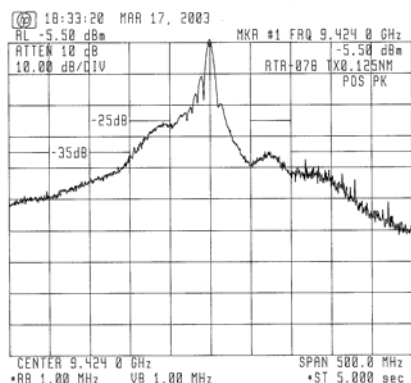


## Attachment A

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

### 1. Spurious emissions for 0.125 nm Range:

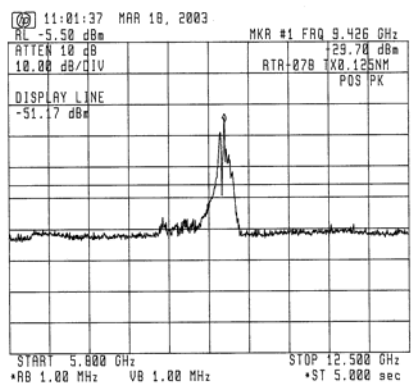


Ref. level: -5.5 dBm

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)

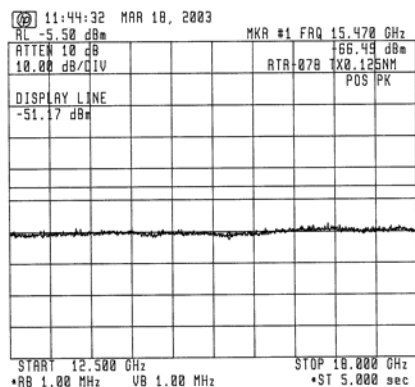
Fig. 1.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 45.67 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

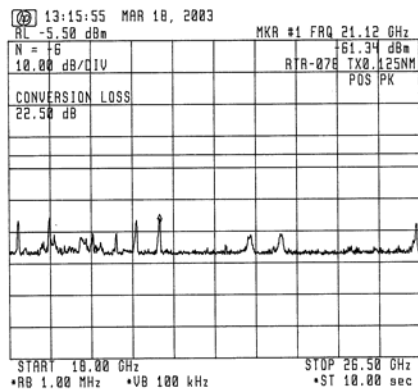
Fig. 1.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 45.67 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

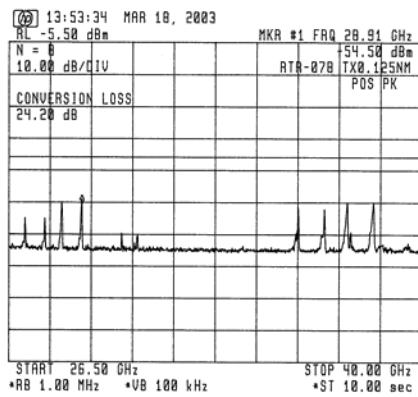
Fig. 1.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 45.67 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 1.4 With Filter No. 2

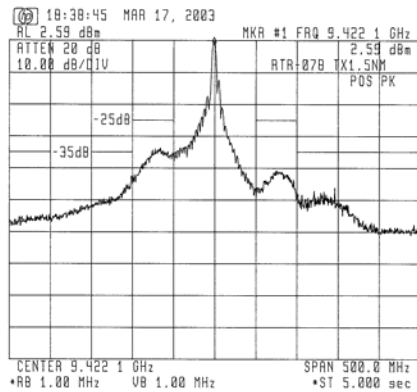


Emission limitations:

- (c)  $43 + 10 \log P_m = 45.67 \text{ dB}$   
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:

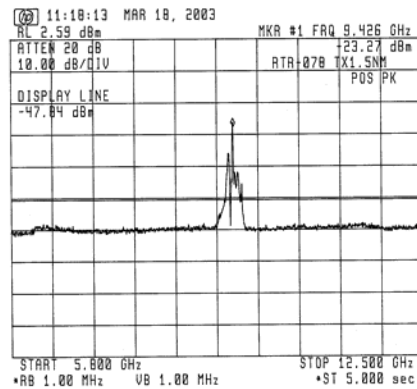


Ref. level: 2.59 dBm

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)

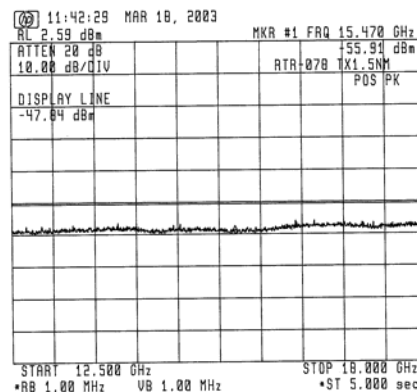
Fig. 2.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.43 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

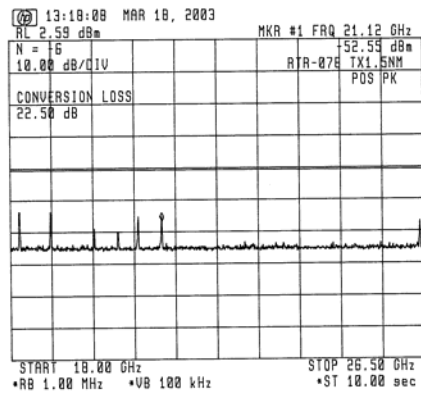
Fig. 2.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.43 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

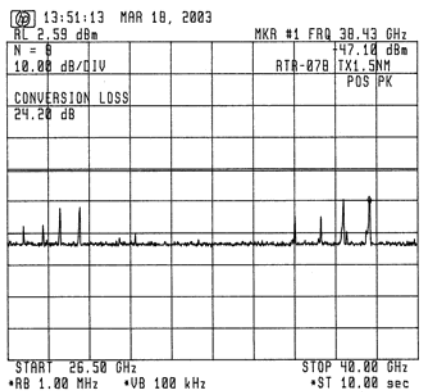
Fig. 2.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.43 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 2.4 With Filter No. 2

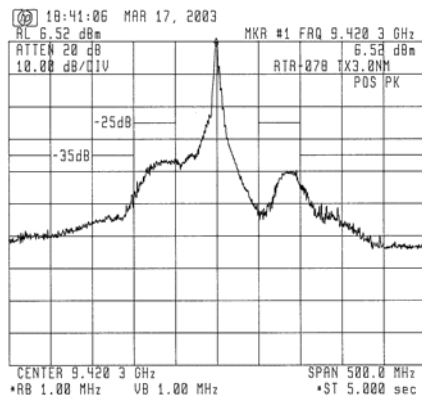


Emission limitations:

- (c)  $43 + 10 \log P_m = 50.43 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 2.5 With Filter No. 2

### 3. Spurious emissions for 3 nm Range:

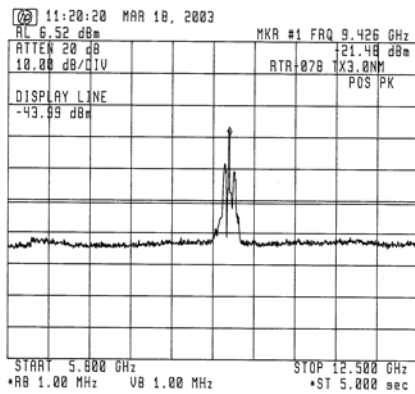


Ref. level: 6.52 dBm

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)

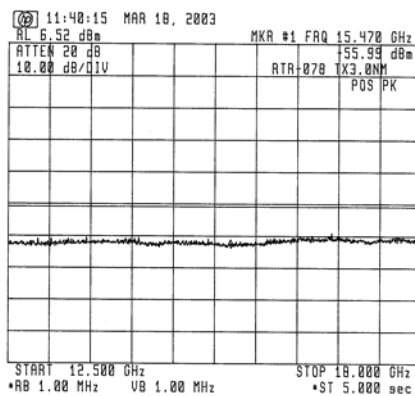
Fig. 3.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.51 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

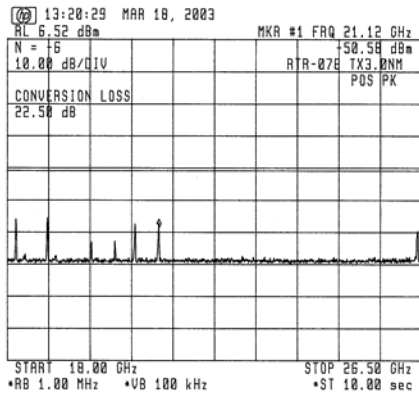
Fig. 3.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.51 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

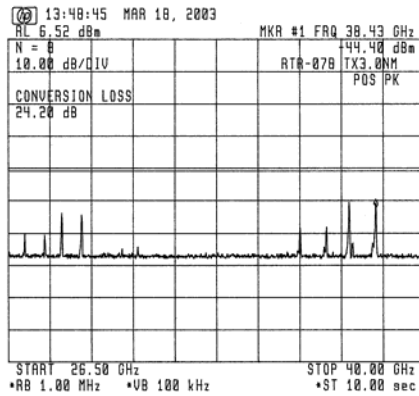
Fig. 3.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.51 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 3.4 With Filter No. 2

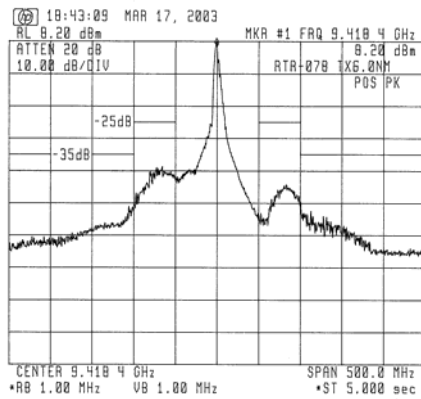


Emission limitations:

- (c)  $43 + 10 \log P_m = 50.51 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 3.5 With Filter No. 2

4 Spurious emissions for 6 nm Range:

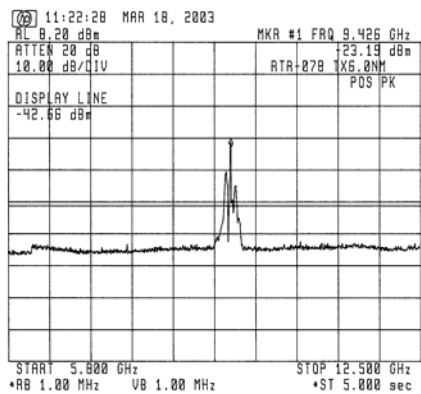


Ref. level: 8.2 dBm

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)

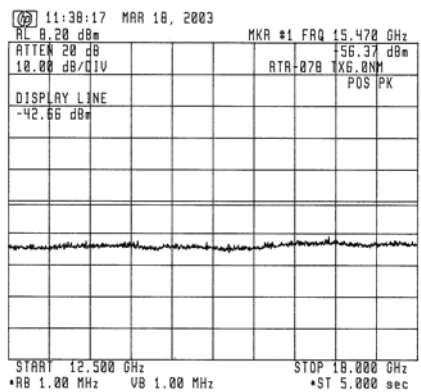
Fig. 4.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.86 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

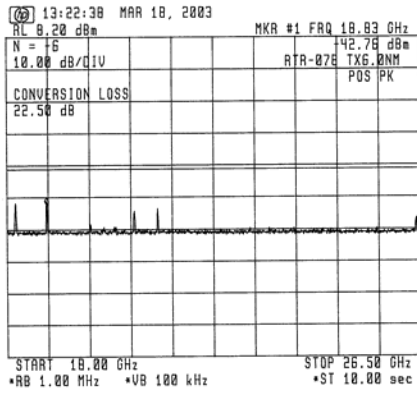
Fig. 4.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.86 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

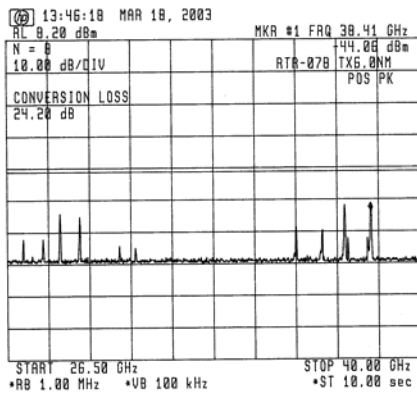
Fig. 4.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 50.86 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 4.4 With Filter No. 2

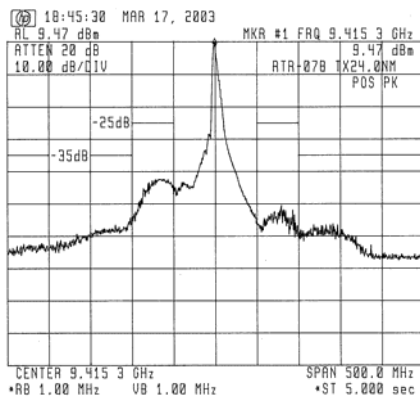


Emission limitations:

- (c)  $43 + 10 \log P_m = 50.86 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 4.5 With Filter No. 2

5 Spurious emissions for 24 nm Range:

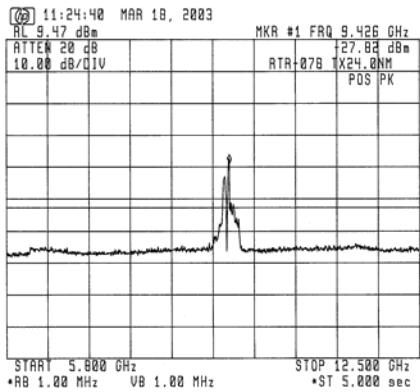


Ref. level: 9.47 dBm

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)

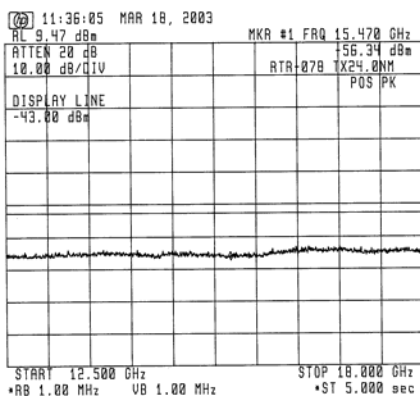
Fig. 5.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.47 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

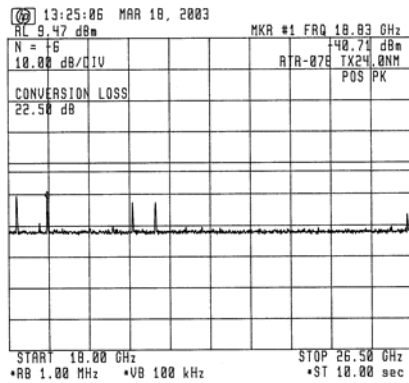
Fig. 5.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.47 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

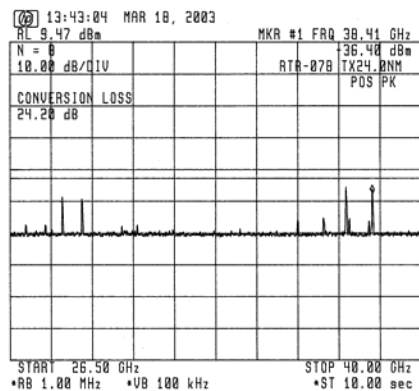
Fig. 5.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.47 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 5.4 With Filter No. 2

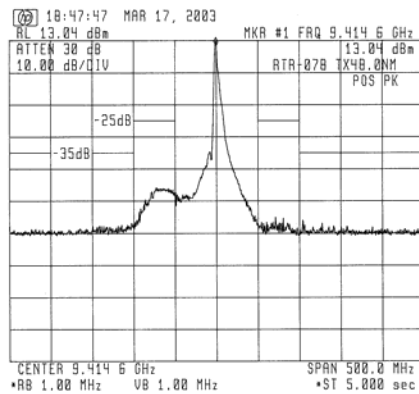


Emission limitations:

- (c)  $43 + 10 \log P_m = 52.47 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 5.5 With Filter No. 2

6 Spurious emissions for 48 nm Range:

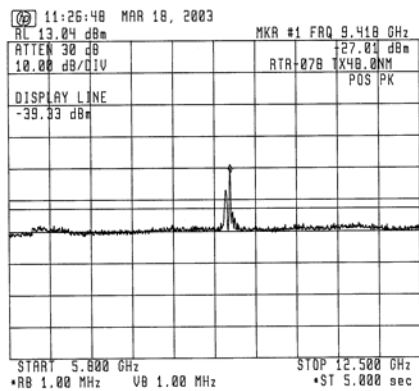


Ref. level: 13.04 dBm

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)

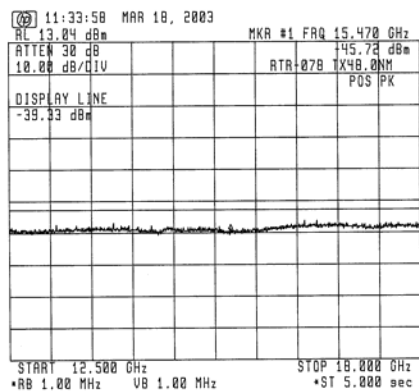
Fig. 6.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.37 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

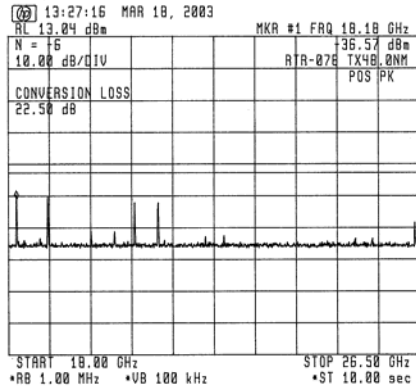
Fig. 6.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.37 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

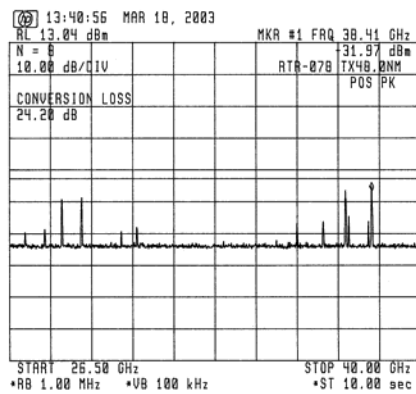
Fig. 6.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 52.37 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 6.4 With Filter No. 2

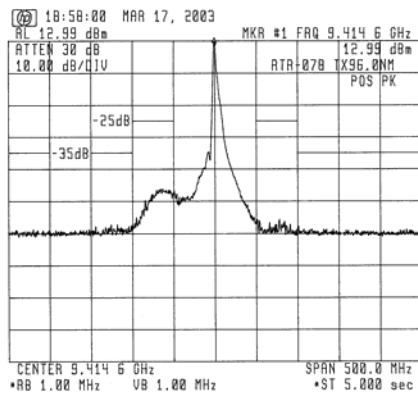


Emission limitations:

- (c)  $43 + 10 \log P_m = 52.37 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 6.5 With Filter No. 2

7 Spurious emissions for 96 nm Range:

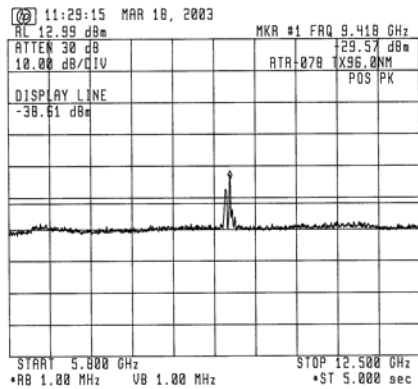


Ref. level: 12.99 dBm

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)

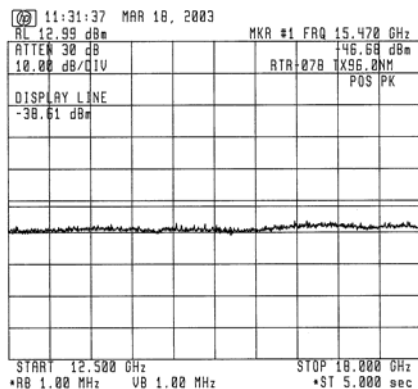
Fig. 7.1 Without Filter



Emission limitations:

- (c)  $43 + 10 \log P_m = 51.6 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

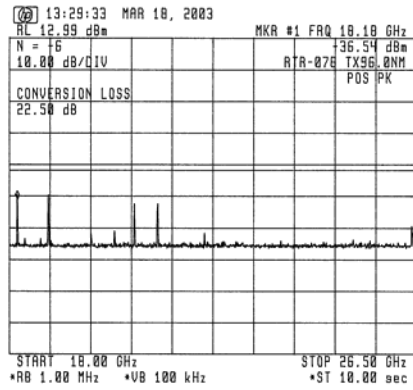
Fig. 7.2 With Filter No.1



Emission limitations:

- (c)  $43 + 10 \log P_m = 51.6 \text{ dB}$  for more than 250 % of the authorized BW (100 MHz)

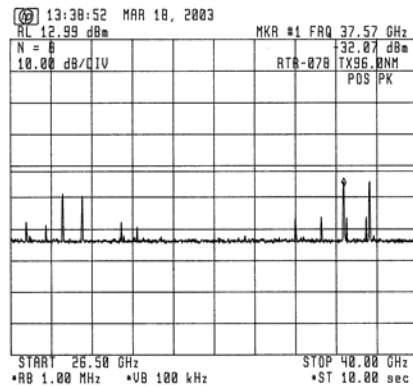
Fig. 7.3 With Filter No. 2



Emission limitations:

- (c)  $43 + 10 \log P_m = 51.6 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

Fig. 7.4 With Filter No. 2

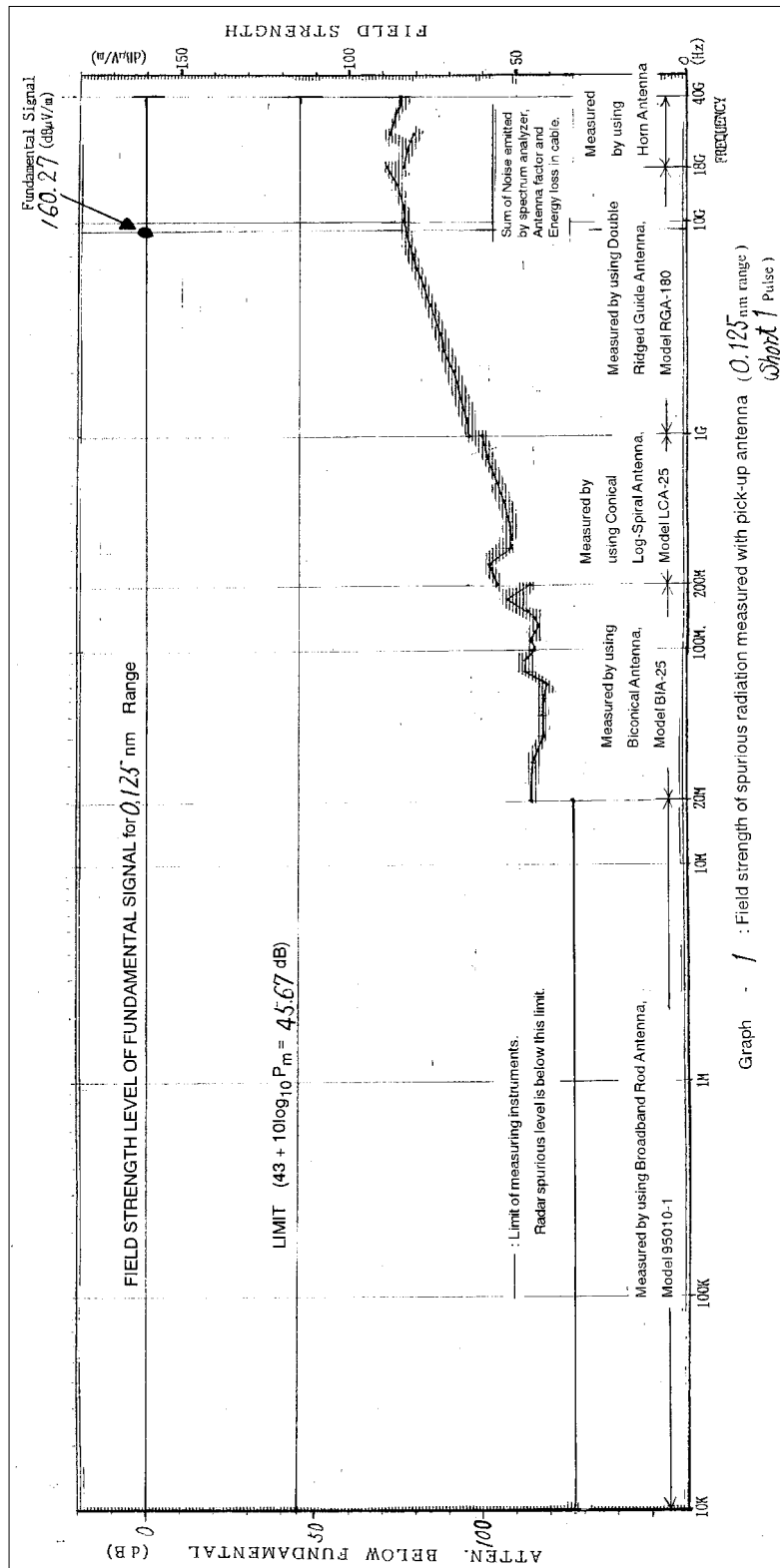


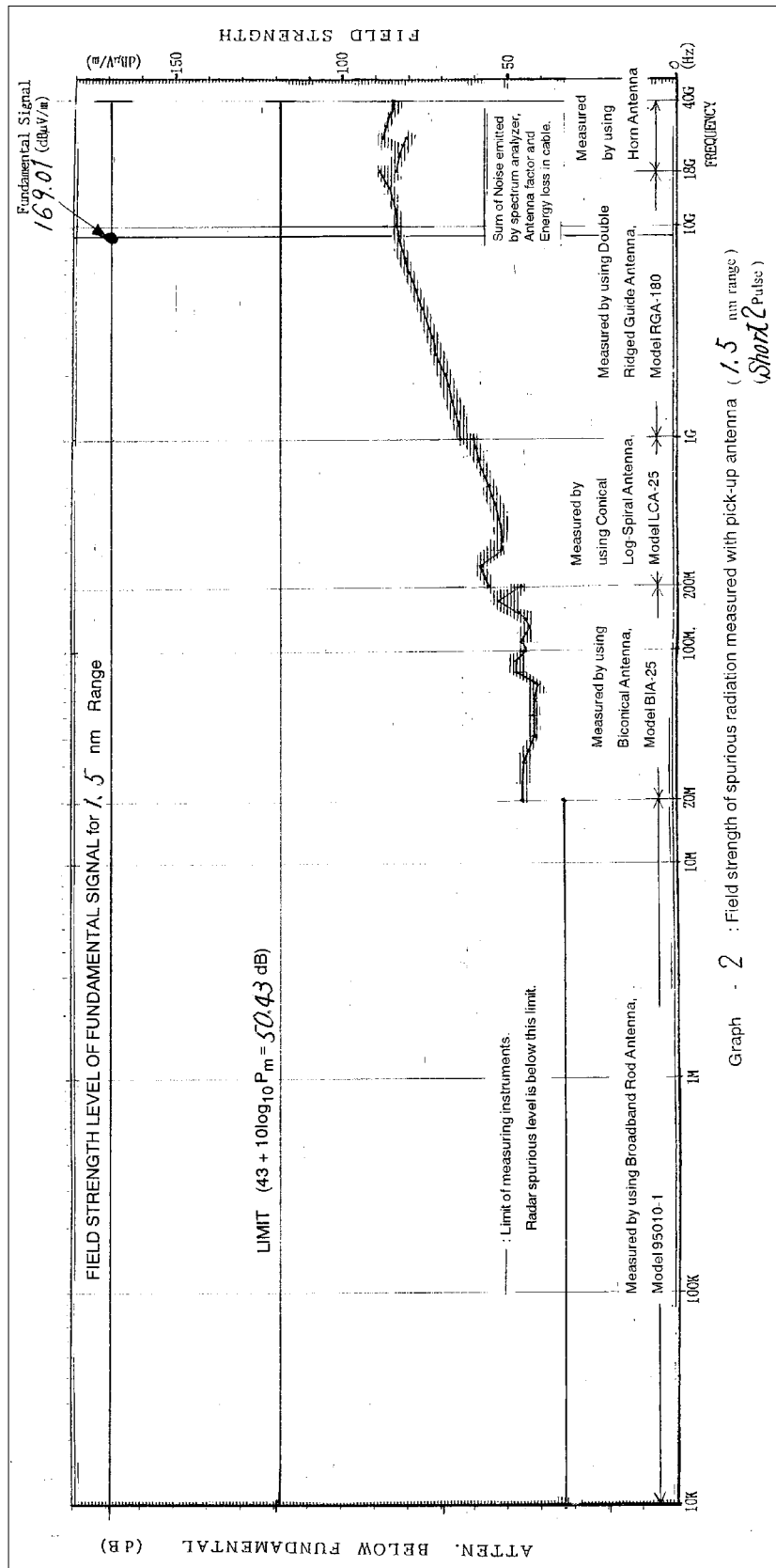
Emission limitations:

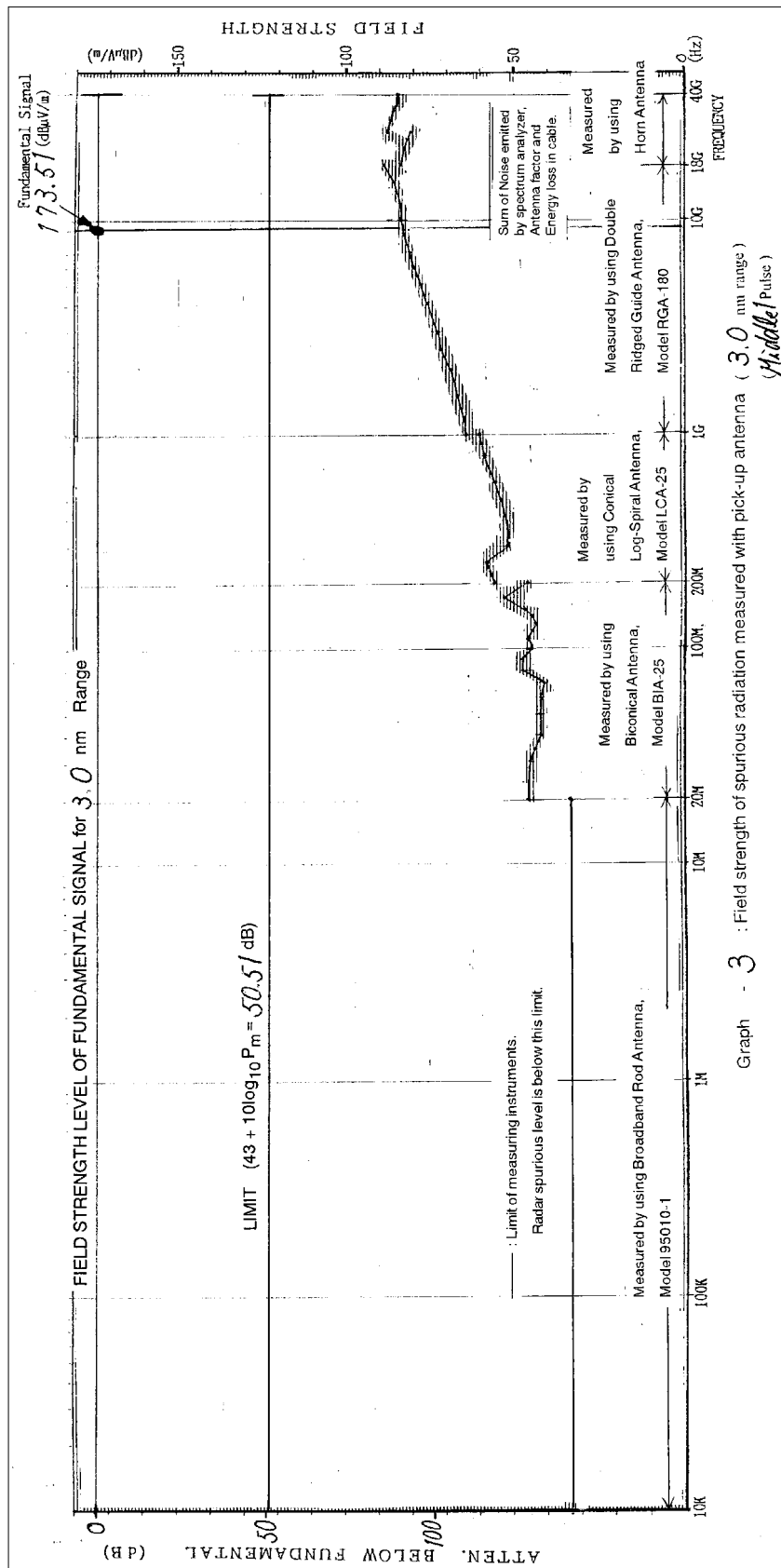
- (c)  $43 + 10 \log P_m = 51.6 \text{ dB}$   
for more than 250 % of  
the authorized BW (100 MHz)

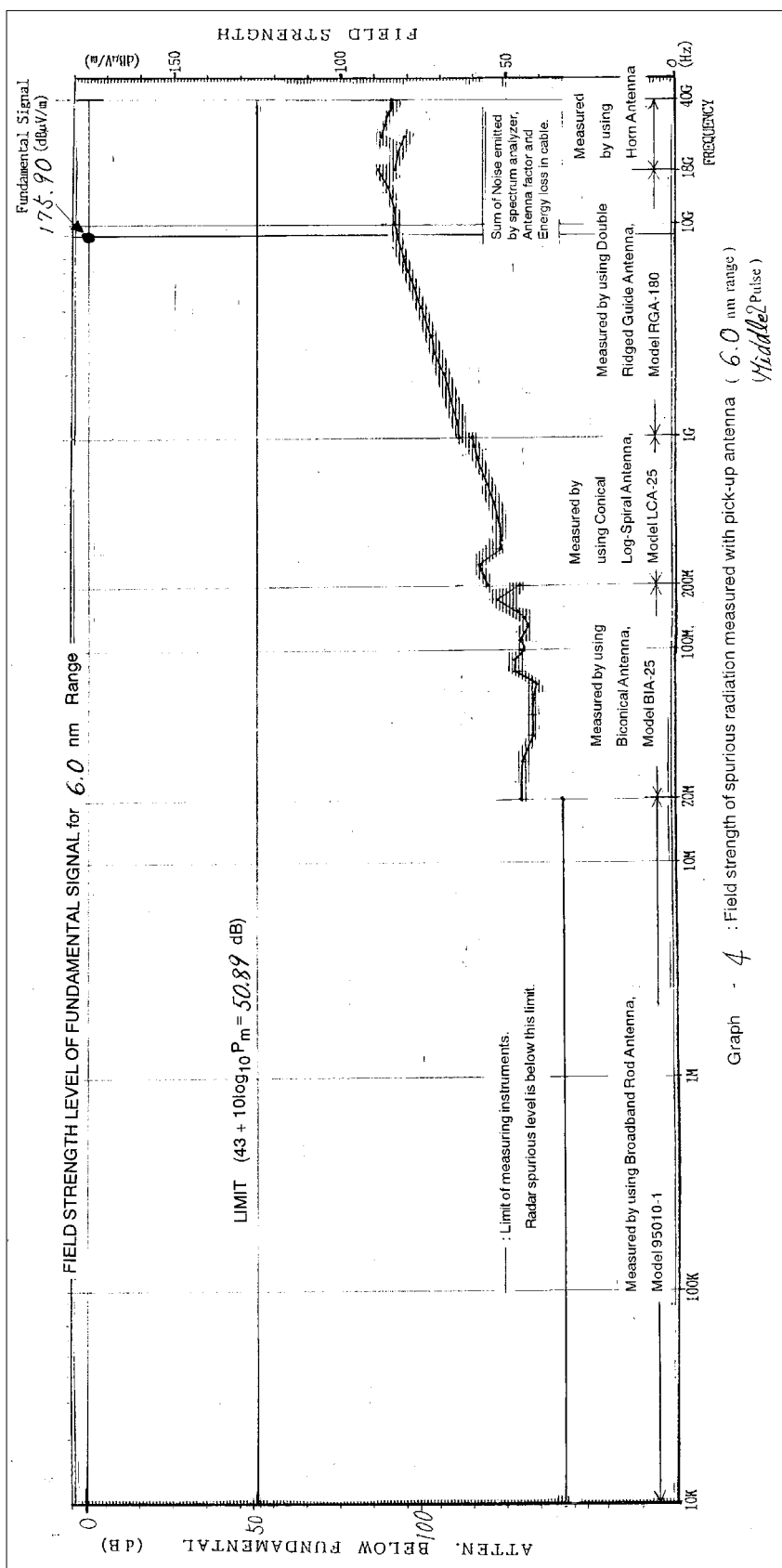
Fig. 7.5 With Filter No. 2

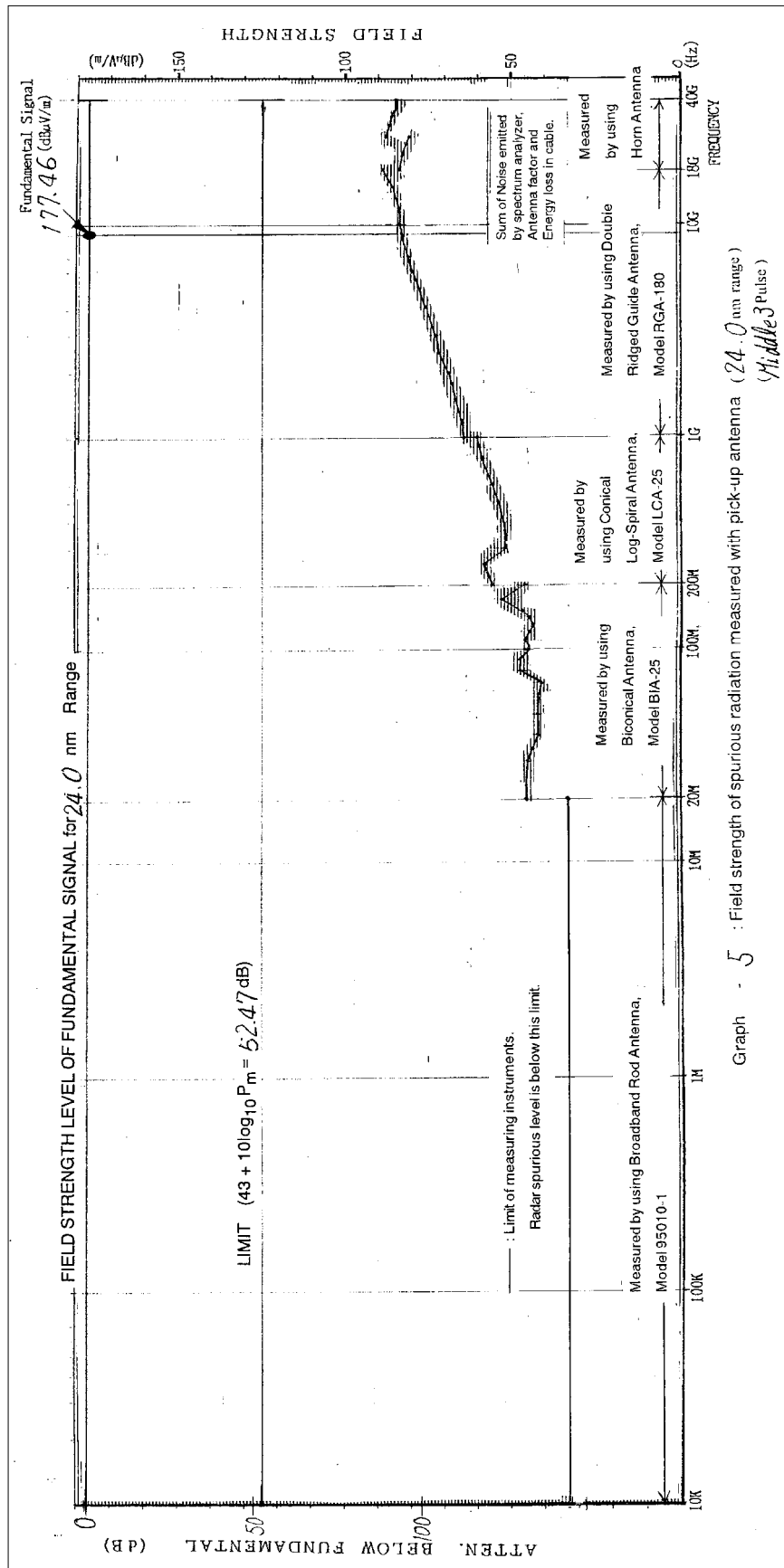
**ATTACHMENT B TEST DATA for Clause 3.5 FIELD STRENGTH OF SPURIOUS RADIATION**

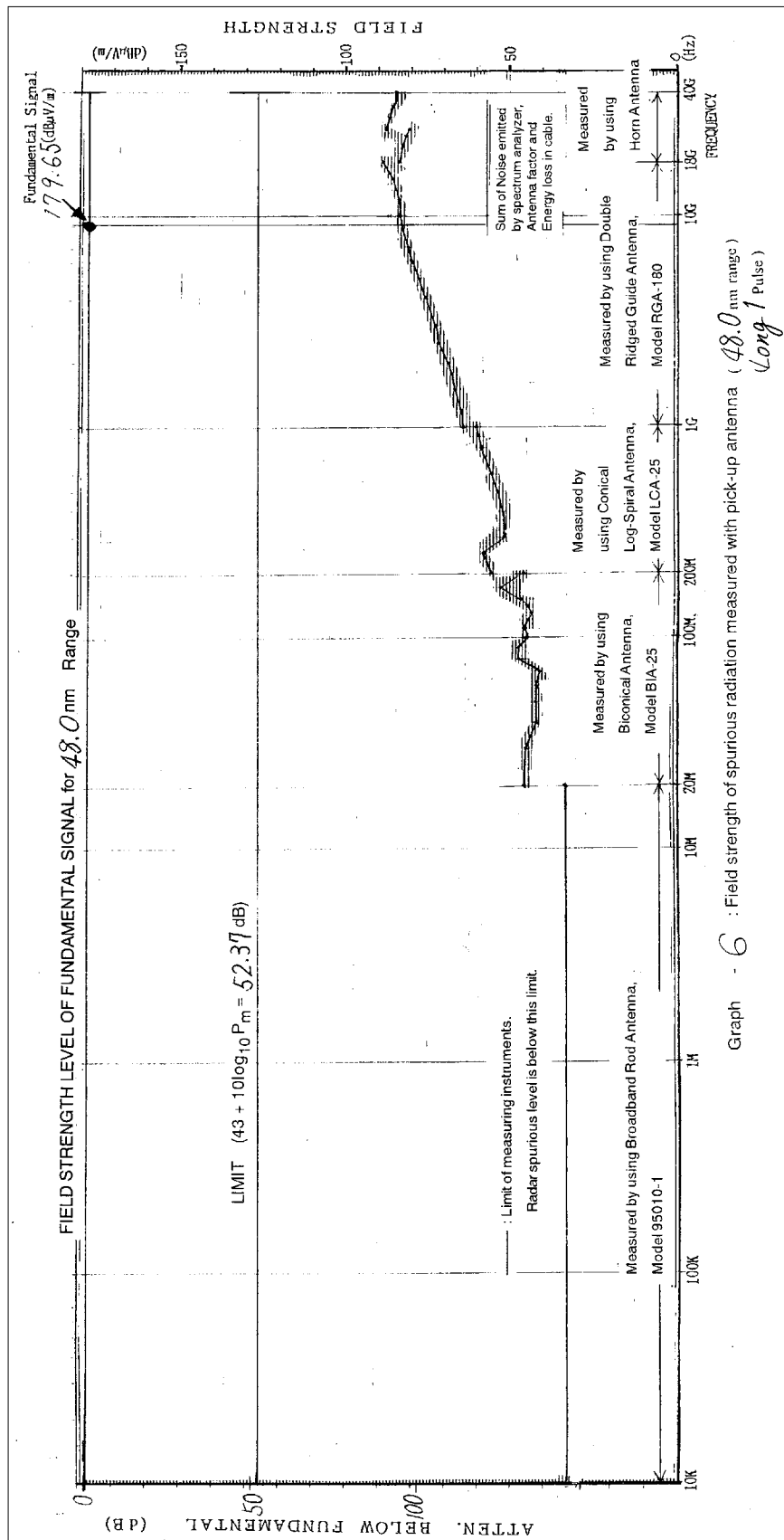


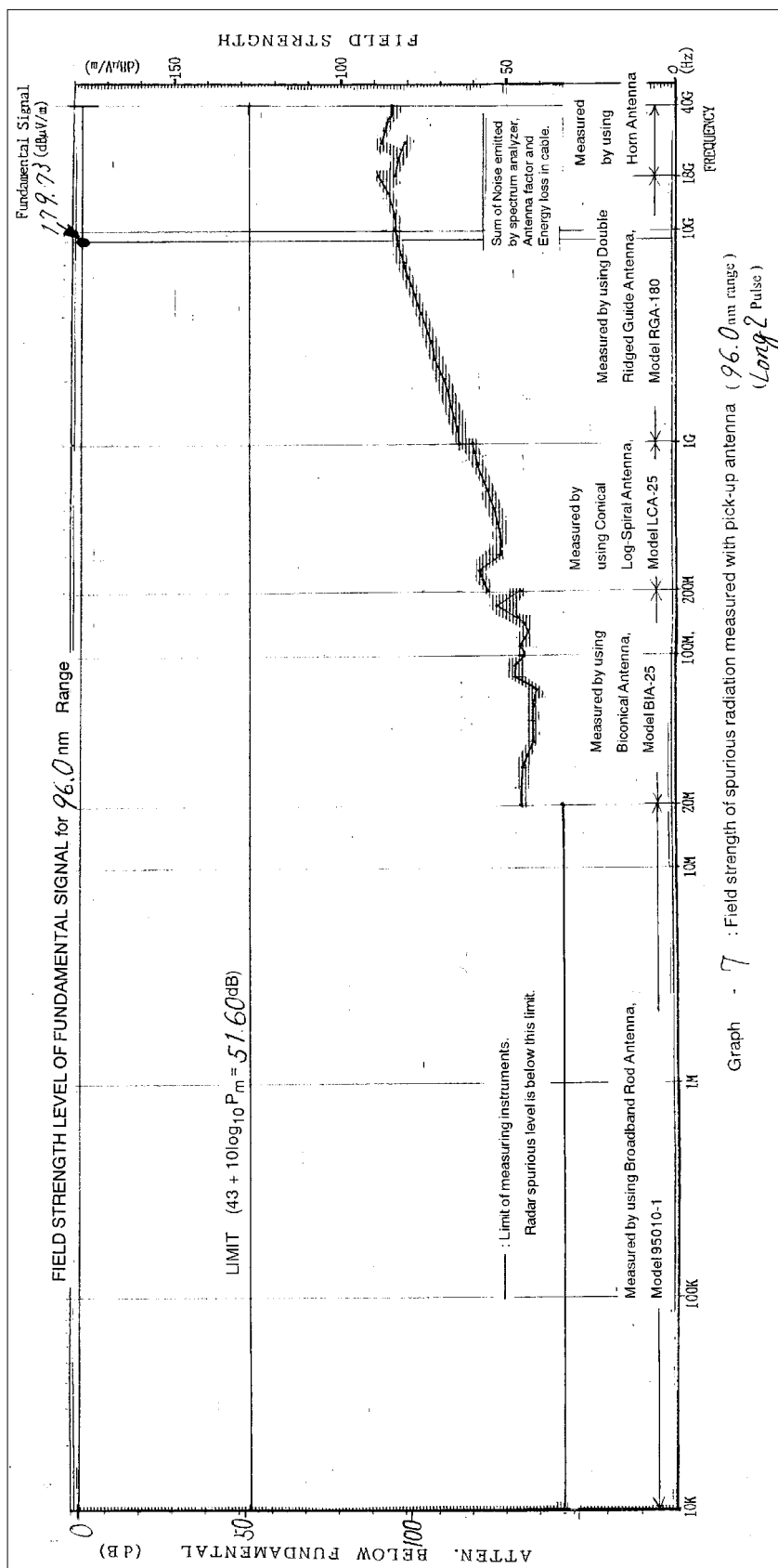












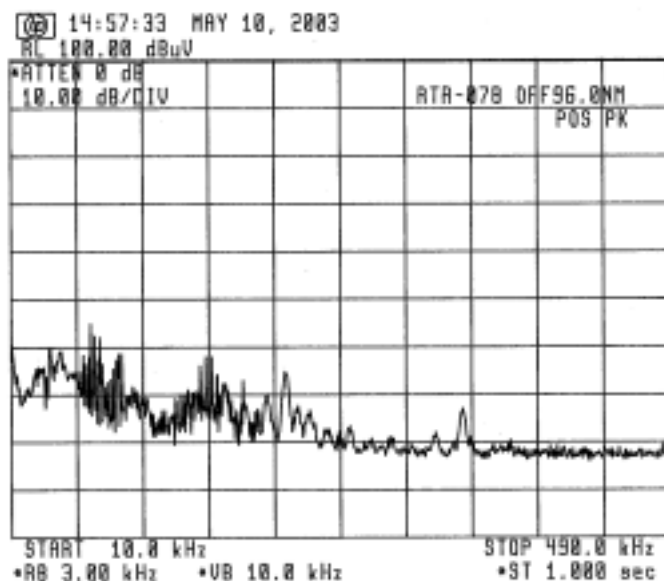
## ATTACHMENT C

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

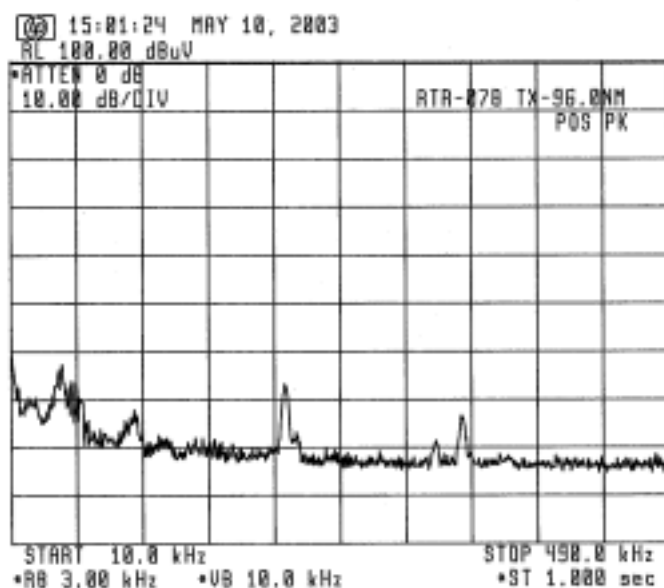
### 1 Harmful Interference to Receiver

(Band: 14 kHz - 490 kHz)

a) Radar Power: OFF

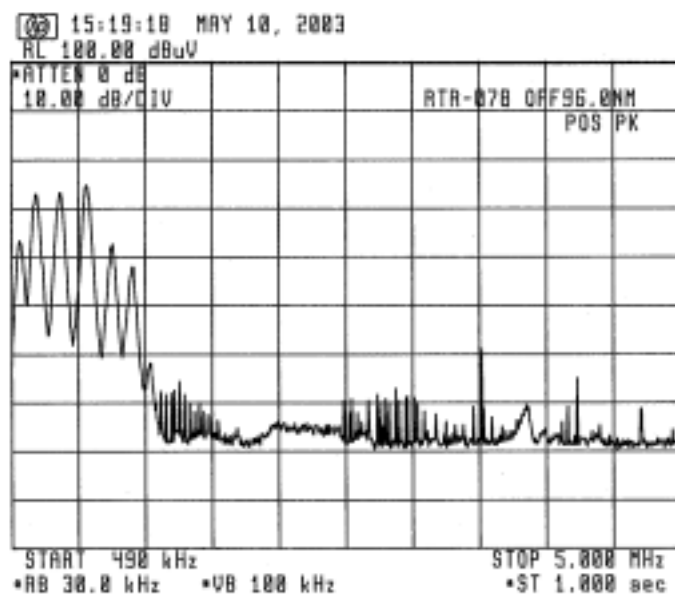


b) Radar TX: ON

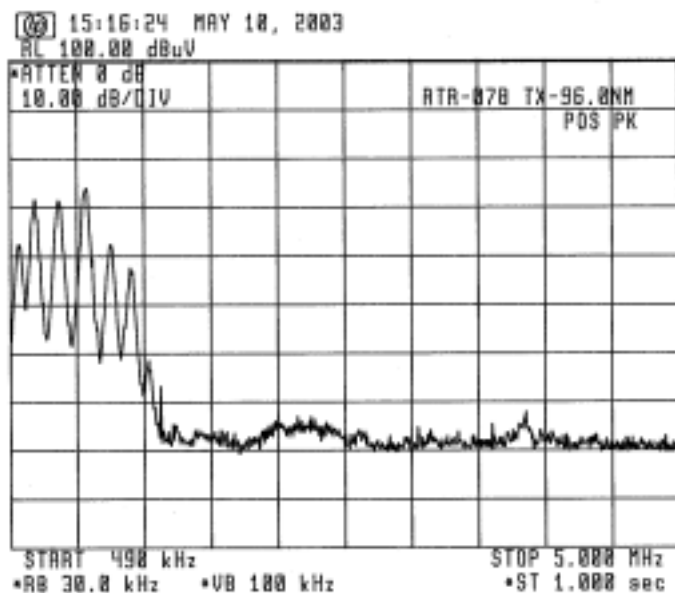


(Band: 490 kHz - 5 MHz)

a) Radar Power: OFF

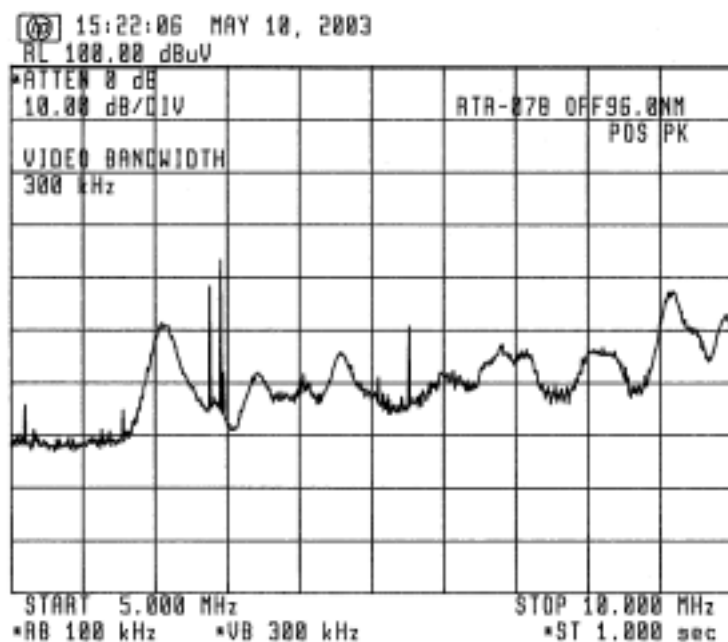


b) Radar TX: ON

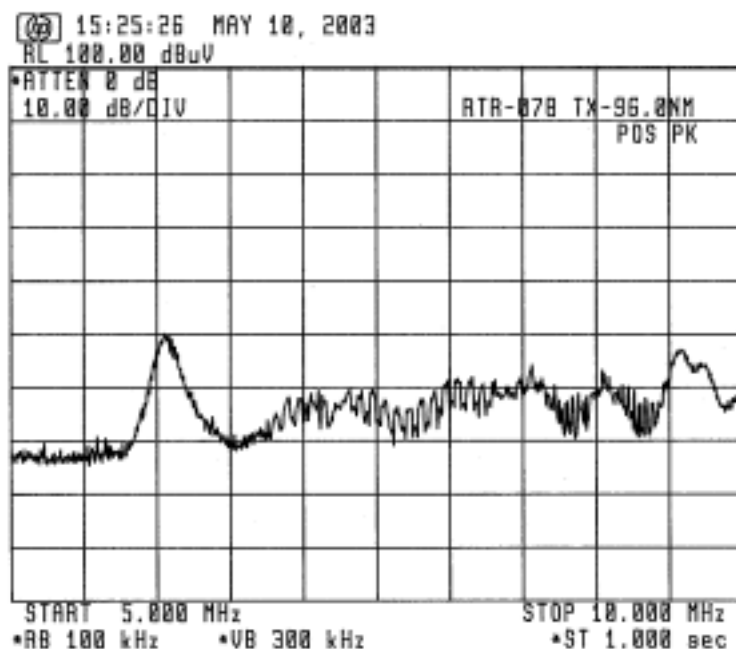


(Band: 5 MHz - 10 MHz)

a) Radar Power: OFF

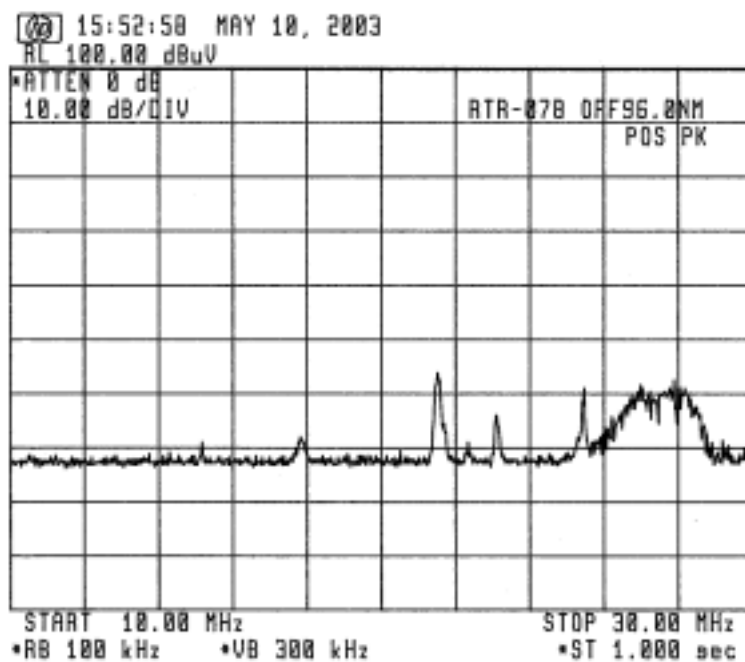


b) Radar TX: ON

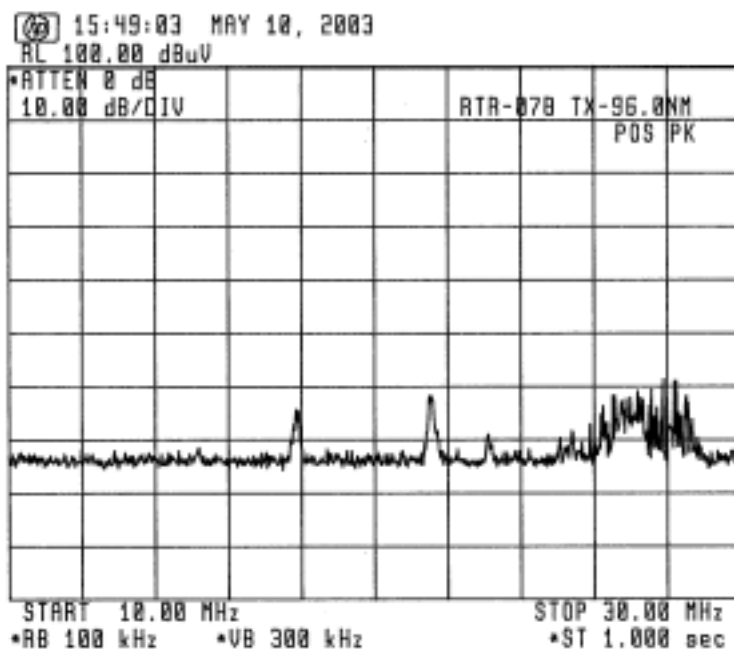


(Band: 10 MHz - 30 MHz)

a) Radar Power: OFF

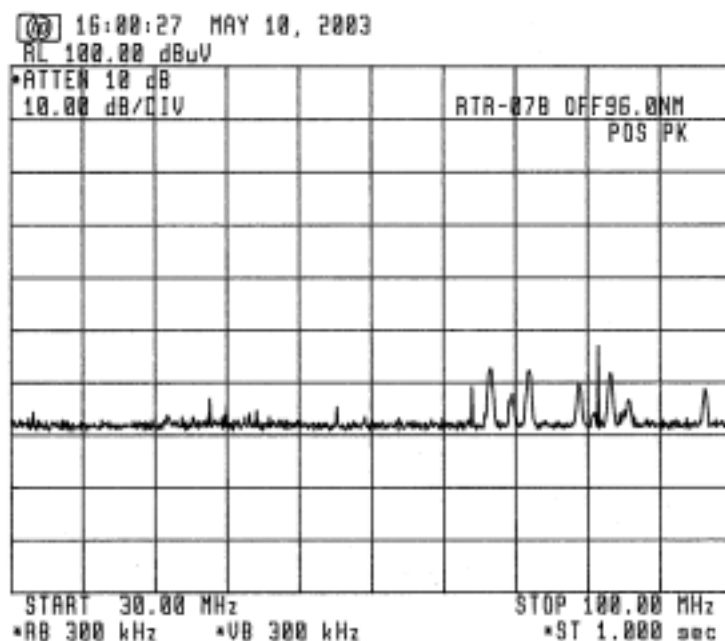


b) Radar TX: ON

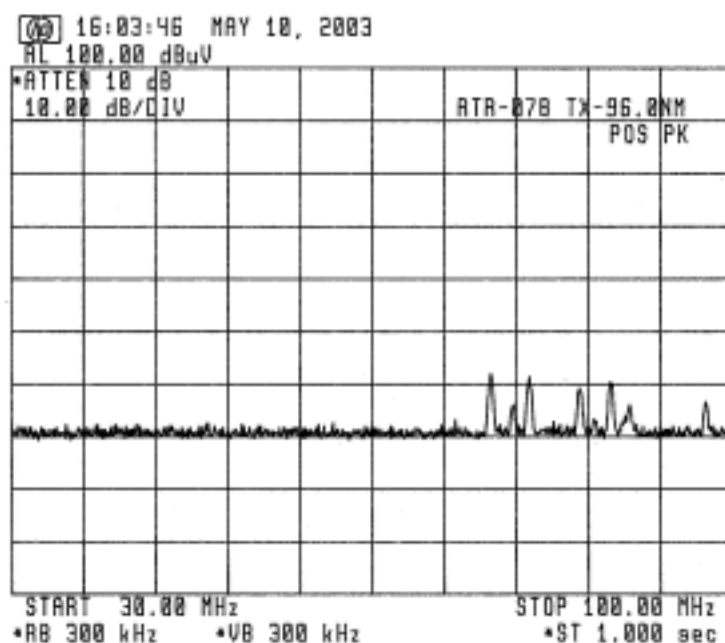


(Band: 30 MHz - 100 MHz)

a) Radar Power: OFF

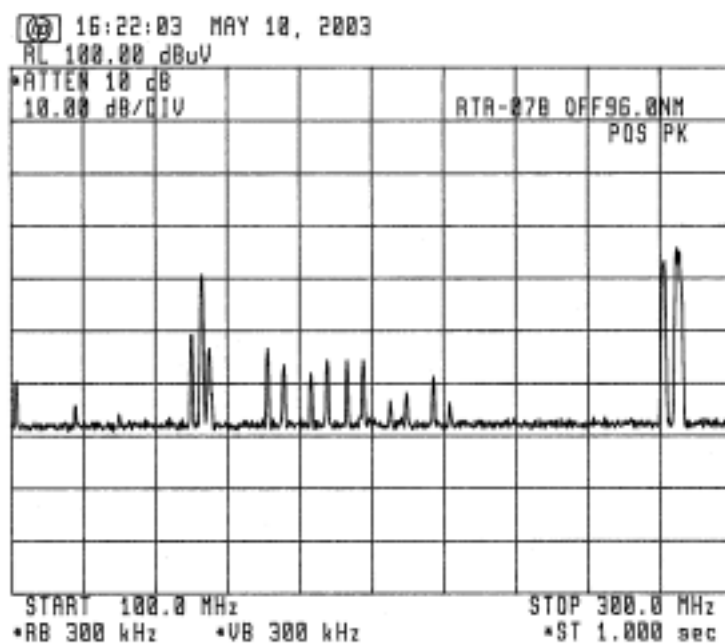


b) Radar TX: ON

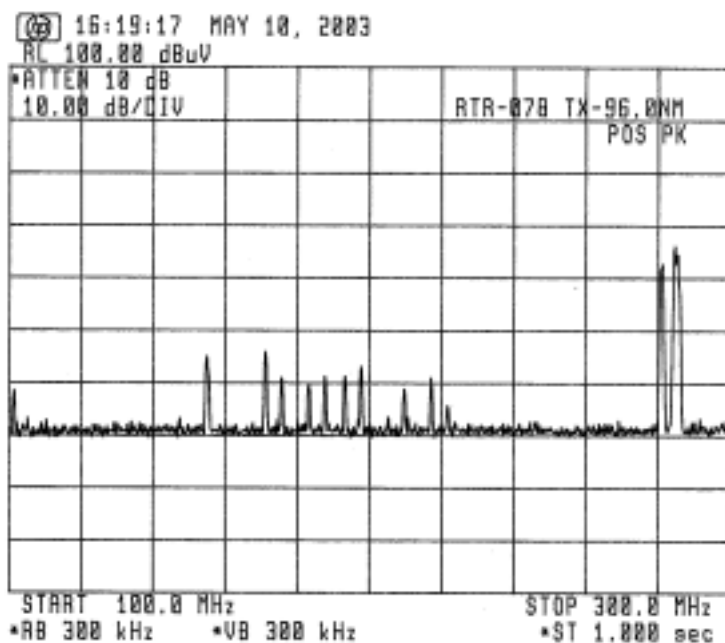


(Band: 100 MHz - 300 MHz)

a) Radar Power: OFF

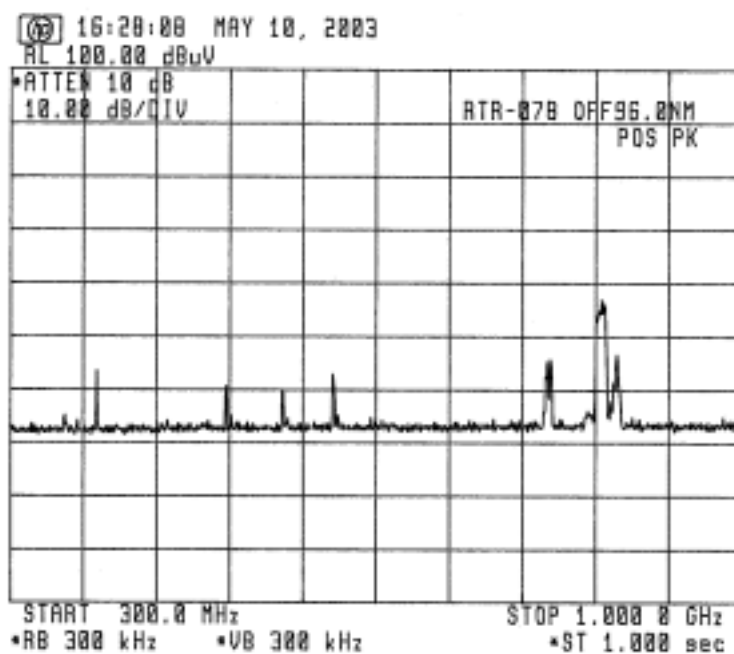


b) Radar TX: ON

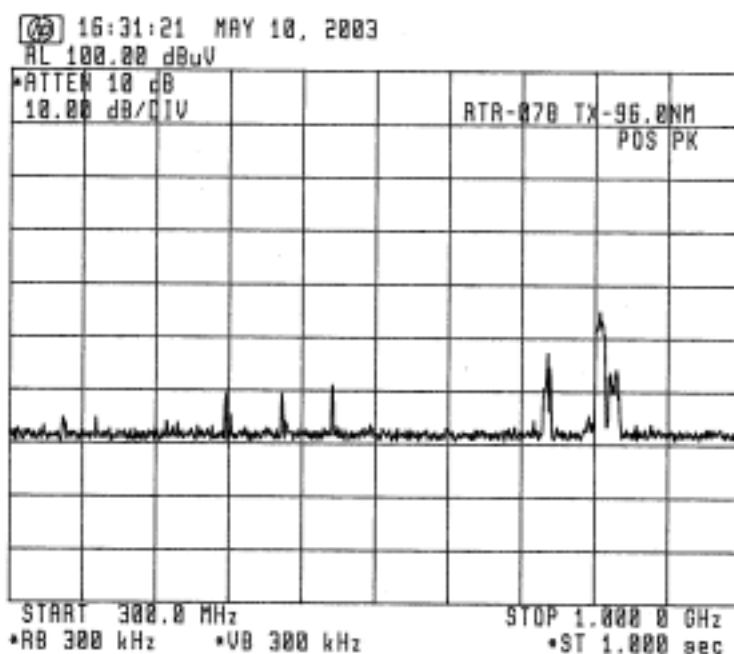


(Band: 300 MHz - 1 GHz)

a) Radar Power: OFF



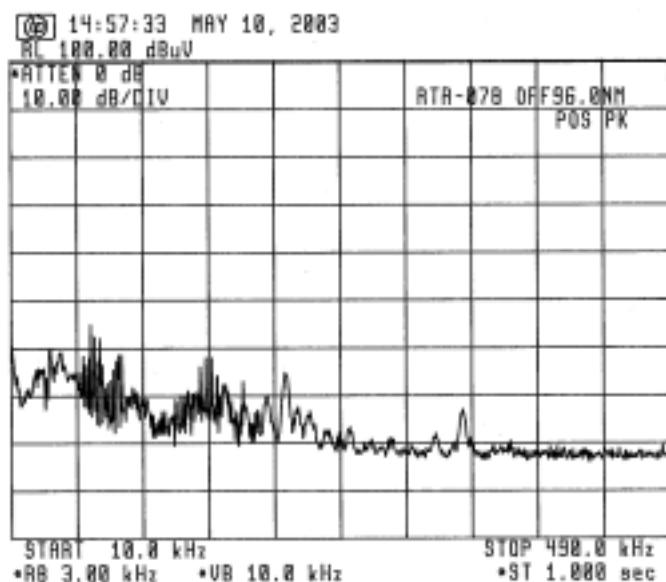
b) Radar TX: ON



## 2 Electromagnetic Field

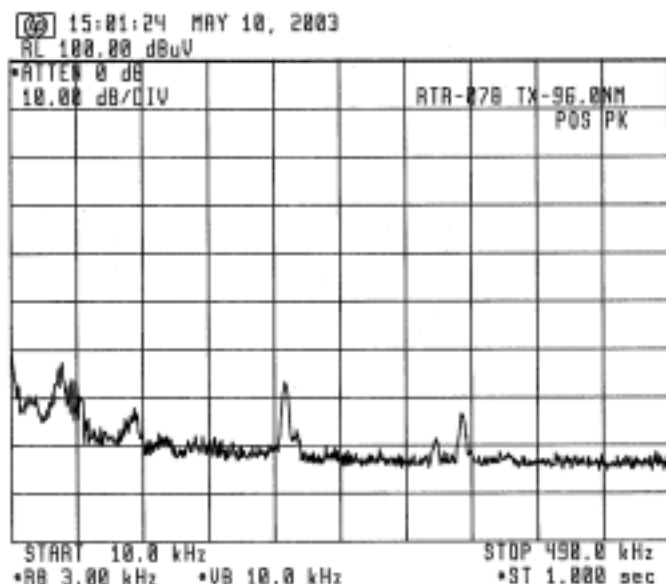
(Band: 14 kHz - 490 MHz, Limit at 1 nm = 0.1  $\mu$ V/m = -20 dB $\mu$ V/m)

a) Radar Power: OFF



Ref. level = -26 dB $\mu$ V/m

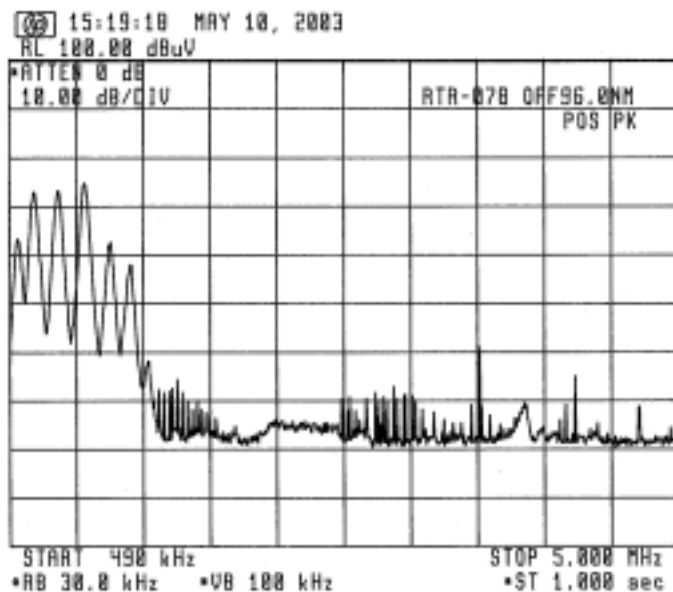
b) Radar TX: ON



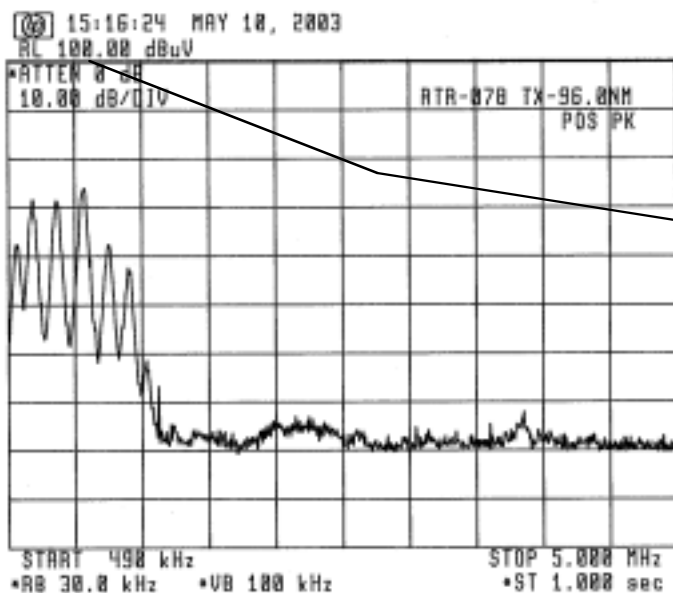
Ref. level = -26 dB $\mu$ V/m

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

a) Radar Power: OFF



b) Radar TX: ON



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

= 100 - 126 = -26 (at 0.5 MHz)

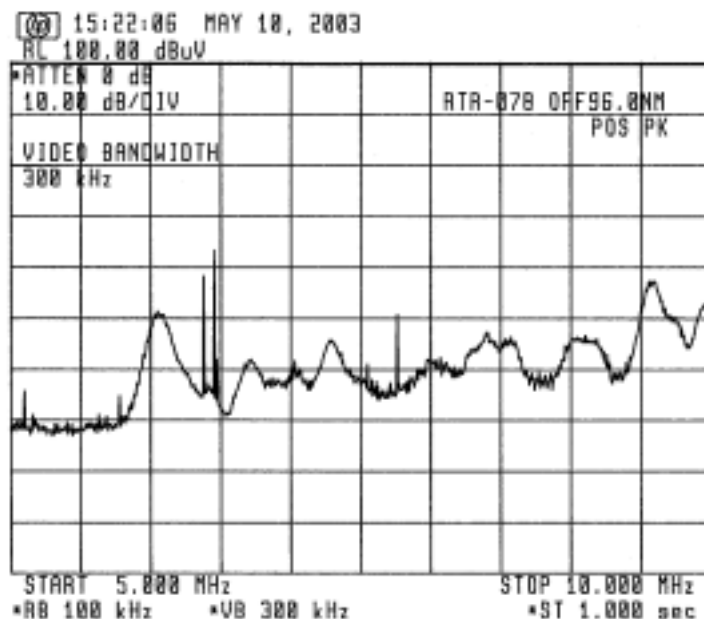
= 100 - 96 = 4 (at 3 MHz)

= 100 - 88 = 12 (at 5 MHz)

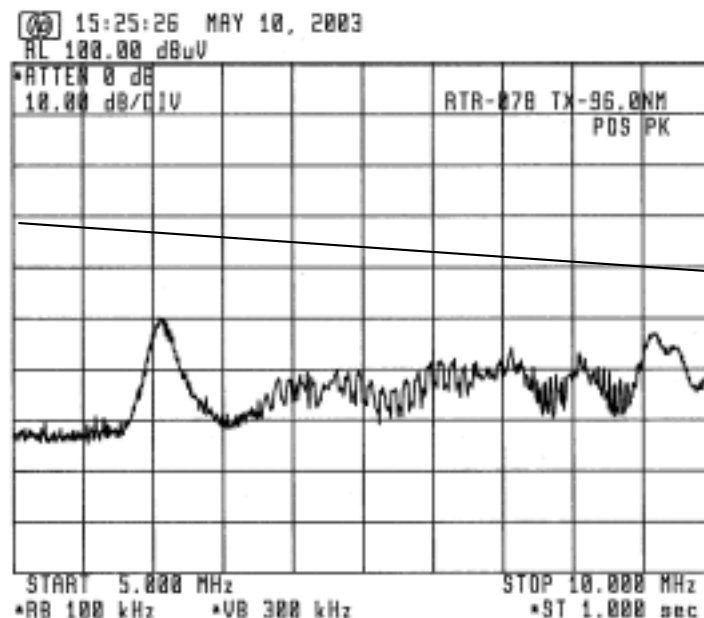
-20 dB $\mu\text{V/m}$  limit line

(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)

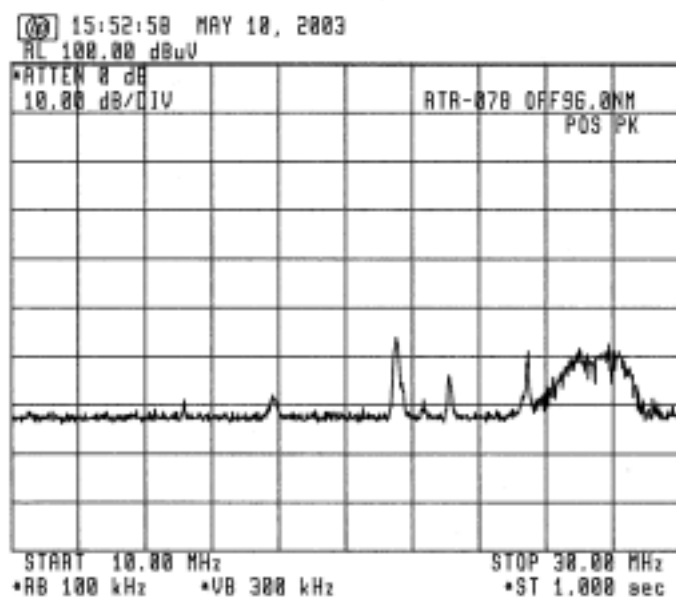
= 100 - 83 = 17 (at 7 MHz)

= 100 - 78 = 22 (at 10 MHz)

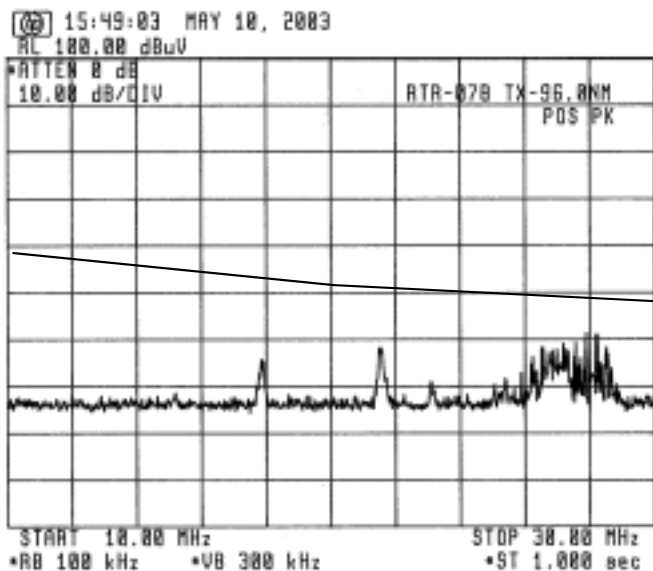
-20 dB $\mu\text{V}/\text{m}$  limit line

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

a) Radar Power: OFF



b) Radar TX: ON

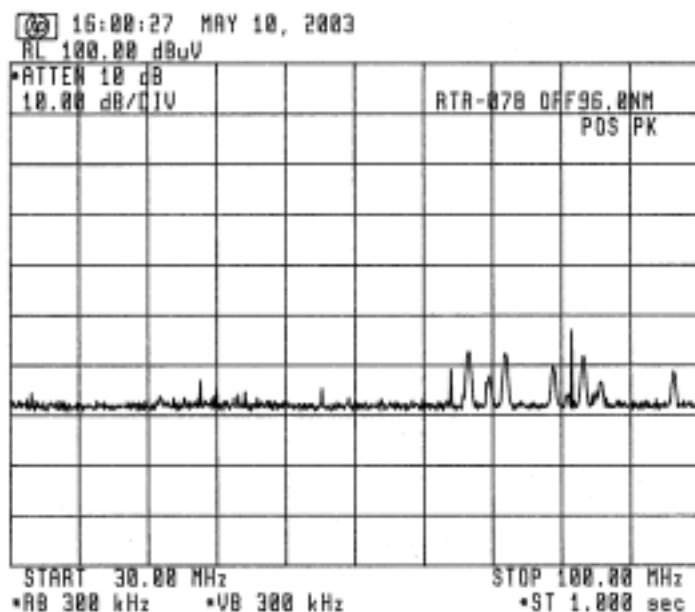


Ref. level (dB $\mu\text{V/m}$ )  
 = 100 - 78 = 22 (at 10 MHz)  
 = 100 - 70 = 30 (at 20 MHz)  
 = 100 - 67 = 33 (at 30 MHz)

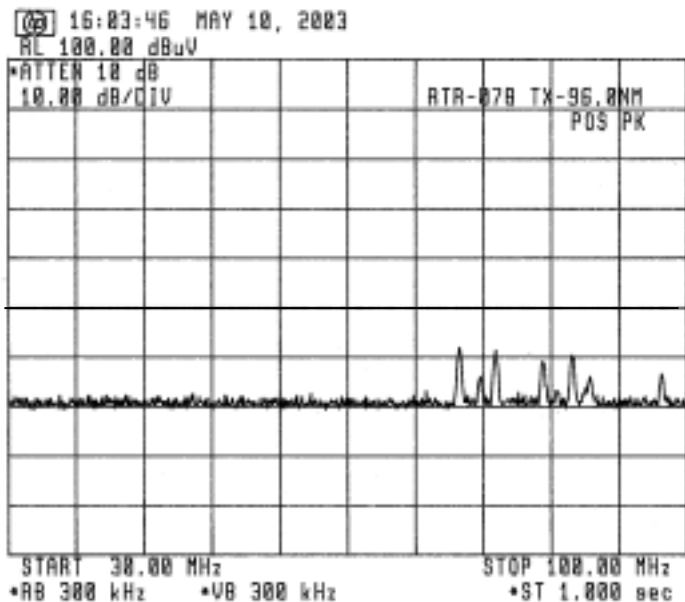
-20 dB $\mu\text{V/m}$  limit line

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

a) Radar Power: OFF



b) Radar TX: ON



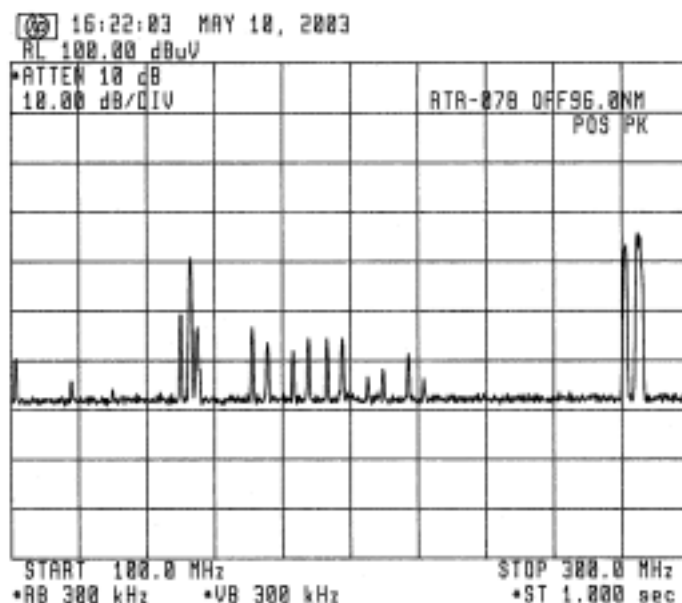
Ref. level (dB $\mu\text{V}/\text{m}$ )

= 100 - 61 = 39

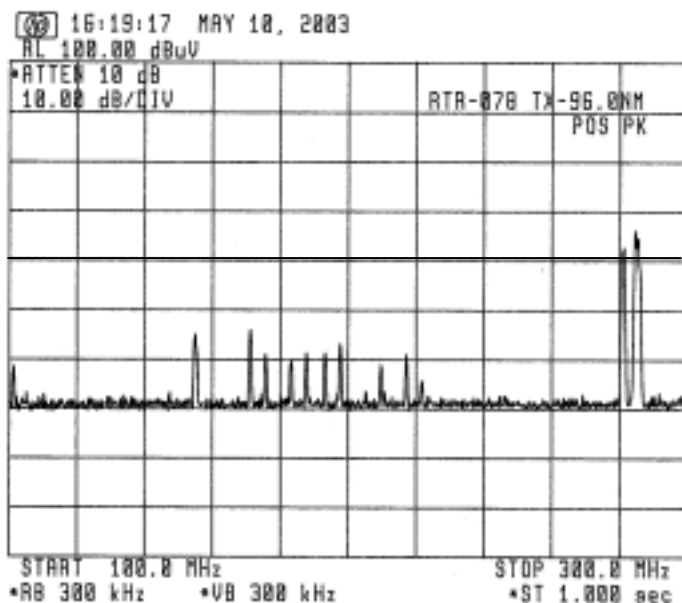
-10.5 dB $\mu\text{V}/\text{m}$  limit line

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

a) Radar Power: OFF



b) Radar TX: ON



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

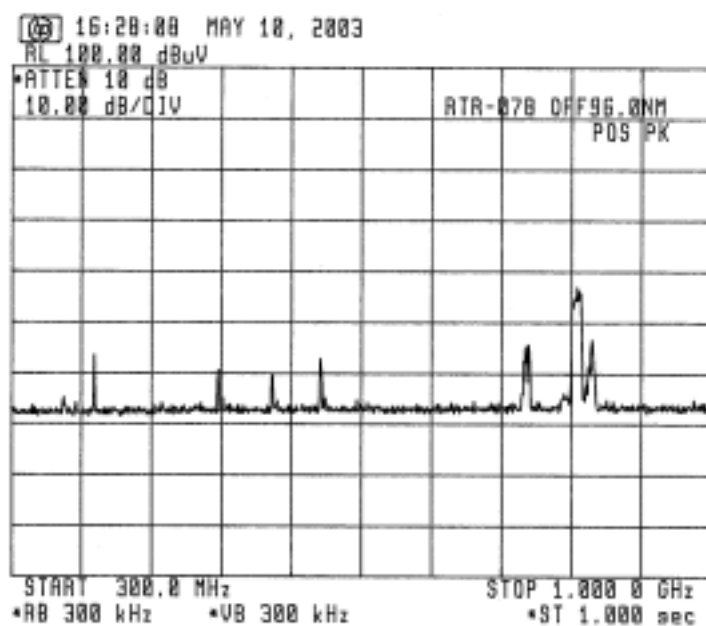
0 dB $\mu\text{V}/\text{m}$  limit line

Note:

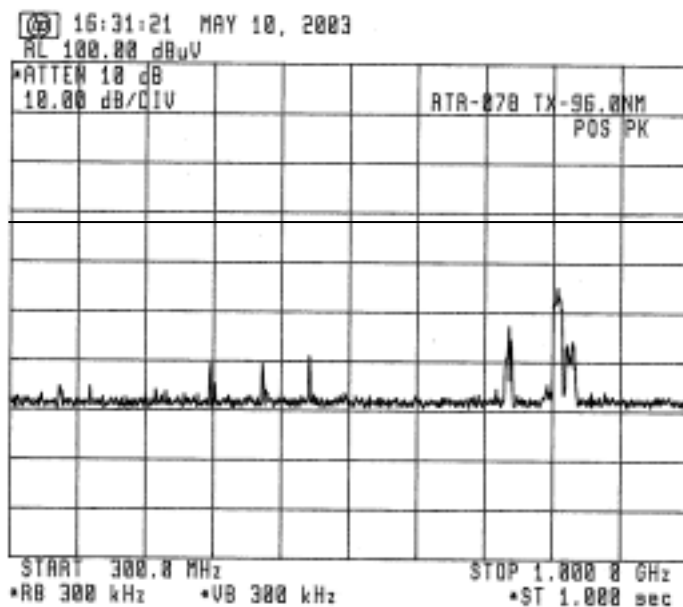
All components above the limit  
are from external noise or  
signals, not from Radar.

(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)

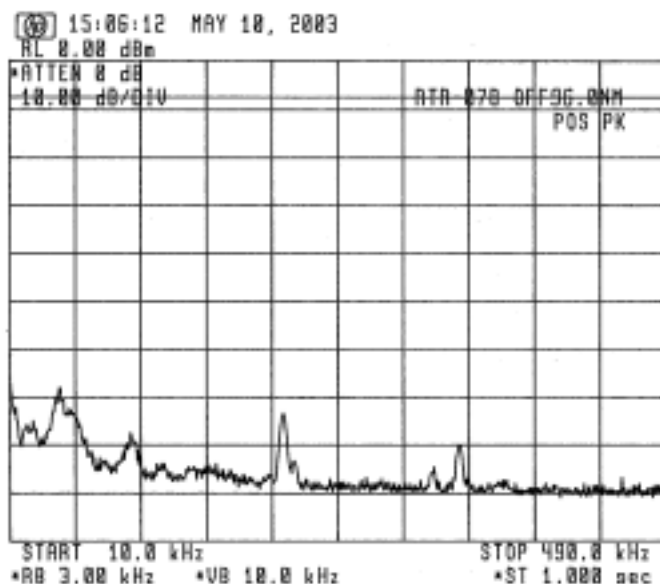
= 100 - 59.5 = 40.5

9.5 dB $\mu$ V/m limit line

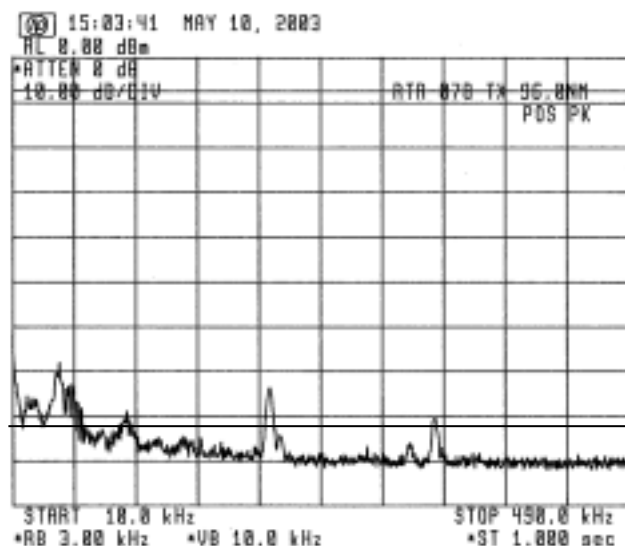
## 3 Power Input to an Artificial Antenna

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

a) Radar Power: OFF



b) Radar TX: ON



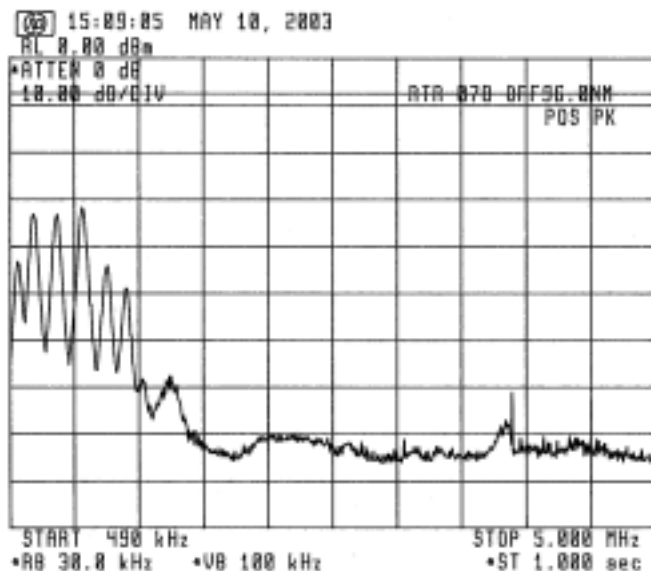
Note:

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

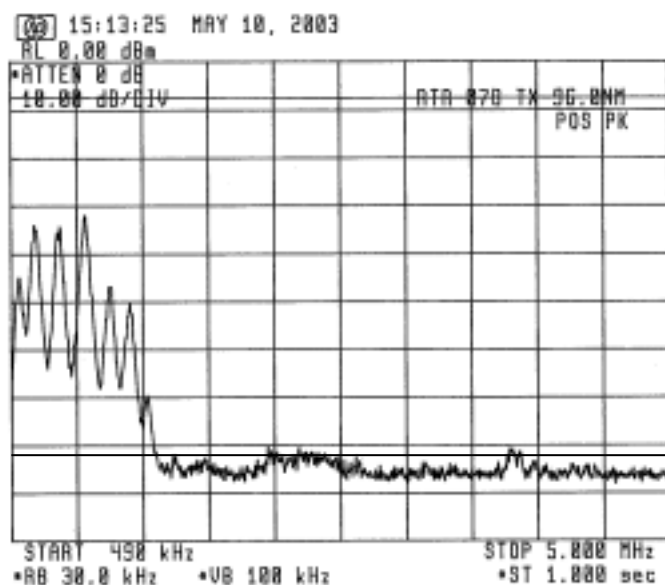
-81 dBm limit line

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

a) Radar Power: OFF



b) Radar TX: ON



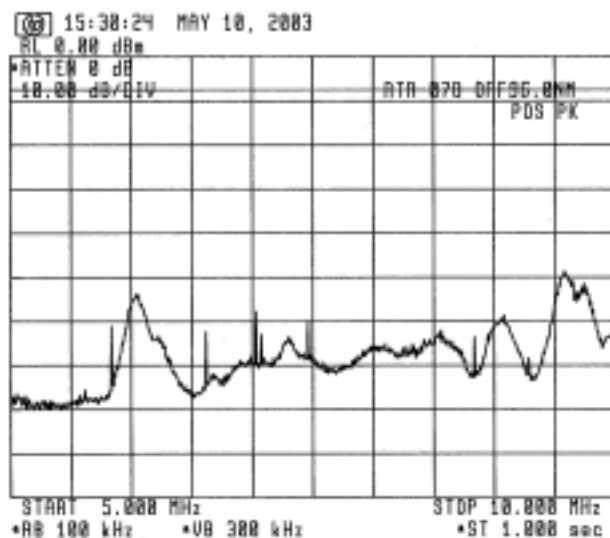
Note:

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

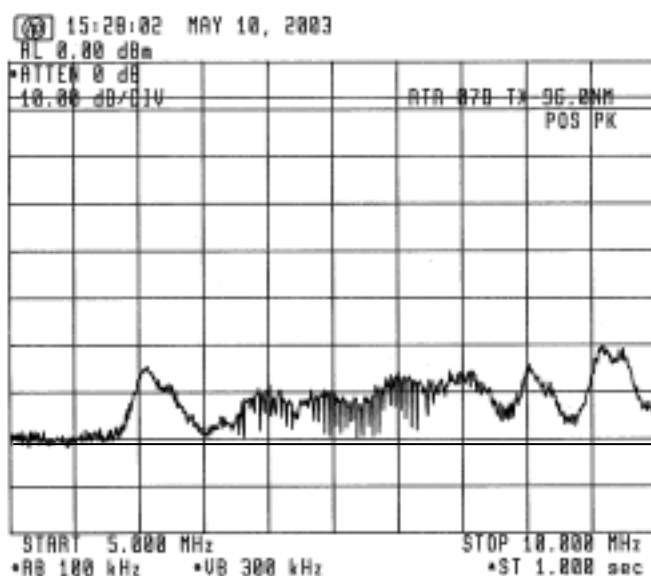
-81 dBm limit line

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

a) Radar Power: OFF



b) Radar TX: ON



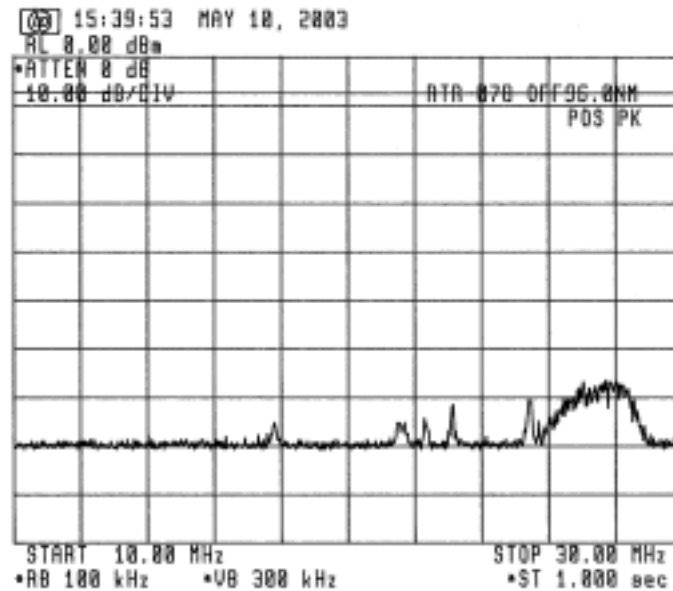
Note:

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

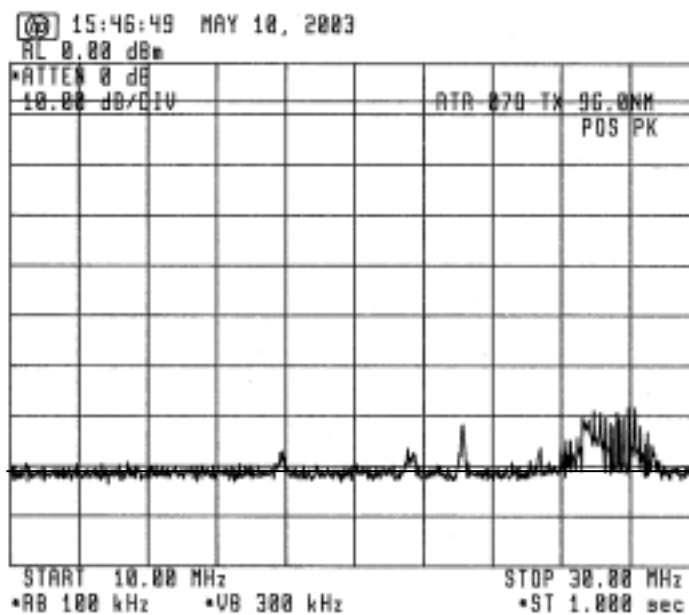
-81 dBm limit line

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

a) Radar Power: ON



b) Radar TX: ON



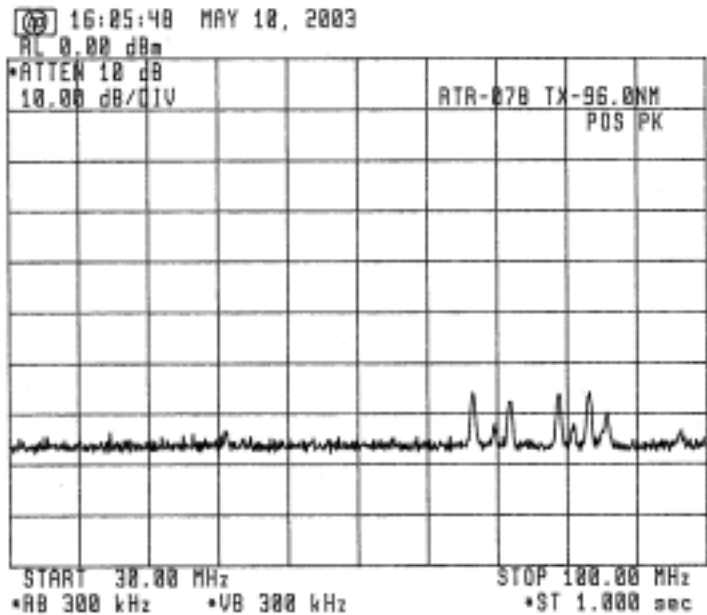
Note:

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

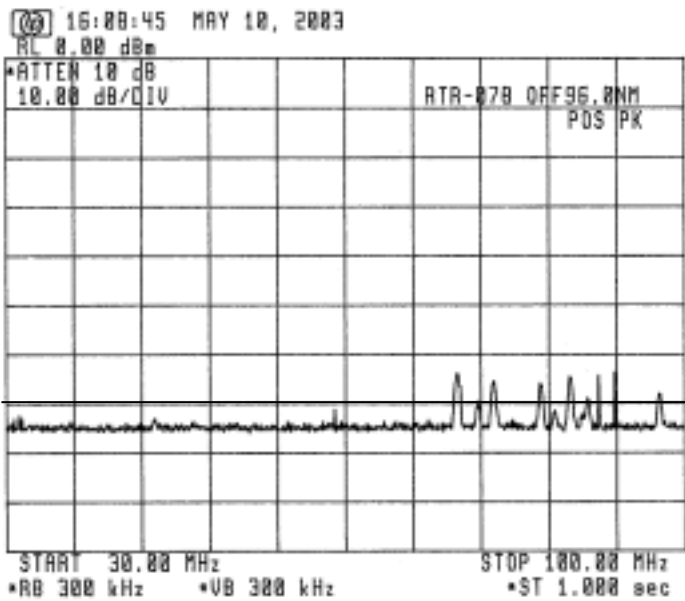
-81 dBm limit line

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

a) Radar Power: OFF



b) Radar TX: ON

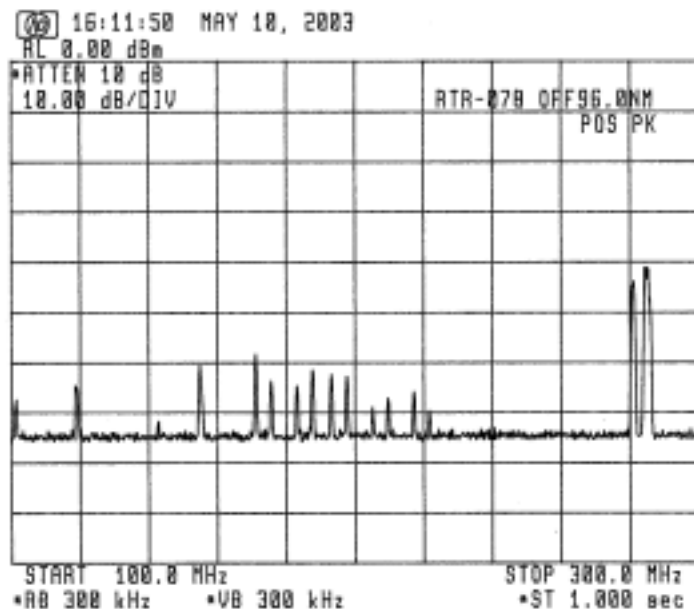


Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

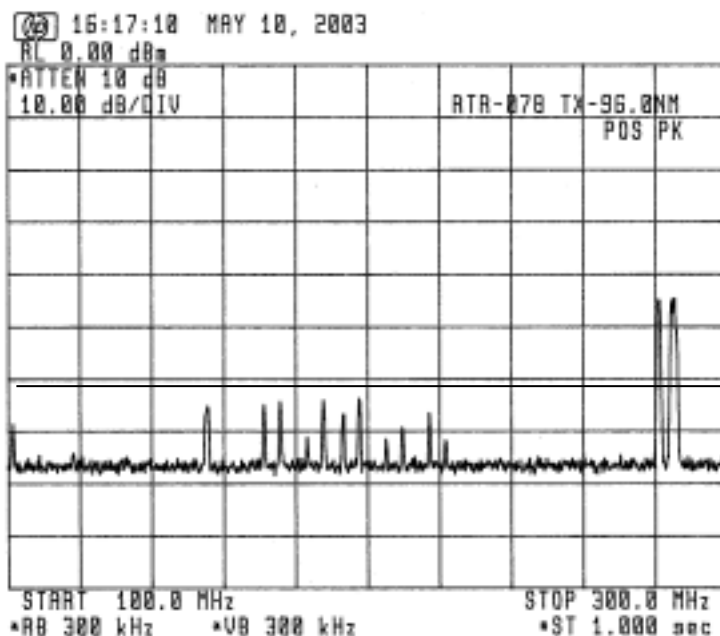
-71 dBm limit line

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

a) Radar Power: OFF



b) Radar TX: ON

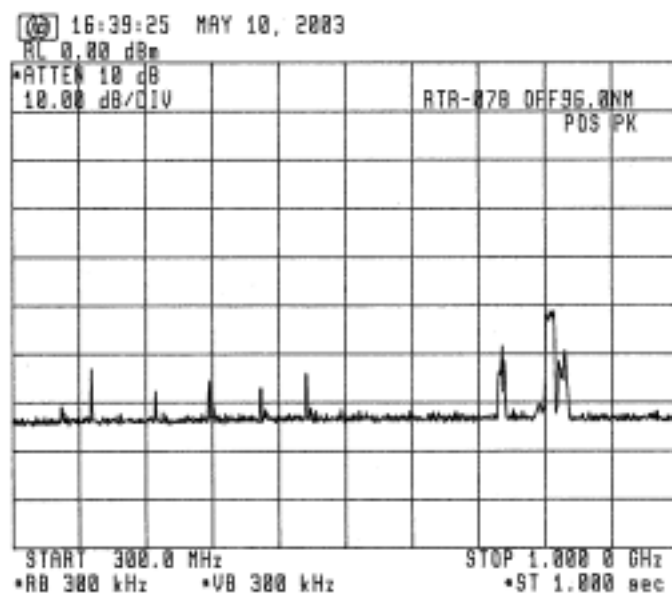


Note:  
All components above the limit  
are from external noise or  
signals, not from Radar.

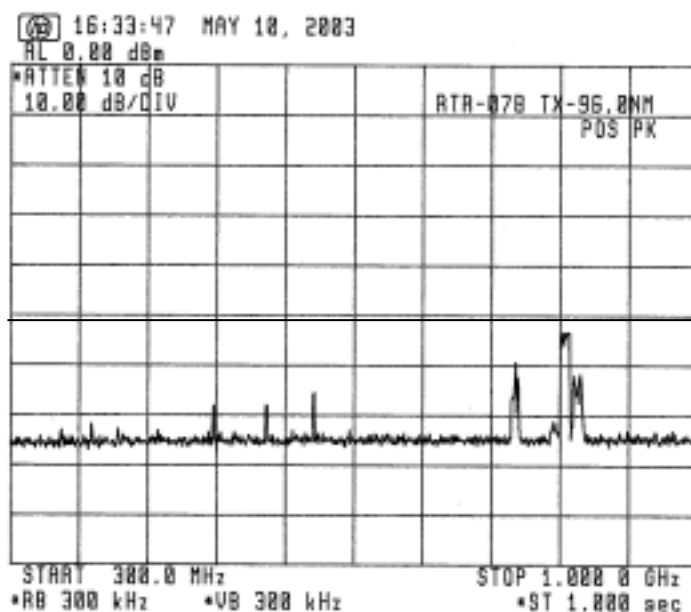
-61 dBm limit line

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

a) Radar Power: OFF



b) Radar TX: ON



-51 dBm limit line

**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     |