

4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE&SCHWARZ SPECTRUM ANALYZER	FSEK30	100049	July 17, 2002

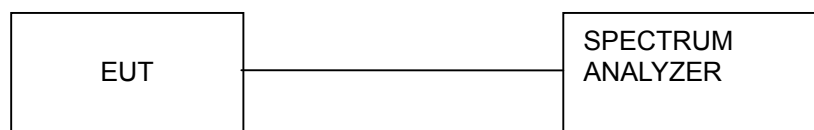
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD can be found.

4.5.4 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

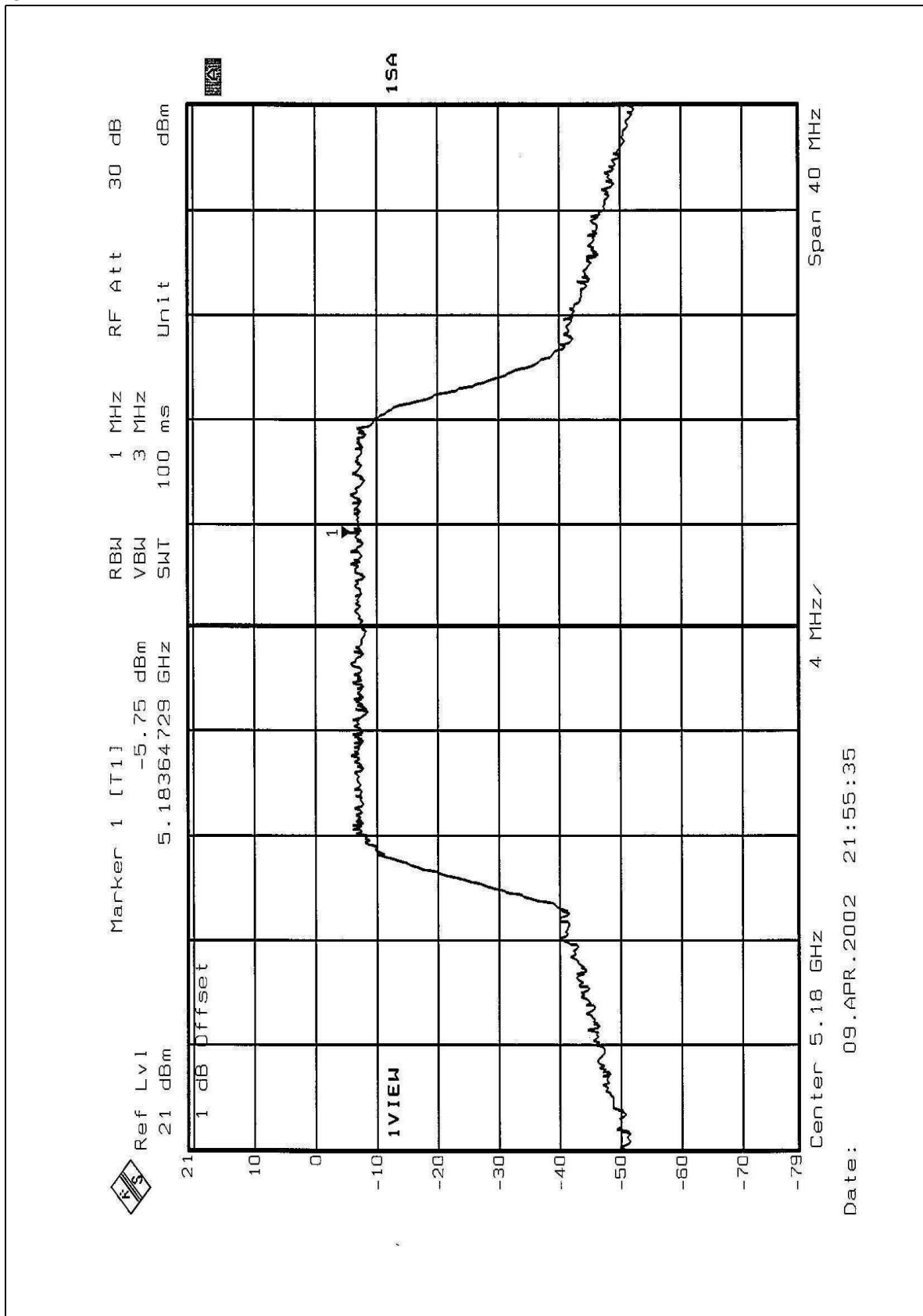
Same as 4.3.5

4.5.6 TEST RESULTS

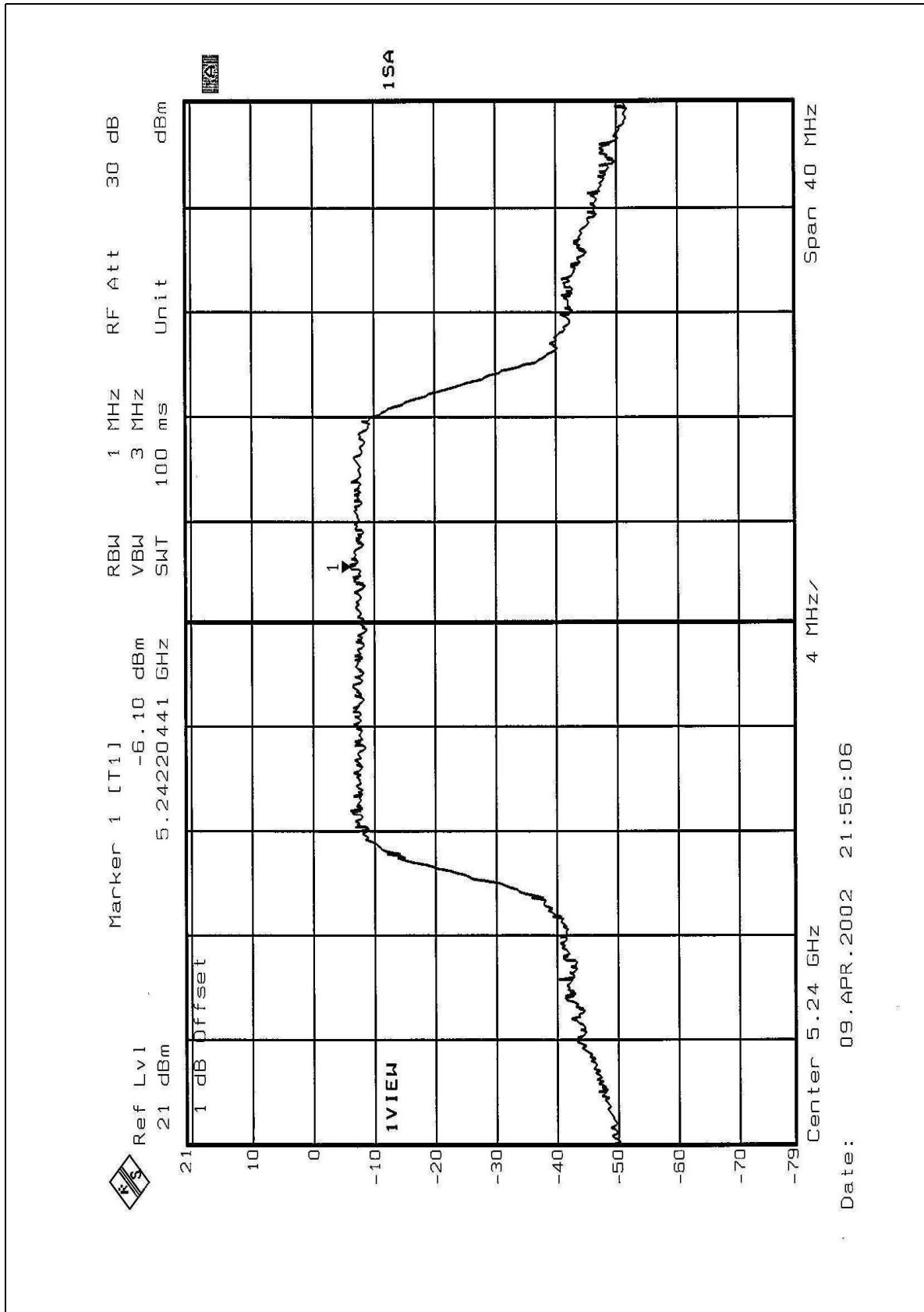
EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	21 deg. C, 50%RH, 1005 hPa	TESTED BY	Bruce Shiao

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-5.75	4	PASS
4	5240	-6.10	4	PASS
5	5260	-5.61	11	PASS
8	5320	-5.41	11	PASS

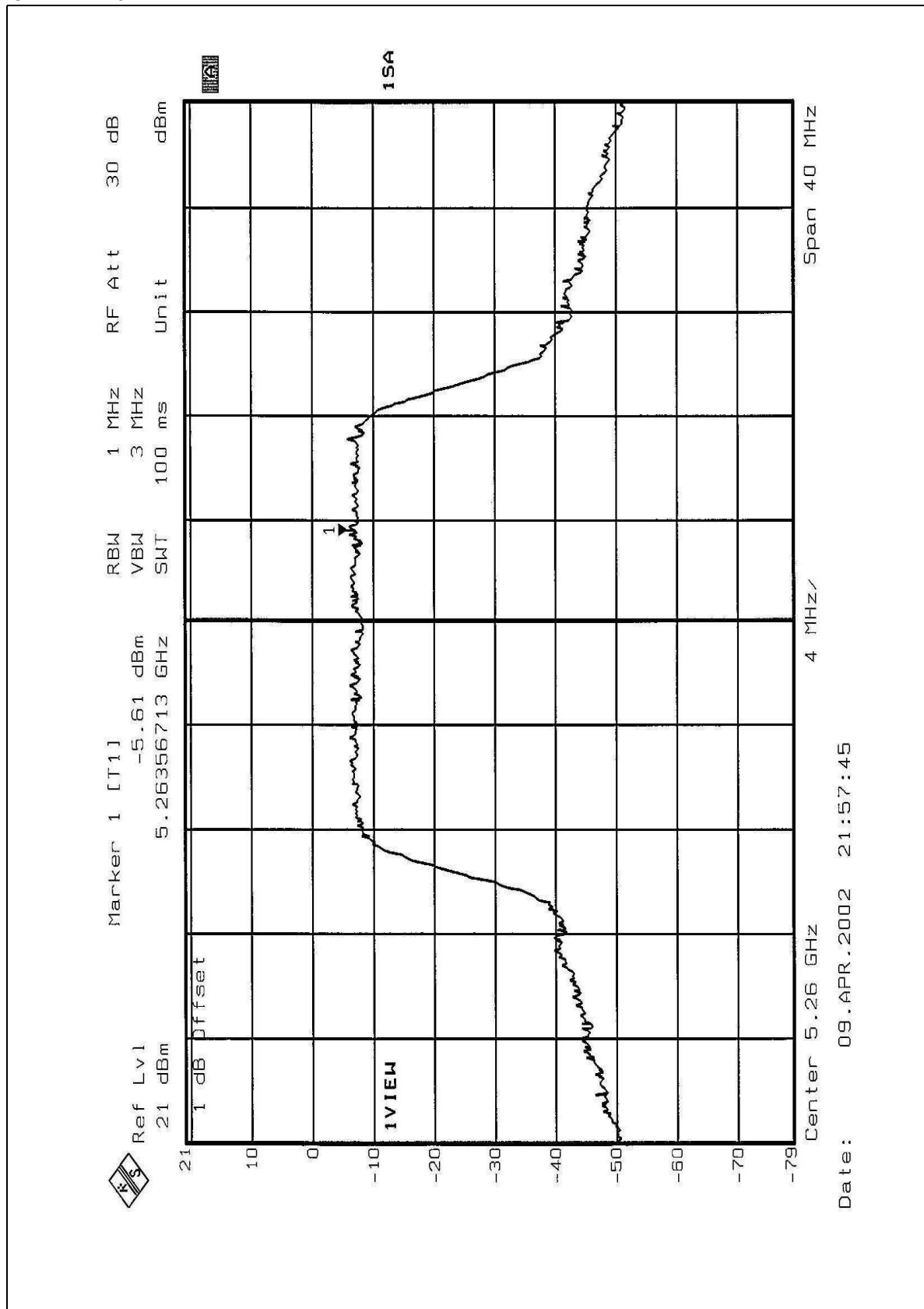
CHANNEL 1



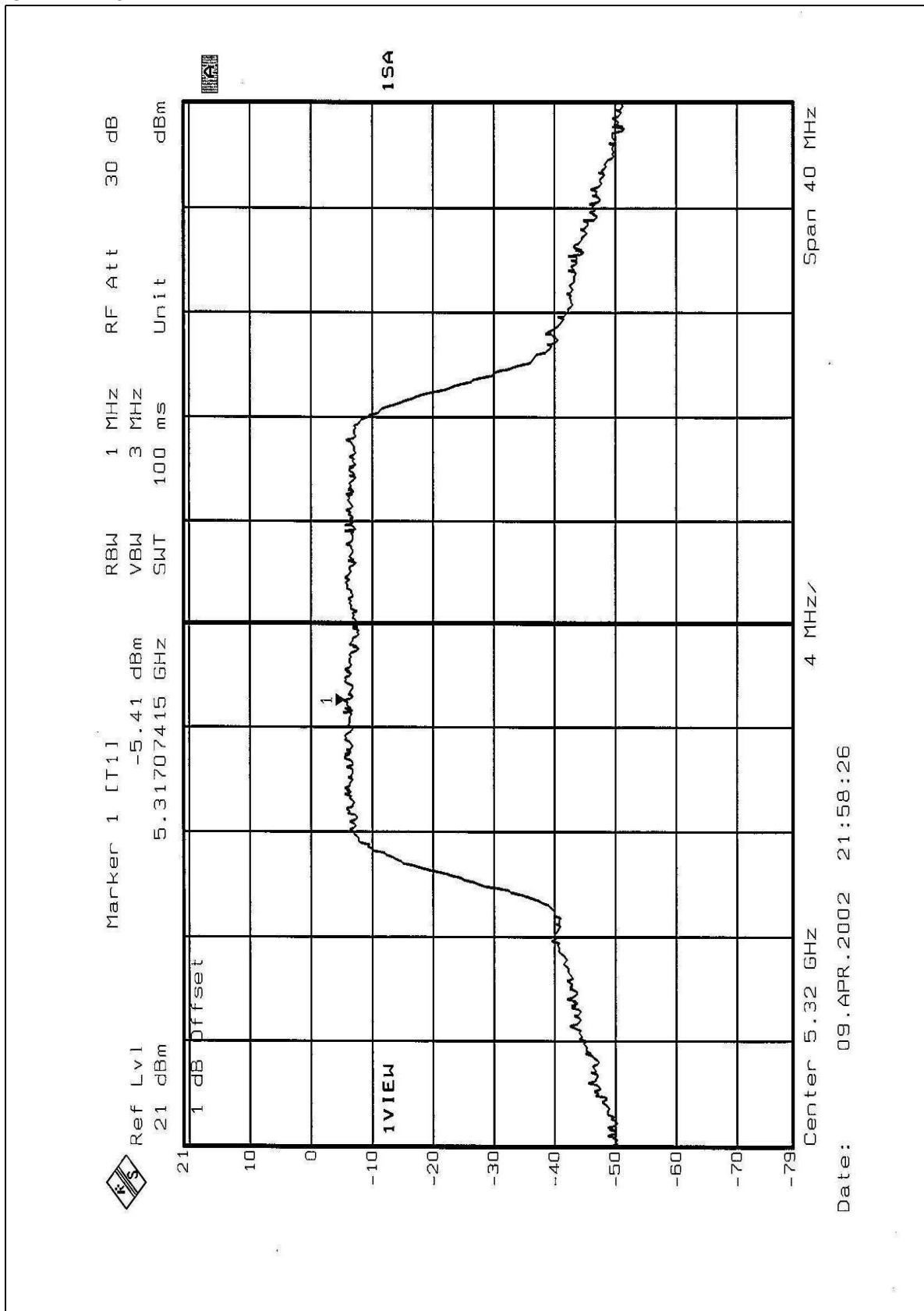
CHANNEL 4



CHANNEL 5



CHANNEL 8

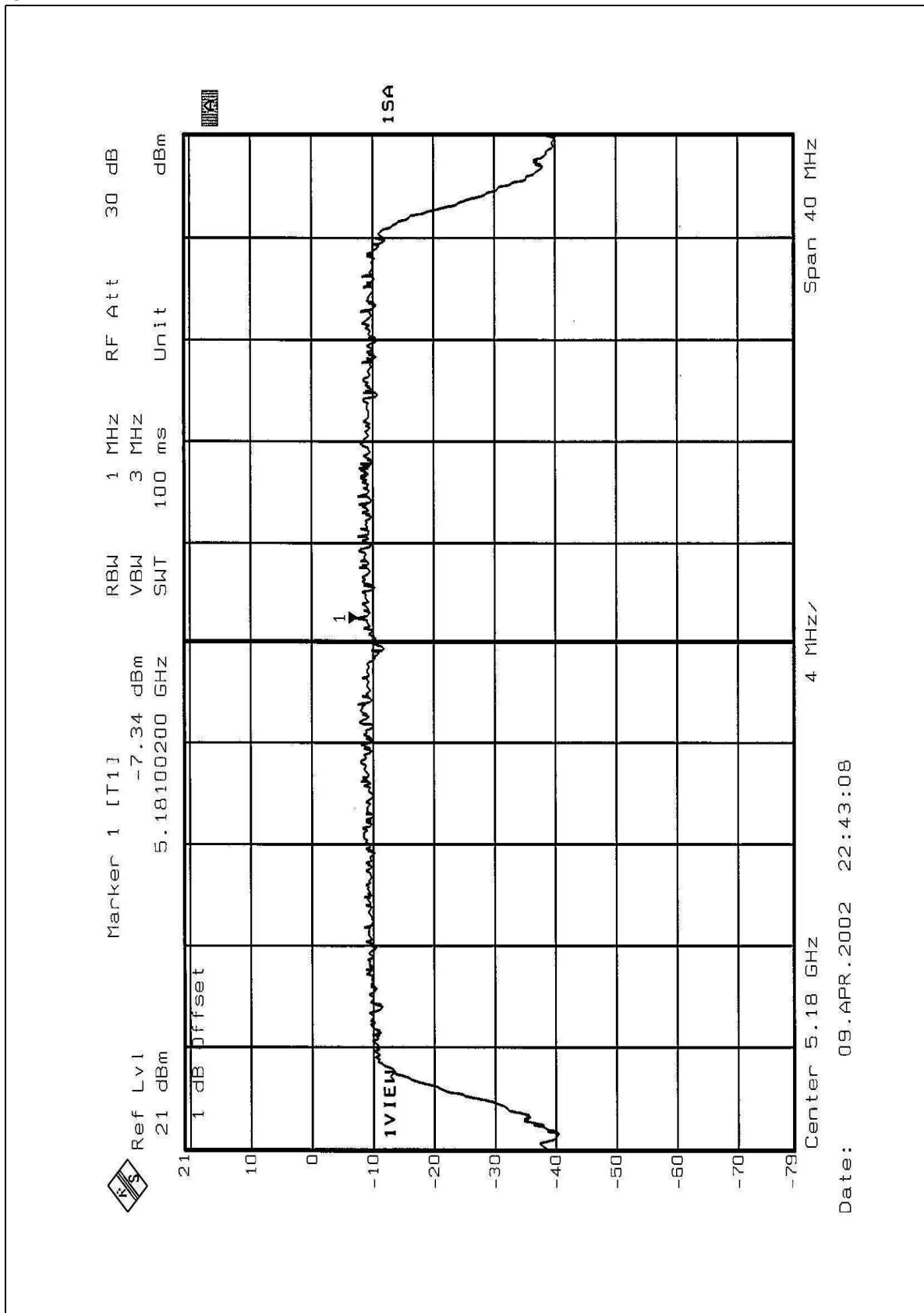




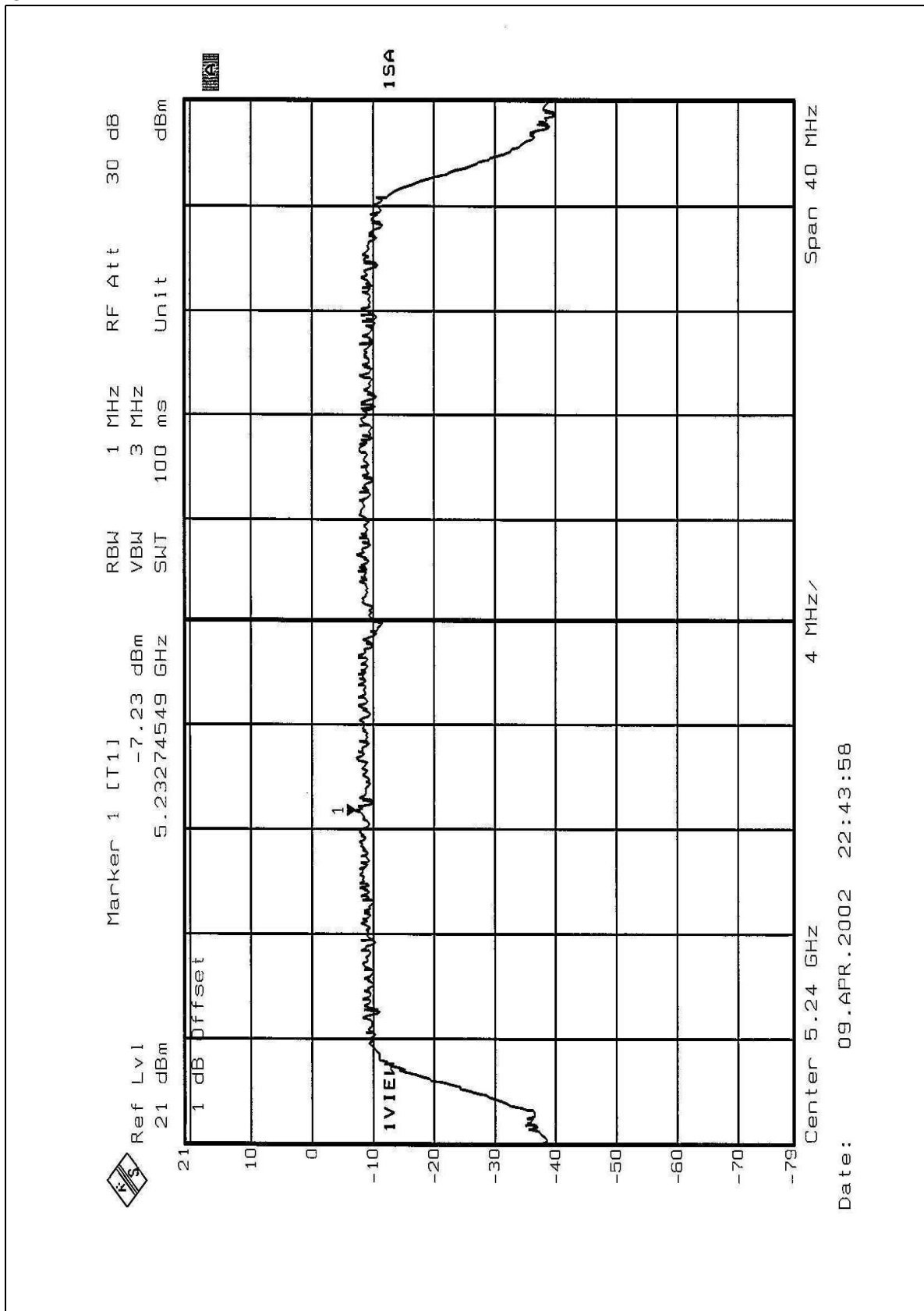
EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	21 deg. C, 50%RH, 1005 hPa	TESTED BY	Bruce Shiau

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-7.34	4	PASS
4	5240	-7.23	4	PASS
5	5260	-7.22	11	PASS
8	5320	-6.07	11	PASS

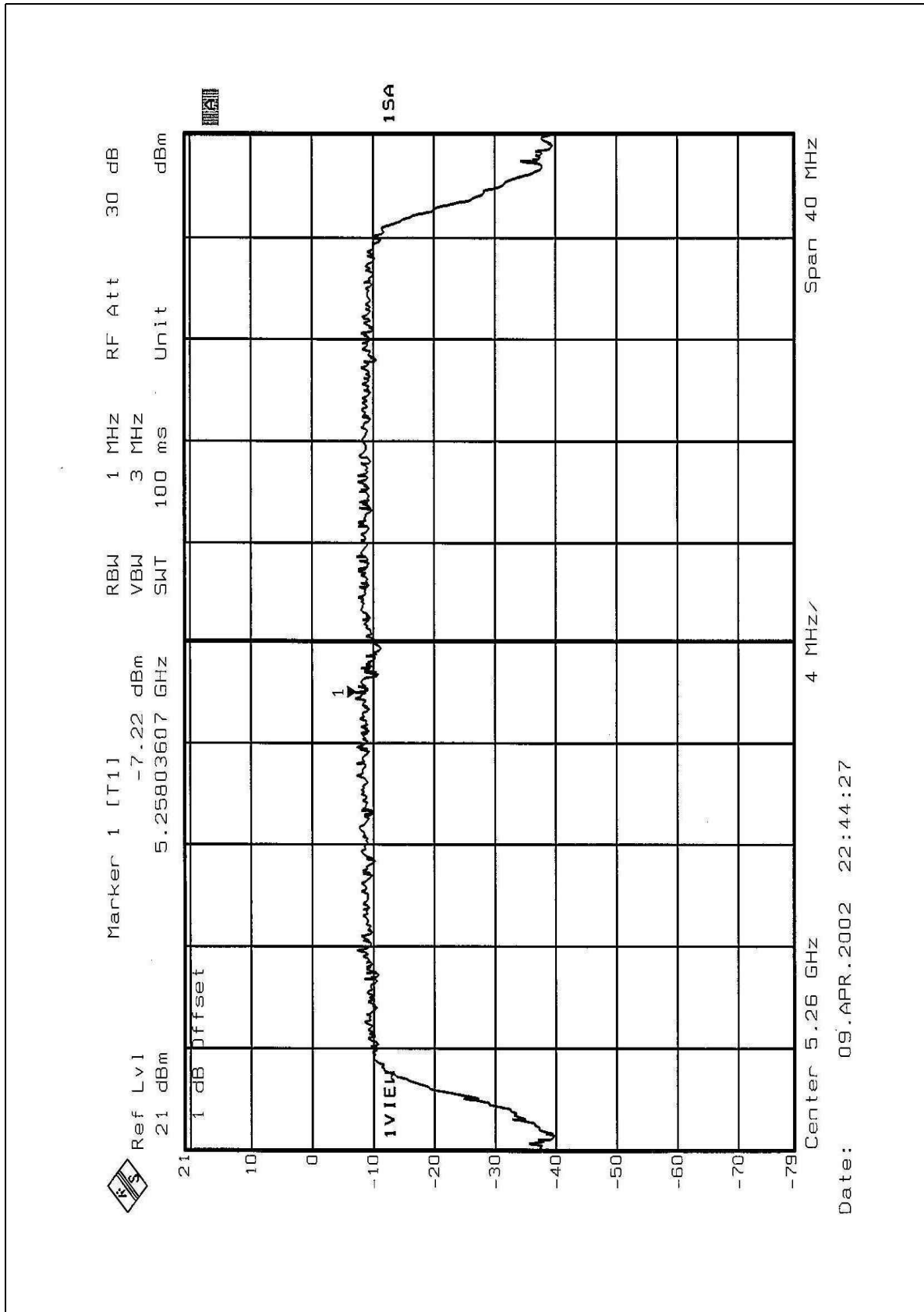
CHANNEL 1



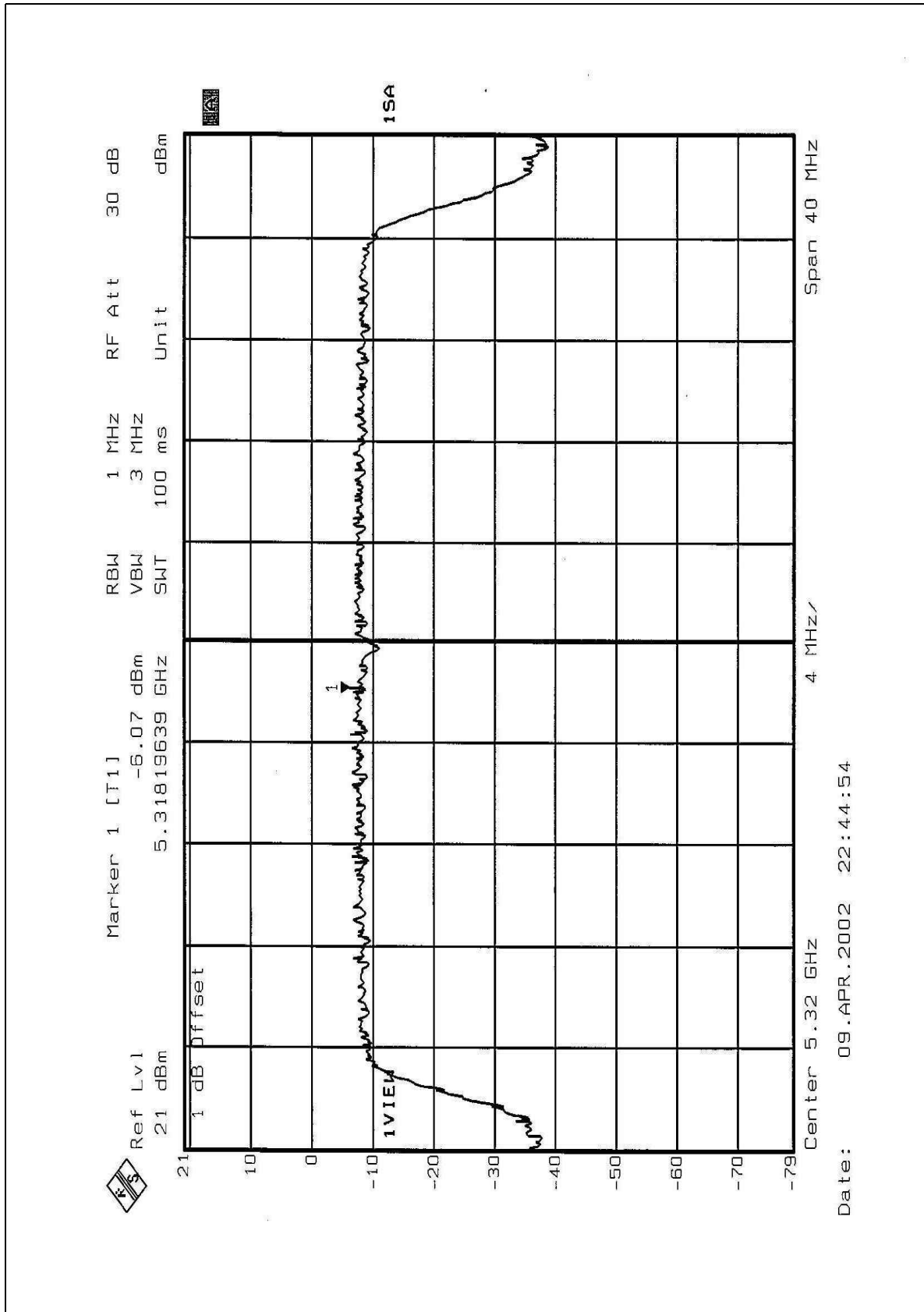
CHANNEL 4



CHANNEL 5



CHANNEL 8





4.6 EFFECTIVE ISOTROPIC RADIATED POWER SPURIOUS EMISSIONS MEASUREMENT

4.6.1 LIMITS OF EFFECTIVE ISOTROPIC RADIATED POWER SPURIOUS EMISSIONS MEASUREMENT

- (1) For transmitters operating in the 5.15 – 5.25 GHz band:
All emissions outside of the 5.15 – 5.25 GHz band shall not exceed an EIRP of –27dBm/MHz.
- (2) For transmitters operating in the 5.25 – 5.35 GHz band:
All emissions outside of the 5.25 – 5.35 GHz band shall not exceed an EIRP of –27dBm/MHz.
- (3) For transmitters operating in the 5.725 – 5.825 GHz band:
All emissions operating within the frequency range from the band edge 10 MHz above or below the band edge shall not exceed an EIRP of –17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge shall not exceed an EIRP of –27dBm/MHz.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* ROHDE & SCHWARZ Spectrum Analyzer	FSEK30	100049	July 17, 2002
ROHDE & SCHWARZ Signal Generator	68247B	984703	May 28, 2002
* EMCO Horn Antenna	3115	5623	Apr. 25, 2002
* EMCO Horn Antenna	3115	5619	May 11, 2002
MITEQ Preamplifier	AMF-4D-0051	692677	Jun. 22, 2002
MITEQ Preamplifier	AFS33-18002	690751	
Broadband Horn Antenna	BBHA 9170	BBHA9170147	Apr. 2, 2002
Broadband Horn Antenna	BBHA 9170	148	Apr. 2, 2002

NOTE:

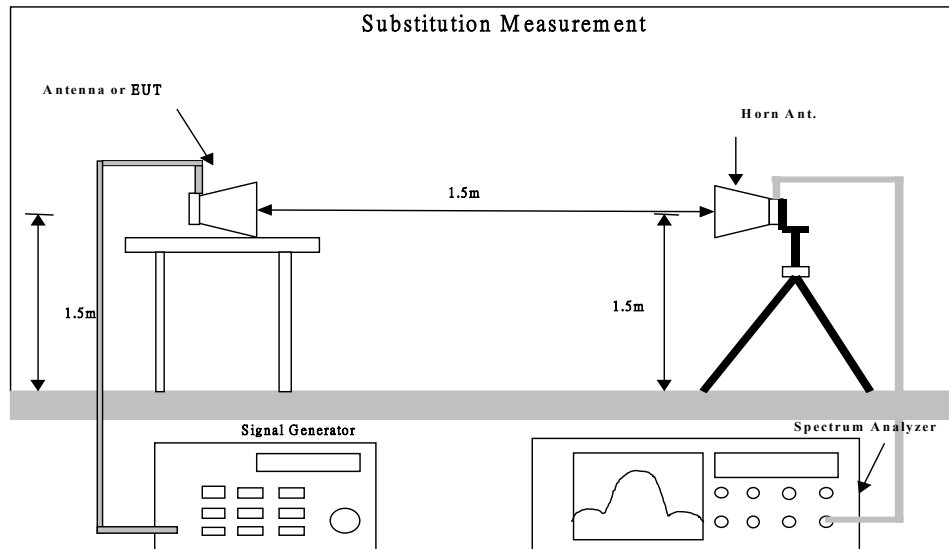
5. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
6. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



4.6.3 TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 1.5 meters away from the receiving antenna, which was mounted on antenna tower and its position at 1.5 m above the ground.
3. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading and recorded the value.
4. The EUT is replaced by a horn antenna connected to a signal generator tuned to the frequency of emission.
5. The signal generator level has to be adjusted to have the same emission nature.
6. The radiated power can be calculated via the factor and antenna gain.
7. Repeat step 1-6 for horizontal polarization.

4.6.4 TEST SETUP



4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.5



4.6.6 TEST RESULTS

EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Normal Mode	CHANNEL	1
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Bruce Shiau		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10357.07	V	-33.4	-27	-6.4	
10414.63	H	-39.3	-27	-12.3	
15540.00	-	-	-	-	Note
20720.00	-	-	-	-	Note
25896.11	H	-43.5	-27	-16.5	
25899.96	V	-36.8	-27	-9.8	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Normal Mode	CHANNEL	4
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Bruce Shiau		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10476.00	H	-35.6	-27	-8.6	
10482.60	V	-34.6	-27	-7.6	
15720.00	-	-	-	-	Note
20960.00	-	-	-	-	Note
26196.80	H	-46.7	-27	-19.6	
26199.54	V	-37.5	-27	-10.5	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Normal Mode	CHANNEL	5
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Bruce Shiau		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10514.30	H	-38.8	-27	-11.8	
10524.90	V	-33.9	-27	-6.9	
15780.00	-	-	-	-	Note
21040.00	-	-	-	-	Note
26299.50	V	-43.2	-27	-16.2	
26299.70	H	-52.5	-27	-25.5	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Normal Mode	CHANNEL	8
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Bruce Shiau		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10640.00	-	-	-	-	Note
15960.00	-	-	-	-	Note
21280.00	-	-	-	-	Note
26582.32	H	-49.2	-27	-22.2	
26603.17	V	-41.1	-27	-14.1	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Turbo Mode	CHANNEL	1
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Steven Lu		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10362.30	H	-33.2	-27	-6.2	
10362.30	V	-31.2	-27	-4.2	
15540.00	-	-	-	-	Note
20720.00	-	-	-	-	Note
25880.26	V	-36.1	-27	-9.1	
25892.69	H	-49.7	-27	-22.7	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Turbo Mode	CHANNEL	4
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Steven Lu		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10484.53	H	-37.5	-27	-10.5	
10523.59	V	-37.2	-27	-10.2	
15720.00	-	-	-	-	Note
20960.00	-	-	-	-	Note
26169.04	H	-51.7	-27	-24.7	
26172.04	V	-46.9	-27	-19.9	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Turbo Mode	CHANNEL	5
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Steven Lu		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10513.68	V	-36.4	-27	-9.4	
10522.00	H	-34.5	-27	-7.5	
15780.00	-	-	-	-	Note
21040.00	-	-	-	-	Note
26272.85	H	-52.4	-27	-25.4	
26289.88	V	-43.3	-27	-16.3	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.



EUT	54Mbps Wireless Network PC Card	MODEL	WPC54A
MODE	Turbo Mode	CHANNEL	8
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 70%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Steven Lu		

EIRP SPURIOUS EMISSION LEVEL					
Frequency (MHz)	Antenna Polarization	Level (dBm)	Limit (dBm)	Margin	Remark
10640.00	-	-	-	-	Note
15960.00	-	-	-	-	Note
21280.00	-	-	-	-	Note
26577.45	H	-50.8	-27	-23.8	
26588.08	V	-46.5	-27	-19.5	

NOTE: The emissions appearing in the restricted Bands shall not exceed the general limits of 15.209.