TEST REPORT

Application No.:	SZEM1903011703CR
Applicant:	Hytera Communications Corporation Limited
Address of Applicant:	Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, 518057, China
Manufacturer:	Hytera Communications Corporation Limited
Address of Manufacturer:	Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, 518057, China
Equipment Under Test (EUT):	
EUT Name:	PoC LTE Terminal
Model No.:	PNC370
Trade mark:	Hytera
FCC ID:	YAMPNC370
Standard(s) :	47 CFR Part 2; 47 CFR Part 22 subpart H 47 CFR Part 24 subpart E 47 CFR Part 27 subpart C
Date of Receipt:	2019-03-14
Date of Test:	2019-03-15 to 2019-04-01
Date of Issue:	2019-04-04
Test Result:	**Pass**

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

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Revision Record				
Version	***Chapter***	***Date***	***Modifier***	***Remark***
01		*2019-04-04*		*Original*

Authorized for issue by:				
		Edison Li /Project Engineer		
		Eric Fu /Reviewer		

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2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913, §24.232, §27.50(d)	ERP≤7W(WCDMA BAND V) EIRP≤ 2W(WCDMA BAND II) EIRP≤ 1W(WCDMA BAND IV)	PASS
Peak-Average Ratio	§24.232, §27.50(d)	≤13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049(h), §22.917, §24.238, §27.53(h)	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051, §22.917, §24.238, §27.53(h)	≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block	PASS
Spurious emissions at antenna terminals	§2.1051, §22.917, §24.238, §27.53(h)	≤ -13dBm	PASS
Field strength of spurious radiation	§2.1051, §22.917, §24.238, §27.53(h)	≤ -13dBm	PASS
Frequency stability	§2.1055, §22.355, §24.235, §27.54	≤ ±2.5ppm	PASS

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3 Contents

Page

1 COVER PAGE 1

2 TEST SUMMARY 3

3 CONTENTS 4

4 GENERAL INFORMATION 6

4.1 Details of E.U.T. 6
4.2 Test Frequency 7
4.3 Test Environment 8
4.4 Description of Support Units 8
4.5 Measurement Uncertainty 8
4.6 Test Location 9
4.7 Test Facility 9
4.8 Deviation from Standards 9
4.9 Abnormalities from Standard Conditions 9

5 EQUIPMENT LIST 10

6 RADIO SPECTRUM MATTER TEST RESULTS 12

6.1 Effective (Isotropic) Radiated Power Output Data 12
6.1.1 E.U.T. Operation 12
6.1.2 Test Setup Diagram 12
6.1.3 Measurement Data 12
6.2 Peak-Average Ratio 15
6.2.1 E.U.T. Operation 15
6.2.2 Test Setup Diagram 15
6.2.3 Measurement Data 15
6.3 Bandwidth 19
6.3.1 E.U.T. Operation 19
6.3.2 Test Setup Diagram 19
6.3.3 Measurement Data 19
6.4 Band Edge Compliance 24
6.4.1 E.U.T. Operation 24
6.4.2 Test Setup Diagram 24
6.4.3 Measurement Data 24
6.5 Spurious emissions at antenna terminals 27
6.5.1 E.U.T. Operation 27
6.5.2 Test Setup Diagram 27
6.5.3 Measurement Data 27
6.6 Field strength of spurious radiation 31
6.6.1 E.U.T. Operation 31
6.6.2 Test Setup Diagram 31
6.6.3 Measurement Procedure and Data 32
6.7 Frequency stability 36

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6.7.1 E.U.T. Operation 36
6.7.2 Test Setup Diagram 36
6.7.3 Measurement Data 36
6.8 Modulation Characteristics 46
6.8.1 E.U.T. Operation 46
6.8.2 Test Setup Diagram 46
6.8.3 Measurement Data 46-51

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4 General Information

4.1 Details of E.U.T.

Power supply:	Switching Power Supply Model: S010WU0500200 Input: AC 100-240V, 50/60Hz, 400mA Output: DC 5.0V, 2000mA DC 3.6V, 3100mAh rechargeable battery which charged by USB port
Sample Type:	Portable production
Operation Frequency Band:	WCDMA Band II/ WCDMA Band IV/ WCDMA Band V
Modulation Type:	QPSK
HSDPA UE Category:	14
HSUPA UE Category:	6
DC-HSDPA UE Category:	24
Designation of Emissions:	WCDMA Band II:4M16F9W WCDMA Band IV: 4M16F9W WCDMA Band V: 4M17F9W
Antenna Type:	LDS Antenna
Antenna Gain:	0dBi
Extreme temp. Tolerance:	-30℃ to +50℃
Extreme vol. Limits:	3.06VDC to 4.14VDC (nominal: 3.6VDC)

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4.2 Test Frequency

Test mode:	TX/RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA Band V	TX	Channel 4132	Channel 4182	Channel 4233
		826.4MHz	836.4 MHz	846.6 MHz
	RX	Channel 4357	Channel 4407	Channel 4458
		871.4 MHz	881.4 MHz	891.6 MHz

Test mode:	TX/RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA Band IV	TX	Channel 1312	Channel 1413	Channel 1513
		1712.4 MHz	1732.6 MHz	1752.6 MHz
	RX	Channel 1537	Channel 1638	Channel 1738
		2112.4 MHz	2132.6 MHz	2152.6 MHz

Test mode:	TX/RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA Band II	TX	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
	RX	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960.0 MHz	1987.6 MHz

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4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1015Pa	
Temperature:	TN	25 ℃
Voltage:	VL	3.06 V
	VN	3.6 V
	VH	4.14 V

NOTE: VL= lower extreme test voltage
VN= nominal voltage
VH= upper extreme test voltage
TN= normal temperature

4.4 Description of Support Units

The EUT has been tested independent unit.

4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25×10^{-8}
2	Occupied Bandwidth	3%
3	RF conducted power	0.75dB
4	Conducted Spurious emissions	0.75dB
5	RF Radiated power	4.5dB (below 1GHz)
		4.8dB (above 1GHz)
6	Radiated Spurious emission test	4.5dB (Below 1GHz)
		4.8dB (Above 1GHz)
7	Temperature test	1℃
8	Humidity test	3%
9	Supply voltages	1.5%
10	Time	3%

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4.6 Test Location

All tests were performed at:

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No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.8 Deviation from Standards

None

4.9 Abnormalities from Standard Conditions

None

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5 Equipment List

RF conducted test					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
DC Power Supply	ZhaoXin	PS-3005D	SEM011-05	2018-09-25	2019-09-24
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2018-04-13	2019-04-12
Signal Analyzer (10Hz-40GHz)	Rohde & Schwarz	FSV40	SEM008-04	2018-04-02	2019-04-01
Signal Generator (9kHz-40GHz)	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.6	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2018-07-12	2019-07-11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2018-04-02	2019-04-01
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	SEM010-02	2018-04-02	2019-04-01
Power Splitter	Narda	4324-2	0168	N/A	N/A

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
EXA Signal Analyzer (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2018-04-13	2019-04-12
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2018-09-25	2019-09-24
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2018-11-12	2019-11-11
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2018-04-02	2019-04-01
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2018-07-12	2019-07-11

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Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Signal Generator	R&S	SMA100A	102174	2018-07-12	2019-07-11

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2018-09-25	2019-09-24
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2018-04-02	2019-04-01
				2019-04-01	2020-03-31
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2018-07-12	2019-07-11
Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Signal Generator	R&S	SMA100A	102174	2018-07-12	2019-07-11

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-17

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6 Radio Spectrum Matter Test Results

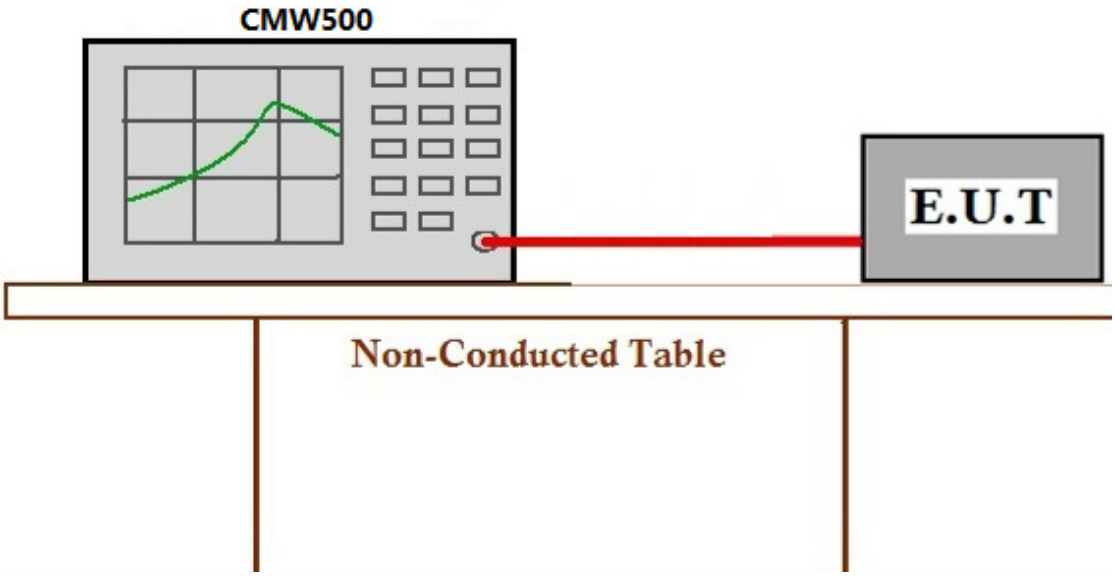
6.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: §2.1046, §22.913, §24.232, §27.50(d)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ERP≤7W(WCDMA BAND V)
EIRP≤ 2W(WCDMA BAND II)
EIRP≤ 1W(WCDMA BAND IV)

6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar
Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

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Test band: WCDMA Band V										
Conducted output power(dBm)					Antenna gain (dBd)	Antenna gain (dBi)	FCC: ERP(dBm)			Limit (dBm)
Channel		4132	4182	4233			4132	4182	4233	
WCDMA	12.2kbps RMC	22.88	22.89	22.79	-2.15	0	20.73	20.74	20.64	38.45
HSDPA	Subtest 1	23.13	22.93	22.97	-2.15	0	**20.98**	20.78	20.82	38.45
	Subtest 2	23.09	22.93	22.96	-2.15	0	20.94	20.78	20.81	38.45
	Subtest 3	23.10	22.93	22.94	-2.15	0	20.95	20.78	20.79	38.45
	Subtest 4	23.11	22.92	22.94	-2.15	0	20.96	20.77	20.79	38.45
HSUPA	Subtest 1	22.31	21.85	21.93	-2.15	0	20.16	19.7	19.78	38.45
	Subtest 2	21.04	21.38	21.35	-2.15	0	18.89	19.23	19.2	38.45
	Subtest 3	21.14	20.96	21.17	-2.15	0	18.99	18.81	19.02	38.45
	Subtest 4	21.71	21.54	21.75	-2.15	0	19.56	19.39	19.6	38.45
DC-HSDPA	Subtest 1	22.60	22.20	22.40	-2.15	0	20.45	20.05	20.25	38.45
	Subtest 2	23.11	22.91	22.95	-2.15	0	20.96	20.76	20.8	38.45
	Subtest 3	23.06	22.88	22.91	-2.15	0	20.91	20.73	20.76	38.45
	Subtest 4	23.09	22.90	22.90	-2.15	0	20.94	20.75	20.75	38.45

Note:

1) dBd= dBi-2.15

2) ERP= Conducted output power+Antenna gain (dBd)

3) EIRP= Conducted output power+Antenna gain (dBi)

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Test band: WCDMA Band IV									
Conducted output power(dBm)					Antenna gain (dBi)	FCC: EIRP(dBm)			Limit (dBm)
Channel		1312	1413	1513		1312	1413	1513	
WCDMA	12.2kbps RMC	23.62	23.56	23.64	0	23.62	23.56	23.64	30
HSDPA	Subtest 1	23.59	23.53	23.77	0	23.59	23.53	**23.77**	30
	Subtest 2	23.32	23.47	23.42	0	23.32	23.47	23.42	30
	Subtest 3	23.35	23.47	23.49	0	23.35	23.47	23.49	30
	Subtest 4	23.30	23.45	23.47	0	23.30	23.45	23.47	30
HSUPA	Subtest 1	22.42	22.42	22.48	0	22.42	22.42	22.48	30
	Subtest 2	21.40	21.35	21.41	0	21.40	21.35	21.41	30
	Subtest 3	21.34	21.35	21.42	0	21.34	21.35	21.42	30
	Subtest 4	21.60	21.96	21.59	0	21.60	21.96	21.59	30
DC-HSDPA	Subtest 1	22.72	22.84	22.77	0	22.72	22.84	22.77	30
	Subtest 2	23.31	23.45	23.48	0	23.31	23.45	23.48	30
	Subtest 3	23.30	23.33	23.46	0	23.30	23.33	23.46	30
	Subtest 4	23.32	23.42	23.45	0	23.32	23.42	23.45	30

Note:

1) EIRP= Conducted output power+Antenna gain (dBi)

Test band: WCDMA Band II									
Conducted output power(dBm)					Antenna gain (dBi)	FCC: EIRP(dBm)			Limit (dBm)
Channel		9262	9400	9538		9262	9400	9538	
WCDMA	12.2kbps RMC	22.98	23.04	23.09	0	22.98	23.04	23.09	33
HSDPA	Subtest 1	23.37	23.43	23.47	0	23.37	23.43	**23.47**	33
	Subtest 2	23.36	23.41	23.45	0	23.36	23.41	23.45	33
	Subtest 3	23.31	23.42	23.46	0	23.31	23.42	23.46	33
	Subtest 4	23.35	23.41	23.43	0	23.35	23.41	23.43	33
HSUPA	Subtest 1	22.47	22.46	22.49	0	22.47	22.46	22.49	33
	Subtest 2	21.44	21.30	21.47	0	21.44	21.30	21.47	33
	Subtest 3	21.31	21.39	21.47	0	21.31	21.39	21.47	33
	Subtest 4	21.62	21.97	21.57	0	21.62	21.97	21.57	33
DC-HSDPA	Subtest 1	22.70	22.80	22.70	0	22.70	22.80	22.70	33
	Subtest 2	23.34	23.41	23.44	0	23.34	23.41	23.44	33
	Subtest 3	23.32	23.38	23.42	0	23.32	23.38	23.42	33
	Subtest 4	23.30	23.40	23.40	0	23.30	23.40	23.40	33

Note:

1) EIRP= Conducted output power+Antenna gain (dBi)

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6.2 Peak-Average Ratio

Test Requirement: §24.232, §27.50(d)

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤13dB

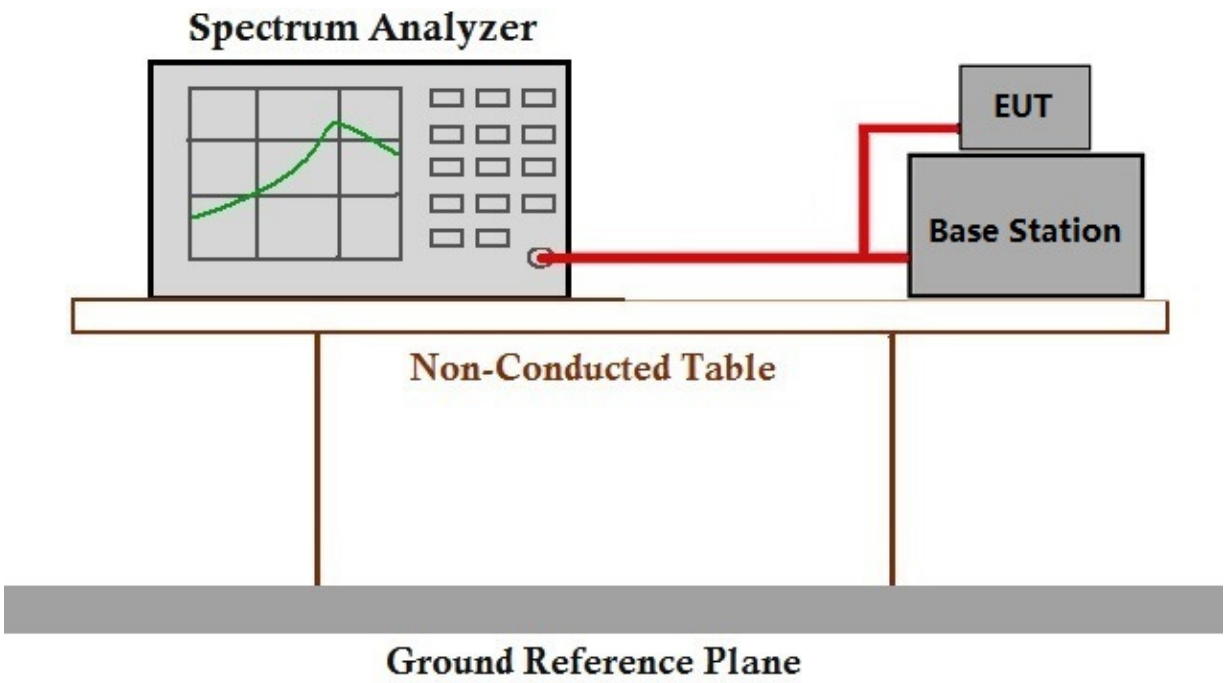
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar

Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

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Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
WCDMA BAND II	HSDPA	LCH	3.16	13	PASS
		MCH	2.80	13	PASS
		HCH	2.76	13	PASS
WCDMA BAND IV	HSDPA	LCH	3.32	13	PASS
		MCH	3.16	13	PASS
		HCH	3.12	13	PASS
WCDMA BAND V	HSDPA	LCH	3.48	13	PASS
		MCH	3.04	13	PASS
		HCH	2.88	13	PASS

Note: All modes have been tested and we found HSDPA mode has the worst test result. Only record the worst test result.

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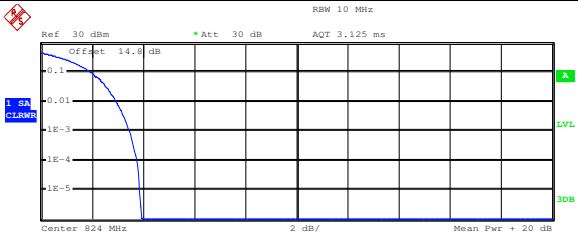
Test Plots for HSDPA

WCDMA BAND V

Low channel

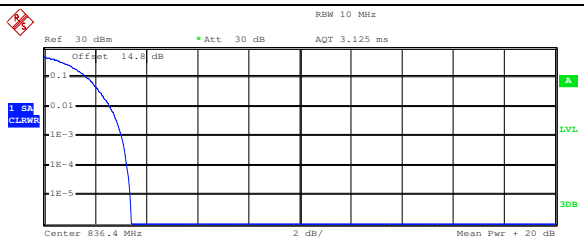


Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	23.89 dBm
Peak	27.82 dBm
Crest	3.93 dB
10 %	2.00 dB
1 %	2.96 dB
.1 %	3.48 dB
.01 %	3.76 dB

Middle channel

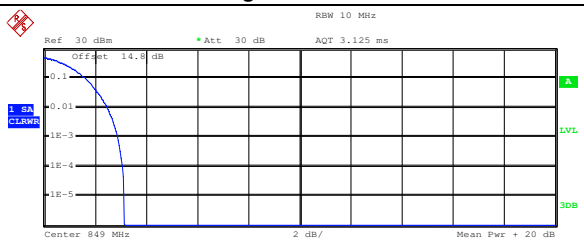


Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	24.13 dBm
Peak	27.54 dBm
Crest	3.42 dB
10 %	1.68 dB
1 %	2.60 dB
.1 %	3.04 dB
.01 %	3.24 dB

High channel



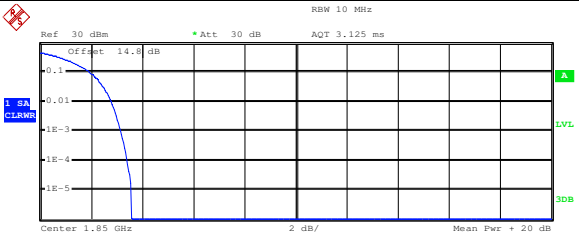
Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	24.04 dBm
Peak	27.19 dBm
Crest	3.15 dB
10 %	1.64 dB
1 %	2.48 dB
.1 %	2.88 dB
.01 %	3.08 dB

WCDMA BAND II

Low channel

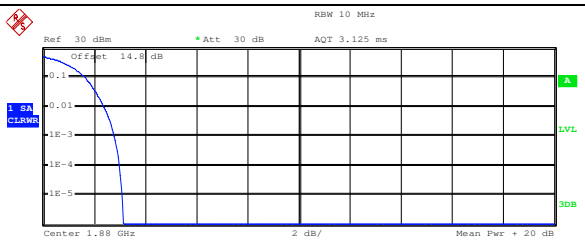


Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	23.95 dBm
Peak	27.54 dBm
Crest	3.59 dB
10 %	1.96 dB
1 %	2.80 dB
.1 %	3.16 dB
.01 %	3.40 dB

Middle channel

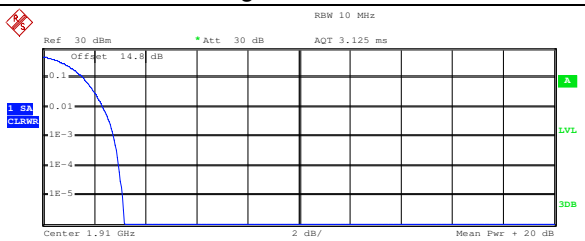


Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	23.89 dBm
Peak	27.05 dBm
Crest	3.16 dB
10 %	1.68 dB
1 %	2.40 dB
.1 %	2.80 dB
.01 %	3.00 dB

High channel



Complementary Cumulative Distribution Function (100000 samples)

Trace 1

Mean	23.45 dBm
Peak	26.63 dBm
Crest	3.18 dB
10 %	1.60 dB
1 %	2.36 dB
.1 %	2.76 dB
.01 %	2.96 dB

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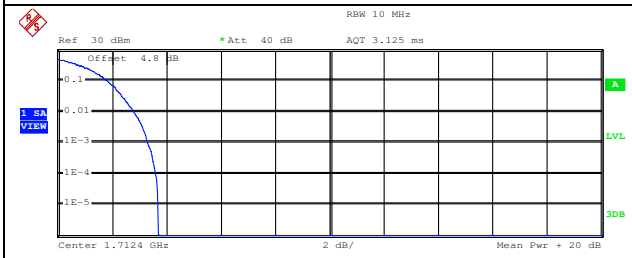
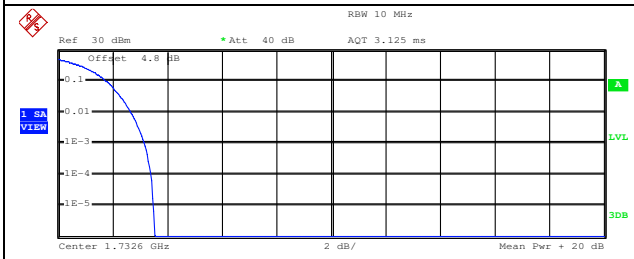
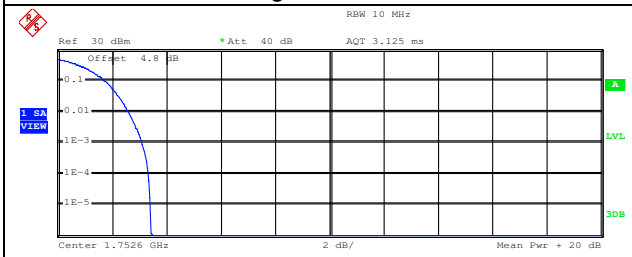
Test Plots for HSDPA

WCDMA BAND IV	-
Low channel	Low channel
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 21.52 dBm Peak 25.21 dBm Crest 3.70 dB 10 % 1.84 dB 1 % 2.80 dB .1 % 3.32 dB .01 % 3.60 dB	-
Middle channel	Middle channel
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.17 dBm Peak 25.71 dBm Crest 3.54 dB 10 % 1.80 dB 1 % 2.68 dB .1 % 3.16 dB .01 % 3.40 dB	-
High channel	High channel
 Complementary Cumulative Distribution Function (100000 samples) Trace 1 Mean 22.48 dBm Peak 25.92 dBm Crest 3.44 dB 10 % 1.76 dB 1 % 2.60 dB .1 % 3.12 dB .01 % 3.36 dB	-

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6.3 Bandwidth

Test Requirement: §2.1049(h), §22.917, §24.238, §27.53(h)

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: OBW: No limit
EBW: No limit

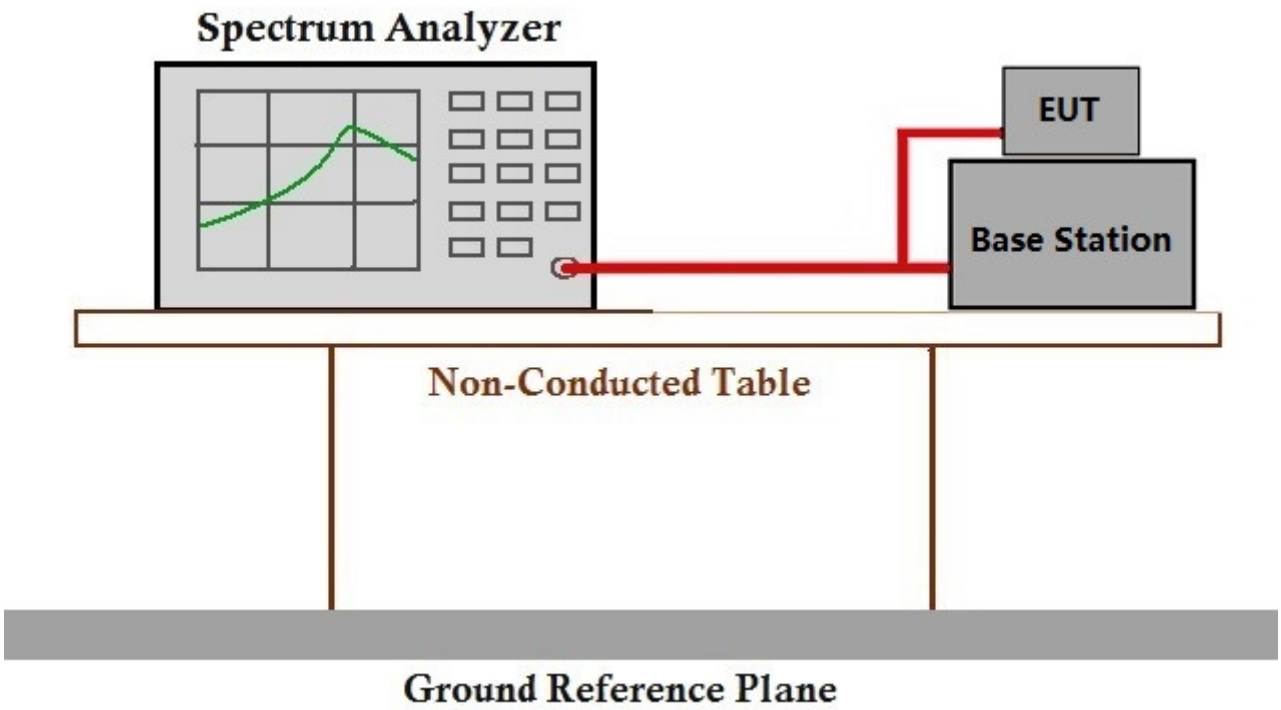
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar

Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

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Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
WCDMA BAND V	HSDPA	LCH	4.15	4.73	PASS
		MCH	4.14	4.71	PASS
		HCH	4.16	4.74	PASS
WCDMA BAND IV	HSDPA	LCH	4.15	4.73	PASS
		MCH	4.14	4.71	PASS
		HCH	4.16	4.74	PASS
WCDMA BAND II	HSDPA	LCH	4.17	4.76	PASS
		MCH	4.17	4.71	PASS
		HCH	4.17	4.78	PASS

Note: All modes have been tested and we found HSDPA mode has the worst test result. Only record the worst test result.

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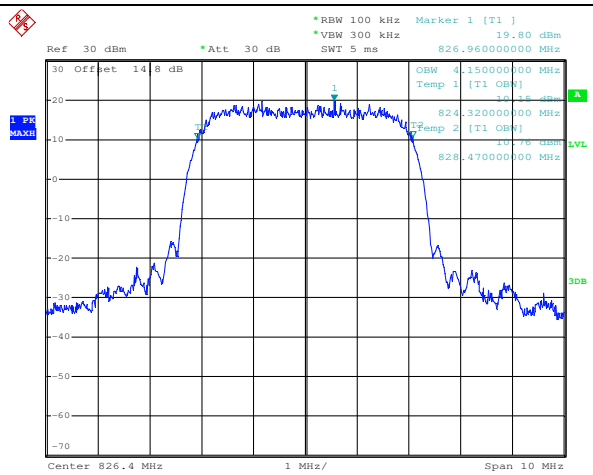
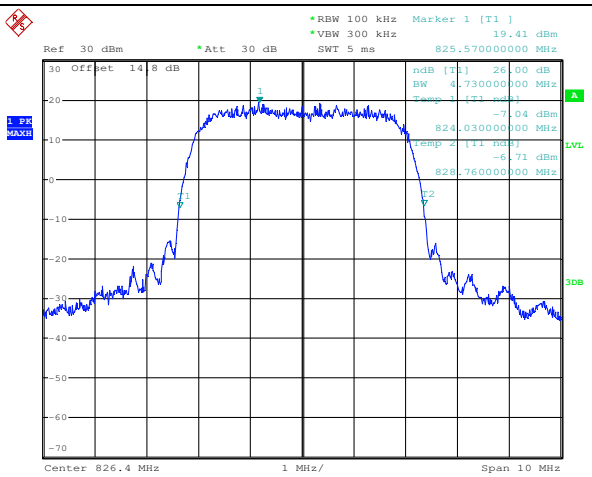
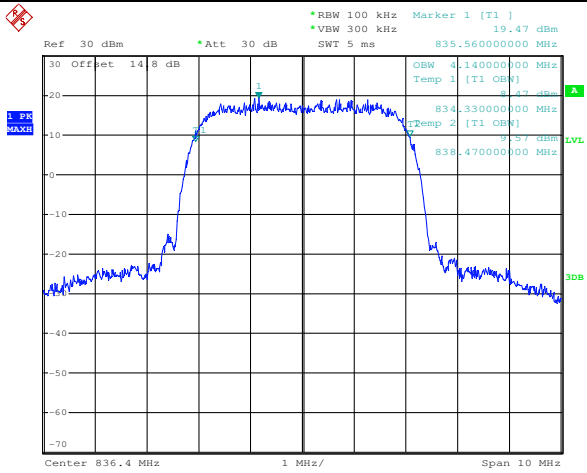
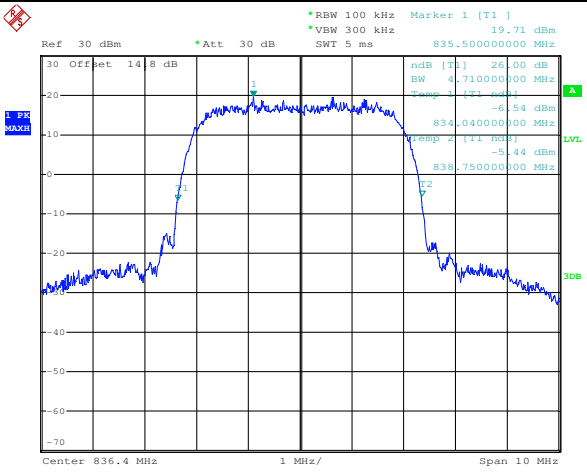
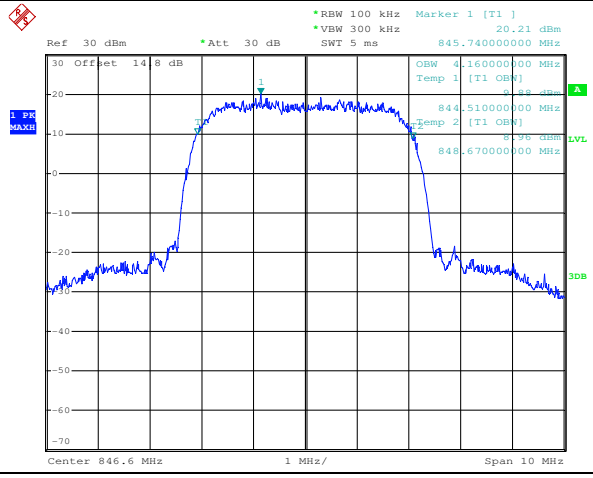
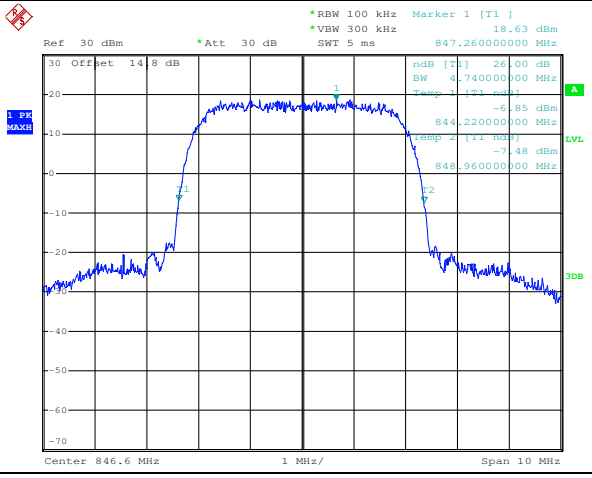
Test Plots for HSDPA

WCDMA BAND V / OBW	WCDMA BAND V / 26dB bandwidth
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

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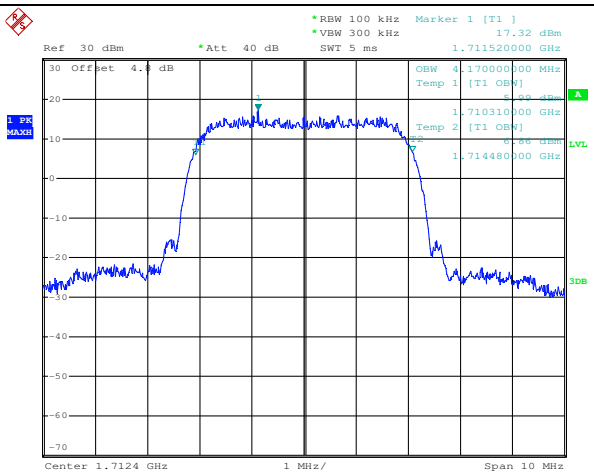
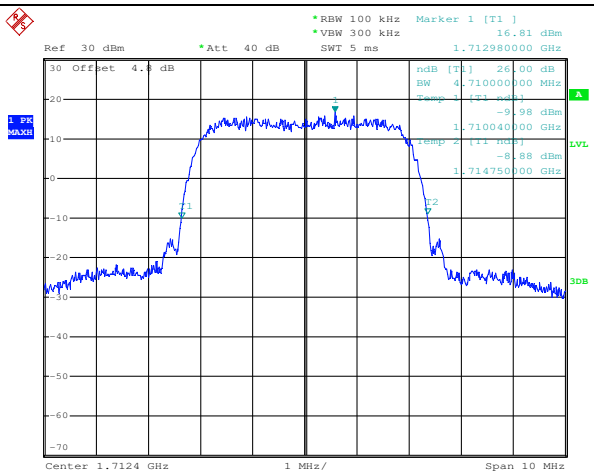
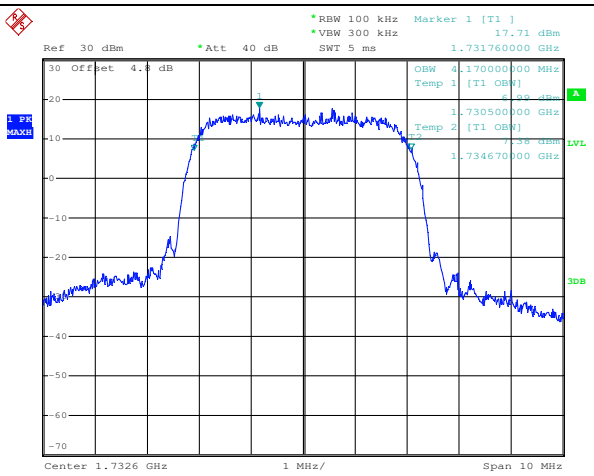
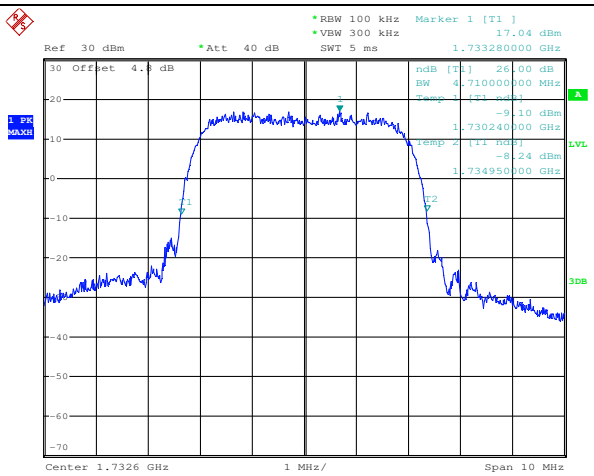
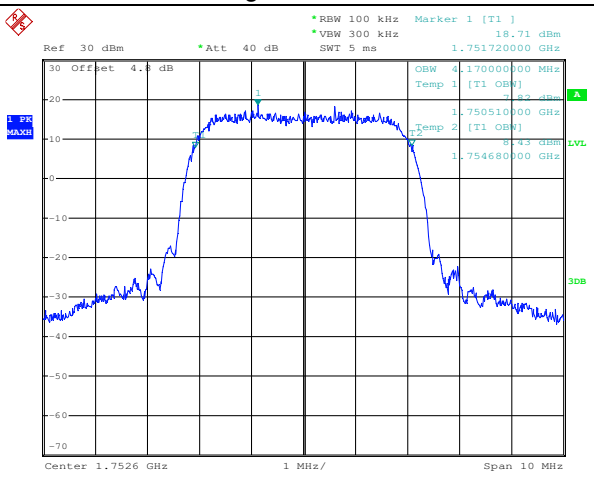
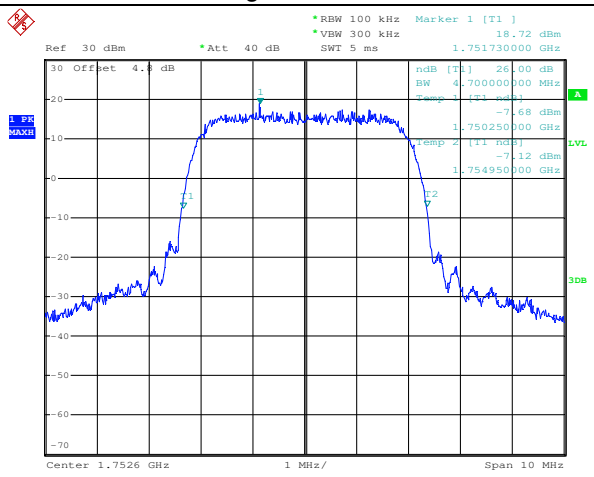
WCDMA BAND IV / OBW	WCDMA BAND IV / 26dB bandwidth
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

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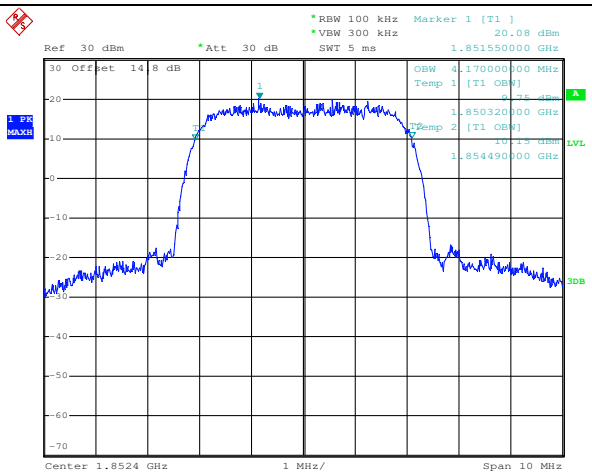
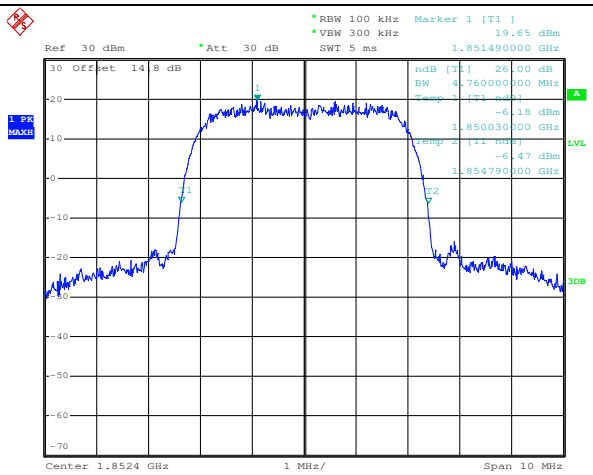
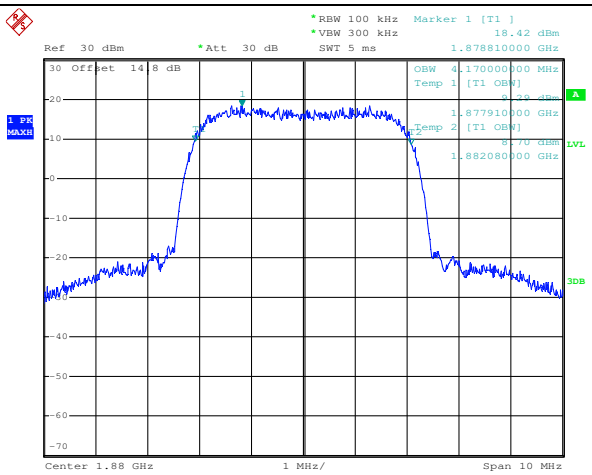
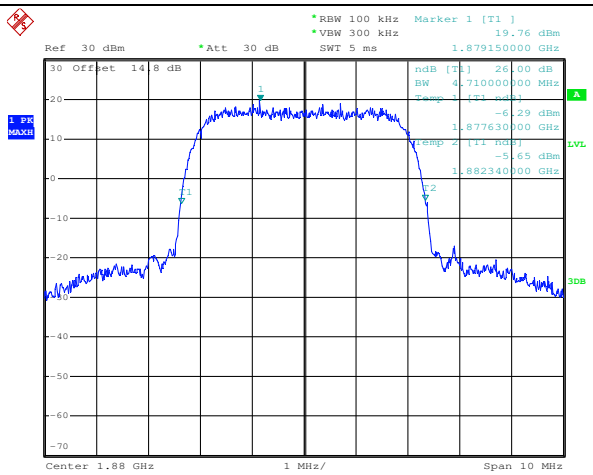
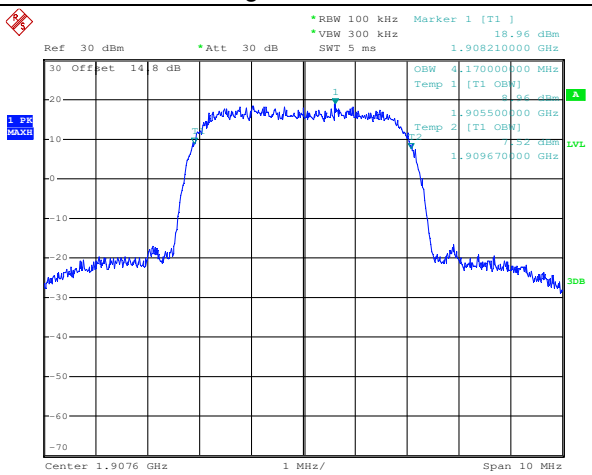
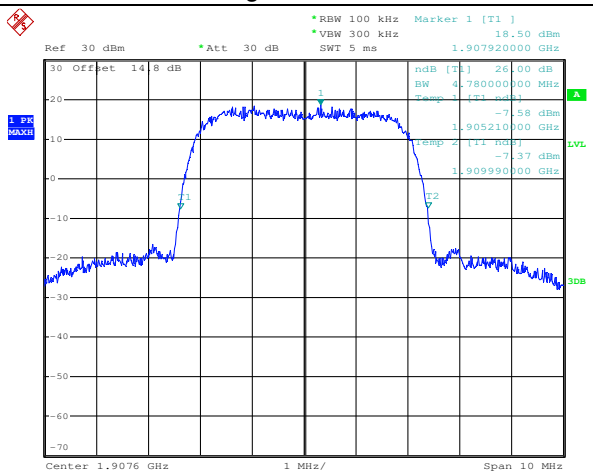
WCDMA BAND II / OBW	WCDMA BAND II / 26dB bandwidth
Low channel	Low channel
	
Middle channel	Middle channel
	
High channel	High channel
	

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6.4 Band Edge Compliance

Test Requirement: §2.1051, §22.917, §24.238, §27.53(h)

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block

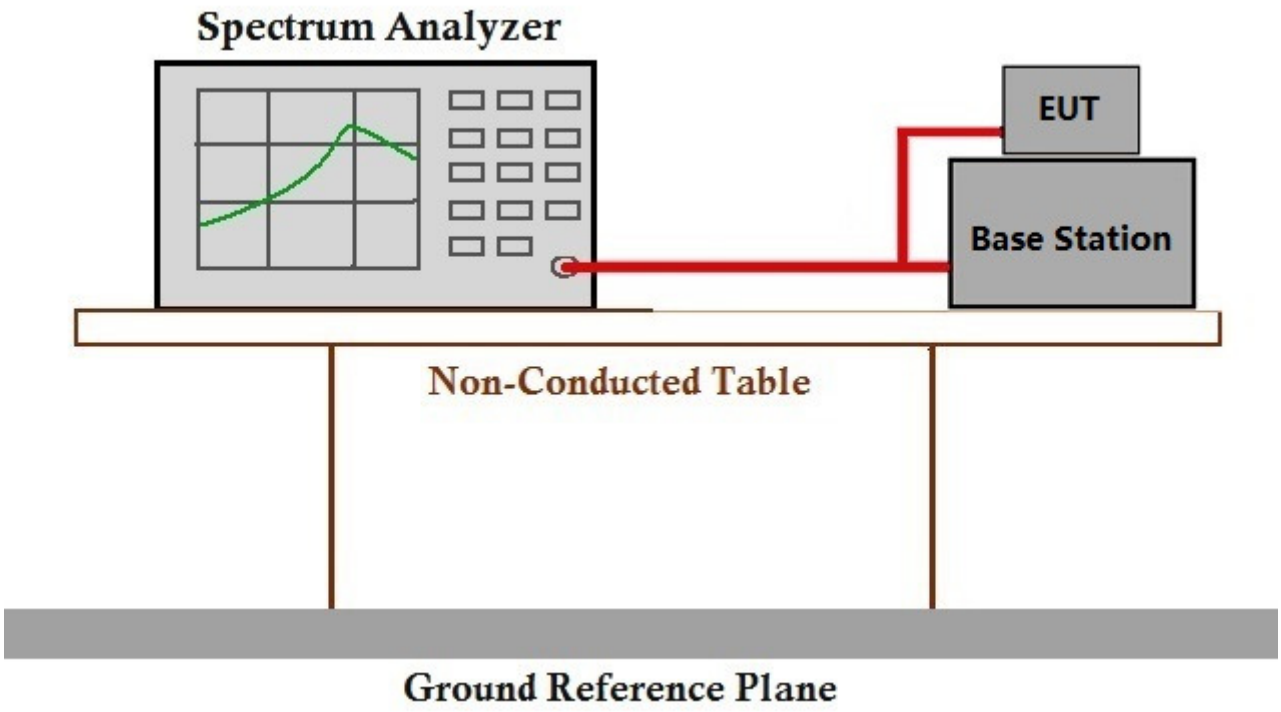
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar

Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

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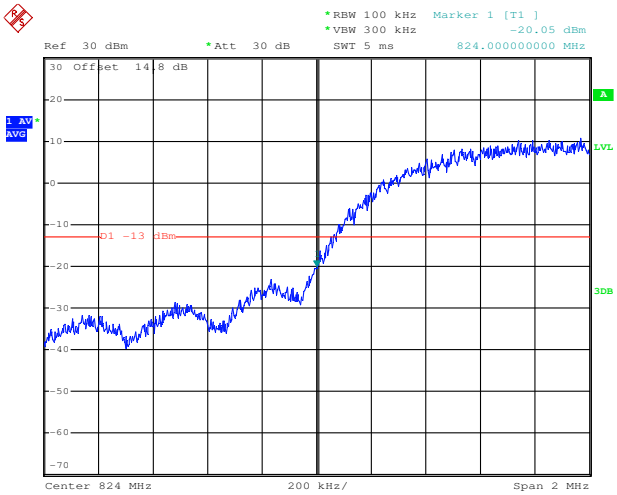
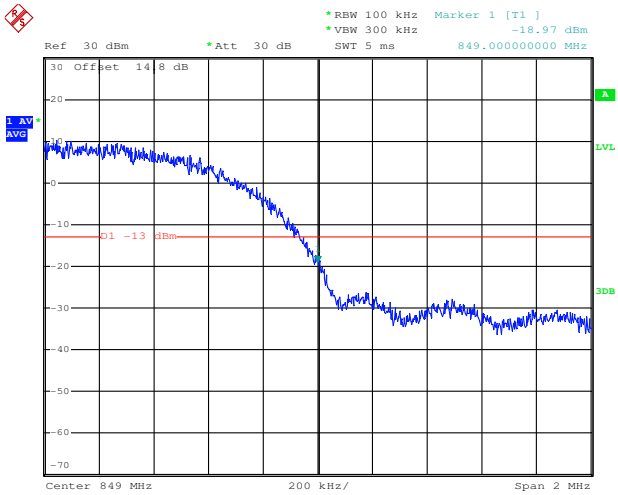
Test Plots for HSDPA

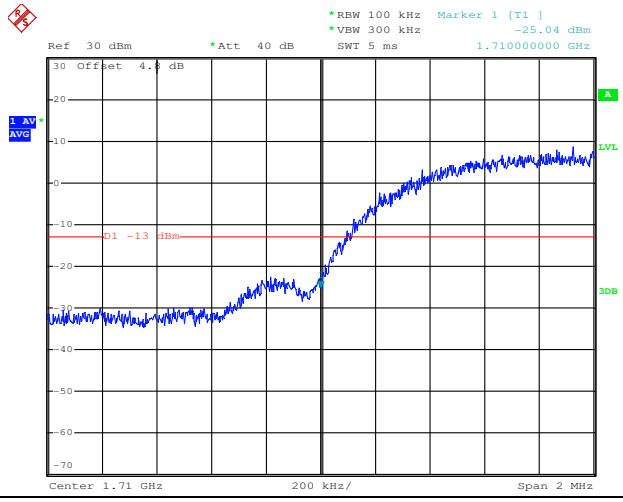
WCDMA BAND V-Low Channel



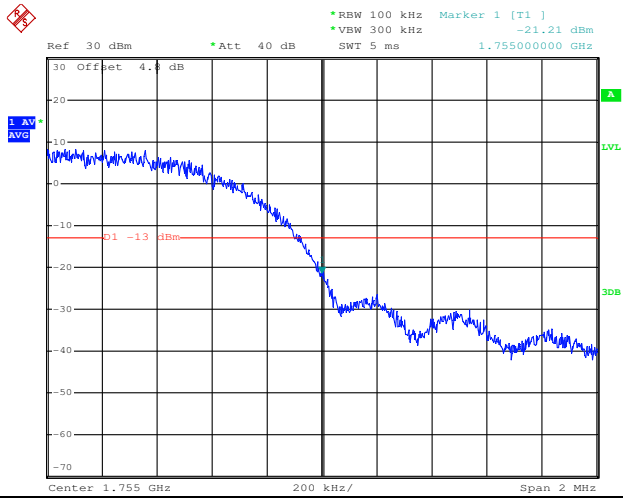
WCDMA BAND V-High Channel



WCDMA BAND IV-Low Channel



WCDMA BAND IV-High Channel



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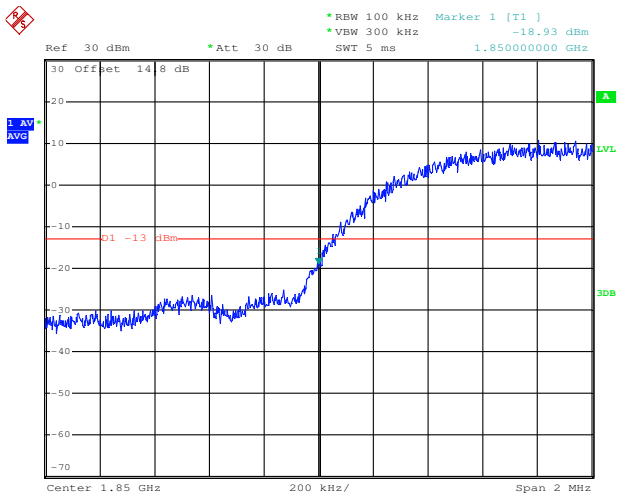
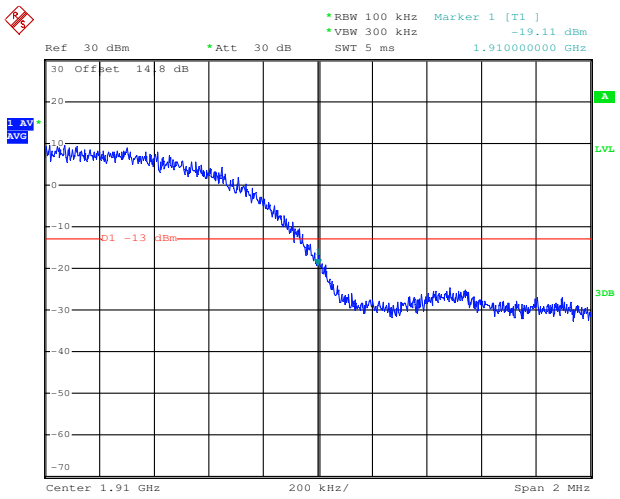
WCDMA BAND II-Low Channel	WCDMA BAND II-High Channel
	

Note: All modes have been tested and we found HSDPA mode has the worst test result. Only record the worst test result.

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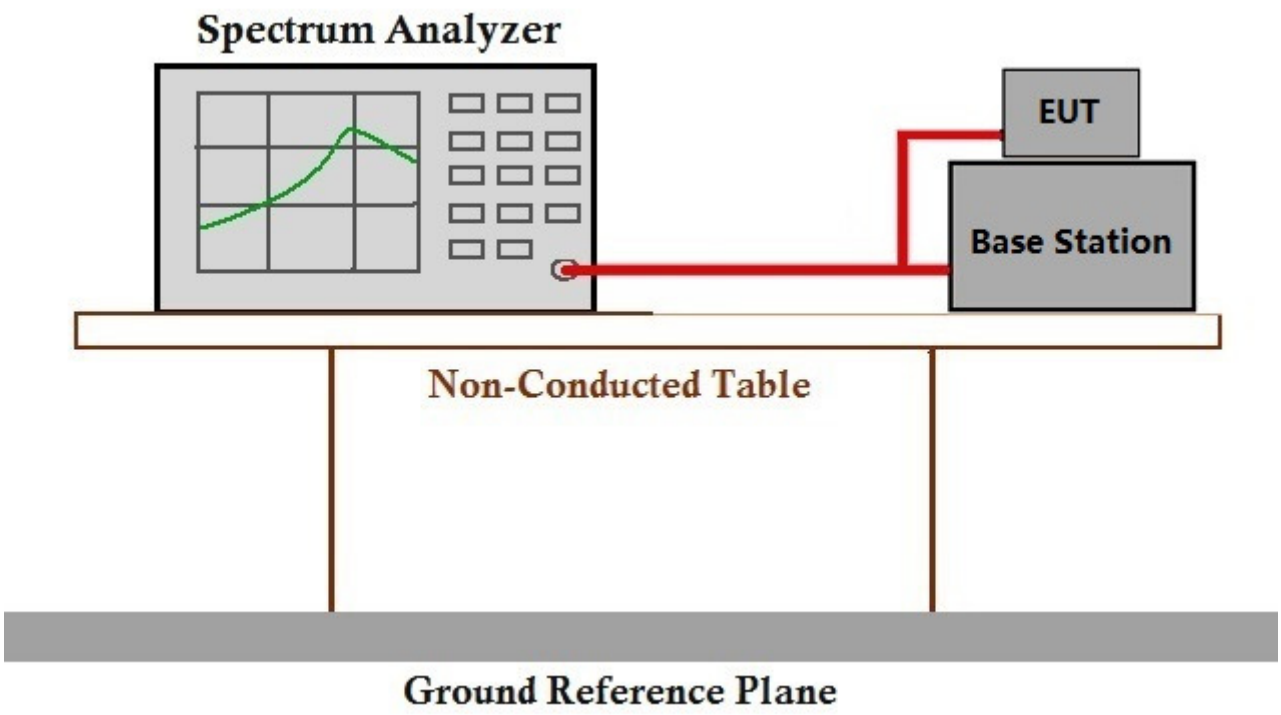
6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §22.917, §24.238, §27.53(h)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤ -13dBm

6.5.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar
Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Note: All modes have been tested and we found HSDPA mode has the worst test result. Only record the worst test result.

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Test Plots for HSDPA

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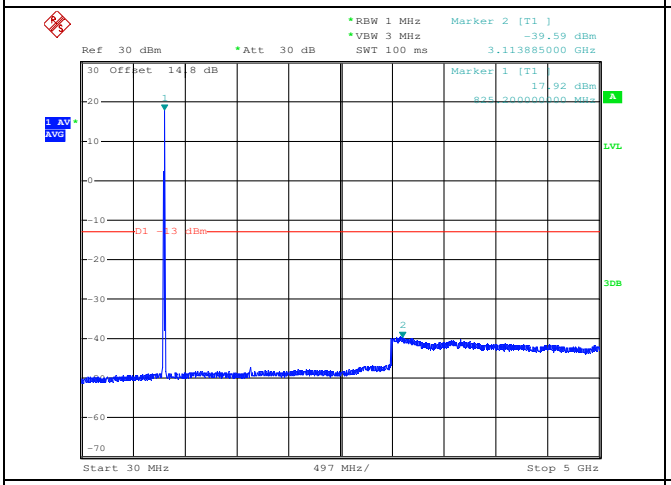
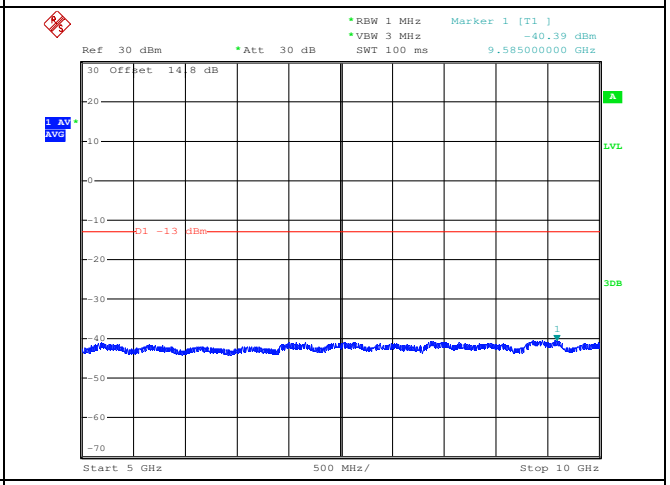
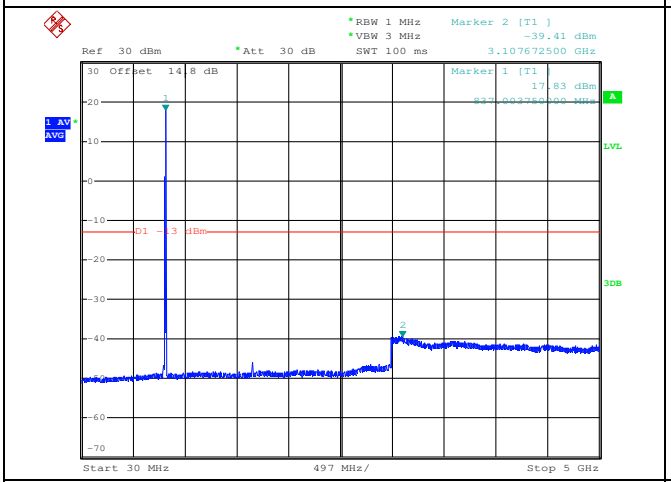


WCDMA BAND V-Low Channel



WCDMA BAND V-Middle Channel



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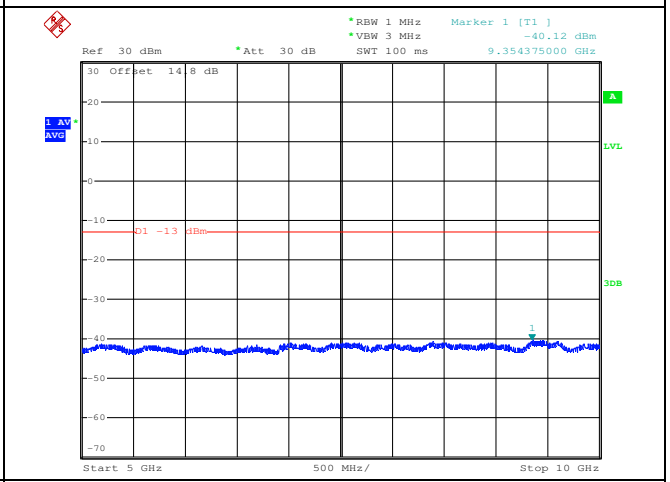

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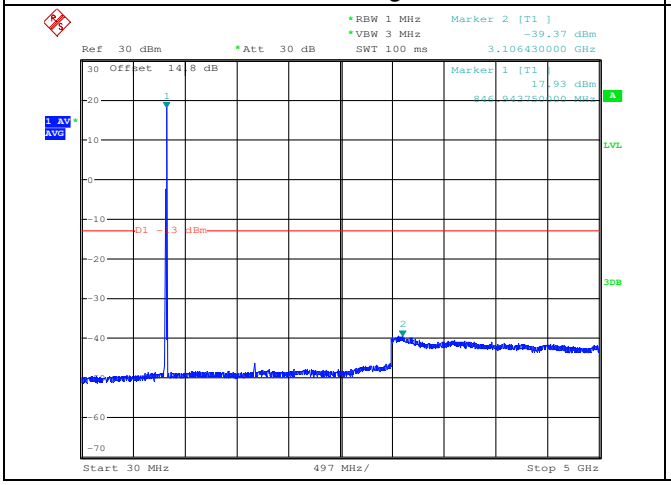

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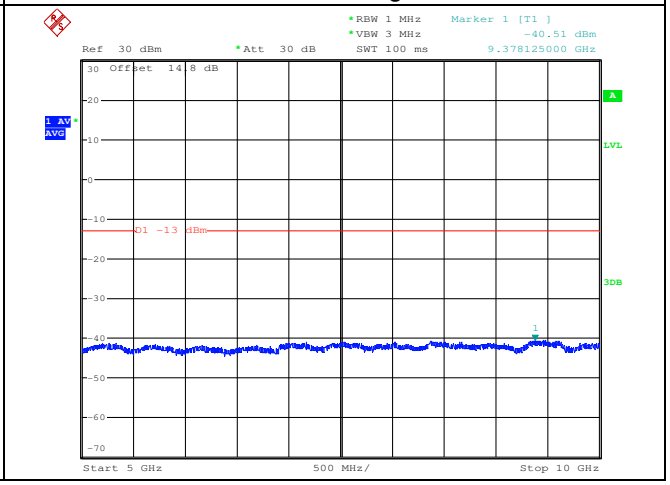

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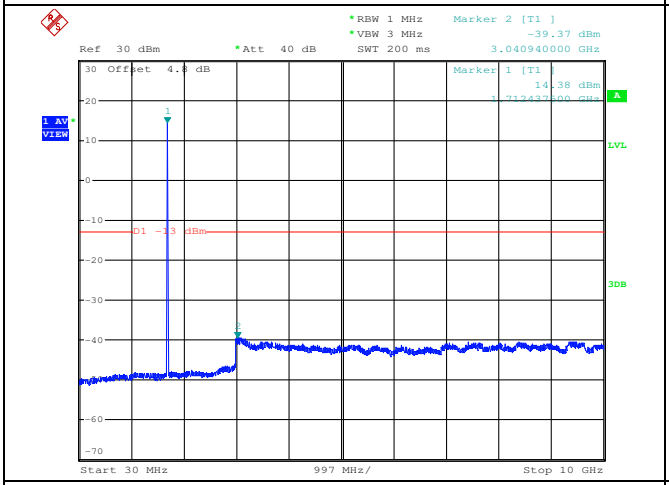

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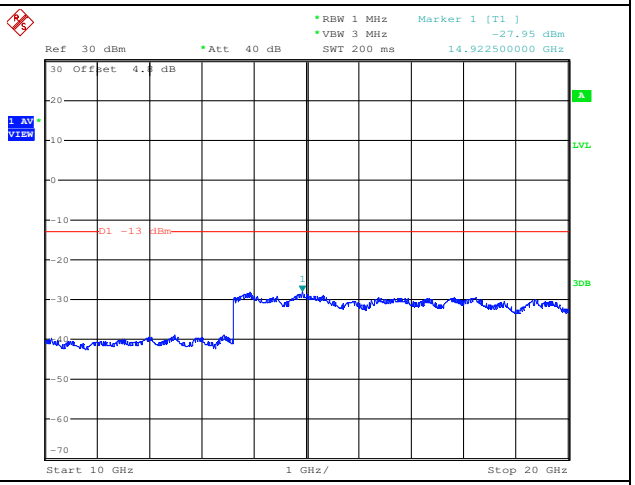
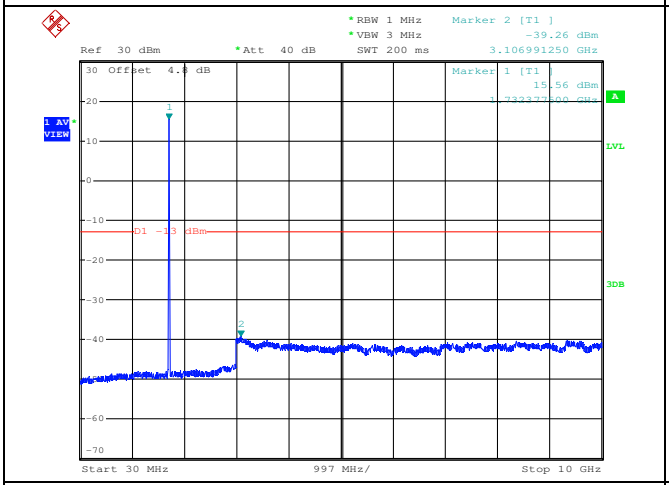


WCDMA BAND IV-Middle Channel



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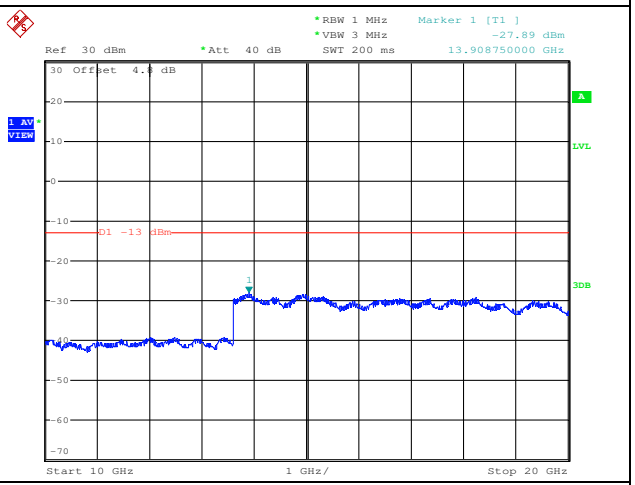

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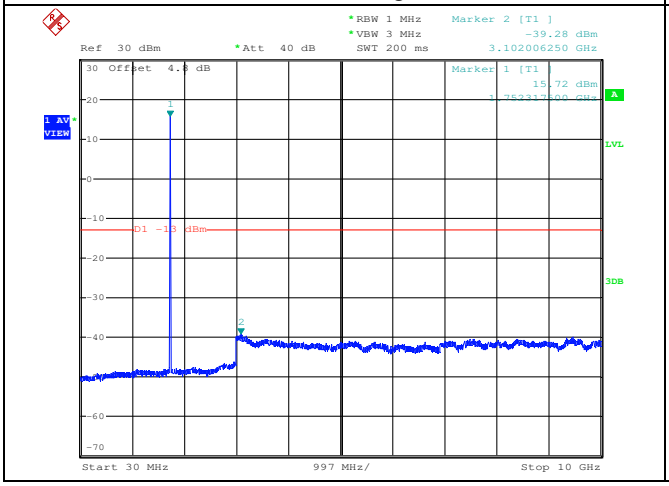

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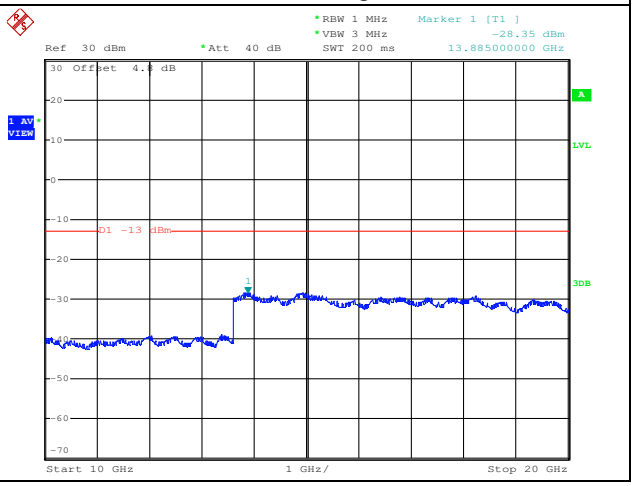

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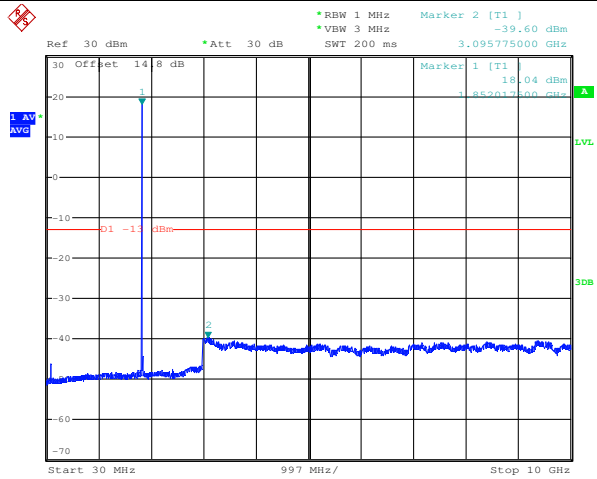	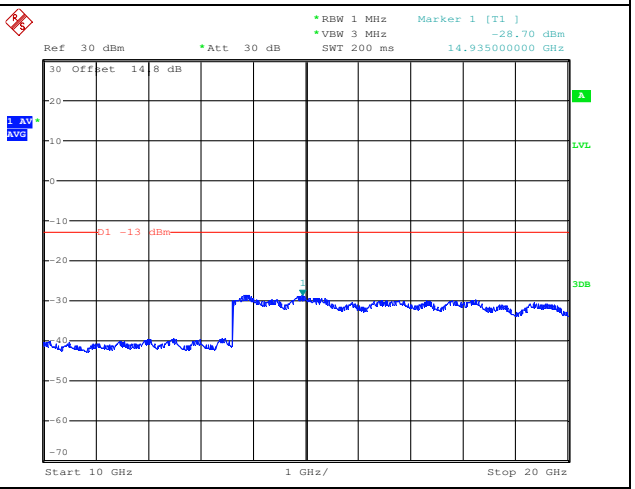
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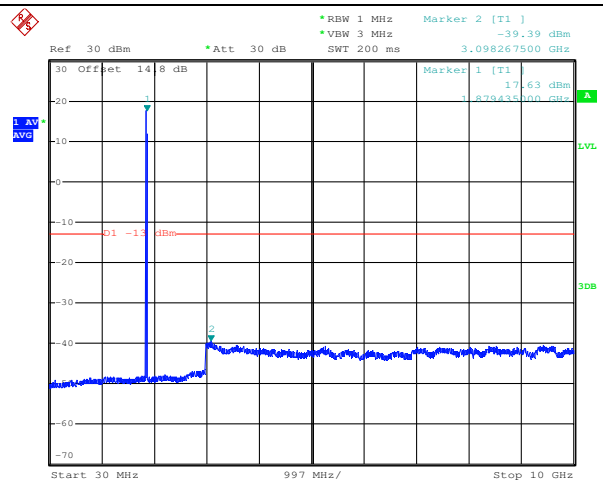	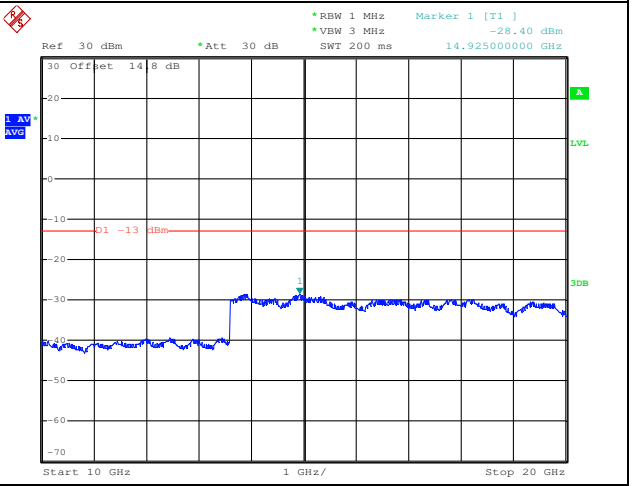
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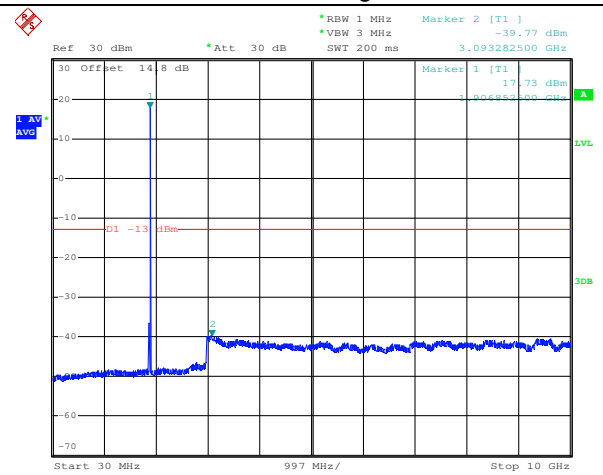	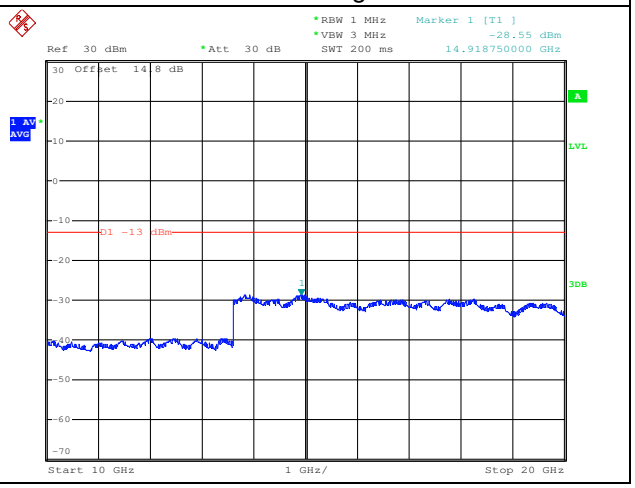

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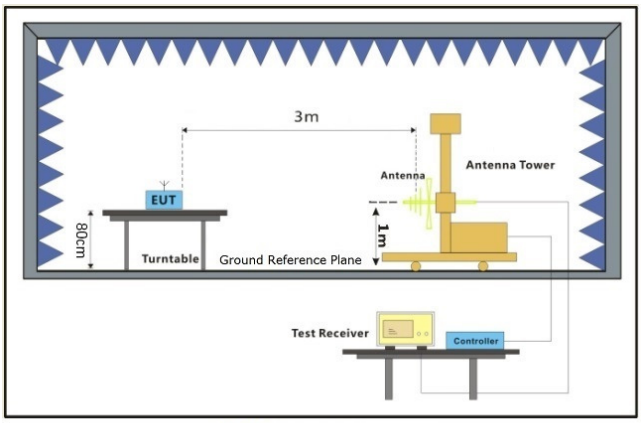
6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §22.917, §24.238, §27.53(h)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤ -13dBm

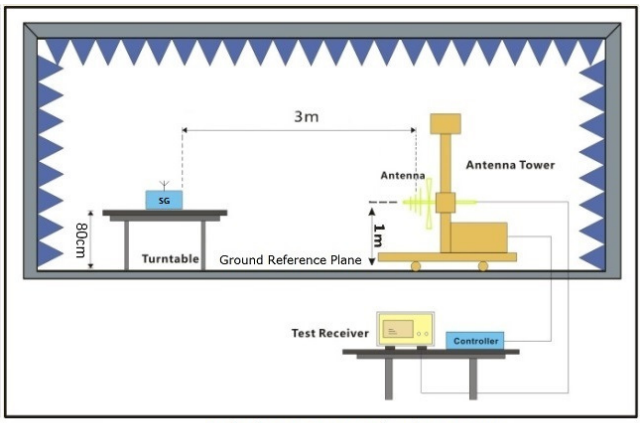
6.6.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar
Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.6.2 Test Setup Diagram



EUT



Substiute Antenna+Signal Generator

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6.6.3 Measurement Procedure and Data

Test Procedure:

(1)On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use a declared by the user.
(2)The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to corres to the transmitter.
(3)The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-p detector was used for the measurement as indicated on the report. The detector selection is based how close the emission level was approaching the limit.
(4)The transmitter shall be switched on; if possible, without the modulation and the measurement recei shall be tuned to the frequency of the transmitter under test.
(5)The test antenna shall be raised and lowered through the specified range of height until the measuri receiver detects a maximum signal level.
(6)The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal l detected by the measuring receiver.
(7)The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
(8)The maximum signal level detected by the measuring receiver shall be noted.
(9)The measurement shall be repeated with the test antenna set to horizontal polarization.
(10) Replace the antenna with a proper Antenna (substitution antenna).
(11)The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of tl substitution antenna shall be adjusted to correspond to the frequency of transmitting.
(12)The substitution antenna shall be connected to a calibrated signal generator.
(13)If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to inc the sensitivity of the measuring receiver.
(14)The test antenna shall be raised and lowered through the specified range of the height to ensure th maximum signal is received.
(15)The input signal to substitution antenna shall be adjusted to the level that produces a level detecte the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for a change of input attenuator setting of the measuring receiver.

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WCDMA Band V-Low channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
1652.8	-66.27	0.52	6	-60.79	-13	-47.79	Horizontal	Pass
2479.2	-61.34	0.53	5.8	-56.07	-13	-43.07	Horizontal	Pass
3305.6	-58.58	0.65	6.2	-53.03	-13	-40.03	Horizontal	Pass
1652.8	-66.13	0.52	6	-60.65	-13	-47.65	Vertical	Pass
2479.2	-61.19	0.53	5.8	-55.92	-13	-42.92	Vertical	Pass
3305.6	-58.82	0.65	6.2	-53.27	-13	-40.27	Vertical	Pass

WCDMA Band V-Middle channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
1672.8	-65.62	0.52	6	-60.14	-13	-47.14	Horizontal	Pass
2509.2	-61.98	0.59	5.3	-57.27	-13	-44.27	Horizontal	Pass
3345.6	-58.1	0.65	6.2	-52.55	-13	-39.55	Horizontal	Pass
1672.8	-66.15	0.52	6	-60.67	-13	-47.67	Vertical	Pass
2509.2	-61.77	0.59	5.3	-57.06	-13	-44.06	Vertical	Pass
3345.6	-59.12	0.65	6.2	-53.57	-13	-40.57	Vertical	Pass

WCDMA Band V-High channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
1693.2	-65.68	0.52	6	-60.2	-13	-47.2	Horizontal	Pass
2539.8	-60.51	0.59	5.3	-55.8	-13	-42.8	Horizontal	Pass
3386.4	-57.81	0.65	6.2	-52.26	-13	-39.26	Horizontal	Pass
1693.2	-67.61	0.52	6	-62.13	-13	-49.13	Vertical	Pass
2539.8	-61.23	0.59	5.3	-56.52	-13	-43.52	Vertical	Pass
3386.4	-58.75	0.65	6.2	-53.2	-13	-40.2	Vertical	Pass

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WCDMA Band IV-Low channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
3424.8	-58.7	0.65	6.2	-53.15	-13	-40.15	Horizontal	Pass
5137.2	-57.26	0.82	9.6	-48.48	-13	-35.48	Horizontal	Pass
6849.6	-56.57	0.95	11.8	-45.72	-13	-32.72	Horizontal	Pass
3424.8	-59.78	0.65	6.2	-54.23	-13	-41.23	Vertical	Pass
5137.2	-55.25	0.82	9.6	-46.47	-13	-33.47	Vertical	Pass
6849.6	-55.77	0.95	11.8	-44.92	-13	-31.92	Vertical	Pass

WCDMA Band IV-Middle channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
3465.2	-58.2	0.65	6.2	-52.65	-13	-39.65	Horizontal	Pass
5197.8	-57.11	0.82	9.6	-48.33	-13	-35.33	Horizontal	Pass
6930.4	-57.73	0.95	11.8	-46.88	-13	-33.88	Horizontal	Pass
3465.2	-57.66	0.65	6.2	-52.11	-13	-39.11	Vertical	Pass
5197.8	-56.32	0.82	9.6	-47.54	-13	-34.54	Vertical	Pass
6930.4	-56.64	0.95	11.8	-45.79	-13	-32.79	Vertical	Pass

WCDMA Band IV-High channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
3505.2	-58.44	0.71	7.6	-51.55	-13	-38.55	Horizontal	Pass
5257.8	-56.92	0.82	9.6	-48.14	-13	-35.14	Horizontal	Pass
7010.4	-58.38	1	12.9	-46.48	-13	-33.48	Horizontal	Pass
3505.2	-58.9	0.71	7.6	-52.01	-13	-39.01	Vertical	Pass
5257.8	-57.35	0.82	9.6	-48.57	-13	-35.57	Vertical	Pass
7010.4	-58.39	1	12.9	-46.49	-13	-33.49	Vertical	Pass

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WCDMA Band II-Low channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
3704.8	-59.98	0.71	7.6	-53.09	-13	-40.09	Horizontal	Pass
5557.2	-58.04	0.85	10.3	-48.59	-13	-35.59	Horizontal	Pass
7409.6	-57.56	1	12.9	-45.66	-13	-32.66	Horizontal	Pass
3704.8	-60.94	0.71	7.6	-54.05	-13	-41.05	Vertical	Pass
5557.2	-56.3	0.85	10.3	-46.85	-13	-33.85	Vertical	Pass
7409.6	-56.57	1	12.9	-44.67	-13	-31.67	Vertical	Pass

WCDMA Band II-Middle channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
3760	-59.83	0.71	7.6	-52.94	-13	-39.94	Horizontal	Pass
5640	-57.72	0.85	10.3	-48.27	-13	-35.27	Horizontal	Pass
7520	-58.88	0.99	13.2	-46.67	-13	-33.67	Horizontal	Pass
3760	-59.21	0.71	7.6	-52.32	-13	-39.32	Vertical	Pass
5640	-56.75	0.85	10.3	-47.3	-13	-34.3	Vertical	Pass
7520	-58.15	0.99	13.2	-45.94	-13	-32.94	Vertical	Pass

WCDMA Band II-High channel								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
3815.2	-58.67	0.71	7.6	-51.78	-13	-38.78	Horizontal	Pass
5722.8	-58.05	0.85	10.3	-48.6	-13	-35.6	Horizontal	Pass
7630.4	-58.49	0.99	13.2	-46.28	-13	-33.28	Horizontal	Pass
3815.2	-59.07	0.71	7.6	-52.18	-13	-39.18	Vertical	Pass
5722.8	-57.65	0.85	10.3	-48.2	-13	-35.2	Vertical	Pass
7630.4	-58.41	0.99	13.2	-46.2	-13	-33.2	Vertical	Pass

Note: All modes have been tested and we found HSDPA mode has the worst test result. Only record the worst test result.

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6.7 Frequency stability

Test Requirement: §2.1055, §22.355, §24.235, §27.54

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤ ±2.5ppm.

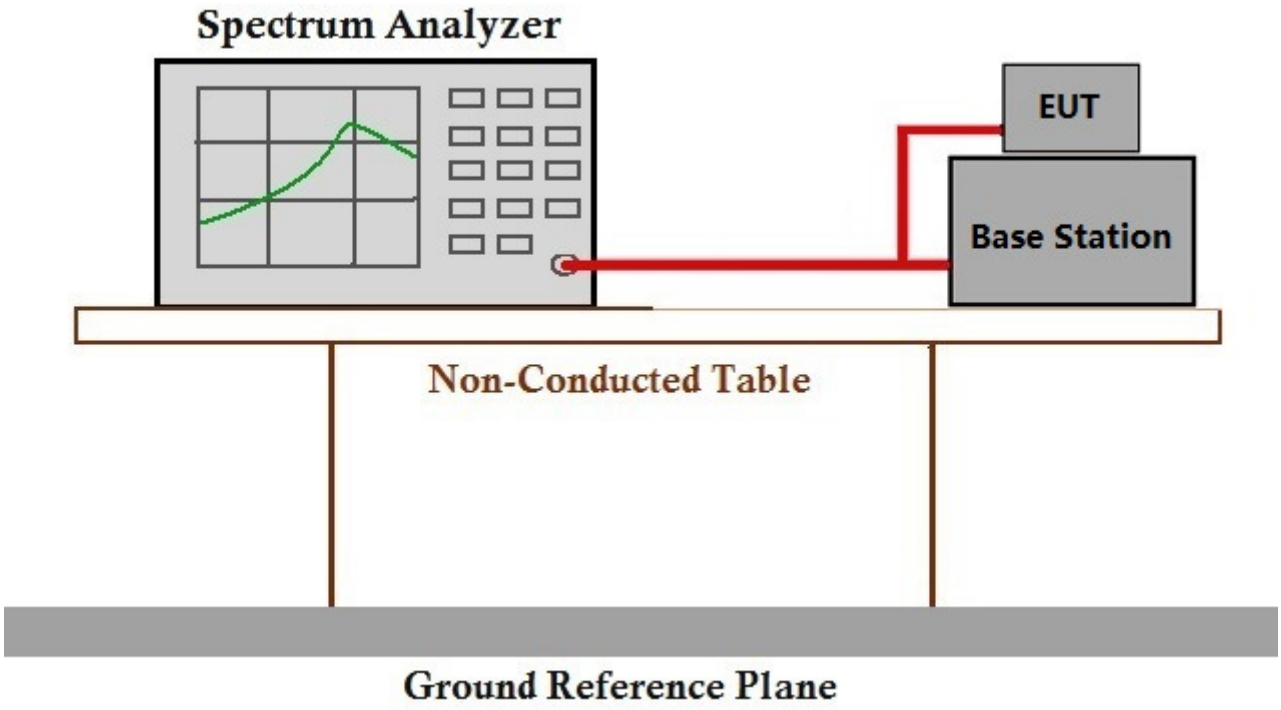
6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar

Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

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Frequency Error VS. Voltage

Test Band	Test mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA V	HSDPA	LCH	TN	VL	2.89	0.003497	PASS
				VN	1.81	0.002190	PASS
				VH	-3.27	-0.003957	PASS
		MCH	TN	VL	-1.89	-0.002260	PASS
				VN	-1.25	-0.001495	PASS
				VH	-3.94	-0.004711	PASS
		HCH	TN	VL	4.06	0.004796	PASS
				VN	-0.78	-0.000921	PASS
				VH	-2.13	-0.002516	PASS
	HSUPA	LCH	TN	VL	-3.57	-0.004320	PASS
				VN	1.5	0.001815	PASS
				VH	-2.44	-0.002953	PASS
		MCH	TN	VL	3.84	0.004591	PASS
				VN	2.56	0.003061	PASS
				VH	-4.44	-0.005308	PASS
		HCH	TN	VL	1.13	0.001335	PASS
				VN	-3.18	-0.003756	PASS
				VH	2.5	0.002953	PASS

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Test Band	Test mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA IV	HSDPA	LCH	TN	VL	-4.73	-0.002527	PASS
				VN	2.2	0.001114	PASS
				VH	1.63	0.000843	PASS
		MCH	TN	VL	1.12	0.000525	PASS
				VN	-2.78	-0.001433	PASS
				VH	3.28	0.001702	PASS
		HCH	TN	VL	-2.75	-0.001415	PASS
				VN	2.2	0.001122	PASS
				VH	-4.37	-0.002245	PASS
	HSUPA	LCH	TN	VL	1.15	0.000656	PASS
				VN	-3.99	-0.002113	PASS
				VH	2.68	0.001472	PASS
		MCH	TN	VL	-4.36	-0.002325	PASS
				VN	1.71	0.000945	PASS
				VH	0.76	0.000452	PASS
		HCH	TN	VL	-2.47	-0.001233	PASS
				VN	3.77	0.001936	PASS
				VH	-4.97	-0.002674	PASS

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Test Band	Test mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA II	HSDPA	LCH	TN	VL	-4.73	-0.002553	PASS
				VN	2.2	0.001188	PASS
				VH	1.63	0.000880	PASS
		MCH	TN	VL	1.12	0.000596	PASS
				VN	-2.78	-0.001479	PASS
				VH	3.28	0.001745	PASS
		HCH	TN	VL	-2.75	-0.001442	PASS
				VN	2.2	0.001153	PASS
				VH	-4.37	-0.002291	PASS
	HSUPA	LCH	TN	VL	1.15	0.000621	PASS
				VN	-3.99	-0.002154	PASS
				VH	2.68	0.001447	PASS
		MCH	TN	VL	-4.36	-0.002319	PASS
				VN	1.71	0.000910	PASS
				VH	0.76	0.000404	PASS
		HCH	TN	VL	-2.47	-0.001295	PASS
				VN	3.77	0.001976	PASS
				VH	-4.97	-0.002605	PASS

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Frequency Error VS. Temperature

Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA V	HSDPA	LCH	VN	-30	-2.24	-0.002718	PASS
				-20	-2.28	-0.002766	PASS
				-10	2.33	0.002827	PASS
				0	-3.97	-0.004817	PASS
				10	1.64	0.001990	PASS
				20	-3.82	-0.004635	PASS
				30	-4.56	-0.005533	PASS
				40	-4.38	-0.005314	PASS
				50	-3.8	-0.004611	PASS
		MCH	VN	-30	-2.28	-0.002726	PASS
				-20	-2.31	-0.002761	PASS
				-10	3.6	0.004303	PASS
				0	-5.09	-0.006084	PASS
				10	1.82	0.002175	PASS
				20	-3.9	-0.004662	PASS
				30	-3.64	-0.004351	PASS
				40	-2.56	-0.003060	PASS
				50	-3.79	-0.004530	PASS
		HCH	VN	-30	-3.9	-0.004607	PASS
				-20	-3.85	-0.004548	PASS
				-10	-2.79	-0.003296	PASS
				0	-2.49	-0.002941	PASS
				10	-2.78	-0.003284	PASS
				20	1.19	0.001406	PASS
				30	-4.79	-0.005658	PASS
				40	-3.61	-0.004264	PASS
				50	-3.05	-0.003603	PASS

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Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA IV	HSDPA	LCH	VN	-30	-2.72	-0.001424	PASS
				-20	-2.73	-0.001415	PASS
				-10	-3.9	-0.002144	PASS
				0	3.08	0.001602	PASS
				10	-3.18	-0.001762	PASS
				20	-0.11	-0.000021	PASS
				30	1.99	0.001003	PASS
				40	-2.81	-0.001575	PASS
				50	-2.2	-0.001124	PASS
		MCH	VN	-30	-3.92	-0.002013	PASS
				-20	-3.93	-0.002032	PASS
				-10	1.77	0.000901	PASS
				0	-2.1	-0.001158	PASS
				10	4.81	0.002570	PASS
				20	-3.4	-0.001846	PASS
				30	-1.53	-0.000844	PASS
				40	-3.46	-0.001885	PASS
				50	-4.24	-0.002216	PASS
		HCH	VN	-30	-2.81	-0.001424	PASS
				-20	-2.82	-0.001413	PASS
				-10	3.75	0.001912	PASS
				0	2.07	0.001011	PASS
				10	-0.12	-0.000021	PASS
				20	-3.02	-0.001533	PASS
				30	-3.89	-0.002059	PASS
				40	1.88	0.000945	PASS
				50	-2.72	-0.001434	PASS

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Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA II	HSDPA	LCH	VN	-30	-2.72	-0.001468	PASS
				-20	-2.73	-0.001474	PASS
				-10	-3.9	-0.002105	PASS
				0	3.08	0.001663	PASS
				10	-3.18	-0.001717	PASS
				20	-0.11	-0.000059	PASS
				30	1.99	0.001074	PASS
				40	-2.81	-0.001517	PASS
				50	-2.2	-0.001188	PASS
		MCH	VN	-30	-3.92	-0.002085	PASS
				-20	-3.93	-0.002090	PASS
				-10	1.77	0.000941	PASS
				0	-2.1	-0.001117	PASS
				10	4.81	0.002559	PASS
				20	-3.4	-0.001809	PASS
				30	-1.53	-0.000814	PASS
				40	-3.46	-0.001840	PASS
				50	-4.24	-0.002255	PASS
		HCH	VN	-30	-2.81	-0.001473	PASS
				-20	-2.82	-0.001478	PASS
				-10	3.75	0.001966	PASS
				0	2.07	0.001085	PASS
				10	-0.12	-0.000063	PASS
				20	-3.02	-0.001583	PASS
				30	-3.89	-0.002039	PASS
				40	1.88	0.000986	PASS
				50	-2.72	-0.001426	PASS

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Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA V	HSUPA	LCH	VN	-30	-1.21	-0.001468	PASS
				-20	-1.25	-0.001517	PASS
				-10	3.36	0.004077	PASS
				0	-2.94	-0.003567	PASS
				10	2.67	0.003240	PASS
				20	-2.79	-0.003385	PASS
				30	-3.53	-0.004283	PASS
				40	-3.35	-0.004065	PASS
				50	-2.77	-0.003361	PASS
		MCH	VN	-30	-1.25	-0.001495	PASS
				-20	-1.28	-0.001530	PASS
				-10	4.63	0.005534	PASS
				0	-4.06	-0.004853	PASS
				10	2.85	0.003407	PASS
				20	-2.87	-0.003431	PASS
				30	-2.61	-0.003120	PASS
				40	-1.53	-0.001829	PASS
				50	-2.76	-0.003299	PASS
		HCH	VN	-30	-2.87	-0.003390	PASS
				-20	-2.82	-0.003331	PASS
				-10	-1.76	-0.002079	PASS
				0	-1.46	-0.001725	PASS
				10	-1.75	-0.002067	PASS
				20	2.22	0.002622	PASS
				30	-3.76	-0.004441	PASS
				40	-2.58	-0.003047	PASS
				50	-2.02	-0.002386	PASS

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Test Band	Test mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
WCDMA IV	HSUPA	LCH	VN	-30	-3.38	-0.001879	PASS
				-20	-3.39	-0.001887	PASS
				-10	-4.56	-0.002413	PASS
				0	2.42	0.001345	PASS
				10	-3.84	-0.002058	PASS
				20	-0.77	-0.000473	PASS
				30	1.33	0.000756	PASS
				40	-3.47	-0.001845	PASS
				50	-2.86	-0.001583	PASS
		MCH	VN	-30	-4.58	-0.002476	PASS
				-20	-4.59	-0.002488	PASS
				-10	1.11	0.000516	PASS
				0	-2.76	-0.001424	PASS
				10	4.15	0.002232	PASS
				20	-4.06	-0.002112	PASS
				30	-2.19	-0.001107	PASS
				40	-4.12	-0.002145	PASS
				50	-4.9	-0.002655	PASS
		HCH	VN	-30	-3.47	-0.001884	PASS
				-20	-3.48	-0.001877	PASS
				-10	3.09	0.001684	PASS
				0	1.41	0.000776	PASS
				10	-0.78	-0.000445	PASS
				20	-3.68	-0.001981	PASS
				30	-4.55	-0.002342	PASS
				40	1.22	0.000635	PASS
				50	-3.38	-0.001716	PASS

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WCDMA II	HSUPA	LCH	VN	-30	-3.38	-0.001825	PASS
				-20	-3.39	-0.001830	PASS
				-10	-4.56	-0.002462	PASS
				0	2.42	0.001306	PASS
				10	-3.84	-0.002073	PASS
				20	-0.77	-0.000416	PASS
				30	1.33	0.000718	PASS
				40	-3.47	-0.001873	PASS
				50	-2.86	-0.001544	PASS
		MCH	VN	-30	-4.58	-0.002436	PASS
				-20	-4.59	-0.002441	PASS
				-10	1.11	0.000590	PASS
				0	-2.76	-0.001468	PASS
				10	4.15	0.002207	PASS
				20	-4.06	-0.002160	PASS
				30	-2.19	-0.001165	PASS
				40	-4.12	-0.002191	PASS
				50	-4.9	-0.002606	PASS
		HCH	VN	-30	-3.47	-0.001819	PASS
				-20	-3.48	-0.001824	PASS
				-10	3.09	0.001620	PASS
				0	1.41	0.000739	PASS
				10	-0.78	-0.000409	PASS
				20	-3.68	-0.001929	PASS
				30	-4.55	-0.002385	PASS
				40	1.22	0.000640	PASS
				50	-3.38	-0.001772	PASS

Note: All modes have been tested and we found HSDPA and HSUPA mode has the worst test result. Only record the worst test result.

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6.8 Modulation Characteristics

Test Requirement: §2.1047
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: Digital modulation

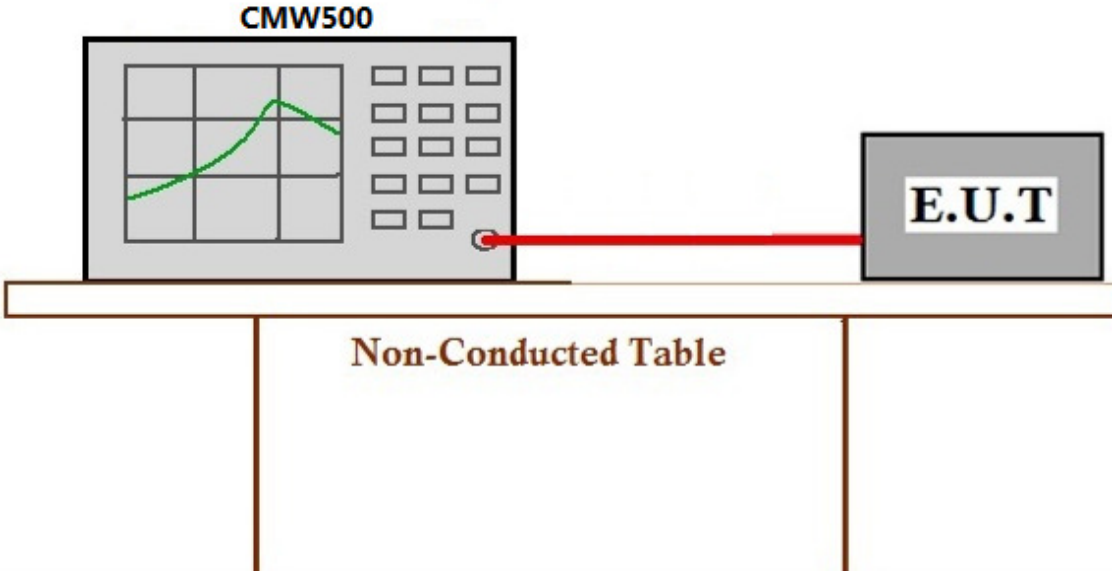
6.8.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 57 % RH Atmospheric Pressure: 1015 mbar

Test mode: z: Tx mode, Keep the EUT in transmitting mode.

6.8.2 Test Setup Diagram



6.8.3 Measurement Data

Note: All modes have been tested and we found HSDPA mode has the worst test result. Only record the worst test result.

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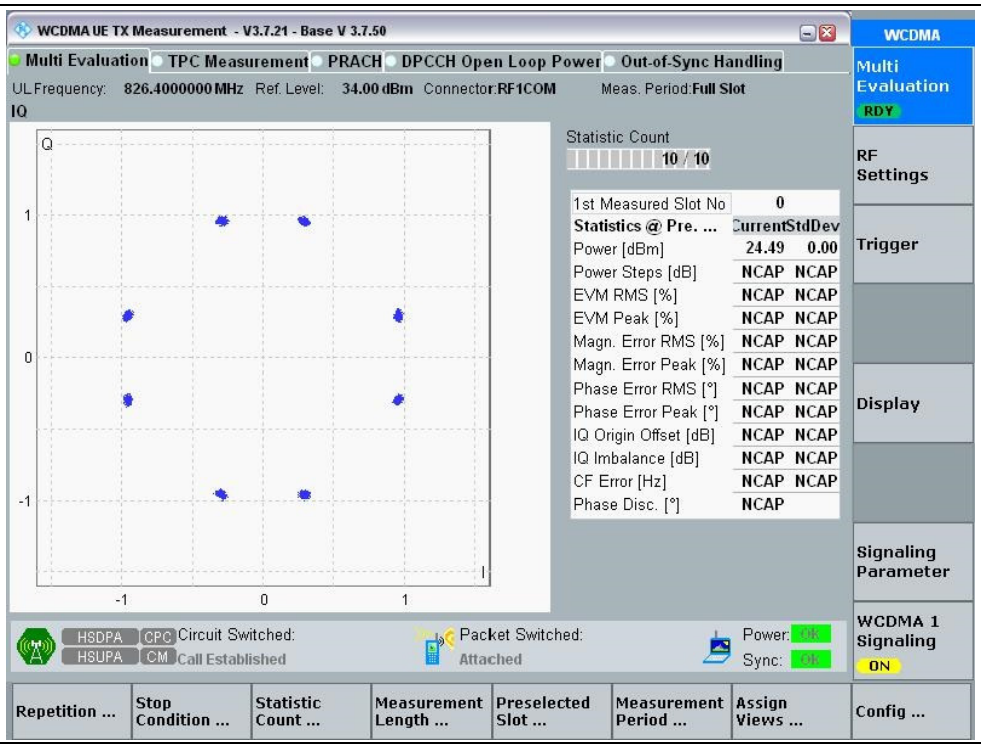
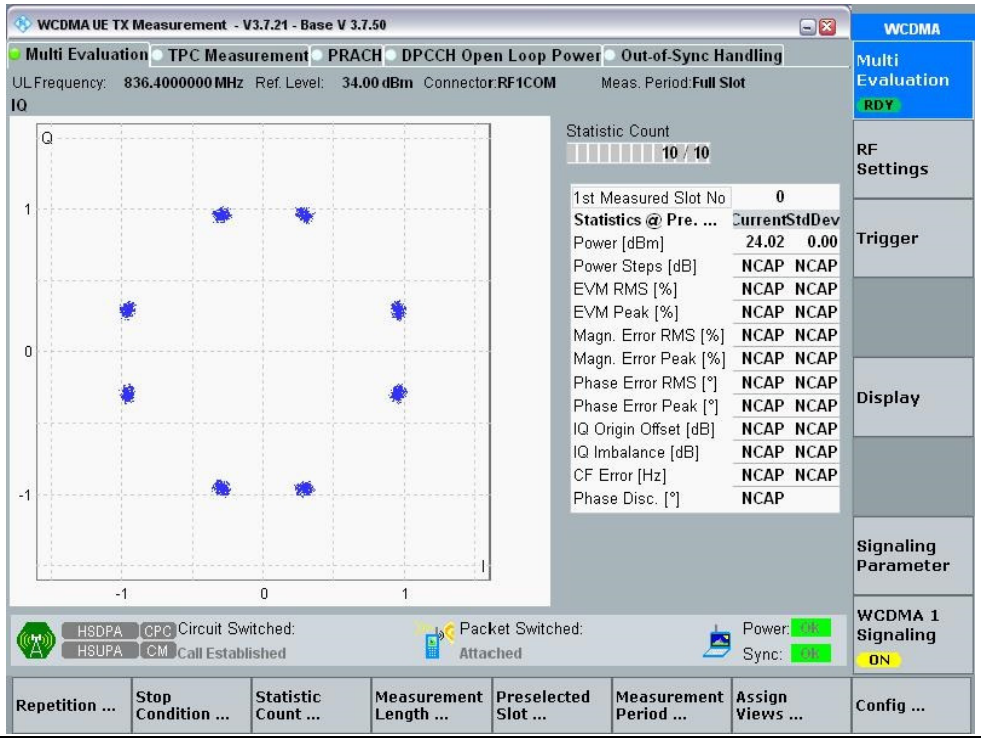
Test Plot

WCDMA BAND V-Low



WCDMA BAND V-Middle



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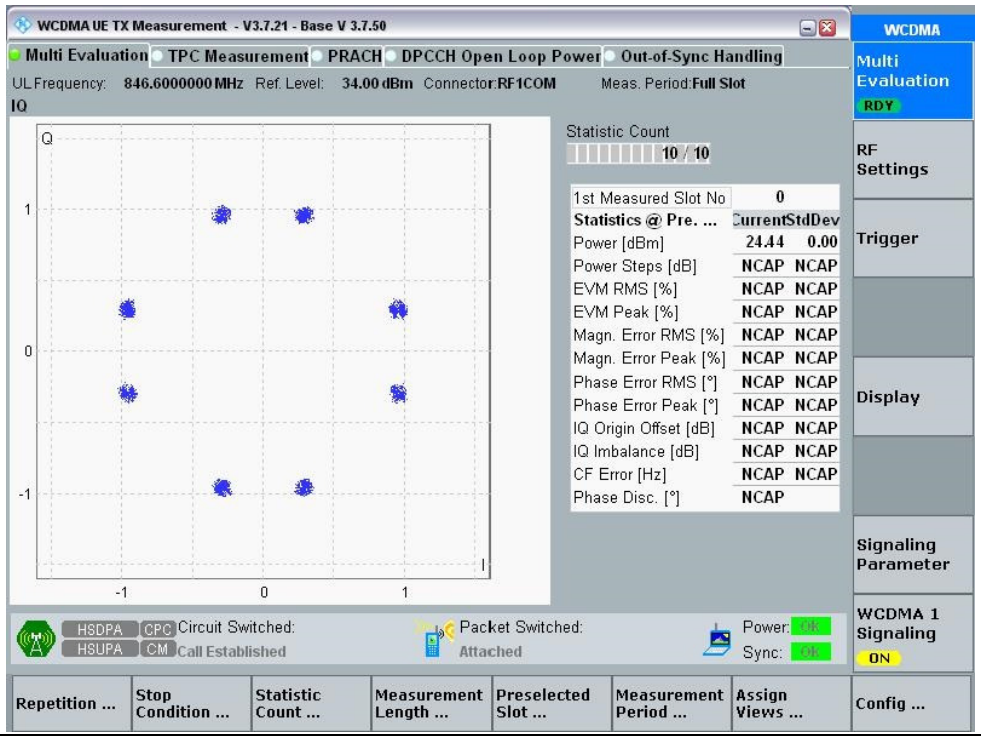
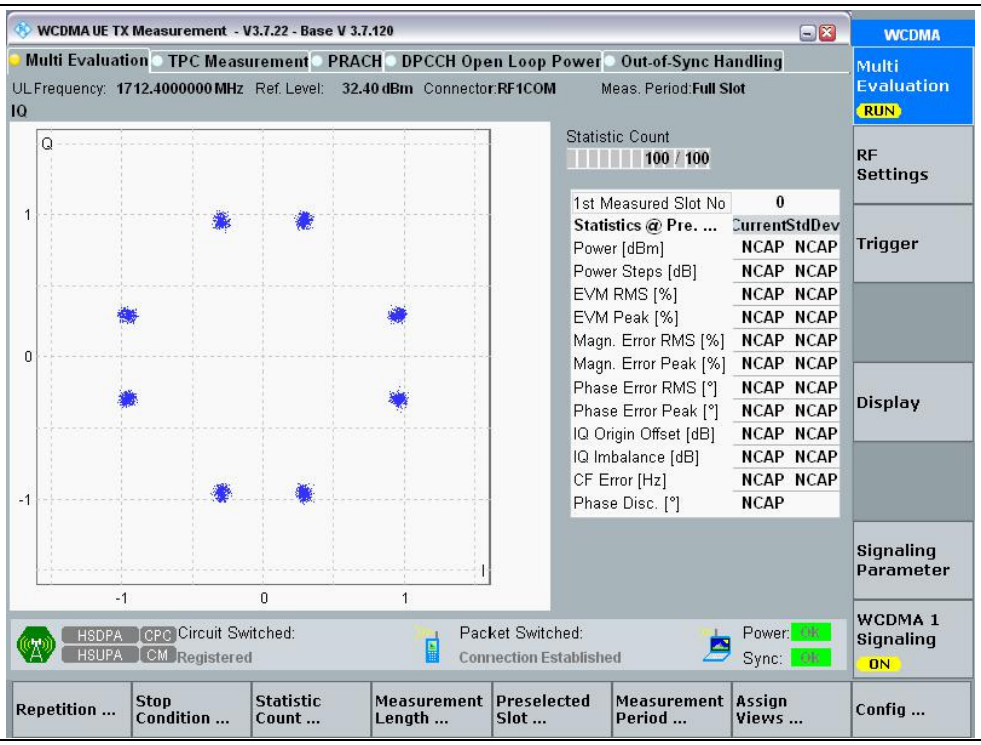
WCDMA BAND V-High



WCDMA BAND IV-Low



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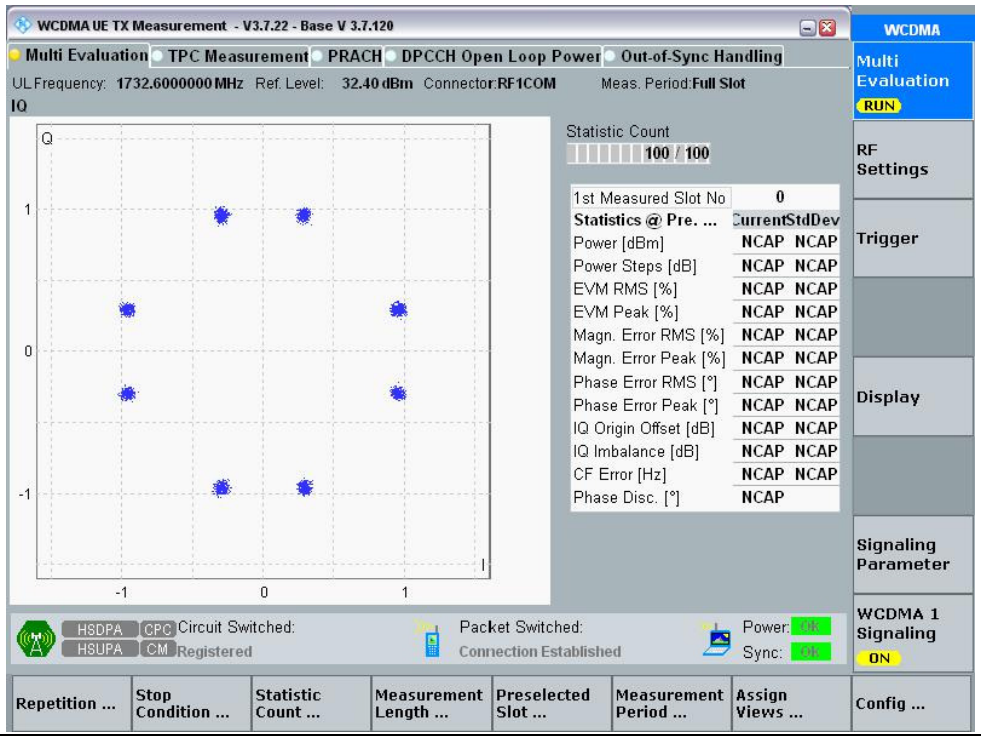
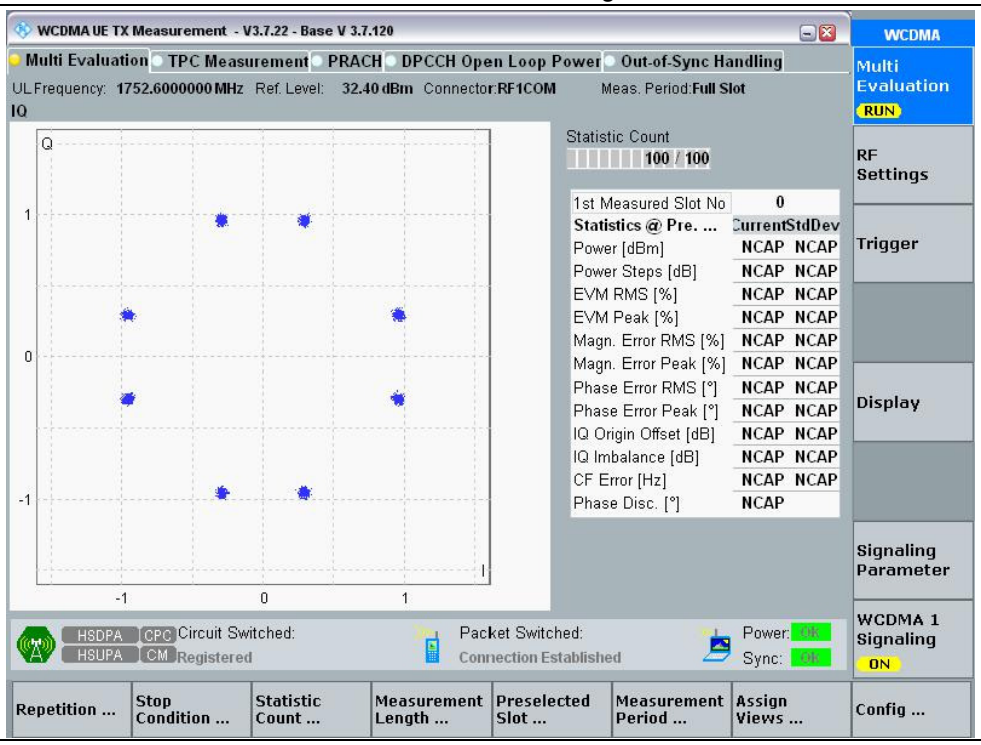
WCDMA BAND IV-Middle



WCDMA BAND IV-High



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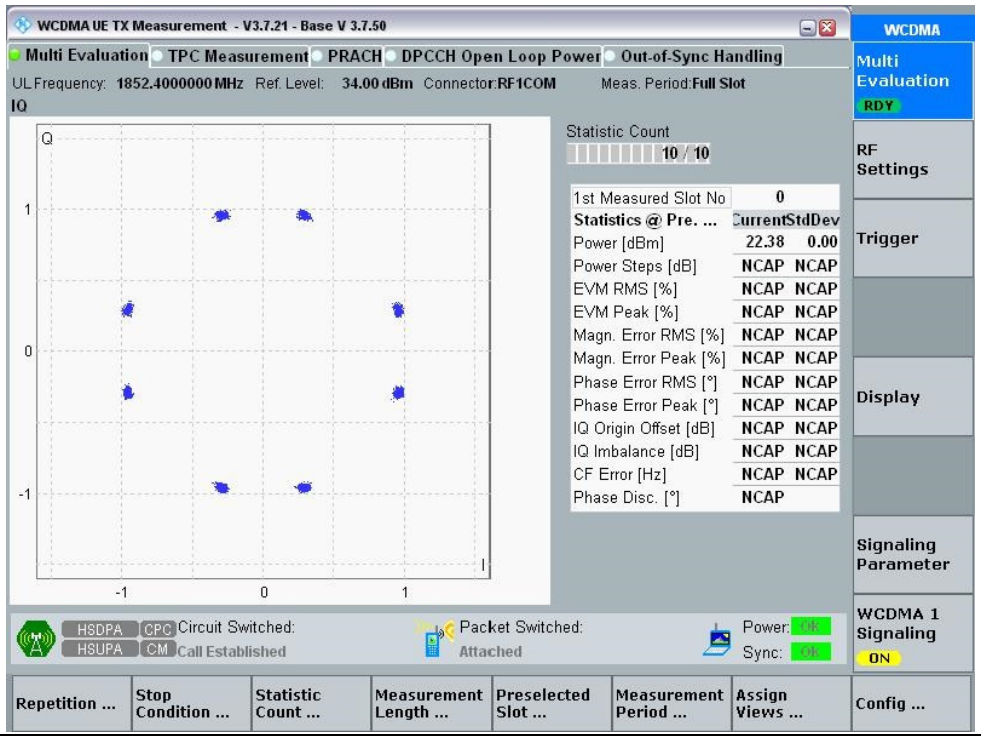
WCDMA BAND II-Low



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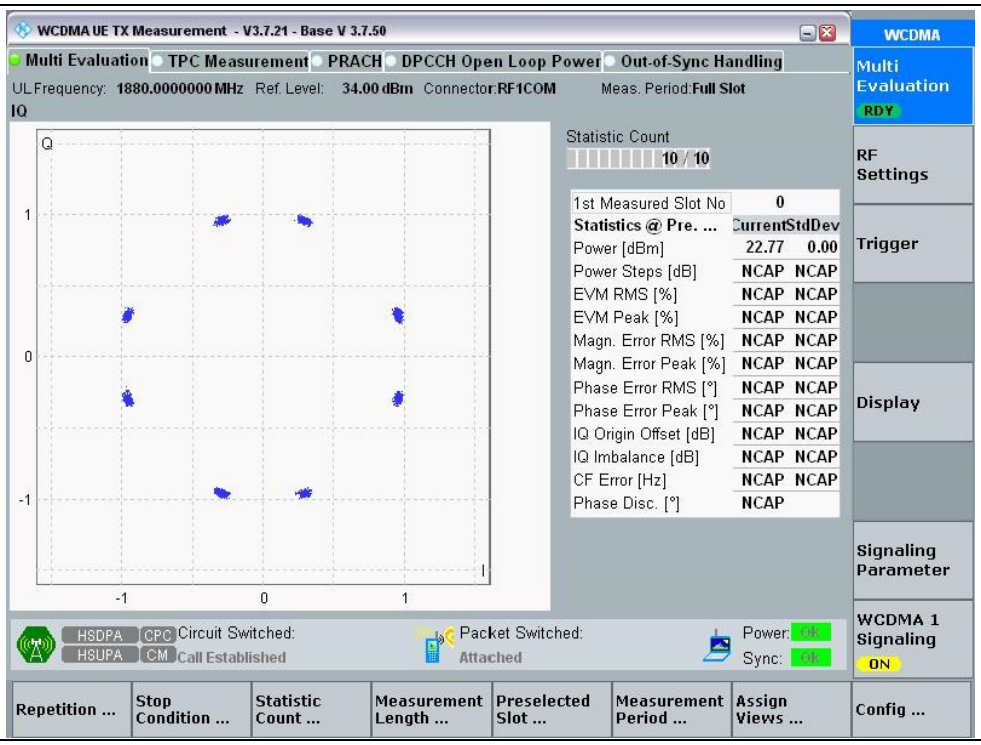

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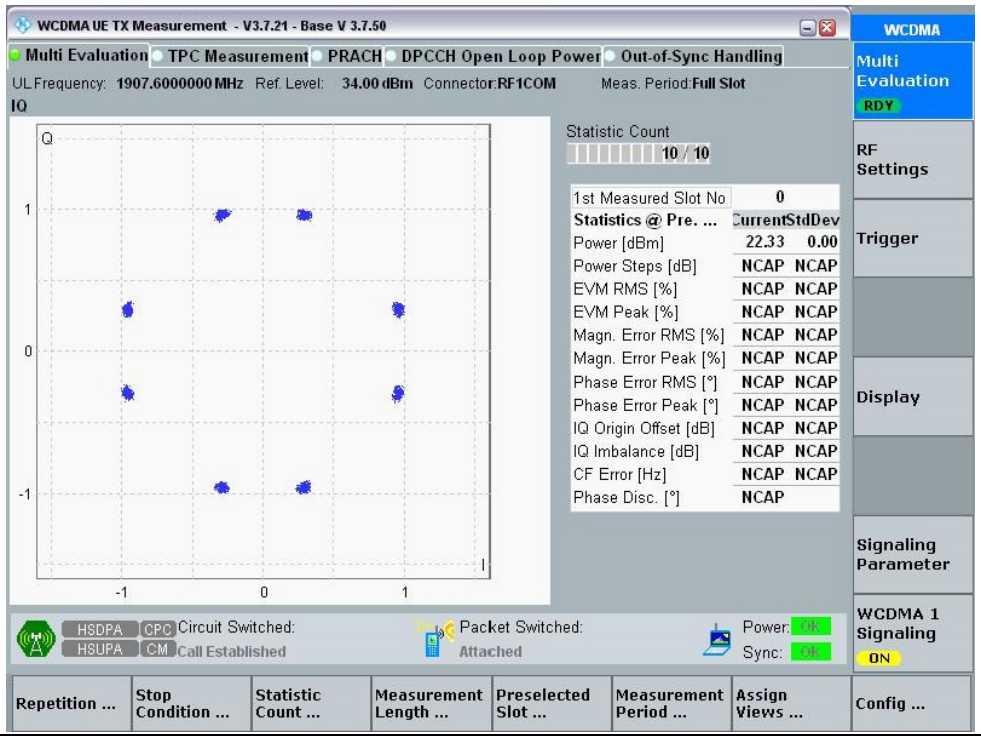
WCDMA BAND II-High



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