

FCC TEST REPORT (PART 22)

 REPORT NO.:
 RF991230C03A

 MODEL NO.:
 C505A

 FCC ID:
 UZI-C505A

 RECEIVED:
 Dec. 30, 2010

 TESTED:
 Jan. 05 ~ Jan. 09, 2011

 ISSUED:
 Aug. 20, 2012

APPLICANT: BandRich Inc.

- ADDRESS: 6F., No. 71, Zhouzi St., Neihu Dist., Taipei City 11493, 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 report should not be used by the client to claim product certification, approval, or endorsement by TAF 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

RELEAS	SE CONTROL RECORD	3
1	CERTIFICATION	
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	
3.4	TEST ITEM AND TEST CONFIGURATION	9
3.5	GENERAL DESCRIPTION OF APPLIED STANDARDS	
4	TEST TYPES AND RESULTS	
4.1	OUTPUT POWER MEASUREMENT	
4.1.1	LIMITS OF OUTPUT POWER MEASUREMENT.	
4.1.2	TEST PROCEDURES	
4.1.3	TEST SETUP	
4.1.4	TEST RESULTS	
4.2	FREQUENCY STABILITY MEASUREMENT	13
4.2.1	LIMITS OF FREQUENCY STABILIITY MEASUREMENT	
4.2.2	TEST PROCEDURE	
4.2.3	TEST SETUP	
4.2.4	TEST RESULTS	
4.3	OCCUPIED BANDWIDTH MEASUREMENT	
4.3.1	LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT	
4.3.2	TEST SETUP	15
4.3.3	TEST RESULTS	
4.4	BAND EDGE MEASUREMENT	17
4.4.1	LIMITS OF BAND EDGE MEASUREMENT	17
4.4.2	TEST SETUP	17
4.4.3	TEST PROCEDURES	17
4.4.4	TEST RESULTS	
4.5	CONDUCTED SPURIOUS EMISSIONS	19
4.5.1	LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	19
4.5.2	TEST PROCEDURE	19
4.5.3	TEST SETUP	19
4.5.4	TEST RESULTS	
4.6	RADIATED EMISSION MEASUREMENT (BELOW 1GHz)	22
4.6.1	LIMITS OF RADIATED EMISSION MEASUREMENT	22
4.6.2	TEST PROCEDURES	22
4.6.3	DEVIATION FROM TEST STANDARD	22
4.6.4	TEST SETUP	23
4.6.5	TEST RESULTS	24
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	
6	INFORMATION ON THE TESTING LABORATORIES	
7	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES	3
	TO THE EUT BY THE LAB	30



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF991230C03A	Original release	Aug. 20, 2012



1 CERTIFICATION

PRODUCT:LTE USB ModemMODEL:C505ABRAND:BandLuxeAPPLICANT:BandRich Inc.TEST SAMPLE:ENGINEERING SAMPLETESTED:Jan. 05 ~ Jan. 25, 2011STANDARDS:FCC Part 22, Subpart H

The above equipment (model: C505A) 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	Andrea Hsia / Specialist	, DATE : _	Aug. 20, 2012
APPROVED BY	Gary Chang / Technical Manager	, DATE : _	Aug. 20, 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 –26.0dB at 1693.2MHz.			

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	2.44 dB
	30MHz ~ 200MHz	2.93 dB
Radiated emissions	200MHz ~1000MHz	2.95 dB
Radiated 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 ROHDE & SCHWARZ	ESCI	100424	Aug. 04, 2010	Aug. 03, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 09, 2010	Jul. 08, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 02, 2010	Aug. 01, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 27, 2010	Dec. 26, 2011
Preamplifier Agilent	8449B	3008A01910	Sep. 09, 2010	Sep. 08, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 20, 2010	Aug. 19, 2011
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA
Mini-Circuits Power Splitter	ZAPD-4	NA	Jun. 29, 2010	Jun. 28, 2011
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
Wainwright Instruments Band Reject Filter	WRCG1850/1910-1830/ 1930-60/10SS	SN1	Mar. 25, 2010	Mar. 24, 2011
Wainwright Instruments High Pass Filter	WHK3.1/18G-10SS	SN3	Jun. 29, 2010	Jun. 28, 2011
WIT Standard Temperature & Humidity Chamber	TH-4S-C	W981030	Jun. 28, 2010	Jun. 27, 2011

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	LTE USB Modem			
MODEL NO.	C505A			
NOMINAL VOLTAGE	5.0Vdc from host equipment			
MODULATION TYPE	BPSK			
FREQUENCY RANGE	826.4MHz ~ 846.6MHz			
RELEASE VERSION	Release 5, 6			
MAX. ERP POWER	0.0676W			
ANTENNA TYPE	Embedded monopole antenna with -2dBi gain			
DATA CABLE	0.5m non-shielded USB cable without core			
I/O PORTS	Refer to user's manual			
ACCESSORY DEVICES	NA			

NOTE:

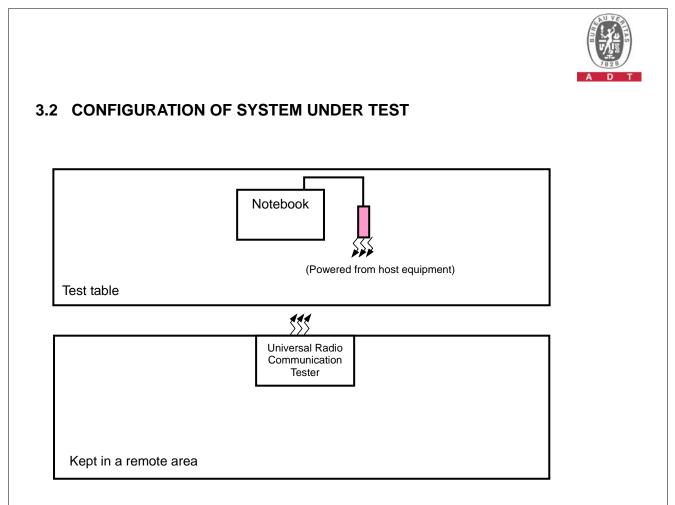
1. The EUT has no voice function.

2. HW version: V01.

3. SW version: R834_4 QC_0_00016744_0_001_0240.

4. IMEI Code: 35673404******.

5. 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.



3.3 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.

N	0.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	1	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	104484	Feb. 02, 2010	Feb. 01, 2011
2	2	NJZ-2000 (GPRS+WCDMA SIMULATOR)	JRC	NJZ-2000	ET00054	Sep. 30, 2010	Sep. 29, 2011

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

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

NOTE 2: Item 1-2 acted as a communication partners to transfer data.



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

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4182, 4233	WCDMA
FREQUENCY STABILITY	4132 to 4233	4182	WCDMA
OCCUPIED BANDWIDTH	4132 to 4233	4132, 4182, 4233	WCDMA
BAND EDGE	4132 to 4233	4132, 4233	WCDMA
CONDCUDETED EMISSION	4132 to 4233	4132, 4182, 4233	WCDMA
RADIATED EMISSION BELOW 1GHz	4132 to 4233	4233	WCDMA
RADIATED EMISSION ABOVE 1GHz	4132 to 4233	4132, 4182, 4233	WCDMA

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 C63.4-2003 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 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.

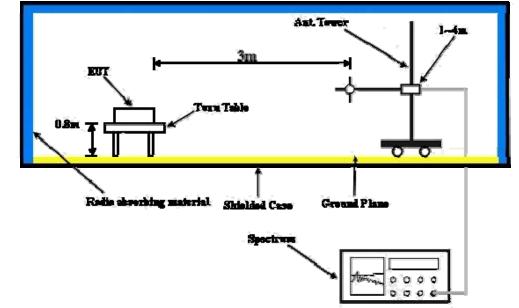
CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with 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.



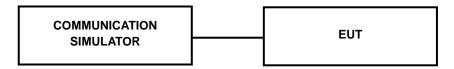
4.1.3 TEST SETUP





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	WCDMA V		
Channel	4132 4182 4233		
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.16	23.20	23.03

ERP POWER (dBm)

Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
826.4	-12.8	20.45	0	18.3	38.5	-20.2
836.4	-12.8	19.95	0	17.8	38.5	-20.7
846.6	-12.5	19.95	0.5	18.3	38.5	-20.2

NOTE: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)-2.15dB.



4.2 FREQUENCY STABILITY MEASUREMENT

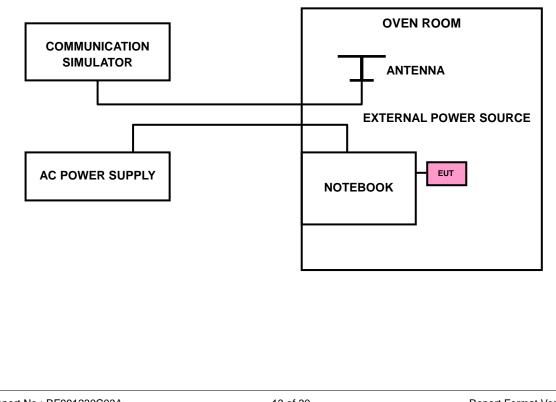
4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

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 AC 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

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)	LIMIT (ppm)
126.5	0.001	2.5
93.5	0.002	2.5

NOTE: The applicant defined the normal working voltage of the host equipment is from 93.5Vac to 126.5Vac.

FREQUENCY ERROR vs. TEMPERATURE.

TEMP. (℃)	FREQUENCY ERROR (ppm)	LIMIT (ppm)
50	0.004	2.5
40	0.001	2.5
30	0.002	2.5
20	0.001	2.5
10	0.000	2.5
0	0.001	2.5
-10	-0.001	2.5
-20	-0.002	2.5
-30	-0.002	2.5

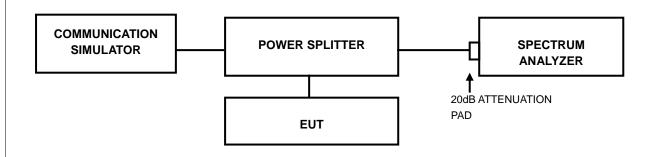


4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

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.

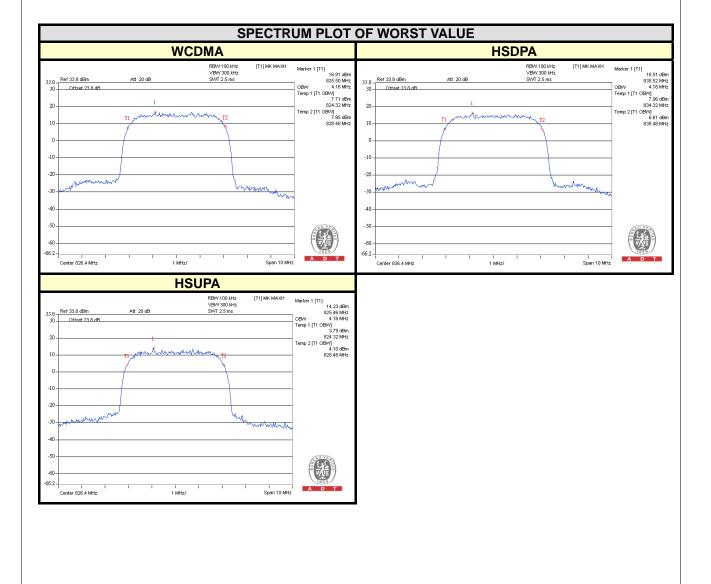
4.3.2 TEST SETUP





4.3.3 TEST RESULTS

		99% OCCUPIED BANDWIDTH (MHz)			
CHANNEL	FREQ. (MHz)	WCDMA	HSDPA	HSUPA	
4132	826.4	4.16	4.14	4.16	
4182	836.4	4.16	4.16	4.16	
4233	846.6	4.14	4.14	4.16	



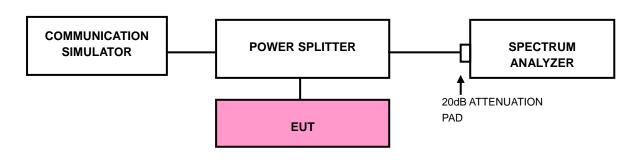


4.4 BAND EDGE MEASUREMENT

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

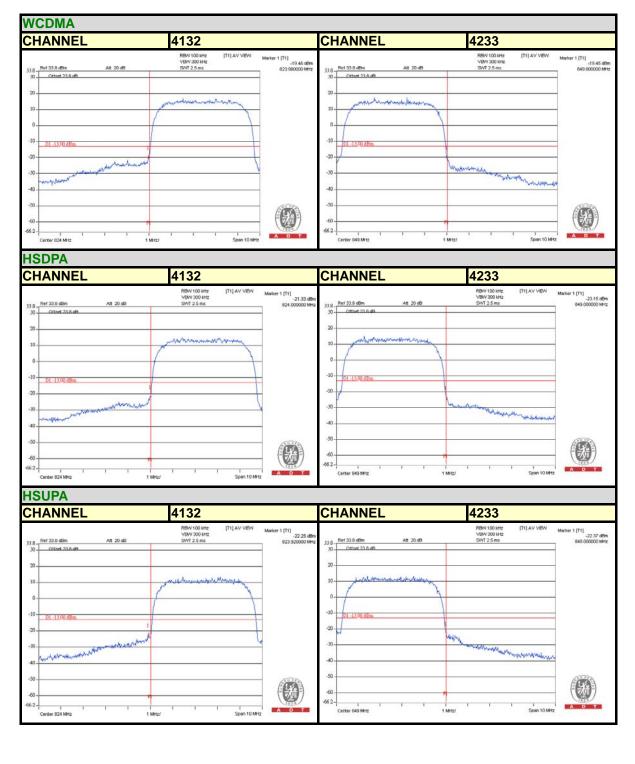


4.4.3 TEST PROCEDURES

- 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 5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
- c. Record the max trace plot into the test report.



4.4.4 TEST RESULTS





4.5 CONDUCTED SPURIOUS EMISSIONS

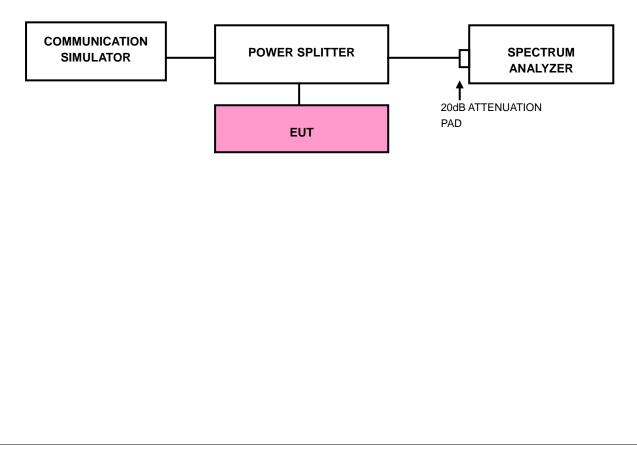
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 -13 dBm.

4.5.2 TEST PROCEDURE

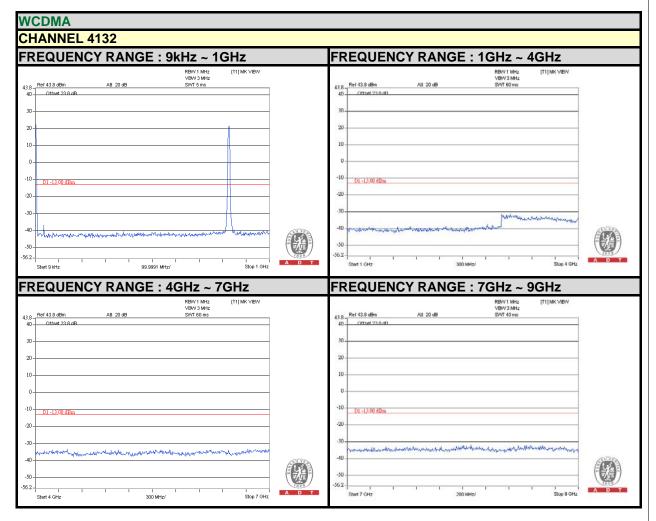
- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 9GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

4.5.3 TEST SETUP





4.5.4 TEST RESULTS



		A	
CHANNEL 4182 FREQUENCY RANGE : 9kHz ~ 1GHz		FREQUENCY RANGE : 1GHz ~ 4GHz	
RBW1 MHz [T1] MK VIEW		RBW 1 MHz [71] MK VEW VBW 3 Mer	
40.0 - Officer 23.6.40		42.8 40) - Ottoet 23.0.eB	
20-		30	
10-		10	
0	3	0-	
-10 - D1 - D2 00 dBm		-10 - <u>D1-12.00 JEm</u>	
30-		. m.	
-10 - White was a share and a series and a series of the s		10 - margine margine and the second	ALL A
-50		-50	
			A
FREQUENCY RANGE : 4GHz ~ 7GHz		FREQUENCY RANGE : 7GHz ~ 9GHz	
VBW 3 MHz 43.0_Rel 43.0 dBm A8_20 dB SMT 60 ms 40.00000000000000000000000000000000000	7	VDM 3 Merc 4) S Ref 43.6 dBm All 20 dB SWT 40 ms 40 Dittout 23.6 dB SWT 40 ms	
30-	-	30-	
20		20	
0		0-	
-10 - D1 -13.00 #Bm		-10 - D1 -13/0 dBm	
-20		-20	
-30 - Restrict - Second and a start and a start of the second start and the second start and the second start and the Contract - Second start and the second	a comp	-30- National Constant and a second with the constant of the second second second second second second second second	15 VP.
-50		-50 -	
562-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ADT	-562-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A D T
CHANNEL 251			
FREQUENCY RANGE : 9kHz ~ 1GHz		FREQUENCY RANGE : 1GHz ~ 4GHz	
VBV/3 MHz 43.8. Ref 43.0 dBm Att 20 dB 3V/1 5 ms 40.0. Ottowt 23.6.db		1/EAX/2 Addr	
		43.8 Ref 43.8 dBm Att 20 dB SVVF 60 mit 40 Orticet 23.8 dB	
30		43.8	
20		43.0 Met 43.8 dBm Att 20 dB SV/T 60 ms 40 Criticat 32.0 dB 30 20	
		43.0 Ref 43.8 dBm Alt 20 dB SN/T 60 ms 40 - Office 23.0 dB 30 -	
20.		43 g Ref 43 8 d6m All 20 d6 SN/T 60 ms 40	
20- 10- -10- -10- -01-1300 40m -20-		410 - Met 43.8 dBm All 20 dB SN/T 60 ms 40 - Officie 23.0 dB 20	
20	0720.	41.0	<u>400</u> 00
20- 10- 10- 10- 10- 10- 10- 10- 1		410 _ Met 32.6 dBm	
20- 10- 0- 10- 10- 10- 10- 10- 10		410 - Met 32.8 dBm All 20 dB SVT 80 ms	
20- 10- 10- 10- 10- 10- 10- 10- 1		413 to 150 to 15	
20 10 10 10 10 10 10 10 10 10 1		413 Mit 43.8 dbm All 20 db SV/150 ms 40 Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db Office 23.0 db Office 23.0 db Office 23.0 db 90 Office 23.0 db 90 Office 23.0 db Office 23.0 db <td< td=""><td></td></td<>	
20- 10- -0- -10		410 test 23 d db 41 20 db 55VT 60 hs 40 Critice 23 A db 40 Criti	
20- 10- 10- 10- 10- 10- 10- 10- 1		410 MI 20 dB SVT 60 ms 400 Office 23 A dB SVT 60 ms 400 SVT 60 ms SVT 60 ms 400 Office 23 A dB SVT 60 ms 400 SVT 60 ms SVT 60 ms 413 Fer 43 8 dB AE 20 dB 500 SVT 60 ms SVT 60 ms 413 AE 20 dB SVT 40 ms	
20- 10- 10- 10- 10- 10- 10- 10- 1		410 M1 20 40 SWT 60 ms 40 Officer 23 A d/b M1 20 40 30 Officer 23 A d/b 40 Officer 23 A d/b 0 Officer 23 A d/b 0 </td <td></td>	
20- 10- -1		410 M1 20 00 SVT 60 ms 400 Citizet 23 0.00 Image: SVT 60 ms 90 Start 1 0 tr Start 1 0 tr 90 Start 1 0 tr Start 20 00 910 Start 40 ms Image: SVT 60 ms 910 Citizet 23 0.00 SVT 60 ms	
20- 10- -1		410 M1 20 40 SWT 60 ms 40 Officer 23 A d/b M1 20 40 30 Officer 23 A d/b 40 Officer 23 A d/b 0 Officer 23 A d/b 0 </td <td></td>	
20- 10- 10- 10- 10- 10- 10- 10- 1		410 M1 20 dB SWT80 ms 400 Critical 23 A dB SWT80 ms 401 Critical 23 A dB SWT80 ms 402 SwT10 Rt SwT40 ms 403 Ref 433 dB At 20 dB 404 SwT40 ms SwT40 ms 405 Critical 23 A dB SwT40 ms	
20- 10- 10- 10- 10- 10- 10- 10- 1		130 M1 20 00 SVT 60 ms 400 Citizet 33.0.00 Image: Million and the second secon	



4.6 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)

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 -13 dBm.

4.6.2 TEST PROCEDURES

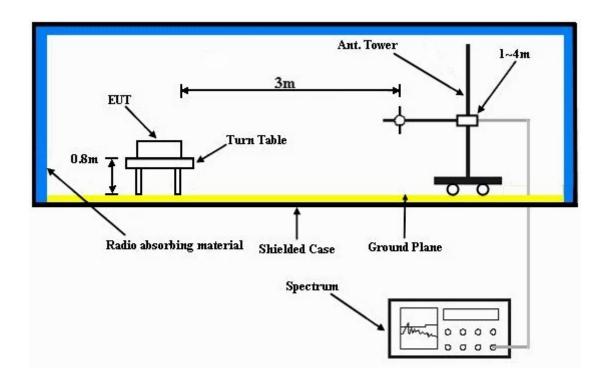
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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

Below 1GHz

MODE	TX channel 4233	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	David Huang		

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	45.45	-72.5	-48.15	-10.5	-60.8	-13	-47.8	
2	158.22	-84.4	-70.55	0	-72.7	-13	-59.7	
3	331.26	-81.7	-73.05	5.2	-70	-13	-57	
4	504.31	-78.2	-69.25	4.9	-66.5	-13	-53.5	
5	704.57	-73.8	-65.15	5.2	-62.1	-13	-49.1	
6	957.33	-70.6	-60.65	3.9	-58.9	-13	-45.9	
	AN	NTENNA POL	ARITY & TE	ST DISTANC	E: VERTICAL	AT 3 M		
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	45.55	-63.9	-39.55	-10.5	-52.2	-13	-39.2	
2	156.35	-73.8	-59.95	0	-62.1	-13	-49.1	
3	376.01	-71.8	-63.15	5.2	-60.1	-13	-47.1	
4	593.73	-65.1	-55.75	4.5	-53.4	-13	-40.4	
5	799.78	-60.8	-50.95	4	-49.1	-13	-36.1	
6	965.01	-60.7	-50.75	3.9	-49	-13	-36	

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB).



Above 1GHz

MODE	I X channel 4132	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH
TESTED BY	David Huang		

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	1652.8	-57.1	-47.45	5.5	-44.1	-13	-31.1	
2	2479.2	-61.2	-52.35	6.4	-48.1	-13	-35.1	
3	3305.6	-59	-51.65	6.9	-46.9	-13	-33.9	
	AN	ITENNA POL	ARITY & TE	ST DISTANC	E: VERTICAL	_ AT 3 M		
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	1652.8	-53.1	-43.95	5.5	-40.6	-13	-27.6	
2	2479.2	-57.2	-48.65	6.4	-44.4	-13	-31.4	
3	3305.6	-57.7	-49.75	6.9	-45	-13	-32	

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB).



MODE	TX channel 4182	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH
TESTED BY	David Huang		

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	1672.8	-55.1	-46.65	5.5	-43.3	-13	-30.3	
2	2509.2	-62.3	-53.95	6.4	-49.7	-13	-36.7	
3	3345.6	-59.6	-51.65	6.4	-47.4	-13	-34.4	
	AN	ITENNA POL	ARITY & TE	ST DISTANC	E: VERTICAL	_ AT 3 M		
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	1672.8	-52.4	-43.45	5.5	-40.1	-13	-27.1	
2	2509.2	-59.6	-51.75	6.4	-47.5	-13	-34.5	
3	3345.6	-58.3	-50.35	6.4	-46.1	-13	-33.1	

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (dB).



MODE	TX channel 4233	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH
TESTED BY	David Huang		

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	1693.2	-56.2	-46.95	5.6	-43.5	-13	-30.5	
2	2539.8	-60.1	-52.15	6.4	-47.9	-13	-34.9	
3	3386.4	-60.3	-52.05	7	-47.2	-13	-34.2	
	AN	ITENNA POI	ARITY & TE	ST DISTANC	E: VERTICAL	AT 3 M		
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	
1	1693.2	-51.8	-42.45	5.6	-39	-13	-26.0	
2	2539.8	-57.8	-49.65	6.4	-45.4	-13	-32.4	

REMARKS:

1. Power Value (dBm) = S.G Power Value (dBm) + Correction Factor (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 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: 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

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----