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 Spread Spectrum (DSS)

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

Jones Tsai / Manager

Testing Laboratory
1190

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

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR0D0904-15A	Rev. 01	This is a variant report which can be referred to Product Equality Declaration as Appendix C. All the test cases were performed on original report which can be referred to Sporton Report Number FR0D0904-03A as appendix D. Based on the original report, only worst cases of Radiated Emission Test were verified.	Aug. 11, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.2	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.7 dB at 2483.5 MHz
3.4	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	2400 MHz ~ 2483.5 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Channel Spacing	1 MHz
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 2.88 dBm (0.0019 W) Bluetooth EDR (2Mbps) : 3.25 dBm (0.0021 W) Bluetooth EDR (3Mbps) : 3.86 dBm (0.0024 W)
Antenna Type	PIFA Antenna with gain 3 dBi
Type of Antenna Connector	N/A
HW Version	5
SW Version	26.02
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
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 Spread Spectrum (DSS).
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 1st 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.
	03CH07-HY	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 Public Notice DA 00-705
- 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 Output Power

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

Channel	Frequency	Bluetooth RF Output Power					
		Data Rate / Modulation					
		GFSK		π/4-DQPSK		8-DPSK	
		1Mbps		2Mbps		3Mbps	
Ch00	2402MHz	2.23	dBm	2.68	dBm	3.35	dBm
Ch39	2441MHz	2.88	dBm	3.25	dBm	3.83	dBm
Ch78	2480MHz	2.78	dBm	3.24	dBm	**3.86**	dBm

Remark:

1. The data rate was set in 3Mbps for all the test items due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.

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: conduction (150 kHz to 30 MHz), radiation (9 kHz 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 tables are showing the test modes as the worst cases and recorded in this report.

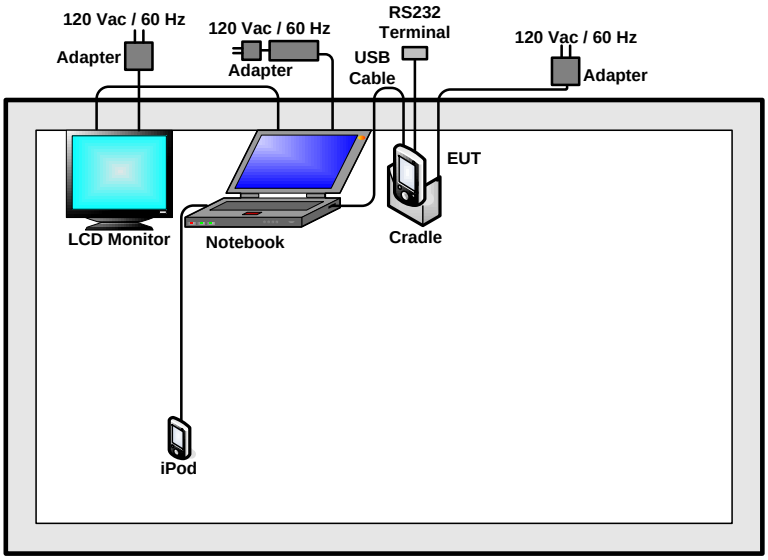
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Radiated TCs	N/A	N/A	Mode 1: CH78_2480 MHz + TC for Sample 1

Remark:

1. For radiated TCs, the data rate was set in 3Mbps due to the highest RF output power; only the data of these modes was reported.
2. TC stands for Test Configuration, and consists of USB cable, RS232 terminal, cradle, and adapter.

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



2.4 RF Utility

For Bluetooth function, the RF utility, “BT Tester” was installed in EUT which was programmed in order to make the EUT into the engineering modes to contact with Bluetooth base station for transmitting and receiving signals continuously.

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. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.1.2 Measuring Instruments

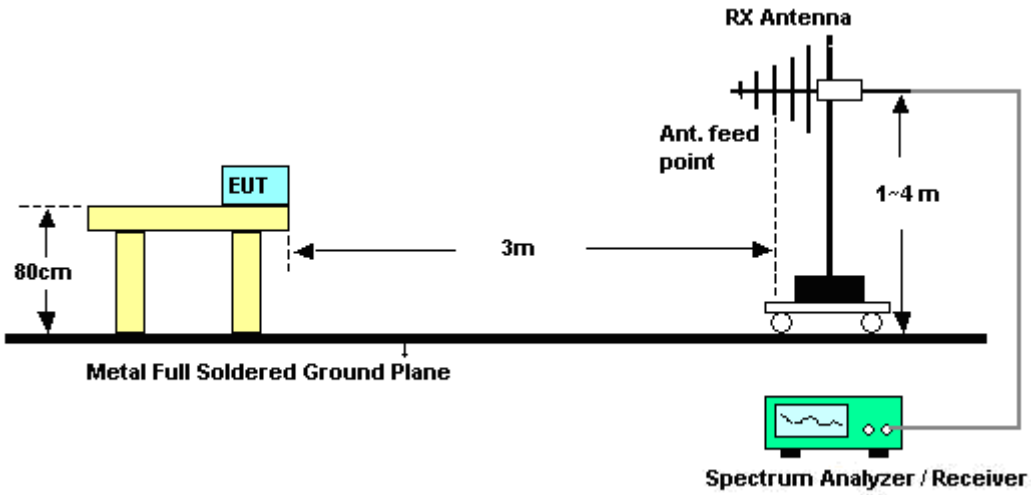
See list of measuring instruments of this test report.

3.1.3 Test Procedures

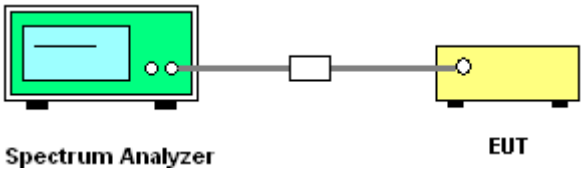
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300k Hz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Applies 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 = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average. 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. See FCC Section 15.35(b) and (c).
4. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

3.1.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.1.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
		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	66.79	-7.21	74	62.23	32.28	6.18	33.9	100	288	Peak
2483.5	48.3	-5.7	54	43.74	32.28	6.18	33.9	100	288	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBµV/m)	Delta Result (dB)	Average Result (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
Single Carrier Mode	98.27	49.97	48.3	54	-5.7	Pass
Hopping Mode	98.27	52.25	46.02	54	-7.98	Pass

Note : Average result = Maximum field strength – Delta result

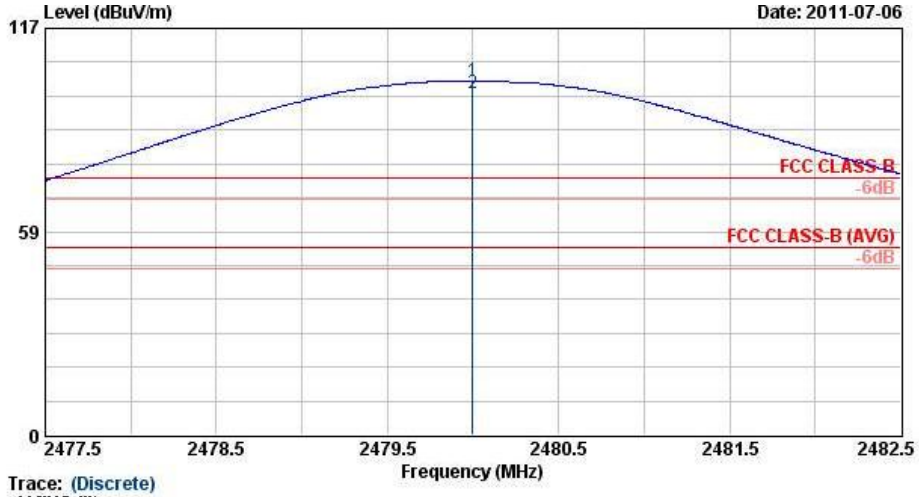
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	59.17	-14.83	74	54.61	32.28	6.18	33.9	100	10	Peak
2483.5	43.6	-10.4	54	39.04	32.28	6.18	33.9	100	10	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBµV/m)	Delta Result (dB)	Average Result (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
Single Carrier Mode	90.77	47.17	43.60	54	-10.40	Pass
Hopping Mode	90.77	48.61	42.16	54	-11.84	Pass

Note : Average result = Maximum field strength – Delta result

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal

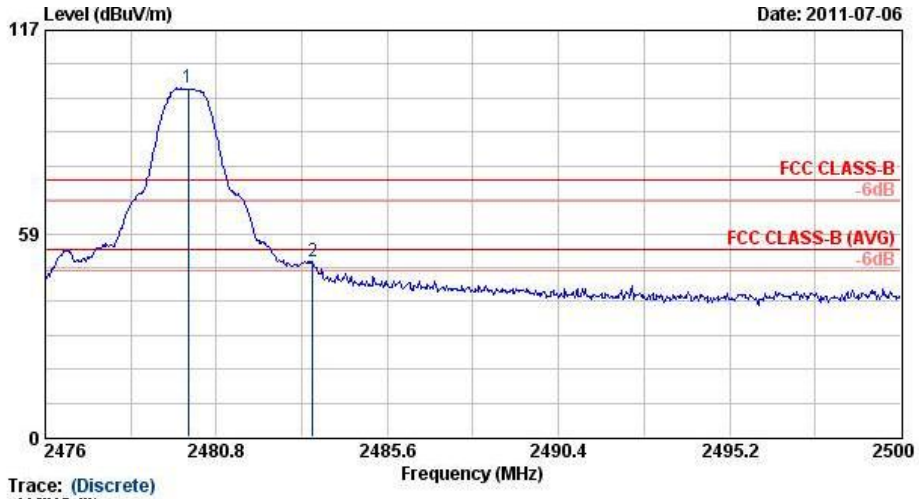


Site : 03CH07-HY
Condition : FCC CLASS-B HF_ANT_100824 HORTZONTAL
Project : FR 0D0904-15
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	101.85	27.85	74.00	97.29	32.28	6.18	33.90	100	288	Peak
2 @	2480.00	98.27	44.27	54.00	93.71	32.28	6.18	33.90	100	288	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal

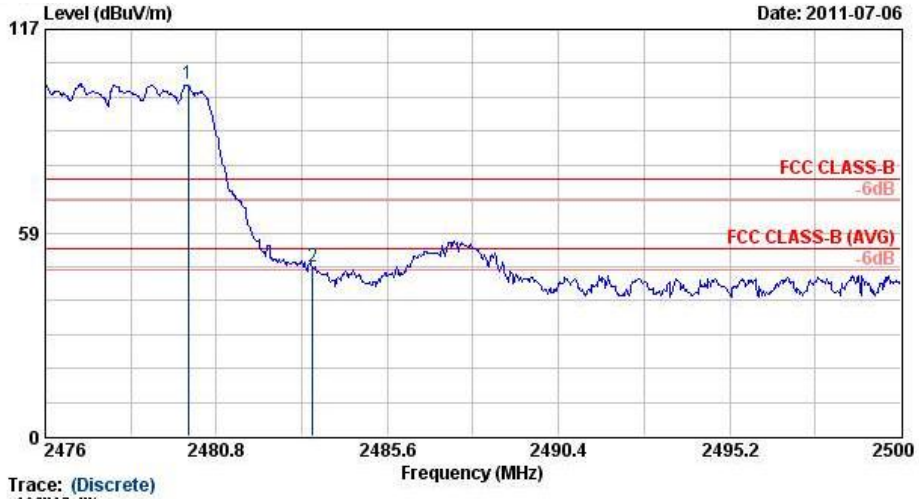


Site : 03CH07-HY
Condition : FCC CLASS-B HF_ANT_100824 HORTZONTAL
Project : FR 0D0904-15
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	100.27	26.27	74.00	95.71	32.28	6.18	33.90	100	288	Peak
2	2483.50	50.30	-23.70	74.00	45.74	32.28	6.18	33.90	100	288	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 49.97 dB , single carrier Mode

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal

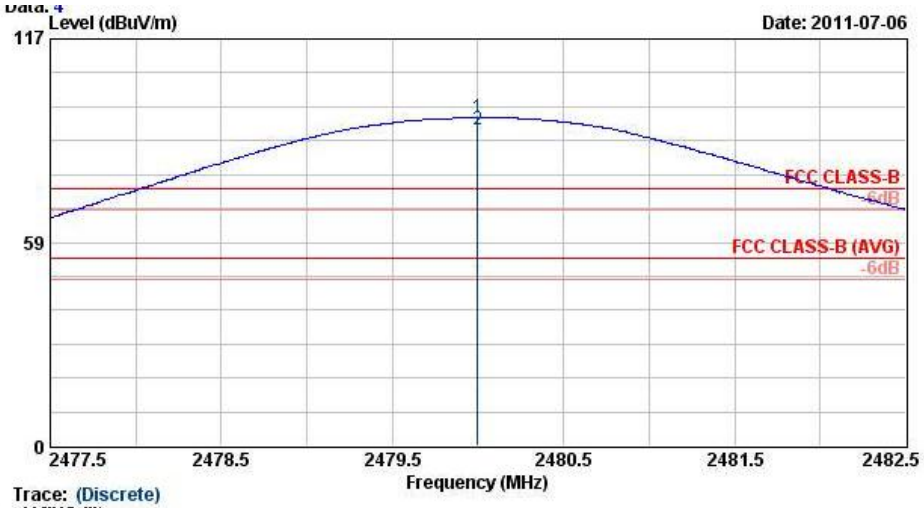


Site : 03CH07-HY
Condition : FCC CLASS-B HF_ANT_100824 HORTZONTAL
Project : FR 0D0904-15
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	101.16	27.16	74.00	96.60	32.28	6.18	33.90	100	288	Peak
2	2483.50	48.91	-25.09	74.00	44.35	32.28	6.18	33.90	100	288	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 52.25 dB , Hopping Mode

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical

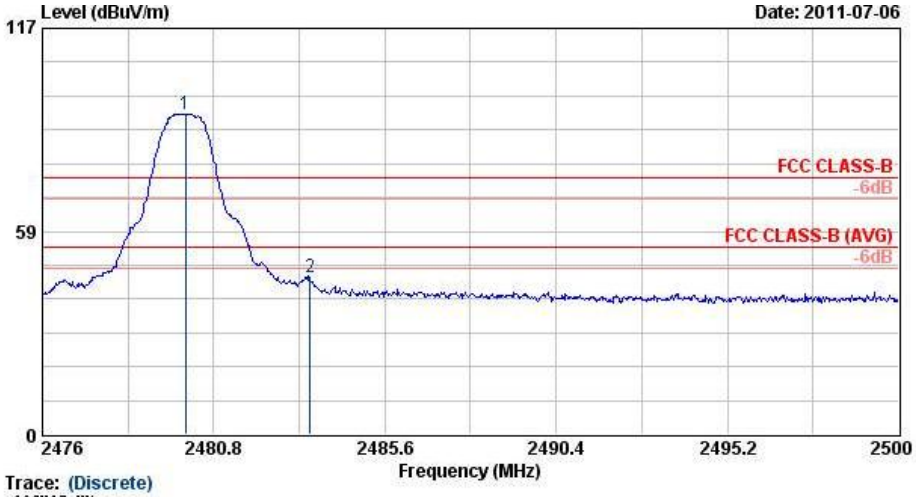


Site : 03CH07-HY
Condition : FCC CLASS-B HF_ANT_100824 VERTICAL
Project : FR 0D0904-15
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	94.38	20.38	74.00	89.82	32.28	6.18	33.90	100	10	Peak
2 @	2480.00	90.77	36.77	54.00	86.21	32.28	6.18	33.90	100	10	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical

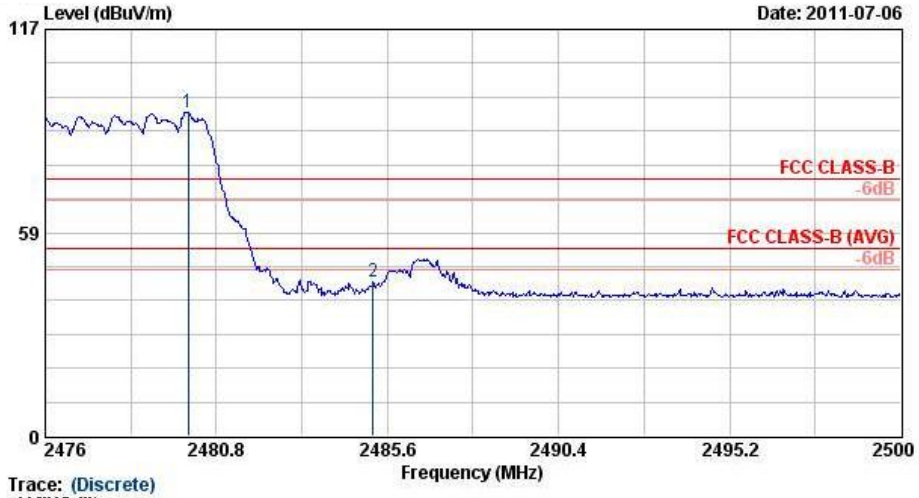


Site : 03CH07-HY
Condition : FCC CLASS-B HF_ANT_100824 VERTICAL
Project : FR 0D0904-15
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 X	2480.00	92.20	18.20	74.00	87.64	32.28	6.18	33.90	100	10	Peak
2	2483.50	45.03	-28.97	74.00	40.47	32.28	6.18	33.90	100	10	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 47.17 dB , single carrier Mode

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical



Site : 03CH07-HY
Condition : FCC CLASS-B HF_ANT_100824 VERTICAL
Project : FR 0D0904-15
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	93.18	19.18	74.00	88.62	32.28	6.18	33.90	100	10	Peak
2	2485.19	44.57	-29.43	74.00	40.01	32.28	6.18	33.90	100	10	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 48.61 dB , Hopping Mode

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. 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

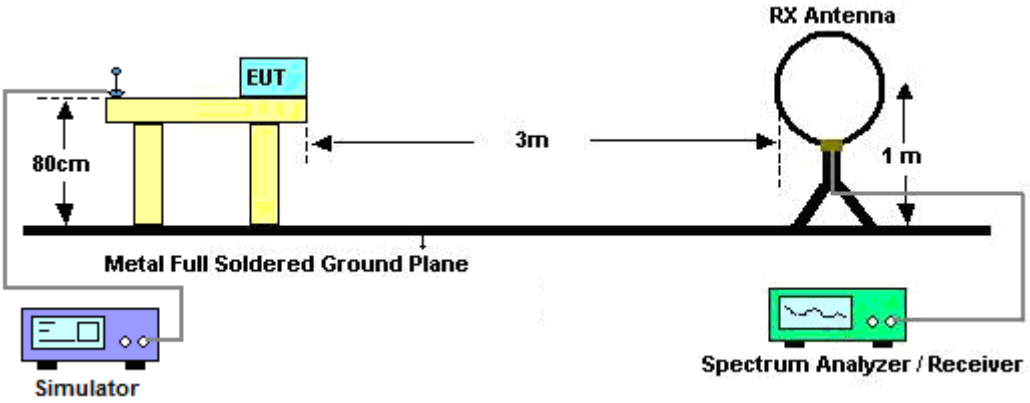
See list of measuring instruments of this test report.

3.2.3 Test Procedures

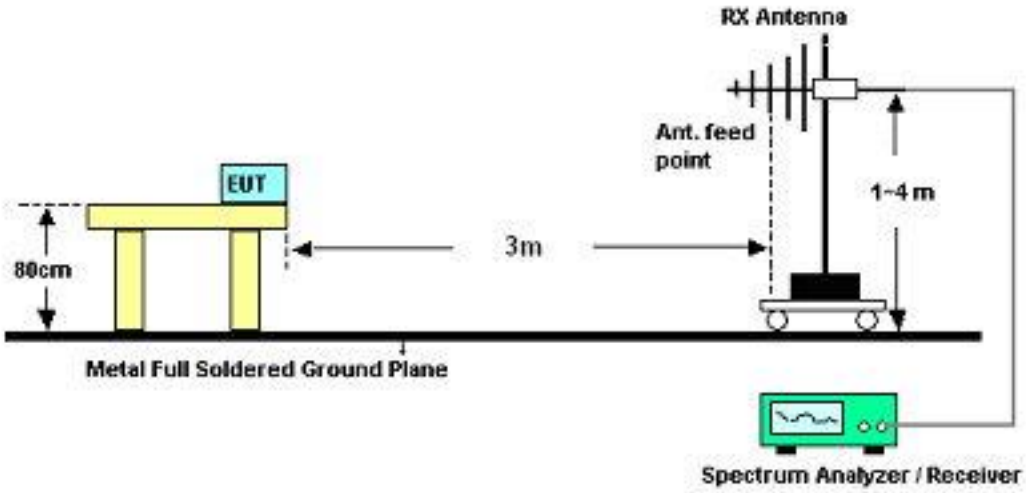
5. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
6. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = 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 (specific distance [3m] / test distance [1m]) (dB)
7. 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.
8. Measured average value for the peak value is greater than 54 dBuv/m

3.2.4 Test Setup

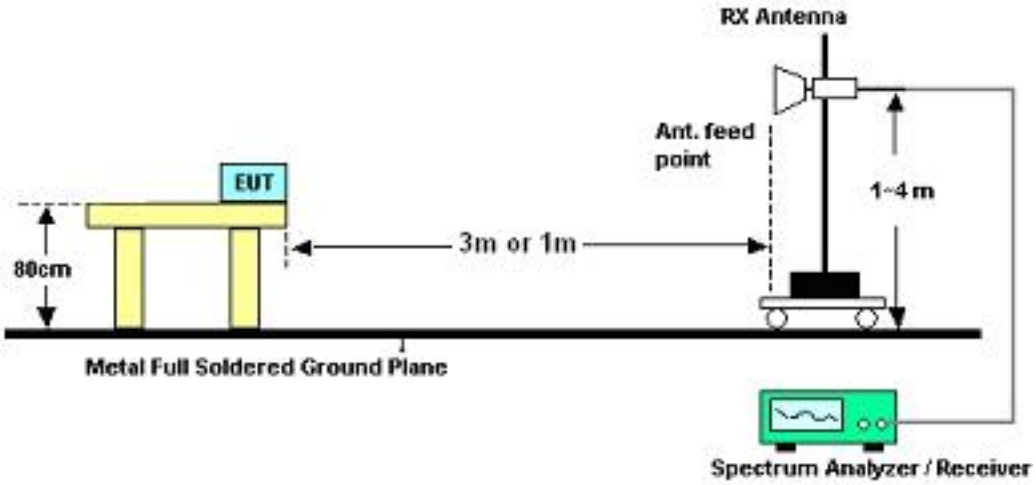
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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 (specific distance / test distance) (dB);

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

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

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Horizontal
Remark :	2480 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
32.7	18.78	-21.22	40	33.89	15.8	0.56	31.47	135	201	Peak
191.46	20.09	-23.41	43.5	41.24	9.07	1.28	31.5	-	-	Peak
283.26	22.95	-23.05	46	39.44	13.2	1.65	31.34	-	-	Peak
307	20.95	-25.05	46	36.79	13.7	1.79	31.33	-	-	Peak
587	20.93	-25.07	46	29.66	19.56	2.65	30.94	-	-	Peak
788.6	23.96	-22.04	46	29.23	22.29	3.12	30.68	-	-	Peak
2356	45.4	-28.6	74	41.15	32.13	5.95	33.83	100	288	Peak
2356	33.09	-20.91	54	28.84	32.13	5.95	33.83	100	288	Average
2480	101.77	-	-	97.21	32.28	6.18	33.9	100	288	Peak
2480	98.39	-	-	93.83	32.28	6.18	33.9	100	288	Average
2483.5	66.79	-7.21	74	62.23	32.28	6.18	33.9	100	288	Peak
2483.5	48.3	-5.7	54	43.74	32.28	6.18	33.9	100	288	Average

Test Mode :	Mode 1	**Temperature :**	24~25 °C
Test Channel :	78	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**Polarization :**	Vertical
Remark :	2480 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
30	22.43	-17.57	40	36.85	16.51	0.53	31.46	-	-	Peak
81.3	24.58	-15.42	40	47.85	7.37	0.89	31.53	103	312	Peak
180.93	25.04	-18.46	43.5	46.28	9.04	1.25	31.53	-	-	Peak
307.7	19.53	-26.47	46	35.37	13.7	1.79	31.33	-	-	Peak
556.2	23.29	-22.71	46	32.61	19.08	2.57	30.97	-	-	Peak
808.9	24.33	-21.67	46	29.29	22.57	3.16	30.69	-	-	Peak
2318	45.76	-28.24	74	41.57	32.09	5.92	33.82	100	10	Peak
2318	32.88	-21.12	54	28.69	32.09	5.92	33.82	100	10	Average
2480	94.14	-	-	89.58	32.28	6.18	33.9	100	10	Peak
2480	90.87	-	-	86.31	32.28	6.18	33.9	100	10	Average
2483.5	59.17	-14.83	74	54.61	32.28	6.18	33.9	100	10	Peak
2483.5	43.6	-10.4	54	39.04	32.28	6.18	33.9	100	10	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. 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	GB41292344	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	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	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	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	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

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

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 Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

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

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 Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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.