FCC TEST REPORT

(Part 24)

REPORT NO.: RF990514C15-1
MODEL NO.: F-09B
RECEIVED: May 14, 2010
TESTED: May 17 ~ May 20, 2010
ISSUED: May 26, 2010

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, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang, Taipei Hsien 244, 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.

TABLE OF CONTENTS

1 CERTIFICATION

PRODUCT:	Mobile phone
MODEL NO.:	F-09B
BRAND:	FOMA
APPLICANT:	FUJITSU LIMITED
TESTED:	May 17 ~ May 20, 2010
TEST SAMPLE:	ENGINEERING SAMPLE
TEST STANDARDS:	**FCC Part 24, Subpart E** ANSI C63.4-2003
TEST ITEM:	**Maximum Peak Output Power (Section 2.1046 24.232)** **Radiated Spurious Emissions (Section 2.1053 24.238)** **AC Power Conducted Emission (Section 15.207)**

The above equipment (model: F-09B) 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 :** May 26, 2010
Andrea Hsia / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE :** May 26, 2010
Responsible for RF
Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE :** May 26, 2010
Gary Chang / Assistant Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2 / IC RSS-133			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
2.1046 24.232	Maximum Peak Output Power Limit: max. 2 watts e.i.r.p peak power	PASS	Meet the requirement of limit. Minimum passing margin is 30.6dBm at 1909.8MHz.
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -18.1dB at 5729.4MHz.
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is –18.71dB at 0.205MHz.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Mobile phone
MODEL NO.	F-09B
POWER SUPPLY	3.7Vdc (Li-ion battery) 5.4Vdc (Adapter)
MODULATION TYPE	GMSK
OPERATING FREQUENCY	1850.2MHz ~ 1909.8MHz
NUMBER OF CHANNEL	299
ANTENNA TYPE	Integral antenna with 0dBi gain (EUT open) Integral antenna with -2dBi gain (EUT close)
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Battery

NOTE:

1. In this report, only included test items of output power, radiated spurious emissions and conducted emissions per client's requests.
2. The EUT is a Mobile phone. The functions of EUT listed as below:

	TEST STANDARD	REFERENCE REPORT
WCDMA 850	FCC Part 22	RF990514C15
GSM 1900	FCC Part 24	RF990514C15-1

3. The EUT is powered by the following battery.

BATTERY	
BRAND	Fujitsu Limited
MODEL	F17
RATING	3.7Vdc, 800mAh

4. The following accessory is for support units only.

PRODUCT	BRAND	DESCRIPTION
Adapter	SMK	I/P: 100-240Vac, 0.12A, 50-60Hz O/P: 5.4Vdc, 700mA
USB cable	NA	0.8m non-shielded cable without core

5. Hardware version: V2.3
6. Software version: R23.1.
7. IMEI Code: 359085030009607.
8. 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

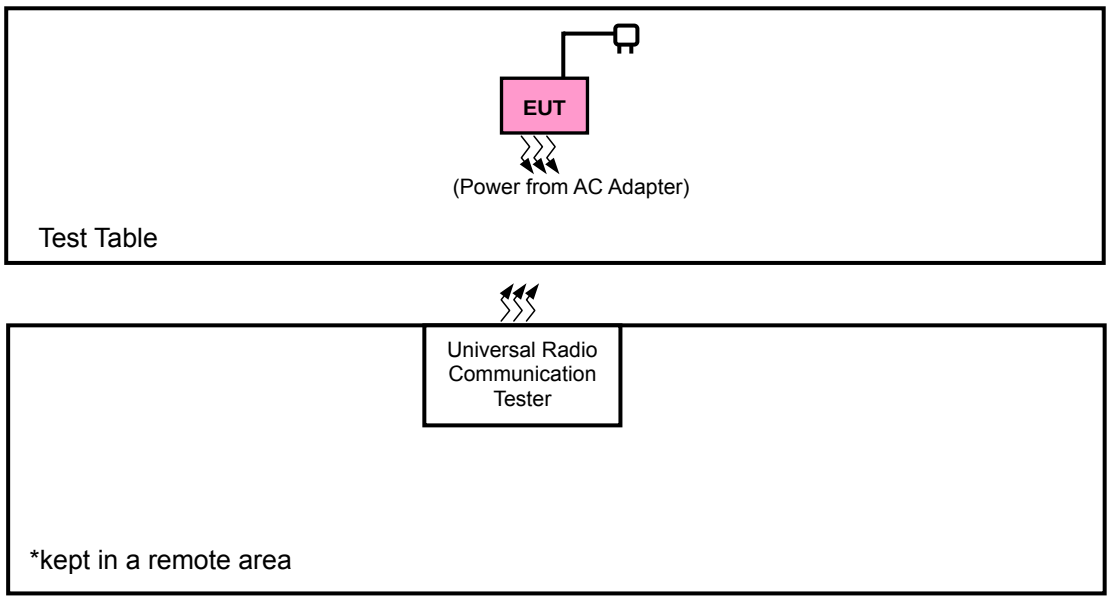
299 channels are provided to this EUT. Therefore, the low, middle and high channels are chosen for testing.

	CHANNEL	FREQUENCY	TX MODE
LOW	512	1850.2 MHz	GSM
MIDDLE	661	1880.0 MHz	GSM
HIGH	810	1909.8 MHz	GSM

NOTE:

1. Below 1 GHz, the channel 512, 661, and 810 were pre-tested in chamber. The channel 512 was chosen for final test.
2. Above 1 GHz, the channel 512, 661, and 810 were tested individually.

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 **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, 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
512 to 810	512, 661, 810	GSM, GPRS	X, Y, Z

RADIATED EMISSION MEASUREMENT (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, 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
512 to 810	512	GSM	X, Y, Z

RADIATED EMISSION MEASUREMENT (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, 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
512 to 810	512, 661, 810	GSM	X, Y, Z

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
512 to 810	512	GSM

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
OP	22deg. C, 61%RH, 991hPa	120Vac, 60Hz	Brad Wu
RE≥1G	22deg. C, 61%RH, 991hPa	120Vac, 60Hz	Brad Wu
RE<1G	22deg. C, 61%RH, 991hPa	120Vac, 60Hz	Brad Wu
PLC	28deg. C, 70%RH, 1015hPa	120Vac, 60Hz	Scott Yang

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 24

IC RSS-133

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	NJZ-2000 (GSM+WCDMA SIMULATOR)	JRC	NJZ-2000	ET00054	NA
2	ADAPTER	SMK	NA	NA	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 2 was supplied from the client for conducted emission test.

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 24.232(b) that “Mobile / Portable station are limited to 2 watts e.i.r.p” and 24.232(c) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jul. 06, 2009	Jul. 05, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Dec 31, 2009	Dec 30, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2010	Apr. 26, 2011
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8447D	2944A10633	Nov. 10, 2009	Nov. 09, 2010
Preamplifier Agilent	8449B	3008A01964	Nov. 09, 2009	Nov. 08, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238141/4	May 14, 2010	May 13, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 14, 2010	May 13, 2011
Software ADT.	ADT_Radiated_ V7.6.15.9.2	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 ADT.	TT100.	TT93021703	NA	NA
Turn Table Controller ADT.	SC100.	SC93021703	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.

4.1.3 TEST PROCEDURES

a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels, 512, 661 and 810 (GSM) (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 1MHz (GSM), then read peak power value and record to the test. (All transmitted path loss shall be considered in the test report data.)

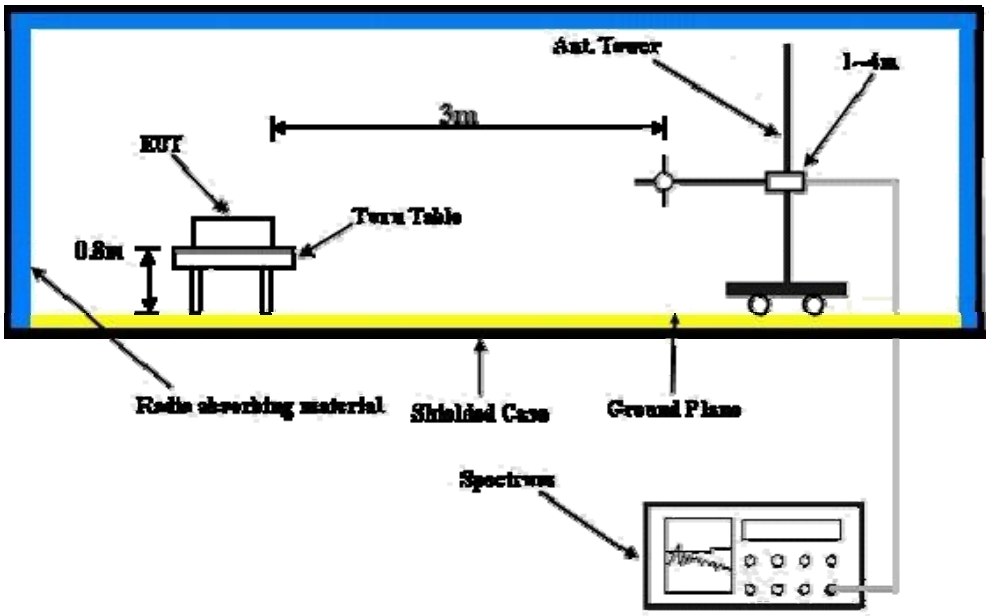
c. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

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

a. The EUT makes a phone call to the communication simulator.

b. 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

X-AXIS

FOR GSM

EIRP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
512	1850.2	22.1	8.4	30.5	1122.0
661	1880.0	21.6	8.6	30.2	1047.1
810	**1909.8**	**22.1**	**8.5**	**30.6**	**1148.2**

FOR GPRS-T1

EIRP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
512	1850.2	21.3	8.4	29.7	933.3
661	1880.0	20.8	8.6	29.4	871.0
810	1909.8	21.4	8.5	29.9	977.2

Y-AXIS

FOR GSM

EIRP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
512	1850.2	19.6	8.4	28.0	631.0
661	1880.0	19.5	8.6	28.1	645.7
810	1909.8	19.5	8.5	28.0	631.0

FOR GPRS-T1

EIRP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
512	1850.2	18.8	8.4	27.2	524.8
661	1880.0	18.8	8.6	27.4	549.5
810	1909.8	18.8	8.5	27.3	537.0

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

Z-AXIS

FOR GSM

EIRP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
512	1850.2	20.8	8.4	29.2	831.8
661	1880.0	20.7	8.6	29.3	851.1
810	1909.8	20.7	8.5	29.2	831.8

FOR GPRS-T1

EIRP					
CHANNEL NO.	FREQUENCY (MHz)	S.G VALUE (dBm)	CORRECTION FACTOR (dB)	OUTPUT POWER	
				dBm	mW
512	1850.2	20.1	8.4	28.5	707.9
661	1880.0	20.1	8.6	28.7	741.3
810	1909.8	19.9	8.5	28.4	691.8

REMARKS: 1. Peak Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).

2. Correction Factor (dB) = TX 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 –13dBm.

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

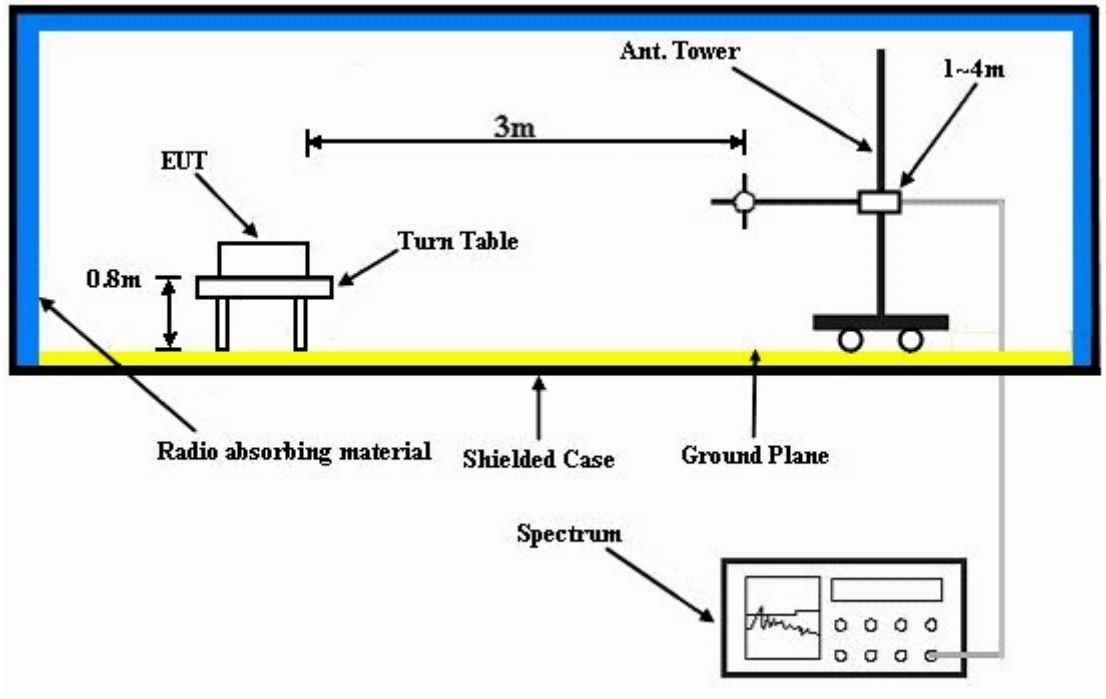
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

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

a. The EUT makes a phone call to the communication simulator.

b. 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

X-AXIS

MODE	TX channel 661	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	72.77	38.9	-13.0	-47.9	-7.7	-55.6
2	148.58	37.8	-13.0	-48.8	-7.7	-56.5
3	189.40	42.4	-13.0	-43.9	-7.7	-51.6
4	236.05	42.4	-13.0	-44.1	-7.7	-51.8
5	500.42	32.6	-13.0	-53.7	-7.8	-61.5
6	834.77	37.0	-13.0	-49.2	-7.9	-57.1
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	41.66	48.1	-13.0	-38.2	-7.7	-45.9
2	76.65	49.2	-13.0	-37.2	-7.7	-44.9
3	152.46	46.4	-13.0	-40.1	-7.7	-47.8
4	216.61	44.2	-13.0	-42.3	-7.7	-50.0
5	543.19	31.5	-13.0	-55.0	-7.8	-62.8
6	930.02	38.5	-13.0	-47.7	-7.9	-55.6

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

Y-AXIS

MODE	TX channel 661	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	144.69	42.3	-13.0	-44.3	-7.7	-52.0
2	236.05	39.8	-13.0	-47.0	-7.7	-54.7
3	500.42	33.2	-13.0	-53.0	-7.8	-60.8
4	650.10	32.9	-13.0	-53.4	-7.8	-61.2
5	757.01	35.1	-13.0	-51.4	-7.9	-59.3
6	933.91	39.8	-13.0	-46.6	-7.9	-54.5
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	43.61	55.5	-13.0	-31.1	-7.7	-38.8
2	115.53	43.4	-13.0	-43.3	-7.7	-51.0
3	230.22	42.9	-13.0	-43.6	-7.7	-51.3
4	500.42	35.2	-13.0	-51.4	-7.8	-59.2
5	667.60	33.1	-13.0	-53.6	-7.8	-61.4
6	922.24	38.6	-13.0	-48.1	-7.9	-56.0

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

Z-AXIS

MODE	TX channel 661	FREQUENCY RANGE	Below 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	41.66	38.7	-13.0	-47.4	-7.7	-55.1
2	144.69	37.6	-13.0	-49.1	-7.7	-56.8
3	226.33	43.7	-13.0	-42.9	-7.7	-50.6
4	628.72	33.5	-13.0	-53.2	-7.8	-61.0
5	834.77	36.0	-13.0	-50.1	-7.9	-58.0
6	957.23	38.5	-13.0	-47.8	-7.9	-55.7
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	45.55	51.8	-13.0	-34.9	-7.7	-42.6
2	74.71	44.2	-13.0	-41.9	-7.7	-49.6
3	131.08	43.9	-13.0	-42.4	-7.7	-50.1
4	226.33	49.2	-13.0	-37.6	-7.7	-45.3
5	455.71	31.7	-13.0	-54.7	-7.9	-62.5
6	935.85	38.3	-13.0	-48.2	-7.9	-56.1

NOTE: Power Value (dBum) = 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

X-AXIS

MODE	TX channel 512	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3700.40	51.7	-13.0	-52.7	9.9	-42.8
2	5550.60	56.8	-13.0	-47.2	9.7	-37.5
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	3700.40	50.6	-13.0	-53.8	9.9	-43.9
2	5550.60	57.7	-13.0	-46.3	9.7	-36.6

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

MODE	TX channel 661	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3760.00	53.5	-13.0	-50.5	9.9	-40.6
2	5640.00	57.4	-13.0	-46.5	9.6	-36.9
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	3760.00	52.1	-13.0	-52.2	9.9	-42.3
2	5640.00	59.9	-13.0	-43.8	9.6	-34.2

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

MODE	TX channel 810	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3819.60	54.2	-13.0	-50.1	9.9	-40.2
2	5729.40	57.5	-13.0	-46.1	9.6	-36.5
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	3819.60	53.3	-13.0	-50.9	9.9	-41.0
2	5729.40	57.4	-13.0	-46.6	9.6	-37.0

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

Y-AXIS

MODE	TX channel 512	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3700.40	52.3	-13.0	-51.6	9.9	-41.7
2	5550.60	57.6	-13.0	-46.4	9.7	-36.7
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	3700.40	51.0	-13.0	-50.3	9.9	-43.1
2	5550.60	59.4	-13.0	-44.7	9.7	-35.0

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

MODE	TX channel 661	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3760.00	52.9	-13.0	-51.1	9.9	-41.2
2	5640.00	58.0	-13.0	-45.9	9.6	-36.3
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	3760.00	51.8	-13.0	-52.6	9.9	-42.7
2	5640.00	61.5	-13.0	-42.4	9.6	-32.8

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

MODE	TX channel 810	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3819.60	56.4	-13.0	-48.0	9.9	-38.1
2	5729.40	57.8	-13.0	-45.9	9.6	-36.3
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	3819.60	53.9	-13.0	-50.1	9.9	-40.2
2	5729.40	58.7	-13.0	-45.2	9.6	-35.6

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

Z-AXIS

MODE	TX channel 512	FREQUENCY RANGE	Above 1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa	TESTED BY	Brad Wu

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	3700.40	53.4	-13.0	-50.5	9.9	-40.6
2	5550.60	61.7	-13.0	-42.2	9.7	-32.5
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	3700.40	52.0	-13.0	-52.0	9.9	-42.1
2	5550.60	58.1	-13.0	-45.9	9.7	-36.2

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

MODE	TX channel 661	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER	3.7Vdc	ENVIRONMENTAL CONDITIONS	22deg. C, 61%RH, 991hPa
TESTED BY	Brad Wu	TEST MODE	Z-Axis

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	3760.00	51.7	-13.0	-52.5	9.9	-42.6
2	5640.00	63.0	-13.0	-40.8	9.6	-31.2
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	3760.00	52.2	-13.0	-52.2	9.9	-42.3
2	5640.00	57.5	-13.0	-46.3	9.6	-36.7

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

MODE	TX channel 810	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER	3.7Vdc	**ENVIRONMENTAL CONDITIONS**	22deg. C, 61%RH, 991hPa
TESTED BY	Brad Wu	**TEST MODE**	Z-Axis

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	3819.60	53.0	-13.0	-41.1	9.9	-41.1
2	**5729.40**	**63.1**	**-13.0**	**-31.1**	**9.6**	**-31.1**
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	3819.60	54.0	-13.0	-40.2	9.9	-40.2
2	5729.40	59.1	-13.0	-35.1	9.6	-35.1

NOTE: Power Value (dBum) = 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 (dBμV)	
	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	100288	Sep. 24, 2009	Sep. 23, 2010
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2009	Dec. 30, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Aug. 24, 2009	Aug. 23, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 29, 2009	Jul. 28, 2010
Software ADT	ADT_Cond_ 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.

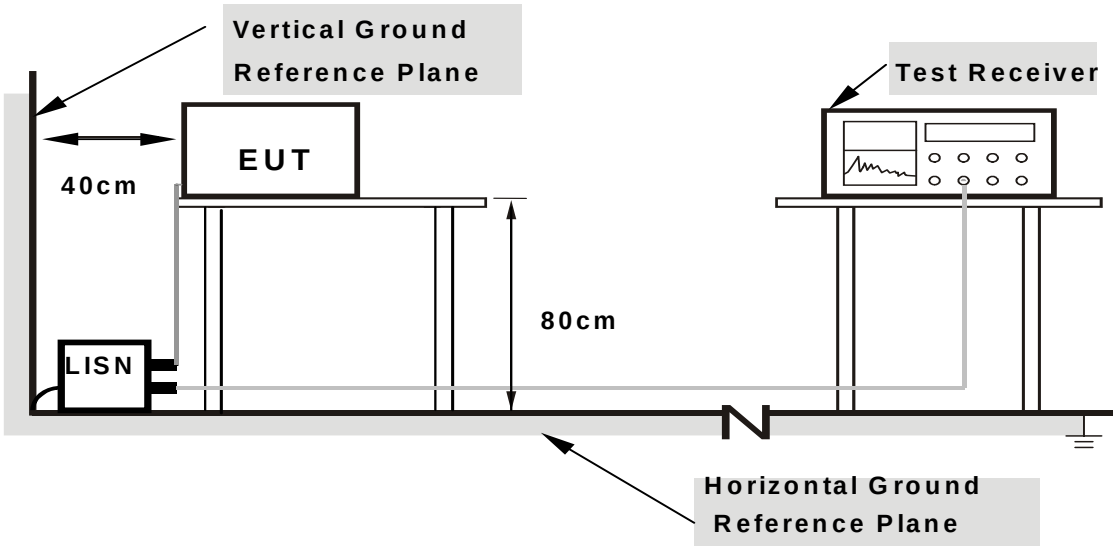
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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 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.

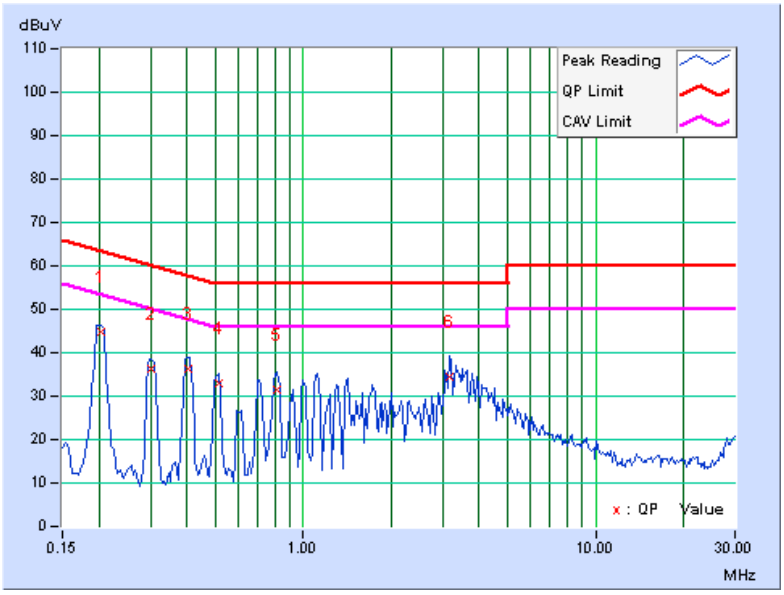
4.4.7 TEST RESULTS

CONDUCTED WORST CASE DATA:

PHASE	Line 1	6dB BANDWIDTH	9kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.205**	**0.16**	**44.55**	**-**	**44.71**	**-**	**63.42**	**53.42**	**-18.71**	**-**
2	0.302	0.17	36.00	-	36.17	-	60.18	50.18	-24.01	-
3	0.404	0.18	36.01	-	36.19	-	57.77	47.77	-21.58	-
4	0.513	0.19	32.62	-	32.81	-	56.00	46.00	-23.19	-
5	0.810	0.21	31.40	-	31.61	-	56.00	46.00	-24.39	-
6	3.164	0.33	34.15	-	34.48	-	56.00	46.00	-21.52	-

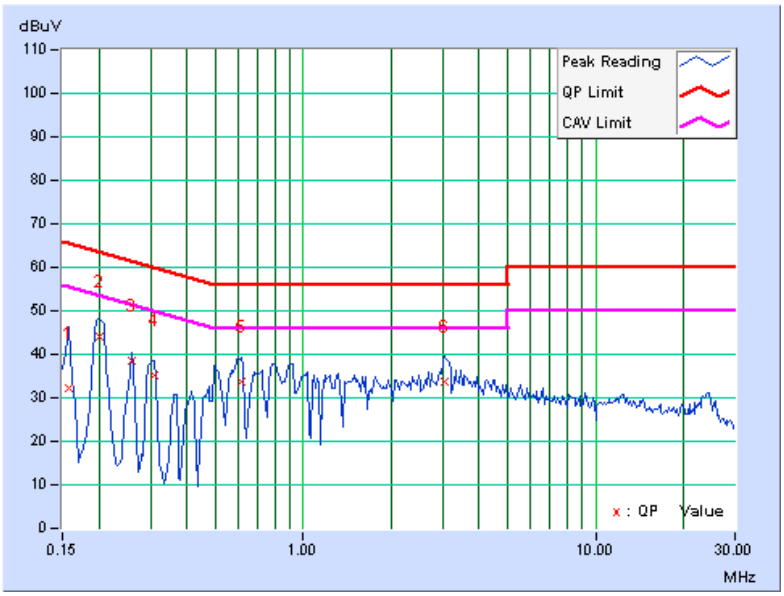
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



PHASE	Line 2	6dB BANDWIDTH	9kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.13	32.20	-	32.33	-	65.58	55.58	-33.25	-
2	0.202	0.13	44.04	-	44.17	-	63.53	53.53	-19.36	-
3	0.259	0.14	38.36	-	38.50	-	61.45	51.45	-22.95	-
4	0.310	0.15	35.00	-	35.15	-	59.97	49.97	-24.82	-
5	0.611	0.18	33.57	-	33.75	-	56.00	46.00	-22.25	-
6	3.047	0.33	33.25	-	33.58	-	56.00	46.00	-22.42	-

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.
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

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---