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

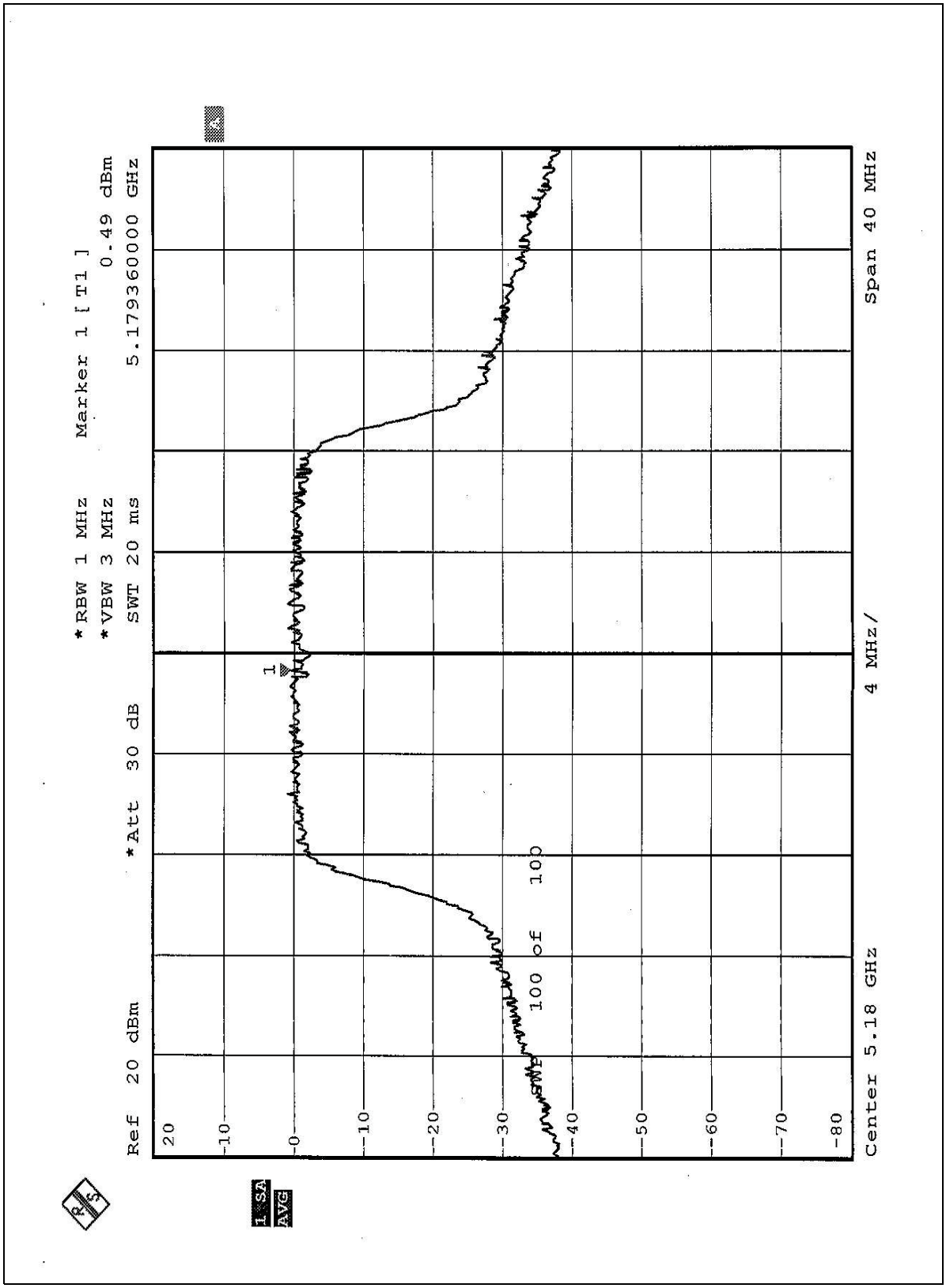
Same as 5.3.6

5.5.7 TEST RESULTS

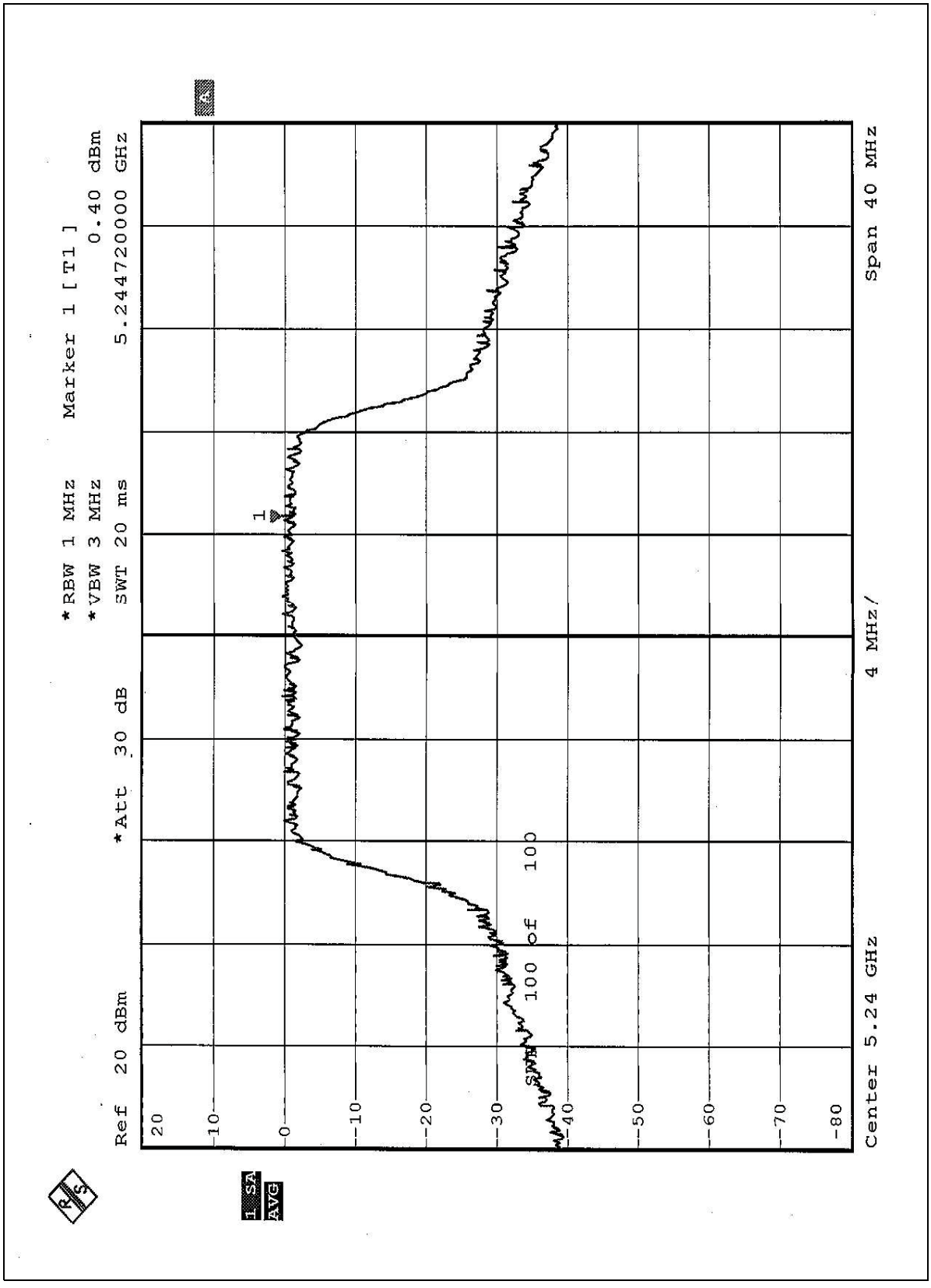
EUT	EZ-Stream Universal 2.4GHz/5GHz Wireless Cardbus Adapter	**MODEL**	SMC2336W-AG
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	**TESTED BY**	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	0.49	4	PASS
4	5240	0.40	4	PASS
5	5260	0.21	11	PASS
8	5320	2.48	11	PASS

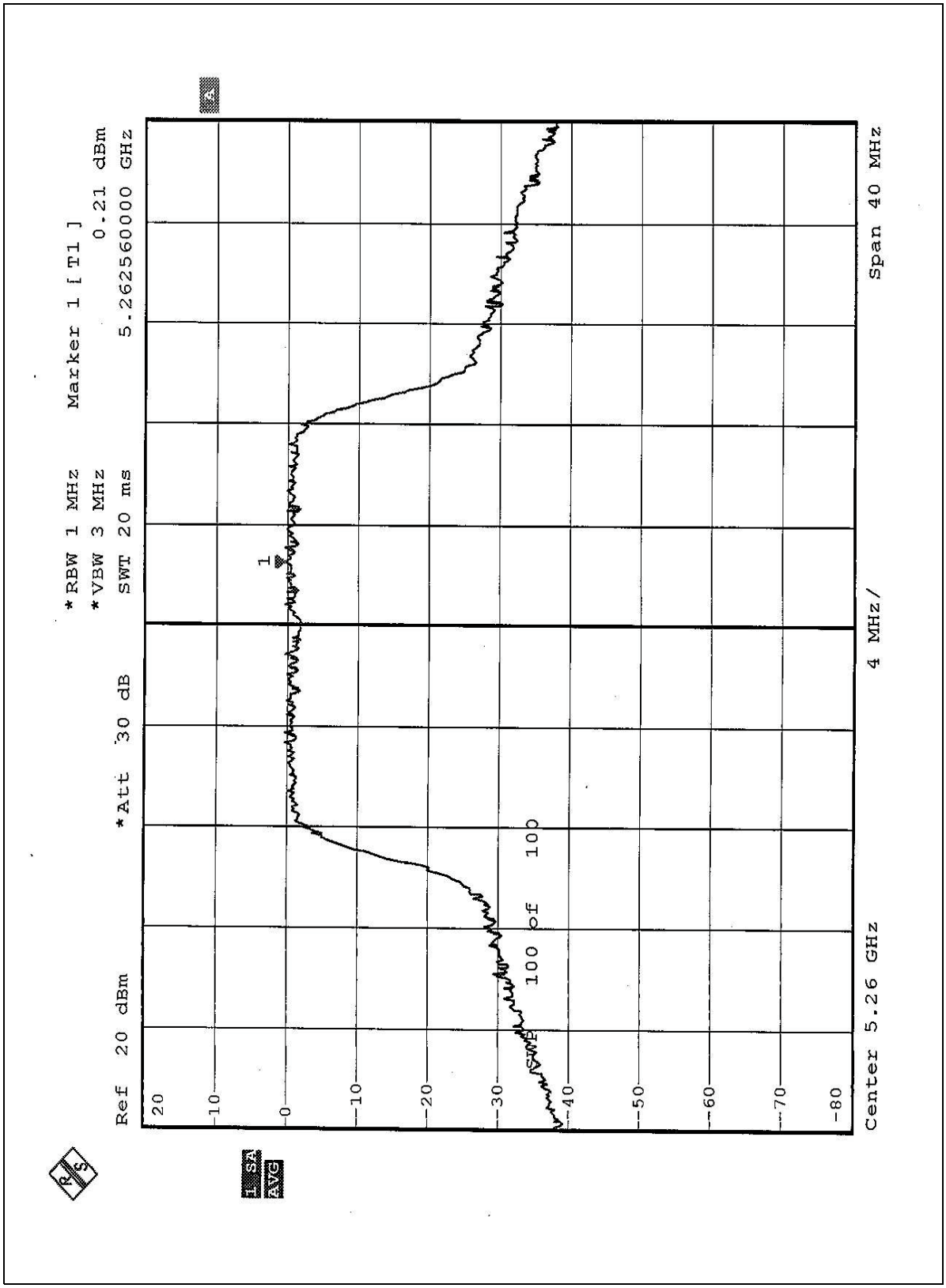
CHANNEL 1


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
0.49 dBm
5.17936000 GHz
Center 5.18 GHz
4 MHz/
Span 40 MHz
100 of 100
1 SA
AVG

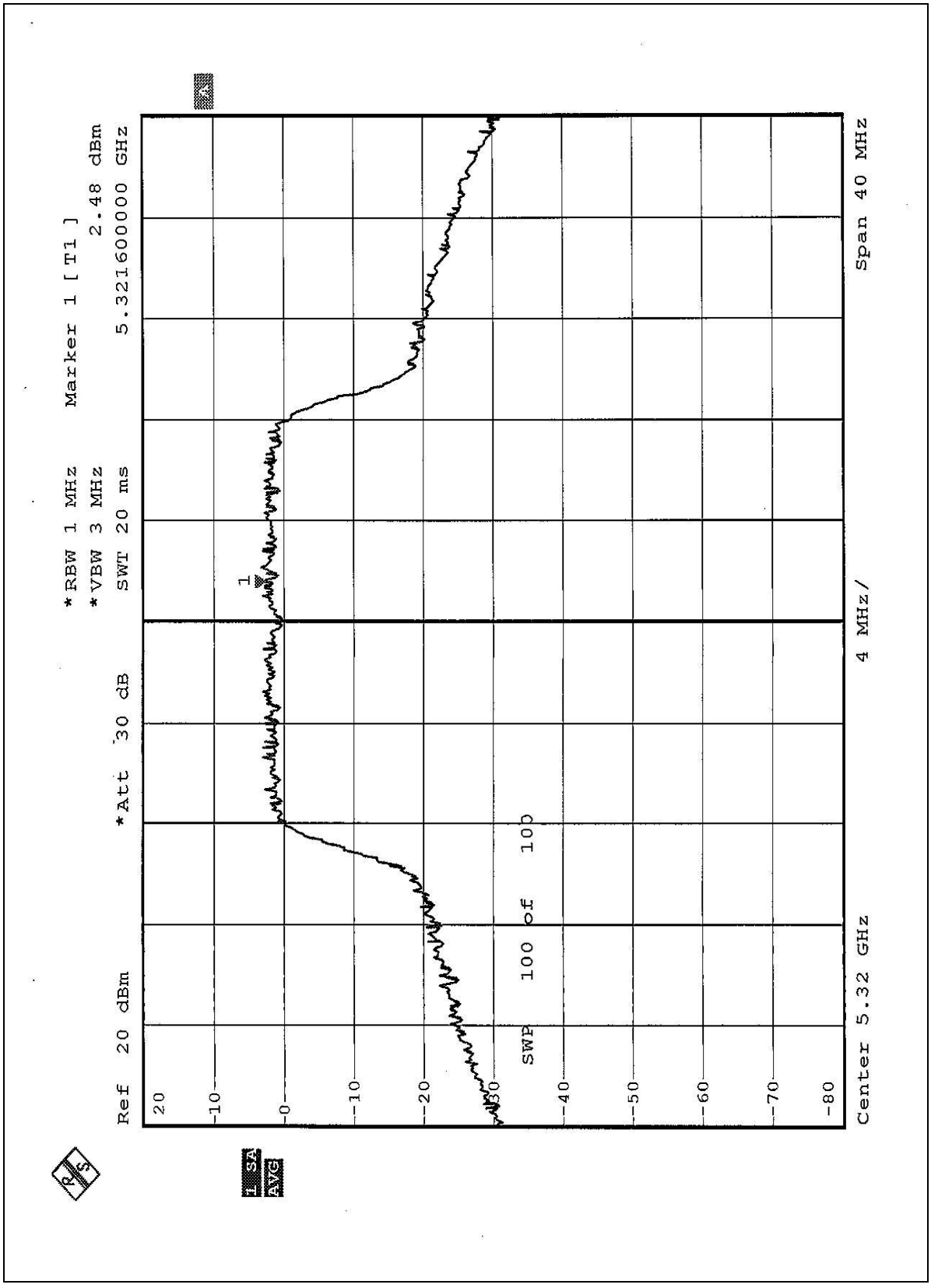
CHANNEL 4


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
0.40 dBm
5.244720000 GHz
Center 5.24 GHz
4 MHz/
Span 40 MHz
1 SA
AVG

CHANNEL 5


Marker 1 [T1]
0.21 dBm
5.262560000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20 dBm
Span 40 MHz
4 MHz/
Center 5.26 GHz
100 of 100
SWP
1 SA
AVG

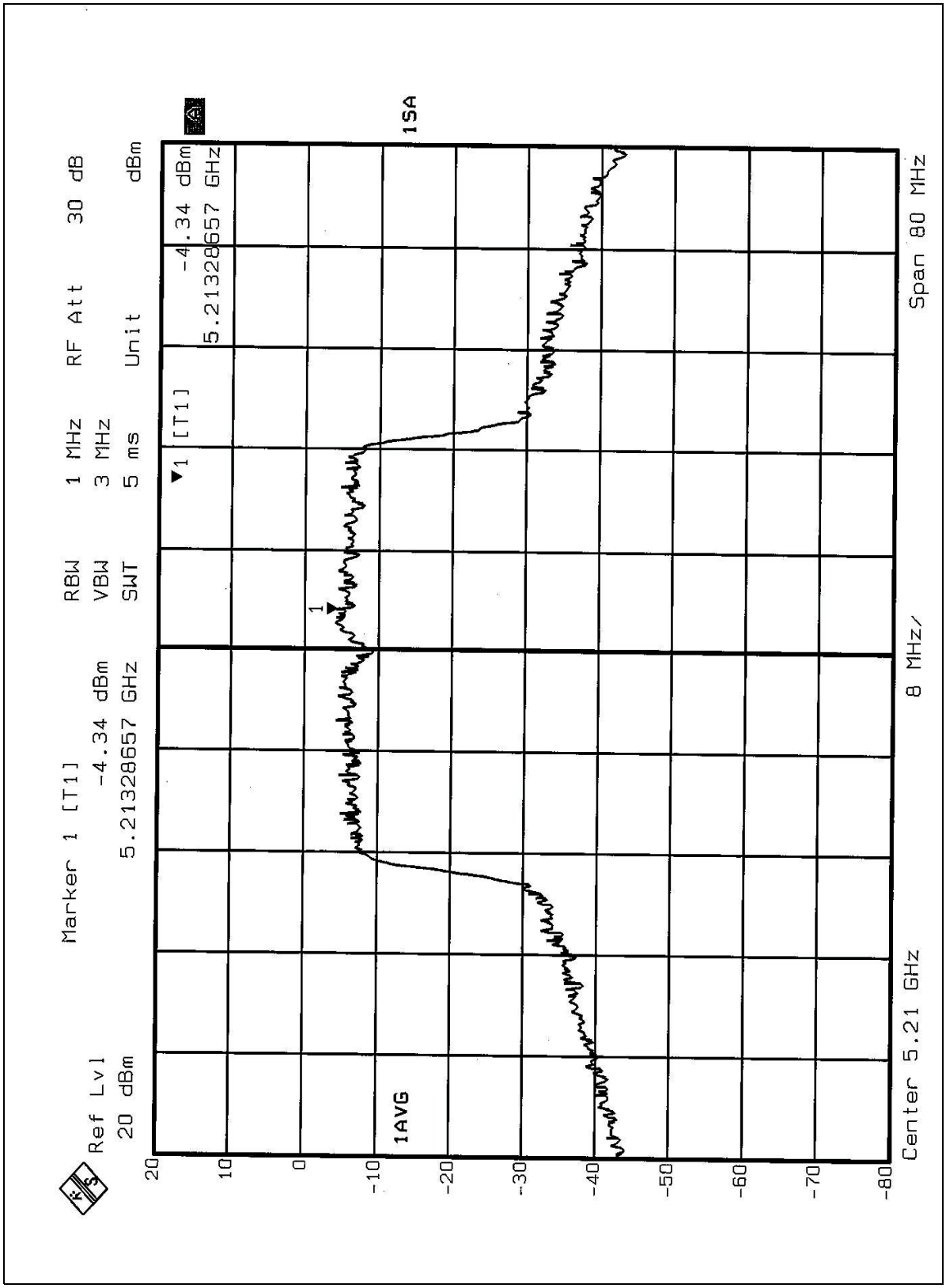
CHANNEL 8


Ref 20 dBm
*Att 30 dB
SWT 20 ms
*VBW 3 MHz
*RBW 1 MHz
Marker 1 [T1]
2.48 dBm
5.321600000 GHz
Center 5.32 GHz
4 MHz/
Span 40 MHz
SWP 100 of 100
1 SA
AVG

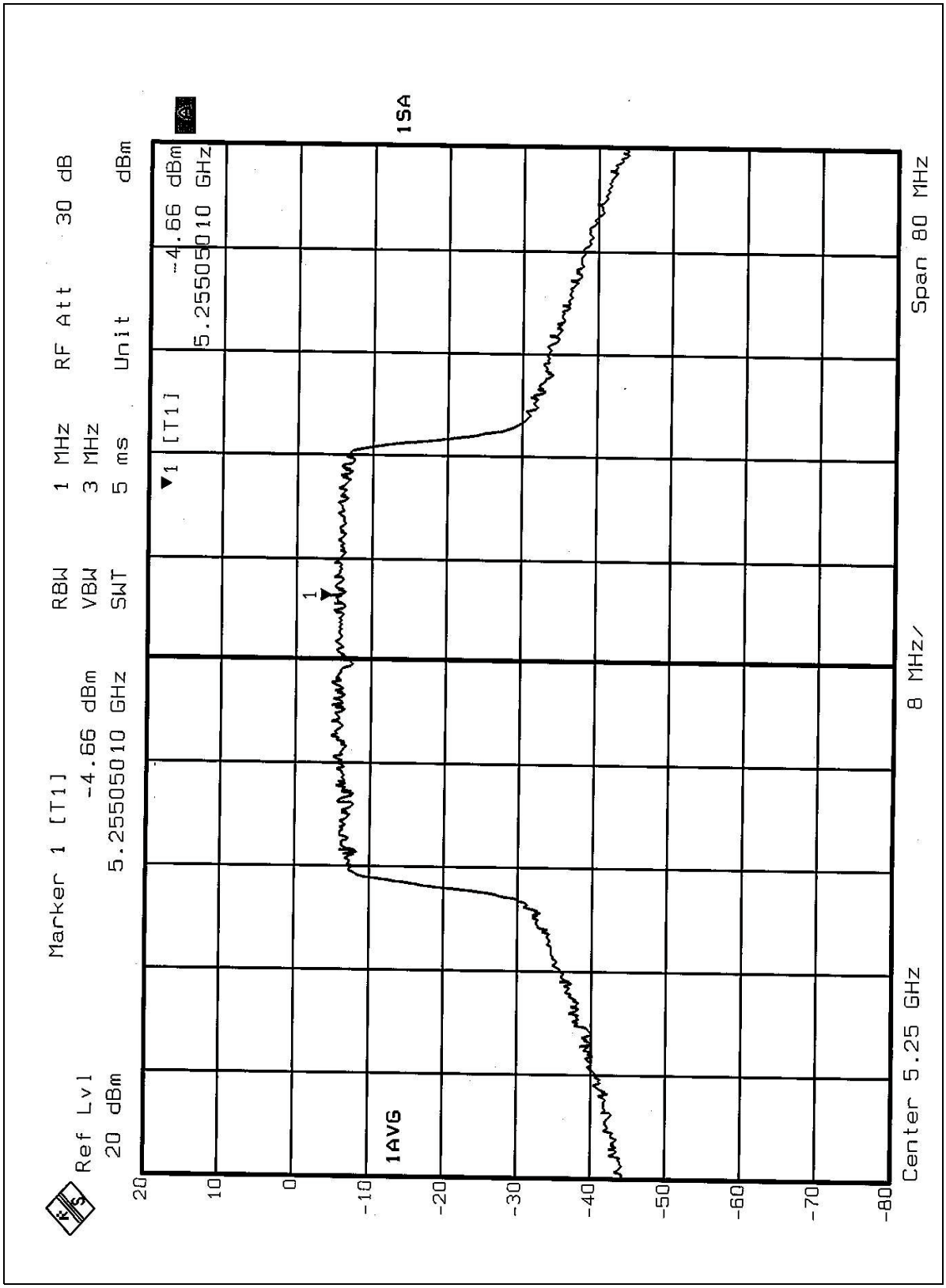
EUT	EZ-Stream Universal 2.4GHz/5GHz Wireless Cardbus Adapter	**MODEL**	SMC2336W-AG
MODE	Turbo	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	**TESTED BY**	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-4.34	4	PASS
2	5250	-4.66	4	PASS
3	5290	0.23	11	PASS

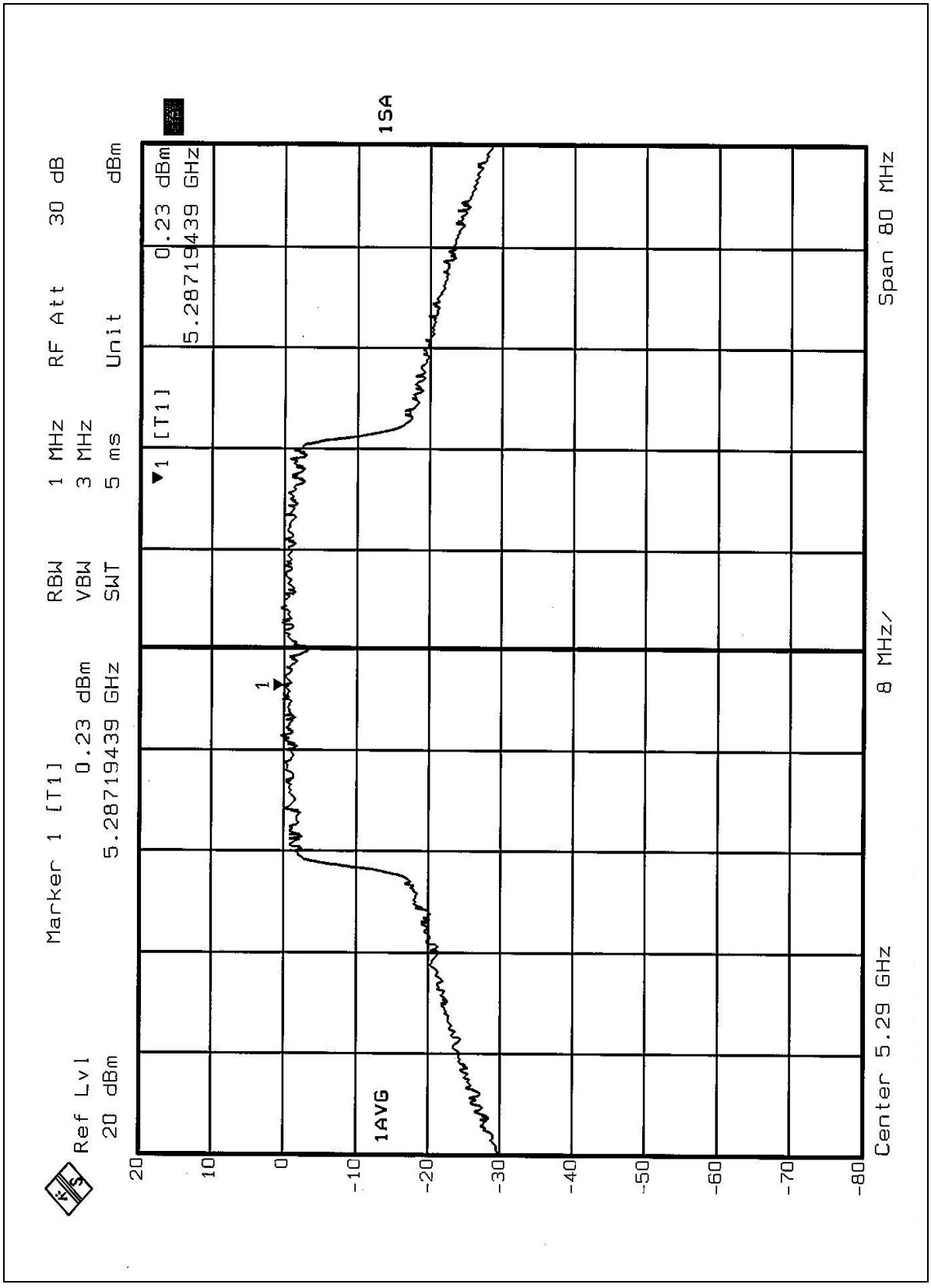
CHANNEL 1


Marker 1 [T1]
-4.34 dBm
5.21328657 GHz
Ref Lvl
20 dBm
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1AVG
Center 5.21 GHz
8 MHz/
Span 80 MHz

CHANNEL 2


Marker 1 [T1]
-4.66 dBm
5.25505010 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1SA
1AVG
Center 5.25 GHz
8 MHz/
Span 80 MHz

CHANNEL 3


Ref Lvl
20 dBm
Marker 1 [T1]
0.23 dBm
5.28719439 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1AVG
Center 5.29 GHz
8 MHz/
Span 80 MHz

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.

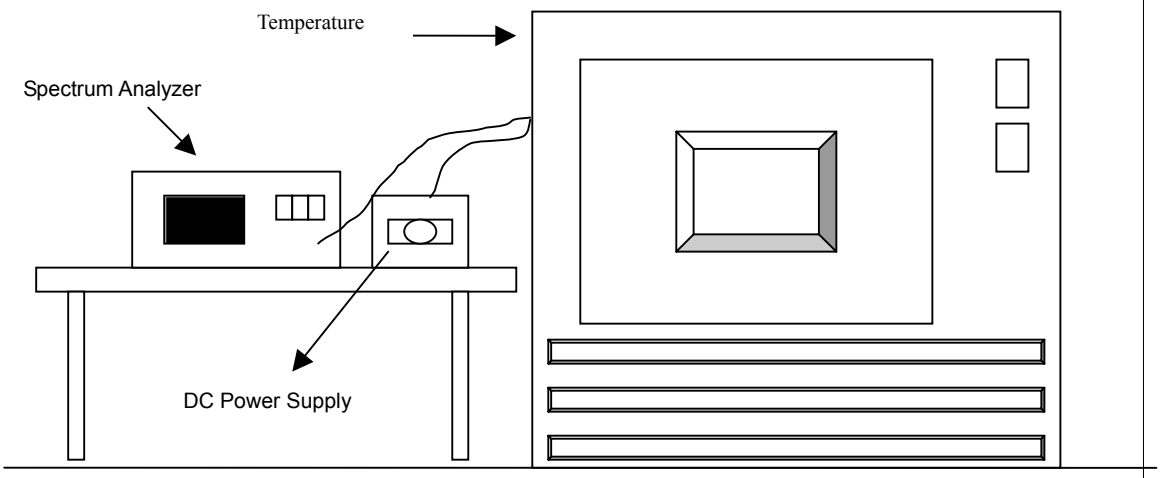
5.6.3 TEST PROCEDURE

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	5320.0968	0.0018195	5320.0976	0.0018346	5320.0996	0.0018722
	120V	5320.0968	0.0018195	5320.0976	0.0018346	5320.0994	0.0018684
	138	5320.0972	0.0018271	5320.0976	0.0018346	5320.0996	0.0018722
40	102	5320.0744	0.0013985	5320.0776	0.0014586	5320.0796	0.0014962
	120V	5320.0740	0.0013910	5320.0772	0.0014511	5320.0794	0.0014925
	138	5320.0744	0.0013985	5320.0776	0.0014586	5320.0796	0.0014962
30	102	5320.0656	0.0012331	5320.0688	0.0012932	5320.0708	0.0013308
	120V	5320.0648	0.0012180	5320.0688	0.0012932	5320.0708	0.0013308
	138	5320.0656	0.0012331	5320.0688	0.0012932	5320.0708	0.0013308
20	102	5320.0188	0.0003534	5320.0780	0.0014662	5320.0660	0.0012406
	120V	5320.0172	0.0003233	5320.0792	0.0014887	5320.0664	0.0012481
	138	5320.0192	0.0003609	5320.0772	0.0014511	5320.0660	0.0012406
10	102	5320.0640	0.0012030	5320.0716	0.0013459	5320.0742	0.0013953
	120V	5320.0636	0.0011955	5320.0712	0.0013383	5320.0740	0.0013910
	138	5320.0640	0.0012030	5320.0716	0.0013459	5320.0744	0.0013985
0	102	5320.0224	0.0004211	5320.0184	0.0003459	5320.0176	0.0003308
	120V	5320.0236	0.0004436	5320.0184	0.0003459	5320.0176	0.0003308
	138	5320.0222	0.0004173	5320.0184	0.0003459	5320.0176	0.0003308
-10	102	5320.0160	0.0003008	5320.0132	0.0002481	5320.0124	0.0002331
	120V	5320.0160	0.0003008	5320.0132	0.0002481	5320.0128	0.0002406
	138	5320.0160	0.0003008	5320.0132	0.0002481	5320.0124	0.0002331
-20	102	5320.0084	0.0001579	5320.0084	0.0001579	5320.0084	0.0001579
	120V	5320.0084	0.0001579	5320.0084	0.0001579	5320.0084	0.0001579
	138	5320.0084	0.0001579	5320.0084	0.0001579	5320.0084	0.0001579
-30	102	5320.0112	0.0002105	5320.0136	0.0002556	5320.0152	0.0002857
	120V	5320.0112	0.0002105	5320.0136	0.0002556	5320.0152	0.0002857
	138	5320.0112	0.0002105	5320.0136	0.0002556	5320.0152	0.0002857

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.

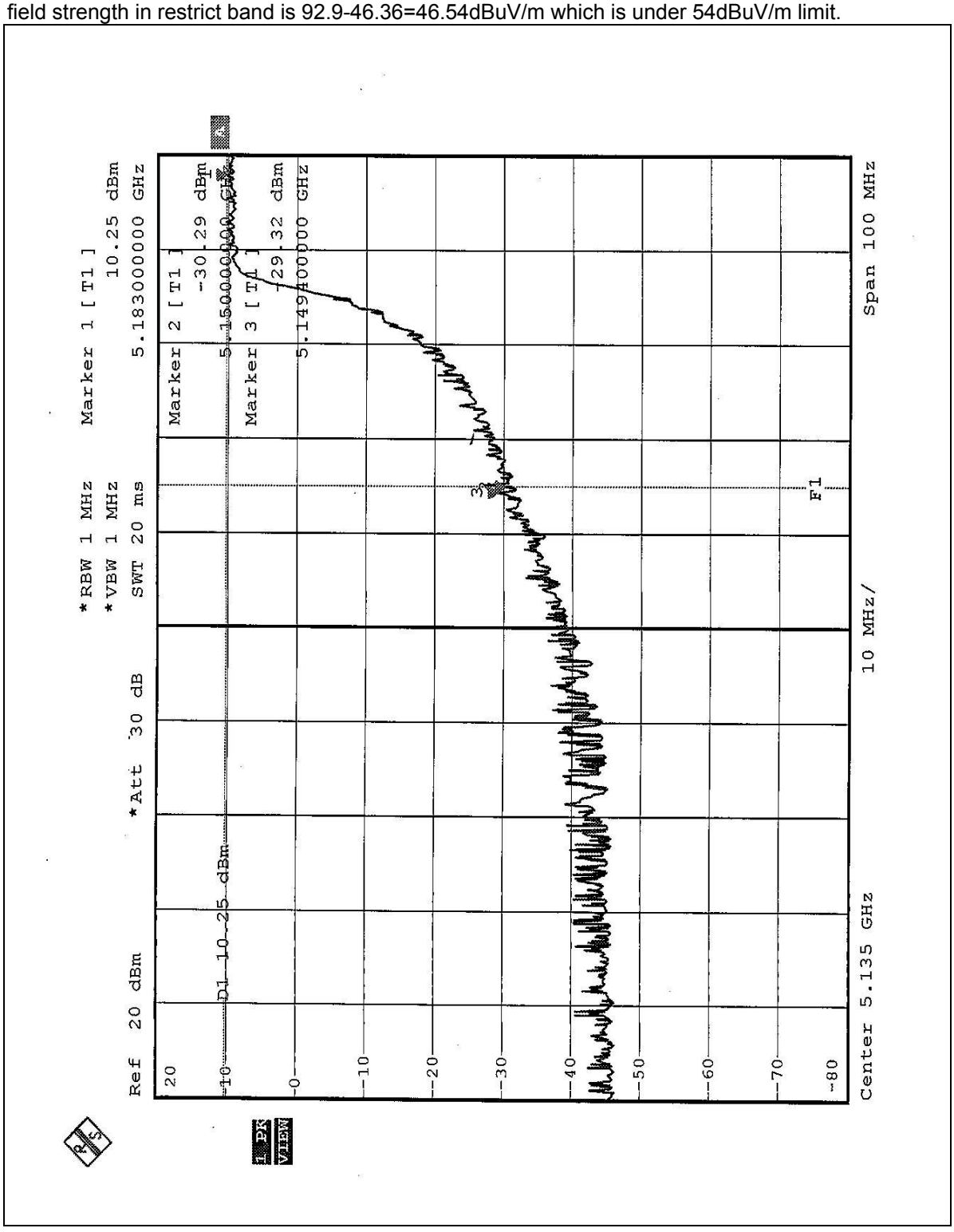
5.7.4 TEST RESULTS

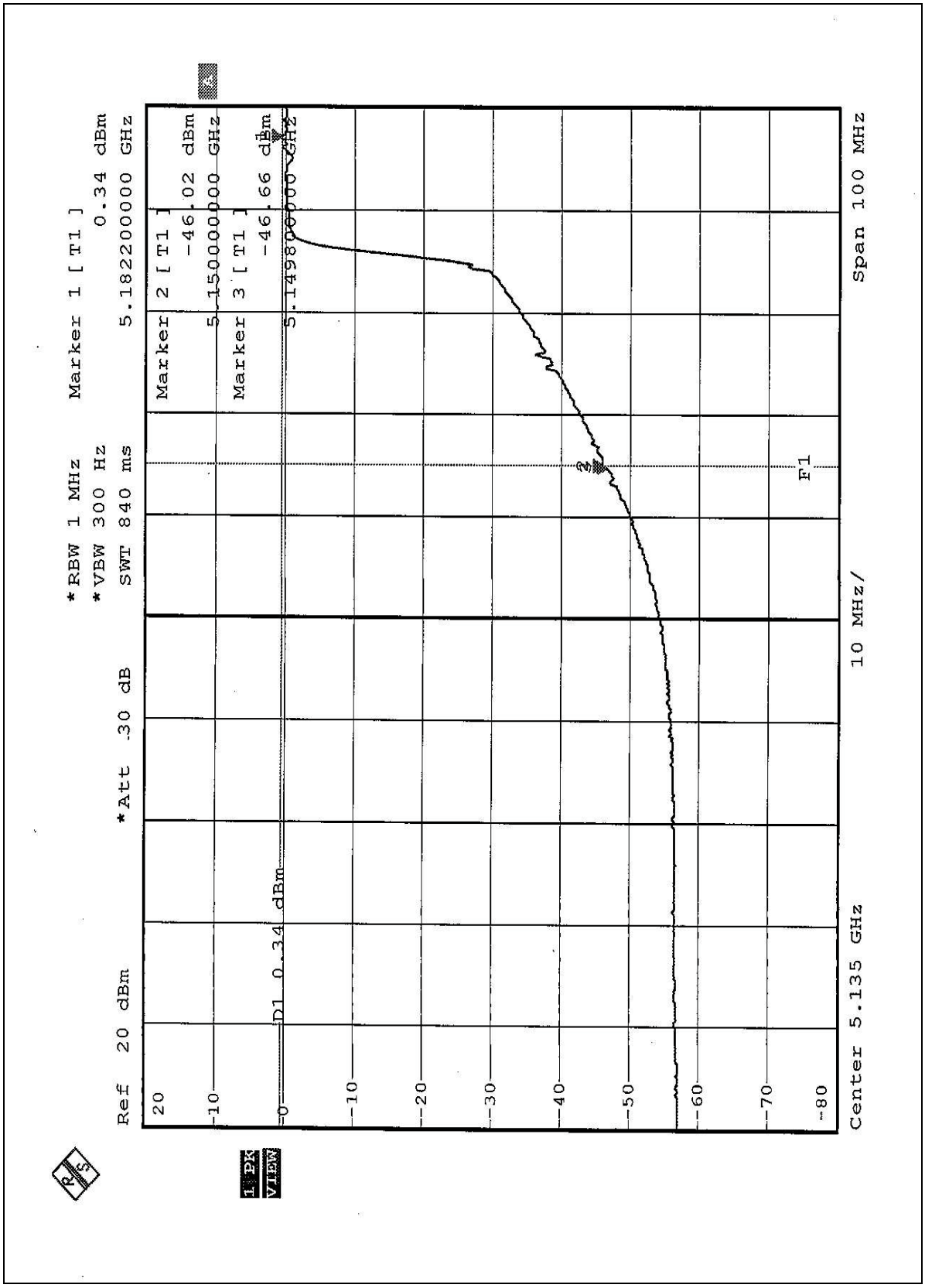
For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal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

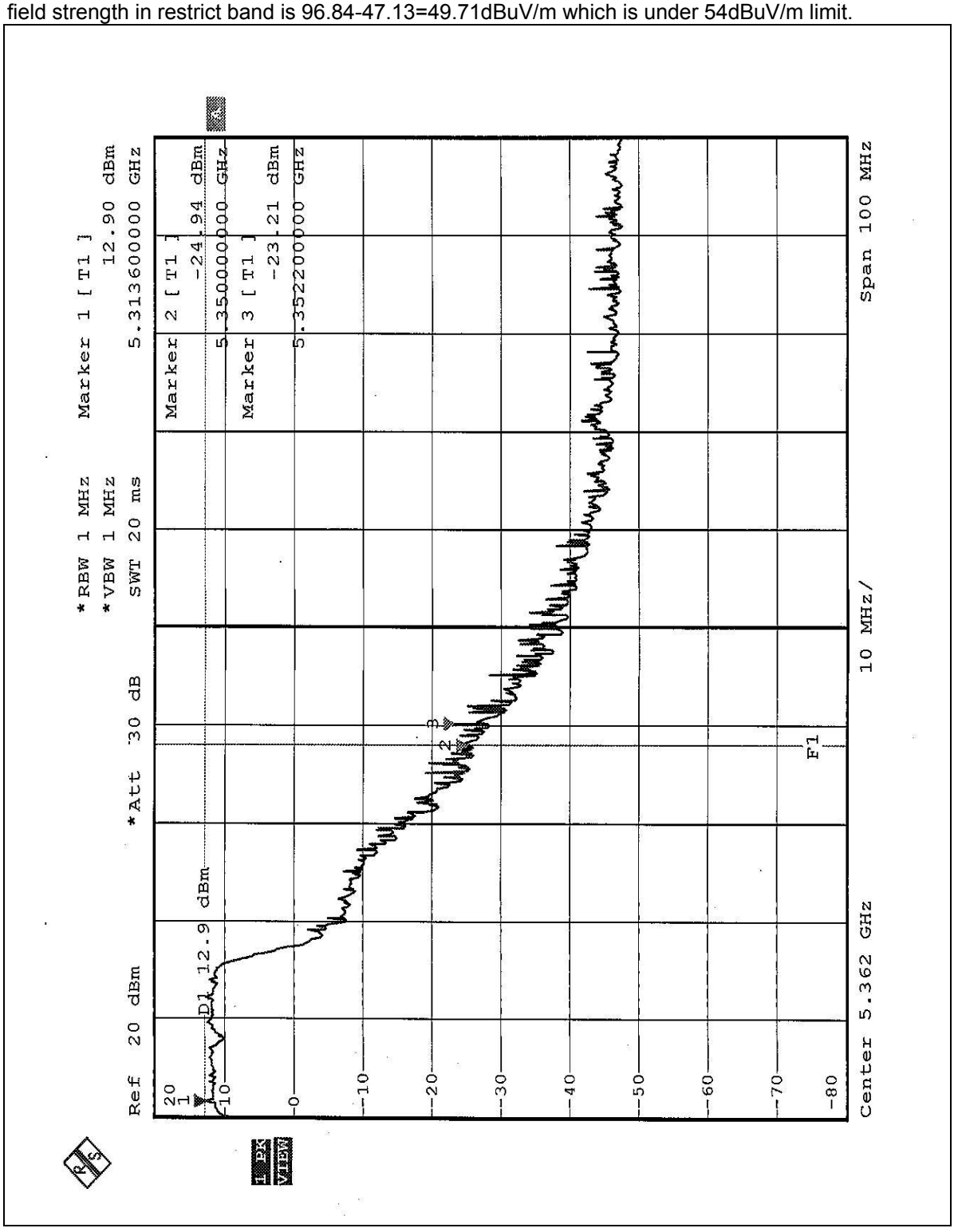
The band edge emission plot on the following pages shows 39.57dBc (Peak) / 46.36 (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (normal mode) is 92.9dBuV/m, so the maximum field strength in restrict band is 92.9-46.36=46.54dBuV/m which is under 54dBuV/m limit.

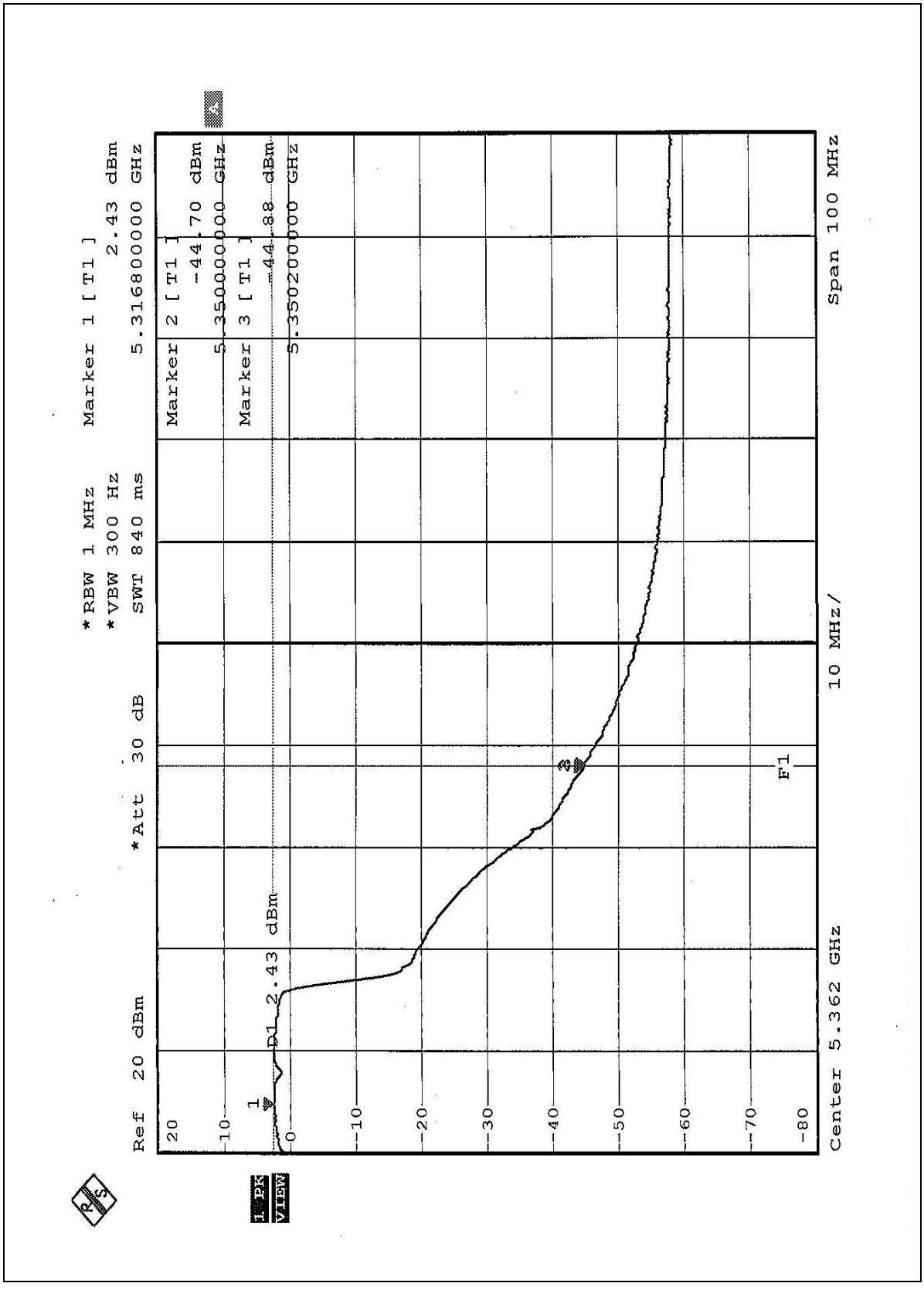



Ref 20 dBm
*Att 30 dB
*VBW 300 Hz
SWT 840 ms
*RBW 1 MHz
Marker 1 [T1]
0.34 dBm
5.182200000 GHz
Marker 2 [T1]
-46.02 dBm
5.150000000 GHz
Marker 3 [T1]
-46.66 dBm
5.149800000 GHz
D1 0.34 dBm
Center 5.135 GHz
10 MHz/
Span 100 MHz
F1
1 PK
VIEW

Normal Mode: Channel 8 (5320 MHz)

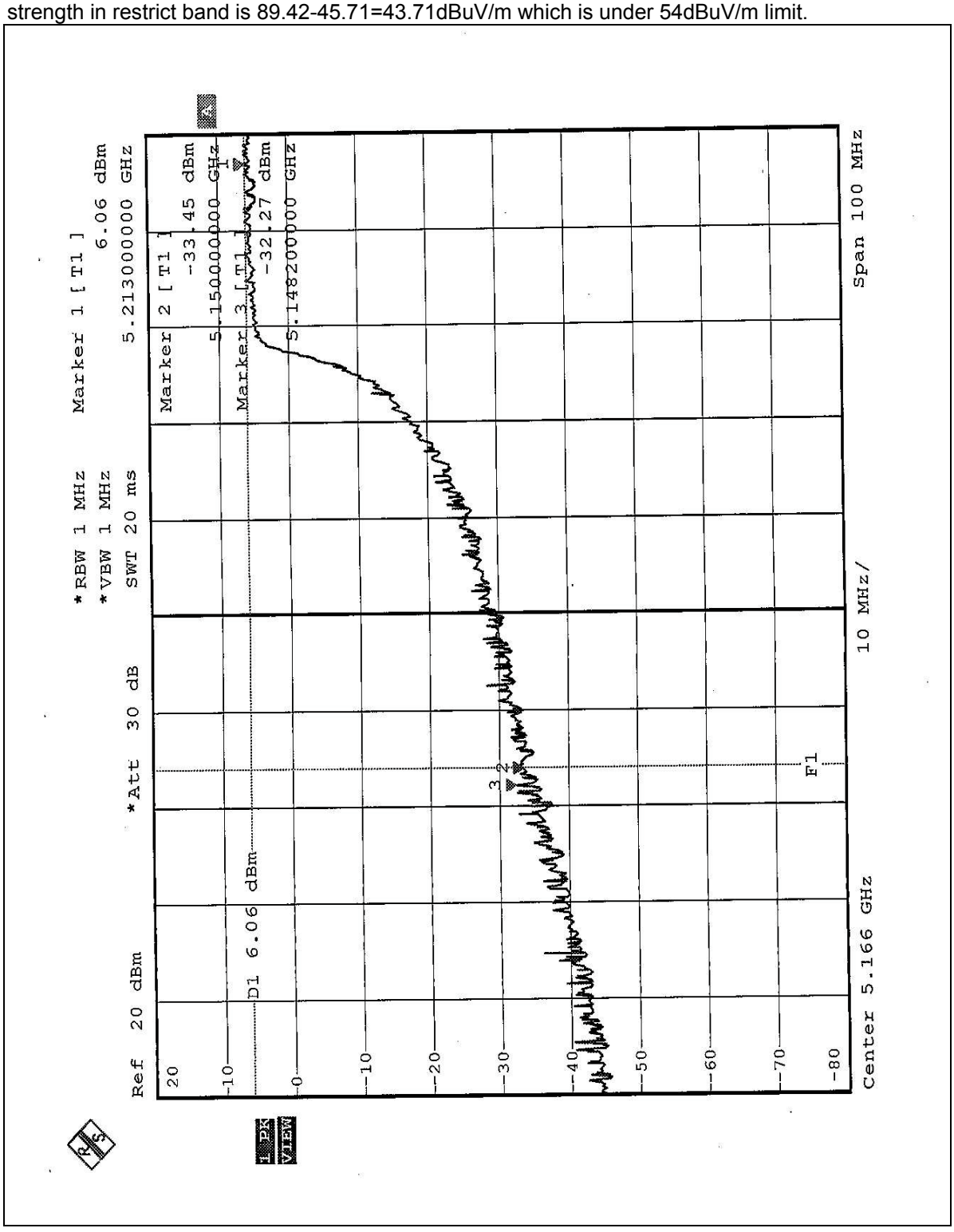
The band edge emission plot on the following pages shows 36.11dBc (Peak) / 47.13dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 (normal mode) is 96.84dBuV/m, so the maximum field strength in restrict band is 96.84-47.13=49.71dBuV/m which is under 54dBuV/m limit.

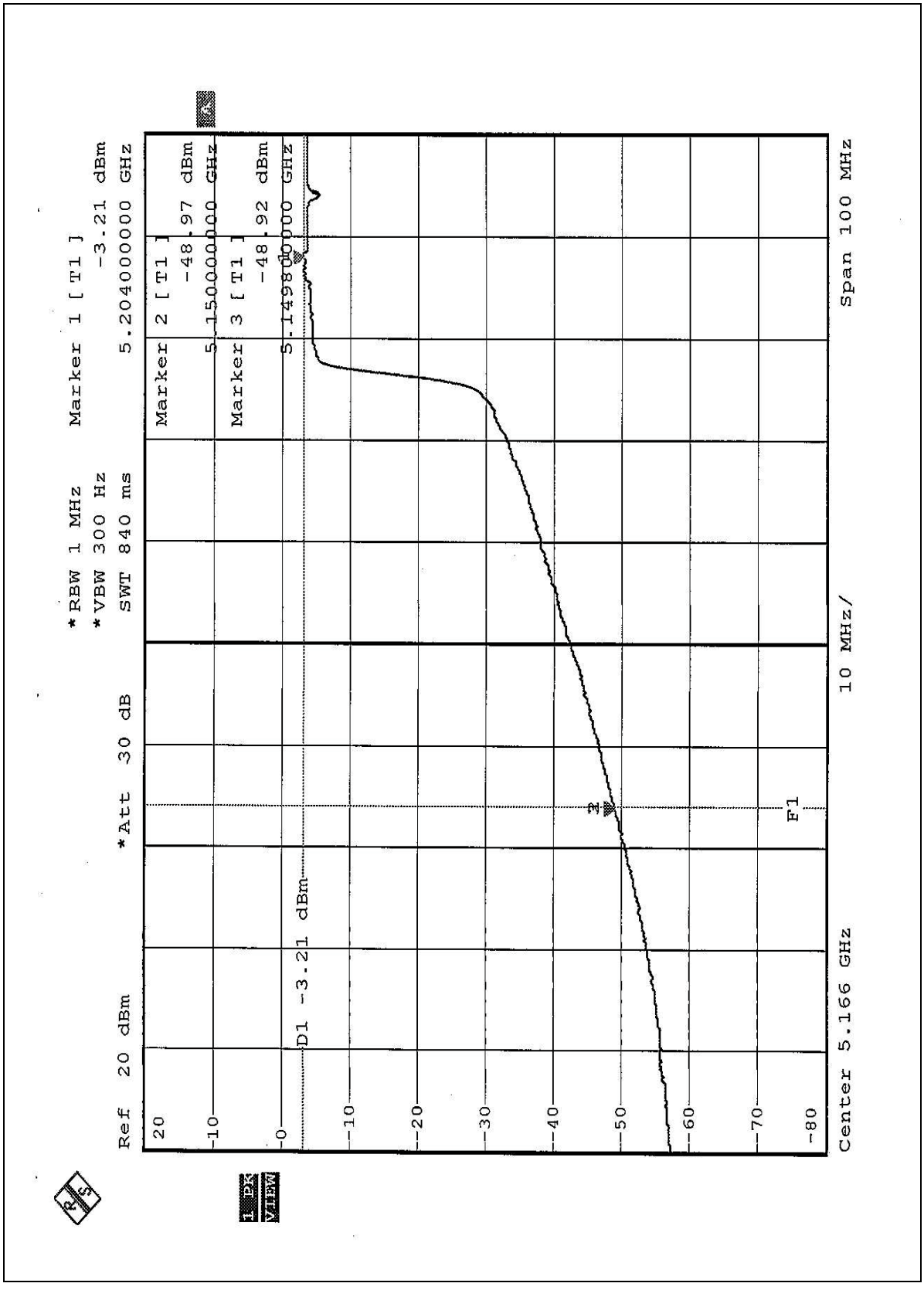



Ref 20 dBm
*Att 30 dB
SWT 840 ms
*VBW 300 Hz
*RBW 1 MHz
Marker 1 [T1]
2.43 dBm
5.316800000 GHz
Marker 2 [T1]
-44.70 dBm
5.350000000 GHz
Marker 3 [T1]
-44.88 dBm
5.350200000 GHz
D1 2.43 dBm
Center 5.362 GHz
10 MHz/
Span 100 MHz
F1
1 Pk
VIEW

Turbo Mode: Channel 1 (5210 MHz)

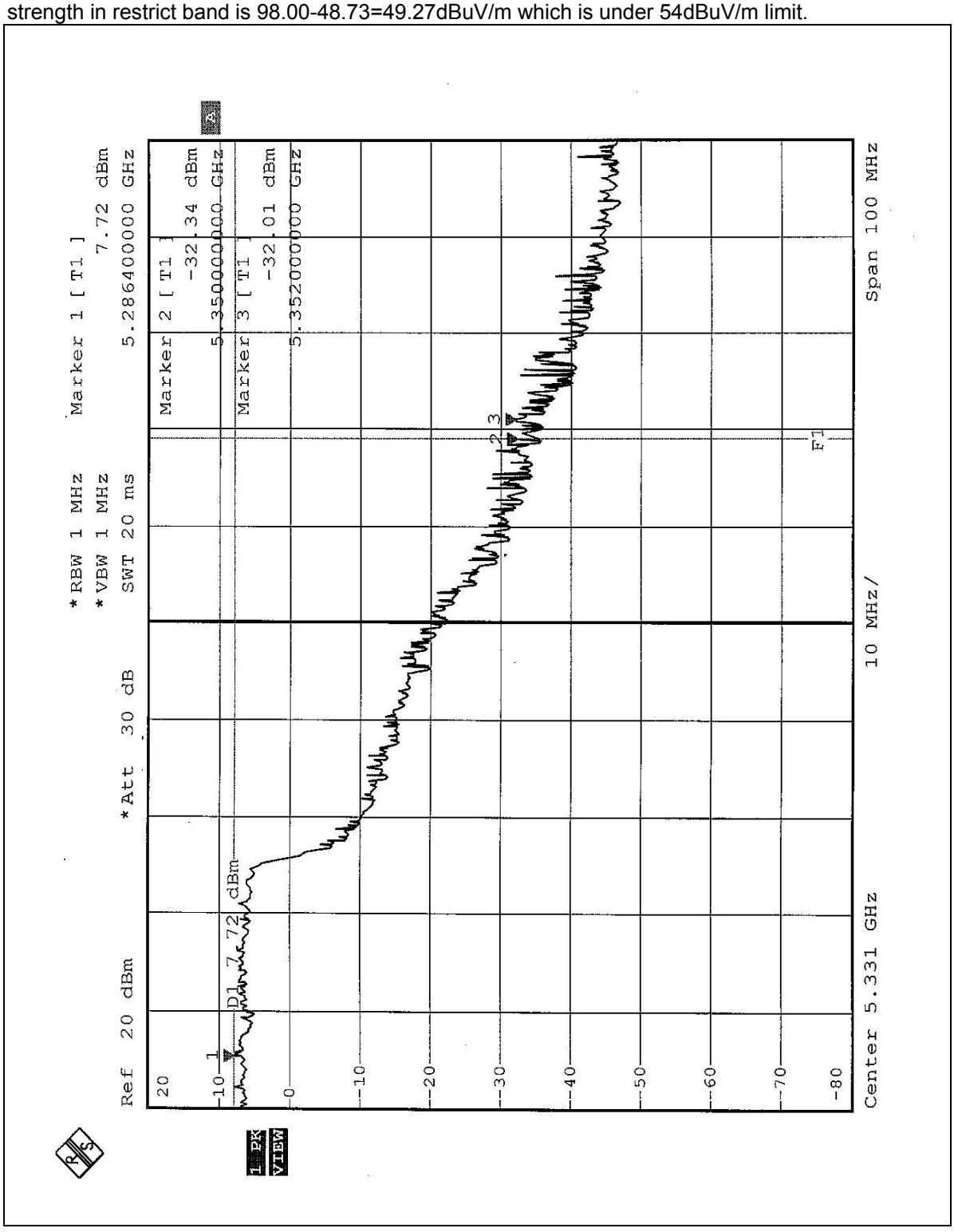
The band edge emission plot on the following pages shows 38.33dBc (Peak) / 45.71dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (turbo mode) is 89.42dBuV/m, so the maximum field strength in restrict band is 89.42-45.71=43.71dBuV/m which is under 54dBuV/m limit.

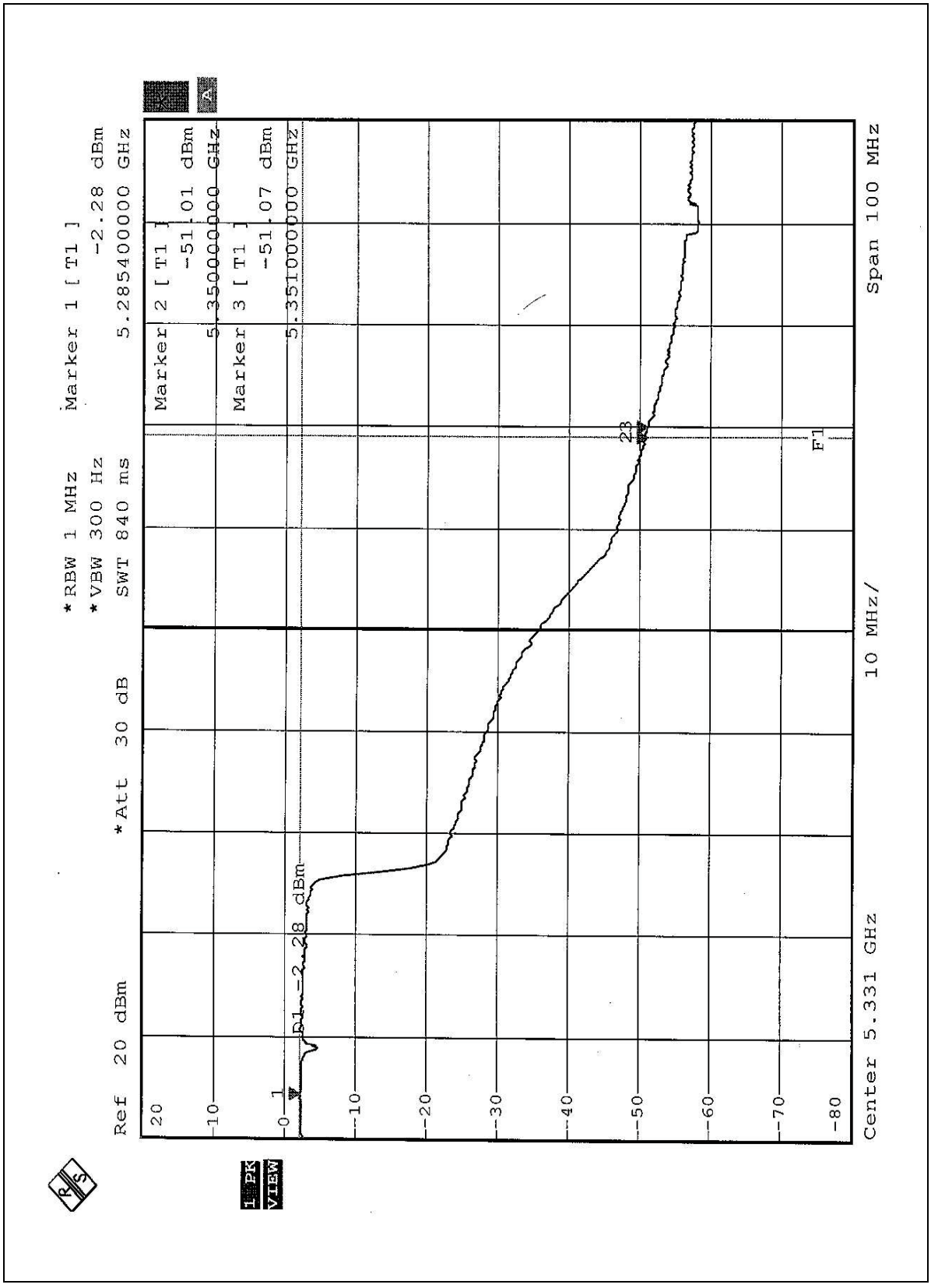



Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 1 [T1]
-3.21 dBm
5.204000000 GHz
Marker 2 [T1]
-48.97 dBm
5.150000000 GHz
Marker 3 [T1]
-48.92 dBm
5.149800000 GHz
D1 -3.21 dBm
F1
Center 5.166 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW

Turbo Mode: Channel 3 (5290 MHz)

The band edge emission plot on the following pages shows 39.73dBc (Peak) / 48.73dBc (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 98.00dBuV/m, so the maximum field strength in restrict band is 98.00-48.73=49.27dBuV/m which is under 54dBuV/m limit.




Ref 20 dBm
*Att 30 dB
*VBW 300 Hz
*RBW 1 MHz
SWT 840 ms
Marker 1 [T1]
-2.28 dBm
5.285400000 GHz
Marker 2 [T1]
-51.01 dBm
5.350000000 GHz
Marker 3 [T1]
-51.07 dBm
5.351000000 GHz
D1 -2.28 dBm
Center 5.331 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW

5.8 ANTENNA REQUIREMENT

5.8.1 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 15.407(a), 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.

5.8.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Patch antenna without antenna connector. The maximum Gain of the antenna is 1.05dBi.

FOR FREQUENCY 5.725~5.850GHz

5.9 6dB BANDWIDTH MEASUREMENT

5.9.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.9.2 TEST INSTRUMENTS

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

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

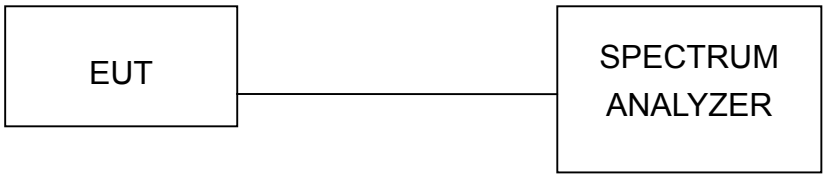
5.9.3 TEST PROCEDURE

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

5.9.4 DEVIATION FROM TEST STANDARD

No deviation

5.9.5 TEST SETUP



5.9.6 EUT OPERATING CONDITIONS

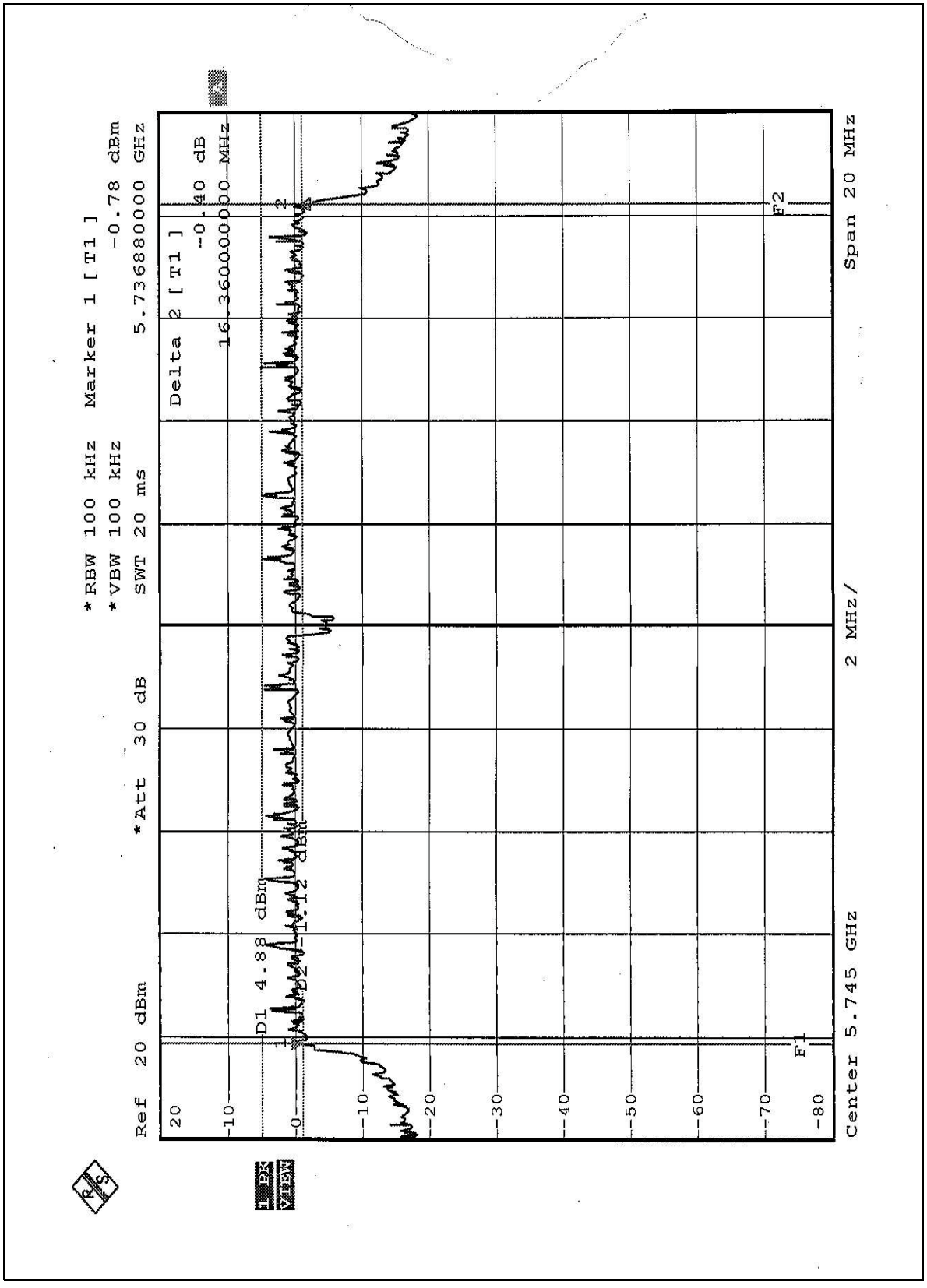
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.9.7 TEST RESULTS

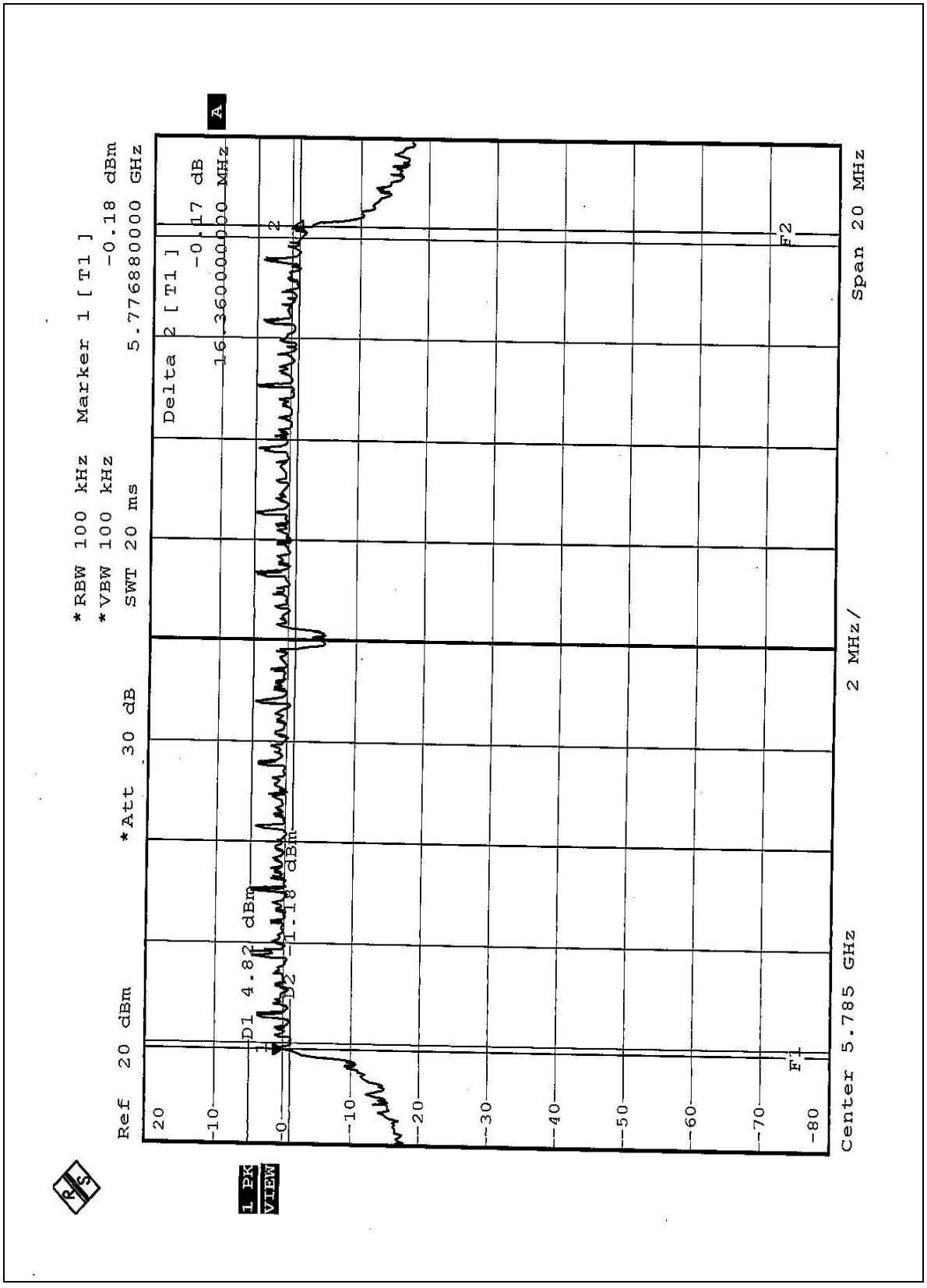
EUT	EZ-Stream Universal 2.4GHz/5GHz Wireless Cardbus Adapter	**MODEL**	SMC2336W-AG
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
9	5745	16.36	0.5	PASS
11	5785	16.36	0.5	PASS
13	5825	16.36	0.5	PASS

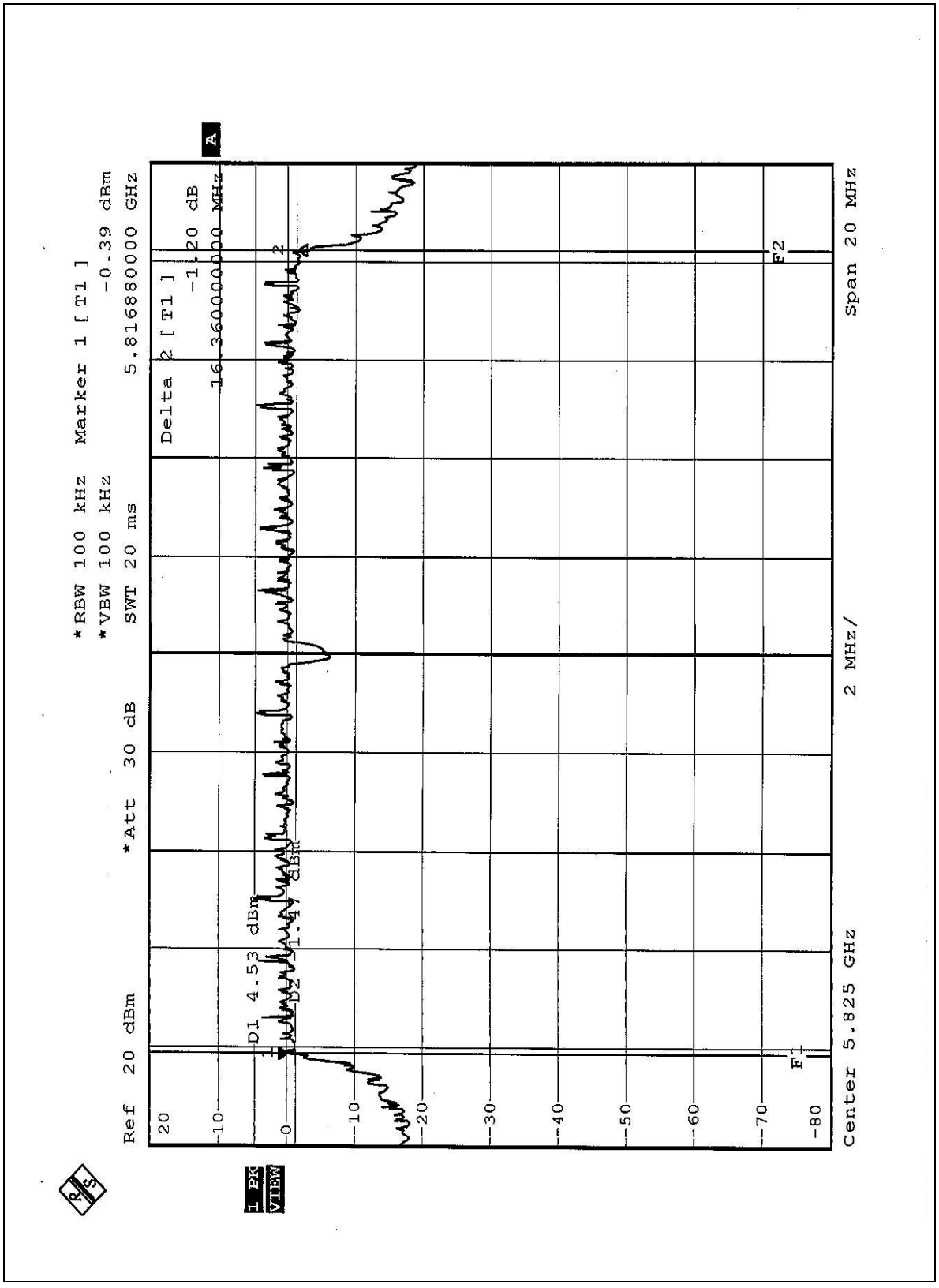
CHANNEL 9


Ref 20 dBm
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 20 ms
Marker 1 [T1]
-0.78 dBm
5.736880000 GHz
Delta 2 [T1]
-0.40 dB
16.360000000 MHz
D1 4.88 dBm
D2 -1.12 dBm
Center 5.745 GHz
2 MHz/
Span 20 MHz
1 PK
VIEW

CHANNEL 11


Ref 20 dBm
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 20 ms
Marker 1 [T1]
-0.18 dBm
5.776880000 GHz
Delta 2 [T1]
-0.17 dB
16.360000000 MHz
D1 4.82 dBm
D2 -1.18 dBm
Center 5.785 GHz
2 MHz/
Span 20 MHz
F1
F2
1 PK
VIEW

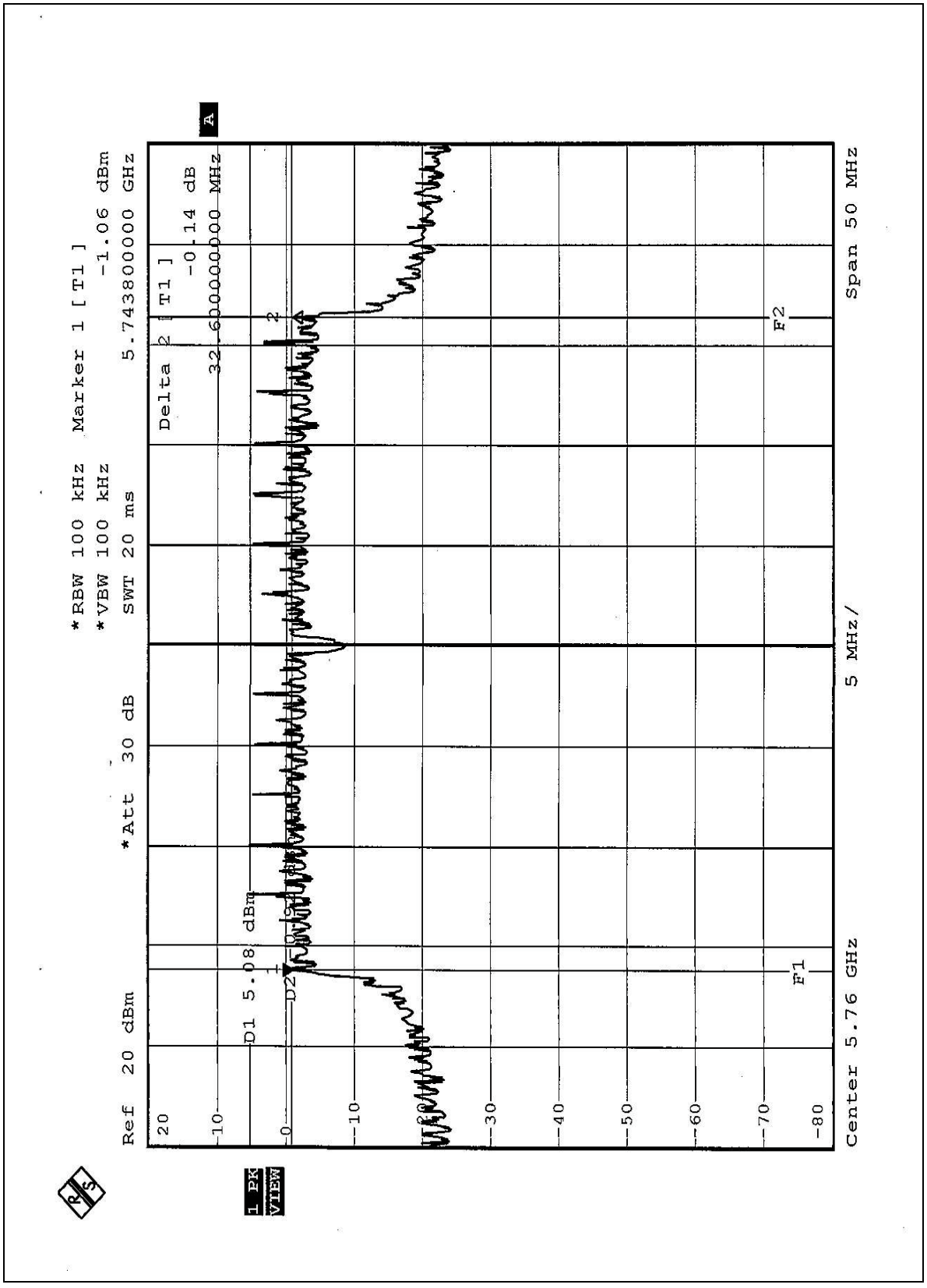
CHANNEL 13


Ref 20 dBm
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 20 ms
Marker 1 [T1]
-0.39 dBm
5.81688000 GHz
Delta 2 [T1]
-1.20 dB
16.36000000 MHz
D1 4.53 dBm
D2 1.47 dBm
Center 5.825 GHz
2 MHz/
Span 20 MHz
1 PK VIEW

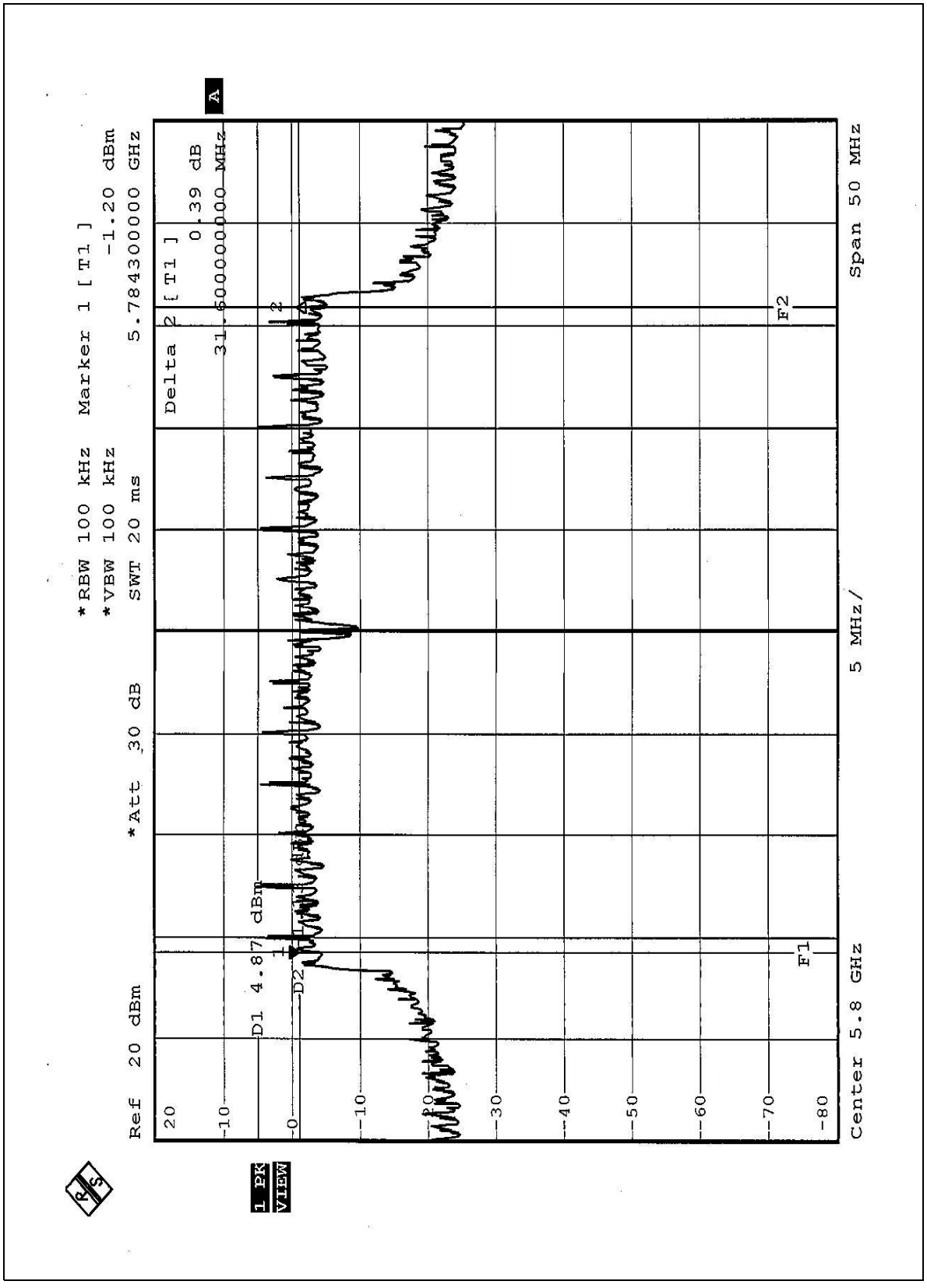
EUT	EZ-Stream Universal 2.4GHz/5GHz Wireless Cardbus Adapter	**MODEL**	SMC2336W-AG
MODE	Turbo	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
4	5760	32.60	0.5	PASS
5	5800	31.60	0.5	PASS

CHANNEL 4


RBW 100 kHz
VBW 100 kHz
SWT 20 ms
Att 30 dB
Ref 20 dBm
Marker 1 [T1]
-1.06 dBm
5.743800000 GHz
Delta 2 [T1]
-0.14 dB
32.60000000 MHz
D1 5.08 dBm
Center 5.76 GHz
5 MHz/
Span 50 MHz
F1
F2
1 PK
VIEW

CHANNEL 5


Ref 20 dBm
*Att 30 dB
*VBW 100 kHz
SWT 20 ms
*RBW 100 kHz
Marker 1 [T1]
-1.20 dBm
5.784300000 GHz
Delta 2 [T1]
0.39 dB
31.600000000 MHz
D1 4.87 dBm
Center 5.8 GHz
5 MHz/
Span 50 MHz
F1
F2
1 PK
VIEW

5.10 MAXIMUM PEAK OUTPUT POWER

5.10.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.10.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B048470	Mar. 05, 2004
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..

5.10.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read 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 reading on oscilloscope. Record the power level.

5.10.4 DEVIATION FROM TEST STANDARD

No deviation

5.10.5 TEST SETUP

5.10.6 EUT OPERATING CONDITIONS

Same as Item 5.9.6

5.10.7 TEST RESULTS

EUT	EZ-Stream Universal 2.4GHz/5GHz Wireless Cardbus Adapter	**MODEL**	SMC2336W-AG
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
9	5745	17.36	30	PASS
11	5785	17.18	30	PASS
13	5825	17.12	30	PASS

EUT	EZ-Stream Universal 2.4GHz/5GHz Wireless Cardbus Adapter	**MODEL**	SMC2336W-AG
MODE	Turbo	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4	5760	17.32	30	PASS
5	5800	17.26	30	PASS