

FCC TEST REPORT

REPORT NO.: RF920814R03

MODEL NO.: 3660

RECEIVED: August 14, 2003

TESTED: August 17~August 28, 2003

APPLICANT: SYNTECH INFORMATION CO., LTD.

ADDRESS: 8F, No.210, Ta- Tung Rd., Sec.3, Hsi-Chih,
Taipei Hsien, Taiwan

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei,
Taiwan, R.O.C.

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0528
ILAC MRA



Lab Code: 200102-0

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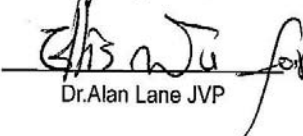
1 CERTIFICATION

PRODUCT : Wireless Scanner Base
MODEL NO.: 3660
BRAND: CipherLab
APPLICANT : SYNTECH INFORMATION CO., LTD.
TEST ITEM: ENGINEERING SAMPLE
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.249),
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from August 17, 2003 to August 28, 2003. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

PREPARED BY:  , **DATE:** September 9, 2003

Stephanie Hung

APPROVED BY:  **DATE:** September 9, 2003

Dr. Alan Lane JVP

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	Conducted Emission Test	PASS	Minimum passing margin is -16.41dB at 0.888MHz
15.249	Radiated Emission Test	PASS	Minimum passing margin is -9.50dB at 210.14MHz
15.249	Band edge Test	PASS	Meet the requirement of limit

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Scanner Base
MODEL NO.	3660
BRAND	CipherLab
POWER SUPPLY	5.0VDC from AC power adapter
MODULATION TYPE	GFSK(FHSS)
FREQUENCY RANGE	2.4GHz ~ 2.4835GHz
NUMBER OF CHANNEL	79
ANTENNA TYPE	Wire Antenna
DATA CABLE	1.1m(Nonshielded) for D-sub 15 pin to RS-232 cable and D-sub 15 pin to PS2 cable
I/O PORTS	D-sub 15 pin
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT was operated by the following AC adapter:

BRAND :	SINO-AMERICAN
MODEL :	SA10-0515U
INPUT :	100-240V-50-60Hz 250mA
OUTPUT :	5V--1500mA

2. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.



3.2 DESCRIPTION OF TEST MODES

The Wireless Scanner Base can transmit message from wireless scanner to host equipment via D-sub 15 pin to RS-232 cable or D-sub 15 pin to PS2 cable. Two test mode are presented in the test report, test (A) is for using D-sub 15 pin to RS-232 cable and test (B) is for using D-sub 15 pin to PS2 cable.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless Scanner Base. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 15, Subpart C. (15.249)

ANSI C63.4 : 1992

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

3.4 DESCRIPTION OF SUPPORT UNITS

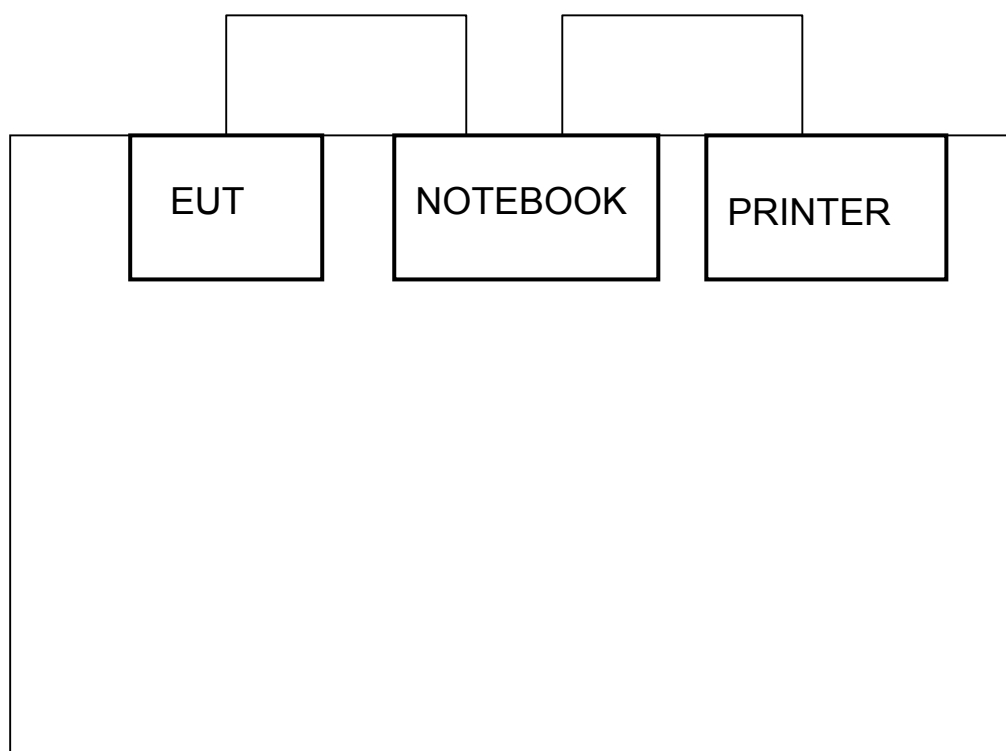
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	Dell	PP01L	TW-09C748-12800-16M-5064	DoC
2	PRINTER	HP	2225C	2929S52398	DSI6XU2225

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST TYPES AND RESULTS

4.1 Conducted Emission Measurement

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	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
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Jan. 20, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Dec. 18, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Dec. 18, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Dec. 18, 2003
ROHDE & SCHWARZ 4-wire ISN	ENY41	837032/016	Nov. 29 2003
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 29 2003
Software	Cond-V2M3	NA	NA
RF cable (JYEBao)	5D-FB	Cable-C10.01	May. 01, 2004
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010770	Mar. 24, 2004
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Apr. 06, 2004

- 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. “*”: These equipment are used for conducted telecom port test only (if tested).
 3. The test was performed in ADT Shielded Room No. 10.
 4. The VCCI Site Registration No. is C-1312.



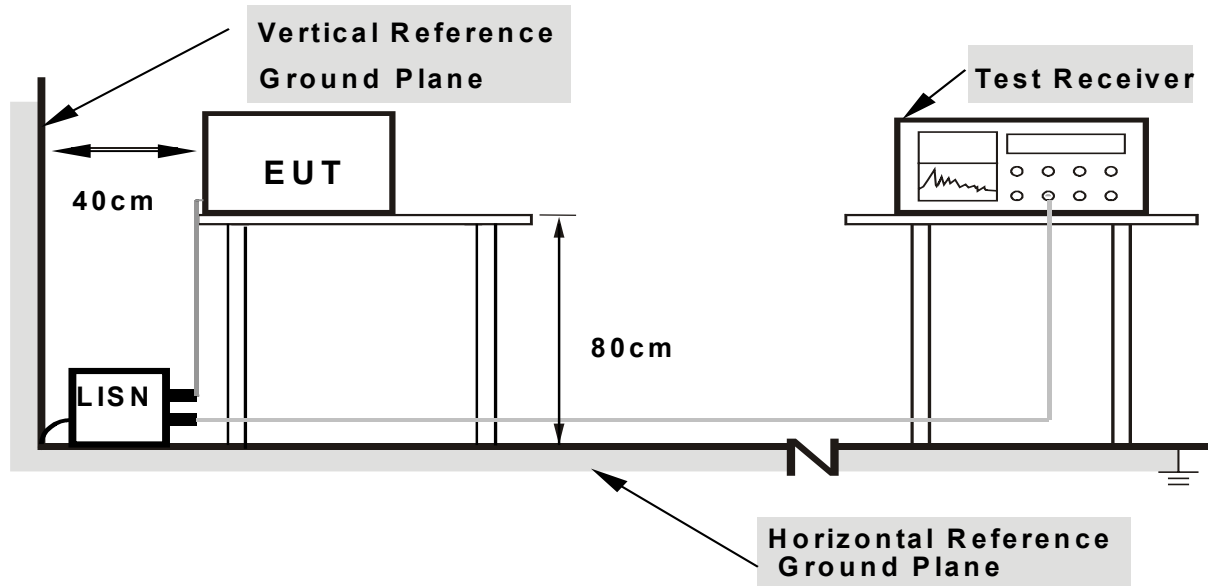
4.1.3 TEST PROCEDURE

- 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 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported.

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

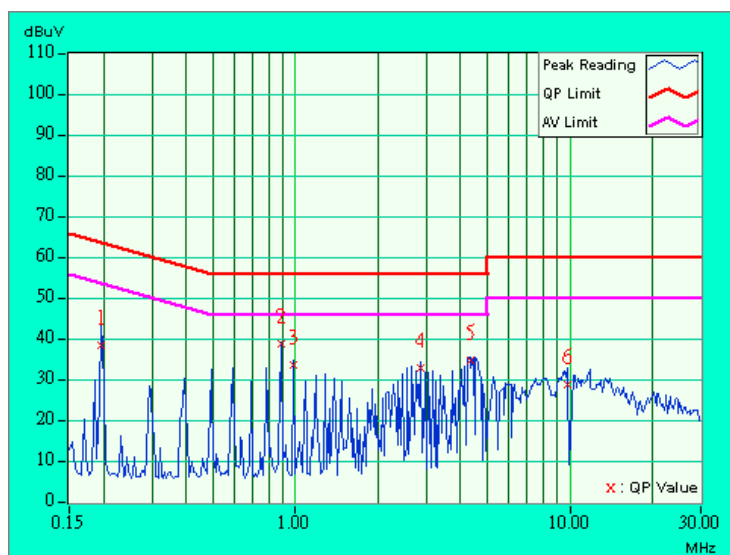
- Connected the EUT to a computer system placed on a testing table.
- Enable EUT under transmission/receiving condition continuously at specific channel frequency.
- The computer system sent "H" messages to modem.
- The computer system sent "H" messages to printer and the printer prints them on paper.

4.1.7 TEST RESULTS (A)

EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 1		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

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	0.197	0.06	38.16	-	38.22	-	63.74	53.74	-25.52	-
2	0.888	0.14	38.32	-	38.46	-	56.00	46.00	-17.54	-
3	0.986	0.16	33.46	-	33.62	-	56.00	46.00	-22.38	-
4	2.859	0.20	32.63	-	32.83	-	56.00	46.00	-23.17	-
5	4.336	0.23	34.28	-	34.51	-	56.00	46.00	-21.49	-
6	9.758	0.40	28.65	-	29.05	-	60.00	50.00	-30.95	-

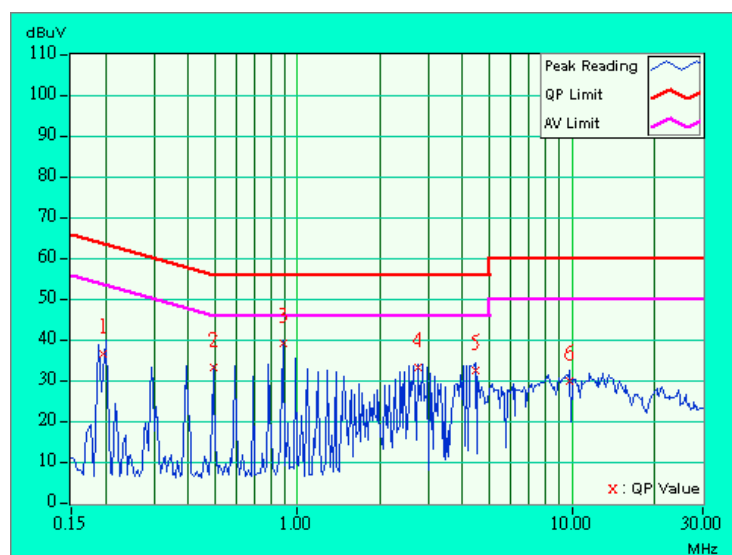
- REMARKS:
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 1		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.196	0.05	36.38	-	36.43	-	63.79	53.79	-27.36	-
2	0.494	0.07	32.85	-	32.92	-	56.10	46.10	-23.19	-
3	0.888	0.14	38.70	-	38.84	-	56.00	46.00	-17.16	-
4	2.762	0.19	32.80	-	32.99	-	56.00	46.00	-23.01	-
5	4.438	0.22	32.34	-	32.56	-	56.00	46.00	-23.44	-
6	9.857	0.39	29.70	-	30.09	-	60.00	50.00	-29.91	-

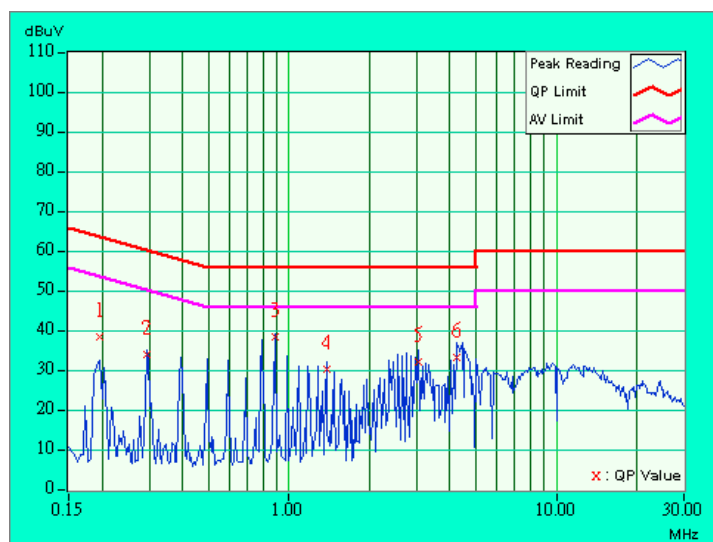
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 39		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.197	0.06	38.26	-	38.32	-	63.74	53.74	-25.42	-
2	0.295	0.06	34.00	-	34.06	-	60.40	50.40	-26.34	-
3	0.888	0.14	38.38	-	38.52	-	56.00	46.00	-17.48	-
4	1.379	0.17	30.26	-	30.43	-	56.00	46.00	-25.57	-
5	3.055	0.20	31.89	-	32.09	-	56.00	46.00	-23.91	-
6	4.240	0.23	33.00	-	33.23	-	56.00	46.00	-22.77	-

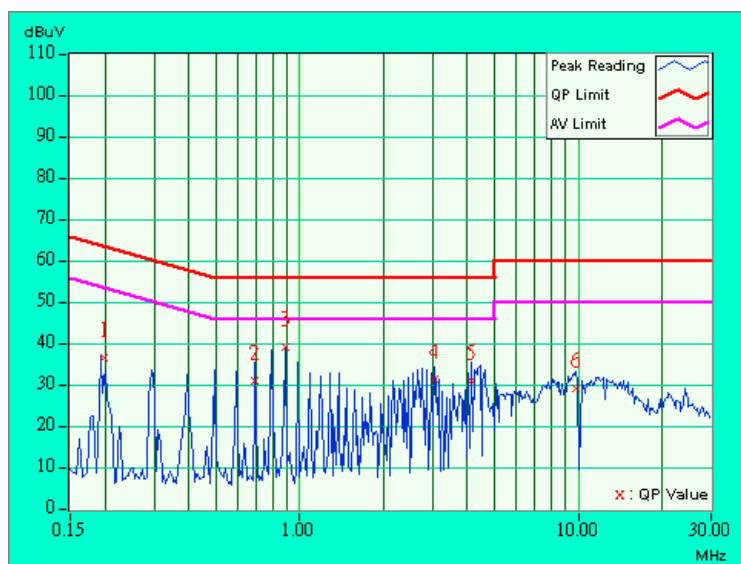
- REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 39		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

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	0.198	0.05	36.22	-	36.27	-	63.69	53.69	-27.42	-
2	0.690	0.10	30.64	-	30.74	-	56.00	46.00	-25.26	-
3	0.888	0.14	38.78	-	38.92	-	56.00	46.00	-17.08	-
4	3.055	0.19	30.92	-	31.11	-	56.00	46.00	-24.89	-
5	4.143	0.21	30.88	-	31.09	-	56.00	46.00	-24.91	-
6	9.857	0.39	28.94	-	29.33	-	60.00	50.00	-30.67	-

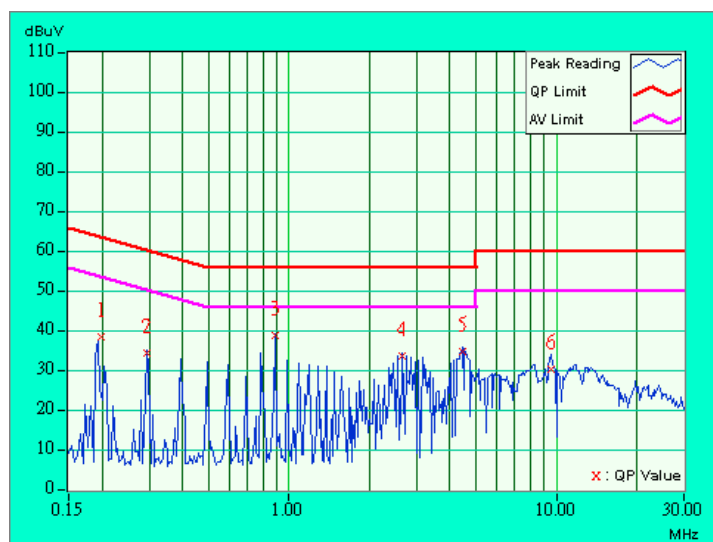
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 79		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

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	0.06	38.26	-	38.32	-	63.72	53.72	-25.40	-
2	0.295	0.06	34.13	-	34.19	-	60.40	50.40	-26.21	-
3	0.888	0.14	38.42	-	38.56	-	56.00	46.00	-17.44	-
4	2.660	0.19	33.24	-	33.43	-	56.00	46.00	-22.57	-
5	4.438	0.24	34.42	-	34.66	-	56.00	46.00	-21.34	-
6	9.563	0.40	29.93	-	30.33	-	60.00	50.00	-29.67	-

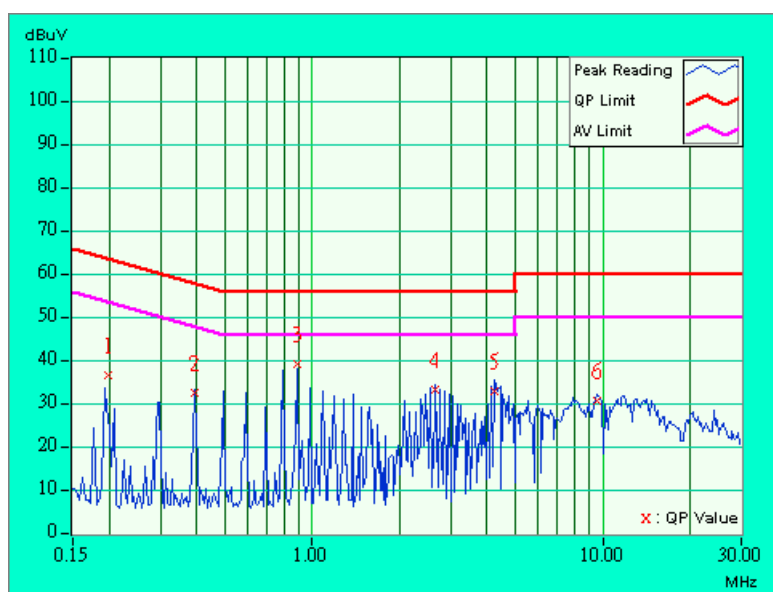
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit
 4. Margin value = Emission level - Limit value
 5.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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 79		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.198	0.05	36.18	-	36.23	-	63.68	53.68	-27.45	-
2	0.394	0.05	32.25	-	32.30	-	57.98	47.98	-25.68	-
3	0.888	0.14	38.78	-	38.92	-	56.00	46.00	-17.08	-
4	2.660	0.19	33.04	-	33.23	-	56.00	46.00	-22.77	-
5	4.239	0.21	32.77	-	32.98	-	56.00	46.00	-23.02	-
6	9.563	0.38	30.38	-	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.

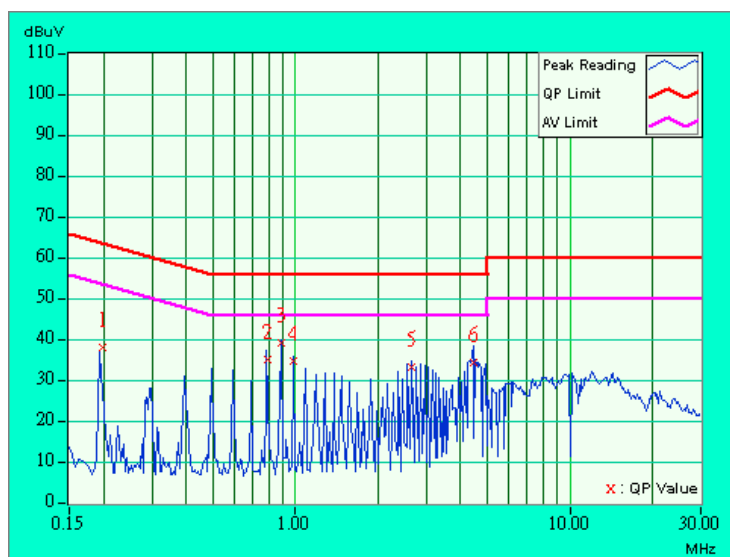


4.1.8 TEST RESULTS (B)

EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 1		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

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	0.198	0.06	38.02	-	38.08	-	63.69	53.69	-25.61	-
2	0.789	0.12	35.01	-	35.13	-	56.00	46.00	-20.87	-
3	0.888	0.14	39.19	-	39.33	-	56.00	46.00	-16.67	-
4	0.986	0.16	34.61	-	34.77	-	56.00	46.00	-21.23	-
5	2.663	0.19	33.12	-	33.31	-	56.00	46.00	-22.69	-
6	4.438	0.24	34.34	-	34.58	-	56.00	46.00	-21.42	-

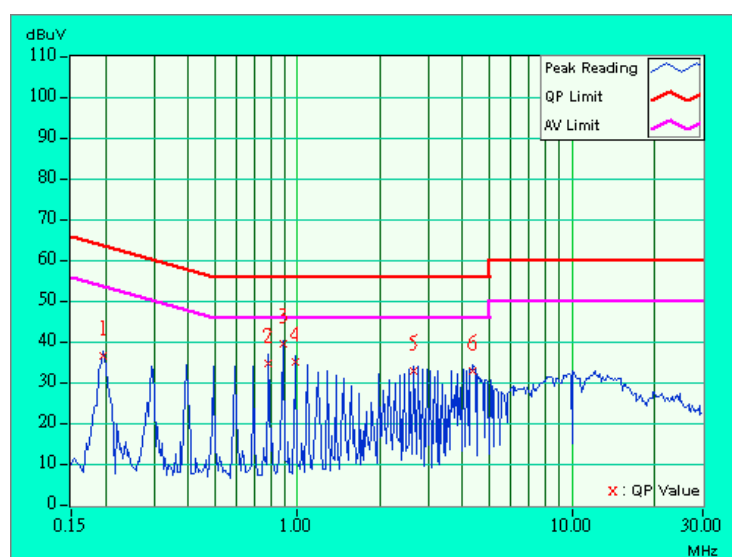
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 1		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.197	0.05	36.50	-	36.55	-	63.74	53.74	-27.19	-
2	0.787	0.12	34.55	-	34.67	-	56.00	46.00	-21.33	-
3	0.888	0.14	39.45	-	39.59	-	56.00	46.00	-16.41	-
4	0.986	0.16	35.15	-	35.31	-	56.00	46.00	-20.69	-
5	2.664	0.19	32.59	-	32.78	-	56.00	46.00	-23.22	-
6	4.340	0.22	32.83	-	33.05	-	56.00	46.00	-22.95	-

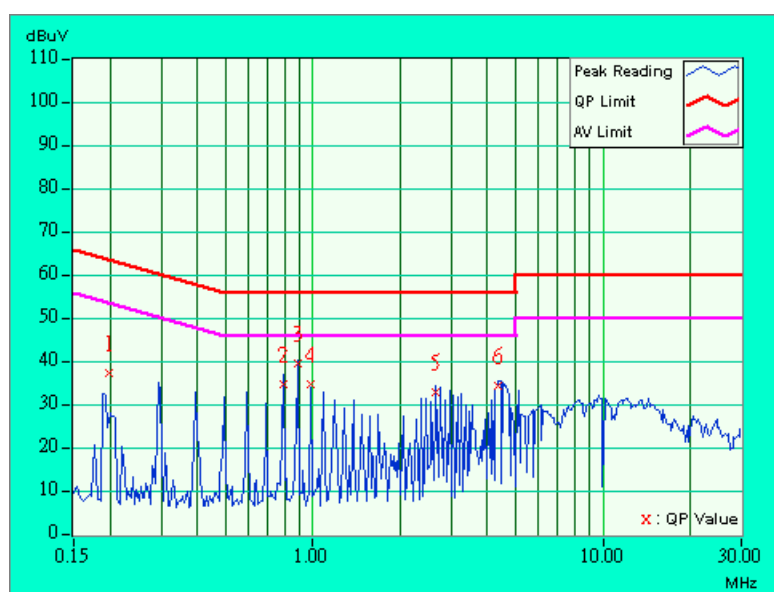
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 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 39		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.199	0.06	37.20	-	37.26	-	63.64	53.64	-26.38	-
2	0.791	0.13	34.72	-	34.85	-	56.00	46.00	-21.15	-
3	0.888	0.14	39.28	-	39.42	-	56.00	46.00	-16.58	-
4	0.986	0.16	34.66	-	34.82	-	56.00	46.00	-21.18	-
5	2.664	0.19	32.57	-	32.76	-	56.00	46.00	-23.24	-
6	4.340	0.23	34.17	-	34.40	-	56.00	46.00	-21.60	-

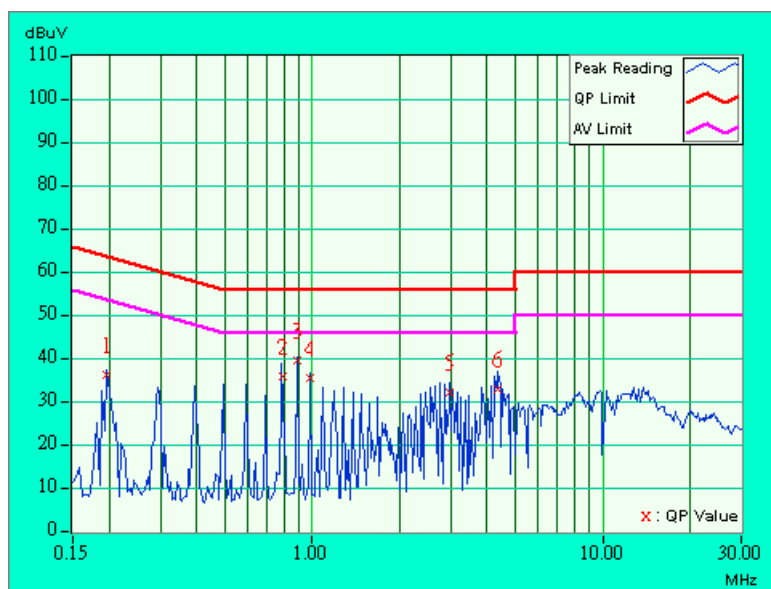
- REMARKS:
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 39		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.197	0.05	36.10	-	36.15	-	63.74	53.74	-27.59	-
2	0.790	0.12	35.56	-	35.68	-	56.00	46.00	-20.32	-
3	0.888	0.14	39.39	-	39.53	-	56.00	46.00	-16.47	-
4	0.986	0.16	35.27	-	35.43	-	56.00	46.00	-20.57	-
5	2.957	0.19	31.86	-	32.05	-	56.00	46.00	-23.95	-
6	4.340	0.22	32.83	-	33.05	-	56.00	46.00	-22.95	-

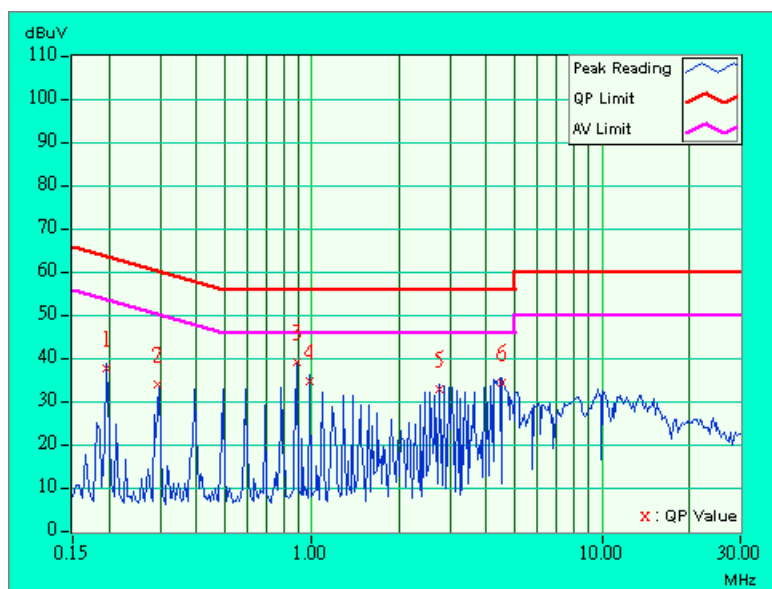
- REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 79		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

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	0.06	37.43	-	37.49	-	63.74	53.74	-26.25	-
2	0.296	0.06	33.71	-	33.77	-	60.36	50.36	-26.59	-
3	0.888	0.14	38.98	-	39.12	-	56.00	46.00	-16.88	-
4	0.986	0.16	34.55	-	34.71	-	56.00	46.00	-21.29	-
5	2.762	0.20	32.89	-	33.09	-	56.00	46.00	-22.91	-
6	4.535	0.24	34.02	-	34.26	-	56.00	46.00	-21.74	-

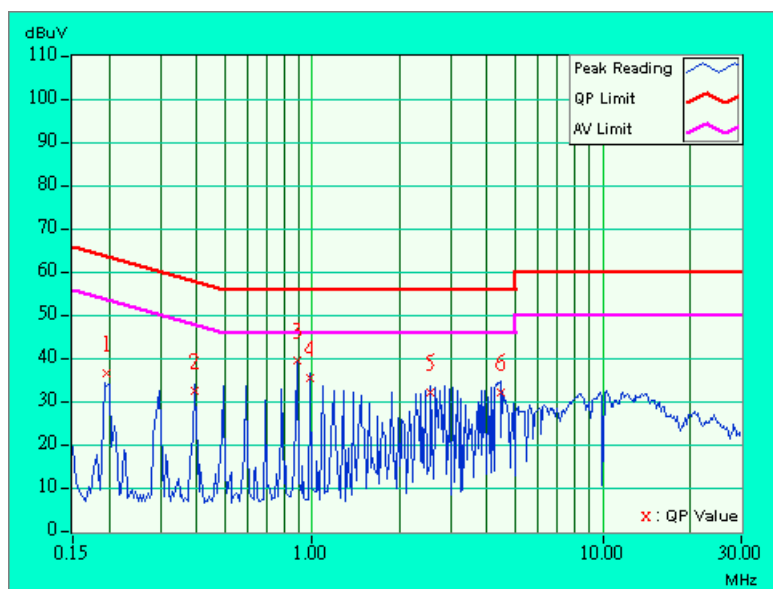
- REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless Scanner Base	MODEL	3660
TEST MODE	Channel 79		
INPUT POWER	230Vac, 50 Hz	6dB BANDWIDTH	9kHz
		PHASE	Line (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

No	Freq.	Corr. Factor	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	0.197	0.05	36.32	-	36.37	-	63.75	53.75	-27.38	-
2	0.394	0.05	32.19	-	32.24	-	57.98	47.98	-25.74	-
3	0.888	0.14	39.29	-	39.43	-	56.00	46.00	-16.57	-
4	0.986	0.16	35.25	-	35.41	-	56.00	46.00	-20.59	-
5	2.563	0.19	31.92	-	32.11	-	56.00	46.00	-23.89	-
6	4.436	0.22	32.18	-	32.40	-	56.00	46.00	-23.60	-

- 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

The field strength of emission from fundamental frequency shall comply with the following:

Frequencies (MHz)	Field strength (dBuV/m)	
	Peak	Average
2400 ~ 2483.5	114	94

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
*HP Spectrum Analyzer	8594E	3911A07465	Jul. 07, 2004
*HP Preamplifier	8447D	2944A10386	Aug. 12, 2004
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 11, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
SCHAFFNER TEST RECEIVER	SCR 3501	409	Jan. 26, 2004
* SCHAFFNER BILOG Antenna	CBL6111C	2727	Jul. 15, 2004
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jun 30, 2004
* EMCO Horn Antenna	3115	9312-4192	Mar. 23 2004
* ADT. Turn Table	TT100	0201	NA
* ADT. Tower	AT100	0201	NA
* Software	ADT_Radiated_V 5.14	NA	NA
* ANRITSU RF Switches	MP59B	6100237246	Oct. 30, 2003
* TIMES RF cable	LMR-600	CABLE-ST10-01	Oct. 30, 2003

- 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. "*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 10.
5. The VCCI Site Registration No. is R-1625.



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 10 meter open area test site. 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 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

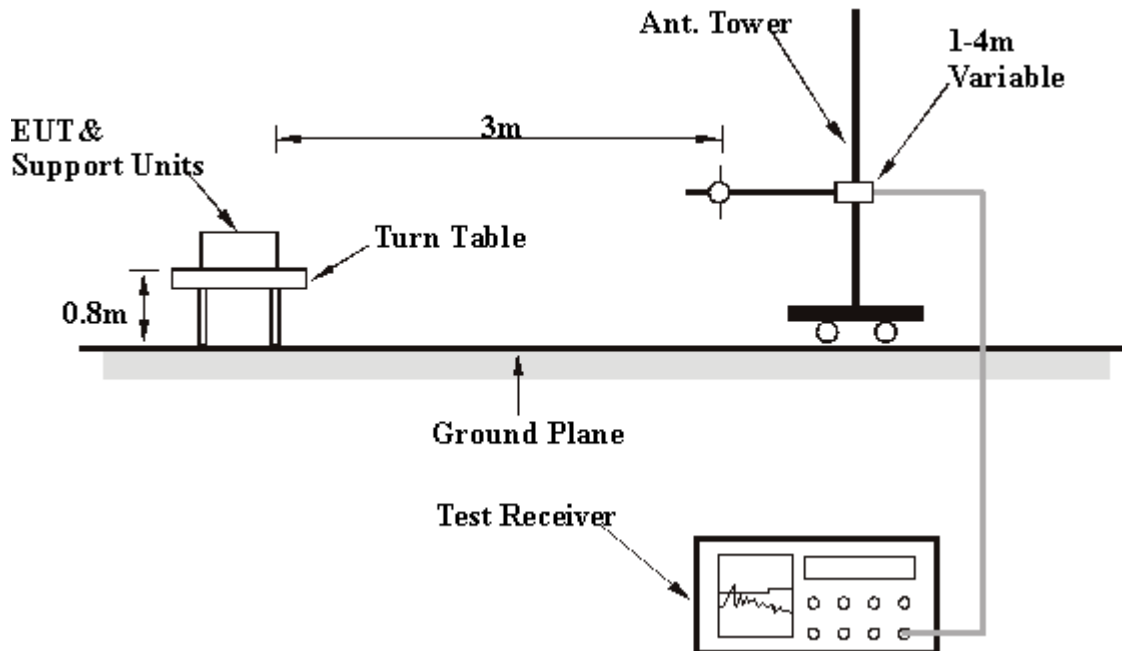
NOTE:

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 300 Hz 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

- a. Connected the EUT to a computer system placed on a testing table.
- b. Enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The computer system sent "H" messages to modem
- d. The computer system sent "H" messages to printer and the printer prints them on paper.

4.2.7 TEST RESULTS

EUT	Wireless Scanner Base	MODEL	3660
MODE	Channel 79 (Test (A))	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	34deg. C, 60%RH, 991hPa	TESTED BY: Steven Lu	

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	175.25	33.6 QP	43.50	-9.90	1.74 H	20	24.40	9.20
2	188.03	25.2 QP	43.50	-18.20	1.82 H	354	16.10	9.20
3	210.14	34.0 QP	43.50	-9.50	1.54 H	329	24.00	10.00
4	232.26	25.9 QP	46.00	-20.10	1.71 H	349	14.50	11.40
5	400.93	29.5 QP	46.00	-16.50	1.60 H	350	12.10	17.40
6	601.40	29.5 QP	46.00	-16.50	1.84 H	6	7.80	21.60
7	668.17	28.8 QP	46.00	-17.20	1.89 H	338	6.20	22.60
8	785.28	28.2 QP	46.00	-17.80	1.74 H	327	4.40	23.80
9	982.27	31.4 QP	54.00	-22.60	1.56 H	16	4.40	26.90

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	175.26	25.1 QP	43.50	-18.40	1.80 V	305	15.90	9.20
2	210.15	24.5 QP	43.50	-19.00	1.94 V	284	14.60	10.00
3	232.27	22.8 QP	46.00	-23.20	1.92 V	279	11.40	11.40
4	400.93	29.5 QP	46.00	-16.50	1.34 V	16	12.10	17.40
5	668.18	29.4 QP	46.00	-16.60	1.80 V	305	6.90	22.60
6	785.28	28.2 QP	46.00	-17.80	1.63 V	345	4.40	23.80
7	982.27	30.8 QP	54.00	-23.20	1.51 V	330	3.90	26.90

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	Wireless Scanner Base	MODEL	3660
MODE	Channel 79 (Test (B))	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	34deg. C, 60%RH, 991hPa	TESTED BY: Steven Lu	

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	179.78	23.3 QP	43.50	-20.20	1.38 H	341	14.30	9.10
2	248.84	28.5 QP	46.00	-17.50	1.00 H	351	16.10	12.40
3	259.93	26.1 QP	46.00	-19.90	1.00 H	351	12.00	14.00
4	294.94	21.6 QP	46.00	-24.40	1.00 H	350	7.10	14.50
5	342.86	28.6 QP	46.00	-17.40	1.00 H	334	13.30	15.30
6	432.05	20.3 QP	46.00	-25.70	1.00 H	296	2.40	17.90
7	601.76	27.3 QP	46.00	-18.70	1.00 H	324	5.60	21.60
8	785.29	28.8 QP	46.00	-17.20	1.00 H	324	4.90	23.80
9	857.98	26.6 QP	46.00	-19.40	1.00 H	340	1.10	25.50

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	175.26	26.8 QP	43.50	-16.70	2.00 V	288	17.60	9.20
2	232.27	27.4 QP	46.00	-18.60	2.00 V	265	16.00	11.40
3	400.92	28.0 QP	46.00	-18.00	1.65 V	356	10.60	17.40
4	442.40	26.9 QP	46.00	-19.10	1.54 V	343	8.90	18.00
5	453.48	23.3 QP	46.00	-22.70	1.46 V	317	5.00	18.30
6	668.21	28.6 QP	46.00	-17.40	1.61 V	326	6.00	22.60
7	785.28	30.1 QP	46.00	-15.90	1.53 V	343	6.30	23.80
8	982.27	29.9 QP	54.00	-24.10	1.71 V	336	3.00	26.90

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	Wireless Scanner Base	MODEL	3660
CHANNEL	Channel 1	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	25deg. C, 52%RH, 991hPa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TESTED BY: Steven Lu			

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	1201.44	37.3 PK	74.00	-36.70	1.00 H	304	10.00	27.20
2	*2402.16	90.7 PK	114.00	-23.30	1.08 H	150	60.00	30.80
2	*2402.16	60.7 AV	94.00	-33.30	1.08 H	150	29.90	30.80
3	4804.00	45.9 PK	74.00	-28.10	1.60 H	83	9.70	36.20

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	1201.44	38.6 PK	74.00	-35.40	1.08 V	292	11.30	27.20
2	*2402.13	93.1 PK	114.00	-20.90	1.16 V	72	62.30	30.80
2	*2402.13	63.1 AV	94.00	-30.90	1.16 V	72	32.30	30.80
3	4804.00	49.9 PK	74.00	-24.10	1.16 V	199	13.70	36.20

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 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 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 247 ms per channel. Therefore, the duty cycle be equal to: $20\log(3.125/100) = -30\text{dB}$
 - 7.Average value = peak reading $-20\log(\text{duty cycle})$

EUT	Wireless Scanner Base	MODEL	3660
CHANNEL	Channel 39	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	25deg. C, 52%RH, 991hPa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TESTED BY: Steven Lu			

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M								
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	1201.40	38.2 PK	74.00	-35.80	1.00 H	322	11.00	27.20
2	*2441.00	89.6 PK	114.00	-24.40	1.00 H	165	58.60	31.00
2	*2441.00	59.6 AV	94.00	-34.40	1.00 H	165	28.60	31.00
3	4804.00	46.3 PK	74.00	-27.70	1.42 H	85	10.10	36.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M								
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	1220.00	39.6 PK	74.00	-34.40	1.00 V	2	12.30	27.30
2	*2441.00	95.1 PK	114.00	-18.90	1.04 V	175	64.20	31.00
2	*2441.00	65.1 AV	94.00	-28.90	1.04 V	175	34.10	31.00
3	4884.00	48.0 PK	74.00	-26.00	1.58 V	70	11.60	36.40

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 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 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 247 ms per channel. Therefore, the duty cycle be equal to: $20\log(3.125/100) = -30\text{dB}$
 - 7.Average value = peak reading $-20\log(\text{duty cycle})$

EUT	Wireless Scanner Base	MODEL	3660
CHANNEL	Channel 79	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	25deg. C, 52%RH, 991hPa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TESTED BY: Steven Lu			

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M								
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	1240.44	40.7 PK	74.00	-33.30	1.16 H	232	13.30	27.40
2	*2480.00	91.1 PK	114.00	-22.90	1.00 H	169	60.00	31.10
2	*2480.00	61.1 AV	94.00	-32.90	1.00 H	169	30.00	31.10
3	4960.00	46.4 PK	74.00	-27.60	1.52 H	89	9.90	36.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M								
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	1240.44	41.6 PK	74.00	-32.40	1.35 V	47	14.20	27.40
2	*2480.00	95.3 PK	114.00	-18.70	1.15 V	75	64.20	31.10
2	*2480.00	65.3 AV	94.00	-28.70	1.15 V	75	34.20	31.10
3	4960.00	50.2 PK	74.00	-23.80	1.16 V	211	13.70	36.50

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 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 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 247 ms per channel. Therefore, the duty cycle be equal to: $20\log(3.125/100) = -30\text{dB}$
 7. Average value = peak reading $-20\log(\text{duty cycle})$

4.3 BAND EDGES MEASUREMENT

4.3.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	August 12, 2004

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.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 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.

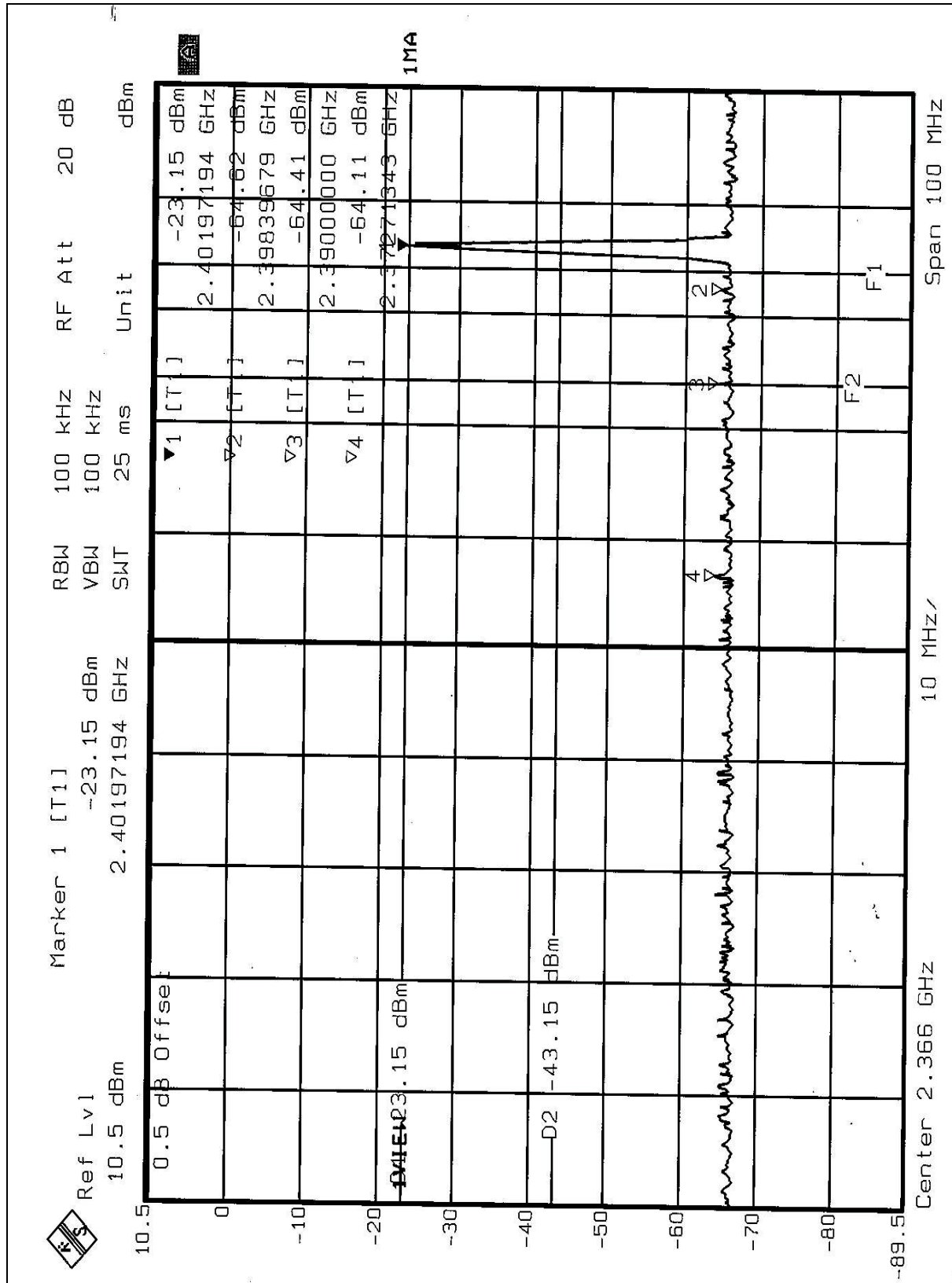


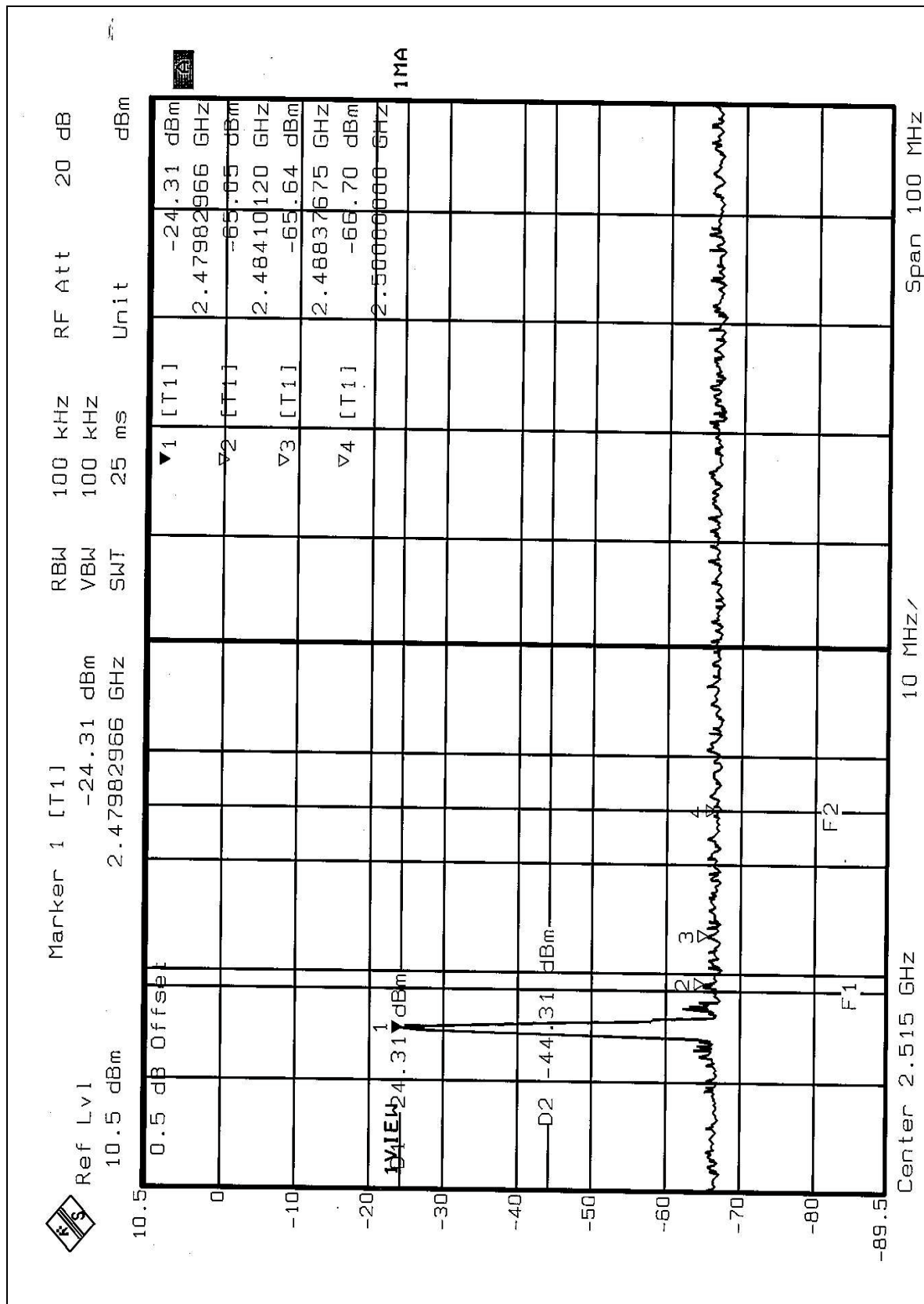
4.3.4 EUT OPERATING CONDITION

Same as Item 4.3.5

4.3.5 TEST RESULTS

The spectrum plots are attached on the following 1 page. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.249(C).





5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



Test Mode(A)



Test Mode (B)



RADIATED EMISSION TEST



Test Mode(A)



Test Mode (B)





6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	BSMI, DGT, CNLA

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.

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