Permissive Class II Change FCC Test Report

FCC Part 15.247 & RSS-210, Issue 7 for Digital Transmission Systems

FOR:

Broadcom, Inc.

802.11abg Wireless LAN PCI-E Mini Card

Model Number: BCM94311MCAG

FCC ID: QDS-BRCM1019

IC UPN: 4324A-BRCM1019

TEST REPORT #:EMC_BROAD_051_08001_DTS
DATE: March 14, 2008

ilac-MRA A2LA ACCREDITED Certificate # 2135.01

Bluetooth™ Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab LAB CODE 20020328-00

FCC listed# A2LA Certified

IC recognized # 3462B

***CETECOM* Inc.**
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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 15.407 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS-210.

Company	Description	Model #
Broadcom, Inc.	**Wireless LAN PCI-E Mini Card**	**BCM94311MCAG**

Technical responsibility for area of testing:

Date	Section	Name	Signature
March 14, 2008	**EMC & Radio**	Ivaylo Tankov **(Project Engineer)**	Ivaylo Tankov I am approving this document

Responsible for test report and project leader:

Date	Section	Name	Signature
March 14, 2008	**EMC & Radio**	Juan Martinez **(Project Engineer)**	Juan Martinez 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**
Project Leader:	**Juan Martinez**
Responsible Test Lab Manager:	**Ivaylo Tankov**

2.2 Identification of the Client

Applicant's Name:	**Broadcom, Inc.**
Address:	**190 Mathilda Place, Sunnyvale, CA 94086, USA**
Contact Person:	**Daniel Lawless**
Phone No.	**408 965-3346**
Fax:	**408 324-4840**
e-mail:	**dlawless@broadcom.com**

2.3 Identification of the Manufacturer

Manufacturer's Name:	**Broadcom, Inc.**
Manufacturer's Address:	**190 Mathilda Place, Sunnyvale, CA 94086 USA**

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Product Type	**Wireless LAN PCI-E Mini Card**
Marketing Name:	**802.11abg Wireless LAN PCI-E Mini Card**
Model No:	**BCM94311MCAG**
FCC-ID:	**QDS-BRCM1019**
IC UPN:	**4324A-BRCM1019**
Frequency Range:	**2412 – 2462 & 5745 – 5825 MHz**
Number of Channels	**11 & 20**
Type(s) of Modulation:	**CCK & OFDM**
Antenna Type:	**WNC PIFA 2412 – 2462 MHz Main (2.79dBi) & Aux (2.82dBi), 5725 – 5825 MHz Main (1.33dBi) & Aux (-0.15dBi), YAGEO PIFA 2412 – 2412 Main (2.09dBi) & Aux (0.75dBi), 5725 – 5825 MHz Main (2.3dBi) & Aux (1.43dBi)**

3.2 Class II permissive change laptops to be added

EUT #	TYPE	MANF.	MODEL	SERIAL #
1	Laptop	HP	HSTNN-I46C	N/A

3.3 Identification of Accessory equipment

TYPE	MANF.	MODEL
AC ADAPTOR	HP	N/A

4 Subject Of Investigation

All testing were performed on the HP HSTNN-I46C laptop with the BCM94311MCAG pre-approved module. Measurements were performed on the Amphenol antenna. This report is to also cover the Acon antenna which has a lower gain antenna, but same type of antenna. Data, presented in this report, was collected for a Class II permissive change to add the laptop to the BCM94311MCAG (FCC ID: QDS-BRCM1019) module application.

During the testing process the EUT was tested in “b” 1Mbps and “g” 6Mbps and “a” mode with 6Mbps data rate which yielded the worst case results. All testing was performed on main antenna which yielded the highest gain, all data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

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 RSS-210.

4.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (b) (3) & RSS-210 (A8.4)(4) (RADIATED)

EIRP:

802.11b

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2412	2437	2462
WNC Antenna				
T_{nom}(23)°C	V_{nom}	22.5	22.48	20.93
YAGEO Antenna				
T_{nom}(23)°C	V_{nom}	22.85	22.55	22.66
Measurement uncertainty		±0.5dBm		

802.11g

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		2412	2437	2462
WNC Antenna				
T_{nom}(23)°C	V_{nom}	24.1	25.11	25.06
YAGEO Antenna				
T_{nom}(23)°C	V_{nom}	25.82	27.13	24.15
Measurement uncertainty		±0.5dBm		

802.11a

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)		5745	5785	5825
WNC Antenna				
T_{nom}(23)°C	V_{nom}	20.78	20.47	28.47
YAGEO Antenna				
T_{nom}(23)°C	V_{nom}	26.86	28.21	29.55
Measurement uncertainty		±0.5dBm		

LIMIT **SUBCLAUSE § 15.247 (b) (3) & RSS-210 (A8.4)(4)**

Frequency range	RF power output
2400-2483.5 MHz	**30dBm on Conducted**
5725-5850 MHz	**30dBm on Conducted**

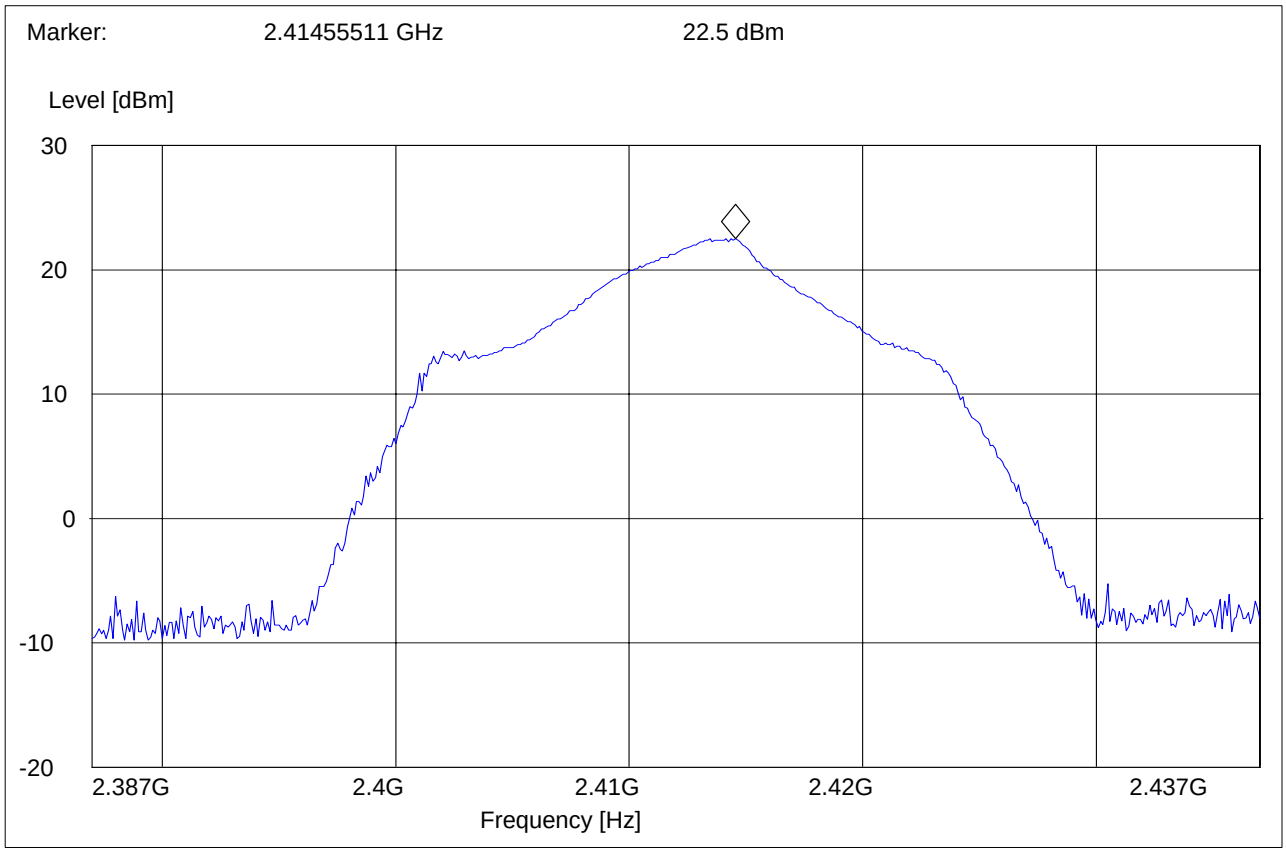
Notes:
1. For 802.11b, 802.11g, and 802.11b powers were set to transmit at the specified conducted average output power.
2. EIRP was measured with the device transmitting on both the auxiliary and the main antenna. The EIRP was highest when transmitting on the Aux antenna. EIRP values shown in this report are with the device transmitting on the main antenna.
3. Both vertical and horizontal were measured. Worst case polarization was horizontal for all modes.

EIRP: 2412 MHz (802.11b)

```
EUT:              94311MCAG
Customer::        Broadcom
Test Mode:        802.11b Ch.1 AUX WNC
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Adapter
```

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

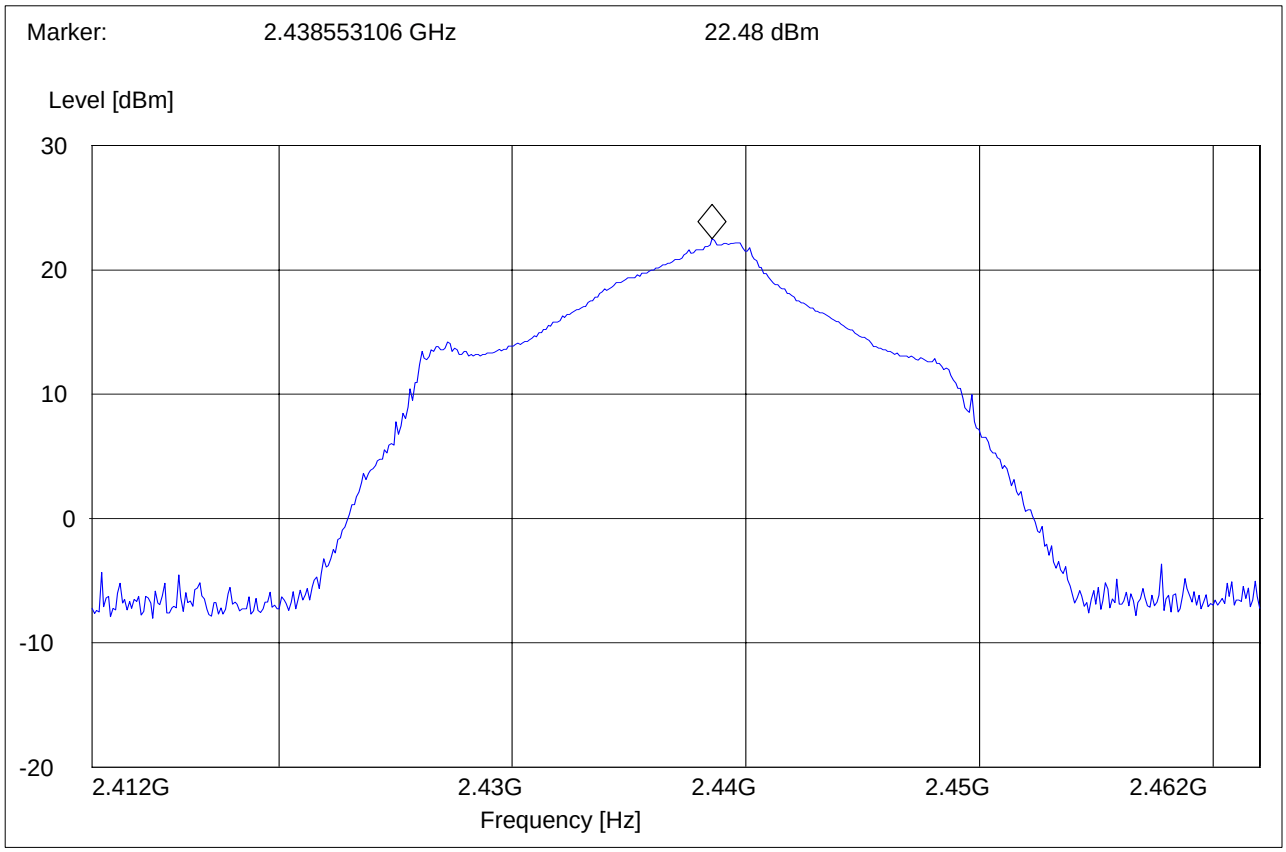


EIRP: 2437 MHz (802.11b)

```
EUT:              94311MCAG
Customer::        Broadcom
Test Mode:        802.11b Ch.6 AUX WNC
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Adapter
```

SWEEP TABLE: "EIRP RLAN CH6"

```
  Short Description:            EIRP RLAN channel-2437 MHz
  Start      Stop       Detector  Meas.     IF        Transducer
  Frequency  Frequency             Time      Bandw.
  2.4 GHz    2.5 GHz    MaxPeak   Coupled   10 MHz    DUMMY-DBM
                        MaxPeak
```

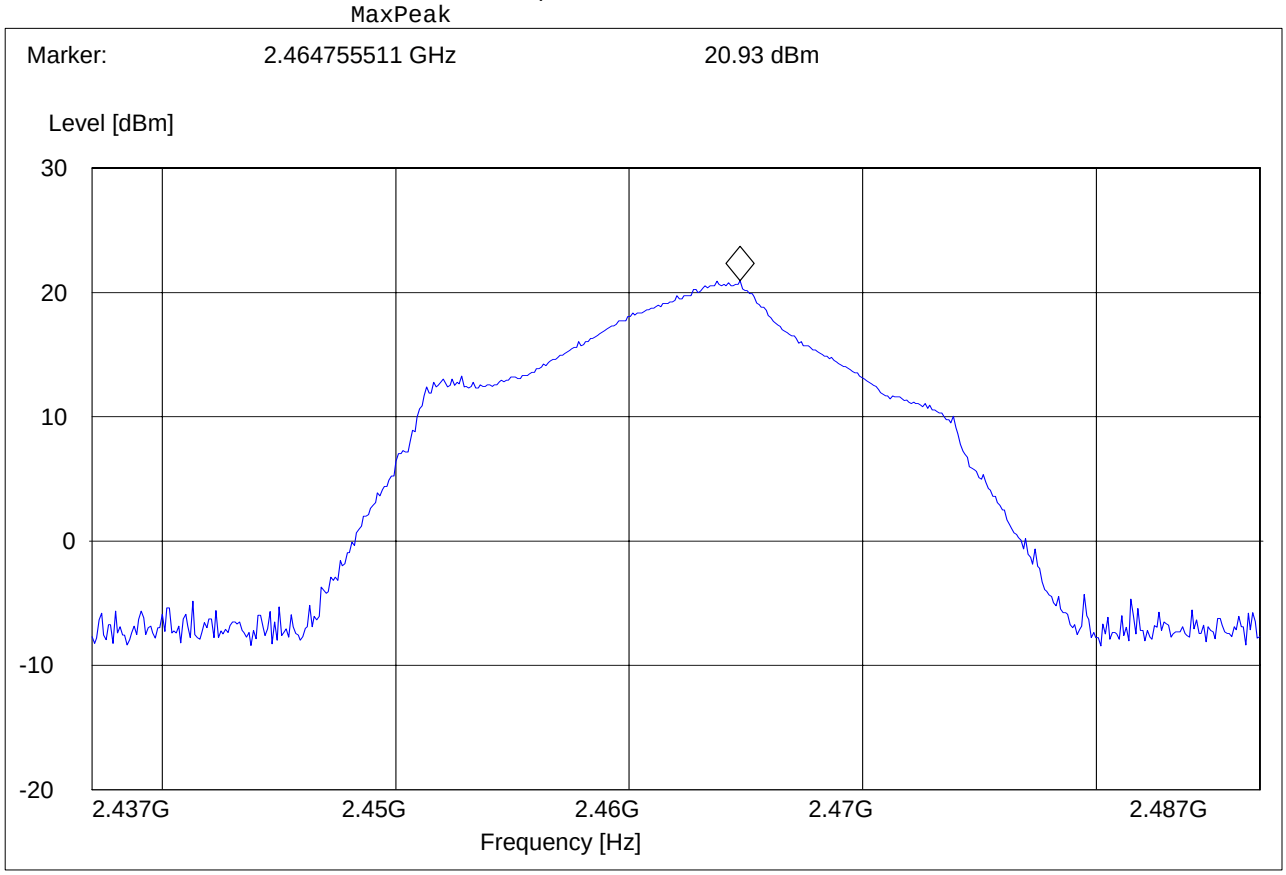


EIRP: 2462 MHz (802.11b)

```
EUT:              94311MCAG
Customer::        Broadcom
Test Mode:        802.11b Ch.11 AUX
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Adapter
```

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



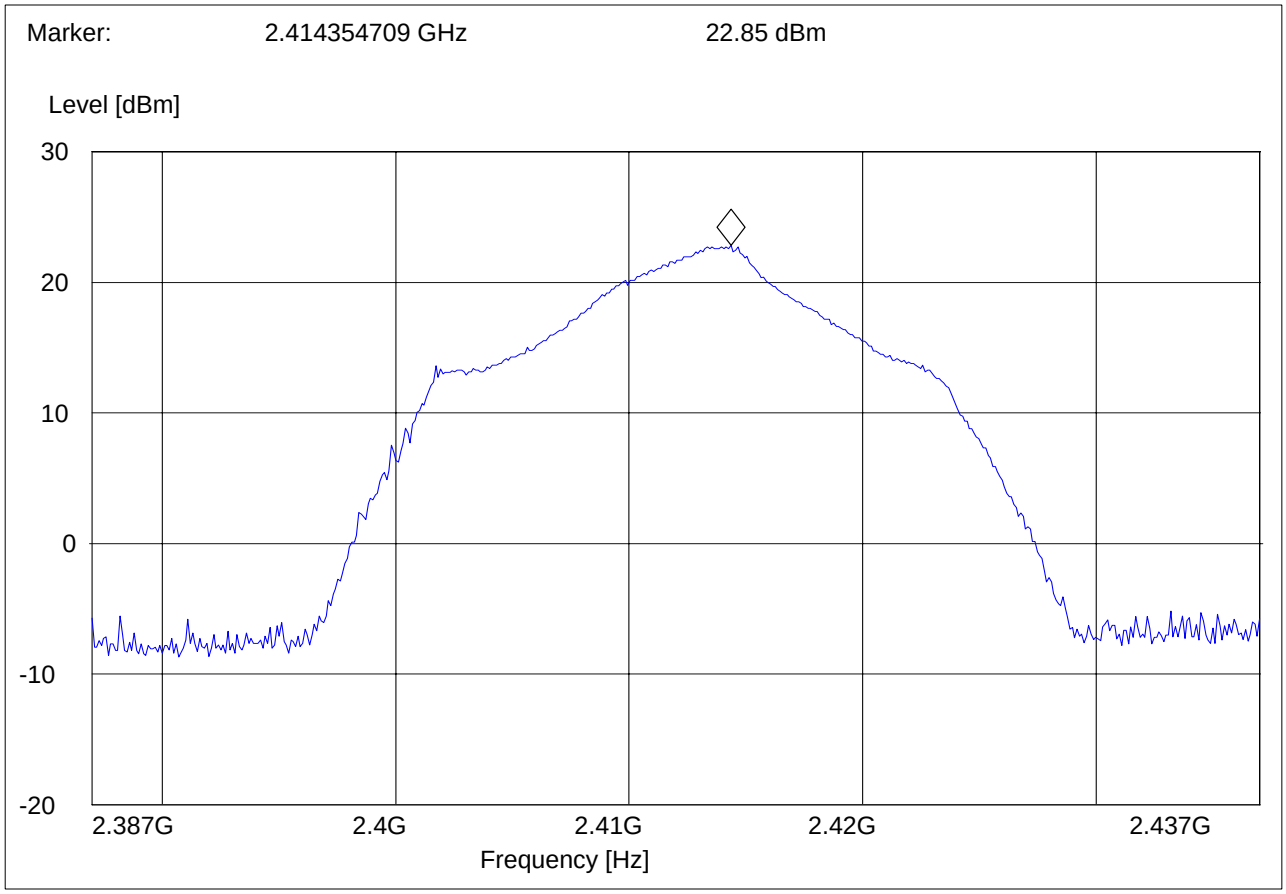
EIRP: 2412 MHz (802.11b)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.1 AUX Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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	Coupled	10 MHz	DUMMY-DBM MaxPeak



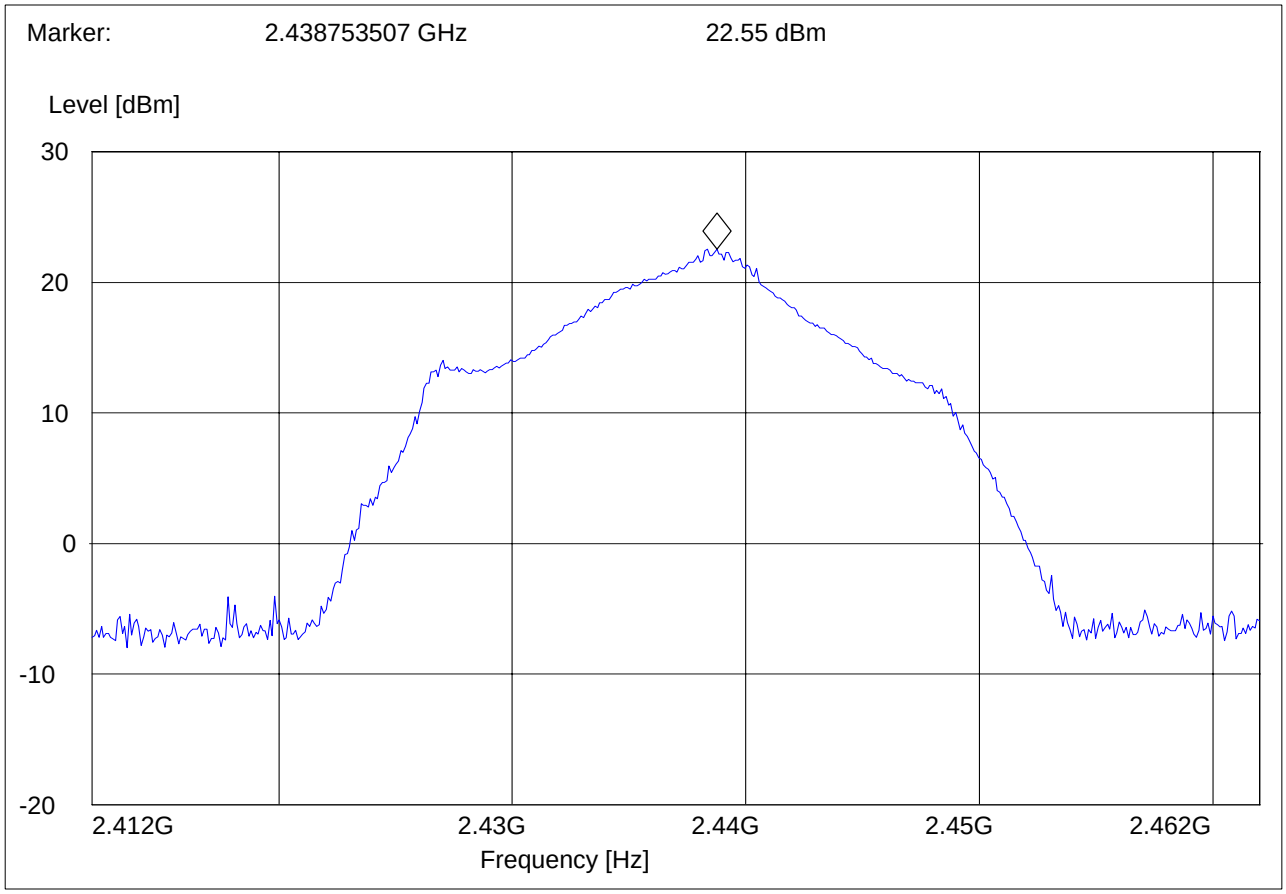
EIRP: 2437 MHz (802.11b)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.6 AUX Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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	Coupled	10 MHz	DUMMY-DBM MaxPeak



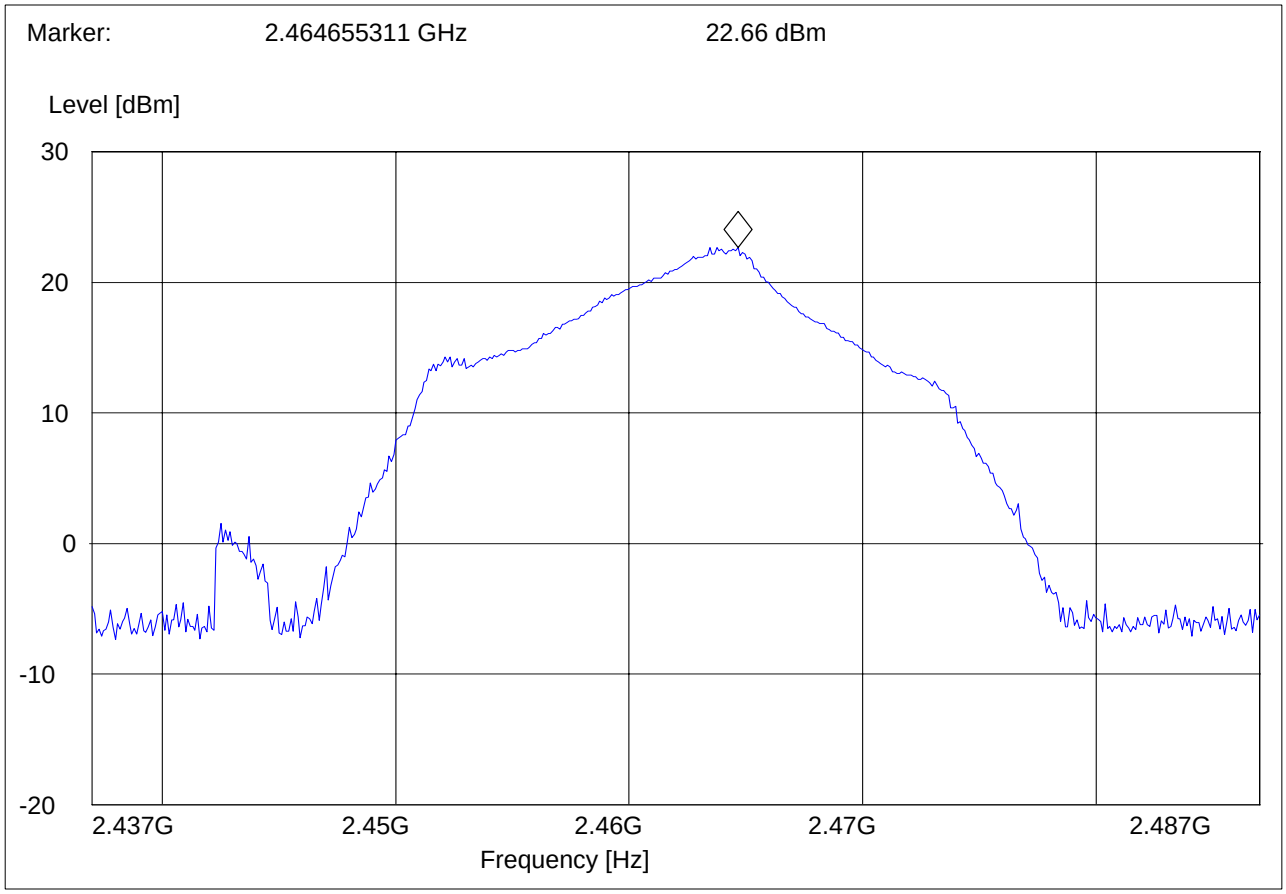
EIRP: 2462 MHz (802.11b)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.11 AUX
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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	Coupled	10 MHz	DUMMY-DBM MaxPeak

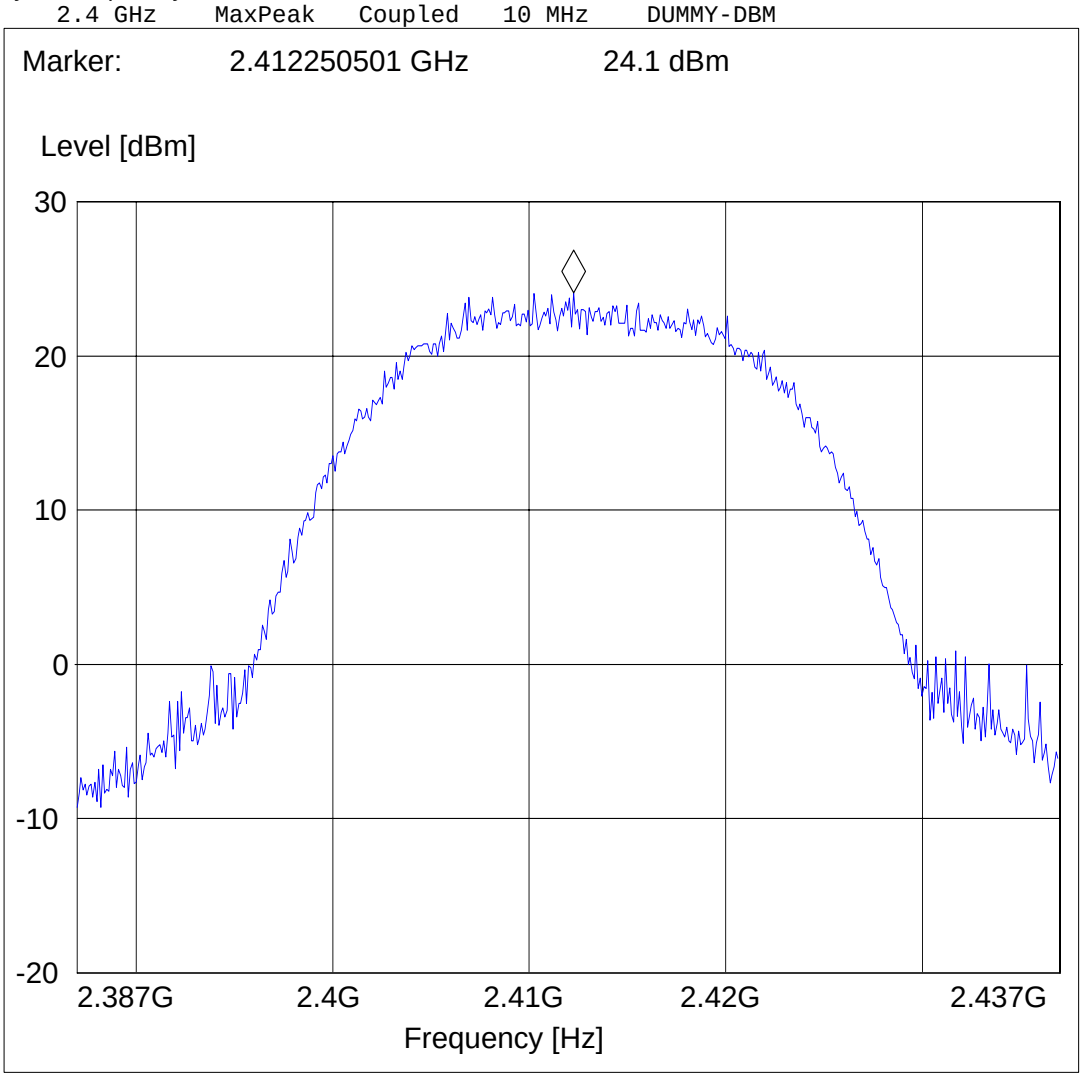


EIRP: 2412 MHz (802.11g)

```
EUT:             BCM94311MCAG
Customer:        Broadcom
Test Mode:       802.11g, ch 1 Aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Chris
Power Supply:    AC Adapter
```

SWEEP TABLE: "EIRP RLAN CH1"

```
  Short Description:            EIRP RLAN channel-2412 MHz
  Start      Stop       Detector  Meas.     IF        Transducer
  Frequency  Frequency            Time      Bandw.
  2.4 GHz    2.4 GHz    MaxPeak   Coupled   10 MHz    DUMMY-DBM
```



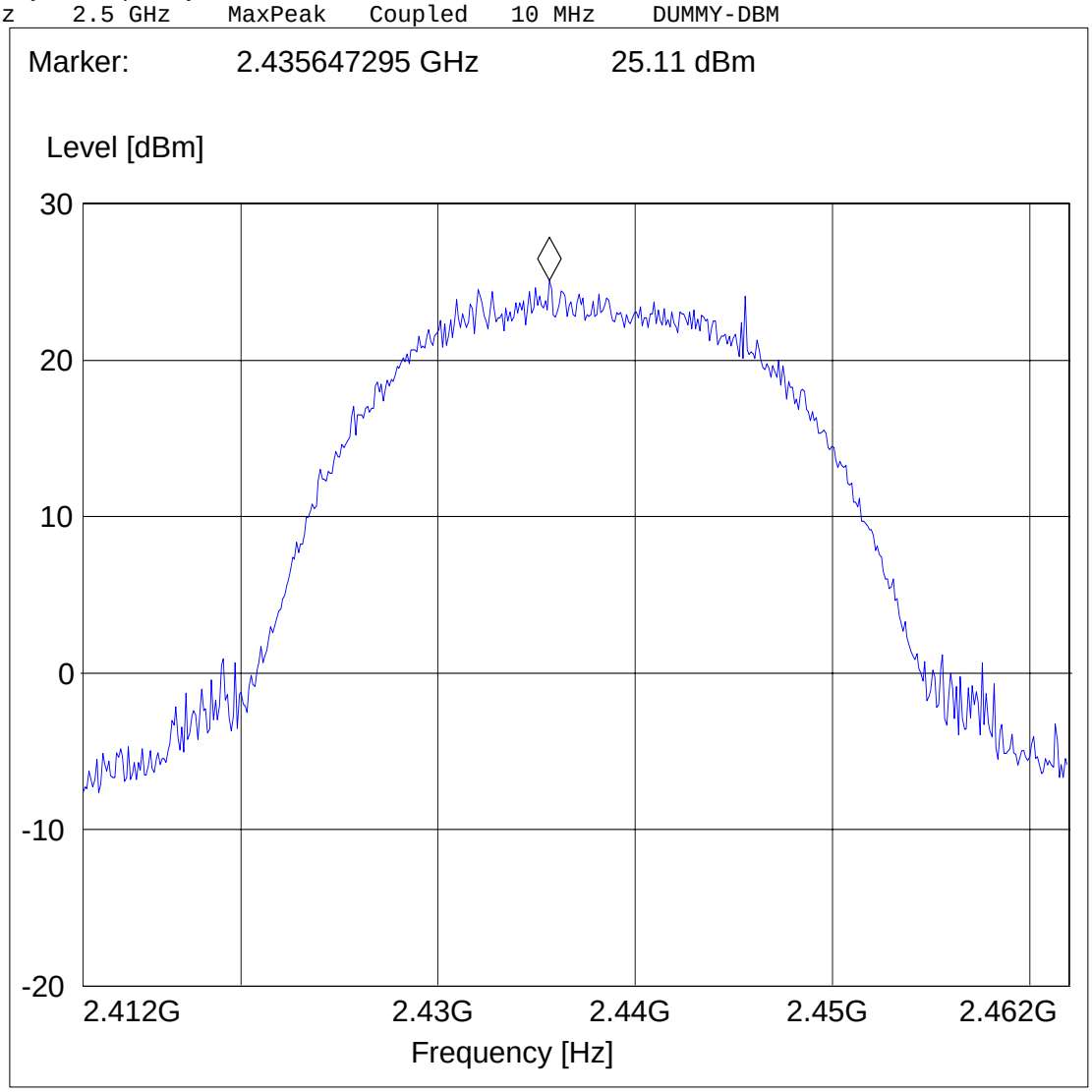
EIRP: 2437 MHz (802.11g)

EUT: BCM94311MCAG
Customer: Broadcom
Test Mode: 802.11g, ch 6 Aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Power Supply: AC Adapter

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	Coupled	10 MHz	DUMMY-DBM

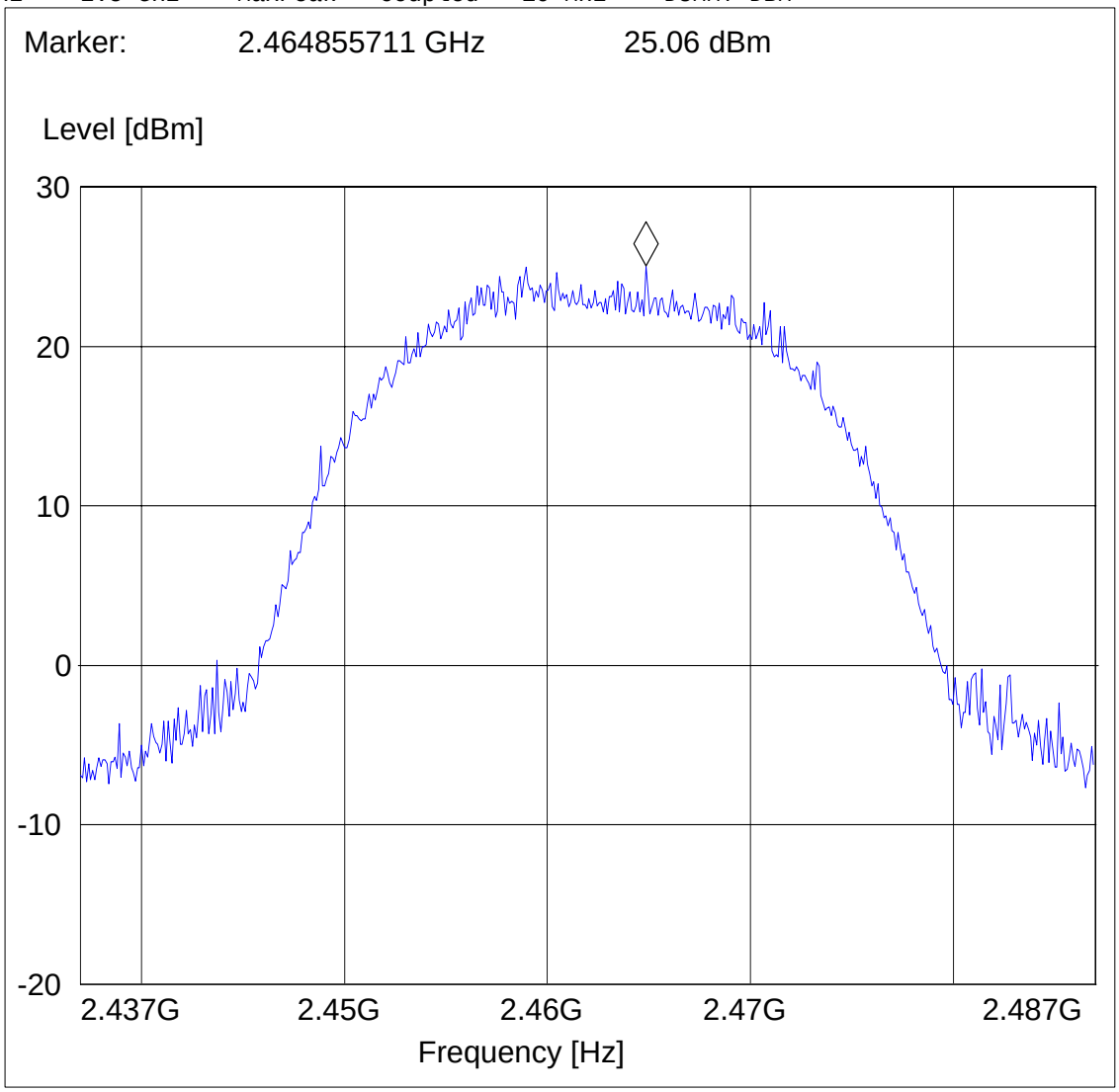


EIRP: 2462 MHz (802.11g)

```
EUT:              BCM94311MCAG
Customer:         Broadcom
Test Mode:        802.11g, ch 11 Aux WNC
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Power Supply:     AC Adapter
```

SWEEP TABLE: "EIRP RLAN CH11"

```
Short Description:              EIRP RLAN channel-2462 MHz
Start       Stop        Detector  Meas.      IF         Transducer
Frequency   Frequency             Time       Bandw.
2.4 GHz     2.5 GHz     MaxPeak   Coupled    10 MHz     DUMMY-DBM
```



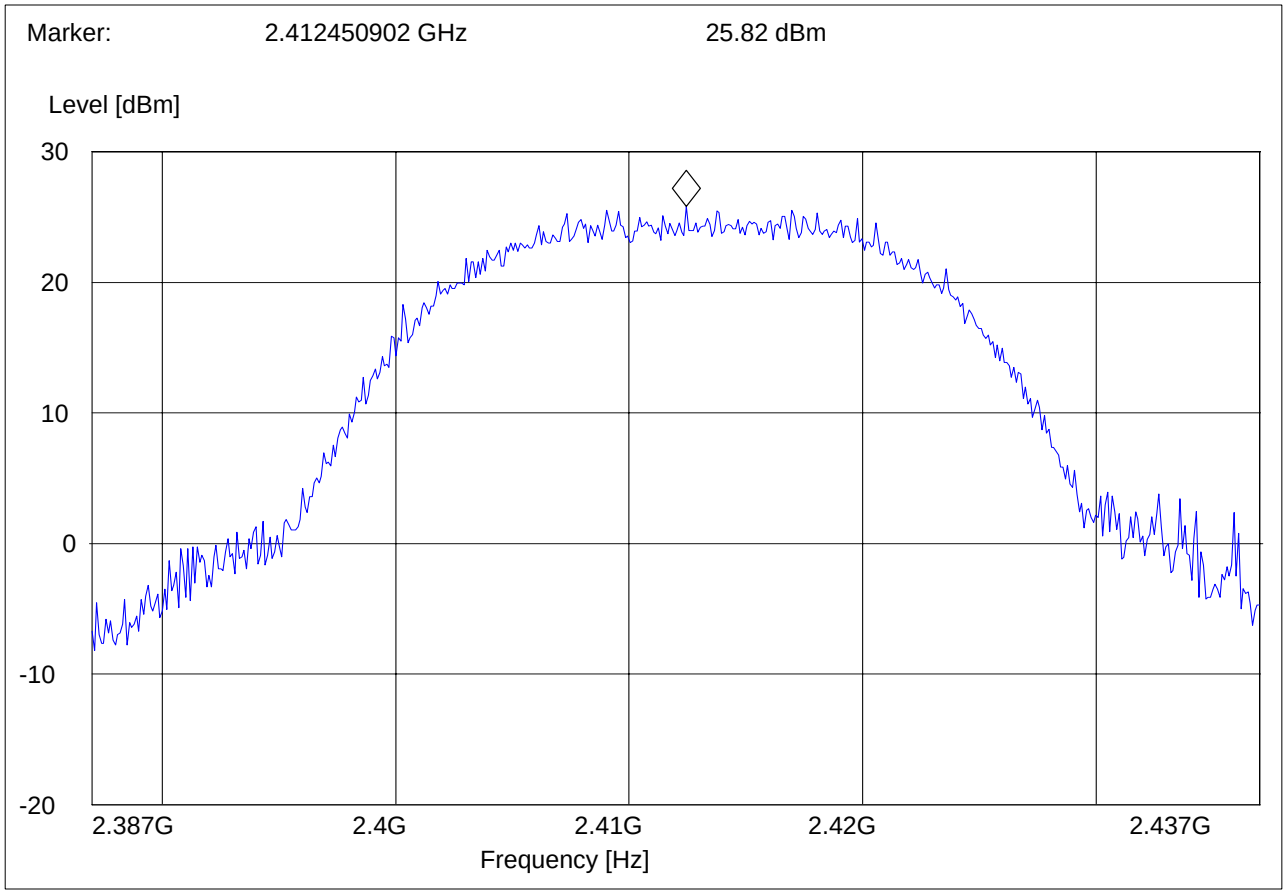
EIRP: 2412 MHz (802.11g)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11G CH.1 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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	Coupled	10 MHz	DUMMY-DBM MaxPeak



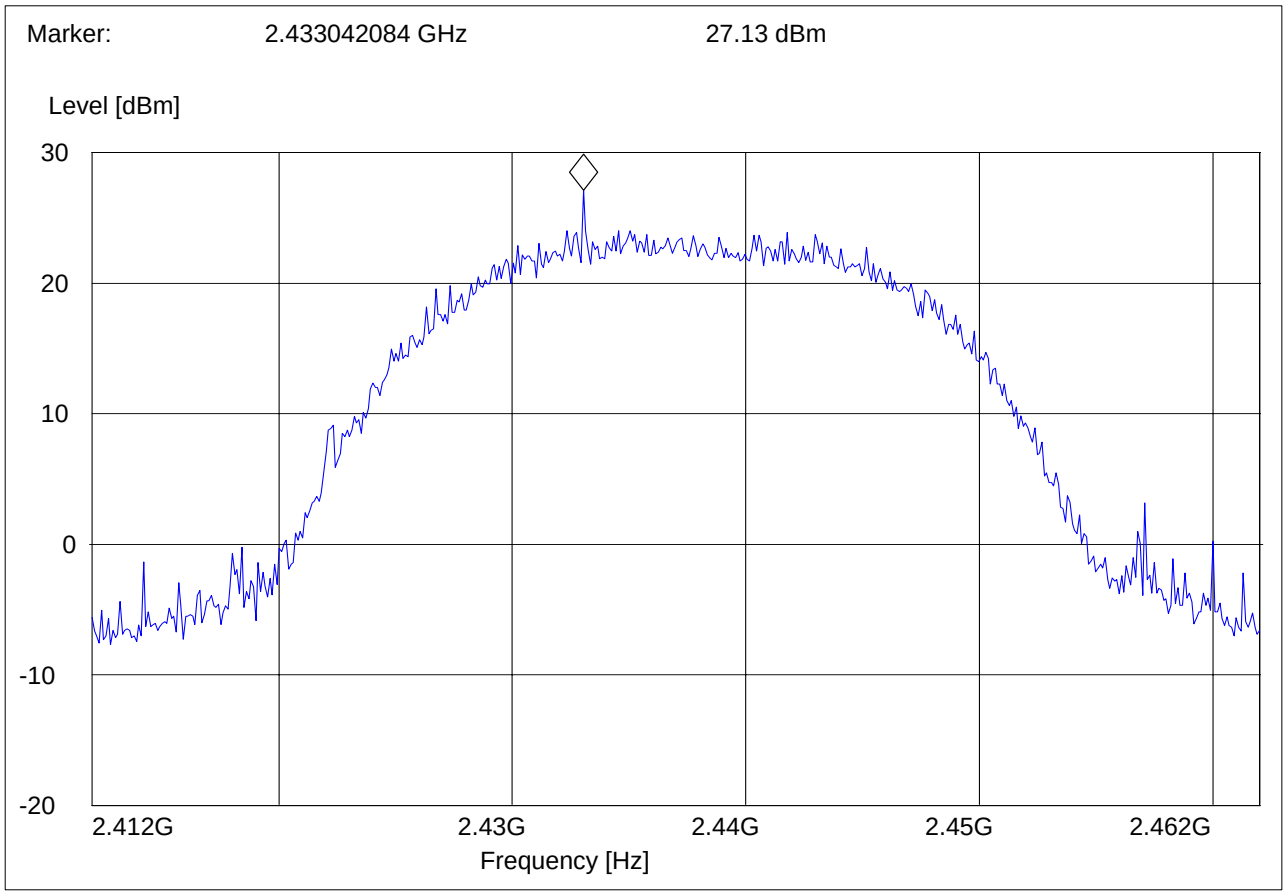
EIRP: 2437 MHz (802.11g)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11g CH.6 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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	Coupled	10 MHz	DUMMY-DBM MaxPeak



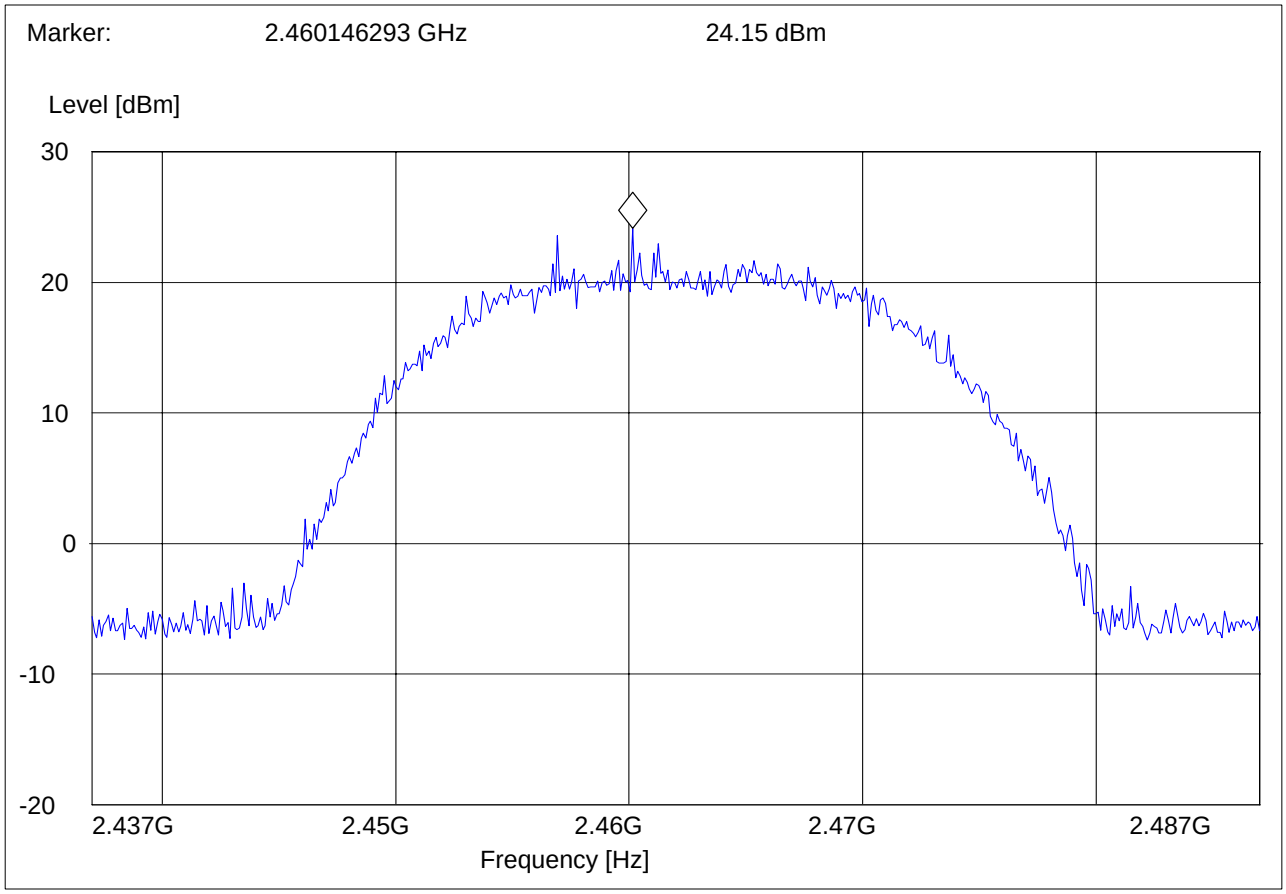
EIRP: 2462 MHz (802.11g)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11g CH.11 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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	Coupled	10 MHz	DUMMY-DBM MaxPeak



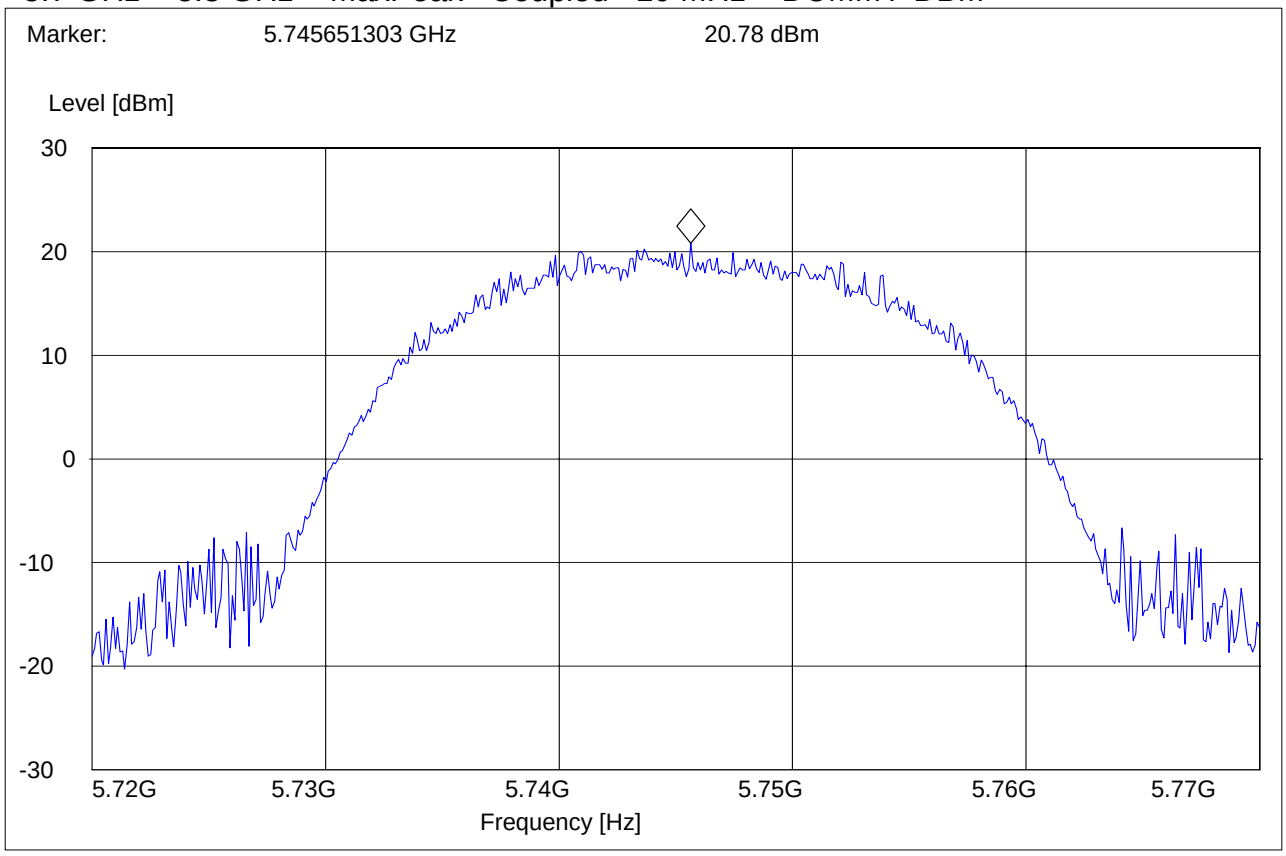
EIRP: 5745 MHz (802.11a)

EUT: 94312MCG_94311MCAG
Customer:: Broadcom
Test Mode: 802.11a Ch.149 main WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

SWEEP TABLE: "EIRP 802.11a_149"

Short Description: EIRP channel-5745 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.7 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM

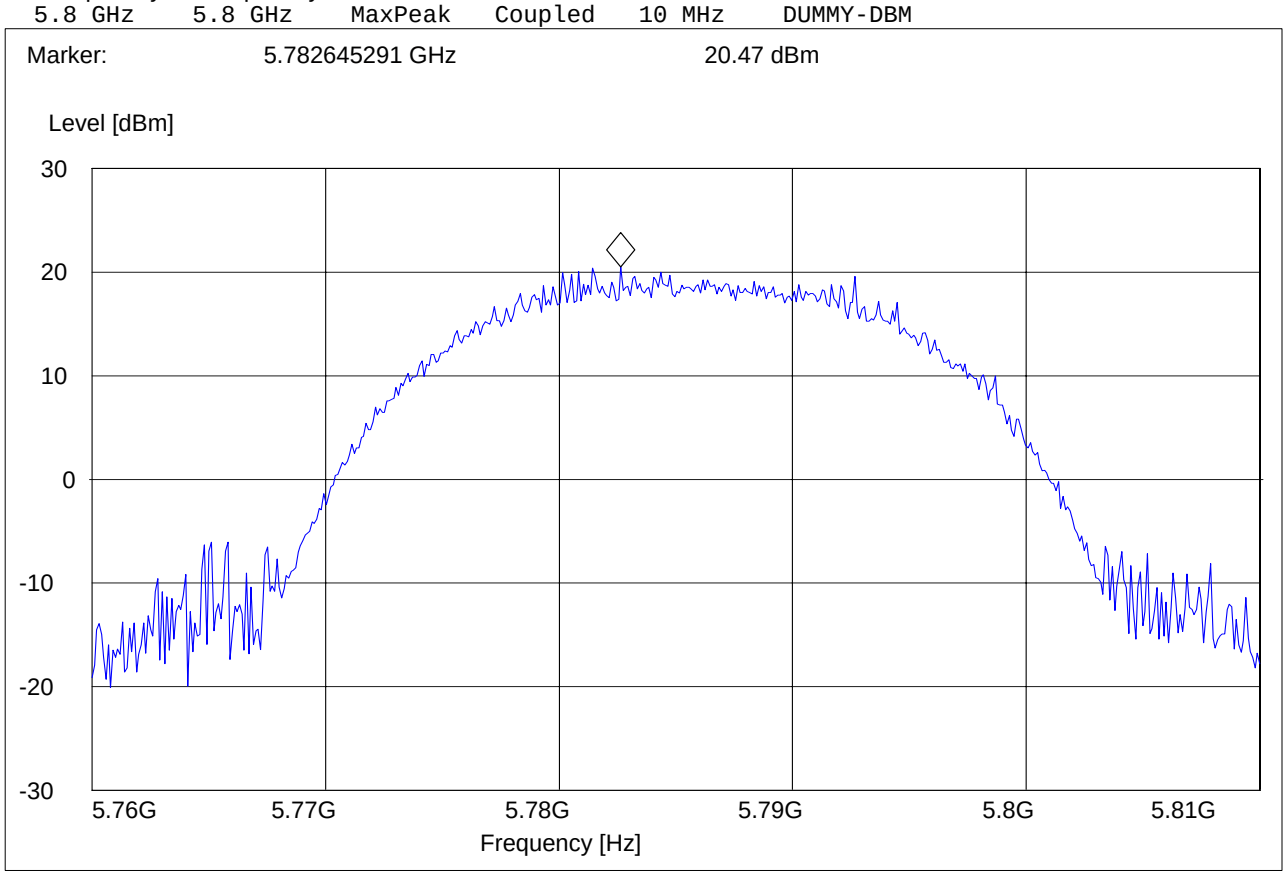


EIRP: 5785 MHz (802.11a)

```
EUT:             94312MCG_94311MCAG
Customer::       Broadcom
Test Mode:       802.11a Ch.157 Main WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Chris
Voltage:         AC Adapter
```

SWEEP TABLE: "EIRP 802.11a_157"

```
  Short Description:            EIRP  channel-5785 MHz
  Start      Stop       Detector  Meas.     IF        Transducer
  Frequency  Frequency            Time      Bandw.
  5.8 GHz    5.8 GHz    MaxPeak   Coupled   10 MHz    DUMMY-DBM
```



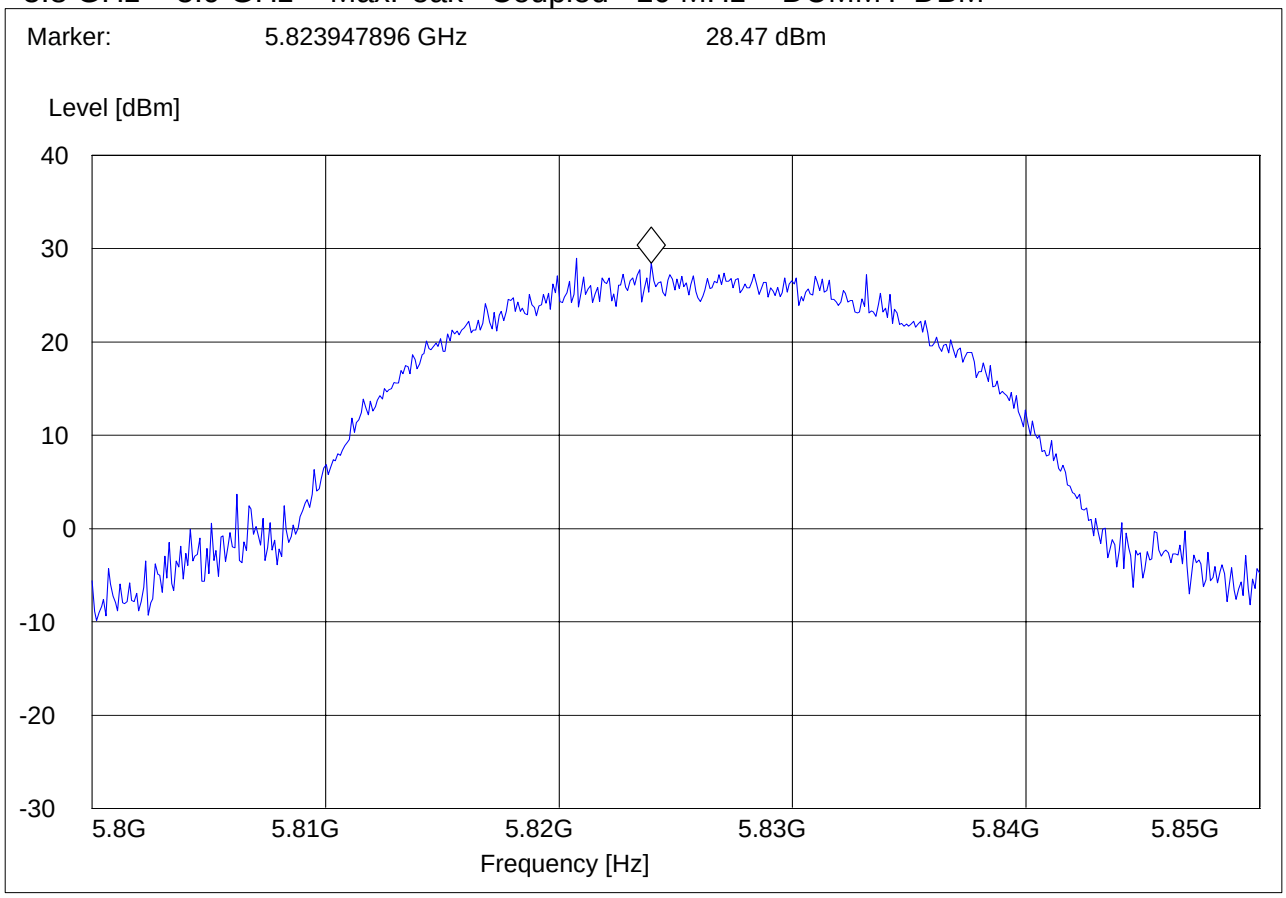
EIRP: 5825 MHz (802.11a)

EUT: 94312MCG
Customer:: Broadcom
Test Mode: 802.11a CH.165 Main WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

SWEEP TABLE: "EIRP 802.11a_165"

Short Description: EIRP channel-5825 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.8 GHz	5.9 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM



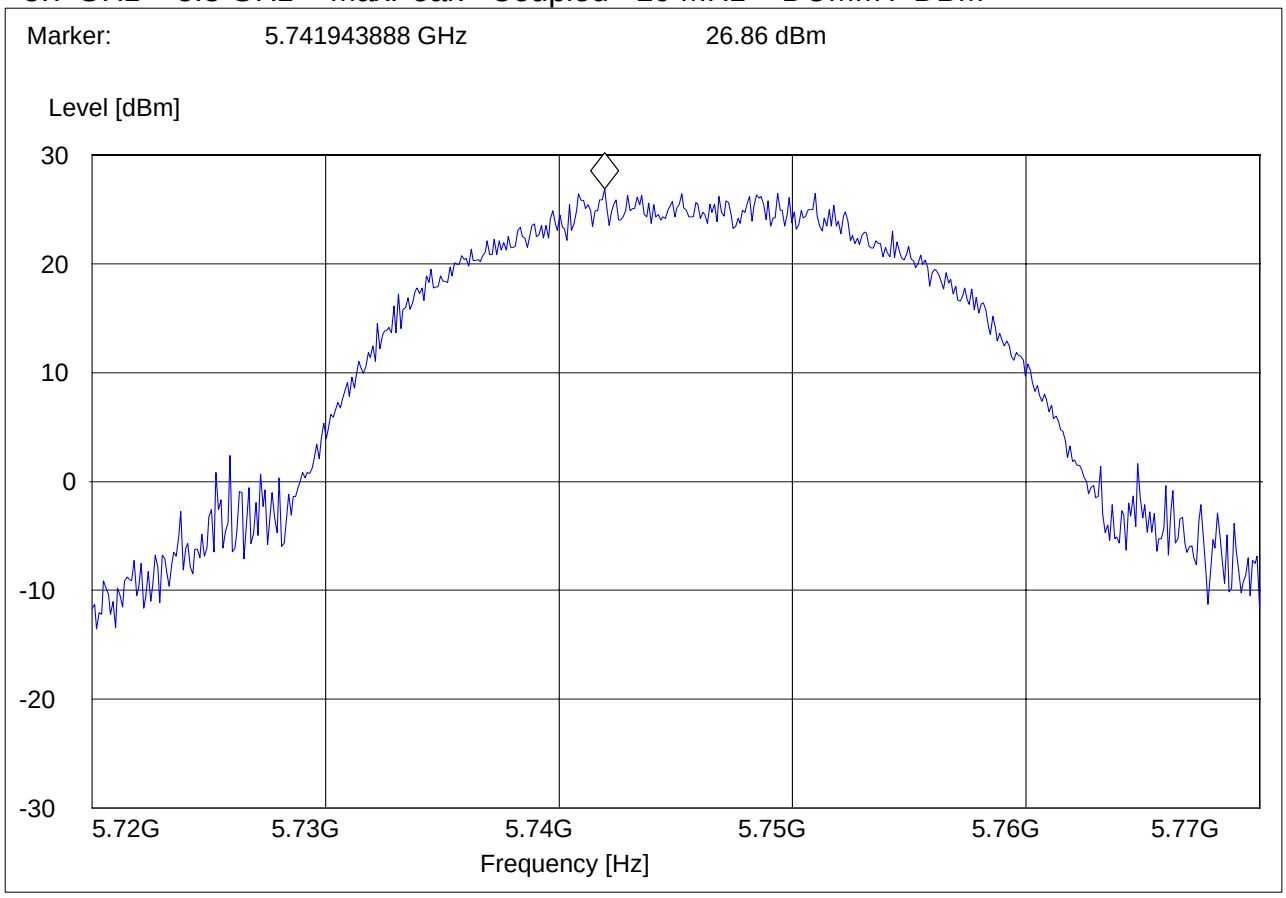
EIRP: 5745 MHz (802.11a)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11a CH.149 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC Adapter

SWEEP TABLE: "EIRP 802.11a_149"

Short Description: EIRP channel-5745 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.7 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM



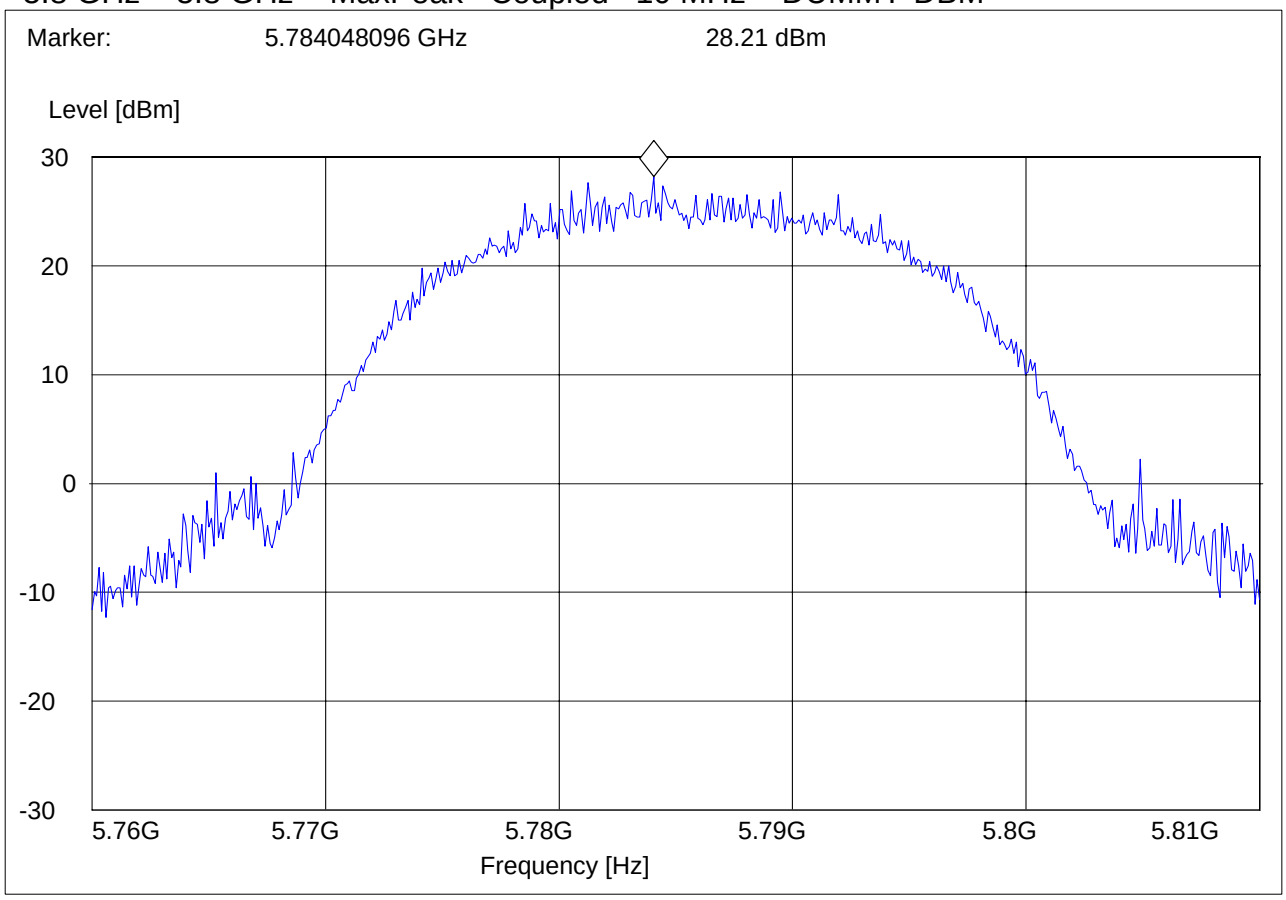
EIRP: 5785 MHz (802.11a)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11a CH.157
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC Adapter

SWEEP TABLE: "EIRP 802.11a_157"

Short Description: EIRP channel-5785 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.8 GHz	5.8 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM



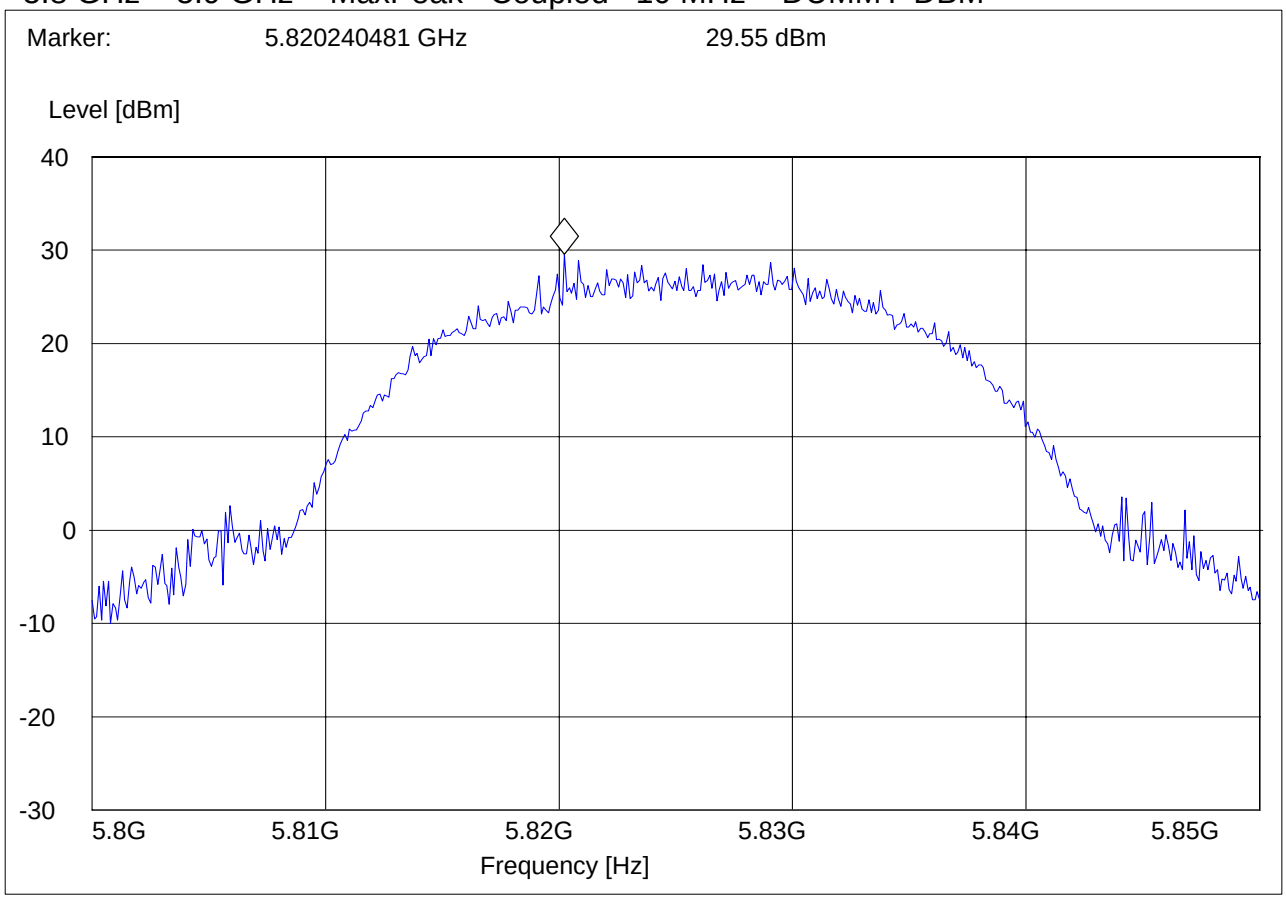
EIRP: 5825 MHz (802.11a)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11a CH.165 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC Adapter

SWEEP TABLE: "EIRP 802.11a_165"

Short Description: EIRP channel-5825 MHz

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.8 GHz	5.9 GHz	MaxPeak	Coupled	10 MHz	DUMMY-DBM



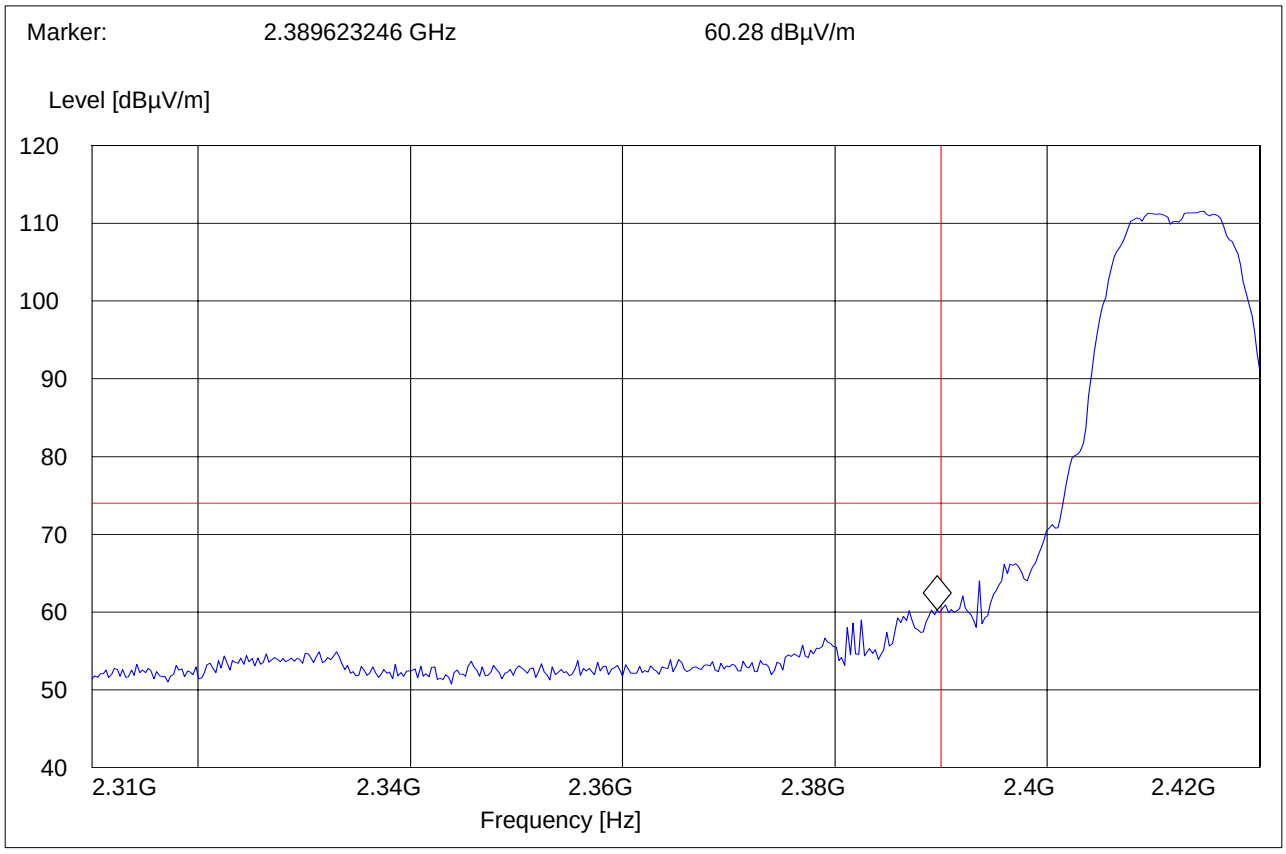
4.2 BAND EDGE COMPLIANCE (802.11b) §15.247 (d) & RSS-210(A8.5)

802.11b Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: 94312MCG_94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.1 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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 MaxPeak



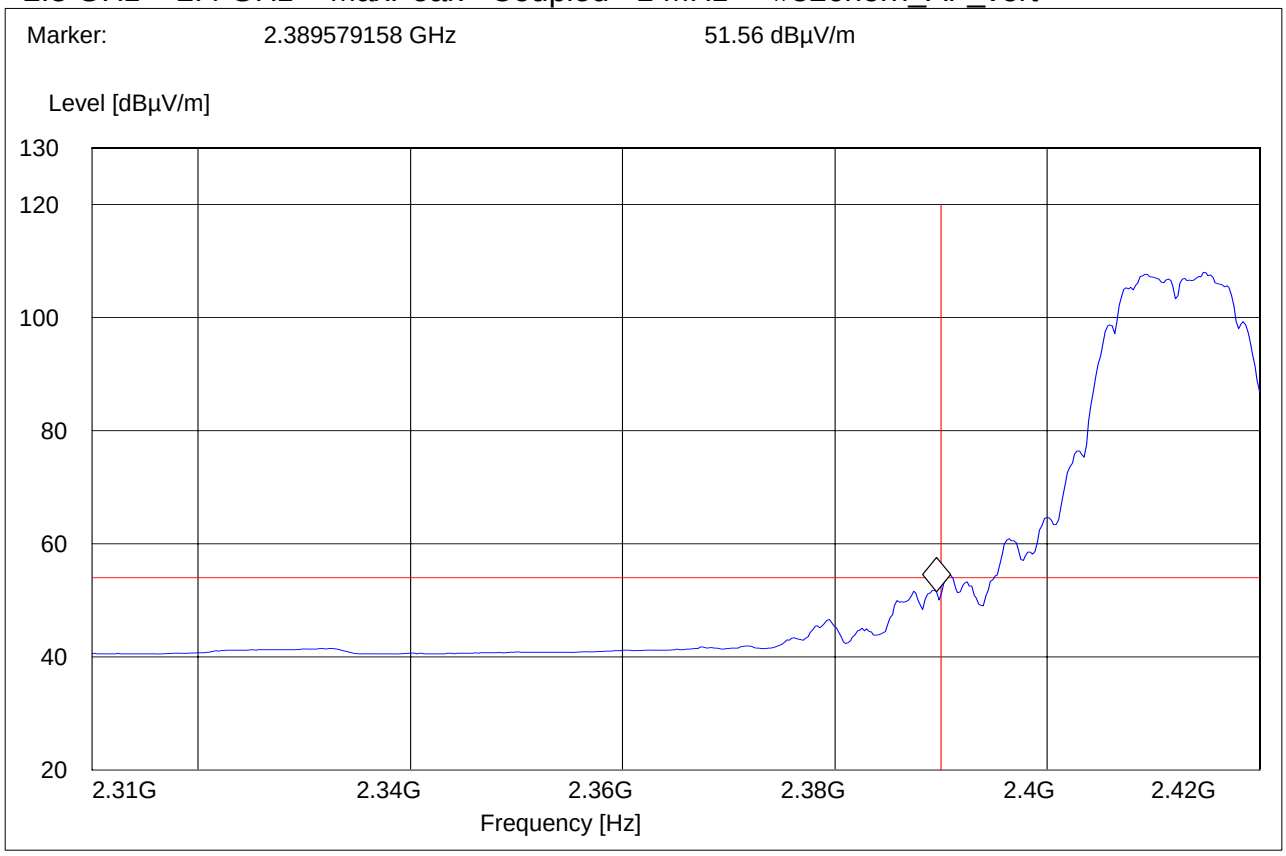
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11b Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.1 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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



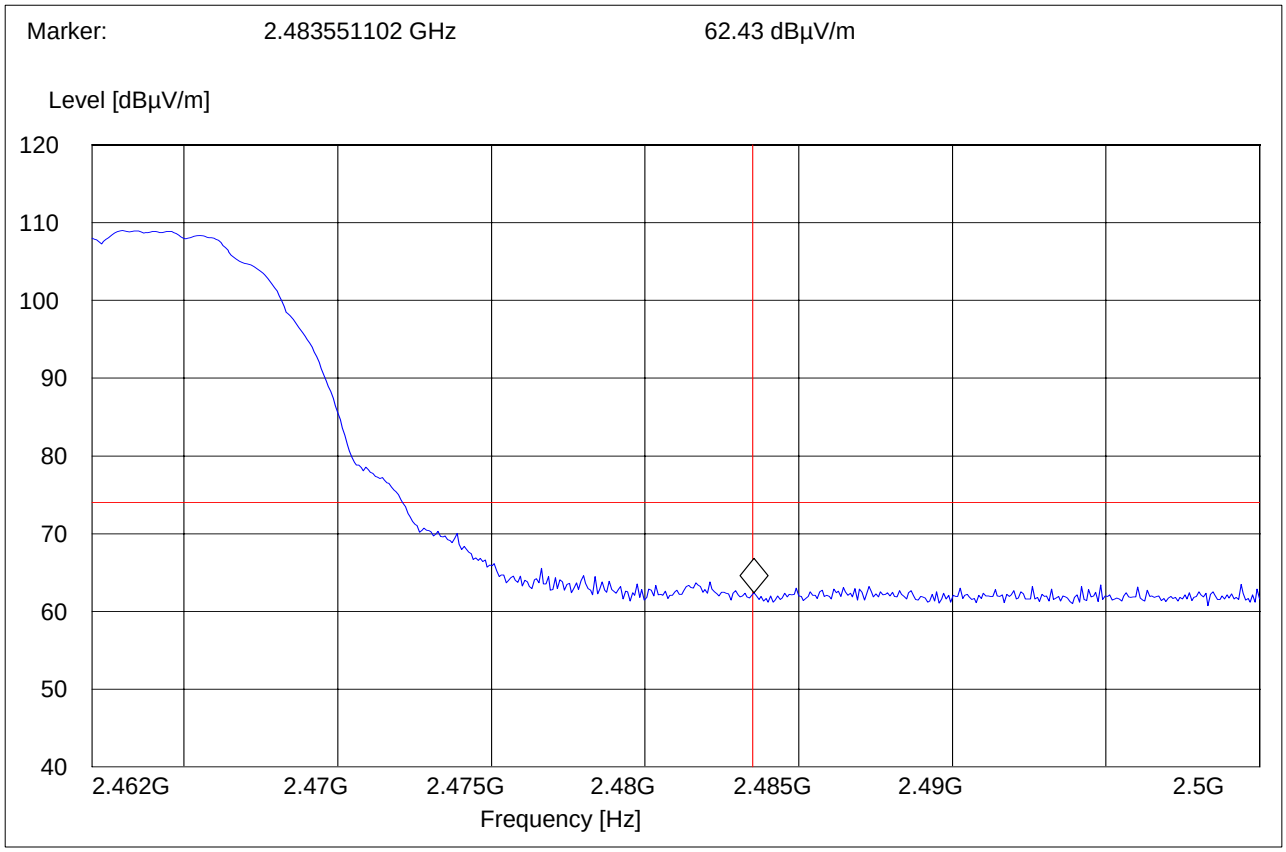
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11b High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.1 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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 MaxPeak

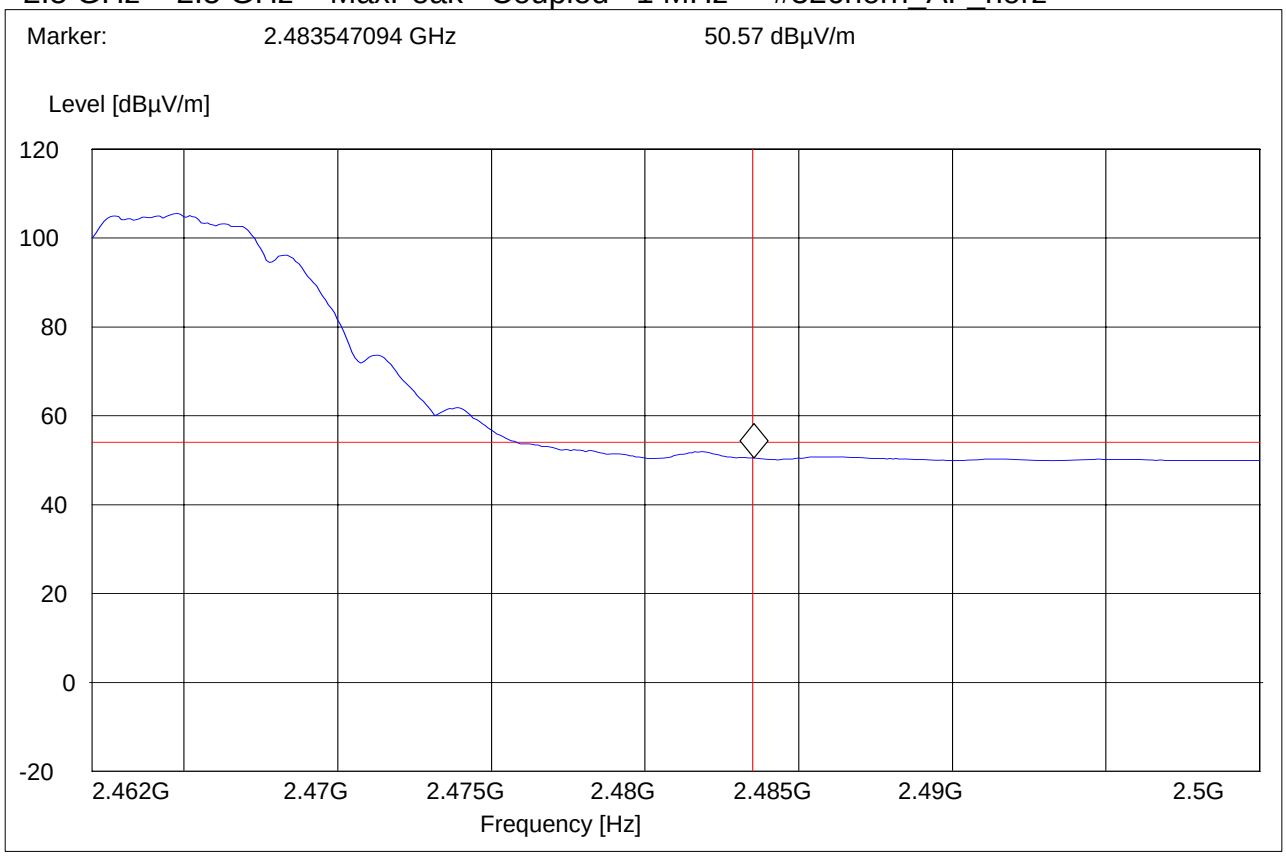


BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11b High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)
EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.1 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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

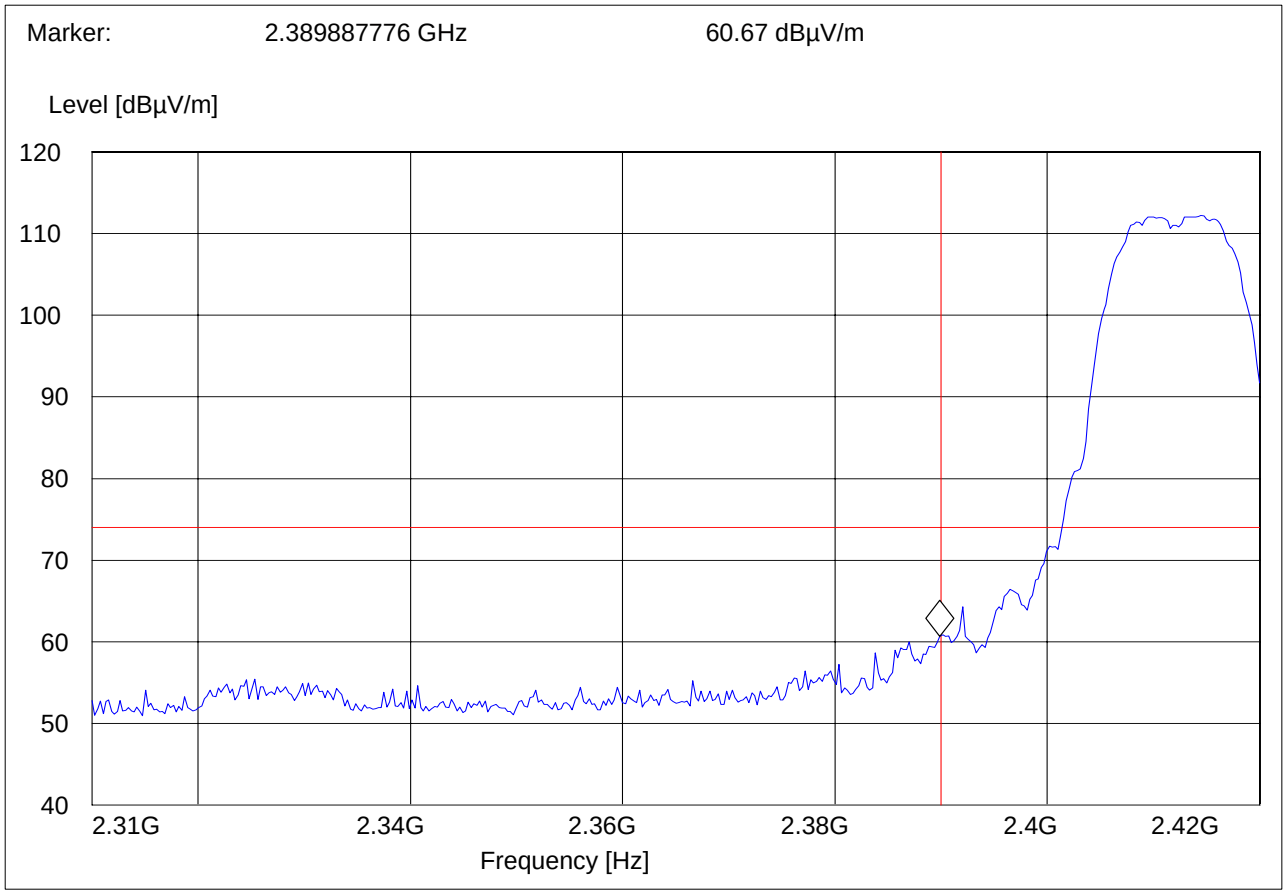


802.11b Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.1 Aux Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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 MaxPeak



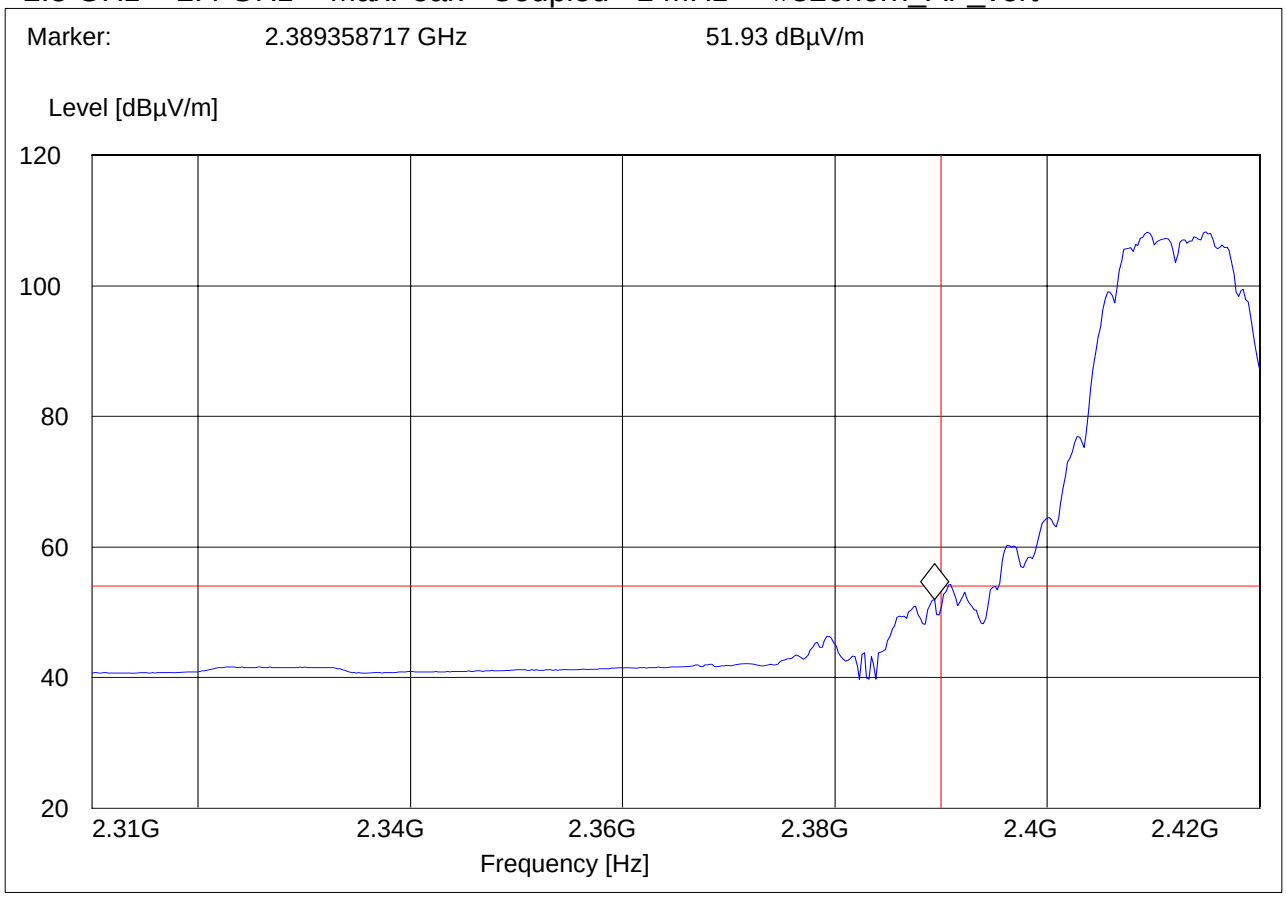
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11b Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.1 Aux Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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



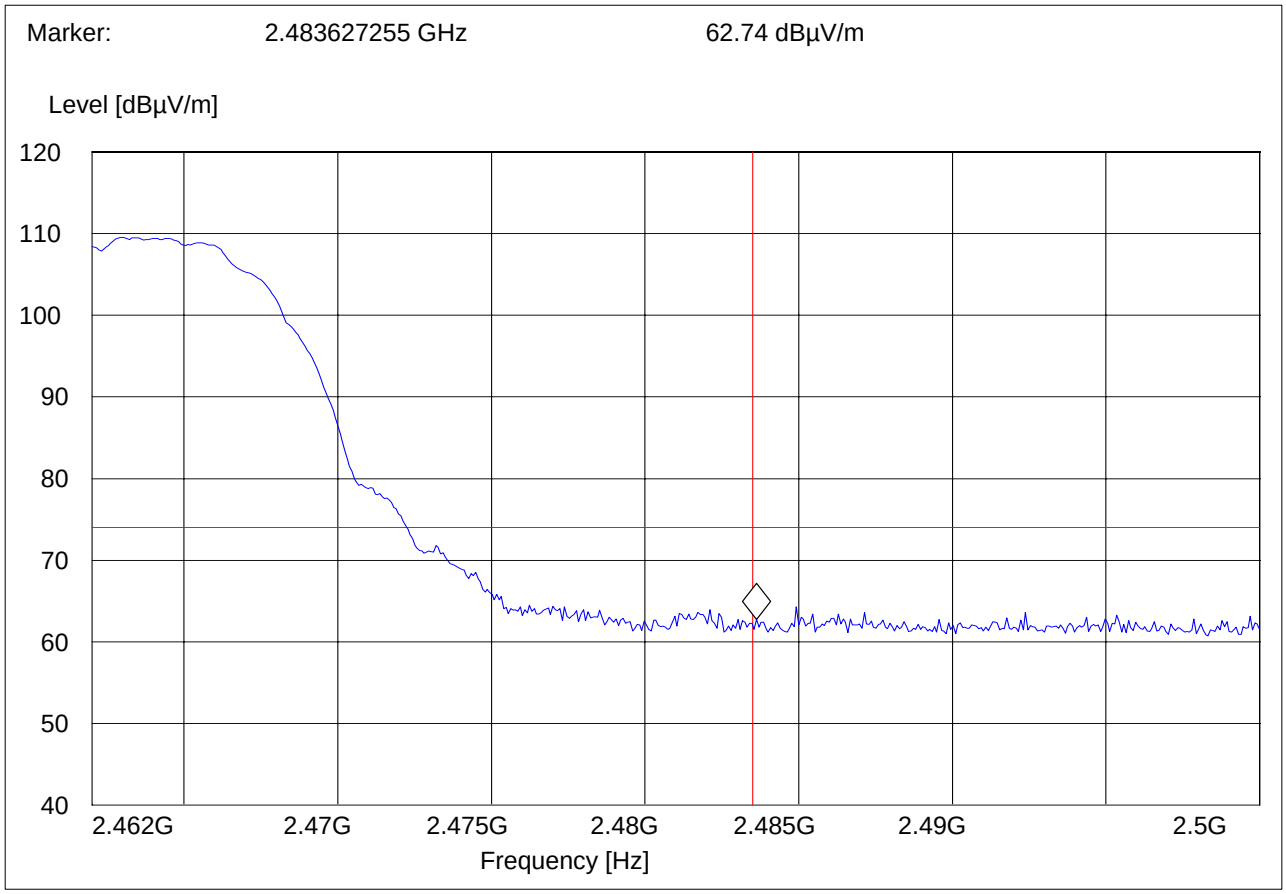
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11b High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.11 Aux Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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 MaxPeak



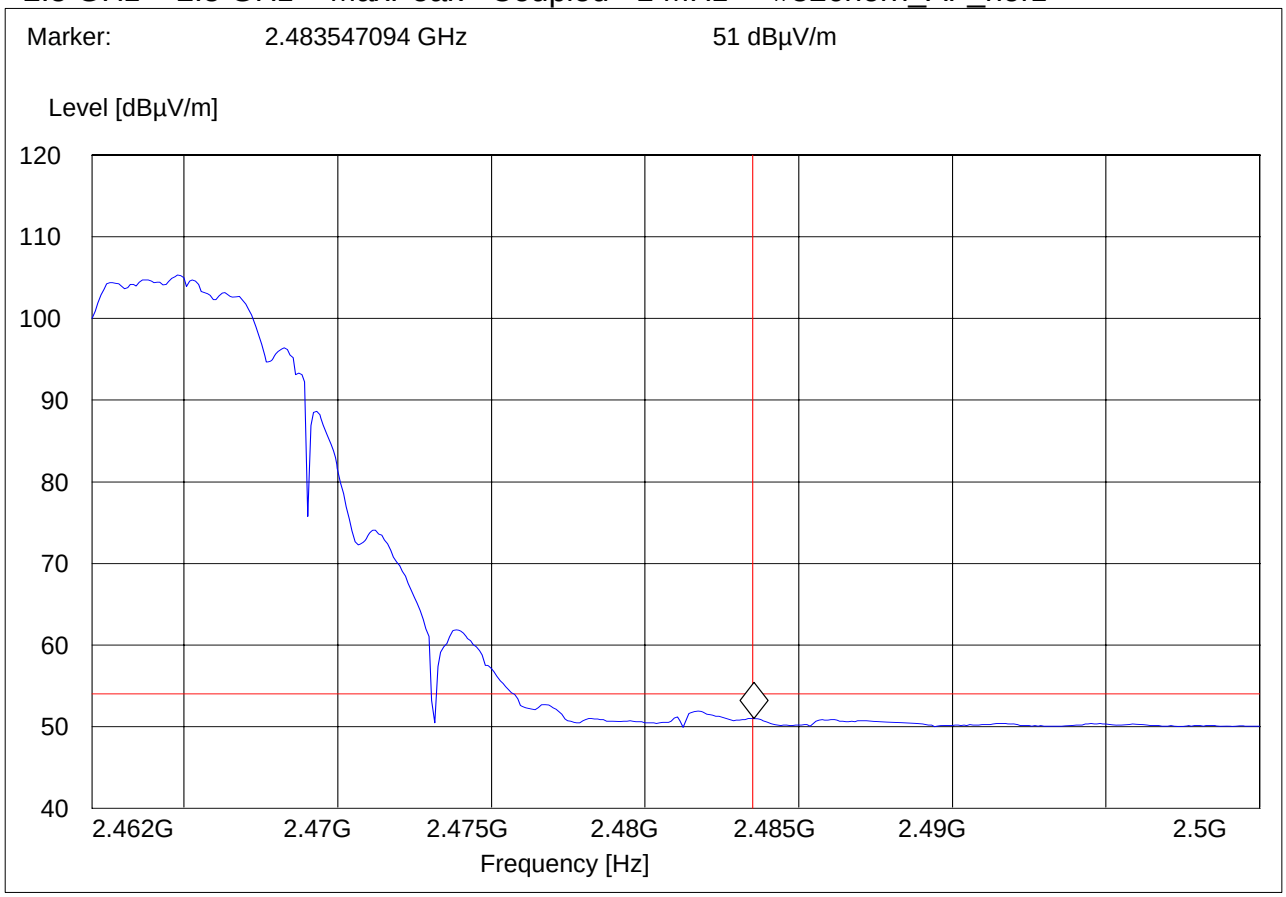
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11b High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b CH.11 Aux Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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



4.3 BAND EDGE COMPLIANCE (802.11g) §15.247 (d) & RSS-210(A8.5)

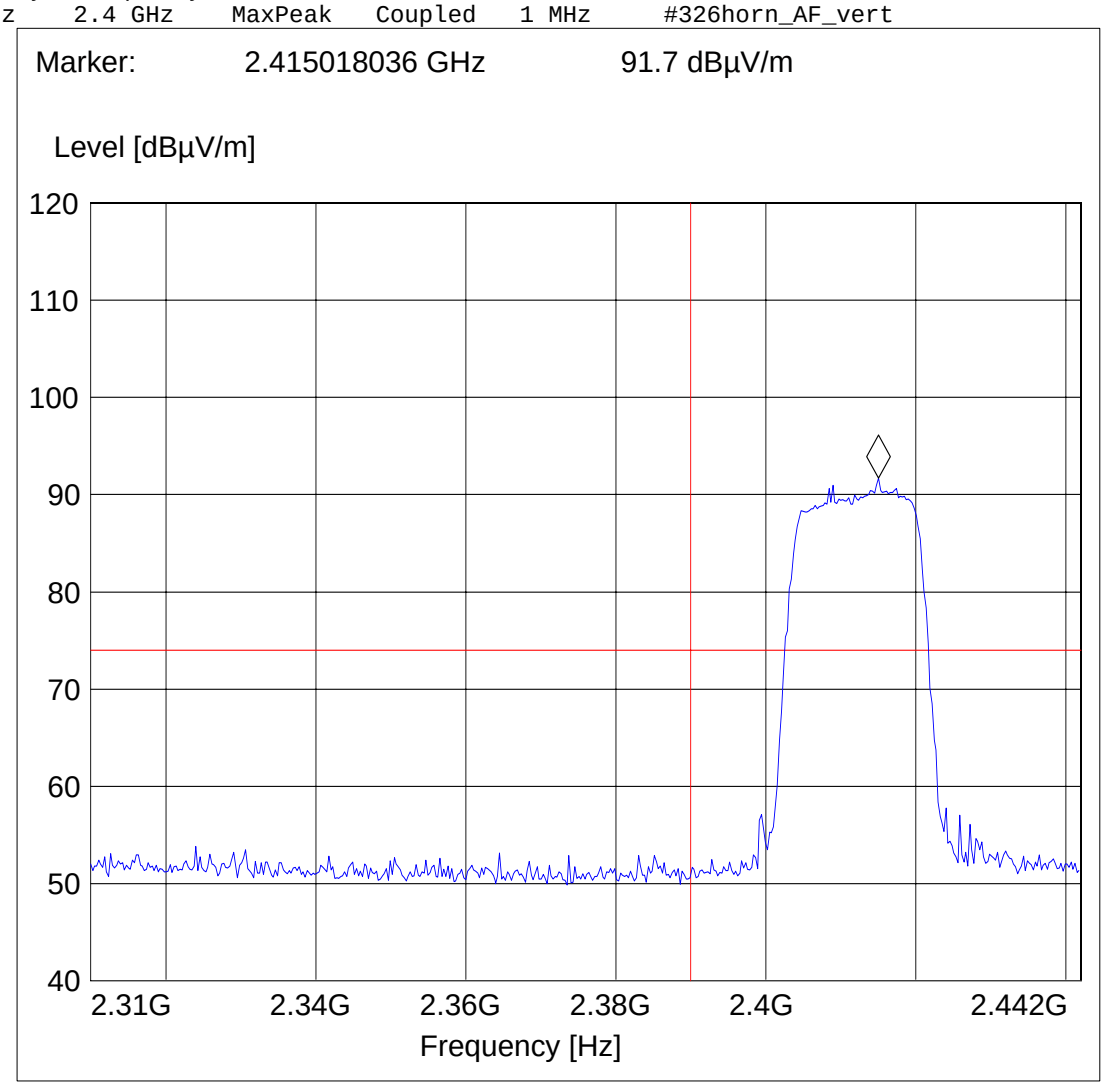
802.11g Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

```
EUT:             BCM94311MCAG
Customer:        Broadcom
Test Mode:       802.11g, ch 1 Aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Chris
Power Supply:    AC Adapter
```

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



BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

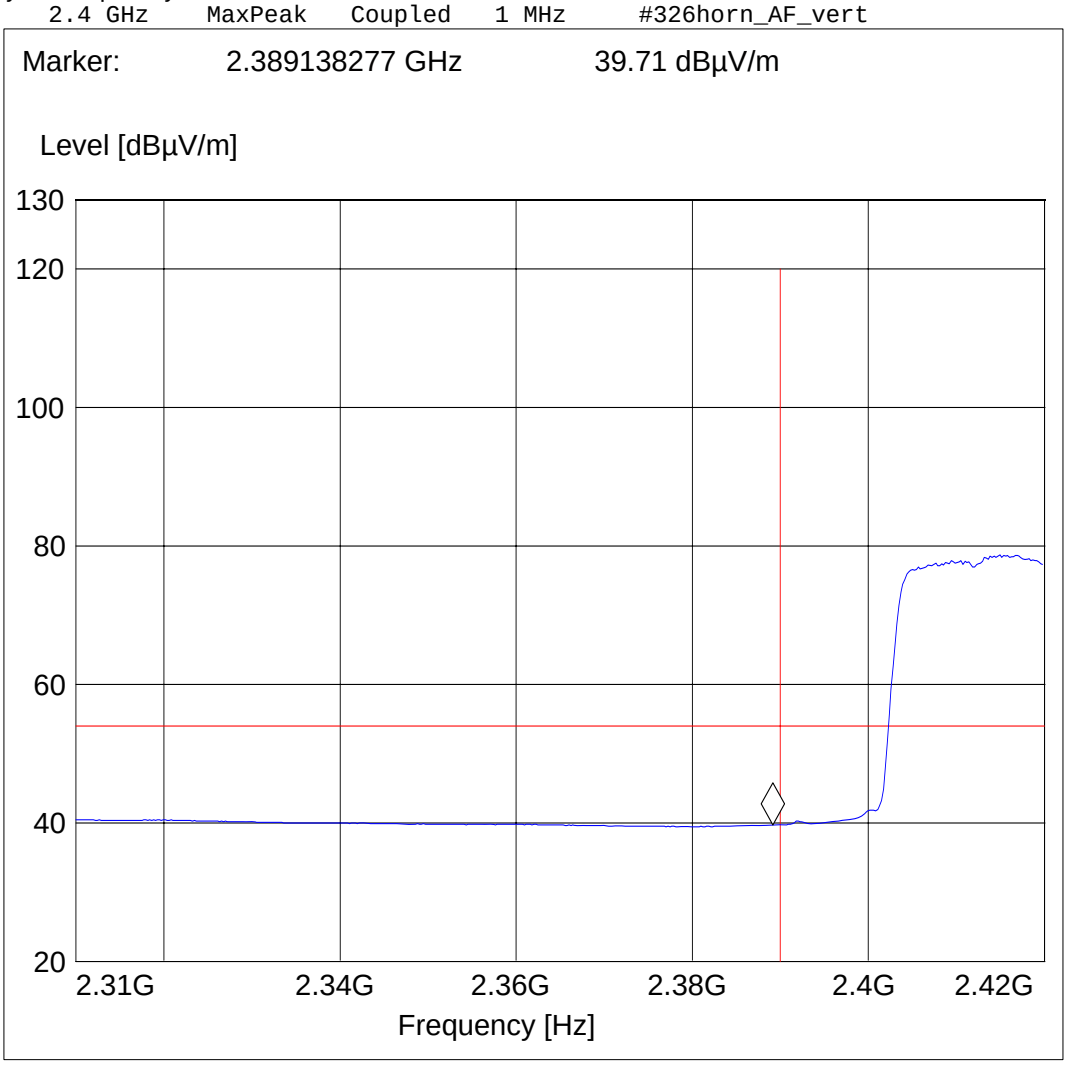
802.11g Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

```
EUT:             BCM94311MCAG
Customer:        Broadcom
Test Mode:       802.11g, ch 1 Aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Chris
Power Supply:    AC Adapter
```

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



BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

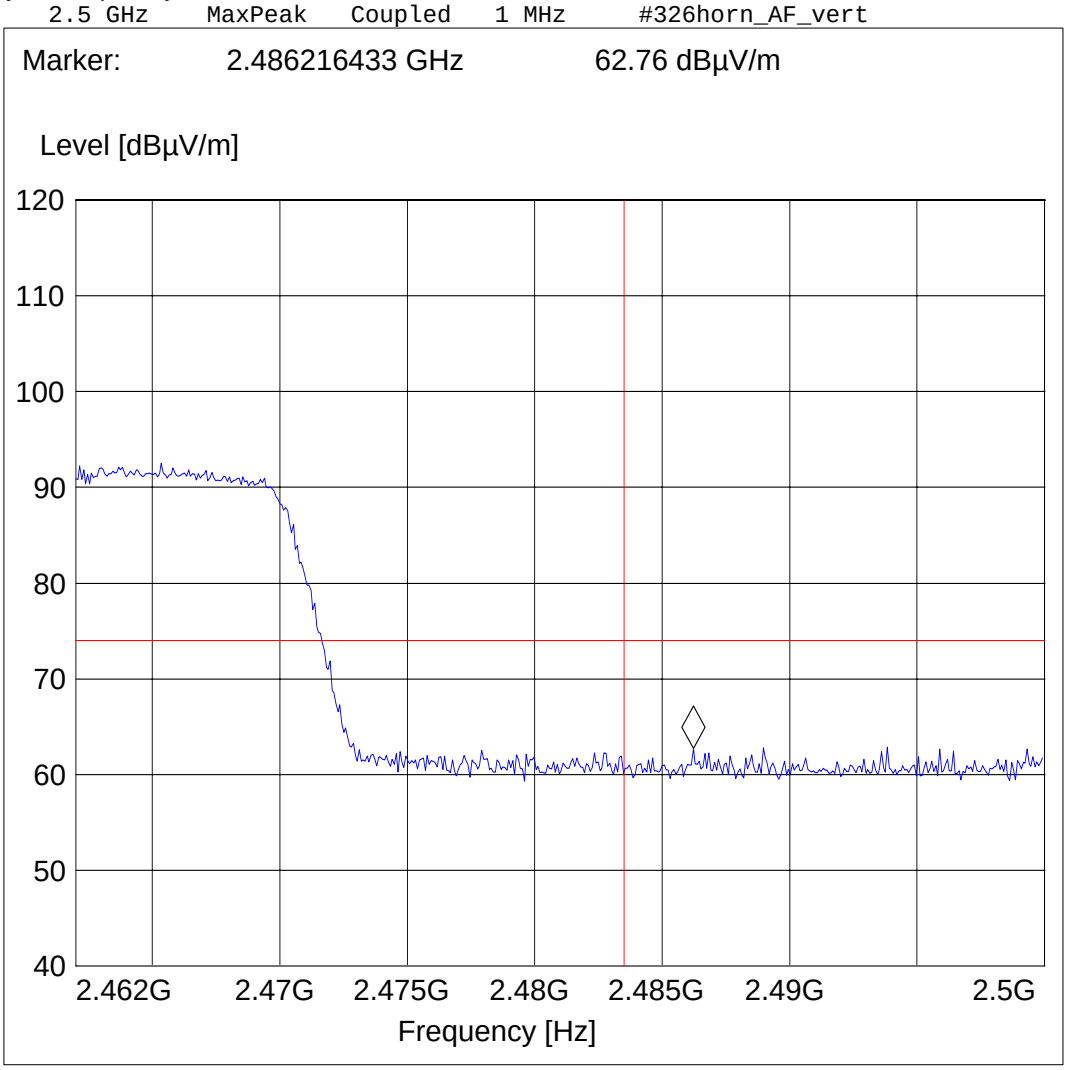
802.11g High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

```
EUT:             BCM94311MCAG
Customer:        Broadcom
Test Mode:       802.11g, ch 11 Aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Chris
Power Supply:    AC Adapter
```

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



BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

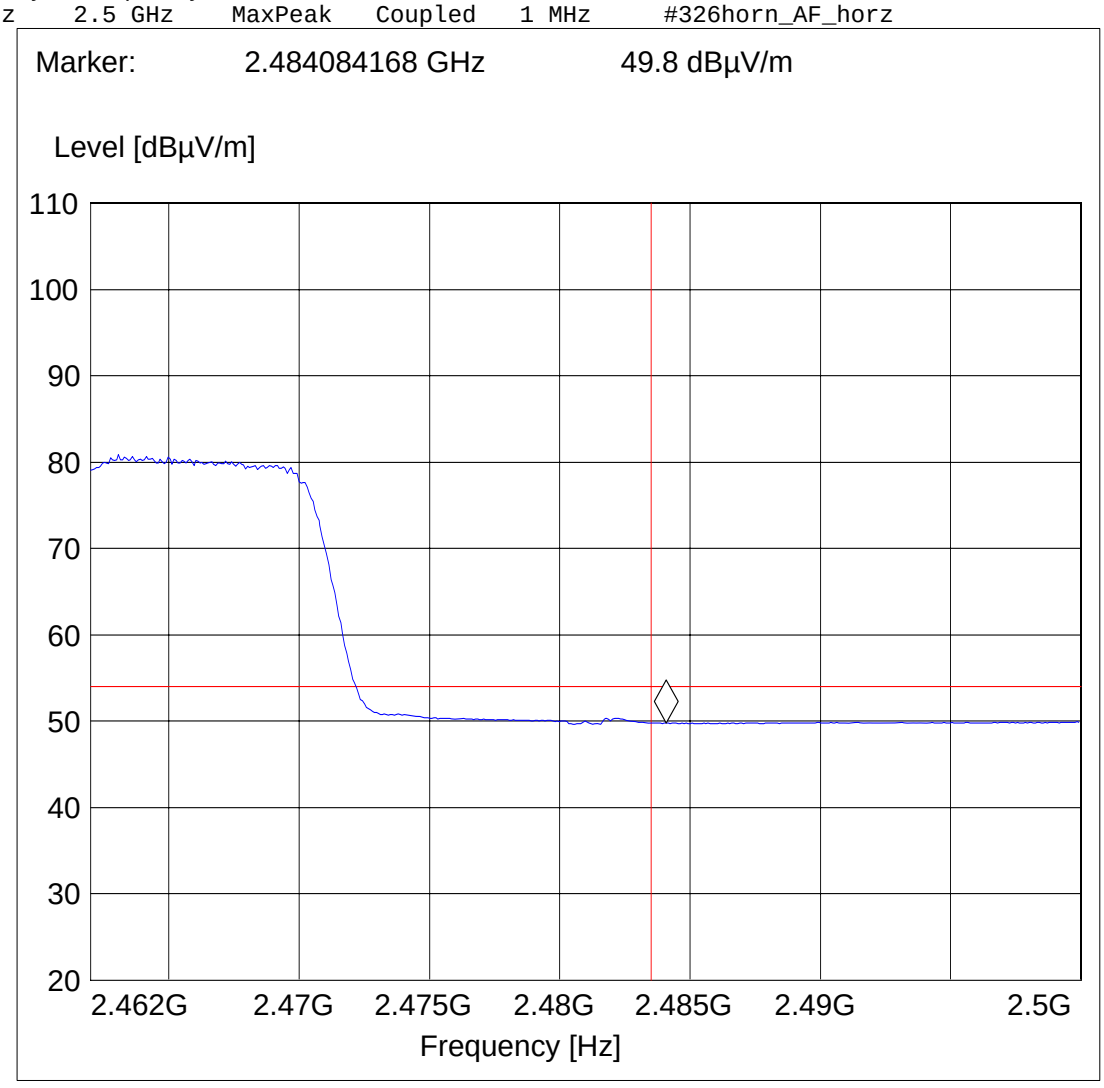
802.11g High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

```
EUT:             Dell PP12S with BCM94311MCAG
Customer:        Broadcom
Test Mode:       802.11g, ch 11 Aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer:   Chris
Power Supply:    AC Adapter
```

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



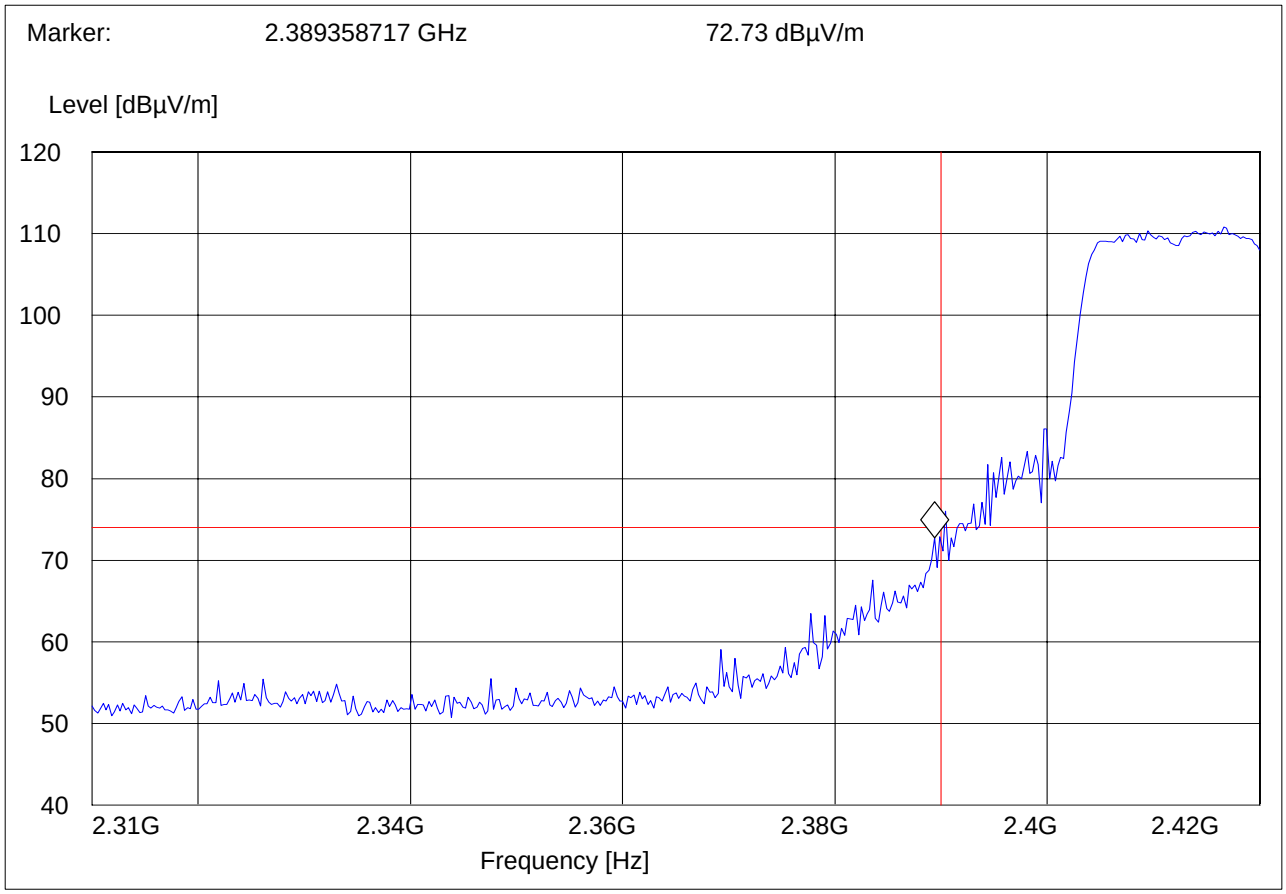
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11g Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11g CH.1 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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
		MaxPeak			



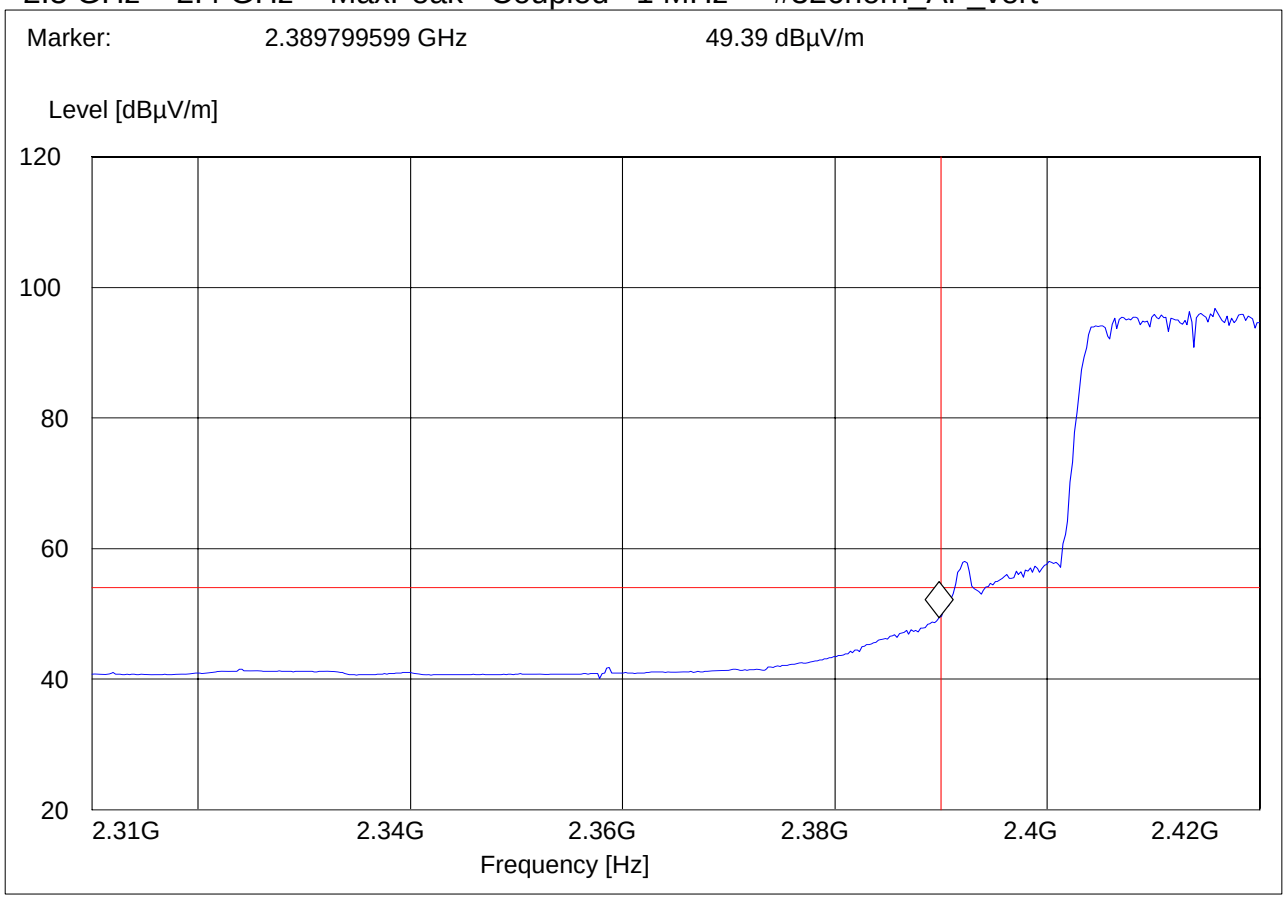
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11g Low frequency section (spurious in the restricted band 2310 – 2390 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11g CH.1 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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



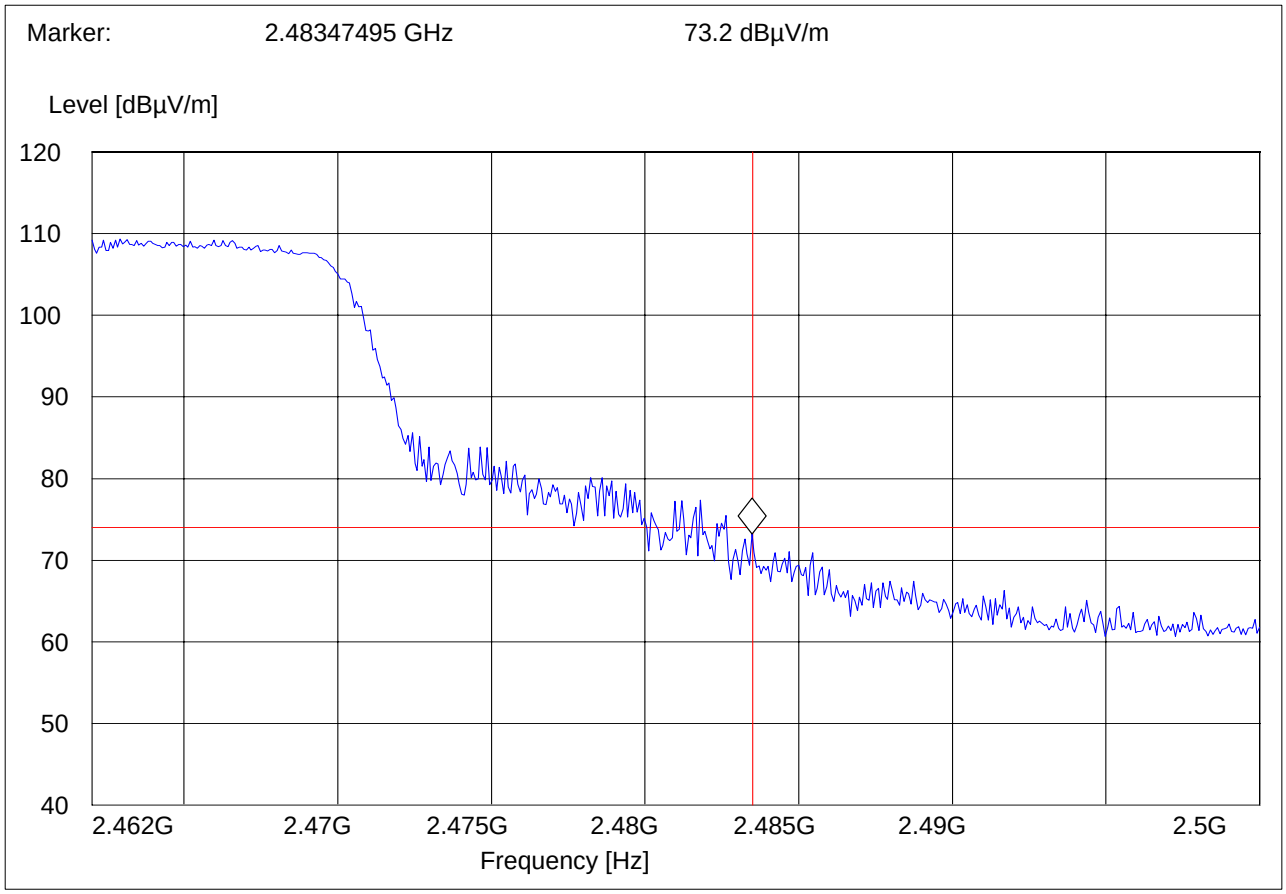
BAND EDGE COMPLIANCE §15.247 (d) & RSS-210(A8.5)

802.11g High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11g CH.11 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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 MaxPeak

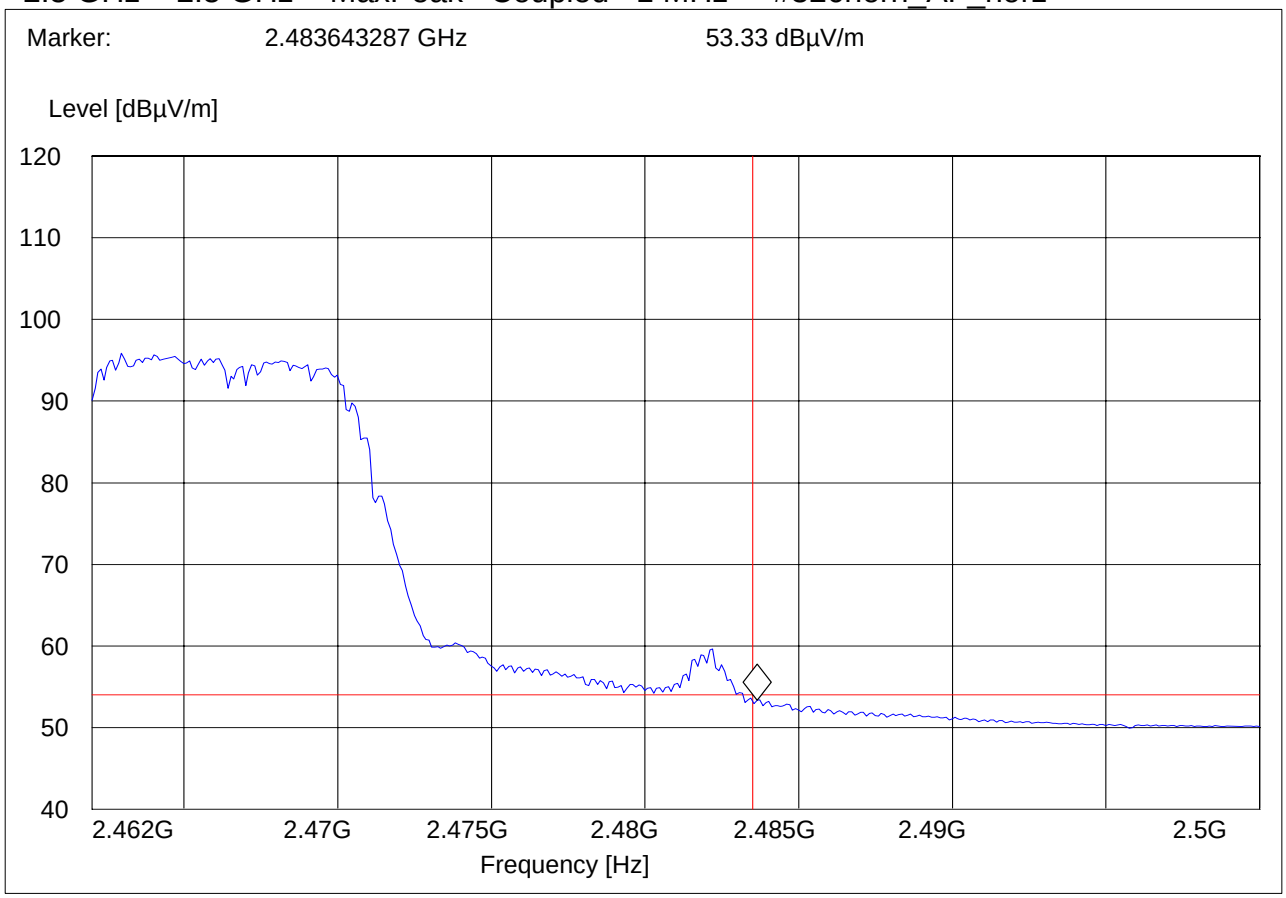


802.11g High frequency section (spurious in the restricted band 2483.5 – 2500 MHz)

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11g CH.11 Main Yageo
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC ADAPTER

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



4.4 EMISSION LIMITATIONS §15.247 (d) & RSS-210(A8.5)

Transmitter (Radiated)

LIMITS

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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)).

NOTEs:

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 26.5 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode unless specified with the plots.

3. Emissions were measured with the device in 802.11b mode, 802.11g mode, and 802.11a mode.

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

4.5 EMISSION LIMITATIONS - Radiated (Transmitter), 802.11b

§15.247 (d) & RSS-210(A8.5):

Transmit at Lowest channel Frequency 2412MHz (802.11b)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

Transmit at Middle channel Frequency 2437MHz (802.11b)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

Transmit at Highest channel Frequency 2462MHz (802.11b)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

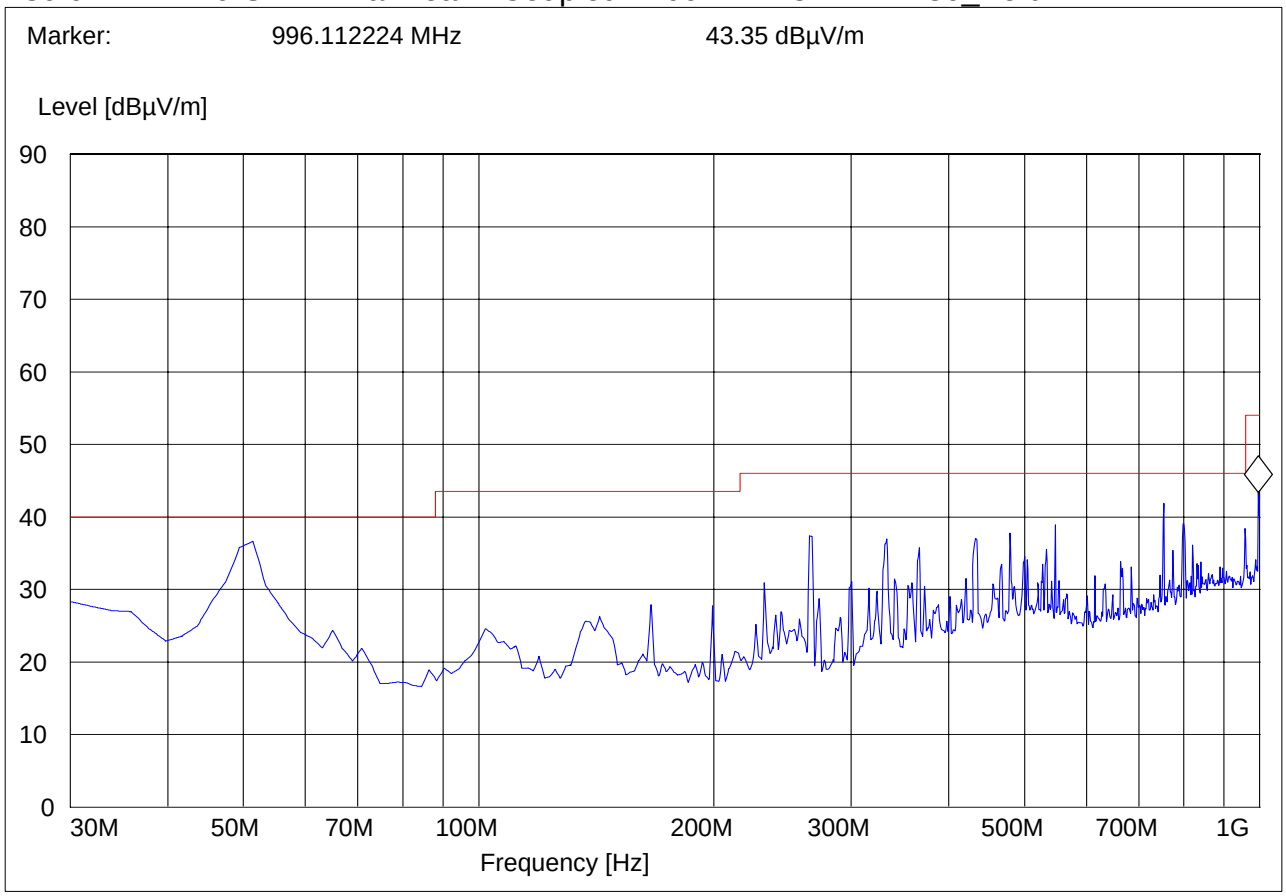
Lowest Channel (2412MHz): 30MHz – 1GHz

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

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: Aux WNC and Yageo for all modes (Note: radiated emissions below 1 GHz remained the same on all 802.11 modes)
ANT Orientation: V
EUT Orientation: H
Test Engineer: Sam
Voltage: AC Adapter

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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

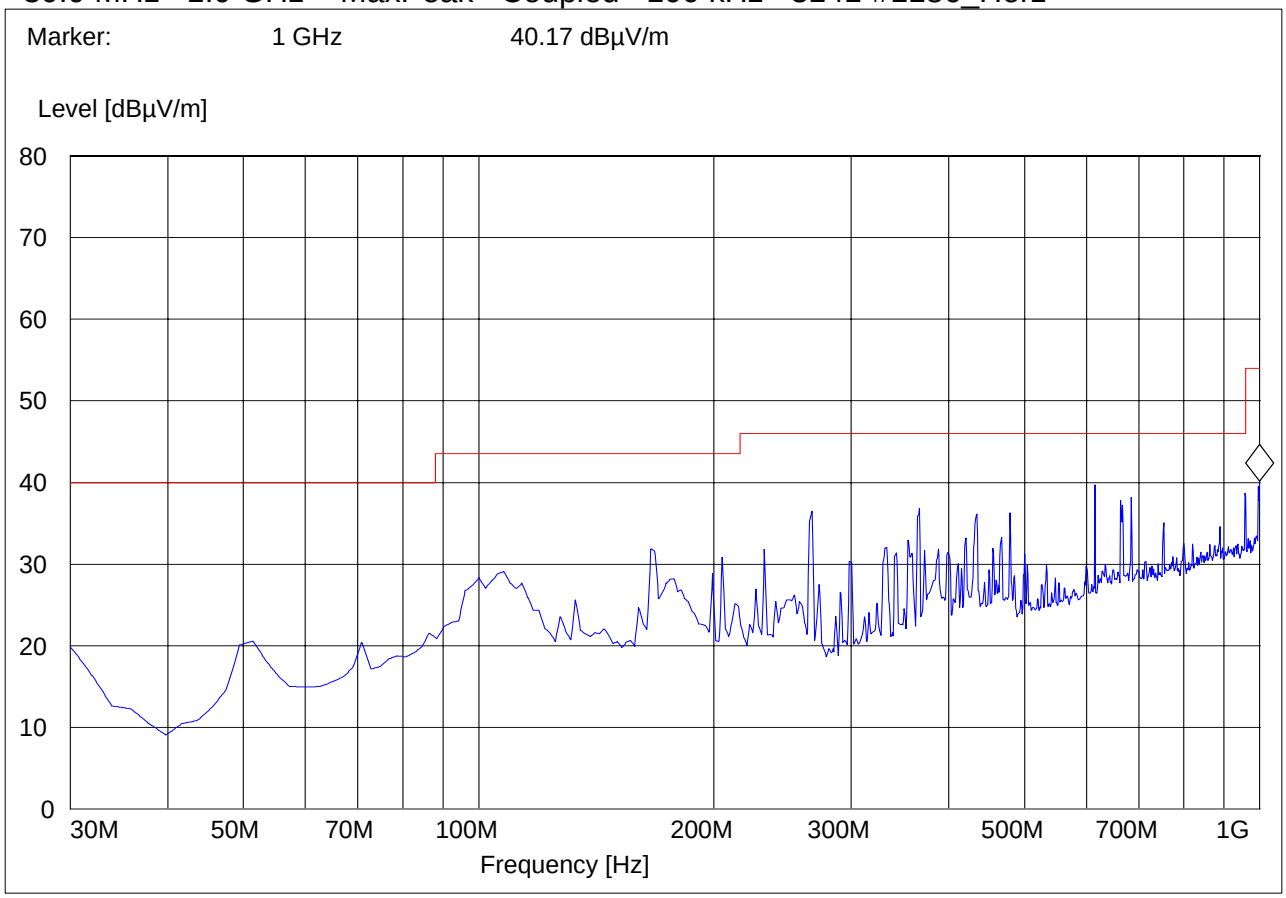
Lowest Channel (2412MHz): 30MHz – 1GHz

Antenna: Horizontal

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: Aux WNC and Yageo for all modes (Note: radiated emissions below 1 GHz remained the same on all 802.11 modes)
ANT Orientation: H
EUT Orientation: H
Test Engineer: Sam
Voltage: AC Adapter

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

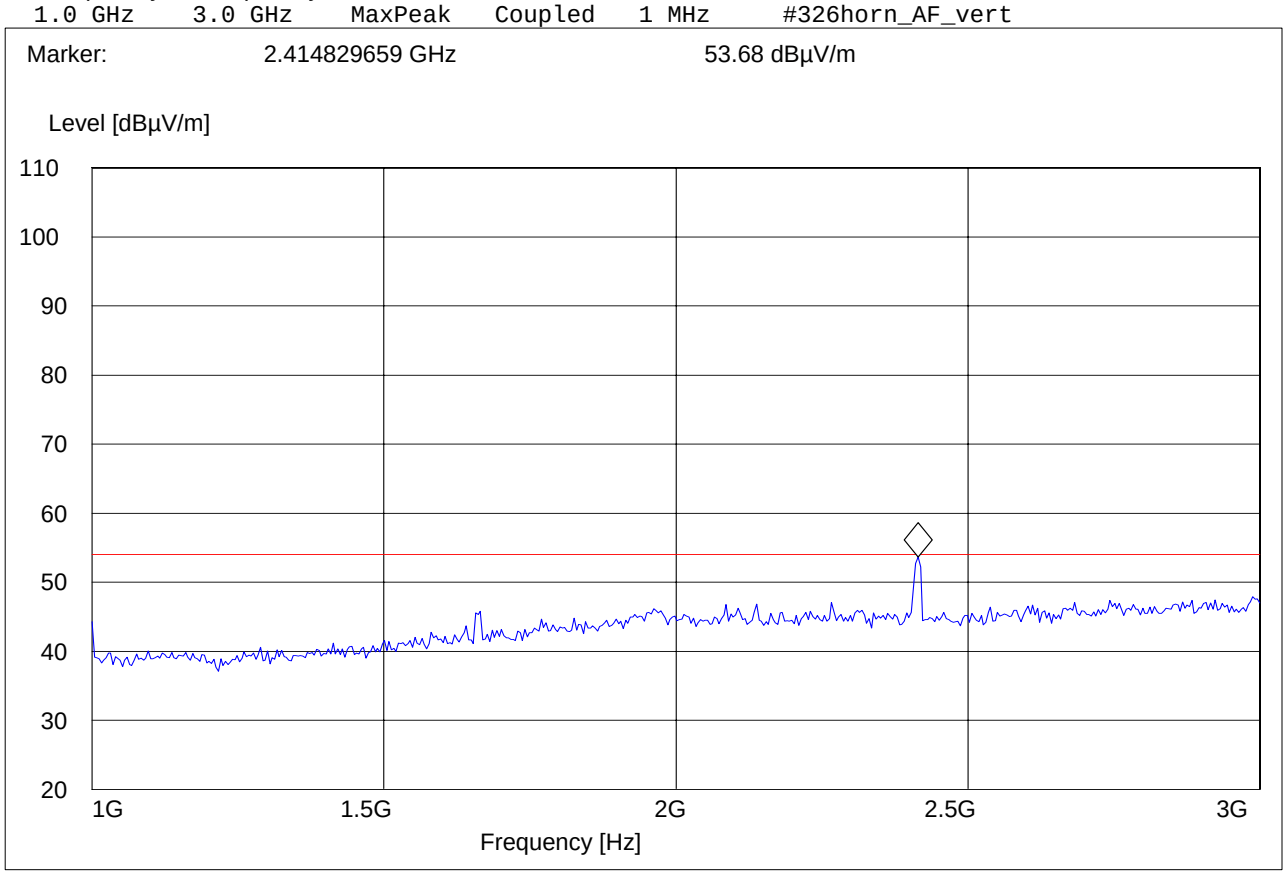


EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)
Lowest Channel (2412MHz): 1GHz – 18GHz

```
EUT:              94312MCG
Customer::        Broadcom
Test Mode:        802.11b Ch.1 aux WNC
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC Adapter
```

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

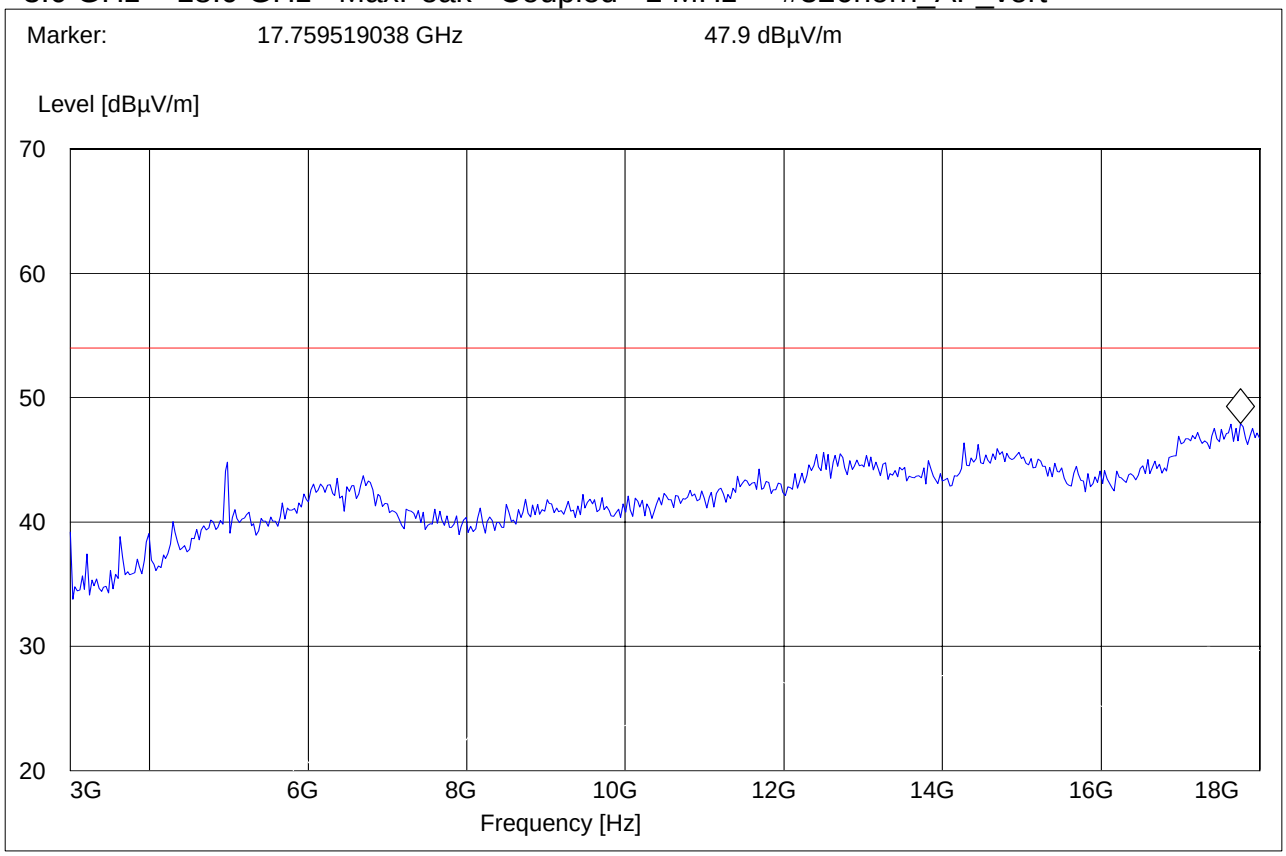
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.1 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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

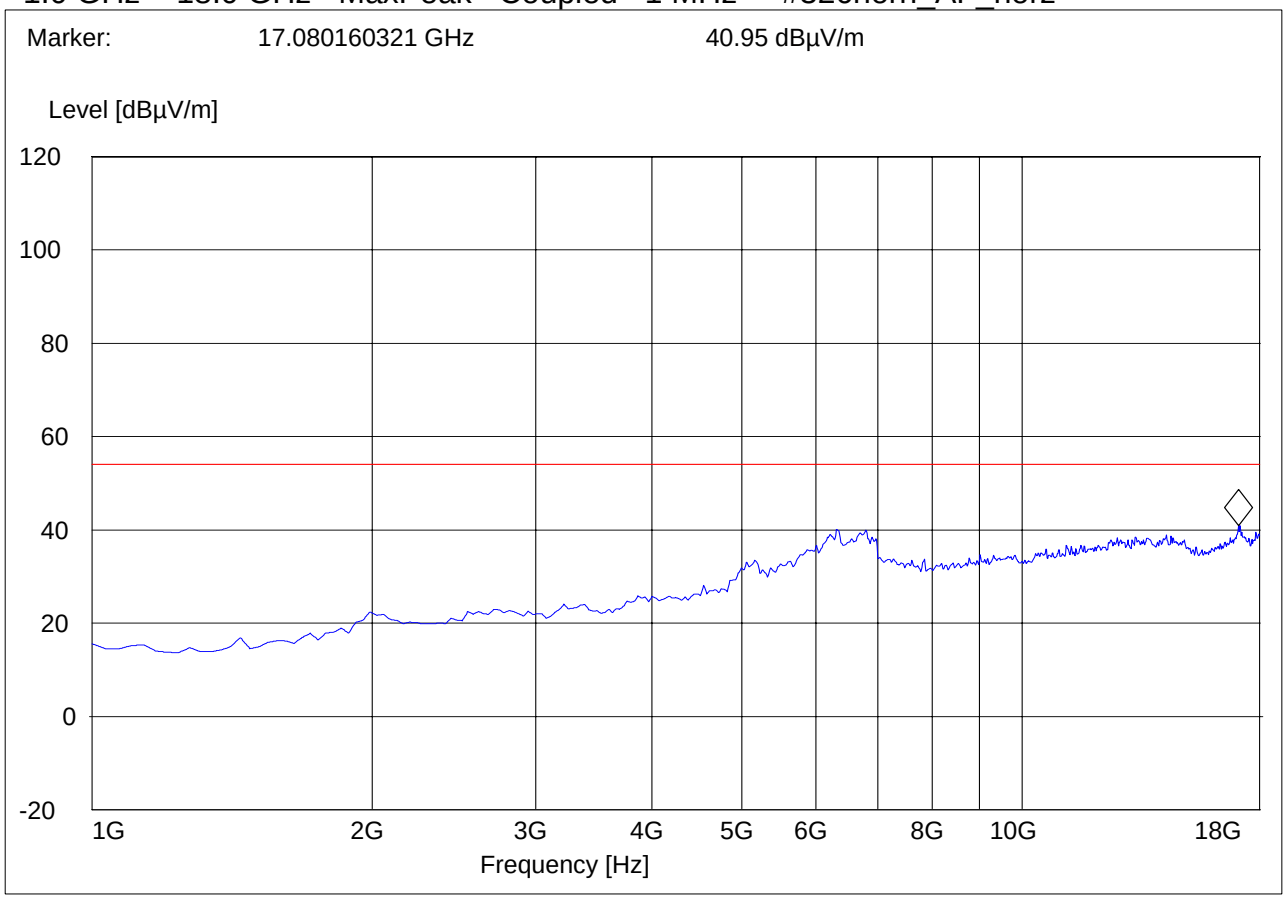
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11b CH.1 MAIN Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

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

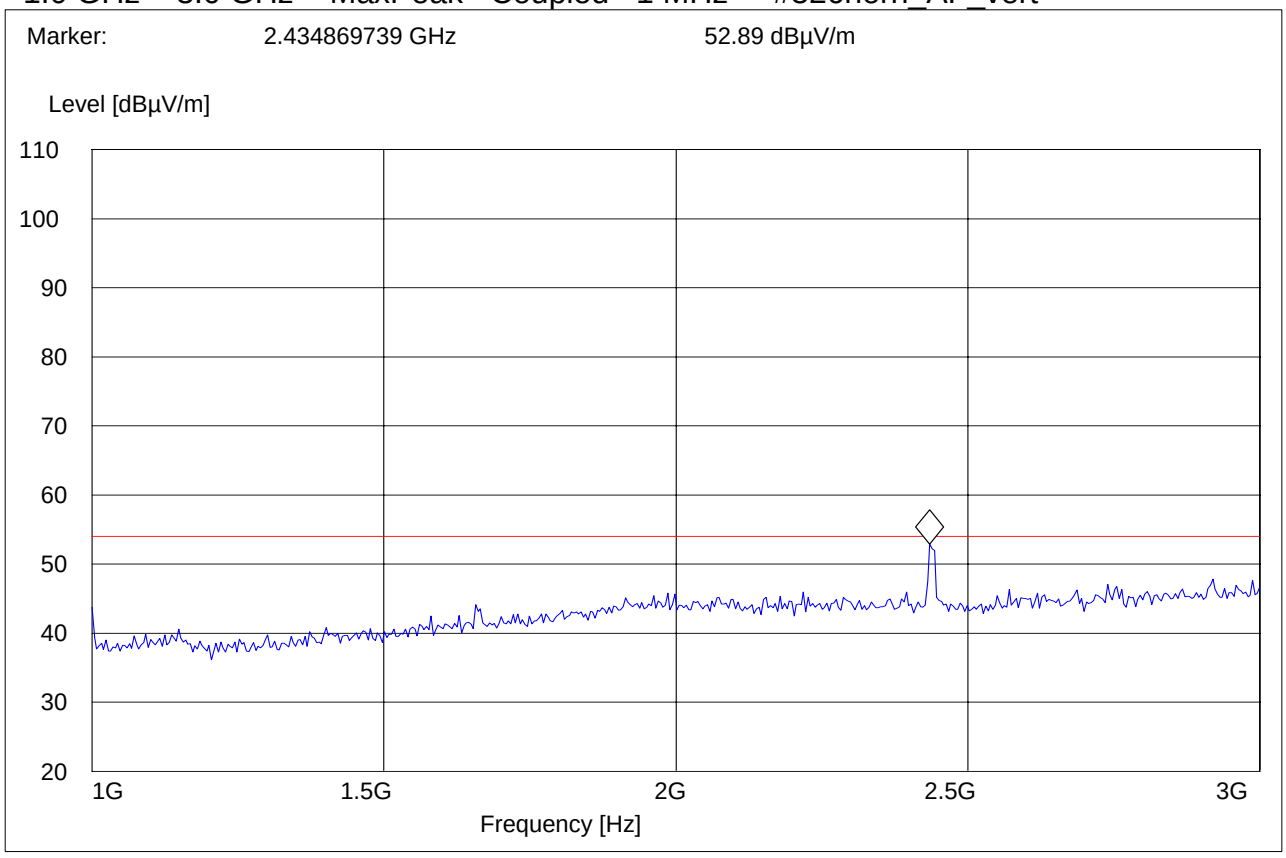


EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)
Mid Channel (2437MHz): 1GHz – 18GHz

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.6 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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

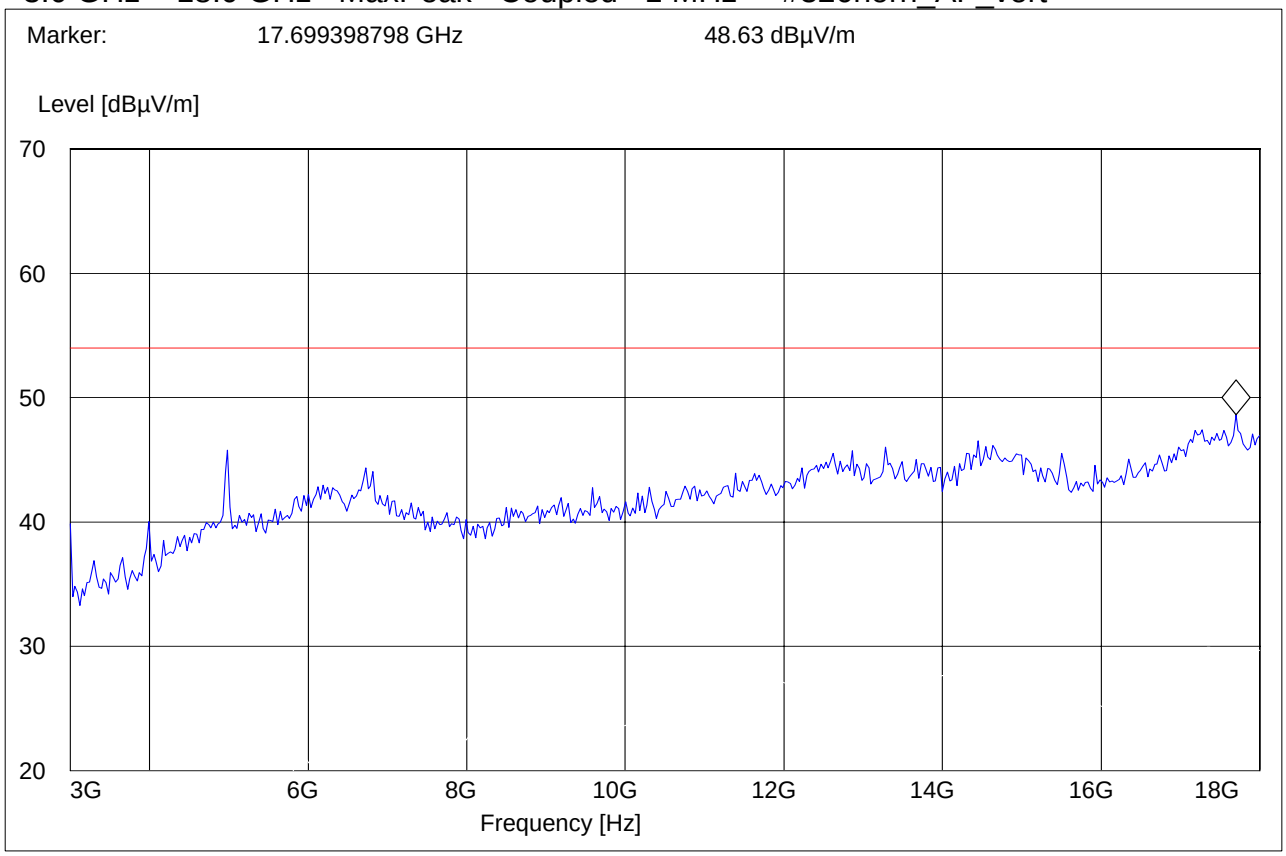
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.6 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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

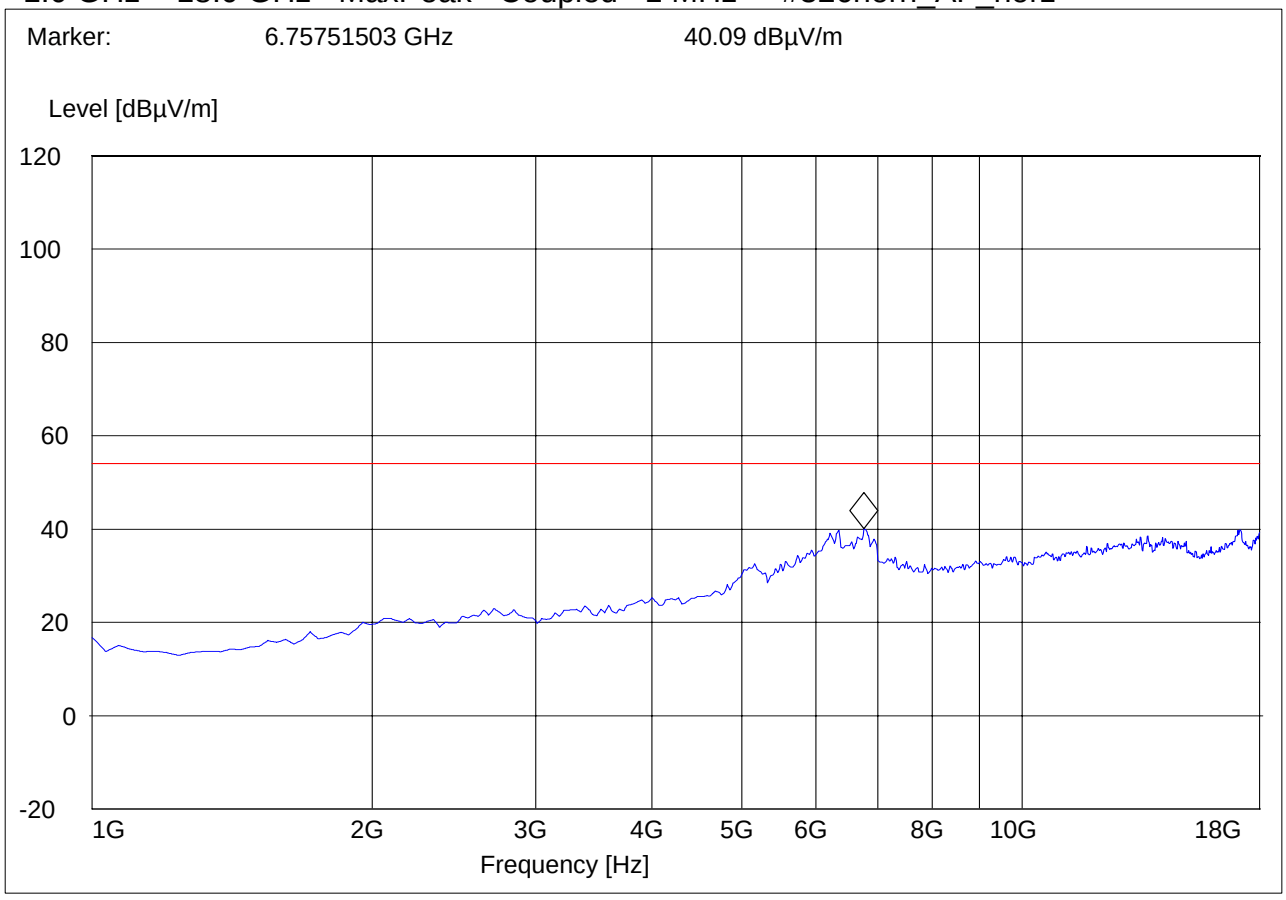
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11b CH.6 MAIN Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

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

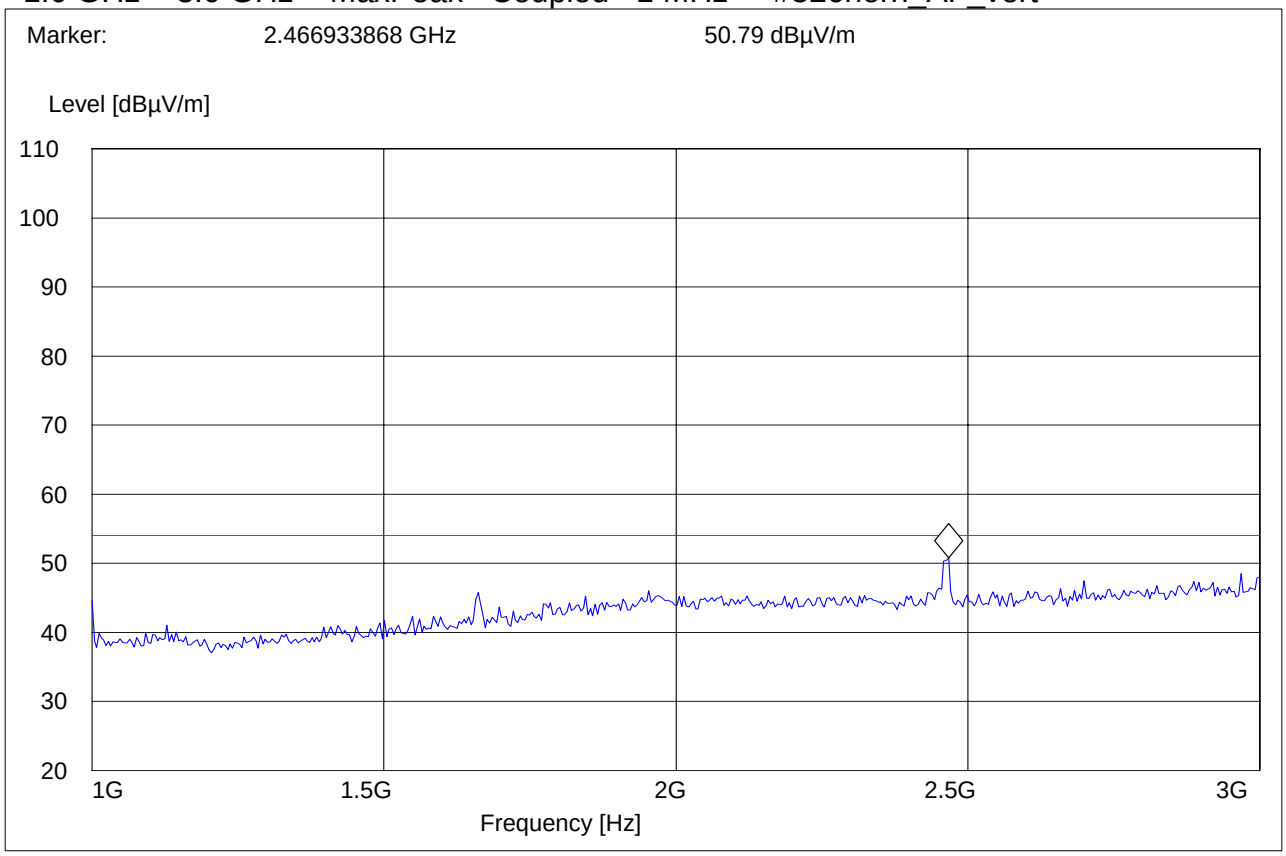


EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)
Highest Channel (2462MHz): 1GHz – 18GHz

EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.11 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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

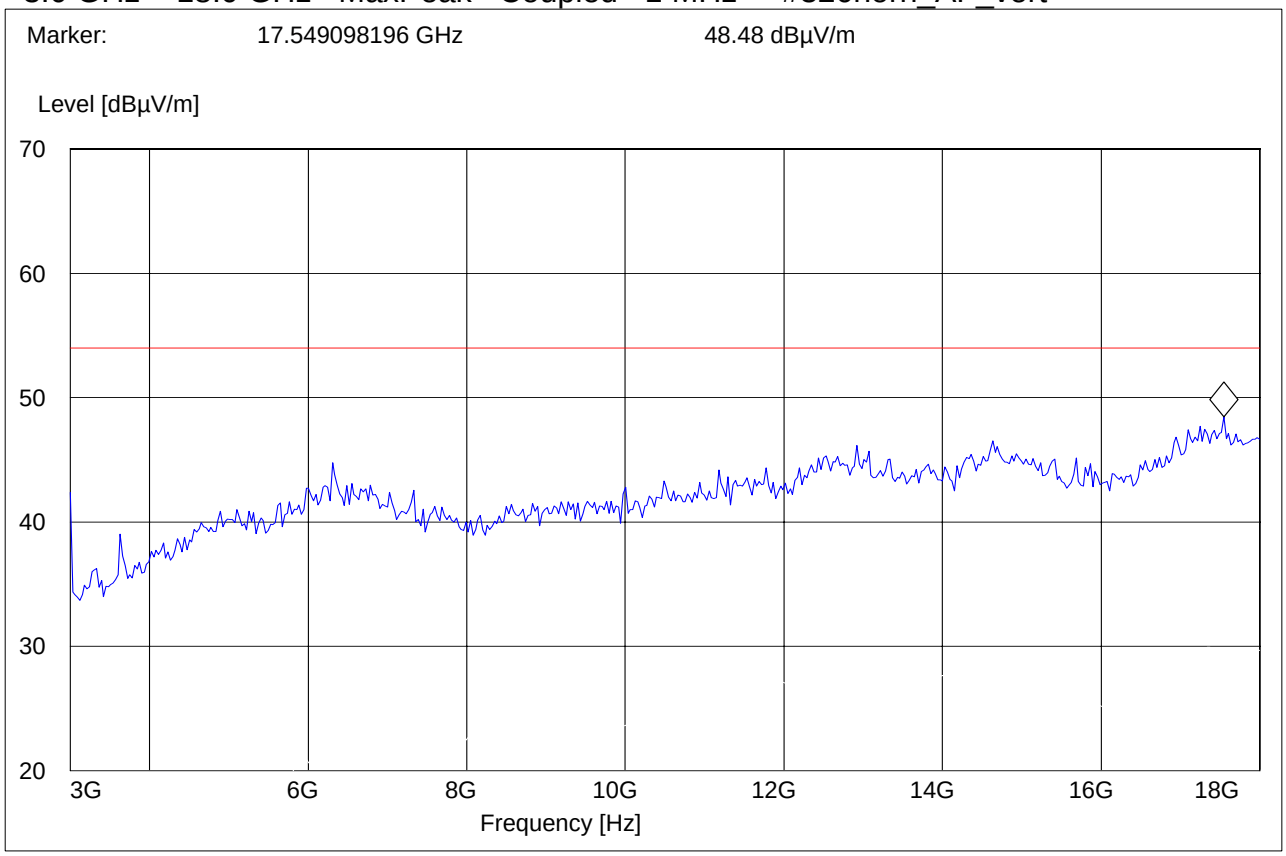
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



EUT: 94311MCAG
Customer:: Broadcom
Test Mode: 802.11b Ch.11 aux WNC
ANT Orientation: H
EUT Orientation: H
Test Engineer: Chris
Voltage: AC Adapter

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

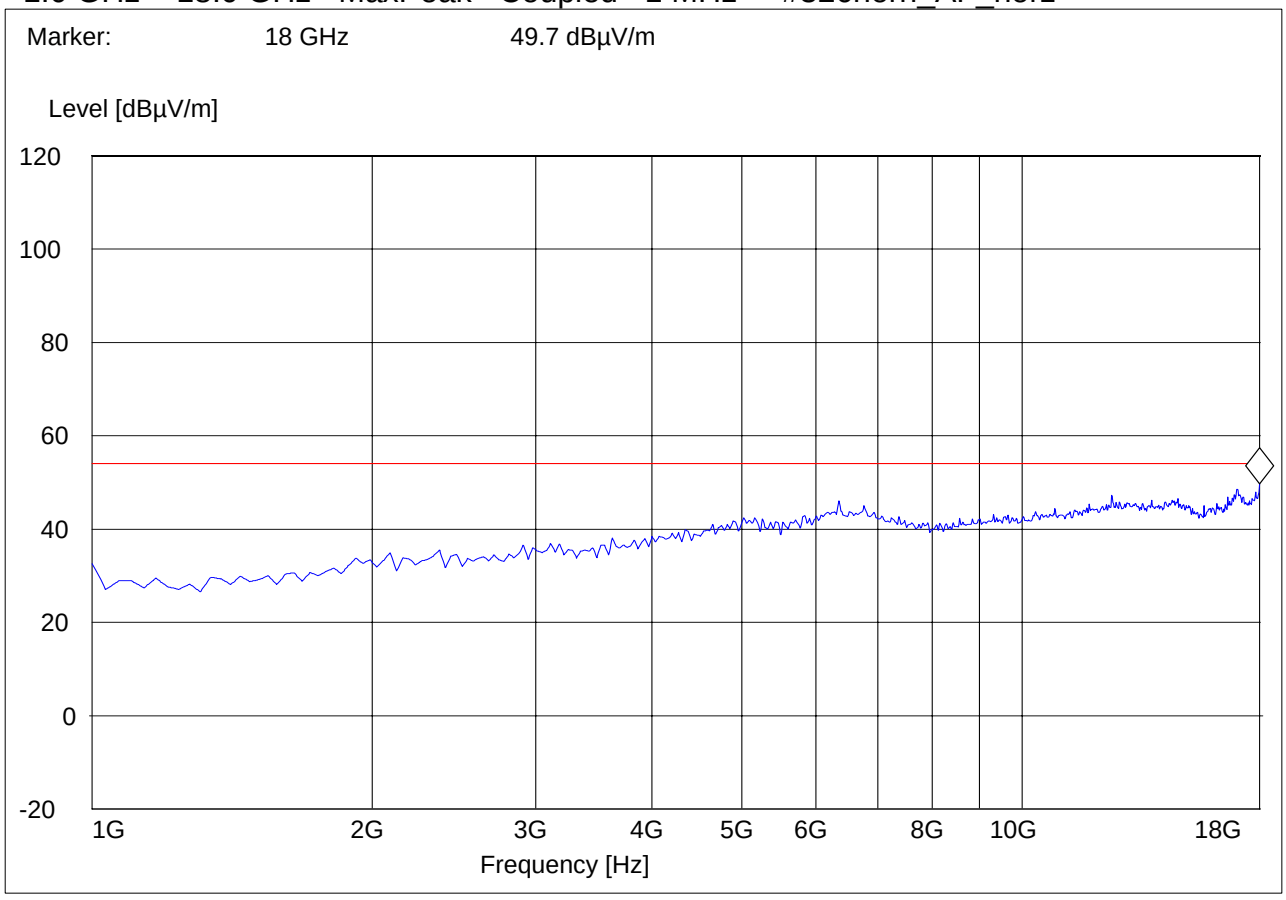
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
3.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11b CH.11 MAIN Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

18GHz – 26.5GHz for low, middle, and high channels

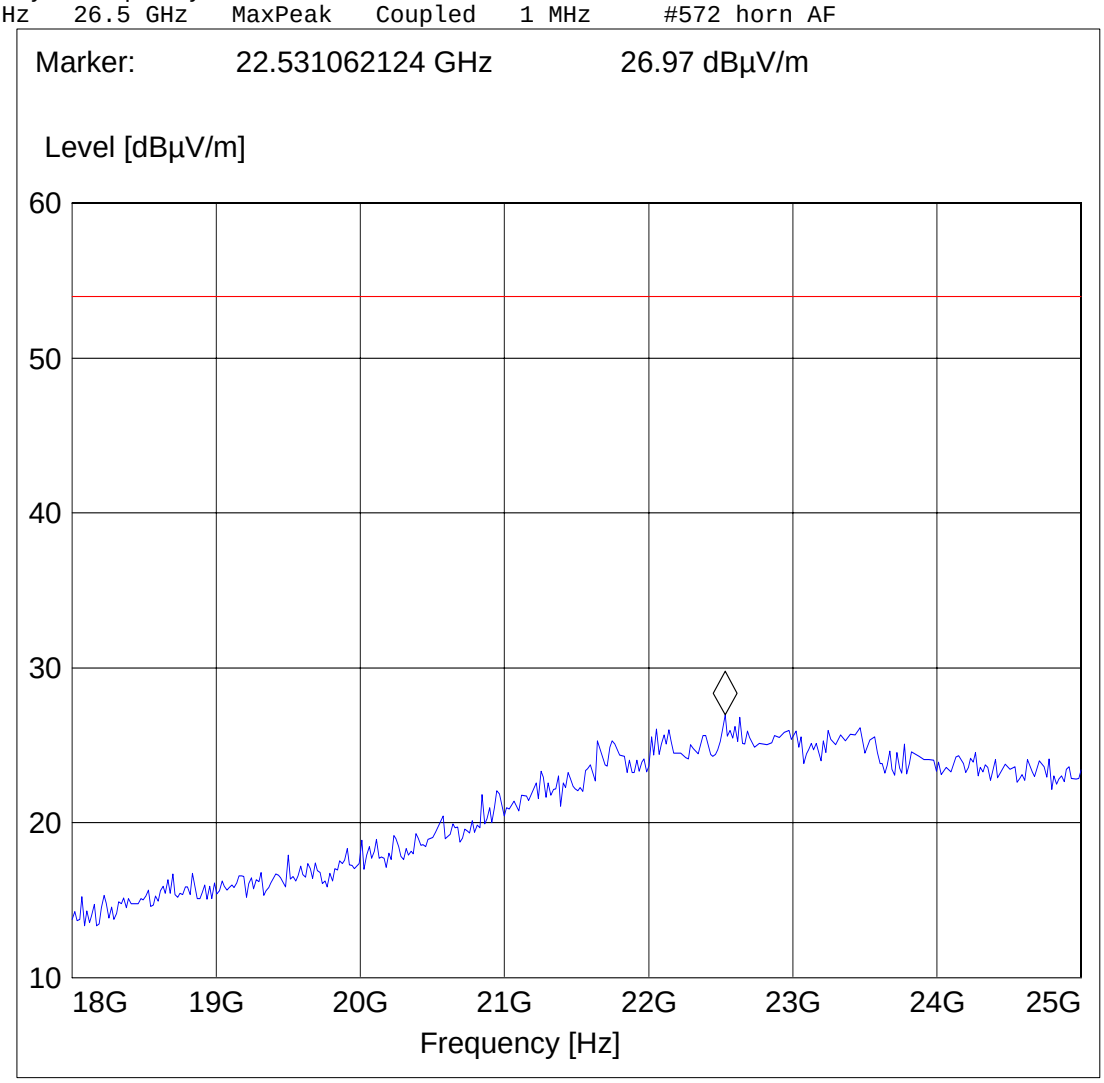
Note: This plot is valid for low, mid, high channels (worst-case plot)

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

```
EUT / Description: Dell PP12S with BCM94311MCAG
Manufacturer:      Broadcom
Test Mode:         802.11b, Measurement for low, middle, and high channels
ANT Orientation:   V
EUT Orientation:   H
Test Engineer:     Juan
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



4.6 EMISSION LIMITATIONS - Radiated (Transmitter), 802.11g

§15.247 (d) & RSS-210(A8.5):

Transmit at Lowest channel Frequency 2412MHz (802.11g)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

Transmit at Middle channel Frequency 2437MHz (802.11g)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

Transmit at Highest channel Frequency 2462MHz (802.11g)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

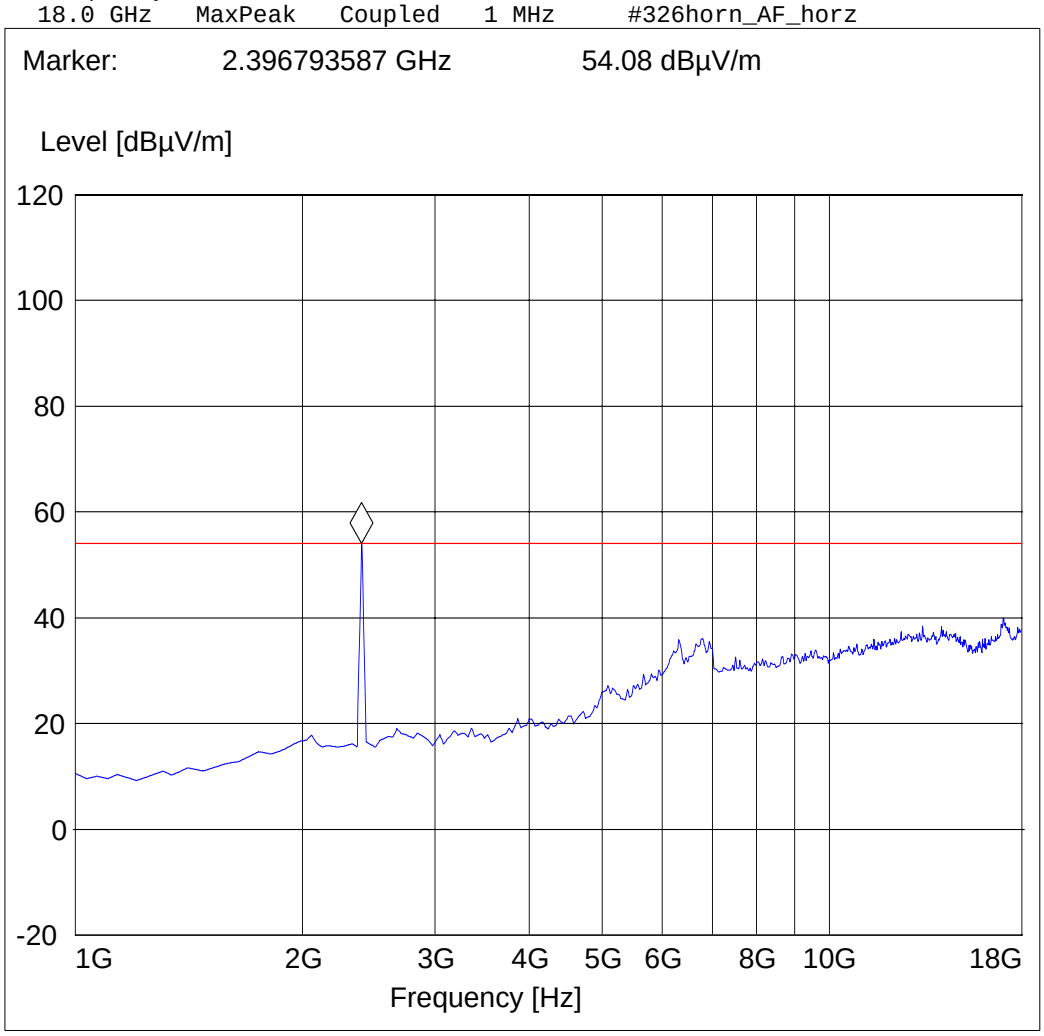
Lowest Channel (2412MHz): 1GHz – 18GHz

Note: No significant harmonic emissions detected either in Vertical or Horizontal

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11g, Ch. 1 Aux WNC
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Chris
Voltage:           AC Adapter
Comments:          Marker on fundamental signal
```

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

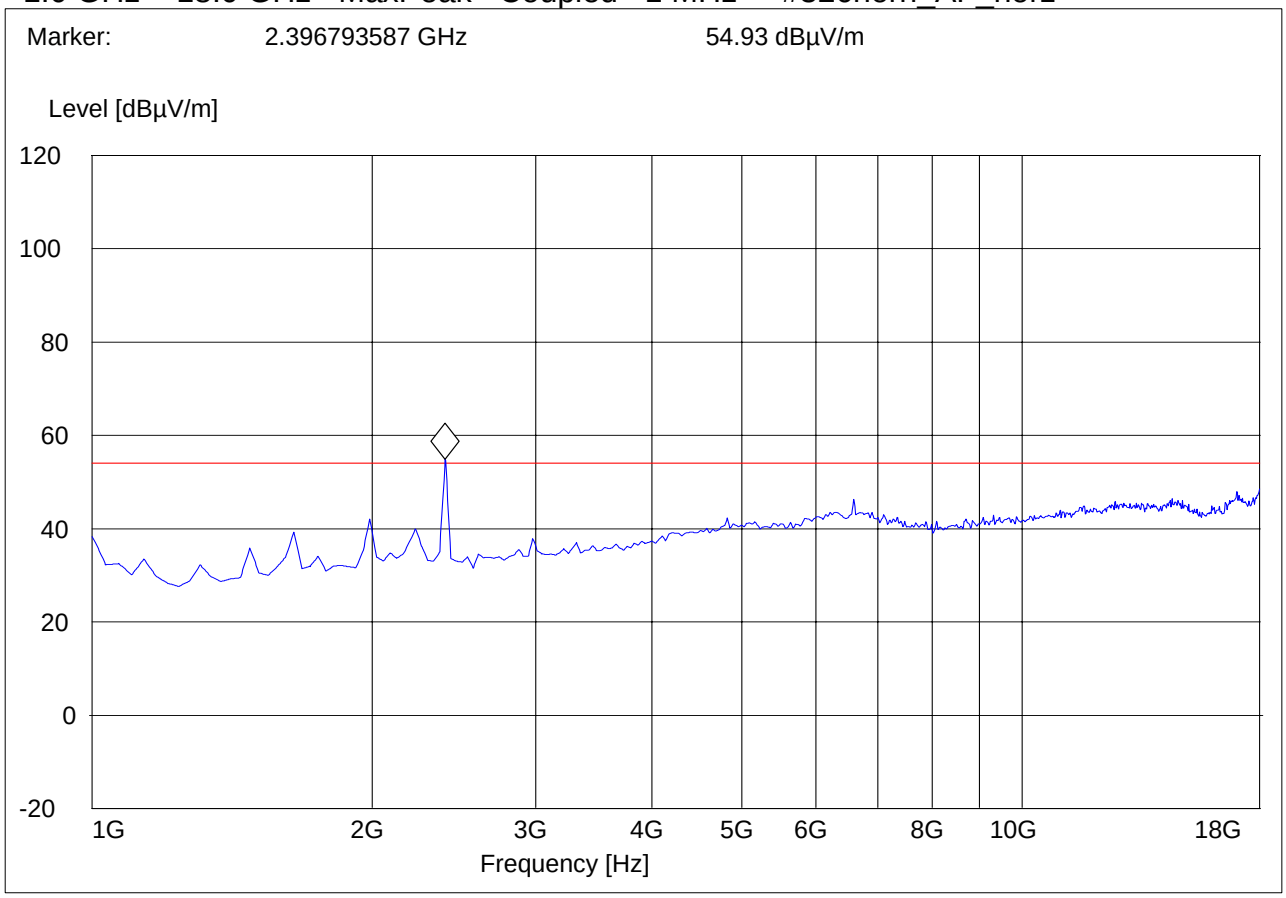
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11b Ch.1, Main Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter
Comments:: marker on TX signal

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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

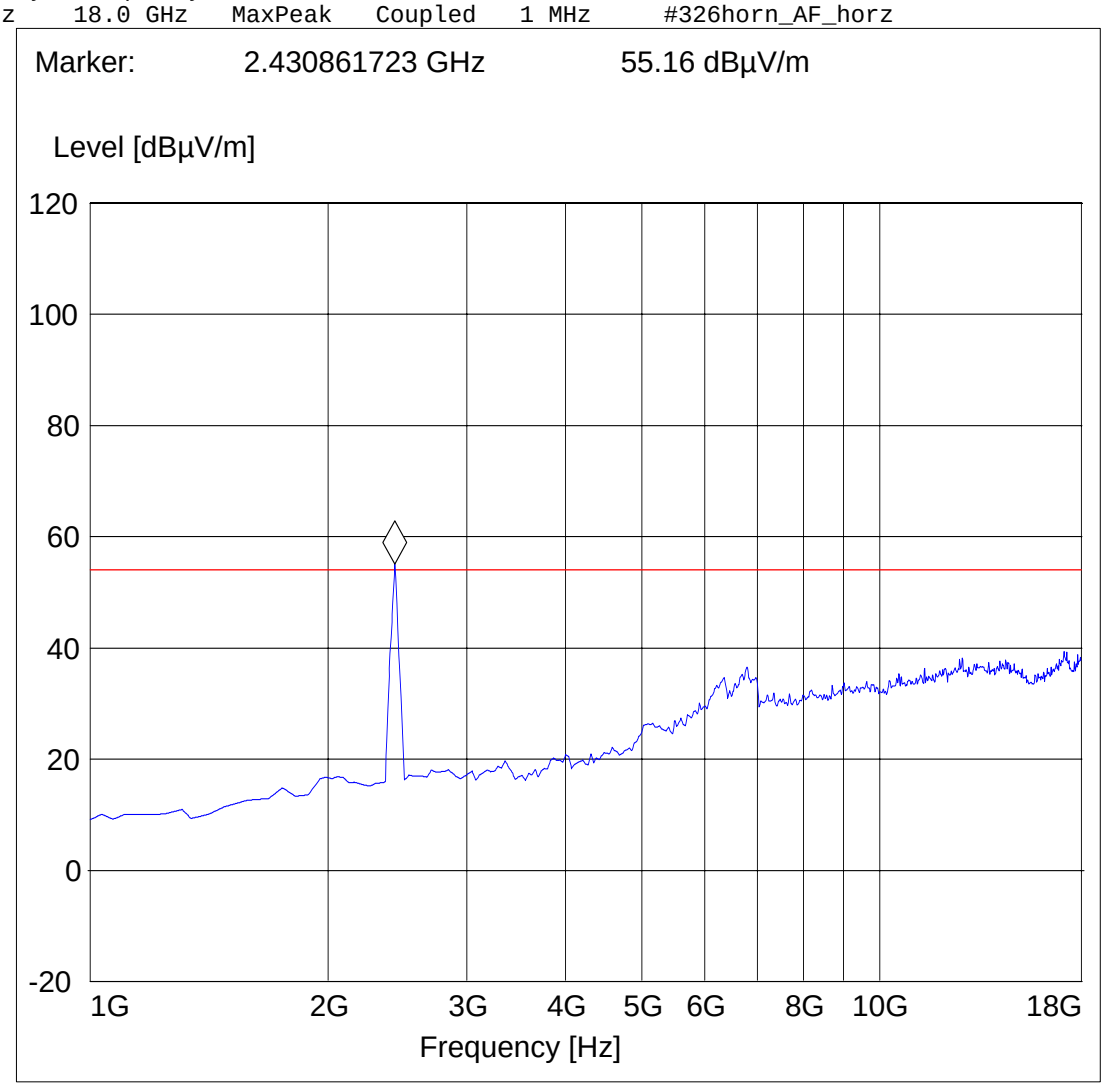
Mid Channel (2437MHz): 1GHz – 18GHz

Note: No significant harmonic emissions detected either in Vertical or Horizontal

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11g, Ch. 6 Aux WNC
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Chris
Voltage:           AC Adapter
Comments:          Marker on fundamental signal
```

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

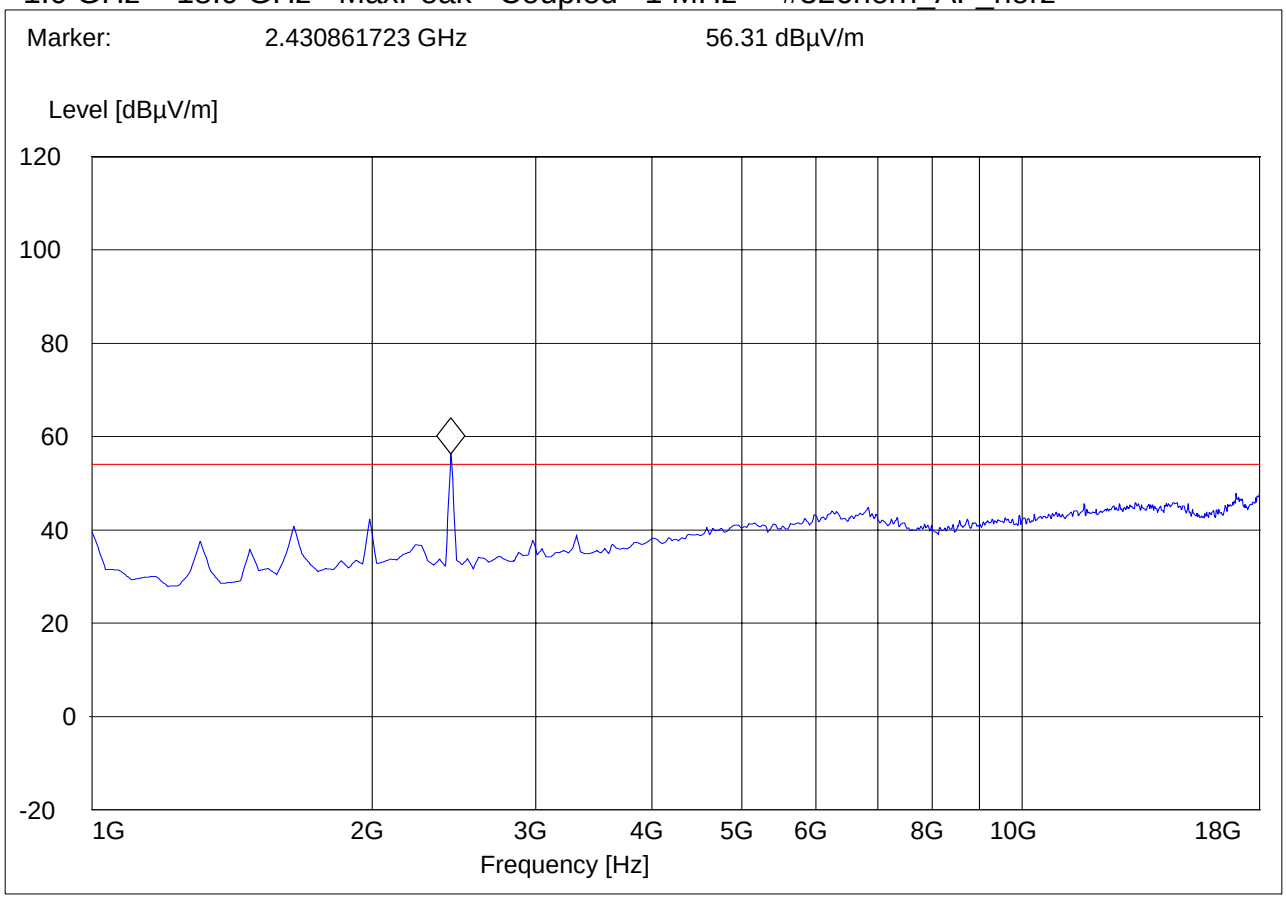
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11b Ch.6, Main Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter
Comments:: marker on TX signal

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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

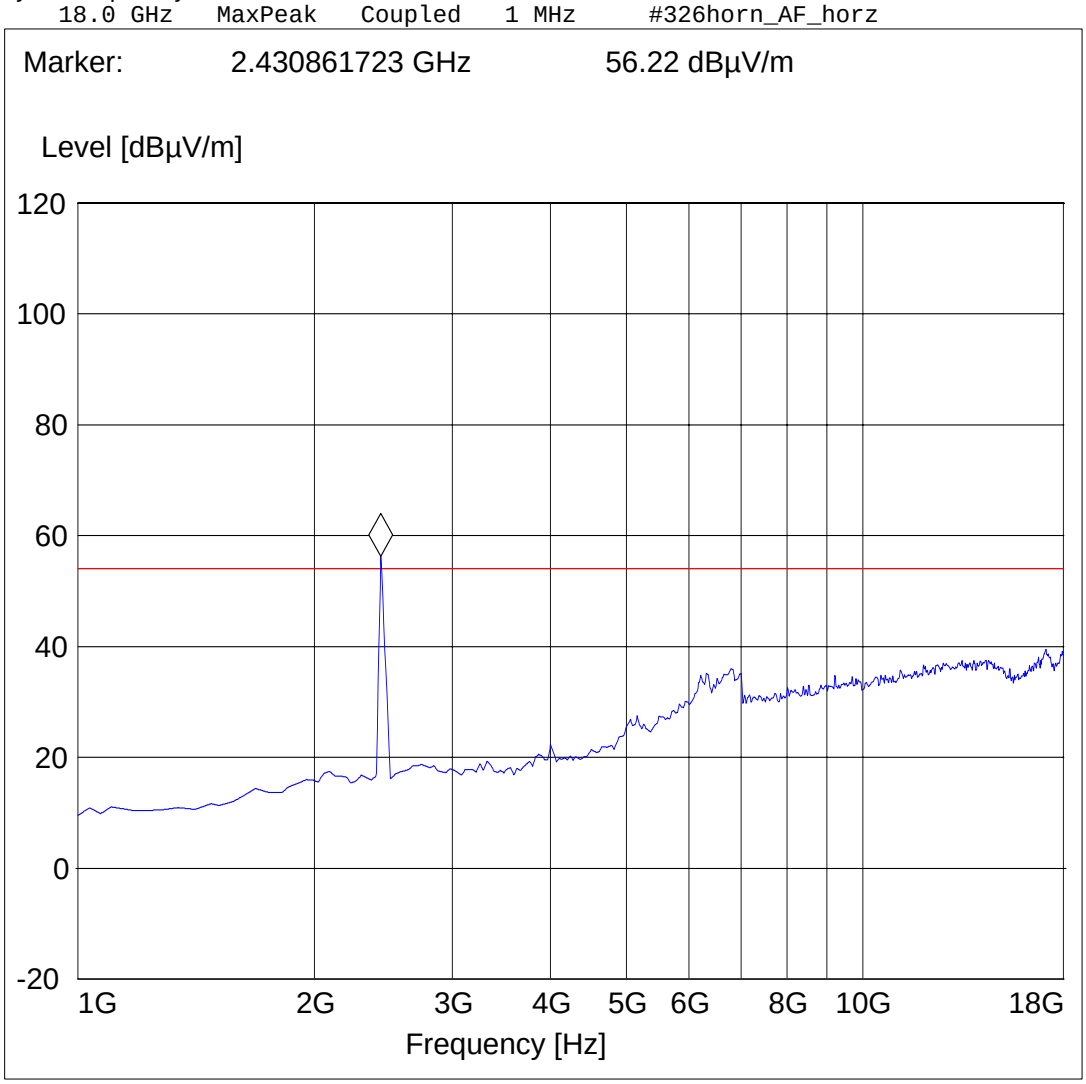
Highest Channel (2462MHz): 1GHz – 18GHz

Note: No significant harmonic emissions detected either in Vertical or Horizontal

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11g, Ch. 11 Aux WNC
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Chris
Voltage:           AC Adapter
Comments:          Marker on fundamental signal
```

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

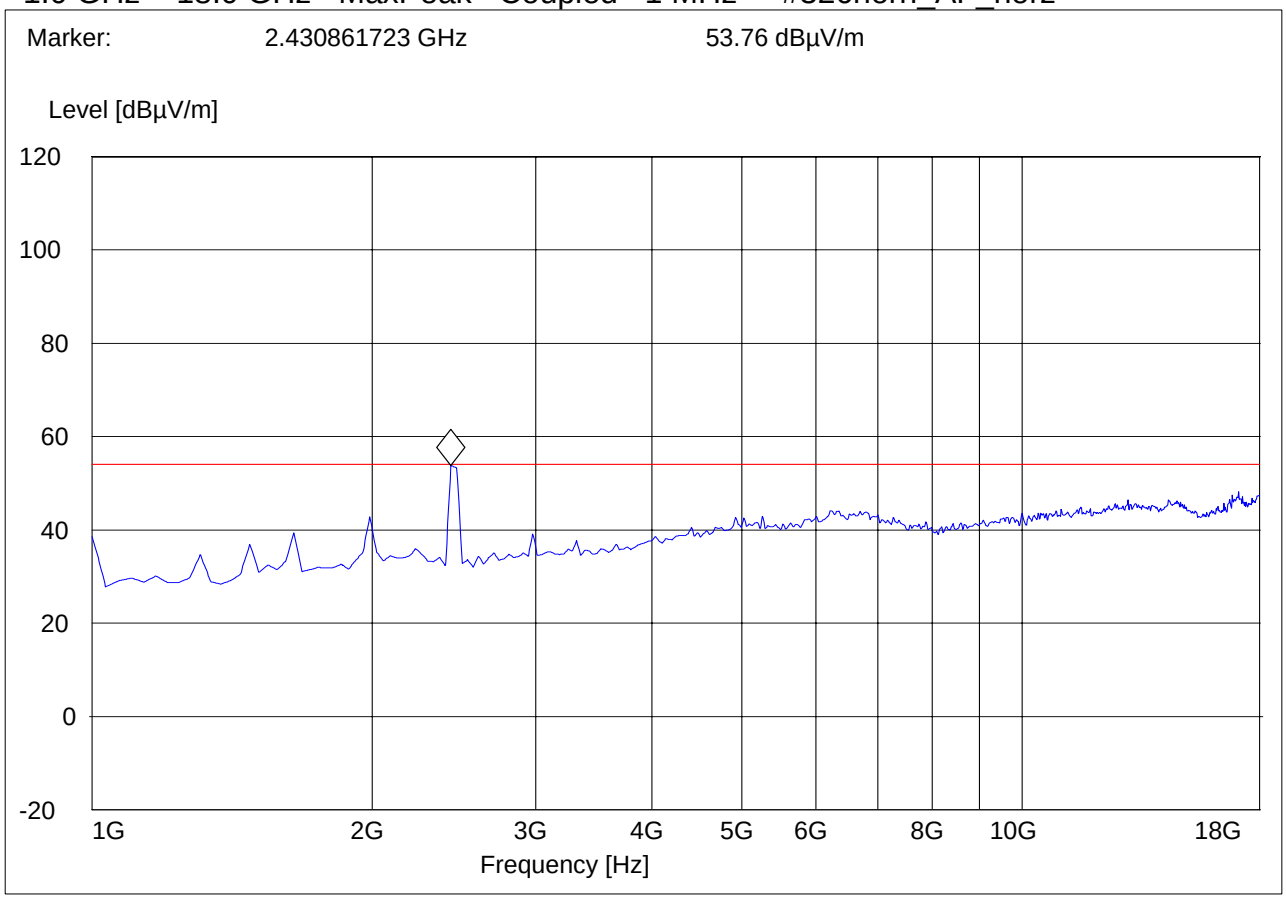
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11b Ch.11, Main Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

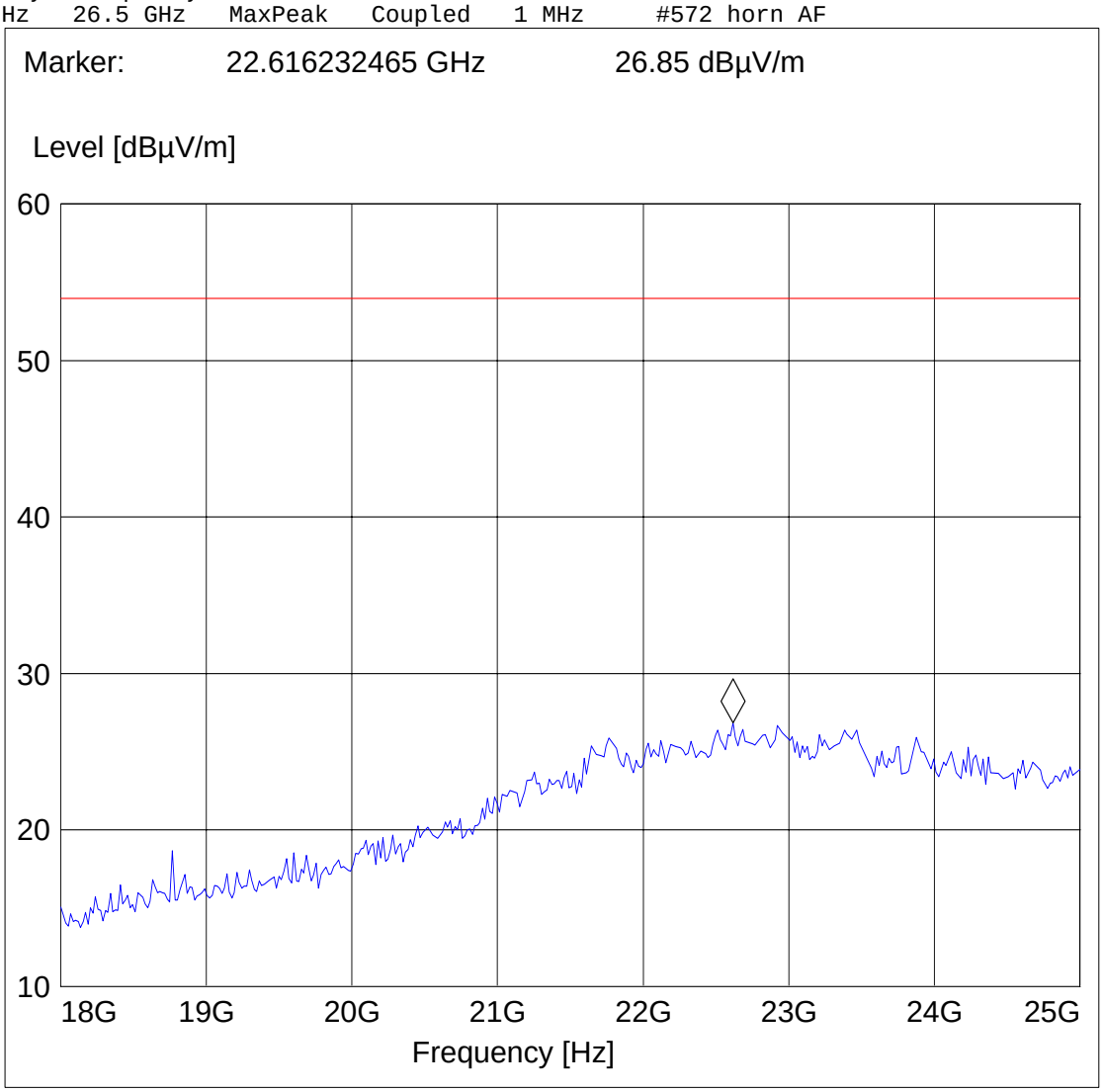
18GHz – 26.5GHz for low, middle, and high channels

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

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test Mode:         802.11g, Measurement for low, middle, and high channels
ANT Orientation:   V
EUT Orientation:   H
Test Engineer:     Sam
Power Supply:      AC Adapter
```

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



4.7 EMISSION LIMITATIONS - Radiated (Transmitter), 802.11a

§15.247 (d) & RSS-210(A8.5):

Transmit at Lowest channel Frequency 5745MHz (802.11a)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

Transmit at Middle channel Frequency 5785MHz (802.11a)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

Transmit at Highest channel Frequency 5825MHz (802.11a)			
Frequency (MHz)	**Level (dBµV/m)**		
	Peak	**Quasi-Peak**	**Average**
SEE PLOTS			

EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

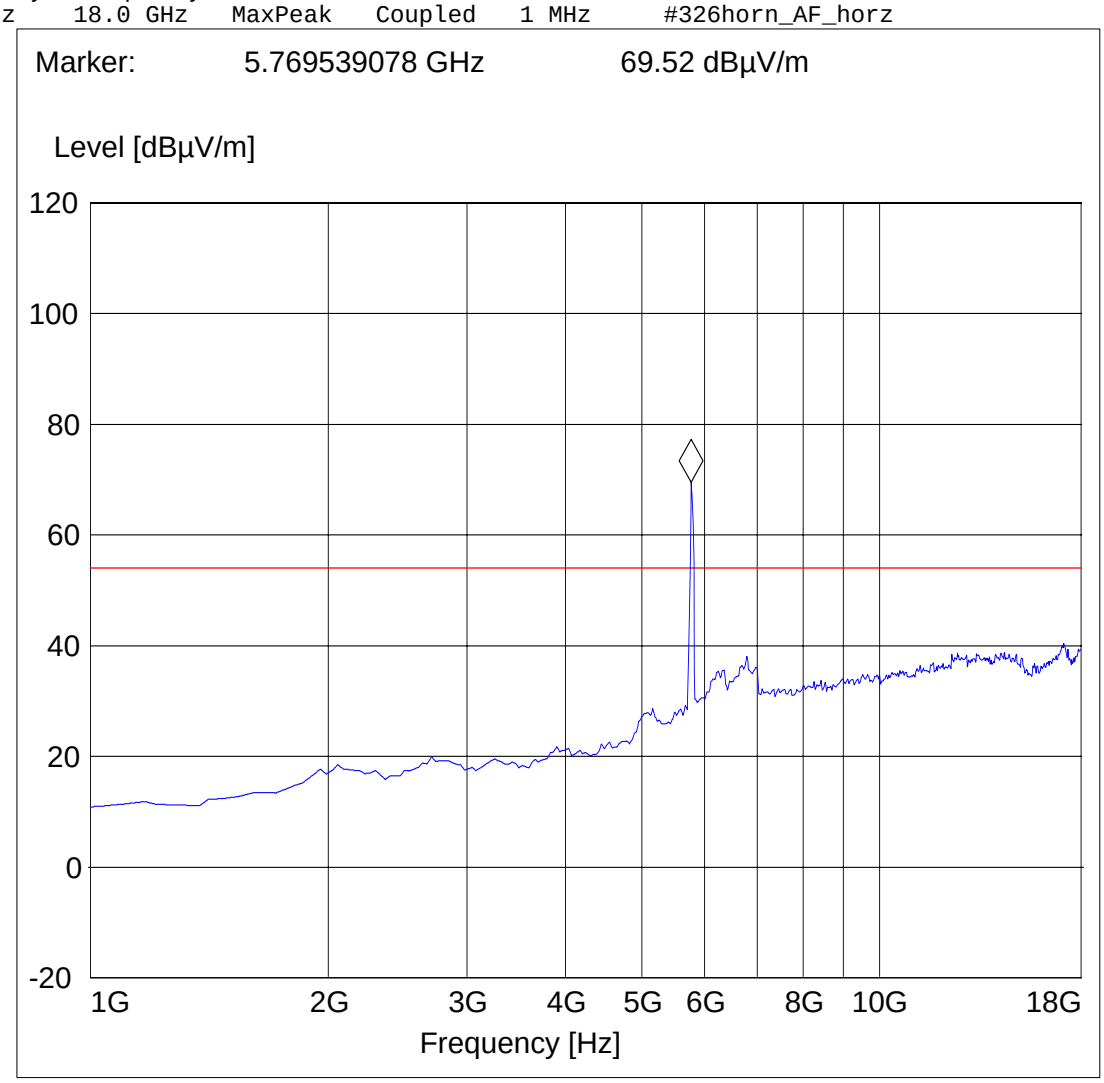
Lowest Channel (5745MHz): 1GHz – 18GHz

Note: No significant harmonic emissions detected either in Vertical or Horizontal

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11a, ch 149 (Main Antenna)WNC
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Chris
Voltage:           AC Adapter
Comments:          Mark is on Fundamental signal
```

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

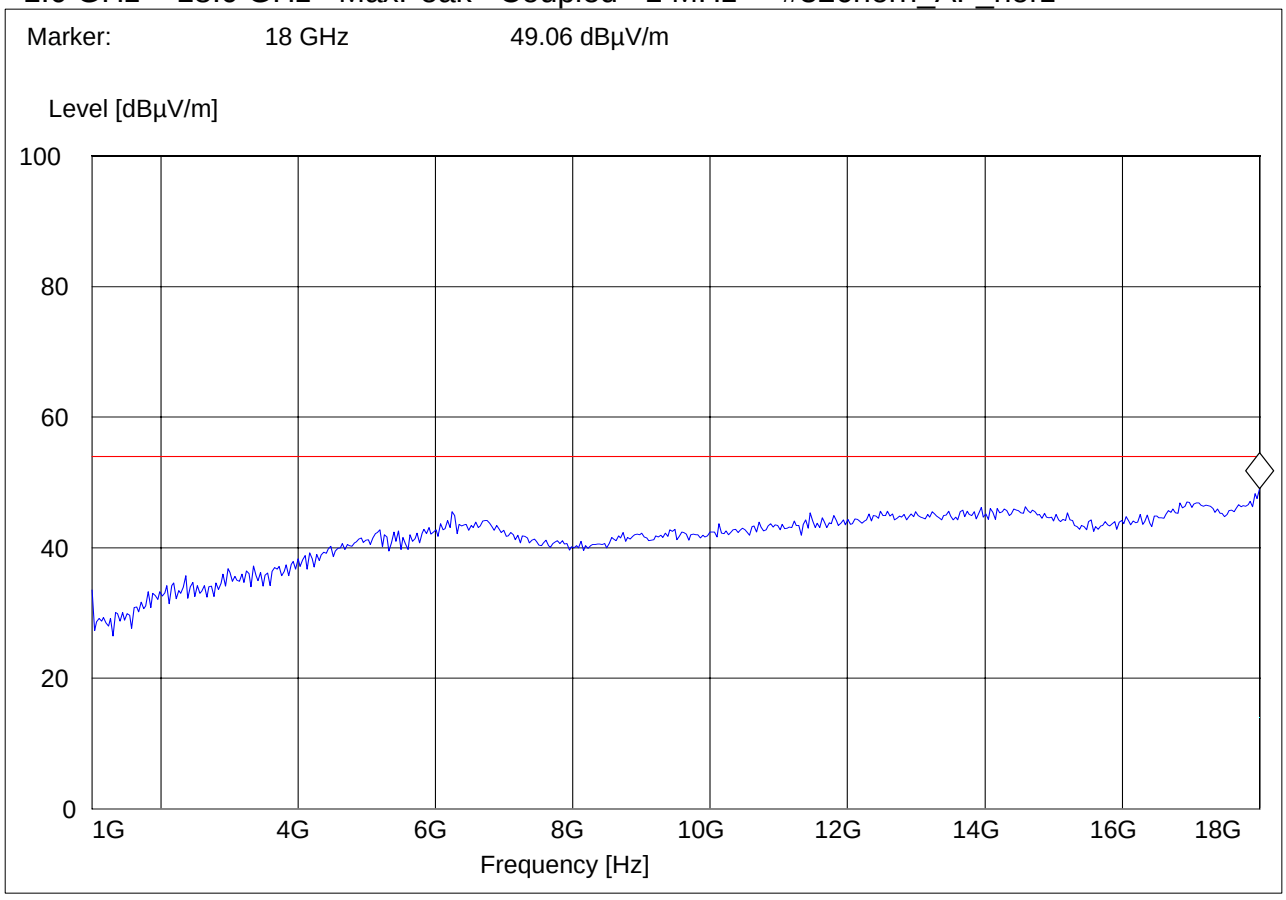
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11a CH.149 Main Yageo
ANT Orientation: : V
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

SWEEP TABLE: "FCC 15.407 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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

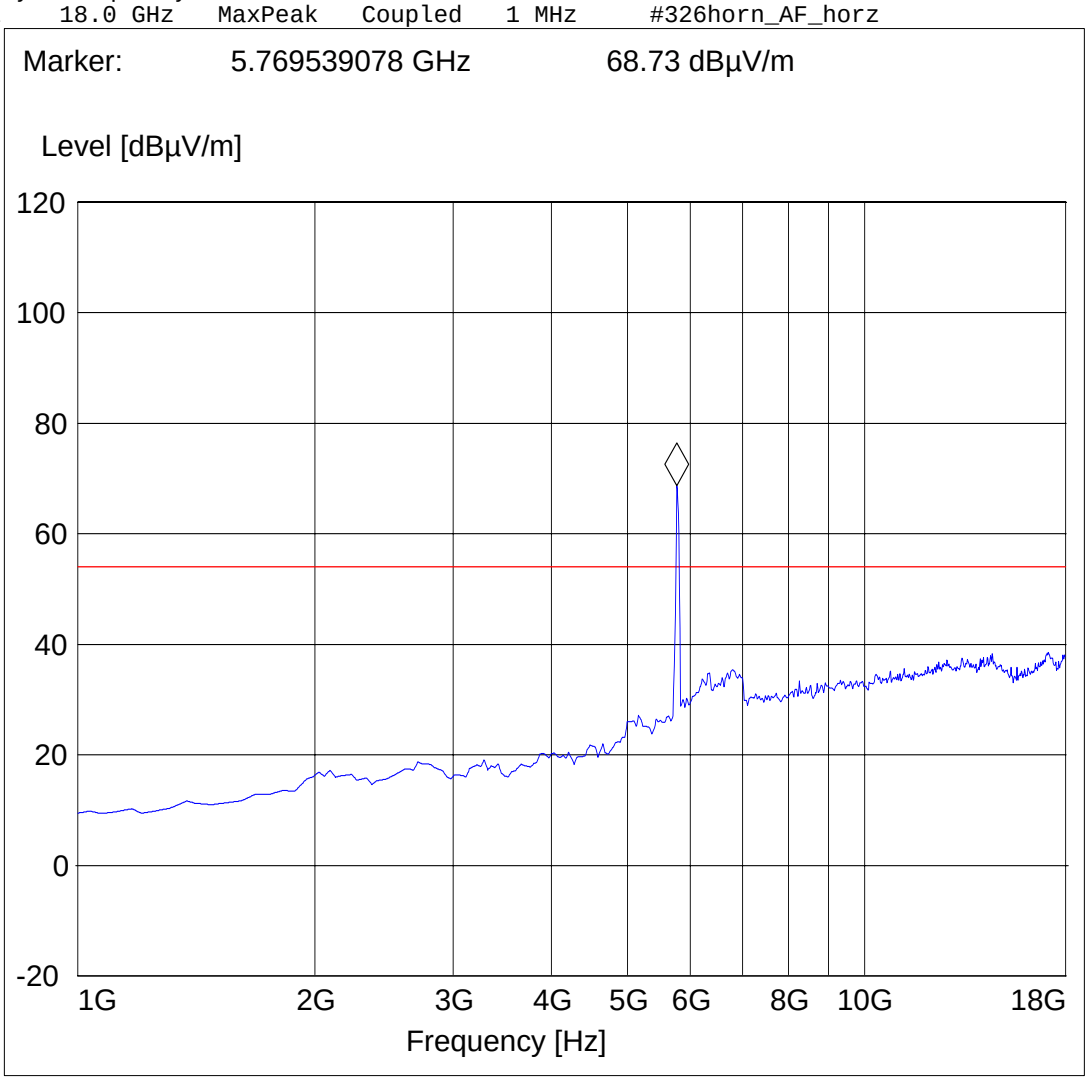
Mid Channel (5785MHz): 1GHz – 18GHz

Note: No significant harmonic emissions detected either in Vertical or Horizontal

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11a, ch 157 (Main Antenna) WNC
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Chris
Voltage:           AC Adapter
Comments:          Mark is on Fundamental signal
```

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

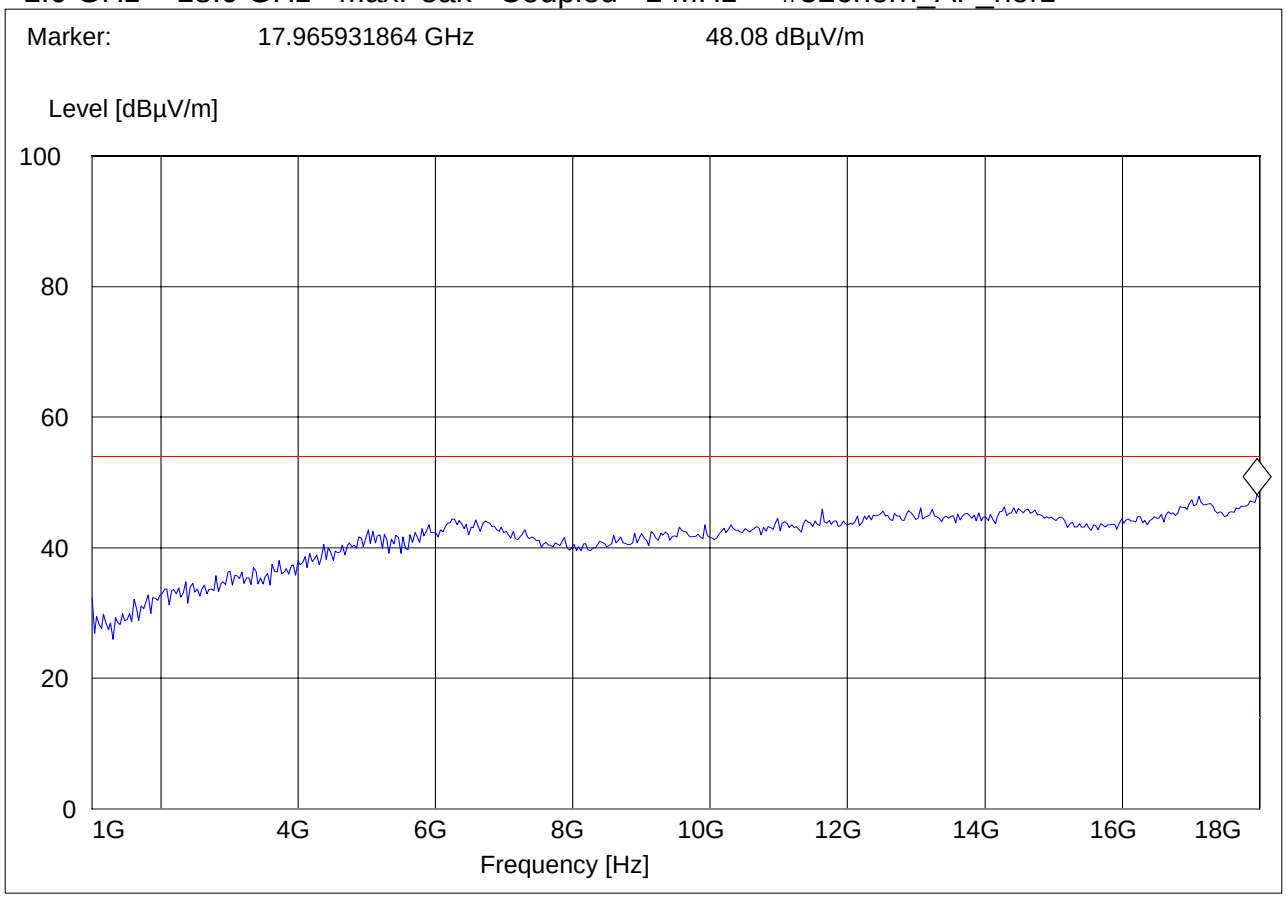
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11a CH.157 Main Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

SWEEP TABLE: "FCC 15.407 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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

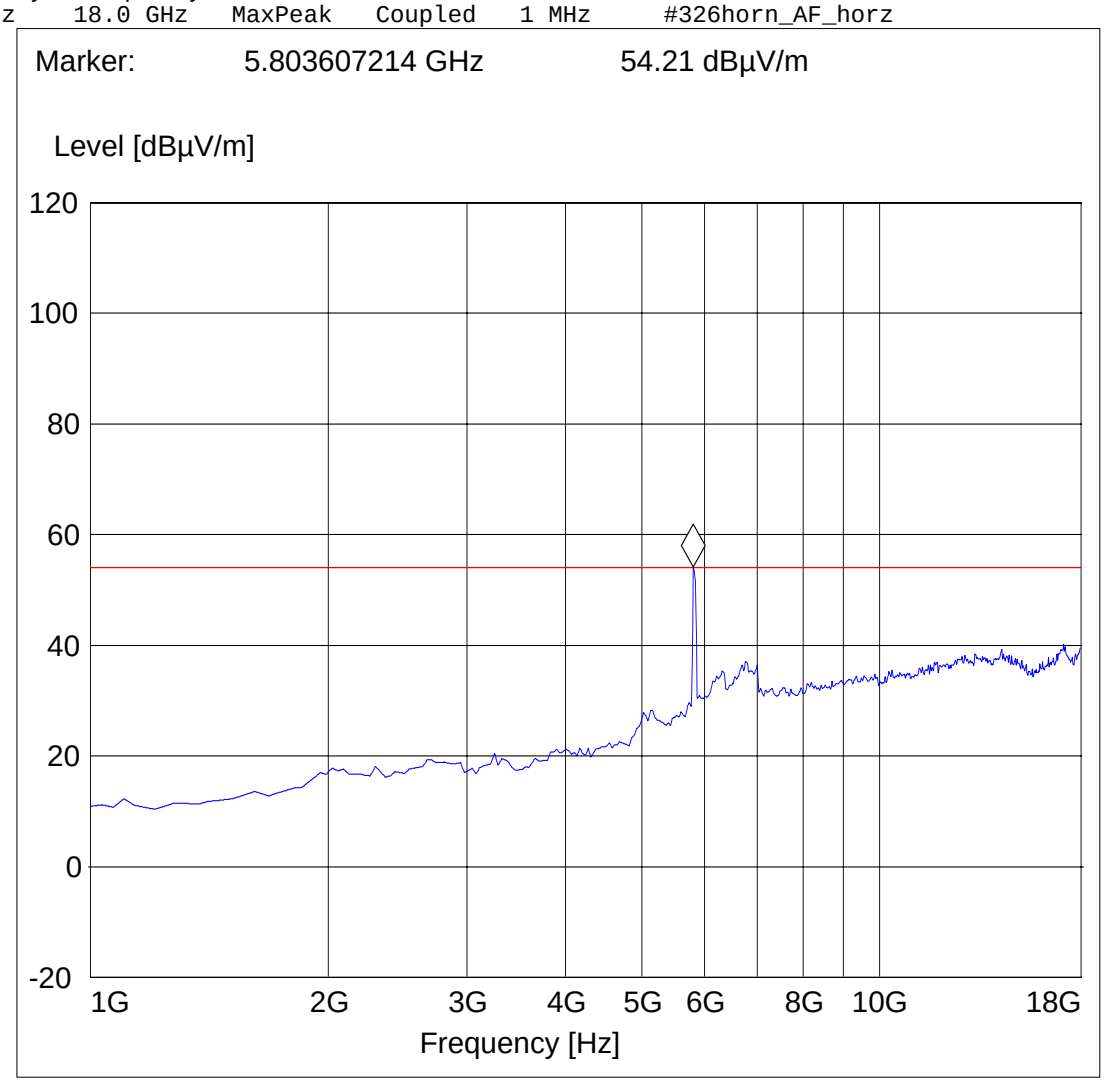
Highest Channel (5825MHz): 1GHz – 18GHz

Note: No significant harmonic emissions detected either in Vertical or Horizontal

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11a, ch 165 (Main Antenna)WNC
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Chris
Voltage:           AC Adapter
Comments:          Mark is on Fundamental signal
```

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

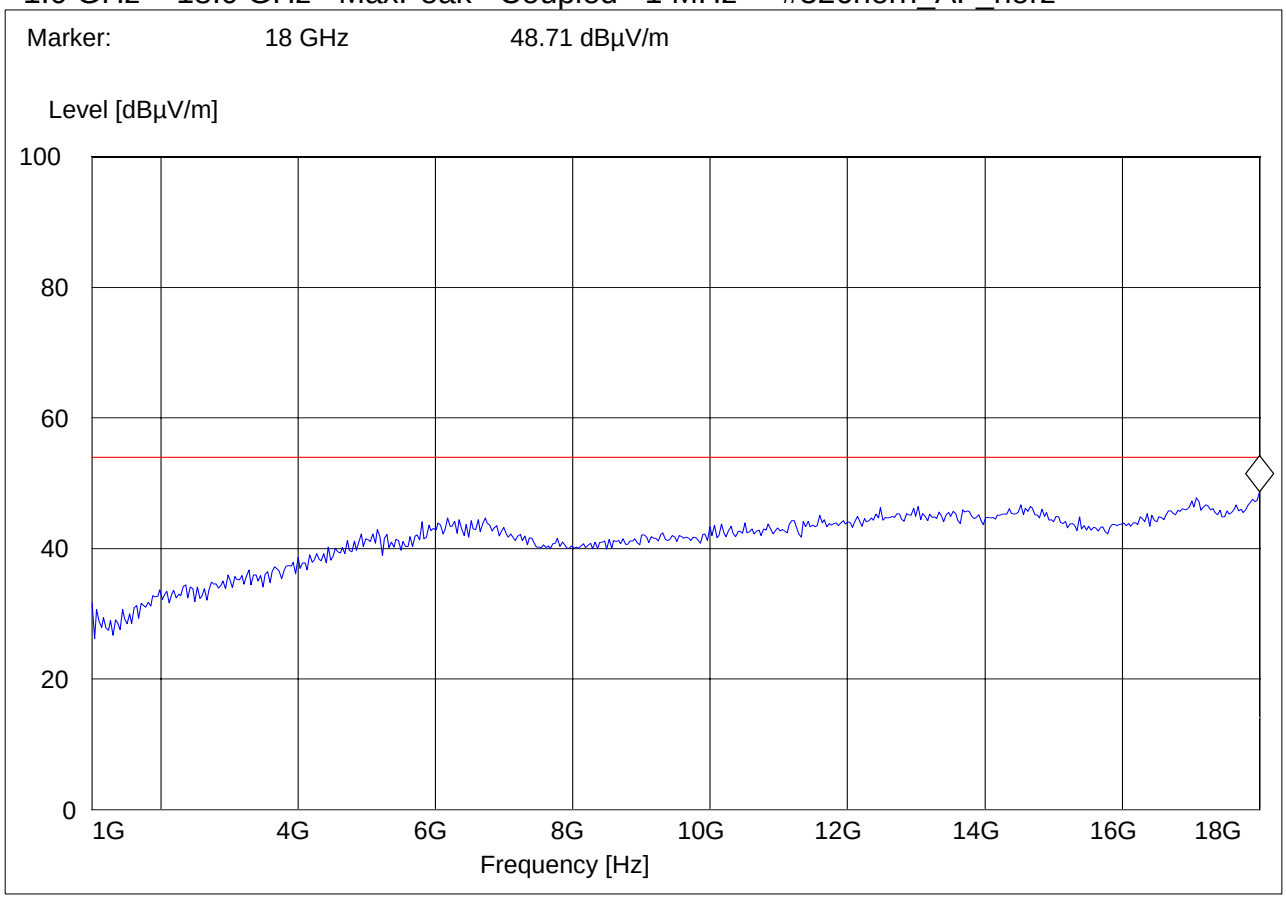
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



EUT / Description: 94311MCAG
Manufacturer: Broadcom
Operation Mode: 802.11a CH.165 Main Yageo
ANT Orientation: : H
EUT Orientation:: H
Test Engineer: SAM
Voltage: AC Adapter

SWEEP TABLE: "FCC 15.407 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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

18GHz – 26.5GHz for low, middle, and high channels

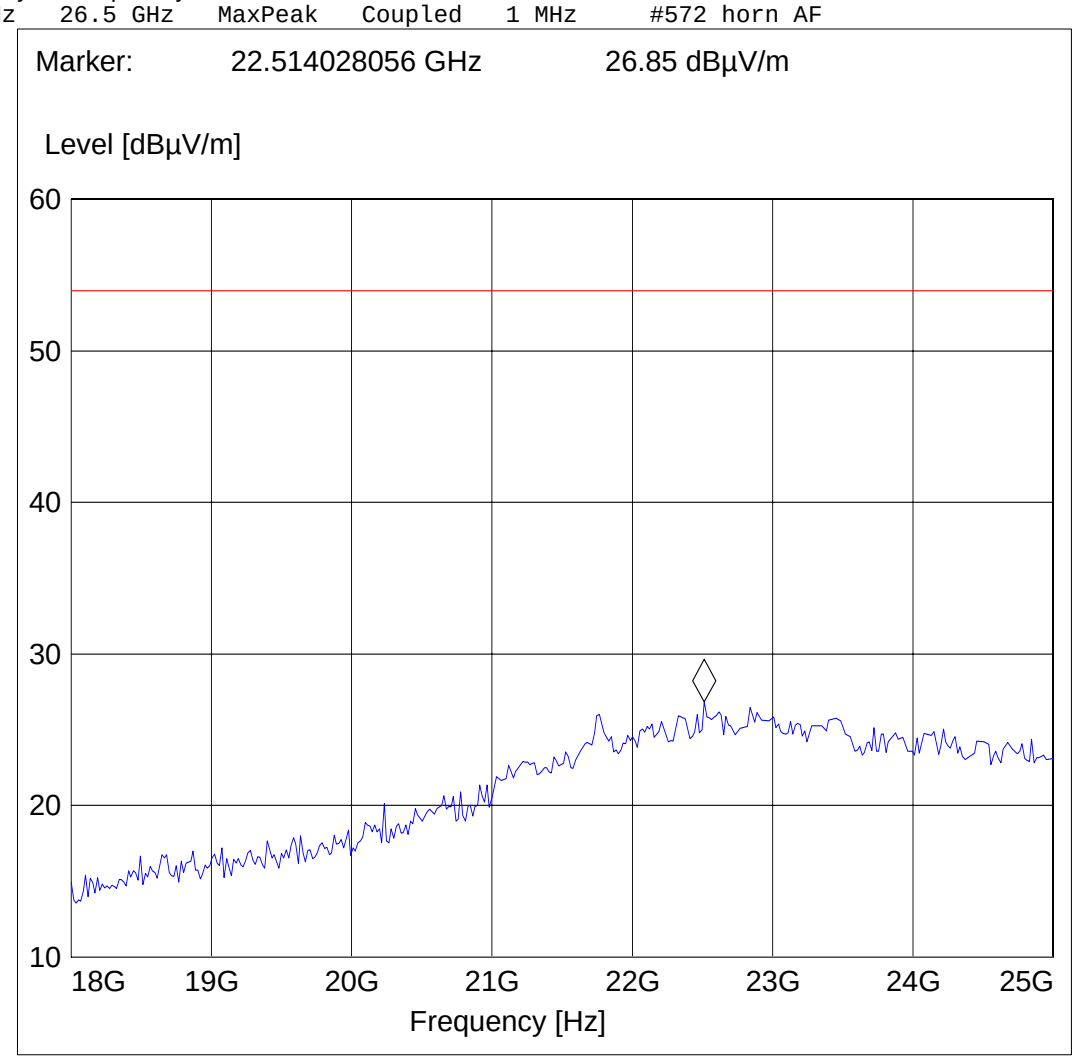
Note: This plot is valid for low, mid, high channels (worst-case plot)

CETECOM Inc., 411 Dixon Landing Road, Milpitas CA 95035, USA

```
EUT / Description: BCM94311MCAG
Manufacturer:      Broadcom
Test mode:         802.11a, ch 157 (Main Antenna)
ANT Orientation:   H
EUT Orientation:   H
Test Engineer:     Ed
Voltage:           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



EMISSION LIMITATIONS - Radiated (Transmitter) §15.247 (d) & RSS-210(A8.5)

26-40GHz for low, middle and high channels.

Note: Since no harmonic emissions were detected 20-dB of the limit for scans 18 – 26GHz it was determine that no emissions will be detected from 26 – 40 GHz, so no scans were captured.

5 AC POWER LINE CONDUCTED EMISSIONS § 15.207 & RSS-GEN (7.2.2)

LIMITS
Technical specification: 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.

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

OPERATING MODE
Conducted AC emissions testing were performed with 110 VAC @ 60 Hz with the EUT in the mode that produced the highest power.

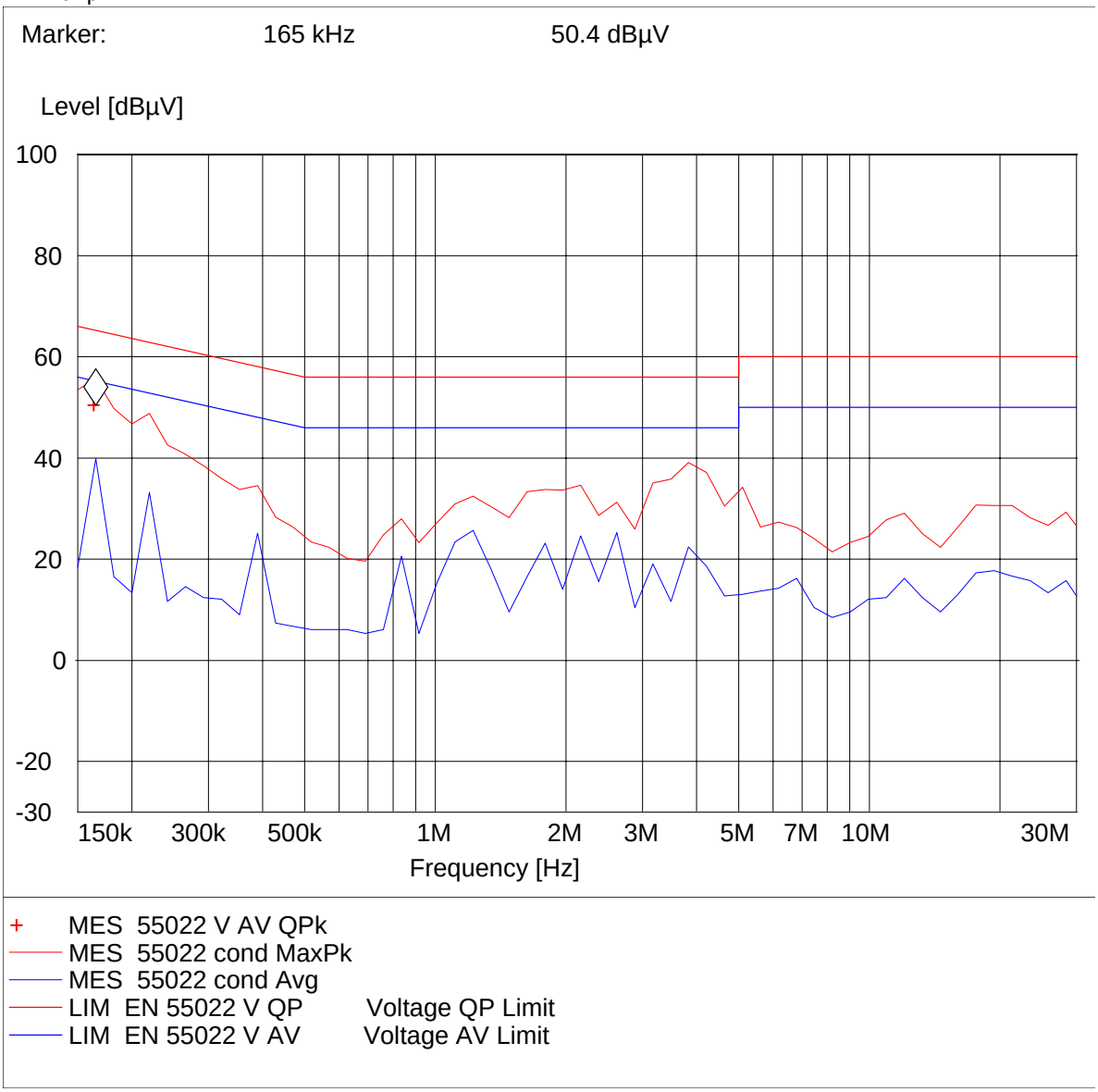
Voltage Mains Test (Line)

CETECOM Inc. Milpitas, USA

```
EUT:                  BCM94311MCAG
Manufacturer:         Broadcom
Operating Condition:  Tx Mode
ANT Orientation::     CONDUCTED
EUT Orientation::     H
Test Engineer:        Juan M.
Power Supply:         AC Adaptor
Comments:             120V,60Hz (Line)
```

SWEEP TABLE: "55022 cond"

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

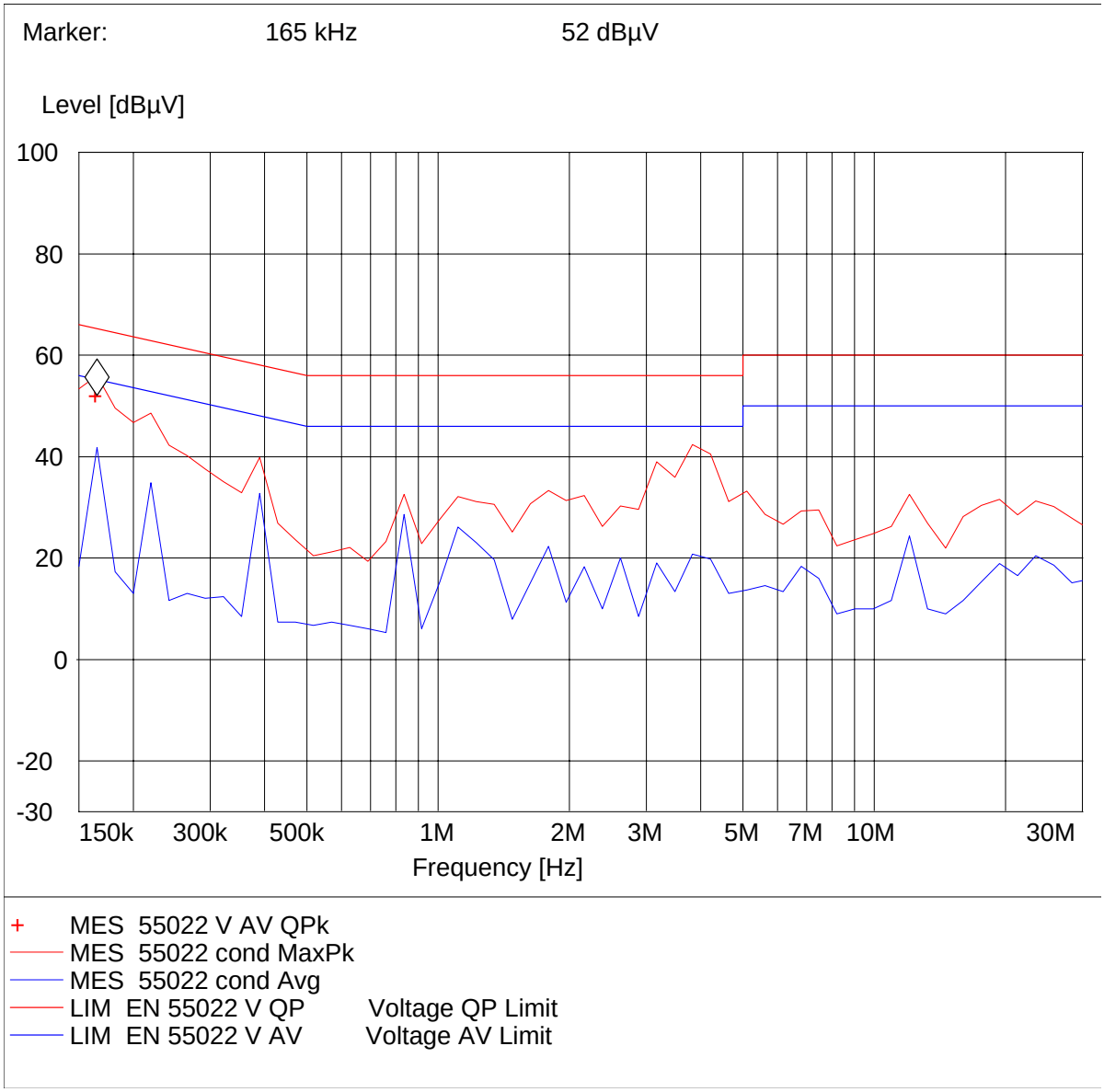


Voltage Mains Test (Neutral)

```
EUT:                  BCM94311MCAG
Manufacturer:         Broadcom
Operating Condition:  Tx Mode
ANT Orientation::     CONDUCTED
EUT Orientation::     H
Test Engineer::       Juan M.
Power Supply: :       AC Adaptor
Comments:  :          120V,60Hz (Neutral)
```

SWEEP TABLE: "55022 cond"

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



6 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
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
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2008	1 year

7 BLOCK DIAGRAMS

Radiated Testing