Svenska EMC Lab
Minervavägen 20 S-371 41 Karlskrona
Tel.+46 (0)455 802 90 Fax.+46 (0)455 102 88

TEST REF. NO: 98/1899
DATE: December 14, 1998

TEST REPORT

47 Cfr Ch. 1 (10-1-97 Edition).

CUSTOMER: Saab Marine Electronics AB
SE-581 88 Linköping
Sweden

MANUFACTURER: Saab Marine Electronics AB
Box 13045
SE-402 51 Göteborg
Sweden

EQUIPMENT UNDER TEST (EUT): Radar Level Gauge. Model: TankRadar TH2015, s/n: TP-3050.

TEST SPEC.:
1) 47 Cfr Ch. 1 (10-1-97 Edition), Part 15:
- Subpart B, Class A.
- Subpart C, Field Disturbance Sensor.

2) 47 Cfr Ch. 1 (10-1-97 Edition), Part 90:
- Subpart F

DATE: November 23 - 24, 1998

TEST SITE: Svenska EMC Lab AB, Karlskrona, Sweden.
FCC List No 31040/SIT 1300F2.

TEST PERSONNEL: Svenska EMC Lab AB: Bo Gidlöw.
Saab Marine Electronics AB: Mikael Kleman.

TEST RESULT: The EUT (Equipment Under Test) did pass the above mentioned test.

Karlskrona December 14, 1998

Hans Östergren
Manager Svenska EMC Lab AB

Svenska EMC Lab
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TEST EQUIPMENT:

Type/Manufacturer/Bandwidth	s/n	Calibration information	
		Date	Interval
For emission test up to 1 GHz:			
EMI Test System, Monitor EZM, Rohde & Schwarz EP-6, 20 Hz-1300 MHz	860157/014	9807	12 months
Test Receiver, Rohde & Schwarz ESH-3, 9 kHz-30 MHz	894979/013	9807	12 months
Test Receiver, Rohde & Schwarz ESVP, 20-1300 MHz	893497/006	9808	12 months
Pulse Limiter Rohde & Schwarz ESH3-Z2 DC-30 MHz	357881052	9807	12 months
Plotter Tektronix HC 100	JP05851	-	-
LISN 50 OHM/50 uH, Electro Metrics EM-7820 10 kHz - 30 MHz, 16 A	2771	9807	12 months
Software, Rohde & Schwarz K-1	-	-	-
Biconical Antenna, Schwarzbeck BBA9106 30-300 MHz	93-92196.1	9807	12 months
Log-periodic Antenna, Schwarzbeck UHALP9107, 300-1000 MHz	91071205	9807	12 months
Antenna Mast System, Jyske EMC, h = 1 - 5 m	93-90172	NA	NA
Turn Table, Jyske EMC	93-90171	NA	NA
Shielded Chamber, Jyske EMC, 11 x 6 x 4.5 m	93-90168	9703	36 months
Anechoic Chamber, 8 x 4.5 x 3 m	93-87151	9704	36 months
Open Area Test Site for 10 m antenna distance	-	9704	36 months
For emission test at fundamental frequency 10.244 GHz:			
Spectrum Analyzer, HP 8566B	2950A06284	9710	12 months
Plotter, HP 7475A	2641L16543	NA	NA
Signal Amplifier, Avantek AMN 12713	E6395	9805	12 months
Signal Amplifier, Avantek AMN 12713	E6396	9805	12 months
Standard Gain Horn Antenna, Narda mod. 640, 8.2 - 12.4 GHz	8909SME180588	NA	NA
Coaxial Cable, Sealectro u-wave-cable, l = 3 m	A4746	9805	12 months
Coaxial Cable, Sealectro u-wave-cable, l = 1 m	D0658	9805	12 months
Coaxial Cable, Sealectro u-wave-cable, l = 0.3 m	D0460	9805	12 months
For emission test 1 to 18 GHz:			
Spectrum Analyzer, HP 8566B	2950A06284	9710	12 months
Plotter, HP 7475A	2641L16543	NA	NA
Double Ridged Guide Antenna, EMCO 3115, 1 - 18 GHz	2338	9709	36 months
Coaxial Cable, Suhner RG 214, l = 3 m	009	9805	12 months

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TEST EQUIPMENT (CONTINUED):

Type/Manufacturer/Bandwidth	s/n	Calibration information	
		Date	Interval
For emission test at harmonic frequencies above 12.4 GHz:			
Spectrum Analyzer, HP 8566B	2950A06284	9710	12 months
Plotter, HP 7475A	2641L16543	NA	NA
Signal Mixer, HP 11970K, 18 - 26.5 GHz	2332A00478	9801	12 months
Signal Mixer, HP 11970A, 26.5 - 40 GHz	2332A00749	9801	12 months
Signal Mixer, HP 11970U, 40 - 60 GHz	2332A00133	9806	12 months
Mixer Amplifier, HP 11975A, 2 - 8 GHz	2517A00748	9801	12 months
Standard Gain Horn Antenna, Flann 20 24 20, 18 - 26.5 GHz.	YA2762	9705	36 months
Standard Gain Horn Antenna, Flann 22 24 20, 26.5 - 40 GHz.	YA2763	9705	36 months
Standard Gain Horn Antenna, Hughes 4582UH, 40 - 60 GHz.	x	NA	NA

CALIBRATION DECLARATION:

The test equipment is calibrated as indicated in the calibration information of the Test Equipment list. Before starting of the tests the checkpoints in Checklist CE and in checklist RE (Appendix 1 and 2) were confirmed.

TEST SET-UP AND PROCEDURE:

See Appendix 3 to 6. As laid out in ANSI C.63.4:1992 Document.

DESCRIPTION OF THE EUT:

The EUT is a Radar Tank Gauge used in industrial environments. The used radar frequency is sweeping in the range 9.5 GHz to 10.6 GHz. The output power is below 1 mW. To control the radar digital circuits are integrated in the same enclosure as the radar transmitter-receiver. After installation is the radar antenna totally enclosed in a metal tank and the unwanted radiation is therefor extremely low. The test sample was mounted on the top of a metal tank with the dimensions of approx. 1.3 x 1.3 x 1.3 m. Together with the external shielded boxes (temperature sensors, analogue input, bus interface, pressure sensor and Saab Tankradar) is a normal system configured.
Configuration: See Appendix 7.
Rating: 115 VAC, 60 Hz, 60 W.
Peripherals: Personal Computer, Dell Latitude CPI, s/n 0009321C-12800-87E-2166. Saab Tankradar L/2 DAU 2100 s/n 10317. Smart Pressure Sensor, Rosemount, s/n 127973. Field Bus Modem, FBM 2170, P/N 9240002-632. Simulator, Analogue Inputs, Saab JB12. Simulator, Temperature Sensors, Saab JB12.

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DESCRIPTION OF THE EUT (CONTINUED):

Power Line Filter: X2-Capacitor, Rifa PME271, 0.1 microfarade, 2 x Y2-Capacitor Rifa PME271, 0.0047 microfarade. Choke Siemens Matsushita B82732-R2901-A30, 2 x 27 milli-Henry.
See Appendix 8.
Cables: Shielded power line cable of 1.5 m length with protective earth. Shielded cable of 1.5 m length from the EUT to JB12 Analogue Input. Shielded cable of 1.5 m length from the EUT to JB12 Temperature Sensors. Shielded cable of 1.5 m length from JB12 Analogue Input to DAU. Shielded cable of 1.5 m length from JB12 Analogue Input to Smart Pressure Sensor. Shielded cable of 1.5 m length from the EUT to the FBM. Shielded cable of 15 m length from FBM to the PC. All shielded cables designed with contact hoods of metal.
Clock Frequency: 49.152 MHz. Radar frequency locked at 10.244 GHz.
Effective radiated power: 0.5 mW.
Modulation type: FXN. Frequency modulation, 96 kHz sine wave.
Modifications: No modifications.
Operating Conditions: Normal operating conditions. Active level gauging with level measurements, temperature measurements and pressure measurements. During the radiation test above 1 GHz the frequency sweep was stopped at 10.244 GHz. Tested at 115 VAC.

TEST PERFORMANCE:

Part 15:

§ 15.107. Conducted Emission test: The conducted emission was measured on the Power input terminals through a 50 ohm 50 micro-Henry LISN (Line Impedance Stabilization Network) in the frequency range 0.45 to 30 MHz. The two lines were measured with a quasi-peak detector. See Appendix 9- 10. Worst cases were recorded.

§ 15.109. Radiated Electromagnetic Field (30 - 1000 MHz):
Final Test. Measured in the frequency range 30 - 1000 MHz at an antenna distance of 10 m, on the open area test site. The emission was maximized by rotating the table, varying the antenna height and the antenna polarization. See Appendix 11 and 12. Test instruments: Rohde & Schwarz EP-6 System, 30 MHz - 1000 MHz. Antennas: Schwarzbeck BBA9106, 30 - 300 MHz and UHALP9107, 300 - 1000 MHz. Worst cases were recorded.

Radiated Electromagnetic Field (1 - 60 GHz):
Measured in the frequency range 1 - 60 GHz on the open area test site. The emission was maximized by rotating the table, varying the antenna height 1 to 4 m and the antenna polarization in vertical or horizontal positions. Test instruments according to "TEST EQUIPMENT"- list on page 2 and 3. Test equipment set-up as in Appendix 13.

Measurements on the fundamental: Antenna distance of 3 m was used. To find the frequency with the highest amplitude in the sweeping range the EUT was set in normal operating mode, with frequency sweeping. The analyzer was in max hold with average detector (RBW = 1 MHz, VBW = 10 kHz). The maximum amplitude was found at 10.244 GHz. Then the sweep was stopped at this frequency. The emission of the fixed frequency was now maximized by rotating the table, varying the

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TEST PERFORMANCE (CONTINUED):

antenna height and the antenna polarization. Measured with peak detector and with average detector. See Appendix 14 to 16. The limit for class A at 10 m distance is with average detector 49.5 dBuV/m (300 uV/m) and with peak detector 69.5 dBuV/m. Linear conversion was used to get the limit at the 3 m measurement distance. The limits will be 59.5 dBuV/m (Average) and 79.5 dBuV/m (Peak)

Measurements on the harmonics: Measured up to 51.220 GHz with the sweep stopped at 10.244 GHz. Measurement at 3 m distance was not possible because the harmonics were too low. The distance was changed to 0.3 m and the limit linearly converted to this distance by adding 20 dB. The peak limit is then 79.5 dBuV/m plus 20 dB = 99.5 dBuV/m. The antenna was moved around and over the EUT and the flanges of the EUT and around and over all other parts on the Tank there leakage could appear, both with vertical and horizontal antenna polarization. No emission was observed. The noise level was appr. 58 dBuV/m with peak detector. See Appendix 14 and 17 to 20.

Part 90, Subpart F:

§2.985: RF power output.
Not measured in antenna terminal. Antenna terminal is non existing. Instead, the radiated power was calculated from the measured radiated field strength. Direct on the waveguide of The EUT was a circulair horn antenna with a gain of 21 dB mounted. The radiated emission was measured with this horn antenna oriented to give maximum signal from the receiving antenna.
Antenna distance of 3 m (far field) was used. Measured with peak detector and with RBW = 3 MHz. The emission was maximized by small variations in the antenna height. See Appendix 14 and 21.
The relationship field strength – effective radiated power for free space propagation in far field is:
$E = k \sqrt{P} / d$; $k = 7$;
Test result: Measured field strength was 78 dBuV/m at the distance of 3 m. The calculated output power (erp) will be 0.012 mW.

§2.987: Modulation.
The modulation is a frequency modulation with 96 kHz sine wave. Type: FXN. The frequency is swept from a start frequency (factory set to 9.5 GHz) to a stop frequency (factory set to 10.5 GHz).
Test result: The modulation was measured an found in compliance with the manufacturers technical description.

§2.989: Occupied bandwidth.
The sweep was stopped at 10.2469 GHz, and Measured with RBW = 100 kHz and peak detector, in max hold. The modulation was activated. The bandwidth of the signal was measured between the points "Peak value minus 26 dB".
Test result: See Appendix 22. Maximum bandwidth @-26 dB = 7.56 MHz.
Note: The frequency at the swept band edges were also measured at the points "Peak– 26 dB".
Result: With the modulation on is no emission outside the band 9.500 – 10.500 GHz.

§2.991: Spurious at antenna terminals.
Not applicable.

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TEST PERFORMANCE (CONTINUED):

§2.993: Field strength of spuriuos radiation.
See: Radiated Electromagnetic Field (1 - 60 GHz), above.

§2.995: Frequency stability.
Not applicable.

SUMMARY OF RESULTS:

A) In the frequency range of 0.45 to 1000 MHz:

§ 15.107 and 15.207: The conducted emission margin to the tighter limit in § 15.207 was – 8.7 dB (QP) at 0.4999 MHz. See Appendix 9 - 10.

§ 15.109. The radiated emission margin to Class A limit was – 2.9 dB (QP) at 245.7555 MHz. See Appendix 11 and 12.

B) In the frequency range of 1 to 60 GHz: See Appendix 14 to 20.

Margin to limit (Class A) of the fundamental was with average detector – 17.2 dB and with peak detector – 24.2 dB as worst case.

Margin to limit (Class B) of the fundamental was with average detector – 11.7 dB and with peak detector – 18.7 dB as worst case.

Margin to limit (Class B) of the harmonics were more than -30 dB with peak detector (noise level). No measurements with average detector were performed.

The Radar Level Gauge. Model: TankRadar TH2015, s/n: TP-3050, did pass the above mentioned tests in Part 15: Subpart B, Digital Devices Class A, and Subpart C, Field Disturbance Sensor.

Karlskrona December 14, 1998

Hans Östergren
Manager Svenska EMC Lab AB

Bo Gidlöw
Test Engineer

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List over Appendixes.

Appendix No	Note
1	Check-list RE
2	Check-list CE
3	Test set-up, photos
4	Test set-up, photos
5	Test set-up, photos
6	Test set-up, photos
7	Configuration
8	Power Line Filter
9	CE, 0.45 - 30 MHz, live
10	CE, 0.45 - 30 MHz, neutral
11	Calculation of Final Emission Levels, 30 - 1000 MHz
12	RE, 30 - 1000 MHz, 3 m
13	Test equipment set-up
14	Calculation of Final Emission Levels, 1 - 60 GHz.
15	Fundamental, 10.244 GHz. Peak
16	Fundamental, 10.244 GHz. Average
17	Harmonic, 20.427 GHz
18	Harmonic, 30.640 GHz
19	Harmonic, 40.850 GHz
20	Harmonic, 51.220 GHz
21	Field strength from open EUT at 3 m
22	Bandwidth

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CHECK-LIST, RE
(Radiated emission)

EQUIPMENT UNDER TEST (EUT): Radar Level Gauge. Model: TankRadar TH2015, s/n: TP-3050.

TEST SPEC.: 47 Cfr Ch. 1 (10-1-97 Edition), Part 15:
- Subpart B, Class B.
- Subpart C, Field Disturbance Sensor.

DATE: November 23 - 24, 1998

Check point. (REF. NO: 97010)	Checked by Sign/Date	Not applicable Sign/Date
A. EUT set-up in accordance with the standard:	BG981123	
B. All instruments calibrated with traceability:	BG981123	
C. Antennas: No defects:	BG981123	
D. Calibrated antennas used: 30 - 300 MHz, BBA9106 No: 93-92196.1	BG981123	
300 - 1000 MHz, UHALP9107 No: 9107.1205	BG981123	
1 - ~~18~~ 40 GHz, 3115 No: See Appendix	BG981123	
E. Antenna Mast position: 3 m:	BG981123	
~~10 m:~~		BG981123
F. No equipment in the obstruction free area:	BG981123	
G. Calibrated cables used: Antenna - receiver: Cable No 001	BG981123	
H. Test Receiver, Rohde & Schwarz ESVP. Warm-up time min. 1/2 h. Total Calibration done.	BG981123	
I. Reference measurement with CNE III. The deviation is within the tolerance for Radiated Emission:	BG981123	

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CHECK-LIST, CE
(Conducted emission)

EQUIPMENT UNDER TEST (EUT): Radar Level Gauge. Model: TankRadar TH2015, s/n: TP-3050.

TEST SPEC.: 47 Cfr Ch. 1 (10-1-97 Edition), Part 15:
- Subpart B, Class B.
- Subpart C, Field Disturbance Sensor.

DATE: November 23 - 24, 1998

Check point. (REF. NO: 97011)	Checked by Sign/Date	Not applicable Sign/Date
A. EUT set-up in accordance with the standard	BG981124	
B. All instruments calibrated with traceability	BG981124	
C. LISN, ISN, HF-Probes: No defects	BG981124	
D. Calibrated LISN, ISN, HF-Probes used: LISN, 0.15 - 30 MHz: EM7820 7271	BG981124	
~~ISN,~~ 0.15 - 30 MHz:		BG981124
~~HF-Pr~~obe, 0.15 - 30 MHz:		BG981124
E. No additional equipment in 1 m distance from EUT:	BG981124	
Tested in the shielded room no:	BG981124	
F. Calibrated cables used: LISN - feed through - receiver: Cables No 005 / 006	BG981124	
ISN - feed through - receiver: Cables No /		BG981124
HF-Probe - feed through - receiver: Cables No /		BG981124
G. Test Receiver, Rohde & Schwarz ESH3. Warm-up time min. 1/2 h. Total Calibration done.	BG981124	
H. Reference measurement with CNE III and adapter CNE A. The deviation is within the tolerance for Conducted Emission	BG981124	

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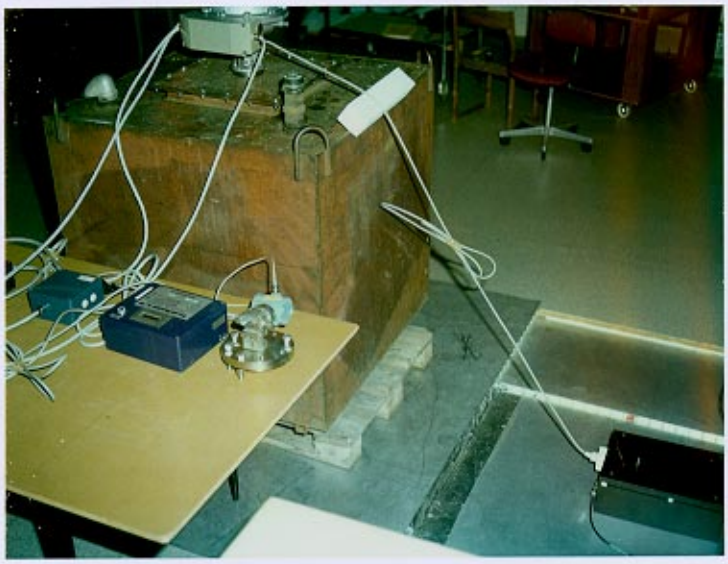
Test set-up, Conducted Emission



Test set-up, Conducted Emission

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Test set-up, Radiated Emission 30 - 1000 MHz

Test set-up, Radiated Emission 30 - 1000 MHz

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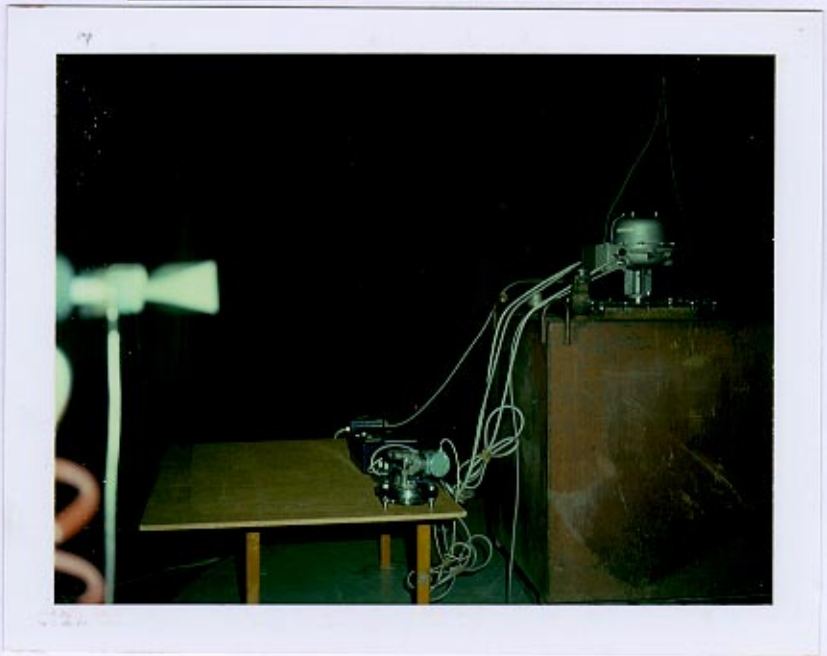
Test set-up, radiated emission, fundamental



Radiated emission, check of subharmonics

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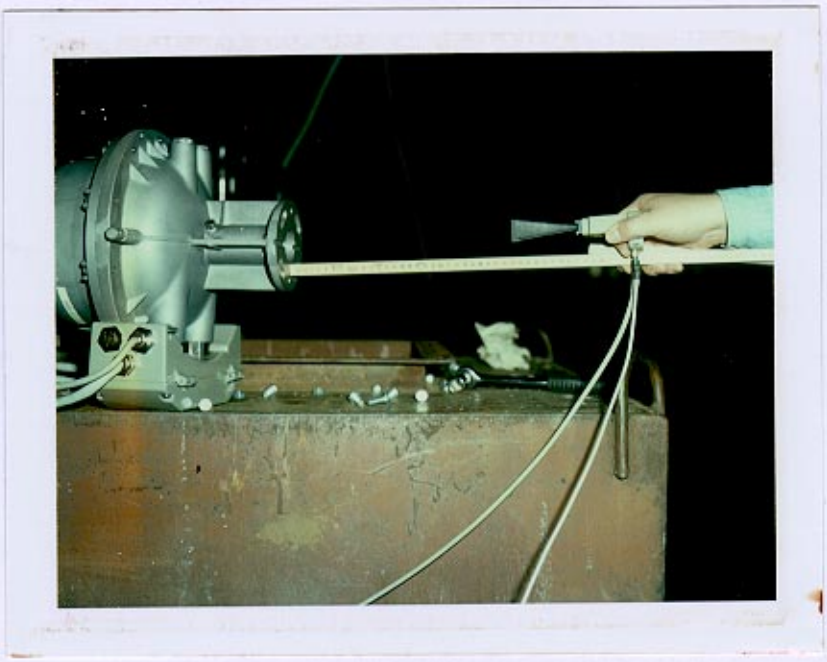
Radiated emission, check of harmonics



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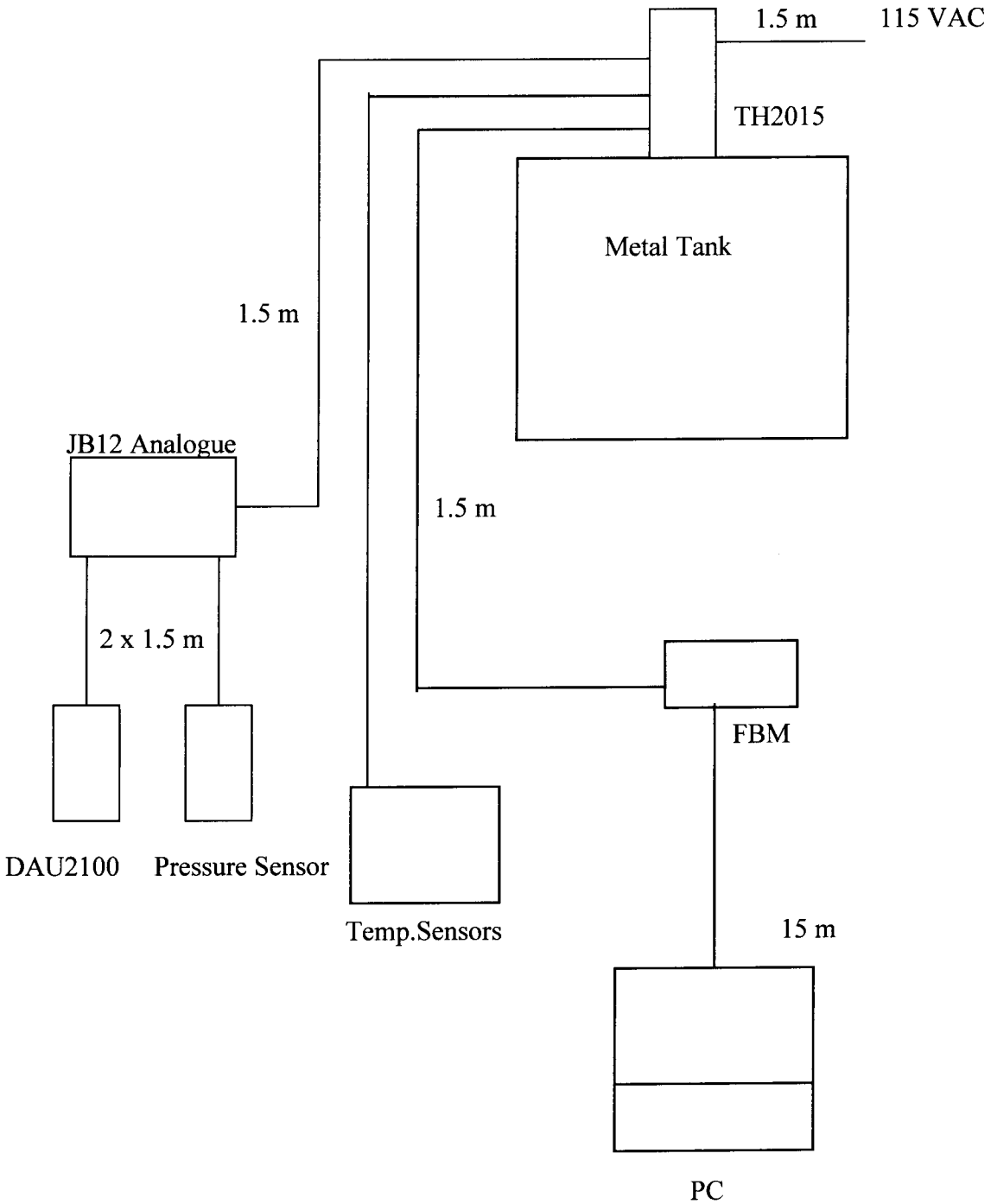
Configuration



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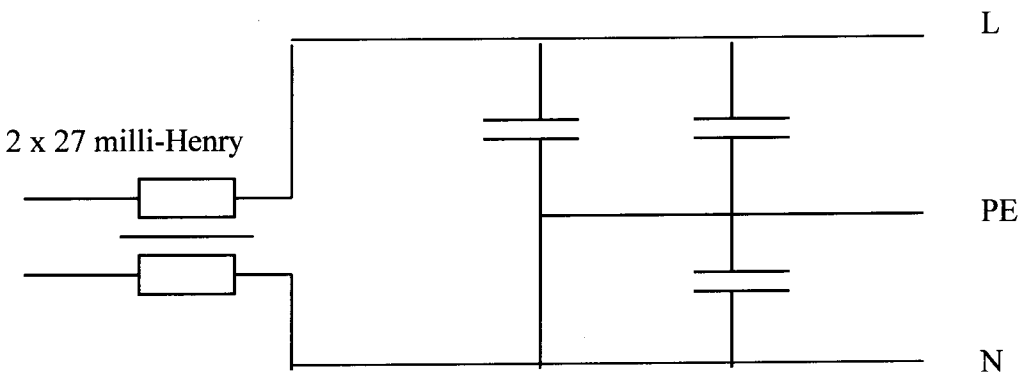
Power Line Filter



X-Capacitor
0.1 micro-Farad

2 x Y-Capacitors
0.0047 micro-Farad

8.

SAAB MARINE ELECTRONICS. AB
Conducted Emission. Test

Start of Test:. 24.NOV.'98 . 15:22

E.u.T.:. RADAR LEVEL GAUGE TH 2015.

Oper. Condition:. ACTIVE

Operator: Bo Gidloew.

Test Spec:.
FCC Part 15, Subpart B. Conducted RFI, Class. B.

Start Fr. MHz	Stop Fr. MHz	IF-BW. kHz	Display Mode	Att. dB	Transducer. type
0.4500	30.0000	10.00	Max Hold	0	EM7820

Frequency MHz	Average dBuV.	AV-Margin. dBuV.	Quasi. Peak dBuV.	QP-Margin. dBuV.
0.4500	-	-	29.6	-18.4
0.5024	-	-	34.6	-13.4
0.7032	-	-	33.5	-14.5
0.8041	-	-	34.8	-13.2
0.9043	-	-	33.2	-14.8
1.5074	-	-	24.8	-23.2
1.6081	-	-	23.9	-24.1
7.6390	-	-	31.3	-16.7

* Limit exceeded

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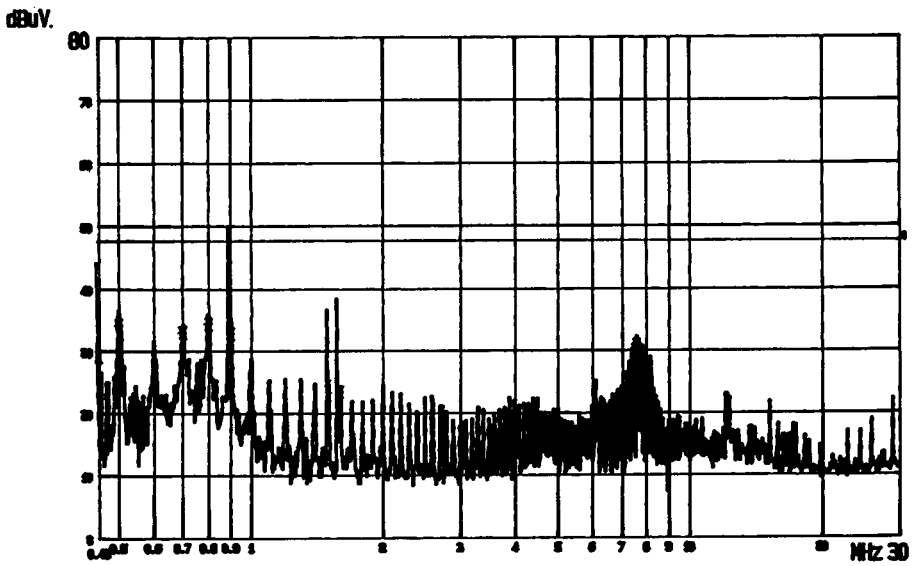
16 + = AVERAGE * = QUASI. PEAK



CONDUCTED EMISSION. ON. 115. V. AC, LINE TERMINAL

7.

SAAB MARINE ELECTRONICS. AB
Conducted Emission. Test

Start of Test:. 24.NOV.'98 . 15:06.

E.u.T.: RADAR LEVEL GAUGE TH 2015.

Oper. Condition:. ACTIVE

Operator:. Bo Gidloew.

Test Spec:.
FCC Part 15, Subpart B. Conducted RFI, Class B.

Start Fr. MHz	Stop Fr. MHz	IF-BW. kHz	Display Mode	Att. dB	Transducer. type
0.4500	30.0000	10.00	Max Hold	0	EM7820

Frequency MHz	Average dBuV.	AV-Margin. dBuV.	Quasi. Peak dBuV.	QP-Margin. dBuV.
0.4999	-	-	39.3	-8.7
0.7004	-	-	32.6	-15.4
0.8006	-	-	32.4	-15.6
0.9009	-	-	31.5	-16.4
1.4015	-	-	22.3	-25.7
2.2028	-	-	20.0	-28.0
7.5110	-	-	27.1	-20.9

* Limit exceeded

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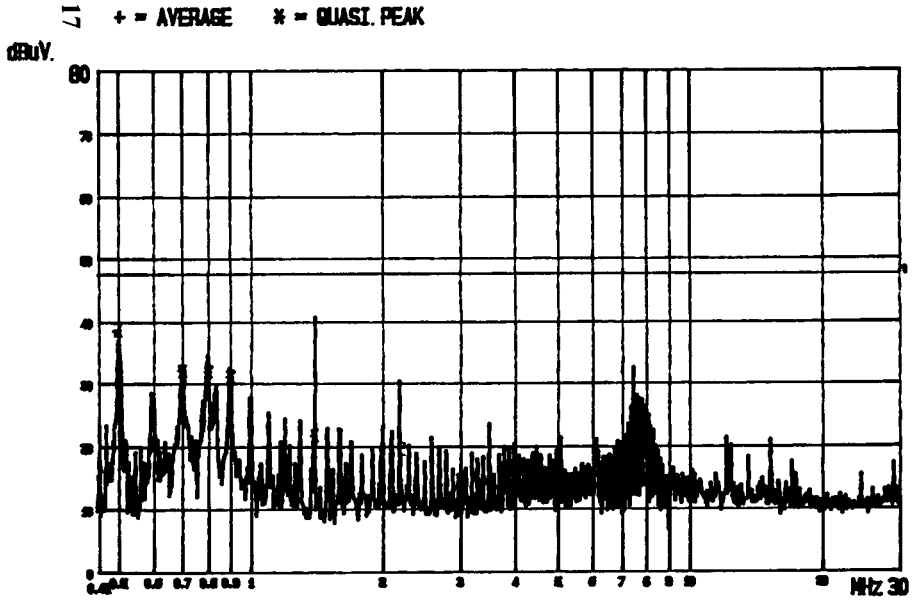

CONDUCTED EMISSION. ON. 115. V. AC, NEUTRAL TERMINAL

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Radiated Fieldstrength Test. Calculation of Final Emission Levels

EUT: Radar Level Gauge. Model: TankRadar TH2015, s/n: TP-3050.

Test spec.: 47 Cfr Ch. 1 (10-1-97 Edition), Part 15:
- Subpart B, Class A.
- Subpart C, Field Disturbance Sensor.
Radiated emission, Open Area Test Site
10 m antenna distance.

Date: November 23 - 24, 1998

Operation: Normal operating conditions. Active level gauging with level measurements 4 times pro second

Field strength (dBuV/m) = Amplitude (dBuV) + Antenna factor (dB/m) + cable loss (dB)

Tested frequency range: 30 - 1000 MHz
Measured quasi-peak values.

Freq.	App.	Ampl	Cable loss	Ant fact	Field streng.	Limit	Dist	Mar-gin	Ant. height	Ant. polar
MHz	No	dBuV	dB	dB/m	dBuV/m	dBuV/m	m	dB	m	v/h
33.18	12	13.9	1.3	17.7	32.9	39.0	10	- 6.1	1.0	v
44.24	12	15.6	1.6	13.7	30.9	39.0	10	- 8.1	1.0	v
196.60	12	16.9	3.8	16.5	37.2	43.4	10	- 6.2	1.0	v
233.47	12	17.5	4.1	17.3	38.9	46.4	10	- 7.5	3.2	h
239.61	12	16.4	4.2	17.4	38.0	46.4	10	- 8.4	2.2	h
245.76	12	21.8	4.2	17.5	43.5	46.4	10	- 2.9	2.6	v
307.20	12	16.5	4.6	16.1	37.2	46.4	10	- 9.2	3.6	h
344.06	12	19.0	5.0	16.3	40.3	46.4	10	- 6.1	3.1	h

6.

SAAB MARINE ELECTRONICS. AB
Radiated Emission. test on. OATS.

Start of Test: 23.NOV.'98 . 13:34

E.u.T.: RADAR LEVEL GAUGE TH 2015.

Oper. Condition: . ACTIVE

Operator: Bo Gidloew.

Test Spec:
FCC Part 15, Subpart B. Class. A, 10 m OATS.

Start Fr. MHz	Stop Fr. MHz	IF-BW. kHz	Detector	Att.. dB	Meas.T.. s.	Transd. type
30.0000	299.9999	120	Peak	LN..	0.020	BICON.
300.0000	1000.0000	120	Peak	LN..	0.020	

measured QP values.

Frequency MHz	Level. dBuV/m	Margin. dB	Pol. h/v.	Height m	Azimuth. deg.
33.1826.	32.9.	-6.1.	v.	1.00	0
44.2409.	30.9.	-8.1.	v.	1.00	0
122.6779.	33.1.	-10.3.	v.	1.00	0
196.6045.	37.2	-6.2	v.	1.00	0
221.1803.	31.7.	-14.7.	v.	1.00	0
233.4679.	38.9.	-7.5.	h.	3.20	0
239.6116.	36.0	-8.4	h.	2.20	0
245.7556.	43.5.	-2.9.	h.	2.50	0
270.3315.	35.9.	-10.5.	h.	2.10	0
307.1960	37.2	-9.2	h.	3.60	0
313.3290	35.0	-11.4	h.	3.10	0
344.0600	40.3.	-6.1.	h.	3.10	0
362.4640	33.7.	-12.7.	h.	1.50	0
368.6350	31.7.	-14.7.	h.	1.50	0
442.3600	34.4	-12.0	h.	1.00	0

* Limit exceeded

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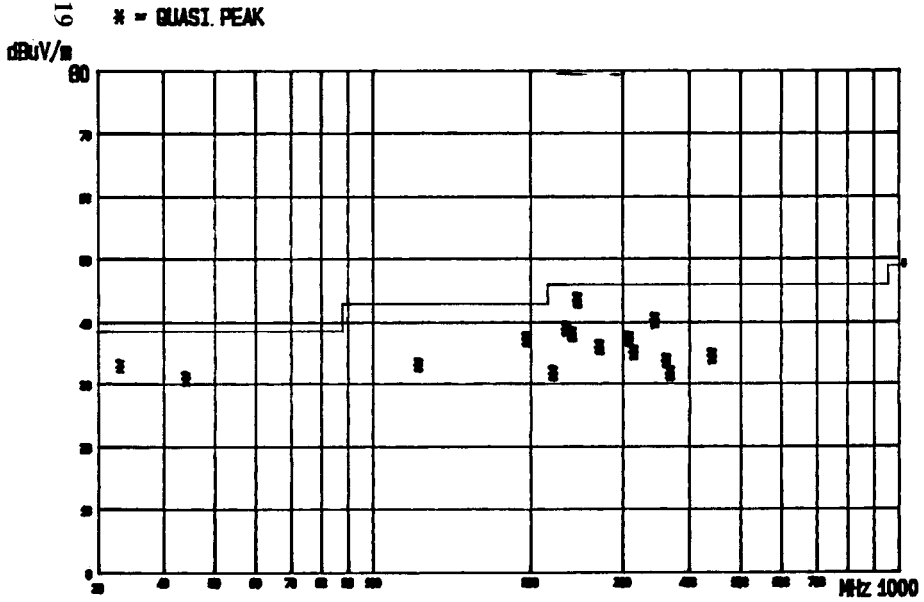

RADIATED EMISSION. ON. OATS. AT. 10 m. DISTANCE

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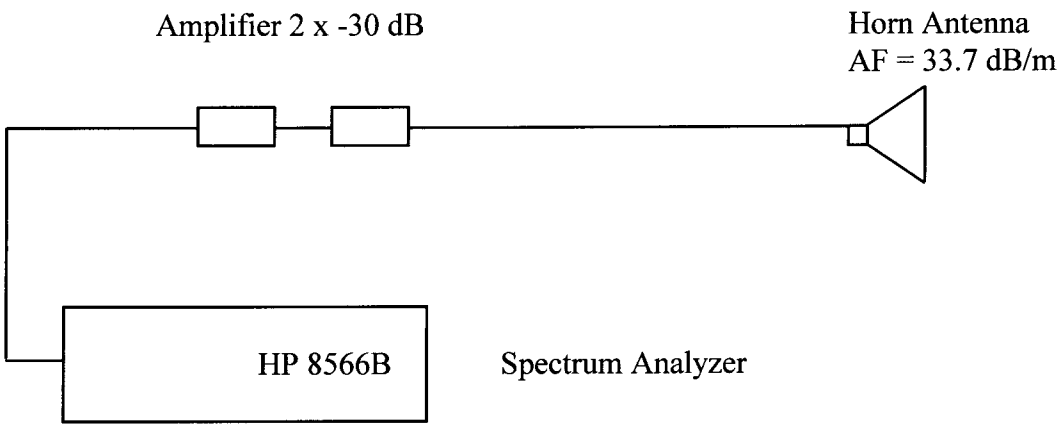
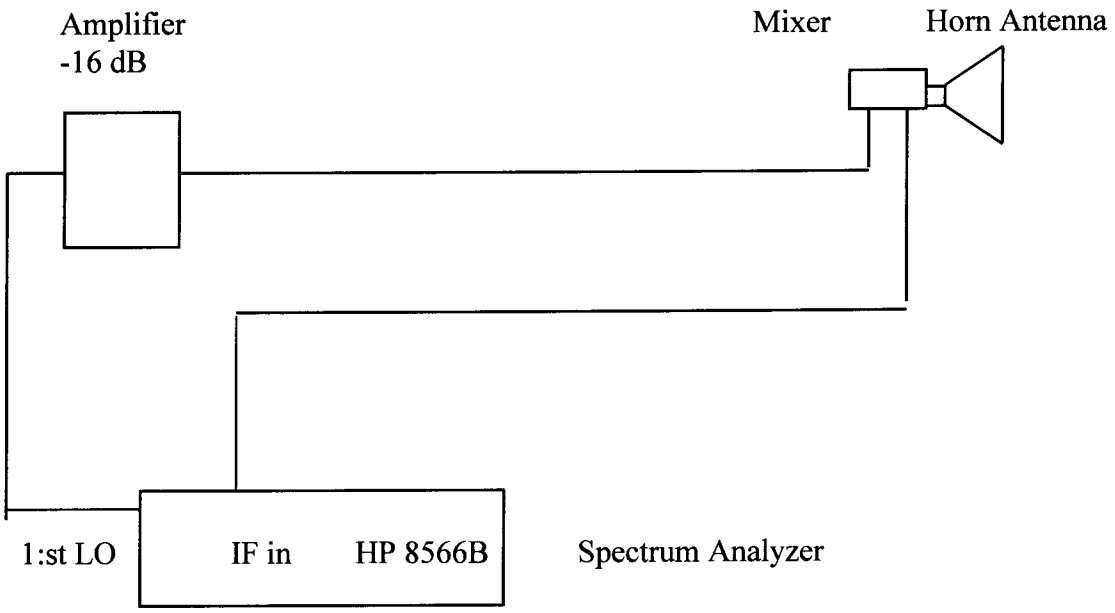
Test equipment set-up

F0, 8.2 - 12.4 GHz:



F1 - F3, 18 - 60 GHz:



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Radiated Fieldstrength Test. Calculation of Final Emission Levels

EUT: Radar Level Gauge. Model: TankRadar TH2015, s/n: TP-3050.

Test spec.: 47 Cfr Ch. 1 (10-1-97 Edition):
Part 15, Subpart C, Field Disturbance Sensor.
Part 90, Subpart F.
Radiated emission, Open Area Test Site
3 m and 0.3 m antenna distance.

Date: November 23 - 24, 1998

Operation: Fixed operating frequency.

Field strength (dBuV/m) = Amplitude (dBuV) + Antenna factor (dB/m) + cable loss (dB)

Tested frequency range: 1 - 60 GHz
Measured maximum peak and average values.

Freq.	App	Amplitude peak / av.	RBW / VBW	Ant. factor	Preamp + cable corr.	Field strength	Dist.	Limit	Margin	Note
GHz	No	dBuV	kHz / kHz	dB/m	dB	dBuV/m	m	dBuV/m	dB	
10.244	14	81.6 / -	1000/1000	33.7	-60.0	55.3	3	74	- 18.7	peak
10.244	15	- / 68.6	1000 / 10	33.7	-60.0	42.3	3	54	- 11.7	av.
20.427	16	21.6 / -	10 / 10	36.6	-	58.2*	0.3	94	- 35.8	peak
30.640	17	15.2 / -	10 / 10	40.7	-	55.9*	0.3	94	- 38.1	peak
40.850	18	19.0 / -	10 / 10	39.3	-	58.3*	0.3	94	- 35.7	peak
51.220	19	15.5 / -	10 / 10	40.9	-	56.4*	0.3	94	- 37.6	peak
10.246	21	64.3 / -	3000/3000	33.7	-21+1.2	78.2	3	-	-	peak

* = Noise level

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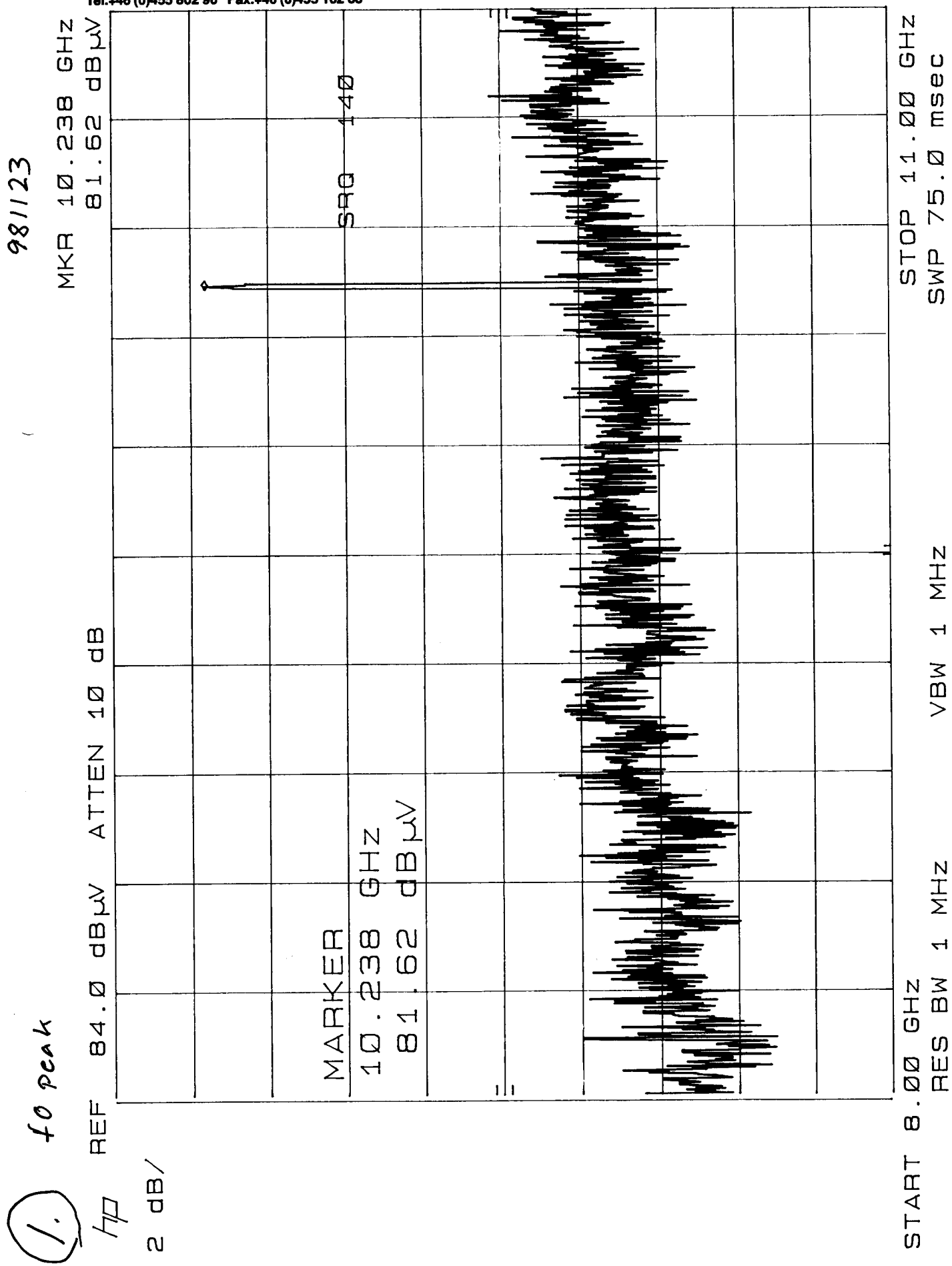

98/123

fo peak

1.

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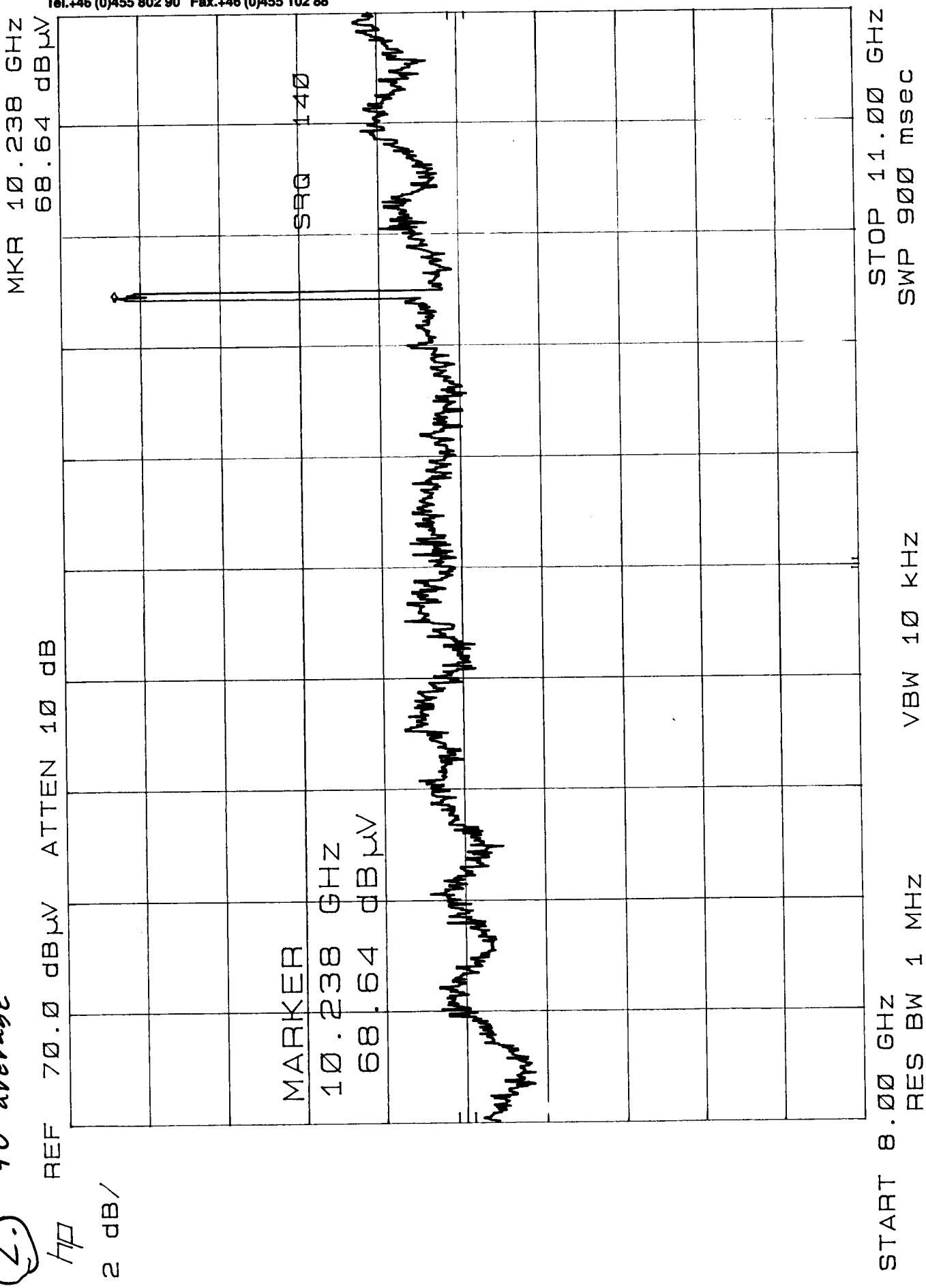

2. fo average

hp

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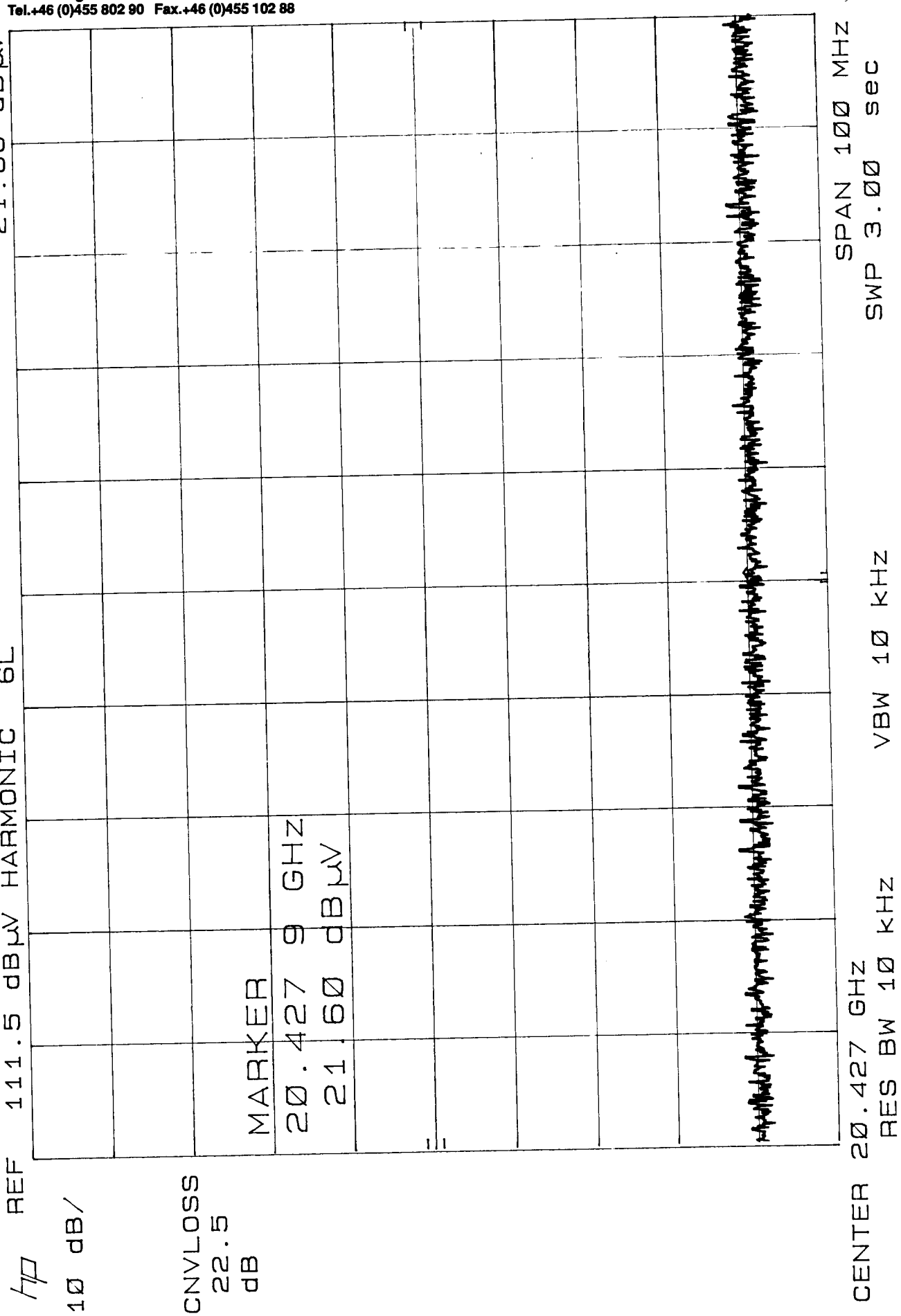
9811



3. f2

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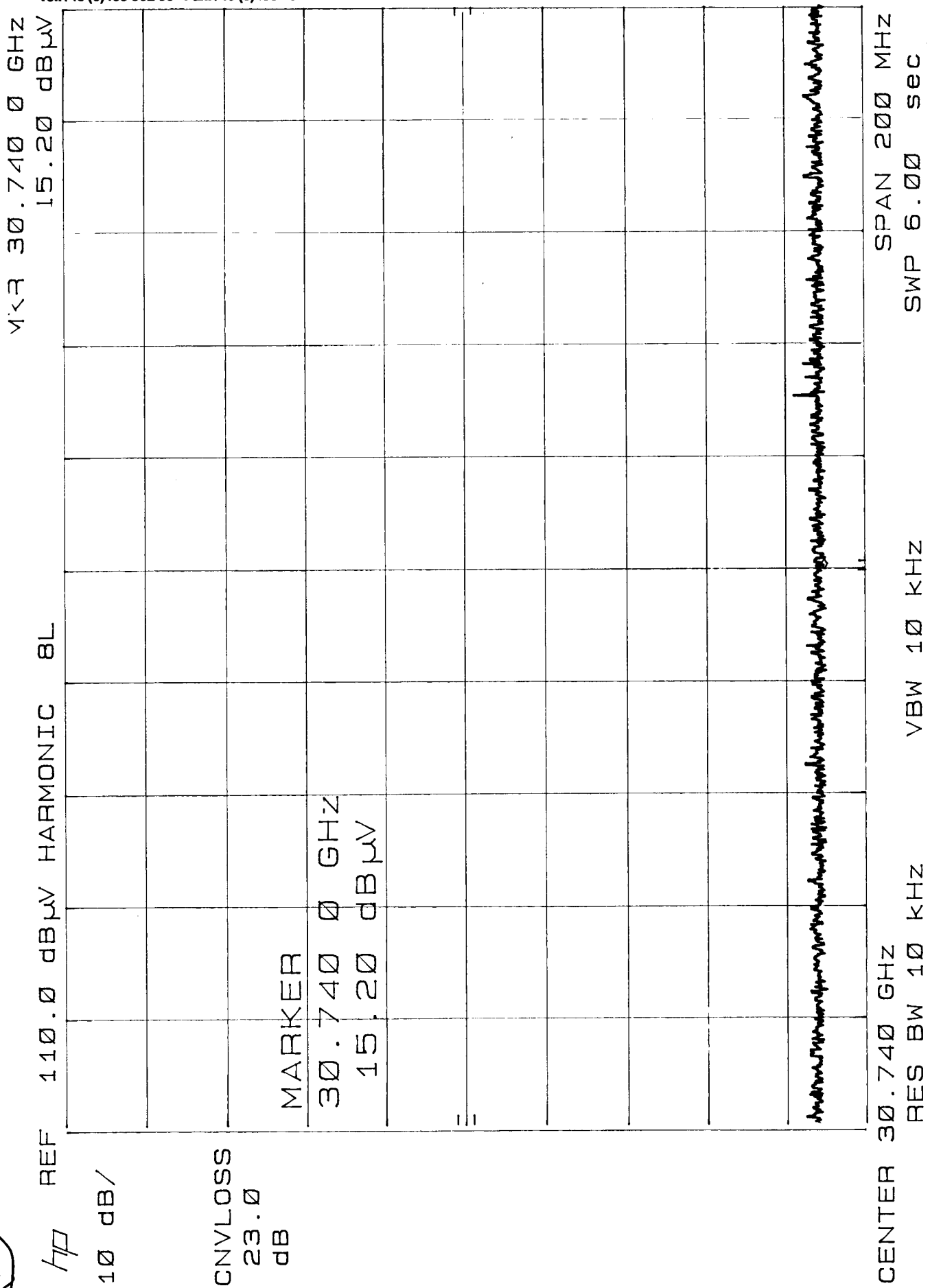

f3

4.

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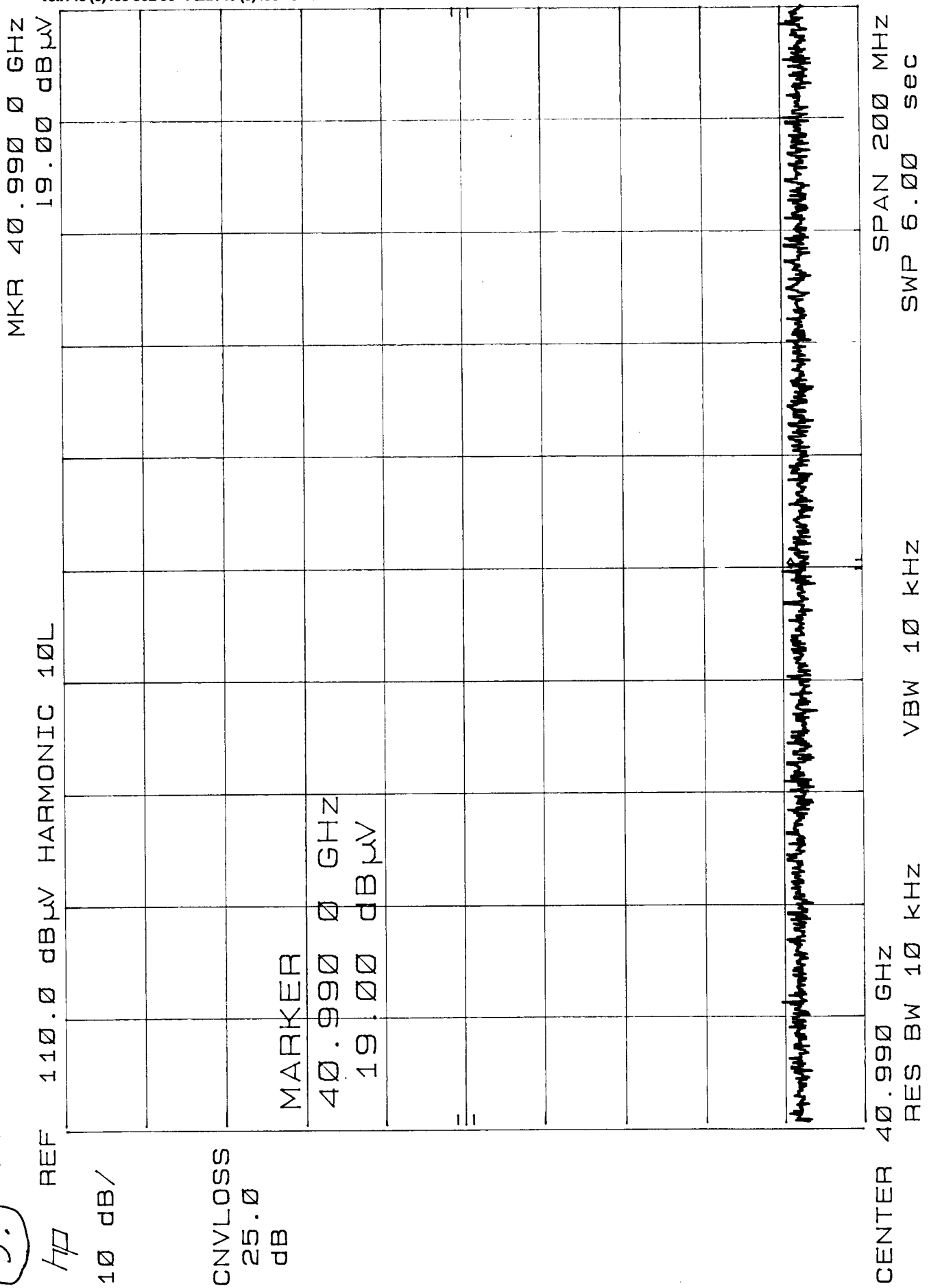

5. f4

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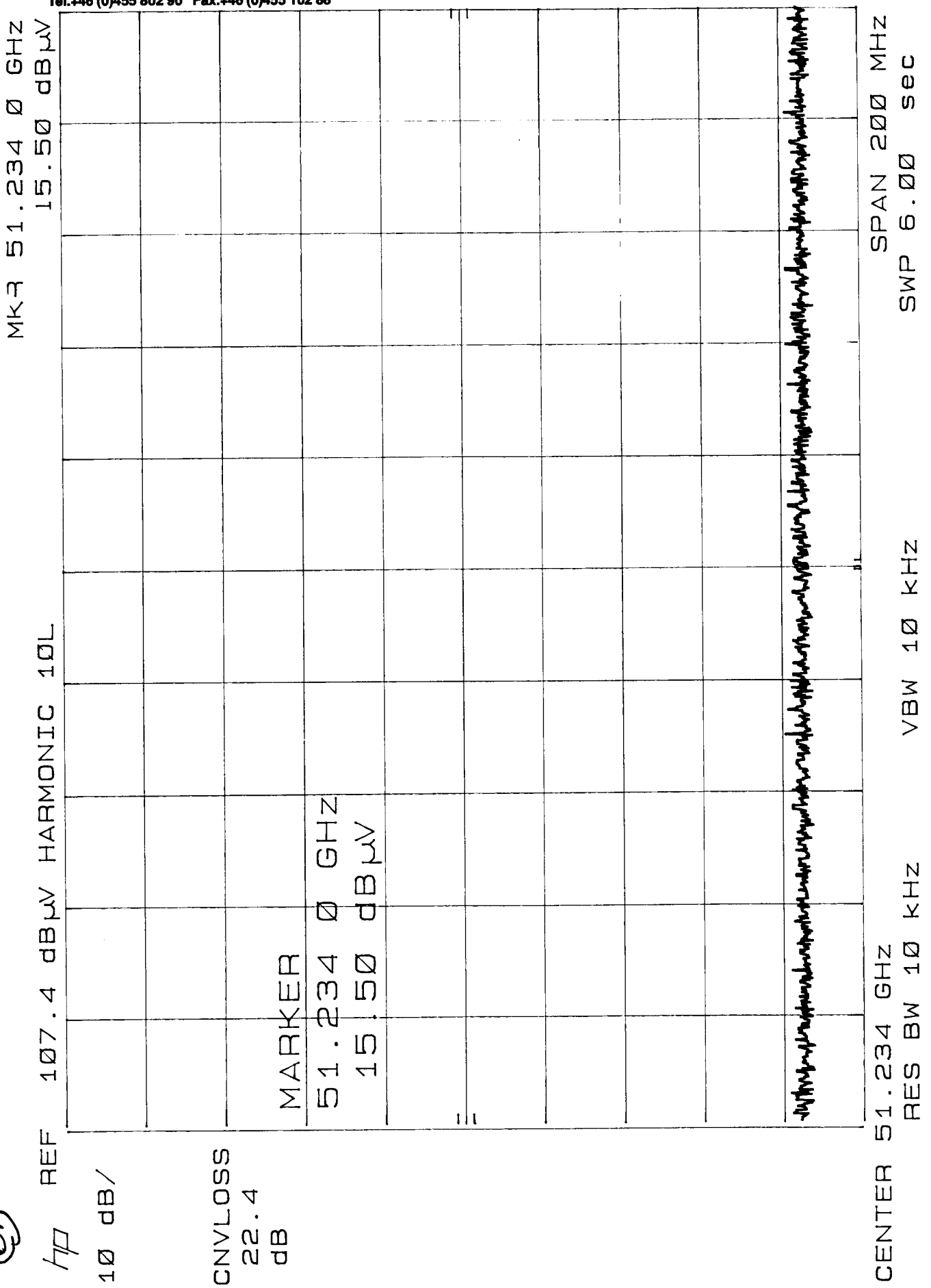
(6.) f5



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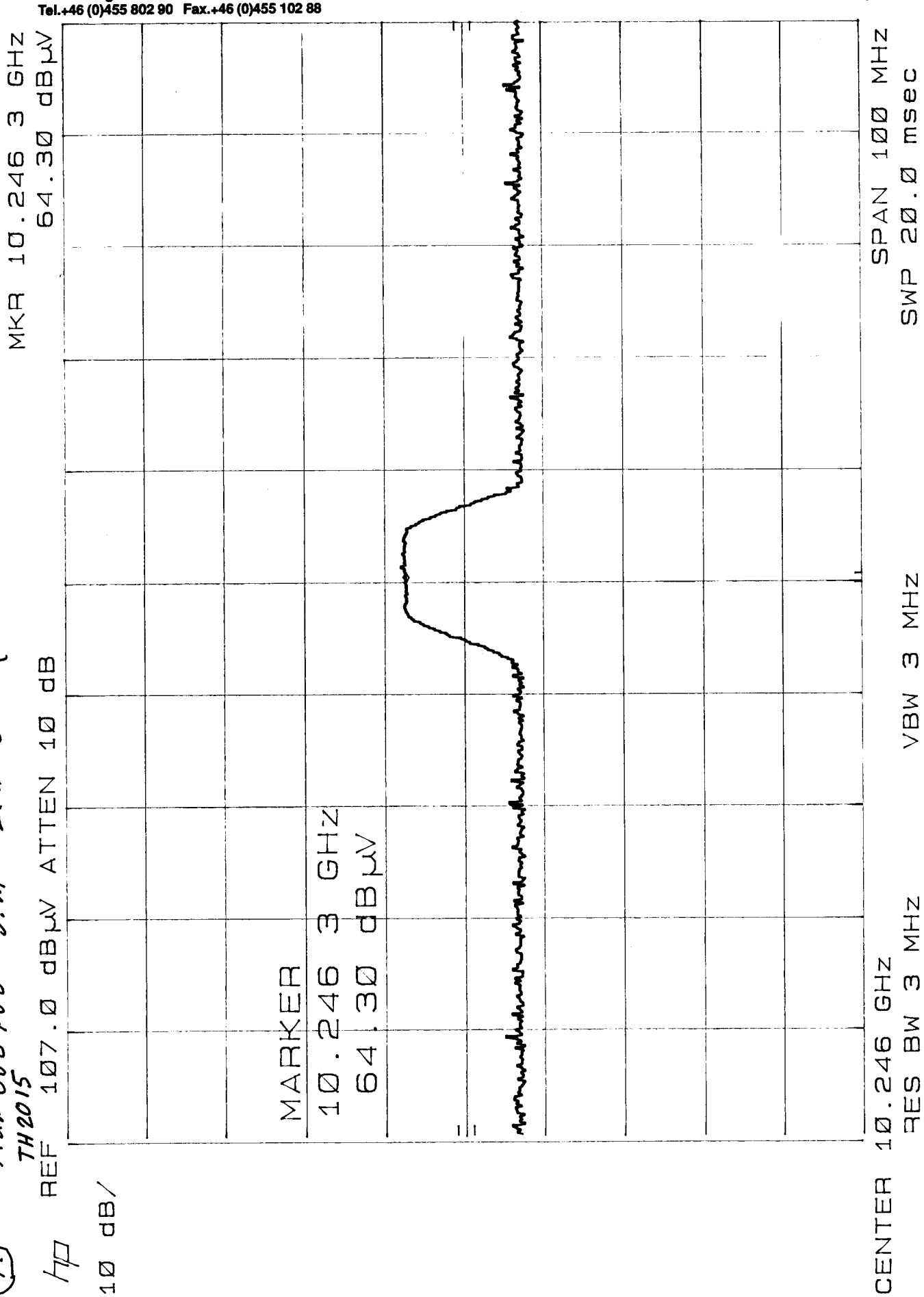
(7.)



Max out put 3.m 2. dB Gain (sänd. ant 6" hor)
TH2015

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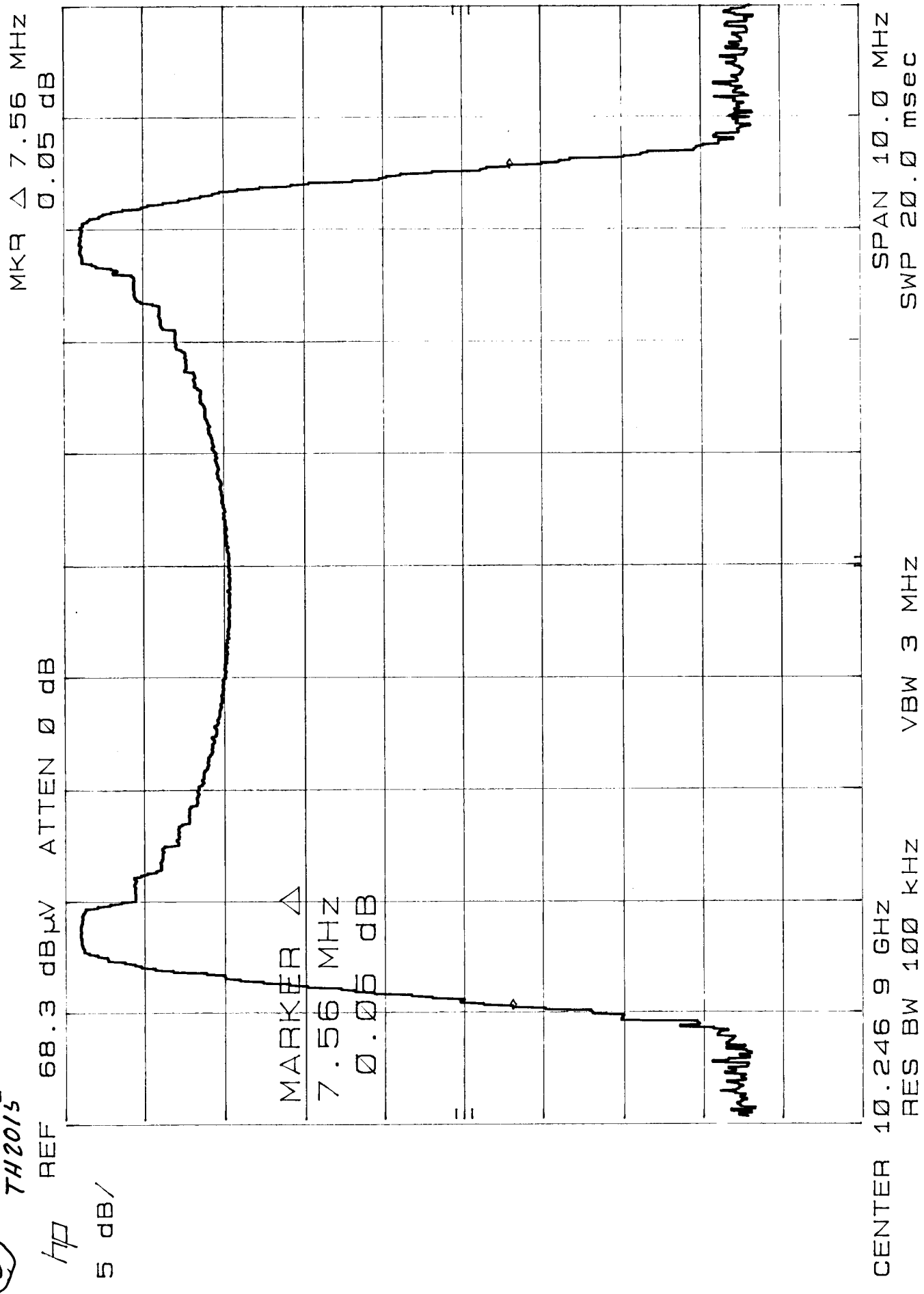

Bandbredd TH2015