

FCC TEST REPORT (PART 22)

REPORT NO.: RF131021N050-2
MODEL NO.: Lenovo A680
MID: 68000031
FCC ID: YCNA680
RECEIVED: Oct. 21, 2013
TESTED: Oct. 21, 2013 ~ Oct. 30, 2013
ISSUED: Oct. 30, 2013

APPLICANT: Lenovo Mobile Communication Technology Ltd.

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ISSUED BY: Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

LAB ADDRESS: No. 34, Chenwulu Section, Guantai Road, Houjie
Town, Dongguan City, Guangdong 523942, China

TEST LOCATION: No. 34, Chenwulu Section, Guantai Road, Houjie
Town, Dongguan City, Guangdong 523942, China

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TABLE OF CONTENTS

RELEASE CONTROL RECORD.....	3
1 CERTIFICATION.....	4
2 SUMMARY OF TEST RESULTS.....	5
2.1 MEASUREMENT UNCERTAINTY.....	5
3 GENERAL INFORMATION.....	7
3.1 GENERAL DESCRIPTION OF EUT.....	7
3.3 DESCRIPTION OF SUPPORT UNITS.....	9
3.4 TEST ITEM AND TEST CONFIGURATION.....	10
3.5 EUT OPERATING CONDITIONS.....	11
3.6 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	11
4 TEST TYPES AND RESULTS.....	12
4.1 OUTPUT POWER MEASUREMENT.....	12
4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT.....	12
4.1.2 TEST PROCEDURES.....	12
4.1.3 TEST SETUP.....	13
4.1.4 TEST RESULTS.....	14
4.2 FREQUENCY STABILITY MEASUREMENT.....	16
4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT.....	16
4.2.2 TEST PROCEDURE.....	16
4.2.3 TEST SETUP.....	16
4.2.4 TEST RESULTS.....	17
4.3 OCCUPIED BANDWIDTH MEASUREMENT.....	18
4.3.1 TEST PROCEDURES.....	18
4.3.2 TEST SETUP.....	18
4.3.3 TEST RESULTS.....	19
4.4 BAND EDGE MEASUREMENT.....	21
4.4.1 LIMITS OF BAND EDGE MEASUREMENT.....	21
4.4.2 TEST SETUP.....	21
4.4.3 TEST PROCEDURES.....	21
4.4.4 TEST RESULTS.....	22
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT.....	23
4.5.2 TEST PROCEDURE.....	23
4.5.3 TEST SETUP.....	23
4.6 RADIATED EMISSION MEASUREMENT.....	26
4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT.....	26
4.6.2 TEST PROCEDURES.....	26
4.6.3 DEVIATION FROM TEST STANDARD.....	26
4.6.4 TEST SETUP.....	27
4.6.5 TEST RESULTS.....	28
5 PHOTOGRAPHS OF THE TEST CONFIGURATION.....	29
6 INFORMATION ON THE TESTING LABORATORIES.....	31
7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	32



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Test Report No.: RF131021N050-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131021N050-2	Original release	Oct. 30, 2013



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Test Report No.: RF131021N050-2

1 CERTIFICATION

PRODUCT: Lenovo Mobile Phone

MODEL: Lenovo A680

BRAND: lenovo

APPLICANT: Lenovo Mobile Communication Technology Ltd.

TESTED: Oct. 21, 2013 ~ Oct. 30, 2013

TEST SAMPLE: Production Unit

STANDARDS: FCC PART 22, Subpart H

The above equipment (model: Lenovo A680) has been tested by **Bureau Veritas Shenzhen Co., Ltd. Dongguan 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.

TESTED BY : _____ , **DATE** : Oct. 30, 2013
Glyn He/ Project Engineer

APPROVED BY : _____ , **DATE** : Oct. 30 2013
Sam Tung / Technical Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
2.1046 22.913 (a)	Effective Radiated Power	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.

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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.67dB
Radiated emissions	30MHz ~ 1GHz	4.81dB
	1GHz ~ 18GHz	4.3dB
	18GHz ~ 40GHz	1.94dB

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



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Test Report No.: RF131021N050-2

2.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	Apr. 24,13	Apr. 23,14
EMI Test Receiver	Rohde&Schwarz	ESVD	847398/003	May 14,13	May 13,14
Bilog Antenna (25MHz-2GHz)	Teseq	CBL 6111D	27089	Nov. 22,12	Nov. 21,13
Horn Antenna (1GHz -18GHz)	EMCO	3117	00062558	Oct.18, 13	Oct.17,14
Pre-Amplifier (20MHz-3GHz)	EMCI	EMC 330	980095	Nov. 02,12	Nov. 01,13
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 14,13	May 13,14
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8 .8m	NSEMC006	Mar. 24,13	Mar. 23,14
Digital Multimeter	FLUKE	15B	A1220010D G	Oct. 31,12	Oct. 30,13
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA91702 42	Jan. 04,12	Jan. 03,14
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,12	Nov. 03,13
Universal Radio Communication Tester	Rohde&Schwarz	CMU 200	123259	Apr. 16,12	Apr. 15,14
Test Software	ADT	ADT_Radiated _V7.6.15	N/A	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in Dongguan Chamber 10m.
 3. The horn antenna are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 502831.



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Test Report No.: RF131021N050-2

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Lenovo Mobile Phone
MODEL NO.	Lenovo A680
MID	68000031
HW Version	AW800_MB_PCB_V3.0
SW Version	A680_S009_131015
POWER SUPPLY	DC 5V (adapter or host equipment) DC 3.7V (Li-ion battery)
MODULATION TYPE	GSM, GPRS: GMSK WCDMA : BPSK
FREQUENCY RANGE	GSM, GPRS: 824.2MHz ~ 848.8MHz WCDMA: 826.4MHz ~ 846.6MHz
MAX. ERP POWER	GSM: 0.35 Watts WCDMA: 0.28 Watts
POWER CLASS	4
ANTENNA TYPE	Fixed Internal antenna with -3.7dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: Shielded, Detachable, 1.0m Earphone cable: Unshielded, Detachable, 1.5m
ACCESSORY DEVICES	Adapter

NOTE:

1. WLAN, Bluetooth, GPS, GSM, WCDMA technologies are used for the EUT.
2. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	lenovo
MODEL:	C-P33
INPUT:	AC 100-240V 50/60Hz,150mA
OUTPUT:	DC 5V, 700m A
DC LINE:	N/A

3. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



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Test Report No.: RF131021N050-2

4. There are two kind of samples for the model Lenovo A680, two kinds of samples are different in LCD,TP and camera; we consider sample A as the main test sample(full tests for it), and partial test for the sample B. The information on LCD,TP and camera of sample A and sample B is listed below:

For sample A:

LCD	TP	camera
Brand: Bitland	Brand: AVC	Brand: Sunny
Model: BT050TN02	Model: AP050203	Model: P5M27B

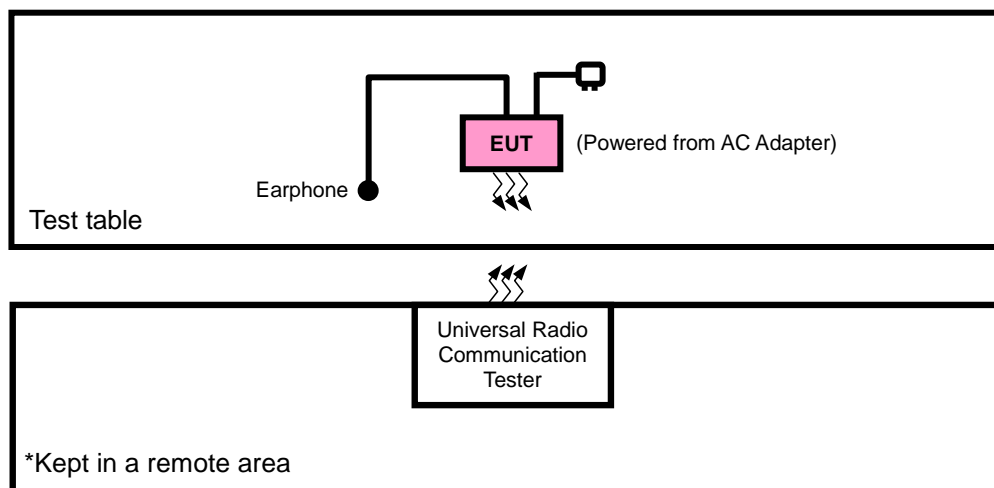
For sample B:

LCD	TP	camera
Brand: YASSY	Brand: O-film	Brand: O-film
Model: YT50F152V0	Model: MCF-050-1129-01	Model: L0543F00



3.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



3.3 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	N/A				

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

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

3.4 TEST ITEM AND TEST CONFIGURATION

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 for ERP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + Earphone with GSM link
B	EUT + Battery + Earphone with GSM link
C	EUT + USB cable + Earphone with GSM link

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	ERP	128 to 251	128, 189, 251	GSM
B	FREQUENCY STABILITY	128 to 251	189	GSM
B	OCCUPIED BANDWIDTH	128 to 251	128, 189, 251	GSM
B	BAND EDGE	128 to 251	128, 251	GSM
A,C	CONDCUDED EMISSION	128 to 251	128, 189, 251	GSM
A,C	RADIATED EMISSION	128 to 251	189	GSM

WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
B	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
B	FREQUENCY STABILITY	4132 to 4233	4182	WCDMA
B	OCCUPIED BANDWIDTH	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
B	BAND EDGE	4132 to 4233	4132, 4233	WCDMA, HSDPA, HSUPA
A,C	CONDCUDED EMISSION	4132 to 4233	4132, 4182, 4233	WCDMA
A,C	RADIATED EMISSION	4132 to 4233	4182	WCDMA



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Test Report No.: RF131021N050-2

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	23deg. C, 59%RH	3.7Vdc from Battery	Venless Long
FREQUENCY STABILITY	23deg. C, 59%RH	3.7Vdc from Battery	Venless Long
OCCUPIED BANDWIDTH	23deg. C, 59%RH	3.7Vdc from Battery	Venless Long
BAND EDGE	23deg. C, 59%RH	3.7Vdc from Battery	Venless Long
CONDCUDED EMISSION	23deg. C, 60%RH	5Vdc from adapter	Venless Long
RADIATED EMISSION	25deg. C, 61%RH	5Vdc from adapter	Venless Long

3.5 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

3.6 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.



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Test Report No.: RF131021N050-2

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 & EDGE 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15\text{dBi}$.

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with GSM, GPRS, EDGE & 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.

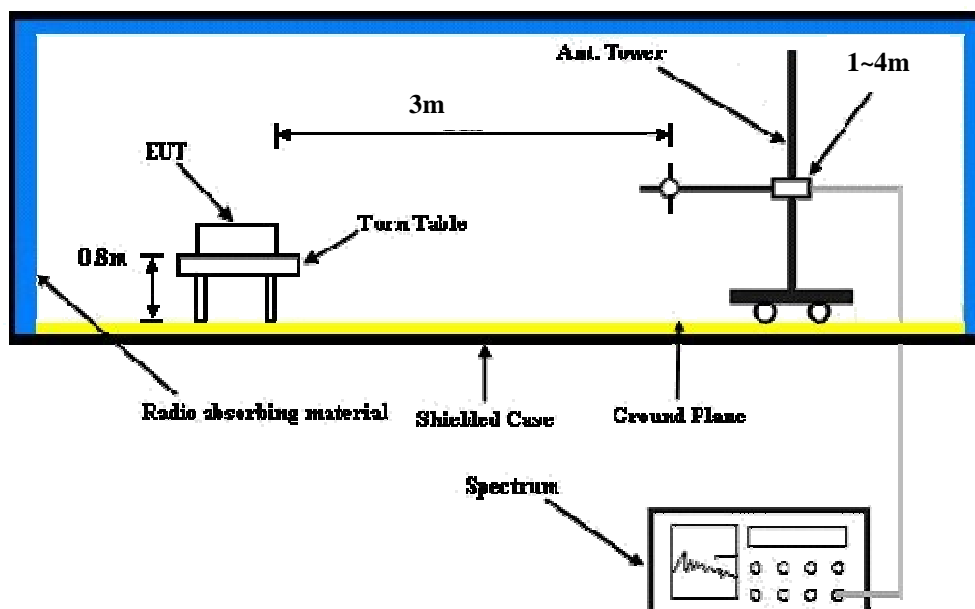


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Test Report No.: RF131021N050-2

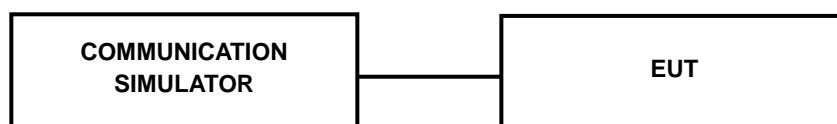
4.1.3 TEST SETUP

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).



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Test Report No.: RF131021N050-2

4.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850		
Channel	128	190	251
Frequency (MHz)	824.2	836.4	848.8
GSM (1 Uplink)	32.89	32.79	32.75
GPRS 8 (1 Uplink)	32.84	32.76	32.74
GPRS 10 (2 Uplink)	32.11	32.04	32.02
GPRS 11 (3 Uplink)	30.38	30.35	30.37
GPRS 12 (4 Uplink)	29.68	29.65	29.65

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.88	23.08	22.79
HSDPA Subtest-1	21.97	22.07	21.84
HSDPA Subtest-2	21.95	22.08	21.83
HSDPA Subtest-3	21.50	21.64	21.39
HSDPA Subtest-4	21.47	21.63	21.35
HSUPA Subtest-1	19.94	20.12	19.83
HSUPA Subtest-2	19.96	20.14	19.84
HSUPA Subtest-3	20.94	21.11	20.83
HSUPA Subtest-4	20.46	20.64	20.33
HSUPA Subtest-5	21.88	22.10	21.81



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Test Report No.: RF131021N050-2

ERP POWER (dBm)

GSM 850 (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
128	824.2	-6.25	32.91	24.51	0.28
189	836.4	-6.47	33.7	25.08	0.32
251	848.8	-6.61	34.14	25.38	0.35
GSM 850 (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
128	824.2	-15.90	35.18	17.13	0.05
189	836.4	-16.30	35.27	16.82	0.05
251	848.8	-16.72	35.27	16.40	0.04

WCDMA Band V_RMC 12.2K (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
4132	826.4	-16.38	33.11	14.58	0.03
4182	836.4	-16.58	33.7	14.97	0.03
4233	846.6	-16.73	34.13	15.25	0.03
WCDMA Band V_RMC 12.2K (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	Watt
4132	826.4	-8.67	35.28	24.46	0.28
4182	836.4	-8.92	35.27	24.20	0.26
4233	846.6	-8.95	35.37	24.27	0.27

REMARKS: 1. ERP Output Power (dBm) = SPA Reading (dBm) + Correction Factor (dB) -2.15 (dB)
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss.



4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

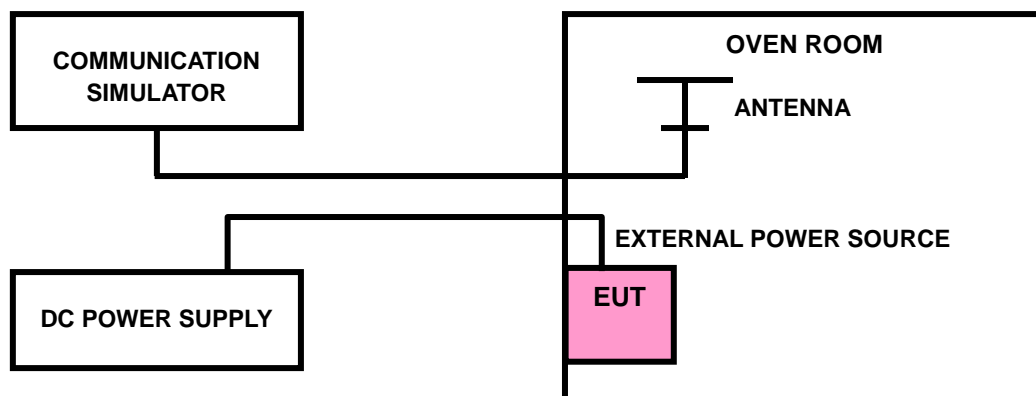
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.2.2 TEST PROCEDURE

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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





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Test Report No.: RF131021N050-2

4.2.4 TEST RESULTS

FREQUENCY ERROR VS. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	GSM	WCDMA	
4.2	0.02	0.02	2.5
3.7	0.02	0.02	2.5
3.4	0.02	0.03	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.2Vdc.

FREQUENCY ERROR vs. TEMPERATURE.

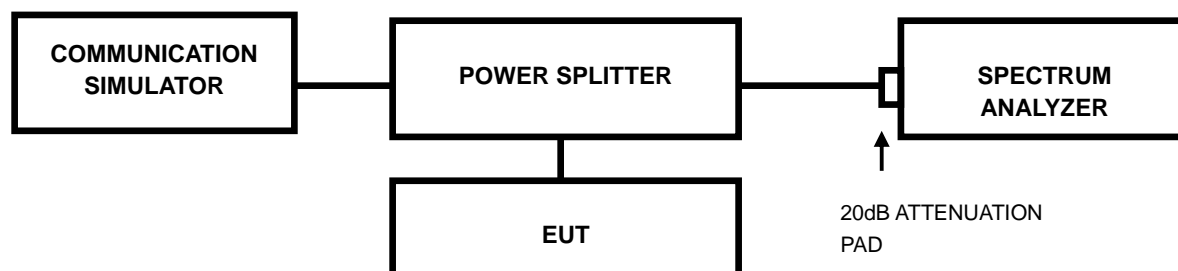
TEMP. (°C)	FREQUENCY ERROR (ppm)		LIMIT (ppm)
	GSM	WCDMA	
-20	0.01549	-0.00891	2.5
-10	0.01553	-0.00882	2.5
0	0.00659	0.00541	2.5
10	0.00753	0.00682	2.5
20	0.00798	0.00761	2.5
30	0.00989	0.00811	2.5
40	0.01007	0.00851	2.5
50	0.01020	0.00958	2.5
55	0.01114	0.01053	2.5

4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 TEST PROCEDURES

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 EST SETUP



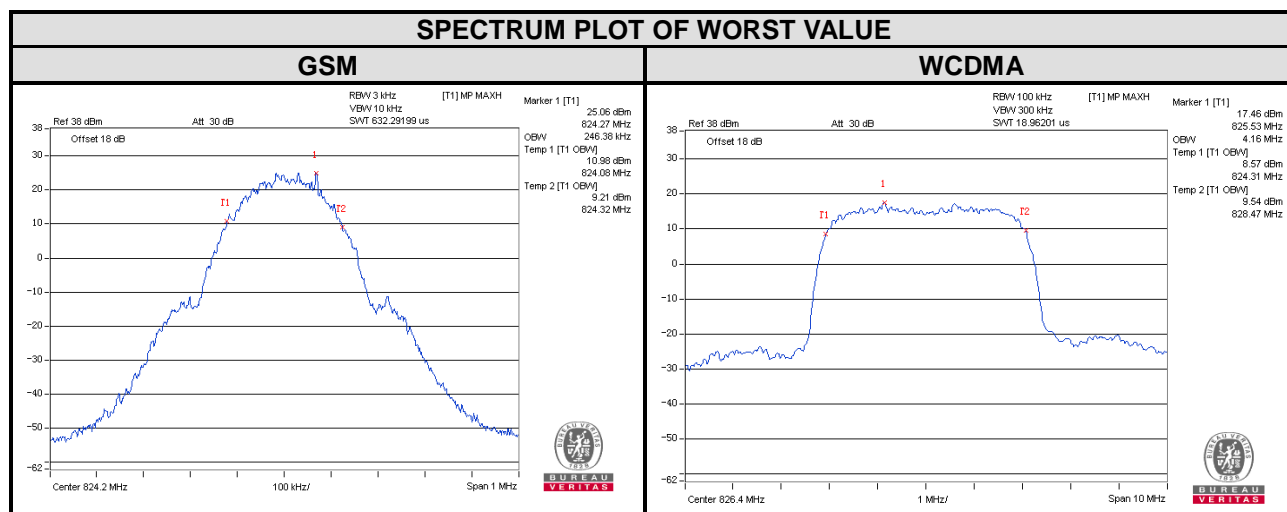


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Test Report No.: RF131021N050-2

4.3.3 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)	CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
		GSM			WCDMA
128	824.2	246.38	4132	826.6	4160
189	836.4	243.48	4182	836.4	4160
251	848.8	244.93	4233	846.4	4140

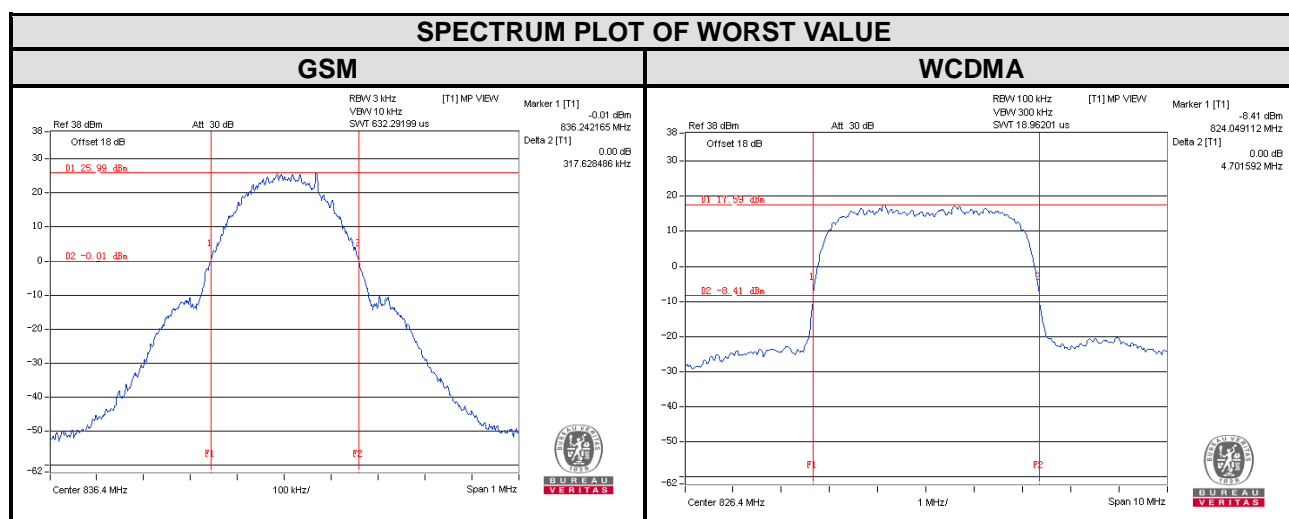




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Test Report No.: RF131021N050-2

CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (kHz))	CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (kHz))
		GSM			WCDMA
128	824.2	316.56	4132	826.6	4701
189	836.4	317.63	4182	836.4	4692
251	848.8	314.47	4233	846.4	4688



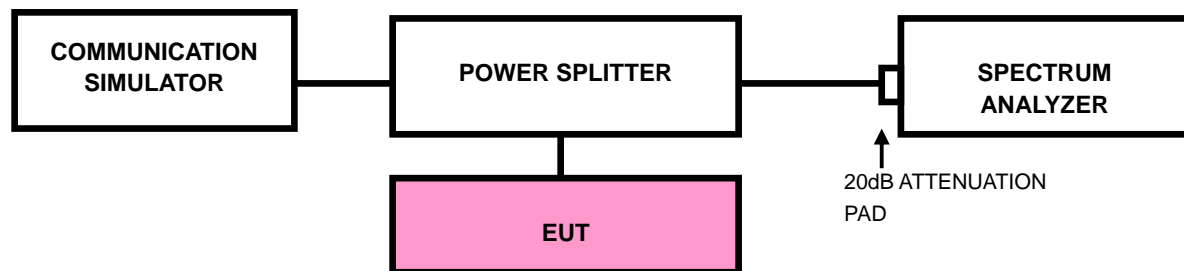


4.4 BAND EDGE MEASUREMENT

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

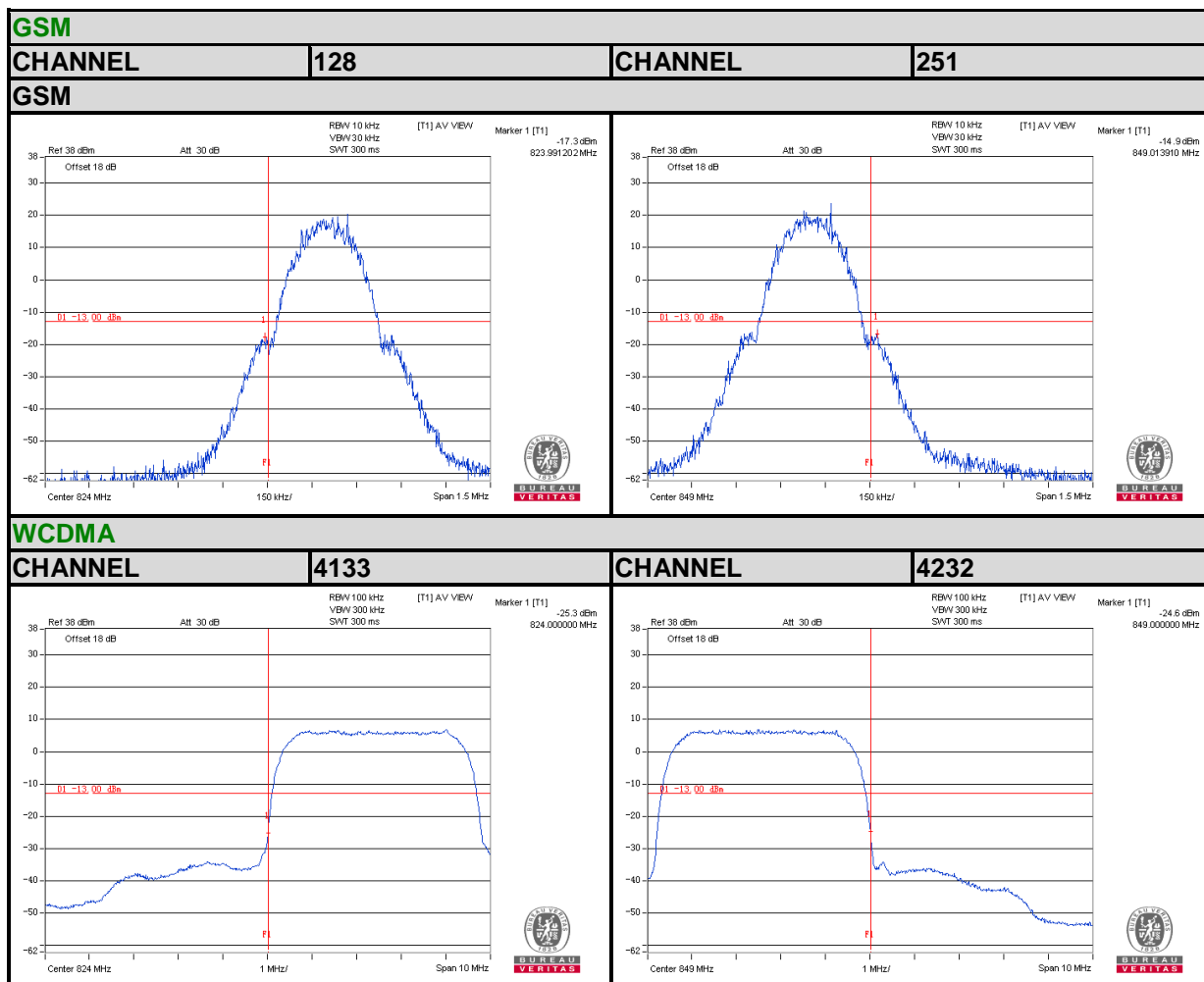
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/ EDGE).
- The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
- Record the max trace plot into the test report.



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Test Report No.: RF131021N050-2

4.4.4 TEST RESULTS



4.5 CONDUCTED SPURIOUS EMISSIONS

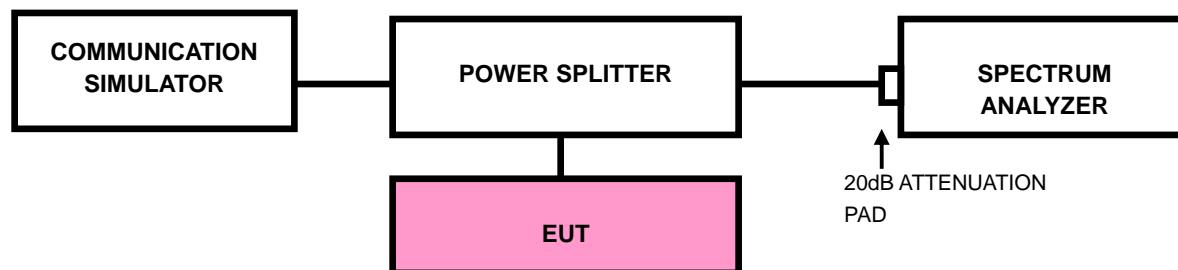
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 .

4.5.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- 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.

4.5.3 TEST SETUP

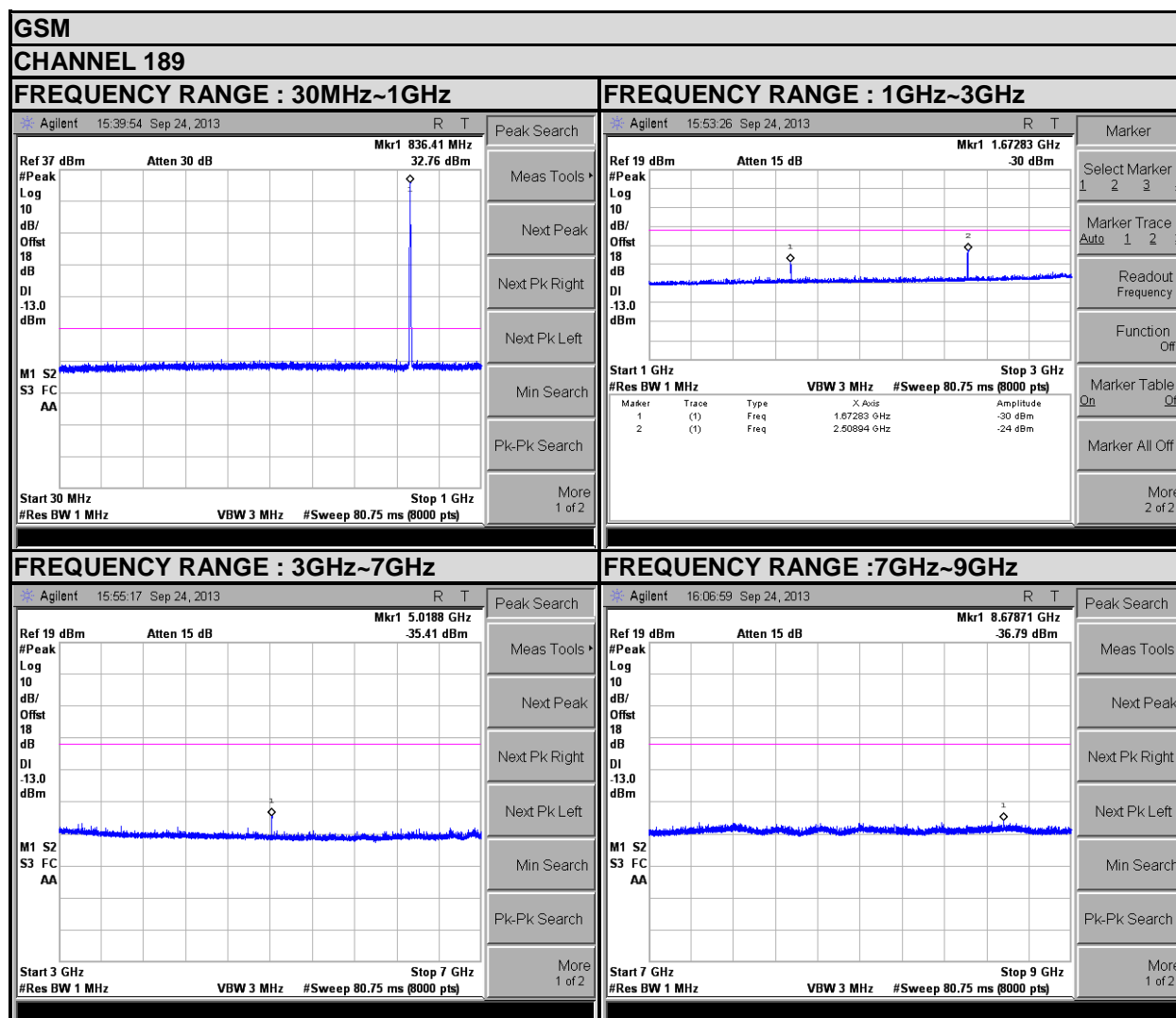




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Test Report No.: RF131021N050-2

4.5.4 TEST RESULTS





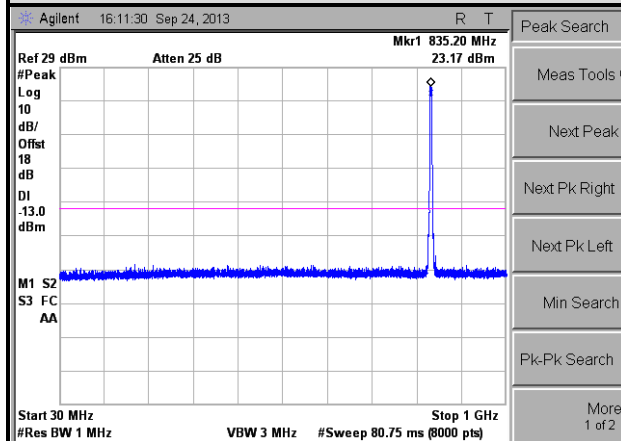
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Test Report No.: RF131021N050-2

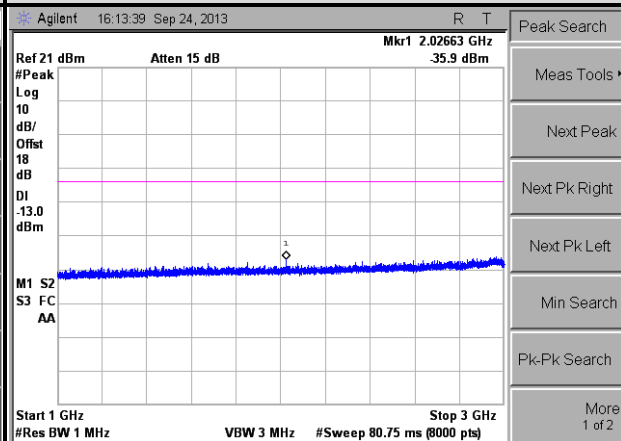
WCDMA

CHANNEL 4133

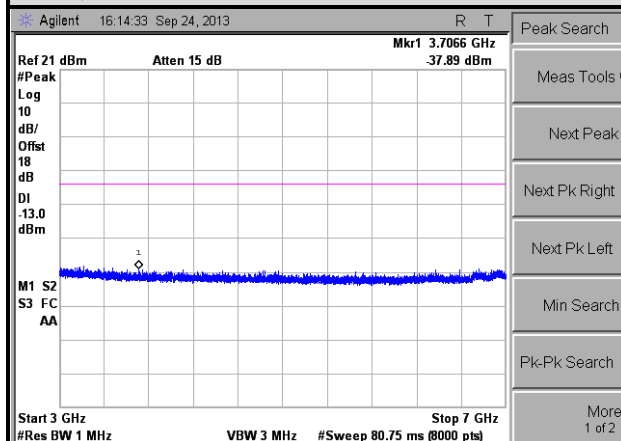
FREQUENCY RANGE : 30MHz~1GHz



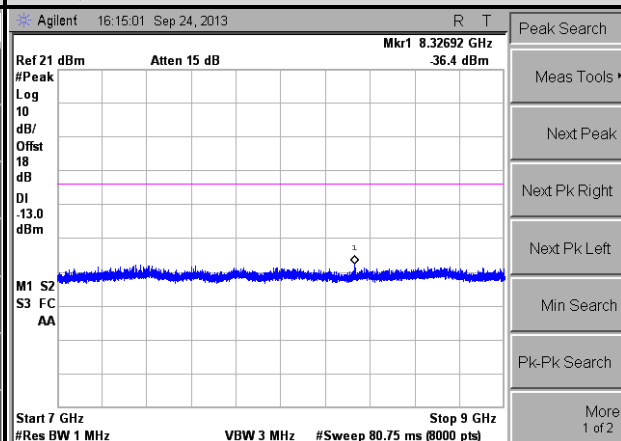
FREQUENCY RANGE : 1GHz~3GHz



FREQUENCY RANGE : 3GHz~7GHz



FREQUENCY RANGE : 7GHz~9GHz





4.6 RADIATED EMISSION MEASUREMENT

4.6.1 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 .

4.6.2 TEST PROCEDURES

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

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

4.6.3 DEVIATION FROM TEST STANDARD

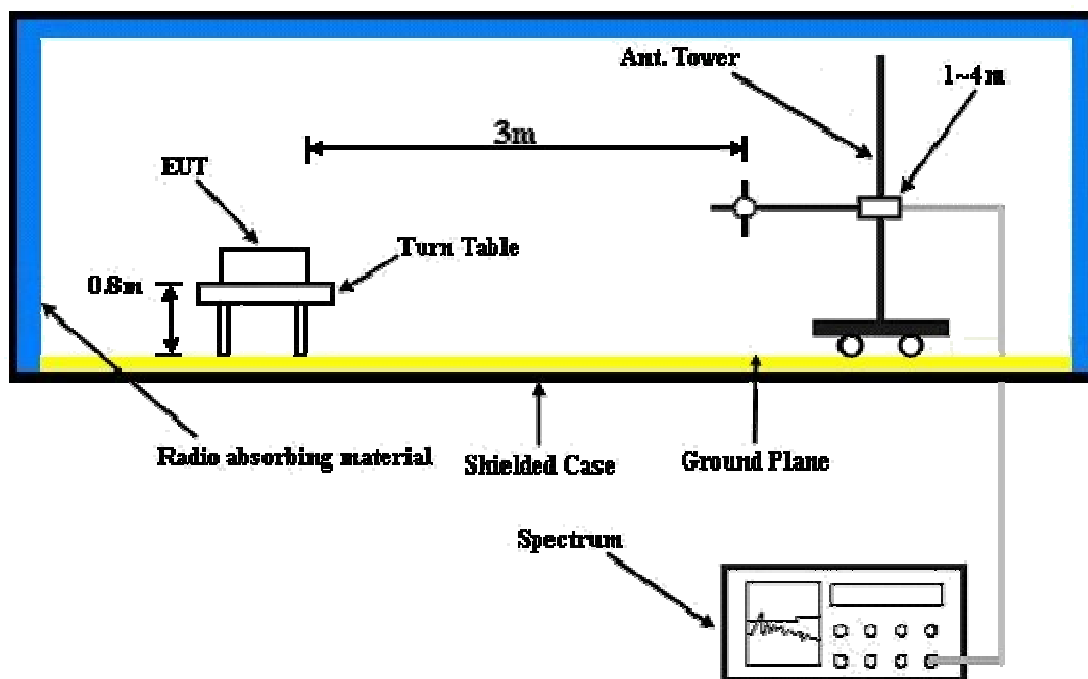
No deviation



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Test Report No.: RF131021N050-2

4.6.4 TEST SETUP



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



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Test Report No.: RF131021N050-2

4.6.5 TEST RESULTS

For sample A:

GSM:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	SPA READING (dBm)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-42.49	-13	-37.56	0.46	-37.10
2	2509	-35.19	-13	-25.88	0.17	-25.71
3	3345	-51.38	-13	-41.83	1.49	-40.34
4	4182	-45.63	-13	-32.46	2.05	-30.41
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	SPA READING (dBm)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-42.6	-13	-34.93	0.46	-34.47
2	2509	-36.2	-13	-25.68	0.17	-25.51
3	3345	-48.44	-13	-36.58	1.49	-35.09
4	4182	-45.44	-13	-31.16	2.05	-29.11

REMARKS:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB) - 2.15 (dB)

WCDMA:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	SPA READING (dBm)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-51.8	-13	-47.12	0.46	-46.66
2	2509	-46.81	-13	-37.97	0.17	-37.80
3	3345	-46.51	-13	-36.84	1.49	-35.35
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	SPA READING (dBm)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-52.97	-13	-45.76	0.46	-45.30
2	2509	-46.23	-13	-36.04	0.17	-35.87
3	3345	-47.52	-13	-35.66	1.49	-34.17

REMARKS:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB) - 2.15 (dB)



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Test Report No.: RF131021N050-2

For sample B:

GSM:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	SPA READING (dBm)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-40.39	-13	-35.40	0.46	-34.94
2	2509	-38.39	-13	-29.21	0.17	-29.04
3	3345	-52.68	-13	-43.16	1.49	-41.67
4	4182	-47.52	-13	-34.39	2.05	-32.34
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	SPA READING (dBm)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-41.36	-13	-33.64	0.46	-33.18
2	2509	-38.54	-13	-28.10	0.17	-27.93
3	3345	-51.22	-13	-39.37	1.49	-37.88
4	4182	-43.58	-13	-29.25	2.05	-27.20

REMARKS:

1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB) - 2.15 (dB)



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Test Report No.: RF131021N050-2

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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Test Report No.: RF131021N050-2

6 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch, were founded in 2002 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:

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Fax: +86-769-85931080

Email: customerservice.dg@cn.bureauveritas.com

Web Site: www.adt.com.tw

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



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Test Report No.: RF131021N050-2

7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---