

# FCC TEST REPORT

## (PART 22)

**REPORT NO.:** RF991202C03 R2

**MODEL NO.:** F-06C

**RECEIVED:** Dec. 02, 2010

**TESTED:** Dec. 03 ~ Dec. 09, 2010

**ISSUED:** Feb. 01, 2011

**APPLICANT:** FUJITSU LIMITED

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**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
Ltd., Taoyuan Branch

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**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan  
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## TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	3
1 CERTIFICATION .....	4
2 SUMMARY OF TEST RESULTS .....	5
2.1 MEASUREMENT UNCERTAINTY .....	5
3 GENERAL INFORMATION.....	6
3.1 GENERAL DESCRIPTION OF EUT .....	6
3.2 DESCRIPTION OF TEST MODES.....	7
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST .....	7
3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL .....	8
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	10
3.4 DESCRIPTION OF SUPPORT UNITS .....	10
4 TEST TYPES AND RESULTS .....	11
4.1 OUTPUT POWER MEASUREMENT .....	11
4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT .....	11
4.1.2 TEST INSTRUMENTS .....	12
4.1.3 TEST PROCEDURES .....	13
4.1.4 TEST SETUP .....	14
4.1.5 EUT OPERATING CONDITIONS .....	14
4.1.6 TEST RESULTS .....	15
4.2 RADIATED EMISSION MEASUREMENT (BELOW 1GHz) .....	16
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	16
4.2.2 TEST INSTRUMENTS .....	16
4.2.3 TEST PROCEDURES .....	17
4.2.4 DEVIATION FROM TEST STANDARD .....	17
4.2.5 TEST SETUP .....	18
4.2.6 EUT OPERATING CONDITIONS .....	18
4.2.7 TEST RESULTS .....	19
4.3 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz) .....	21
4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	21
4.3.2 TEST INSTRUMENTS .....	21
4.3.3 TEST PROCEDURES .....	21
4.3.4 DEVIATION FROM TEST STANDARD .....	21
4.3.5 TEST SETUP .....	21
4.3.6 EUT OPERATING CONDITIONS .....	21
4.3.7 TEST RESULTS .....	22
4.4 CONDUCTED EMISSION MEASUREMENT .....	24
4.4.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	24
4.4.2 TEST INSTRUMENTS .....	24
4.4.3 TEST PROCEDURES .....	25
4.4.4 DEVIATION FROM TEST STANDARD .....	25
4.4.5 TEST SETUP .....	26
4.4.6 EUT OPERATING CONDITIONS .....	26
4.4.7 TEST RESULTS .....	27
5 PHOTOGRAPHS OF THE TEST CONFIGURATION.....	31
6 INFORMATION ON THE TESTING LABORATORIES .....	32
7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	33



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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Dec. 17, 2010
RF991202C03 R1	Change product name	Jan. 27, 2011
RF991202C03 R2	Update description in item 3.1	Feb. 01, 2011



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## 1 CERTIFICATION

**PRODUCT:** Data Modem  
**MODEL NO.:** F-06C  
**BRAND:** FOMA  
**APPLICANT:** FUJITSU LIMITED  
**TESTED:** Dec. 03 ~ Dec. 09, 2010  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**STANDARDS:** FCC Part 22, Subpart H  
ANSI C63.4-2003  
**TEST ITEM:** Maximum Peak Output Power (Section 2.1046 22.913 (a))  
Radiated Spurious Emissions (Section 2.1053 22.917)  
AC Power Conducted Emission (Section 15.207)

The above equipment (model: F-06C) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**. 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 , **DATE:** Feb. 01, 2011  
Andrea Hsia / Specialist

**APPROVED BY** : Gary Chang , **DATE:** Feb. 01, 2011  
Gary Chang / Assistant 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. Minimum passing margin is 22.3dBm at 826.4MHz.
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -22.4dB at 998.06MHz.
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.89dB at 0.150MHz.

### 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	2.44dB
Radiated emissions	30MHz ~ 200MHz	3.34dB
	200MHz ~1000MHz	3.35dB
	1GHz ~ 18GHz	2.26dB
	18GHz ~ 40GHz	1.94dB

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

<b>EUT</b>	Data Modem
<b>MODEL NO.</b>	F-06C
<b>POWER SUPPLY</b>	3.3Vdc (host equipment)
<b>MODULATION TYPE</b>	WCDMA (Band 5) / HSDPA
<b>OPERATING FREQUENCY</b>	826.4MHz ~ 846.6MHz
<b>NUMBER OF CHANNEL</b>	102
<b>ANTENNA TYPE</b>	$\lambda/4$ Monopole antenna with 0dBi gain
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	NA

**NOTE:**

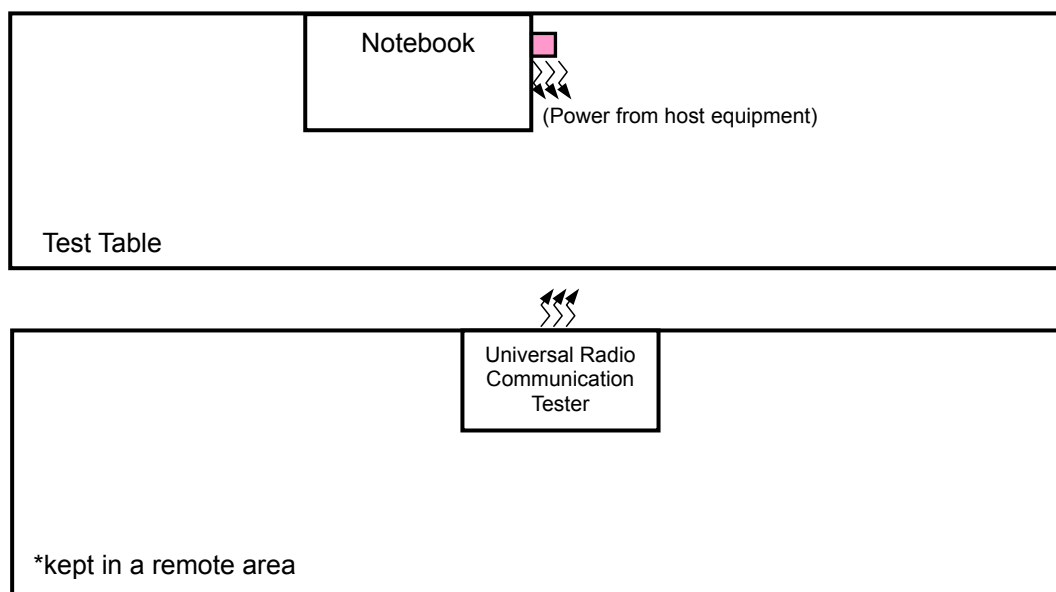
1. IMEI Code: 352150040002237.
2. Hardware Version: V2.1
3. Software Version: R02.2
4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

## 3.2 DESCRIPTION OF TEST MODES

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

### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	OP	RE<1G	RE≥1G	PLC	
-	√	√	√	√	-

Where **OP**: Output Power Measurement **RE<1G**: Radiated emission below 1GHz  
**RE≥1G**: Radiated emission above 1GHz **PLC**: Power Line Conducted Emission

#### OUTPUT POWER MEASUREMENT:

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	ANTENNA DEGREE
4132 to 4233	4132, 4182, 4233	WCDMA	0°
4132 to 4233	4182	HSDPA	0°

#### RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	ANTENNA DEGREE
4132 to 4233	4132	WCDMA	0°
4132 to 4233	4182	HSDPA	0°

#### RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	ANTENNA DEGREE
4132 to 4233	4132, 4182, 4233	WCDMA	0°
4132 to 4233	4182	HSDPA	0°



# POWER LINE CONDUCTED EMISSION TEST:

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

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY
4132 to 4233	4132	WCDMA
4132 to 4233	4182	HSDPA

# TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
OP	26deg. C, 68%RH, 1005hPa	120Vac, 60Hz	Match Tsui
RE≥1G	22deg. C, 65%RH, 1005hPa	120Vac, 60Hz	Match Tsui
RE<1G	22deg. C, 65%RH, 1005hPa	120Vac, 60Hz	Match Tsui
PLC	20deg. C, 60%RH, 1007hPa	120Vac, 60Hz	Match Tsui

### 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	2/3G Acoustic test (Audio conformance test-CMU 200)	R&S	CMU 200	118914	NA
2	NOTEBOOK	DELL	D531	CN-0XM006-4864 3-81U-2786	QDS-BRCM1020

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

**NOTE:** All power cords of the above support units are non shielded (1.8m).

## **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	100424	Aug. 04, 2010	Aug. 03, 2011
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Jul. 09, 2010	Jul. 08, 2011
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Aug. 02, 2010	Aug. 01, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01910	Sep. 09, 2010	Sep. 08, 2011
Preamplifier Agilent	8447D	2944A10638	Nov. 03, 2010	Nov. 02, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 20, 2010	Aug. 19, 2011
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

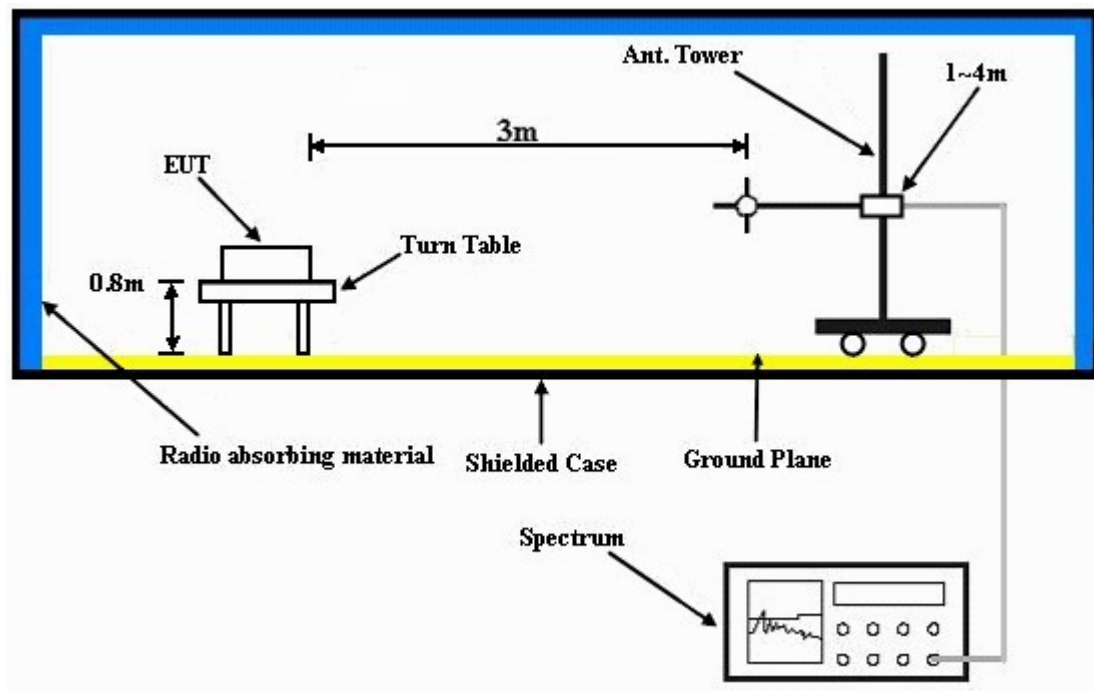
- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Chamber 9.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency 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

- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 4132, 4182 and 4233 (WCDMA) (low, middle and high operational frequency range.)
- b. The conducted peak output power used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. The path loss included the splitter loss, cable loss and 20dB pad loss. The spectrum set RB/VB 5MHz (WCDMA), then read peak power value and record to the test. (All transmitted path loss shall be considered in the test report data.)
- c. 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.
- d. 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
- e.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- f. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15dBi.$

#### 4.1.4 TEST SETUP

##### EIRP POWER MEASUREMENT:



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

#### 4.1.5 EUT OPERATING CONDITIONS

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

#### 4.1.6 TEST RESULTS

##### FOR WCDMA

ERP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
4132	826.4	30.9	-8.6	22.3	167.9
4182	836.4	30.8	-8.6	22.2	164.1
4233	846.6	30.4	-8.7	21.7	146.2

**REMARKS:** 1. Peak Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).  
 2. Correction Factor (dB) = Substitution Antenna Gain (dBi) + Cable Loss (dB)

##### FOR HSDPA

ERP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
4182	836.4	28.5	-8.6	19.9	96.6

**REMARKS:** 1. Peak Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).  
 2. Correction Factor (dB) = Substitution Antenna Gain (dBi) + Cable Loss (dB)

## **4.2 RADIATED EMISSION MEASUREMENT (BELOW 1GHz)**

### **4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT**

In the FCC 24.238(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 specified minimum attenuation becomes 43dB and the limit of emission equal to  $-13\text{dBm}$ .

### **4.2.2 TEST INSTRUMENTS**

Same as 4.1.2.



#### 4.2.3 TEST PROCEDURES

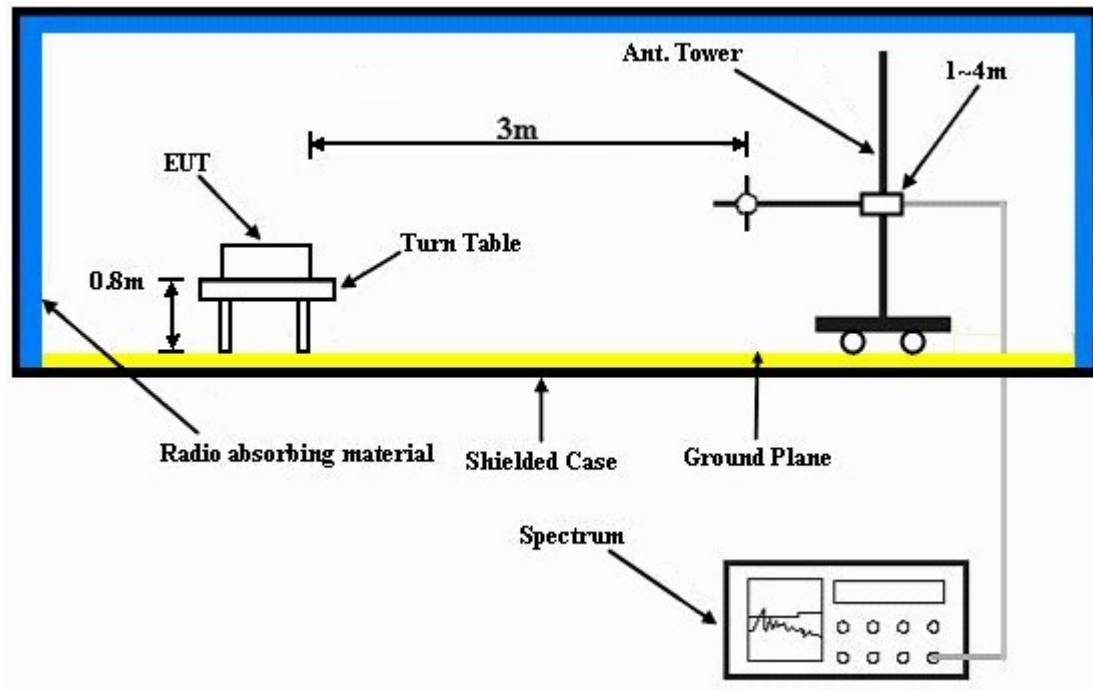
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from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

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

## 4.2.5 TEST SETUP



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

## 4.2.6 EUT OPERATING CONDITIONS

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

## 4.2.7 TEST RESULTS

### FOR WCDMA

MODE		TX channel 4182				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	782.28	51.3	-13.0	-35.4	-7.9	-43.3
2	813.39	53.5	-13.0	-33.3	-7.9	-41.2
3	902.81	52.6	-13.0	-33.8	-7.9	-41.7
4	810.58	54.5	-13.0	-31.8	-7.9	-39.7
5	949.46	53.0	-13.0	-33.9	-7.9	-41.8
6	998.06	57.2	-13.0	-29.4	-7.9	-37.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	228.28	52.6	-13.0	-34.3	-7.7	-42.0
2	811.44	51.6	-13.0	-35.2	-7.9	-43.1
3	898.92	52.3	-13.0	-34.1	-7.9	-42.0
4	933.91	52.7	-13.0	-33.8	-7.9	-41.7
5	965.01	53.5	-13.0	-32.9	-7.9	-40.8
6	998.06	59.0	-13.0	-27.5	-7.9	-35.4

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



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**FOR HSDPA**

MODE		TX channel 4182				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	722.02	49.9	-13.0	-37.0	-7.9	-44.9
2	776.45	50.7	-13.0	-36.2	-7.9	-44.1
3	813.39	54.0	-13.0	-32.8	-7.9	-40.7
4	906.69	52.8	-13.0	-33.7	-7.9	-41.6
5	926.13	54.0	-13.0	-32.8	-7.9	-40.7
6	945.57	52.9	-13.0	-33.3	-7.9	-41.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	125.25	51.3	-13.0	-35.6	-7.7	-43.3
2	230.22	52.5	-13.0	-34.4	-7.7	-42.1
3	803.67	51.7	-13.0	-35.1	-7.9	-43.0
4	896.97	52.3	-13.0	-34.0	-7.9	-41.9
5	914.47	52.7	-13.0	-34.0	-7.9	-41.9
6	966.95	53.6	-13.0	-33.0	-7.9	-40.9

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

### **4.3 RADIATED EMISSION MEASUREMENT (ABOVE 1GHz)**

#### **4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT**

Same as 4.2.1.

#### **4.3.2 TEST INSTRUMENTS**

Same as 4.2.2.

#### **4.3.3 TEST PROCEDURES**

Same as 4.2.3.

#### **4.3.4 DEVIATION FROM TEST STANDARD**

No deviation

#### **4.3.5 TEST SETUP**

Same as 4.2.5.

#### **4.3.6 EUT OPERATING CONDITIONS**

Same as 4.2.6.

### 4.3.7 TEST RESULTS

#### FOR WCDMA

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MODE		TX channel 4132				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1652.80	39.6	-13.0	-62.3	7.6	-54.7
2	3305.60	47.9	-13.0	-54.7	8.4	-46.3
3	2519.07	41.9	-13.0	-60.7	8.4	-52.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1652.80	42.3	-13.0	-59.3	7.6	-51.7
2	3305.60	48.1	-13.0	-54.5	8.4	-46.1
3	2519.07	50.6	-13.0	-52.0	8.4	-43.6
MODE		TX channel 4182				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1672.80	38.7	-13.0	-63.6	7.7	-55.9
2	3345.60	45.9	-13.0	-57.0	8.4	-48.6
3	2519.07	42.2	-13.0	-60.4	8.4	-52.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1672.80	41.5	-13.0	-60.6	7.7	-52.9
2	3345.60	45.2	-13.0	-57.6	8.4	-49.2
3	2519.07	50.3	-13.0	-52.3	8.4	-43.9
MODE		TX channel 4233				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1693.20	41.0	-13.0	-61.1	7.9	-53.2
2	2519.07	41.7	-13.0	-60.9	8.4	-52.5
3	2539.80	45.4	-13.0	-57.5	8.5	-49.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1693.20	42.0	-13.0	-59.9	7.9	-52.0
2	2519.07	49.9	-13.0	-52.7	8.4	-44.3
3	2539.80	47.3	-13.0	-55.4	8.5	-46.9

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

# FOR HSDPA

MODE		TX channel 4182				
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1693.20	37.8	-13.0	-64.4	7.7	-56.7
2	2539.80	45.7	-13.0	-56.8	8.4	-48.4
3	2519.07	42.8	-13.0	-59.8	8.4	-51.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M						
No.	Freq. (MHz)	Emission Level (dBuV)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Power Value (dBm)
1	1693.20	41.8	-13.0	-60.3	7.7	-52.6
2	2539.80	46.9	-13.0	-55.6	8.4	-47.2
3	2519.07	49.9	-13.0	-52.7	8.4	-44.3

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

## 4.4 CONDUCTED EMISSION MEASUREMENT

### 4.4.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 23, 2010	Nov. 22, 2011
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2009	Dec. 30, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 25, 2009	Dec. 24, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 08, 2010	Jul. 07, 2011
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jul. 12, 2010	Jul. 11, 2011
Software ADT	ADT_Conc_ V7.3.7	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 Shielded Room 2.
  3. The VCCI Site Registration No. is C-2047.



#### 4.4.3 TEST PROCEDURES

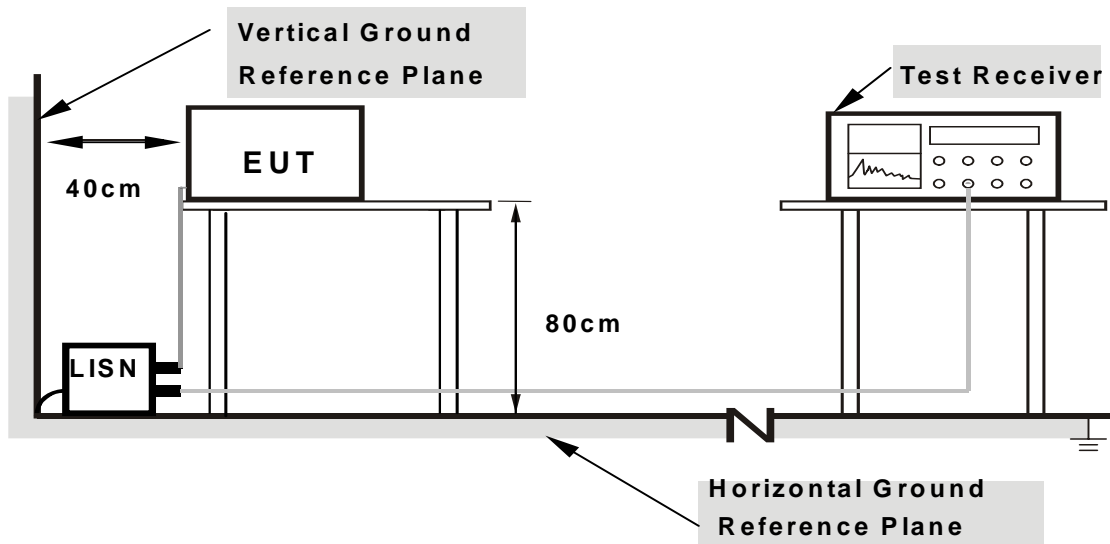
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

#### 4.4.6 EUT OPERATING CONDITIONS

Set the EUT under transmitting condition.

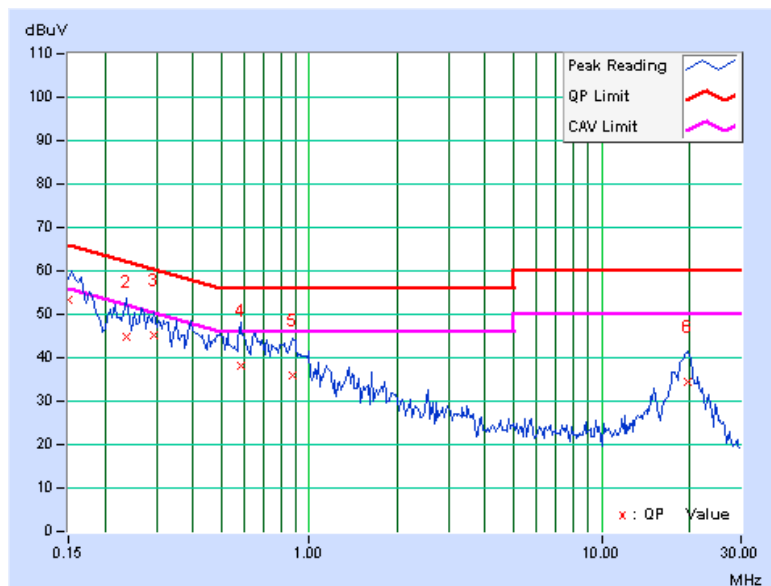
#### 4.4.7 TEST RESULTS

##### CONDUCTED WORST CASE DATA: WCDMA

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.16	53.35	-	53.51	-	66.00	56.00	-12.49	-
2	0.236	0.16	44.49	-	44.65	-	62.24	52.24	-17.58	-
3	0.295	0.17	45.08	-	45.25	-	60.40	50.40	-15.15	-
4	0.584	0.20	37.84	-	38.04	-	56.00	46.00	-17.96	-
5	0.873	0.22	35.57	-	35.79	-	56.00	46.00	-20.21	-
6	19.703	0.68	33.85	-	34.53	-	60.00	50.00	-25.47	-

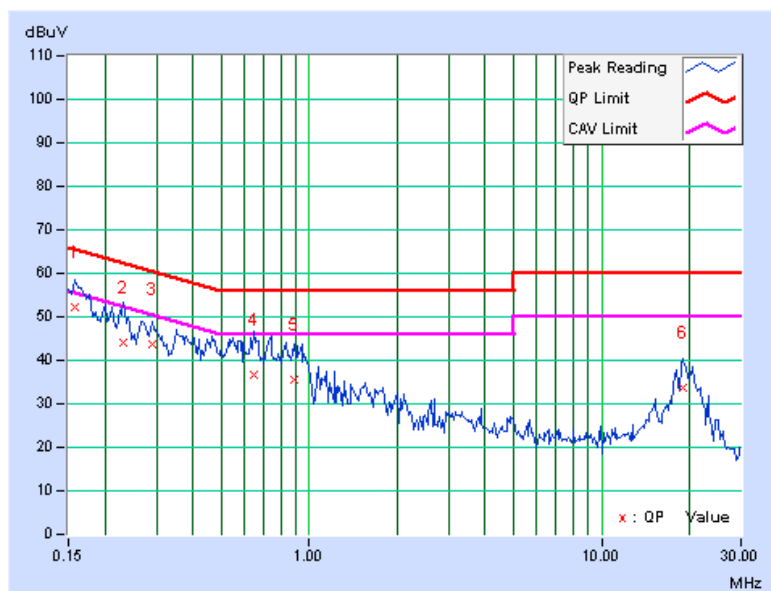
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.13	52.01	-	52.14	-	65.58	55.58	-13.44	-
2	0.232	0.13	43.86	-	43.99	-	62.38	52.38	-18.38	-
3	0.291	0.14	43.69	-	43.83	-	60.51	50.51	-16.67	-
4	0.650	0.18	36.59	-	36.77	-	56.00	46.00	-19.23	-
5	0.884	0.21	35.21	-	35.42	-	56.00	46.00	-20.58	-
6	18.918	0.86	32.87	-	33.73	-	60.00	50.00	-26.27	-

- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.  
3. The emission levels of other frequencies were very low against the limit.  
4. Margin value = Emission level - Limit value  
5. Correction factor = Insertion loss + Cable loss  
6. Emission Level = Correction Factor + Reading Value.

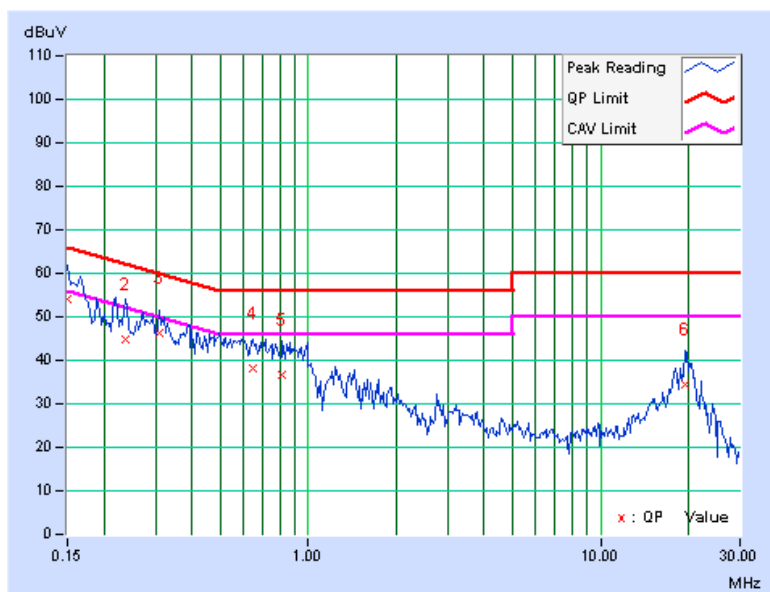


# CONDUCTED WORST CASE DATA: HSDPA

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor [dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.16	53.95	-	54.11	-	66.00	56.00	-11.89	-
2	0.236	0.16	44.69	-	44.85	-	62.24	52.24	-17.38	-
3	0.310	0.17	46.06	-	46.23	-	59.97	49.97	-13.74	-
4	0.646	0.20	37.89	-	38.09	-	56.00	46.00	-17.91	-
5	0.818	0.21	36.36	-	36.57	-	56.00	46.00	-19.43	-
6	19.445	0.67	33.87	-	34.54	-	60.00	50.00	-25.46	-

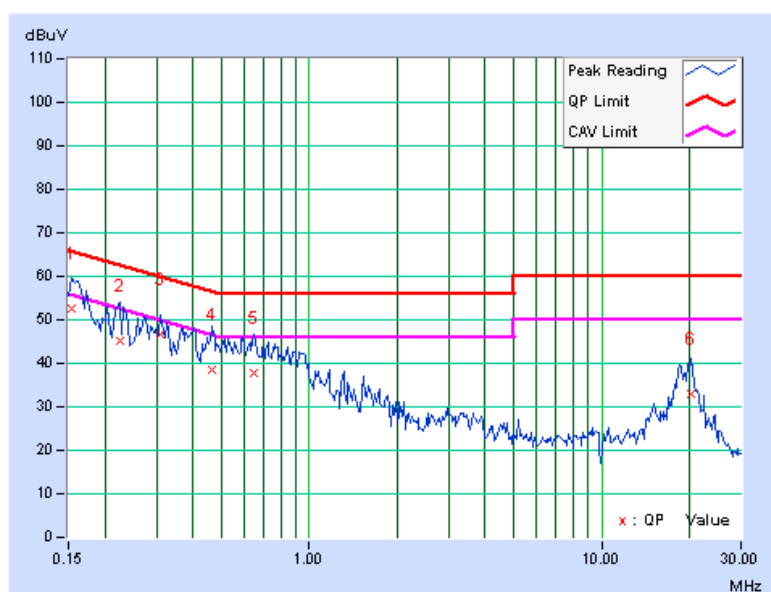
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.13	52.42	-	52.55	-	65.79	55.79	-13.24	-
2	0.224	0.13	45.03	-	45.16	-	62.66	52.66	-17.50	-
3	0.310	0.15	46.38	-	46.53	-	59.97	49.97	-13.44	-
4	0.466	0.17	38.41	-	38.58	-	56.58	46.58	-18.00	-
5	0.650	0.18	37.60	-	37.78	-	56.00	46.00	-18.22	-
6	20.184	0.92	31.90	-	32.82	-	60.00	50.00	-27.18	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



## 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 certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml).  
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

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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



## **7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.

**---END---**