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

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Dec. 11, 2004
RF signal cable Woken	5D-FB	Cable-HyC02-01	Mar. 07, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Mar. 10, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Mar. 04, 2005
Software ADT	ADT_Cond_V3	NA	NA

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. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

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.

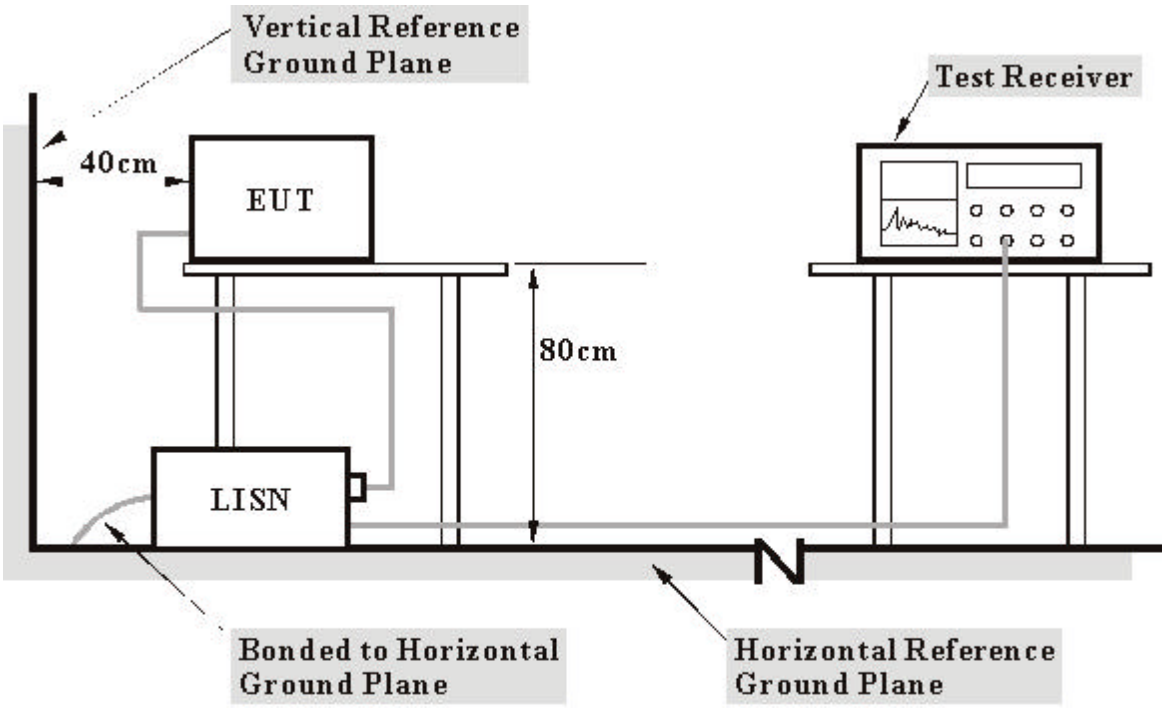
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

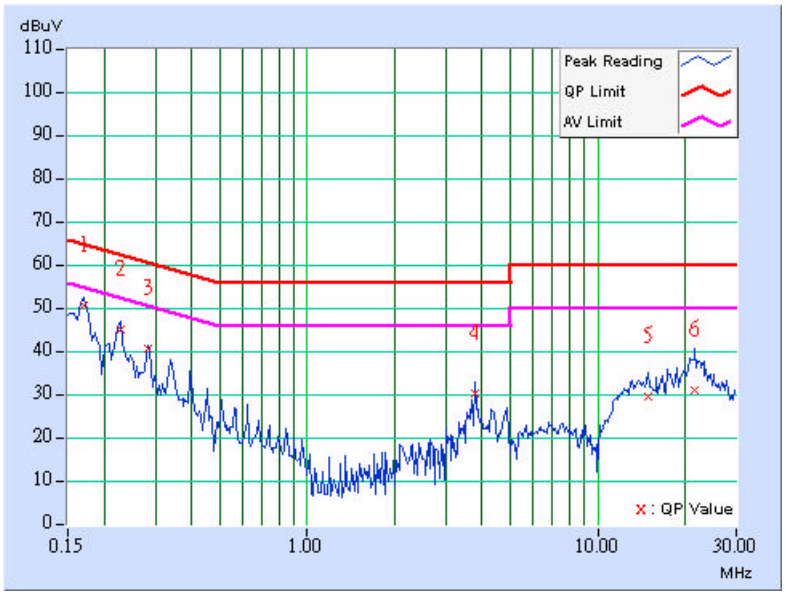
Same as 4.1.6

5.1.7 TEST RESULTS

EUT	Mini- PCI CARD	**MODEL**	WLL4030
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	**PHASE**	Line (L)
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.170**	**0.10**	**49.86**	**-**	**49.96**	**-**	**64.98**	**54.98**	**-15.02**	**-**
2	0.228	0.10	44.04	-	44.14	-	62.52	52.52	-18.38	-
3	0.283	0.11	39.68	-	39.79	-	60.73	50.73	-20.95	-
4	3.793	0.31	29.53	-	29.84	-	56.00	46.00	-26.16	-
5	14.949	0.70	28.75	-	29.45	-	60.00	50.00	-30.55	-
6	21.551	0.99	30.03	-	31.02	-	60.00	50.00	-28.98	-

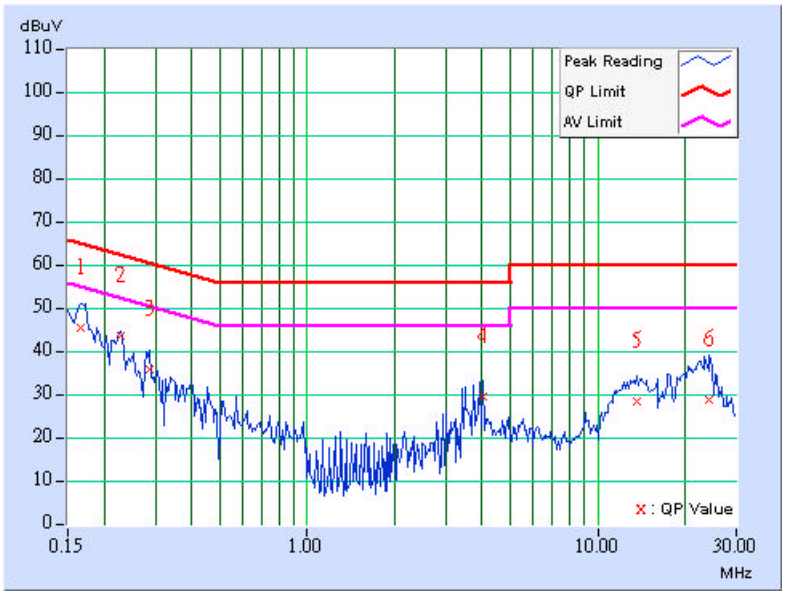
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Mini- PCI CARD	MODEL	WLL4030
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	6dB BANDWIDTH	9 kHz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.10	44.82	-	44.92	-	65.18	55.18	-20.26	-
2	0.228	0.10	42.83	-	42.93	-	62.52	52.52	-19.59	-
3	0.287	0.11	35.31	-	35.42	-	60.62	50.62	-25.20	-
4	4.020	0.30	28.96	-	29.26	-	56.00	46.00	-26.74	-
5	13.688	0.54	27.75	-	28.29	-	60.00	50.00	-31.71	-
6	24.297	0.69	28.34	-	29.03	-	60.00	50.00	-30.97	-

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



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

5.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

NOTE:

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

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

5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun. 08, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jun. 03, 2005
BILOG Antenna SCHWARZBECK	VULB9168	9168-153	Feb. 03, 2005
HORN Antenna SCHWARZBECK	9120D	9120D-408	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170243	Feb. 23, 2005
Preamplifier Agilent	8447D	2944A10633	Nov. 09, 2005
Preamplifier Agilent	8449B	3008A01964	Nov. 06, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218183/4	Mar. 05, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218195/4	Mar. 05, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

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. The test was performed in HwaYa Chamber 2.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The IC Site Registration No. is IC4924-3.

5.2.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

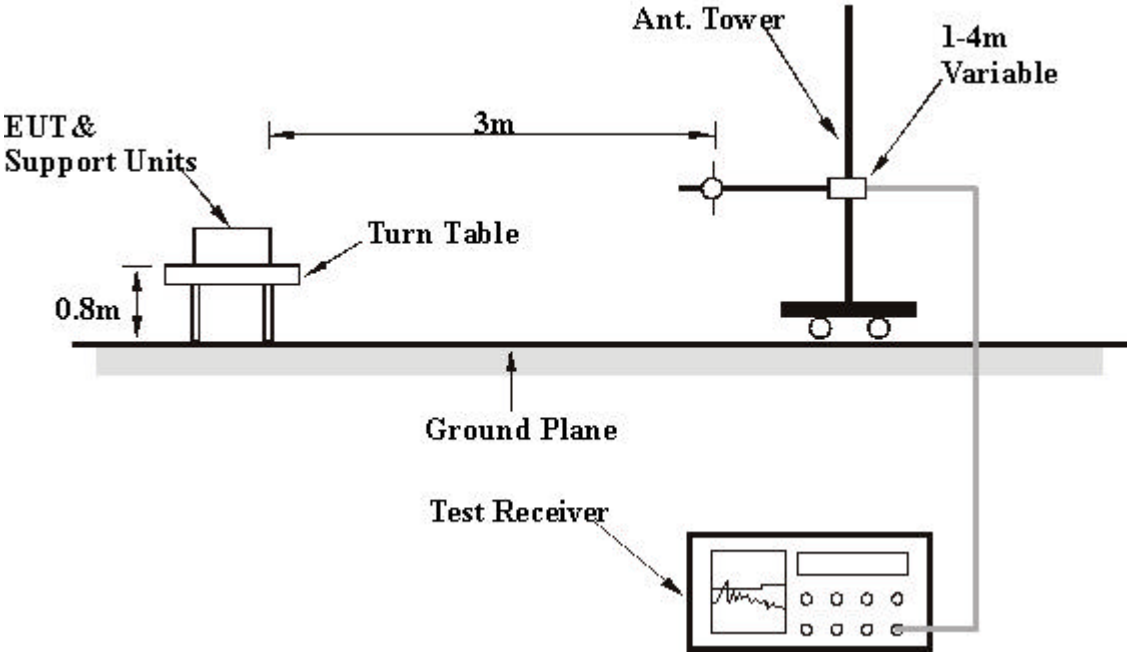
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

5.2.5 DEVIATION FROM TEST STANDARD

No deviation

5.2.6 TEST SETUP



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

5.2.7 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.8 TEST RESULTS

EUT	Mini- PCI CARD	**MODEL**	WLL4030
CHANNEL	Channel 5	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**TESTED BY**: Leo Hung	

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	173.85	38.53 QP	43.50	-4.97	2.50 H	40	25.00	13.53
2	232.16	39.46 QP	46.00	-6.54	1.75 H	136	26.72	12.74
3	397.39	39.74 QP	46.00	-6.26	2.50 H	208	22.84	16.90
4	500.42	35.58 QP	46.00	-10.42	1.50 H	40	16.86	18.72
5	665.65	42.79 QP	46.00	-3.21	1.00 H	46	20.67	22.12
6	795.89	44.69 QP	46.00	-1.31	1.00 H	52	20.93	23.76

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	98.04	31.47 QP	43.50	-12.03	1.50 V	310	20.45	11.02
2	397.39	34.11 QP	46.00	-11.89	1.25 V	172	17.21	16.90
3	496.53	34.81 QP	46.00	-11.19	1.00 V	100	16.14	18.67
4	531.52	39.97 QP	46.00	-6.03	1.00 V	115	20.57	19.40
5	663.71	43.56 QP	46.00	-2.44	1.00 V	307	21.47	22.10
6	797.84	40.81 QP	46.00	-5.19	1.25 V	262	17.04	23.77

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	Mini- PCI CARD	MODEL	WLL4030
FREQUENCY RANGE	1 ~ 40 GHz	CHANNEL	1
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH, 991hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5150.00	60.00 PK	74.00	-14.00	1.00 H	357	21.56	38.44
1	#5150.00	50.11 AV	54.00	-3.89	1.00 H	357	11.67	38.44
2	*5180.00	111.36 PK			1.00 H	357	72.79	38.57
2	*5180.00	101.62 AV			1.00 H	357	63.05	38.57
3	6906.00	52.54 PK	68.30	-15.76	1.36 H	349	8.80	43.74
4	10360.00	60.16 PK	68.30	-8.14	1.13 H	251	10.48	49.68

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5150.00	57.60 PK	74.00	-16.40	1.29 V	349	19.16	38.44
1	#5150.00	46.84 AV	54.00	-7.16	1.29 V	349	8.40	38.44
2	*5180.00	108.11 PK			1.29 V	349	69.54	38.57
2	*5180.00	98.35 AV			1.29 V	349	59.78	38.57
3	6906.00	43.92 PK	68.30	-24.38	1.36 V	243	0.18	43.74
4	10360.00	63.03 PK	68.30	-5.27	1.87 V	348	13.35	49.68

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Mini- PCI CARD	MODEL	WLL4030
FREQUENCY RANGE	1 ~ 40 GHz	CHANNEL	4
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH, 991hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	112.08 PK			1.09 H	0	73.46	38.62
1	*5240.00	101.50 AV			1.09 H	0	62.88	38.62
2	6987.00	51.26 PK	68.30	-17.04	1.36 H	224	7.93	43.33
3	10480.00	58.29 PK	68.30	-10.01	1.12 H	36	9.19	49.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	107.40 PK			1.04 V	288	68.78	38.62
1	*5240.00	97.23 AV			1.04 V	288	58.61	38.62
2	6987.00	46.36 PK	68.30	-21.94	1.12 V	21	3.03	43.33
3	10480.00	62.87 PK	68.30	-5.43	1.00 V	248	13.77	49.10

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Mini- PCI CARD	MODEL	WLL4030
FREQUENCY RANGE	1 ~ 40 GHz	CHANNEL	5
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH, 991hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5260.00	112.36 PK			1.00 H	5	73.75	38.61
1	*5260.00	102.71 AV			1.00 H	5	64.10	38.61
2	7013.00	48.89 PK	68.30	-19.41	1.36 H	287	5.60	43.29
3	10520.00	57.82 PK	68.30	-10.48	1.00 H	209	8.85	48.97

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5260.00	108.10 PK			1.04 V	290	69.49	38.61
1	*5260.00	98.25 AV			1.04 V	290	59.64	38.61
2	7013.00	44.70 PK	68.30	-23.60	1.42 V	339	1.41	43.29
3	10520.00	60.81 PK	68.30	-7.49	1.56 V	327	11.84	48.97

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Mini- PCI CARD	MODEL	WLL4030
FREQUENCY RANGE	1 ~ 40 GHz	CHANNEL	8
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH, 991hPa	TESTED BY	Long Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	110.83 PK			1.00 H	0	72.27	38.56
1	*5320.00	100.17 AV			1.00 H	0	61.61	38.56
2	#5350.00	61.08 PK	74.00	-12.92	1.00 H	0	22.55	38.53
2	#5350.00	50.42 AV	54.00	-3.58	1.00 H	0	11.89	38.53
3	7093.00	48.36 PK	68.30	-19.94	1.11 H	356	4.91	43.45
4	#10640.00	57.95 PK	74.00	-16.05	1.00 H	296	8.62	49.33
4	#10640.00	45.19 AV	54.00	-8.81	1.00 H	296	-4.14	49.33

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	107.89 PK			1.02 V	286	69.33	38.56
1	*5320.00	98.45 AV			1.02 V	286	59.89	38.56
2	#5350.00	58.14 PK	74.00	-15.86	1.02 V	286	19.61	38.53
2	#5350.00	48.70 AV	54.00	-5.30	1.02 V	286	10.17	38.53
3	7093.00	44.69 PK	68.30	-23.61	1.35 V	224	1.24	43.45
4	#10640.00	60.12 PK	74.00	-13.88	1.51 V	10	10.79	49.33
4	#10640.00	47.29 AV	54.00	-6.71	1.51 V	10	-2.04	49.33

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Mini- PCI CARD	MODEL	WLL4030
FREQUENCY RANGE	1 ~ 40 GHz	CHANNEL	9
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH, 991hPa	TESTED BY	Long Hung

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	3830.00	48.82 PK	74.00	-25.18	1.06 H	200	13.81	35.01
2	5715.00	62.40 PK	68.30	-5.90	1.31 H	209	23.36	39.04
3	**5725.00**	**77.05 PK**	**78.30**	**-1.25**	**1.31 H**	**209**	**37.96**	**39.09**
4	*5745.00	109.39 PK			1.31 H	209	70.19	39.20
4	*5745.00	99.15 AV			1.31 H	209	59.95	39.20
5	#11490.00	60.50 PK	74.00	-13.50	1.52 H	4	10.75	49.75
5	#11490.00	48.29 AV	54.00	-5.71	1.52 H	4	-1.46	49.75

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	#3830.00	44.83 PK	74.00	-29.17	1.12 V	257	9.82	35.01
1	#3830.00	32.08 AV	54.00	-21.92	1.12 V	257	-2.93	35.01
2	5715.00	60.33 PK	68.30	-7.97	1.07 V	11	21.29	39.04
3	5725.00	74.15 PK	78.30	-4.15	1.07 V	11	35.06	39.09
4	*5745.00	102.11 PK			1.07 V	11	62.91	39.20
4	*5745.00	91.91 AV			1.07 V	11	52.71	39.20
5	#11490.00	65.15 PK	74.00	-8.85	1.06 V	308	15.40	49.75
5	#11490.00	52.45 AV	54.00	-1.55	1.06 V	308	2.70	49.75

NOTE:

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.
5. " * " : Fundamental frequency.
6. "#" The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT	Mini- PCI CARD	MODEL	WLL4030
FREQUENCY RANGE	1 ~ 40 GHz	CHANNEL	12
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 67%RH, 991hPa	TESTED BY	Long Hung

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	#3870.00	44.07 PK	74.00	-29.93	1.10 H	242	9.02	35.05
1	#3870.00	31.51 AV	54.00	-22.49	1.10 H	242	-3.54	35.05
2	*5805.00	110.10 PK			1.59 H	351	70.61	39.49
2	*5805.00	98.13 AV			1.59 H	351	58.64	39.49
3	5825.00	76.69 PK	78.30	-1.61	1.59 H	351	37.21	39.48
4	5835.00	64.92 PK	68.30	-3.38	1.59 H	351	25.44	39.48
5	#11610.00	64.63 PK	74.00	-9.37	1.37 H	164	14.80	49.83
5	#11610.00	51.53 AV	54.00	-2.47	1.37 H	164	1.70	49.83

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	#3870.00	46.60 PK	74.00	-27.40	1.11 V	35	11.55	35.05
1	#3870.00	41.62 AV	54.00	-12.38	1.11 V	35	6.57	35.05
2	*5805.00	105.41 PK			1.37 V	283	65.92	39.49
2	*5805.00	95.67 AV			1.37 V	283	56.18	39.49
3	5825.00	76.21 PK	78.30	-2.09	1.37 V	283	36.73	39.48
4	5835.00	62.33 PK	68.30	-5.97	1.37 V	283	22.85	39.48
5	#11610.00	51.23 PK	74.00	-22.77	1.00 V	44	1.40	49.83
5	#11610.00	36.99 AV	54.00	-17.01	1.00 V	44	-12.84	49.83

NOTE:

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.
5. " * " : Fundamental frequency.
6. "#" The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

5.3 PEAK TRANSMIT POWER MEASUREMENT

5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

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

5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
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.

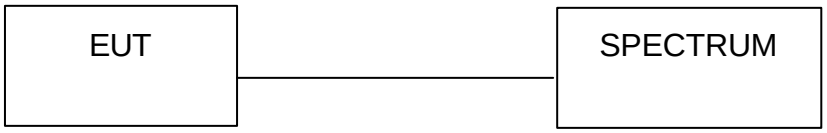
5.3.3 TEST PROCEDURE

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

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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

5.3.7 TEST RESULTS

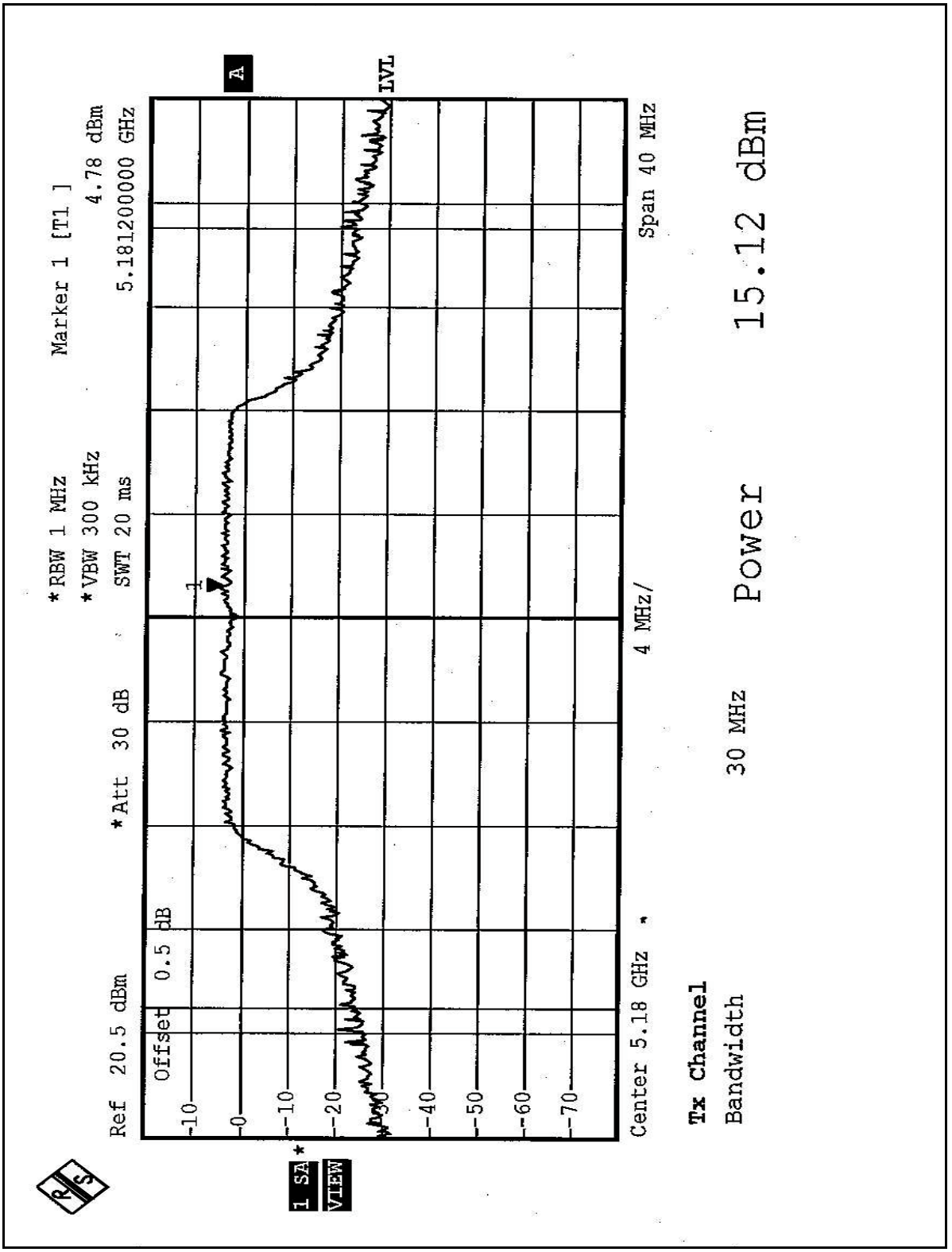
EUT	Mini- PCI CARD	**MODEL**	WLL4030
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY	Leo Hung		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	32.509	15.12	17.00	29.40	PASS
4	5240	32.885	15.17	17.00	26.95	PASS
5	5260	41.976	16.23	24.00	26.53	PASS
8	5320	41.400	16.17	24.00	26.25	PASS
9	5745	65.163	18.14	30.00	35.10	PASS
12	5805	65.163	18.14	30.00	36.20	PASS

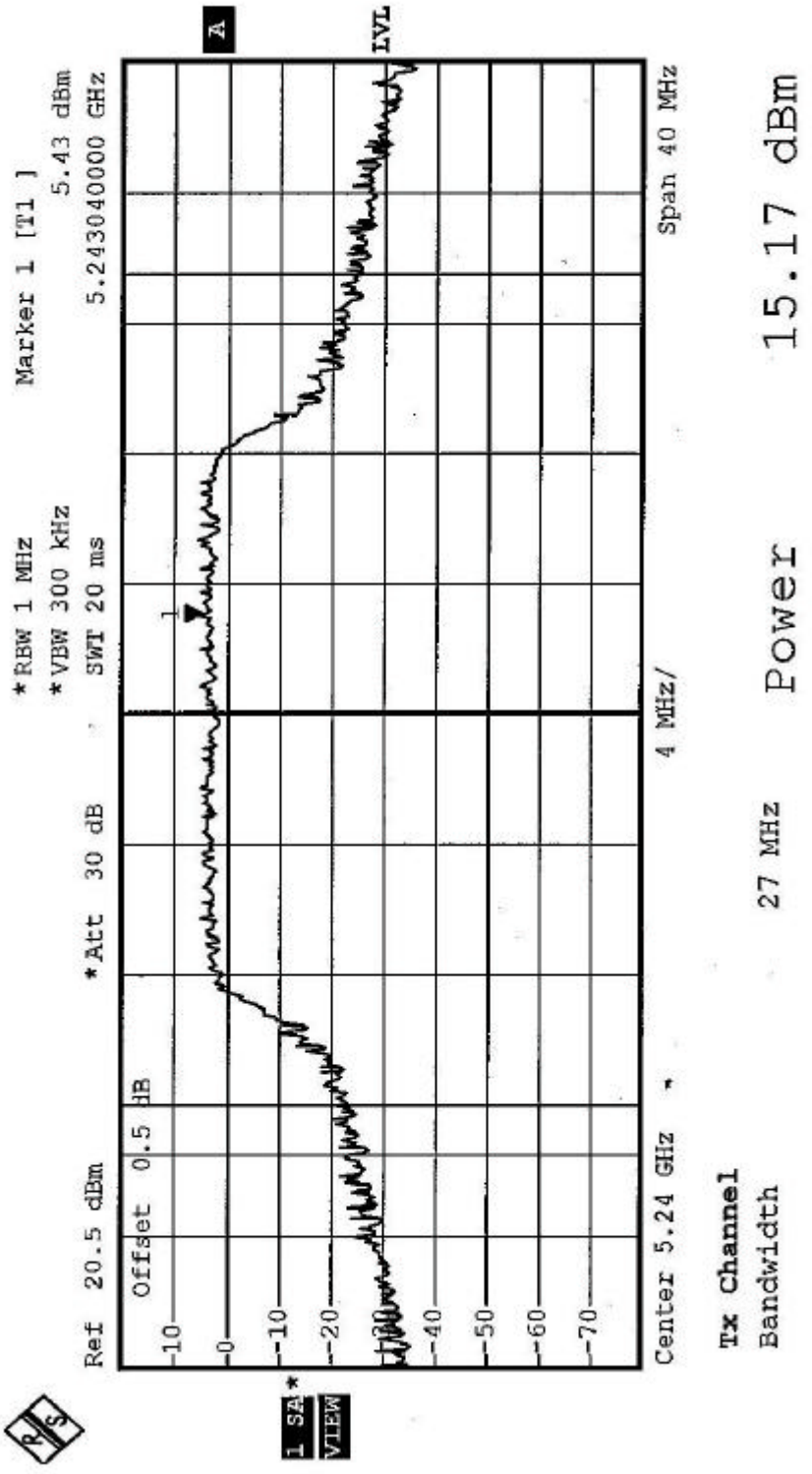
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:

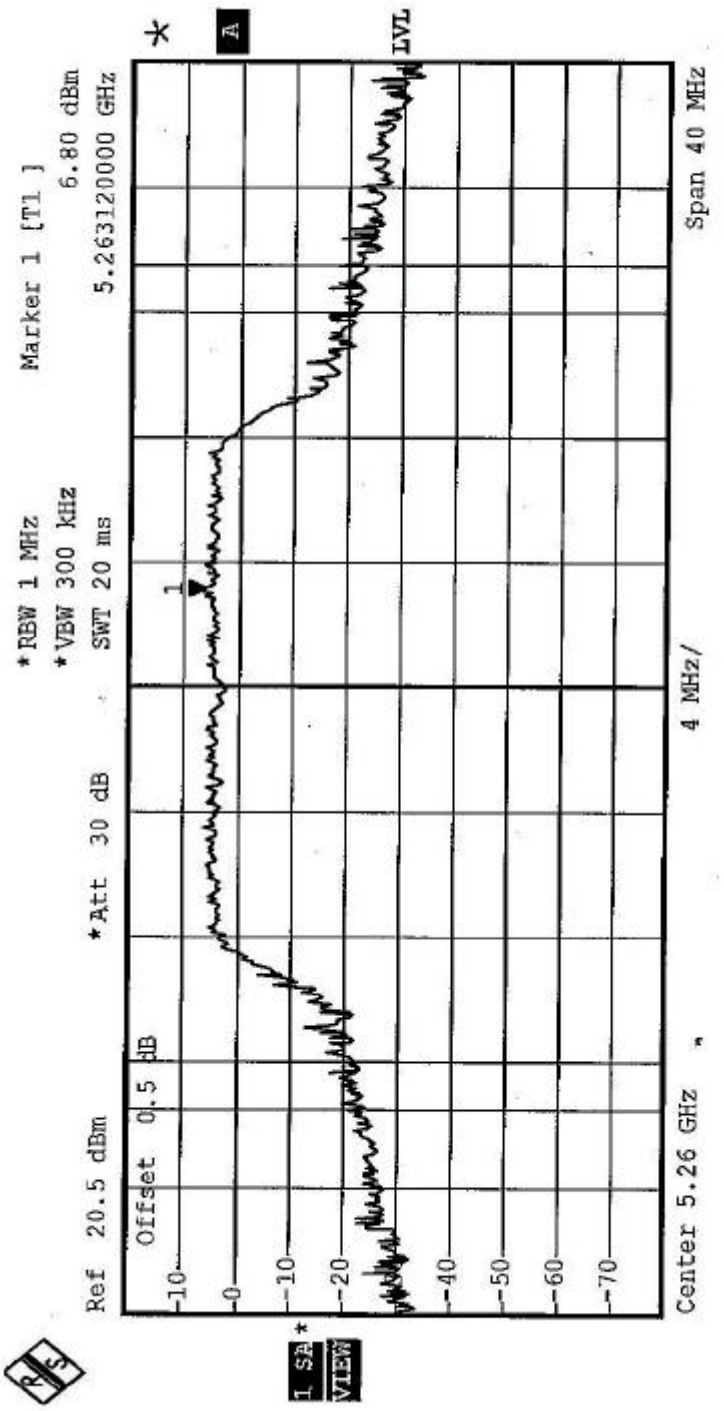
CH1



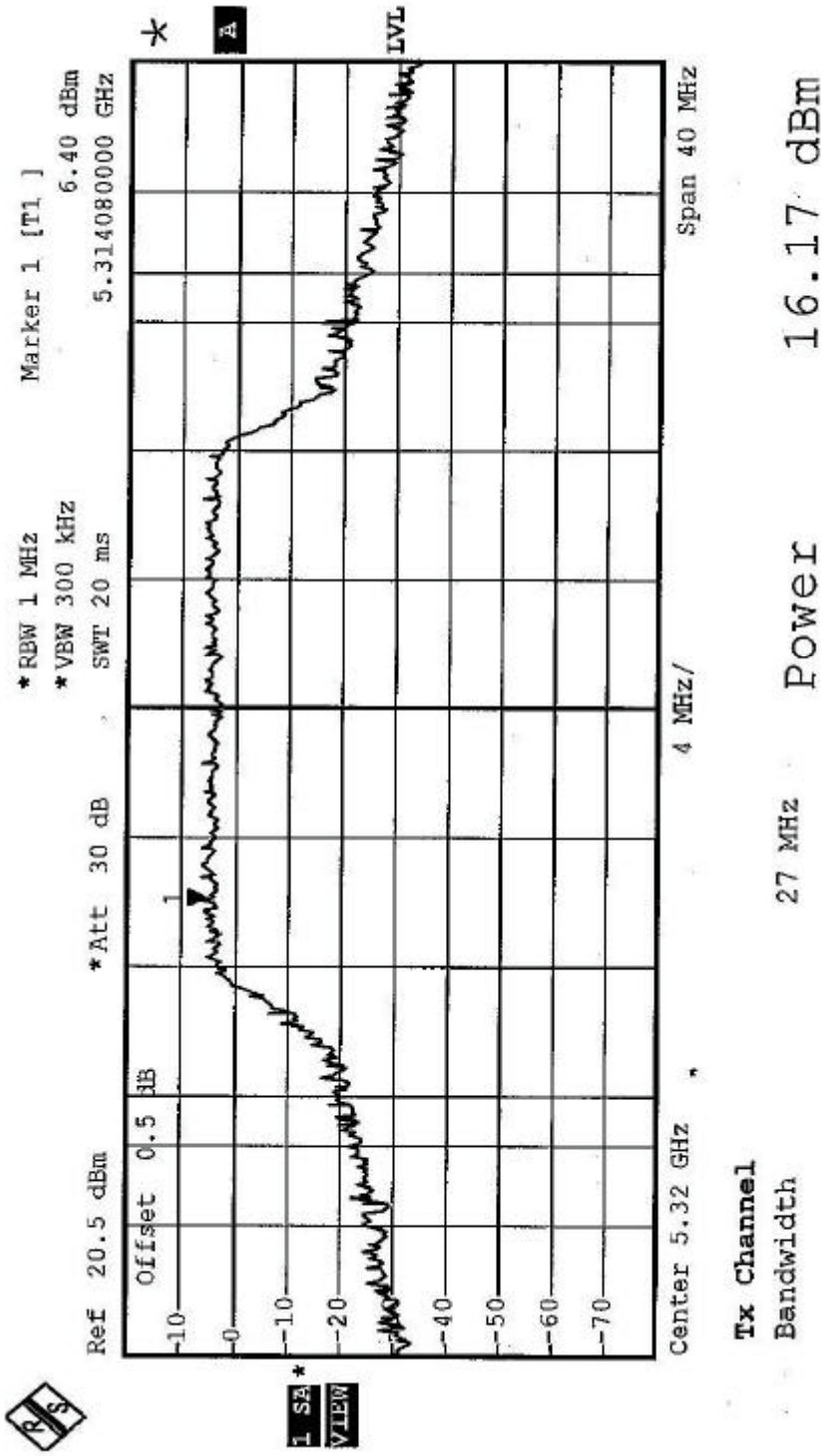
CH4


Ref 20.5 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
5.43 dBm
5.243040000 GHz
Center 5.24 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
27 MHz
Power
15.17 dBm
1 SA
VIEW
A
MAXH

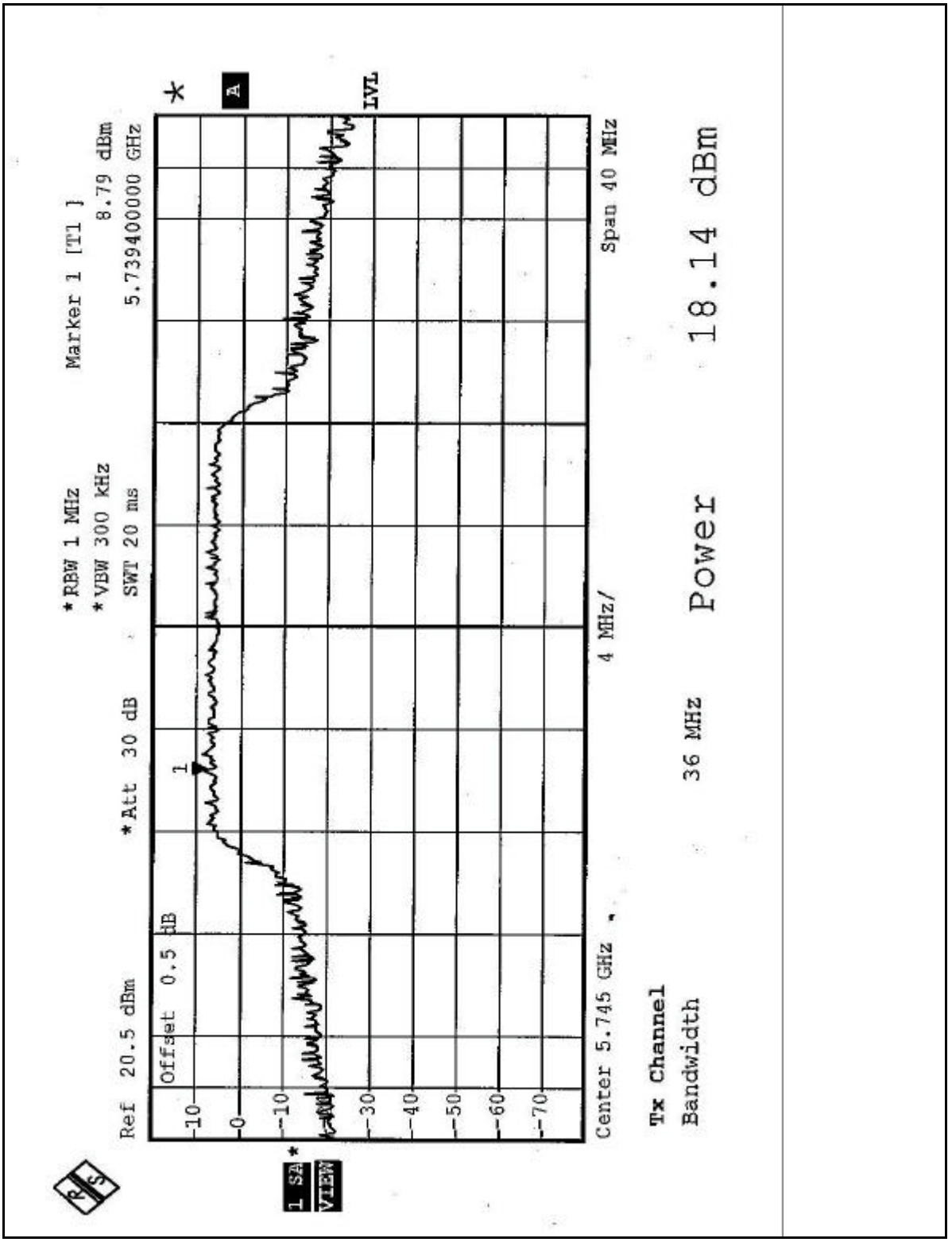
CH5


Marker 1 [T1]
6.80 dBm
5.263120000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.26 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
27 MHz
Power
16.23 dBm
1 SA
VIEW
A
LVL

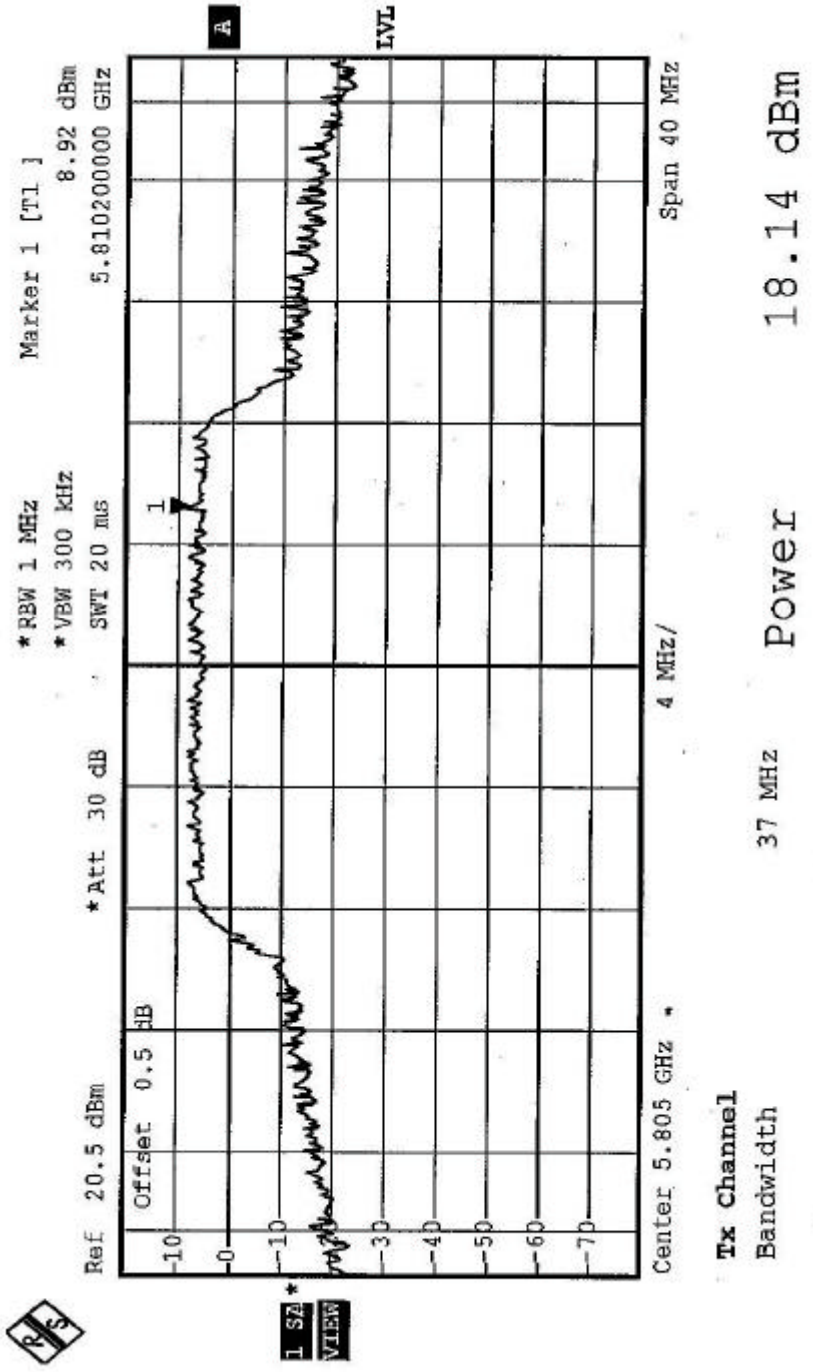
CH8


Marker 1 [T1]
6.40 dBm
5.314080000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.32 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
27 MHz
Power
16.17 dBm

CH9

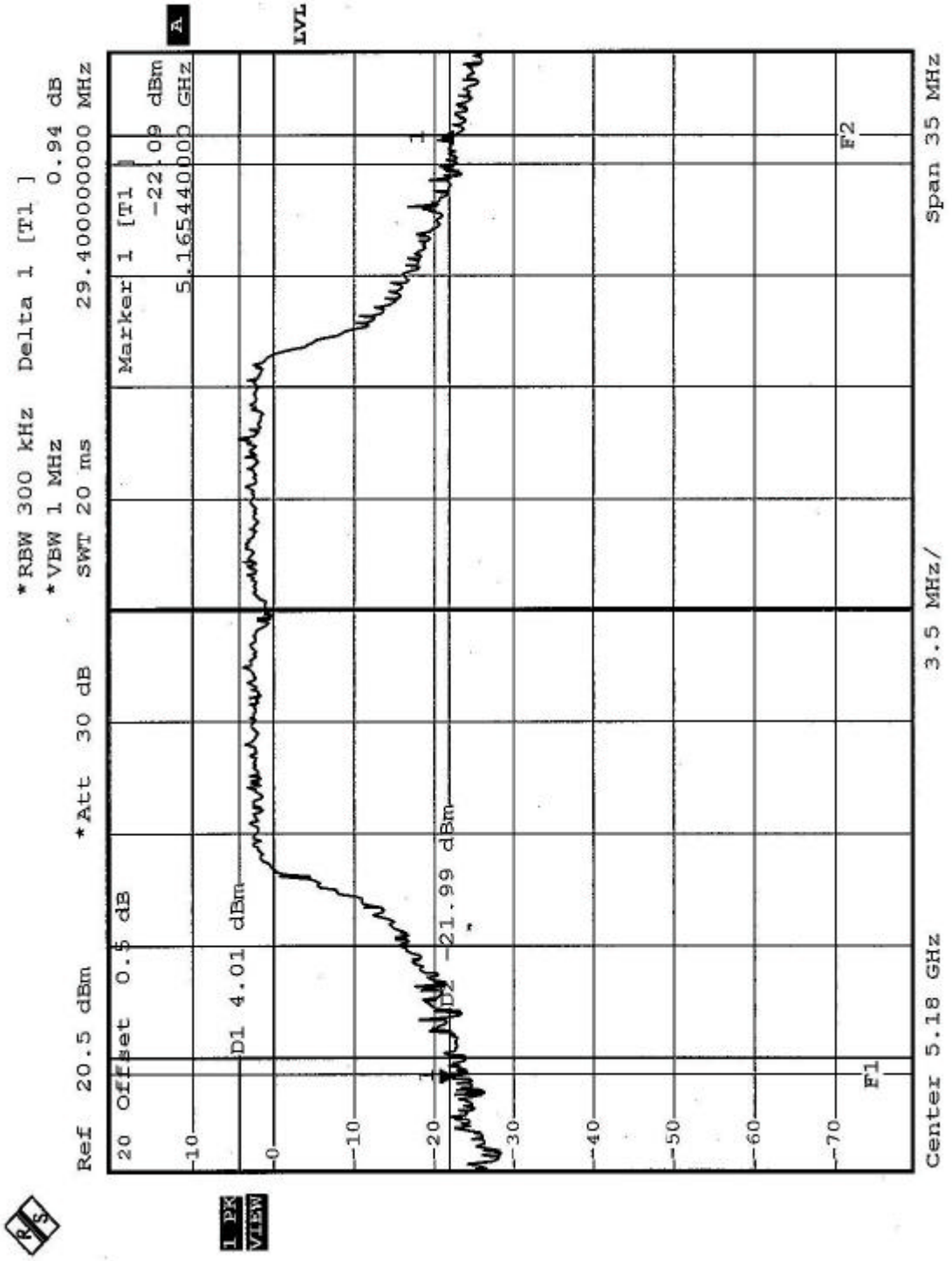

Marker 1 [T1]
8.79 dBm
5.739400000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.745 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
36 MHz
Power
18.14 dBm
LVL
A
1 SA
VIEW

CH12

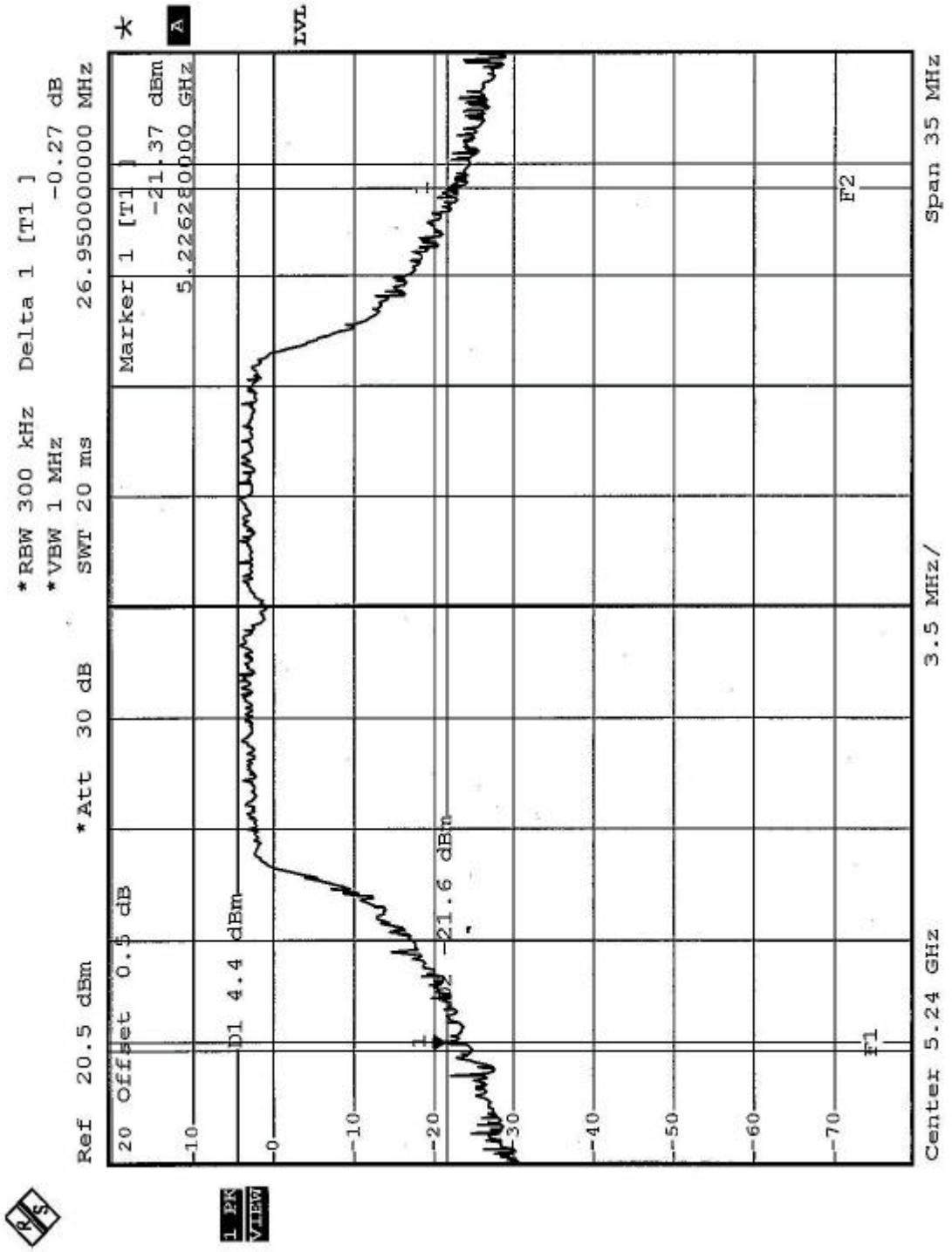

Tx Channel
Bandwidth
37 MHz
Power
18.14 dBm
Ref 20.5 dBm
Offset 0.5 dB
*RBW 1 MHz
*VBW 300 kHz
*Att 30 dB
SWT 20 ms
Marker 1 [T1]
8.92 dBm
5.810200000 GHz
Center 5.805 GHz
4 MHz/
Span 40 MHz
LVL
A
1 SA
VIEW

26dB Occupied Bandwidth:

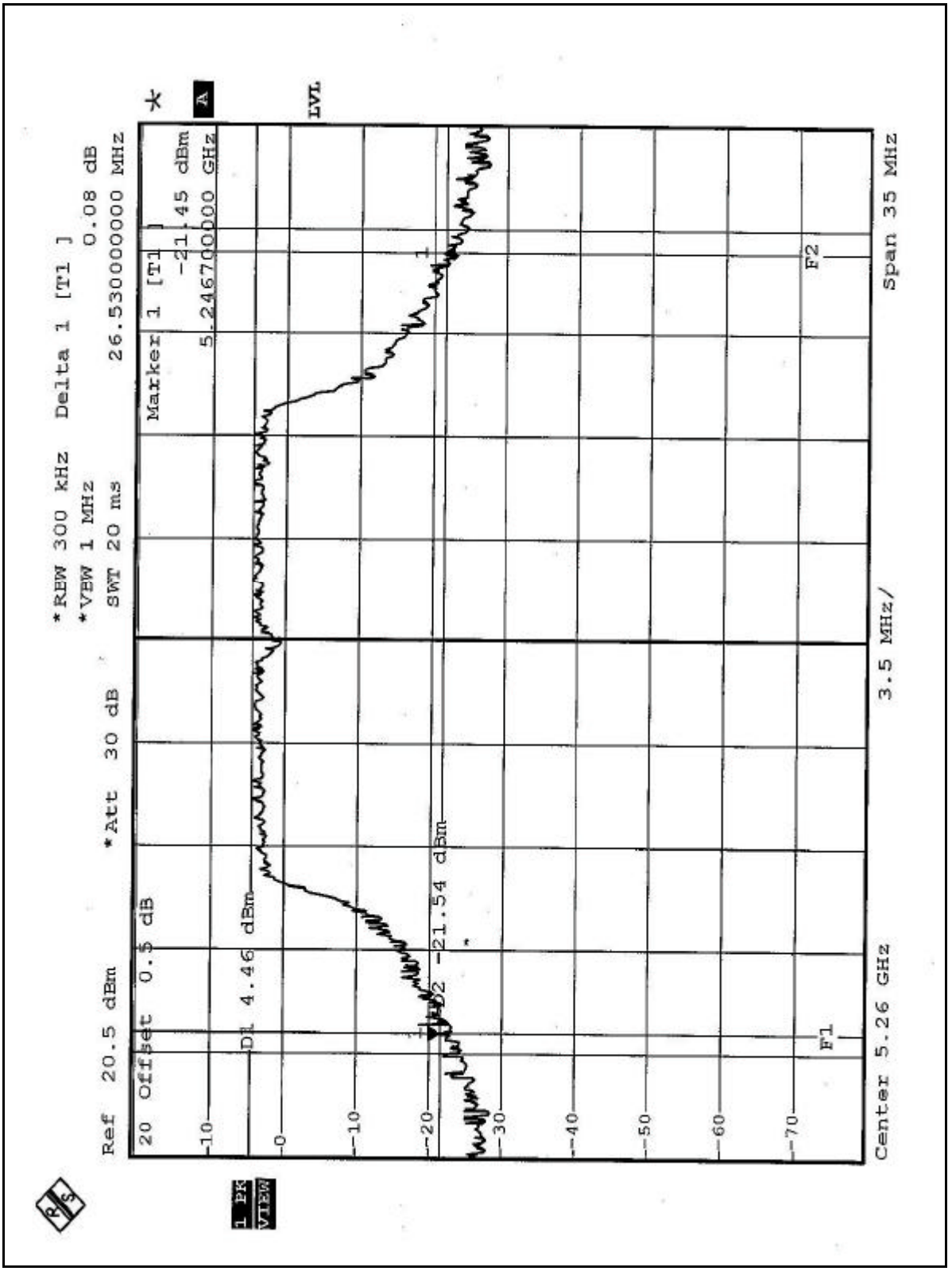
CH 1



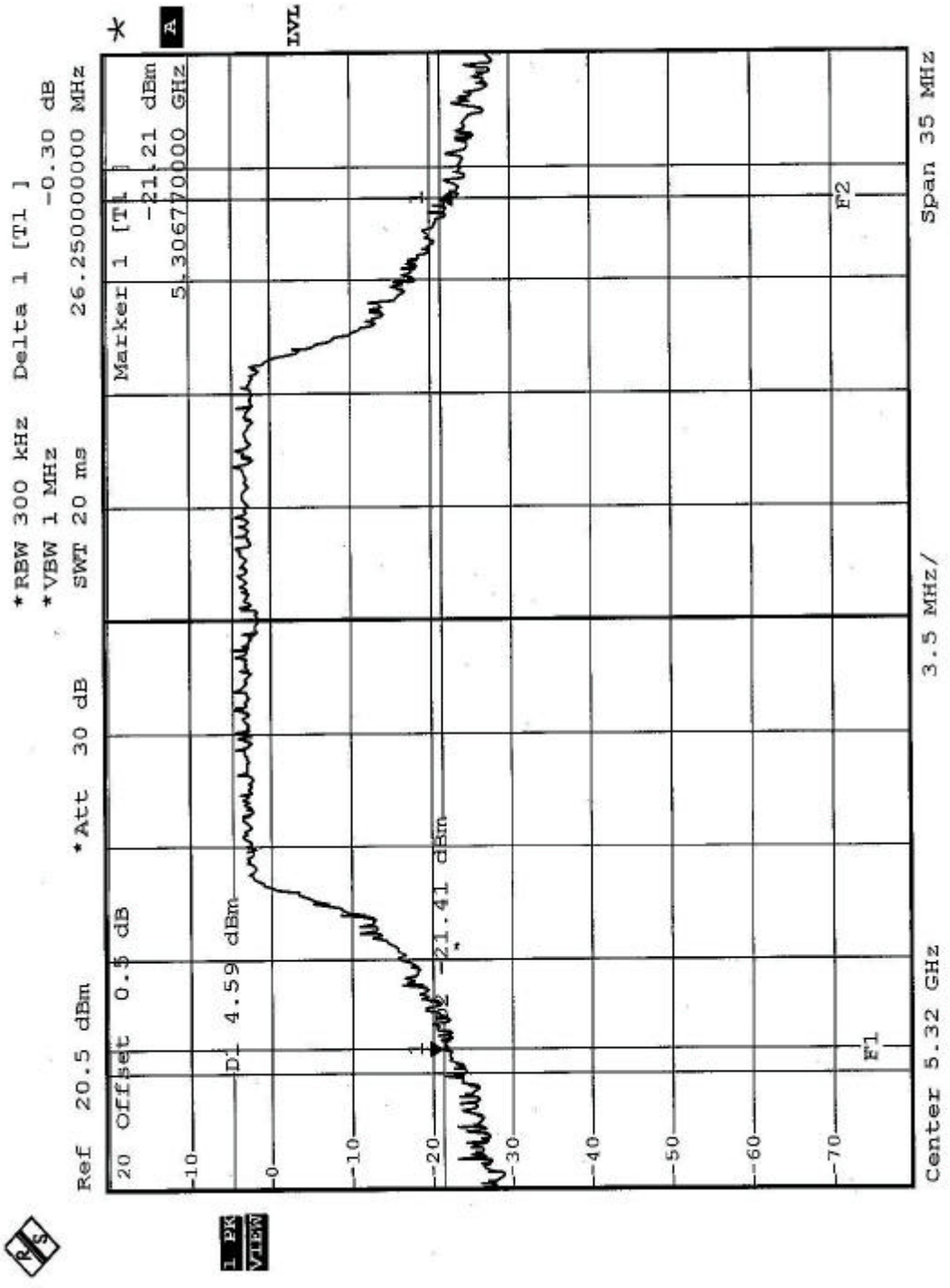
CH 4


*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.27 dB
26.950000000 MHz
Marker 1 [T1]
-21.37 dBm
5.226280000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
D1 4.4 dBm
-21.6 dBm
F1
F2
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
1 PK
VIEW

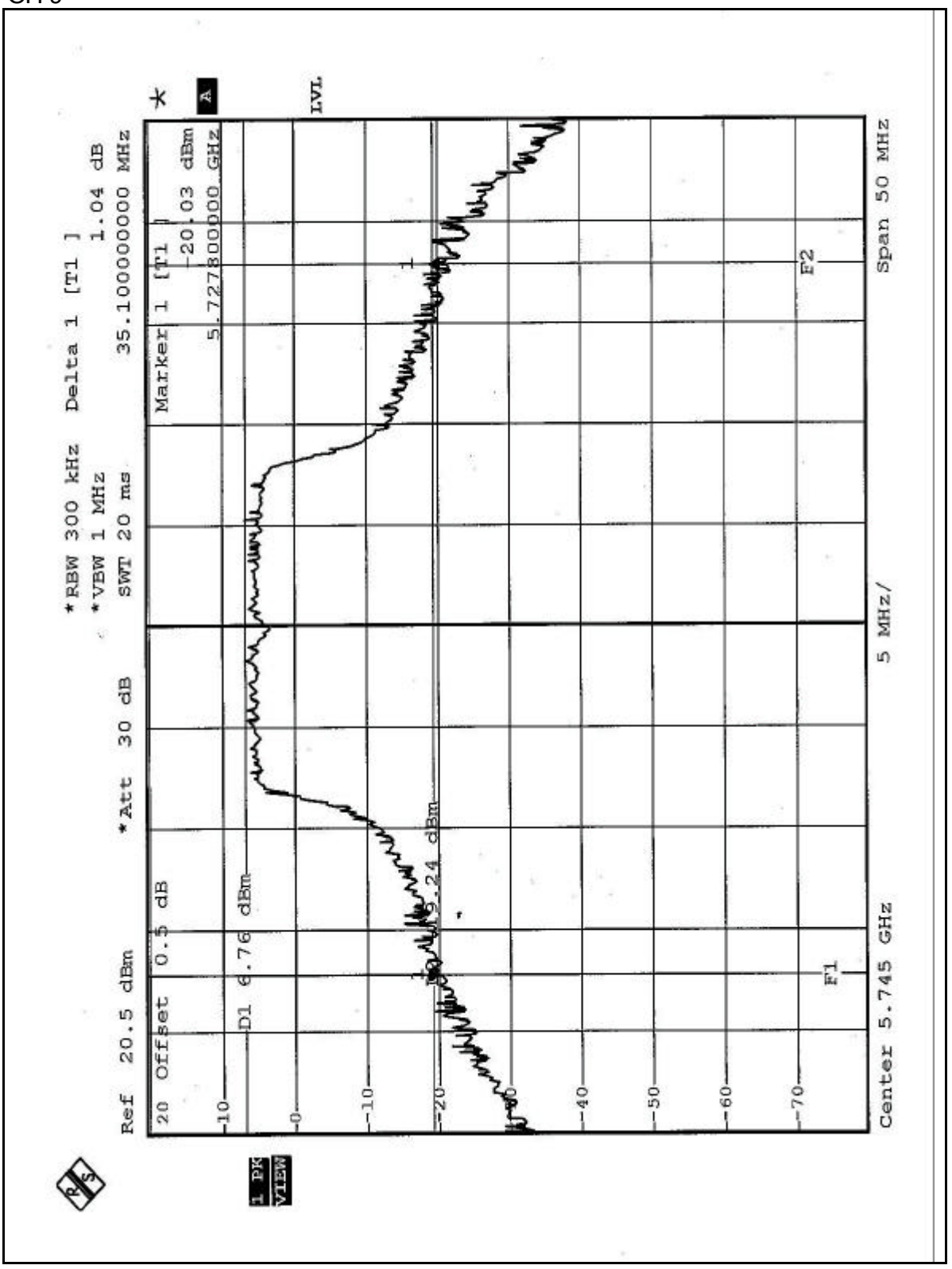
CH 5


*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
0.08 dB
26.530000000 MHz
Marker 1 [T1]
-21.45 dBm
5.246700000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
D1 4.46 dBm
D2 -21.54 dBm
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
F1
F2
1 PK VIEW

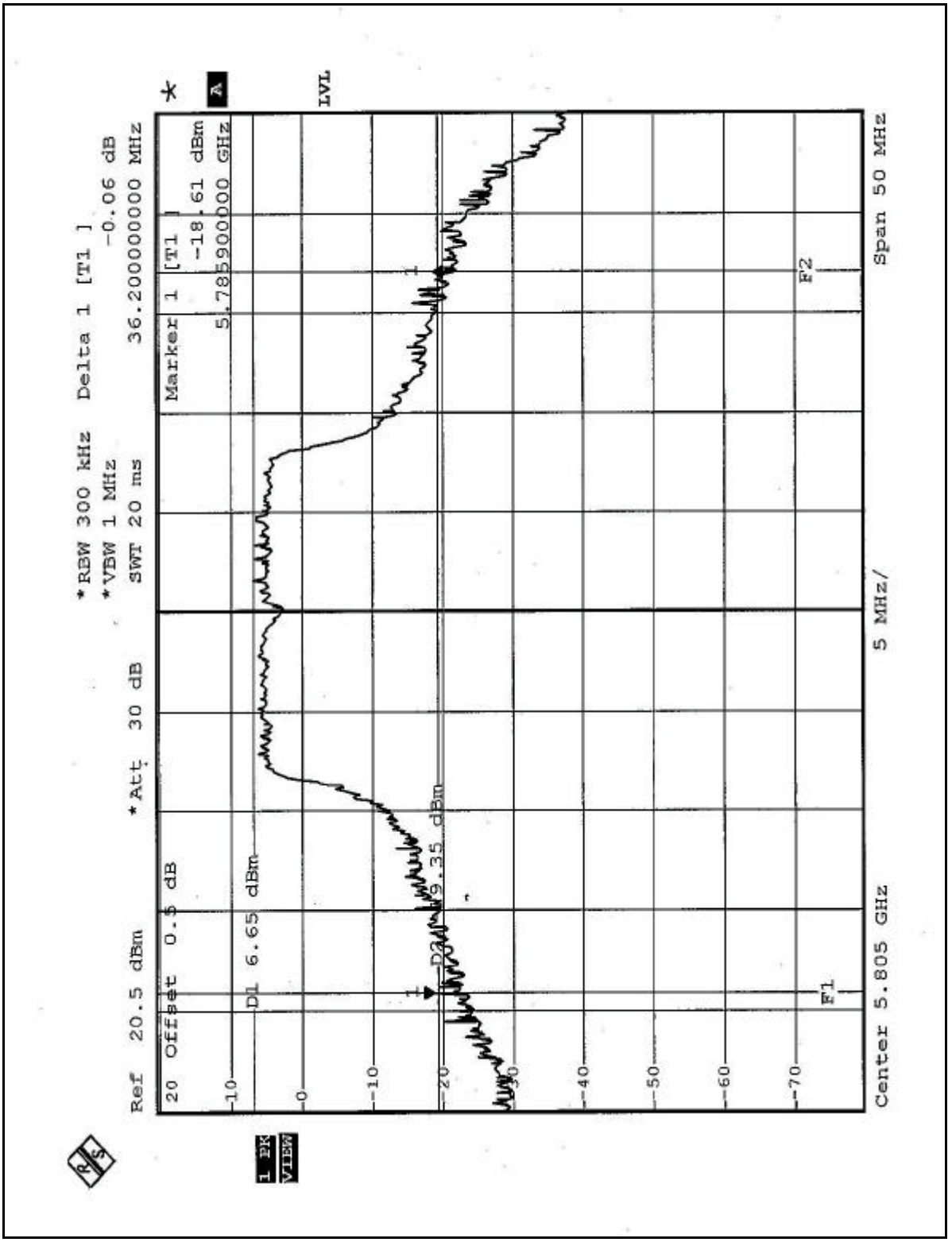
CH 8


*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.30 dB
26.25000000 MHz
Marker 1 [T1]
-21.21 dBm
5.30677000 GHz
Ref 20.5 dBm
Offset 0.5 dB
*Att 30 dB
D1 4.59 dBm
-21.41 dBm
F1
F2
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW

CH 9


*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
1.04 dB
35.100000000 MHz
Ref 20.5 dBm
Offset 0.5 dB
*Att 30 dB
Marker 1 [T1]
-20.03 dBm
5.727800000 GHz
D1 6.76 dBm
9.24 dBm
F1
F2
Center 5.745 GHz
5 MHz/
Span 50 MHz
1 PK VIEW
LVL

CH 12


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.06 dB
36.20000000 MHz
Marker 1 [T1]
-18.61 dBm
5.78590000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 6.65 dBm
D2 -9.35 dBm
F1
F2
Center 5.805 GHz
5 MHz/
Span 50 MHz
LVL
1 PK VIEW

5.4 PEAK POWER EXCURSION MEASUREMENT

5.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.725 – 5.825 GHz	13dB

5.4.2 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.