# FCC TEST REPORT

| | | |
|---|---|---|
| **Equipment Under Test** | : | WIRELESS AUDIO LINK |
| **Model No.** | : | WS-WAL1 |
| **Applicant** | : | SIIG, INC. |
| **Address of Applicant** | : | 6078 Stewart Avenue,Fremont, CA, USA. |

Standards:

**FCC Part 15 subpart C**

In the configuration tested, the EUT complied with the standards specified above.

**Remarks:**

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan EMC Services or testing done by SGS Taiwan EMC Services in connection with distribution or use of the product described in this report must be approved by SGS Taiwan EMC Services in writing.

| | | | | | |
|---|---|---|---|---|---|
| **Tested by** | : | **Gallon Lee** | **Date** | : | **Nov. 4, 2002** |
| **Approved by** | : | **Jason Lin** | **Date** | : | **Nov. 5, 2002** |

# Contents

# 1. General Information

## 1.1 Testing Laboratory

SGS Taiwan Ltd. ( FCC Registration number: 94644 )
1F, No. 134, Wukung Road, Wuku industrial zone
Taipei county , Taiwan , R.O.C.
Telephone : +886-2-2299-3279
Fax : +886-2-2298-2698
Internet : http://www.sgs.com.tw

## 1.2 Details of Applicant

Name SIIG, INC.
Address 6078 Stewart Avenue,Fremont, CA, USA.

Contact Andrew Gong
Telephone 1-510-4135328

## 1.3 Description of EUT(s)

| | | |
|---|---|---|
| 1 | Product name | Wireless Audio Link |
| 2 | Product ID | WS-WAL1 |
| 3 | Supply Voltage | USB Power Supply 5V±10% |
| 4 | Carrier Frequency | 88MHz to 108MHz |
| 5 | Output Interface | USB |

## 1.4 Operation Procedure

Turn on PC and all peripheral devices. Set Frequency by DIP switch. Connect EUT to USB connector. Connect audio source to 3.5mm connector of EUT.

Testing requirement follows CFR47, Part 15.239 , testing site comply with the requirement of ANSI C63.4 standard.

# 2.Summary of Results

| subclause | Parameter to be measures | Verdict | Page |
|---|---|---|---|
| 15.207 | Conducted Limits | *PASS* | 6 |
| 15.209 | Radiated emission Limits, general requirement | *PASS* | 9 |
| 15.239(a) | Frequency range of 88MHz-108MHz | *PASS* | 14 |
| 15.239(b) | Main frequency field strength not exceed 250 microvolts/meter at 3 meters | *PASS* | 15 |

# 3. Instruments List

| Instrument | Model | Serial number | Calibration date |
|---|---|---|---|
| Desktop PC | Acer Veriton 7200 | N/A | N/A |
| Spectrum Analyzer | Agilent 7405A | US40240202 | May 22, 2002 |
| Antenna | Schwarzbeck<br>VULB9163 | 159 | July 1, 2002 |
| EMC Analyzer | HP 8594EM | 3624A00203 | Dec. 13, 2001 |
| EMI Test Receiver | R&S ESCS 30 | 828985/004 | Oct. 11, 2002 |
| Transient Limiter | HP 11947A | 3107A02062 | Jul. 24, 2002 |
| L.I.S.N | Rolf-Heine<br>NNB-2/16Z | 99012 | Oct. 08, 2002 |

# 4. Measurements

## 4.1 Conducted Limits SUBCLAUSE 15.207

Product Name: Wireless Audio Link Test Date: Nov,4,2002

Model No.: WS-WAL1 Tester : Gallon

Test Mode: operation mode Temperature 24 ℃

Test Result: PASS Humidity: 55 %

Main Terminals:L

| FREQ MHz | QP1 dBuV | AVG1 dBuV | Factor | QP2 dBuV | AVG 2 | QP Limit | AV Limit | QP Offset | AV Offset |
|---|---|---|---|---|---|---|---|---|---|
| 0.2 | 49.6 | 49.5 | 2.90 | 52.50 | 52.40 | 63.61 | 53.61 | -11.11 | -1.21 |
| 0.3 | 37 | 36.1 | 2.80 | 39.80 | 38.90 | 60.24 | 50.24 | -20.44 | -11.34 |
| 4.65 | 27.1 | 21 | 3.19 | 30.29 | 24.19 | 56.00 | 46.00 | -25.71 | -21.81 |
| 6.09 | 38 | 36.1 | 3.22 | 41.22 | 39.32 | 60.00 | 50.00 | -18.78 | -10.68 |
| 13.59 | 36.3 | 33.8 | 3.41 | 39.71 | 37.21 | 60.00 | 50.00 | -20.29 | -12.79 |
| 20.73 | 27.5 | 21.1 | 3.62 | 31.12 | 24.72 | 60.00 | 50.00 | -28.88 | -25.28 |

1." -" denotes the emission level was - 10 dB beneth the Average limit,so nothing need to re-check anymore.

2. QP1/ AVG1 value means the QP/AV reading without the factor.

3. QP2/AVG2 value means the QP/AV final reading with the factor.

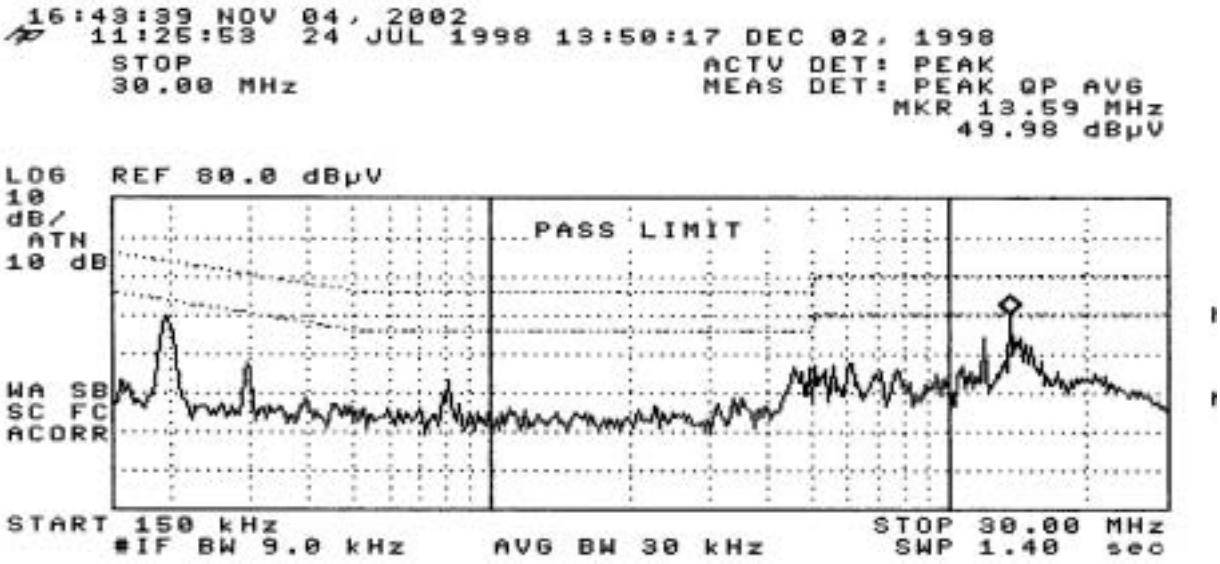
| | | | | |
|---|---|---|---|---|
| Product Name: | Wireless Audio Link | Test Date: | Nov,4,2002 | |
| Model No.: | WS-WAL1 | Tester : | Gallon | |
| Test Mode: | operation mode | Temperature | 24 | °C |
| Test Result: | PASS | Humidity: | 55 | % |

Main Terminals:N

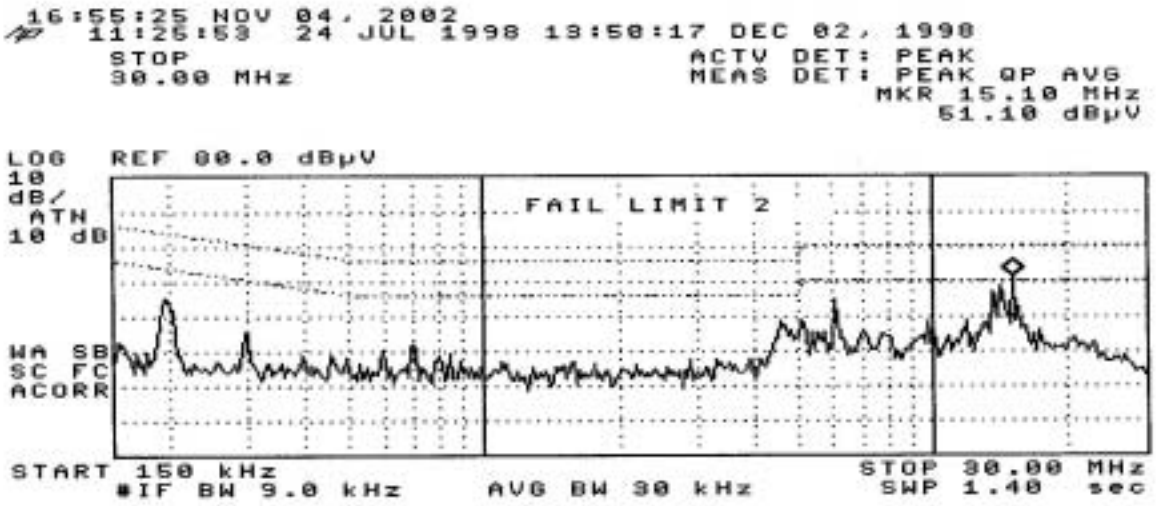
| FREQ MHz | QP1 dBuV | AVG1 dBuV | Factor | QP2 dBuV | AVG 2 | QP Limit | AV Limit | QP Offset | AV Offset |
|---|---|---|---|---|---|---|---|---|---|
| 0.2 | 45 | 44.6 | 2.9 | 47.9 | 47.5 | 63.6 | 53.61 | -15.7 | -6.11 |
| 0.30 | 35.00 | 33.90 | 2.80 | 37.80 | 36.70 | 60.24 | 50.24 | -22.44 | -13.54 |
| 0.84 | 24.40 | 15.10 | 2.83 | 27.23 | 17.93 | 56.00 | 46.00 | -28.77 | -28.07 |
| 4.65 | 27.20 | 21.20 | 3.19 | 30.39 | 24.39 | 56.00 | 46.00 | -25.61 | -21.61 |
| 9.67 | 27.50 | 21.20 | 3.29 | 30.79 | 24.49 | 60.00 | 50.00 | -29.21 | -25.51 |
| 15.10 | 34.10 | 25.80 | 3.45 | 37.55 | 29.25 | 60.00 | 50.00 | -22.45 | -20.75 |

1." -" denotes the emission level was - 10 dB beneth the Average limit,so nothing need to re-check anymore.
2. QP1/ AVG1 value means the QP/AV reading without the factor.
3. QP2/AVG2 value means the QP/AV final reading with the factor.

***Line***




***Neutral***



## 4.2 Radiated emission Limits, general requirement SUBCLAUSE 15.209

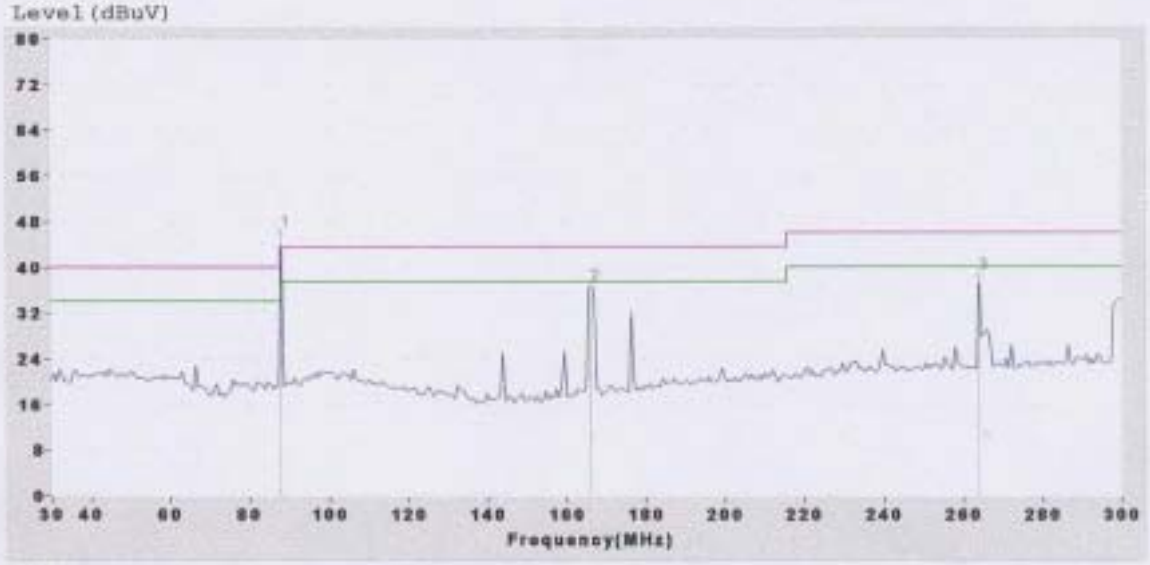
Part 1: 30Mhz-300Mhz(H)

SGS EMC Lab. Site 2

EMI TESTING REPORT

Customer:瑞朋
Model :WSWAL1
Spec. :N/A
Ser. No.:N/A
Limit :FCC B

Date:2002-12-09 Time:16:02
Polar. :Horizontal- 3M
Report No.:A0009
File :-1
Tester :Gallon
Tmp.(C):23.0 Humid.(%):65




MEMO:

| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Factor | Other Factor |
|---|---|---|---|---|---|---|---|---|
| | MHz | dB | dB | dB | dB | dB | dB | dB |
| * 1 | 88.05 | 46.26 | 2.76 | 43.50 | 35.12 | 10.43 | 0.71 | 0.00 |
| 2 | 166.35 | 36.66 | -6.84 | 43.50 | 27.47 | 8.29 | 0.91 | 0.00 |
| 3 | 264.23 | 38.56 | -7.44 | 46.00 | 25.12 | 12.28 | 1.15 | 0.00 |

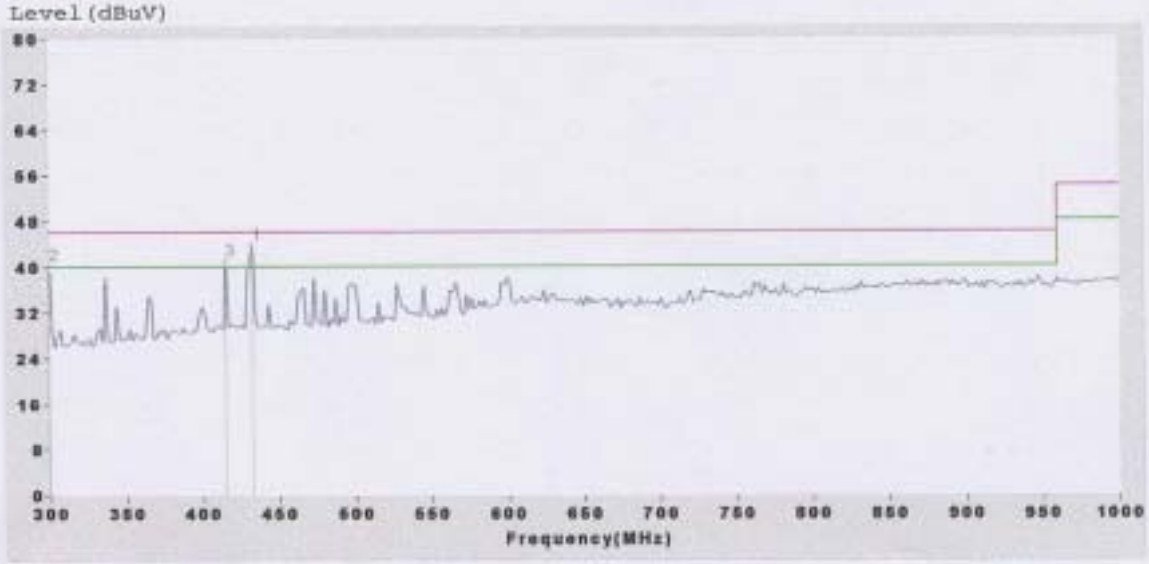
Part2: 300Mhz- 1Ghz(H)

SGS EMC Lab. Site 2

EMI TESTING REPORT

Customer:瑞朋
Model :WSWALl
Spec. :N/A
Ser. No.:N/A
Limit :FCC B

Date:2002-12-09 Time:16:06
Polar. :Horizontal- 3M
Report No.:A0009
File :-1
Tester :Gallon
Tmp.(C):23.0 Humid.(%):65




MEMO:

| | | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Factor | Other Factor |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dB | dB | dB | dB | dB | dB | dB |
| ! | 1 | 433.00 | 43.81 | -2.19 | 46.00 | 25.97 | 16.16 | 1.68 | 0.00 |
| ! | 2 | 300.00 | 40.18 | -5.82 | 46.00 | 25.60 | 13.34 | 1.24 | 0.00 |
| ! | 3 | 415.50 | 40.97 | -5.03 | 46.00 | 23.35 | 15.98 | 1.64 | 0.00 |

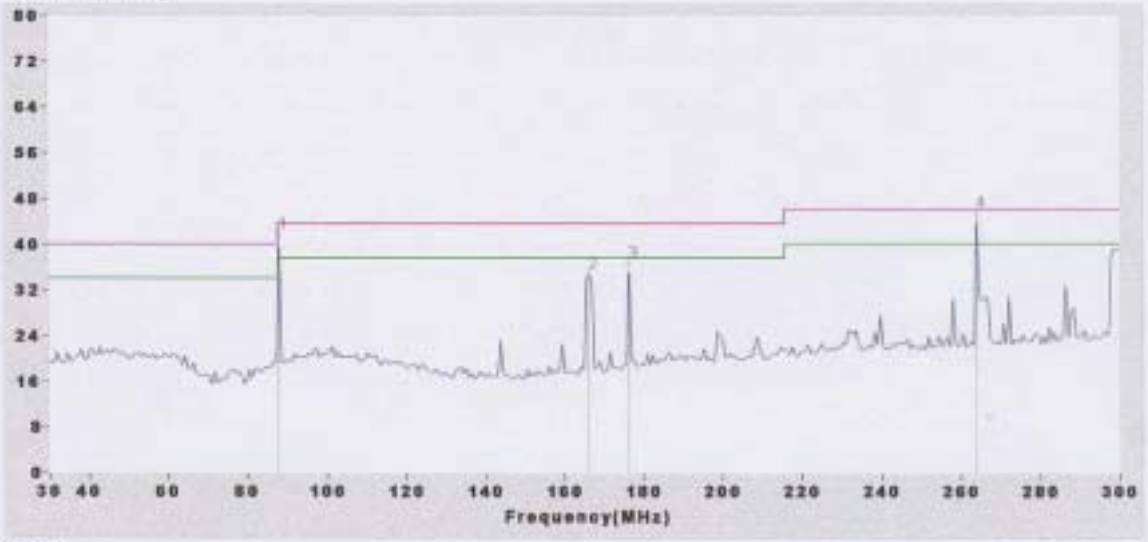
Part 3: 30Mhz-300Mhz(V)

SGS EMC Lab. Site 2

EMI TESTING REPORT

Customer:瑞朋
Model :WSWAL1
Spec. :N/A
Ser. No.:N/A
Limit :FCC B

Date:2002-12-09 Time:16:09
Polar. :Vertical- 3M
Report No.:A0009
File :-1
Tester :Gallon
Tmp.(C):23.0 Humid.(%):65




MEMO:

| | | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Factor | Other Factor |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dB | dB | dB | dB | dB | dB | dB |
| ! | 1 | 88.05 | 41.72 | -1.78 | 43.50 | 30.58 | 10.43 | 0.71 | 0.00 |
| | 2 | 166.35 | 34.62 | -8.88 | 43.50 | 25.43 | 8.29 | 0.91 | 0.00 |
| | 3 | 176.47 | 36.71 | -6.79 | 43.50 | 26.81 | 8.96 | 0.93 | 0.00 |
| ! | 4 | 264.23 | 45.49 | -0.51 | 46.00 | 32.06 | 12.28 | 1.15 | 0.00 |

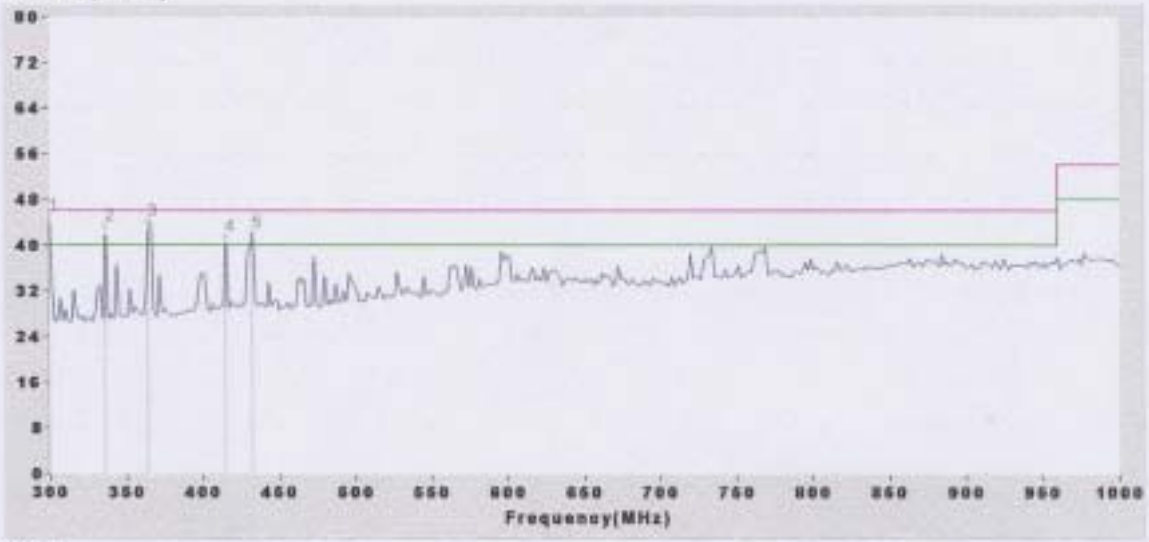
Part4: 300Mhz- 1Ghz(V)

SGS EMC Lab. Site 2

EMI TESTING REPORT

Customer:瑞朋
Model :WSWAL1
Spec. :N/A
Ser. No.:N/A
Limit :FCC B

Date:2002-12-09 Time:16:12
Polar. :Vertical- 3M
Report No.:A0009
File :-1
Tester :Gallon
Tmp.(C):23.0 Humid.(%):65




MEMO:

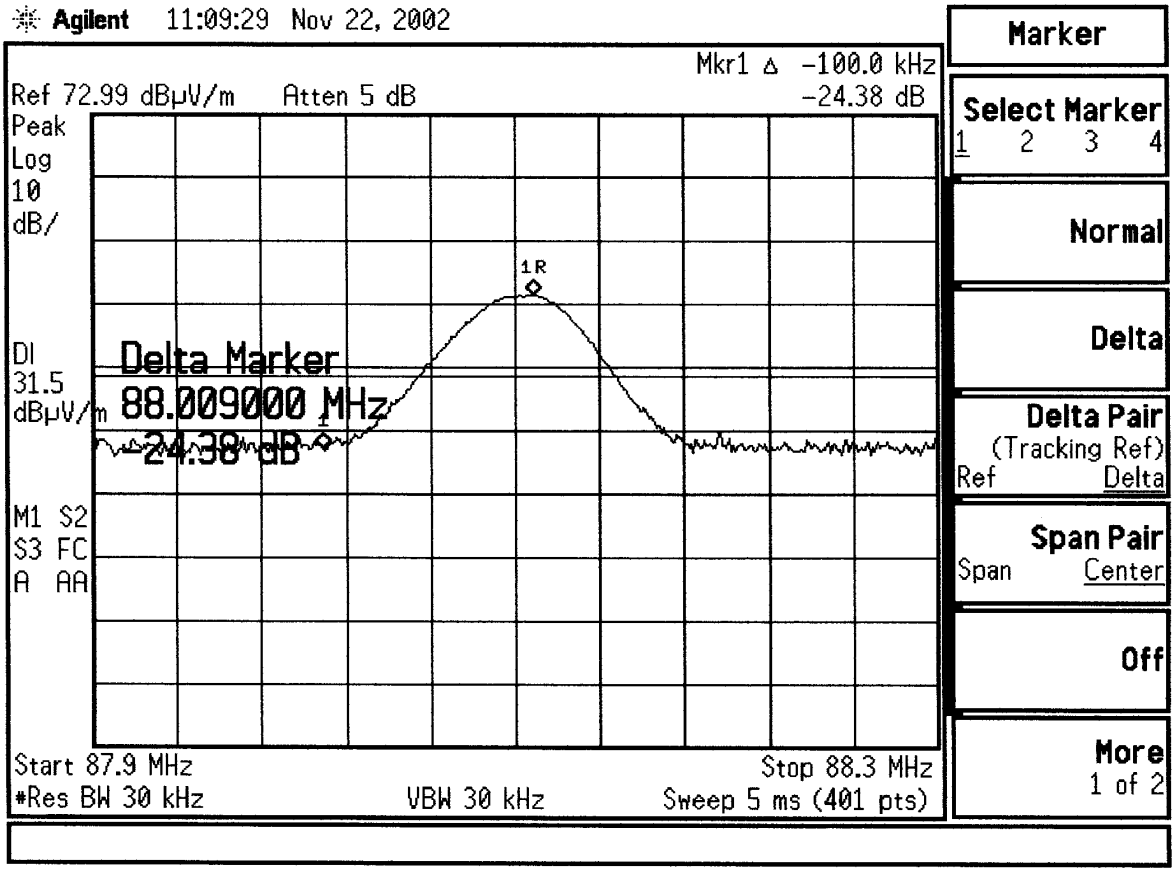
| | | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Factor | Other Factor |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dB | dB | dB | dB | dB | dB | dB |
| ! | 1 | 300.00 | 45.20 | -0.80 | 46.00 | 30.62 | 13.34 | 1.24 | 0.00 |
| ! | 2 | 336.75 | 43.36 | -2.64 | 46.00 | 27.58 | 14.40 | 1.37 | 0.00 |
| ! | 3 | 364.75 | 44.17 | -1.83 | 46.00 | 27.74 | 14.96 | 1.47 | 0.00 |
| ! | 4 | 415.50 | 41.47 | -4.53 | 46.00 | 23.85 | 15.98 | 1.64 | 0.00 |
| ! | 5 | 433.00 | 42.15 | -3.85 | 46.00 | 24.30 | 16.16 | 1.68 | 0.00 |

### 4.2.1 Limits

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) | 300 |
| 0.490 - 1.705 | 24000/F(kHz) | 30 |
| 1.705 - 30.0 | 30 | 30 |
| 30 - 88 | 100 ** | 3 |
| 88 - 216 | 150 ** | 3 |
| 216 - 960 | 200 ** | 3 |
| Above 960 | 500 | 3 |

## 4.3 Frequency range of 88MHz-108MHz SUBCLAUSE 15.239(a)

**(a) Emissions From the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency, The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz**

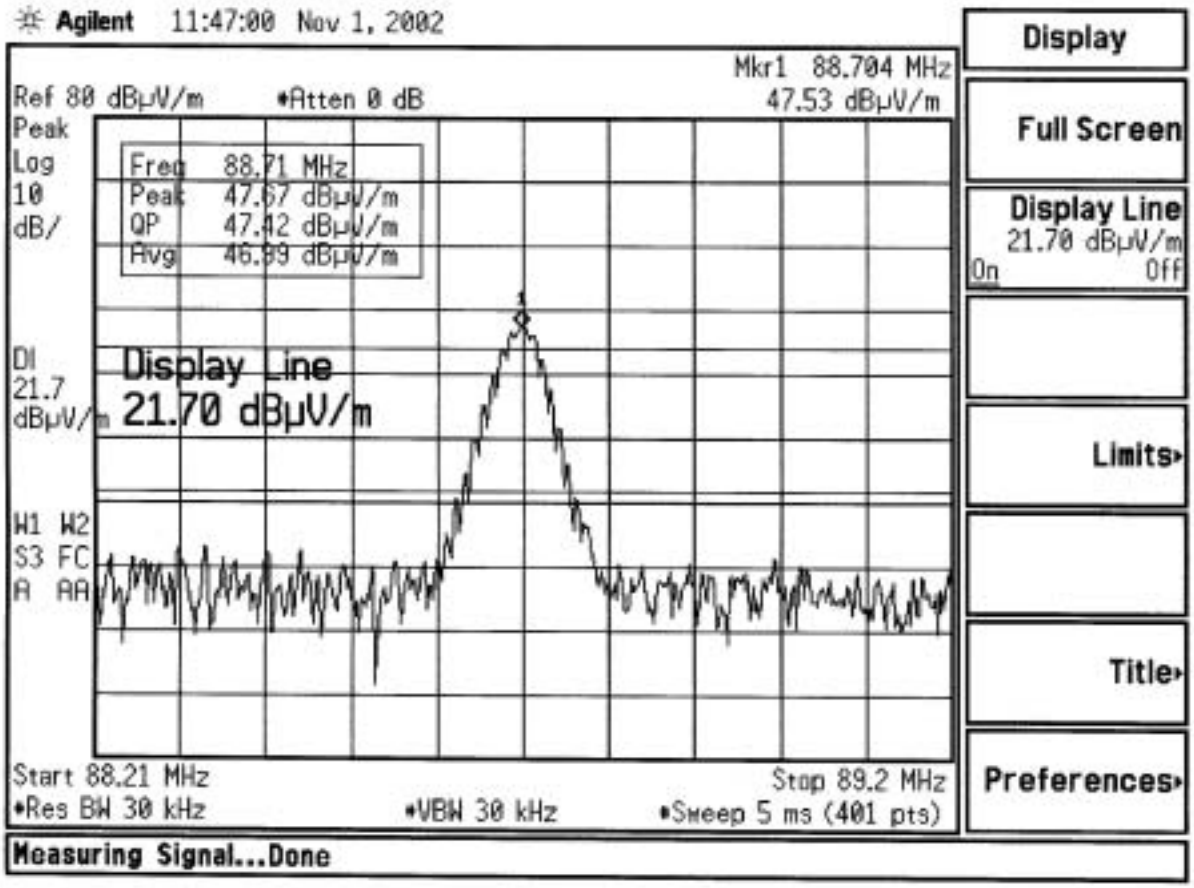



**Center Freq: f=88.1009MHz**

**Lower Band edge at 200khz bandwidth f=88.009MHz**

## 4.4 Main frequency field strength SUBCLAUSE 15.239(b)

**(b) The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.The provisions in Section 15.35 for limiting peak emissions apply.**



## APPENDIX: Photographs of Test Setup

**The photos are saved separately**

## APPENDIX : Photographs of EUT

**OUT**

**The photos are saved separately**

**IN**

**The photos are saved separately**