FCC RF Test Report

APPLICANT	:	Alcatel-Lucent
BRAND NAME	:	Alcatel-Lucent
MODEL NAME	:	9364 Metro Cell Outdoor V2.0 1900/850MHz 250mW
FCC ID	:	U3EMO-V2-250MW-DB
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)
Tx/Rx FREQUENCY RANGE	:	WCDMA Band V : 869 ~ 894 MHz / 824 ~ 849 MHz WCDMA Band II : 1930 ~ 1990 MHz / 1850 ~ 1910 MHz
MAX. ERP/EIRP POWER	:	Band V (RMC 12.2Kbps) : 0.11 W Band II (RMC 12.2Kbps) : 0.19 W
EMISSION DESIGNATOR	:	4M18F9W

The product was received on Feb. 13, 2012 and completely tested on Feb. 29, 2012. 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 / 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

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG170613-02	Rev. 01	Initial issue of report	Mar. 27, 2012

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 22.91 dB at 3920 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

Alcatel-Lucent
7-9, Avenue Morane Saulnier BP 57 78141, VELIZY, France

1.2 Manufacturer

Delta Networks (Dongguan) Ltd.
Delta Plant 5, Delta Industrial Estate, Shijie Town, Dongguang City, Guangdong Province, China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Brand Name	Alcatel-Lucent
Model Name	9364 Metro Cell Outdoor V2.0 1900/850MHz 250mW
FCC ID	U3EMO-V2-250MW-DB
Tx Frequency	WCDMA Band V DL : 869 MHz ~ 894 MHz WCDMA Band II DL : 1930 MHz ~ 1990 MHz
Rx Frequency	WCDMA Band V UL : 824 MHz ~ 849 MHz WCDMA Band II UL : 1850 MHz ~ 1910 MHz
Maximum Output Power to Antenna	Band V : 23.23 dBm Band II : 23.61 dBm
Maximum ERP/EIRP	Band V (RMC 12.2Kbps) : 0.11 W (20.35 dBm) Band II (RMC 12.2Kbps) : 0.19 W (22.81 dBm)
Antenna Type	Fixed External / 2dBi, 4dBi
HW Version	3JR09151ADAA
SW Version	Pctest dni v2 v2.19
Type of Modulation	QPSK
Type of Emission	4M18F9W
EUT Stage	Production Unit

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 (PCB).

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	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:

- 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.	Notebook	DELL	D505	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.

Frequency range investigated for radiated emission is as follows:

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

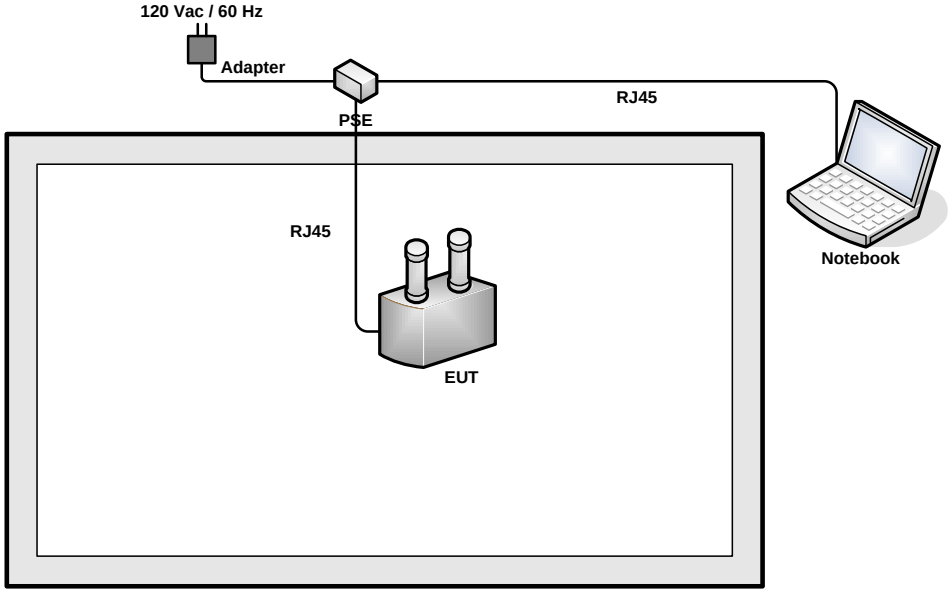
Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note: The maximum power levels are RMC 12.2Kbps mode for WCDMA band V, and RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.

The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
Band	**WCDMA Band V**			**WCDMA Band II**		
Tx Channel	**4357**	**4407**	**4458**	**9662**	**9800**	**9938**
Frequency	**871.4**	**881.4**	**891.6**	**1932.4**	**1960.0**	**1987.6**
RMC 12.2K	23.09	23.09	23.23	23.23	23.61	23.28

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.

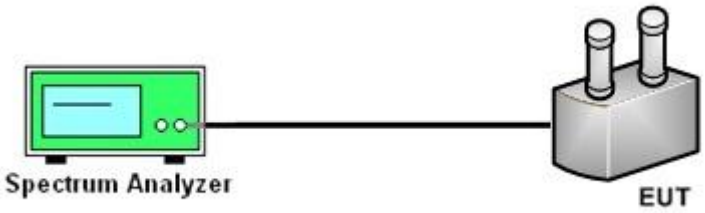
3.1.2 Measuring Instruments

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

WCDMA Band V				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
RMC 12.2Kbps	4357 (Low)	871.4	23.09	0.20
	4407 (Mid)	881.4	23.09	0.20
	4458 (High)	891.6	23.23	0.21

WCDMA Band II				
Modes	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
RMC 12.2Kbps	9662 (Low)	1932.4	23.23	0.21
	9800 (Mid)	1960.0	23.61	0.23
	9938 (High)	1987.6	23.28	0.21

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.

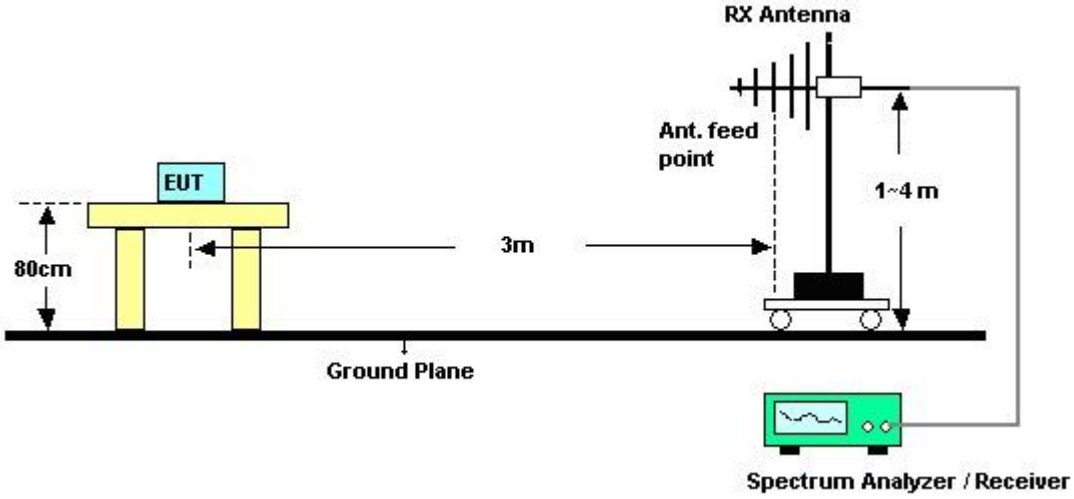
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 100kHz, VBW= 300kHz, RMS detector settings and using channel power option.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (substitution antenna) at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15 .

3.2.4 Test Setup



3.2.5 Test Result of ERP

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
871.4	-8.91	30.91	19.85	0.10
881.4	-9.35	31.10	19.60	0.09
891.6	-9.11	31.61	20.35	0.11
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (W)**
871.4	-19.08	35.95	14.72	0.03
881.4	-18.04	34.92	14.73	0.03
891.6	-19.41	34.70	13.14	0.02

* ERP = LVL (dBm) + Correction Factor (dB) – 2.15

3.2.6 Test Result of EIRP

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP				
Horizontal Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1932.4	-19.71	41.33	21.62	0.15
1960.0	-18.75	41.56	22.81	0.19
1987.6	-19.10	41.27	22.17	0.16
Vertical Polarization				
Frequency (MHz)	**LVL (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (W)**
1932.4	-29.55	41.61	12.06	0.02
1960.0	-29.60	43.20	13.60	0.02
1987.6	-30.55	42.79	12.24	0.02

* EIRP = LVL (dBm) + Correction Factor (dB)

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.

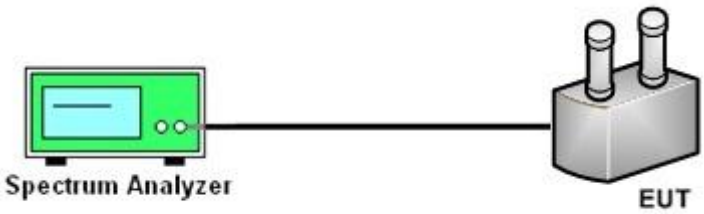
3.3.2 Measuring Instruments

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.

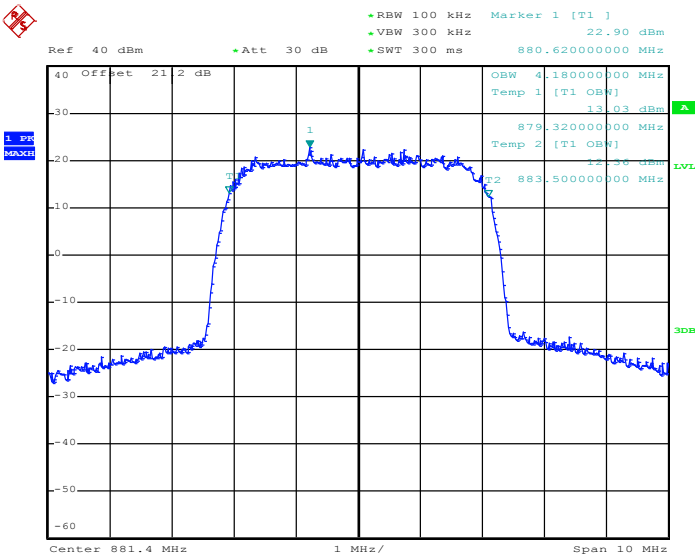
3.3.4 Test Setup

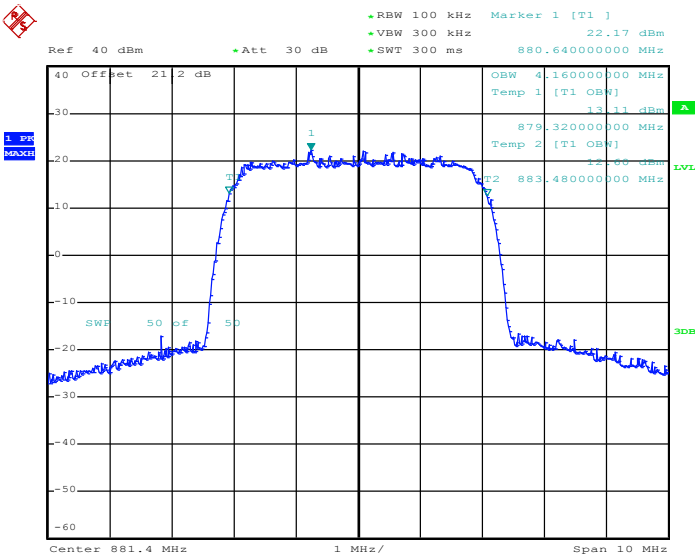


3.3.5 Test Result (Plots) of Occupied Bandwidth

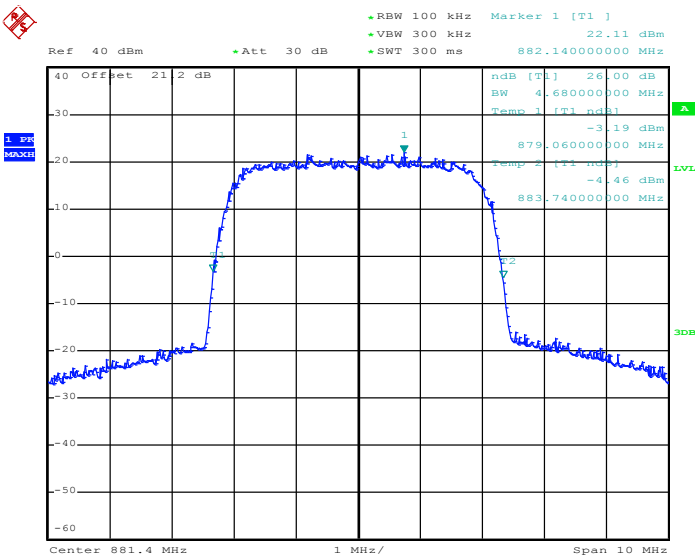
Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 4407



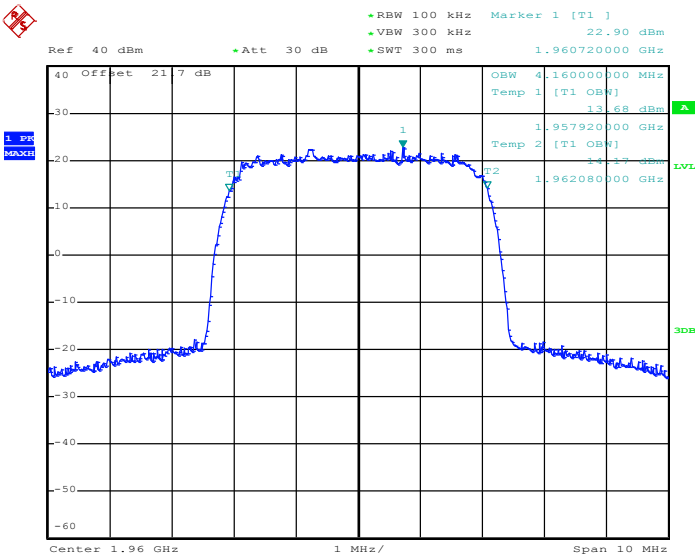


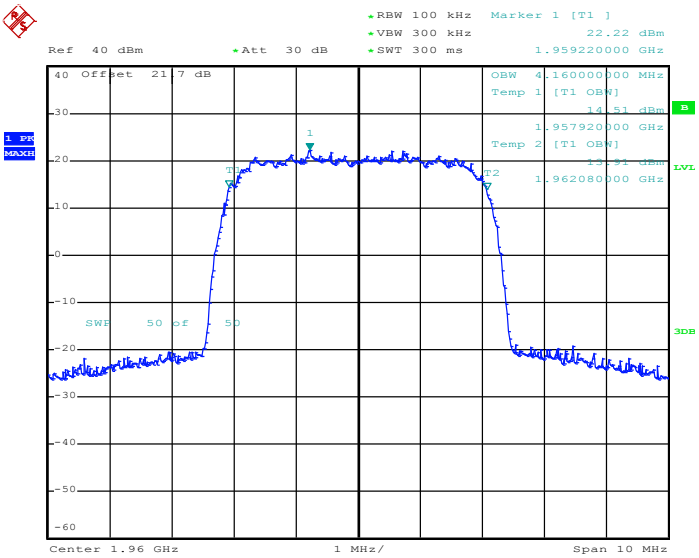
26dB Bandwidth Plot on Channel 4407



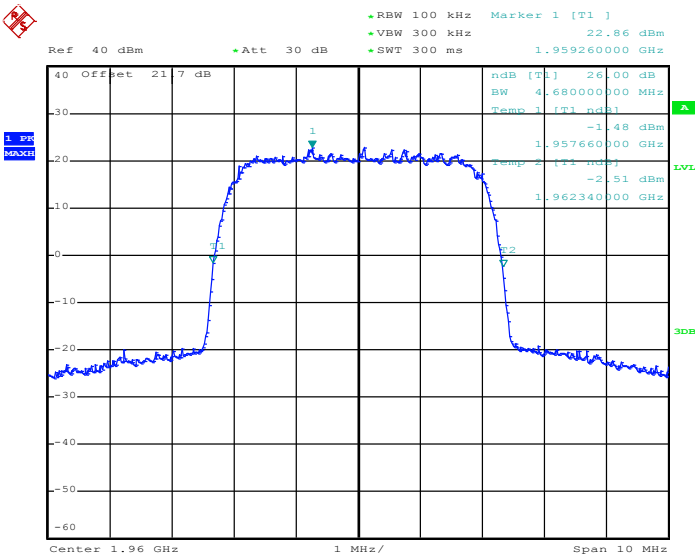
Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

99% Occupied Bandwidth Plot on Channel 9800





26dB Bandwidth Plot on Channel 9800



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.

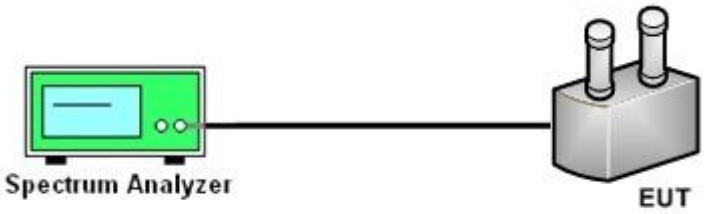
3.4.2 Measuring Instruments

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.

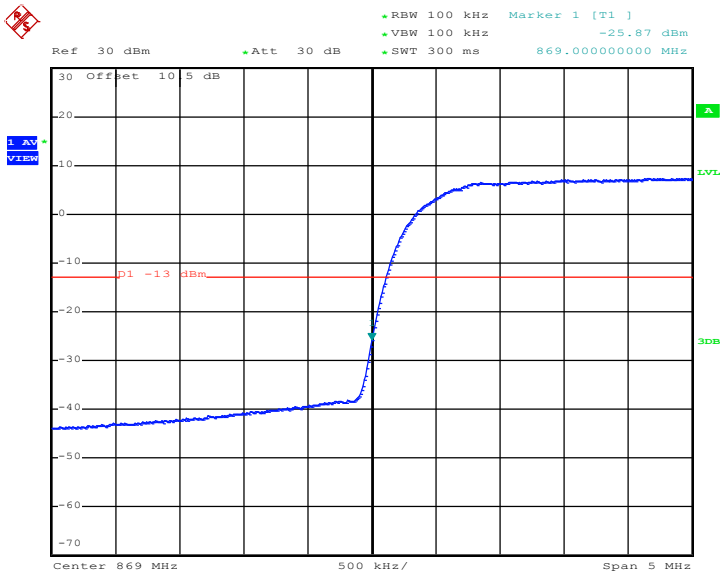
3.4.4 Test Setup

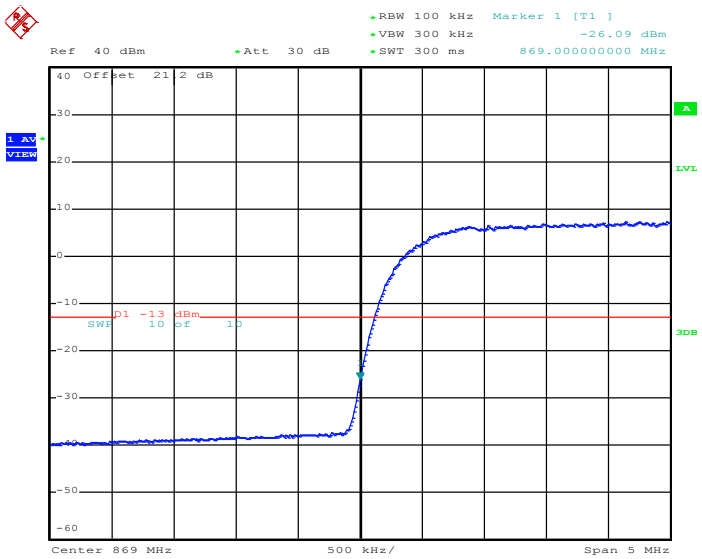


3.4.5 Test Result (Plots) of Conducted Band Edge

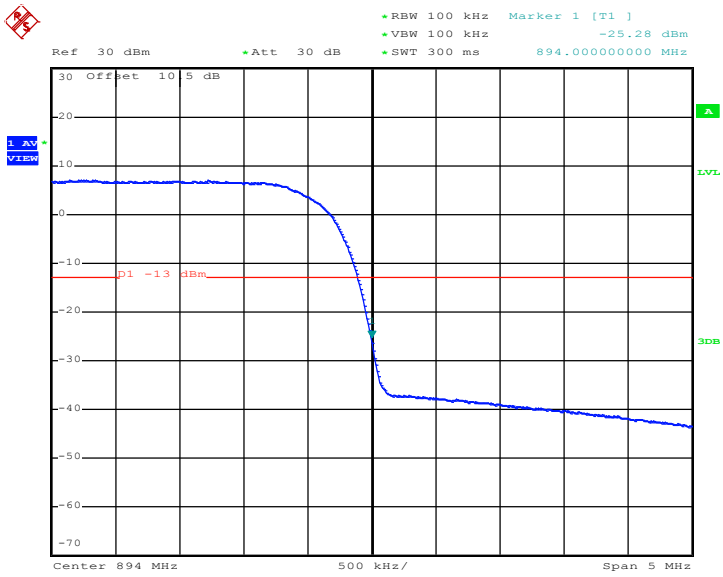
Band :	WCDMA Band V	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

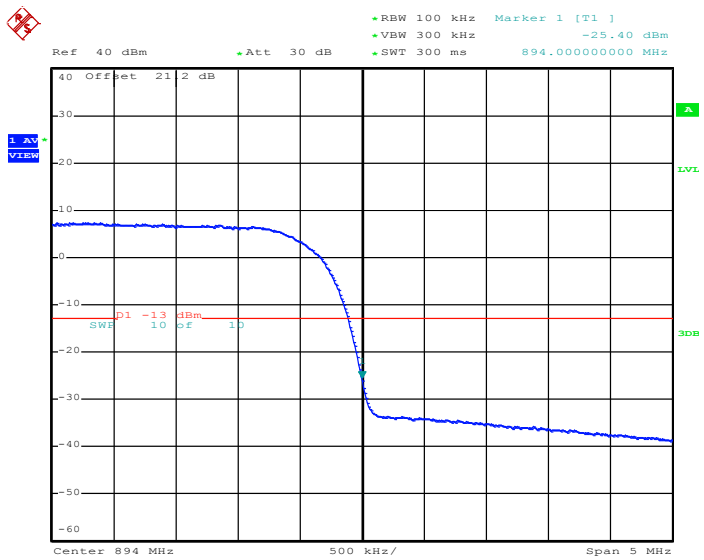
Lower Band Edge Plot on Channel 4357





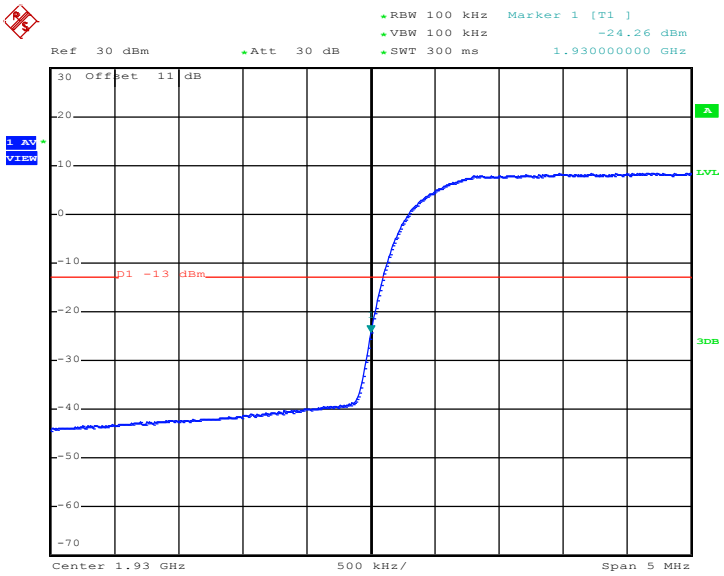
Higher Band Edge Plot on Channel 4458

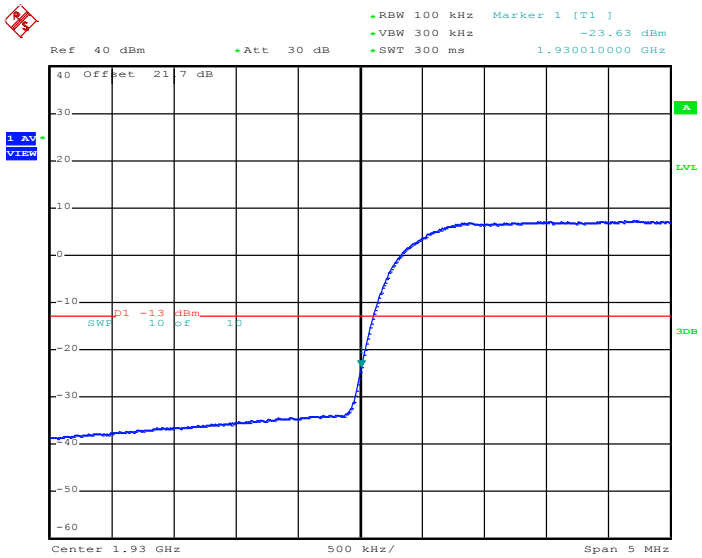




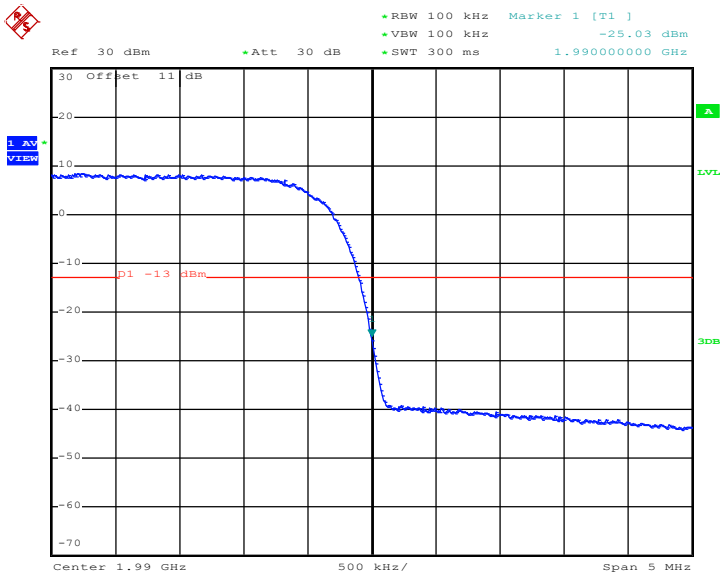
Band :	WCDMA Band II	Power Stage :	High
Test Mode :	RMC 12.2Kbps Link		

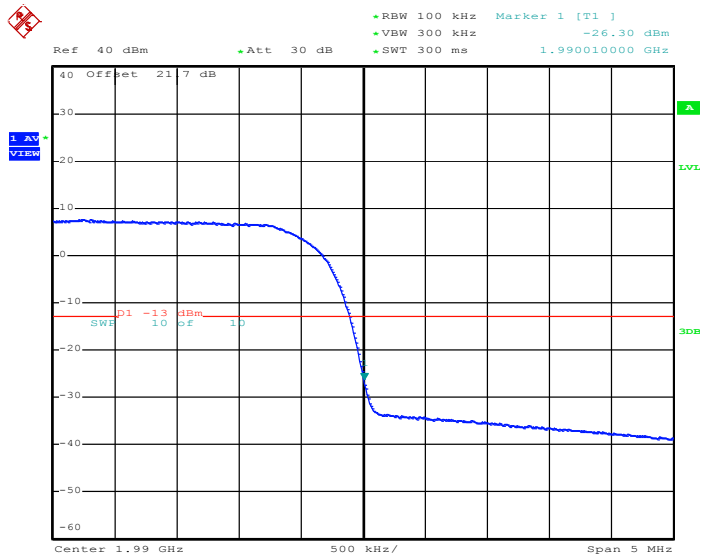
Lower Band Edge Plot on Channel 9662





Higher Band Edge Plot on Channel 9938





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 10^{th} harmonic.

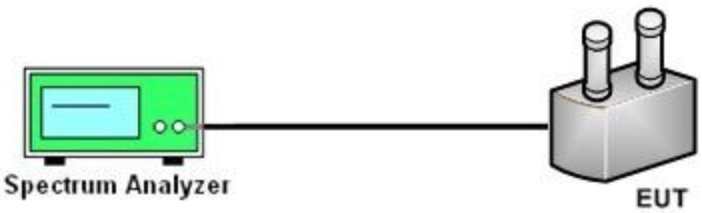
3.5.2 Measuring Instruments

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.

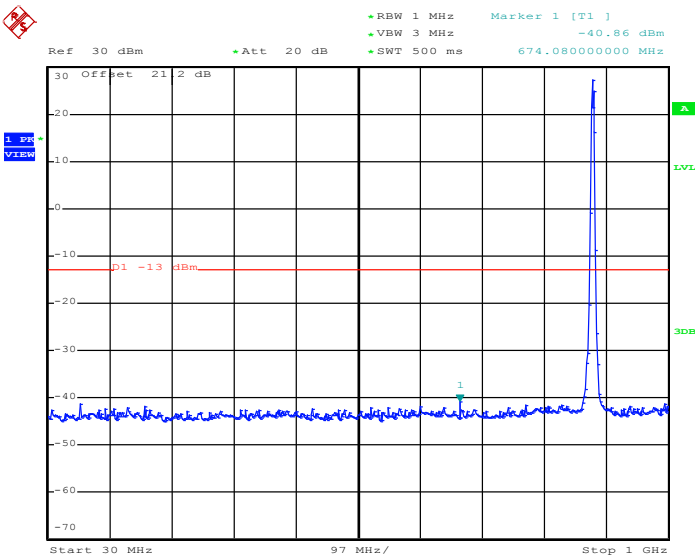
3.5.4 Test Setup



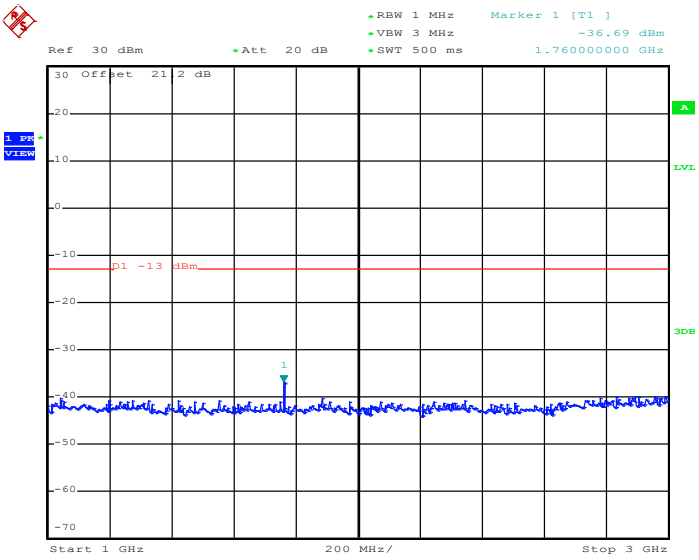
3.5.5 Test Result (Plots) of Conducted Emission

Band :	WCDMA Band V	Channel :	CH4407
Test Mode :	RMC 12.2Kbps Link		

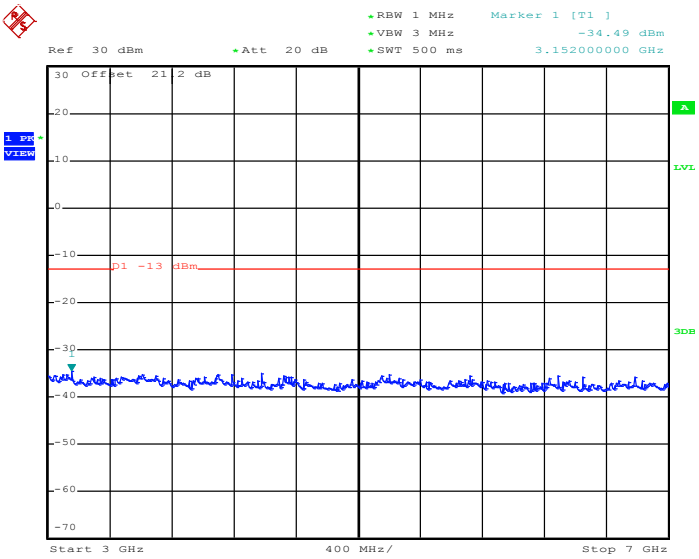
Conducted Emission Plot between 30MHz ~ 1GHz



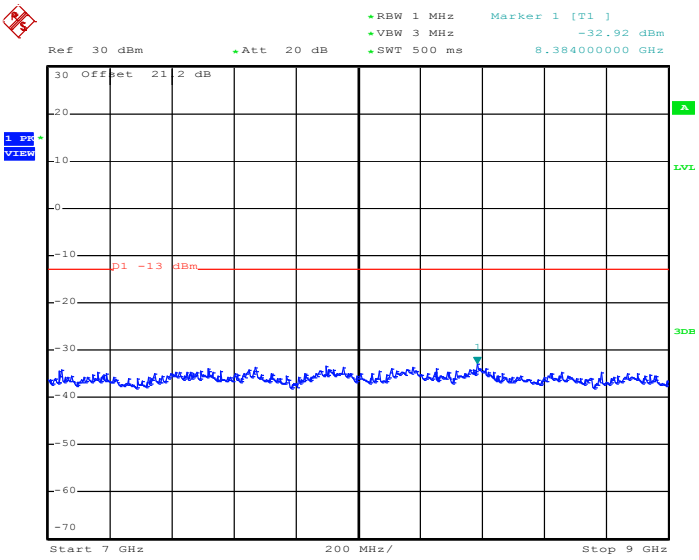
Conducted Emission Plot between 1GHz ~ 3GHz



Conducted Emission Plot between 3GHz ~ 7GHz

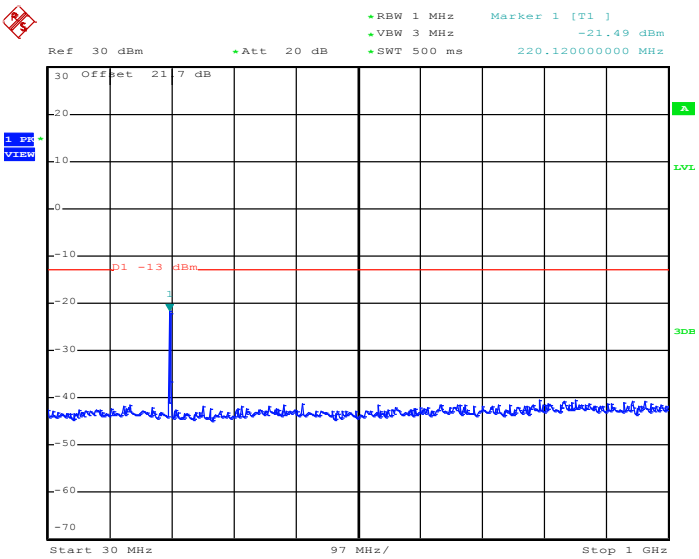


Conducted Emission Plot between 7GHz ~ 9GHz

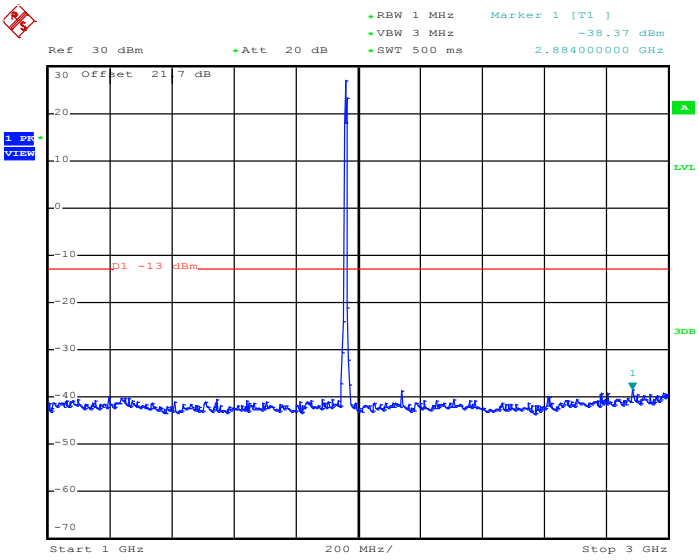


Band :	WCDMA Band II	Channel :	CH9800
Test Mode :	RMC 12.2Kbps Link		

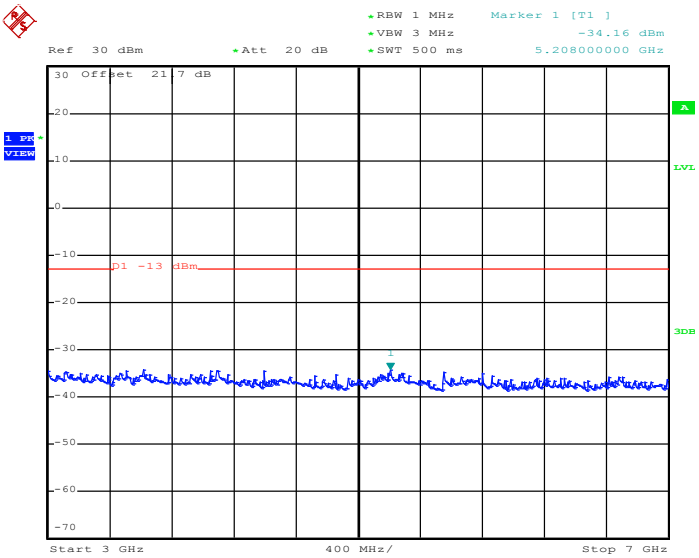
Conducted Emission Plot between 30MHz ~ 1GHz



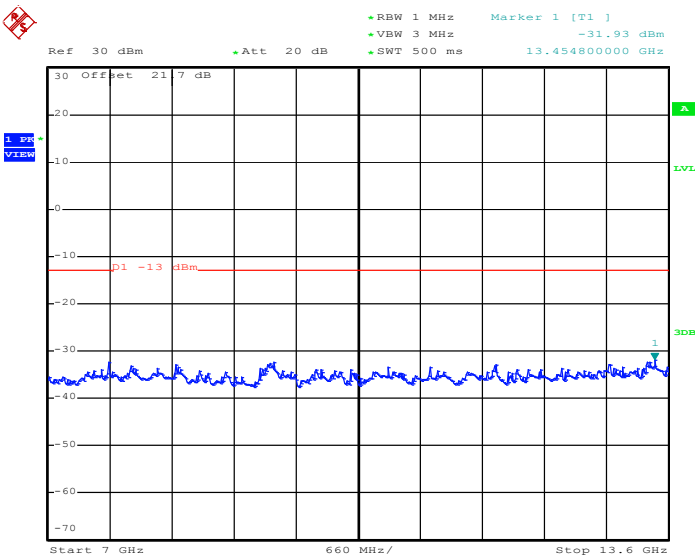
Conducted Emission Plot between 1GHz ~ 3GHz



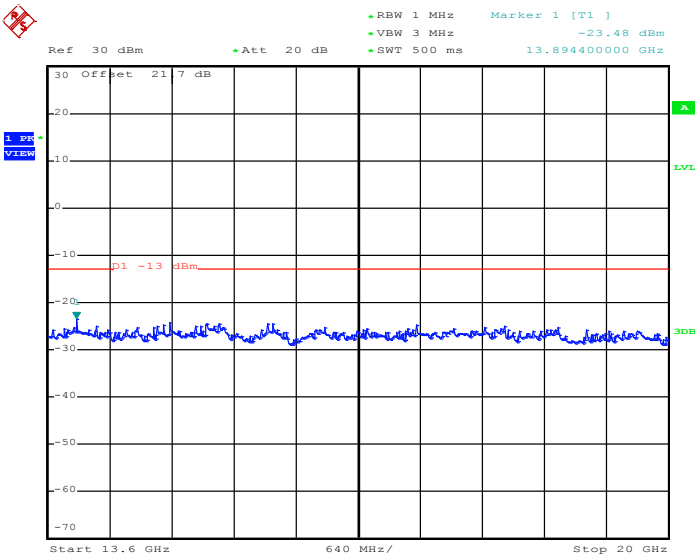
Conducted Emission Plot between 3GHz ~ 7GHz



Conducted Emission Plot between 7GHz ~ 13.6GHz



Conducted Emission Plot between 13.6GHz ~ 20GHz



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.

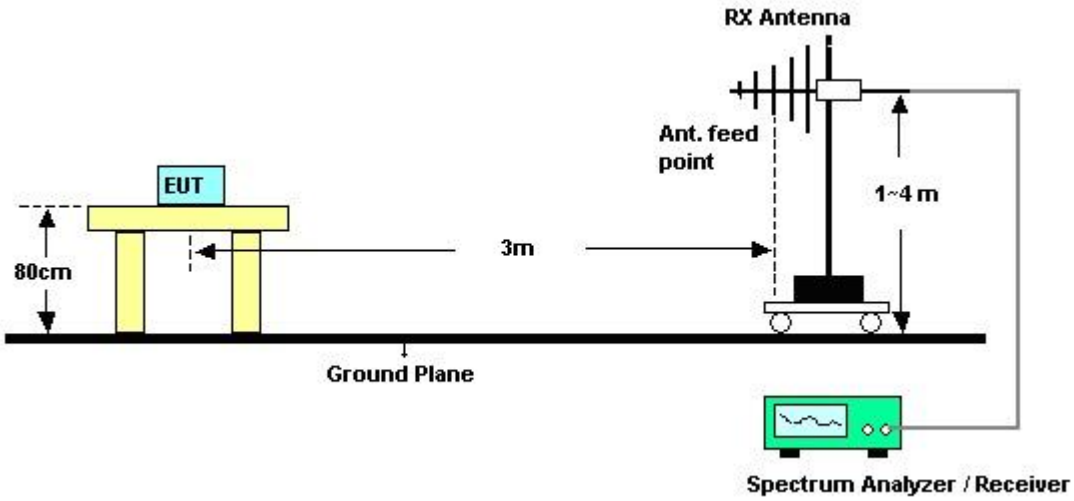
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

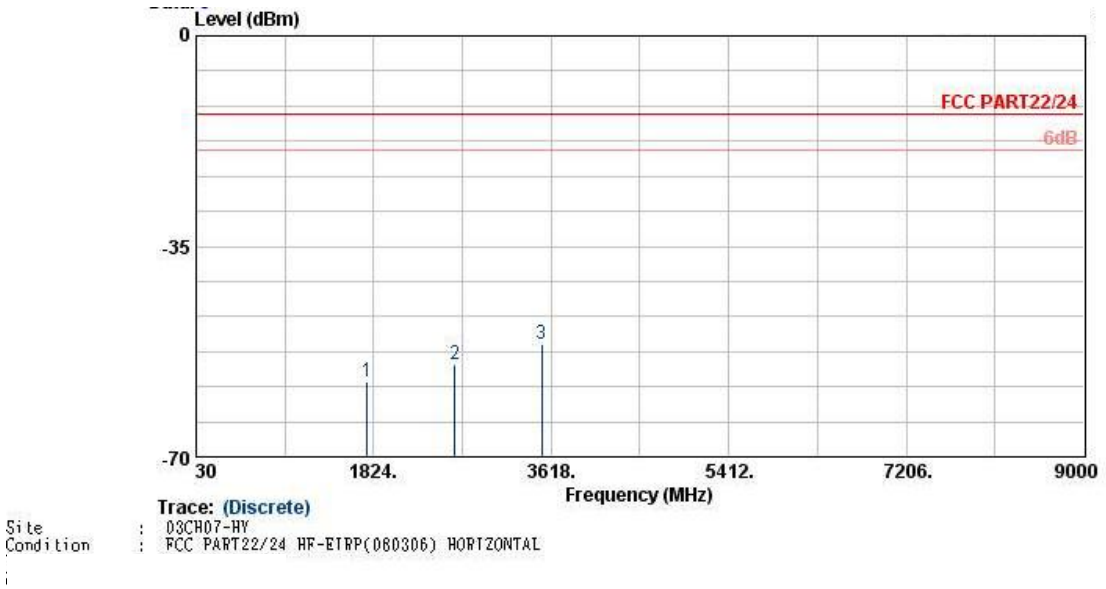
1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving 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



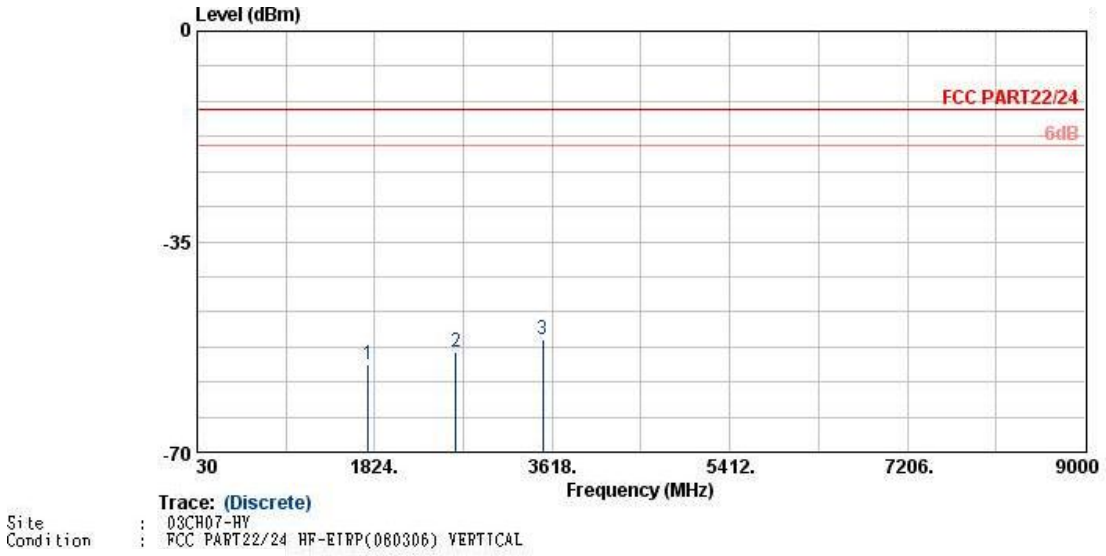
3.6.5 Test Result of Field Strength of Spurious Radiated

Band :	WCDMA Band V	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	45~47%
Test Engineer :	David Yang	Polarization :	Horizontal



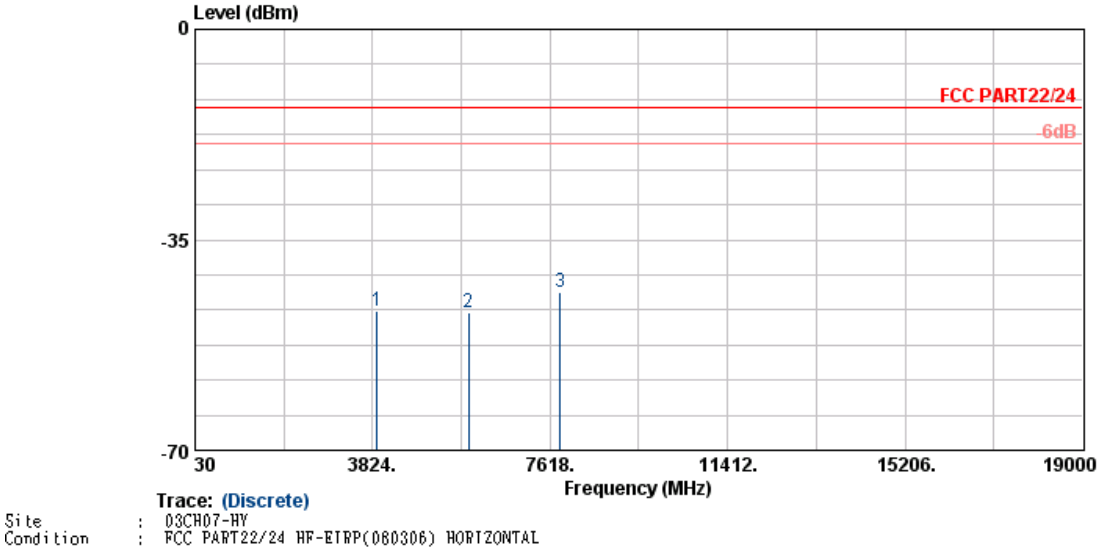
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1762	-57.49	-13	-44.49	-67.04	-59.21	1.62	5.49	H	Pass
2644	-54.61	-13	-41.61	-67.73	-56.58	2.1	6.22	H	Pass
3525	-51.35	-13	-38.35	-66.37	-54.24	3.03	8.07	H	Pass

Band :	WCDMA Band V	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	45~47%
Test Engineer :	David Yang	Polarization :	Vertical



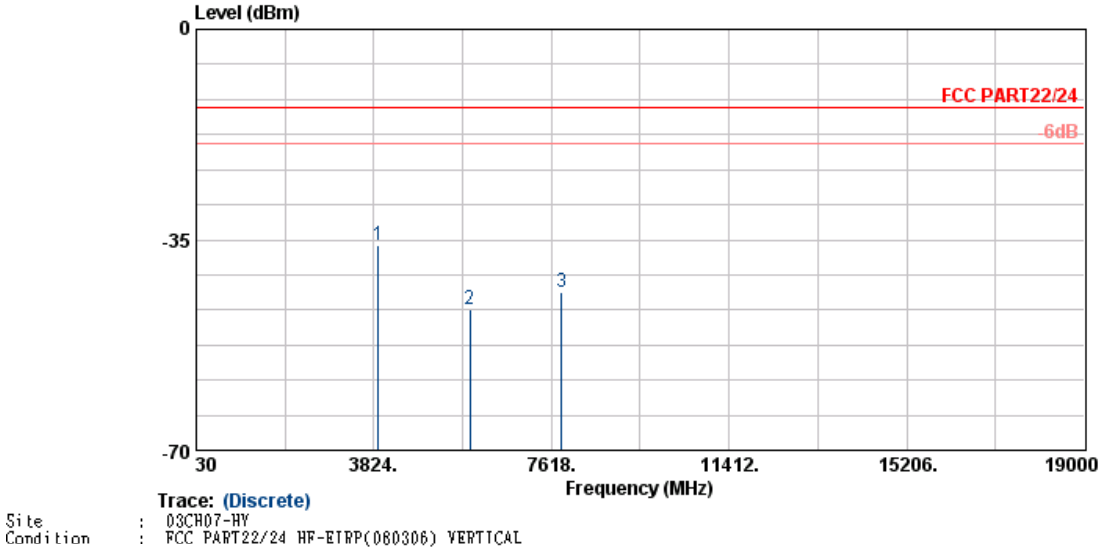
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1762	-55.40	-13	-42.40	-67.46	-57.12	1.62	5.49	V	Pass
2644	-53.28	-13	-40.28	-68.38	-55.25	2.1	6.22	V	Pass
3525	-51.36	-13	-38.36	-66.69	-54.25	3.03	8.07	V	Pass

Band :	WCDMA Band II	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	45~47%
Test Engineer :	David Yang	Polarization :	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
3920	-46.94	-13	-33.94	-63.06	-53.24	2.51	8.81	H	Pass
5880	-47.16	-13	-34.16	-69.07	-54.87	2.99	10.70	H	Pass
7840	-43.68	-13	-30.68	-68.26	-52.21	3.59	12.12	H	Pass

Band :	WCDMA Band II	Temperature :	21~23°C
Test Mode :	RMC 12.2Kbps Link	Relative Humidity :	45~47%
Test Engineer :	David Yang	Polarization :	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
3920	-35.91	-13	-22.91	-52.52	-42.21	2.51	8.81	V	Pass
5880	-46.53	-13	-33.53	-69.11	-54.24	2.99	10.70	V	Pass
7840	-43.68	-13	-30.68	-68.71	-52.21	3.59	12.12	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.

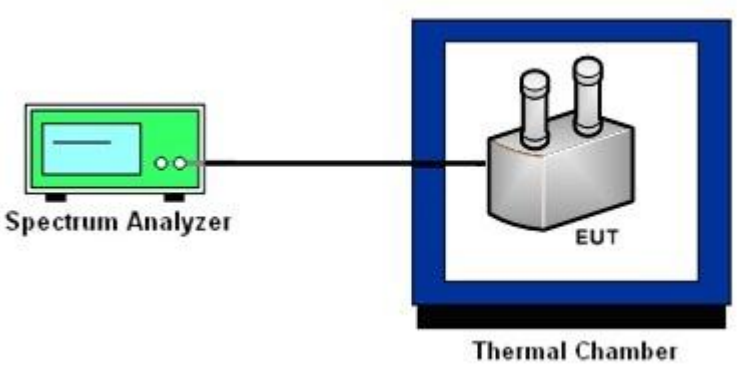
3.7.3 Test Procedures for Temperature Variation

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 -33°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 from -30°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 cannot 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 44 to 57 Vdc 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 :	4407
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-33	3.48	0.004	PASS
-30	3.71	0.004	
-20	4.03	0.005	
-10	-3.30	-0.004	
0	3.22	0.004	
10	3.54	0.004	
20	3.61	0.004	
30	3.47	0.004	
40	-3.04	-0.003	
45	3.23	0.004	
50	N/A	N/A	

Band :	WCDMA Band II	Channel :	9800
Limit (ppm) :	2.5		

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-33	9.08	0.005	PASS
-30	6.88	0.004	
-20	-6.84	-0.003	
-10	-7.00	-0.004	
0	6.81	0.003	
10	-6.94	-0.004	
20	-6.05	-0.003	
30	5.59	0.003	
40	9.39	0.005	
45	6.65	0.003	
50	N/A	N/A	

3.7.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Vdc)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
WCDMA Band V CH4407	RMC 12.2Kbps	48	3.43	0.004	2.5	PASS
		44	3.61	0.004		
		57	4.00	0.004		
WCDMA Band II CH9800	RMC 12.2Kbps	48	-6.12	-0.003		
		44	6.59	0.003		
		57	-7.00	-0.004		

Note: Normal Voltage = 48 Vdc.

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. 13, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 27, 2011	Jul. 26, 2012	Conducted (TH02-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 05, 2011	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB. GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-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. Photographs of EUT

Please refer to Sporton report number EP170613-02 as below.