

Intertek Testing Services

APPLICATION FOR FCC CERTIFICATION

GVC Corporation

Cordless Telephone

Model: GH2400

FCC ID: DK4GH2400

Report # J99012172

Number of Pages: 28

Date of Report: June 28, 1999

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0.0 Summary of Test Results**GVC Corporation - MODEL: GH2400**
FCC ID: DK4GH2400

TEST	REFERENCE	RESULTS
Radiated Emission	15.249	Complies
Conducted Emission	15.207	Complies
Antenna Requirement	15.203	Complies



Test Engineer: _____

Shawn McGuinness

Date: 6/28/99

Telco Mgr.: _____

C.K. Li

Date: 6/28/99

1.0 General Description

1.1 Product Description

The Conair/South Western Bell Model GH2400 is a cordless telephone.

Please refer to the attached technical description for more details.

1.2 Related Submittal(s) Grants

This is an Application for Certification of a low power transmitter. One transmitter is included in this Application. This specific report details the emission characteristics of transmitter.

The FCC ID for the receiver associated with this transmitter is . The receivers are subject to the notification authorization process. A Notification report has been prepared for the receiver.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is Site 1. This test facility and site measurement data have been fully placed on file with the FCC and NVLAP accredited.

2.0 System Test Configuration

2.1 Justification

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power without modulation.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Detector function is in peak mode. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

For emissions testing, the units were setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

2.3 System Test Configuration

2.3.1 Support Equipment

None, the EUT was tested as a standalone device.

2.3.2 Block Diagram of Test Setup

Not applicable, the EUT was tested as a standalone device.

2.4 Equipment Modification

Any modifications installed previous to testing by GVC Corporation will be incorporated in each production model sold/leased in the United States.

No modifications were made to the EUT by Intertek Testing Services.

2.5 Additions, deviations and exclusions from standards

No additions, deviations or exclusion have been made from standard.

3.0 Emission Results

AC line conducted emission measurements were performed from 0.45 MHz to 30 MHz. Analyzer resolution is 10 kHz or greater.

Radiated emission measurements were performed from 30 MHz to 5000 MHz. Analyzer resolution is 100 kHz or greater for 30 MHz to 1000 MHz, 1 MHz for >1000 MHz.

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

where FS = Field Strength in dB(μ V/m)

RA = Receiver Amplitude (including preamplifier) in dB(μ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

$$FS = RR + LF$$

where FS = Field Strength in dB(μ V/m)

RR = RA - AG in dB(μ V)

LF = CF + AF in dB

Assume a receiver reading of 52.0 dB(μ V) is obtained. The antenna factor of 7.4 dB/m and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB(μ V/m). This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 52.0 \text{ dB}(\mu\text{V})$$

$$AF = 7.4 \text{ dB/m}$$

$$RR = 23.0 \text{ dB}(\mu\text{V})$$

$$CF = 1.6 \text{ dB}$$

$$LF = 9.0 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ dB}(\mu\text{V/m})$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } \{[32 \text{ dB}(\mu\text{V/m})]/20\} = 39.8 \mu\text{V/m}$$

3.3 Radiated Emission Data

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Results:	Passed by 8.8 dB at 36 MHz
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Note: a) All emissions not reported are at least 20 dB below the limits

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EUT:	HANDSET CORDLESS PHONE	S/N #:	NOT LABELED	Limits:	12	
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance:	3	meters
Test Mode:	TX@2462.1Mhz	Engineer:		Duty	0	dB
				Relaxation		

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	1	0	8	10	0	0	12	0
Model:	EMCO 3303	EMCO 3115	EMCO 3143	None	CDL_P1000	AFT13655	None	None	Grr_M+L	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
2462.10E+0	60.2	Peak	8	0	H	29.8	0.0	2.3	0.0	92.3	94.0	-1.7
2462.10E+0	58.8	Ave.	8	0	H	29.8	0.0	2.3	0.0	90.9	94.0	-3.1
4924.20E+0	40.1	Peak	8	8	H	34.0	28.1	3.2	0.0	49.2	74.0	-24.8
4924.20E+0	36.0	Ave.	8	8	H	34.0	28.1	3.2	0.0	45.1	54.0	-8.9
7386.40E+0	39.1	Peak	8	8	H	36.8	28.0	4.3	0.0	52.2	74.0	-21.8
7386.40E+0	32.7	Ave.	8	8	H	36.8	28.0	4.3	0.0	45.8	54.0	-8.2
9848.00E+0	34.0	Peak	8	8	H	39.8	27.6	5.0	0.0	51.2	74.0	-22.8
9848.00E+0	30.4	Ave.	8	8	H	39.8	27.6	5.0	0.0	47.6	54.0	-6.4
1.23E+4	45.0	Peak	8	10	H	44.1	39.1	5.9	0.0	55.9	74.0	-18.2
1.23E+4	33.2	Ave.	8	10	H	44.1	39.1	5.9	0.0	44.1	54.0	-9.9

ITS Intertek Testing Services

Company:	GVC CORPORATION	Model #:	GH2400	Standard:	FCC § 15.249
EUT:	HANDSET CORDLESS PHONE	S/N #:	NOT LABELED	Limits:	12
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance:	3 meters
Test Mode:	TX@2463.5Mhz	Engineer:	SHAWN	Duty Relaxation:	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	0	0	10	8	0	0	12	0
Model:	EMCO 3303	EMCO 3115	None	None	AFT15855	CDL_P1000	None	None	Gm M+ L	None

Frequency	Reading	Detector	Ant. #	Amp. #	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
Mhz	dB(μV)	P/A/Q	#	#	H/V	dB(1m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
2463.50E+0	60.0	Peak	8	0	H	29.8	0.0	2.3	0.0	92.1	94.0	-1.9
2463.50E+0	57.1	Ave.	8	0	H	29.8	0.0	2.3	0.0	89.2	94.0	-4.8
4926.90E+0	41.2	Peak	8	8	H	34.0	28.1	3.2	0.0	50.3	74.0	-23.7
4926.90E+0	36.4	Ave.	8	8	H	34.0	28.1	3.2	0.0	45.5	54.0	-8.5
7390.30E+0	38.6	Peak	8	8	H	36.8	28.0	4.3	0.0	51.7	74.0	-22.3
7390.30E+0	32.8	Ave.	8	8	H	36.8	28.0	4.3	0.0	45.9	54.0	-8.1
9853.80E+0	33.4	Peak	8	8	H	39.8	27.6	5.0	0.0	50.6	74.0	-23.4
9853.80E+0	31.0	Ave.	8	8	H	39.8	27.6	5.0	0.0	48.2	54.0	-5.8
1.23E+4	44.6	Peak	8	10	H	44.1	39.1	5.9	0.0	55.5	74.0	-18.6
1.23E+4	34.0	Ave.	8	10	H	44.1	39.1	5.9	0.0	44.9	54.0	-9.2

ITS Intertek Testing Services

Company:	GVC CORPORATION	Model #:	GH2400	Standard:	FCC § 15.249
EUT:	HANDSET CORDLESS PHONE	S/N #:	NOT LABELED	Limits:	12
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance:	3 meters
Test Mode:	TX@2464.8Mhz	Engineer:	SHAWN	Duty Relaxation:	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	0	0	10	8	0	0	12	0
Model:	EMCO 3303	EMCO 3115	None	None	AFT15855	CDL_P1000	None	None	Gm_M-L	None

Frequency	Reading	Detector	Ant. #	Amp. #	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
Hz	dB(μV)	P/A/Q	#	#	H/V	dB(1m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
2464.80E+0	60.5	Peak	8	0	H	29.8	0.0	2.3	0.0	92.6	94.0	-1.4
2464.80E+0	59.0	Ave.	8	0	H	29.8	0.0	2.3	0.0	91.1	94.0	-2.9
4929.60E+0	42.1	Peak	8	8	H	34.0	28.1	3.2	0.0	51.2	74.0	-22.8
4929.60E+0	38.4	Ave.	8	8	H	34.0	28.1	3.2	0.0	47.5	54.0	-6.5
7394.20E+0	40.6	Peak	8	8	H	36.8	28.0	4.3	0.0	53.7	74.0	-20.3
7394.20E+0	32.9	Ave.	8	8	H	36.8	28.0	4.3	0.0	46.0	54.0	-8.0
9859.20E+0	34.0	Peak	8	8	H	39.8	27.6	5.0	0.0	51.2	74.0	-22.8
9859.20E+0	32.9	Ave.	8	8	H	39.8	27.6	5.0	0.0	50.1	54.0	-3.9
1.23E+4	45.0	Peak	8	10	H	44.1	39.1	5.9	0.0	55.9	74.0	-18.2
1.23E+4	35.0	Ave.	8	10	H	44.1	39.1	5.9	0.0	45.9	54.0	-8.2

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Company:	GVC CORPORATION	Model #:	GH2400	Standard:	FCC § 15.249
EUT:	BASE SET CORDLESS PHONE	S/N #:	NOT LABELED	Limits:	12
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance:	3 meters
Test Mode:	TX@2435.1MHZ	Engineer:		Duty Relaxation:	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	1	0	8	10	0	0	12	0
Model:	EMCO 3303	EMCO 3115	EMCO 3143	None	CDI_P1000	APT16855	None	None	Gm_M+L	None

Frequency	Reading	Detector	Ant. #	Amp. #	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
Hz	dB(μV)	P/A/Q	#	#	H/V	dB(1m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
2435.10E+0	48.9	Peak	8	0	H	29.8	0.0	2.3	0.0	81.0	94.0	-13.0
4870.30E+0	40.1	Peak	8	8	H	34.0	28.1	3.2	0.0	49.2	74.0	-24.8
4870.30E+0	35.6	Ave.	8	8	H	34.0	28.1	3.2	0.0	44.7	54.0	-9.3
7305.40E+0	38.7	Peak	8	8	H	36.8	28.0	4.3	0.0	51.8	74.0	-22.2
7305.40E+0	33.6	Ave.	8	8	H	36.8	28.0	4.3	0.0	46.7	54.0	-7.3
9735.50E+0	33.0	Peak	8	8	H	39.8	27.3	5.0	0.0	50.5	74.0	-23.5
9735.50E+0	24.6	Ave.	8	8	H	39.8	27.3	5.0	0.0	42.1	54.0	-11.9
1.22E+4	38.2	Peak	8	10	H	44.1	39.1	5.9	0.0	49.1	74.0	-25.0
1.22E+4	31.0	Ave.	8	10	H	44.1	39.1	5.9	0.0	41.9	54.0	-12.2

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Company:	GVC CORPORATION	Model #:	GH2400	Standard:	FCC § 15.249
EUT:	BASE SET CORDLESS PHONE	S/N #:	NOT LABELED	Limits:	12
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance:	3 meters
Test Mode:	TX@2436.4Mhz	Engineer:		Duty	0 dB
				Relaxation	

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	1	0	8	10	0	0	12	0
Model:	EMCO 3503	EMCO 3115	EMCO 3143	None	CDR_P1000	AFT16855	None	None	Gm_M+L	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
Mhz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
2436.30E+0	47.6	Peak	8	0	H	29.8	0.0	2.3	0.0	79.7	94.0	-14.3
4872.70E+0	39.2	Peak	8	8	H	34.0	28.1	3.2	0.0	48.3	74.0	-25.7
4872.70E+0	31.6	Ave.	8	8	H	34.0	28.1	3.2	0.0	40.7	54.0	-13.3
7309.10E+0	37.3	Peak	8	8	H	36.8	28.0	4.3	0.0	50.4	74.0	-23.6
7309.10E+0	29.8	Ave.	8	8	H	36.8	28.0	4.3	0.0	42.9	54.0	-11.1
9745.60E+0	33.0	Peak	8	8	H	39.8	27.3	5.0	0.0	50.5	74.0	-23.5
9745.60E+0	23.8	Ave.	8	8	H	39.8	27.3	5.0	0.0	41.3	54.0	-12.7
1.22E+4	38.4	Peak	8	10	H	44.1	39.1	5.9	0.0	49.3	74.0	-24.8
1.22E+4	32.1	Ave.	8	10	H	44.1	39.1	5.9	0.0	43.0	54.0	-11.1

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Company:	GVC CORPORATION	Model #:	GH2400	Standard	FCC § 15.249
EUT:	BASE SET CORDLESS PHONE	S/N #:	NOT LABELED	Limits	12
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance	3 meters
Test Mode:	TX@2437.8Mhz	Engineer:		Duty Relaxation	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	1	0	8	10	0	0	12	0
Model:	EMCO 3303	EMCO 3115	EMCO 3143	None	CDP_P1000	AFT16955	None	None	Gm_M+L	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
2437.80E+0	48.4	Peak	8	0	H	29.8	0.0	2.3	0.0	80.5	94.0	-13.5
4875.60E+0	39.4	Peak	8	8	H	34.0	28.1	3.2	0.0	48.5	74.0	-25.5
4875.60E+0	34.0	Ave.	8	8	H	34.0	28.1	3.2	0.0	43.1	54.0	-10.9
7313.40E+0	37.8	Peak	8	8	H	36.8	28.0	4.3	0.0	50.9	74.0	-23.1
7313.40E+0	29.5	Ave.	8	8	H	36.8	28.0	4.3	0.0	42.6	54.0	-11.4
9751.20E+0	34.2	Peak	8	8	H	39.8	27.3	5.0	0.0	51.7	74.0	-22.3
9751.20E+0	24.5	Ave.	8	8	H	39.8	27.3	5.0	0.0	42.0	54.0	-12.0
1.22E+4	39.0	Peak	8	10	H	44.1	39.1	5.9	0.0	49.9	74.0	-24.2
1.22E+4	33.0	Ave.	8	10	H	44.1	39.1	5.9	0.0	43.9	54.0	-10.2

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Company:	GVC CORPORATION	Model #:	GH2400	Standard:	FCC § 15B
EUT:	BASE CORDLESS PHONE	S/N #:	NOT LABELED	Limits:	2
Project #:	J99012172	Test Date:	JUNE 11, 1999	Test Distance:	3 meters
Test Mode:	CHARGING	Engineer:	SHAWN	Duty Relaxation:	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	17	8	2	1	2	9	0	4	2	0
Model:	EMCO 3303	EMCO 3115	EMCO 3143	HP 8447D	HP 8447D	WJ	None	RG214 U	RG214 U	None

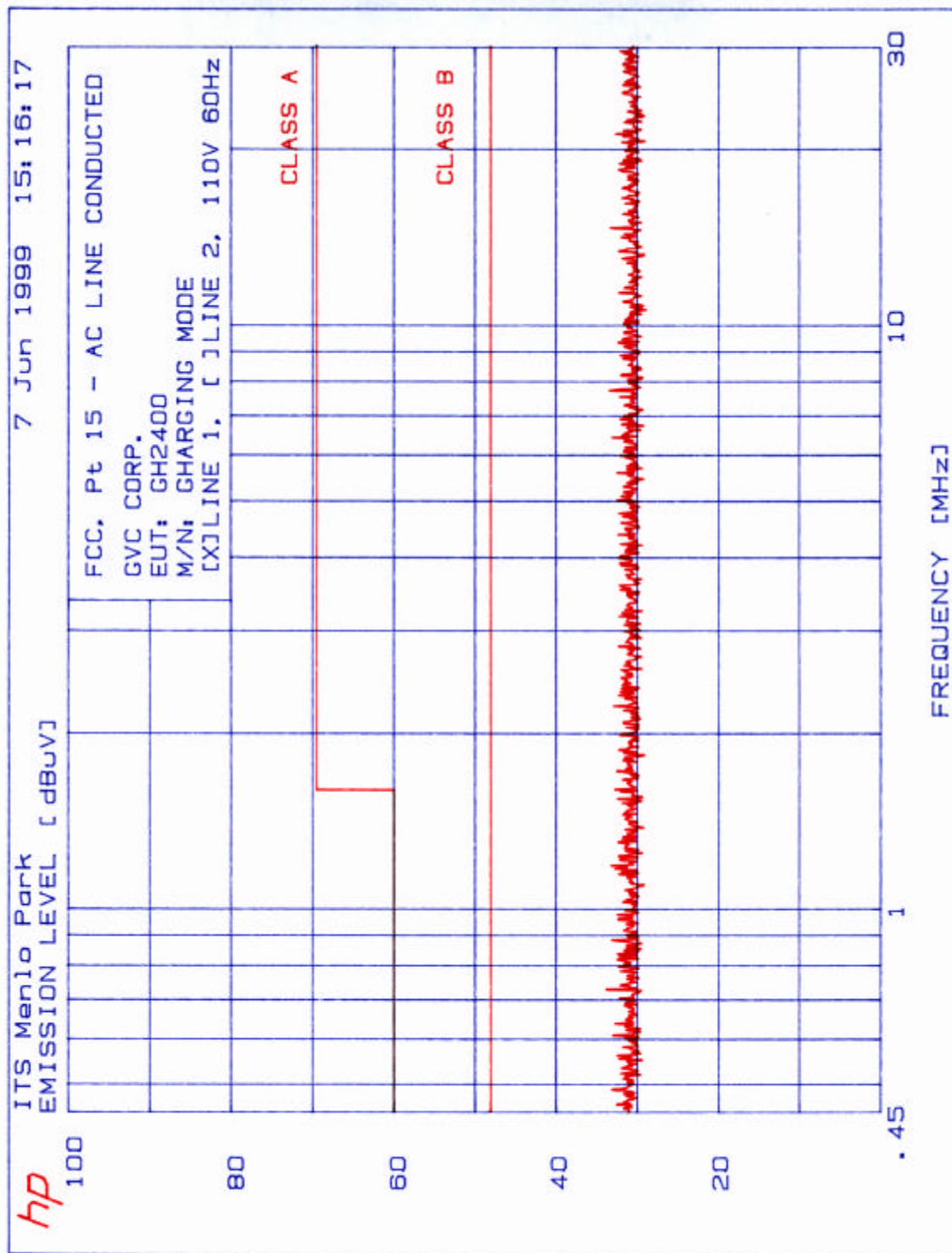
Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
Mhz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
48.00E+0	41.2	Peak	2	2	H	8.5	22.3	1.0	0.0	28.4	40.0	-11.6
32.00E+0	38.4	Peak	2	1	V	11.0	27.2	0.8	0.0	23.0	40.0	-17.0

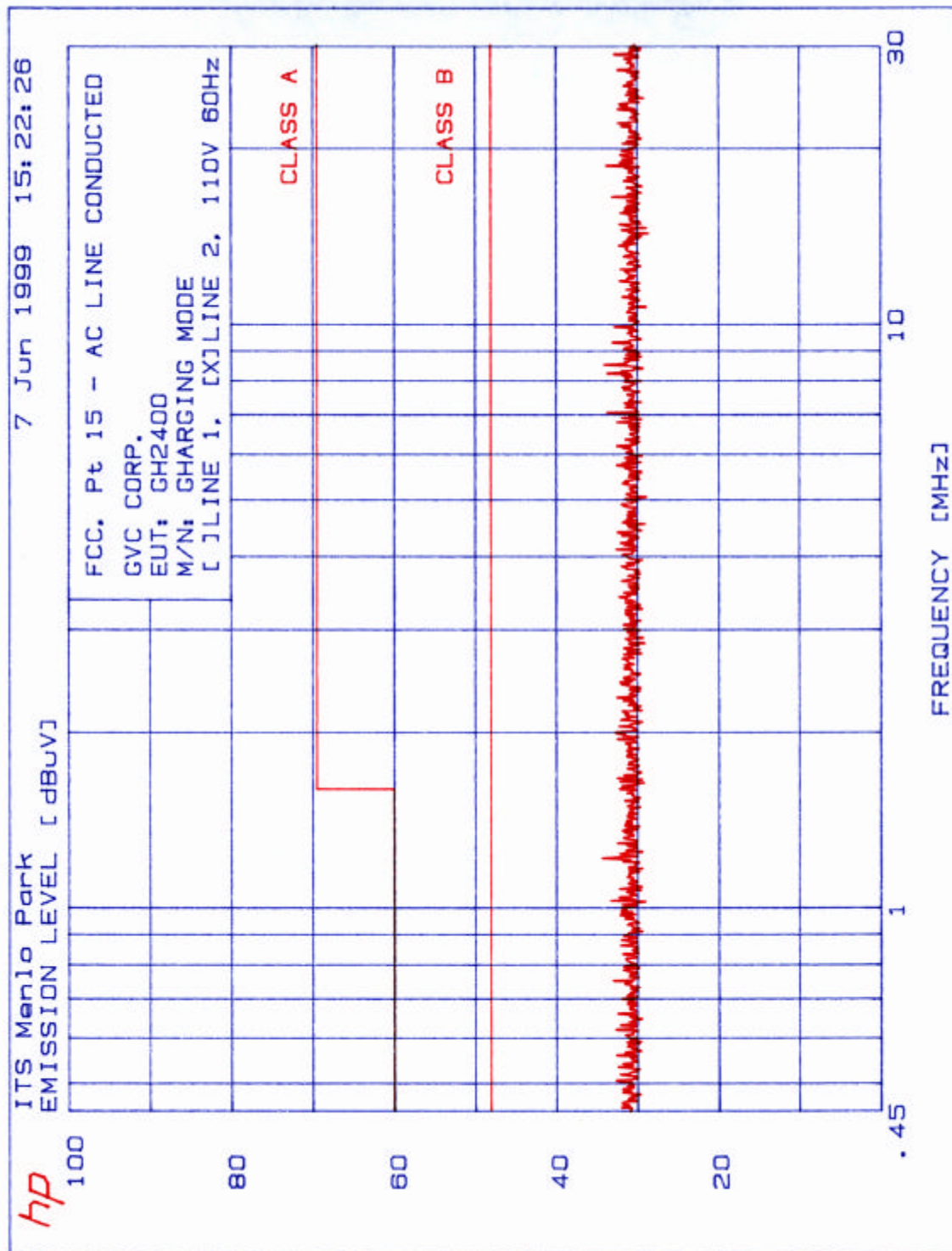
3.5 Conducted Emission Data

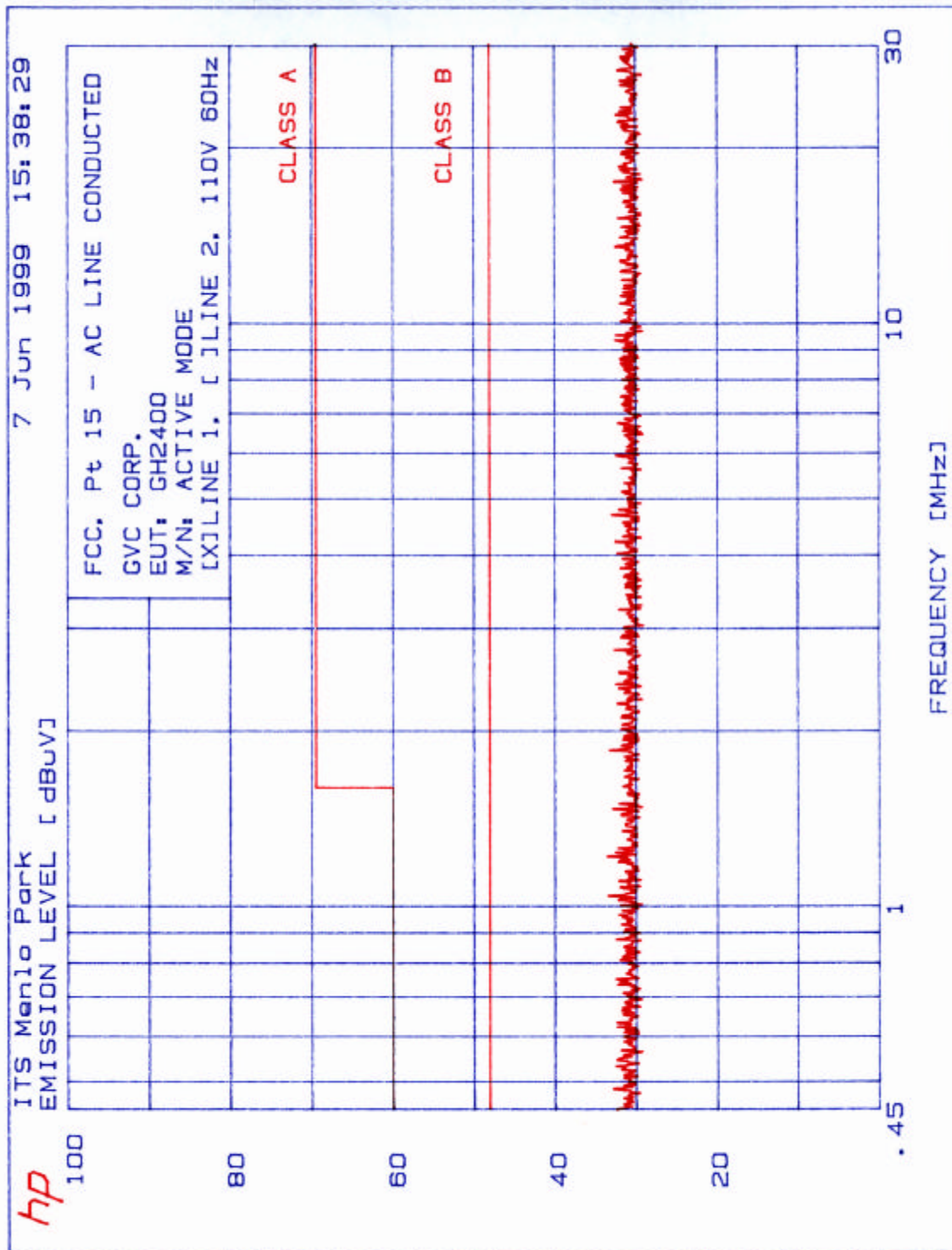
The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

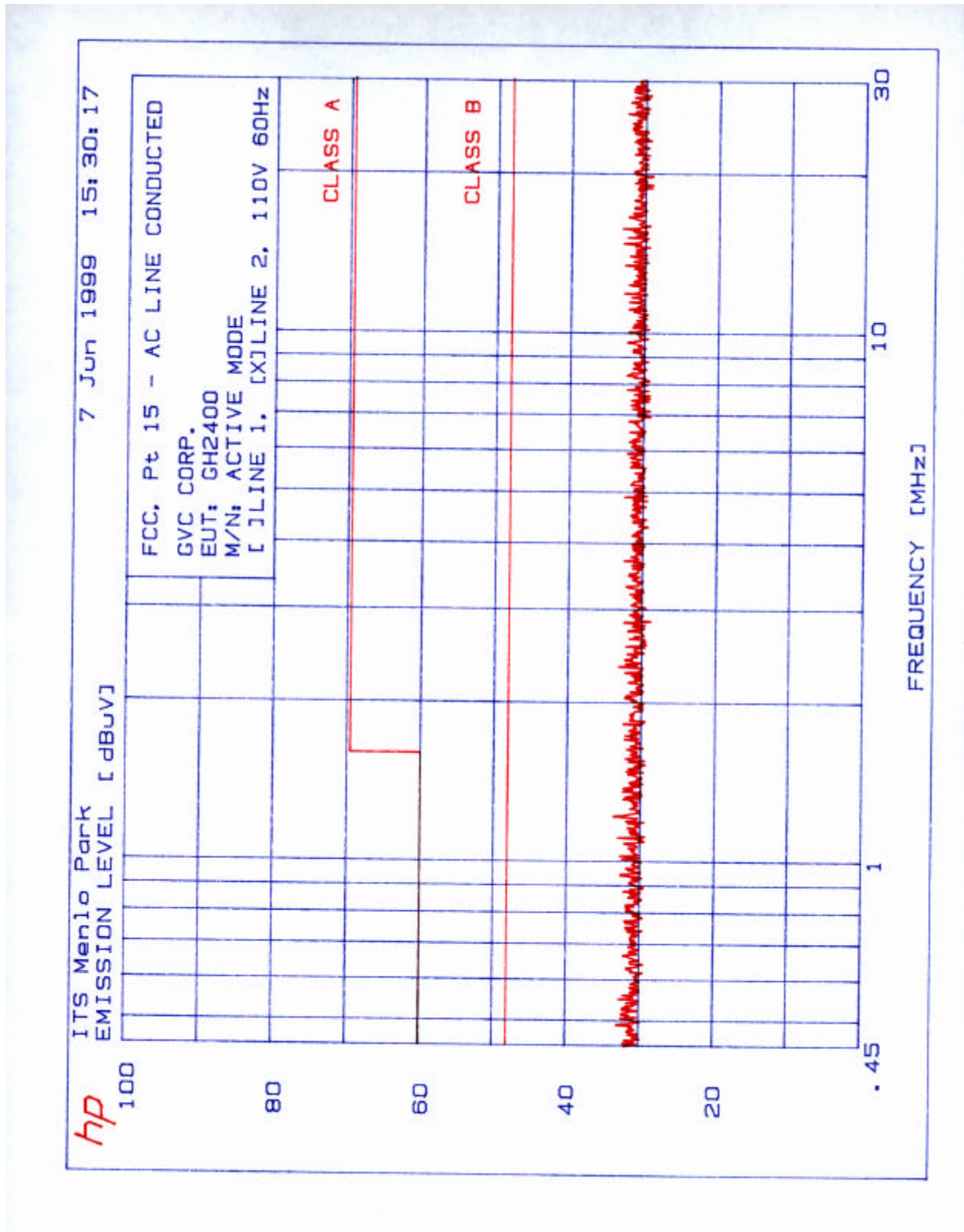
Results:	Passed by 27 dB at 1.1 MHz
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Note: a) A complete scan from 0.45 - 30 MHz was made.





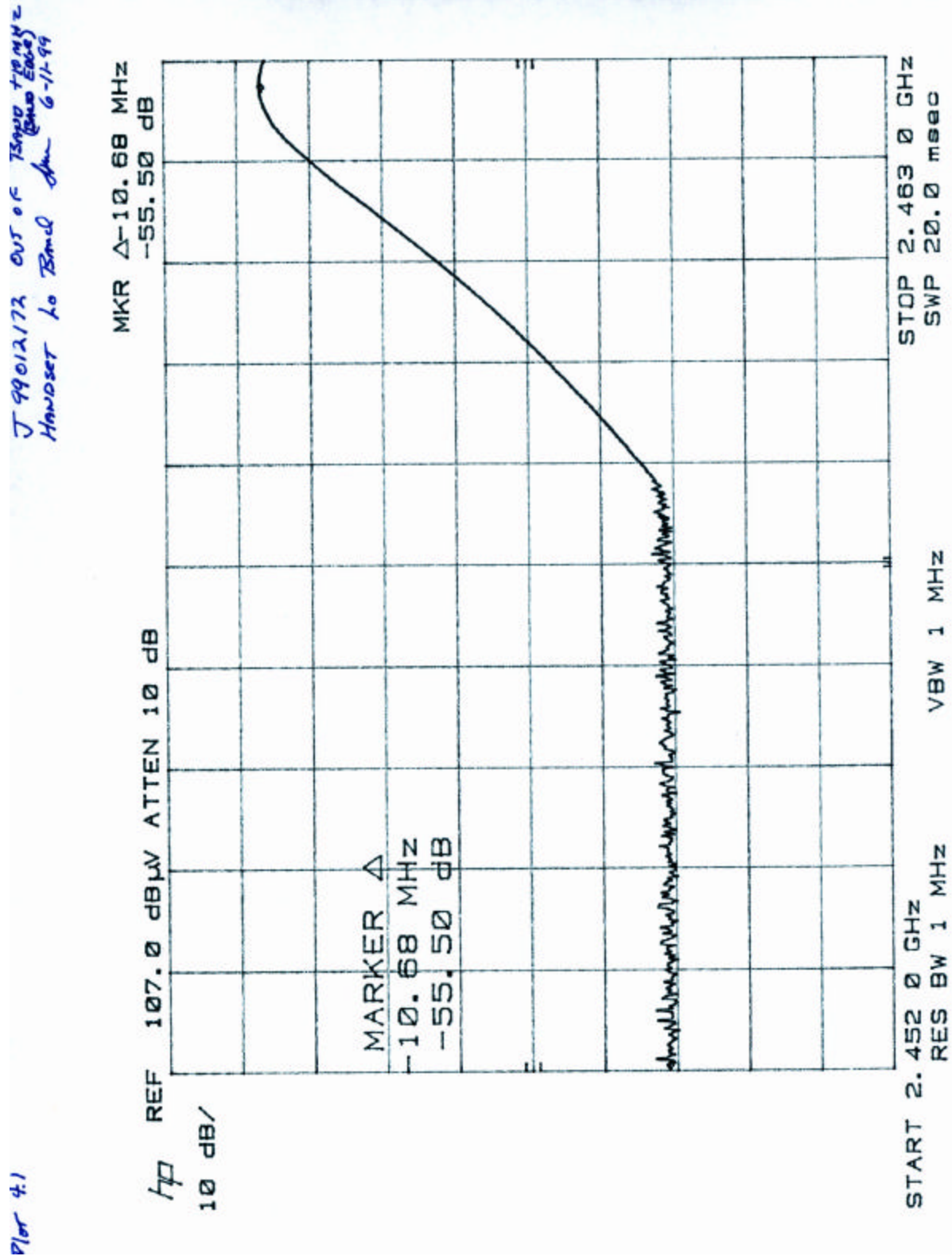


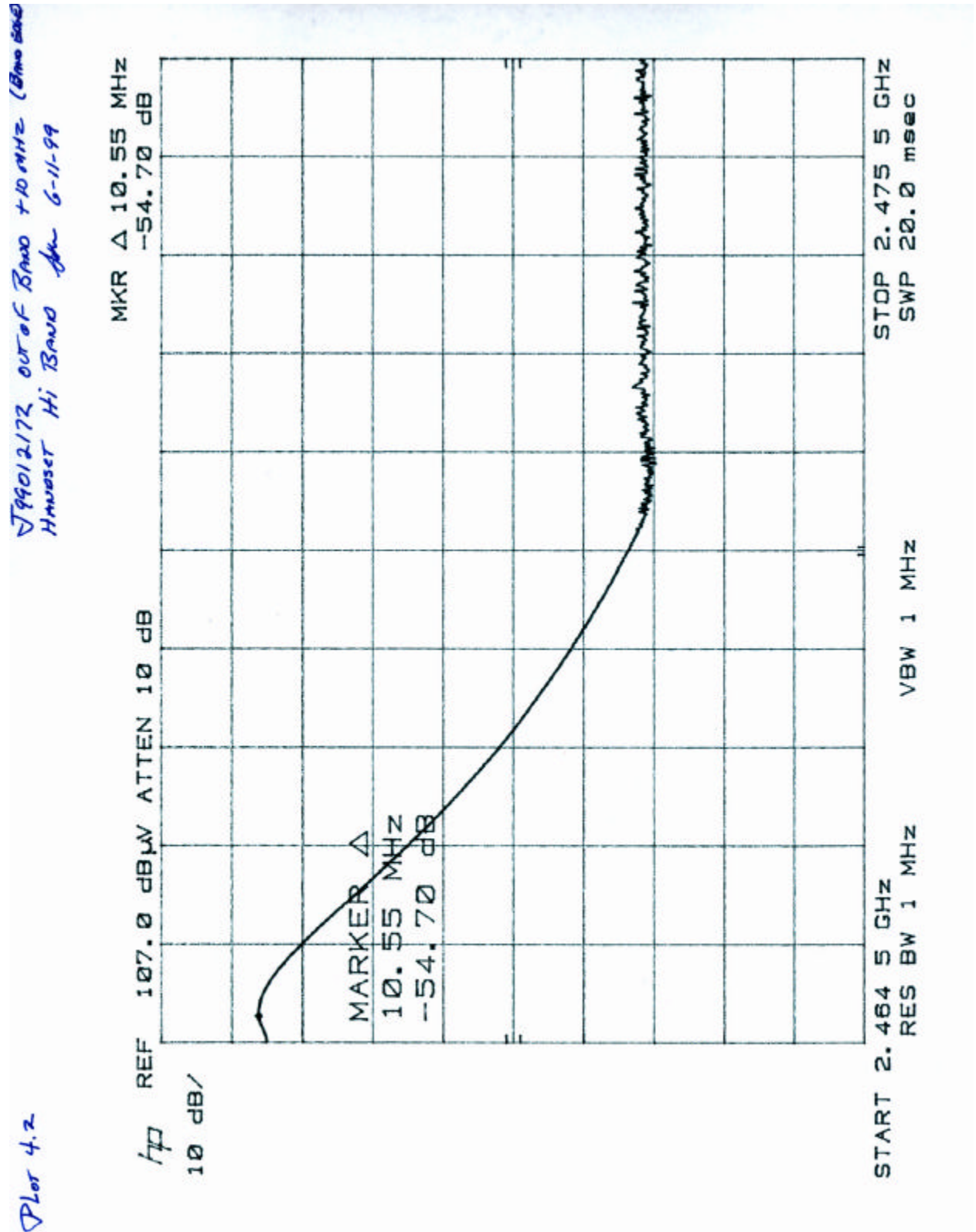


4.0 Out of Band Emission Plot

The following plots show the relative spurious emission level of the transmitter.

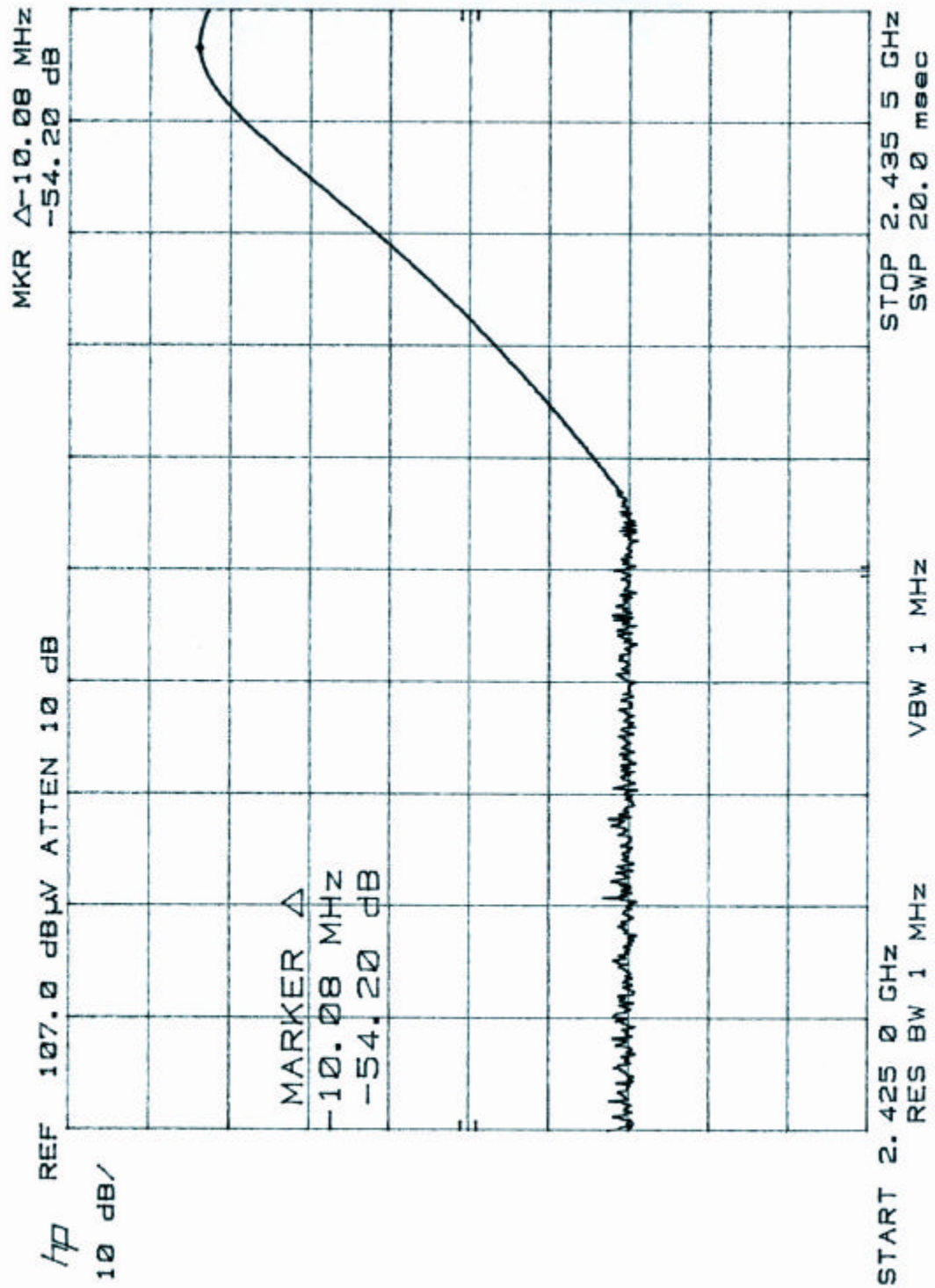
Plot #	Description
4.1	Out of Band (Bandedge + 10 MHz) Handset, Low Band
4.2	Out of Band (Bandedge + 10 MHz) Handset, Hi Band
4.3	Out of Band (Bandedge + 10 MHz) Base, Low Band
4.4	Out of Band (Bandedge + 10 MHz) Base, Hi Band

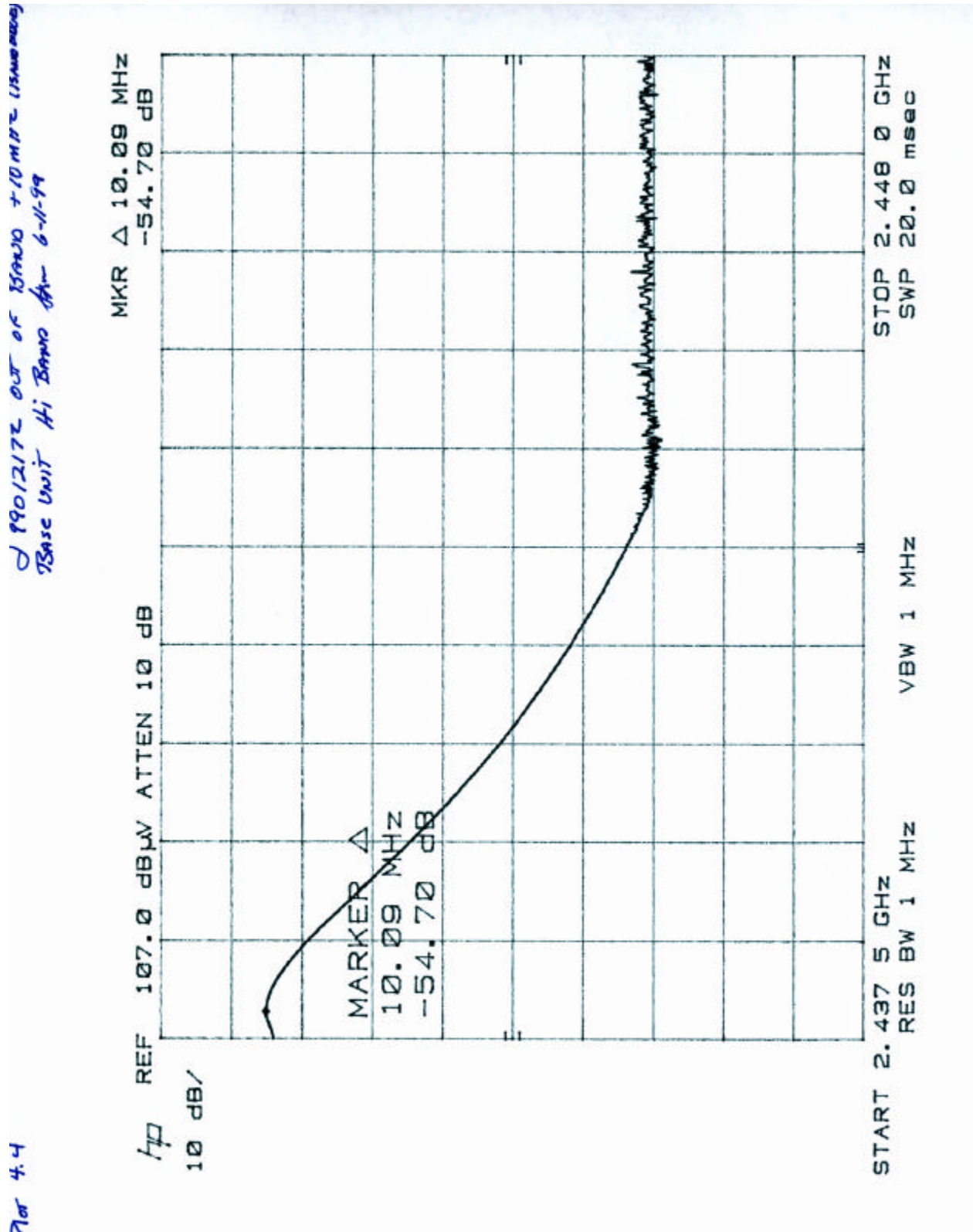




J99012172 OUT of BAND +10 MHz (BAND EDGE)
Base unit Lo. Band fr. 6-11-99

Plot 4.3





5.0 Antenna Requirement

✓	The transmitter uses a permanently connected antenna.
	The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector.
	The EUT requires professional installation. Please refer to the attached documentation for details).

6.0 List of Exhibits

<i>Exhibit 1</i>	ID Label Format
<i>Exhibit 2</i>	ID Label Location
<i>Exhibit 3</i>	Equipment Photographs
<i>Exhibit 4</i>	Block Diagram
<i>Exhibit 5</i>	Circuit Diagram
<i>Exhibit 6</i>	This Test Report
<i>Exhibit 7</i>	Test Setup Photos
<i>Exhibit 8</i>	Instruction Manual