



# 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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Taipei Hsien, Taiwan, R.O.C.

**ISSUED BY:** Advance Data Technology Corporation

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**TEST LOCATION:** No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou  
Hsiang 244, Taipei Hsien, Taiwan, R.O.C.

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No. 2177-01



0528  
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:

<b>APPLIED STANDARD: FCC Part 15, Subpart C</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>REMARK</b>
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:

<b>Measurement</b>	<b>Uncertainty</b>
Conducted emissions	2.44 dB
Radiated emissions	3.86 dB

## a. GENERAL INFORMATION

### .1 GENERAL DESCRIPTION OF EUT

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

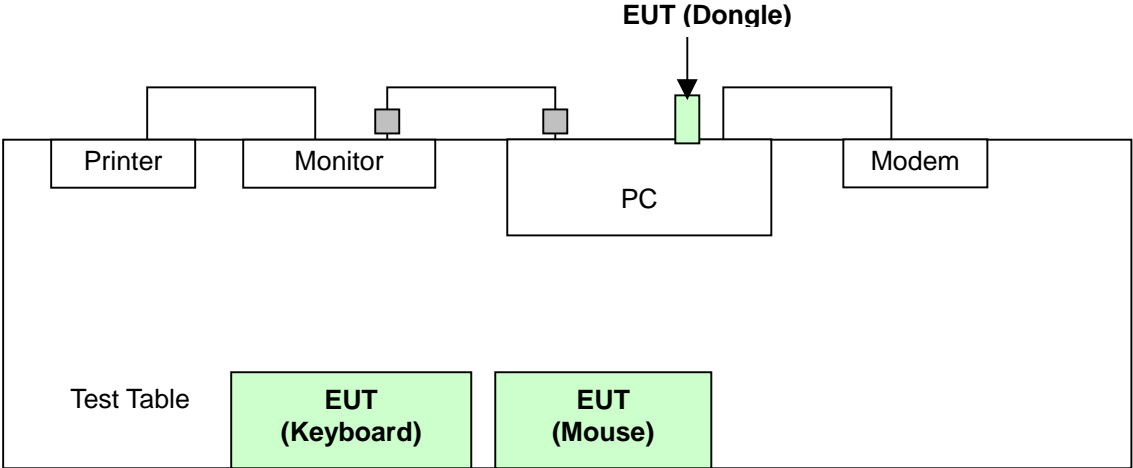
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	LEO	Persica 8620G	1A36I98A000204	FCC DoC Approved
2	MONITOR	HP	D2842A	KR93473113	BEJCB910
3	PRINTER	EPSON	LQ-300+	DCGY038846	FCC DoC Approved
4	MODEM	ACEEX	1414	0206026757	IFAXDM1414

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 (dB $\mu$ 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.

#### .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.



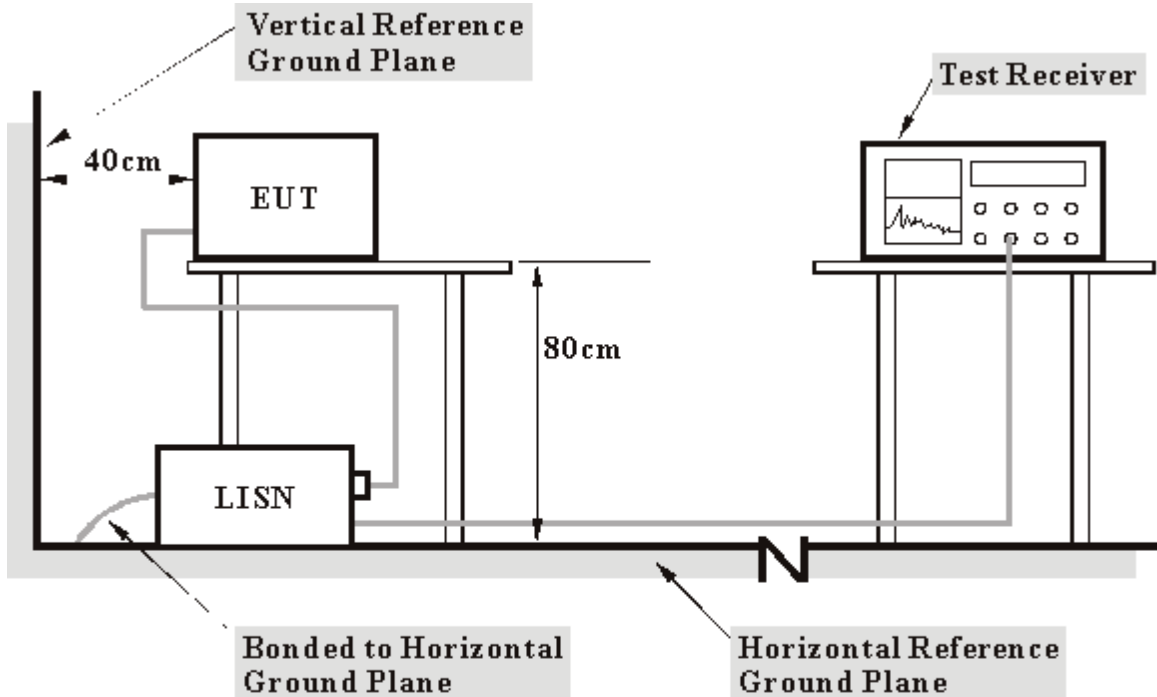
### **.1.3 TEST PROCEDURES**

- 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.

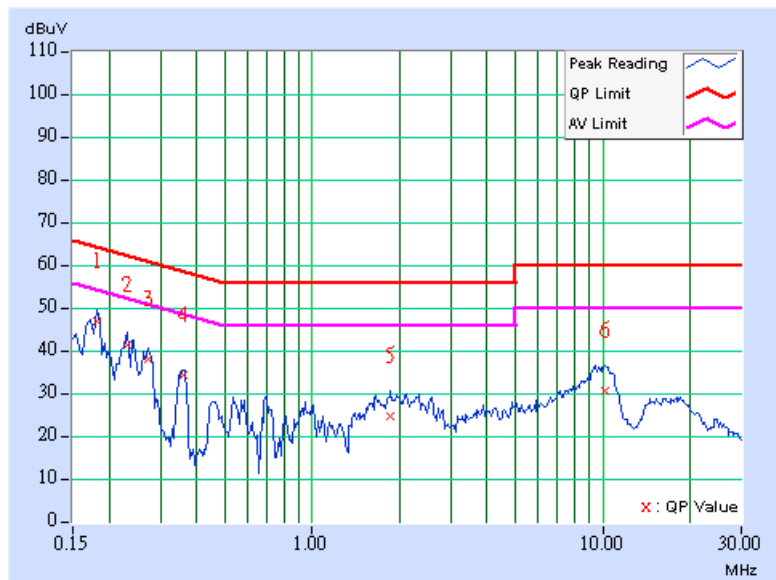


### .1.1 TEST RESULTS

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

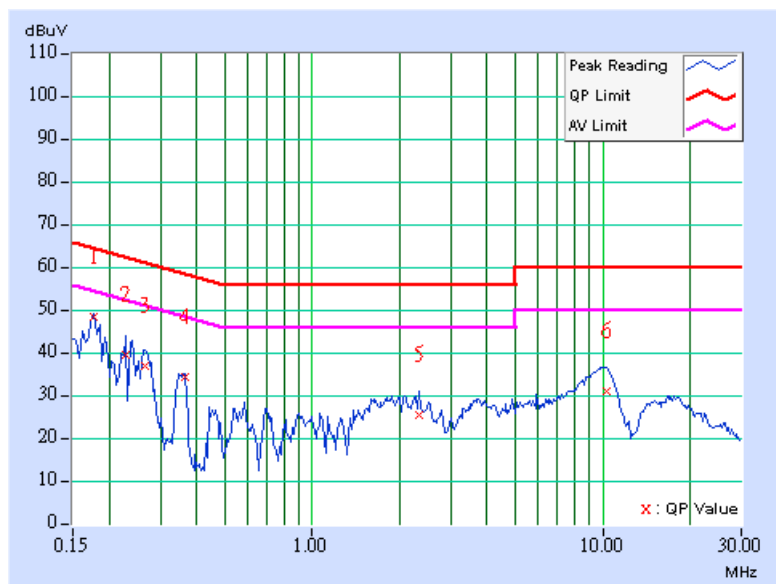




<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>CHANNEL</b>	0	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 67% RH, 991 hPa	<b>TESTED BY</b>	Jamison Chan

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.

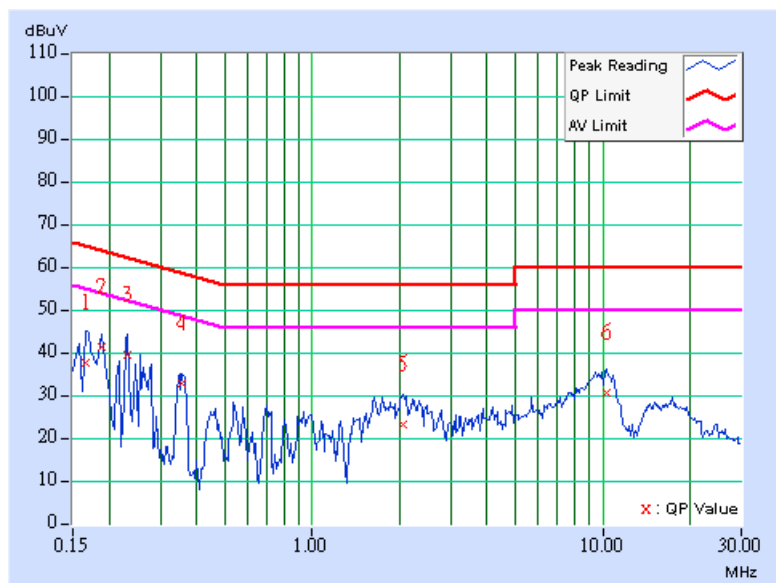




<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>CHANNEL</b>	39	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 67% RH, 991 hPa	<b>TESTED BY</b>	Jamison Chan

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	0.166	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.



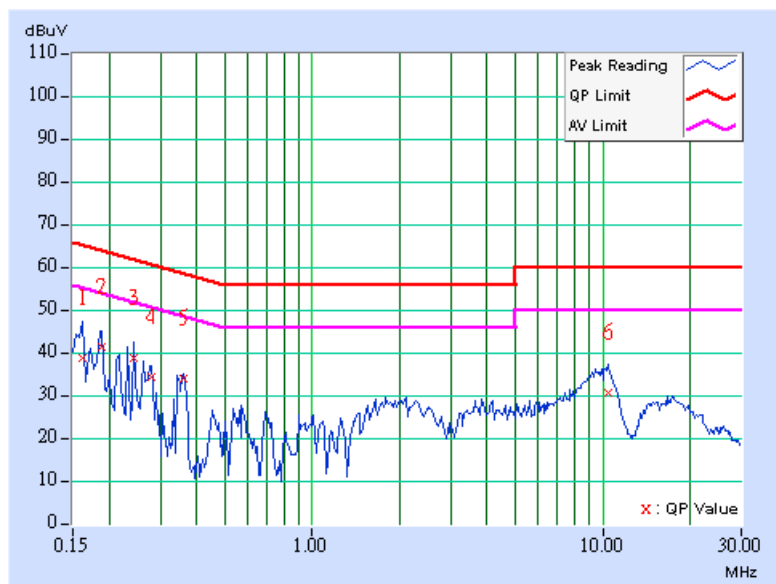




<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>CHANNEL</b>	39	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 67% RH, 991 hPa	<b>TESTED BY</b>	Jamison Chan

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.

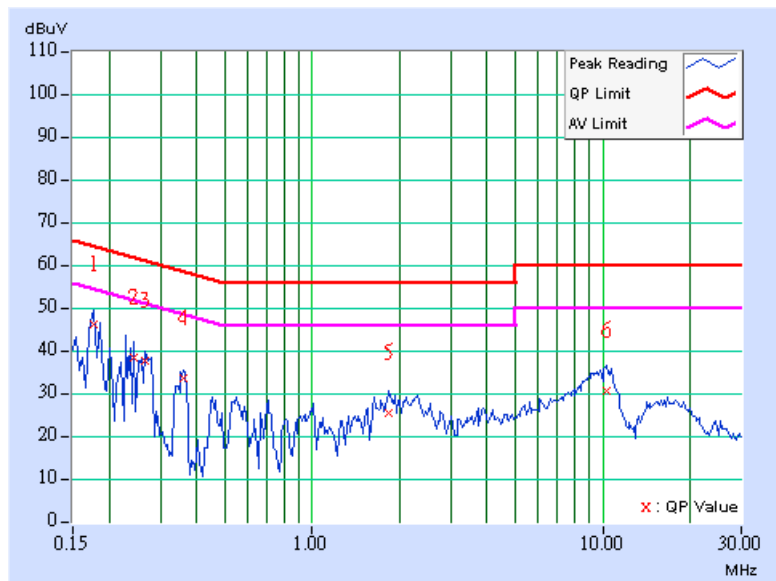




<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>CHANNEL</b>	77	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 67% RH, 991 hPa	<b>TESTED BY</b>	Jamison Chan

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.

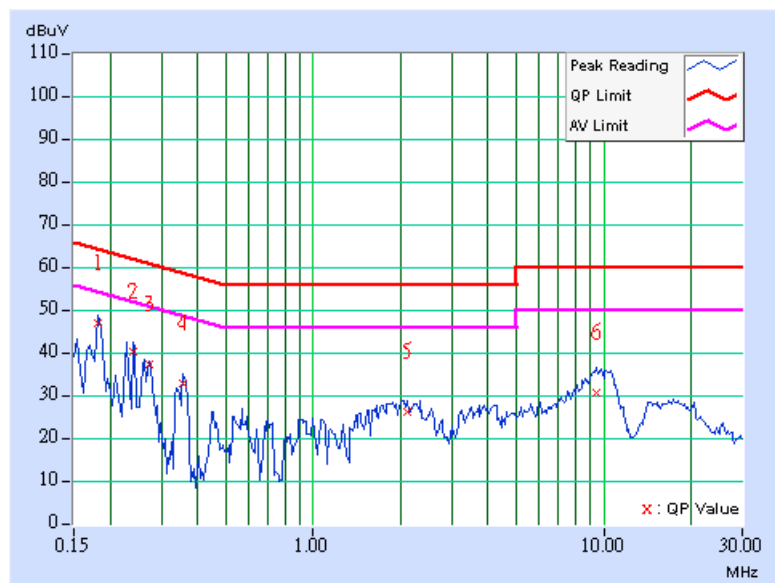




<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>CHANNEL</b>	77	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60 Hz	<b>PHASE</b>	Netural (N)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 67% RH, 991 hPa	<b>TESTED BY</b>	Jamison Chan

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	46.40	-	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.

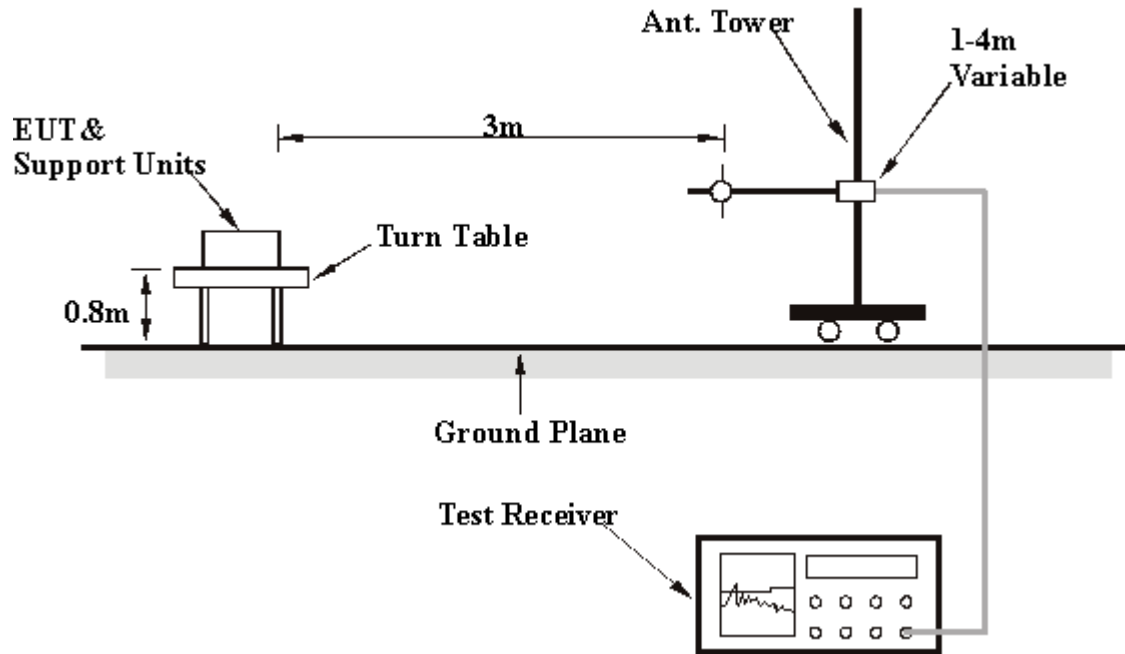
### **NOTE:**

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

<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>CHANNEL</b>	77	<b>FREQUENCY RANGE</b>	Below 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	27 deg. C, 79% RH, 991 hPa	<b>TESTED BY</b>	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
<b>3</b>	<b>399.34</b>	<b>40.43 QP</b>	<b>46.00</b>	<b>-5.57</b>	<b>1.00 H</b>	<b>274</b>	<b>22.88</b>	<b>17.55</b>
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.





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



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



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



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

<b>Description &amp; Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibrated Until</b>
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.

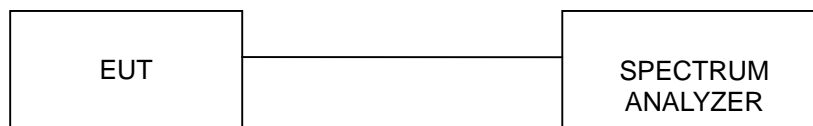
### **.3.3 TEST PROCEDURE**

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.



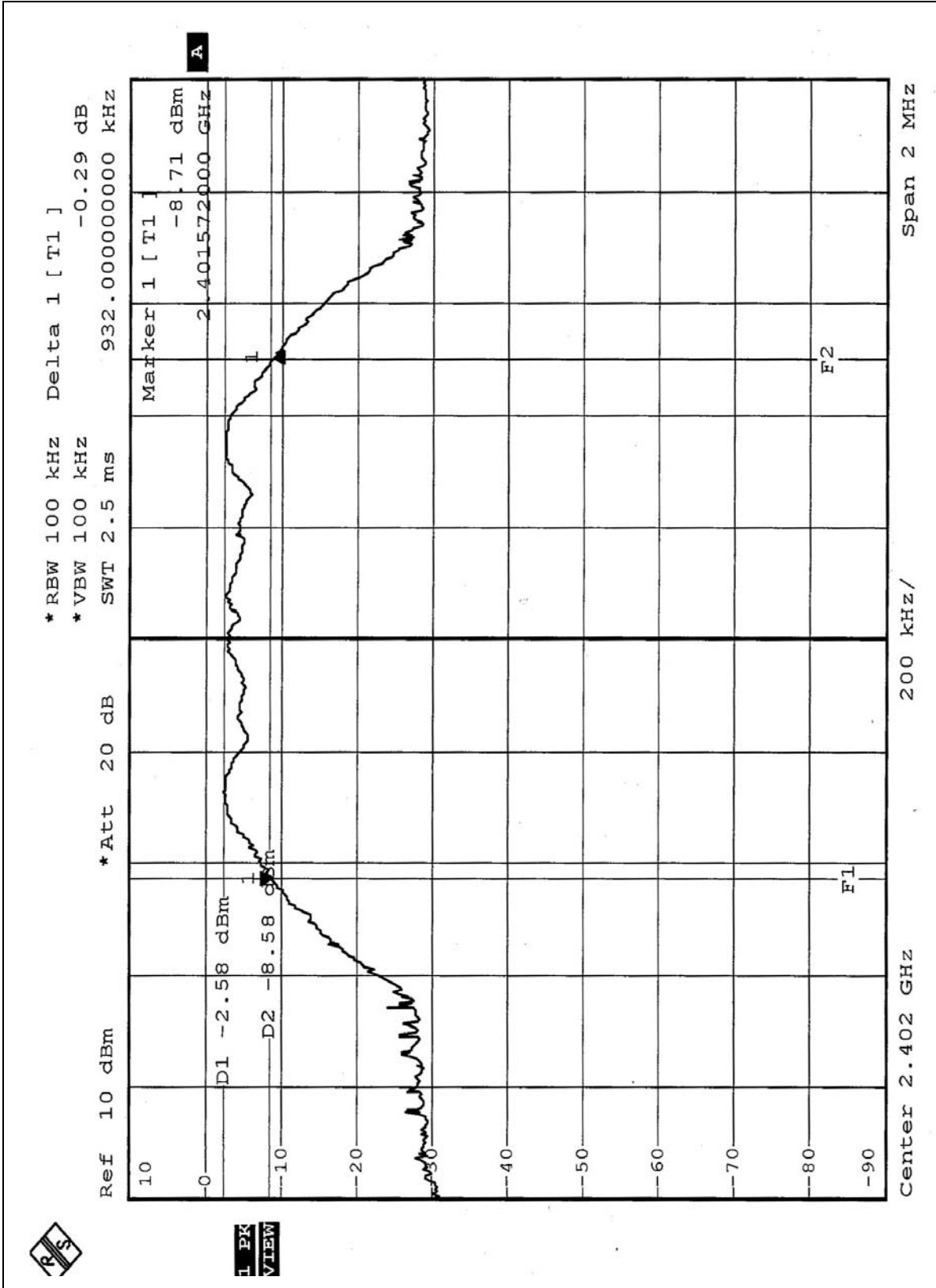
### .3.7 TEST RESULTS

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

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



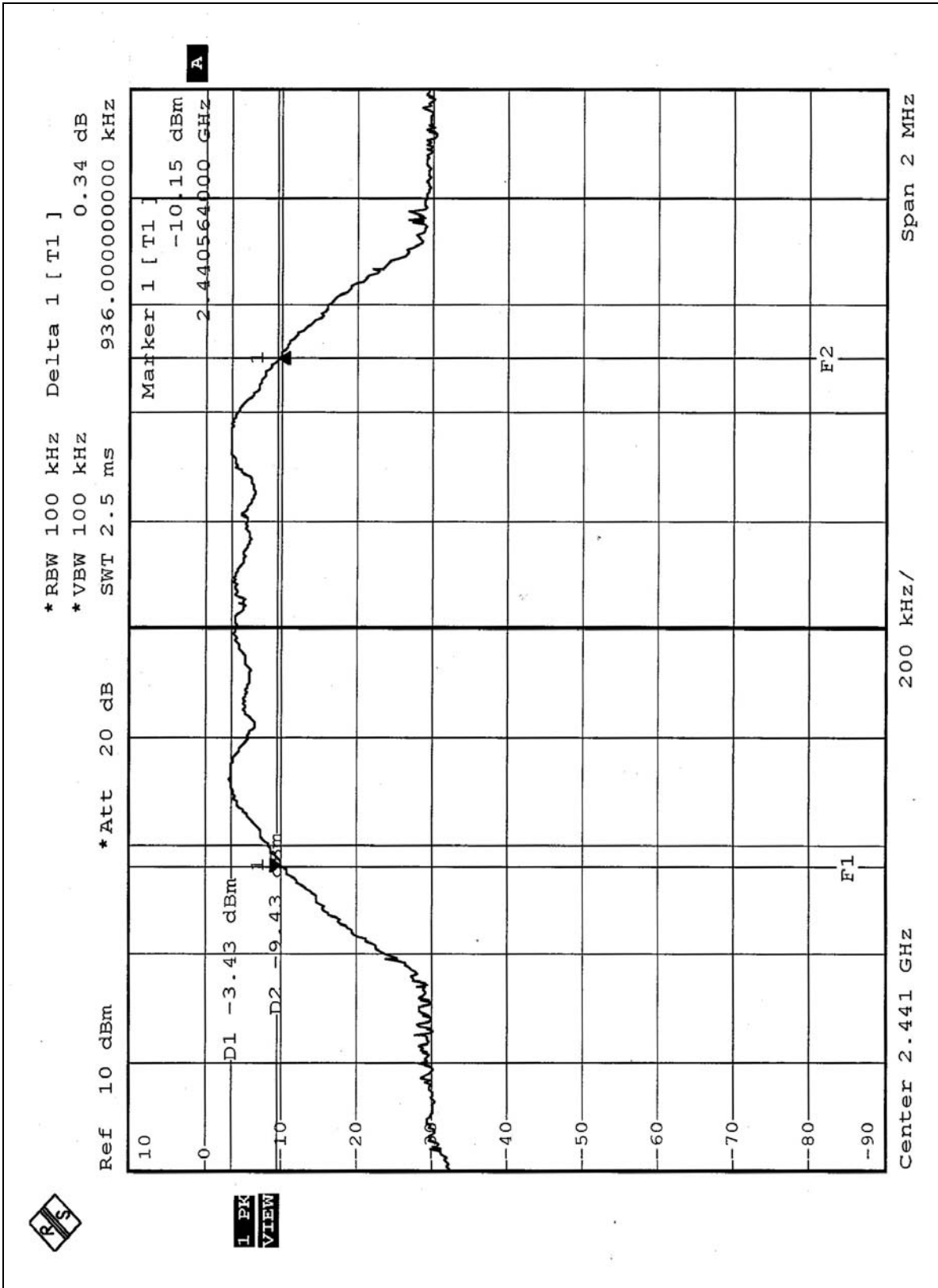
CH0





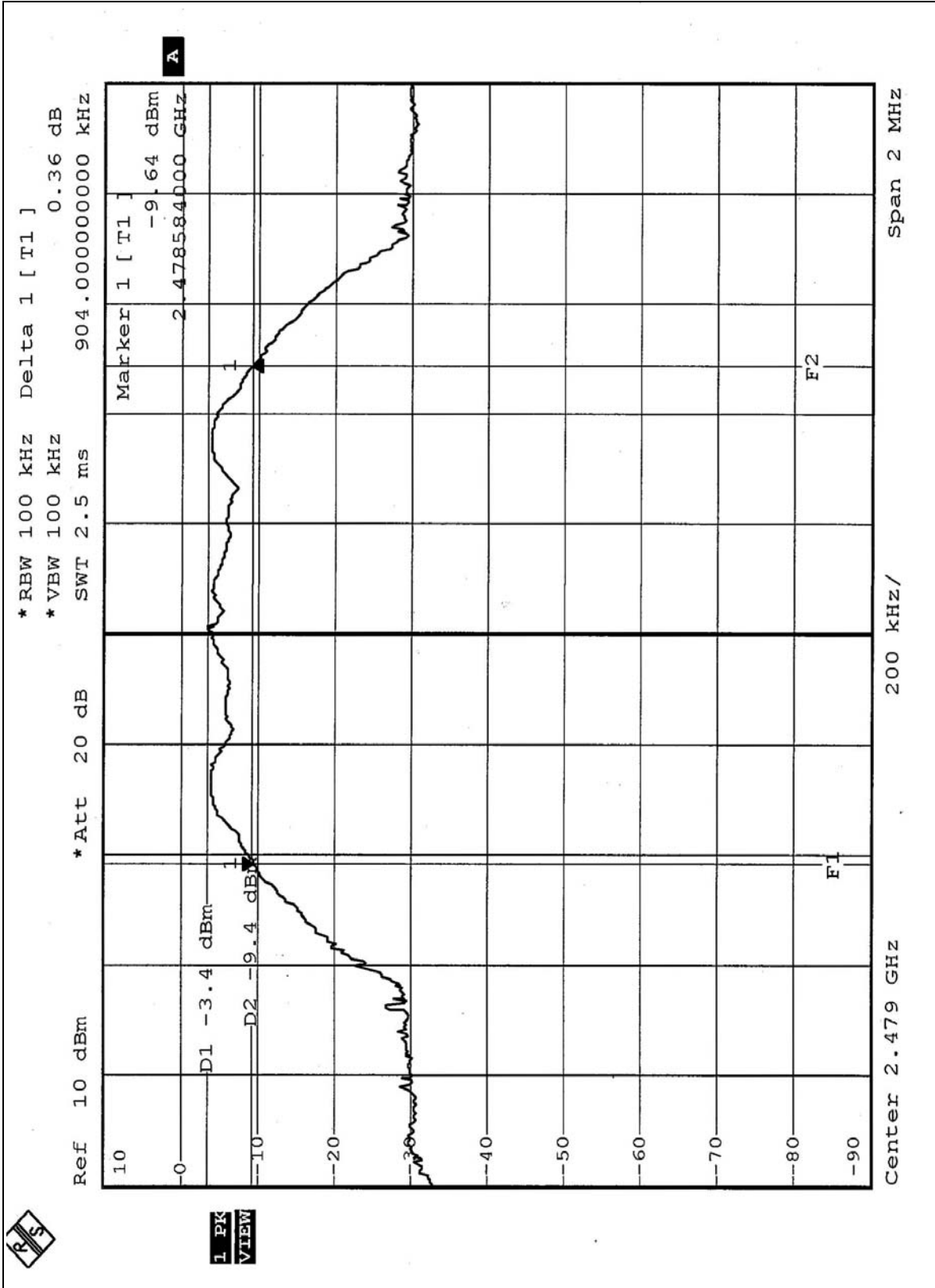


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## .4 MAXIMUM PEAK OUTPUT POWER

### 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

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

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER OUTPUT (mW)</b>	<b>PEAK POWER OUTPUT (dBm)</b>	<b>PEAK POWER LIMIT (dBm)</b>	<b>PASS/FAIL</b>
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**

<b>Description &amp; Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibrated Until</b>
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.

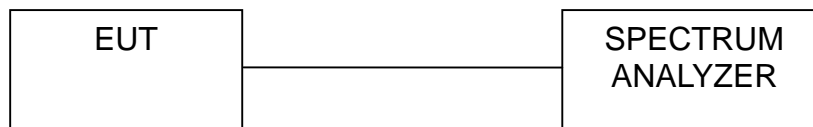
### **.5.3 TEST PROCEDURE**

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

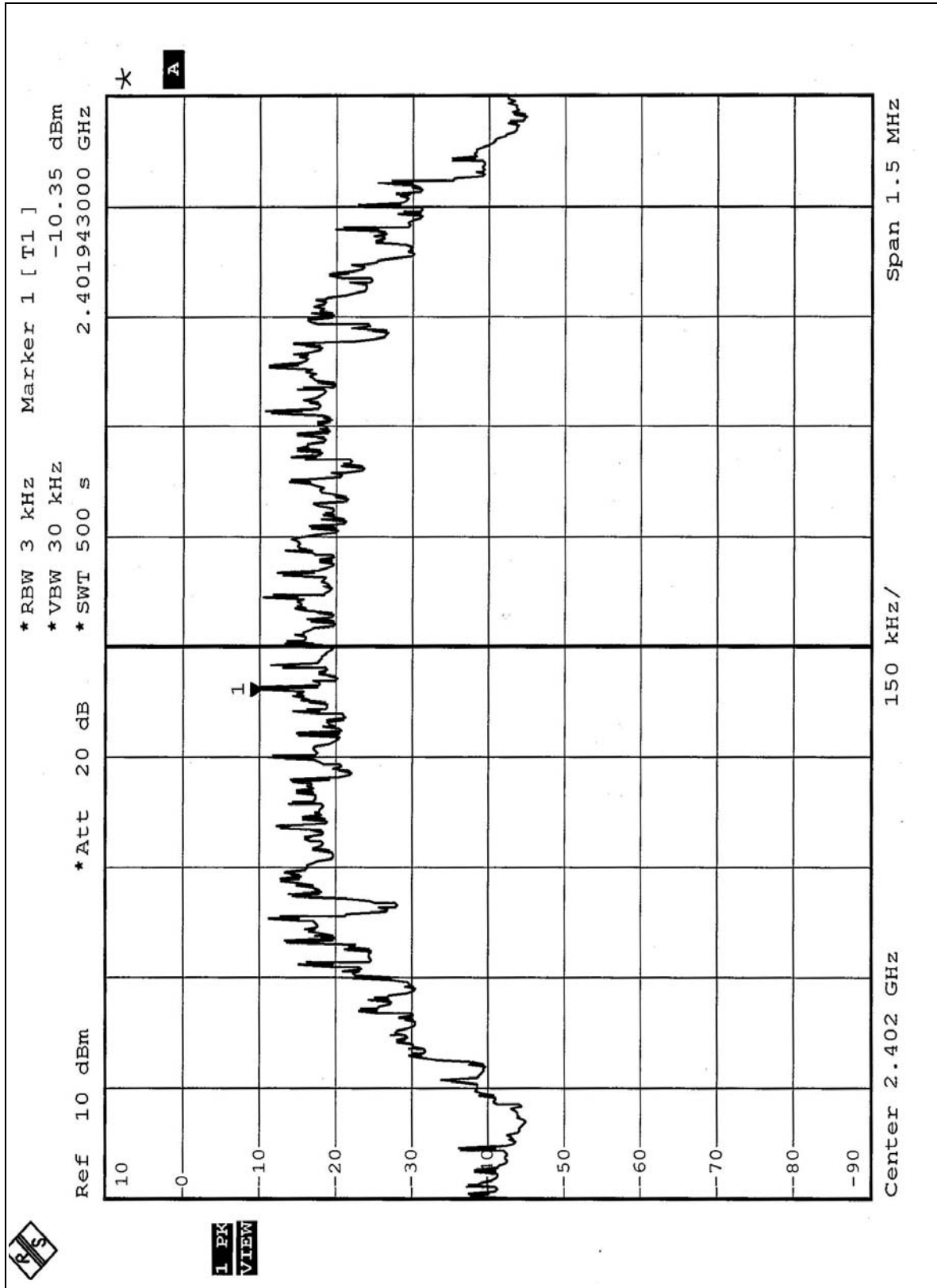
<b>EUT</b>	Wireless USB Dongle	<b>MODEL</b>	SK-8812
<b>INPUT POWER (SYSTEM)</b>	120 Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60% RH, 991 hPa
<b>TESTED BY</b>	Jamison Chan		

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



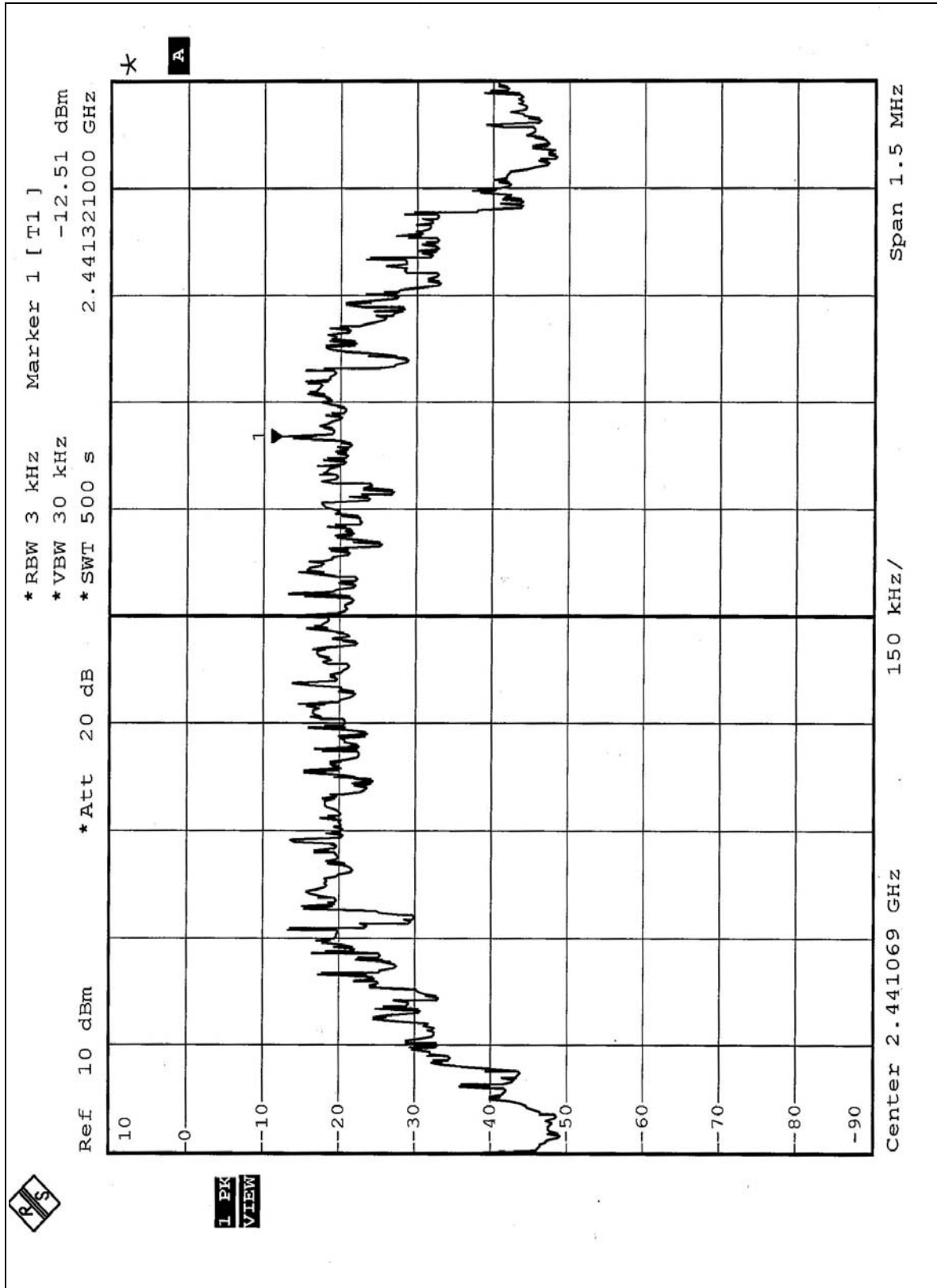


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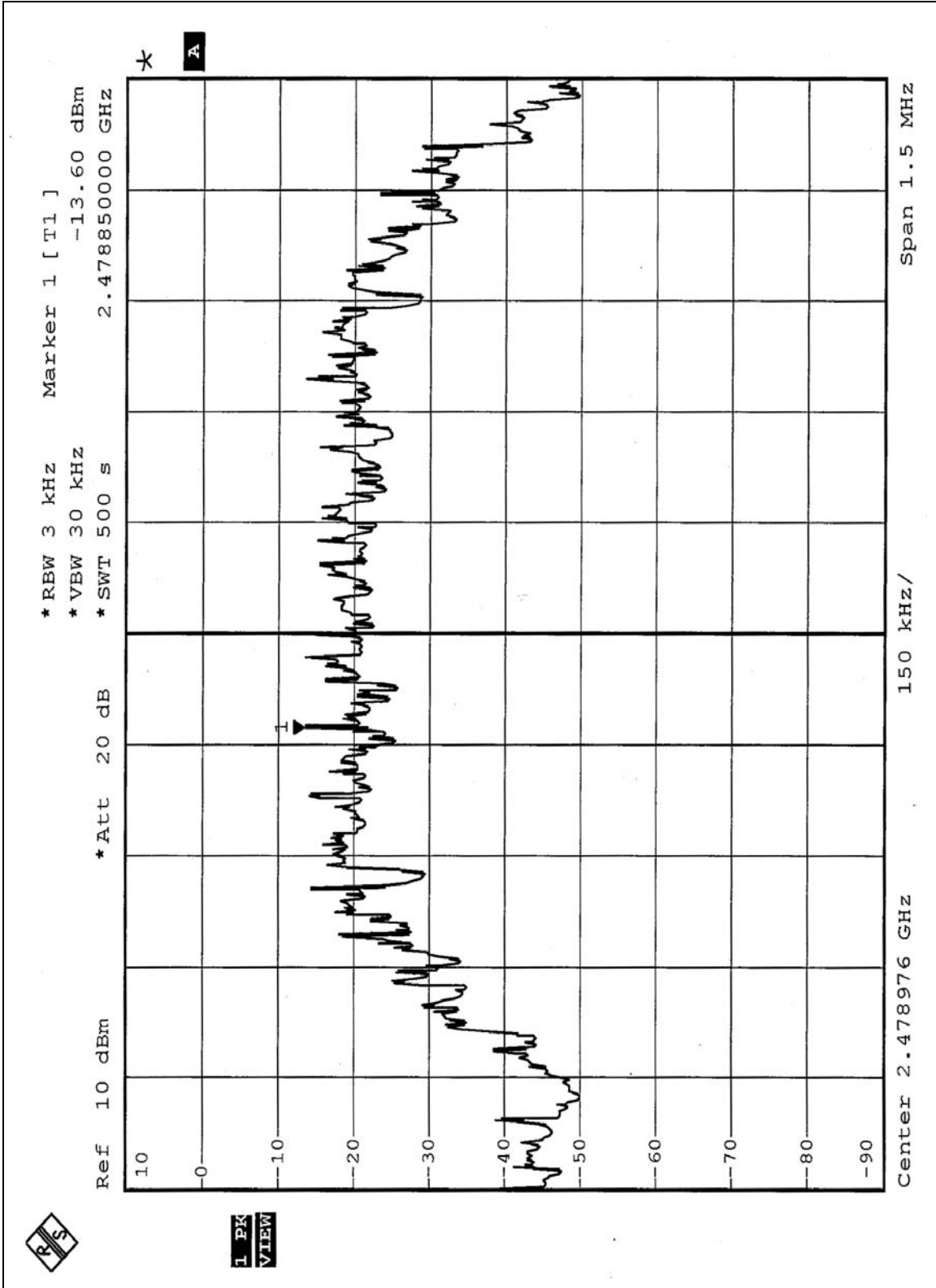


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## **.6 BAND EDGES MEASUREMENT**

### **.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**

<b>Description &amp; Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibrated Until</b>
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).

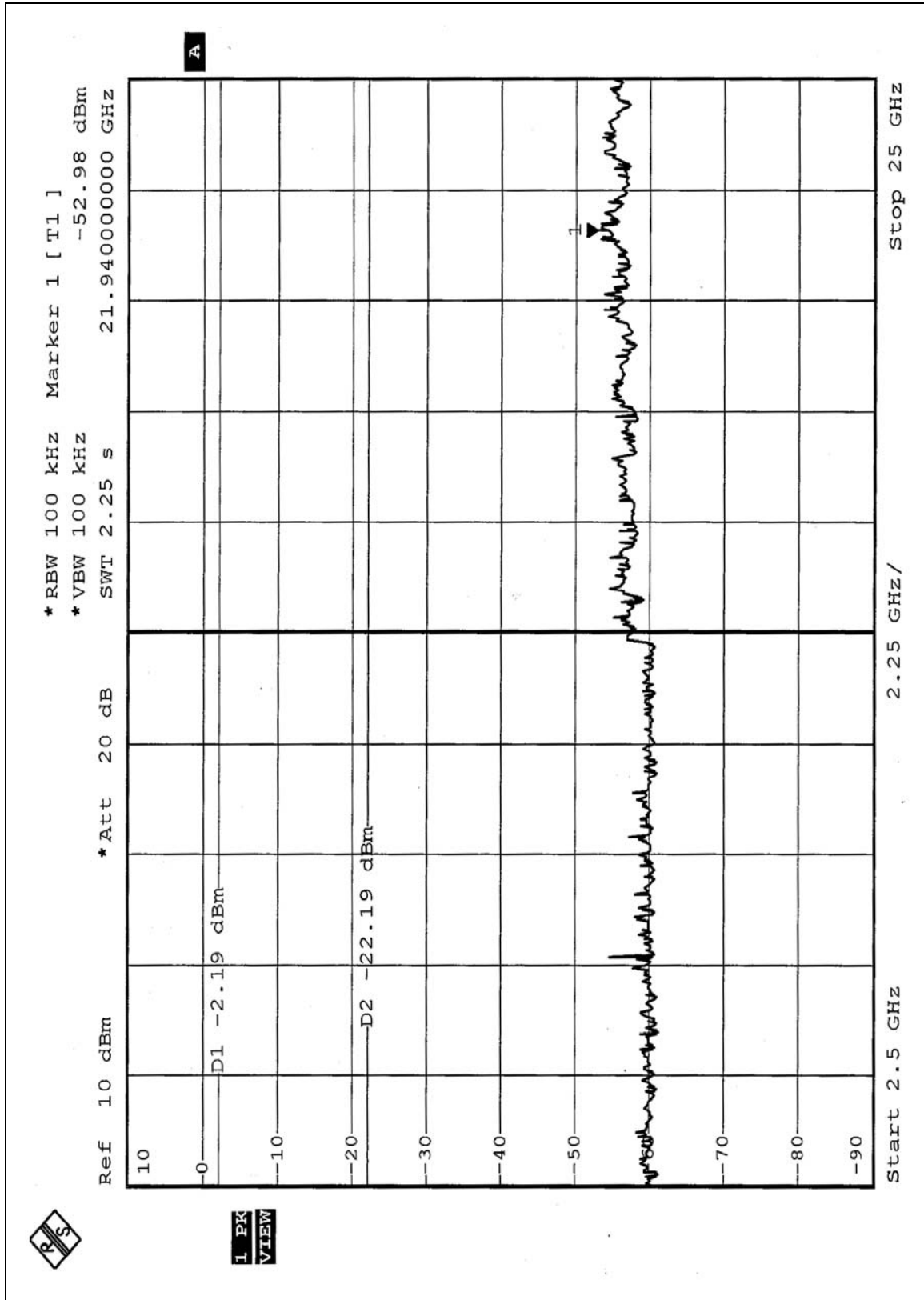
## **.6.7 TEST RESULTS(A)**

### **NOTE:**

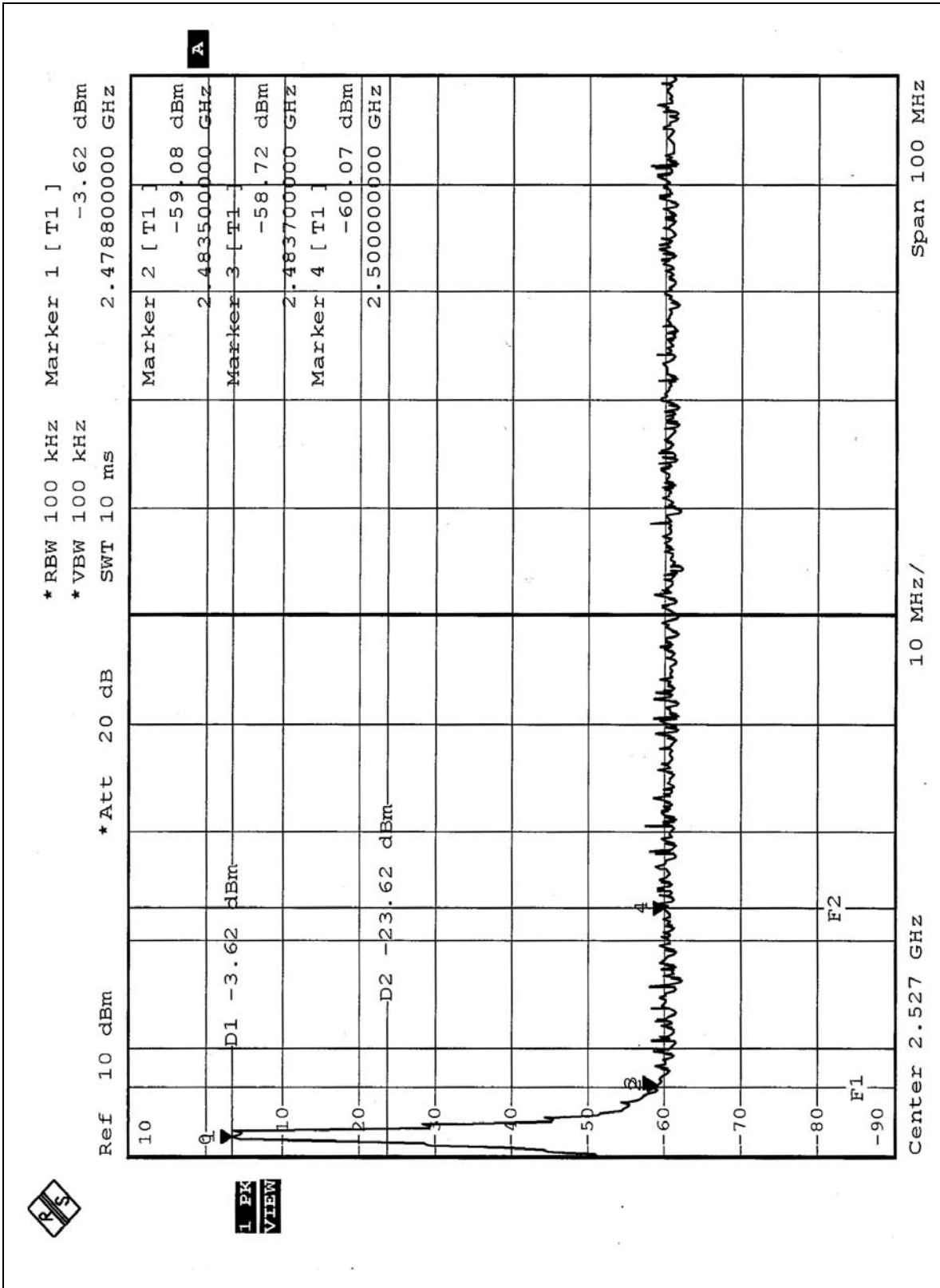
The band edge emission plot on the following 1~2 pages show 55.69dB delta between carrier maximum power and local maximum emission in restrict band (2.3812GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.2.8 is 90.34dBuV/m, so the maximum field strength in restrict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

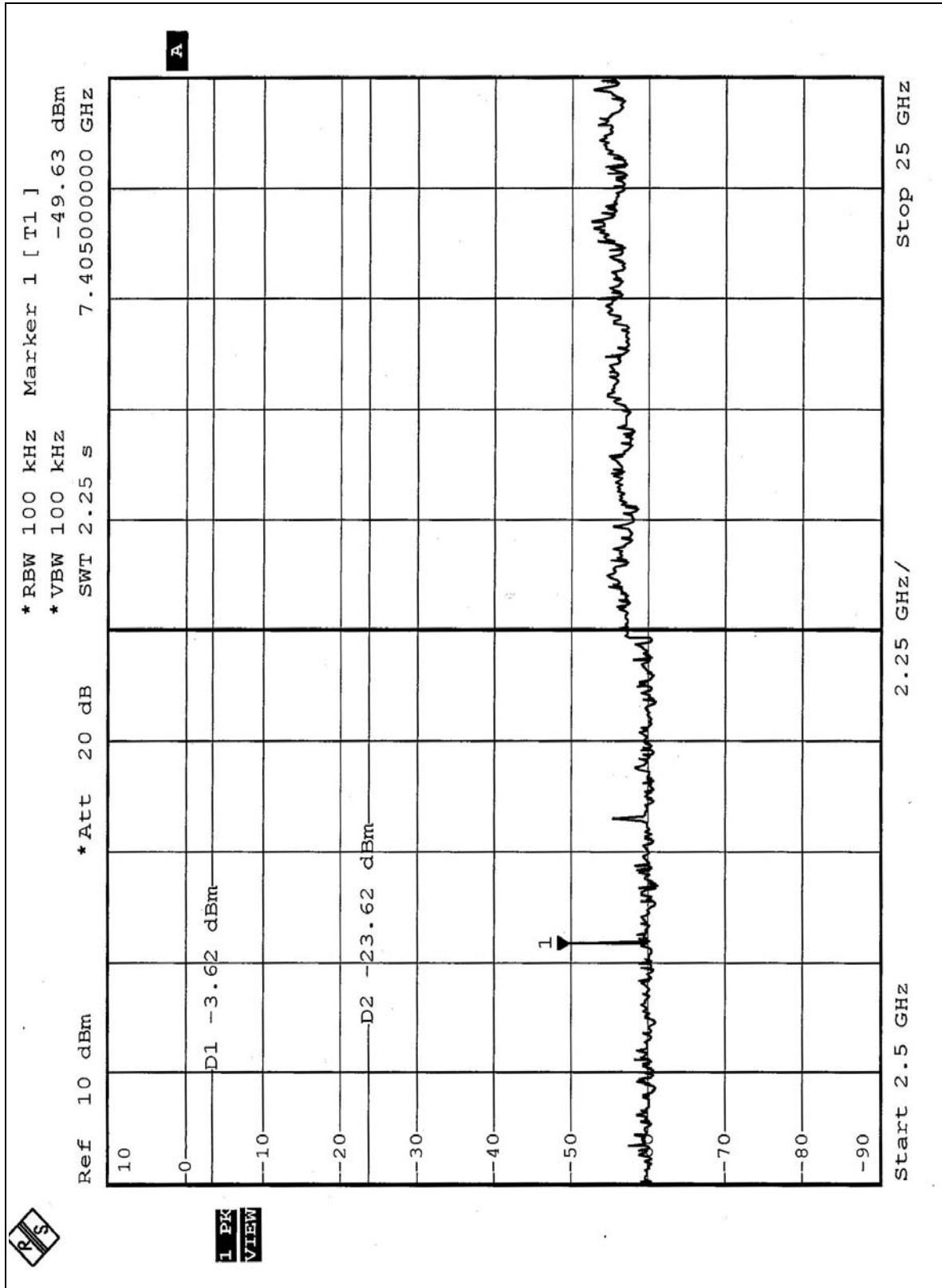














## **.7 ANTENNA REQUIREMENT**

### **.7.1 STANDARD APPLICABLE**

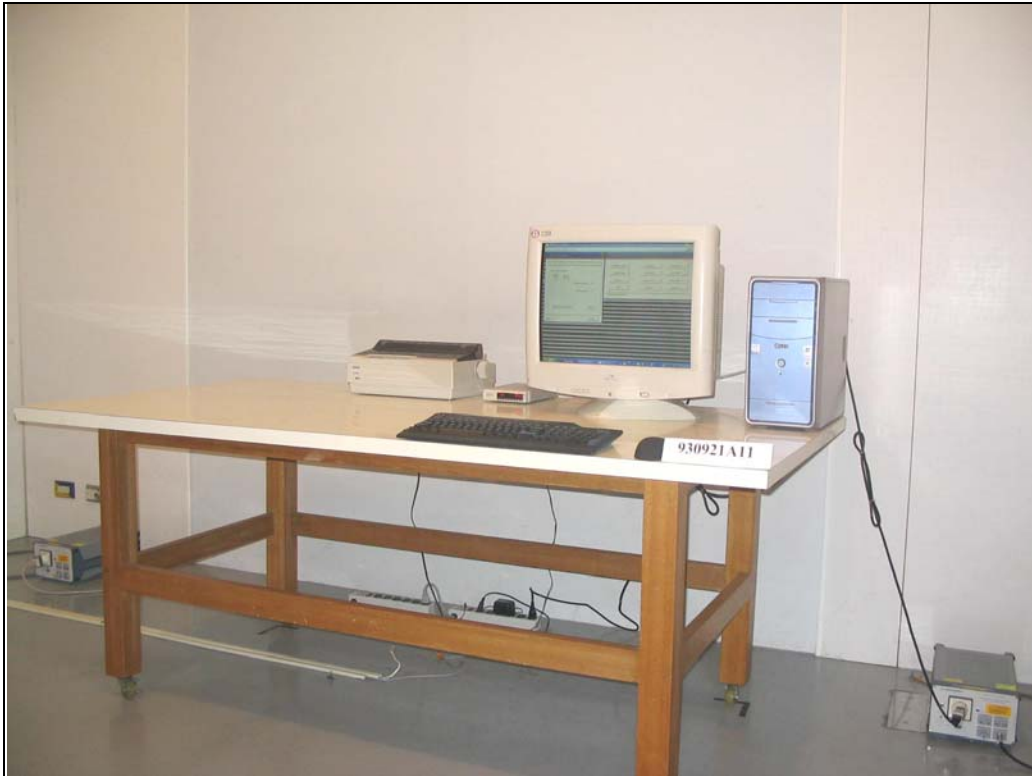
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

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:

<b>USA</b>	FCC, NVLAP, UL, A2LA
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