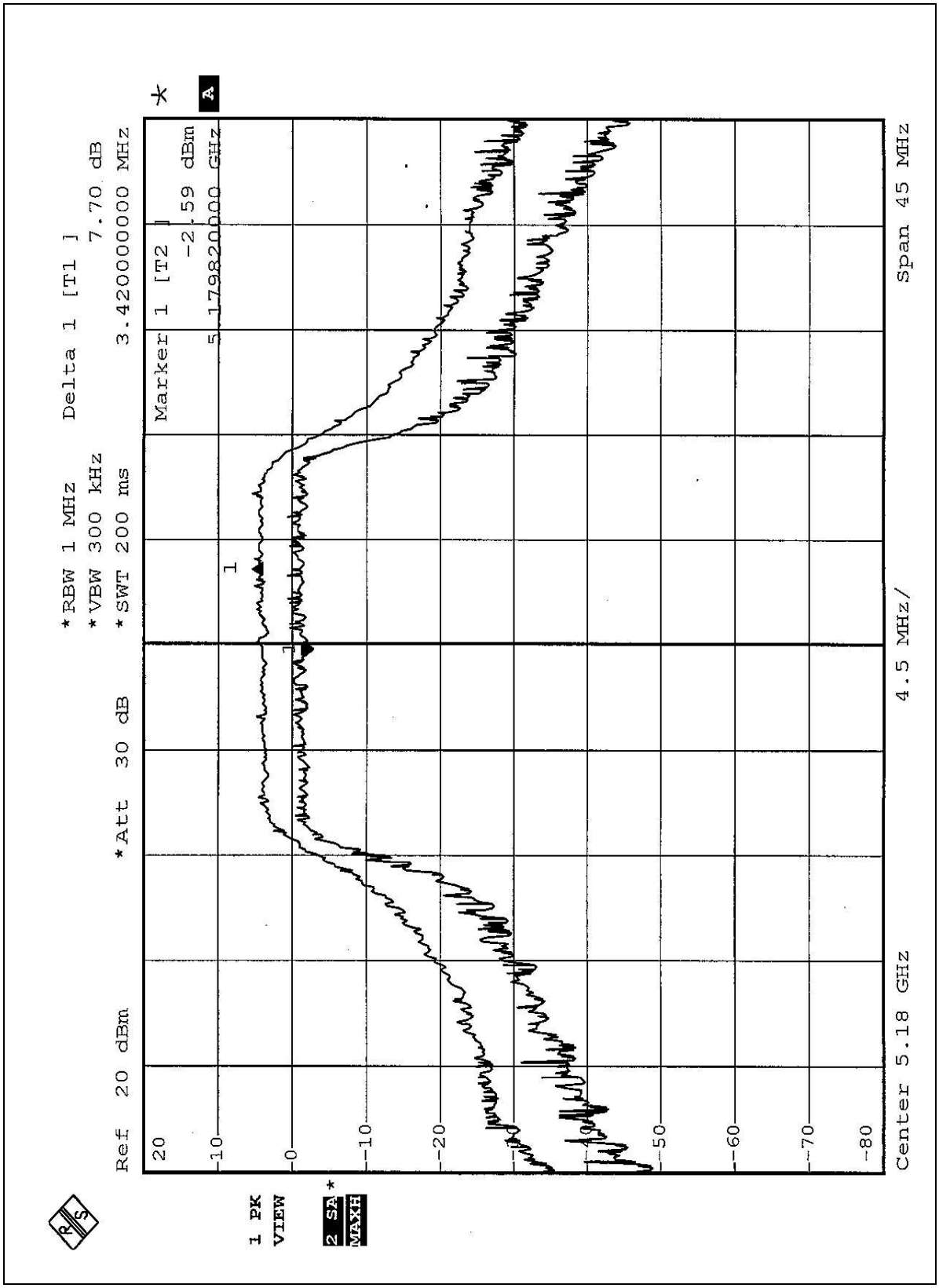
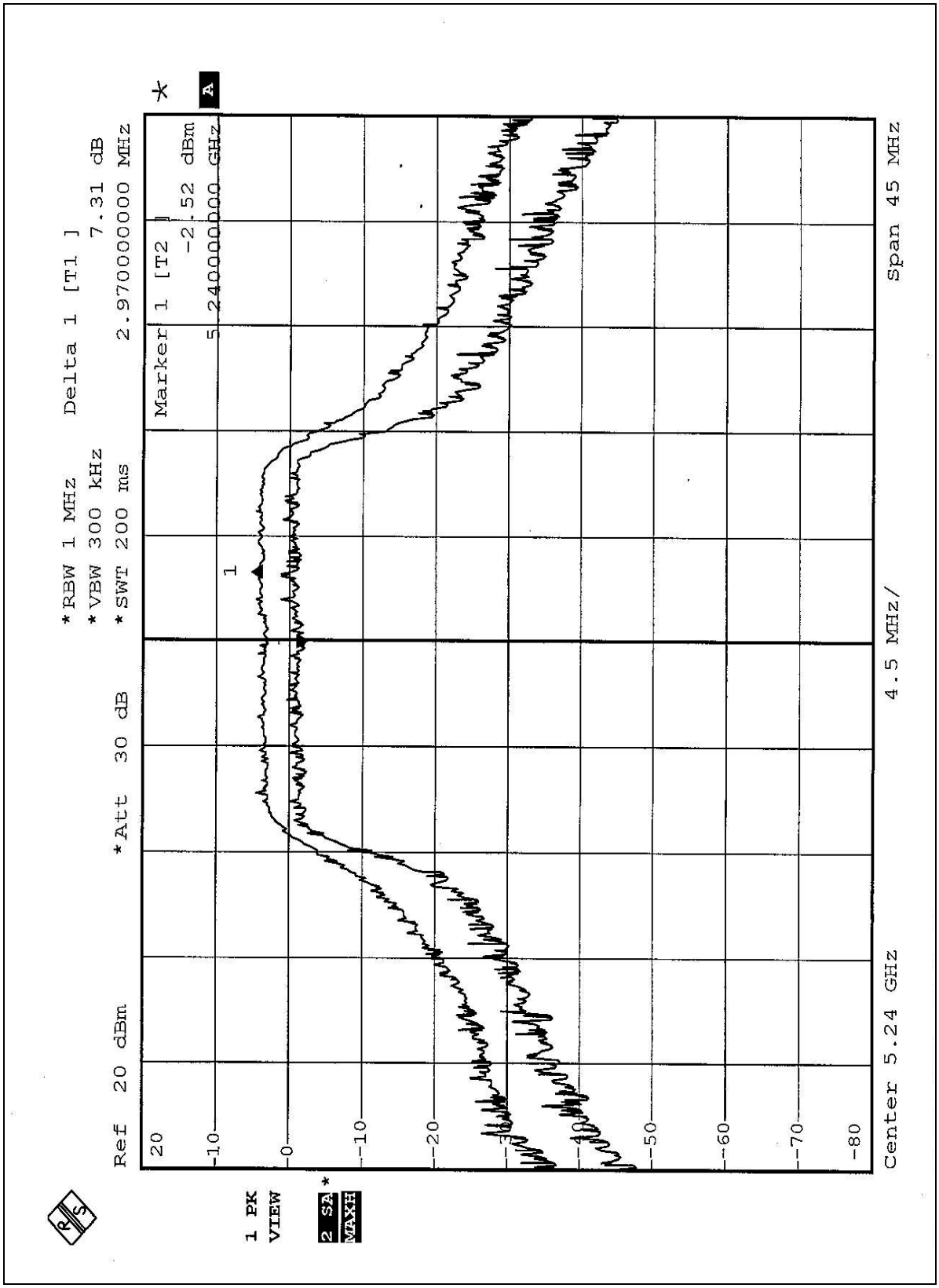
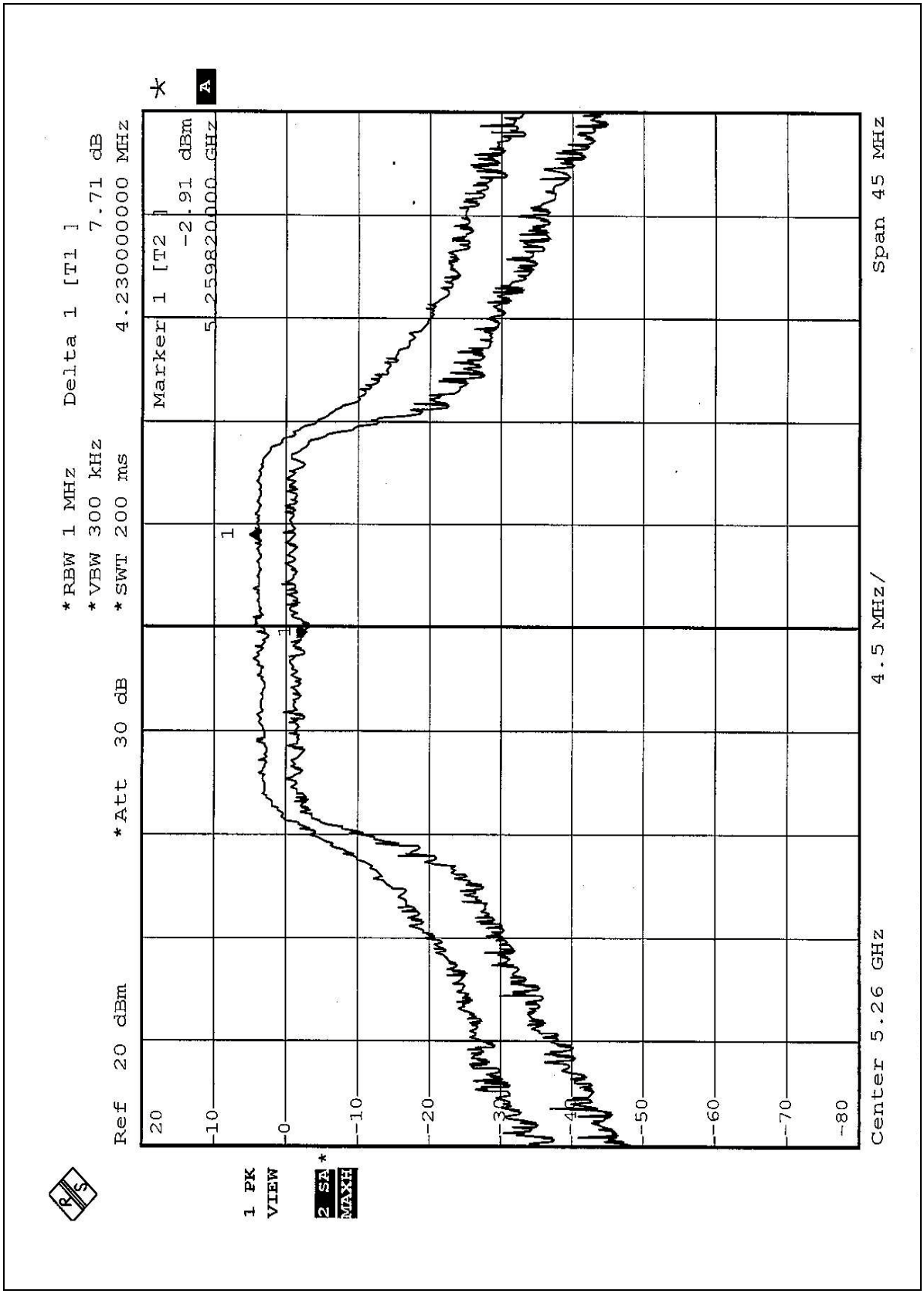
CHANNEL 1


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
*SWT 200 ms
Delta 1 [T1]
7.70 dB
3.42000000 MHz
Marker 1 [T2]
-2.59 dBm
5.17982000 GHz
Center 5.18 GHz
4.5 MHz/
Span 45 MHz
1 PK VIEW
2 SA MAXH

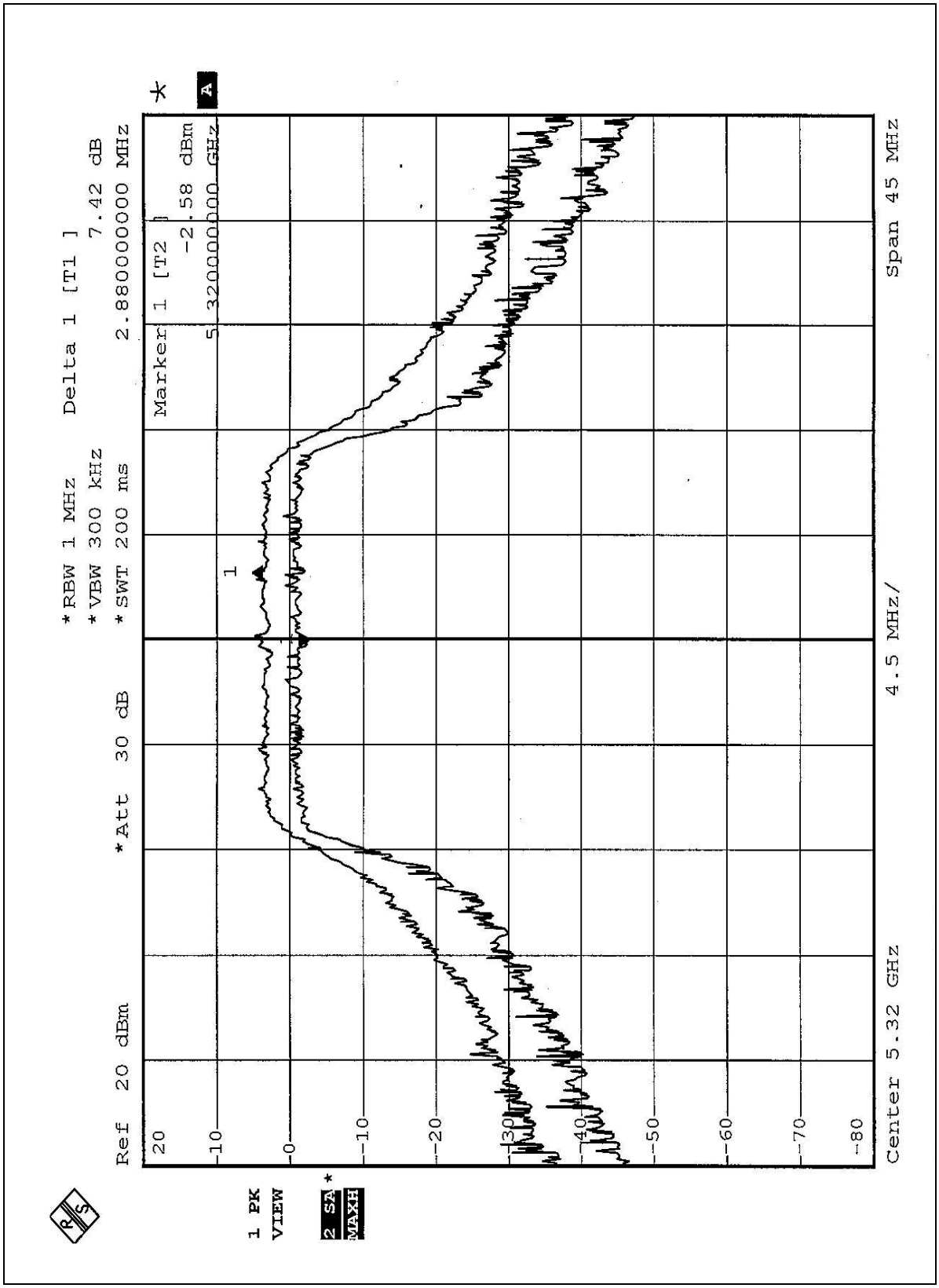
CHANNEL 4


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
*SWT 200 ms
Delta 1 [T1] 7.31 dB
2.970000000 MHz
Marker 1 [T2] -2.52 dBm
5.240000000 GHz
Center 5.24 GHz
4.5 MHz/
Span 45 MHz
1 PK VIEW
2 SA MAXH

CHANNEL 5


Ref 20 dBm
*Att 30 dB
*SWT 200 ms
*VBW 300 kHz
*RBW 1 MHz
Delta 1 [T1]
7.71 dB
4.230000000 MHz
Marker 1 [T2]
-2.91 dBm
5.259820000 GHz
Center 5.26 GHz
4.5 MHz/
Span 45 MHz
1 PK
VIEW
2 SA
MAXH

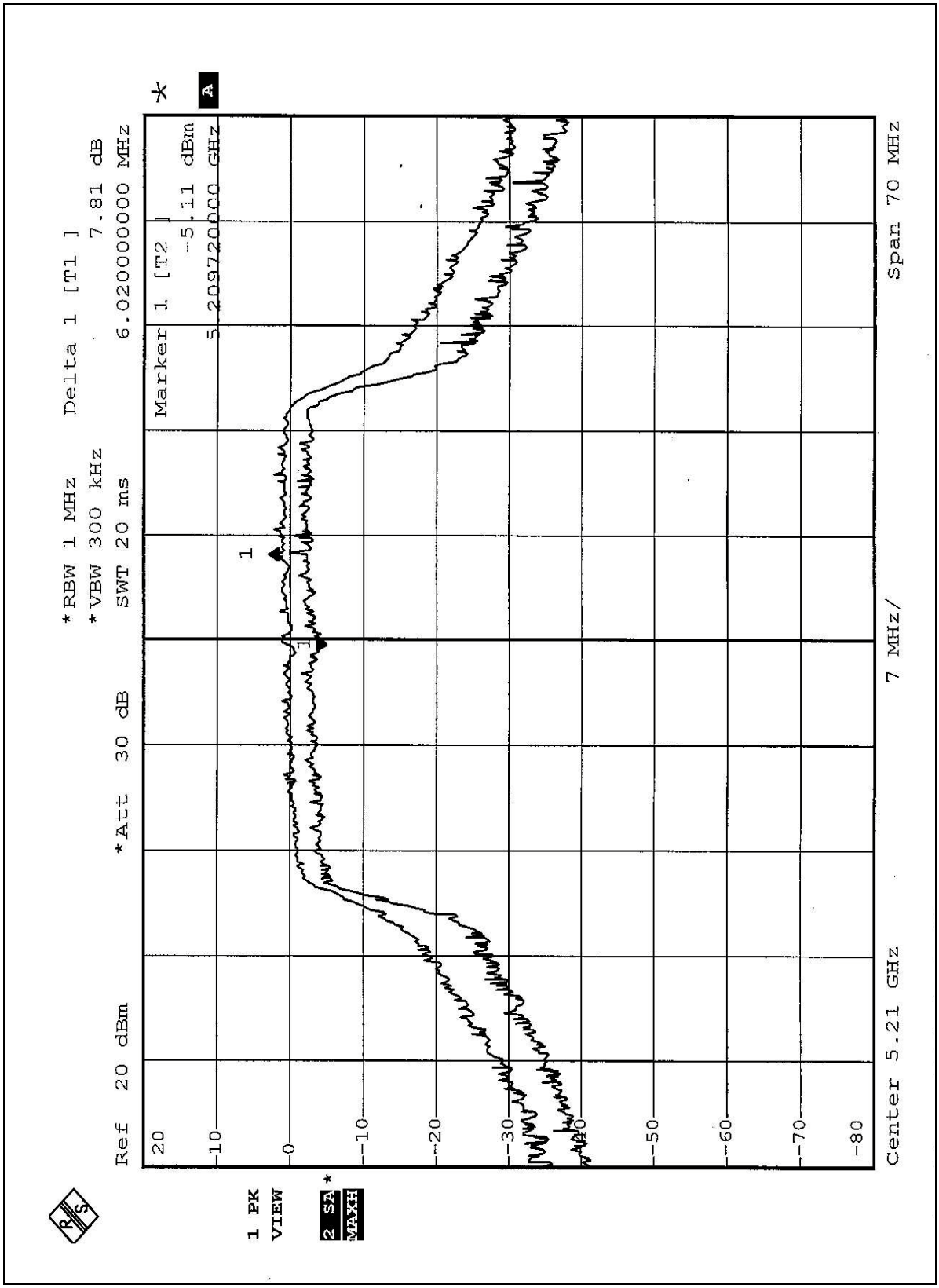
CHANNEL 8


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
*SWT 200 ms
Delta 1 [T1]
7.42 dB
2.88000000 MHz
Marker 1 [T2]
-2.58 dBm
5.32000000 GHz
Center 5.32 GHz
4.5 MHz/
Span 45 MHz
1 PK
VIEW
2 SA *
MAXH

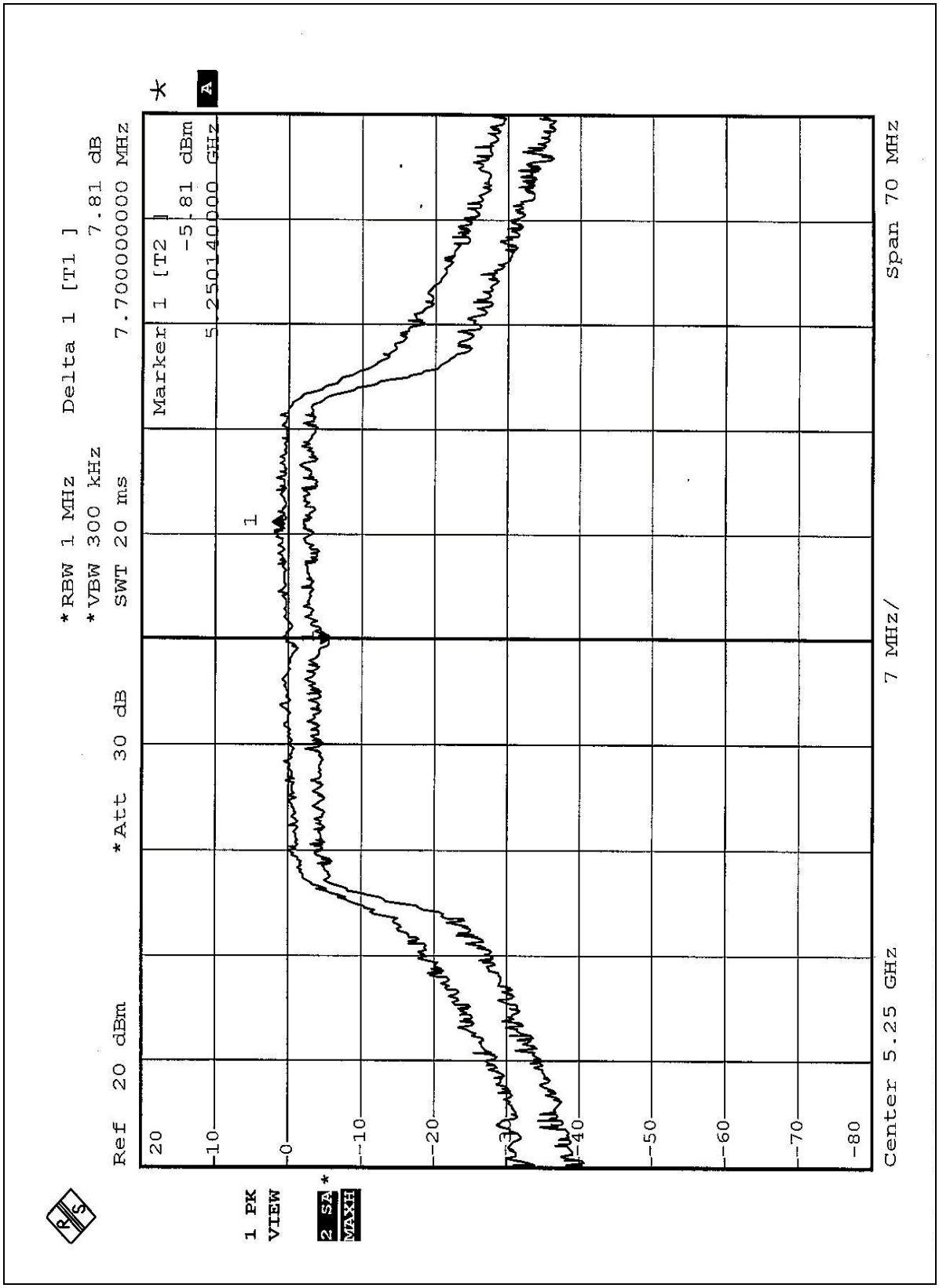
EUT	Atheros 11a/g Mini-PCI Adapter	**MODEL**	NL-5354MP Plus Aries2
MODE	Turbo	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	**TESTED BY**	Gary Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	7.81	13	PASS
2	5250	7.81	13	PASS
3	5290	7.51	13	PASS

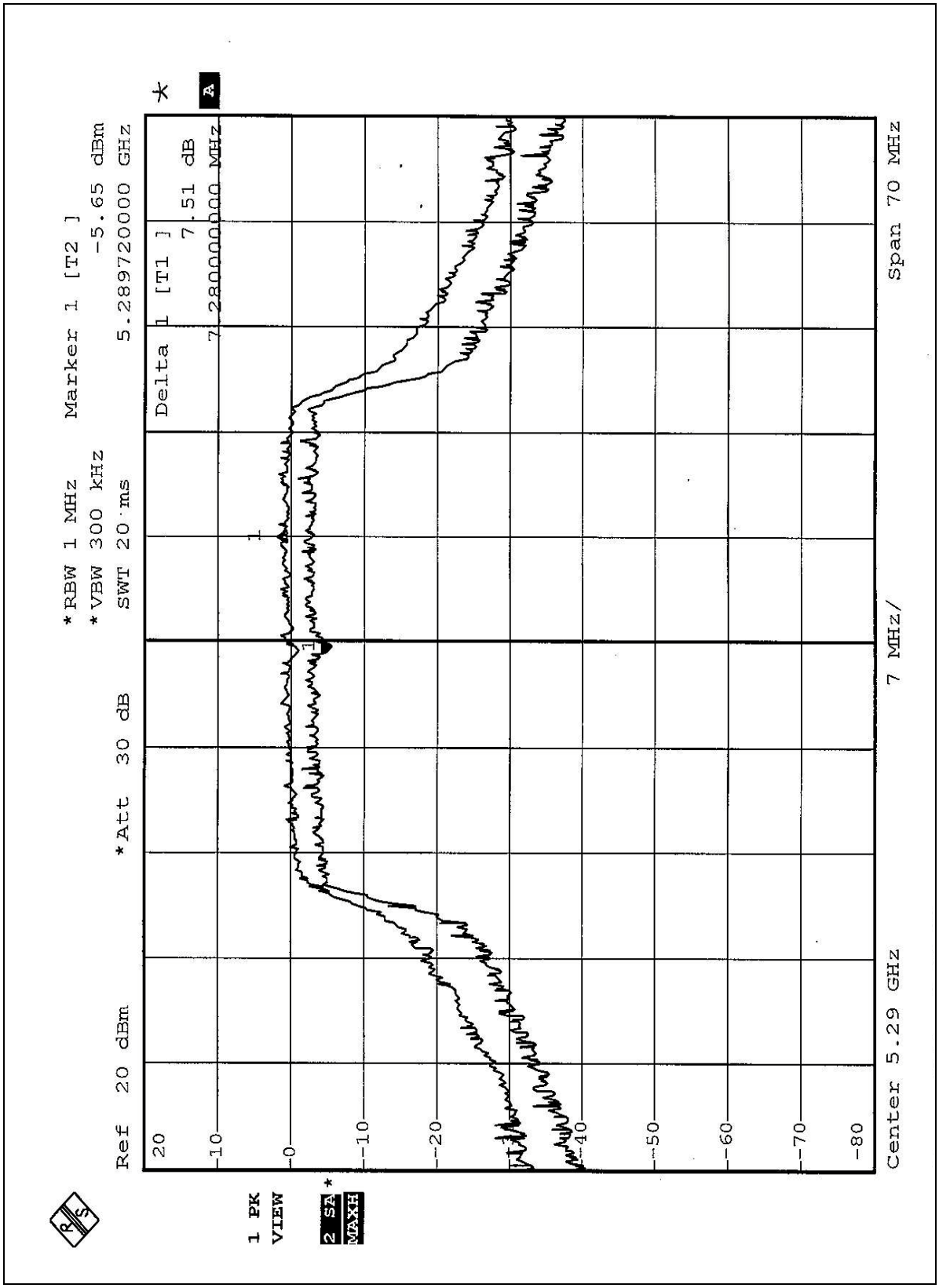
CHANNEL 1


Ref 20 dBm
*Att 30 dB
SWT 20 ms
*VBW 300 kHz
*RBW 1 MHz
Delta 1 [T1] 7.81 dB
6.02000000 MHz
Marker 1 [T2] -5.11 dBm
5.20972000 GHz
Center 5.21 GHz
7 MHz/
Span 70 MHz
1 PK VIEW
2 SA MAXH

CHANNEL 2


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 1 [T1] 7.81 dB
7.70000000 MHz
Marker 1 [T2] -5.81 dBm
5.25140000 GHz
Center 5.25 GHz
7 MHz/
Span 70 MHz
1 PK VIEW
2 SA MAXH

CHANNEL 3


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2]
-5.65 dBm
5.289720000 GHz
Delta 1 [T1]
7.51 dB
7.280000000 MHz
Center 5.29 GHz
7 MHz/
Span 70 MHz
1 PK
VIEW
2 SA
MAXH

5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	4dBm
5.25 – 5.35GHz	11dBm
5.725 – 5.825GHz	17dBm

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

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

5.5.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP

5.5.6 EUT OPERATING CONDITIONS

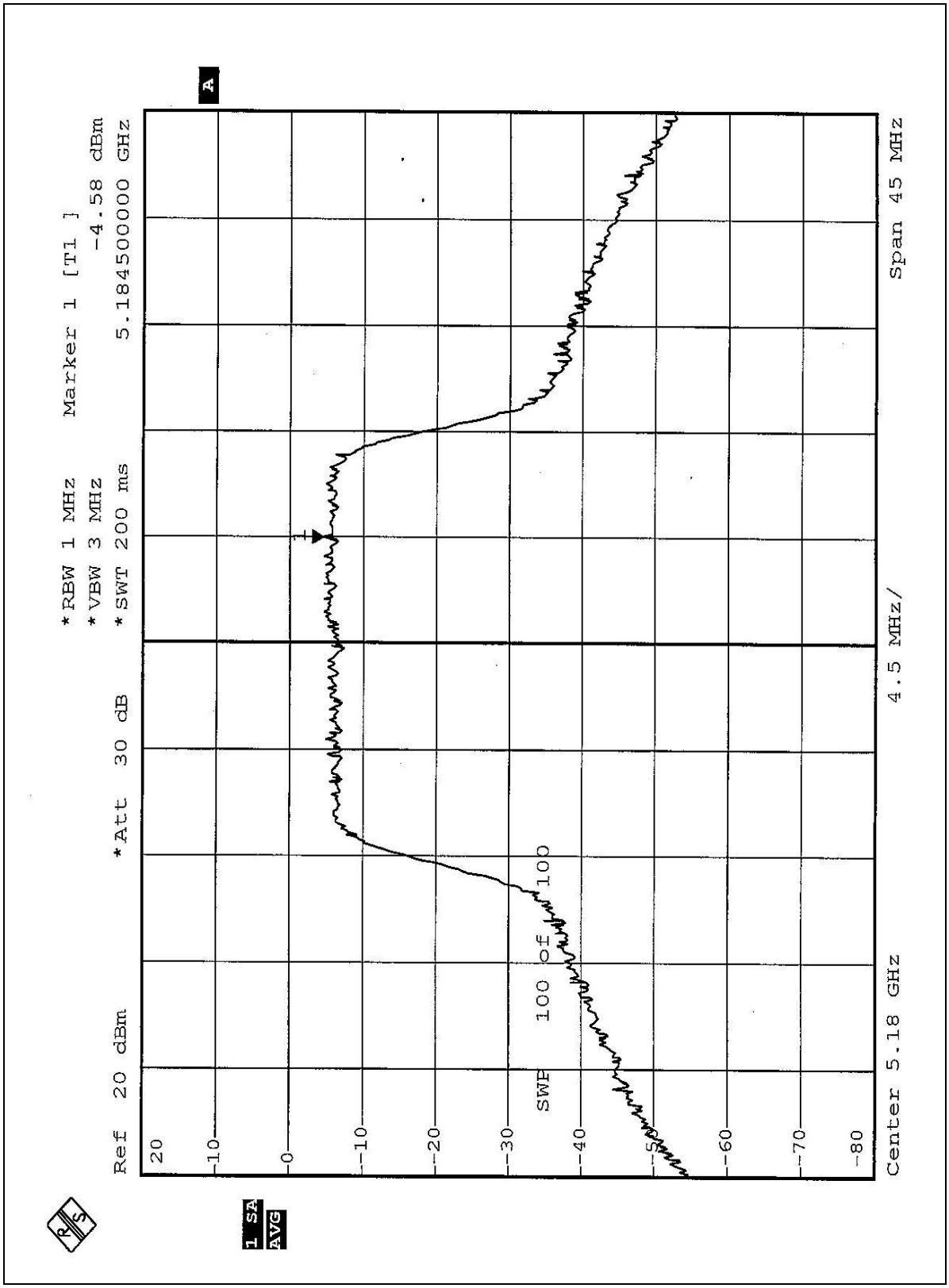
Same as 5.3.6

5.5.7 TEST RESULTS

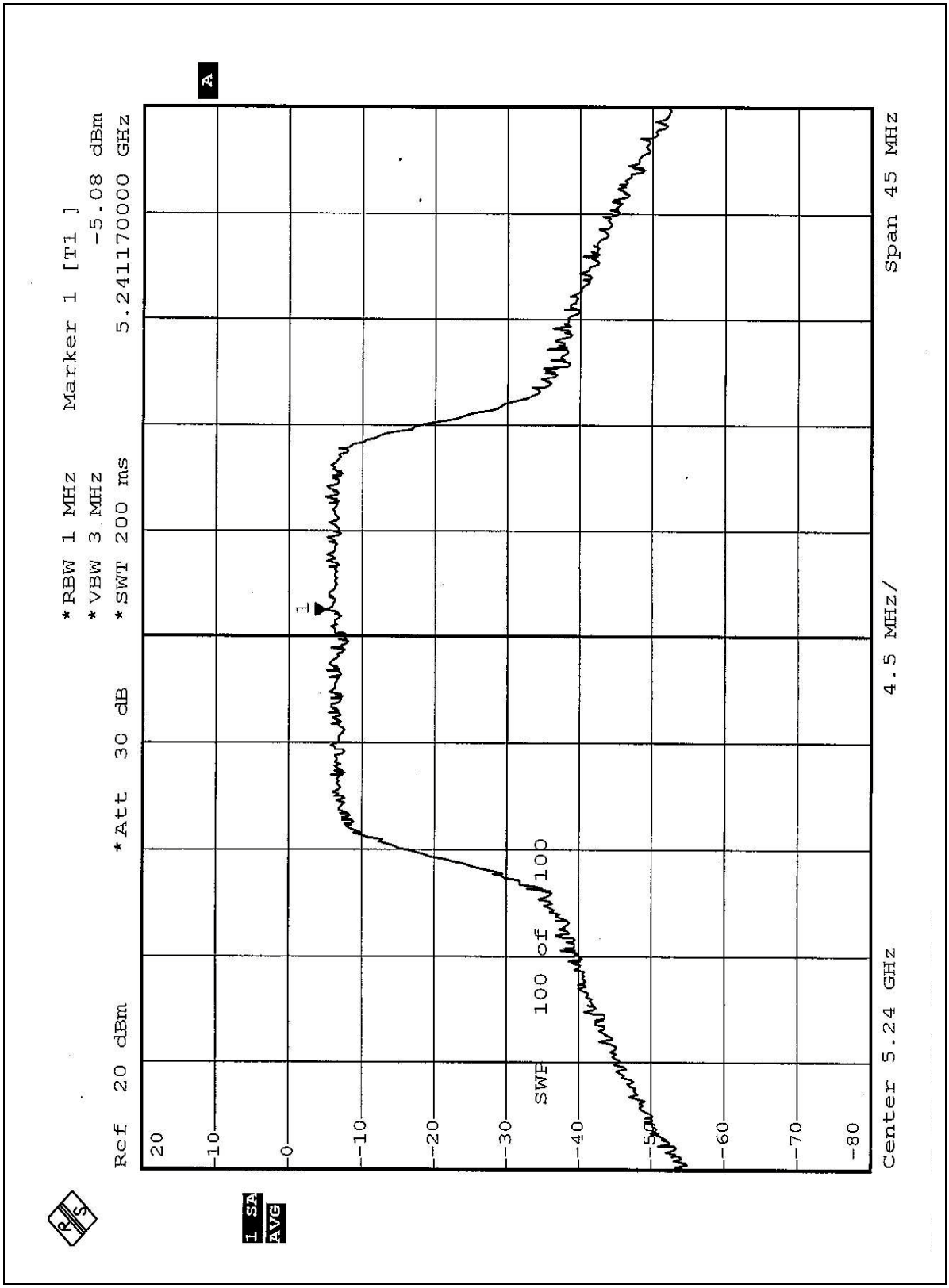
EUT	Atheros 11a/g Mini-PCI Adapter	**MODEL**	NL-5354MP Plus Aries2
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	**TESTED BY**	Gary Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-4.58	4	PASS
4	5240	-5.08	4	PASS
5	5260	-4.96	11	PASS
8	5320	-5.19	11	PASS

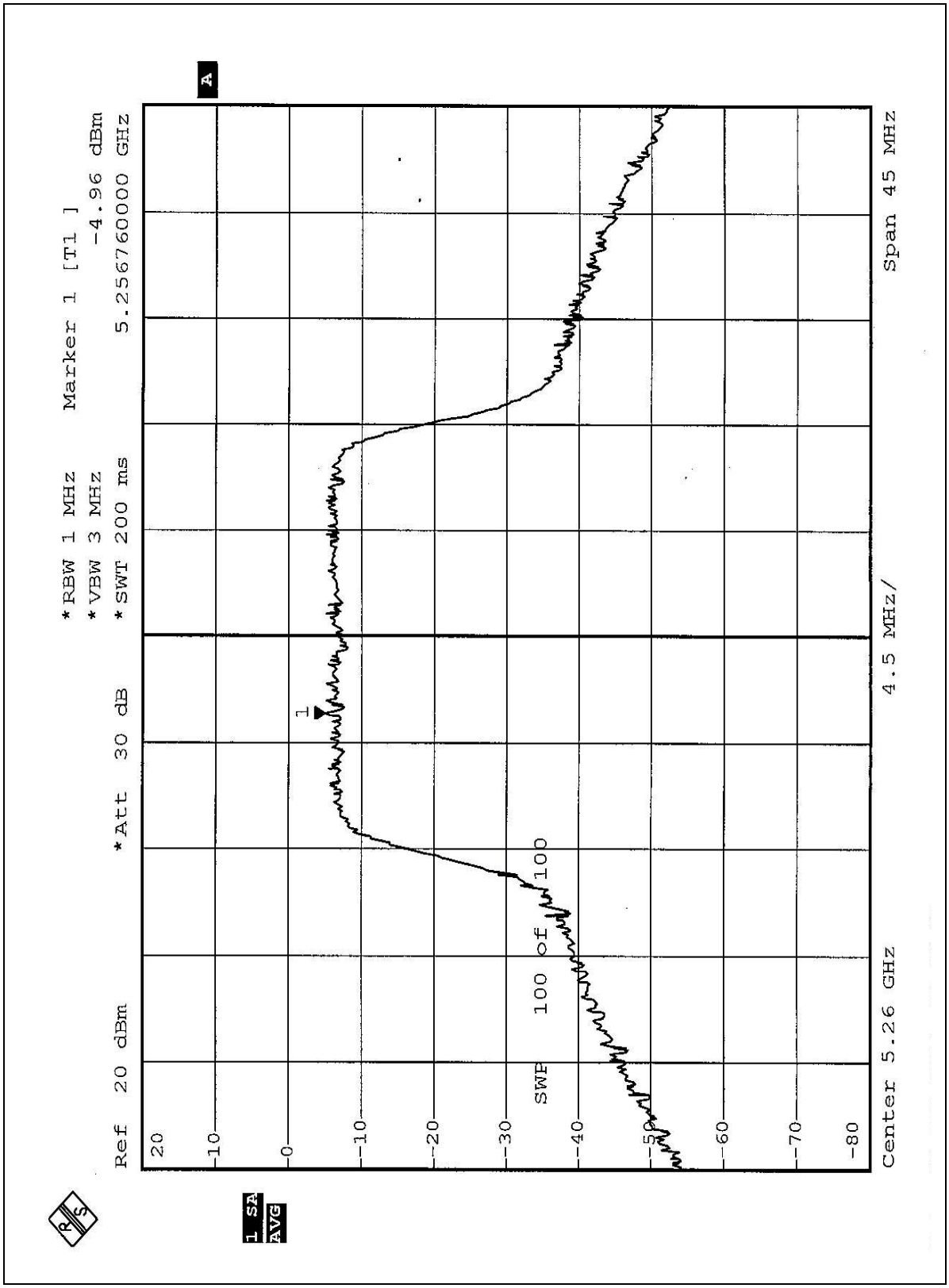
CHANNEL 1


A
Marker 1 [T1]
-4.58 dBm
5.184500000 GHz
*RBW 1 MHz
*VBW 3 MHz
*SWT 200 ms
*Att 30 dB
Ref 20 dBm
Span 45 MHz
4.5 MHz/
Center 5.18 GHz
SWP 100 of 100
1 SA
AVG

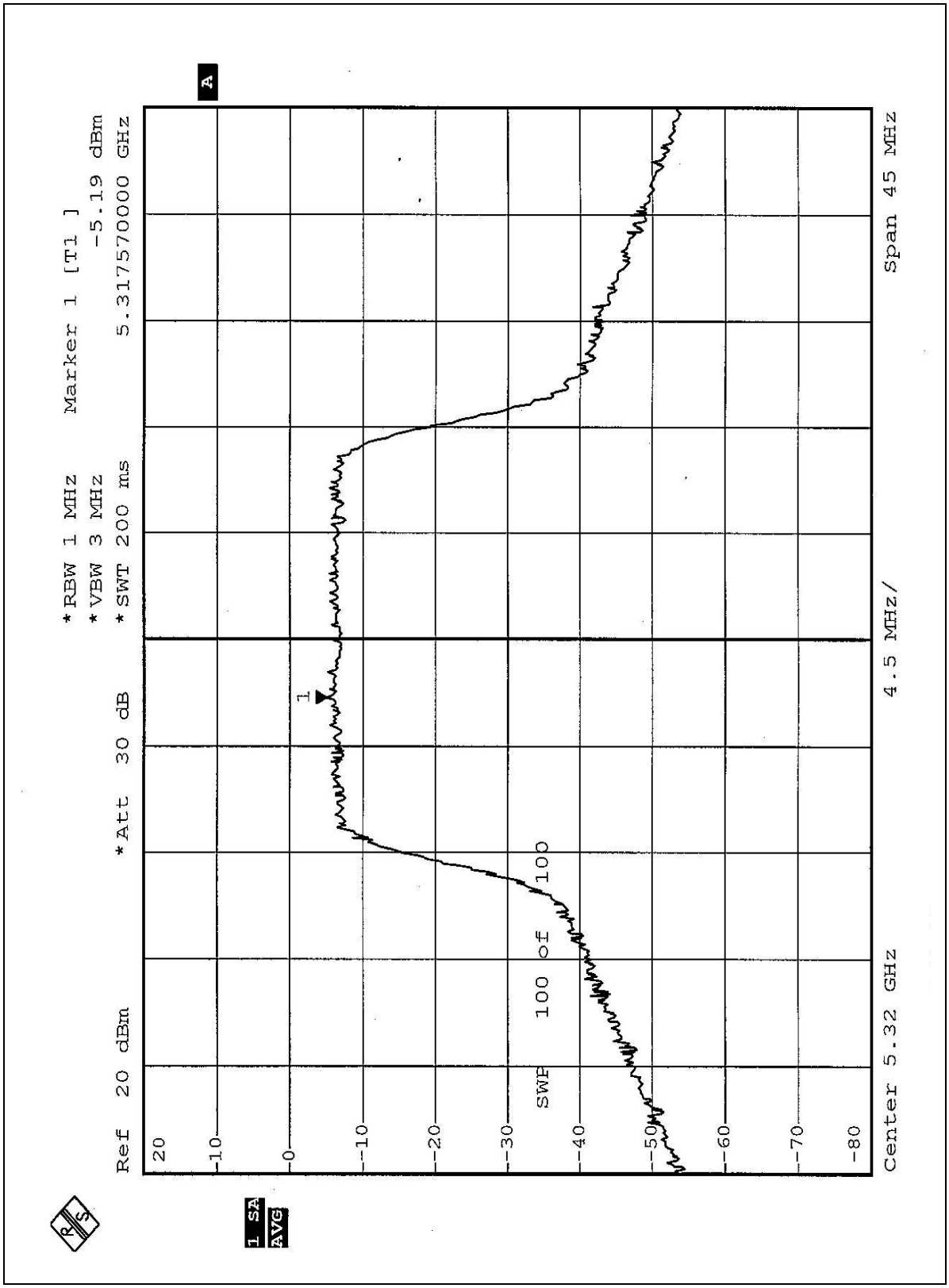
CHANNEL 4


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
*SWT 200 ms
Marker 1 [T1]
-5.08 dBm
5.24117000 GHz
SWP 100 of 100
Center 5.24 GHz
4.5 MHz/
Span 45 MHz
1 SA
AVG

CHANNEL 5


A
Marker 1 [T1]
-4.96 dBm
5.25676000 GHz
*RBW 1 MHz
*VBW 3 MHz
*SWT 200 ms
*Att 30 dB
Ref 20 dBm
SWP 100 of 100
Center 5.26 GHz
4.5 MHz/
Span 45 MHz
1 SA
AVG

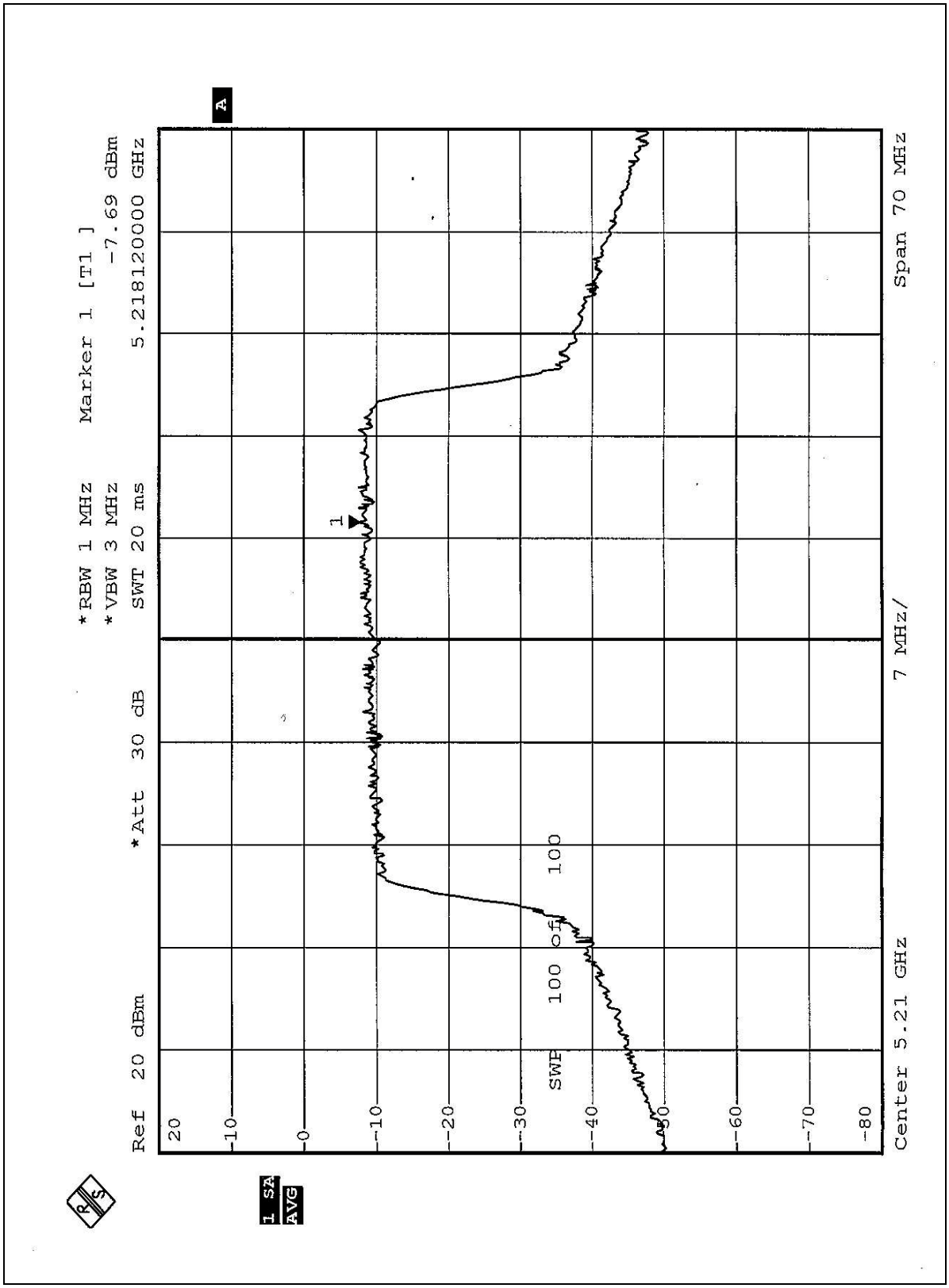
CHANNEL 8


A
Marker 1 [T1]
-5.19 dBm
5.31757000 GHz
*RBW 1 MHz
*VBW 3 MHz
*SWT 200 ms
*Att 30 dB
Ref 20 dBm
Span 45 MHz
4.5 MHz/
Center 5.32 GHz
SWP 100 of 100
1 SA
AVG

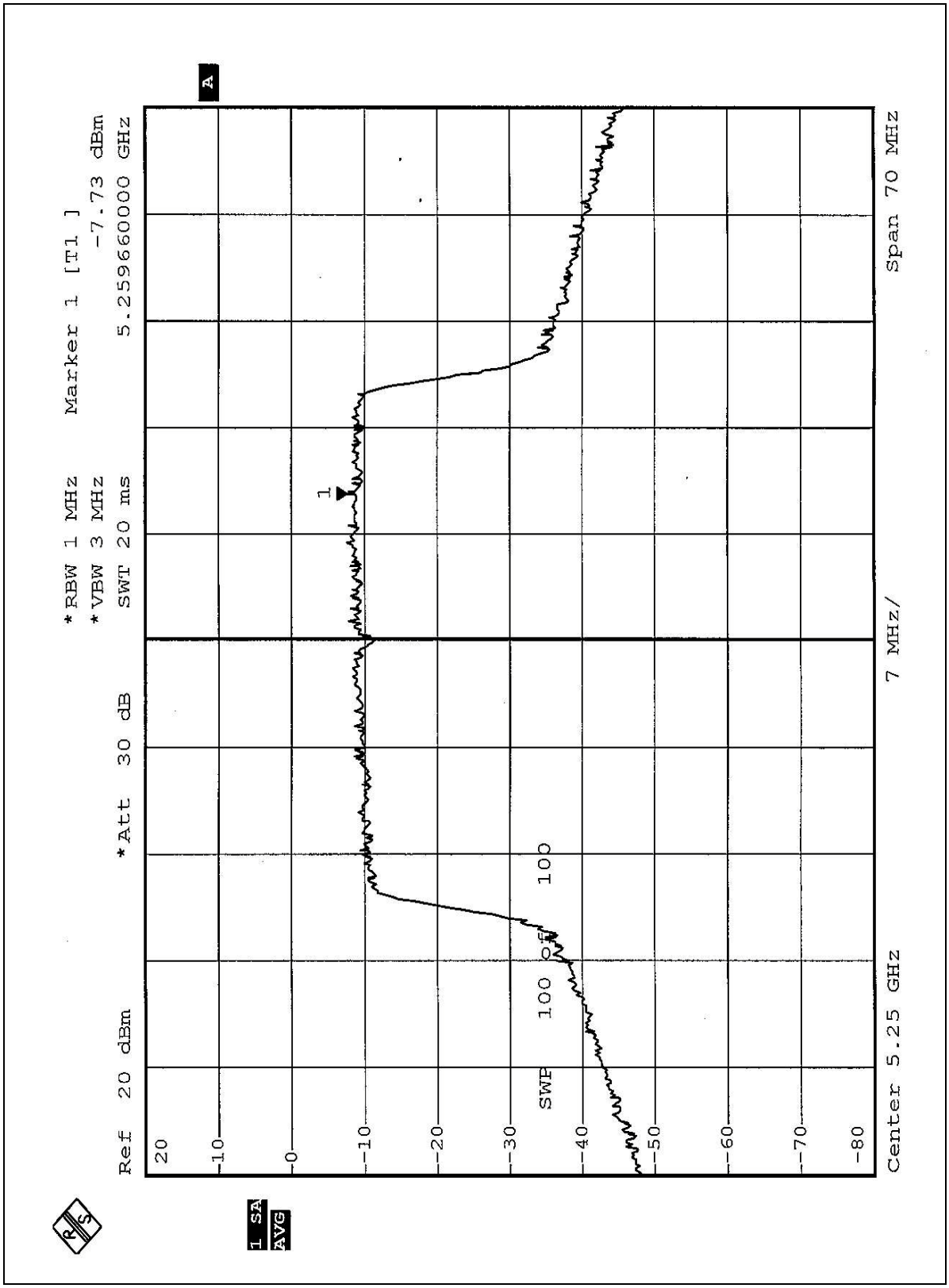
EUT	Atheros 11a/g Mini-PCI Adapter	**MODEL**	NL-5354MP Plus Aries2
MODE	Turbo	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	**TESTED BY**	Gary Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-7.69	4	PASS
2	5250	-7.73	4	PASS
3	5290	-8.49	11	PASS

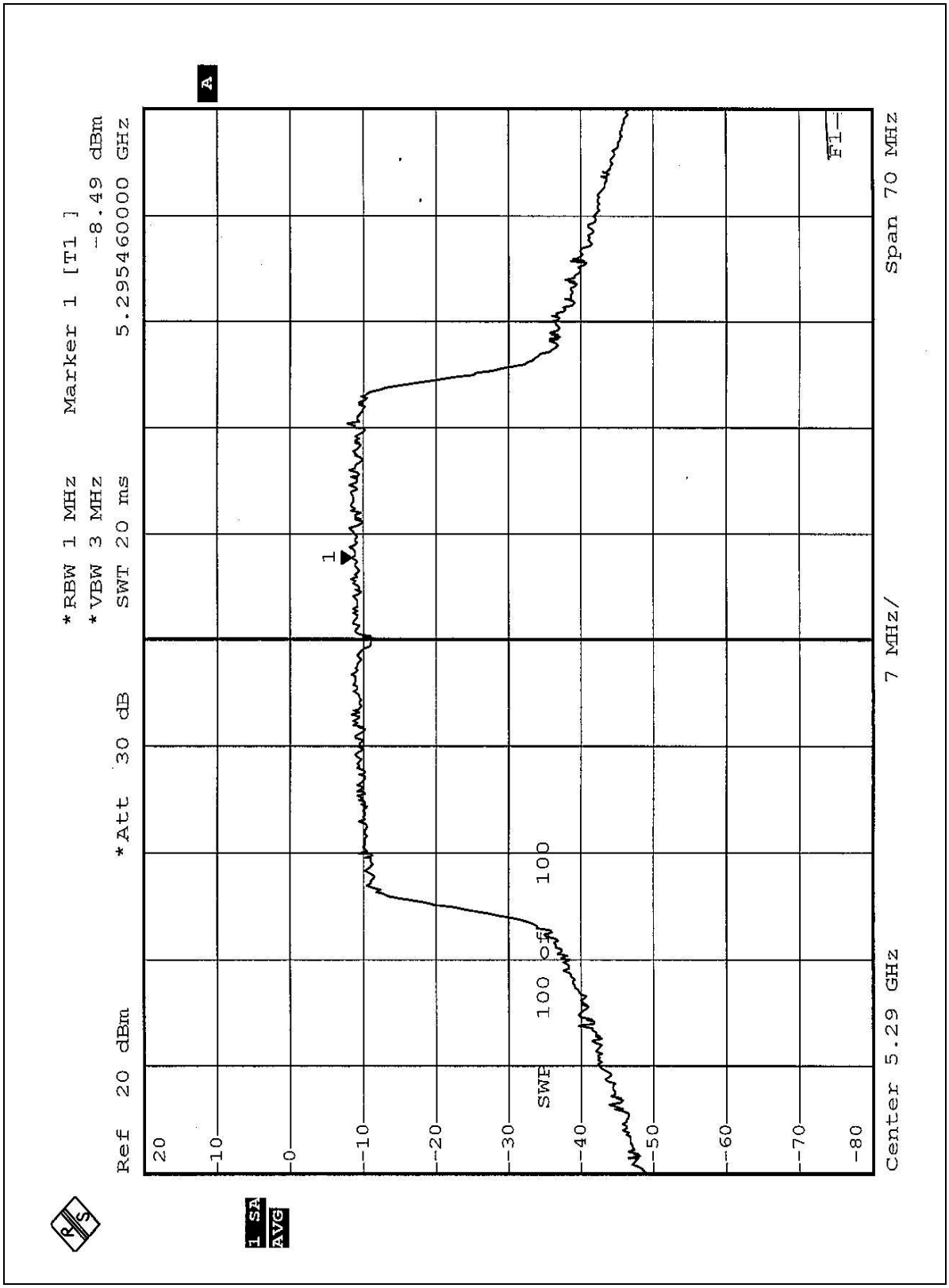
CHANNEL 1


A
Marker 1 [T1]
-7.69 dBm
5.218120000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20 dBm
Span 70 MHz
7 MHz/
Center 5.21 GHz
SWP 100 of 100
1 SA
AVG
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80

CHANNEL 2


Ref 20 dBm
*Att 30 dB
SWT 20 ms
*VBW 3 MHz
*RBW 1 MHz
Marker 1 [T1]
-7.73 dBm
5.259660000 GHz
Center 5.25 GHz
7 MHz/
Span 70 MHz
SWP 100 of 100
1 SA
AVG

CHANNEL 3


Marker 1 [T1]
-8.49 dBm
5.295460000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20 dBm
Center 5.29 GHz
7 MHz/
Span 70 MHz
SWP 100 of 100
1 SA
AVG

5.6 FREQUENCY STABILITY

5.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

5.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Aug. 12, 2004
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	Aug. 12, 2004

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

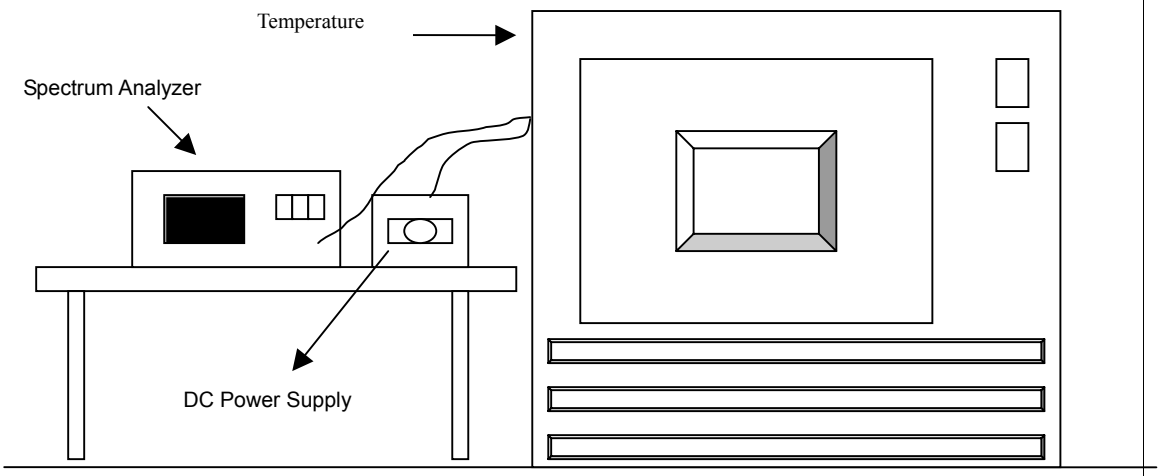
5.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

5.6.7 TEST RESULTS

Operating frequency: 5320MHz				Limit : ± 0.02%			
Temp. (℃)	Power supply (VDC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	102	5320.0316	0.0005940	5320.0323	0.0006071	5320.0340	0.0006391
	120V	5320.0314	0.0005902	5320.0323	0.0006071	5320.0340	0.0006391
	138	5320.0316	0.0005940	5320.0323	0.0006071	5320.0346	0.0006504
40	102	5320.0206	0.0003872	5320.0193	0.0003628	5320.0153	0.0002876
	120V	5320.0206	0.0003872	5320.0191	0.0003590	5320.0153	0.0002876
	138	5320.0206	0.0003872	5320.0193	0.0003628	5320.0153	0.0002876
30	102	5320.0263	0.0004944	5320.0323	0.0006071	5320.0354	0.0006654
	120V	5320.0263	0.0004944	5320.0323	0.0006071	5320.0354	0.0006654
	138	5320.0263	0.0004944	5320.0323	0.0006071	5320.0354	0.0006654
20	102	5320.0193	0.0003628	5320.0204	0.0003835	5320.0214	0.0004023
	120V	5320.0193	0.0003628	5320.0206	0.0003872	5320.0214	0.0004023
	138	5320.0197	0.0003703	5320.0206	0.0003872	5320.0214	0.0004023
10	102	5319.9960	-0.0000752	5319.9886	-0.0002143	5319.9841	-0.0002989
	120V	5319.9960	-0.0000752	5319.9883	-0.0002199	5319.9843	-0.0002951
	138	5319.9960	-0.0000752	5319.9886	-0.0002143	5319.9843	-0.0002951
0	102	5319.9983	-0.0000320	5319.9896	-0.0001955	5319.9834	-0.0003120
	120V	5319.9980	-0.0000376	5319.9894	-0.0001992	5319.9834	-0.0003120
	138	5319.9983	-0.0000320	5319.9896	-0.0001955	5319.9836	-0.0003083
-10	102	5319.9897	-0.0001936	5319.9914	-0.0001617	5319.9938	-0.0001165
	120V	5319.9897	-0.0001936	5319.9913	-0.0001635	5319.9940	-0.0001128
	138	5319.9897	-0.0001936	5319.9914	-0.0001617	5319.9936	-0.0001203
-20	102	5319.9963	-0.0000695	5319.9980	-0.0000376	5319.9986	-0.0000263
	120V	5319.9963	-0.0000695	5319.9980	-0.0000376	5319.9986	-0.0000263
	138	5319.9965	-0.0000658	5319.9980	-0.0000376	5319.9990	-0.0000188
-30	102	5319.9960	-0.0000752	5319.9947	-0.0000996	5319.9940	-0.0001128
	120V	5319.9957	-0.0000808	5319.9949	-0.0000959	5319.9940	-0.0001128
	138	5319.9960	-0.0000752	5319.9949	-0.0000959	5319.9942	-0.0001090

5.7 BAND EDGES MEASUREMENT

5.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

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

5.7.2 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 with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

5.7.3 EUT OPERATING CONDITION

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

5.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=VBW=1MHz, Average RBW=1MHz, VBW=300Hz) are attached on the following pages.

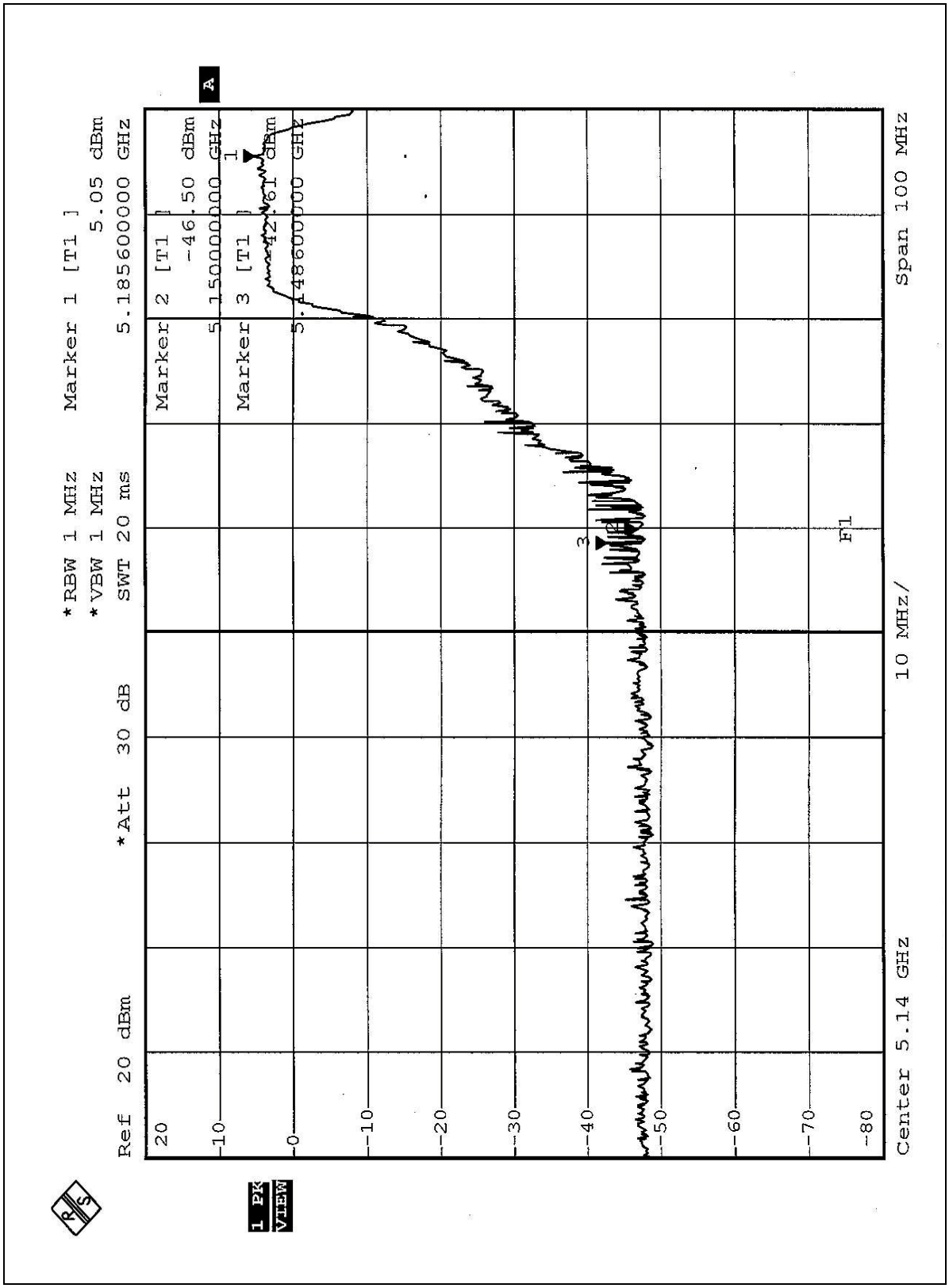
Normal Mode: Channel 1 (5180 MHz)
The band edge emission plot on the following 1~2 pages show 47.66dBc (Peak) / 52.58dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (normal mode) is 97.43dBuV/m, so the maximum field strength in restrict band is 97.43-52.58=44.85dBuV/m which is under 54dBuV/m limit.

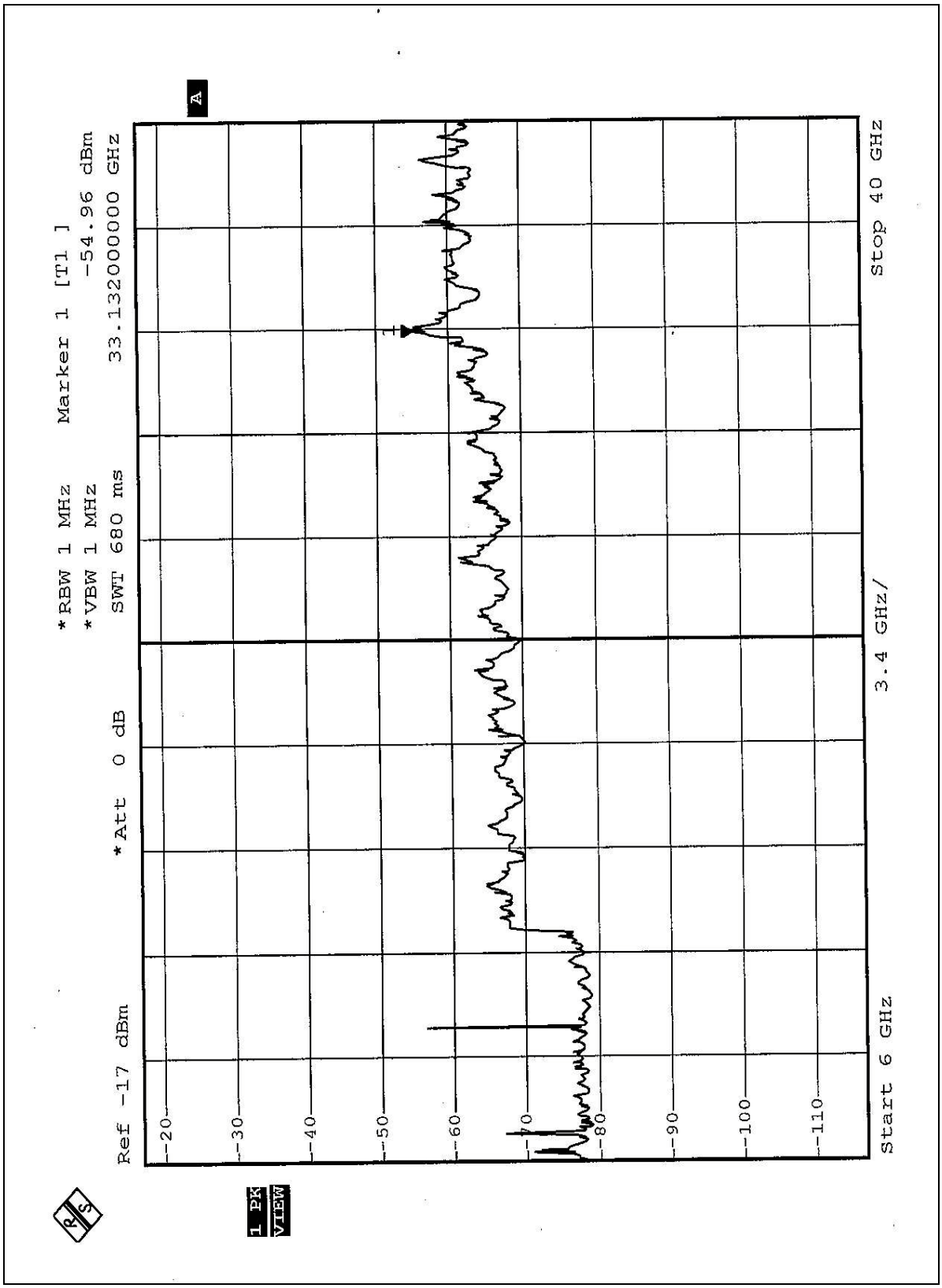
Normal Mode: Channel 8 (5320 MHz)
The band edge emission plot on the following 3~4 pages show 47.22dBc (Peak) / 48.68dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 (normal mode) is 97.51dBuV/m, so the maximum field strength in restrict band is 97.51-48.68=48.83dBuV/m which is under 54dBuV/m limit.

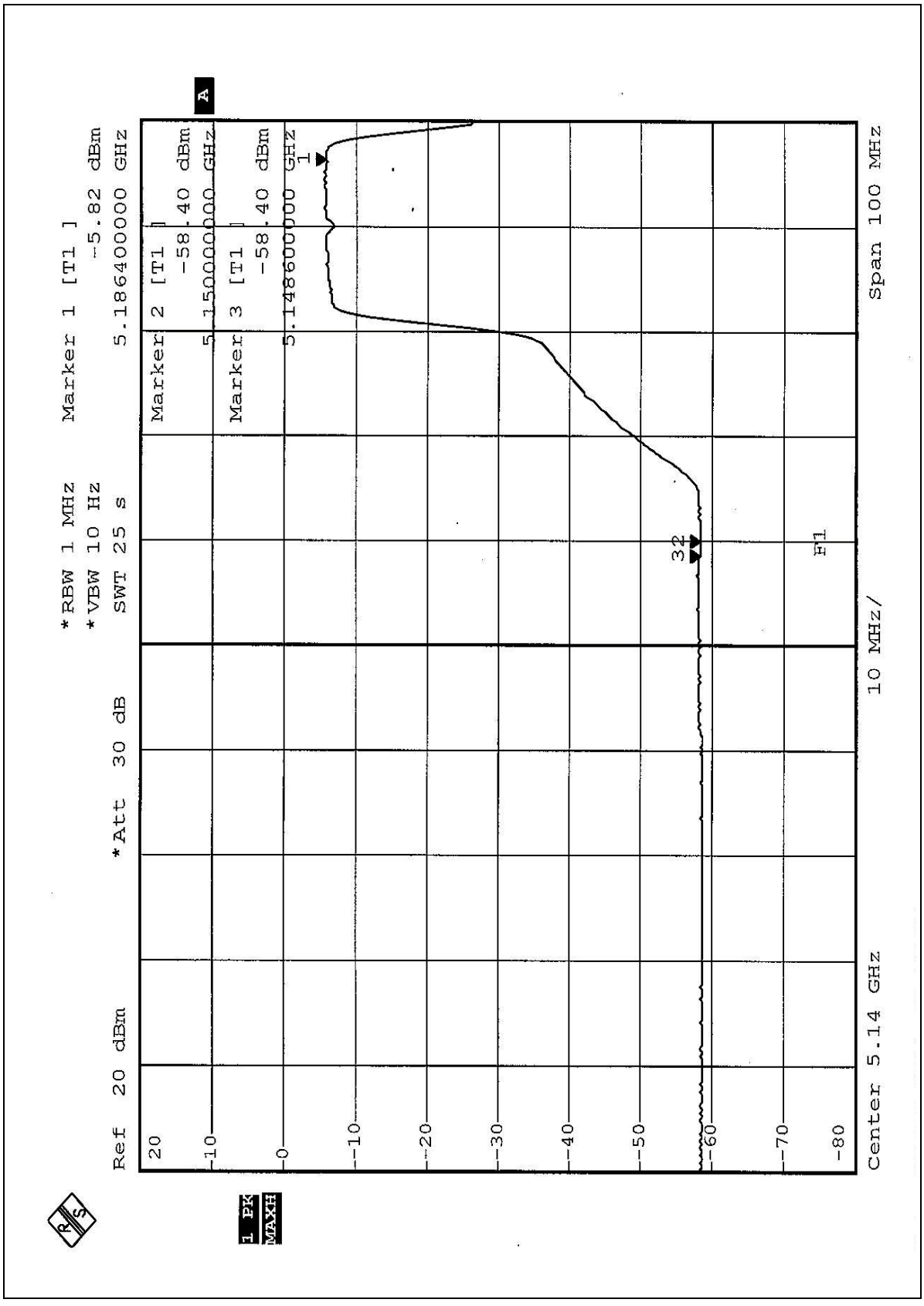
Turbo Mode: Channel 1 (5210 MHz)
The band edge emission plot on the following 5~6 pages show 48.13dBc (Peak) / 49.84dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (turbo mode) is 95.38dBuV/m, so the maximum field strength in restrict band is 95.38-49.84=45.54dBuV/m which is under 54dBuV/m limit.

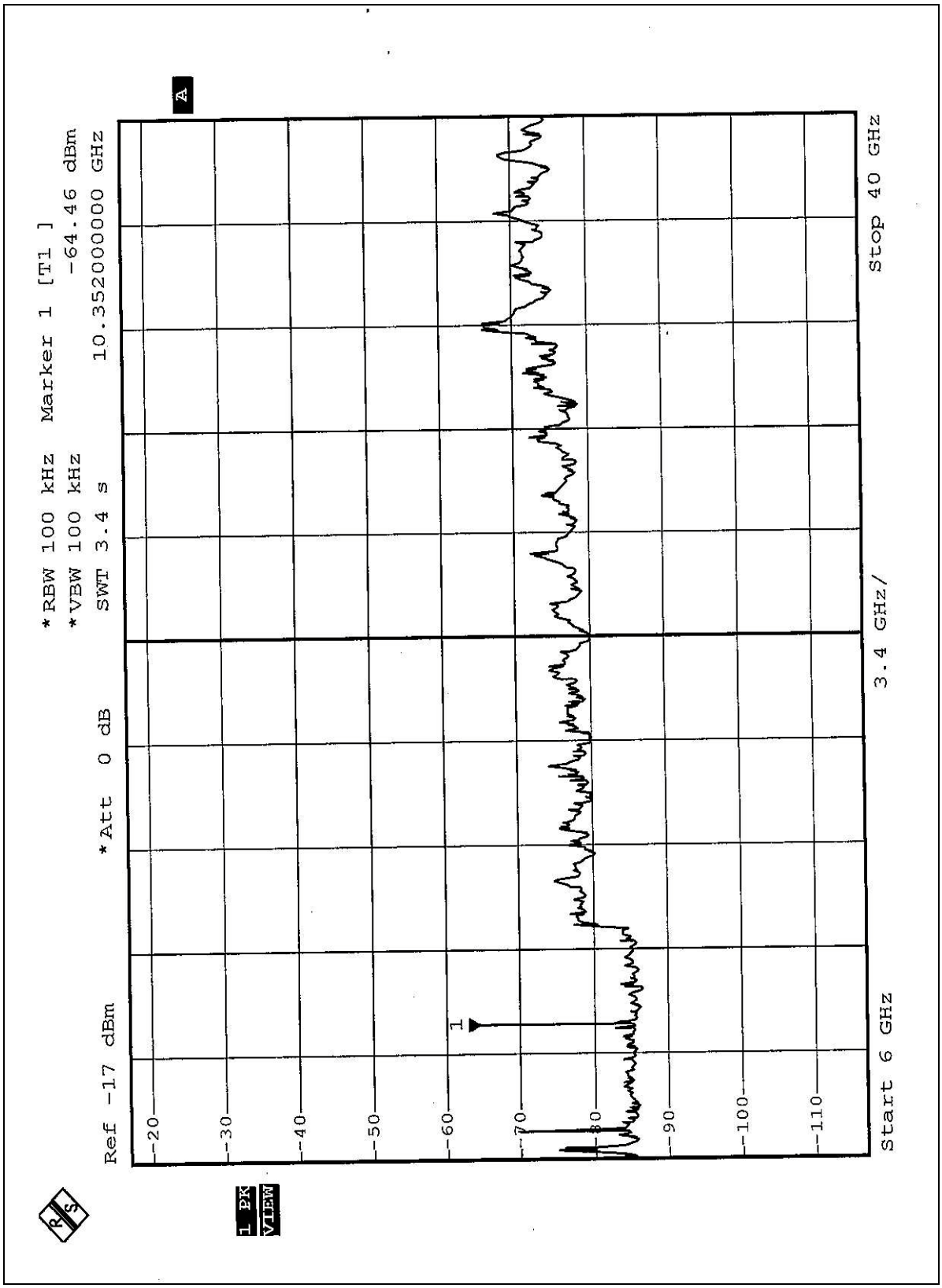
Turbo Mode: Channel 3 (5290 MHz)
The band edge emission plot on the following 7~8 pages show 44.36dBc (Peak) / 46.79dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 (turbo mode) is 94.60dBuV/m, so the maximum field strength in restrict band is 94.60-46.79=47.81dBuV/m which is under 54dBuV/m limit.

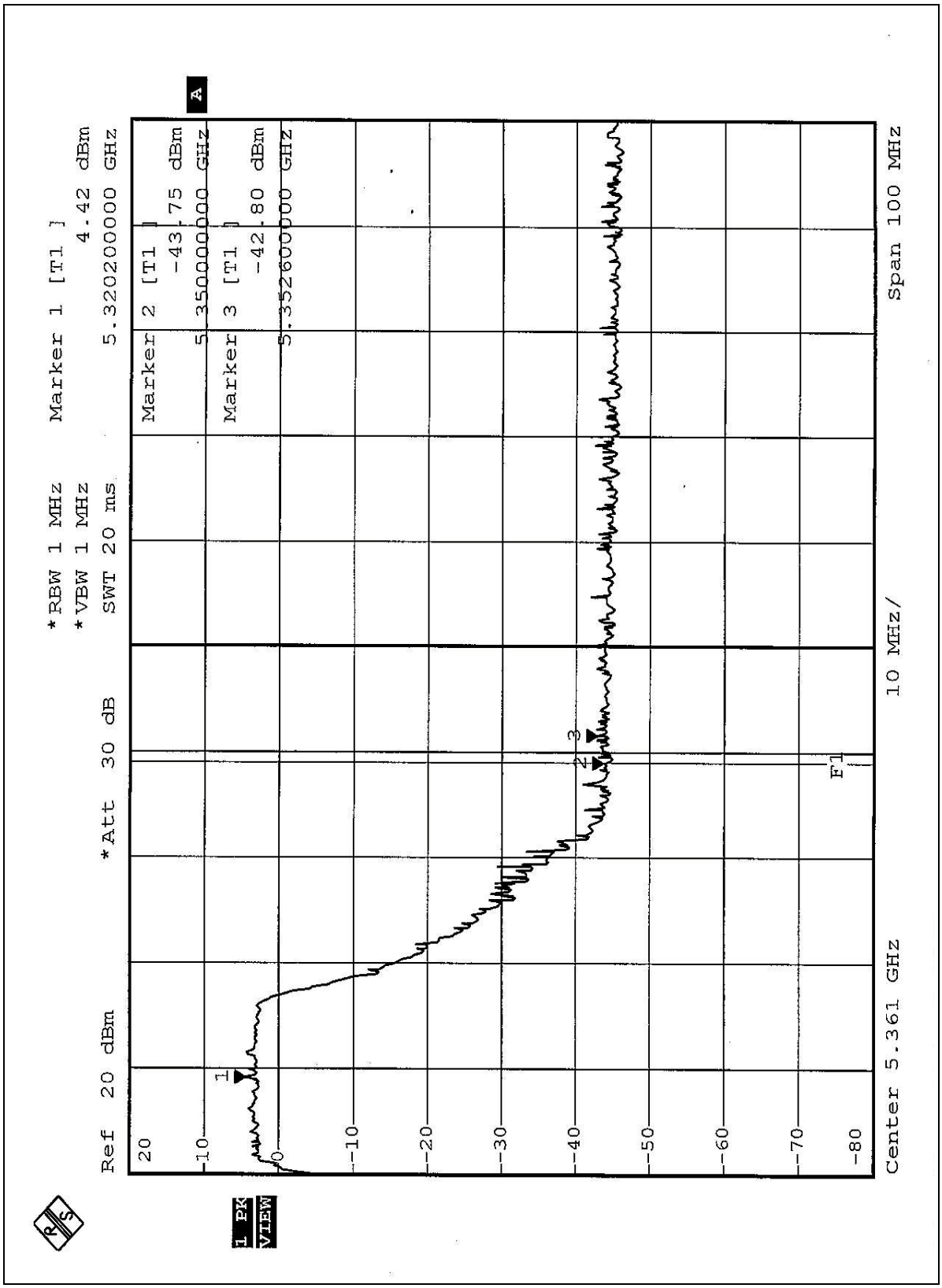
Normal Mode

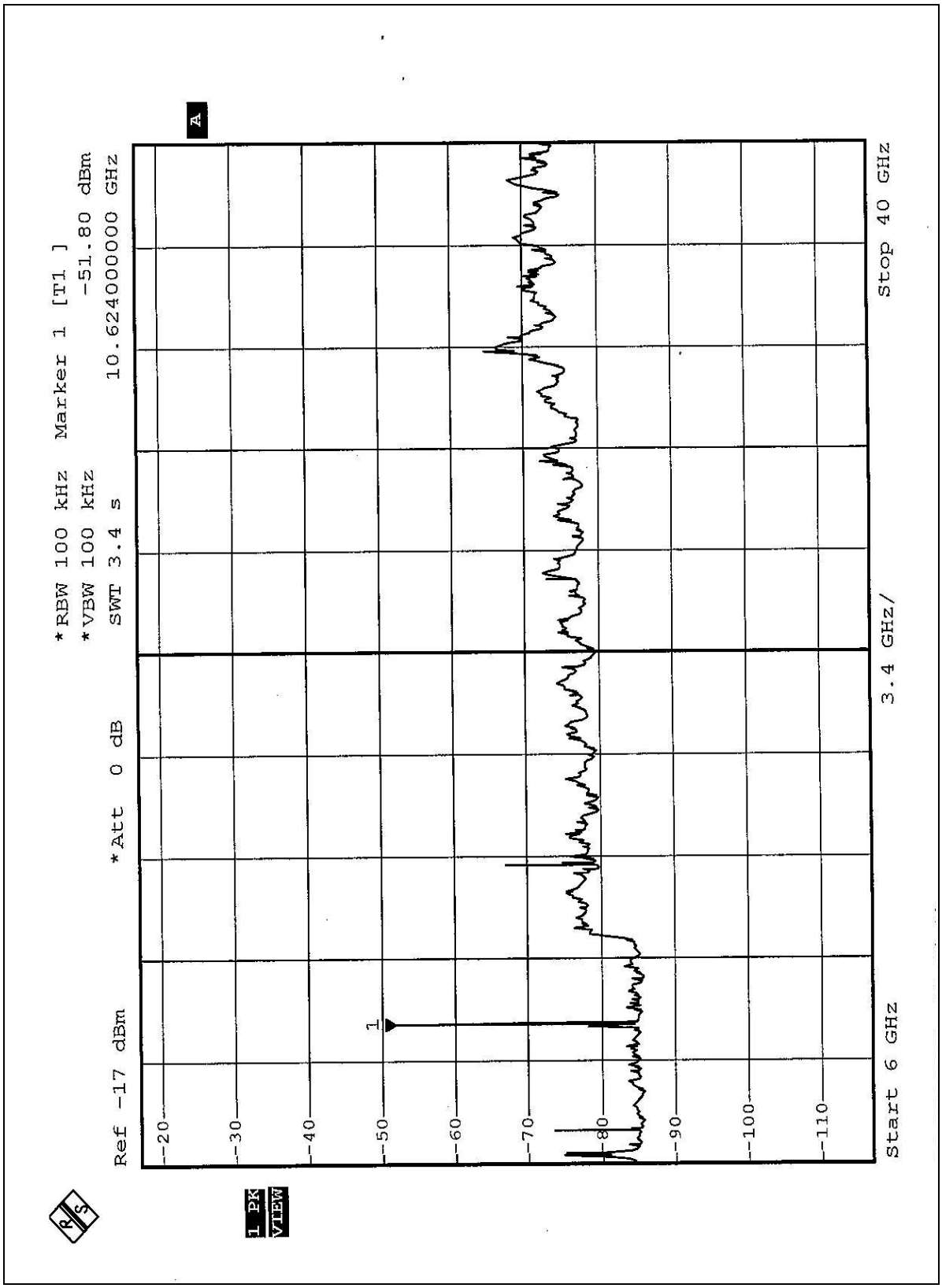

Ref 20 dBm
*Att 30 dB
SWT 20 ms
*VBW 1 MHz
*RBW 1 MHz
Marker 1 [T1]
5.05 dBm
5.185600000 GHz
Marker 2 [T1]
-46.50 dBm
5.150000000 GHz
Marker 3 [T1]
42.61 dBm
5.148600000 GHz
Center 5.14 GHz
10 MHz/
Span 100 MHz
1 PK VIEW


A
Marker 1 [T1]
-54.96 dBm
33.132000000 GHz
*RBW 1 MHz
*VBW 1 MHz
SWT 680 ms
*Att 0 dB
Ref -17 dBm
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
Start 6 GHz
3.4 GHz/
Stop 40 GHz
1 PK
VIEW


Ref 20 dBm
*Att 30 dB
SWT 25 s
*VBW 10 Hz
*RBW 1 MHz
Marker 1 [T1]
-5.82 dBm
5.186400000 GHz
Marker 2 [T1]
-58.40 dBm
5.150000000 GHz
Marker 3 [T1]
-58.40 dBm
5.148600000 GHz
Center 5.14 GHz
10 MHz/
Span 100 MHz
1 PK MAXH
A
F1


A
*RBW 100 kHz
*VBW 100 kHz
SWT 3.4 s
Marker 1 [T1]
-64.46 dBm
10.352000000 GHz
*Att 0 dB
Ref -17 dBm
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
1
1 PK
VIEW
Start 6 GHz
3.4 GHz/
Stop 40 GHz


Ref 20 dBm
*Att 30 dB
*VBW 1 MHz
SWT 20 ms
*RBW 1 MHz
Marker 1 [T1]
4.42 dBm
5.320200000 GHz
Marker 2 [T1]
-43.75 dBm
5.350000000 GHz
Marker 3 [T1]
-42.80 dBm
5.352600000 GHz
Center 5.361 GHz
10 MHz/
Span 100 MHz
1 PK VIEW
A


*RBW 100 kHz
*VBW 100 kHz
SWT 3.4 s
Marker 1 [T1]
-51.80 dBm
10.624000000 GHz
*Att 0 dB
Ref -17 dBm
Start 6 GHz
3.4 GHz/
Stop 40 GHz
1 PK
VIEW
A