



Variant FCC RF Test Report

APPLICANT : Honeywell International Inc.
EQUIPMENT : 99EX Mobile computer
BRAND NAME : Honeywell
MODEL NAME : 99GX
FCC ID : HD599EXLG
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

This is a variant report which is only valid combine with the original test report. The product was received on Jun. 15, 2011 and completely tested on Jul. 06, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager



SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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REVISION HISTORY



SUMMARY OF TEST RESULT

| Report Section | FCC Rule | IC Rule | Description | Limit | Result | Remark |
|----------------|--------------------|---------|-------------------------------|-----------------------|--------|-----------------------------------|
| 3.1 | 15.247(d) | A8.5 | Frequency Band Edges | $\leq 20\text{dBc}$ | Pass | - |
| 3.2 | 15.247(d) | A8.5 | Transmitter Radiated Emission | 15.209(a) & 15.247(d) | Pass | Under limit 5.62 dB at 2483.5 MHz |
| 3.3 | 15.203 & 15.247(b) | A8.4 | Antenna Requirement | N/A | Pass | - |



1 General Description

1.1 Applicant

Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.2 Manufacturer

Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA



1.3 Feature of Equipment Under Test

| Product Feature & Specification | |
|--|--|
| Equipment | 99EX Mobile computer |
| Brand Name | Honeywell |
| Model Name | 99GX |
| FCC ID | HD599EXLG |
| Sample 1 | EUT with 55 keypad options |
| Sample 2 | EUT with 43 keypad options |
| Sample 3 | EUT with 34 keypad options |
| Tx/Rx Frequency Range | 802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5725 MHz ~ 5850 MHz |
| Channel Spacing | 802.11b/g : 5 MHz 802.11a : 20 MHz |
| Maximum Output Power to Antenna | <2400 MHz ~ 2483.5 MHz> 802.11b : 20.08 dBm (0.1019 W) 802.11g : 23.93 dBm (0.2472 W) 802.11n (BW 20MHz) : 23.94 dBm (0.2477 W) <5725 MHz ~ 5850 MHz> 802.11a : 22.16 dBm (0.1644 W) 802.11n (BW 20MHz) : 22.18 dBm (0.1652 W) |
| Antenna Type | 802.11b/g/n : PIFA Antenna with gain 3 dBi 802.11a/n : PIFA Antenna with gain 3.2 dBi |
| Type of Antenna Connector | N/A |
| HW Version | 5 |
| SW Version | 26.02 |
| Type of Modulation | 802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) |
| EUT Stage | Production Unit |

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



1.4 Testing Site

| | | |
|---------------------------|--|--------------------------------|
| Test Site | SPORTON INTERNATIONAL INC. | |
| Test Site Location | No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978 | |
| Test Site No. | Sporton Site No. | FCC/IC Registration No. |
| | 03CH06HY | 722060/4086B-1 |

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 8

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable | Power Cord |
|------|-------------|------------|-------------|---------|-----------------|--|
| 1. | Notebook | DELL | Vostro 1510 | FCC DoC | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 2. | LCD Monitor | lenovo | 6135-AB1 | FCC DoC | Shielded, 1.6 m | Unshielded, 1.8 m |
| 3. | iPod | Apple | A1285 | FCC DoC | Shielded, 1.0 m | N/A |
| 4. | Cradle | Honeywell | 99EX-HB | N/A | N/A | N/A |
| 5. | Adapter | ENG | 3A-902DB12 | N/A | N/A | N/A |
| 6. | USB Cable | N/A | N/A | N/A | N/A | N/A |



2 Test Configuration of Equipment Under Test

2.1 RF Power

Preliminary tests were performed in different data rate and recorded the RF power output in the following table:

| Channel | Frequency | 2.4GHz 802.11b RF Power (dBm) | | | |
|---------|-----------|-------------------------------|--------|----------|---------|
| | | DSSS Data Rate | | | |
| | | 1 Mbps | 2 Mbps | 5.5 Mbps | 11 Mbps |
| CH 01 | 2412 MHz | 19.82 | - | - | - |
| CH 06 | 2437 MHz | 20.07 | - | - | - |
| CH 11 | 2462 MHz | 20.08 | - | - | - |

| Channel | Frequency | 2.4GHz 802.11g RF Power (dBm) | | | | | | | |
|---------|-----------|-------------------------------|--------|---------|---------|---------|---------|---------|---------|
| | | OFDM Data Rate | | | | | | | |
| | | 6 Mbps | 9 Mbps | 12 Mbps | 18 Mbps | 24 Mbps | 36 Mbps | 48 Mbps | 54 Mbps |
| CH 01 | 2412 MHz | 22.37 | - | - | - | - | - | - | - |
| CH 06 | 2437 MHz | 23.93 | - | - | - | - | - | - | - |
| CH 11 | 2462 MHz | 22.7 | - | - | - | - | - | - | - |

| Channel | Frequency | 2.4GHz 802.11n (BW 20MHz) RF Power (dBm) | | | | | | | |
|---------|-----------|--|------|------|------|------|------|------|------|
| | | OFDM Data Rate | | | | | | | |
| | | MCS0 | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH 01 | 2412 MHz | 22.14 | - | - | - | - | - | - | - |
| CH 06 | 2437 MHz | 23.94 | - | - | - | - | - | - | - |
| CH 11 | 2462 MHz | 22.52 | - | - | - | - | - | - | - |



| Channel | Frequency | 5GHz 802.11a RF Power (dBm) | | | | | | | |
|---------|-----------|-----------------------------|--------|---------|---------|---------|---------|---------|---------|
| | | OFDM Data Rate | | | | | | | |
| | | 6 Mbps | 9 Mbps | 12 Mbps | 18 Mbps | 24 Mbps | 36 Mbps | 48 Mbps | 54 Mbps |
| CH149 | 5745 MHz | 22.11 | - | - | - | - | - | - | - |
| CH157 | 5785 MHz | 22.15 | - | - | - | - | - | - | - |
| CH165 | 5825 MHz | 22.16 | - | - | - | - | - | - | - |

| Channel | Frequency | 5GHz 802.11n (BW 20MHz) RF Power (dBm) | | | | | | | |
|---------|-----------|--|------|------|------|------|------|------|------|
| | | OFDM Data Rate | | | | | | | |
| | | MCS0 | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 |
| CH149 | 5745 MHz | 22.1 | - | - | - | - | - | - | - |
| CH157 | 5785 MHz | 22.18 | - | - | - | - | - | - | - |
| CH165 | 5825 MHz | 22.16 | - | - | - | - | - | - | - |

Remark:

1. The EUT is programmed to transmit signals continuously for all testing.
2. The data rates of WLAN 802.11a/b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, MCS0 for 802.11n (BW 20MHz), 6Mbps for 802.11a, and MCS0 for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.



2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

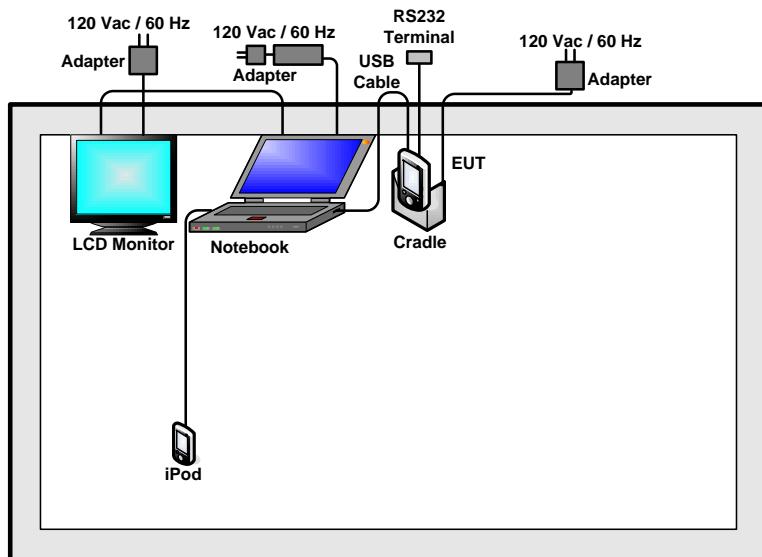
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

| Test Cases | |
|--|--|
| Test Item | 802.11g/n (Modulation : OFDM) |
| Radiated TCs | Mode 1: 802.11gTx(20M)_CH11_2462 MHz + TC for Sample 1 |
| Remark: TC stands for Test Configuration, and consists of USB cable, RS232 terminal, cradle, and adapter. | |

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



2.4 RF Utility

The programmed RF utility “TI1273 WLAN FCC” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.



3 Test Result

3.1 Band Edges Measurement

3.1.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

3.1.2 Measuring Instruments

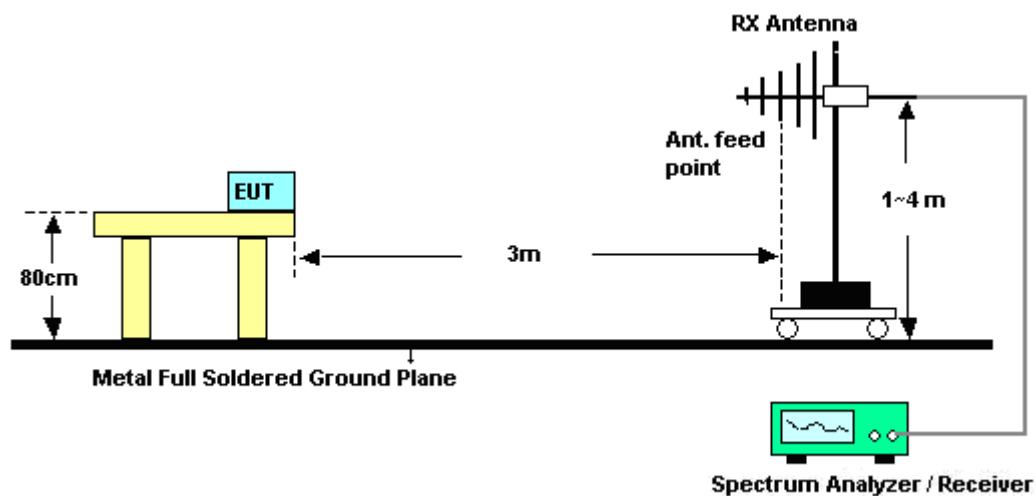
See list of measuring instruments of this test report.

3.1.3 Test Procedures

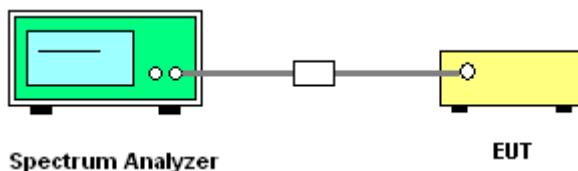
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the output power of this device was measured by power meter, the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.1.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.1.5 Test Result of Radiated Band Edges

| | | | | | | | | | |
|----------------|--------------------|--|--|---------------------|-------------|--|--|--|--|
| Test Mode : | Mode 2 | | | Temperature : | 24~25°C | | | | |
| Test Band : | 802.11n (BW 20MHz) | | | Relative Humidity : | 48~49% | | | | |
| Test Channel : | 11 | | | Test Engineer : | Ivan Chiang | | | | |

| ANTENNA POLARITY : HORIZONTAL | | | | | | | | | | |
|-------------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
| 2483.5 | 66.98 | -7.02 | 74 | 62.42 | 32.28 | 6.18 | 33.9 | 100 | 298 | Peak |
| 2483.5 | 48.38 | -5.62 | 54 | 43.82 | 32.28 | 6.18 | 33.9 | 100 | 298 | Average |

| ANTENNA POLARITY : VERTICAL | | | | | | | | | | |
|-----------------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
| 2483.85 | 57.01 | -16.99 | 74 | 52.45 | 32.28 | 6.18 | 33.9 | 101 | 12 | Peak |
| 2483.85 | 39.67 | -14.33 | 54 | 35.11 | 32.28 | 6.18 | 33.9 | 101 | 12 | Average |



3.2 Radiated Emission Measurement

3.2.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

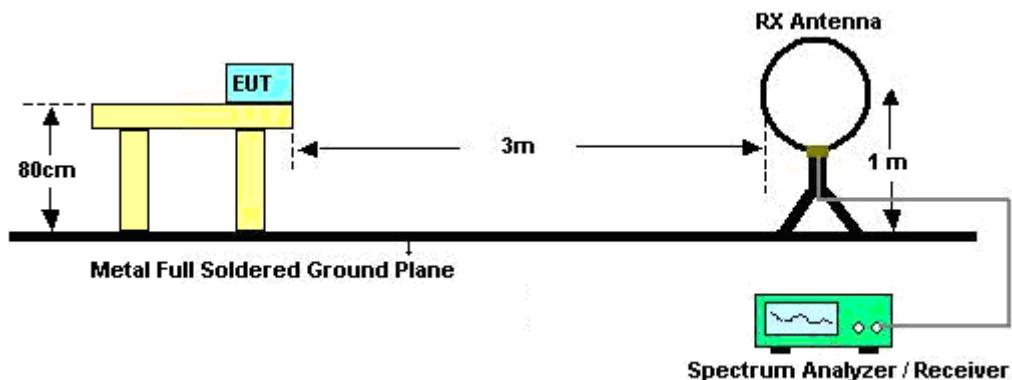
3.2.3 Test Procedures

1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold.
 - (2) Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

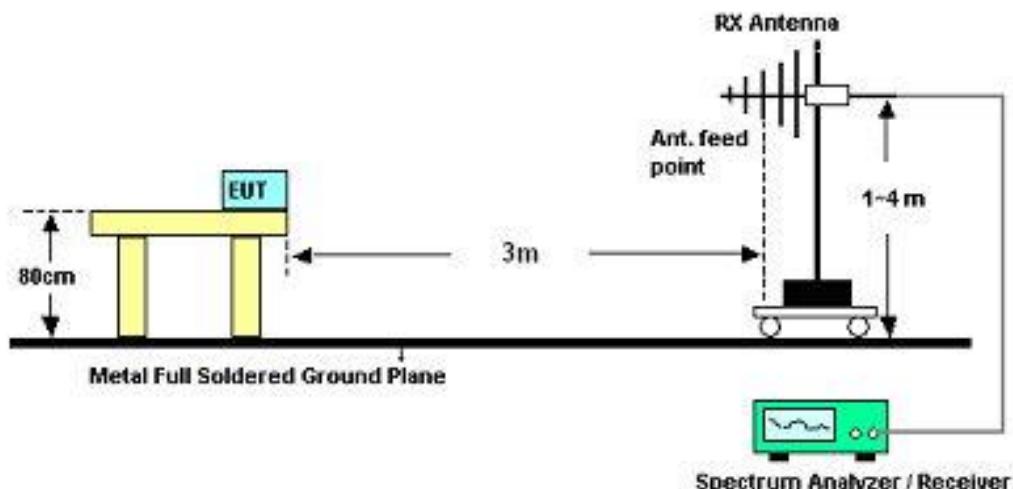
Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.2.4 Test Setup

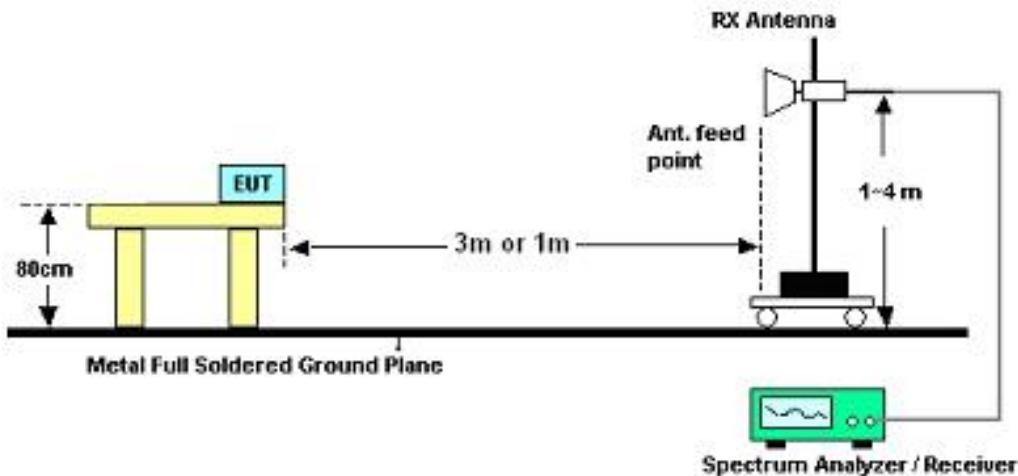
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Emissions (9kHz ~ 30MHz)

| Test Engineer : | Ivan Chiang | Temperature : | 24~25°C | |
|-----------------|--------------|---------------------|-------------------|----------|
| | | Relative Humidity : | 48~49% | |
| Frequency (MHz) | Level (dBuV) | Over Limit (dB) | Limit Line (dBuV) | Remark |
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.



3.2.6 Test Result of Radiated Emission (30MHz ~ 10th Harmonic)

| | | | | | | | | | | |
|-----------------|---|--|--|---------------------|------------|--|--|--|--|--|
| Test Mode : | Mode 2 | | | Temperature : | 24~25°C | | | | | |
| Test Channel : | 11 | | | Relative Humidity : | 48~49% | | | | | |
| Test Engineer : | Ivan Chiang | | | Polarization : | Horizontal | | | | | |
| Remark : | 2462 MHz is Fundamental Signals which can be ignored. | | | | | | | | | |

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 31.89 | 19.11 | -20.89 | 40 | 33.98 | 16.04 | 0.55 | 31.46 | 143 | 172 | Peak |
| 189.3 | 20.52 | -22.98 | 43.5 | 41.68 | 9.07 | 1.28 | 31.51 | - | - | Peak |
| 287.85 | 22.45 | -23.55 | 46 | 38.83 | 13.27 | 1.68 | 31.33 | - | - | Peak |
| 312.6 | 22.57 | -23.43 | 46 | 38.25 | 13.85 | 1.79 | 31.32 | - | - | Peak |
| 545 | 20.37 | -25.63 | 46 | 29.9 | 18.92 | 2.54 | 30.99 | - | - | Peak |
| 799.8 | 23.77 | -22.23 | 46 | 28.84 | 22.47 | 3.14 | 30.68 | - | - | Peak |
| 2382 | 52.76 | -21.24 | 74 | 48.42 | 32.16 | 6.03 | 33.85 | 100 | 298 | Peak |
| 2382 | 36 | -18 | 54 | 31.66 | 32.16 | 6.03 | 33.85 | 100 | 298 | Average |
| 2462 | 97.71 | - | - | 93.2 | 32.26 | 6.14 | 33.89 | 100 | 298 | Average |
| 2462 | 109.02 | - | - | 104.51 | 32.26 | 6.14 | 33.89 | 100 | 298 | Peak |
| 2483.5 | 66.98 | -7.02 | 74 | 62.42 | 32.28 | 6.18 | 33.9 | 100 | 298 | Peak |
| 2483.5 | 48.38 | -5.62 | 54 | 43.82 | 32.28 | 6.18 | 33.9 | 100 | 298 | Average |



| | | | |
|------------------------|---|----------------------------|----------|
| Test Mode : | Mode 2 | Temperature : | 24~25°C |
| Test Channel : | 11 | Relative Humidity : | 48~49% |
| Test Engineer : | Ivan Chiang | Polarization : | Vertical |
| Remark : | 2462 MHz is Fundamental Signals which can be ignored. | | |

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 76.98 | 24.85 | -15.15 | 40 | 48.65 | 6.88 | 0.86 | 31.54 | 108 | 74 | Peak |
| 180.66 | 24.98 | -18.52 | 43.5 | 46.22 | 9.04 | 1.25 | 31.53 | - | - | Peak |
| 271.38 | 24.51 | -21.49 | 46 | 41.23 | 13.01 | 1.64 | 31.37 | - | - | Peak |
| 312.6 | 20.13 | -25.87 | 46 | 35.81 | 13.85 | 1.79 | 31.32 | - | - | Peak |
| 570.9 | 23.06 | -22.94 | 46 | 32.08 | 19.32 | 2.61 | 30.95 | - | - | Peak |
| 713.7 | 24.56 | -21.44 | 46 | 31.28 | 21.1 | 2.97 | 30.79 | - | - | Peak |
| 2390 | 46.57 | -27.43 | 74 | 42.21 | 32.18 | 6.03 | 33.85 | 101 | 12 | Peak |
| 2390 | 33.78 | -20.22 | 54 | 29.42 | 32.18 | 6.03 | 33.85 | 101 | 12 | Average |
| 2462 | 100.43 | - | - | 95.92 | 32.26 | 6.14 | 33.89 | 101 | 12 | Peak |
| 2462 | 89.71 | - | - | 85.2 | 32.26 | 6.14 | 33.89 | 101 | 12 | Average |
| 2483.85 | 57.01 | -16.99 | 74 | 52.45 | 32.28 | 6.18 | 33.9 | 101 | 12 | Peak |
| 2483.85 | 39.67 | -14.33 | 54 | 35.11 | 32.28 | 6.18 | 33.9 | 101 | 12 | Average |



3.3 Antenna Requirements

3.3.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

3.3.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.3.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Due Date | Remark |
|---------------------------|--------------|-----------|--------------|-----------------------|------------------|---------------|-----------------------|
| System Simulator | R&S | CMU200 | 117995 | N/A | Aug. 11, 2010 | Aug.10, 2011 | Conducted (TH02-HY) |
| Spectrum Analyzer | R&S | FSP40 | 100055 | 9kHz~40GHz | Jun. 13, 2011 | Jun. 12, 2012 | Conducted (TH02-HY) |
| Power Meter | Anritsu | ML2495A | 0932001 | N/A | Sep. 13, 2010 | Sep. 12, 2011 | Conducted (TH02-HY) |
| Power Sensor | Anritsu | MA2411B | 0846202 | N/A | Sep. 14, 2010 | Sep. 13, 2011 | Conducted (TH02-HY) |
| Power Meter | Agilent | E4416A | GB412923 44 | N/A | Feb. 18, 2011 | Feb. 17, 2012 | Conducted (TH02-HY) |
| Power Sensor | Agilent | E9327A | US404415 48 | N/A | Feb. 18, 2011 | Feb. 17, 2012 | Conducted (TH02-HY) |
| Thermal Chamber | Ten Billion | TTH-D35P | TBN-9307 01 | N/A | Jul. 30, 2010 | Jul. 29, 2011 | Conducted (TH02-HY) |
| Bilog Antenna | SCHAFFNER | CBL6111C | 2726 | 30MHz ~ 1GHz | Oct. 31, 2010 | Oct. 30, 2011 | Radiation (03CH07-HY) |
| Spectrum Analyzer | R&S | FSP30 | 101067 | 9KHz ~ 30GHz | Dec. 03, 2010 | Dec. 02, 2011 | Radiation (03CH07-HY) |
| Double Ridge Horn Antenna | ESCO | 3117 | 00075962 | 1GHz ~ 18GHz | Aug. 19, 2010 | Aug. 18, 2011 | Radiation (03CH07-HY) |
| SHF-EHF Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170 251 | 15GHz- 40GHz | Oct. 18, 2010 | Oct. 17, 2011 | Radiation (03CH07-HY) |
| Pre Amplifier | Agilent | 8449B | 3008A023 62 | 1GHz~ 26.5GHz | Dec. 06, 2010 | Dec. 05, 2011 | Radiation (03CH07-HY) |
| Pre Amplifier | COM-POWER | PA-103A | 161241 | 10-1000MHz.32 dB.GAIN | Mar. 29, 2011 | Mar. 28, 2012 | Radiation (03CH07-HY) |
| Loop Antenna | R&S | HFH2-Z2 | 860004/00 1 | 9 kHz~30 MHz | Jul. 29, 2010 | Jul. 28, 2011 | Radiation (03CH07-HY) |



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

| Contribution | Uncertainty of X_i | | $u(X_i)$ |
|--|----------------------|--------------------------|----------|
| | dB | Probability Distribution | |
| Receiver Reading | 0.10 | Normal (k=2) | 0.05 |
| Cable Loss | 0.10 | Normal (k=2) | 0.05 |
| AMN Insertion Loss | 2.50 | Rectangular | 0.63 |
| Receiver Specification | 1.50 | Rectangular | 0.43 |
| Site Imperfection | 1.39 | Rectangular | 0.80 |
| Mismatch | +0.34 / -0.35 | U-Shape | 0.24 |
| Combined Standard Uncertainty $U_c(y)$ | 1.13 | | |
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$) | 2.26 | | |

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

| Contribution | Uncertainty of X_i | | $u(X_i)$ |
|--|----------------------|--------------------------|----------|
| | dB | Probability Distribution | |
| Receiver Reading | 0.41 | Normal (k=2) | 0.21 |
| Antenna Factor Calibration | 0.83 | Normal (k=2) | 0.42 |
| Cable Loss Calibration | 0.25 | Normal (k=2) | 0.13 |
| Pre-Amplifier Gain Calibration | 0.27 | Normal (k=2) | 0.14 |
| RCV/SPA Specification | 2.50 | Rectangular | 0.72 |
| Antenna Factor Interpolation for Frequency | 1.00 | Rectangular | 0.29 |
| Site Imperfection | 1.43 | Rectangular | 0.83 |
| Mismatch | +0.39 / -0.41 | U-Shape | 0.28 |
| Combined Standard Uncertainty $U_c(y)$ | 1.27 | | |
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$) | 2.54 | | |

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

| Contribution | Uncertainty of X_i | | $u(X_i)$ | C_i | $C_i * u(X_i)$ |
|---|----------------------|--------------------------|----------|-------|----------------|
| | dB | Probability Distribution | | | |
| Receiver Reading | ±0.10 | Normal (k=2) | 0.10 | 1 | 0.10 |
| Antenna Factor Calibration | ±1.70 | Normal (k=2) | 0.85 | 1 | 0.85 |
| Cable Loss Calibration | ±0.50 | Normal (k=2) | 0.25 | 1 | 0.25 |
| Receiver Correction | ±2.00 | Rectangular | 1.15 | 1 | 1.15 |
| Antenna Factor Directional | ±1.50 | Rectangular | 0.87 | 1 | 0.87 |
| Site Imperfection | ±2.80 | Triangular | 1.14 | 1 | 1.14 |
| Mismatch Receiver VSWR $\Gamma 1 = 0.197$ Antenna VSWR $\Gamma 2 = 0.194$ Uncertainty = $20\log(1-\Gamma 1^*\Gamma 2)$ | +0.34 / -0.35 | U-Shape | 0.244 | 1 | 0.244 |
| Combined Standard Uncertainty $U_c(y)$ | 2.36 | | | | |
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$) | 4.72 | | | | |



Appendix A. Photographs of EUT

Please refer to Sporton report number EP0D0904-15 as below.



Appendix C. Product Equality Declaration

Honeywell

Honeywell Scanning and Mobility
9680 Old Bailes Road
Fort Mill, SC 29707 USA

Date: August 8, 2011

Product Equality Declaration

We, Honeywell International Inc., declare on our sole responsibility for the product of 99GX (model name) as below:

The difference between 99GX and 99EX is:

1. Remove Camera
2. Remove GPS
3. Add handle and trigger

Except Listings above, the others are the same as previous version.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,

Contact Person: Michael Robinson
Applicant: Honeywell International Inc.
Tel: 315.554.6387
Fax: 315.554.6393
E-Mail: michael.robinson3@honeywell.com



Appendix D. Original Report

Please refer to Sporton report number FR0D0904-03A as below.