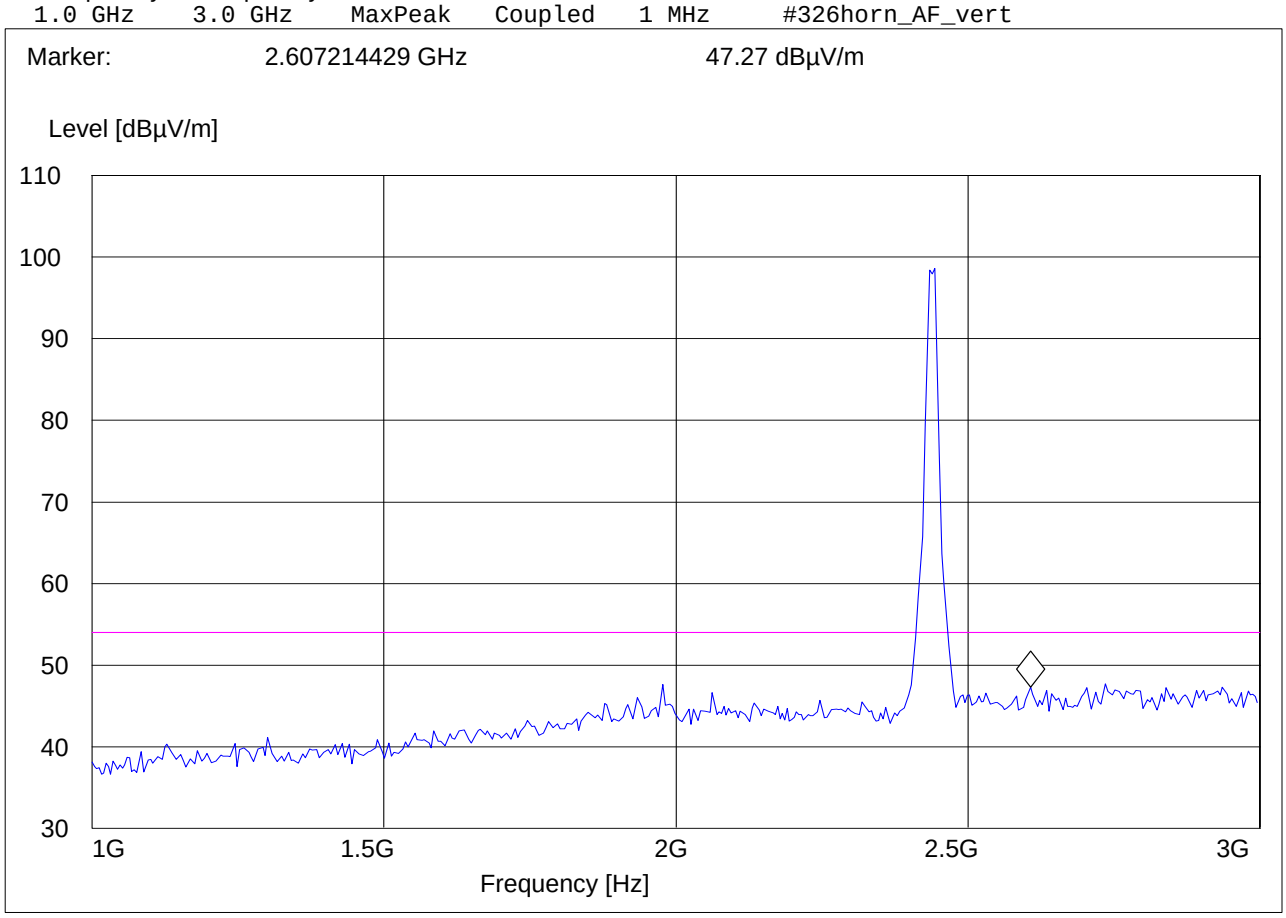


1-3GHz (2437MHz)
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

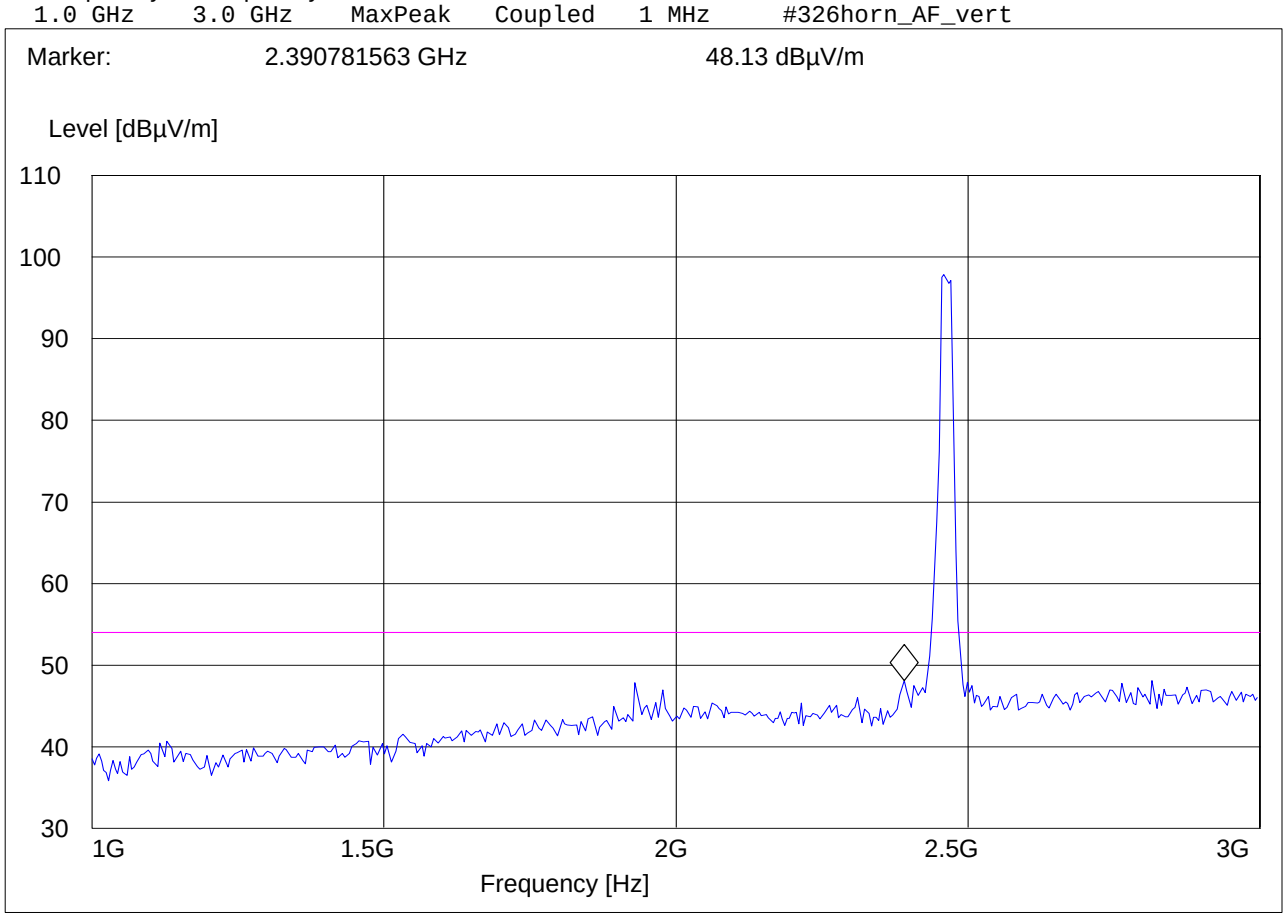


1-3GHz (2462MHz)
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

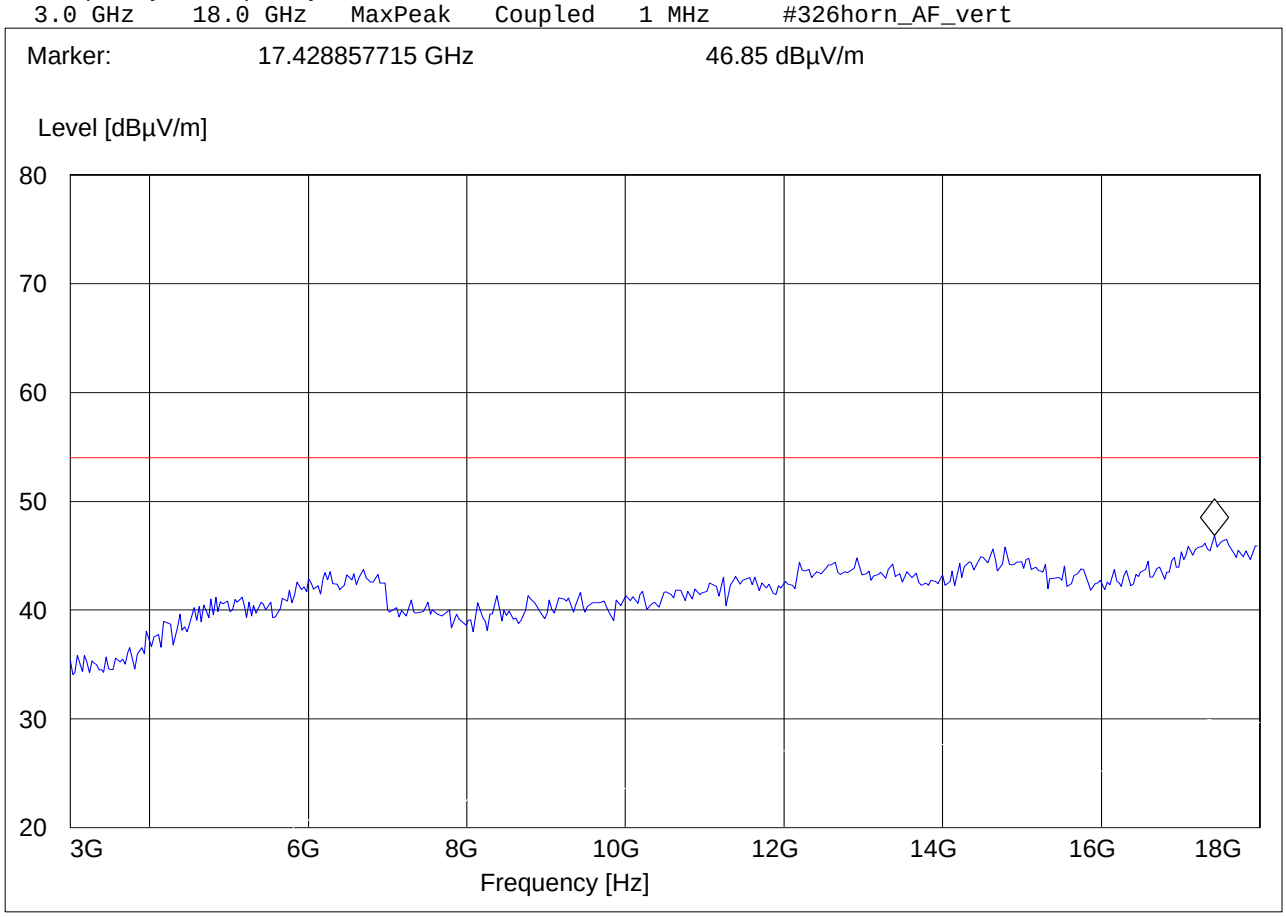


3-18GHz (2412MHz)
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

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

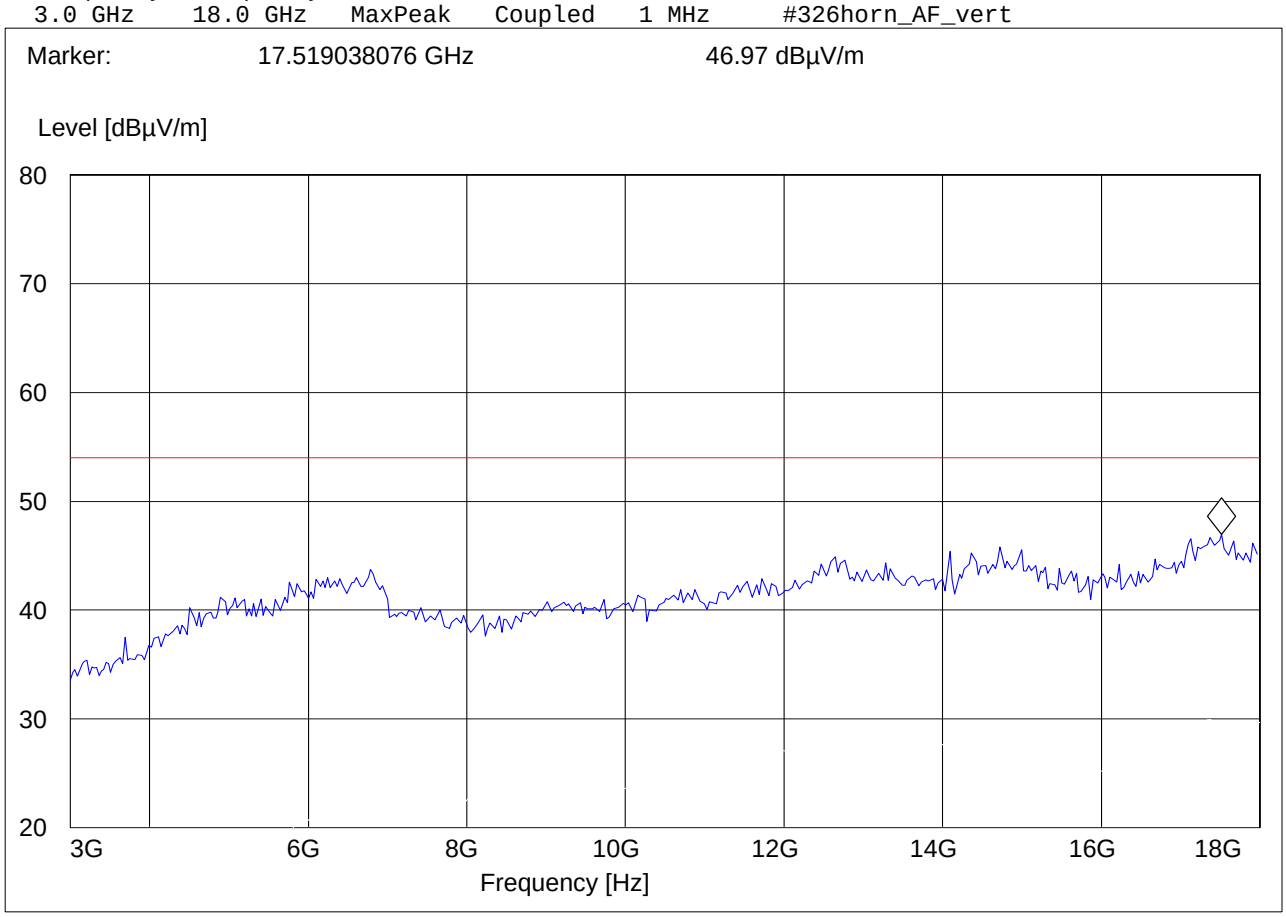


3-18GHz (2437MHz)
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

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

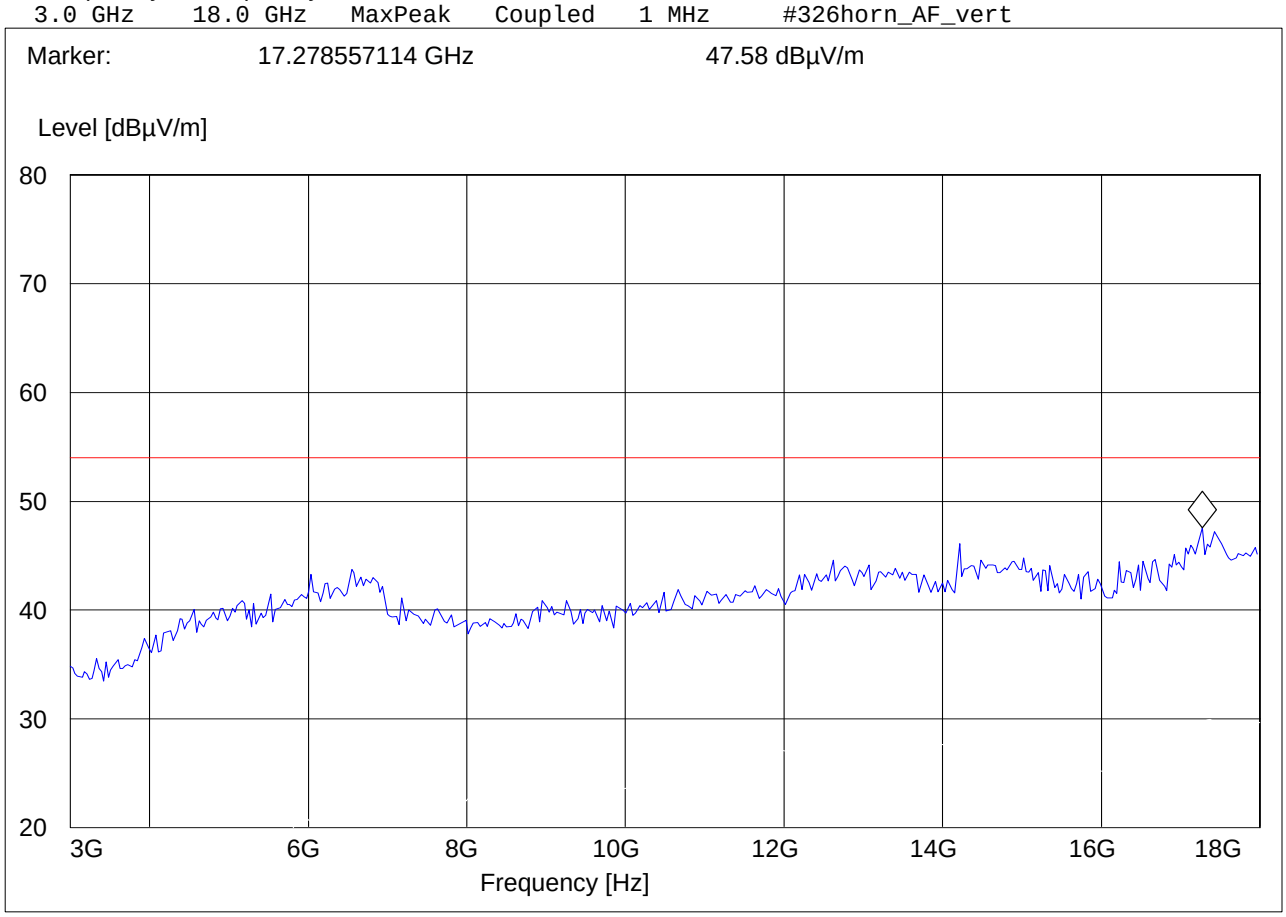


3-18GHz (2462MHz)
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
Comments:
```

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

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

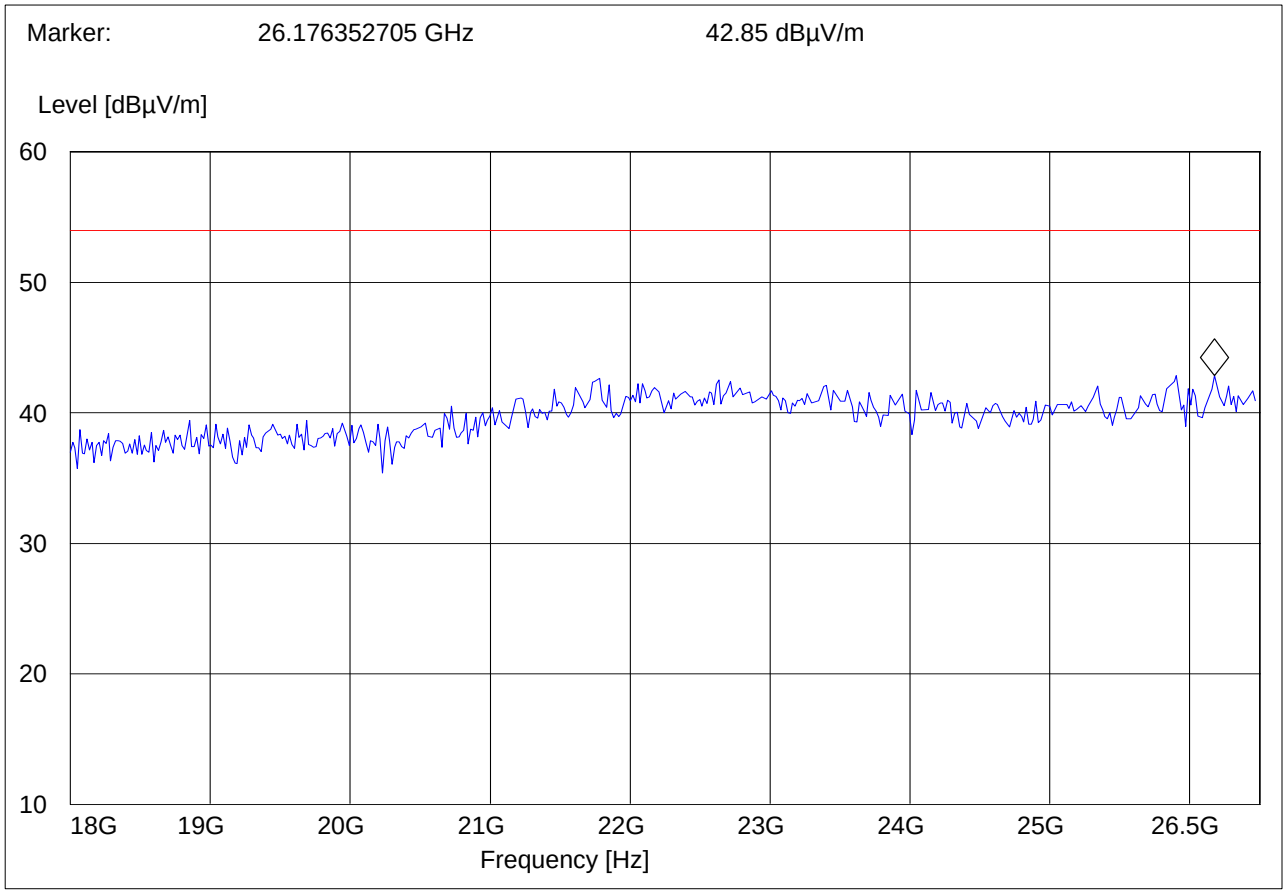


18-25GHz
Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          BATT
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 MaxPeak	Coupled	100 kHz	Horn # 3116_18-40G



5.4 RECEIVER SPURIOUS RADIATION § 15.209/RSS210

5.4.1 LIMITS

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

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.

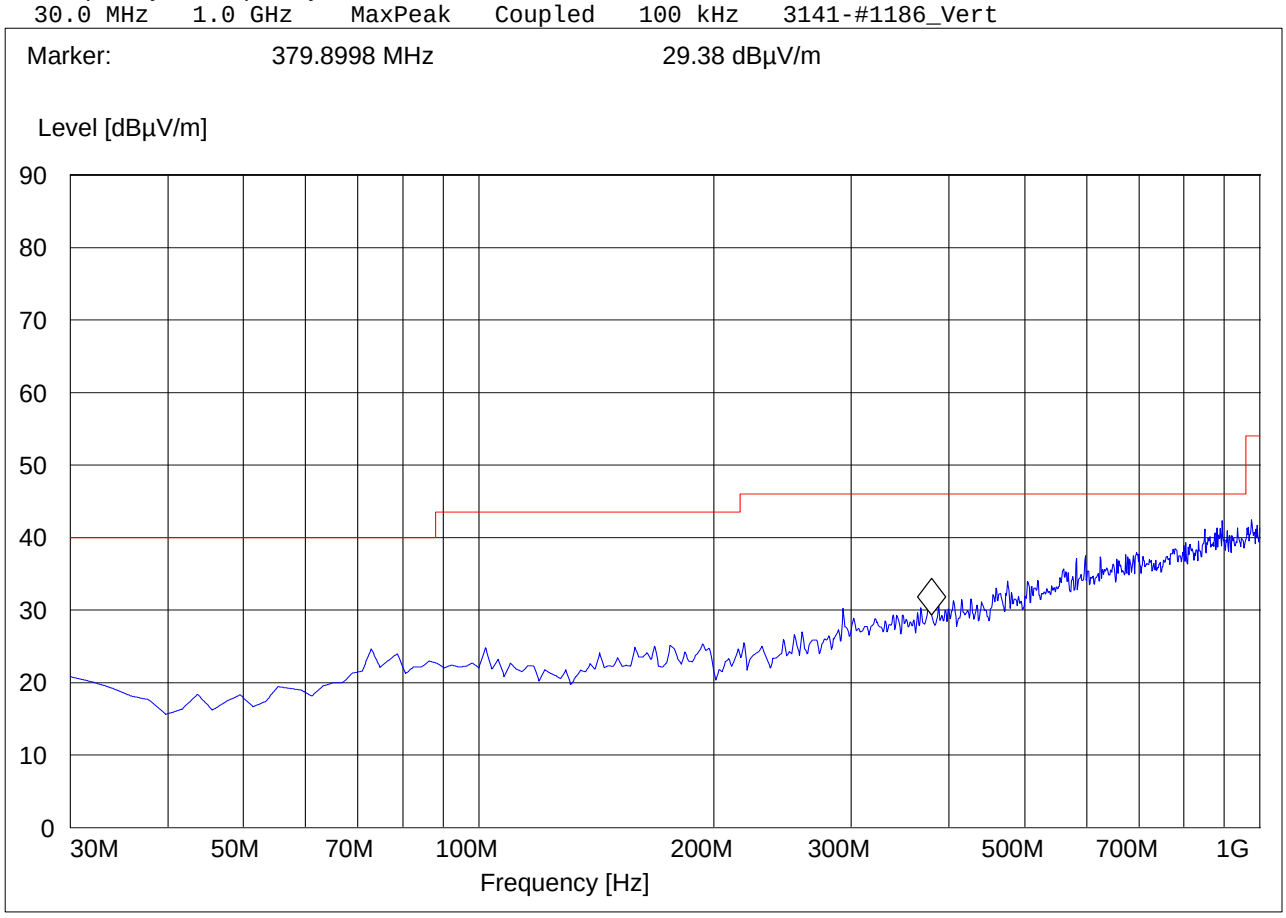
2. All measurements are done in peak mode using an average limit , unless specified with the plots.

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

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
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

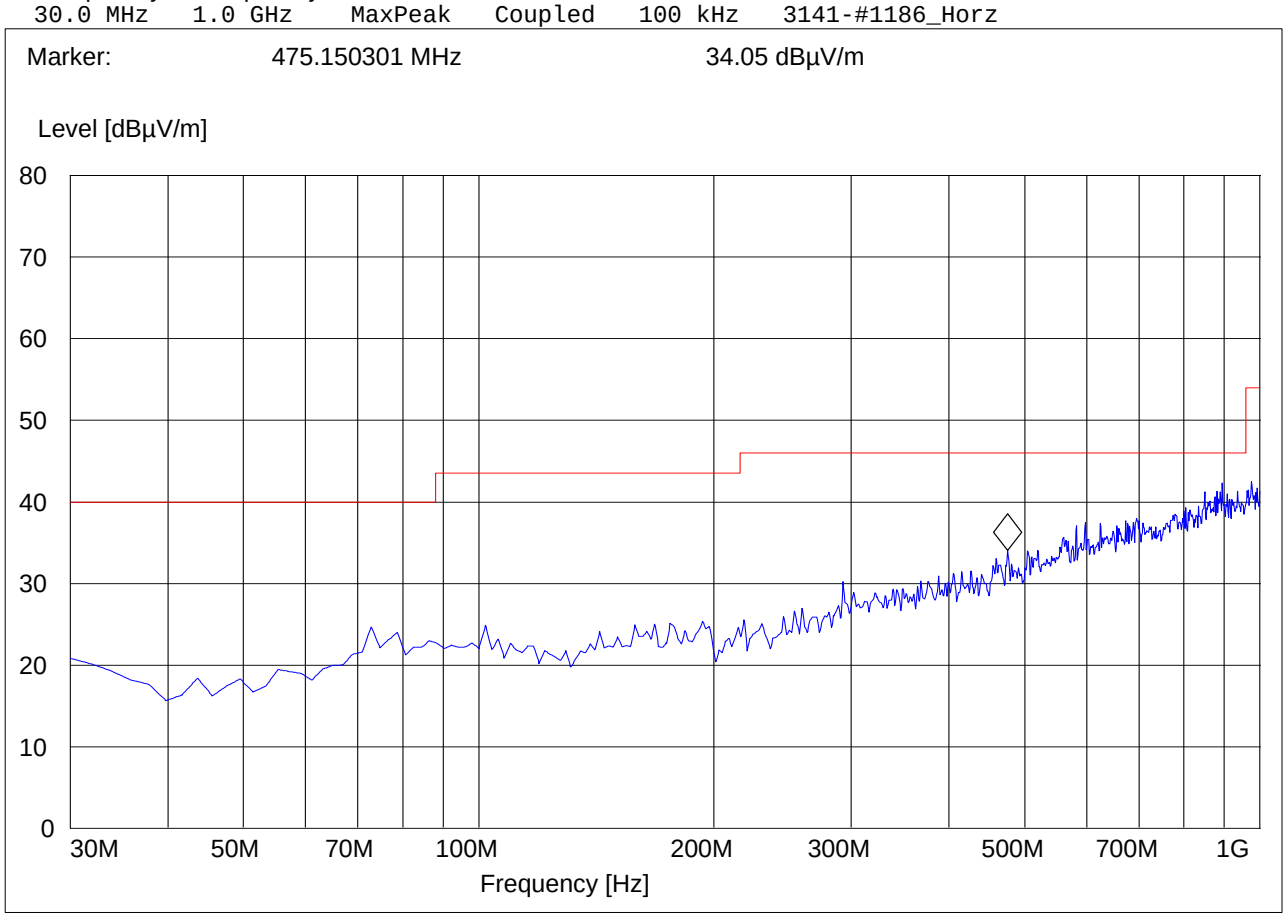


30MHz – 1GHz
Antenna: Horizontal
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
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

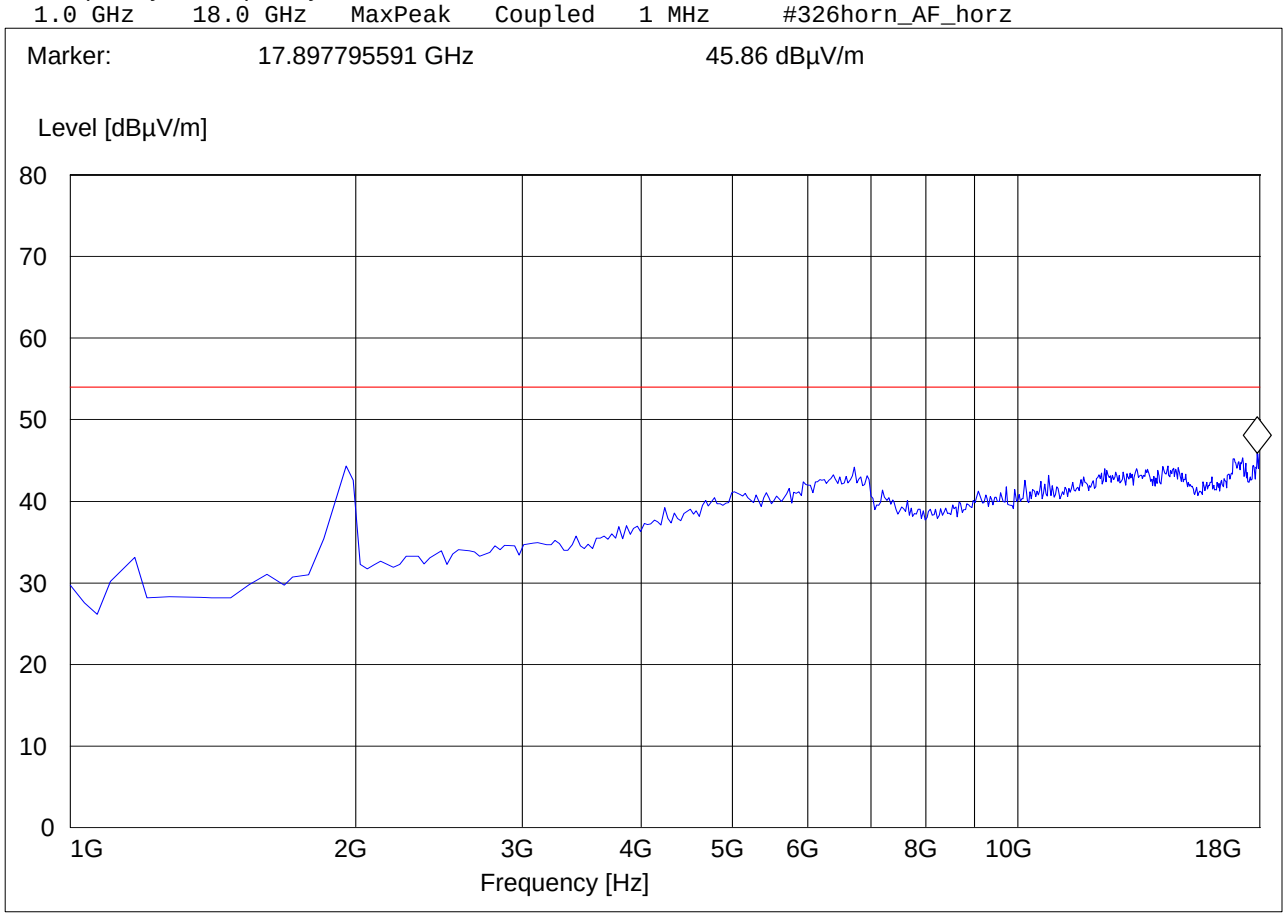


1-18GHz
Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

```
EUT:              8881606UY7K
Customer::        ACI
Test Mode:        802.11G
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    PETER
Voltage:          AC ADAPTOR
Comments:
```

SWEEP TABLE: "FCC15.247_1-18G"

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



6 Measurements (CONDUCTED)

6.1 MAXIMUM OUTPUT POWER § 15.247 (CONDUCTED)

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

Frequency range	RF power output
2400-2483.5 MHz	30dBm

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

6.1.2 RESULTS:

TEST CONDITIONS	MAXIMUM OUTPUT POWER (dBm)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	16.72	16.89	16.87
802.11g	16.68	16.88	16.65

6.2 6dB BANDWIDTH

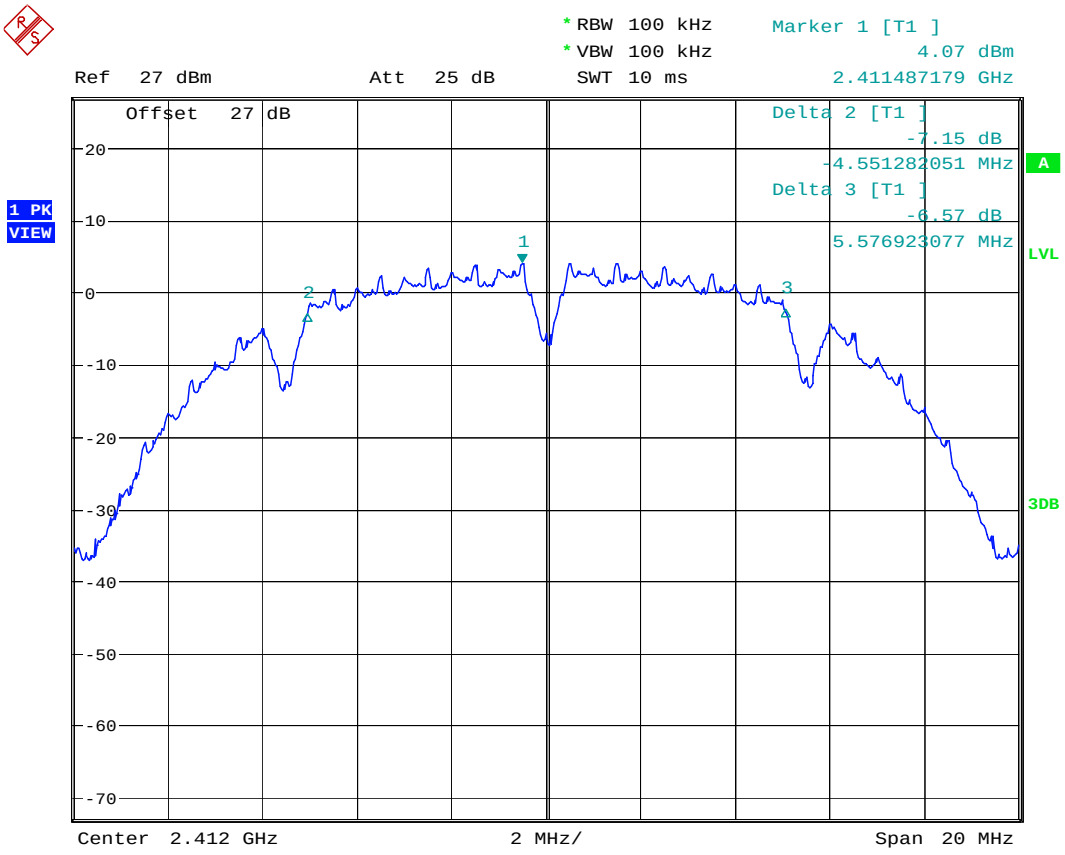
6.2.1 LIMIT SUB CLAUSE § 15.247 (a) (2)

(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Frequency range	6dB Band width
2400-2483.5 MHz	500kHz

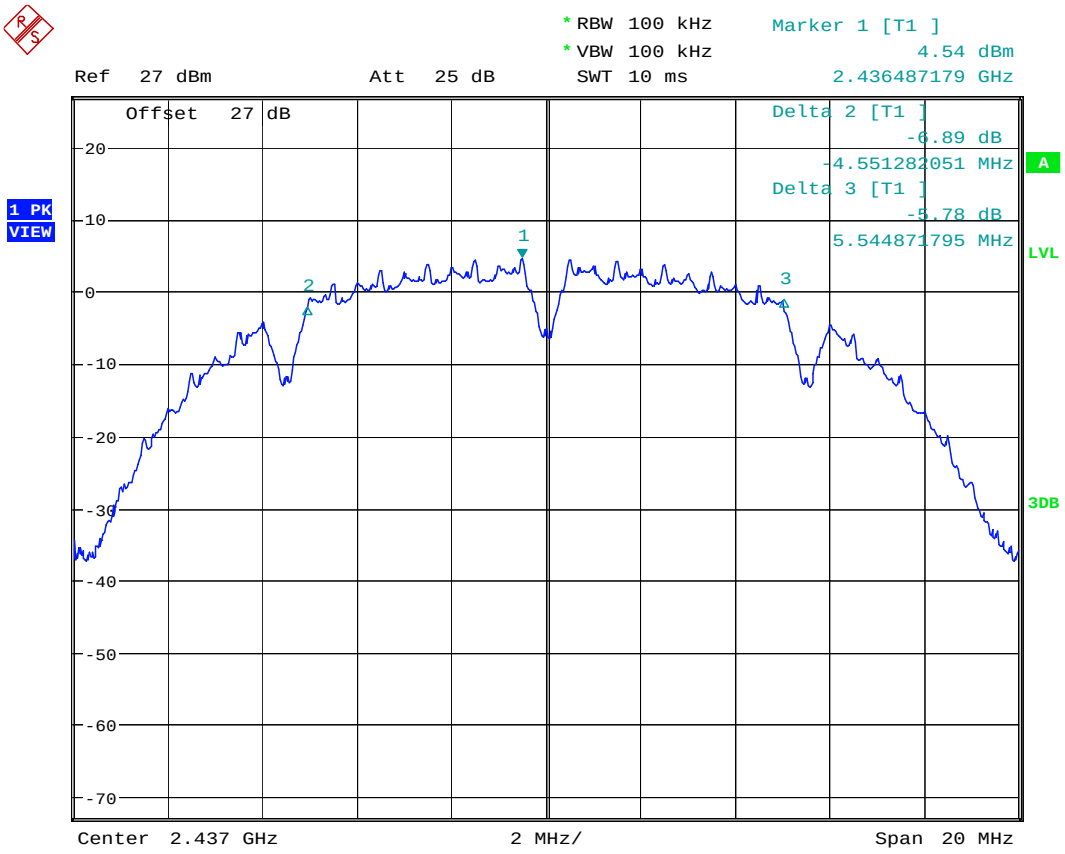
TEST CONDITIONS	6dB BANDWIDTH (MHz)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	10.12	10.09	10.08
802.11g	15.58	16.60	16.60

(2412 MHz) 802.11b 6dB BW



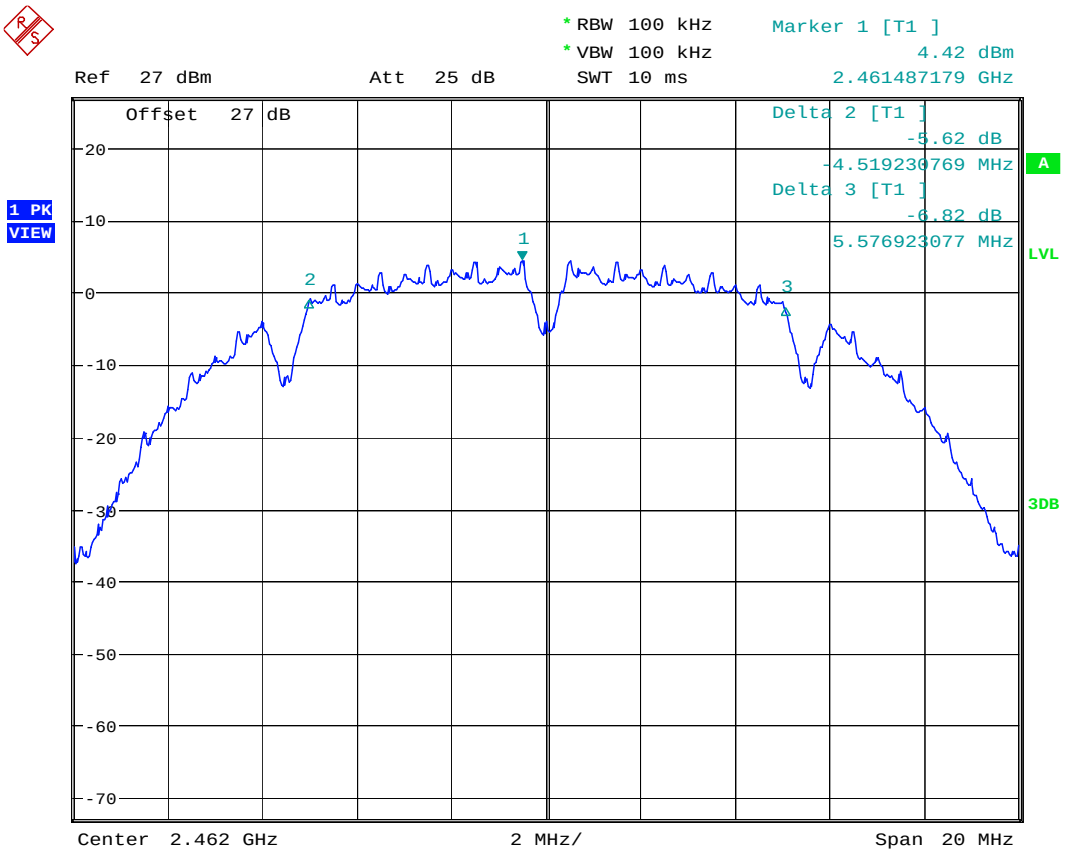
Date: 9.MAY.2008 10:49:58

(2437 MHz) 802.11b 6dB BW



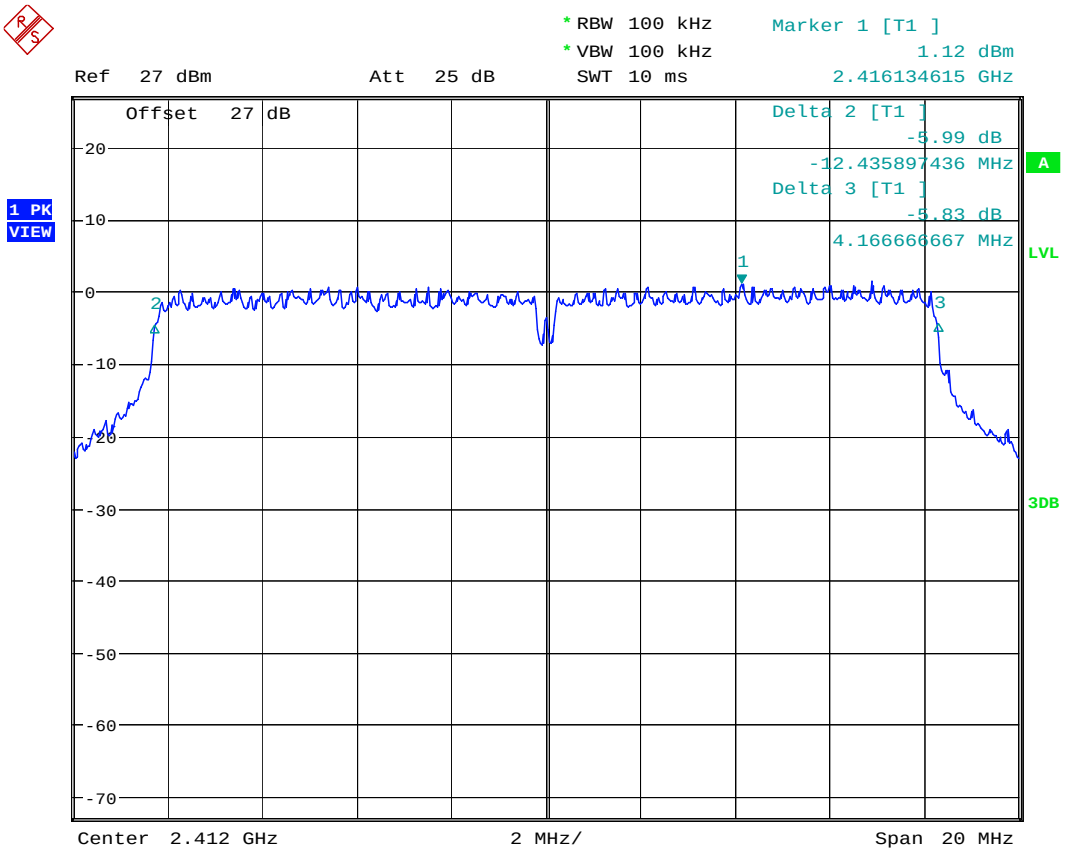
Date: 9.MAY.2008 10:47:31

(2462 MHz) 802.11b 6dB BW



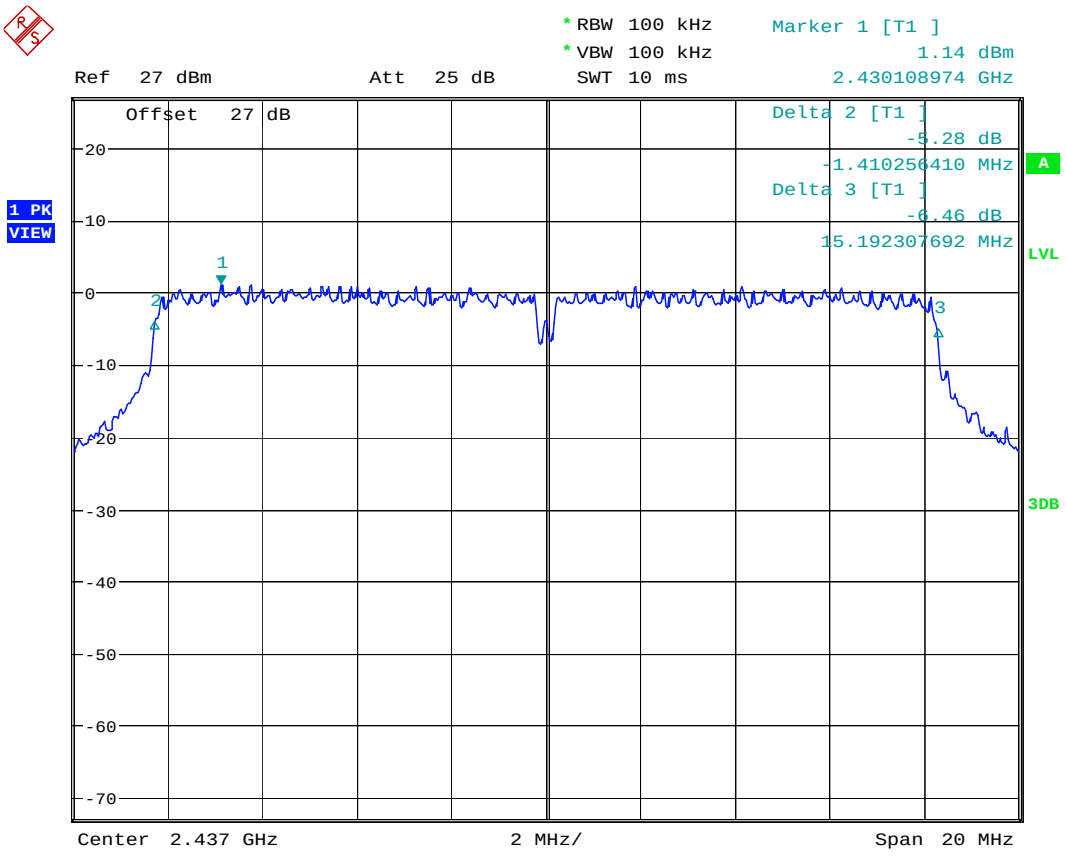
Date: 9.MAY.2008 10:42:17

(2412 MHz) 802.11g 6dB BW



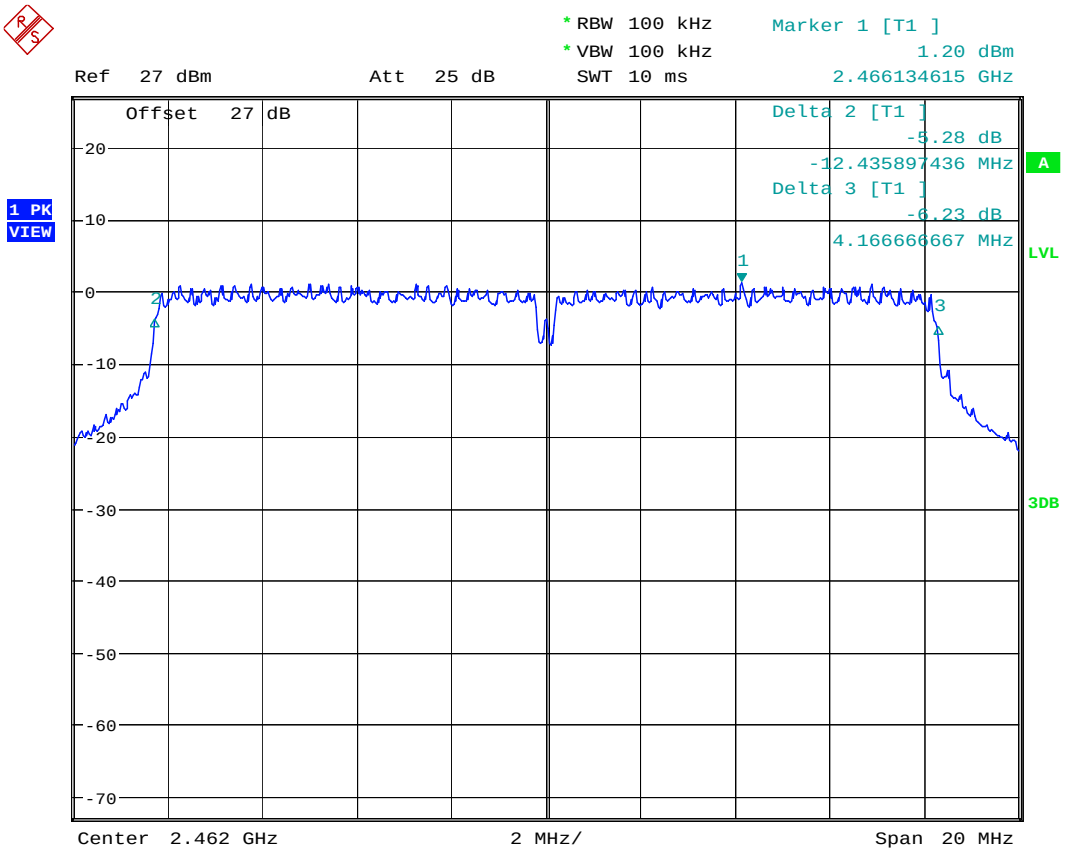
Date: 9.MAY.2008 10:51:13

(2437 MHz) 802.11g 6dB BW



Date: 9.MAY.2008 10:48:31

(2462 MHz) 802.11g 6dB BW



Date: 9.MAY.2008 10:44:22

6.3 99% BANDWIDTH

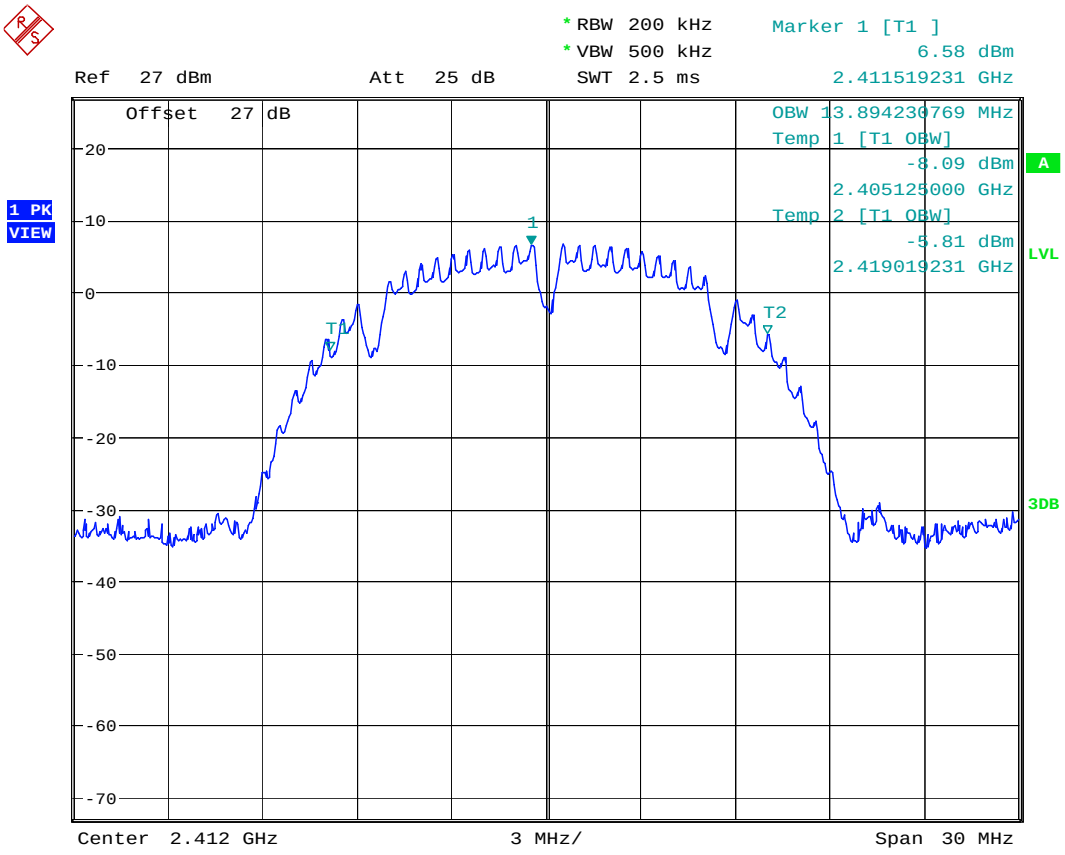
6.3.1 LIMIT SUB CLAUSE § RSS-210 (A8.2)(a)

99% BW shall be at least 500kHz

Frequency range	99% Band width
2400-2483.5 MHz	500kHz

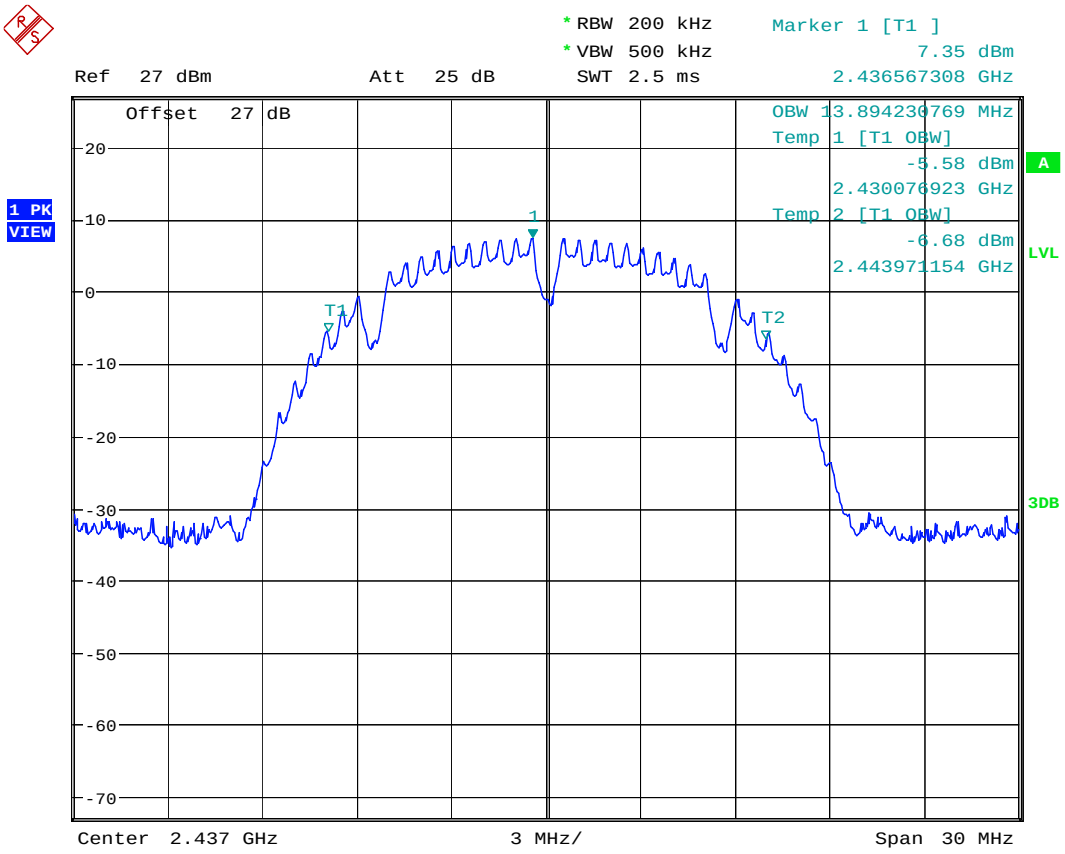
TEST CONDITIONS	99% BANDWIDTH (MHz)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	13.89	13.89	13.94
802.11g	16.83	16.73	16.83

(2412 MHz) 802.11b 99% BW



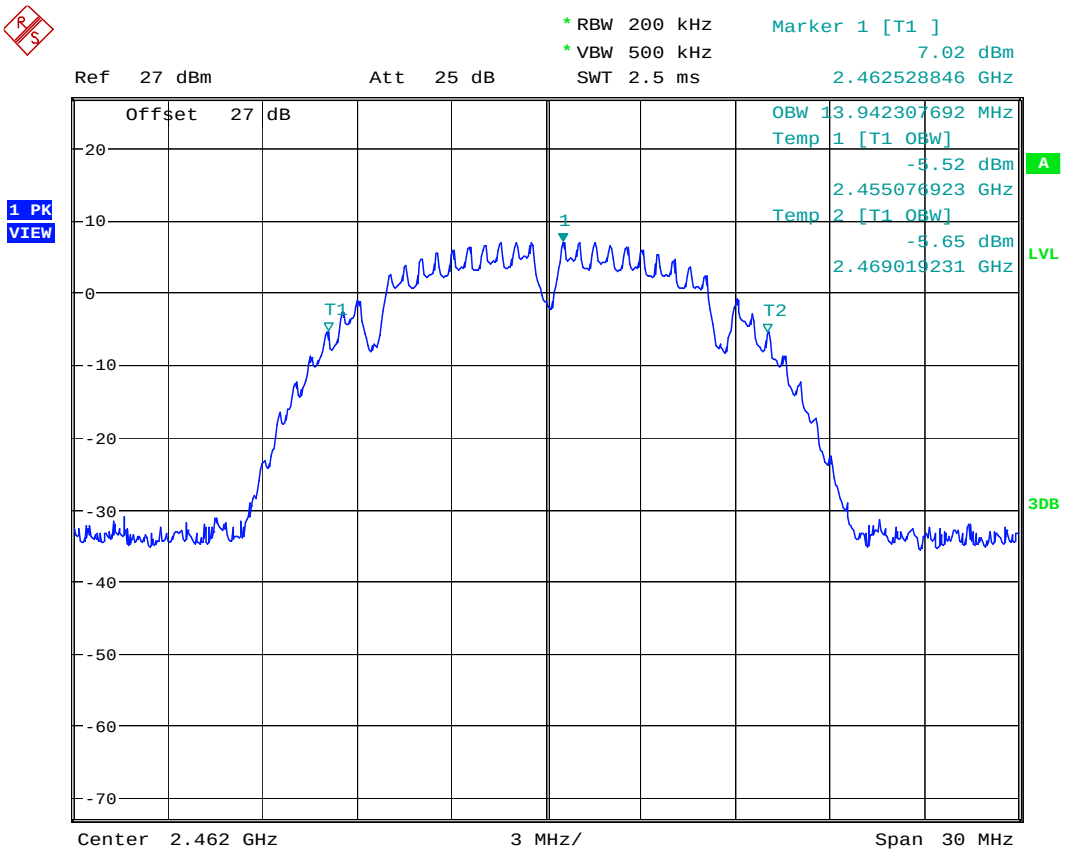
Date: 9.MAY.2008 10:54:58

(2437 MHz) 802.11b 99% BW



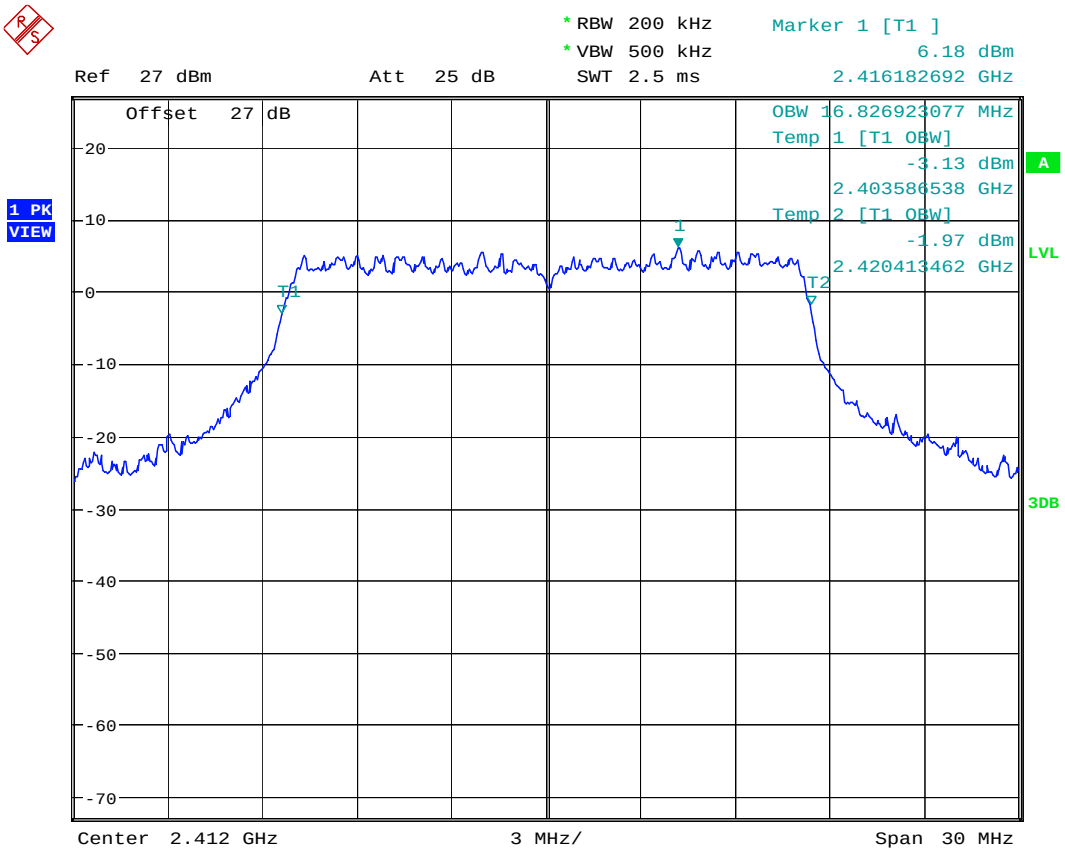
Date: 9.MAY.2008 10:55:44

(2462 MHz) 802.11b 99% BW



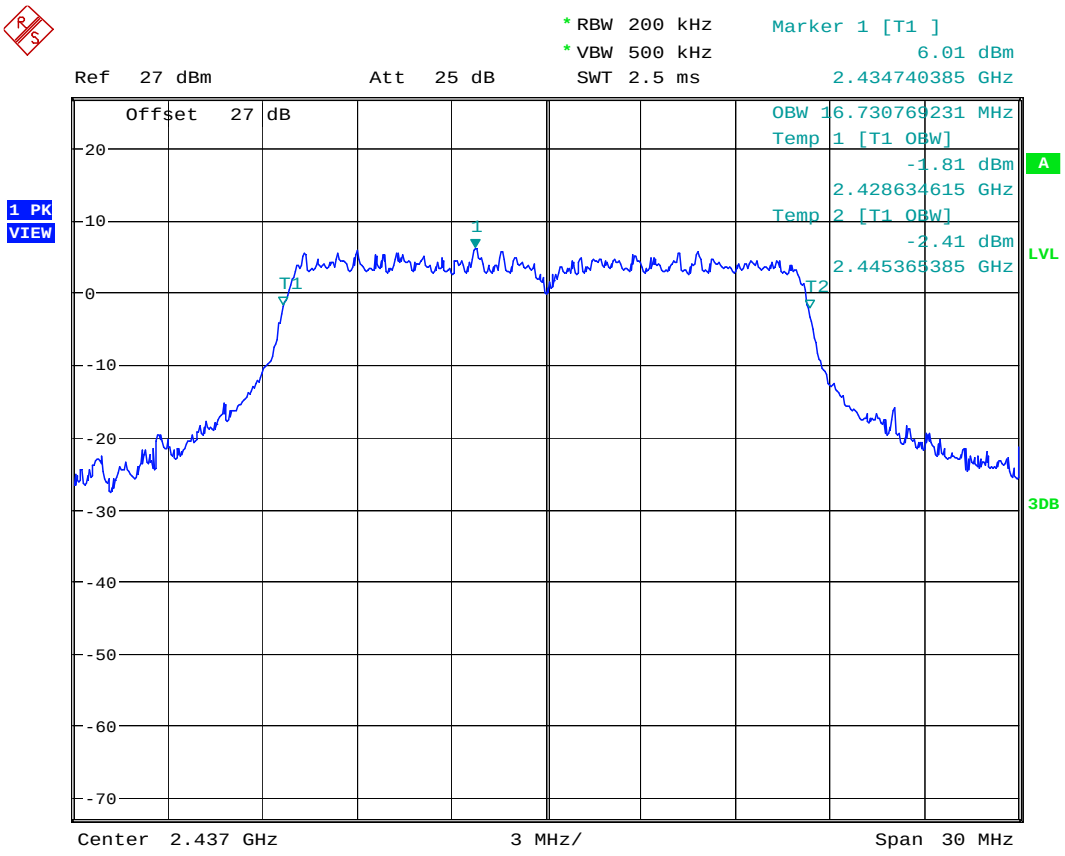
Date: 9.MAY.2008 10:57:26

(2412 MHz) 802.11g 99% BW



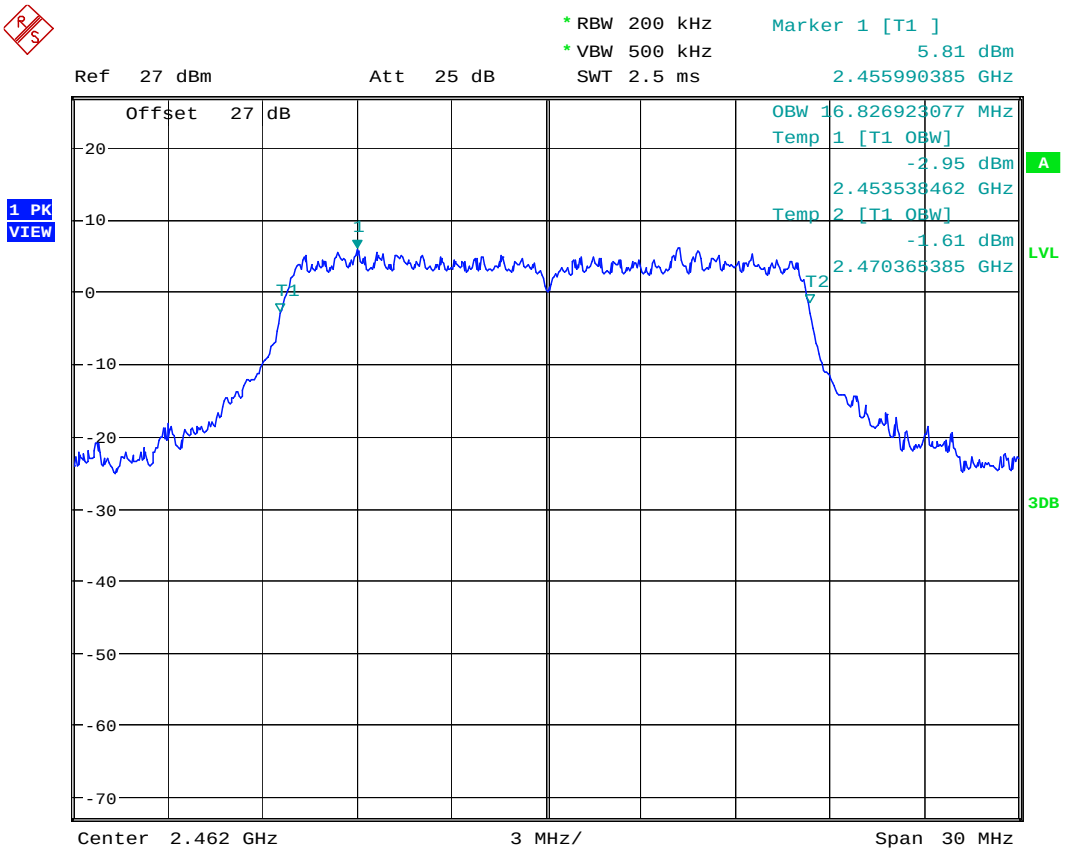
Date: 9.MAY.2008 10:54:18

(2437 MHz) 802.11g 99% BW



Date: 9.MAY.2008 10:56:29

(2462 MHz) 802.11g 99% BW



Date: 9.MAY.2008 10:58:05

6.4 POWER SPECTRAL DENSITY

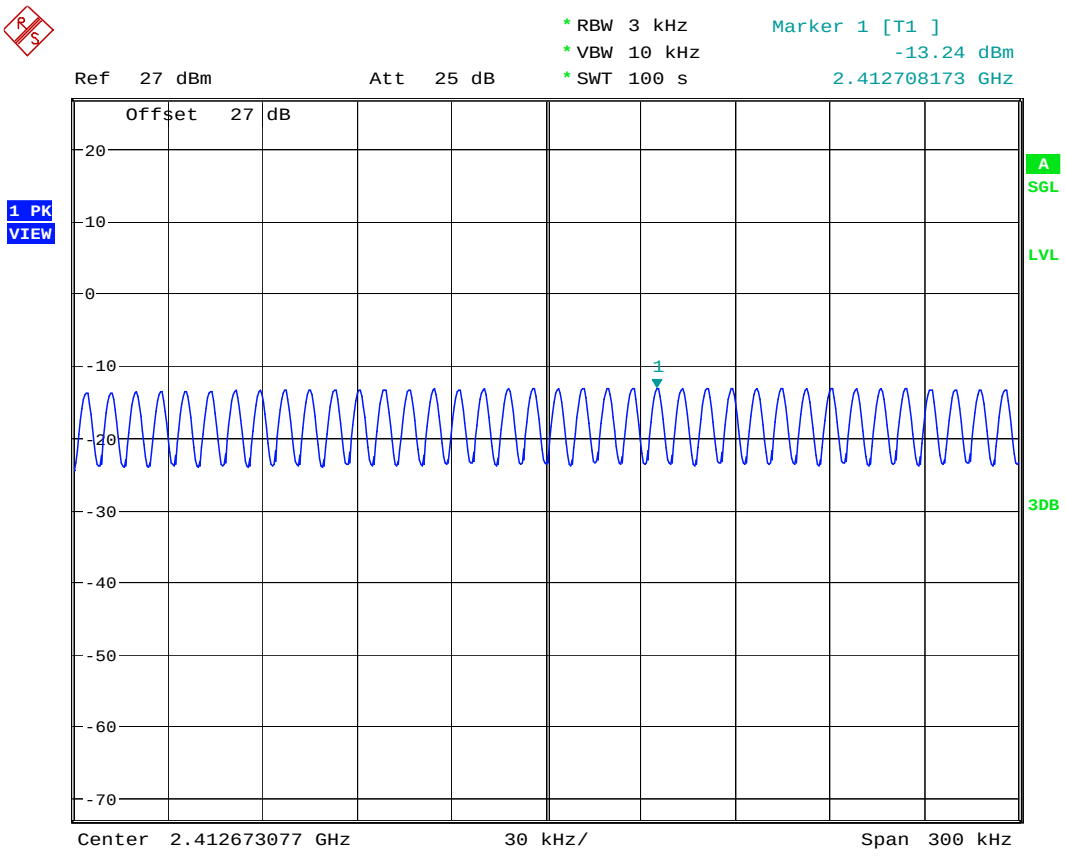
6.4.1 LIMIT SUB CLAUSE § 15.247 5 (d)

FREQUENCY RANGE	limit
2400-2483.5	8dBm (in 3kHz BW)

6.4.2 RESULTS:

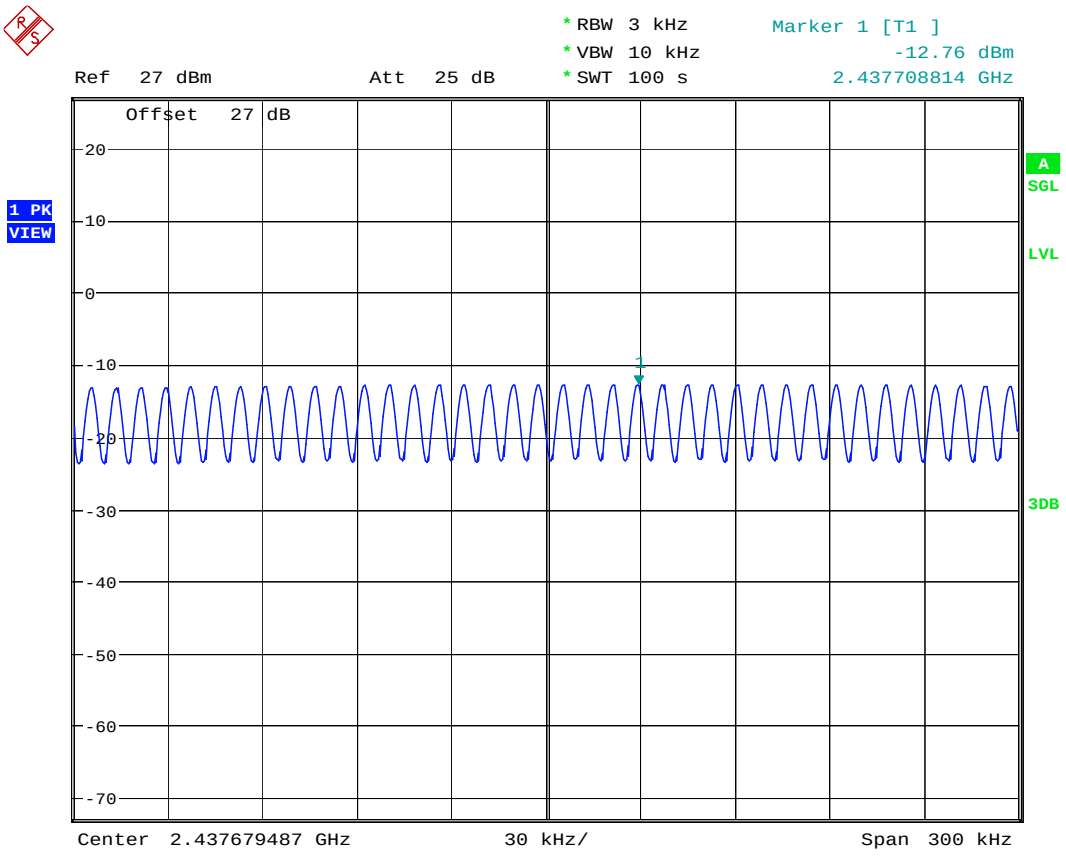
TEST CONDITIONS	POWER SPECTRAL DENSITY (dBm)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	-13.24	-12.76	-13.21
802.11g	-13.25	-13.16	-12.54

(2412 MHz) 802.11b POWER SPECTRAL DENSITY



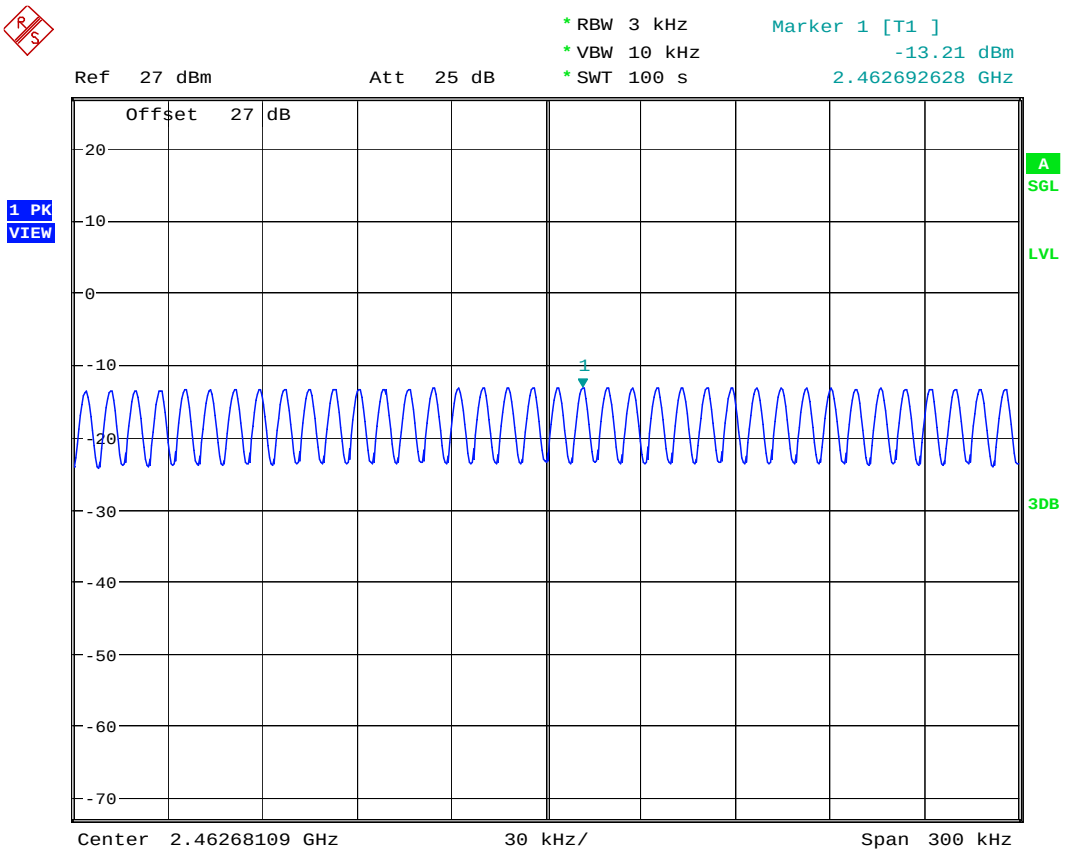
Date: 9.MAY.2008 11:33:35

(2437 MHz) 802.11b POWER SPECTRAL DENSITY



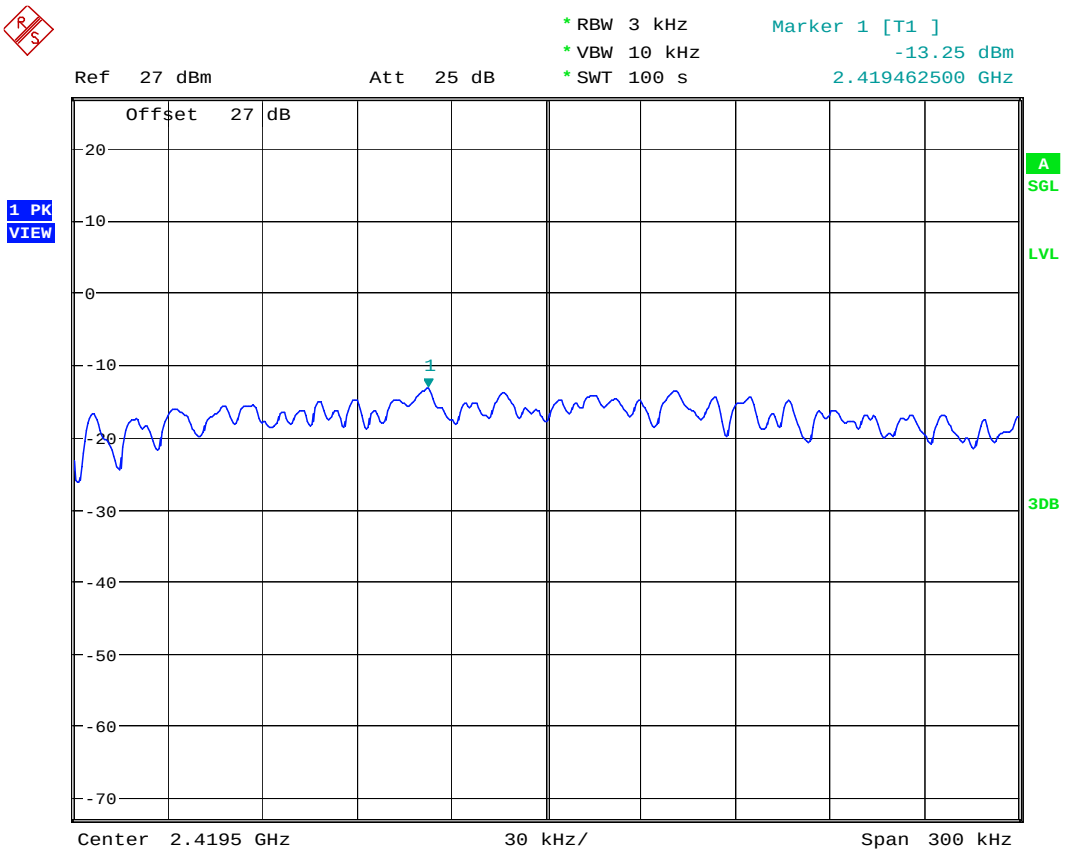
Date: 9.MAY.2008 11:26:44

(2462 MHz) 802.11b POWER SPECTRAL DENSITY



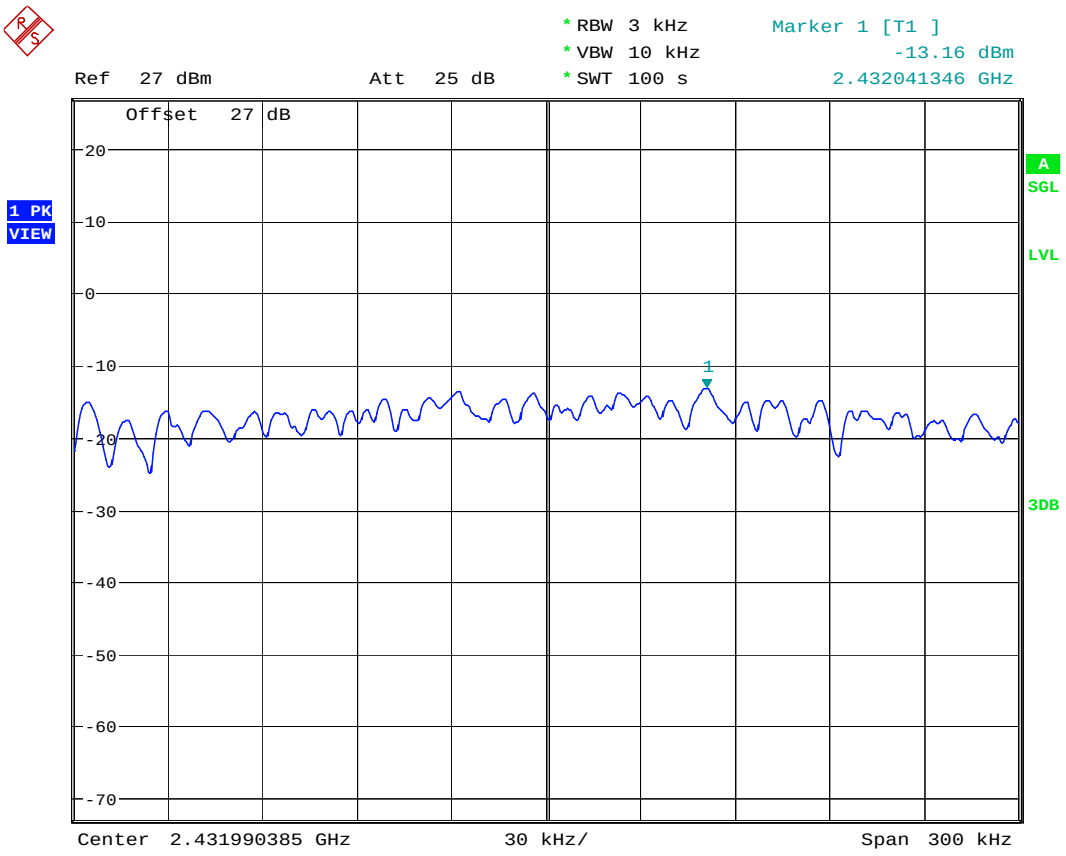
Date: 9.MAY.2008 11:16:54

(2412 MHz) 802.11g POWER SPECTRAL DENSITY



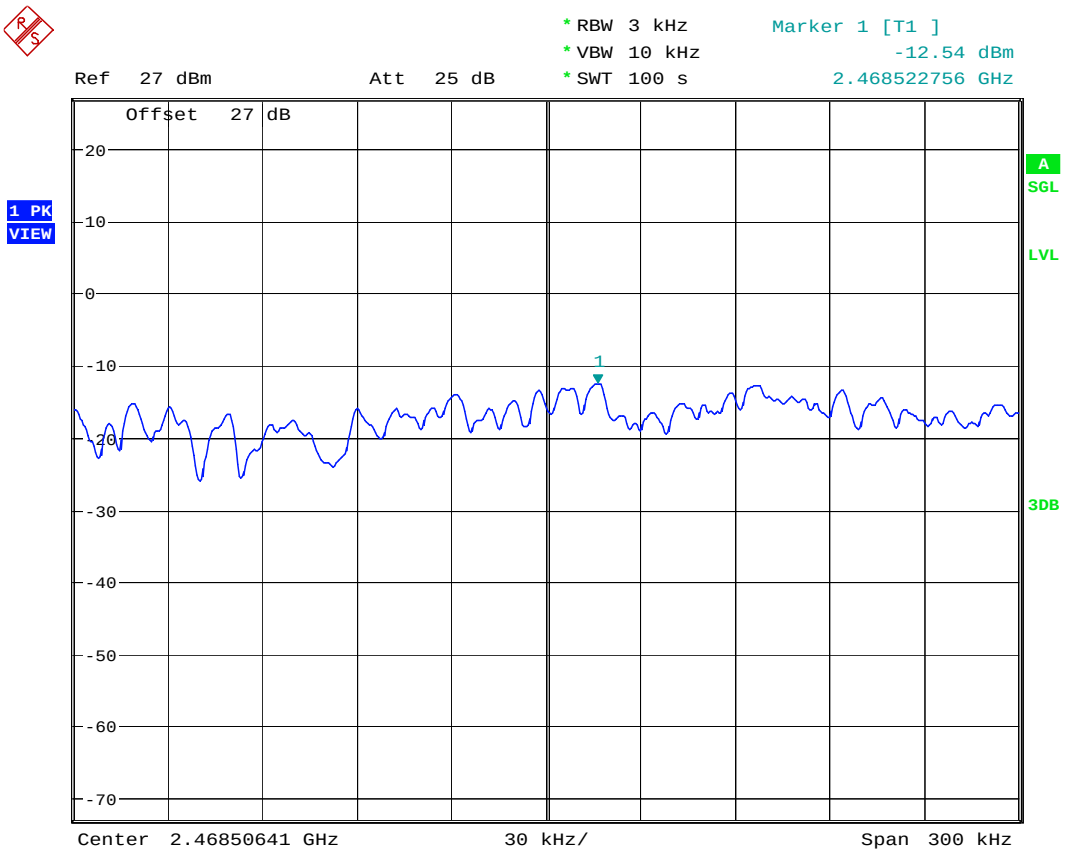
Date: 9.MAY.2008 11:36:54

(2437 MHz) 802.11g POWER SPECTRAL DENSITY



Date: 9.MAY.2008 11:30:28

(2462 MHz) 802.11g POWER SPECTRAL DENSITY



Date: 9.MAY.2008 11:06:59

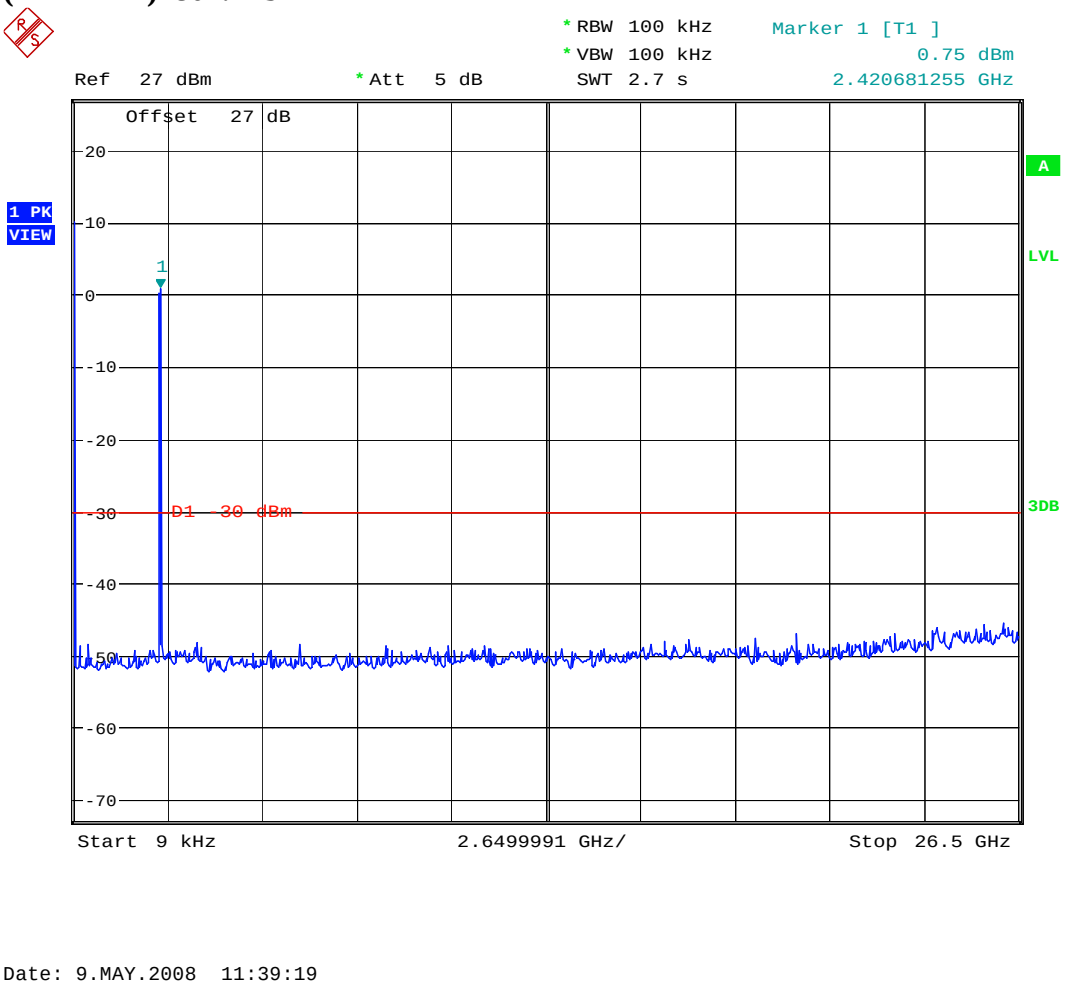
6.5 CONDUCTED SPURIOUS EMISSION

6.5.1 LIMIT SUB CLAUSE § 15.247 (d)

FREQUENCY RANGE	limit
30M-25GHz	-20dBc

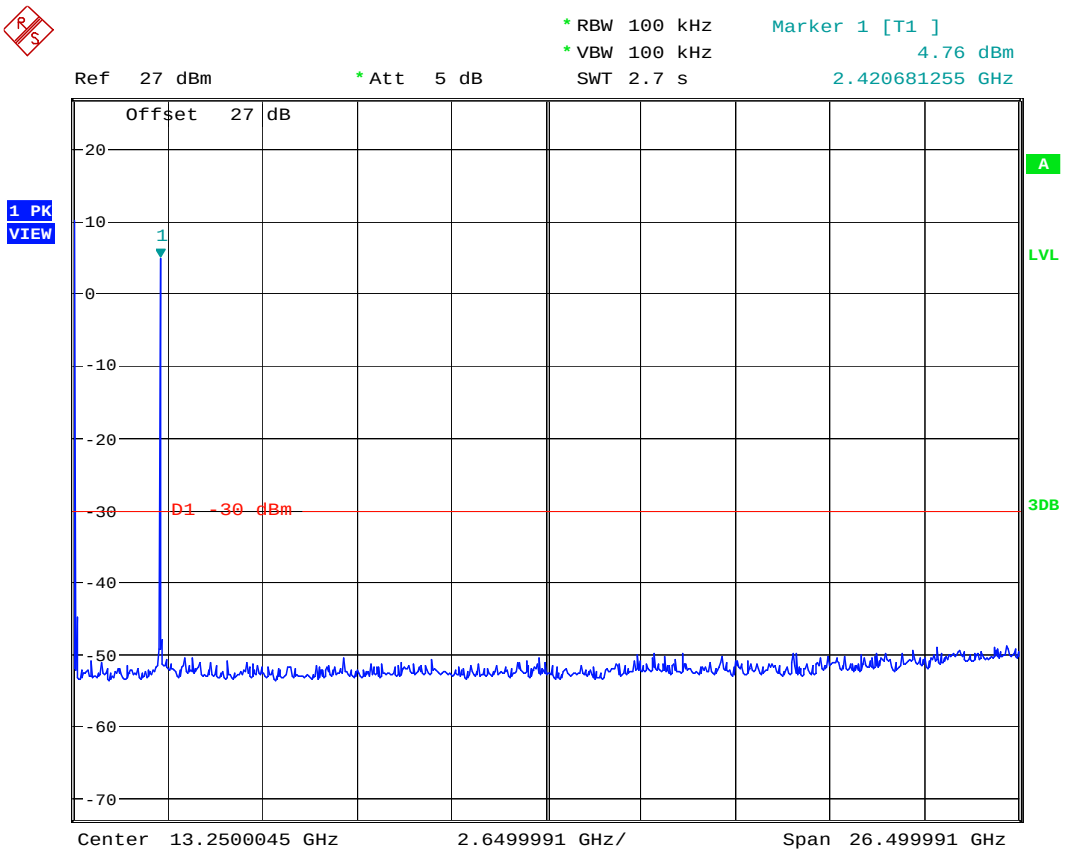
6.5.2 RESULTS: Tnom(23)°C VnomVDC

(2412MHz) 802.11b

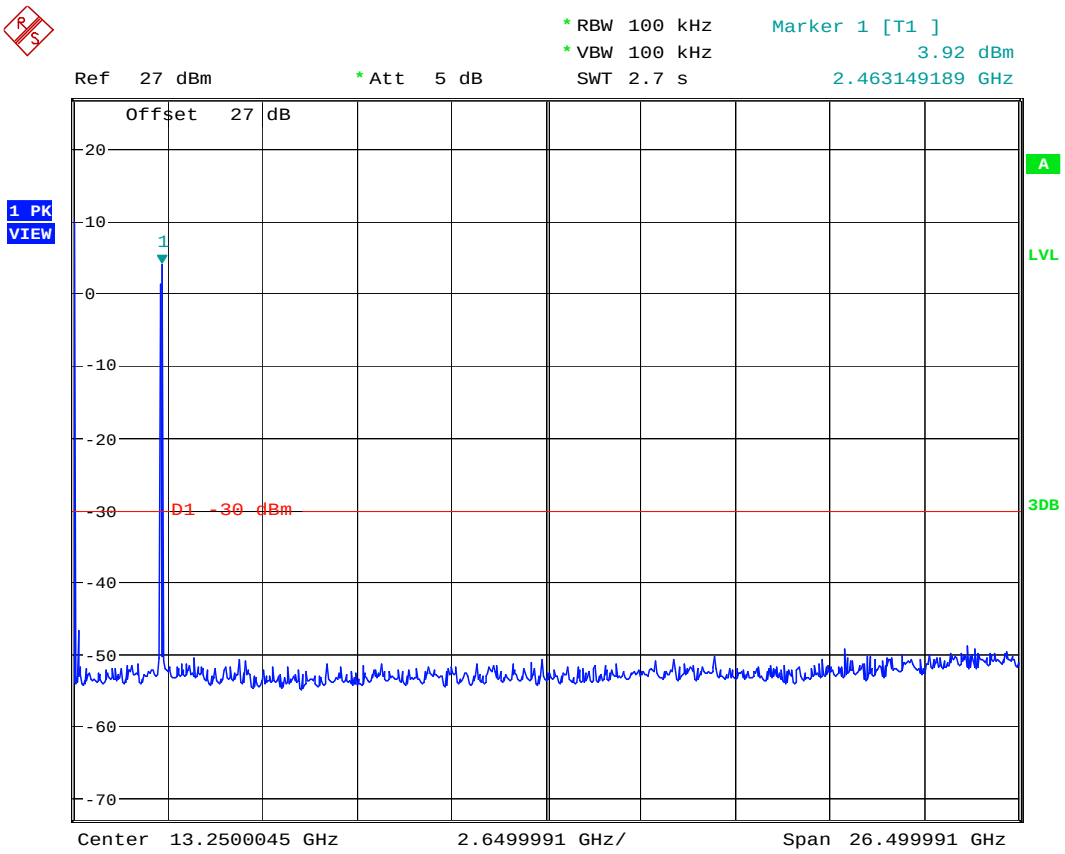


Date: 9.MAY.2008 11:39:19

(2437MHz) 802.11b

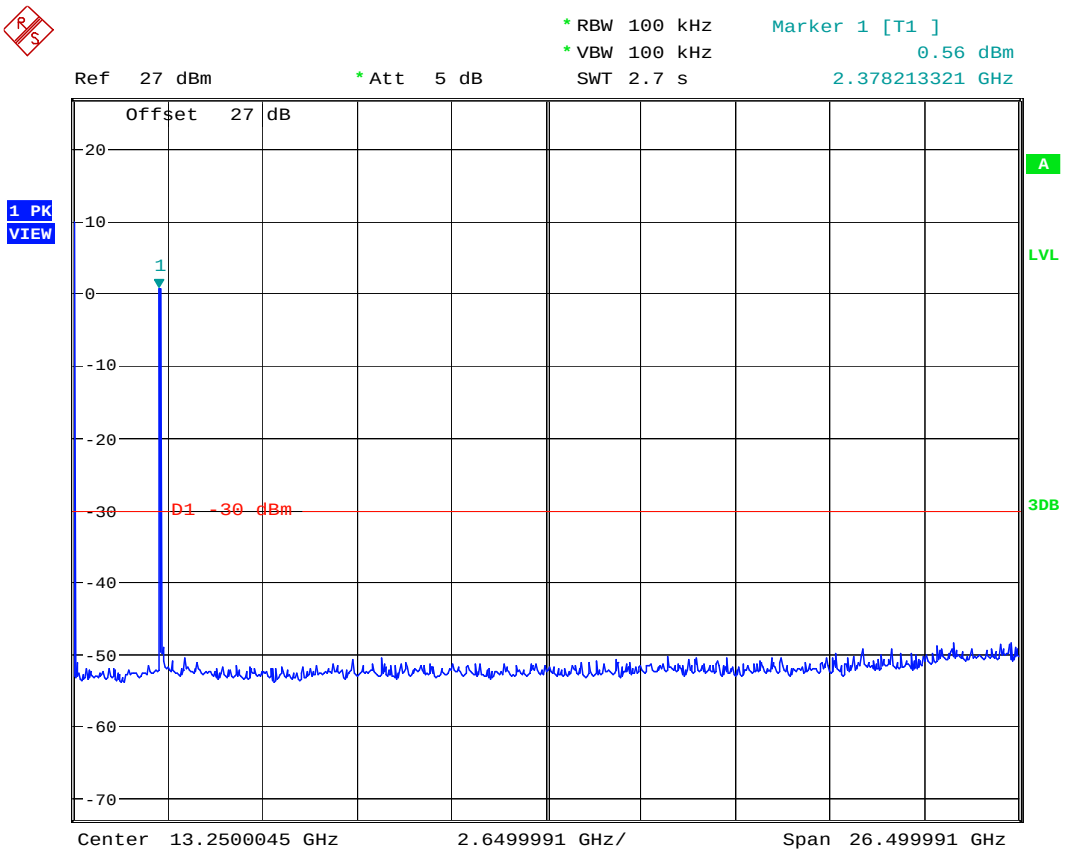


(2462MHz) 802.11b



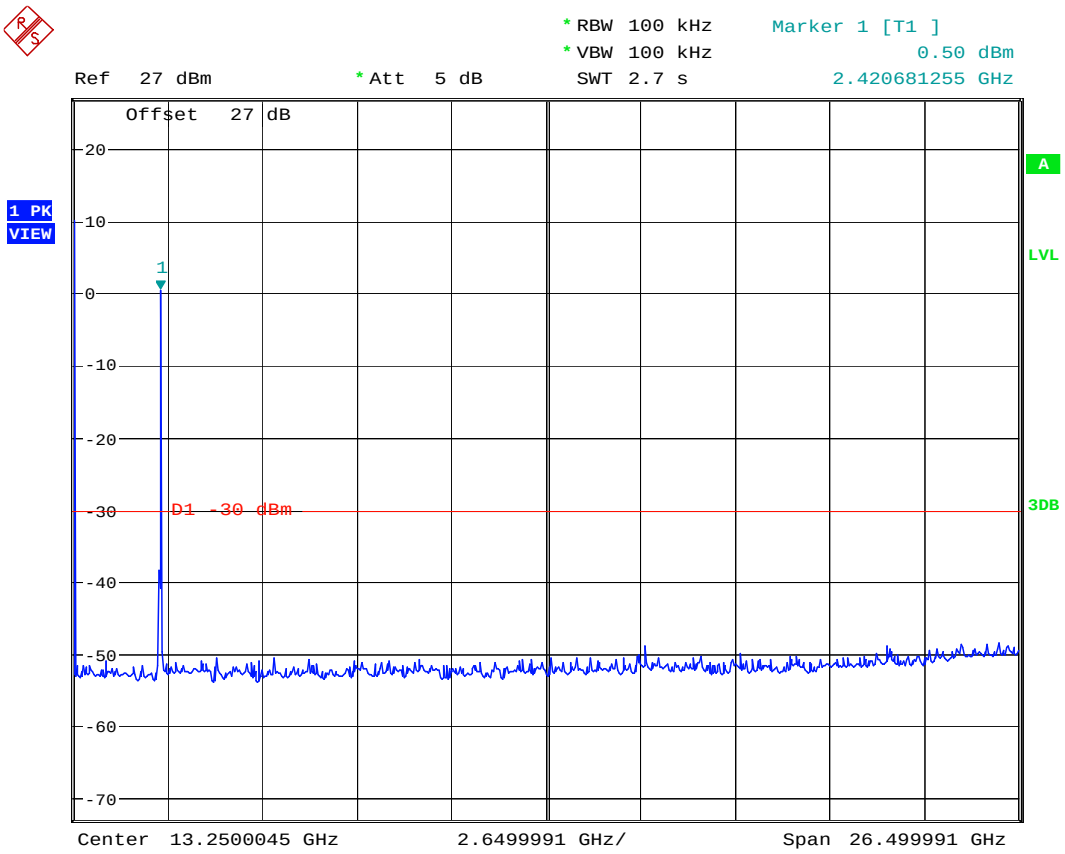
Date: 9.MAY.2008 11:41:08

(2412MHz) 802.11g



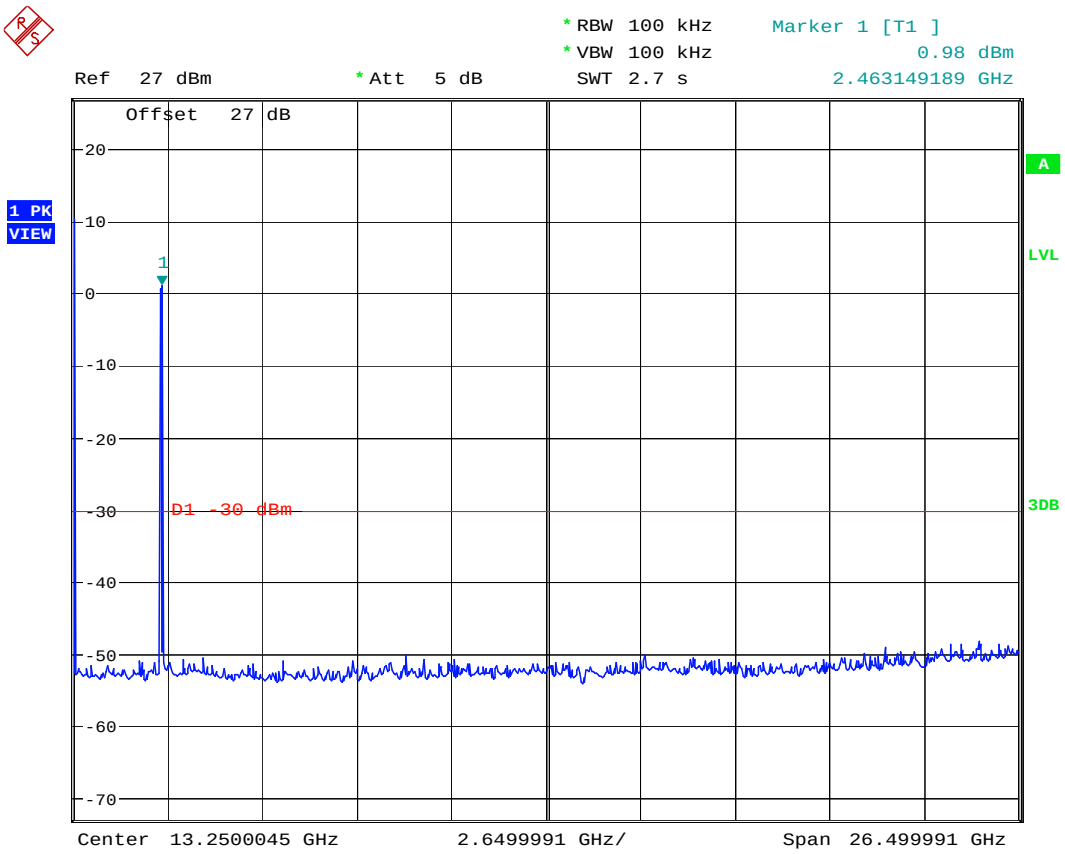
Date: 9.MAY.2008 11:42:17

(2437MHz) 802.11g



Date: 9.MAY.2008 11:42:54

(2462MHz) 802.11g



Date: 9.MAY.2008 11:44:54

6.6 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207

6.6.1 LIMITS

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

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Limit

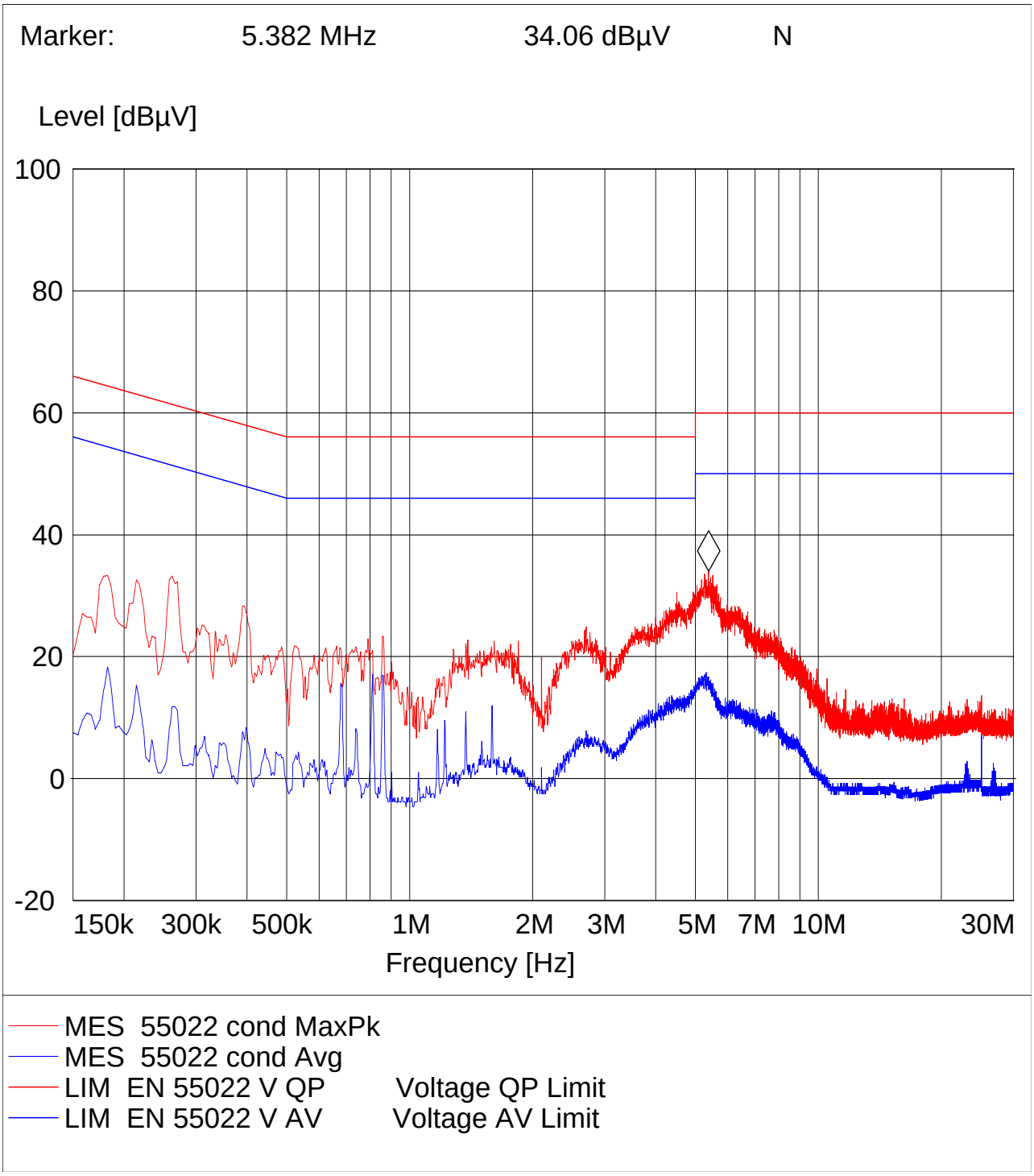
Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz

Results repots here represents the worse case emission in all operating modes.

6.6.2 RESULTS Line:

```
EUT:
Manufacturer:      ACI
Test Mode:         FDD2 + WLAN
ANT Orientation:: Conducted
EUT Orientation:: H
Test Engineer::    PETER
Power Supply: :    AC adapter
Comments:  :       Line
```



LIMIT LINE: "EN 55022 V AV"

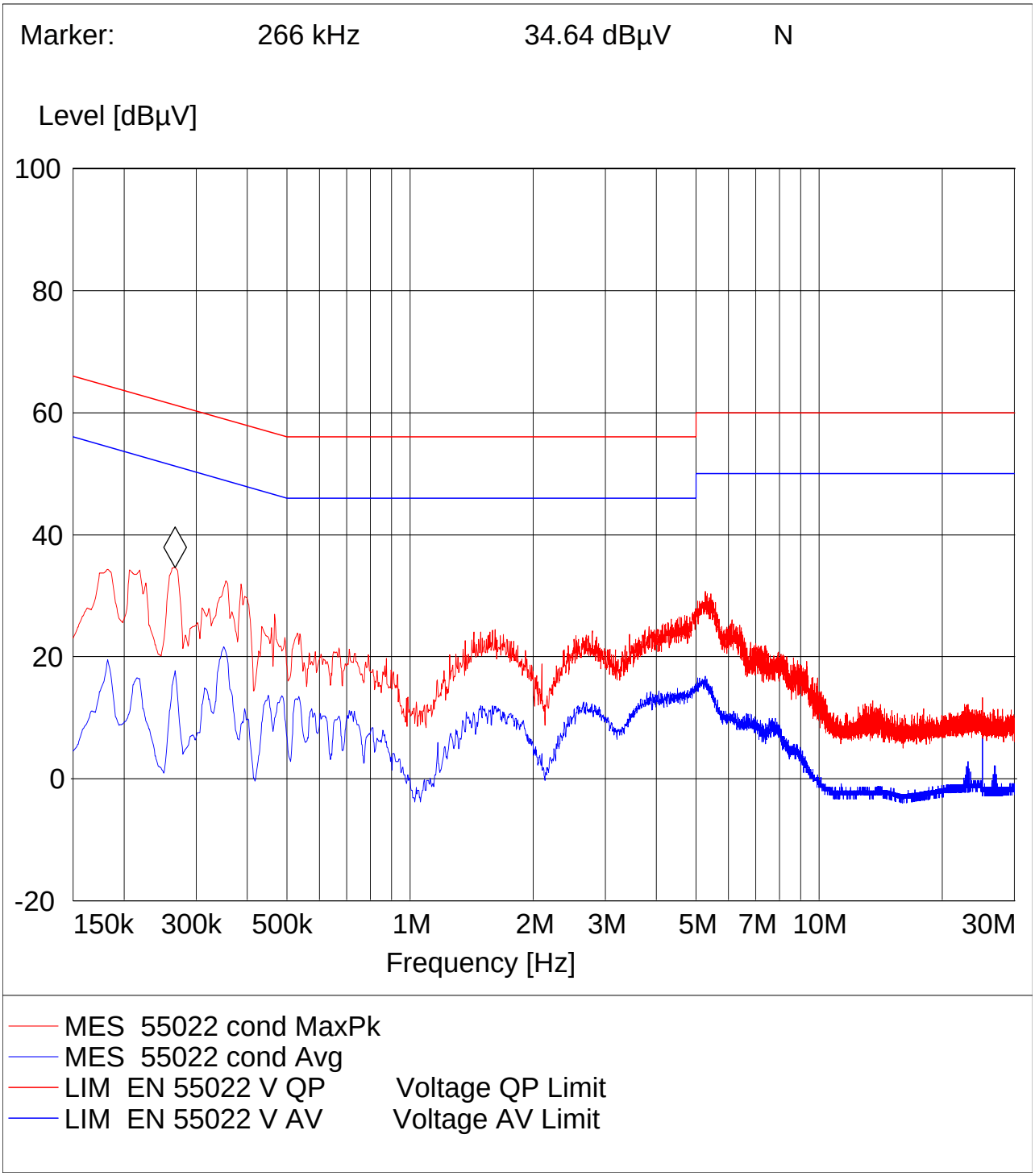
```
  Short Description:            Voltage AV Limit
4/27/1998  2:24PM
   Frequency    Level
         MHz     dBµV

    0.150000    56.00
    0.500000    46.00
    5.000000    46.00
    5.000000    50.00
   30.000000    50.00
```

LIMIT LINE: "EN 55022 V QP"

```
  Short Description:            Voltage QP Limit
4/27/1998  2:24PM
   Frequency    Level
         MHz     dBµV

    0.150000    66.00
    0.500000    56.00
    5.000000    56.00
    5.000000    60.00
   30.000000    60.00
```

Neutral:

```
EUT:
Manufacturer:      ACI
Test Mode:         FDD2 + WLAN
ANT Orientation:: Conducted
EUT Orientation:: H
Test Engineer::    PETER
Power Supply: :    AC adapter
Comments:  :       NEUTRAL
```



LIMIT LINE: "EN 55022 V AV"

```
  Short Description:            Voltage AV Limit
4/27/1998  2:24PM
   Frequency    Level
         MHz     dBµV

    0.150000    56.00
    0.500000    46.00
    5.000000    46.00
    5.000000    50.00
   30.000000    50.00
```

LIMIT LINE: "EN 55022 V QP"

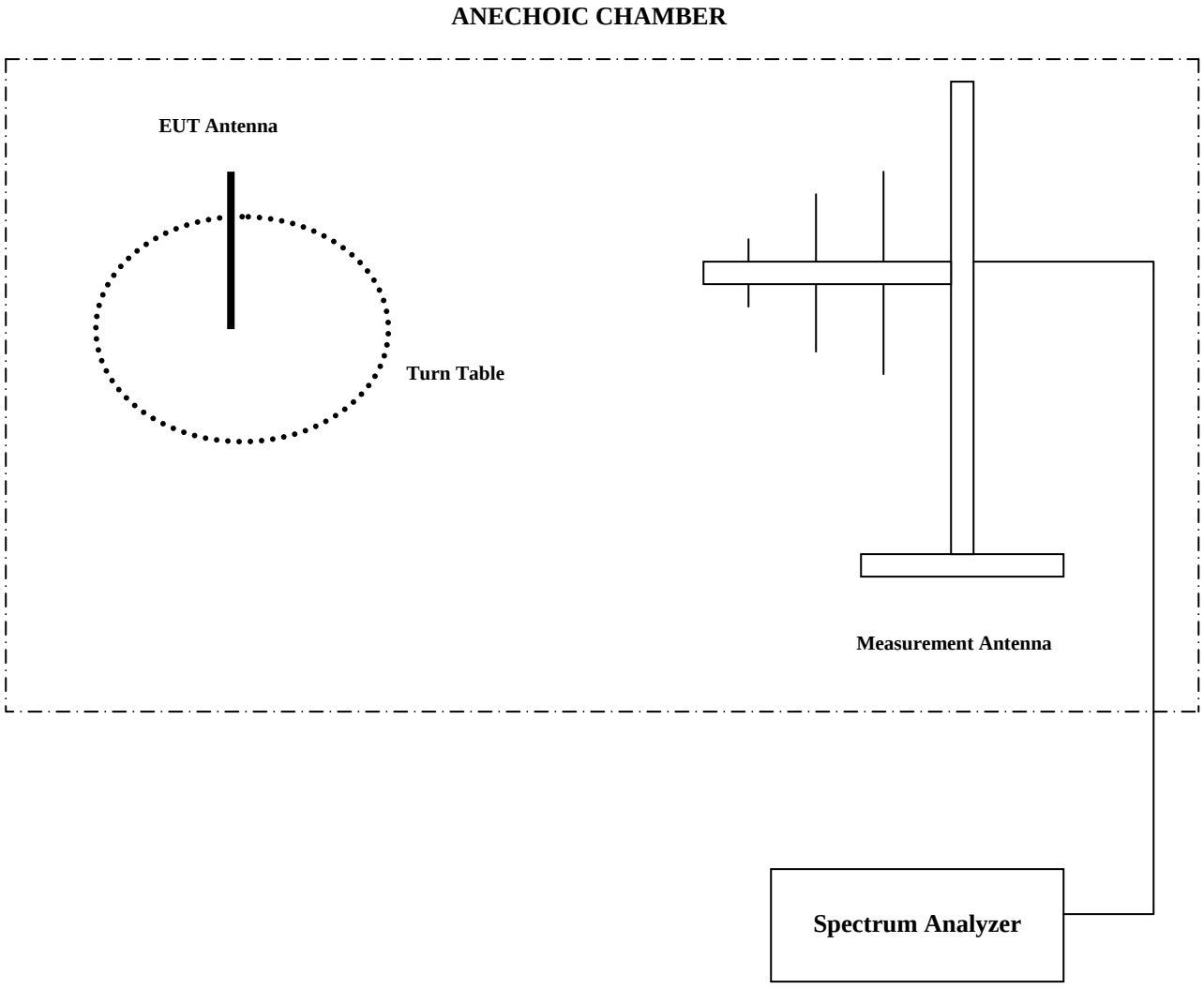
```
  Short Description:            Voltage QP Limit
4/27/1998  2:24PM
   Frequency    Level
         MHz     dBµV

    0.150000    66.00
    0.500000    56.00
    5.000000    56.00
    5.000000    60.00
   30.000000    60.00
```

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 2007	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2007	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2007	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2007	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2007	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2007	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2007	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2007	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 2007	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2007	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2007	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2007	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2007	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2007	2 years

8 BLOCK DIAGRAMS

Radiated Testing



9 Revision History

2008-5-23: First Issue.

2008-6-6: Rev1. Updated WLAN antenna gain and EIRP. Replaces original dated 2008-5-23 and titled " *EMC_A1241_15.247_DSSS_M*."