



FCC TEST REPORT

(FOR FM)

REPORT NO.: RF960621L16-1

MODEL NO.: BE 7928

RECEIVED: Jun. 21, 2007

TESTED: Jun. 23 ~ Jul. 18, 2007

ISSUED: Jul. 25, 2007

APPLICANT: MITAC INTERNATIONAL CORP.

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ISSUED BY: Advance Data Technology Corporation

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1. CERTIFICATION

PRODUCT: Portable Navigator / Automotive Systems
MODEL NO.: BE 7928
BRAND NAME: HARMAN / BECKER AUTOMOTIVE SYSTEMS
APPLICANT: MITAC INTERNATIONAL CORP.
TESTED: Jun. 23 ~ Jul. 18, 2007
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart C (Section 15.239)**
ANSI C63.4-2003

The above equipment (model: BE 7928) have 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 :  , **DATE:** Jul. 25, 2007
Joanna Wang / Senior Specialist

TECHNICAL ACCEPTANCE :  , **DATE:** Jul. 25, 2007
Responsible for RF Long Chen / Senior Engineer

APPROVED BY :  , **DATE:** Jul. 25, 2007
Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -14.96dB at 0.537MHz.
15.239	Radiated Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -3.61dB at 176.200MHz.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz ~ 30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~ 1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1. GENERAL DESCRIPTION OF EUT

PRODUCT	Portable Navigator / Automotive Systems
MODEL NO.	BE 7928
FCC ID	P4Q-BE7928
POWER SUPPLY	5 Vdc from adapter 5 Vdc from car charger 3.7 Vdc from battery
MODULATION TYPE	FM
FREQUENCY RANGE	88~108MHz
ANTENNA TYPE	Monopole antenna (For FM function)
DATA CABLE	1.20m shielded USB cable without core 1.50m shielded TMC cable 0.12m shielded TMC cable
I/O PORTS	Refer to user's manual
ACCESSORY DEVICE	Adapter, car charger (0.9m), battery, Cradle x 2

NOTE:

1. The EUT was powered by the following power adapter and car charger:

ADAPTER	
BRAND	PHIHONG
MODEL	PSC11R-050
INPUT POWER	100-240Vac, 0.3A, 50~60Hz
OUTPUT POWER	5Vdc, 2A MAX
POWER LINE	1.8m non-shielded cable with one core

CAR CHARGER	
BRAND	UDID
MODEL	G12PCL-536-B021
INPUT POWER	12Vdc & 24Vdc, 800mA
OUTPUT POWER	5Vdc, 1A
POWER LINE	1.5m shielded cable without core

2. The EUT is powered from car battery (12Vdc or 24Vdc) via car charger. In this report, 24Vdc is the worst case for final test.
3. There are two cradles to use in this EUT.

Cradle	Brand	Model	Remark
1	HARMEN / BECKER	BE 7978	This cradle with built-in battery and has charger function (TMC port)
2	HARMEN / BECKER	BE 7828	This cradle without built-in battery and has five connect ports (stereo, mic., charger, tel. mute, TMC port)

4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2. DESCRIPTION OF TEST MODES

Three channels were provided to this EUT.

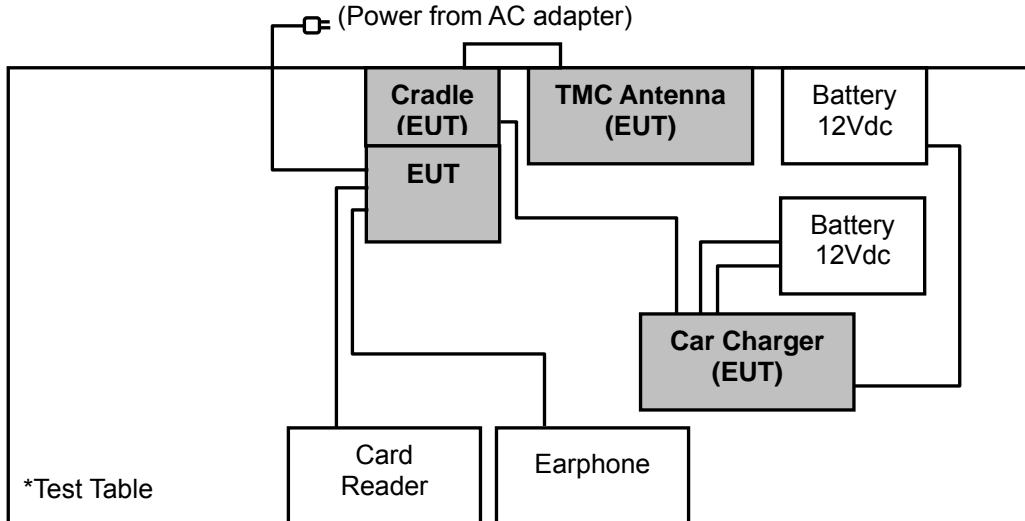
CHANNEL	FREQUENCY (MHz)
Low channel (L)	88.1MHz
Middle channel (M)	98.1MHz
High channel (H)	107.9MHz

The EUT could not use any audio device (ipod or MP3 player...etc), therefore test software provided by manufacture let EUT played the typical music file, and audio volume was adjusted to the worst case during the test.

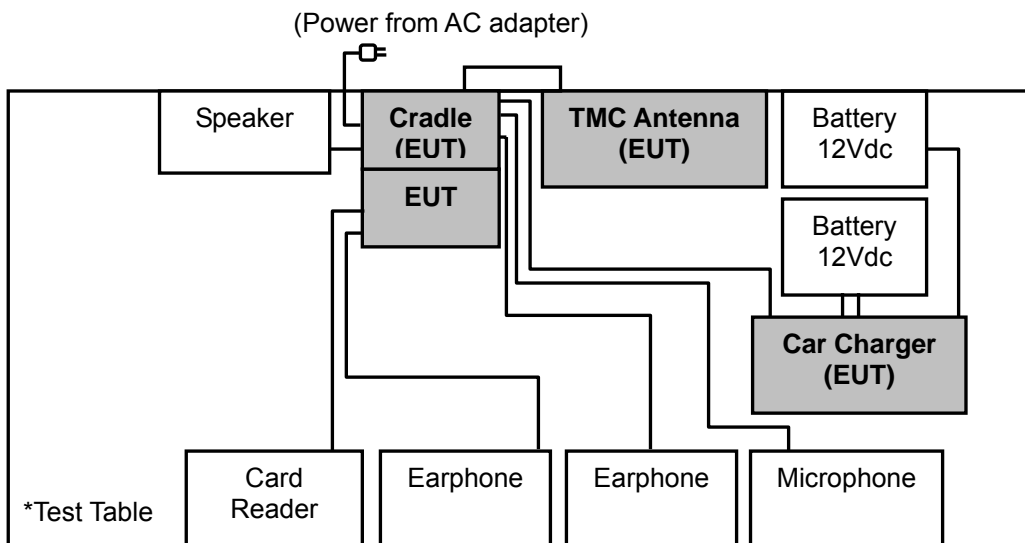
The tuning range has been manually verified and the device can work only within 88 ~ 108M band.

3.2.1. CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A



Test Mode B



3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	Applicable to			Description
	PLC	RE<1G	EB	
A	√	√ (NOTE 2)	-	Cradle 1 (BE 7978)
B	√	√ (NOTE 2)	√	Cradle 2 (BE 7828)

Where **PLC**: Power Line Conducted Emission **RE<1G**: Radiated Emission below 1GHz
EB: Emission Band Measurement

NOTE: 1. “-“ means no effect.

2. Only the worst case (mode B) of fundamental frequency is presented in the report.

POWER LINE CONDUCTED EMISSION TEST:

- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CHANNEL	MODULATION TYPE
A, B	L, M, H	FM

RADIATED EMISSION TEST (BELOW 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, packet types and XYZ Axis.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CHANNEL	MODULATION TYPE	AXIS
A, B	L, M, H	FM	Z

MISSION BAND MEASUREMENT:

- Following channel(s) was (were) selected for the final test as listed below.

TESTED CHANNEL	MODULATION TYPE
L, M, H	FM



3.2.3. GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is the transmitter part of a FM transmitter. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.239)

ANSI C63.4- 2003

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

3.2.4. 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	SPEAKER	SANYO	SYSP-802	SP07500040300845	NA
2	CARD READER	NA	NA	NA	NA
3	EARPHONE	NA	P04-006-00	NA	NA
4	EARPHONE	NA	NA	NA	NA
5	MICROPHONE	NA	NA	NA	NA
6	BATTERY	HEXA	NT50-N2+CMF	NA	NA
7	BATTERY	HEXA	NT50-N2+CMF	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8m shielded cable
2	NA
3	1.6m shielded cable
4	1.6m shielded cable
5	1.6m shielded cable
6	NA
7	NA

NOTE:

1. All power cords of the above support units are non shielded (1.8m).
2. Item 3 is provided by client.

4. TEST TYPES AND RESULTS

4.1. CONDUCTED EMISSION MEASUREMENT

4.1.1. 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.

4.1.2. TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 25, 2007
RF signal cable Woken	5D-FB	Cable-HYCO3-01	Jan. 06, 2008
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 08, 2008
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 16, 2008
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 2.
 3. The VCCI Site Registration No. is C-2047.

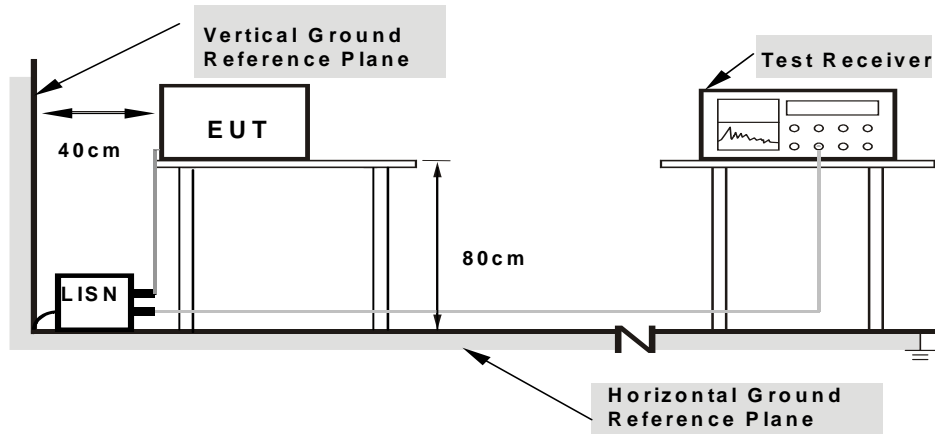
4.1.3. TEST PROCEDURES

- 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 cm from other units and other metal planes

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

4.1.6. EUT OPERATING CONDITIONS

- a. Connected the EUT to card reader via USB cable and placed on a testing table.
- b. The EUT read/write data from the card reader.
- c. Set the EUT under transmission condition continuously at specific channel frequency.
- d. The necessary accessories enable the system in full functions.

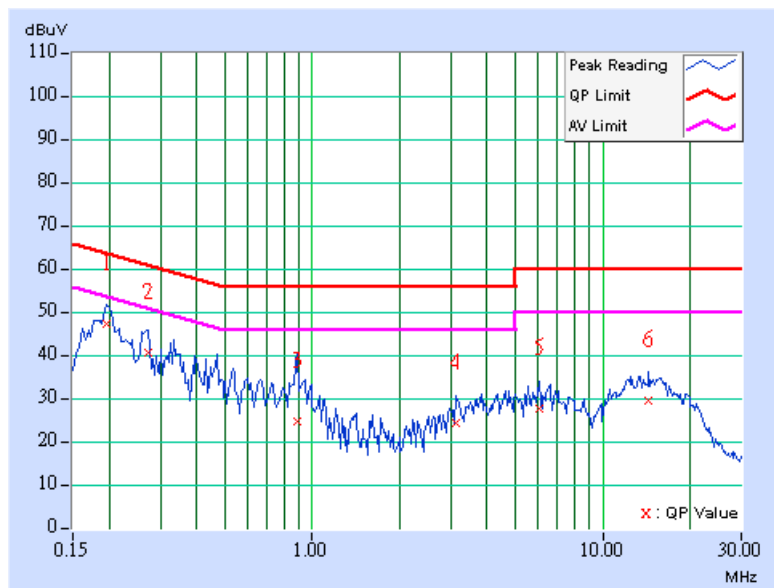
4.1.7. TEST RESULTS

CONDUCTED WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Low channel	PHASE	Line 1
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	47.03	-	47.13	-	63.74	53.74	-16.61	-
2	0.271	0.10	40.44	-	40.54	-	61.08	51.08	-20.54	-
3	0.888	0.11	24.39	-	24.50	-	56.00	46.00	-31.50	-
4	3.145	0.25	24.03	-	24.28	-	56.00	46.00	-31.72	-
5	6.039	0.30	27.26	-	27.56	-	60.00	50.00	-32.44	-
6	14.359	0.46	29.25	-	29.71	-	60.00	50.00	-30.29	-

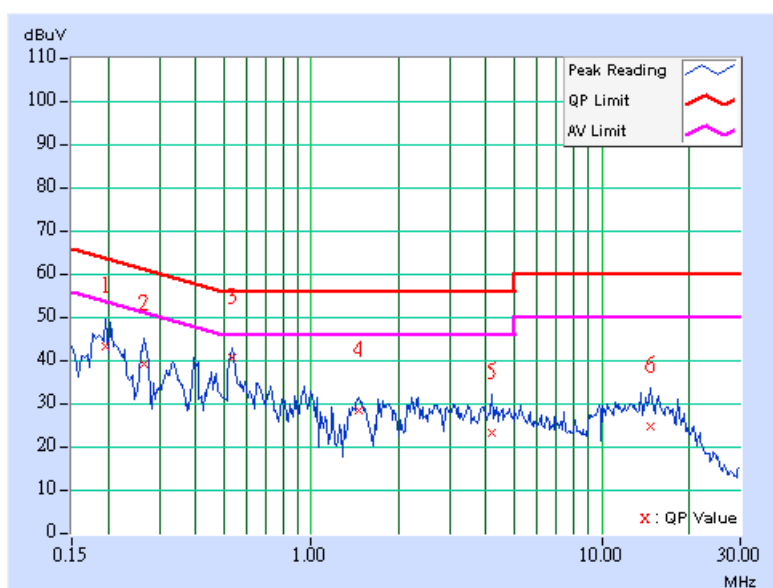
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Low channel	PHASE	Line 2
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Brad Wu

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	0.197	0.10	43.02	-	43.12	-	63.74	53.74	-20.62	-
2	0.267	0.10	38.68	-	38.78	-	61.20	51.20	-22.42	-
3	0.537	0.13	40.40	-	40.53	-	56.00	46.00	-15.47	-
4	1.457	0.21	27.99	-	28.20	-	56.00	46.00	-27.80	-
5	4.180	0.28	22.89	-	23.17	-	56.00	46.00	-32.83	-
6	14.789	0.48	24.48	-	24.96	-	60.00	50.00	-35.04	-

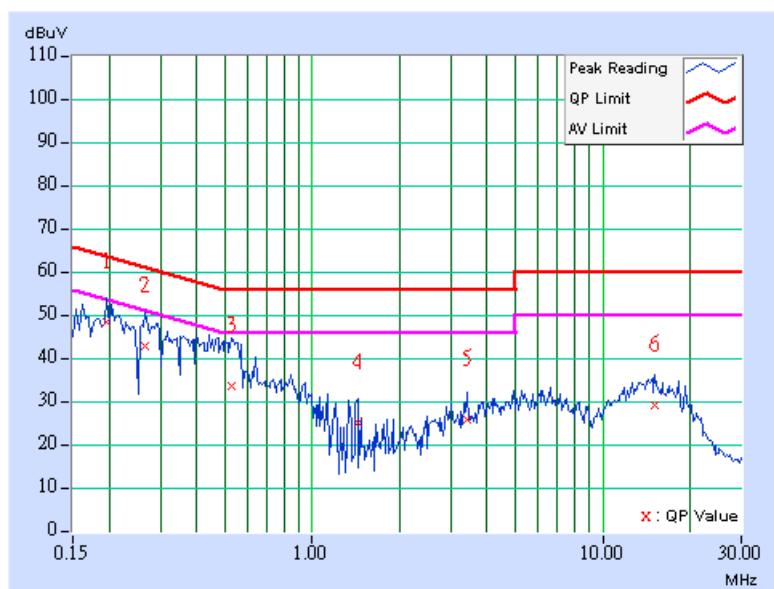
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Middle channel	PHASE	Line 1
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	48.10	-	48.20	-	63.74	53.74	-15.54	-
2	0.267	0.10	42.31	-	42.41	-	61.20	51.20	-18.79	-
3	0.525	0.10	33.09	-	33.19	-	56.00	46.00	-22.81	-
4	1.434	0.16	24.86	-	25.02	-	56.00	46.00	-30.98	-
5	3.422	0.26	25.49	-	25.75	-	56.00	46.00	-30.25	-
6	15.113	0.48	28.90	-	29.38	-	60.00	50.00	-30.62	-

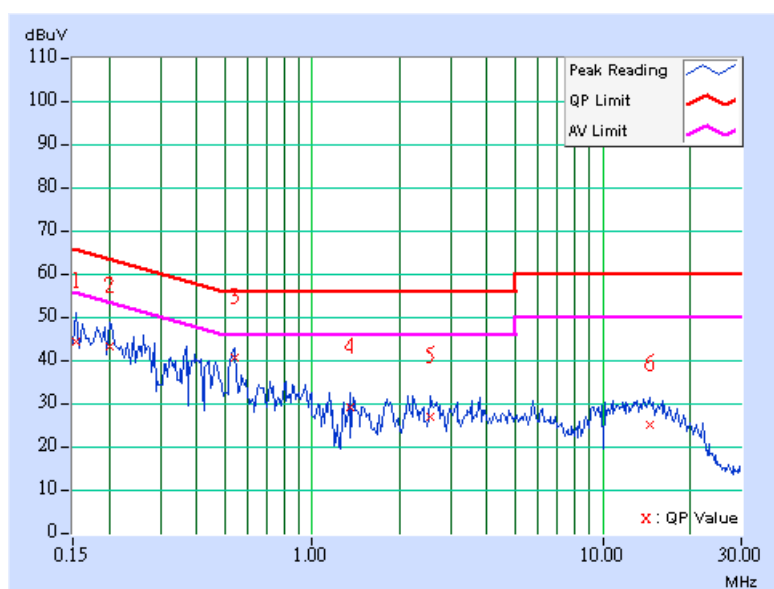
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Middle channel	PHASE	Line 2
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Brad Wu

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	0.154	0.10	44.11	-	44.21	-	65.79	55.79	-21.58	-
2	0.201	0.10	43.04	-	43.14	-	63.58	53.58	-20.44	-
3	0.541	0.13	40.45	-	40.58	-	56.00	46.00	-15.42	-
4	1.352	0.21	28.68	-	28.89	-	56.00	46.00	-27.11	-
5	2.563	0.24	26.57	-	26.81	-	56.00	46.00	-29.19	-
6	14.465	0.47	24.85	-	25.32	-	60.00	50.00	-34.68	-

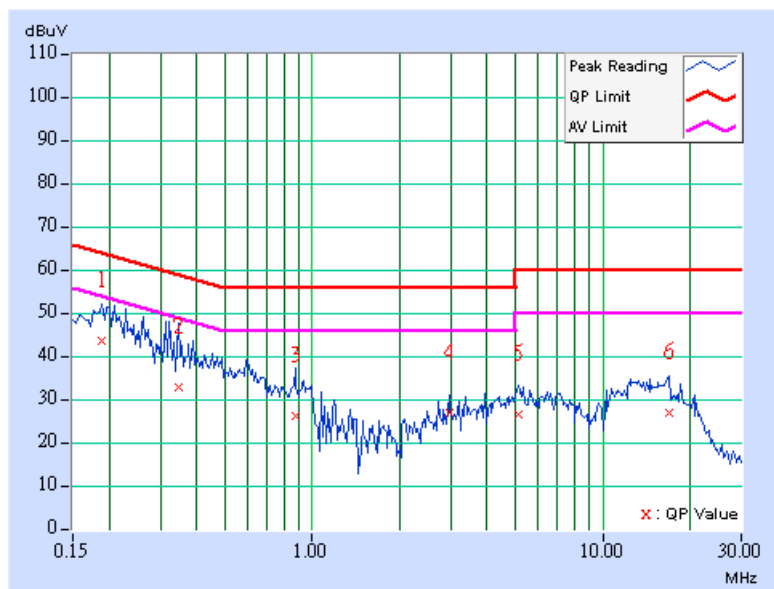
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	High channel	PHASE	Line 1
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Brad Wu

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.189	0.10	43.24	-	43.34	-	64.08	54.08	-20.74	-
2	0.345	0.10	32.47	-	32.57	-	59.07	49.07	-26.50	-
3	0.873	0.11	25.85	-	25.96	-	56.00	46.00	-30.04	-
4	2.953	0.25	26.44	-	26.69	-	56.00	46.00	-29.31	-
5	5.113	0.29	26.23	-	26.52	-	60.00	50.00	-33.48	-
6	17.004	0.52	26.66	-	27.18	-	60.00	50.00	-32.82	-

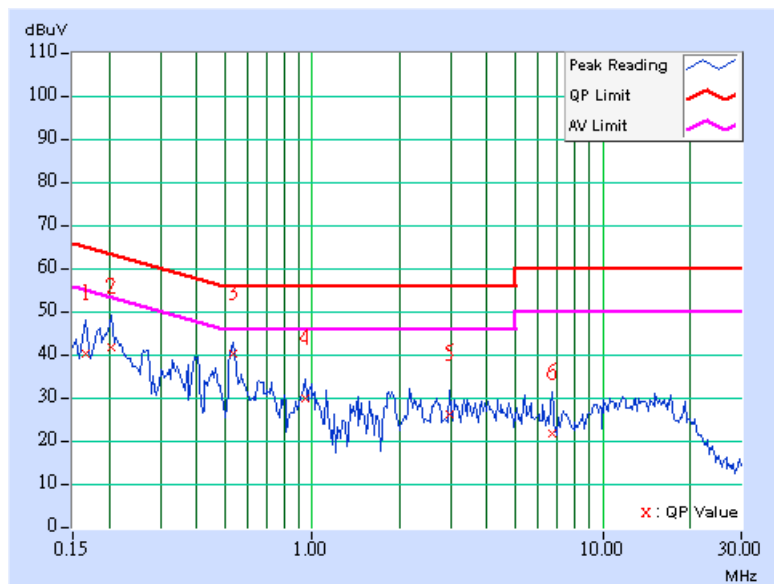
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	High channel	PHASE	Line 2
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	A	TESTED BY	Brad Wu

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	0.166	0.10	40.16	-	40.26	-	65.18	55.18	-24.92	-
2	0.205	0.10	41.33	-	41.43	-	63.42	53.42	-21.99	-
3	0.533	0.12	40.12	-	40.24	-	56.00	46.00	-15.76	-
4	0.943	0.20	29.71	-	29.91	-	56.00	46.00	-26.09	-
5	2.973	0.25	25.87	-	26.12	-	56.00	46.00	-29.88	-
6	6.695	0.35	21.38	-	21.73	-	60.00	50.00	-38.27	-

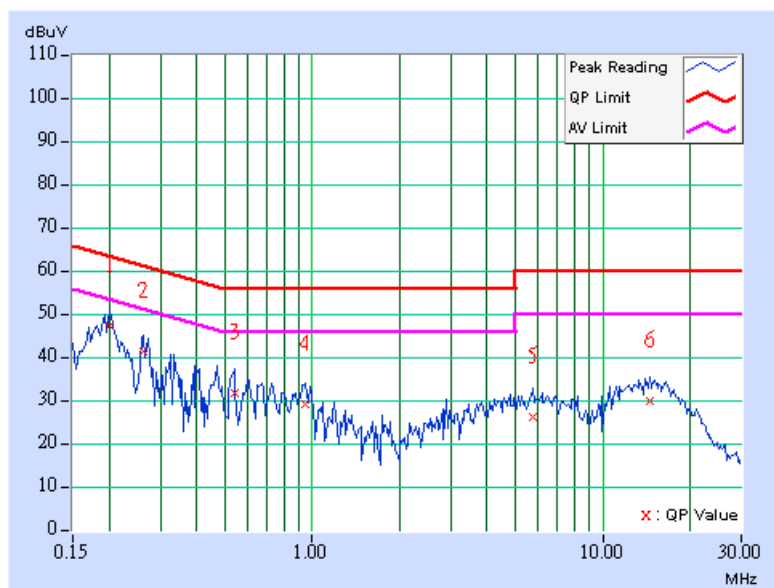
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Low Channel	PHASE	Line 1
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Brad Wu

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	47.05	-	47.15	-	63.58
2	0.263	0.10	40.86	-	40.96	-	61.33	51.33	-20.37	-
3	0.541	0.10	31.33	-	31.43	-	56.00	46.00	-24.57	-
4	0.947	0.11	28.92	-	29.03	-	56.00	46.00	-26.97	-
5	5.766	0.29	25.86	-	26.15	-	60.00	50.00	-33.85	-
6	14.629	0.47	29.63	-	30.10	-	60.00	50.00	-29.90	-

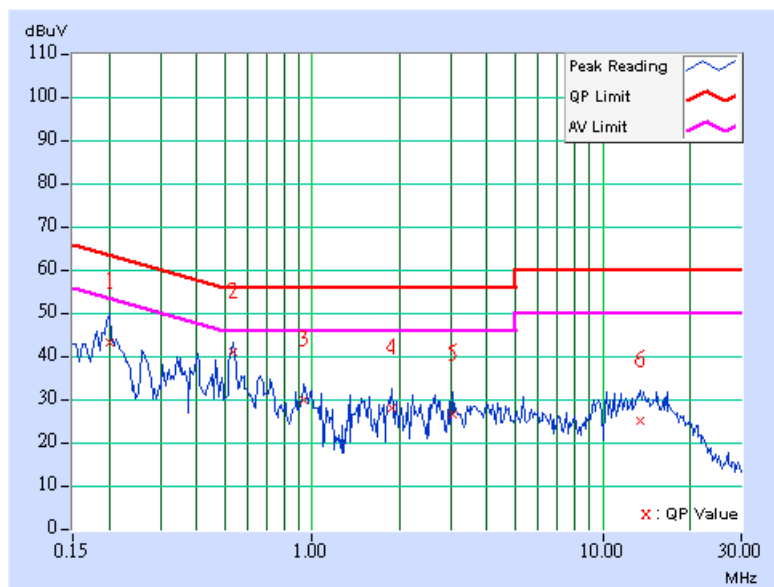
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Low Channel	PHASE	Line 2
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Brad Wu

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	42.76	-	42.86	-	63.58	53.58	-20.72	-
2	0.537	0.13	40.77	-	40.90	-	56.00	46.00	-15.10	-
3	0.939	0.20	29.43	-	29.63	-	56.00	46.00	-26.37	-
4	1.879	0.22	27.70	-	27.92	-	56.00	46.00	-28.08	-
5	3.035	0.25	26.03	-	26.28	-	56.00	46.00	-29.72	-
6	13.398	0.46	24.67	-	25.13	-	60.00	50.00	-34.87	-

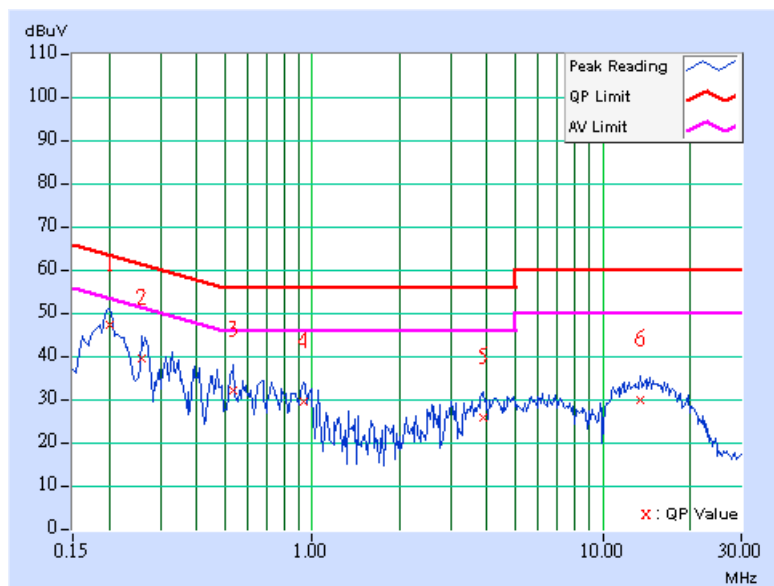
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Middle Channel	PHASE	Line 1
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Brad Wu

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	46.89	-	46.99	-	63.58	53.58	-16.59	-
2	0.259	0.10	39.08	-	39.18	-	61.45	51.45	-22.27	-
3	0.537	0.10	31.79	-	31.89	-	56.00	46.00	-24.11	-
4	0.939	0.11	29.35	-	29.46	-	56.00	46.00	-26.54	-
5	3.875	0.28	25.36	-	25.64	-	56.00	46.00	-30.36	-
6	13.504	0.44	29.61	-	30.05	-	60.00	50.00	-29.95	-

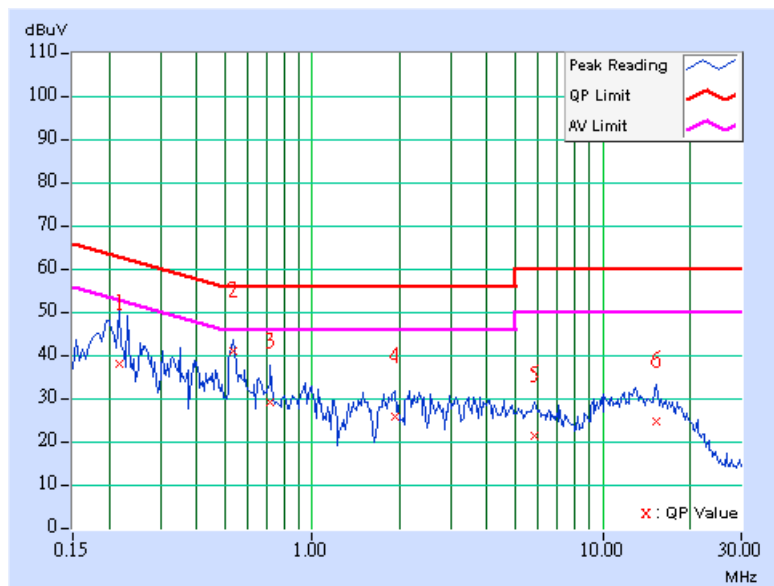
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Middle Channel	PHASE	Line 2
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Brad Wu

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	0.216	0.10	37.77	-	37.87	-	62.96	52.96	-25.09	-
2	0.533	0.12	40.50	-	40.62	-	56.00	46.00	-15.38	-
3	0.716	0.16	28.68	-	28.84	-	56.00	46.00	-27.16	-
4	1.926	0.22	25.34	-	25.56	-	56.00	46.00	-30.44	-
5	5.828	0.33	21.02	-	21.35	-	60.00	50.00	-38.65	-
6	15.281	0.49	24.46	-	24.95	-	60.00	50.00	-35.05	-

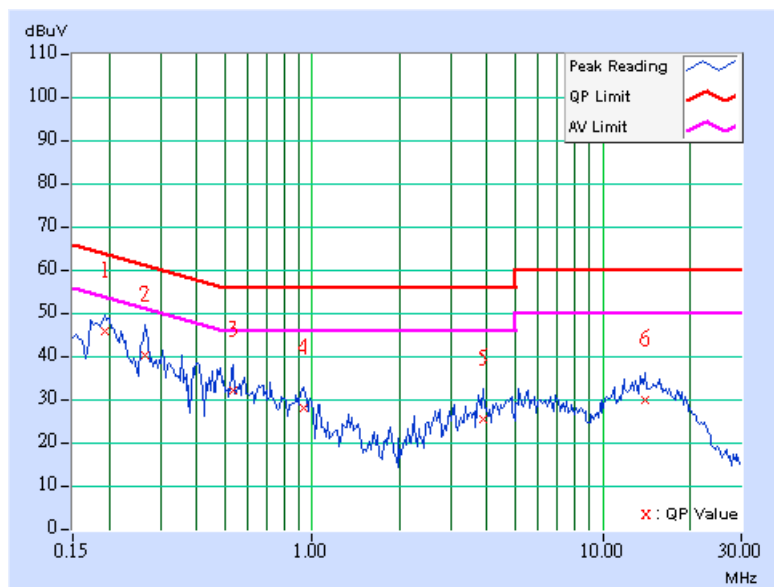
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	High Channel	PHASE	Line 1
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Brad Wu

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	0.193	0.10	45.61	-	45.71	-	63.91	53.91	-18.20	-
2	0.267	0.10	39.88	-	39.98	-	61.20	51.20	-21.22	-
3	0.537	0.10	31.79	-	31.89	-	56.00	46.00	-24.11	-
4	0.935	0.11	27.68	-	27.79	-	56.00	46.00	-28.21	-
5	3.891	0.28	25.12	-	25.40	-	56.00	46.00	-30.60	-
6	13.969	0.45	29.40	-	29.85	-	60.00	50.00	-30.15	-

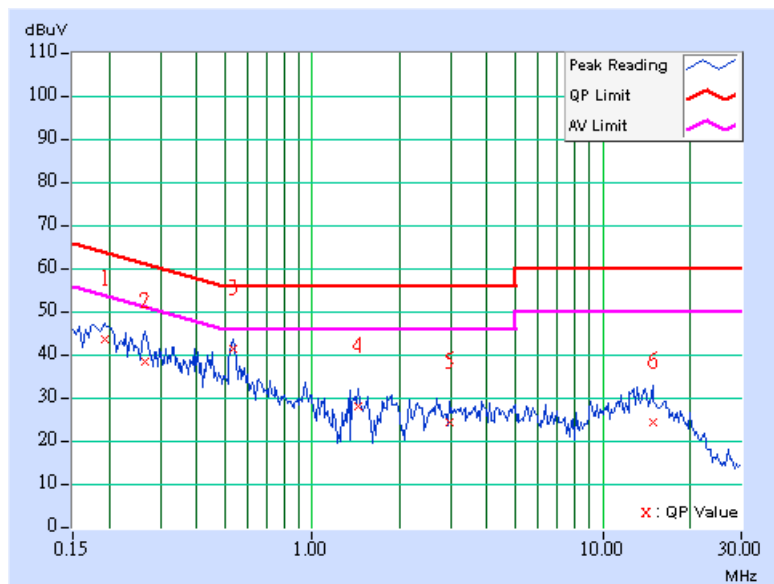
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	High Channel	PHASE	Line 2
MODULATION TYPE	FM	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 1009hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	B	TESTED BY	Brad Wu

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	0.193	0.10	43.10	-	43.20	-	63.91	53.91	-20.71	-
2	0.267	0.10	38.12	-	38.22	-	61.20	51.20	-22.98	-
3	0.537	0.13	40.91	-	41.04	-	56.00	46.00	-14.96	-
4	1.434	0.21	27.68	-	27.89	-	56.00	46.00	-28.11	-
5	2.988	0.25	24.13	-	24.38	-	56.00	46.00	-31.62	-
6	14.855	0.48	24.07	-	24.55	-	60.00	50.00	-35.45	-

- 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

According to 15.239 the field strength of Emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (dBuV/m)	
	Peak	Average
88 to 108	67.96	47.96

Field strength limits are at the distance of 3 meters, 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

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	838496/016	Dec. 29, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 01, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 04, 2008
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-405	Dec. 18, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 16, 2008
Preamplifier Agilent	8449B	3008A1960	Oct. 30, 2007
Preamplifier Agilent	8447D	2944A10631	Oct. 30, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	230128/4	Nov. 14, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	233233/4	Nov. 14, 2007
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 4.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The IC Site Registration No. is IC3789B-4.

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 meter 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 method or average method as specified and then reported in data sheet.

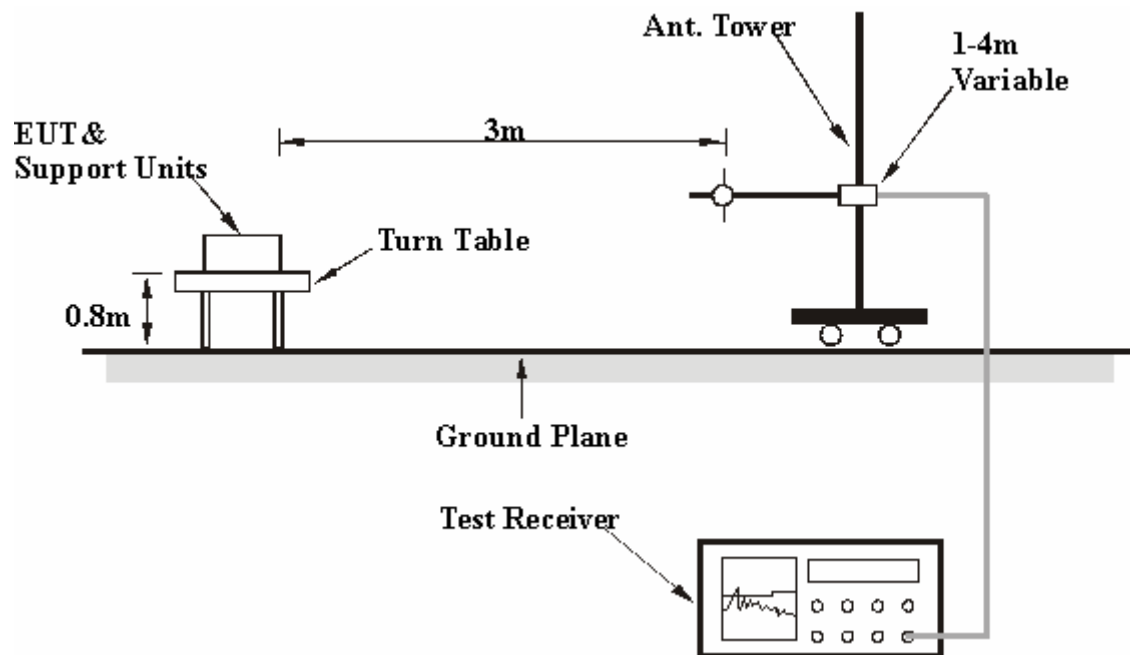
NOTE:

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.

4.2.4. DEVIATION FROM TEST STANDARD

No deviation.

4.2.5. TEST SETUP



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

4.2.6. EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7. TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Low Channel	FREQUENCY RANGE	88 ~ 108MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	*88.10	44.08 PK	67.96	-23.88	2.11 H	201	34.91	9.17
2	*88.10	43.93 AV	47.96	-4.03	2.11 H	201	34.76	9.17

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	*88.10	41.15 PK	67.96	-26.81	1.00 V	9	31.98	9.17
2	*88.10	39.98 AV	47.96	-7.98	1.00 V	9	30.81	9.17

- 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	Middle Channel	FREQUENCY RANGE	88 ~ 108MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	*98.10	42.98 PK	67.96	-24.98	1.89 H	304	33.15	9.83
2	*98.10	42.61 AV	47.96	-5.35	1.89 H	304	32.78	9.83

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	*98.10	39.01 PK	67.96	-28.95	1.00 V	2	29.18	9.83
2	*98.10	38.73 AV	47.96	-9.23	1.00 V	2	28.90	9.83

- 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	High Channel	FREQUENCY RANGE	88 ~ 108MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Peak (PK) Average (AV)
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	*107.90	42.23 PK	67.96	-25.73	2.28 H	84	31.30	10.93
2	*107.90	41.96 AV	47.96	-6.00	2.28 H	84	31.03	10.93

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	*107.90	38.81 PK	67.96	-29.15	1.08 V	16	27.88	10.93
2	*107.90	38.52 AV	47.96	-9.44	1.08 V	16	27.59	10.93

- 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	Low Channel	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	176.20	39.89 QP	43.50	-3.61	1.50 H	302	26.56	13.33
2	264.30	32.02 QP	46.00	-13.98	2.00 H	325	18.01	14.01
3	352.10	33.25 QP	46.00	-12.75	1.50 H	352	17.15	16.10
4	440.12	31.11 QP	46.00	-14.89	1.00 H	38	12.52	18.59
5	528.25	28.85 QP	46.00	-17.15	1.50 H	321	7.60	21.25
6	616.70	33.58 QP	46.00	-12.42	2.00 H	35	10.06	23.52
7	704.12	32.85 QP	46.00	-13.15	1.50 H	45	7.55	25.30
8	792.90	33.85 QP	46.00	-12.15	1.00 H	328	7.51	26.34
9	881.00	40.69 QP	46.00	-5.31	2.00 H	96	13.04	27.65
10	968.80	36.02 QP	54.00	-17.98	1.50 H	315	7.25	28.77

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	70.52	31.85 QP	40.00	-8.15	1.00 V	3	19.76	12.09
2	176.20	38.77 QP	43.50	-4.73	2.00 V	322	25.44	13.33
3	264.30	30.25 QP	46.00	-15.75	1.50 V	322	16.24	14.01
4	352.10	27.15 QP	46.00	-18.85	1.50 V	28	11.05	16.10
5	440.12	26.28 QP	46.00	-19.72	1.50 V	310	7.69	18.59
6	528.25	29.15 QP	46.00	-16.85	2.00 V	158	7.90	21.25
7	616.70	25.98 QP	46.00	-20.02	2.00 V	25	2.46	23.52
8	704.12	25.65 QP	46.00	-20.35	1.50 V	351	0.35	25.30
9	792.90	25.32 QP	46.00	-20.68	1.50 V	308	-1.02	26.34
10	881.00	36.89 QP	46.00	-9.11	1.50 V	26	9.24	27.65
11	968.80	28.98 QP	54.00	-25.02	1.50 V	32	0.21	28.77

- 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	Middle Channel	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	196.85	39.21 QP	43.50	-4.29	1.50 H	274	27.66	11.55
2	293.28	31.58 QP	46.00	-14.42	2.00 H	280	16.98	14.60
3	391.89	29.24 QP	46.00	-16.76	1.50 H	325	12.11	17.12
4	490.97	32.08 QP	46.00	-13.92	2.00 H	109	11.85	20.23
5	587.89	40.35 QP	46.00	-5.65	2.50 H	353	17.53	22.82
6	686.55	31.25 QP	46.00	-14.75	1.50 H	352	6.27	24.98
7	782.12	33.52 QP	46.00	-12.48	1.00 H	334	7.30	26.22
8	882.77	40.49 QP	46.00	-5.51	1.50 H	226	12.81	27.68
9	981.72	35.67 QP	54.00	-18.33	1.50 H	19	6.72	28.95

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	70.73	31.58 QP	40.00	-8.42	1.00 V	10	19.51	12.07
2	138.78	25.09 QP	43.50	-18.41	1.00 V	244	11.74	13.35
3	196.81	38.55 QP	43.50	-4.95	2.00 V	325	26.99	11.56
4	293.15	30.05 QP	46.00	-15.95	1.50 V	304	15.45	14.60
5	391.25	27.35 QP	46.00	-18.65	1.50 V	322	10.24	17.11
6	490.97	30.01 QP	46.00	-15.99	1.00 V	295	9.78	20.23
7	587.58	29.68 QP	46.00	-16.32	2.00 V	334	6.87	22.81
8	686.55	26.78 QP	46.00	-19.22	2.00 V	358	1.80	24.98
9	882.77	37.11 QP	46.00	-8.89	1.50 V	352	9.43	27.68
10	981.72	28.63 QP	54.00	-25.37	1.50 V	352	-0.32	28.95

- 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	High Channel	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	29.90	27.03 QP	40.00	-12.97	1.50 H	346	14.55	12.48
2	84.34	26.17 QP	40.00	-13.83	2.00 H	226	16.09	10.08
3	181.55	34.83 QP	43.50	-8.67	2.00 H	94	22.22	12.61
4	215.67	39.56 QP	43.50	-3.94	1.50 H	238	27.48	12.08
5	323.85	32.72 QP	46.00	-13.28	1.50 H	307	17.36	15.36
6	431.25	32.91 QP	46.00	-13.09	2.00 H	289	14.60	18.31
7	539.25	33.58 QP	46.00	-12.42	1.50 H	271	12.04	21.54
8	647.25	34.62 QP	46.00	-11.38	1.00 H	322	10.42	24.20
9	755.35	28.65 QP	46.00	-17.35	2.00 H	352	2.75	25.90
10	862.52	26.89 QP	46.00	-19.11	1.50 H	35	-0.46	27.35

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	43.51	25.65 QP	40.00	-14.35	1.00 V	355	12.78	12.87
2	70.73	31.60 QP	40.00	-8.40	1.00 V	265	19.53	12.07
3	156.28	25.00 QP	43.50	-18.50	1.00 V	169	10.47	14.53
4	215.67	38.73 QP	43.50	-4.77	1.00 V	298	26.65	12.08
5	323.97	30.73 QP	46.00	-15.27	1.00 V	178	15.36	15.37
6	431.12	27.19 QP	46.00	-18.81	2.00 V	355	8.88	18.31
7	539.10	28.56 QP	46.00	-17.44	2.00 V	10	7.03	21.53
8	647.85	27.41 QP	46.00	-18.59	1.50 V	10	3.19	24.22
9	755.35	26.89 QP	46.00	-19.11	2.00 V	352	0.99	25.90
10	862.52	25.12 QP	46.00	-20.88	1.50 V	32	-2.23	27.35

- 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	Low Channel	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	176.20	38.45 QP	43.50	-5.05	2.00 H	311	25.12	13.33
2	264.24	31.18 QP	46.00	-14.82	1.50 H	317	17.17	14.01
3	352.10	33.08 QP	46.00	-12.92	2.00 H	307	16.98	16.10
4	440.10	30.65 QP	46.00	-15.35	1.50 H	147	12.06	18.59
5	528.23	27.89 QP	46.00	-18.11	1.50 H	287	6.64	21.25
6	616.71	33.07 QP	46.00	-12.93	2.00 H	146	9.55	23.52
7	704.12	33.07 QP	46.00	-12.93	1.50 H	136	7.77	25.30
8	792.90	33.85 QP	46.00	-12.15	1.00 H	328	7.51	26.34
9	881.00	40.69 QP	46.00	-5.31	2.00 H	96	13.04	27.65
10	968.78	35.04 QP	54.00	-18.96	2.00 H	217	6.27	28.77

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	70.52	31.46 QP	40.00	-8.54	1.00 V	13	19.37	12.09
2	176.20	38.46 QP	43.50	-5.04	2.00 V	125	25.13	13.33
3	264.30	30.44 QP	46.00	-15.56	1.50 V	296	16.43	14.01
4	352.12	27.36 QP	46.00	-18.64	1.50 V	45	11.25	16.11
5	440.15	26.43 QP	46.00	-19.57	1.50 V	215	7.84	18.59
6	528.22	29.36 QP	46.00	-16.64	2.00 V	121	8.11	21.25
7	616.72	25.84 QP	46.00	-20.16	2.00 V	56	2.32	23.52
8	704.14	25.54 QP	46.00	-20.46	1.50 V	341	0.24	25.30
9	792.92	25.46 QP	46.00	-20.54	1.50 V	315	-0.89	26.35
10	881.03	36.75 QP	46.00	-9.25	1.50 V	38	9.10	27.65
11	968.82	28.88 QP	54.00	-25.12	1.50 V	64	0.11	28.77

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	Middle Channel	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	196.81	39.26 QP	43.50	-4.24	1.50 H	277	27.70	11.56
2	293.26	31.44 QP	46.00	-14.56	2.00 H	275	16.84	14.60
3	391.88	29.39 QP	46.00	-16.61	1.50 H	296	12.27	17.12
4	490.95	32.22 QP	46.00	-13.78	2.00 H	118	11.99	20.23
5	587.91	40.46 QP	46.00	-5.54	2.50 H	231	17.64	22.82
6	686.58	31.54 QP	46.00	-14.46	1.50 H	338	6.56	24.98
7	782.10	33.54 QP	46.00	-12.46	1.00 H	328	7.32	26.22
8	882.77	40.55 QP	46.00	-5.45	1.50 H	126	12.87	27.68
9	981.72	35.84 QP	54.00	-18.16	1.50 H	22	6.89	28.95

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	70.71	31.66 QP	40.00	-8.34	1.00 V	24	19.59	12.07
2	138.75	25.18 QP	43.50	-18.32	1.00 V	233	11.83	13.35
3	196.80	38.74 QP	43.50	-4.76	2.00 V	225	27.18	11.56
4	293.15	30.21 QP	46.00	-15.79	1.50 V	225	15.61	14.60
5	391.25	27.68 QP	46.00	-18.32	1.50 V	322	10.57	17.11
6	490.95	30.15 QP	46.00	-15.85	1.00 V	300	9.92	20.23
7	587.58	29.85 QP	46.00	-16.15	2.00 V	330	7.04	22.81
8	686.56	26.88 QP	46.00	-19.12	2.00 V	351	1.90	24.98
9	882.77	37.24 QP	46.00	-8.76	1.50 V	348	9.56	27.68
10	981.75	28.74 QP	54.00	-25.26	1.50 V	358	-0.21	28.95

- 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	High Channel	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	FM	DETECTOR FUNCTION	Quasi-Peak
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
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	29.90	27.18 QP	40.00	-12.82	1.50 H	326	14.70	12.48
2	84.32	26.44 QP	40.00	-13.56	1.50 H	229	16.35	10.09
3	181.57	34.83 QP	43.50	-8.67	1.50 H	100	22.22	12.61
4	215.69	39.48 QP	43.50	-4.02	1.50 H	216	27.40	12.08
5	323.85	32.61 QP	46.00	-13.39	1.50 H	302	17.25	15.36
6	431.26	32.84 QP	46.00	-13.16	2.00 H	212	14.53	18.31
7	539.28	33.64 QP	46.00	-12.36	1.50 H	265	12.10	21.54
8	647.27	34.69 QP	46.00	-11.31	1.00 H	318	10.49	24.20
9	755.38	28.74 QP	46.00	-17.26	2.00 H	355	2.84	25.90
10	862.53	26.74 QP	46.00	-19.26	1.00 H	88	-0.61	27.35

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	43.50	25.84 QP	40.00	-14.16	1.50 V	340	12.97	12.87
2	70.71	31.88 QP	40.00	-8.12	1.50 V	212	19.81	12.07
3	156.44	25.25 QP	43.50	-18.25	1.00 V	111	10.73	14.52
4	215.65	38.70 QP	43.50	-4.80	1.00 V	303	26.62	12.08
5	323.97	30.62 QP	46.00	-15.38	1.50 V	142	15.25	15.37
6	431.15	27.26 QP	46.00	-18.74	2.00 V	314	8.95	18.31
7	539.11	28.68 QP	46.00	-17.32	2.00 V	24	7.15	21.53
8	647.83	27.67 QP	46.00	-18.33	1.50 V	22	3.45	24.22
9	755.32	26.74 QP	46.00	-19.26	2.00 V	326	0.85	25.89
10	862.52	25.24 QP	46.00	-20.76	1.50 V	56	-2.11	27.35

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



4.3. EMISSION BAND MEASUREMENT

4.3.1. LIMITS OF EMISSION BAND MEASUREMENT

Emissions from the intentional radiator shall be confined within a bands 200kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88 to 108MHz.

4.3.2. TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP40	100040	Jun. 28, 2008

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

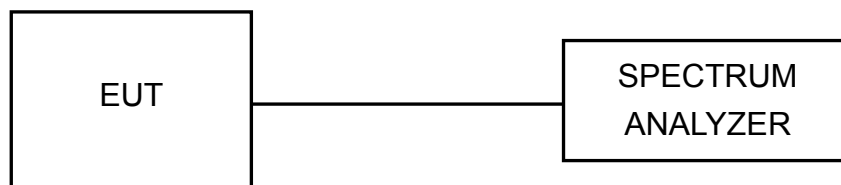
4.3.3. TEST PROCEDURES

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10 kHz RBW and 30 kHz VBW. Measured the 26dBc bandwidth and plotted the graph.

4.3.4. DEVIATION FROM TEST STANDARD

No deviation.

4.3.5. TEST SETUP



4.3.6. EUT OPERATING CONDITIONS

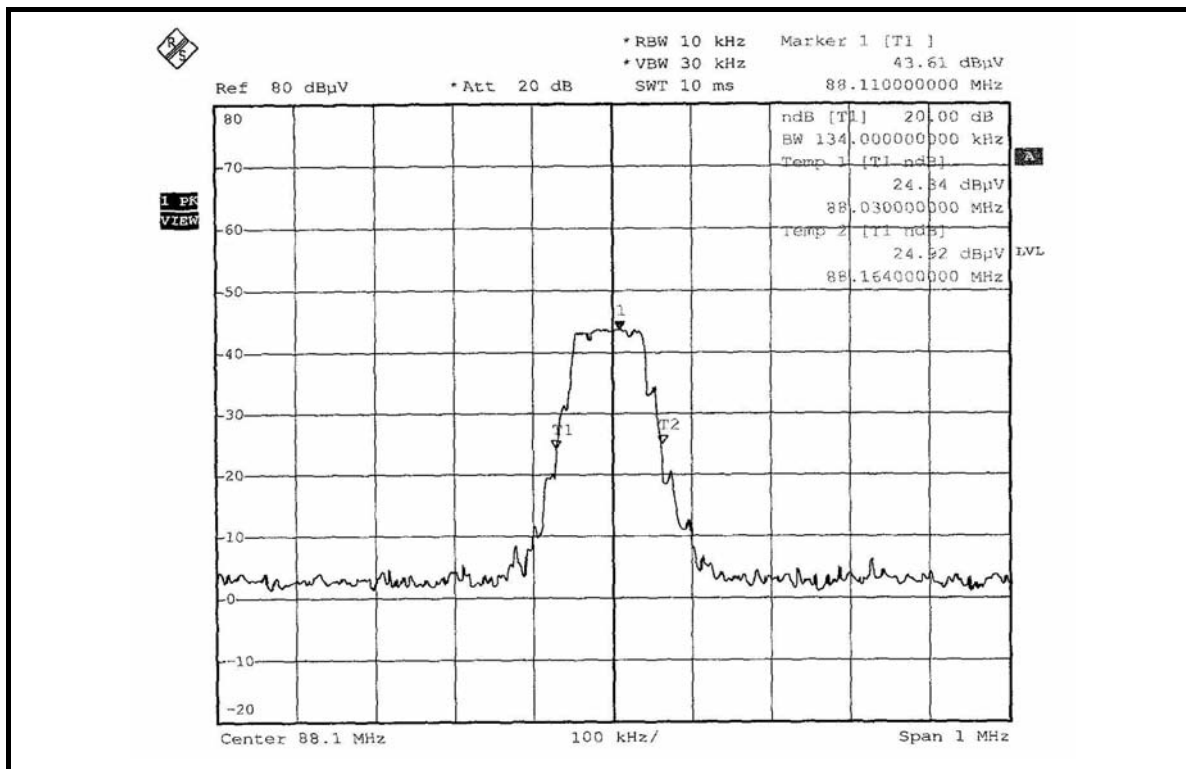
Set the EUT under transmission condition continuously at specific channel frequency.

4.3.7. TEST RESULTS

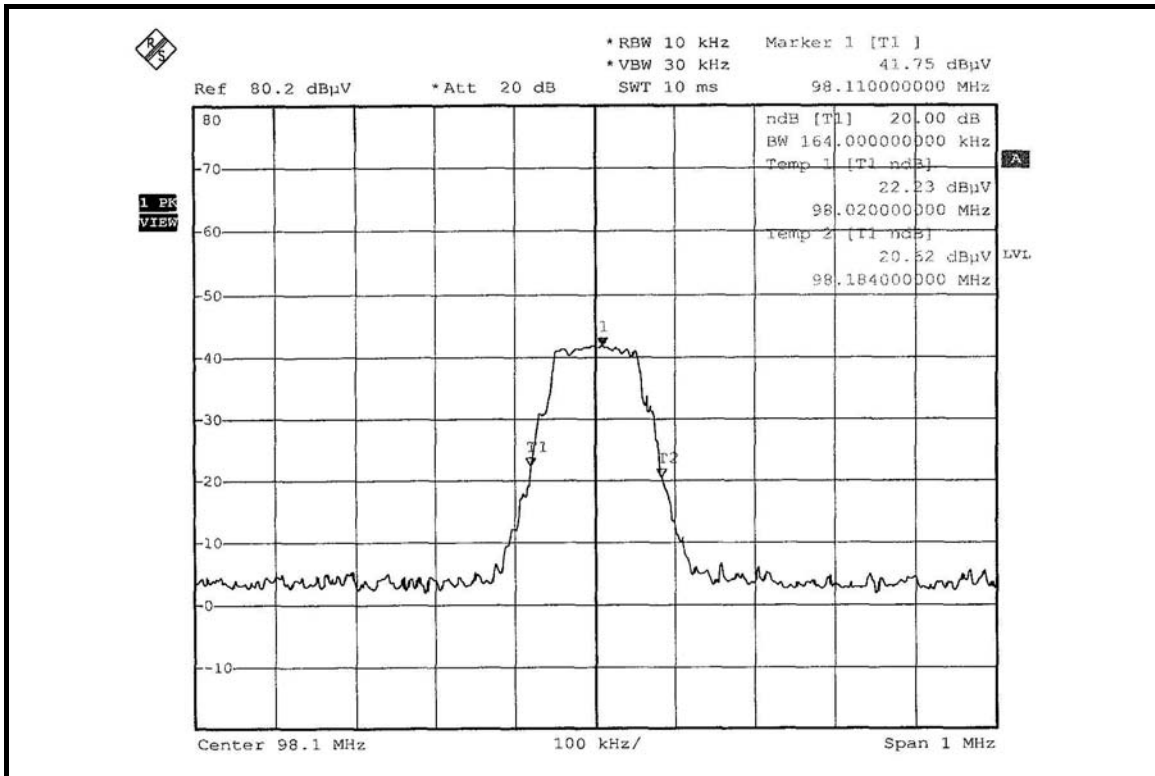
CHANNEL	Low, Middle, High Channel	MODULATION TYPE	FM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 1009hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	20 dB BANDWIDTH (kHz)	MAXIMUM LIMIT (kHz)	PASS/FAIL
Low	88.10	134.00	200	PASS
Middle	98.10	164.00	200	PASS
High	107.90	128.00	200	PASS

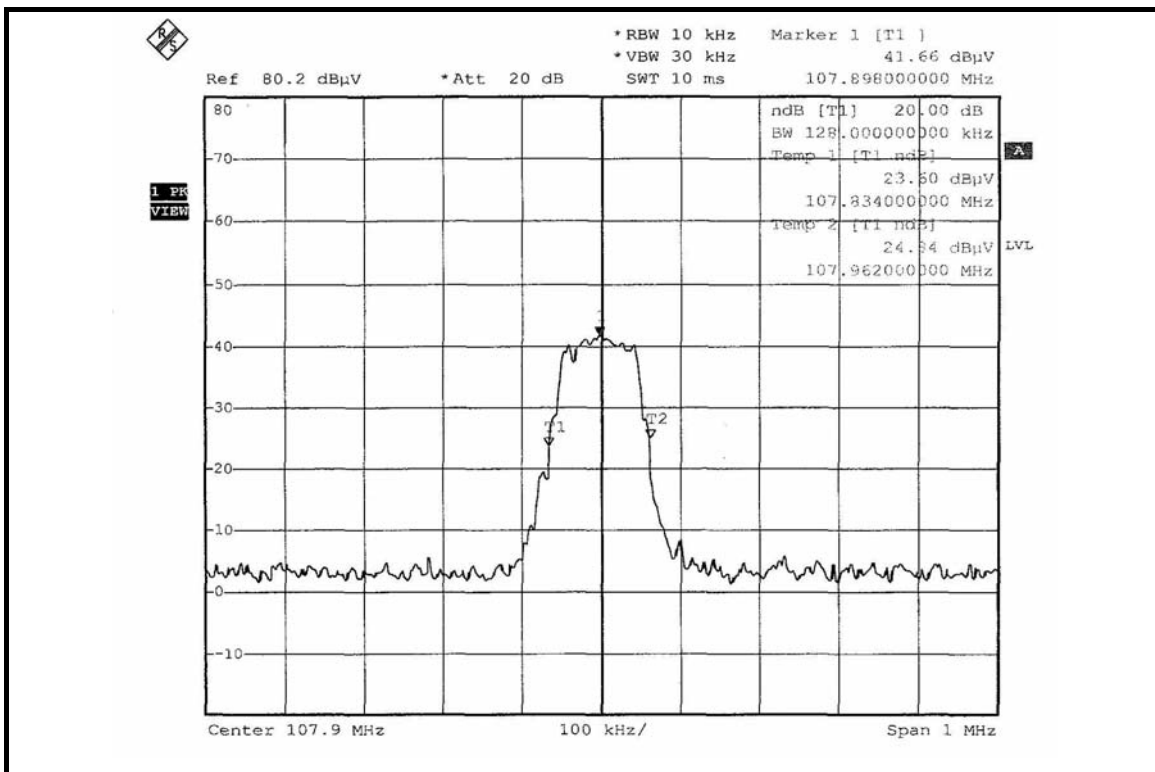
CH 1



CH 2



CH 3





5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



6. 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.	TAF, BSMI, NCC
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: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

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



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

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