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FCC TEST REPORT (CO-LOCATED)

REPORT NO.: RF110617D07-7

MODEL NO.: PCG-4121DL, PCG-4121EL

FCC ID: AK8PCG4121DL

RECEIVED: Jun. 17, 2011

TESTED: Jun. 30 ~ Jul. 27, 2011

ISSUED: Jul. 27, 2011

APPLICANT: SONY Corporation

ADDRESS: 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

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

LAB LOCATION: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou
Hsiang, Taipei Hsien, 244 Taiwan

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110617D07-7	Original release	Jul. 27, 2011



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1. CERTIFICATION

PRODUCT: Personal Computer
BRAND NAME: SONY
MODEL NO.: PCG-4121DL, PCG-4121EL
APPLICANT: SONY Corporation
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Jun. 30 ~ Jul. 27, 2011
STANDARDS: **FCC Part 15, Subpart C (Section 15.247)**
FCC Part 15, Subpart E (Section 15.407)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: PCG-4121DL) 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 : Annie Chang , **DATE:** Jul. 27, 2011
(Annie Chang / Senior Specialist)

APPROVED BY : Ken Liu , **DATE:** Jul. 27, 2011
(Ken Liu / Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207 15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -24.50dB at 1.023MHz.
15.247(d) 15.407(b/1/2/3) (b)(5)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.5dB at 11000.00MHz.

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:

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.41 dB
Radiated emissions	30MHz ~ 1GHz	3.87 dB
	Above 1GHz	3.36 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Personal Computer
MODEL NO.	PCG-4121DL, PCG-4121EL
FCC ID	AK8PCG4121DL
NOMINAL VOLTAGE	19.5Vdc from AC adapter or 11.1Vdc from battery
MODULATION TYPE	WLAN: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM Bluetooth: GFSK, π /4-DQPSK, 8DPSK
MODULATION TECHNOLOGY	WLAN: DSSS, OFDM Bluetooth: FHSS
TRANSFER RATE	WLAN: 802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps Bluetooth: 1/2/3Mbps
OPERATING FREQUENCY	WLAN: 2.4GHz: 2412.0 ~ 2462.0MHz 5.0GHz: 5180~5320MHz, 5500~5700MHz & 5745~5825MHz Bluetooth: 2402 ~ 2480MHz
NUMBER OF CHANNEL	WLAN: 2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5180 ~ 5320MHz: 8 for 802.11a, 802.11n (20MHz) 4 for 802.11n (40MHz) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz) 5745~5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) Bluetooth: 79
OUTPUT POWER	WLAN: 143.3mW for 2412 ~ 2462MHz 33.9mW for 5180 ~ 5240MHz 31.6mW for 5260 ~ 5320MHz 27.5mW for 5500 ~ 5700MHz 83.5mW for 5745 ~ 5825MHz Bluetooth: 4.5mW
ANTENNA TYPE	Refer to note below

ANTENNA CONNECTOR	Refer to note below
I/O PORTS	Refer to User's manual
DATA CABLE	NA
ACCESSORY DEVICES	Refer to note below

NOTE:

1. The EUT is a Personal Computer. The functions of EUT listed as below:

Function	Test Standard	Reference Report
WLAN IEEE802.11abgn Mini-PCI Card + Bluetooth module (Brand: Intel, Model: 62230ANHMW)	WLAN 802.11an (5180~5320MHz, 5500~5700MHz)	RF110617D07
	WLAN 802.11a (For DFS report) (5260~5320MHz, 5500~5700MHz)	RF110617D07-5
	WLAN 802.11an (5745~5825 MHz)	RF110617D07-1
	WLAN 802.11bgn	
	Bluetooth	RF110617D07-2
	CO-Located Report	RF110617D07-7
GSM 850 / CDMA 850 / WCDMA 850 (Brand: Huawei, Model: Gobi3000)	FCC Part 22	RF110617D07-3
PCS 1900 / CDMA 1900 / WCDMA 1900 (Brand: Huawei, Model: Gobi3000)	FCC Part 24	RF110617D07-4

2. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2412~2462	5180~5320	5500~5700	5745~5825
802.11b	√			
802.11g	√			
802.11a		√	√	√
802.11n (20MHz)	√	√	√	√
802.11n (40MHz)	√	√	√	√

3. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

4. Since 2.4G/5G band cannot transmit at same time, only WLAN and BT co-transmission was investigated in this report.

5. The EUT has several models, which are identical to each other except for the Topcover less of ODD differences only, as the following:

Brand	Model No.	Topcover less of ODD
SONY	PCG-4121DL	Without
	PCG-4121EL	With

During the test, the **model no.: PCG-4121DL** was the worst case and only its test data was recorded in this report.

6. The EUT doesn't operate in 5600 ~ 5650MHz via software controls.

7. The case of EUT has two kinds of material: MG & CFRP. During the test, the **MG material case** was the worst case and only its test data was recorded in this report.

8. The following antennas were applied to the EUT:

Type	Connector	Gain			
		2.4G	5.0G (Band 4)	5.0G (Band 1~3)	Bluetooth
PIFA	Hirose U.FL	0.59	-1.04	0.80	0.59

9. The EUT consumes power from a power adapter/ battery and there are the following sources could be chosen:

Power Source	Brand	Model No.	Spec.
AC adapter 1	NJRC	VGP-AC19V31	AC Input: 100-240V, 1.5A, 50-60Hz DC Output: 19.5V, 4.7A Non-shielded AC 2Pin (0.8m) Non-shielded DC (1.8m)
AC adapter 2	NJRC	VGP-AC19V32	AC Input: 100-240V, 1.5A, 50-60Hz DC Output: 19.5V, 4.7A Non-shielded AC 3Pin (0.8m) Non-shielded DC (1.8m)
AC adapter 3	Liteon	VGP-AC19V36	AC Input: 100-240V, 1.5A, 50/60Hz DC Output: 19.5V, 4.7A Non-shielded AC 3Pin (0.8m) Non-shielded DC (1.8m)
AC adapter 4	Delta	VGP-AC19V42	AC Input: 100-240V, 1.5A 50-60Hz DC Output: 19.5V, 4.7A Non-shielded AC 3Pin (0.8m) Non-shielded DC (1.8m)
AC adapter 5	Delta	VGP-AC19V51	AC Input: 100-240V, 1.5A, 50/60Hz DC Output 1: 19.5Vdc 4.7A DC Output 2: 5Vdc 1.5A DC Output 3: 5Vdc 1.5A Non-shielded AC 3Pin (0.8m) Non-shielded DC (1.8m)
Battery	Sony	VGP-BPS24	11.1V, 4400mAh

After pre-tested above AC adapters, the **AC Adapter 3** was the worst case, therefore, only its test data was recorded in this report.

10. 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 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

FOR 5.0GHz (5180 ~ 5320MHz):

8 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

4 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	54	5270 MHz
46	5230 MHz	62	5310 MHz

FOR 5.0GHz (5500 ~ 5700MHz):

8 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	116	5580 MHz
104	5520 MHz	132	5660 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 MHz

3 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	134	5670 MHz
110	5550 MHz		

FOR 5.0GHz (5745 ~ 5825MHz):

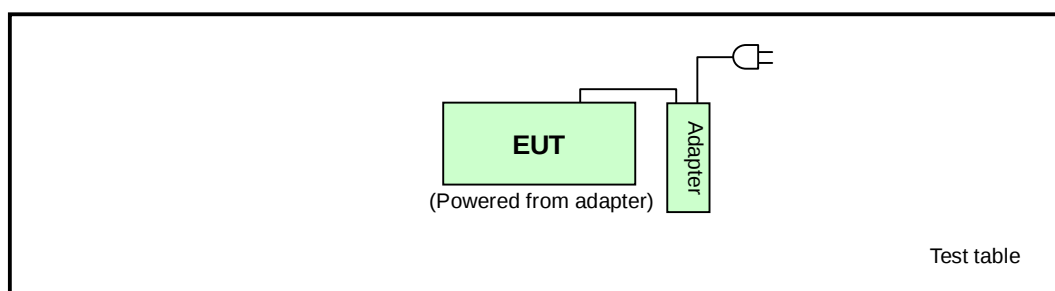
5 channels are provided for 802.11a and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE ³ 1G	RE<1G	CE	
-	√	√	√	-

Where **RE³1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz

CE: Conducted Emission Measurement

NOTE: 1. Test modes as below are composed of the max output power channel of each band.

2. Speed mode worst enable during the test

RADIATED EMISSION TEST (ABOVE 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11gn (20MHz) + Bluetooth	2412~2462	1 to 11	6 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11a + Bluetooth	5180-5320	36 to 64	48 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11a + Bluetooth	5500-5700	100 to 140	100 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11an (40MHz) + Bluetooth	5745~5825	151 to 159	159 + 78	OFDM	BPSK	27
	2402~2480	0 to 78		FHSS	GFSK	1

RADIATED EMISSION TEST (BELOW 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11gn (20MHz) + Bluetooth	2412~2462	1 to 11	6 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11a + Bluetooth	5180-5320	36 to 64	48 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11a + Bluetooth	5500-5700	100 to 140	100 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11an (40MHz) + Bluetooth	5745~5825	151 to 159	159 + 78	OFDM	BPSK	27
	2402~2480	0 to 78		FHSS	GFSK	1

CONDUCTED EMISSION TEST:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11gn (20MHz) + Bluetooth	2412~2462	1 to 11	6 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11a + Bluetooth	5180-5320	36 to 64	48 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11a + Bluetooth	5500-5700	100 to 140	100 + 78	OFDM	BPSK	6
	2402~2480	0 to 78		FHSS	GFSK	1
802.11an (40MHz) + Bluetooth	5745~5825	151 to 159	159 + 78	OFDM	BPSK	27
	2402~2480	0 to 78		FHSS	GFSK	1



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TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE ³ 1G	21deg. C, 74%RH	120Vac, 60Hz	Nick Chen
RE<1G	21deg. C, 74%RH	120Vac, 60Hz	Nick Chen
PLC	26deg. C, 74%RH	120Vac, 60Hz	Nick Chen

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 Part 15, Subpart C (Section 15.247)

FCC Part 15, Subpart E (Section 15.407)

ANSI C63.4-2003

ANSI C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with its adapter.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

FREQUENCIES (MHz)	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m) *NOTE 3
	PK	PK
5150 ~ 5250	-27	68.3
5250 ~ 5350	-27	68.3
5470 ~ 5725	-27	68.3

NOTE:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$



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4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01924	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01292	Mar. 04, 2011	Mar. 03, 2012
ROHDE & SCHWARZ TEST RECEIVER	ESU26	100005	Jun. 10, 2011	Jun. 09, 2012
Schwarzbeck Antenna	VULB 9168	137	Apr. 12, 2011	Apr. 11, 2012
Schwarzbeck Antenna	VHBA 9123	480	May 06, 2011	May 05, 2012
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 20, 2010	Aug. 19, 2011
EMCO Horn Antenna	3115	6714	Oct. 26, 2010	Oct. 25, 2011
EMCO Horn Antenna	3115	9312-4192	Apr. 22, 2011	Apr. 21, 2012
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

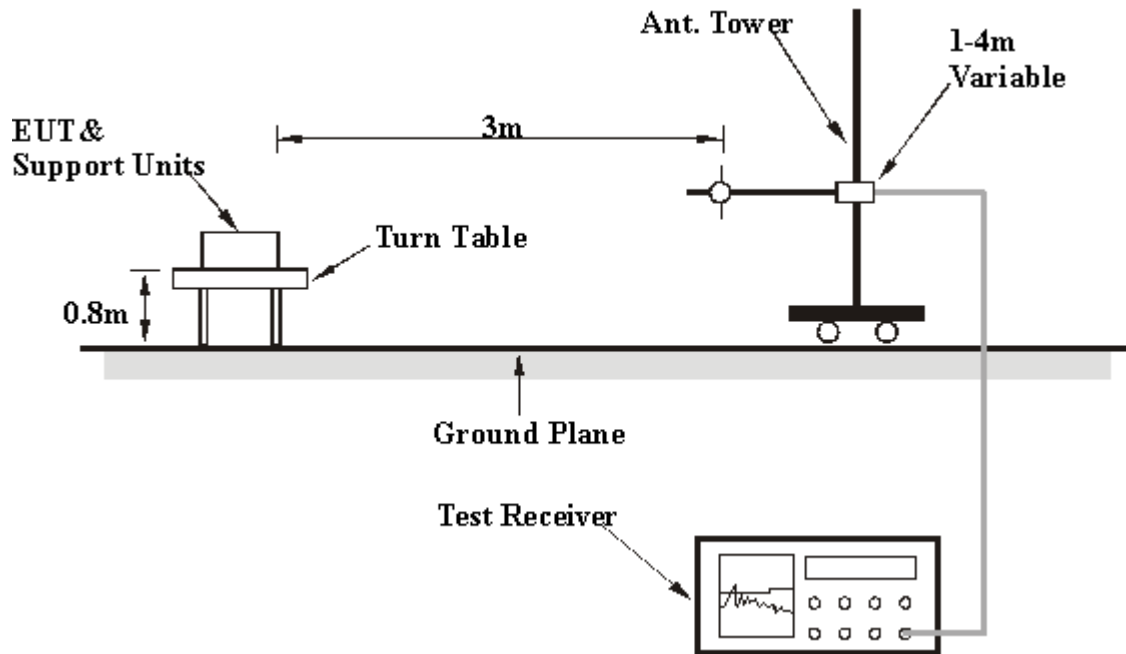
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 DEVIATION FROM TEST STANDARD

No deviation

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITIONS

- Turn on the power of all equipment.
- EUT ran a test program (provided by manufacture) to enable it under transmitting condition at specific channel continuously.

4.1.8 TEST RESULTS

802.11gn (20MHz) + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 06 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	113.2 PK			1.15 H	227	80.27	32.88
2	*2437.00	101.9 AV			1.15 H	227	69.06	32.88
3	*2480.00	101.5 PK			1.00 H	321	68.49	33.01
4	*2480.00	71.4 AV			1.00 H	321	38.39	33.01
5	2483.50	39.2 PK	74.0	-34.8	1.00 H	321	6.18	33.02
6	2483.50	9.1 AV	54.0	-44.9	1.00 H	321	-23.92	33.02
7	4874.00	49.2 PK	74.0	-24.8	1.00 H	308	8.81	40.43
8	4874.00	36.6 AV	54.0	-17.4	1.00 H	308	-3.86	40.43
9	4960.00	57.6 PK	74.0	-16.4	1.00 H	159	16.91	40.73
10	4960.00	27.5 AV	54.0	-26.5	1.00 H	159	-13.19	40.73

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. “ * “: Fundamental frequency.

6. “#”:The radiated frequency is out the restricted band.



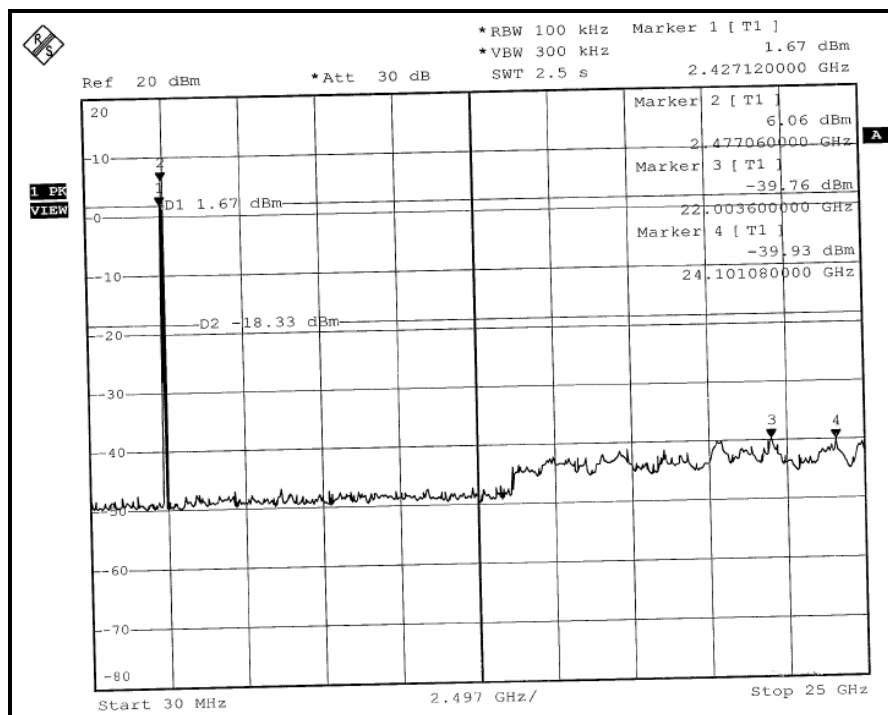
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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 06 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

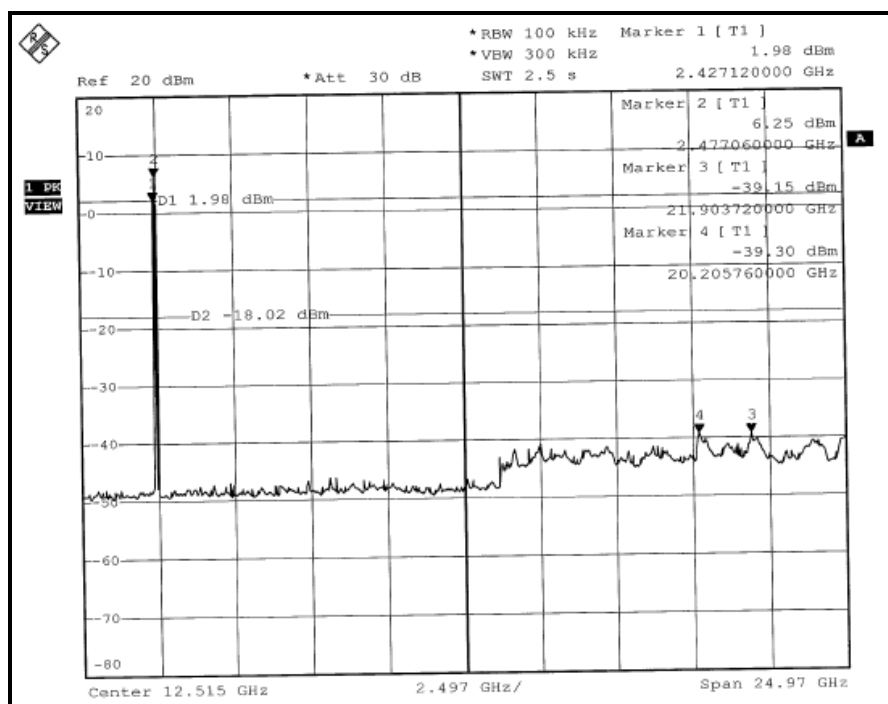
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.0 PK			1.19 V	284	73.13	32.88
2	*2437.00	95.5 AV			1.19 V	284	62.59	32.88
3	*2480.00	99.0 PK			1.12 V	285	65.96	33.01
4	*2480.00	68.9 AV			1.12 V	285	35.86	33.01
5	2483.50	36.7 PK	74.0	-37.3	1.12 V	285	3.65	33.02
6	2483.50	6.6 AV	54.0	-47.4	1.12 V	285	-26.45	33.02
7	4874.00	45.4 PK	74.0	-28.6	1.03 V	219	4.98	40.43
8	4874.00	36.7 AV	54.0	-17.3	1.03 V	219	-3.73	40.43
9	4960.00	53.5 PK	74.0	-20.5	1.00 V	113	12.77	40.73
10	4960.00	23.4 AV	54.0	-30.6	1.00 V	113	-17.33	40.73

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.

Conducted Emission of Antenna 0



Conducted Emission of Antenna 1





A D T

802.11a + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 48 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	101.4 PK			1.00 H	114	68.91	32.49
2	*2480.00	71.3 AV			1.00 H	114	38.81	32.49
3	2483.50	38.7 PK	74.0	-35.3	1.00 H	114	6.14	32.51
4	2483.50	8.6 AV	54.0	-45.5	1.00 H	114	-23.96	32.51
5	4960.00	56.9 PK	74.0	-17.1	1.00 H	154	17.91	38.98
6	4960.00	26.8 AV	54.0	-27.2	1.00 H	154	-12.19	38.98
7	*5240.00	108.5 PK			1.00 H	252	69.14	39.38
8	*5240.00	98.6 AV			1.00 H	252	59.19	39.38
9	5350.00	45.7 PK	74.0	-28.3	1.00 H	252	6.22	39.52
10	5350.00	35.8 AV	54.0	-18.2	1.00 H	252	-3.73	39.52
11	#10480.00	59.1 PK	68.3	-9.2	1.00 H	143	9.63	49.48

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ”: Fundamental frequency.
 6. “ # ”: The radiated frequency is out the restricted band.



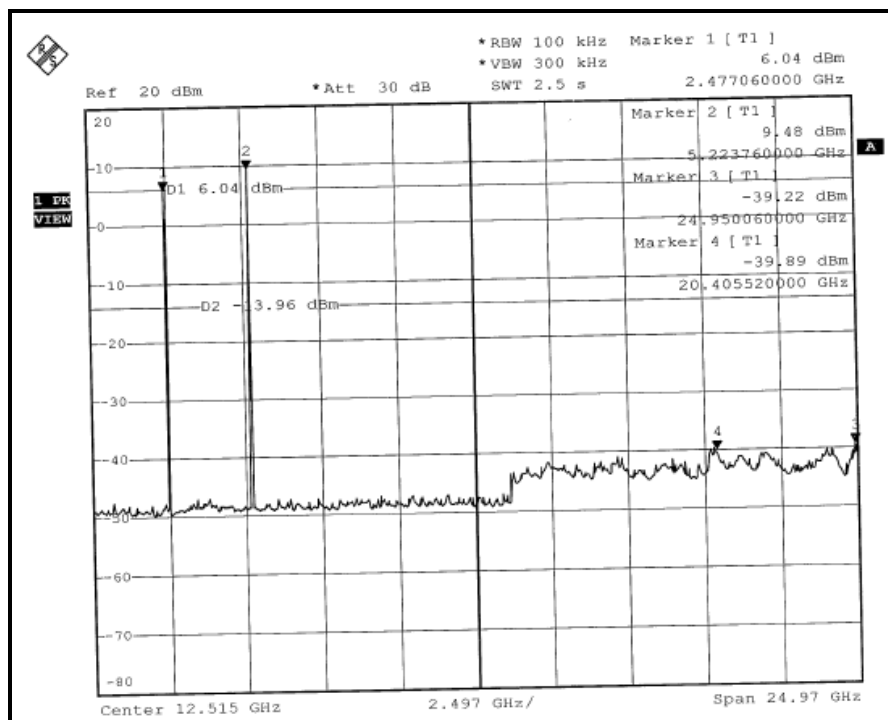
A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 48 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

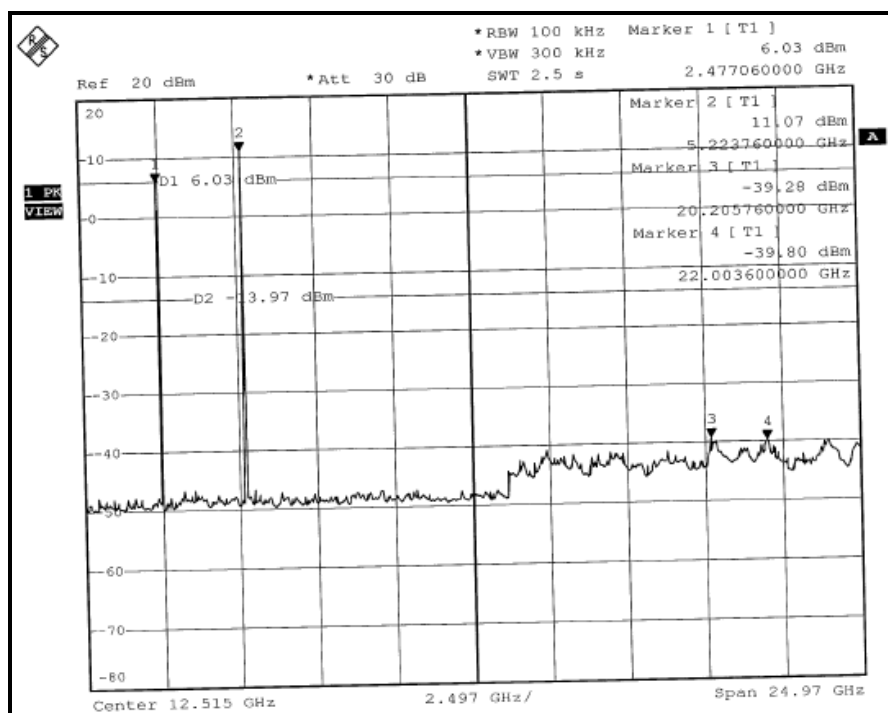
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	98.6 PK			1.12 V	284	66.13	32.49
2	*2480.00	68.5 AV			1.12 V	284	36.03	32.49
3	2483.50	36.3 PK	74.0	-37.7	1.12 V	284	3.81	32.51
4	2483.50	6.2 AV	54.0	-47.8	1.12 V	284	-26.29	32.51
5	4960.00	53.3 PK	74.0	-20.7	1.00 V	165	14.31	38.98
6	4960.00	23.2 AV	54.0	-30.8	1.00 V	165	-15.79	38.98
7	*5240.00	107.0 PK			1.22 V	301	67.60	39.38
8	*5240.00	96.5 AV			1.22 V	301	57.14	39.38
9	5350.00	47.0 PK	74.0	-27.0	1.22 V	301	7.47	39.52
10	5350.00	35.8 AV	54.0	-18.2	1.22 V	301	-3.69	39.52
11	#10480.00	60.0 PK	68.3	-8.4	1.00 V	4	10.47	49.48

- REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.
6. “#”:The radiated frequency is out the restricted band.

Conducted Emission of Antenna 0



Conducted Emission of Antenna 1





A D T

802.11a + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 100 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	100.9 PK			1.00 H	308	68.43	32.49
2	*2480.00	70.8 AV			1.00 H	308	38.33	32.49
3	2483.50	38.6 PK	74.0	-35.4	1.00 H	308	6.11	32.51
4	2483.50	8.5 AV	54.0	-45.5	1.00 H	308	-23.99	32.51
5	4960.00	57.5 PK	74.0	-16.5	1.00 H	58	18.54	38.98
6	4960.00	27.4 AV	54.0	-26.6	1.00 H	58	-11.56	38.98
7	5460.00	56.5 PK	74.0	-17.5	1.00 H	225	16.73	39.76
8	5460.00	40.2 AV	54.0	-13.9	1.00 H	225	0.39	39.76
9	#5470.00	62.8 PK	68.3	-5.5	1.00 H	225	23.01	39.79
10	*5500.00	105.7 PK			1.00 H	225	65.80	39.88
11	*5500.00	95.1 AV			1.00 H	225	55.24	39.88
12	11000.00	60.2 PK	74.0	-13.8	1.00 H	194	9.83	50.37
13	11000.00	51.5 AV	54.0	-2.5	1.00 H	194	1.16	50.37

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.



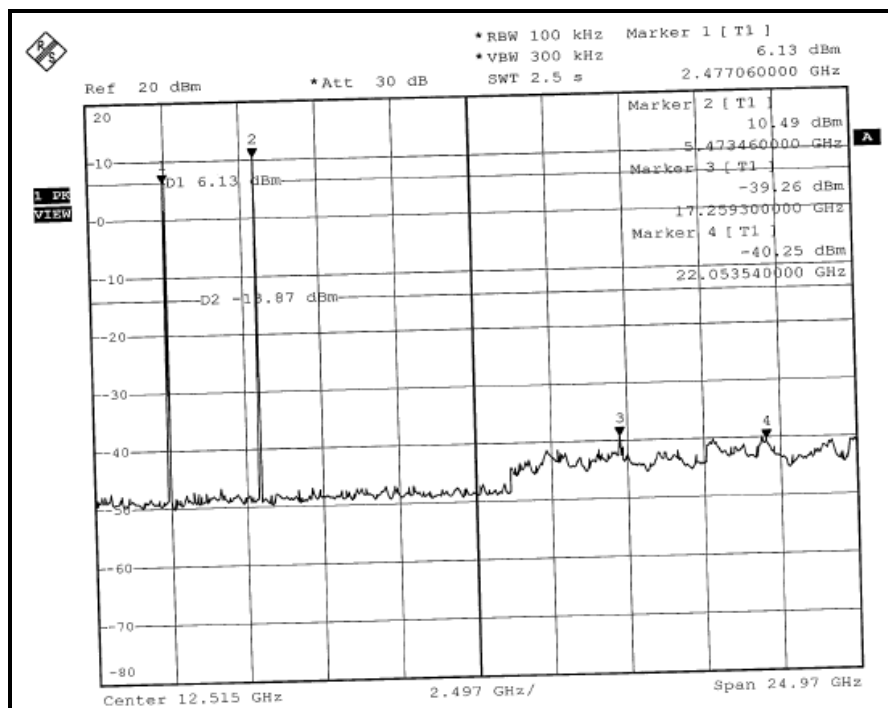
A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 100 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

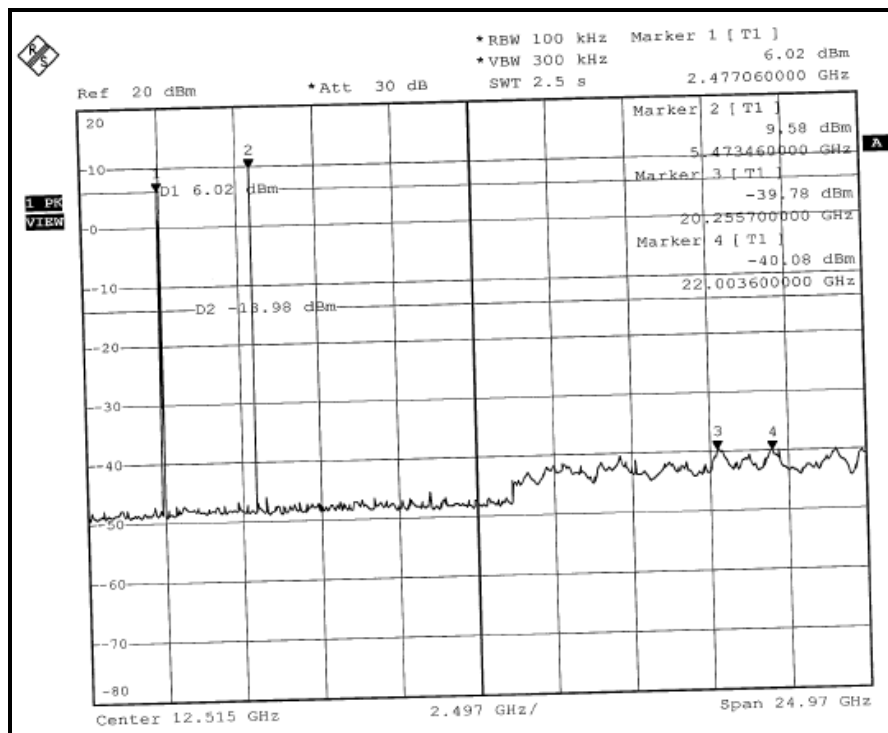
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	98.6 PK			1.00 V	312	66.13	32.49
2	*2480.00	68.5 AV			1.00 V	312	36.03	32.49
3	2483.50	36.3 PK	74.0	-37.7	1.00 V	312	3.81	32.51
4	2483.50	6.2 AV	54.0	-47.8	1.00 V	312	-26.29	32.51
5	4960.00	53.9 PK	74.0	-20.1	1.00 V	144	14.94	38.98
6	4960.00	23.8 AV	54.0	-30.2	1.00 V	144	-15.16	38.98
7	5460.00	49.6 PK	74.0	-24.4	1.18 V	342	9.85	39.76
8	5460.00	39.0 AV	54.0	-15.0	1.18 V	342	-0.73	39.76
9	#5470.00	57.5 PK	68.3	-10.8	1.18 V	342	17.68	39.79
10	*5500.00	103.9 PK			1.18 V	342	63.97	39.88
11	*5500.00	95.2 AV			1.18 V	342	55.31	39.88
12	11000.00	59.0 PK	74.0	-15.0	1.00 V	12	8.59	50.37
13	11000.00	49.7 AV	54.0	-4.3	1.00 V	12	-0.70	50.37

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.

Conducted Emission of Antenna 0



Conducted Emission of Antenna 1





A D T

802.11an (40MHz) + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 159 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	101.4 PK			1.00 H	154	68.94	32.49
2	*2480.00	71.3 AV			1.00 H	154	38.84	32.49
3	2483.50	39.1 PK	74.0	-34.9	1.00 H	154	6.62	32.51
4	2483.50	9.0 AV	54.0	-45.0	1.00 H	154	-23.48	32.51
5	4960.00	56.3 PK	74.0	-17.7	1.00 H	194	17.31	38.98
6	4960.00	26.2 AV	54.0	-27.8	1.00 H	194	-12.79	38.98
7	*5795.00	104.4 PK			1.00 H	298	64.09	40.30
8	*5795.00	93.5 AV			1.00 H	298	53.16	40.30
9	#5850.00	64.6 PK	84.4	-19.8	1.00 H	301	24.25	40.38
10	#5850.00	41.4 AV	73.5	-32.1	1.00 H	301	0.97	40.38
11	11590.00	60.2 PK	74.0	-13.8	1.08 H	268	10.05	50.19
12	11590.00	50.4 AV	54.0	-3.6	1.08 H	268	0.24	50.19

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ”: Fundamental frequency.
 6. The limit value is defined as per 15.247.
 7. “#”:The radiated frequency is out the restricted band.



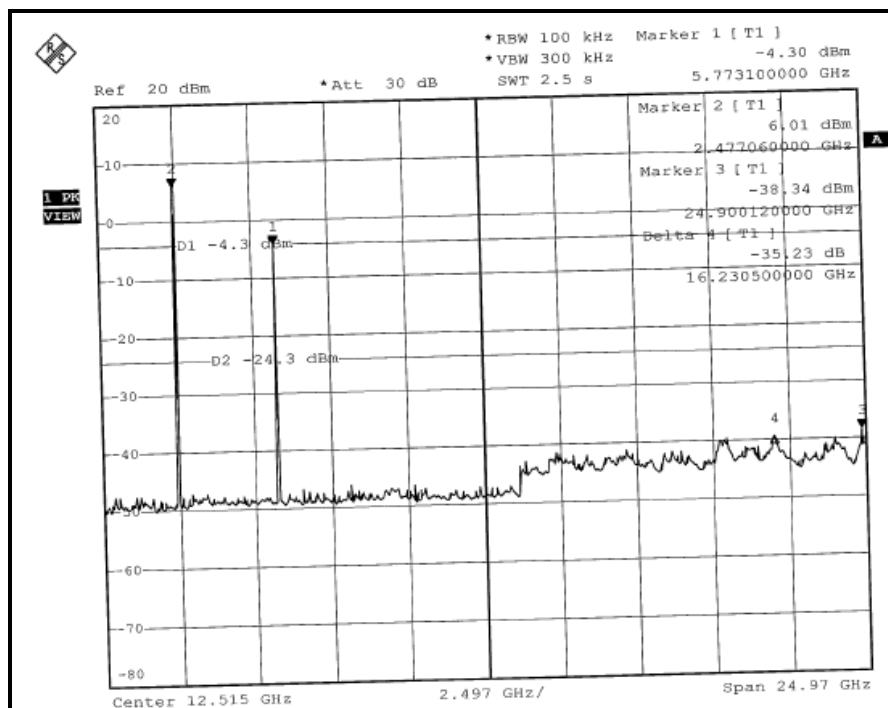
A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 159 + CH 78	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

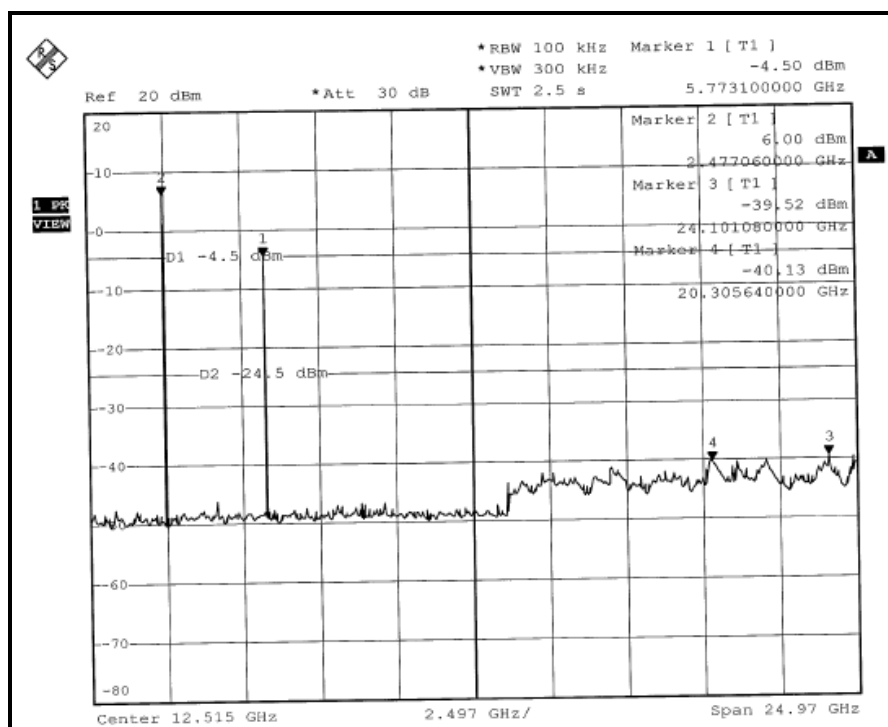
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	99.6 PK			1.12 V	286	67.14	32.49
2	*2480.00	69.5 AV			1.12 V	286	37.04	32.49
3	2483.50	37.3 PK	74.0	-36.7	1.12 V	286	4.82	32.51
4	2483.50	7.2 AV	54.0	-46.8	1.12 V	286	-25.28	32.51
5	4960.00	53.5 PK	74.0	-20.5	1.00 V	345	14.52	38.98
6	4960.00	23.4 AV	54.0	-30.6	1.00 V	345	-15.58	38.98
7	*5795.00	102.2 PK			1.00 V	186	61.91	40.30
8	*5795.00	91.6 AV			1.00 V	186	51.25	40.30
9	#5850.00	51.7 PK	82.2	-30.5	1.00 V	186	11.32	40.38
10	#5850.00	38.9 AV	71.6	-32.7	1.00 V	186	-1.53	40.38
11	11590.00	60.9 PK	74.0	-13.1	1.00 V	228	10.73	50.19
12	11590.00	50.6 AV	54.0	-3.4	1.00 V	228	0.37	50.19

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. The limit value is defined as per 15.247.
 7. “#”:The radiated frequency is out the restricted band.

Conducted Emission of Antenna 0



Conducted Emission of Antenna 1





A D T

802.11gn (20MHz) + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 06 + CH 78	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	120.38	31.1 QP	43.5	-12.4	1.52 H	271	18.81	12.31
2	151.05	33.2 QP	43.5	-10.3	1.24 H	262	18.71	14.45
3	357.64	31.9 QP	46.0	-14.1	1.25 H	184	14.42	17.44
4	662.68	32.6 QP	46.0	-13.4	1.33 H	10	8.65	23.91
5	680.43	30.4 QP	46.0	-15.7	1.10 H	337	6.29	24.06
6	869.27	31.3 QP	46.0	-14.7	1.11 H	245	3.81	27.45
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.25	27.7 QP	40.0	-12.3	1.59 V	245	13.35	14.31
2	72.64	24.4 QP	40.0	-15.6	1.33 V	10	12.34	12.02
3	144.21	30.6 QP	43.5	-12.9	1.06 V	221	16.63	13.99
4	292.01	31.7 QP	46.0	-14.4	1.00 V	314	16.38	15.27
5	530.99	31.0 QP	46.0	-15.0	1.24 V	136	9.08	21.91
6	607.25	33.6 QP	46.0	-12.4	1.00 V	36	10.16	23.48

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



A D T

802.11a + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 48 + CH 78	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	121.08	33.0 QP	43.5	-10.5	1.73 H	214	20.63	12.35
2	150.36	32.0 QP	43.5	-11.5	1.00 H	54	17.56	14.45
3	357.21	31.7 QP	46.0	-14.4	1.09 H	333	14.23	17.42
4	662.84	31.5 QP	46.0	-14.5	1.21 H	10	7.63	23.91
5	679.41	30.7 QP	46.0	-15.4	1.00 H	109	6.60	24.05
6	870.21	30.4 QP	46.0	-15.6	1.00 H	258	2.98	27.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.32	28.1 QP	40.0	-11.9	1.53 V	209	13.82	14.24
2	73.08	25.2 QP	40.0	-14.8	1.23 V	211	13.28	11.91
3	144.95	30.2 QP	43.5	-13.3	1.94 V	26	16.19	14.05
4	193.78	25.6 QP	43.5	-17.9	1.00 V	64	13.73	11.88
5	530.21	32.8 QP	46.0	-13.2	1.54 V	32	10.95	21.89
6	605.94	31.8 QP	46.0	-14.2	1.00 V	197	8.31	23.47

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



A D T

802.11a + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 100 + CH 78	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	119.36	32.9 QP	43.5	-10.6	1.00 H	259	20.68	12.19
2	150.64	30.6 QP	43.5	-12.9	1.47 H	354	16.19	14.45
3	357.12	32.9 QP	46.0	-13.1	1.00 H	39	15.45	17.42
4	663.10	29.8 QP	46.0	-16.2	1.21 H	197	5.87	23.91
5	678.78	30.3 QP	46.0	-15.7	1.00 H	91	6.26	24.04
6	868.19	29.1 QP	46.0	-16.9	1.00 H	159	1.66	27.44
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.58	27.1 QP	40.0	-12.9	1.66 V	123	12.87	14.23
2	72.19	24.7 QP	40.0	-15.3	1.06 V	20	12.55	12.13
3	143.87	32.5 QP	43.5	-11.0	1.10 V	146	18.52	13.97
4	192.77	31.7 QP	43.5	-11.8	1.18 V	185	19.69	11.97
5	521.62	31.7 QP	46.0	-14.4	1.32 V	258	9.96	21.69
6	606.08	32.1 QP	46.0	-13.9	1.09 V	224	8.64	23.47

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

802.11an (40MHz) + Bluetooth

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	CH 159 + CH 78	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 74%RH	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	120.45	32.0 QP	43.5	-11.5	1.52 H	254	19.68	12.31
2	151.36	32.6 QP	43.5	-10.9	1.19 H	106	18.19	14.45
3	354.15	32.0 QP	46.0	-14.0	1.56 H	244	14.63	17.34
4	664.32	33.0 QP	46.0	-13.0	1.10 H	37	9.09	23.92
5	679.15	30.3 QP	46.0	-15.7	1.00 H	247	6.26	24.04
6	870.32	33.0 QP	46.0	-13.0	1.00 H	307	5.51	27.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.32	28.5 QP	40.0	-11.5	1.45 V	47	14.16	14.30
2	72.13	25.4 QP	40.0	-14.6	1.54 V	224	13.22	12.14
3	144.25	31.3 QP	43.5	-12.3	1.45 V	24	17.25	14.00
4	291.36	31.6 QP	46.0	-14.5	1.21 V	245	16.30	15.25
5	530.25	31.3 QP	46.0	-14.8	1.14 V	254	9.36	21.89
6	607.98	32.4 QP	46.0	-13.6	1.07 V	113	8.87	23.49

- REMARKS:** 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100276	Dec. 31, 2010	Dec. 30, 2011
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100219	Nov. 24, 2010	Nov. 23, 2011
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 24, 2010	Nov. 23, 2011
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 24, 2010	Nov. 23, 2011
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 22, 2011	Feb. 21, 2012
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 26, 2011	Feb. 25, 2012

- 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 Shielded Room No. 10.
 3. The VCCI Site Registration No. C-1852.

4.2.3 TEST PROCEDURES

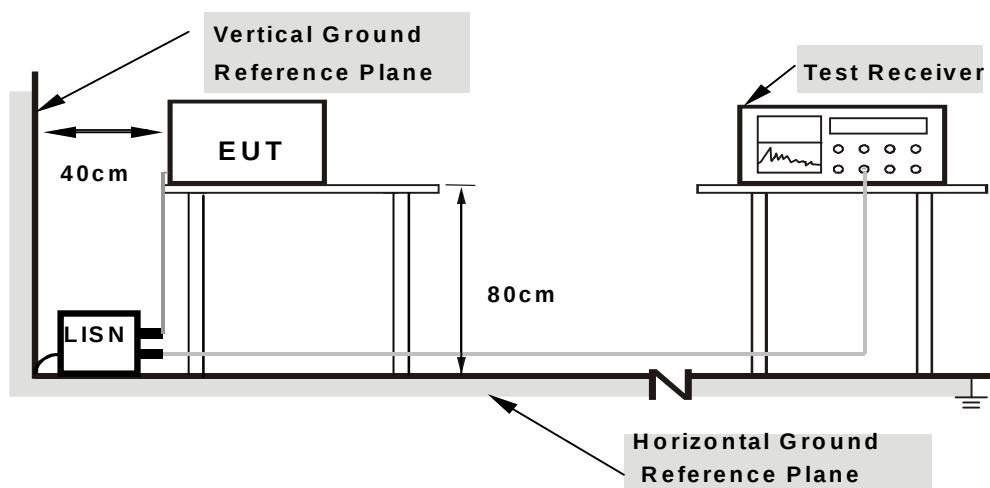
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 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).

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

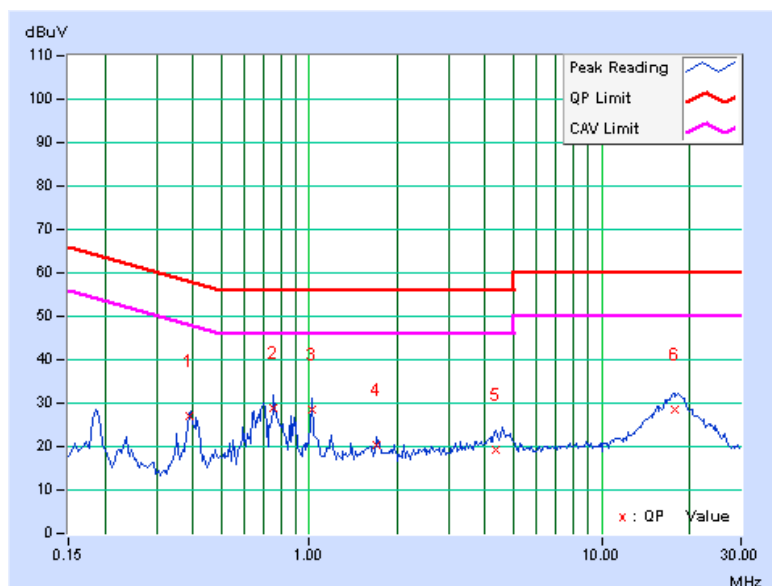
4.2.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: 802.11gn (20MHz) + Bluetooth

CHANNEL	CH 06 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 1		

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	0.391	0.24	26.88	-	27.12	-	58.04	48.04	-30.92	-
2	0.757	0.26	28.74	-	29.00	-	56.00	46.00	-27.00	-
3	1.027	0.27	28.40	-	28.67	-	56.00	46.00	-27.33	-
4	1.698	0.31	20.03	-	20.34	-	56.00	46.00	-35.66	-
5	4.351	0.51	18.84	-	19.35	-	56.00	46.00	-36.65	-
6	17.831	1.24	27.22	-	28.46	-	60.00	50.00	-31.54	-

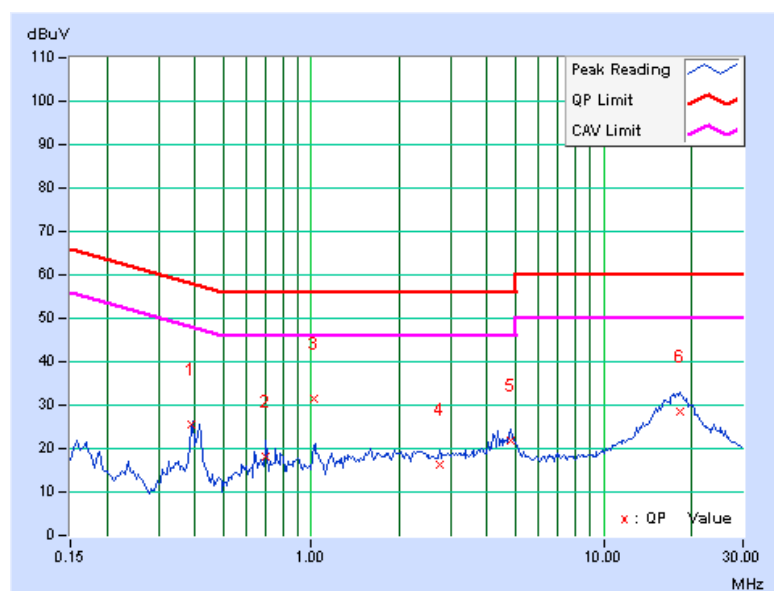
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



CHANNEL	CH 06 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 2		

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	0.391	0.25	25.24	-	25.49	-	58.04	48.04	-32.55	-
2	0.700	0.27	18.01	-	18.28	-	56.00	46.00	-37.72	-
3	1.023	0.28	31.22	-	31.50	-	56.00	46.00	-24.50	-
4	2.761	0.38	15.74	-	16.12	-	56.00	46.00	-39.88	-
5	4.791	0.50	21.25	-	21.75	-	56.00	46.00	-34.25	-
6	18.227	0.95	27.52	-	28.47	-	60.00	50.00	-31.53	-

- 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.

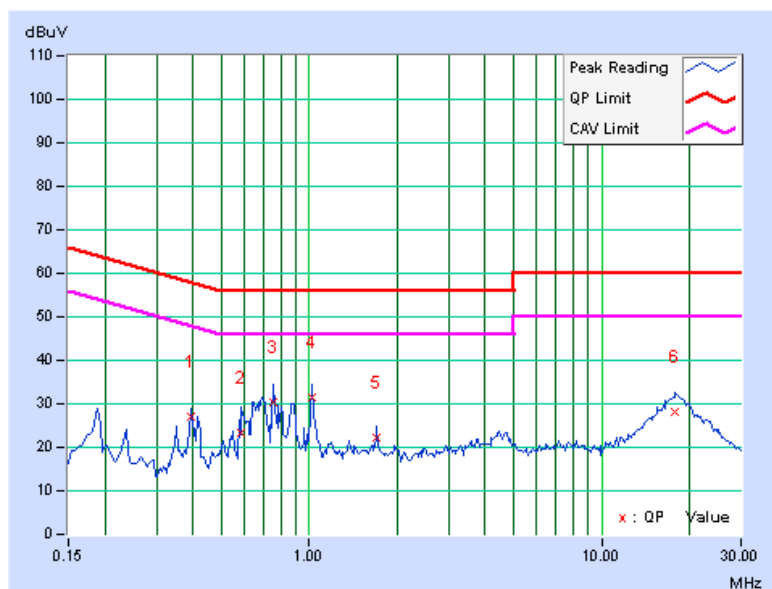


802.11a + Bluetooth

CHANNEL	CH 48 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 1		

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	0.396	0.24	26.84	-	27.08	-	57.95	47.95	-30.87	-
2	0.587	0.25	23.03	-	23.28	-	56.00	46.00	-32.72	-
3	0.756	0.26	30.25	-	30.51	-	56.00	46.00	-25.49	-
4	1.022	0.27	31.12	-	31.39	-	56.00	46.00	-24.61	-
5	1.696	0.31	21.79	-	22.10	-	56.00	46.00	-33.90	-
6	17.925	1.24	27.08	-	28.32	-	60.00	50.00	-31.68	-

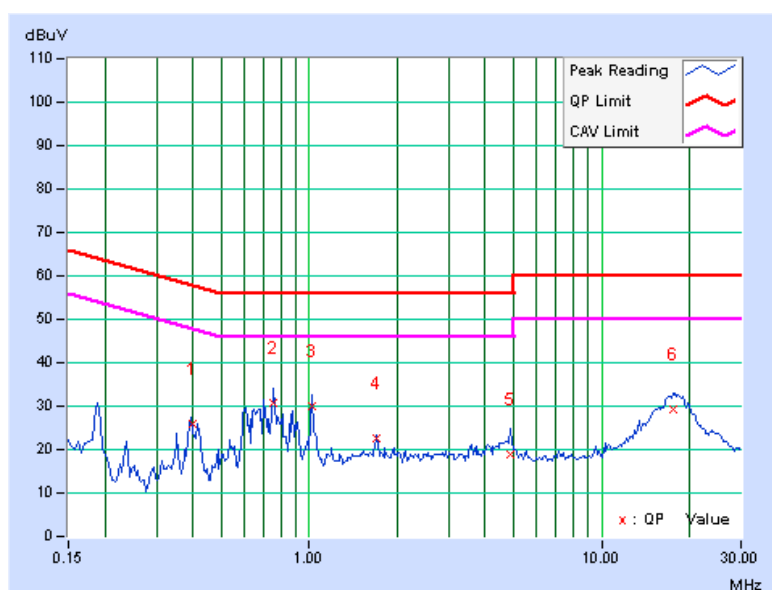
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



CHANNEL	CH 48 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 2		

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	0.397	0.25	25.71	-	25.96	-	57.91	47.91	-31.95	-
2	0.752	0.27	30.42	-	30.69	-	56.00	46.00	-25.31	-
3	1.028	0.28	29.89	-	30.17	-	56.00	46.00	-25.83	-
4	1.697	0.31	22.39	-	22.70	-	56.00	46.00	-33.30	-
5	4.851	0.50	18.32	-	18.82	-	56.00	46.00	-37.18	-
6	17.657	0.93	28.18	-	29.11	-	60.00	50.00	-30.89	-

- 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.

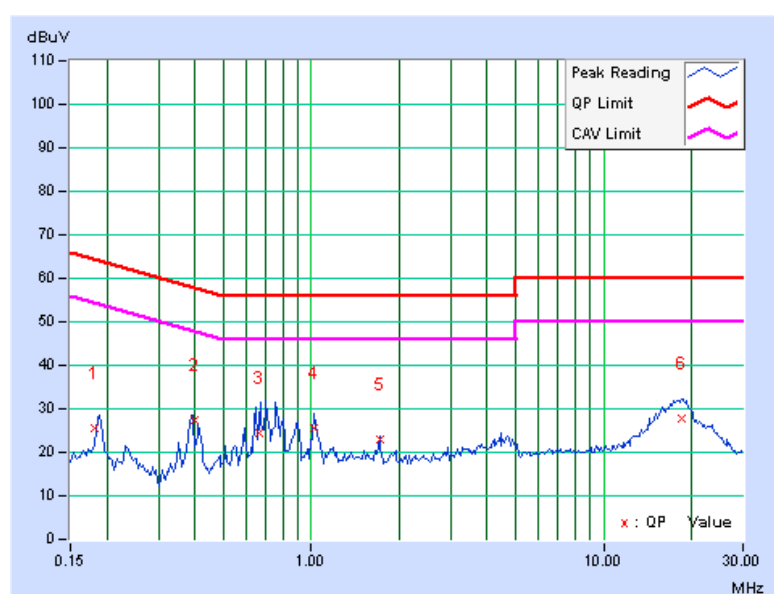


802.11a + Bluetooth

CHANNEL	CH 100 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 1		

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	0.181	0.17	25.36	-	25.53	-	64.43	54.43	-38.91	-
2	0.397	0.24	27.01	-	27.25	-	57.91	47.91	-30.66	-
3	0.667	0.25	24.25	-	24.50	-	56.00	46.00	-31.50	-
4	1.027	0.27	25.25	-	25.52	-	56.00	46.00	-30.48	-
5	1.710	0.31	22.58	-	22.89	-	56.00	46.00	-33.11	-
6	18.519	1.27	26.35	-	27.62	-	60.00	50.00	-32.38	-

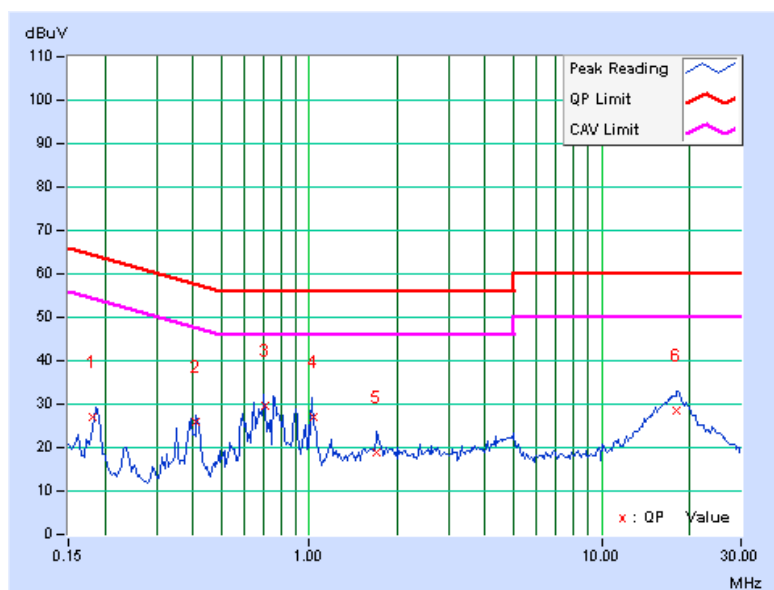
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



CHANNEL	CH 100 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 2		

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	0.181	0.18	26.84	-	27.02	-	64.43	54.43	-37.42	-
2	0.411	0.25	25.52	-	25.77	-	57.62	47.62	-31.85	-
3	0.707	0.27	29.54	-	29.81	-	56.00	46.00	-26.19	-
4	1.028	0.28	26.69	-	26.97	-	56.00	46.00	-29.03	-
5	1.701	0.32	18.42	-	18.74	-	56.00	46.00	-37.26	-
6	18.153	0.95	27.74	-	28.69	-	60.00	50.00	-31.31	-

- 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.

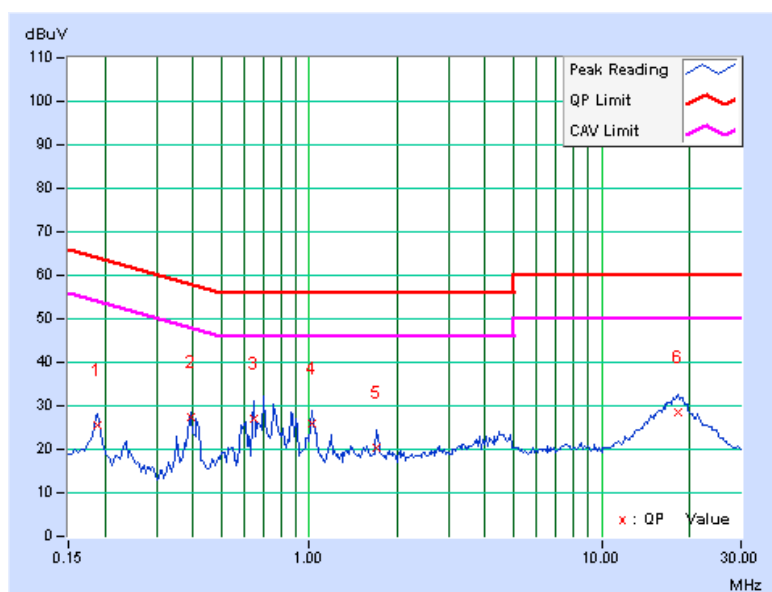


802.11an (40MHz) + Bluetooth

CHANNEL	CH 159 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 1		

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	0.189	0.17	25.23	-	25.40	-	64.06	54.06	-38.67	-
2	0.393	0.24	27.01	-	27.25	-	58.01	48.01	-30.76	-
3	0.650	0.25	26.82	-	27.07	-	56.00	46.00	-28.93	-
4	1.015	0.27	25.72	-	25.99	-	56.00	46.00	-30.01	-
5	1.707	0.31	20.15	-	20.46	-	56.00	46.00	-35.54	-
6	18.172	1.25	27.14	-	28.39	-	60.00	50.00	-31.61	-

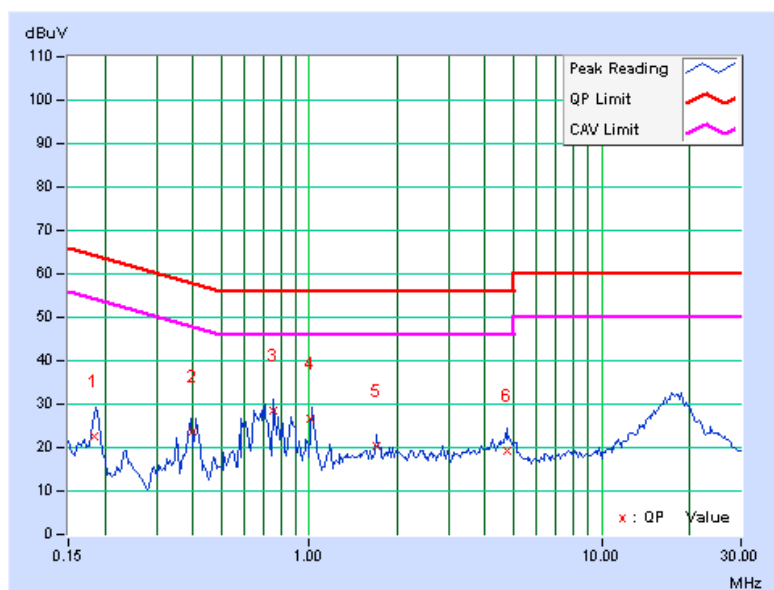
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



CHANNEL	CH 159 + CH 78	6dB BANDWIDTH	9kHz
PHASE	Line 2		

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	0.183	0.18	22.52	-	22.70	-	64.33	54.33	-41.63	-
2	0.398	0.25	23.59	-	23.84	-	57.90	47.90	-34.06	-
3	0.753	0.27	28.19	-	28.46	-	56.00	46.00	-27.54	-
4	1.015	0.28	26.52	-	26.80	-	56.00	46.00	-29.20	-
5	1.707	0.32	19.91	-	20.23	-	56.00	46.00	-35.77	-
6	4.732	0.49	18.82	-	19.31	-	56.00	46.00	-36.69	-

- 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

Email: service.adt@tw.bureauveritas.com

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---