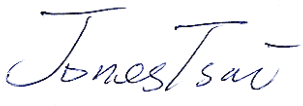
FCC RF Test Report

APPLICANT	:	Tecom Co., Ltd.
EQUIPMENT	:	3G Femto Outdoor Cell Device
BRAND NAME	:	CISCO
MODEL NAME	:	USC9330-BI-K9
FCC ID	:	D6XUSC9330BI
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)

The product was received on Apr. 18, 2014 and testing was completed on May 01, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 and the testing has shown the tested sample to be in 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: Joseph Lin / Supervisor



Approved 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

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG441829-01	Rev. 01	Initial issue of report	Aug. 22, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046 §22.913(a)(2) §24.232(c)	RSS-132 (5.4) RSS-133 (6.4) SRSP-503(5.1.3) SRSP-510(5.1.2)	Conducted Output Power and ERP/EIRP	N/A ERP < 7 Watts EIRP < 2 Watts	PASS	-
3.2	§24.232(d)	RSS-132 (5.4) RSS-133(6.4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.3	§2.1049 §22.917(b) §24.238(b)	RSS-GEN(4.6.1) RSS-133(2.3)	Occupied Bandwidth	N/A	PASS	-
3.4	§2.1051 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Band Edge Measurement	< $43+10\log_{10}$(P[Watts])	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Conducted Spurious Emission	< $43+10\log_{10}$(P[Watts])	PASS	-
3.6	§2.1053 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Field Strength of Spurious Radiation	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 15.66 dB at 2677.000 MHz
3.7	§2.1055 §22.355 §24.235	RSS-132(5.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

Tecom Co., Ltd.
23 R&D Road 2, Hsinchu Science-based Industrial Park, Hsin-Chu, Taiwan R.O.C.

1.2 Manufacturer

Global Brands Manufacture (DongGuan) Ltd.
Yue Yuan Industrial Estate, Huang Jiang Zhen, DongGuan City, GuangDong Province, China.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	3G Femto Outdoor Cell Device
Brand Name	CISCO
Model Name	USC9330-BI-K9
FCC ID	D6XUSC9330BI
EUT supports Radios application	GSM (Sniffer mode) WCDMA
EUT Stage	Beta Stage

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz
Rx Frequency	WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz
Maximum Output Power to Antenna	WCDMA Band V : 30.13 dBm WCDMA Band II : 30.01 dBm
Antenna Type	Collinear Antenna
Antenna Gain	WCDMA Band V : 2.15 dBi WCDMA Band II : 2.12 dBi
Type of Modulation	WCDMA: QPSK (Uplink)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	1.03	0.39 ppm	4M18F9W
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	1.63	0.04 ppm	4M18F9W

1.7 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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.**	
	TH02-HY	03CH07-HY

1.8 Applicable Standards

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

- FCC 47 CFR Part 2, 22(H), 24(E)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01
- FCC KDB 412172 D01 Determining ERP and ERIP v01

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, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r01 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 9000 MHz for WCDMA Band V.
2. 30 MHz to 19000 MHz for WCDMA Band II.

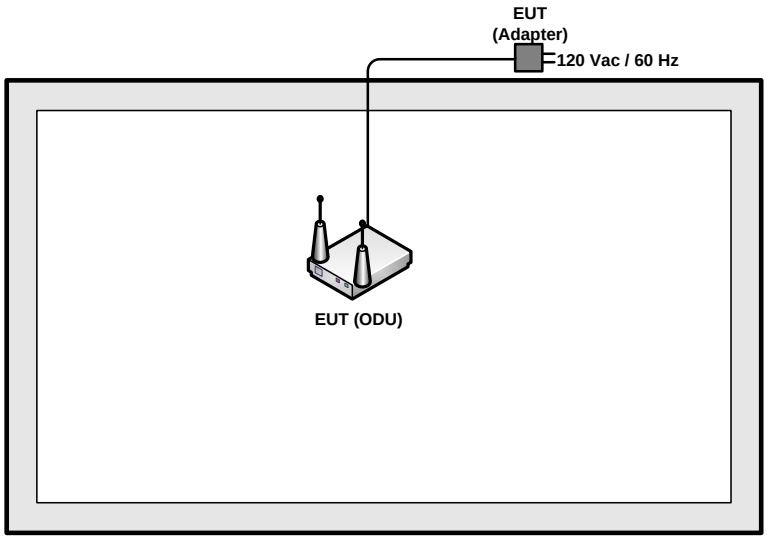
Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note: The maximum power levels are chosen to test as the worst case configuration as follows: RMC 12.2Kbps mode for WCDMA band V and r WCDMA band II, only these modes were used for all tests.

Conducted Power Measurement Results:

Conducted Power (*Unit: dBm)						
Band	**WCDMA Band V**			**WCDMA Band II**		
Channel	**4357**	**4405**	**4458**	**9662**	**9800**	**9938**
Frequency	**871.4**	**881.0**	**891.6**	**1932.4**	**1960.0**	**1987.6**
RMC 12.2K	29.09	30.09	**30.13**	29.43	29.29	**30.01**

2.2 Connection Diagram of Test System



2.3 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
The following shows an offset computation example with RF cable loss 4.2 dB and a 10dB attenuator.

Example :
Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 Conducted Output Power and ERP/EIRP Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

The ERP of mobile transmitters must not exceed 7 Watts for Band 850.

The EIRP of mobile transmitters must not exceed 2 Watts for Band 1900.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

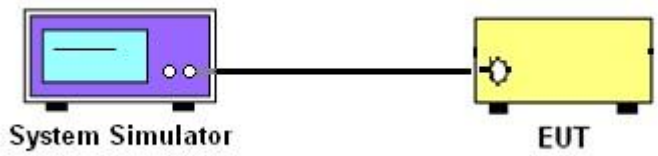
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band			
Modes	**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**4357 (Low)**	**4405 (Mid)**	**4458 (High)**
Frequency (MHz)	**871.4**	**881.0**	**891.6**
Conducted Power (dBm)	29.09	30.09	30.13
Conducted Power P_T (Watts)	0.81	1.02	1.03
ERP(dBm)	29.09	30.09	30.13
ERP(Watts)	0.81	1.02	1.03

PCS Band			
Modes	**WCDMA Band II (RMC 12.2Kbps)**		
Channel	**9662 (Low)**	**9800 (Mid)**	**9938 (High)**
Frequency (MHz)	**1932.4**	**1960.0**	**1987.6**
Conducted Power (dBm)	29.43	29.29	30.01
Conducted Power P_T (Watts)	0.88	0.85	1.00
EIRP(dBm)	31.55	31.41	32.13
EIRP(Watts)	1.43	1.38	1.63

Note: maximum average power for WCDMA.

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

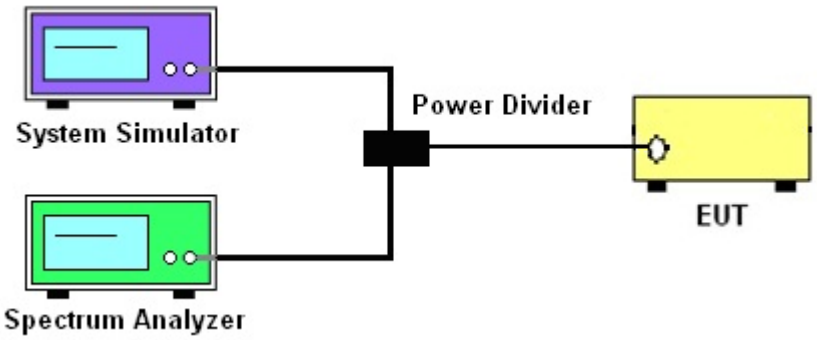
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. For GSM/EGPRS operating modes:
   a. Set EUT in maximum power output.
   b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector on spectrum analyzer for first trace.
   c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector on spectrum analyzer for second trace.
   d. The wanted burst signal is triggered by spectrum analyzer, and measured respectively the peak level and Mean level without burst-off time, after system simulator has synchronized with the spectrum analyzer.
3. For UMTS operating modes:
   a. Set the CCDF (Complementary Cumulative Distribution Function) option on the spectrum analyzer.
   b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

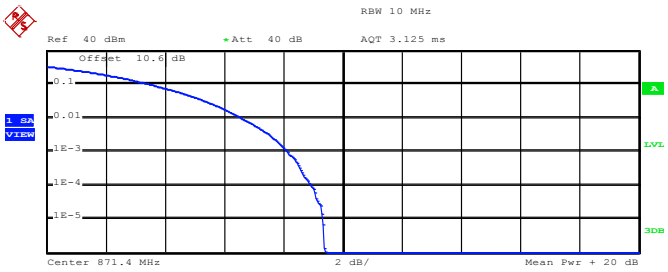
Cellular Band			
Modes	**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**4357 (Low)**	**4405 (Mid)**	**4458 (High)**
Frequency (MHz)	**871.4**	**881.0**	**891.6**
Peak-to-Average Ratio (dB)	8.16	7.68	8.08

PCS Band			
Modes	**WCDMA Band II (RMC 12.2Kbps)**		
Channel	**9662 (Low)**	**9800 (Mid)**	**9938 (High)**
Frequency (MHz)	**1932.4**	**1960.0**	**1987.6**
Peak-to-Average Ratio (dB)	8.16	8.36	8.20

3.2.6 Test Result (Plots) of Peak-to-Average Ratio

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 4357 (871.4 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.42 dBm
Peak	38.81 dBm
Crest	9.39 dB
10 %	3.64 dB
1 %	6.60 dB
.1 %	8.16 dB
.01 %	8.96 dB

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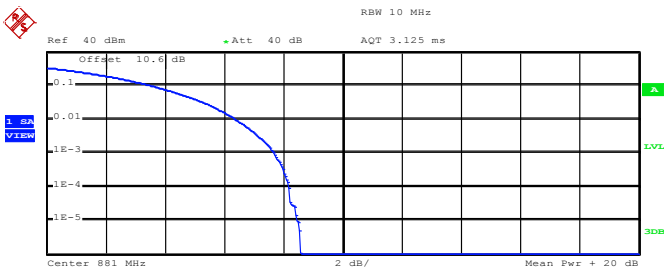
Peak-to-Average Ratio on Channel 4405 (881.0 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	30.38 dBm
Peak	38.96 dBm
Crest	8.58 dB
10 %	3.68 dB
1 %	6.44 dB
.1 %	7.68 dB
.01 %	8.20 dB

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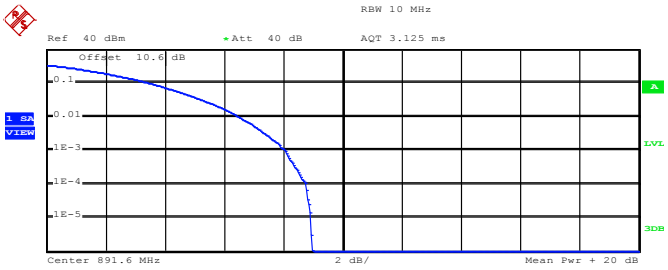
Peak-to-Average Ratio on Channel 4458 (891.6 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.51 dBm
Peak	38.46 dBm
Crest	8.95 dB
10 %	3.60 dB
1 %	6.52 dB
.1 %	8.08 dB
.01 %	8.76 dB

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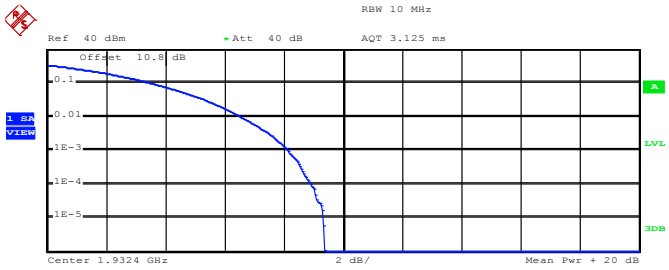
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 9662 (1932.4 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.52 dBm
Peak	38.88 dBm
Crest	9.36 dB
10 %	3.64 dB
1 %	6.60 dB
.1 %	8.16 dB
.01 %	8.92 dB

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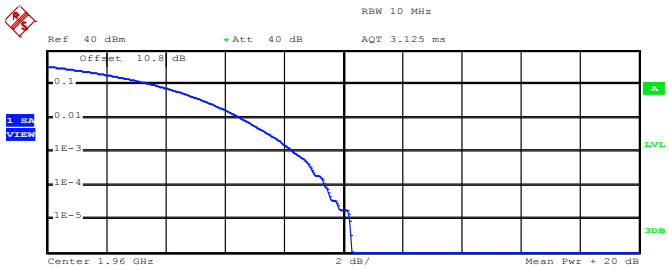
Peak-to-Average Ratio on Channel 9800 (1960.0 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	29.45 dBm
Peak	39.73 dBm
Crest	10.28 dB
10 %	3.68 dB
1 %	6.60 dB
.1 %	8.36 dB
.01 %	9.40 dB

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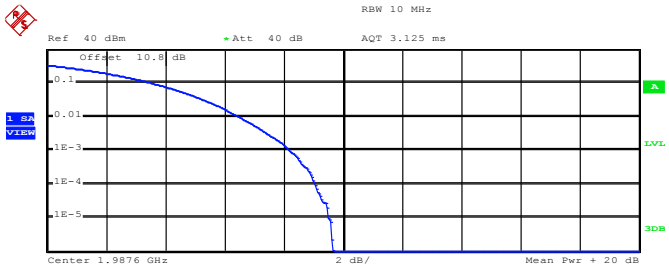
Peak-to-Average Ratio on Channel 9938 (1987.6 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	30.09 dBm
Peak	39.73 dBm
Crest	9.64 dB
10 %	3.68 dB
1 %	6.52 dB
.1 %	8.20 dB
.01 %	9.08 dB

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3.3 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.3.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

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.

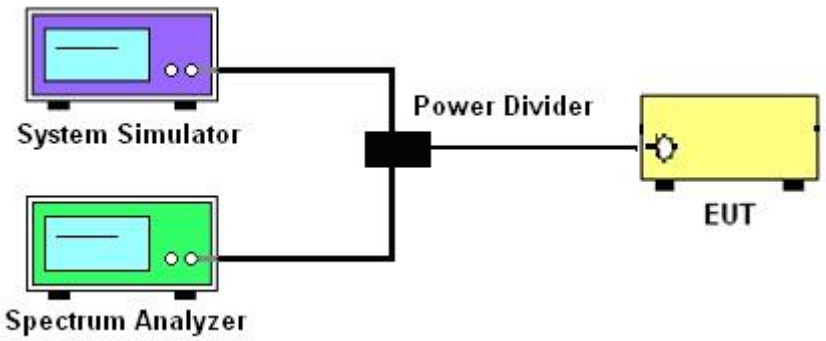
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 99% occupied bandwidth were measured, set RBW= 1% of span, VBW= 3*RBW, sample detector, trace maximum hold.
4. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.

3.3.4 Test Setup



3.3.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

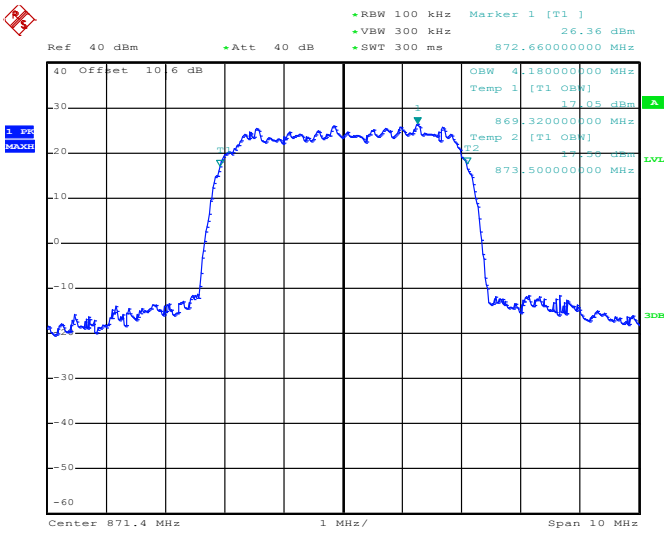
Cellular Band			
Modes	**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**4357 (Low)**	**4405 (Mid)**	**4458 (High)**
Frequency (MHz)	871.4	881.0	891.6
99% OBW (MHz)	4.18	4.18	4.16
26dB BW (MHz)	4.70	4.72	4.68

PCS Band			
Modes	**WCDMA Band II (RMC 12.2Kbps)**		
Channel	**9662 (Low)**	**9800 (Mid)**	**9938 (High)**
Frequency (MHz)	**1932.4**	**1960.0**	**1987.6**
99% OBW (MHz)	4.18	4.18	4.18
26dB BW (MHz)	4.70	4.72	4.72

3.3.6 Test Result (Plots) of Occupied Bandwidth and 26dB Bandwidth

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 4357 (871.4 MHz)



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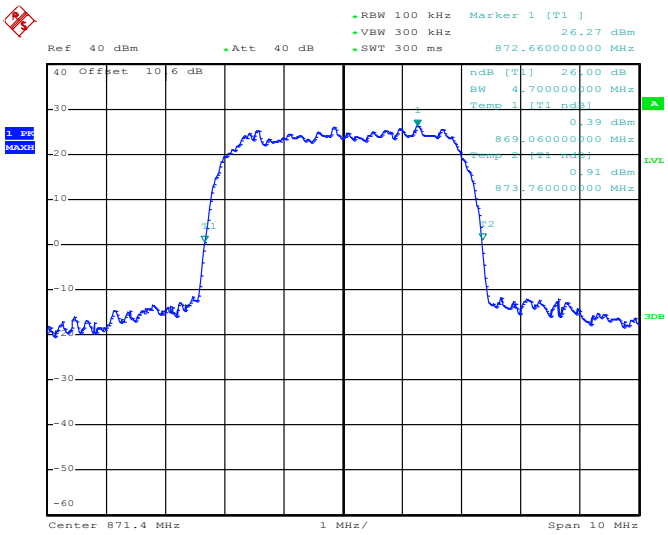
26dB Bandwidth Plot on Channel 4357 (871.4 MHz)



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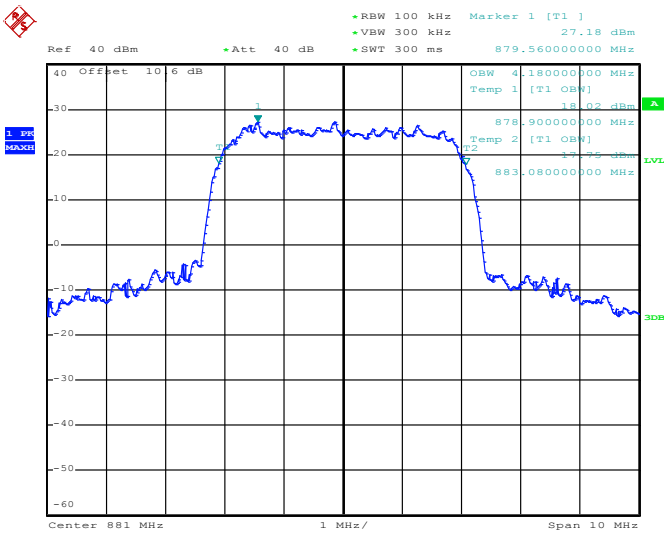
99% Occupied Bandwidth Plot on Channel 4405 (881.0 MHz)



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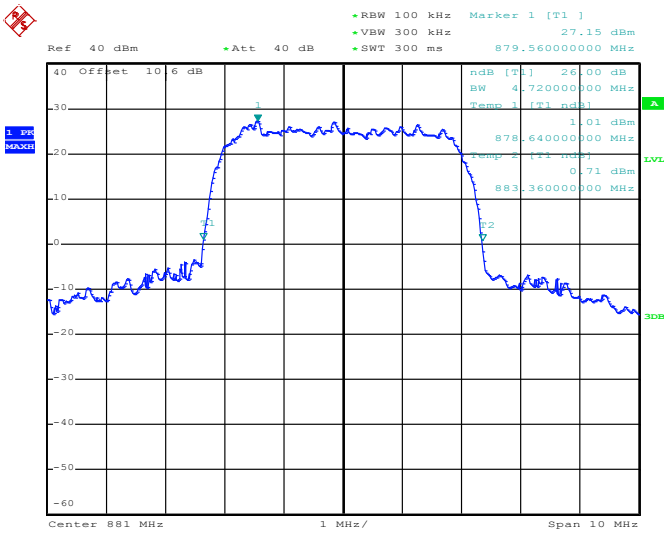
26dB Bandwidth Plot on Channel 4405 (881.0 MHz)



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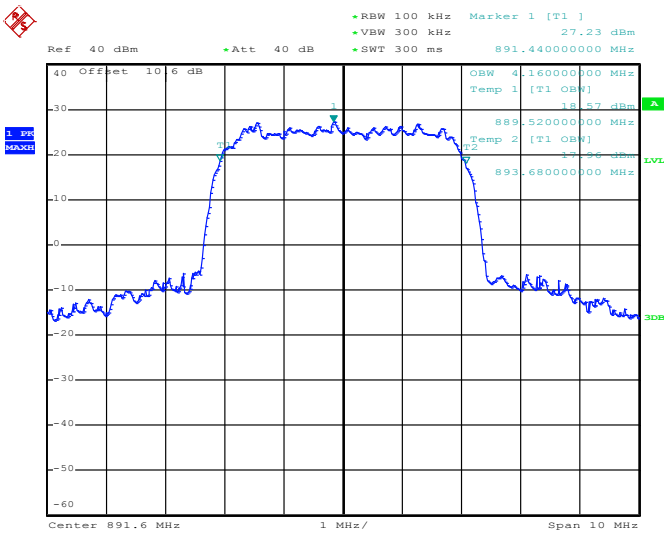
99% Occupied Bandwidth Plot on Channel 4458 (891.6 MHz)



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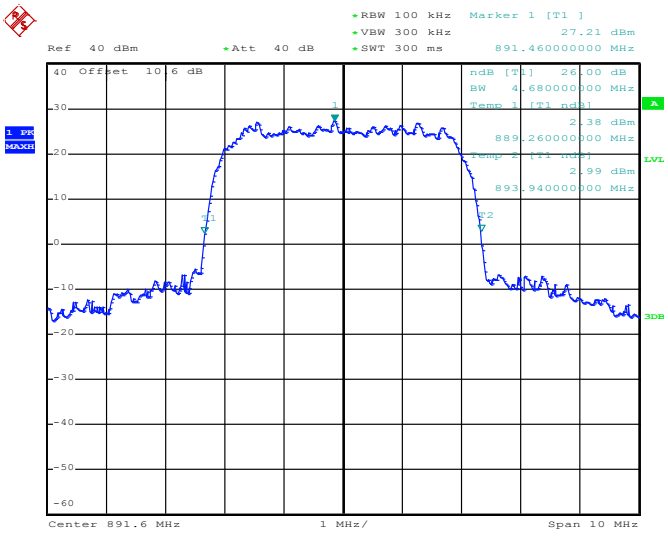
26dB Bandwidth Plot on Channel 4458 (891.6 MHz)



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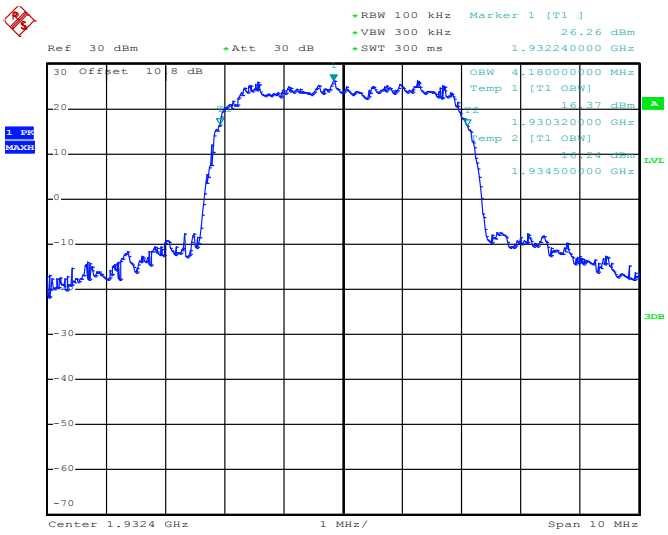
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 9662 (1932.4 MHz)



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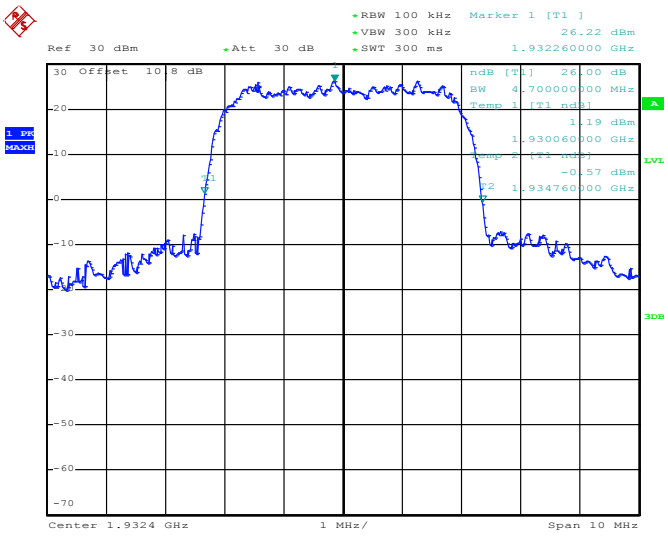
26dB Bandwidth Plot on Channel 9662 (1932.4 MHz)



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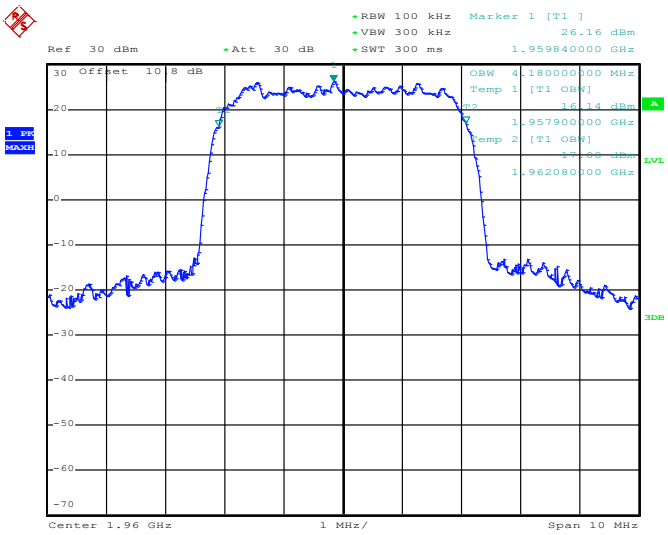
99% Occupied Bandwidth Plot on Channel 9800 (1960.0 MHz)



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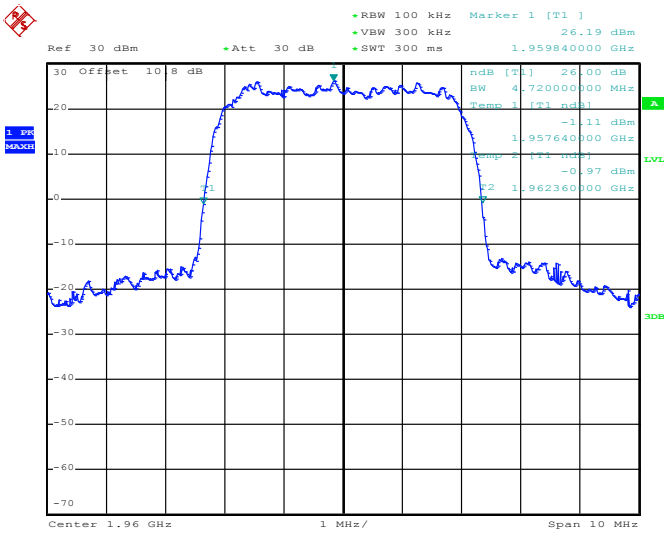
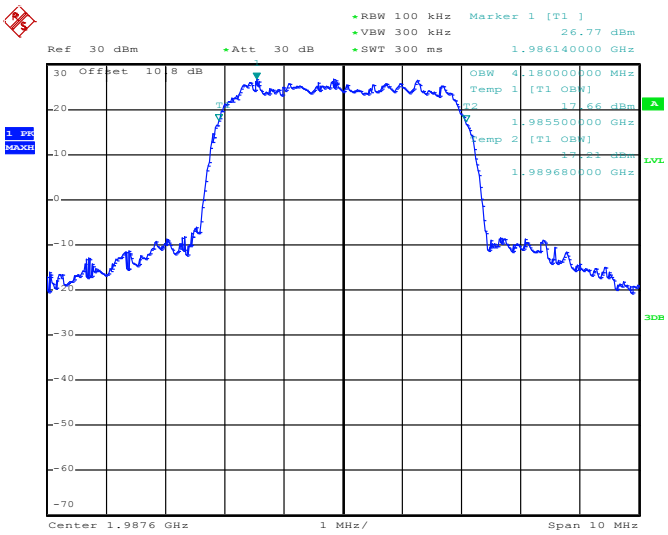
26dB Bandwidth Plot on Channel 9800 (1960.0 MHz)



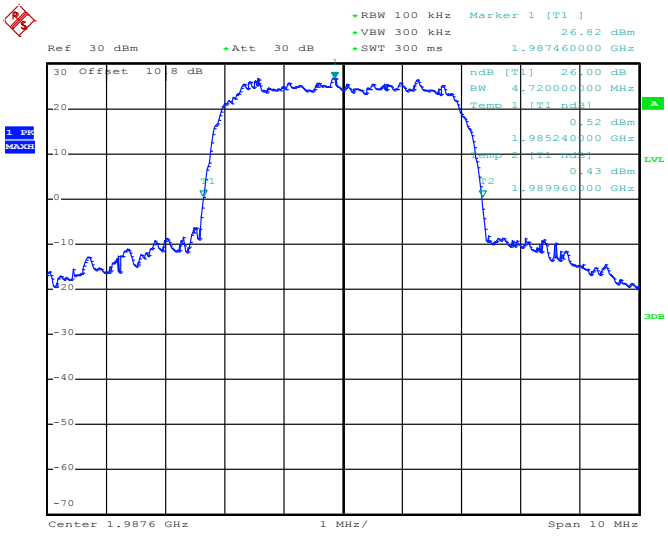
Date: 28.APR.2014 15:45:44

99% Occupied Bandwidth Plot on Channel 9938 (1987.6 MHz)



Date: 28.APR.2014 15:53:45

26dB Bandwidth Plot on Channel 9938 (1987.6 MHz)



Date: 28.APR.2014 15:47:47

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.

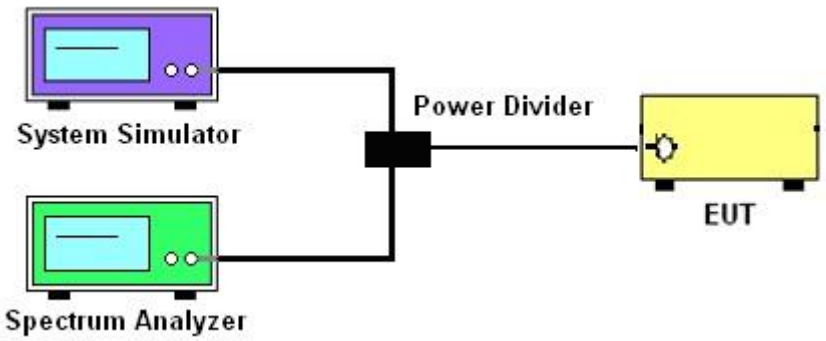
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The band edges of low and high channels for the highest RF powers were measured.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
5. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

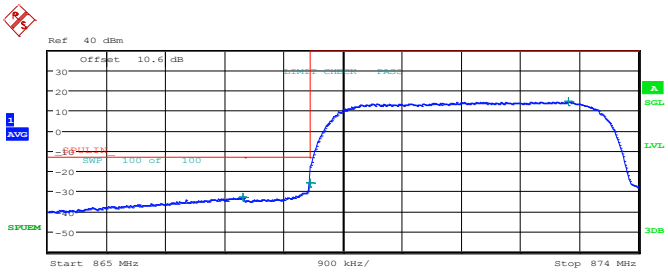
3.4.4 Test Setup



3.4.5 Test Result (Plots) of Conducted Band Edge

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

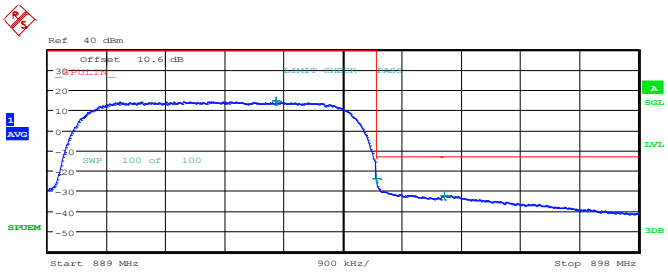
Lower Band Edge Plot on Channel 4357 (871.4 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
865.000 M	868.000 M	100.00 k	867.973000 M	-33.09	-20.09
868.000 M	869.000 M	50.00 k	868.999500 M	-25.92	-12.92
869.000 M	874.000 M	100.00 k	872.935000 M	14.21	-25.79

Date: 28.APR.2014 20:40:33

Higher Band Edge Plot on Channel 4458 (891.6 MHz)

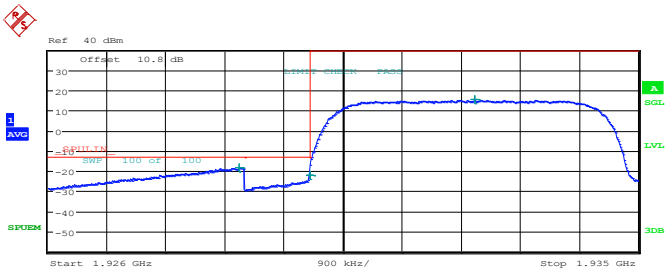


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
889.000 M	894.000 M	100.00 k	892.472500 M	14.37	-25.63
894.000 M	895.000 M	50.00 k	894.000500 M	-24.26	-11.26
895.000 M	898.000 M	100.00 k	895.045000 M	-32.40	-19.40

Date: 28.APR.2014 20:42:55

Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

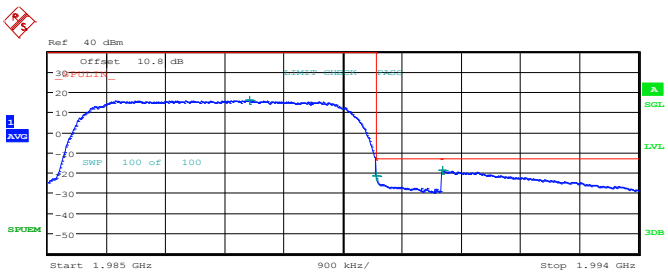
Lower Band Edge Plot on Channel 9662 (1932.4 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
1.926 G	1.929 G	1.00 M	1.928907 G	-18.35	-5.35
1.929 G	1.930 G	50.00 k	1.930000 G	-22.20	-9.20
1.930 G	1.935 G	100.00 k	1.932503 G	15.32	-24.68

Date: 28.APR.2014 21:18:02

Higher Band Edge Plot on Channel 9938 (1987.6 MHz)



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
1.985 G	1.990 G	100.00 k	1.988072 G	15.69	-24.31
1.990 G	1.991 G	50.00 k	1.990001 G	-21.82	-8.82
1.991 G	1.994 G	1.00 M	1.991009 G	-18.89	-5.89

Date: 28.APR.2014 21:15:33

3.5 Conducted Spurious Emission Measurement

3.5.1 Description of Conducted Spurious 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.

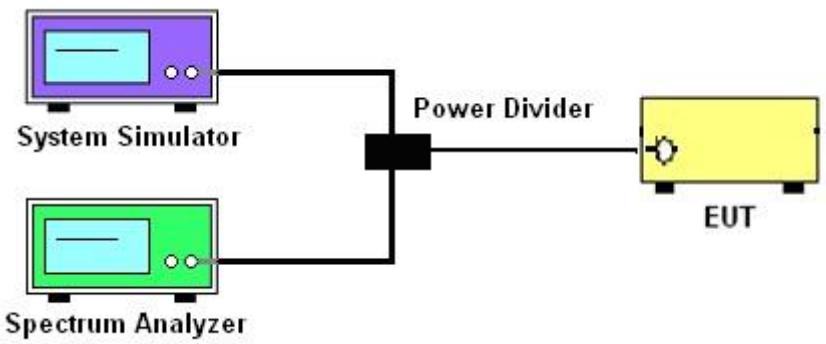
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

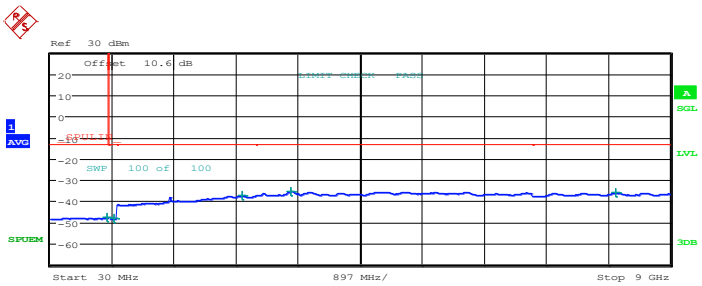
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Spurious Emission

Band :	WCDMA Band V	Channel :	CH4405
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	881.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz

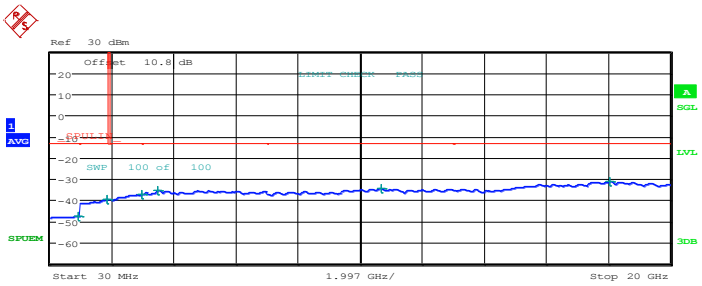


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	865.000 M	100.00 k	852.892500 M	-47.92	-34.92
898.000 M	1.000 G	100.00 k	952.162000 M	-48.00	-35.00
1.000 G	3.000 G	1.00 M	2.810000 G	-37.46	-24.46
3.000 G	7.000 G	1.00 M	3.504000 G	-35.60	-22.60
7.000 G	9.000 G	1.00 M	8.205000 G	-36.13	-23.13

Date: 28.APR.2014 20:57:22

Band :	WCDMA Band II	Channel :	CH9800
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1960.0MHz

Conducted Spurious Emission Plot between 30MHz ~ 20GHz



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	Δ Limit [dB]
30.000 M	1.000 G	100.00 k	929.675000 M	-47.70	-34.70
1.000 G	1.926 G	1.00 M	1.849142 G	-39.68	-26.68
1.994 G	3.000 G	1.00 M	2.984407 G	-37.33	-24.33
3.000 G	7.000 G	1.00 M	3.492000 G	-35.37	-22.37
7.000 G	13.000 G	1.00 M	10.675000 G	-34.63	-21.63
13.000 G	20.000 G	1.00 M	18.043500 G	-31.12	-18.12

Date: 28.APR.2014 21:08:27

3.6 Field Strength of Spurious Radiation Measurement

3.6.1 Description of Field Strength of Spurious Radiated Measurement

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

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The EUT was placed on a rotatable wooden table 0.8 meters above the 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 for the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking 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
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

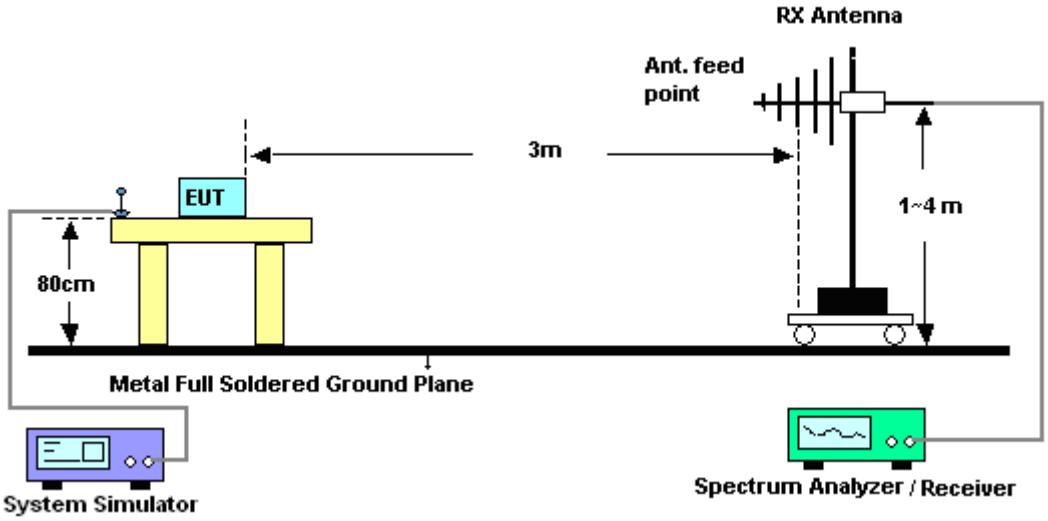
    = P(W) - [43 + 10log(P)] (dB)

    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

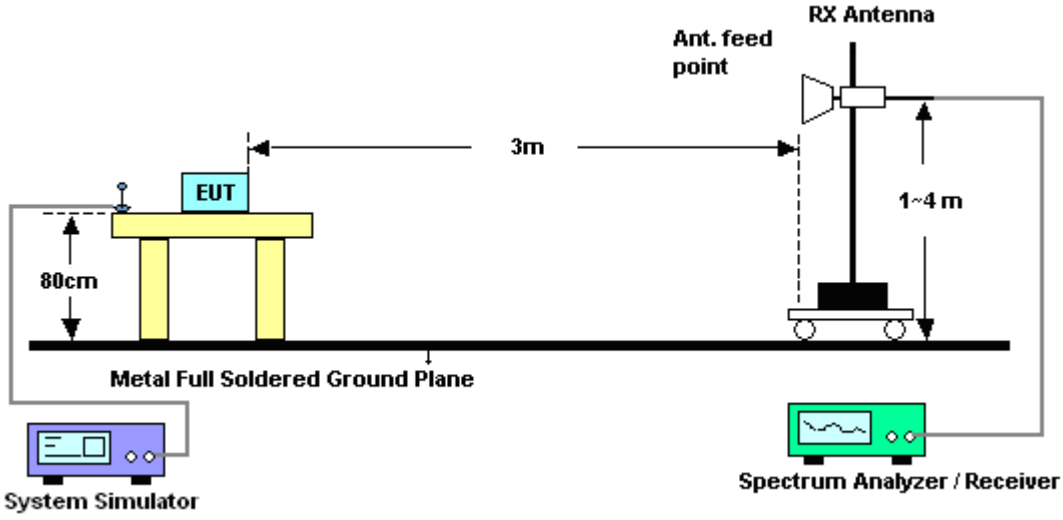
    = -13dBm.

3.6.4 Test Setup

For radiated emissions from 30MHz to 1GHz

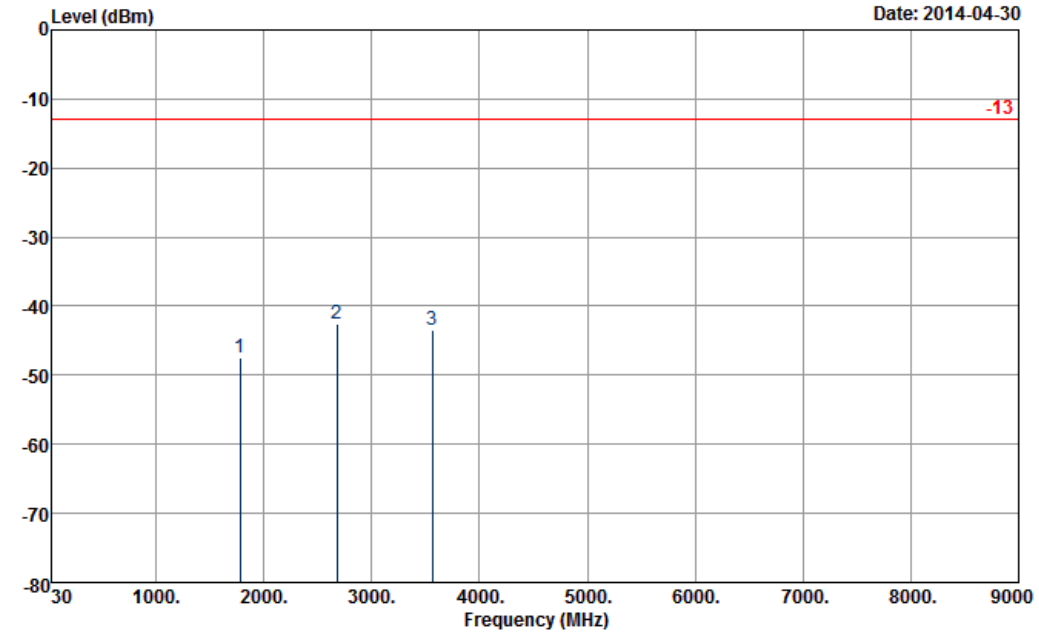


For radiated emissions above 1GHz



3.6.5 Test Result of Field Strength of Spurious Radiated

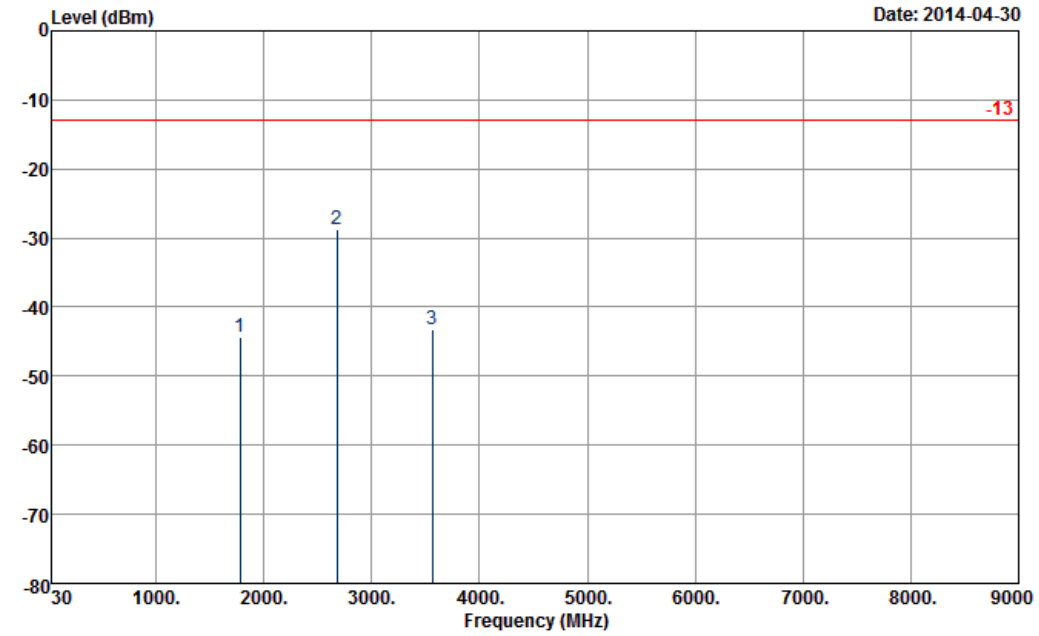
Band :	WCDMA Band V	**Temperature :**	21~23°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	48~50%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH07-HY
Condition : -13 HF-EIRP(080306) HORIZONTAL

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
1783	-47.57	-13	-34.57	-57	-49.88	0.91	5.37	H	Pass
2677	-42.47	-13	-29.47	-55.73	-46.62	0.99	7.29	H	Pass
3565	-43.50	-13	-30.50	-58.11	-49.21	1.13	8.99	H	Pass

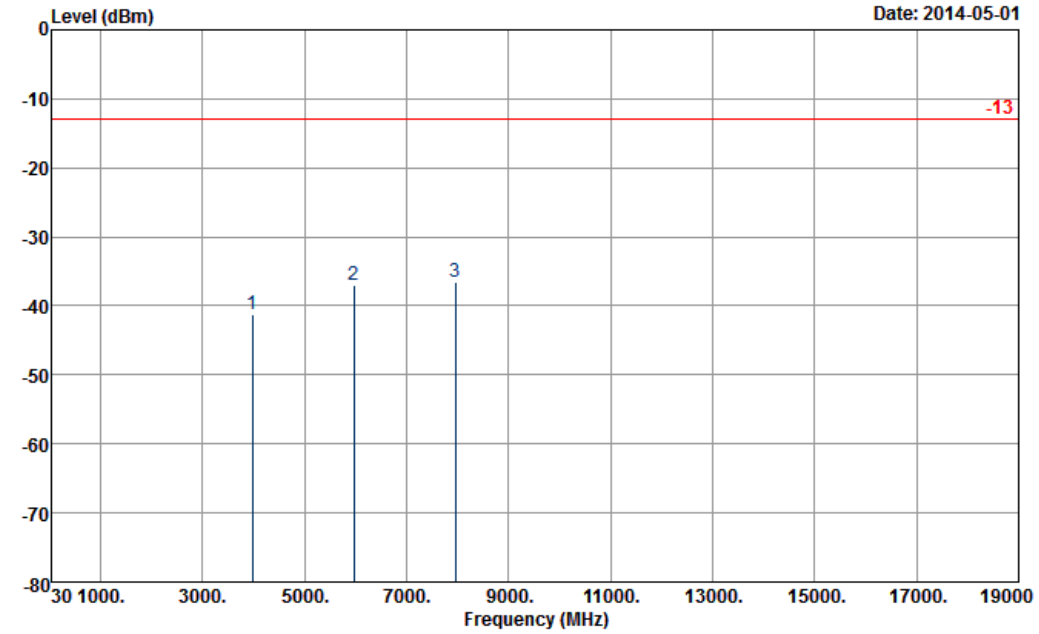
Band :	WCDMA Band V	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~50%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH07-HY
Condition : -13 HF-EIRP(080306) VERTICAL

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
1783	-44.43	-13	-31.43	-56.11	-46.74	0.91	5.37	V	Pass
2677	-28.66	-13	-15.66	-42.89	-32.81	0.99	7.29	V	Pass
3565	-43.18	-13	-30.18	-58.89	-48.89	1.13	8.99	V	Pass

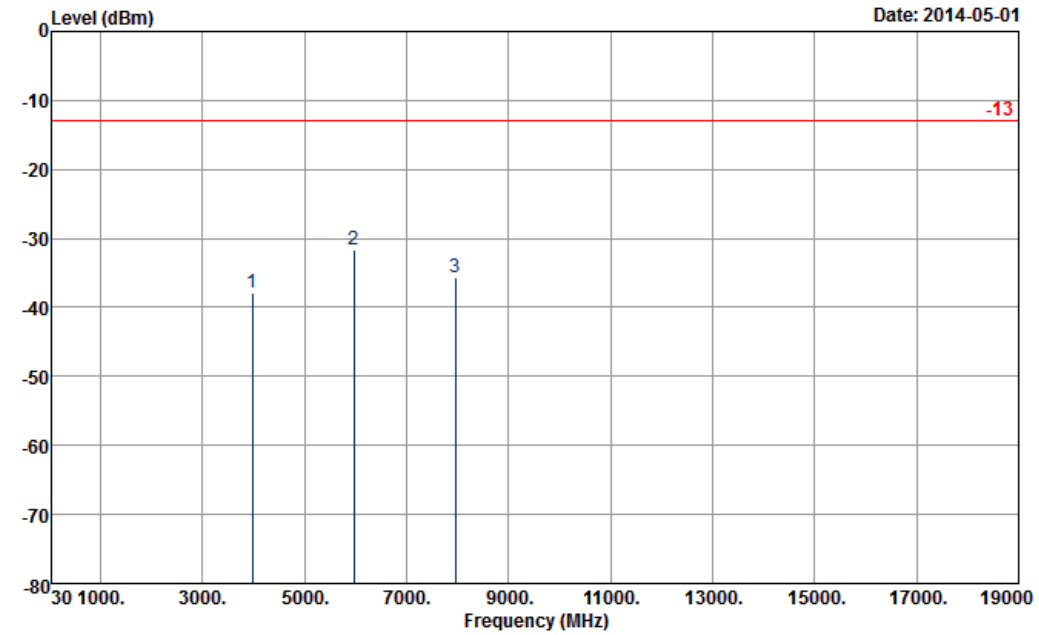
Band :	WCDMA Band II	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~50%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH07-HY
Condition : -13 HF-EIRP(080306) HORIZONTAL

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
3976	-41.15	-13	-28.15	-57.31	-48.69	1.63	9.17	H	Pass
5964	-37.06	-13	-24.06	-59.05	-46.13	1.81	10.88	H	Pass
7952	-36.56	-13	-23.56	-60.37	-46.97	2.42	12.83	H	Pass

Band :	WCDMA Band II	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	48~50%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH07-HY
Condition : -13 HF-EIRP(080306) VERTICAL

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
3976	-37.78	-13	-24.78	-54.69	-45.32	1.63	9.17	V	Pass
5964	-31.56	-13	-18.56	-53.21	-40.63	1.81	10.88	V	Pass
7952	-35.74	-13	-22.74	-59.71	-46.15	2.42	12.83	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

The measuring equipment is listed in the section 4 of this test report.

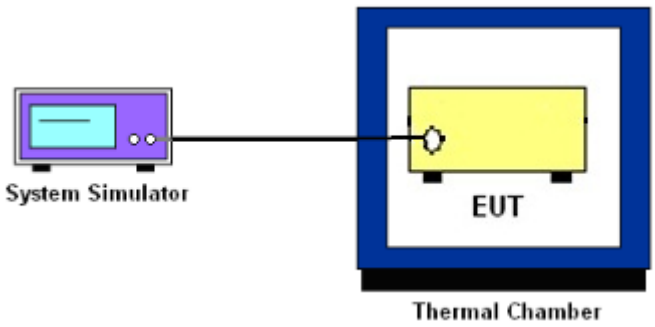
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. 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 steps 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.

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 system simulator.
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 V	Channel :	4405
Limit (ppm) :	2.5	Frequency :	881.0 MHz

Temperature (°C)	RMC 12.2Kbps	Result
	Deviation (ppm)	
-30	0.37	PASS
-20	0.38	
-10	0.38	
0	0.39	
10	0.38	
20	0.38	
30	0.37	
40	0.38	
50	0.38	

Band :	WCDMA Band II	Channel :	9800
Limit (ppm) :	2.5	Frequency :	1960.0 MHz

Temperature (°C)	RMC 12.2Kbps Deviation (ppm)	Result
-30	0.04	PASS
-20	0.04	
-10	0.04	
0	0.04	
10	0.04	
20	0.04	
30	0.04	
40	0.04	
50	0.04	

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Deviation (ppm)	Limit (ppm)	Result
WCDMA Band V CH4182	RMC 12.2Kbps	264.0	0.39	2.5	PASS
		115.0	0.38		
		90.0	0.38		
WCDMA Band II CH9400	RMC 12.2Kbps	264.0	0.04		
		115.0	0.04		
		90.0	0.04		

Note: Normal Voltage = 115.0V.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
System Simulator	Rohde & Schwarz	CMU200	117995	N/A	Aug. 01, 2013	Apr. 28, 2014	Jul. 31, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 07, 2013	Apr. 28, 2014	Jun. 06, 2014	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 19, 2013	Apr. 28, 2014	Jul. 18, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Apr. 30, 2014~ May 01, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Apr. 30, 2014~ May 01, 2014	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2013	Apr. 30, 2014~ May 01, 2014	Aug. 21, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz	Mar. 17, 2014	Apr. 30, 2014~ May 01, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Nov. 29, 2013	Apr. 30, 2014~ May 01, 2014	Nov. 28, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Apr. 30, 2014~ May 01, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	M-400-0	114/8000604/.	N/A	N/A	Apr. 30, 2014~ May 01, 2014	N/A	Radiation (03CH07-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Apr. 30, 2014~ May 01, 2014	Oct. 02, 2014	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.50**