

# FCC TEST REPORT (PART 22)

 REPORT NO.:
 RF110923D13-2

 MODEL NO.:
 MODAT-100

 FCC ID:
 RFHMODAT-100

 RECEIVED:
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 TESTED:
 Feb. 06 ~ Feb. 17, 2012

 ISSUED:
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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
Original release	N/A	Feb. 17, 2012



#### CERTIFICATION 1

**PRODUCT: HANDHELD COMPUTER** MODEL: MODAT-100 BRAND: iEi **APPLICANT:** ICP Electronics, Inc. **TESTED:** Feb. 06 ~ Feb. 17, 2012 **TEST SAMPLE: ENGINEERING SAMPLE** STANDARDS: FCC Part 22, Subpart H

The above equipment (model: MODAT-100) 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 Feb. 17, 2012

APPROVED BY : , DATE : Feb. 17, 2012 Gary Chang / Technical Manager



## 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 AND LIMIT	RESULT	REMARK				
2.1046 22.913 (a)	Maximum Peak Output Power Limit: max. 7 watts e.r.p peak power	PASS	Meet the requirement of limit. Max. e.r.p is 25.56dBm at 824.2MHz.				
2.1055	Frequency Stability AFC Freq. Error vs. Voltage AFC Freq. Error vs. Temperature Limit: max. ±2.5ppm		Meet the requirement of limit.				
2.1049 (h)	Occupied Bandwidth	PASS	Meet the requirement of limit.				
22.917	Band Edge Measurements	PASS	Meet the requirement of limit.				
2.1051 22.917 Conducted Spurious Emissions		PASS	Meet the requirement of limit.				
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is –7.02dB at 1672.80MHz.				

## 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	3.34 dB
Dedicted emissions	200MHz ~1000MHz	3.35 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.



## **3 GENERAL INFORMATION**

## 3.1 GENERAL DESCRIPTION OF EUT

EUT	HANDHELD COMPUTER			
MODEL NO.	MODAT-100			
FCC ID	RFHMODAT-100	)		
POWER SUPPLY	12.0Vdc (adapter 7.4Vdc (battery)	-) )		
MODULATION TYPE	GPRS, E-GPRS	GMSK		
MODULATION TIPE	WCDMA	BPSK		
FREQUENCY RANGE	GPRS, E-GPRS	824.2MHz ~ 848.8MHz		
FREQUENCI RANGE	WCDMA	826.4MHz ~ 846.6MHz		
	GPRS	0.36Watts		
MAX. ERP POWER	E-GPRS	0.13Watts		
	WCDMA	0.05Watts		
MULTI-SLOTS CLASS	10			
WCDMA RELEASE VERSION	5			
MAX. ANTENNA GAIN	Embedded Penta-band Antenna with 3.3dBi gain			
I/O PORTS	Refer to users' manual			
DATA CABLE	NA			
ACCESSORY DEVICES	Refer to Note as	below		

#### NOTE:

1. The EUT was powered by the following adapter & battery:

#### ADAPTER

ADAPTER				
BRAND:	FSP			
MODEL:	FSP036-RAB613			
INPUT: 90-264Vac, 50-60Hz, 1A				
OUTPUT:	12Vdc, 3A			
POWER LINE:	1.5m shielded cable 1 core			
BATTERY				
RATING:	7.4Vdc, 1880mAh, 13.9Wh			

2. Hardware version: R1.05.

3. Software version: R015.

- 4. Voice & DTM mode is not supported.
- 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 DESCRIPTION OF TEST MODES

## FOR GPRS & E-GPRS:

124 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	128	824.2 MHz	GPRS & E-GPRS
MIDDLE	189	836.4 MHz	GPRS & E-GPRS
HIGH	251	848.8 MHz	GPRS & E-GPRS

#### NOTE:

1. The channel 128, 189, and 251 were pre-tested in chamber. The channel 189 was chosen for final test.

- 2. The worst case for final test is chosen when the power control level set 5.
- 3. The channel space is 0.2MHz.
- 4. The EUT is an E-GPRS class 10 device (Multislot class: 10), which provide 2 up-link. After pre-tested 2 functions, found up-link with 1 time slot is worse, therefore, test results of output power, frequency stability, occupied bandwidth and band edge tests came out from this.

#### FOR WCDMA:

102 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	4132	826.4 MHz	WCDMA, HSDPA
MIDDLE	4182	836.4 MHz	WCDMA, HSDPA
HIGH	4233	846.6 MHz	WCDMA, HSDPA

NOTE:

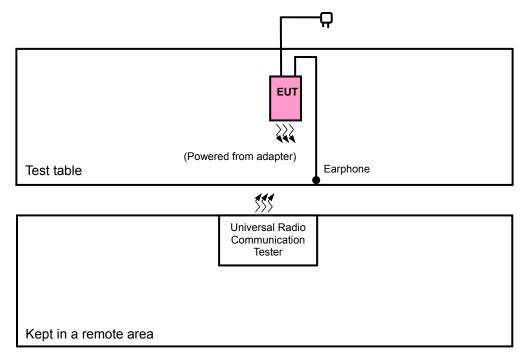
1. The channel 4132, 4182 and 4233 were pre-tested in chamber. The channel 4182 was chosen for final test.

- 2. The channel space is 0.2MHz.
- 3. After pretest of output power and spurious emission under WCDMA-RMC & HSDPA mode, find the worst mode is WCDMA-RMC. Therefore, select WCDMA-RMC mode to do final test

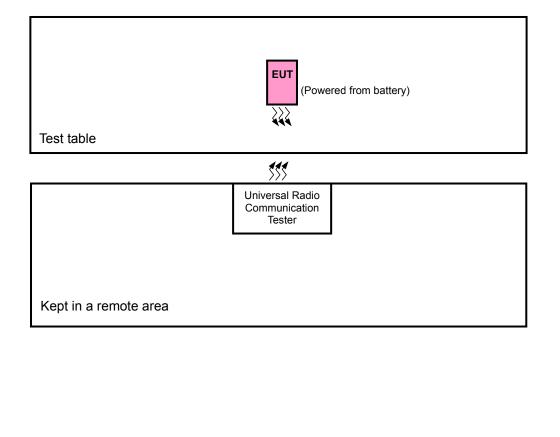


## 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

#### For Radiated Emission Test



#### For Output Power Test





# 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL FOR GPRS & E-GPRS:

FOR GPRS	& E-GPR	S:					
EUT CONFIGURE			APPLICA	ABLE TO			DESCRIPTION
MODE	OP	FS	ОВ	BE	CE	RE	DESCRIPTION
-	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-
Where     OP: Output power     FS: Frequency stability       OB: Occupied bandwidth     BE: Band edge       CE: Conducted spurious emissions     RE: Radiated emission							
TPUT POWEI	R MEASU	REMENT	:				
	between a sity archit	available r ecture).	nodulation	s, data ra	tes, XYZ a	axis and a	om all possible ntenna ports (if E
AVAILABLE C	HANNEL	TESTEI	CHANNEL	мо	DULATION	TECHNOLO	OGY AXIS
128 to 2	251	128,	189, 251		GPRS,	E-GPRS	x
Following cha			D CHANNEL			TECHNOLO	
128 to :	251		189		GPRS.	E-GPRS	
each mode. Pre-Sca	udes all te in has bee between a annel(s) wa	est value of en conduct available r as (were) :	f each moo ed to dete nodulation	rmine the s and ant or the final	worst-cas enna ports test as lis	se mode fr s (if EUT v	
128 to	251	128.	189, 251		GPRS.	E-GPRS	
combinations architecture).	n has bee between a	en conduct available r	nodulation	s and ant	enna ports	s (if EUT v	om all possible ⁄ith antenna dive
Following cha							
128 to 2			8, 251			E-GPRS	
120 10 2		12	,		Gr (0,		



#### CONDUCTED SPURIOUS EMISSIONS MEASUREMENT:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
128 to 251	189	GPRS, E-GPRS

#### RADIATED EMISSION MEASUREMENT:

- 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 (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL TESTED CHANNEL		MODULATION TECHNOLOGY	AXIS
128 to 251	189	GPRS, E-GPRS	Z

#### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
OP	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
FS	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
OB	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
EM	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
BE	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
CE	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
RE	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu



#### FOR WCDMA:

				APPLIC	ABLE TO				
	CONFIGURE MODE	OP	FS	OB	BE	CE	RE	DE	SCRIPTION
	-		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		-
	OB:	: Output pow Occupied ba Conducted s	andwidth	issions	BE:	Frequency st Band edge Radiated em	-		
<u>00</u>	OUTPUT POWER MEASUREMENT:								
	<ul> <li>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 (if EUT with antenna diversity architecture).</li> <li>Following channel(s) was (were) selected for the final test as listed below.</li> </ul>								
	AVAILABLE			TED CHAN			ON TECHNO		AXIS
	4132 to	o 4233	41	32, 4182, 42	233	V	VCDMA		х
	Pre-Scar combinations architecture). Following cha	n has beer between a	n conduct vailable r	ed to dete nodulatior	ns and ant	enna ports		ith ante	
	AVAILABLE	CHANNEL	TES	TED CHAN	NEL	MODULATIC	ON TECHNO	LOGY	
	4132 to	9 4233		4182		۷	VCDMA		
OCCUPIED BANDWIDTH MEASUREMENT:         Image: State in the includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes spectrum plot of worst value of each mode.         Image: State includes all test value of each mode, but only includes all test value of each mode.         Image: State includes all test value of each mode and antenna ports (if EUT with antenna diversity architecture).         Image: State includes all test value of each mode.         Image: State includes all test value of each mode.         Image: State includes all test v									
	4132 to	0 4233	41	32, 4182, 42	233	V	VCDMA		
	combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).								
	4132 to	0 4233		4132, 4233		V	VCDMA		



#### CONDUCTED SPURIOUS EMISSIONS MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL TESTED CHANNEL		MODULATION TECHNOLOGY		
4132 to 4233	4182	WCDMA		

#### **RADIATED EMISSION MEASUREMENT:**

- 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 (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	AXIS
4132 to 4233	4182	WCDMA	Z

#### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
OP	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
FS	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
OB	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
EM	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
BE	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
CE	25deg. C, 57%RH	7.4Vdc	Phoenix Chen
RE	25deg. C, 57%RH	120Vac, 60Hz	Kay Wu



## 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2 FCC 47 CFR Part 22 ANSI C63.4-2003 ANSI/TIA/EIA-603-C 2004

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

## 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	104484	NA
2	Radio Communication Analyzer	Anritsu	MT8820C	6201010284	NA

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

#### NOTE:

- 1. All power cords of the above support units are non shielded (1.8m).
- 2. Item 1-2 acted as a communication partners to transfer data.



## 4 TEST TYPES AND RESULTS

## 4.1 OUTPUT POWER MEASUREMENT

## 4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 22.913 (a) that "Mobile / Portable station are limited to 7 watts e.r.p".



## 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 04, 2011	Aug. 03, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 20, 2011	Jul. 19, 2012
Preamplifier Agilent	8449B	3008A01911	Oct. 29, 2011	Oct. 28, 2012
Preamplifier Agilent	8447D	2944A10638	Oct. 29, 2011	Oct. 28, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 19, 2011	Aug. 18, 2012
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 13, 2011	Aug. 12, 2012
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA

**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.



## 4.1.3 TEST PROCEDURES

#### EIRP / ERP MEASUREMENT:

- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 128, 189 and 251 (GPRS & E-GPRS) / 4132, 4182 and 4233 (WCDMA) (low, middle and high operational frequency range.) RWB and VBW is 1MHz for GPRS & E-GPRS and 5MHz for WCDMA mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step c. Record the power level of S.G
- d. EIRP = Output power level of S.G TX cable loss + Antenna gain of substitution horn.
- e. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

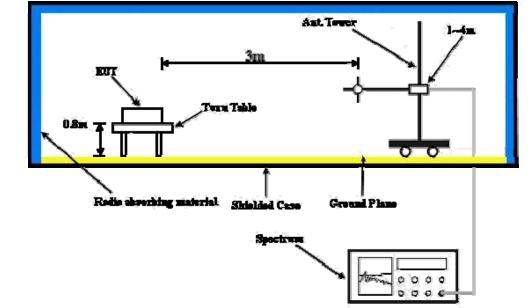
#### CONDUCTED POWER MEASUREMENT:

- a. The EUT was set up for the maximum power with GPRS, E-GPRS & WCDMA link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

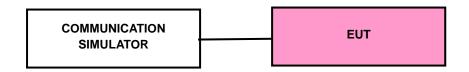


## 4.1.4 TEST SETUP





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).

## 4.1.5 EUT OPERATING CONDITIONS

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.



## 4.1.6 TEST RESULTS

## CONDUCTED OUTPUT POWER (dBm)

Band	GPRS850				
Channel	128	189	251		
Frequency (MHz)	824.2	836.4	848.8		
GPRS 8 (GMSK, 1 slot)	31.13	31.25	31.36		
GPRS 10 (GMSK, 2 slot)	29.58	29.70	29.82		
EDGE 8 (8PSK, 1 slot)	26.16	26.29	26.38		
EDGE 10 (8PSK, 2 slot)	26.13	26.26	26.36		

Band	WCDMA V				
Channel	4132	4182	4233		
Frequency (MHz)	826.4	836.4	846.6		
RMC 12.2K	23.26	23.03	22.79		
HSDPA Subtest-1	23.21	23.23	23.06		
HSDPA Subtest-2	23.32	23.20	23.16		
HSDPA Subtest-3	23.29	23.22	23.17		
HSDPA Subtest-4	23.23	23.22	23.15		



#### **ERP POWER**

#### FOR GPRS MODE

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(W)	Polarization (H/V)
	128	824.2	-4.91	32.62	25.56	0.36	Н
	189	836.4	-5.51	32.52	24.86	0.31	Н
x	251	848.8	-7.43	32.65	23.07	0.20	Н
^	128	824.2	-13.96	32.76	16.65	0.05	V
	189	836.4	-13.61	32.39	16.63	0.05	V
	251	848.8	-16.79	32.54	13.60	0.02	V

#### FOR E-GPRS MODE

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(W)	Polarization (H/V)
	128	824.2	-9.24	32.62	21.23	0.13	Н
	189	836.4	-9.75	32.52	20.62	0.12	Н
x	251	848.8	-11.73	32.65	18.77	0.08	Н
^	128	824.2	-18.44	32.76	12.17	0.02	V
	189	836.4	-17.94	32.39	12.30	0.02	V
	251	848.8	-21.04	32.54	9.35	0.01	V

#### FOR WCDMA MODE

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(W)	Polarization (H/V)
	4132	826.4	-13.11	32.62	17.36	0.05	Н
	4182	836.4	-13.89	32.52	16.48	0.04	Н
x	4233	846.6	-14.18	32.65	16.32	0.04	Н
^	4132	826.4	-22.15	32.76	8.46	0.01	V
	4182	836.4	-22.00	32.39	8.24	0.01	V
	4233	846.6	-23.19	32.54	7.20	0.01	V



## 4.2 FREQUENCY STABILITY MEASUREMENT

## 4.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

According to the FCC part 22.863 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The frequency error rate is according to the JTC standard that the frequency error rate shall be accurate to within 2.5ppm of the received frequency from the base station.

## 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Spectrum Analyzer Agilent	E4446A	MY43360128	Feb. 22, 2011	Feb. 21, 2012
Hewlett Packard RF cable	8120-6192	01428251	NA	NA
RF cable	SUCOFLEX 104	257029	Sep. 11, 2011	Sep. 10, 2012
WIT Standard Temperature & Humidity Chamber	MHU-225AU	920842	Jun. 15, 2011	Jun. 14, 2012

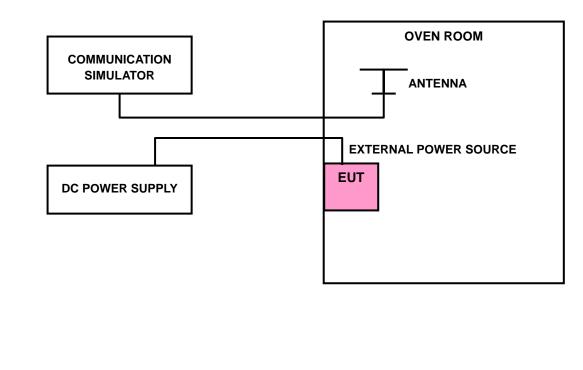
**NOTE:** The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.



## 4.2.3 TEST PROCEDURE

- a. Because of the measure the carrier frequency under the condition of the AFC lock, it shall be used the mobile station in the GPRS / WCDMA link mode. This is accomplished with the use of the R&S CMU200 / JRC NJZ-2000 simulator station. The oven room could control the temperatures and humidity. The GPRS link channel is the 189 and the WCDMA link channel is the 4182.
- b. Power must be removed when changing from one temperature to another or one voltage to another voltage. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- c. EUT is connected the external power supply to control the DC input power. The various Volts from the minimum 6.00Volts to 8.46Volts. Each step shall be record the frequency error rate.
- d. 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.
- e. 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.



## 4.2.4 TEST SETUP



## 4.2.5 TEST RESULTS

#### FOR GPRS:

AFC FREQUENCY ERROR vs. VOLTAGE					
VOLTAGE (Volts)         FREQUENCY ERROR (Hz)         FREQUENCY ERROR (ppm)         LIMIT (ppm)					
7.40	8.47	0.01	2.5		
6.00	10.67	0.01	2.5		
8.46	4.29	0.01	2.5		

**NOTE:** The applicant defined the normal working voltage of the battery is from 6.00Vdc to 8.46Vdc.

AFC FREQUENCY ERROR vs. TEMP.						
<b>ТЕМР. (</b> ℃)	TEMP. (°C) FREQUENCY ERROR FREQUENCY ERROR (Ppm)					
-20	-12.55	-0.01	2.5			
-10	-10.41	-0.01	2.5			
0	-8.76	-0.01	2.5			
10	-5.09	-0.01	2.5			
20	-4.32	-0.01	2.5			
30	3.81	0.00	2.5			
40	6.24	0.01	2.5			
50	7.66	0.01	2.5			



#### FOR E-GPRS:

AFC FREQUENCY ERROR vs. VOLTAGE					
VOLTAGE (Volts)         FREQUENCY ERROR (Hz)         FREQUENCY ERROR (ppm)         LIMIT (ppm)					
7.40	-3.82	0.00	2.5		
6.00	3.28	0.00	2.5		
8.46	3.33	0.00	2.5		

**NOTE:** The applicant defined the normal working voltage of the battery is from 6.00Vdc to 8.46Vdc.

AFC FREQUENCY ERROR vs. TEMP.					
ТЕМР. (℃)	FREQUENCY ERROR (Hz)	FREQUENCY ERROR (ppm)	LIMIT (ppm)		
-20	-9.76	-0.01	2.5		
-10	-7.39	-0.01	2.5		
0	-7.81	-0.01	2.5		
10	-6.85	-0.01	2.5		
20	-6.22	-0.01	2.5		
30	-4.17	0.00	2.5		
40	-4.24	0.00	2.5		
50	-3.07	0.00	2.5		



#### FOR WCDMA:

AFC FREQUENCY ERROR vs. VOLTAGE					
VOLTAGE (Volts)         FREQUENCY ERROR (Hz)         FREQUENCY ERROR (ppm)         LIMIT (ppm)					
7.40	23.52	0.03	2.5		
6.00	25.10	0.03	2.5		
8.46	26.33	0.03	2.5		

**NOTE:** The applicant defined the normal working voltage of the battery is from 6.00Vdc to 8.46Vdc.

AFC FREQUENCY ERROR vs. TEMP.					
ТЕМР. (℃)	FREQUENCY ERROR (Hz)	FREQUENCY ERROR (ppm)	LIMIT (ppm)		
-20	21.99	0.03	2.5		
-10	22.02	0.03	2.5		
0	22.90	0.03	2.5		
10	26.72	0.03	2.5		
20	26.66	0.03	2.5		
30	32.45	0.04	2.5		
40	27.98	0.03	2.5		
50	23.14	0.03	2.5		



## 4.3 OCCUPIED BANDWIDTH MEASUREMENT

## 4.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

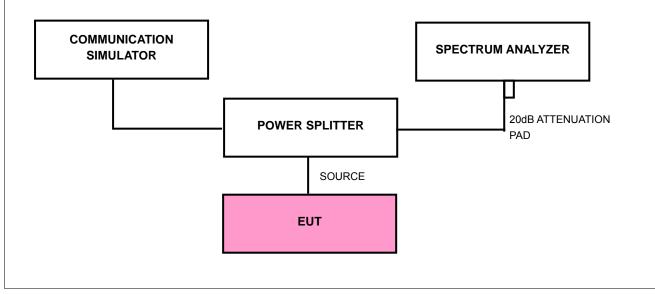
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the totalmean power of a given emission.

4.3.2	TEST INSTRUMENTS	

DESCRIPTION & MANUFACTURER	MODEL NO.	MODEL NO. SERIAL NO.		DUE DATE OF CALIBRATION
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012
Mini-Circuits Power Splitter	ZN2PD-9G	NA	May 25, 2011	May 24, 2012
RF cable	SUCOFLEX 104	274403/4	Aug. 20, 2011	Aug. 19, 2012
RF cable	SUCOFLEX 104	250729/4	Aug. 19, 2011	Aug. 18, 2012
RF cable	SUCOFLEX 104	214377/4	Aug. 19, 2011	Aug. 18, 2012
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

**NOTE:** The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

## 4.3.3 TEST SETUP





## 4.3.4 TEST PROCEDURES

- a. The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 128, 189 and 251 (GPRS / E-GPRS) / 4132, 4182 and 4233 (WCDMA) (low, middle and high operational frequency range.)
- b. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. 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.

## 4.3.5 EUT OPERATING CONDITION

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum and minimum output power under transmission mode and specific channel frequency.



## 4.3.6 TEST RESULTS

#### FOR GPRS MODE

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
128	824.2	245.77
189	836.4	244.18
251	848.8	246.26

#### CH 251

Center Fre	RF 50.Ω AC eq 848.800000 M	Trig: 1	sense:INT r Freq: 848.800000 MHz ree Run Avg Hold 1: 30 dB	Radio 1>10/10	D:29 AM Feb 09, 2012 Std: None Device: BTS	Frequency
10 dB/div	Ref Offset 14 dB Ref 30.00 dBm					
20.0		3,000	mann			Center Freq
10.0		and a second second second	- mm		_	848.800000 MHz
0.00						
-10.0		nt		hr.	-	
-20.0	Carl Carl	-		12th Martin		
-30.0	a phy war			Ym		
50.0 MAN	W W AFR			رس <sup>ر</sup> ا	Mr. Manserana	
60.0						CF Step
Center 848 #Res BW		#	VBW 10 kHz	Swe	Span 1 MHz ep 105.5 ms	100.000 kHz
Occup	ied Bandwidth		Total Power	38.0 dBn	n	Freq Offset
	24	6.26 kHz				0 Hz
Transm	it Freq Error	551 Hz	OBW Power	99.00 %	6	
x dB Ba	ndwidth	311.5 kHz	x dB	-26.00 dl	3	



#### FOR E-GPRS MODE

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)
128	824.2	244.62
189	836.4	243.53
251	848.8	242.39

#### CH 128

Center Fr	eq 824.200000 N	Trig:	SENSE:INT er Freq: 824.200000 Mi Free Run Avg n: 30 dB	lz R Hold:>10/10	Radio Device: BTS		Trace/Detector	
10 dB/div	Ref Offset 14 dB Ref 30.00 dBm	1 .						
20.0		Manna	Mendershare				c	lear Write
0.00 -10.0 -20.0				hurry				Average
-30.0 -40.0 -50.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Werner	a.v. 4400140		Max Hold
Genter 82 #Res BW		#	WBW 10 kHz			1 MHz		Min Hold
Occup	ied Bandwidth 24	4.62 kHz	Total Power	33.7 c	1Bm		Auto	Detector Peak► <u>Man</u>
	nit Freq Error andwidth	-419 Hz 307.5 kHz	OBW Power x dB	99.0 -26.00				



#### FOR WCDMA:

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
4132	826.4	4.164
4182	836.4	4.171
4233	846.6	4.157

#### CH 4182

Center F	RF 50 Ω		7		NSE:INT req: 836.400	000 MHz	ALIGNAUTO	03:03:21 F Radio Std	MFeb 10, 2012 : None	Frequency
			- Gain:Low	#Atten: 30				Radio Dev	rice: BTS	
10 dB/div Log										
20.0			and the states	quiternation	11 <sup>11</sup> 2/1444/197470.)	en galanta				Center Freq 836.400000 MHz
0.00		/"					N. I			
-10.0	line rate of the allowing						- And		harder way about	
-30.0 <b>Lipe<sup>NA</sup></b> -40.0	Men or a monerty	With It.							a stort deal	
-50.0										
	36.4 MHz 100 kHz			#VE	3W 300 k	Hz			n 10 MHz p 300 ms	
Occu	pied Band		05 MI	J-7	Total P	ower	30.2	2 dBm		Freq Offset
Trans	mit Freq Erro		-20.493		OBW P	ower	99	9.00 %		
x dB E	Bandwidth		4.643 №	IHz	x dB		-26.	00 dB		



## 4.4 BAND EDGE MEASUREMENT

## 4.4.1 LIMITS OF BAND EDGE MEASUREMENT

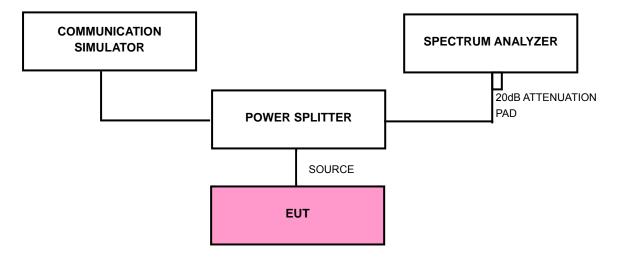
According to FCC 22.917 specified that power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

## 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION	
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012	
Mini-Circuits Power Splitter	ZN2PD-9G	NA	May 25, 2011	May 24, 2012	
RF cable	SUCOFLEX 104	274403/4	Aug. 20, 2011	Aug. 19, 2012	
RF cable	SUCOFLEX 104	250729/4	Aug. 19, 2011	Aug. 18, 2012	
RF cable	SUCOFLEX 104	214377/4	Aug. 19, 2011	Aug. 18, 2012	
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA	

**NOTE:** The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

## 4.4.3 TEST SETUP





## 4.4.4 TEST PROCEDURES

- a. The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels, 128 and 251 (GPRS / E-GPRS) / 4132 and 4233 (WCDMA) (low and high operational frequency range.)
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 3kHz (GPRS / E-GPRS).
- d. 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 100kHz (WCDMA).
- e. Record the max trace plot into the test report.

## 4.4.5 EUT OPERATING CONDITION

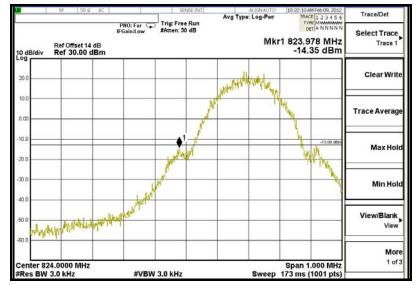
- a. The EUT makes a phone call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.



## 4.4.6 TEST RESULTS

#### FOR GPRS

#### LOWER BAND EDGE



#### HIGHER BAND EDGE





#### FOR E-GPRS MODE

#### LOWER BAND EDGE



#### HIGHER BAND EDGE





#### FOR WCDMA MODE

#### LOWER BAND EDGE



#### HIGHER BAND EDGE

Marker	03:16:11 PMFeb 10, 2012 TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET A N N N N N		Avg Type	NSE:INT		MHz PNO: Far	50 R AC	ker 1	w Mar
Select Marker 1	849.000 MHz -25.99 dBm	Mkr1 8		dB	#Atten: 30	IFGain:Low	f Offset 14 dB f 30.00 dBm	B/div	10 d Log
Norm									20.0
Delt								******	10.0 0.00
Fixed	-13.00 dBm			1					-10.0
o	man of the second states and the second street		James and a state of the state	hy here we					-30.0
Properties									50.0
Mor 1 of	Span 5.000 MHz 00 ms (1001 pts)	Sween 200			100 kHz	#\/B\M	00 MHz	ter 849 s BW 1	



## 4.5 CONDUCTED SPURIOUS EMISSIONS

## 4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

In the FCC 22.917, On any frequency outside a licensee's frequency block within GPRS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The emission limit equal to -13dBm.

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION	
SPECTRUM ANALYZER R&S	FSP40	100039	Feb. 23, 2011	Feb. 22, 2012	
Mini-Circuits Power Splitter	ZN2PD-9G	NA	May 25, 2011	May 24, 2012	
RF cable	SUCOFLEX 104	274403/4	Aug. 20, 2011	Aug. 19, 2012	
RF cable	SUCOFLEX 104	250729/4	Aug. 19, 2011	Aug. 18, 2012	
RF cable	SUCOFLEX 104	214377/4	Aug. 19, 2011	Aug. 18, 2012	
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA	

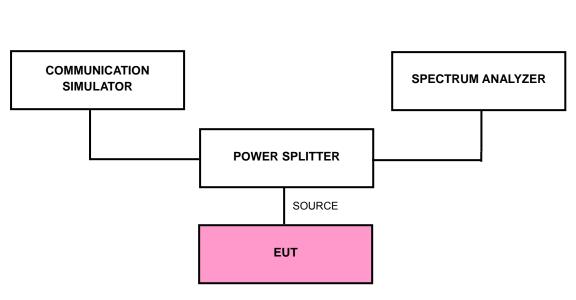
## 4.5.2 TEST INSTRUMENTS

**NOTE:** The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.



## 4.5.3 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at channel 189 (GPRS / E-GPRS) and channel 4182 (WCDMA).
- b. The conducted spurious emission used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. Measuring frequency range is from 30 MHz to 9GHz. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.



# 4.5.4 TEST SETUP

# 4.5.5 EUT OPERATING CONDITIONS

- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.



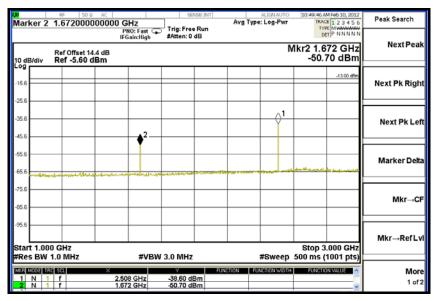
### 4.5.6 TEST RESULTS

### FOR GPRS:

**CH 189:** 30MHz ~ 1GHz

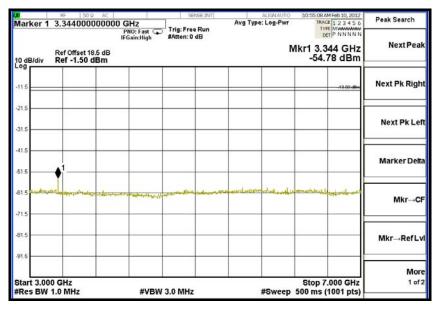
Amplitude		MFeb 09, 2012	TRACE	03	GNAUTO og-Pwr	Avg Type	ISE:INT	SE Trig: Free		.00 dBm	r⊧ soa Level 34	erence	» Refe
Ref Level 34.00 dBm		79 MHz 46 dBm	715.		М		dB	#Atten: 30	NO: Fast 😱 Sain:Low	dB	ef Offset 14 ef 34.00 (		10 dE
Attenuation [30 dB]													24.0
Scale/Div 10 dB													14.0 4.00
Scale Type	Log	-13.00 dBm											-6.00
Presel Center		والمحر وعاومية وأنتيس			ا الدور مرور م		s		-				26.0 36.0
Presel Adjust 0 Hz										han an a	, h-44-48, m/pt./		46.0
More 1 of 2		000 GHz	op 1.0	Sto							Hz	t 30.0 N	-56.0 Star
		1001 pts)			weep	;		3.0 MHz	#VBW			BW 1.	

#### 1GHz ~ 3GHz





#### 3GHz ~ 7GHz



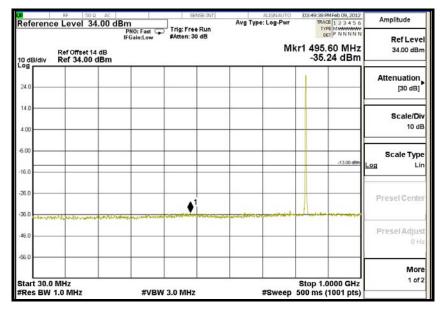
<sup>7</sup>GHz ~ 9GHz

Peak Search	1:27:10 AM Feb 10, 2012 TRACE 1 2 3 4 5 6	ALIGNAUTO	Avg Type	NSE:INT	SE	Hz		.3640000	rker 1 8
Next Pea	1 8.364 GHz -51.02 dBm	м			Trig: Fre #Atten: 0	NO: Fast 😱 Sain:High	P IF0 2 dB	ef Offset 21 ef 0.00 dl	F
Next Pk Righ	-13.00 dBm								
Next Pk Lei									
Marker Delt			•						 
Mkr→C	leptopetradispediate to provide the		and maintain	han the local	- decottat	an warden and	e un studioù.	g Utilinghan met	ي
Mkr→RefL									
Mor 1 of	Stop 9.000 GHz 0 ms (1001 pts)				3.0 MHz				rt 7.000



### FOR E-GPRS:

**CH 189:** 30MHz ~ 1GHz

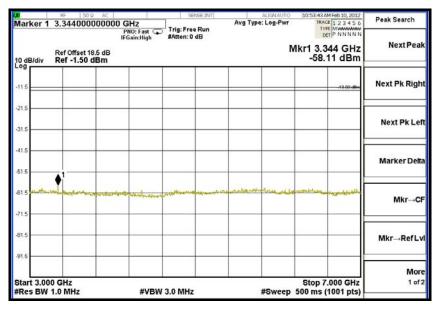


1GHz ~ 3GHz

Peak Search	10:51:40 AM Feb 10, 2012 TRACE 1 2 3 4 5 6	LIGNAUTO	Aug T	SENSE:INT		RF 50 Q AC	
	DET P NNNN	Log-Fwi	Avgi	Trig: Free Run #Atten: 0 dB	PNO: Fast IFGain:High	1.6720000000	narker 2
Next Pea	Mkr2 1.672 GHz -53.07 dBm			Offset 14.4 dB -5.60 dBm			
Next Pk Righ	-13.00 dBm						-15.6
							25.6
Next Pk Le		1					35.6
							-45.6
Marker Delt						-	-55.6
	ec <sup>analist</sup> ation <sup>an</sup> arasyleeninenin <sup>a</sup>	م المدار معرفي الرومية م الم	De OSHORINA C	الليوانية الأنتاج فالتوسيجية إليوميا	nton the house	and the manufacture	
Mkr→C							-75.6
							-95.6
Mkr→RefL							
	Stop 3.000 GHz 500 ms (1001 pts)	#Sweep 4		3.0 MHz	#VBW		Start 1.00 #Res BW
Mor 1 of	FUNCTION VALUE	CTION WIDTH	NETION	-44.52 dBm -53.07 dBm	2.510 GHz 1.672 GHz	RC SCL X	MKE MODE TO 1 N 1 2 N 1



#### 3GHz ~ 7GHz



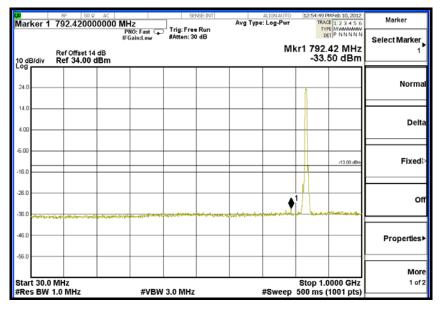
<sup>7</sup>GHz ~ 9GHz

Peak Search	TRACE 1 2 3 4 5 6 TYPE MWWWWW	Log-Pwr	Avg Type	sense int	Tala			RF 50 8.364000	arker 1
NextPeal	1 8.364 GHz -55.99 dBm	м			#Atte	PNO: Fast 😱 Gain:High	IF .2 dB	Ref Offset 2 Ref 0.00 (	0 dB/div
Next Pk Righ	-13.00 dBm								10.0
Next Pk Lef									80.0 10.0
Marker Delt									40.0 50.0
Mkr→C		apartan an	mand	And gables with		holden and to be and to be and to		Maria Maria Li	0.0
Mkr→RefLv									0.0
Mor 1 of:	Stop 9.000 GHz 0 ms (1001 pts)					#VBW			tart 7.00



### FOR WCDMA:

**CH 4182:** 30MHz ~ 1GHz



1GHz ~ 3GHz

Mkr2 1.670 G -61.03 dl	IFGaintligh #Atten: 0 dB Ref Offset 14.4 dB Ref -5.60 dBm
.13.0	
1	2
Stop 3.000 0	00 GHz
Stop 3.000 C	#Sweet



### $3GHz \sim 7GHz$

Peak Search	2:47:22 PMFeb 10, 2012 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N		ALIGNAUTI Avg Type: Log-Pwi	ee Run	Trig: F	GHz PNO: Fast		.552000	ker 1 (	arl
NextPea	1 5.552 GHz -58.96 dBm			0 dB	#Atten	Gain:High	11 8.5 dB	ef Offset 1 tef -1.50 (		0 dE
Next Pk Righ	-1300 dBm									1.5
Next Pk Le										1.5
Marker Delt			<u></u>							1.5
Mkr→C	elest <sub>errep</sub> errepeterbe	and Lynn	and an all an all and a second se	and and and all	a second and a second and	the second second	alan an a	an a	her" an	1.5
Mkr→RefL	[									1.5
Mor 1 of	Stop 7.000 GHz 0 ms (1001 pts)					#VBW			t 3.000 s BW 1.	

<sup>7</sup>GHz ~ 9GHz

Peak Search	12:48:51 PMFeb 10, 2012	ALIGNAUTO	SENSE:INT			RF 50 9	
NextPea	kr1 7.564 GHz -56.66 dBm	vg Type: Log-Pwr M	Frig: Free Run Matten: 0 dB	iHz NO: Fast 😱 Sain:High	Ph IFG .2 dB	7.5640000 Ref Offset 21 Ref 0.00 dl	) dB/div
Next Pk Righ	~13.00 dBm						0.0
Next Pk Le							0.0
Marker Delt							0.0
Mkr→C	langer and the second		interbricking a generativ	Ant-water the late	a description	ulo a conse	0.0
Mkr→RefL							0.0
Mor 1 of	Stop 9.000 GHz 500 ms (1001 pts)	#Sween	0.0447	#VBW :			tart 7.000



# 4.6 RADIATED EMISSION MEASUREMENT

### 4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

In the FCC 22.917 (a), On any frequency outside a licensee's frequency block within USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P) dB$ . The emission limit equal to -13 dBm.

### 4.6.2 TEST INSTRUMENTS

Same as 4.1.2.



### 4.6.3 TEST PROCEDURES

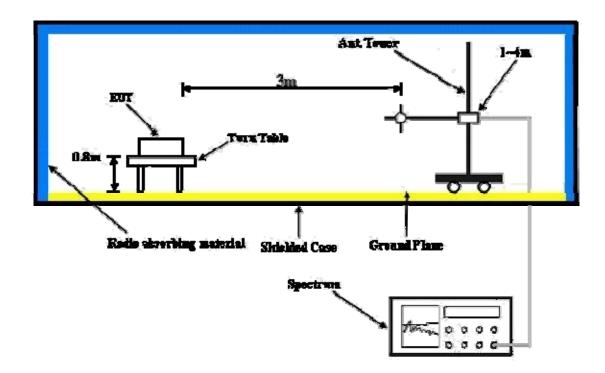
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from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

## 4.6.4 DEVIATION FROM TEST STANDARD

No deviation



# 4.6.5 TEST SETUP



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

## 4.6.6 EUT OPERATING CONDITIONS

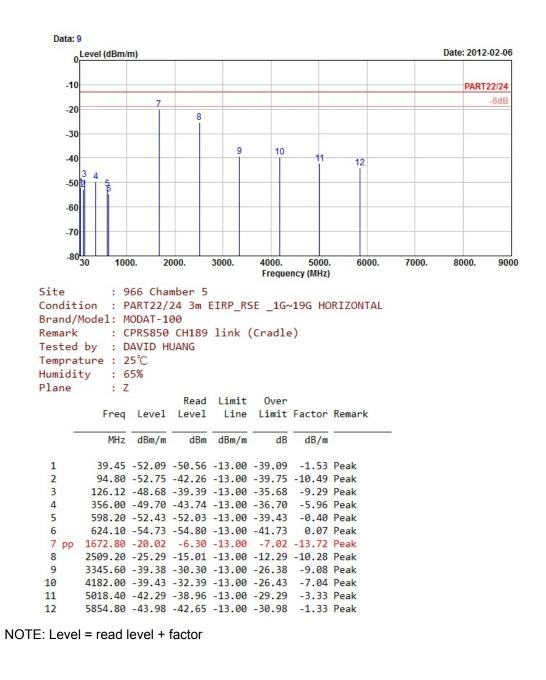
- a. The EUT makes a call to the communication simulator.
- b. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.



### 4.6.7 TEST RESULTS

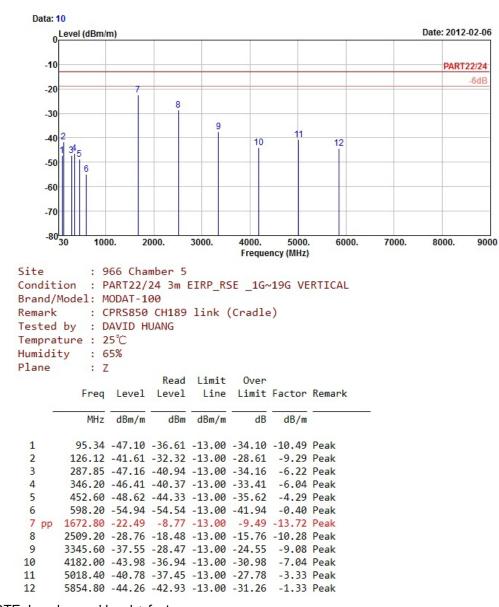
#### FOR GPRS:

ENVIRONMENTAL CONDITIONS	25deg. C, 57%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Kay Wu	POLARIZATION	Horizontal





ENVIRONMENTAL CONDITIONS	25deg. C, 57%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Kay Wu	POLARIZATION	Vertical

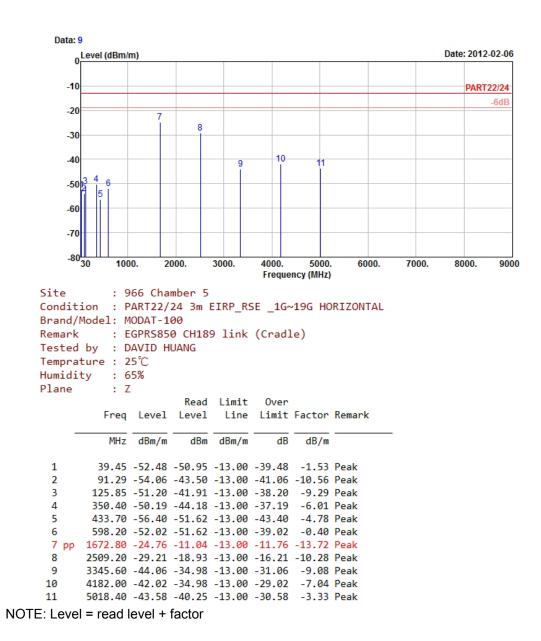


NOTE: Level = read level + factor



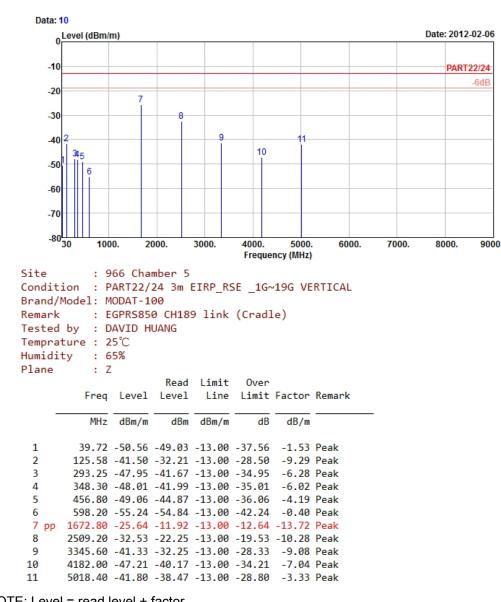
### FOR E-GPRS:

ENVIRONMENTAL CONDITIONS	25deg. C, 57%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Kay Wu	POLARIZATION	Horizontal





ENVIRONMENTAL CONDITIONS	25deg. C, 57%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Kay Wu	POLARIZATION	Vertical

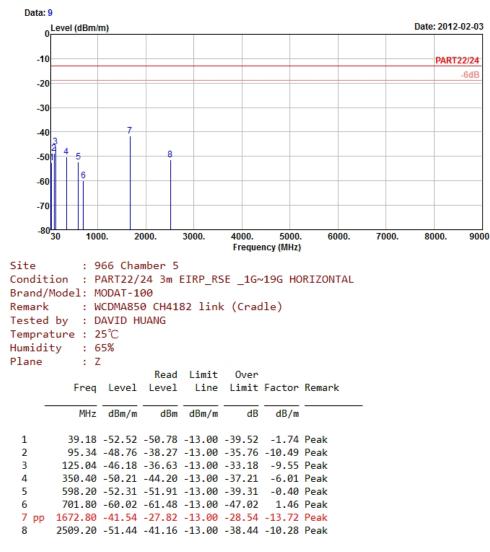


NOTE: Level = read level + factor



### FOR WCDMA:

ENVIRONMENTAL CONDITIONS	25deg. C, 57%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Kay Wu	POLARIZATION	Horizontal



NOTE: Level = read level + factor



	16	Kay Wu				Vertical	
ESTED BY	Kay W				RIZATION		
Data: 10							
0 Level (dBm/m	)					Date: 20	12-02-03
10							
-10						PAF	-6dB
-20							-000
-30							
-30							
-40 2	7						
-50							
-50 6							
-60							
-70							
-80 <mark>30 1000</mark>	2000.	3000.			00. 7000.	8000.	9000
-80 <mark>111111111111111111111111111111111111</mark>	2000.	3000.	4000. Frequency (		00. 7000.	8000.	9000
	. 2000. 6 Chambei				00. 7000.	8000.	9000
Site : 96 Condition : PA	6 Chambe RT22/24 3	r 5	Frequency (	MHz)		8000.	9000
Site : 96 Condition : PA Brand/Model: MO	6 Chambe RT22/24 3 DAT-100	r 5 3m EIRP_RS	Frequency ( 5E _1G~190	MHz) 6 VERTICAL		8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC	6 Chambe RT22/24 3 DAT-100 DMA850 CH	r 5 3m EIRP_R9 H4182 linH	Frequency ( 5E _1G~190	MHz) 6 VERTICAL		8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG	r 5 3m EIRP_R9 H4182 linH	Frequency ( 5E _1G~190	MHz) 6 VERTICAL		8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25	6 Chamber RT22/24 ∷ DAT-100 DMA850 CH VID HUANG ℃	r 5 3m EIRP_R9 H4182 linH	Frequency ( 5E _1G~190	MHz) 6 VERTICAL		8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA	6 Chamber RT22/24 ∷ DAT-100 DMA850 CH VID HUANG ℃	r 5 3m EIRP_R9 H4182 linH	Frequency ( 5E _1G~190	MHz) 6 VERTICAL		8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z	6 Chamber RT22/24 ∷ DAT-100 DMA850 CH VID HUANG ℃ %	r 5 3m EIRP_RS H4182 link G ead Limit	Frequency ( 5E _1G~190 c (Cradle) Over	MHz)	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z	6 Chamber RT22/24 ∷ DAT-100 DMA850 CH VID HUANG ℃ %	r 5 3m EIRP_R H4182 link G	Frequency ( 5E _1G~190 c (Cradle) Over	MHz)	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG °C % Ruevel Lev	r 5 3m EIRP_RS H4182 link G ead Limit	Frequency( E _1G~190 (Cradle) Over Limit Fac	MHz)	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq MHz	6 Chamber RT22/24 : DAT-100 DMA850 Cł VID HUANO °C % Ruevel Le dBm/m	r 5 3m EIRP_RS H4182 link G ead Limit vel Line dBm dBm/m	Frequency( 5E _1G~190 c (Cradle) Over Limit Fac dB d	MHz) 5 VERTICAL tor Remark B/m	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq MHz - 1 39.18 -	6 Chamber RT22/24 : DAT-100 DMA850 Cł VID HUANO °C % Level Le <sup>o</sup> dBm/m 49.63 -47	r 5 3m EIRP_RS H4182 link G ead Limit vel Line 	Frequency ( 5E _1G~190 (Cradle) Over Limit Fac dB d -36.63 -1	MHz) 5 VERTICAL tor Remark B/m .74 Peak	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq 	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG ℃ % Rtevel Le <sup>o</sup> dBm/m 49.63 -47 41.70 -32	r 5 3m EIRP_RS H4182 link G ead Limit vel Line dBm dBm/m .89 -13.00	Frequency ( 5E _1G~190 c (Cradle) 0ver Limit Fac dB d -36.63 -1 -28.70 -9	MHz) VERTICAL tor Remark B/m .74 Peak .55 Peak	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq 1 39.18 - 2 pp 124.77 - 3 287.85 - 4 307.70 -	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG ℃ % R Level Lev dBm/m 49.63 -47 41.70 -32 46.15 -39 46.90 -40	r 5 3m EIRP_RS H4182 link G ead Limit vel Line dBm dBm/m .89 -13.00 .15 -13.00 .93 -13.00 .58 -13.00	Frequency ( SE _1G~190 (Cradle) Over Limit Fac 	MHz) VERTICAL tor Remark B/m .74 Peak .55 Peak .22 Peak .32 Peak	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq MHz 1 39.18 - 2 pp 124.77 - 3 287.85 - 4 307.70 - 5 448.40 -	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG ℃ % RI Level Lev dBm/m 49.63 -47 41.70 -32 46.15 -39 46.90 -40 49.34 -44	r 5 3m EIRP_RS H4182 link G ead Limit vel Line dBm dBm/m .89 -13.00 .15 -13.00 .93 -13.00 .58 -13.00 .93 -13.00	Frequency ( 5E _1G~190 5E _1	MHz) VERTICAL VERTICAL B/m .74 Peak .55 Peak .22 Peak .32 Peak .41 Peak	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq 1 39.18 - 2 pp 124.77 - 3 287.85 - 4 307.70 - 5 448.40 - 6 572.30 -	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG ℃ % Rr Level Ler dBm/m 49.63 -47 41.70 -32 46.15 -39 46.90 -40 49.34 -44 54.12 -53	r 5 3m EIRP_RS H4182 link G ead Limit vel Line dBm dBm/m .89 -13.00 .15 -13.00 .93 -13.00 .93 -13.00 .93 -13.00 .93 -13.00	Frequency ( SE _1G~190 (Cradle) Over Limit Fac -36.63 -1 -28.70 -9 -33.15 -6 -33.90 -6 -36.34 -4 -41.12 -1	MHz) VERTICAL VERTICAL B/m .74 Peak .55 Peak .22 Peak .32 Peak .32 Peak .12 Peak	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq 1 39.18 - 2 pp 124.77 - 3 287.85 - 4 307.70 - 5 448.40 - 6 572.30 - 7 1672.80 -	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG ℃ % RI Level Lev dBm/m 49.63 -47 41.70 -32 46.15 -39 46.90 -40 49.34 -44 54.12 -53 43.79 -30	r 5 3m EIRP_R9 H4182 link G ead Limit vel Line dBm dBm/m .89 -13.00 .15 -13.00 .93 -13.00 .93 -13.00 .93 -13.00 .00 -13.00 .07 -13.00	Frequency ( 5E _1G~190 (Cradle) 0ver Limit Fac -36.63 -1 -28.70 -9 -33.15 -6 -33.90 -6 -36.34 -4 -41.12 -1 -30.79 -13	MHz) VERTICAL VERTICAL B/m .74 Peak .55 Peak .22 Peak .32 Peak .32 Peak .12 Peak .72 Peak	-	8000.	9000
Site : 96 Condition : PA Brand/Model: MO Remark : WC Tested by : DA Temprature : 25 Humidity : 65 Plane : Z Freq 1 39.18 - 2 pp 124.77 - 3 287.85 - 4 307.70 - 5 448.40 - 6 572.30 - 7 1672.80 - 8 2509.20 -	6 Chamber RT22/24 : DAT-100 DMA850 CH VID HUANG ℃ % RI Level Lev dBm/m 49.63 -47 41.70 -32 46.15 -39 46.90 -40 49.34 -44 54.12 -53 43.79 -30 52.59 -42	r 5 3m EIRP_RS H4182 link G ead Limit vel Line dBm dBm/m .89 -13.00 .15 -13.00 .93 -13.00 .93 -13.00 .93 -13.00 .93 -13.00	Frequency ( 5E _1G~190 (Cradle) 0ver Limit Fac -36.63 -1 -28.70 -9 -33.15 -6 -33.90 -6 -36.34 -4 -41.12 -1 -30.79 -13 -39.59 -10	MHz) VERTICAL VERTICAL B/m .74 Peak .55 Peak .22 Peak .32 Peak .32 Peak .12 Peak .12 Peak .72 Peak .28 Peak	-	8000.	9000



# 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



# 6 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

# Linko EMC/RF Lab:

Tel: 886-2-26052180 Fax: 886-2-26051924

### Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343 Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab: Tel: 886-3-3183232 Fax: 886-3-3185050 Email: <u>service.adt@tw.bureauveritas.com</u> 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 modifications were made to the EUT by the lab during the test.

---END----