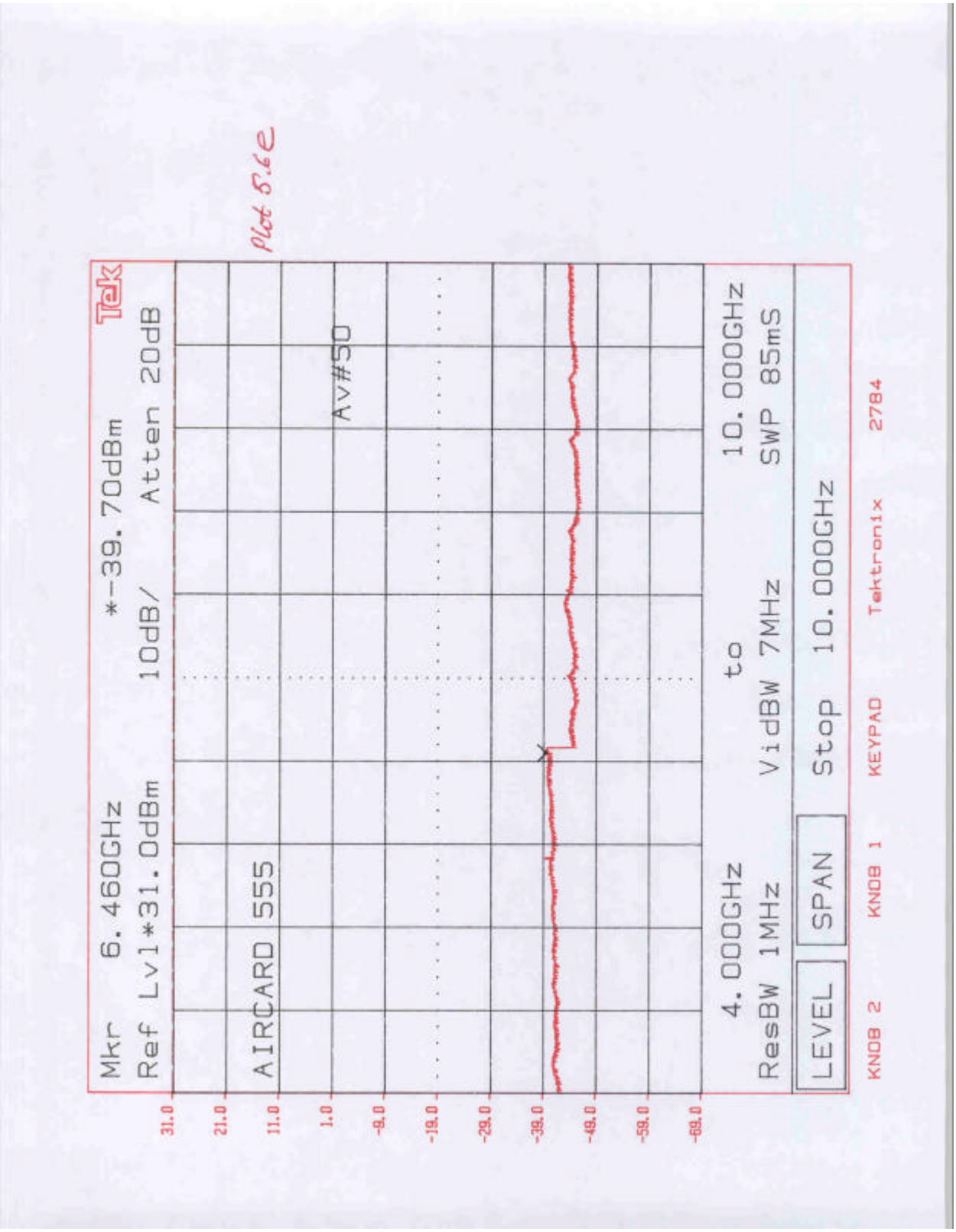
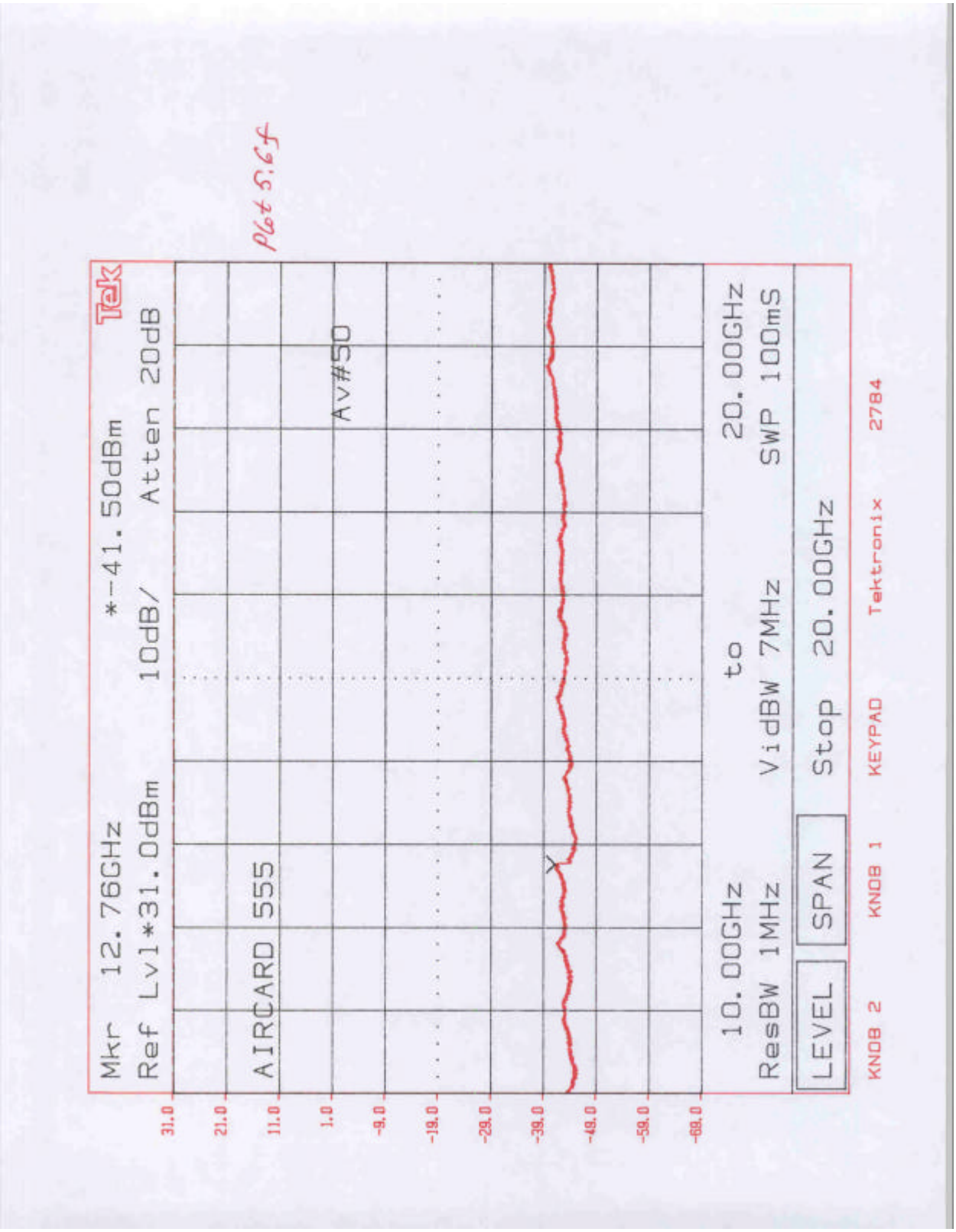
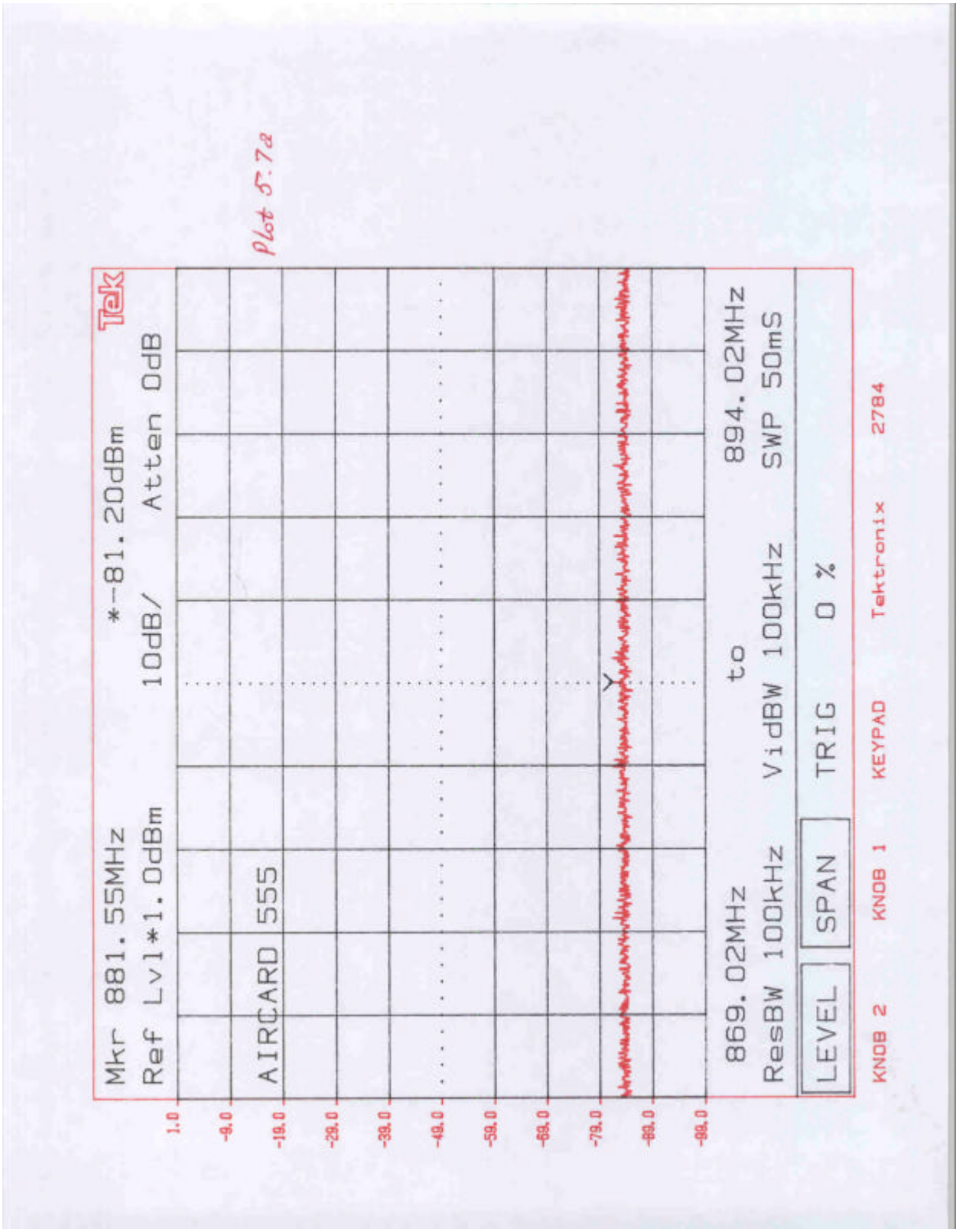
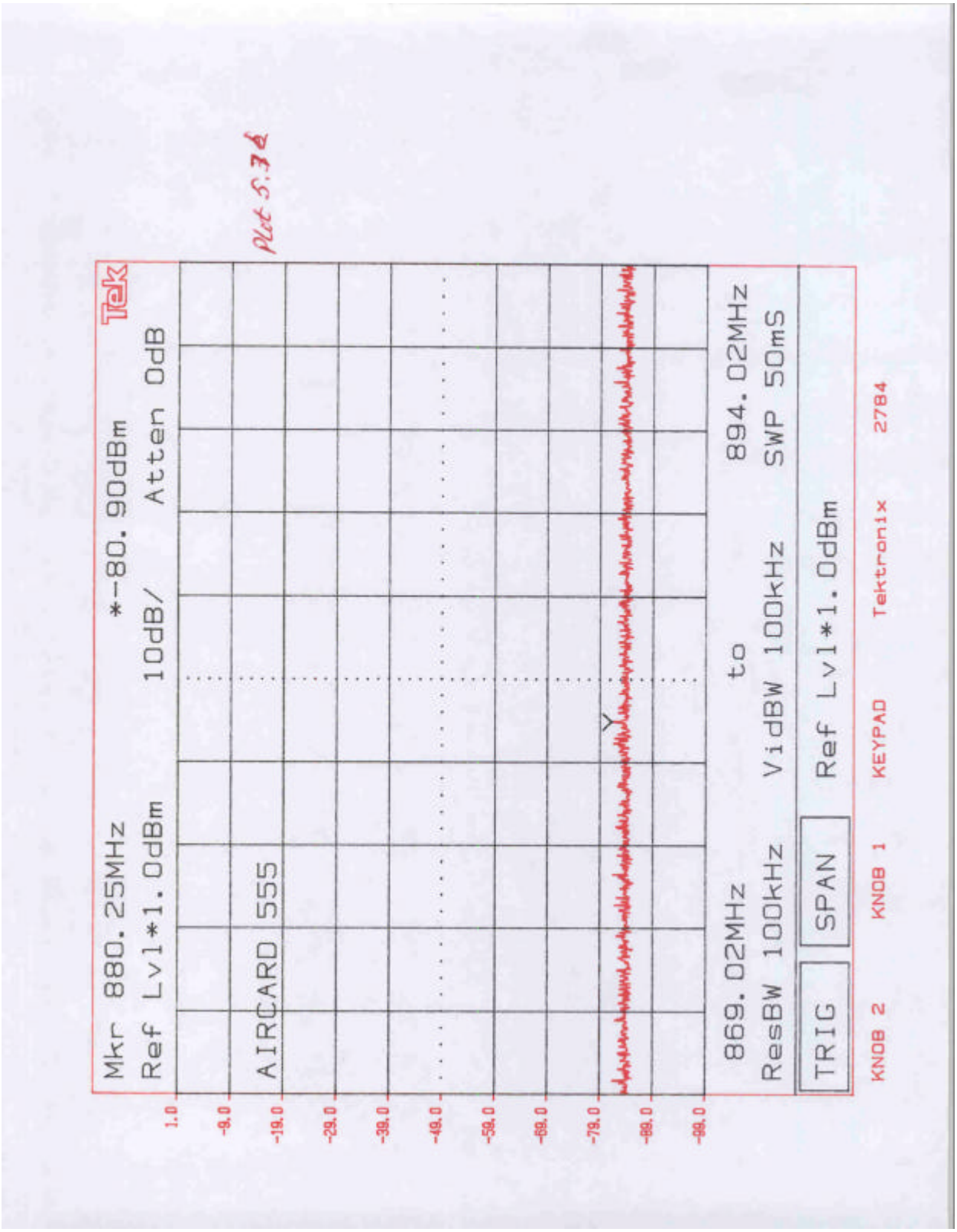
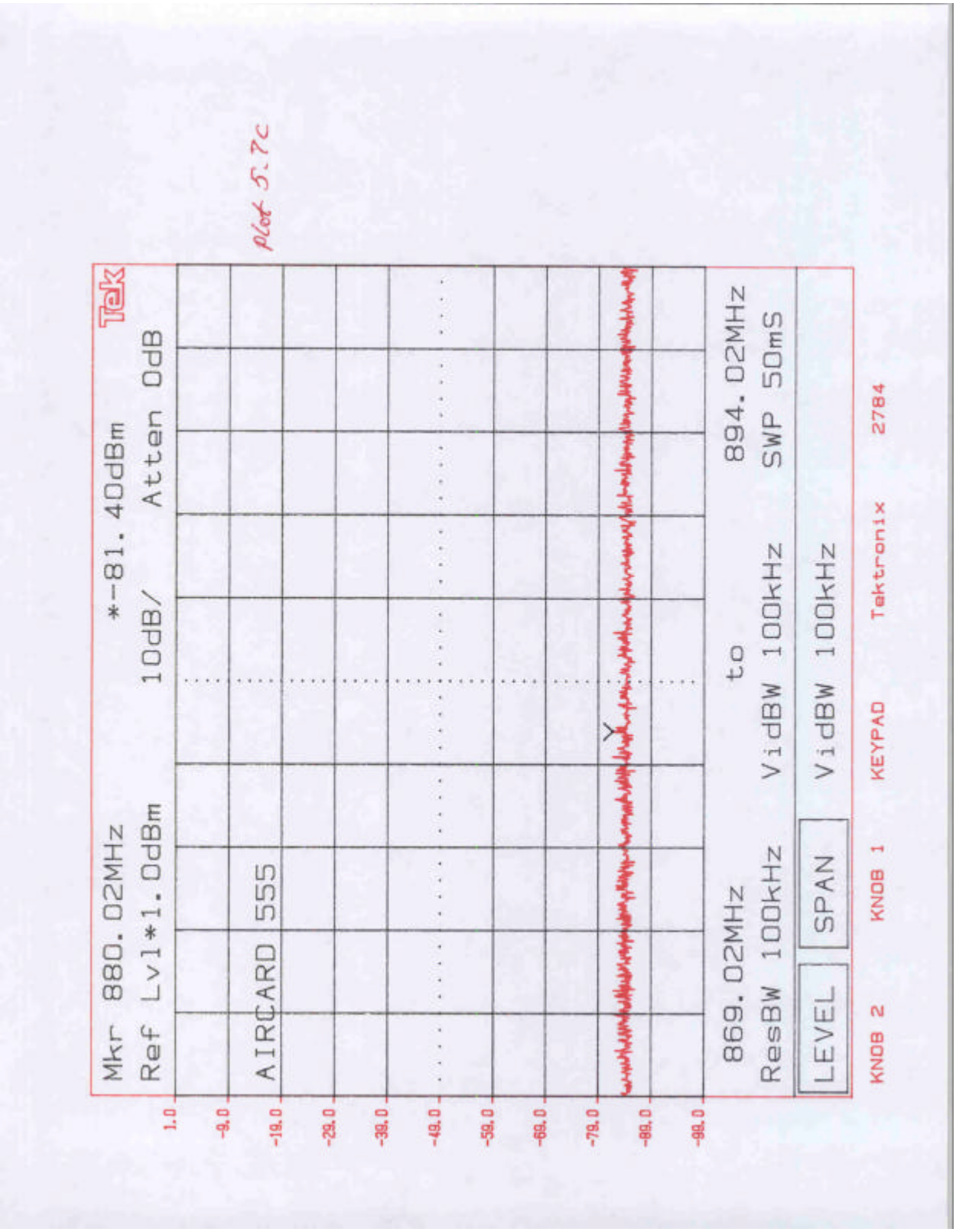

Plot 5.6e
Tek
Mkr 6.460GHz
Ref Lvl*31.0dBm
*-39.70dBm
10dB/ Atten 20dB
AIRCARD 555
Av#50
31.0
21.0
11.0
1.0
-9.0
-19.0
-29.0
-39.0
-49.0
-59.0
-69.0
4.000GHz
ResBW 1MHz
to
10.000GHz
VidBW 7MHz
SWP 85mS
LEVEL
SPAN
Stop 10.000GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784


Plot 5.6f
Tek
Mkr 12.76GHz
Ref Lvl*31.0dBm
*-41.50dBm
10dB/
Atten 20dB
AIRCARD 555
Av#50
31.0
21.0
11.0
1.0
-9.0
-19.0
-29.0
-39.0
-49.0
-59.0
-69.0
10.00GHz
ResBW 1MHz
to
20.00GHz
VidBW 7MHz
SWP 100mS
LEVEL
SPAN
Stop 20.00GHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784


Plot 5.7a
Tek
Mkr 881.55MHz
Ref Lvl *1.0dBm
*-81.20dBm
10dB/
Atten 0dB
AIRCARD 555
869.02MHz
ResBW 100kHz
to
894.02MHz
VidBW 100kHz
SWP 50mS
LEVEL
SPAN
TRIG
0 %
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784
1.0
-9.0
-19.0
-29.0
-39.0
-49.0
-59.0
-69.0
-79.0
-89.0
-99.0


Plot 5.34
Tek
Mkr 880.25MHz
*-80.90dBm
Ref Lvl*1.0dBm
10dB/
Atten 0dB
AIRCARD 555
1.0
-9.0
-19.0
-29.0
-39.0
-49.0
-59.0
-69.0
-79.0
-89.0
-99.0
869.02MHz
to
894.02MHz
ResBW 100kHz
VidBW 100kHz
SWP 50mS
TRIG
SPAN
Ref Lvl*1.0dBm
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784


plot 5.7c
Tek
Mkr 880.02MHz
Ref Lvl *1.0dBm
*-81.40dBm
10dB/
Atten 0dB
AIRCARD 555
1.0
-9.0
-19.0
-29.0
-39.0
-49.0
-59.0
-69.0
-79.0
-89.0
-99.0
869.02MHz
ResBW 100kHz
to
894.02MHz
VidBW 100kHz
SWP 50mS
LEVEL
SPAN
VidBW 100kHz
KNOB 2
KNOB 1
KEYPAD
Tektronix
2784

6.0 Field Strength of Spurious Radiation

FCC 2.1053, 22.901(d), 24.238(a)

6.1 Test Procedure

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to tenth harmonic of each of the three fundamental frequency (low, middle, and high channels) for each band (cellular and PCS) was investigated. The tests were performed with the Radio Card installed in Laptop and PDA for both polarization of the transmitter's antenna (antenna in vertical and horizontal position). The worst case of emissions was reported.

For spurious emissions attenuation, the substitution method was used. On each frequency where the Field Strength was found above 63.4 dBuV/m (which corresponds to ERP = -33 dBm), the EUT was substituted by a reference antenna (half-wave dipole - below 1 GHz, or Horn antenna - above 1GHz), connected to a signal generator. The signal generator output was adjusted to obtain the same reading as from EUT. The ERP/EIRP at the spurious emissions frequency was calculated as in section 3. The spurious emissions attenuation was calculated as the difference between ERP/EIRP at the fundamental frequency (see section 3) and at the spurious emissions frequency.

6.2 Test Equipment

EMCO 3115 Horn Antennas
HP 8566B Spectrum Analyzer
Tektronix 2784 Spectrum Analyzer
Low Pass Filter
Preamplifiers

6.3 Test Results

Test Result:	Complies, refer to the attached data sheets

Radiated Emissions Test Data

Company:	Sierra Wireless			**Model #:**	AIRCARD 555			
EUT:	PCMCIA Card			**FCC #:**	**N7NACRD555**			
Project #:	J20054479			**Test Date:**	July 19. 2001			
Test Mode:	Tx @ 825.25 MHz			**Engineer:**	D. Chernomordik			
	Antenna Used			Pre-Amp Used			Cable Used	
Number:	8	11	21	12	8	10	12	0
Model:	EMCO 3115	LPB-2520A	3160-9	ACO/180	CDI_P1000	AFT18855	NPS366	None

Frequency	**Reading**	**Detector**	**Ant**	**Amp**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**Net**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(µV/m)
1650.50	57.5	Peak	8	8	H	26.7	29.5	2.3	57.0
2475.75	63.8	Peak	8	8	H	29.1	28.5	3.0	69.3
3301.00	48.0	Peak	8	8	H	31.3	27.9	3.7	55.1
4126.25	41.6	Peak	8	8	H	34.5	27.9	4.0	52.6
4951.50	40.3 *	Peak	8	8	V/H	34.0	28.1	4.3	52.0
5776.75	38.5 *	Peak	8	8	V/H	36.6	28.3	4.9	51.7
6602.00	37.3 *	Peak	8	8	V/H	36.6	28.0	5.3	51.2
7427.25	38.2 *	Peak	8	8	V/H	36.8	28.0	5.5	54.3
8252.50	39.0 *	Peak	8	8	V/H	37.2	27.2	6.1	55.1

a) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
b) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
c) * Noise floor
d) All other emissions not reported at least 10 dB below the limit
e) Test was performed at 3 m

Radiated Emissions Test Data

Company	Sierra Wireless	**Model #:**	AIRCARD 555
EUT:	PCMCIA Card	**FCC #:**	**N7NACRD555**
Project #:	J20054479	**Test Date:**	July 19. 2001
Test Mode:	Tx @ 836.5 MHz	**Engineer:**	D. Chernomordik

	Antenna Used			Pre-Amp Used			Cable Used	
Number:	8	11	21	12	8	10	12	0
Model:	EMCO 3115	LPB-2520A	3160-9	ACO/180	CDI_P1000	AFT18855	NPS366	None

Frequency	**Reading**	**Detector**	**Ant**	**Amp**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**Net**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(µV/m)
1673.00	59.0	Peak	8	8	H	26.7	29.5	2.3	58.5
2509.60	63.0	Peak	8	8	H	30.6	28.5	3.4	68.5
3364.12	46.0	Peak	8	8	H	31.3	27.9	3.7	53.1
4182.65	41.2	Peak	8	8	H	34.5	27.9	4.0	51.8
5018.18	40.0 *	Peak	8	8	V/H	35.4	28.3	4.6	51.7
5855.71	38.5 *	Peak	8	8	V/H	36.6	28.3	4.9	51.7
6692.22	37.0 *	Peak	8	8	V/H	36.6	28.0	5.3	50.9
7528.76	38.0 *	Peak	8	8	V/H	38.3	28.0	5.8	54.1
8365.20	39.0 *	Peak	8	8	V/H	37.2	27.2	6.1	55.1

Notes:
a) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
b) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
c) * Noise floor
d) All other emissions not reported at least 10 dB below the limit
e) Test was performed at 3 m

Radiated Emissions Test Data

Company:	Sierra Wireless	**Model #:**	AIRCARD 555
EUT:	PCMCIA Card	**FCC #:**	**N7NACRD555**
Project #:	J20054479	**Test Date:**	July 19. 2001
Test Mode:	Tx @ 847.75 MHz	**Engineer:**	D. Chernomordik

	Antenna Used			Pre-Amp Used			Cable Used	
Number:	8	11	21	12	8	10	12	0
Model:	EMCO 3115	LPB-2520A	3160-9	ACO/180	CDI_P1000	AFT18855	NPS366	None

Frequency	**Reading**	**Detector**	**Ant**	**Amp**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**Net**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(µV/m)
1695.5	59.5	Peak	8	8	H	26.7	29.5	2.3	59.0
2543.3	62.0	Peak	8	8	H	30.6	28.5	3.4	67.5
3391.0	45.3	Peak	8	8	H	31.3	27.9	3.7	52.4
4238.8	40.4	Peak	8	8	H	34.5	27.9	4.0	51.0
5086.5	40.1 *	Peak	8	8	V/H	35.4	28.3	4.6	51.8
5934.3	38.3 *	Peak	8	8	V/H	36.6	28.3	4.9	51.5
6782.0	37.2 *	Peak	8	8	V/H	36.6	28.0	5.3	51.1
7629.8	38.3 *	Peak	8	8	V/H	38.3	27.8	5.8	54.4
8477.5	39.0 *	Peak	8	8	V/H	37.2	27.1	6.1	55.1

Notes:
a) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
b) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
c) * Noise floor
d) All other emissions not reported at least 10 dB below the limit
e) Test was performed at 3 m

Radiated Emissions Test Data

Company:	Sierra Wireless	**Model #:**	AIRCARD 555
EUT:	PCMCIA Card	**FCC #:**	**N7NACRD555**
Project #:	J20054479	**Test Date:**	July 20. 2001
Test Mode:	Tx @ 1851.25 MHz	**Engineer:**	D. Chernomordik.

	Antenna Used			Pre-Amp Used			Cable Used	
Number:	8	11	12	0	8	10	12	0
Model:	EMCO 3115	LPB-2520A	EMCO 3104	None	CDI_P1000	AFT18855	NPS366	None

Frequency	**Reading**	**Detector**	**Ant**	**Amp**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**Net**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(µV/m)
3702.50	62.1	Peak	8	8	H	32.8	27.9	3.8	70.8
5553.75	41.8	Peak	8	8	V	36.6	28.3	4.9	55.0
7405.00	40.5	Peak	8	8	V	37.0	28.0	5.5	55.0
9256.25	37.7 *	Peak	8	8	V	39.7	27.0	6.6	57.0
11107.5	43.8 *	Peak	8	10	V	40.2	39.9	7.2	51.3
12958.8	41.4 *	Peak	8	10	V	41.6	39.1	7.8	51.7
14810.0	44.7 *	Peak	8	10	H	41.1	37.4	8.4	56.8
16661.3	41.0 *	Peak	8	10	H	40.8	39.4	9.0	51.4
18512.5	40.2 *	Peak	21	12	H	40.2	32.2	9.6	57.8

Notes:	a) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
	b) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
	c) * Noise floor
	d) All other emissions not reported at least 10 dB below the limit
	e) Test was performed at 3 m

Radiated Emissions Test Data

Company:	Sierra Wireless	**Model #:**	AIRCARD 555
EUT:	PCMCIA Card	**FCC #:**	**N7NACRD555**
Project #:	J20054479	**Test Date:**	July 20. 2001
Test Mode:	Tx @ 1880 MHz	**Engineer:**	D. Chernomordik.

	Antenna Used			Pre-Amp Used			Cable Used	
Number:	8	11	21	12	8	10	12	0
Model:	EMCO 3115	LPB-2520A	3160-9	ACO/180	CDI_P1000	AFT18855	NPS366	None

Frequency	**Reading**	**Detector**	**Ant**	**Amp**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**Net**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(µV/m)
3760.00	61.4	Peak	8	8	H	32.8	28.0	3.8	70.0
5640.00	40.0	Peak	8	8	V	36.6	28.3	4.9	53.2
7520.00	38.8	Peak	8	8	V	37.8	28.0	5.8	54.4
9400.00	37.5 *	Peak	8	8	V	39.7	27.0	6.6	56.8
11280.0	43.5 *	Peak	8	10	V	40.2	39.9	7.2	51.0
13160.0	41.5 *	Peak	8	10	V	41.5	39.2	7.9	51.7
15040.0	44.5 *	Peak	8	10	H	41.3	38.3	8.5	56.0
16920.0	40.3 *	Peak	8	10	H	40.8	39.4	9.0	50.7
18800.0	40.0 *	Peak	21	12	H	40.2	32.2	9.6	57.6

Notes:
a) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
b) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
c) * Noise floor
d) All other emissions not reported at least 10 dB below the limit
e) Test was performed at 3 m

Radiated Emissions Test Data

Company:	Sierra Wireless	**Model #:**	AIRCARD 555
EUT:	PCMCIA Card	**FCC #:**	**N7NACRD555**
Project #:	J20054479	**Test Date:**	July 20. 2001
Test Mode:	Tx @ 1908.75 MHz	**Engineer:**	D. Chernomordik.

	Antenna Used			Pre-Amp Used			Cable Used	
Number:	8	11	21	12	8	10	12	0
Model:	EMCO 3115	LPB-2520A	3160-9	ACO/180	CDI_P1000	AFT18855	NPS366	None

Frequency	**Reading**	**Detector**	**Ant**	**Amp**	**Ant. Pol.**	**Ant. Factor**	**Pre-Amp**	**Insert. Loss**	**Net**
MHz	dB(µV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(µV/m)
3817.50	60.5	Peak	8	8	H	32.8	28.0	3.8	69.1
5726.25	39.8	Peak	8	8	V	36.6	28.3	4.9	53.0
7635.00	38.5	Peak	8	8	V	37.8	27.8	5.8	54.3
9543.75	37.4 *	Peak	8	8	V	38.5	27.3	6.7	55.3
11452.5	43.4 *	Peak	8	10	V	40.2	39.9	7.2	50.9
13361.3	41.7 *	Peak	8	10	V	41.5	39.2	7.9	51.9
15270.0	44.6 *	Peak	8	10	H	41.3	38.3	8.5	56.1
17178.8	40.5 *	Peak	8	10	H	41.2	38.8	9.2	52.1
19087.5	40.2 *	Peak	21	12	H	40.2	32.2	9.8	58.0

Notes:
a) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
b) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
c) * Noise floor
d) All other emissions not reported at least 10 dB below the limit
e) Test was performed at 3 m

Spurious Emissions Attenuation measured by Substitution Method

Frequency MHz	Field Strength generated by the EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	ERP dBm	Attenuation dB	Attenuation Limit dB	Margin dB
825.25	-	-	26.6	-	-	-
1650.5	57.0	-48.5	-43.5	70.1	40.4	-29.7
2475.75	69.3	-38.0	-33.0	59.6	40.4	-19.2

Frequency MHz	Field Strength generated by the EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	ERP dBm	Attenuation dB	Attenuation Limit dB	Margin dB
836.5	-	-	26.6	-	-	-
1673.0	58.5	-47.8	-42.8	69.4	40.4	-29.0
2509.6	68.5	-39.1	-34.1	60.7	40.4	-20.3

Frequency MHz	Field Strength generated by the EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	ERP dBm	Attenuation dB	Attenuation Limit dB	Margin dB
847.75	-	-	26.5	-	-	-
1695.5	59.0	-47.0	-42.0	68.5	40.4	-28.1
2543.3	67.5	-40.3	-35.3	61.8	40.4	-21.4

Spurious Emissions Attenuation measured by Substitution Method

Frequency MHz	Field Strength generated by the EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	EIRP dBm	Attenuation dB	Attenuation Limit dB	Margin dB
1851.25	-	-	28.2	-	-	-
3702.50	70.8	-45.8	-38.8	67.0	40.4	-26.6

Frequency MHz	Field Strength generated by the EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	EIRP dBm	Attenuation dB	Attenuation Limit dB	Margin dB
1880.0	-	-	28.0	-	-	-
3760.0	70.0	-46.9	-39.9	67.9	40.4	-27.5

Frequency MHz	Field Strength generated by the EUT dBuv/m	Signal Generator Level required to generate same field as EUT; dBm	EIRP dBm	Attenuation dB	Attenuation Limit dB	Margin dB
1908.75	-	-	26.4	-	-	-
3817.50	69.1	-48.0	-41.0	67.4	40.4	-27.0

7.0 Line Conducted Emissions

FCC 15.107

7.1 Test Procedure

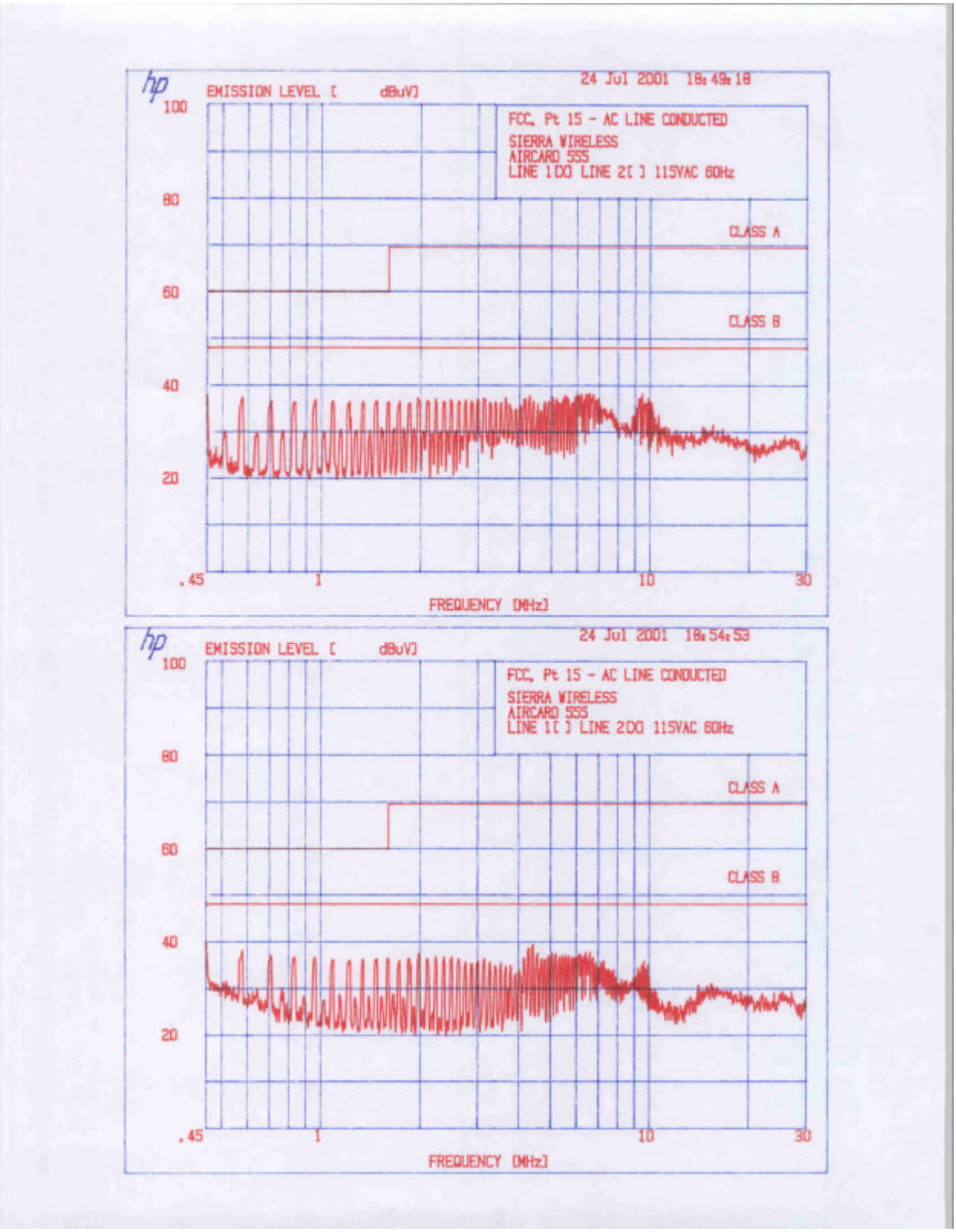
Test procedure described in the ANSI C63.4 Standard was employed. The Laptop was connected to the AC line through the LISNs. Both HOT and NEUTRAL leads were tested.

7.2 Test Equipment

HP8568A Spectrum Analyzer with 85650 Quasi-peak adapter
Solar Electronics 8028-50-TS-24-BNC LISNs

7.3 Test Results

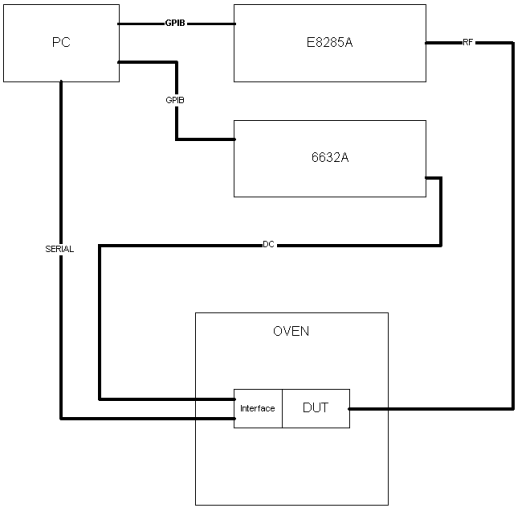
See attached plot.


EMISSION LEVEL [dBuV]
24 Jul 2001 18:49:18
FCC, Pt 15 - AC LINE CONDUCTED
SIERRA WIRELESS
AIRCARD 555
LINE 1[X] LINE 2[ ] 115VAC 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]
EMISSION LEVEL [dBuV]
24 Jul 2001 18:54:53
FCC, Pt 15 - AC LINE CONDUCTED
SIERRA WIRELESS
AIRCARD 555
LINE 1[ ] LINE 2[X] 115VAC 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

8.0 Frequency Stability vs Temperature

FCC 2.1055

8.1 Test Procedure



Test setup block diagram

The AIRCARD 555 was placed inside the temperature chamber. After the temperature stabilized for approximately 20 minutes, the transmitting frequency was recorded.

8.2 Test Equipment

Aglient e8285A CDMA Mobile Station Test Set
HP 6632A DC Power Supply

8.3 Test Results

Test Result:	Complies. Emission attenuation on the band-edges frequencies of the frequency block is not affected by the measured frequency instability.

Transmitting Frequency: 1880 MHz

Temperature (°C)	Frequency (MHz)	Difference (Hz)
-30	1880.000002	2.43
-20	1879.999995	-5.02
-10	1879.999991	-9.32
0	1880.000007	7.50
10	1879.999997	-2.69
20	1880.000008	8.29
30	1880.000003	2.63
40	1879.999996	-3.55
50	1880.000002	1.59

Note: The measured frequency stability vs. temperature for the Cellular band is identical (% difference) to the above table since the transmitting frequency is locked to the same oscillator.

9.0 Frequency Stability vs Voltage

FCC 2.1055

9.1 Test Procedure

For the test setup block diagram, refer to sec. 8.
The Aircard 555 was connected to a DC Power Supply. The voltage was set to 115% of the nominal value and was then decreased to 85% of the nominal value. The output frequency was recorded for each voltage setting.

9.2 Test Equipment

Aglient e8285A CDMA Mobile Station Test Set
HP 6632A DC Power Supply

9.3 Test Results.

Test Result:	Complies. Emission attenuation on the band-edges frequencies of the frequency block is not affected by the measured frequency instability.

Transmitting Frequency: 837 MHz

Vcc, Volts	Frequency (MHz)	Difference (Hz)
4.0	836.999995	-5.08
6.0	837.000006	6.23

Transmitting Frequency: 1880 MHz

Vcc, Volts	Frequency (MHz)	Difference (Hz)
4.0	1880.000003	3.31
6.0	1880.000002	2.39

10.0 Miscellaneous Comments

For setup photos see separate file “Set Up Photos”