

FCC TEST REPORT

REPORT NO.: RF920508R04

MODEL NO.: SL-5354CB ARIES (**BRAND: SENAO**)

OEM MODEL NO.: NL-5354CB ARIES (**BRAND: EnGenius**)
SMC2536W-AG (**BRAND: SMC**)

RECEIVED: May 08, 2003

TESTED: May 27 ~ June 28, 2003

APPLICANT: SENAO INTERNATIONAL CO., LTD.

ADDRESS: 2F, No. 351, CHUNG CHENG RD., HSIN-TIEN,
TAIPEI, TAIWAN, R.O.C

ISSUED BY: Advance Data Technology Corporation

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

This test report consists of 125 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.....	5
2.	SUMMARY OF TEST RESULTS	6
3.	GENERAL INFORMATION	8
3.1	GENERAL DESCRIPTION OF EUT	8
3.2	DESCRIPTION OF TEST MODES	9
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	10
3.4	DESCRIPTION OF SUPPORT UNITS.....	10
4.	TEST TYPES AND RESULTS (FOR PART 802.11b & DRAFT 802.11g) ...	11
4.1	CONDUCTED EMISSION MEASUREMENT.....	11
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	11
4.1.2	TEST INSTRUMENTS	11
4.1.3	TEST PROCEDURES	12
4.1.4	DEVIATION FROM TEST STANDARD	12
4.1.5	TEST SETUP	13
4.1.6	EUT OPERATING CONDITIONS.....	13
4.1.7	TEST RESULTS	14
4.2	RADIATED EMISSION MEASUREMENT.....	20
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	20
4.2.2	TEST INSTRUMENTS	21
4.2.3	TEST PROCEDURES	22
4.2.4	DEVIATION FROM TEST STANDARD	22
4.2.5	TEST SETUP	23
4.2.6	EUT OPERATING CONDITIONS.....	23
4.2.7	TEST RESULTS	24
4.3	6dB BANDWIDTH MEASUREMENT	32
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	32
4.3.2	TEST INSTRUMENTS	32
4.3.3	TEST PROCEDURE	33
4.3.4	DEVIATION FROM TEST STANDARD	33
4.3.5	TEST SETUP	33
4.3.6	EUT OPERATING CONDITIONS.....	33
4.3.7	TEST RESULTS	34
4.4	MAXIMUM PEAK OUTPUT POWER.....	42
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	42
4.4.2	INSTRUMENTS.....	42
4.4.3	TEST PROCEDURES	43
4.4.4	DEVIATION FROM TEST STANDARD	43
4.4.5	TEST SETUP	43
4.4.6	EUT OPERATING CONDITIONS.....	43

4.4.7	TEST RESULTS	44
4.5	POWER SPECTRAL DENSITY MEASUREMENT	45
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	45
4.5.2	TEST INSTRUMENTS	45
4.5.3	TEST PROCEDURE	46
4.5.4	DEVIATION FROM TEST STANDARD	46
4.5.5	TEST SETUP	46
4.5.6	EUT OPERATING CONDITION	46
4.5.7	TEST RESULTS	47
4.6	BAND EDGES MEASUREMENT	55
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	55
4.6.2	TEST INSTRUMENTS	55
4.6.3	TEST PROCEDURE	55
4.6.4	DEVIATION FROM TEST STANDARD	55
4.6.5	EUT OPERATING CONDITION	56
4.6.6	TEST RESULTS	56
4.7	ANTENNA REQUIREMENT	61
4.7.1	STANDARD APPLICABLE	61
4.7.2	ANTENNA CONNECTED CONSTRUCTION	61
5.	TEST TYPES AND RESULTS (FOR PART 802.11a)	62
5.1	CONDUCTED EMISSION MEASUREMENT	62
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	62
5.1.2	TEST INSTRUMENTS	62
5.1.3	TEST PROCEDURES	63
5.1.4	DEVIATION FROM TEST STANDARD	63
5.1.5	TEST SETUP	64
5.1.6	EUT OPERATING CONDITIONS	64
5.1.7	TEST RESULTS	65
5.2	RADIATED EMISSION MEASUREMENT	67
5.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	67
5.2.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	68
5.2.3	TEST INSTRUMENTS	69
5.2.4	TEST PROCEDURES	70
5.2.5	DEVIATION FROM TEST STANDARD	70
5.2.6	TEST SETUP	71
5.2.7	EUT OPERATING CONDITIONS	71
5.2.8	TEST RESULTS	72
5.3	PEAK TRANSMIT POWER MEASUREMENT	80
5.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	80
5.3.2	TEST INSTRUMENTS	80
5.3.3	TEST PROCEDURE	81
5.3.4	DEVIATION FROM TEST STANDARD	81
5.3.5	TEST SETUP	81



5.3.6	EUT OPERATING CONDITIONS.....	81
5.3.7	TEST RESULTS	82
5.4	PEAK POWER EXCURSION MEASUREMENT	95
5.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT	95
5.4.2	TEST INSTRUMENTS	95
5.4.3	TEST PROCEDURE	96
5.4.4	DEVIATION FROM TEST STANDARD	96
5.4.5	TEST SETUP	96
5.4.6	EUT OPERATING CONDITIONS.....	96
5.4.7	TEST RESULTS	97
5.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	104
5.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	104
5.5.2	TEST INSTRUMENTS	104
5.5.3	TEST PROCEDURES	105
5.5.4	DEVIATION FROM TEST STANDARD	105
5.5.5	TEST SETUP	105
5.5.6	EUT OPERATING CONDITIONS.....	105
5.5.7	TEST RESULTS	106
5.6	FREQUENCY STABILITY	113
5.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	113
5.6.2	TEST INSTRUMENTS	113
5.6.3	TEST PROCEDURE	113
5.6.4	DEVIATION FROM TEST STANDARD	114
5.6.5	TEST SETUP	114
5.6.6	EUT OPERATING CONDITION	114
5.6.7	TEST RESULTS	115
5.7	BAND EDGES MEASUREMENT	116
5.7.1	TEST INSTRUMENTS	116
5.7.2	TEST PROCEDURE	116
5.7.3	EUT OPERATING CONDITION	116
5.7.4	TEST RESULTS	117
5.8	ANTENNA REQUIREMENT.....	122
5.8.1	STANDARD APPLICABLE	122
5.8.2	ANTENNA CONNECTED CONSTRUCTION	122
6.	PHOTOGRAPHS OF THE TEST CONFIGURATION	123
7.	INFORMATION ON THE TESTING LABORATORIES.....	125



1. CERTIFICATION

PRODUCT NAME : Wireless Cardbus Adapter
MODEL NO. : SL-5354CB ARIES (**Brand: SENAO**)
OEM MODEL NO. : NL-5354CB ARIES (**Brand: EnGenius**)
SMC2536W-AG (**Brand: SMC**)
APPLICANT : SENAO INTERNATIONAL CO., LTD.
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407), ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from May 27, 2003 to June 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 : Emily Lu , **DATE :** July 4, 2003
Emily Lu

APPROVED BY : Dr. Alan Lane, JVP , **DATE :** July 4, 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	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -12.92dBuV at 0.173MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -2.0dBuV at 224.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

APPLIED STANDARD: 47 CFR Part 15, Subpart E			
Standard Section	Test Type	Result	REMARK
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -15.01dBuV at 0.173MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30 MHz ~ 40000 MHz	PASS	Meet the requirement of limit Minimum passing margin is -1.90dBuV at 10480.00MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Cardbus Adapter
MODEL NO.	SL-5354CB ARIES NL-5354CB ARIES SMC2536W-AG
POWER SUPPLY	3.3VDC from host equipment
MODULATION	BPSK, QPSK, CCK, 16QAM, 64QAM
RADIO TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	up to 54Mbps
FREQUENCY RANGE	802.11b: 2412MHz ~ 2462MHz 802.11a: 5.15GHz ~ 5.35GHz, 5.725GHz ~ 5.825GHz
NUMBER OF CHANNEL	802.11b: 11 802.11a: 12 for Normal mode
CHANNEL SPACING	802.11b: 5MHz 802.11a: 20MHz for Normal mode
OUTPUT POWER	802.11b and draft 802.11g: 18.3dBm 802.11a: 18.87dBm
DATA CABLE	NA
ANTENNA TYPE	Printed antenna
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. Three models mentioned above are identical except for their model number and brand name.
2. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11g technology.
3. IEEE 802.11a, 802.11b, and Draft 802.11g Compliant.
4. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

For 802.11b and draft 802.11g: Eleven channels are provided to this EUT.

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

NOTE:

1. Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. Transfer rate of 11Mbps with CCK technique and 6Mbps with OFDM technique, the worst case, was chosen for final test.

For 802.11a: Twelve channels are provided to this EUT for Normal mode.

Channel	Frequency	Channel	Frequency
1	5180 MHz	7	5300 MHz
2	5200 MHz	8	5320 MHz
3	5220 MHz	9	5745MHz
4	5240 MHz	10	5765MHz
5	5260 MHz	11	5785MHz
6	5280 MHz	12	5805MHz

NOTE:

1. The EUT was transmitting at full power on the specified channel with a duty cycle of 99% (maximum allowed). The EUT was tested in channel bandwidth of approximately 30MHz.
2. "Normal Mode" allows data rates of up to 54Mbps. The device was, therefore, tested in Normal mode at the data rate that produced the highest output power for normal mode (6Mbps).
3. Channel 1, 4, 5, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 15, Subpart C. (15.247),
Subpart E (15.407). ANSI C63.4 : 1992**

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP01L	TW-09C748-12800-193-C800	FCC DoC Approved
2	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DoC Approved
3	MODEM	ACEEX	1414	980020569	IFAXDM1414

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
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.

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

4. TEST TYPES AND RESULTS (FOR PART 802.11b & draft 802.11g)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 03, 2003
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	July 02, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Nov. 29, 2003
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 29, 2003
EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	July 02, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C02.01	July 5, 2003
HP Terminator (For EMCO LISN)	11593A	E1-01-298	Feb. 23, 2004
HP Terminator (For EMCO LISN)	11593A	E1-01-299	Feb. 23, 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. 2.
 4. The VCCI Site Registration No. is C-240.



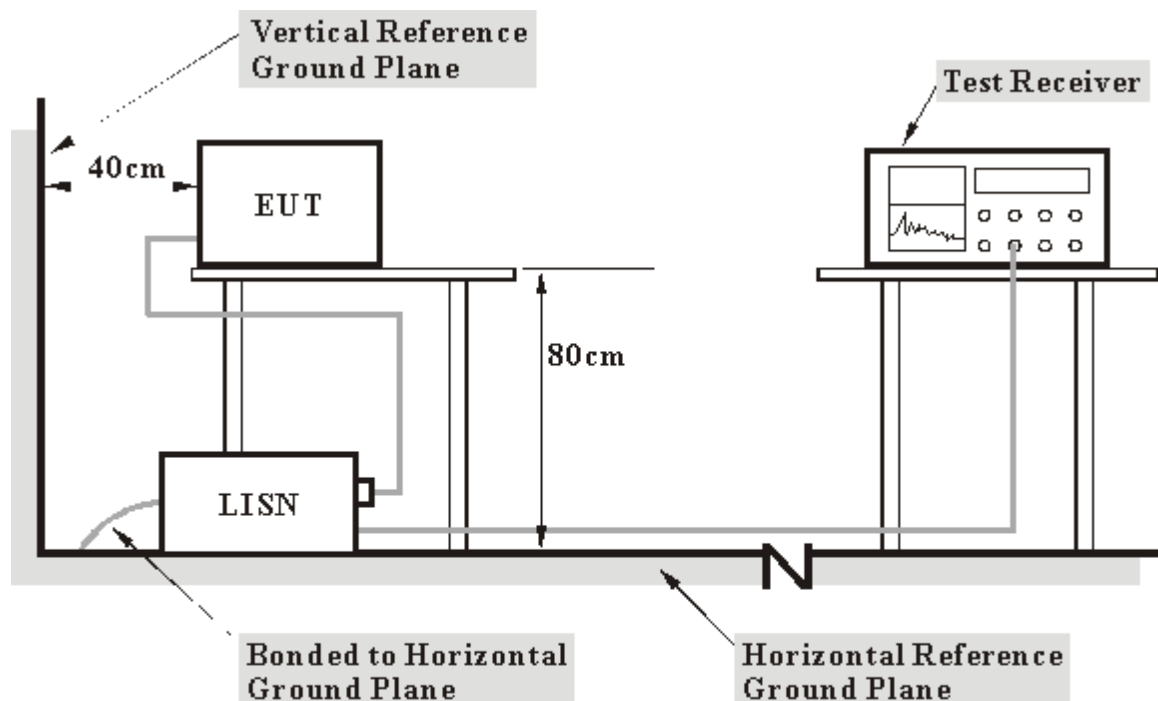
4.1.3 TEST PROCEDURES

- 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

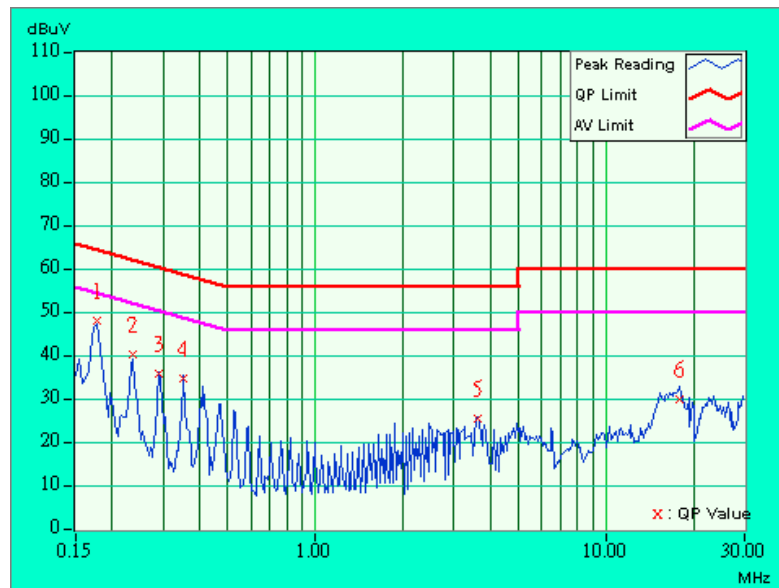
- a. Connected the EUT to a computer system placed on a testing table.
- b. The computer system ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The computer system sent "H" messages to its screen.
- d. The computer system sent "H"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

4.1.7 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	Channel 1	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

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	0.177	0.10	46.90	-	47.00	-	64.61	54.61	-17.61	-
2	0.236	0.10	39.22	-	39.32	-	62.24	52.24	-22.92	-
3	0.291	0.10	34.64	-	34.74	-	60.51	50.51	-25.77	-
4	0.353	0.10	33.74	-	33.84	-	58.89	48.89	-25.05	-
5	3.633	0.36	24.21	-	24.57	-	56.00	46.00	-31.43	-
6	17.922	1.18	28.82	-	30.00	-	60.00	50.00	-30.00	-

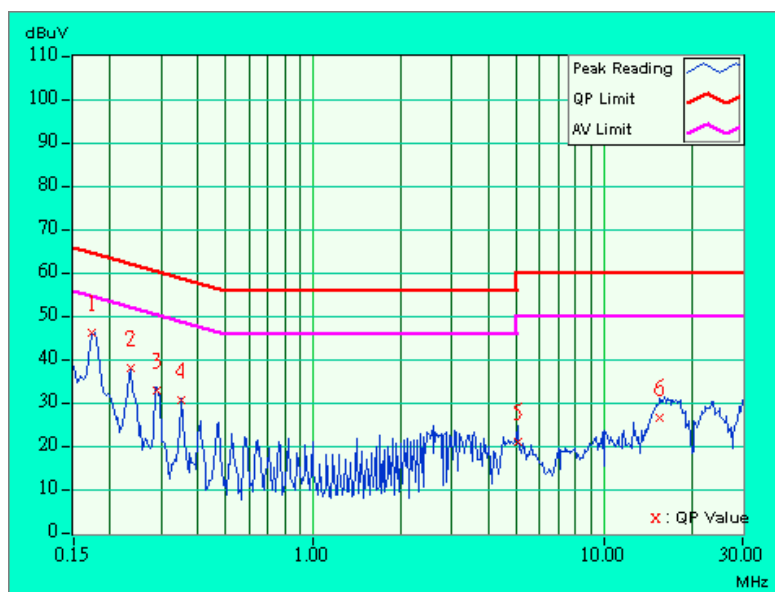
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	Channel 1	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.10	45.52	-	45.62	-	64.79	54.79	-19.17	-
2	0.236	0.10	37.34	-	37.44	-	62.24	52.24	-24.80	-
3	0.291	0.10	31.97	-	32.07	-	60.51	50.51	-28.44	-
4	0.353	0.10	29.92	-	30.02	-	58.89	48.89	-28.87	-
5	5.035	0.42	20.27	-	20.69	-	60.00	50.00	-39.31	-
6	15.527	0.83	25.92	-	26.75	-	60.00	50.00	-33.25	-

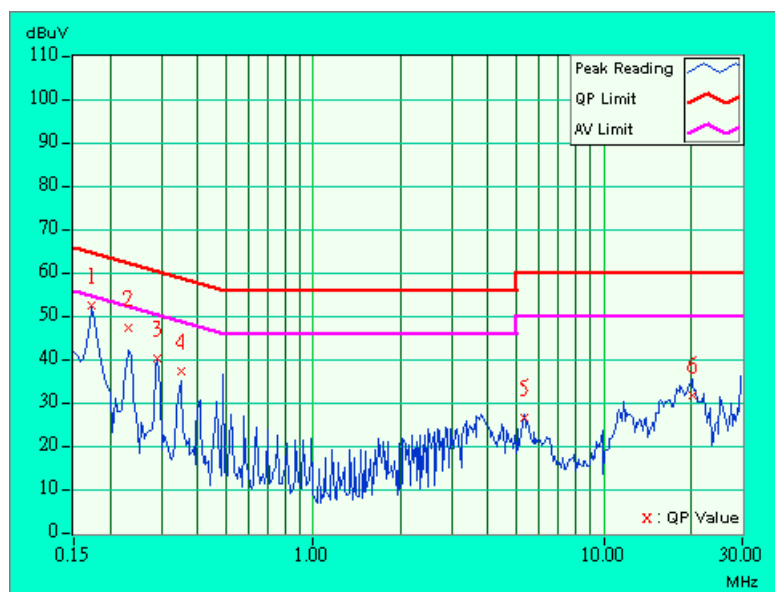
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	Channel 6	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

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	0.173	0.10	51.26	-	51.36	-	64.79	54.79	-13.43	-
2	0.232	0.10	46.18	-	46.28	-	62.38	52.38	-16.10	-
3	0.291	0.10	39.11	-	39.21	-	60.51	50.51	-21.30	-
4	0.349	0.10	36.24	-	36.34	-	58.98	48.98	-22.64	-
5	5.340	0.47	25.20	-	25.67	-	60.00	50.00	-34.33	-
6	20.125	1.30	30.47	-	31.77	-	60.00	50.00	-28.23	-

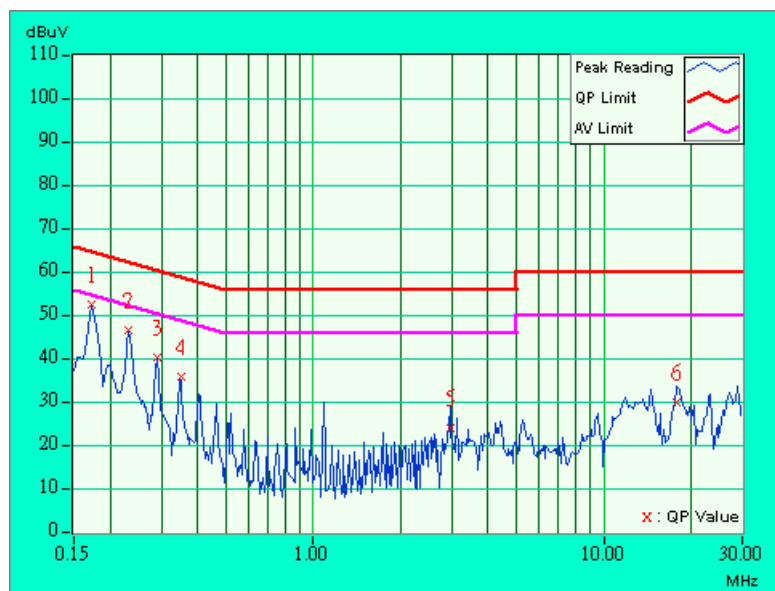
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value =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



EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	Channel 6	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

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	0.173	0.10	51.77	-	51.87	-	64.79	54.79	-12.92	-
2	0.232	0.10	45.81	-	45.91	-	62.38	52.38	-16.47	-
3	0.291	0.10	39.33	-	39.43	-	60.51	50.51	-21.08	-
4	0.349	0.10	35.08	-	35.18	-	58.98	48.98	-23.80	-
5	2.954	0.30	23.09	-	23.39	-	56.00	46.00	-32.61	-
6	17.738	0.96	28.94	-	29.90	-	60.00	50.00	-30.10	-

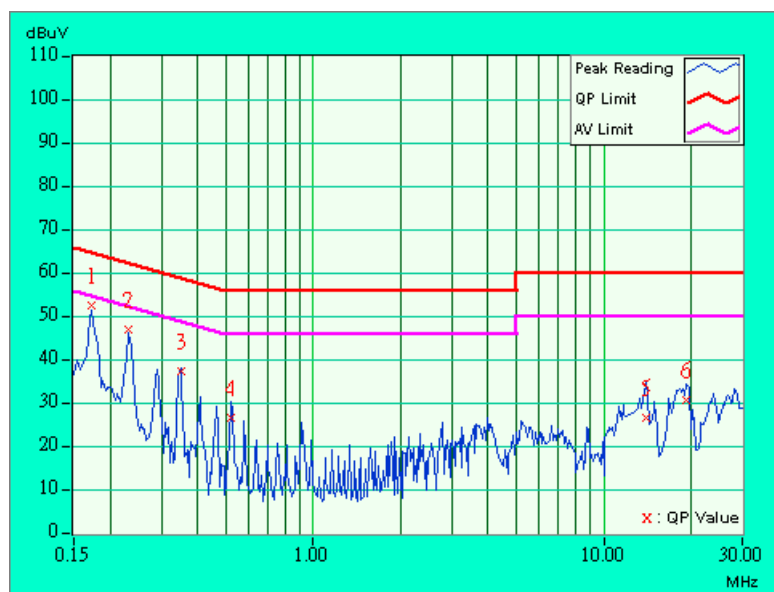
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	Channel 11	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.10	51.24	-	51.34	-	64.79	54.79	-13.45	-
2	0.232	0.10	45.93	-	46.03	-	62.38	52.38	-16.35	-
3	0.349	0.10	36.04	-	36.14	-	58.98	48.98	-22.84	-
4	0.521	0.12	25.28	-	25.40	-	56.00	46.00	-30.60	-
5	14.000	0.94	25.47	-	26.41	-	60.00	50.00	-33.59	-
6	19.184	1.25	29.35	-	30.60	-	60.00	50.00	-29.40	-

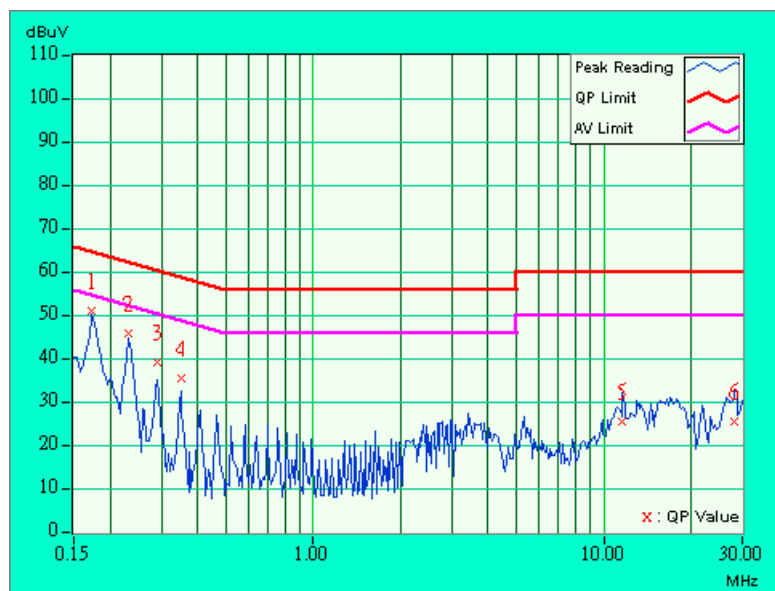
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	Channel 11	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

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	0.173	0.10	49.64	-	49.74	-	64.79	54.79	-15.05	-
2	0.232	0.10	44.46	-	44.56	-	62.38	52.38	-17.82	-
3	0.291	0.10	38.03	-	38.13	-	60.51	50.51	-22.38	-
4	0.349	0.10	34.17	-	34.27	-	58.98	48.98	-24.71	-
5	11.629	0.60	24.19	-	24.79	-	60.00	50.00	-35.21	-
6	28.293	1.37	24.30	-	25.67	-	60.00	50.00	-34.33	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

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



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	June 10, 2004
* HP Preamplifier	8447D	2944A08485	May 01, 2004
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
* Spectrum Analyzer	8593E	3926A04191	Mar. 24, 2004
* Test Receiver	ESI7	838496/016	Feb. 23, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 02, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July 03, 2003
* EMCO Horn Antenna	3115	9312-4192	Mar. 23, 2004
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	ADT_Radiated_V5.09	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Feb. 27, 2004
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 11. 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. 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.

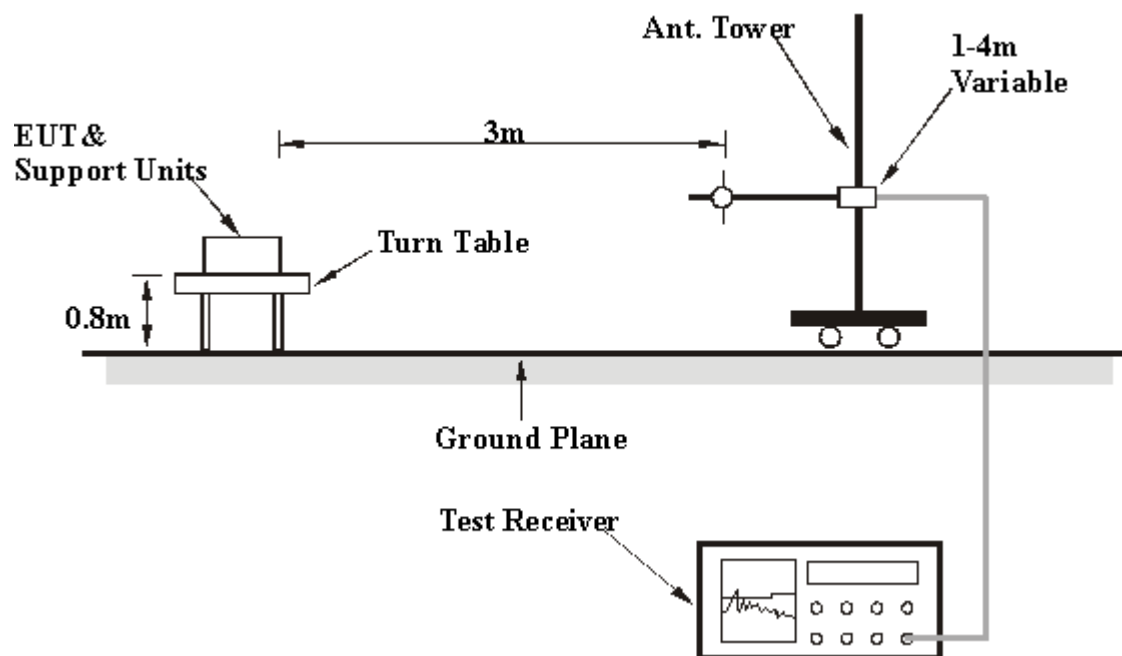
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth 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 4.1.6

4.2.7 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. 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	127.99	29.8 QP	43.50	-13.70	1.69 H	193	16.90	13.00
2	160.00	37.8 QP	43.50	-5.70	1.55 H	123	26.90	10.80
3	191.99	40.7 QP	43.50	-2.80	1.36 H	113	29.90	10.80
4	224.00	44.0 QP	46.00	-2.00	1.00 H	264	30.80	13.20
5	256.01	43.6 QP	46.00	-2.40	1.17 H	58	27.20	16.40
6	288.02	35.8 QP	46.00	-10.20	1.11 H	197	19.20	16.60
7	320.02	34.8 QP	46.00	-11.20	1.35 H	66	17.60	17.20
8	352.00	33.4 QP	46.00	-12.60	1.00 H	131	15.70	17.70
9	384.00	33.6 QP	46.00	-12.40	1.00 H	109	14.90	18.70
10	416.00	30.6 QP	46.00	-15.40	1.06 H	250	11.30	19.30
11	448.00	34.1 QP	46.00	-11.90	1.87 H	69	14.30	19.70
12	480.01	34.2 QP	46.00	-11.80	2.03 H	243	13.60	20.60
13	512.01	32.4 QP	46.00	-13.60	2.30 H	77	11.20	21.20
14	544.01	30.8 QP	46.00	-15.20	1.80 H	214	9.70	21.10
15	576.00	32.7 QP	46.00	-13.30	1.62 H	57	10.80	21.90
16	608.01	31.0 QP	46.00	-15.00	1.36 H	235	8.30	22.70
17	639.92	25.3 QP	46.00	-20.70	1.40 H	110	2.50	22.80
18	735.96	31.2 QP	46.00	-14.80	1.40 H	68	7.40	23.80
19	767.87	35.8 QP	46.00	-10.20	1.28 H	31	11.40	24.40
20	799.68	30.8 QP	46.00	-15.20	1.40 H	36	5.90	24.90
21	832.02	31.9 QP	46.00	-14.10	1.40 H	70	6.90	25.00
22	896.02	27.9 QP	46.00	-18.10	1.40 H	93	2.70	25.20

- 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.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa	TESTED BY: Hardaway Lee	

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	128.00	29.7 QP	43.50	-13.80	1.44 V	94	16.70	13.00
2	160.00	33.3 QP	43.50	-10.20	1.00 V	187	22.40	10.80
3	192.00	36.2 QP	43.50	-7.30	1.27 V	127	25.40	10.80
4	224.00	40.1 QP	46.00	-5.90	2.72 V	144	27.00	13.20
5	256.00	38.6 QP	46.00	-7.40	2.19 V	106	22.30	16.40
6	287.98	34.6 QP	46.00	-11.40	2.17 V	57	18.00	16.60
7	320.02	35.9 QP	46.00	-10.10	1.51 V	192	18.70	17.20
8	384.02	30.1 QP	46.00	-15.90	1.32 V	64	11.50	18.70
9	448.02	29.9 QP	46.00	-16.10	1.03 V	270	10.20	19.70
10	480.02	32.0 QP	46.00	-14.00	1.24 V	127	11.40	20.60
11	512.00	30.8 QP	46.00	-15.20	1.00 V	304	9.60	21.20
12	543.99	33.9 QP	46.00	-12.10	1.12 V	96	12.80	21.10
13	575.99	30.1 QP	46.00	-15.90	1.89 V	237	8.10	21.90
14	703.99	33.8 QP	46.00	-12.20	1.42 V	36	10.70	23.10
15	799.99	28.6 QP	46.00	-17.40	1.30 V	51	3.80	24.90
16	895.99	33.7 QP	46.00	-12.30	1.30 V	91	8.50	25.20
17	927.99	33.7 QP	46.00	-12.30	1.39 V	126	8.70	25.00

- 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.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	CCK	FREQUENCY RANGE	Above 1000 MHz
CHANNEL	Channel 1		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*2412.00	99.8 PK			1.16 H	116	70.10	29.70
1	*2412.00	92.1 AV			1.16 H	116	62.40	29.70
2	3168.00	42.1 PK	79.80	-37.70	1.47 H	222	10.60	31.50
3	4824.00	52.2 PK	74.00	-21.80	1.84 H	205	16.90	35.30
3	4824.00	37.5 AV	54.00	-16.50	1.84 H	205	2.30	31.50
4	6336.00	53.7 PK	79.80	-26.10	1.47 H	205	15.40	38.30
4	6336.00	50.6 AV	72.10	-21.50	1.47 H	205	12.30	35.30

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	*2412.00	108.2 PK			1.22 V	223	78.50	29.70
1	*2412.00	100.4 AV			1.22 V	223	70.70	29.70
2	3168.00	45.5 PK	88.20	-42.70	1.47 V	154	14.00	31.50
3	4824.00	55.0 PK	74.00	-19.00	1.14 V	87	19.70	35.30
3	4824.00	38.9 AV	54.00	-15.10	1.14 V	87	3.70	31.50
4	6336.00	53.8 PK	88.20	-34.40	1.22 V	223	15.50	38.30
4	6336.00	50.7 AV	80.40	-29.70	1.22 V	223	12.40	35.30

- 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	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	CCK	FREQUENCY RANGE	Above 1000 MHz
CHANNEL	Channel 6		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*2437.00	107.2 PK			1.23 H	160	77.40	29.70
1	*2437.00	99.4 AV			1.23 H	160	69.70	29.70
2	3168.00	42.3 PK	87.20	-44.90	1.24 H	188	10.80	31.50
3	4874.00	53.8 PK	74.00	-20.20	1.49 H	160	18.40	35.50
3	4874.00	38.8 AV	54.00	-15.20	1.49 H	160	3.40	31.50
4	6336.00	54.5 PK	87.20	-32.70	1.47 H	325	16.20	38.30
4	6336.00	49.2 AV	79.40	-30.20	1.47 H	325	10.90	35.50

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	*2437.00	103.1 PK			1.81 V	88	73.40	29.70
1	*2437.00	95.5 AV			1.81 V	88	65.80	29.70
2	3168.00	39.2 PK	83.10	-43.90	1.54 V	247	7.70	31.50
3	4874.00	57.8 PK	74.00	-16.20	1.04 V	122	22.30	35.50
3	4874.00	43.4 AV	54.00	-10.60	1.04 V	122	8.00	31.50
4	6336.00	54.2 PK	83.10	-28.90	1.45 V	225	15.90	38.30
4	6336.00	49.2 AV	75.50	-26.30	1.45 V	225	10.90	35.50

- 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.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	CCK	FREQUENCY RANGE	Above 1000 MHz
CHANNEL	Channel 11		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*2462.00	101.8 PK			1.01 H	58	72.00	29.80
1	*2462.00	93.8 AV			1.01 H	58	64.00	29.80
2	3168.00	41.9 PK	81.80	-39.90	1.00 H	182	10.40	31.50
3	4924.00	51.5 PK	74.00	-22.50	1.86 H	82	15.80	35.70
3	4924.00	36.2 AV	54.00	-17.80	1.86 H	82	0.60	31.50
4	6336.00	53.3 PK	81.80	-28.50	1.86 H	82	15.00	38.30
4	6336.00	49.8 AV	73.80	-24.00	1.86 H	82	11.50	35.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	98.8 PK			1.10 V	117	69.00	29.80
1	*2462.00	90.5 AV			1.10 V	117	60.70	29.80
2	3168.00	44.8 PK	78.80	-34.00	1.47 V	123	13.30	31.50
3	4924.00	51.3 PK	74.00	-22.70	1.59 V	321	15.60	35.70
3	4924.00	36.3 AV	54.00	-17.70	1.59 V	321	0.60	31.50
4	6336.00	54.1 PK	78.80	-24.70	1.59 V	321	15.80	38.30
4	6336.00	49.9 AV	70.50	-20.60	1.59 V	321	11.60	35.70

- 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	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	OFDM	FREQUENCY RANGE	Above 1000 MHz
CHANNEL	Channel 1		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*2412.00	104.3 PK			1.16 H	66	74.60	29.70
1	*2412.00	94.8 AV			1.16 H	66	65.20	29.70
2	3168.00	41.1 PK	84.30	-43.20	1.00 H	45	9.60	31.50
3	4824.00	49.7 PK	74.00	-24.30	1.16 H	66	14.50	35.30
4	6336.00	53.7 PK	84.30	-30.60	1.59 H	145	15.30	38.30
4	6336.00	50.5 AV	74.80	-24.30	1.59 H	145	12.20	31.50

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	*2412.00	103.9 PK			1.71 V	288	74.20	29.70
1	*2412.00	94.9 AV			1.71 V	288	65.30	29.70
2	3168.00	45.1 PK	83.90	-38.80	1.48 V	263	13.60	31.50
3	4824.00	51.4 PK	74.00	-22.60	1.24 V	33	16.10	35.30
3	4824.00	37.2 AV	54.00	-16.80	1.24 V	33	1.90	31.50
4	6336.00	53.2 PK	83.90	-30.70	1.54 V	180	14.90	38.30
4	6336.00	50.6 AV	74.90	-24.30	1.54 V	180	12.30	35.30

- 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	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	OFDM	FREQUENCY RANGE	Above 1000 MHz
CHANNEL	Channel 6		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*2437.00	104.5 PK			1.00 H	9	74.70	29.70
1	*2437.00	95.3 AV			1.00 H	9	65.50	29.70
2	3168.00	41.5 PK	84.50	-43.00	1.06 H	242	10.00	31.50
3	4874.00	47.3 PK	74.00	-26.70	1.69 H	140	11.90	35.50
4	6336.00	53.5 PK	84.50	-31.00	1.61 H	80	15.10	38.30
4	6336.00	49.3 AV	75.30	-26.00	1.61 H	80	10.90	31.50

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	*2437.00	101.9 PK			1.00 V	45	72.20	29.70
1	*2437.00	92.8 AV			1.00 V	45	63.10	29.70
2	3168.00	38.3 PK	81.90	-43.60	1.14 V	321	6.80	31.50
3	4874.00	46.0 PK	74.00	-28.00	1.63 V	288	10.50	35.50
4	6336.00	53.7 PK	81.90	-28.20	1.08 V	200	15.30	38.30
4	6336.00	48.4 AV	72.80	-24.40	1.08 V	200	10.10	31.50

- 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.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
MODE	OFDM	FREQUENCY RANGE	Above 1000 MHz
CHANNEL	Channel 11		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*2462.00	103.7 PK			1.00 H	102	73.90	29.80
1	*2462.00	94.2 AV			1.00 H	102	64.40	29.80
2	3168.00	41.3 PK	83.70	-42.40	1.51 H	46	9.80	31.50
3	4924.00	48.4 PK	74.00	-25.60	1.61 H	13	12.70	35.70
4	6336.00	54.4 PK	83.70	-29.30	1.61 H	246	16.10	38.30
4	6336.00	50.5 AV	74.20	-23.70	1.61 H	246	12.20	31.50

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	*2462.00	103.2 PK			1.00 V	11	73.40	29.80
1	*2462.00	94.9 AV			1.00 V	11	65.10	29.80
2	3168.00	44.5 PK	83.20	-38.70	1.47 V	69	13.00	31.50
3	4924.00	49.6 PK	74.00	-24.40	1.20 V	146	14.00	35.70
4	6336.00	53.7 PK	83.20	-29.50	1.82 V	46	15.30	38.30
4	6336.00	49.7 AV	74.90	-25.20	1.82 V	46	11.40	31.50

- 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 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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

4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

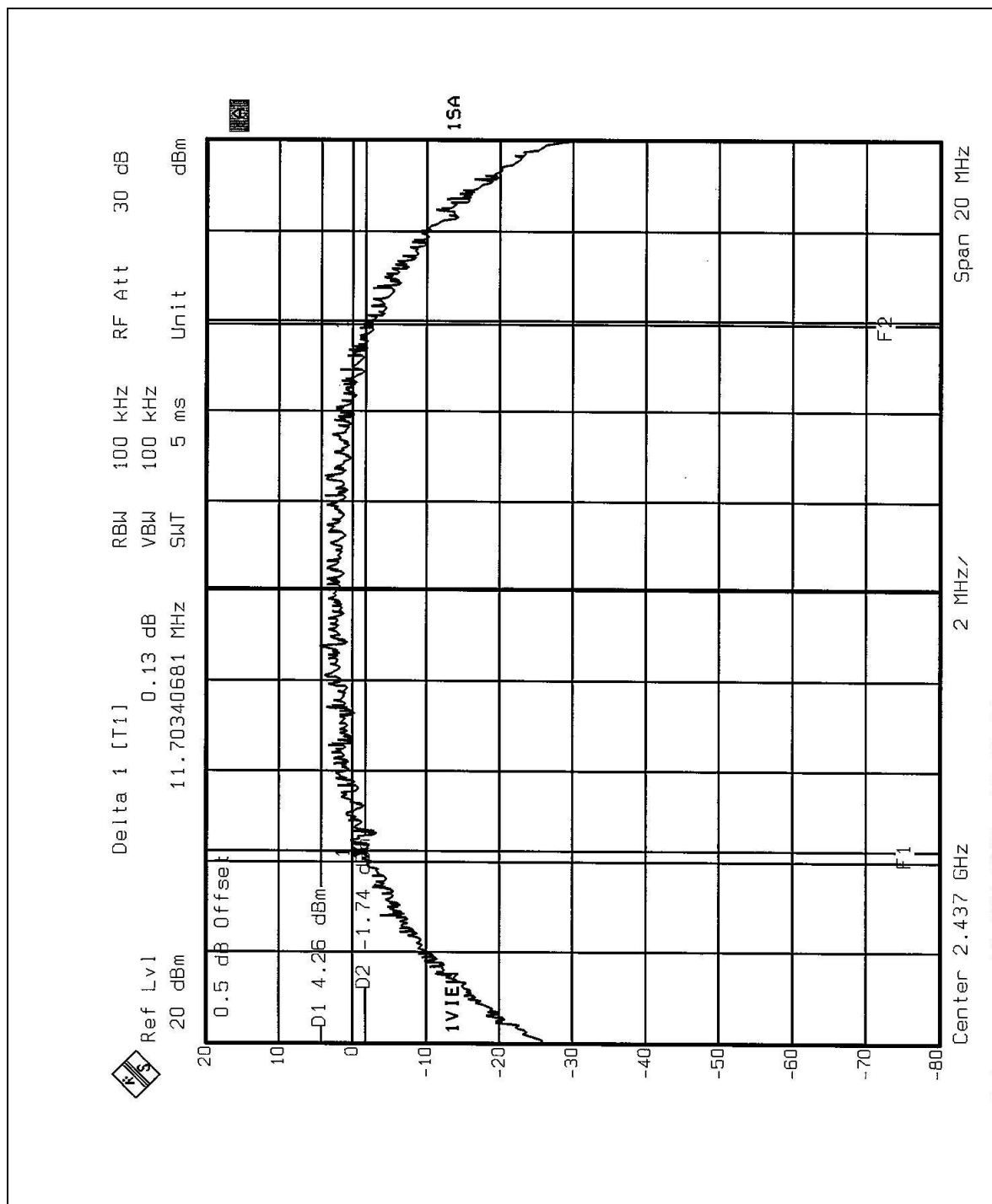
4.3.7 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		MODE	CCK
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 69RH, 991hPa
TESTED BY: Cody Chang			

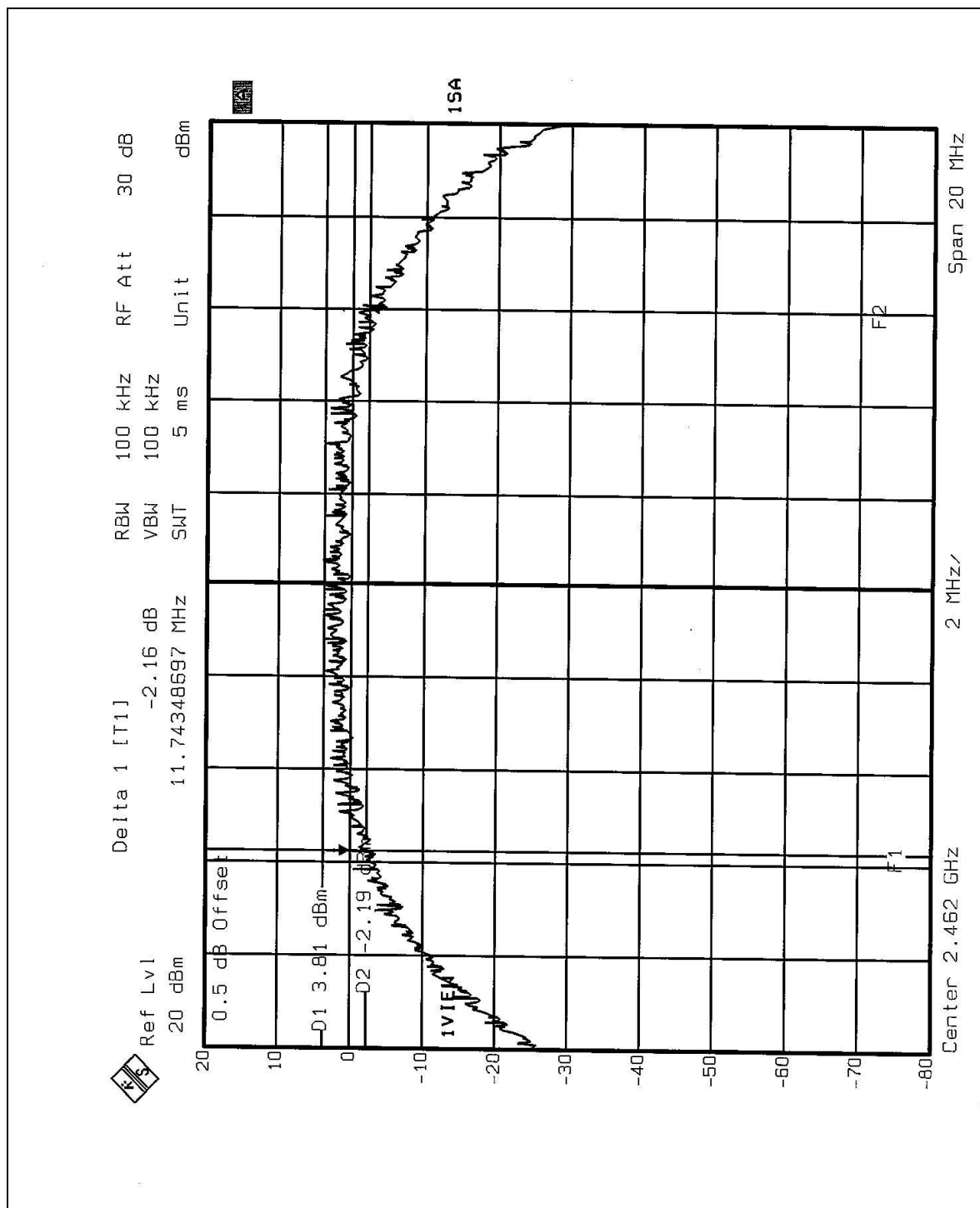
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.463	0.5	PASS
6	2437	11.703	0.5	PASS
11	2462	11.743	0.5	PASS

Delta 1 [T1] 0.68 dB 100 kHz RBW 100 kHz RF Att 30 dB
 Ref Lvl 20 dBm 11.46292585 MHz 5 ms Unit dBm
 0.5 dB Offset
 D1 5.25 dBm
 D2 -0.75 dBm
 1V1E
 -0.11 dBm
 2.40648898 GHz
 0.68 dB
 11.46292585 MHz
 1SA
 F1
 F2
 Center 2.412 GHz 2 MHz/ Span 20 MHz

CH6



CH11





EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		MODE	OFDM
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 69RH, 991hPa
TESTED BY: Cody Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.513	0.5	PASS
6	2437	16.473	0.5	PASS
11	2462	16.433	0.5	PASS

Delta 1 [T1]
0.55 dB

Ref Lvl 20 dBm
0.5 dB Offset

RBW 100 kHz
VBW 100 kHz
SWT 5 ms

RF Att 30 dB

Unit dBm

1V1EW

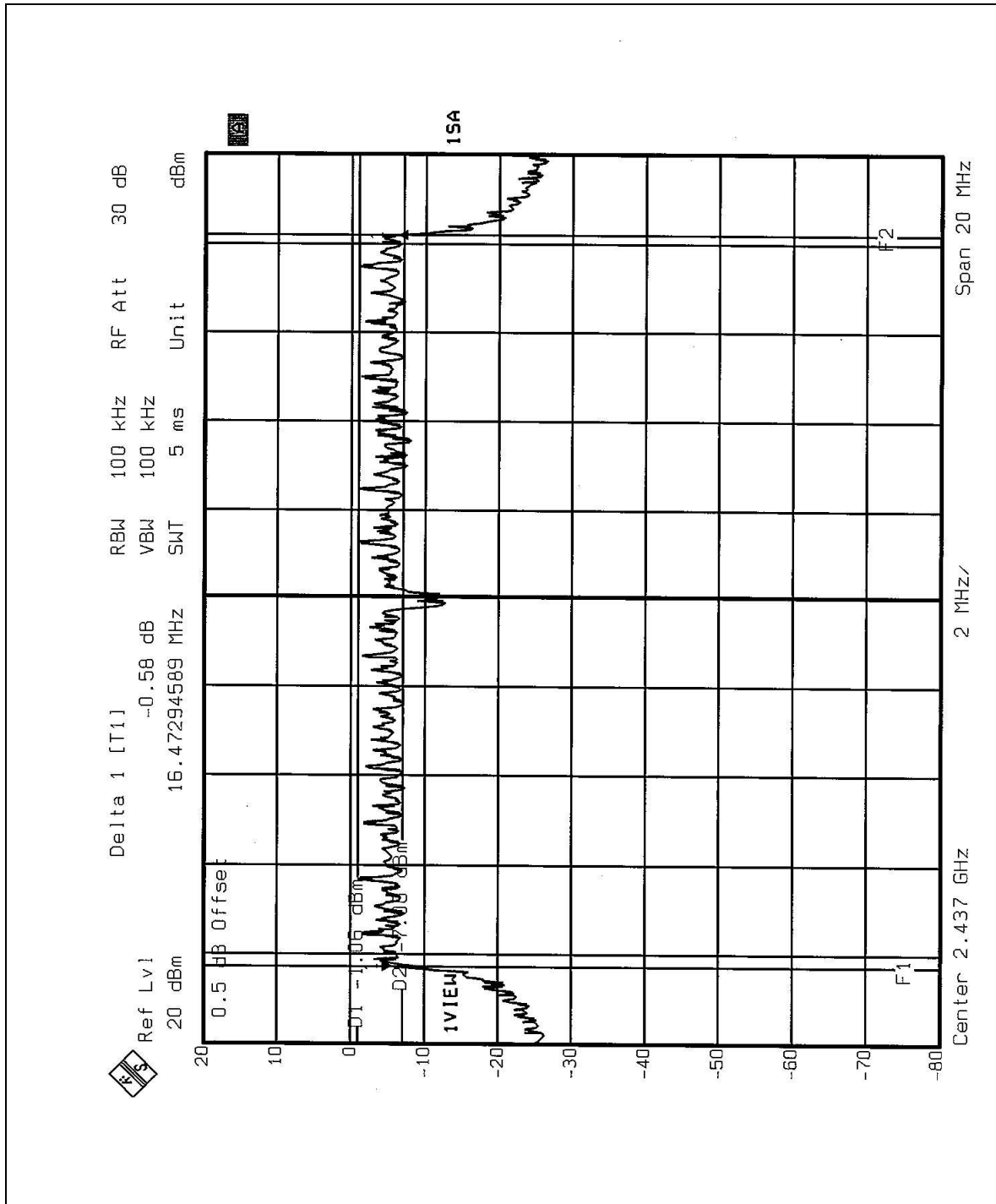
F1

F2

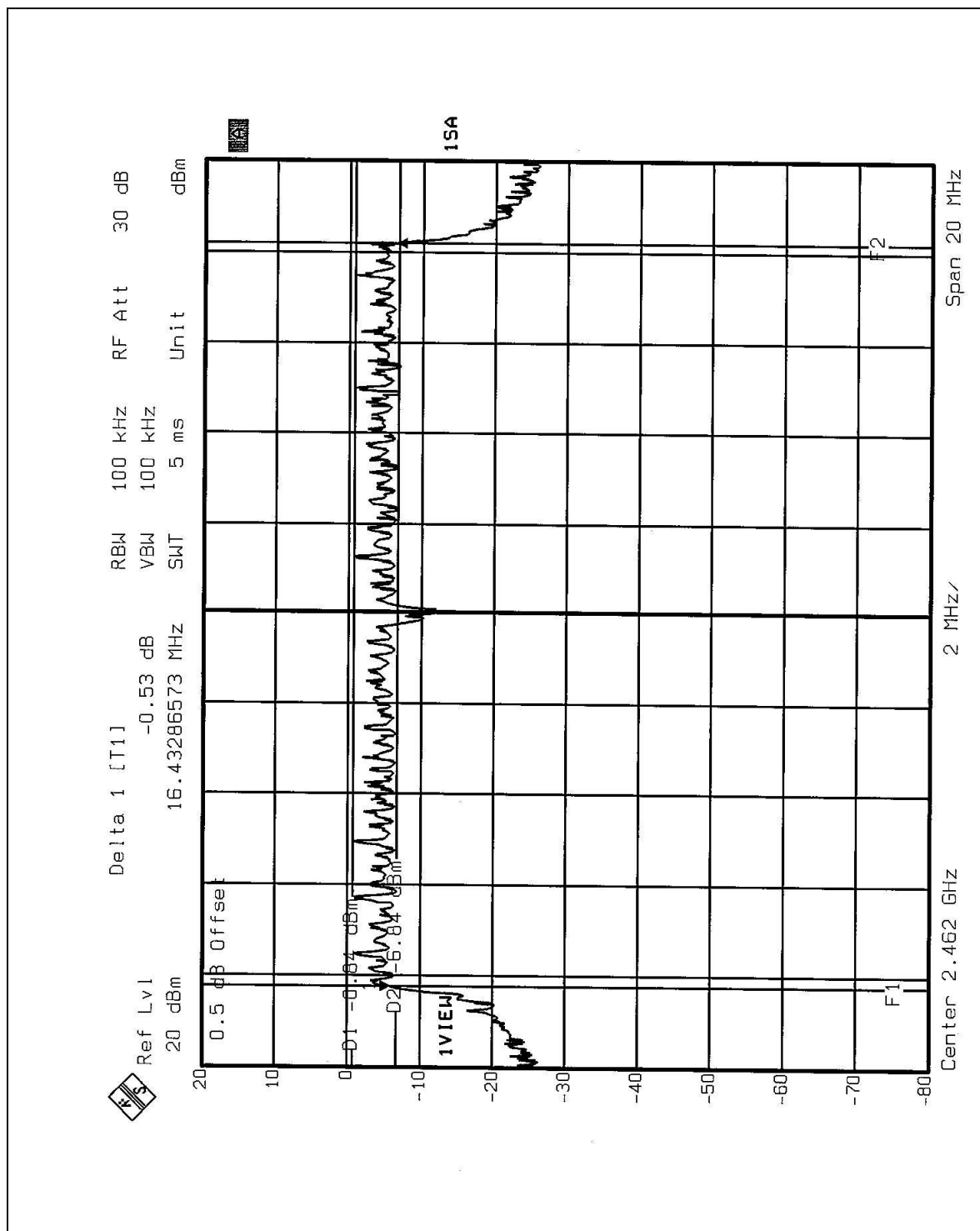
Center 2.412 GHz

Span 20 MHz

CH6



CH11



4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Jul. 24, 2003
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B048470	Mar. 05, 2004
NARDA DETECTOR	4503A	FSCM99899	NA

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

4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		MODE	CCK
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 69RH, 991hPa
TESTED BY: Cody Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.30	30	PASS
6	2437	18.22	30	PASS
11	2462	18.27	30	PASS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		MODE	OFDM
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 69RH, 991hPa
TESTED BY: Cody Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.20	30	PASS
6	2437	18.30	30	PASS
11	2462	18.20	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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

4.5.3 TEST PROCEDURE

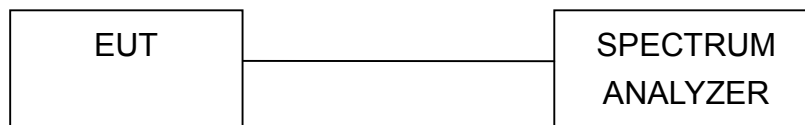
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

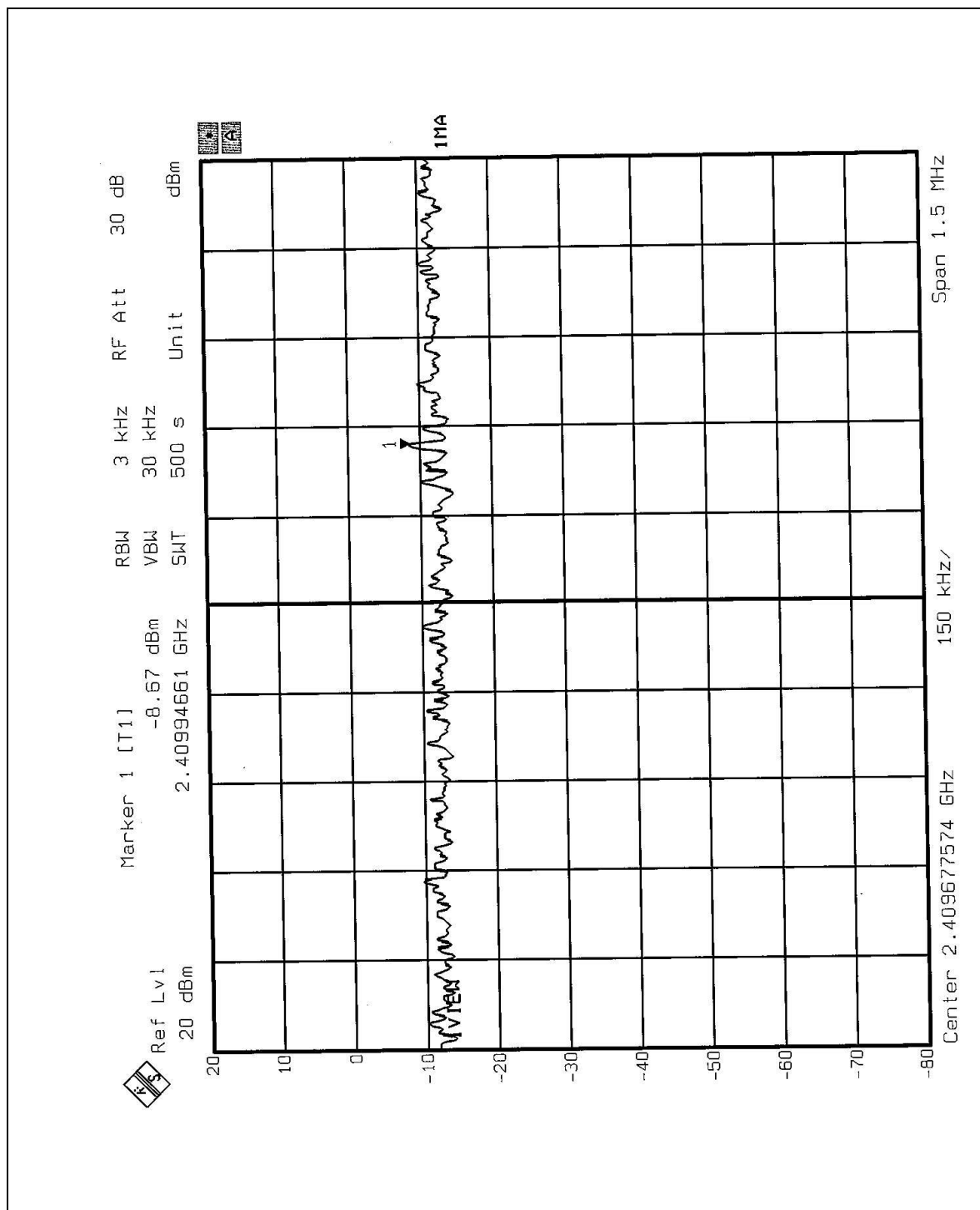
Same as Item 4.3.6

4.5.7 TEST RESULTS

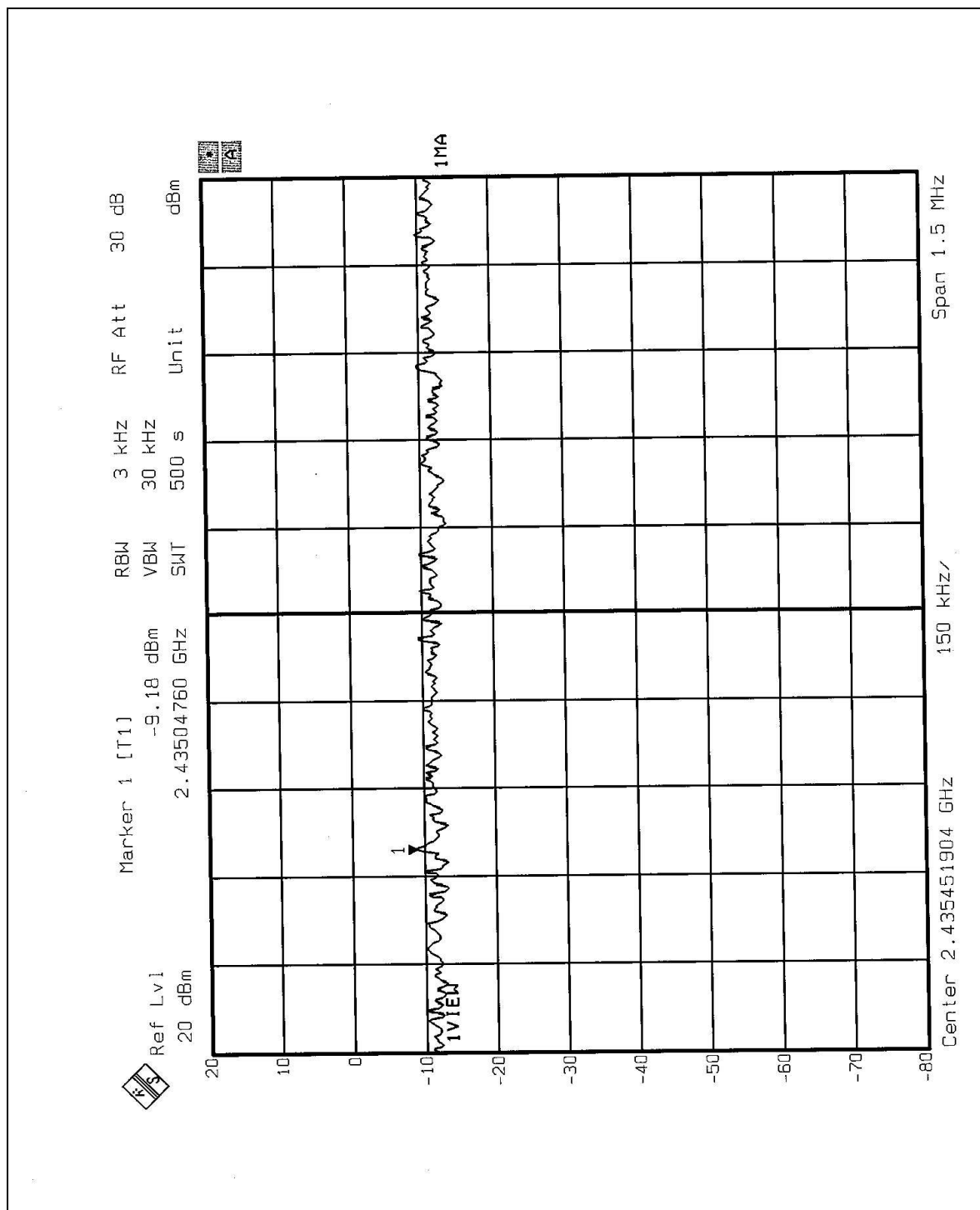
EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		MODE	CCK
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 69RH, 991hPa
TESTED BY: Cody Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-8.67	8	PASS
6	2437	-9.18	8	PASS
11	2462	-10.33	8	PASS

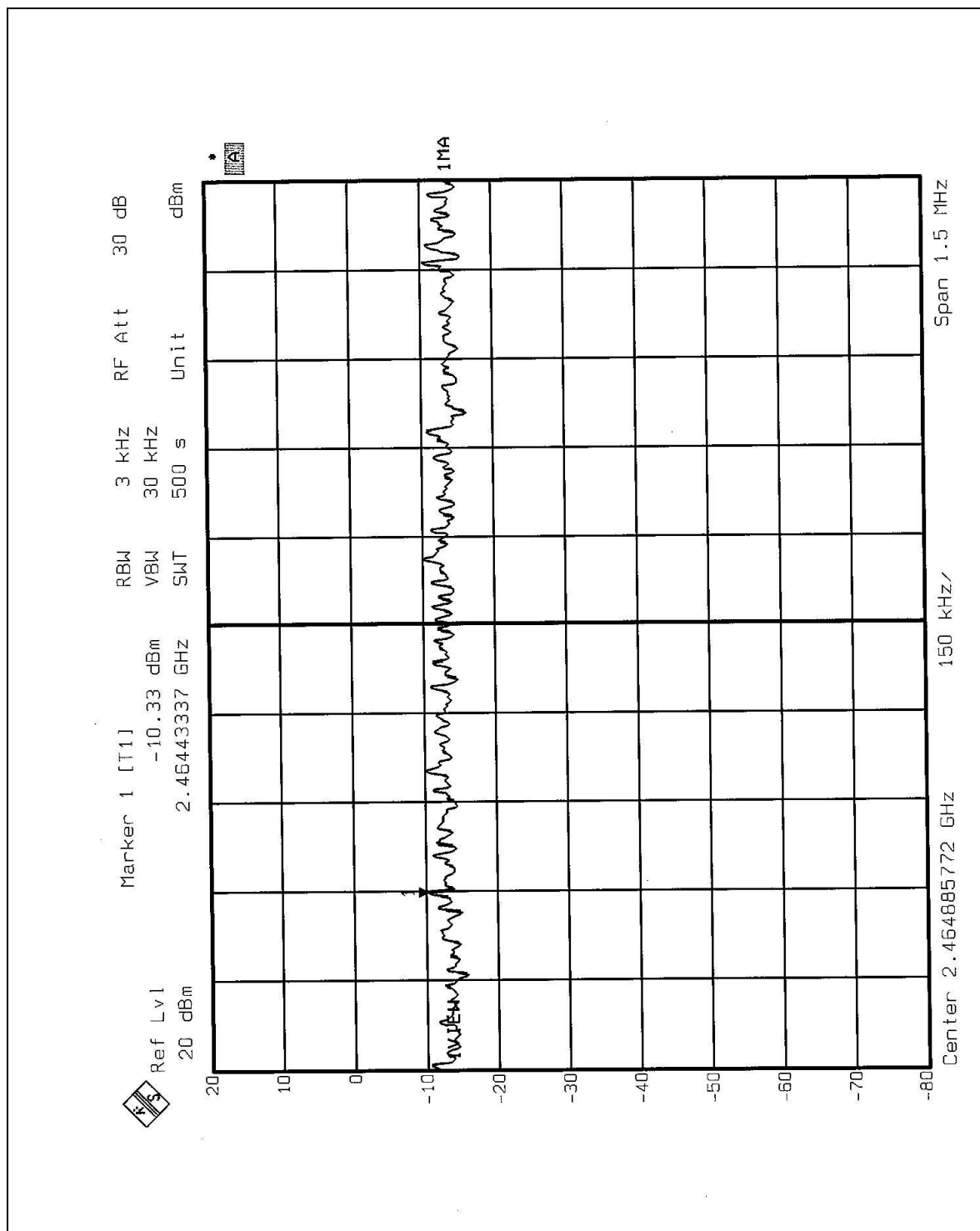
CH1



CH6



CH11

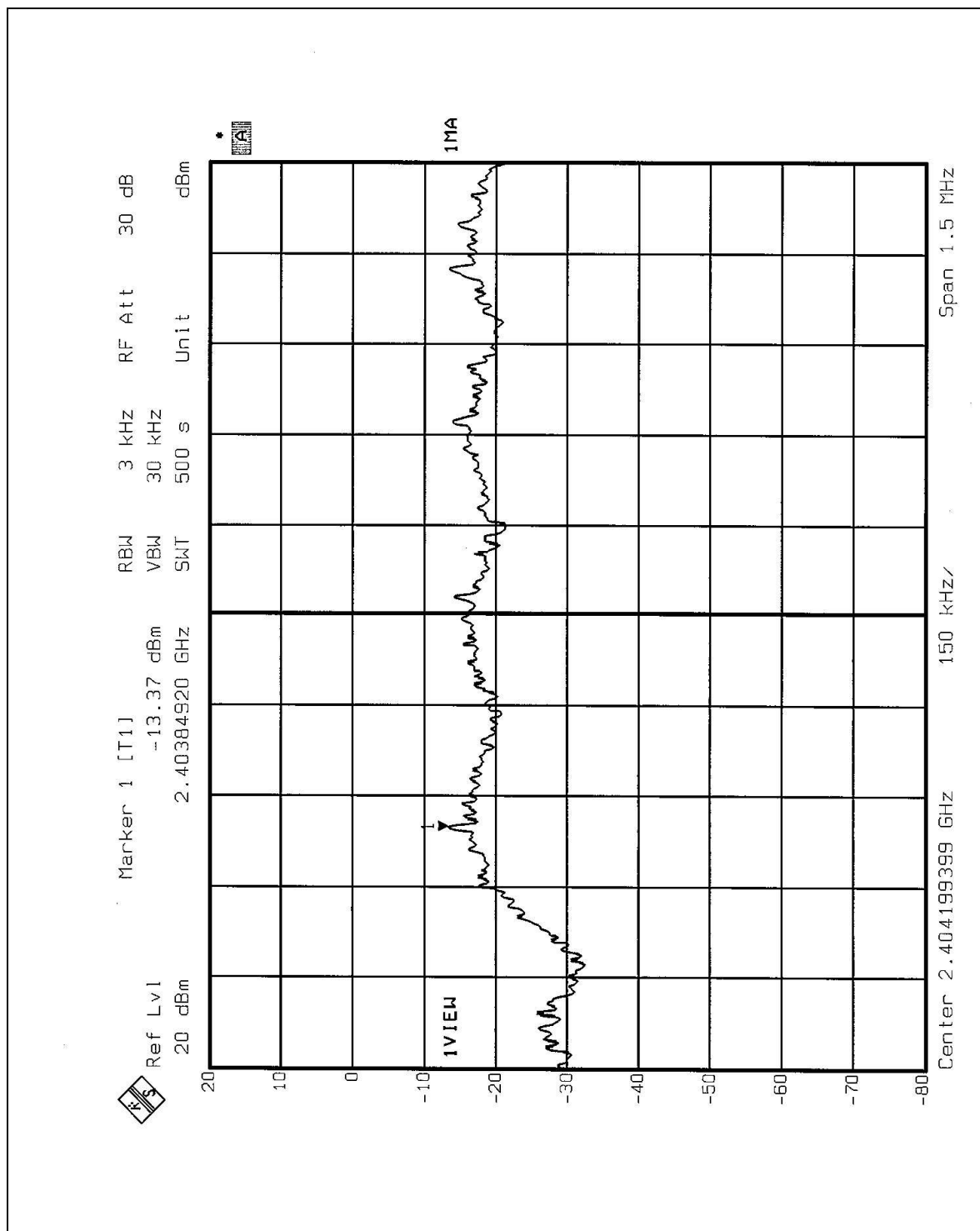




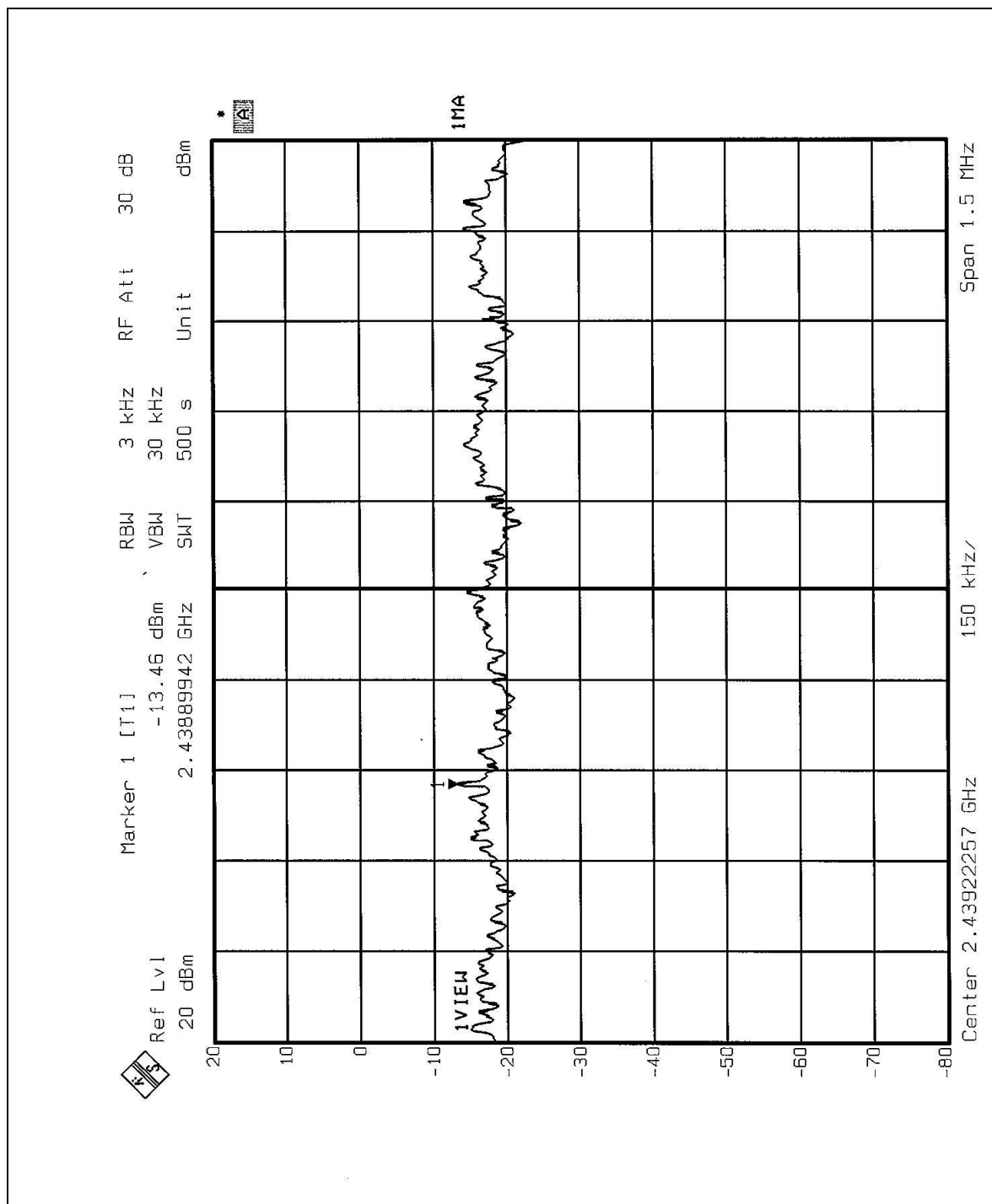
EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		MODE	OFDM
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 69RH, 991hPa
TESTED BY: Cody Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-13.37	8	PASS
6	2437	-13.46	8	PASS
11	2462	-13.83	8	PASS

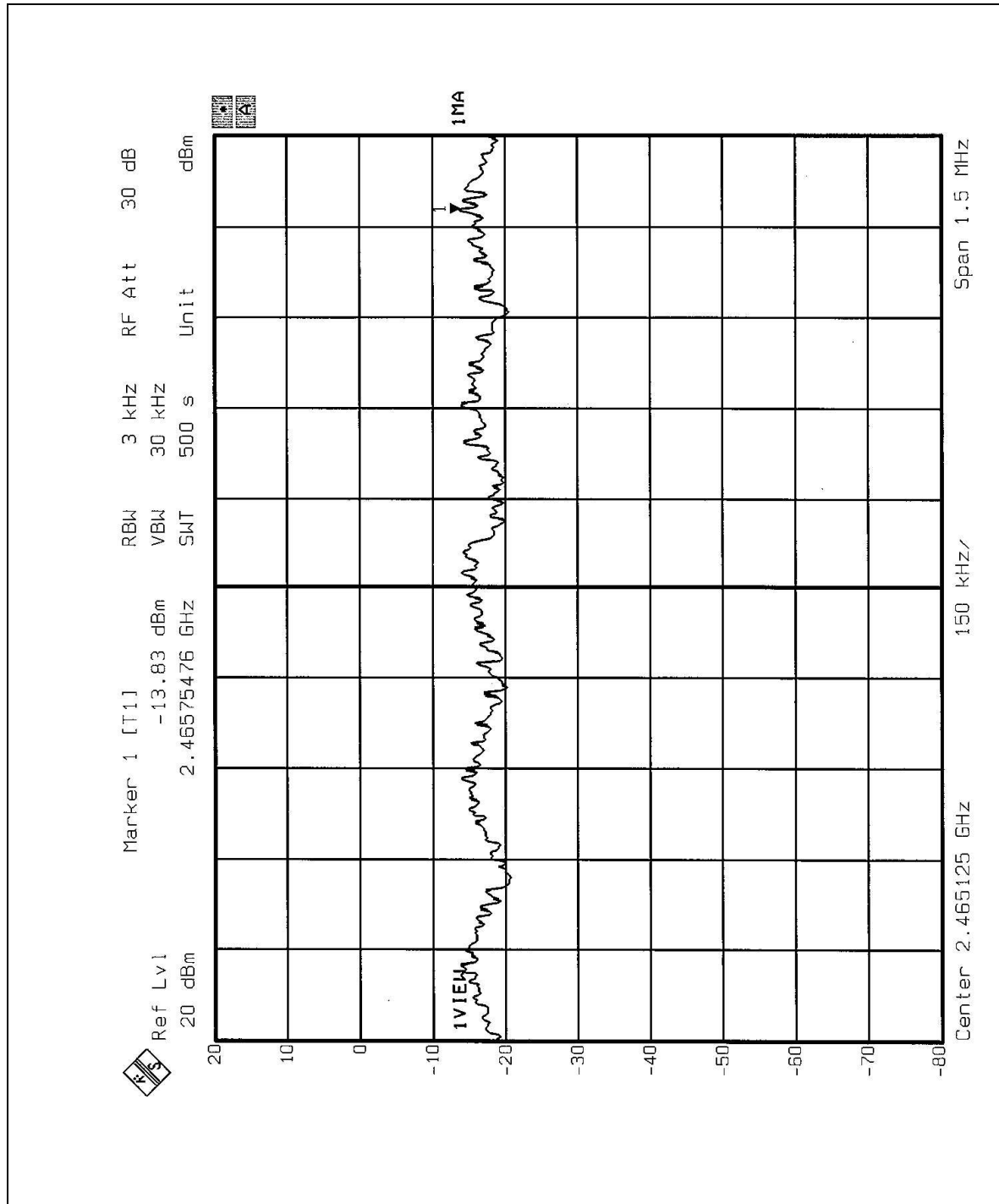
CH1



CH6



CH11



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz for CCK technique and 1MHz and 300Hz for OFDM technique with suitable frequency span including 100kHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

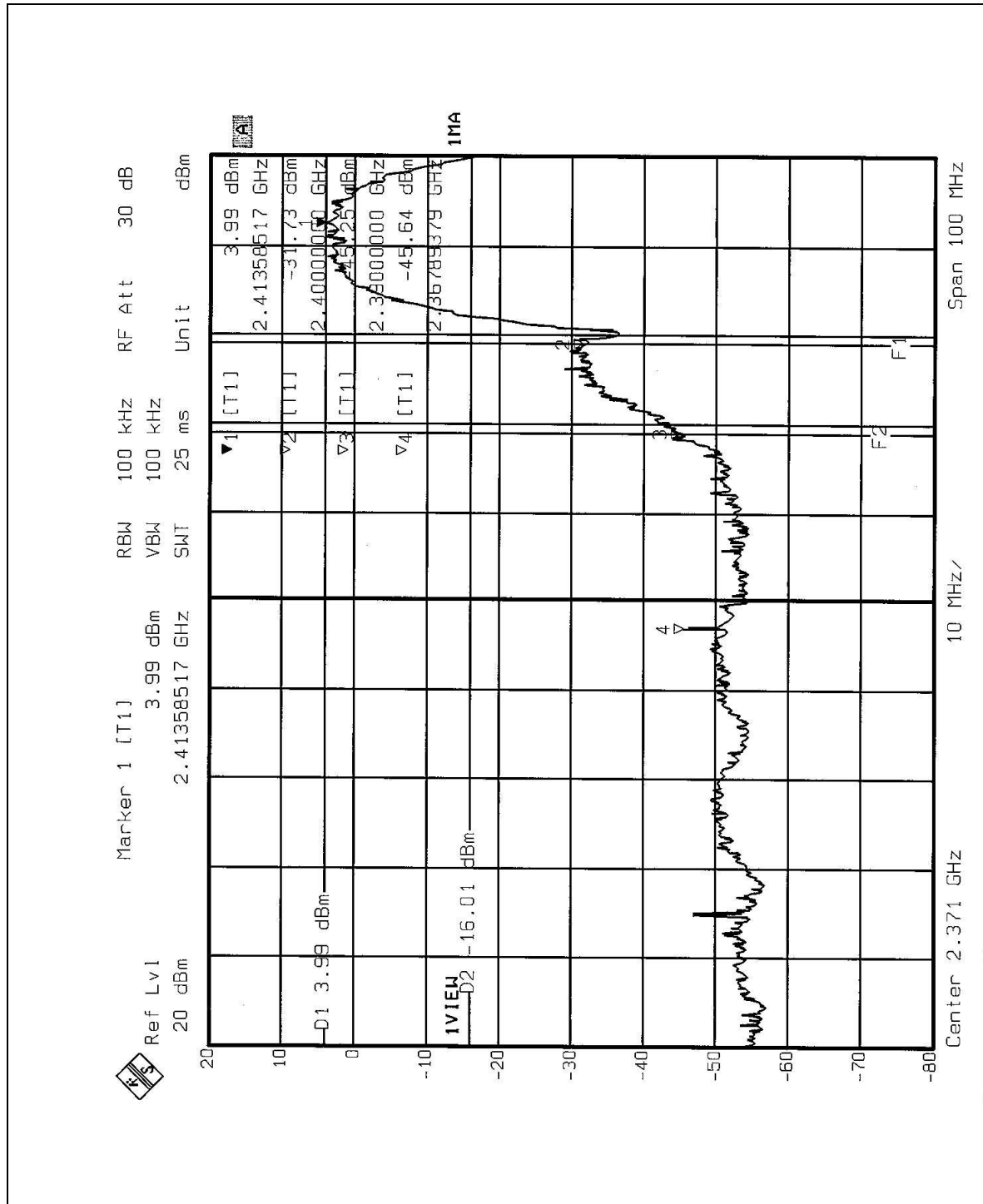
Same as Item 4.3.6

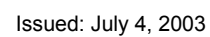
4.6.6 TEST RESULTS

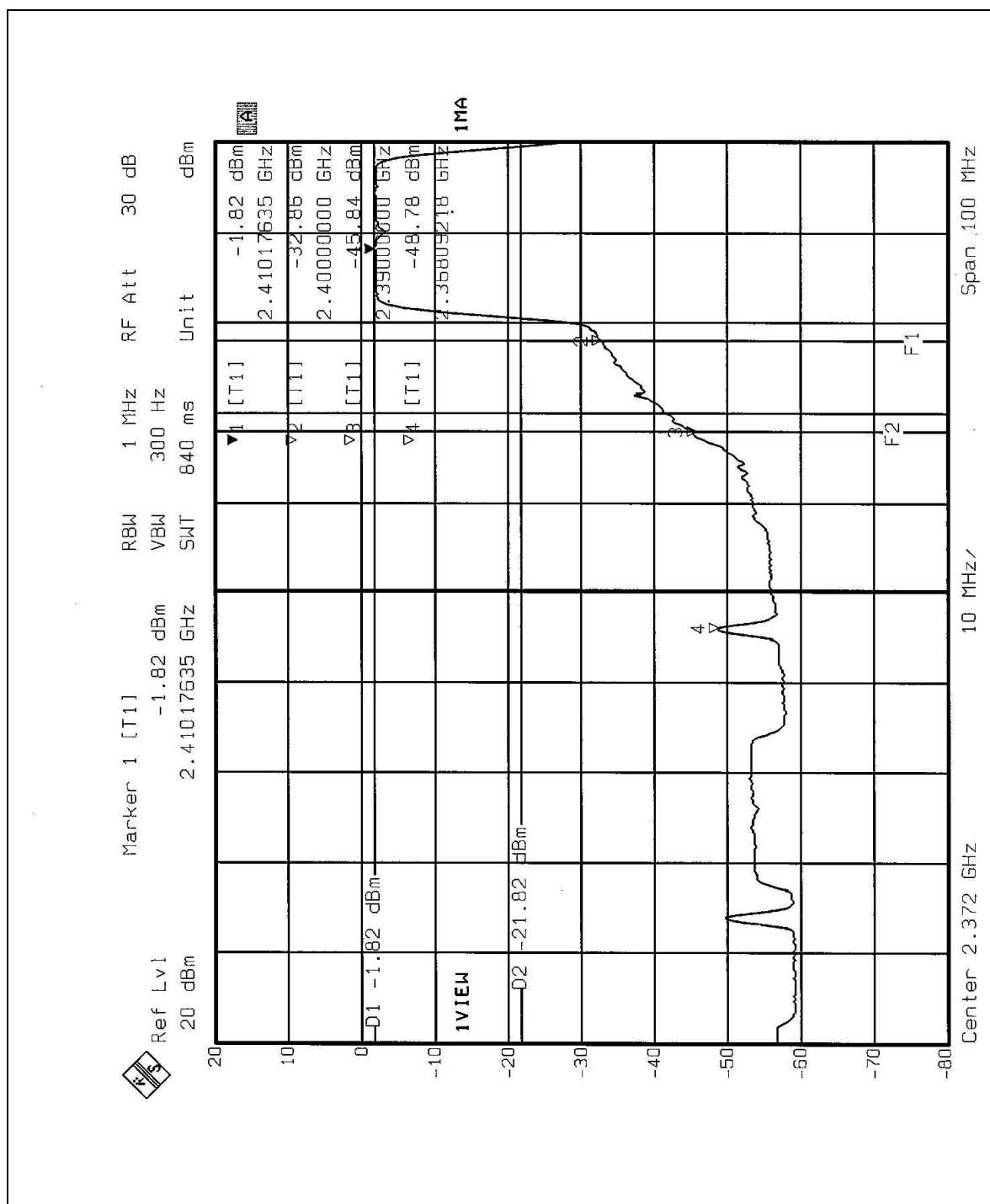
The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

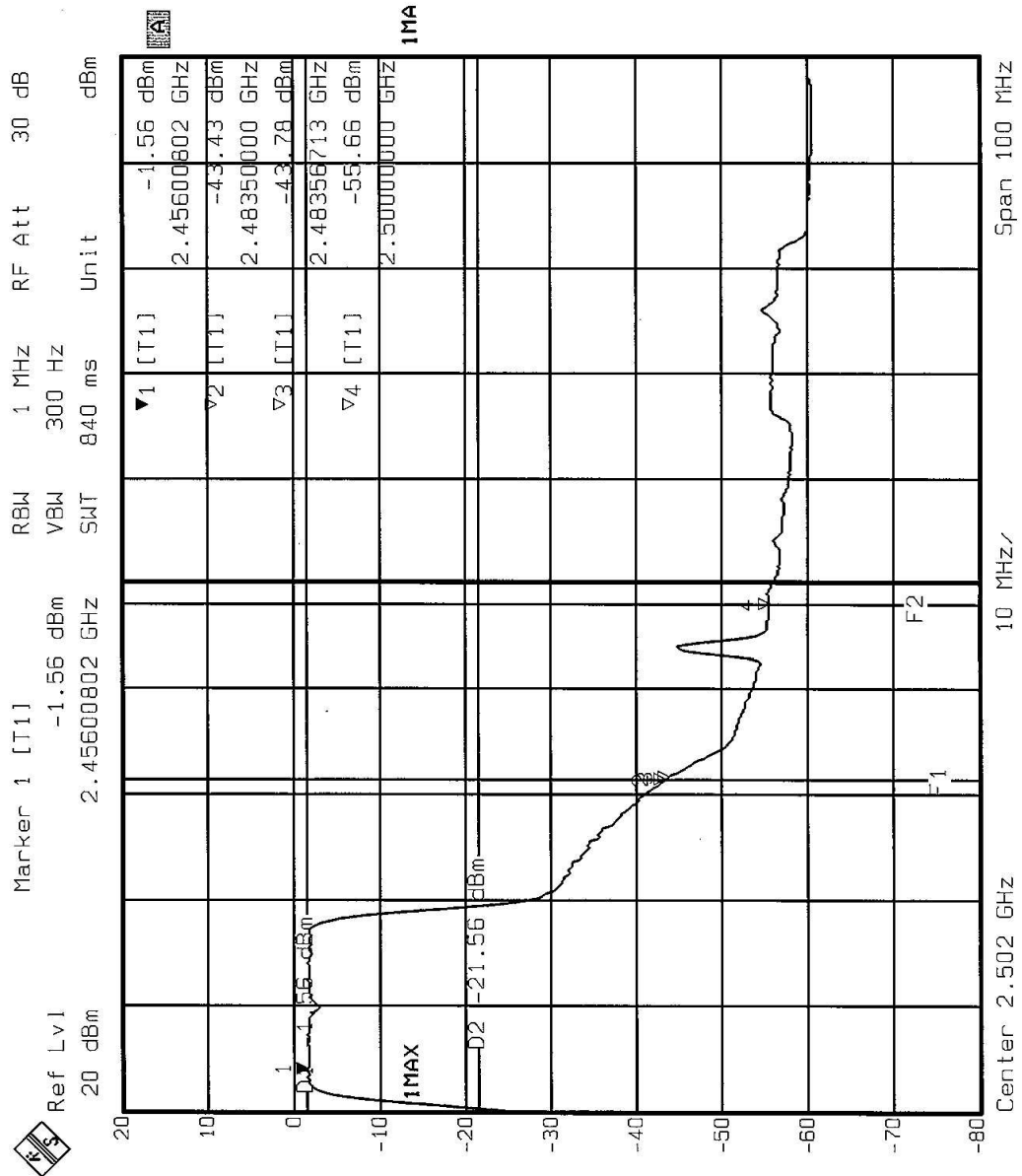
NOTE 1: The band edge emission plot on the following 1-2 pages shows 49.24dB / 45.64dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz / 2.4961GHz). The emission of carrier strength list in the test result of channel 1 of CCK technique at the item 4.2.7 is 100.4BuV/m, so the maximum field strength in restrict band is $100.4 - 49.24 = 51.16$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the following 3-4 pages shows 44.02dB / 41.87dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz / 2.4835GHz). The emission of carrier strength list in the test result of channel 11 of OFDM technique at the item 4.2.7 is 94.9dBuV/m, so the maximum field strength in restrict band is $94.9 - 41.87 = 53.03$ dBuV/m which is under 54dBuV/m limit.











4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

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

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Printed Antenna without connector. The maximum Gain of the antenna is 0dBi

5. TEST TYPES AND RESULTS (FOR PART 802.11a)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 03, 2003
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	July 02, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Nov. 29, 2003
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 29, 2003
EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	July 02, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C02.01	July 5, 2003
HP Terminator (For EMCO LISN)	11593A	E1-01-298	Feb. 23, 2004
HP Terminator (For EMCO LISN)	11593A	E1-01-299	Feb. 23, 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. 2.
 4. The VCCI Site Registration No. is C-240.



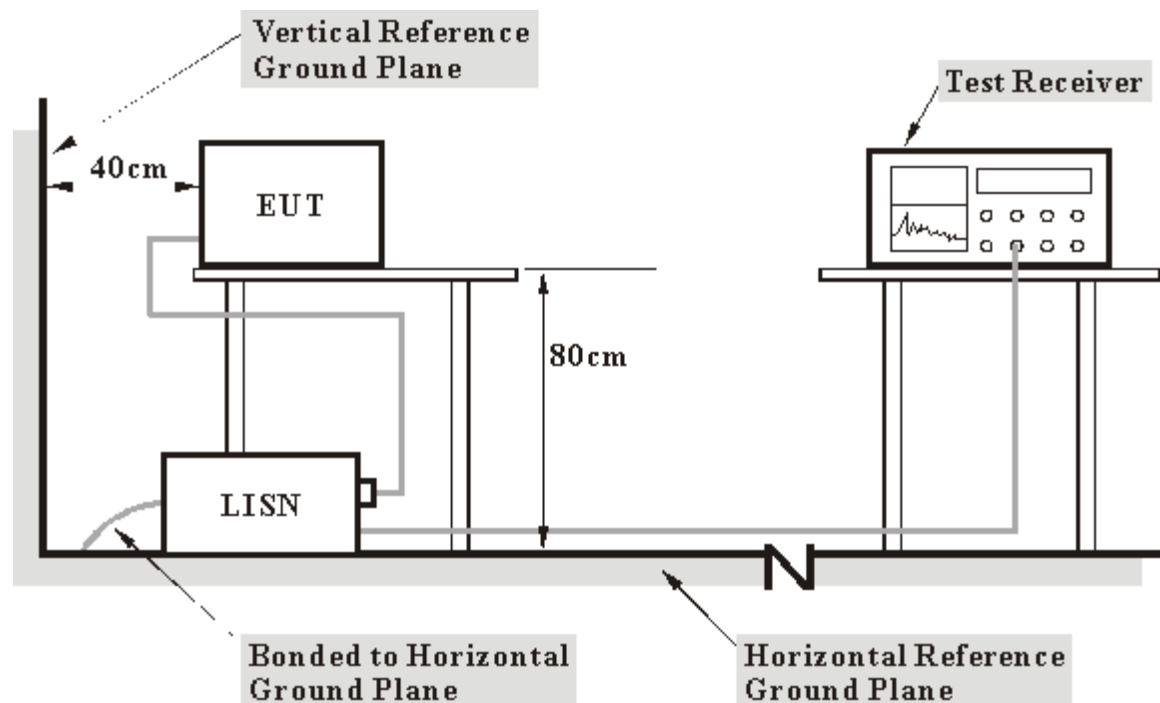
5.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



- Note:** 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 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.

5.1.6 EUT OPERATING CONDITIONS

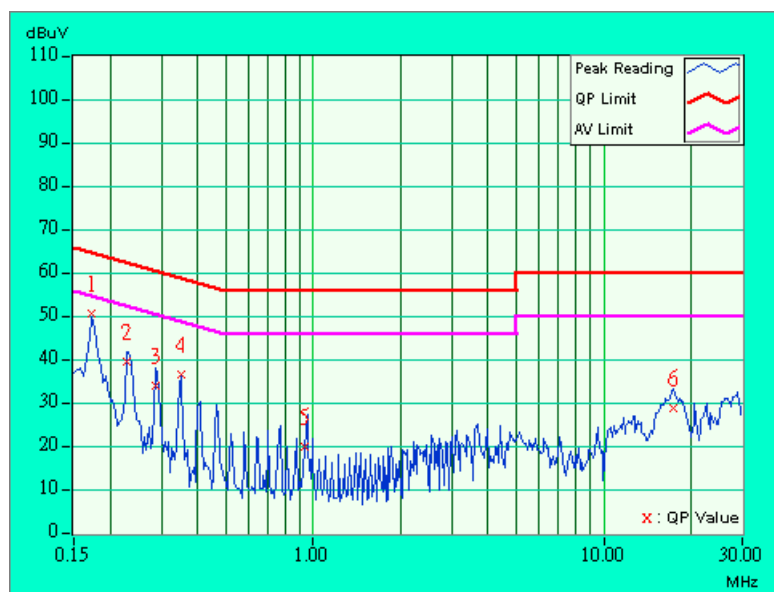
Same as 4.1.6

5.1.7 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

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	0.173	0.10	49.68	-	49.78	-	64.79	54.79	-15.01	-
2	0.228	0.10	38.65	-	38.75	-	62.52	52.52	-23.77	-
3	0.287	0.10	32.79	-	32.89	-	60.62	50.62	-27.73	-
4	0.349	0.10	35.48	-	35.58	-	58.98	48.98	-23.40	-
5	0.933	0.19	19.00	-	19.19	-	56.00	46.00	-36.81	-
6	17.398	1.14	27.84	-	28.98	-	60.00	50.00	-31.02	-

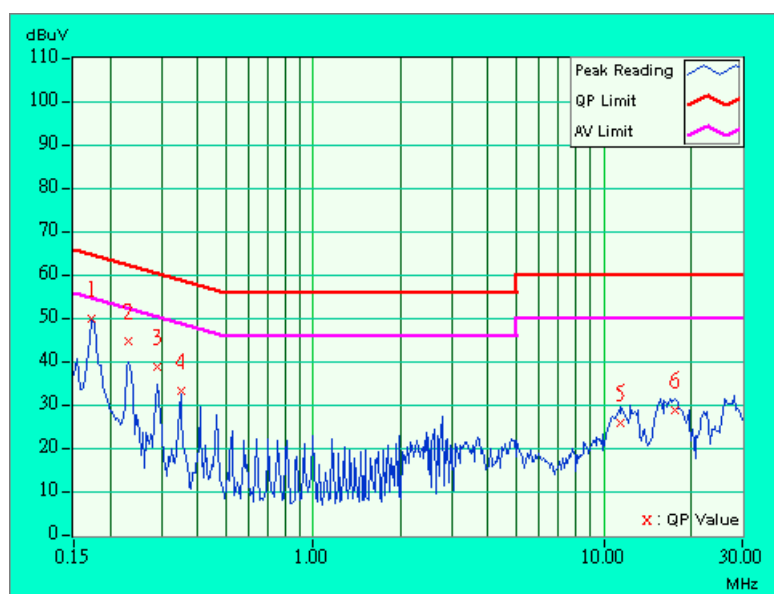
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
		6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gary Chang	

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	0.173	0.10	48.99	-	49.09	-	64.79	54.79	-15.70	-
2	0.232	0.10	43.73	-	43.83	-	62.38	52.38	-18.55	-
3	0.291	0.10	37.79	-	37.89	-	60.51	50.51	-22.62	-
4	0.349	0.10	32.37	-	32.47	-	58.98	48.98	-26.51	-
5	11.410	0.58	25.10	-	25.68	-	60.00	50.00	-34.32	-
6	17.563	0.95	27.83	-	28.78	-	60.00	50.00	-31.22	-

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





5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

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



5.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

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



5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	June 10, 2004
* HP Preamplifier	8447D	2944A08485	May 01, 2004
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
* Spectrum Analyzer	8593E	3926A04191	Mar. 24, 2004
* Test Receiver	ESI7	838496/016	Feb. 23, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 02, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July 03, 2003
* EMCO Horn Antenna	3115	9312-4192	Mar. 23, 2004
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	ADT_Radiated_V5.09	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Feb. 27, 2004
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 11. 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. 5.
 5. The VCCI Site Registration No. is R-1039.



5.2.4 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 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

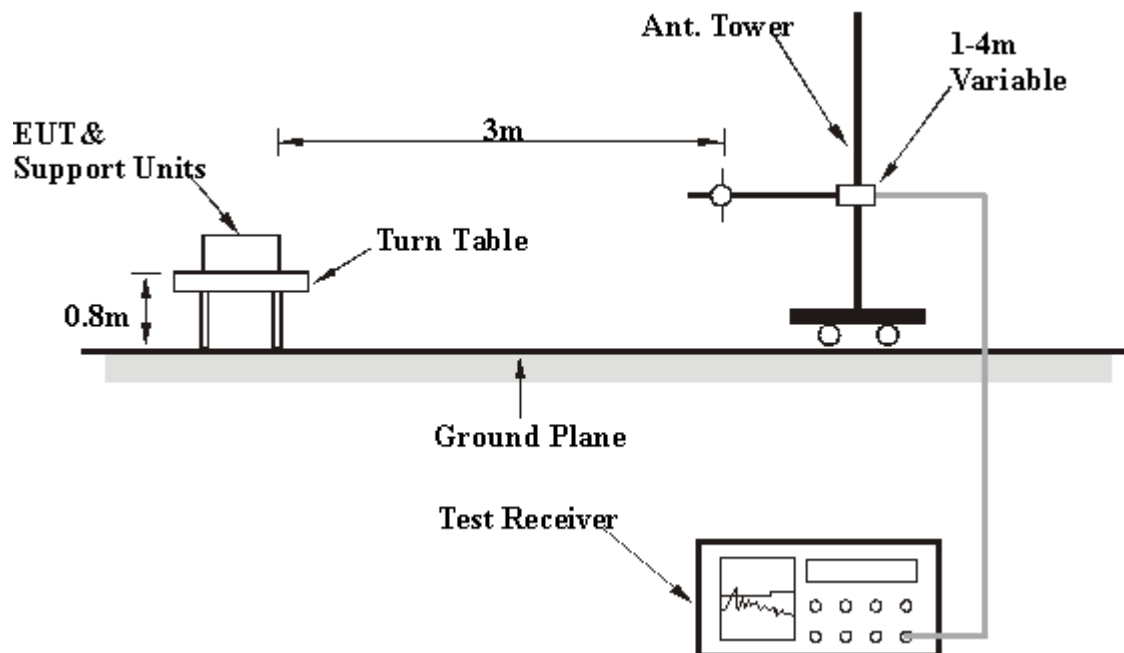
NOTE:

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.

5.2.5 DEVIATION FROM TEST STANDARD

No deviation

5.2.6 TEST SETUP



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

5.2.7 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.8 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. 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	127.99	29.8 QP	43.50	-13.70	1.69 H	193	16.90	13.00
2	160.00	37.8 QP	43.50	-5.70	1.55 H	123	26.90	10.80
3	191.99	40.7 QP	43.50	-2.80	1.36 H	113	29.90	10.80
4	224.00	44.0 QP	46.00	-2.00	1.00 H	264	30.80	13.20
5	256.01	43.6 QP	46.00	-2.40	1.17 H	58	27.20	16.40
6	288.02	35.8 QP	46.00	-10.20	1.11 H	197	19.20	16.60
7	320.02	34.8 QP	46.00	-11.20	1.35 H	66	17.60	17.20
8	352.00	33.4 QP	46.00	-12.60	1.00 H	131	15.70	17.70
9	384.00	33.6 QP	46.00	-12.40	1.00 H	109	14.90	18.70
10	416.00	30.6 QP	46.00	-15.40	1.06 H	250	11.30	19.30
11	448.00	34.1 QP	46.00	-11.90	1.87 H	69	14.30	19.70
12	480.01	34.2 QP	46.00	-11.80	2.03 H	243	13.60	20.60
13	512.01	32.4 QP	46.00	-13.60	2.30 H	77	11.20	21.20
14	544.01	30.8 QP	46.00	-15.20	1.80 H	214	9.70	21.10
15	576.00	32.7 QP	46.00	-13.30	1.62 H	57	10.80	21.90
16	608.01	31.0 QP	46.00	-15.00	1.36 H	235	8.30	22.70
17	639.92	25.3 QP	46.00	-20.70	1.40 H	110	2.50	22.80
18	735.96	31.2 QP	46.00	-14.80	1.40 H	68	7.40	23.80
19	767.87	35.8 QP	46.00	-10.20	1.28 H	31	11.40	24.40
20	799.68	30.8 QP	46.00	-15.20	1.40 H	36	5.90	24.90
21	832.02	31.9 QP	46.00	-14.10	1.40 H	70	6.90	25.00
22	896.02	27.9 QP	46.00	-18.10	1.40 H	93	2.70	25.20

- 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.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa	TESTED BY: Hardaway Lee	

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	128.00	29.7 QP	43.50	-13.80	1.44 V	94	16.70	13.00
2	160.00	33.3 QP	43.50	-10.20	1.00 V	187	22.40	10.80
3	192.00	36.2 QP	43.50	-7.30	1.27 V	127	25.40	10.80
4	224.00	40.1 QP	46.00	-5.90	2.72 V	144	27.00	13.20
5	256.00	38.6 QP	46.00	-7.40	2.19 V	106	22.30	16.40
6	287.98	34.6 QP	46.00	-11.40	2.17 V	57	18.00	16.60
7	320.02	35.9 QP	46.00	-10.10	1.51 V	192	18.70	17.20
8	384.02	30.1 QP	46.00	-15.90	1.32 V	64	11.50	18.70
9	448.02	29.9 QP	46.00	-16.10	1.03 V	270	10.20	19.70
10	480.02	32.0 QP	46.00	-14.00	1.24 V	127	11.40	20.60
11	512.00	30.8 QP	46.00	-15.20	1.00 V	304	9.60	21.20
12	543.99	33.9 QP	46.00	-12.10	1.12 V	96	12.80	21.10
13	575.99	30.1 QP	46.00	-15.90	1.89 V	237	8.10	21.90
14	703.99	33.8 QP	46.00	-12.20	1.42 V	36	10.70	23.10
15	799.99	28.6 QP	46.00	-17.40	1.30 V	51	3.80	24.90
16	895.99	33.7 QP	46.00	-12.30	1.30 V	91	8.50	25.20
17	927.99	33.7 QP	46.00	-12.30	1.39 V	126	8.70	25.00

- 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.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	#5150.00	57.2 PK	74.00	-16.80	1.15 H	25	21.00	36.20
1	#5150.00	47.1 AV	54.00	-6.90	1.15 H	25	10.90	36.20
2	*5180.00	104.1 PK			1.30 H	62	67.90	36.20
2	*5180.00	94.0 AV			1.30 H	62	57.80	36.20
3	10360.00	60.4 PK	68.30	-7.90	1.37 H	185	15.90	44.50

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	#5150.00	49.0 PK	74.00	-25.00	1.72 V	178	12.80	36.20
2	*5180.00	95.9 PK			1.72 V	178	59.70	36.20
2	*5180.00	85.5 AV			1.72 V	178	49.30	36.20
3	10360.00	56.0 PK	68.30	-12.30	1.21 V	52	11.50	44.50

- 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 radiated frequency falling in the restricted band.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 4	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5240.00	104.3 PK			1.43 H	56	68.00	36.30
1	*5240.00	95.9 AV			1.43 H	56	59.50	36.30
2	10480.00	66.4 PK	68.30	-1.90	1.12 H	74	21.70	44.70

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	*5240.00	98.2 PK			1.15 V	34	61.90	36.30
1	*5240.00	89.0 AV			1.15 V	34	52.70	36.30
2	10480.00	61.0 PK	68.30	-7.30	1.38 V	352	16.30	44.70

- 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	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 5	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5260.00	105.5 PK			1.57 H	41	69.20	36.40
1	*5260.00	96.9 AV			1.57 H	41	60.50	36.40
2	10520.00	65.8 PK	68.30	-2.50	1.15 H	34	21.00	44.80

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	*5260.00	101.4 PK			1.21 V	95	65.10	36.40
1	*5260.00	91.3 AV			1.21 V	95	55.00	36.40
2	10520.00	57.9 PK	68.30	-10.40	1.14 V	85	13.10	44.80

- 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	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 8	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5320.00	103.6 PK			1.51 H	85	67.20	36.40
1	*5320.00	93.3 AV			1.51 H	85	56.90	36.40
2	#5350.00	61.1 PK	74.00	-12.90	1.51 H	85	24.60	36.50
2	#5350.00	48.2 AV	54.00	-5.80	1.51 H	85	11.70	36.50
3	#10640.00	59.8 PK	74.00	-14.20	1.30 H	51	14.70	45.10
3	#10640.00	49.1 AV	54.00	-4.90	1.30 H	51	4.00	45.10

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	*5320.00	97.7 PK			1.18 V	35	61.30	36.40
1	*5320.00	87.8 AV			1.18 V	35	51.40	36.40
2	#10640.00	57.3 PK	74.00	-16.70	1.19 V	100	12.20	45.10
2	#10640.00	46.2 AV	54.00	-7.80	1.19 V	100	1.10	45.10

- 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.
 6. “ # “: The radiated frequency falling in the restricted band.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 9	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	5715.00	65.2 PK	68.30	-3.10	1.71 H	35	28.10	37.10
2	5725.00	74.0 PK	78.30	-4.30	1.71 H	35	36.90	37.10
3	*5745.00	99.8 PK			1.71 H	35	62.70	37.10
3	*5745.00	90.2 AV			1.71 H	35	53.10	37.10
4	#11490.00	57.0 PK	74.00	-17.00	1.10 H	12	11.30	45.80
4	#11490.00	45.7 AV	54.00	-8.30	1.10 H	12	0.00	45.80

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	5715.00	64.0 PK	68.30	-4.30	1.17 V	84	26.90	37.10
2	5725.00	71.0 PK	78.30	-7.30	1.17 V	84	33.90	37.10
3	*5745.00	97.5 PK			1.17 V	84	60.40	37.10
3	*5745.00	84.0 AV			1.17 V	84	46.90	37.10
4	#11489.00	57.2 PK	74.00	-16.80	1.31 V	101	11.50	45.80
4	#11489.00	45.5 AV	54.00	-8.50	1.31 V	101	-0.20	45.80

- 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 radiated frequency falling in the restricted band.

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
CHANNEL	Channel 12	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. 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	*5805.00	98.1 PK			1.86 H	266	60.90	37.20
1	*5805.00	88.6 AV			1.86 H	266	51.40	37.20
2	5825.00	73.80 PK	78.30	-4.50	1.13 H	65	36.50	37.30
3	5835.00	56.40 PK	68.30	-11.90	1.13H	65	19.10	37.30
4	#11610.00	56.6 PK	74.00	-17.40	1.05 H	84	10.90	45.60
4	#11610.00	47.2 AV	54.00	-6.80	1.05 H	84	1.50	45.60

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	*5805.00	95.2 PK			1.15 V	20	58.00	37.20
1	*5805.00	86.8 AV			1.15 V	20	49.60	37.20
2	5825.00	62.3 PK	78.30	-16.00	1.15 V	20	25.00	37.30
3	5835.00	72.5 PK	68.30	-4.20	1.15 V	20	35.20	37.30
4	#11617.00	57.0 PK	74.00	-17.00	1.36 V	202	11.30	45.60
4	#11617.00	46.6 AV	54.00	-7.40	1.36 V	202	0.90	45.60

- 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 radiated frequency falling in the restricted band.

5.3 PEAK TRANSMIT POWER MEASUREMENT

5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

Note: Where B is the 26dB emission bandwidth in MHz.

5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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

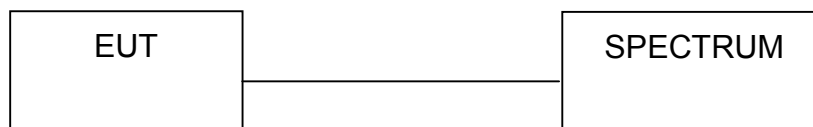
5.3.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 300kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

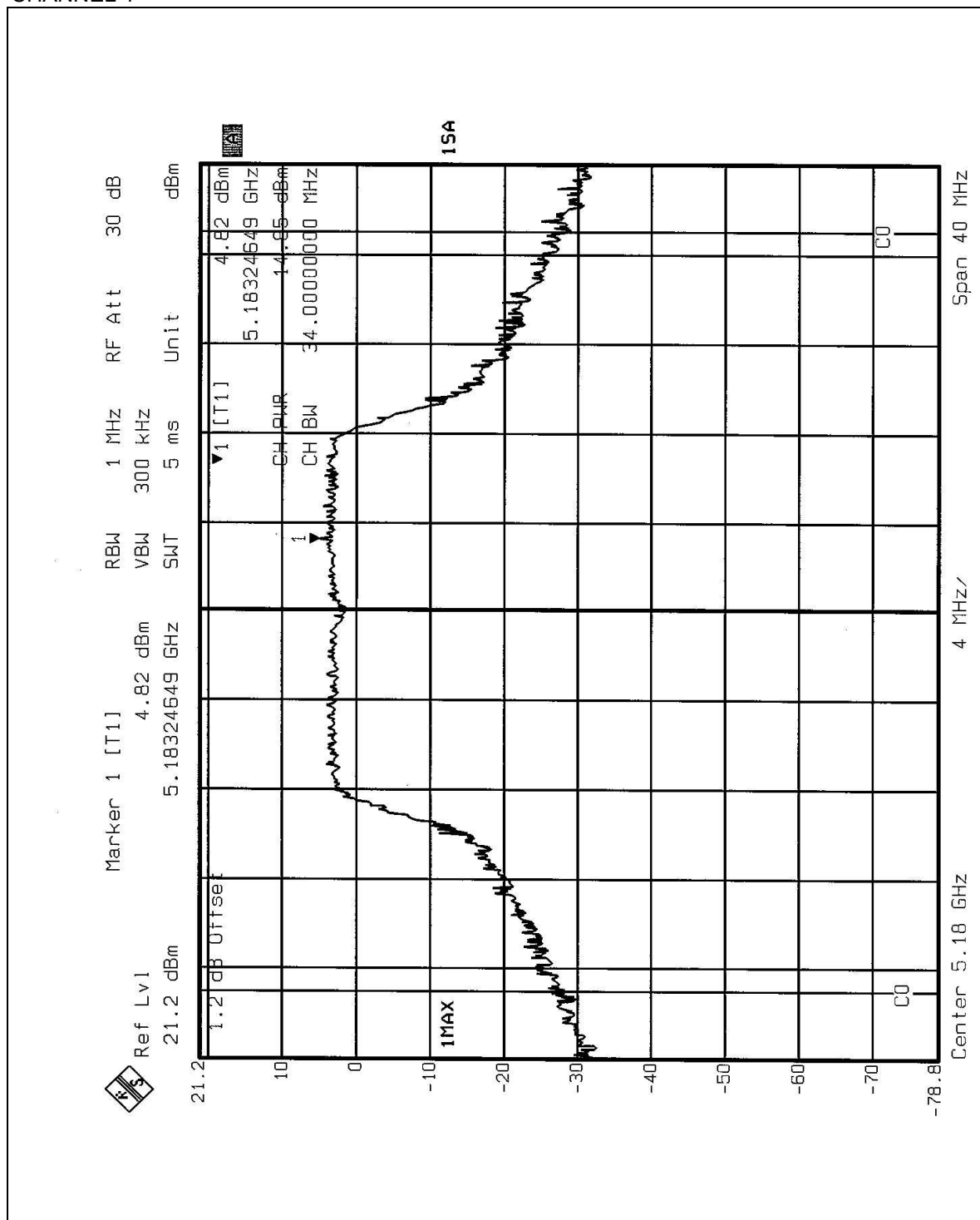
5.3.7 TEST RESULTS

EUT	Wireless Cardbus Adapter	MODEL	SL-5354CB ARIES
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Ansen Lei		

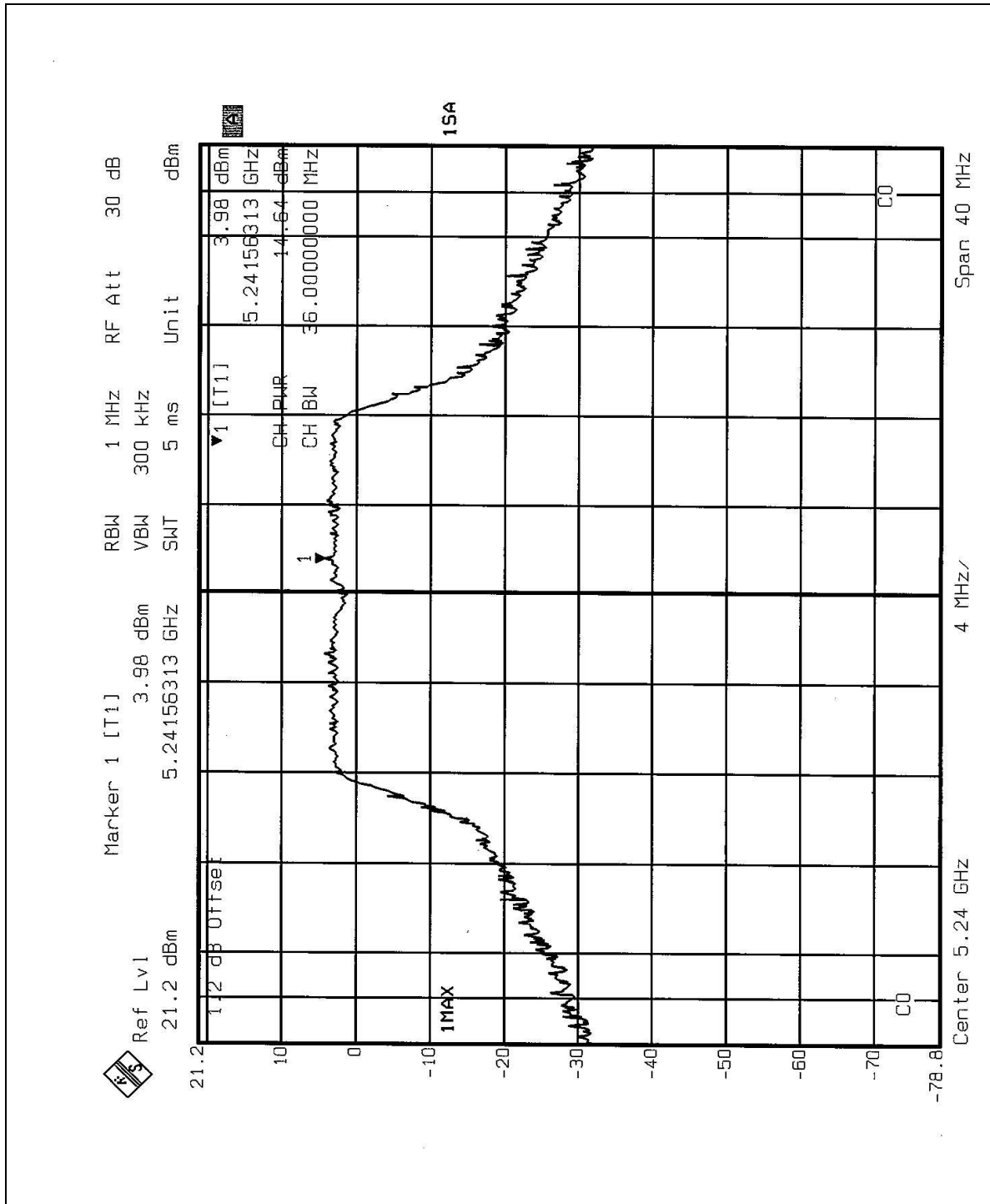
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	14.85	17.00	33.43	PASS
4	5240	14.64	17.00	34.79	PASS
5	5260	14.62	24.00	35.51	PASS
8	5320	14.82	24.00	37.27	PASS
9	5745	18.43	30.00	42.08	PASS
12	5805	18.87	30.00	43.79	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

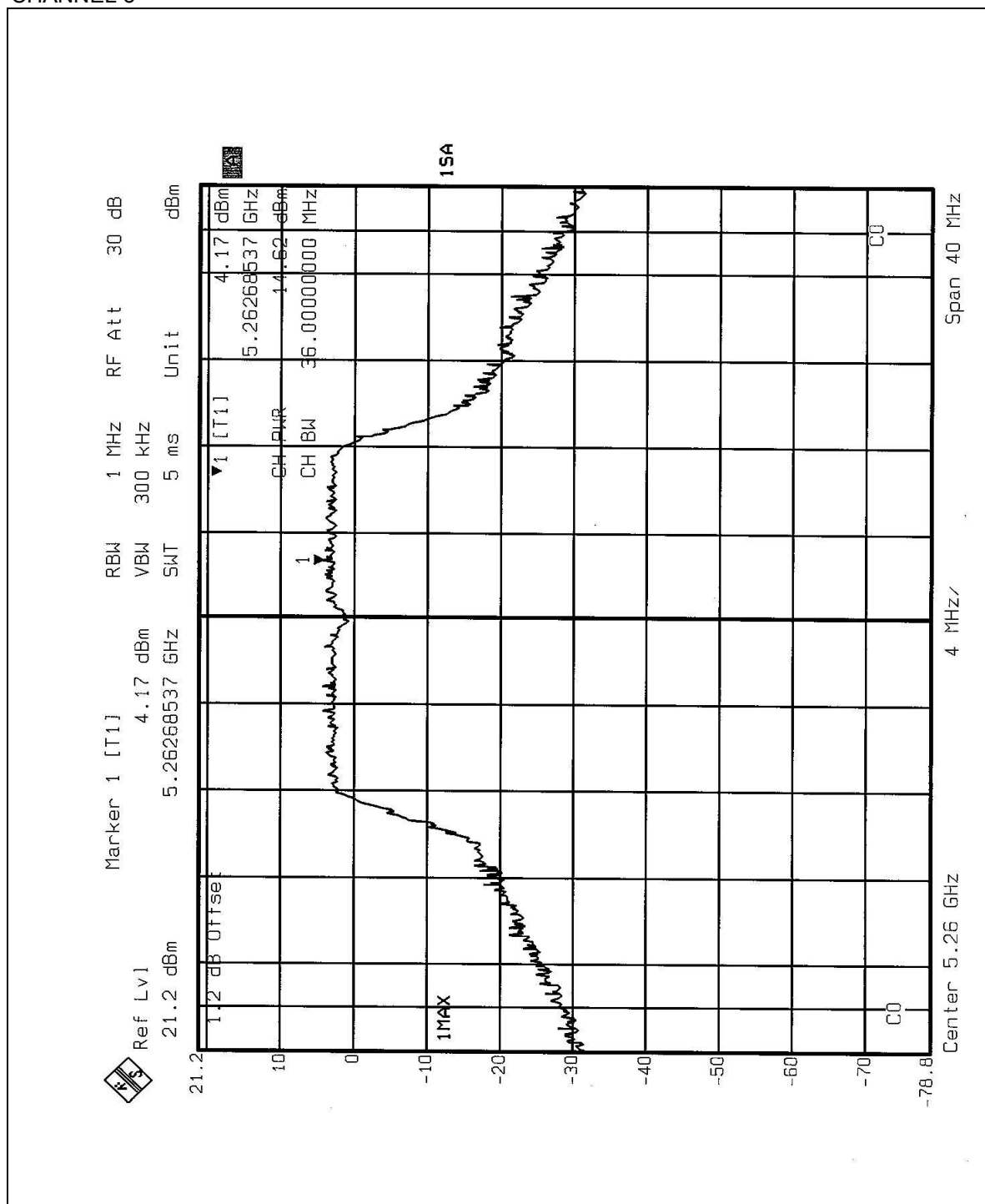
CHANNEL 1



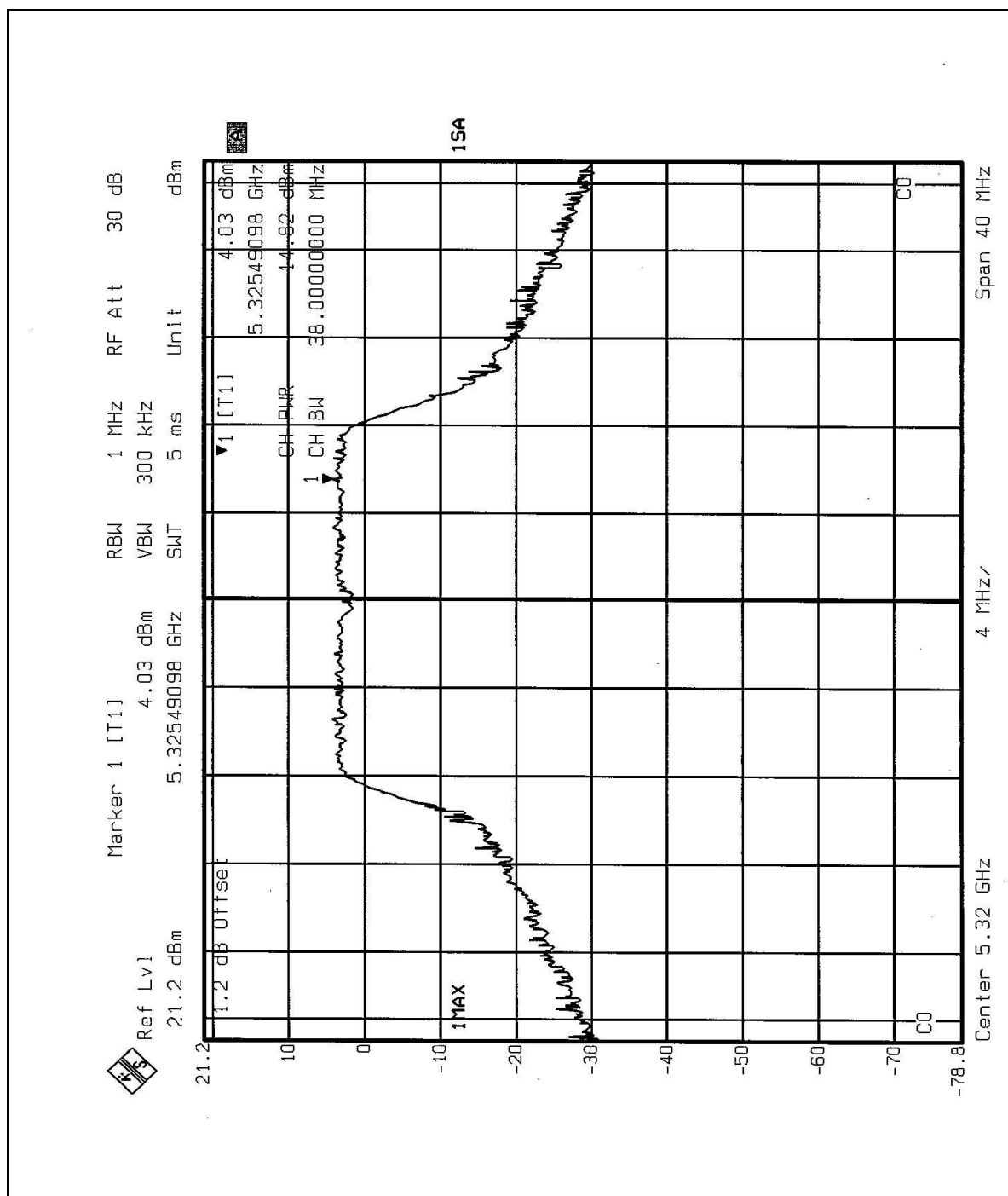
CHANNEL 4



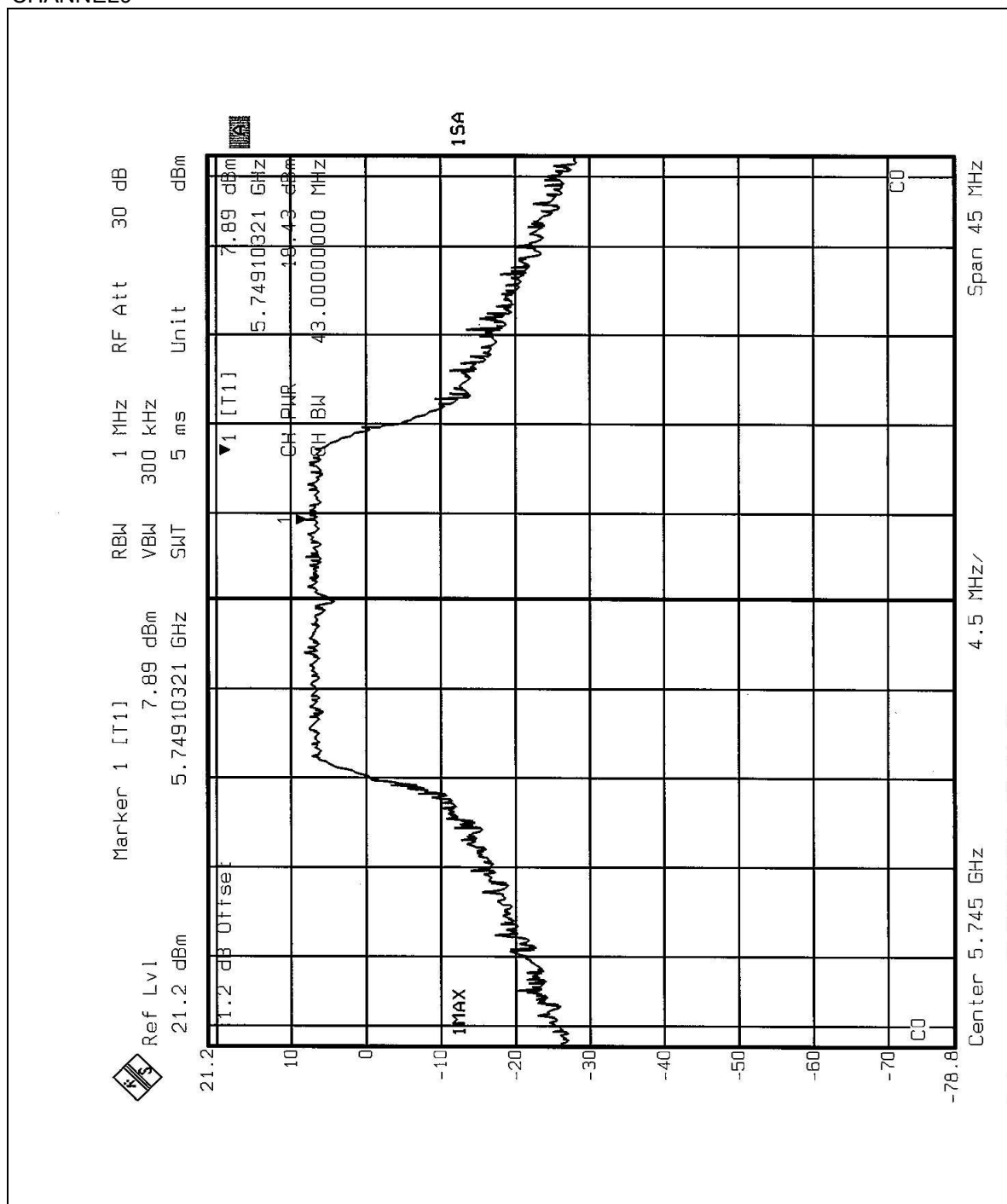
CHANNEL 5



CHANNEL8



CHANNEL9



CHANNEL 12

