



A KONGSBERG Company

NAVIGATION AND
COMMUNICATION
SYSTEMS

**REPORT FOR TESTING
RS87 TO EN 801 843-1**

REPORT NUMBER: EMC047

**ELECTROMAGNETIC COMPATIBILITY
AND RADIO SPECTRUM MATTERS (ERM)
ELECTROMAGNETIC COMPATIBILITY (EMC)
FOR RADIOTELEPHONE TRANSMITTERS AND RECEIVERS FOR THE
MARITIME MOBILE SERVICE OPERATING IN THE VHF BANDS**

Simrad Ltd
RS87 Test Report to EN 301 843-2

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SECTION 1 INTRODUCTION

This report contains the results of tests performed on the product RS87 VHF radio with DSC, on this premises of :

**Simrad Ltd
Star Lane
Margate
Kent**

Simrad Ltd complies with the accreditation criteria requirements of the quality standards, BS EN ISO 9001:1994. The accreditation covers the quality system of the EMC test department as well as the, design, manufacture, distribution, aftersales, marketing and support of communications and marine electronics for the leisure, commercial and military markets, as described in the certificate of approval bearing the certificate number AJA02/4543 and was granted on 28th January 2002.

All testing was carried out within the EMC test department of Simrad Ltd, to the requirements of EN 801 843-1 V1.1.1(2001-02).

Testing carried out by:

Report checked by:

Date:

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SECTION 2 PRODUCT

A sample of the following product was submitted for testing:

Maritime Integrated VHF/DSC Radiotelephone with ATIS

Manufacture: *Simrad Ltd*

Parts of Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Serial Number: *TA / EMC Unit 1*

Software Release: *Issue 1*

Particulars: *DSC Class D*

SECTION 3 TEST SCHEDULE

All tests were carried out within the EMC department at Simrad Ltd.

The sample unit was tested between the following dates: 13th January 2003 - 1st February 2003.

The RS87 VHF radio with DSC & ATIS, is intended for use in the following application area:

MARINE COMMUNICATIONS EQUIPMENT; and was tested to ETSI EN 801 843-1 V1.1.1(2001-02).

The following tests shown below were carried out on a sample of the RS87 VHF radio with DSC & ATIS

Test Clause	Description of Test	Date of Test
8.1.2.1	<i>Radiated Emissions (150kHz-30Mhz)</i>	<i>30/1/03-1/2/03</i>
8.2	<i>DC Power Ports</i>	<i>01/02/2003</i>
9.1	<i>RF Electromagnetic Field (80Mhz-1Ghz)</i>	<i>15-31/1/2003</i>
9.2	<i>Electrostatic Discharge</i>	<i>01/02/2003</i>
9.3	<i>Fast Transient</i>	<i>01/02/2003</i>
9.4	<i>Conducted disturbances induced by RF fields (150Khz-80Mhz)</i>	<i>01/02/2003</i>
9.6	<i>Power Supply Failure</i>	<i>01/02/2003</i>

Exempt from Testing

Test Clause	Description of Test	Reason
8.1.2.2	<i>Radiated Emissions (30Mhz-1Ghz)</i>	<i>This test is covered by EN 301 025 V1.1.1 (1998-08), See test report for RS87 VHF radio with DSC & ATIS to EN 301 025.</i>
9.5	<i>Power Supply Short Term Variation</i>	<i>This test is required on AC power input ports only, the RS87 requires a 12v DC input only, therefore is exempt.</i>
9.7	<i>Surge</i>	<i>This test is required on AC power input ports only, the RS87 requires a 12v DC input only, therefore is exempt.</i>

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SECTION 4 TEST TECHNICAL DETAILS

Test Unit =	<i>RS87 VHF Radio with DSC & ATIS.</i>	
Serial Number =	<i>TA / EMC UNIT 2</i>	
Additional Parts =	<i>Telephone handsets x 4 / External Speakers x 2 / Hailers x 2</i>	
Nominal Voltage =	<i>12.0 Volts</i>	
Upper Frequency =	<i>162.975MHz</i>	
Lower Frequency =	<i>155.025MHz</i>	
Second Receiver Frequency =	<i>156.525MHz</i>	
Channel Spacing =	<i>25.0kHz</i>	
First IF Main Rx =	<i>21.4MHz</i>	
Second IF Main Rx =	<i>455.0kHz</i>	
First IF 2nd Rx =	<i>17.9MHz</i>	
Second IF 2nd Rx =	<i>455.0kHz</i>	
Rated Audio Power =	<i>2.0 Watts</i>	<i>(external speaker)</i>
	<i>2 mW</i>	<i>(handset earphone)</i>
Rated Audio Load =	<i>4 Ohms</i>	<i>(external speaker)</i>
	<i>228 Ohms</i>	<i>(handset earphone)</i>

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SECTION 5 SUMMARY OF TEST RESULTS

Clause No	Description of Test	Complies?
8.2	<i>Radiated Emissions (150kHz-30Mhz)</i>	Yes
8.2	<i>Radiated Emissions (30Mhz-1Ghz)</i>	Yes*
8.3	<i>DC power in/out</i>	Yes
9.2	<i>RF electromagnetic field (80Mhz-1Ghz)</i>	Yes
9.3	<i>Electrostatic Discharge</i>	Yes
9.4	<i>Fast Transients</i>	Yes
9.5	<i>Radio Frequency - Common Mode</i>	Yes
9.6.1	<i>Power Supply Short Term Variations</i>	Yes*
9.6.2	<i>Power Supply Failure</i>	Yes
9.7	<i>Surge</i>	Yes*

Note: * = See Section 3 (exempt from testing)

The test sample of RS87 VHF radio with DSC & ATIS has successfully passed a series of tests to EN 801 843-1 V1.1.1(2001-02), which indicate its compliance with the EMC criteria of ETSI EN 801 843-1 V1.1.1(2001-02).

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SECTION 6

RADIATED EMISSIONS

Clause : 8.2

Definition: *This test assesses the ability of the EUT to limit unwanted emissions from the enclosure.*

Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Method: *As per EN 801 843, clause 8.1.2.1.*

Results:

General conditions:

Date of test: *15th to 31st January 2003*

Temperature: *Tnom (20°C)*

Rated power: *25 Watts*

Supply: *Vnom (12V)*

Channel tested: *156.800MHz*

To identify any potential emissions the EUT was placed inside a anechoic chamber, connected to 12v dc power supply. With the radio placed in receive and (25w) transmit mode, a measurement scan was then carried out in all axis under software control, and the emissions compared against the limits as defined in table 1, Clause 8.2.3 EN 801 843 V1.1.1.

Results from this test can be found at section 8, Plots 1 & 2, showing all measured radiated spurious emissions in the required test frequency range (150kHz-30Mhz).

Complies: Yes

Limits:

The levels of field strength of any radiated spurious emission in the frequency range 150kHz-30Mhz shall not exceed the specified values.

80dbuV - 34dbuV

Equipment used:

Equipment used refers to item numbers, specified in section 7

16, 17, 22, 27, 28, 29, 32,33, 34, 40.

Conclusion:

The EUT complies with the requirements of EN 801 843 for radiated spurious emissions between 150kHz - 30Mhz. (Clause 8.2 EN 801 843)

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POWER PORTS

Clause : 8.3

Definition: *This test assesses the ability of the EUT to limit internal noise from the power ports.*

Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Method: *As per EN 801 843, clause 8.3.2.*

Results:

General conditions:

Date of test: *1st February 2003*

Temperature: *Tnom (20°C)*

Rated power: *25 Watts*

Supply: *Vnom (12V)*

Channel tested: *156.800MHz*

To identify any potential emissions the EUT and measuring equipment were placed on and bonded to an earth plane. The 12v dc power supply was connected to the EUT via a LISN conforming to CISPR-16 with the output connected to a measuring receiver. The EUT was then placed in receive and transmit mode (25w), and a measurement scan then carried out under software control. The emissions were then compared with the limits as defined in Clause 8.3.3 EN 801 843 V1.1.1.

Results from this test can be found at section 8, Plots 3 & 4, showing all measured conducted spurious emissions detected in the frequency range (10kHz-30Mhz).

Complies: Yes

Limits:

The levels of field strength of any conducted spurious emission in the frequency range 10kHz-30Mhz shall not exceed the specified values as defined in clause 8.2.3 EN 801 843 V1.1.1.
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50-96dBuV

Equipment used:

Equipment used refers to item numbers, specified in section 7

3, 16, 17, 20, 30, 32, 35, 36, 38

Conclusion:

The EUT complies with the requirements of EN 801 843 for power ports. (Clause 8.3 EN 801 843)
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RADIO FREQUENCY ELECTROMAGNETIC FIELD

Clause : 9.2

Definition: *This test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic field disturbance at the enclosure*

Product: *RS87; Transceiver Unit with DSC controller & ATIS, Handsets, Speakers and Hailer's*

Method: *As per EN 801 843, clause 9.2.2.*

Results:

General conditions:

Date of test: 15th to 31st January 2003
Relative Humidity: 32%
Supply: Vnom (12V)
Channel tested: 156.800MHz

The EUT was placed inside an anechoic screened room, and mounted as it would be in normal operation, with the test set-up corresponding to EN 61000-4-6(5). The EUT was placed in (25w) transmit, receive intercom, hailer and auxiliary input mode whilst under test, the applied field strength, test frequency range and modulation was as described in subclause 9.2.2 EN 801 843 V1.1.1 and controlled via software. The EUT was then continuously monitored for degradation or loss of performance with a communication test set, under software control. The test was carried out, with the generated field in both vertical and horizontal polarisation.

Worst case orientation results from these tests can be found according to the following table in section 8, Plots 5 - , showing the field strength, SINAD, frequency and output power measurements.

	<i>Horizontal Polarisation</i>	<i>Vertical Polarisation</i>
<i>Receive Station 1-4</i>	<i>Plots 5,7,9</i>	<i>Plots 6,8,10</i>
<i>Second Receiver Station 1</i>	<i>Plot 11</i>	<i>Plot 12</i>
<i>Transmit Station 1-4</i>	<i>Plots 13,15,17,19,21</i>	<i>Plots 14,16,18,20,22</i>
<i>Station 1 & 4 - Loudhailer</i>	<i>Plots 23,25,27</i>	<i>Plots 24,26,28</i>
<i>Internal Speaker - Station 3</i>	<i>Plots 29,31</i>	<i>Plots 30,32</i>
<i>Station 1 - Station 2</i>	<i>Plots 33,35</i>	<i>Plots 34,36</i>
<i>Auxiliary AF to Station 1</i>	<i>Plot 37</i>	<i>Plot 38</i>

Complies: Yes

Limits:

EUT shall meet the requirements of performance criteria A (clause 6.1 & 6.4 EN 801 843 V1.1.1.)

Equipment used:

Equipment used refers to item numbers, specified in section 7 2,3,6,13,16,18,19,28,29,30

Conclusion:

The EUT complies with the requirements of EN 801 843 for Radio frequency electromagnetic field (80Mhz - 1Ghz). (Clause 9.2.3 EN 801 843)

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ELECTROSTATIC DISCHARGE

Clause : 9.3

Definition: *This test assesses the ability of the EUT to operate as intended in the event of an electrostatic discharge.*

Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Method: *As per EN 801 843, clause 9.3.2.*

Results:

General conditions:

Date of test: *1st February 2003*

Temperature: *Tnom (20°C)*

Rated power: *1 Watt / 25 Watts*

Supply: *Vnom (12V)*

Channel tested: *156.800MHz*

The EUT was placed on, but insulated from a horizontal coupling plane as in accordance with BS EN 61000-4-2 [2]. Using a electrostatic discharge generator with test levels set to 6KV for contact discharge and 8KV for air discharge, 10 positive and 10 negative discharges were applied to 10 points of the EUT, these points are shown in section 9, photographs 6,7 & 8, with the test carried out in both receive and transmit modes. Throughout the test, the EUT was monitored to ensure it conformed to performance criteria B.

Complies: Yes

Limits:

EUT shall meet the requirements of performance criteria B (clause 6.2 & 6.4 EN 801 843 V1.1.1.)

Equipment used:

Equipment used refers to item numbers, specified in section 7	3, 6, 20, 21, 37
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Conclusion:

The EUT complies with the requirements of EN 801 843 for Electrostatic discharge. (Clause 9.3.3 EN 801 843)
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FAST TRANSIENTS

Clause : 9.4

Definition: *This test assesses the ability of the EUT to operate as intended in the event of fast transients/bursts on the power, signal and control ports.*

Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Method: *As per EN 801 843, clause 9.4.2*

Results:

General conditions:

Date of test: *1st February 2003*

Temperature: *Tnom (20°C)*

Rated power: *1 Watt / 25 Watts*

Supply: *Vnom (12V)*

Channel tested: *156.800MHz*

The EUT was placed on, but insulated from a horizontal coupling plane as in accordance with BS EN 61000-4-4 [3]. Using the bust generator and coupling clamp a 2KV test voltage was applied to each of the ports in turn according to EN301 843 (V1.1.1)

All ports were tested handsets and speakers power cables in Transmit and receive, handsets, speakers and hailers in intercom modes.

A photograph of the test set up is given Section 9 Photograph 9.

Throughout the test, the EUT was monitored to ensure it conformed to performance criteria B.

Complies: Yes

Limits:

EUT shall meet the requirements of performance criteria B (clause 6.2 and 6.4 EN 801 843 V1.1.1.)

Equipment used:

Equipment used refers to item numbers, specified in section 7	3, 6, 20, 21, 40, 41, 42, 43.
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Conclusion:

The EUT complies with the requirements of EN 801 843 for Fast Transients. (Clause 9.4.3 EN 801 843)
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**CONDUCTED DISTURBANCES INDUCED BY RF-FIELDS IN THE
FREQUENCY RANGE 150kHz - 80Mhz**

Clause :9.5

Definition: *This test assesses the ability of the EUT to operate as intended in the presence of a radio frequency electromagnetic disturbance.*

Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Method: *As per EN 801 843, clause 9.5.2.*

Results:

General conditions:

Date of test: *1st February 2003*
Temperature: *Tnom (20°C)*
Rated power: *1 Watt / 25 Watts*
Supply: *Vnom (12V)*
Channel tested: *156.800MHz*

*The test was conducted as described in BS EN 61000-4-6[5], with the test levels, modulation and frequency range, as detailed in clause 9.4.2 EN 801 843 V1.1.1. A current injection clamp was used for this test, as described in BS EN 61000-4-6[5]. The EUT was placed on an insulating support, above the ground plane, with the current injection clamp placed around each supply cable in turn. The EUT was then subjected to the induced disturbance as defined in clause 9.5.2 EN 801 843 V1.1.1, and the EUT was continuously monitored so as to conform to the required performance criteria.
All testing was under software control, which included the injection clamp undergoing a pre-calibration, via use of a calibration jig.*

Results from these tests can be found at section 8, Plots 39 to 80, showing the field strength, SINAD, frequency and output power measurements.

Complies: Yes

Limits:

EUT shall meet the requirements of performance criteria A (clause 6.1 & 6.4 EN 801 843 V1.1.1.)

Equipment used:

Equipment used refers to item numbers, specified in section 7	3, 6, 7, 8, 17, 19, 20, 21,2 x 22, 24, 30, 39
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Conclusion:

The EUT complies with the requirements of EN 801 843 for conducted disturbances induced by RF-fields in the frequency range 150kHz - 80Mhz. (Clause 9.5.3 EN 801 843)

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POWER SUPPLY FAILURE

Clause : 9.6.2

Definition: *This test assesses the ability of the EUT to operate as intended after being subjected to short breaks in the power supply, due to power supply change over and breaker dropout.*

Product: *RS87; Transceiver Unit with DSC controller & ATIS.
Handsets, Speakers and Hailer's.*

Method: *As per EN 801 843, clause 9.6.2.2.*

Results:

General conditions:

Date of test: *1st February 2003*

Temperature: *Tnom (20°C)*

Rated power: *1 Watt / 25 Watts*

Supply: *Vnom (12V)*

Channel tested: *156.800MHz*

The EUT was subjected to 3 breaks in the supply, of a duration of 60 seconds. The power to the EUT was switched off as described in clause 9.6.2 EN 801 843 V1.1.1. The test was conducted with the EUT in both receive and transmit modes of operation. The EUT was subjected to meet the requirements of performance criteria C, after each break in the supply.

The equipment is intended to operate from a battery source. Disconnection of this source results in the equipment powering down, without malfunction.

Complies: Yes

Limits:

EUT shall meet the requirements of performance criteria C (clause 6.2 and 6.4 EN 801 843 V1.1.1.)

Equipment used:

Equipment used refers to item numbers, specified in section 7	6, 9, 20, 21, 22
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Conclusion:

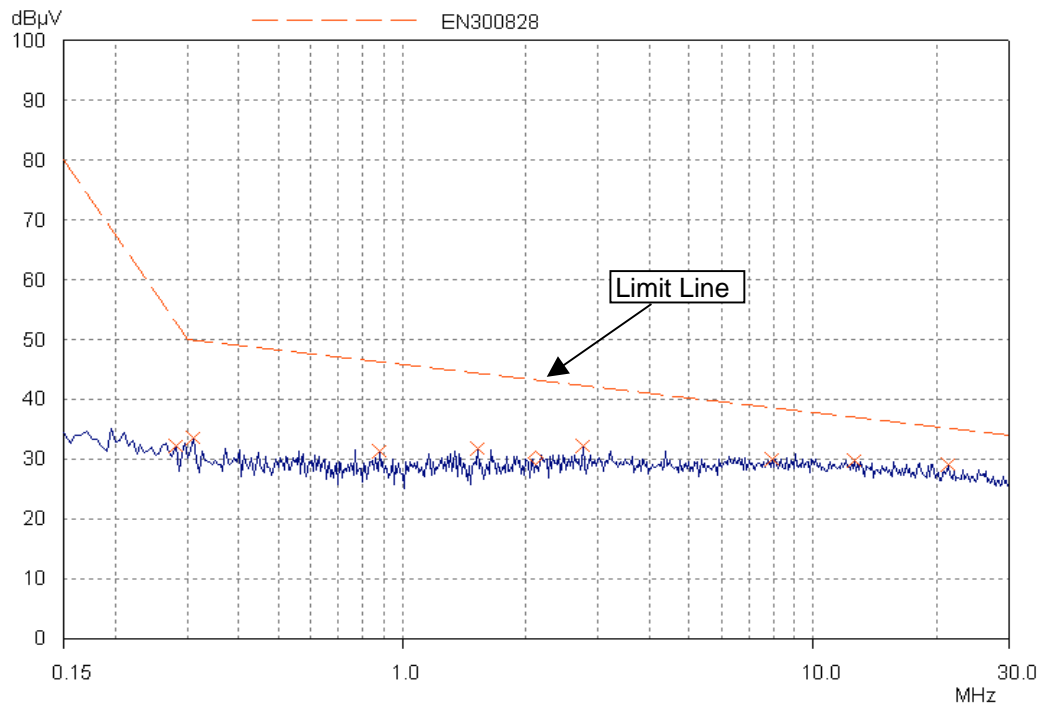
The EUT complies with the requirements of EN 801 843 for power supply failure. (Clause 9.6.2.3 EN 801 843)

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SECTION 7 EQUIPMENT LIST

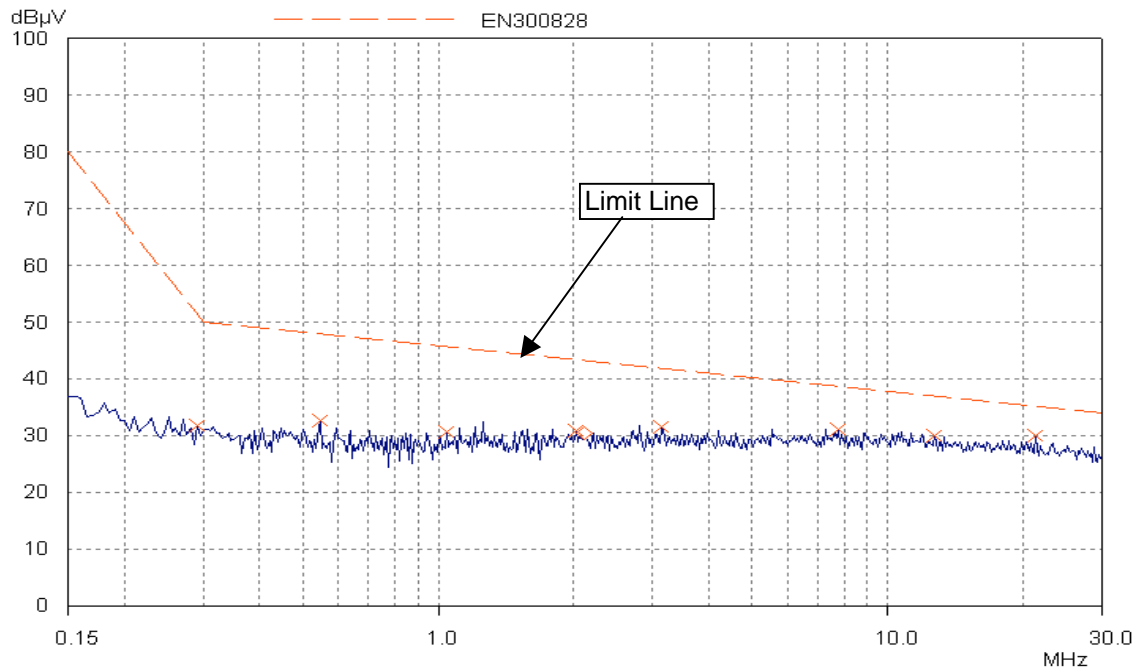
ITEM	MANUFACTURE	TYPE	DESCRIPTION	NAVICO SERIAL
1	Rohde & Schwarz	ESVS10	EMI Test Receiver	Nav 284
2	IFR	2023B	Signal Generator	Nav 1309
3	Xantrex	XHR33-33	Power Supply	Nav 1312
4	IFR	2041	Signal Generator	Nav 1310
5	Marconi	2041	Signal Generator	Nav 280
6	Rohde & Schwarz	CMT54	Radio Comms Set	Nav 132
7	Rohde & Schwarz	FSEA	Spectrum Analyser	Nav 1308
9	Thurby Thandar	TSX3510	Power Supply	Nav 1328
11	Design Environmental Ltd	B5125-40	Environmental Chamber	Nav 1381
12	Mini-Circuits	15542	Splitter	Nav 1379
13	Antenna Research Ltd	LPB2513	Log Periodic Antenna	Nav 1376
14	Chase	VHA9103	Dipole 30-300Mhz	Nav 893
15	Chase	VHA9105	Dipole 300-1000Mhz	Nav 894
16	MPE	C1162-D1	Anechoic Chamber	Nav 1307
17	Reseda	-	Pc - Running Software	Nav 1232
18	Chauvin Arnoux	C.A.43	Field Meter	Nav 1334
19	IFR	SMX100	Power Amplifier	Nav 1401
20	In - House	-	Ptt Connection Handset	-
21	In - House	-	PL259 to Bnc Lead	-
22	In - House	-	1m Bnc Lead	-
23	ICS	DSC2	GMDSS Controller	-
24	In - House	-	Isolation Transformer	-
25	Castle	GA601	Acoustic Calibrator	Nav 1457
26	In - House	-	Band Pass Filter	-
27	Bird	-	20db Attenuator	Nav 1380
28	In - House	Cable	Chamber to Receiver	TJ0224/C
29	In - House	Cable	Antenna to Chamber	TJ0224/B
30	In - House	Cable	5m Bnc to Bnc	-
31	Racal Dana	1991	Frequency Counter	Konav CR018
32	Rohde & Schwarz	ESHS10	EMI Test Receiver	Nav 283
33	Chase	HLA6120	Loop Antenna	Nav 1338
34	Chase	CBP9720	DC Battery Supply	Nav 1339
35	Rohde & Schwarz	ESH3-Z-5	LISN	Nav 282
36	Rendar	Safebloc	Safety Connect Block	Nav 363
37	Haefely	PSD-25B	ESD Tester	Nav 279
38	In - House	-	10db Transient Limiter	TJ0133
39	Solar Electronics	9125-1	Calibration Jig	Nav 1332
40	Lead Acid Battery			
41	Schaffner	CDN125	Coupling Clamp	NAV277
42	Schaffner	SL402-379	6dB Attenuator	NAV902
43	Schaffner	NSG1035	Fast Transient Generator	NAV278

SECTION 8 MEASUREMENT SCAN RESULTS

PLOT 1 RS87 Transmitter (25w) Radiated Emissions (150kHz-30Mhz)

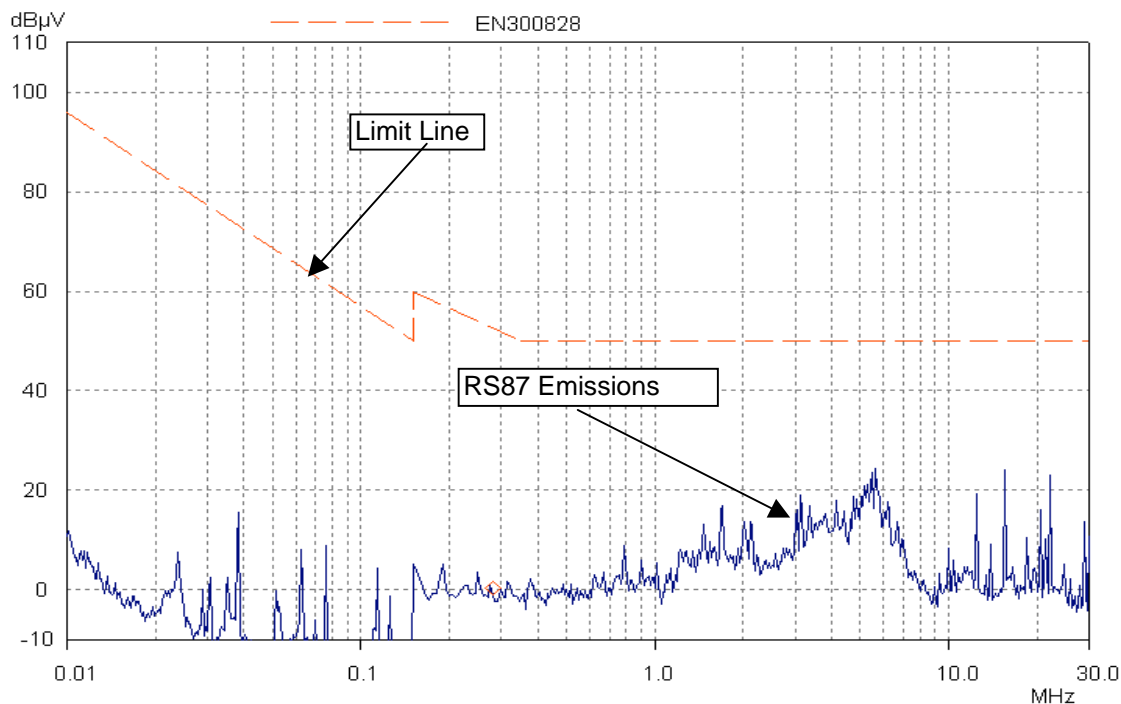


PLOT 2 RS87 Receiver Radiated Emissions (150kHz-30Mhz)

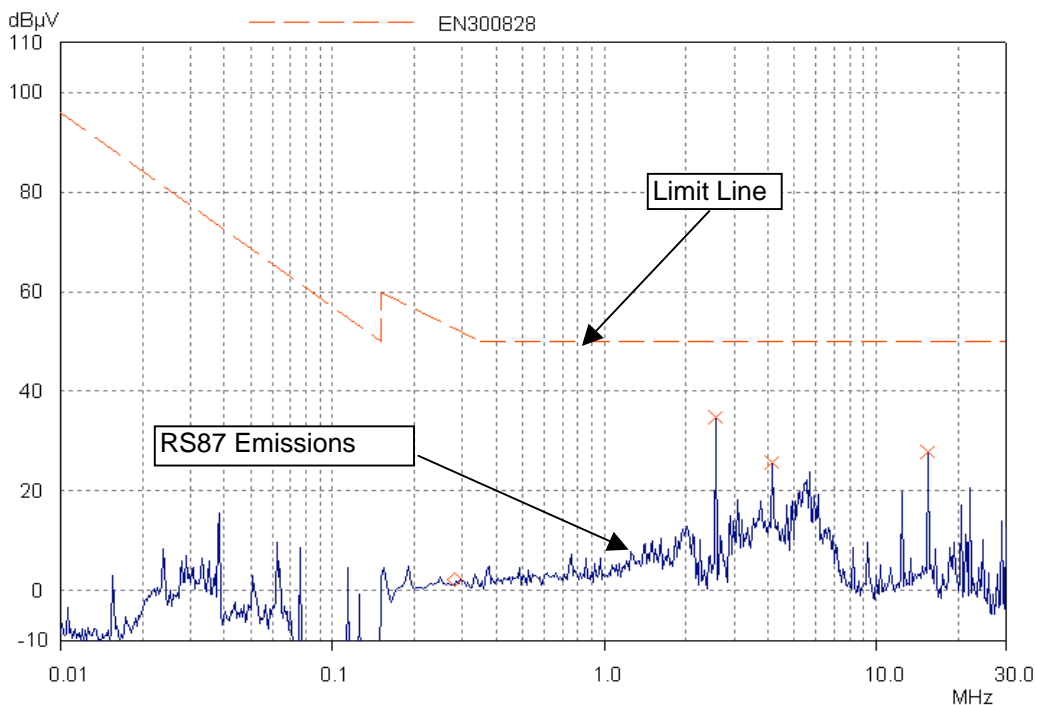


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PLOT 3 RS87 Conducted Emissions (10kHz - 30Mhz) in the receive mode of operation

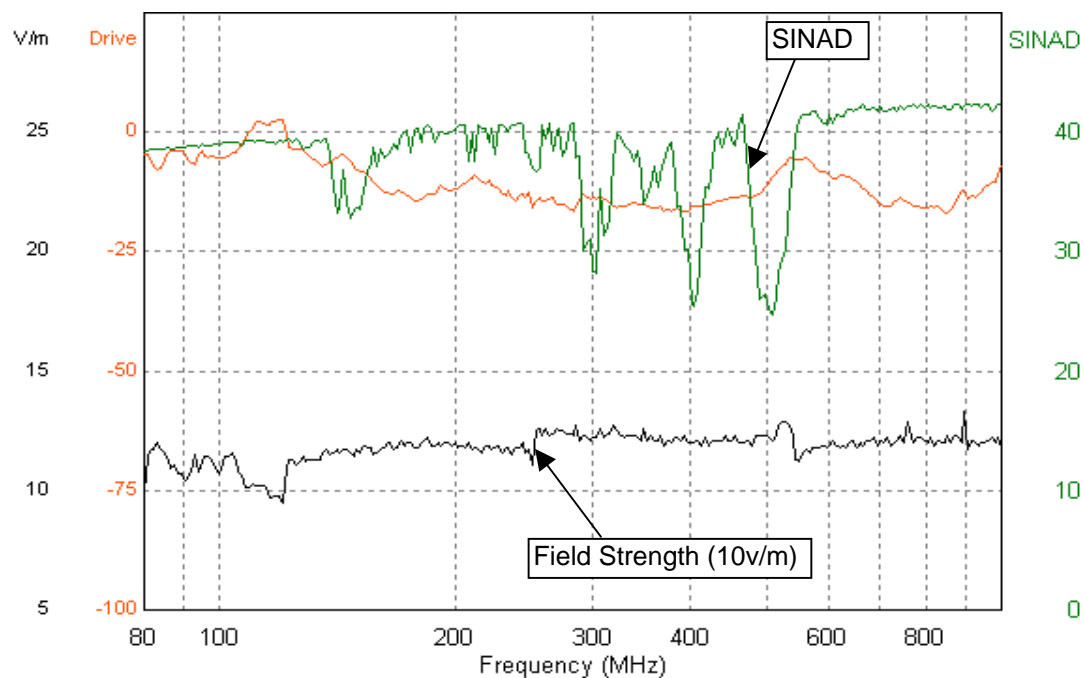


PLOT 4 RS87 Conducted Emissions (10kHz - 30Mhz) in the (25w) transmit mode of operation

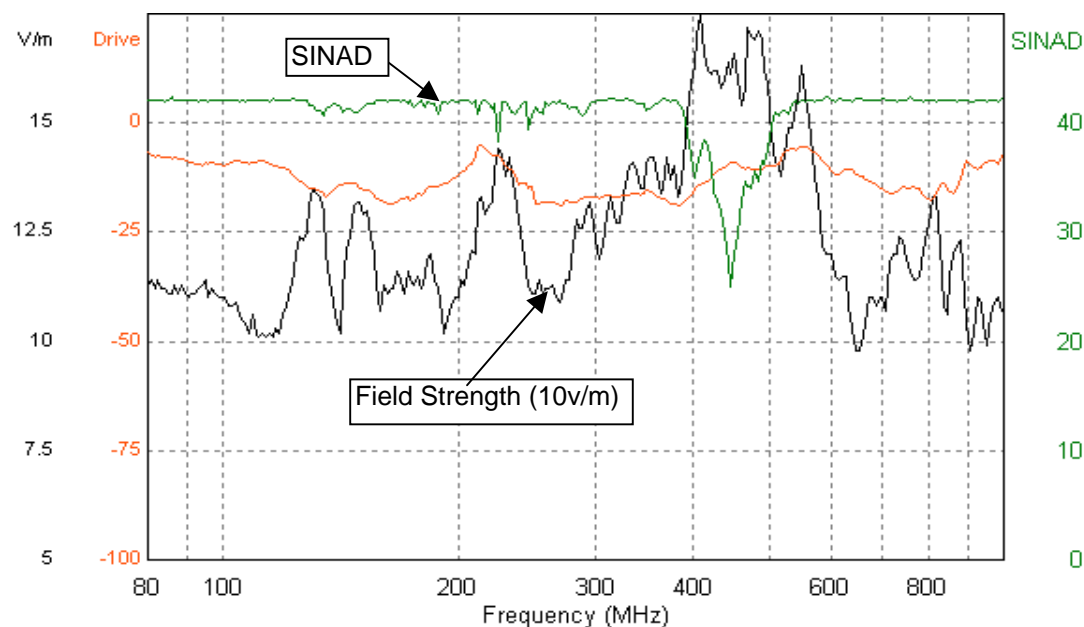


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PLOT 5 Radiated Immunity measurement scan on horizontal polarisation
Handset 1 with RS87 in receive mode of operation rear facing

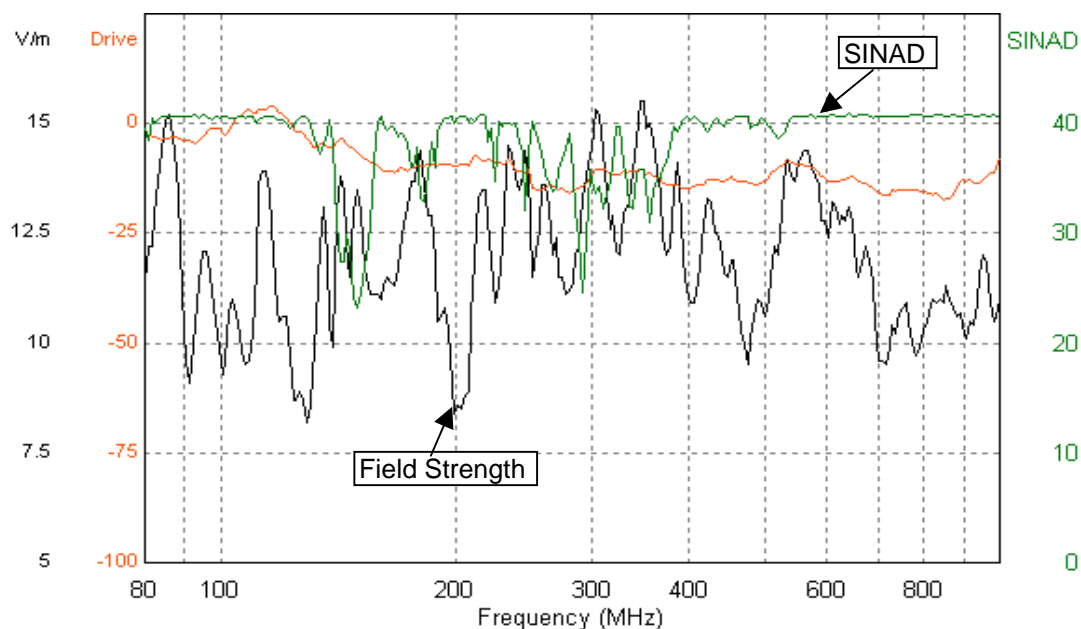


PLOT 6 Radiated Immunity measurement scan on vertical polarisation
Handset 1 with RS87 in receive mode of operation left facing

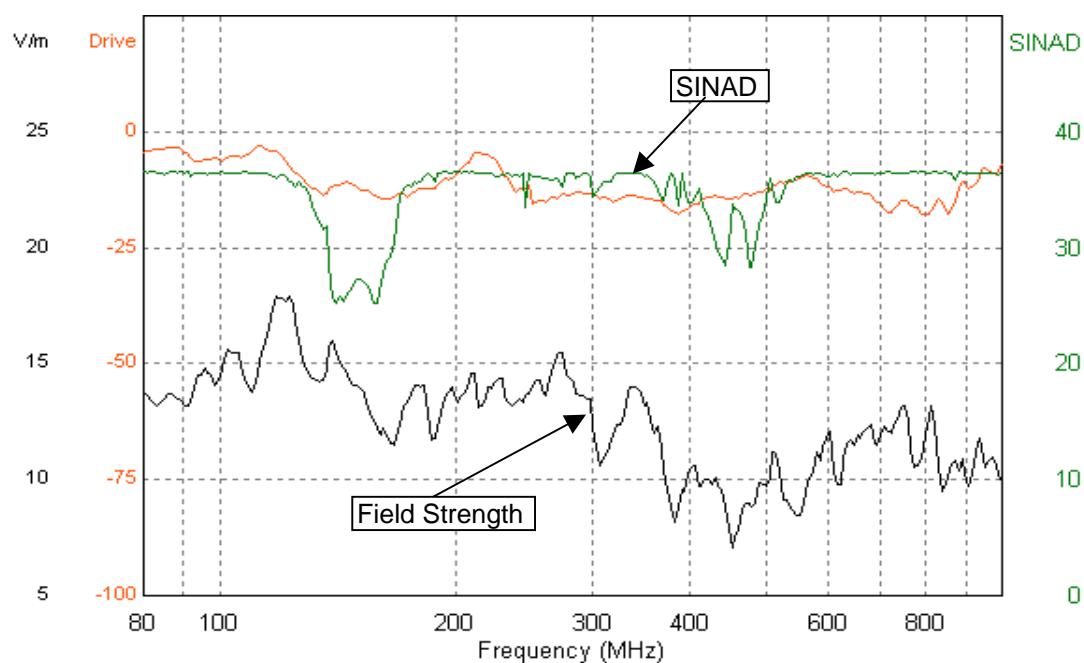


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PLOT 7 **Radiated Immunity measurement scan on horizontal polarisation**
Handset 2 and 3 with RS87 in receive mode of operation front facing

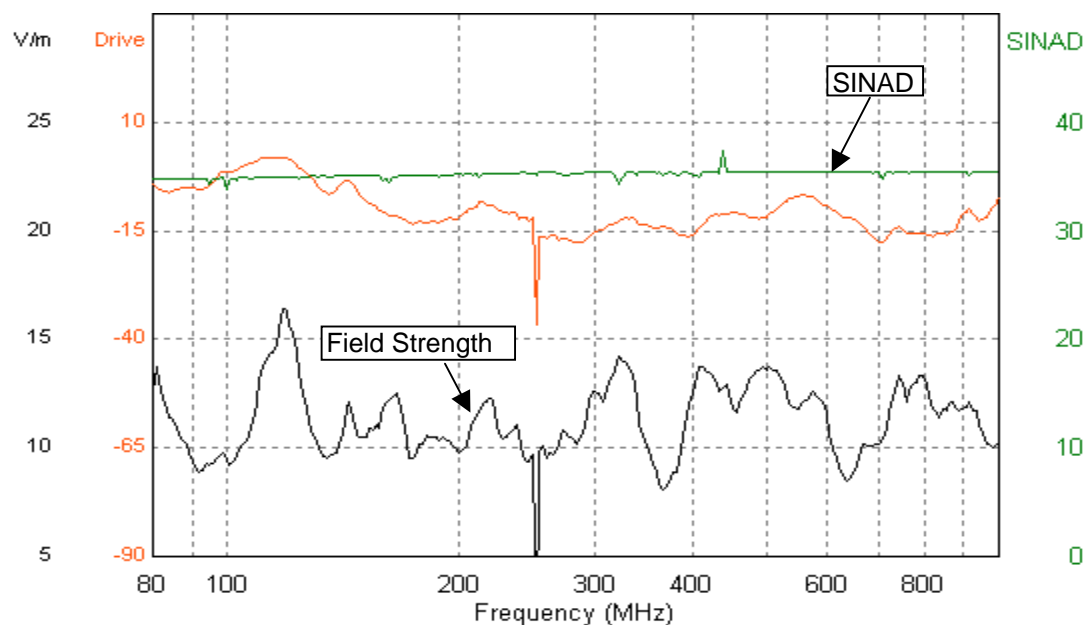


PLOT 8 **Radiated Immunity measurement scan on vertical polarisation**
Handset 2 and 3 with RS87 in receive mode of operation left facing

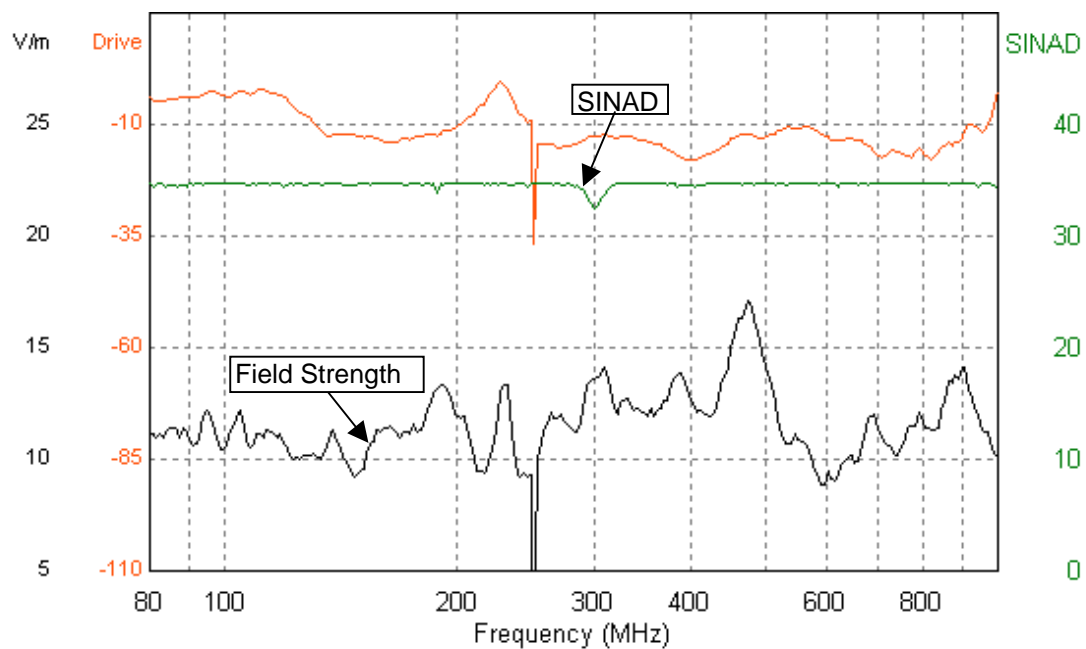


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PLOT 9 **Radiated Immunity measurement scan on horizontal polarisation**
Handset 4 with RS87 in receive mode of operation left facing

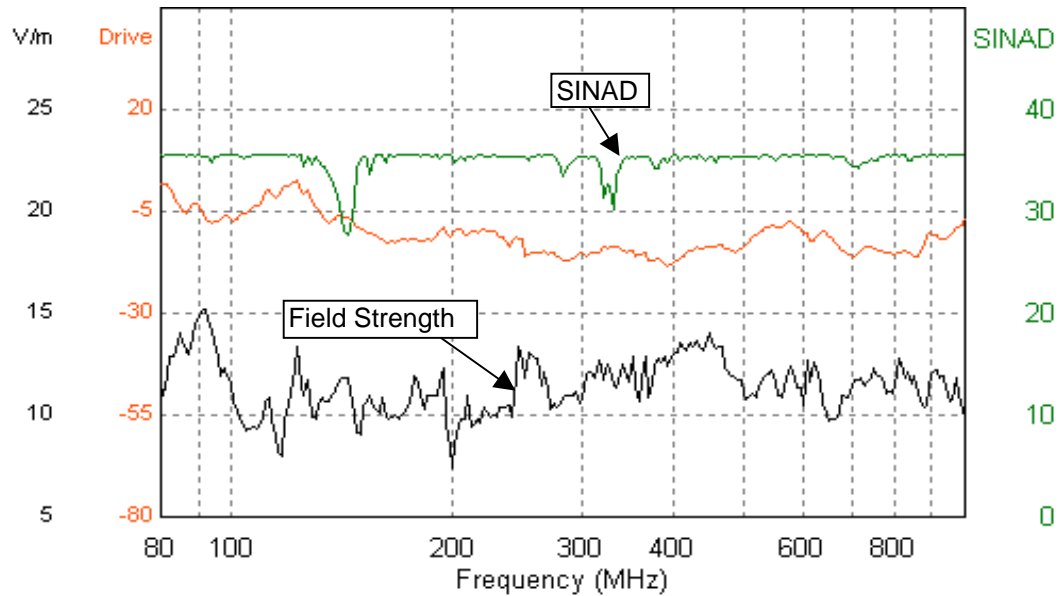


PLOT 10 **Radiated Immunity measurement scan on vertical polarisation**
Handset 4 with RS87 in receive mode of operation right facing

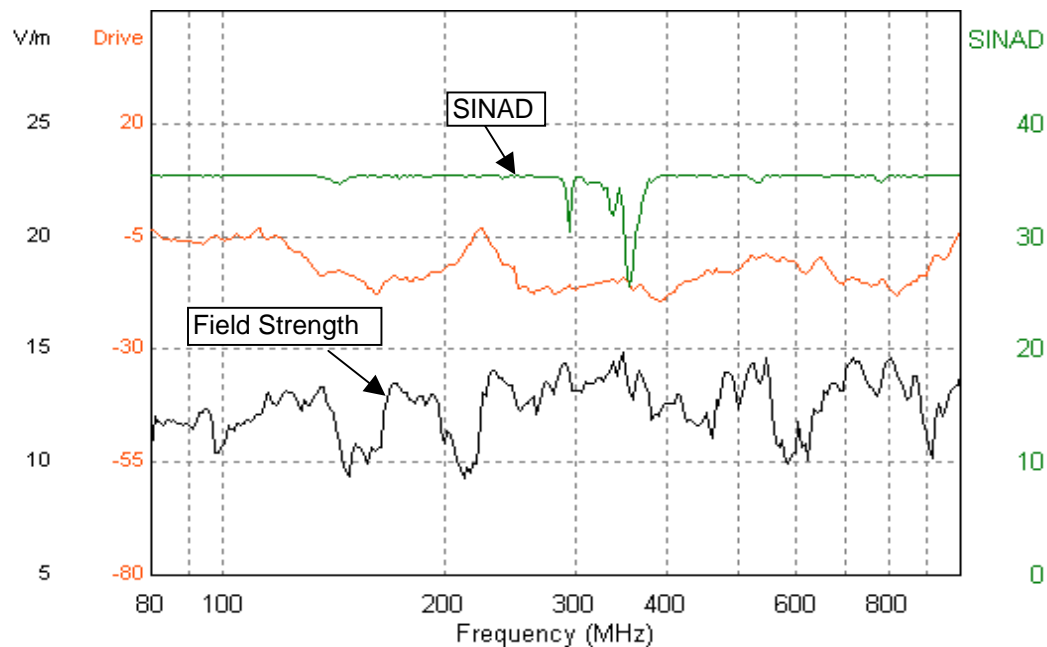


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PLOT 11 **Radiated Immunity measurement scan on horizontal polarisation**
Handset 1 with RS87 in receive on 2nd receiver left facing

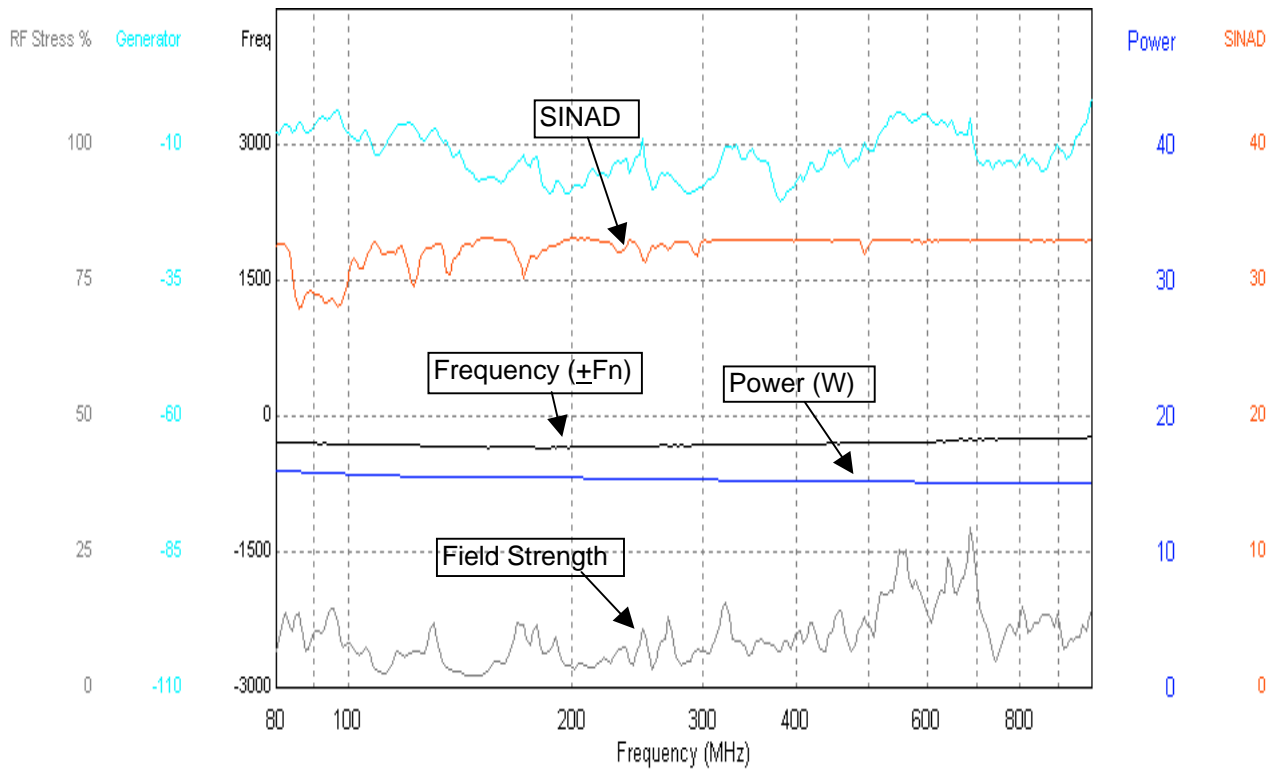


PLOT 12 **Radiated Immunity measurement scan on vertical polarisation**
Handset 1 with RS87 in receive on 2nd receiver right facing

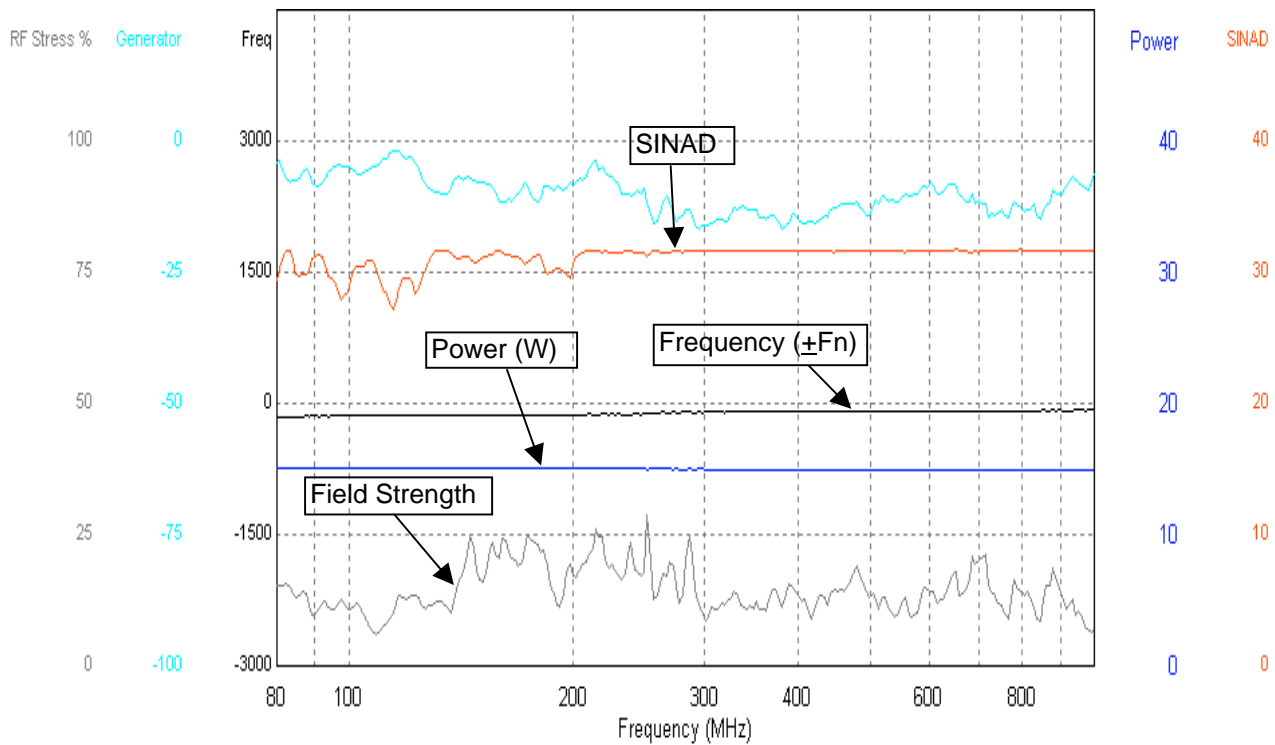


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PLOT 13 Radiated Immunity Measurement scan on horizontal polarisation
Handset 1 and RS87 left facing in transmit (25W)

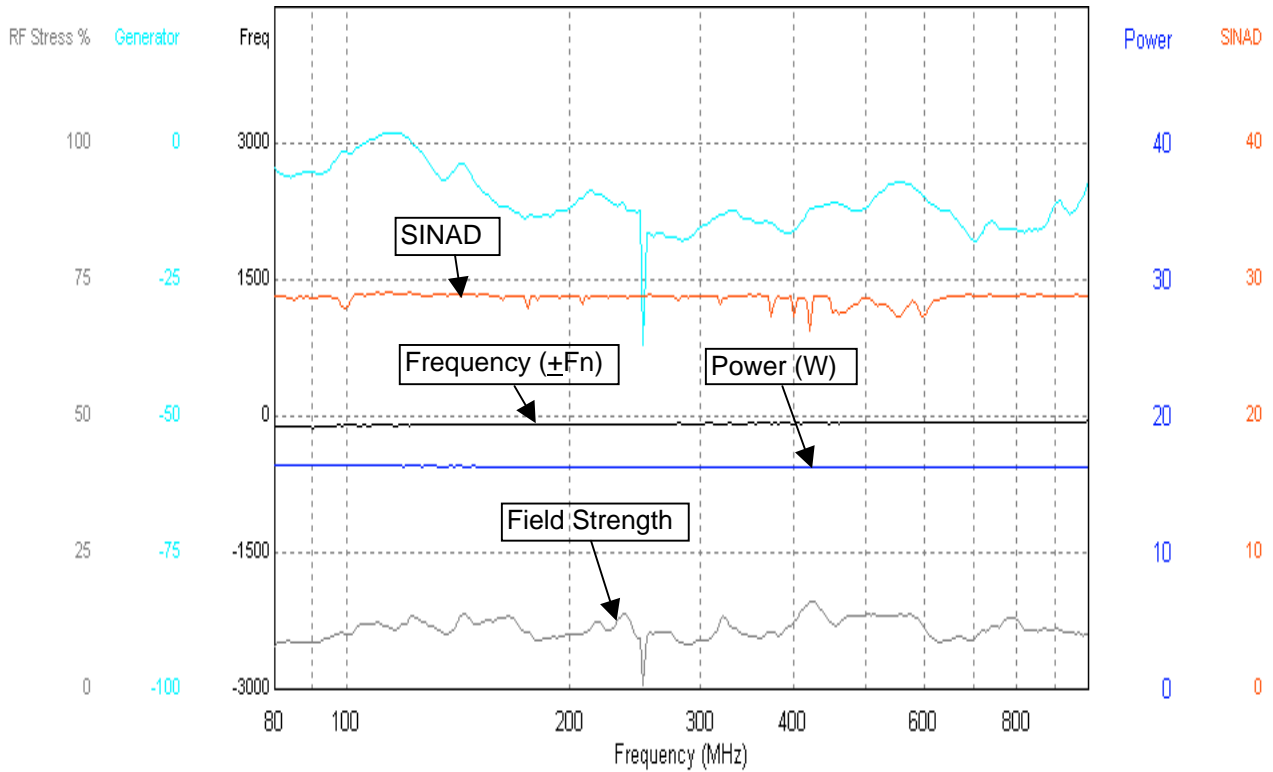


PLOT 14 Radiated Immunity Measurement scan on vertical polarisation
Handset 1 and RS87 left facing in transmit (25W)

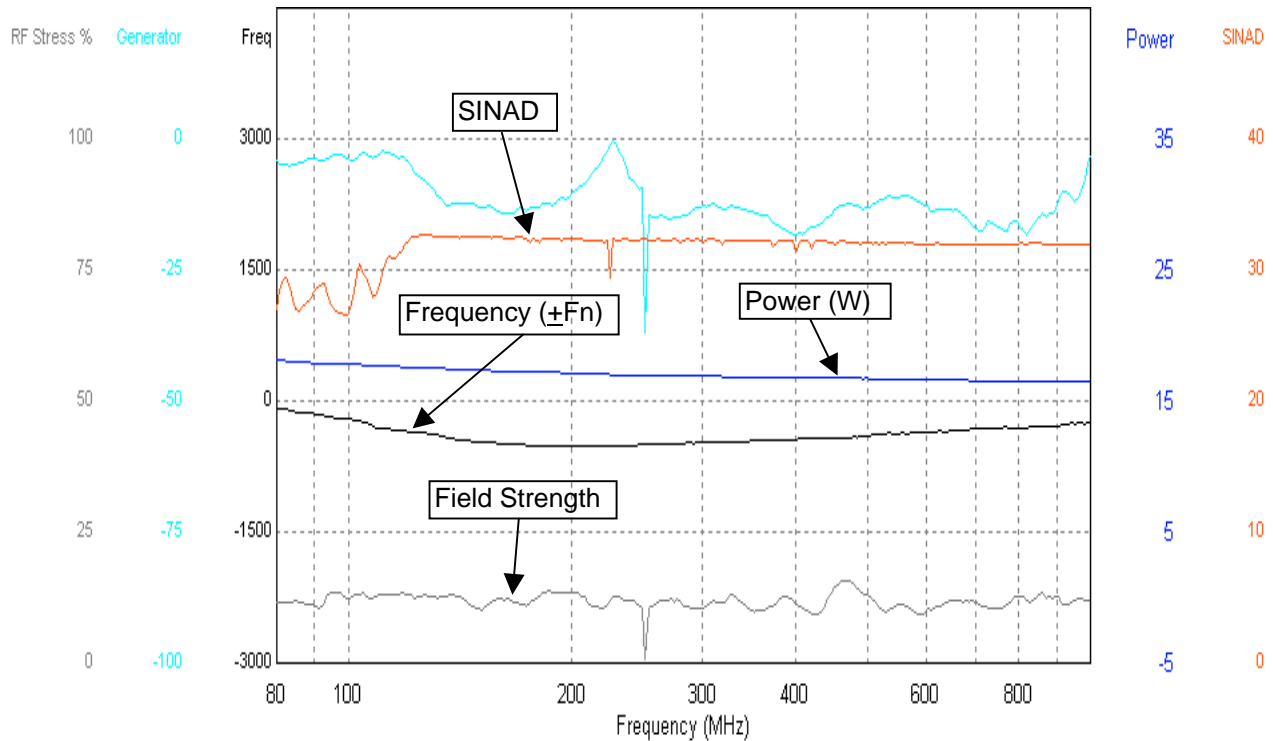


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PLOT 15 Radiated Immunity Measurement scan on horizontal polarisation
Handset 2 and RS87 right facing in transmit (25W)

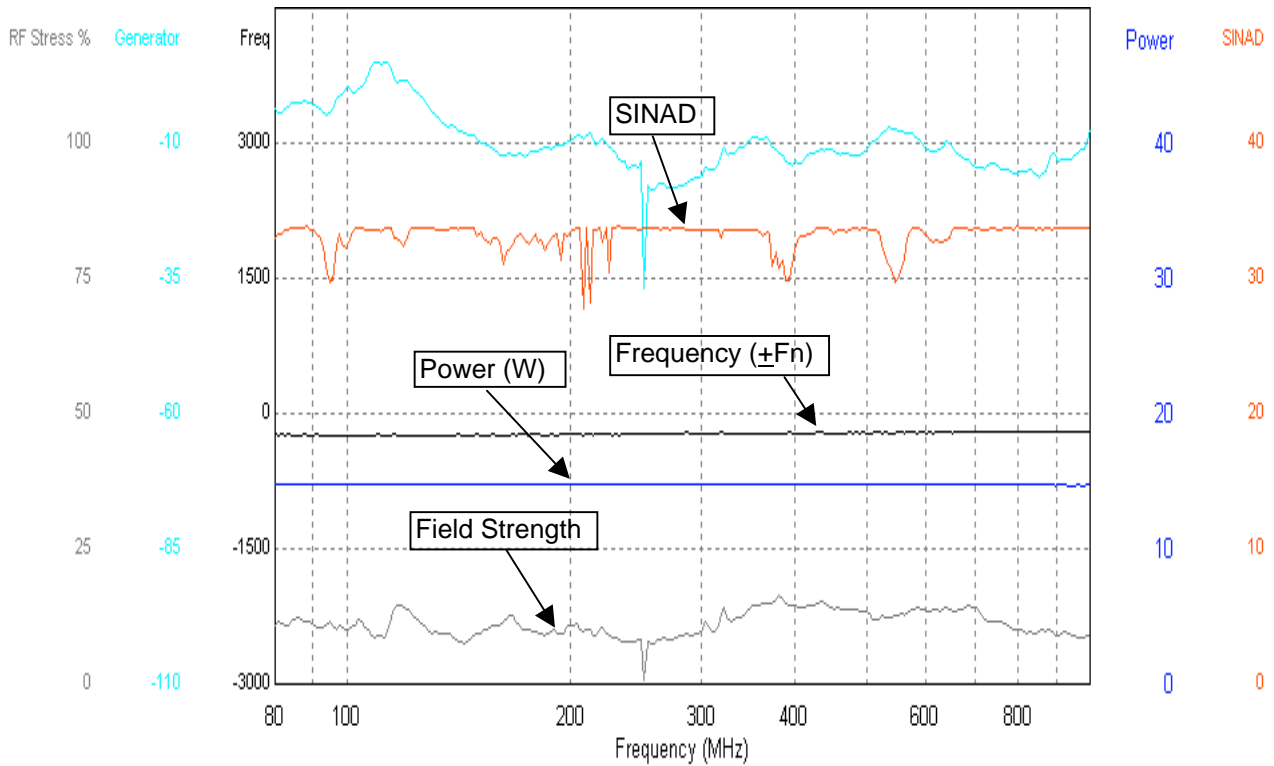


PLOT 16 Radiated Immunity Measurement scan on vertical polarisation
Handset 2 and RS87 rear facing in transmit (25W)

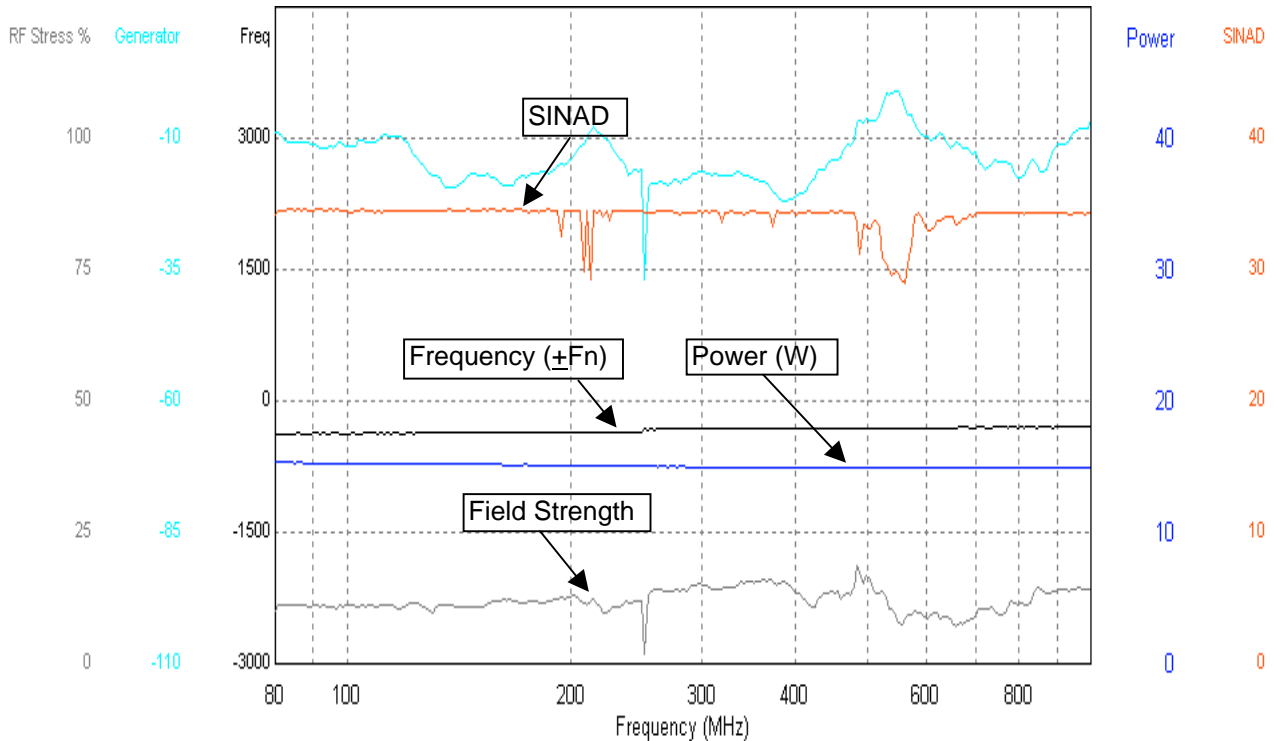


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PLOT 17 Radiated Immunity Measurement scan on horizontal polarisation
Handset 3 and RS87 left facing in transmit (25W)

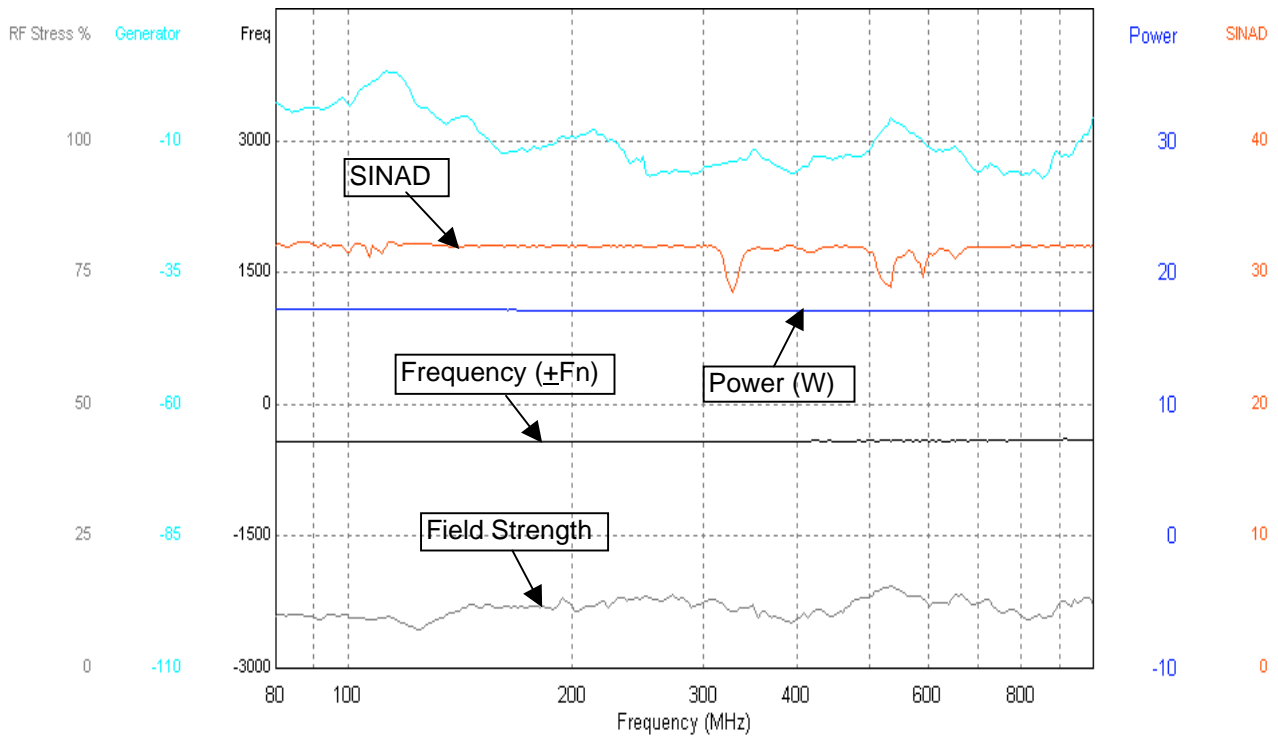


PLOT 18 Radiated Immunity Measurement scan on vertical polarisation
Handset 3 and RS87 rear facing in transmit (25W)

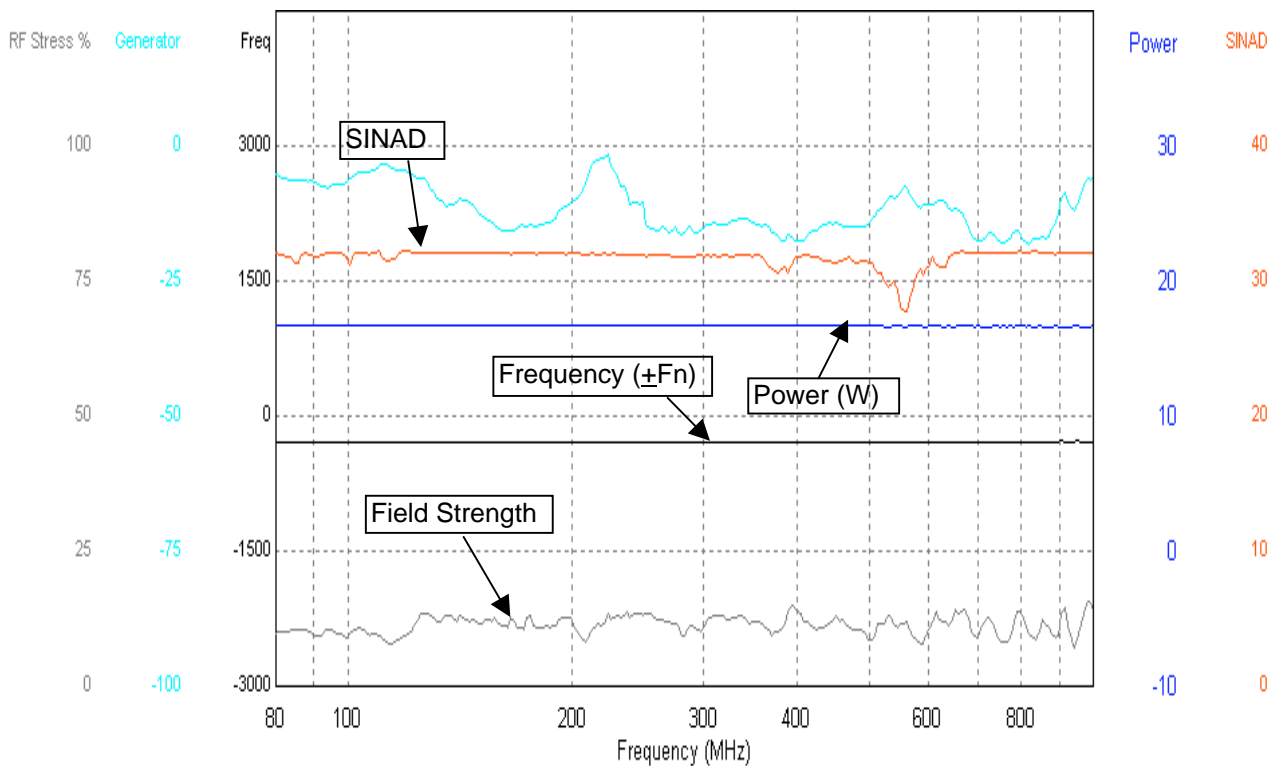


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PLOT 19 Radiated Immunity Measurement scan on horizontal polarisation
Handset 4 and RS87 right facing in transmit (25W)

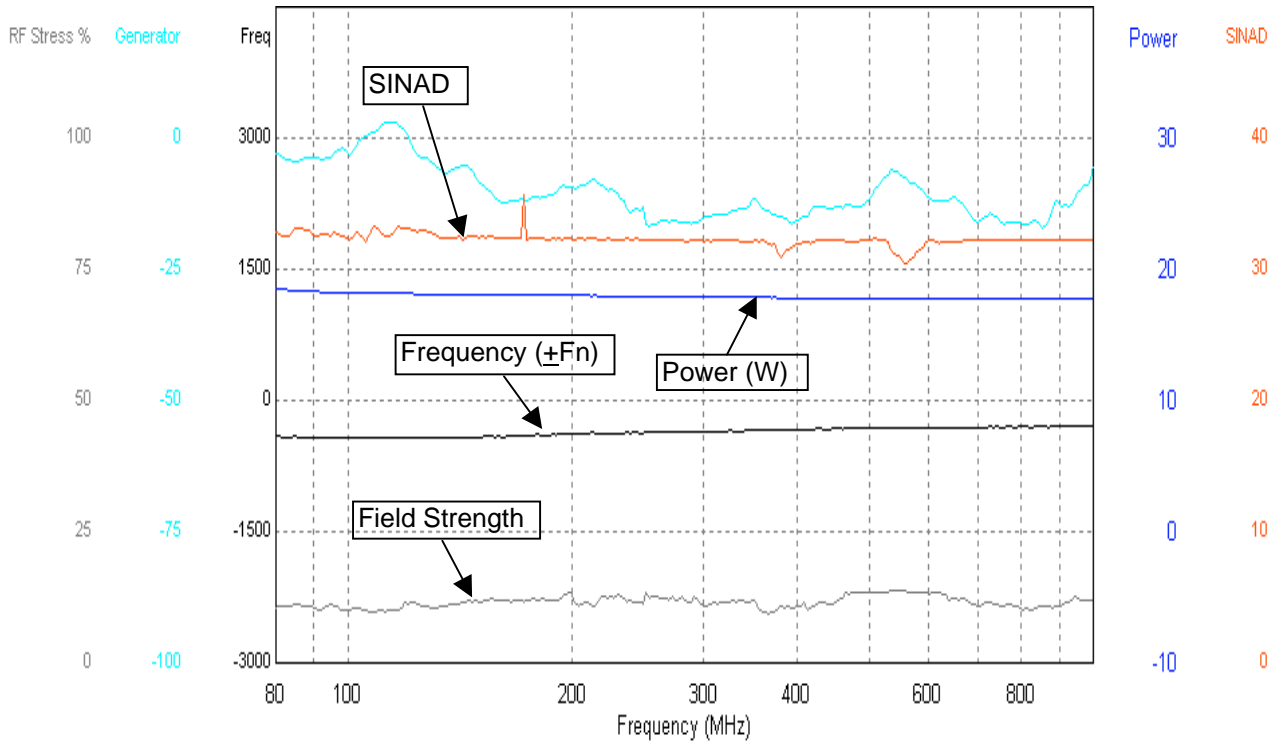


PLOT 20 Radiated Immunity Measurement scan on vertical polarisation
Handset 4 and RS87 left facing in transmit (25W)

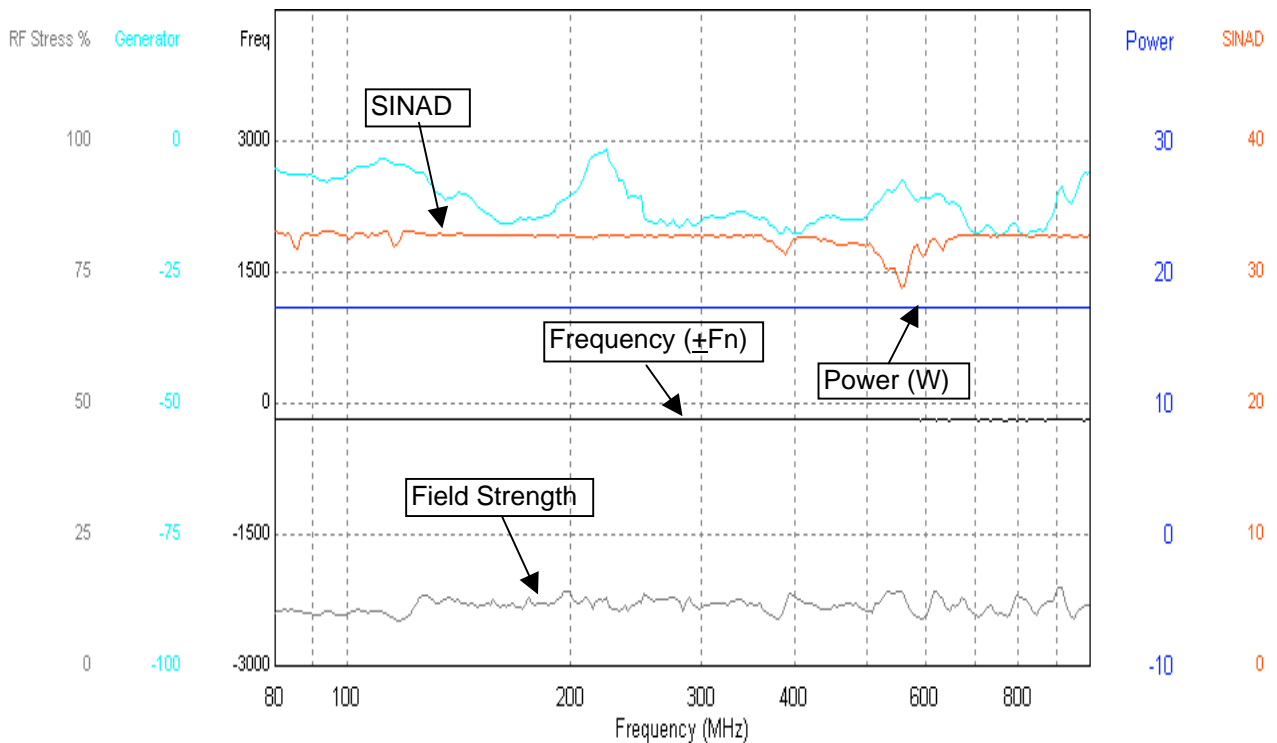


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PLOT 21 Radiated Immunity Measurement scan on horizontal polarisation
Handset 1 left facing only in chamber and RS87 in transmit (25W) external

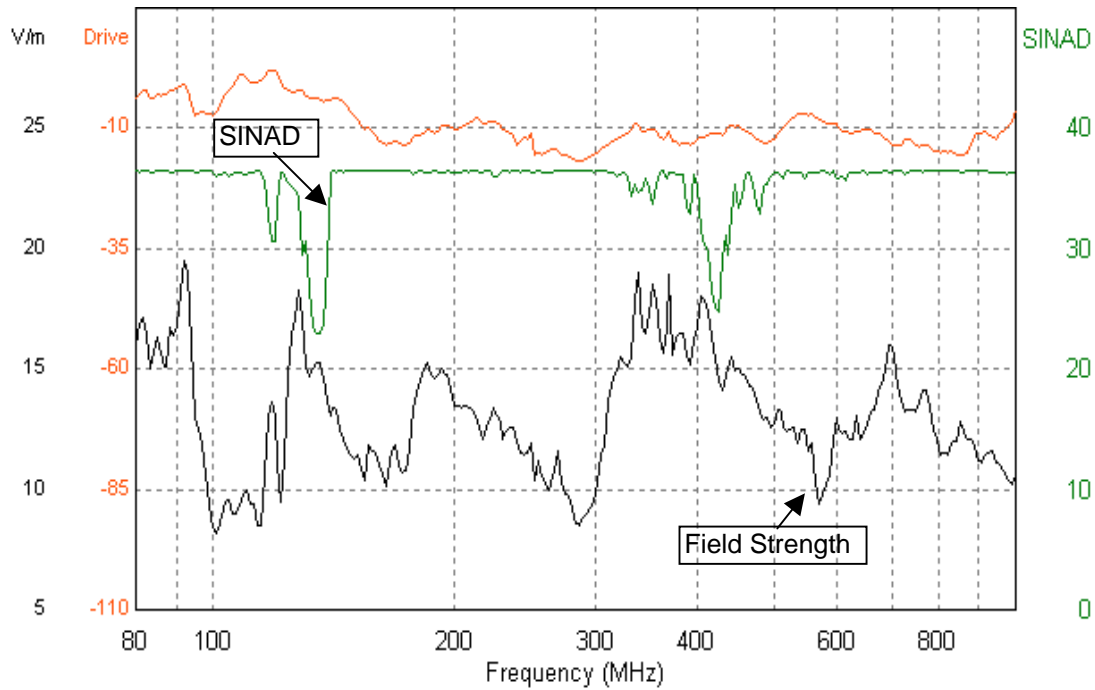


PLOT 22 Radiated Immunity Measurement scan on vertical polarisation
Handset 1 right facing only in chamber and RS87 in transmit (25W) external

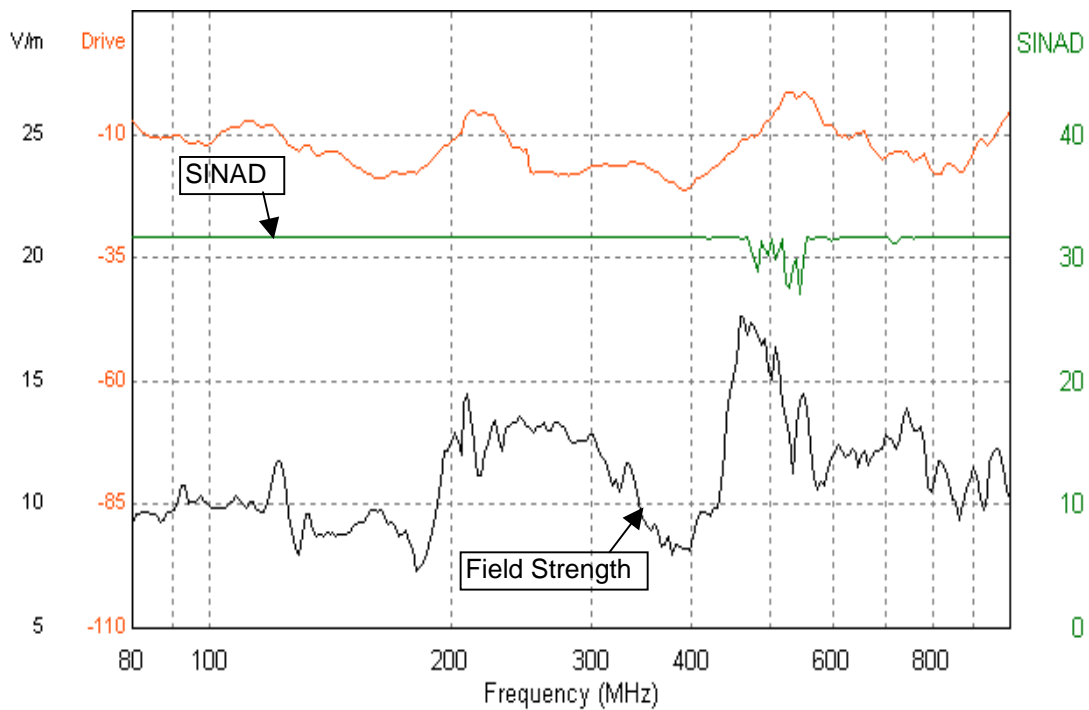


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PLOT 23 Radiated Immunity Measurement scan on horizontal polarisation
Handset 1 to Loudhailer Radio right facing

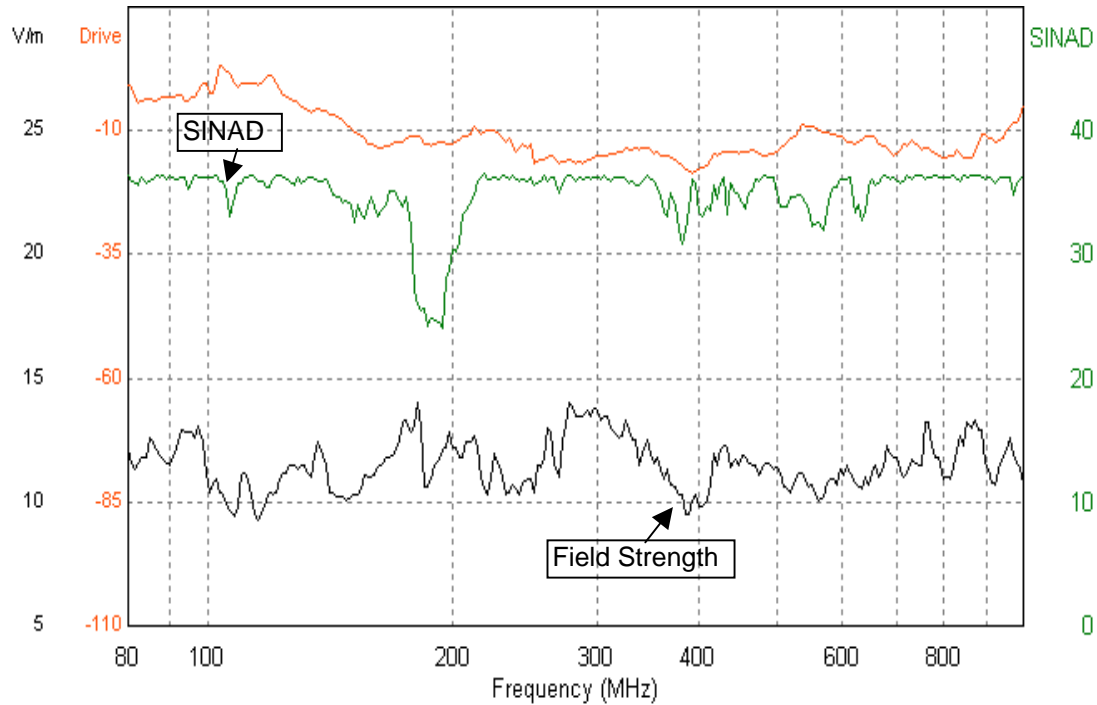


PLOT 24 Radiated Immunity Measurement scan on vertical polarisation
Handset 1 to Loudhailer Radio rear facing

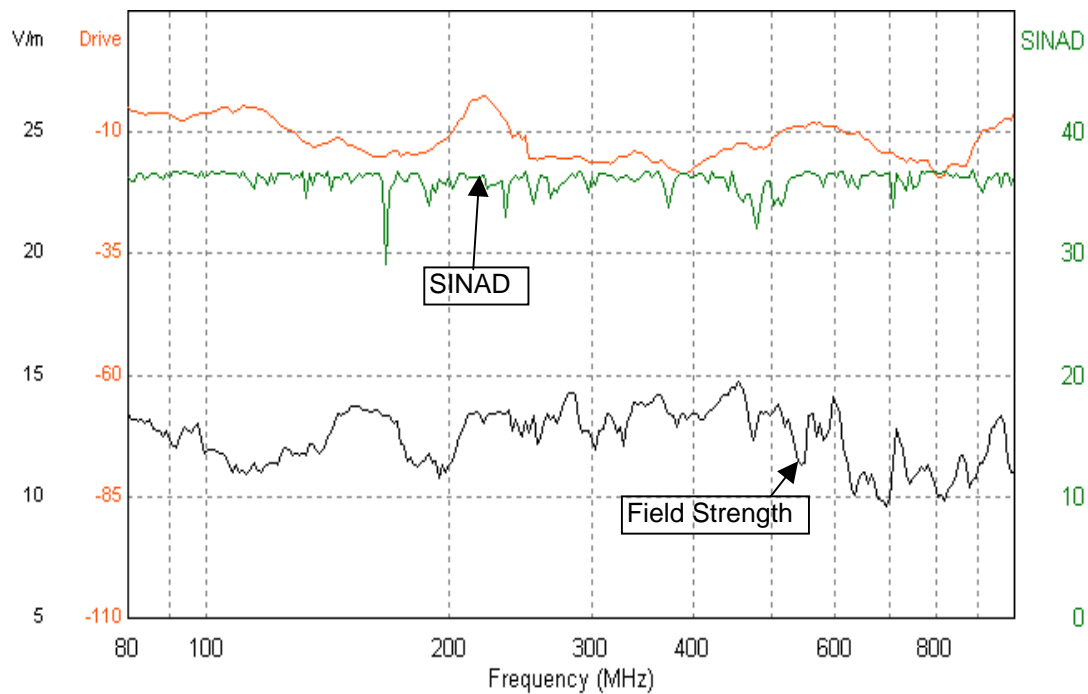


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PLOT 25 Radiated Immunity Measurement scan on horizontal polarisation
Loudhailer fwd to Handset 4 Radio left facing

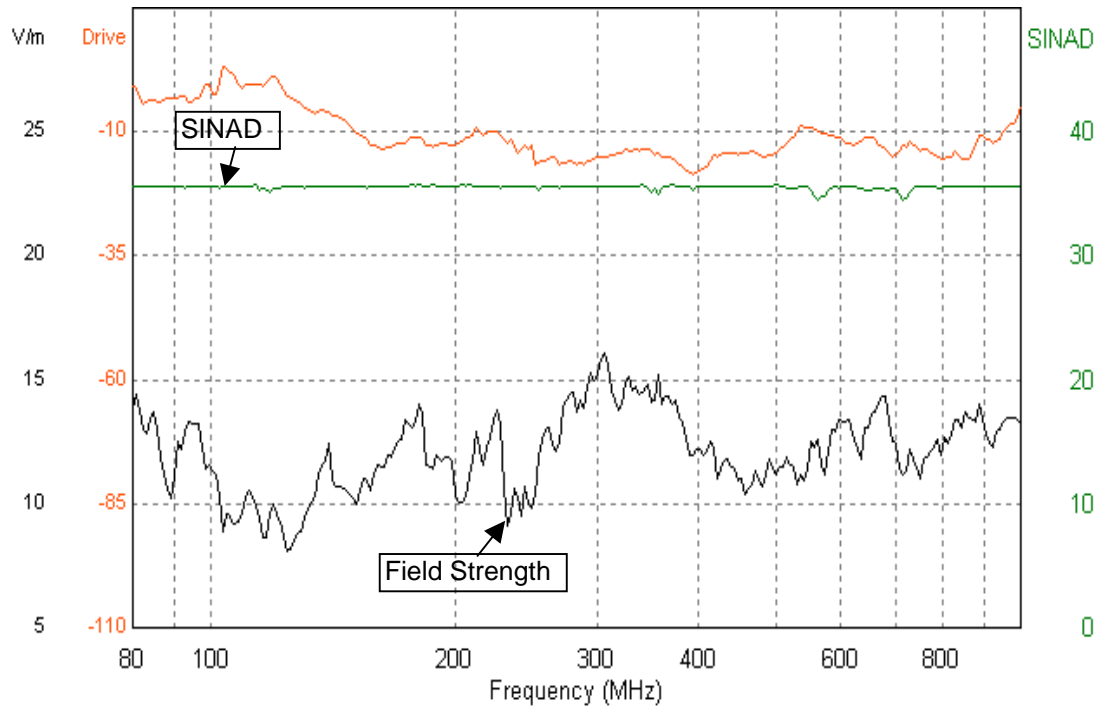


PLOT 26 Radiated Immunity Measurement scan on vertical polarisation
Loudhailer fwd to Handset 4 Radio left facing

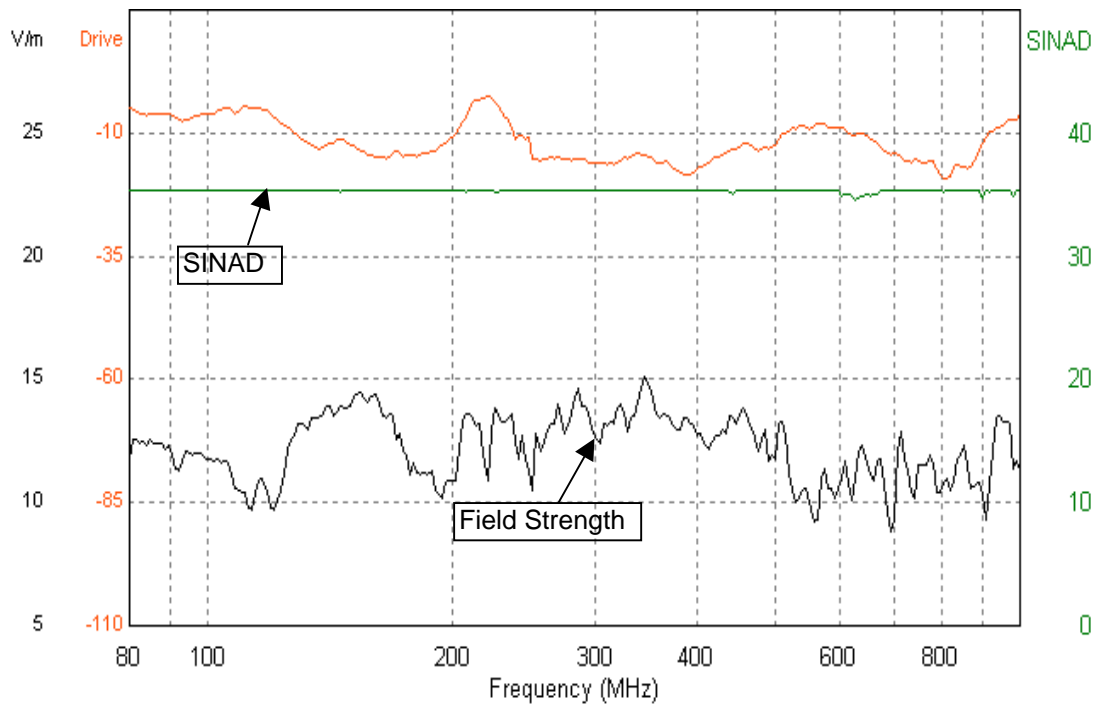


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PLOT 27 Radiated Immunity Measurement scan on horizontal polarisation
Handset 4 to Loudhailer fwd Radio right facing

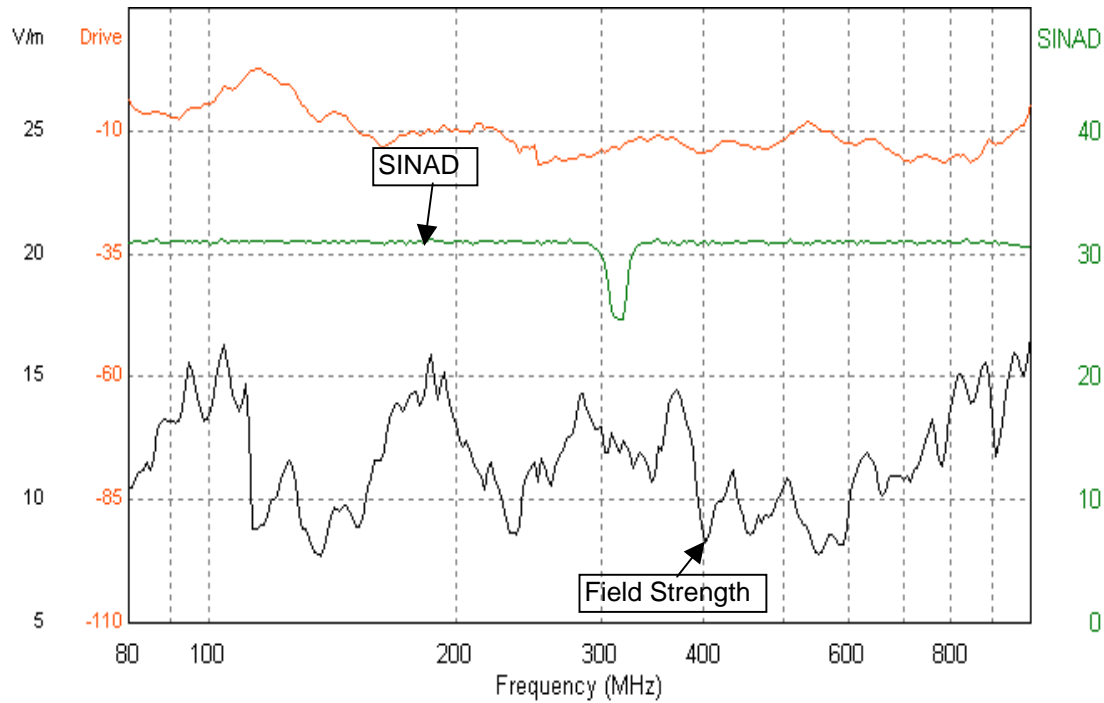


PLOT 28 Radiated Immunity Measurement scan on vertical polarisation
Handset 4 to Loudhailer fwd Radio rear facing

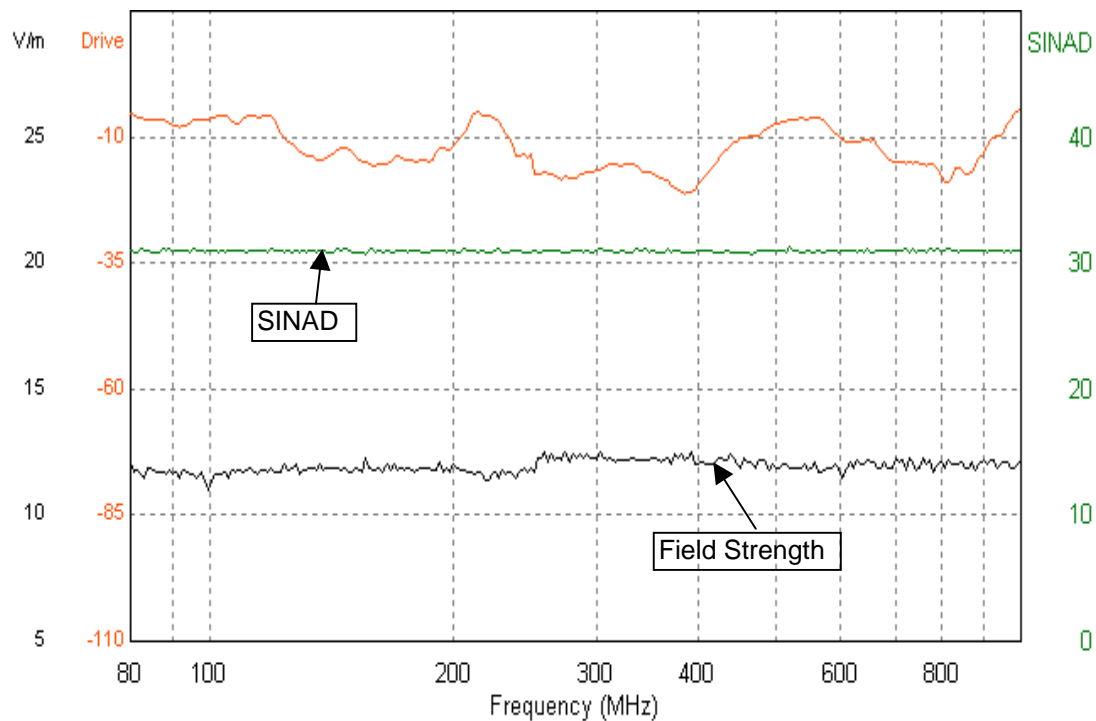


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PLOT 29 Radiated Immunity Measurement scan on horizontal polarisation
Internal 1 speaker to Handset 3 Intercom Radio rear facing

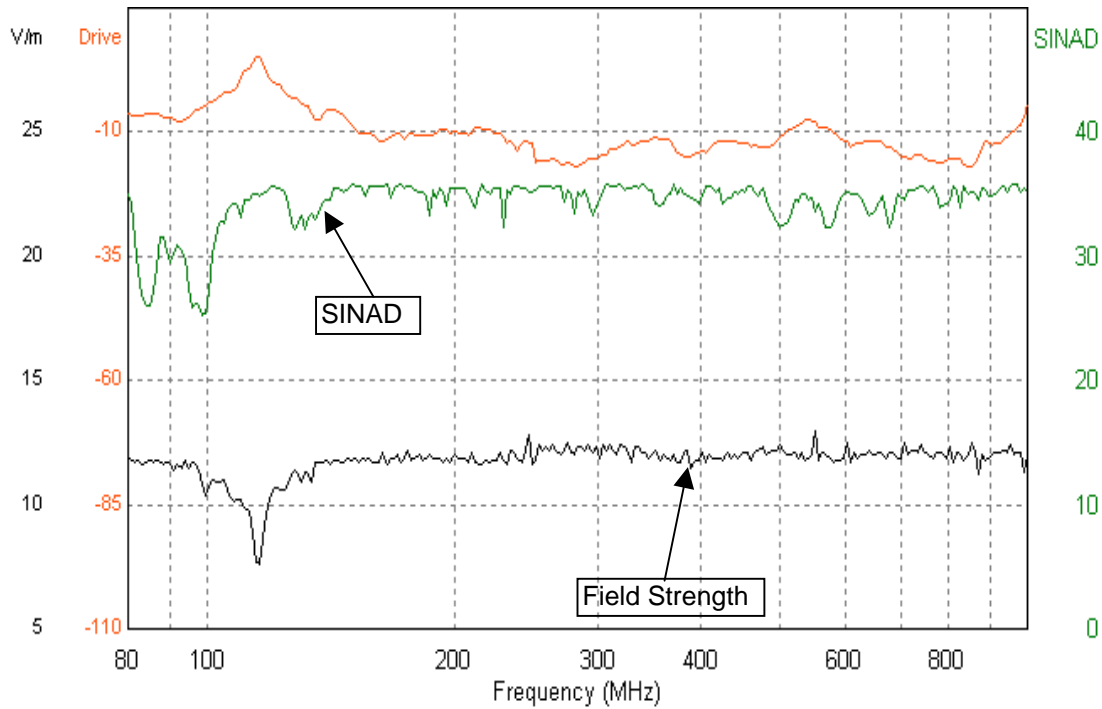


PLOT 30 Radiated Immunity Measurement scan on vertical polarisation
Internal 1 speaker to Handset 3 Intercom Radio front facing

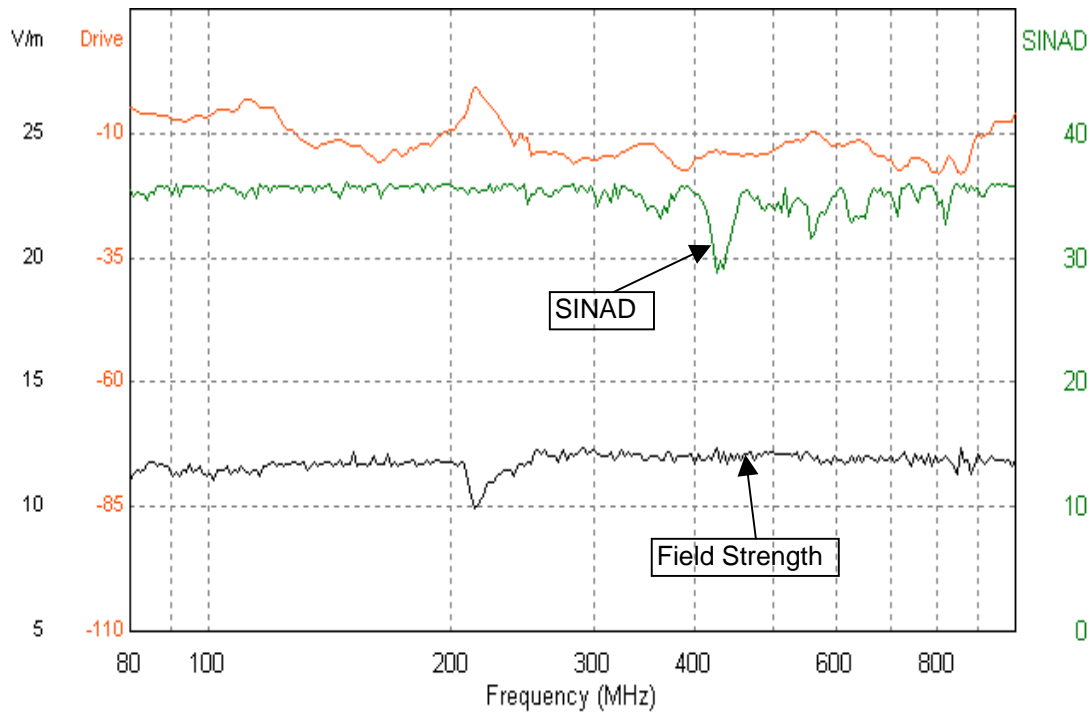


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PLOT 31 Radiated Immunity Measurement scan on horizontal polarisation
Handset 3 to Internal 1 speaker Intercom Radio front facing

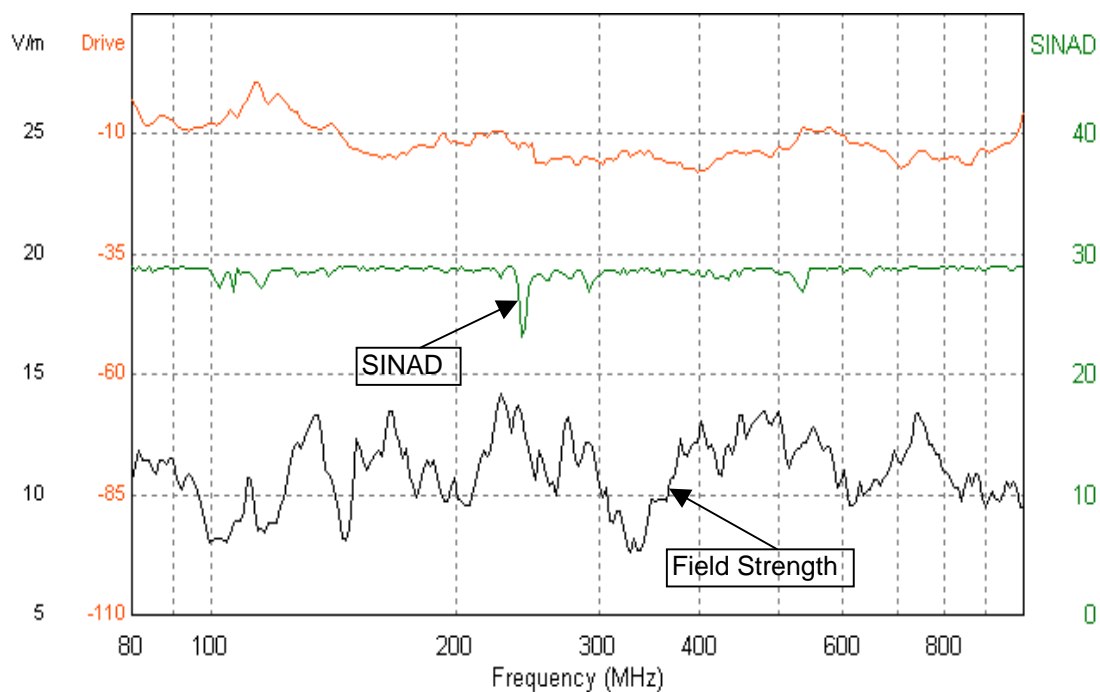


PLOT 32 Radiated Immunity Measurement scan on vertical polarisation
Handset 3 to Internal 1 speaker Intercom Radio front facing

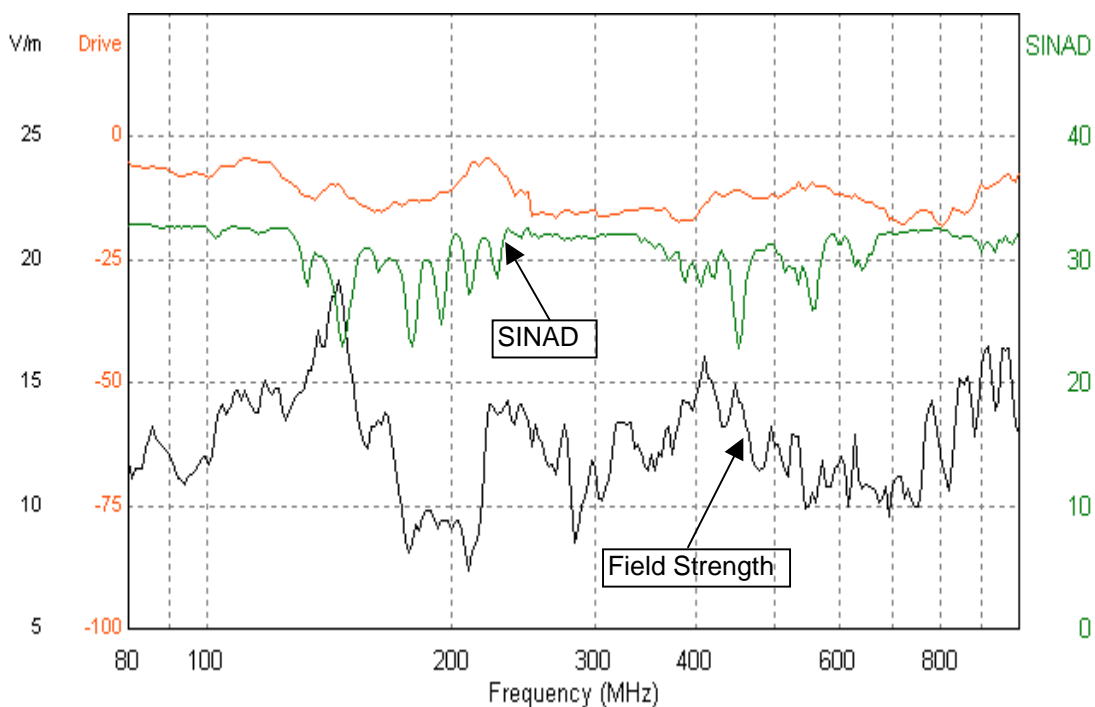


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PLOT 33 Radiated Immunity Measurement scan on horizontal polarisation
Handset 1 to Handset 2 Intercom Radio right facing

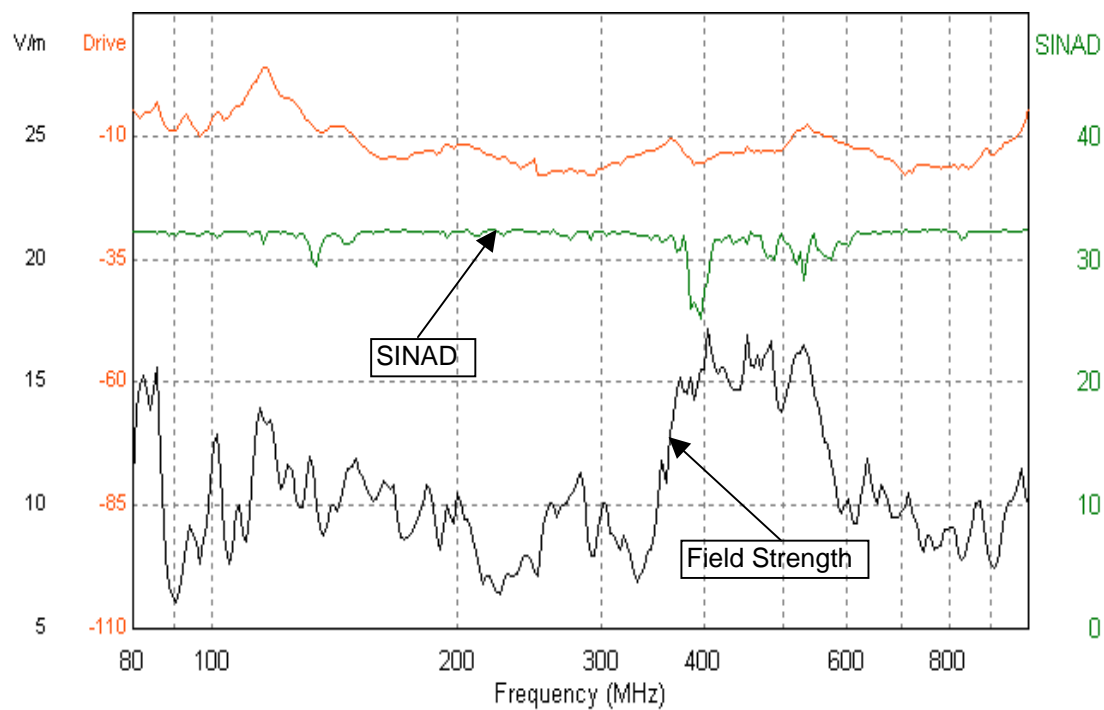


PLOT 34 Radiated Immunity Measurement scan on vertical polarisation
Handset 1 to Handset 2 Intercom Radio right facing

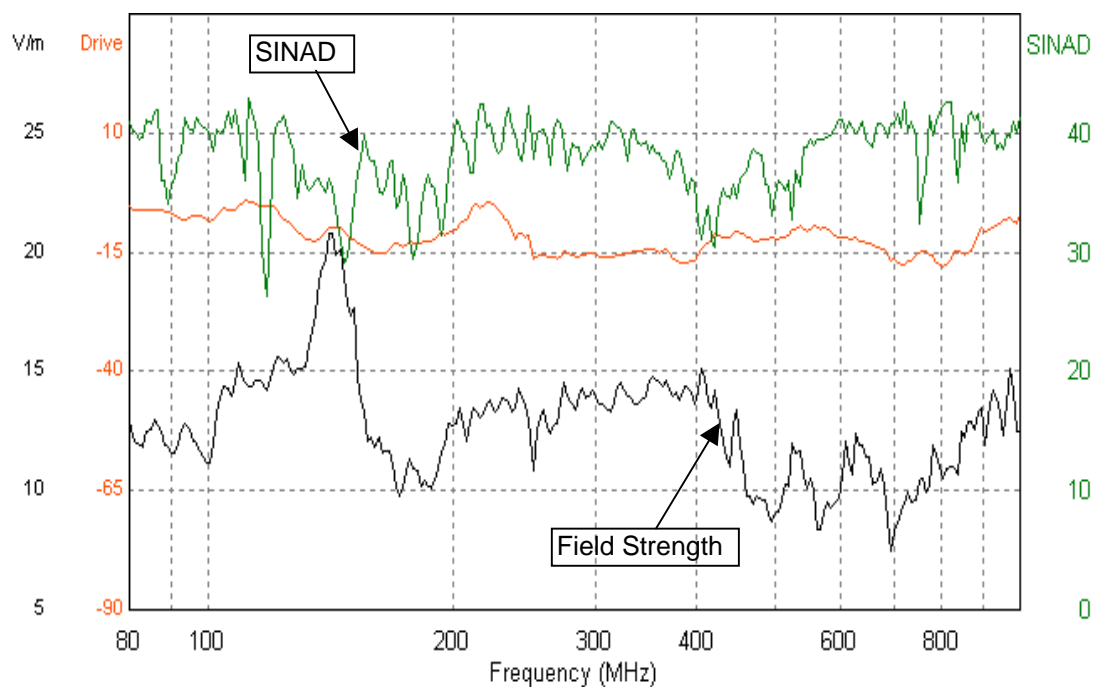


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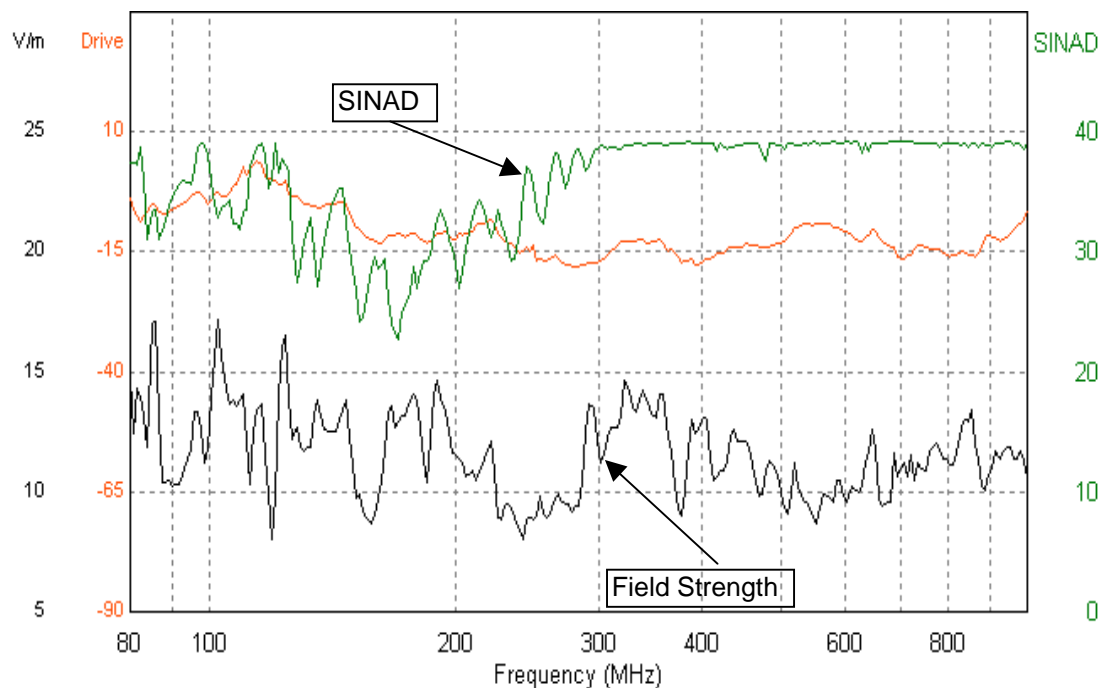
PLOT 35 Radiated Immunity Measurement scan on horizontal polarisation
Handset 2 to Handset 1 Intercom Radio right facing



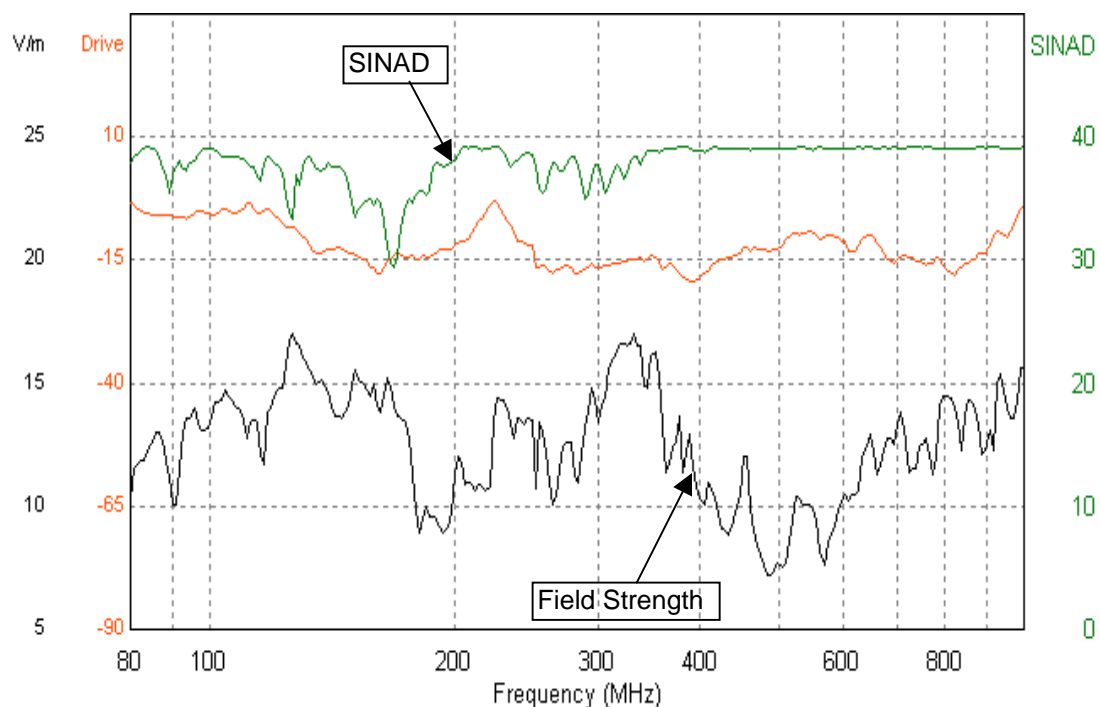
PLOT 36 Radiated Immunity Measurement scan on vertical polarisation
Handset 2 to Handset 1 Intercom Radio right facing



PLOT 37 Radiated Immunity Measurement scan on horizontal polarisation
Auxiliary AF to Handset 1 Intercom Radio right facing

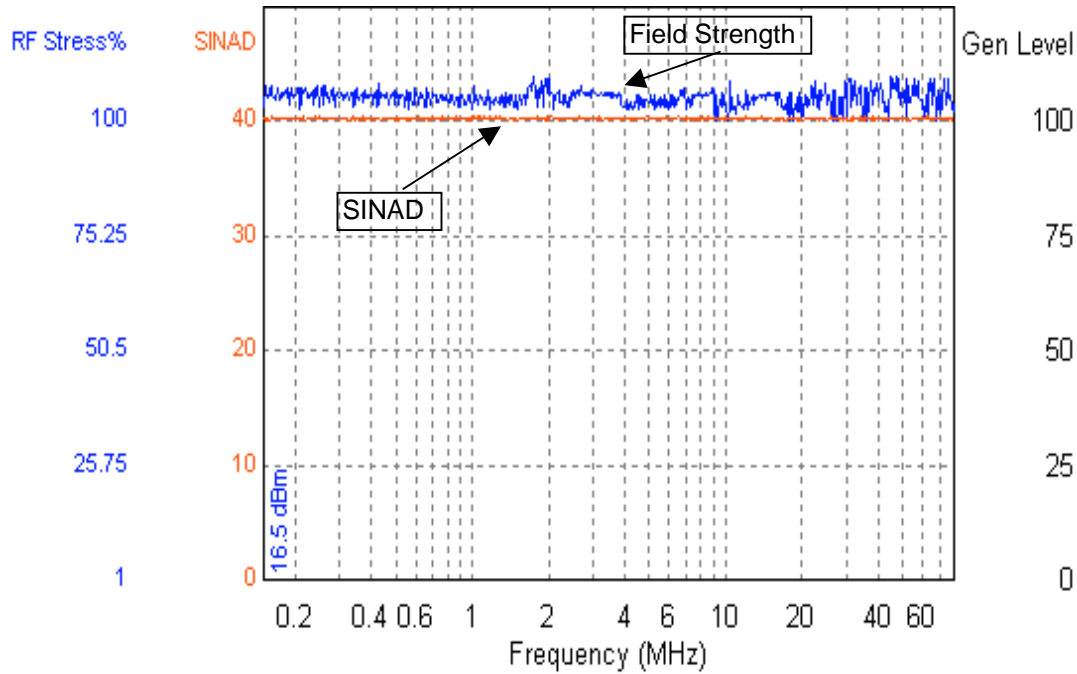


PLOT 38 Radiated Immunity Measurement scan on vertical polarisation
Auxiliary AF to Handset 1 Intercom Radio left facing

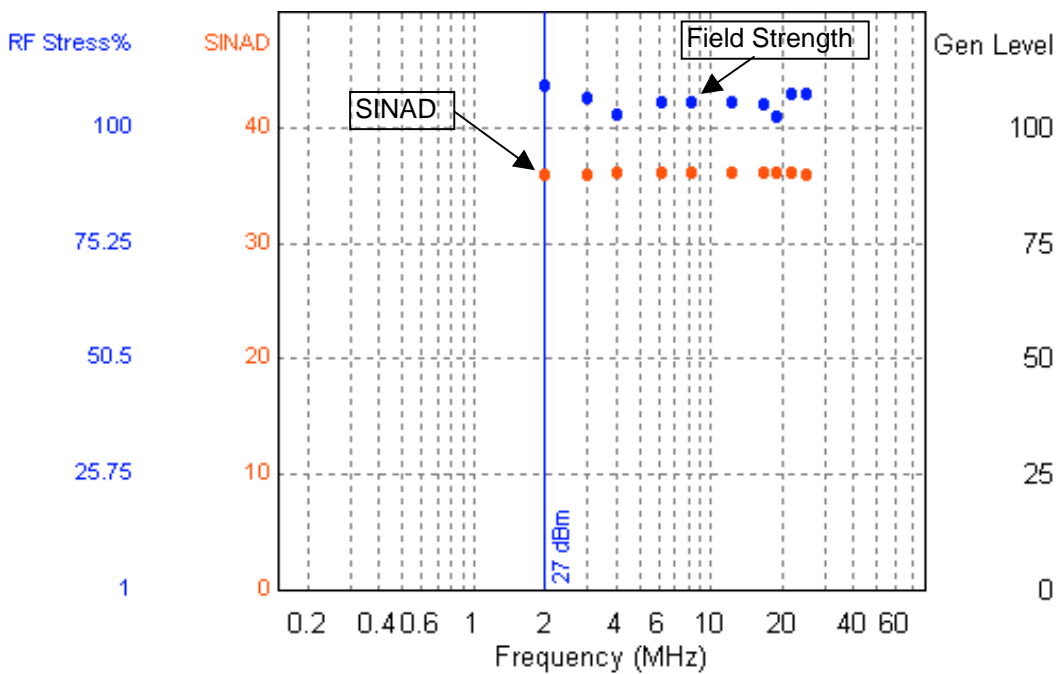


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PLOT 39 Conducted Immunity Measurement scan on the +ve supply line of RS87 in receive mode of operation 3V rms swept

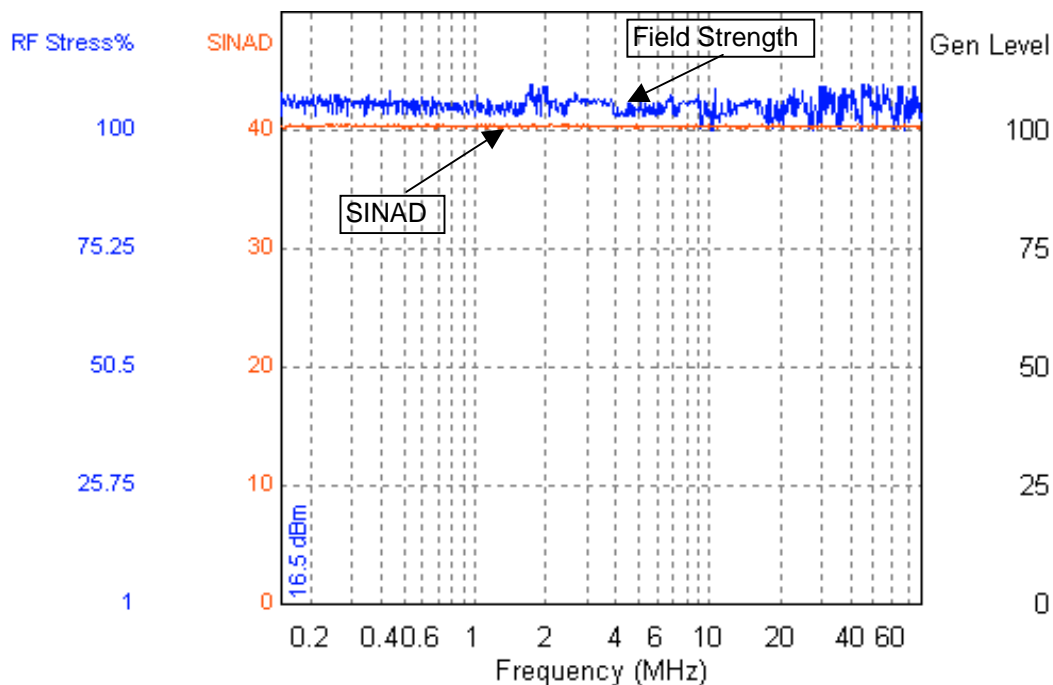


PLOT 40 Conducted Immunity Measurement scan on the +ve supply line of RS87 in receive mode of operation 10V rms spot frequencies

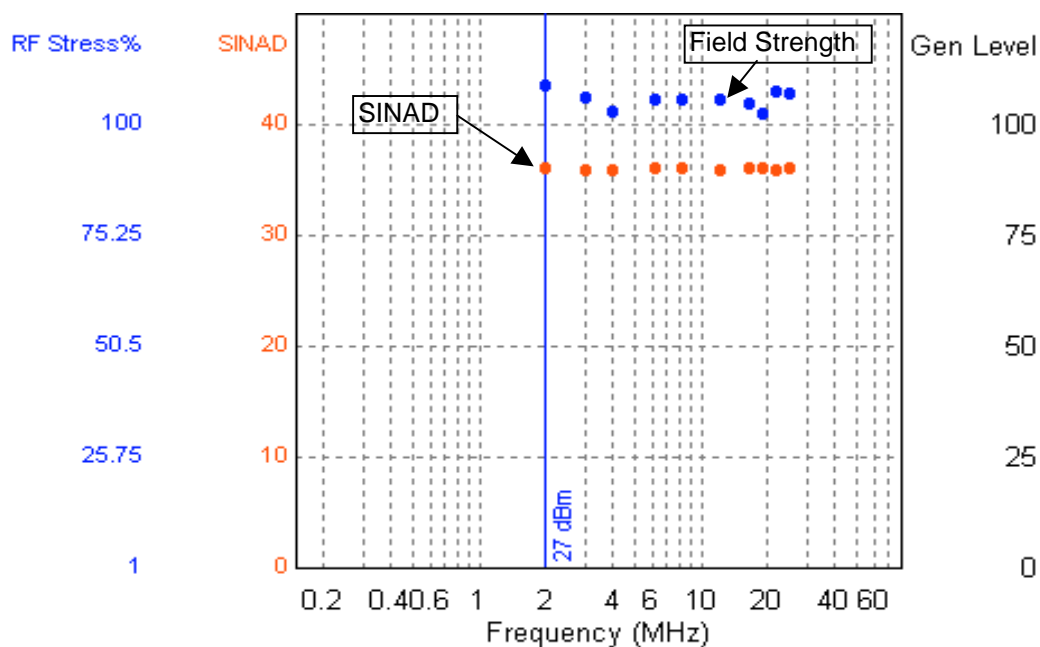


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PLOT 41 Conducted Immunity Measurement scan on the -ve supply line of RS87 in receive mode of operation 3V rms swept

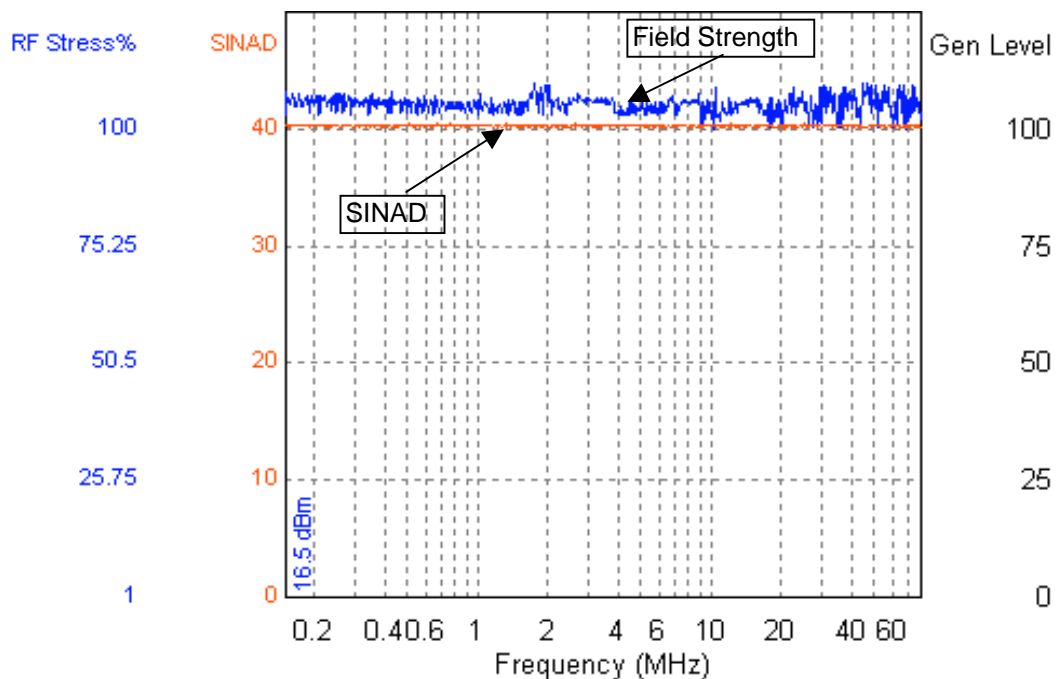


PLOT 42 Conducted Immunity Measurement scan on the -ve supply line of RS87 in receive mode of operation 10V rms spot frequencies

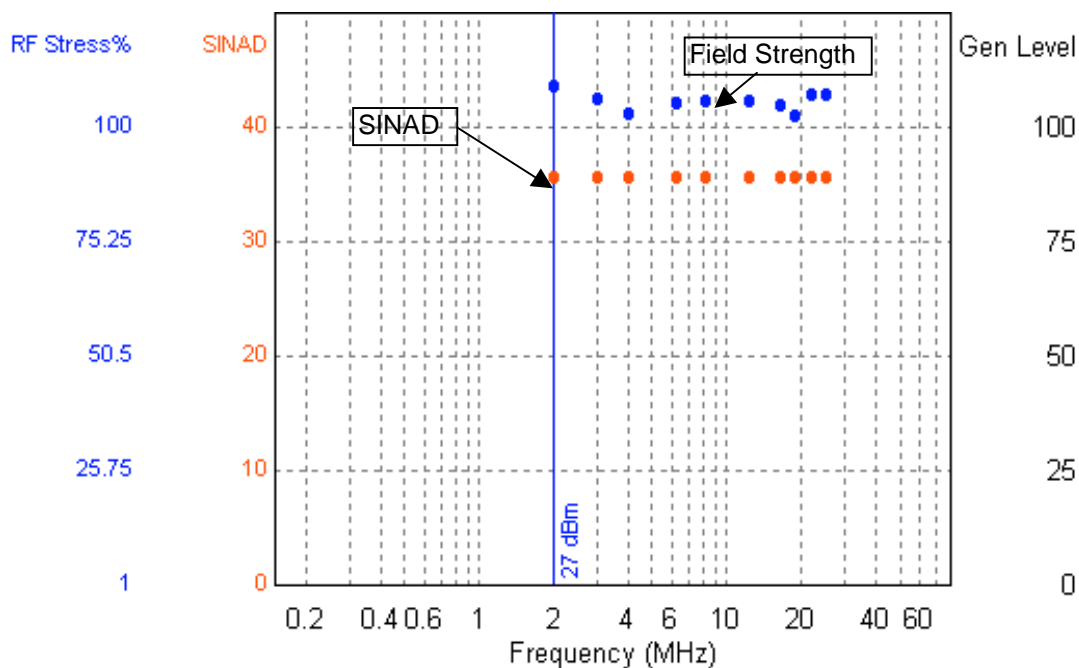


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PLOT 43 Conducted Immunity Measurement scan on the Handset 1 line of RS87 in receive mode of operation 3V rms swept

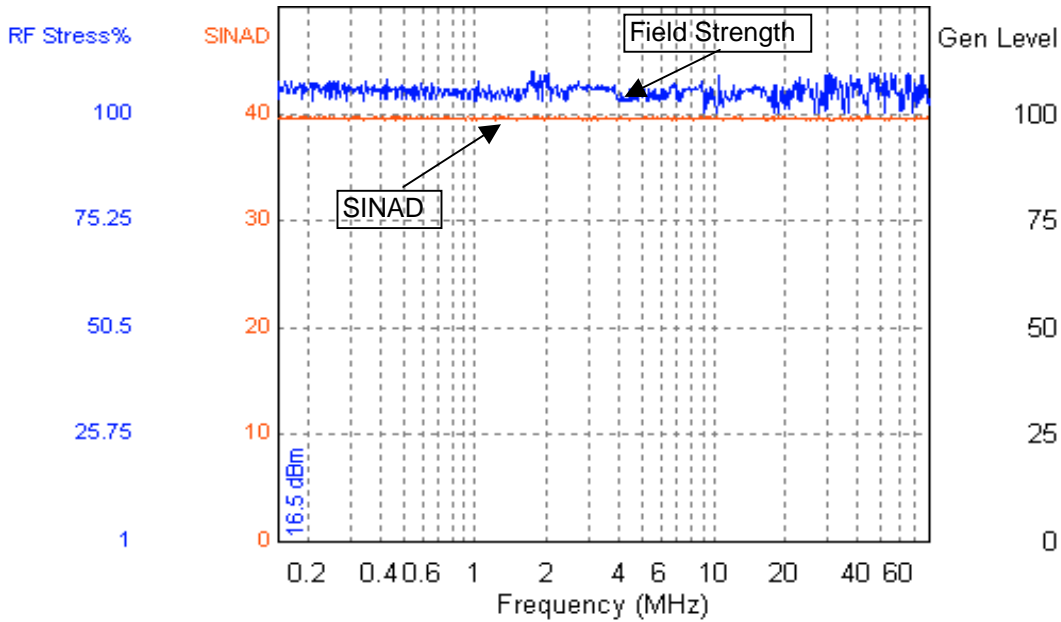


PLOT 44 Conducted Immunity Measurement scan on the Handset 1 line of RS87 in receive mode of operation 10V rms spot frequencies

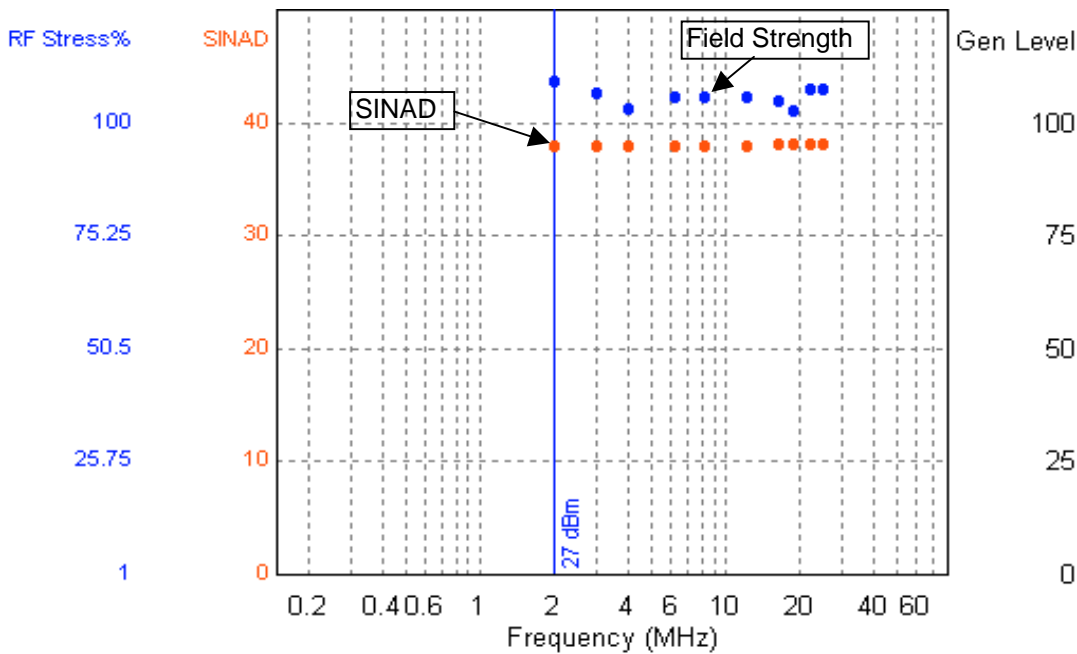


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PLOT 45 Conducted Immunity Measurement scan on the Handset 2 line of RS87 in receive mode of operation 3V rms swept

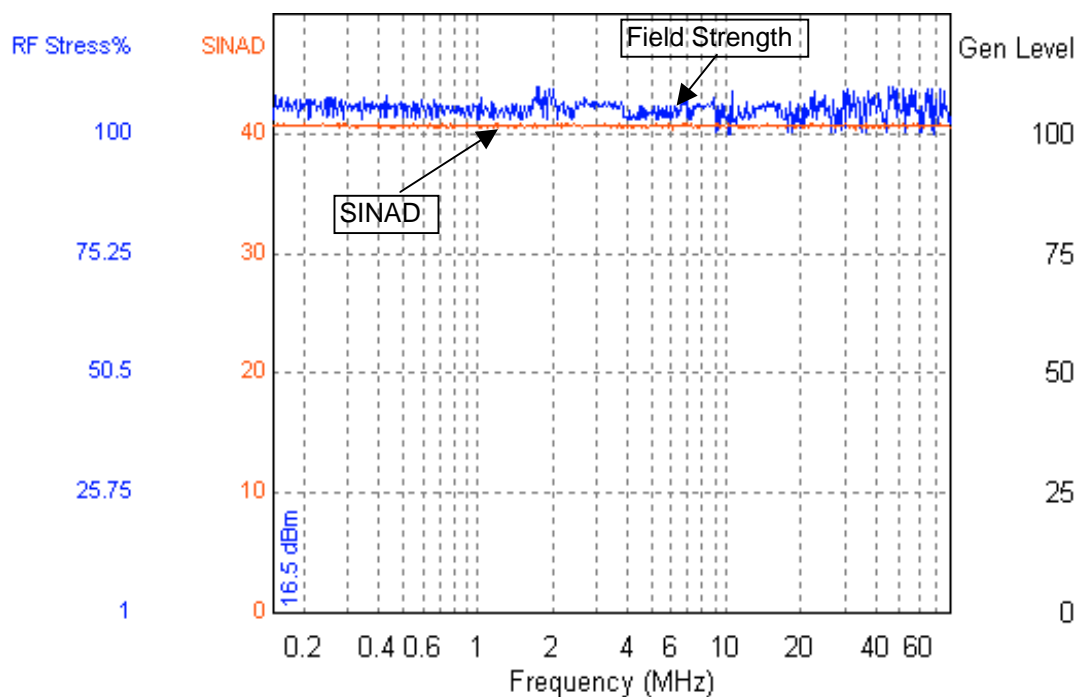


PLOT 46 Conducted Immunity Measurement scan on the Handset 2 line of RS87 in receive mode of operation 10V rms spot frequencies

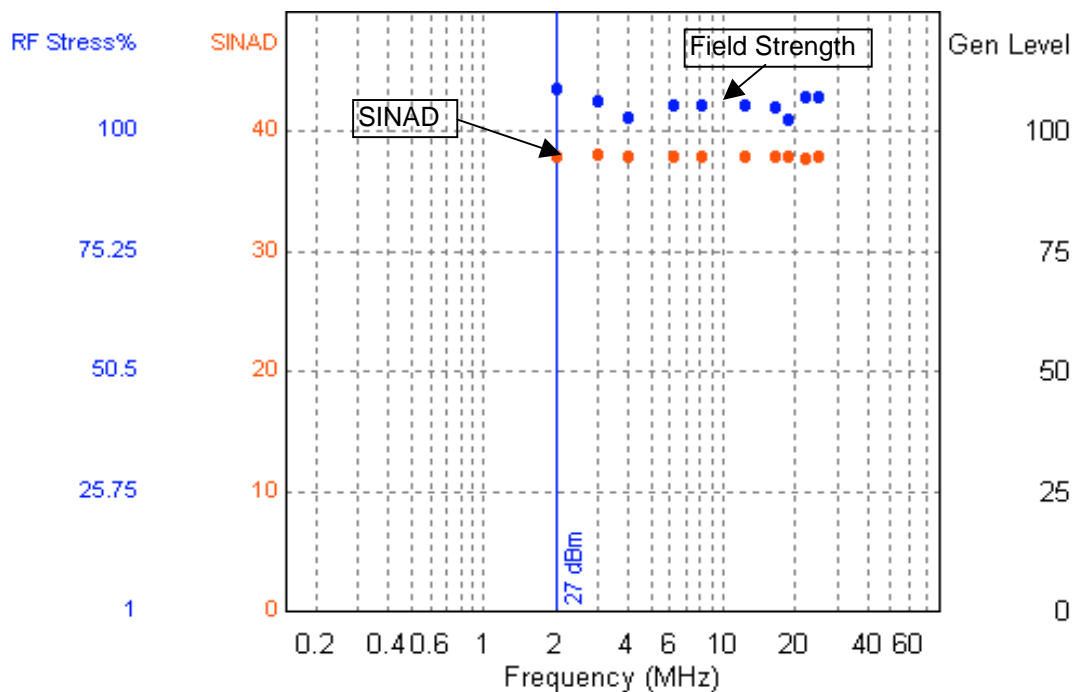


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PLOT 47 Conducted Immunity Measurement scan on the Handset 3 line of RS87 in receive mode of operation 3V rms swept

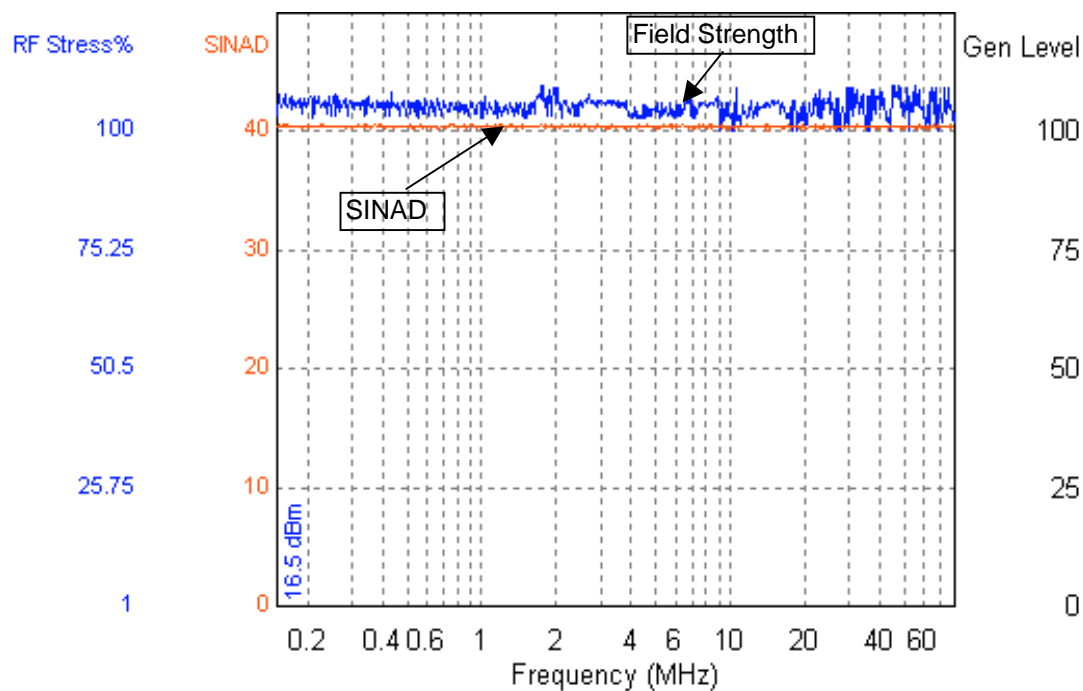


PLOT 48 Conducted Immunity Measurement scan on the Handset 3 line of RS87 in receive mode of operation 10V rms spot frequencies

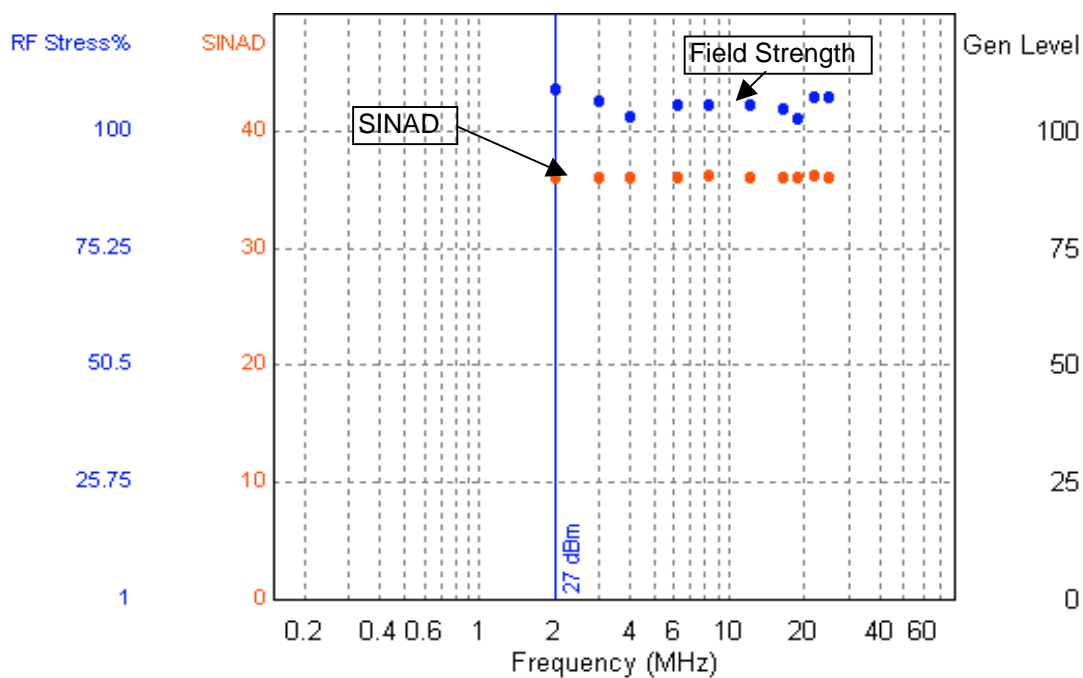


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PLOT 49 Conducted Immunity Measurement scan on the Handset 4 line of RS87 in receive mode of operation 3V rms swept

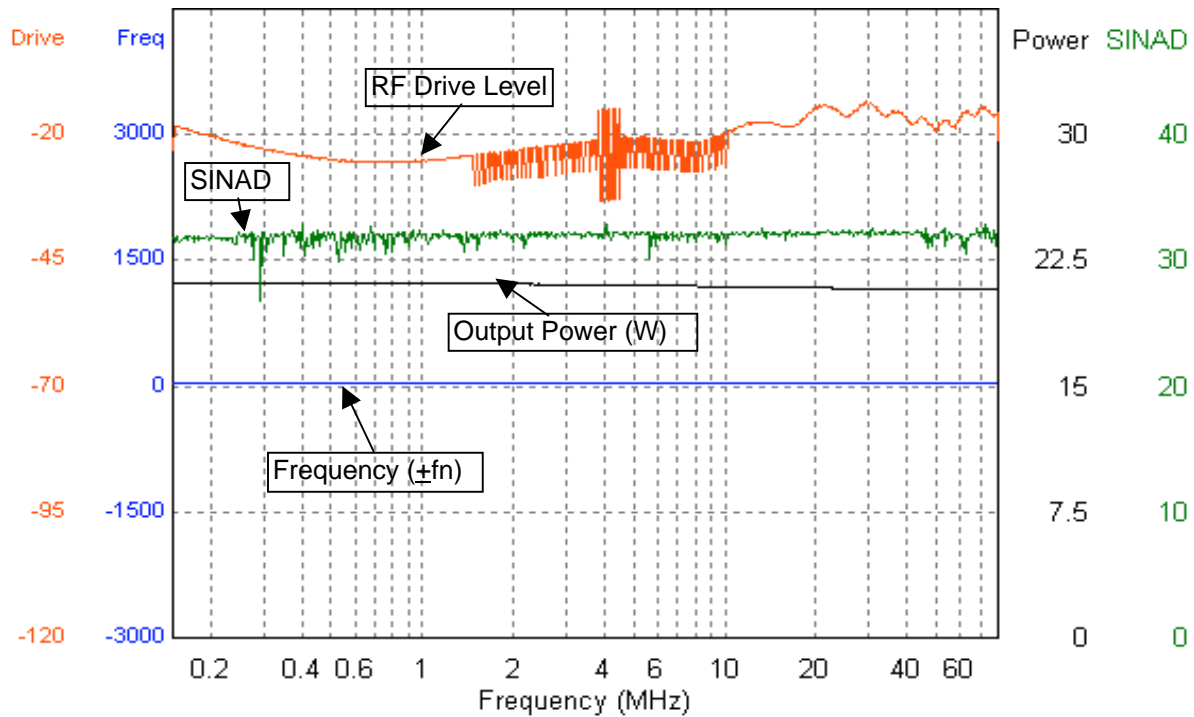


PLOT 50 Conducted Immunity Measurement scan on the Handset 4 line of RS87 in receive mode of operation 10V rms spot frequencies

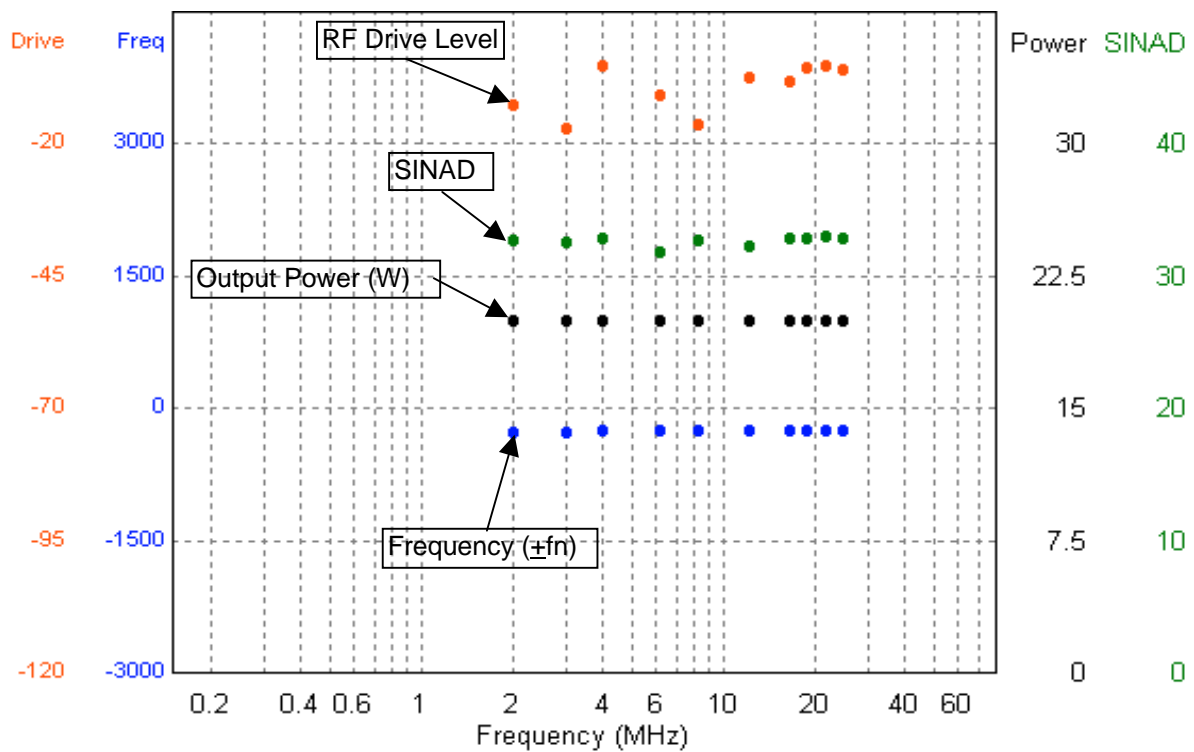


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PLOT 51 Conducted Immunity Measurement scan on the +ve Supply line of RS87 in transmit mode of operation 3V rms swept

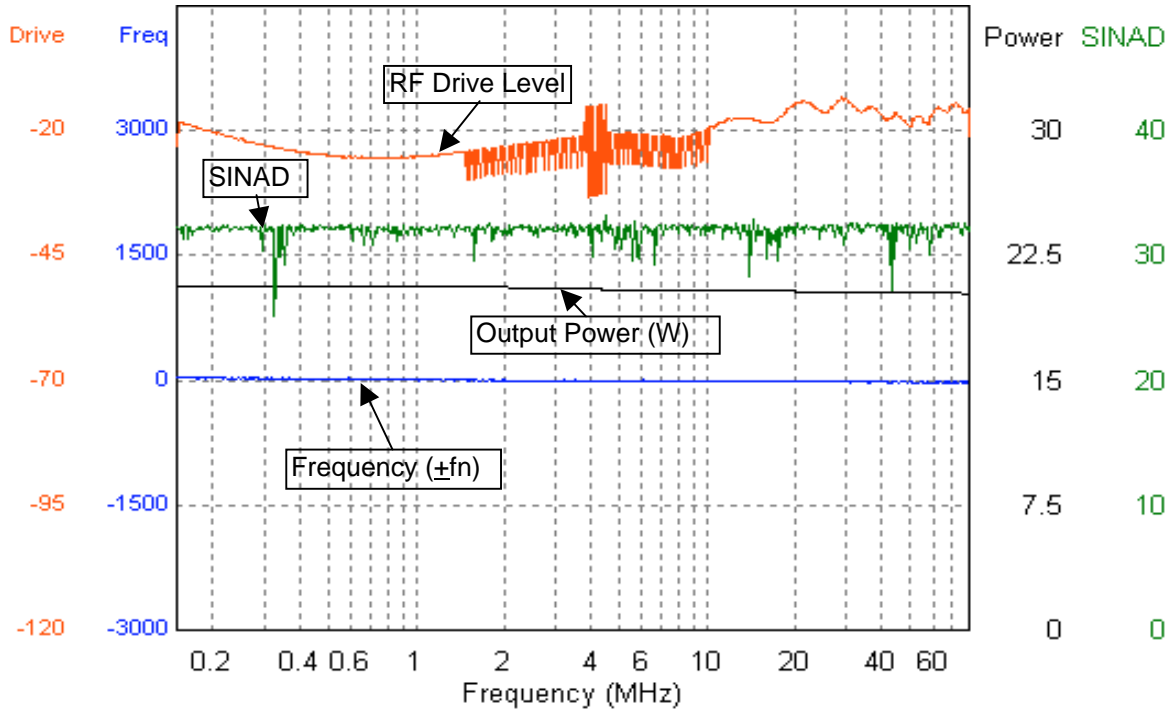


PLOT 52 Conducted Immunity Measurement scan on the +ve Supply line of RS87 in transmit mode of operation 10V rms spot frequencies

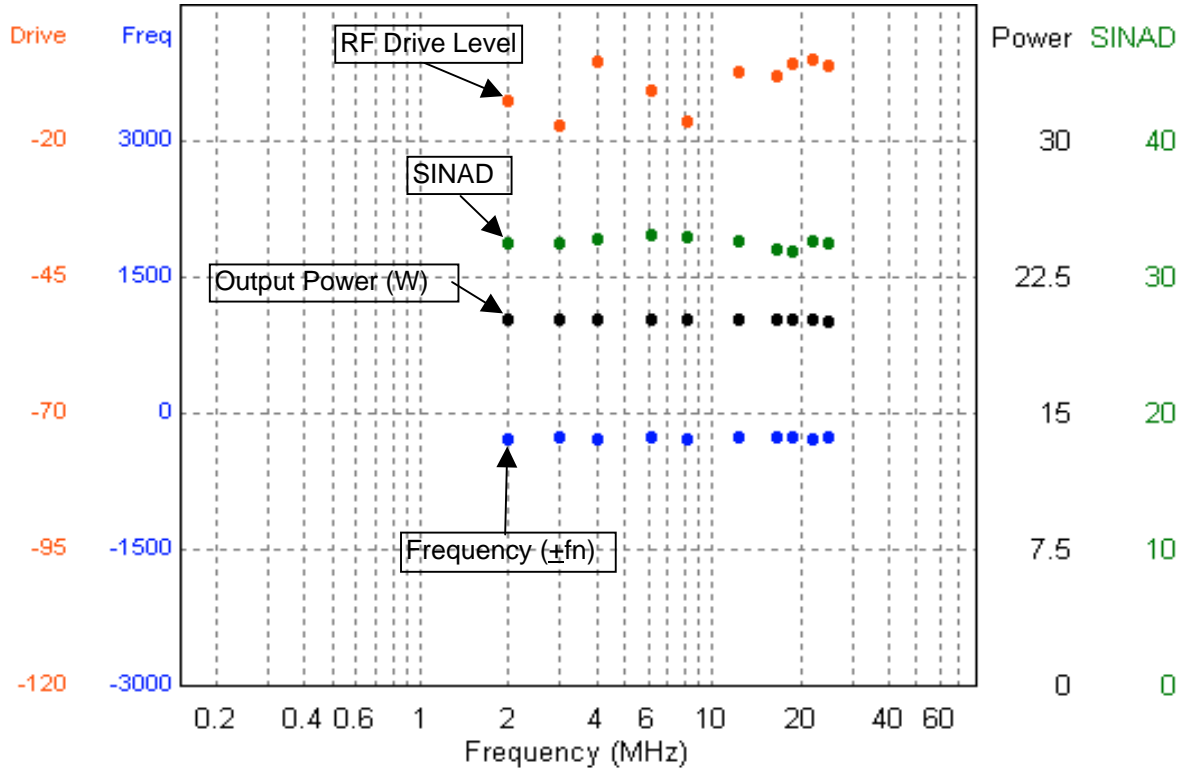


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PLOT 53 Conducted Immunity Measurement scan on the -ve Supply line of RS87 in transmit mode of operation 3V rms swept

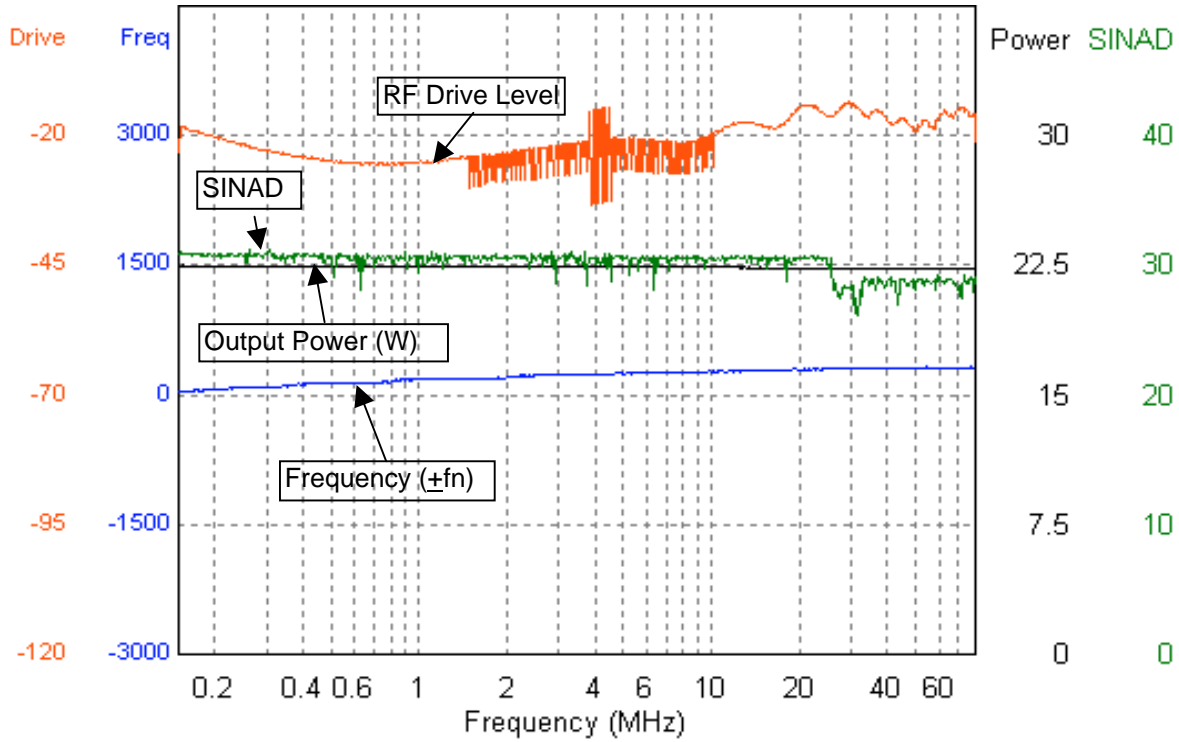


PLOT 54 Conducted Immunity Measurement scan on the -ve Supply line of RS87 in transmit mode of operation 10V rms spot frequencies

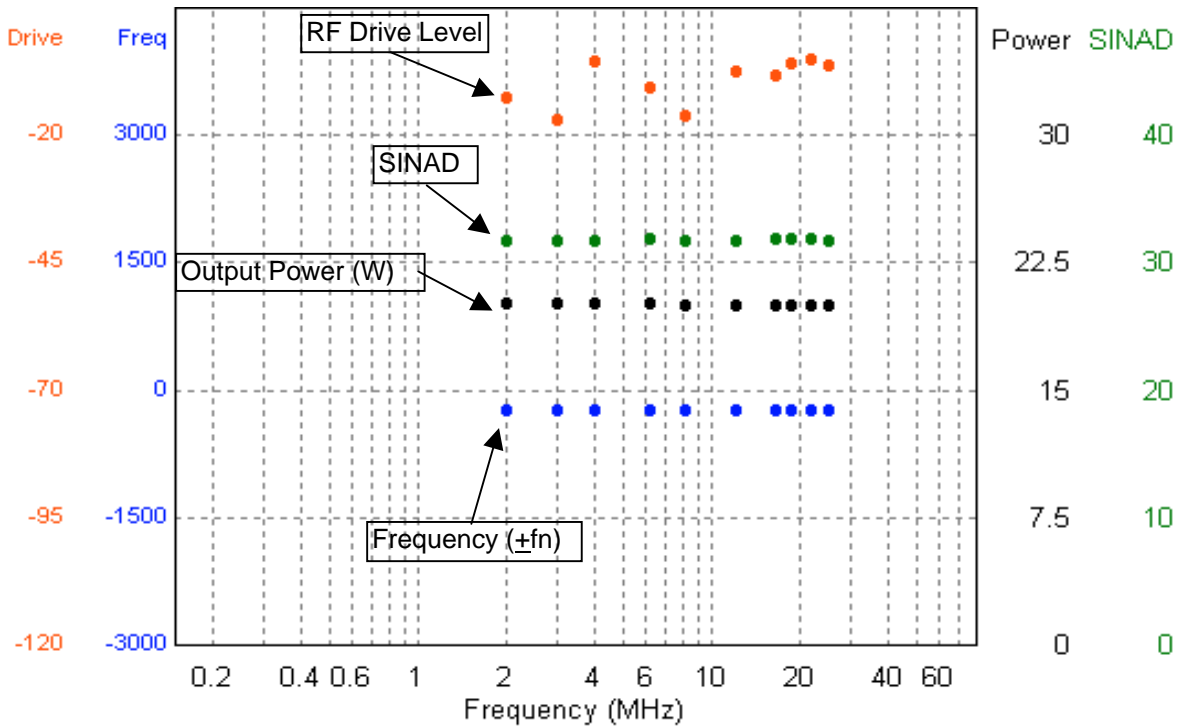


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PLOT 55 Conducted Immunity Measurement scan on the station 1 line of RS87 in transmit mode of operation 3V rms swept

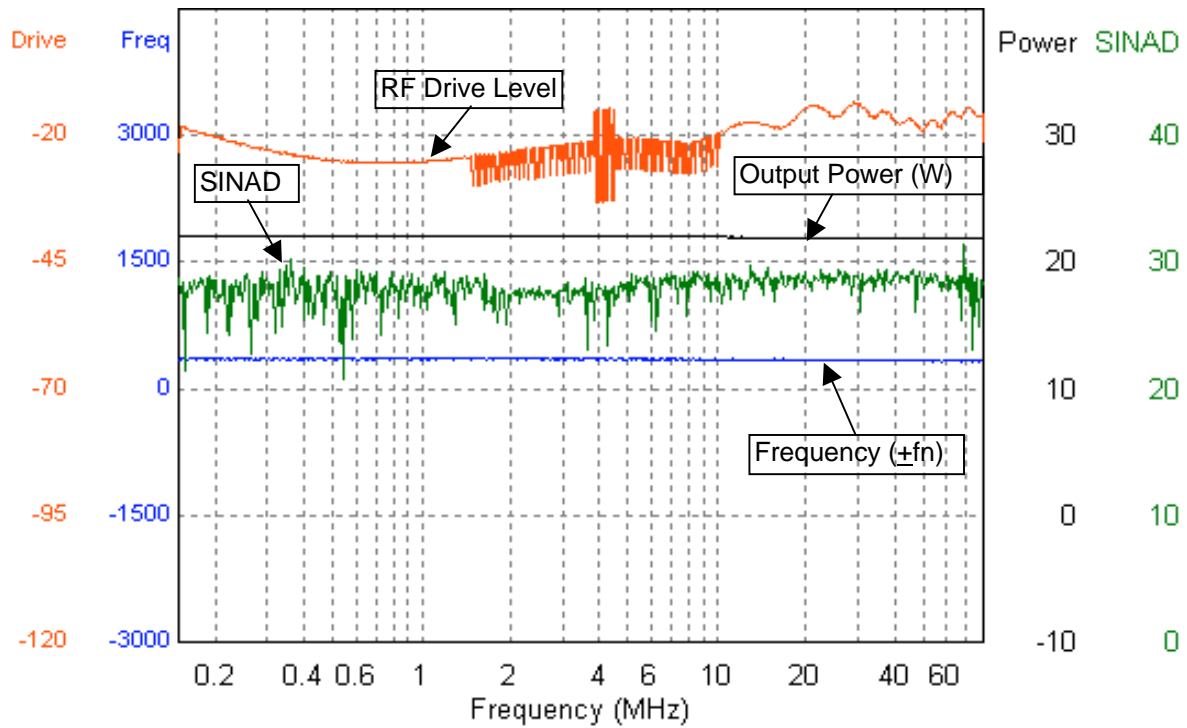


PLOT 56 Conducted Immunity Measurement scan on the station 1 line of RS87 in transmit mode of operation 10V rms spot frequencies

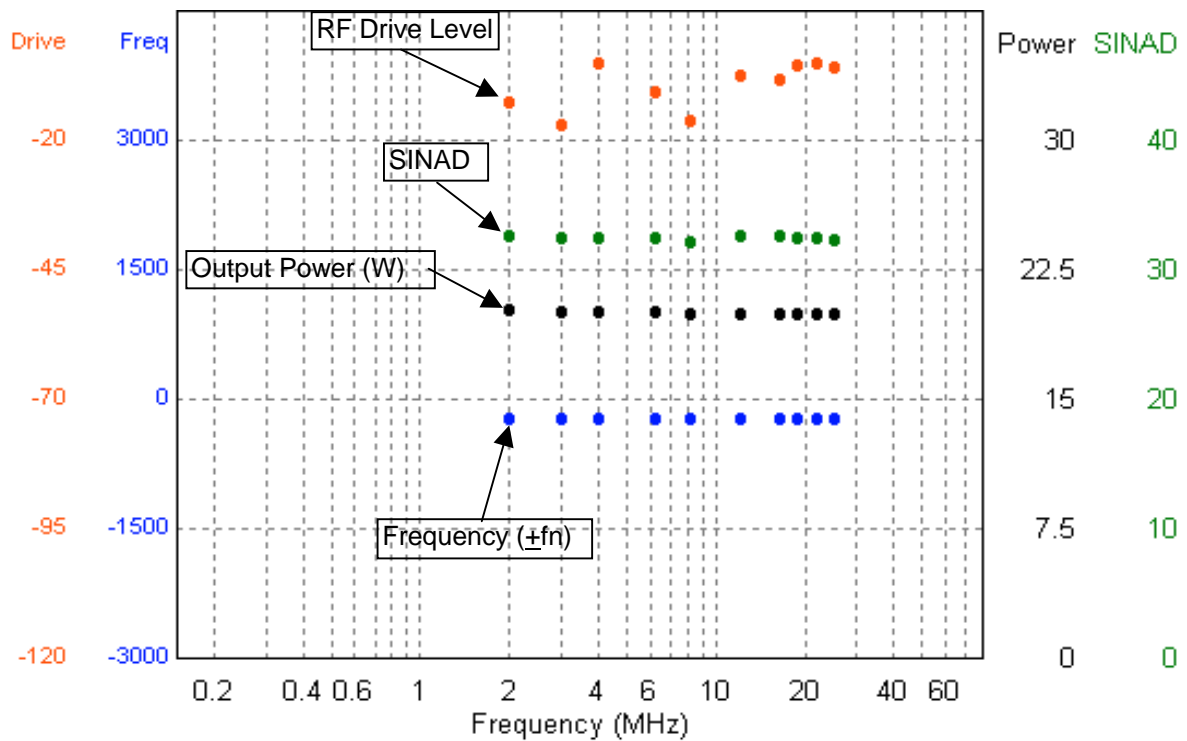


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PLOT 57 Conducted Immunity Measurement scan on the station 2 line of RS87 in transmit mode of operation 3V rms swept

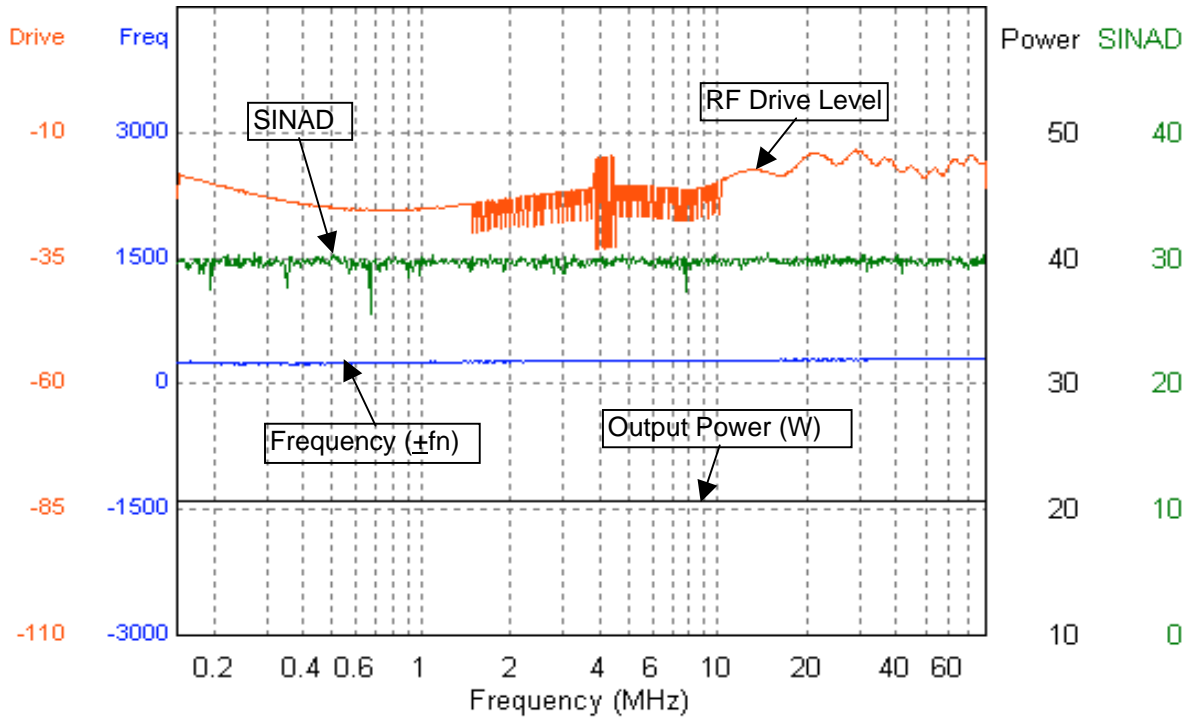


PLOT 58 Conducted Immunity Measurement scan on the station 2 line of RS87 in transmit mode of operation 10V rms spot frequencies

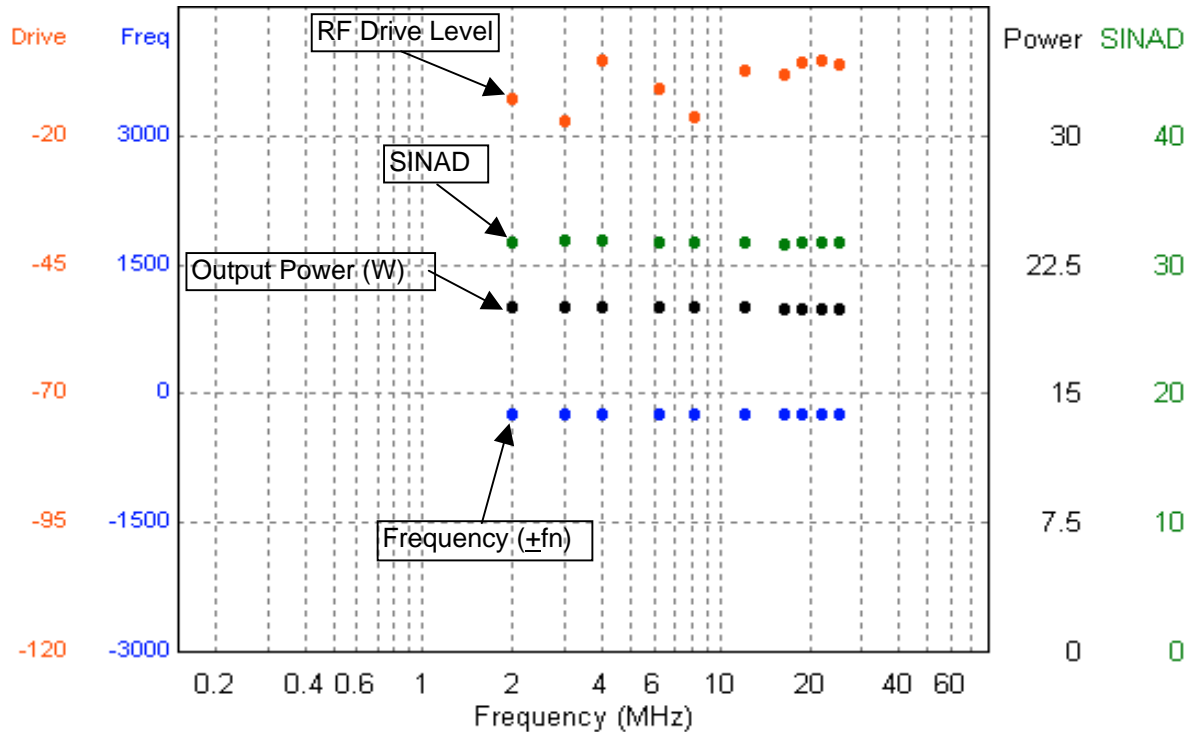


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PLOT 59 Conducted Immunity Measurement scan on the station 3 line of RS87 in transmit mode of operation 3V rms swept

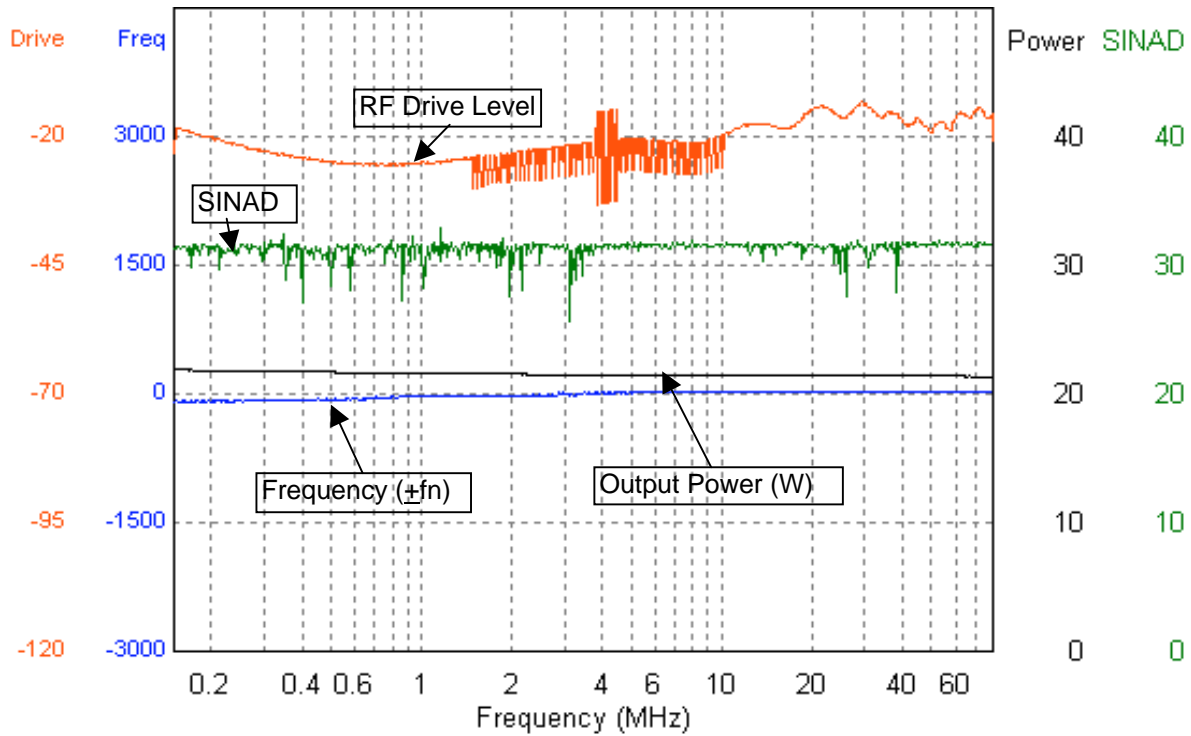


PLOT 60 Conducted Immunity Measurement scan on the station 3 line of RS87 in transmit mode of operation 10V rms spot frequencies

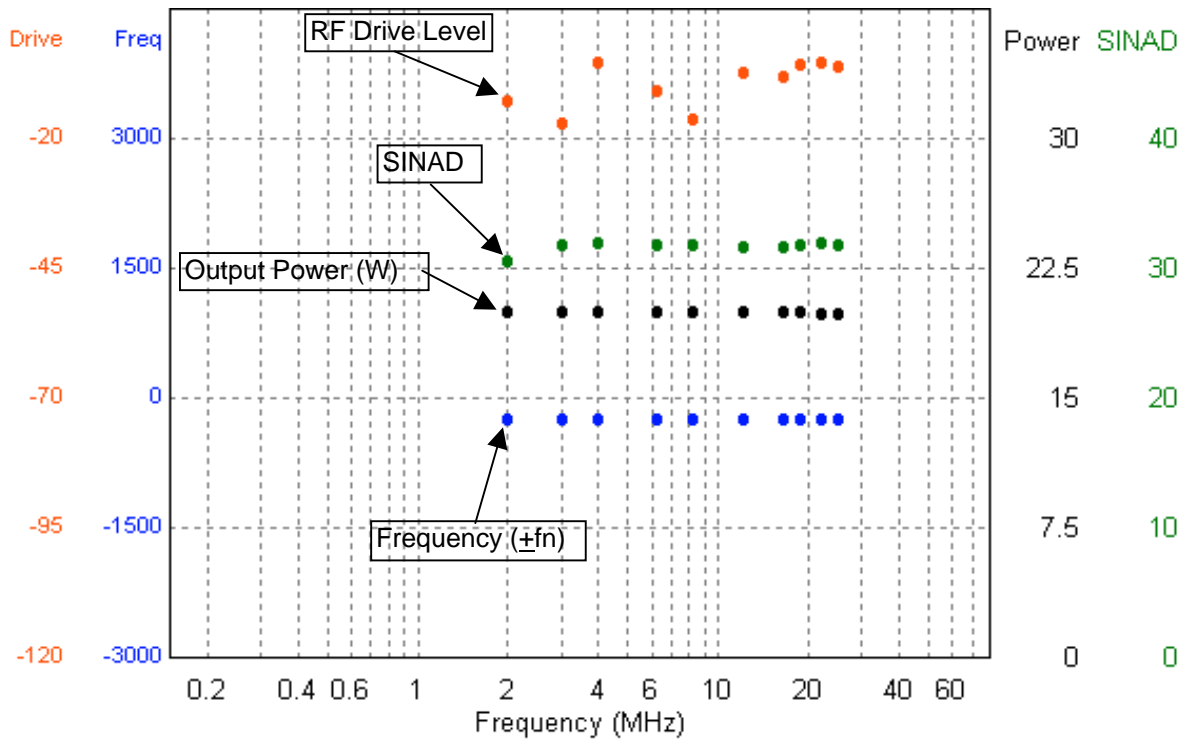


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PLOT 61 Conducted Immunity Measurement scan on the station 4 line of RS87 in transmit mode of operation 3V rms swept

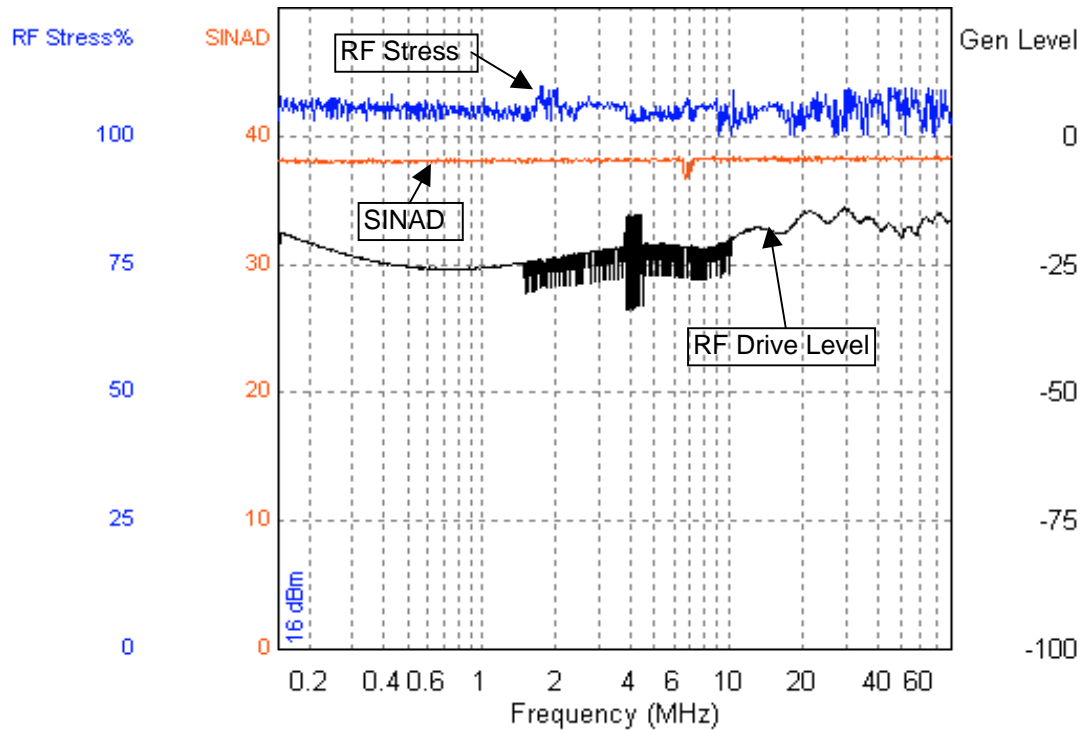


PLOT 62 Conducted Immunity Measurement scan on the station 4 line of RS87 in transmit mode of operation 10V rms spot frequencies

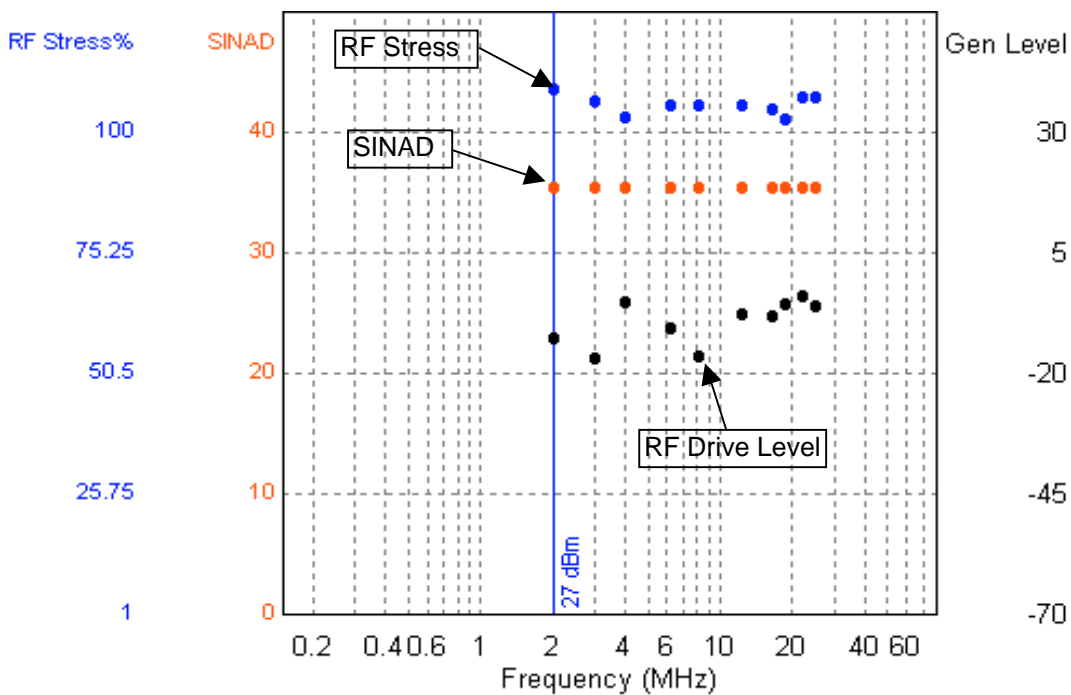


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PLOT 63 Conducted Immunity Measurement scan on the INT1 to station 1 of RS87 in intercom mode of operation 3V rms swept clamp on Int1 cable

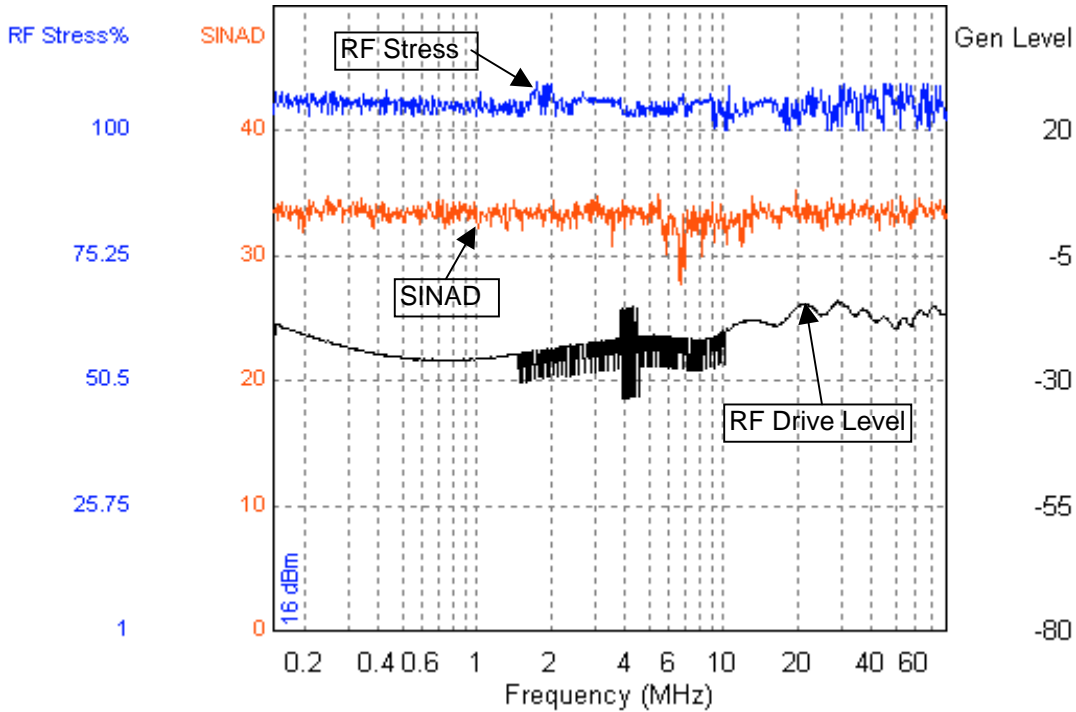


PLOT 64 Conducted Immunity Measurement scan on the INT1 to station 1 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on Int1 cable

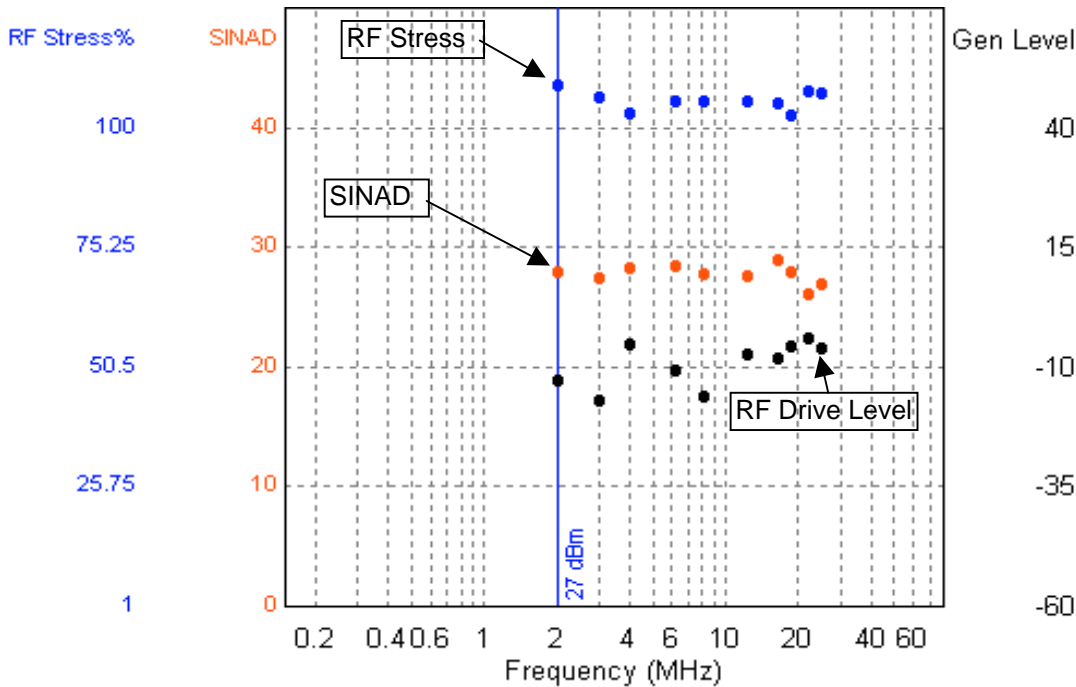


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PLOT 65 Conducted Immunity Measurement scan on the station 1 to INT1 of RS87 in intercom mode of operation 3V rms swept clamp on station 1 cable

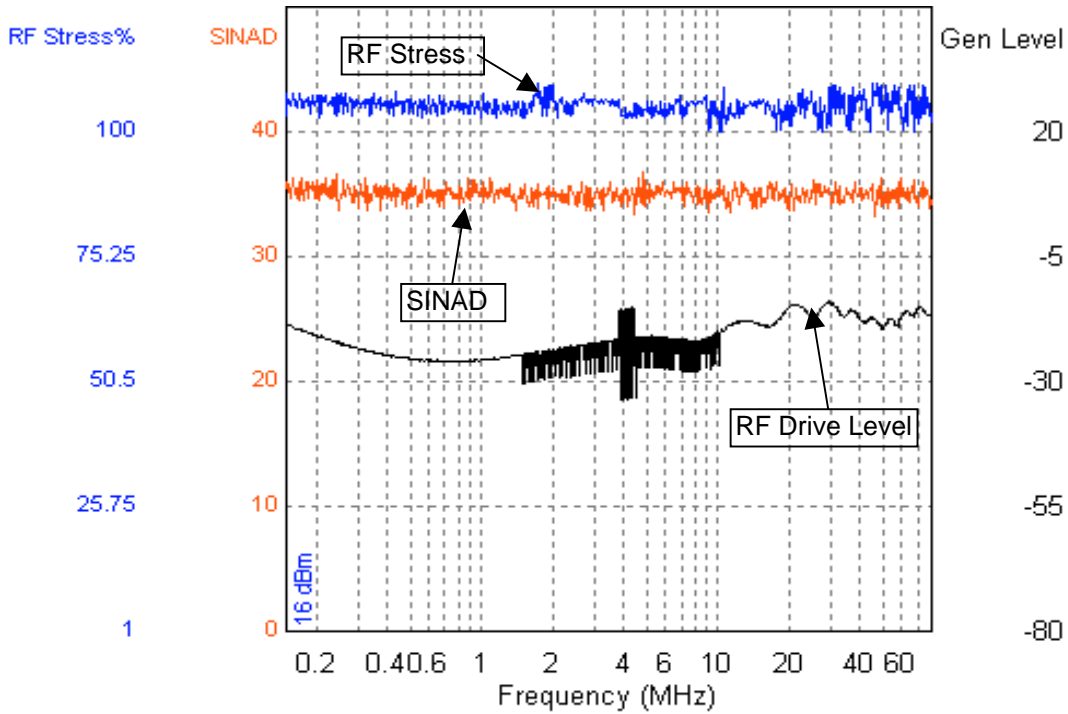


PLOT 66 Conducted Immunity Measurement scan on the station 1 to INT1 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on station 1 cable

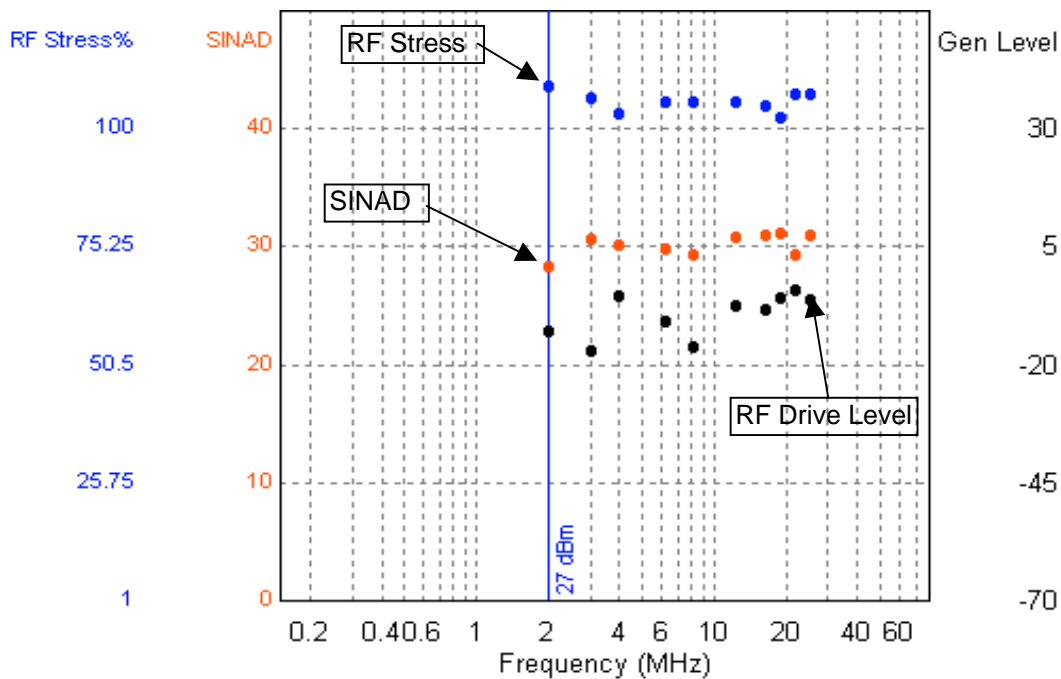


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PLOT 67 Conducted Immunity Measurement scan on the station 2 to INT2 of RS87 in intercom mode of operation 3V rms swept clamp on station 2 cable

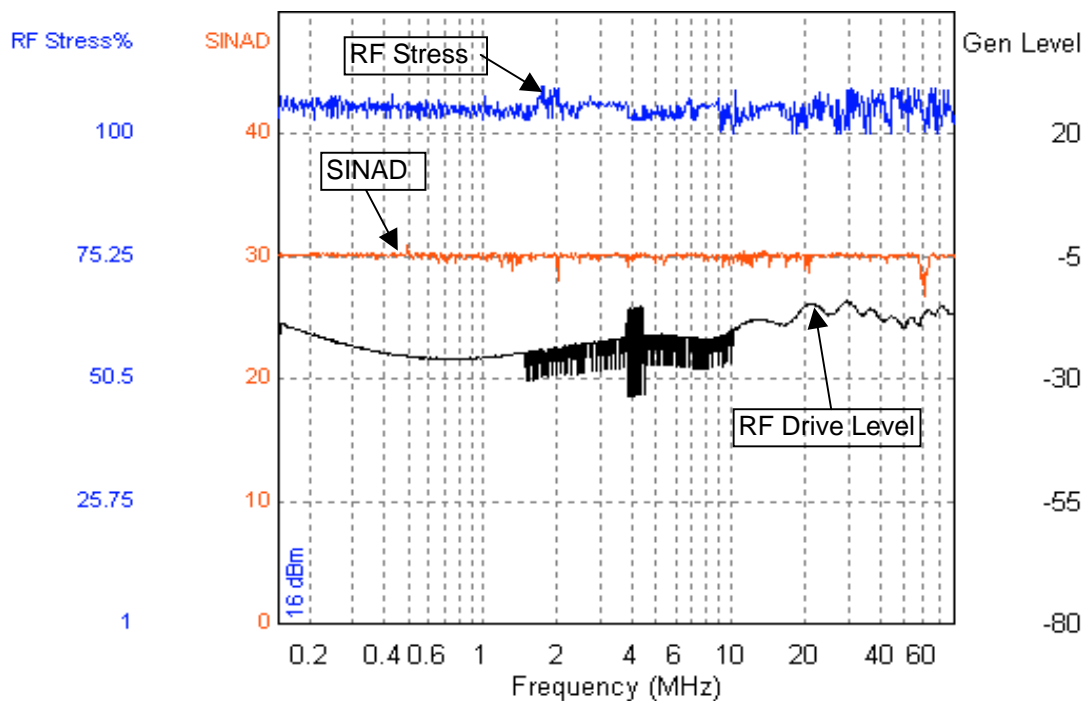


PLOT 68 Conducted Immunity Measurement scan on the station 2 to INT2 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on station 2 cable

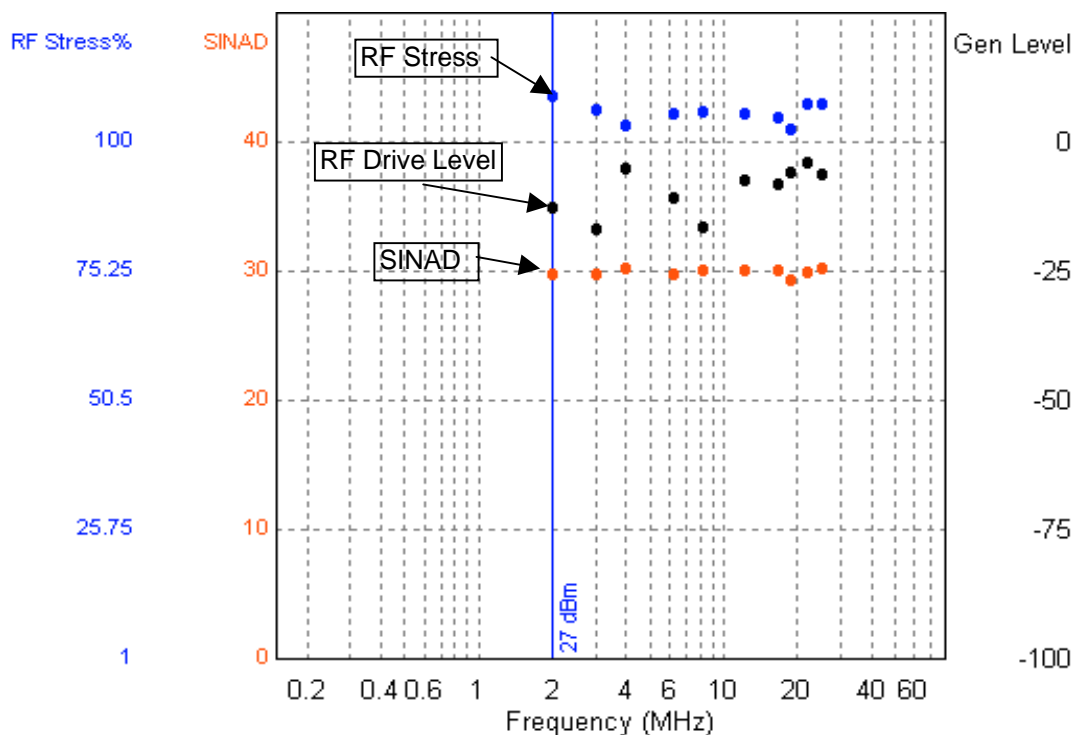


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PLOT 69 Conducted Immunity Measurement scan on the INT2 to station 2 of RS87 in intercom mode of operation 3V rms swept clamp on INT2 cable

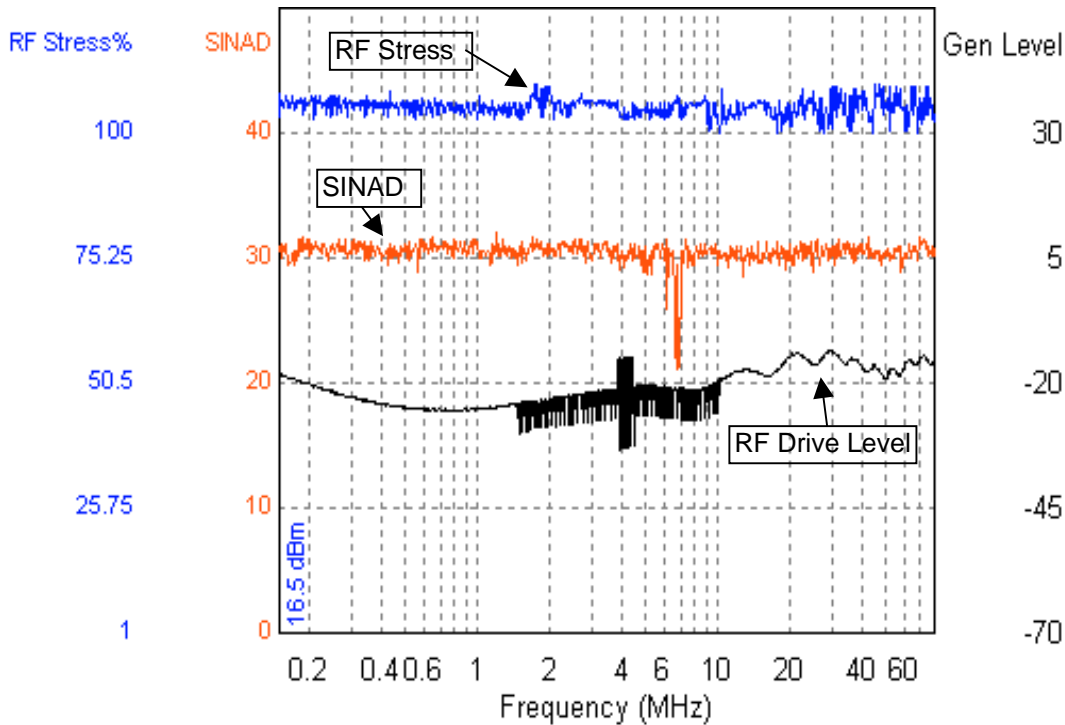


PLOT 70 Conducted Immunity Measurement scan on the INT2 to station 2 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on INT2 cable

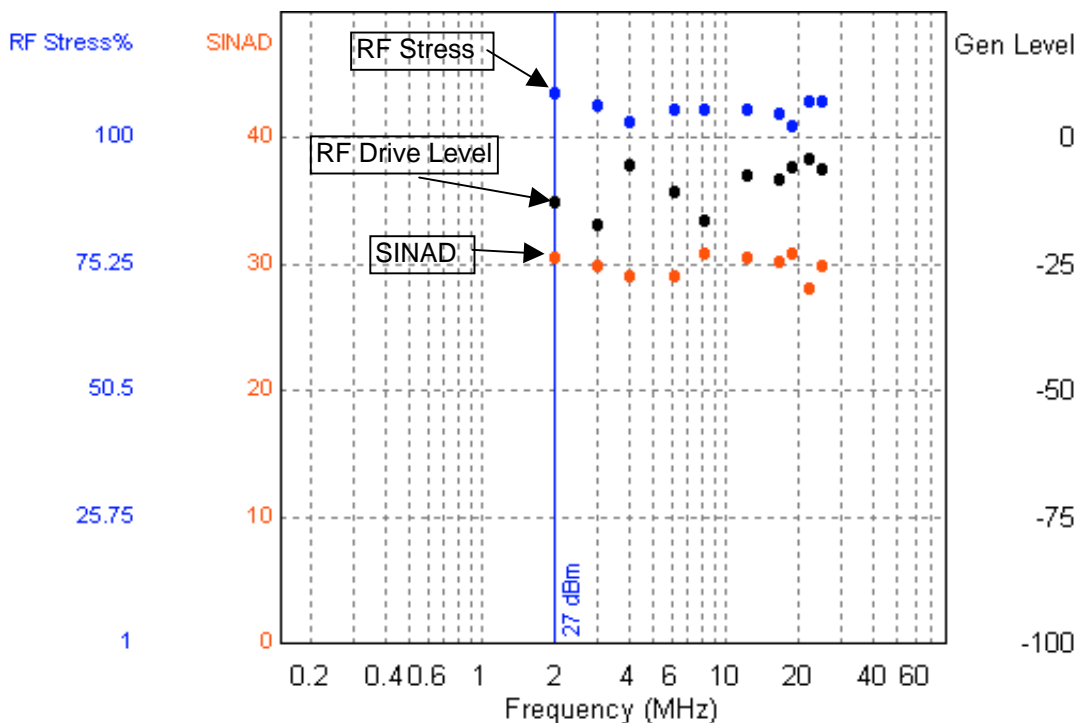


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PLOT 71 Conducted Immunity Measurement scan on the Hailer 1 to station 3 of RS87 in intercom mode of operation 3V rms swept clamp on Hailer 1 cable

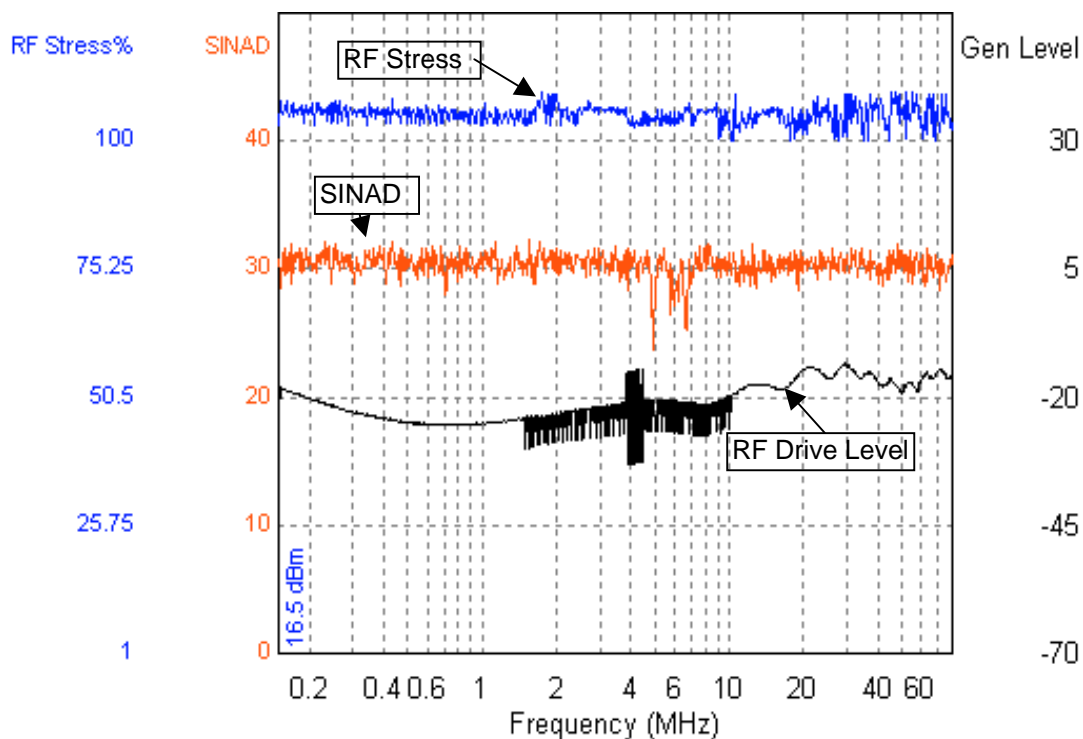


PLOT 72 Conducted Immunity Measurement scan on the Hailer 1 to station 3 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on Hailer 1 cable

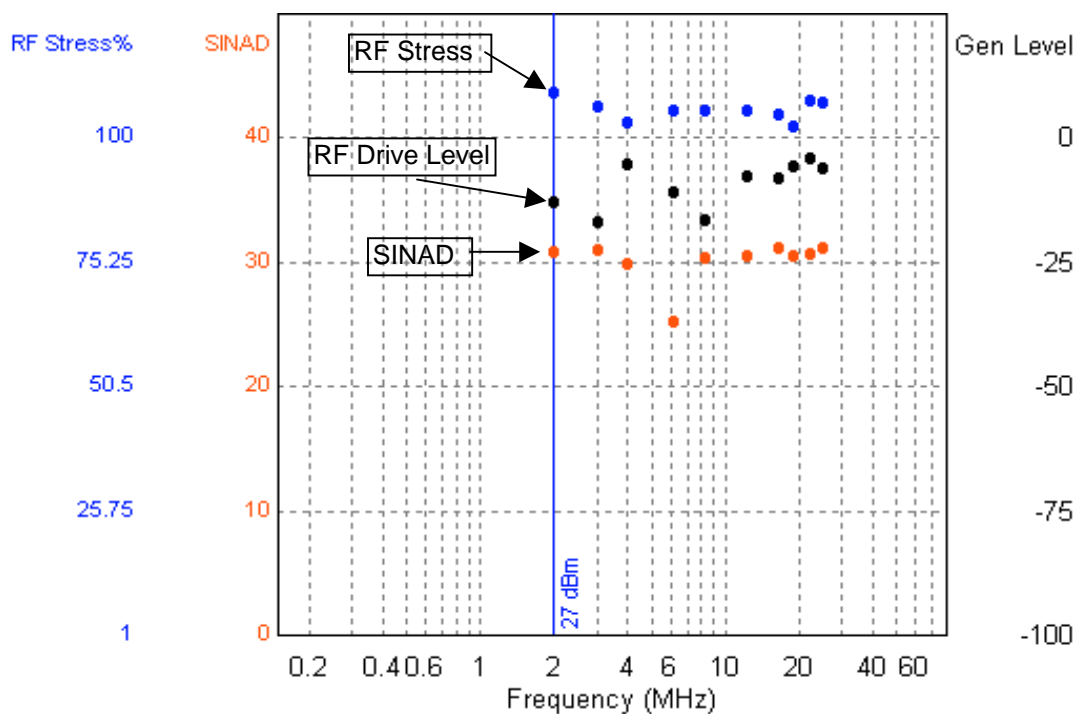


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PLOT 73 Conducted Immunity Measurement scan on the station 3 to Hailer 1 of RS87 in intercom mode of operation 3V rms swept clamp on station 3 cable

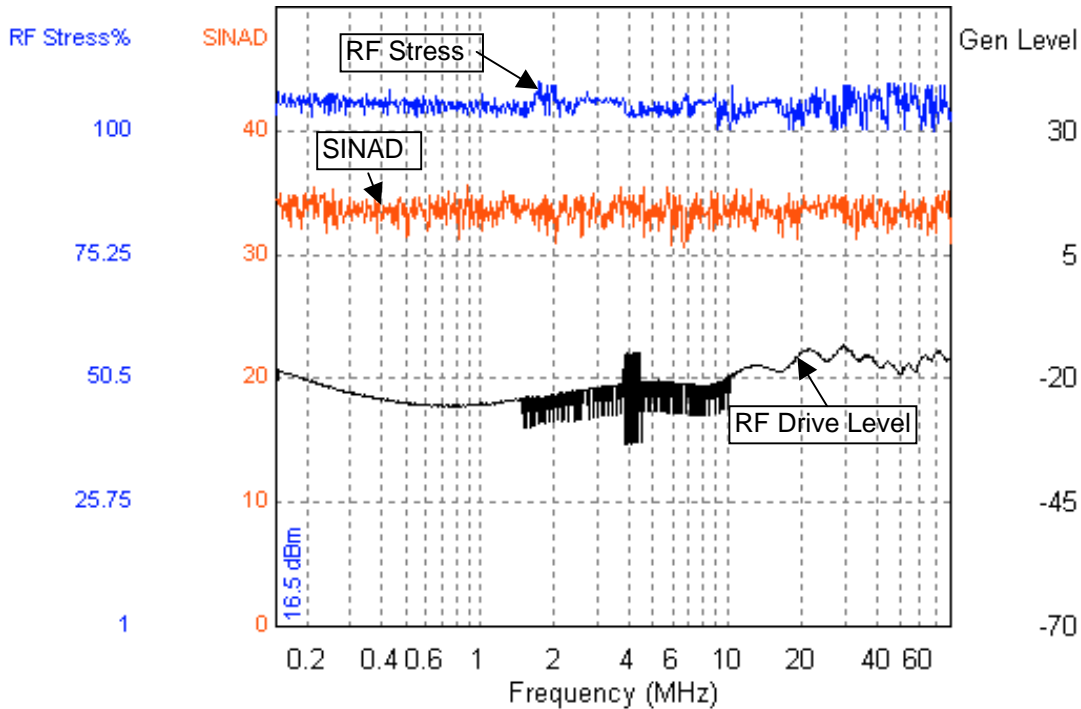


PLOT 74 Conducted Immunity Measurement scan on the station 3 to Hailer 1 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on station 3 cable

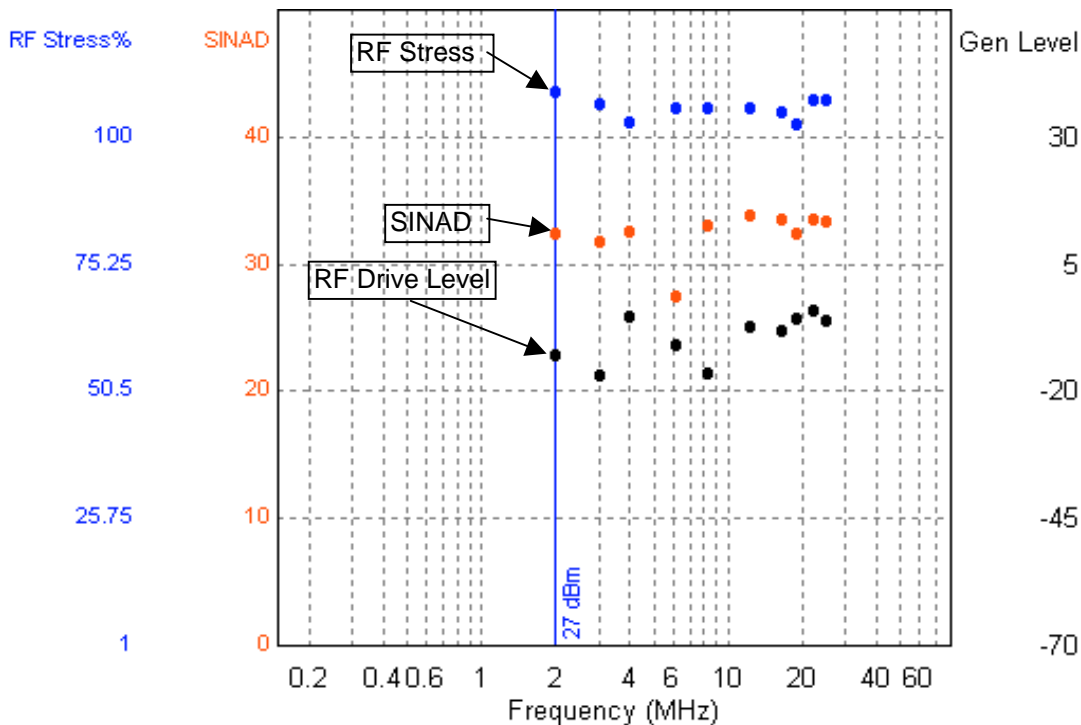


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PLOT 75 Conducted Immunity Measurement scan on the station 4 to Hailer 2 of RS87 in intercom mode of operation 3V rms swept clamp on station 4 cable

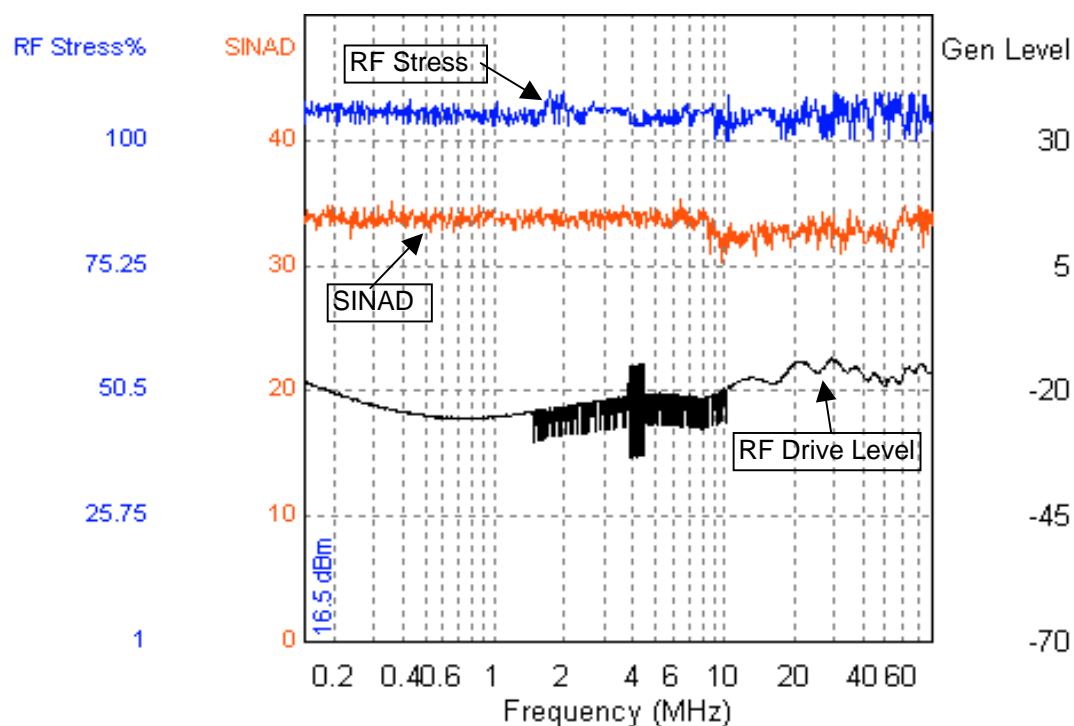


PLOT 76 Conducted Immunity Measurement scan on the station 4 to Hailer 2 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on station 4 cable

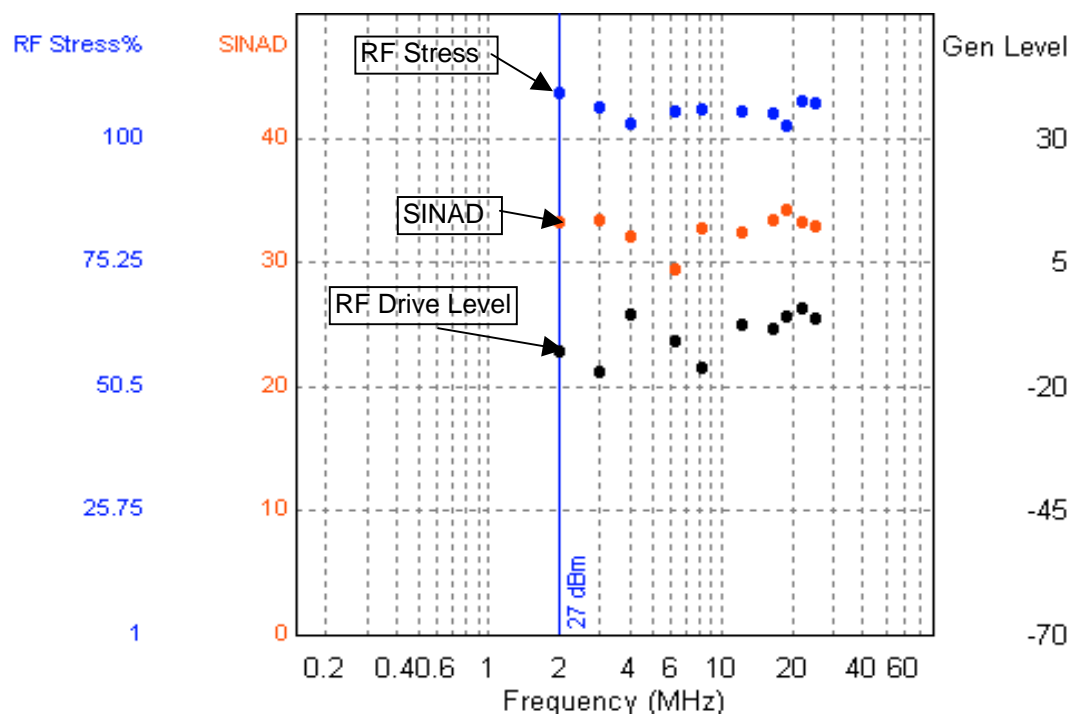


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PLOT 77 Conducted Immunity Measurement scan on the hailer 2 to station 4 of RS87 in intercom mode of operation 3V rms swept clamp on hailer 2 cable

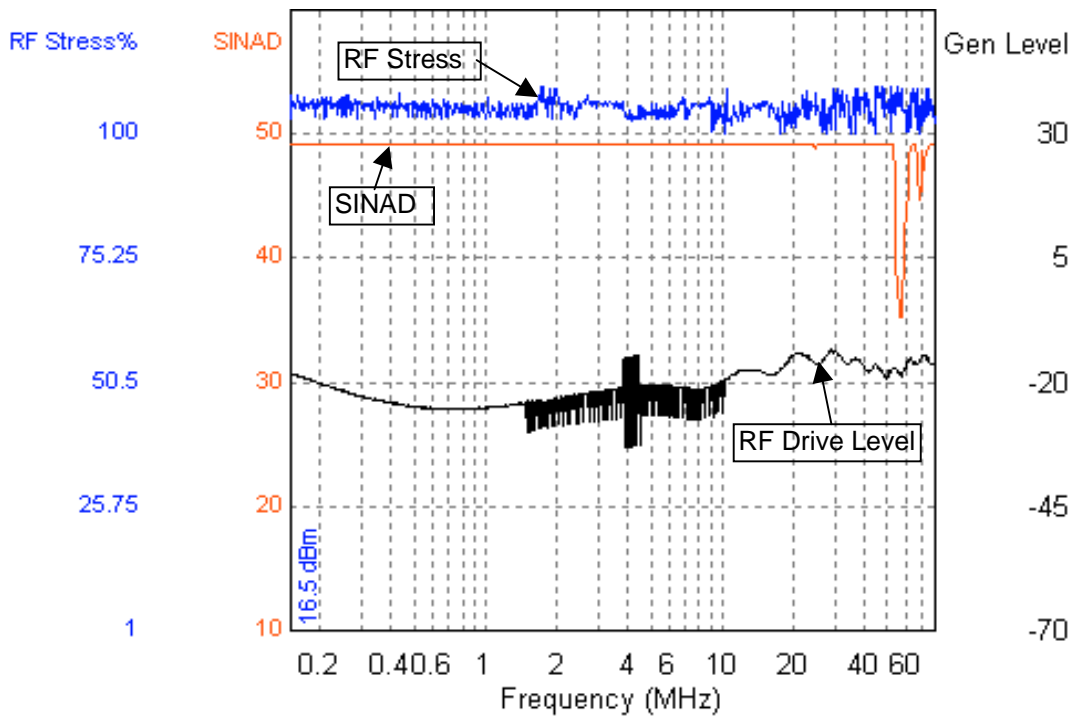


PLOT 78 Conducted Immunity Measurement scan on the hailer 2 to station 4 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on hailer 2 cable



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PLOT 79 Conducted Immunity Measurement scan on the auxiliary AF to station 1 of RS87 in intercom mode of operation 3V rms swept clamp on Auxiliary AF cable



PLOT 80 Conducted Immunity Measurement scan on the auxiliary AF to station 1 of RS87 in intercom mode of operation 10V rms spot frequencies clamp on Auxiliary AF cable

