Variant FCC RF Test Report

APPLICANT	:	Motorola Mobility, Inc.
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	MOTOROLA
MODEL NAME	:	XT316
GPPD NUMBER	:	3040
FCC ID	:	IHDT56ML2
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)
Tx/Rx FREQUENCY RANGE	:	GSM850 : 824.2 ~ 848.8 MHz / 869.2 ~ 893.8 MHz GSM1900 : 1850.2 ~ 1909.8 MHz / 1930.2 ~ 1989.8 MHz WCDMA Band V : 826.4 ~ 846.6 MHz / 871.4 ~ 891.6 MHz WCDMA Band II : 1852.4 ~ 1907.6 MHz / 1932.4 ~ 1987.6 MHz
MAX. ERP/EIRP POWER	:	GSM850 (GSM) : 0.67 W GSM850 (EDGE 8) : 0.22 W GSM1900 (GSM) : 1.49 W GSM1900 (EDGE 8) : 0.44 W WCDMA Band V (RMC 12.2Kbps) : 0.09 W WCDMA Band II (RMC 12.2Kbps) : 0.32 W
EMISSION DESIGNATOR	:	4M16F9W

This is a variant report which is only valid together with the original test report. The product was received on May 13, 2011 and completely tested on Jun. 08, 2011. We, SPORTON INTERNATIONAL Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown 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.

TABLE OF CONTENTS

REVISION HISTORY **4**

SUMMARY OF TEST RESULT **5**

1 GENERAL DESCRIPTION **6**

1.1 Applicant 6
1.2 Manufacturer 6
1.3 Feature of Equipment Under Test 7
1.4 Testing Site 8
1.5 Applied Standards 8
1.6 Ancillary Equipment List 8

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST **9**

2.1 Test Mode 9
2.2 Connection Diagram of Test System 10

3 TEST RESULT **11**

3.1 Conducted Output Power Measurement 11
3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement 12
3.3 Occupied Bandwidth Measurement 18
3.4 Band Edge Measurement 20
3.5 Conducted Emission Measurement 22
3.6 Field Strength of Spurious Radiation Measurement 26
3.7 Frequency Stability Measurement 34

4 LIST OF MEASURING EQUIPMENT **37**

5 UNCERTAINTY OF EVALUATION **38**

APPENDIX A. PRODUCT EQUALITY DECLARATION

APPENDIX B. ORIGINAL REPORT

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG130415-03	Rev. 01	This is a variant report which can be referred to Product Equality Declaration as appendix A. All the test cases were performed on original report which can be referred to Sporton Report Number FG130415 as appendix B. Based on original report, only the worst case of ERP/EIRP and radiation emission were verified and add the conducted test data of WCDMA Band II.	Jun. 08, 2011
FG130415-03	Rev. 02	Update report for adding verified conducted output power	Jun. 20, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	N/A	Conducted Output Power	N/A	PASS	-
3.2	§22.913(a)(2)	RSS-132(4.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.2	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.3	§2.1049 §22.917(a) §24.238(a)	N/A	Occupied Bandwidth	N/A	PASS	-
3.4	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Band Edge Measurement	< $43+10\log_{10}$(P[Watts])	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Conducted Emission	< $43+10\log_{10}$(P[Watts])	PASS	-
3.6	§2.1053 §22.917(a) §24.238(a)	RSS-132 (4.5.1) RSS-133 (6.5.1)	Field Strength of Spurious Radiation	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 29.93 dB at 3760 MHz
3.7	§2.1055 §22.355 §24.235	RSS-132(4.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

Motorola Mobility, Inc.
8F., No. 9, Songgao Rd., Taipei 110, Taiwan, R.O.C.

1.2 Manufacturer

Chi Mei Communication Systems, Inc.
No. 4, Mingsheng Street, Tucheng District, New Taipei City, 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Mobile Phone
Brand Name	MOTOROLA
Model Name	XT316
FCC ID	IHDT56ML2
Tx Frequency	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band II : 1850 MHz ~ 1910 MHz
Rx Frequency	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz
Maximum Output Power to Antenna	WCDMA Band II : 23.47 dBm
Maximum ERP/EIRP	GSM850 (GSM) : 0.67 W (28.23 dBm) GSM850 (EDGE 8) : 0.22 W (23.37 dBm) GSM1900 (GSM) : 1.49 W (31.72 dBm) GSM1900 (EDGE 8) : 0.44 W (26.46 dBm) WCDMA Band V (RMC 12.2Kbps) : 0.09 W (19.41 dBm) WCDMA Band II (RMC 12.2Kbps) : 0.32 W (25.04 dBm)
Antenna Type	Fixed Internal Antenna
HW Version	V2.0
SW Version	V3.23F
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM
Type of Emission	QPSK : 4M16F9W
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, the test report will be issued separately.
2. This test report recorded only product characteristics and test results of PCS Licensed Transmitter Held to Ear (PCE).
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: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	**Sporton Site No.**		**FCC/IC Registration No.**
	TH02-HY	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:

- Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- FCC 47 CFR Part 2, 22(H), 24(E)
- ANSI / TIA / EIA-603-C-2004
- IC RSS-132 Issue 2
- IC RSS-133 Issue 5

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 No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU200	N/A	N/A	Unshielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850.
2. 30 MHz to 19000 MHz for GSM1900 and WCDMA Band II.

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	■ GSM Link	■ -
GSM 1900	■ EDGE 8 Link	■ -
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note:

1. The maximum power level is RMC 12.2Kbps mode for WCDMA band II, only this mode was used for all tests.

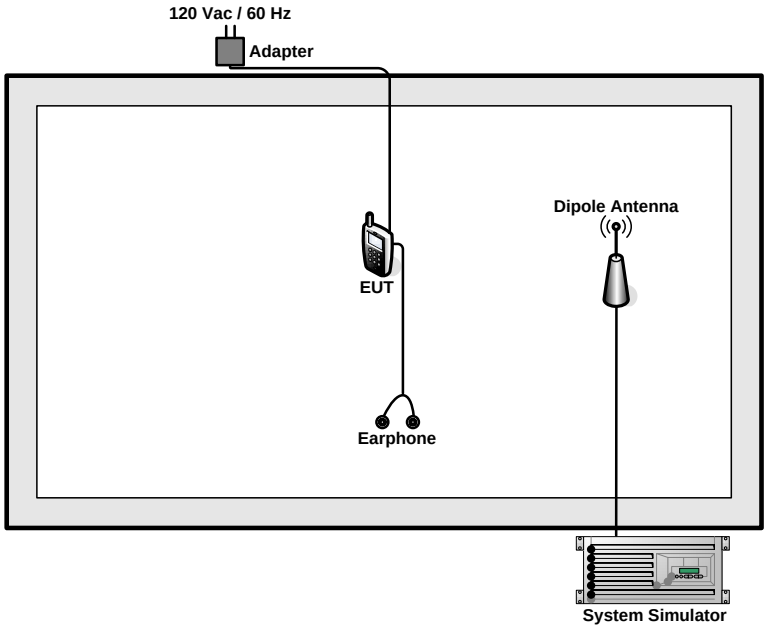
2. Because there are individual antennas for each WWAN and Bluetooth, the co-location test modes are not required.

The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency	**824.2**	**836.4**	**848.8**	**1850.2**	**1880.0**	**1909.8**
GSM	**32.49**	32.47	32.44	29.95	**29.97**	29.96
GPRS 8	32.48	32.47	32.43	29.95	29.96	29.96
GPRS 10	29.56	29.55	29.50	26.82	27.02	26.95
GPRS 12	26.23	26.22	26.17	24.10	24.28	24.10
EGPRS 8	**28.01**	27.97	27.88	26.84	**27.10**	26.91
EGPRS 10	25.47	25.46	25.38	24.40	24.58	24.39
EGPRS 12	22.55	22.58	22.45	21.40	21.48	21.45

Conducted Power (*Unit: dBm)						
Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency	826.4	836.4	846.6	1852.4	1880.0	1907.6
RMC 12.2K	23.48	23.45	23.47	23.43	23.47	23.42
HSDPA Subtest-1	23.42	23.40	23.38	23.42	23.45	23.43
HSDPA Subtest-2	23.45	23.32	23.31	23.20	23.32	23.38
HSDPA Subtest-3	22.92	22.86	22.77	23.05	23.13	22.92
HSDPA Subtest-4	22.89	22.82	22.75	23.03	23.12	23.04

2.2 Connection Diagram of Test System



3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

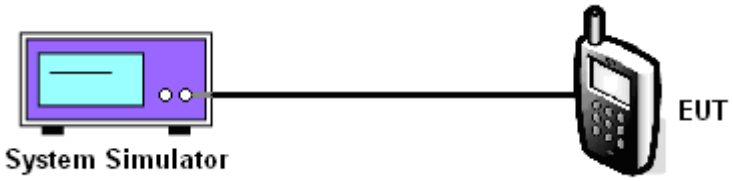
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

PCS Band				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
WCDMA Band II (RMC 12.2Kbps)	9262 (Low)	1852.4	23.43	0.22
	9400 (Mid)	1880.0	23.47	0.22
	9538 (High)	1907.6	23.42	0.22

3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.2.1 Description of the ERP/EIRP Measurement

ERP/EIRP is measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

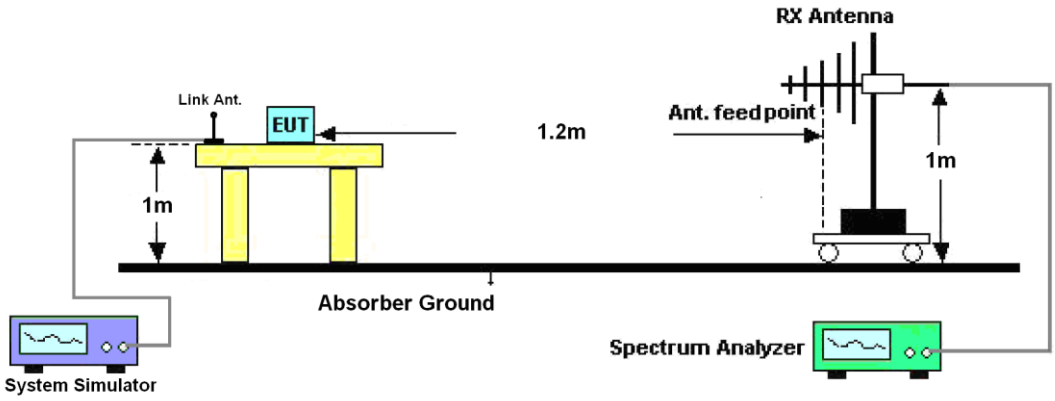
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was placed on a turntable with 1.0 meter height in a fully anechoic chamber.
2. The EUT was set at 1.2 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiated power.
4. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
5. Taking the record of maximum ERP/EIRP.
6. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the dipole antenna is measured.
8. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
9. ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs
   Ps (dBm)：Input power to substitution antenna.
   Gs (dBi or dBd)：Substitution antenna Gain.
   Et = Rt + AF
   Es = Rs + AF
   AF (dB/m)：Receive antenna factor
   Rt：The highest received signal in spectrum analyzer for EUT.
   Rs：The highest received signal in spectrum analyzer for substitution antenna.

3.2.4 Test Setup



3.2.5 Test Result of ERP

GSM850 (GSM) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-20.25	-48.12	0.00	-1.08	26.79	0.48
836.40	-19.12	-48.28	0.00	-0.93	28.23	0.67
848.80	-20.91	-48.35	0.00	-0.76	26.68	0.47
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-37.04	-47.97	0.00	-1.08	9.85	0.01
836.40	-35.88	-48.01	0.00	-0.93	11.20	0.01
848.80	-33.98	-48.05	0.00	-0.76	13.31	0.02

GSM850 (EDGE 8) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-24.96	-48.12	0.00	-1.08	22.08	0.16
836.40	-23.98	-48.28	0.00	-0.93	23.37	0.22
848.80	-24.23	-48.35	0.00	-0.76	23.36	0.22
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-40.86	-47.97	0.00	-1.08	6.03	0.00
836.40	-39.95	-48.01	0.00	-0.93	7.13	0.01
848.80	-40.03	-48.05	0.00	-0.76	7.26	0.01

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-28.03	-48.12	0.00	-1.08	19.01	0.08
836.40	-27.94	-48.28	0.00	-0.93	19.41	0.09
846.60	-28.39	-48.35	0.00	-0.76	19.20	0.08
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-44.28	-47.97	0.00	-1.08	2.61	0.00
836.40	-44.02	-48.01	0.00	-0.93	3.06	0.00
846.60	-44.28	-48.05	0.00	-0.76	3.01	0.00

3.2.6 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-22.12	-51.88	0.00	1.96	31.72	1.49
1880.00	-23.94	-52.99	0.00	2.00	31.05	1.27
1909.80	-25.71	-54.28	0.00	1.98	30.55	1.14
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-22.74	-52.13	0.00	1.96	31.35	1.36
1880.00	-24.38	-53.17	0.00	2.00	30.79	1.20
1909.80	-25.58	-54.13	0.00	1.98	30.53	1.13

GSM1900 (EDGE 8) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-28.90	-51.88	0.00	1.96	24.94	0.31
1880.00	-29.79	-52.99	0.00	2.00	25.20	0.33
1909.80	-31.77	-54.28	0.00	1.98	24.49	0.28
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-28.13	-52.13	0.00	1.96	25.96	0.39
1880.00	-28.71	-53.17	0.00	2.00	26.46	0.44
1909.80	-30.70	-54.13	0.00	1.98	25.41	0.35

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1852.40	-28.80	-51.88	0.00	1.96	25.04	0.32
1880.00	-31.62	-52.99	0.00	2.00	23.37	0.22
1907.60	-32.44	-54.28	0.00	1.98	23.82	0.24
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1852.40	-29.33	-52.13	0.00	1.96	24.76	0.30
1880.00	-32.16	-53.17	0.00	2.00	23.01	0.20
1907.60	-32.27	-54.13	0.00	1.98	23.84	0.24

3.3 Occupied Bandwidth Measurement

3.3.1 Description of Occupied Bandwidth Measurement

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

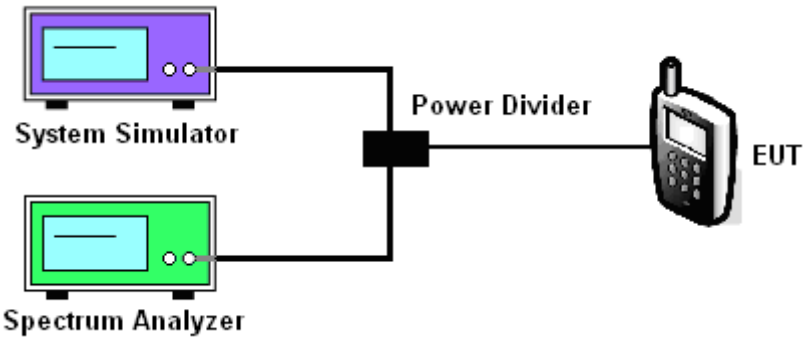
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.

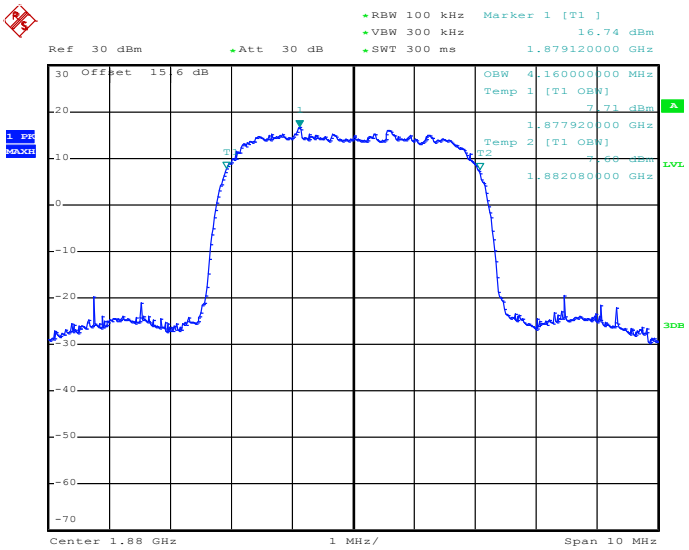
3.3.4 Test Setup



3.3.5 Test Result (Plots) of Occupied Bandwidth

Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 9400



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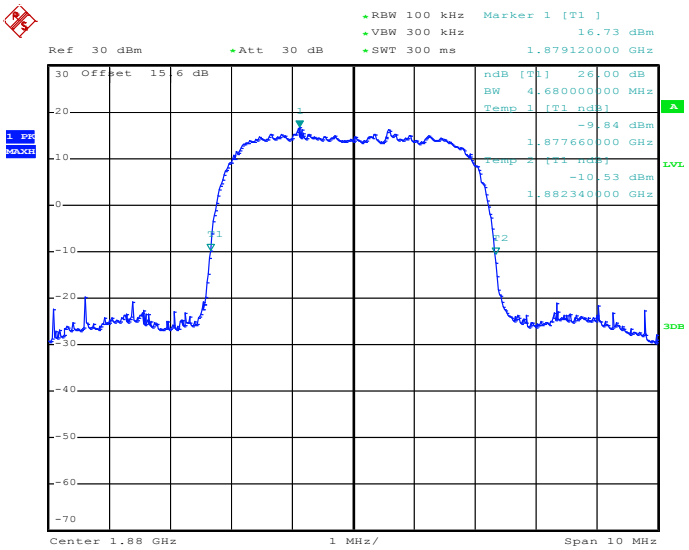
26dB Bandwidth Plot on Channel 9400



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3.4 Band Edge Measurement

3.4.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

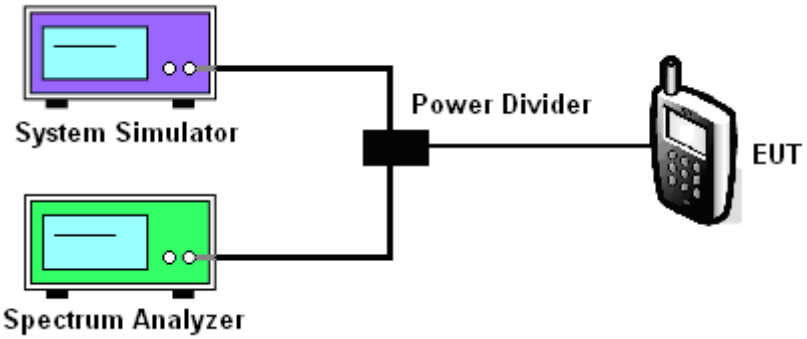
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.

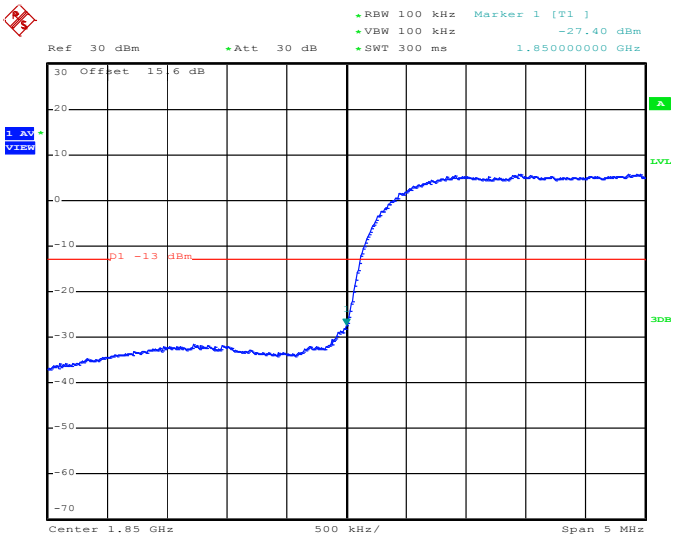
3.4.4 Test Setup



3.4.5 Test Result (Plots) of Conducted Band Edge

Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

Lower Band Edge Plot on Channel 9262



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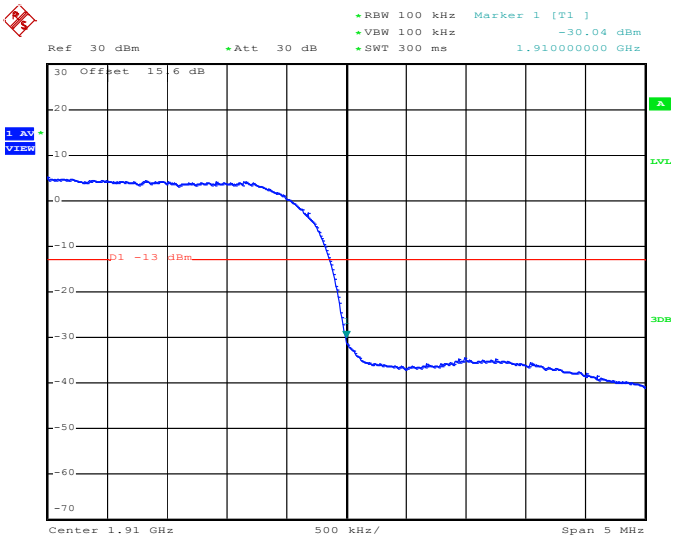
Higher Band Edge Plot on Channel 9538



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3.5 Conducted Emission Measurement

3.5.1 Description of Conducted Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

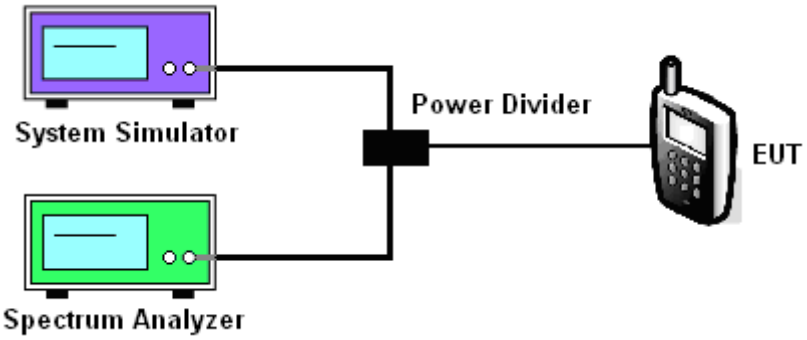
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

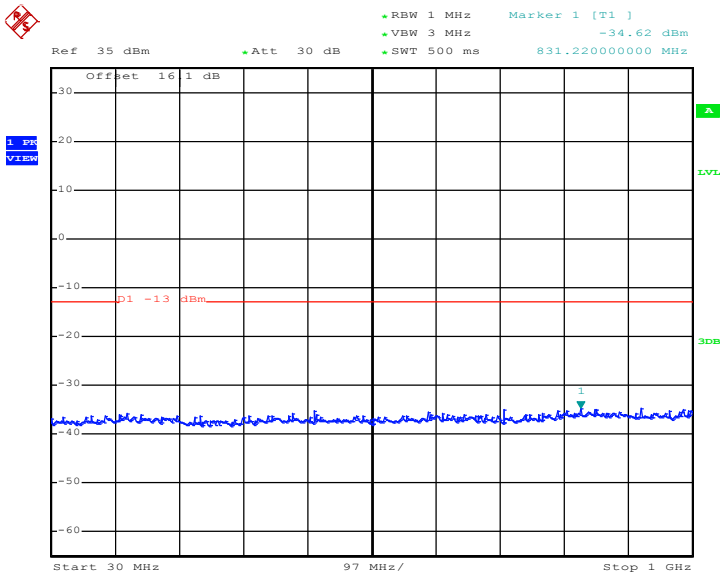
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Emission

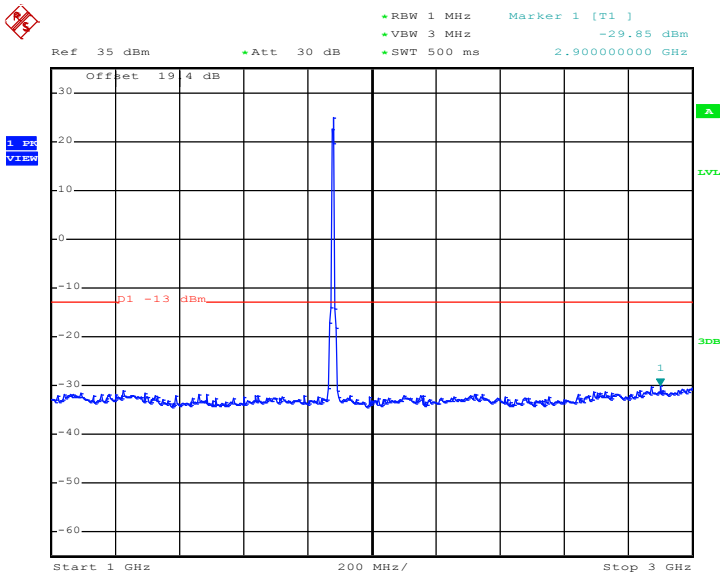
Band :	WCDMA Band II	Channel :	CH9400
Test Mode :	RMC 12.2Kbps Link		

Conducted Emission Plot between 30MHz ~ 1GHz



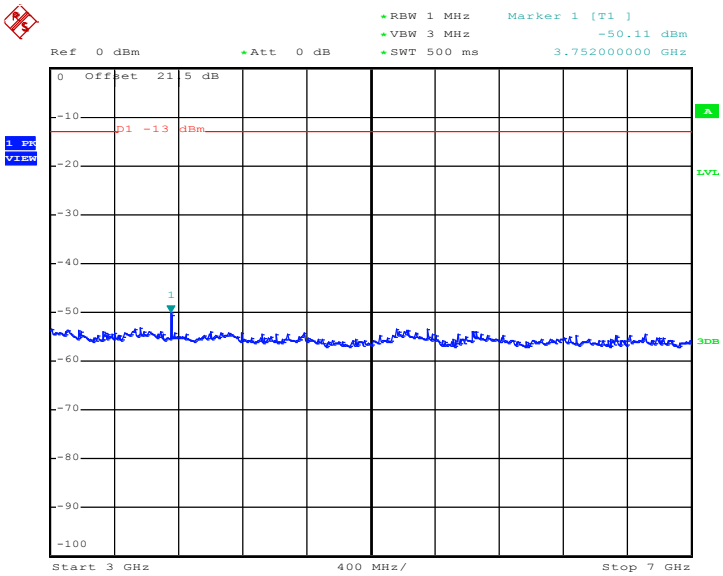
Date: 8.JUN.2011 15:07:13

Conducted Emission Plot between 1GHz ~ 3GHz



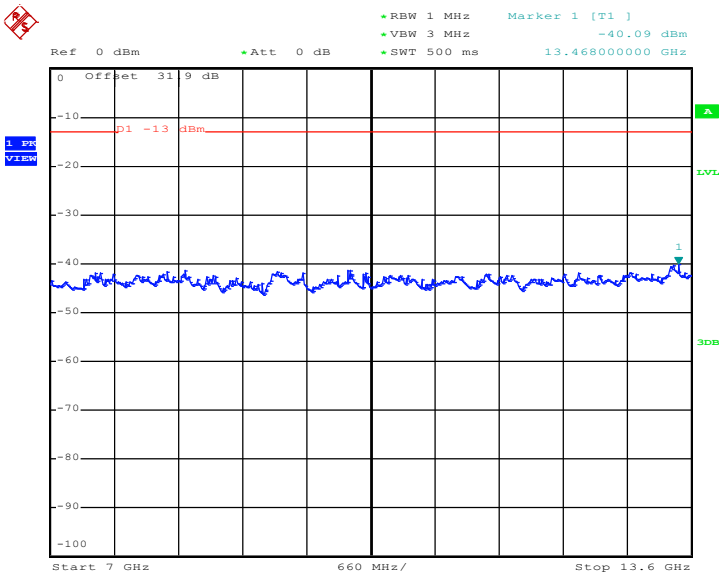
Date: 8.JUN.2011 15:07:26

Conducted Emission Plot between 3GHz ~ 7GHz



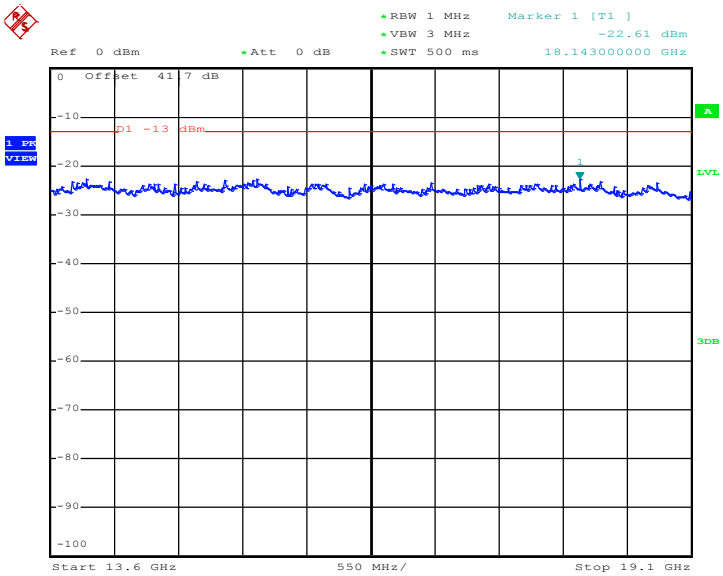
Date: 8.JUN.2011 15:07:44

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 8.JUN.2011 15:07:56

Conducted Emission Plot between 13.6GHz ~ 19.1GHz



Date: 8.JUN.2011 15:08:09

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

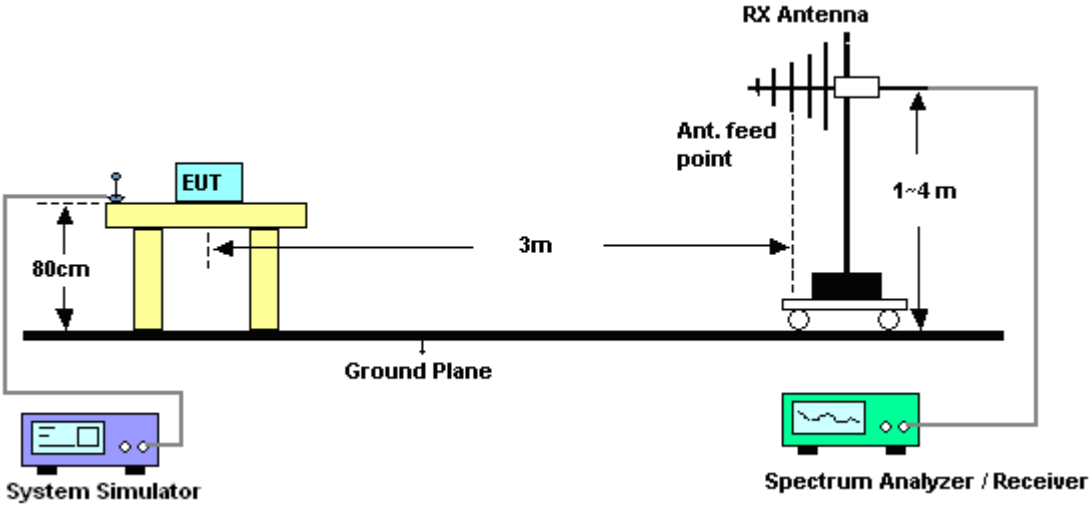
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

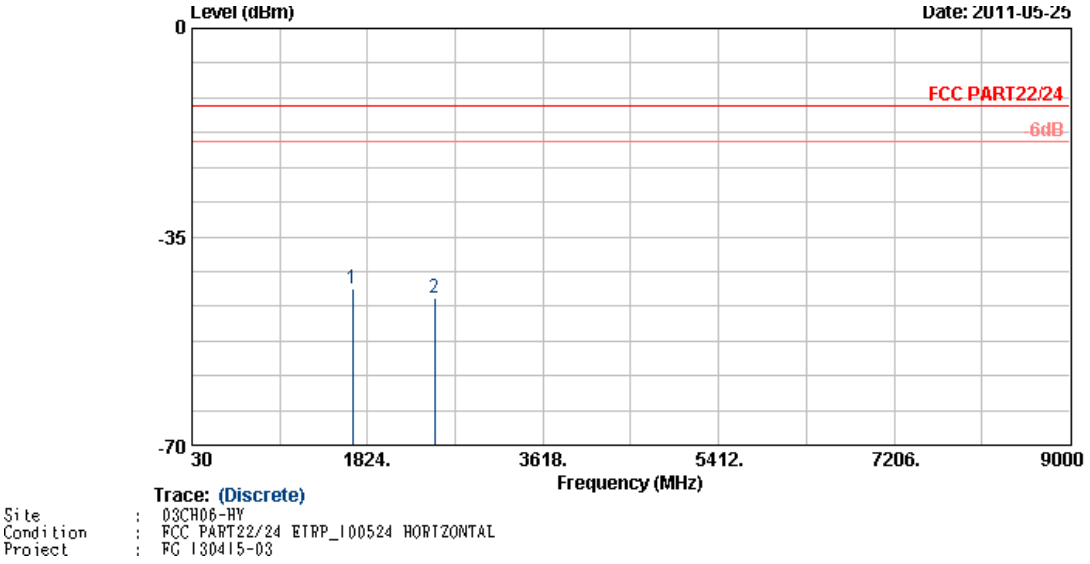
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15

3.6.4 Test Setup



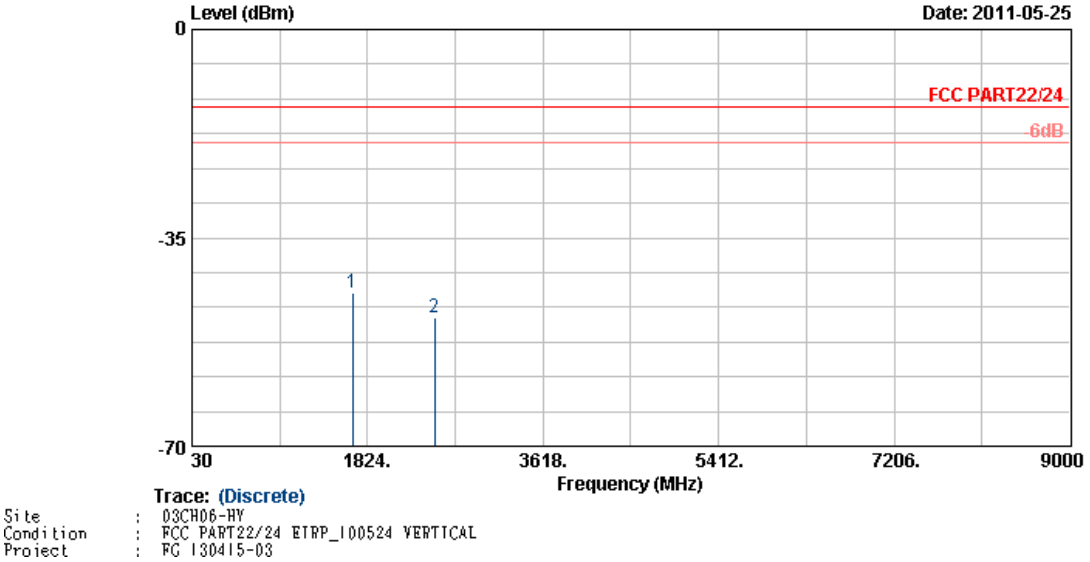
3.6.5 Test Result of Field Strength of Spurious Radiated

Band :	GSM850	**Temperature :**	23~24°C
Test Mode :	GSM Link	**Relative Humidity :**	47~49%
Test Engineer :	Hayden Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



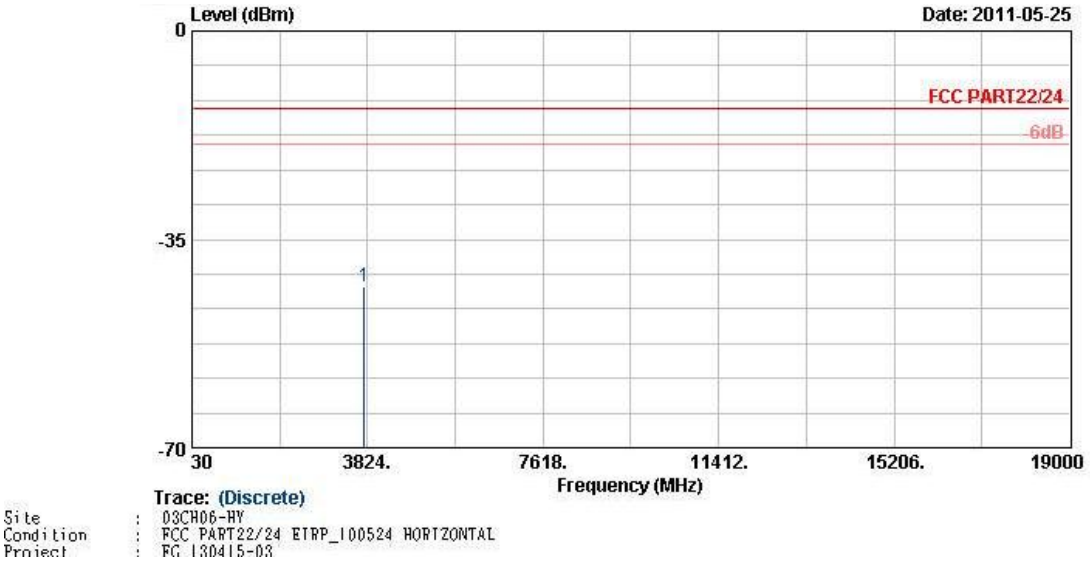
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-43.83	-13	-30.83	-55.04	-45.29	1.88	5.49	H	Pass
2509	-45.35	-13	-32.35	-59.23	-46.98	2.44	6.22	H	Pass

Band :	GSM850	**Temperature :**	23~24°C
Test Mode :	GSM Link	**Relative Humidity :**	47~49%
Test Engineer :	Hayden Wu	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



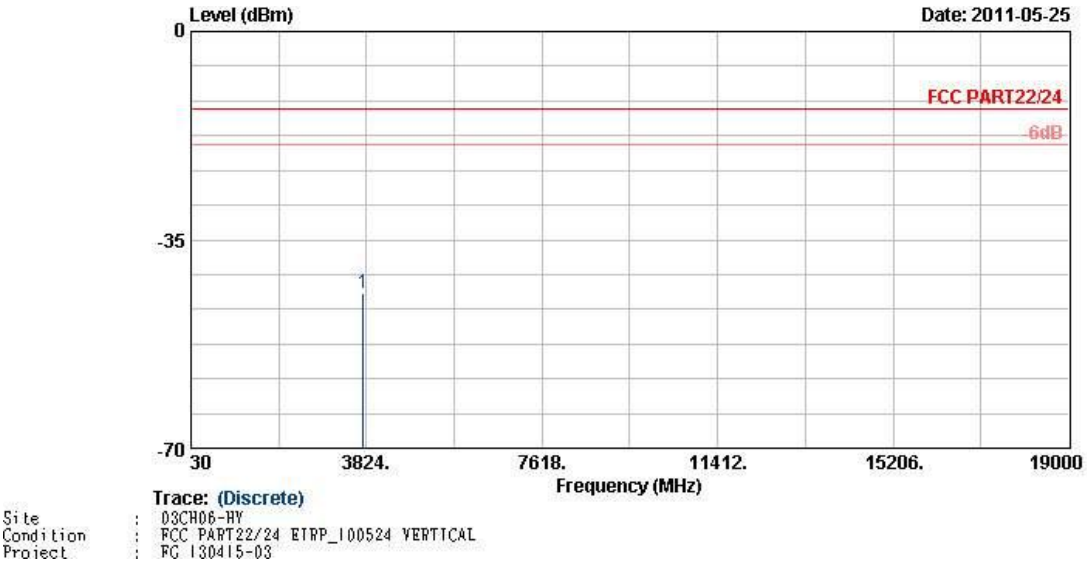
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-44.16	-13	-31.16	-55.55	-45.62	1.88	5.49	V	Pass
2509	-48.49	-13	-35.49	-62.46	-50.12	2.44	6.22	V	Pass

Band :	EDGE 1900	**Temperature :**	23~24°C
Test Mode :	EDGE 8 Link	**Relative Humidity :**	47~49%
Test Engineer :	Hayden Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



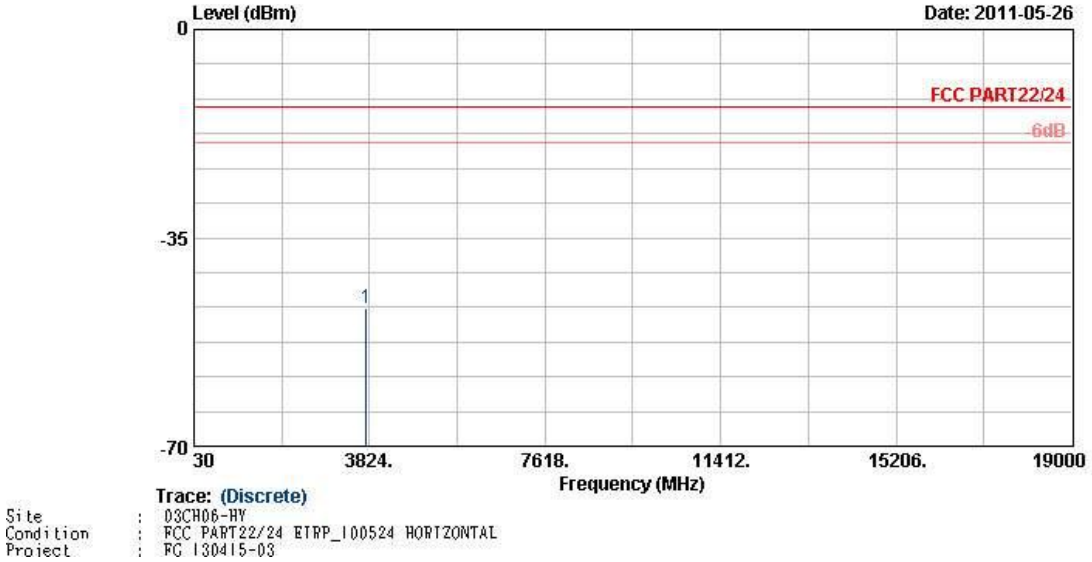
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-42.93	-13	-29.93	-61.31	-49.18	2.56	8.81	H	Pass

Band :	EDGE 1900	**Temperature :**	23~24°C
Test Mode :	EDGE 8 Link	**Relative Humidity :**	47~49%
Test Engineer :	Hayden Wu	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



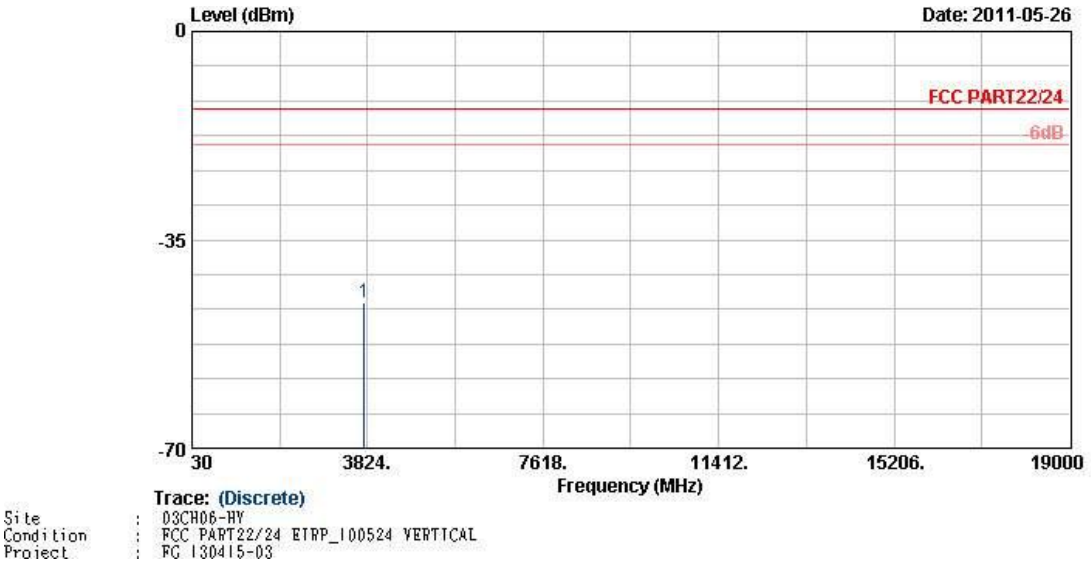
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-44.04	-13	-31.04	-62.13	-50.29	2.56	8.81	V	Pass

Band :	WCDMA Band II	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	47~49%
Test Engineer :	Hayden Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-46.93	-13	-33.93	-65.26	-53.18	2.56	8.81	H	Pass

Band :	WCDMA Band II	**Temperature :**	23~24°C
Test Mode :	RMC 12.2Kbps Link	**Relative Humidity :**	47~49%
Test Engineer :	Hayden Wu	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-45.63	-13	-32.63	-64.19	-51.88	2.56	8.81	V	Pass

3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

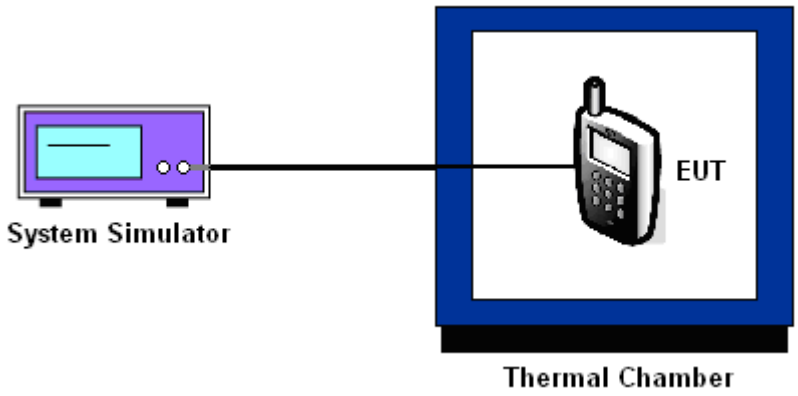
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT can not be turned on at -30°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.7.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.7.5 Test Setup



3.7.6 Test Result of Temperature Variation

Band :	WCDMA Band II	Channel :	9400
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	N/A	N/A	PASS
-20	N/A	N/A	
-10	49	0.03	
0	47	0.02	
10	39	0.02	
20	-32	-0.02	
30	-24	-0.01	
40	-23	-0.01	
50	-18	-0.01	

Note:

1. The EUT stops transmitting at temperatures -20°C and -30°C.
2. The manufacturer declared that the EUT could work properly between temperatures -10~55°C.

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
WCDMA Band II CH9400	RMC 12.2Kbps	3.8	26	0.01	2.5	PASS
		BEP	-19	-0.01		
		4.2	-34	-0.02		

Note:

1. Normal Voltage = 3.8V.
2. Battery End Point (BEP) = 3.6 V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 11, 2010	Jun. 10, 2011	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)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 30, 2010	Jul. 29, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 25, 2010	Oct. 24, 2011	Radiation (03CH06-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug.19, 2010	Aug.19, 2011	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 31, 2010	Oct. 31, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 02, 2010	Aug. 01, 2011	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Oct. 20, 2010	Oct. 19, 2011	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH06-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH06-HY)

5 Uncertainty of Evaluation

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. Product Equality Declaration

Chi Mei Communication System Inc.
Tel: 886-2-2268-5511; Fax: 886-2-2269-2922

Date: June 8, 2011

Product Equality Declaration

We, Chi Mei Communication System Inc., declare on our sole responsibility for the product of XT311 as below:

The difference between XT316 (850/1900) and XT316 (850/2100) is:

- WCDMA Band difference : from Band I & V to Band II & V.
- Schematics is the same with XT316 (850/2100) . Only BOM difference listed below.

Reference #	Parent Model XT316 (850/2100)	Current Model XT316 (850/1900)
U2201	S091G95A000	S091G88B000
U2202	SA07200T020	SA07206T020
U2203	SF14195K0A1	SF1X1G880A1
U2501	SF0X2G140A1	SF04196A0A1
L2201	SI258J20701	NA
L2202	SI215I21551	SI234J20861
L2203	SI229J20801	SI234J20861
C2201	SC001L04600	SC533M04911
C2202	SI258J20701	SI262J20781
C2203	SCX39M04650	SC547M04912
C2205	SI103I20521	NA
C2414	SC522L02751	NA
C2419	NA	SC522L02751
R2203	NA	SR000000252
R2204	SR000000252	NA
R2205	NA	SR000000252
R2206	SR000000252	NA
R2502	SR000000252	NA
R2503	NA	SR000000252

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: Charlene Tsai
Applicant: Chi Mei Communication System Inc.
Tel: 886-2-2268-5511 ; **Fax:** 886-2-2269-2922
E-Mail: CharleneTsai@fih-foxconn.com

Appendix B. Original Report

Please refer to Sporton report number FG130415 as below.