

*Testing Tomorrow's Technology*

**Application**

**For**

**Part 2, Subpart J, Paragraph 2.907 Equipment Authorization of Certification for an Intentional Radiator per Part 15, Subpart C, paragraphs 15.207, 15.209 and 15.249**

**And**

**IC Radio Standards Specification: RSS-210 Issue 8, Annex A 2.9**

**For the**

**Polycom Inc.**

**Model: P008**

**FCC ID: M72-P008**

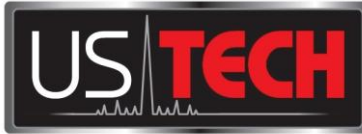
**IC:1849C-P008**

**UST Project: 15-0088**

**Issue Date: August 4, 2015**

Total Pages in This Report: 33

**3505 Francis Circle Alpharetta, GA 30004  
PH: 770-740-0717 Fax: 770-740-1508  
[www.ustech-lab.com](http://www.ustech-lab.com)**




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I certify that I am authorized to sign for the Test Agency and that all of the statements in this report and in the Exhibits attached hereto are true and correct to the best of my knowledge and belief:

US TECH (Agent Responsible For Test):

By: Alan Ghasiani

Name: 

Title: Compliance Engineer – President

Date August 4, 2015



NVLAP LAB CODE 200162-0

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### MEASUREMENT TECHNICAL REPORT

**COMPANYS NAME:** Polycom Inc.

**MODEL:** P008 SIP Application Module

**FCC ID:** M72-P008

**IC:** 1849C-P008

**DATE:** August 4, 2015

This report concerns (check one): Original grant   
Class II change

Equipment type: 2.4 GHz FHSS Transmitter Module

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes\_\_\_\_\_ No X

If yes, defer until: N/A  
date

agrees to notify the Commission by N/A  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

US Tech  
3505 Francis Circle  
Alpharetta, GA 30004

Phone Number: (770) 740-0717  
Fax Number: (770) 740-1508

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Agency Agreement  
Application Forms  
Letter of Confidentiality  
Equipment Label(s)  
Block Diagram(s)  
Schematic(s)  
Test Configuration Photographs  
Internal Photographs  
External Photographs  
Antenna Photographs  
Theory of Operation  
RF Exposure  
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## **1 General Information**

### **1.1 Purpose of this Report**

This report is prepared as a means of conveying test results and information concerning the suitability of this exact product for public distribution according to the FCC Rules and Regulations Part 15, Section 247 and IC RSS 247 Issue 1.

### **1.2 Characterization of Test Sample**

The sample used for testing was received by US Tech on April 27, 2015 in good operating condition.

### **1.3 Product Description**

The Equipment under Test (EUT) is the Polycom Inc. Model P008 SIP Application Module. The P008 SIP Application Module is an embedded wireless internet connectivity module that operates in the 2.4 and 5.0 GHz spectrum. The Wi-Fi modules' hardware consists of an ARM Cortex M4 host processor, Broadcom BCM43341/0 Dual-Band 802.11 a/b/g/n MAC/Baseband/Radio with integrated Bluetooth 4.0 and NFC support.

The 2.4 GHz Wi-Fi, 5.0 GHz WiFi, and NFC radios have been tested and the results reported in a separate reports.

The Bluetooth radio features the following:

Antenna Gain: 1.4 (Chip)  
Modulation: FHSS/GFSK  
Data Rates: DH1, DH3 and DH5  
Maximum Output Power: +7 dBm

### **1.4 Configuration of Tested System**

The Test Sample was tested per *ANSI C63.4:2009/2014, Methods of Measurement of Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2009/2014)* for FCC subpart A Digital equipment Verification requirements and per FCC Public Notice DA 00-705 released March 30, 2000 Under section 15.247. Also, FCC, KDB Publication No. DA 00-705 was used as a test procedure guide.

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A list of EUT and Peripherals is found in Table 1 below. A block diagram of the tested system is shown in Figure 1. Test configuration photographs are provided in separate Appendices.

### 1.5 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA 30004. This site has been fully described and registered with the FCC. Its designation number is 186022. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number 9900A-1.

### 1.6 Related Submittals

The EUT is subject to the following FCC authorizations:

- a) Certification under section 15.247 as a transmitter.
- b) Verification under 15.101 as a digital device and receiver.
- c) Certification under section 15.249 as a transmitter.
- d) Certification under section 15.225 as a transmitter.
- e) Certification under section 15.407 as a transmitter

**Table 1. EUT and Peripherals**

PERIPHERAL MANUFACTURER.	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Polycom Inc.	P008 SIP Application Module	Engineering Sample	FCC ID: M72-P008 (pending) IC: 1849C-P008 (pending)	N/A
Antenna See antenna details	--	--	--	--

U= Unshielded S= Shielded  
 P= Power D= Data



## 2 Tests and Measurements

### 2.1 Test Equipment

The table below lists test equipment used to evaluate this product. Model numbers, serial numbers and their calibration status are indicated.

**Table 2. Test Instruments**

TEST INSTRUMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	DATE OF LAST CALIBRATION
SPECTRUM ANALYZER	8593E	HEWLETT-PACKARD	3205A00124	1/6/2015
SPECTRUM ANALYZER	E4407B	AGILENT	US41442935	1/28/2015
LOOP ANTENNA	SAS-200/562	A.H. Systems	142	9/12/2013 2 yr.
BICONICAL ANTENNA	3110B	EMCO	9306-1708	11/24/2014 2 yr.
LOG PERIODIC ANTENNA	3146	EMCO	9110-3236	11/19/2014 2 yr.
LOG PERIODIC ANTENNA	3146	EMCO	9305-3600	7/1/2014 2 yr.
HORN ANTENNA	SAS-571	A.H. Systems	605	7/23/2013 2 yr.
HORN ANTENNA	3115	EMCO	9107-3723	7/8/2014 2 yr.
HORN ANTENNA	3116	EMO	9505-2255	1/27/2015 2 yr.
PRE-AMPLIFIER	8449B	HEWLETT-PACKARD	3008A00480	12/5/2014
PRE-AMPLIFIER	8477E	HEWLETT-PACKARD	1145A00307	11/21/2014
PRE-AMPLIFIER	8447D	HEWLETT-PACKARD	1937A02980	12/4/2014
LISN x 2	9247-50-TS-50-N	SOLAR ELECTRONICS	955824 and 955825	12/30/2014

Note: The calibration interval of the above test instruments are 12 months unless stated otherwise and all calibrations are traceable to NIST/USA.

## 2.2 Modifications to EUT Hardware

No physical modifications were made by US Tech in order to bring the EUT into compliance with FCC Part 15, Subpart C Intentional Radiator Limits for the transmitter portion of the EUT or the Subpart B Unintentional Radiator Limits (Receiver and Digital Device) Requirements.

## 2.3 Number of Measurements for Intentional Radiators (15.31(m))

Measurements of intentional radiators or receivers shall be performed and reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in Table 3 below.

**Table 3. Number of Test Frequencies for Intentional Radiators**

Frequency Range over which the device operates	Number of Frequencies	Location in the Range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near the top 1 near the bottom
Greater than 10 MHz	3	1 near top 1 near middle 1 near bottom

Because the EUT operates from 2400 MHz to 2483.5 MHz, 3 test frequencies were used.

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## **2.4 Frequency Range of Radiated Measurements (Part 15.33)**

### **2.4.1 Intentional Radiator**

The spectrum shall be investigated for the intentional radiator from the lowest RF signal generated in the EUT, without going below 9 kHz to the 10<sup>th</sup> harmonic of the highest fundamental frequency generated or 40 GHz, whichever is the lowest.

### **2.4.2 Unintentional Radiator**

For the digital device, an unintentional radiator, the frequency range shall be 30 MHz to 1000 MHz, or up to 5 times the highest internal clock frequency.

## **2.5 Measurement Detector Function and Bandwidth (CFR 15.35)**

The radiated and conducted emissions limits shown herein are based on the following:

### **Detector Function and Associated Bandwidth:**

On frequencies below 1000 MHz, the limits herein are based upon measurement equipment employing a CISPR Quasi-peak detector function and related measurement bandwidths (i.e. 9 kHz from 150 kHz to 30 MHz and 120 kHz from 30 MHz to 1000 MHz). Alternatively, measurements may be made with equipment employing a peak detector function as long as the same bandwidths specified for the Quasi-peak device are used.

### **Corresponding Peak and Average Requirements:**

Above 1000 MHz, radiated limits are based on measuring instrumentation employing an average detector function. When average radiated emissions are specified there is also a corresponding Peak requirement, as measured using a peak detector, of 20 dB greater than the average limit. For all measurements above 1000 MHz the Resolution Bandwidth shall be at least 1 MHz.

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#### Pulsed Transmitter Averaging:

When the radiated emissions limit is expressed as an average value, and the transmitter is pulsed, the measured field strength shall be determined by applying a Duty Cycle Correction Factor based upon dividing the total ON time during the first 100 ms period by 100 ms (or by the period if less than 100 ms). The duty cycle may be expressed logarithmically in dB.

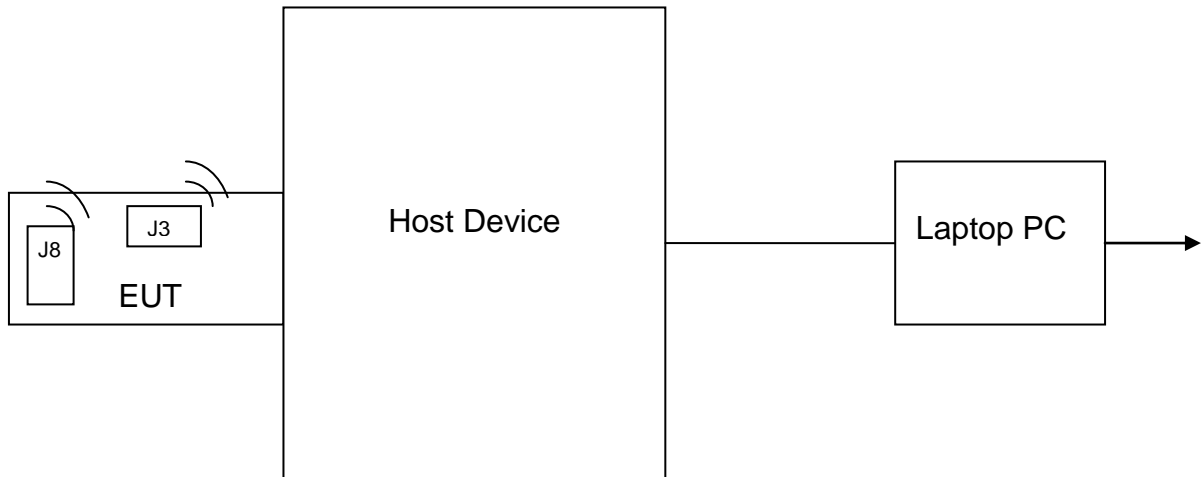
NOTE: If the transmitter was programmed to transmit at >98% duty cycle, then, wherever applicable (where the detection mode was AVG) the duty cycle factor calculated will be applied.

## 2.6 EUT Antenna Requirements (CFR 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. Only the antenna(s) listed in Table 4 will be used with this module.

**Table 4. Allowed Antenna(s)**

REPORT REFERENCE	MANUFACTURER	TYPE OF ANTENNA	MODEL	GAIN dBi	TYPE OF CONNECTOR
J3 and J8	Unictron Technologies Corp.	Chip	AA077	1.4	Chip



**Figure 1. Block Diagram of Test Configuration**

## 2.7 Restricted Bands of Operation (Part 15.205)

Only spurious emissions can fall in the frequency bands of CFR 15.205. The field strength of these spurious cannot exceed the limits of 15.209. Radiated harmonics and other spurious are examined for this requirement see paragraph 2.13

## 2.8 Transmitter Duty Cycle (CFR 35 (c))

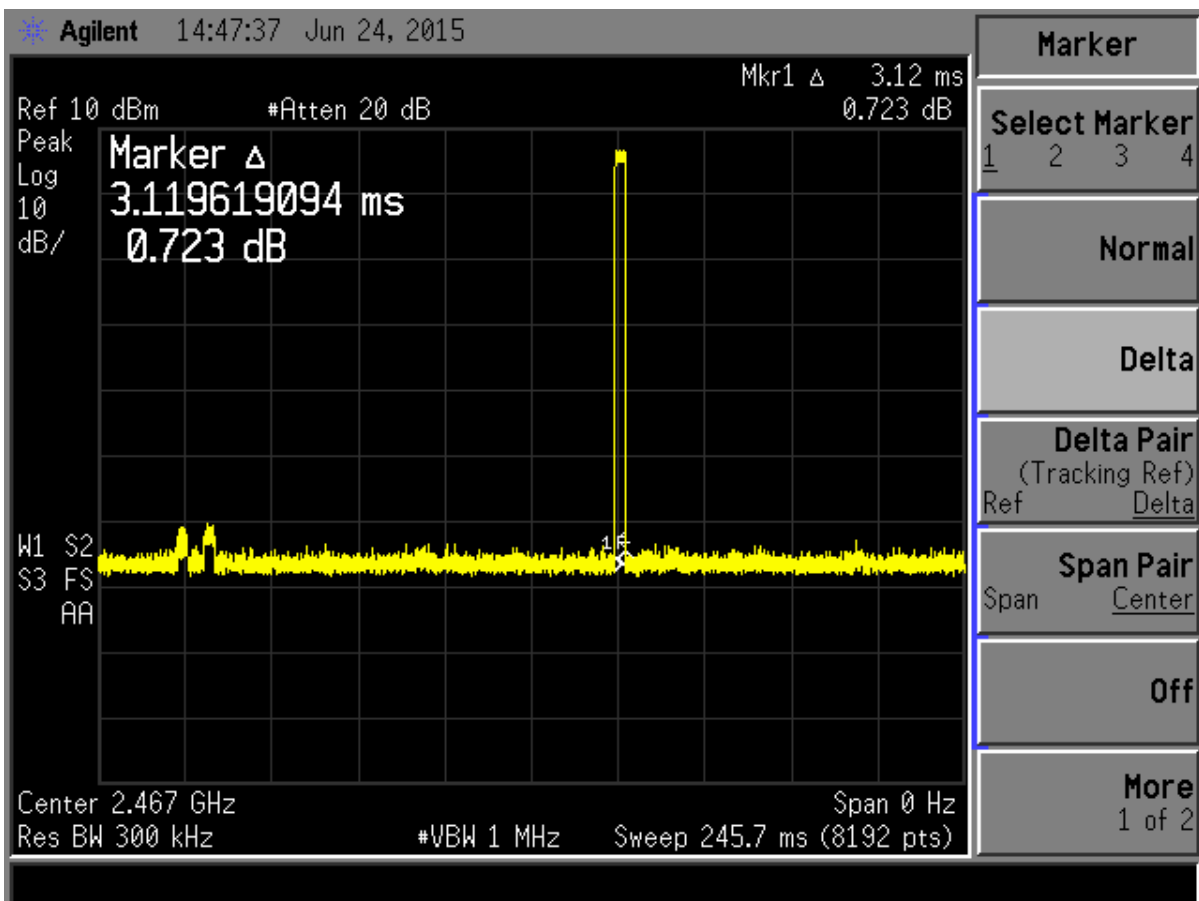


Figure 2. Transmitter Pulse Width

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**Total Time On from Figure 3 = 3.11 ms (Transmitter Pulse Width)**

**(3.11 ms Total Time On)/(100 ms Total Pulse Train) = .0311 Numeric Duty Cycle**  
**Duty Cycle = 20 Log (A/B) = -30.14 dB**

Since the Duty cycle is < -20 dB, the Duty cycle Applied in this test report is -20 dB.

NOTE: The transmitter was programmed to transmit at >98% duty cycle, therefore wherever applicable (where the detection mode was AVG), the duty cycle factor calculated above will be applied.

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## **2.9 Intentional Radiator, Power Line Conducted Emissions (CFR 15.207)**

The EUT is powered by 3.3 VDC through a host device, since the host device was connected to the AC mains the power line conducted emissions testing was performed. Power line conducted emissions testing was performed to ensure that with the EUT in operation (exercising all transmitter functions), the complete system continues to meet the applicable requirements for CFR 15.207. These measurements were completed and are displayed below.



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**Table 5. Transmitter Power Line Conducted Emissions Test Data, Part 15.207**

150KHz to 30 MHz with Class B Limits						
Test: Power Line Conducted Emissions				Client: Polycom Inc.		
Project: 15-0085				Model: P008 SIP Application Module		
Frequency (MHz)	Test Data (dBuV)	LISN+CL-PA (dB)	Results (dBuV)	AVG Limits (dBuV)	Margin (dB)	Detector PK, QP, or AVG
120 VAC, 60 Hz Phase						
0.15	51.10	1.36	52.46	55.8	3.3	PK
0.51	42.90	0.43	43.33	46.0	2.7	PK
4.85	41.50	0.44	41.94	46.0	4.1	PK
6.14	46.70	0.47	47.17	50.0	2.8	PK
19.60	41.00	0.62	41.62	50.0	8.4	PK
24.45	42.80	0.69	43.49	50.0	6.5	PK
120VAC, 60 Hz Neutral						
0.46	44.70	0.44	45.14	56.6*	11.5	QP
0.46	41.00	0.44	41.44	46.6	5.2	AVG
0.54	45.40	0.41	45.81	56.0*	10.2	QP
0.54	41.70	0.41	42.11	46.0	3.9	AVG
4.61	42.00	0.42	42.42	46.0	3.6	PK
6.14	46.60	0.46	47.06	50.0	2.9	PK
11.16	41.10	0.59	41.69	50.0	8.3	PK
21.23	41.20	0.64	41.84	50.0	8.2	PK

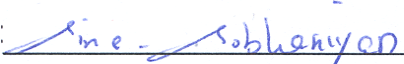
Note: \* denotes QP Limits

SAMPLE CALCULATION at 0.15 MHz:

Magnitude of Measured Frequency	51.10	dBuV
+ Cable Loss+ LISN Loss	1.36	dB
=Corrected Result	52.46	dBuV
Limit	55.80	dBuV
-Corrected Result	52.46	dBuV
Margin	3.34	dB

Test Date: August 3, 2015

Tested By:

Signature:  Name: Sina Sobheniyan

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## **2.10 Intentional Radiator, Radiated Emissions (CFR 15.209, 15.247(d)) (IC RSS 247, 5.4)**

Radiated Spurious measurements: The EUT was placed into a continuous transmit mode of operation (>98% duty cycle) and tested per FCC Public Notice DA 00-705 and ANSI C63.10:2013. A preliminary scan was performed on the EUT to find signal frequencies that were caused by the transmitter part of the device. A preliminary scan was performed on the EUT to find the worse case results the EUT was tested in X, Y, and Z axes or in the orientation of normal operation if the device is designed to operate in a fixed position.

Radiated measurements were then conducted between the frequency range of 9 kHz (or lowest frequency used/generated by the device) up to the tenth harmonic of the device (no greater than 40 GHz). In the band below 30 MHz a resolution bandwidth (RBW) of 9 kHz was used, emissions below 1 GHz were tested with a RBW of 120 kHz and emissions above 1 GHz were tested with a RBW of 1 MHz. All video bandwidth settings were at least three times the RBW value.

The EUT was investigated per CFR 15.209, General requirements for unwanted spurious emissions. The conducted spurious method as described below was used to investigate all other emissions emanating from the antenna port.

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**Table 6. Peak Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.249(a)					Client: Polycom Inc.			
Project: 15-0088					Model: P008 SIP Application Module			
Frequency (MHz)	Test Data (dBuV)	Factor (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
Low Channel								
2402.00	56.75		31.03	87.78	114.0	3.0m./HORZ	26.2	PK
4804.00	53.46	-9.50	3.12	47.08	74.0	1.0m./HORZ	26.9	PK
7206.00	46.05	-9.50	9.19	45.74	74.0	1.0m./HORZ	28.2	PK
9608.00	47.46	-9.50	10.03	47.99	74.0	1.0m./HORZ	26.0	PK
Mid Channel								
2426.00	53.03		31.03	84.06	114.0	3.0m./HORZ	29.9	PK
4852.00	52.82	-9.50	2.64	45.96	74.0	1.0m./HORZ	28.0	PK
7278.00	45.68	-9.50	8.94	45.12	74.0	1.0m./HORZ	28.9	PK
9704.00	49.19	-9.50	10.24	49.93	74.0	1.0m./HORZ	24.1	PK
High Channel								
2480.00	53.90		31.03	84.93	114.0	3.0m./HORZ	29.1	PK
4960.00	56.32	-9.50	3.07	49.89	74.0	1.0m./HORZ	24.1	PK
7440.00	45.16	-9.50	9.23	44.89	74.0	1.0m./HORZ	29.1	PK
9920.00	49.65	-9.50	10.82	50.97	74.0	1.0m./HORZ	23.0	PK

- (\*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 & 20 dB relaxation for peak measurements of CFR 15.35.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- (-) Measurements taken at 1 meter were extrapolated to 3 meters using a factor of (-9.5 dB).
- The EUT was placed in three orthogonal positions and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4804 MHz:

Magnitude of Measured Frequency	53.46	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	3.12	dB/m
1 meter to 3 meters extrapolation	-9.50	dB
Corrected Result	47.08	dBuV/m

Test Date: May, 23, 2015

Tested By  
 Signature: 

Name: Carrie Ingram

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**Table 7. Average Radiated Fundamental & Harmonic Emissions**

Test: FCC Part 15, Para 15.209, 15.249(a)					Client: Polycom Inc.			
Project: 15-0088					Model: P008 SIP Application Module			
Frequency (MHz)	Test Data (dBuV)	Factor (dB)	AF+CA -AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
Low Channel								
2402.00	50.93		31.03	81.96	94.0	3.0m./HORZ	12.0	<b>AVG</b>
4804.00	50.35	-9.50	3.12	43.97	54.0	1.0m./HORZ	10.0	<b>AVG</b>
7206.00	38.26	-9.50	9.19	37.95	54.0	1.0m./HORZ	16.0	<b>AVG</b>
9608.00	39.94	-9.50	10.03	40.47	54.0	1.0m./HORZ	13.5	<b>AVG</b>
Mid Channel								
2426.00	52.24		31.03	83.27	94.0	3.0m./HORZ	10.7	<b>AVG</b>
4852.00	49.58	-9.50	2.64	42.72	54.0	1.0m./HORZ	11.3	<b>AVG</b>
7278.00	39.39	-9.50	8.94	38.83	54.0	1.0m./HORZ	15.2	<b>AVG</b>
9704.00	43.57	-9.50	10.24	44.31	54.0	1.0m./HORZ	9.7	<b>AVG</b>
High Channel								
2480.00	53.00		31.03	84.03	94.0	3.0m./HORZ	10.0	<b>AVG</b>
4960.00	54.53	-9.50	3.07	48.10	54.0	1.0m./HORZ	5.9	<b>AVG</b>
7440.00	36.54	-9.50	9.23	36.27	54.0	1.0m./HORZ	17.7	<b>AVG</b>
9920.00	46.21	-9.50	10.82	47.53	54.0	1.0m./HORZ	6.5	<b>AVG</b>

- (\*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 & 20 dB relaxation for **peak** measurements of CFR 15.35.
- No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10<sup>th</sup> harmonic
- (-) Measurements taken at 1 meter were extrapolated to 3 meters using a factor of (-9.5 dB).
- The EUT was placed in three orthogonal positions and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 4804 MHz:

Magnitude of Measured Frequency	50.35	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain – Duty Cycle	3.12	dB/m
1 meter to 3 meter extrapolation	-9.50	dB
Corrected Result	43.97	dBuV/m

Test Date: May, 23, 2015

Tested By  
 Signature: 

Name: Carrie Ingram

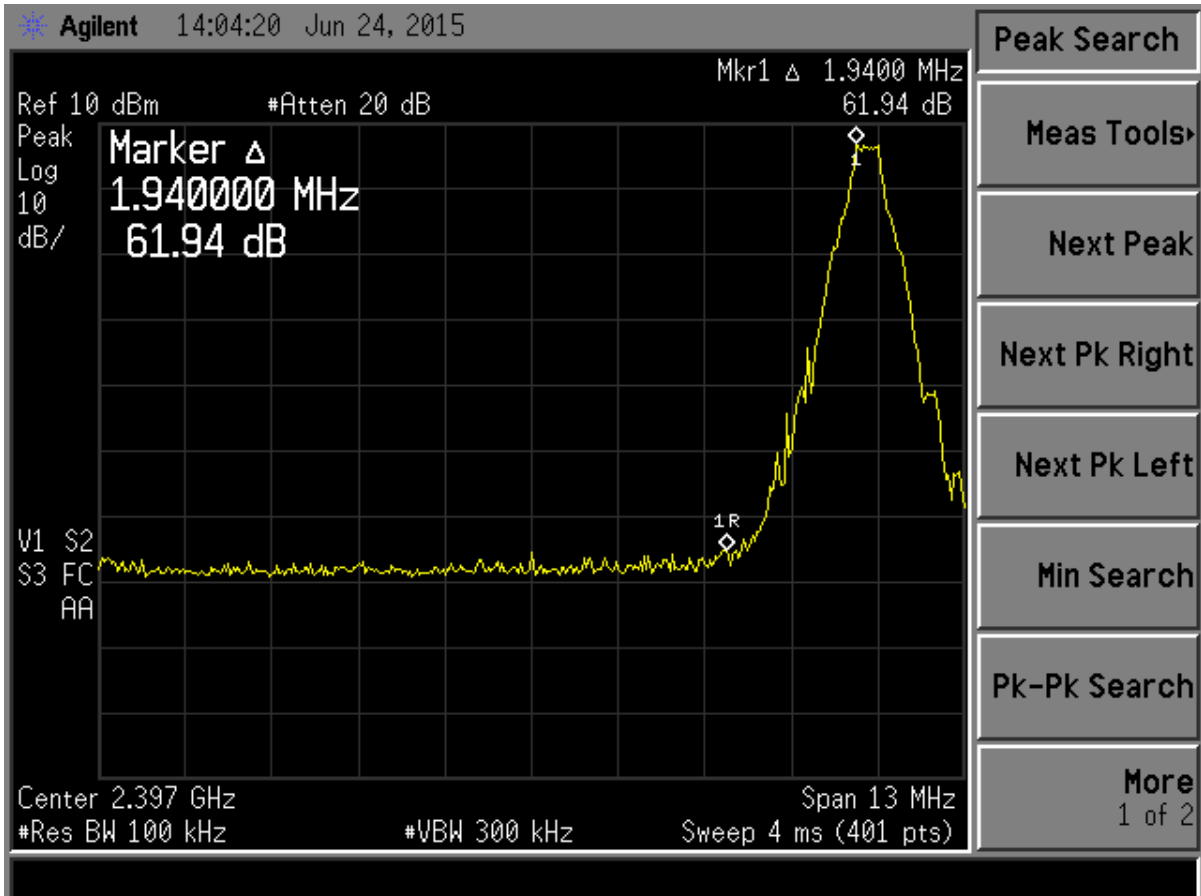
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IC:  
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## **2.11 Band Edge Measurements – (CFR 15.247 (d))**

Band Edge measurements are made following the guidelines in FCC KDB Publication No. DA 00-705 with the EUT initially operating on the Lowest Channel and then operating on the Highest Channel within its band of operation. Antenna port conducted measurements are performed to demonstrate compliance with the requirement of 15.247(d) that all emissions outside of the band edges be attenuated by at least 50 dB when compared to its highest in-band value (contained in a 100 kHz band).



**Figure 3. Band Edge Compliance, Low Channel Delta - Peak**

Calculation of worst case lower band edge measurement:

Delta (from Figure 3)	61.94	dB
Limit	50.00	dB
Band Edge Margin	11.94	dB

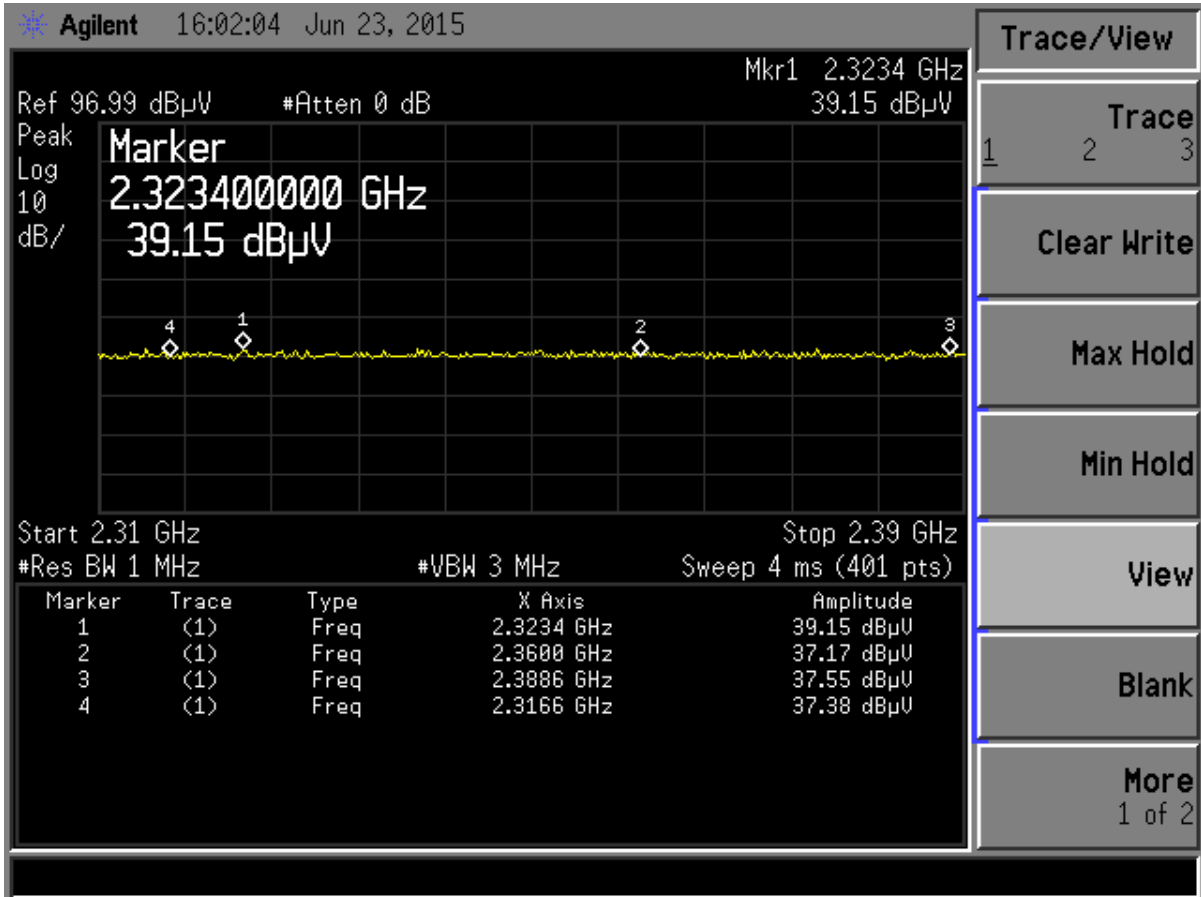


Figure 4. Radiated Restricted Band Measurements PK, 2.31 GHz to 2.39 GHz

Table 8. Radiated Restricted Band Measurements PK, 2.31 GHz to 2.39 GHz

Test: FCC Part 15, Restricted Bands				Client: Polycom Inc.			
Project: 15-0088				Model: P008 SIP Application Module			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	PK Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector Mode
2323.40	39.15	31.95	61.60	74.0	1.0m./HORZ	12.4	PK
2360.00	37.17	32.12	59.79	74.0	1.0m./HORZ	14.2	PK
2388.60	37.55	32.12	60.17	74.0	1.0m./HORZ	13.8	PK
2316.60	38.38	31.95	60.83	74.0	1.0m./HORZ	13.2	PK

Test Date: May, 23, 2015

Tested By  
 Signature: 

Name: Carrie Ingram

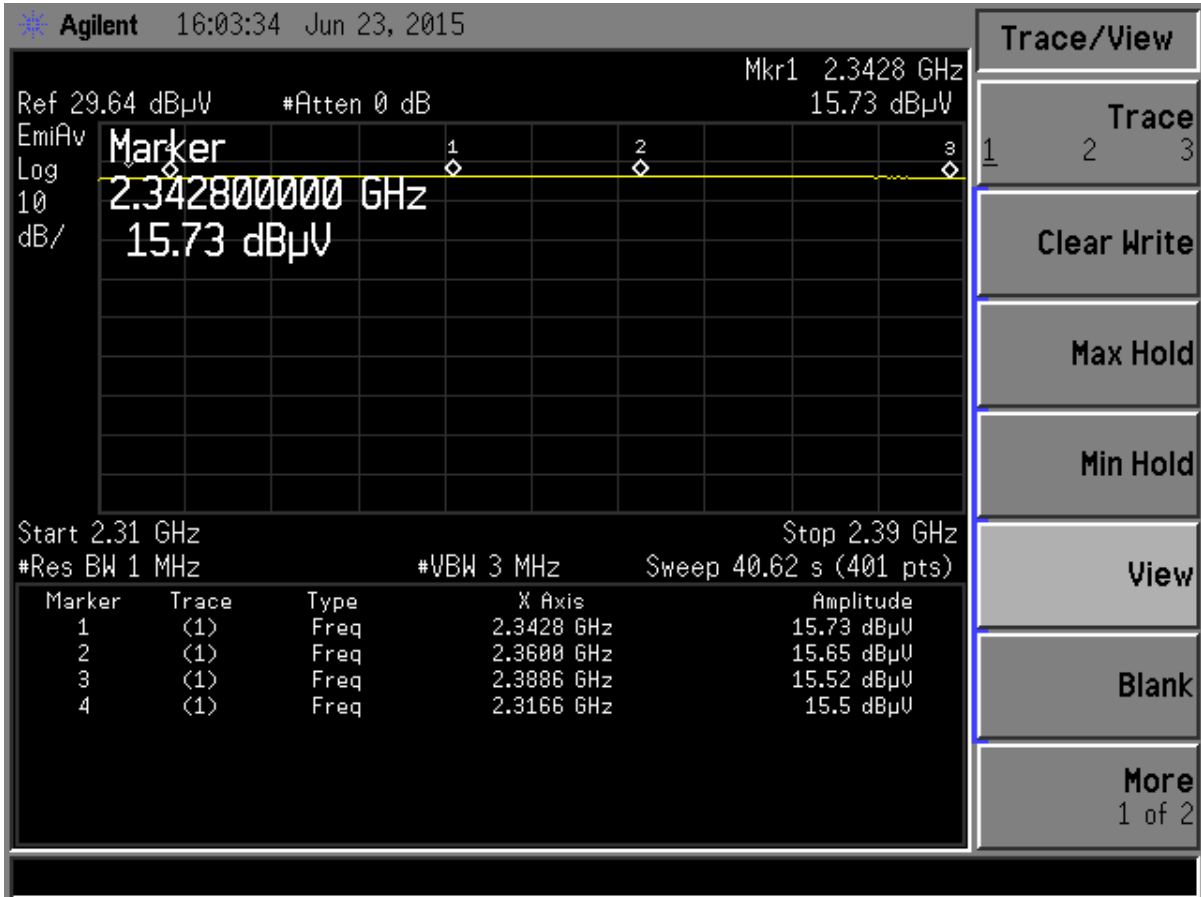


Figure 5. Radiated Restricted Band Measurements AVG, 2.31 GHz to 2.39 GHz

Table 9. Radiated Restricted Band Measurements AVG, 2.31 GHz to 2.39 GHz

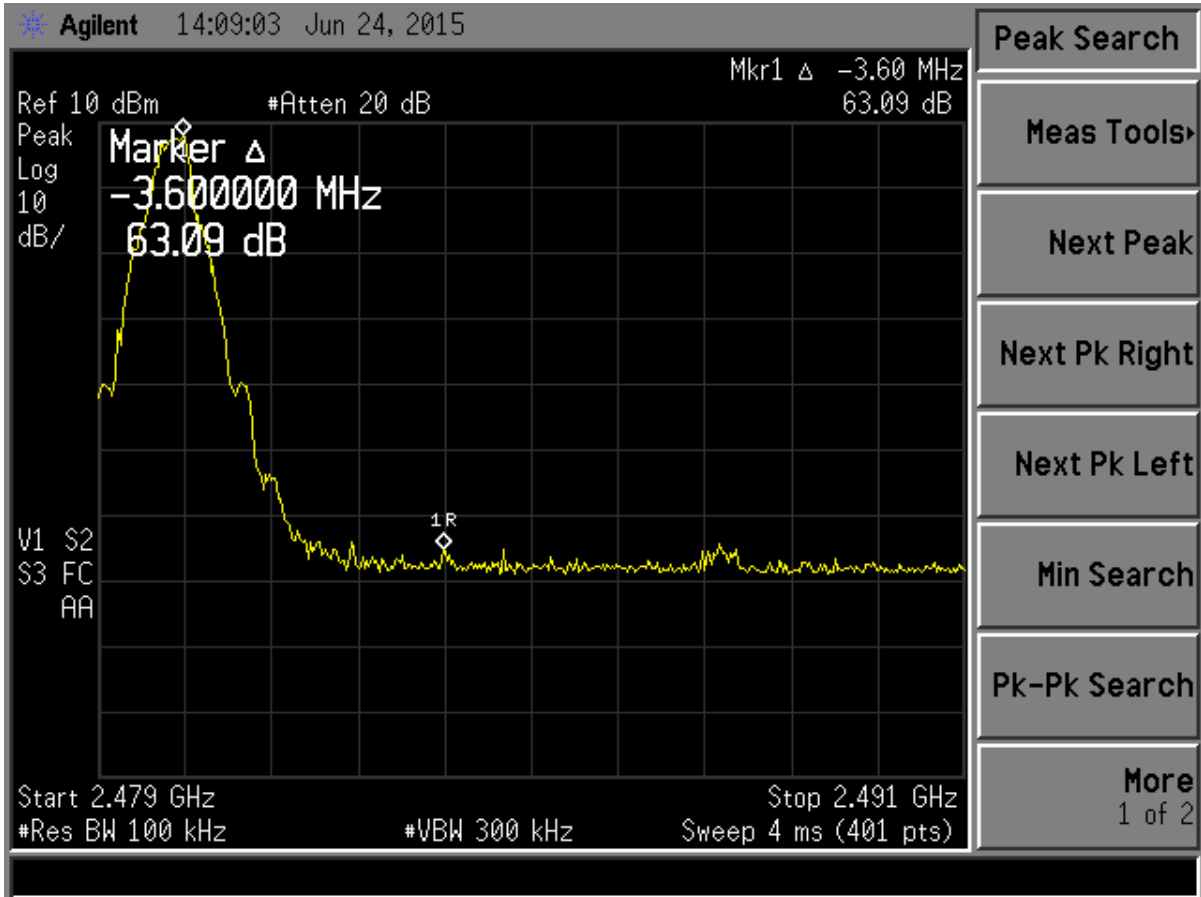
Test: FCC Part 15, Restricted Bands				Client: Polycom Inc.			
Project: 15-0088				Model: P008 SIP Application Module			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/Polarization	Margin (dB)	Detector Mode
2342.80	15.73	31.95	38.18	54.0	1.0m./HORZ	15.8	AVG
2360.00	15.65	32.12	38.27	54.0	1.0m./HORZ	15.7	AVG
2388.60	15.52	32.12	38.14	54.0	1.0m./HORZ	15.9	AVG
2316.60	15.50	31.95	37.95	54.0	1.0m./HORZ	16.1	AVG

Test Date: May, 23, 2015

Tested By  
 Signature: 

Name: Carrie Ingram





**Figure 6. Band Edge Compliance, High Channel Delta – Peak**

Calculation of worst case lower band edge measurement:

Delta (from Figure 6)	63.09	dB
Limit	50.00	dB
Band Edge Margin	13.09	dB

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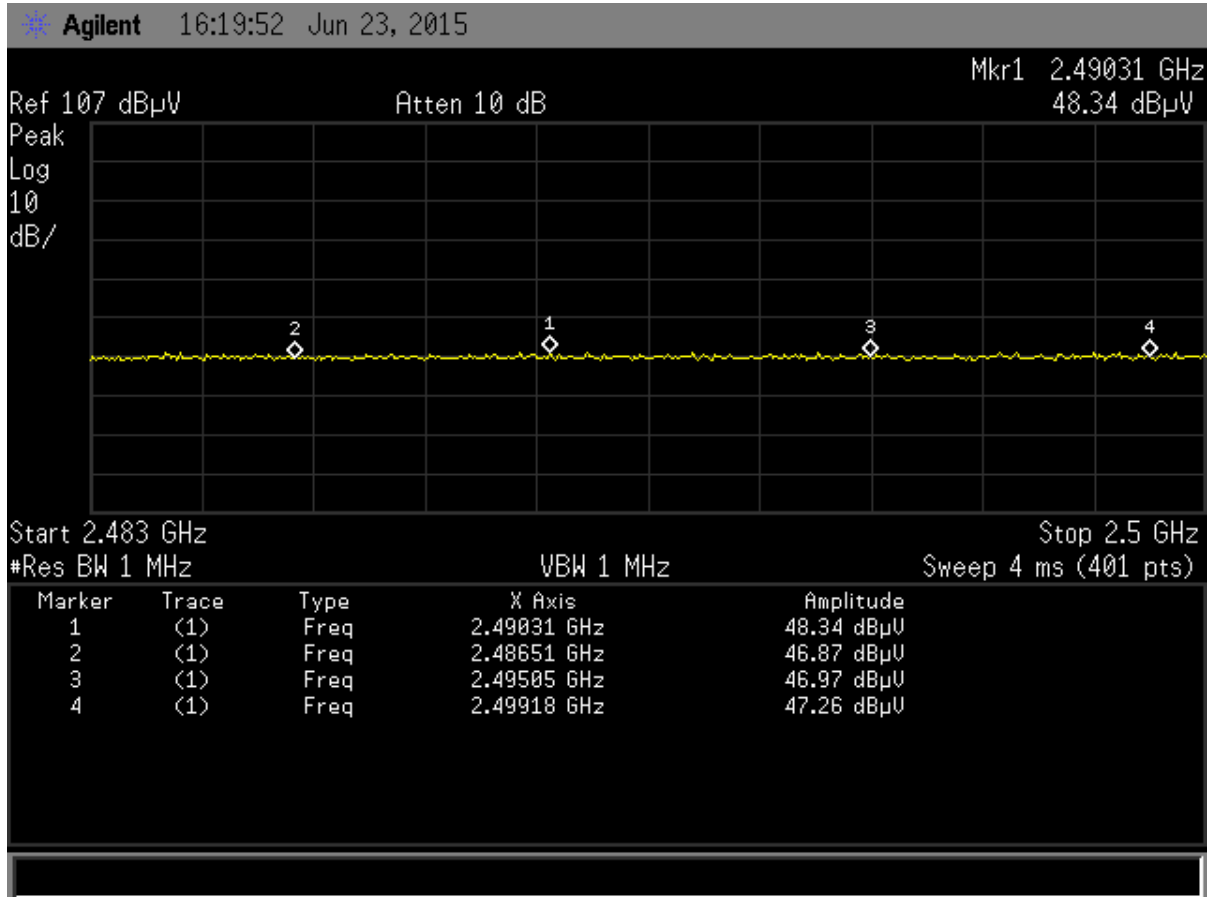


Figure 7. Radiated Restricted Band Measurements PK, 2.4835 GHz to 2.5 GHz

Table 10. Radiated Restricted Band Measurements PK, 2.4835 GHz to 2.5 GHz

Test: FCC Part 15, Restricted Bands				Client: Polycom Inc.			
Project: 15-0088				Model: P008 SIP Application Module			
Frequency (MHz)	Test Data (dBuV)	AF+CA-AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/Polarization	Margin (dB)	Detector Mode
2490.31	48.34	32.40	71.24	74.0	1.0m./HORZ	2.8	PK
2486.51	46.87	32.40	69.77	74.0	1.0m./HORZ	4.2	PK
2495.05	46.97	32.40	69.87	74.0	1.0m./HORZ	4.1	PK
2499.18	47.26	32.40	70.16	74.0	1.0m./HORZ	3.8	PK

Test Date: May, 23, 2015

Tested By  
 Signature: 

Name: Carrie Ingram

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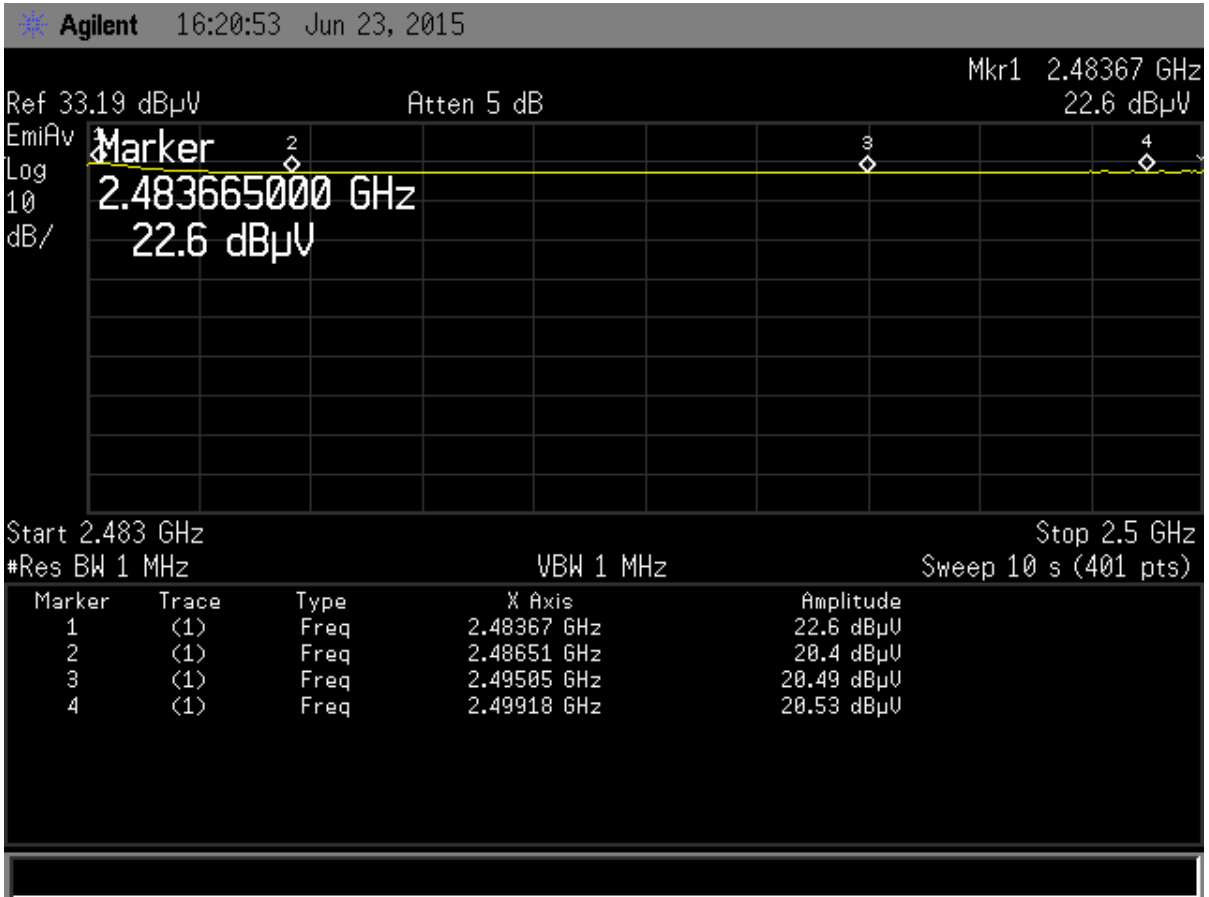


Figure 8. Radiated Restricted Measurements AVG, 2.4835 GHz to 2.5 GHz

Table 11. Radiated Restricted Measurements AVG, 2.4835 GHz to 2.5 GHz

Test: FCC Part 15, Restricted Bands				Client: Polycom Inc.			
Project: 15-0088				Model: P008 SIP Application Module			
Frequency (MHz)	Test Data (dBuv)	AF+CA-AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/Polarization	Margin (dB)	Detector Mode
2483.67	22.60	32.40	45.50	54.0	1.0m./HORZ	8.5	AVG
2486.51	20.40	32.40	43.30	54.0	1.0m./HORZ	10.7	AVG
2495.05	20.49	32.40	43.39	54.0	1.0m./HORZ	10.6	AVG
2449.18	20.53	32.38	43.41	54.0	1.0m./HORZ	10.6	AVG

Test Date: May, 23, 2015

Tested By  
 Signature: 

Name: Carrie Ingram

US Tech Test Report:  
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### 2.12 99% Occupied Bandwidth (IC RSS 247, 5.1 & 5.2)

These measurements were performed while the EUT was in a constant transmit mode. A method similar to the marker delta method was used to capture the points. The RBW was set to approximately 1/100 of the manufacturers claimed RBW and with the VBW  $\geq$  RBW. The results of this test are given in Table 12 and Figures 21-23.

**Table 12. 20 dB Bandwidth and 99% Occupied Bandwidth**

Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
2402	.488	.990
2426	.496	.979
2480	.477	.975

Test Date: May, 24, 2015

Tested By

Signature: 

Name: Carrie Ingram

US Tech Test Report:  
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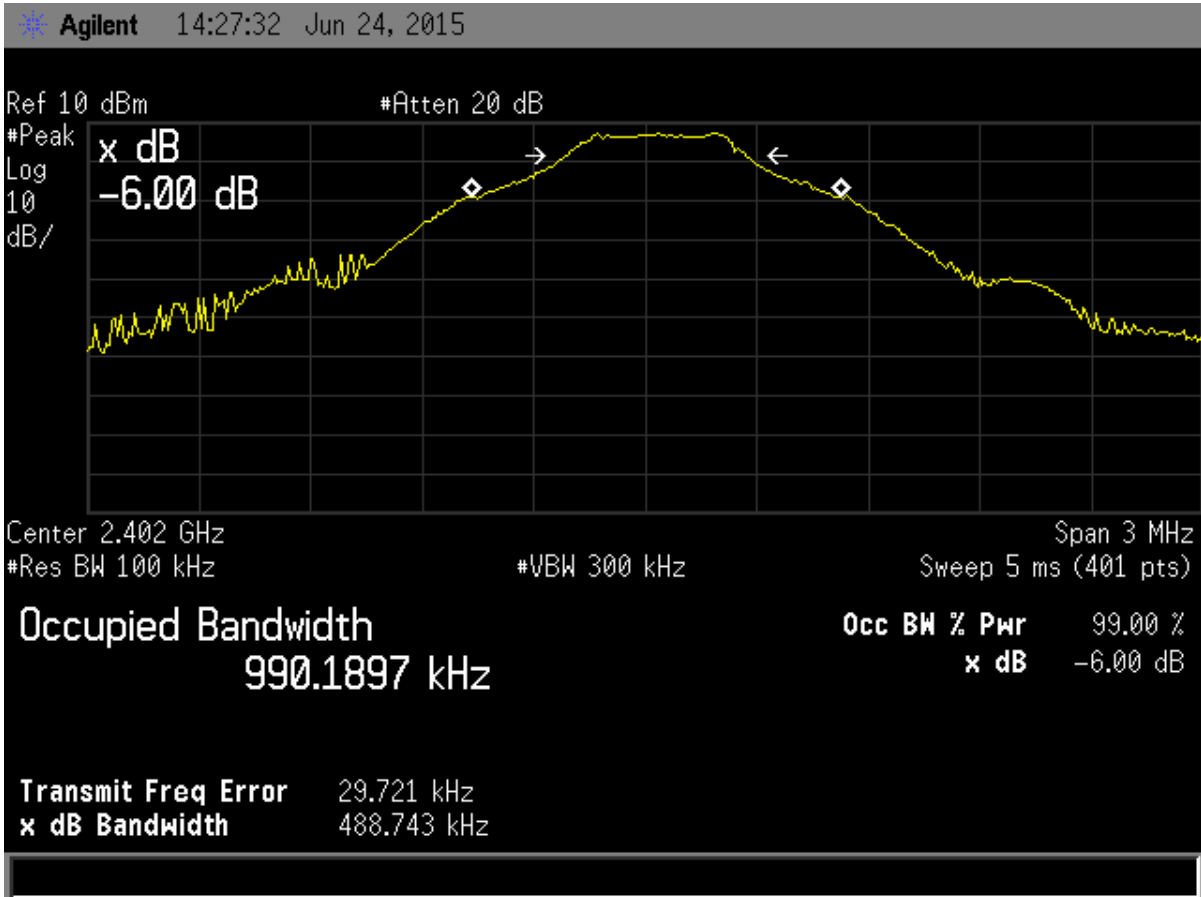


Figure 9. Twenty dB Bandwidth - IC RSS 247, A8.1- Low Channel

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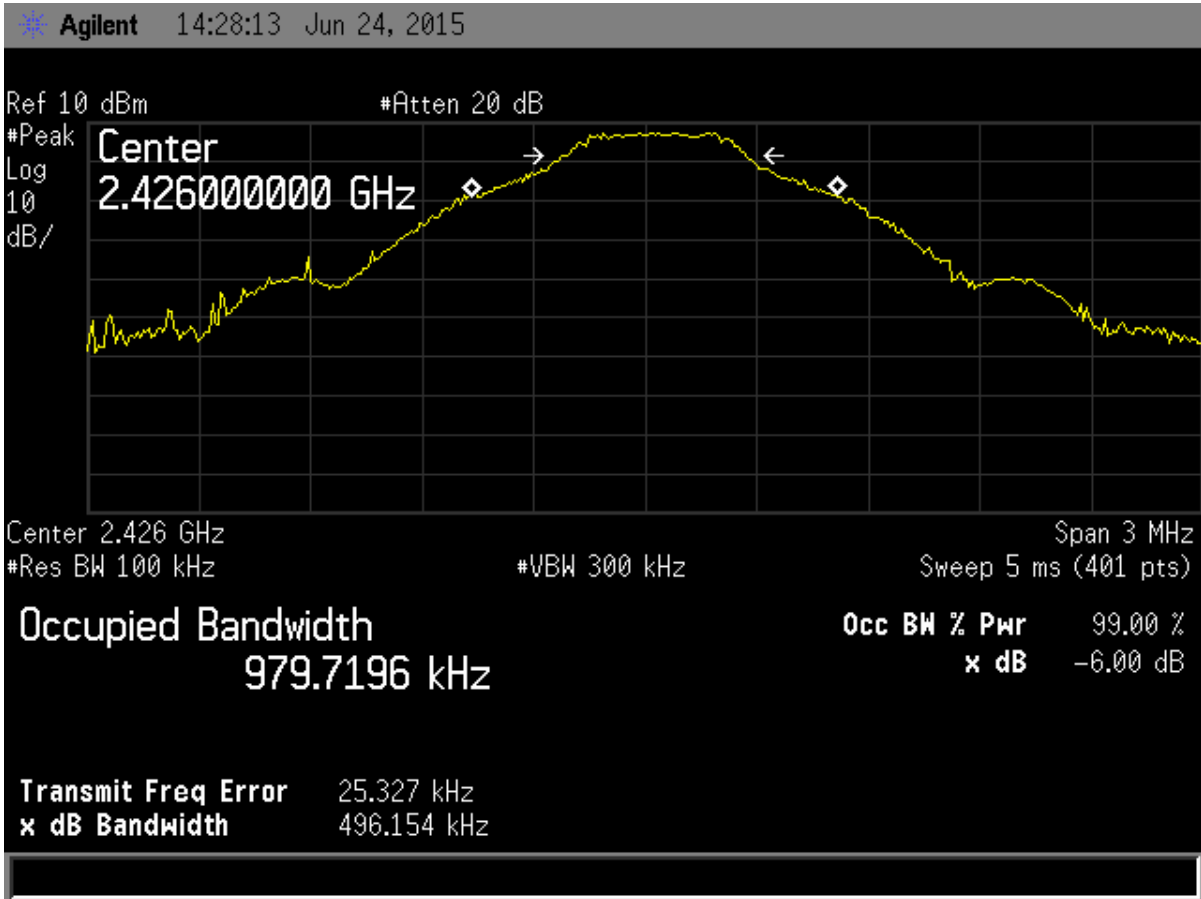


Figure 10. Twenty dB Bandwidth -IC RSS 247, A8.1 – Mid Channel

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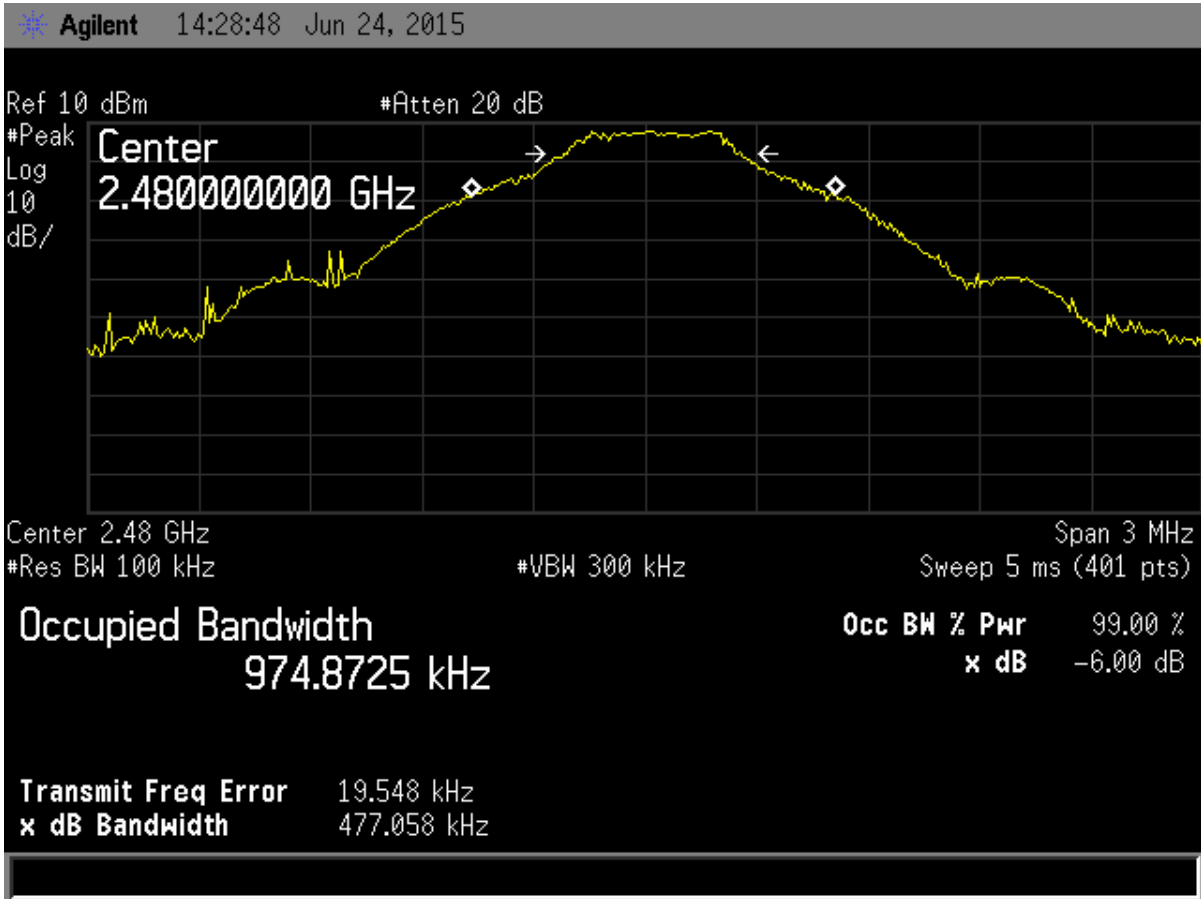


Figure 11. Twenty dB Bandwidth -IC RSS 247, A8.1 – High Channel

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### **2.13 Unintentional Radiator, Powerline Emissions (CFR 15.107)**

The power line conducted voltage emission measurements have been carried out in accordance with CFR 15.107, per ANSI C63.4:2009, Paragraph 7, with a spectrum analyzer connected to a LISN and the EUT placed into a continuous mode of transmission.

This Test Data is included in US Tech report 15-0085.

### **2.14 Unintentional Radiator, Radiated Emissions (CFR 15.109)**

Radiated emissions disturbance Measurements were performed with an instrument having both peak and quasi-peak detectors over the frequency range of 30 MHz to 25 GHz. Measurements of the radiated emissions were made with the receiver antenna at a distance of 3 m from the boundary of the test unit.

The test antenna was varied from 1 m to 4 m in height while watching the analyzers' display for the maximum magnitude of the signal at the test frequency. The antenna polarization (horizontal or vertical) and test sample azimuth were varied during the measurements to find the maximum field strength readings to record.

This Test Data is included in US Tech report 15-0085



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## **2.15 Measurement Uncertainty**

The measurement uncertainties given were calculated using the method detailed in CISPR 16-4. A coverage factor of  $k=2$  was used to give a level of confidence of approximately 95%.

For a measurement distance of 3 m the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is  $\pm 5.39$  dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is  $\pm 5.18$  dB.

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is  $\pm 5.21$  dB.