Test Lab
Cert 2951.01

FCC TEST REPORT

(PART 22)

REPORT NO.:	RF140314N018-2
MODEL NO.:	HSTNH-B19C
FCC ID:	B94HHB19C
RECEIVED:	Mar. 14, 2014
TESTED:	Mar. 14, 2014 ~ Mar. 31, 2014
ISSUED:	Apr. 01 2014

APPLICANT:	Hewlett-Packard Company
ADDRESS:	1501 Page Mill Road, M/S 1419, Palo Alto, CA 94304, USA

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

This report should not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140314N018-2	Original release	Apr. 01 2014

1 CERTIFICATION

PRODUCT:	Voice Tablet
MODEL:	HSTNH-B19C
BRAND:	HP
APPLICANT:	Hewlett-Packard Company
TESTED:	Mar. 14, 2014 ~ Mar. 31, 2014
TEST SAMPLE:	Production Unit
STANDARDS:	**FCC PART 22, Subpart H**

The above equipment (model: HSTNH-B19C) 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 :** Apr. 01 2014

Glyn He/ Project Engineer

APPROVED BY : _____ **DATE :** Apr. 01 2014

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.

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	Teseq	CBL 6111D	27089	Jul. 27, 13	Jul. 26, 14
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Oct. 19, 12	Oct. 18, 14
Pre-Amplifier (9kHz~1GHz)	SONOMA	310D	186955	Mar. 05,14	Mar. 04,15
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	Jun. 11, 13	Jun. 10, 14
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 30, 13	Oct. 29, 14
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	Feb. 13,14	Feb. 12,17
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,13	Nov. 03,14
Universal Radio Communication Tester	Rohde&Schwarz	CMU 200	123259	Apr. 16,12	Apr. 15,14

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 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.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Voice Tablet
MODEL NO.	HSTNH-B19C
FCC ID	B94HHB19C
HW VERSION	wg601hm_mb_B3
SW VERSION	V0.03.08_20140226.051.100
POWER SUPPLY	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)
MODULATION TYPE	**GSM, GPRS:** GMSK **EDGE:** 8PSK **WCDMA :** BPSK
FREQUENCY RANGE	**GSM, GPRS, EDGE:** 824.2MHz ~ 848.8MHz **WCDMA:** 826.4MHz ~ 846.6MHz
MAX. ERP POWER	**GSM:** 0.71Watts **EDGE:** 0.61Watts **WCDMA:** 0.40Watts
POWER CLASS	4
ANTENNA TYPE	Fixed Internal antenna with -2.17dBi gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB Cable: Shielded, Detachable,1m
ACCESSORY DEVICES	Refer to note as below

NOTE:

1. BT, WLAN, GSM, WCDMA technologies are used for the EUT.
2. The EUT's accessories list refers to EUT Photo. pdf. The EUT was powered by the following adapters:

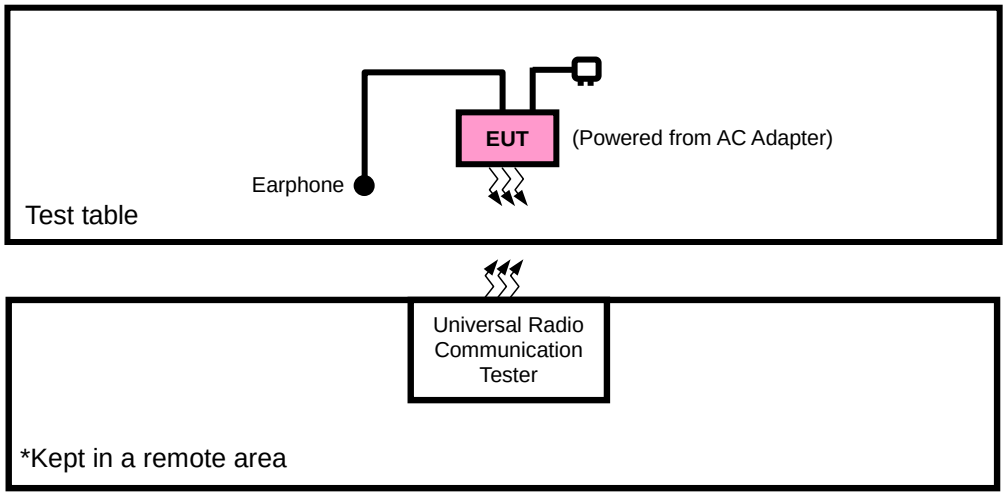
ADAPTER1	
BRAND:	hp
MODEL:	8395-V001-1080
INPUT:	AC 100-240V, 50/60Hz, 0.3A
OUTPUT:	DC 5.3V, 2A
DC LINE:	N/A

ADAPTER2	
BRAND:	chicony
MODEL:	W12-010M3A
INPUT:	AC 100-240V, 50/60Hz, 0.3A
OUTPUT:	DC 5V, 2A
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.

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	Notebook	DELL	5P2PM2X	12400120329	N/A
2	Mouse	DELL	M056UOA	01688082	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1.	AC Line :Unshielded, Detachable,1.5m;DC Line: Unshielded, Undetachable,1.8m; HDMI Cable: Shielded, Detachable,1.6m, with a core
2	USB Line: Unshielded, undetachable, 1.5m.

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	**Powered by adapter with GSM link**
B	Powered by battery with GSM link

GSM MODE

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

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
B	BAND EDGE	4132 to 4233	4132, 4233	WCDMA
A	CONDCUDETED EMISSION	4132 to 4233	4182	WCDMA
A	RADIATED EMISSION	4132 to 4233	4182	WCDMA

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	23deg. C, 59%RH	3.8Vdc from Battery	Venless Long
FREQUENCY STABILITY	23deg. C, 59%RH	3.8Vdc from Battery	Venless Long
OCCUPIED BANDWIDTH	23deg. C, 59%RH	3.8Vdc from Battery	Venless Long
BAND EDGE	23deg. C, 59%RH	3.8Vdc from Battery	Venless Long
CONDCUDETED EMISSION	24deg. C, 56%RH	5Vdc from adapter	Yuqiang.Yin
RADIATED EMISSION	25deg. C, 54%RH	5Vdc from adapter	Blue.Zheng

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.

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

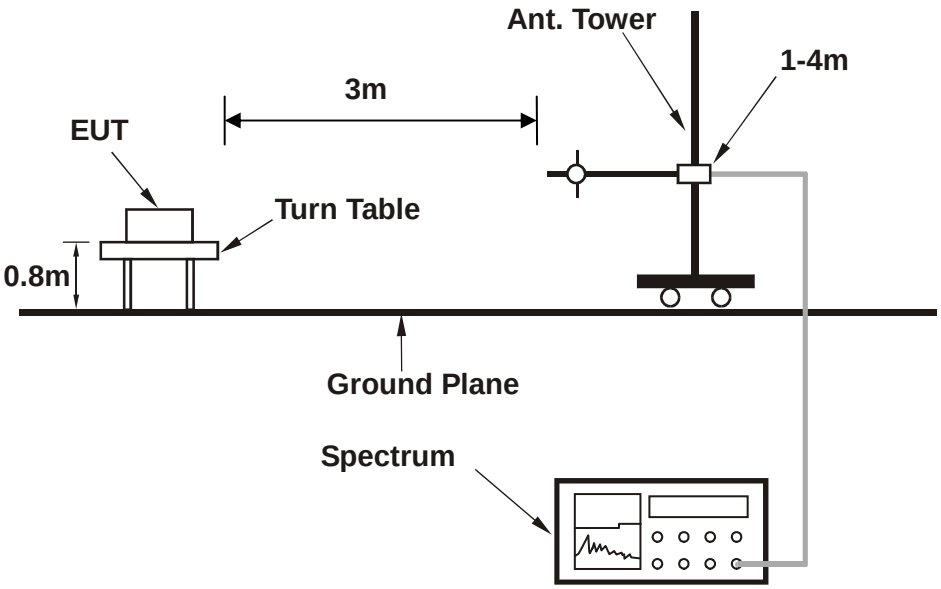
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

CONDUCTED POWER MEASUREMENT:

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

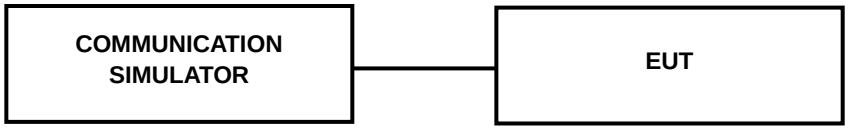
4.1.3 TEST SETUP

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	189	251
Frequency (MHz)	824.2	836.4	848.8
GPRS 8	**32.05**	32.01	31.96
GPRS 10	32.03	32.01	31.98
GPRS 11	32.03	32.00	31.97
GPRS 12	30.95	30.92	30.88
EDGE 8 (MCS1)	28.93	28.91	28.87
EDGE 10 (MCS1)	32.03	32.04	31.96
EDGE 11 (MCS1)	32.03	32.03	31.95
EDGE 12 (MCS1)	30.94	30.91	30.87
EDGE 8 (MCS9)	28.94	28.94	28.87
EDGE 10 (MCS9)	26.54	26.76	26.91
EDGE 11 (MCS9)	25.40	25.70	25.85
EDGE 12 (MCS9)	24.01	24.33	24.53

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	**22.85**	22.82	22.80
HSDPA Subtest-1	22.79	22.73	22.71
HSDPA Subtest-2	22.73	22.78	22.68
HSDPA Subtest-3	22.32	22.35	22.27
HSDPA Subtest-4	22.31	22.26	22.16
HSUPA Subtest-1	22.75	22.78	22.78
HSUPA Subtest-2	20.42	20.59	20.41
HSUPA Subtest-3	21.85	21.79	21.86
HSUPA Subtest-4	20.32	20.26	20.25
HSUPA Subtest-5	22.80	22.79	22.65

ERP POWER (dBm)

GSM 850 (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	ERP POWER	
				dBm	Watt
128	824.2	-3.38	32.91	27.38	0.55
189	836.4	-3.40	33.7	28.15	0.65
251	848.8	-3.45	34.14	28.54	**0.71**
GSM 850 (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	ERP POWER	
				dBm	Watt
128	824.2	-7.20	35.18	25.83	0.38
189	836.4	-7.60	35.27	25.52	0.36
251	848.8	-7.90	35.27	25.22	0.33

EDGE 850 (1 Uplink) (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	ERP POWER	
				dBm	Watt
128	824.2	-3.85	32.91	26.91	0.49
189	836.4	-3.90	33.7	27.65	0.58
251	848.8	-4.12	34.14	27.87	**0.61**
EDGE 850 (1 Uplink) (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	ERP POWER	
				dBm	Watt
128	824.2	-7.50	35.18	25.53	0.36
189	836.4	-7.92	35.27	25.20	0.33
251	848.8	-8.02	35.27	25.10	0.32

WCDMA Band V_RMC 12.2K (Horizontal)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	ERP POWER	
				dBm	Watt
4132	826.4	-5.43	33.11	25.53	0.36
4182	836.4	-5.64	33.7	25.91	0.39
4233	846.6	-5.95	34.13	26.03	**0.40**
WCDMA Band V_RMC 12.2K (Vertical)					
CHANNEL NO.	FREQUENCY (MHz)	SPA Reading (dBm)	CORRECTION FACTOR (dB)	ERP POWER	
				dBm	Watt
4132	826.4	-9.42	35.28	23.71	0.23
4182	836.4	-10.67	35.27	22.45	0.18
4233	846.6	-10.96	35.37	22.26	0.17

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 STABILIITY MEASUREMENT

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

4.2.2 TEST PROCEDURE

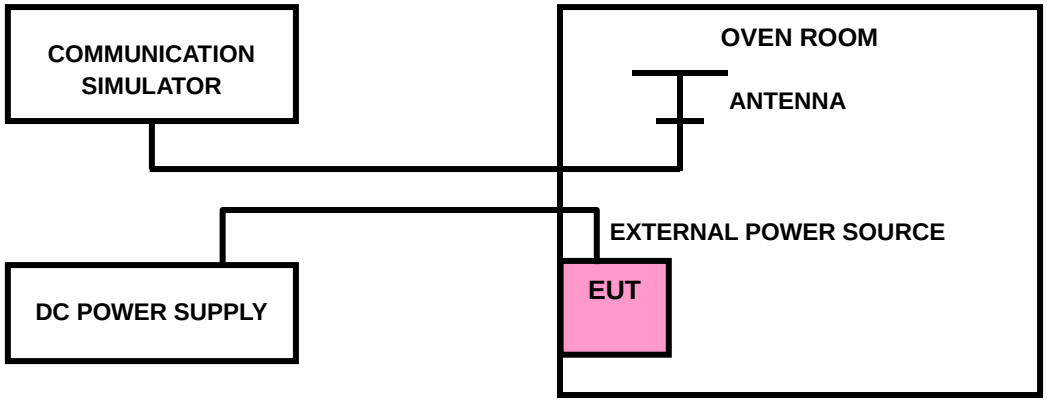
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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	
3.8	0.02	0.02	0.02	2.5
3.6	0.02	0.02	0.01	2.5
4.2	0.02	0.02	0.02	2.5

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

FREQUENCY ERROR vs. TEMPERATURE.

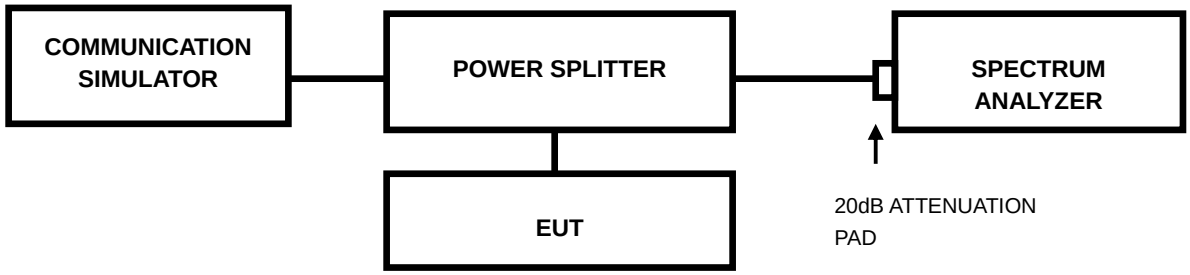
TEMP. (℃)	FREQUENCY ERROR (PPM)			LIMIT (PPM)
	GSM	EDGE	WCDMA	
-10	0.03	0.03	0.03	2.5
0	0.02	0.02	0.03	2.5
10	0.02	0.02	0.02	2.5
20	0.01	0.01	0.02	2.5
30	0.02	0.02	0.01	2.5
40	0.02	0.02	0.02	2.5
50	0.02	0.02	0.02	2.5
55	0.02	0.02	0.02	2.5

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

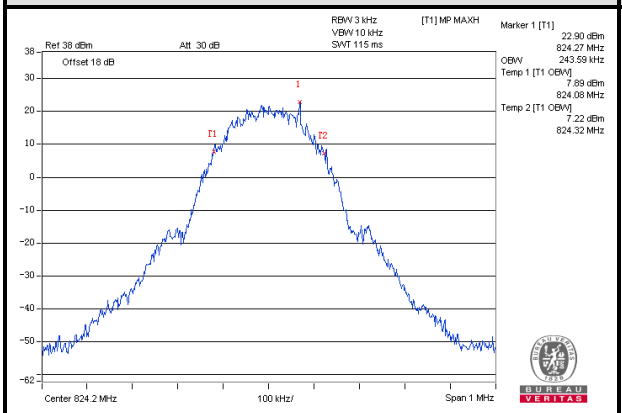


4.3.3 TEST RESULTS

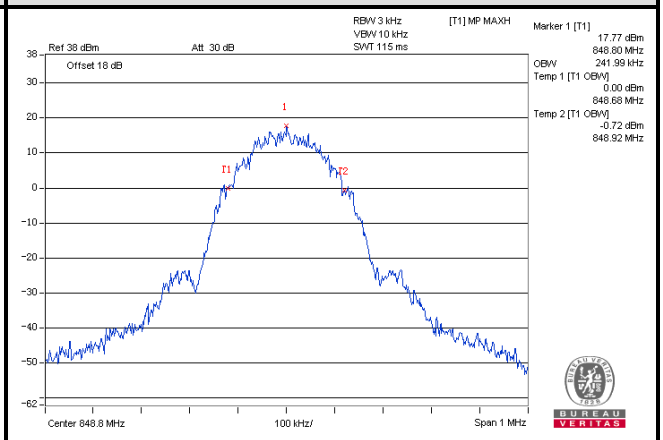
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
		GSM	EDGE			WCDMA
128	824.2	243.59	241.99	4132	826.4	4180
190	836.6	241.99	240.38	4182	836.4	4180
251	848.8	241.99	241.99	4233	846.6	4200

SPECTRUM PLOT OF WORST VALUE

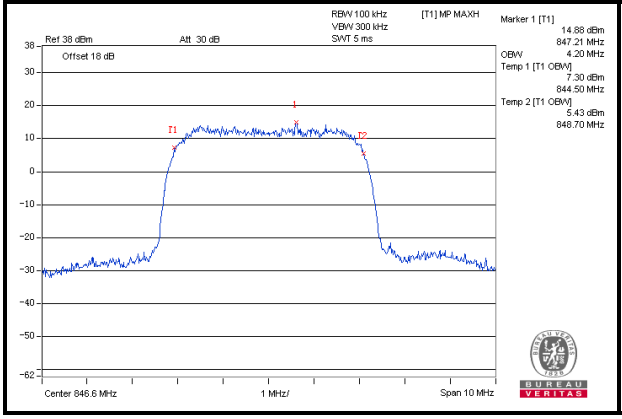
GSM



EDGE



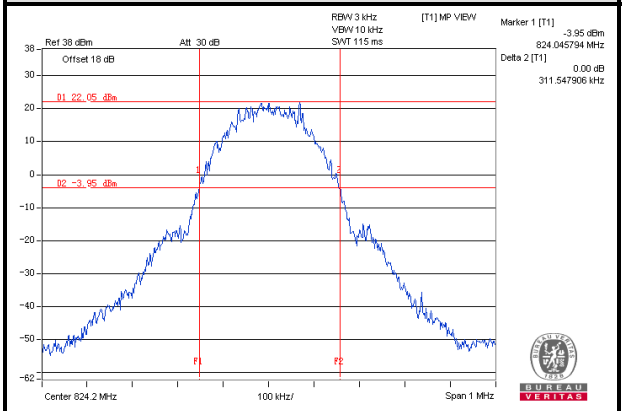
WCDMA



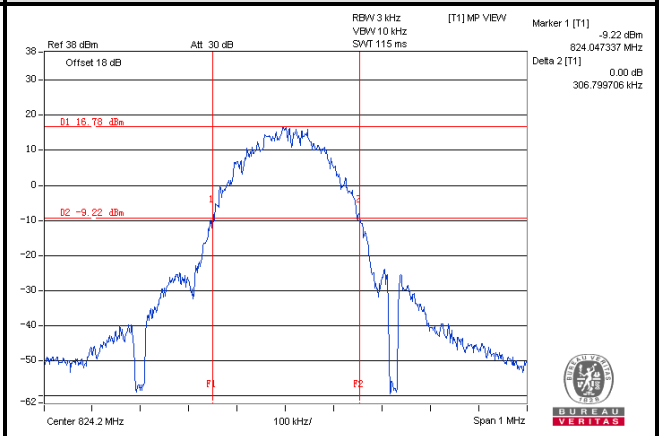
CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (kHz)		CHANNEL	FREQUENCY (MHz)	26dB BANDWIDTH (kHz)
		GSM	EDGE			WCDMA
128	824.2	311.54	306.79	4132	826.4	4735
190	836.6	310.02	303.58	4182	836.4	4711
251	848.8	308.48	306.11	4233	846.6	4718

SPECTRUM PLOT OF WORST VALUE

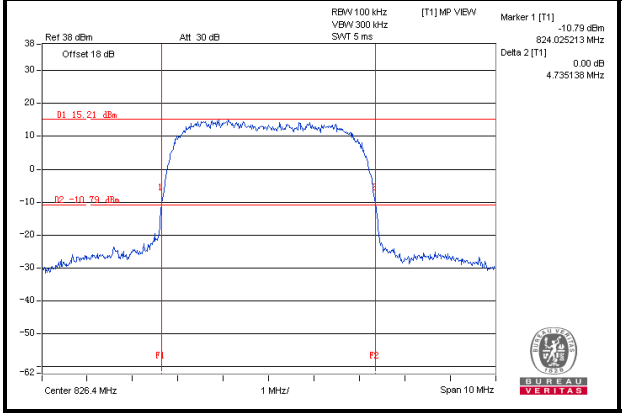
GSM



EDGE



WCDMA

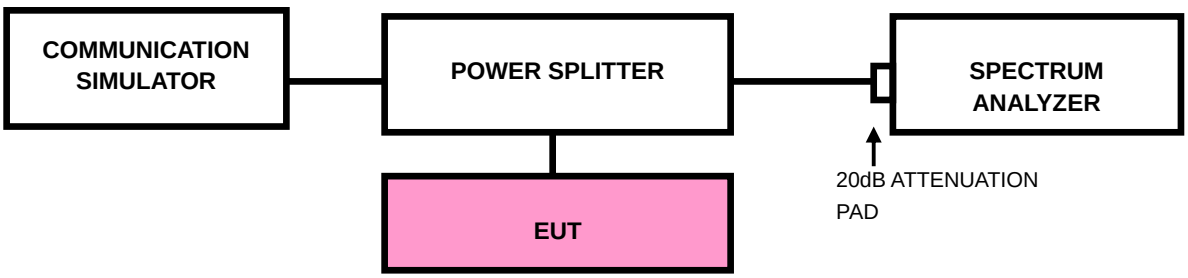


4.4 BAND EDGE MEASUREMENT

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 1.5 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/ EDGE).

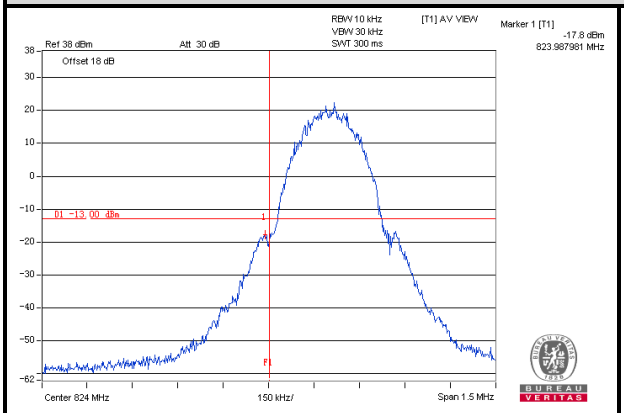
c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).

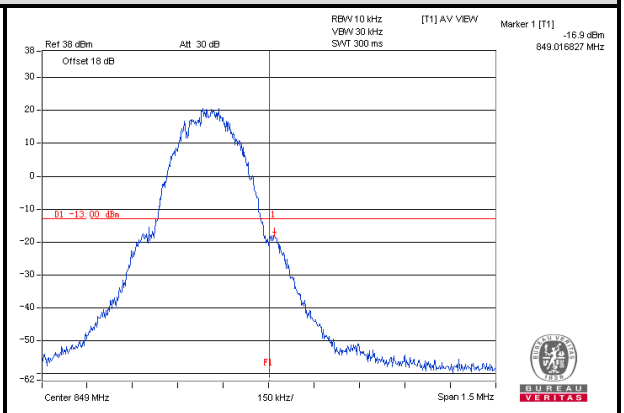
d. Record the max trace plot into the test report.

4.4.4 TEST RESULTS

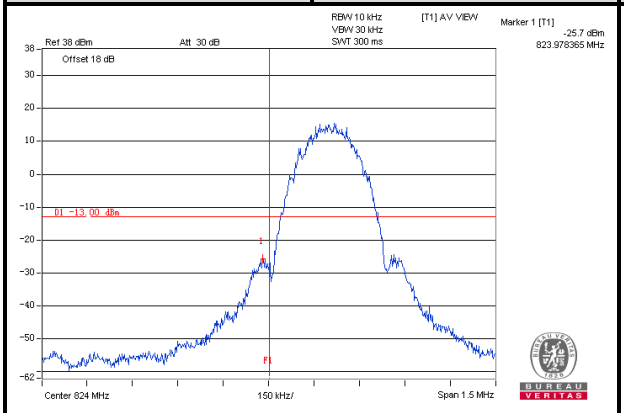
GSM			
CHANNEL	128	CHANNEL	251

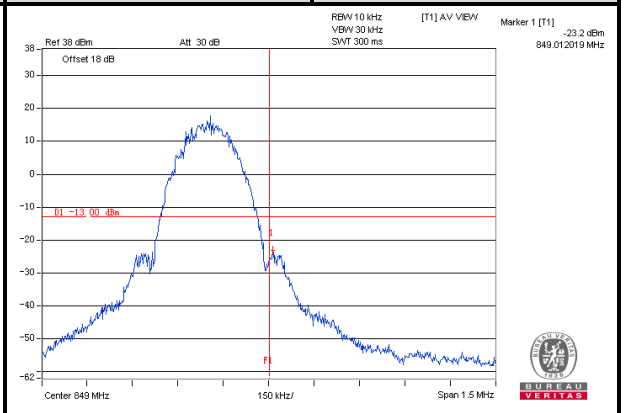
GSM



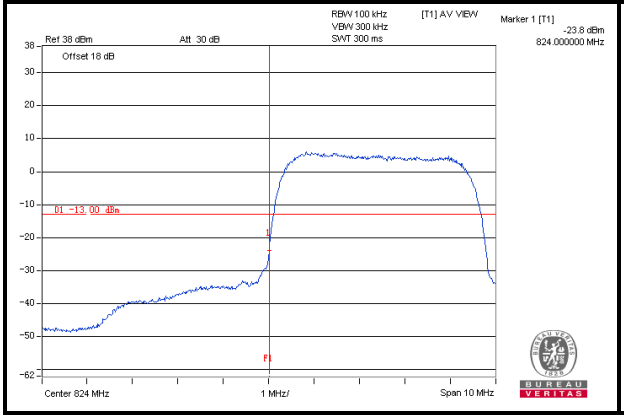


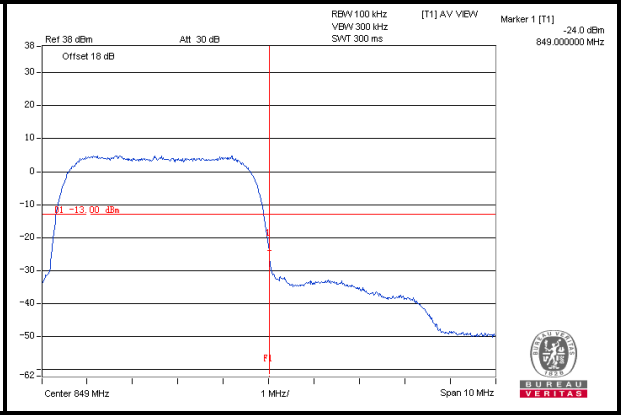
EDGE			
CHANNEL	128	CHANNEL	251





WCDMA			
CHANNEL	4132	CHANNEL	4233





4.5 CONDUCTED SPURIOUS EMISSIONS

4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

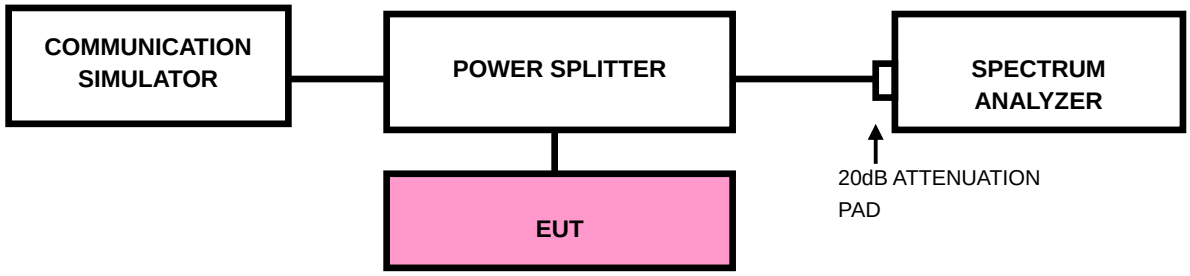
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

4.5.2 TEST PROCEDURE

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.

4.5.3 TEST SETUP

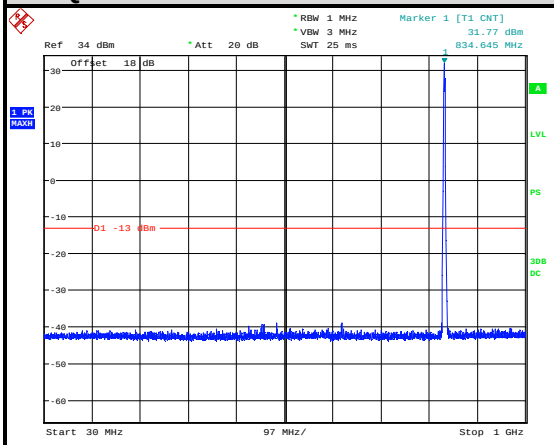


4.5.4 TEST RESULTS

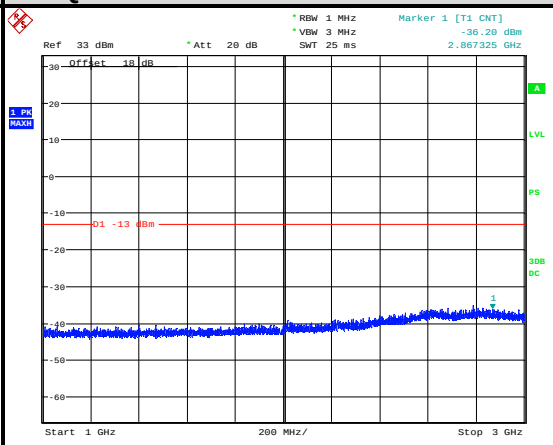
GSM

CHANNEL 189

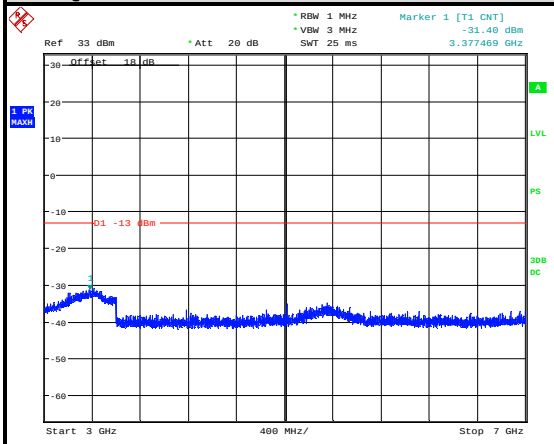
FREQUENCY RANGE : 30MHz~1GHz



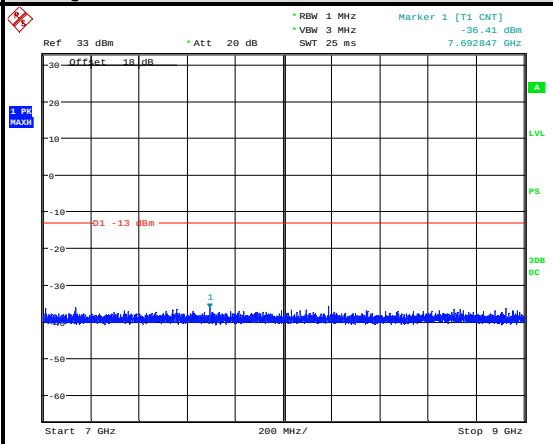
FREQUENCY RANGE : 1GHz~3GHz



FREQUENCY RANGE : 3GHz~7GHz



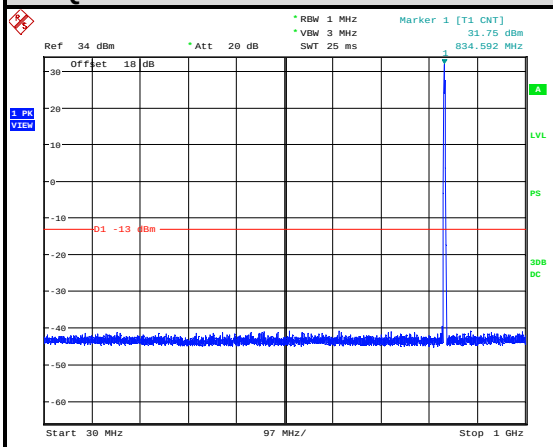
FREQUENCY RANGE :7GHz~9GHz



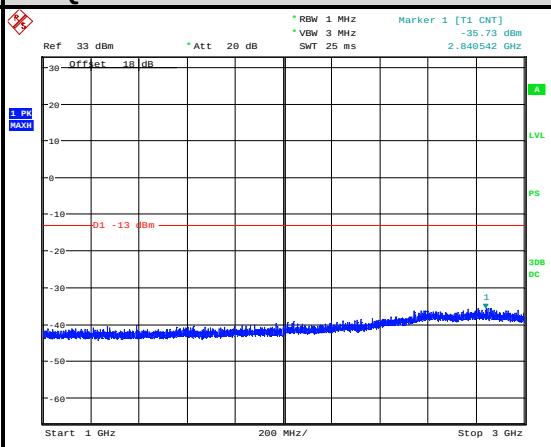
EDGE

CHANNEL 189

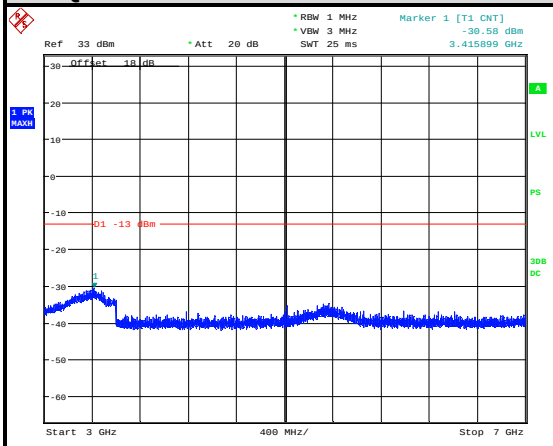
FREQUENCY RANGE : 30MHz~1GHz



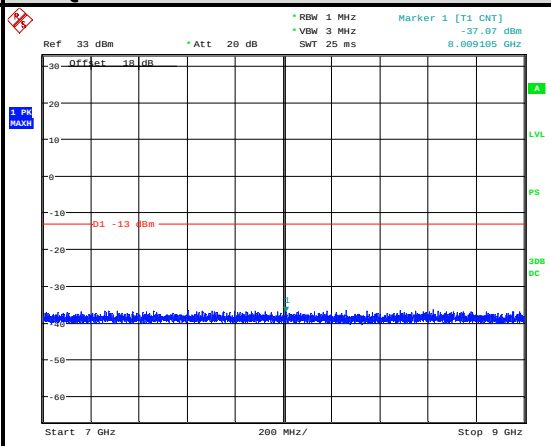
FREQUENCY RANGE : 1GHz~3GHz



FREQUENCY RANGE : 3GHz~7GHz



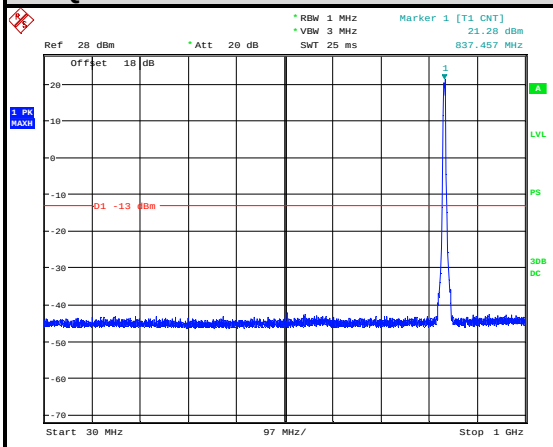
FREQUENCY RANGE :7GHz~9GHz



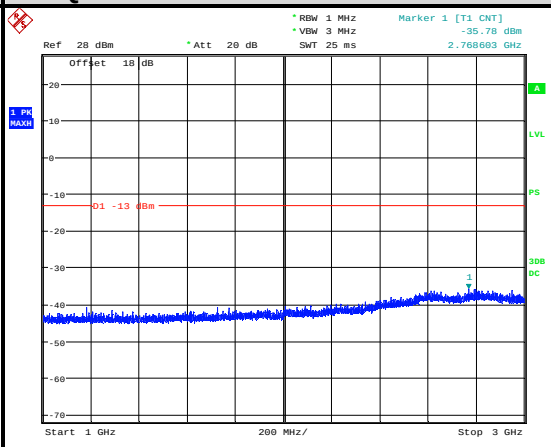
WCDMA

CHANNEL 4182

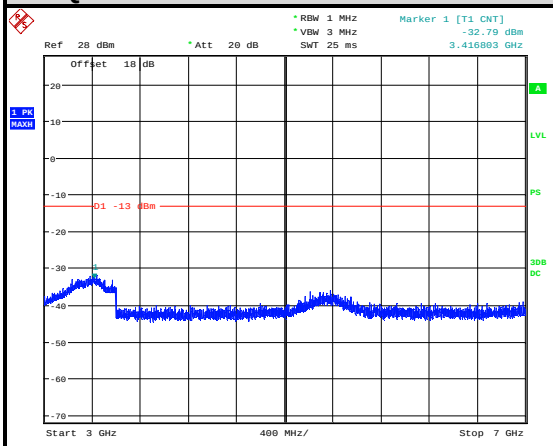
FREQUENCY RANGE : 30MHz~1GHz



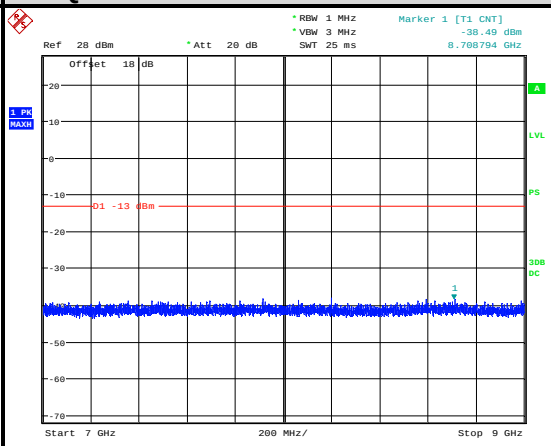
FREQUENCY RANGE : 1GHz~3GHz



FREQUENCY RANGE : 3GHz~7GHz



FREQUENCY RANGE :7GHz~9GHz



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

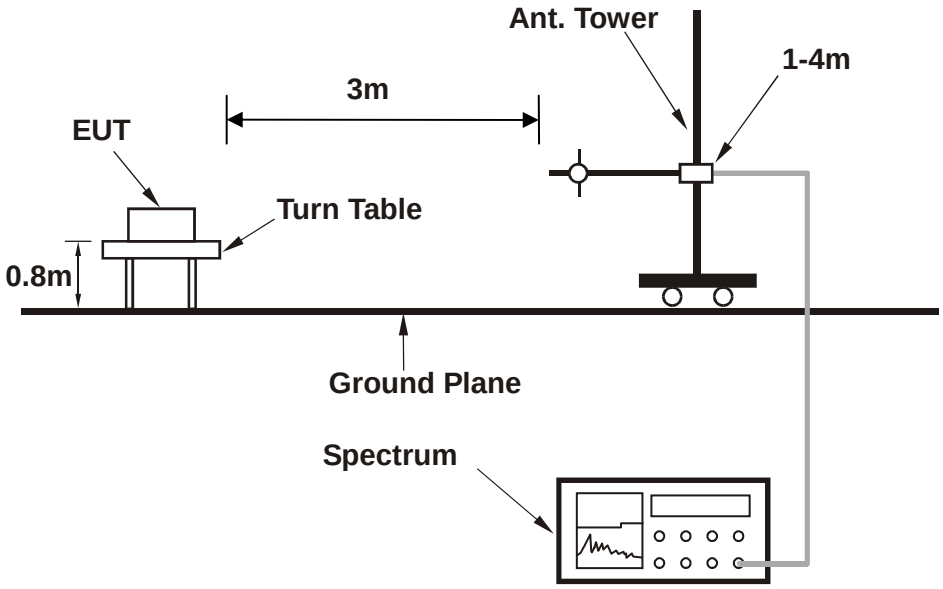
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

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

4.6.3 DEVIATION FROM TEST STANDARD

No deviation

4.6.4 TEST SETUP



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

4.6.5 TEST RESULTS

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	-46.85	-13	-42.03	0.46	-41.57
2	2509	-48.74	-13	-39.98	0.17	-39.81
3	3345	-52.33	-13	-42.80	1.49	-41.31
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	-45.74	-13	-38.21	0.46	-37.75
2	2509	-46.85	-13	-36.68	0.17	-36.51
3	3345	-55.48	-13	-43.66	1.49	-42.17

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)

EDGE:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-48.52	-13	-43.75	0.46	-43.29
2	2509	-50.14	-13	-41.43	0.17	-41.26
3	3345	-53.45	-13	-43.95	1.49	-42.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)
1	1672	-47.59	-13	-40.14	0.46	-39.68
2	2509	-49.25	-13	-39.16	0.17	-38.99
3	3345	-52.41	-13	-40.57	1.49	-39.08

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	-51.41	-13	-46.71	0.46	-46.25
2	2509	-53.69	-13	-45.13	0.17	-44.96
3	3345	-57.48	-13	-48.08	1.49	-46.59
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	-52.1	-13	-44.85	0.46	-44.39
2	2509	-54.46	-13	-44.54	0.17	-44.37
3	3345	-57.69	-13	-45.88	1.49	-44.39

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)

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

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:

Dongguan EMC/RF Lab:
Tel: +86-769-85935656
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.

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---