

## **RFI / EMI TEST REPORT**

**APPLICANT** : **ROYALDIGITAL INC.**

**E U T Type** : **Bluetooth GPS**

**MODEL NO.** : **BS4100**

**FCC ID** : **SHBBS4100**

**REGULATION** : **CFR 47 , Part 15 Subpart C , Class B**

**TEST SITE** : **PEP Testing Laboratory**

**TEST ENGINEER** : **JASON KUNG**

**TEST DATE** : **DEC. 05, 2005**

**ISSUED DATE** : **DEC. 13, 2005**

**REPORT NO.** : **E940857**

**PEP Testing Laboratory**

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

**VERIFICATION**

**WE HEREBY VERIFY THAT:**

The EUT listed below has completed RFI testing by PEP Testing Laboratory and it does comply with the limitation of FCC Part 15, Section 15.247 limitations .

The tested configurations and the facility complies with the radiated and AC line conducted test site criteria in ANSI C63 .4 - 2003 .

Any data in this RFI report is “ **reference** “ only .

**APPLICANT** : ROYALDIGITAL INC.  
**PRODUCT** : Bluetooth GPS  
**FCC ID** : SHBBS4100  
**MODEL** : BS4100

*M. Y. Tsui*

---

M. Y. TSUI / President

**PEP Testing Laboratory**

12-3FL., NO. 27-1, Lane 169, Kang-Ning St.,  
Hsi-Chi, Taipei Hsien, Taiwan, R. O. C.  
TEL : 886-2-6922097 FAX : 886-2-6956236

**TABLE OF CONTENTS**

|      |                                                        |    |
|------|--------------------------------------------------------|----|
| I.   | GENERAL INFORMATION                                    | 5  |
| 1.1  | Description of EUT                                     |    |
| 1.2  | Supporting Devices for EUT testing                     |    |
| 1.3  | EUT Test Setup Configuration                           |    |
| 1.4  | Channels Verification (15.205)                         |    |
| II.  | §15.207 POWER LINE CONDUCTED EMISSION TEST             | 10 |
| 2.1  | Testing Description                                    |    |
| 2.2  | Software Using                                         |    |
| 2.3  | Test Result                                            |    |
| 2.4  | Conducted Emission Test Photo                          |    |
| III. | §15.247(a)(1): HOPPINGCHANNEL FREQUENCY SEPARATION     | 16 |
| 3.1  | Test Procedure                                         |    |
| 3.2  | Test result of Frequency Separation                    |    |
| 3.3  | Spectrum Plot Data                                     |    |
| IV.  | §15.247(a)(1) : 20dB BANDWIDTH                         | 17 |
| 4.1  | Test Procedure                                         |    |
| 4.2  | Test Result of Bandwidth                               |    |
| 4.3  | Spectrum Plot Data                                     |    |
| V.   | §15.247(a) (1): TIME OF OCCUPANCY(DWELL TIME)          | 21 |
| 5.1  | Test Procedure                                         |    |
| 5.2  | Test Result of Dwell Time                              |    |
| 5.3  | Spectrum Plot Data                                     |    |
| VI   | §15.247(b) : THE MAXIMUM PEAK OUTPUT POWER ( ≤ 1WATT ) | 23 |
| 6.1  | Testing Description                                    |    |
| 6.2  | Software Using                                         |    |
| 6.3  | Test Result of Fundamental Emissions                   |    |
| VII. | §15.247(b)(4) MAXIMUM PERMISSIBLE EXPOSURE (MPE)       | 31 |
| 7.1  | MPE distance calculation                               |    |
| 7.2  | Device operating configurations exposure conditions    |    |
| 7.3  | Maximum Permissible Exposure (MPE)                     |    |

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,

Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

|       |                                            |    |
|-------|--------------------------------------------|----|
| VIII. | §15.247(c) : SPURIOUS RADIATED EMISSIONS   | 33 |
| 8.1   | Out side band below 1GHz                   |    |
| 8.2   | Out side band above 1GHz                   |    |
| 8.2   | Spurious Radiate Emission Testing Photos   |    |
| IX.   | §15.247(c) : BAND-EDGES COMPLIANCE         | 38 |
| X.    | §15.247(d) : PEAK POWER SPECTRAL DENSITY   | 42 |
| 10.1  | Test Procedure                             |    |
| 10.2  | Test result of Peak Power Spectral Density |    |
| 10.3  | Spectrum Plot Data                         |    |
| XI.   | LIST OF TEST INSTRUMENTS                   | 46 |
| XII.  | EUT PHOTOS                                 | 47 |

## I . General Information

The equipment under test (EUT) is Bluetooth GPS, FCC ID SHBBS4100, model BS4100. The EUT is designed for the applications such as car navigation purpose. The working frequency is 2400-2483.5MHz. 3.7V lithium battery, vehicle charger or alternate adapter model TCR are used as power source to EUT. For more detail specification about EUT, please refer to the user's manual.

Test method: According to the major function designed, the placement and operational function of EUT and support device PDA were set to proceed with test. The test was respectively carried out on the operational condition of Tx-On mode: continuous transmission state between PDA and EUT that was supplied by vehicle charger, adaptor model TCR. The worst-case test result of each test mode was recorded and provided in this report.

At the frequencies where the peak values of the emission exceeded the quasi-peak limit, the emissions were also measured with the quasi-peak detectors. The average detector also measured the emission either (A) quasi-peak values were under quasi-peak limit but exceeded average limit, or (B) peak values were under quasi-peak limit but exceeded average limit.

### 1.1 Description of EUT

|                        |          |                                                       |
|------------------------|----------|-------------------------------------------------------|
| <b>EUT Type</b>        | <b>:</b> | <b>Bluetooth GPS</b>                                  |
| <b>FCC ID</b>          | <b>:</b> | <b>SHBBS4100</b>                                      |
| <b>EUT Model No.</b>   | <b>:</b> | <b>BS4100</b>                                         |
| <b>Frequency Range</b> | <b>:</b> | <b>2.402~2.480GHz</b>                                 |
| <b>Support Channel</b> | <b>:</b> | <b>79 channels</b>                                    |
| <b>Modulation</b>      | <b>:</b> | <b>GFSK</b>                                           |
| <b>Antenna Type</b>    | <b>:</b> | <b>Comply with FCC Part 15, Section 15.203;</b>       |
| <b>Power Supply</b>    | <b>:</b> | <b>1) Manufacturer : CHANNEX TECHNOLOGY CO., LTD.</b> |
|                        |          | <b>Model No. : TCR</b>                                |
|                        |          | <b>Input : AC 100-240V 50/60Hz</b>                    |
|                        |          | <b>Output : DC 5V 650mA</b>                           |
|                        |          | <b>2) DC 12V ----- Car Charge</b>                     |
|                        |          | <b>3) DC 3.7V ----- From Battery</b>                  |
| <b>Power Cord</b>      | <b>:</b> | <b>N/A</b>                                            |

## PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

### 1.2 Supporting Devices for EUT testing

#### 1. DC Power Supply

**Manufacturer :** SCHMIDT

**Model Number :** EPS-3030SD (DC-0-30V)

#### 2. PDA

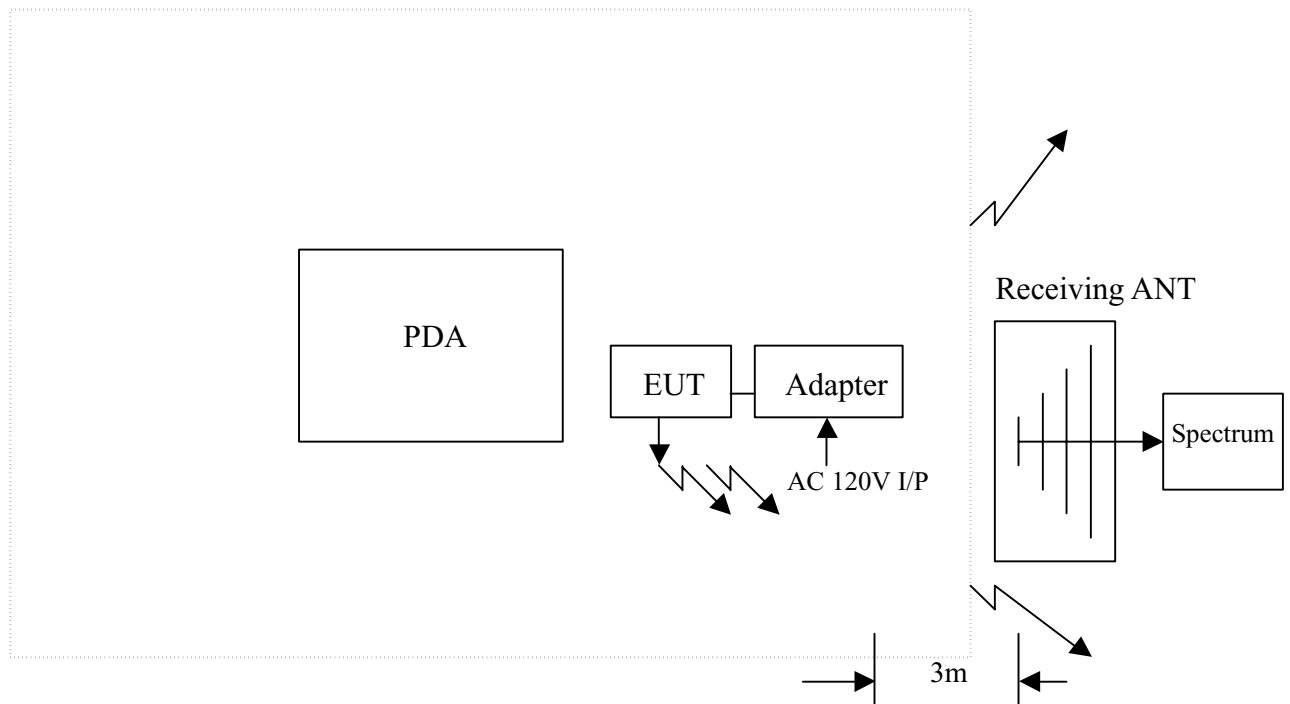
**Manufacturer :** HP

**Model Number :** iPAQ 2100

### **1.3 EUT Test Setup Configuration**

- (A)Test Procedure: As required by ANSI C63.4 (2003)
- (B)Channel Verification: In order to force selection of the typical channels for testing, Dungle was connected PC through USB interface and using the driver “CSR BlueSuite”, under WinXP to force the channel selection by control PC, then set the EUT in high power and continuously transmitting mode for detecting the operating frequency, the test result for 79 channels is operating within 2400-2483.5MHz band.
- (C)Measurement Procedure: As required by FCC Part15, Section 15.31(m) measurements on intentional radiators or receiver should be performed at three frequencies for operating frequency over 10MHz, one near top, one near middle and one near bottom.
- (D)Test Channel: Due to the support channels are 79 channels, the selected three frequencies for testing would be 2.402GHz near top for CH LOW, 2.441GHz near middle for CH MID and 2.480GHz near bottom for CH HIGH.
- (E) At the frequencies where the peak values of the emission exceeded the quasi-peak limit, the emissions were also measured with the quasi-peak detectors. The average detector also measured the emission either (a) quasi-peak values were under quasi-peak limit but exceeded average limit, or (b) peak values were under quasi-peak limit but exceeded average limit.
- (F)In this RFI test report, we provided the worst case conducted emission test data and radiated emission test data. The entire testing data was recorded and provided in this report.

## 1.4 Channels Verification



**a. EUT Type : Bluetooth GPS**

**b. EUT Model : BS4100**

**c. TX Channel No. : 79**

|                      |                      |                      |
|----------------------|----------------------|----------------------|
| Channel 01: 2402 MHz | Channel 28: 2429 MHz | Channel 55: 2456 MHz |
| Channel 02: 2403 MHz | Channel 29: 2430 MHz | Channel 56: 2457 MHz |
| Channel 03: 2404 MHz | Channel 30: 2431 MHz | Channel 57: 2458 MHz |
| Channel 04: 2405 MHz | Channel 31: 2432 MHz | Channel 58: 2459 MHz |
| Channel 05: 2406 MHz | Channel 32: 2433 MHz | Channel 59: 2460 MHz |
| Channel 06: 2407 MHz | Channel 33: 2434 MHz | Channel 60: 2461 MHz |
| Channel 07: 2408 MHz | Channel 34: 2435 MHz | Channel 61: 2462 MHz |
| Channel 08: 2409 MHz | Channel 35: 2436 MHz | Channel 62: 2463 MHz |
| Channel 09: 2410 MHz | Channel 36: 2437 MHz | Channel 63: 2464 MHz |
| Channel 10: 2411 MHz | Channel 37: 2438 MHz | Channel 64: 2465 MHz |
| Channel 11: 2412 MHz | Channel 38: 2439 MHz | Channel 65: 2466 MHz |
| Channel 12: 2413 MHz | Channel 39: 2440 MHz | Channel 66: 2467 MHz |
| Channel 13: 2414 MHz | Channel 40: 2441 MHz | Channel 67: 2468 MHz |
| Channel 14: 2415 MHz | Channel 41: 2442 MHz | Channel 68: 2469 MHz |
| Channel 15: 2416 MHz | Channel 42: 2443 MHz | Channel 69: 2470 MHz |
| Channel 16: 2417 MHz | Channel 43: 2444 MHz | Channel 70: 2471 MHz |
| Channel 17: 2418 MHz | Channel 44: 2445 MHz | Channel 71: 2472 MHz |
| Channel 18: 2419 MHz | Channel 45: 2446 MHz | Channel 72: 2473 MHz |
| Channel 19: 2420 MHz | Channel 46: 2447 MHz | Channel 73: 2474 MHz |
| Channel 20: 2421 MHz | Channel 47: 2448 MHz | Channel 74: 2475 MHz |
| Channel 21: 2422 MHz | Channel 48: 2449 MHz | Channel 75: 2476 MHz |
| Channel 22: 2423 MHz | Channel 49: 2450 MHz | Channel 76: 2477 MHz |
| Channel 23: 2424 MHz | Channel 50: 2451 MHz | Channel 77: 2478 MHz |
| Channel 24: 2425 MHz | Channel 51: 2452 MHz | Channel 78: 2479 MHz |
| Channel 25: 2426 MHz | Channel 52: 2453 MHz | Channel 79: 2480 MHz |
| Channel 26: 2427 MHz | Channel 53: 2454 MHz |                      |
| Channel 27: 2428 MHz | Channel 54: 2455 MHz |                      |

**Frequency Range : 2.402 GHz to 2.480 GHz**

Note :

1. All channels located in the frequency range as below :

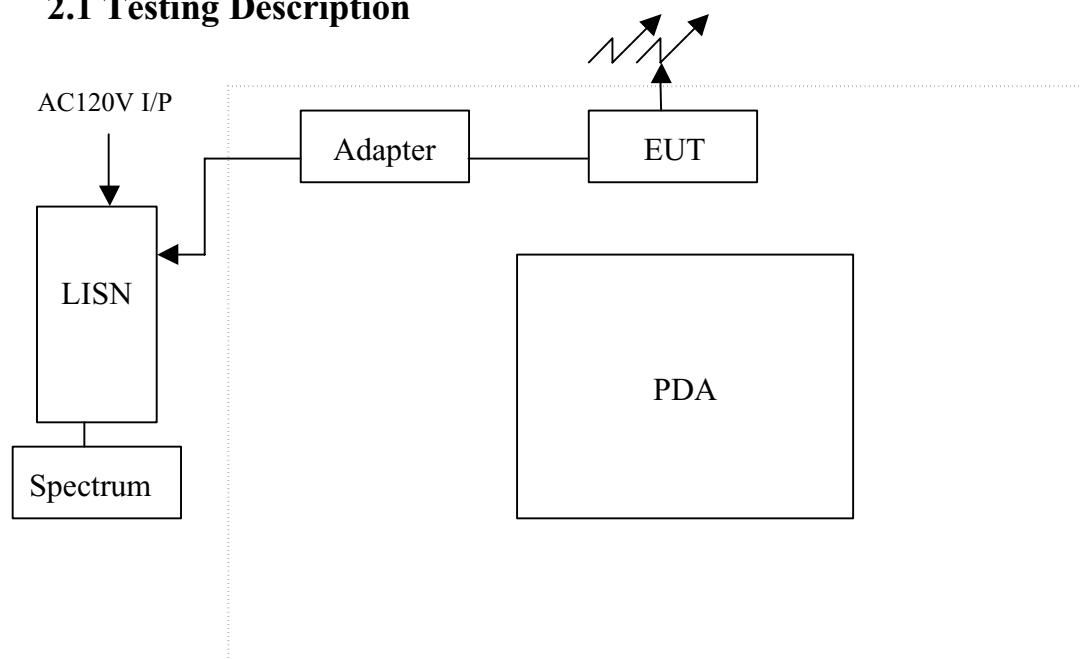
2.4 GHz --- 2.4835 GHz ☒ Yes ☐ No

Typical Channel for testing :

| Channel | Channel Number | Frequency (GHz) |
|---------|----------------|-----------------|
| LOW     | 1              | 2.402           |
| MID     | 40             | 2.441           |
| HIGH    | 79             | 2.480           |

## **II . 15.207 Power Line Conducted Emission Test**

### **2.1 Testing Description**



### **2.2 Software Using**

The driver of “CSR BlueSuite” is used to select the support channel as mentioned on section 1.3 (b) listed above

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

2.3 Test Result

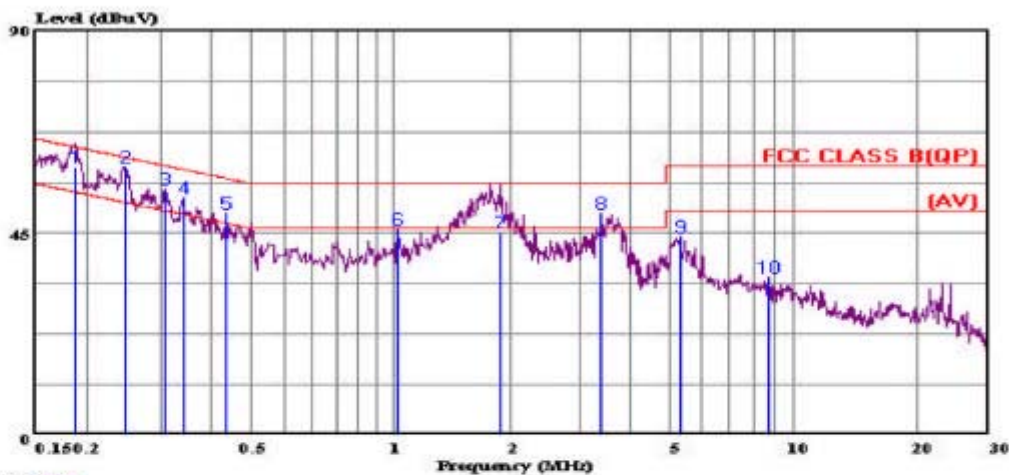
EUT Model No. BS4100 (LINE)

Detector : Peak Value



緯鑫科技股份有限公司  
PEP Testing Laboratory

Data#: 560 File#: FCC CLASS B(QP).EMI Date: 2005-12-05 Time: 14:36:22



Trace: 559  
Site : Shih-Chi : Conduction No.1(Long)  
Condition: FCC CLASS B(QP) LISN.L(16A) LINE  
eut : E940857  
power : AC 120V 60Hz  
memo : Peak Value  
: Final Test  
: TCR

Page: 1

|    | Freq  | Level | Over   | Limit | Read  | Probe  | Cable |        |
|----|-------|-------|--------|-------|-------|--------|-------|--------|
|    | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark |
|    |       |       | dB     | dBuV  | dBuV  | dB     | dB    |        |
| 1  | 0.186 | 59.60 | -4.60  | 64.20 | 59.40 | 0.10   | 0.10  | QP     |
| 2  | 0.248 | 59.60 | -2.22  | 61.82 | 59.31 | 0.10   | 0.10  |        |
| 3  | 0.308 | 54.75 | -5.27  | 60.02 | 54.55 | 0.10   | 0.10  |        |
| 4  | 0.341 | 52.98 | -6.20  | 59.18 | 52.78 | 0.10   | 0.10  |        |
| 5  | 0.435 | 49.20 | -7.95  | 57.15 | 49.00 | 0.10   | 0.10  |        |
| 6  | 1.123 | 45.69 | -10.31 | 56.00 | 45.39 | 0.10   | 0.20  |        |
| 7  | 2.001 | 45.30 | -10.70 | 56.00 | 45.00 | 0.10   | 0.20  | QP     |
| 8  | 3.491 | 49.20 | -6.80  | 56.00 | 48.85 | 0.10   | 0.25  |        |
| 9  | 5.390 | 44.19 | -15.81 | 60.00 | 43.77 | 0.16   | 0.26  |        |
| 10 | 8.869 | 35.05 | -24.95 | 60.00 | 34.48 | 0.27   | 0.30  |        |

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

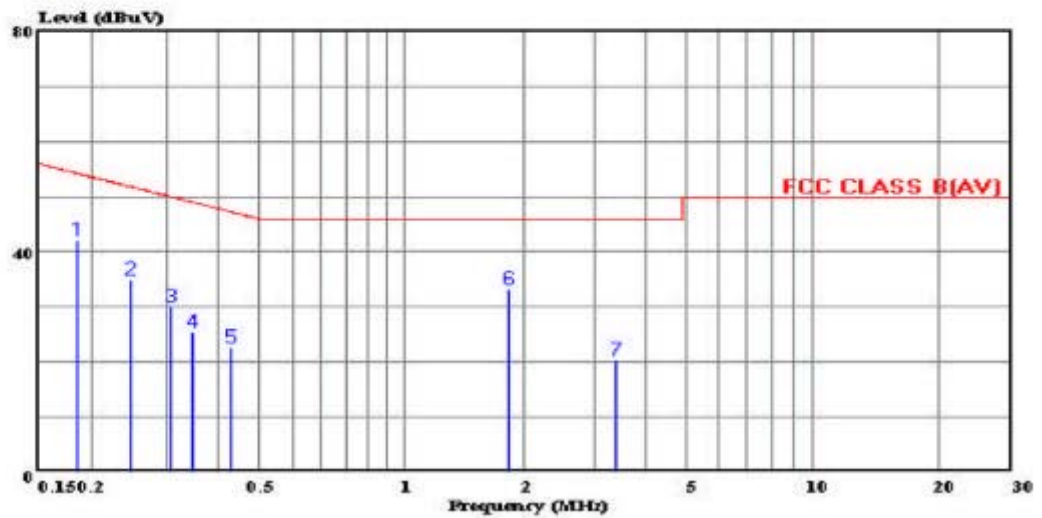
REPORT NO. : E940857



## 暉鑫科技股份有限公司 PEP Testing Laboratory

Data#: 47 File#: FCC CLASS B(AV).EMI

Date: 2005-12-05 Time: 14:37:18



Site : Shih-Chi : Conduction No.1(Long)  
Condition: FCC CLASS B(AV) LISN.L(16A) LINE  
eut : E940857  
power : AC 120V 60Hz  
memo : Peak Value  
memo : Final Test  
memo : TCR

Page: 1

|   | Freq  | Level | Over   | Limit | Read  | Probe  | Cable |         |
|---|-------|-------|--------|-------|-------|--------|-------|---------|
|   | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|   |       |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1 | 0.185 | 42.20 | -12.06 | 54.26 | 42.00 | 0.10   | 0.10  | Average |
| 2 | 0.248 | 34.99 | -16.83 | 51.82 | 34.70 | 0.10   | 0.19  | Average |
| 3 | 0.307 | 30.00 | -20.05 | 50.05 | 29.80 | 0.10   | 0.10  | Average |
| 4 | 0.347 | 25.40 | -23.63 | 49.03 | 25.20 | 0.10   | 0.10  | Average |
| 5 | 0.428 | 22.60 | -24.69 | 47.29 | 22.40 | 0.10   | 0.10  | Average |
| 6 | 1.940 | 33.40 | -12.60 | 46.00 | 33.10 | 0.10   | 0.20  | Average |
| 7 | 3.489 | 20.35 | -25.65 | 46.00 | 20.00 | 0.10   | 0.25  | Average |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

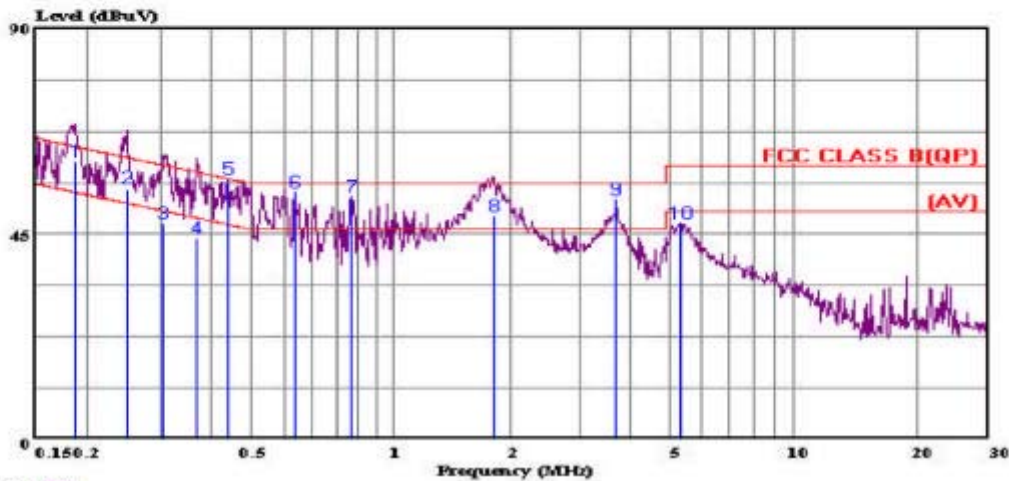
EUT Model No.: BS4100 (NEUTRAL)

Detector : Peak Value



緯鑫科技股份有限公司  
PEP Testing Laboratory

Data#: 555 File#: FCC CLASS B(QP).EMI Date: 2005-12-05 Time: 14:23:44



Trace: 554  
Site : Shih-Chi : Conduction No.1(Long)  
Condition: FCC CLASS B(QP) LISN.N(16A) NEUTRAL  
eut : E940857  
power : AC 120V 60Hz  
memo : Peak Value  
: Final Test  
: TCR

Page: 1

|    | Freq  | Level | Over   | Limit | Read  | Probe  | Cable |        |
|----|-------|-------|--------|-------|-------|--------|-------|--------|
|    | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark |
|    |       |       | dB     | dBuV  | dBuV  | dB     | dB    |        |
| 1  | 0.186 | 61.00 | -3.20  | 64.20 | 60.80 | 0.10   | 0.10  | QP     |
| 2  | 0.249 | 55.00 | -6.78  | 61.78 | 54.70 | 0.10   | 0.20  | QP     |
| 3  | 0.305 | 47.30 | -12.80 | 60.10 | 47.10 | 0.10   | 0.10  | QP     |
| 4  | 0.369 | 44.30 | -14.22 | 58.52 | 44.10 | 0.10   | 0.10  | QP     |
| 5  | 0.440 | 57.03 | -0.04  | 57.07 | 56.83 | 0.10   | 0.10  |        |
| 6  | 0.634 | 54.08 | -1.92  | 56.00 | 53.88 | 0.10   | 0.10  |        |
| 7  | 0.871 | 53.10 | -2.90  | 56.00 | 52.83 | 0.10   | 0.17  |        |
| 8  | 1.928 | 49.00 | -7.00  | 56.00 | 48.70 | 0.10   | 0.20  | QP     |
| 9  | 3.779 | 52.52 | -3.48  | 56.00 | 52.14 | 0.10   | 0.28  |        |
| 10 | 5.390 | 47.48 | -12.52 | 60.00 | 47.06 | 0.16   | 0.26  |        |

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

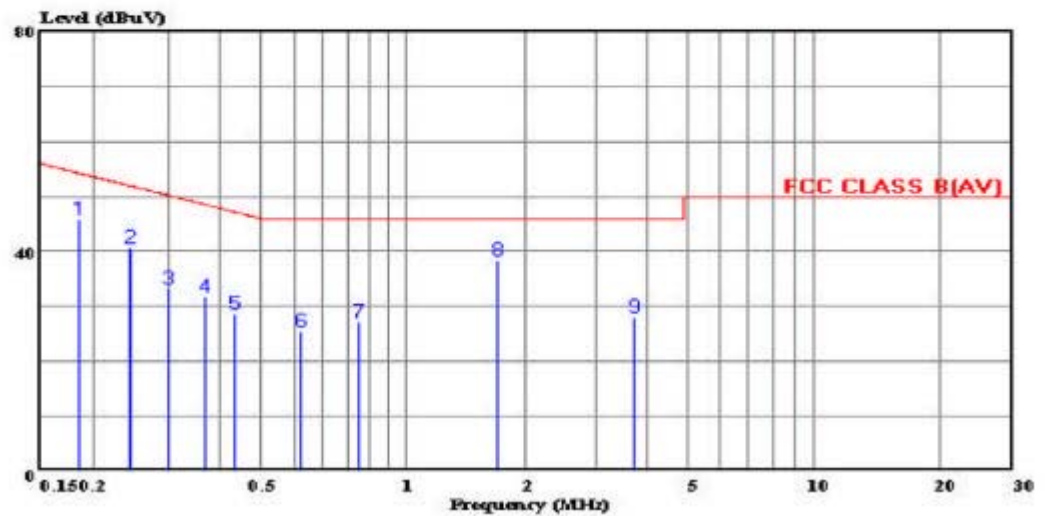
REPORT NO. : E940857



## 暉鑫科技股份有限公司 PEP Testing Laboratory

Data#: 46 File#: FCC CLASS B(AV).EMI

Date: 2005-12-05 Time: 14:24:20



Site : Shih-Chi : Conduction No.1(Long)  
Condition: FCC CLASS B(AV) LISN.N(16A) NEUTRAL  
eut : E940857  
power : AC 120V 60Hz  
memo : Peak Value  
memo : Final Test  
memo : TCR

Page: 1

|   | Freq  | Level | Over   | Limit | Read  | Probe  | Cable |         |
|---|-------|-------|--------|-------|-------|--------|-------|---------|
|   | MHz   | dBuV  | Limit  | Line  | Level | Factor | Loss  | Remark  |
|   |       |       | dB     | dBuV  | dBuV  | dB     | dB    |         |
| 1 | 0.185 | 45.90 | -8.36  | 54.26 | 45.70 | 0.10   | 0.10  | Average |
| 2 | 0.246 | 40.69 | -11.20 | 51.89 | 40.40 | 0.10   | 0.19  | Average |
| 3 | 0.303 | 33.30 | -16.86 | 50.16 | 33.10 | 0.10   | 0.10  | Average |
| 4 | 0.366 | 31.70 | -16.89 | 48.59 | 31.50 | 0.10   | 0.10  | Average |
| 5 | 0.433 | 28.60 | -18.59 | 47.19 | 28.40 | 0.10   | 0.10  | Average |
| 6 | 0.622 | 25.50 | -20.50 | 46.00 | 25.30 | 0.10   | 0.10  | Average |
| 7 | 0.854 | 27.35 | -18.65 | 46.00 | 27.10 | 0.10   | 0.15  | Average |
| 8 | 1.820 | 38.30 | -7.70  | 46.00 | 38.00 | 0.10   | 0.20  | Average |
| 9 | 3.840 | 27.99 | -18.01 | 46.00 | 27.60 | 0.10   | 0.29  | Average |

## **2.4 Conducted Emission Test Photo**

**EUT Model No. BS4100**

**< FRONT VIEW >**



### III. §15.247(a)(1) : Hopping Channel Frequency Separation

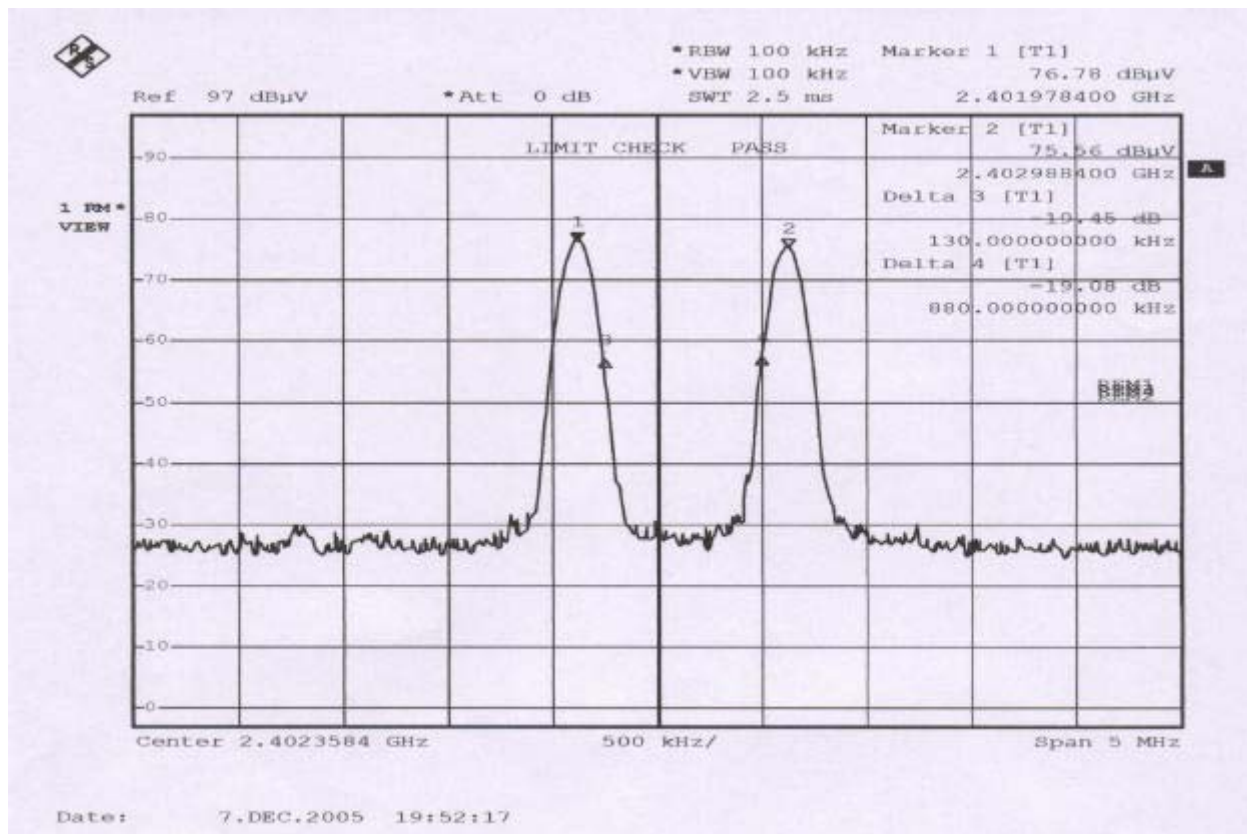
#### 3.1 Test Procedure

- (1) The Hopping Channel Frequency Separation was measured in max hold analyzer mode with span wide enough to capture the peaks of two adjacent channels.
- (2) Set the Spectrum as RBW=VBW=100KHz
- (3) 3.3 Spectrum Plot Data show the Frequency Separation test results.

#### 3.2 Test result of Frequency Separation

|                     | Measured Separation (KHz) | Limit (KHz) | Pass/Fail |
|---------------------|---------------------------|-------------|-----------|
| Channel Separation  | 1010                      | 25          | Pass      |
| Separation at -20dB | 750                       | 25          | Pass      |

#### 3.3 Spectrum Plot Data



## **IV. §15.247(a)(1) : 20dB Bandwidth**

### **4.1 Test Procedure**

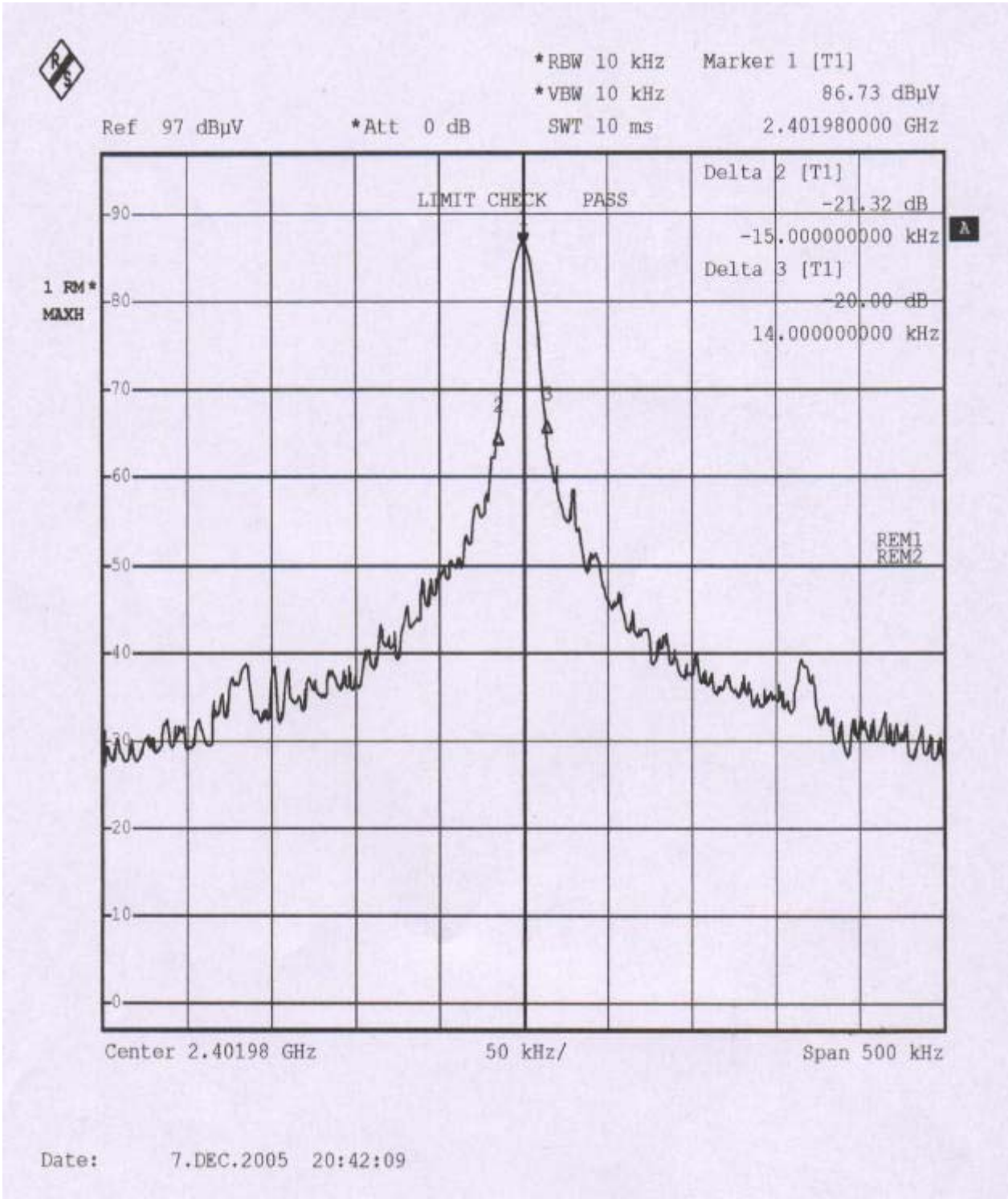
- (1)The 20dB bandwidth was measured at the EUT antenna terminal in max hold analyzer mode with span wide enough to capture the hopping channel emissions.
- (2)Set the Spectrum as RBW=VBW=10KHz
- (3) 4.2 Spectrum Plot Data show the 20dB Bandwidth test results.

### **4.2 Test result of Bandwidth**

#### **EUT Model No. BS4100**

| <b>Channel</b> | <b>Bandwidth<br/>(KHz)</b> | <b>Limit<br/>(KHz)</b> | <b>Pass/Fail</b> |
|----------------|----------------------------|------------------------|------------------|
| <b>LOW</b>     | <b>29</b>                  | <b>1000</b>            | <b>Pass</b>      |
| <b>MID</b>     | <b>28</b>                  | <b>1000</b>            | <b>Pass</b>      |
| <b>HIGH</b>    | <b>28</b>                  | <b>1000</b>            | <b>Pass</b>      |

4.3 Spectrum Plot Data  
Channel : CH LOW



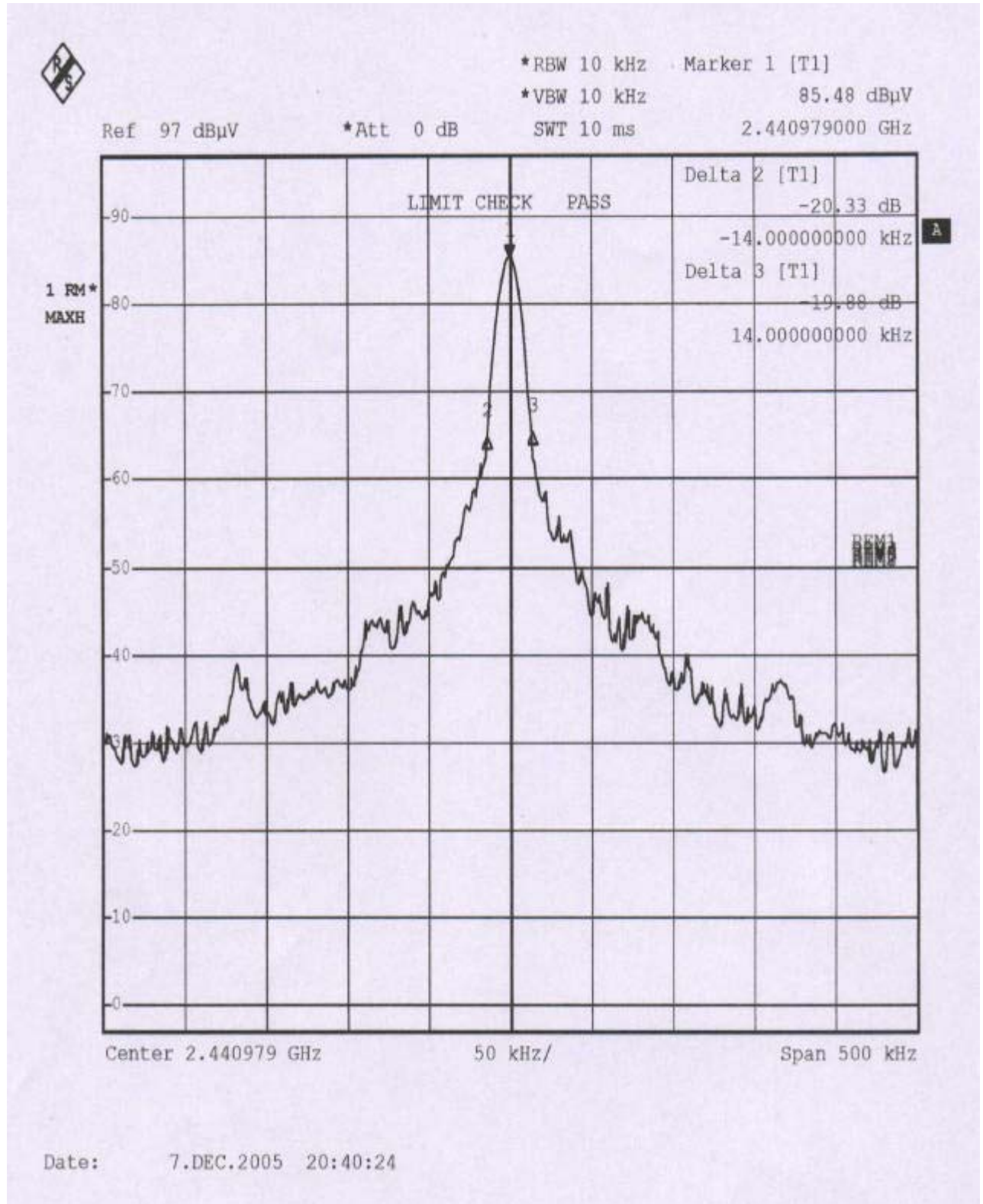
# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

## Channel : CH MID



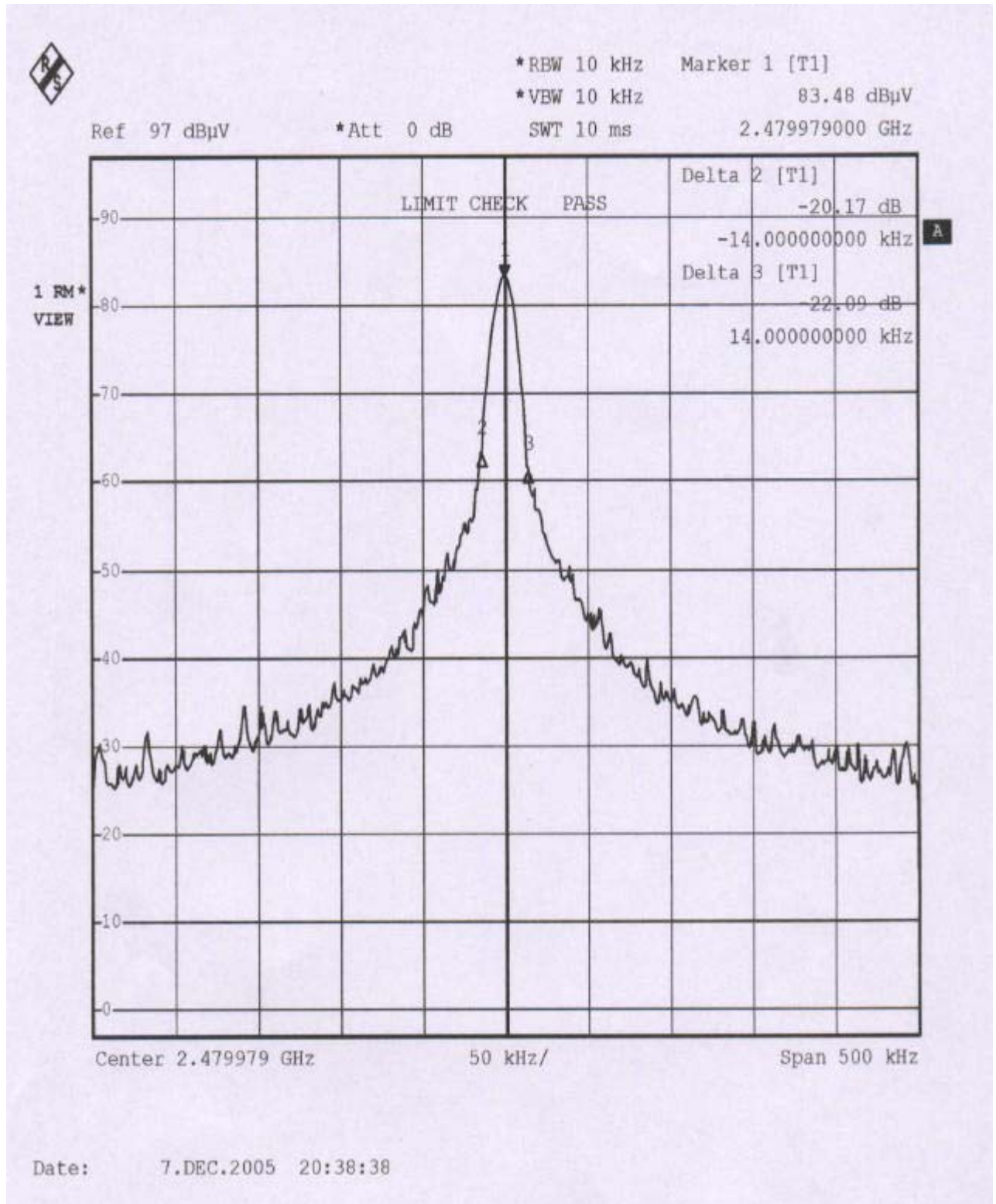
# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

## Channel : CH HIGH



## **V. §15.247(a) (1): Time of Occupancy(Dwell Time)**

### **5.1 Test Procedure**

- (1)The Time of Occupancy was measured in “max hold” analyzer mode with zero span and different sweep time to calculate the Time of Occupancy.
- (2)Set the Spectrum as RBW=VBW=1MHz
- (3)5.3 Spectrum Plot Data show the Time of Occupancy test results.

### **5.2 Test Result of Dwell Time**

Dwell Time=  $0.40 \times 80 = 32.0\text{ms} < 0.4\text{s}$

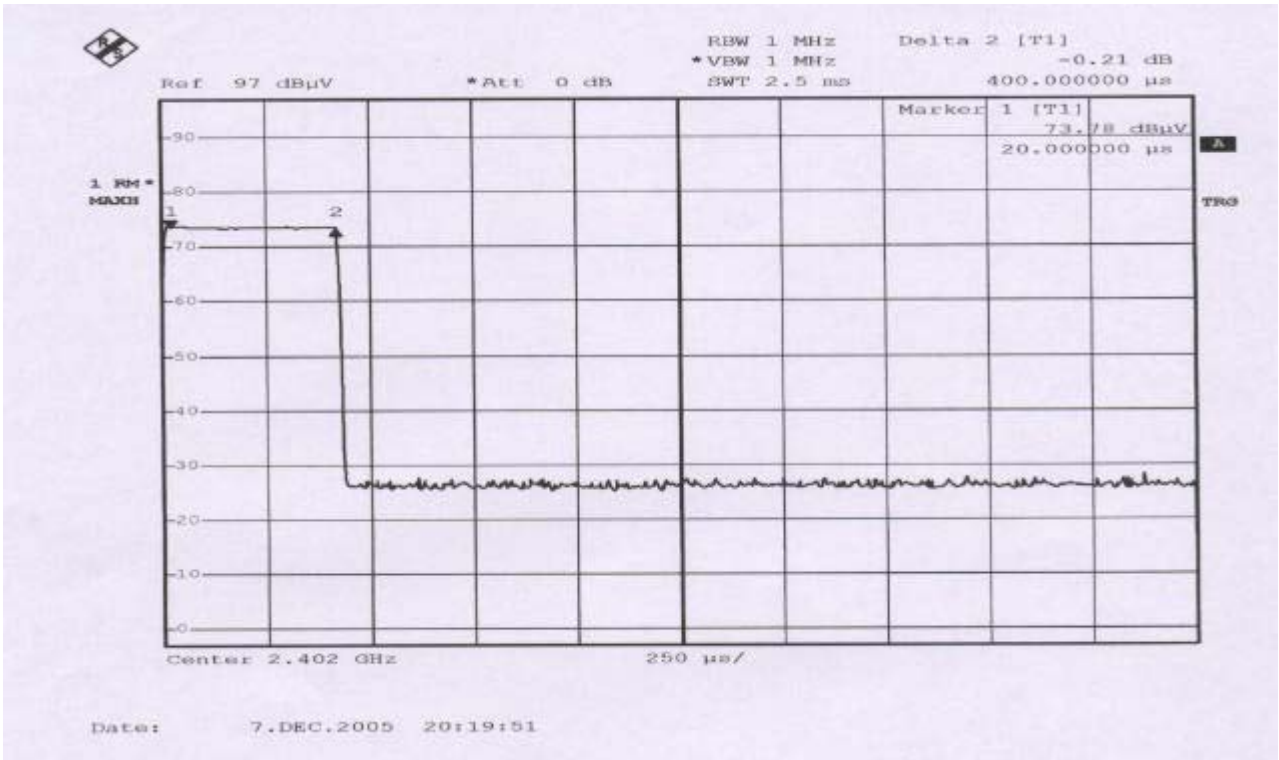
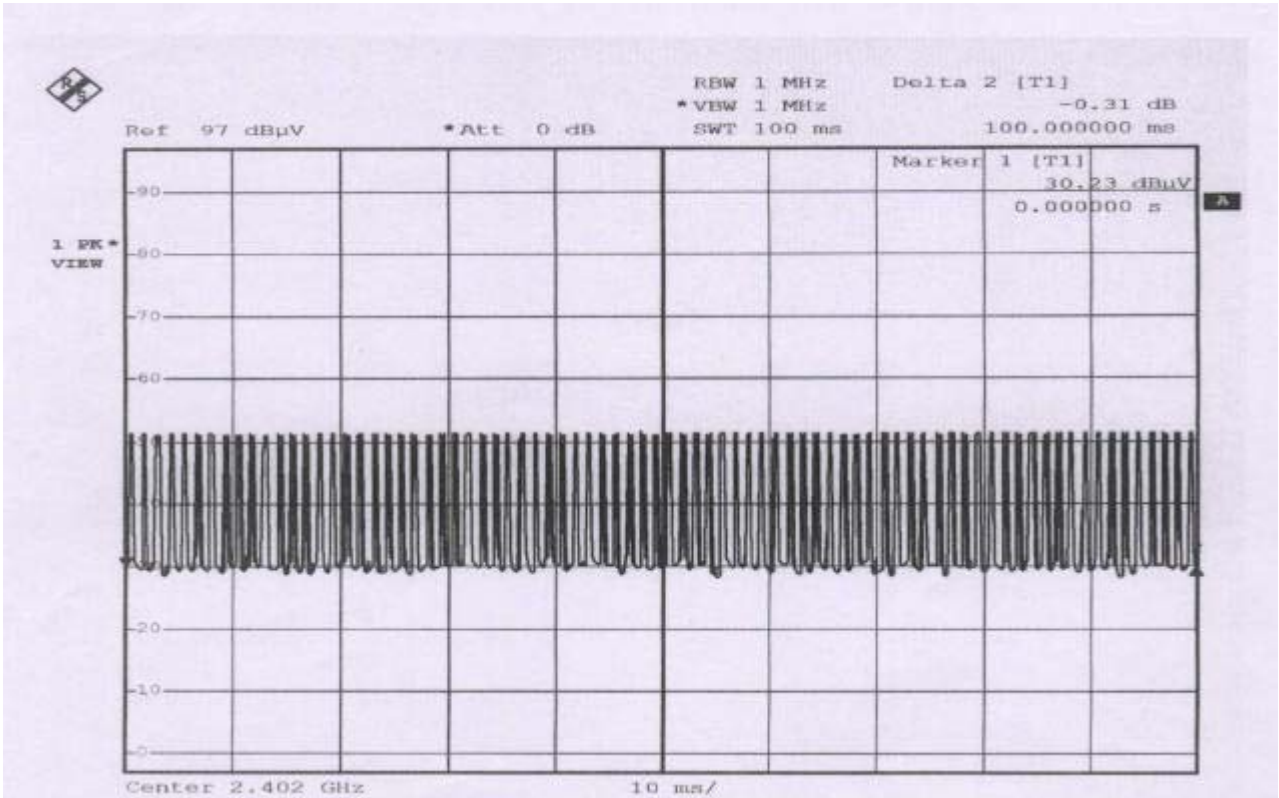
PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

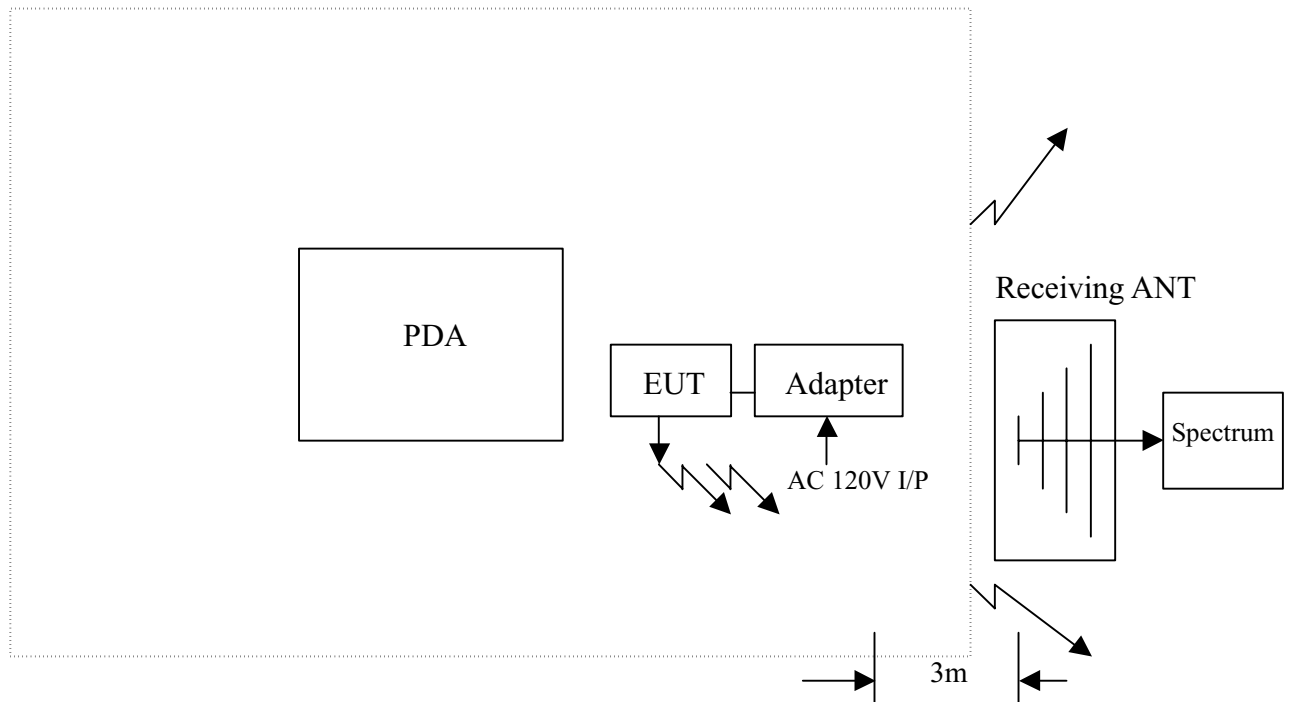
REPORT NO. : E940857

5.3 Spectrum Plot Data



## **VI. §15.247(b) : The maximum peak output power ( $\leq 1\text{watt}$ )**

### **6.1 Testing Description**



Three channels were tested : CH LOW, CH MID AND CH HIGH Measurements were taken by using both horizontal and vertical antenna polarization, and the antenna was raised and lowered from one to four meters to find the worst emission levels.

### **6.2 Software Using**

The driver of “CSR BlueSuite” is used to select the support channel as mentioned on section 1.3 (b) listed above

### 6.3 Test Result of Fundamental Emissions

**EUT Model No. BS4100**

| Channel | Frequency<br>( MHz ) | Antenna<br>Polarity<br>(H/V) | Spectrum<br>Read<br>(dBuV/m) | C.F.<br>(dB) | Level<br>(dBuV/m) | E.I.R.P.<br>(W)        |
|---------|----------------------|------------------------------|------------------------------|--------------|-------------------|------------------------|
| LOW     | 2401.95              | H                            | 66.00                        | -2.10        | 63.90             | $7.364 \times 10^{-7}$ |
|         | 2401.95              | V                            | 65.03                        | -2.10        | 59.44             | $5.890 \times 10^{-7}$ |
| MID     | 2440.96              | H                            | 63.78                        | -2.01        | 61.77             | $4.509 \times 10^{-7}$ |
|         | 2440.97              | V                            | 63.67                        | -2.01        | 61.66             | $4.397 \times 10^{-7}$ |
| HIGH    | 2479.95              | H                            | 59.93                        | -1.94        | 61.87             | $2.952 \times 10^{-6}$ |
|         | 2479.95              | V                            | 62.95                        | -1.94        | 61.01             | $3.785 \times 10^{-7}$ |

Note :

1. "C.F." means corrected factor = antenna factor + cable loss — Preamplifier Gain .
2. Level means emission amplitude = S.P. + C.F. + duty cycle factor
3. Conducted output power :  $P = (E d)^2 / 30G$

where  $E (V) = \text{Level} (V)$

$d (m) = \text{measurement distance} = 3m$

$G = 1$  ( the gain of the transmitting antenna over isotropic antenna )

$P = \text{E.I.R.P.}$

4. Example :

If Level = 120 dBuV/m

$$10^{(120/20)} \times 10^{-6} = 1 \text{ V}$$

$$\text{E.I.R.P.} = (1 \times 3)^2 / 30 = 300 \text{ mW}$$

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

EUT Model No. BS4100

Channel : CH LOW

Polarity : Horizontal



暉鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA H.3 HORIZONTAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The maximum peak output power  
Memo : CH LOW : 2402Hz

| Freq | Level    | Over  | Limit | Read         |
|------|----------|-------|-------|--------------|
| MHz  | dBuV/m   | Limit | Line  | Level Factor |
| 1    | 2401.950 | 63.90 | ----- | 66.00 -2.10  |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

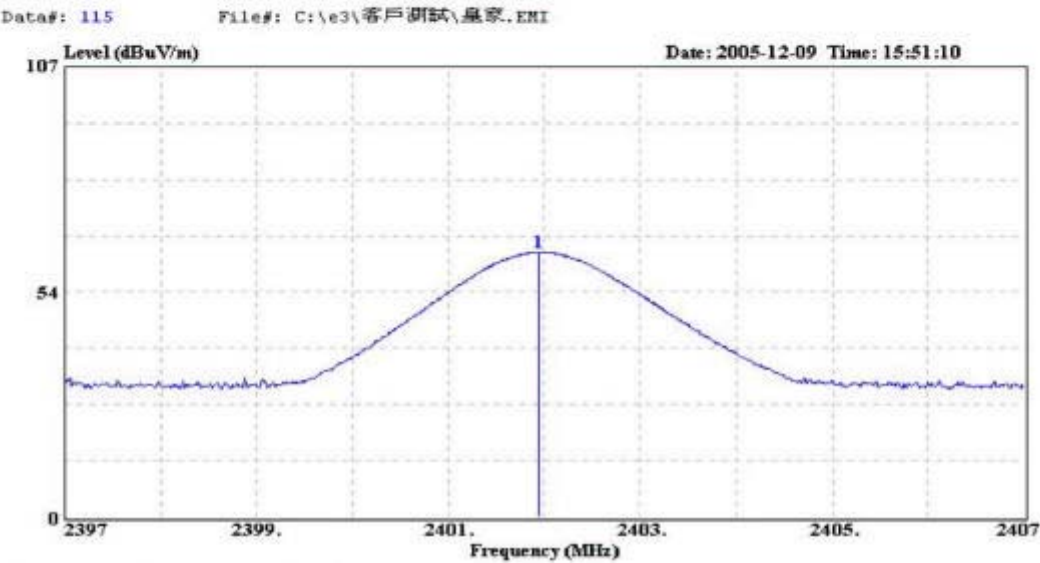
REPORT NO. : E940857

Channel : CH LOW

Polarity : Vertical



緯鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA V.3 VERTICAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The maximum peak output power  
Memo : CH LOW : 2402Hz

| Freq | Level    | Over  | Limit | Read  |        |
|------|----------|-------|-------|-------|--------|
| MHz  | dBuV/m   | Limit | Line  | Level | Factor |
| 1    | 2401.950 | 62.93 | ----- | 65.03 | -2.10  |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

Channel : CH MID  
Polarity : Horizontal



暉鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA H.3 HORIZONTAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The maximum peak output power  
Memo : CH MID : 2441Hz

| Freq | Level    | Over  | Limit | Read  |        |
|------|----------|-------|-------|-------|--------|
| MHz  | dBuV/m   | Limit | Line  | Level | Factor |
| 1    | 2440.960 | 61.77 | ----- | 63.78 | -2.01  |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

Channel : CH MID

Polarity : Vertical



緯鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA V.3 VERTICAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The maximum peak output power  
Memo : CH MID : 2441Hz

| Freq       | Level  | Over  | Limit | Read  |        |
|------------|--------|-------|-------|-------|--------|
| MHz        | dBuV/m | Limit | Line  | Level | Factor |
| 1 2440.970 | 61.66  | ----- | ----- | 63.67 | -2.01  |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

Channel : CH HIGH

Polarity : Horizontal



緯鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA H.3 HORIZONTAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The maximum peak output power  
Memo : CH HIGH : 2480Hz

| Freq       | Level  | Over  | Limit | Read  |        |
|------------|--------|-------|-------|-------|--------|
| MHz        | dBuV/m | Limit | Line  | Level | Factor |
| 1 2479.950 | 59.93  | ----- | ----- | 61.87 | -1.94  |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

Channel : CH HIGH

Polarity : Vertical



緯鑫科技股份有限公司  
PEP Testing Laboratory



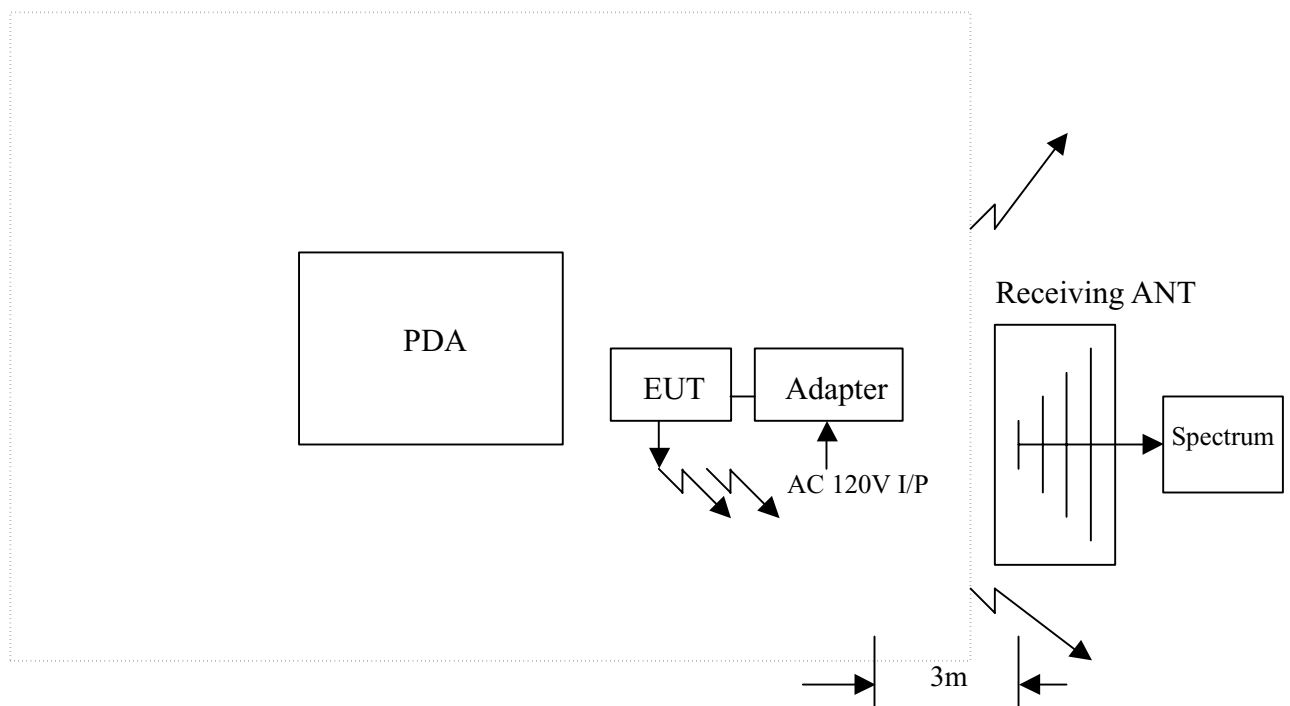
|           |                                 |        |            |        |       |
|-----------|---------------------------------|--------|------------|--------|-------|
| Site      | : chamber no3 (Bear)            |        |            |        |       |
| Condition | : 3m HORN ANTENNA V.3 VERTICAL  |        |            |        |       |
| EUT       | : E940857                       |        |            |        |       |
| Power     | : AC 120V 50Hz                  |        |            |        |       |
| Memo      | : Peak Value                    |        |            |        |       |
| Memo      | : The maximum peak output power |        |            |        |       |
|           | : CH HIGH : 2480Hz              |        |            |        |       |
|           | Freq                            | Level  | Over Limit | Read   |       |
|           | MHz                             | dBuV/m | dB         | dBuV/m | dB    |
| 1         | 2479.950                        | 61.01  | -----      | 62.95  | -1.94 |

## VII. §15.247(b)(4) Maximum Permissible Exposure (MPE)

### 7.1 MPE distance calculation

$$d = \frac{\sqrt{30G \text{ EIRP}}}{E}$$

### 7.2 Device operating configurations exposure conditions



**7.3 Maximum Permissible Exposure (MPE)****EUT Model No. BS4100**

| Channel | Frequency | A.P.  | S.P.<br>Read | C.F.  | Level    | Power density<br>at 20cm  |
|---------|-----------|-------|--------------|-------|----------|---------------------------|
|         | ( MHz )   | (H/V) | (dBuV/m)     | (dB)  | (dBuV/m) | ( m W / cm <sup>2</sup> ) |
| LOW     | 2401.95   | H     | 66.00        | -2.10 | 63.90    | 3.27*10 <sup>-9</sup>     |
|         | 2401.95   | V     | 65.03        | -2.10 | 59.44    | 1.17*10 <sup>-9</sup>     |
| MID     | 2440.96   | H     | 63.78        | -2.01 | 61.77    | 2.00*10 <sup>-9</sup>     |
|         | 2440.97   | V     | 63.67        | -2.01 | 61.66    | 1.95*10 <sup>-9</sup>     |
| HIGH    | 2479.95   | H     | 59.93        | -1.94 | 61.87    | 2.05*10 <sup>-9</sup>     |
|         | 2479.95   | V     | 62.95        | -1.94 | 61.01    | 1.68*10 <sup>-9</sup>     |

Note :

1. "A.P." means antenna polarity .
2. "S.P." Read means amplitude read by spectrum analyzer .
3. "C.F." means corrected factor = antenna factor + cable loss - Preamplifier Gain .
4. Level means emission amplitude = S.P. + C.F. + duty cycle factor
5. Conducted output power :  $P = (E d)^2 / 30G$

where E (V) = Level (V)

d (m) = distance = 20 cm

G = 1 ( the gain of the transmitting antenna over isotropic antenna )

P = E.I.R.P.

6. Example :

If Level = 120 dBuV/m

$$10^{(120/20)} \times 10^{-6} = 1 \text{ V}$$

$$\text{E.I.R.P.} = (1 \times 3)^2 / 30 = 300 \text{ mW}$$

**VIII. §15.247(c) : Spurious Radiated Emissions****8.1 Out side band below 1GHz****Test Results :****Model No. : BS4100****Frequency range : 30MHz - 1GHz****Detector : Quasi-Peak Value****Temperature : 20° C****Humidity : 54 %****Antenna polarization : HORIZONTAL ; Test distance : 3 m ;**

| Freq.<br>(MHz) | Level<br>(dBuV/m) | Over<br>Limit<br>(dB) | Limit<br>Line<br>(dBuV/m) | Read<br>Level<br>(dBuV) | Probe<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Preamp<br>Factor<br>(dB) | Remark |
|----------------|-------------------|-----------------------|---------------------------|-------------------------|---------------------------|-----------------------|--------------------------|--------|
| 165.863        | 28.47             | -15.03                | 43.5                      | 31.39                   | 16.98                     | 1.50                  | 21.40                    |        |
| 239.410        | 29.13             | -16.87                | 46.0                      | 36.31                   | 12.15                     | 1.97                  | 21.30                    |        |
| 264.233        | 29.66             | -16.34                | 46.0                      | 35.74                   | 12.85                     | 2.19                  | 21.12                    |        |
| 399.640        | 28.40             | -17.60                | 46.0                      | 30.80                   | 15.90                     | 2.70                  | 21.00                    |        |
| 497.549        | 30.95             | -15.05                | 46.0                      | 31.06                   | 17.60                     | 3.09                  | 20.80                    |        |
| 596.222        | 37.84             | - 8.16                | 46.0                      | 35.60                   | 19.46                     | 3.39                  | 20.61                    |        |

**Antenna polarization : VERTICAL ; Test distance : 3 m ;**

| Freq.<br>(MHz) | Level<br>(dBuV/m) | Over<br>Limit<br>(dB) | Limit<br>Line<br>(dBuV/m) | Read<br>Level<br>(dBuV) | Probe<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Preamp<br>Factor<br>(dB) | Remark |
|----------------|-------------------|-----------------------|---------------------------|-------------------------|---------------------------|-----------------------|--------------------------|--------|
| 165.911        | 28.47             | -15.03                | 43.5                      | 31.39                   | 16.98                     | 1.50                  | 21.40                    |        |
| 196.910        | 29.81             | -13.69                | 43.5                      | 36.76                   | 12.75                     | 1.60                  | 21.30                    |        |
| 274.342        | 28.27             | -17.73                | 46.0                      | 33.99                   | 13.15                     | 2.25                  | 21.12                    |        |
| 497.498        | 36.03             | - 9.97                | 46.0                      | 36.14                   | 17.60                     | 3.09                  | 20.80                    |        |
| 547.927        | 35.49             | -10.51                | 46.0                      | 34.38                   | 18.56                     | 3.25                  | 20.70                    |        |
| 596.247        | 38.74             | - 7.26                | 46.0                      | 36.50                   | 19.46                     | 3.39                  | 20.61                    |        |

**Note :**

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor

2. Over Limit = Level – Limit Line

3. All the other frequencies are under the limits more than 20dB

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

## 8.2 Out side band above 1GHz

### Test Results :

Model No. : BS4100

Frequency range : above 1GHz

Temperature : 20° C

Channel : LOW

Detector : Peak / Average Value

Humidity : 54 %

Antenna polarization : HORIZONTAL ; Test distance : 3 m ;

| Freq.    | Level    | Over   | Limit    | Read   | Probe  | Cable | Preamp |        |
|----------|----------|--------|----------|--------|--------|-------|--------|--------|
| (MHz)    | (dBuV/m) | Limit  | Line     | Level  | Factor | Loss  | Factor | Remark |
|          |          | (dB)   | (dBuV/m) | (dBuV) | (dB/m) | (dB)  | (dB)   |        |
| 4803.500 | 49.64    | -24.36 | 74       | 45.03  | 32.79  | 5.93  | 34.11  | PK     |

Antenna polarization : VERTICAL ; Test distance : 3 m ;

| Freq.    | Level    | Over   | Limit    | Read   | Probe  | Cable | Preamp |        |
|----------|----------|--------|----------|--------|--------|-------|--------|--------|
| (MHz)    | (dBuV/m) | Limit  | Line     | Level  | Factor | Loss  | Factor | Remark |
|          |          | (dB)   | (dBuV/m) | (dBuV) | (dB/m) | (dB)  | (dB)   |        |
| 4803.500 | 49.90    | -24.10 | 74       | 45.29  | 32.79  | 5.93  | 34.11  | PK     |

### Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,

Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

**Model No. : BS4100**

**Frequency range : above 1GHz**

**Detector : Peak / Average Value**

**Temperature : 20° C**

**Humidity : 54 %**

**Channel : MID**

**Antenna polarization : HORIZONTAL ; Test distance : 3 m ;**

|          |          | Over   | Limit    | Read   | Probe  | Cable | Preamp |        |
|----------|----------|--------|----------|--------|--------|-------|--------|--------|
| Freq.    | Level    | Limit  | Line     | Level  | Factor | Loss  | Factor | Remark |
| (MHz)    | (dBuV/m) | (dB)   | (dBuV/m) | (dBuV) | (dB/m) | (dB)  | (dB)   |        |
| 4881.500 | 53.22    | -20.78 | 74       | 48.23  | 33.09  | 5.96  | 34.06  | PK     |

**Antenna polarization : VERTICAL ; Test distance : 3 m ;**

|          |          | Over   | Limit    | Read   | Probe  | Cable | Preamp |        |
|----------|----------|--------|----------|--------|--------|-------|--------|--------|
| Freq.    | Level    | Limit  | Line     | Level  | Factor | Loss  | Factor | Remark |
| (MHz)    | (dBuV/m) | (dB)   | (dBuV/m) | (dBuV) | (dB/m) | (dB)  | (dB)   |        |
| 4881.500 | 53.16    | -20.84 | 74       | 48.17  | 33.09  | 5.96  | 34.06  | PK     |

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

**Model No. : BS4100**

**Frequency range : above 1GHz**

**Detector : Peak / Average Value**

**Temperature : 20° C**

**Humidity : 54 %**

**Channel : HIGH**

**Antenna polarization : HORIZONTAL ; Test distance : 3 m ;**

|          |          | Over   | Limit    | Read   | Probe  | Cable | Preamp |        |
|----------|----------|--------|----------|--------|--------|-------|--------|--------|
| Freq.    | Level    | Limit  | Line     | Level  | Factor | Loss  | Factor | Remark |
| (MHz)    | (dBuV/m) | (dB)   | (dBuV/m) | (dBuV) | (dB/m) | (dB)  | (dB)   |        |
| 4959.500 | 57.00    | -17.00 | 74       | 51.64  | 33.39  | 5.99  | 34.02  | PK     |
| 4959.500 | 53.53    | - 0.47 | 54       | 48.17  | 33.39  | 5.99  | 34.02  | AV     |

**Antenna polarization : VERTICAL ; Test distance : 3 m ;**

|          |          | Over   | Limit    | Read   | Probe  | Cable | Preamp |        |
|----------|----------|--------|----------|--------|--------|-------|--------|--------|
| Freq.    | Level    | Limit  | Line     | Level  | Factor | Loss  | Factor | Remark |
| (MHz)    | (dBuV/m) | (dB)   | (dBuV/m) | (dBuV) | (dB/m) | (dB)  | (dB)   |        |
| 4959.500 | 54.68    | -19.32 | 74       | 49.32  | 33.39  | 5.99  | 34.02  | PK     |
| 4959.500 | 51.45    | - 2.55 | 54       | 46.09  | 33.39  | 5.99  | 34.02  | AV     |

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

### **8.3 Spurious Radiate Emission Testing Photos**

**EUT Model No. BS4100**

**< FRONT VIEW >**



**< REAR VIEW >**



## PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

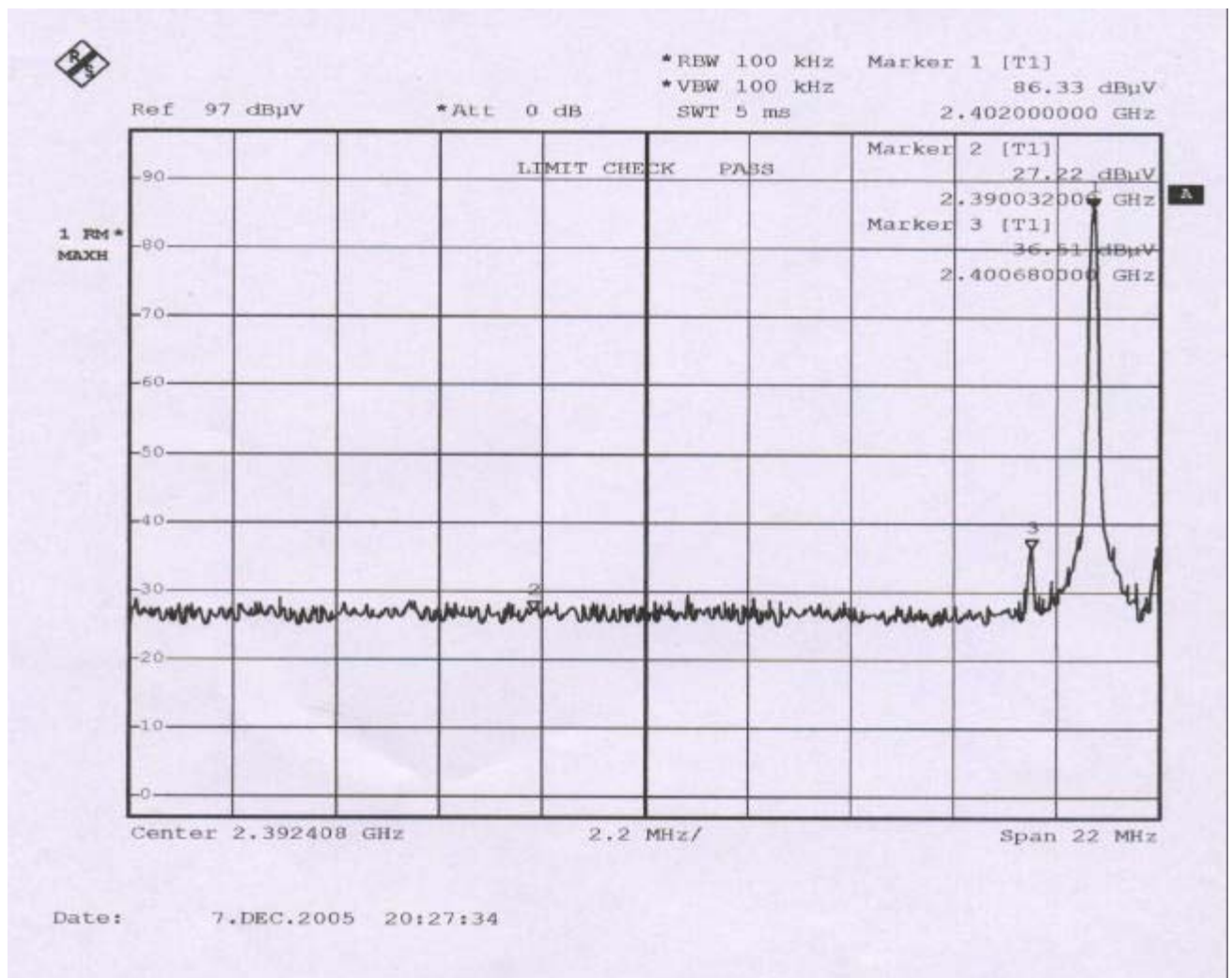
FCC ID : SHBBS4100

REPORT NO. : E940857

### IX. §15.247(c) : Band-edges Compliance

Channel : CH LOW

Polarity : Horizontal



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$86.33\text{dBuV/m} - 27.22\text{ dBuV/m} = 59.11\text{dBuV/m}$

$86.93\text{ dBuV/m} - 59.11\text{ dBuV/m} = 27.28\text{ dBuV/m}$

$*27.28\text{dBuV/m} < \text{Average Limit (54dBuV/m)}$

## PEP Testing Laboratory

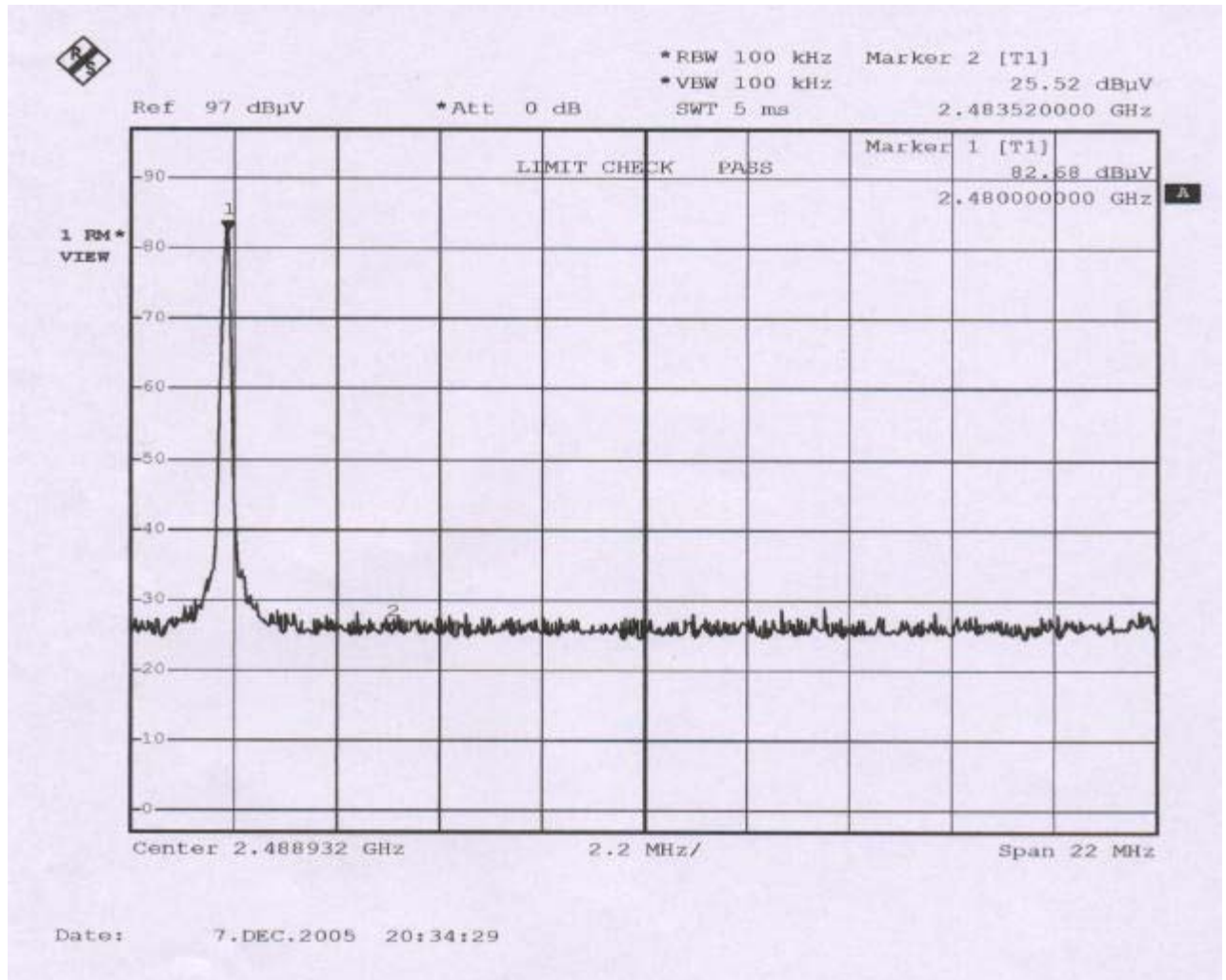
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

**Channel : CH HIGH**

**Polarity : Horizontal**



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$82.68\text{dBuV/m} - 25.52\text{ dBuV/m} = 57.16\text{dBuV/m}$

$81.10\text{ dBuV/m} - 57.16\text{ dBuV/m} = 23.94\text{ dBuV/m}$

$*23.94\text{dBuV/m} < \text{Average Limit (54dBuV/m)}$

# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,

Taipei Hsien, Taiwan, R. O. C.

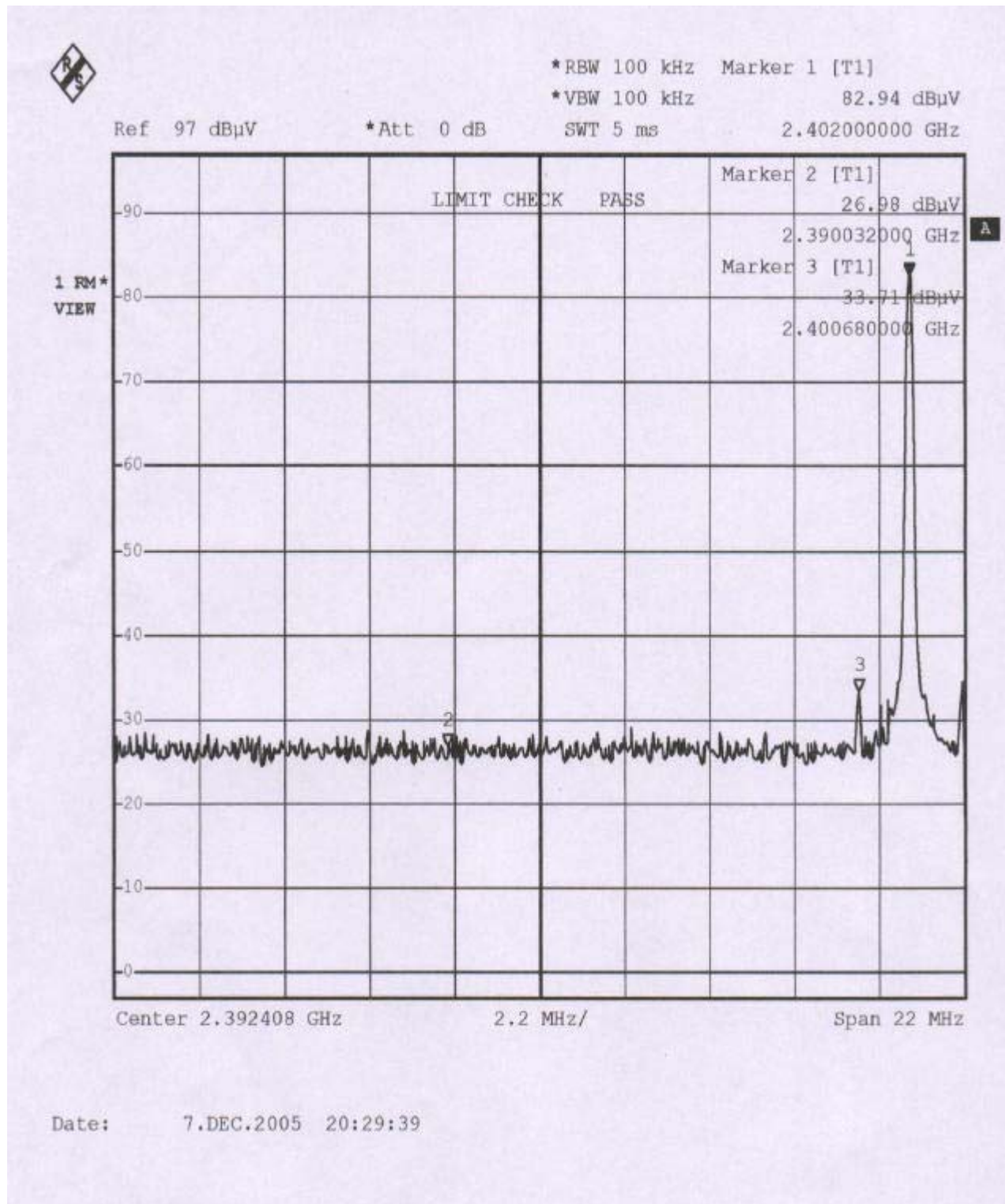
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

Channel : CH LOW

Polarity : Vertical



# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,

Taipei Hsien, Taiwan, R. O. C.

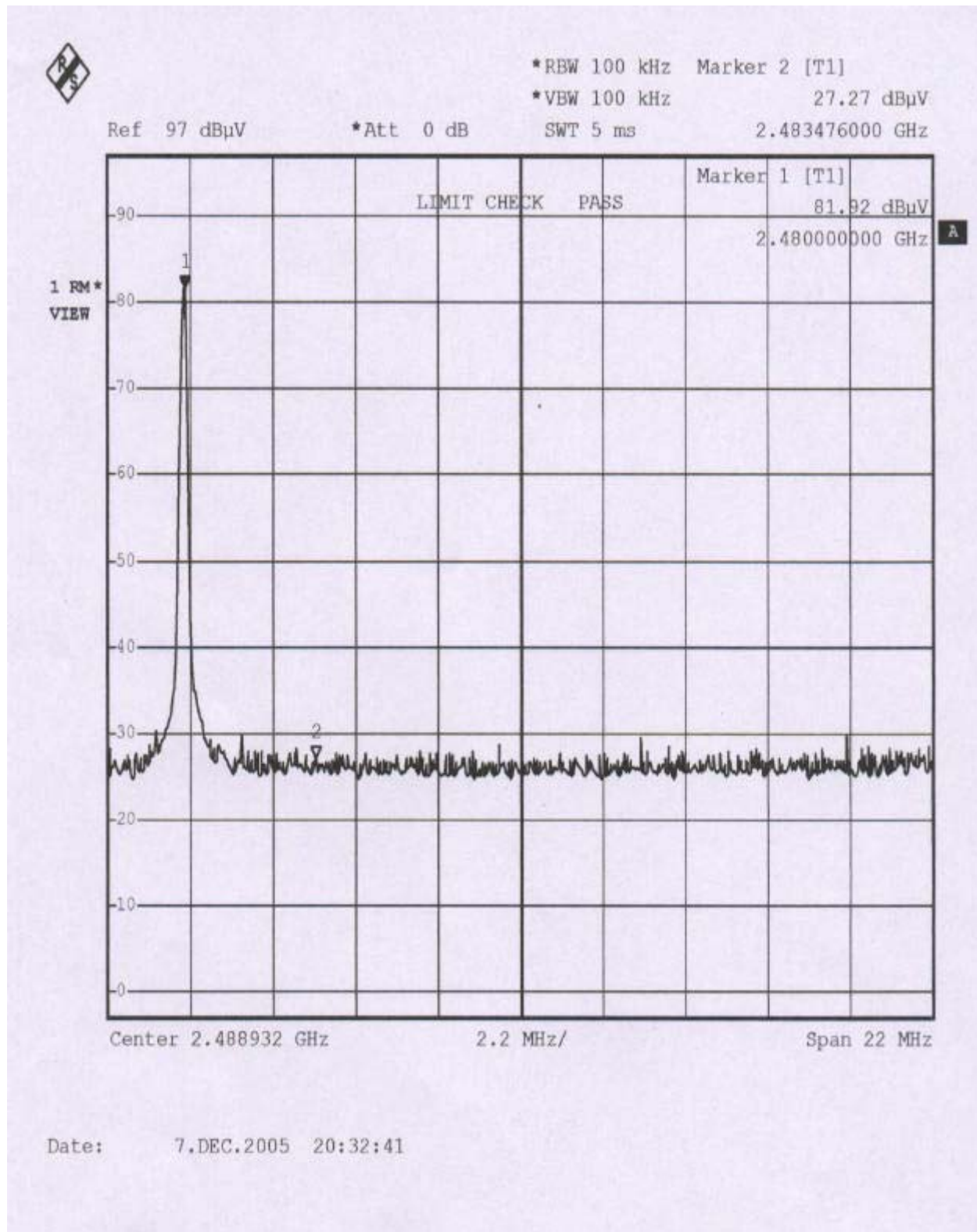
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

Channel : CH HIGH

Polarity : Vertical



## **X. §15.247(d) : Peak Power Spectral Density**

### **10.1 Test Procedure**

- (1) The Peak Power Spectral Density was measured at the EUT antenna terminal in max hold analyzer mode with span wide enough to capture the hopping channel emissions.
- (2) Set Spectrum as RBW=VBW=3KHz , Sweptime:auto.
- (3) 10.3 Spectrum Plot Data show the Peak Power Spectral Density test results.

### **10.2 Test result of Peak Power Spectral Density**

| Channel | Frequency (MHz) | Level (dBm) | Limit (dBm) | Pass/Fail |
|---------|-----------------|-------------|-------------|-----------|
| LOW     | 2401.98         | -30.71      | 8           | Pass      |
| MID     | 2440.98         | -33.10      | 8           | Pass      |
| HIGH    | 2479.98         | -35.16      | 8           | Pass      |

Note:

1. "S.P. read" means spectrum analyzer read power density.
2. "C.F." means correct factor = antenna factor + cable loss – Preamplifier Gain.
3. "Level" means power spectral density.

$$E.R.P. = (E d)^2 / 30G$$

where E (V) = S.P. read + C.F.

d (m) = measurement distance = 3m

G = 1 ( the gain of the transmitting antenna over isotropic antenna )

Example :

If Level = 120 dBuV/m

$$10^{(120/20)} \times 10^{-6} = 1 \text{ V}$$

$$E.R.P. = (1 \times 3)^2 / 30 = 300 \text{ mW} = 10 \text{ Log } (300\text{mW}/1\text{mW}) \\ = 24.77\text{dBm}$$

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

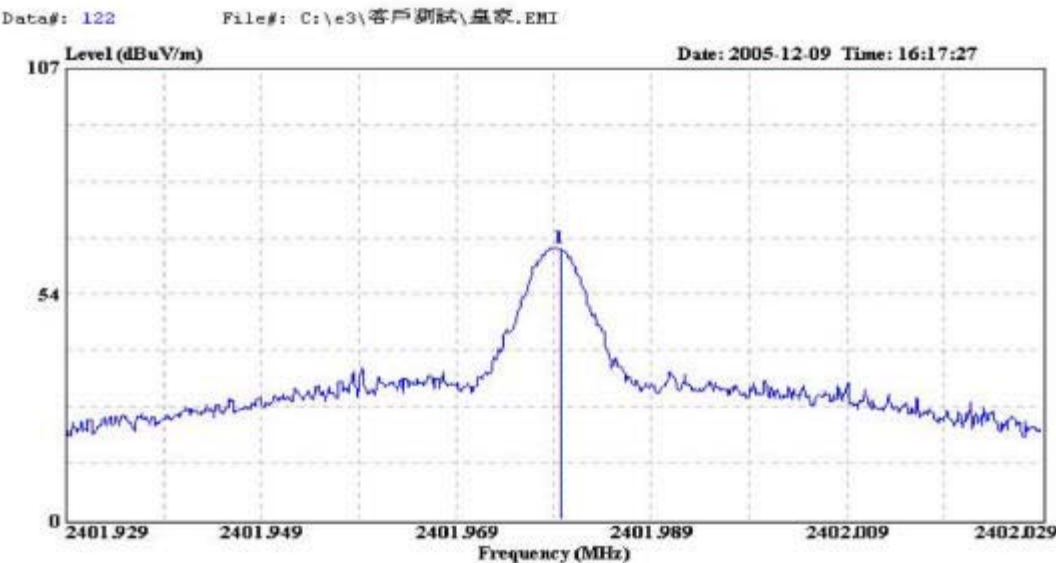
10.3 Spectrum Plot Data

Channel : CH LOW

Polarity : Horizontal



緯鑫科技股份有限公司  
PEP Testing Laboratory



|           |                                  |        |            |        |       |
|-----------|----------------------------------|--------|------------|--------|-------|
| Site      | : chamber no3 (Bear)             |        |            |        |       |
| Condition | : 3m HORN ANTENNA H.3 HORIZONTAL |        |            |        |       |
| EUT       | : E940857                        |        |            |        |       |
| Power     | : AC 120V 50Hz                   |        |            |        |       |
| Memo      | : Peak Value                     |        |            |        |       |
| Memo      | : The Peak Power Density         |        |            |        |       |
|           | : CH LOW : 2441Hz                |        |            |        |       |
|           | Freq                             | Level  | Over Limit | Read   |       |
|           | MHz                              | dBuV/m | dB         | dBuV/m | dB    |
| 1         | 2401.980                         | 64.53  | -----      | 66.65  | -2.12 |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

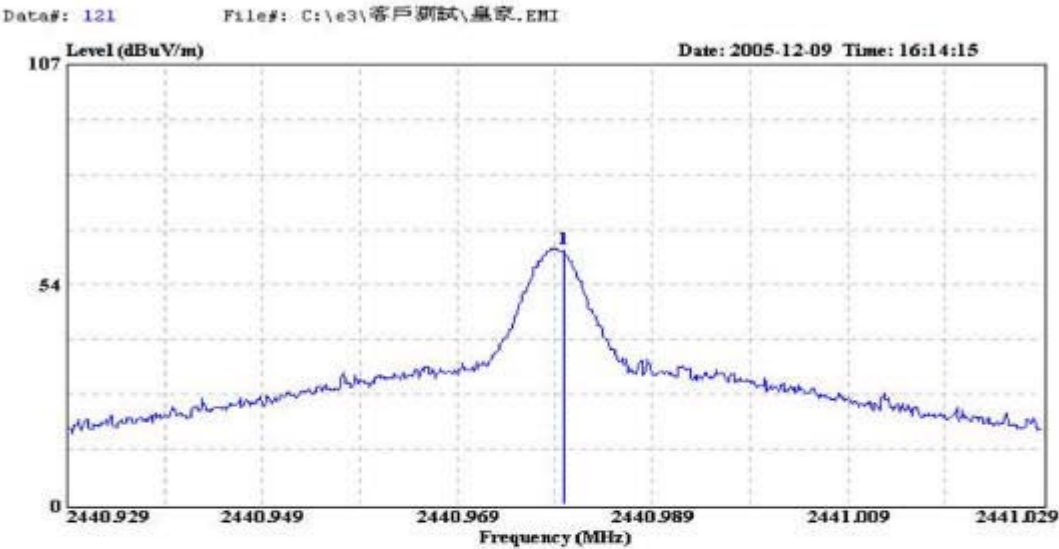
REPORT NO. : E940857

Channel : CH MID

Polarity : Horizontal



緯鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA H.3 HORIZONTAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The Peak Power Density  
Memo : CH MID : 2441Hz

|      | Over     | Limit | Read   |              |
|------|----------|-------|--------|--------------|
| Freq | Level    | Limit | Line   | Level Factor |
| MHz  | dBuV/m   | dB    | dBuV/m | dBuV dB      |
| 1    | 2440.980 | 62.13 | -----  | 64.14 -2.01  |

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

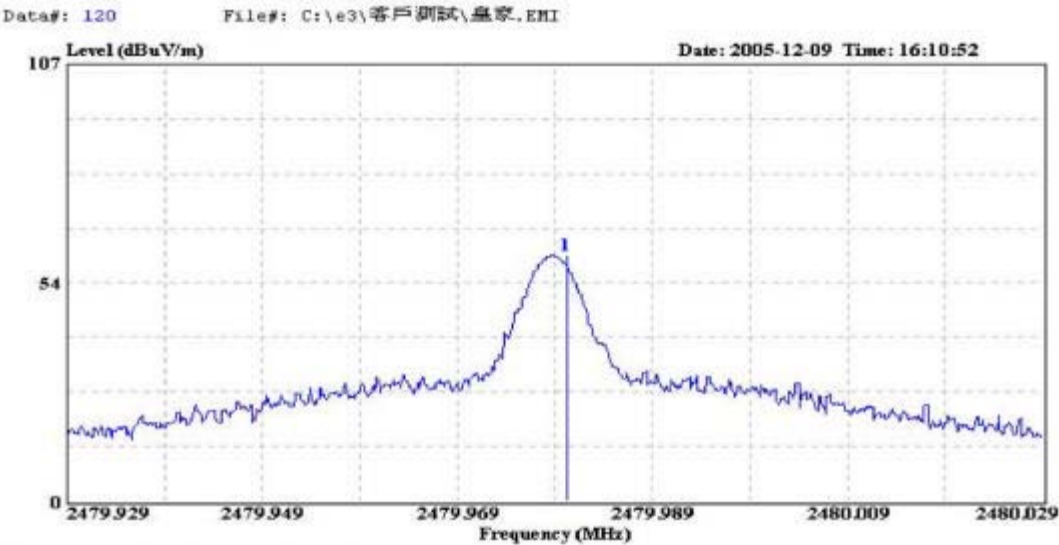
REPORT NO. : E940857

Channel : CH HIGH

Polarity : Horizontal



緯鑫科技股份有限公司  
PEP Testing Laboratory



Site : chamber no3 (Bear)  
Condition : 3m HORN ANTENNA H.3 HORIZONTAL  
EUT : E940857  
Power : AC 120V 50Hz  
Memo : Peak Value  
Memo : The Peak Power Density  
Memo : CH HIGH : 2480Hz

| Freq | Level    | Over  | Limit | Read  |        |
|------|----------|-------|-------|-------|--------|
| MHz  | dBuV/m   | Limit | Line  | Level | Factor |
| 1    | 2479.980 | 60.07 | ----- | 62.01 | -1.94  |

FCC ID : SHBBS4100

REPORT NO. : E940857

## XI. List of Test Instruments

| Test Mode                      | Instrument                       | Model No.              | Serial No.             | Next Cal. Date | Cal. Interval |
|--------------------------------|----------------------------------|------------------------|------------------------|----------------|---------------|
| <b>Conduction<br/>(No.1)</b>   | R & S Receiver                   | ESHS10                 | 830223/008             | May 22, 2006   | 1Year         |
|                                | Rolf Heine LISN                  | NNB-4/63TL             | 98008                  | May 01, 2006   | 1Year         |
|                                | R & S LISN                       | ESH3-Z5                | 844982/039             | Aug. 06, 2006  | 1Year         |
|                                | Spectrum Analyzer                | R3261A                 | 91720076               | June 08, 2006  | 1Year         |
|                                | RF Cable                         | Rg400                  | N/A                    | May 12, 2006   | 1Year         |
|                                | Schaffner ISN                    | T411                   | N/A                    | June 29, 2006  | 1Year         |
| <b>Radiation<br/>(OP No.1)</b> | R & S Receiver                   | ESVS30                 | 863342/012             | Apr. 23, 2006  | 1Year         |
|                                | Schaffner Pre-amplifier          | CPA9232                | 1028                   | May 20, 2006   | 1Year         |
|                                | COM-Power Horn Ant.              | AH-118<br>(1GHz~18GHz) | 10095                  | May 21, 2007   | 2Year         |
|                                | Schwarzbeck Precision Dipole Ant | VHAP<br>(30MHz~1GHz)   | 970 + 971<br>953 + 954 | June 26, 2006  | 3Year         |
|                                | R &S Signal Generator            | SMY01                  | 841104/037             | Apr. 29, 2007  | 2Year         |
|                                | RF Cable                         | No. 1                  | N/A                    | May 11, 2006   | 1Year         |
|                                | EMCO Antenna                     | 3142B<br>(26MHz~2GHz)  | 9904-1370              | Aug. 24, 2006  | 1Year         |
| <b>Chamber<br/>(No. 3)</b>     | Pre-Amplifier                    | CPA-9232               | 1027                   | Feb. 24, 2006  | 1Year         |
|                                | Antenna                          | VULB9160               | 3074                   | July 24, 2006  | 1Year         |
|                                | Signal Generator                 | SMY02                  | 829846/0358            | Jane 29, 2007  | 2Year         |
|                                | RF Cable                         | NO.3                   | N/A                    | Feb. 19, 2006  | 1Year         |
|                                | HORN ANTENNA                     | AH-118                 | 10095                  | May 13, 2006   | 1Year         |

## **XII. EUT Photos**

**EUT Model No. BS4100**



# PEP Testing Laboratory

12-3FI, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



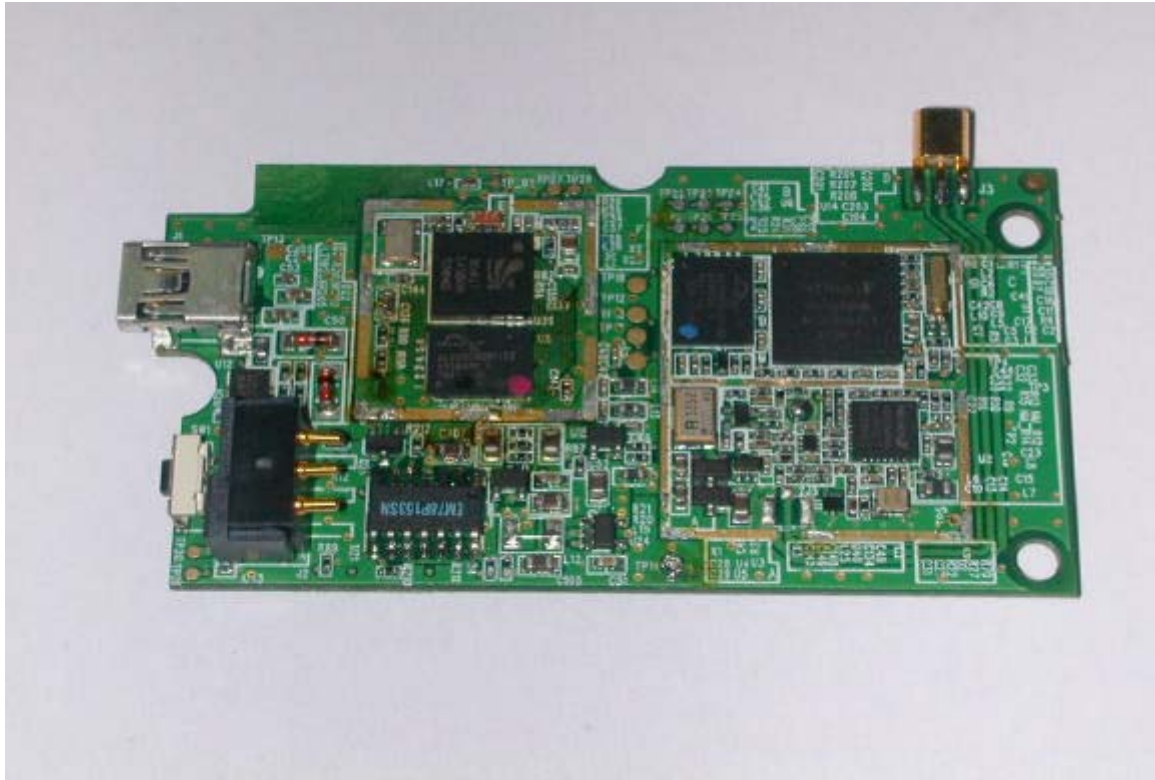
# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



## PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



# PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



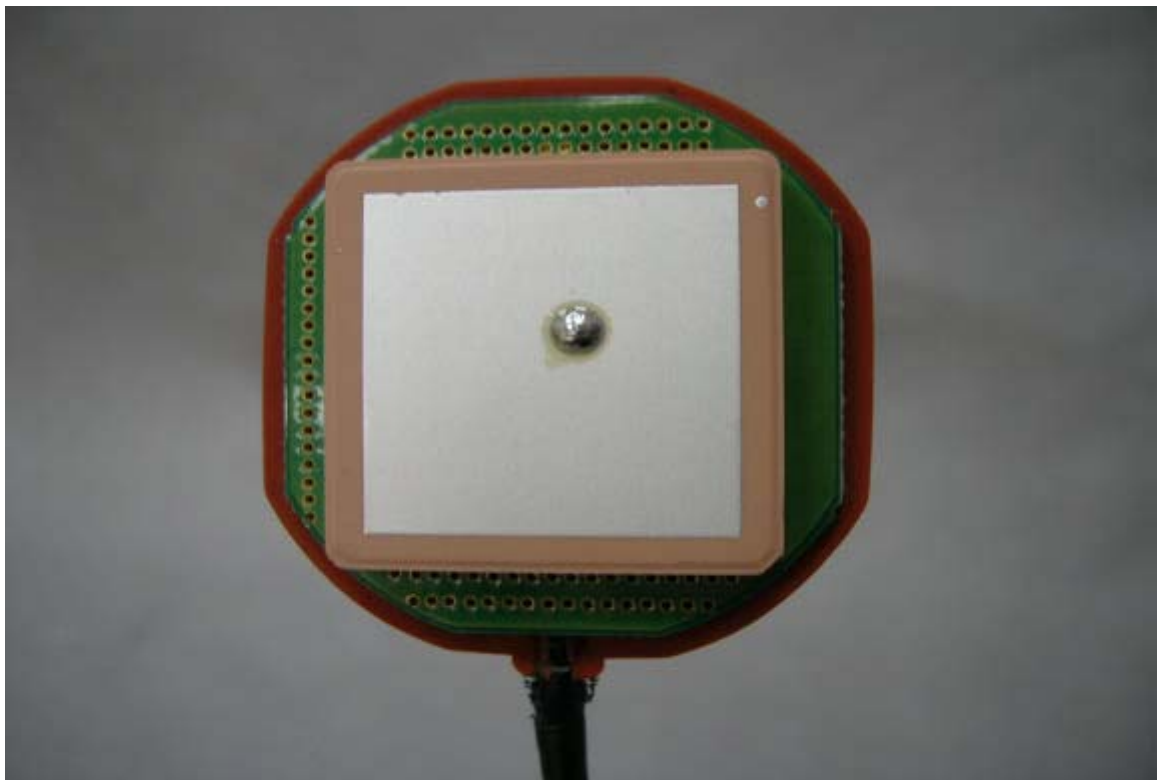
## PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857



## PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,  
Taipei Hsien, Taiwan, R. O. C.  
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SHBBS4100

REPORT NO. : E940857

