

Test of Polycom Spectralink 8450 Wi-Fi handset with  
Bluetooth

To: FCC 47 CFR Part 15, SubPart B & ICES-003

Test Report Serial No.: POLY06-U21 Rev A



# TEST REPORT

From



**Test of:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Test Report Serial No.:** POLY06-U21 Rev A

This report supersedes: None

**Applicant:** Polycom  
4750 Willow Road  
Pleasanton, CA 94588-2708  
USA

**Product Function:** Wi-Fi handset with Bluetooth

**Copy No:** pdf      **Issue Date:** 14th February 2011

**This Test Report is Issued Under the Authority of;**

**MiCOM Labs, Inc.**  
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Pleasanton, CA 94566 USA  
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TESTING CERTIFICATE #2381.01

**MiCOM Labs is an ISO 17025 Accredited Testing Laboratory**



**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 3 of 52

## TABLE OF CONTENTS

|          |                                                                                                            |           |
|----------|------------------------------------------------------------------------------------------------------------|-----------|
| <b>1</b> | <b>ACCREDITATION, LISTINGS &amp; RECOGNITION .....</b>                                                     | <b>4</b>  |
| 1.1      | TESTING ACCREDITATION .....                                                                                | 4         |
| 1.2      | RECOGNITION .....                                                                                          | 5         |
| 1.3      | PRODUCT CERTIFICATION .....                                                                                | 6         |
| <b>2</b> | <b>DOCUMENT HISTORY .....</b>                                                                              | <b>7</b>  |
| <b>3</b> | <b>TEST RESULT CERTIFICATE .....</b>                                                                       | <b>8</b>  |
| <b>4</b> | <b>REFERENCES AND MEASUREMENT UNCERTAINTY .....</b>                                                        | <b>9</b>  |
| 4.1      | Normative References .....                                                                                 | 9         |
| 4.2      | Test and Uncertainty Procedures .....                                                                      | 10        |
| <b>5</b> | <b>TEST SUMMARY .....</b>                                                                                  | <b>11</b> |
| <b>6</b> | <b>PRODUCT DETAILS AND TEST CONFIGURATIONS .....</b>                                                       | <b>12</b> |
| 6.1      | Test Program Scope .....                                                                                   | 12        |
| 6.2      | EUT Details .....                                                                                          | 19        |
| 6.3      | External A.C. / D.C. Power Adaptor .....                                                                   | 20        |
| 6.4      | Cabling and I/O Ports .....                                                                                | 20        |
| 6.5      | EUT Configurations .....                                                                                   | 21        |
| 6.6      | Equipment Details .....                                                                                    | 21        |
| 6.7      | Equipment Modifications .....                                                                              | 22        |
| 6.8      | Deviations from the Test Standard .....                                                                    | 22        |
| <b>7</b> | <b>TEST RESULTS .....</b>                                                                                  | <b>23</b> |
| 7.1      | Radiated Spurious Emissions – Digital Apparatus .....                                                      | 23        |
| 7.1.1    | <i>Stand Alone Charger - Measurement Results for Radiated Spurious Emissions – Digital Apparatus .....</i> | <i>29</i> |
| 7.1.2    | <i>Charging Dock - Measurement Results for Radiated Spurious Emissions – Digital Apparatus .....</i>       | <i>31</i> |
| 7.1.3    | <i>Speaker Dock - Measurement Results for Radiated Spurious Emissions – Digital Apparatus .....</i>        | <i>33</i> |
| 7.2      | Conducted Disturbance at Mains Terminal (150 kHz – 30 MHz) .....                                           | 35        |
| 7.2.1    | <i>Stand Alone Charger - Conducted Disturbance at Mains Terminal .....</i>                                 | <i>39</i> |
| 7.2.2    | <i>Charging Dock - Conducted Disturbance at Mains Terminal .....</i>                                       | <i>40</i> |
| 7.2.3    | <i>Speaker Dock - Conducted Disturbance at Mains Terminal .....</i>                                        | <i>41</i> |
| <b>8</b> | <b>Photographs .....</b>                                                                                   | <b>42</b> |
| 8.1      | Radiated Emission below 1 GHz with Stand Alone Charger .....                                               | 42        |
| 8.2      | Radiated Emissions above 1 GHz with Stand Alone Charger .....                                              | 43        |
| 8.3      | Radiated Emission below 1 GHz with Charging Dock .....                                                     | 44        |
| 8.4      | Radiated Emissions above 1 GHz with Charging Dock .....                                                    | 45        |
| 8.5      | Radiated Emission below 1 GHz with Speaker Dock .....                                                      | 46        |
| 8.6      | Radiated Emission above 1 GHz with Speaker Dock .....                                                      | 47        |
| 8.7      | AC Mains Conducted Emissions with Stand Alone Charger .....                                                | 48        |
| 8.8      | AC Mains Conducted Emissions with Charging Dock .....                                                      | 49        |
| 8.9      | AC Mains Conducted Emissions with Speaker Dock .....                                                       | 50        |
| <b>9</b> | <b>TEST EQUIPMENT DETAILS .....</b>                                                                        | <b>51</b> |

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 4 of 52

## 1 ACCREDITATION, LISTINGS & RECOGNITION

### 1.1 TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard EN ISO/IEC 17025. The company is accredited by the American Association for Laboratory Accreditation (A2LA) [www.a2la.org](http://www.a2la.org) test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-01.pdf>



The American Association for Laboratory Accreditation

### *Accredited Laboratory*

A2LA has accredited

**MICOM LABS**

*Pleasanton, CA*

for technical competence in the field of

**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 14<sup>th</sup> day of April 2010.

President & CEO

For the Accreditation Council

Certificate Number 2381.01

Valid to November 30, 2011

*For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 5 of 52

## 1.2 RECOGNITION

MiCOM Labs, Inc has widely recognized Electrical testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA\*\* countries. Our test reports are widely accepted for global type approvals.

| Country   | Recognition Body                                                                                 | Status | Phase      | Identification No. |
|-----------|--------------------------------------------------------------------------------------------------|--------|------------|--------------------|
| USA       | Federal Communications Commission (FCC)                                                          | TCB    | -          | Listing #: 102167  |
| Canada    | Industry Canada (IC)                                                                             | FCB    | APEC MRA 2 | Listing #: 4143A   |
| Japan     | VCCI                                                                                             | -      | -          | No. 2959           |
| Europe    | European Commission                                                                              | NB     | EU MRA     | NB 2280            |
| Australia | Australian Communications and Media Authority (ACMA)                                             | CAB    | APEC MRA 1 | US0159             |
| Hong Kong | Office of the Telecommunication Authority (OFTA)                                                 | CAB    | APEC MRA 1 |                    |
| Korea     | Ministry of Information and Communication Radio Research Laboratory (RRL)                        | CAB    | APEC MRA 1 |                    |
| Singapore | Infocomm Development Authority (IDA)                                                             | CAB    | APEC MRA 1 |                    |
| Taiwan    | National Communications Commission (NCC)<br>Bureau of Standards, Metrology and Inspection (BSMI) | CAB    | APEC MRA 1 |                    |
| Vietnam   | Ministry of Communication (MIC)                                                                  | CAB    | APEC MRA 1 |                    |

\*\*APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.

Is a recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.

Phase I - recognition for product testing

Phase II – recognition for both product testing and certification

N/A – Not Applicable

\*\*EU MRA – European Union Mutual Recognition Agreement.

Is a recognition agreement under which test lab is accredited to regulatory standards of the EU member countries.

\*\*NB – Notified Body

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 6 of 52

### 1.3 PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard EN ISO/IEC Guide 65. The company is accredited by the American Association for Laboratory Accreditation (A2LA) [www.a2la.org](http://www.a2la.org) test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-02.pdf>



*The American Association for Laboratory Accreditation*

## *Accredited Product Certification Body*

A2LA has accredited

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*Pleasanton, CA*

for technical competence as a

**Product Certification Body**

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC Guide 65:1996 *General requirements for bodies operating product certification systems*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system for a Telecommunications Certification Body (TCB) meeting FCC (U.S.), and IC (Canada) requirements.



Presented this 24<sup>th</sup> day of June 2010.

*Peter Moya*

President & CEO  
For the Accreditation Council  
Certificate Number 2381.02  
Valid to November 30, 2011

*For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.*

### **United States of America – Telecommunication Certification Body**

TCB Identifier – US0159

### **Industry Canada – Certification Body**

CAB Identifier – US0159

### **Europe – Notified Body**

Notified Body Identifier - 2280

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**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 7 of 52

## 2 DOCUMENT HISTORY

| Document History |                    |                 |
|------------------|--------------------|-----------------|
| Revision         | Date               | Comments        |
| Draft            |                    |                 |
| Rev A            | 14th February 2011 | Initial Release |
|                  |                    |                 |
|                  |                    |                 |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 8 of 52

### 3 TEST RESULT CERTIFICATE

|                 |                                                                              |            |                                                                                            |
|-----------------|------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------|
| Applicant:      | Polycom<br>4750 Willow Road<br>Pleasanton<br>California ,<br>94588-2708, USA | Tested By: | MiCOM Labs, Inc.<br>440 Boulder Court<br>Suite 200<br>Pleasanton<br>California, 94566, USA |
| Product:        | Spectralink 8400 series Wi-Fi<br>handsets                                    | Telephone: | +1 925 462 0304                                                                            |
| Model No.:      | Spectralink 8450 handset                                                     | Fax:       | +1 925 462 0306                                                                            |
| S/No's:         | 600826769                                                                    |            |                                                                                            |
| Date(s) Tested: | Nov 19 <sup>th</sup> , 2010 – Jan 3rd, 2011                                  | Website:   | www.micomlabs.com                                                                          |

| STANDARD(S)                                 | TEST RESULTS       |
|---------------------------------------------|--------------------|
| FCC 47 CFR Part 15, SubPart B &<br>ICES-003 | EQUIPMENT COMPLIES |

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

#### Notes:

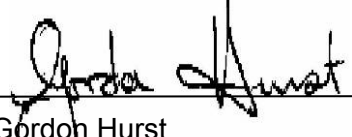
1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

Approved & Released for MiCOM Labs, Inc. by:



TESTING CERTIFICATE #2381.01

  
\_\_\_\_\_  
Graeme Grieve  
Quality Manager MiCOM Labs, Inc.

  
\_\_\_\_\_  
Gordon Hurst  
President & CEO MiCOM Labs, Inc.

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 9 of 52

## 4 REFERENCES AND MEASUREMENT UNCERTAINTY

### 4.1 Normative References

| Ref.  | Publication               | Year                 | Title                                                                                                                                                                |
|-------|---------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| i.    | 47 CFR Part 15, SubPart B | 2010                 | 47 CFR Part 15, SubPart B; Unintentional Radiators                                                                                                                   |
| ii.   | ICES-003                  | 2004                 | Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus; Issue 4                                                 |
| iii.  | ANSI C63.4                | 2009                 | American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| iv.   | CISPR 22/ EN 55022        | 2008<br>2006+A1:2007 | Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment                                                          |
| v.    | M 3003                    | Edition 1 Dec. 1997  | Expression of Uncertainty and Confidence in Measurements                                                                                                             |
| vi.   | LAB34                     | Edition 1 Aug 2002   | The expression of uncertainty in EMC Testing                                                                                                                         |
| vii.  | ETSI TR 100 028           | 2001                 | Parts 1 and 2<br>Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics          |
| viii. | A2LA                      | 9th June 2010        | Reference to A2LA Accreditation Status – A2LA Advertising Policy                                                                                                     |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 10 of 52

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## **4.2 Test and Uncertainty Procedures**

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.



**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 11 of 52

## 5 TEST SUMMARY

**List of Measurements:** The following table represents the list of measurements required under FCC 47 CFR Part 15, SubPart B & ICES-003.

| Standard Section(s) | Test Description                            | Condition | Result | Test Report Section |
|---------------------|---------------------------------------------|-----------|--------|---------------------|
| 15.109              | Radiated Emissions - Unintentional Radiator | Radiated  | Pass   | 7.1                 |
| 15.107              | AC Mains Emissions 0.15 – 30 MHz            | Conducted | Pass   | 7.2                 |

Note 1: Test results reported in this document relate only to the items tested

Note 2: The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria

Note 3: Section 6.7 Equipment Modifications highlights the equipment modifications that were required to bring the product into compliance with the above test matrix

## 6 PRODUCT DETAILS AND TEST CONFIGURATIONS

### 6.1 Test Program Scope

The scope of the test program was to test the Polycom Spectralink 8450 Wi-Fi handset in three different configurations as listed below for compliance against FCC 47 CFR Part 15, SubPart B & Industry Canada ICES-003.

#### Test Configurations

8450 Handset + AC-DC Adapter /Charger: SA106B-05 + Headset

8450 Handset + AC-DC Adapter: HK-U-120A050-CP + Charging Dock + Headset

8450 Handset + AC-DC Adapter: HK-AX-120A200-CP + Speaker Dock + Headset

**APPLICANT:** Polycom **PRODUCT:** Spectralink 8450 Wi-Fi handsets Front





**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 13 of 52

---

**APPLICANT:** Polycom **PRODUCT:** Spectralink 8450 Wi-Fi handset Back



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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 14 of 52

**APPLICANT:** Polycom **PRODUCT:** AC-DC Adapter/ Charger for Spectralink 8400 series handsets



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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 15 of 52

---

**APPLICANT:** Polycom **PRODUCT:** Charging Dock for Spectralink 8400 series handsets



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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 16 of 52

**APPLICANT:** Polycom **PRODUCT:** AC-DC Adapter for Charging Dock



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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 17 of 52

**APPLICANT:** Polycom **PRODUCT:** Speaker Dock for Spectralink 8400 series handsets



This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. Any changes will be noted in the Document History section of the report.



**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 18 of 52

---

**APPLICANT:** Polycom **PRODUCT:** AC-DC Adapter for Speaker Dock



---

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 19 of 52

## 6.2 EUT Details

| Detail                              | Description                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Purpose:                            | Test of the Polycom Spectralink 8450 Wi-Fi handset with Bluetooth for compliance against FCC 47 CFR Part 15, SubPart B & ICES-003 |
| Applicant:                          | Polycom<br>4750 Willow Road<br>Pleasanton, CA 94588-2708<br>USA                                                                   |
| Manufacturer:                       | Same as Applicant                                                                                                                 |
| Test Laboratory:                    | MiCOM Labs, Inc.<br>440 Boulder Court, Suite 200<br>Pleasanton, California 94566 USA                                              |
| Test report reference number:       | POLY06-U21                                                                                                                        |
| Date EUT received:                  | 11/11/2010                                                                                                                        |
| Dates of test (from - to):          | 11/19/2010 - 01/03/2011                                                                                                           |
| No of Units Tested:                 | 1 – S/N: 600826769                                                                                                                |
| Product Name:                       | Spectralink 8400 series Wi-Fi handsets                                                                                            |
| Manufacturers Trade Name:           | Polycom Spectralink 8400 series Wi-Fi handsets                                                                                    |
| Model No.:                          | Spectralink 8450 handset                                                                                                          |
| Equipment Primary Function:         | Wi-Fi handset with Bluetooth                                                                                                      |
| Equipment Secondary Function(s):    | Bar code reader                                                                                                                   |
| Type of Technology:                 | 802.11bg / Bluetooth                                                                                                              |
| Installation type:                  | Portable                                                                                                                          |
| Construction/Location for Use:      | Indoor/Outdoor                                                                                                                    |
| Software/Firmware Release:          | BootROM Mink Phoenix E6 FCC Test 14.                                                                                              |
| Test Software Release:              | BootROM Mink Phoenix E6 FCC Test 14.                                                                                              |
| Rated Input Voltage and Current DC: | Nominal: 3.8V; Battery: 3.5V - 4.2V,<br>Charger (USB or Base) supply: 5V +/- 10%                                                  |
| Operating Temperature Range °C:     | Min: 0 °C      Max: 40 °C                                                                                                         |
| Equipment Dimensions:               | 5.75" x 2.125" x 0.9"                                                                                                             |
| Weight:                             | 8 oz                                                                                                                              |
| Long Term Frequency Stability:      | 20 p.p.m.                                                                                                                         |
| Transmit/Receive Operation:         | Full Duplex                                                                                                                       |
| Output Power Type                   | Fixed                                                                                                                             |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 20 of 52

### 6.3 External A.C. / D.C. Power Adaptor

| Model            | Description                                                                                             |
|------------------|---------------------------------------------------------------------------------------------------------|
| SA106B-05        | GCI Technologies switching adaptor:<br>Input: 100 - 240V AC; 50-60 Hz; 0.25 Amp<br>Output: 5V DC; 1 Amp |
| HK-U-120A050-CP  | Hon-Kwang I.T.E. Power Supply<br>Input: 100 - 240V AC; 50/60 Hz; 0.2 Amp<br>Output: 12V DC; 0.5 Amp     |
| HK-AX-120A200-CP | Hon-Kwang I.T.E. Power Supply<br>Input: 100-240V AC 50/60 Hz; 0.8 Amp<br>Output: 12V DC; 2.0 Amp        |

### 6.4 Cabling and I/O Ports

The following is a description of the cable and input, output ports available on the EUT.

| Type of I/O Ports       | Description                                                                    | Screened (Y/N) | Length     | Qty | Tested (Y/N) |
|-------------------------|--------------------------------------------------------------------------------|----------------|------------|-----|--------------|
| Battery terminal        | Battery connections for removable battery                                      | N              | N/A        | 1   | N            |
| 1/8th" stereo Connector | for connection to hands free headset                                           | Y              | < 3 meters | 1   | Y            |
| Power Supply            | Power connector - mini USB for charging using AC-DC Adapter/ Charger SA106B-05 | Y              | < 3 meters | 1   | Y            |
| Charging terminals      | Charging terminal for charging EUT with docking options                        | N              | N/A        | 1   | Y            |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 21 of 52

## 6.5 EUT Configurations

EUT + AC-DC Adapter: HK-AX-120A200-CP + Speaker Dock + Headset  
EUT + AC-DC Adapter: HK-U-120A050-CP + Charging Dock + Headset  
EUT + AC-DC Adapter /Charger: SA106B-05 + Headset

## 6.6 Equipment Details

The following is a description of supporting equipment used during the test program.

| Equipment             | Equipment Description                         | Manufacturer     | Model No.        | Serial No (s).      | Tested |
|-----------------------|-----------------------------------------------|------------------|------------------|---------------------|--------|
| Battery               | Alpha SAMPLE                                  | Polycom          | ESB-RS657+002    | AC10103200B7        | Y      |
| Battery               | Alpha SAMPLE                                  | Polycom          | ESB-RS657+002    | AC1010320232        | Y      |
| Battery               | Alpha SAMPLE                                  | Polycom          | ESB-RS657+002    | AC101032008E        | Y      |
| Battery               | Alpha SAMPLE                                  | Polycom          | ESB-RS658+002    | AD101032019C        | Y      |
| Charging Dock         | Alpha SAMPLE                                  | Polycom          | ESB-DCA39+001    | AlphaB39174<br>1033 | Y      |
| AC-DC Adapter         | I.T.E. Power Supply                           | HON-KWANG        | HK-U-120A050-CP  | N/A                 | Y      |
| AC-DC Adapter/Charger | Switching Adapter                             | GCI technologies | SA106B-05        | N/A                 | Y      |
| Speaker Dock          | 10uF @ U8 Pin4 to Ground Dock PCB Revision X4 | Polycom          | N/A              | N/A                 | Y      |
| AC-DC Adapter         | I.T.E. Power Supply                           | HON-KWANG        | HK-AX-120A200-CP | N/A                 | Y      |
| Headset               | Encore Headset                                | Plantronics      | P/N: 29951-12    | 0E0723 K7           | Y      |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 22 of 52

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## **6.7 Equipment Modifications**

The following modifications were required to bring the equipment into compliance:

1. NONE

## **6.8 Deviations from the Test Standard**

The following deviations from the test standard were required in order to complete the test program:

1. NONE



**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 23 of 52

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## **7 TEST RESULTS**

### **7.1 Radiated Spurious Emissions – Digital Apparatus**

#### **Standard Reference**

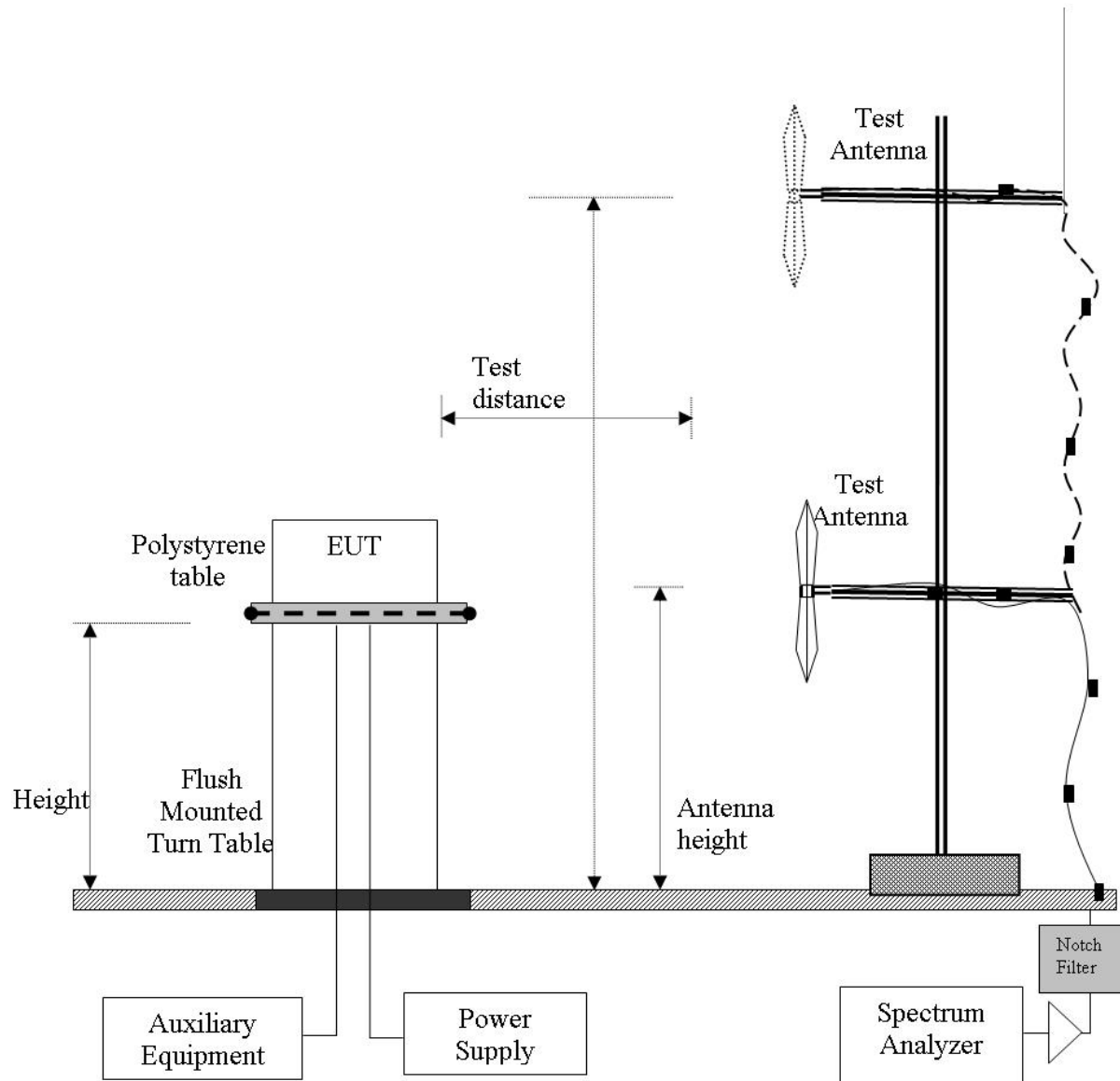
FCC, Part 15 Subpart B §15.109  
Industry Canada ICES-003 §5

#### **Test Procedure**

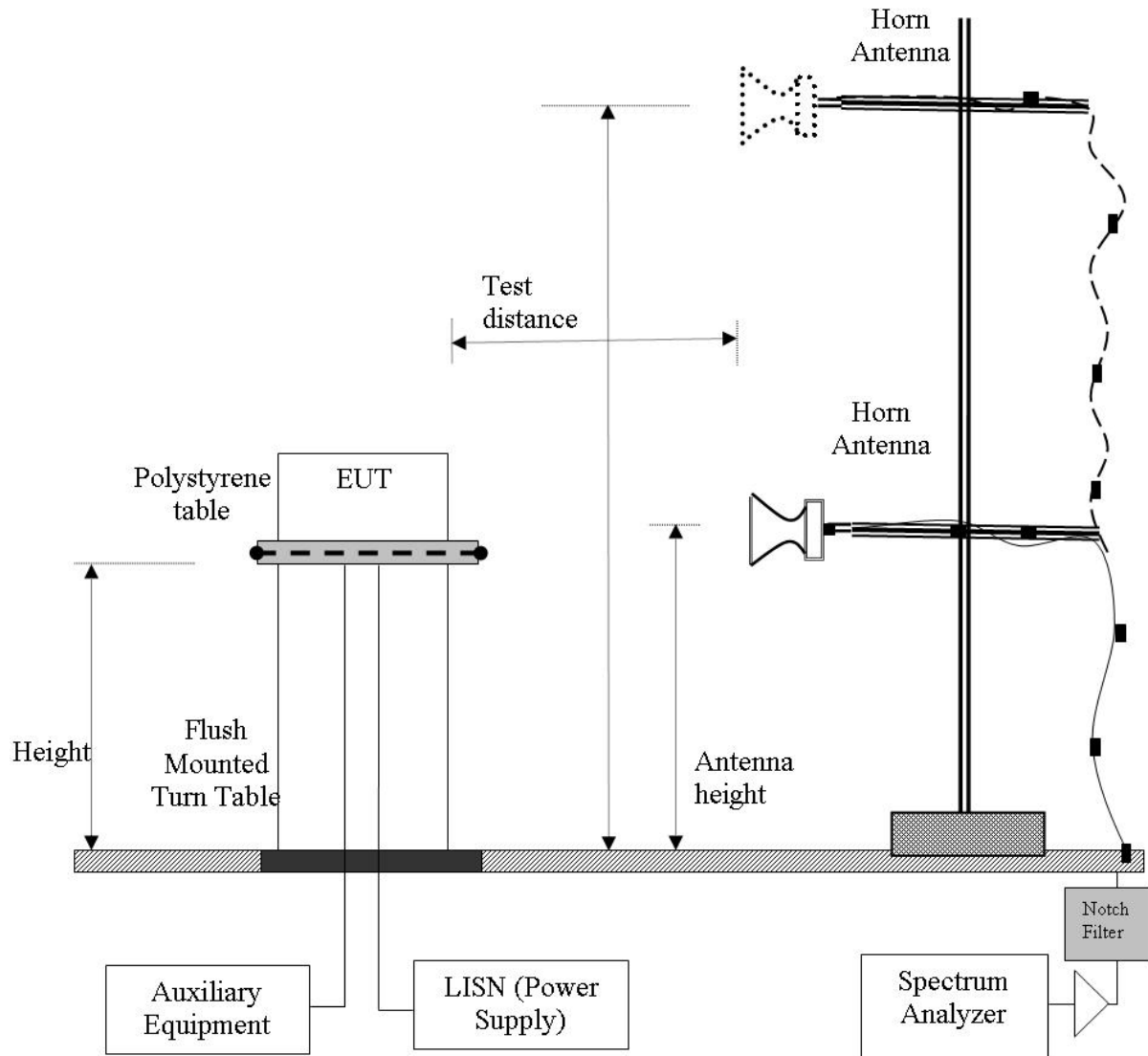
Testing was performed in a 3-meter semi-anechoic chamber. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. Preliminary emissions were recorded with in Spectrum Analyzer mode, using a maximum peak detector while in peak hold mode.

Emissions nearest the limits were chosen for maximization and formal measurement using a CISPR Compliant receiver. Emissions from 30 MHz – 1000 MHz are measured utilizing a CISPR compliant quasi-peak detector with a tuned receiver, using a bandwidth of 120 kHz. Emissions above 1000 MHz are measured utilizing a CISPR compliant average detector with a tuned receiver, using a bandwidth of 1 MHz. Only the highest emissions relative to the limit are listed.

## Test Measurement Setup



Measurement setup for Radiated Emission Test < 1 GHz



Measurement setup for Radiated Emission Test > 1 GHz



**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 26 of 52

## Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

$$FS = R + AF + CORR - FO$$

FS = Field Strength

R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor

FO = Distance Falloff Factor

$$CORR = \text{Correction Factor} = CL - AG + NFL$$

CL = Cable Loss

AG = Amplifier Gain

NFL = Notch Filter Loss or Waveguide Loss

### Field Strength Calculation Example:

Given receiver input reading of 51.5 dB $\mu$ V; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength of the measured emission is:

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 \text{ dB}\mu\text{V/m}$$

Conversion between dB $\mu$ V/m (or dB $\mu$ V) and  $\mu$ V/m (or  $\mu$ V) are done as:

$$\text{Level (dB}\mu\text{V/m)} = 20 * \text{Log (level (}\mu\text{V/m))}$$

$$40 \text{ dB}\mu\text{V/m} = 100 \mu\text{V/m}$$

$$48 \text{ dB}\mu\text{V/m} = 250 \mu\text{V/m}$$



**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 27 of 52

## Specification

### Radiated Spurious Emissions – Digital Apparatus

#### FCC, Part 15 Subpart B §15.109

A representative type or model of each digital apparatus shall be tested in accordance with the measurement methods described in FCC Part 15; Subpart A - General and FCC Subpart B – Unintentional Radiators.

#### Industry Canada ICES-003

A representative type or model of each digital apparatus shall be tested in accordance with the measurement method described in the publication referred to in Section 7.1 [Canadian Standards Association Standard CAN/CSA-CEI/IEC CISPR 22:02, "Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment."].

### FCC, Part 15 Subpart B §15.109 Spurious Emissions Limits

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values.

| Frequency (MHz) | Field Strength (µV/m) @ 3m | Measurement Distance (meters) | Field Strength (dBµV/m) @ 3m |
|-----------------|----------------------------|-------------------------------|------------------------------|
| 30-88           | 100                        | 3                             | 40.0                         |
| 88-216          | 150                        | 3                             | 43.5                         |
| 216-960         | 200                        | 3                             | 46.0                         |
| Above 960       | 500                        | 3                             | 54.0                         |

Field Strength of radiated emissions for a Class A digital device are as follows.

| Frequency (MHz) | Field Strength (µV/m) @ 10m | Measurement Distance (meters) | Field Strength (dBµV/m) @ 3m |
|-----------------|-----------------------------|-------------------------------|------------------------------|
| 30-88           | 90                          | 3                             | 49.5                         |
| 88-216          | 150                         | 3                             | 54.0                         |
| 216-960         | 210                         | 3                             | 57.0                         |
| Above 960       | 300                         | 3                             | 60.0                         |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 28 of 52

## ICES-003 §5 Spurious Emissions Limits

**Class A Digital Device:** The field intensity of radio noise emissions that are radiated from a Class A digital apparatus shall not exceed the limits specified in Table 5 of the publication referred to in Section 7.1, within the indicated frequency range.

| Frequency range (MHz) | Quasi-peak limits dB(μV/m) @ 10m                                          | Quasi-peak limits dB(μV/m) @ 3m |
|-----------------------|---------------------------------------------------------------------------|---------------------------------|
| 30 to 230             | 40                                                                        | 50.5                            |
| 230 to 1000           | 47                                                                        | 57.5                            |
| Note 1                | The lower limit shall apply at the transition frequency                   |                                 |
| Note 2                | Additional provisions may be required for cases where interference occurs |                                 |

**Class B Digital Device:** The field intensity of radio noise emissions that are radiated from a Class B digital apparatus shall not exceed the limits specified in Table 6 of the publication referred to in Section 7.1, within the indicated frequency range.

| Frequency range (MHz) | Quasi-peak limits dB(μV/m) @ 10m                                          | Quasi-peak limits dB(μV/m) @ 3m |
|-----------------------|---------------------------------------------------------------------------|---------------------------------|
| 30 to 230             | 30                                                                        | 40.5                            |
| 230 to 1000           | 37                                                                        | 47.5                            |
| Note 1                | The lower limit shall apply at the transition frequency.                  |                                 |
| Note 2                | Additional provisions may be required for cases where interference occurs |                                 |

## Laboratory Measurement Uncertainty for Spectrum Measurement

|                                |               |
|--------------------------------|---------------|
| <b>Measurement Uncertainty</b> | +5.6/ -4.5 dB |
|--------------------------------|---------------|

## Traceability

| Method                 | Test Equipment Used                            |
|------------------------|------------------------------------------------|
| Work instruction WI-03 | 0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312 |

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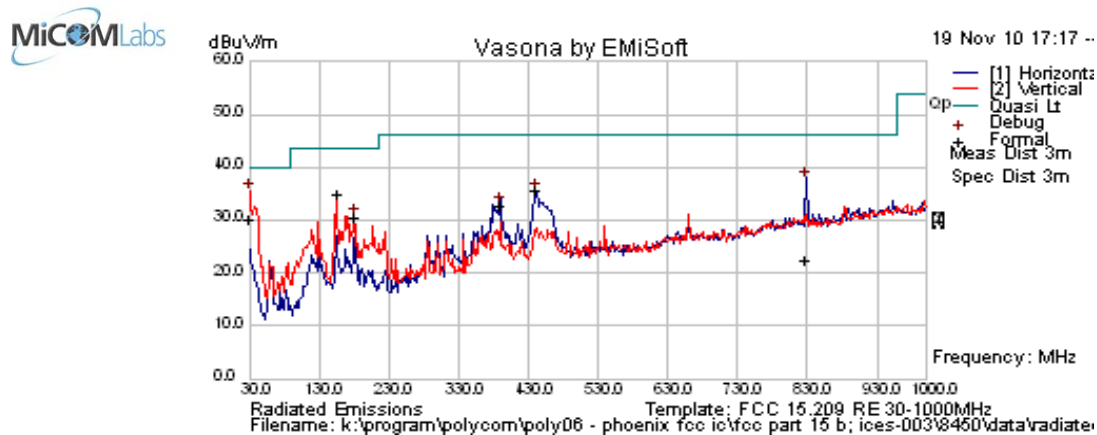


**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 29 of 52

### 7.1.1 Stand Alone Charger - Measurement Results for Radiated Spurious Emissions – Digital Apparatus

EUT emissions were investigated with the EUT arranged in X, Y, and Z axis. The highest emissions orientation was chosen for the final test. Only final data is presented in this test report.

|                      |                                                                                                                                                  |                       |      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|
| <b>Test Freq.</b>    | N/A                                                                                                                                              | <b>Engineer</b>       | EVF  |
| <b>Variant</b>       | Digital Emissions                                                                                                                                | <b>Temp (°C)</b>      | 22.5 |
| <b>Freq. Range</b>   | 30 MHz - 1000 MHz                                                                                                                                | <b>Rel. Hum. (%)</b>  | 34   |
| <b>Power Setting</b> | Charger: 120VAC/ 60Hz                                                                                                                            | <b>Press. (mBars)</b> | 99.7 |
| <b>Antenna</b>       | Integral                                                                                                                                         |                       |      |
| <b>Test Notes 1</b>  | Handset (Model: 8450) with discharged battery (SN: AC1010320232) , headset connected, also connected to charger (Model: SA106B-05)               |                       |      |
| <b>Test Notes 2</b>  | Preliminary testing performed. EUT tested in horizontal position/ Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1 |                       |      |



#### Formally measured emission peaks

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail | Comments |
|---------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|----------|
| 30.297        | 36.0     | 3.4        | -9.4  | 30.0         | Quasi Max        | V   | 151    | 90      | 40           | -10.0     | Pass       | DIG      |
| 155.996       | 48.7     | 4.5        | -18.4 | 34.9         | Quasi Max        | V   | 98     | 87      | 43.5         | -8.7      | Pass       | DIG      |
| 829.047       | 23.3     | 7.2        | -7.9  | 22.6         | Quasi Max        | H   | 332    | 173     | 46           | -23.4     | Pass       | DIG      |
| 179.994       | 45.6     | 4.7        | -19.7 | 30.5         | Peak [Scan]      | V   | 98     | 360     | 43.5         | -13.0     | Pass       | DIG      |
| 389.992       | 42.1     | 5.6        | -14.9 | 32.8         | Peak [Scan]      | H   | 98     | 360     | 46           | -13.2     | Pass       | DIG      |
| 441.988       | 43.5     | 5.8        | -13.8 | 35.5         | Peak [Scan]      | H   | 98     | 360     | 46           | -10.5     | Pass       | DIG      |

Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency  
 NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

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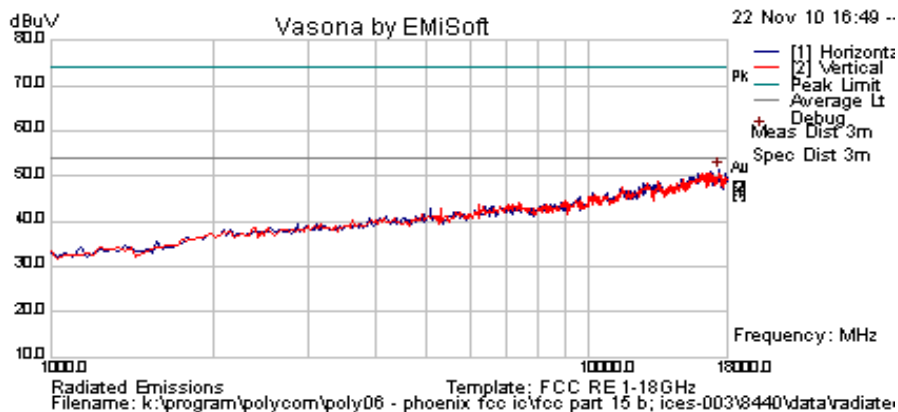
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 30 of 52

|                      |                                                                                                                                     |                       |      |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|
| <b>Test Freq.</b>    | N/A                                                                                                                                 | <b>Engineer</b>       | EVF  |
| <b>Variant</b>       | Digital Emissions                                                                                                                   | <b>Temp (°C)</b>      | 21.5 |
| <b>Freq. Range</b>   | 1000 MHz - 18000 MHz                                                                                                                | <b>Rel. Hum. (%)</b>  | 34   |
| <b>Power Setting</b> | Charger: 120VAC/ 60Hz                                                                                                               | <b>Press. (mBars)</b> | 1007 |
| <b>Antenna</b>       | Integral                                                                                                                            |                       |      |
| <b>Test Notes 1</b>  | Handset (Model: 8450) with discharged battery (S/N: AC10103200B7) , headset connected, also connected to charger (Model: SA106B-05) |                       |      |
| <b>Test Notes 2</b>  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1                                                      |                       |      |



#### Formally measured emission peaks

| Frequency MHz                                                                                  | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail | Comments |
|------------------------------------------------------------------------------------------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|----------|
| No emissions above 1GHz.                                                                       |          |            |       |              |                  |     |        |         |              |           |            |          |
| Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency |          |            |       |              |                  |     |        |         |              |           |            |          |
| NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band              |          |            |       |              |                  |     |        |         |              |           |            |          |

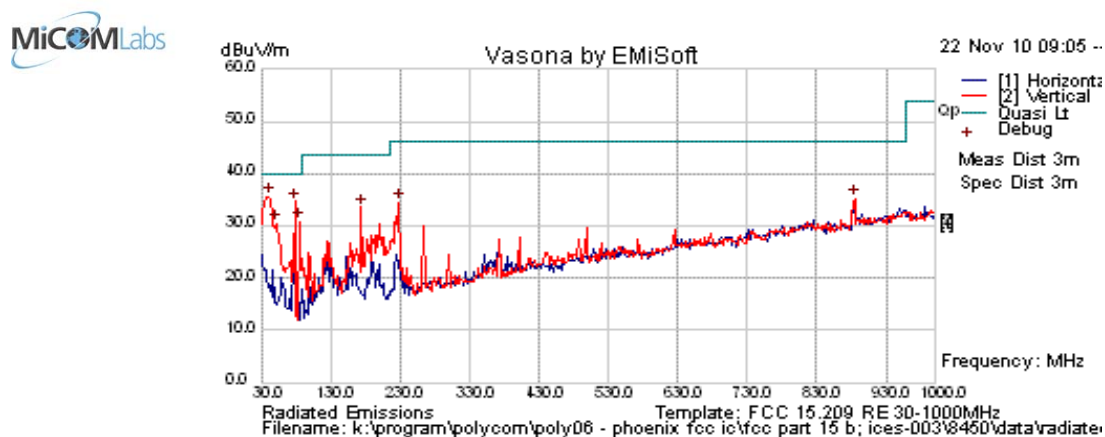
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**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 31 of 52

### 7.1.2 Charging Dock - Measurement Results for Radiated Spurious Emissions – Digital Apparatus

|               |                                                                                                                                                                                                   |                |      |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|
| Test Freq.    | N/A                                                                                                                                                                                               | Engineer       | EVF  |
| Variant       | Digital Emissions                                                                                                                                                                                 | Temp (°C)      | 21.5 |
| Freq. Range   | 30 MHz - 1000 MHz                                                                                                                                                                                 | Rel. Hum. (%)  | 33   |
| Power Setting | Dock: 120VAC/ 60Hz                                                                                                                                                                                | Press. (mBars) | 1009 |
| Antenna       | Integral                                                                                                                                                                                          |                |      |
| Test Notes 1  | Handset (Model: 8450) with discharged battery (SN: AC10103200B7), headset connected, charging in dock with additional battery charging (SN: AD101032019C), AC-DC Adapter (Model: HK-U-120A050-CP) |                |      |
| Test Notes 2  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1                                                                                                                    |                |      |



#### Formally measured emission peaks

| Frequency MHz                                                                                  | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail | Comments |
|------------------------------------------------------------------------------------------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|----------|
| 85.898                                                                                         | 36.7     | 4.0        | -23.7 | 17.0         | Quasi Max        | V   | 98     | 142     | 40           | -23.0     | Pass       | DIG      |
| 53.539                                                                                         | 46.8     | 3.8        | -23.6 | 26.9         | Quasi Max        | V   | 102    | 33      | 40           | -13.1     | Pass       | DIG      |
| 174.174                                                                                        | 33.7     | 4.6        | -19.4 | 18.9         | Quasi Max        | V   | 126    | 338     | 43.5         | -24.6     | Pass       | DIG      |
| 883.643                                                                                        | 29.8     | 7.3        | -7.3  | 29.8         | Quasi Max        | V   | 400    | 360     | 46           | -16.2     | Pass       | DIG      |
| 41.026                                                                                         | 45.7     | 3.6        | -17.7 | 31.6         | Quasi Max        | V   | 107    | 360     | 40           | -8.4      | Pass       | DIG      |
| 77.995                                                                                         | 42.3     | 4.0        | -23.0 | 23.2         | Quasi Max        | V   | 154    | 244     | 40           | -16.8     | Pass       | DIG      |
| Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency |          |            |       |              |                  |     |        |         |              |           |            |          |
| NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band              |          |            |       |              |                  |     |        |         |              |           |            |          |

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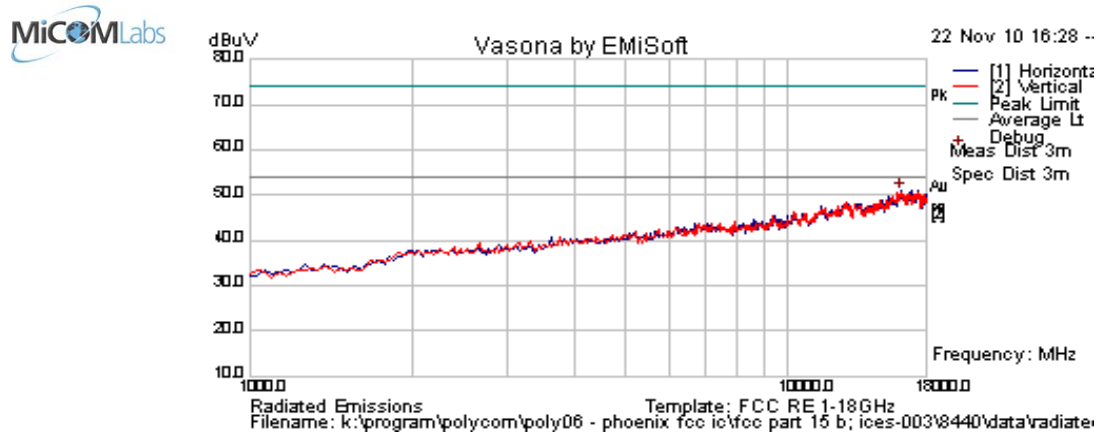
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 32 of 52

|               |                                                                                                                                                                                                   |                |      |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|
| Test Freq.    | N/A                                                                                                                                                                                               | Engineer       | EVF  |
| Variant       | Digital Emissions                                                                                                                                                                                 | Temp (°C)      | 21.5 |
| Freq. Range   | 1000 MHz - 18000 MHz                                                                                                                                                                              | Rel. Hum. (%)  | 34   |
| Power Setting | Dock: 120VAC/ 60Hz                                                                                                                                                                                | Press. (mBars) | 1007 |
| Antenna       | Integral                                                                                                                                                                                          |                |      |
| Test Notes 1  | Handset (Model: 8450) with discharged battery (SN: AC101032008E), headset connected, charging in dock with additional battery charging (SN: AD101032019C), AC-DC Adapter (Model: HK-U-120A050-CP) |                |      |
| Test Notes 2  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1                                                                                                                    |                |      |



#### Formally measured emission peaks

| Frequency MHz                                                                                  | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail | Comments |
|------------------------------------------------------------------------------------------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|----------|
| No emissions above 1GHz.                                                                       |          |            |       |              |                  |     |        |         |              |           |            |          |
| Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency |          |            |       |              |                  |     |        |         |              |           |            |          |
| NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band              |          |            |       |              |                  |     |        |         |              |           |            |          |

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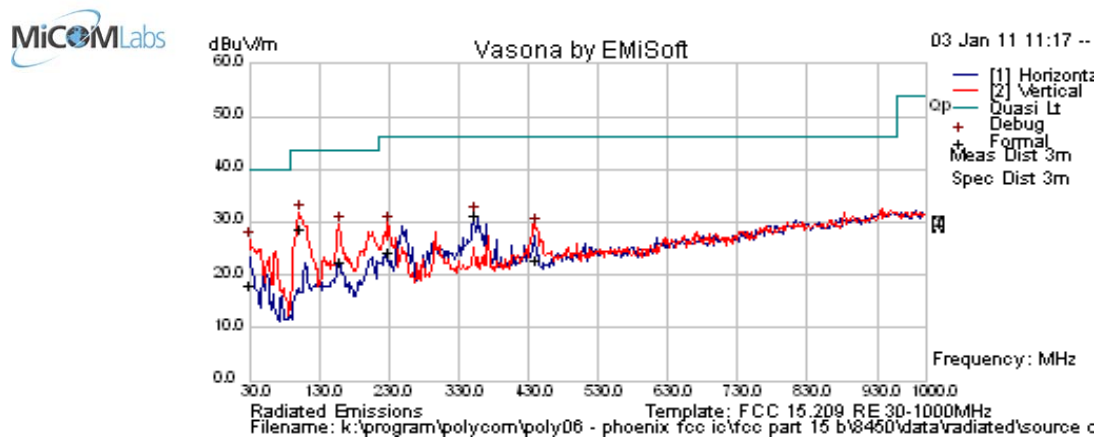
**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 33 of 52

### 7.1.3 Speaker Dock - Measurement Results for Radiated Spurious Emissions – Digital Apparatus

|               |                                                                                                                                                                                                    |                |      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|
| Test Freq.    | N/A                                                                                                                                                                                                | Engineer       | EVF  |
| Variant       | Digital Emissions                                                                                                                                                                                  | Temp (°C)      | 19.5 |
| Freq. Range   | 30 MHz - 1000 MHz                                                                                                                                                                                  | Rel. Hum. (%)  | 37   |
| Power Setting | Speaker Dock: 120VAC/ 60Hz                                                                                                                                                                         | Press. (mBars) | 1005 |
| Antenna       | Integral                                                                                                                                                                                           |                |      |
| Test Notes 1  | Handset (Model: 8450) with discharged battery (SN: AC101032008E), headset connected, charging in dock with additional battery charging (SN: AD101032019C), AC-DC Adapter (Model: HK-AX-120A200-CP) |                |      |
| Test Notes 2  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=0, DK=1                                                                                                                     |                |      |



#### Formally measured emission peaks

| Frequency MHz                                                                                  | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail | Comments |
|------------------------------------------------------------------------------------------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|----------|
| 101.571                                                                                        | 45.0     | 4.2        | -20.6 | 28.6         | Quasi Max        | V   | 101    | 0       | 43.5         | -14.9     | Pass       | DIG      |
| 31.311                                                                                         | 25.1     | 3.4        | -10.4 | 18.1         | Quasi Max        | V   | 276    | 183     | 40           | -22.0     | Pass       | DIG      |
| 159.259                                                                                        | 36.3     | 4.5        | -18.4 | 22.4         | Quasi Max        | V   | 99     | 89      | 43.5         | -21.1     | Pass       | DIG      |
| 351.992                                                                                        | 41.1     | 5.5        | -15.4 | 31.2         | Quasi Max        | H   | 159    | 10      | 46           | -14.8     | Pass       | DIG      |
| 230.040                                                                                        | 38.2     | 4.9        | -18.9 | 24.2         | Quasi Max        | V   | 98     | 81      | 46           | -21.8     | Pass       | DIG      |
| 441.827                                                                                        | 30.7     | 5.8        | -13.8 | 22.7         | Quasi Max        | V   | 136    | 208     | 46           | -23.3     | Pass       | DIG      |
| Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency |          |            |       |              |                  |     |        |         |              |           |            |          |
| NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band              |          |            |       |              |                  |     |        |         |              |           |            |          |

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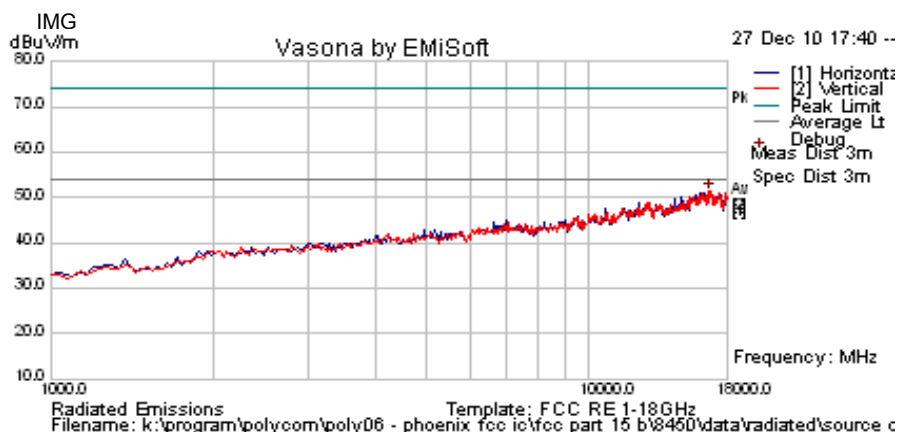
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 34 of 52

|               |                                                                                                                                                                                                    |                |      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|
| Test Freq.    | N/A                                                                                                                                                                                                | Engineer       | EVF  |
| Variant       | Digital Emissions                                                                                                                                                                                  | Temp (°C)      | 19.5 |
| Freq. Range   | 1000 MHz - 18000 MHz                                                                                                                                                                               | Rel. Hum. (%)  | 41   |
| Power Setting | Speaker Dock: 120VAC/ 60Hz                                                                                                                                                                         | Press. (mBars) | 1011 |
| Antenna       | Integral                                                                                                                                                                                           |                |      |
| Test Notes 1  | Handset (Model: 8450) with discharged battery (SN: AC101032008E), headset connected, charging in dock with additional battery charging (SN: AD101032019C), AC-DC Adapter (Model: HK-AX-120A200-CP) |                |      |
| Test Notes 2  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=0, DK=1                                                                                                                     |                |      |



#### Formally measured emission peaks

| Frequency MHz                                                                                  | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail | Comments |
|------------------------------------------------------------------------------------------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|----------|
| No emissions above 1 GHz.                                                                      |          |            |       |              |                  |     |        |         |              |           |            |          |
| Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency |          |            |       |              |                  |     |        |         |              |           |            |          |
| NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band              |          |            |       |              |                  |     |        |         |              |           |            |          |

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with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 35 of 52

---

## **7.2 Conducted Disturbance at Mains Terminal (150 kHz – 30 MHz)**

### **Standard Reference**

FCC, Part 15 Subpart C §15.107  
Industry Canada ICES-003 §5.3

### **Test Procedure**

The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.





**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 37 of 52

## Specification

### Conducted Disturbance at Mains Terminal – Digital Apparatus

#### FCC, Part 15 Subpart B §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  $\mu$ H/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 band edges.

(b) For a Class A digital device 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  $\mu$ H/50 ohms 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.

#### Industry Canada ICES-003

The voltage of radio noise emissions that are conducted along the power supply lines of a Class A digital apparatus shall not exceed the limits specified in Table 1 of the publication referred to in Section 7.1 [Canadian Standards Association Standard CAN/CSA-CEI/IEC CISPR 22:02, "Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment."], within the indicated frequency range.

The voltage of radio noise emissions that are conducted along the power supply lines of a Class B digital apparatus shall not exceed the limits specified in Table 2 of the publication referred to in Section 7.1 [Canadian Standards Association Standard CAN/CSA-CEI/IEC CISPR 22:02, "Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment."], within the indicated frequency range.



**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 38 of 52

## FCC, Part 15 Subpart B §15.107 & Industry Canada ICES-003 Limits

Limits for conducted disturbance at the mains ports of class B ITE

| Frequency of emission (MHz) | Quasi-peak (dBuV)                                                  | Average (dBuV) |
|-----------------------------|--------------------------------------------------------------------|----------------|
| 0.15–0.5                    | 66 to 56*                                                          | 56 to 46*      |
| 0.5–5                       | 56                                                                 | 46             |
| 5–30                        | 60                                                                 | 50             |
| Note 1                      | * Decreases with the logarithm of the frequency                    |                |
| Note 2                      | * The lower limit applies at the boundary between frequency ranges |                |

Limits for conducted disturbance at the mains ports of class A ITE

| Frequency of emission (MHz) | Quasi-peak (dBuV)                                         | Average (dBuV) |
|-----------------------------|-----------------------------------------------------------|----------------|
| 0.15–0.5                    | 79                                                        | 66             |
| 0.5–30                      | 73                                                        | 60             |
| Note 1                      | * The lower limit shall apply at the transition frequency |                |

## Laboratory Measurement Uncertainty for Conducted Emissions

|                         |          |
|-------------------------|----------|
| Measurement uncertainty | ±2.64 dB |
|-------------------------|----------|

## Traceability

| Method                     | Test Equipment Used                |
|----------------------------|------------------------------------|
| Work instruction WI-EMC-01 | 0158, 0184, 0193, 0190, 0293, 0307 |

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**Title:** Polycom Spectralink 8450 Wi-Fi handset with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

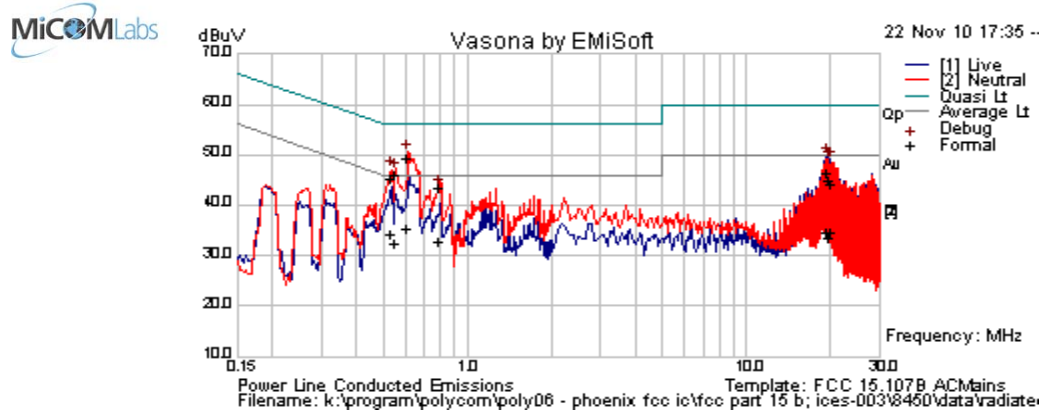
**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 39 of 52

## 7.2.1 Stand Alone Charger - Conducted Disturbance at Mains Terminal

|               |                                                                                                                                     |                |      |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------|------|
| Test Freq.    | N/A                                                                                                                                 | Engineer       | EVF  |
| Variant       | AC Line Emissions                                                                                                                   | Temp (°C)      | 21.5 |
| Freq. Range   | 0.150 MHz - 30 MHz                                                                                                                  | Rel. Hum. (%)  | 34   |
| Power Setting | Charger: 120VAC/60Hz                                                                                                                | Press. (mBars) | 1007 |
| Antenna       | Intergal                                                                                                                            |                |      |
| Test Notes 1  | Handset (Model: 8450) with discharged battery (S/N: AC10103200B7) , headset connected, also connected to charger (Model: SA106B-05) |                |      |
| Test Notes 2  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1                                                      |                |      |



### Formally measured emission peaks

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line    | Limit dBuV | Margin dB | Pass /Fail | Comments |
|---------------|----------|------------|------------|------------|------------------|---------|------------|-----------|------------|----------|
| 0.535         | 35.2     | 9.9        | 0.1        | 45.2       | Quasi Peak       | Neutral | 56         | -10.8     | Pass       |          |
| 0.535         | 24.4     | 9.9        | 0.1        | 34.5       | Average          | Neutral | 46         | -11.5     | Pass       |          |
| 0.553         | 36.1     | 9.9        | 0.1        | 46.1       | Quasi Peak       | Neutral | 56         | -9.9      | Pass       |          |
| 0.553         | 22.3     | 9.9        | 0.1        | 32.3       | Average          | Neutral | 46         | -13.7     | Pass       |          |
| 0.615         | 25.3     | 10.0       | 0.1        | 35.3       | Average          | Neutral | 46         | -10.7     | Pass       |          |
| 0.615         | 39.3     | 10.0       | 0.1        | 49.3       | Quasi Peak       | Neutral | 56         | -6.7      | Pass       |          |
| 0.800         | 33.5     | 10.0       | 0.1        | 43.5       | Quasi Peak       | Neutral | 56         | -12.5     | Pass       |          |
| 0.800         | 22.7     | 10.0       | 0.1        | 32.7       | Average          | Neutral | 46         | -13.3     | Pass       |          |
| 19.462        | 35.1     | 10.5       | 0.7        | 46.3       | Quasi Peak       | Live    | 60         | -13.7     | Pass       |          |
| 19.462        | 23.4     | 10.5       | 0.7        | 34.6       | Average          | Live    | 50         | -15.4     | Pass       |          |
| 19.727        | 33.5     | 10.5       | 0.7        | 44.8       | Quasi Peak       | Neutral | 60         | -15.2     | Pass       |          |
| 19.727        | 22.3     | 10.5       | 0.7        | 33.6       | Average          | Neutral | 50         | -16.4     | Pass       |          |
| 20.070        | 32.9     | 10.5       | 0.7        | 44.2       | Quasi Peak       | Live    | 60         | -15.8     | Pass       |          |
| 20.070        | 23.3     | 10.5       | 0.7        | 34.5       | Average          | Live    | 50         | -15.5     | Pass       |          |

Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency

NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

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**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

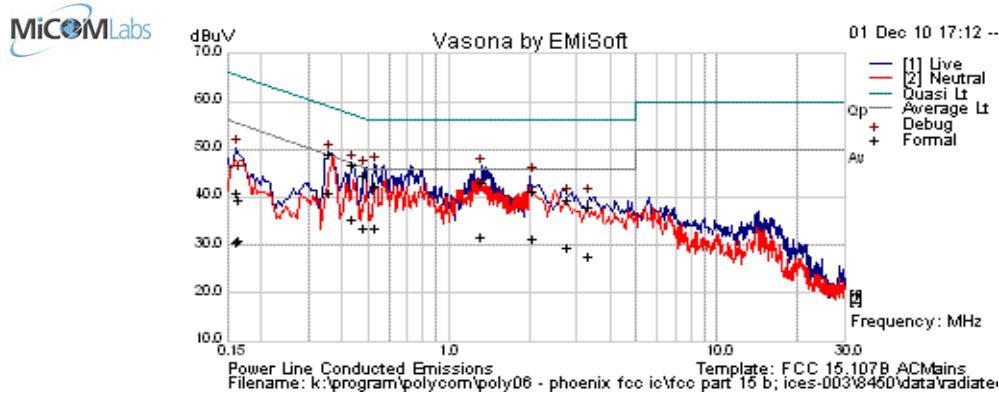
**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 40 of 52

## 7.2.2 Charging Dock - Conducted Disturbance at Mains Terminal

|                      |                                                                                                                                                                                                   |                       |      |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|
| <b>Test Freq.</b>    | N/A                                                                                                                                                                                               | <b>Engineer</b>       | EVF  |
| <b>Variant</b>       | AC Line Emissions                                                                                                                                                                                 | <b>Temp (°C)</b>      | 21   |
| <b>Freq. Range</b>   | 0.150 MHz - 30 MHz                                                                                                                                                                                | <b>Rel. Hum. (%)</b>  | 35   |
| <b>Power Setting</b> | Dock: 120VAC/60Hz                                                                                                                                                                                 | <b>Press. (mBars)</b> | 1006 |
| <b>Antenna</b>       | Intergal                                                                                                                                                                                          |                       |      |
| <b>Test Notes 1</b>  | Handset (Model: 8450) with discharged battery (SN: AC10103200B7), headset connected, charging in dock with additional battery charging (SN: AD101032019C), AC-DC Adapter (Model: HK-U-120A050-CP) |                       |      |
| <b>Test Notes 2</b>  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1                                                                                                                    |                       |      |



### Formally measured emission peaks

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line | Limit dBuV | Margin dB | Pass /Fail | Comments |
|---------------|----------|------------|------------|------------|------------------|------|------------|-----------|------------|----------|
| 0.362         | 31.1     | 9.9        | 0.1        | 41         | Average          | Live | 48.7       | -7.7      | Pass       |          |
| 0.362         | 38.9     | 9.9        | 0.1        | 48.9       | Quasi Peak       | Live | 58.7       | -9.8      | Pass       |          |
| 0.44          | 25.4     | 9.9        | 0.1        | 35.4       | Average          | Live | 47.1       | -11.7     | Pass       |          |
| 0.44          | 36.8     | 9.9        | 0.1        | 46.8       | Quasi Peak       | Live | 57.1       | -10.3     | Pass       |          |
| 0.486         | 23.6     | 9.9        | 0.1        | 33.6       | Average          | Live | 46.2       | -12.6     | Pass       |          |
| 0.486         | 34.7     | 9.9        | 0.1        | 44.7       | Quasi Peak       | Live | 56.2       | -11.6     | Pass       |          |
| 0.537         | 23.6     | 9.9        | 0.1        | 33.6       | Average          | Live | 46         | -12.4     | Pass       |          |
| 0.537         | 32.4     | 9.9        | 0.1        | 42.4       | Quasi Peak       | Live | 56         | -13.6     | Pass       |          |
| 1.336         | 21.6     | 10         | 0.1        | 31.7       | Average          | Live | 46         | -14.3     | Pass       |          |
| 1.336         | 33       | 10         | 0.1        | 43.1       | Quasi Peak       | Live | 56         | -12.9     | Pass       |          |
| 2.071         | 21.2     | 10.1       | 0.1        | 31.4       | Average          | Live | 46         | -14.6     | Pass       |          |
| 2.071         | 31       | 10.1       | 0.1        | 41.2       | Quasi Peak       | Live | 56         | -14.8     | Pass       |          |
| 2.788         | 19.1     | 10.1       | 0.1        | 29.4       | Average          | Live | 46         | -16.6     | Pass       |          |
| 2.788         | 29.1     | 10.1       | 0.1        | 39.4       | Quasi Peak       | Live | 56         | -16.6     | Pass       |          |
| 3.337         | 17.5     | 10.1       | 0.2        | 27.8       | Average          | Live | 46         | -18.2     | Pass       |          |
| 3.337         | 27.7     | 10.1       | 0.2        | 38         | Quasi Peak       | Live | 56         | -18       | Pass       |          |

Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency

NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

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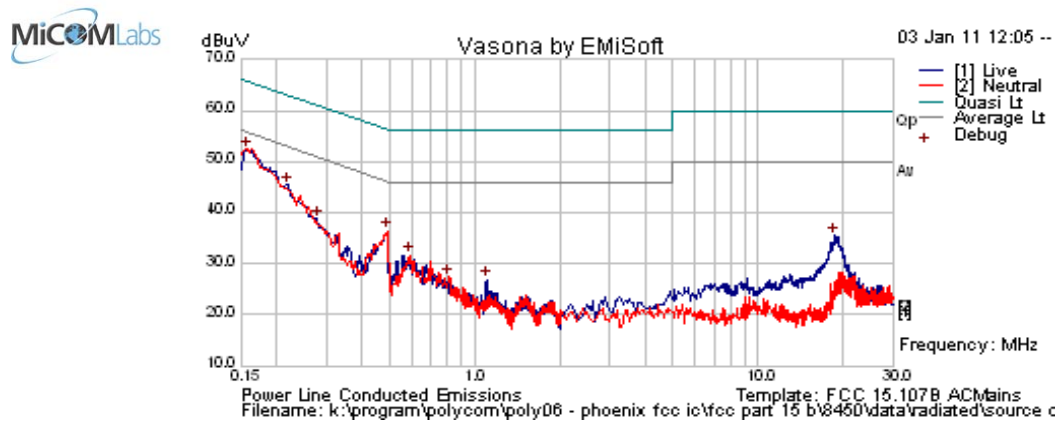
**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 41 of 52

### 7.2.3 Speaker Dock - Conducted Disturbance at Mains Terminal

|               |                                                                                                                                                                                                            |                |      |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|
| Test Freq.    | N/A                                                                                                                                                                                                        | Engineer       | EVF  |
| Variant       | AC Line Emissions                                                                                                                                                                                          | Temp (°C)      | 19.5 |
| Freq. Range   | 0.150 MHz - 30 MHz                                                                                                                                                                                         | Rel. Hum.(%)   | 36   |
| Power Setting | Speaker Dock: 120VAC/ 60Hz                                                                                                                                                                                 | Press. (mBars) | 1005 |
| Antenna       | Integral                                                                                                                                                                                                   |                |      |
| Test Notes 1  | Handset (Model: 8450) with discharged battery (SN: AC101032008E), headset connected, charging in speaker dock with additional battery charging (SN: AD101032019C), AC-DC Adapter (Model: HK-AX-120A200-CP) |                |      |
| Test Notes 2  | Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=0, DK=1                                                                                                                             |                |      |



#### Formally measured emission peaks

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line    | Limit dBuV | Margin dB | Pass /Fail | Comments |
|---------------|----------|------------|------------|------------|------------------|---------|------------|-----------|------------|----------|
| 0.158         | 22.3     | 9.9        | 0.1        | 32.3       | Average          | Neutral | 55.57      | -23.3     | Pass       |          |
| 0.158         | 40.8     | 9.9        | 0.1        | 50.8       | Quasi Peak       | Neutral | 65.57      | -14.8     | Pass       |          |
| 0.217         | 13.1     | 9.9        | 0.1        | 23.1       | Average          | Neutral | 52.93      | -29.8     | Pass       |          |
| 0.217         | 32.5     | 9.9        | 0.1        | 42.5       | Quasi Peak       | Neutral | 62.93      | -20.5     | Pass       |          |
| 0.280         | 14.1     | 9.9        | 0.1        | 24.0       | Average          | Live    | 50.82      | -26.8     | Pass       |          |
| 0.280         | 24.1     | 9.9        | 0.1        | 34.1       | Quasi Peak       | Live    | 60.82      | -26.7     | Pass       |          |
| 0.494         | 11.7     | 9.9        | 0.1        | 21.7       | Average          | Neutral | 46.1       | -24.4     | Pass       |          |
| 0.494         | 24.1     | 9.9        | 0.1        | 34.1       | Quasi Peak       | Neutral | 56.1       | -22.0     | Pass       |          |
| 0.590         | 4.8      | 9.9        | 0.1        | 14.8       | Average          | Neutral | 46         | -31.2     | Pass       |          |
| 0.590         | 14.6     | 9.9        | 0.1        | 24.6       | Quasi Peak       | Neutral | 56         | -31.4     | Pass       |          |
| 0.821         | 6.9      | 9.9        | 0.1        | 16.9       | Average          | Neutral | 46         | -29.1     | Pass       |          |
| 0.821         | 12.8     | 9.9        | 0.1        | 22.9       | Quasi Peak       | Neutral | 56         | -33.2     | Pass       |          |
| 18.777        | 15.3     | 10.5       | 0.7        | 26.6       | Average          | Live    | 50         | -23.5     | Pass       |          |
| 18.777        | 20.5     | 10.5       | 0.7        | 31.7       | Quasi Peak       | Live    | 60         | -28.3     | Pass       |          |

Legend: DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency

NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

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## 8 Photographs

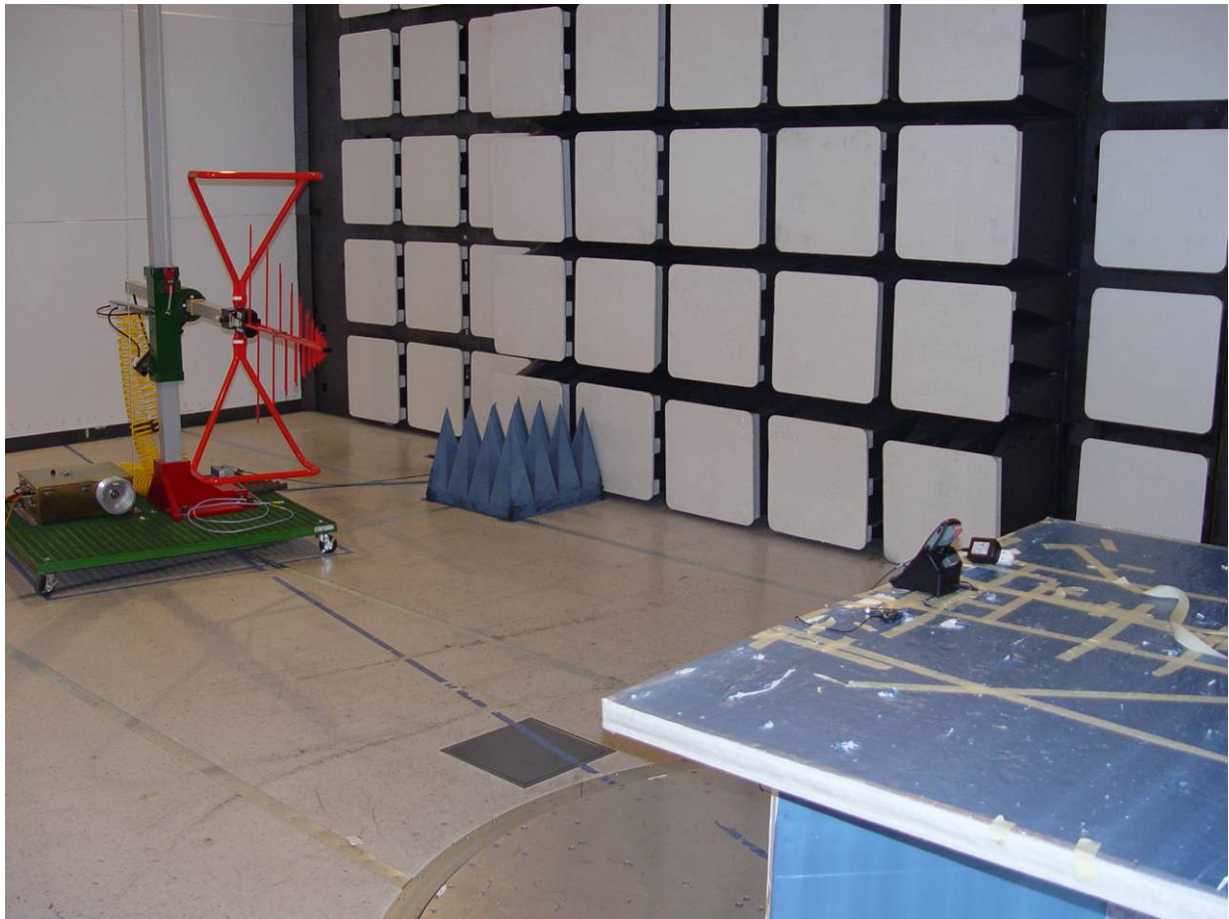
### 8.1 Radiated Emission below 1 GHz with Stand Alone Charger



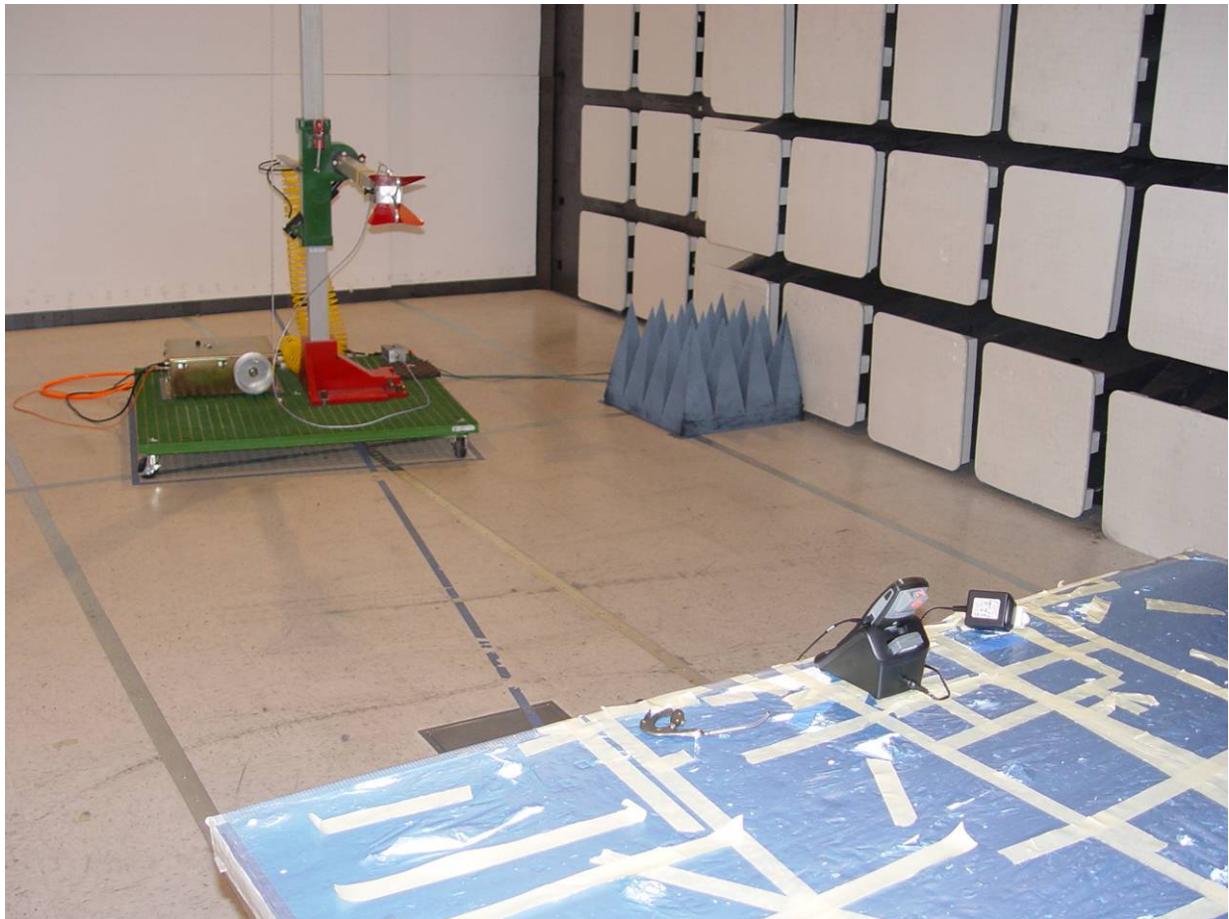
## 8.2 Radiated Emissions above 1 GHz with Stand Alone Charger



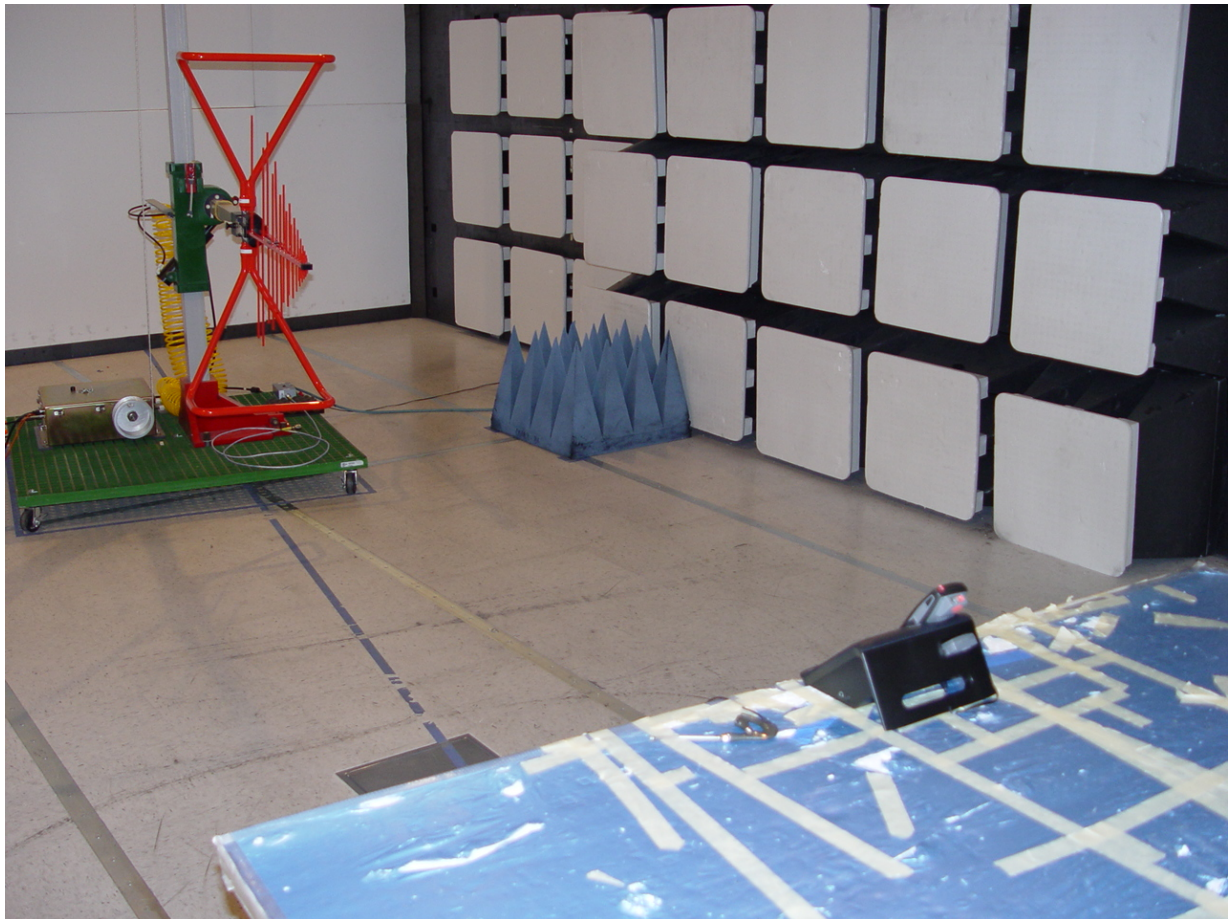
### 8.3 Radiated Emission below 1 GHz with Charging Dock



#### 8.4 Radiated Emissions above 1 GHz with Charging Dock



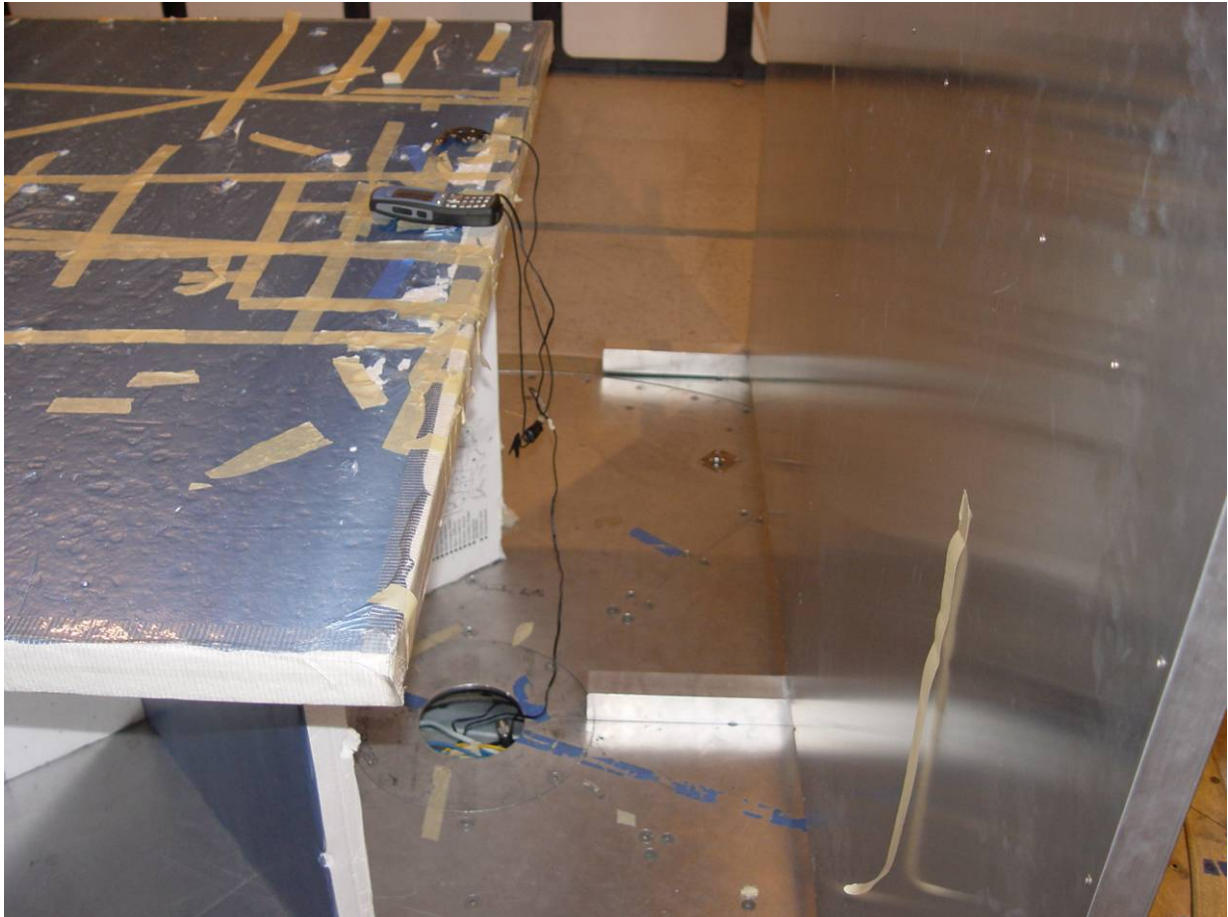
## 8.5 Radiated Emission below 1 GHz with Speaker Dock



## 8.6 Radiated Emission above 1 GHz with Speaker Dock



## 8.7 AC Mains Conducted Emissions with Stand Alone Charger

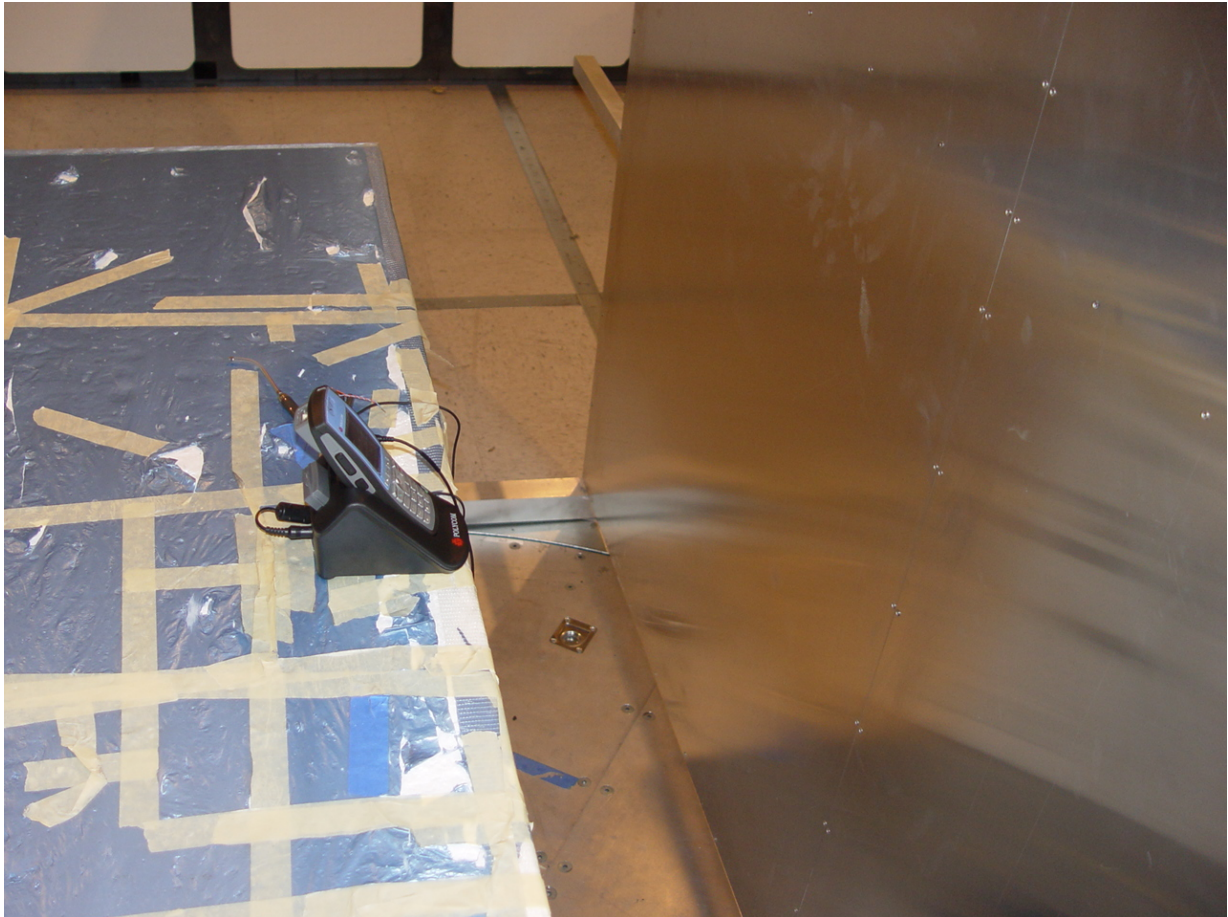




**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth  
**To:** FCC 47 CFR Part 15, SubPart B & ICES-003  
**Serial #:** POLY06-U21 Rev A  
**Issue Date:** 14th February, 2011  
**Page:** Page 49 of 52

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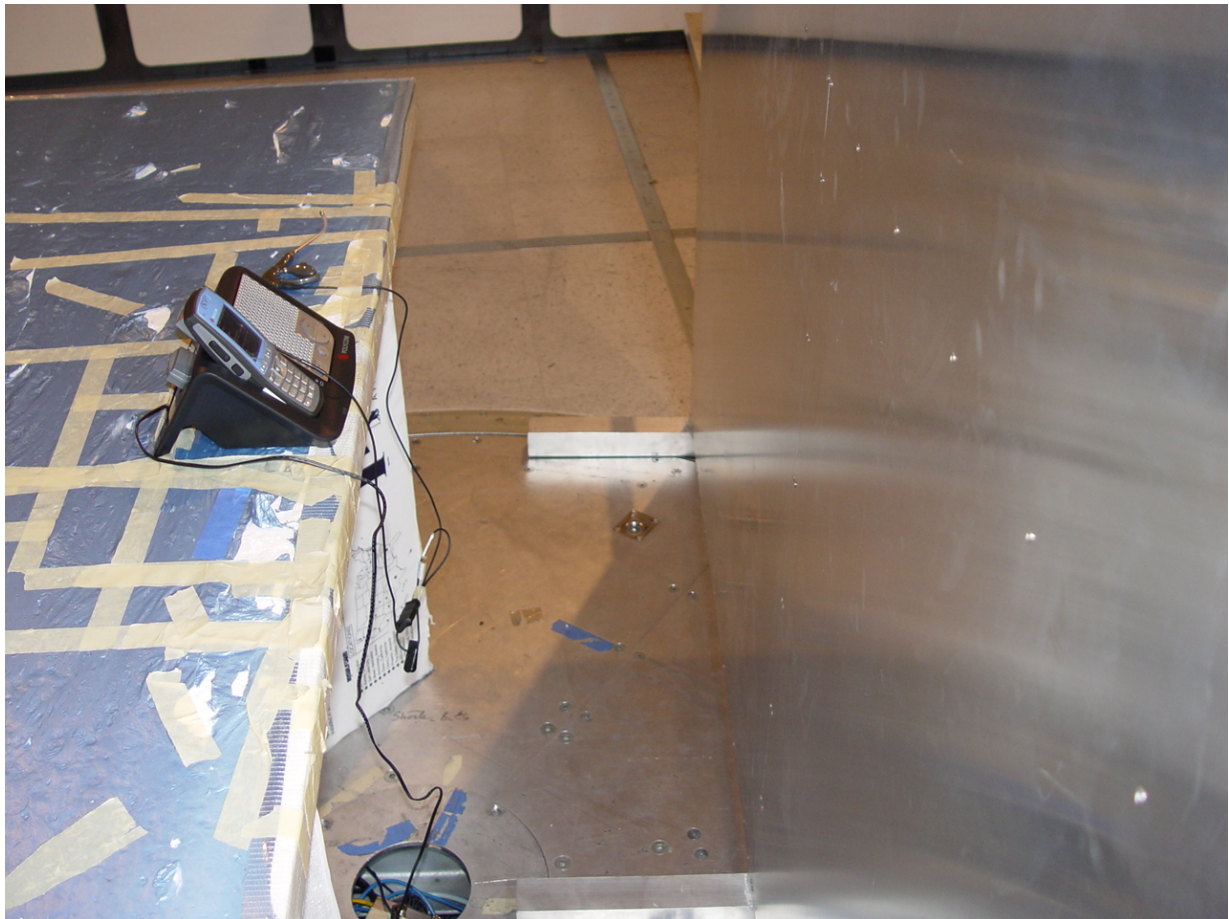
## 8.8 AC Mains Conducted Emissions with Charging Dock



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## 8.9 AC Mains Conducted Emissions with Speaker Dock





**Title:** Polycom Spectralink 8450 Wi-Fi handset  
with Bluetooth

**To:** FCC 47 CFR Part 15, SubPart B & ICES-003

**Serial #:** POLY06-U21 Rev A

**Issue Date:** 14th February, 2011

**Page:** Page 51 of 52

## 9 TEST EQUIPMENT DETAILS

| Asset # | Instrument                | Manufacturer     | Part #                    | Serial #    |
|---------|---------------------------|------------------|---------------------------|-------------|
| 0134    | Amplifier                 | Com Power        | PA 122                    | 181910      |
| 0158    | Barometer<br>/Thermometer | Control Co.      | 4196                      | E2846       |
| 0287    | EMI Receiver              | Rhode & Schwartz | ESIB 40                   | 100201      |
| 0193    | EMI Receiver              | Rhode & Schwartz | ESIB 7                    | 838496/007  |
| 0252    | SMA Cable                 | Megaphase        | Sucoflex 104              | None        |
| 0310    | 2m SMA Cable              | Micro-Coax       | UFA210A-0-<br>0787-3G03G0 | 209089-001  |
| 0312    | 3m SMA Cable              | Micro-Coax       | UFA210A-1-<br>1181-3G0300 | 209092-001  |
| 0313    | Coupler                   | Hewlett Packard  | 86205A                    | 3140A01285  |
| 0314    | 30dB N-Type<br>Attenuator | ARRA             | N9444-30                  | 1623        |
| 0070    | Power Meter               | Hewlett Packard  | 437B                      | 3125U11552  |
| 0116    | Power Sensor              | Hewlett Packard  | 8485A                     | 3318A19694  |
| 0117    | Power Sensor              | Hewlett Packard  | 8487D                     | 3318A00371  |
| 0184    | Pulse Limiter             | Rhode & Schwartz | ESH3Z2                    | 357.8810.52 |
| 0190    | LISN                      | Rhode & Schwartz | ESH3Z5                    | 836679/006  |
| 0293    | BNC Cable                 | Megaphase        | 1689 1GVT4                | 15F50B001   |
| 0301    | 5.6 GHz Notch Filter      | Micro-Tronics    | RBC50704                  | 001         |
| 0302    | 5.25 GHz Notch Filter     | Micro-Tronics    | BRC50703                  | 002         |
| 0303    | 5.8 GHz Notch Filter      | Micro-Tronics    | BRC50705                  | 003         |
| 0304    | 2.4GHzHz Notch Filter     | Micro-Tronics    | --                        | 001         |
| 0307    | BNC Cable                 | Megaphase        | 1689 1GVT4                | 15F50B002   |
| 0335    | 1-18GHz Horn Antenna      | ETS- Lindgren    | 3117                      | 00066580    |
| 0337    | Amplifier                 | MiCOM Labs       | --                        | --          |
| 0338    | Antenna                   | Sunol Sciences   | JB-3                      | A052907     |

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