

FCC TEST REPORT (Part 24)

- REPORT NO.:
 RF991230C03A-1

 MODEL NO.:
 C505A

 FCC ID:
 UZI-C505A

 RECEIVED:
 Dec. 30, 2010

 TESTED:
 Jan. 05 ~ Jan. 09, 2011
 - **ISSUED:** Aug. 20, 2012

APPLICANT: BandRich Inc.

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- **ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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- **TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF991230C03A-1	Original release	Aug. 20, 2012



1 CERTIFICATION

PRODUCT: LTE USB Modem
MODEL: C505A
BRAND: BandLuxe
APPLICANT: BandRich Inc.
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Jan. 05 ~ Jan. 25, 2011
TEST STANDARDS: FCC Part 24, Subpart E

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 24 & Part 2						
STANDARD SECTION	TEST TYPE	RESULT	REMARK			
2.1046 24.232	Equivalent isotropically radiated power	PASS	Meet the requirement of limit.			
2.1055 24.235	Frequency Stability	PASS	Meet the requirement of limit.			
2.1049 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit.			
24.238(b)	Band Edge Measurements	PASS	Meet the requirement of limit.			
2.1051 24.238	Conducted Spurious Emissions	PASS	Meet the requirement of limit.			
2.1053 24.238	Radiated Spurious Emissions		Meet the requirement of limit. Minimum passing margin is –19.7dB at 3815.20MHz.			

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			May 14, 2010	May 13, 2011
RF signal cable Worken			Aug. 20, 2010	Aug. 19, 2011
Software	oftware ADT_Radiated_ V7.6.15.9.2		NA	NA
Antenna Tower 2070/2080 EMCO		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 1852.4MHz ~ 1907.6MHz					
RELEASE VERSION	Release 5, 6				
MAX. EIRP POWER	0.1122W				
ANTENNA TYPE	Embedded monopole antenna with -3dBi 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.

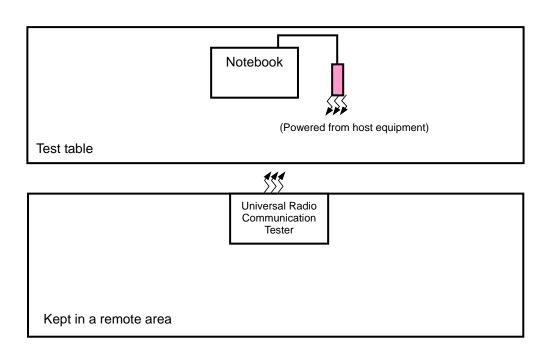
3. SW version: R834_4 QC_0_00016744_0_001_0240.

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.



3.2 CONFIGURATION OF SYSTEM UNDER 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.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	104484	Feb. 02, 2010	Feb. 01, 2011
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					
NOT	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 Z-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
EIRP	EIRP 9262 to 9538		WCDMA
FREQUENCY STABILITY	LITY 9262 to 9538 9400		WCDMA
OCCUPIED BANDWIDTH	9262 to 9538	9262, 9400, 9538	WCDMA
BAND EDGE	9262 to 9538	9262, 9538	WCDMA
CONDCUDETED EMISSION 9262 to 9538		9262, 9400, 9538	WCDMA
RADIATED EMISSION BELOW 1GHz	9262 to 9538	to 9538 9400	
RADIATED EMISSION ABOVE 1GHz	9262 to 9538	9262, 9400, 9538	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 24 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 and portable stations are limited to 2 watts EIRP

4.1.2 TEST PROCEDURES

EIRP 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.

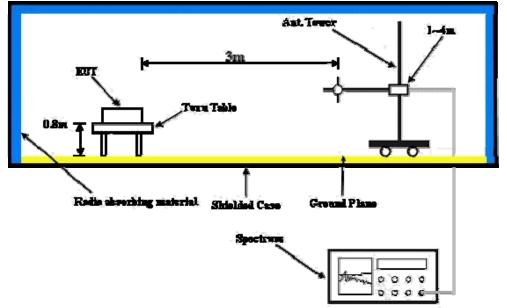
CONDUCTED POWER MEASUREMENT:

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.



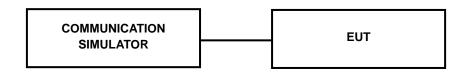
4.1.3 TEST SETUP





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 II				
Channel	9262 9400 9538				
Frequency (MHz)	1852.4	1880.0	1907.6		
RMC 12.2K	22.62	23.07	22.56		

EIRP POWER (dBm)

Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1852.4	-16.8	19.3	1.1	20.4	33	-12.6
1880	-16.1	19.4	1.1	20.5	33	-12.5
1907.6	-16.4	19	1.1	20.1	33	-12.9

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



4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

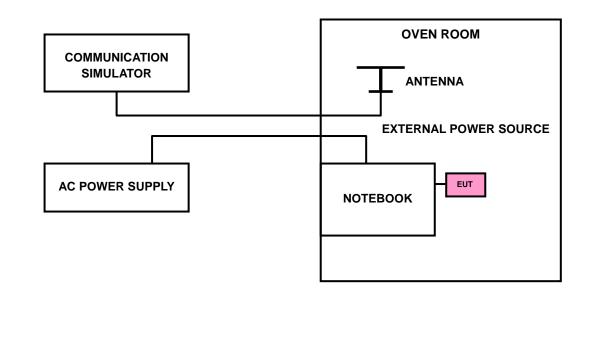
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)	LIMIT (ppm)
126.5	0.003	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.

темр. (°C)	FREQUENCY ERROR (ppm)	LIMIT (ppm)
50	0.003	2.5
40	-0.001	2.5
30	-0.003	2.5
20	0.003	2.5
10	0.002	2.5
0	0.001	2.5
-10	0.002	2.5
-20	-0.002	2.5
-30	-0.001	2.5

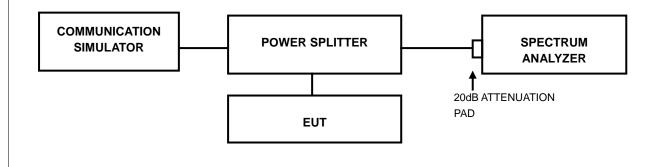


4.3 OCCUPIED BANDWIDTH MEASUREMENT

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.

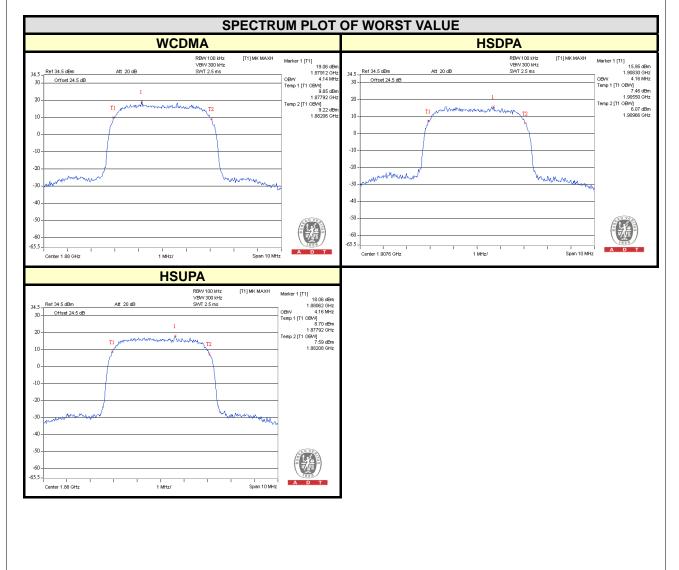
4.3.2 TEST SETUP





4.3.3 TEST RESULTS

		99% OCCUPIED BANDWIDTH (MHz)				
CHANNEL	FREQ. (MHz)	WCDMA	HSDPA	HSUPA		
9262	1852.4	4.12	4.14	4.14		
9400	1880.0	4.14	4.16	4.16		
9538	1907.6	4.14	4.16	4.16		



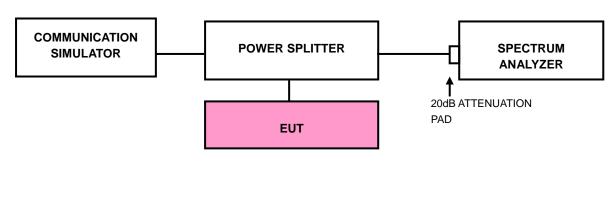


4.4 BAND EDGE MEASUREMENT

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

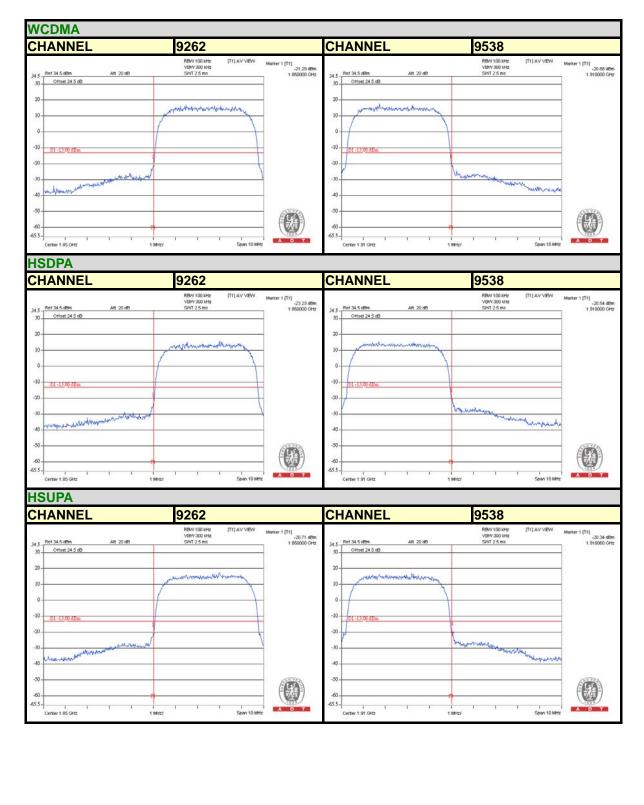


4.4.3 TEST PROCEDURES

- 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

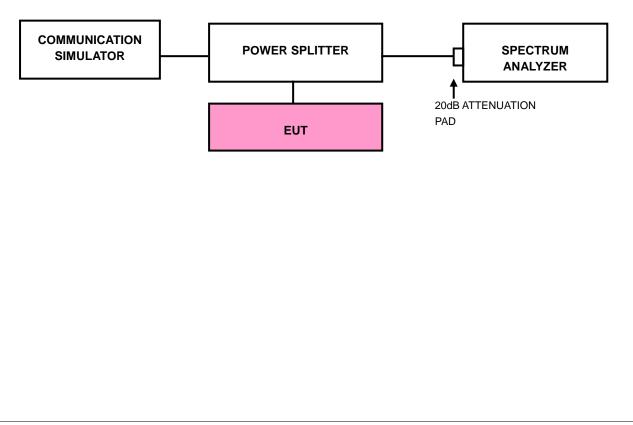
4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 19.1GHz. 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

FREQUENCY RANGE : 9kHz ~ 3GHz FREQUENCY RANGE : 3GHz ~ 10GHz Image: state in the state in	HANNEL 9262						
Specific data Very 3 Mic Very	REQUENCY RANGE :	: 9kHz ~ 3GHz	FREQUENC	Y RANGE :	: 3GHz ~	10GHz	
20- 	15 Ref 44.5 dBm Att 20 dB 00 Offiset 24.5 d0 0 00 0 0 0 00 D1 - 13 00 dBm 0 0 00 0 0 0 0 00 0 0 0 0 0 00 0 0 0 0 0 0 00 0	RBW 1 MHz [T1] MK VIEW VBW 3 MHz	44 5 Ref 44.5 dBm 40 Offset 24.5 dB 30 0 20 0 10 0 0 0 0 0 -10 0 0 11300 dBm -20 0 -30 0	All 20 dB	RBW1 MHz VBW3 MHz SWT 140ms		



CHANNEL 9400	
FREQUENCY RANGE : 9kHz ~ 3GHz	FREQUENCY RANGE : 3GHz ~ 10GHz
RDW1 MHz [T1] MK VIDW	RBW11MHz [T1]MK VBW
VBW/3 MHz 44.5	VBW/3 MHz 44.5 _Ret 44.5 dBm Att 20 dB SWT 140 ms
44.5 - 40 - Offset 24.5 dB	44.5
30-	30-
20-	20 -
10-	10-
0-	0
-10- 01-13.00 48m	-10 - D1 -12.00 (Bm
-20	-20 -
-30 -	-20- manufacture and a second and the war all a second and the
40 - martingly on marting have and have a ground a low and a start of the second and the second	-40
-50	
333- Start 9 kHz 299.9991 MHz/ Stop 3 GHz A D T	-555
FREQUENCY RANGE : 10GHz ~ 20GHz	
RBV/1 M42 [TT] M6: VBW VBW/3 M42 24.5 - Ref 24.5 dBm A8 10 dB SWF 200 ms	
20.5. 20. Offset 24.5.db	
10	
0-	
-10 - 01 -13 00 4Bm	
-20-	
-30-	
to an another and the second	
10 minumenter Martin	
40	
-70.	
-755- Stear 10 GHz 1 GHz/ Stop 20 GHz	
General TOPEZ TOPEZ Stop 20 OPE	
CHANNEL 9538	-
CHANNEL 9538 FREQUENCY RANGE : 9kHz ~ 3GHz	FREQUENCY RANGE : 3GHz ~ 10GHz
FREQUENCY RANGE : 9kHz ~ 3GHz	RBW 1 MHz (T1) MK VEW VBW 3 MHz
FREQUENCY RANGE : 9kHz ~ 3GHz	RBW1 MHz (T1) MCVEW
FREQUENCY RANGE : 9kHz ~ 3GHz	PB/V1 MHz [T1] MK VEW VSW 3 MHz VSW 3 MHz 44.5. Ret 44.5 dBm Att 20 dB SW1 140 ms 40. Offset 24.5 dB SW1 140 ms
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 MHz [11] MK VEW VBW 3 MHz VBW 3 MHz 40 Ortset 24.5 dB 30 Ortset 24.5 dB
FREQUENCY RANGE : 9kHz ~ 3GHz Reveal & Set all Solids (11) INV VEW	RBM1 MHz [11] MK VEW V3M 3 MHz V3M 3 MHz 40 Offset 24.5 dB 30 Offset 24.5 dB
FREQUENCY RANGE : 9kHz ~ 3GHz IPUT INCLUS (ITI) INCLUS	PBW1 Mitz [11] Mit VBW 44.5 Ref 44.5 dBm Att 20 dB SW17 140 me 40 Offset 24.5 dB SW17 140 me 30
FREQUENCY RANGE : 9kHz ~ 3GHz	RBM1 MHz [11] MK VEW V3M 3 MHz V3M 3 MHz 40 Offset 24.5 dB 30 Offset 24.5 dB
FREQUENCY RANGE : 9kHz ~ 3GHz 463 Ref 44.5 dBn All 20 dB SWY 15 ns 40 Officet 24.5 dB Officet 24.5 dB Officet 24.5 dB 30 Officet 24.5 dB Officet 24.5 dB Officet 24.5 dB 10 Officet 24.5 dB Officet 24.5 dB Officet 24.5 dB	PBW1 Mtz [11] MtX VBW VBV3 MHz VBV3 MHz 40. Offset 24.5 dB 20. Offset 24.5 dB
FREQUENCY RANGE : 9kHz ~ 3GHz	PBW1 M4z [T1]MK VBW 44.5 Ref 44.5 dBn Alt. 20 dB SWT 140 me 40 Offset 24.5 dB SWT 140 me SWT 140 me 30
FREQUENCY RANGE : 9kHz ~ 3GHz 463 Ref 44.5 dBn All 20 dB SWY 15 ns 40 Officet 24.5 dB Officet 24.5 dB Officet 24.5 dB 30 Officet 24.5 dB Officet 24.5 dB Officet 24.5 dB 10 Officet 24.5 dB Officet 24.5 dB Officet 24.5 dB	PBM1 MHz [T1] MK VBW VBV3 M4c VBV3 M4c 40- Offset 24.5 dB 30-
FREQUENCY RANGE : 9kHz ~ 3GHz RBW1 Mit: (IT) MV VBW 44.5 - Ref 44.5 dBn AB 20 dB 9W1 Mit: (IT) MV VBW 44.5 - Ref 44.5 dBn Officet 24.5 dBn 0 10	PBM 1 M4z [T1] MK VBW 44.5 Ref 44.5 dBn AB 20 dB SWT 140 m 40 Offset 24.5 dB SWT 140 m SWT 140 m 30 SWT 140 m SWT 140 m SWT 140 m 10 SWT 140 m SWT 140 m SWT 140 m 10 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m 20 SWT 140 m SWT 140 m SWT 140 m
FREQUENCY RANGE : 9kHz ~ 3GHz 445 Ref 44 5 dBn All 20 dB SW1 H41: YW9/3 M42; SW715 nm IT1]M: VEW 445 Officet 24 5 dBn All 20 dB SW715 nm 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn 30 Officet 24 5 dBn Officet 24 5 dBn Officet 24 5 dBn <td>PBW1 M4c; VBV3 M4c; (T1) M4 VBW 44.5 Att 20 dB SWT H40 mm 40 Official 24.5 dB SWT H40 mm 30 SWT H40 mm SWT H40 mm 10 SWT H40 mm<</td>	PBW1 M4c; VBV3 M4c; (T1) M4 VBW 44.5 Att 20 dB SWT H40 mm 40 Official 24.5 dB SWT H40 mm 30 SWT H40 mm SWT H40 mm 10 SWT H40 mm<
FREQUENCY RANGE : 9kHz ~ 3GHz 100/19/2000 100/10/2000	PBM/1 M4:: [T1] MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz 445 Ref 44 5 dBn All 20 dB SWY 15 nn 445 Officer 24 5 dB SWY 15 nn 445 Officer 24 5 dB SWY 15 nn 440 Officer 24 5 dB SWY 15 nn 440 Officer 24 5 dB SWY 15 nn 440 Officer 24 5 dB Officer 24 5 dB 00 Officer 24 5 dB Officer 24 5 dB 00 Officer 24 5 dB Officer 24 5 dB 00 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 dB 01 Officer 24 5 dB Officer 24 5 d	PBM 1 M4z (T1) MK VBW 415. Ref 45.5 dbn Alt 20 db SWT 140 mm 40. Offset 24.5 db SWT 140 mm SWT 140 mm 30.
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 MHz [11] MK VEW VEX 3 M42 VEX 3 M42 41.5 Ref 44.5 dB 40 Offset 24.5 dB 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 MHz [11] MK VEW VEX 3 M42 VEX 3 M42 41.5 Ref 44.5 dB 40 Offset 24.5 dB 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 MHz [11] MK VEW VEX 3 M42 VEX 3 M42 41.5 Ref 44.5 dB 40 Offset 24.5 dB 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 MHz [11] MK VEW VEX 3 M42 VEX 3 M42 41.5 Ref 44.5 dB 40 Offset 24.5 dB 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 MHz [11] MK VEW VEX 3 M42 VEX 3 M42 41.5 Ref 44.5 dB 40 Offset 24.5 dB 30
FREQUENCY RANGE : 9kHz ~ 3GHz	PBM 1 M4z (T1) MK VBW 4415 Ref 44.5 dbn Alt 20 db SWT 140 mm 40 Offset 24.5 db SWT 140 mm SWT 140 mm 30



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

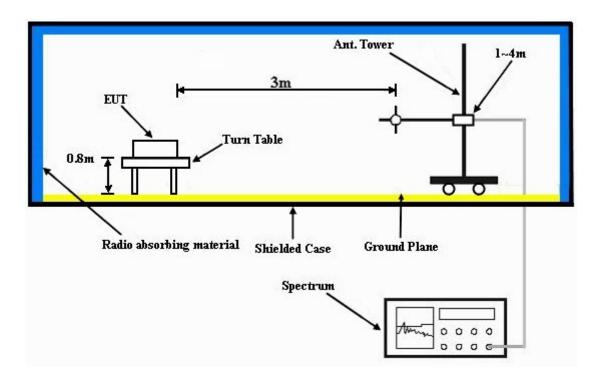
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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 9538	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Frank Wang		

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	
1	74.71	-71.5	-56.4	-3.4	-59.8	-13	-46.8	
2	234.11	-68.2	-61.9	5.4	-56.5	-13	-43.5	
3	372.12	-67.4	-60.9	5.2	-55.7	-13	-42.7	
4	720.08	-67.5	-60.8	5	-55.8	-13	-42.8	
5	898.92	-60.5	-52.7	3.9	-48.8	-13	-35.8	
6	998.06	-61.7	-53.9	3.9	-50	-13	-37	
	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)	EIRP (dBm)	Limit (dBm)	Margin (dB)	
1	74.71	-107	-48.6	-3.4	-52	-13	-39	
2	175.79	-107	-57.4	2.4	-55	-13	-42	
3	255.49	-107	-64.3	5.4	-58.9	-13	-45.9	
4	688.98	-107	-60.1	5.2	-54.9	-13	-41.9	
5	896.97	-107	-52.7	3.9	-48.8	-13	-35.8	
6	1000	-107	-50.5	3.9	-46.6	-13	-33.6	

REMARKS:

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



Above 1GHz

MODE	TX channel 9262	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 1008hPa
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)	EIRP (dBm)	Limit (dBm)	Margin (dB)	
1	3704.8	-54.6	-49.6	7.2	-42.4	-13	-29.4	
2	5557.2	-66.2	-60.3	6.8	-53.5	-13	-40.5	
3	7409.6	-61.3	-53.4	4.2	-49.2	-13	-36.2	
	AN	ITENNA POL	ARITY & TE	ST DISTANC	E: VERTICAL	_ AT 3 M		
No.	No. Freq. (MHz) Reading (dBm) S.G Power Correction EIRP (dBm) Limit (dBm) Margin (dB)							
1	3704.8	-52.5	-47.6	7.2	-40.4	-13	-27.4	
2	5557.2	-64.7	-58.9	6.8	-52.1	-13	-39.1	
3	7409.6	-59.8	-51.5	4.2	-47.3	-13	-34.3	

REMARKS:

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



MODE	TX channel 9400	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 1008hPa
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)	EIRP (dBm)	Limit (dBm)	Margin (dB)	
1	3760	-57.9	-52.3	7.1	-45.2	-13	-32.2	
2	5640	-66.6	-61.2	6.8	-54.4	-13	-41.4	
3	7520	-61.9	-53.6	4.2	-49.4	-13	-36.4	
	AN	ITENNA POL	ARITY & TE	ST DISTANC	E: VERTICAL	AT 3 M		
No.	No. Freq. (MHz) Reading (dBm) S.G Power Correction EIRP (dBm) Limit (dBm) Margin (dBm)							
1	3760	-55.5	-50.5	7.1	-43.4	-13	-30.4	
2	5640	-65.2	-59.8	6.8	-53	-13	-40	
3	7520	-60.6	-52.5	4.2	-48.3	-13	-35.3	

REMARKS:

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



MODE	TX channel 9538	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 1008hPa
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)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3815.2	-55.7	-50.5	7.1	-43.4	-13	-30.4
2	5722.8	-64.5	-58.8	6.7	-52.1	-13	-39.1
3	7630.4	-72	-63.9	4.2	-59.7	-13	-46.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3815.2	-45	-39.8	7.1	-32.7	-13	-19.7
2	5722.8	-63.2	-57.5	6.7	-50.8	-13	-37.8
3	7630.4	-70.4	-62.4	4.2	-58.2	-13	-45.2

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: <u>www.adt.com.tw</u>

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.

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