

Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 1 of 91

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

**Product Name:** outdoor b/g AP

**Brand Name:** LanReady, Edimax, 4ipnet, Cipherium, USC,

**NetField** 

**Model Name:** WCB-1000H2PZ, WCB-1010H2PZ,

WCB-1015H2PZ, EW-7301APg,

EW-7302APg, CPE100, CPE110, CPE115,

A500, A510, A515

**Model Different:** Model different for various Antenna type /

gain supply various marketing require.

**FCC ID:** SCD020035

**Report No.:** ER/2008/40043

**Issue Date:** May 05, 2008

**Rule Part: §15.247** 

**Prepared for:** LanReady Technologies Inc.

3F, No. 116, Sinhu 2nd Rd., Neihu District,

Taipei City 114, Taiwan

Prepared by: SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

No. 134, Wu Kung Rd., Wuku Industrial

Zone, Taipei County, Taiwan





0513

**Note:** This report shall not be reproduced except in full, without the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section of the document.

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 2 of 91

# VERIFICATION OF COMPLIANCE

**Applicant:** LanReady Technologies Inc.

3F, No. 116, Sinhu 2nd Rd., Neihu District, Taipei City 114, Taiwan

**Equipment Under Test:** outdoor b/g AP

**Brand Name:** LanReady, Edimax, 4ipnet, Cipherium, USC, NetField

WCB-1000H2PZ, WCB-1010H2PZ, WCB-1015H2PZ, EW-7301APg, Model No.:

EW-7302APg, CPE100, CPE110, CPE115, A500, A510, A515

**Model Difference:** Model different for Various Antenna type / gain supply various marketing

require.

FCC ID: SCD020035

File Number: ER/2008/40043

Date of test: Apr. 15, 2008 ~ May 05, 2008

**Date of EUT Received:** Apr. 15, 2008

# We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247.

The test results of this report relate only to the tested sample identified in this report.

| Test By:     | Jazz Huang                 | Date | May 05, 2008 |  |
|--------------|----------------------------|------|--------------|--|
|              | Jazz Huang / Engineer      |      |              |  |
| Prepared By: | Evaloro                    | Date | May 05, 2008 |  |
|              | Eva Kao / Asst. Supervisor |      |              |  |
| Approved By: | Timent Su                  | Date | May 05, 2008 |  |
| _            | Vincent Su / Manager       |      |              |  |

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 3 of 91

# Version

| Version No. | Date         |
|-------------|--------------|
| 00          | May 05, 2008 |
|             |              |
|             |              |

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,受責,管轄權告明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 4 of 91

# **Table of Contents**

| 1. | GEN  | ERAL INFORMATION                 | 6  |
|----|------|----------------------------------|----|
|    | 1.1. | General:                         | ε  |
|    | 1.2. | Related Submittal(s) / Grant (s) | 8  |
|    | 1.3. | Test Methodology                 | 8  |
|    | 1.4. | Test Facility                    | 8  |
|    | 1.5. | Special Accessories              | 8  |
|    | 1.6. | Equipment Modifications          | 8  |
| 2. | SYST | TEM TEST CONFIGURATION           | 9  |
|    | 2.1. | EUT Configuration                | 9  |
|    | 2.2. | EUT Exercise                     | 9  |
|    | 2.3. | Test Procedure                   | 9  |
|    | 2.4. | Configuration of Tested System   | 10 |
| 3. | SUM  | MARY OF TEST RESULTS             | 11 |
| 4. | DES  | CRIPTION OF TEST MODES           | 11 |
| 5. | CON  | DUCTED EMISSION TEST             | 12 |
|    | 5.1. | Standard Applicable              | 12 |
|    | 5.2. | EUT Setup                        | 12 |
|    | 5.3. | Measurement Procedure            | 12 |
|    | 5.4. | Measurement Equipment Used:      | 13 |
|    | 5.5. | Measurement Result               | 13 |
| 6. | PEA  | K OUTPUT POWER MEASUREMENT       | 16 |
|    | 6.1. | Standard Applicable              | 16 |
|    | 6.2. | Measurement Procedure            | 17 |
|    | 6.3. | Measurement Equipment Used:      | 17 |
|    | 6.4. | Measurement Result               | 18 |
| 7. | 6dB  | Bandwidth                        | 19 |
|    | 7.1. | Standard Applicable              | 23 |
|    | 7.2. | Measurement Procedure            | 23 |
|    | 7.3. | Measurement Equipment Used:      | 23 |
|    | 7.4. | Measurement Result               | 24 |

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 5 of 91

| 8.  | 100K  | Hz BANDWIDTH OF BAND EDGES MEASUREMENT       | 29         |
|-----|-------|--|------------|
|     | 8.1.  | Standard Applicable                          | 29         |
|     | 8.2.  | Measurement Procedure                        | 29         |
|     | 8.3.  | Measurement Equipment Used:                  | 29         |
|     | 8.4.  | Measurement Result                           | 29         |
| 9.  | SPUR  | RIOUS RADIATED EMISSION TEST                 | 38         |
|     | 9.1.  | Standard Applicable                          |            |
|     | 9.2.  | EUT Setup                                    | 40         |
|     | 9.3.  | Measurement Procedure                        | 40         |
|     | 9.4.  | Test SET-UP (Block Diagram of Configuration) | 41         |
|     | 9.5.  | Measurement Equipment Used:                  | 42         |
|     | 9.6.  | Field Strength Calculation                   | 42         |
|     | 9.7.  | Measurement Result                           | 42         |
| 10. | Peak  | Power Spectral Density                       | 61         |
|     | 10.1. | -  |            |
|     | 10.2. | Measurement Procedure                        | 85         |
|     | 10.3. | Measurement Equipment Used:                  | 85         |
|     | 10.4. | Measurement Result                           | 86         |
| 11. | ANTI  | ENNA REQUIREMENT                             | 91         |
|     | 11.1. | Standard Applicable                          |            |
|     | 11.2  | Antenna Connected Construction               | <b>Q</b> 1 |



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 6 of 91

# **GENERAL INFORMATION**

### 1.1. General:

| Product Name:     | outdoor b/g AP   |
|-------------------|--|
| Brand Name:       | LanReady, Edimax, 4ipnet, Cipherium, USC, NetField   |
| Model Number:     | WCB-1000H2PZ, WCB-1010H2PZ, WCB-1015H2PZ, EW-7301APg, EW-7302APg, CPE100, CPE110, CPE115, A500, A510, A515 |
| Model Difference: | Model different for Various Antenna type / gain supply various marketing require.                          |
| Power Supply:     | 48Vdc for AC/DC Adapter, model: A5-20S48-V   |
| Hardware Version: | N/A  |
| Software Version: | N/A  |

**Model different description** 

| Brand Name/Trade name | Model No     | Antenna type                                     |  |
|-----------------------|--------------|--|--|
| LanReady              | WCB-1000H2PZ |  |  |
| Edimax                | EW-7301APg   |  |  |
| 4ipnet                | CPE100       | Detachable Dipole antenna,                       |  |
| Cipherium             |              | Antenna Gain 4.31dBi                             |  |
| USC                   | A500         |  |  |
| NetField              |              |  |  |
| LanReady              | WCB-1010H2PZ |  |  |
| Edimax                | EW-7302APg   |  |  |
| 4ipnet                | CPE110       | Integral PCB type antenna,                       |  |
| Cipherium             |              | Antenna Gain 6.02dBi                             |  |
| USC                   | A510         |  |  |
| NetField              |              |  |  |
| LanReady              | WCB-1015H2PZ |  |  |
| 4ipnet                | CPE115       | 1.000  |  |
| Cipherium             |              | Integral PCB type antenna, Antenna Gain 14.36dBi |  |
| USC                   | A515         | 7 moma Gam 17.50dbi                              |  |
| NetField              |              |  |  |

Refer to antenna specification for details.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 7 of 91

# 802.11 b/g WLAN AP:

| Frequency Range & Channel number: | 2412 – 2462 MHz, 11 channels                                       |
|-----------------------------------|--|
| Rated Power:                      | 802.11 b: 17.65 dBm (peak)<br>802.11 g: 15.84 dBm (peak)           |
| Modulation type:                  | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM    |
| Transmission Rate:                | 802.11 b: 1/2/5.5/11 Mbps;<br>802.11 g: 6/9/12/18/24/36/48/54 Mbps |
| Antenna Designation:              | PCB Antenna*2: 14.36dBi and 6.02dBi<br>Dipole Antenna: 4.31 dBi    |
| Type of Emission:                 | 802.11 b: 10M1G1D<br>802.11 g: 15M6D1D                             |

#### Antenna List

| Antenna List |                  |                |  |
|--------------|------------------|----------------|--|
| Item no.     | Model/Type       |                |  |
|              | Antenna Type     | Dipole Antenna |  |
| A , 1        | model:           | AN2405FO-M     |  |
| Antenna 1    | Frequency Range: | 2400 ~2500MHZ  |  |
|              | Antenna Gain:    | 4.31dBi        |  |
|              | Antenna Type     | PCB Antenna    |  |
| A            | Manufacture:     | N/A            |  |
| Antenna 2    | Frequency Range: | 2400 ~2500MHZ  |  |
|              | Antenna Gain:    | 6.02dBi        |  |
|              | Antenna Type     | PCB Antenna    |  |
| A            | Manufacture:     | N/A            |  |
| Antenna 3    | Frequency Range: | 2400 ~2500MHZ  |  |
|              | Antenna Gain:    | 14.36dBi       |  |

The EUT is compliance with IEEE 802.11 b/g Standard.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 8 of 91

## 1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.247 of the FCC Part 15, Subpart C Rules. The composite system (digital device) is compliance with Subpart B is authorized under a Doc procedure.

## 1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

# 1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-1

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

# 1.5. Special Accessories

Not available for this EUT intended for grant.

## 1.6. Equipment Modifications

Not available for this EUT intended for grant.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 9 of 91

# SYSTEM TEST CONFIGURATION

# 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### 2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

#### 2.3. Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna. according to the requirements in Section 8 and 13 and Subclause 8.3.1.2 of ANSI C63.4-2003.

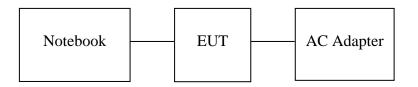


Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 10 of 91

# 2.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



**Table 2-1 Equipment Used in Tested System** 

| Item | Equipment     | Mfr/Brand | Model/<br>Type No.                    | FCC ID | Series No. | Data Ca-<br>ble | Power<br>Cord |
|------|---------------|-----------|---------------------------------------|--------|------------|-----------------|---------------|
| 1.   | Notebook      | IBM       | T40                                   | N/A    | 99HCYF4    | Shielded        | Un-shield     |
| 2.   | Test software | ART       | Revision 8.0<br>build # 31<br>ART_11n | N/A    | N/A        | N/A             | N/A           |

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 11 of 91

# SUMMARY OF TEST RESULTS

| FCC Rules             | Description Of Test              | Result    |
|-----------------------|----------------------------------|-----------|
| §15.207(a)            | AC Power Line Conducted Emission | Compliant |
| §15.247(b) (3),(4)(c) | Peak Output Power                | Compliant |
| §15.247(a)(2)         | 6dB Bandwidth                    | Compliant |
|                       | 100 KHz Bandwidth Of             |           |
| §15.247(d)            | Frequency Band Edges             | Compliant |
| §15.247(d)            | Spurious Emission                | Compliant |
| §15.247(e)            | Peak Power Density               | Compliant |
| §15.203               | Antenna Requirement              | Compliant |

# 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Test program was used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

802.11 b mode: Channel low (2412MHz) · mid (2437MHz) and high (2462MHz) with 1 and 11Mbps data rate were chosen for full testing. The Worst case 1Mbps was reported for radiated spurious emission.

802.11 g mode: Channel low (2412MHz) · mid (2437MHz) and high (2462MHz) with 6 and 54Mbps data rate were chosen for full testing. The Worst case 6Mbps was reported for radiated spurious emission.

There are two type of antenna, PCB and Dipole. The field strength of radiated emission was measured with max gain of each type antennas.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 12 of 91

# **CONDUCTED EMISSION TEST**

# 5.1. Standard Applicable

According to §15.207. frequency within 150KHz to 30MHz shall not exceed the Limit table as below.

| Frequency range |            | nits<br>(uV) |
|-----------------|------------|--------------|
| MHz             | Quasi-peak | Average      |
| 0.15 to 0.50    | 66 to 56   | 56 to 46     |
| 0.50 to 5       | 56         | 46           |
| 5 to 30         | 60         | 50           |

#### Note

# 5.2. EUT Setup

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2003.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The LISN was connected with 110Vac/60Hz power source.

#### **5.3.** Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- **3.** Repeat above procedures until all frequency measured were complete.

<sup>1.</sup> The lower limit shall apply at the transition frequencies

<sup>2.</sup> The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 13 of 91

# 5.4. Measurement Equipment Used:

| Conducted Emission Test Site |            |                         |            |            |            |
|------------------------------|------------|-------------------------|------------|------------|------------|
| EQUIPMENT                    | MFR        | MODEL                   | SERIAL     | LAST       | CAL DUE.   |
| TYPE                         |            | NUMBER                  | NUMBER     | CAL.       |            |
| EMC Analyzer                 | HP         | 8594EM                  | 3624A00203 | 09/02/2007 | 09/03/2008 |
| EMI Test Receiver            | R&S        | ESCS30                  | 828985/004 | 06/09/2007 | 06/10/2008 |
| Transient Limiter            | HP         | 11947A                  | 3107A02062 | 09/02/2007 | 09/03/2008 |
| LISN                         | Rolf-Heine | NNB-2/16Z               | 99012      | 12/31/2007 | 12/30/2008 |
| LISN                         | Rolf-Heine | NNB-2/16Z               | 99013      | 01/10/2008 | 01/09/2009 |
| LISN                         | FCC        | FCC-LISN-50/250-25-2-01 | 04034      | 01/11/2008 | 01/10/2009 |
| Coaxial Cables               | N/A        | N/A                     | CE01       | 01/11/2008 | 01/10/2009 |

## 5.5. Measurement Result

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 14 of 91

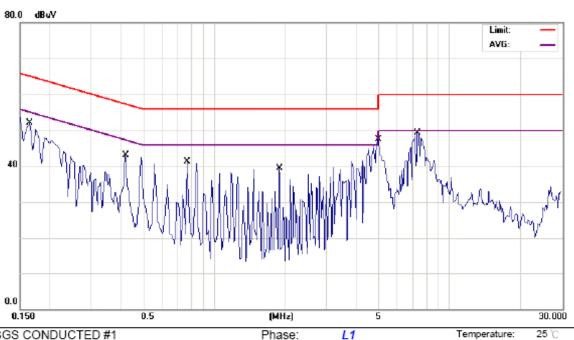
Humidity:

Air Pressure:

57 %

# AC POWER LINE CONDUCTED EMISSION TEST DATA

| Operation Mode: | Operation Mode |           | Test Date: | May 01, 2008 |      |
|-----------------|----------------|-----------|------------|--------------|------|
| Temperature:    | 25 ℃           | Humidity: | 57%        | Test By:     | Jazz |



Power:

Distance:

AC 120V/80Hz

Site SGS CONDUCTED #1

Limit: CISPR22 Class B Conduction(QP)

EUT: outdoor b/g AP

M/N: WCB1000H2 Note: OPERTION mode

| No. Mk. | Freq.  | Reading<br>Level | Factor | Measure-<br>ment | Limit | Over   |          |         |  |
|---------|--------|------------------|--------|------------------|-------|--------|----------|---------|--|
|         | MHz    | dBuV             | dB     | dBuV             | dBuV  | dB     | Detector | Comment |  |
| 1       | 0.1650 | 51.74            | 0.34   | 52.08            | 65.21 | -13.13 | QP       |         |  |
| 2       | 0.4200 | 42.99            | 80.0   | 43.07            | 57.45 | -14.38 | QP       |         |  |
| 3       | 0.7700 | 41.20            | 0.05   | 41.25            | 56.00 | -14.75 | QP       |         |  |
| 4       | 1.8950 | 39.50            | 0.04   | 39.54            | 56.00 | -16.46 | QP       |         |  |
| 5       | 4.9850 | 46.60            | 0.05   | 46.65            | 56.00 | -9.35  | QP       |         |  |
| 6 *     | 4.9850 | 44.00            | 0.05   | 44.05            | 46.00 | -1.95  | AVG      |         |  |
| 7       | 7.3000 | 47.80            | 0.11   | 47.91            | 60.00 | -12.09 | QP       |         |  |

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。

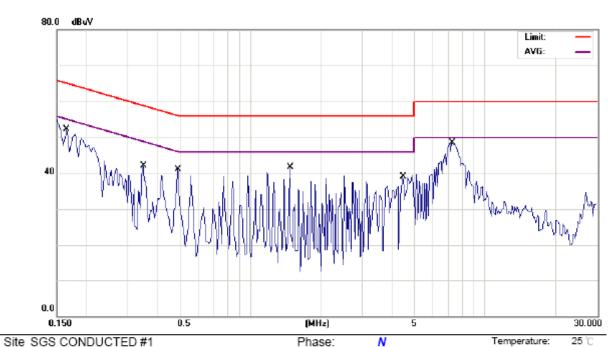


Report No.: ER/2008/40043 Issue Date: May 05, 2008

Humidity:

Air Pressure:

Page: 15 of 91



Power:

Distance:

AC 120V/60Hz

Limit: CISPR22 Class B Conduction(QP)

EUT: outdoor b/g AP

M/N: WCB1000H2 Note: OPERTION mode

| No. Mk. | Freq.  | Reading<br>Level | Factor | Measure-<br>ment | Limit | Over   |          |         |  |
|---------|--------|------------------|--------|------------------|-------|--------|----------|---------|--|
|         | MHz    | dBuV             | dB     | dBuV             | dBuV  | dB     | Detector | Comment |  |
| 1       | 0.1650 | 52.06            | 0.32   | 52.38            | 65.21 | -12.83 | QP       |         |  |
| 2       | 0.3500 | 42.05            | 0.10   | 42.15            | 58.96 | -16.81 | QP       |         |  |
| 3       | 0.4900 | 41.08            | 0.05   | 41.13            | 56.17 | -15.04 | QP       |         |  |
| 4       | 1.4750 | 41.64            | 0.03   | 41.67            | 56.00 | -14.33 | QP       |         |  |
| 5       | 4.4900 | 39.05            | 0.05   | 39.10            | 56.00 | -16.90 | QP       |         |  |
| 6 *     | 7.2200 | 48.33            | 0.15   | 48.48            | 60.00 | -11.52 | QP       |         |  |



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 16 of 91

# PEAK OUTPUT POWER MEASUREMENT

# 6.1. Standard Applicable

According to  $\S15.247(a)(2)$ , (b)

- (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and
- 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
- (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (c) Operation with directional antenna gains greater than 6 dBi.
- (1) Fixed point-to-point operation:
- (i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for

fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(ii) Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

Output power limitation calculation:

Max antenna gain is 14.36dBi

(14.36-6)/3=3

30 dBm - 3 dB = 27 dBm

This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sqs.com">www.sqs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 17 of 91

### **6.2.** Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum. (Channel power function, RBW= 1MHz, VBW = 3MHz, Bandwidth=26dB occupied Bandwidth)
- 3. Record the max. reading.
- 4. Repeat above procedures until all frequency measured were complete.

# 6.3. Measurement Equipment Used:

|                   | Conducted Emission Test Site |                    |            |            |            |  |  |  |  |  |  |
|-------------------|------------------------------|--------------------|------------|------------|------------|--|--|--|--|--|--|
| EQUIPMENT         | MFR                          | MODEL              | SERIAL     | LAST       | CAL DUE.   |  |  |  |  |  |  |
| TYPE              |                              | NUMBER             | NUMBER     | CAL.       |            |  |  |  |  |  |  |
| Spectrum Analyzer | Agilent                      | E4446A             | MY43360126 | 04/27/2007 | 04/27/2008 |  |  |  |  |  |  |
| Spectrum Analyzer | Agilent                      | E7405A             | US41160416 | 07/04/2007 | 07/03/2008 |  |  |  |  |  |  |
| Low Loss Cable    | HUBER+SUHNER                 | SUCOFLEX<br>104PEA | N/A        | N/A        | N/A        |  |  |  |  |  |  |
| Splitter          | Agilent                      | 11667B             | N/A        | 09/23/2007 | 09/22/2008 |  |  |  |  |  |  |
| Attenuator        | Mini-Circuit                 | BW-S6W5            | N/A        | 01/05/2008 | 01/04/2009 |  |  |  |  |  |  |



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 18 of 91

# 6.4. Measurement Result

## **Test Results (802.11b) 1M:**

| СН   | Frequency<br>(MHz) | Reading<br>Power<br>( dBm) | Cable<br>Loss<br>(dB) | Output<br>Power<br>(dBm) | Limit (dBm) | Result |
|------|--------------------|----------------------------|-----------------------|--------------------------|-------------|--------|
| LOW  | 2412.00            | 17.65                      | 0.00                  | 17.65                    | 27          | PASS   |
| MID  | 2437.00            | 17.41                      | 0.00                  | 17.41                    | 27          | PASS   |
| HIGH | 2462.00            | 17.47                      | 0.00                  | 17.47                    | 27          | PASS   |

offset: 0.1dB

# Test Results (802.11g) 6M:

| СН   | Frequency<br>(MHz) | Reading<br>Power<br>( dBm) | Cable<br>Loss<br>(dB) | Output<br>Power<br>(dBm) | Limit (dBm) | Result |
|------|--------------------|----------------------------|-----------------------|--------------------------|-------------|--------|
| LOW  | 2412.00            | 15.84                      | 0.00                  | 15.84                    | 27          | PASS   |
| MID  | 2437.00            | 15.11                      | 0.00                  | 15.11                    | 27          | PASS   |
| HIGH | 2462.00            | 15.10                      | 0.00                  | 15.10                    | 27          | PASS   |

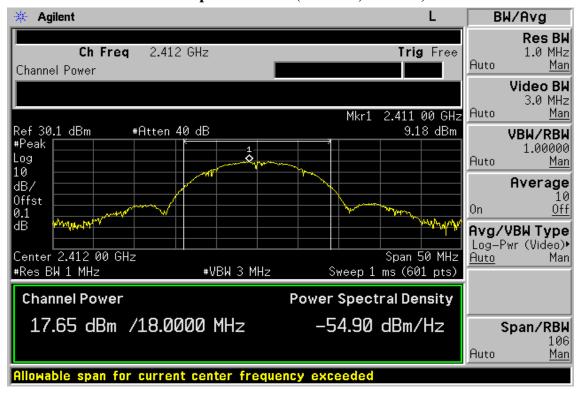
offset: 0.1dB



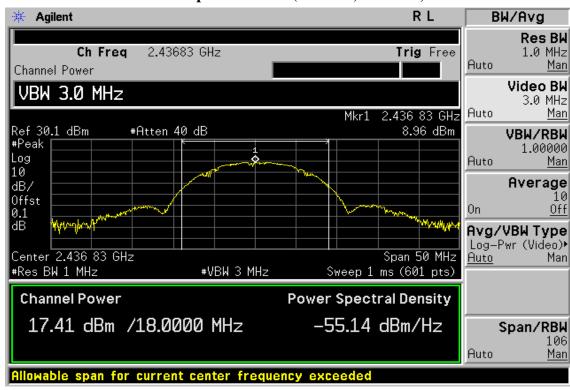
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 19 of 91

## Peak Power Output Data Plot (CH Low) 802.11b, 1M mode



#### Peak Power Output Data Plot (CH Mid) 802.11b, 1M mode



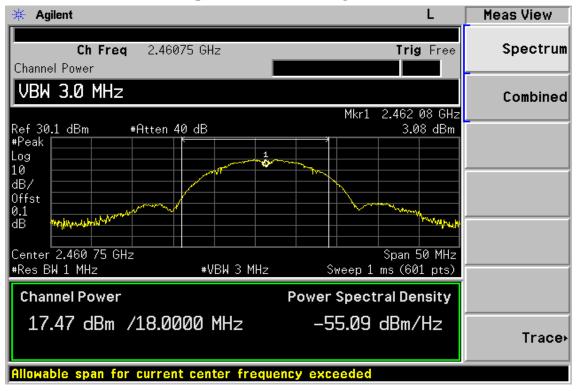
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 20 of 91

# Peak Power Output Data Plot (CH High) 802.11b, 1M mode

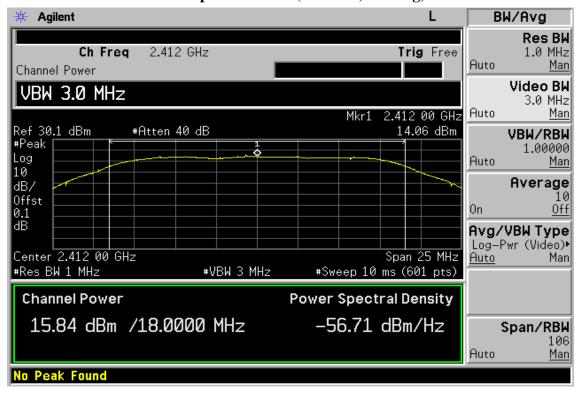




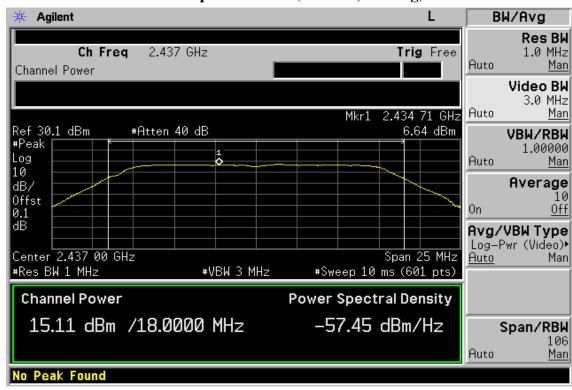
Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 21 of 91

## Peak Power Output Data Plot (CH Low) 802.11g, 6M mode



#### Peak Power Output Data Plot (CH Mid) 802.11g, 6M mode



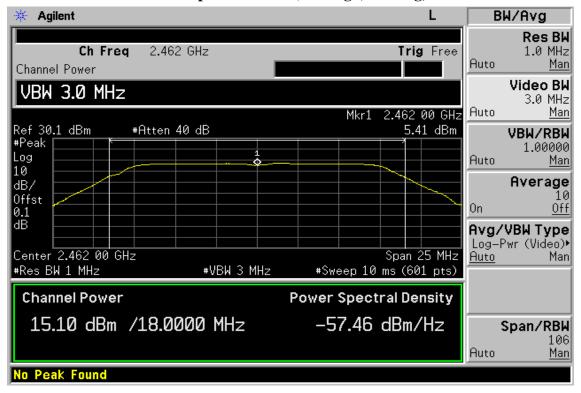
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 22 of 91

## Peak Power Output Data Plot (CH High) 802.11g, 6M mode





Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 23 of 91

# 7. 6dB Bandwidth

# 7.1. Standard Applicable

According to §15.247(a)(2), Systems using digital modulation techniques may operate in the 902 - 928 MHz,2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

#### 7.2. Measurement Procedure

- 1.Place the EUT on the table and set it in transmitting mode.
- 2.Remove the antenna from the EUT and then connect a low loss RF cable from the 3.antenna port to the spectrum analyzer.
- 3.Set the spectrum analyzer as RBW=1% bandwidth, VBW =3\* RBW, Span= 50MHz, Sweep=auto
- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat above procedures until all frequency measured were complete.

# 7.3. Measurement Equipment Used:

|                   | Conducted Emission Test Site |                    |            |            |            |  |  |  |  |  |  |
|-------------------|------------------------------|--------------------|------------|------------|------------|--|--|--|--|--|--|
| EQUIPMENT         | MFR                          | MODEL              | SERIAL     | LAST       | CAL DUE.   |  |  |  |  |  |  |
| TYPE              |                              | NUMBER             | NUMBER     | CAL.       |            |  |  |  |  |  |  |
| Spectrum Analyzer | Agilent                      | E4446A             | MY43360126 | 04/27/2007 | 04/27/2008 |  |  |  |  |  |  |
| Spectrum Analyzer | Agilent                      | E7405A             | US41160416 | 07/04/2007 | 07/03/2008 |  |  |  |  |  |  |
| Splitter          | Agilent                      | 11667B             | N/A        | 09/23/2007 | 09/22/2008 |  |  |  |  |  |  |
| Low Loss Cable    | HUBER+SUHNER                 | SUCOFLEX<br>104PEA | N/A        | N/A        | N/A        |  |  |  |  |  |  |
| Attenuator        | Mini-Circuit                 | BW-S6W5            | N/A        | 01/05/2008 | 01/04/2009 |  |  |  |  |  |  |



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 24 of 91

# 7.4. Measurement Result

## **Test Results (802.11b) 1M:**

| results (out-lis) livi. |                 |                             |        |  |  |  |  |  |  |  |
|-------------------------|-----------------|-----------------------------|--------|--|--|--|--|--|--|--|
| СН                      | Bandwidth (MHz) | Limit<br>Bandwidth<br>(KHz) | Result |  |  |  |  |  |  |  |
| 2412                    | 10.130          | > 500                       | PASS   |  |  |  |  |  |  |  |
| 2437                    | 9.205           | > 500                       | PASS   |  |  |  |  |  |  |  |
| 2462                    | 9.197           | > 500                       | PASS   |  |  |  |  |  |  |  |

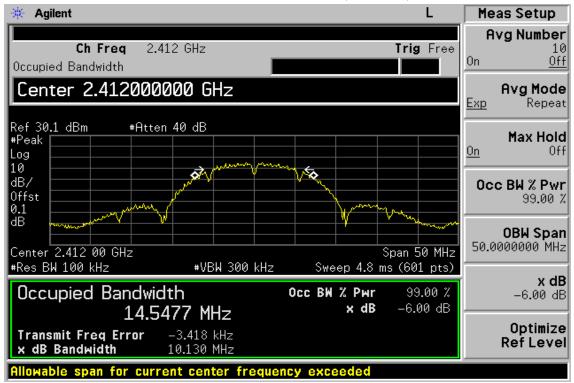
## **Test Results (802.11g) 6M:**

| 7 2100 62200 (0 0 2022 8) |                 |                             |        |
|---------------------------|-----------------|-----------------------------|--------|
| СН                        | Bandwidth (MHz) | Limit<br>Bandwidth<br>(KHz) | Result |
| 2412                      | 15.573          | > 500                       | PASS   |
| 2437                      | 15.231          | > 500                       | PASS   |
| 2462                      | 15.461          | > 500                       | PASS   |

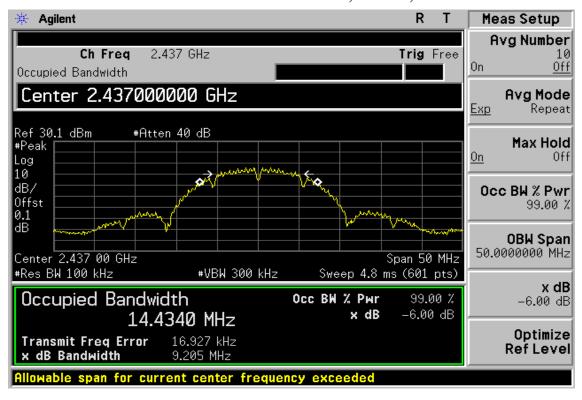
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 25 of 91

# 6dB Band Width Test Data CH-Low, 802.11b, 1M mode



## 6dB Band Width Test Data CH-Mid, 802.11b, 1M mode



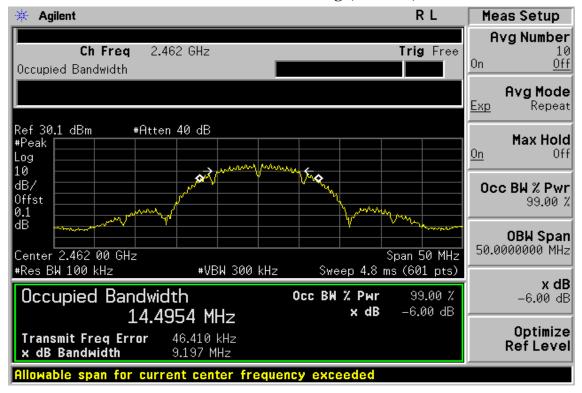
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 26 of 91

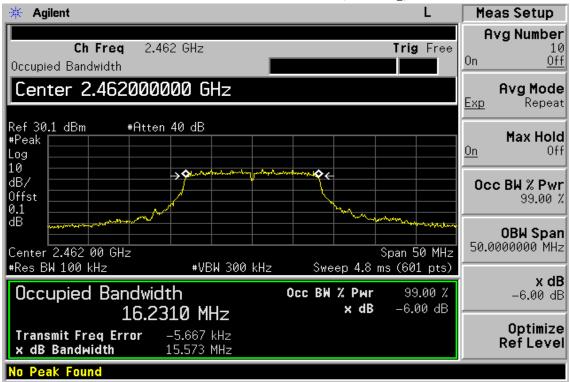
# 6dB Band Width Test Data CH-High, 802.11b, 1M mode



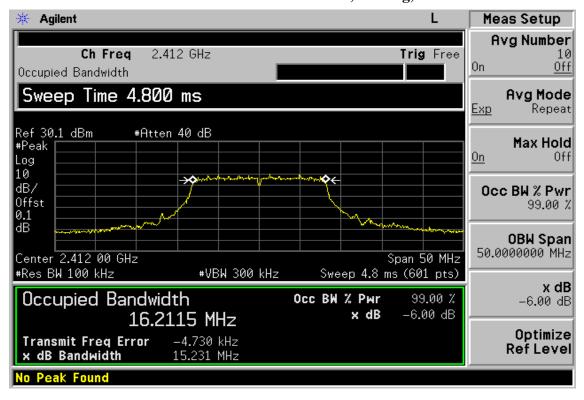
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 27 of 91

# 6dB Band Width Test Data CH-Low, 802.11g, 6M mode



## 6dB Band Width Test Data CH-Mid, 802.11g, 6M mode



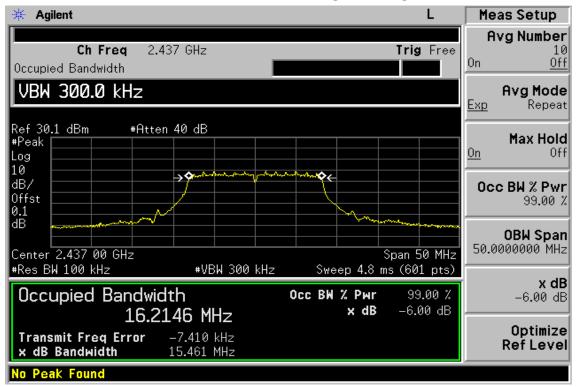
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 28 of 91

# 6dB Band Width Test Data CH-High, 802.11g, 6M mode





Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 29 of 91

## 100KHz BANDWIDTH OF BAND EDGES MEASUREMENT

# 8.1. Standard Applicable

According to §15.247(c), in any 100 KHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

#### 8.2. Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set center frequency of spectrum analyzer = operating frequency.
- 4. Set the spectrum analyzer as RBW, VBW=100KHz, Span=30MHz, Sweep = auto
- 5. Mark Peak, 2.390GHz and 2.4835GHz and record the max. level.
- 6. Repeat above procedures until all frequency measured were complete.

# 8.3. Measurement Equipment Used:

|                   | Conducted Emission Test Site |                    |            |            |            |  |  |  |  |  |  |
|-------------------|------------------------------|--------------------|------------|------------|------------|--|--|--|--|--|--|
| EQUIPMENT         | EQUIPMENT MFR                |                    | SERIAL     | LAST       | CAL DUE.   |  |  |  |  |  |  |
| ТҮРЕ              |                              | NUMBER             | NUMBER     | CAL.       |            |  |  |  |  |  |  |
| Spectrum Analyzer | Agilent                      | E4446A             | MY43360126 | 04/27/2007 | 04/27/2008 |  |  |  |  |  |  |
| Spectrum Analyzer | Agilent                      | E7405A             | US41160416 | 07/04/2007 | 07/03/2008 |  |  |  |  |  |  |
| Splitter          | Agilent                      | 11667B             | N/A        | 09/23/2007 | 09/22/2008 |  |  |  |  |  |  |
| Low Loss Cable    | HUBER+SUHNER                 | SUCOFLEX<br>104PEA | N/A        | N/A        | N/A        |  |  |  |  |  |  |
| Attenuator        | Mini-Circuit                 | BW-S6W5            | N/A        | 01/05/2008 | 01/04/2009 |  |  |  |  |  |  |

## 8.4. Measurement Result

Refer to attach spectrum analyzer data chart.



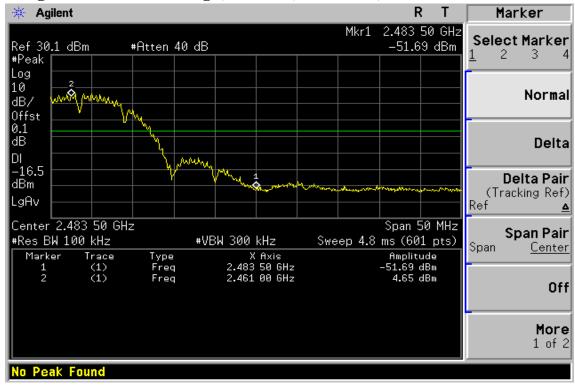
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 30 of 91

# Band Edges Test Data CH-Low, 802.11b, 1M mode, Conducted



# Band Edges Test Data CH-High, 802.11b, 1M mode, Conducted



This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 31 of 91

## Radiated Emission: Antenna 1

Operation Mode TX CH Low 802.11b mode 1M Test Date Apr. 30, 2008

Fundamental Frequency 2412 MHz Test By Jazz Temperature  $25^{\circ}$ C Pol Ver.

Humidity 65 %

|  | Peak        | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|--|-------------|---------------|---------|----------|---------------|----------|---------------|---------------|--------|
| Freq.                                    | Reading     | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)                                    | (dBuV)      | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m       | ( <b>dB</b> ) |        |
| 2390.00                                  | 58.47       | 49.57         | -1.39   | 57.08    | 48.18         | 74.00    | 54.00         | -5.82         | AV     |
| 2385.19                                  | 60.21       | 51.14         | -1.46   | 58.75    | 49.68         | 74.00    | 54.00         | -4.32         | AV     |
| Operation Mode TX CH Low 802.11b mode 1M |             |               |         | e 1M     | Test          | t Date   | Apr. 30, 20   | 008           |        |
| Fundamen                                 | tal Frequer | ncy 2412      | MHz     |          |               | Test     | t By          | Jazz          |        |
| Temperatu                                | re          | 25 ℃          |         |          |               | Pol      | ]             | Hor.          |        |
| Humidity                                 |             | 65 %          |         |          |               |          |               |               |        |

|         | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |        |
|---------|---------|---------------|---------|----------|---------------|----------|---------------|--------|--------|
| Freq.   | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin | Remark |
| (MHz)   | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   |        |
| 2390.00 | 59.45   | 49.48         | -1.39   | 58.06    | 48.09         | 74.00    | 54.00         | -5.91  | AV     |
| 2381.19 | 59.02   | 48.70         | -1.46   | 57.56    | 47.24         | 74.00    | 54.00         | -6.76  | AV     |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column When measured Peak value is under AV Limit, It doesn't need to measure AV value again.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 32 of 91

#### **Radiated Emission: Antenna 1**

Operation Mode TX CH High 802.11b mode 1M Test Date Apr. 30, 2008

Fundamental Frequency 2462 MHz Test By Jazz Temperature 25 $^{\circ}$ C Pol Ver.

Humidity 65 %

|                                     | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|-------------------------------------|---------|---------------|---------|----------|---------------|----------|---------------|---------------|--------|
| Freq.                               | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)                               | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m       | ( <b>dB</b> ) |        |
| 2483.50                             | 57.98   | 49.63         | -0.92   | 57.06    | 48.71         | 74.00    | 54.00         | -5.29         | AV     |
| 2488.56                             | 60.65   | 51.80         | -0.86   | 59.79    | 50.94         | 74.00    | 54.00         | -3.06         | AV     |
| Operation Mode TX CH High 802.11b m |         |               |         |          | e 1M          | Test     | Date          | Apr. 30, 20   | 008    |
| Fundamental Frequency 2462 MHz      |         |               |         |          |               | Test By  |               | Jazz          |        |
| Temperatu                           | re      | 25 ℃          |         |          |               | Pol      |               | Hor.          |        |
| Humidity                            |         | 65 %          |         |          |               |          |               |               |        |

|         | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |        |
|---------|---------|---------------|---------|----------|---------------|----------|---------------|--------|--------|
| Freq.   | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin | Remark |
| (MHz)   | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   |        |
| 2483.50 | 59.98   | 49.99         | -0.92   | 59.06    | 49.07         | 74.00    | 54.00         | -4.93  | AV     |
| 2485.19 | 59.73   | 49.68         | -0.92   | 58.81    | 48.76         | 74.00    | 54.00         | -5.24  | AV     |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column When measured Peak value is under AV Limit, It doesn't need to measure AV value again.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 33 of 91

## Radiated Emission: Antenna 3

Operation Mode TX CH Low 802.11b mode 1M Test Date Apr. 30, 2008

Fundamental Frequency 2412 MHz Test By Jazz Temperature 25°C Pol Ver.

Humidity 65 %

|  | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak         | $\mathbf{AV}$ |                     |        |
|--|---------|---------------|---------|----------|---------------|--------------|---------------|---------------------|--------|
| Freq.  | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit        | Limit         | Margin              | Remark |
| (MHz)  | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m)     | (dBuV/m       | ( <b>dB</b> )       |        |
| 2390.00  | 63.27   | 54.34         | -1.39   | 61.88    | 52.95         | 74.00        | 54.00         | -1.05               | AV     |
| 2386.38  | 61.69   | 53.66         | -1.40   | 60.29    | 52.26         | 74.00        | 54.00         | -1.74               | AV     |
| Operation Mode TX CH Low 802.11b<br>Fundamental Frequency 2412 MHz |         |               |         |          | e 1M          | Test<br>Test |               | Apr. 30, 20<br>Jazz | 800    |
| Temperatu  | -       | 25 °C         |         |          |               | Pol          | •             | Hor.                |        |
| Humidity   |         | 65 %          |         |          |               |              |               |                     |        |

|         | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|---------|---------|---------------|---------|----------|---------------|----------|---------------|---------------|--------|
| Freq.   | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)   | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m       | ( <b>dB</b> ) |        |
| 2390.00 | 60.63   | 51.61         | -1.39   | 59.24    | 50.22         | 74.00    | 54.00         | -3.78         | AV     |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column · When measured Peak value is under AV Limit, It doesn't need to measure AV value again.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 34 of 91

## **Radiated Emission: The Worst Mode (Antenna 3)**

Operation Mode TX CH High 802.11b mode 1M Test Date Apr. 30, 2008

Fundamental Frequency 2462 MHz Test By Jazz Temperature  $25^{\circ}\text{C}$  Pol Ver.

Humidity 65 %

|                                | Peak    | $\mathbf{AV}$ |          | Actu       | al FS         | Peak     | $\mathbf{AV}$ |             |        |  |
|--------------------------------|---------|---------------|----------|------------|---------------|----------|---------------|-------------|--------|--|
| Freq.                          | Reading | Reading       | Ant./CL  | Peak       | $\mathbf{AV}$ | Limit    | Limit         | Margin      | Remark |  |
| (MHz)                          | (dBuV)  | (dBuV)        | CF(dB)   | (dBuV/m)   | (dBuV/m)      | (dBuV/m) | (dBuV/n       | (dB)        |        |  |
| 2483.50                        | 56.58   | 48.68         | -0.92    | 55.66      | 47.76         | 74.00    | 54.00         | -6.24       | AV     |  |
| 2488.00                        | 64.29   | 54.03         | -0.86    | 63.43      | 53.17         | 74.00    | 54.00         | -0.83       | AV     |  |
| Operation 1                    | Mode    | TX C          | H High 8 | 02.11b mod | le 1M         | Test     | Date          | Apr. 30, 20 | 800    |  |
| Fundamental Frequency 2462 MHz |         |               |          |            |               |          | Test By       |             | Jazz   |  |
| Temperatu                      | re      | 25 ℃          |          |            |               | Pol      |               | Hor.        |        |  |
| Humidity                       |         | 65 %          |          |            |               |          |               |             |        |  |

|         | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |        |
|---------|---------|---------------|---------|----------|---------------|----------|---------------|--------|--------|
| Freq.   | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin | Remark |
| (MHz)   | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   |        |
| 2483.50 | 59.68   | 50.68         | -0.92   | 58.76    | 49.76         | 74.00    | 54.00         | -4.24  | AV     |
| 2488.00 | 60.31   | 51.77         | -0.86   | 59.45    | 50.91         | 74.00    | 54.00         | -3.09  | AV     |

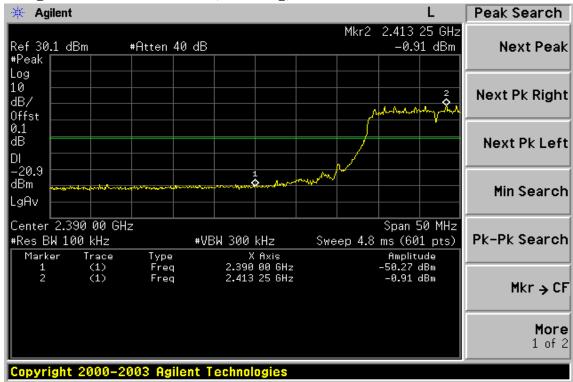
- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column When measured Peak value is under AV Limit, It doesn't need to measure AV value again.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



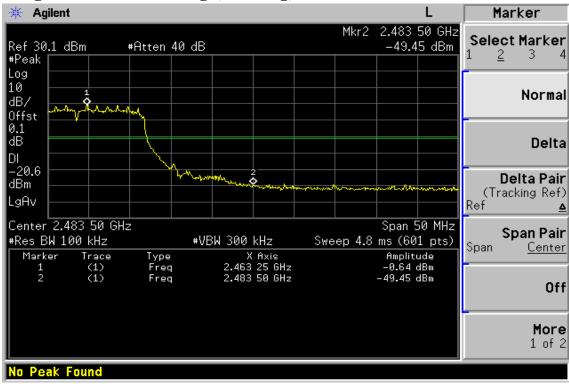
Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 35 of 91

# Band Edges Test Data CH-Low, 802.11g, 6M mode



# Band Edges Test Data CH-High, 802.11g, 6M mode



This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可不www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 36 of 91

## **Radiated Emission: The Worst Mode (Antenna 1)**

Operation Mode TX CH Low 802.11g mode 6M Test Date Apr. 30, 2008

Fundamental Frequency 2412 MHz Test By Jazz Pol Ver. Temperature 25°C

Humidity 65 %

|  | Peak        | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|--|-------------|---------------|---------|----------|---------------|----------|---------------|---------------|--------|
| Freq.                                    | Reading     | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)                                    | (dBuV)      | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | dBuV/m        | ( <b>dB</b> ) |        |
| 2390.00                                  | 61.23       | 50.16         | -1.39   | 59.84    | 48.77         | 74.00    | 54.00         | -5.23         | AV     |
| Operation Mode TX CH Low 802.11g mode 6M |             |               |         |          |               | Test     | Date A        | Apr. 30, 20   | 008    |
| Fundamen                                 | tal Frequei | ncy 2412      | MHz     |          |               | Test     | By J          | Jazz          |        |
| Temperatu                                | re          | 25 °C         |         |          |               | Pol      | ]             | Hor.          |        |
| Humidity                                 |             | 65 %          |         |          |               |          |               |               |        |

|         | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|---------|---------|---------------|---------|----------|---------------|----------|---------------|---------------|--------|
| Freq.   | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)   | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m       | ( <b>dB</b> ) |        |
| 2390.00 | 58.90   | 49.41         | -1.39   | 57.51    | 48.02         | 74.00    | 54.00         | -5.98         | AV     |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column · When measured Peak value is under AV Limit, It doesn't need to measure AV value again.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 37 of 91

### **Radiated Emission: The Worst Mode (Antenna 1)**

Operation Mode TX CH High 802.11g mode 6M Test Date Apr. 30, 2008

Fundamental Frequency 2462 MHz Test By Jazz Temperature  $25^{\circ}$ C Pol Ver.

Humidity 65 %

|             | Peak    | $\mathbf{AV}$ |         | Actu       | al FS         | Peak         | $\mathbf{AV}$ |                     |        |
|-------------|---------|---------------|---------|------------|---------------|--------------|---------------|---------------------|--------|
| Freq.       | Reading | Reading       | Ant./CL | Peak       | $\mathbf{AV}$ | Limit        | Limit         | Margin              | Remark |
| (MHz)       | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m)   | (dBuV/m)      | (dBuV/m)     | (dBuV/n       | n) (dB)             |        |
| 2483.50     | 65.15   | 52.38         | -0.92   | 64.23      | 51.46         | 74.00        | 54.00         | -2.54               | AV     |
| 2487.68     | 60.57   | 50.25         | -0.86   | 59.71      | 49.39         | 74.00        | 54.00         | -4.61               | AV     |
| Operation : |         |               |         | 02.11g mod | le 6M         | Test<br>Test |               | Apr. 30, 20<br>Jazz | 800    |
| Temperatu   | 1       | 25 °C         |         |            |               | Pol          | -             | Hor.                |        |
| Humidity    |         | 65 %          |         |            |               |              |               |                     |        |

|       | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |        |
|-------|---------|---------------|---------|----------|---------------|----------|---------------|--------|--------|
| Freq. | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin | Remark |
| (MHz) | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m       | (dBuV/m) | (dBuV/m)      | (dB)   |        |

| 2483.50 | 60.20 | 50.31 | -0.92 | 59.28 | 49.39 | 74.00 | 54.00 | -4.61 | AV |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|----|
| 2485.87 | 59.40 | 49.72 | -0.92 | 58.48 | 48.80 | 74.00 | 54.00 | -5.20 | AV |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column When measured Peak value is under AV Limit, It doesn't need to measure AV value again.
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 38 of 91

### Radiated Emission: The Worst Mode (Antenna 3)

Operation Mode TX CH Low 802.11g mode 6M Test Date Apr. 30, 2008

Fundamental Frequency 2412 MHz Test By Jazz Pol Ver. **Temperature** 25°C

Humidity 65 %

|             | Peak        | $\mathbf{AV}$ |         | Actu       | al FS         | Peak     | $\mathbf{AV}$ |             |        |
|-------------|-------------|---------------|---------|------------|---------------|----------|---------------|-------------|--------|
| Freq.       | Reading     | Reading       | Ant./CL | Peak       | $\mathbf{AV}$ | Limit    | Limit         | Margin      | Remark |
| (MHz)       | (dBuV)      | (dBuV)        | CF(dB)  | (dBuV/m)   | (dBuV/m)      | (dBuV/m) | (dBuV/n       | (dB)        |        |
| 2372.21     | 60.24       | 52.94         | -1.46   | 58.78      | 51.48         | 74.00    | 54.00         | -2.52       | AV     |
| 2390.00     | 60.40       | 51.30         | -1.39   | 59.01      | 49.91         | 74.00    | 54.00         | -4.09       | AV     |
| Operation 1 |             |               |         | 02.11g mod | e 6M          |          |               | Apr. 30, 20 | 800    |
| Fundament   | tal Frequei | ncy 2412      | MHz     |            |               | Test     | Ву            | Jazz        |        |
| Temperatu   | re          | 25 °C         |         |            |               | Pol      |               | Hor.        |        |
| Humidity    |             | 65 %          |         |            |               |          |               |             |        |

|         | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|---------|---------|---------------|---------|----------|---------------|----------|---------------|---------------|--------|
| Freq.   | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)   | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m       | ( <b>dB</b> ) |        |
| 2390.00 | 60.40   | 51.65         | -1.39   | 59.01    | 50.26         | 74.00    | 54.00         | -3.74         | AV     |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column • When measured Peak value is under AV Limit, It doesn't need to measure AV value
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 39 of 91

### Radiated Emission: The Worst Mode (Antenna 3)

Operation Mode TX CH High 802.11g mode 6M Test Date Apr. 30, 2008

Fundamental Frequency 2462 MHz Test By Jazz Pol Ver. **Temperature** 25°C

Humidity 65 %

|             | Peak        | $\mathbf{AV}$ |           | Actu       | al FS         | Peak     | $\mathbf{AV}$ |               |        |
|-------------|-------------|---------------|-----------|------------|---------------|----------|---------------|---------------|--------|
| Freq.       | Reading     | Reading       | Ant./CL   | Peak       | $\mathbf{AV}$ | Limit    | Limit         | Margin        | Remark |
| (MHz)       | (dBuV)      | (dBuV)        | CF(dB)    | (dBuV/m)   | (dBuV/m)      | (dBuV/m) | (dBuV/m       | ( <b>dB</b> ) |        |
| 2483.56     | 63.94       | 54.04         | -0.92     | 63.02      | 53.12         | 74.00    | 54.00         | -0.88         | AV     |
| Operation : | Mode        | TX C          | H High 80 | 02.11g mod | e 6M          | Test     | Date .        | Apr. 30, 20   | 008    |
| Fundament   | tal Frequer | ncy 2462      | MHz       |            |               | Test     | By .          | Jazz          |        |
| Temperatu   | re          | 25 °C         |           |            |               | Pol      | ]             | Hor.          |        |
| Humidity    |             | 65 %          |           |            |               |          |               |               |        |

|    |       | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak    | $\mathbf{AV}$ |        |        |
|----|-------|---------|---------------|---------|----------|---------------|---------|---------------|--------|--------|
| F  | req.  | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit   | Limit         | Margin | Remark |
| (N | MHz)  | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m | )(dBuV/m)     | (dB)   |        |
| 24 | 83.56 | 60.43   | 51.88         | -0.92   | 59.51    | 50.96         | 74.00   | 54.00         | -3.04  | AV     |

- (1) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 6dB below the permissible limits or the field strength is too small to be measured.
- (2) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column · When measured Peak value is under AV Limit, It doesn't need to measure AV value
- (3) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (4) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 40 of 91

### SPURIOUS RADIATED EMISSION TEST

### 9.1. Standard Applicable

According to §15.247(c), all other emissions outside these bands shall not exceed the general radiated emission limits specified in §15.209(a). And according to §15.33(a)(1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

### 9.2. EUT Setup

- 1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
- 2. The EUT was put in the front of the test table. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The spacing between the peripherals was 10 centimeters.
- 4. External I/O cables were draped along the edge of the test table and bundle when necessary.

#### 9.3. Measurement Procedure

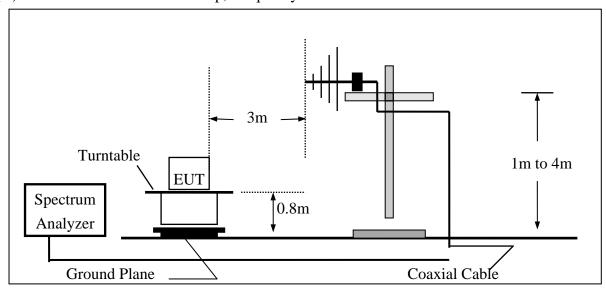
- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until all frequency measured were complete.

Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

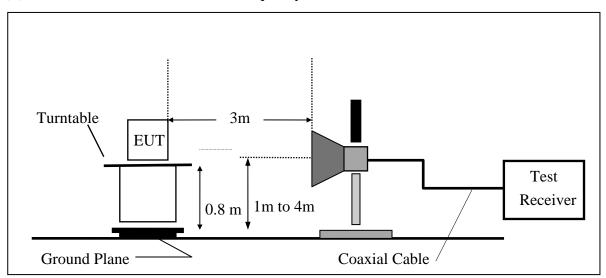
Page: 41 of 91

# 9.4. Test SET-UP (Block Diagram of Configuration)

### (A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



# (B) Radiated Emission Test Set-UP Frequency Over 1 GHz





Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 42 of 91

#### 9.5. **Measurement Equipment Used:**

|                   | 9            | 66 Chamber             |            |            |            |
|-------------------|--------------|------------------------|------------|------------|------------|
| EQUIPMENT         | MFR          | MODEL                  | SERIAL     | LAST       | CAL DUE.   |
| ТҮРЕ              |              | NUMBER                 | NUMBER     | CAL.       |            |
| Spectrum Analyzer | Agilent      | E4446A                 | MY43360126 | 04/19/2008 | 04/18/2009 |
| Spectrum Analyzer | Agilent      | E7405A                 | US41160416 | 07/04/2007 | 07/03/2008 |
| Bi-log Antenna    | SCHWAZBECK   | VULB9160               | 3224       | 11/14/2007 | 11/13/2008 |
| Horn antenna      | SCHWAZBECK   | BBHA 9120D             | 603        | 04/11/2007 | 04/10/2009 |
| Horn antenna      | SCHWAZBECK   | BBHA 9170              | 184/185    | 12/31/2007 | 12/31/2008 |
| Pre-Amplifier     | HP           | 8447D                  | 2944A09469 | 07/19/2007 | 07/18/2008 |
| Pre-Amplifier     | HP           | 8449B                  | 3008A01973 | 01/05/2008 | 01/04/2009 |
| Turn Table        | HD           | DT420                  | N/A        | N.C.R      | N.C.R      |
| Antenna Tower     | HD           | MA240-N                | 240/657    | N.C.R      | N.C.R      |
| Controller        | HD           | HD100                  | N/A        | N.C.R      | N.C.R      |
| Low Loss Cable    | HUBER+SUHNER | SUCOFLEX<br>104PEA-10M | 10m        | 01/05/2008 | 01/04/2009 |
| Low Loss Cable    | HUBER+SUHNER | SUCOFLEX<br>104PEA-3M  | 3m         | 01/05/2008 | 01/04/2009 |
| Site NSA          | SGS          | 966 chamber            | N/A        | 11/17/2007 | 11/16/2008 |

### 9.6. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

| Where | FS = Field Strength    | CL = Cable Attenuation Factor (Cable Loss) |
|-------|------------------------|--|
|       | RA = Reading Amplitude | AG = Amplifier Gain                        |
|       | AF = Antenna Factor    |  |

### 9.7. Measurement Result

Refer to attach tabular data sheets.

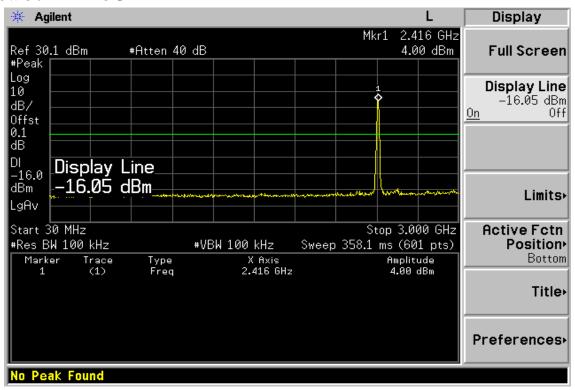
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



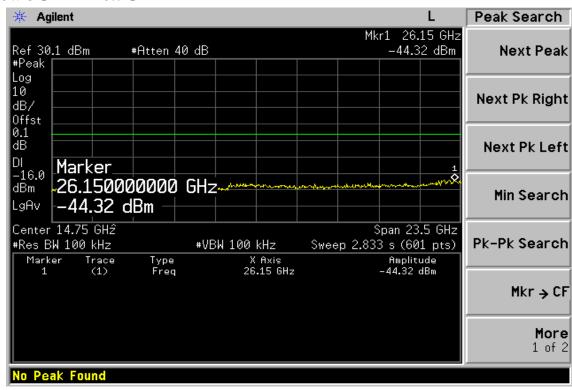
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 43 of 91

# Conducted Spurious Emission Measurement Result (802.11b), 1M Ch Low 30MHz - 3GHz



# Ch Low 3GHz - 26.5GHz



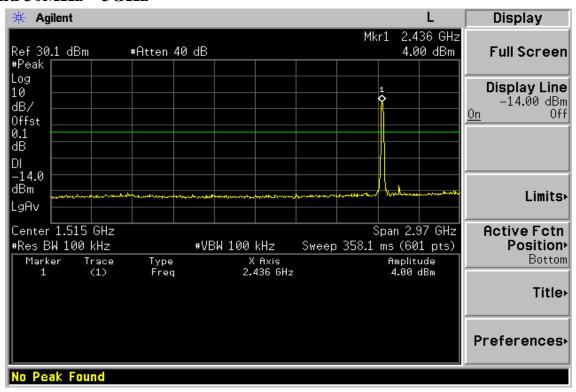
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



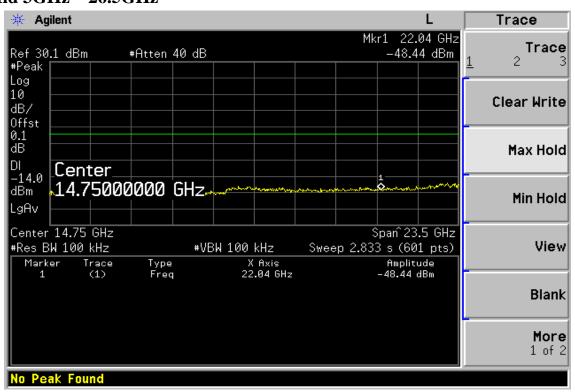
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 44 of 91

### Ch Mid 30MHz - 3GHz



### **Ch Mid 3GHz – 26.5GHz**



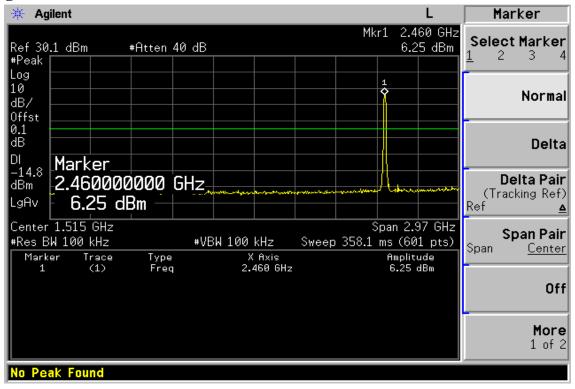
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



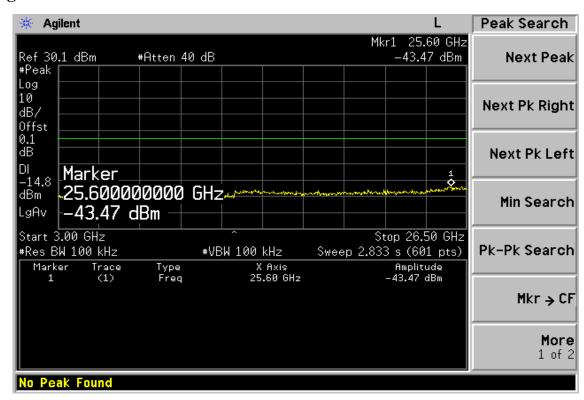
Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 45 of 91

# Ch High 30MHz – 3GHz



# Ch High 3GHz – 26.5GHz



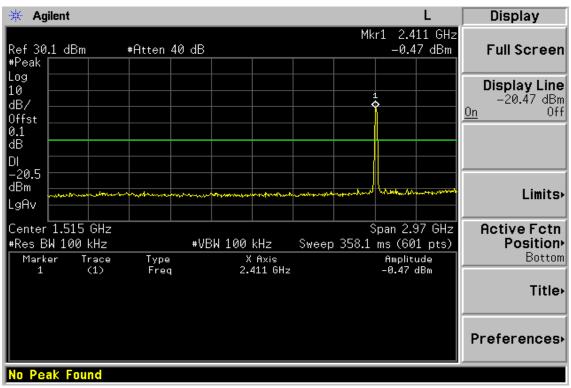
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可不www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



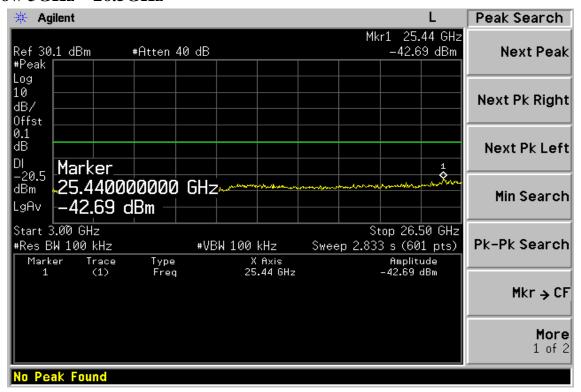
Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 46 of 91

# Conducted Spurious Emission Measurement Result (802.11g), 6M Ch Low 30MHz – 3GHz



# Ch Low 3GHz - 26.5GHz



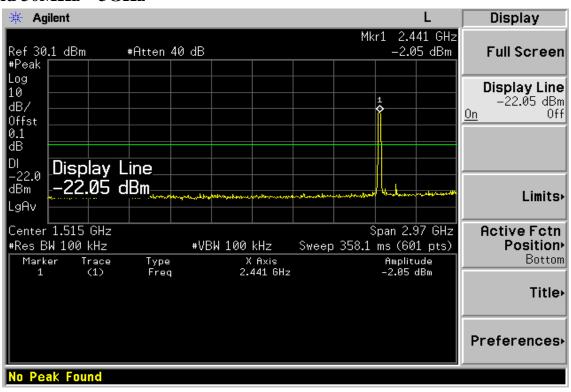
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



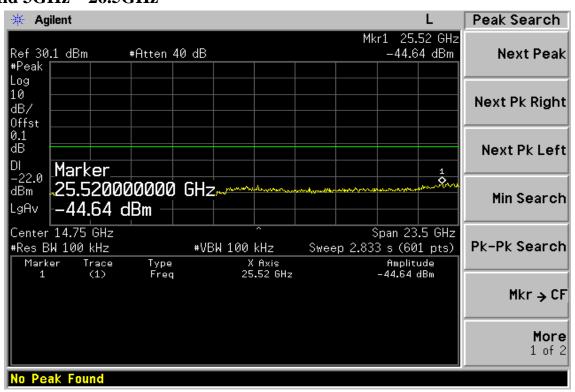
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 47 of 91

# Ch Mid 30MHz - 3GHz



### **Ch Mid 3GHz – 26.5GHz**



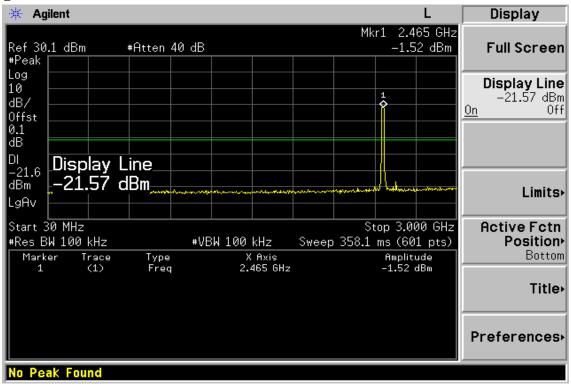
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



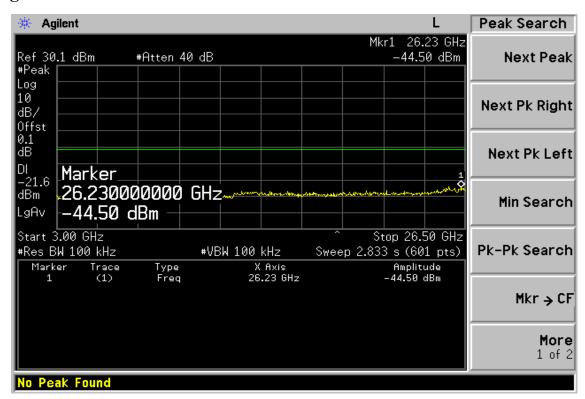
Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 48 of 91

# Ch High 30MHz – 3GHz



# Ch High 3GHz – 26.5GHz



This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放,請注意此條款 列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,免責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不 可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 49 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH Low 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz 25 °C Pol Temperature Ver./Hor

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 66.86  | V        | Peak             | 50.49   | -15.34 | 35.15     | 40.00    | -4.85       |
| 187.14 | V        | Peak             | 47.67   | -14.95 | 32.72     | 43.50    | -10.78      |
| 541.19 | V        | Peak             | 42.36   | -7.85  | 34.51     | 46.00    | -11.49      |
|        |          |                  |         |        |           |          |             |
| 57.16  | Н        | Peak             | 53.33   | -14.64 | 38.69     | 40.00    | -1.31       |
| 187.14 | Н        | Peak             | 48.23   | -14.95 | 33.28     | 43.50    | -10.22      |
| 541.19 | H        | Peak             | 44.17   | -7.85  | 36.32     | 46.00    | -9.68       |

#### Remark:

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

f (886-2) 2298-2698



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 50 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH Mid 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Temperature 25 °C Pol Ver./Hor

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 66.86  | V        | Peak             | 51.60   | -15.34 | 36.26     | 40.00    | -3.74       |
| 187.14 | V        | Peak             | 47.02   | -14.95 | 32.07     | 43.50    | -11.43      |
| 541.19 | V        | Peak             | 41.33   | -7.85  | 33.48     | 46.00    | -12.52      |
|        |          |                  |         |        |           |          |             |
| 57.16  | Н        | Peak             | 52.74   | -14.64 | 38.10     | 40.00    | -1.90       |
| 541.19 | Н        | Peak             | 44.41   | -7.85  | 36.56     | 46.00    | -9.44       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/OP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 51 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH High 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz 25 °C Pol Temperature Ver./Hor

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 80.44  | V        | Peak             | 52.59   | -17.84 | 34.75     | 40.00    | -5.25       |
| 541.19 | V        | Peak             | 42.38   | -7.85  | 34.53     | 46.00    | -11.47      |
|        |          |                  |         |        |           |          |             |
| 68.80  | H        | Peak             | 54.00   | -15.85 | 38.15     | 40.00    | -1.85       |
| 541.19 | Н        | Peak             | 44.67   | -7.85  | 36.82     | 46.00    | -9.18       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 52 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH Low 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Ver./Hor Temperature 25 °C Pol

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 68.80  | V        | Peak             | 54.75   | -15.85 | 38.90     | 40.00    | -1.10       |
| 187.14 | V        | Peak             | 47.81   | -14.95 | 32.86     | 43.50    | -10.64      |
|        |          |                  |         |        |           |          |             |
| 79.47  | H        | Peak             | 56.40   | -17.79 | 38.61     | 40.00    | -1.39       |
| 538.28 | H        | Peak             | 44.70   | -7.88  | 36.82     | 46.00    | -9.18       |
| 596.48 | Н        | Peak             | 41.71   | -6.12  | 35.59     | 46.00    | -10.41      |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/OP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 53 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH Mid 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Ver./Hor Temperature 25 °C Pol

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | <b>Actual FS</b> | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|------------------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)         | (dBuV/m) | (dB)        |
| 59.10  | V        | Peak             | 53.10   | -14.67 | 38.43            | 40.00    | -1.57       |
| 541.19 | V        | Peak             | 42.38   | -7.85  | 34.53            | 46.00    | -11.47      |
|        |          |                  |         |        |                  |          |             |
| 57.16  | H        | Peak             | 53.73   | -14.64 | 39.09            | 40.00    | -0.91       |
| 119.24 | Н        | Peak             | 46.87   | -15.32 | 31.55            | 43.50    | -11.95      |
| 541.19 | H        | Peak             | 45.20   | -7.85  | 37.35            | 46.00    | -8.65       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/OP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 54 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH High 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Ver./Hor Temperature 25 °C Pol

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 80.44  | V        | Peak             | 54.61   | -17.84 | 36.77     | 40.00    | -3.23       |
| 187.14 | V        | Peak             | 47.77   | -14.95 | 32.82     | 43.50    | -10.68      |
| 541.19 | V        | Peak             | 42.52   | -7.85  | 34.67     | 46.00    | -11.33      |
|        |          |                  |         |        |           |          |             |
| 62.01  | Н        | Peak             | 51.73   | -14.79 | 36.94     | 40.00    | -3.06       |
| 541.19 | Н        | Peak             | 41.31   | -7.85  | 33.46     | 46.00    | -12.54      |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/OP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 55 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH Low 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Ver./Hor **Temperature** 25 °C

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 58.13  | V        | Peak             | 53.47   | -14.66 | 38.81     | 40.00    | -1.19       |
| 363.68 | V        | Peak             | 52.04   | -11.27 | 40.77     | 46.00    | -5.23       |
| 806.97 | V        | Peak             | 47.32   | -2.84  | 44.48     | 46.00    | -1.52       |
|        |          |                  |         |        |           |          |             |
| 77.53  | Н        | Peak             | 55.32   | -17.46 | 37.86     | 40.00    | -2.14       |
| 245.34 | Н        | Peak             | 53.45   | -13.98 | 39.47     | 46.00    | -6.53       |
| 895.24 | H        | Peak             | 46.40   | -1.13  | 45.27     | 46.00    | -0.73       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 56 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH Mid 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol **Temperature** 25 °C Ver./Hor

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 373.38 | V        | Peak             | 51.05   | -10.95 | 40.10     | 46.00    | -5.90       |
| 809.88 | V        | Peak             | 47.77   | -2.79  | 44.98     | 46.00    | -1.02       |
|        |          |                  |         |        |           |          |             |
| 373.38 | Н        | Peak             | 50.95   | -10.95 | 40.00     | 46.00    | -6.00       |
| 647.89 | Н        | Peak             | 46.68   | -4.99  | 41.69     | 46.00    | -4.31       |
| 812.79 | Н        | Peak             | 43.72   | -2.74  | 40.98     | 46.00    | -5.02       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 57 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH High 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Ver./Hor **Temperature** 25 °C

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 58.13  | V        | Peak             | 52.92   | -14.66 | 38.26     | 40.00    | -1.74       |
| 373.38 | V        | Peak             | 51.68   | -10.95 | 40.73     | 46.00    | -5.27       |
| 809.88 | V        | Peak             | 47.44   | -2.79  | 44.65     | 46.00    | -1.35       |
|        |          |                  |         |        |           |          |             |
| 245.34 | Н        | Peak             | 53.67   | -13.98 | 39.69     | 46.00    | -6.31       |
| 647.89 | Н        | Peak             | 46.79   | -4.99  | 41.80     | 46.00    | -4.20       |
| 809.88 | Н        | Peak             | 46.46   | -2.79  | 43.67     | 46.00    | -2.33       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 58 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH Low 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Ver./Hor **Temperature** 25 °C

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 216.24 | V        | Peak             | 51.16   | -15.05 | 36.11     | 46.00    | -9.89       |
| 353.98 | V        | Peak             | 52.54   | -11.67 | 40.87     | 46.00    | -5.13       |
| 810.85 | V        | Peak             | 46.75   | -2.77  | 43.98     | 46.00    | -2.02       |
|        |          |                  |         |        |           |          |             |
| 373.38 | Н        | Peak             | 50.74   | -10.95 | 39.79     | 46.00    | -6.21       |
| 647.89 | Н        | Peak             | 47.01   | -4.99  | 42.02     | 46.00    | -3.98       |
| 807.94 | Н        | Peak             | 45.31   | -2.83  | 42.48     | 46.00    | -3.52       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 59 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH Mid 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Ver./Hor **Temperature** 25 °C

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 216.24 | V        | Peak             | 50.86   | -15.05 | 35.81     | 46.00    | -10.19      |
| 363.68 | V        | Peak             | 51.94   | -11.27 | 40.67     | 46.00    | -5.33       |
| 812.79 | V        | Peak             | 45.75   | -2.74  | 43.01     | 46.00    | -2.99       |
|        |          |                  |         |        |           |          |             |
| 245.34 | Н        | Peak             | 53.14   | -13.98 | 39.16     | 46.00    | -6.84       |
| 373.38 | Н        | Peak             | 50.23   | -10.95 | 39.28     | 46.00    | -6.72       |
| 809.88 | H        | Peak             | 45.88   | -2.79  | 43.09     | 46.00    | -2.91       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 60 of 91

# Radiated Spurious Emission Measurement Result (below 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH High 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Ver./Hor **Temperature** 25 °C

Humidity 60 %

| Freq.  | Ant.Pol. | Detector<br>Mode | Reading | Factor | Actual FS | Limit3m  | Safe Margin |
|--------|----------|------------------|---------|--------|-----------|----------|-------------|
| (MHz)  | H/V      | (PK/QP)          | (dBuV)  | (dB)   | (dBuV/m)  | (dBuV/m) | (dB)        |
| 363.98 | V        | Peak             | 51.97   | -11.67 | 40.30     | 46.00    | -5.70       |
| 807.94 | V        | Peak             | 46.31   | -2.83  | 43.48     | 46.00    | -2.52       |
|        |          |                  |         |        |           |          |             |
| 245.34 | Н        | Peak             | 53.16   | -13.98 | 39.18     | 46.00    | -6.82       |
| 373.38 | Н        | Peak             | 50.76   | -10.95 | 39.81     | 46.00    | -6.19       |
| 647.89 | Н        | Peak             | 47.06   | -4.99  | 42.07     | 46.00    | -3.93       |

- (1) Measuring frequencies from 30 MHz to the 1GHz •
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.
- (3) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 61 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH Low 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz 23 °C Pol Temperature Ver.

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 46.12   |               | -5.76   | 40.36    |               | 75.00    | 54.00         | -13.64 | Peak |
| 4824.00  | 48.31   | 46.85         | 6.02    | 54.33    | 52.87         | 75.00    | 54.00         | -1.13  | AV   |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 62 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH Low 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Temperature 23 °C Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 4824.00  | 41.51   |               | 6.02    | 47.53    |               | 75.00    | 54.00         | -6.47  | Peak |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 63 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH Mid 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 45.03   |               | -5.76   | 39.27    |               | 75.00    | 54.00         | -14.73 | Peak |
| 4874.00  | 45.91   |               | 6.15    | 52.06    |               | 75.00    | 54.00         | -1.94  | Peak |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 64 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH Mid 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Temperature 23 °C Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 44.44   |               | -5.76   | 38.68    |               | 75.00    | 54.00         | -15.32 | Peak |
| 4874.00  | 38.54   |               | 6.15    | 44.69    |               | 75.00    | 54.00         | -9.31  | Peak |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 65 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH High 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 45.78   |               | -5.76   | 40.02    |               | 75.00    | 54.00         | -13.98 | Peak |
| 4924.00  | 46.30   |               | 6.28    | 52.58    |               | 75.00    | 54.00         | -1.42  | Peak |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 66 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 1)

Operation Mode 802.11b TX CH High 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Temperature 23 °C Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 44.60   |               | -5.76   | 38.84    |               | 75.00    | 54.00         | -15.16 | Peak |
| 4924.00  | 38.54   |               | 6.28    | 44.82    |               | 75.00    | 54.00         | -9.18  | Peak |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 67 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH Low 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Ver. Temperature 25 °C

Humidity 60 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 46.55   |               | -5.76   | 40.79    |               | 75.00    | 54.00         | -13.21 | Peak |
| 4824.00  | 37.66   |               | 6.02    | 43.68    |               | 75.00    | 54.00         | -10.32 | Peak |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 68 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH Low 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Hor Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 44.35   |               | -5.76   | 38.59    |               | 75.00    | 54.00         | -15.41 | Peak |
| 4824.00  | 33.54   |               | 6.02    | 39.56    |               | 75.00    | 54.00         | -14.44 | Peak |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 69 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH Mid 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | -    |
| 1533.00  | 45.50   |               | -5.76   | 39.74    |               | 75.00    | 54.00         | -14.26 | Peak |
| 4874.00  | 33.66   |               | 6.15    | 39.81    |               | 75.00    | 54.00         | -14.19 | Peak |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 70 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH Mid 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Hor Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 44.27   |               | -5.76   | 38.51    |               | 75.00    | 54.00         | -15.49 | Peak |
| 4874.00  |         |               |         |          |               |          |               |        |      |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 71 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH High 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency  $2462 \mathrm{MHz}$  Test By Jazz Temperature  $23~^{\circ}\mathrm{C}$  Pol Ver

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | -    |
| 1533.00  | 46.30   |               | -5.76   | 40.54    |               | 75.00    | 54.00         | -13.46 | Peak |
| 4924.00  |         |               |         |          |               |          |               |        |      |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency  $^{\circ}$
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 72 of 91

# Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 1)

Operation Mode 802.11g TX CH High 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Hor Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 44.40   |               | -5.76   | 38.64    |               | 75.00    | 54.00         | -15.36 | Peak |
| 4924.00  |         |               |         |          |               |          |               |        |      |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 73 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH Low 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Ver. Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | -    |
| 1533.00  | 49.11   |               | -5.76   | 43.35    |               | 75.00    | 54.00         | -10.65 | Peak |
| 4824.00  | 56.15   | 47.71         | 6.02    | 62.17    | 53.73         | 75.00    | 54.00         | -0.27  | AV   |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 74 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH Low 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Temperature 23 °C Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |    |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|----|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |    |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | •  |
| 4824.00  | 56.09   | 47.69         | 6.02    | 62.11    | 53.71         | 75.00    | 54.00         | -0.29  | AV |
| 7236.00  |         |               |         |          |               |          |               |        |    |
| 9648.00  |         |               |         |          |               |          |               |        |    |
| 12060.00 |         |               |         |          |               |          |               |        |    |
| 14472.00 |         |               |         |          |               |          |               |        |    |
| 16884.00 |         |               |         |          |               |          |               |        |    |
| 19296.00 |         |               |         |          |               |          |               |        |    |
| 21708.00 |         |               |         |          |               |          |               |        |    |
| 24120.00 |         |               |         |          |               |          |               |        |    |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 75 of 91

### Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH Mid 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | -    |
| 1533.00  | 47.04   |               | -5.76   | 41.28    |               | 75.00    | 54.00         | -12.72 | Peak |
| 4874.00  | 49.28   | 47.17         | 6.15    | 55.43    | 53.32         | 75.00    | 54.00         | -0.68  | AV   |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 76 of 91

### Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH Mid 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Temperature 23 °C Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |    |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|----|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |    |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | •  |
| 4874.00  | 50.28   | 47.36         | 6.15    | 56.43    | 53.51         | 75.00    | 54.00         | -0.49  | AV |
| 7311.00  |         |               |         |          |               |          |               |        |    |
| 9748.00  |         |               |         |          |               |          |               |        |    |
| 12185.00 |         |               |         |          |               |          |               |        |    |
| 14622.00 |         |               |         |          |               |          |               |        |    |
| 17059.00 |         |               |         |          |               |          |               |        |    |
| 19496.00 |         |               |         |          |               |          |               |        |    |
| 21933.00 |         |               |         |          |               |          |               |        |    |
| 24370.00 |         |               |         |          |               |          |               |        |    |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 77 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH High 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 46.45   |               | -5.76   | 40.69    |               | 75.00    | 54.00         | -13.31 | Peak |
| 4924.00  | 49.87   | 47.09         | 6.28    | 56.15    | 53.37         | 75.00    | 54.00         | -0.63  | AV   |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 78 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11b / Antenna 3)

Operation Mode 802.11b TX CH High 1Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Temperature 23 °C Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |    |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|----|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |    |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | •  |
| 4924.00  | 48.04   | 46.80         | 6.28    | 54.32    | 53.08         | 75.00    | 54.00         | -0.92  | AV |
| 7386.00  |         |               |         |          |               |          |               |        |    |
| 9848.00  |         |               |         |          |               |          |               |        |    |
| 12310.00 |         |               |         |          |               |          |               |        |    |
| 14772.00 |         |               |         |          |               |          |               |        |    |
| 17234.00 |         |               |         |          |               |          |               |        |    |
| 19696.00 |         |               |         |          |               |          |               |        |    |
| 22158.00 |         |               |         |          |               |          |               |        |    |
| 24620.00 |         |               |         |          |               |          |               |        |    |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 79 of 91

### Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH Low 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Temperature 25 °C Pol Ver.

Humidity 60 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 1533.00  | 46.83   |               | -5.76   | 41.07    |               | 75.00    | 54.00         | -12.93 | Peak |
| 4824.00  | 39.32   |               | 6.02    | 45.34    |               | 75.00    | 54.00         | -8.66  | Peak |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency  $^{\circ}$
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 80 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH Low 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2412MHz Test By Jazz Pol Hor Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | _    |
| 4824.00  | 41.36   |               | 6.02    | 47.38    |               | 75.00    | 54.00         | -6.62  | Peak |
| 7236.00  |         |               |         |          |               |          |               |        |      |
| 9648.00  |         |               |         |          |               |          |               |        |      |
| 12060.00 |         |               |         |          |               |          |               |        |      |
| 14472.00 |         |               |         |          |               |          |               |        |      |
| 16884.00 |         |               |         |          |               |          |               |        |      |
| 19296.00 |         |               |         |          |               |          |               |        |      |
| 21708.00 |         |               |         |          |               |          |               |        |      |
| 24120.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column •
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 81 of 91

### Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH Mid 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | -    |
| 1533.00  | 46.07   |               | -5.76   | 40.31    |               | 75.00    | 54.00         | -13.69 | Peak |
| 4874.00  | 38.13   |               | 6.15    | 44.28    |               | 75.00    | 54.00         | -9.72  | Peak |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown " " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 82 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH Mid 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2437MHz Test By Jazz Temperature 23 °C Pol Hor

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   |      |
| 4874.00  | 40.76   |               | 6.15    | 46.91    |               | 75.00    | 54.00         | -7.09  | Peak |
| 7311.00  |         |               |         |          |               |          |               |        |      |
| 9748.00  |         |               |         |          |               |          |               |        |      |
| 12185.00 |         |               |         |          |               |          |               |        |      |
| 14622.00 |         |               |         |          |               |          |               |        |      |
| 17059.00 |         |               |         |          |               |          |               |        |      |
| 19496.00 |         |               |         |          |               |          |               |        |      |
| 21933.00 |         |               |         |          |               |          |               |        |      |
| 24370.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency  $^{\circ}$
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 83 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH High 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Ver Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   |      |
| 4924.00  | 38.51   |               | 6.28    | 44.79    |               | 75.00    | 54.00         | -9.21  | Peak |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column °
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 84 of 91

## Radiated Spurious Emission Measurement Result (above 1GHz) (802.11g / Antenna 3)

Operation Mode 802.11g TX CH High 6Mbps Test Date Apr. 30, 2008

Fundamental Frequency 2462MHz Test By Jazz Pol Hor Temperature 23 °C

Humidity 54 %

|          | Peak    | $\mathbf{AV}$ |         | Actu     | al FS         | Peak     | $\mathbf{AV}$ |        |      |
|----------|---------|---------------|---------|----------|---------------|----------|---------------|--------|------|
| Freq.    | Reading | Reading       | Ant./CL | Peak     | $\mathbf{AV}$ | Limit    | Limit         | Margin |      |
| (MHz)    | (dBuV)  | (dBuV)        | CF(dB)  | (dBuV/m) | (dBuV/m)      | (dBuV/m) | (dBuV/m)      | (dB)   | -    |
| 4924.00  | 38.52   |               | 6.28    | 44.80    |               | 75.00    | 54.00         | -9.20  | Peak |
| 7386.00  |         |               |         |          |               |          |               |        |      |
| 9848.00  |         |               |         |          |               |          |               |        |      |
| 12310.00 |         |               |         |          |               |          |               |        |      |
| 14772.00 |         |               |         |          |               |          |               |        |      |
| 17234.00 |         |               |         |          |               |          |               |        |      |
| 19696.00 |         |               |         |          |               |          |               |        |      |
| 22158.00 |         |               |         |          |               |          |               |        |      |
| 24620.00 |         |               |         |          |               |          |               |        |      |

- (1) Measuring frequencies scanned from 1GHz to the 10th harmonic of highest fundamental frequency °
- (2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column o
- (4) Spectrum Peak Setting: 1GHz-26GHz, RBW=1MHz, VBW=3MHz, Sweep time=200 ms.
- (5) Spectrum AV Setting: 1GHz-26GHz, RBW=1MHz, VBW=10Hz, Sweep time=200 ms.



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 85 of 91

## 10. Peak Power Spectral Density

## 10.1. Standard Applicable

According to §15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

#### 10.2. Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW = 3KHz, VBW = 10KHz, Span = 1.5MHz, Sweep=100s
- 4. Record the max. reading.
- 5. Repeat above procedures until all frequency measured were complete.

### 10.3. Measurement Equipment Used:

| Conducted Emission Test Site |              |                    |            |            |            |  |  |  |
|------------------------------|--------------|--------------------|------------|------------|------------|--|--|--|
| EQUIPMENT                    | MFR          | MODEL              | SERIAL     | LAST       | CAL DUE.   |  |  |  |
| TYPE                         |              | NUMBER             | NUMBER     | CAL.       |            |  |  |  |
| Spectrum Analyzer            | Agilent      | E4446A             | MY43360126 | 04/27/2007 | 04/27/2008 |  |  |  |
| Spectrum Analyzer            | Agilent      | E7405A             | US41160416 | 07/04/2007 | 07/03/2008 |  |  |  |
| Splitter                     | Agilent      | 11667B             | N/A        | 09/23/2007 | 09/22/2008 |  |  |  |
| Low Loss Cable               | HUBER+SUHNER | SUCOFLEX<br>104PEA | N/A        | N/A        | N/A        |  |  |  |
| Attenuator                   | Mini-Circuit | BW-S6W5            | N/A        | 01/05/2008 | 01/04/2009 |  |  |  |



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 86 of 91

### 10.4. Measurement Result

802.11b, 1M

| 002/110, 11/1 |                  |                             |             |               |  |  |  |
|---------------|------------------|-----------------------------|-------------|---------------|--|--|--|
| СН            | RF Power Density | Cable loss RF Power Density |             | Maximum Limit |  |  |  |
|               | Reading (dBm)    | (dB)                        | Level (dBm) | (dBm)         |  |  |  |
| 2412          | -1.38            | 0.00                        | -1.38       | 8             |  |  |  |
| 2437          | -1.90            | 0.00                        | -1.90       | 8             |  |  |  |
| 2462          | -1.61            | 0.00                        | -1.61       | 8             |  |  |  |

Note: offset 0.1 dB for insertion loss

802.11g, 6M

| СН   | RF Power Density | Cable loss | RF Power Density | Maximum Limit |
|------|------------------|------------|------------------|---------------|
|      | Reading (dBm)    | (dB)       | Level (dBm)      | (dBm)         |
| 2412 | -8.50            | 0.00       | -8.50            | 8             |
| 2437 | -8.32            | 0.00       | -8.32            | 8             |
| 2462 | -7.67            | 0.00       | -7.67            | 8             |

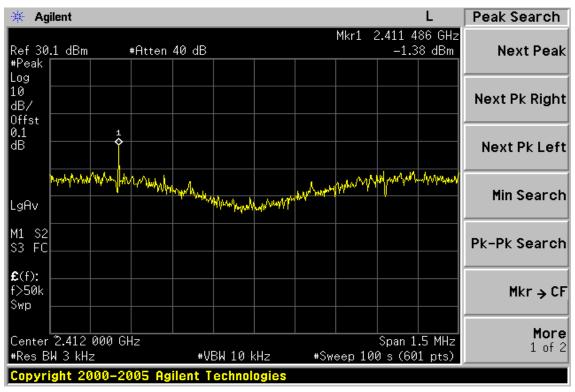
Note: offset 0.1 dB for insertion loss



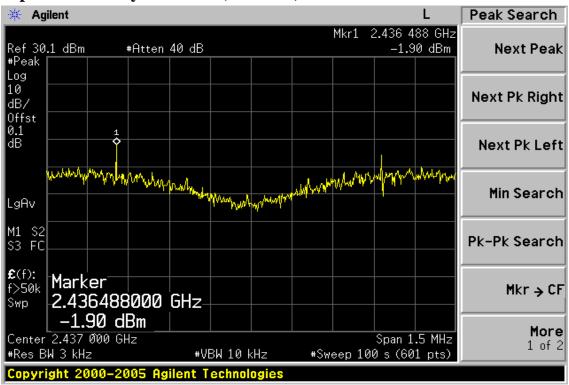
Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 87 of 91

# 802.11b, 1M Power Spectral Density Test Plot (CH-Low)



# **Power Spectral Density Test Plot (CH-Mid)**



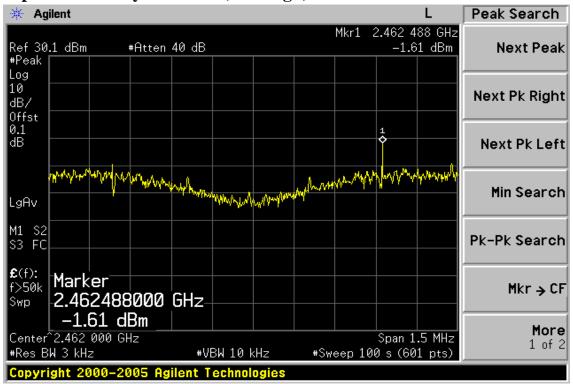
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 88 of 91

## **Power Spectral Density Test Plot (CH-High)**

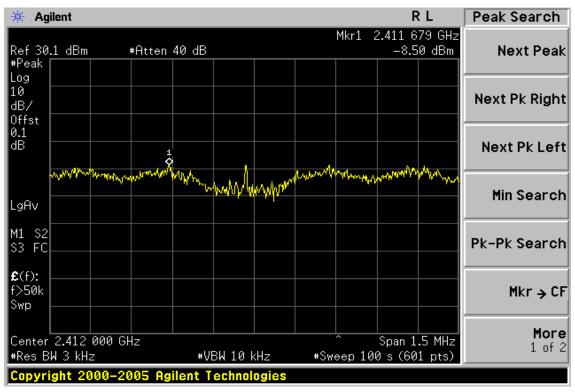




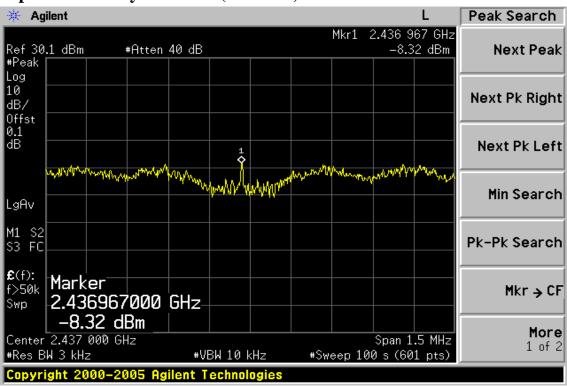
Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 89 of 91

# 802.11g, 6M Power Spectral Density Test Plot (CH-Low)



# **Power Spectral Density Test Plot (CH-Mid)**



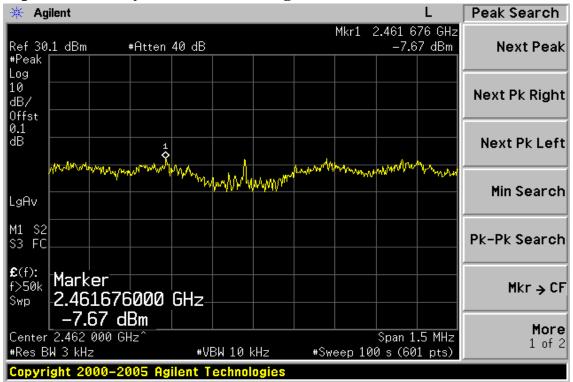
This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可在www.sgs.com中查閱。將本公司之義務,受責,管轄權皆明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 Issue Date: May 05, 2008

Page: 90 of 91

# **Power Spectral Density Test Plot (CH-High)**



This document is issued by the Company subject to its General Conditions of Service printed overleaf or available on request and accessible at <a href="www.sgs.com">www.sgs.com</a>. Attention is drawn to the limitations of liability, indemnification, and Jurisdictional issued defined therein. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested. This document cannot be reproduced except in full, without prior approval of Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law. 此報告是遵循本公司訂定之通用服務條款所製作發放, 請注意此條款列印於背面,亦可不www.sgs.com中查閱。將本公司之義務,受責,管轄權告明確規範之。除非另有說明,此報告結果僅對檢驗之樣品負責。本報告未經本公司書面許可,不可部份複製。對本報告內容或外觀之任何未經授權之變更、僞造、竄改皆屬非法,違犯者將會被依法追訴。



Report No.: ER/2008/40043 **Issue Date: May 05, 2008** 

Page: 91 of 91

## 11. ANTENNA REQUIREMENT

### 11.1. Standard Applicable

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

#### 11.2. Antenna Connected Construction

The directional gains of antenna used for transmitting are PCB Antenna\*2: 14.36dBi and 6.02dBi; Dipole Antenna: 4.31 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.