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FCC TEST REPORT (PART 22)

REPORT NO.: RF130529C21A

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.

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ISSUED BY: Bureau Veritas Consumer Products Services
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RELEASE CONTROL RECORD

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

1 CERTIFICATION

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

MODEL: E362

BRAND: Novatel

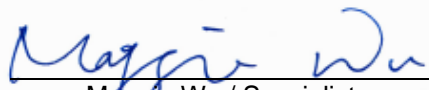
APPLICANT: Novatel Wireless Inc.

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

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC PART 22, Subpart H

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 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	NA	Refer to NOTE below
2.1049	Occupied Bandwidth	NA	Refer to NOTE below
22.917	Band Edge Measurements	NA	Refer to NOTE below
2.1051 22.917	Conducted Spurious Emissions	NA	Refer to NOTE below
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -27.49dB at 1693.20MHz.

NOTE: Test item for Effective radiated power and radiated emissions were performed for this addendum. Other testing data refer to original report.

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.



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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.



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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	
POWER SUPPLY	3.3Vdc from host equipment	
HW VERSION	2976443801	
SW VERSION	HiveOS 6.0r3 Fuji buildE1137	
MODULATION TYPE	WCDMA, HSDPA, HSUPA	BPSK
	CDMA, EVDO, 1xEVDO	QPSK, OQPSK, HPSK
FREQUENCY RANGE	WCDMA, HSDPA, HSUPA	826.4MHz ~ 846.6MHz
	CDMA, EVDO, 1xEVDO	824.7MHz ~ 848.31MHz
MAX. ERP POWER	WCDMA	337.287mW (25.28dBm)
	HSDPA	324.340mW (25.11dBm)
	HSUPA	305.492mW (24.85dBm)
	CDMA	363.078mW (25.60dBm)
	EVDO	401.791mW (26.04dBm)
	1xEVDO	399.025mW (26.01dBm)
EMISSION DESIGNATOR	WCDMA	4M17F9W
	CDMA	1M27F9W
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	

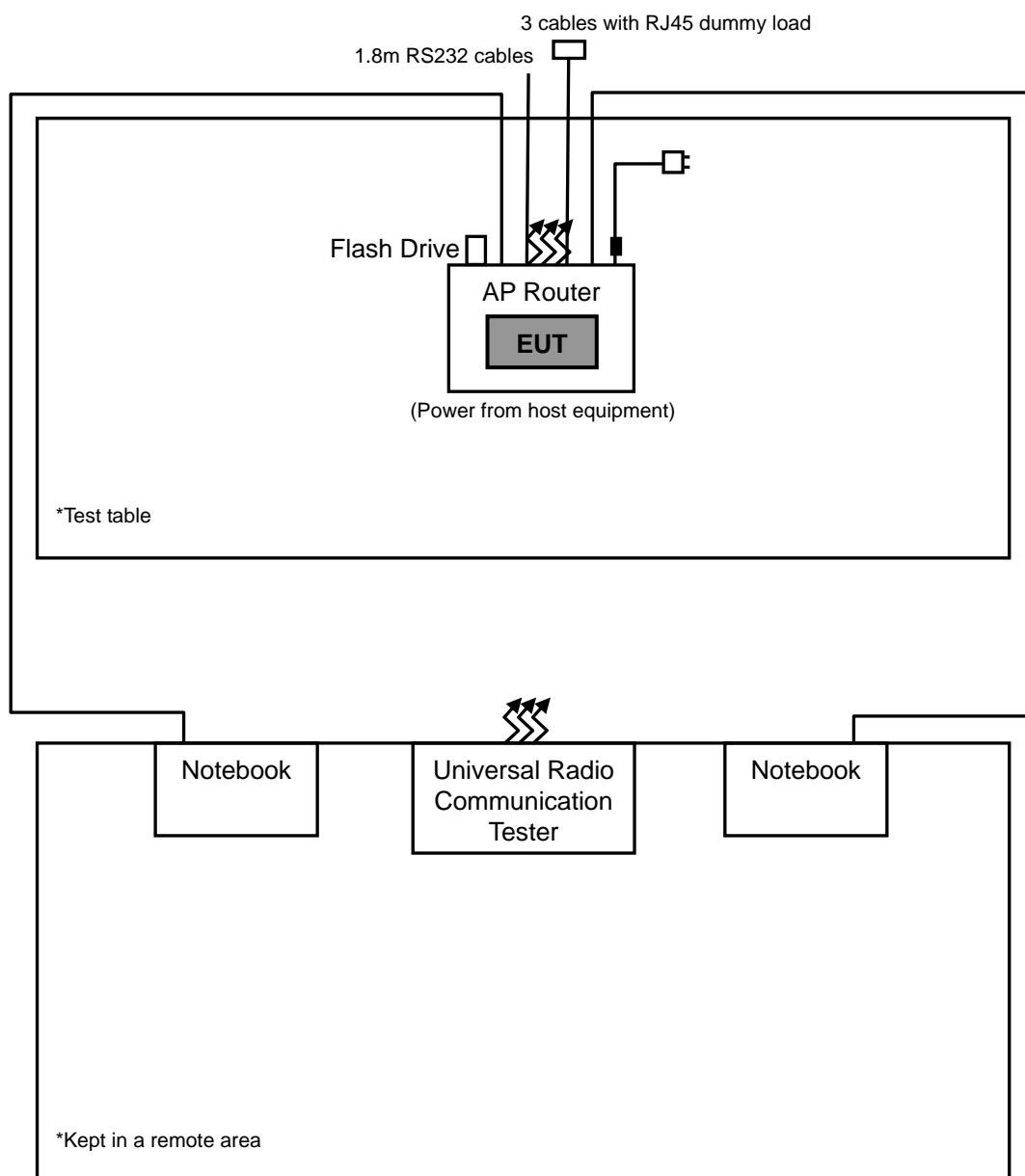
NOTE:

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, ERP, 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





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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
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	RADIATED EMISSION Below 1GHz	4132 to 4233	4132	WCDMA
-	RADIATED EMISSION Above 1GHz	4132 to 4233	4132, 4182, 4233	WCDMA

CDMA

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
-	ERP	1013 to 777	1013, 384, 777	CDMA, EVDO, 1xEVDO
-	RADIATED EMISSION Below 1GHz	1013 to 777	384	CDMA
-	RADIATED EMISSION Above 1GHz	1013 to 777	1013, 384, 777	CDMA

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	25deg. C, 65%RH	120Vac, 60Hz	Jones Chang Chris Lin
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 22

ANSI/TIA/EIA-603-C 2004

NOTE: All test items have been performed and recorded as per the above standards.

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile / Portable station are limited to 7 watts e.r.p.

4.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

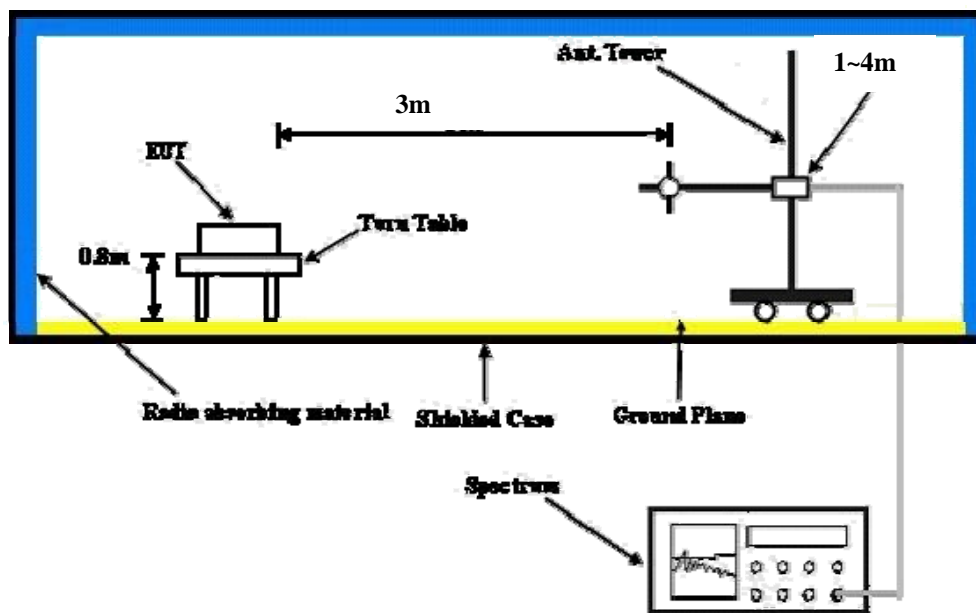
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for WCDMA/HSDPA/HSUPA/CDMA/EVDO/1xEVDO mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$
 $E.R.P \text{ power can be calculated form E.I.R.P power by subtracting the gain of dipole, } E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15\text{dBi.}$

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.

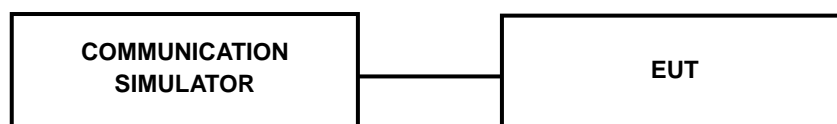
4.1.3 TEST SETUP

EIRP / 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	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.70	23.01	22.81
HSDPA Subtest-1	22.07	22.52	22.18
HSDPA Subtest-2	21.98	22.62	21.99
HSDPA Subtest-3	21.37	22.42	21.68
HSDPA Subtest-4	21.27	22.18	21.44
HSUPA Subtest-1	21.85	21.75	21.46
HSUPA Subtest-2	20.62	20.67	21.13
HSUPA Subtest-3	20.97	21.22	21.08
HSUPA Subtest-4	20.77	21.42	20.93
HSUPA Subtest-5	21.80	22.15	21.49

Band	CDMA2000 BC0		
Channel	1013	384	777
Frequency (MHz)	824.7	836.52	848.31
RC1+SO55	23.42	23.31	23.51
RC3+SO55	23.53	23.39	23.60
RC3+SO32(+ F-SCH)	23.60	23.41	23.66
RC3+SO32(+SCH)	23.48	23.32	23.52
RTAP 153.6	23.64	23.53	23.73
RETAP 4096	23.60	23.49	23.69



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ERP POWER (dBm)

WCDMA

MODE		TX channel 4132					
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	826.40	-12.46	18.59	0.06	18.65	38.45	-19.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-4.45	24.95	0.06	25.01	38.45	-13.44

MODE		TX channel 4182					
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	836.40	-13.86	16.44	0.29	16.73	38.45	-21.72
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-4.84	24.99	0.29	25.28	38.45	-13.17

MODE		TX channel 4233					
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	846.60	-13.84	16.38	0.47	16.85	38.45	-21.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.60	-5.96	24.64	0.47	25.11	38.45	-13.34

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



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HSDPA

MODE		TX channel 4132					
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	826.45	-13.67	17.37	0.06	17.43	38.45	-21.02
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-4.54	24.86	0.06	24.92	38.45	-13.53

MODE		TX channel 4182					
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	836.40	-13.35	16.95	0.29	17.24	38.45	-21.21
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-5.01	24.82	0.29	25.11	38.45	-13.34

MODE		TX channel 4233					
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	846.60	-13.31	16.91	0.47	17.38	38.45	-21.07
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.60	-6.10	24.50	0.47	24.97	38.45	-13.48

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



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HSUPA

MODE		TX channel 4132					
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	826.40	-13.82	17.23	0.06	17.29	38.45	-21.16
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-4.70	24.70	0.06	24.76	38.45	-13.69

MODE		TX channel 4182					
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	836.40	-13.21	17.09	0.29	17.38	38.45	-21.07
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-5.27	24.56	0.29	24.85	38.45	-13.60

MODE		TX channel 4233					
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	846.60	-13.27	16.95	0.47	17.42	38.45	-21.03
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.60	-6.34	24.26	0.47	24.73	38.45	-13.72

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



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CDMA

MODE		TX channel 1013					
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	824.70	-11.67	19.50	0.02	19.52	38.45	-18.93
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-3.84	25.49	0.02	25.51	38.45	-12.94

MODE		TX channel 384					
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	836.52	-8.76	21.54	0.29	21.83	38.45	-16.62
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.52	-4.68	25.16	0.29	25.45	38.45	-13.00

MODE		TX channel 777					
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	848.31	-10.18	20.03	0.50	20.53	38.45	-17.92
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.31	-5.62	25.10	0.50	25.60	38.45	-12.85

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



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EVDO

MODE		TX channel 1013					
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	824.70	-11.35	19.82	0.02	19.84	38.45	-18.61
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-3.44	25.89	0.02	25.91	38.45	-12.54

MODE		TX channel 384					
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	836.52	-10.75	19.55	0.29	19.84	38.45	-18.61
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.52	-4.37	25.47	0.29	25.76	38.45	-12.69

MODE		TX channel 777					
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	848.31	-10.57	19.64	0.50	20.14	38.45	-18.31
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.31	-5.18	25.54	0.50	26.04	38.45	-12.41

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



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MODE		TX channel 1013					
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	824.70	-11.45	19.72	0.02	19.74	38.45	-18.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-3.47	25.86	0.02	25.88	38.45	-12.57

MODE		TX channel 384					
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	836.52	-11.05	19.25	0.29	19.54	38.45	-18.91
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.52	-4.41	25.43	0.29	25.72	38.45	-12.73

MODE		TX channel 777					
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	848.31	-11.03	19.18	0.50	19.68	38.45	-18.77
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.31	-5.21	25.51	0.50	26.01	38.45	-12.44

NOTE: ERP (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

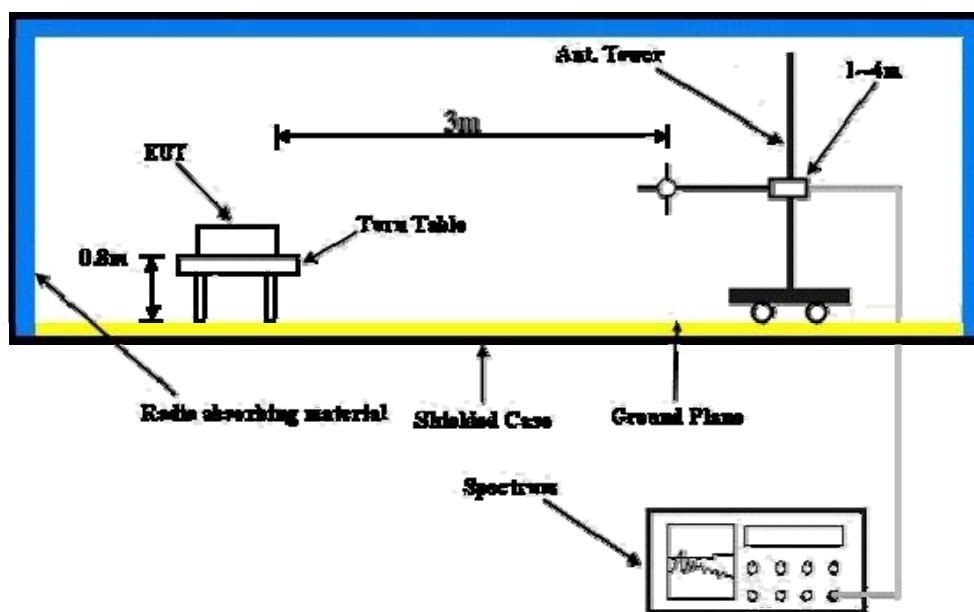
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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 4132	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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	154.16	-60.43	-66.56	0.07	-66.49	-13.00	-53.49
2	266.68	-57.44	-69.52	5.31	-64.21	-13.00	-51.21
3	297.72	-56.99	-68.44	5.14	-63.30	-13.00	-50.30
4	385.02	-58.70	-66.30	5.25	-61.05	-13.00	-48.05
5	751.68	-69.90	-71.15	4.60	-66.55	-13.00	-53.55
6	959.26	-70.51	-69.46	3.91	-65.55	-13.00	-52.55
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	289.96	-55.47	-64.43	5.18	-59.25	-13.00	-46.25
2	699.30	-65.53	-66.51	5.24	-61.27	-13.00	-48.27
3	776.90	-65.93	-65.05	4.31	-60.74	-13.00	-47.74
4	800.18	-58.06	-57.03	4.02	-53.01	-13.00	-40.01
5	914.64	-66.31	-62.98	3.91	-59.07	-13.00	-46.07
6	945.68	-68.84	-64.74	3.91	-60.83	-13.00	-47.83

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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CDMA

MODE	TX channel 384	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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	208.48	-62.16	-74.44	4.23	-70.21	-13.00	-57.21
2	747.80	-63.03	-63.03	3.27	-59.76	-13.00	-46.76
3	778.84	-70.46	-70.46	3.24	-67.22	-13.00	-54.22
4	802.12	-68.15	-68.20	3.20	-65.00	-13.00	-52.00
5	823.46	-67.13	-67.10	3.16	-63.94	-13.00	-50.94
6	875.84	-69.35	-68.91	3.11	-65.80	-13.00	-52.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	423.82	-62.55	-66.66	3.79	-62.87	-13.00	-49.87
2	681.84	-68.70	-68.24	3.37	-64.87	-13.00	-51.87
3	734.22	-68.77	-67.04	3.29	-63.75	-13.00	-50.75
4	790.48	-66.03	-64.15	3.23	-60.92	-13.00	-47.92
5	873.90	-65.33	-62.10	3.12	-58.98	-13.00	-45.98
6	906.88	-67.53	-63.55	3.07	-60.48	-13.00	-47.48

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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ABOVE 1GHz

WCDMA

MODE	TX channel 4132	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.80	-55.08	-57.83	5.49	-52.34	-13.00	-39.34
2	2210.00	-58.68	-58.28	6.37	-51.91	-13.00	-38.91
3	3750.00	-60.60	-58.44	7.11	-51.33	-13.00	-38.33
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1600.00	-57.26	-62.00	5.37	-56.63	-13.00	-43.63
2	1652.80	-55.97	-60.63	5.49	-55.14	-13.00	-42.14
3	3750.00	-63.07	-61.24	7.11	-54.13	-13.00	-41.13

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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MODE	TX channel 4182	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.80	-53.43	-56.26	5.54	-50.72	-13.00	-37.72
2	2211.87	-58.63	-58.24	6.37	-51.87	-13.00	-38.87
3	3675.00	-61.22	-59.36	7.15	-52.21	-13.00	-39.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.80	-54.31	-58.94	5.54	-53.40	-13.00	-40.40
2	2211.87	-57.02	-56.30	6.37	-49.93	-13.00	-36.93
3	4687.43	-61.52	-56.61	6.73	-49.88	-13.00	-36.88

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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MODE	TX channel 4233	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.20	-43.16	-46.08	5.59	-40.49	-13.00	-27.49
2	2539.80	-63.74	-63.32	6.43	-56.89	-13.00	-43.89
3	3386.40	-62.92	-61.48	7.01	-54.47	-13.00	-41.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.20	-47.29	-51.90	5.59	-46.31	-13.00	-33.31
2	2539.80	-64.90	-64.72	6.43	-58.29	-13.00	-45.29
3	3386.40	-60.78	-59.48	7.01	-52.47	-13.00	-39.47

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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CDMA

MODE	TX channel 1013	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.44	-60.89	-63.63	5.49	-58.14	-13.00	-45.14
2	2474.10	-61.27	-61.22	6.43	-54.79	-13.00	-41.79
3	3298.80	-59.86	-58.25	6.87	-51.38	-13.00	-38.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.44	-55.28	-59.95	5.49	-54.46	-13.00	-41.46
2	2474.10	-59.31	-59.11	6.43	-52.68	-13.00	-39.68
3	3298.80	-60.11	-58.89	6.87	-52.02	-13.00	-39.02

REMARKS:

- 1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
- 2. Correction Factor = gain of substitution antenna + cable loss



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MODE	TX channel 384	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.04	-57.84	-60.67	5.54	-55.13	-13.00	-42.13
2	2509.56	-61.59	-61.39	6.45	-54.94	-13.00	-41.94
3	3346.08	-59.91	-58.39	6.94	-51.45	-13.00	-38.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.04	-54.00	-58.61	5.59	-53.02	-13.00	-40.02
2	2509.56	-62.08	-61.85	6.45	-55.40	-13.00	-42.40
3	3346.08	-60.07	-58.80	6.94	-51.86	-13.00	-38.86

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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MODE	TX channel 777	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	INPUT POWER	120Vac, 60 Hz
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)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.62	-56.07	-58.99	5.59	-53.40	-13.00	-40.40
2	2544.94	-62.29	-61.84	6.44	-55.40	-13.00	-42.40
3	3393.21	-59.81	-58.38	7.02	-51.36	-13.00	-38.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.62	-54.52	-59.11	5.59	-53.52	-13.00	-40.52
2	2544.93	-63.26	-63.10	6.44	-56.66	-13.00	-43.66
3	3393.24	-60.27	-58.96	7.02	-51.94	-13.00	-38.94

REMARKS:

1. ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB)
2. Correction Factor = gain of substitution antenna + cable loss



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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.

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



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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---