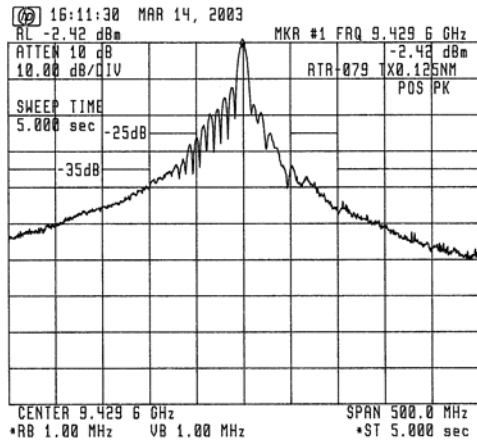


**Attachment A**

[ TEST DATA for Clause 3.4 SPURIOUS EMISSIONS AT ANTENNA TERMINALS ]

1 Spurious emissions for 0.125 nm Range:

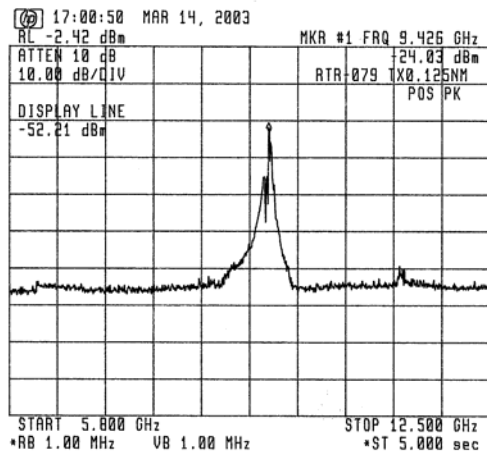
Ref. level: -2.42 dBm



Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

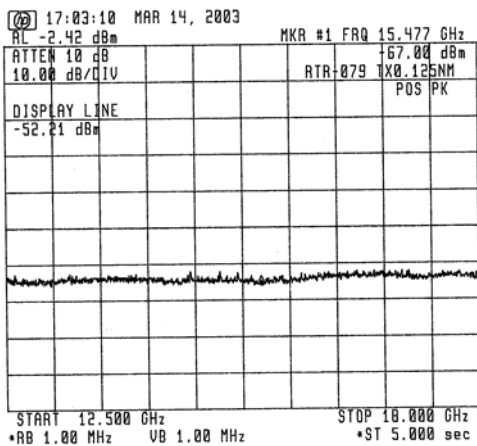
Fig. 1.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 49.79$  dB for more than 250 % of the authorized BW (100 MHz)

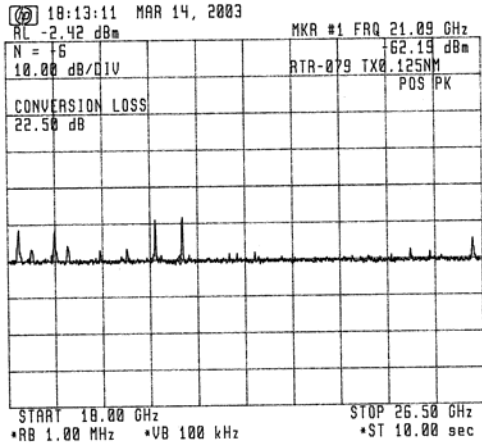
Fig. 1.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 49.79$  dB for more than 250 % of the authorized BW (100 MHz)

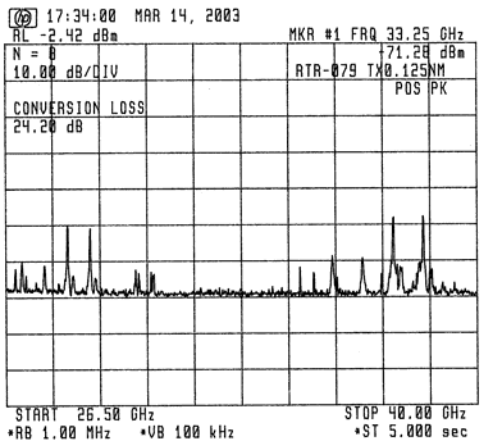
Fig. 1.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 49.79 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 1.4 With Filter No. 2

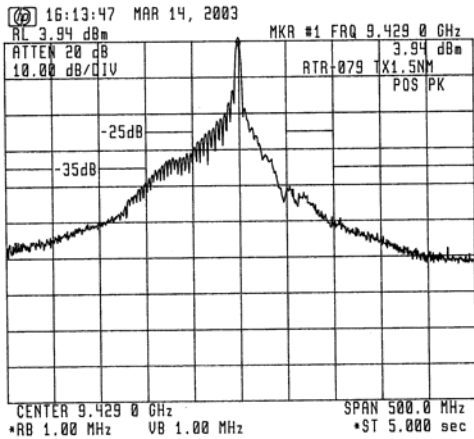


Emission limitations:

- (c)  $43 + 10 \log P_m = 49.79 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 1.5 With Filter No. 2

2 Spurious emissions for 1.5 nm Range:

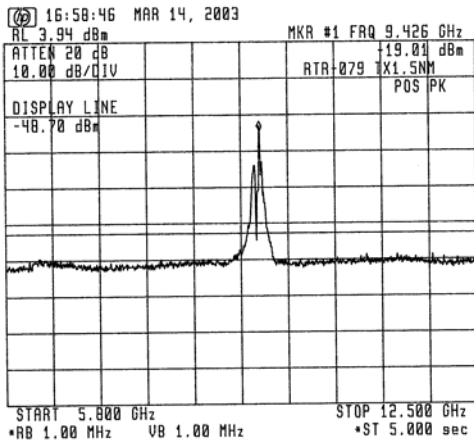


Ref. level: 3.94 dBm

Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

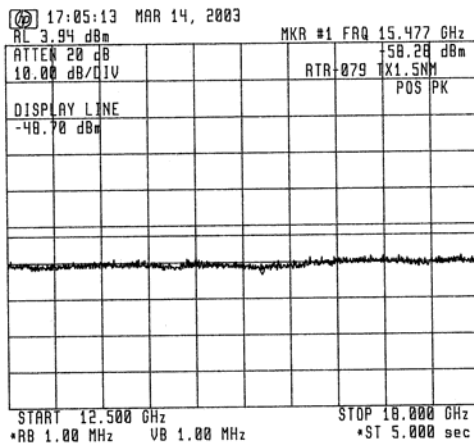
Fig. 2.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.64 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

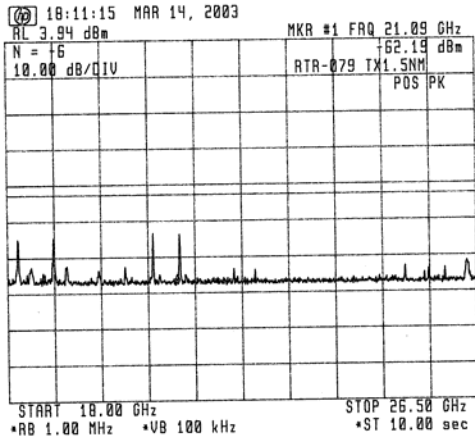
Fig. 2.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.64 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

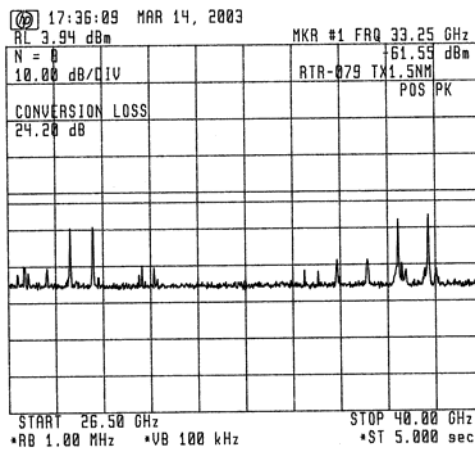
Fig. 2.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.64 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 2.4 With Filter No. 2



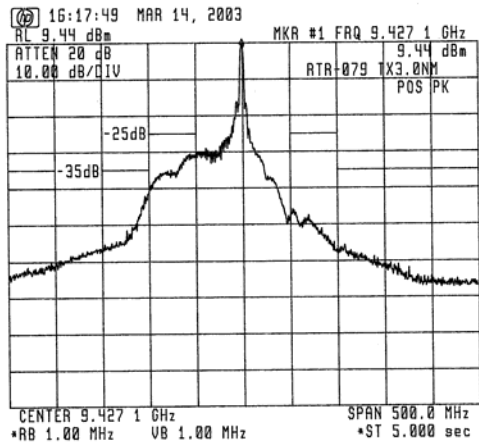
Emission limitations:

- (c)  $43 + 10 \log P_m = 52.64 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 2.5 With Filter No. 2

3 Spurious emissions for 3 nm Range:

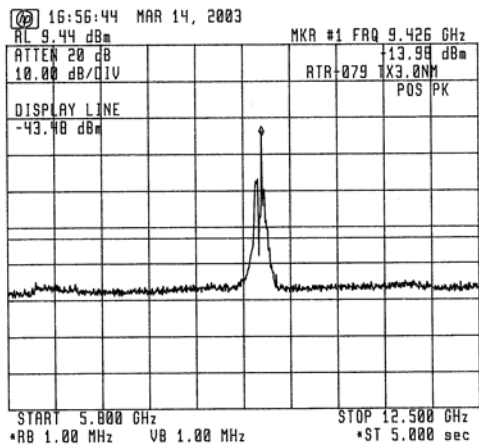
Ref. level: 9.44 dBm



Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

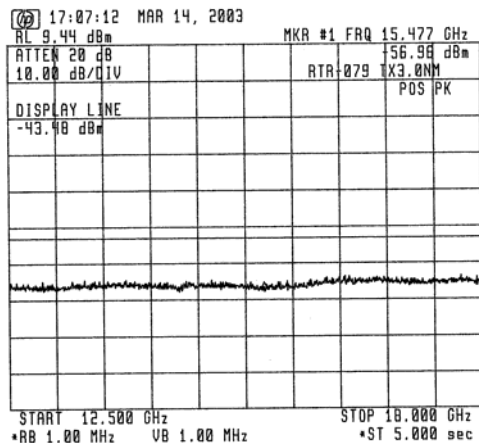
Fig. 3.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.92$  dB for more than 250 % of the authorized BW (100 MHz)

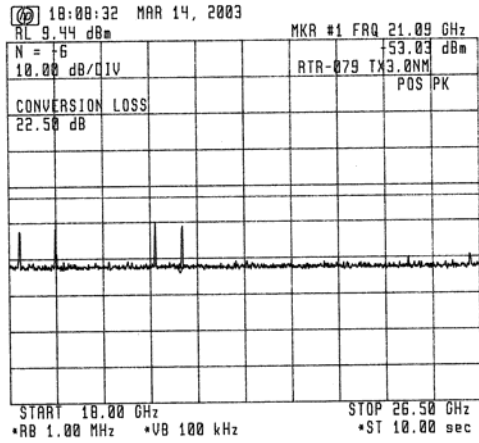
Fig. 3.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.92$  dB for more than 250 % of the authorized BW (100 MHz)

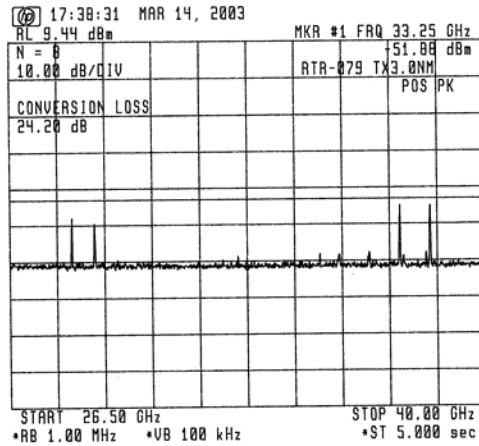
Fig. 3.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.92 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 3.4 With Filter No. 2

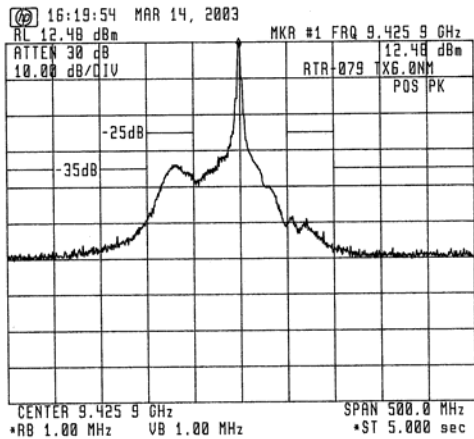


Emission limitations:

- (c)  $43 + 10 \log P_m = 52.92 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 3.5 With Filter No. 2

4 Spurious emissions for 6 nm Range:

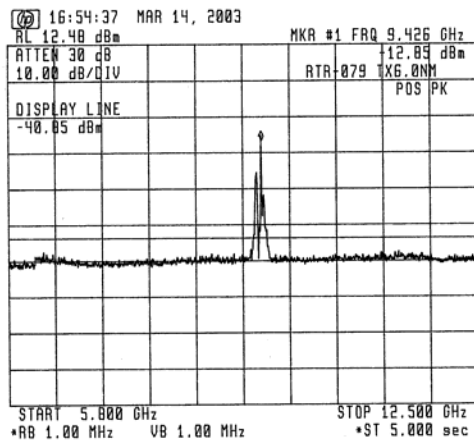


Ref. level: 12.48 dBm

Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

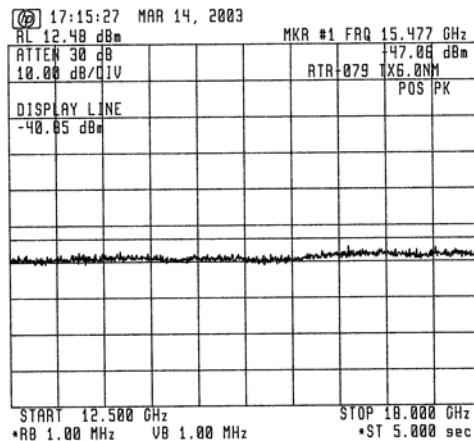
Fig. 4.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 53.33 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

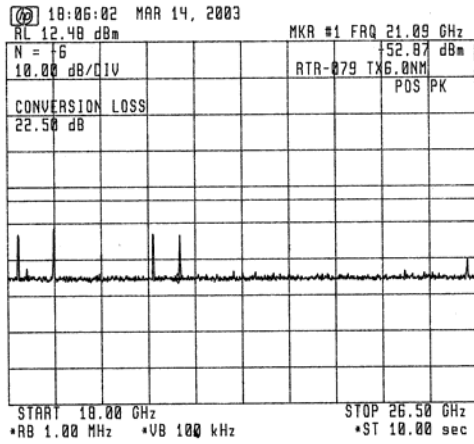
Fig. 4.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 53.33 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

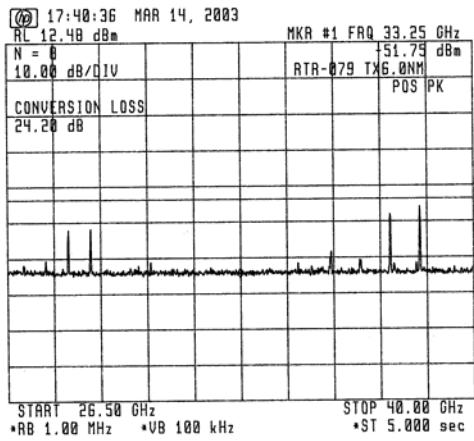
Fig. 4.3 With Filter No. 2



Emission limitations:

← (c)  $43 + 10 \log P_m = 53.33 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 4.4 With Filter No. 2



Emission limitations:

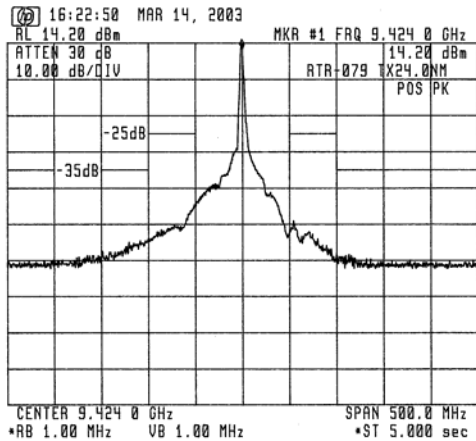
← (c)  $43 + 10 \log P_m = 53.33 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 4.5 With Filter No. 2



5 Spurious emissions for 24 nm Range:

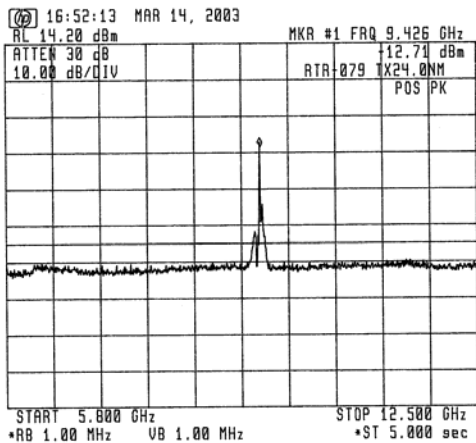
Ref. level: 14.2 dBm



Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

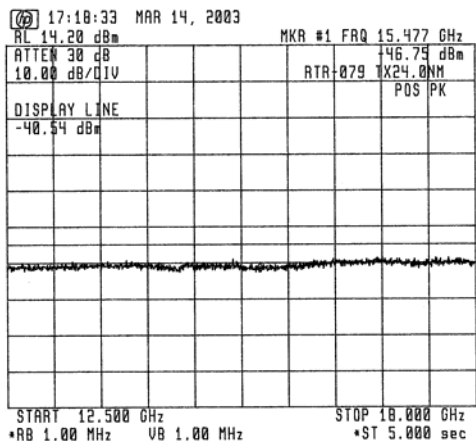
Fig. 5.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 54.74$  dB for more than 250 % of the authorized BW (100 MHz)

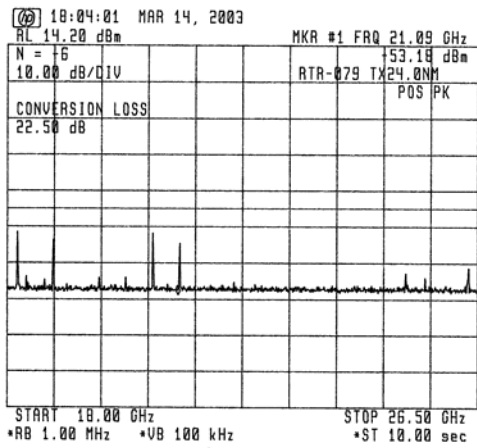
Fig. 5.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 54.74$  dB for more than 250 % of the authorized BW (100 MHz)

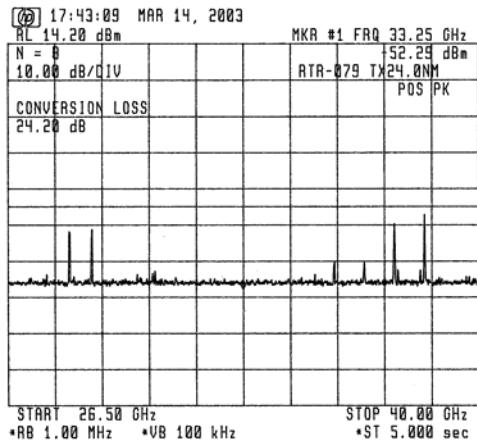
Fig. 5.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 54.74 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 5.4 With Filter No. 2



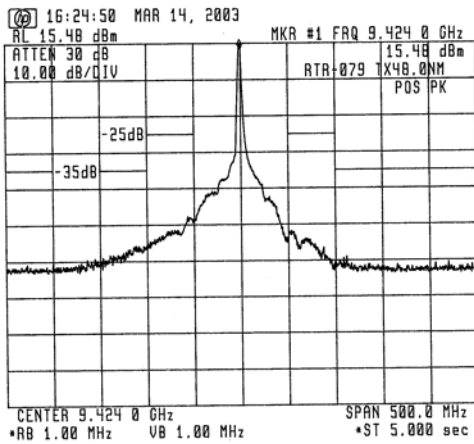
Emission limitations:

- (c)  $43 + 10 \log P_m = 54.74 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 5.5 With Filter No. 2

6 Spurious emissions for 48 nm Range:

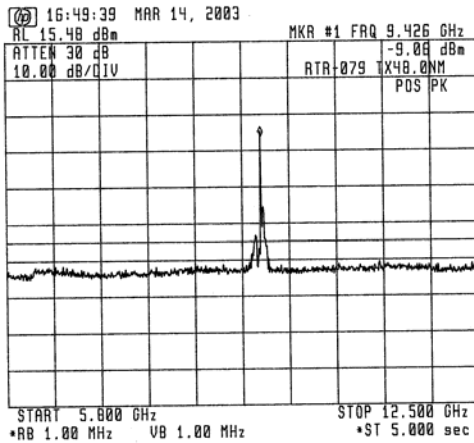
Ref. level: 15.48 dBm



Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

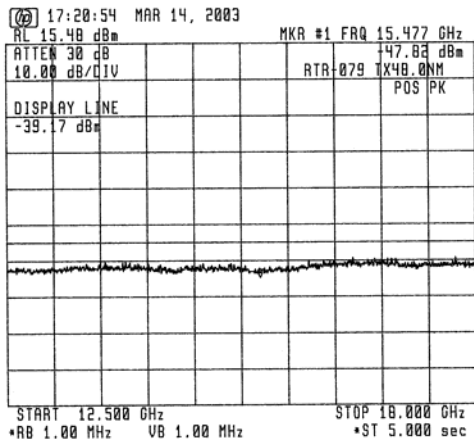
Fig. 6.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 54.65 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

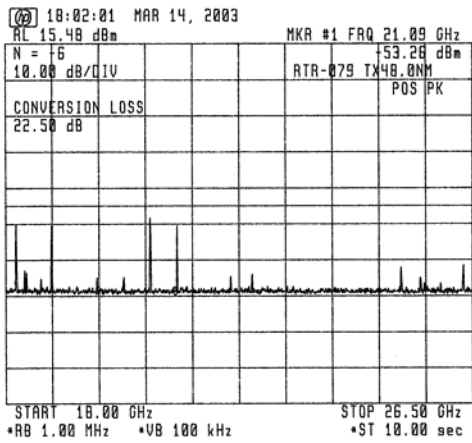
Fig. 6.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 54.65 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

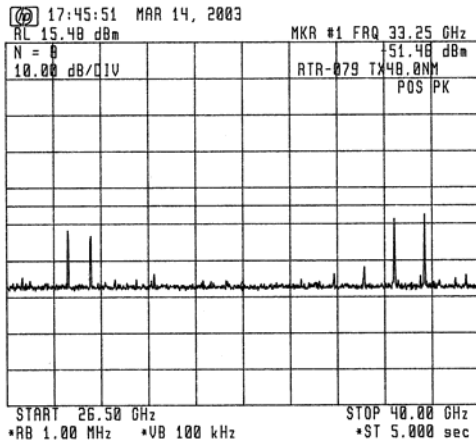
Fig. 6.3 With Filter No. 2



Emission limitations:

← (c)  $43 + 10 \log P_m = 54.65 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 6.4 With Filter No. 2



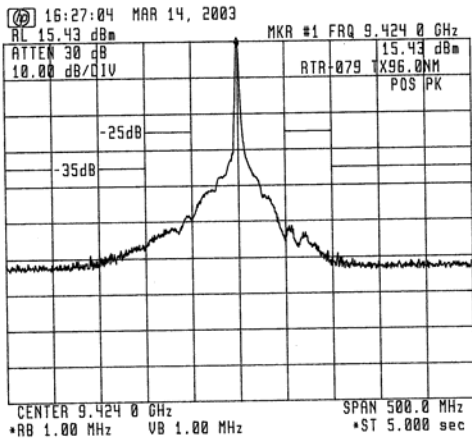
Emission limitations:

← (c)  $43 + 10 \log P_m = 54.65 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 6.5 With Filter No. 2

7 Spurious emissions for 96 nm Range:

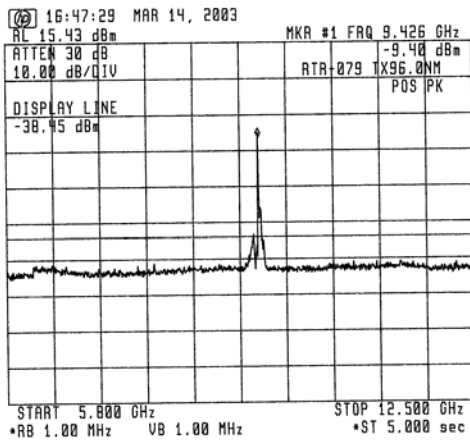
Ref. level: 15.43 dBm



Emission limitations:

- (a) 25 dB for 50 to 100 % of the authorized BW (100 MHz)
- (b) 35 dB for 100 to 250 % of the authorized BW (100 MHz)

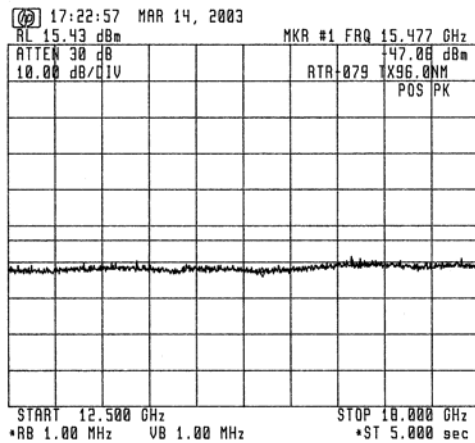
Fig. 7.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 53.88 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

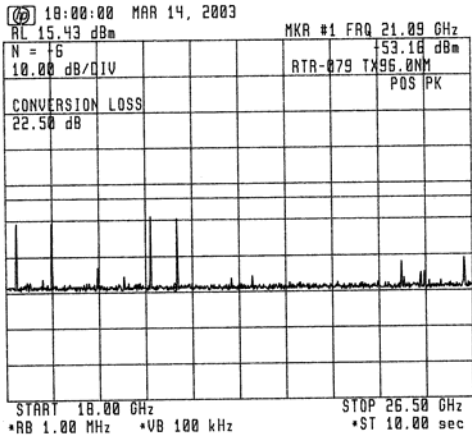
Fig. 7.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 53.88 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

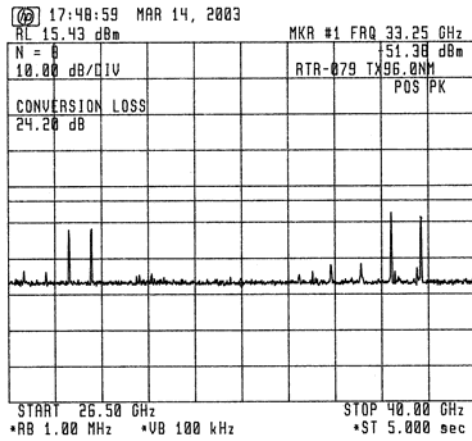
Fig. 7.3 With Filter No. 2



Emission limitations:

← (c)  $43 + 10 \log P_m = 53.88 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 7.4 With Filter No. 2

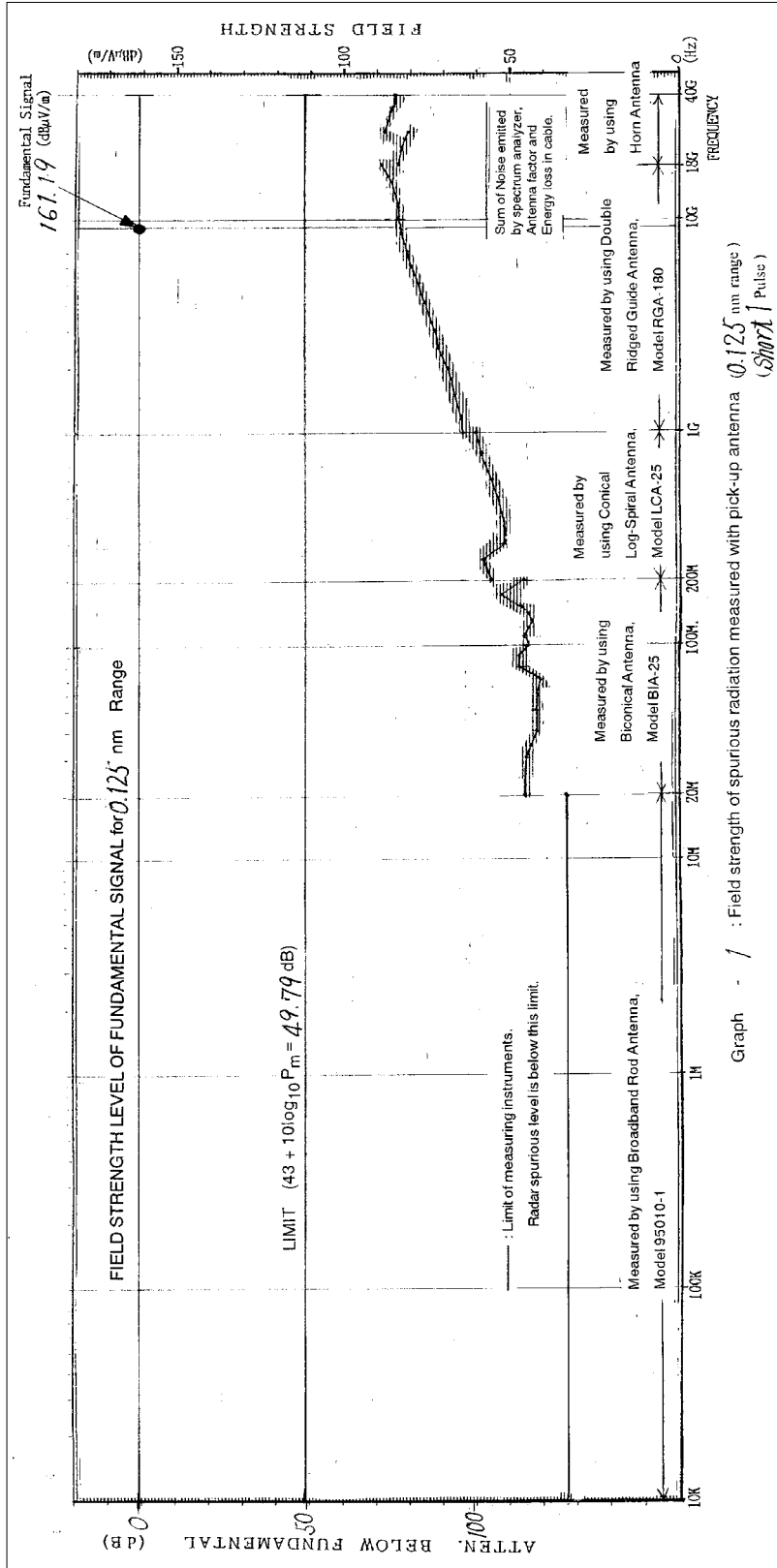


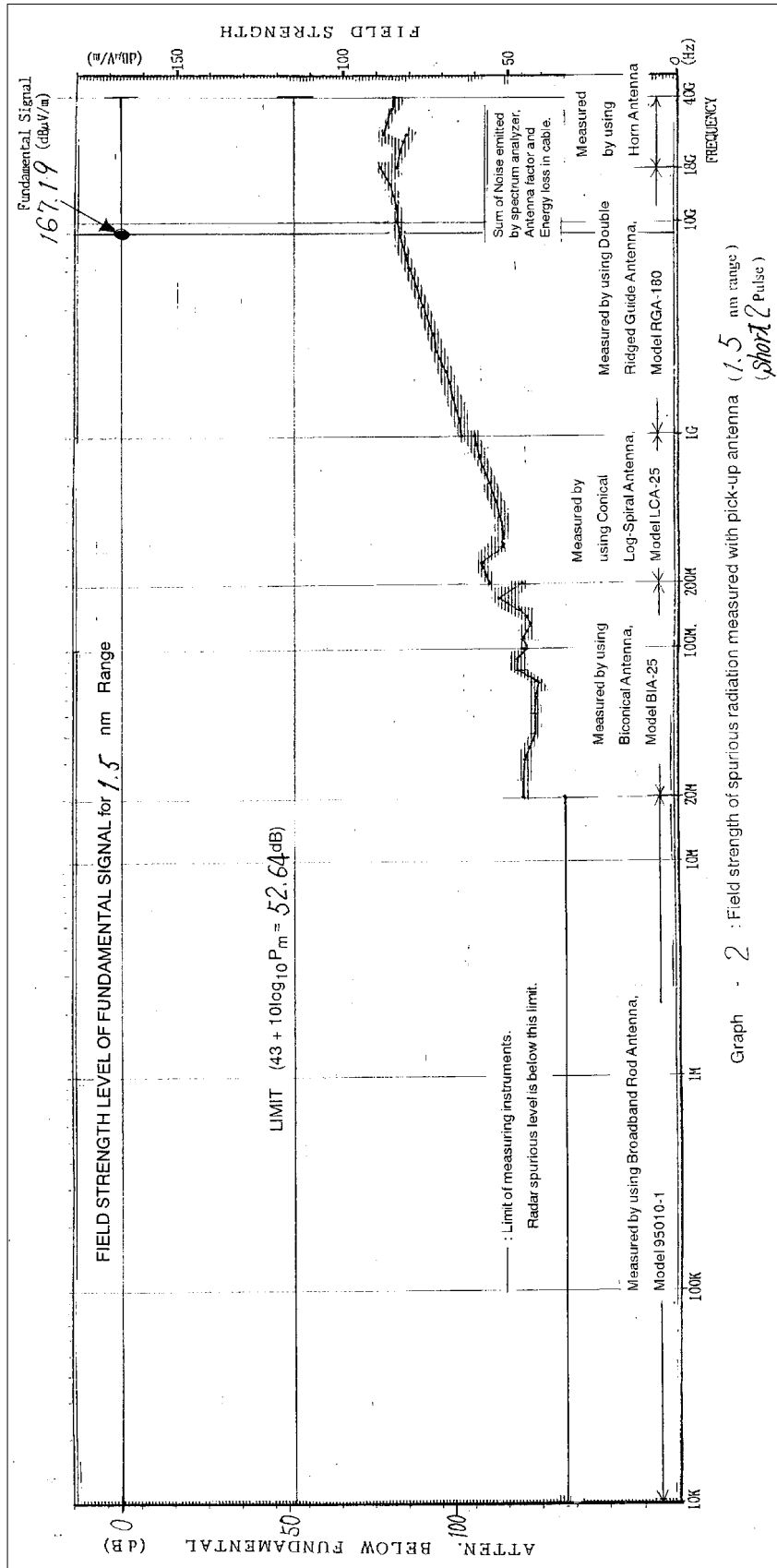
Emission limitations:

← (c)  $43 + 10 \log P_m = 53.88 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

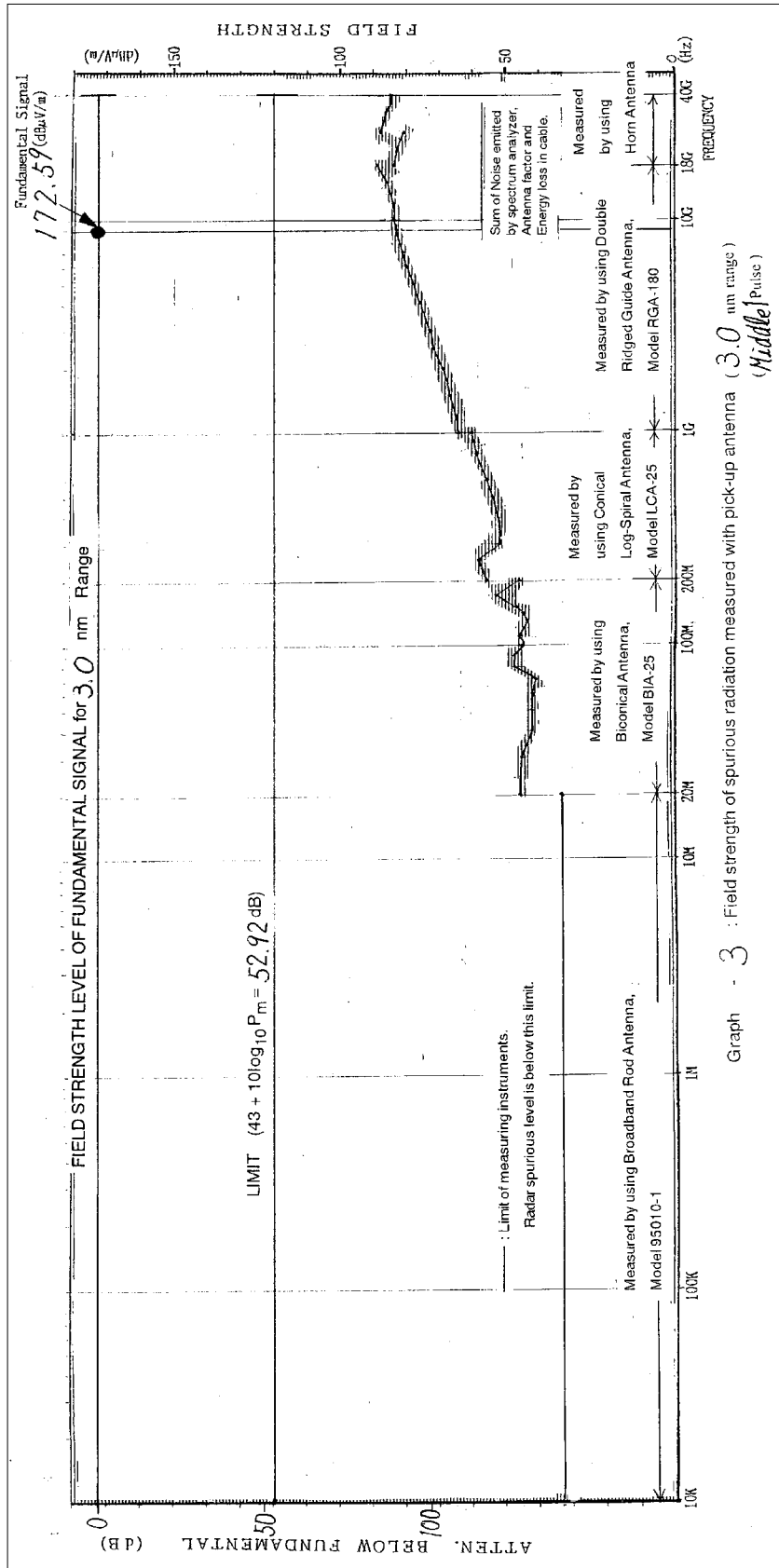
Fig. 7.5 With Filter No. 2

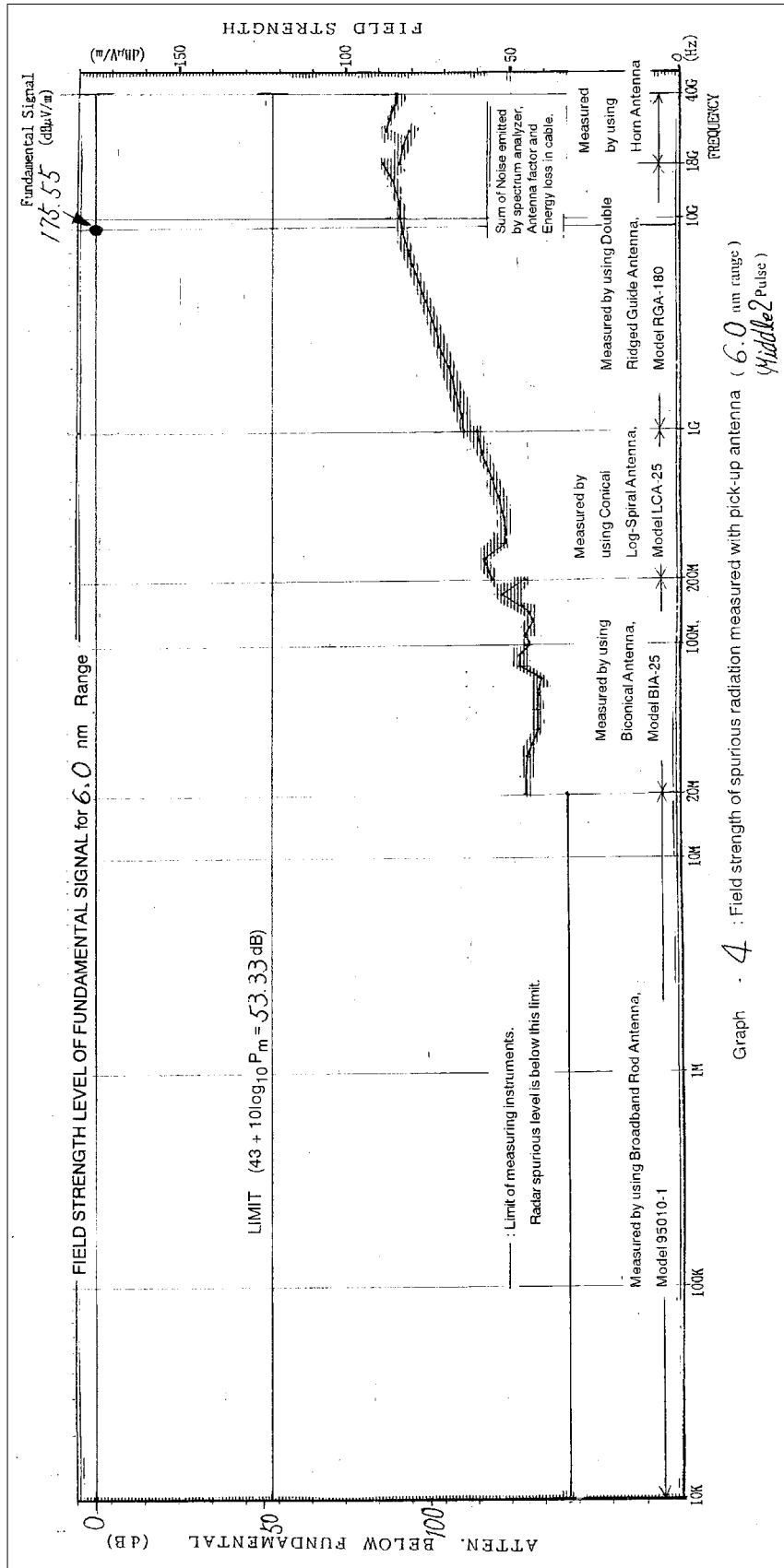
**ATTACHMENT B TEST DATA for Clause 3.5 FIELD STRENGTH OF SPURIOUS RADIATION**



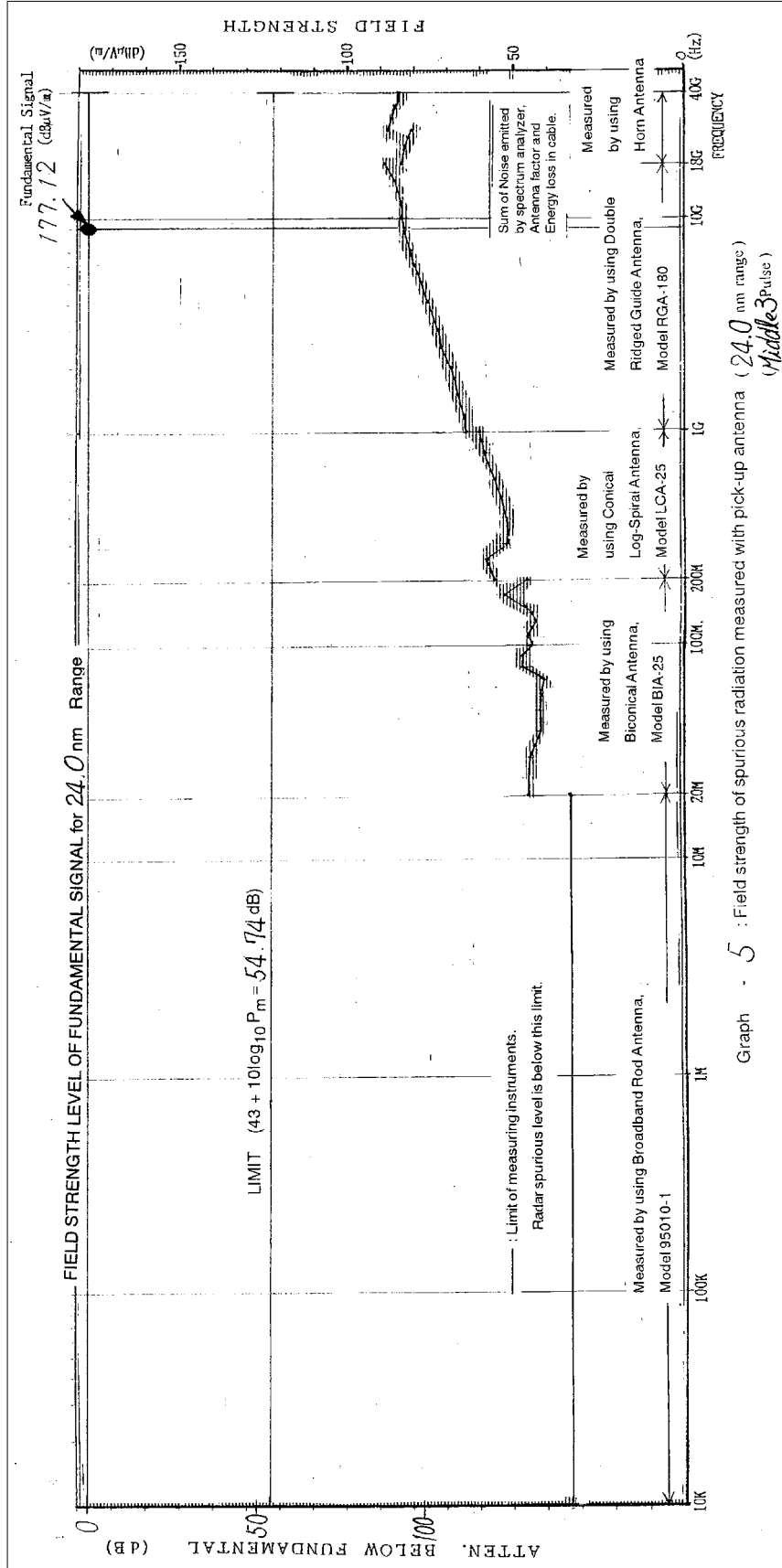


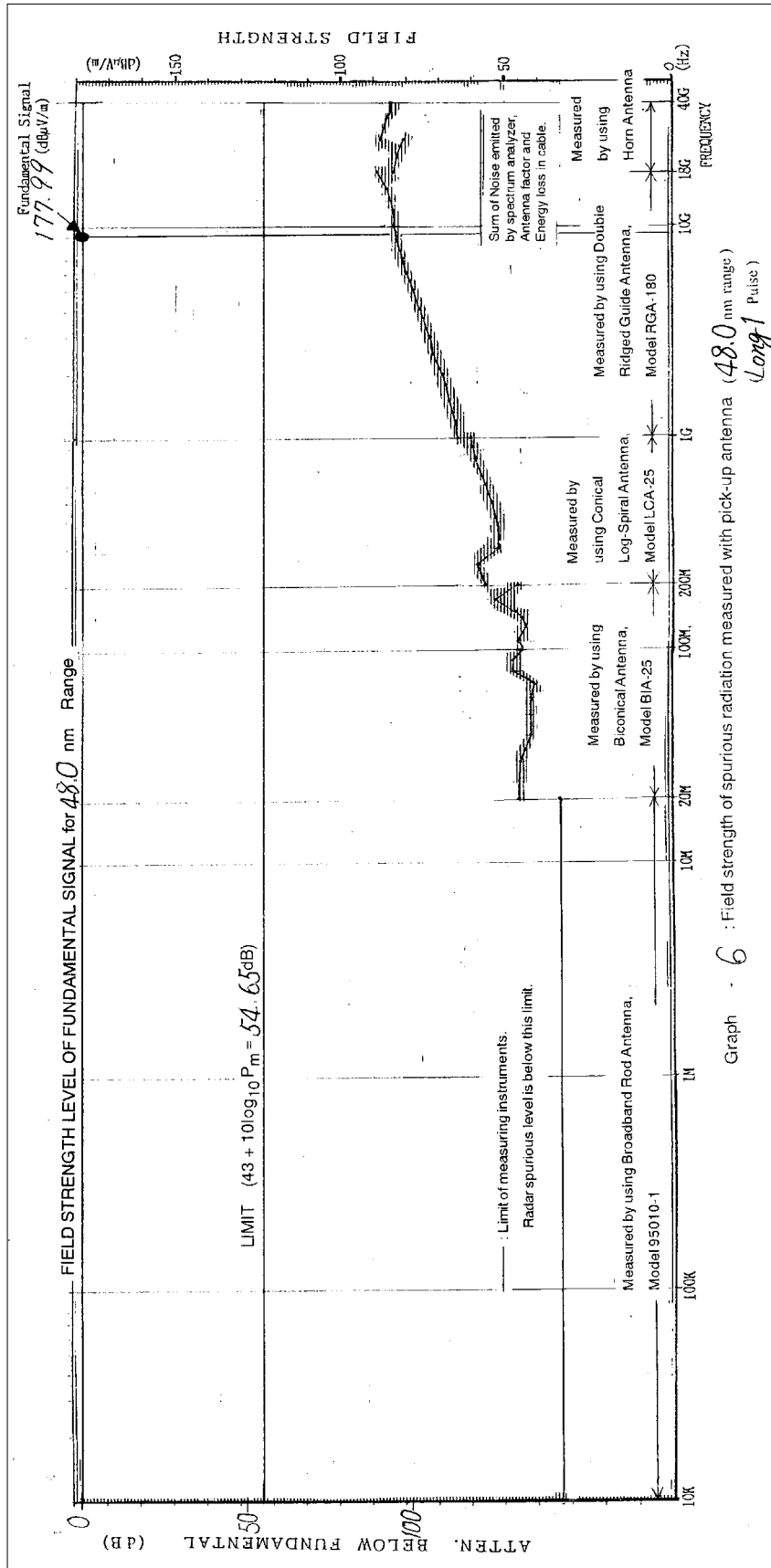


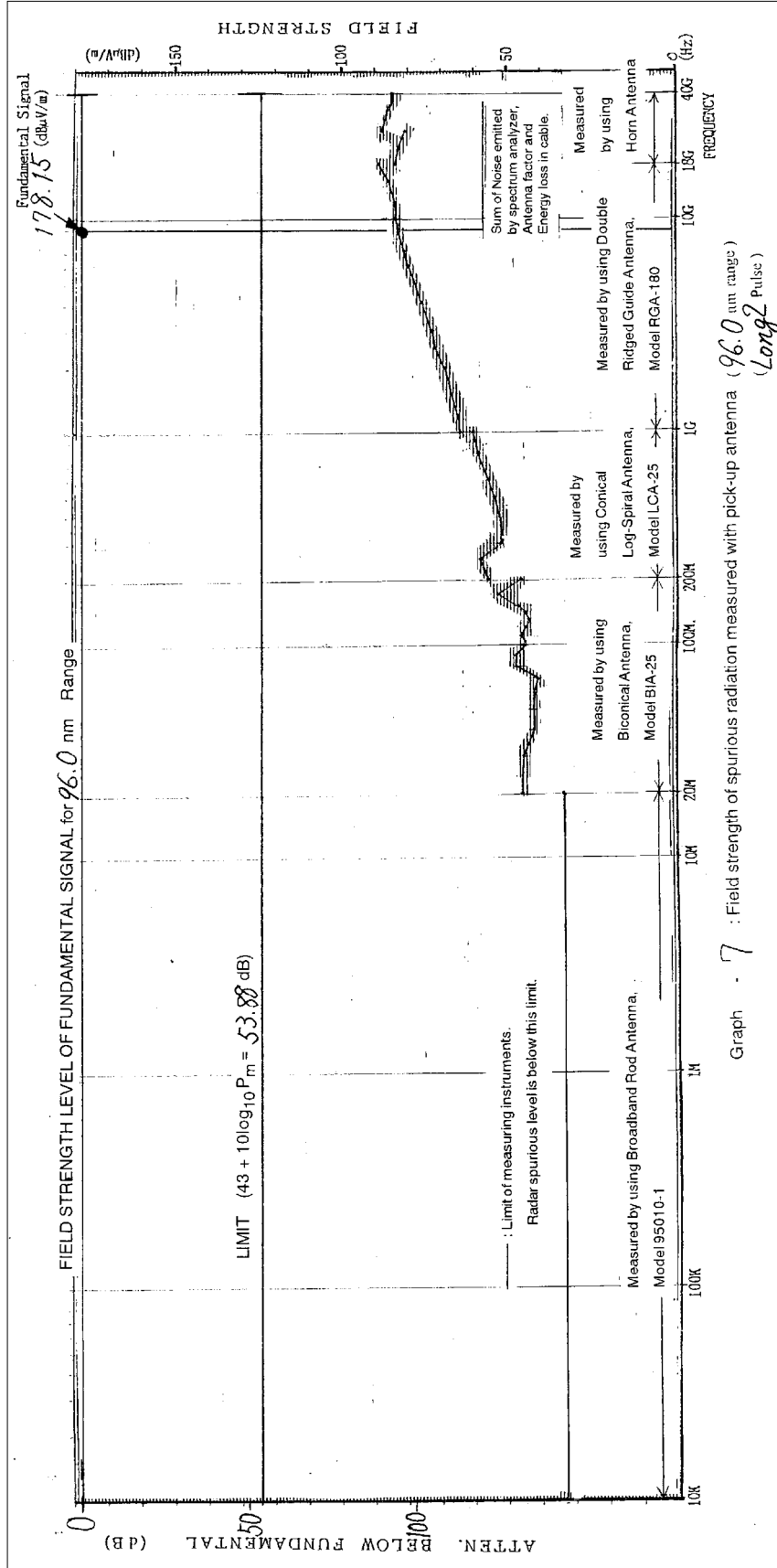




Graph - 4 : Field strength of spurious radiation measured with pick-up antenna (6.0 nm range) (Middle 2 Pulse)







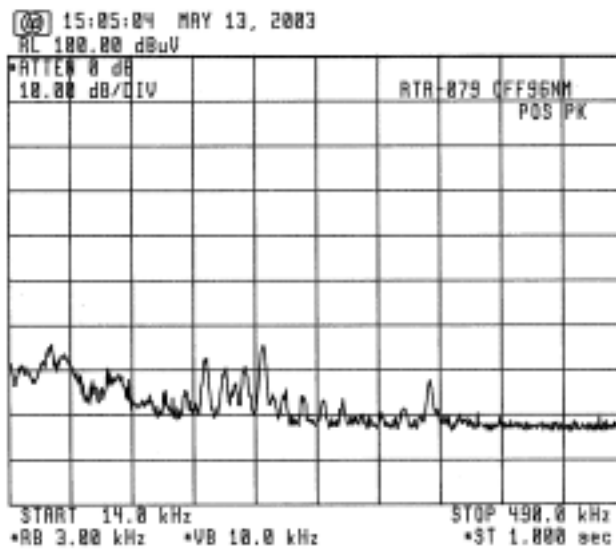
**ATTACHMENT C**

[ TEST DATA for Clause 3.7 SUPPRESSION OF INTERFERENCE ABOARD SHIPS ]

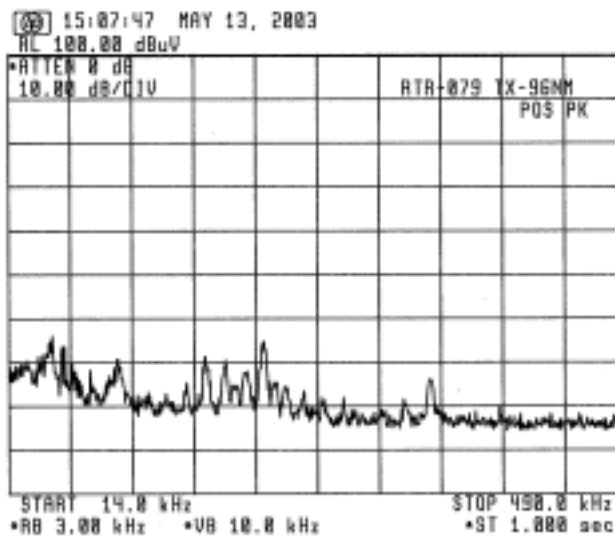
## 1 Harmful Interference to Receiver

(Band: 14 kHz - 490 kHz)

a) Radar Power: OFF

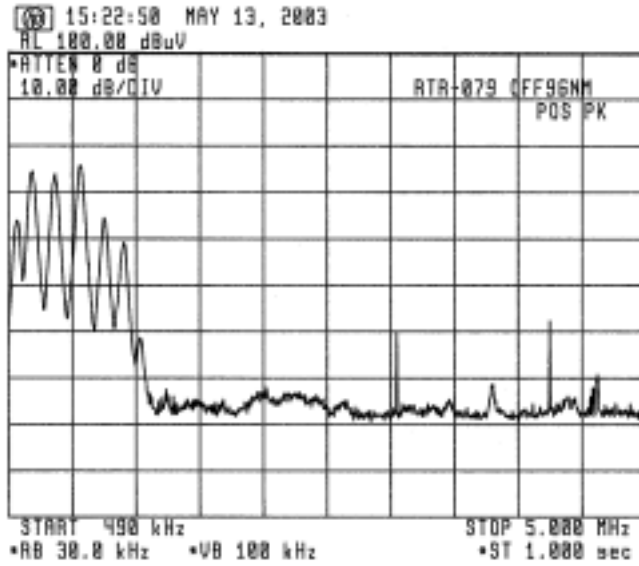


b) Radar TX: ON

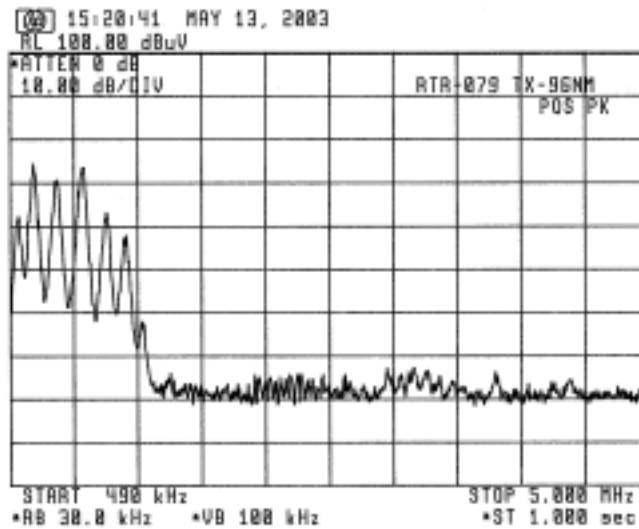


(Band: 490 kHz - 5 MHz)

a) Radar Power: OFF



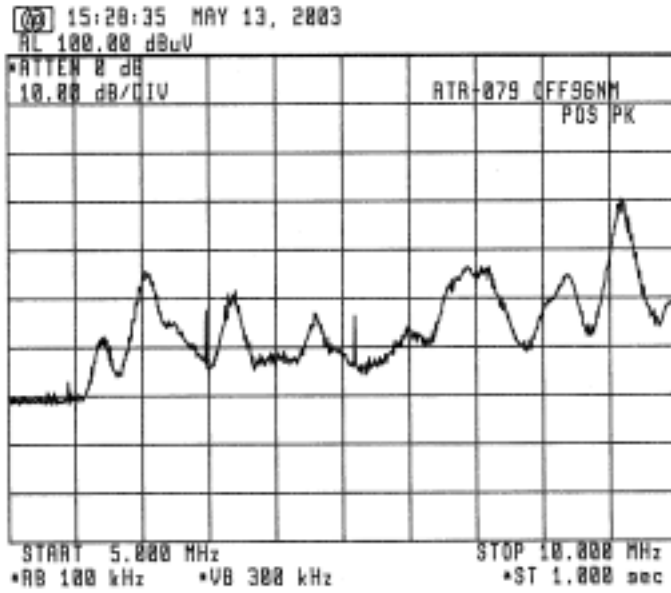
b) Radar TX: ON



(Band: 5 MHz - 10 MHz)

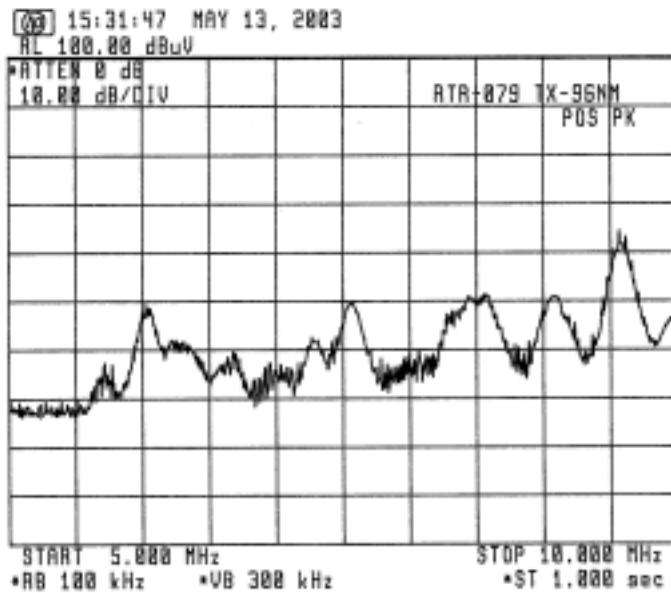
a) Radar Power: OFF

---



b) Radar TX: ON

---

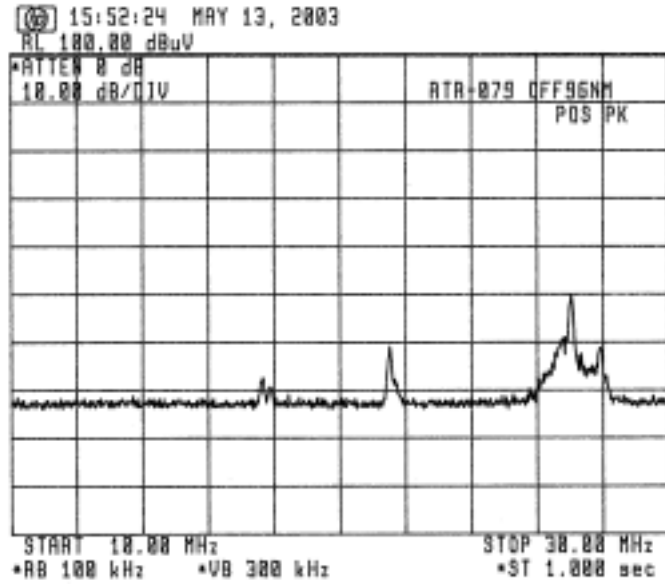




(Band: 10 MHz - 30 MHz)

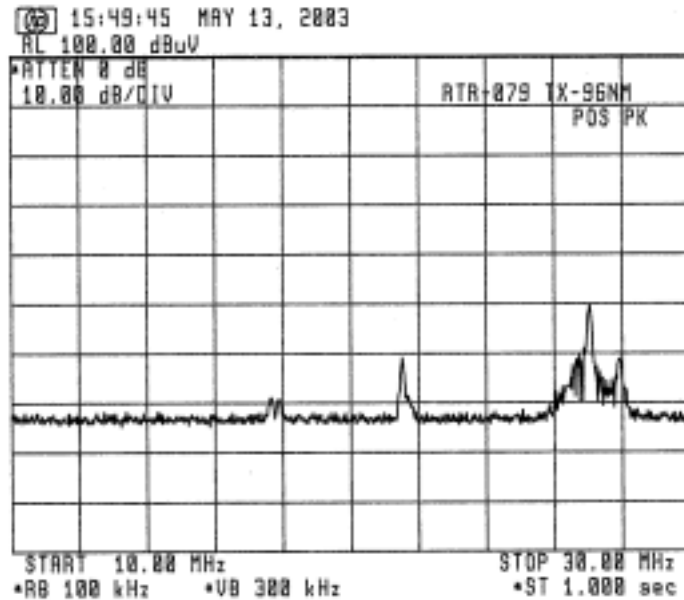
a) Radar Power: OFF

---



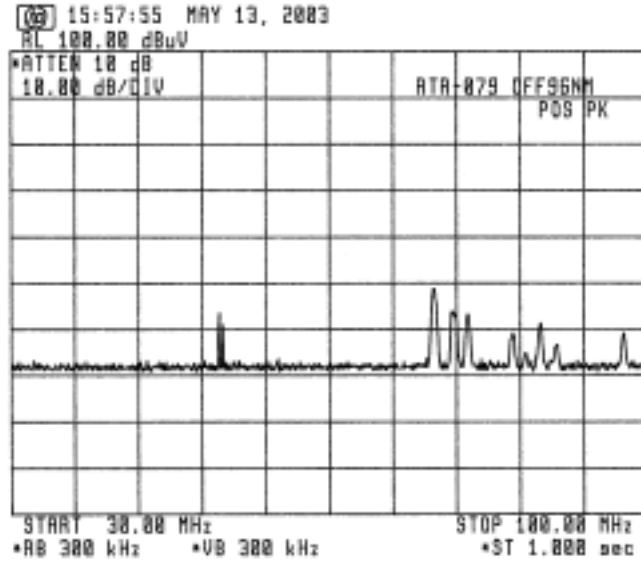
b) Radar TX: ON

---

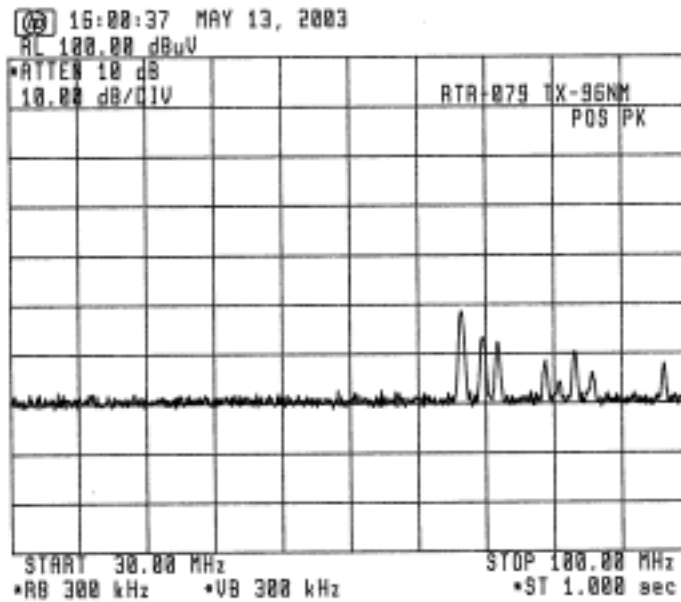


(Band: 30 MHz - 100 MHz)

a) Radar Power: OFF

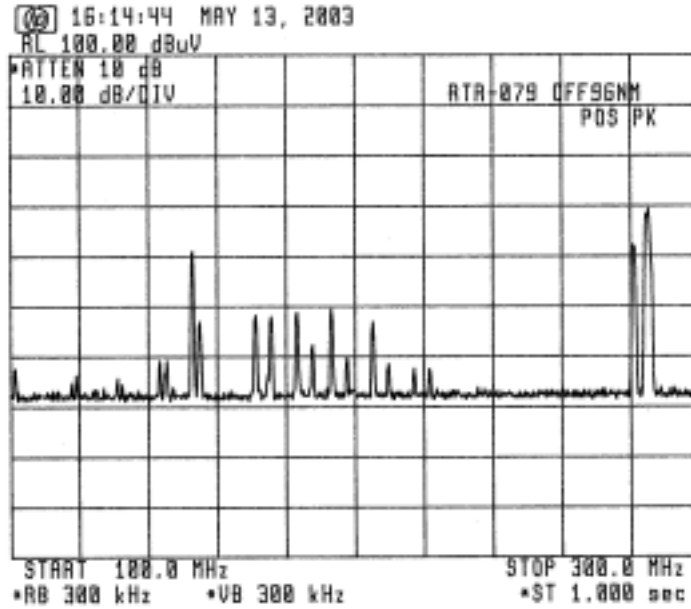


b) Radar TX: ON

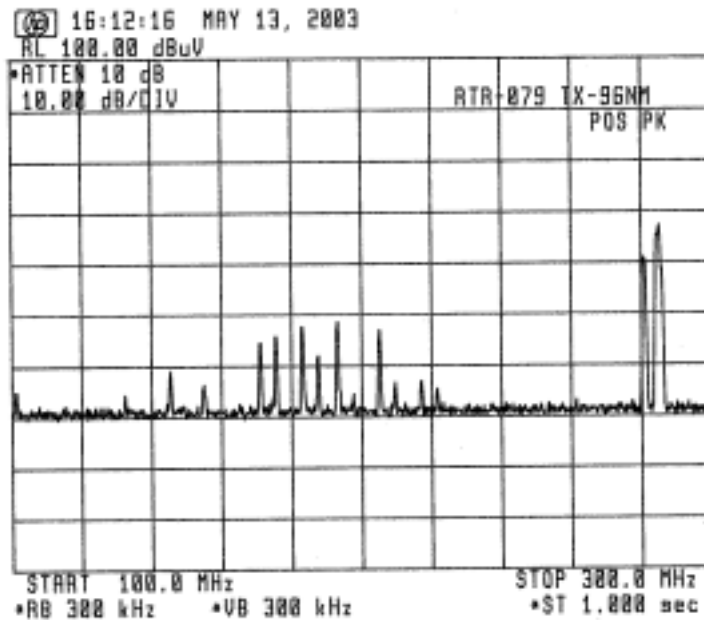


(Band: 100 MHz - 300 MHz)

a) Radar Power: OFF



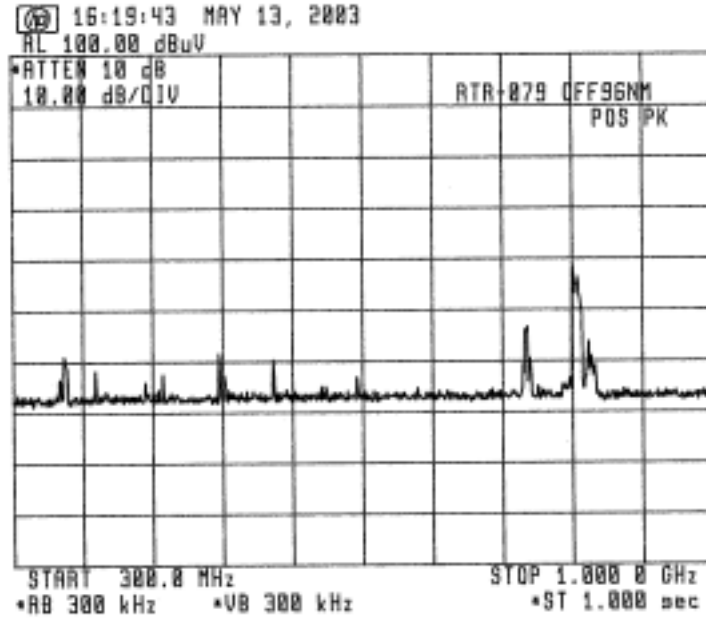
b) Radar TX: ON



(Band: 300 MHz - 1 GHz)

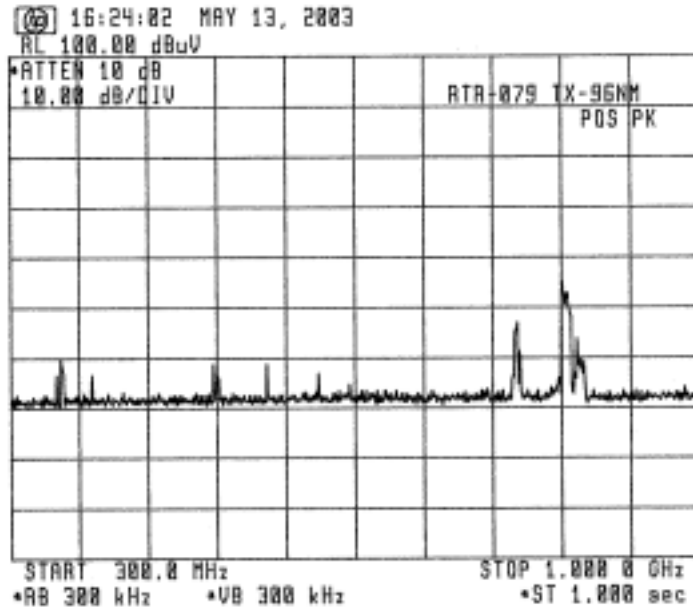
a) Radar Power: OFF

---



b) Radar TX: ON

---

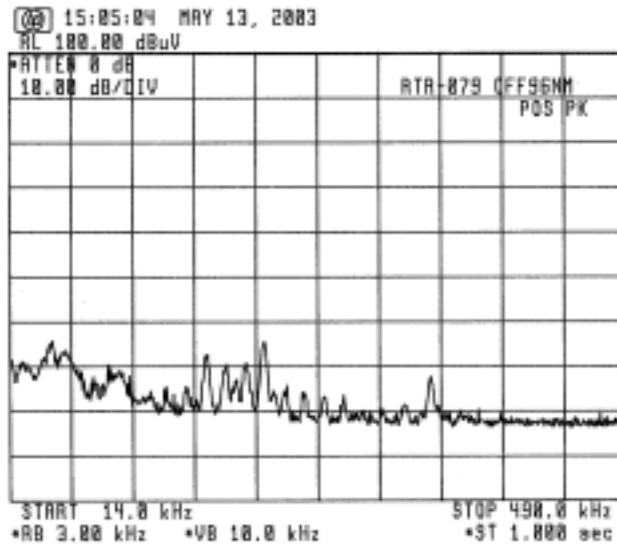


## 2 Electromagnetic Field

(Band: 14 kHz - 490 kHz, Limit at 1 nm = 0.1  $\mu\text{V}/\text{m}$  = -20 dB $\mu\text{V}/\text{m}$ )

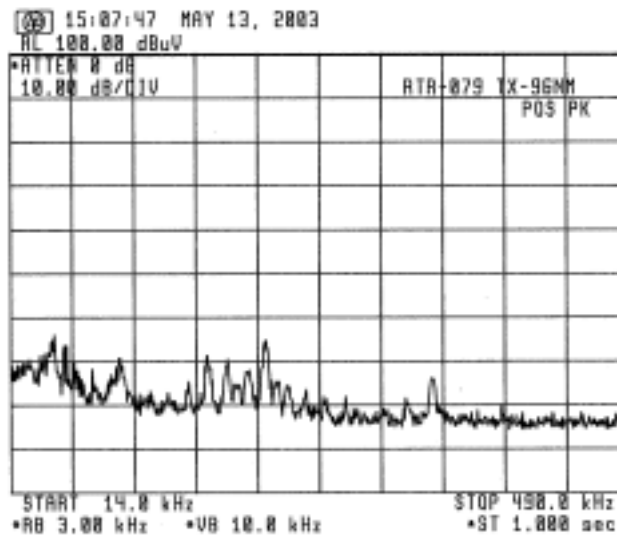
a) Radar Power: OFF

---



b) Radar TX: ON

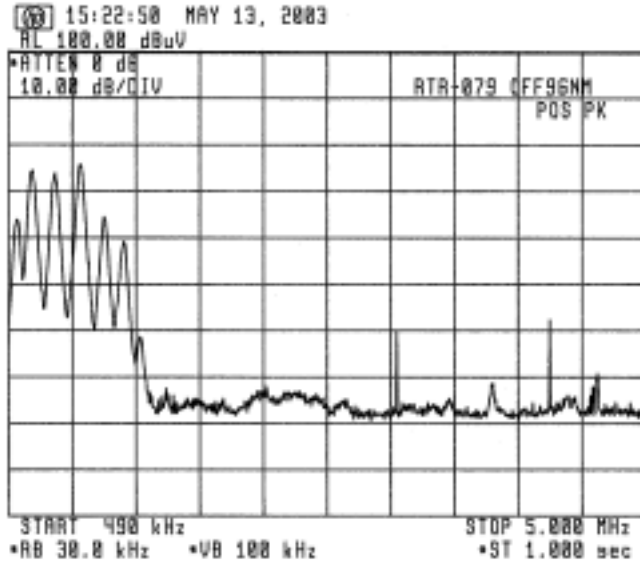
---



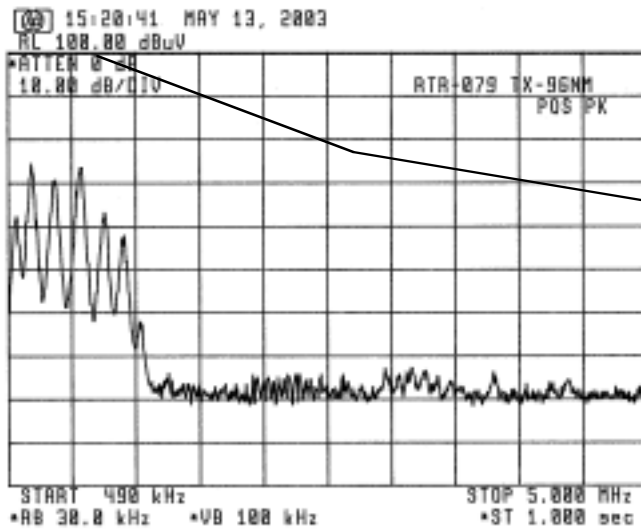
Ref. level: -26 dB $\mu\text{V}/\text{m}$

(Band: 490 kHz - 5 MHz, Limit at 1 nm = 0.1  $\mu$ V/m = -20 dB $\mu$ V/m)

a) Radar Power: OFF



b) Radar TX: ON



Ref. level (dB $\mu$ V/m)

$$= 100 - 126 = -26 \text{ (at 0.5 MHz)}$$

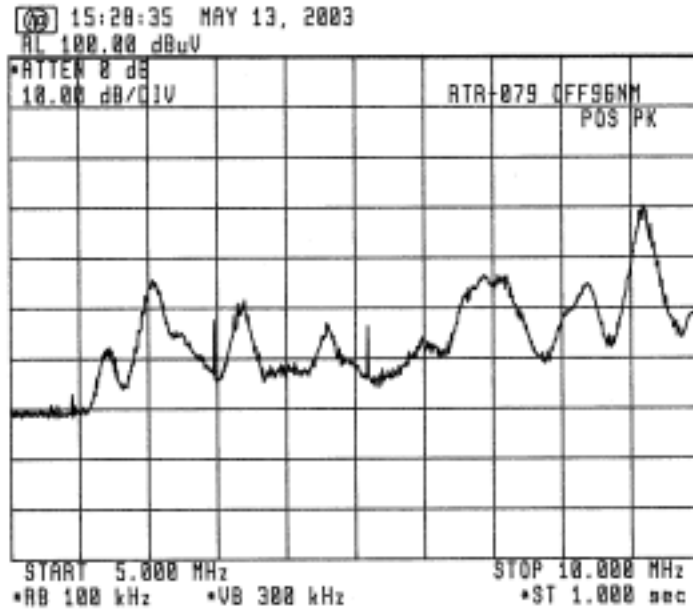
$$= 100 - 96 = 4 \text{ (at 3 MHz)}$$

$$= 100 - 88 = 12 \text{ (at 5 MHz)}$$

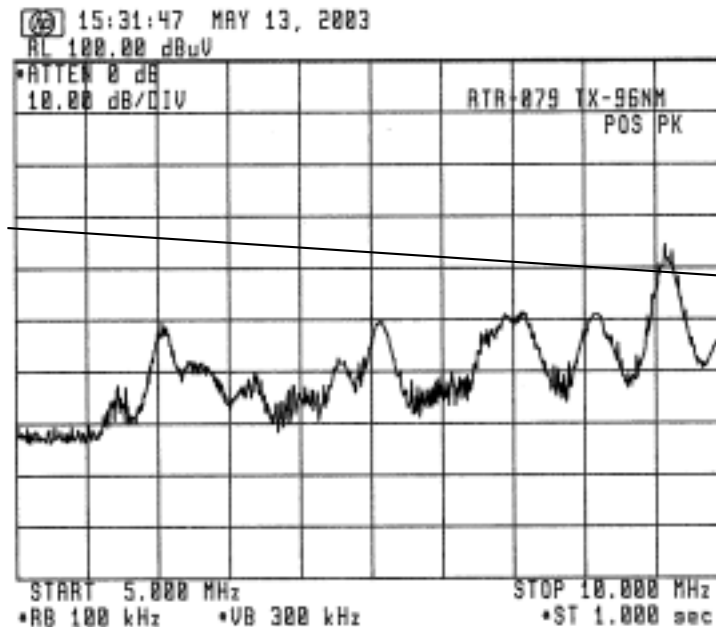
-20 dB $\mu$ V/m limit line

(Band: 5 MHz - 10 MHz, Limit at 1 nm = 0.1  $\mu\text{V}/\text{m}$  = -20 dB $\mu\text{V}/\text{m}$ )

a) Radar Power: OFF



b) Radar TX: ON



Ref. level (dB $\mu\text{V}/\text{m}$ )

= 100 - 88 = 12 (at 5 MHz)

= 100 - 83 = 17 (at 7 MHz)

= 100 - 78 = 22 (at 10 MHz)

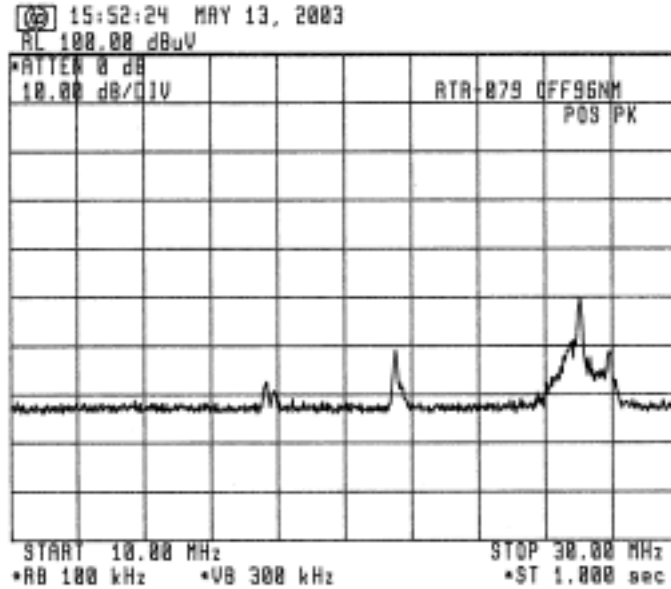
-20 dB $\mu\text{V}/\text{m}$  limit line

Note:

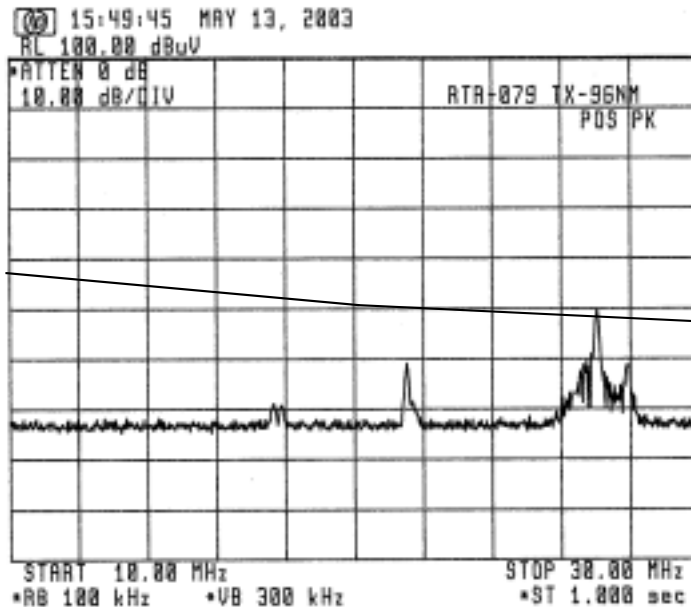
All components above the limit are from external noise or signals, not from Radar.

(Band: 10 MHz - 30 MHz, Limit at 1 nm = 0.1  $\mu\text{V}/\text{m}$  = -20 dB $\mu\text{V}/\text{m}$ )

a) Radar Power: OFF



b) Radar TX: ON



Ref. level (dB $\mu\text{V}/\text{m}$ )  
 = 100 - 78 = 22 (at 10 MHz)  
 = 100 - 70 = 30 (at 20 MHz)  
 = 100 - 67 = 33 (at 30 MHz)

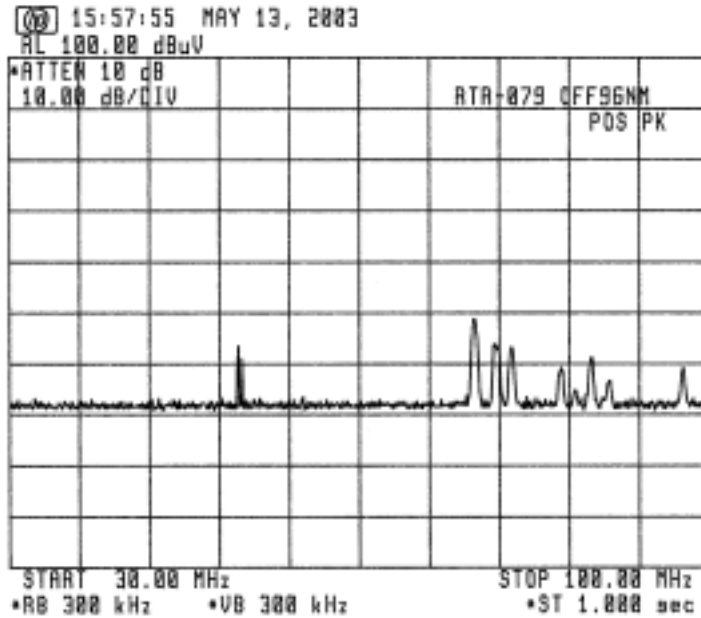
-20 dB $\mu\text{V}/\text{m}$  limit line

Note:  
 All components above the limit  
 are from external noise or  
 signals, not from Radar.

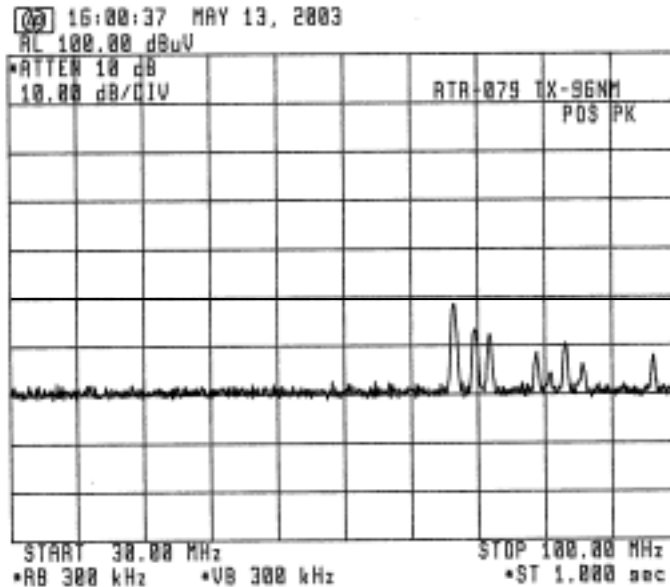


(Band: 30 MHz - 100 MHz, Limit at 1 nm = 0.1  $\mu$ V/m = -10.5 dB $\mu$ V/m)

a) Radar Power: OFF



b) Radar TX: ON

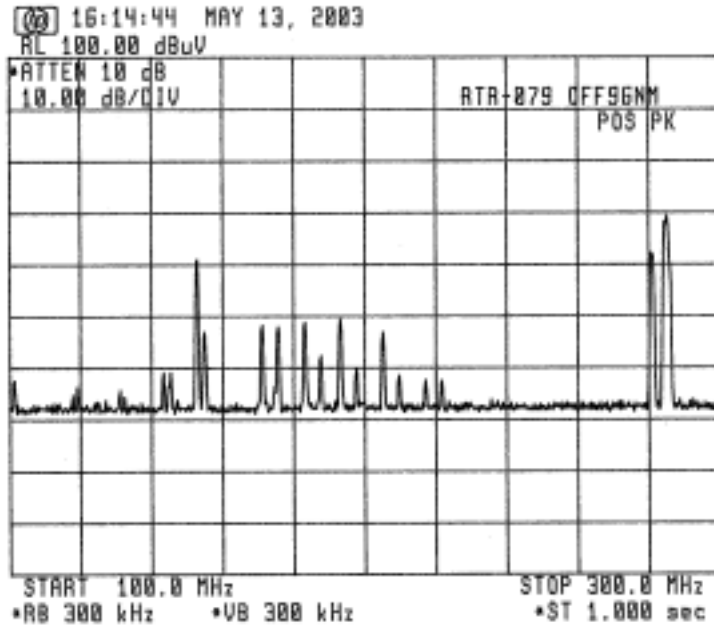


Ref. level (dB $\mu$ V/m)  
= 100 - 61 = 39

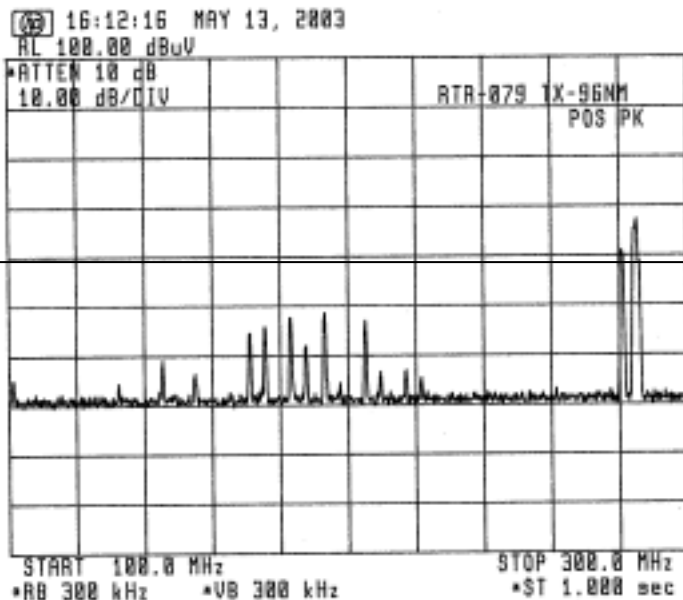
-10.5 dB $\mu$ V/m limit line

(Band: 100 MHz - 300 MHz, Limit at 1 nm = 0.1  $\mu$ V/m = -0 dB $\mu$ V/m)

a) Radar Power: OFF



b) Radar TX: ON



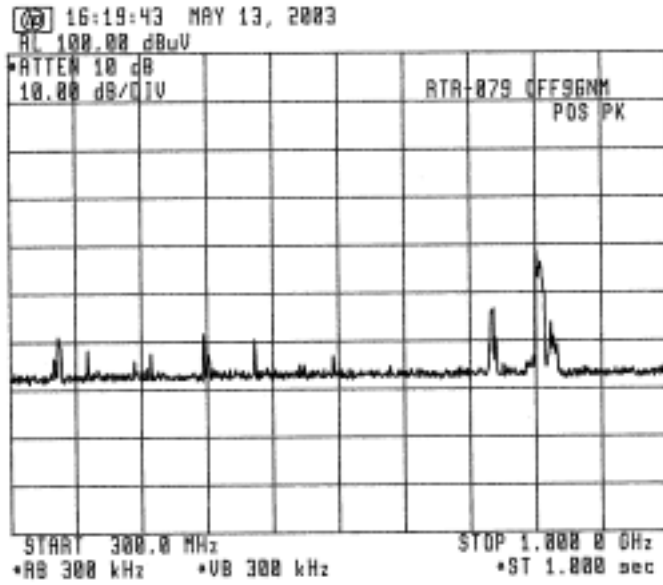
Ref. level (dB $\mu$ V/m)  
= 100 - 60 = 40

0 dB $\mu$ V/m limit line

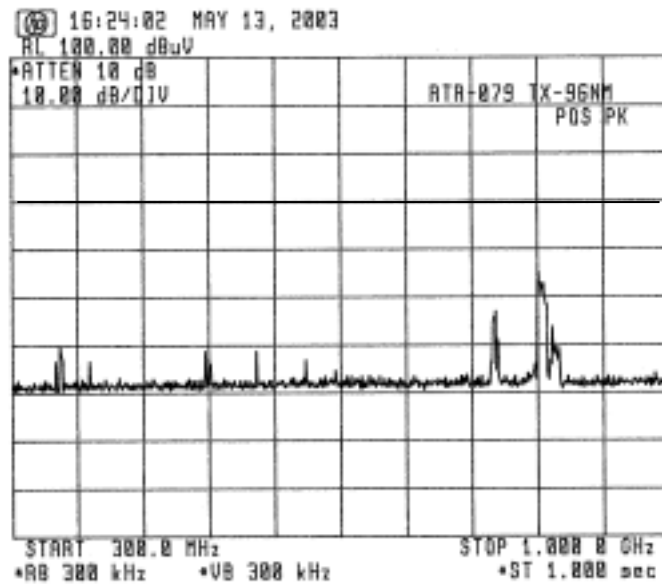
Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

(Band: 300 MHz - 1 GHz, Limit at 1 nm = 3  $\mu$ V/m = -9.5 dB $\mu$ V/m)

a) Radar Power: OFF



b) Radar TX: ON



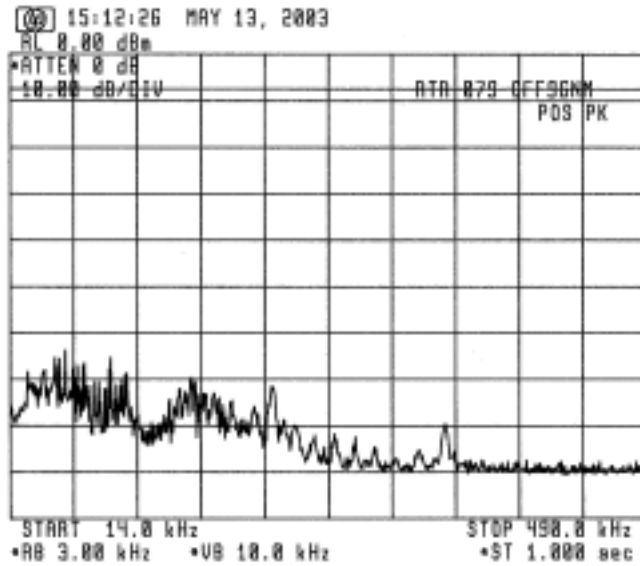
Ref. level (dB $\mu$ V/m)  
= 100 - 59.5 = 40.5

9.5 dB $\mu$ V/m limit line

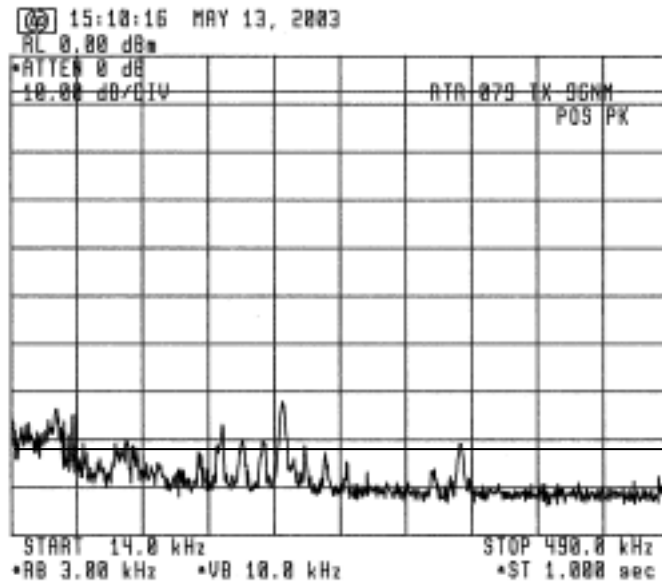
### 3 Power Input to an Artificial Antenna

(Band: 14 kHz - 490 kHz, Limit at 2 m = -81 dBm)

a) Radar Power: OFF



b) Radar TX: ON



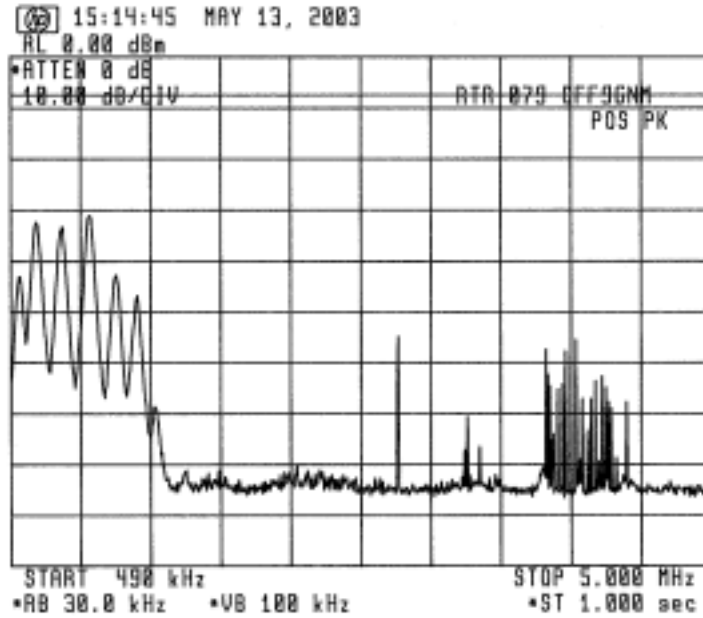
Note:

All components above the limit are from external noise or signals, not from Radar.

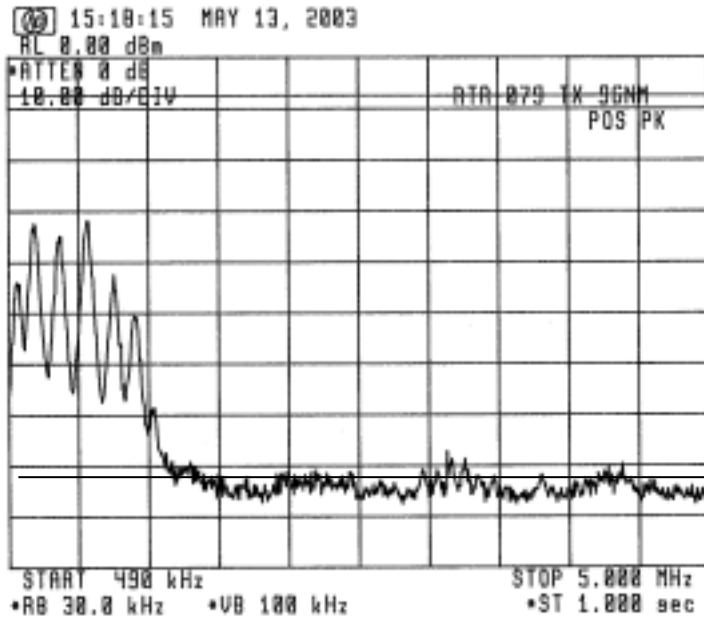
-81 dBm limit line

(Band: 490 kHz - 5 MHz, Limit at 2 m = -81 dBm)

a) Radar Power: OFF



b) Radar TX: ON



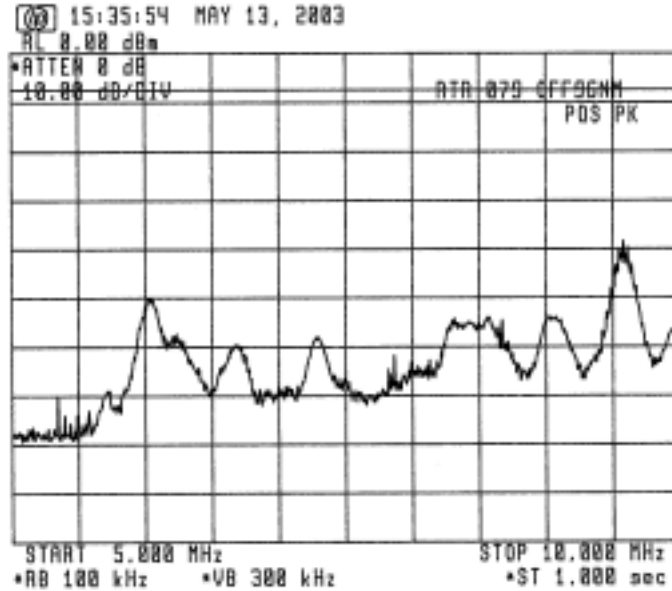
Note:

All components above the limit are from external noise or signals, not from Radar.

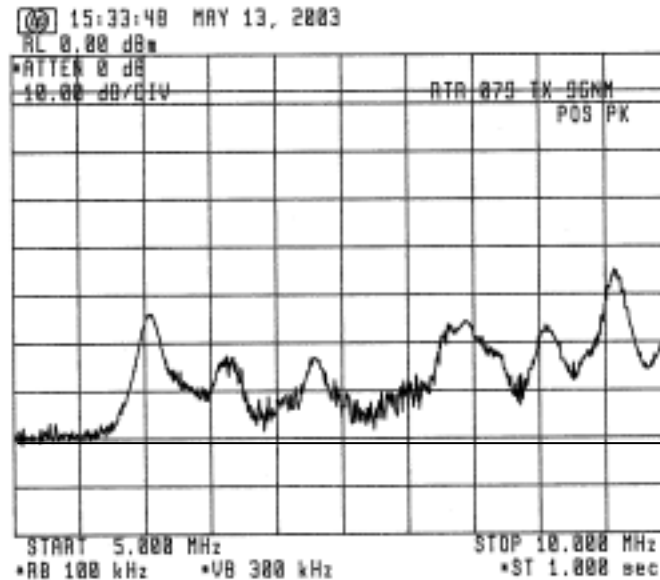
-81 dBm limit line

(Band: 5 MHz - 10 MHz, Limit at 2 m = -81 dBm)

a) Radar Power: OFF



b) Radar TX: ON

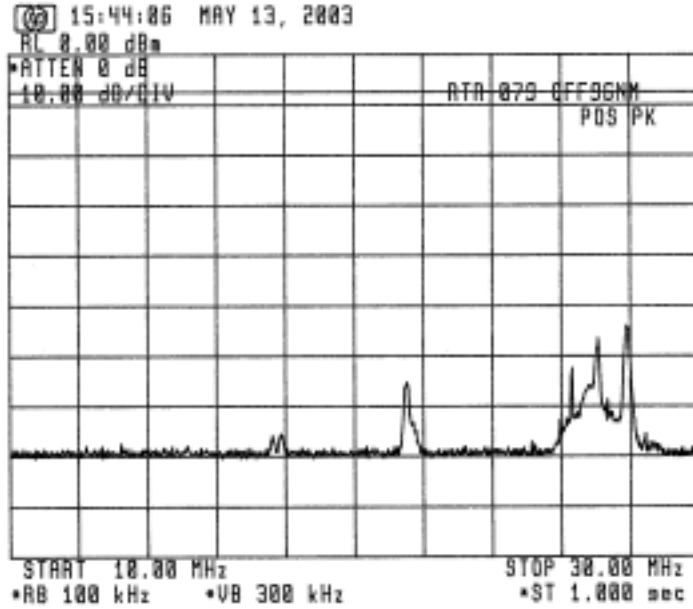


Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

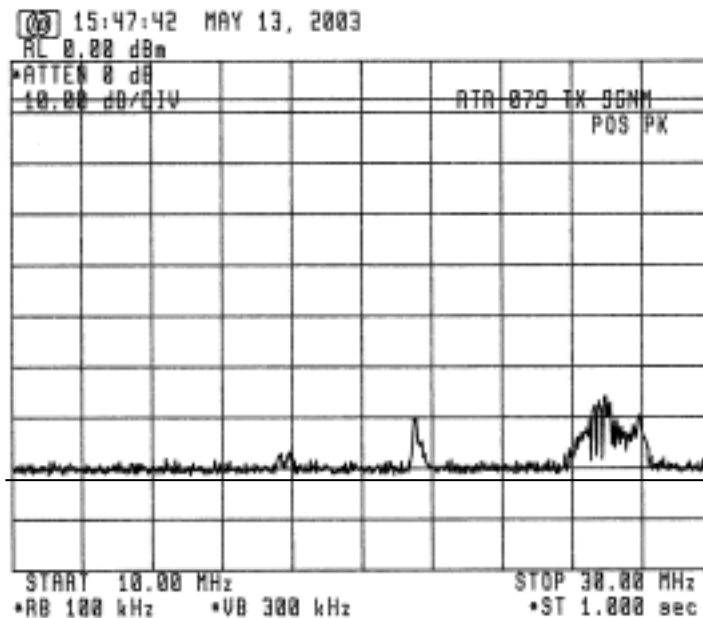
-81 dBm limit line

(Band: 10 MHz - 30 MHz, Limit at 2 m = -81 dBm)

a) Radar Power: OFF



b) Radar TX: ON

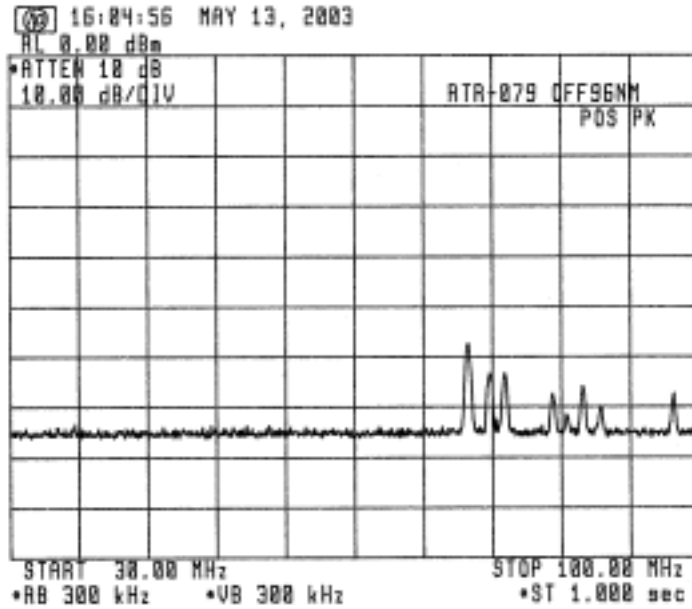


Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

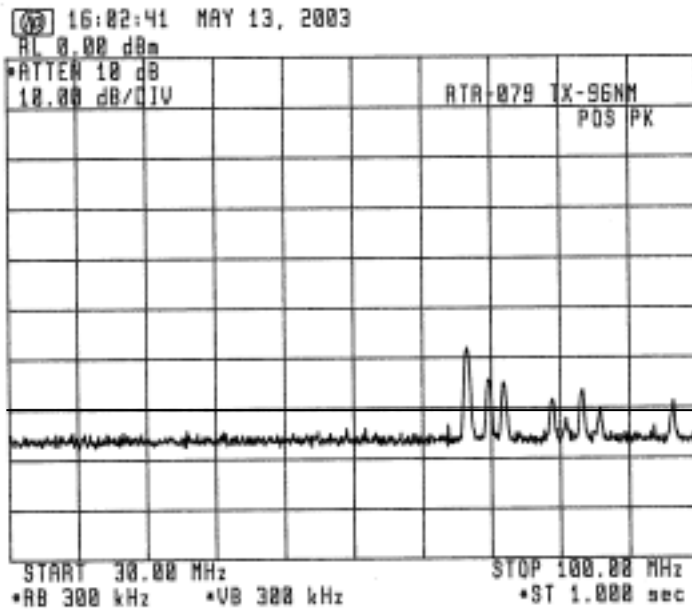
-81 dBm limit line

(Band: 30 MHz - 100 MHz, Limit at 2 m = -71 dBm)

a) Radar Power: OFF



b) Radar TX: ON



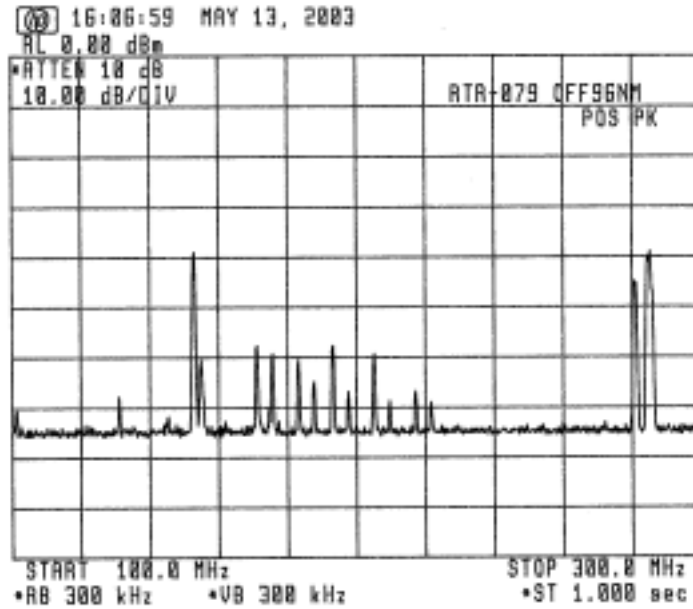
Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

-71 dBm limit line

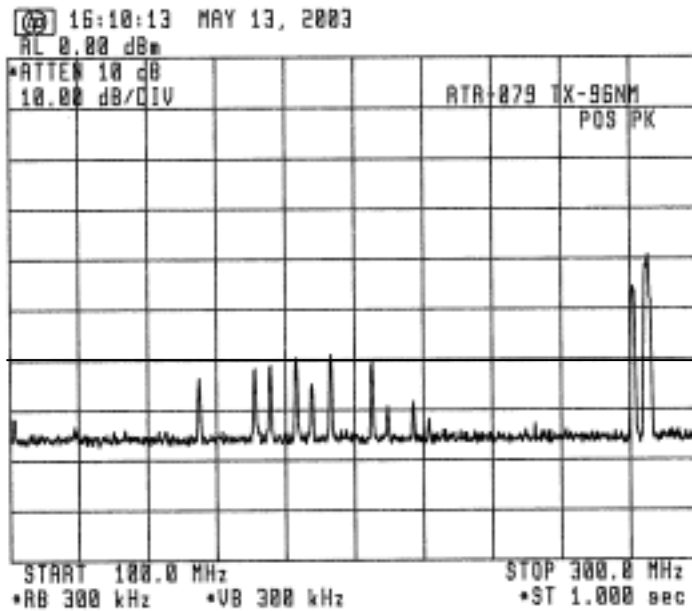


(Band: 100 MHz - 300 MHz, Limit at 2 m = -61 dBm)

a) Radar Power: OFF



b) Radar TX: ON



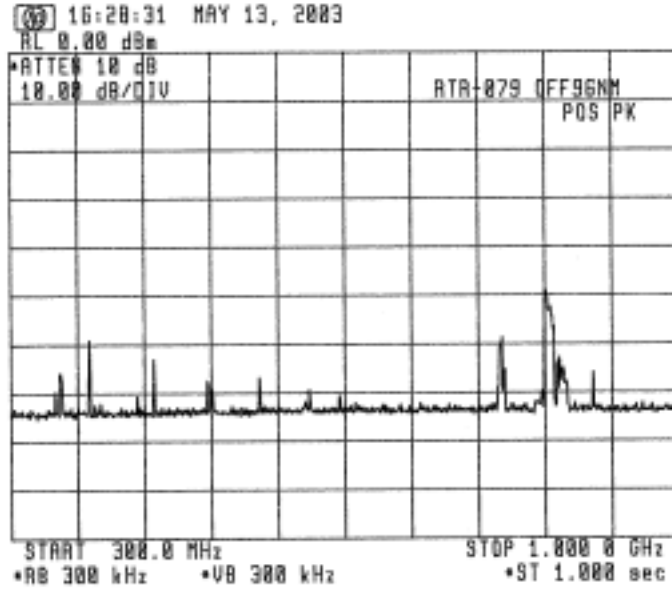
-61 dBm limit line

Note:

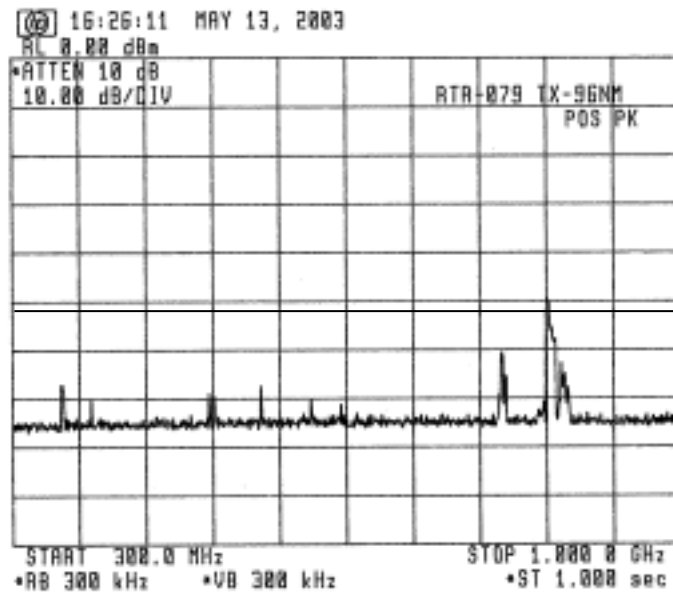
All components above the limit are from external noise or signals, not from Radar.

(Band: 300 MHz - 1 GHz, Limit at 2 m = -51 dBm)

a) Radar Power: OFF



b) Radar TX: ON



-51 dBm limit line

Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

**Attachment D** [ List of Test/Measuring Equipment ] (for X-band radar)

For Clause 3.1 RF Power Output

<u>Model</u>	<u>Type</u>	<u>Serial no.</u>	<u>Mfr.</u>
Spectrum Analyzer	71210C	2927A02847	HP
Oscilloscope	TDS680B	B030202	Tektronix
Directional Coupler	5D364S	R05762	Shimada
Voltage Divider	HV-P30	2780	Iwatsu
Current Transformer	2100	----	Pearson Electronics
Power Meter	436A	2410A19137	HP
Power Sensor	8481A	2349A39603	HP
Frequency Counter	TR5824A	41940036	Advantest
Frequency Meter	X532B	1441A00523	HP
Crystal Detector	423B	1822A34735	HP
Dummy Load	4D376	R05763	Shimada
Attenuator (10 dB step, 70 dB)	8495B	3308A22026	Agilent
Attenuator (1 dB step, 11 dB)	8494B	US00430229	Agilent

For Clause 3.2 Modulation Characteristics

<u>Model</u>	<u>Type</u>	<u>Serial no.</u>	<u>Mfr.</u>
Oscilloscope	TDS680B	B030202	Tektronix
Crystal Detector	423B	1822A34735	HP
Directional Coupler	5D364S	R05762	Shimada
Dummy Load	4D376	R05763	Shimada
Voltage Divider	HV-P30	2780	Iwatsu
Spectrum Analyzer	71210C	2927A02847	HP
Attenuator (10 dB step, 70 dB)	8495B	3308A22026	Agilent
Attenuator (1 dB step, 11 dB)	8494B	US00430229	Agilent

For Clause 3.4 Spurious Emissions at Antenna Terminal

<u>Model</u>	<u>Type</u>	<u>Serial no.</u>	<u>Mfr.</u>
Spectrum Analyzer	71210C	2927A02847	HP
Attenuator (10 dB step, 70 dB)	8495B	3308A22026	Agilent
External Mixer:	11970K	2332A00589	HP
External Mixer:	11970A	2332A01187	HP
Directional Coupler	5D364S	R05762	Shimada
Dummy Load	4D376	R05763	Shimada
Notch Filter (X-band)			
Circulator	MA8L32#82	----	Microwave Associates
Bandpass filter	-----	R9904	Shimada
High Pass Filter (X-band)	-----	-----	Furuno

For Clause 3.5 Field Strength of Spurious Radiation

<u>Model</u>	<u>Type</u>	<u>Serial no.</u>	<u>Mfr.</u>
Broadband Rod Antenna	95010-1		Advanced Electronics
Biconical Antenna	BIA-25	2650	Electro Metrics
Conical Log-Spiral Antenna	LCA-25	2886	Electro Metrics
Double Ridged Guide Horn Antenna: RGA-180		2248	Electro Metrics
Horn Antenna:	----	----	Toshiba
Spectrum Analyzer:	71210C	2927A02847	HP
External Mixer:	11970K	2332A00589	HP
External Mixer:	11970A	2332A01187	HP
Attenuator (10 dB step, 70 dB)	8495B	3308A22026	Agilent
Notch Filter (X-band)			
Circulator	MA8L32#82	----	Microwave Associates
Bandpass filter	-----	R9904	Shimada

For Clause 3.6 Frequency Stability

<u>Model</u>	<u>Type</u>	<u>Serial no.</u>	<u>Mfr.</u>
Power Meter:	436A	2410A19137	HP
Power Sensor:	8481A	2349A39603	HP
Frequency Meter:	X532B	1441A00523	HP
Directional Coupler:	5D364S	R5762	Shimada
Dummy Load:	4D376	R05763	Shimada
Environmental Chamber:	PL-4KP	14004204	Tabai Espec

For Clause 3.7 Suppression of Interference Aboard Ships

<u>Model</u>	<u>Type</u>	<u>Serial no.</u>	<u>Mfr.</u>
Spectrum Analyzer:	71210C	2927A02847	HP
6 m Whip Antenna	14 k - 10 MHz	----	Furuno
4 m Whip Antenna	10 - 30 MHz	----	Furuno
VHF Whip Antenna	30 - 300 MHz	150M-W2UM	Anten
UHF Whip Antenna	300 - 1000 MHz	----	Anten
Network analyzer:	8753C	3214J01067	HP
Spectrum Analyzer	TR4172	30690116	Advantest
Spectrum Analyzer	8566B	2637A03642	HP
Attenuator (10 dB step, 70 dB)	8495B	3308A22026	Agilent
Attenuator (1 dB step, 11 dB)	8494B	US00430229	Agilent