

FCC TEST REPORT

REPORT NO.: RF930921A11B

MODEL NO.: SK-8812

RECEIVED: Sep. 22, 2004

TESTED: Sep. 23 ~ Oct. 15, 2004

ISSUED: Nov. 4, 2004

APPLICANT: Lite-On Technology Corporation

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No. 2177-01



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ILAC MRA

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1 CERTIFICATION

PRODUCT : Wireless USB Dongle
BRAND NAME : IBM
MODEL NO. : SK-8812
APPLICANT : Lite-On Technology Corporation
TESTED : Sep. 23 ~ Oct. 15, 2004
TEST SAMPLE : ENGINEERING SAMPLE
STANDARDS : FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Annie Chang , **DATE:** Nov. 4, 2004
(Annie Chang)

TECHNICAL
ACCEPTANCE : Arthur Lin , **DATE:** Nov. 4, 2004
Responsible for EMI (Arthur Lin)

APPROVED BY : Cody Chang , **DATE:** Nov. 4, 2004
(Cody Chang, Deputy Manager)

a. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -16.67dB at 0.177MHz
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)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -5.57dB at 399.34MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(c)	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

.1 MEASUREMENT UNCERTAINTY

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

Measurement	Uncertainty
Conducted emissions	2.44 dB
Radiated emissions	3.86 dB

a. GENERAL INFORMATION**.1 GENERAL DESCRIPTION OF EUT**

PRODUCT	Wireless USB Dongle
MODEL NO.	SK-8812
POWER SUPPLY	5Vdc from host equipment
MODULATION TYPE	GFSK
TRANSFER RATE	62.5kbits / sec.
FREQUENCY RANGE	2402MHz ~ 2479MHz
NUMBER OF CHANNEL	78
MAXIMUM OUTPUT POWER	1.327mW
ANTENNA TYPE	Wiggle antenna with 1.15dBi gain
DATA CABLE	NA
I/O PORTS	USB port
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a transmitter part of a wireless Dongle
2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

.2 DESCRIPTION OF TEST MODES

Seventy-eight channels are provided to this EUT.

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

NOTE:

1. Below 1GHz, the channel 0, 39, and 77 were pre-tested in chamber. The channel 77, the worst case, was chosen for final test.
2. Above 1GHz, the channel 0, 39, and 77 were tested individually.



.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

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

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

.4 DESCRIPTION OF SUPPORT UNITS

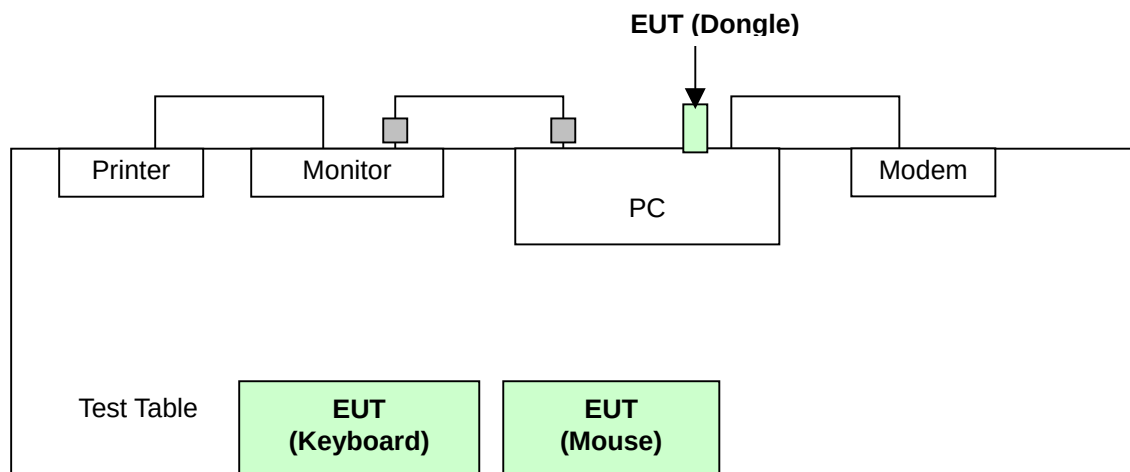
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	LEO	Persica 8620G	1A36I98A000204	FCC DoC Approved
2	MONITOR	HP	D2842A	KR93473113	BEJCB910
3	PRINTER	EPSON	LQ-300+	DCGY038846	FCC DoC Approved
4	MODEM	ACEEX	1414	0206026757	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, with 2 cores
3	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
4	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).

.5 CONFIGURATION OF SYSTEM UNDER TEST



a. TEST TYPES AND RESULTS

.1 CONDUCTED EMISSION MEASUREMENT

.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.

.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Jan. 4, 2005
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Dec. 9, 2004
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Dec. 9, 2004
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Dec. 9, 2004
ROHDE & SCHWARZ 4-wire ISN	ENY41	837032/016	Nov. 19, 2004
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 19, 2004
Software	ADT_Cond_V7.3.1	NA	NA
Software	ADT_ISN_V7.3.1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Apr. 28, 2005
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010770	Feb. 28, 2005
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 28, 2005

- 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. C-1852.



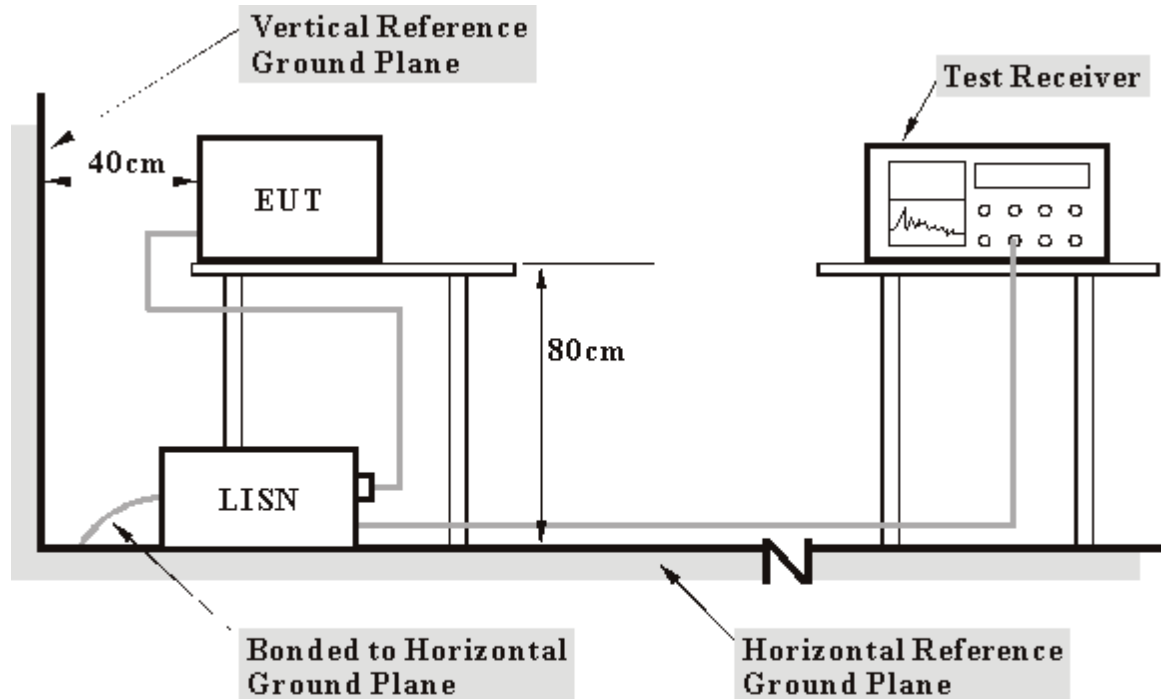
.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under Limit - 20dB was not recorded.

.1.4 DEVIATION FROM TEST STANDARD

No deviation

.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.

.1.6 EUT OPERATING CONDITIONS

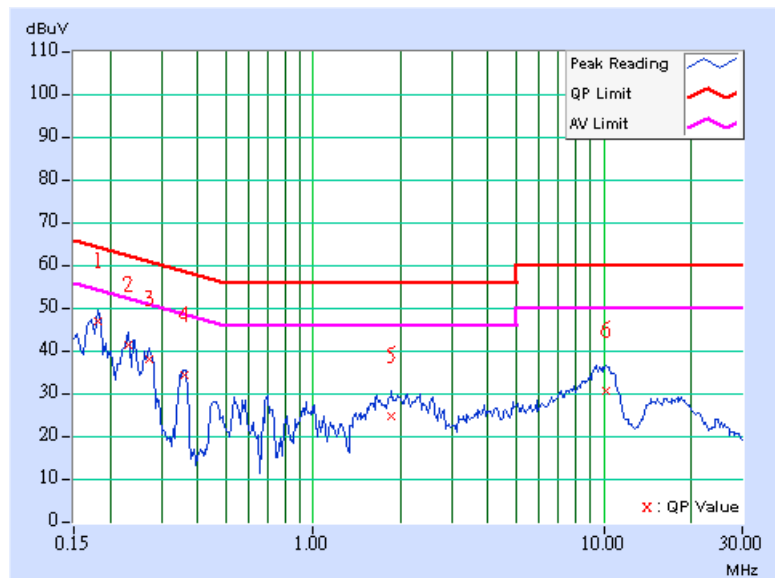
- a. Plug the EUT to PC system placed on a testing table.
- b. The PC system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The PC system shows “H” messages on its screen.
- d. The PC system sent “H” messages to modem.
- e. The PC system sent “H” messages to printer, and the printer printed them out.
- f. Repeated c~e.

.1.1 TEST RESULTS

EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	0	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 67% RH, 991 hPa	TESTED BY	Jamison Chan

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	0.181	0.10	46.58	-	46.68	-	64.43	54.43	-17.75	-
2	0.232	0.10	40.93	-	41.03	-	62.38	52.38	-21.35	-
3	0.271	0.10	37.46	-	37.56	-	61.08	51.08	-23.52	-
4	0.361	0.10	33.82	-	33.92	-	58.71	48.71	-24.79	-
5	1.859	0.20	24.29	-	24.49	-	56.00	46.00	-31.51	-
6	10.141	0.61	30.04	-	30.65	-	60.00	50.00	-29.35	-

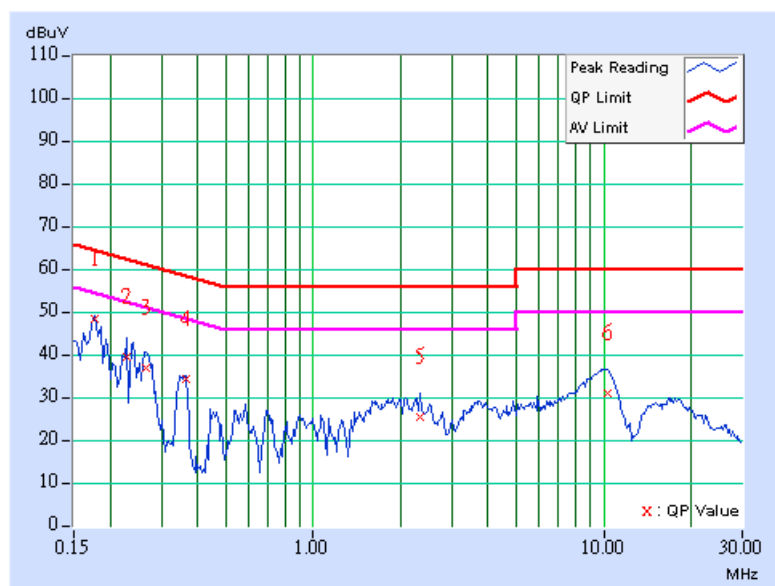
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	0	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 67% RH, 991 hPa	TESTED BY	Jamison Chan

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	47.84	-	47.94	-	64.61	54.61	-16.67	-
2	0.228	0.10	39.18	-	39.28	-	62.52	52.52	-23.24	-
3	0.267	0.10	36.38	-	36.48	-	61.20	51.20	-24.72	-
4	0.365	0.10	33.81	-	33.91	-	58.62	48.62	-24.71	-
5	2.344	0.22	25.09	-	25.31	-	56.00	46.00	-30.69	-
6	10.262	0.51	30.46	-	30.97	-	60.00	50.00	-29.03	-

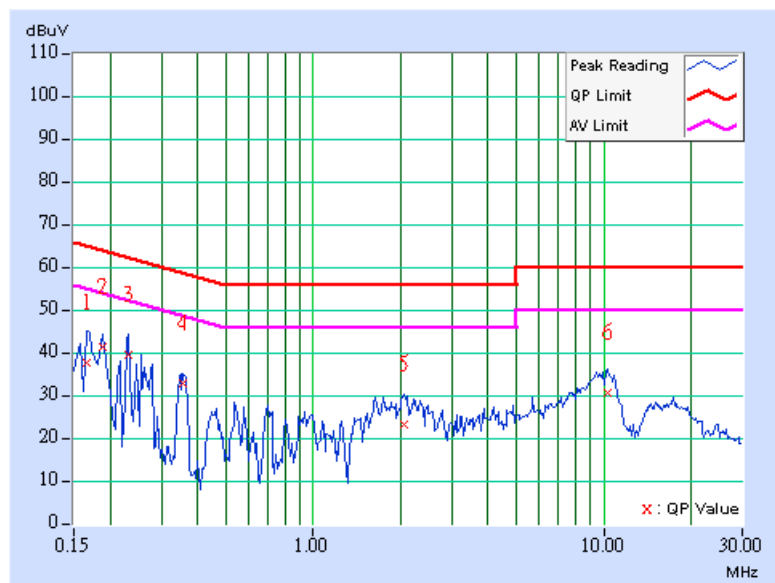
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	39	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 67% RH, 991 hPa	TESTED BY	Jamison Chan

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	0.10	37.07	-	37.17	-	65.18	55.18	-28.01	-
2	0.189	0.10	40.78	-	40.88	-	64.08	54.08	-23.20	-
3	0.232	0.10	39.14	-	39.24	-	62.38	52.38	-23.14	-
4	0.357	0.10	32.34	-	32.44	-	58.80	48.80	-26.36	-
5	2.051	0.20	22.64	-	22.84	-	56.00	46.00	-33.16	-
6	10.309	0.61	30.00	-	30.61	-	60.00	50.00	-29.39	-

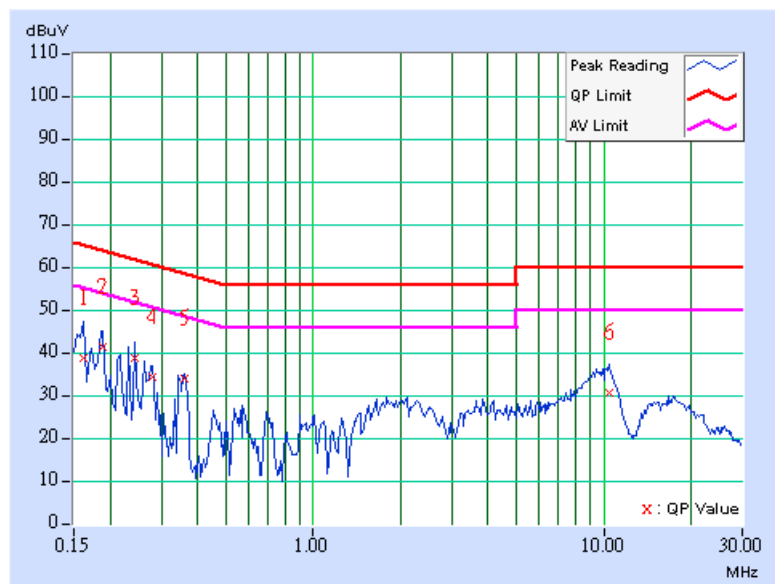
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	39	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 67% RH, 991 hPa	TESTED BY	Jamison Chan

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	0.162	0.10	38.29	-	38.39	-	65.38	55.38	-26.99	-
2	0.189	0.10	41.13	-	41.23	-	64.08	54.08	-22.85	-
3	0.244	0.10	38.22	-	38.32	-	61.97	51.97	-23.65	-
4	0.279	0.10	33.87	-	33.97	-	60.85	50.85	-26.88	-
5	0.361	0.10	33.54	-	33.64	-	58.71	48.71	-25.07	-
6	10.426	0.52	30.36	-	30.88	-	60.00	50.00	-29.12	-

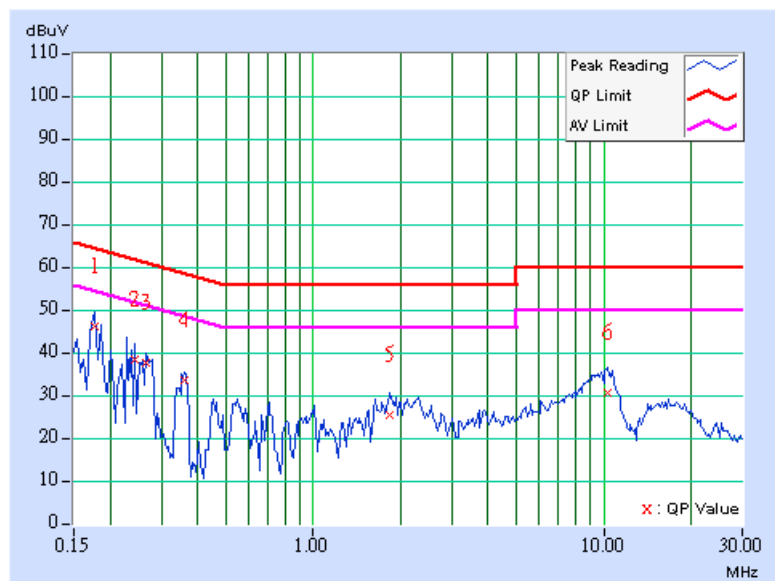
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	77	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 67% RH, 991 hPa	TESTED BY	Jamison Chan

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	45.52	-	45.62	-	64.61	54.61	-18.99	-
2	0.244	0.10	37.90	-	38.00	-	61.97	51.97	-23.97	-
3	0.267	0.10	37.27	-	37.37	-	61.20	51.20	-23.83	-
4	0.361	0.10	33.13	-	33.23	-	58.71	48.71	-25.48	-
5	1.844	0.20	24.81	-	25.01	-	56.00	46.00	-30.99	-
6	10.273	0.61	30.10	-	30.71	-	60.00	50.00	-29.29	-

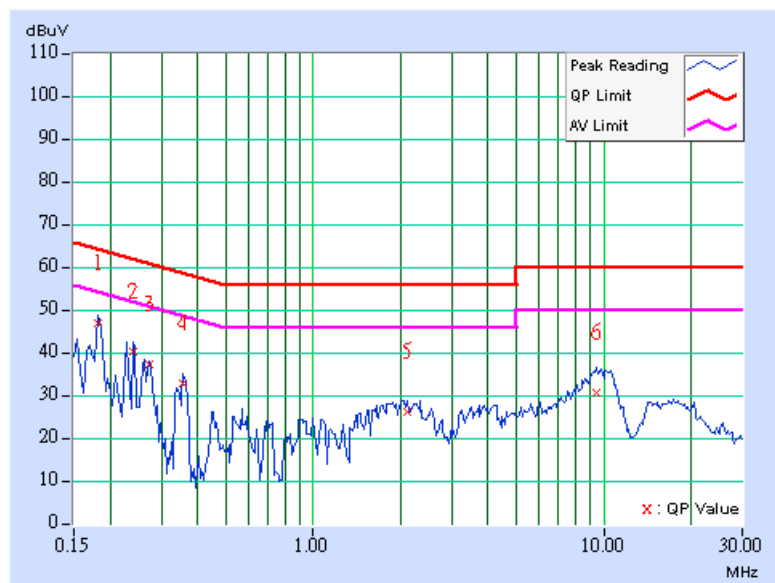
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	77	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	PHASE	Netural (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 67% RH, 991 hPa	TESTED BY	Jamison Chan

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	0.181	0.10	46.40	-	46.50	-	64.43	54.43	-17.93	-
2	0.240	0.10	39.96	-	40.06	-	62.10	52.10	-22.04	-
3	0.271	0.10	36.90	-	37.00	-	61.08	51.08	-24.08	-
4	0.357	0.10	32.40	-	32.50	-	58.80	48.80	-26.30	-
5	2.105	0.21	25.81	-	26.02	-	56.00	46.00	-29.98	-
6	9.438	0.48	30.29	-	30.77	-	60.00	50.00	-29.23	-

- 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.



.2 RADIATED EMISSION MEASUREMENT

.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.

.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Preamplifier	8447D	2432A03504	Jun. 3, 2005
* HP Preamplifier	8449B	3008A01924	Sep. 19, 2005
* HP Preamplifier	8449B	3008A01638	Sep. 30, 2005
SCHWARZBECK Tunable Dipole Antenna	VHA 9103	NA	Nov. 15, 2004
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 12, 2005
Schwarzbeck Antenna	VULB9168	137	Feb. 27, 2005
* EMCO Horn Antenna	3115	6714	Nov. 26, 2004
* EMCO Horn Antenna	3115	9312-4192	Feb. 28, 2005
ADT. Turn Table	TT100	0306	NA
ADT. Tower	AT100	0306	NA
Software	ADT_Radiated_V 6	NA	NA
TIMES RF cable	LL142	CABLE-CH6-01	Apr. 16, 2005

- 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 Chamber No. 6.
 5. The Industry Canada Reference No. IC 3789-6.

.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

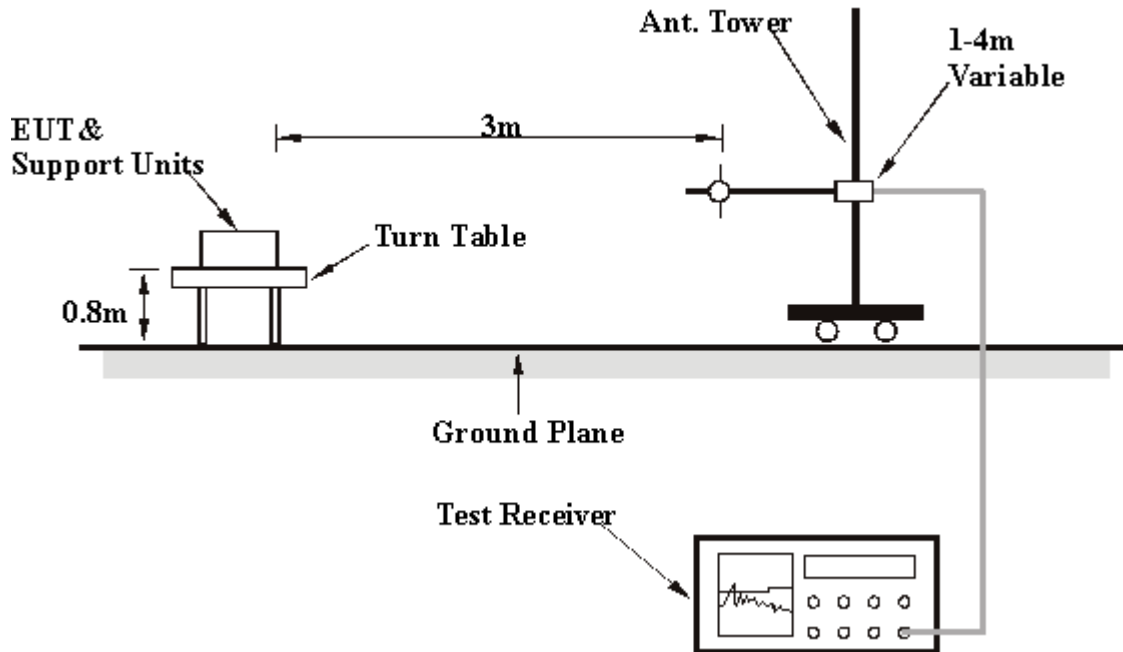
NOTE:

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

.2.4 DEVIATION FROM TEST STANDARD

No deviation

.2.5 TEST SETUP



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

.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

.2.7 TEST RESULTS

EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	77	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120 Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27 deg. C, 79% RH, 991 hPa	TESTED BY	Jamison Chan

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	123.31	33.78 QP	43.50	-9.72	3.00 H	133	21.91	11.87
2	199.12	31.73 QP	43.50	-11.77	1.00 H	226	21.06	10.67
3	399.34	40.43 QP	46.00	-5.57	1.00 H	274	22.88	17.55
4	665.65	37.20 QP	46.00	-8.80	1.25 H	181	14.66	22.53
5	776.45	34.30 QP	46.00	-11.70	1.00 H	310	9.48	24.82
6	809.50	36.12 QP	46.00	-9.88	1.00 H	349	11.12	25.00

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

EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	77	FREQUENCY RANGE	Below 1000 MHz
INPUT POWER (SYSTEM)	120 Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27 deg. C, 79% RH, 991 hPa	TESTED BY	Jamison Chan

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	35.83	27.75 QP	40.00	-12.25	1.00 V	145	14.66	13.09
2	117.47	30.44 QP	43.50	-13.06	1.00 V	316	19.15	11.29
3	399.34	36.76 QP	46.00	-9.24	1.00 V	238	19.21	17.55
4	455.71	33.15 QP	46.00	-12.85	1.00 V	178	14.44	18.71
5	665.65	39.69 QP	46.00	-6.31	1.00 V	142	17.15	22.53
6	931.96	36.44 QP	46.00	-9.56	1.00 V	127	10.10	26.33

REMARKS:

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

EUT	Wireless USB Dongle	MODEL	SK-8812
CHANNEL	0	FREQUENCY RANGE	1~20 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 69% RH, 991 hPa	TESTED BY	Jamison Chan

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	31.40 PK	74.00	-42.60	1.00 H	167	-1.41	32.81
1	2390.00	30.08 AV	54.00	-23.92	1.00 H	167	-2.73	32.81
2	*2402.00	90.55 PK			1.00 H	167	57.66	32.89
2	*2402.00	89.23 AV			1.00 H	167	56.34	32.89
3	4804.00	55.65 PK	74.00	-18.35	1.00 H	210	16.79	38.86
3	4804.00	43.61 AV	54.00	-10.39	1.00 H	210	4.75	38.86

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	32.85 PK	74.00	-41.15	1.00 V	4	0.04	32.81
1	2390.00	31.19 AV	54.00	-22.81	1.00 V	4	-1.62	32.81
2	*2402.00	92.00 PK			1.00 V	4	59.11	32.89
2	*2402.00	90.34 AV			1.00 V	4	57.45	32.89
3	4804.00	52.72 PK	74.00	-21.28	1.11 V	210	13.86	38.86
3	4804.00	40.64 AV	54.00	-13.36	1.11 V	210	1.78	38.86

- 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 USB Dongle	MODEL	SK-8812
CHANNEL	39	FREQUENCY RANGE	1~20 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 69% RH, 991 hPa	TESTED BY	Jamison Chan

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	*2441.00	92.10 PK			1.25 H	360	59.01	33.09
1	*2441.00	90.95 AV			1.25 H	360	57.86	33.09
2	4882.00	51.60 PK	74.00	-22.40	1.13 H	180	12.70	38.89
2	4882.00	40.03 AV	54.00	-13.97	1.13 H	180	1.13	38.89

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	*2441.00	91.81 PK			1.00 V	360	58.72	33.09
1	*2441.00	90.34 AV			1.00 V	360	57.25	33.09
2	4882.00	51.83 PK	74.00	-22.17	1.00 V	186	12.93	38.89
2	4882.00	40.57 AV	54.00	-13.43	1.00 V	186	1.67	38.89

- 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 USB Dongle	MODEL	SK-8812
CHANNEL	77	FREQUENCY RANGE	1~20 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 69% RH, 991 hPa	TESTED BY	Jamison Chan

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	*2479.00	93.08 PK			1.20 H	168	59.79	33.29
1	*2479.00	91.78 AV			1.20 H	168	58.49	33.29
2	2483.50	44.58 PK	74.00	-29.42	1.20 H	168	11.27	33.31
2	2483.50	43.28 AV	54.00	-10.72	1.20 H	168	9.97	33.31
3	4958.00	52.10 PK	74.00	-21.90	1.14 H	194	13.09	39.02
3	4958.00	41.80 AV	54.00	-12.20	1.14 H	194	2.79	39.02

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	*2479.00	92.50 PK			1.25 V	9	59.21	33.29
1	*2479.00	91.20 AV			1.25 V	9	57.91	33.29
2	2483.50	44.00 PK	74.00	-30.00	1.25 V	9	10.69	33.31
3	4958.00	50.94 PK	74.00	-23.06	1.23 V	222	11.93	39.02

- 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.

.3 6dB BANDWIDTH MEASUREMENT

.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSP 40	100036	Mar 18. 2005

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

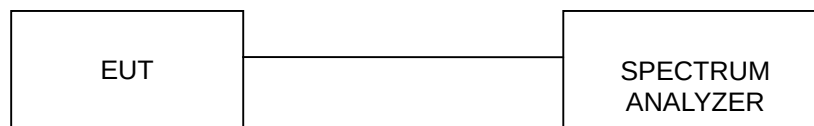
.3.3 TEST PROCEDURE

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

.3.4 DEVIATION FROM TEST STANDARD

No deviation

.3.5 TEST SETUP



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

.3.6 EUT OPERATING CONDITIONS

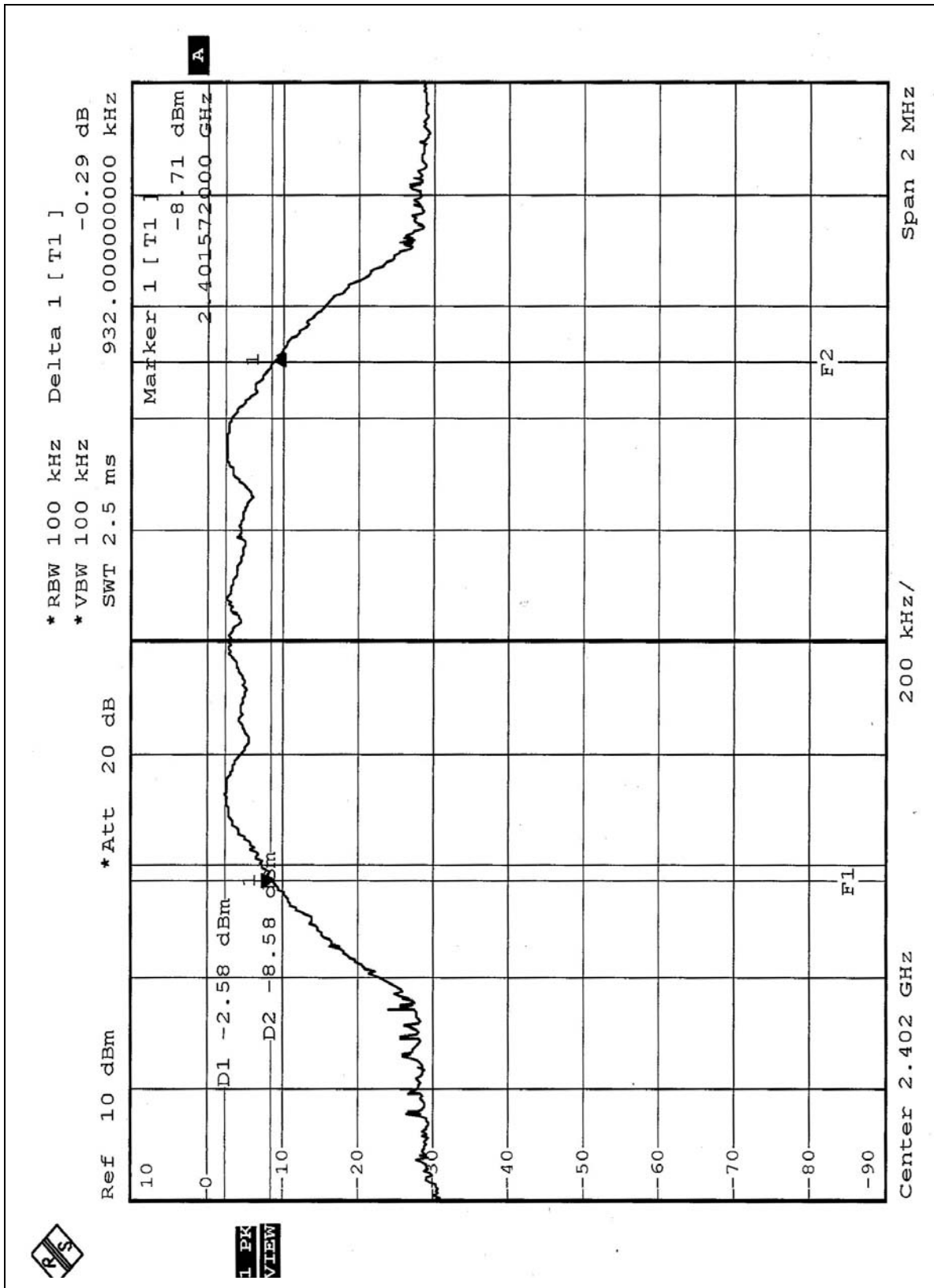
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

.3.7 TEST RESULTS

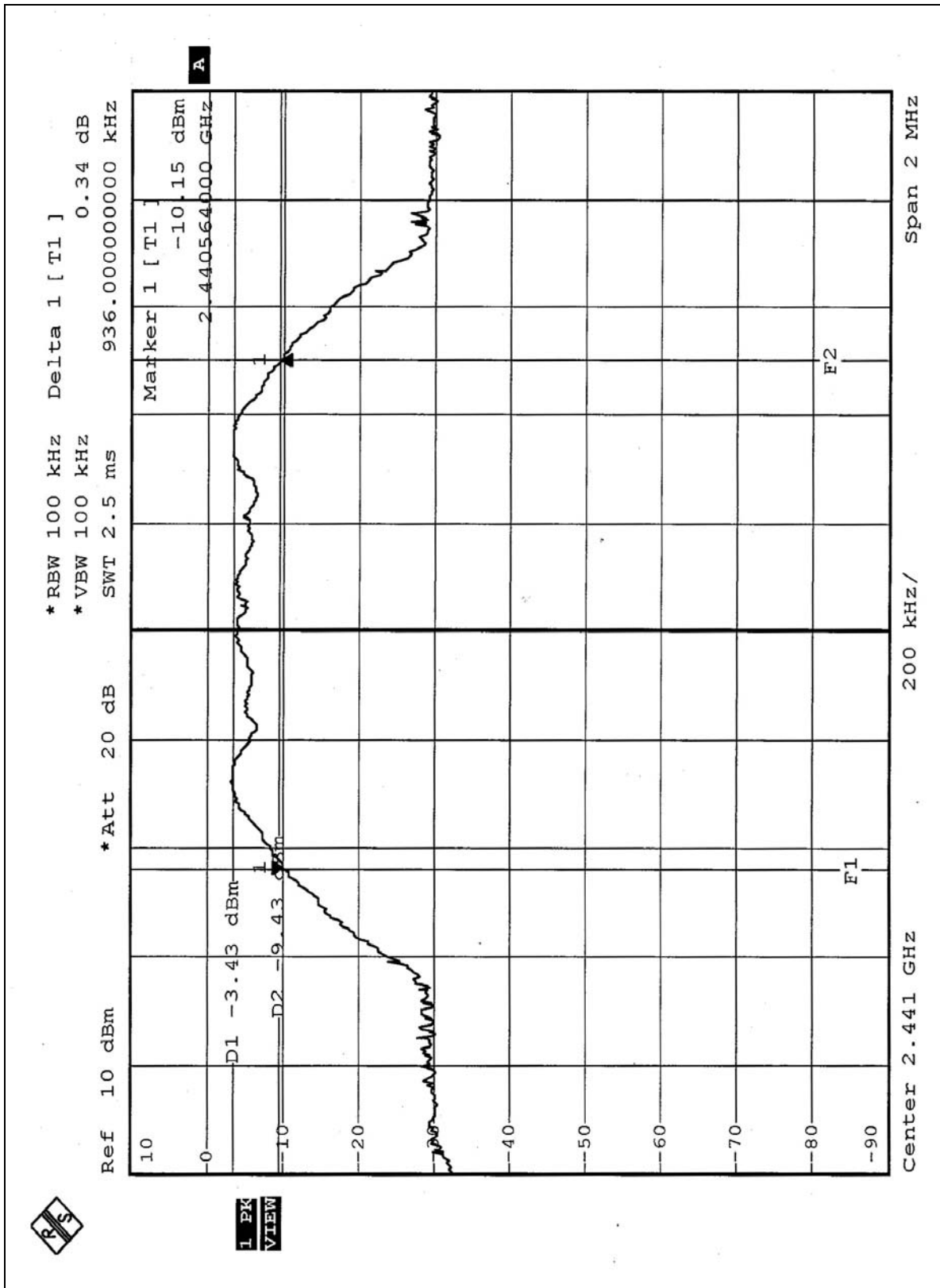
EUT	Wireless USB Dongle	MODEL	SK-8812
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa
TESTED BY	Jamison Chan		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
0	2402	0.932	0.5	PASS
39	2441	0.936	0.5	PASS
77	2479	0.904	0.5	PASS

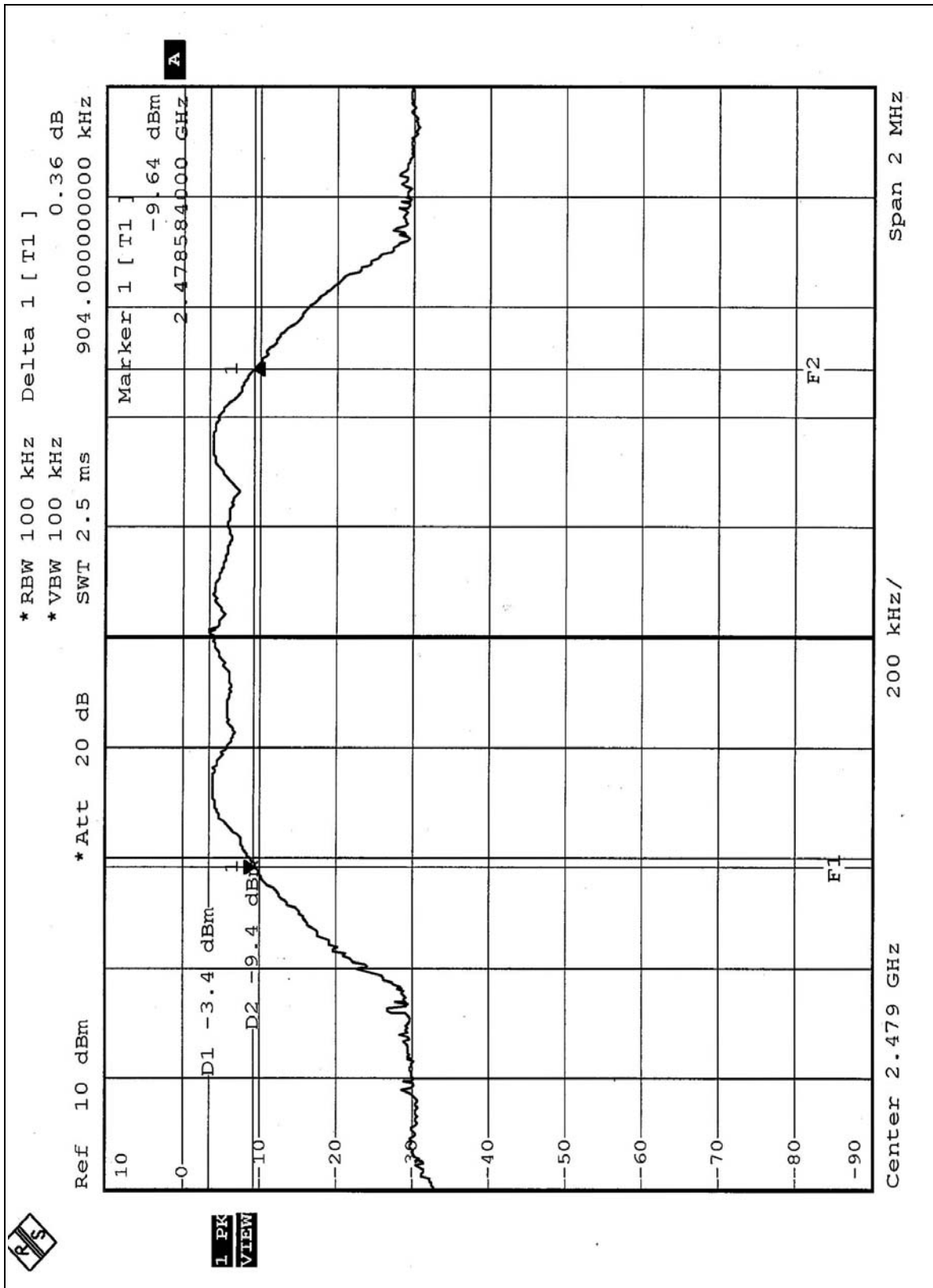
CH0



CH39



CH77



.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 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Mar 18. 2005
ROHDE & SCHWARZ Signal Generator	SMR40	100231	Mar. 17. 2005
Tektronix Oscilloscope	TDS1012	C019167	Feb. 01. 2005
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 peak 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 peak 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

4.4.8 TEST RESULTS

EUT	Wireless USB Dongle	MODEL	SK-8812
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa
TESTED BY	Jamison Chan		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	2402	1.327	1.23	30	PASS
39	2441	1.130	0.53	30	PASS
77	2479	1	0.00	30	PASS

.5 POWER SPECTRAL DENSITY MEASUREMENT

.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSP 40	100036	Mar 18. 2005

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

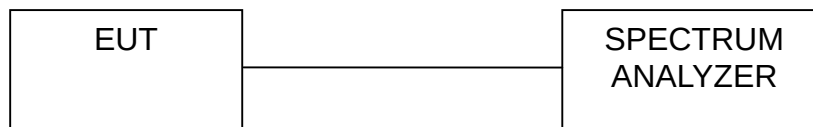
.5.3 TEST PROCEDURE

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

.5.4 DEVIATION FROM TEST STANDARD

No deviation

.5.5 TEST SETUP



.5.6 EUT OPERATING CONDITIONS

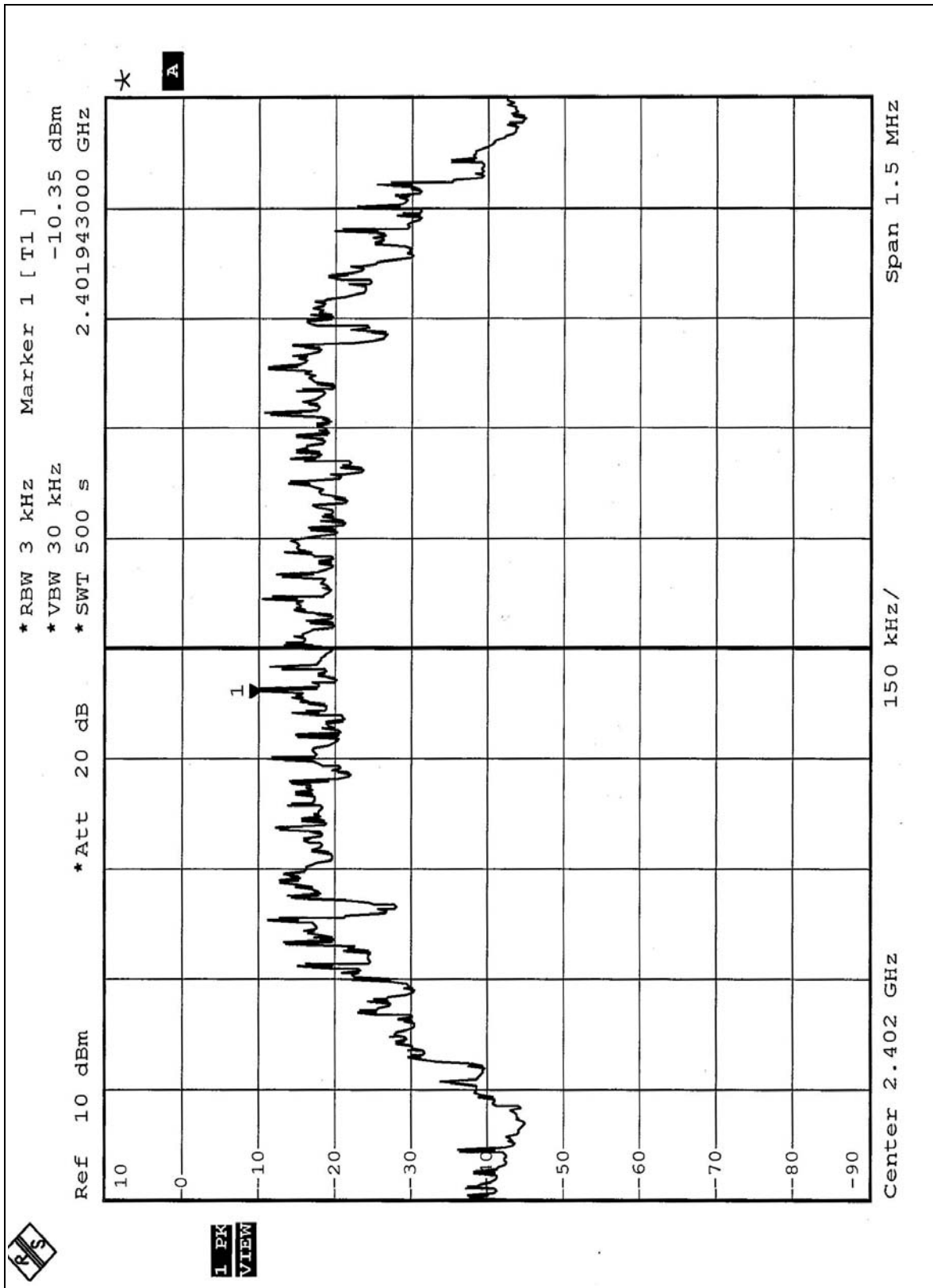
Same as 4.3.6

.5.7 TEST RESULTS

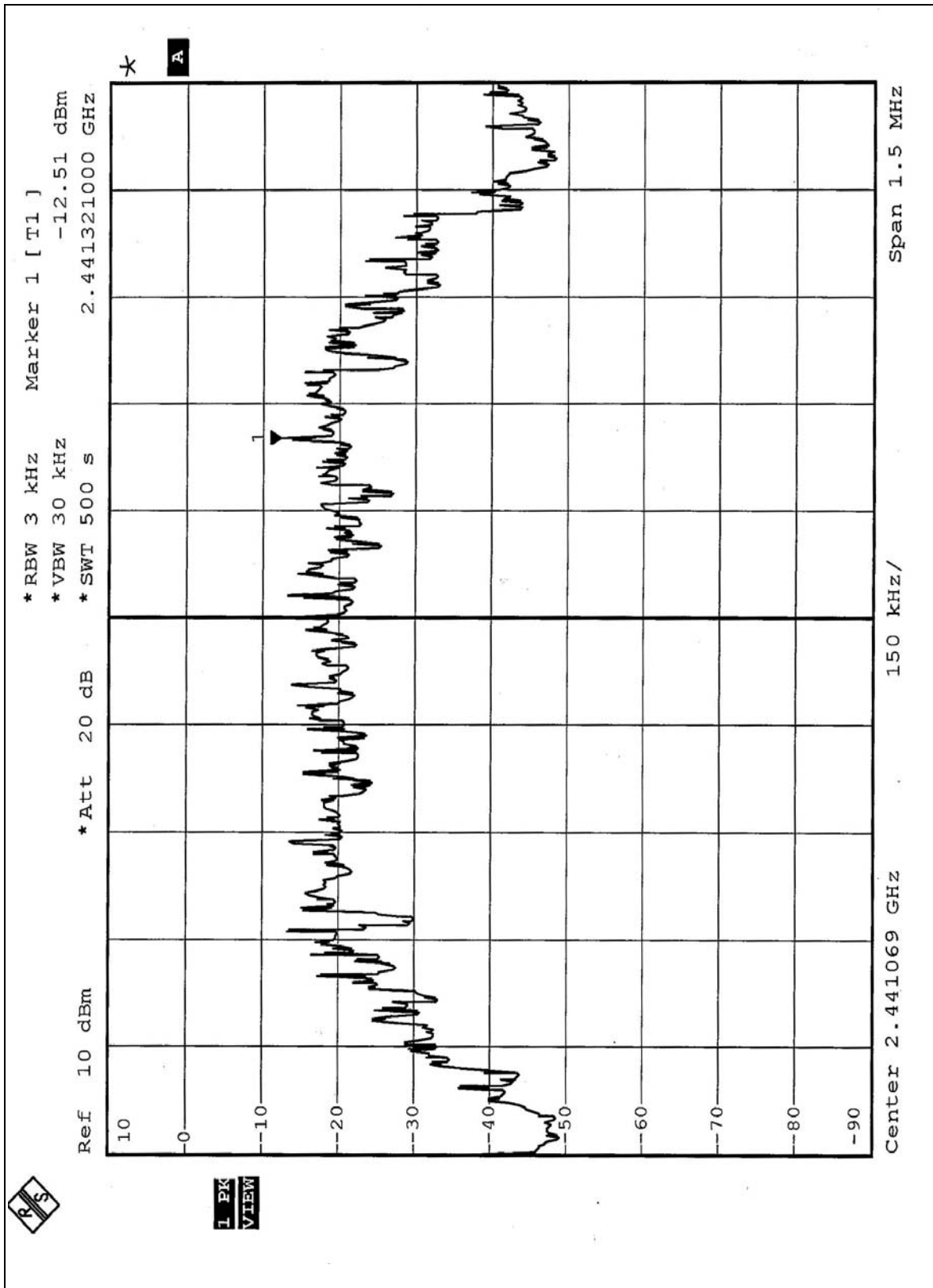
EUT	Wireless USB Dongle	MODEL	SK-8812
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa
TESTED BY	Jamison Chan		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
0	2402	-10.35	8	PASS
39	2441	-12.51	8	PASS
77	2479	-13.60	8	PASS

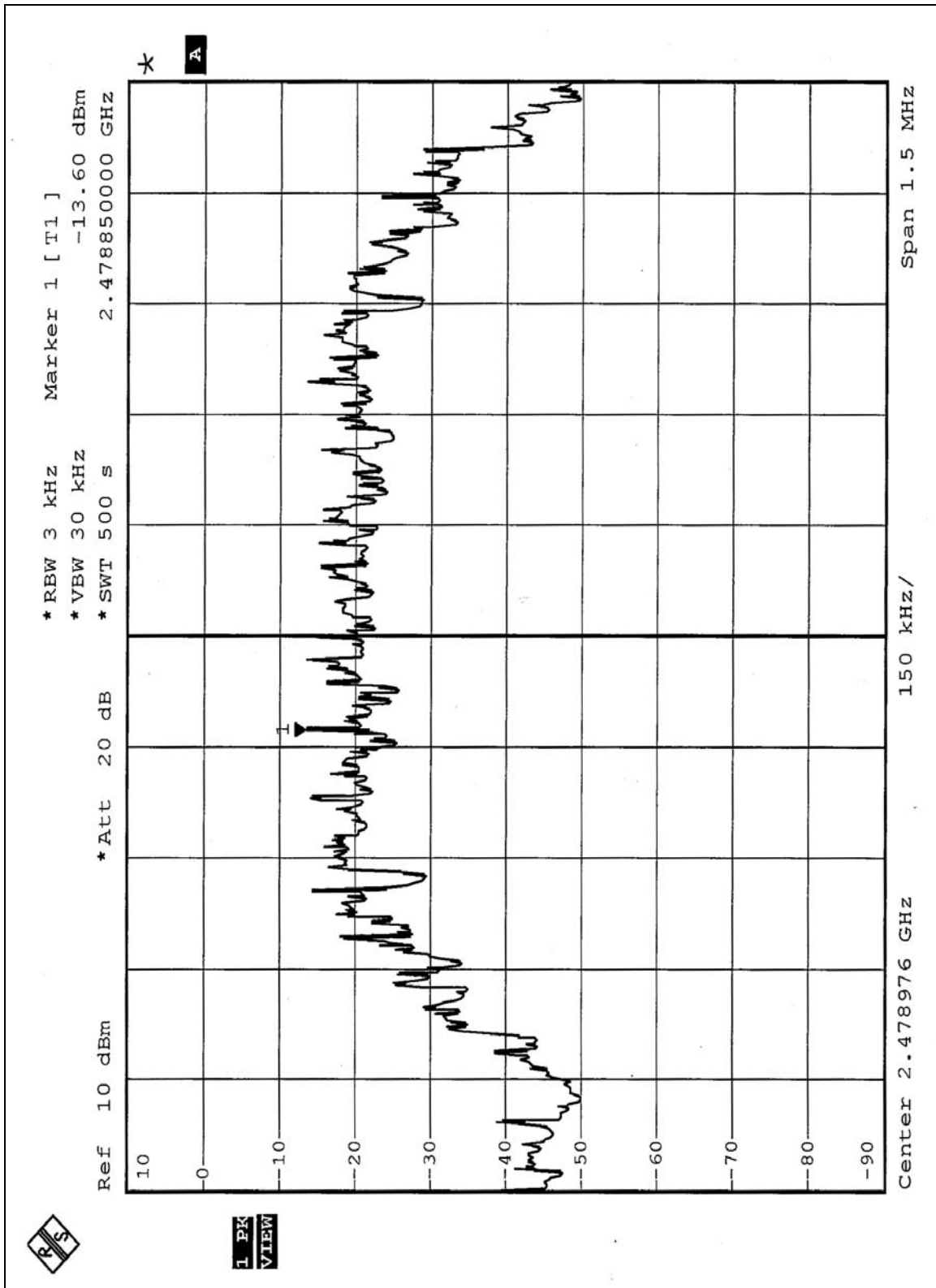
CH0



CH39



CH77



.6 BAND EDGES MEASUREMENT

.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

.6.3 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 1MHz and 1kHz with suitable frequency span including 1MHz and 1kHz bandwidth from band edge. The band edges was measured and recorded.

.6.4 DEVIATION FROM TEST STANDARD

No deviation

.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

.6.6 TEST RESULTS

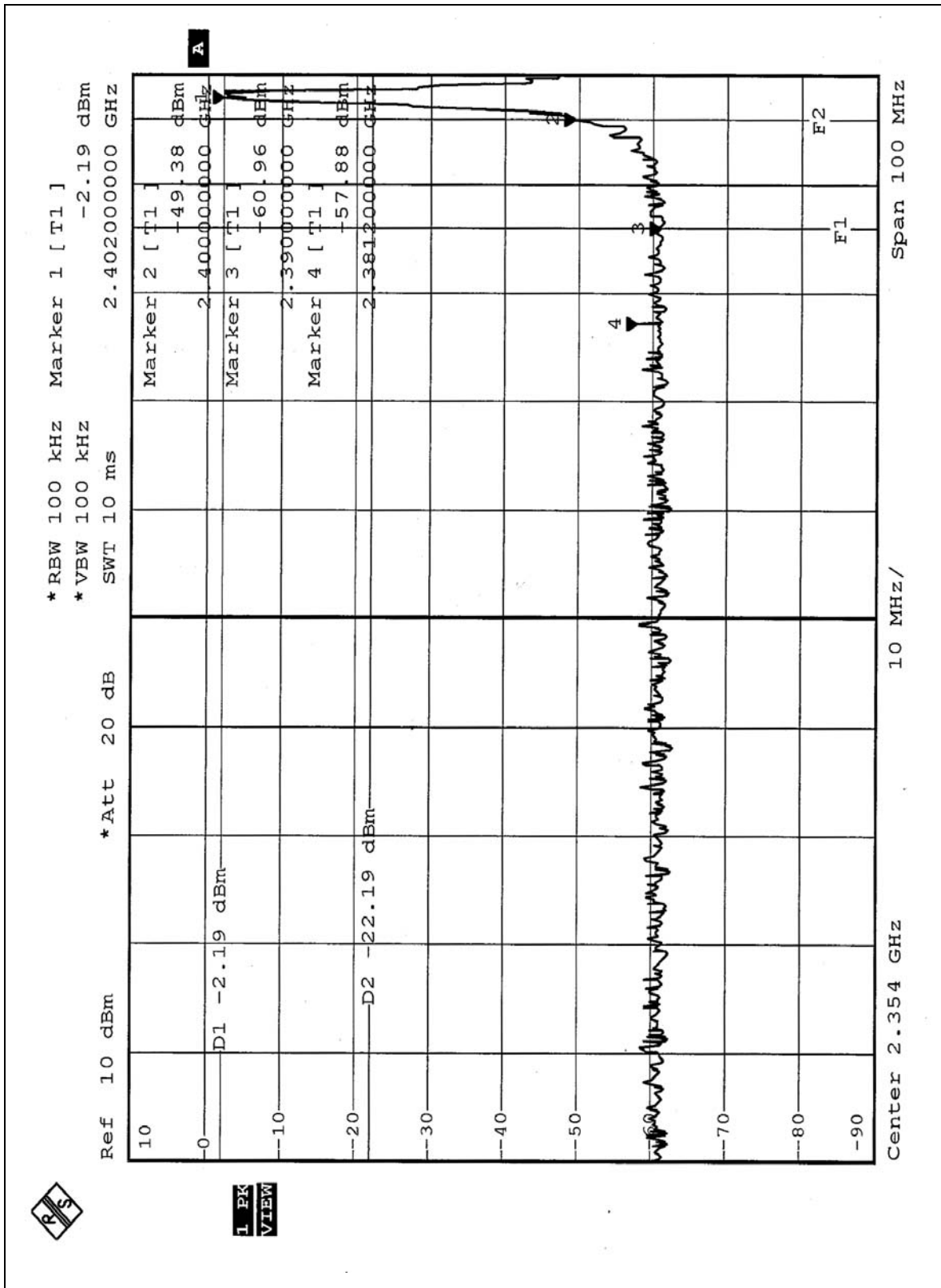
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

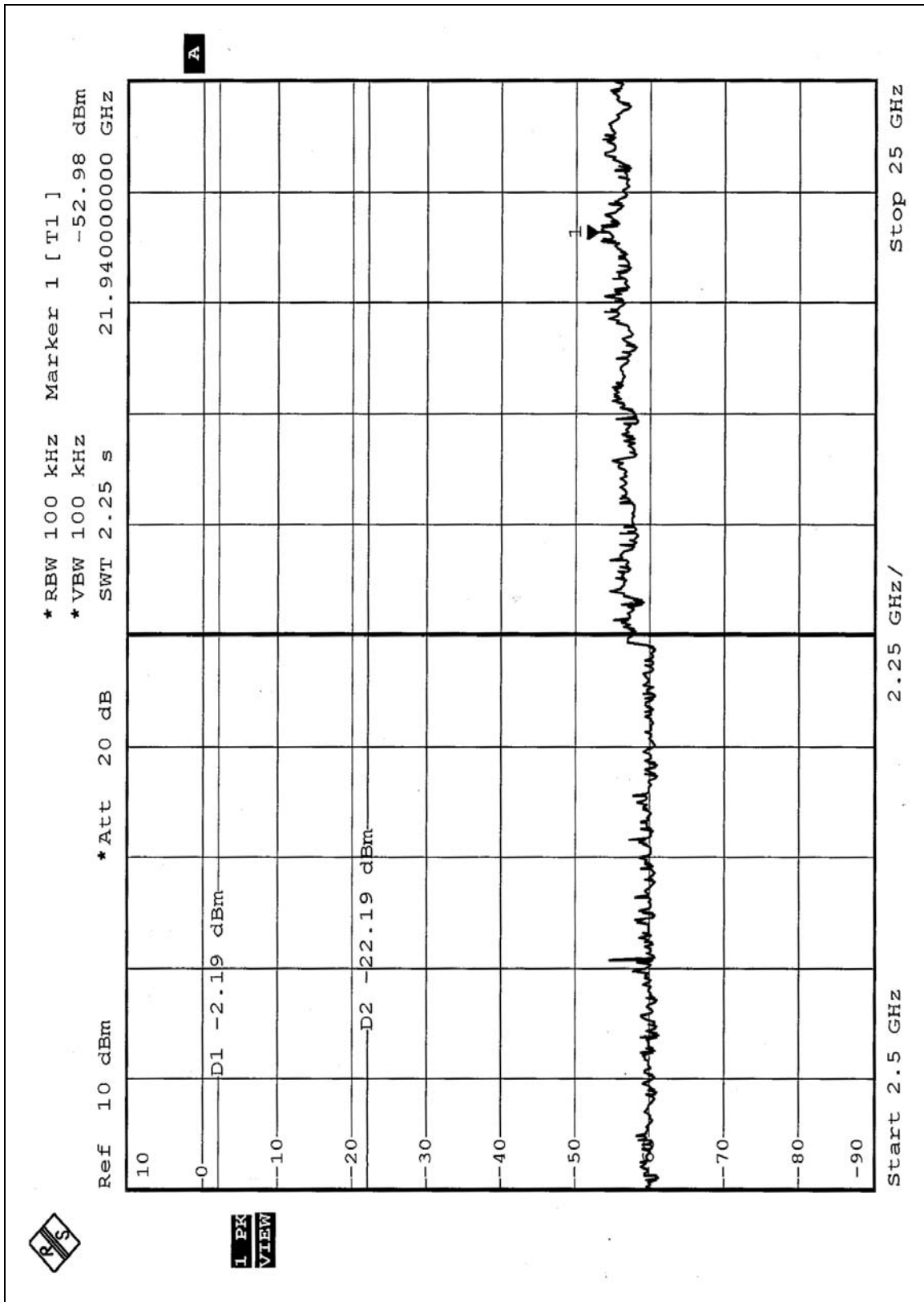
.6.7 TEST RESULTS(A)

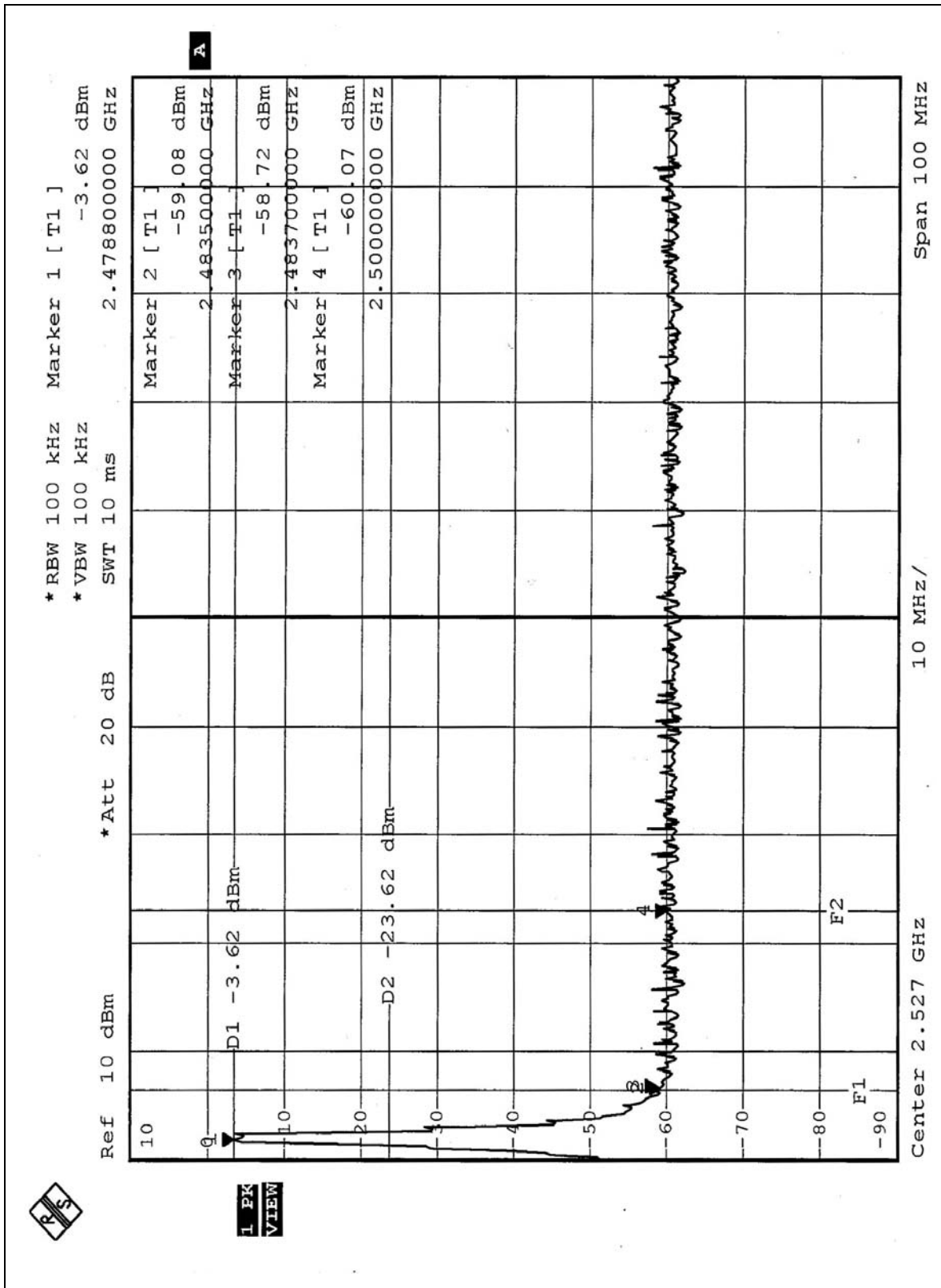
NOTE:

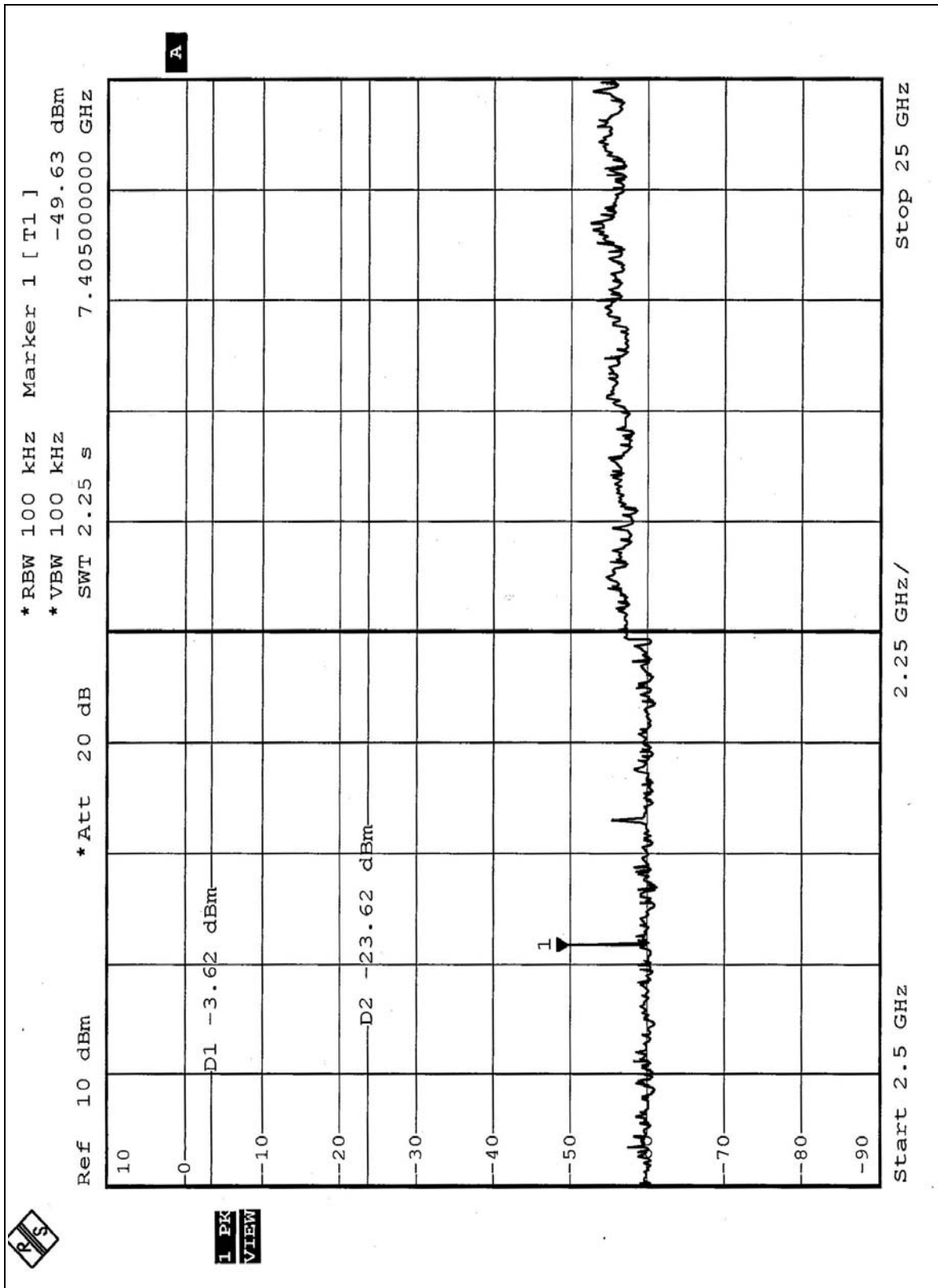
The band edge emission plot on the following 1~2 pages show 55.69dB delta between carrier maximum power and local maximum emission in restrict band (2.3812GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.2.8 is 90.34dBuV/m, so the maximum field strength in restrict band is $90.34 - 55.69 = 34.65$ dBuV/m which is under 54dBuV/m limit.

The band edge emission plot of on the following 3~4 pages show 55.10dB delta between carrier maximum power and local maximum emission in restrict band (2.4837GHz). The emission of carrier strength list in the test result of channel 77 at the item 4.2.8 is 91.78dBuV/m, so the maximum field strength in restrict band is $91.78 - 55.10 = 36.68$ dBuV/m which is under 54dBuV/m limit.











.7 ANTENNA REQUIREMENT

.7.1 STANDARD APPLICABLE

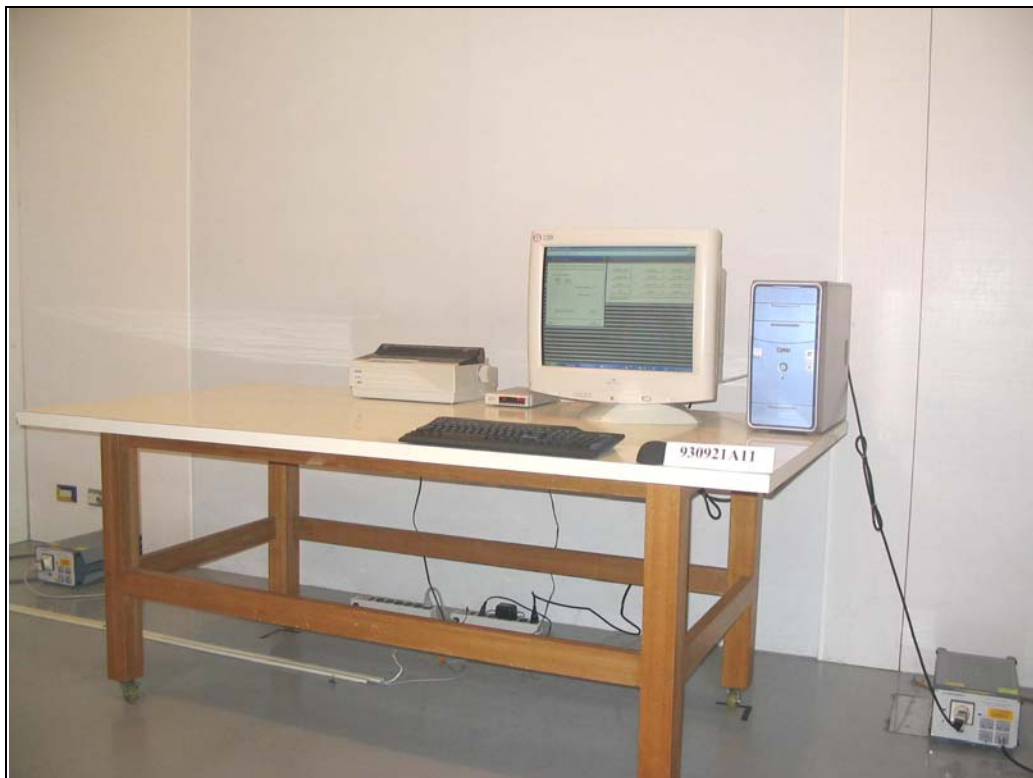
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

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.

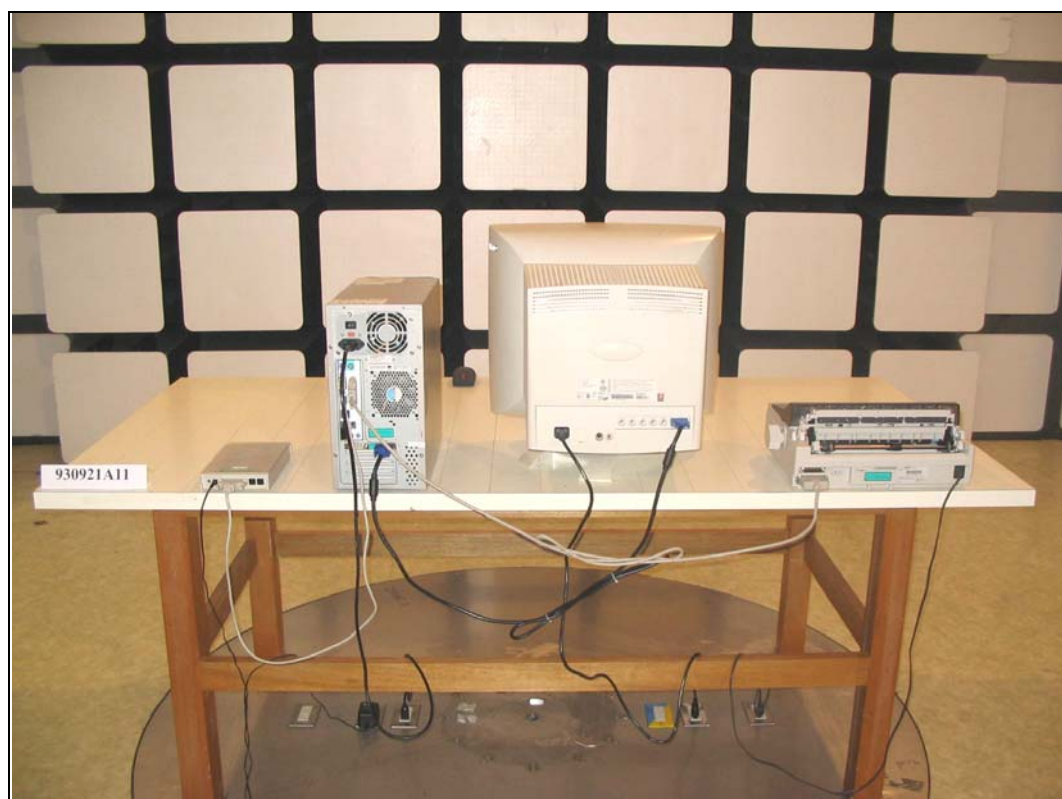
.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Wiggle antenna. And the maximum Gain of this antenna is 1.15dBi.

a. PHOTOGRAPHS OF THE TEST CONFIGURATION
CONDUCTED EMISSION TEST



RADIATED EMISSION TEST



a. INFORMATION ON THE TESTING LABORATORIES

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

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

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

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