



FCC TEST REPORT

REPORT NO.: RF920806R01

MODEL NO.: LF-30S TX

RECEIVED: August 06, 2003

TESTED: August 19, 2003 – August 20, 2003

APPLICANT: Jebsee Electronics Co., Ltd.

ADDRESS: 24-3, Sin-Lo Road, P.O.Box 57, Tainan, Taiwan

ISSUED BY: Advance Data Technology Corporation

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

This test report consists of 30 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, NVLAP or any government agencies. The test results in the report only apply to the tested sample.



0528
ILAC MRA



Lab Code: 200102-0

Table of Contents

1	CERTIFICATION.....	3
2	SUMMARY OF TEST RESULTS	4
3.	GENERAL INFORMATION	5
3.1	GENERAL DESCRIPTION OF EUT	5
3.2	DESCRIPTION OF TEST MODES	6
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS.....	6
3.4	DESCRIPTION OF SUPPORT UNITS	7
4.	TEST TYPES AND RESULTS	8
4.1	CONDUCTED EMISSION MEASUREMENT.....	8
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	8
4.1.2	TEST INSTRUMENTS	8
4.1.3	TEST PROCEDURES.....	9
4.1.4	DEVIATION FROM TEST STANDARD.....	9
4.1.5	TEST SETUP	10
4.1.6	EUT OPERATING CONDITIONS	10
4.1.7	TEST RESULTS	11
4.2	RADIATED EMISSION MEASUREMENT.....	17
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	17
4.2.2	TEST INSTRUMENTS	18
4.2.3	TEST PROCEDURES.....	19
4.2.4	DEVIATION FROM TEST STANDARD.....	19
4.2.5	TEST SETUP	20
4.2.6	EUT OPERATING CONDITIONS	20
4.2.7	TEST RESULTS.....	21
4.3	BAND EDGES MEASUREMENT.....	25
4.3.1	LIMITS OF BAND EDGES MEASUREMENT	25
4.3.2	TEST INSTRUMENTS	25
4.3.3	TEST PROCEDURE	25
4.3.4	EUT OPERATING CONDITION.....	25
4.3.5	TEST RESULTS.....	25
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION	28
6.	INFORMATION ON THE TESTING LABORATORIES	30



1 CERTIFICATION

PRODUCT : 2.4GHz VIDEO/AUDIO/IR REMOTE
CONTROL WIRELESS SENDER
MODEL NO.: LF-30S TX
BRAND: TERK
APPLICANT : Jebsee Electronics 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 19, 2003 to August 20. 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: Stephanie Hung, **DATE:** September 06, 2003

APPROVED BY: Angus Hsu **DATE:** September 06, 2003
Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
15.207	Conducted Emission Test	PASS	Minimum passing margin is -22.20dB at 0.404MHz
15.209 15.249	Radiated Emission Test	PASS	Minimum passing margin is -5.60dB at 320.36MHz
15.249	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

NOTE: The receiver part to communicate with the EUT has been verified to comply with FCC Part 15, Subpart B, Class B (DoC). The test report can be provided upon request.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER
MODEL NO.	LF-30S TX
BRAND	TERK
POWER SUPPLY	15VDC from power adapter
MODULATION TYPE	FM
CARRIER FREQUENCY OF EACH CHANNEL	2414, 2432, 2450, 2468MHz
SPACING CHANNEL	18MHz
NUMBER OF CHANNEL	4
ANTENNA TYPE	Detachable antenna
DATA CABLE	1.9m (Nonshielded)
I/O PORTS	AV

NOTE:

1. The EUT include Transmitter part and Receiver part. The model no.: LF-30S TX which includes Tx of 2.4GHz application used for video/audio sender and Rx of 433MHz application used for receive part of IR extender.
2. Receiver part of model LF-30S TX has been presented in DoC report.
3. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.
4. The EUT was operated with following power adapter:

Brand :	HON-KWANG
Model:	D6-10-06
Input:	120V, 60Hz, 18W
Output:	15Vdc, 300mA

3.2 DESCRIPTION OF TEST MODES

Four channels are provided in the EUT

Channel	Frequency	Channel	Frequency
1	2414 MHz	2	2432 MHz
3	2450 MHz	4	2468 MHz

NOTE:

1. Below 1000MHz, the channel1, 1, 3, 4 were pre-tested in chamber. The channel 4, worst case one, was chosen for final test.
2. Above 1000MHz, the channel 1, 3, 4 were tested individually.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a 2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER. 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

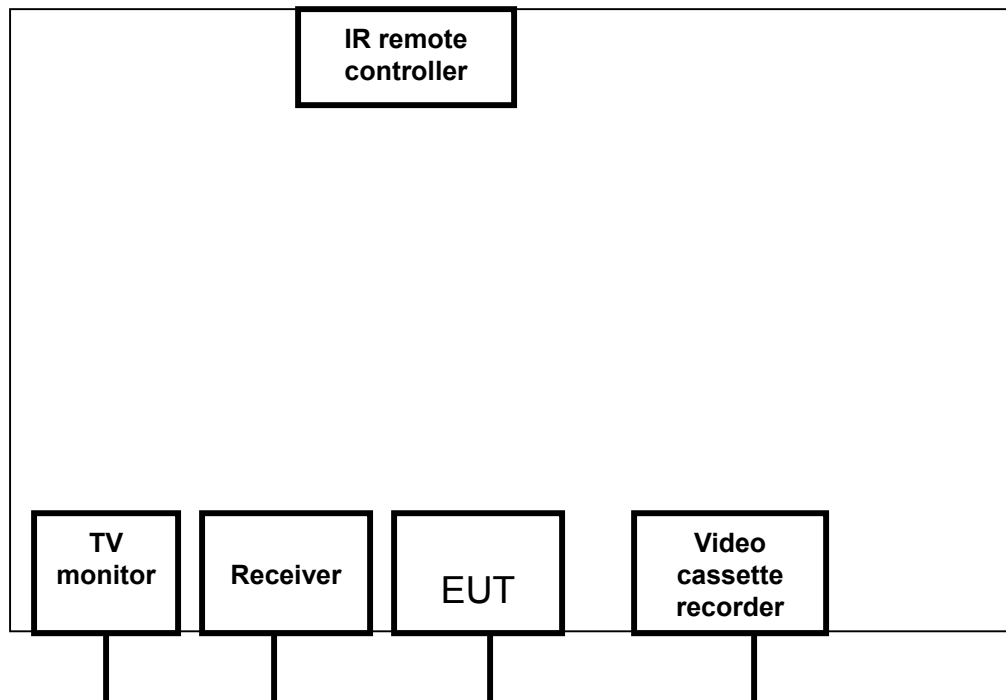
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	TV MONITOR	HACE	CC14A	23719011000399	VERIFICATION
2	VIDEO CASSETTE RECORDER	JVC	HR-S3800U	135J8459	FCC DoC Approved
3	Receiver	TERK	LF-30S RX	NA	NA

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

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

CONFIGURATION OF SYSTEM UNDER TEST



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
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.



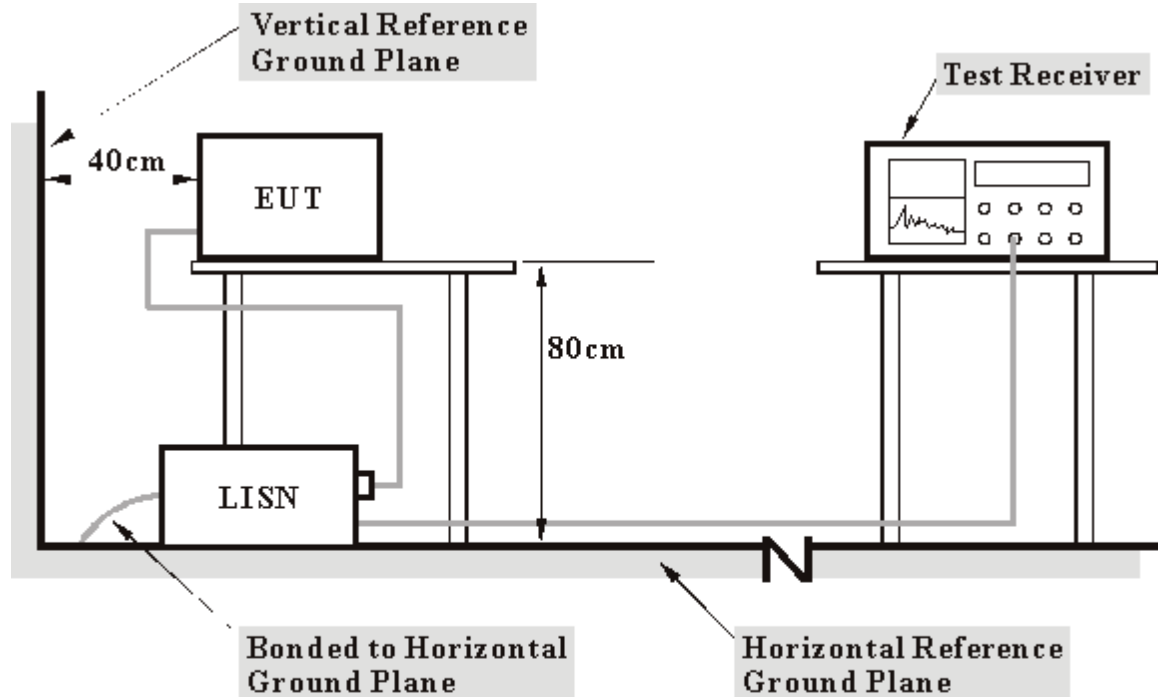
4.1.3 TEST PROCEDURES

- 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 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) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

4.1.6 EUT OPERATING CONDITIONS

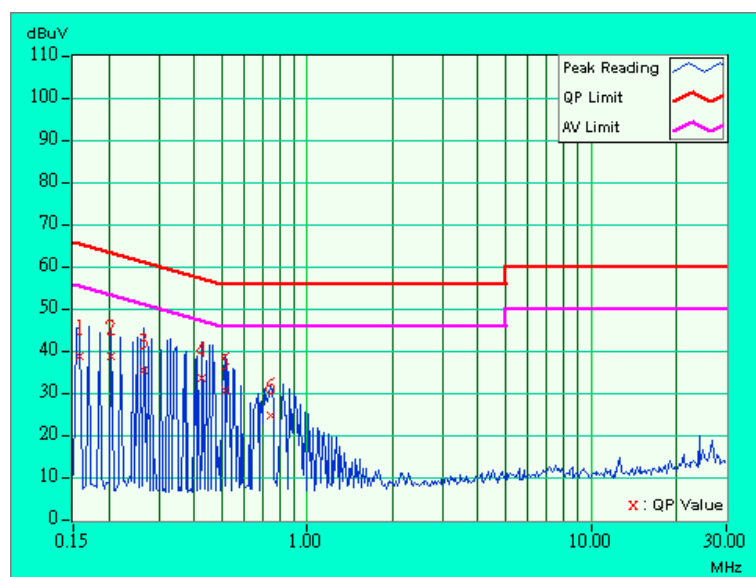
- a. Connected the EUT with a video cassette recorder via A/V cable.
- b. The EUT received the signal from DVD player and transmitting the signal at specific channel.

4.1.7 TEST RESULTS

EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	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	0.158	0.06	38.68	-	38.74	-	65.58	55.58	-26.84	-
2	0.205	0.06	38.76	-	38.82	-	63.42	53.42	-24.60	-
3	0.267	0.06	35.29	-	35.35	-	61.20	51.20	-25.85	-
4	0.427	0.06	33.77	-	33.83	-	57.30	47.30	-23.47	-
5	0.513	0.08	30.45	-	30.53	-	56.00	46.00	-25.47	-
6	0.748	0.12	24.53	-	24.65	-	56.00	46.00	-31.35	-

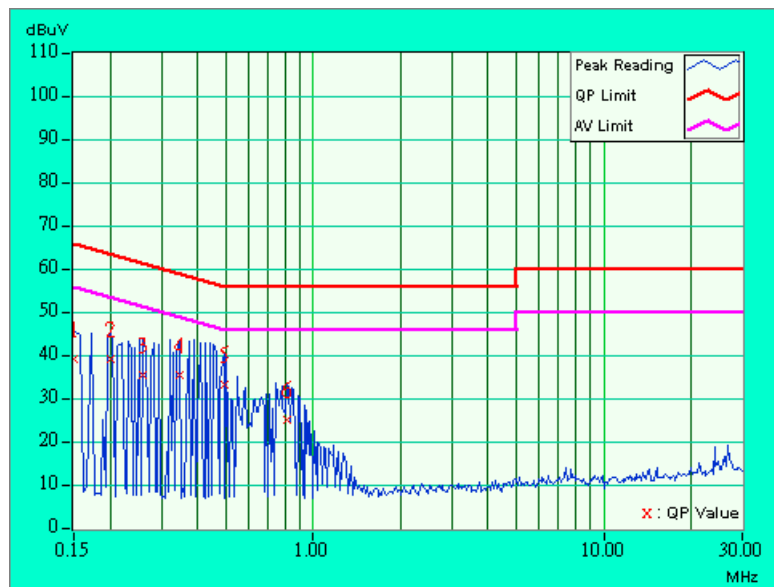
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
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	0.150	0.05	39.09	-	39.14	-	66.00	56.00	-26.86	-
2	0.201	0.05	39.14	-	39.19	-	63.58	53.58	-24.39	-
3	0.259	0.05	35.41	-	35.46	-	61.45	51.45	-25.99	-
4	0.345	0.05	35.33	-	35.38	-	59.07	49.07	-23.69	-
5	0.494	0.07	33.19	-	33.26	-	56.10	46.10	-22.85	-
6	0.810	0.12	25.15	-	25.27	-	56.00	46.00	-30.73	-

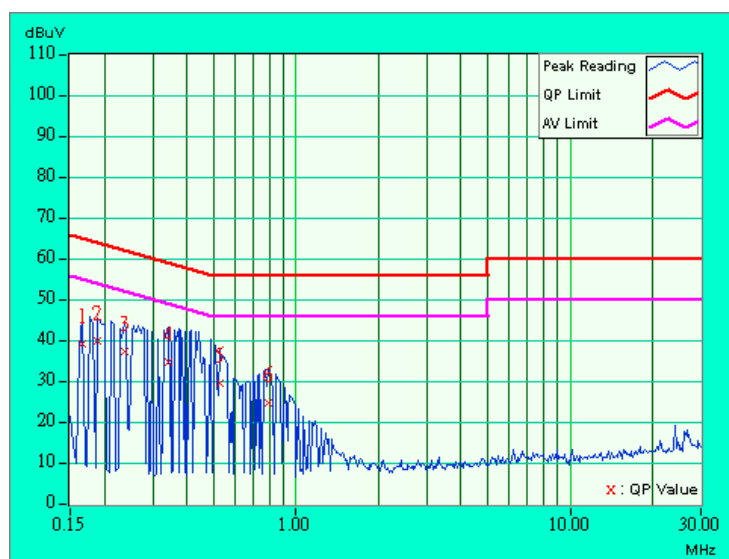
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 3	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	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	0.166	0.06	39.09	-	39.15	-	65.18	55.18	-26.03	-
2	0.189	0.06	39.75	-	39.81	-	64.08	54.08	-24.27	-
3	0.236	0.06	37.15	-	37.21	-	62.24	52.24	-25.03	-
4	0.341	0.06	34.67	-	34.73	-	59.17	49.17	-24.44	-
5	0.529	0.08	29.59	-	29.67	-	56.00	46.00	-26.33	-
6	0.791	0.13	24.58	-	24.71	-	56.00	46.00	-31.29	-

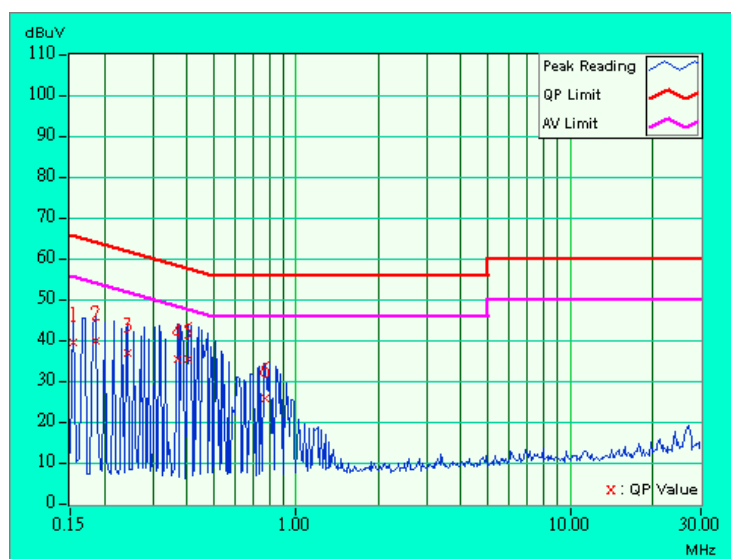
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 3	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
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	0.154	0.05	39.37	-	39.42	-	65.79	55.79	-26.37	-
2	0.185	0.05	39.89	-	39.94	-	64.25	54.25	-24.31	-
3	0.244	0.05	36.81	-	36.86	-	61.97	51.97	-25.11	-
4	0.369	0.05	35.42	-	35.47	-	58.53	48.53	-23.06	-
5	0.404	0.05	35.52	-	35.57	-	57.77	47.77	-22.20	-
6	0.775	0.12	25.83	-	25.95	-	56.00	46.00	-30.05	-

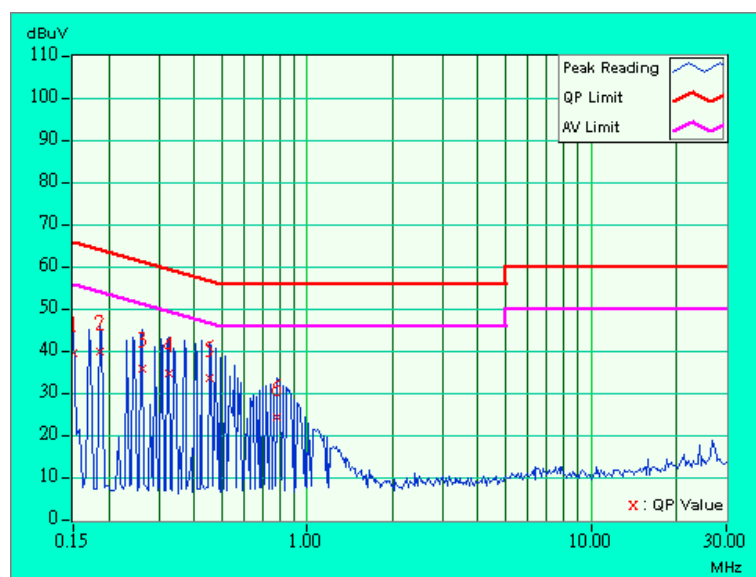
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 4	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	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	0.150	0.05	39.57	-	39.62	-	66.00	56.00	-26.38	-
2	0.185	0.06	39.99	-	40.05	-	64.25	54.25	-24.20	-
3	0.263	0.06	35.88	-	35.94	-	61.33	51.33	-25.39	-
4	0.326	0.06	34.80	-	34.86	-	59.56	49.56	-24.70	-
5	0.455	0.07	33.65	-	33.72	-	56.79	46.79	-23.07	-
6	0.787	0.12	24.36	-	24.48	-	56.00	46.00	-31.52	-

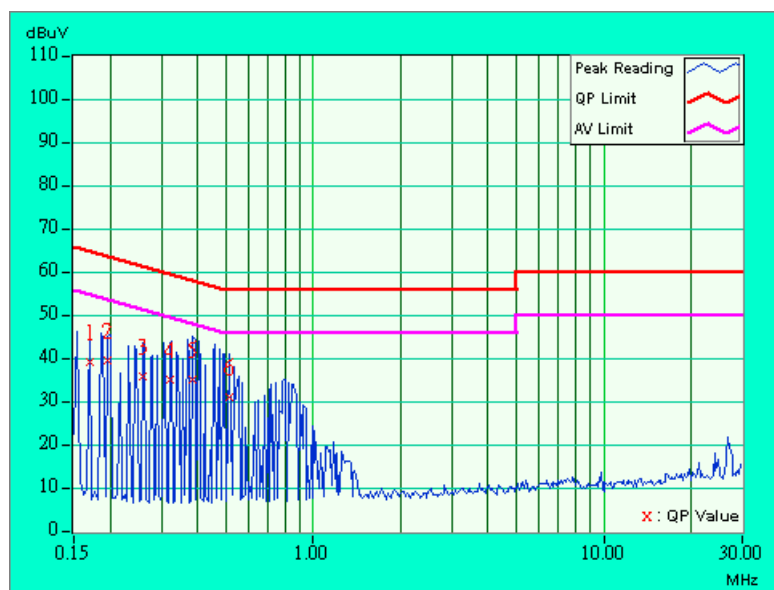
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 4	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
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	0.170	0.05	39.15	-	39.20	-	64.98	54.98	-25.78	-
2	0.197	0.05	39.69	-	39.74	-	63.74	53.74	-24.00	-
3	0.259	0.05	35.88	-	35.93	-	61.45	51.45	-25.52	-
4	0.322	0.05	35.04	-	35.09	-	59.66	49.66	-24.57	-
5	0.384	0.05	35.16	-	35.21	-	58.18	48.18	-22.97	-
6	0.513	0.07	31.10	-	31.17	-	56.00	46.00	-24.83	-

- 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	8590L	3544A01176	Jun. 10, 2004
* HP Preamplifier	8447D	2944A08485	May. 01, 2004
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 13, 2004
ROHDE & SCHWARZ TEST RECEIVER	ESI7	838496/016	Feb. 23, 2004
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 13, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* CHASE BILOG Antenna	CBL6112A	2221	July 26, 2004
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jun 30, 2004
* EMCO Horn Antenna	3115	9312-4192	Mar. 23 2004
* EMCO Turn Table	1060	1115	NA
* CHANCE Tower	CM-AT40	CM-A010	NA
* Software	ADT_Radiated_V5.14	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jan. 05. 2004
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jan. 05. 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 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. 5.
5. The VCCI Site Registration No. is R-1039.

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 the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

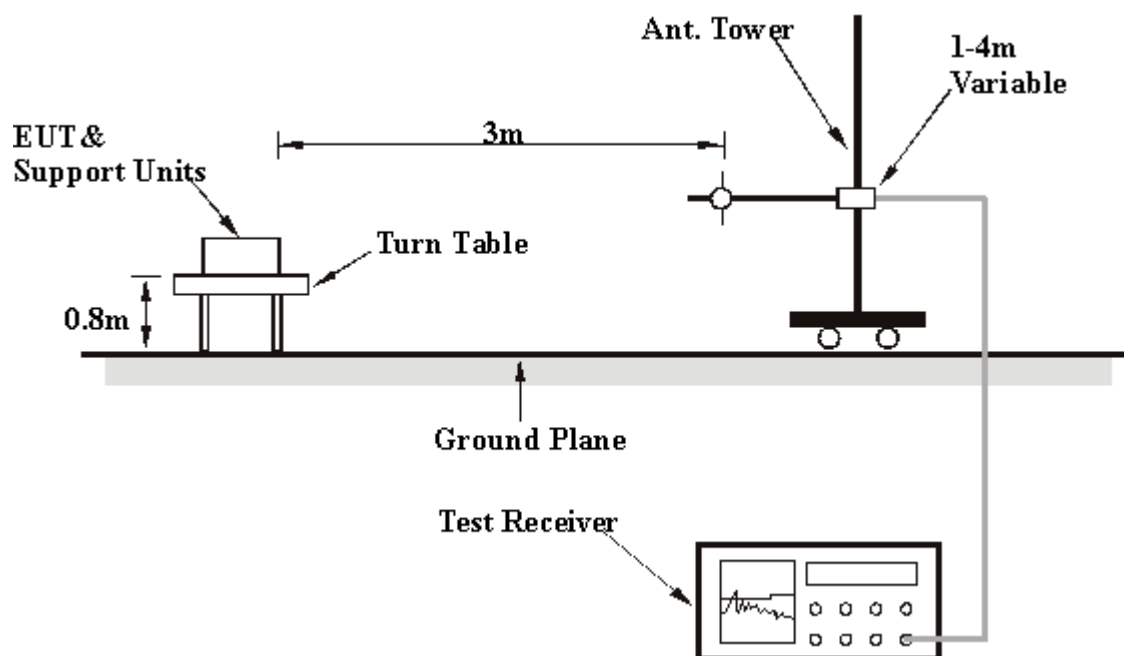
NOTE:

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

Same as item 4.1.6

4.2.7 TEST RESULTS

EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
MODE	Channel 4	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	30deg. C, 60%RH, 991hPa	TESTED BY: Hardaway Lee	

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	195.03	27.9 QP	43.50	-15.60	1.30 H	112	17.30	10.70
2	225.01	30.8 QP	46.00	-15.20	1.64 H	302	18.60	12.20
3	244.11	27.9 QP	46.00	-18.10	1.69 H	127	14.60	13.30
4	250.13	26.3 QP	46.00	-19.70	1.00 H	19	12.60	13.60
5	320.36	36.7 QP	46.00	-9.30	1.68 H	273	20.70	16.00
6	413.80	34.8 QP	46.00	-11.20	1.01 H	1	16.40	18.40
7	762.00	31.4 QP	46.00	-14.60	1.51 H	65	7.60	23.80
8	851.20	34.2 QP	46.00	-11.80	1.06 H	324	9.90	24.40
9	895.00	34.2 QP	46.00	-11.80	1.01 H	248	9.80	24.40

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	125.01	33.0 QP	43.50	-10.50	1.57 V	273	20.20	12.80
2	175.01	31.5 QP	43.50	-12.00	1.33 V	79	21.00	10.50
3	187.55	31.1 QP	43.50	-12.40	1.57 V	343	20.50	10.60
4	225.01	33.5 QP	46.00	-12.50	1.07 V	60	21.30	12.20
5	250.13	29.7 QP	46.00	-16.30	1.00 V	119	16.10	13.60
6	320.36	40.4 QP	46.00	-5.60	1.01 V	100	24.40	16.00
7	452.30	31.4 QP	46.00	-14.60	1.06 V	182	12.50	18.90
8	737.50	39.1 QP	46.00	-6.90	1.39 V	144	15.60	23.60
9	769.00	37.3 QP	46.00	-8.70	1.64 V	280	13.50	23.80
10	898.50	36.9 QP	46.00	-9.10	1.04 V	1	12.50	24.40

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	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
CHANNEL	Channel 1	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	30deg. C, 60%RH, 991hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY: Hardaway Lee			

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	*2414.00	83.1 PK			1.00 H	286	53.50	29.70
1	*2414.00	81.9 AV			1.00 H	286	52.20	29.70
2	4828.00	47.0 PK	74.00	-27.00	1.58 H	52	11.70	35.30
3	7242.00	52.1 PK	74.00	-21.90	1.56 H	180	11.00	41.10
3	7242.00	41.9 AV	54.00	-12.10	1.56 H	180	0.80	41.10

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	*2414.00	80.7 PK			1.00 V	254	51.00	29.70
1	*2414.00	79.6 AV			1.00 V	254	49.90	29.70
2	4828.00	47.7 PK	74.00	-26.30	1.21 V	67	12.40	35.30
3	7243.00	51.6 PK	74.00	-22.40	1.06 V	158	10.50	41.10
3	7243.00	41.6 AV	54.00	-12.40	1.06 V	158	0.50	41.10

- 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.



EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
CHANNEL	Channel 3	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	30deg. C, 60%RH, 991hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY: Hardaway Lee			

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	*2450.00	79.9 PK			1.00 H	283	50.10	29.80
1	*2450.00	77.7 AV			1.00 H	283	47.90	29.80
2	4899.00	47.0 PK	74.00	-27.00	1.09 H	243	11.40	35.60
3	7349.50	52.2 PK	74.00	-21.80	1.57 H	73	10.90	41.40
3	7349.50	41.4 AV	54.00	-12.60	1.57 H	73	0.10	41.40

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	*2450.00	80.2 PK			1.19 V	212	50.40	29.80
1	*2450.00	78.8 AV			1.19 V	212	49.00	29.80
2	4900.00	47.2 PK	74.00	-26.80	1.40 V	173	11.70	35.60
3	7350.00	51.1 PK	74.00	-22.90	1.19 V	212	9.70	41.40
3	7350.00	41.9 AV	54.00	-12.10	1.19 V	212	0.60	41.40

- 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.

EUT	2.4GHz VIDEO/AUDIO/IR REMOTE CONTROL WIRELESS SENDER	MODEL	LF-30S TX
CHANNEL	Channel 4	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	30deg. C, 60%RH, 991hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY: Hardaway Lee			

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	*2467.80	81.0 PK			1.00 H	294	51.20	29.80
1	*2467.80	79.7 AV			1.00 H	294	49.90	29.80
2	4937.00	47.2 PK	74.00	-26.80	1.35 H	194	11.50	35.70
3	7403.00	53.6 PK	74.00	-20.40	1.26 H	312	12.10	41.50
3	7403.00	42.1 AV	54.00	-11.90	1.26 H	312	0.60	41.50

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	*2467.00	82.6 PK			1.25 V	252	52.70	29.80
1	*2467.00	81.4 AV			1.25 V	252	51.60	29.80
2	4936.00	47.1 PK	74.00	-26.90	4.00 V	83	11.40	35.70
3	7404.00	53.2 PK	74.00	-20.80	1.31 V	212	11.70	41.50
3	7404.00	41.7 AV	54.00	-12.30	1.31 V	212	0.20	41.50

- 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.

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

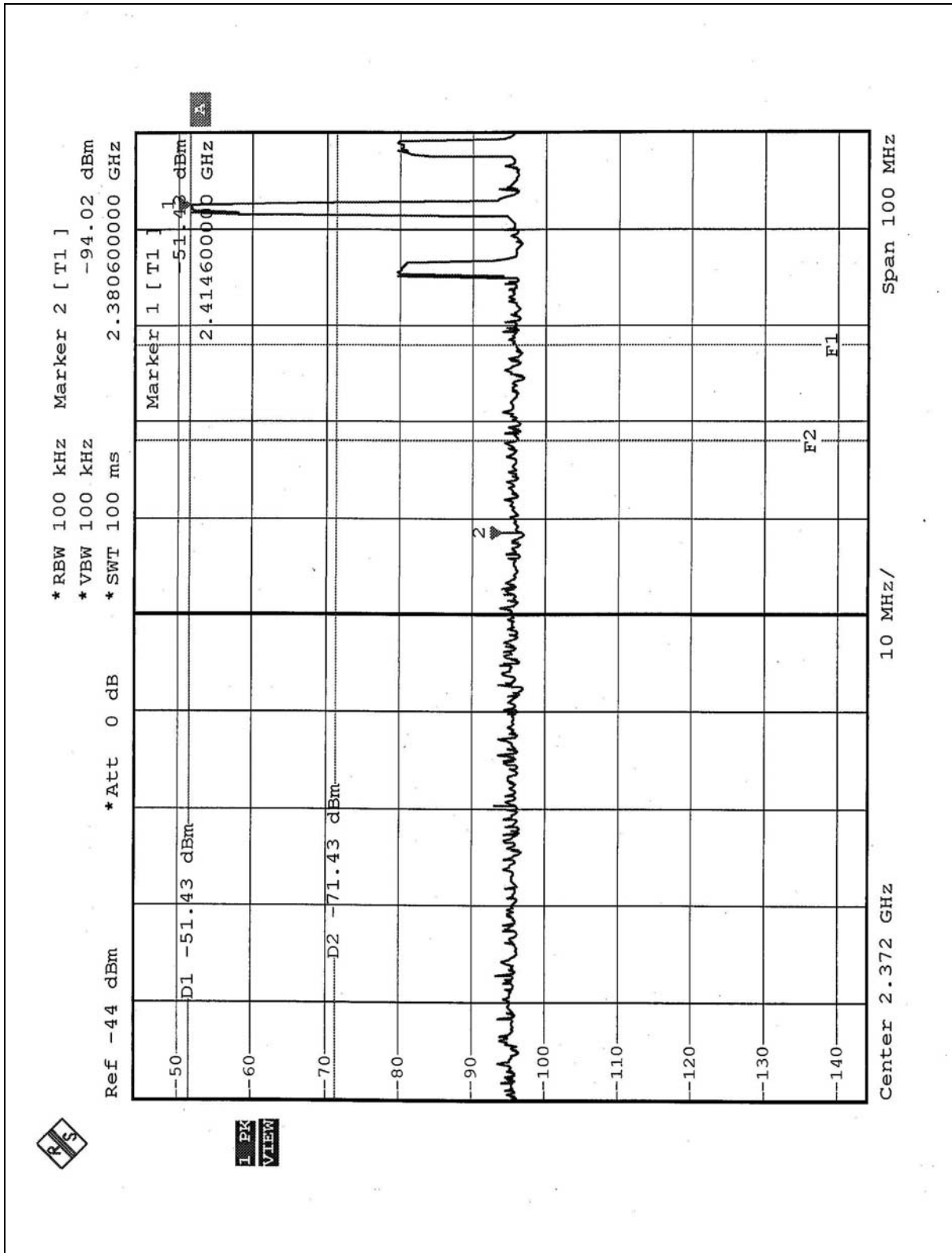
The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

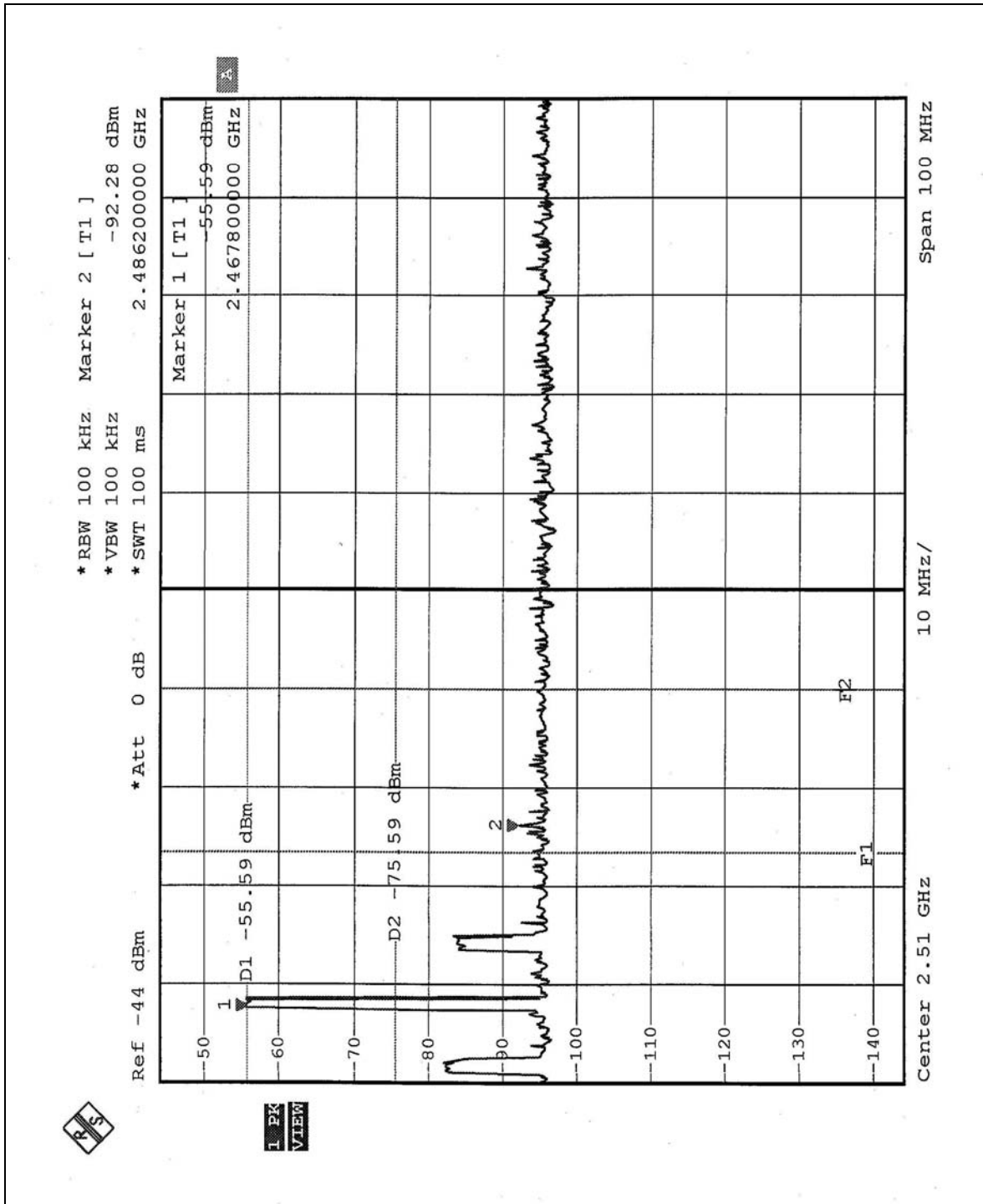
4.3.4 EUT OPERATING CONDITION

Enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.5 TEST RESULTS

The spectrum plots are attached on the following 2 pages. 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



RADIATED EMISSION TEST





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.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC Lab:

Tel: 886-35-935343

Fax: 886-35-935342

Lin Kou Safety Lab:

Tel: 886-2-26093195

Fax: 886-2-26093184

Lin Kou RF&Telecom Lab

Tel: 886-3-3270910

Fax: 886-3-3270892

Email: service@mail.adt.com.tw

Web Site: www.adt.com.tw

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