DNB ENGINEERING, INC.

CERTIFICATION
FOR
INTENTIONAL RADIATOR

per
Part 15 Subpart C
(CFR 47, 15.201, - 15.209 &15.231)

Vehicle Security System Transmitter
Model No. TXFM447LC01
447.0 MHz

PREPARED FOR APPLICANT:
David Levy Corporation Inc.
12753 Moore Street
Cerritos, CA 90703

PREPARED BY:
DNB ENGINEERING, INC.
3535 W. Commonwealth Ave.
Fullerton, CA 92833
(714) 870-7781

TRANSMITTAL SUMMARY

Unit tested:	Vehicle Security System Remote Transmitter
Model #:	TXFM447LC01
FCC ID:	JBWTXFM447LC01
Specifications:	ANSI C63.4 1992 and CFR 47 FCC part 15 Subpart C
Purpose of Report:	This report was prepared to document the status of the Vehicle Security System remote Transmitter (447 MHz) with requirements of the standards listed above.
Requirements not applicable to EUT	Part 15.37 - Not applicable Emergency Broadcast System - Not applicable Spread Spectrum Exhibit - Not applicable Scanning Receiver - Not applicable
Test Summary	The EUT's compliance status according to the tests performed is as follows.

REQUIREMENTS	STATUS
FCC part 15 Subpart C	
per 15.201-, 15.209 & 15.231	COMPLIANT

The report shall not be reproduced, except in full, without the written approval of DNB ENGINEERING, INC. Results contained in this report relate only to the item tested.

The TXFM4467LC01 (Black Widow) Remote Transmitter met all the criteria pertaining to standards called out for testing.

TABLE OF CONTENTS

1.0 ADMINISTRATIVE DATA

Certifications and Qualifications

I certify that DNB Engineering, Inc conducted the tests performed in order to obtain the technical data presented in this application. Also, based on the results of the enclosed data, I have concluded that the equipment tested meets or exceeds the requirements of the Rules and Regulations governing this application.

Measurement Repeatability Information

The test data presented in this report has been acquired using the guidelines set forth in FCC Part 15 Subpart C (CFR 47, 15.201 – 15.209 and 15.231). The test results presented in this document are valid only for the equipment identified herein under the test conditions described. Repeatability of these test results will only be achieved with identical measurement conditions. These conditions include: The same test distance, EUT Height, Measurement Site Characteristics, and the same EUT System Components. The system must have the same Interconnecting Cables arranged in identical placement to that in the test set-up, with the system and/or EUT functioning in the identical mode of operation (i.e. software and so on) as on the date of the test. Any deviation from the test conditions and the environment on the date of the test may result in measurement repeatability difficulties.

All changes made to the EUT during the course of testing as identified in this test report must be incorporated into the EUT or identical models to ensure compliance with the FCC regulations.

Bryan Broaddus (Para. 1.1)

Manager, Test Dept.

DNB Engineering, Inc.

Tel. (714) 870-7781 FAX (714) 870-5081

1.1.1 Request for Certification Per 2.1033(b)1:

Applicant: David Levy Corporation Inc
12753 Moore Street
Cerritos, CA 90703

Contact: Derek Hamilton
Phone: (562) 577-8578

Equipment Under Test: Vehicle Security System Remote Transmitter

FCC ID: JBWTXFM447LC01

1.2 Related Submittals/Grants

None.

1.3 Purpose of Tests

The purpose of this series of tests was to demonstrate the Electromagnetic Compatibility (EMC) characteristics of the EUT. The following tests were performed:

REQUIREMENTS	STATUS
FCC part 15 Subpart C	
Per 15.201- 15.209 &15.231	COMPLIANT

2. TEST DESCRIPTION

2.1 Test Configuration

Configuration	Unit Name - Processor, Monitor Printer, Cable, etc. (indent for features of a unit)	Style/Model/ Part No.	Comments/ FCC ID#
A	Vehicle Security Remote (447 MHz)	Black Widow	JBWTXFM447LC01

2.2 Equipment Description

Please see Appendix A

2.3 Mode of Operation

EUT was placed in three orthogonal positions to determine worst case emissions. Fresh batteries were used for final measurements.

2.4 Antenna Requirement - per 15.203

The antenna is internally fixed.

2.5 Circuit Description - per 2.1033(b)4

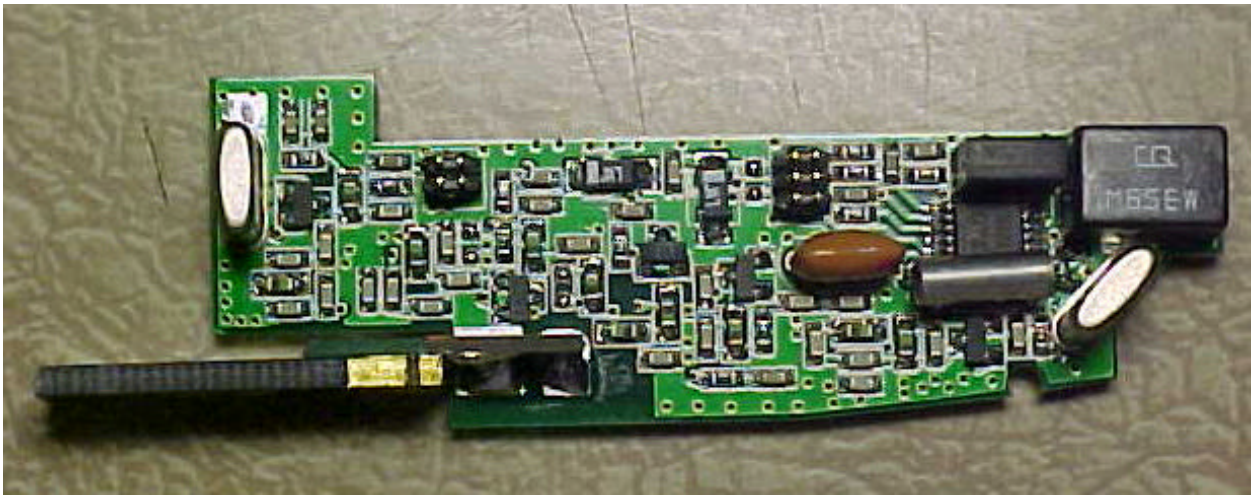
Please see Appendix A.

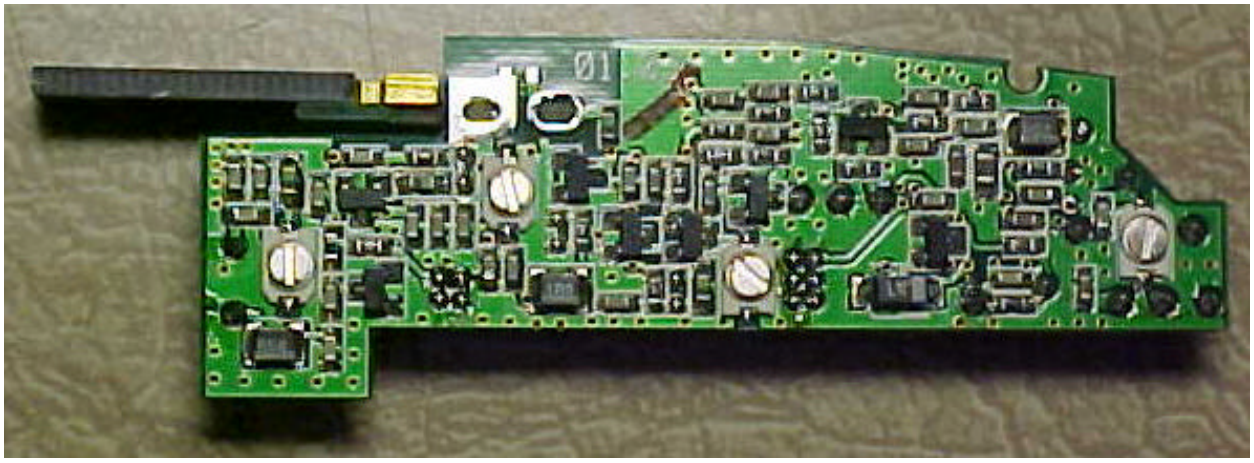
2.6 Schematics

Please see section 5.0

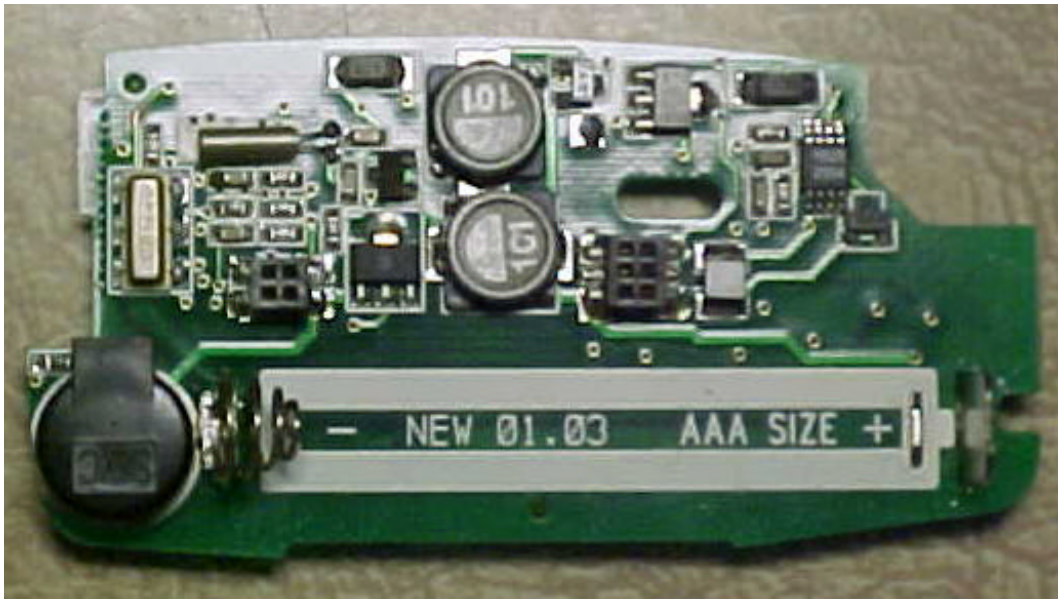
2.7 Photographs of EUT - per 2.1033(b)(7)

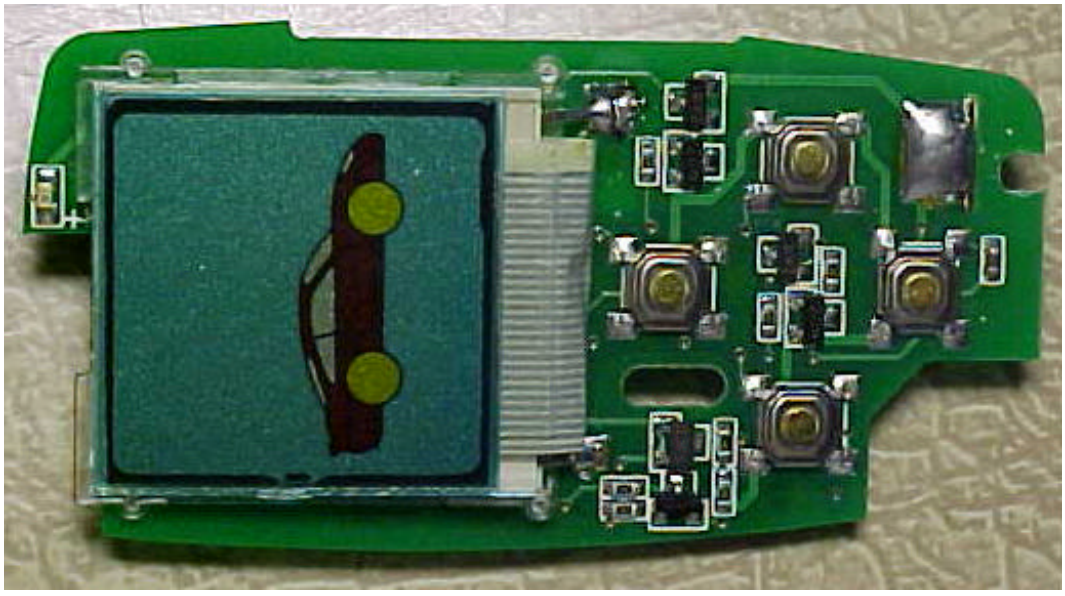
Photographs of EUT - per 2.1033(b)(7) continued





Photographs of EUT - per 2.1033(b)(7) continued





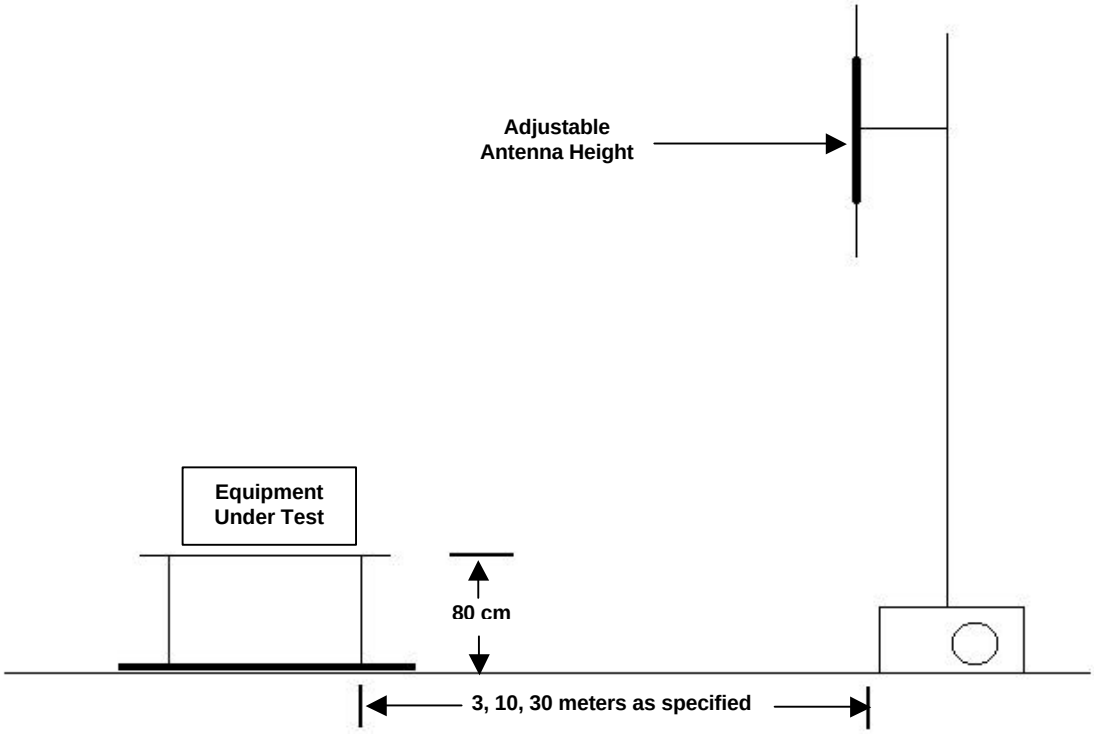
3. EMISSIONS

Per FCC Part 15 Subpart C

3.1 Radiated Emissions Test Setup and Procedure - Per 2.1033(b)(6) Per 2.947(a)

The EUT was placed on a wooden table 1 meter wide and 1.5 meters long, which rests on a inground turntable 3 meter open area test site test site. The top of the table is 80 cm above the ground plane. The turntable can be rotated 360 degrees. Measuring antenna is set at the prescribed distance. (Measurements are made with broad band antennas that have been correlated with tuned dipole antennas). The mast is 6 meters high and is self-supporting. The height of the antenna can be varied from 1 to 4 meters. Positioning of the antenna is controlled remotely.

3.1.1 Spurious Radiation Test Site Per 2.1033(b)6



Radiated Test Setup and Procedure - cont'd

The EUT is put into the operational test mode as stated in Section 2.2.1 is then started.

The spectrum analyzer is setup to store the peak emission over the band of the antenna. Peak EUT and ambient emissions are stored while the turntable is rotated 360^0. Peak spectrum analyzer trace is then recorded with the addition of antenna and cable correction factors. The limit is recorded on the same graph. A receiver with CISPR Quasi Peak capabilities is then used on the frequencies identified as the highest with respect to the plotted limit. Ambience is noted on the graph along with EUT emissions. The highest EUT frequencies, with respect to the limit, are maximized.

To maximize emissions levels, the turntable is rotated and the antenna is raised and lowered to determine the point of maximum emanations. The cables are then manipulated at that point to maximize emissions. Measurements are made with the antennas in each horizontal and vertical polarization separately. The data obtained from these tests is corrected with the proper cable, preamplifier

and antenna factors. The results are then transcribed onto tables that show the maximum emission levels. The highest emissions are listed in a Radiated Emissions Summary table.

If no emissions can be found, the lowest harmonics of the EUT clocks within the bands of the standard are tuned into with the receiver. If no emissions are found, the noise floor will be entered into the table and noted. A minimum of six frequencies will be logged. Summary results
will reflect only actual emissions from the EUT.

The field intensity measurements are made using standard techniques with a spectrum analyzer or EMI receiver as the calibrated Field Intensity Meter (FIM). Preamplifiers and filters are used when required.

When using the Hewlett Packard Model 8566B Spectrum Analyzer as the FIM, the Analyzer is calibrated to read signal level in dBm. Where:

0 dBm (50 ohms) = 107 dBuV (50 ohms)

The signal level (dBuV) = indicated signal level (dBm) + 107 dB. To obtain the signal level in dBuV/m it is necessary to add the antenna factor in dB.

3.1.2 Example Of Typical Calculation Per 2.1033(b)6

Measurement Distance = 3 Meter		
Reading @ 60 MHz	→	49.0 dBuV
Antenna Factor	+7.5 dBuV	
Cable Loss	+2.0 dBuV	
Preamplifier	-25.5 dBuV	
	-16.0 dBuV →	-16.0 dBuV
Field Strength dBuV/m at 3 Meter	→	33.0 dBuV

The Following FCC limits for acceptance were used:

Limit 447 MHz (Field Strength of Fundamental):
11,350 μV/M = 20 log (11,350) dBμV/M = 81.1 dBμV/M @ 3 Meters

Limit 447 MHz (Field Strength of Spurious Emissions):
1,135 μV/M = 20 log (1,135) dBμV/M = 61.1 dBμV/M @ 3 Meters

Limit 30 to 88 MHz:

100 μV/M = 20 log (100) dBμV/M = 40.0 dBμV/M @ 3 Meters

Limit 88 to 216 MHz (Not at the Carrier Frequency):

150 μV/M = 20 log (150) dBμV/M = 43.5 dBμV/M @ 3 Meters

Limit 216 to 960 MHz:

200 μV/M = 20 log (200) dBμV/M = 46 dBμV/M @ 3 Meters

Limit >960 MHz:

500μV/M = 20 log (500) dBμV/M = 54.0 dBμV/M @ 3 Meters

3.1.3 Field Strength of Fundamental

Test equipment used for all measurements is provided on page 12

Test results are provided on pages 13 & 14.

3.1.4 Harmonic Radiated Emissions

Test equipment used for all measurements is provided on page 12.

Test results are provided on pages 13 & 14.

3.1.5 Spurious Emissions Not Associated With Fundamental

Per FCC Part 15 Subpart C, 15.209 @ 3meters, No emissions were deleted.

TEST EQUIPMENT LOG

Customer:	David Levy Corporation	**Test Procedure:**	FCC Part 15
EUT:	Security System Xmtr	**Test Specification:**	Radiated Emissions
Model /Part#:	TXFM447LC01	**Test Engineer:**	Les Payne
Serial#:	N/A	**Customer Rep:**	N/A

DESCRIPTION	MANUFACTURER	MODEL# / SERIAL #	CAL. DUE DATE
Spec. Analyzer	HP	8568B/2318A05282	09/2001
Q-P Adapter	HP	85650A / 2811A01240	09/2001
Pre-amp	MCL	ZFL2000	03/2001
Biconical	SAS	200-540	01/2001
Log Periodic	EMCO	3146 / 1284	01/2001
DRG Antenna	Electrometrics	3115 / 2280	01/2001

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CFR 47 Subpart C Worksheet

DNB Job Number:	18145	Date:	March 30, 2001	Specification
Customer:	David Levey Corp			FCC Part 15 Subpart C paragraph 15.209 paragraph 15.231
Model Number:	Black Widow Remote Transceiver	Serial Number:	N/A	
Description:	Transceiver, 447.5 MHz			

EUT performed within the requirements of the applicable Standard(s) ☒ YES ☐ NO Signed

B = A.H. Systems SAS-200/540 Biconical Antenna S/N 138 (30-200 Mhz)
L = EMCO 3146 Log-Periodic Antenna S/N 1284 (200-1000 Mhz)
H = Electro-Metrics M/N 3115 Double Ridge Guide Antenna S/N 2280 (1-18 Ghz)
ACF = Antenna correction factor
AMP = Preamplifer Gain
CBL = Cable Los
DCF = Distance Correction Factor = $20*LOG_{10}$(Test Distance/Specification Distance)
Corr = Corrected reading = Meter + ACF + AMP + CBL + DCF
MD = Type of reading PK = Peak reading QP = Quasi-peak reading AV= Average reading
PL = Antenna polarity and type V = Vertical H = Horizontal
"*" = Readings taken with a resolution bandwidth of 10KHz do to nearby ambient signal

NOTES: Limits are from FCC Part 15 Subpart C para 15.231.
Highest reading at each harmonic has been recorded regardless of EUT position.

Freq GHz	Meter	ACF	AMP	CBL	DCF	Corr dBuV	Limit dBuV	Delta dBuv	Corr uV	Limit uV	Delta uV	MD	PL
447.5	67.8	20.4	-22	1.0	0	67.2	81.1	-13.9	2291	11350	-9059	PK	H
895.0	27.0	24.3	-22	1.5	0	30.8	61.1	-30.3	35	1135	-1100	PK	H
1342.5	21.0	25.5	-22	1.5	0	26	61.1	-35.1	20	1135	-1115	PK	H
1790.0	19.0	27.5	-22	2.0	0	26.5	61.1	-34.6	21	1135	-1114	PK	H
2237.5	19.0	29.9	-32	2.5	0	19.4	61.1	-41.7	9	1135	-1126	PK	H
2685.0	17.0	30.1	-32	3.0	0	18.1	61.1	-43	8	1135	-1127	PK	H
3132.5	17.0	31.3	-32	3.7	0	20	61.1	-41.1	10	1135	-1125	PK	H
3580.0	17.0	32.3	-32	4.3	0	21.6	61.1	-39.5	12	1135	-1123	PK	H
4027.5	22.0	33.1	-29	4.8	0	30.9	61.1	-30.2	35	1135	-1100	PK	H
4475.0	22.0	33.5	-29	5.2	0	31.7	61.1	-29.4	38	1135	-1097	PK	H
447.5	78.9	20.4	-22	1.0	0	78.3	81.1	-2.8	8222	11350	-3128	PK	V
895.0	20.0	24.3	-22	1.5	0	23.8	61.1	-37.3	15	1135	-1120	PK	V
1342.5	17.0	25.5	-22	1.5	0	22	61.1	-39.1	13	1135	-1122	PK	V
1790.0	17.0	27.5	-22	2.0	0	24.5	61.1	-36.6	17	1135	-1118	PK	V
2237.5	17.0	29.9	-32	2.5	0	17.4	61.1	-43.7	7	1135	-1128	PK	V
2685.0	17.0	30.1	-32	3.0	0	18.1	61.1	-43	8	1135	-1127	PK	V
3132.5	17.0	31.3	-32	3.7	0	20	61.1	-41.1	10	1135	-1125	PK	V
3580.0	17.0	32.3	-32	4.3	0	21.6	61.1	-39.5	12	1135	-1123	PK	V
4027.5	22.0	33.1	-29	4.8	0	30.9	61.1	-30.2	35	1135	-1100	PK	V
4475.0	22.0	33.5	-29	5.2	0	31.7	61.1	-29.4	38	1135	-1097	PK	V

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CFR 47 Subpart C Worksheet

DNB Job Number:	18145	Date:	March 30, 2001	Specification
Customer:	David Levey Corp			FCC Part 15 Subpart C paragraph 15.209 paragraph 15.231
Model Number:	Black Widow Remote Transceiver	Serial Number:	N/A	
Description:	Transceiver, 447.5 MHz			

EUT performed within the requirements of the applicable Standard(s) ☒ YES ☐ NO Signed

B = A.H. Systems SAS-200/540 Biconical Antenna S/N 138 (30-200 Mhz)
L = EMCO 3146 Log-Periodic Antenna S/N 1284 (200-1000 Mhz)
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DCF = Distance Correction Factor = $20*LOG_{10}$(Test Distance/Specification Distance)
Corr = Corrected reading = Meter + ACF + AMP + CBL + DCF
MD = Type of reading PK = Peak reading QP = Quasi-peak reading AV= Average reading
PL = Antenna polarity and type V = Vertical H = Horizontal
"*" = Readings taken with a resolution bandwidth of 10KHz do to nearby ambient signal

NOTES: Limits are from FCC Part 15 Subpart C para 15.209 except for fundamental which is 15.231.
Highest reading at each harmonic has been recorded regardless of EUT position.

Freq GHz	Meter	ACF	AMP	CBL	DCF	Corr dBuV	Limit dBuV	Delta dBuv	Corr uV	Limit uV	Delta uV	MD	PL
447.5	67.8	20.4	-22	1.0	0	67.2	81.1	-13.9	2291	11350	-9059	PK	H
895.0	27.0	24.3	-22	1.5	0	30.8	46.02	-15.22	35	200	-165	PK	H
1342.5	21.0	25.5	-22	1.5	0	26	53.98	-27.98	20	500	-480	PK	H
1790.0	19.0	27.5	-22	2.0	0	26.5	53.98	-27.48	21	500	-479	PK	H
2237.5	19.0	29.9	-32	2.5	0	19.4	53.98	-34.58	9	500	-491	PK	H
2685.0	17.0	30.1	-32	3.0	0	18.1	53.98	-35.88	8	500	-492	PK	H
3132.5	17.0	31.3	-32	3.7	0	20	53.98	-33.98	10	500	-490	PK	H
3580.0	17.0	32.3	-32	4.3	0	21.6	53.98	-32.38	12	500	-488	PK	H
4027.5	22.0	33.1	-29	4.8	0	30.9	53.98	-23.08	35	500	-465	PK	H
4475.0	22.0	33.5	-29	5.2	0	31.7	53.98	-22.28	38	500	-462	PK	H
447.5	78.9	20.4	-22	1.0	0	28.4	81.1	-52.7	26	11350	-11324	PK	V
895.0	20.0	24.3	-22	1.5	0	23.8	46.02	-22.22	15	200	-185	PK	V
1342.5	17.0	25.5	-22	1.5	0	22	53.98	-31.98	13	500	-487	PK	V
1790.0	17.0	27.5	-22	2.0	0	24.5	53.98	-29.48	17	500	-483	PK	V
2237.5	17.0	29.9	-32	2.5	0	17.4	53.98	-36.58	7	500	-493	PK	V
2685.0	17.0	30.1	-32	3.0	0	18.1	53.98	-35.88	8	500	-492	PK	V
3132.5	17.0	31.3	-32	3.7	0	20	53.98	-33.98	10	500	-490	PK	V
3580.0	17.0	32.3	-32	4.3	0	21.6	53.98	-32.38	12	500	-488	PK	V
4027.5	22.0	33.1	-29	4.8	0	30.9	53.98	-23.08	35	500	-465	PK	V
4475.0	22.0	33.5	-29	5.2	0	31.7	53.98	-22.28	38	500	-462	PK	V

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EMI Datasheet (ITE Devices)

DNB Job Number:	18145	Date: March 30, 2000	Specification
Customer:	David Levy Corporation Inc		⊠ FCC Part 15 Class B
Model Number:	Black Widow Remote Transceiver	Serial Number: N/A	
Description:	Transceiver, 447.5 MHz		

EUT performed within the requirements of the applicable Standard(s) ⊠ YES □ NO Signed

Bcn = A.H. Systems SAS-200/540 Biconical Antenna S/N 138 (30-200 Mhz)
Log = EMCO 3146 Log-Periodic Antenna S/N 1284 (200-1000 Mhz)
Def = Distance Correction Factor = $20*LOG_{10}$(Test Distance/Specification Distance)
Typ = Type of reading PK = Peak reading QP = Quasi-peak reading
"*" = Readings taken with a res bandwidth of 10KHz do to nearby ambient signal

Cbl = Cable Loss
Amp = Preamplifier Gain
Pl = Antenna polarity V = Vertical H = Horizontal

NOTES: Unintentional Radiator and Receiver Emissions

Freq	Meter	Bcn	Log	Cbl	Amp	Def	Corr	Lim dB	Delta	Corr uV	Lim uV	Delta	Typ	Pl
30.202	23.8	11.9	0	1.1	-24	0	12.8	40	-27.2	4	100	-96	PK	H
130.896	30.8	14.7	0	2.4	-24	0	23.9	40	-16.1	16	100	-84	PK	H
166.435	32.6	16.2	0	2.8	-24	0	27.6	40	-12.4	24	100	-76	PK	H
436.999	35.9	0	20.0	4.6	-24	0	36.5	47	-10.5	67	224	-157	PK	H
440.112	39.0	0	20.1	4.7	-24	0	39.8	47	-7.2	98	224	-126	PK	H
443.285	36.1	0	20.2	4.7	-24	0	37	47	-10	71	224	-153	PK	H
445.684	33.2	0	20.3	4.7	-24	0	34.2	47	-12.8	51	224	-173	PK	H
514.90	33.4	0	22.4	5.1	-24	0	36.9	47	-10.1	70	224	-154	PK	H
524.90	33.5	0	22.5	5.2	-24	0	37.2	47	-9.8	72	224	-152	PK	H
541.1	35.0	0	22.5	5.3	-24	0	38.8	47	-8.2	87	224	-137	PK	H
542.7	37.8	0	22.5	5.3	-24	0	41.6	47	-5.4	120	224	-104	PK	H
547.5	40.3	0	22.5	5.3	-24	0	44.1	47	-2.9	160	224	-64	QP	H

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EMI Datasheet (ITE Devices)

DNB Job Number:	18145	Date: March 30, 2000	Specification
Customer:	David Levy Corporation Inc		⊠ FCC Part 15 Class B
Model Number:	Black Widow Remote Transceiver	Serial Number: N/A	
Description:	Transceiver, 447.5 MHz		

Freq	Meter	Ben	Log	Cbl	Amp	Def	Corr	Lim dB	Delta	Corr uV	Lim uV	Delta	Typ	Pl
650.8	39.5	0	23.8	5.9	-24	0	45.2	47	-1.8	182	224	-42	QP	H
30.111	26.6	11.9	0	1.1	-24	0	15.6	40	-24.4	6	100	-94	PK	V
130.938	29.4	14.7	0	2.4	-24	0	22.5	40	-17.5	13	100	-87	PK	V
163.977	28.0	15.8	0	2.8	-24	0	22.6	40	-17.4	13	100	-87	PK	V
436.9	33.2	0	20.0	4.6	-24	0	33.8	47	-13.2	49	224	-175	PK	V
440.1	32.1	0	20.1	4.7	-24	0	32.9	47	-14.1	44	224	-180	PK	V
442.8	33.3	0	20.2	4.7	-24	0	34.2	47	-12.8	51	224	-173	PK	V

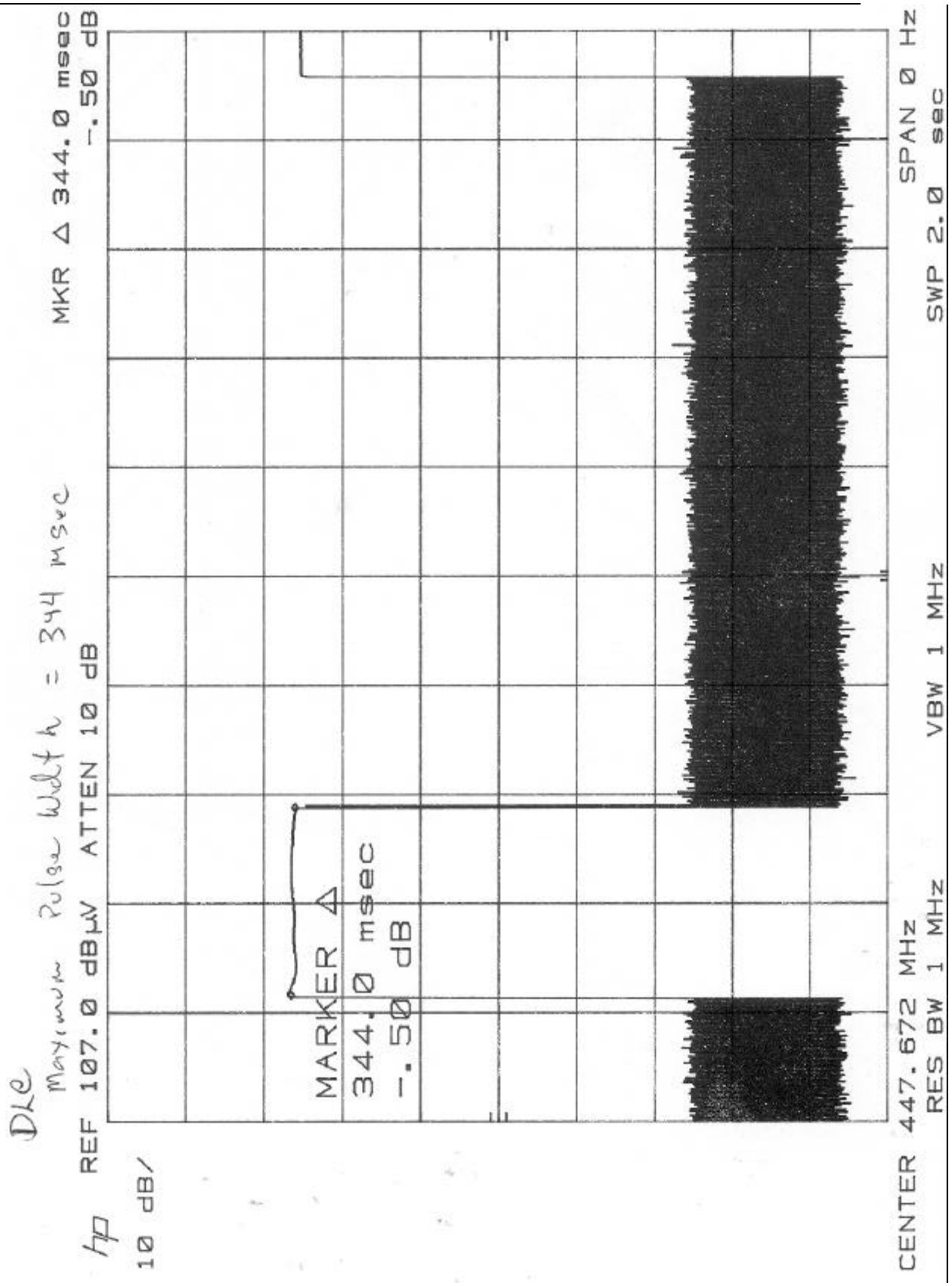
3.1.6 Duty Cycle Correction

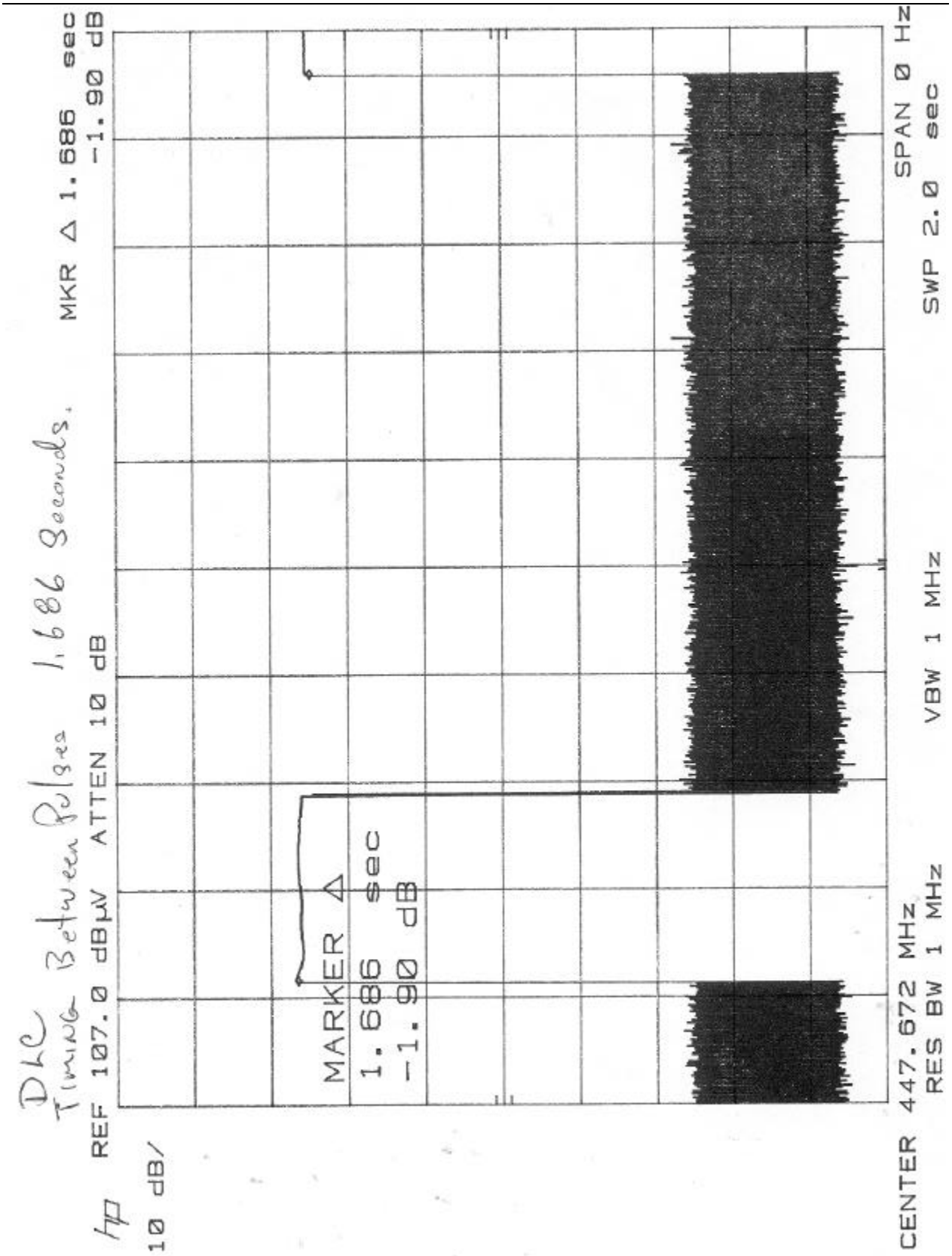
Duty cycle correction is determined by counting the number of pulses on over a 100 ms period.

Actual plots showing on time versus off time are on pages 17 and 18.

No duty cycle correction has been applied to this unit.

		Time in ms	
Pulse Train Cycle Time			
Number of long pulses			
Number of Short pulses			
Total on Time per cycle			
Number of Cycles per 100 ms			
Total on time per 100 ms			
Percent on per 100 ms			
Total duty cycle correction in dB			


DLC
Maximum Pulse Width = 344 msec
MKR Δ 344.0 msec
-.50 dB
REF 107.0 dBµV ATTEN 10 dB
10 dB/
MARKER Δ
344.0 msec
-.50 dB
CENTER 447.672 MHz
RES BW 1 MHz
VBW 1 MHz
SWP 2.0 sec
SPAN 0 Hz


DLC
Timing Between Pulses 1.686 Seconds.
hp
10 dB/
REF 107.0 dBµV ATTEN 10 dB
MKR Δ 1.686 sec
-1.90 dB
MARKER Δ
1.686 sec
-1.90 dB
CENTER 447.672 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 0 Hz
SWP 2.0 sec

3.1.7 Occupied Bandwidth

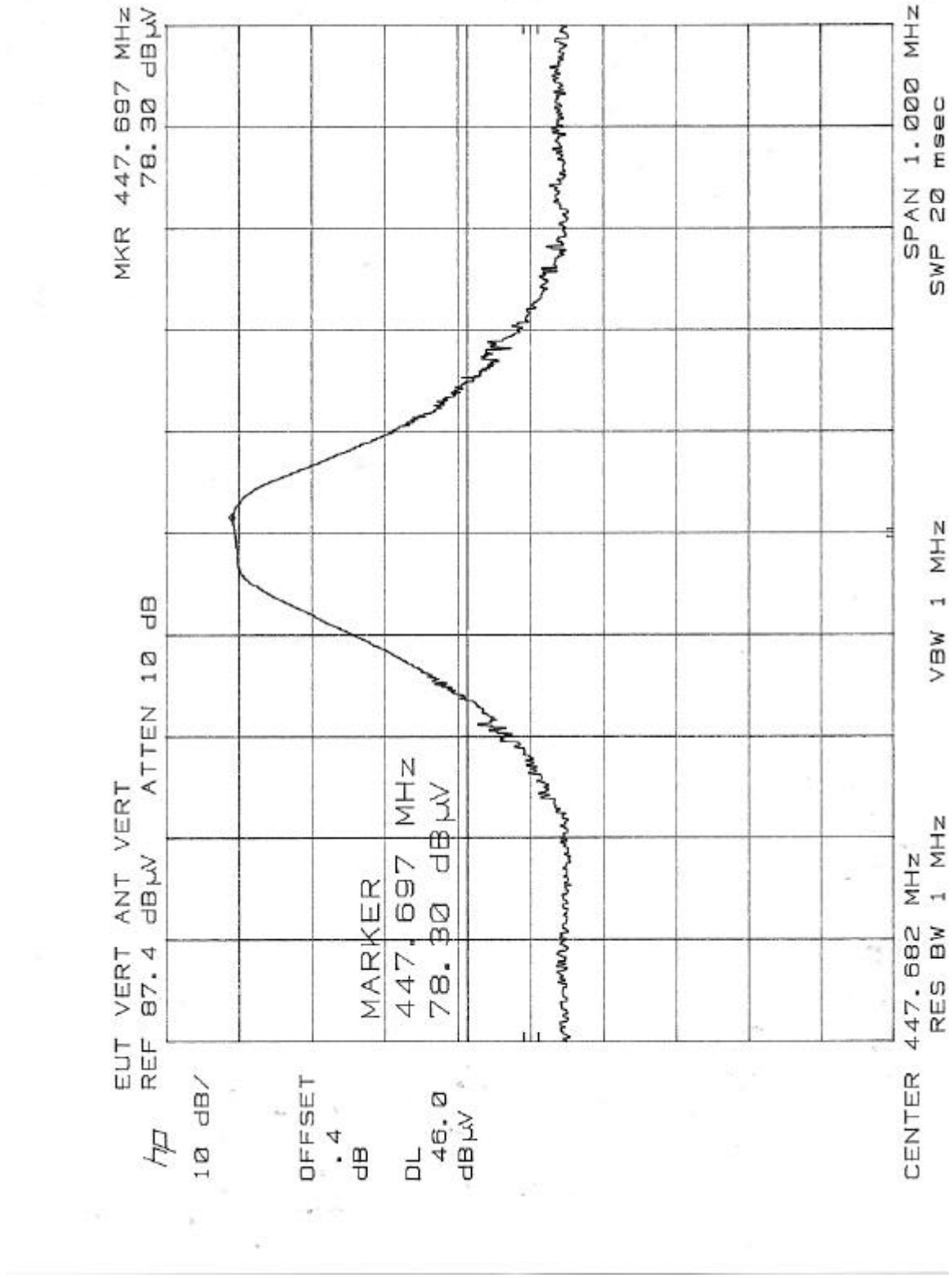
The transmitter's occupied bandwidth at (447 MHz) was measured with respect to the 20dB down point of the center frequency. Part 15.231 (c) stipulates that emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 and shall be attenuated by at least 20 dB below the level of the fundamental or to the general radiated emission limits in Part 15.209, whichever is the lesser attenuation. Part 15.209 (a) specifies that the emissions from an intentional radiator shall not exceed the field strength levels in the 216 to 960 MHz band of 200 uV/m (46 dBuV/m).

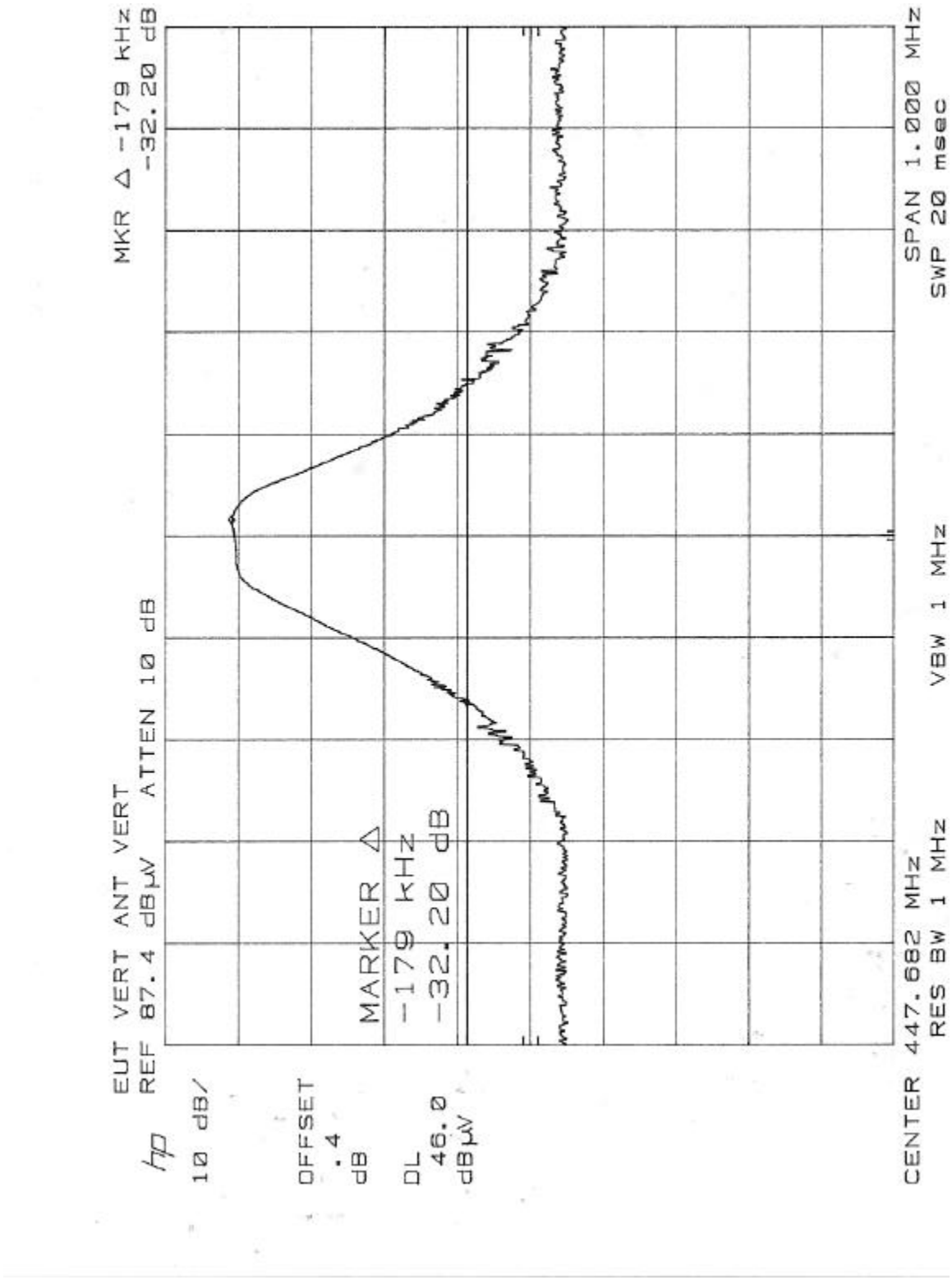
When transmitting at 447.7 MHz, emissions measured at the 0.25% bandwidth of 447.7 MHz (band edge) were 45.1 dBuV/m (< 46 dBuV/m).

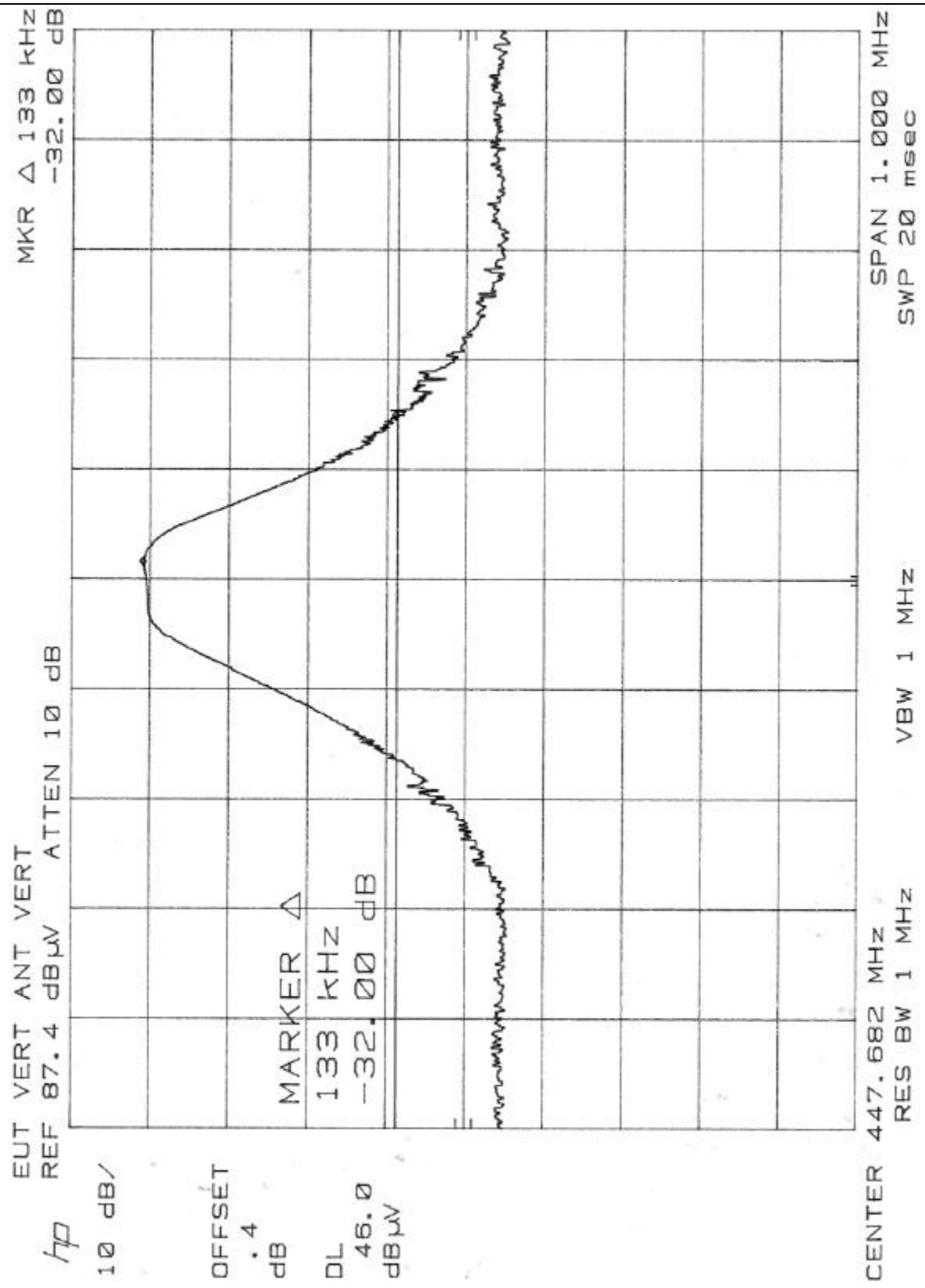
Lower band edge calculated as 446.580 MHz
Lower 20dB down point is 447.590 MHz (Between 446.580 and 448.819 MHz)
Transmitting signal fall below 37dBuV/m at 447.400 MHz (<46 dBuV/m)

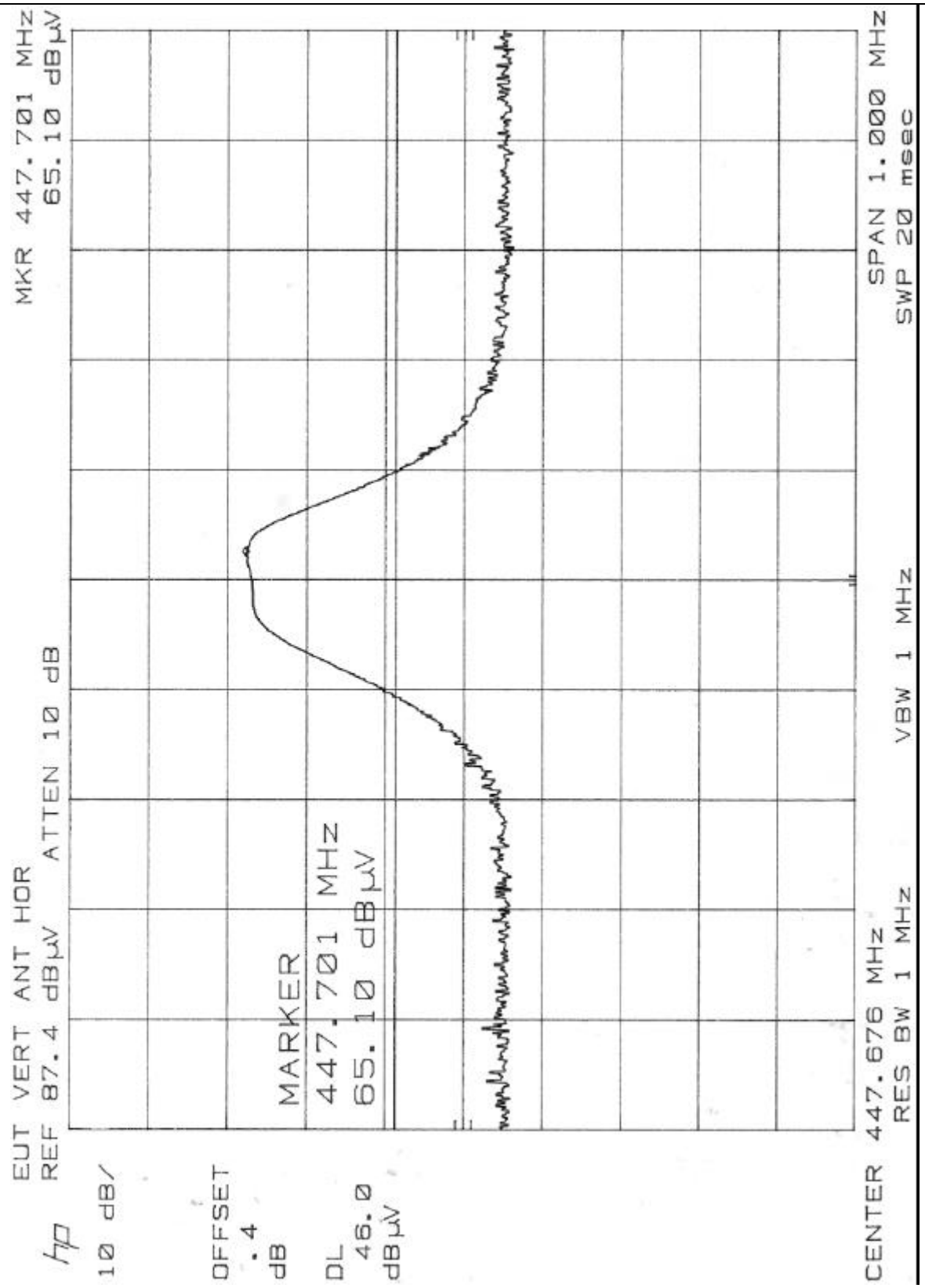
Upper band edge calculated as 448.819 MHz
Upper 20dB down point is 447.785 MHz (Between 446.580 and 448.819 MHz)
Transmitting signal falls below 37dBuV/m at 448.000 MHz (<46 dBuV/m)

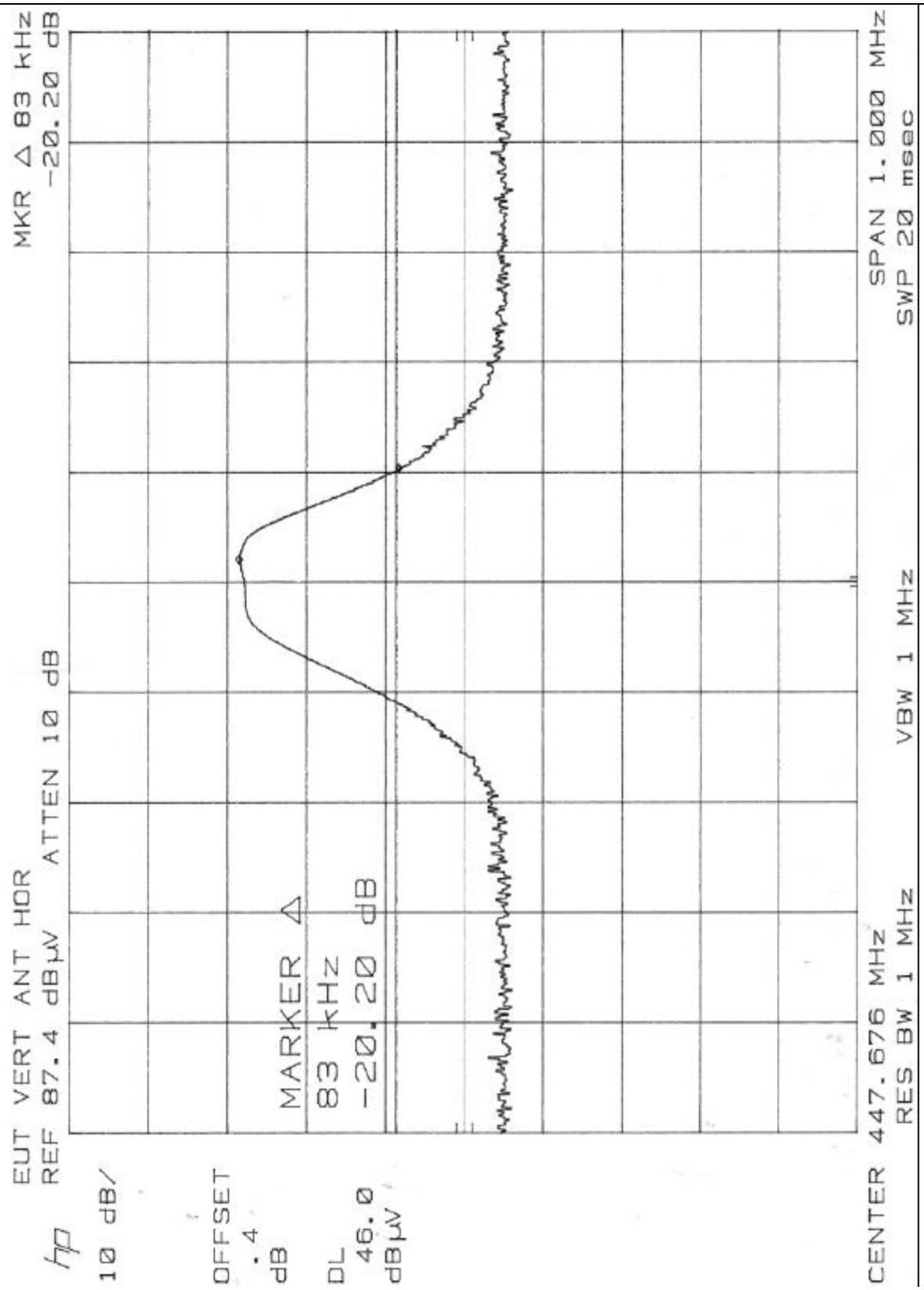
Plots showing the occupied bandwidth are provided on pages 20 – 31.

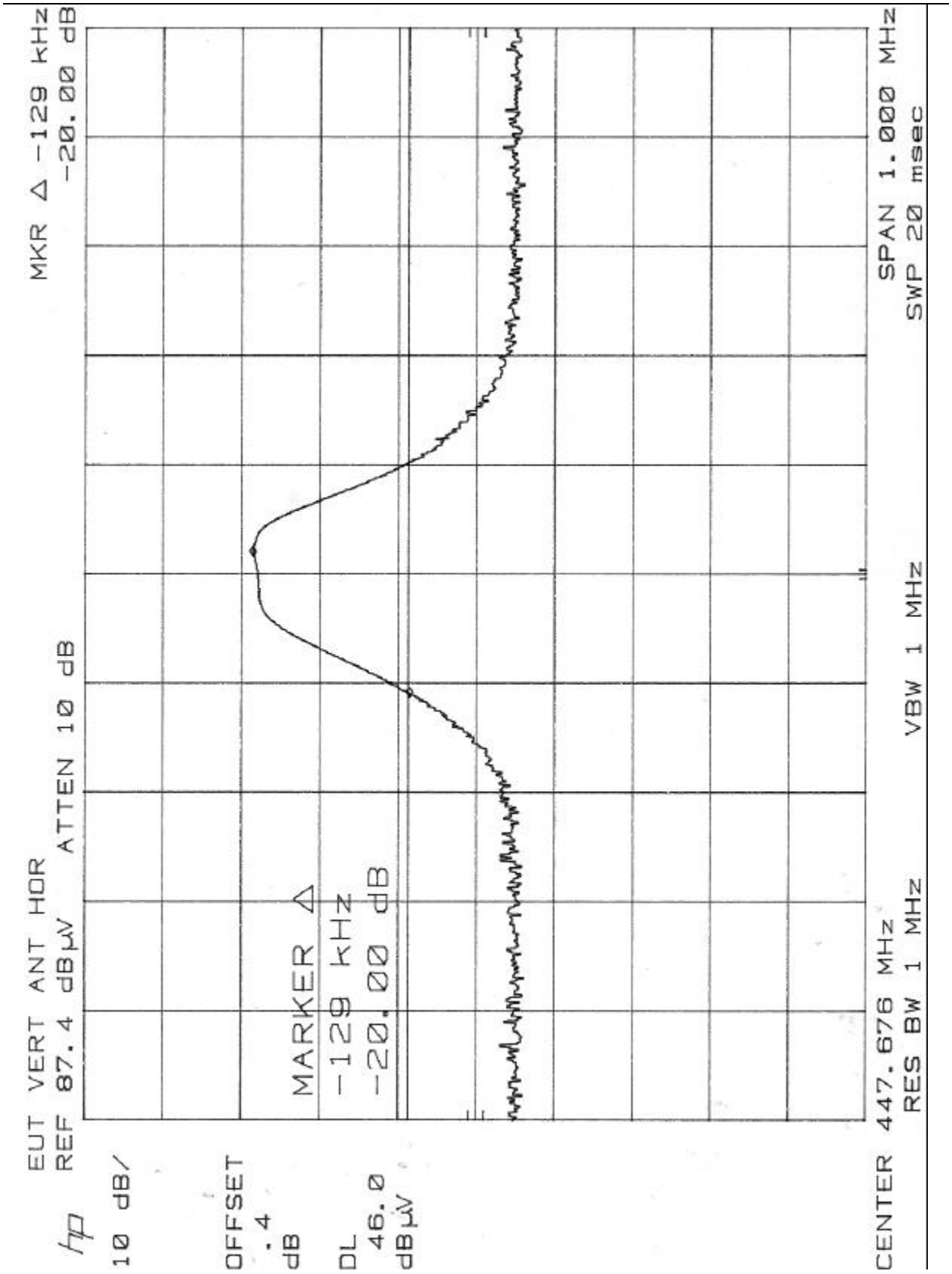

EUT VERT ANT VERT
REF 87.4 dBµV ATTEN 10 dB
MKR 447.697 MHz
78.30 dBµV
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER
447.697 MHz
78.30 dBµV
CENTER 447.682 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

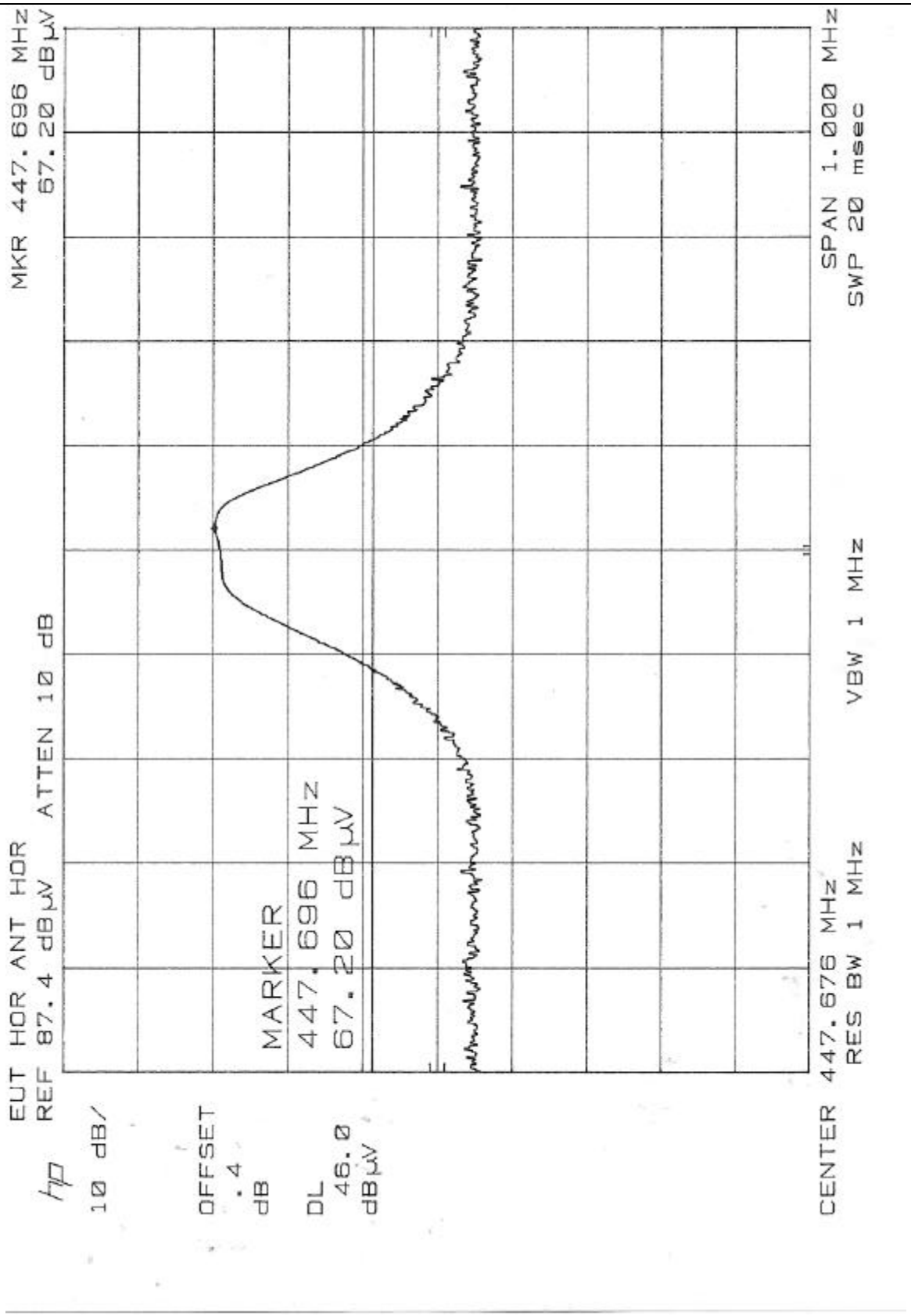

EUT VERT ANT VERT
REF 87.4 dBµV ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
-179 kHz
-32.20 dB
MKR Δ -179 kHz
-32.20 dB
CENTER 447.682 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

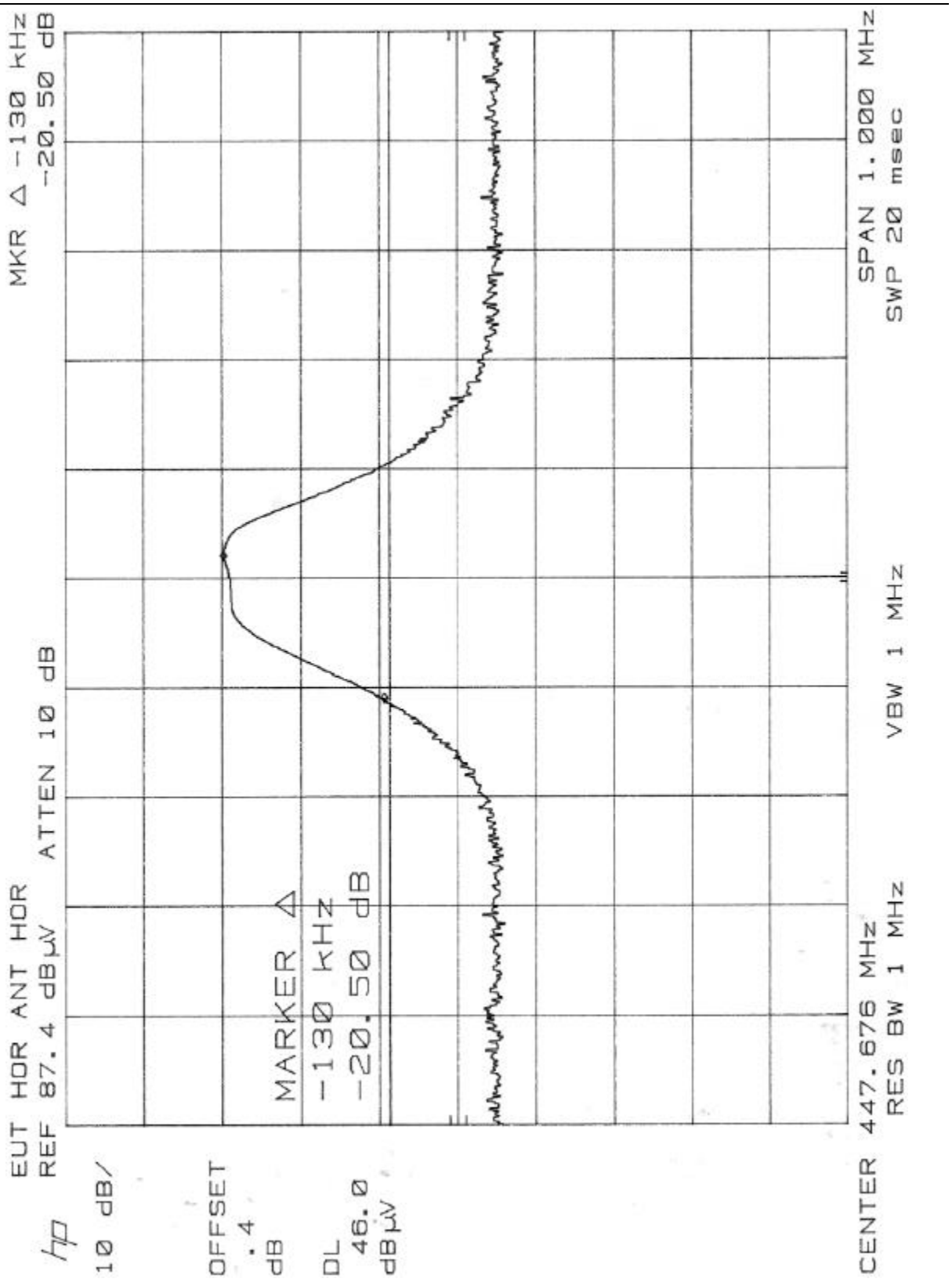

EUT VERT ANT VERT
REF 87.4 dBµV
ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
133 kHz
-32.00 dB
MKR Δ 133 kHz
-32.00 dB
CENTER 447.682 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

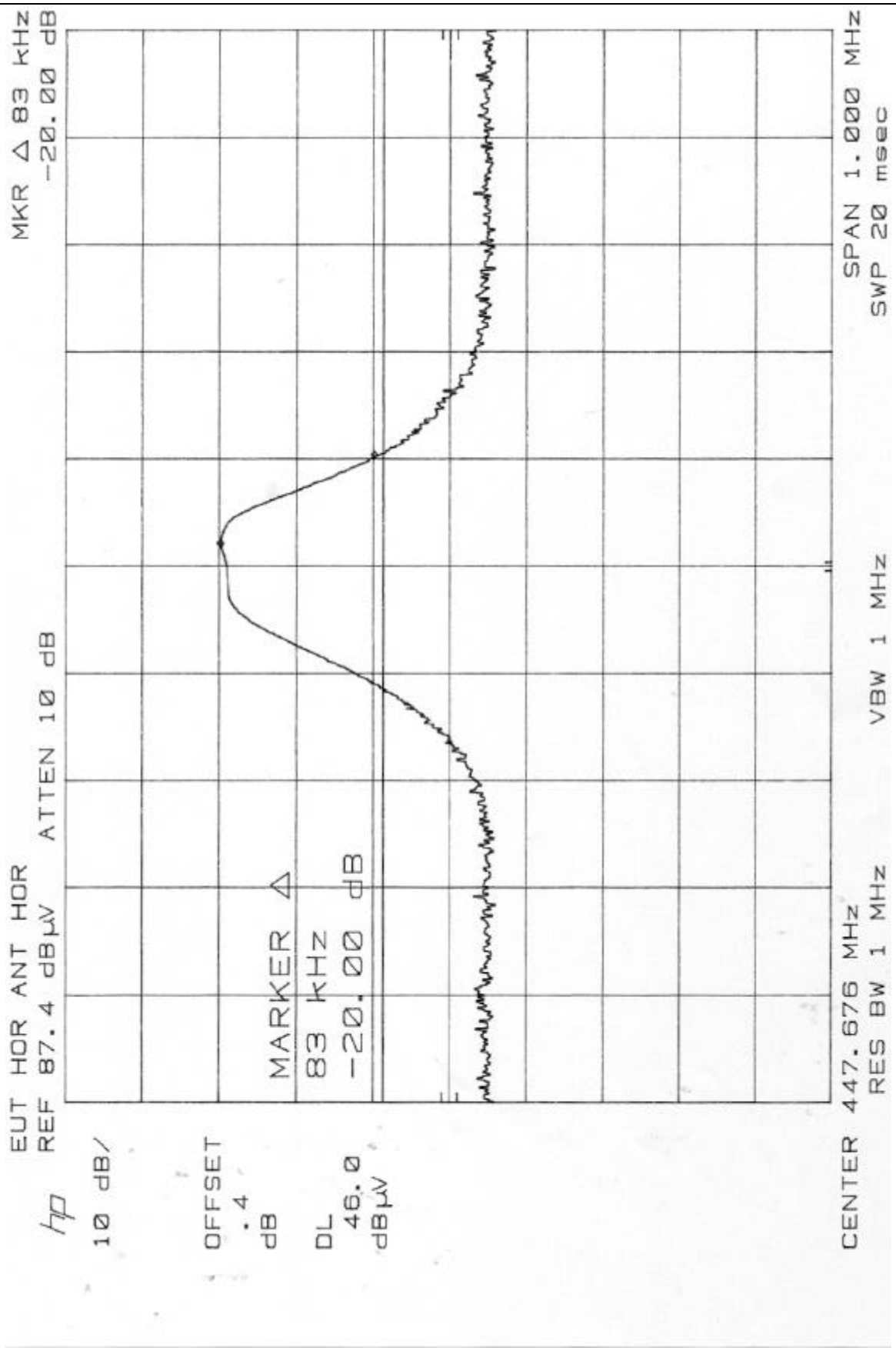

EUT VERT ANT HOR
REF 87.4 dBµV
ATTEN 10 dB
MKR 447.701 MHz
65.10 dBµV
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER
447.701 MHz
65.10 dBµV
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

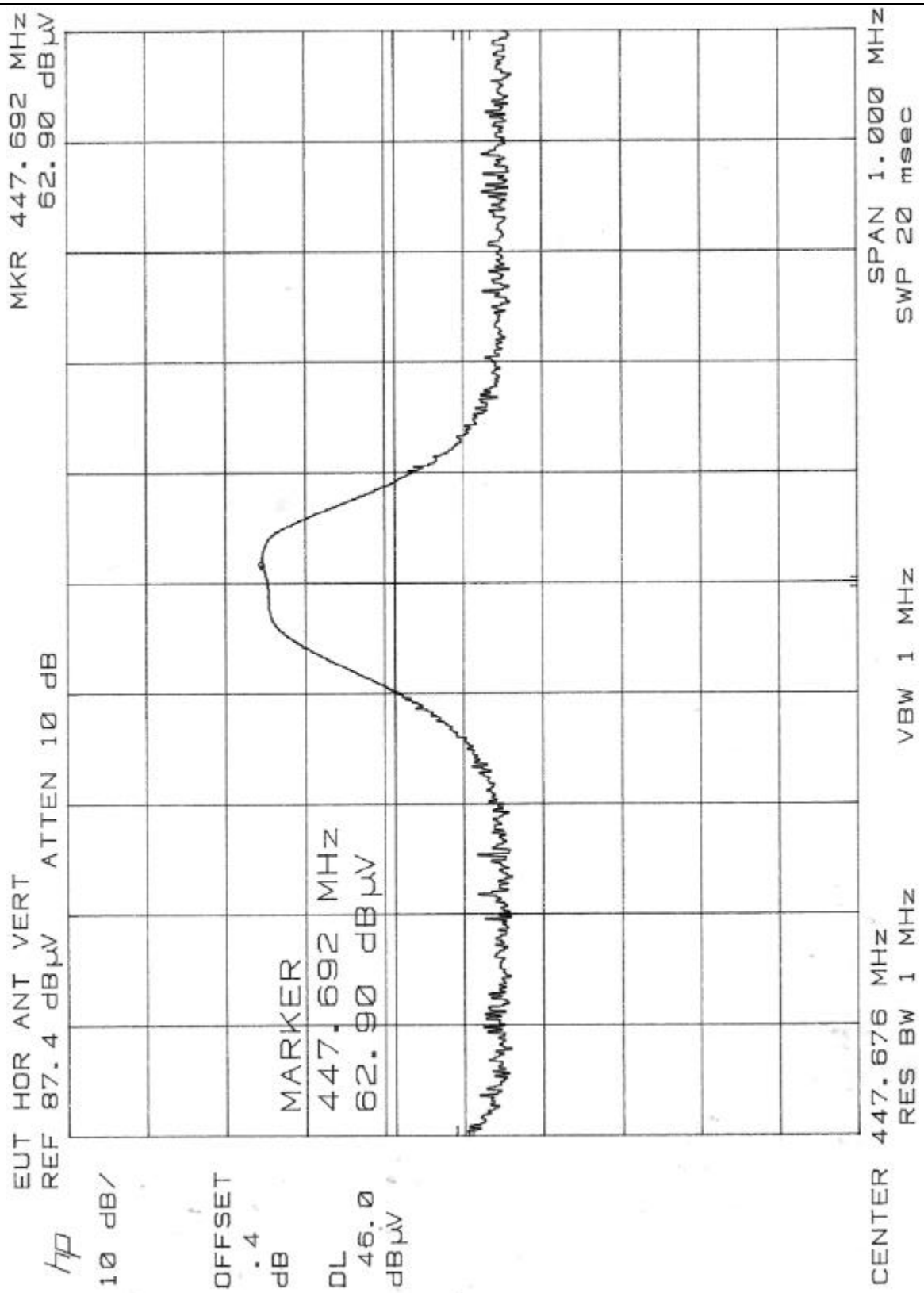

EUT VERT ANT HOR
REF 87.4 dBµV
ATTEN 10 dB
MKR Δ 83 kHz
-20.20 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
83 kHz
-20.20 dB
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

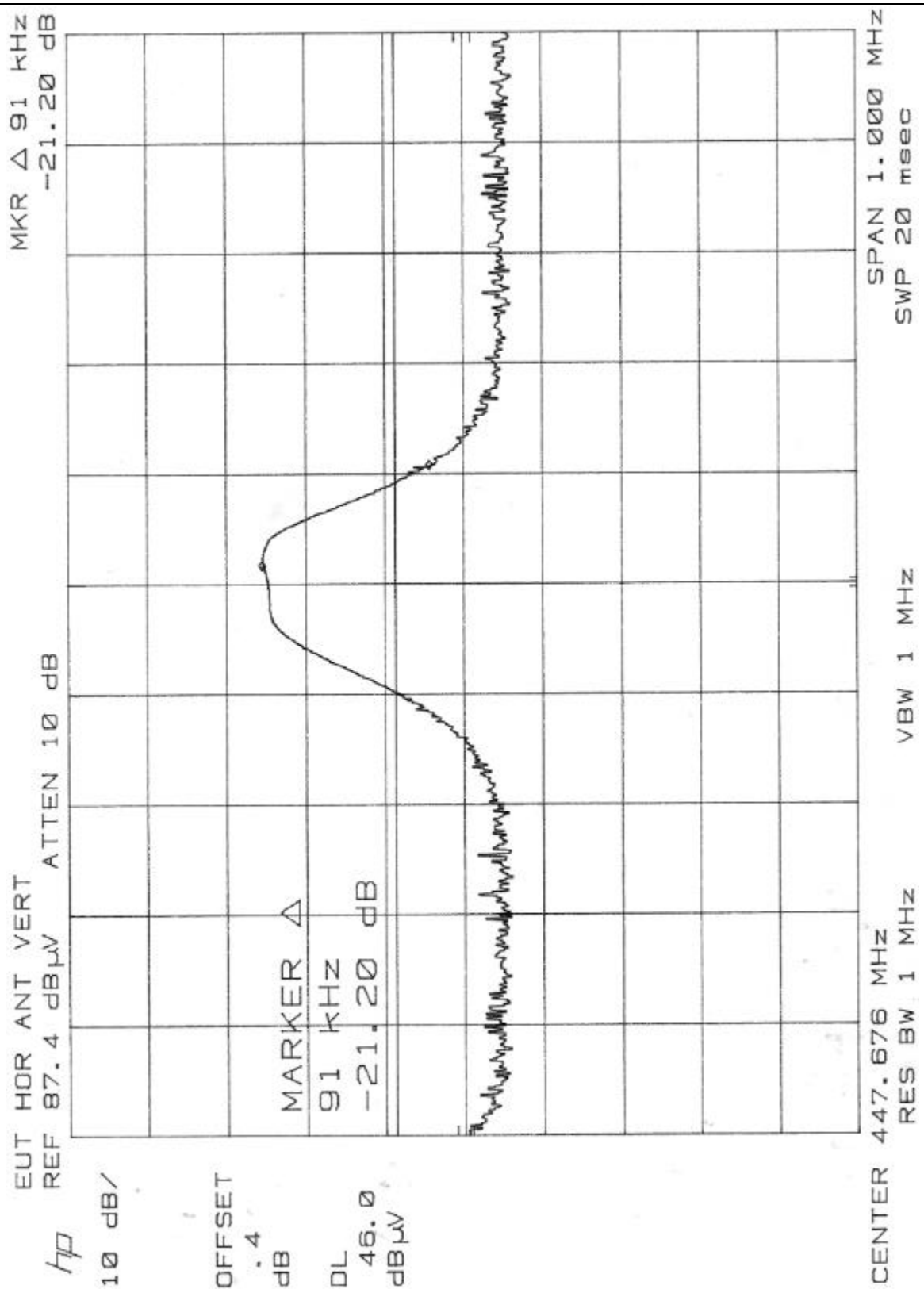

EUT VERT ANT HOR
REF 87.4 dBµV
ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
-129 kHz
-20.00 dB
MKR Δ -129 kHz
-20.00 dB
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

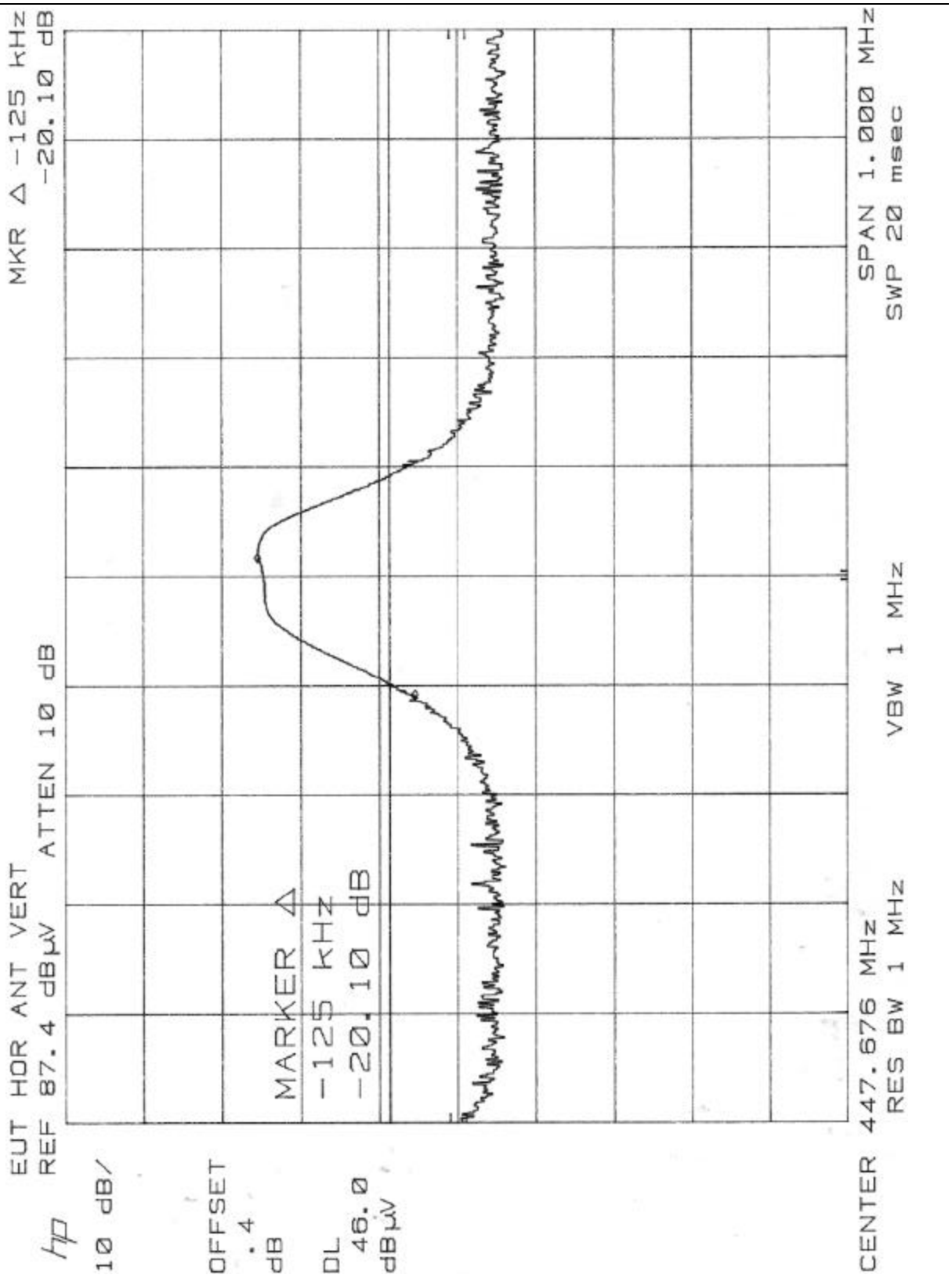

EUT HOR ANT HOR
REF 87.4 dBµV
ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER
447.696 MHz
67.20 dBµV
MKR 447.696 MHz
67.20 dBµV
SPAN 1.000 MHz
SWP 20 msec
VBW 1 MHz
CENTER 447.676 MHz
RES BW 1 MHz


EUT HOR ANT HOR
REF 87.4 dBµV
ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
-130 kHz
-20.50 dB
MKR Δ -130 kHz
-20.50 dB
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec


EUT HOR ANT HOR
REF 87.4 dBµV
ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
83 kHz
-20.00 dB
MKR Δ 83 kHz
-20.00 dB
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec


EUT HOR ANT VERT
REF 87.4 dBµV ATTEN 10 dB
10 dB/
OFFSET .4 dB
DL 46.0 dBµV
MARKER
447.692 MHz
62.90 dBµV
MKR 447.692 MHz
62.90 dBµV
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

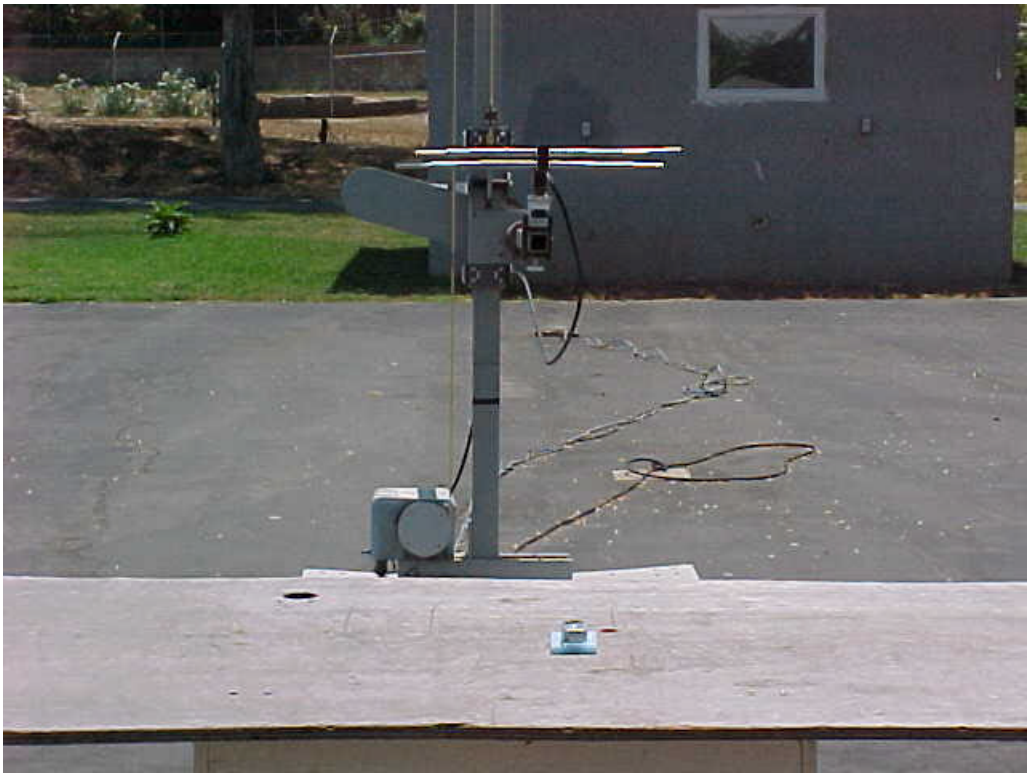

EUT HOR ANT VERT
REF 87.4 dBµV ATTEN 10 dB
10 dB/
OFFSET .4 dB
DL 46.0 dBµV
MKR Δ 91 kHz -21.20 dB
MARKER Δ
91 kHz
-21.20 dB
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec


EUT HOR ANT VERT
REF 87.4 dBµV
ATTEN 10 dB
10 dB/
OFFSET
.4
dB
DL
46.0
dBµV
MARKER Δ
-125 kHz
-20.10 dB
MKR Δ -125 kHz
-20.10 dB
CENTER 447.676 MHz
RES BW 1 MHz
VBW 1 MHz
SPAN 1.000 MHz
SWP 20 msec

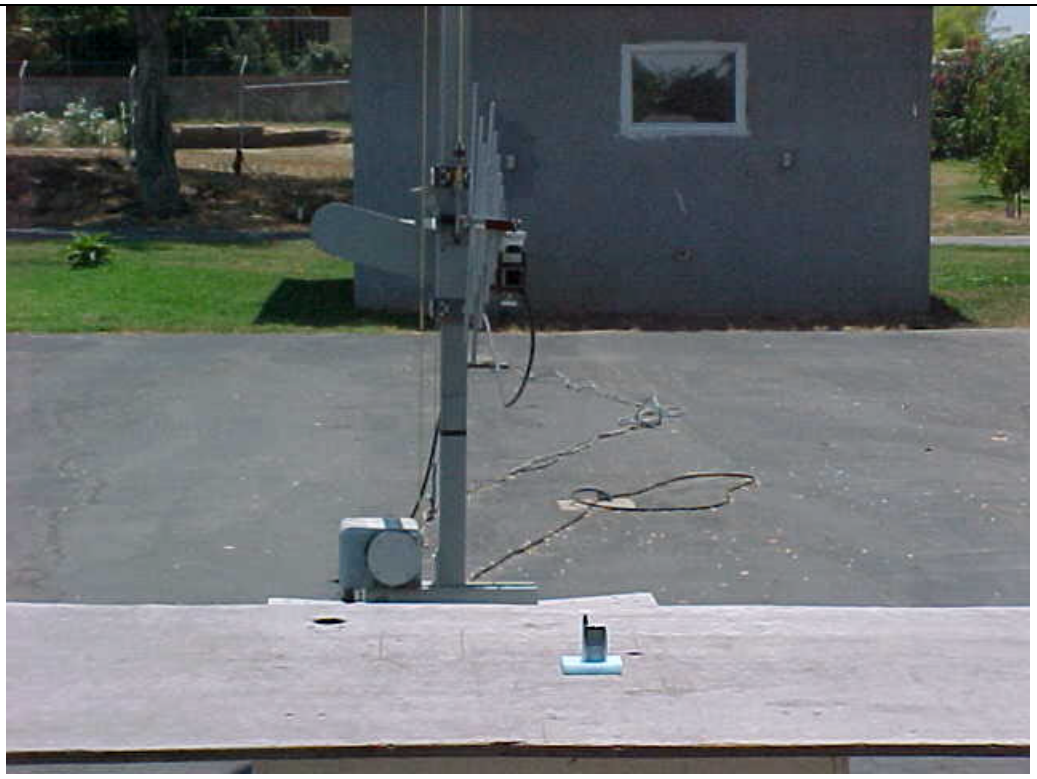
3.1.8 Photographs of Radiated Test Setup – per 2.1033(b)(7)

Radiated Emissions, Fundamental (and Harmonics to 1GHz)

Horizontal Polarization EUT in position 1



Vertical Polarization EUT in position 2



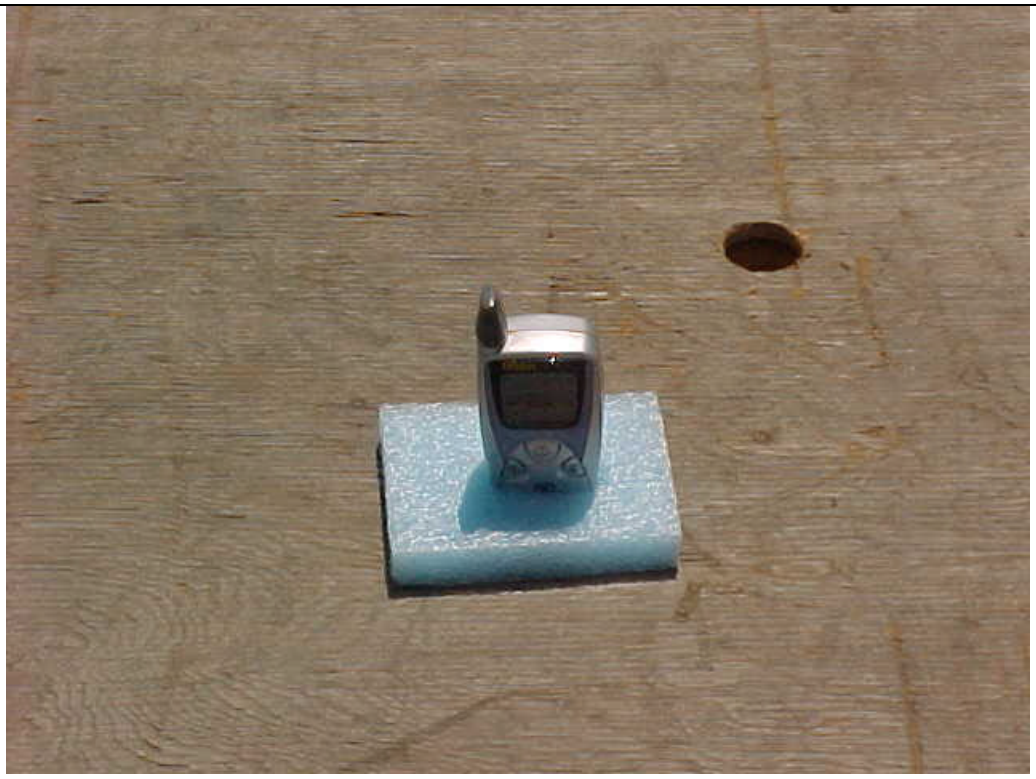
Radiated Emissions, Harmonics above 1GHz

Horizontal Position EUT in position 1

Vertical Polarization EUT in position 2

Close up views
EUT in position 1

EUT in position 2



4. LABELING REQUIREMENTS - PER 2.1033(B)(7)

Label will be constructed of 0.02-inch plastic attached as shown on the equipment with permanent adhesive.

All information on the label will be etched or screened. All methods will exceed the expected lifetime of the equipment.

The label will be large enough to allow all information to be readily legible.

4.1 Additional Label Required

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

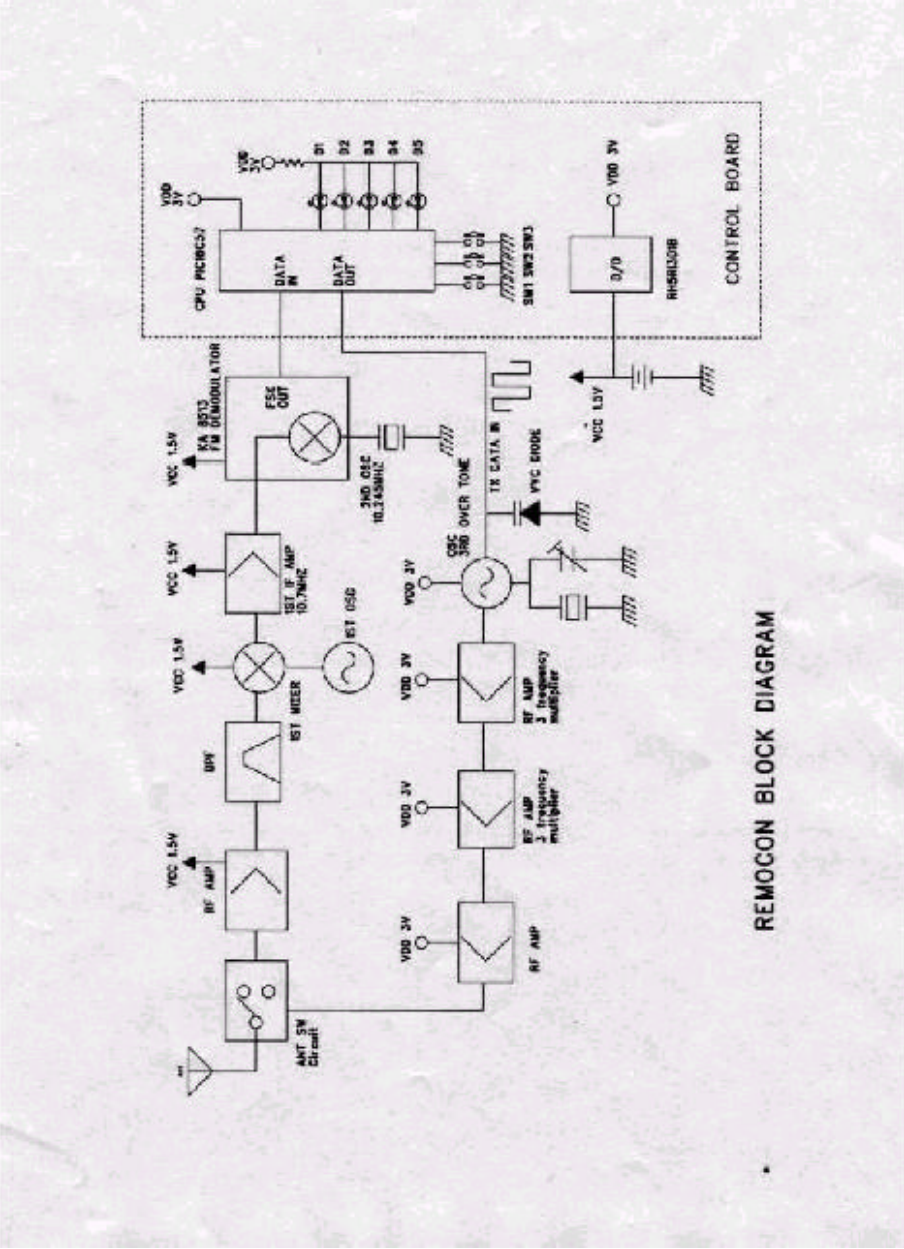
Shown above is a copy of the label with the Part 15.19 Compliance Statement, Location of required information is checked “below”.

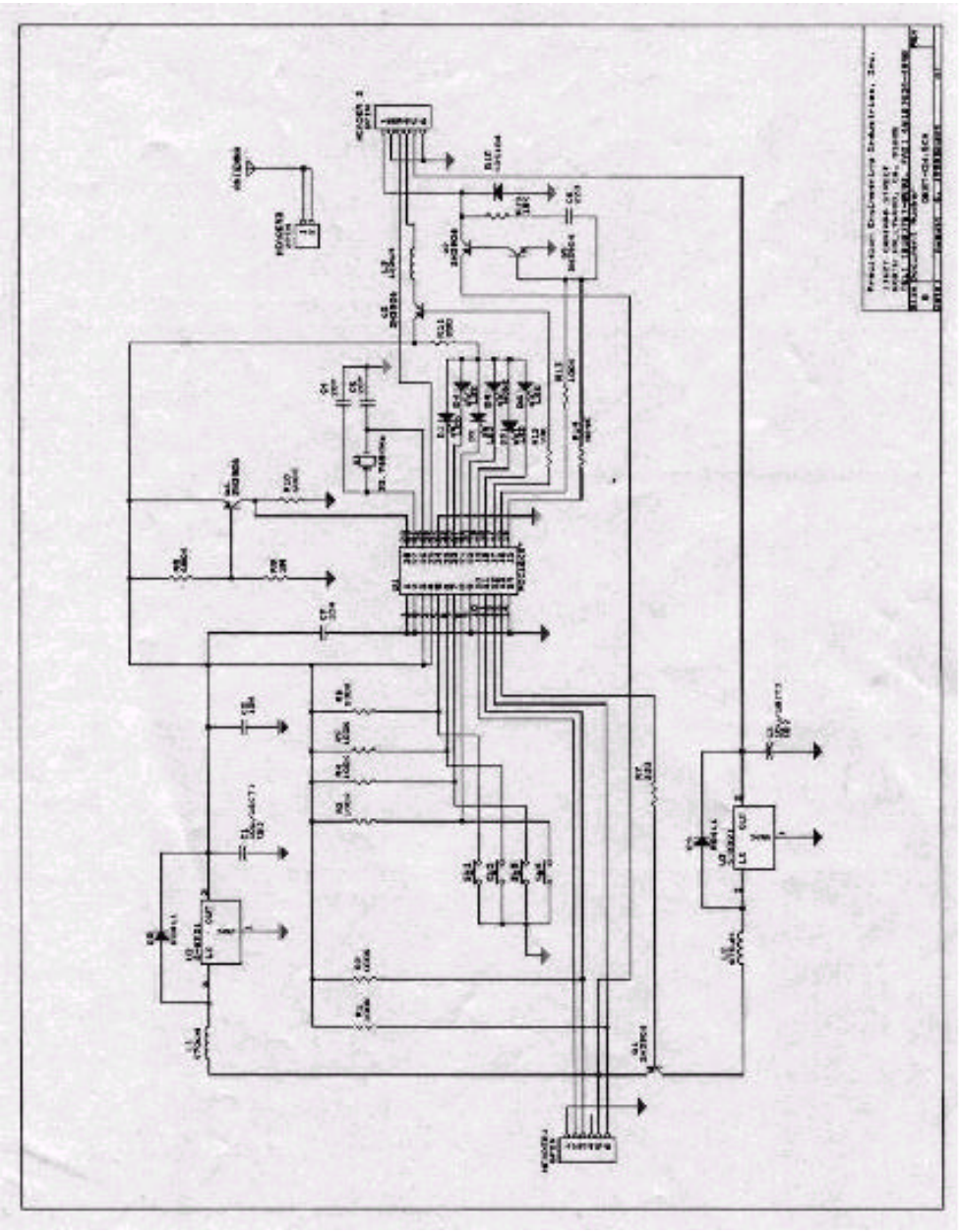
The label will be placed in a conspicuous location on the device.

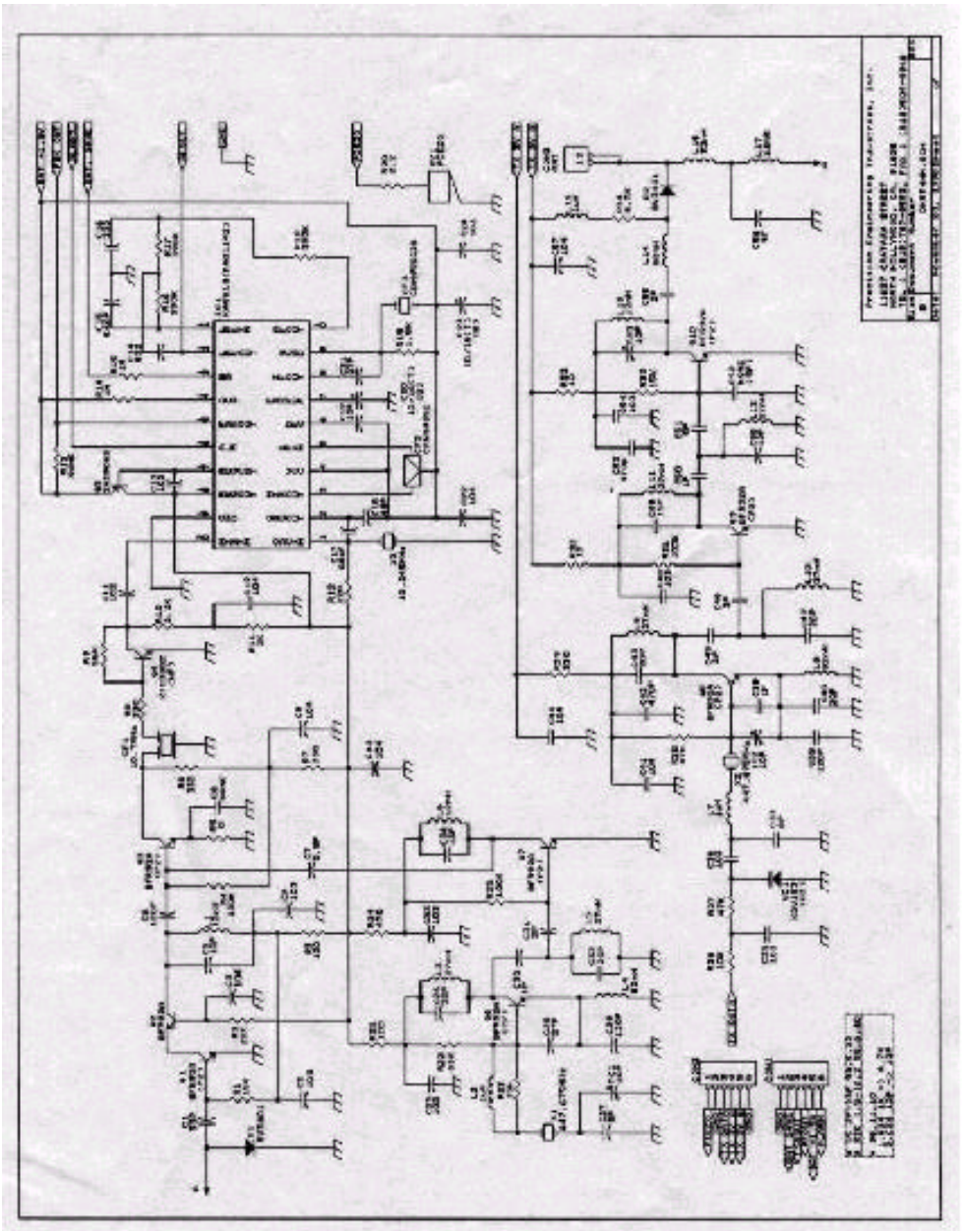
4.2 Photograph of Label Placement and Contents

Because of the small size of this device the information in 4.1 may be placed in the documentation provided to the user. The FCC ID shall be placed upon the unit. This is in accordance with FCC Part 15.19 (a) (5).

5. SCHEMATIC DIAGRAMS







UNCERTAINTY TOLERANCE

DNB Engineering's Riverside Facility (3 and 10 meter Open Area Test Sites) are within acceptable uncertainty tolerances per ANSI C63.4 (1992) sections 5.4.6.1 and 5.4.6.2.

ANSI C63.4 (1992)

5.4.6.1 Site Attenuation. A measurement site shall be considered acceptable for radiated electromagnetic field measurements if the horizontal and vertical NSA derived from measurements, i.e., the "measured NSA," are within ±4 dB of the theoretical NSA (5.4.6.3) for an ideal site.

5.4.6.1 NSA Tolerance. The ±4 dB tolerance in 5.4.6.1 includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies. These errors are analyzed in ANSI C63.6-1988 [3], wherein it is shown that the performance of a well-built site contributes only 1 dB of the total allowable tolerance.

INFORMATION PERTAINING TO EQUIPMENT MANUFACTURED AFTER COMPLIANCE TESTING

It is prudent that manufacturers have an established Quality Assurance program to spot check their products on a periodic basis, either based upon time or quantities produced. Obviously, a change in the engineering design should be sufficient justification for a re-test.

The Quality assurance test need not be formal Verification or Certification such as required during the initial production of the product. However, it should be sufficient in scope to assure that the EMI characteristics of the product have not changed to the degree that the product exceeds the FCC limits. If a new model of a product is produced, it must undergo full Verification or Certification testing and, in case of Certification, be filed with the FCC.

It is expected that the FCC will place greater emphasis and resources in spot checking commercially available products. If a product is found not to be compliant with the Limits specified in Part 15, Subpart B. the manufacturer will be subject to the appropriate penalties imposed by the Commission. The initial Certification or Verification is sufficient to justify initial production. The additional quality assurance testing performed is the manufacturer's responsibility to assure continued compliance.

Appendix A

Security Features

Remote Arming

When Armed, the system monitors and protects 3 independent areas, or *zones*, including the doors, hood/trunk, and shock sensor.

To Arm the system:

1. Turn off the ignition.
2. Press Button 1.
   - The siren/horn will chirp once.*
   - The doors will lock.
   - The parking lights will flash once.
   - The LCD will show and .
   - The LED will turn on red, indicating the doors, hood and trunk inputs are activated.

* The siren chirp(s) during Arming will alert you the condition of the system and vehicle when the system is armed.

1 chirp	=	normal arming
1 + 4 chirps	=	door, hood, or trunk open

During Arming, if the system detects a bad sensor or an open zone, the system will ignore that input, but keep all other areas protected.

3. After 10 seconds:
   - The LED will begin blinking, indicating that the shock sensor is activated.

While the system is **Armed**, the system will trigger if:

- The doors are opened.
- The shock sensor detects an impact to the vehicle.
- The hood or trunk is opened.

When triggered, the siren will sound, and the parking lights will flash and the horn will honk (if connected). If the system is triggered by the doors, hood, or trunk, the system will alarm for 40 seconds. If triggered by the shock sensor, the system will alarm for 20 seconds.

If the same input triggers the system 3 times during a single arming cycle, the system will bypass that input keeping the other zones protected until the next time the system is armed.

If the shock sensor detects a light impact to the car, the siren will sound 5 chirps to warn away the potential intruder.

Remote Disarming

To Disarm the system:

Press Button 2.

- The siren/horn will chirp twice.*
- The doors will unlock.**
- The parking lights will flash twice.*

- The LCD will show "0" and "DISARM".
- The LED will turn off.

* The siren chirps and light flashes during disarming will alert you if the system had been triggered while armed.

2 chirps / 2 flashes	=	normal disarming
3 chirps / 3 flashes	=	Tamper Alert - system was triggered

** If the Passenger Unlock Feature is installed, pressing Button 2 will unlock only the driver's door. Pressing the unlock Button 2 again unlocks all doors.

Tamper Alert

On Disarming, if the system responds with three chirps, indicating the system was triggered, the LED will flash for 60 seconds to indicate the zone that triggered the system.

1 flash	=	door
2 flashes	=	shock sensor
3 flashes	=	trunk

example: flash-flash-pause-flash-flash-pause = shock sensor

Silent Arming / Disarming

Each Remote Transmitter can be individually set to Arm and Disarm the system with or without chirp confirmation at the time they are programmed into the system (see **Adding a New Transmitter into the System**).

To mute the Arming and Disarming confirmation chirps, you can Arm or Disarm the system by pressing Button 3.

Note: The confirmation chirps will only be cancelled if the system status is normal. The chirp indications for Tamper Alert and the open zone warning will not be cancelled when the system is Armed or Disarmed silently.

Arming Mode Selection

The system can be set in one of the following Arming Modes:

- Passive (automatic) Arming *with* chirp confirmation
- Active Arming (by Remote Only)
- Passive (automatic) Arming *without* chirp confirmation

To set the Arming Mode:

1. Turn the ignition on.
2. Within 4 seconds, press the Transmitter button corresponding to desired operation.

Button 1 / 1 chirp	=	Active Arming
Button 2 / 2 chirps	=	Passive Arming with chirp
Button 3 / 3 chirps	=	Passive Arming without chirp

Note: If no buttons are pressed for 5 seconds, Arming Mode Selection is automatically exited.

3. Turn the ignition off to save the selection.

Passive Arming

When the **Arming Mode** has been set for *Passive Arming*, the system arms itself automatically, each time the ignition is turned off and all of the doors, hood and trunk are closed.
To start the Passive Arming Process:

1. Turn off the ignition.*
   - The status LED will begin to flash quickly.
2. Open the door and exit the vehicle.
   - Once all doors are closed and the dome light is turned off, the LED will turn off.
3. After 20 seconds,
   - The siren will chirp (if Passive Arming with chirp is selected).
   - The parking lights will flash.
   - The doors will lock.**
   - The status LED will flash red, indicating the system is armed.
   - The LCD will show 🔒 and .
4. The system is now armed.

* The ignition must have been on for *at least* 10 seconds before the Passive Arming sequence will begin.
** If the Passive Locking feature is selected.

To temporarily disable Passive Arming, you can turn the ignition key on then off within 10 seconds. The status LED will stop flashing, and the system will not passively arm until the next time the key is on for more than 10 seconds. This feature is useful for turning off passive arming when refueling, washing the car, or if you want to sit in your car and do not want the system to arm.

Panic Mode

Allows you to instantly trigger the alarm in an emergency situation using the Remote Transmitter.

To enter Panic Mode:

1. Press and hold Button 1 for 3 seconds.
   - The siren will sound.
   - The doors will unlock.
   - The LCD will show PANIC.
2. Press Button 1 again to stop panic and place system into the Armed state.
3. Press Button 2 to stop panic and place system into the Disarmed state.

If Panic Mode is not stopped by the Remote, it will automatically time out after 40 seconds, and the system will return to its prior Armed/Disarmed state.

Emergency Override

In case your Remote Transmitter becomes inoperable, or it is lost or stolen, you can still enter and drive your car by using the following procedure. Be sure that you have your ignition keys ready and that you know the location of the Override switch before you perform this procedure.

To override the system:

1. Unlock the door using the key.
2. Enter the vehicle.
   - Because the system is armed, the system will trigger and the siren will be sounding.
3. Turn ignition key on.
4. Within 4 seconds, press and hold the Override switch.
   - The system will disarm.
5. You can now start and drive the car.

Note: During installation, your installer can program the system to give 10 second entry delay when the system Arms passively. When the door is opened while the system is Armed, the siren will give a series warning of chirps before sounding, giving you time to perform the emergency override procedure.

Automatic System Rearming

This feature, which can be turned on by your installer during the installation, insures the security of the system by protecting your car in case of an accidental disarm.

If your system becomes disarmed due to an accidental press of the Arm/Disarm Button, the system will automatically rearm if no other activity is detected within one minute.

One minute after Remote Disarming, the system will alert you with a series of chirps, then arm. (If the Passive Door Locking feature is selected during the installation, the system will also relock the doors.)

Any of the following will cancel Automatic System Rearming:

- Turn on the Ignition.
- Open the Trunk or Hood.
- Activate the Auxiliary Function.

Automatic System Rearming is independent of Passive Arming and only takes place if the system was Armed (actively or passively) for at least 10 seconds and then Disarmed by the Remote Transmitter.

Remote Start Features

Remote Starting

To Remote Start the System:

1. Be sure the System is not in Valet Mode.
2. Press Button 4.
   - The LCD will show START.
   - The parking lights will turn on.
   - The siren will chirp 3 times (if the system is Armed, the shock sensor will turn off).
   - The ignition will turn on.
   - The engine will start and run for the duration of its programmed Run Timer.*
   - The heater or air conditioner will turn on (if turned on prior to exiting the vehicle).
   - The LED will flash rapidly.
   - The LCD will show ENGINE RUN.

   *If the engine fails to start on the first attempt, it will repeat the starting procedure 2 more times.

Turning on the ignition key then pressing the brake pedal will disengage the LCD FM Combo and allow you to operate and drive your vehicle in a normal manner.

Shut Down

Any of the following will shut down the engine when it is under Remote Start control:

1. Press Button 4 for 3 seconds.
   - After the engine shuts down the doors will lock (if installed and programmed).
   - The LCD will show OFF.
2. Press the brake pedal.
3. Open the hood (or trunk if connected).
4. Remote Start Time-Out (completion of the timed run cycle).

Stop and Go

The Stop and Go Feature allows you to remove the ignition key and exit the vehicle while keeping the engine running during short stops.

To leave the vehicle running:

1. Press the brake pedal and hold.
2. While pressing the brake pedal, push Button 4 on the Remote Transmitter for 2 seconds.
   - The LED will flash rapidly.
   - The parking lights will flash 5 times.

3. Release the brake pedal.
4. Remove the key from the ignition switch.
5. You may now exit the vehicle, arm the alarm and lock the doors.

To re-enter the vehicle and resume driver control:

1. Disarm the alarm by pressing Button 2 on the Remote Transmitter.*
   - The doors will unlock.*
2. Turn on the ignition.
3. Press the brake pedal to disengaged the LCD FM Combo.
   - The LED will turn off.

*If optional keyless entry feature is installed.

Auto Cold Starting

The Auto Cold Starting Feature automatically starts the vehicle every two hours and runs for the preset Run Time.

To enter Cold Start Mode:

1. Be sure ignition is off.
2. Press and hold the Valet switch.
3. Continue holding the Valet switch and press Transmitter Button 3 for 5 seconds then release both buttons.
   - The parking lights will flash 5 times.
   - The engine will start and run for 30 seconds then shut down.
   - The LED will flash.
4. The system will remain in Cold Start Mode until the vehicle is started using the transmitter or the Cold Start Feaure has completed all the run cycles.

Note: Pressing the brake pedal will also turn off the Auto Cold Starting Feature.

Other Features

Valet Mode

Allows you to temporarily disable the security system when the car is being service or turned over to a parking attendant.

To turn Valet Mode on or off:

1. Turn on the ignition.
2. Press and hold the override switch.
3. While holding the override switch, turn off the ignition.
   - The siren will chirp once to indicate you have turned Valet Mode on.
   - The siren will chirp twice to indicate you have turned Valet Mode off.
4. Release the override switch.

While Valet Mode is on, the LED will light solid and you can continue to lock and unlock your doors with the Remote Transmitters, as well as operate the Auxiliary Function.

For added protection, when the doors are locked using the Remote Transmitter, the system's Starter Disable circuit will activate, and the LED will emit double flashes until the system is unlocked by the RemoteTransmitter.

If the Remote Transmitter is lost, stolen, or becomes inoperable while the car is locked in Valet Mode, you can exit the Valet mode to deactivate the Starter Disable circuit.

Ignition Controlled Door Locking

For added convenience and safety, this feature automatically locks your car's doors 10 seconds after the ignition key is turned on.

To prevent you from accidentally locking your keys inside the car:

- The system will not automatically lock the doors if a door is open when the ignition key is turned on.
- The system will not automatically lock the doors if a door is opened during the first 10 seconds after the ignition key is turned on.

Dome Light Control

The dome light will turn on for 20 seconds when the system is disarmed (or unlocked in Valet Mode) using the Remote Transmitter.

Auxiliary Function

This function will operate regardless of whether the system is armed or disarmed. To operate the auxiliary function, press Button 3.

- The LCD will show 7PLFN.

Remote Sensor Bypass

The system can be set up so that in case of extreme weather conditions (such as high winds), the shock sensor can be temporarily bypassed using the Remote Transmitter, while the system is armed, to prevent false alarming.

To Bypass the sensors:

1. After arming the system, press Button 2 on the Remote Transmitter within 2 seconds.
   - The siren will chirp 5 times, indicating the sensors have been bypassed.
2. The sensors will remain bypassed until the next time the system is armed.