

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
R&S 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.

4.6.3 TEST PROCEDURE

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

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

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 18 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(d).

NOTE 1: The band edge emission plot of DSSS technique on page 85 show 48.12 dBc between carrier maximum power and local maximum emission in restrict band (2.3858GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 111.34dBuV/m (Peak), so the maximum field strength in restrict band is $111.34 - 48.12 = 63.22$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on page 86 show 53.16dBc between carrier maximum power and local maximum emission in restrict band (2.3872GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 103.64dBuV/m (Average), so the maximum field strength in restrict band is $103.64 - 53.16 = 50.48$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot of DSSS technique on page 88 show 50.99 dBc between carrier maximum power and local maximum emission in restrict band (2.4869GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 111.06dBuV/m (Peak), so the maximum field strength in restrict band is $111.06 - 50.99 = 60.07$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on page 89 show 55.33dBc between carrier maximum power and local maximum emission in restrict band (2.4861GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 103.21dBuV/m (Average), so the maximum field strength in restrict band is $103.21 - 55.33 = 47.88$ dBuV/m which is under 54dBuV/m limit.

NOTE 3: The band edge emission plot of OFDM technique with Normal mode on page 91 show 46.92dBc between carrier maximum power and local maximum emission in restrict band (2.3896GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.16dBuV/m (Peak), so the maximum field strength in restrict band is $108.16 - 46.92 = 61.24$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique with Normal mode on page 92 show 48.71dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 98.03dBuV/m (Average), so the maximum field strength in restrict band is $98.03 - 48.71 = 49.32$ dBuV/m which is under 54dBuV/m limit.

NOTE 4: The band edge emission plot of OFDM technique with Normal mode on page 94 show 45.39dBc between carrier maximum power and local maximum emission in restrict band (2.4849GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.34dBuV/m (Peak), so the maximum field strength in restrict band is $106.34 - 45.39 = 60.95$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique with Normal mode on page 95 show 50.34dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 96.32dBuV/m (Average), so the maximum field strength in restrict band is $96.32 - 50.34 = 45.98$ dBuV/m which is under 54dBuV/m limit.

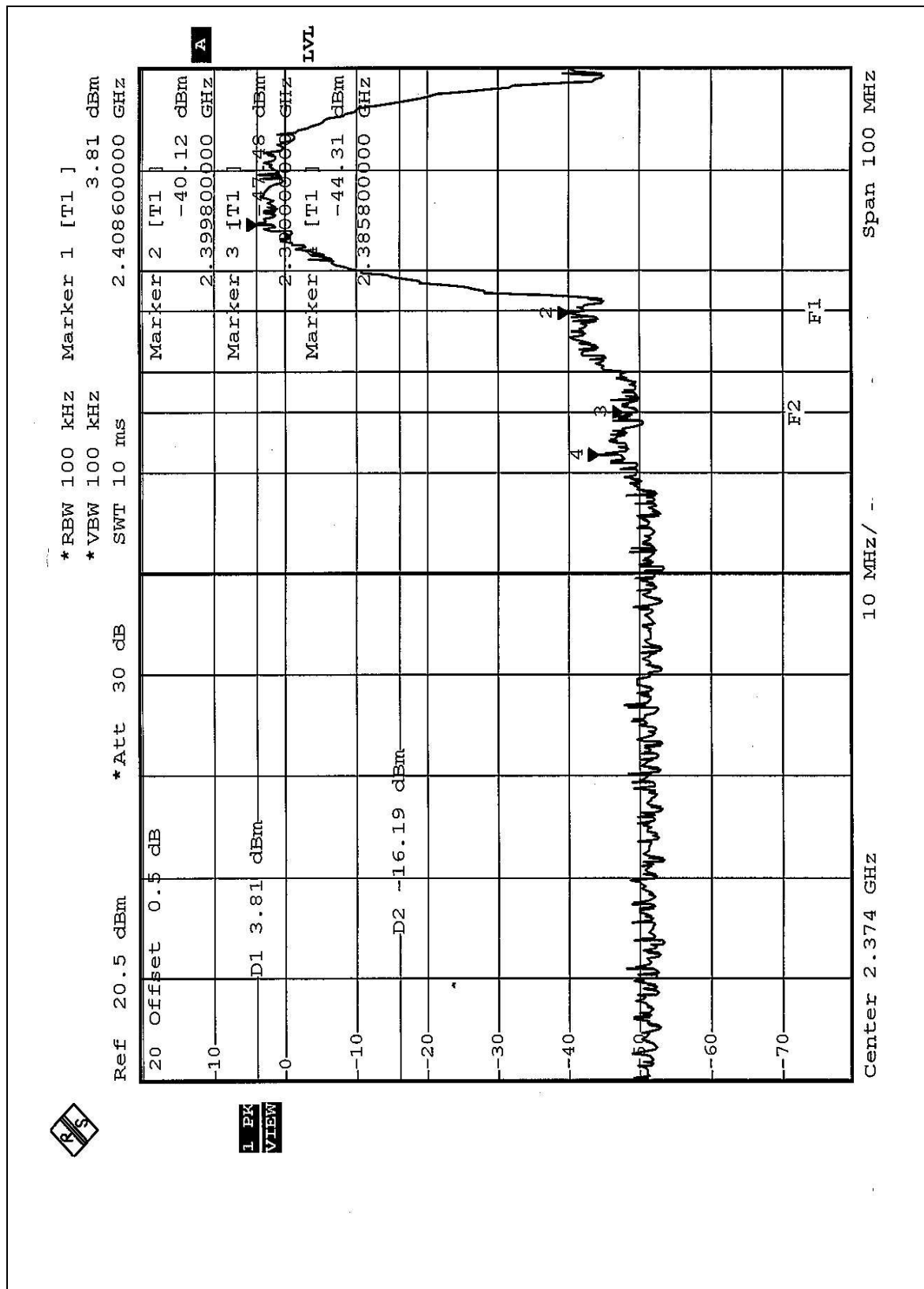
NOTE 5: The band edge emission plot of OFDM technique with Turbo mode on page 97 shows 47.68dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 97.31dBuV/m (Peak), so the maximum field strength in restrict band is $97.31 - 47.68 = 49.63$ dBuV/m which is under 74dBuV/m limit.

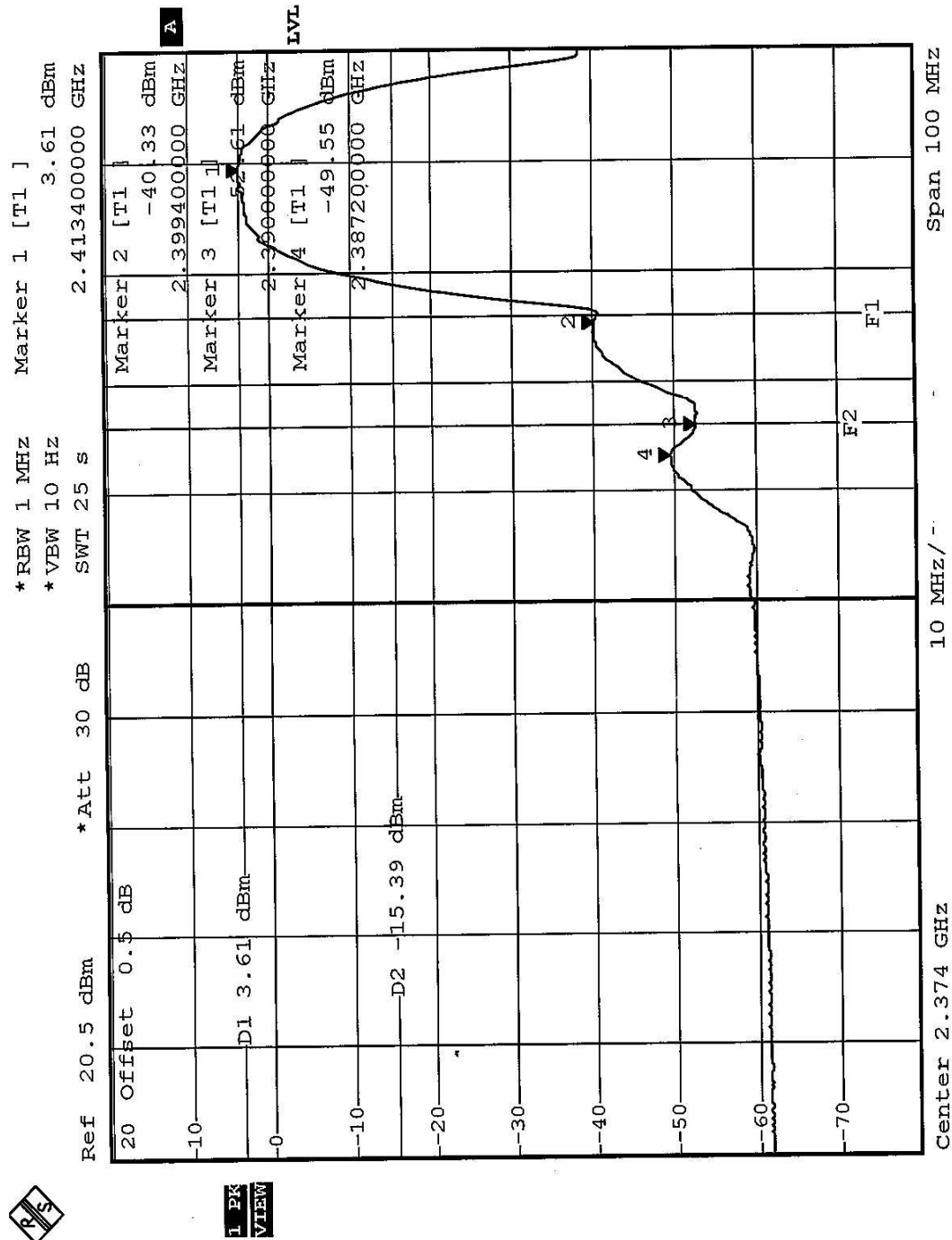
The band edge emission plot of OFDM technique with Turbo mode on page 98 shows 53.26dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 87.54dBuV/m (Average), so the maximum field strength in restrict band is $87.54 - 53.26 = 34.28$ dBuV/m which is under 54dBuV/m limit.

NOTE 6: The band edge emission plot of OFDM technique with Turbo mode on page 100 shows 57.48dBc between carrier maximum power and local maximum emission in restrict band (2.4859GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 97.31dBuV/m (Peak), so the maximum field strength in restrict band is $97.31 - 57.48 = 39.83$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique with Turbo mode on page 101 shows 55.37dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 87.54dBuV/m (Average), so the maximum field strength in restrict band is $87.54 - 55.37 = 32.17$ dBuV/m which is under 54dBuV/m limit.

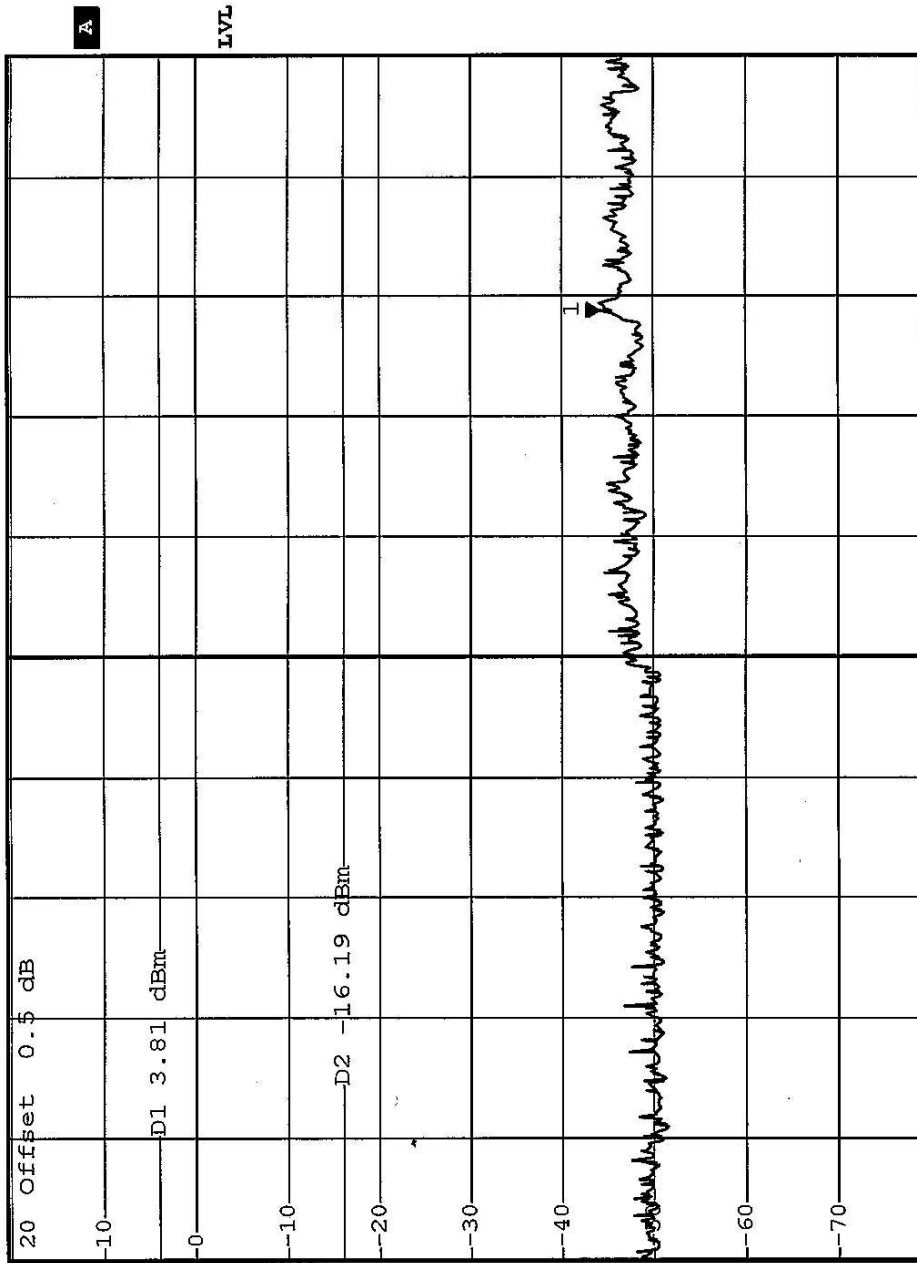
802.11b Mode

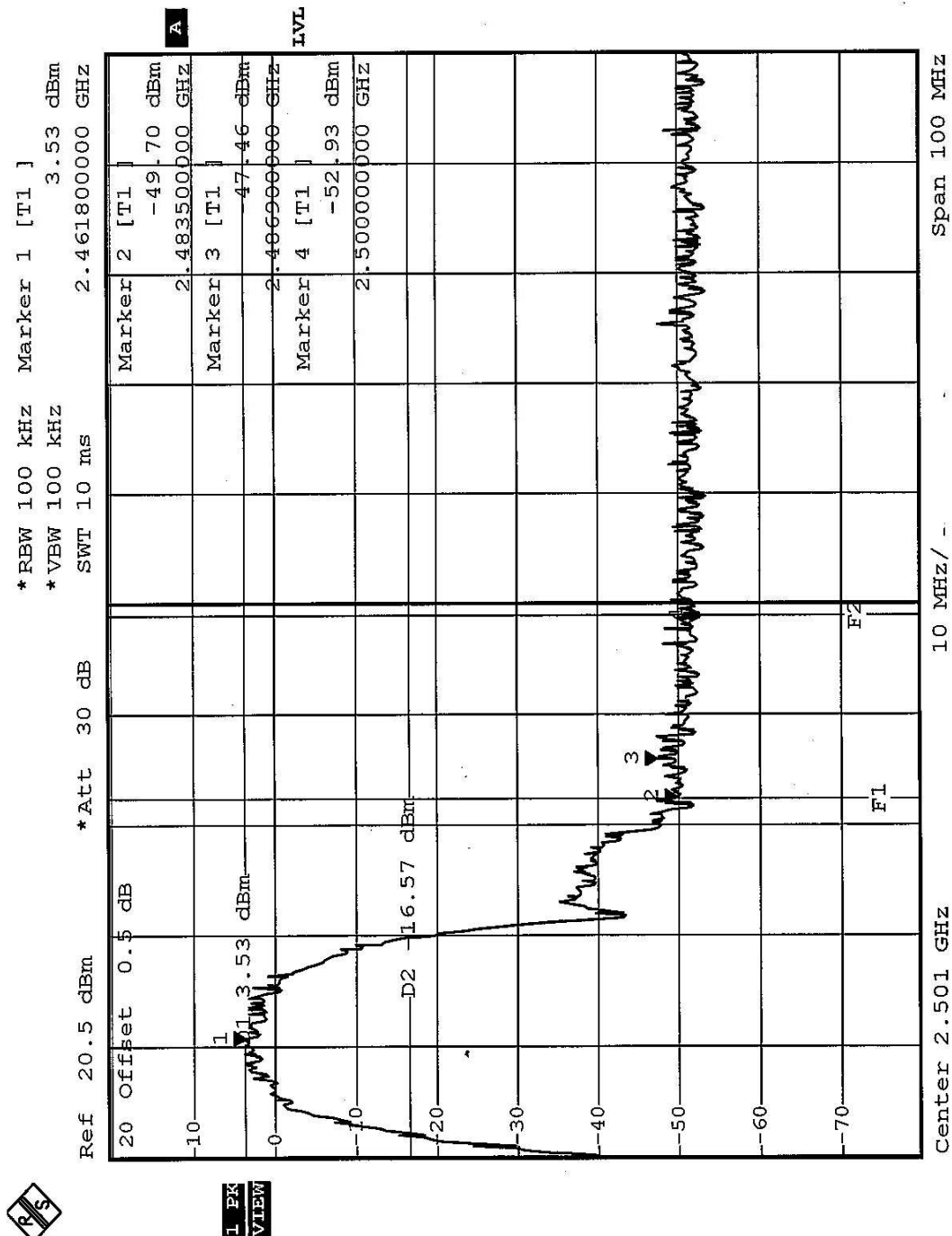


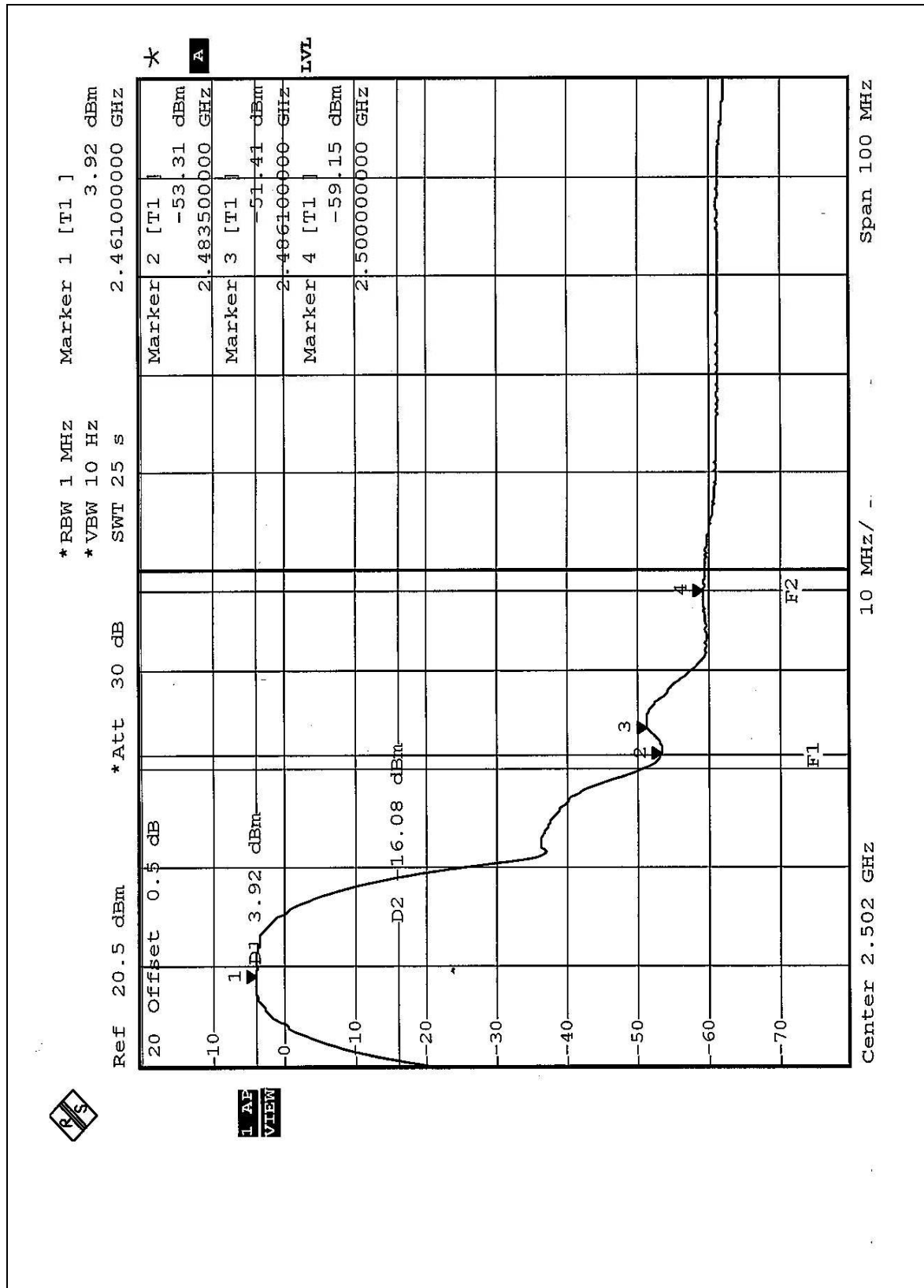


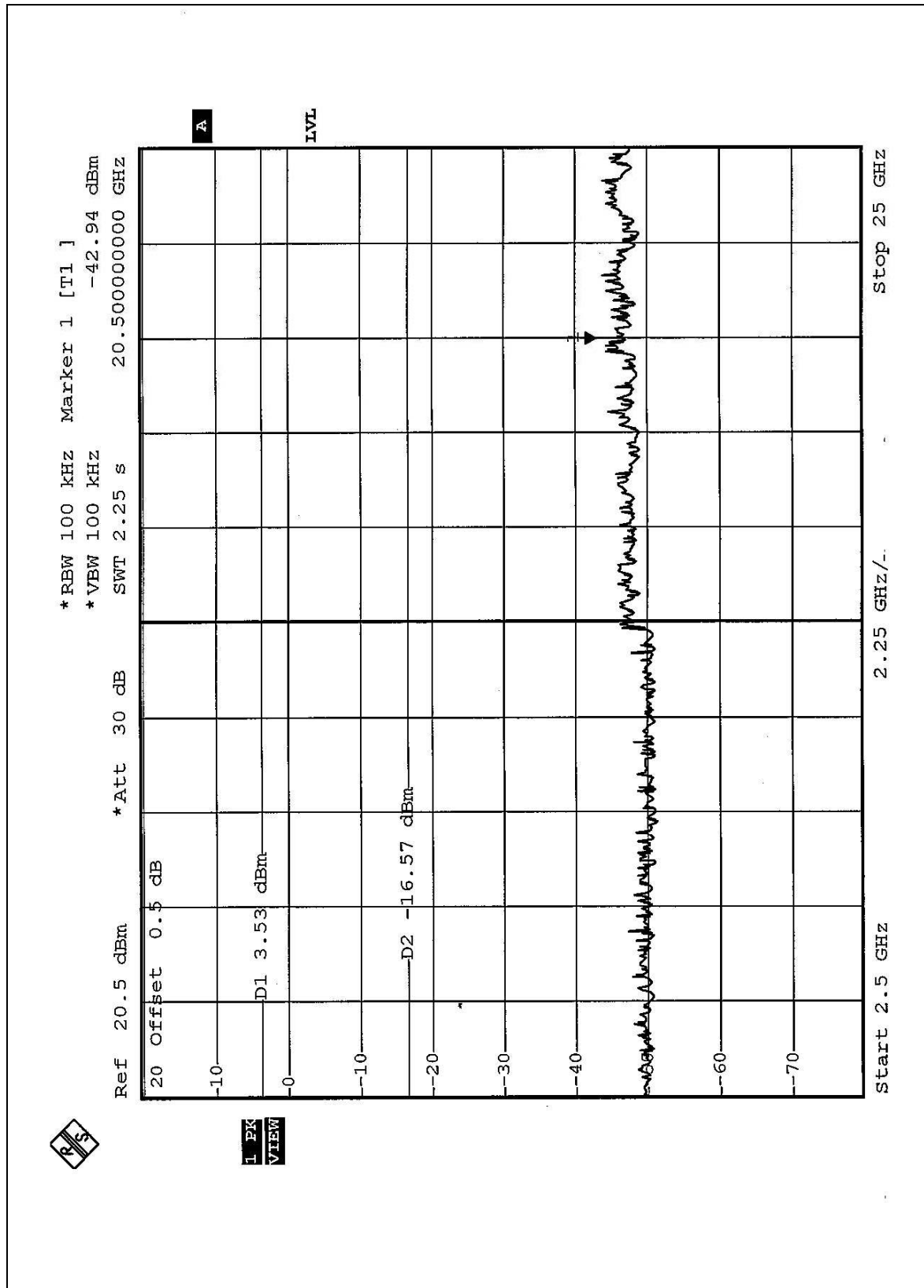


*RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz -44.09 dBm
 Ref 20.5 dBm *Att 30 dB SWT 2.25 s 20.230000000 GHz

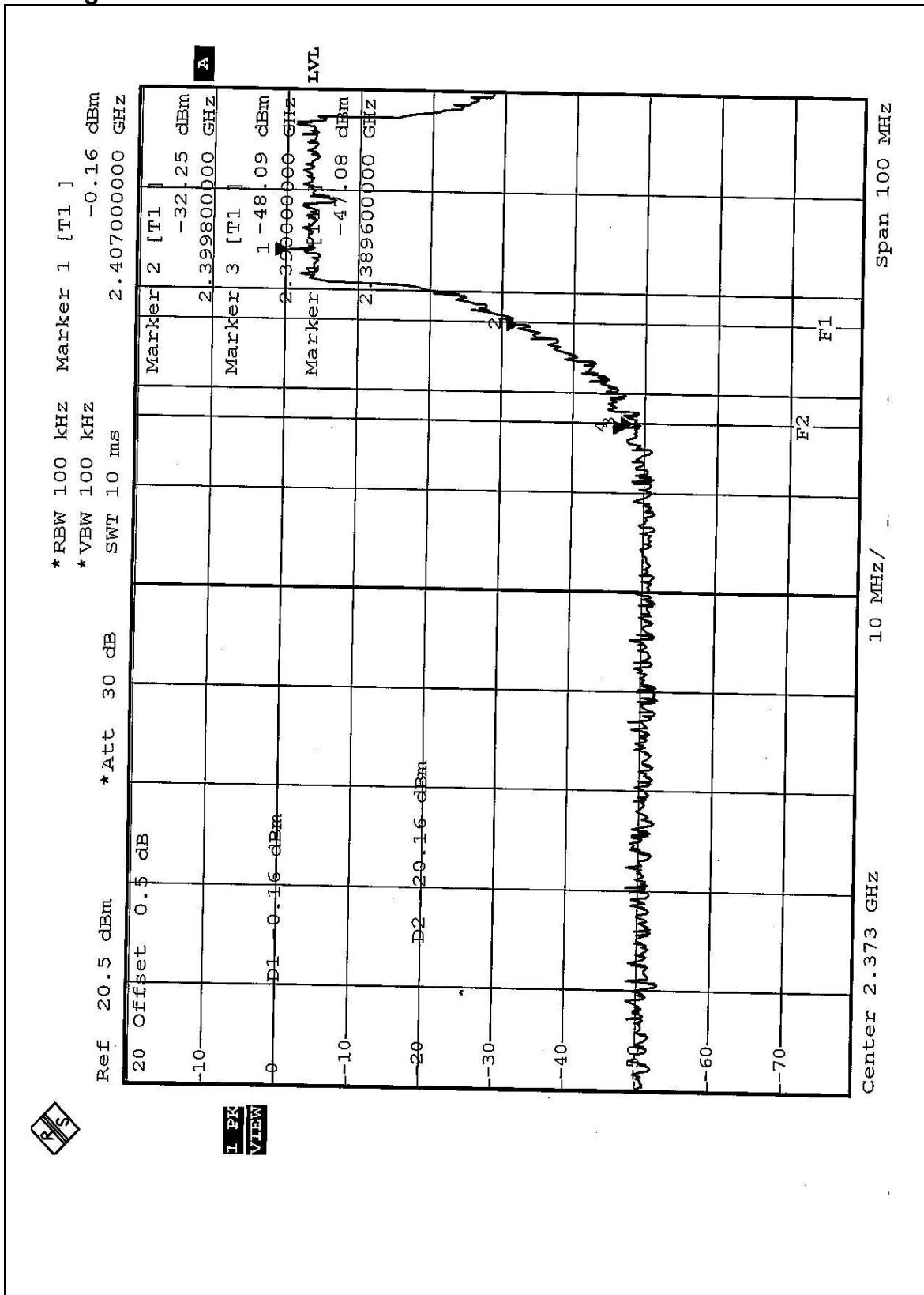


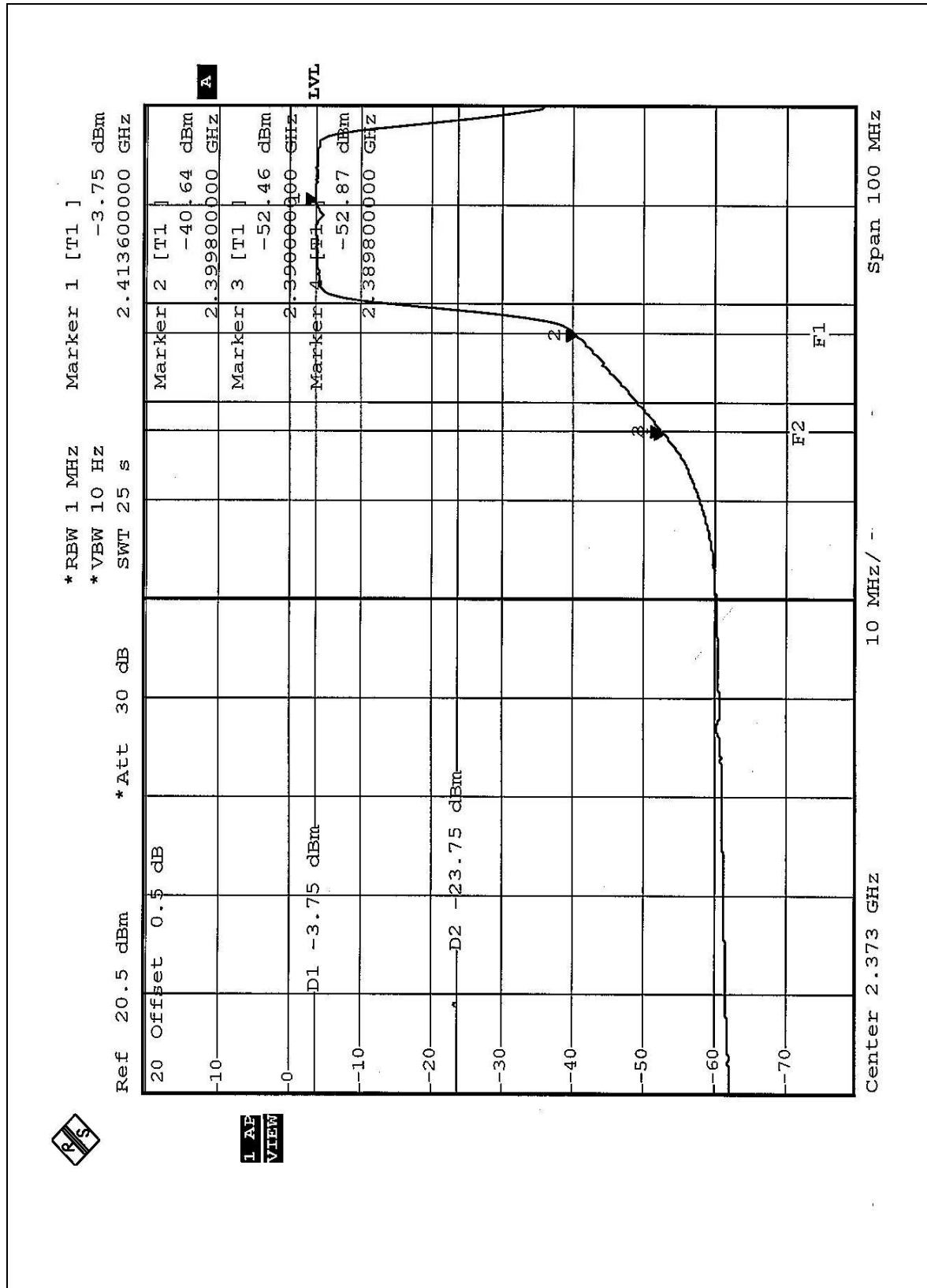


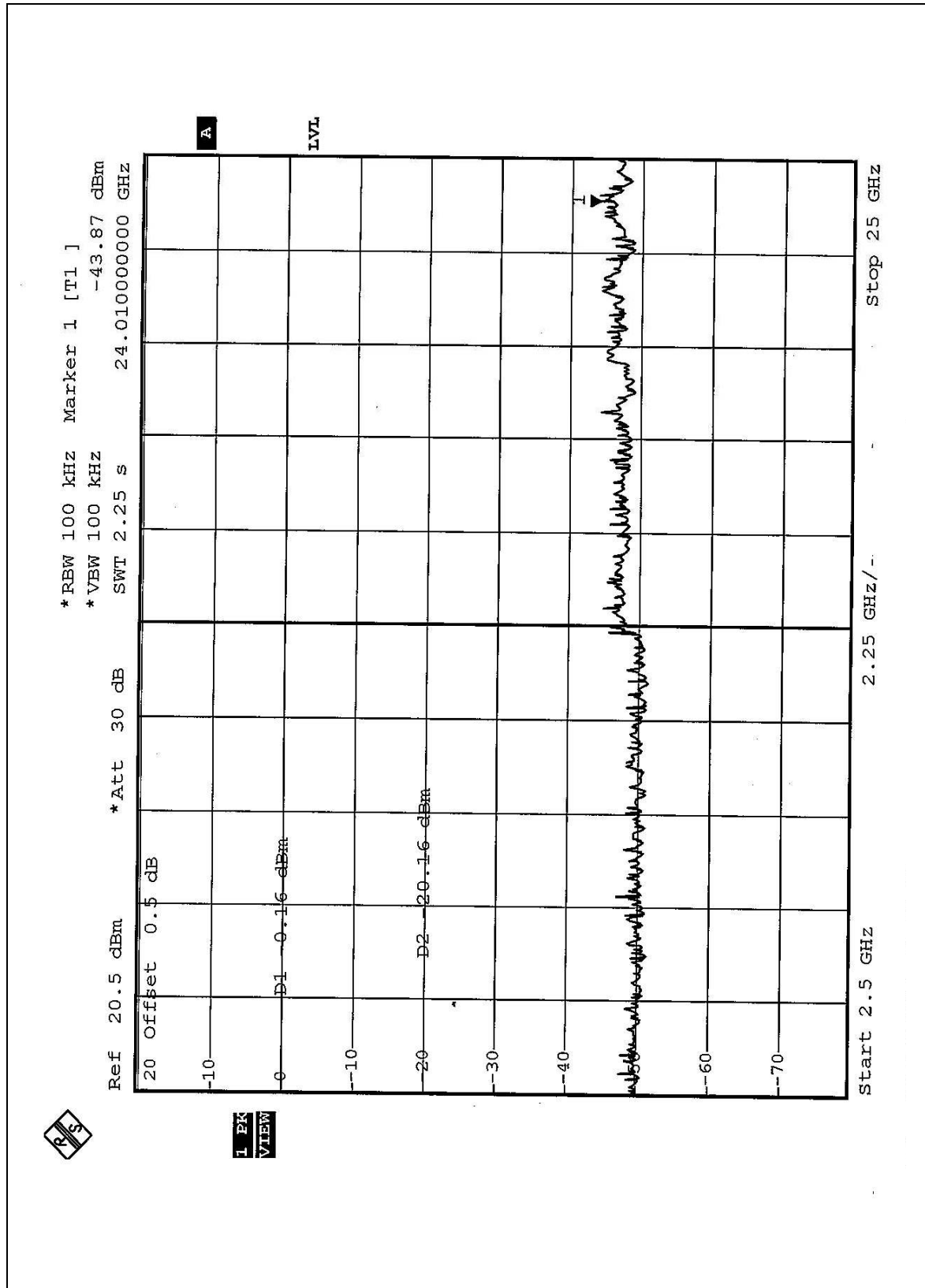


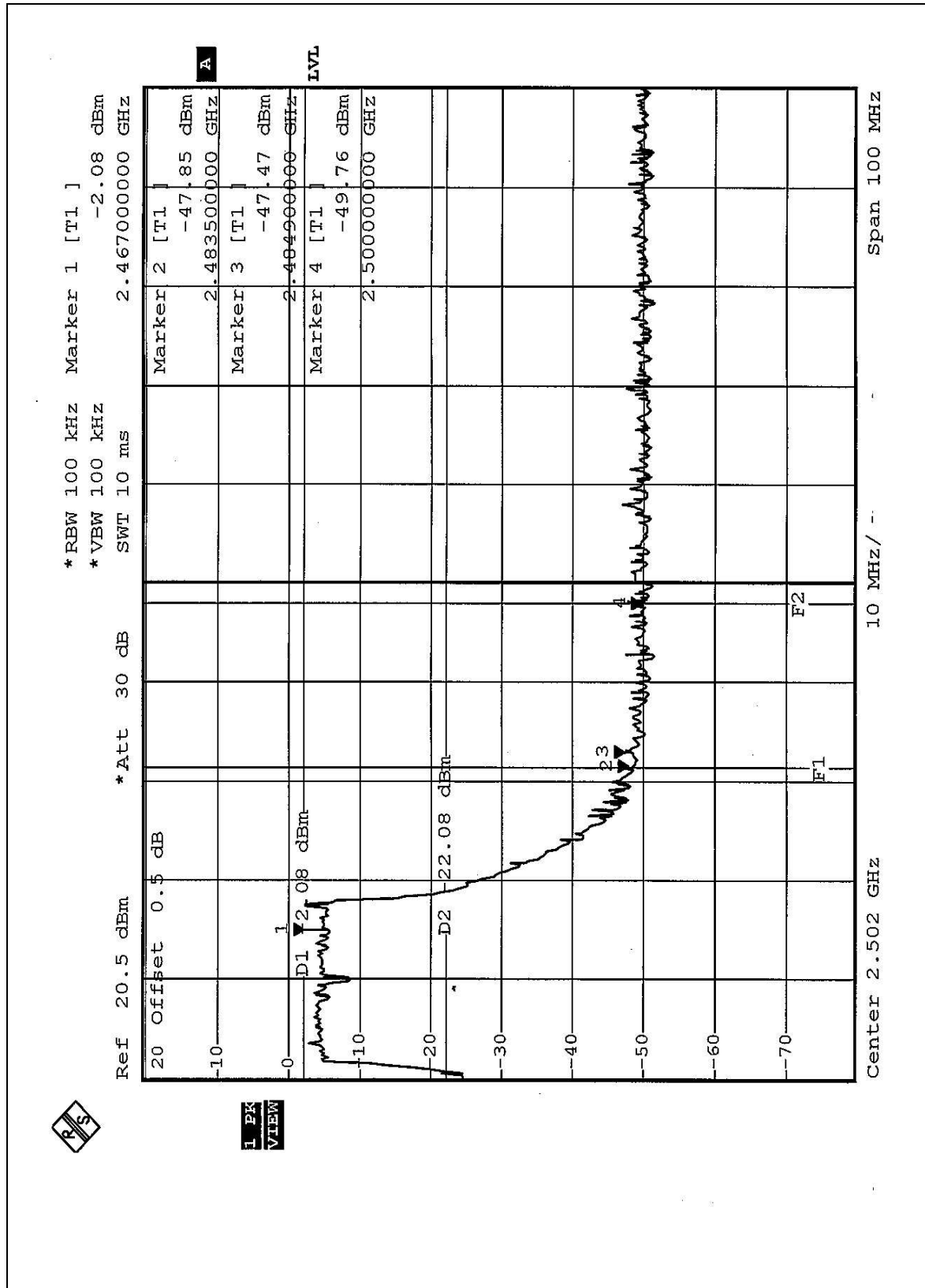


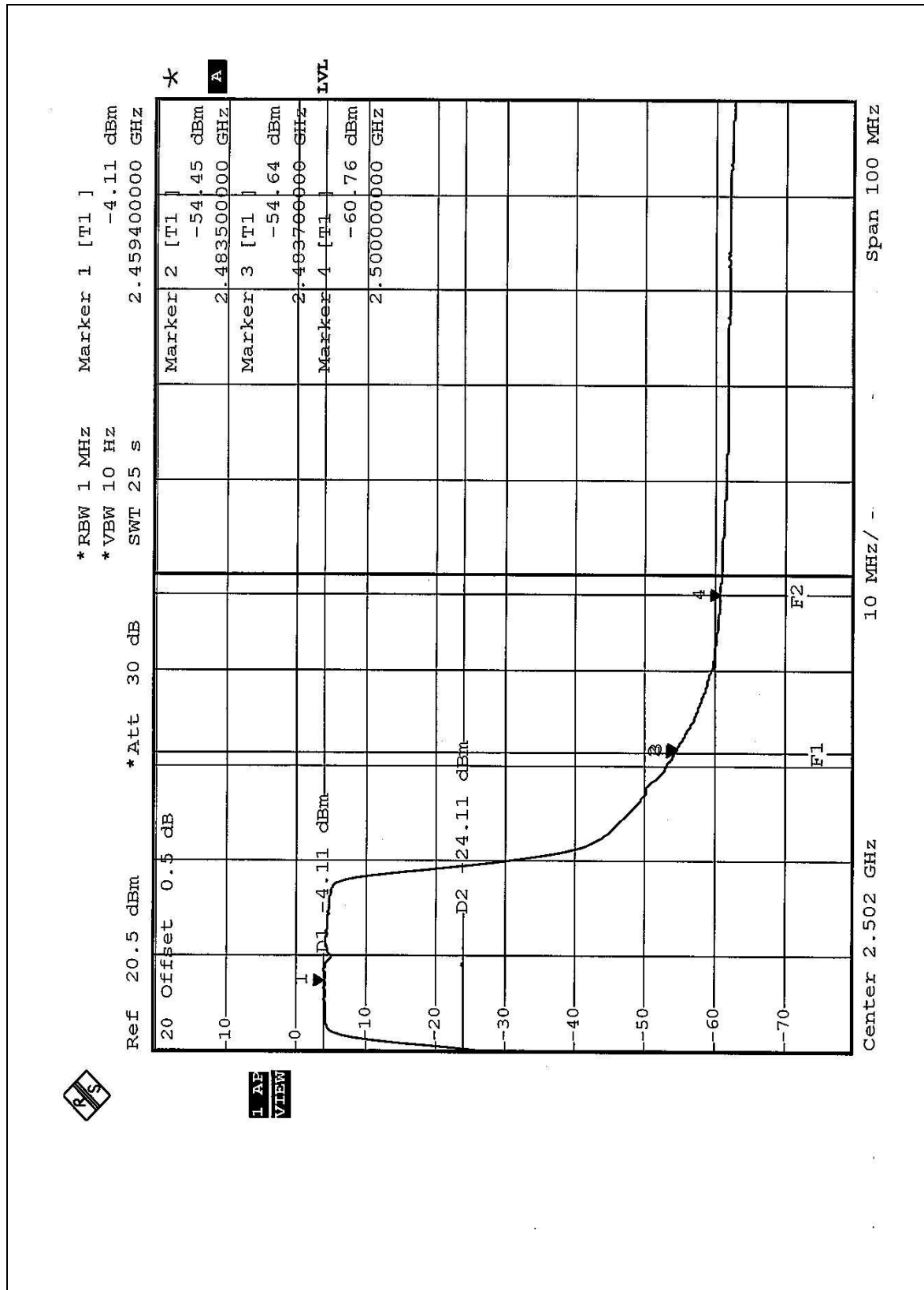
802.11g Mode



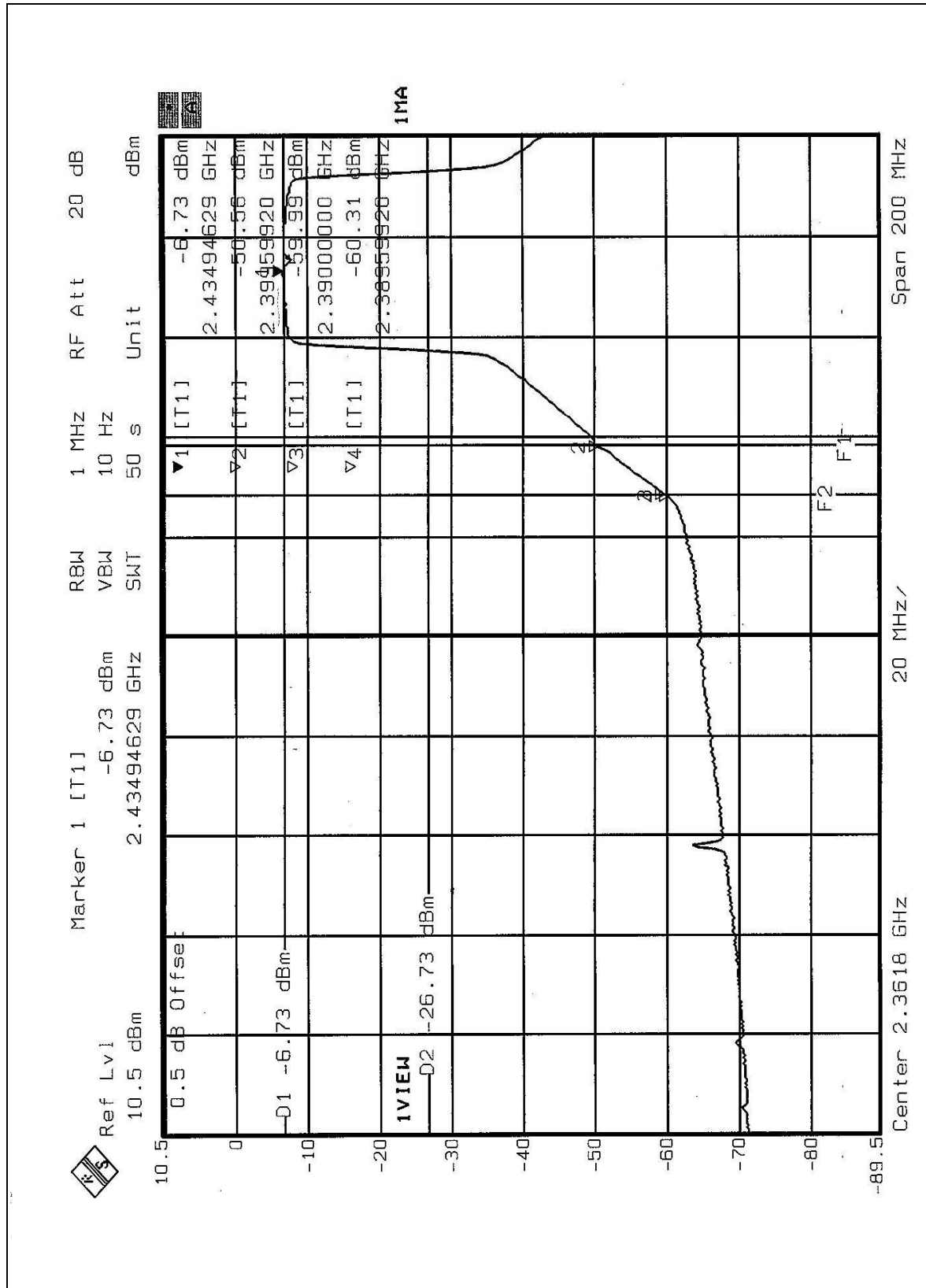


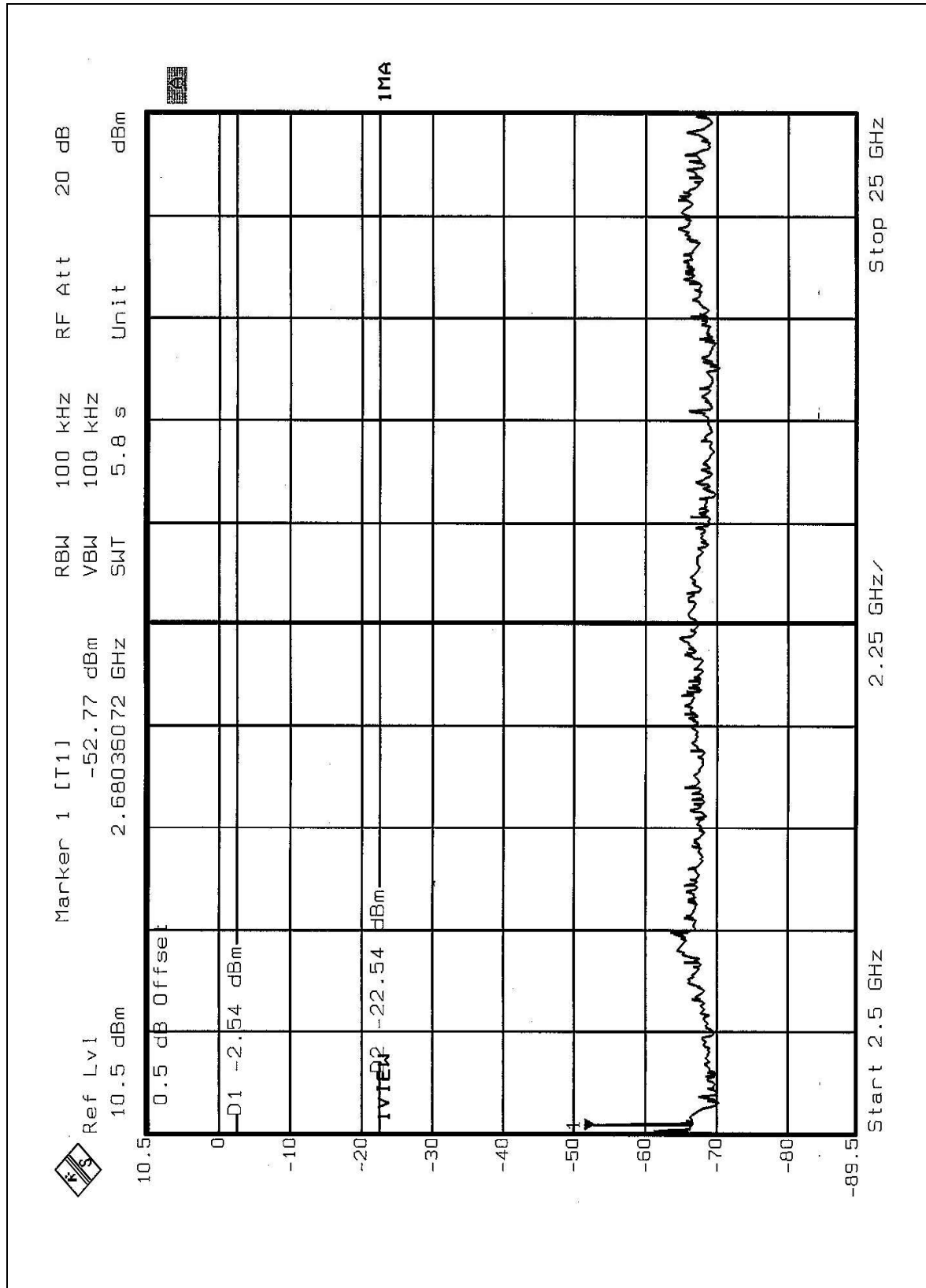


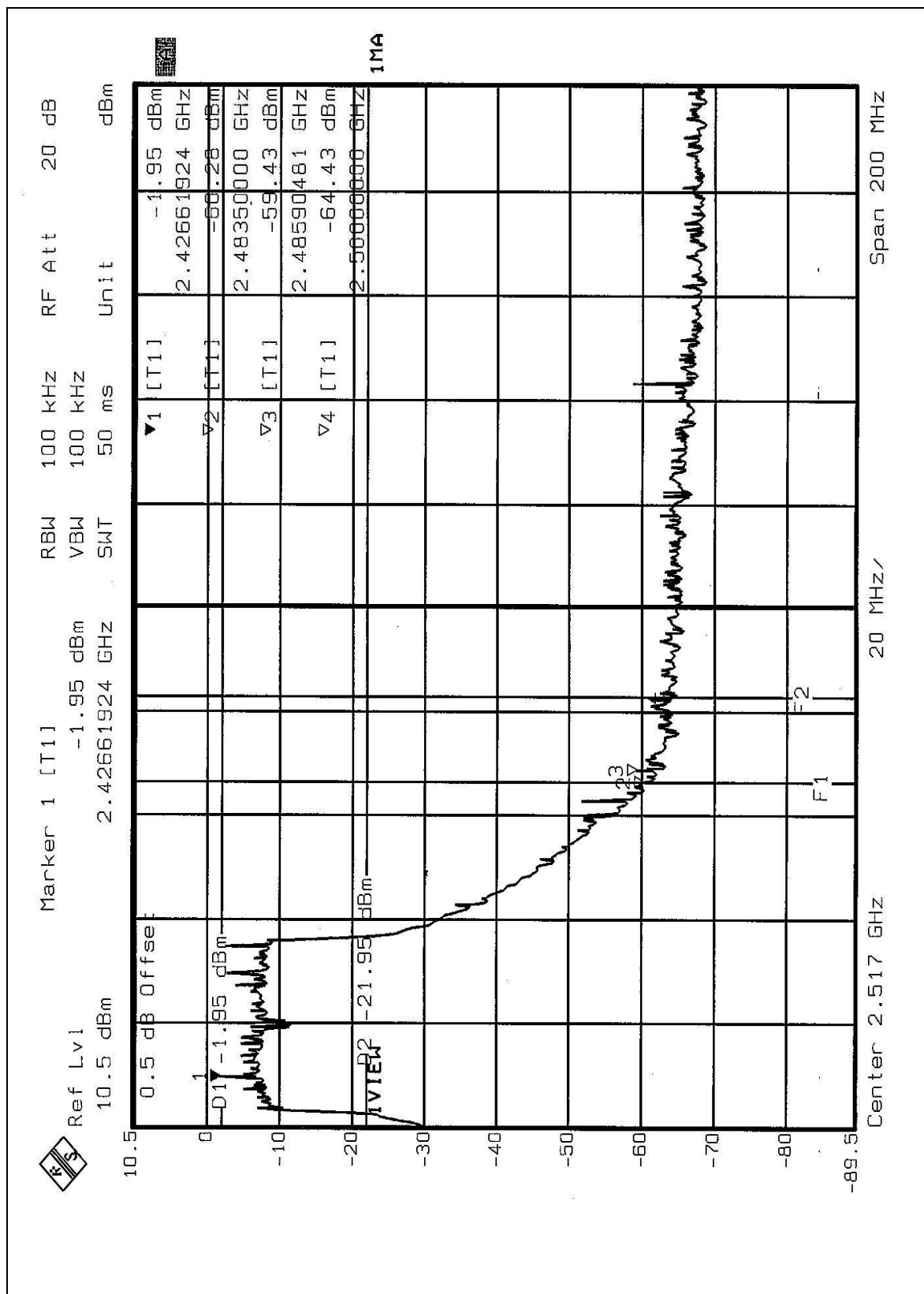


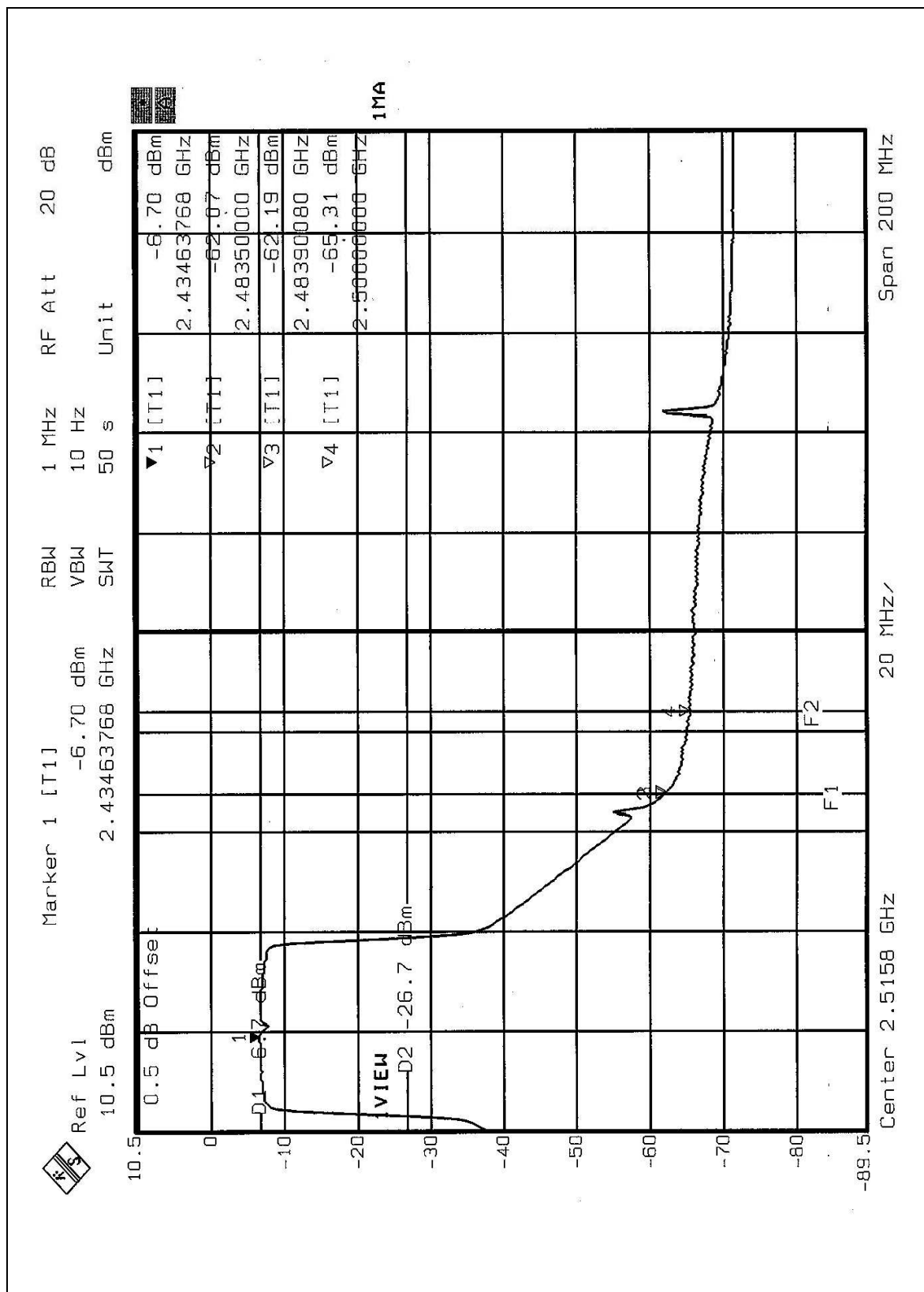


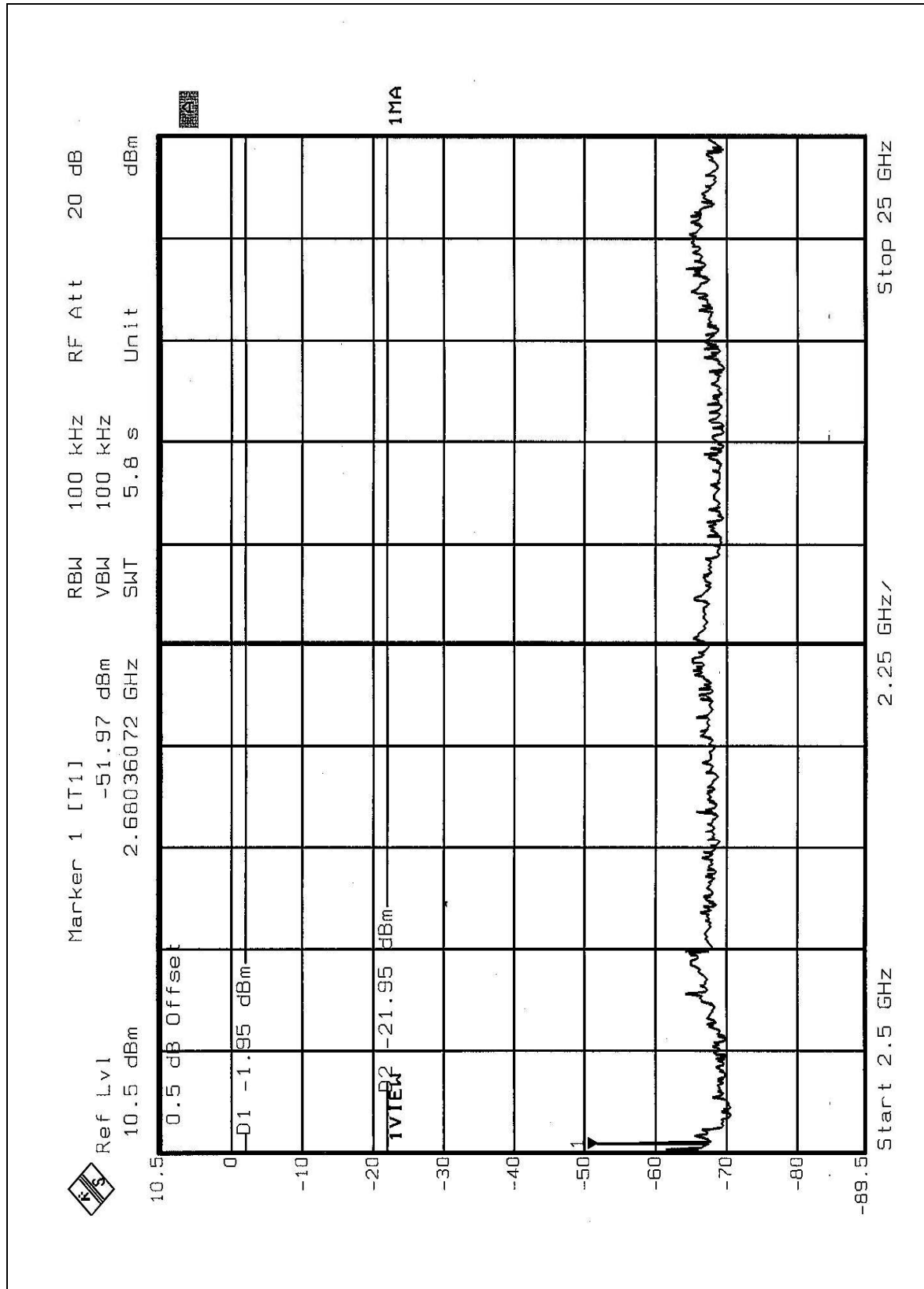














4.7 ANTENNA REQUIREMENT

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 Chip antenna without connector. The maximum Gain of the antenna is 2.0dBi.

5. TEST TYPES AND RESULTS (802.11a 5725-5850M Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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:**
- The lower limit shall apply at the transition frequencies.
 - The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 - 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
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 16, 2005
RF signal cable Woken	5D-FB	Cable-HYC01-01	Mar. 02, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Mar. 03, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Mar. 02, 2005
Software ADT	ADT_Cond_V3	NA	NA

- NOTE:**
- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 -
 - The test was performed in HwaYa Shielded Room 1.
 - The VCCI Site Registration No. is C-2040.



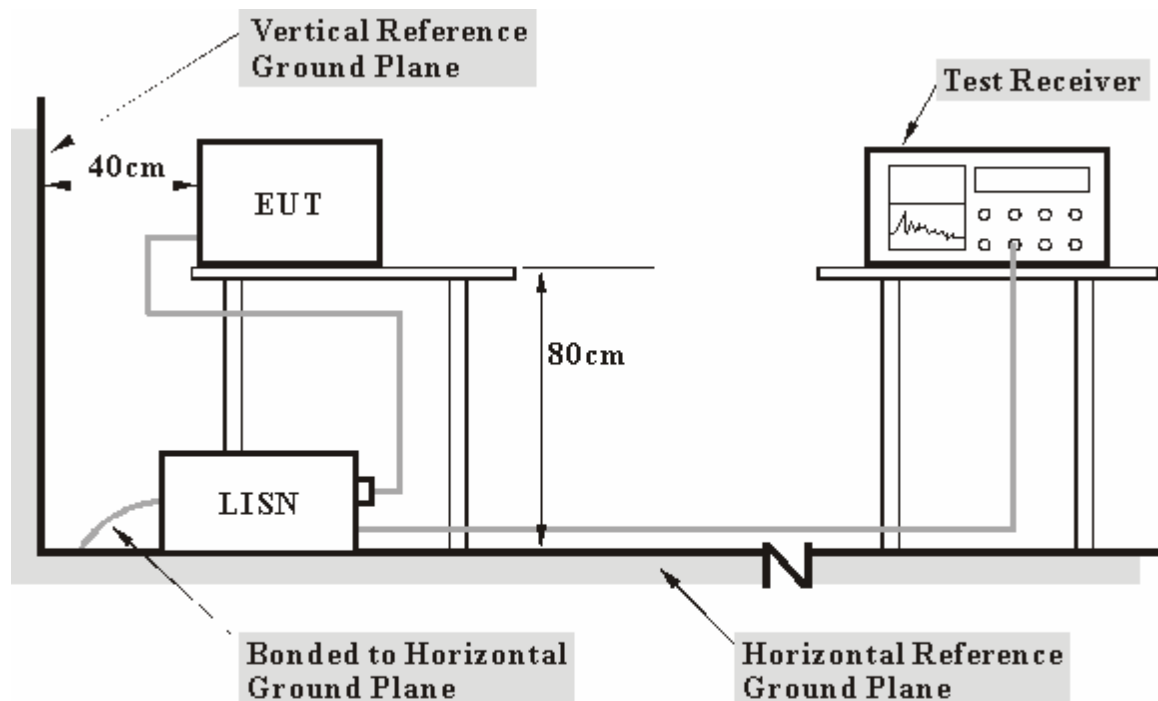
5.1.3 TEST PROCEDURES

- 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 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) was not recorded.

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

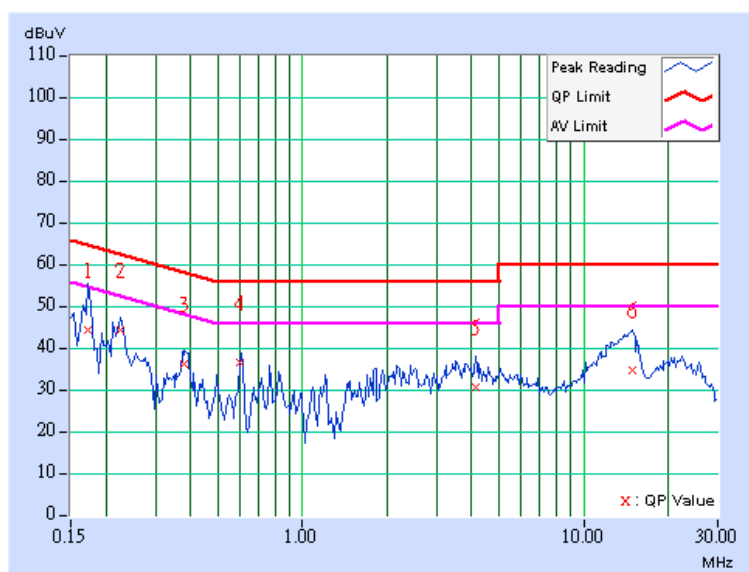
5.1.7 TEST RESULTS

Conducted Worst-Case data (Without Cradle)

EUT	D-Link AirPremier AG DWL-AG132 Wireless USB Adapter	MODEL	DWL-AG132
		6dB BANDWIDTH	9 kHz
CHANNEL	11	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH, 991hPa	PHASE	Line (L)
TEST MOED	1 (Without USB Cradle)	TESTED BY	Steven Lu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.11	43.78	-	43.89	-	64.79	54.79	-20.90	-
2	0.224	0.12	43.66	-	43.78	-	62.66	52.66	-18.88	-
3	0.380	0.13	35.59	-	35.72	-	58.27	48.27	-22.55	-
4	0.601	0.13	35.99	-	36.12	-	56.00	46.00	-19.88	-
5	4.117	0.21	29.88	-	30.09	-	56.00	46.00	-25.91	-
6	14.879	0.77	34.14	-	34.91	-	60.00	50.00	-25.09	-

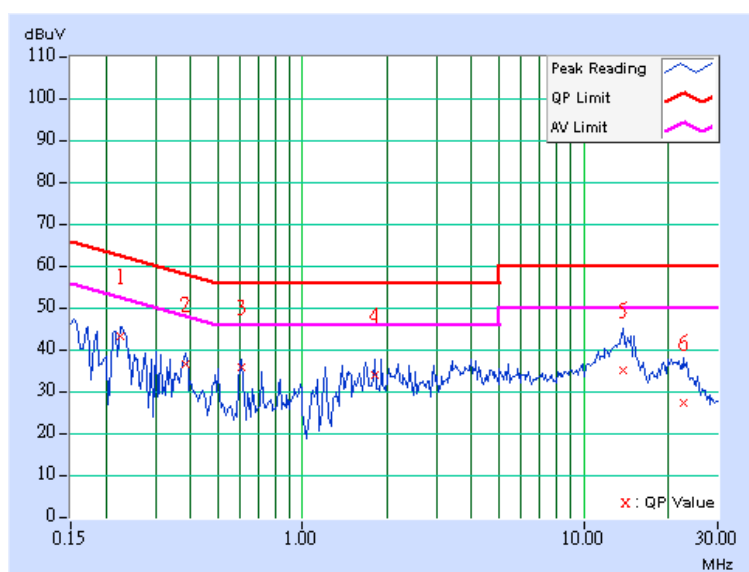
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	D-Link AirPremier AG DWL-AG132 Wireless USB Adapter	MODEL	DWL-AG132
		6dB BANDWIDTH	9 kHz
CHANNEL	11	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH, 991hPa	PHASE	Neutral (N)
TEST MODE	1 (Without USB Cradle)	TESTED BY	Steven Lu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.224	0.11	42.71	-	42.82	-	62.66	52.66	-19.84	-
2	0.384	0.12	36.05	-	36.17	-	58.18	48.18	-22.02	-
3	0.603	0.12	35.18	-	35.30	-	56.00	46.00	-20.70	-
4	1.813	0.16	33.50	-	33.66	-	56.00	46.00	-22.34	-
5	13.789	0.55	34.66	-	35.21	-	60.00	50.00	-24.79	-
6	22.676	0.69	26.66	-	27.35	-	60.00	50.00	-32.65	-

- 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.

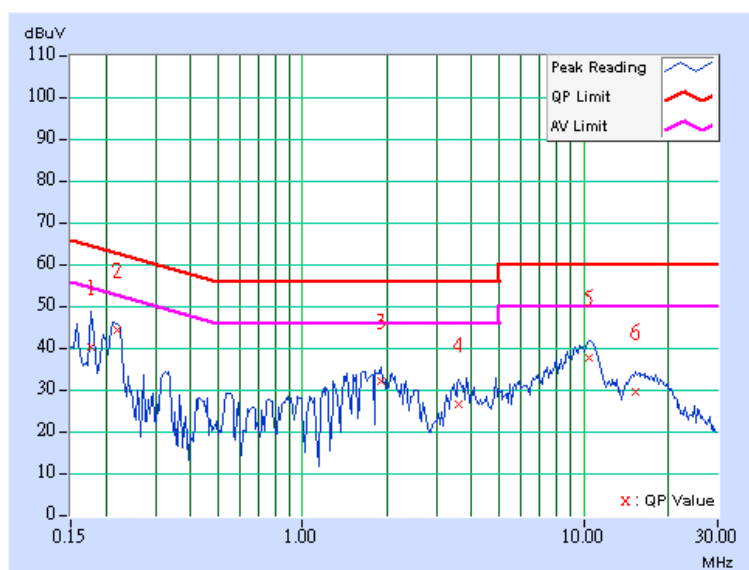


Conducted Worst-Case data (With Cradle)

EUT	D-Link AirPremier AG DWL-AG132 Wireless USB Adapter	MODEL	DWL-AG132
		6dB BANDWIDTH	9 kHz
CHANNEL	11	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	PHASE	Line (L)
TEST MOED	2 (With USB Cradle)	TESTED BY	Match Tsui

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	0.177	0.11	39.54	-	39.65	-	64.61	54.61	-24.96	-
2	0.220	0.12	43.59	-	43.71	-	62.81	52.81	-19.10	-
3	1.898	0.16	31.57	-	31.73	-	56.00	46.00	-24.27	-
4	3.613	0.20	25.77	-	25.97	-	56.00	46.00	-30.03	-
5	10.492	0.35	36.84	-	37.19	-	60.00	50.00	-22.81	-
6	15.367	0.80	28.75	-	29.55	-	60.00	50.00	-30.45	-

- 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	D-Link AirPremier AG DWL-AG132 Wireless USB Adapter	MODEL	DWL-AG132
		6dB BANDWIDTH	9 kHz
CHANNEL	11	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	PHASE	Neutral (N)
TEST MODE	2 (With USB Cradle)	TESTED BY	Match Tsui

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	0.220	0.11	42.83	-	42.94	-	62.81	52.81	-19.87	-
2	0.338	0.11	29.90	-	30.01	-	59.26	49.26	-29.25	-
3	1.484	0.15	29.11	-	29.26	-	56.00	46.00	-26.74	-
4	3.660	0.19	26.76	-	26.95	-	56.00	46.00	-29.05	-
5	10.586	0.32	36.84	-	37.16	-	60.00	50.00	-22.84	-
6	16.230	0.66	27.33	-	27.99	-	60.00	50.00	-32.01	-

- 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.

