

FCC TEST REPORT

(PART 24)

REPORT NO.: RF130529C21A-1

MODEL NO.: E362

FCC ID: PKRNVWE362

RECEIVED: May 20, 2013

TESTED: May 30, 2013 ~ Mar. 22, 2014

ISSUED: Apr. 28, 2014

APPLICANT: Novatel Wireless Inc.

ADDRESS: 9645 Scranton Road, Suite 205 San Diego, CA
92121-3030, United States

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

RELEASE 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	9
3.4 TEST ITEM AND TEST CONFIGURATION	10
3.5 EUT OPERATING CONDITIONS	11
3.6 GENERAL DESCRIPTION OF APPLIED STANDARDS	11
4 TEST TYPES AND RESULTS	12
4.1 OUTPUT POWER MEASUREMENT	12
4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT.....	12
4.1.2 TEST PROCEDURES	12
4.1.3 TEST SETUP	13
4.1.4 TEST RESULTS	14
4.2 RADIATED EMISSION MEASUREMENT	21
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	21
4.2.2 TEST PROCEDURES	21
4.2.3 DEVIATION FROM TEST STANDARD	21
4.2.4 TEST SETUP	22
4.2.5 TEST RESULTS	23
5 PHOTOGRAPHS OF THE TEST CONFIGURATION	31
6 INFORMATION ON THE TESTING LABORATORIES.....	32
7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	33



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130529C21A-1	Original release.	Apr. 28, 2014

1 CERTIFICATION

PRODUCT: 850/1900 GSM/GPRS/EDGE/WCDMA/CDMA/EvDO and
700MHz LTE Module

MODEL: E362

BRAND: Novatel

APPLICANT: Novatel Wireless Inc.

TESTED: May 30, 2013 ~ Mar. 22, 2014

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 24, Subpart E

The above equipment (model: E362) 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. 28, 2014
Maggie Wu / Specialist

APPROVED BY :  , **DATE :** Apr. 28, 2014
Dylan Chiou / Project Engineer

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	NA	Refer to NOTE below
2.1049 24.238(b)	Occupied Bandwidth	NA	Refer to NOTE below
24.238(b)	Band Edge Measurements	NA	Refer to NOTE below
2.1051 24.238	Conducted Spurious Emissions	NA	Refer to NOTE below
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -15.17dB 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	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	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	ESIB7	100187	Jan. 03, 2013	Jan. 02, 2014
			Jan. 02, 2014	Jan. 01, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Mar. 04, 2013	Mar. 03, 2014
			Mar. 03, 2014	Mar. 02, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Mar. 20, 2013	Mar. 19, 2014
			Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	9120D	209	Sep. 13, 2012	Sep. 12, 2013
			Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 16, 2014	Jul. 15, 2013
			Jul. 15, 2013	Jul. 14, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 25, 2012	Oct. 24, 2013
			Oct. 07, 2013	Oct. 06, 2014
Preamplifier Agilent	8449B	3008A01964	Oct. 25, 2012	Oct. 24, 2013
			Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 28, 2012	Aug. 27, 2013
			Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 28, 2012	Aug. 27, 2013
			Aug. 26, 2013	Aug. 25, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Sep. 09, 2013	Sep. 08, 2014
JFW 20dB attenuation	50HF-020-SMA	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 3.

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 988962.

5. The IC Site Registration No. is IC 7450F-3.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	850/1900 GSM/GPRS/EDGE/WCDMA/CDMA/EvDO and 700MHz LTE Module	
MODEL NO.	E362	
HW VERSION	2976443801	
SW VERSION	HiveOS 6.0r3 Fuji buildE1137	
POWER SUPPLY	3.3Vdc from host equipment	
MODULATION TYPE	WCDMA, HSDPA, HSUPA	BPSK
	CDMA, EVDO, 1xEVDO	QPSK, OQPSK, HPSK
FREQUENCY RANGE	WCDMA, HSDPA, HSUPA	1852.4MHz ~ 1907.6MHz
	CDMA, EVDO, 1xEVDO	1851.25MHz ~ 1908.75MHz
MAX. EIRP POWER	WCDMA	497.737mW (26.97dBm)
	HSDPA	449.780mW (26.53dBm)
	HSUPA	427.563mW (26.31dBm)
	CDMA	665.273mW (28.23dBm)
	EVDO	737.904mW (28.68dBm)
	1xEVDO	732.825mW (28.65dBm)
EMISSION DESIGNATOR	WCDMA	4M20F9W
	CDMA	1M28F9W
WCDMA RELEASE VERSION	6	
ANTENNA TYPE	Dipole antenna with 3.62dBi gain	
ANTENNA CONNECTOR	SMA Plug Standard	
DATA CABLE	NA	
I/O PORTS	Refer to user's manual	
ACCESSORY DEVICES	NA	

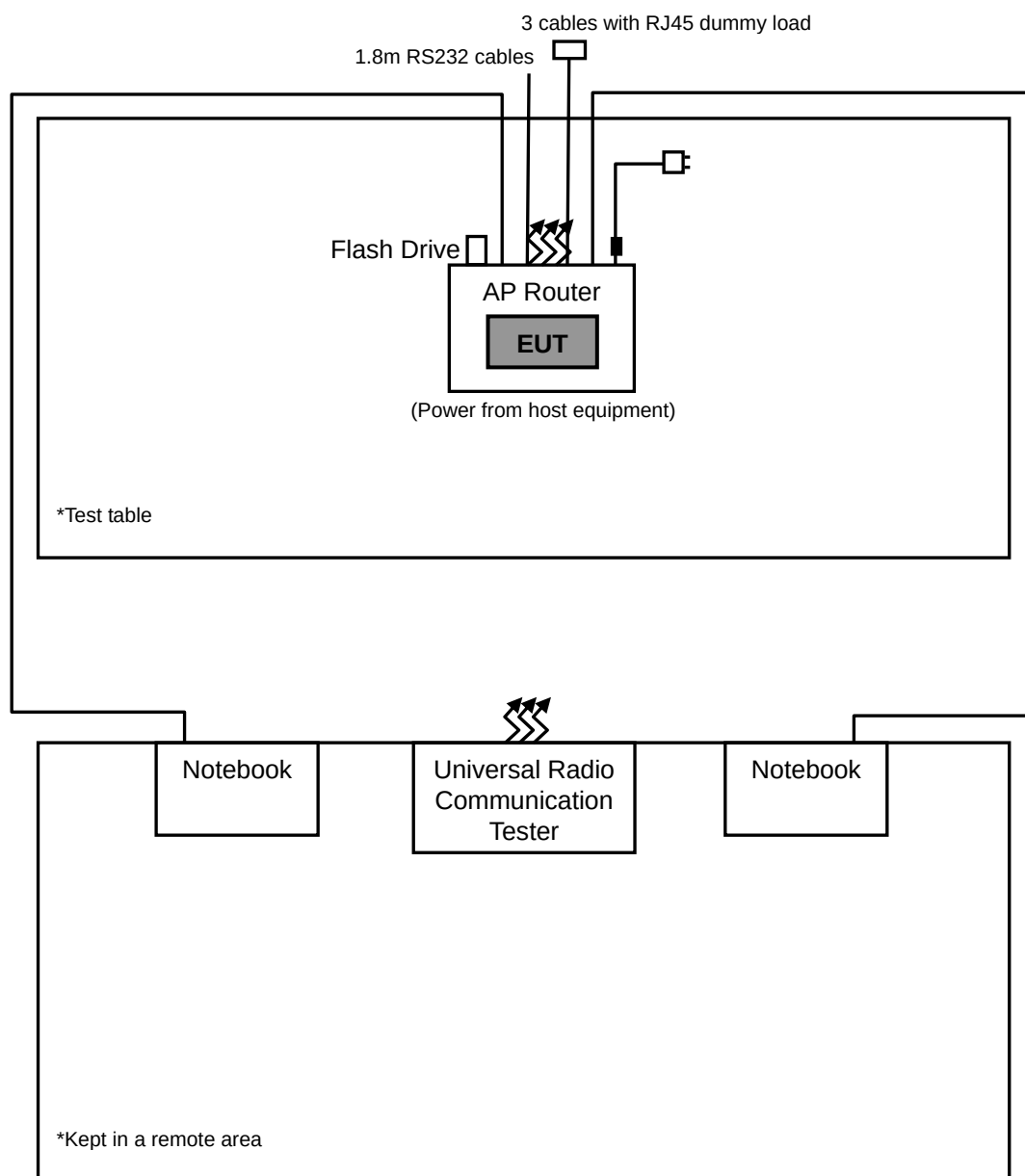
NOTE:

1. This report is prepared for FCC class II permissive change. The difference compared with the original report are adding antenna and Host device. Therefore, test items for conducted output power, EIRP and radiated emissions had been re-tested and presented in this report.
2. The module is specifically installed into the host device.

Product Name	AP Router
Brand	Aerohive
Model	BR200-LTE-VZ

3. The above EUT information is declared by the 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.	FCC ID
1	USB Flash Drive	Transcend	V85	538455 4488	NA
2	Dummy Load	NA	NA	NA	NA
3	Notebook	DELL	E5410	6RP2YM1	FCC DoC Approved
4	Notebook	DELL	D531	CN-0XM006-48643-8 1U-2610	QDS-BRCM1020
5	Universal Radio Communication Tester	R&S	CMU200	104958	NA
6	AP Router	Aerohive	BR200-LTE-VZ	NA	WBV-BR200WPL

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8m RJ45 UTP cable x 3 with load connected to EUT
3	10m RJ45 UTP cable
4	10m RJ45 UTP cable
5	NA
6	NA

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Items 3-5 acted as communication partners to transfer data.
3. Item 6 was provided by the manufacturer.

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**. Following channel(s) was (were) selected for the final test as listed below:

WCDMA

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
-	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA, HSUPA
-	RADIATED EMISSION Below 1GHz	9262 to 9538	9262	WCDMA
-	RADIATED EMISSION Above 1GHz	9262 to 9538	9262, 9400, 9538	WCDMA

CDMA

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
-	EIRP	25 to 1175	25, 600, 1175	CDMA, EVDO, 1xEVDO
-	RADIATED EMISSION Below 1GHz	25 to 1175	600	CDMA
-	RADIATED EMISSION Above 1GHz	25 to 1175	25, 600, 1175	CDMA

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 65%RH	120Vac, 60Hz	Jones Chang Chris Lin
CONDCUDED EMISSION	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Jones Chang

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 24

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 / ERP MEASUREMENT:

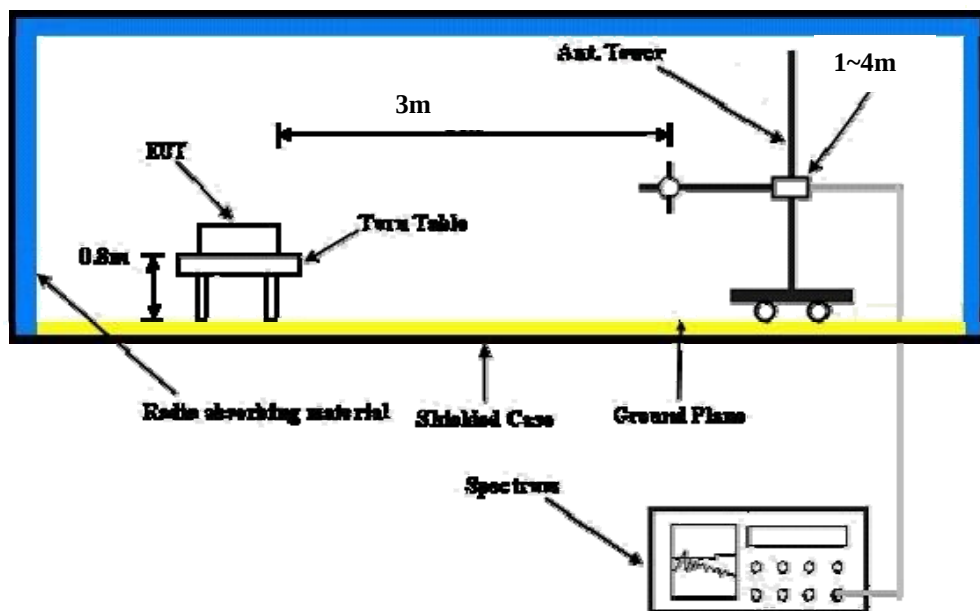
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for WCDMA/HSDPA/HSUPA/CDMA/EVDO/1xEVDO mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “ Read Value ” is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “ Read Value ” of step b. Record the power level of S.G
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with WCDMA & CDMA 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.

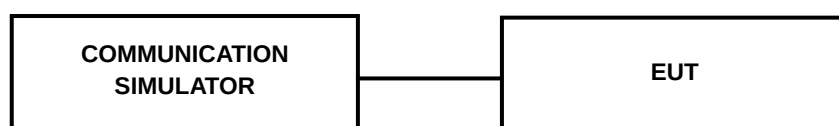
4.1.3 TEST SETUP

EIRP 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	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880	1907.6
RMC 12.2K	21.81	21.74	22.09
HSDPA Subtest-1	21.28	21.31	21.76
HSDPA Subtest-2	21.15	21.38	21.73
HSDPA Subtest-3	20.54	20.67	21.32
HSDPA Subtest-4	20.24	20.67	21.12
HSUPA Subtest-1	21.06	20.66	21.24
HSUPA Subtest-2	19.77	20.30	20.35
HSUPA Subtest-3	20.22	20.15	20.50
HSUPA Subtest-4	19.75	20.73	20.38
HSUPA Subtest-5	20.99	20.59	21.57

Band	CDMA2000 BC1		
Channel	25	600	1175
Frequency (MHz)	1851.25	1880	1908.75
RC1+SO55	23.26	23.06	23.36
RC3+SO55	23.09	22.89	23.19
RC3+SO32(+ F-SCH)	23.19	22.99	23.29
RC3+SO32(+SCH)	23.11	22.91	23.21
RTAP 153.6	23.33	23.13	23.43
RETAP 4096	23.30	23.10	23.40

EIRP POWER (dBm)

WCDMA

MODE		TX channel 9262					
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	1852.40	-17.26	18.80	1.07	19.87	33.00	-13.13
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	1852.40	-9.03	25.90	1.07	26.97	33.00	-6.03

MODE		TX channel 9400					
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	1880.00	-18.76	16.74	1.12	17.86	33.00	-15.14
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	1880.00	-8.54	25.83	1.12	26.95	33.00	-6.05

MODE		TX channel 9538					
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	1907.60	-17.61	17.82	1.11	18.93	33.00	-14.07
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	1907.60	-9.65	25.62	1.11	26.73	33.00	-6.27

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

HSDPA

MODE		TX channel 9262					
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	1852.40	-17.60	18.46	1.07	19.53	33.00	-13.47
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	1852.40	-9.47	25.46	1.07	26.53	33.00	-6.47

MODE		TX channel 9400					
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	1880.00	-17.15	18.35	1.12	19.47	33.00	-13.53
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	1880.00	-9.03	25.34	1.12	26.46	33.00	-6.54

MODE		TX channel 9538					
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	1907.60	-17.16	18.27	1.11	19.38	33.00	-13.62
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	1907.60	-9.96	25.31	1.11	26.42	33.00	-6.58

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

HSUPA

MODE		TX channel 9262					
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	1852.40	-17.89	18.17	1.07	19.24	33.00	-13.76
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	1852.40	-9.69	25.24	1.07	26.31	33.00	-6.69

MODE		TX channel 9400					
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	1880.00	-16.91	18.59	1.12	19.71	33.00	-13.29
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	1880.00	-9.21	25.16	1.12	26.28	33.00	-6.72

MODE		TX channel 9538					
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	1907.60	-17.25	18.18	1.11	19.29	33.00	-13.71
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	1907.60	-10.13	25.14	1.11	26.25	33.00	-6.75

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

CDMA

MODE		TX channel 25					
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	1851.25	-19.03	17.05	1.07	18.12	33.00	-14.88
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	1851.25	-7.90	27.05	1.07	28.12	33.00	-4.88

MODE		TX channel 600					
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	1880.00	-20.16	15.34	1.12	16.46	33.00	-16.54
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	1880.00	-7.55	26.82	1.12	27.94	33.00	-5.06

MODE		TX channel 1175					
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	1908.75	-20.33	15.09	1.11	16.20	33.00	-16.80
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	1908.75	-8.19	27.12	1.11	28.23	33.00	-4.77

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

EVDO

MODE		TX channel 25					
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	1851.25	-17.37	18.71	1.07	19.78	33.00	-13.22
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	1851.25	-7.47	27.48	1.07	28.55	33.00	-4.45

MODE		TX channel 600					
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	1880.00	-17.21	18.29	1.12	19.41	33.00	-13.59
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	1880.00	-7.07	27.30	1.12	28.42	33.00	-4.58

MODE		TX channel 1175					
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	1908.75	-17.24	18.18	1.11	19.29	33.00	-13.71
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	1908.75	-7.74	27.57	1.11	28.68	33.00	-4.32

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

1xEVDO

MODE		TX channel 25					
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	1851.25	-17.74	18.34	1.07	19.41	33.00	-13.59
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	1851.25	-7.51	27.44	1.07	28.51	33.00	-4.49

MODE		TX channel 600					
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	1880.00	-16.74	18.76	1.12	19.88	33.00	-13.12
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	1880.00	-7.11	27.26	1.12	28.38	33.00	-4.62

MODE		TX channel 1175					
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	1908.75	-17.26	18.16	1.11	19.27	33.00	-13.73
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	1908.75	-7.77	27.54	1.11	28.65	33.00	-4.35

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

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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 .

4.2.2 TEST PROCEDURES

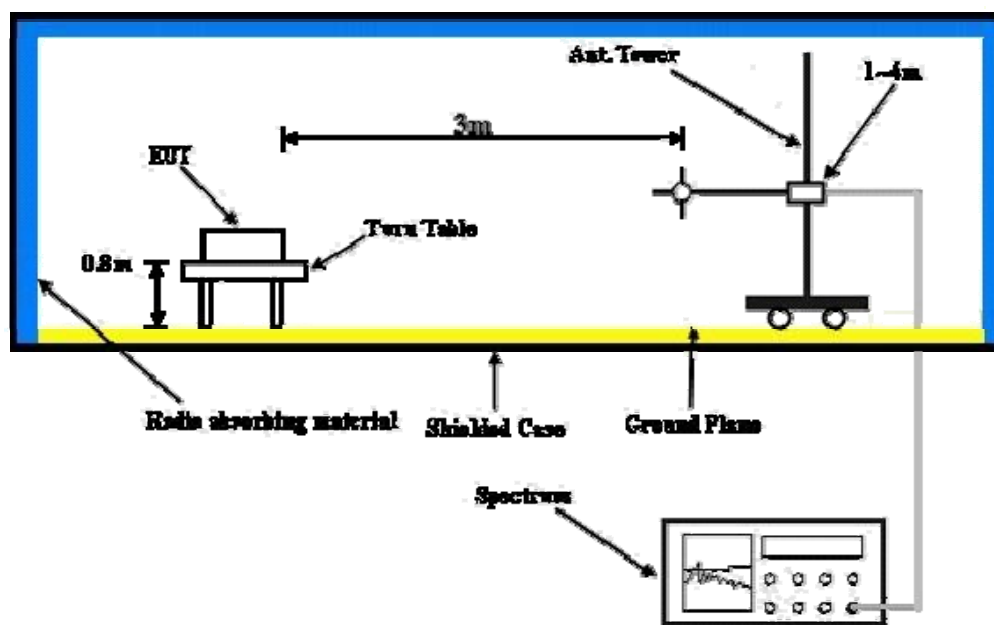
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “ Read Value ” is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “ Read Value ” of step a. Record the power level of S.G
- c. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $\text{E.R.P power} = \text{E.I.R.P power} - 2.15\text{dBi}.$

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

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 TEST SETUP



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

4.2.5 TEST RESULTS

BELOW 1GHz

WCDMA

MODE	TX channel 9262	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	39.70	-57.75	-42.72	-10.93	-53.65	-13.00	-40.65
2	167.74	-51.67	-57.30	1.37	-55.93	-13.00	-42.93
3	301.60	-47.12	-56.33	5.14	-51.19	-13.00	-38.19
4	445.16	-58.91	-63.62	5.10	-58.52	-13.00	-45.52
5	495.60	-60.61	-65.21	4.90	-60.31	-13.00	-47.31
6	798.24	-64.55	-63.29	4.05	-59.24	-13.00	-46.24
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	167.74	-43.33	-43.73	1.37	-42.36	-13.00	-29.36
2	311.30	-46.57	-52.78	5.15	-47.63	-13.00	-34.63
3	445.16	-55.11	-58.47	5.10	-53.37	-13.00	-40.37
4	769.14	-61.89	-58.89	4.39	-54.50	-13.00	-41.50
5	798.24	-57.20	-54.04	4.05	-49.99	-13.00	-36.99
6	827.34	-65.53	-61.86	3.98	-57.88	-13.00	-44.88

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

CDMA

MODE	TX channel 600	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	148.34	-43.30	-51.89	4.40	-47.49	-13.00	-34.49
2	251.16	-58.05	-67.30	4.14	-63.16	-13.00	-50.16
3	313.24	-63.44	-71.10	4.00	-67.10	-13.00	-54.10
4	445.16	-61.08	-64.44	3.75	-60.69	-13.00	-47.69
5	499.48	-66.34	-69.72	3.66	-66.06	-13.00	-53.06
6	875.84	-69.98	-67.39	3.11	-64.28	-13.00	-51.28
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	140.58	-51.70	-57.29	4.43	-52.86	-13.00	-39.86
2	202.66	-59.78	-66.49	4.24	-62.25	-13.00	-49.25
3	443.22	-59.04	-61.03	3.75	-57.28	-13.00	-44.28
4	478.14	-61.13	-63.33	3.69	-59.64	-13.00	-46.64
5	520.82	-63.72	-65.33	3.63	-61.70	-13.00	-48.70
6	856.44	-69.59	-64.58	3.14	-61.44	-13.00	-48.44

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

ABOVE 1GHz

WCDMA

MODE	Channel 9262	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	3704.80	-56.63	-52.52	7.15	-45.37	-13.00	-32.37
2	4687.44	-62.50	-54.23	6.73	-47.50	-13.00	-34.50
3	7409.60	-64.20	-47.02	4.31	-42.71	-13.00	-29.71
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	3704.80	-47.76	-43.88	7.15	-36.73	-13.00	-23.73
2	4687.44	-61.09	-54.03	6.73	-47.30	-13.00	-34.30
3	7409.60	-62.52	-46.02	4.31	-41.71	-13.00	-28.71

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

MODE	Channel 9400	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	3760.00	-54.55	-50.20	7.10	-43.10	-13.00	-30.10
2	4687.44	-61.57	-53.30	6.73	-46.57	-13.00	-33.57
3	7520.00	-64.25	-46.71	4.23	-42.48	-13.00	-29.48
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	3760.00	-44.68	-40.67	7.10	-33.57	-13.00	-20.57
2	4687.31	-61.76	-54.70	6.73	-47.97	-13.00	-34.97
3	7520.00	-63.96	-47.21	4.23	-42.98	-13.00	-29.98

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

MODE	Channel 9538	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	3815.20	-47.36	-42.78	7.06	-35.72	-13.00	-22.72
2	4687.32	-64.05	-55.78	6.73	-49.05	-13.00	-36.05
3	7630.40	-65.12	-47.37	4.20	-43.17	-13.00	-30.17
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	3815.20	-39.35	-35.23	7.06	-28.17	-13.00	-15.17
2	4687.32	-62.44	-55.38	6.73	-48.65	-13.00	-35.65
3	7630.40	-64.58	-47.67	4.20	-43.47	-13.00	-30.47

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

CDMA

MODE	Channel 25	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	3702.50	-55.45	-51.35	7.16	-44.19	-13.00	-31.19
2	5553.75	-65.53	-54.58	6.78	-47.80	-13.00	-34.80
3	7405.00	-64.37	-47.20	4.31	-42.89	-13.00	-29.89
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	3702.50	-42.97	-39.10	7.16	-31.94	-13.00	-18.94
2	5553.75	-65.45	-55.99	6.78	-49.21	-13.00	-36.21
3	7405.00	-63.53	-47.04	4.31	-42.73	-13.00	-29.73

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

MODE	Channel 600	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	3760.00	-55.05	-50.70	7.10	-43.60	-13.00	-30.60
2	5640.00	-65.41	-54.41	6.77	-47.64	-13.00	-34.64
3	7520.00	-60.75	-43.21	4.23	-38.98	-13.00	-25.98
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	3760.00	-47.66	-43.65	7.10	-36.55	-13.00	-23.55
2	5640.00	-60.18	-50.41	6.77	-43.64	-13.00	-30.64
3	7520.00	-55.86	-39.11	4.23	-34.88	-13.00	-21.88

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

MODE	Channel 1175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60Hz
TESTED BY	Jones Chang		

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	3817.50	-55.45	-50.85	7.05	-43.80	-13.00	-30.80
2	5726.25	-67.22	-56.15	6.74	-49.41	-13.00	-36.41
3	7635.00	-65.15	-47.39	4.20	-43.19	-13.00	-30.19
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	3817.50	-44.12	-39.98	7.05	-32.93	-13.00	-19.93
2	5726.25	-65.66	-55.55	6.74	-48.81	-13.00	-35.81
3	7635.00	-64.10	-47.19	4.20	-42.99	-13.00	-29.99

REMARKS:

1. EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



A D T

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

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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



A D T

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---