

# FCC TEST REPORT (PART 24)

**REPORT NO.:** RF140807C02-1

MODEL NO.: F-03G

FCC ID: VQK-F03G

**RECEIVED:** Aug. 08, 2014

**TESTED:** Aug. 27 ~ Aug. 29, 2014

**ISSUED:** Sep. 17, 2014

**APPLICANT:** FUJITSU LIMITED

ADDRESS: 1-1, Kamikodanaka 4-chome, Nakahara-ku,

Kawasaki 211-8588, Japan

**ISSUED BY:** Bureau Veritas Consumer Products Services

(H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47-2, 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.

Report No.: RF140807C02-1 1 of 34 Report Format Version 5.0.0



# **TABLE OF CONTENTS**

RELEA	SE CONTROL RECORD	4
1	CERTIFICATION	5
2	SUMMARY OF TEST RESULTS	6
2.1	MEASUREMENT UNCERTAINTY	6
2.2	TEST SITE AND INSTRUMENTS	7
3	GENERAL INFORMATION	8
3.1	GENERAL DESCRIPTION OF EUT	8
3.2	CONFIGURATION OF SYSTEM UNDER TEST	9
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	FREQUENCY STABILITY MEASUREMENT	. 16
4.2.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	. 16
4.2.2	TEST PROCEDURE	. 16
4.2.3	TEST SETUP	. 16
4.2.4	TEST RESULTS	. 17
4.3	OCCUPIED BANDWIDTH MEASUREMENT	. 18
4.3.1	TEST PROCEDURES	
4.3.2	TEST SETUP	. 18
4.3.3	TEST RESULTS	. 19
4.4	BAND EDGE MEASUREMENT	20
4.4.1	LIMITS OF BAND EDGE MEASUREMENT	20
4.4.2	TEST SETUP	. 20
4.4.3	TEST PROCEDURES	20
4.4.4	TEST RESULTS	. 21
4.5	CONDUCTED SPURIOUS EMISSIONS	. 22
4.5.1	LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT	22
4.5.2	TEST PROCEDURE	. 22
4.5.3	TEST SETUP	22
4.5.4	TEST RESULTS	. 23
4.6	RADIATED EMISSION MEASUREMENT	26
4.6.1	LIMITS OF RADIATED EMISSION MEASUREMENT	26



4.6.2	TEST PROCEDURES	. 26
4.6.3	DEVIATION FROM TEST STANDARD	. 26
4.6.4	TEST SETUP	. 27
4.6.5	TEST RESULTS	. 28
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	. 32
6	INFORMATION ON THE TESTING LABORATORIES	. 33
7	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES	TO
	THE EUT BY THE LAB	. 34



# **RELEASE CONTROL RECORD**

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140807C02-1	Original release	Sep. 17, 2014

Report No.: RF140807C02-1 4 of 34 Report Format Version 5.0.0



# **CERTIFICATION**

PRODUCT: Tablet PC

MODEL: F-03G

**BRAND:** FUJITSU

**APPLICANT:** FUJITSU LIMITED

**TESTED:** Aug. 27 ~ Aug. 29, 2014

**TEST SAMPLE:** ENGINEERING SAMPLE

STANDARDS: FCC Part 24, Subpart E

The above equipment (model: F-03G) 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.

Jyy Lin / Specialist Sep. 17, 2014

**APPROVED BY** 

Bruce Chen / 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	PASS	Meet the requirement of limit.		
2.1049 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit.		
24.238(b)	Band Edge Measurements	PASS	Meet the requirement of limit.		
2.1051 24.238	Conducted Spurious Emissions	PASS	Meet the requirement of limit.		
2.1053 24.238	Radiated Spurious Emissions		Meet the requirement of limit. Minimum passing margin is -28.37dB at 3760.00MHz.		

# 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
	30MHz ~ 200MHz	3.86 dB
Radiated emissions	200MHz ~1000MHz	3.87 dB
Radiated emissions	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 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. 02, 2014	Jan. 01, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Mar. 03, 2014	Mar. 02, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Feb. 26, 2014	Feb. 25, 2015
HORN Antenna SCHWARZBECK	9120D	209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 17, 2014	Feb. 16, 2015
Preamplifier Agilent	8447D	2944A10633	Oct. 07, 2013	Oct. 06, 2014
Preamplifier Agilent	8449B	3008A01964	Aug. 26, 2014	Aug. 25, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 26, 2014	Aug. 25, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6 +309224/4	Aug. 26, 2014	Aug. 25, 2015
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	Apr. 25, 2014	Apr. 24, 2015
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	Tablet PC
MODEL NO.	F-03G
POWER SUPPLY	<ul><li>3.75Vdc (Battery)</li><li>5Vdc (Adapter or cradle when normal charging)</li><li>9Vdc (Adapter or cradle when quick charging)</li></ul>
MODULATION TYPE	GSM, GPRS: GMSK
FREQUENCY RANGE	1850.2MHz ~ 1909.8MHz
MAX. EIRP POWER	<b>GSM:</b> 762.079mW (28.82dBm)
MULTI-SLOTS CLASS	33
ANTENNA TYPE	λ/4 Monopole antenna with -2.2dBi gain
DATA CABLE	N/A
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

### NOTE:

1. The EUT contains the following accessories.

No.	Product	Brand	Model	Description
1	Battery	NTT docomo	N/A	3.75Vdc, 7,840mAh
2	Cradle	NTT docomo	FΔX	Input : 5.0Vdc, 1.5A, 9.0V 1.5A (QC) Output : 5.0Vdc, 1.5A, 9.0V 1.5A (QC)

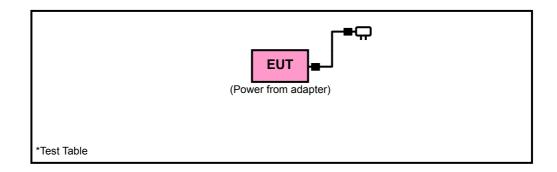
2. The following adapter is supports only.

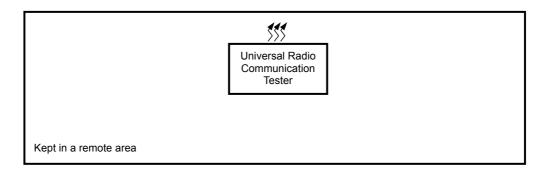
PRODUCT	BRAND	MODEL	DESCRIPTION
			Input: 100-240Vac, 0.12A, 50-60Hz, 0.4A
			Output: 5.0Vdc, 1.8A
Adapter	NTT docomo	AC Adaptor 05	9.0Vdc, 1.8A
			Power line:
			1.25m cable with two cores attached on adapter

- 3. SW version is R07Ae.
- 4. HW version is V2.1.0.
- 5. IMEI Code: 354015060005055.
- 6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.



# 3.2 CONFIGURATION OF SYSTEM UNDER TEST





# 3.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Adapter	NTT docomo	AC Adaptor 05	NA	NA
2	Universal Radio Communication Tester	R&S	CMU200	117260	NA

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

#### NOTE:

- 1. For item 1: 1.25m DC cable with 2 cores.
- 2. Item 1 is provided by the client.
- 3. Item 2 acted as a communication partner to transfer data.



# 3.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports The worst case was found when positioned on X-plane. Following channel(s) was (were) selected for the final test as listed below:

Test results are presented in the report as below.

Test Mode	Test Condition
Α	Power from adapter
В	Power from battery

### **GSM MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
Α	EIRP	512 to 810	512, 661, 810	GPRS
В	FREQUENCY STABILITY	512 to 810	661	GPRS
А	OCCUPIED BANDWIDTH	512 to 810	512, 661, 810	GPRS
А	BAND EDGE	512 to 810	512, 810	GPRS
Α	CONDCUDETED EMISSION	512 to 810	512, 661, 810	GPRS
А	RADIATED EMISSION BELOW 1GHz	512 to 810	512	GPRS
А	RADIATED EMISSION ABOVE 1GHz	512 to 810	512, 661, 810	GPRS

# **TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 69%RH	120Vac, 60Hz	Brad Tung
FREQUENCY STABILITY	24deg. C, 64%RH	3.9Vdc	Match Tsui
OCCUPIED BANDWIDTH	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
BAND EDGE	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
CONDCUDETED EMISSION	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
RADIATED EMISSION	25deg. C, 69%RH	120Vac, 60Hz	Brad Tung



# 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 MEASUREMENT:**

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

#### **CONDUCTED POWER MEASUREMENT:**

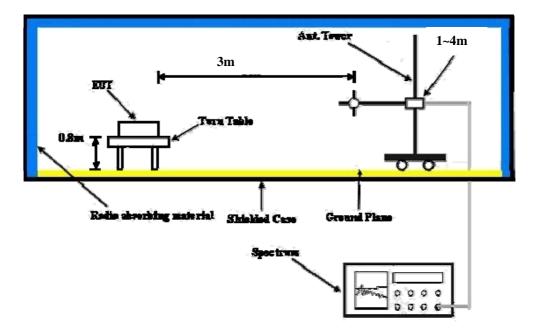
The EUT was set up for the maximum power with GPRS link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Report No.: RF140807C02-1 12 of 34 Report Format Version 5.0.0



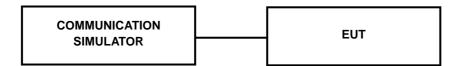
# 4.1.3 TEST SETUP

# **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	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GPRS 8	29.60	29.56	29.64
GPRS 10	26.57	26.53	26.70
GPRS 11	24.59	24.55	24.63
GPRS 12	23.13	23.09	23.17
GPRS 30	29.56	29.52	29.60
GPRS 31	26.58	26.54	26.62
GPRS 32	24.56	24.52	24.60
GPRS 33	23.13	23.09	23.17

Report No.: RF140807C02-1 14 of 34 Report Format Version 5.0.0



# **EIRP POWER (dBm)**

MOD	E	TX char	TX channel 512				
	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No. Freq. (MHz) Reading S.G Power Correction (dBm) Value (dBm) Factor (dB) EIRP (dBm) Lir				Limit (dBm)	Margin (dB)		
1	1850.20	-12.24	26.29	1.07	27.36	33.00	-5.64
	A	NTENNA PO	LARITY & TE	ST DISTANC	E: VERTICA	LAT3M	
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.20	-14.13	22.50	1.07	23.57	33.00	-9.43

MOD	E	TX channel 661					
	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No. Freq. (MHz) Reading (dBm) S.G Power Value (dBm) Factor (dB) EIRP (dBm) Limit (dBm) Margin (				Margin (dB)			
1	1880.00	-11.02	27.70	1.12	28.82	33.00	-4.18
	Α	NTENNA PO	LARITY & TE	ST DISTANC	E: VERTICA	LAT3M	
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-14.31	21.95	1.12	23.07	33.00	-9.93

MOD	E	TX char	TX channel 810				
	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	1909.80	-11.75	27.36	1.11	28.47	33.00	-4.53
	Al	NTENNA PO	LARITY & TE	ST DISTANC	E: VERTICA	LAT3M	
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.80	-14.75	21.14	1.11	22.25	33.00	-10.75

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



# 4.2 FREQUENCY STABILITY MEASUREMENT

# 4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

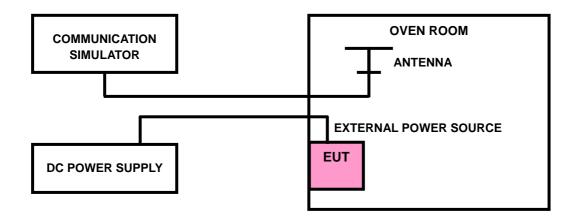
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

# 4.2.2 TEST PROCEDURE

- a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}$ C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

# 4.2.3 TEST SETUP



Report No.: RF140807C02-1 16 of 34 Report Format Version 5.0.0



# 4.2.4 TEST RESULTS

# FREQUENCY ERROR vs. VOLTAGE

VOLTA OF (Volta)	FREQUENCY ERROR (ppm)	LIMIT (nomes)
VOLTAGE (Volts)	GPRS	LIMIT (ppm)
4.29	-0.014	2.5
3.90	-0.013	2.5
3.51	-0.013	2.5

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.51Vdc to 4.29Vdc.

# FREQUENCY ERROR vs. TEMPERATURE

TEMP. (°C)	FREQUENCY ERROR (ppm)	LIMIT (no mone)	
TEMP. (C)	GPRS	LIMIT (ppm)	
55	-0.015	2.5	
50	-0.013	2.5	
40	-0.010	2.5	
30	-0.009	2.5	
20	-0.013	2.5	
10	-0.013	2.5	
0	-0.018	2.5	
-10	-0.021	2.5	
-20	-0.020	2.5	

Report No.: RF140807C02-1 17 of 34 Report Format Version 5.0.0

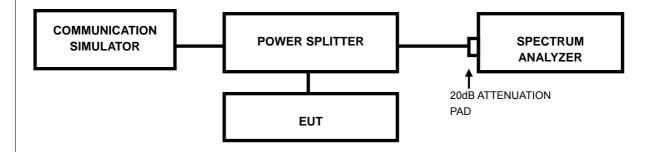


# 4.3 OCCUPIED BANDWIDTH MEASUREMENT

# 4.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

# 4.3.2 TEST SETUP

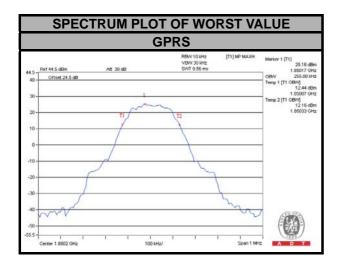


Report No.: RF140807C02-1 18 of 34 Report Format Version 5.0.0



# 4.3.3 TEST RESULTS

CHANNEL	FREQ.	99% OCCUPIED BANDWIDTH (kHz)
CHANNEL	(MHz)	GPRS
512	1850.2	255
661	1880.0	250
810	1909.8	250



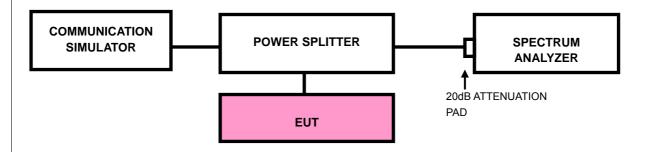


### 4.4 BAND EDGE MEASUREMENT

### 4.4.1 LIMITS OF BAND EDGE MEASUREMENT

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

### 4.4.2 TEST SETUP

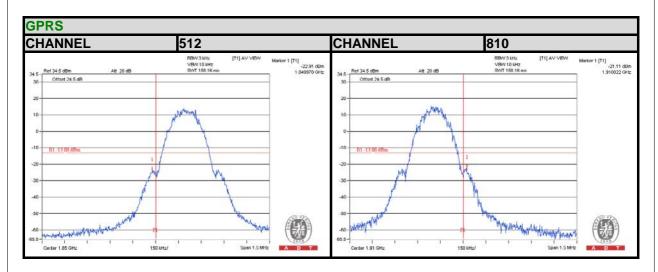


# 4.4.3 TEST PROCEDURES

- a. All measurements were done at low and high operational frequency range.
- b. The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GPRS).
- c. Record the max trace plot into the test report.



# 4.4.4 TEST RESULTS





# 4.5 CONDUCTED SPURIOUS EMISSIONS

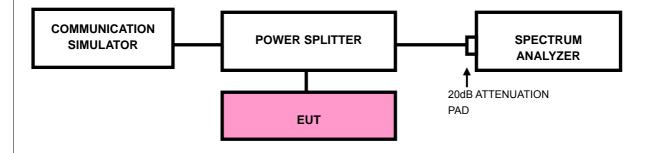
### 4.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P) dB$ . The emission limit equal to -13dBm.

# 4.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9 kHz to 20GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

# 4.5.3 TEST SETUP



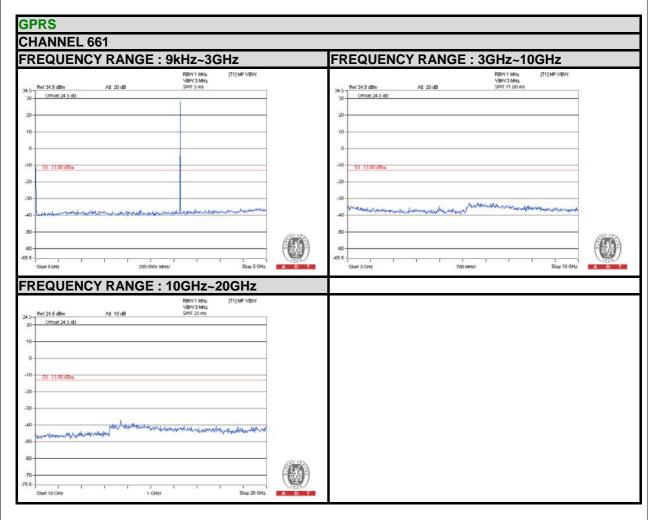
Report No.: RF140807C02-1 22 of 34 Report Format Version 5.0.0



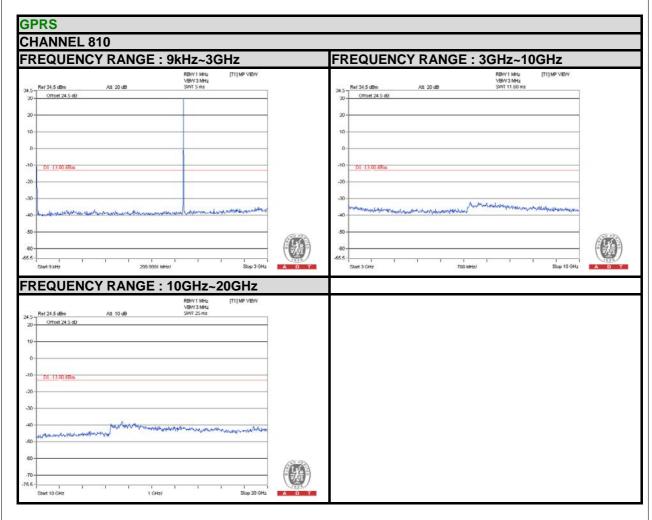
# 4.5.4 TEST RESULTS













# 4.6 RADIATED EMISSION MEASUREMENT

### 4.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P) dB$ . The emission limit equal to -13dBm.

#### 4.6.2 TEST PROCEDURES

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

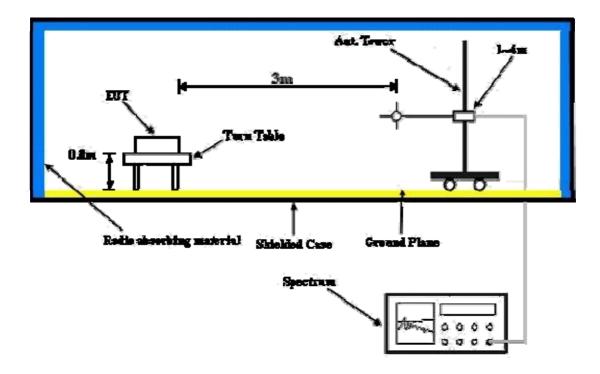
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.6.3 DEVIATION FROM TEST STANDARD

No deviation



# 4.6.4 TEST SETUP



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



# 4.6.5 TEST RESULTS

# **BELOW 1GHz**

MODE	TX channel 512	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 69%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Brad Tung		

	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	55.22	-59.46	-51.29	-8.63	-59.92	-13.00	-46.92
2	97.90	-60.47	-67.18	0.93	-66.25	-13.00	-53.25
3	123.12	-60.25	-66.41	0.01	-66.40	-13.00	-53.40
4	167.74	-63.70	-69.57	1.37	-68.20	-13.00	-55.20
5	586.78	-63.56	-66.68	4.50	-62.18	-13.00	-49.18
6	833.16	-64.58	-61.61	3.98	-57.63	-13.00	-44.63
	AN	NTENNA POL	ARITY & TE	ST DISTANC	E: VERTICAL	AT 3 M	
No.	No. Freq. (MHz) Reading S.G Power Correction (dBm) Value (dBm) Factor (dB) EIRP (dBm) Limit (dBm) Margin (dBm)						
	Freq. (IVIHZ)	(dBm)	Value (dBm)	Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	62.98	Ū			<b>EIRP (dBm)</b> -51.17	-13.00	-38.17
1 2	,	(dBm)	Value (dBm)	Factor (dB)	, ,	, ,	<b>3</b> , ,
-	62.98	(dBm) -45.07	Value (dBm) -44.34	Factor (dB) -6.83	-51.17	-13.00	-38.17
2	62.98 123.12	(dBm) -45.07 -48.75	Value (dBm) -44.34 -52.09	-6.83 0.01	-51.17 -52.08	-13.00 -13.00	-38.17 -39.08
2	62.98 123.12 159.98	(dBm) -45.07 -48.75 -57.49	-44.34 -52.09 -56.91	-6.83 0.01 0.39	-51.17 -52.08 -56.52	-13.00 -13.00 -13.00	-38.17 -39.08 -43.52

# **REMARKS:**

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

Report No.: RF140807C02-1 28 of 34 Report Format Version 5.0.0



# **ABOVE 1GHz**

MODE	LX channel 512	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	25deg. C, 69%RH	INPUT POWER	120Vac, 60 Hz
TESTED BY	Brad Tung		

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	3700.40	-55.33	-49.41	7.16	-42.25	-13.00	-29.25
	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	3700.40	-54.85	-49.12	7.16	-41.96	-13.00	-28.96

# **REMARKS:**

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

Report No.: RF140807C02-1 29 of 34 Report Format Version 5.0.0



MODE	LX channel 661	FREQUENCY RANGE	Above 1000 MHz	
ENVIRONMENTAL CONDITIONS	125ded C 69%RH		120Vac, 60 Hz	
TESTED BY	Brad Tung			

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	-55.13	-49.07	7.10	-41.97	-13.00	-28.97
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	-54.34	-48.47	7.10	-41.37	-13.00	-28.37

# **REMARKS:**

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

Report No.: RF140807C02-1 30 of 34 Report Format Version 5.0.0



MODE	TX channel 810	FREQUENCY RANGE	Above 1000 MHz	
ENVIRONMENTAL CONDITIONS	125ded C: 69%RH		120Vac, 60 Hz	
TESTED BY	Brad Tung			

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	3819.60	-55.21	-49.02	7.05	-41.97	-13.00	-28.97
	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	3819.60	-55.52	-49.51	7.05	-42.46	-13.00	-29.46

# **REMARKS:**

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

Report No.: RF140807C02-1 31 of 34 Report Format Version 5.0.0



# PHOTOGRAPHS OF THE TEST CONFIGURATION Please refer to the attached file (Test Setup Photo).

Report No.: RF140807C02-1 32 of 34 Report Format Version 5.0.0



# **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: Hsin Chu EMC/RF/Telecom Lab:

Tel: 886-2-26052180 Tel: 886-3-5935343 Fax: 886-2-26051924 Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:

Tel: 886-3-3183232 Fax: 886-3-3270892

Email: <a href="mailto:service.adt@tw.bureauveritas.com">service.adt@tw.bureauveritas.com</a>
Web Site: <a href="mailto:www.bureauveritas-adt.com">www.bureauveritas-adt.com</a>

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

Report No.: RF140807C02-1 33 of 34 Report Format Version 5.0.0



# 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

Report No.: RF140807C02-1 34 of 34 Report Format Version 5.0.0