

FCC TEST REPORT (PART 22)

 REPORT NO.:
 RF120402C01

 MODEL NO.:
 PJ83110

 FCC ID:
 NM8PJ83110

 RECEIVED:
 Apr. 02, 2012

 TESTED:
 Apr. 08 ~ Apr. 10, 2012

 ISSUED:
 Apr. 19, 2012

APPLICANT: HTC Corporation

ADDRESS: 23, Xinghua Rd., Taoyuan 330, Taiwan, R.O.C.

- **ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
- LAB ADDRESS: No. 47, 14th Ling, Chia Pau 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 test report consists of 32 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.





TABLE OF CONTENTS

RELEA	SE CONTROL RECORD	3
1	CERTIFICATION	4
2	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY	5
2.2	TEST SITE AND INSTRUMENTS	6
3	GENERAL INFORMATION	7
3.1	GENERAL DESCRIPTION OF EUT	7
3.2	CONFIGURATION OF SYSTEM UNDER TEST	8
3.3	DESCRIPTION OF SUPPORT UNITS	8
3.4	TEST ITEM AND TEST CONFIGURATION	9
3.5	EUT OPERATING CONDITIONS	10
3.6	GENERAL DESCRIPTION OF APPLIED STANDARDS	10
4	TEST TYPES AND RESULTS	11
4.1	OUTPUT POWER MEASUREMENT	11
4.1.1	LIMITS OF OUTPUT POWER MEASUREMENT	11
4.1.2	TEST PROCEDURES	11
4.1.3	TEST SETUP	12
4.1.4	TEST RESULTS	13
4.2	FREQUENCY STABILITY MEASUREMENT	15
4.2.1	LIMITS OF FREQUENCY STABILIITY MEASUREMENT	15
4.2.2	TEST PROCEDURE	15
4.2.3	TEST SETUP	15
4.2.4	TEST RESULTS	16
4.3	OCCUPIED BANDWIDTH MEASUREMENT	17
4.3.1	TEST PROCEDURES	17
4.3.2	TEST SETUP	17
4.3.3	TEST RESULTS	
4.4	BAND EDGE MEASUREMENT	
4.4.1	LIMITS OF BAND EDGE MEASUREMENT	
4.4.2	TEST SETUP	-
4.4.3	TEST PROCEDURES	
4.4.4	TEST RESULTS	20
4.5	CONDUCTED SPURIOUS EMISSIONS	
4.5.1	LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	
4.5.2	TEST PROCEDURE	21
4.5.3	TEST SETUP	21
4.5.4	TEST RESULTS	
4.6	RADIATED EMISSION MEASUREMENT	
4.6.1	LIMITS OF RADIATED EMISSION MEASUREMENT	24
4.6.2	TEST PROCEDURES	
4.6.3	DEVIATION FROM TEST STANDARD	
4.6.4	TEST SETUP	
4.6.5	TEST RESULTS	-
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	
6	INFORMATION ON THE TESTING LABORATORIES	
7	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EI BY THE LAB	



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120402C01	Original release	Apr. 19, 2012



CERTIFICATION 1

PRODUCT: Smart Phone **MODEL:** PJ83110 BRAND: HTC **APPLICANT: HTC Corporation TESTED:** Apr. 08 ~ Apr. 10, 2012 **TEST SAMPLE:** Production Unit STANDARDS: FCC PART 22, Subpart H

The above equipment (model: PJ83110) 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 : ______, Apr. 19, 2012 APPROVED BY : ______, DATE : ______ Apr. 19, 2012



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		Meet the requirement of limit. Minimum passing margin is -17.86dB at 30.00MHz.			

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	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
	30MHz ~ 200MHz	2.93 dB
Radiated emissions	200MHz ~1000MHz	2.95 dB
Radialed emissions	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
Test Receiver Agilent	N9038A	MY51210203	Dec. 22, 2011	Dec. 21, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 21, 2011	Dec. 20, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 20, 2011	Dec. 19, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 20, 2011	Dec. 19, 2012
Preamplifier EMCI	EMC 012645	980115	Dec. 30, 2011	Dec. 29, 2012
Preamplifier EMCI	EMC 330H	980112	Dec. 30, 2011	Dec. 29, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 21, 2011	Oct. 20, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Jan. 02, 2012	Jan. 01, 2013
RF signal cable Worken	RG-213	NA	Jan. 02, 2012	Jan. 01, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	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 test was performed in HwaYa Chamber 9.
- 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 4. The FCC Site Registration No. is 460141.
- 5. The IC Site Registration No. is IC 7450F-4.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Smart Phone		
MODEL NO.	PJ83110		
POWER SUPPLY	5.0Vdc (adapter or host equipment)		
	3.7Vdc (battery)		
MODULATION TYPE	GSM, GPRS: GMSK		
MODULATION TIPE	EDGE: 8PSK		
FREQUENCY RANGE	824.2MHz ~ 848.8MHz		
MAX. ERP POWER	GSM: 1.23Watts		
MAA. ERF FOWER	EDGE: 0.25Watts		
MULTI-SLOTS CLASS	10		
ANTENNA TYPE	Fixed Internal antenna with -1 dBi gain		
I/O PORTS	Refer to users' manual		
DATA CABLE	Refer to NOTE as below		
ACCESSORY DEVICES	Refer to NOTE as below		

NOTE:

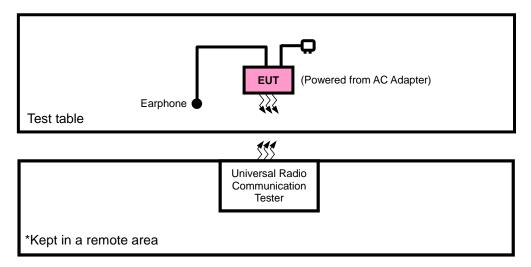
1. The EUT's accessories list refers to Ext Pho.pdf.

2. 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



FOR E.R.P. TEST

Test table	EUT (Powered from battery)	

	Universal Radio Communication Tester	
*Kept in a remote area		

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	Universal Radio Communication Tester	R&S	CMU200	104484	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

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

GSM MODE

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

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	26deg. C, 58%RH	3.7Vdc	Phoenix Chen
FREQUENCY STABILITY	26deg. C, 58%RH	3.7Vdc	Phoenix Chen
OCCUPIED BANDWIDTH	26deg. C, 58%RH	3.7Vdc	Phoenix Chen
BAND EDGE	26deg. C, 58%RH	3.7Vdc	Phoenix Chen
CONDCUDETED EMISSION	26deg. C, 58%RH	3.7Vdc	Phoenix Chen
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu



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. RWB 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.P.R power - 2.15dBi.

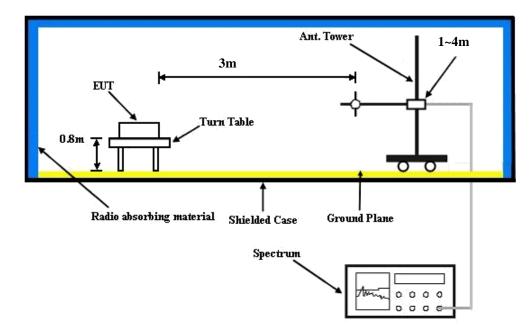
CONDUCTED POWER MEASUREMENT:

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.



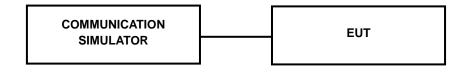
4.1.3 TEST SETUP

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	
GSM (1 Uplink)	33.36	33.01	33.11	
GPRS 8 (1 Uplink)	33.35	32.98	33.18	
GPRS 10 (2 Uplink)	30.39	30.17	30.07	
EDGE 8 (1 Uplink)	26.59	26.51	26.47	
EDGE 10 (2 Uplink)	26.74	26.68	26.60	



ERP POWER (dBm)

GSM

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(W)	Polarization (H/V)
	128	824.2	0.42	32.62	30.89	1.23	Н
	189	836.4	0.08	32.52	30.45	1.11	Н
v	251	848.8	-0.08	32.65	30.42	1.10	Н
Ť	128	824.2	-6.63	32.76	23.98	0.25	V
	189	836.4	-6.62	32.39	23.62	0.23	V
	251	848.8	-7.33	32.54	23.06	0.20	V

EDGE

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(W)	Polarization (H/V)
	128	824.2	-6.58	32.62	23.89	0.24	н
	189	836.4	-6.41	32.52	23.96	0.25	Н
Y	251	848.8	-7.03	32.65	23.47	0.22	Н
r	128	824.2	-13.86	32.76	16.75	0.05	V
	189	836.4	-13.41	32.39	16.83	0.05	V
	251	848.8	-13.96	32.54	16.43	0.04	V



4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

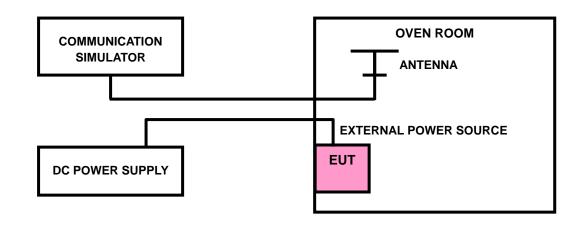
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 $\pm 0.5^{\circ}$ 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





4.2.4 TEST RESULTS

FREQUENCY ERROR VS. VOLTAGE

	FREQUENCY	ERROR (ppm)	
VOLTAGE (Volts)	GSM	EDGE	LIMIT (ppm)
3.8	0.02	0.03	2.5
3.6	0.02	0.03	2.5
4.2	0.03	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. (℃)	FREQUENCY	ERROR (ppm)	
	GSM	EDGE	LIMIT (ppm)
-10	-0.03	0.03	2.5
0	0.04	0.04	2.5
10	0.05	0.03	2.5
20	0.04	0.03	2.5
30	0.04	0.04	2.5
40	0.04	0.03	2.5
50	0.03	0.03	2.5
55	0.03	0.03	2.5

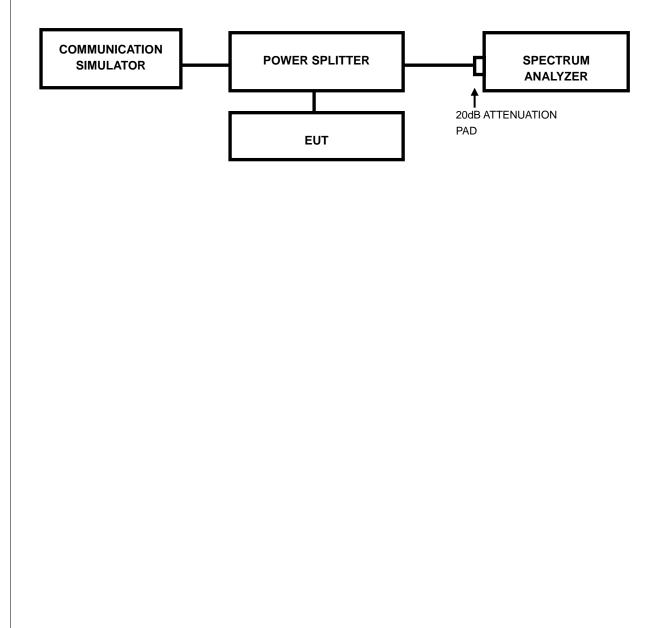


4.3 OCCUPIED BANDWIDTH MEASUREMENT

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 TEST SETUP





4.3.3 TEST RESULTS

	FREQUENCY	99% OCCUPIED E	BANDWIDTH (kHz)
CHANNEL	(MHz)	GSM	EDGE
128	824.2	242.37	240.94
189	836.4	242.85	240.43
251	848.8	245.14	242.61

SPECTRU	M PLOT	OF WORST VALUE	
GSM		EDGE	
Addred Spectrum Analyzer: Concepted BW B 200 200 200 200 200 200 200 200 200 20	Frequency	Agtbort Spectrum Andyzer - Drospied BW 9996-911 1970 - 1970 - 2010 - 20	otd/Y Scale
r#FGalacLow #Atten: 30 dB Radio Device: BTS Ref Offset 13.5 dB 10 dB/dw Ref 30.00 dBm		#FGalicLow #Atten: 30 dB Radio Device: BTS Ref Offset 135 dB 10 dBid/w Ref 30.00 dBm	Ref Value 30.00 dBm
Log 200 100	Center Freq 848.800000 MHz	Att	tenuation [30 dB]
			Scale/Div 10.0 dB
		200 Contraction of the contracti	
Image: Center 848.8 MHz Span 1 MHz #Res BW 3 kHz #VBW 10 kHz Sweep 105.5 ms	CF Step 100.000 kHz Auto Man	60.0	esel Center
Occupied Bandwidth Total Power 39.7 dBm 245.14 kHz	Freq Offset 0 Hz	Occupied Bandwidth Total Power 32.3 dBm Pro	esel Adjust 0 Hz
Transmit Freq Error 838 Hz OBW Power 99.00 % x dB Bandwidth 310.8 kHz x dB -26.00 dB		Transmit Freq Error 245 Hz OBW Power 99.00 % x dB Bandwidth 315.1 kHz x dB -26.00 dB	More 1 of 2
MSQ STATUS	1	MSG STATUS	

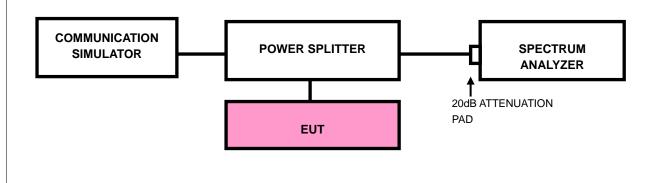


4.4 BAND EDGE MEASUREMENT

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

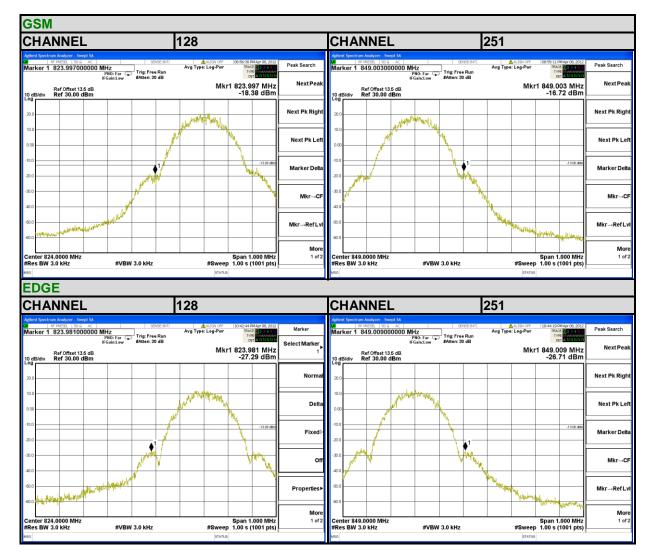


4.4.3 TEST PROCEDURES

- 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





4.5 CONDUCTED SPURIOUS EMISSIONS

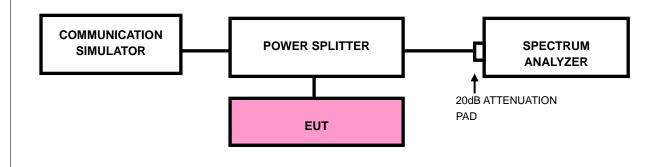
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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.
- Measuring frequency range is from 30 MHz to 9GHz. 10dB 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

Bits Mirt II 27.23 Mirz Mirz II 272 GHz Mirz III 272 GHz Mirz IIII 272 GHz Mirz IIIII 272 GHz Mirz IIIII 272 GHz Mirz IIIII 272 GHz Mirz IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	RE	QUENC	Y RAN	GE : 3	80MHz~	1GHz					NGE :	1GHz~:	3GHz		
Image: Second and		Ref Offset 13.5 dB	PNO: Fast IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	Aug Type: Log	Pwr TRAC Mkr1 872.	.93 MHz		Marker 2 1.672	50 P AC D00000000 GHz PN0: Fast IFGain:Higt set 13.5 dB	SENSE IN Trig: Free Run #Atten: 0 dB	T Avg Type: Le	og-Pwr Mkr2 1	TYPE NINNNN DET PINNNNN	Marker Tat
Image: State 1 Image	3.6	Ref 33.50 dBm				-30.		Next Pk Right	10 dB/div Ref -6	.50 dBm			-0	_	Marker Cour [Of
Image: State of the state	50							Next Pk Left	-26.5				1		Cou Mark ^{On}
Image: Second	50						-13.00 dBm	Marker Delta	-56.5	◆ ²					
Image: Second	5					↓ 1		Mkr→CF	-76.5	adat for a second and					
Introduction Stop 1.0000 GHz Peak Search Introduction Stop 1.0000 GHz Introduction Stop 1.0000 GHz <td>5</td> <td></td> <td></td> <td>in a fail and a fail of a</td> <td></td> <td></td> <td></td> <td>Mkr→RefLvl</td> <td>-96.5 Start 1.000 GHz</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>All Markers</td>	5			in a fail and a fail of a				Mkr→RefLvl	-96.5 Start 1.000 GHz						All Markers
Ref offset 13.5 dB Mikr1 8.028 GHz Bibling Arg Type: Leg-Rw Marker Delta Marker Delta						Stop 1.0	0000 GHz		MKR MODE TRC SCL	2.510 GHz	-44,94 dBm				M 2
W VI VI VIIII VIIIII VIIIIII VIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	CO DW	/ 1.0 MHz	#VBW 3	3.0 MHz					2 N 1 F	1.6/2 GHZ	-50.75 dBm			>	
Ref Offset 13.5 dB Mkr1 6.028 GHz Next Peak Ref Offset 13.5 dB Mkr1 7.038 GHz Next Peak 6	3					STATUS			MSG		1	7GHz~9		×	
5 Next Pk Right 165	RE	QUENC	CY RAN	GE:3	BGHz~7		(1001 pts)	Peak Search	FREQU		ANGE :7	T AL		TRACE 1 2 3 4 5 6	Peak Search
Image: second secon	RE	REQUENC	DOO GHZ PHO: Fast IFGain:High	GE:3	BGHz~7		(1001 pts)		Ref Offi	ENCY RA 502 AC 000000000 GHz PNO: Fast Feat:High set 13.5 dB		T AL	OGHZ	TWPE PNNNNN DET PNNNNNN 7.038 GHz	Peak Search Next Pe
Image: Solution of the second of the seco	RE ent Spect arker 1 dB/div	REQUENC	DOO GHZ PHO: Fast IFGain:High	GE:3	BGHz~7		(1001 pts) (1001	Next Peak	King	ENCY RA 502 AC 000000000 GHz PNO: Fast Feat:High set 13.5 dB		T AL	OGHZ	7.038 GHz 4.92 dBm	
5 755 765 MkrRefL 765 MkrRefL MkrRefL	RE ant Spect trker 1 dB/div	REQUENC	DOO GHZ PHO: Fast IFGain:High	GE:3	BGHz~7		(1001 pts) (1001	Next Peak	Comparison of the second	ENCY RA 502 AC 000000000 GHz PNO: Fast Feat:High set 13.5 dB		T AL	OGHZ	7.038 GHz 4.92 dBm	NextP
5 MkrRefLvl ^{88,5} MkrRefLvl	dB/div	REQUENC	DOO GHZ PHO: Fast IFGain:High	GE:3	BGHz~7		(1001 pts) (1001	Next Peak	Control (Control (Contro) (Contro) (Contro) (Contro) (Contro) (Contro) (Contro) (Contro)	ENCY RA 502 AC 000000000 GHz PNO: Fast Feat:High set 13.5 dB		T AL	OGHZ	7.038 GHz 4.92 dBm	Next Pr Next Pk Ri Next Pk I
5	RE Int Spect	Ref Offset 13.5 dB	CY RAN	GE: 3	BGHz~7		(1001 pts) (1001	Next Peak	€ wind FREQUI Address Systems Address Marker 1 7.038 Marker 1 7.038 Marker 4 10 gB/div Ref -6 0 gB/	ENCY RA 502 AC 000000000 GHz PNO: Fast Feat:High set 13.5 dB	Trig: Free Run RAtten: 0 dB	Avg Type: L)GHz 120 OF 0839 99-Pwr Mkr1 7 -6	7.038 GHz 44.92 dBm 	Next Pr



ilent	EQU Spectrum And	alyzer - Swep		RAN			MHz						n Analyzer - Swe								
ark	er 1 869	9.050000	AC DOOD MHz PNC	t): Fast 🖵 iin:Low	SEN	Run	Avg Type:	Log-Pwr	10:47:50 PI TRACI TVP	MApr 08, 2012	Peak Search		RF 50 Q	PNO: F	Trig: F	sense:INT	Avg Type:	Log-Pwr	10:49:56 PM TRACE TYPE DFT	Apr 08, 2012	Trace/Det
dB	Ref div Ref	Offset 13.5 33.50 di	dB	in:Low	#Atten: 30	dB		Mk	r1 869.0 -34.1	05 MHz 17 dBm	Next Peak	10 dB/div	Ref Offset 13. Ref -6.50 d	IFGain:F 5 dB Bm	igh #Atter	: 0 dB		М	kr2 2.51 -52.45		Select Trace Trace
3.6											Next Pk Right	-16.6								-13.00 dBm	ClearW
3.6 .50											Next Pk Left	-26.5			1						Trace Avera
50										-13.00 dBm	Marker Delta	-56.5						¢²-	nut face and a		MaxH
6.5 6.5									∳ ¹		Mkr→CF	-76.5	dia yakatati yakata	P-70-0304							Min H
6.5	y da e y porte por	under land and	1.**:~~~./}%@@	kuraatiinaa kuraa	4444 mm - 1446	Armers-Lieve	i sourcedord file of the				Mkr→RefLvl	-96.5 Start 1.000 #Res BW 1							Stop 3.0 500 ms (1		View/Blar Vie
	20.0 MIL								Oton 4 0	000 011	More			1.672 GH	z -49.607	dBm				-	
R		UEN			3.0 MHZ	: 30	; ∋Hz~	*Sweep	500 ms (1	000 GHz 1001 pts)	1 of 2			1.672 GH 2.510 GH	1		⊖Hz~	status 9GH	Iz	×	1
R	EQU Spectrum And RF er 1 6.0	MHz UEN alyzer - Swep 50 2 8400000	AC AC DOODO GH PNC IFGa	RAN		SE:INT	GHz~	ALIGN OFF	10:50:53 P	MAPY 08, 2012 PANNIN PANNIN 84 GHz		1 N 1 2 N 1 C MSG FREC Aglent Spectru Marker 1	f DUEN NANALYZET - SWE RF 50 € 7.6180000	ICY R AC 000000 GHz PNO: F. IFGain:		E :70		9GH	10:51:45 PM TRACE TVPE DET	12345 9NNNNN 18 GHz	1 Peak Searci Next P
es R	EQU Spectrum And er 1 6.0 Ref	UEN	AC DOOOO GH PNC IFGa			SE:INT	GHz~	ALIGN OFF	10:50:53 P	MApr 08, 2012	1 of 2 Peak Search	IN 1 IN 1	QUEN	ICY R		E :70		9GH	10:51:45 PM TRACE TVPE DET	123456 M (1111) P N N N N N	Peak Searc
	EQU Spectrum And Fer 1 6.0 Ref	MHZ UEN 1972 - Swep 50 2 8400000	AC DOOOO GH PNC IFGa			SE:INT	GHz~	ALIGN OFF	10:50:53 P	MAPY 08, 2012 12, 45, 55 84 GHz 55 dBm	1 of 2 Peak Search Next Peak	Aritent Spectra Marker 1	f f DAnalyzer - Swa RF 50 Ω 7.6180000 Ref Offset 13.	ICY R		E :70		9GH	10:51:45 PM TRACE TVPE DET	PNNNN 9 dBm	Peak Searc Next F
	EQU Spectrum And Fer 1 6.0 Ref	MHZ UEN 1972 - Swep 50 2 8400000	AC DOOOO GH PNC IFGa			SE:INT	GHz~	ALION OFF Log-Pwr M	10:50:53 P	MAPY 08, 2012 12, 45, 55 84 GHz 55 dBm	1 of 2 Peak Search Next Peak Next Pk Right	1 N 1 2 N 1 2 N 1 4 N 1 6 - 1 10 dBJdiv - 16.5 - - -26.5 - -	f f DAnalyzer - Swa RF 50 Ω 7.6180000 Ref Offset 13.	ICY R		E :70		9GH	10:51:45 PM TRACE TVPE DET	PNNNN 9 dBm	Peak Searc Next F Next Pk R
	EQU Spectrum And Fer 1 6.0 Ref	VIH2	AC DOOOO GH PNC IFGa	RAN Izz Frast in:High		SE:INT	GHz~	ALIGN OFF	10:50:53 P	MAPY 08, 2012 12, 45, 55 84 GHz 55 dBm	1 of 2 Peak Search Next Peak Next Pk Right Next Pk Left	1 1 2 1 100 FREC Addref Sectro 1 10 dB/dv 10 10 15 - 26.5 - 36.5 - 46.5 -	f f DAnalyzer - Swa RF 50 Ω 7.6180000 Ref Offset 13.	ICY R		E :70		9GH	10:51:45 PM TRACE TVPE DET	12 2 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Peak Searc Next F Next Pk R Next Pk
es R	EQU Spectrum And Fer 1 6.0 Ref	VIH2	AC AC PPROD IFGa 6 dB 8m	RAN Izz Frast in:High		SE:INT	GHz~	ALION OFF Log-Pwr M	10:50:53 P	MAPY 08, 2012 12, 45, 55 84 GHz 55 dBm	1 of 2 Peak Search Next Peak Next Pk Right Next Pk Left Marker Delta	1 N 1 2 N 1 4	f f DAnalyzer - Swa RF 50 Ω 7.6180000 Ref Offset 13.	ICY R		E :70	Avg Type:	9GH	10:51:45 PM TRACE Ver Ver 10:4:17.61 -65.0	12 2 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Peak Searc Next F Next Pk R Next Pk Marker I



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.

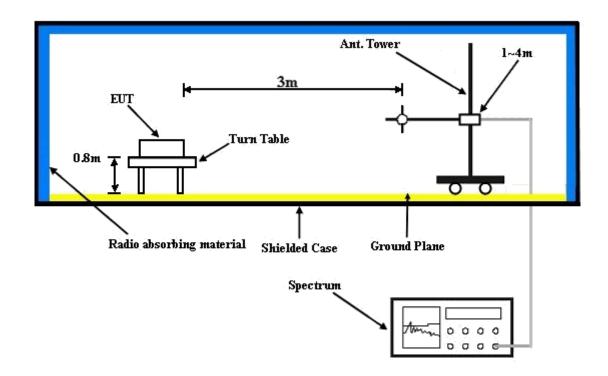
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.6.3 DEVIATION FROM TEST STANDARD

No deviation



4.6.4 TEST SETUP

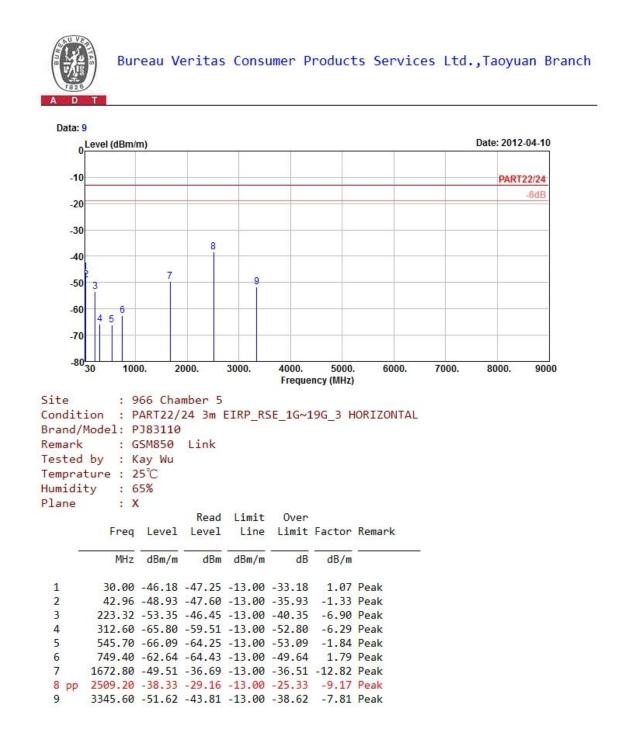


For the actual test configuration, please refer to the attached file (Test Setup Photo).



4.6.5 TEST RESULTS

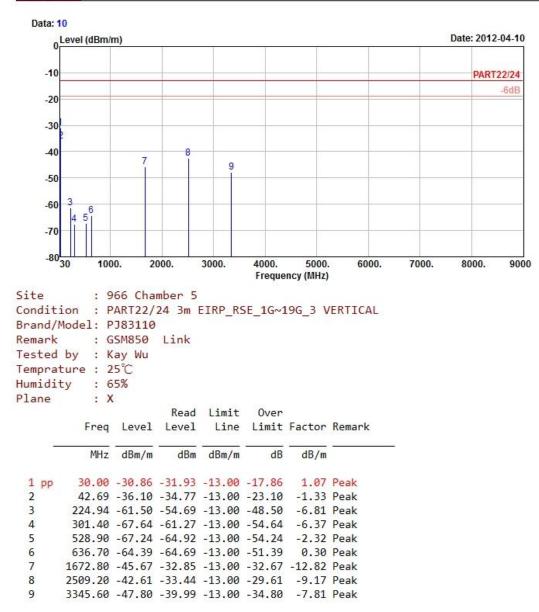
GSM:





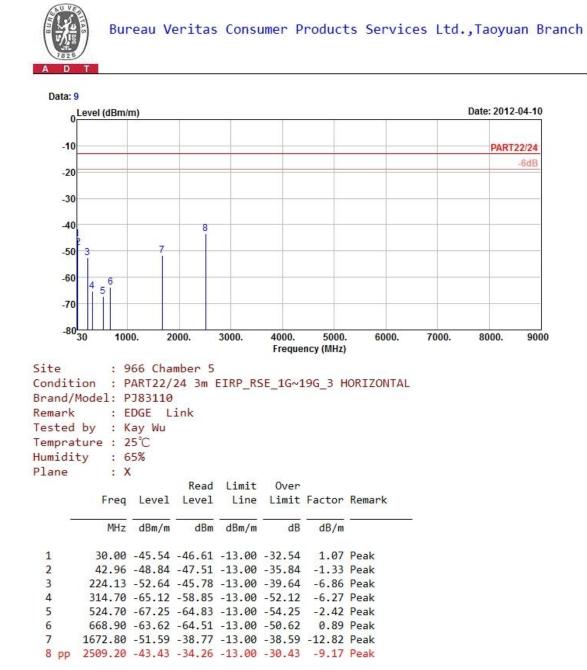


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch





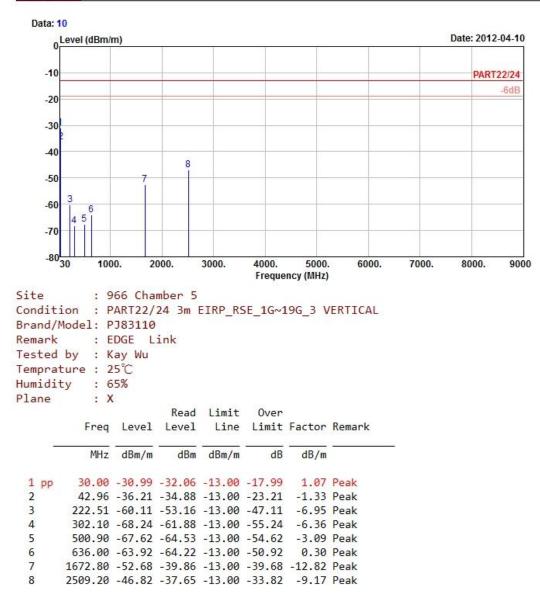
EDGE:







Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch





5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



6 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.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: <u>www.adt.com.tw/index.5.phtml</u>. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180 Fax: 886-2-26051924 Hsin Chu EMC/RF Lab: Tel: 886-3-5935343 Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab: Tel: 886-3-3183232 Fax: 886-3-3270892 Email: service.adt@tw.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 were made to the EUT by the lab during the test.

---END----