

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name: 2.4GHz Wireless mouse

Brand Name: ELECOM

Model No.: M-IR05DR

Model Difference: N/A

FCC ID: YWOM-IR05DR

Report No.: ER/2012/10007

Issue Date: Feb. 06, 2012

FCC Rule Part: §15.249

Prepared for: ELECOM CO., LTD.
1-1 FUSHIMI-MACHI 4-CHOME, CHUO-KU,
OSAKA-SHI, OSAKA, JAPAN

Prepared by: SGS Taiwan Ltd.
Electronics & Communication Laboratory
No. 134, Wu Kung Rd., Wuku Industrial Zone,
Taipei County, Taiwan.



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VERIFICATION OF COMPLIANCE

Applicant: ELECOM CO., LTD.
1-1 FUSHIMI-MACHI 4-CHOME, CHUO-KU, OSAKA-SHI,
OSAKA, JAPAN

Product Description: 2.4GHz Wireless mouse

Brand Name: ELECOM

Model No.: M-IR05DR

FCC ID: YWOM-IR05DR

Model Difference: N/A

File Number: ER/2012/10007

Date of test: Jan. 10, 2012 ~ Feb. 04, 2012

Date of EUT Received: Jan. 10, 2012

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd., Electronics & Communication Laboratory. 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 15.249.

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

Test By:

Jazz Huang

Date:

Feb. 06, 2012

Jazz Huang / Engineer**Prepared By:**

Judy Hsu

Date:

Feb. 06, 2012

Judy Hsu / Clerk**Approved By:**

Jim Chang

Date:

Feb. 06, 2012

Jim Chang / Supervisor

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Version

| Version No. | Date | Description |
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| 00 | Feb. 06, 2012 | Initial creation of document |
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1. GENERAL INFORMATION

1.1 Product Description

| | | | | |
|----------------------|---------------------------|----------|----------|----------|
| Product Name: | 2.4GHz Wireless mouse | | | |
| Brand Name: | ELECOM | | | |
| Model No.: | M-IR05DR | | | |
| Model Difference: | N/A | | | |
| Hardware Version | Ver00 | | | |
| Software Version | Version 105 | | | |
| Operation Frequency: | 2408~2474MHz | | | |
| Channel number: | 34 channels | | | |
| Signal frequency: | 2408MHz | 2410 MHz | 2412 MHz | 2414 MHz |
| | 2416 MHz | 2418 MHz | 2420 MHz | 2422 MHz |
| | 2424 MHz | 2426 MHz | 2428 MHz | 2430 MHz |
| | 2432 MHz | 2434 MHz | 2436 MHz | 2438 MHz |
| | 2440 MHz | 2442 MHz | 2444 MHz | 2446 MHz |
| | 2448 MHz | 2450 MHz | 2452 MHz | 2454 MHz |
| | 2456 MHz | 2458 MHz | 2460 MHz | 2462 MHz |
| | 2464 MHz | 2466 MHz | 2468 MHz | 2470 MHz |
| | 2472 MHz | 2474 MHz | | |
| Modulation Type: | GFSK | | | |
| Power Supply | DC 3V from AAA battery *2 | | | |
| Antenna Designation: | PCB Antenna 4.45 dBi max. | | | |

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1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: YWOM-IR05DR** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

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. Electronics & Communication Laboratory 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 is: 990257 and 236194, Canada Registration Number: 4620A-4.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory 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.

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2. 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 Transmitter was operated in the engineering operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a 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 placed on a 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 according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

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2.4 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

| Frequency (MHz) | Conducted Limit (dBuV) | |
|--------------------|------------------------|---------|
| | Quasi-Peak | Average |
| 0.15 – 0.5 | 66 - 56 | 56 - 46 |
| 0.5 – 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

(2) Radiated Emission 15.249(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

| Frequency (MHz) | Field strength of Fundamental | Field strength of Harmonics | Distance (m) |
|--------------------|----------------------------------|--------------------------------|--------------|
| 902 - 928 | 50 mV/m (94dBuV/m) | 500 uV/m (54dBuV/m) | 3 |
| 2400 – 2483.5 | 50 mV/m (94dBuV/m) | 500 uV/m (54dBuV/m) | 3 |
| 5725 – 5875 | 50 mV/m (94dBuV/m) | 500 uV/m (54dBuV/m) | 3 |
| 24.0 – 24.25 GHz | 250 mV/m (107.95dBuV/m) | 2500 uV/m (67.95dBuV/m) | 3 |

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(3) Radiated Emission 15.249 (d)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 as below, whichever is the lesser attenuation.

| Frequency (MHz) | Field strength $\mu\text{V/m}$ | Distance (m) | Field strength at 3m $\text{dB}\mu\text{V/m}$ |
|--------------------|-----------------------------------|--------------|--|
| 1.705-30 | 30 | 30 | 69.54 |
| 30-88 | 100 | 3 | 40 |
| 88-216 | 150 | 3 | 43.5 |
| 216-960 | 200 | 3 | 46 |
| Above 960 | 500 | 3 | 54 |

(4) Radiated Emission 15.249(e)

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

- Remark: 1. Emission level in $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$
- Measurement was performed at an antenna to the closed point of EUT distance of meters.
 - Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
 - Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ 15.205, then the general radiated emission limits in ξ 15.209 apply.

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2.5 Configuration of Tested System

Fig. 2-1 Configuration

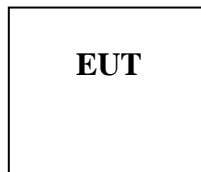


Table 2-2 Equipment Used in Tested System

| Item | Equipment | Mfr/Brand | Model/ Type No. | Series No. | Data Cable | Power Cord |
|------|-----------|-----------|--------------------|------------|------------|------------|
| 1. | N/A | | | | | |

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

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3. Summary of Test Results

| FCC Rules | Description Of Test | Result |
|----------------|-----------------------------|-----------|
| § 15.207 | Conducted Emission | N/A |
| § 15.249(a)(e) | Radiated Emission | Compliant |
| § 15.249(d) | 20dB band width Measurement | Compliant |

4. Description of test modes

The EUT has been tested under operating condition.

The EUT is staying in continuous transmitting mode.

Channel low (2408MHz) 、mid (2440MHz) and high (2474MHz) with highest data rate are chosen for full testing.

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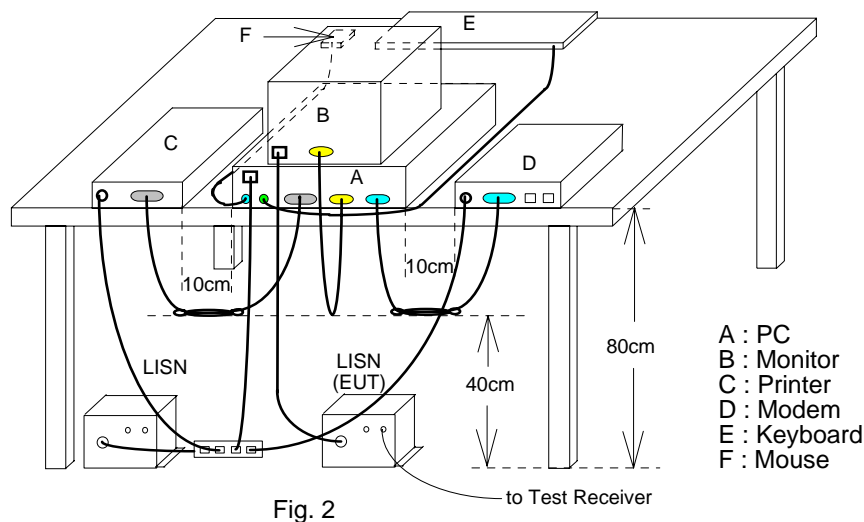
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5. Conducted Emissions Test

5.1 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.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used:

| Conducted Emission Test Site | | | | | |
|------------------------------|------------|-------------------------|---------------|------------|------------|
| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| EMI Test Receiver | R&S | ESCS30 | 828985/004 | 09/23/2010 | 09/22/2012 |
| LISN | Rolf-Heine | NNB-2/16Z | 99012 | 03/31/2011 | 03/30/2012 |
| LISN | FCC | FCC-LISN-50/250-25-2-01 | 04034 | 03/31/2011 | 03/30/2012 |
| Coaxial Cables | N/A | WK CE Cable | N/A | 11/28/2011 | 11/27/2012 |

5.4 Measurement Result:

N/A. 3V from Battery.

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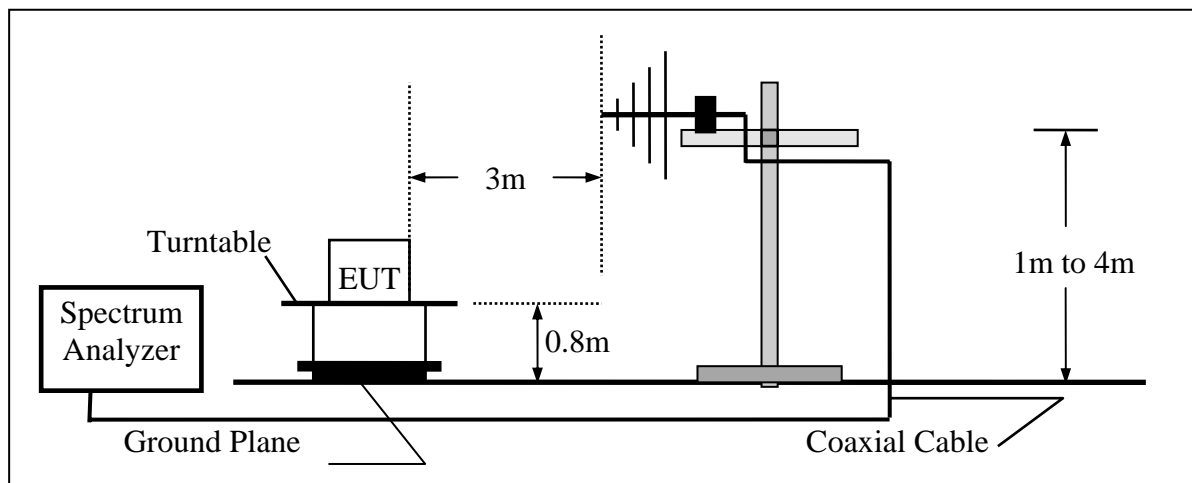
6. Radiated Emission Test

6.1 Measurement Procedure

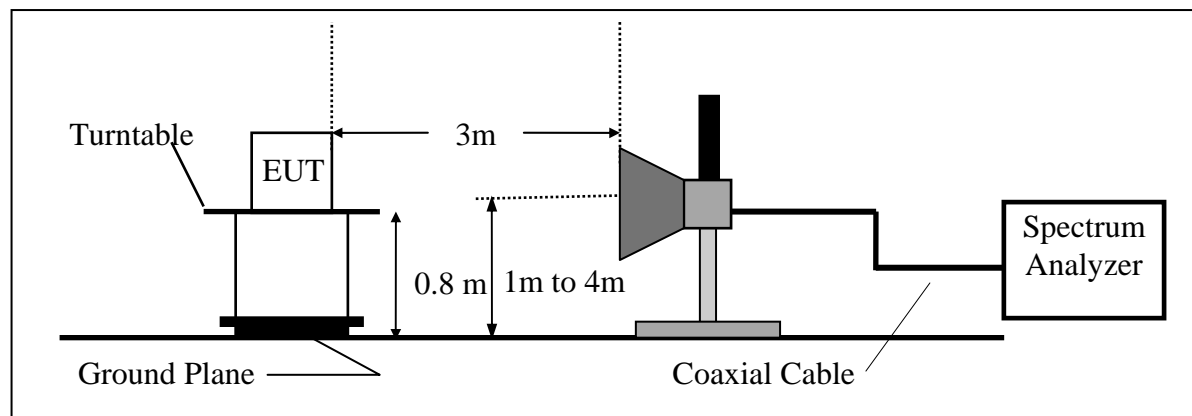
1. The EUT was placed on a turntable that is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 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



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6.3 Measurement Equipment Used:

| 966 Chamber | | | | | |
|------------------------------|--------------|---------------------|---------------|------------|------------|
| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| Spectrum Analyzer | R&S | FSP 40 | 100034 | 03/30/2011 | 03/29/2012 |
| Bilog Antenna | SCHWAZBECK | VULB9160 | 3136 | 11/19/2011 | 11/18/2012 |
| Horn antenna | SCHWAZBECK | BBHA 9120D | 309/320 | 01/22/2010 | 01/21/2012 |
| Pre-Amplifier | Agilent | 8447D | 1937A02834 | 11/28/2011 | 11/27/2012 |
| Pre-Amplifier | Agilent | 8449B | 3008A01973 | 01/05/2012 | 01/04/2013 |
| Radio Communication Analyzer | R & S | CMU200 | 111787 | 10/31/2010 | 10/30/2012 |
| DC Block | Agilent | BLK-18 | 155452 | 01/05/2012 | 01/04/2013 |
| 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 104PEA-10M | 10m | 01/05/2012 | 01/04/2013 |
| Low Loss Cable | HUBER+SUHNER | SUCOFLEX 104PEA-3M | 3m | 01/05/2012 | 01/04/2013 |
| 3m Site | SGS | 966 chamber | N/A | 09/06/2011 | 09/05/2012 |

6.4 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 | |

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6.5 Measurement Result

| | | | |
|-----------------------|----------|--------------------------|-------------------|
| Operation Band | :2.4G | Test Date | :2012-01-11 |
| Fundamental Frequency | :2408MHz | Temp./Humi. | :27 deg_C / 66 RH |
| Operation Mode | :TX LOW | Engineer | :Lion |
| EUT Pol. | :E2 | Measurement Antenna Pol. | :VERTICAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

| Freq. | Note | Detector Mode | Spectrum Reading Level | Factor | Actual FS | Limit @3m | Safe Margin |
|----------|---------|------------------|---------------------------|--------|--------------|--------------|----------------|
| MHz | F/H/E/S | PK/QP/AV | dBμV | dB | dBμV/m | dBμV/m | dB |
| 99.84 | S | Peak | 31.39 | -16.37 | 15.02 | 43.50 | -28.48 |
| 159.98 | S | Peak | 26.64 | -11.57 | 15.07 | 43.50 | -28.43 |
| 288.99 | S | Peak | 27.23 | -12.06 | 15.17 | 46.00 | -30.83 |
| 361.74 | S | Peak | 28.87 | -10.73 | 18.14 | 46.00 | -27.86 |
| 543.13 | S | Peak | 28.28 | -7.97 | 20.31 | 46.00 | -25.69 |
| 872.93 | S | Peak | 28.68 | -2.55 | 26.13 | 46.00 | -19.87 |
| 2408.56 | F | Average | 84.05 | 5.21 | 89.26 | 94.00 | -4.74 |
| 2408.56 | F | Peak | 86.62 | 5.21 | 91.83 | 114.00 | -22.17 |
| 4816.00 | H | Average | 40.63 | 10.00 | 50.63 | 54.00 | -3.37 |
| 4816.00 | H | Peak | 49.01 | 10.00 | 59.01 | 74.00 | -14.99 |
| 7224.00 | H | --- | | | | | |
| 9632.00 | H | --- | | | | | |
| 12040.00 | H | --- | | | | | |
| 14448.00 | H | --- | | | | | |
| 16856.00 | H | --- | | | | | |
| 19264.00 | H | --- | | | | | |
| 21672.00 | H | --- | | | | | |
| 24080.00 | H | --- | | | | | |

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| | | | |
|-----------------------|----------|--------------------------|-------------------|
| Operation Band | :2.4G | Test Date | :2012-01-11 |
| Fundamental Frequency | :2408MHz | Temp./Humi. | :27 deg_C / 66 RH |
| Operation Mode | :TX LOW | Engineer | :Lion |
| EUT Pol. | :E2 | Measurement Antenna Pol. | :HORIZONTAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

| Freq. | Note | Detector | Spectrum | Factor | Actual | Limit | Safe |
|----------|---------|----------|---------------|--------|--------|--------|--------|
| MHz | F/H/E/S | Mode | Reading Level | | FS | @3m | Margin |
| | | PK/QP/AV | dBμV | dB | dBμV/m | dBμV/m | dB |
| 50.37 | S | Peak | 26.59 | -13.78 | 12.81 | 40.00 | -27.19 |
| 157.07 | S | Peak | 26.96 | -11.63 | 15.33 | 43.50 | -28.17 |
| 288.02 | S | Peak | 36.75 | -12.07 | 24.68 | 46.00 | -21.32 |
| 372.41 | S | Peak | 39.70 | -10.57 | 29.13 | 46.00 | -16.87 |
| 468.44 | S | Peak | 30.79 | -9.17 | 21.62 | 46.00 | -24.38 |
| 875.84 | S | Peak | 28.83 | -2.53 | 26.30 | 46.00 | -19.70 |
| 2407.50 | F | Average | 84.05 | 5.90 | 89.95 | 94.00 | -4.05 |
| 2407.50 | F | Peak | 87.44 | 5.90 | 93.34 | 114.00 | -20.66 |
| 4816.00 | H | Average | 42.64 | 10.02 | 52.66 | 54.00 | -1.34 |
| 4816.00 | H | Peak | 51.20 | 10.02 | 61.22 | 74.00 | -12.78 |
| 7224.00 | H | --- | | | | | |
| 9632.00 | H | --- | | | | | |
| 12040.00 | H | --- | | | | | |
| 14448.00 | H | --- | | | | | |
| 16856.00 | H | --- | | | | | |
| 19264.00 | H | --- | | | | | |
| 21672.00 | H | --- | | | | | |
| 24080.00 | H | --- | | | | | |

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| | | | |
|-----------------------|----------|--------------------------|-------------------|
| Operation Band | :2.4G | Test Date | :2012-01-11 |
| Fundamental Frequency | :2440MHz | Temp./Humi. | :27 deg_C / 66 RH |
| Operation Mode | :TX MID | Engineer | :Lion |
| EUT Pol. | :E2 | Measurement Antenna Pol. | :VERTICAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

| Freq. | Note | Detector | Spectrum | Factor | Actual | Limit | Safe |
|----------|---------|----------|---------------|--------|--------|--------|--------|
| MHz | F/H/E/S | Mode | Reading Level | dB | FS | @3m | Margin |
| | | PK/QP/AV | dBμV | | dBμV/m | dBμV/m | dB |
| 55.22 | S | Peak | 27.85 | -14.17 | 13.68 | 40.00 | -26.32 |
| 156.10 | S | Peak | 26.74 | -11.64 | 15.10 | 43.50 | -28.40 |
| 290.93 | S | Peak | 27.27 | -12.05 | 15.22 | 46.00 | -30.78 |
| 374.35 | S | Peak | 29.20 | -10.55 | 18.65 | 46.00 | -27.35 |
| 515.97 | S | Peak | 28.58 | -8.52 | 20.06 | 46.00 | -25.94 |
| 888.45 | S | Peak | 28.17 | -2.28 | 25.89 | 46.00 | -20.11 |
| 2439.56 | F | Average | 85.16 | 5.42 | 90.58 | 94.00 | -3.42 |
| 2439.56 | F | Peak | 87.97 | 5.42 | 93.39 | 114.00 | -20.61 |
| 4880.00 | H | Average | 39.79 | 10.29 | 50.08 | 54.00 | -3.92 |
| 4880.00 | H | Peak | 48.32 | 10.29 | 58.61 | 74.00 | -15.39 |
| 7320.00 | H | --- | | | | | |
| 9760.00 | H | --- | | | | | |
| 12200.00 | H | --- | | | | | |
| 14640.00 | H | --- | | | | | |
| 17080.00 | H | --- | | | | | |
| 19520.00 | H | --- | | | | | |
| 21960.00 | H | --- | | | | | |
| 24400.00 | H | --- | | | | | |

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| | | | |
|-----------------------|----------|--------------------------|-------------------|
| Operation Band | :2.4G | Test Date | :2012-01-11 |
| Fundamental Frequency | :2440MHz | Temp./Humi. | :27 deg_C / 66 RH |
| Operation Mode | :TX MID | Engineer | :Lion |
| EUT Pol. | :E2 | Measurement Antenna Pol. | :HORIZONTAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

| Freq. | Note | Detector | Spectrum | Factor | Actual | Limit | Safe |
|----------|---------|----------|---------------|--------|--------|--------|--------|
| | | Mode | Reading Level | | FS | @3m | Margin |
| MHz | F/H/E/S | PK/QP/AV | dBμV | dB | dBμV/m | dBμV/m | dB |
| 49.40 | S | Peak | 26.90 | -13.95 | 12.95 | 40.00 | -27.05 |
| 159.01 | S | Peak | 26.74 | -11.67 | 15.07 | 43.50 | -28.43 |
| 288.02 | S | Peak | 33.98 | -12.07 | 21.91 | 46.00 | -24.09 |
| 373.38 | S | Peak | 38.20 | -10.56 | 27.64 | 46.00 | -18.36 |
| 468.44 | S | Peak | 31.03 | -9.17 | 21.86 | 46.00 | -24.14 |
| 900.09 | S | Peak | 27.57 | -2.08 | 25.49 | 46.00 | -20.51 |
| 2439.51 | F | Average | 84.35 | 6.25 | 90.60 | 94.00 | -3.40 |
| 2439.51 | F | Peak | 88.34 | 6.25 | 94.59 | 114.00 | -19.41 |
| 4880.00 | H | Average | 40.20 | 10.24 | 50.44 | 54.00 | -3.56 |
| 4880.00 | H | Peak | 50.48 | 10.24 | 60.72 | 74.00 | -13.28 |
| 7320.00 | H | --- | | | | | |
| 9760.00 | H | --- | | | | | |
| 12200.00 | H | --- | | | | | |
| 14640.00 | H | --- | | | | | |
| 17080.00 | H | --- | | | | | |
| 19520.00 | H | --- | | | | | |
| 21960.00 | H | --- | | | | | |
| 24400.00 | H | --- | | | | | |

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| | | | |
|-----------------------|----------|--------------------------|-------------------|
| Operation Band | :2.4G | Test Date | :2012-01-11 |
| Fundamental Frequency | :2474MHz | Temp./Humi. | :27 deg_C / 66 RH |
| Operation Mode | :TX HIGH | Engineer | :Lion |
| EUT Pol. | :E2 | Measurement Antenna Pol. | :VERTICAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

| Freq. | Note | Detector | Spectrum | Factor | Actual | Limit | Safe |
|----------|---------|----------|---------------|--------|--------|--------|--------|
| MHz | F/H/E/S | Mode | Reading Level | dB | FS | @3m | Margin |
| | | PK/QP/AV | dBμV | | dBμV/m | dBμV/m | dB |
| 99.84 | S | Peak | 31.09 | -16.37 | 14.72 | 43.50 | -28.78 |
| 160.95 | S | Peak | 26.86 | -11.59 | 15.27 | 43.50 | -28.23 |
| 288.02 | S | Peak | 27.91 | -12.07 | 15.84 | 46.00 | -30.16 |
| 367.56 | S | Peak | 28.91 | -10.62 | 18.29 | 46.00 | -27.71 |
| 547.01 | S | Peak | 27.85 | -7.90 | 19.95 | 46.00 | -26.05 |
| 854.50 | S | Peak | 28.19 | -2.82 | 25.37 | 46.00 | -20.63 |
| 2474.51 | F | Average | 84.41 | 5.73 | 90.14 | 94.00 | -3.86 |
| 2474.51 | F | Peak | 87.00 | 5.73 | 92.73 | 114.00 | -21.27 |
| 4948.00 | H | Average | 41.95 | 10.73 | 52.68 | 54.00 | -1.32 |
| 4948.00 | H | Peak | 51.57 | 10.73 | 62.30 | 74.00 | -11.70 |
| 7422.00 | H | --- | | | | | |
| 9896.00 | H | --- | | | | | |
| 12370.00 | H | --- | | | | | |
| 14844.00 | H | --- | | | | | |
| 17318.00 | H | --- | | | | | |
| 19792.00 | H | --- | | | | | |
| 22266.00 | H | --- | | | | | |
| 24740.00 | H | --- | | | | | |

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| | | | |
|-----------------------|----------|--------------------------|-------------------|
| Operation Band | :2.4G | Test Date | :2012-01-11 |
| Fundamental Frequency | :2474MHz | Temp./Humi. | :27 deg_C / 66 RH |
| Operation Mode | :TX HIGH | Engineer | :Lion |
| EUT Pol. | :E2 | Measurement Antenna Pol. | :HORIZONTAL |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

| Freq. | Note | Detector | Spectrum | Factor | Actual | Limit | Safe |
|----------|---------|----------|---------------|--------|--------|--------|--------|
| | | Mode | Reading Level | | FS | @3m | Margin |
| MHz | F/H/E/S | PK/QP/AV | dBμV | dB | dBμV/m | dBμV/m | dB |
| 49.40 | S | Peak | 26.86 | -13.95 | 12.91 | 40.00 | -27.09 |
| 158.04 | S | Peak | 27.29 | -11.77 | 15.52 | 43.50 | -27.98 |
| 288.02 | S | Peak | 33.62 | -12.07 | 21.55 | 46.00 | -24.45 |
| 371.44 | S | Peak | 39.81 | -10.60 | 29.21 | 46.00 | -16.79 |
| 468.44 | S | Peak | 32.18 | -9.17 | 23.01 | 46.00 | -22.99 |
| 900.09 | S | Peak | 27.98 | -2.08 | 25.90 | 46.00 | -20.10 |
| 2473.44 | F | Average | 82.60 | 6.71 | 89.31 | 94.00 | -4.69 |
| 2473.44 | F | Peak | 86.65 | 6.71 | 93.36 | 114.00 | -20.64 |
| 4948.00 | H | Average | 41.28 | 10.59 | 51.87 | 54.00 | -2.13 |
| 4948.00 | H | Peak | 50.59 | 10.59 | 61.18 | 74.00 | -12.82 |
| 7422.00 | H | --- | | | | | |
| 9896.00 | H | --- | | | | | |
| 12370.00 | H | --- | | | | | |
| 14844.00 | H | --- | | | | | |
| 17318.00 | H | --- | | | | | |
| 19792.00 | H | --- | | | | | |
| 22266.00 | H | --- | | | | | |
| 24740.00 | H | --- | | | | | |

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7. 20 dB Band Width Measurement

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span = 1MHz.
4. Set SPA Max hold. Mark peak, -20dB.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

7.4 Measurement Results:

2408 Channel = 2.933MHz

2440 Channel = 2.508MHz

2474 Channel = 2.967MHz

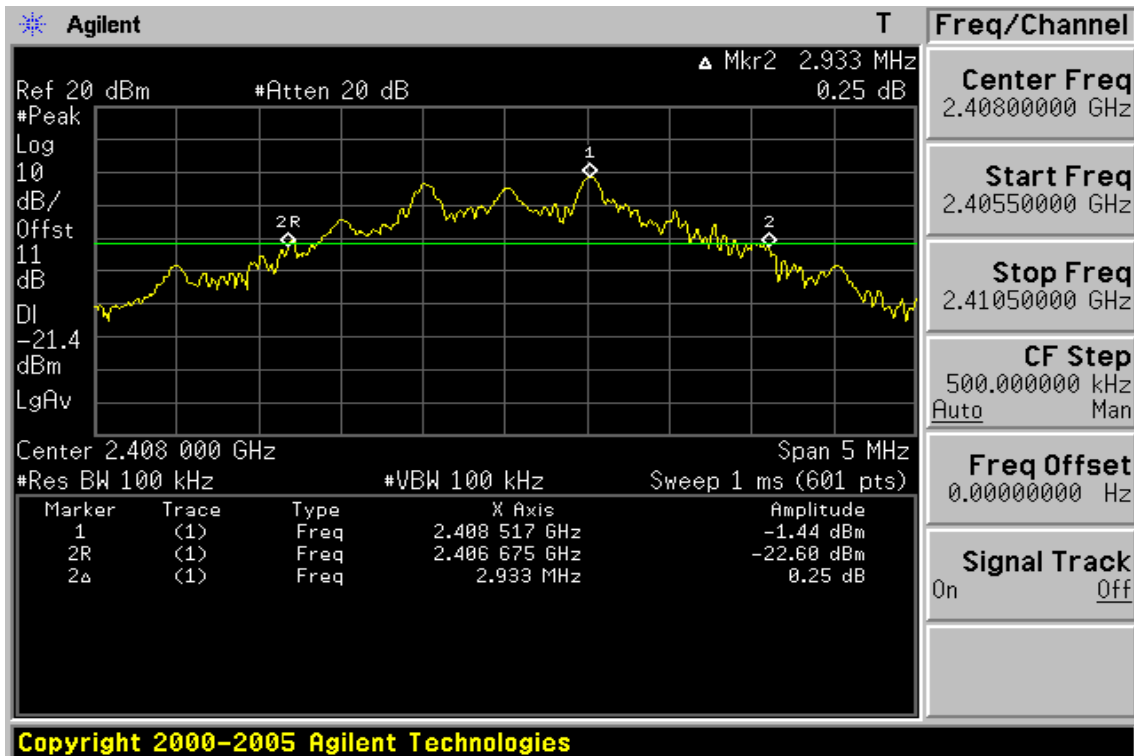
Refer to attached data chart.

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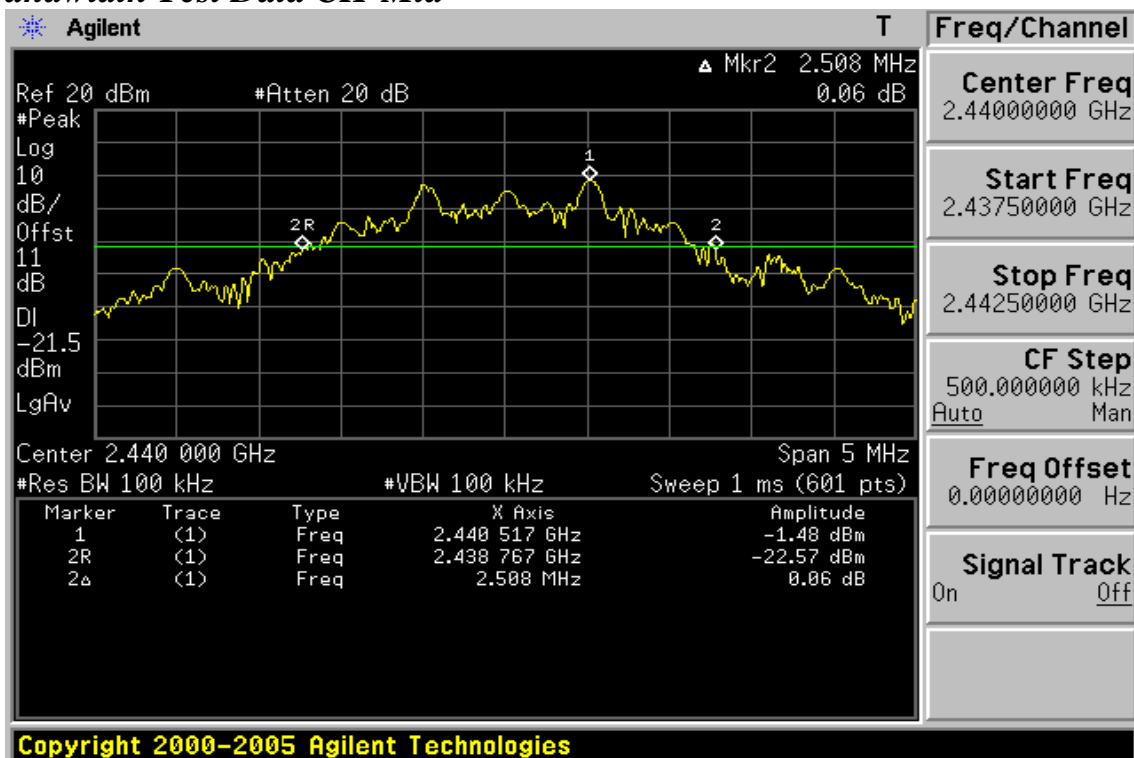
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20dB Bandwidth Test Data CH-Low



20dB Bandwidth Test Data CH-Mid

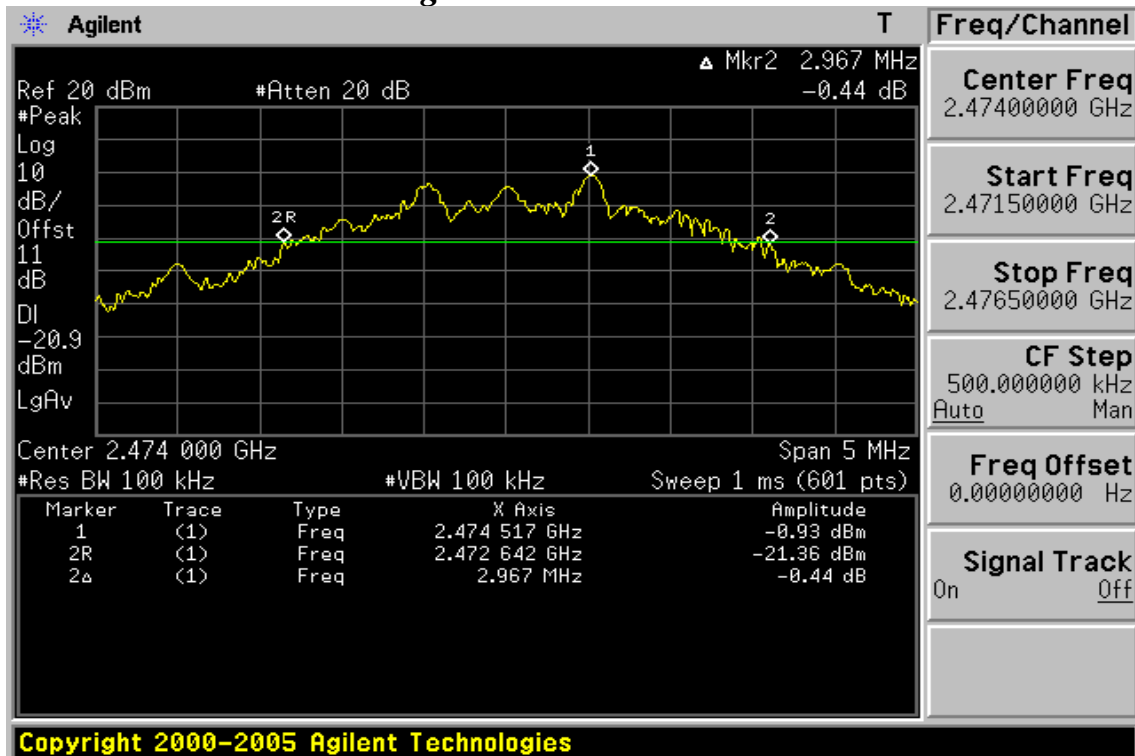


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20dB Bandwidth Test Data CH-High



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