

FCC TEST REPORT

(PART 15, SUBPART C, 15.247)

REPORT NO.: RF950124L20
MODEL NO.: G410
RECEIVED: Feb. 08, 2006
TESTED: Feb. 13 ~ Feb. 16, 2006
ISSUED: Feb. 23, 2006

APPLICANT: ELITEGROUP COMPUTER SYSTEMS
CO., LTD.

ADDRESS: 2F. No. 240, Sec. 1, Nei Hu Road, Taipei,
Taiwan 114, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou
Hsiang 244, Taipei Hsien, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei
Shan Hsiang, Taoyuan Hsien 333, Taiwan,
R.O.C.

This test report consists of 169 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by CNLA, A2LA or any government agencies. The test results in the report only apply to the tested sample.



Table of Contents

1.	CERTIFICATION	6
2.	SUMMARY OF TEST RESULTS	7
2.1	MEASUREMENT UNCERTAINTY	8
3.	GENERAL INFORMATION	9
3.1	GENERAL DESCRIPTION OF EUT	9
3.2	DESCRIPTION OF TEST MODES	11
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	13
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	14
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	19
3.4	DESCRIPTION OF SUPPORT UNITS	19
4.	TEST TYPES AND RESULTS (FOR 802.11b & g 2412~2462MHz BAND)	20
4.1	CONDUCTED EMISSION MEASUREMENT	20
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	20
4.1.2	TEST INSTRUMENTS	20
4.1.3	TEST PROCEDURES	21
4.1.4	DEVIATION FROM TEST STANDARD	21
4.1.5	TEST SETUP	22
4.1.6	EUT OPERATING CONDITIONS	22
4.1.7	TEST RESULTS	23
4.2	RADIATED EMISSION MEASUREMENT	35
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	35
4.2.2	TEST INSTRUMENTS	36
4.2.3	TEST PROCEDURES	37
4.2.4	DEVIATION FROM TEST STANDARD	37
4.2.5	TEST SETUP	38
4.2.6	EUT OPERATING CONDITIONS	38
4.2.7	TEST RESULTS	39
4.3	6dB BANDWIDTH MEASUREMENT	47
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	47
4.3.2	TEST INSTRUMENTS	47
4.3.3	TEST PROCEDURE	48
4.3.4	DEVIATION FROM TEST STANDARD	48
4.3.5	TEST SETUP	48
4.3.6	EUT OPERATING CONDITIONS	48
4.3.7	TEST RESULTS	49
4.4	MAXIMUM PEAK OUTPUT POWER	55
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	55
4.4.2	INSTRUMENTS	55
4.4.1	TEST PROCEDURES	56
4.4.2	DEVIATION FROM TEST STANDARD	56
4.4.3	TEST SETUP	56
4.4.4	EUT OPERATING CONDITIONS	56
4.4.3	TEST RESULTS	57
4.5	POWER SPECTRAL DENSITY MEASUREMENT	58
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	58
4.5.2	TEST INSTRUMENTS	58

4.5.3	TEST PROCEDURE.....	59
4.5.4	DEVIATION FROM TEST STANDARD	59
4.5.5	TEST SETUP	59
4.5.6	EUT OPERATING CONDITION	59
4.5.7	TEST RESULTS	60
4.6	BAND EDGES MEASUREMENT	66
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	66
4.6.2	TEST INSTRUMENTS.....	66
4.6.3	TEST PROCEDURE.....	66
4.6.4	DEVIATION FROM TEST STANDARD	66
4.6.5	EUT OPERATING CONDITION	66
4.6.6	TEST RESULTS	67
4.7	ANTENNA REQUIREMENT	75
4.7.1	STANDARD APPLICABLE	75
4.7.2	ANTENNA CONNECTED CONSTRUCTION.....	75
5.	TEST TYPES AND RESULTS (FOR 802.11a 5745~5825MHz Band)	76
5.1	CONDUCTED EMISSION MEASUREMENT	76
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	76
5.1.2	TEST INSTRUMENTS.....	76
5.1.3	TEST PROCEDURES	77
5.1.4	DEVIATION FROM TEST STANDARD	77
5.1.5	TEST SETUP	78
5.1.6	EUT OPERATING CONDITIONS	78
5.1.7	TEST RESULTS	79
5.2	RADIATED EMISSION MEASUREMENT	83
5.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	83
5.2.2	TEST INSTRUMENTS.....	84
5.2.3	TEST PROCEDURES	85
5.2.4	DEVIATION FROM TEST STANDARD	85
5.2.5	TEST SETUP	86
5.2.6	EUT OPERATING CONDITIONS	86
5.2.7	TEST RESULTS	87
5.3	6dB BANDWIDTH MEASUREMENT	94
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	94
5.3.2	TEST INSTRUMENTS.....	94
5.3.3	TEST PROCEDURE.....	95
5.3.4	DEVIATION FROM TEST STANDARD	95
5.3.5	TEST SETUP	95
5.3.6	EUT OPERATING CONDITIONS	95
5.3.7	TEST RESULTS	96
5.4	MAXIMUM PEAK OUTPUT POWER	99
5.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT.....	99
5.4.2	INSTRUMENTS.....	99
5.4.3	TEST PROCEDURES	100
5.4.4	DEVIATION FROM TEST STANDARD	100
5.4.5	TEST SETUP	100
5.4.6	EUT OPERATING CONDITIONS	100
5.4.7	TEST RESULTS	101
5.5	POWER SPECTRAL DENSITY MEASUREMENT.....	102
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	102

5.5.2	TEST INSTRUMENTS.....	102
5.5.3	TEST PROCEDURE.....	103
5.5.4	DEVIATION FROM TEST STANDARD	103
5.5.5	TEST SETUP	103
5.5.6	EUT OPERATING CONDITION	103
5.5.7	TEST RESULTS	104
5.6	BAND EDGES MEASUREMENT	107
5.6.1	LIMITS OF BAND EDGES MEASUREMENT	107
5.6.2	TEST INSTRUMENTS.....	107
5.6.3	TEST PROCEDURE.....	107
5.6.4	DEVIATION FROM TEST STANDARD	107
5.6.5	EUT OPERATING CONDITION	108
5.6.6	TEST RESULTS	108
5.7	ANTENNA REQUIREMENT	112
5.7.1	STANDARD APPLICABLE	112
5.7.2	ANTENNA CONNECTED CONSTRUCTION.....	112
6.	TEST TYPES AND RESULTS (FOR BLUETOOTH)	113
6.1.1	CONDUCTED EMISSION MEASUREMENT.....	113
6.1.2	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	113
6.1.3	TEST INSTRUMENTS.....	113
6.1.4	TEST PROCEDURES	114
6.1.5	DEVIATION FROM TEST STANDARD	114
6.1.6	TEST SETUP	115
6.1.7	EUT OPERATING CONDITIONS	115
6.1.8	TEST RESULTS	116
6.2	RADIATED EMISSION MEASUREMENT	128
6.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	128
6.2.2	TEST INSTRUMENTS.....	129
6.2.3	TEST PROCEDURES	130
6.2.4	DEVIATION FROM TEST STANDARD	130
6.2.5	TEST SETUP	131
6.2.6	EUT OPERATING CONDITIONS	131
6.2.7	TEST RESULTS	132
6.3	NUMBER OF HOPPING FREQUENCY USED	137
6.3.1	LIMIT OF HOPPING FREQUENCY USED	137
6.3.2	TEST INSTRUMENTS.....	137
6.3.3	TEST PROCEDURES	137
6.3.4	DEVIATION FROM TEST STANDARD	138
6.3.5	TEST SETUP	138
6.3.6	TEST RESULTS	138
6.4	DWELL TIME ON EACH CHANNEL	140
6.4.1	LIMIT OF DWELL TIME USED.....	140
6.4.2	TEST INSTRUMENTS.....	140
6.4.3	TEST PROCEDURES	140
6.4.4	DEVIATION FROM TEST STANDARD	140
6.4.5	TEST SETUP	141
6.4.6	TEST RESULTS	141
6.5	CHANNEL BANDWIDTH.....	145
6.5.1	LIMITS OF CHANNEL BANDWIDTH	145
6.5.2	TEST INSTRUMENTS.....	145

6.5.3	TEST PROCEDURE.....	145
6.5.4	DEVIATION FROM TEST STANDARD	145
6.5.5	TEST SETUP	146
6.5.6	EUT OPERATING CONDITION	146
6.5.7	TEST RESULTS	147
6.6	HOPPING CHANNEL SEPARATION	150
6.6.1	LIMIT OF HOPPING CHANNEL SEPARATION	150
6.6.2	TEST INSTRUMENTS.....	150
6.6.3	TEST PROCEDURES	150
6.6.4	DEVIATION FROM TEST STANDARD	150
6.6.5	TEST SETUP	150
6.6.6	TEST RESULTS	151
6.7	MAXIMUM PEAK OUTPUT POWER	154
6.7.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	154
6.7.2	TEST INSTRUMENTS.....	154
6.7.3	TEST PROCEDURES	154
6.7.4	DEVIATION FROM TEST STANDARD	154
6.7.5	TEST SETUP	155
6.7.6	EUT OPERATING CONDITION	155
6.7.7	TEST RESULTS	156
6.8	BAND EDGES MEASUREMENT	159
6.8.1	LIMITS OF BAND EDGES MEASUREMENT	159
6.8.2	TEST INSTRUMENTS.....	159
6.8.3	TEST PROCEDURE.....	159
6.8.4	DEVIATION FROM TEST STANDARD	159
6.8.5	EUT OPERATING CONDITION	159
6.8.6	TEST RESULTS	160
6.9	ANTENNA REQUIREMENT	163
6.9.1	STANDARD APPLICABLE	163
6.9.2	ANTENNA CONNECTED CONSTRUCTION.....	163
7.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	164
8.	INFORMATION ON THE TESTING LABORATORIES	168
	APPENDIX-A	A-1

1. CERTIFICATION

PRODUCT: Notebook

MODEL: G410

BRAND: ECS

APPLICANT: ELITEGROUP COMPUTER SYSTEMS CO., LTD.

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Feb. 13 ~ Feb. 16, 2006

STANDARDS: FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment has been tested by **Advance Data Technology Corporation**, 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 : Rebecca Huang , **DATE:** Feb. 23, 2006
Rebecca Huang

TECHNICAL
ACCEPTANCE : Long Chen , **DATE:** Feb. 23, 2006
Responsible for RF Long Chen

APPROVED BY : Gary Chang , **DATE:** Feb. 23, 2006
Gary Chang / Supervisor

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For WLAN Function

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.79dB at 0.201MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -3.98dB at 2483.50MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

For Bluetooth Function

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -16.51dB at 0.201MHz
15.247 (a) (1) (iii)	Number of Hopping Frequency Used Spec.: At least 15 channels	PASS	Meet the requirement of limit
15.247 (a) (1) (iii)	Dwell Time on Each Channel Spec.: Max. 0.4 second within 31.6 second	PASS	Meet the requirement of limit
15.247 (a) (1)	Hopping Channel Separation Spec. : Min. 25 kHz or 20 dB bandwidth, which ever is greater	PASS	Meet the requirement of limit
15.247 (a) (1)	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	NA	NA
15.247 (b)	Maximum Peak Output Power Spec.: max. 30dBm	PASS	Meet the requirement of limit
15.247 (d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -5.25dB at 912.53MHz
15.247 (d)	Band Edge Measurement	PASS	Meet the requirement of limit

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:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.55 dB
	200MHz ~1000MHz	3.58 dB
	1GHz ~ 18GHz	1.10 dB
	18GHz ~ 40GHz	0.91 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	Notebook
MODEL NO.	G410
FCC ID	SA6G410IABGHBT
POWER SUPPLY	19.0Vdc from AC Adapter
MODULATION TYPE	Wireless LAN: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM Bluetooth: GFSK for FHSS
MODULATION TECHNOLOGY	DSSS, OFDM, FHSS
TRANSFER RATE	Wireless LAN: 802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps Bluetooth: 723Kbps
FREQUENCY RANGE	Wireless LAN: 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.180 ~ 5.320GHz, 5.745 ~ 5.825GHz Bluetooth: 2.402 ~ 2.480GHz
NUMBER OF CHANNEL	Wireless LAN: 802.11b & 802.11g: 11 802.11a: 13 Bluetooth: 79
CHANNEL SPACING	Wireless LAN: 802.11b & 802.11g: 5MHz 802.11a: 20MHz Bluetooth: 1MHz
OUTPUT POWER	Wireless LAN: 64.121mW for 802.11b 64.121mW for 802.11g 32.063mW for 5.180 ~ 5.320GHz 63.680mW for 5.745 ~ 5.825GHz Bluetooth: 1.084mW
ANTENNA TYPE	For 2.4GHz Left: PIFA antenna with -1.54486dBi gain Right: PIFA antenna with -1.09449dBi gain For 5.0GHz Left: PIFA antenna with -0.84897 dBi gain Right: PIFA antenna with -3.03579Bi gain For Bluetooth PIFA antenna with -1.51038dBi gain
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a Notebook with wireless LAN and bluetooth functions.
2. The adapter were operated with following power adapters:

BRAND:	LITE-ON TECHNOLOGY CORPORATION
MODEL:	PA-1650-02
INPUT:	100-240Vac, 50-60Hz, 1.6A
OUTPUT:	19Vdc, 3.42A
POWER LINE:	AC 1.8m non-shielded cable without core DC 1.6m non-shielded cable with one core

BRAND:	LI SHIN INTERNATIONAL ENTERPRISE CORP.
MODEL:	0335A1965
INPUT:	100-240Vac, 50-60Hz, 1.7A
OUTPUT:	19Vdc, 3.42A
POWER LINE:	AC 1.8m non-shielded cable without core DC 1.6m non-shielded cable with one core

3. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
4. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 channels are provided to the EUT for wireless LAN function:

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

79 channels are provided to this EUT for bluetooth function:

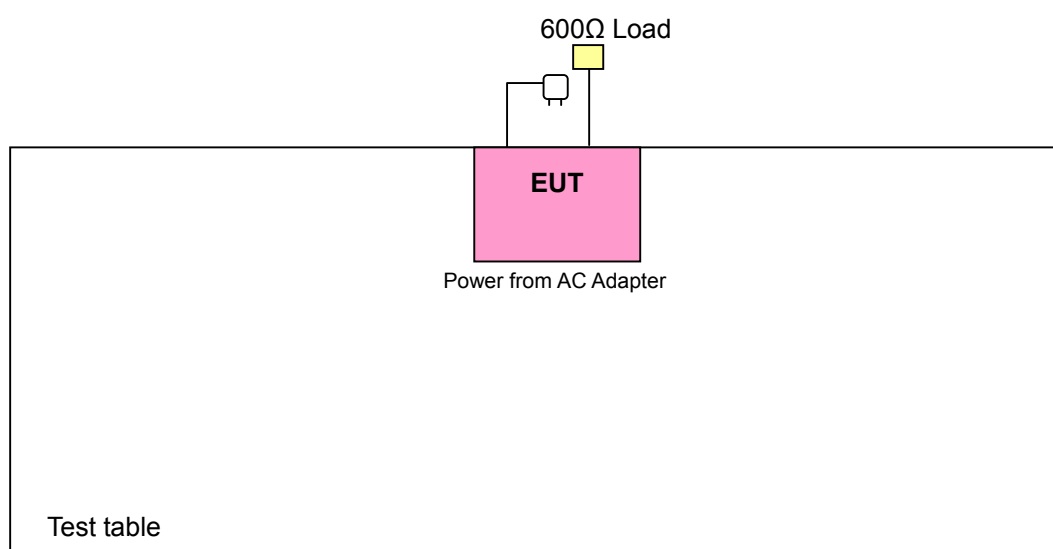
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2431	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

Operated in 5745 ~ 5825MHz band:

5 channels are provided to this EUT for wireless LAN function:

CHANNEL	FREQUENCY
1	5745 MHz
2	5765 MHz
3	5785 MHz
4	5805 MHz
5	5825 MHz

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR WIRELESS LAN FUNCTION:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
A	√	√	√	√	powered by the adapter model: PA-1650-02
B	√	√	-	-	powered by the adapter model: 0335A1965

Where PLC: Power Line Conducted Emission
RE≥1G: Radiated Emission above 1GHz

RE<1G RE: Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

NOTE: “-” means no effect.

Power Line 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.

EUT CONFIGURE MODE	Mode	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
A	802.11a	1 to 5	5	OFDM	BPSK	6
B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
B	802.11a	1 to 5	5	OFDM	BPSK	6

Radiated Emission Test (Below 1 GHz):

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11g	1 to 11	11	OFDM	BPSK	6
A	802.11a	1 to 5	5	OFDM	BPSK	6
B	802.11g	1 to 11	11	OFDM	BPSK	6
B	802.11a	1 to 5	5	OFDM	BPSK	6

Radiated Emission Test (Above 1 GHz):

- ☒ 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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
A	802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6

Bandedge Measurement:

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 5	OFDM	BPSK	6

Antenna Port Conducted Measurement:

- ☒ 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6

FOR BLUETOOTH FUNCTION:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
A	√	√	√	√	powered by the adapter model: PA-1650-02
B	√	√	-	-	powered by the adapter model: 0335A1965

Where PLC: Power Line Conducted Emission
RE≥1G: Radiated Emission above 1GHz

RE<1G RE: Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

NOTE: “-” means no effect.

Power Line 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), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5
B	0 to 78	0, 39, 78	FHSS	GFSK	DH5

Radiated Emission Test (Below 1 GHz):

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	78	FHSS	GFSK	DH5
B	0 to 78	78	FHSS	GFSK	DH5

Radiated Emission Test (Above 1 GHz):

- ☒ 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.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
A	0 to 78	0, 39, 78	FHSS	GFSK	DH5

Bandedge Measurement:

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
0 to 78	0, 78	FHSS	GFSK	DH5

Antenna Port Conducted Measurement:

- ☒ 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	PACKET TYPE
0 to 78	0, 39, 78	FHSS	GFSK	DH5

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. (15.247)

ANSI C63.4-2003

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 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	600Ω Load	NA	NA	NA	NA

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

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

4. TEST TYPES AND RESULTS (FOR 802.11b & g 2412~2462MHz BAND)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 02, 2006
RF signal cable Woken	5D-FB	Cable-HyC02-01	Jan. 06, 2007
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 09, 2007
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 22, 2007
Software ADT	ADT_Cond_V3	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 3.
 3. The VCCI Site Registration No. is C-2047.

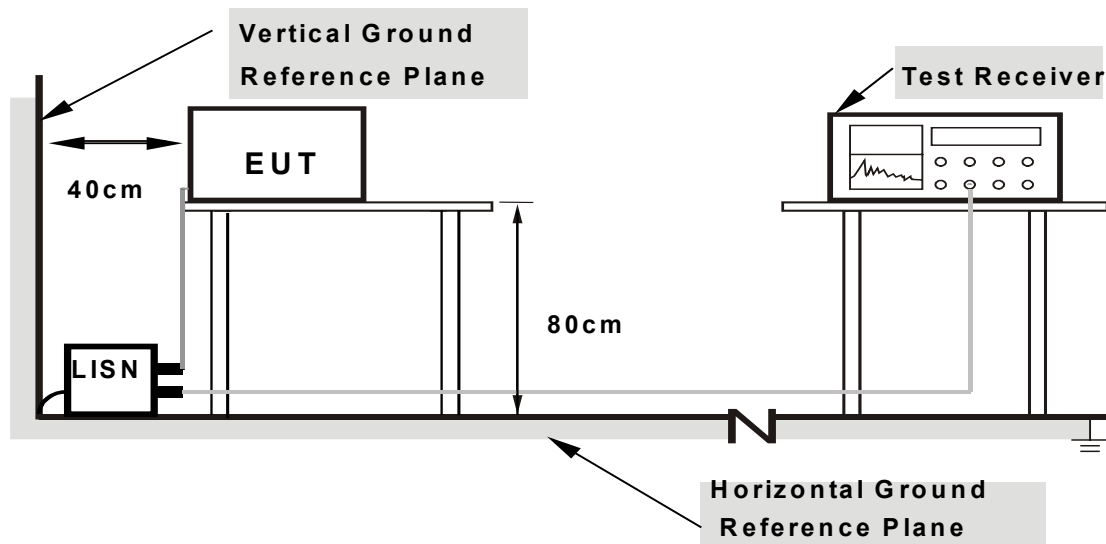
4.1.3 TEST PROCEDURES

- 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.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 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 related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on a testing table.
- b. The EUT ran a test program (provided by manufacturer) to enable all functions under transmission condition continuously at specific channel frequency.
- c. The EUT sent "H" messages to monitor.
- d. Step c was repeated.

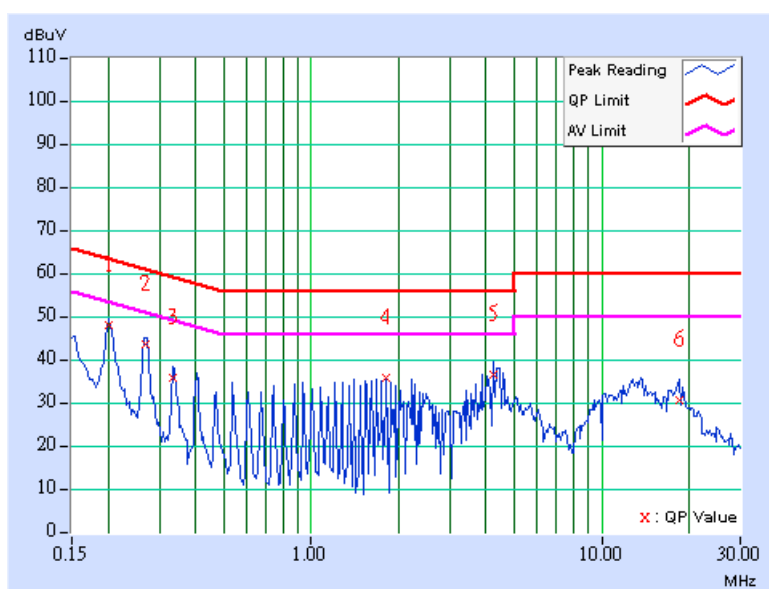
4.1.7 TEST RESULTS

Conducted Worst-Case Data (For Adapter: PA-1650-02)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.201	0.10	47.39	-	47.49	-	63.58	53.58	-16.09	-
2	0.268	0.10	43.13	-	43.23	-	61.19	51.19	-17.96	-
3	0.334	0.10	35.17	-	35.27	-	59.36	49.36	-24.09	-
4	1.814	0.18	35.20	-	35.38	-	56.00	46.00	-20.62	-
5	4.234	0.37	36.03	-	36.40	-	56.00	46.00	-19.60	-
6	18.609	0.58	30.18	-	30.76	-	60.00	50.00	-29.24	-

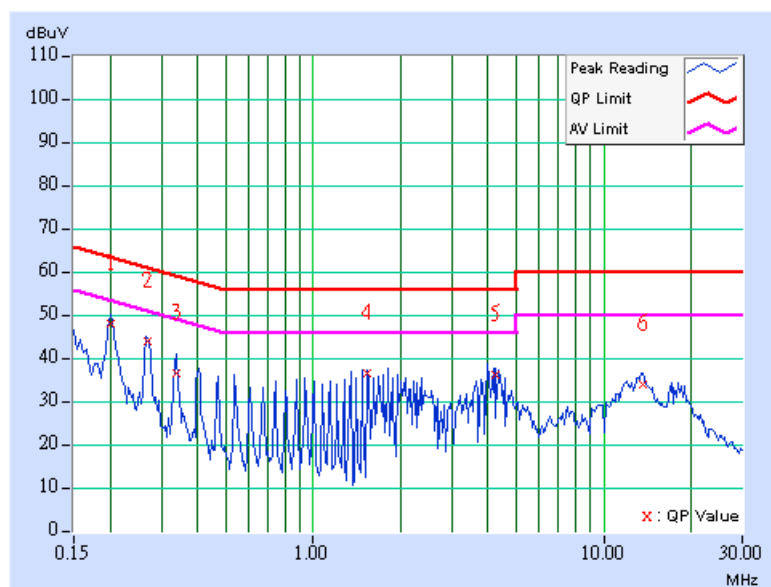
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.201	0.10	47.69	-	47.79	-	63.58	53.58	-15.79	-
2	0.268	0.10	43.42	-	43.52	-	61.19	51.19	-17.67	-
3	0.338	0.10	36.15	-	36.25	-	59.26	49.26	-23.01	-
4	1.543	0.20	36.14	-	36.34	-	56.00	46.00	-19.66	-
5	4.230	0.37	35.83	-	36.20	-	56.00	46.00	-19.80	-
6	13.563	0.58	33.64	-	34.22	-	60.00	50.00	-25.78	-

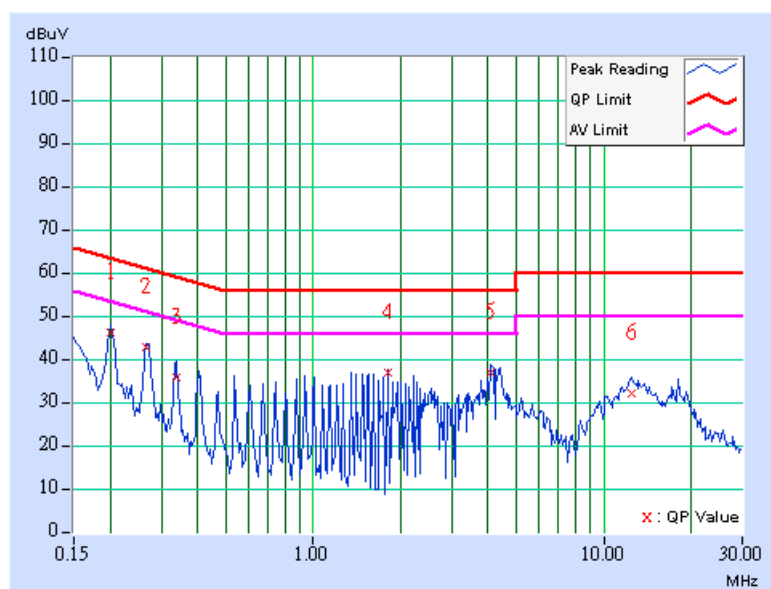
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.201	0.10	45.66	-	45.76	-	63.58	53.58	-17.82	-
2	0.267	0.10	42.33	-	42.43	-	61.20	51.20	-18.77	-
3	0.338	0.10	35.26	-	35.36	-	59.26	49.26	-23.90	-
4	1.813	0.18	36.40	-	36.58	-	56.00	46.00	-19.42	-
5	4.094	0.37	36.64	-	37.01	-	56.00	46.00	-18.99	-
6	12.483	0.49	31.81	-	32.30	-	60.00	50.00	-27.70	-

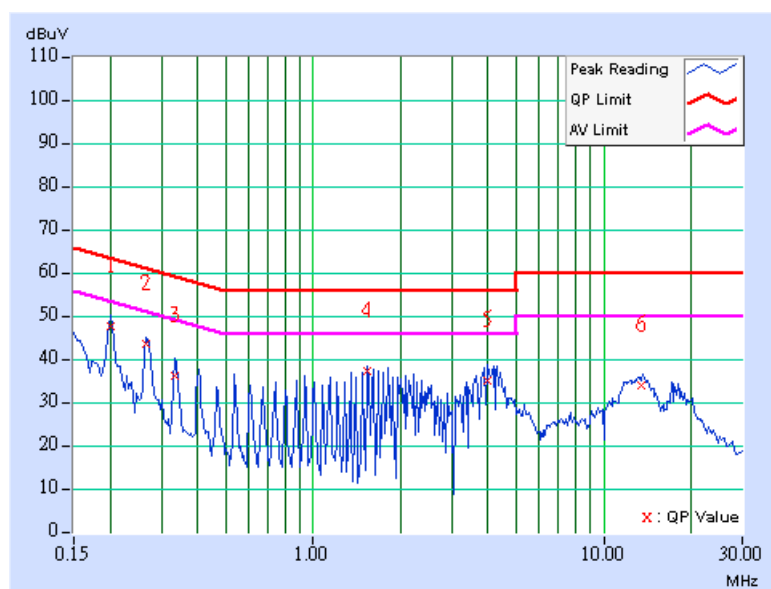
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.10	47.23	-	47.33	-	63.58	53.58	-16.25	-
2	0.267	0.10	43.03	-	43.13	-	61.20	51.20	-18.07	-
3	0.334	0.10	35.90	-	36.00	-	59.36	49.36	-23.36	-
4	1.543	0.20	36.67	-	36.87	-	56.00	46.00	-19.13	-
5	3.961	0.37	34.59	-	34.96	-	56.00	46.00	-21.04	-
6	13.558	0.58	33.54	-	34.12	-	60.00	50.00	-25.88	-

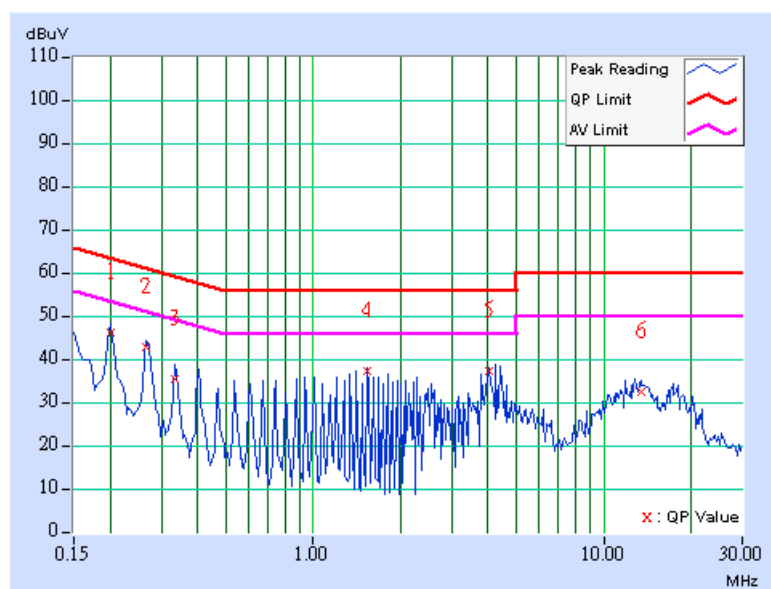
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.201	0.10	45.58	-	45.68	-	63.58	53.58	-17.90	-
2	0.267	0.10	42.33	-	42.43	-	61.20	51.20	-18.77	-
3	0.334	0.10	35.19	-	35.29	-	59.36	49.36	-24.07	-
4	1.543	0.15	36.89	-	37.04	-	56.00	46.00	-18.96	-
5	4.025	0.37	36.70	-	37.07	-	56.00	46.00	-18.93	-
6	13.488	0.55	32.01	-	32.56	-	60.00	50.00	-27.44	-

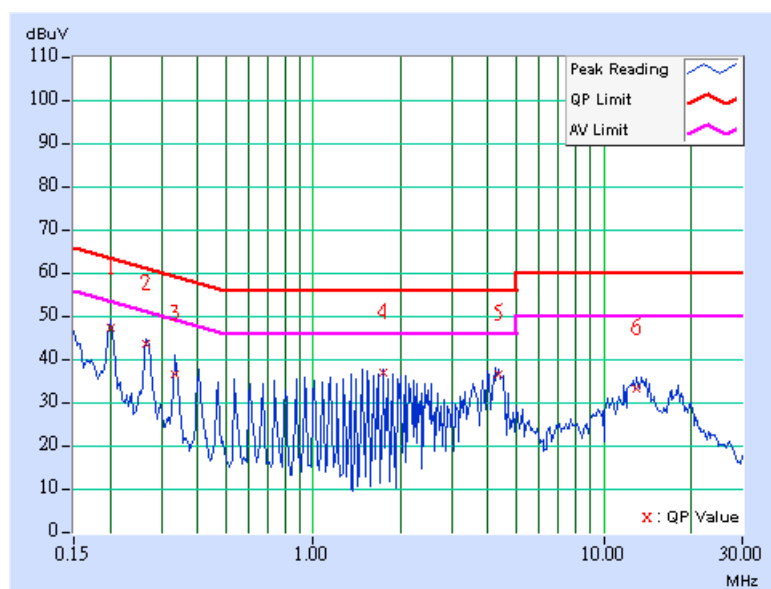
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.201	0.10	46.93	-	47.03	-	63.58	53.58	-16.55	-
2	0.267	0.10	43.01	-	43.11	-	61.20	51.20	-18.09	-
3	0.334	0.10	36.28	-	36.38	-	59.36	49.36	-22.98	-
4	1.746	0.20	36.48	-	36.68	-	56.00	46.00	-19.32	-
5	4.359	0.38	36.07	-	36.45	-	56.00	46.00	-19.55	-
6	13.016	0.56	32.95	-	33.51	-	60.00	50.00	-26.49	-

- 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.

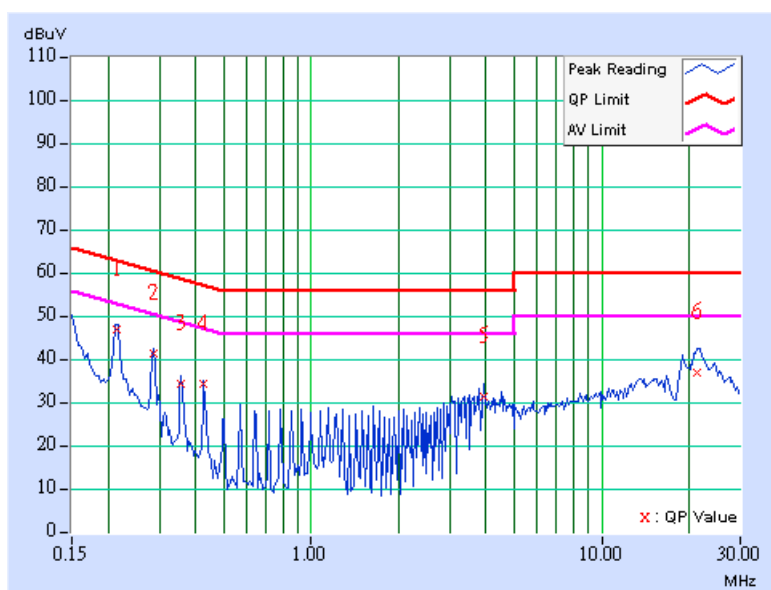


Conducted Worst-Case Data (For Adapter: 0335A1965)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.214	0.10	46.41	-	46.51	-	63.04	53.04	-16.53	-
2	0.287	0.10	40.98	-	41.08	-	60.62	50.62	-19.54	-
3	0.357	0.10	33.66	-	33.76	-	58.80	48.80	-25.04	-
4	0.427	0.10	33.82	-	33.92	-	57.30	47.30	-23.38	-
5	3.926	0.36	30.71	-	31.07	-	56.00	46.00	-24.93	-
6	21.344	0.66	36.35	-	37.01	-	60.00	50.00	-22.99	-

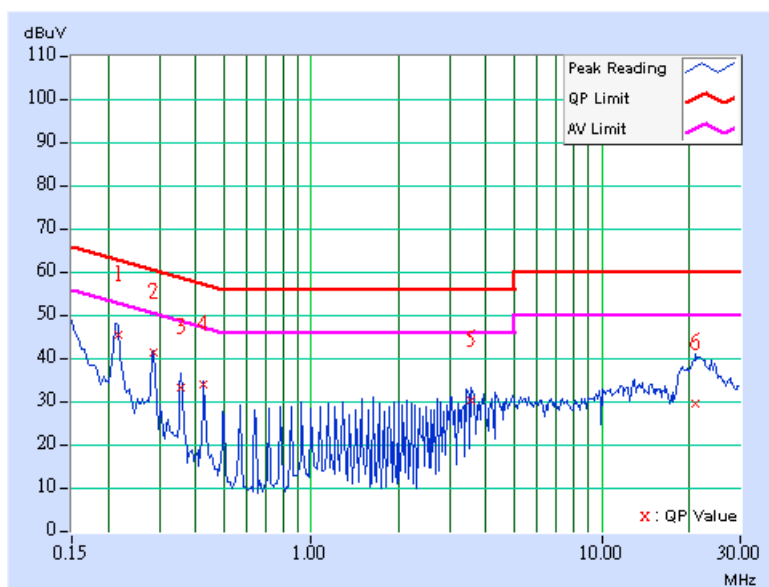
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.217	0.10	45.00	-	45.10	-	62.95	52.95	-17.85	-
2	0.287	0.10	40.75	-	40.85	-	60.62	50.62	-19.77	-
3	0.357	0.10	32.83	-	32.93	-	58.80	48.80	-25.87	-
4	0.427	0.10	33.40	-	33.50	-	57.30	47.30	-23.80	-
5	3.569	0.33	29.63	-	29.96	-	56.00	46.00	-26.04	-
6	21.039	0.62	29.14	-	29.76	-	60.00	50.00	-30.24	-

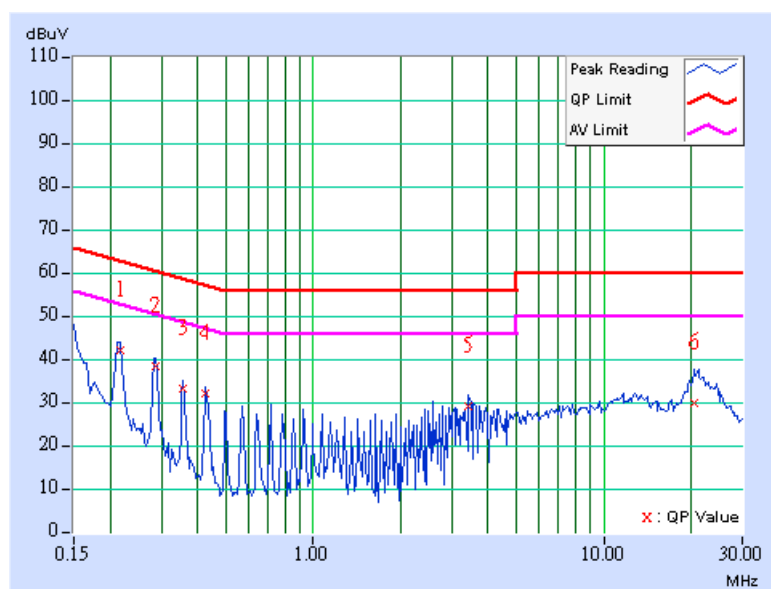
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.216	0.10	41.53	-	41.63	-	62.96	52.96	-21.33	-
2	0.288	0.10	38.06	-	38.16	-	60.59	50.59	-22.43	-
3	0.357	0.10	32.61	-	32.71	-	58.80	48.80	-26.09	-
4	0.428	0.10	31.71	-	31.81	-	57.30	47.30	-25.49	-
5	3.428	0.32	28.54	-	28.86	-	56.00	46.00	-27.14	-
6	20.552	0.60	29.52	-	30.12	-	60.00	50.00	-29.88	-

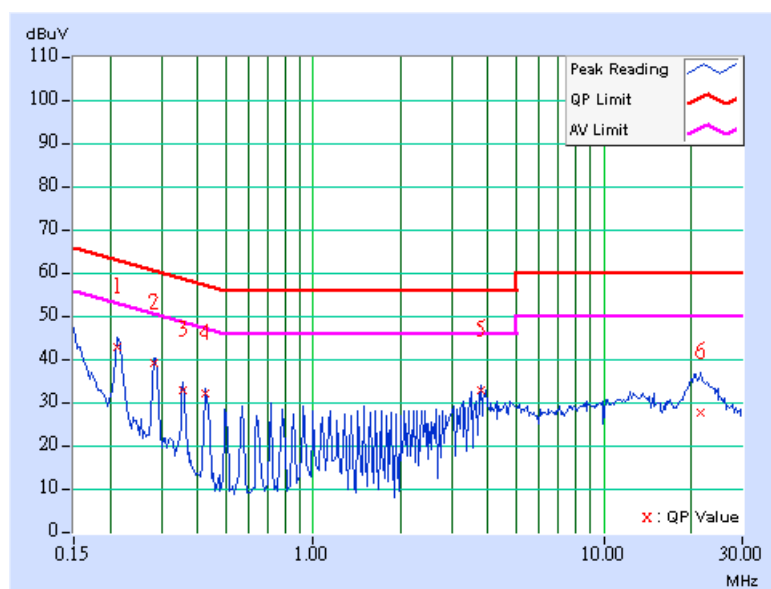
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.213	0.10	42.24	-	42.34	-	63.11	53.11	-20.77	-
2	0.284	0.10	38.46	-	38.56	-	60.69	50.69	-22.13	-
3	0.357	0.10	32.38	-	32.48	-	58.80	48.80	-26.32	-
4	0.427	0.10	31.55	-	31.65	-	57.30	47.30	-25.65	-
5	3.779	0.35	32.15	-	32.50	-	56.00	46.00	-23.50	-
6	21.664	0.65	27.08	-	27.73	-	60.00	50.00	-32.27	-

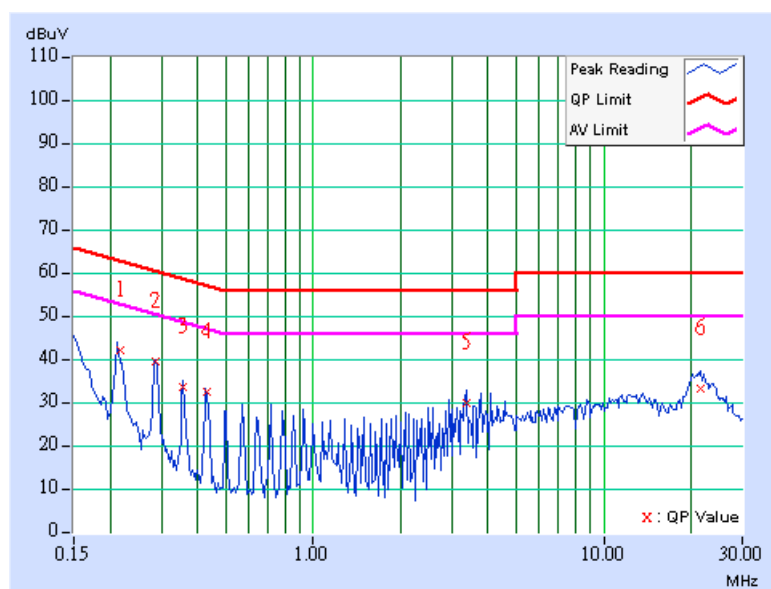
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.216	0.10	41.63	-	41.73	-	62.96	52.96	-21.23	-
2	0.287	0.10	38.81	-	38.91	-	60.62	50.62	-21.71	-
3	0.357	0.10	33.05	-	33.15	-	58.80	48.80	-25.65	-
4	0.429	0.10	31.77	-	31.87	-	57.28	47.28	-25.41	-
5	3.358	0.32	29.21	-	29.53	-	56.00	46.00	-26.47	-
6	21.426	0.67	32.63	-	33.30	-	60.00	50.00	-26.70	-

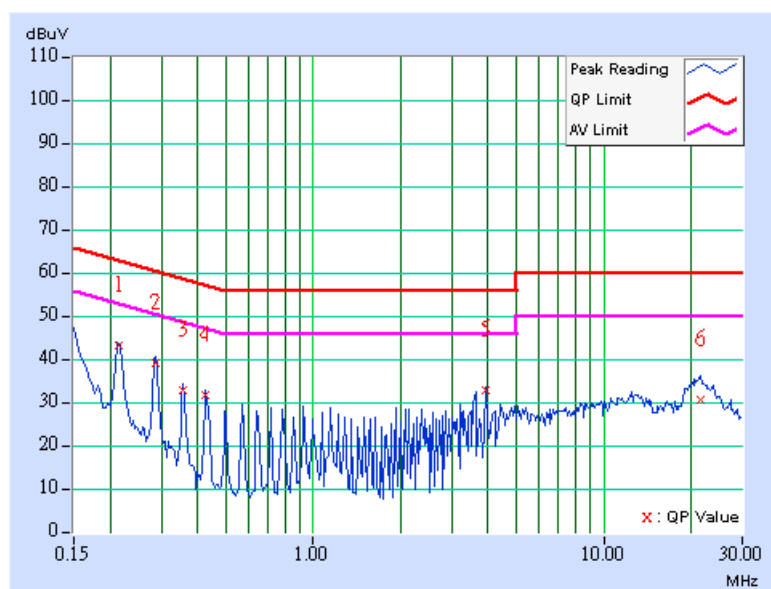
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chiu		

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	0.215	0.10	42.58	-	42.68	-	63.01	53.01	-20.33	-
2	0.287	0.10	38.61	-	38.71	-	60.62	50.62	-21.91	-
3	0.357	0.10	32.38	-	32.48	-	58.80	48.80	-26.32	-
4	0.427	0.10	31.31	-	31.41	-	57.30	47.30	-25.89	-
5	3.930	0.36	32.50	-	32.86	-	56.00	46.00	-23.14	-
6	21.496	0.64	30.20	-	30.84	-	60.00	50.00	-29.16	-

- 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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	May. 19, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Dec. 05, 2006
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Jun. 01, 2006
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 08, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 19, 2007
Preamplifier Agilent	8447D	2944A10633	Nov. 04, 2006
Preamplifier Agilent	8449B	3008A01964	Oct. 30, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214377/4	Dec. 13, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Dec. 13, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA
26GHz ~ 40GHz Amplifier	AMF-6F-2600400	923362	Mar. 13, 2006

- 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 2.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The VCCI Site Registration No. is R-237.
5. The IC Site Registration No. is IC4924-3.

4.2.3 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.

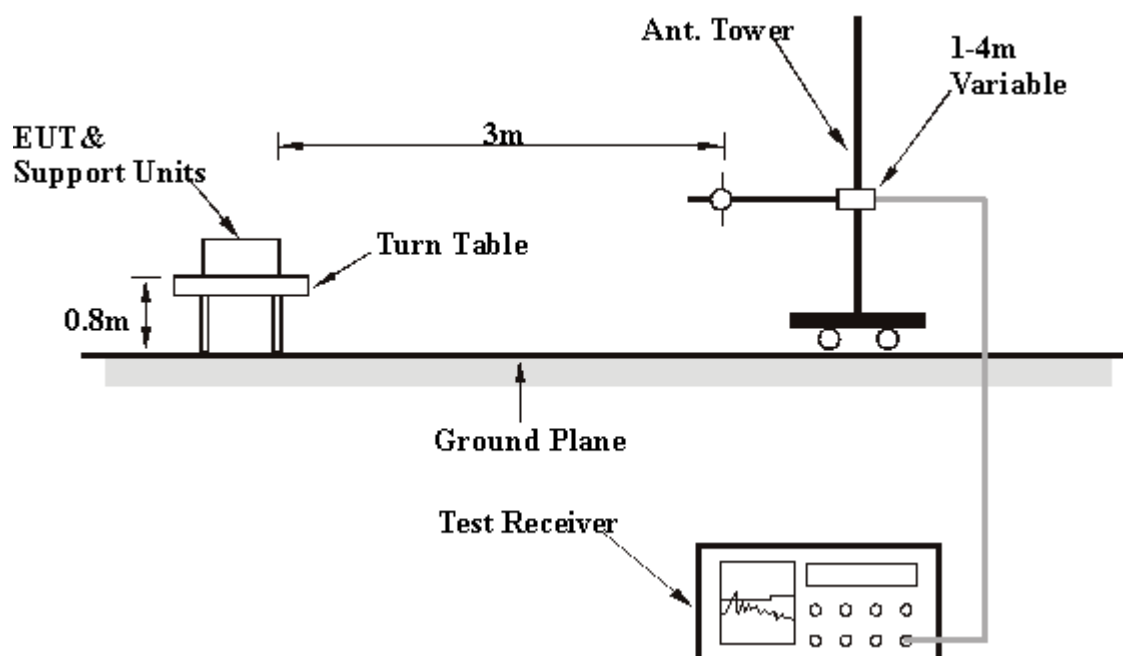
NOTE:

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 and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth are 100 Hz(for 802.11b) and 1kHz (for 802.11g) for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

Below 1GHz Worst-Case Data (For Adapter: PA-1650-02)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Jay Hsu		

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	204.95	27.73 QP	43.50	-15.77	1.00 H	64	16.41	11.32
2	272.99	30.16 QP	46.00	-15.84	1.50 H	100	15.65	14.50
3	341.02	33.15 QP	46.00	-12.85	1.50 H	124	16.61	16.54
4	432.38	34.81 QP	46.00	-11.19	1.50 H	133	15.94	18.87
5	531.52	30.20 QP	46.00	-15.80	1.50 H	133	9.16	21.03
6	696.75	28.17 QP	46.00	-17.83	1.00 H	187	3.92	24.25
7	900.86	31.57 QP	46.00	-14.43	1.00 H	265	3.97	27.59

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	341.02	30.57 QP	46.00	-15.43	1.50 V	310	14.03	16.54
2	432.38	30.86 QP	46.00	-15.14	1.50 V	52	11.99	18.87
3	475.15	31.03 QP	46.00	-14.97	1.00 V	322	11.20	19.83
4	498.48	30.16 QP	46.00	-15.84	1.50 V	52	9.73	20.43
5	533.47	33.37 QP	46.00	-12.63	1.00 V	235	12.30	21.07
6	599.56	31.09 QP	46.00	-14.91	1.00 V	235	7.96	23.13
7	751.18	30.65 QP	46.00	-15.35	1.00 V	10	4.35	26.30
8	889.20	32.96 QP	46.00	-13.04	1.50 V	244	5.48	27.48

- 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.

Below 1GHz Worst-Case Data (For Adapter: 0335A1965)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Jay Hsu		

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	272.99	31.55 QP	46.00	-14.45	1.50 H	145	17.05	14.50
2	341.02	31.28 QP	46.00	-14.72	1.50 H	64	14.74	16.54
3	432.38	30.92 QP	46.00	-15.08	1.00 H	325	12.05	18.87
4	531.52	30.36 QP	46.00	-15.64	1.00 H	325	9.33	21.03
5	751.18	28.58 QP	46.00	-17.42	1.50 H	286	2.29	26.30
6	828.94	30.16 QP	46.00	-15.84	1.50 H	64	3.23	26.94
7	900.86	31.04 QP	46.00	-14.96	1.50 H	238	3.44	27.59
8	933.91	28.42 QP	46.00	-17.58	1.50 H	175	0.32	28.10

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	119.42	25.67 QP	43.50	-17.83	1.00 V	49	14.59	11.08
2	148.58	31.38 QP	43.50	-12.12	1.00 V	4	17.87	13.51
3	341.02	31.10 QP	46.00	-14.90	1.00 V	298	14.57	16.54
4	409.06	30.06 QP	46.00	-15.94	1.50 V	259	11.60	18.46
5	432.38	31.28 QP	46.00	-14.72	1.50 V	145	12.41	18.87
6	477.09	30.25 QP	46.00	-15.75	1.50 V	181	10.37	19.88
7	533.47	31.99 QP	46.00	-14.01	1.00 V	313	10.93	21.07
8	576.23	28.69 QP	46.00	-17.31	1.50 V	181	6.39	22.30
9	751.18	28.70 QP	46.00	-17.30	1.00 V	10	2.40	26.30
10	830.88	29.67 QP	46.00	-16.33	1.50 V	259	2.72	26.95
11	863.93	29.59 QP	46.00	-16.41	1.50 V	181	2.33	27.26
12	945.57	29.91 QP	46.00	-16.09	1.50 V	145	1.64	28.27

- 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.

802.11b DSSS modulation

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	DBPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	2390.00	46.55 PK	74.00	-27.45	1.00 H	311	14.64	31.91
1	2390.00	43.25 AV	54.00	-10.75	1.00 H	311	11.34	31.91
2	*2412.00	104.15 PK			1.00 H	318	72.11	32.04
2	*2412.00	100.47 AV			1.00 H	318	68.43	32.04
3	4824.00	45.18 PK	74.00	-28.82	1.00 H	325	7.67	37.51
3	4824.00	34.01 AV	54.00	-19.99	1.00 H	325	-3.50	37.51
4	7236.00	49.12 PK	74.00	-24.88	1.02 H	315	5.20	43.92
4	7236.00	39.58 AV	54.00	-14.42	1.02 H	315	-4.34	43.92

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	2390.00	47.96 PK	74.00	-26.04	1.00 V	122	16.05	31.91
1	2390.00	44.40 AV	54.00	-9.60	1.00 V	122	12.49	31.91
2	*2412.00	105.96 PK			1.00 V	122	73.92	32.04
2	*2412.00	102.40 AV			1.00 V	122	70.36	32.04
3	4824.00	46.32 PK	74.00	-27.68	1.08 V	12	8.81	37.51
3	4824.00	35.02 AV	54.00	-18.98	1.08 V	12	-2.49	37.51
4	7236.00	50.30 PK	74.00	-23.70	1.05 V	319	6.37	43.92
4	7236.00	40.80 AV	54.00	-13.20	1.05 V	319	-3.13	43.92

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	DBPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	104.22 PK			1.02 H	325	72.02	32.20
1	*2437.00	100.52 AV			1.02 H	325	68.32	32.20
2	4874.00	45.32 PK	74.00	-28.68	1.02 H	352	7.77	37.55
2	4874.00	34.11 AV	54.00	-19.89	1.02 H	352	-3.44	37.55
3	7311.00	49.33 PK	74.00	-24.67	1.00 H	322	5.30	44.03
3	7311.00	39.62 AV	54.00	-14.38	1.00 H	322	-4.41	44.03

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	105.99 PK			1.05 V	128	73.79	32.20
1	*2437.00	102.44 AV			1.05 V	128	70.24	32.20
2	4874.00	46.50 PK	74.00	-27.50	1.02 V	315	8.95	37.55
2	4874.00	35.12 AV	54.00	-18.88	1.02 V	315	-2.43	37.55
3	7311.00	50.12 PK	74.00	-23.88	1.12 V	315	6.09	44.03
3	7311.00	40.65 AV	54.00	-13.35	1.12 V	315	-3.38	44.03

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	DBPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	*2462.00	104.55 PK			1.00 H	348	72.20	32.35
1	*2462.00	100.65 AV			1.00 H	348	68.30	32.35
2	2483.50	47.05 PK	74.00	-26.95	1.00 H	348	14.56	32.49
2	2483.50	43.55 AV	54.00	-10.45	1.00 H	348	11.06	32.49
3	4924.00	45.52 PK	74.00	-28.48	1.00 H	320	7.94	37.58
3	4924.00	34.45 AV	54.00	-19.55	1.00 H	320	-3.13	37.58
4	7386.00	50.10 PK	74.00	-23.90	1.00 H	354	6.12	43.98
4	7386.00	40.09 AV	54.00	-13.91	1.00 H	354	-3.89	43.98

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	*2462.00	106.02 PK			1.05 V	328	73.67	32.35
1	*2462.00	102.51 AV			1.05 V	328	70.16	32.35
2	2483.50	48.11 PK	74.00	-25.89	1.08 V	35	15.62	32.49
2	2483.50	44.65 AV	54.00	-9.35	1.08 V	35	12.16	32.49
3	4924.00	46.58 PK	74.00	-27.42	1.02 V	324	9.00	37.58
3	4924.00	35.49 AV	54.00	-18.51	1.02 V	324	-2.09	37.58
4	7386.00	50.85 PK	74.00	-23.15	1.08 V	329	6.87	43.98
4	7386.00	40.98 AV	54.00	-13.02	1.08 V	329	-3.00	43.98

- 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.

802.11g OFDM modulation

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	2390.00	57.01 PK	74.00	-16.99	1.00 H	32	25.10	31.91
1	2390.00	48.49 AV	54.00	-5.51	1.00 H	32	16.58	31.91
2	*2412.00	102.02 PK			1.00 H	32	69.98	32.04
2	*2412.00	93.49 AV			1.00 H	32	61.45	32.04
3	4824.00	44.85 PK	74.00	-29.15	1.05 H	355	7.34	37.51
3	4824.00	31.91 AV	54.00	-22.09	1.05 H	355	-5.60	37.51

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	2390.00	58.05 PK	74.00	-15.95	1.05 V	325	26.14	31.91
1	2390.00	49.54 AV	54.00	-4.46	1.05 V	325	17.63	31.91
2	*2412.00	103.05 PK			1.05 V	325	71.01	32.04
2	*2412.00	94.54 AV			1.05 V	325	62.50	32.04
3	4824.00	45.94 PK	74.00	-28.06	1.00 V	321	8.43	37.51
3	4824.00	32.98 AV	54.00	-21.02	1.00 V	321	-4.53	37.51

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	102.25 PK			1.00 H	39	70.05	32.20
1	*2437.00	93.58 AV			1.00 H	39	61.38	32.20
2	4874.00	44.98 PK	74.00	-29.02	1.08 H	351	7.43	37.55
2	4874.00	32.11 AV	54.00	-21.89	1.08 H	351	-5.44	37.55

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	103.18 PK			1.02 V	329	70.98	32.20
1	*2437.00	94.68 AV			1.02 V	329	62.48	32.20
2	4874.00	46.01 PK	74.00	-27.99	1.02 V	315	8.46	37.55
2	4874.00	33.12 AV	54.00	-20.88	1.02 V	315	-4.43	37.55

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	*2462.00	102.51 PK			1.00 H	30	70.16	32.35
1	*2462.00	94.35 AV			1.00 H	30	62.00	32.35
2	2483.50	57.40 PK	74.00	-16.60	1.00 H	30	24.91	32.49
2	2483.50	49.50 AV	54.00	-4.50	1.00 H	30	17.01	32.49
3	4924.00	44.81 PK	74.00	-29.19	1.02 H	10	7.23	37.58
3	4924.00	32.05 AV	54.00	-21.95	1.02 H	10	-5.53	37.58

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	*2462.00	103.52 PK			1.02 V	322	71.17	32.35
1	*2462.00	94.85 AV			1.02 V	322	62.50	32.35
2	2483.50	58.50 PK	74.00	-15.50	1.02 V	322	26.01	32.49
2	2483.50	50.02 AV	54.00	-3.98	1.02 V	322	17.53	32.49
3	4924.00	45.99 PK	74.00	-28.01	1.00 V	352	8.41	37.58
3	4924.00	33.02 AV	54.00	-20.98	1.00 V	352	-4.56	37.58

- 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.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK 30	100049	Aug. 14, 2006

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

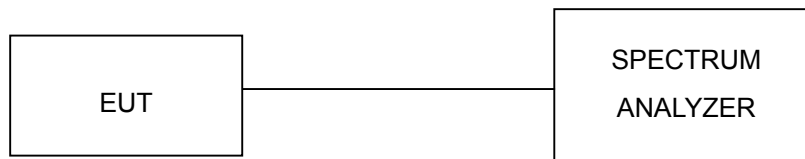
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

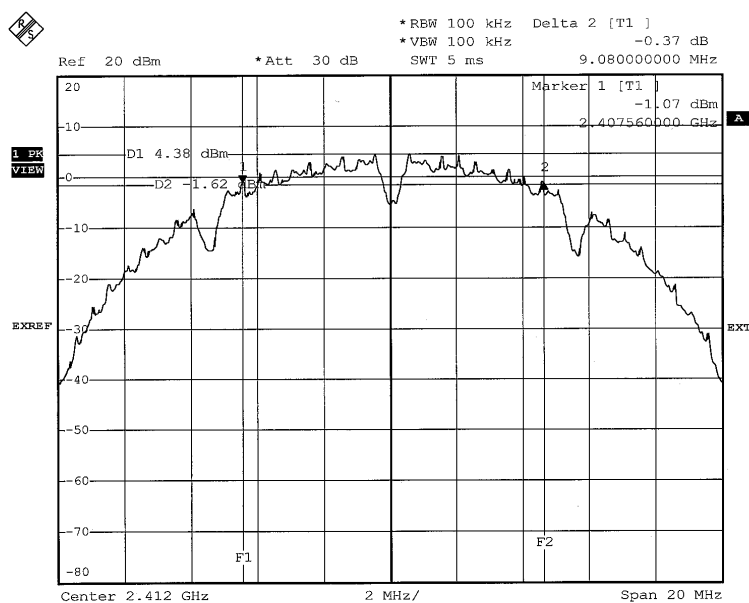
4.3.7 TEST RESULTS

802.11b DSSS modulation

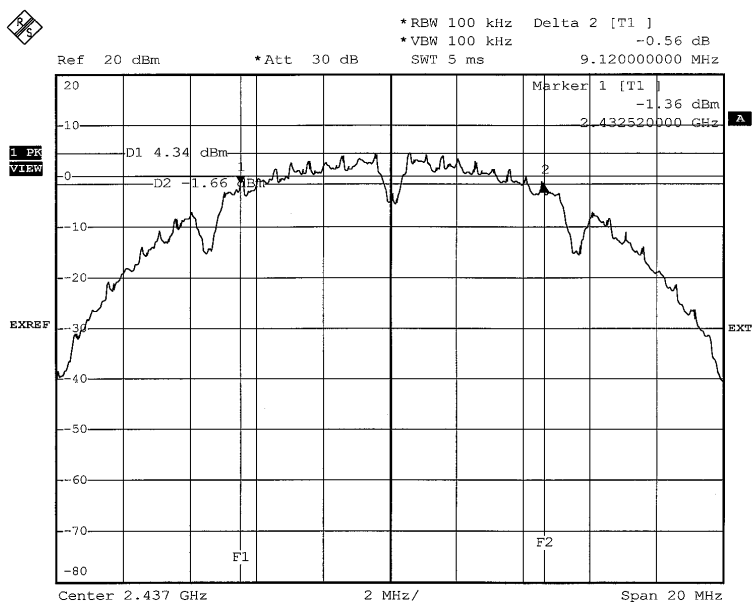
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	9.08	0.5	PASS
6	2437	9.12	0.5	PASS
11	2462	9.12	0.5	PASS

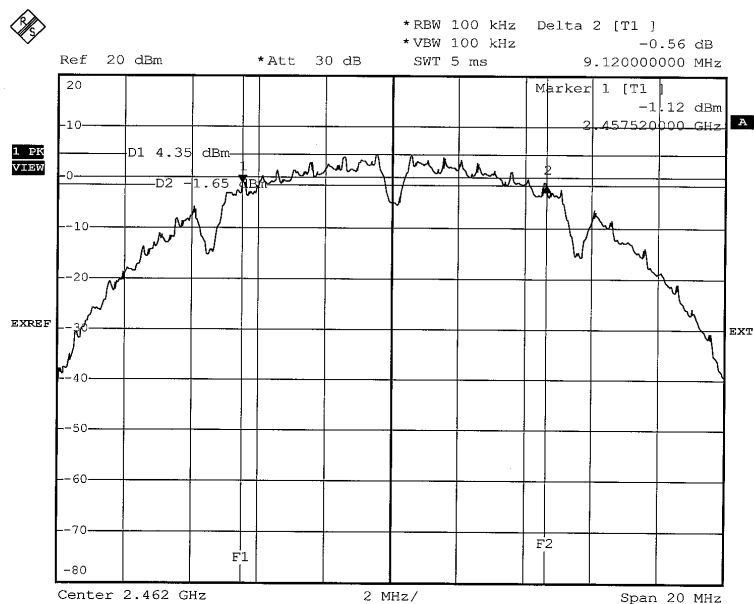
CH 1



CH 6



CH 11

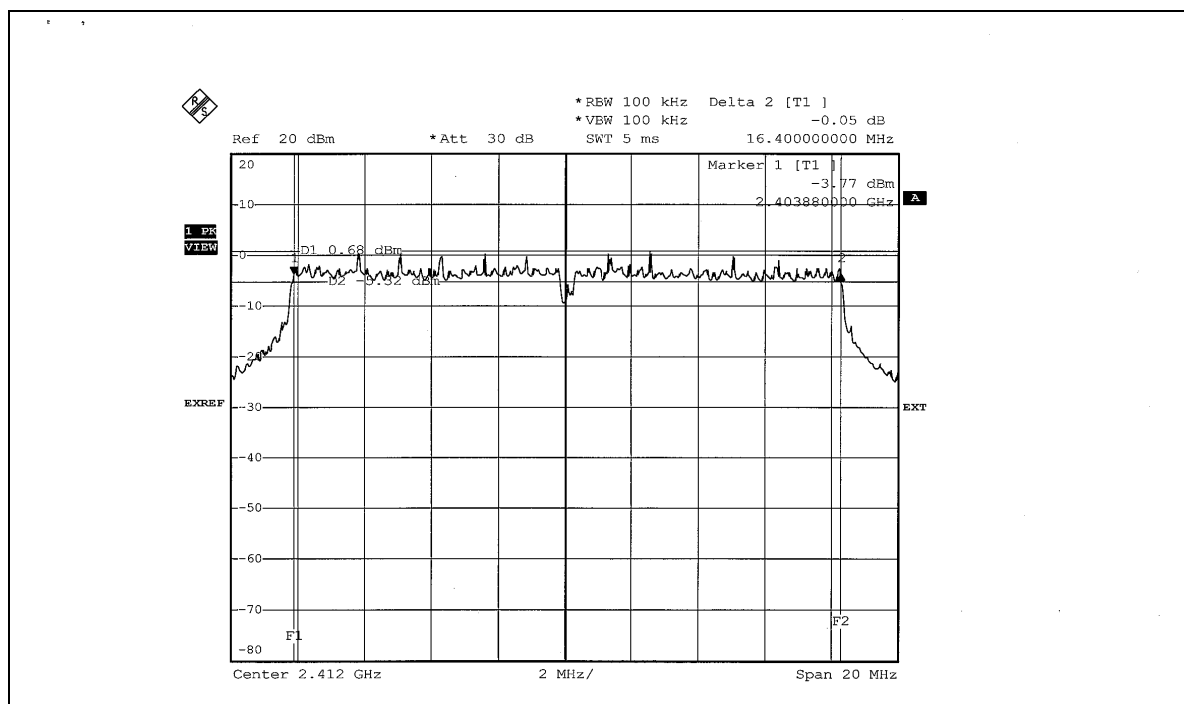


802.11g OFDM modulation

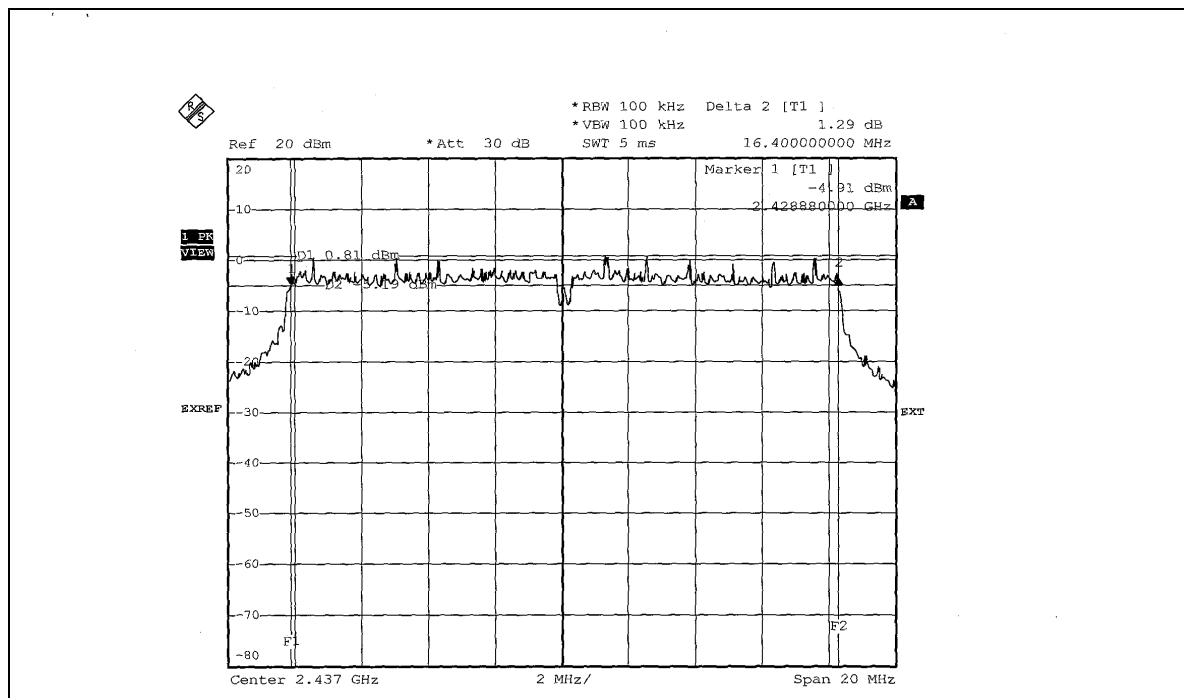
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.40	0.5	PASS
6	2437	16.40	0.5	PASS
11	2462	16.44	0.5	PASS

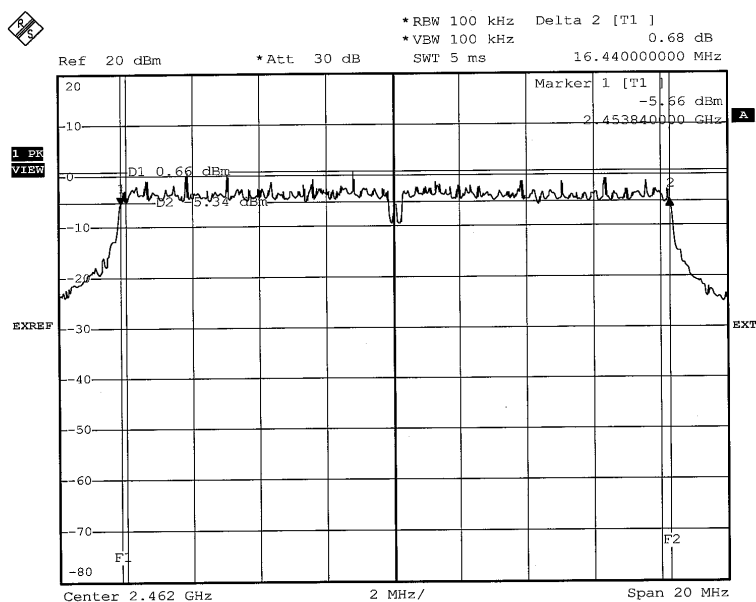
CH 1



CH 6



CH 11



4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 30, 2006
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Jan. 16, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

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

4.4.1 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

4.4.2 DEVIATION FROM TEST STANDARD

No deviation

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.3 TEST RESULTS

802.11b DSSS modulation

MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	64.121	18.07	30	PASS
6	2437	63.973	18.06	30	PASS
11	2462	63.826	18.05	30	PASS

802.11g OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	63.241	18.01	30	PASS
6	2437	63.973	18.06	30	PASS
11	2462	64.121	18.07	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

NOTE:

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

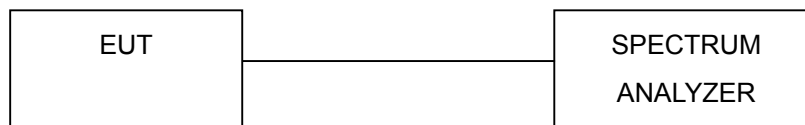
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

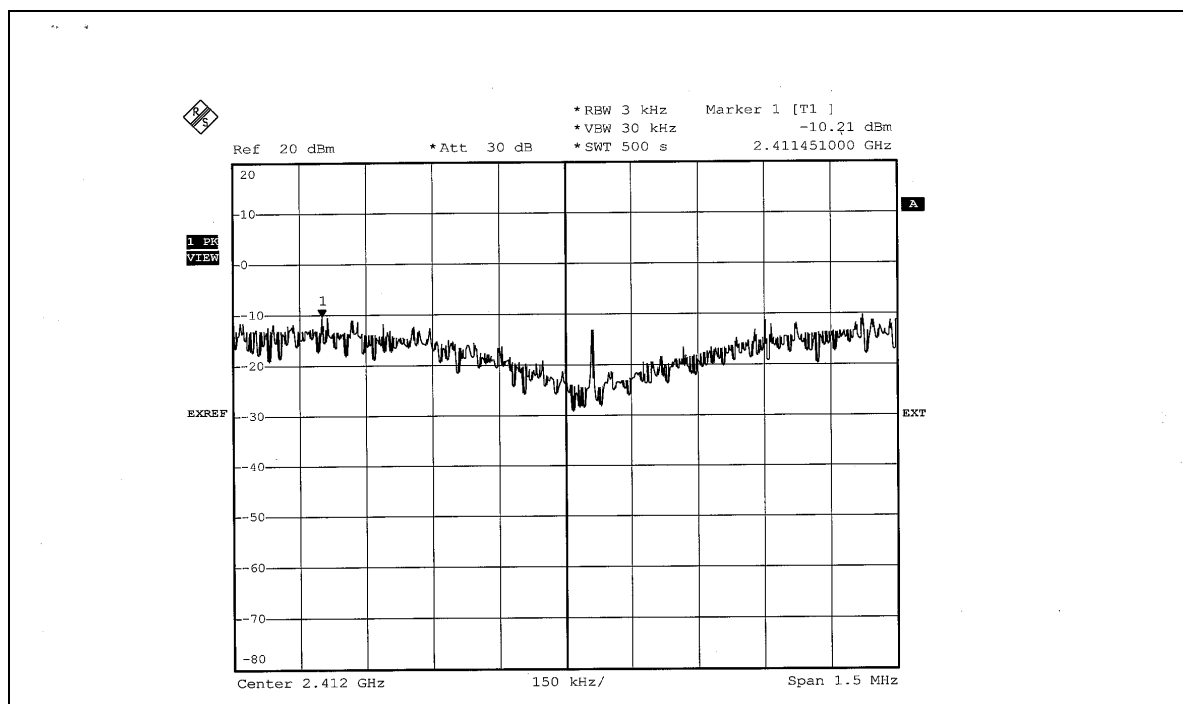
4.5.7 TEST RESULTS

802.11b DSSS modulation

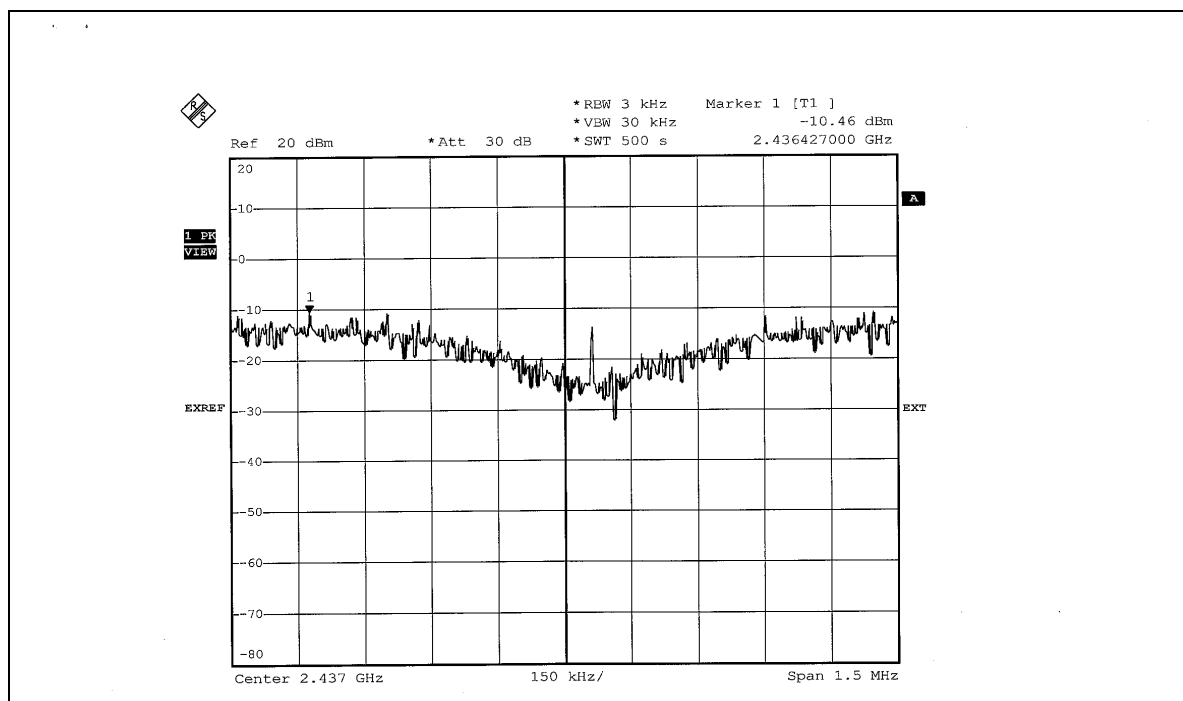
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.21	8	PASS
6	2437	-10.46	8	PASS
11	2462	-10.01	8	PASS

CH 1



CH 6

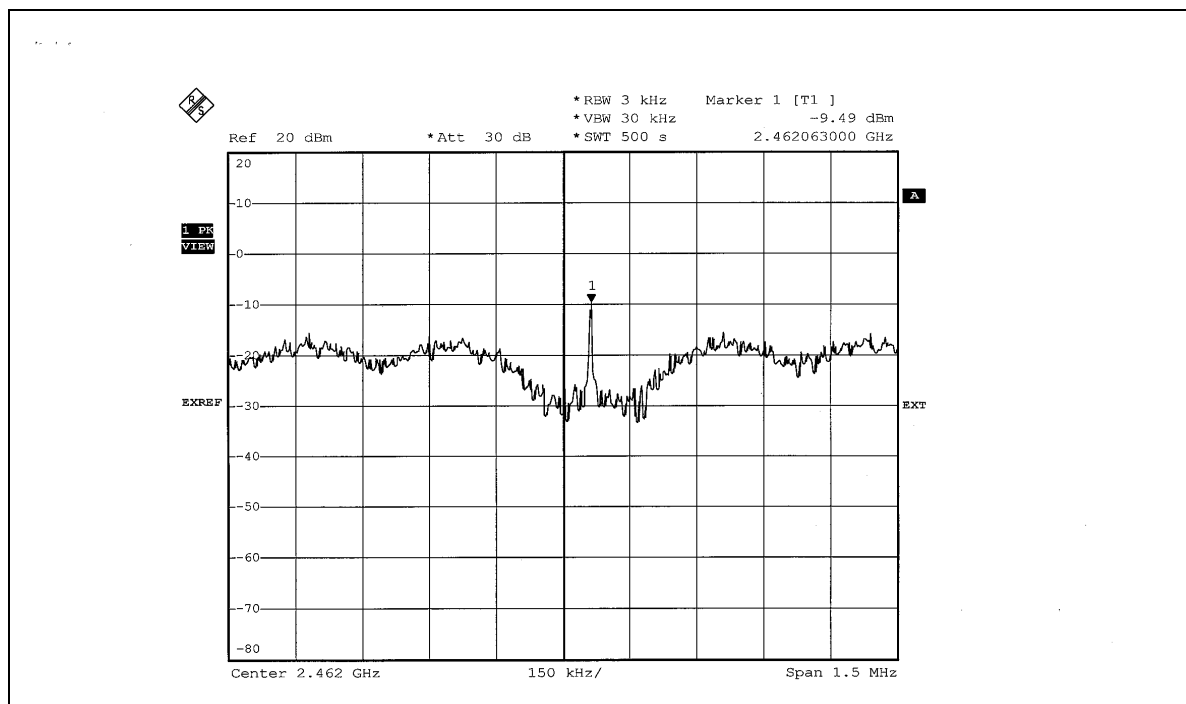


802.11g OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.30	8	PASS
6	2437	-9.31	8	PASS
11	2462	-9.49	8	PASS

CH 11



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz; Average RBW=1MHz, VBW=100Hz(for 802.11b) and 1kHz(for 802.11g)) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

The spectrum plots are attached on the following 12 images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

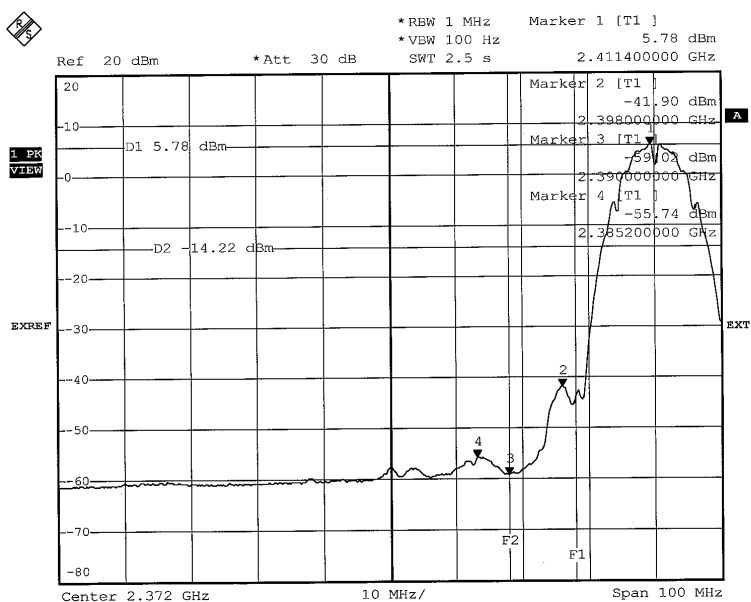
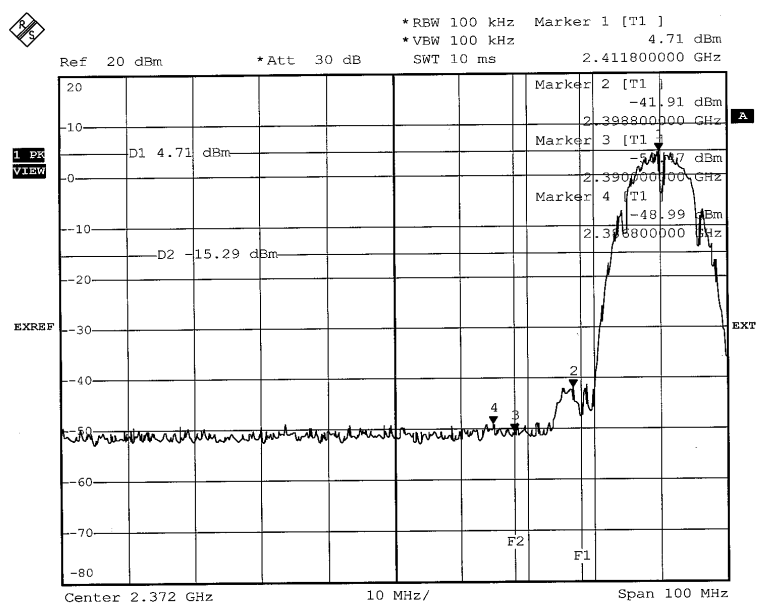
802.11b DSSS modulation

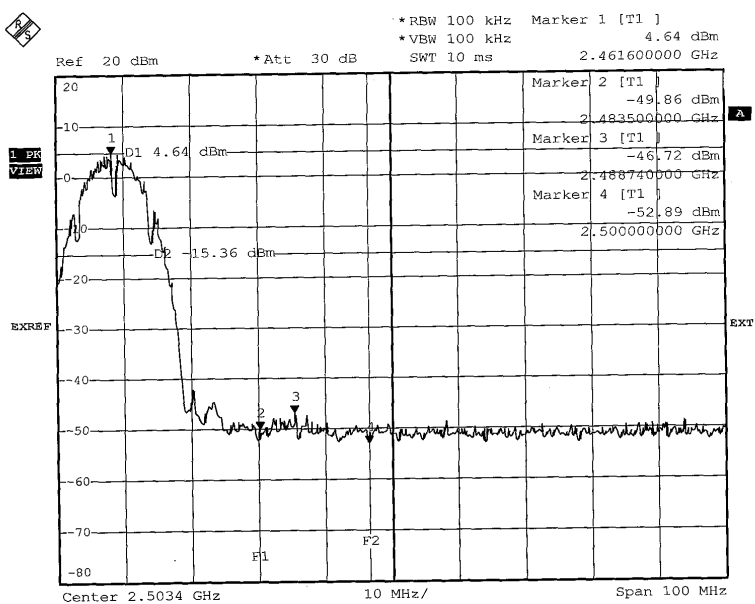
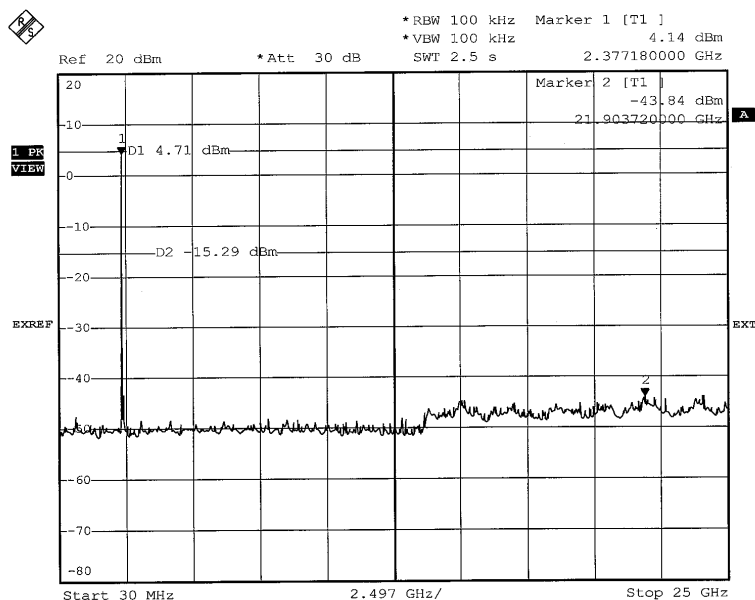
NOTE 1: The band edge emission plot on the next page shows 53.70dBc between carrier maximum power and local maximum emission in restrict band (2.3868GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.96dBuV/m (Peak), so the maximum field strength in restrict band is $105.96 - 53.70 = 52.26$ dBuV/m which is under 74dBuV/m limit.

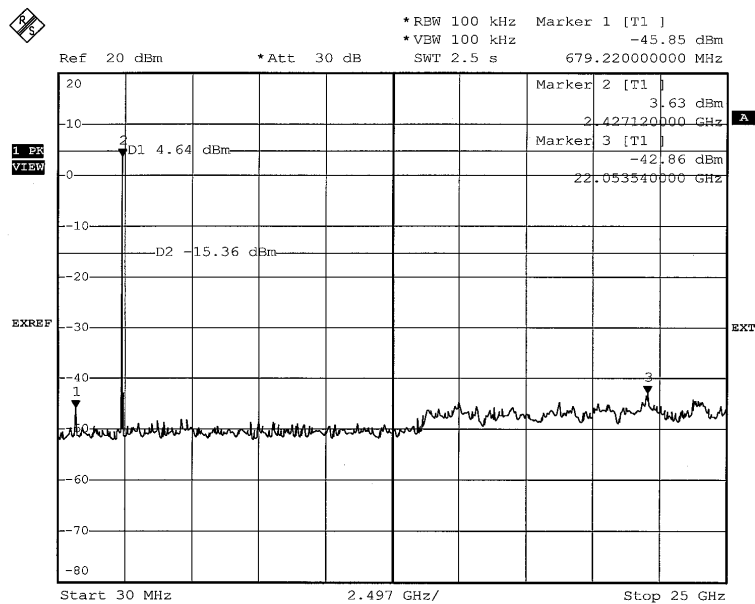
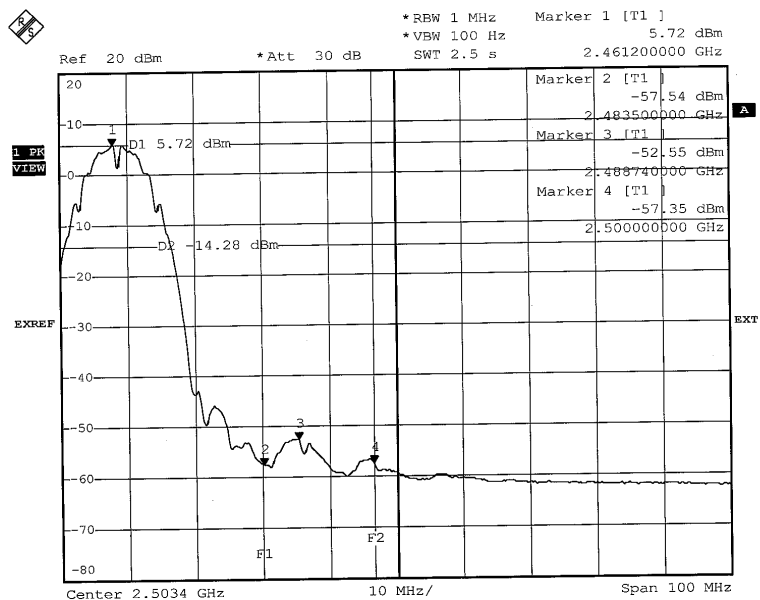
The band edge emission plot of on the next page shows 61.52dBc between carrier maximum power and local maximum emission in restrict band (2.3852GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 102.40dBuV/m (Average), so the maximum field strength in restrict band is $102.40 - 61.52 = 40.88$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 51.36dBc between carrier maximum power and local maximum emission in restrict band (2.4887GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.02dBuV/m (Peak), so the maximum field strength in restrict band is $106.02 - 51.36 = 54.66$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 58.27dBc between carrier maximum power and local maximum emission in restrict band (2.4887GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 102.51dBuV/m (Average), so the maximum field strength in restrict band is $102.51 - 58.27 = 44.24$ dBuV/m which is under 54dBuV/m limit.







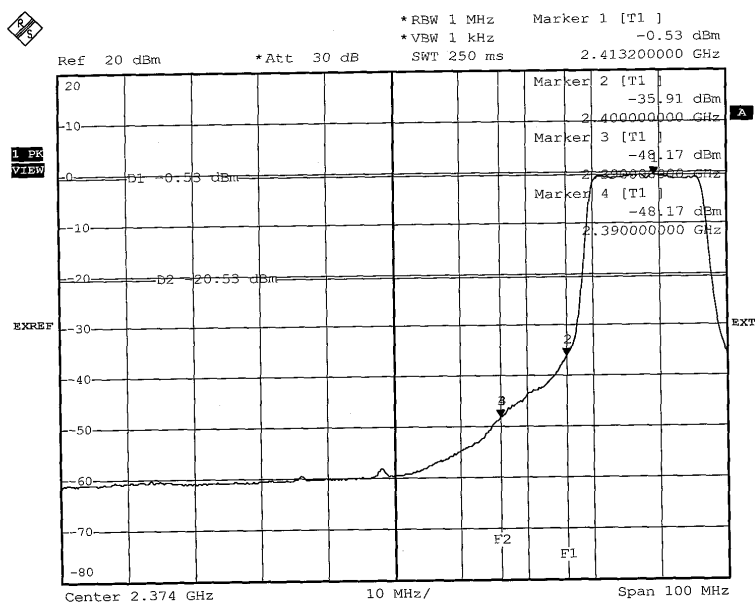
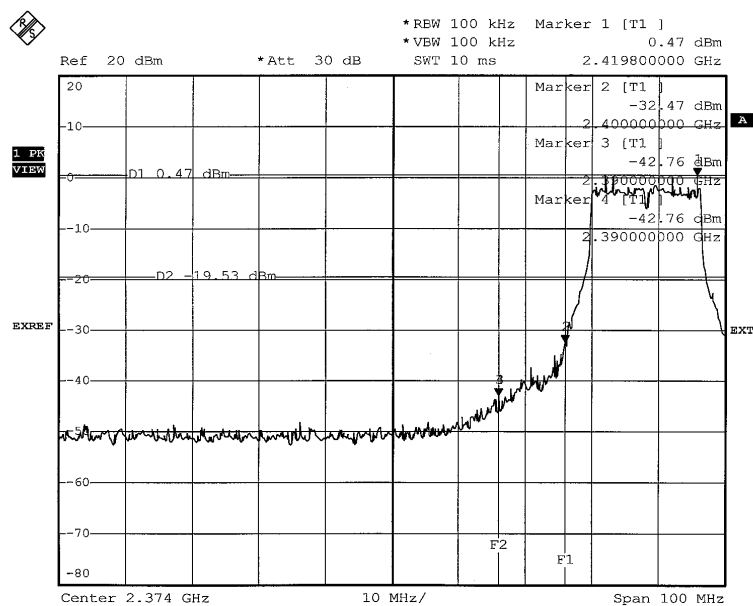
802.11g OFDM modulation

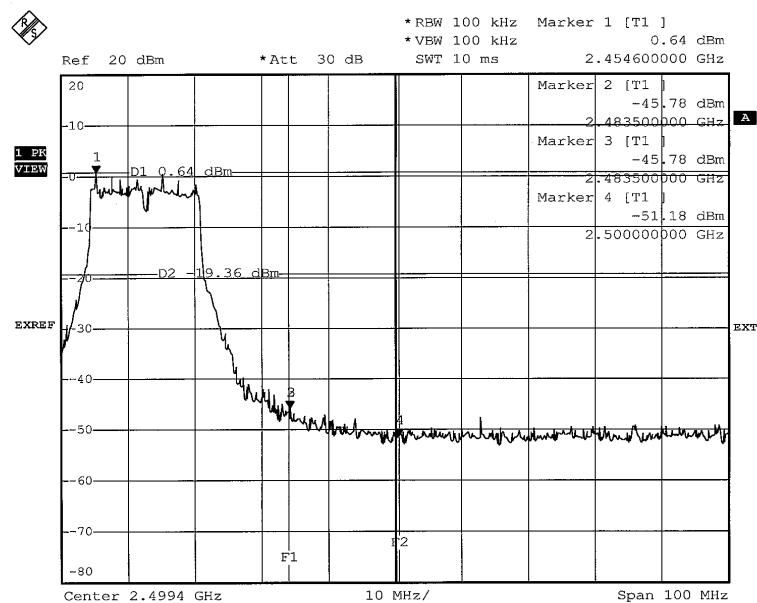
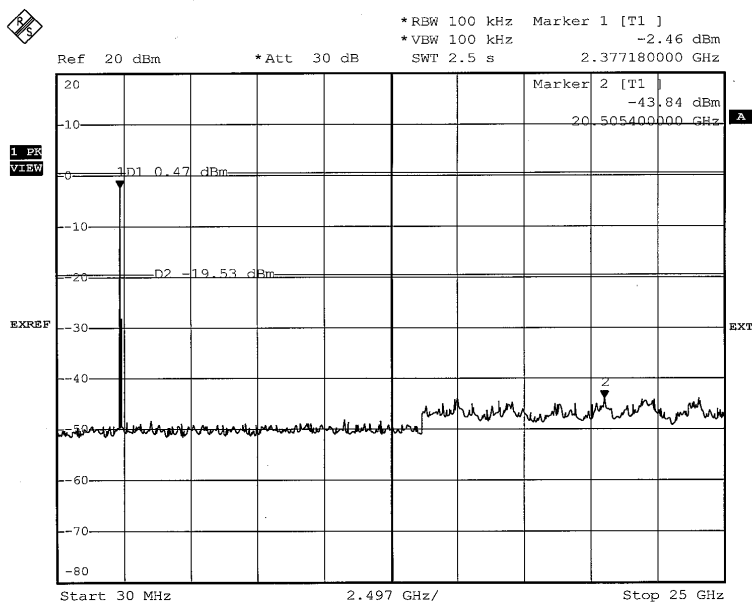
NOTE 1: The band edge emission plot on the next page shows 43.23dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 103.05dBuV/m (Peak), so the maximum field strength in restrict band is $103.05 - 43.23 = 59.82$ dBuV/m which is under 74dBuV/m limit.

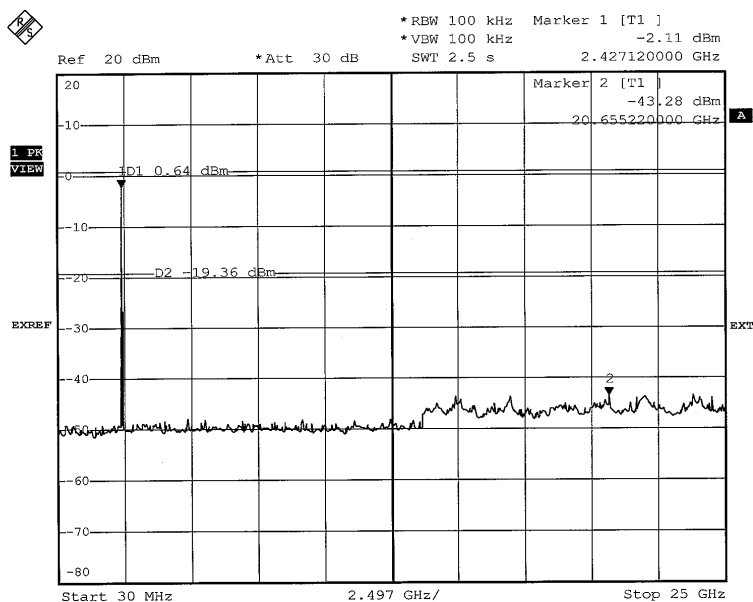
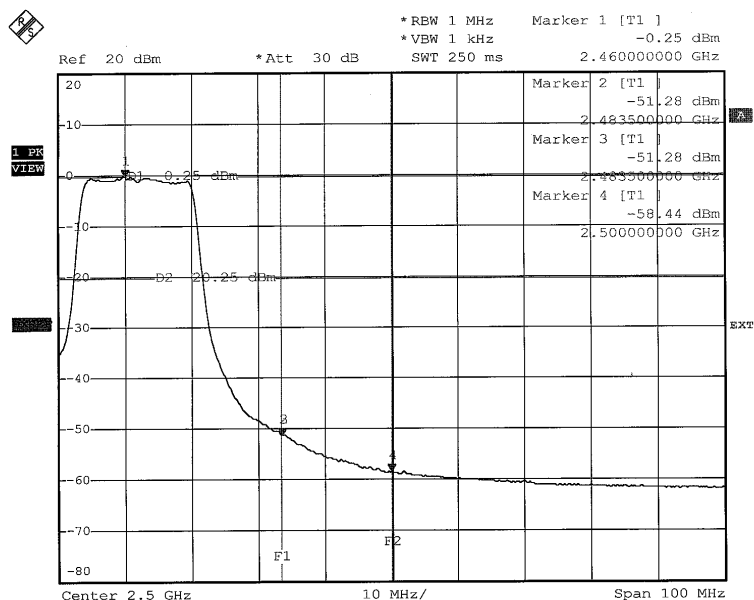
The band edge emission plot of on the next page shows 47.64dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 94.54dBuV/m (Average), so the maximum field strength in restrict band is $94.54 - 47.64 = 46.90$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 46.42dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 103.52dBuV/m (Peak), so the maximum field strength in restrict band is $103.52 - 46.42 = 57.10$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 51.03dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 94.85dBuV/m (Average), so the maximum field strength in restrict band is $94.85 - 51.03 = 43.82$ dBuV/m which is under 54dBuV/m limit.







4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna with UFL connector. The maximum Gain of the antenna is -1.09449dBi .

5. TEST TYPES AND RESULTS (FOR 802.11a 5745~5825MHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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:**
- The lower limit shall apply at the transition frequencies.
 - The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 - 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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 02, 2006
RF signal cable Woken	5D-FB	Cable-HyC02-01	Jan. 06, 2007
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 09, 2007
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 22, 2007
Software ADT	ADT_Cond_V3	NA	NA

- NOTE:**
- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 - The test was performed in HwaYa Shielded Room 3.
 - The VCCI Site Registration No. is C-2047.

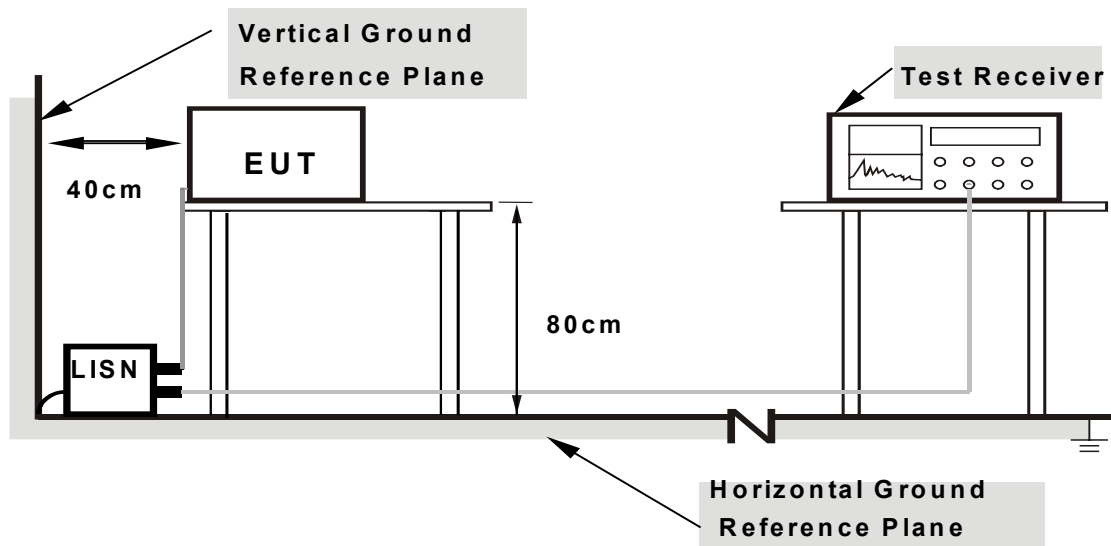
5.1.3 TEST PROCEDURES

- 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.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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 related item – Photographs of the Test Configuration.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

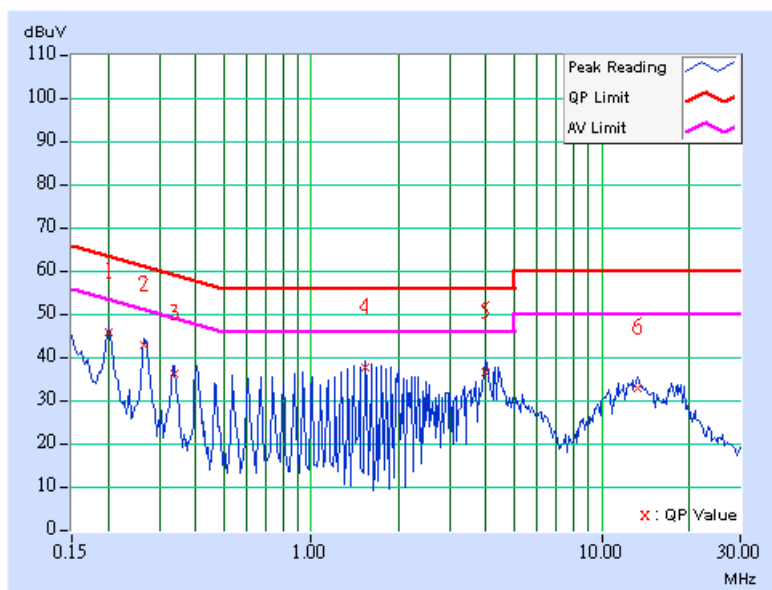
5.1.7 TEST RESULTS

Conducted Worst-Case Data (For Adapter: PA-1650-02)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chou		

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	0.201	0.10	45.24	-	45.34	-	63.58	53.58	-18.24	-
2	0.267	0.10	42.51	-	42.61	-	61.20	51.20	-18.59	-
3	0.338	0.10	35.68	-	35.78	-	59.26	49.26	-23.48	-
4	1.543	0.15	37.37	-	37.52	-	56.00	46.00	-18.48	-
5	3.957	0.37	36.25	-	36.62	-	56.00	46.00	-19.38	-
6	13.281	0.54	32.27	-	32.81	-	60.00	50.00	-27.19	-

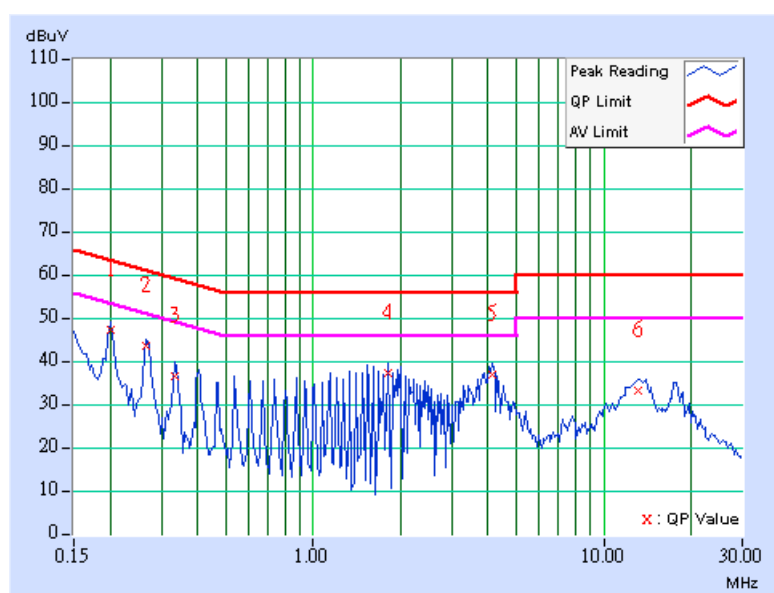
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chou		

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	0.201	0.10	46.75	-	46.85	-	63.58	53.58	-16.73	-
2	0.267	0.10	43.15	-	43.25	-	61.20	51.20	-17.95	-
3	0.334	0.10	36.18	-	36.28	-	59.36	49.36	-23.08	-
4	1.813	0.20	36.84	-	37.04	-	56.00	46.00	-18.96	-
5	4.156	0.37	36.50	-	36.87	-	56.00	46.00	-19.13	-
6	13.078	0.56	32.85	-	33.41	-	60.00	50.00	-26.59	-

- 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.

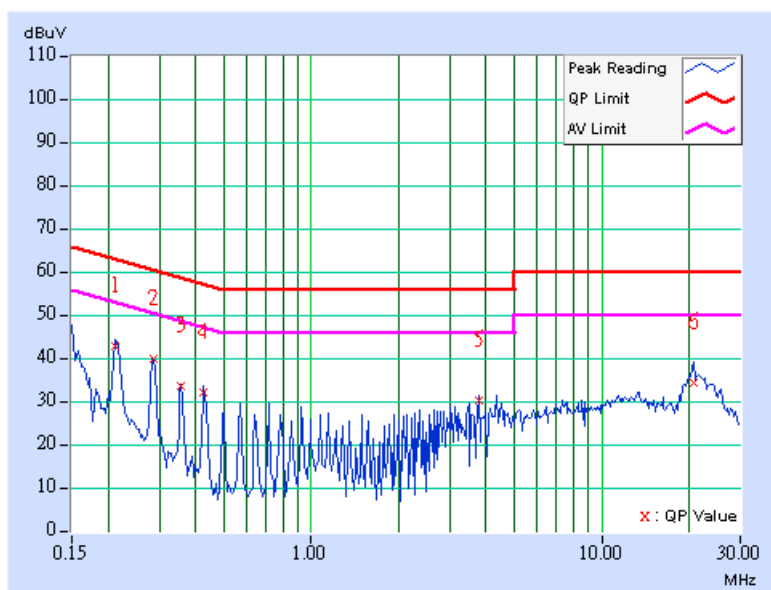


Conducted Worst-Case Data (For Adapter: 0335A1965)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chou		

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	0.213	0.10	42.20	-	42.30	-	63.11	53.11	-20.81	-
2	0.286	0.10	39.21	-	39.31	-	60.65	50.65	-21.34	-
3	0.357	0.10	33.05	-	33.15	-	58.80	48.80	-25.65	-
4	0.427	0.10	31.77	-	31.87	-	57.30	47.30	-25.43	-
5	3.781	0.35	29.81	-	30.16	-	56.00	46.00	-25.84	-
6	20.754	0.62	33.91	-	34.53	-	60.00	50.00	-25.47	-

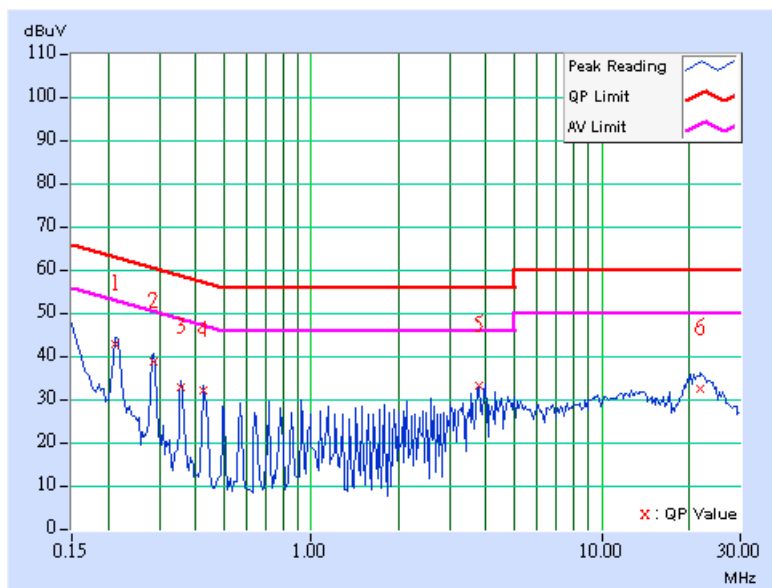
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Lori Chou		

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	0.213	0.10	42.36	-	42.46	-	63.11	53.11	-20.65	-
2	0.287	0.10	38.39	-	38.49	-	60.62	50.62	-22.13	-
3	0.357	0.10	32.12	-	32.22	-	58.80	48.80	-26.58	-
4	0.427	0.10	31.71	-	31.81	-	57.30	47.30	-25.49	-
5	3.781	0.35	32.72	-	33.07	-	56.00	46.00	-22.93	-
6	21.902	0.66	32.09	-	32.75	-	60.00	50.00	-27.25	-

- 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.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	May. 19, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Dec. 05, 2006
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Jun. 01, 2006
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 08, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 19, 2007
Preamplifier Agilent	8447D	2944A10633	Nov. 04, 2006
Preamplifier Agilent	8449B	3008A01964	Oct. 30, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214377/4	Dec. 13, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Dec. 13, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA
26GHz ~ 40GHz Amplifier	AMF-6F-2600400	923362	Mar. 13, 2006

- 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 2.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The VCCI Site Registration No. is R-237.
5. The IC Site Registration No. is IC4924-3.

5.2.3 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.

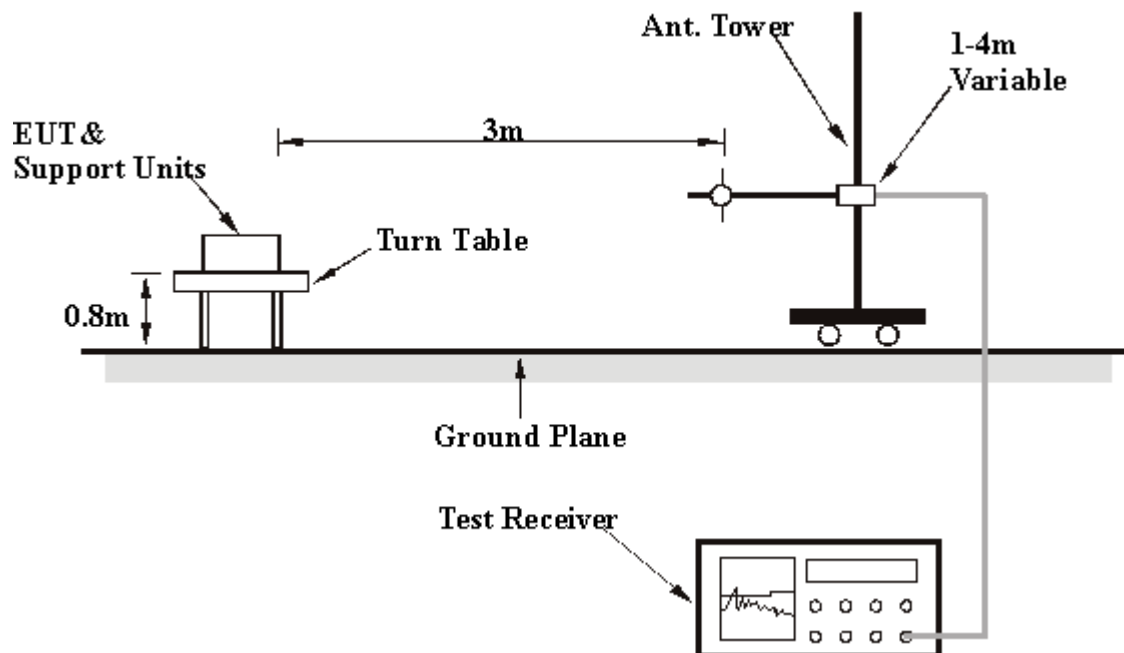
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz for Average detection (AV) at frequency above 1GHz.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

Below 1GHz Worst-Case Data (For Adapter: PA-1650-02)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Jay Hsu		

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	191.34	25.85 QP	43.50	-17.65	1.00 H	61	14.26	11.59
2	204.95	26.70 QP	43.50	-16.80	1.50 H	292	15.38	11.32
3	271.04	29.79 QP	46.00	-16.21	1.50 H	292	15.39	14.40
4	339.08	32.11 QP	46.00	-13.89	1.50 H	64	15.60	16.51
5	432.38	34.03 QP	46.00	-11.97	1.00 H	292	15.16	18.87
6	527.64	29.92 QP	46.00	-16.08	1.00 H	226	8.96	20.96
7	599.56	28.09 QP	46.00	-17.91	1.00 H	52	4.95	23.13
8	624.83	28.33 QP	46.00	-17.67	1.50 H	118	4.98	23.35
9	840.60	28.42 QP	46.00	-17.58	1.50 H	280	1.37	27.04
10	889.20	31.98 QP	46.00	-14.02	1.50 H	64	4.49	27.48
11	912.53	29.50 QP	46.00	-16.50	1.50 H	232	1.73	27.77

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	A	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Jay Hsu		

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	341.02	29.37 QP	46.00	-16.63	1.50 V	241	12.83	16.54
2	409.06	30.23 QP	46.00	-15.77	1.00 V	235	11.77	18.46
3	432.38	30.95 QP	46.00	-15.05	1.50 V	337	12.08	18.87
4	475.15	29.61 QP	46.00	-16.39	1.00 V	235	9.78	19.83
5	498.48	30.05 QP	46.00	-15.95	1.50 V	337	9.62	20.43
6	533.47	33.65 QP	46.00	-12.35	1.00 V	202	12.58	21.07
7	589.84	28.26 QP	46.00	-17.74	1.50 V	358	5.47	22.79
8	599.56	30.32 QP	46.00	-15.68	1.00 V	202	7.19	23.13
9	624.83	28.86 QP	46.00	-17.14	1.00 V	88	5.52	23.35
10	834.77	28.90 QP	46.00	-17.10	1.50 V	52	1.91	26.99
11	863.93	28.89 QP	46.00	-17.11	1.50 V	229	1.63	27.26
12	889.20	32.17 QP	46.00	-13.83	1.00 V	118	4.68	27.48
13	935.85	28.43 QP	46.00	-17.57	1.00 V	217	0.30	28.12
14	941.68	29.16 QP	46.00	-16.84	1.50 V	229	0.95	28.21

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.

Below 1GHz Worst-Case Data (For Adapter: 0335A1965)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Jay Hsu		

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	272.99	28.73 QP	46.00	-17.27	1.50 H	13	14.23	14.50
2	341.02	31.16 QP	46.00	-14.84	1.00 H	1	14.62	16.54
3	432.38	33.51 QP	46.00	-12.49	1.00 H	262	14.64	18.87
4	527.64	30.45 QP	46.00	-15.55	1.50 H	226	9.49	20.96
5	624.83	28.53 QP	46.00	-17.47	1.00 H	25	5.18	23.35
6	828.94	28.78 QP	46.00	-17.22	1.00 H	1	1.84	26.94
7	861.98	28.03 QP	46.00	-17.97	1.50 H	49	0.79	27.24
8	889.20	31.32 QP	46.00	-14.68	1.50 H	13	3.84	27.48
9	924.19	28.99 QP	46.00	-17.01	1.50 H	49	1.04	27.95

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	B	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Jay Hsu		

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	86.37	23.59 QP	40.00	-16.41	1.00 V	28	13.86	9.73
2	119.42	25.98 QP	43.50	-17.52	1.00 V	28	14.91	11.08
3	341.02	31.60 QP	46.00	-14.40	1.00 V	31	15.07	16.54
4	409.06	29.22 QP	46.00	-16.78	1.50 V	124	10.76	18.46
5	432.38	32.86 QP	46.00	-13.14	1.00 V	28	13.99	18.87
6	477.09	29.51 QP	46.00	-16.49	1.50 V	286	9.63	19.88
7	498.48	31.77 QP	46.00	-14.23	1.00 V	28	11.34	20.43
8	531.52	36.04 QP	46.00	-9.96	1.00 V	28	15.01	21.03
9	599.56	29.65 QP	46.00	-16.35	1.50 V	328	6.52	23.13
10	889.20	32.75 QP	46.00	-13.25	1.00 V	133	5.26	27.48
11	912.53	29.18 QP	46.00	-16.82	1.00 V	277	1.41	27.77

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.

802.11a OFDM modulation

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	5725.00	50.45 PK	82.11	-31.66	1.00 H	325	11.42	39.03
1	5725.00	41.29 AV	73.11	-31.82	1.00 H	325	2.26	39.03
2	*5745.00	102.11 PK			1.00 H	325	63.06	39.05
2	*5745.00	93.11 AV			1.00 H	325	54.06	39.05
3	#11490.00	55.48 PK	74.00	-18.52	1.02 H	325	5.42	50.06
3	#11490.00	45.38 AV	54.00	-8.62	1.02 H	325	-4.68	50.06

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	5725.00	51.50 PK	83.25	-31.75	1.22 V	321	12.47	39.03
1	5725.00	42.32 AV	74.21	-31.89	1.22 V	321	3.29	39.03
2	*5745.00	103.25 PK			1.22 V	318	64.20	39.05
2	*5745.00	94.21 AV			1.22 V	318	55.16	39.05
3	#11490.00	56.58 PK	74.00	-17.42	1.02 V	33	6.52	50.06
3	#11490.00	46.49 AV	54.00	-7.51	1.02 V	33	-3.57	50.06

- NOTE:**
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 falling in the restricted band.
 7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	*5785.00	102.41 PK			1.02 H	315	63.32	39.09
1	*5785.00	93.18 AV			1.02 H	315	54.09	39.09
2	#11570.00	55.33 PK	74.00	-18.67	1.12 H	315	5.67	49.66
2	#11570.00	45.60 AV	54.00	-8.40	1.12 H	315	-4.06	49.66

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	*5785.00	103.35 PK			1.32 V	328	64.26	39.09
1	*5785.00	94.32 AV			1.32 V	328	55.23	39.09
2	#11570.00	56.61 PK	74.00	-17.39	1.05 V	315	6.95	49.66
2	#11570.00	46.52 AV	54.00	-7.48	1.05 V	315	-3.14	49.66

- NOTE:**
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 falling in the restricted band.
 7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TESTED BY	Morgan Chen	INPUT POWER (SYSTEM)	120Vac, 60 Hz

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	*5825.00	102.52 PK			1.00 H	321	63.38	39.14
1	*5825.00	93.35 AV			1.00 H	321	54.21	39.14
2	5850.00	50.51 PK	82.52	-32.01	1.05 H	322	11.34	39.17
2	5850.00	41.35 AV	73.35	-32.00	1.05 H	322	2.18	39.17
3	#11650.00	55.80 PK	74.00	-18.20	1.00 H	329	6.40	49.40
3	#11650.00	45.02 AV	54.00	-8.98	1.00 H	329	-4.37	49.40

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	*5825.00	103.67 PK			1.37 V	329	64.53	39.14
1	*5825.00	94.45 AV			1.37 V	329	55.31	39.14
2	5850.00	51.67 PK	83.67	-32.00	1.37 V	329	12.50	39.17
2	5850.00	42.45 AV	74.45	-32.00	1.37 V	329	3.28	39.17
3	#11650.00	56.70 PK	74.00	-17.30	1.02 V	22	7.30	49.40
3	#11650.00	46.04 AV	54.00	-7.96	1.02 V	22	-3.36	49.40

- NOTE:**
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 falling in the restricted band.
 7. The limit value is defined as per 15.247

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

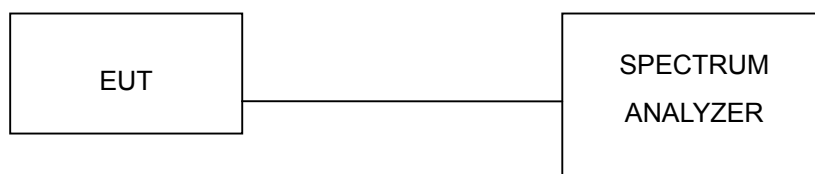
5.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

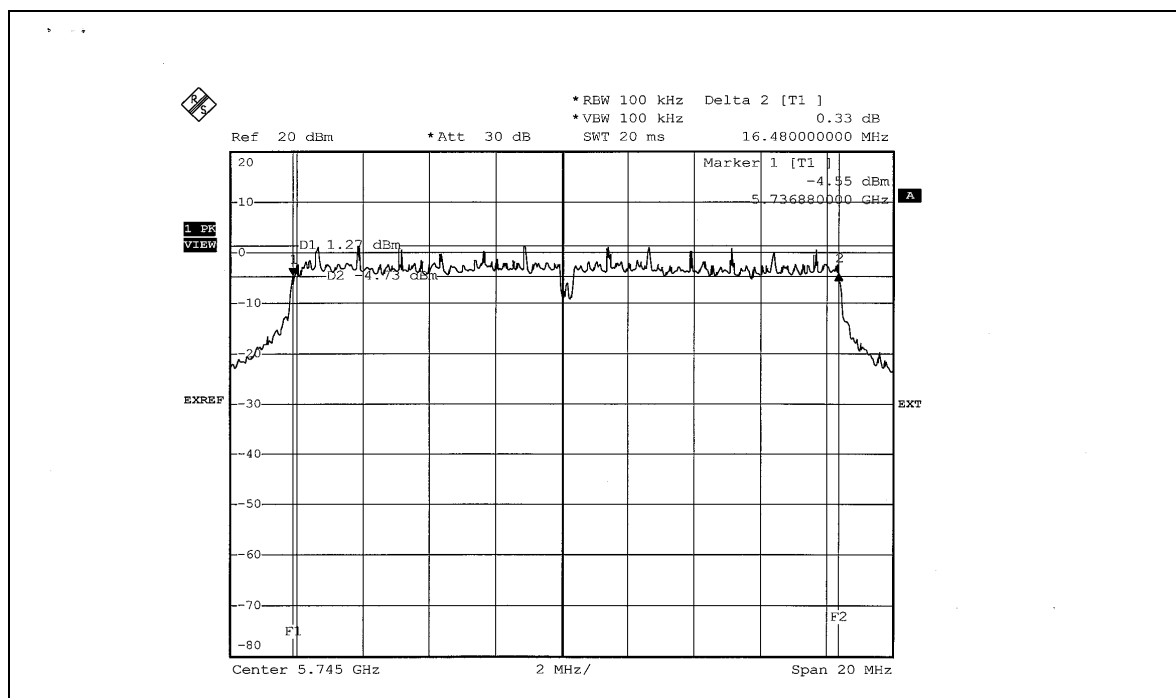
5.3.7 TEST RESULTS

802.11a OFDM modulation

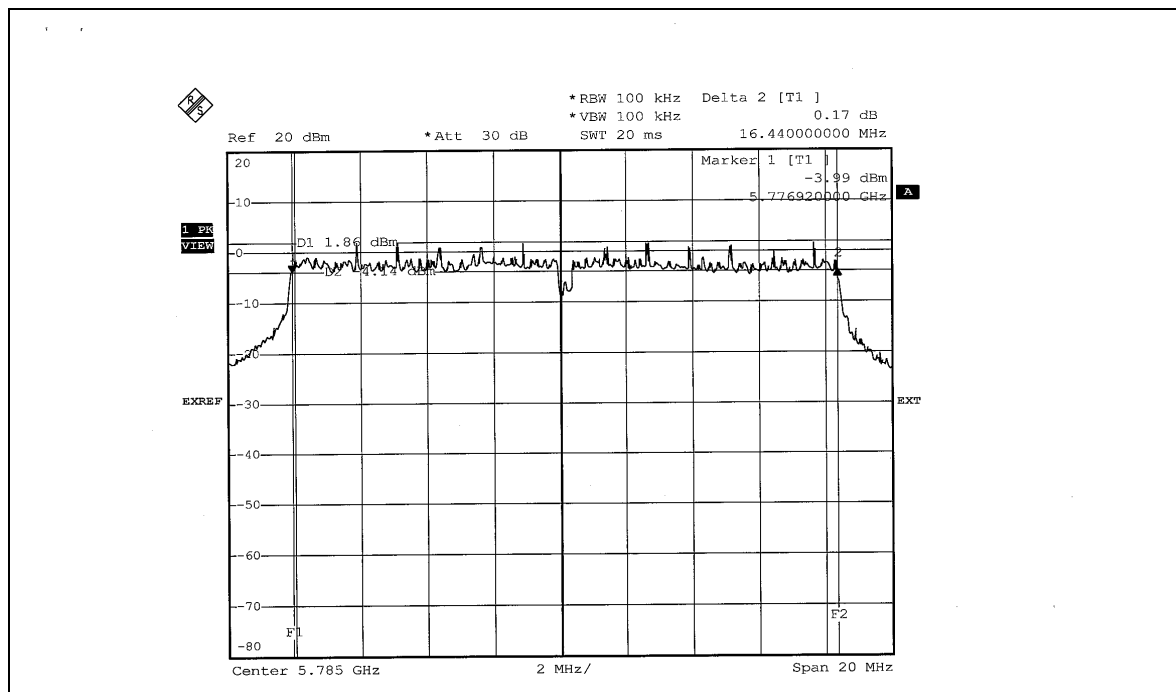
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	5745	16.48	0.5	PASS
3	5785	16.44	0.5	PASS
5	5825	16.44	0.5	PASS

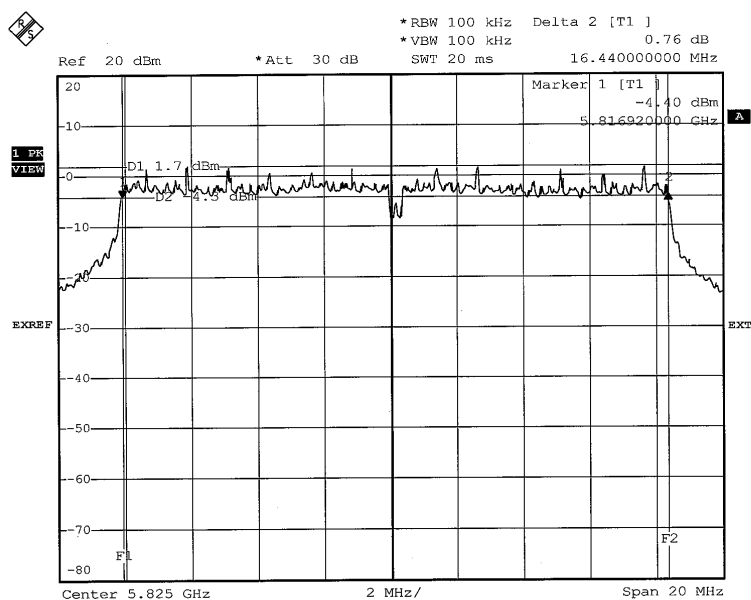
CH 1



CH 3



CH 5



5.4 MAXIMUM PEAK OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 30, 2006
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Jan. 16, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

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

5.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator . The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	5745	63.533	18.03	30	PASS
3	5785	63.680	18.04	30	PASS
5	5825	63.680	18.04	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

NOTES:

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

5.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6

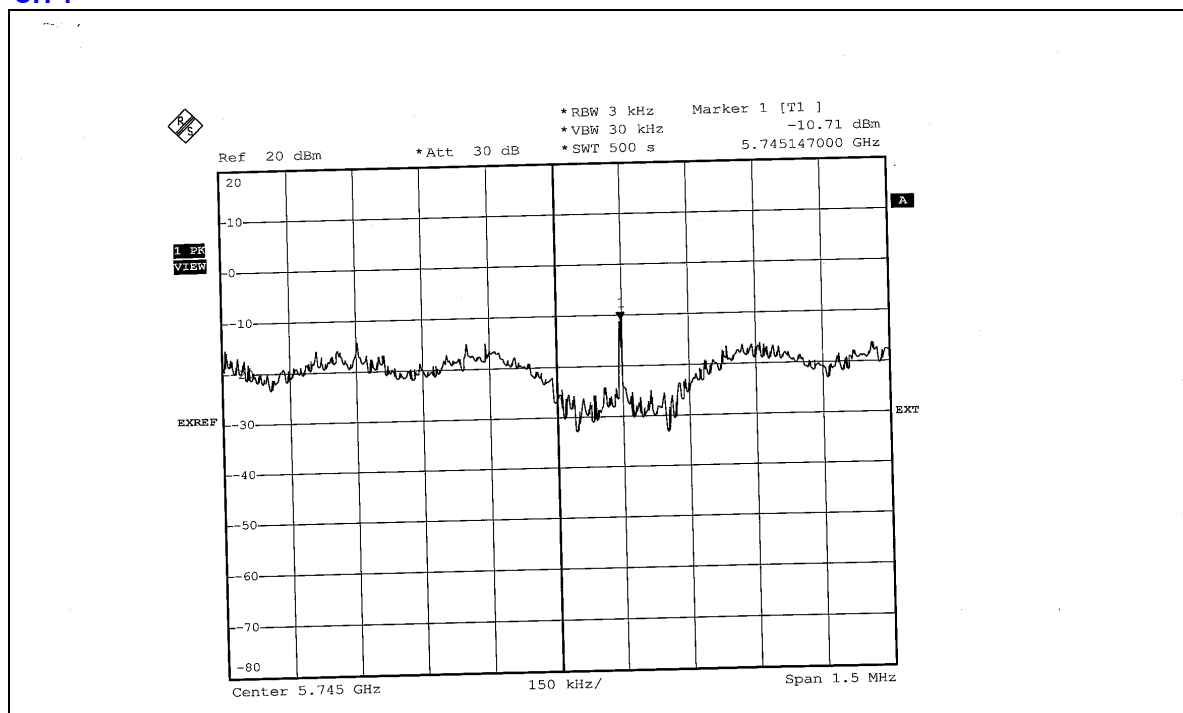
5.5.7 TEST RESULTS

802.11a OFDM modulation

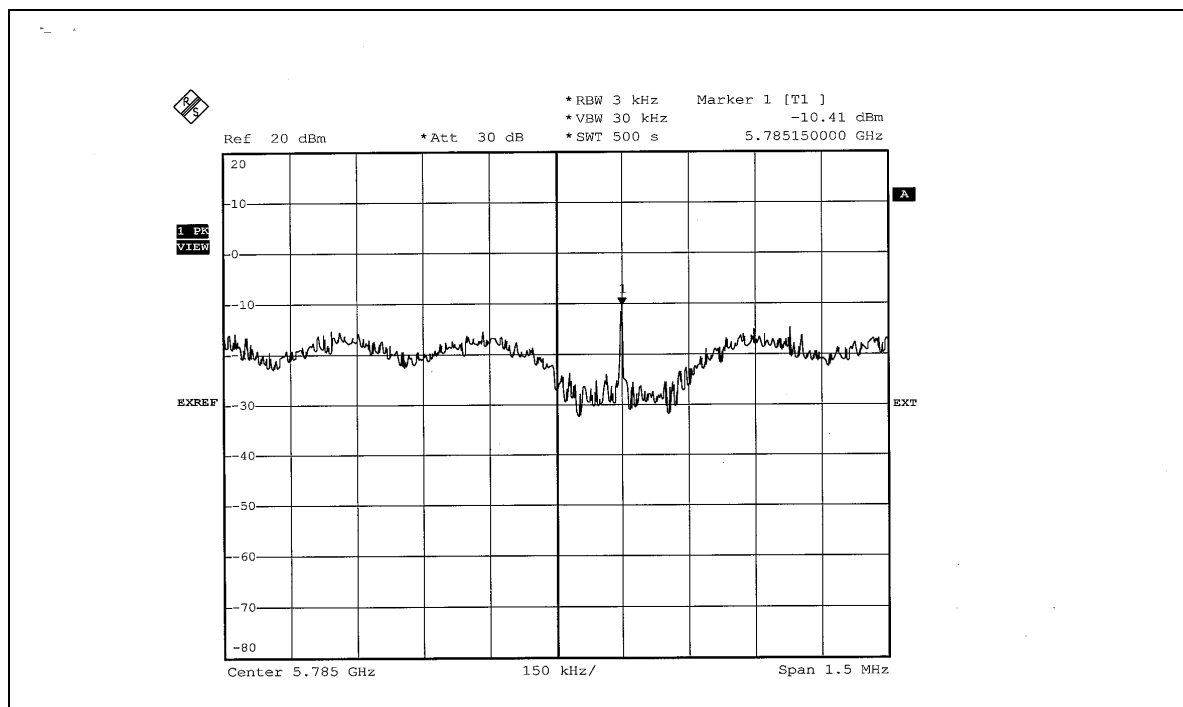
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 61%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5745	-10.71	8	PASS
3	5785	-10.41	8	PASS
5	5825	-10.31	8	PASS

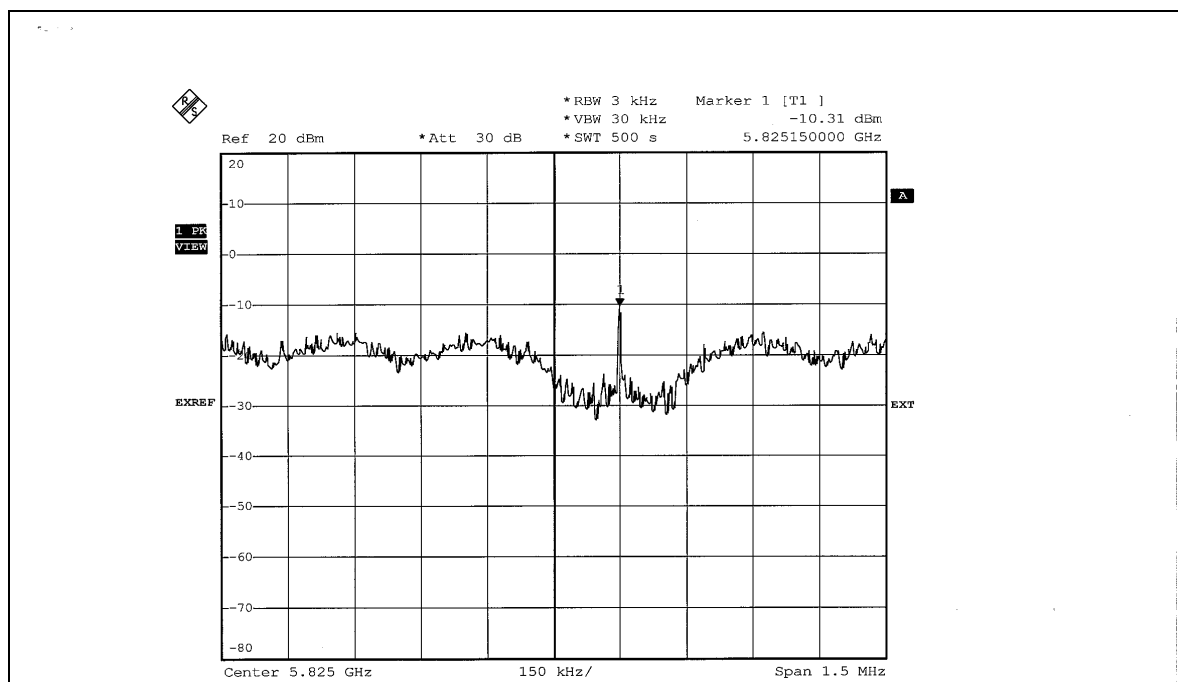
CH 1



CH 3



CH 5



5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

NOTES:

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

5.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

5.6.4 DEVIATION FROM TEST STANDARD

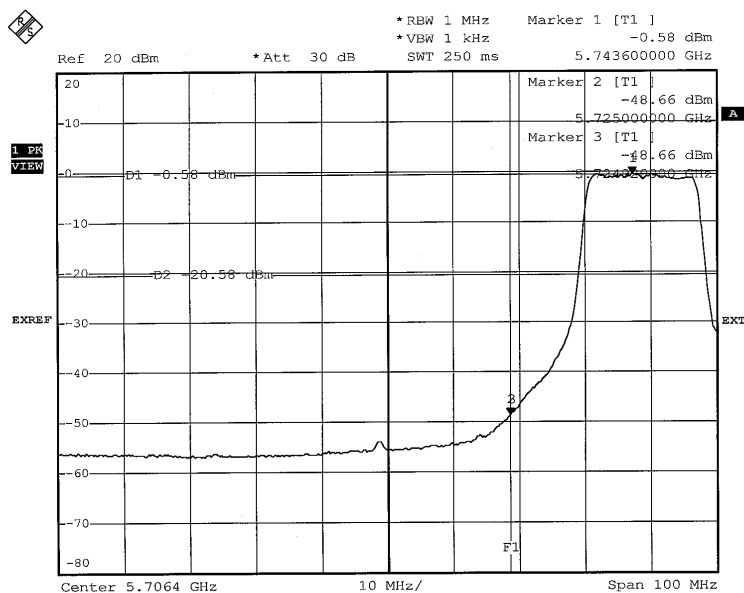
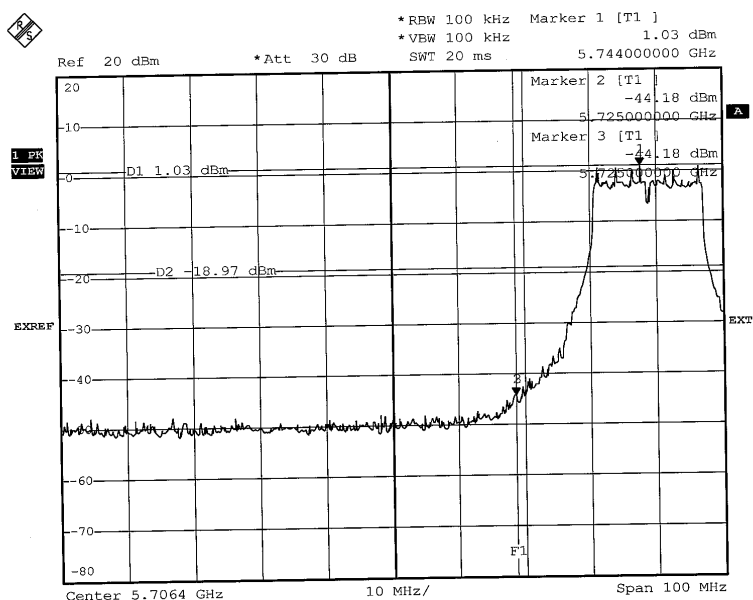
No deviation

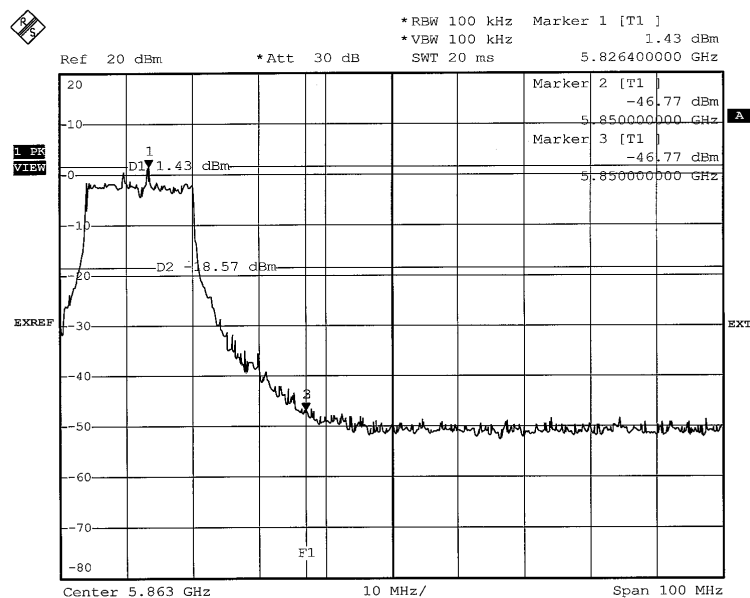
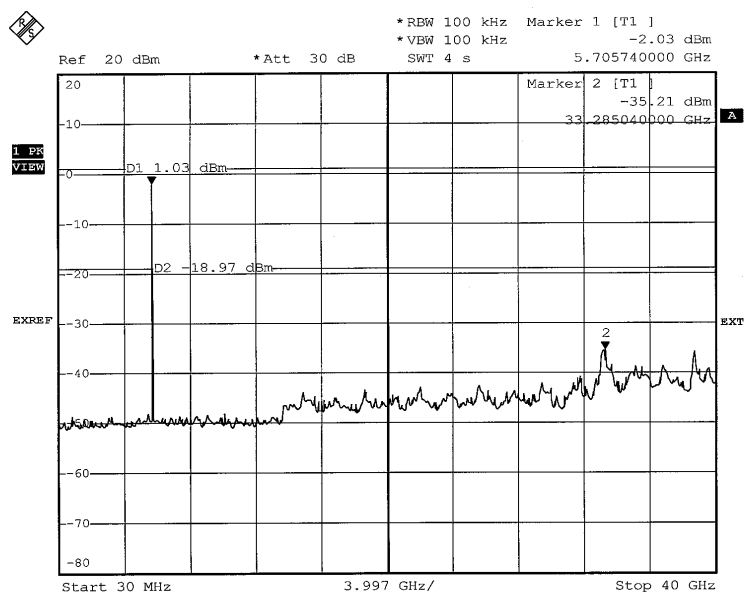
5.6.5 EUT OPERATING CONDITION

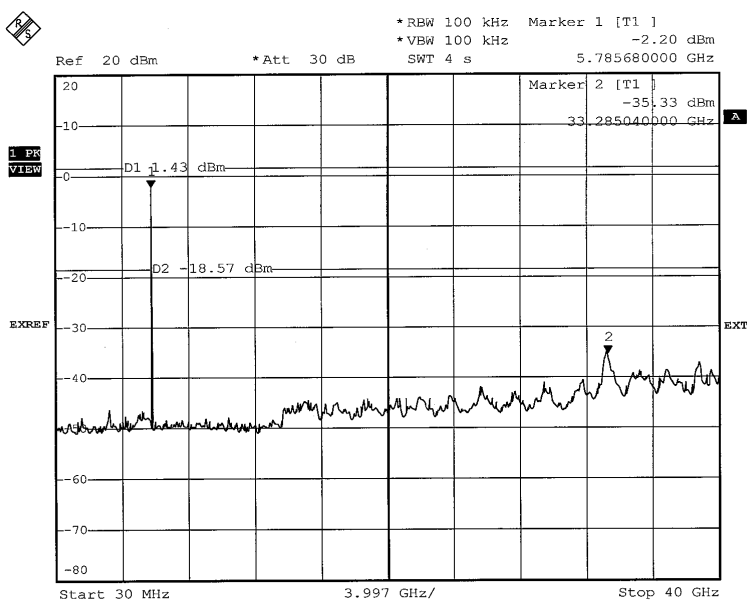
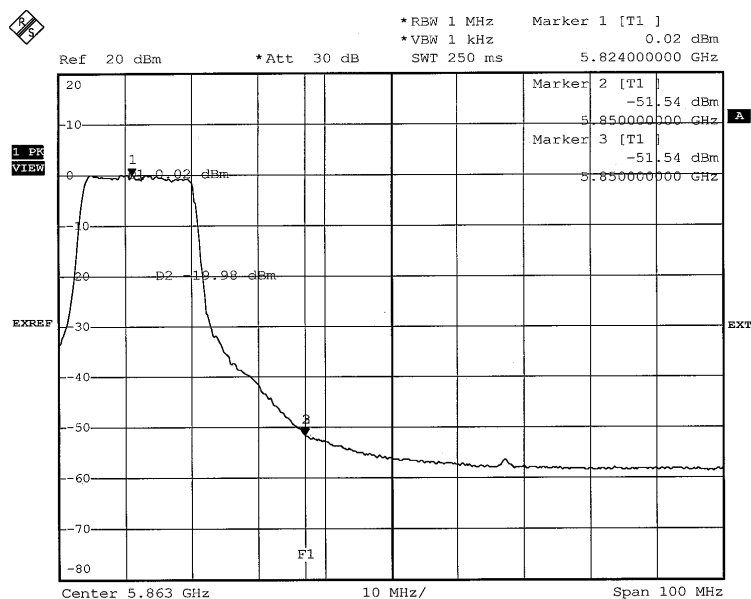
Same as Item 5.9.6

5.6.6 TEST RESULTS

The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).







5.7 ANTENNA REQUIREMENT

5.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna with UFL connector. The maximum Gain of the antenna is -0.84897dBi .

6. TEST TYPES AND RESULTS (FOR BLUETOOTH)

6.1.1 CONDUCTED EMISSION MEASUREMENT

6.1.2 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ 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.

6.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 02, 2006
RF signal cable Woken	5D-FB	Cable-HyC02-01	Jan. 06, 2007
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 09, 2007
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 22, 2007
Software ADT	ADT_Cond_V3	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 3.
 3. The VCCI Site Registration No. is C-2047.

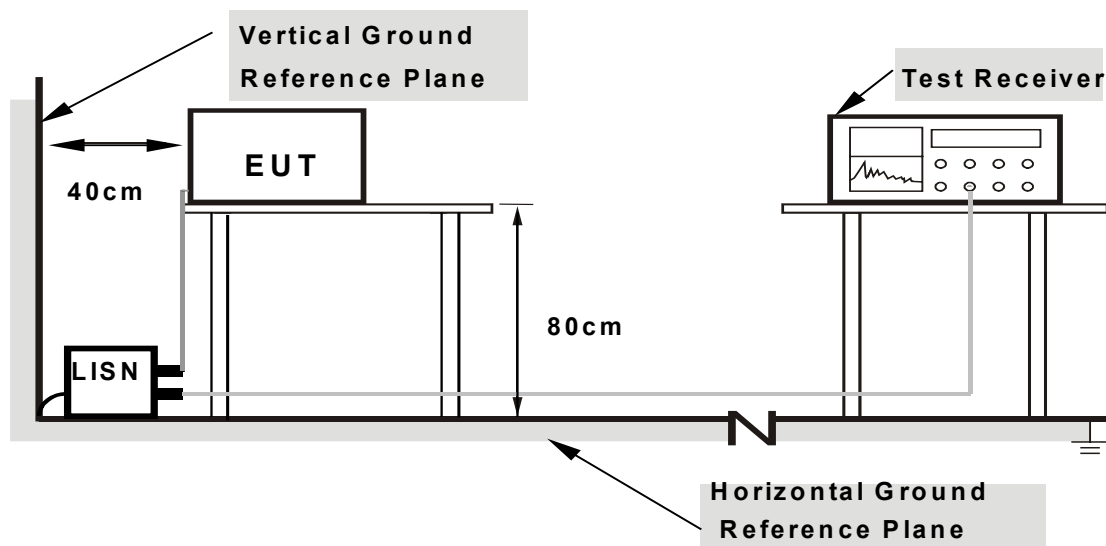
6.1.4 TEST PROCEDURES

- 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.

6.1.5 DEVIATION FROM TEST STANDARD

No deviation

6.1.6 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 related item – Photographs of the Test Configuration.

6.1.7 EUT OPERATING CONDITIONS

Same as 4.1.6

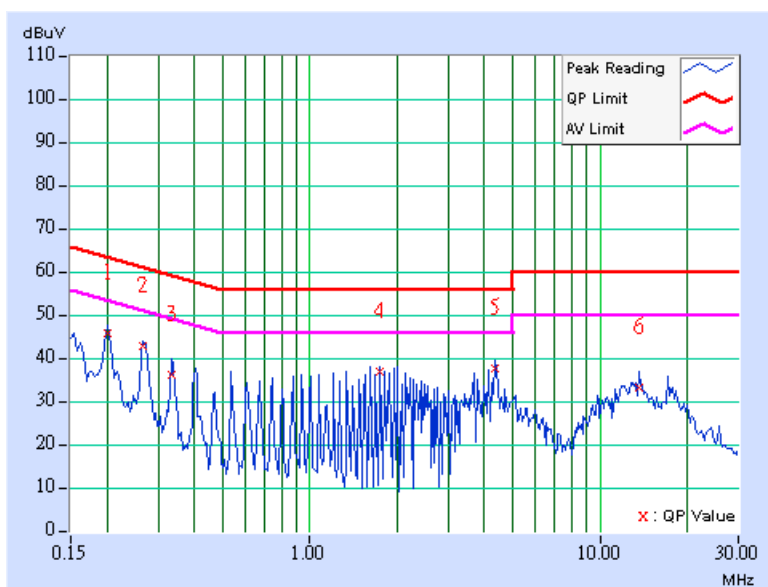
6.1.8 TEST RESULTS

Conducted Worst-Case Data (For Adapter: PA-1650-02)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	TESTED BY	Lori Chiu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.10	45.36	-	45.46	-	63.58	53.58	-18.12	-
2	0.267	0.10	42.45	-	42.55	-	61.20	51.20	-18.65	-
3	0.334	0.10	35.84	-	35.94	-	59.36	49.36	-23.42	-
4	1.746	0.17	36.44	-	36.61	-	56.00	46.00	-19.39	-
5	4.359	0.37	37.06	-	37.43	-	56.00	46.00	-18.57	-
6	13.617	0.56	32.75	-	33.31	-	60.00	50.00	-26.69	-

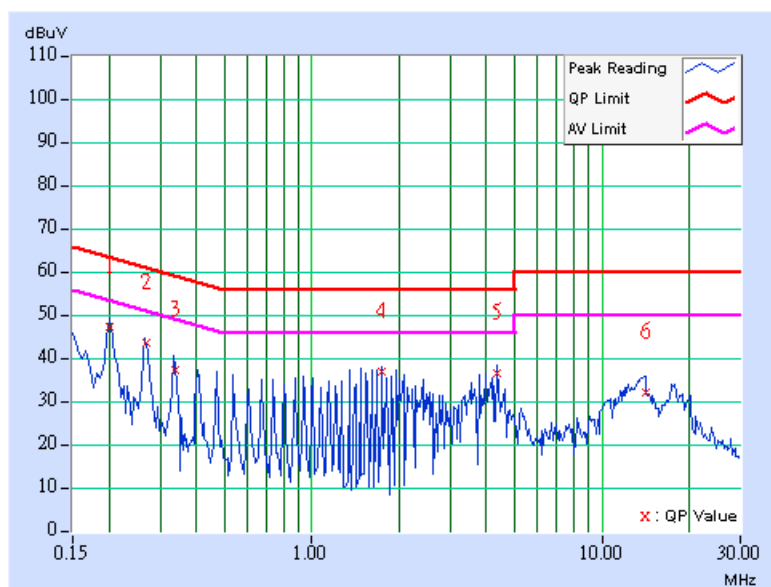
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	TESTED BY	Lori Chiu

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	0.201	0.10	46.87	-	46.97	-	63.58	53.58	-16.61	-
2	0.268	0.10	43.13	-	43.23	-	61.17	51.17	-17.94	-
3	0.336	0.10	36.71	-	36.81	-	59.30	49.30	-22.49	-
4	1.746	0.20	36.48	-	36.68	-	56.00	46.00	-19.32	-
5	4.359	0.38	36.19	-	36.57	-	56.00	46.00	-19.43	-
6	14.090	0.60	31.55	-	32.15	-	60.00	50.00	-27.85	-

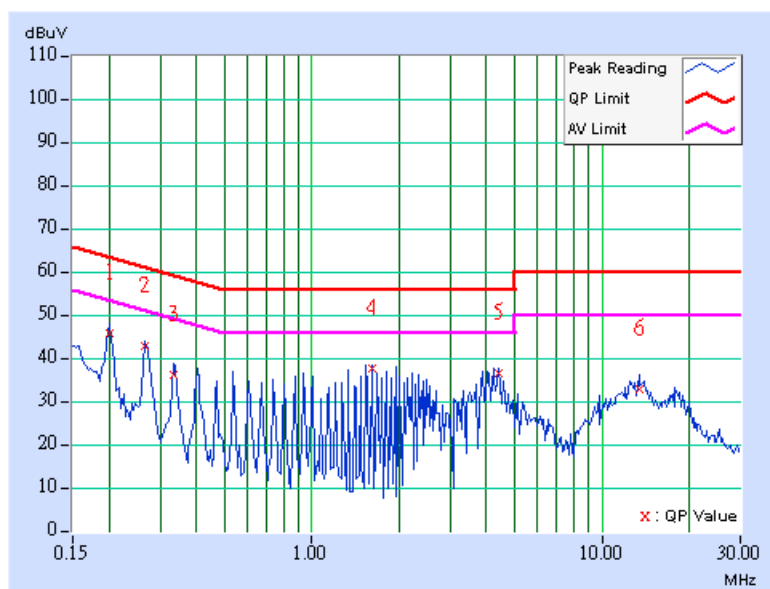
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	TESTED BY	Lori Chiu

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	0.201	0.10	45.26	-	45.36	-	63.58	53.58	-18.22	-
2	0.267	0.10	42.49	-	42.59	-	61.20	51.20	-18.61	-
3	0.334	0.10	35.74	-	35.84	-	59.36	49.36	-23.52	-
4	1.609	0.16	37.28	-	37.44	-	56.00	46.00	-18.56	-
5	4.426	0.37	36.24	-	36.61	-	56.00	46.00	-19.39	-
6	13.551	0.55	32.57	-	33.12	-	60.00	50.00	-26.88	-

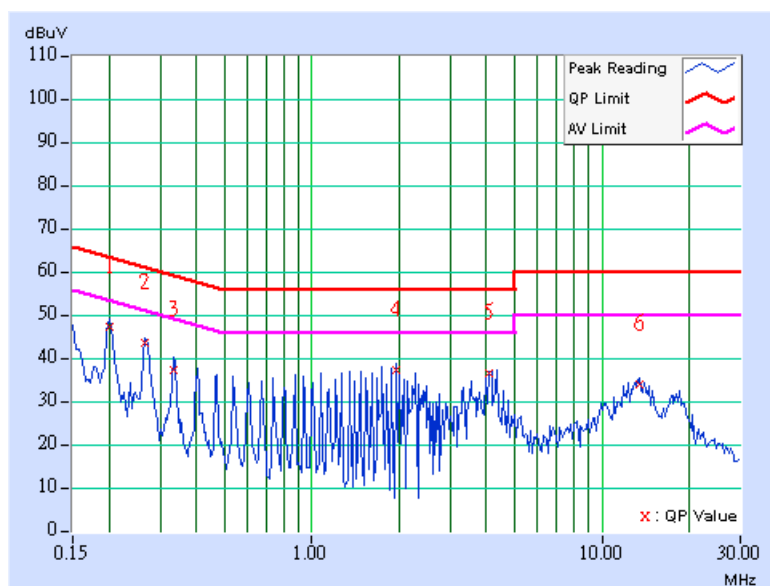
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	PHASE	Line 2
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	TESTED BY	Lori Chiu

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	0.201	0.10	46.97	-	47.07	-	63.58	53.58	-16.51	-
2	0.267	0.10	43.01	-	43.11	-	61.20	51.20	-18.09	-
3	0.334	0.10	36.71	-	36.81	-	59.35	49.35	-22.54	-
4	1.945	0.20	36.68	-	36.88	-	56.00	46.00	-19.12	-
5	4.090	0.37	36.19	-	36.56	-	56.00	46.00	-19.44	-
6	13.481	0.58	33.44	-	34.02	-	60.00	50.00	-25.98	-

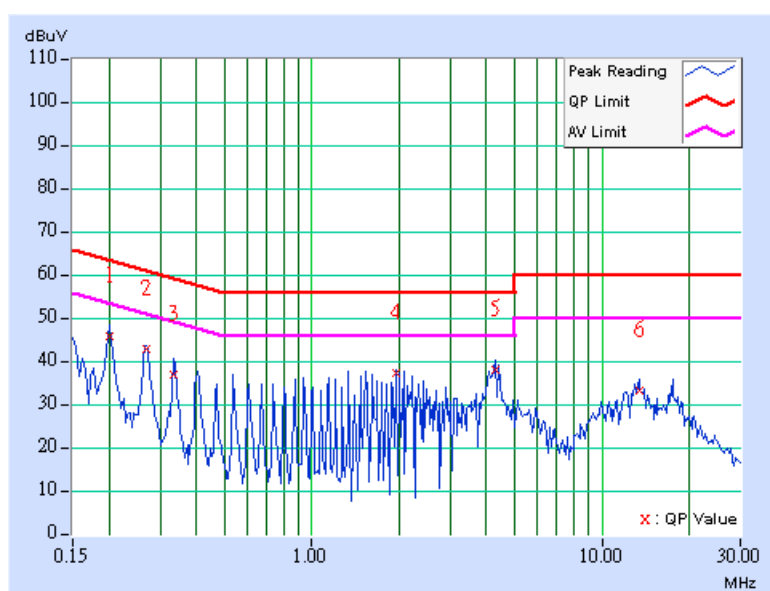
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	TESTED BY	Lori Chiu

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	0.201	0.10	45.24	-	45.34	-	63.58	53.58	-18.24	-
2	0.269	0.10	42.56	-	42.66	-	61.16	51.16	-18.50	-
3	0.335	0.10	36.61	-	36.71	-	59.33	49.33	-22.62	-
4	1.945	0.19	36.68	-	36.87	-	56.00	46.00	-19.13	-
5	4.292	0.37	37.53	-	37.90	-	56.00	46.00	-18.10	-
6	13.480	0.55	32.75	-	33.30	-	60.00	50.00	-26.70	-

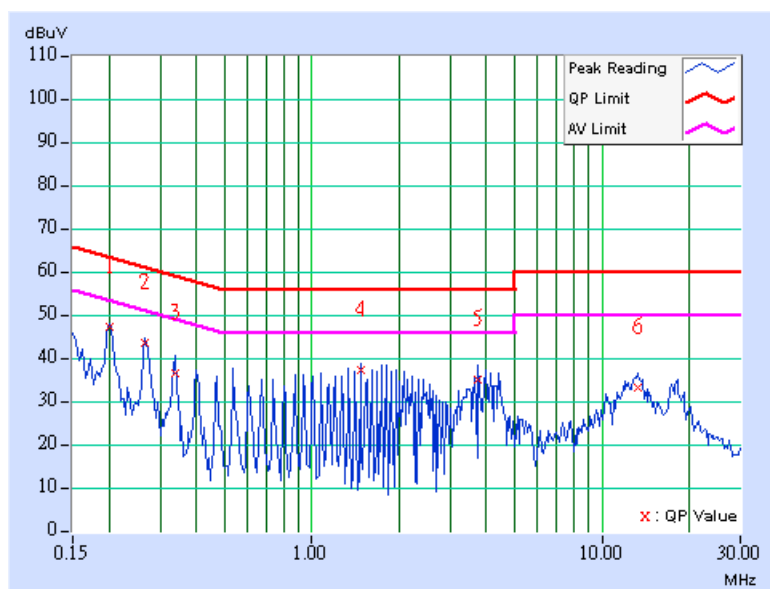
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	PHASE	Line 2
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	A	TESTED BY	Lori Chiu

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	0.201	0.10	46.81	-	46.91	-	63.58	53.58	-16.67	-
2	0.267	0.10	43.01	-	43.11	-	61.20	51.20	-18.09	-
3	0.338	0.10	36.19	-	36.29	-	59.26	49.26	-22.97	-
4	1.477	0.20	36.94	-	37.14	-	56.00	46.00	-18.86	-
5	3.754	0.35	34.65	-	35.00	-	56.00	46.00	-21.00	-
6	13.281	0.57	32.88	-	33.45	-	60.00	50.00	-26.55	-

- 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.

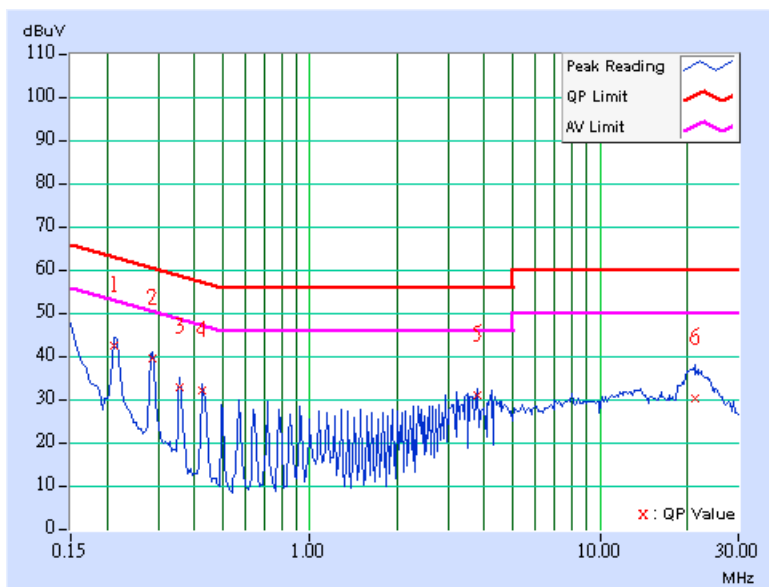


Conducted Worst-Case Data (For Adapter: 0335A1965)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	TESTED BY	Lori Chiu

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	0.213	0.10	42.02	-	42.12	-	63.10	53.10	-20.98	-
2	0.287	0.10	38.88	-	38.98	-	60.62	50.62	-21.64	-
3	0.357	0.10	32.44	-	32.54	-	58.80	48.80	-26.26	-
4	0.427	0.10	31.65	-	31.75	-	57.30	47.30	-25.55	-
5	3.786	0.35	30.50	-	30.85	-	56.00	46.00	-25.15	-
6	21.207	0.65	29.62	-	30.27	-	60.00	50.00	-29.73	-

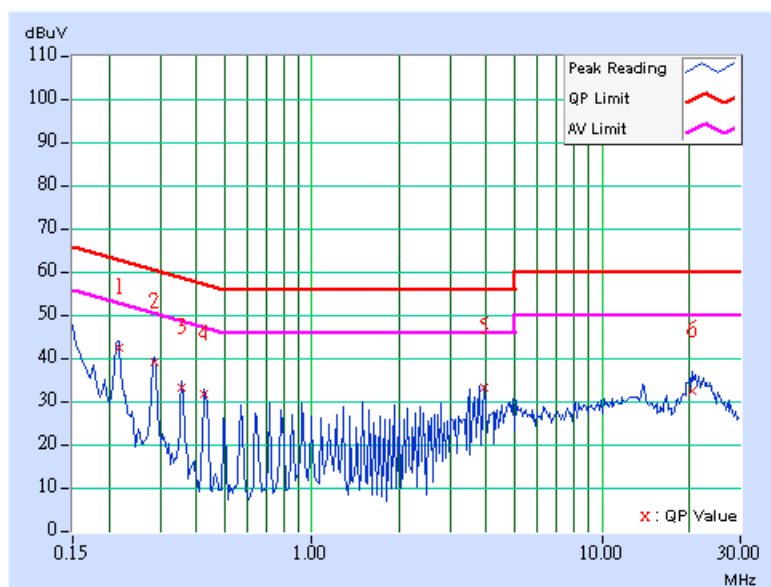
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	TESTED BY	Lori Chiu

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	0.216	0.10	41.83	-	41.93	-	62.96	52.96	-21.03	-
2	0.287	0.10	38.53	-	38.63	-	60.62	50.62	-21.99	-
3	0.357	0.10	32.65	-	32.75	-	58.80	48.80	-26.05	-
4	0.427	0.10	31.35	-	31.45	-	57.30	47.30	-25.85	-
5	3.930	0.36	32.59	-	32.95	-	56.00	46.00	-23.05	-
6	20.512	0.59	31.92	-	32.51	-	60.00	50.00	-27.49	-

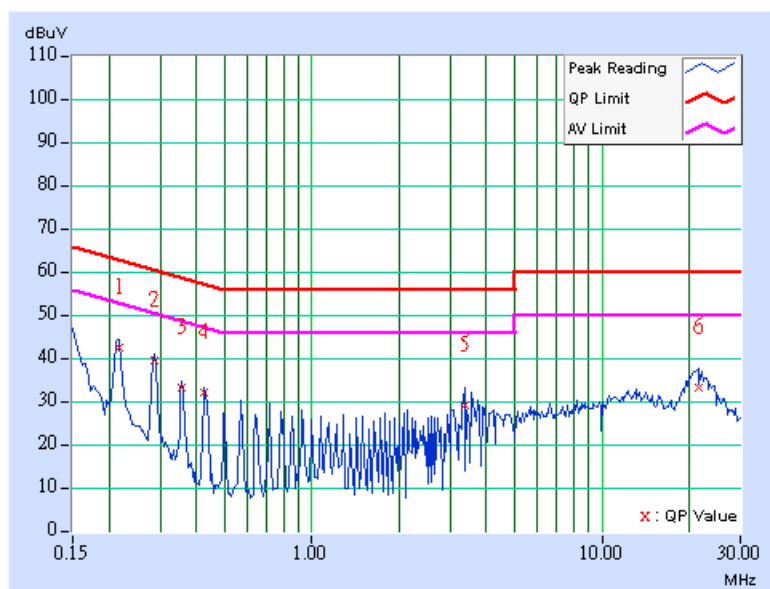
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	TESTED BY	Lori Chiu

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	0.216	0.10	41.75	-	41.85	-	62.96	52.96	-21.11	-
2	0.287	0.10	38.81	-	38.91	-	60.62	50.62	-21.71	-
3	0.357	0.10	32.69	-	32.79	-	58.80	48.80	-26.01	-
4	0.427	0.10	31.59	-	31.69	-	57.30	47.30	-25.61	-
5	3.359	0.32	28.57	-	28.89	-	56.00	46.00	-27.11	-
6	21.496	0.67	32.63	-	33.30	-	60.00	50.00	-26.70	-

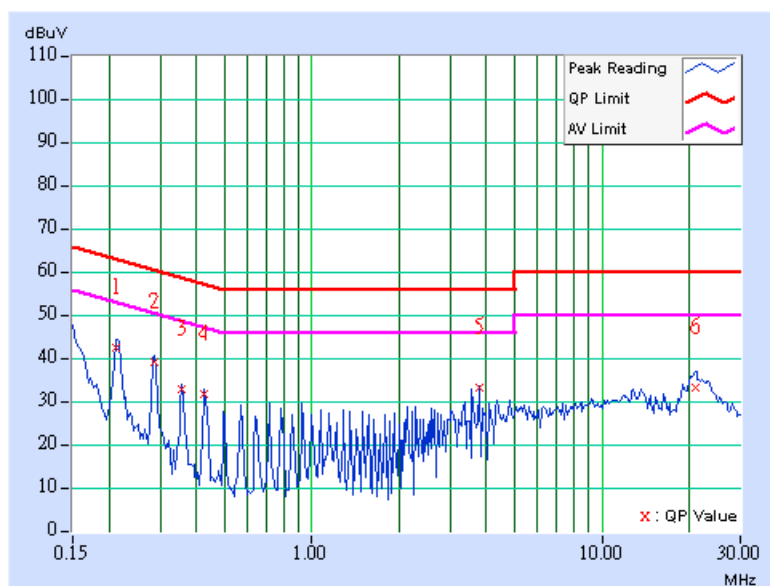
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	PHASE	Line 2
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	TESTED BY	Lori Chiu

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	0.213	0.10	42.12	-	42.22	-	63.11	53.11	-20.89	-
2	0.287	0.10	38.51	-	38.61	-	60.62	50.62	-22.01	-
3	0.357	0.10	32.42	-	32.52	-	58.80	48.80	-26.28	-
4	0.427	0.10	31.37	-	31.47	-	57.30	47.30	-25.83	-
5	3.785	0.35	32.72	-	33.07	-	56.00	46.00	-22.93	-
6	20.926	0.61	32.55	-	33.16	-	60.00	50.00	-26.84	-

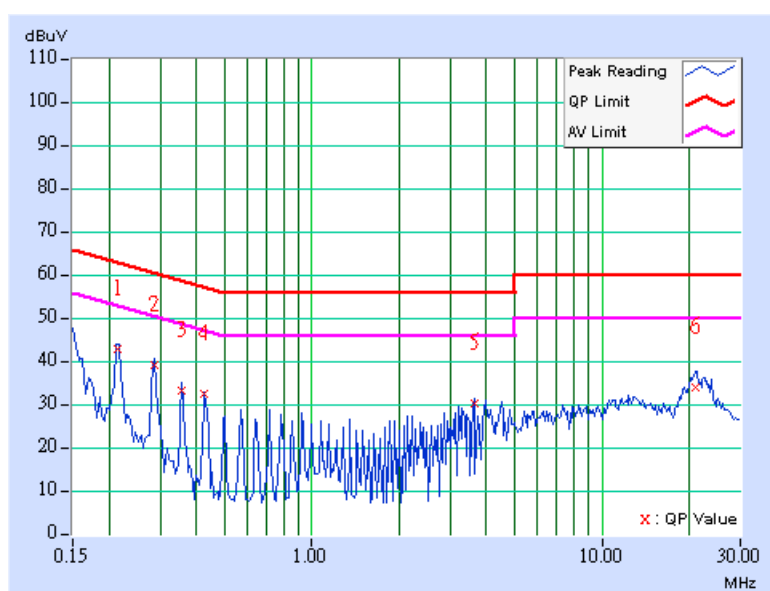
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	PHASE	Line 1
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	TESTED BY	Lori Chiu

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	0.214	0.10	42.48	-	42.58	-	63.03	53.03	-20.45	-
2	0.287	0.10	38.81	-	38.91	-	60.62	50.62	-21.71	-
3	0.357	0.10	32.73	-	32.83	-	58.80	48.80	-25.97	-
4	0.428	0.10	32.00	-	32.10	-	57.30	47.30	-25.20	-
5	3.643	0.34	29.76	-	30.10	-	56.00	46.00	-25.90	-
6	20.930	0.63	33.50	-	34.13	-	60.00	50.00	-25.87	-

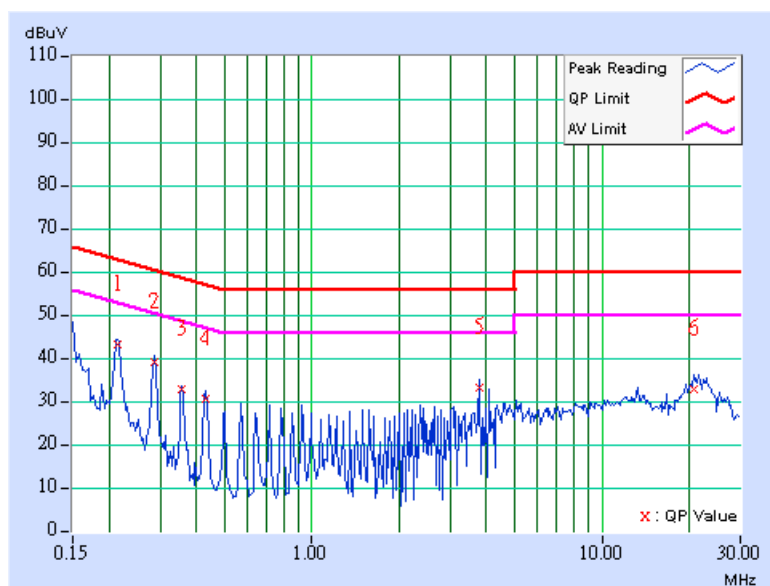
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	PHASE	Line 2
MODULATION TYPE	GFSK	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa
TEST MODE	B	TESTED BY	Lori Chiu

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	0.214	0.10	42.64	-	42.74	-	63.05	53.05	-20.31	-
2	0.287	0.10	38.51	-	38.61	-	60.62	50.62	-22.01	-
3	0.357	0.10	32.46	-	32.56	-	58.80	48.80	-26.24	-
4	0.431	0.11	30.28	-	30.39	-	57.23	47.23	-26.84	-
5	3.785	0.35	32.74	-	33.09	-	56.00	46.00	-22.91	-
6	20.855	0.61	32.48	-	33.09	-	60.00	50.00	-26.91	-

- 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.



6.2 RADIATED EMISSION MEASUREMENT

6.2.1 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.

6.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	May. 19, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Dec. 05, 2006
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Jun. 01, 2006
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 08, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 19, 2007
Preamplifier Agilent	8447D	2944A10633	Nov. 04, 2006
Preamplifier Agilent	8449B	3008A01964	Oct. 30, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214377/4	Dec. 13, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Dec. 13, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA
26GHz ~ 40GHz Amplifier	AMF-6F-2600400	923362	Mar. 13, 2006

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 2.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The VCCI Site Registration No. is R-237.

5. The IC Site Registration No. is IC4924-3.

6.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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.

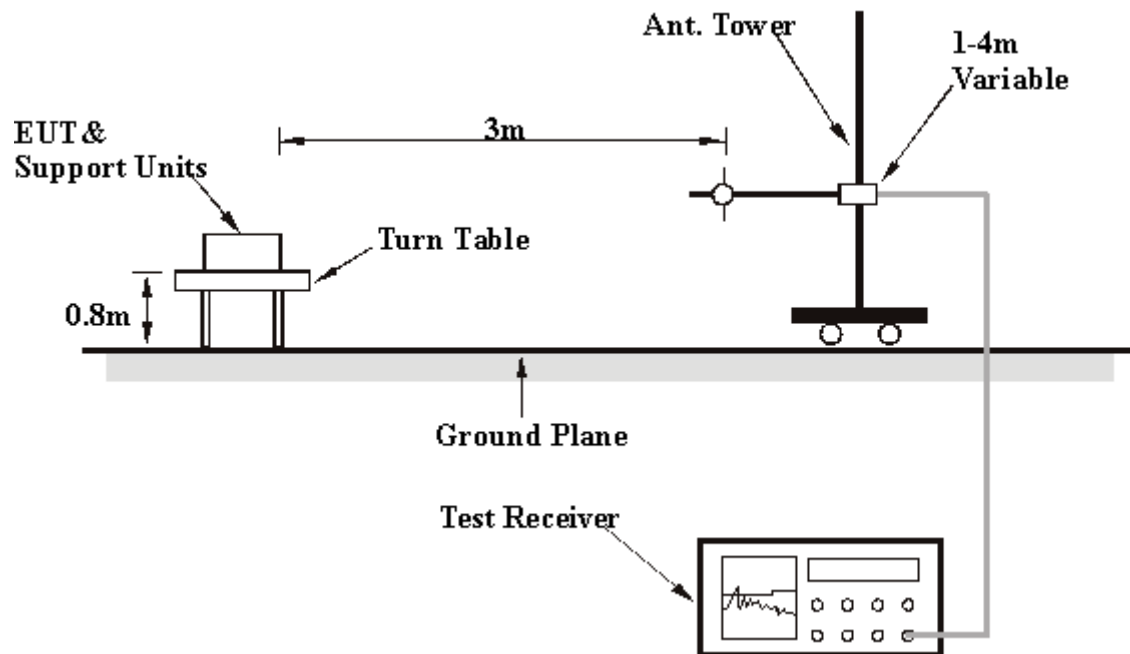
NOTE:

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 and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.

6.2.4 DEVIATION FROM TEST STANDARD

No deviation

6.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

6.2.7 TEST RESULTS

Radiated Worst Case Data (For Adapter: PA-1650-02)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	GFSK	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	A	TESTED BY	Morgan 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	76.65	26.96 QP	40.00	-13.04	1.00 H	49	15.90	11.06
2	239.94	33.57 QP	46.00	-12.43	1.00 H	229	21.20	12.37
3	339.08	32.25 QP	46.00	-13.75	1.00 H	229	15.74	16.51
4	414.89	32.41 QP	46.00	-13.59	1.50 H	10	13.85	18.56
5	432.38	33.19 QP	46.00	-12.81	1.00 H	337	14.32	18.87
6	624.83	31.65 QP	46.00	-14.35	1.50 H	43	8.31	23.35
7	768.68	31.19 QP	46.00	-14.81	1.00 H	25	4.76	26.43
8	912.53	37.78 QP	46.00	-8.22	1.00 H	337	10.01	27.77

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	45.55	33.06 QP	40.00	-6.94	1.00 V	103	18.42	14.64
2	66.93	33.90 QP	40.00	-6.10	1.00 V	346	21.21	12.69
3	432.38	33.78 QP	46.00	-12.22	1.00 V	349	14.91	18.87
4	475.15	31.10 QP	46.00	-14.90	1.00 V	103	11.27	19.83
5	498.48	33.10 QP	46.00	-12.90	1.00 V	349	12.67	20.43
6	533.47	32.78 QP	46.00	-13.22	1.50 V	172	11.71	21.07
7	863.93	33.03 QP	46.00	-12.97	1.00 V	235	5.78	27.26
8	912.53	40.75 QP	46.00	-5.25	1.00 V	346	12.98	27.77

- 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.

Radiated Worst Case Data (For Adapter: 0335A1965)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	GFSK	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa
TEST MODE	B	TESTED BY	Morgan 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	239.94	26.30 QP	46.00	-19.70	1.00 H	268	13.93	12.37
2	272.99	27.65 QP	46.00	-18.35	1.00 H	235	13.15	14.50
3	339.08	30.76 QP	46.00	-15.24	1.50 H	286	14.26	16.51
4	414.89	28.01 QP	46.00	-17.99	2.00 H	115	9.45	18.56
5	432.38	33.45 QP	46.00	-12.55	1.50 H	217	14.58	18.87
6	527.64	30.41 QP	46.00	-15.59	1.50 H	277	9.45	20.96
7	624.83	29.27 QP	46.00	-16.73	2.00 H	88	5.92	23.35
8	828.94	28.49 QP	46.00	-17.51	1.00 H	28	1.55	26.94
9	889.20	31.05 QP	46.00	-14.95	1.50 H	286	3.57	27.48

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	88.32	23.23 QP	43.50	-20.27	1.00 V	112	13.71	9.52
2	119.42	25.83 QP	43.50	-17.67	1.50 V	19	14.76	11.08
3	168.02	22.94 QP	43.50	-20.56	1.00 V	157	9.80	13.14
4	341.02	30.70 QP	46.00	-15.30	1.00 V	340	14.17	16.54
5	407.11	31.47 QP	46.00	-14.53	1.00 V	340	13.05	18.43
6	432.38	32.80 QP	46.00	-13.20	1.50 V	79	13.93	18.87
7	477.09	29.32 QP	46.00	-16.68	1.50 V	316	9.44	19.88
8	498.48	31.10 QP	46.00	-14.90	1.50 V	79	10.67	20.43
9	533.47	34.75 QP	46.00	-11.25	1.00 V	208	13.68	21.07
10	572.34	28.39 QP	46.00	-17.61	1.00 V	340	6.23	22.16
11	599.56	31.18 QP	46.00	-14.82	1.00 V	208	8.05	23.13
12	912.53	29.75 QP	46.00	-16.25	1.50 V	247	1.98	27.77

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	GFSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Morgan 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	1602.00	38.93 PK	74.00	-35.07	1.22 H	337	9.80	29.13
1	1602.00	28.33 AV	54.00	-25.67	1.22 H	337	-0.80	29.13
2	2390.00	33.11 PK	74.00	-40.89	1.02 H	304	1.20	31.91
2	2390.00	25.05 AV	54.00	-28.95	1.02 H	304	-6.86	31.91
3	*2402.00	89.02 PK			1.02 H	304	57.04	31.98
3	*2402.00	59.02 AV			1.02 H	304	27.04	31.98
4	4804.00	50.29 PK	74.00	-23.71	1.05 H	32	12.80	37.49
4	4804.00	20.29 AV	54.00	-33.71	1.05 H	32	-17.20	37.49

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	1602.00	38.25 PK	74.00	-35.75	1.35 V	315	9.12	29.13
1	1602.00	27.89 AV	54.00	-26.11	1.35 V	315	-1.24	29.13
2	2390.00	31.05 PK	74.00	-42.95	1.08 V	355	-0.86	31.91
2	2390.00	23.22 AV	54.00	-30.78	1.08 V	355	-8.69	31.91
3	*2402.00	81.32 PK			1.08 V	355	49.34	31.98
3	*2402.00	51.41 AV			1.08 V	355	19.43	31.98
4	4804.00	49.55 PK	74.00	-24.45	1.06 V	38	12.06	37.49
4	4804.00	19.55 AV	54.00	-34.45	1.06 V	38	-17.94	37.49

- 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.
 5. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on $0.625 * 5$ per 296.25 ms per channel. Therefore, the duty cycle be equal to: $20\log(3.125/100) = -30$ dB.
 6. Average value = peak reading $-20\log(\text{duty cycle})$.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 39	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	GFSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Morgan 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	1627.00	38.88 PK	74.00	-35.12	1.16 H	352	9.72	29.16
1	1627.00	28.29 AV	54.00	-25.71	1.16 H	352	-0.87	29.16
2	*2441.00	89.12 PK			1.05 H	321	56.90	32.22
2	*2441.00	59.12 AV			1.05 H	321	26.90	32.22
3	4882.00	50.35 PK	74.00	-23.65	1.08 H	318	12.79	37.56
3	4882.00	20.35 AV	54.00	-33.65	1.08 H	318	-17.21	37.56

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	1627.00	38.42 PK	74.00	-35.58	1.29 V	312	9.26	29.16
1	1627.00	27.98 AV	54.00	-26.02	1.29 V	312	-1.18	29.16
2	*2441.00	81.59 PK			1.12 V	336	49.37	32.22
2	*2441.00	51.59 AV			1.12 V	336	19.37	32.22
3	4882.00	49.57 PK	74.00	-24.43	1.02 V	325	12.01	37.56
3	4882.00	19.57 AV	54.00	-34.43	1.02 V	325	-17.99	37.56

- 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. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle be equal to: $20\log(3.125/100) = -30$ dB.
 6. Average value = peak reading $-20\log(\text{duty cycle})$.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 78	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	GFSK	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Morgan 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	1653.00	38.99 PK	74.00	-35.01	1.08 H	325	9.81	29.18
1	1653.00	28.41 AV	54.00	-25.59	1.08 H	325	-0.77	29.18
2	*2480.00	89.11 PK			1.06 H	315	56.64	32.47
2	*2480.00	59.11 AV			1.06 H	315	26.64	32.47
3	2483.50	34.55 PK	74.00	-39.45	1.06 H	315	2.06	32.49
3	2483.50	25.78 AV	54.00	-28.22	1.06 H	315	-6.71	32.49
4	4960.00	50.58 PK	74.00	-23.42	1.08 H	325	12.99	37.59
4	4960.00	20.58 AV	54.00	-33.42	1.08 H	325	-17.01	37.59

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	1653.00	38.35 PK	74.00	-35.65	1.32 V	322	9.17	29.18
1	1653.00	27.92 AV	54.00	-26.08	1.32 V	322	-1.26	29.18
2	*2480.00	81.68 PK			1.11 V	329	49.21	32.47
2	*2480.00	51.68 AV			1.11 V	329	19.21	32.47
3	2483.50	32.58 PK	74.00	-41.42	1.02 V	122	0.09	32.49
3	2483.50	23.65 AV	54.00	-30.35	1.02 V	122	-8.84	32.49
4	4960.00	49.68 PK	74.00	-24.32	1.05 V	321	12.09	37.59
4	4960.00	19.68 AV	54.00	-34.32	1.05 V	321	-17.91	37.59

- 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. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle be equal to: $20\log(3.125/100) = -30$ dB.
 6. Average value = peak reading $-20\log(\text{duty cycle})$.

6.3 NUMBER OF HOPPING FREQUENCY USED

6.3.1 LIMIT OF HOPPING FREQUENCY USED

At least 15 channels frequencies, and should be equally spaced.

6.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

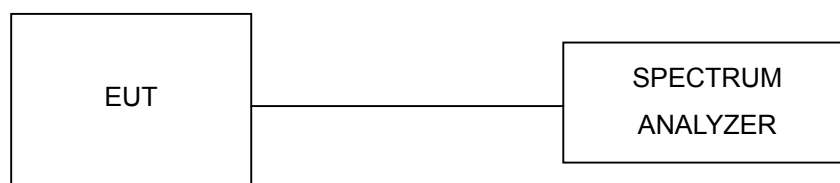
6.3.3 TEST PROCEDURES

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- Set the SA on View mode and then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

6.3.4 DEVIATION FROM TEST STANDARD

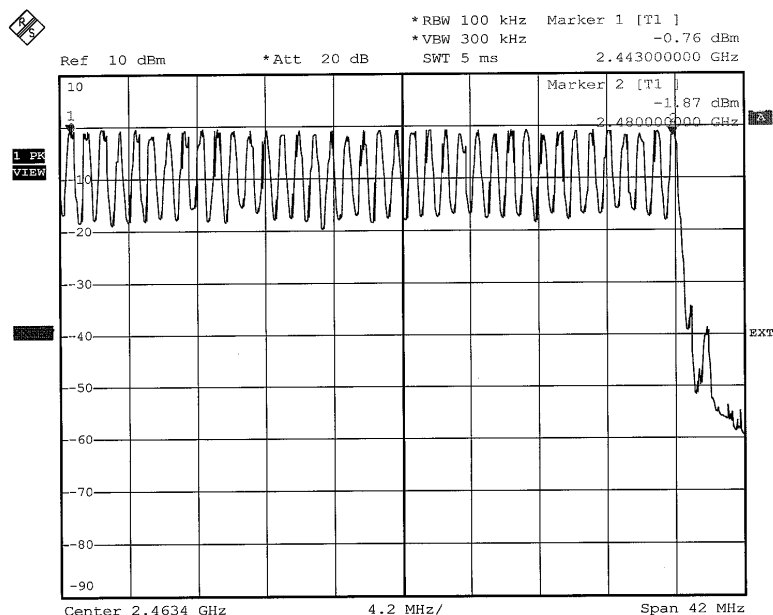
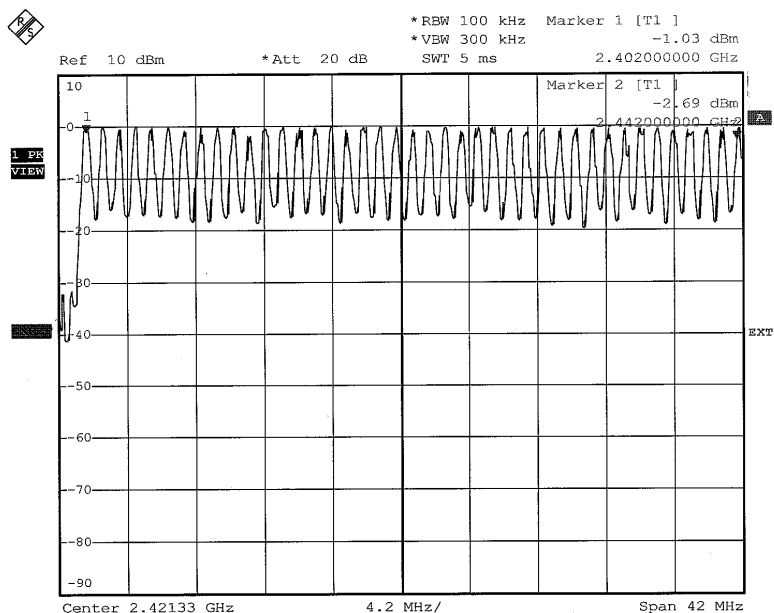
No deviation.

6.3.5 TEST SETUP



6.3.6 TEST RESULTS

There are 79 hopping frequencies in the hopping mode. Please refer to next two pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.



6.4 DWELL TIME ON EACH CHANNEL

6.4.1 LIMIT OF DWELL TIME USED

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

6.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

6.4.3 TEST PROCEDURES

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- Repeat above procedures until all different time-slot modes have been completed.

6.4.4 DEVIATION FROM TEST STANDARD

No deviation.

6.4.5 TEST SETUP

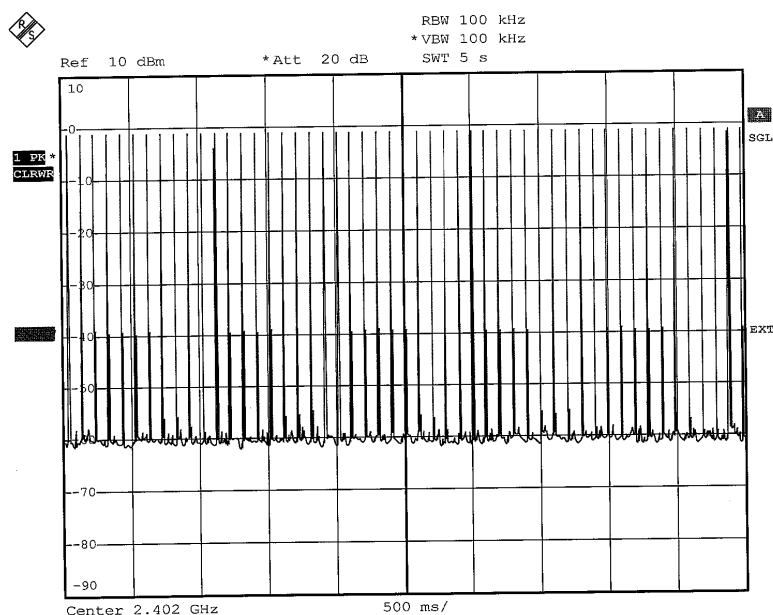
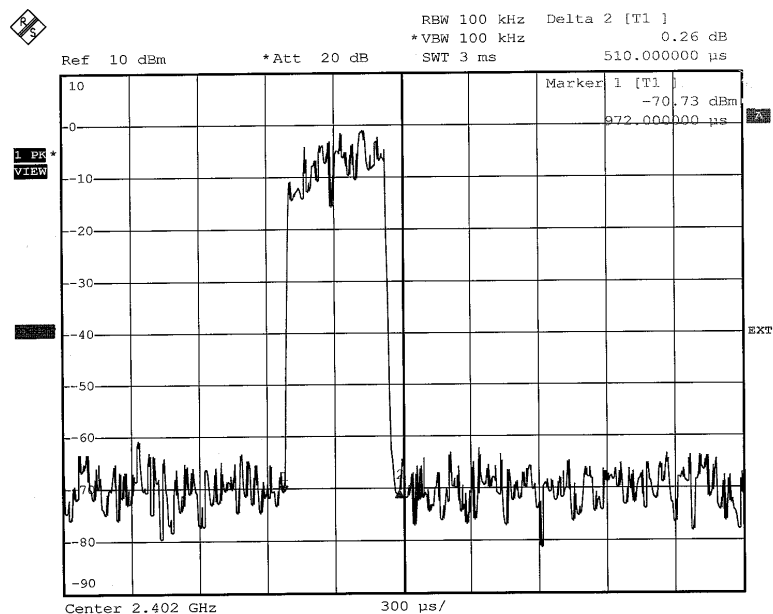


6.4.6 TEST RESULTS

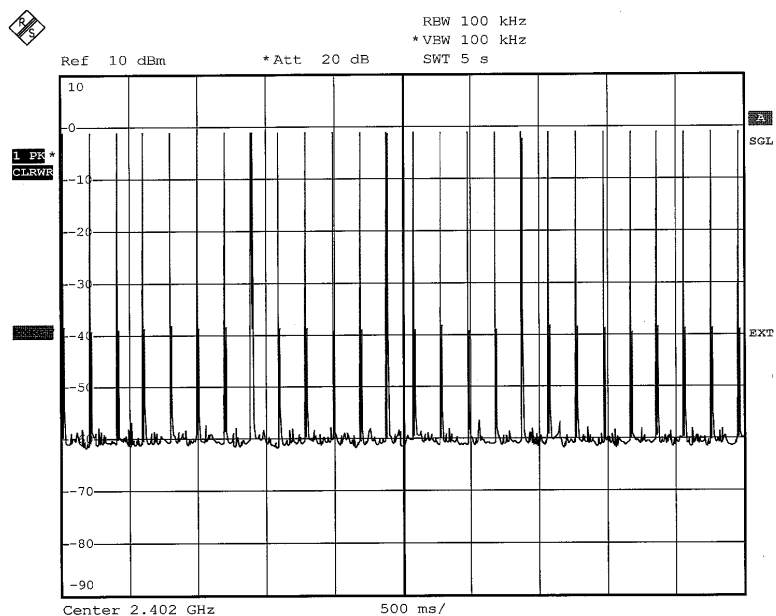
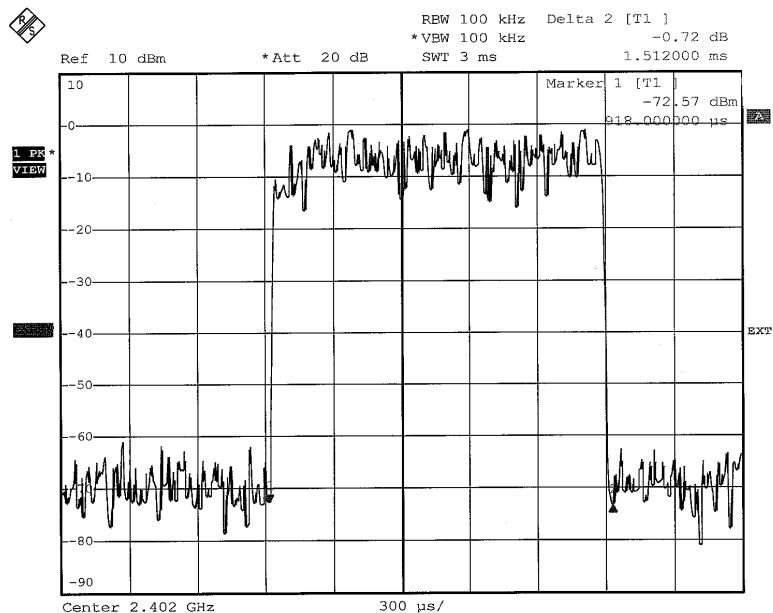
MODE	NUMBER OF TRANSMISSION IN A 31.6 (79HOPPING * 0.4)	LENGTH OF TRANSMISSION TIME (msec)	RESULT (msec)	LIMIT (msec)
DH1	51 (times / 5 sec) * 6.32 = 322.32 times	0.510	164.38	400
DH3	26 (times / 5 sec) * 6.32 = 164.32 times	1.512	248.45	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.070	329.84	400

NOTE: Test plots of the transmitting time slot are shown on next 3 pages.

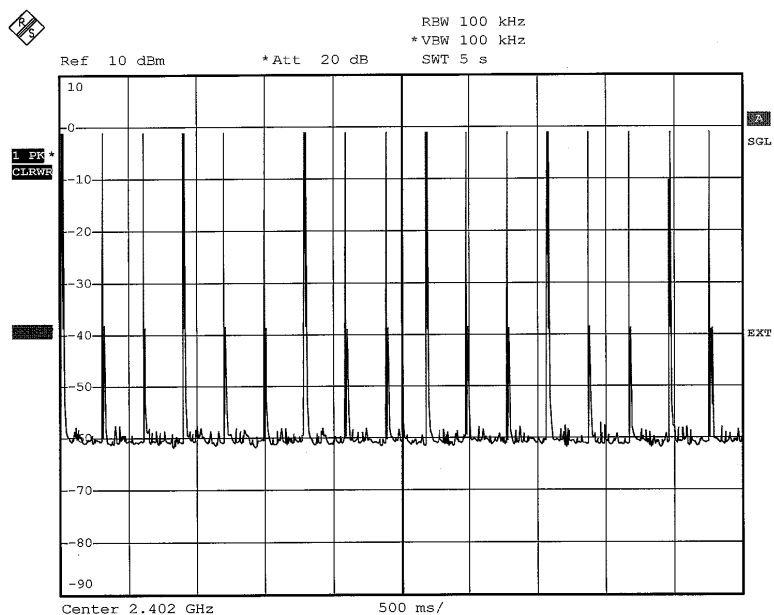
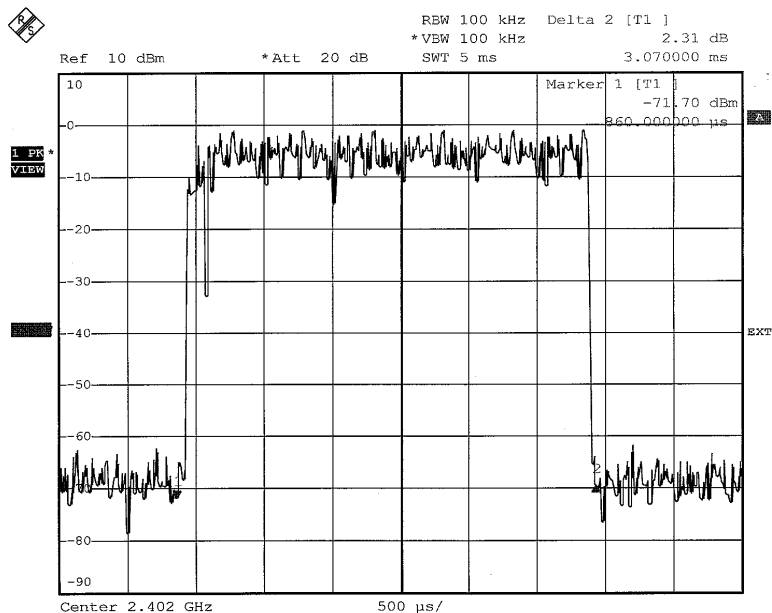
DH1



DH3



DH5



6.5 CHANNEL BANDWIDTH

6.5.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, the 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

6.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

6.5.3 TEST PROCEDURE

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- Repeat above procedures until all frequencies measured were complete.

6.5.4 DEVIATION FROM TEST STANDARD

No deviation.

6.5.5 TEST SETUP



6.5.6 EUT OPERATING CONDITION

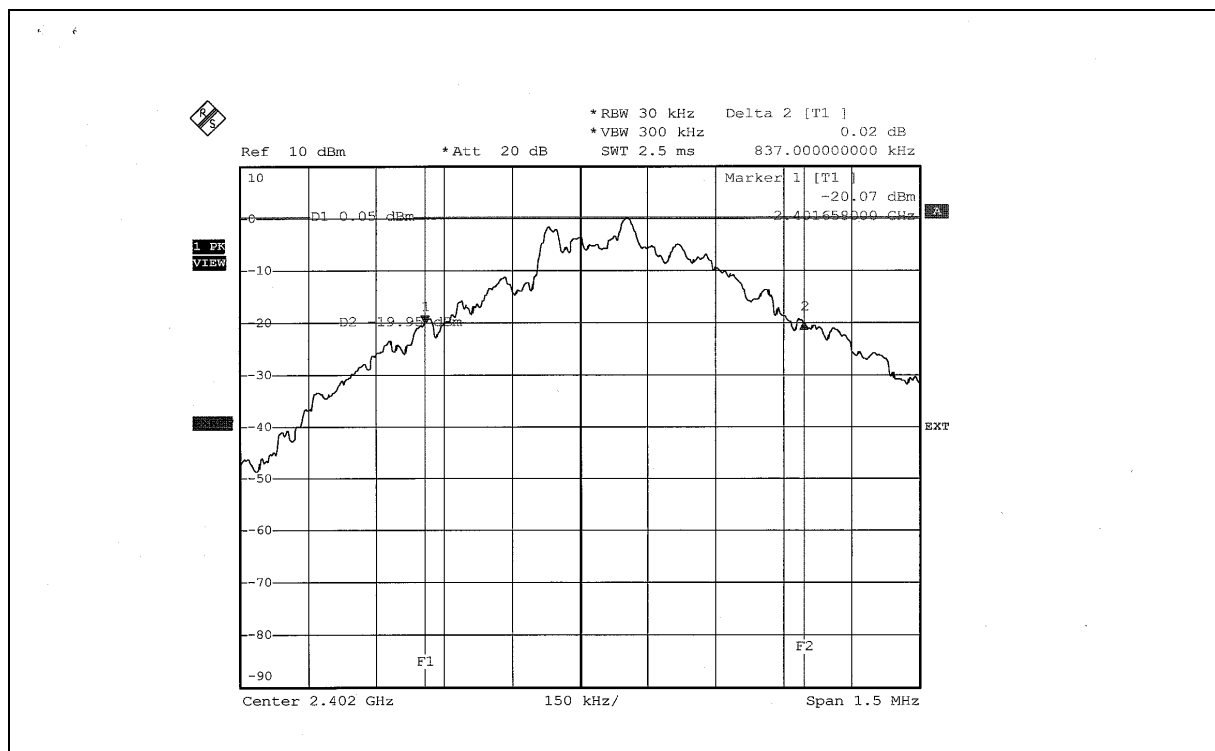
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

6.5.7 TEST RESULTS

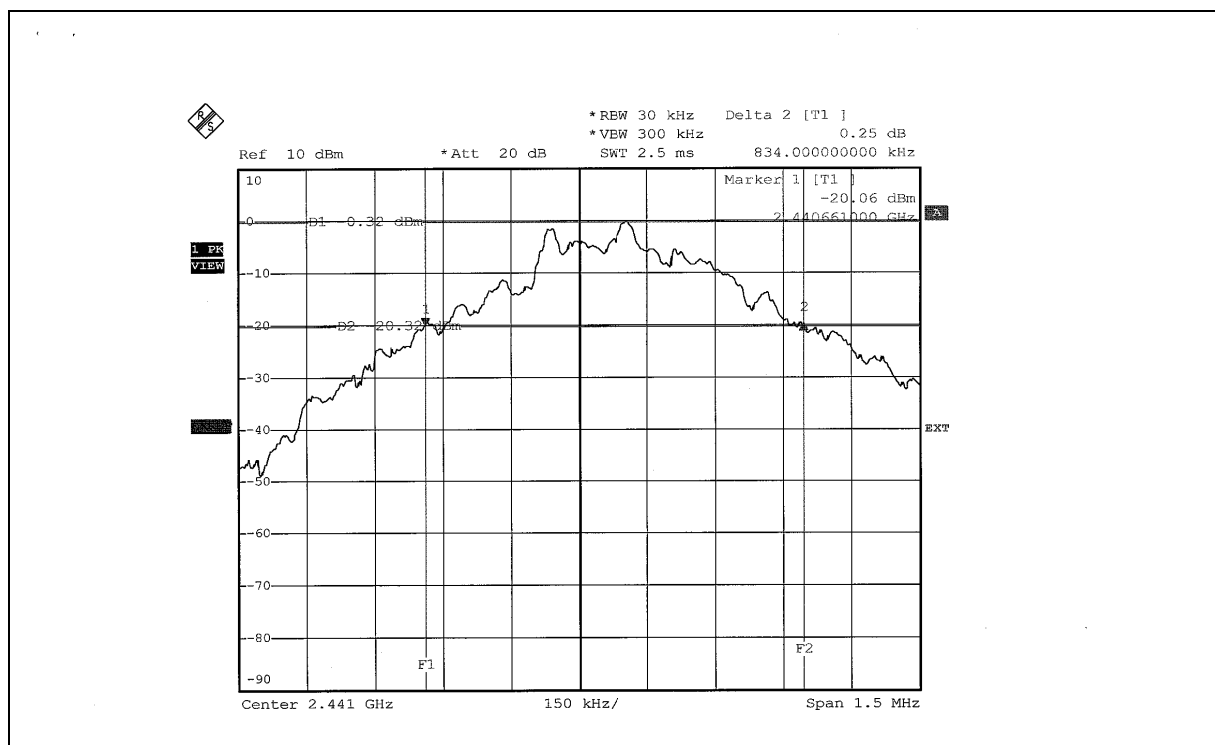
MODULATION TYPE	GFSK	ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	2402	0.837
39	2441	0.834
78	2480	0.828

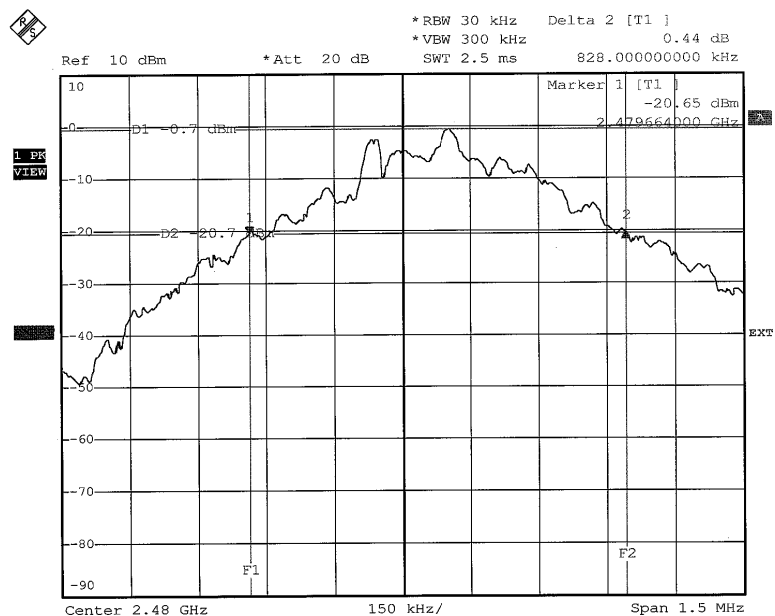
CH 0



CH 39



CH 78



6.6 HOPPING CHANNEL SEPARATION

6.6.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25kHz or 20dB hopping channel bandwidth (whichever is greater).

6.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

6.6.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

6.6.4 DEVIATION FROM TEST STANDARD

No deviation.

6.6.5 TEST SETUP



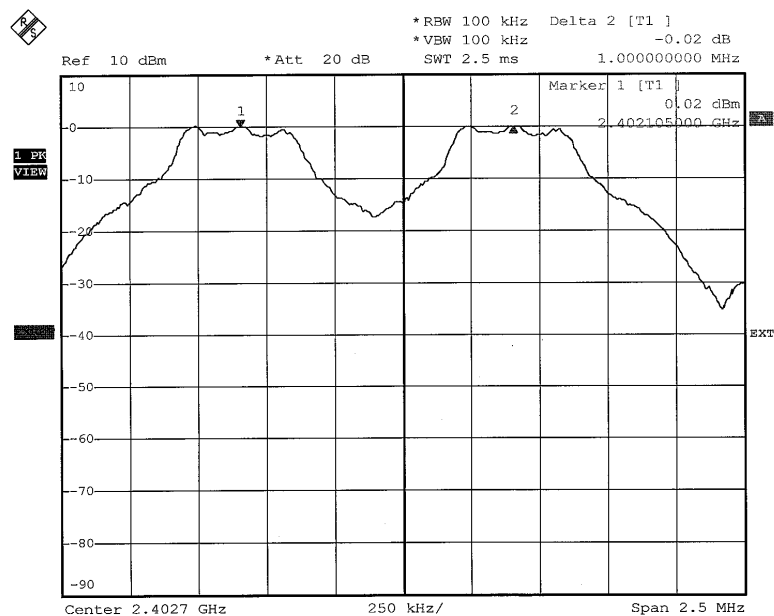
6.6.6 TEST RESULTS

MODULATION TYPE	GFSK	ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Long Chen

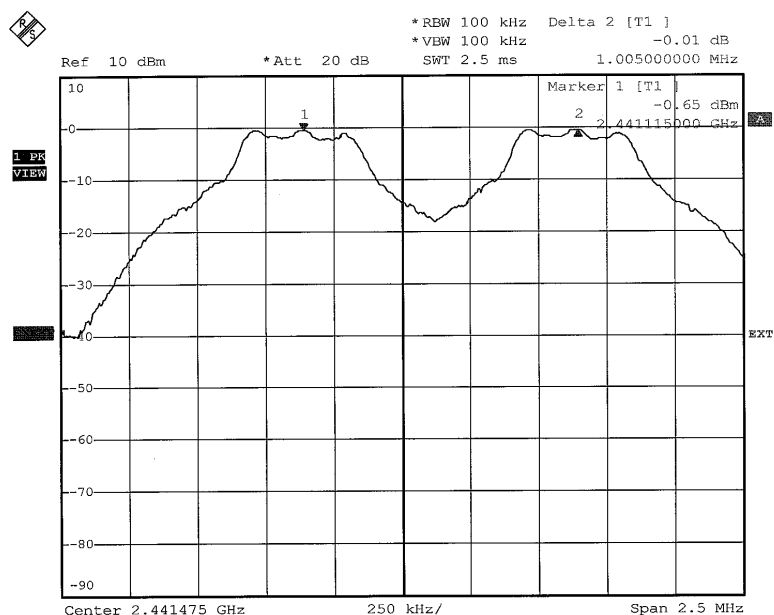
CHANNEL	FREQUENCY (MHz)	ADJACENT CHANNEL SEPARATION (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.000	0.837	PASS
39	2441	1.005	0.834	PASS
78	2480	1.000	0.828	PASS

NOTE: The minimum limit is 20dB bandwidth. Test results please refer to next two pages.

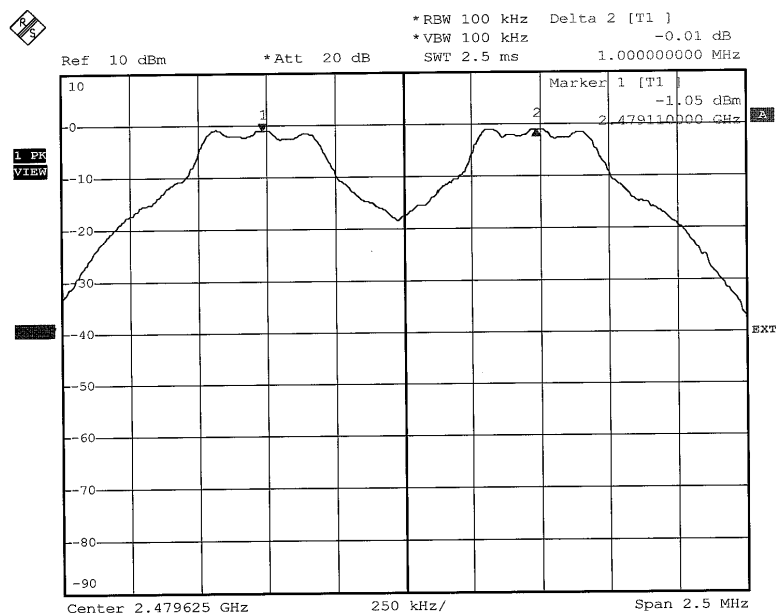
CH 0



CH 39



CH 78



6.7 MAXIMUM PEAK OUTPUT POWER

6.7.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

6.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

6.7.3 TEST PROCEDURES

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- The center frequency of the spectrum analyzer is set to the fundamental frequency and using 1 MHz RBW and 3 MHz VBW.
- Measure the captured power within the band and recording the plot.
- Repeat above procedures until all frequencies required were complete.

6.7.4 DEVIATION FROM TEST STANDARD

No deviation

6.7.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

6.7.6 EUT OPERATING CONDITION

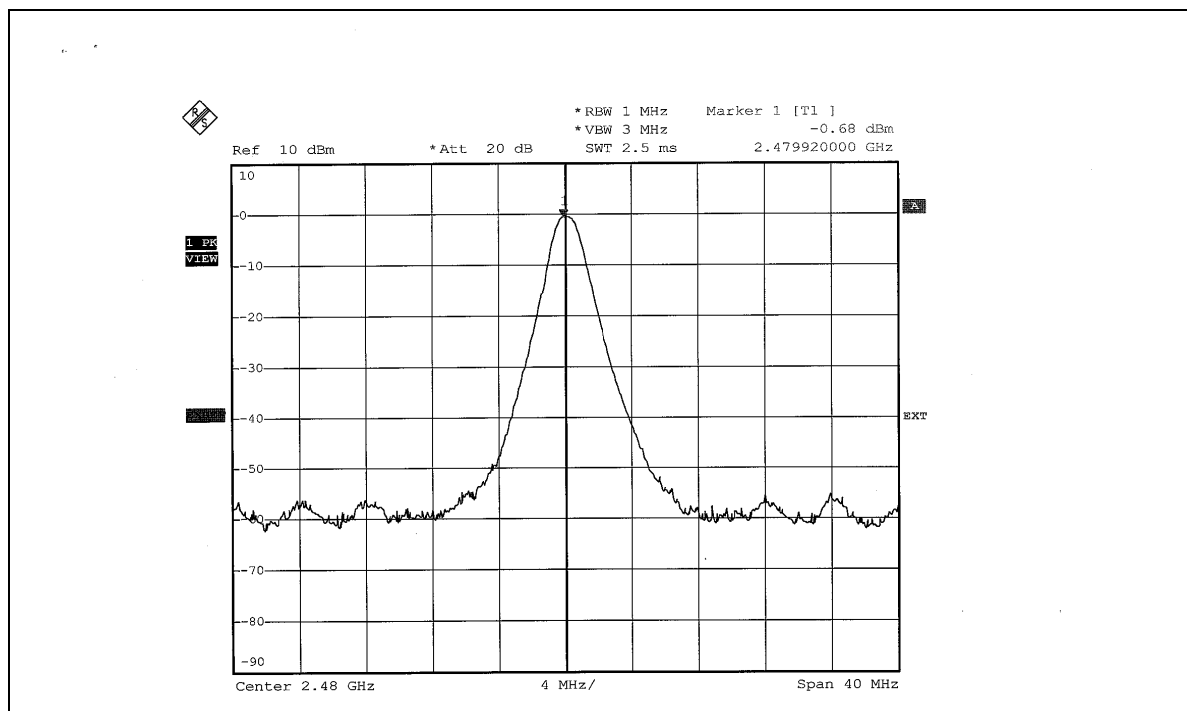
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

6.7.7 TEST RESULTS

MODULATION TYPE	GFSK	ENVIRONMENTAL CONDITIONS	25deg. C, 61%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Long Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	2402	1.084	0.35	30	PASS
39	2441	0.955	-0.20	30	PASS
78	2480	0.855	-0.68	30	PASS

CH 78



6.8 BAND EDGES MEASUREMENT

6.8.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz RBW).

6.8.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

6.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

6.8.4 DEVIATION FROM TEST STANDARD

No deviation.

6.8.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

6.8.6 TEST RESULTS

The spectrum plots are attached on the following 4 images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

NOTE 1:

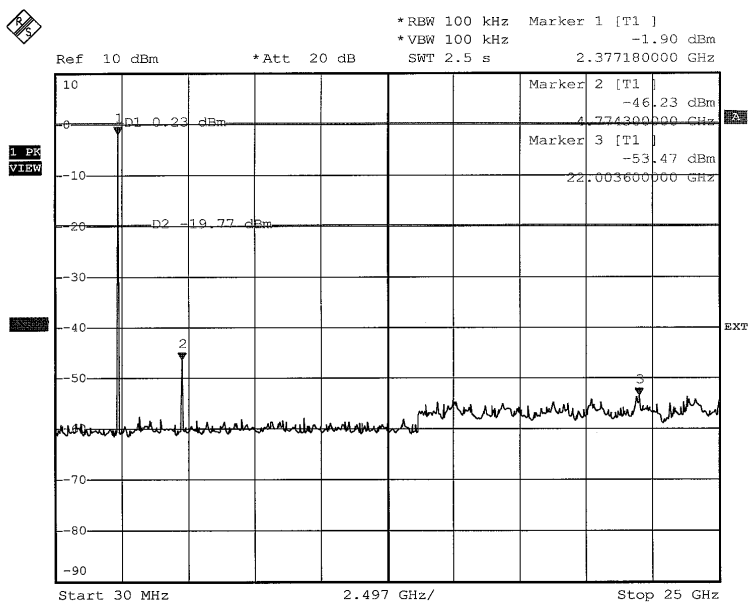
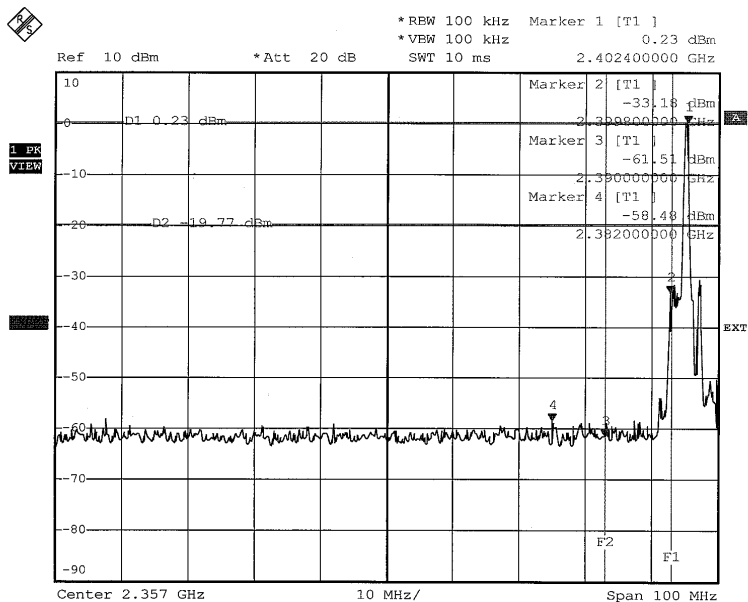
The band edge emission plot on the next page shows 58.71dBc between carrier maximum power and local maximum emission in restrict band (2.3820GHz). The emission of carrier strength list in the test result of channel 0 at the item 6.2.7 is 89.02dBuV/m (Peak), so the maximum field strength in restrict band is $89.02 - 58.71 = 30.31$ dBuV/m, which is under 74 dBuV/m limit.

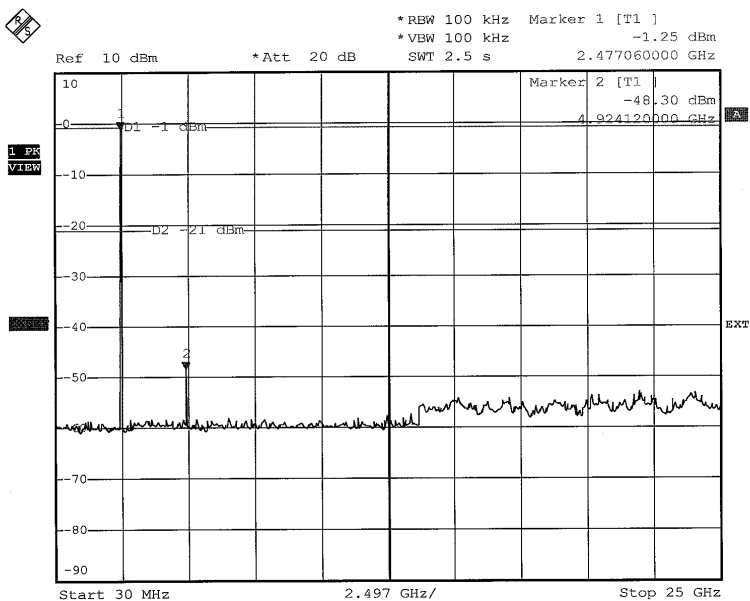
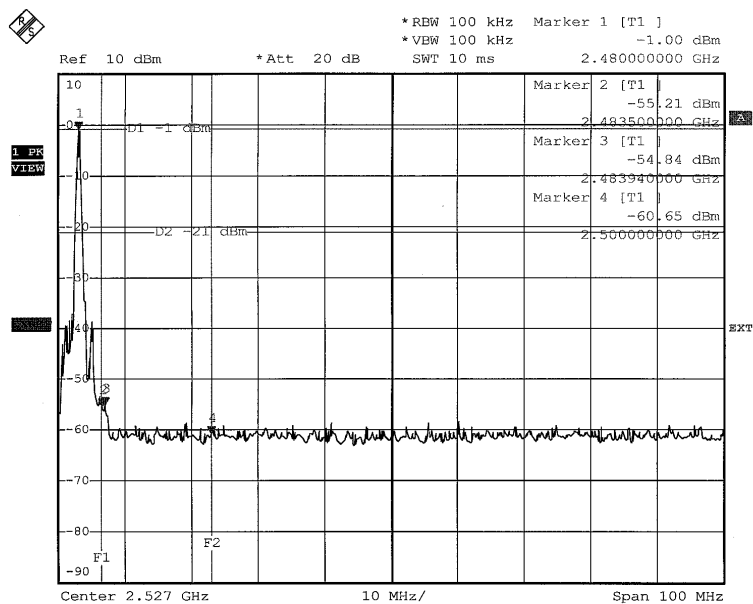
The band edge emission plot on the next page shows 58.71dBc between carrier maximum power and local maximum emission in restrict band (2.3820GHz). The emission of carrier strength list in the test result of channel 0 at the item 6.2.7 is 59.02dBuV/m (Average), so the maximum field strength in restrict band is $59.02 - 58.71 = 0.31$ dBuV/m, which is under 54 dBuV/m limit.

NOTE 2:

The band edge emission plot on the next second page shows 53.84dBc between carrier maximum power and local maximum emission in restrict band (2.4839GHz). The emission of carrier strength list in the test result of channel 78 at the item 6.2.7 is 89.11dBuV/m (Peak), so the maximum field strength in restrict band is $89.11 - 53.84 = 35.27$ dBuV/m, which is under 74 dBuV/m limit.

The band edge emission plot on the next second page shows 53.84dBc between carrier maximum power and local maximum emission in restrict band (2.4839GHz). The emission of carrier strength list in the test result of channel 78 at the item 6.2.7 is 59.11dBuV/m (Average), so the maximum field strength in restrict band is $59.11 - 53.84 = 5.27$ dBuV/m, which is under 54 dBuV/m limit.





6.9 ANTENNA REQUIREMENT

6.9.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.9.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna with UFL antenna connector. The maximum gain of this antenna is -1.51038dBi .

7. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

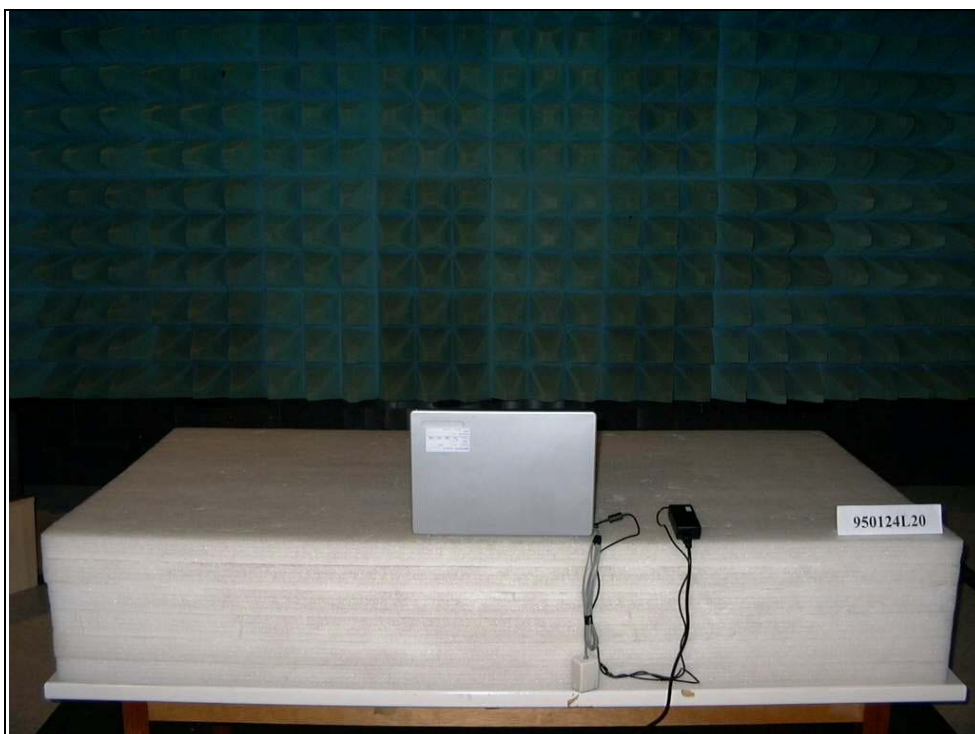
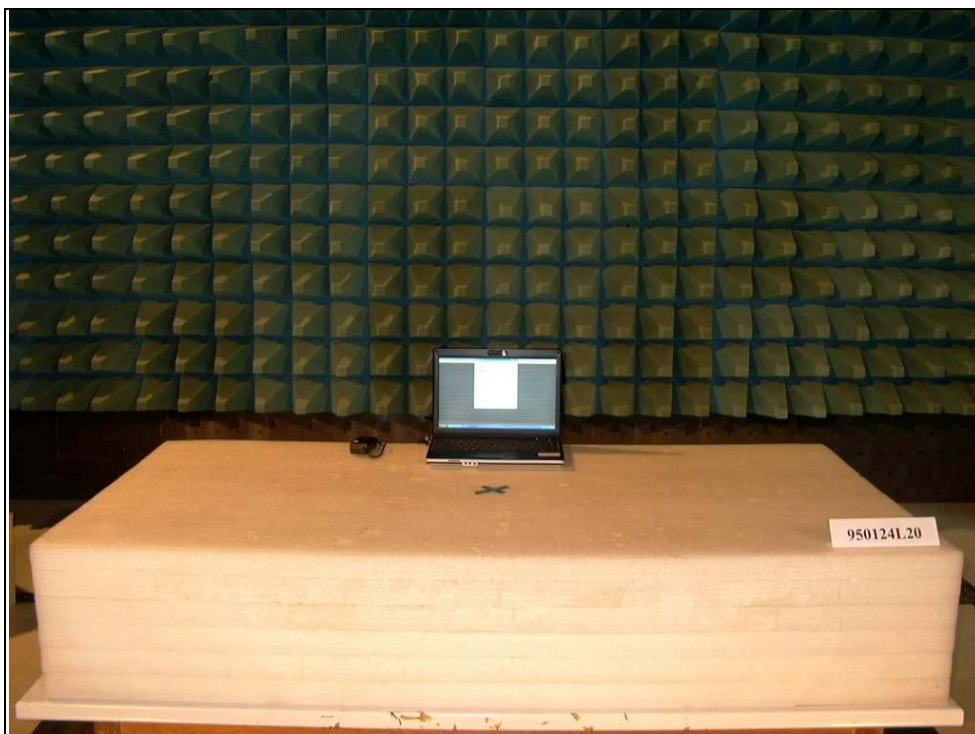
TEST MODE A



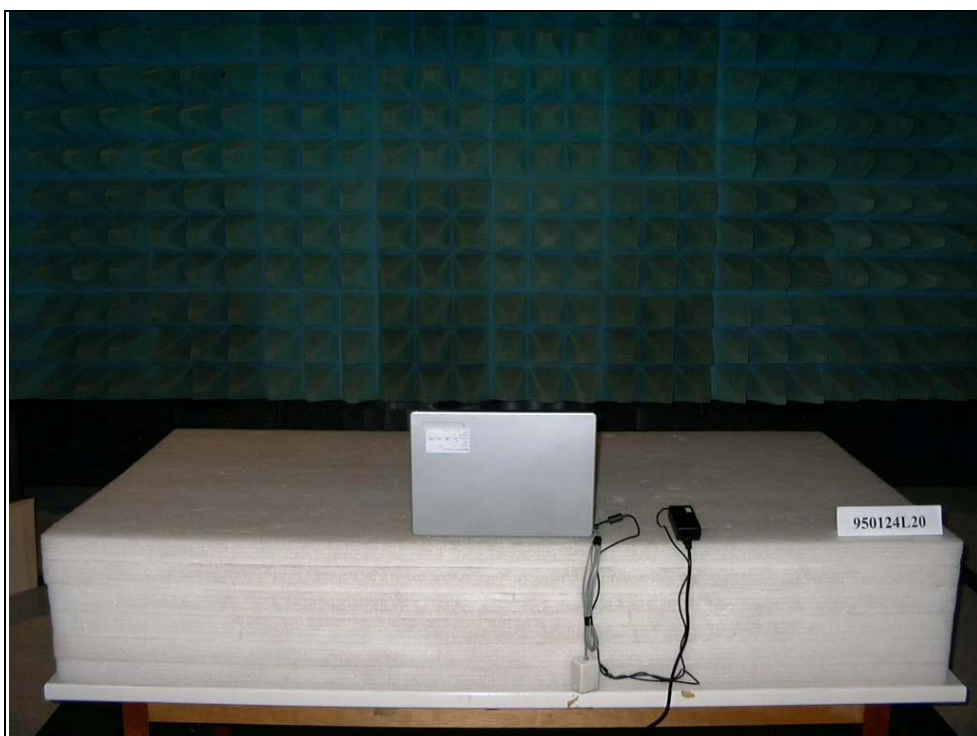
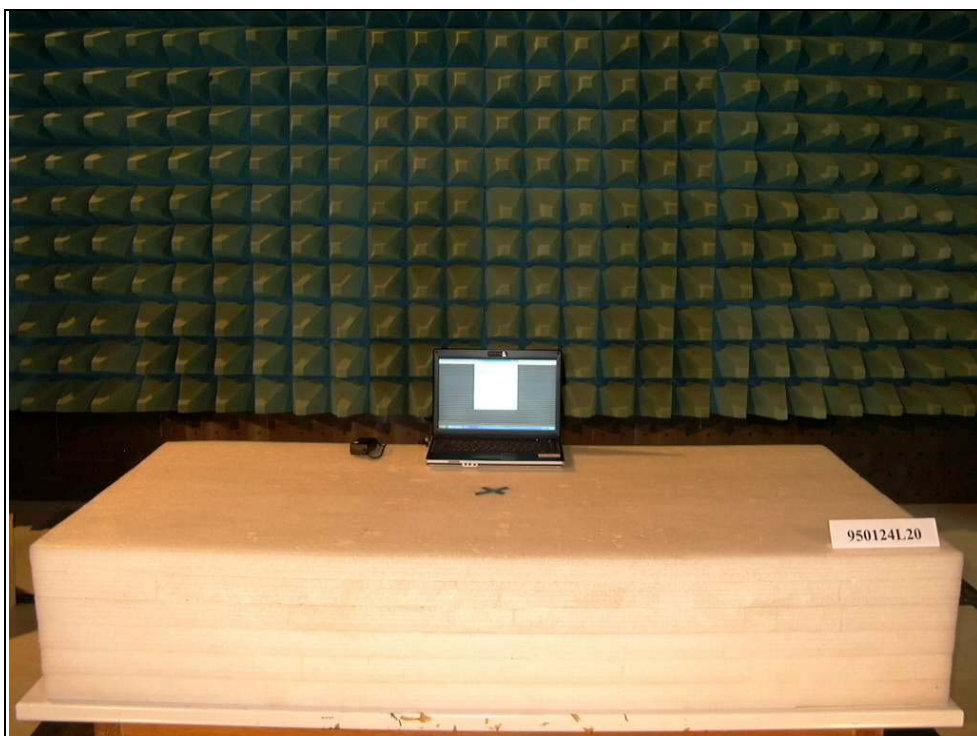
TEST MODE B



RADIATED EMISSION TEST TEST MODE A



TEST MODE B



8. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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: 886-2-26052943

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

Linko RF Lab.

Tel: 886-3-3270910

Fax: 886-3-3270892

Web Site: www.adt.com.tw

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

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.