FCC Test Report

(PART 22)

Report No.:	RF150915W002-3
FCC ID:	YCNA2010L36
Test Model:	Lenovo A2010l36
Received Date:	Sep. 15, 2015
Test Date:	Sep. 16, 2015 ~ Oct. 12, 2015
Issued Date:	Oct. 13, 2015

Applicant:	Lenovo Mobile Communication Technology Ltd.
Address:	No.999, Qishan North 2nd Road, Information & Optoelectronics Park, Torch Hi-tech Industry Development Zone, Xiamen, P.R. China

Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Cau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

Issue No.	Description	Date Issued
RF150915W002-3	Original release	Oct. 13, 2015

1 Certificate of Conformity

Product:	Lenovo Mobile Phone
Brand:	Lenovo
Test Model:	Lenovo A2010l36
Sample Status:	Production unit
Applicant:	Lenovo Mobile Communication Technology Ltd.
Test Date:	Sep. 16, 2015 ~ Oct. 12, 2015
Standards:	FCC Part 22, Subpart H

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Oct. 13, 2015

Amyee Qian / Engineer

Approved by : _____ , **Date:** Oct. 13, 2015

William Chung / Manager

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective radiated power	PASS	Meet the requirement of limit.
---	Peak To Average Ratio	PASS	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	PASS	Meet the requirement of limit.
2.1049	Occupied Bandwidth	PASS	Meet the requirement of limit.
22.917	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -35.97dB at 1672.00MHz.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.2 Test Site And Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer Agilent Technologies	N9038A	MY52260177	May 19, 2015	May 18, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna ETS-Lindgren	3142E	117536	Feb. 23, 2015	Feb. 22, 2016
HORN Antenna ETS-Lindgren	3117	00143293	Aug. 27, 2015	Aug. 26, 2016
Bluetooth Tester	CBT	100980	Apr. 27, 2015	Apr. 26, 2016
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jul. 06, 2015	Jul. 05, 2017
Preamplifier Agilent	310N	187226	Jun. 29, 2015	Jun. 28, 2016
Preamplifier Agilent	83017A	980116	Jan. 09, 2015	Jan. 08, 2016
Power Meter Anritsu	ML2495A	1232002	Sep. 16, 2015	Sep. 15, 2016
Power Sensor Anritsu	MA2411B	1207325	Sep. 16, 2015	Sep. 15, 2016
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 27, 2015	Jun. 26, 2016
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 27, 2015	Jun. 26, 2016
Software BV ADT	E38.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 4.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC7450F-4.

3 General Information

3.1 General Description of EUT

PRODUCT	Lenovo Mobile Phone	
BRAND	Lenovo	
MODEL NAME	Lenovo A2010l36	
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (battery)	
MODULATION TYPE	**GSM/GPRS**	GMSK
	EDGE	GMSK, 8PSK
	WCDMA	BPSK
FREQUENCY RANGE	**GSM/GPRS/EDGE**	824.2MHz ~ 848.8MHz
	WCDMA	826.4MHz ~ 846.6MHz
MAX. ERP POWER	**GSM**	1042mW
	EDGE	329mW
	WCDMA	333mW
EMISSION DESIGNATOR	**GSM**	247KGXW
	EDGE	245KG7W
	WCDMA	4M23F9W
ANTENNA TYPE	Fixed Internal antenna with -3.4dBi gain	
HW VERSION	AL713_MB_PCB_V1.0	
SW VERSION	A2010l36_USR_S203_1508251800_MP3V1_8G_TELEFONICA	
ACCESSORY DEVICE	Refer to note as below	
DATA CABLE	USB cable: Unshielded, detachable, 0.7m Earphone cable: Unshielded, detachable,1.3m	

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.
2. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	Lenovo
MODEL:	C-P56
INPUT:	AC 100-240V, 0.13A
OUTPUT:	DC 5V, 1.0A
MANUFACTURER:	chenyang

3. The EUT matched the following USB Cable and Earphone.

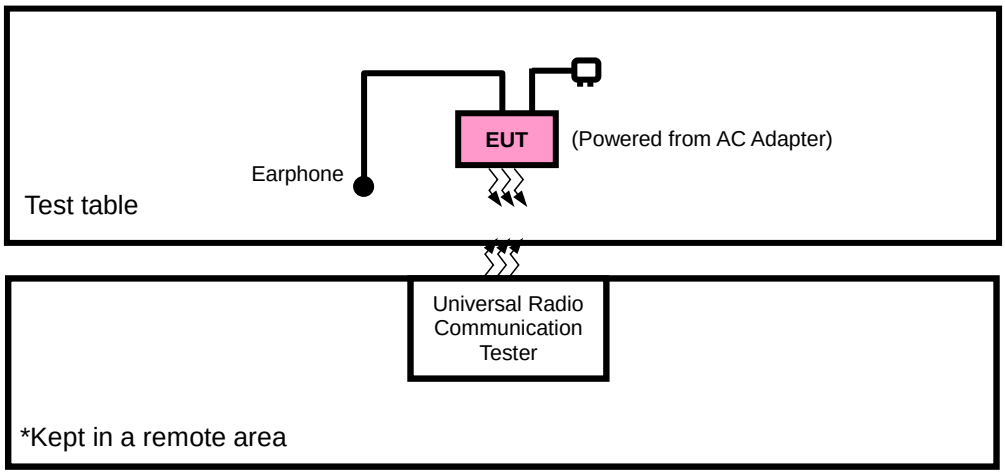
USB CABLE	
BRAND:	lenovo
MODEL:	L16W-05100070L
SIGNAL LINE:	0.7 METER

EARPHONE	
BRAND:	Lenovo
MODEL:	TS990B-28AMS05-M
SIGNAL LINE:	1.3 METER

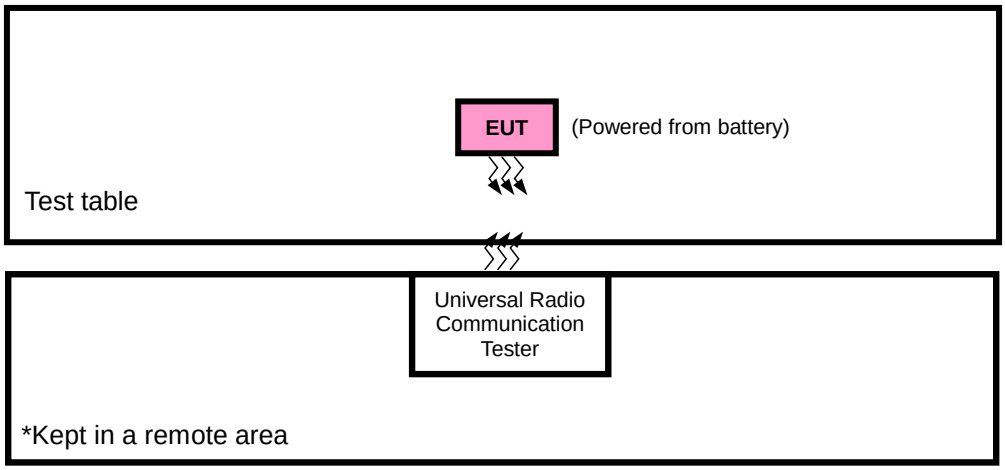
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.2 Configuration of System Under Test

FOR RADIATION EMISSION TEST



FOR E.R.P. TEST



3.2.1 Description Of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m

NOTE:

1. All power cords of the above support units are non shielded (1.8m).

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports
The worst case was found when positioned on Z-plane. Following channel(s) was (were) selected for the final test as listed below:

Test results are presented in the report as below.

Test Mode	Test Condition
A	Power from adapter
B	Power from battery

GSM MODE

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
A	ERP	128 to 251	128, 190, 251	GSM
B	Frequency Stability	128 to 251	190	GSM
A	Occupied Bandwidth	128 to 251	128, 190, 251	GSM, EDGE
A	Band Edge	128 to 251	128, 251	GSM, EDGE
A	Peak To Average Ratio	128 to 251	128, 190, 251	GSM, EDGE
A	Condcudeted Emission	128 to 251	128, 190, 251	GSM, EDGE
A	Radiated Emission Below 1GHz	128 to 251	128	GSM
A	Radiated Emission Above 1GHz	128 to 251	128, 190, 251	GSM

WCDMA MODE

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
A	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
B	Frequency Stability	4132 to 4233	4182	WCDMA
A	Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA
A	Band Edge	4132 to 4233	4132, 4233	WCDMA
A	Peak To Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA
A	Condcudeted Emission	4132 to 4233	4132, 4182, 4233	WCDMA
A	Radiated Emission Below 1GHz	4132 to 4233	4132	WCDMA
A	Radiated Emission Above 1GHz	4132 to 4233	4132, 4182, 4233	WCDMA

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	21deg. C, 71%RH 22deg. C, 71%RH	120Vac, 60Hz	Nick Hsu
Frequency Stability	24deg. C, 64%RH	3.8Vdc	Match Tsui
Occupied Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Band Edge	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Condcudeted Emission	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Radiated Emission	21deg. C, 71%RH	120Vac, 60Hz	Nick Hsu

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

ANSI/TIA/EIA-603-C 2004

NOTE: All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 7 watts e.r.p.

4.1.2 Test Procedures

EIRP / ERP Measurement:

a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GSM, GPRS and 5MHz for WCDMA mode.

b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value“ of step b. Record the power level of S.G

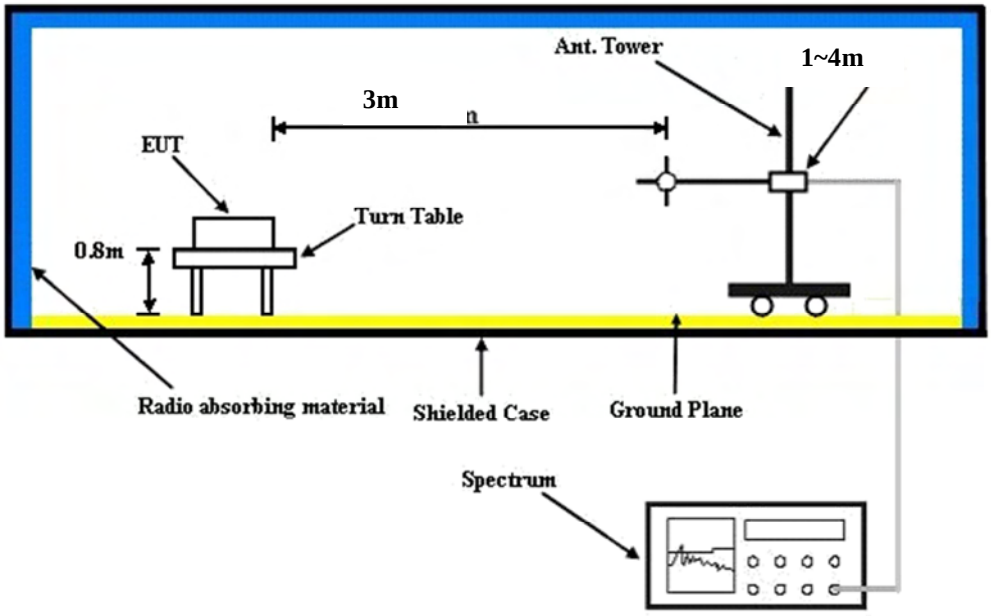
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

Conducted Power Measurement:

The EUT was set up for the maximum power with GSM, GPRS & WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

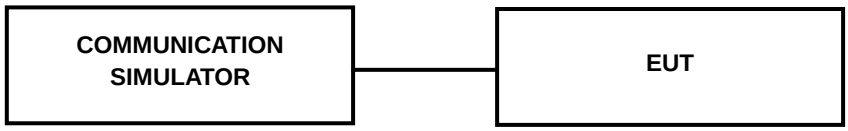
4.1.3 Test Setup

EIRP / ERP MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.4 Test Results

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850		
Channel	128	190	251
Frequency (MHz)	824.2	836.6	848.8
GSM	32.18	**32.23**	32.19
GPRS 8	32.17	32.18	32.14
GPRS 10	31.50	31.50	31.50
GPRS 11	29.85	29.85	29.80
GPRS 12	28.78	28.80	28.74
EDGE 8 (MCS9)	26.36	26.43	26.36
EDGE 10 (MCS9)	25.30	25.37	25.31
EDGE 11 (MCS9)	23.08	23.15	23.09
EDGE 12 (MCS9)	22.12	22.20	22.11

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	**22.09**	21.89	22.08
HSPA			
HSDPA Subtest-1	20.12	19.93	20.13
HSDPA Subtest-2	20.15	19.92	20.11
HSDPA Subtest-3	19.61	19.42	19.62
HSDPA Subtest-4	19.62	19.41	19.60
HSUPA Subtest-1	19.65	19.57	19.65
HSUPA Subtest-2	19.07	18.88	19.06
HSUPA Subtest-3	20.09	19.86	20.02
HSUPA Subtest-4	18.59	18.42	18.58
HSUPA Subtest-5	21.06	20.83	21.04

ERP POWER (dBm)

GSM

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
128	824.2	-1.23	33.56	30.18	**1042.08**	H
189	836.4	-1.43	33.63	30.05	1011.35	H
251	848.8	-1.55	33.57	29.87	970.06	H
128	824.2	-8.75	34.24	23.34	215.58	V
189	836.4	-8.30	34.59	24.14	259.18	V
251	848.8	-8.69	34.62	23.78	238.95	V

EDGE

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
128	824.2	-6.24	33.56	25.17	**328.78**	H
189	836.4	-6.63	33.63	24.85	305.42	H
251	848.8	-6.52	33.57	24.90	308.89	H
128	824.2	-11.50	34.24	20.59	114.45	V
189	836.4	-11.59	34.59	20.85	121.51	V
251	848.8	-11.75	34.62	20.72	118.11	V

WCDMA

Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
4132	826.4	-6.67	33.56	24.74	297.78	H
4182	836.4	-6.26	33.63	25.22	**332.58**	H
4233	846.6	-6.23	33.57	25.19	330.22	H
4132	826.4	-12.80	34.24	19.29	84.84	V
4182	836.4	-12.24	34.59	20.20	104.62	V
4233	846.6	-12.07	34.62	20.40	109.72	V

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stabiliity Measurement

1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.2.2 Test Procedure

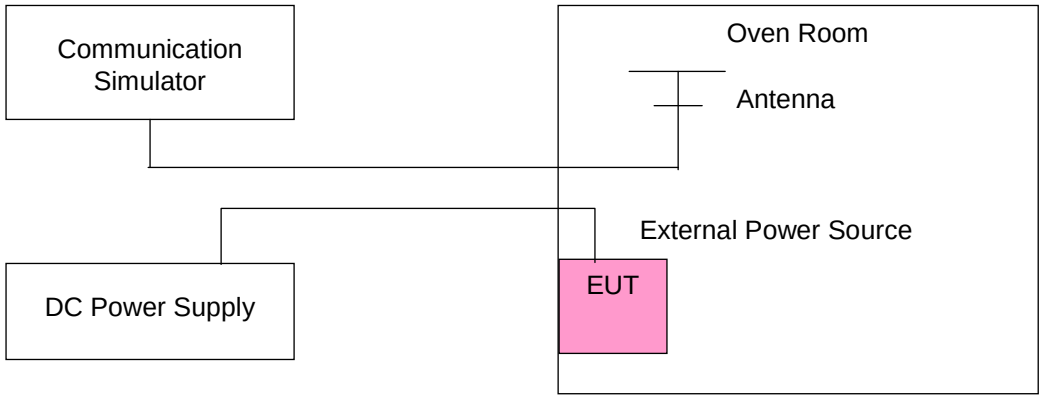
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

4.2.3 Test Setup



4.2.4 Test Results

FREQUENCY ERROR VS. VOLTAGE

Voltage (Volts)	FREQUENCY ERROR (ppm)			Limit (ppm)
	GSM	EDGE	WCDMA	
3.9	0.0008	0.0013	0.0008	2.5
3.7	-0.0040	-0.0050	-0.0061	2.5
4.35	-0.0048	-0.0052	-0.0057	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.7Vdc to 4.35Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

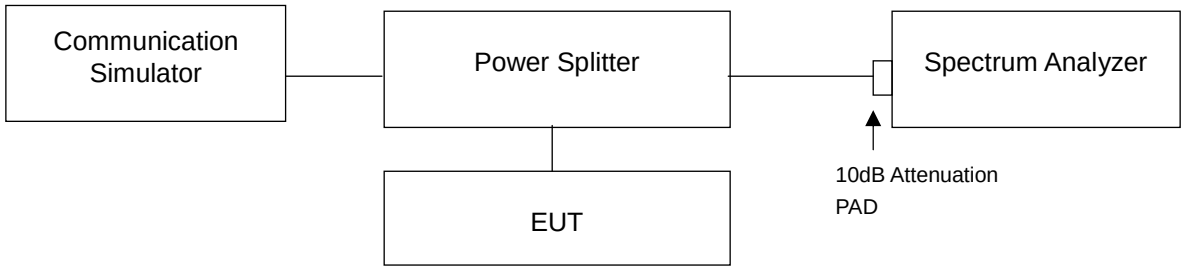
Voltage (Volts)	FREQUENCY ERROR (ppm)			Limit (ppm)
	GSM	EDGE	WCDMA	
-30	-0.0156	-0.0148	-0.0140	2.5
-20	-0.0134	-0.0123	-0.0118	2.5
-10	-0.0117	-0.0110	-0.0110	2.5
0	-0.0094	-0.0095	-0.0099	2.5
10	-0.0081	-0.0083	-0.0078	2.5
20	-0.0064	-0.0067	-0.0064	2.5
30	-0.0042	-0.0055	-0.0038	2.5
40	-0.0022	-0.0037	-0.0021	2.5
50	-0.0009	-0.0015	-0.0004	2.5
60	0.0008	-0.0002	0.0010	2.5

4.3 Occupied Bandwidth Measurement

4.3.1 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.3.2 Test Setup

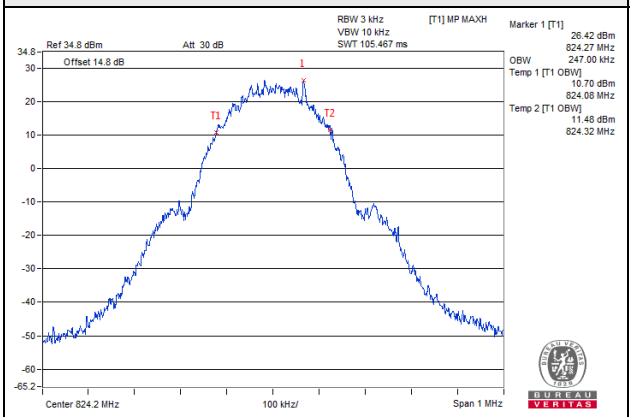


4.3.3 Test Result

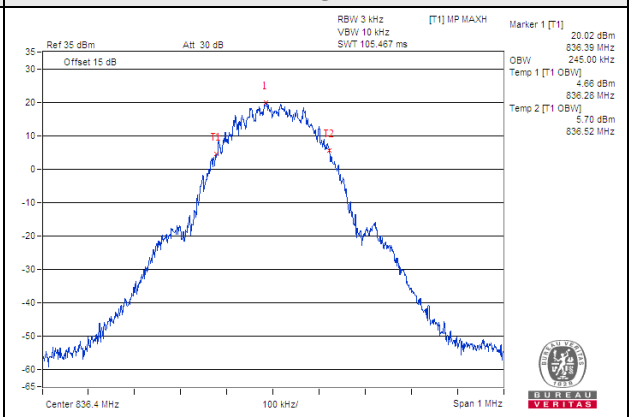
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)		Channel	FREQ. (MHz)	99% Occupied Bandwidth (MHz)
		GSM	EDGE			WCDMA
128	824.2	247.00	244.00	4132	826.4	4.20
190	836.6	243.00	245.00	4182	836.6	4.23
251	848.8	247.00	244.00	4233	846.6	4.21

SPECTRUM PLOT OF WORST VALUE

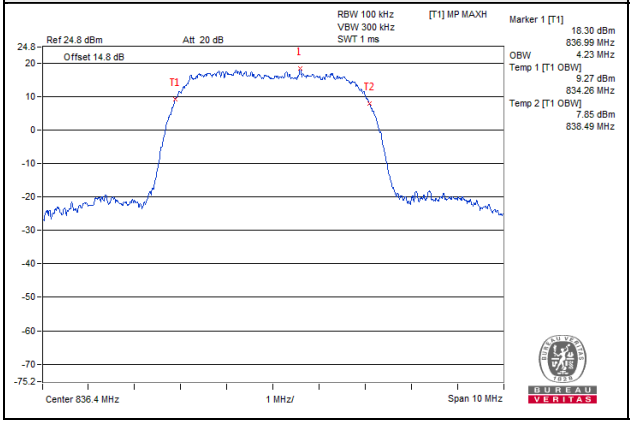
GSM



EDGE



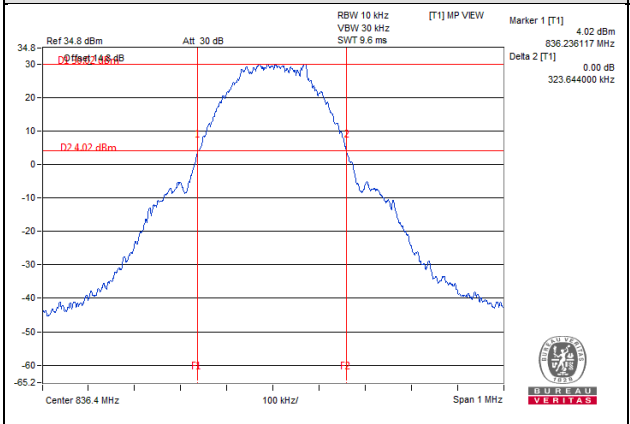
WCDMA



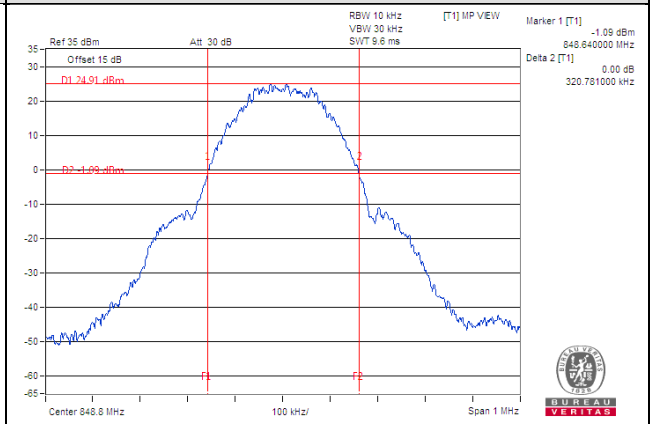
CHANNEL	Frequency (MHz)	26dB Bandwidth (kHz)		CHANNEL	Frequency (MHz)	26dB Bandwidth (MHz)
		GSM	EDGE			WCDMA
128	824.2	320.88	320.10	4132	826.4	4.85
190	836.6	323.64	319.42	4182	836.4	4.88
251	848.8	313.40	320.78	4233	846.6	4.86

SPECTRUM PLOT OF WORST VALUE

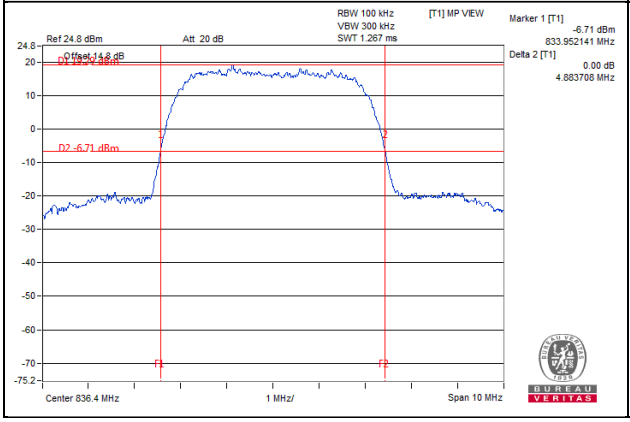
GSM



EDGE



WCDMA

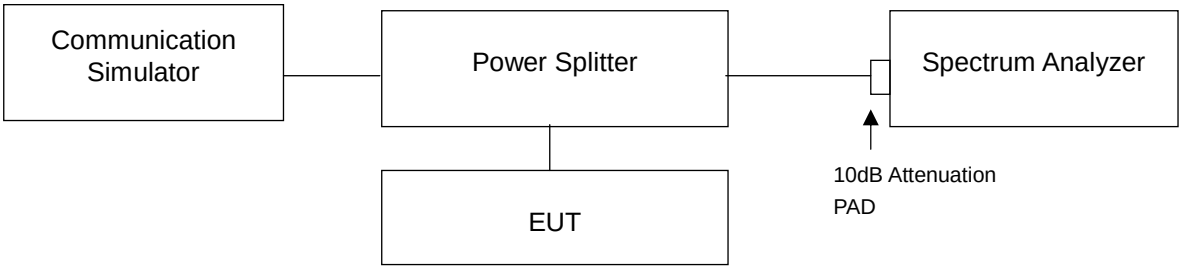


4.4 Band Edge Measurement

4.4.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

4.4.2 Test Setup



4.4.3 Test Procedures

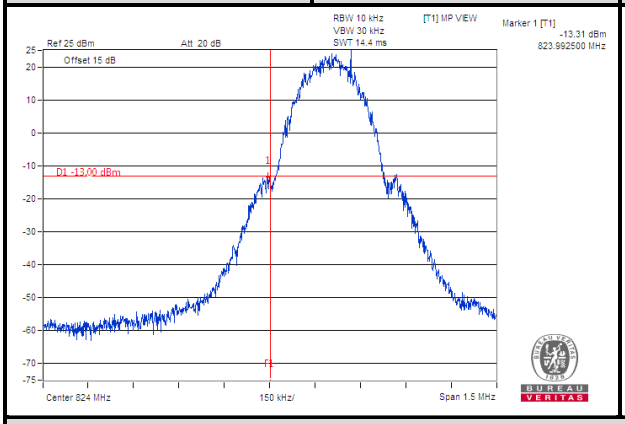
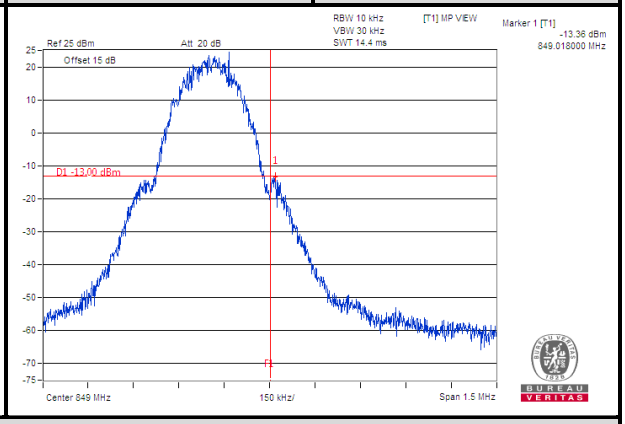
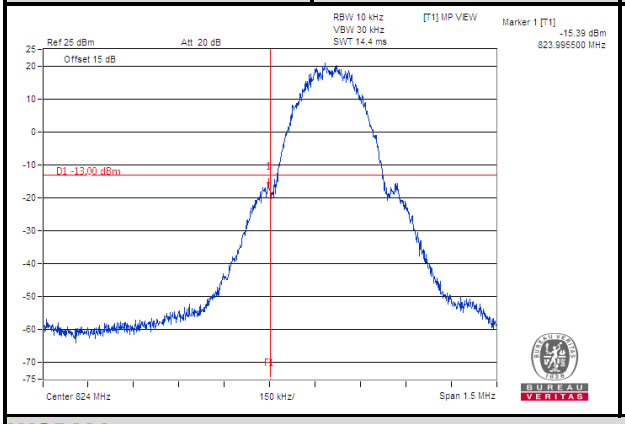
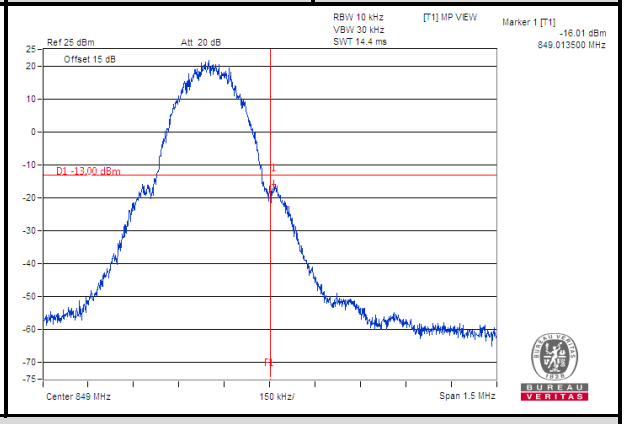
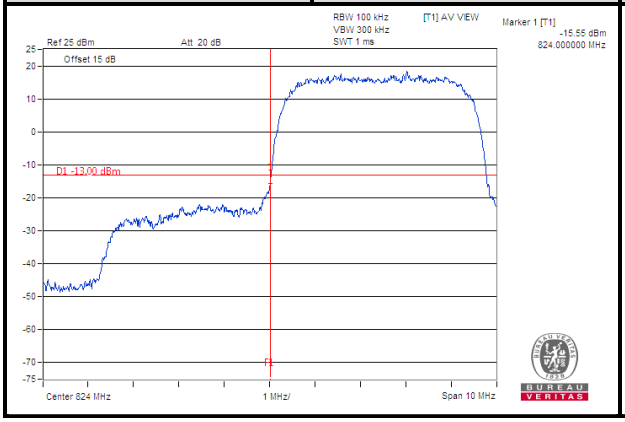
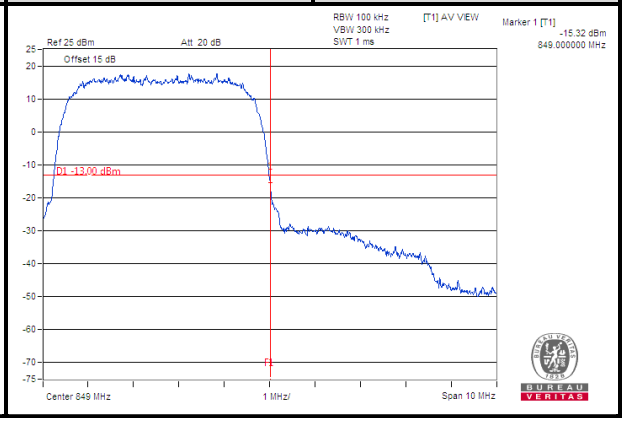
a. All measurements were done at low and high operational frequency range.

b. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/EDGE).

c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).

d. Record the max trace plot into the test report.

4.4.4 Test Results

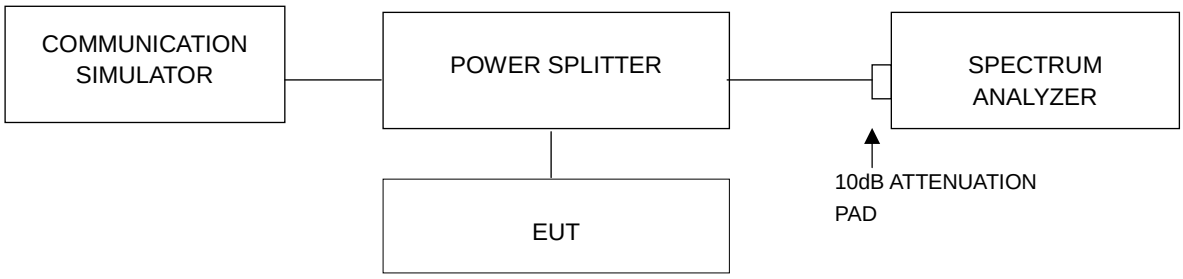
GSM			
CHANNEL	128	CHANNEL	251
			
EDGE			
CHANNEL	128	CHANNEL	251
			
WCDMA			
CHANNEL	4132	CHANNEL	4233
			

4.5 Peak To Average Ratio

4.5.1 Limits of Peak To Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

4.5.2 Test Setup



4.5.3 Test Procedures

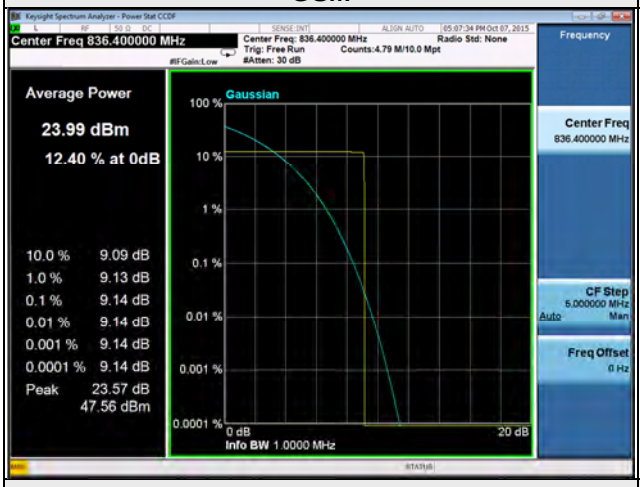
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.5.4 Test Results

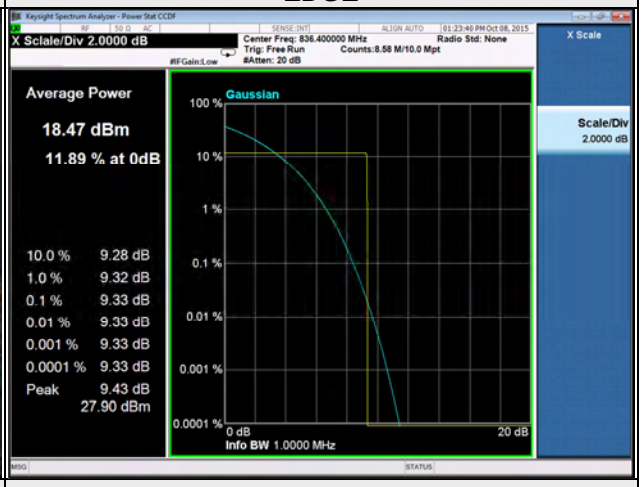
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		Channel	Frequency (MHz)	Peak To Average Ratio (dB)
		GSM	EDGE			WCDMA
189	836.4	9.14	9.33	4182	836.4	2.54

SPECTRUM PLOT OF WORST VALUE

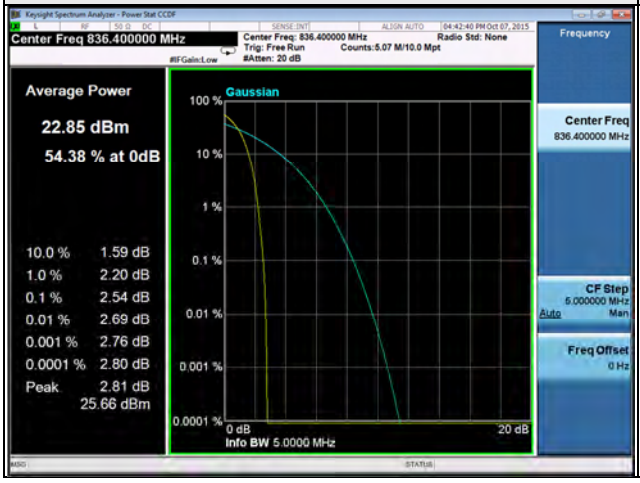
GSM



EDGE



WCDMA

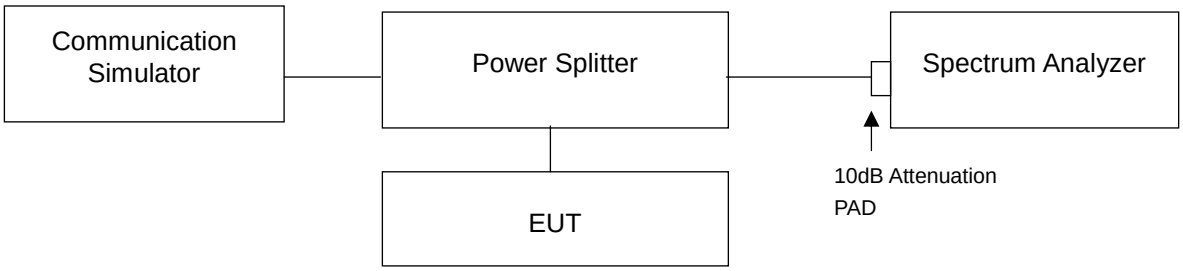


4.6 Conducted Spurious Emissions

4.6.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

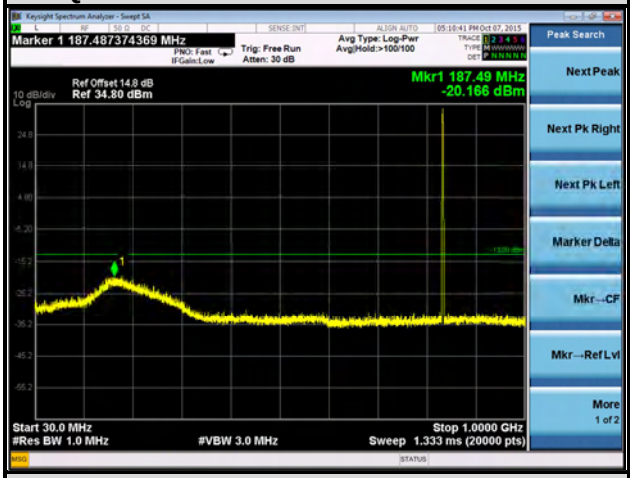
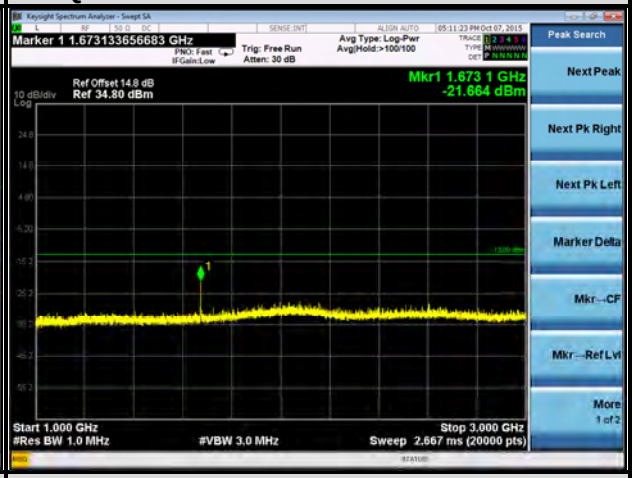
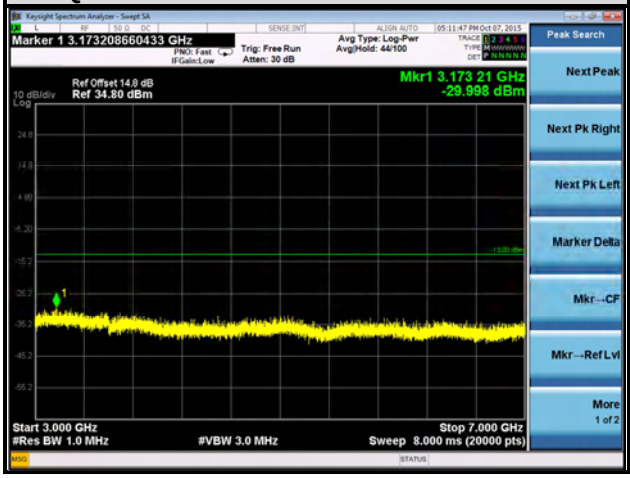
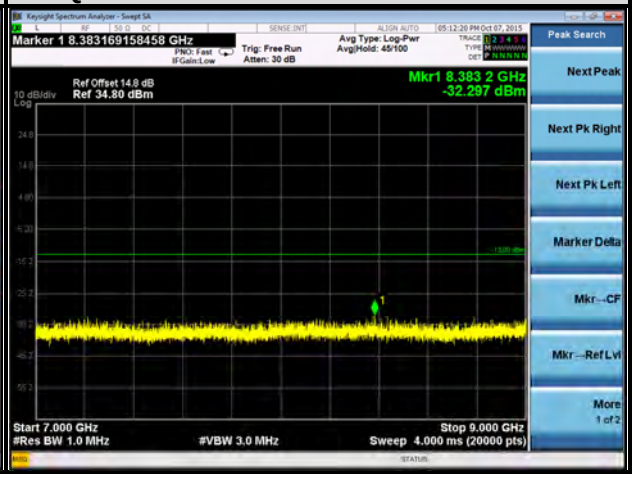
4.6.2 Test Setup

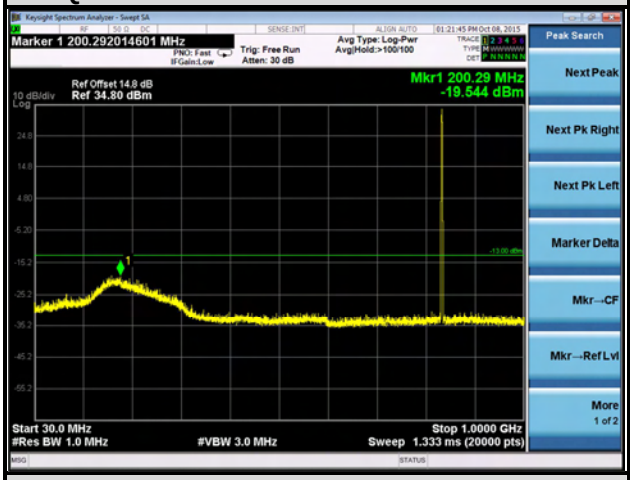
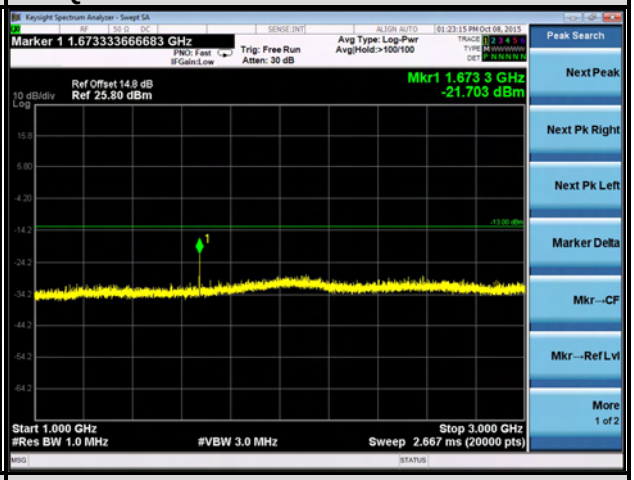
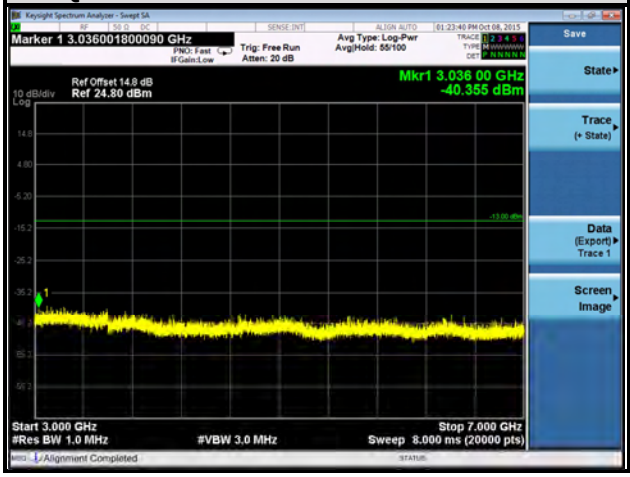
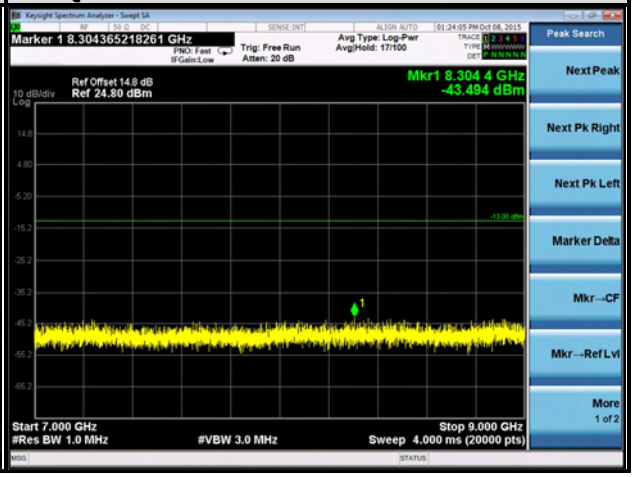


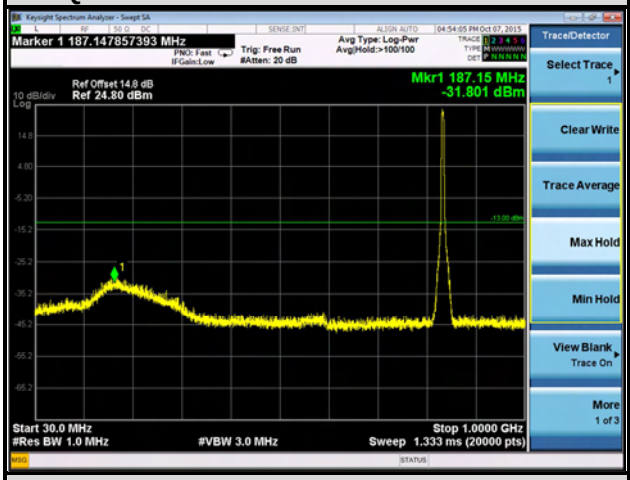
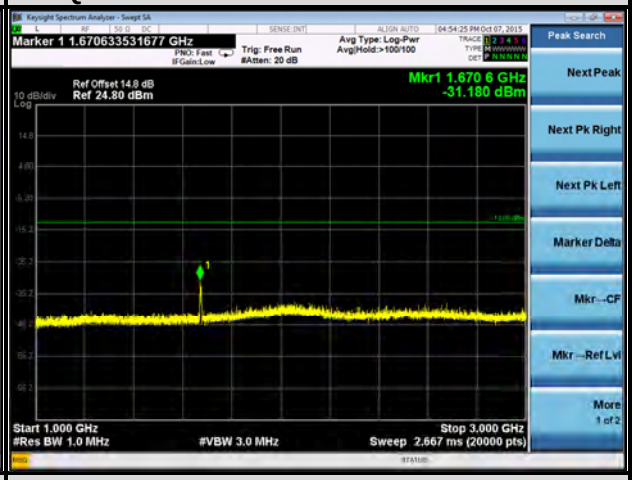
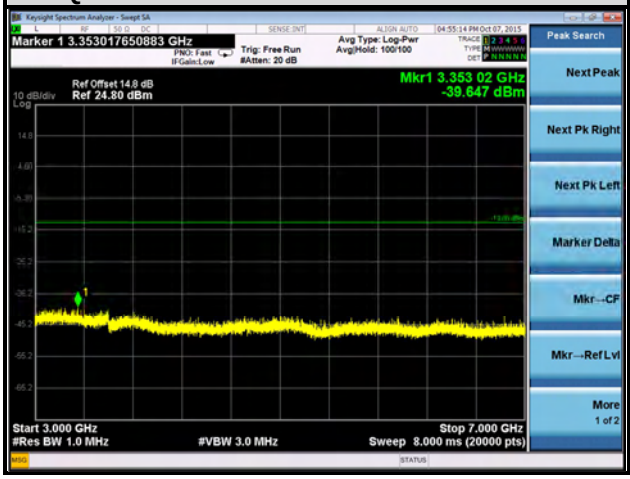
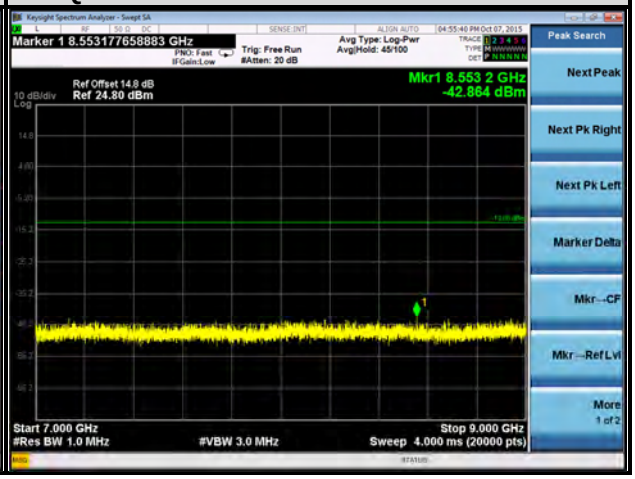
4.6.3 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

4.6.4 Test Results

GSM	
CHANNEL 189	
FREQUENCY RANGE : 30MHz~1GHz	FREQUENCY RANGE : 1GHz~3GHz
	
FREQUENCY RANGE : 3GHz~7GHz	FREQUENCY RANGE : 7GHz~9GHz
	

EDGE	
CHANNEL 189	
FREQUENCY RANGE : 30MHz~1GHz	FREQUENCY RANGE : 1GHz~3GHz
	
FREQUENCY RANGE : 3GHz~7GHz	FREQUENCY RANGE : 7GHz~9GHz
	

WCDMA	
CHANNEL 4182	
FREQUENCY RANGE : 30MHz~1GHz	FREQUENCY RANGE : 1GHz~3GHz
	
FREQUENCY RANGE : 3GHz~7GHz	FREQUENCY RANGE : 7GHz~9GHz
	

4.7 Radiated Emission Measurement

4.7.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

4.7.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

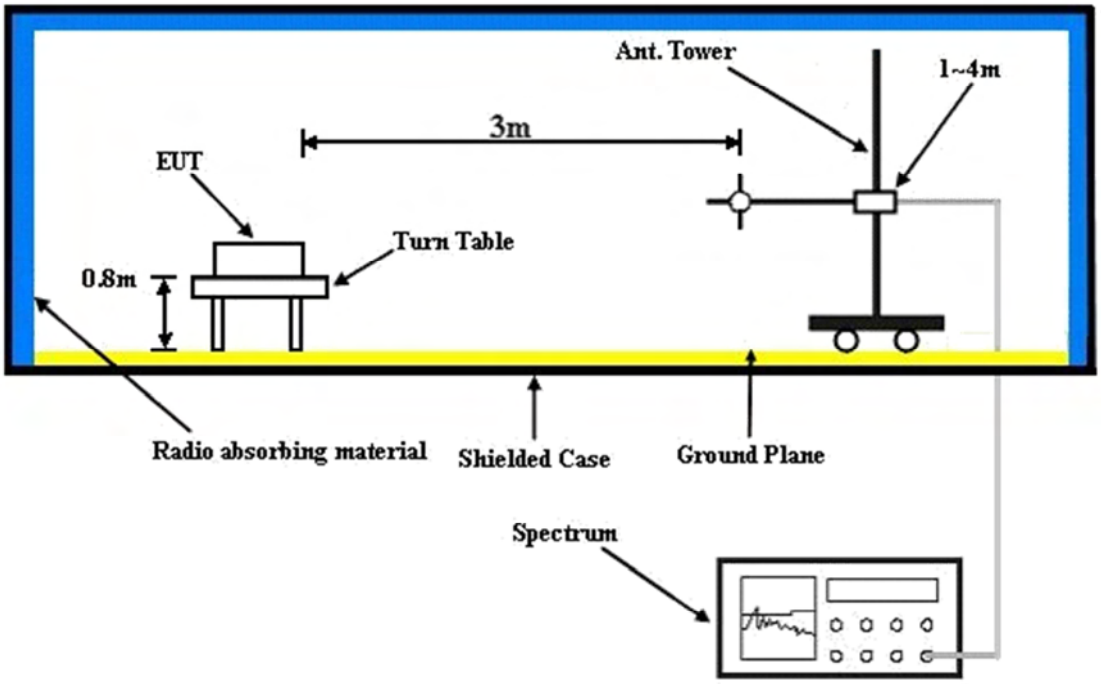
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.7.3 Deviation from Test Standard

No deviation.

4.7.4 Test Setup



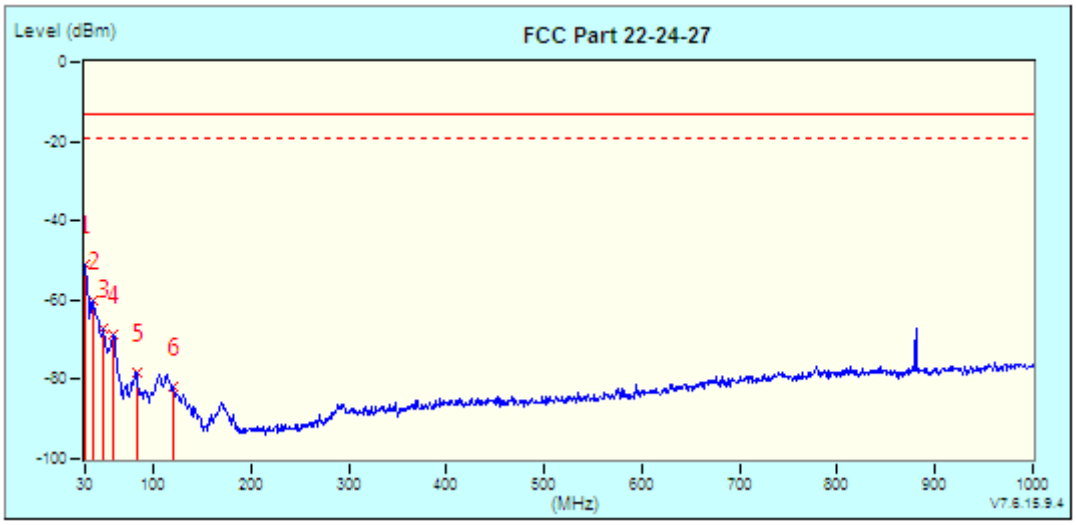
For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.7.5 Test Results

BELOW 1GHz WORST-CASE DATA

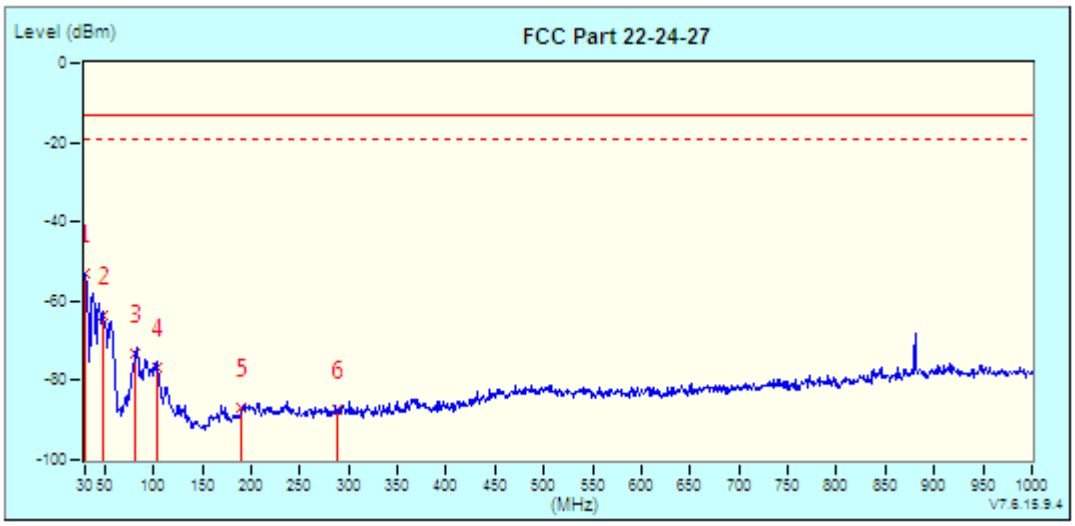
GSM 850:

MODE	TX channel 128	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.		Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower cm	Table deg
*	1	30.00	19.34	-70.40	-51.06	-13.00	-38.06	--	--
	2	37.77	12.24	-72.35	-60.11	-13.00	-47.11	--	--
	3	48.45	4.54	-71.49	-66.95	-13.00	-53.95	--	--
	4	58.16	-5.27	-63.62	-68.89	-13.00	-55.89	--	--
	5	82.43	-7.98	-70.07	-78.05	-13.00	-65.05	--	--
	6	119.33	-15.19	-66.56	-81.75	-13.00	-68.75	--	--

MODE	TX channel 128	**FREQUENCY RANGE**	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

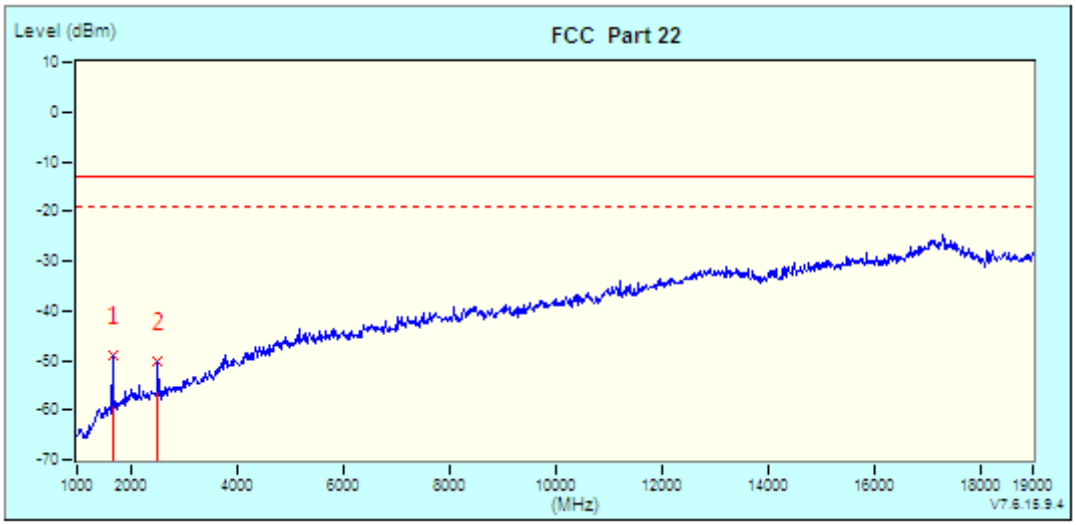


No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBm	dBm	dBm	dB	cm	deg
*	1	30.00	5.33	-58.11	-52.78	-13.00	-39.78	--	--
	2	49.42	-4.54	-59.27	-63.81	-13.00	-50.81	100	360
	3	81.46	-10.29	-62.88	-73.17	-13.00	-60.17	100	360
	4	104.76	-11.30	-65.63	-76.93	-13.00	-63.93	100	360
	5	189.24	-12.00	-75.00	-87.00	-13.00	-74.00	100	360
	6	288.28	-11.35	-75.93	-87.28	-13.00	-74.28	100	360

ABOVE 1GHz DATA

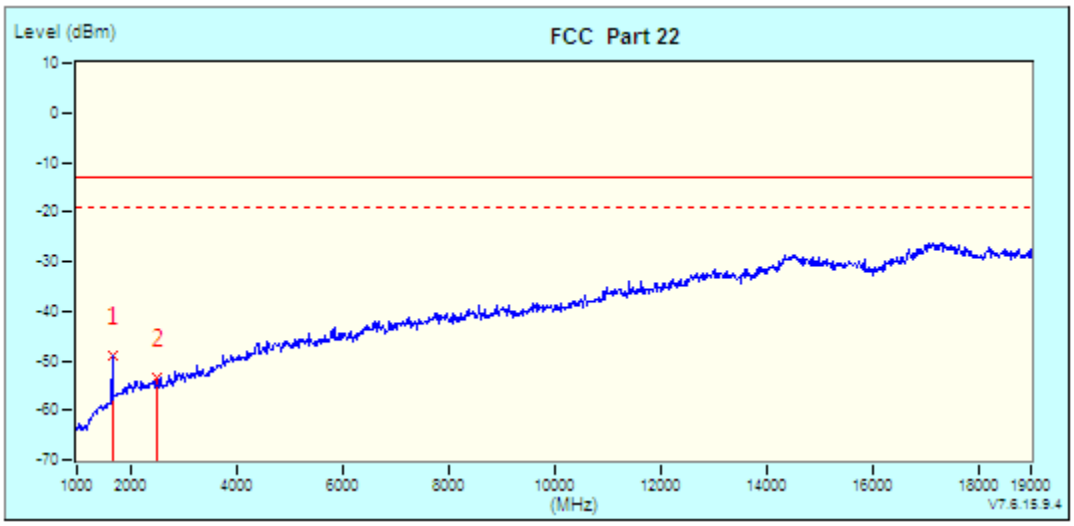
GSM 850:

MODE	TX channel 128	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBm	dBm	dBm	dB	cm	deg
*	1	1672.00 (PK)	-4.77	-44.20	-48.97	-13.00	-35.97	100	78
	2	2509.00 (PK)	-1.60	-48.56	-50.16	-13.00	-37.16	100	126

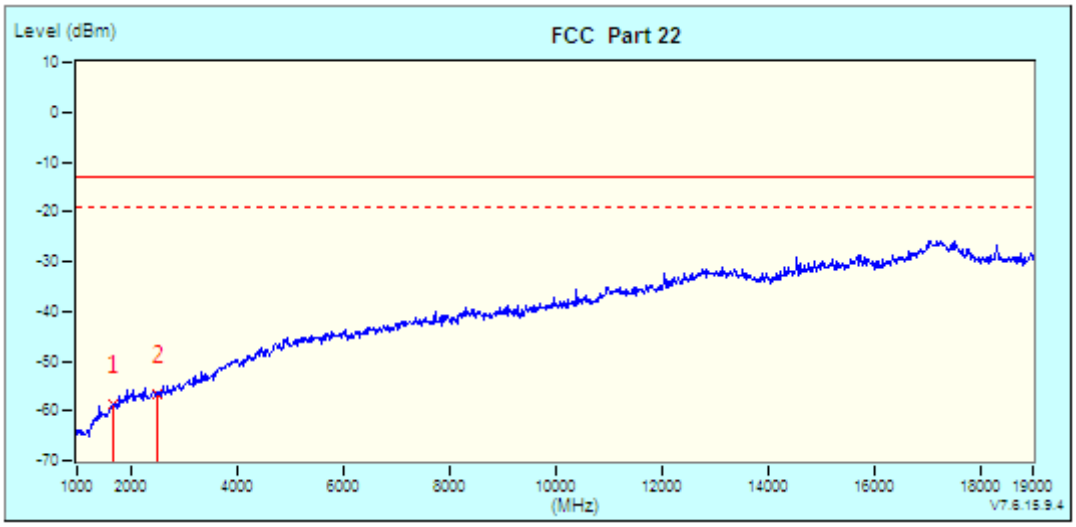
MODE	TX channel 128	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBm	dBm	dBm	dB	cm	deg
*	1	1672.00 (PK)	-3.33	-45.78	-49.11	-13.00	-36.11	100	360
	2	2509.00 (PK)	-0.13	-53.47	-53.60	-13.00	-40.60	100	360

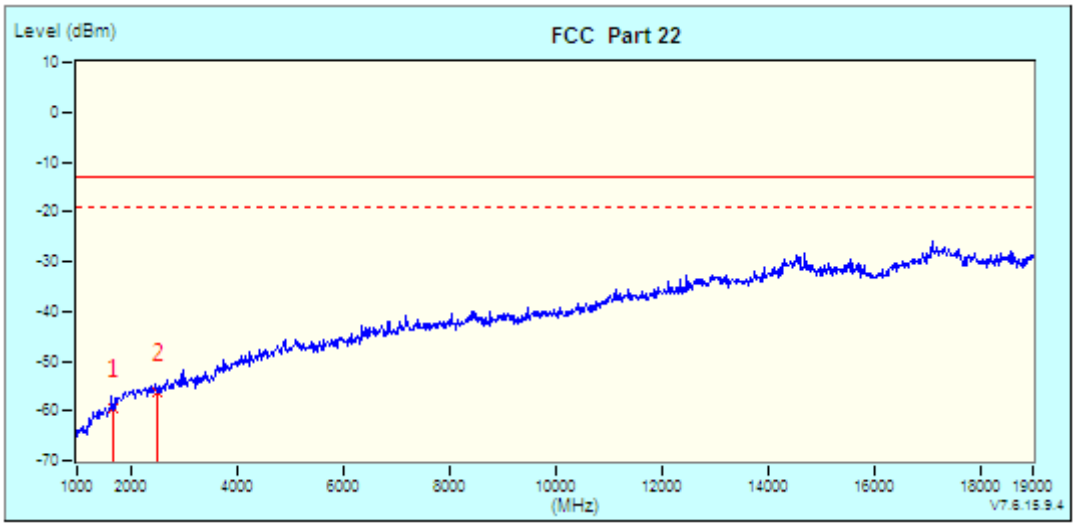
EDGE 850:

MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.		Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower cm	Table deg
	1	1672.00 (PK)	-4.77	-53.88	-58.65	-13.00	-45.65	100	360
*	2	2509.00 (PK)	-1.60	-54.88	-56.48	-13.00	-43.48	100	360

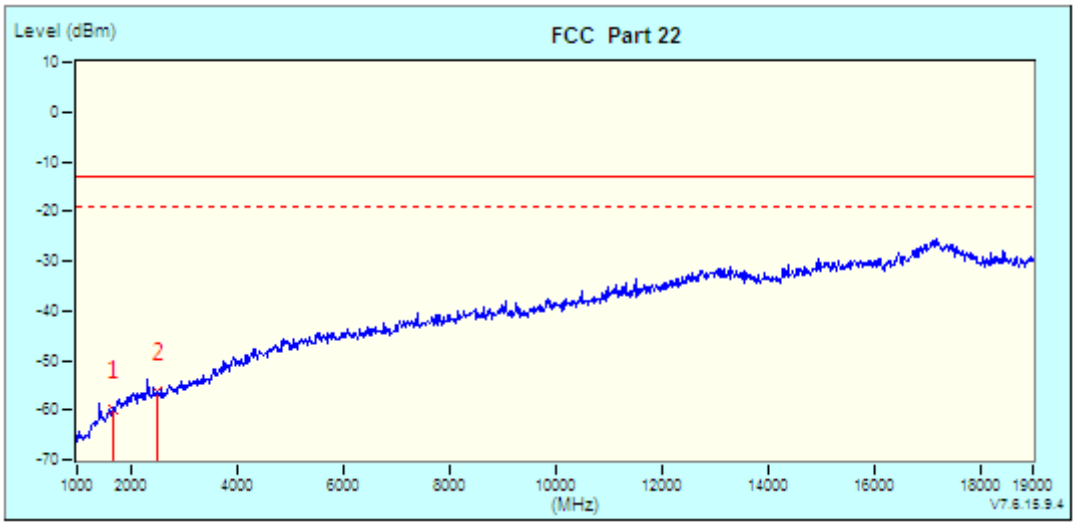
MODE	TX channel 128	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	**INPUT POWER**	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBm	dBm	dBm	dB	cm	deg
	1	1672.00 (PK)	-3.33	-56.23	-59.56	-13.00	-46.56	100	360
*	2	2509.00 (PK)	-0.13	-56.19	-56.32	-13.00	-43.32	100	360

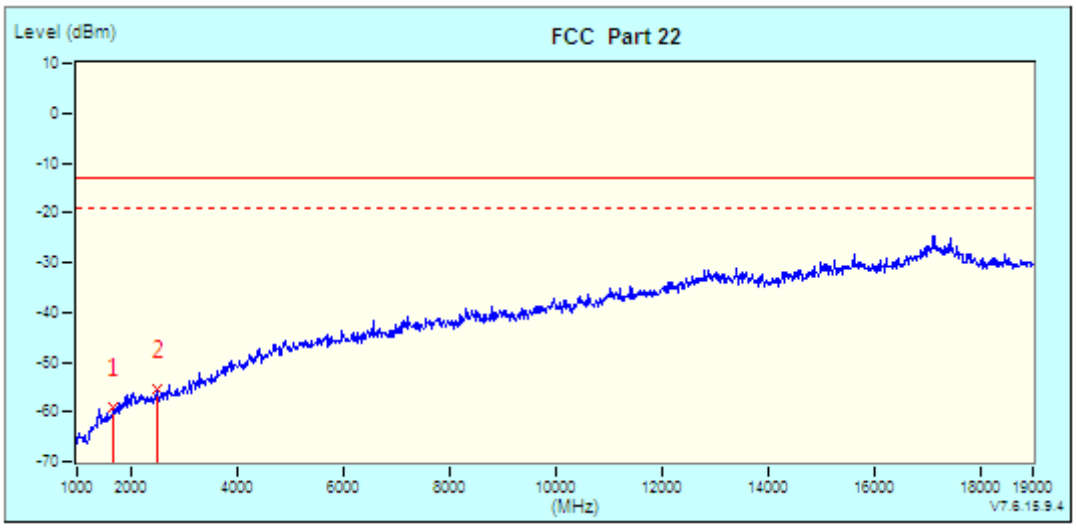
WCDMA Band V:

MODE	TX channel 4132	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower	Table
		MHz	dB	dBm	dBm	dBm	dB	cm	deg
	1	1672.00 (PK)	-4.77	-55.22	-59.99	-13.00	-46.99	100	0
*	2	2509.00 (PK)	-1.60	-54.67	-56.27	-13.00	-43.27	100	0

MODE	TX channel 4132	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 63%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Green		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



No.		Frequency	Factor	Reading	Emission	Limit	Margin	Tower / Table	
		MHz	dB	dBm	dBm	dBm	dB	cm	deg
	1	1672.00 (PK)	-3.33	-55.79	-59.12	-13.00	-46.12	100	0
*	2	2509.00 (PK)	-0.13	-55.30	-55.43	-13.00	-42.43	100	0

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab
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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab
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Fax: 886-3-5935342

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Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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