



Intertek Testing Services  
ETL SEMKO

## TEST REPORT

For

**SPORTSMAN'S MARKET, INC.**

**Scanning Receiver**

**Model: SP-125**

**FCC ID: DY7RT2013**

**Job # 3036423**

**Report # 30364231**

**Date of Testing: December 26-27, 2002**

**Date of Report: December 29, 2002**



A2LA Certificate Number: 1755-01



Review Date: \_\_\_\_\_

Bruce Gordon, Test Engineer

Ollie Moyrong, EMC Manager



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FCC Part 15 Scanning Rx Cert



**Intertek Testing Services NA, Inc.**

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Sportsman's Market, Inc., Model No: SP-125  
FCC ID: DY7RT2013

Date of Test: December 26-27, 2002

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Sportsman's Market, Inc., Model No: SP-125  
FCC ID: DY7RT2013

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## 1.0 General Description

### 1.1 Product Description

The Sportsman's Market, Inc, Model No.: SP-125 is a VHF Aircraft/AM/FM Broadcast Band Programmable Handheld Scanning Receiver.

Please refer to the attached specifications sheets in Appendix A for more details.

A pre-production version of the sample was received on December 25, 2002 in good condition. As declared by the Applicant, it is identical to production units.

### 1.2 Related Submittal(s) Grants

This is a single Application for Certification of a scanning receiver.

### 1.3 Test Methodology

Both AC mains line-conducted (if applicable) and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All radiated measurements were performed in a semi-anechoic chamber. Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Data Section"** of this Application.

### 1.4 Test Facility

The test site and conducted measurement facility used to collect the radiated data is Site 1 (10-m semi-anechoic chamber). This test facility and site measurement data have been fully placed on file with the FCC and A2LA accredited.

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1.5 Summary of Test Results

**Model: SP-125**  
**FCC ID: DY7RT2013**

TEST	REFERENCE	RESULTS
Radiated Emission	15.109	Complies
AC Lie Conducted Emission	15.107	Complies
Antenna Conducted Emission	15.111	Complies
FCC Part 15. 121 Requirement	15.121	Complies *

\* See File "FCC 15.121"

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## 2.0 System Test Configuration

### 2.1 Justification

The tests were performed according to the test procedure as outlined in CFR47 Part 15.31 and in ANSI C63.4.

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 placed on top of a non-conductive table. If the EUT attaches to peripherals, they are connected and operational (as typical as possible).

For radiated emission measurements, 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. 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 if measured at a closer distance.

### 2.2 EUT Exercising Software

The unit was setup to receive continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

### 2.3 Mode of Operation

The EUT was tested in two modes and the worst-case emission was recorded:

Test Mode 1: The EUT was set to constantly receive at a particular frequency (1 near the top, 1 near the middle, and 1 near the bottom of each band).

Test Mode 2: The EUT was set to constantly scan and receive a particular band.

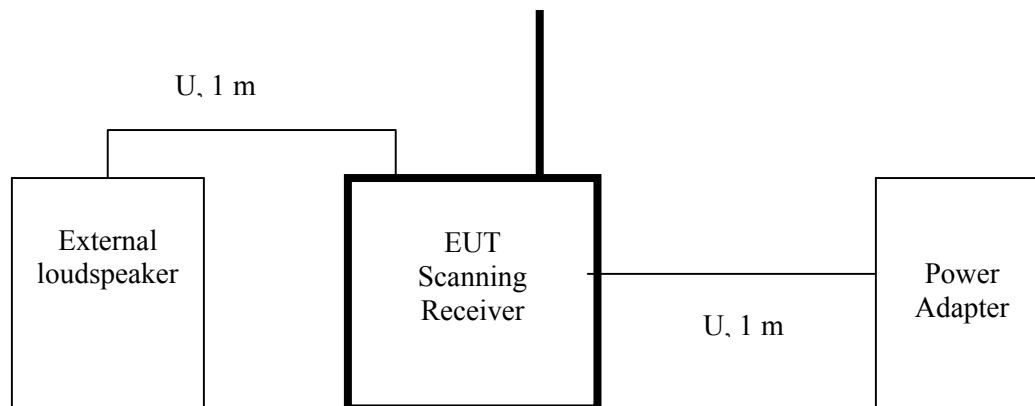
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2.4 Support Equipment List and Description

None. The EUT was tested as a stand-alone device.

2.5 Equipment Setup Block Diagram



2.6 Equipment Modification

Any modifications installed previous to testing by Sportsman's Market, Inc., will be incorporated in each production model sold/leased in the United States.

Intertek Testing Services installed no modifications.

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### 3.0 Emission Test Results

AC line conducted emission measurements were performed from 0.15 MHz to 30 MHz. Analyzer resolution is 10 kHz or greater.

Radiated emission measurements and antenna conducted emission measurements were performed from 30 MHz to 2000 MHz. Analyzer resolution is 100 kHz or greater for 30 MHz to 1000 MHz, 1 MHz for frequencies above 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.

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### 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:

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

Where FS = Field Strength in dB( $\mu$ V/m)

RA = Receiver Amplitude (including preamplifier) in dB( $\mu$ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB(1/m)

AG = Amplifier Gain in dB

DF = Distance Factor in dB

Assume a receiver reading of 52.0 dB( $\mu$ V) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB( $\mu$ V/m). This value in dB( $\mu$ V/m) was converted to its corresponding level in  $\mu$ V/m.

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

$$AF = 7.4 \text{ dB}(1/\text{m})$$

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

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

$$DF = 0 \text{ dB}$$

$$FS = 52 + 7.4 + 1.6 - 29.0 + 0 = 32 \text{ dB}(\mu\text{V}/\text{m})$$

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



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3.2 Radiated Emission Data

<b>Tested By:</b>	Bruce Gordon
<b>Test Date:</b>	December 26, 2002

<b>Temperature</b>	<b>(°C)</b>	21.5 <sup>0</sup> C
<b>Relative Humidity</b>	<b>(%)</b>	45.0%

The results on the following page(s) were obtained when the device was tested in the condition described in Sections 2 and 3.

<b>Results:</b>	<b>Complies</b> by 10.5 dB at 139.4 MHz (Tuned frequency 118 MHz,)
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All other emissions are at least 10 dB below the limit.

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Job No.: 3036423										
Company: GRE										
Model: SCANNER SP 125 AM\FM RECEIVER										
Engineer: Bruce Gordon										
Date: 12/26/02										
FCC Part 15.109 Class B Radiated Emissions Radiated Emissions at Local Oscillator frequencies										
Test Mode: Rx in Air BAND										
Tuned	L.O.	Antenna	Antenna	Receiver	Antenna	Preampl	Cable	Corrected	Limit	Margin
Frequency	Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
118.000	139.400	3.0	V	52.1	9.2	32.3	4.0	33.0	43.5	-10.5
130.450	151.850	3.0	V	41.2	11.1	32.3	4.1	24.1	43.5	-19.4
142.975	164.375	3.0	V	38.5	9.1	32.3	4.1	19.4	43.5	-24.1
118.000	139.400	3.0	H	51.2	8.9	32.3	4.0	31.8	43.5	-11.7
130.450	151.850	3.0	H	44.1	10.2	32.3	4.1	26.1	43.5	-17.4
142.975	164.375	3.0	H	41.0	8.8	32.3	4.1	21.6	43.5	-21.9

Test Mode: Rx in FM BAND										
Tuned	L.O.	Antenna	Antenna	Receiver	Antenna	Preampl	Cable	Corrected	Limit	Margin
Frequency	Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
88.000	98.700	3.0	V	41.4	7.4	32.3	3.9	20.4	43.5	-23.1
98.000	108.700	3.0	V	41.3	7.5	32.3	3.9	20.4	43.5	-23.1
108.000	97.300	3.0	V	34.5	7.4	32.3	3.9	13.5	43.5	-30.0
88.000	98.700	3.0	H	37.7	7.4	32.3	3.9	16.7	43.5	-26.8
98.000	108.700	3.0	H	39.2	7.0	32.3	3.9	17.8	43.5	-25.7
108.000	97.300	3.0	H	30.3	7.4	32.3	3.9	9.3	43.5	-34.2

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**FCC Part 15.109 Class B Radiated Emissions  
Radiated Emissions other than at Local Oscillator frequencies**

<b>Test Mode: Rx in AIR BAND @ 118 MHz</b>									
Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.178	3.0	V	40.3	16.8	32.3	4.9	29.7	46.0	-16.3
687.009	3.0	V	30.9	19.9	32.6	5.4	23.6	46.0	-22.4
557.592	3.0	V	29.5	18.9	32.5	5.1	21.0	46.0	-25.0
418.199	3.0	V	31.2	16.1	32.3	4.9	19.9	46.0	-26.1
696.993	3.0	H	29.3	20.9	32.5	5.1	22.8	46.0	-23.2
278.799	3.0	H	37.7	13.1	32.2	4.5	23.1	46.0	-22.9
418.199	3.0	H	28.4	17.1	32.3	4.9	18.1	46.0	-27.9

<b>Test Mode: Rx in AIR BAND @ 130.45 MHz</b>									
Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
455.548	3.0	V	36.8	16.7	32.3	4.9	26.1	46.0	-19.9
759.252	3.0	V	26.4	20.9	32.5	5.5	20.3	46.0	-25.7
303.700	3.0	V	33.6	13.4	32.2	4.7	19.5	46.0	-26.5
303.700	3.0	H	36.2	14.1	32.2	4.7	22.8	46.0	-23.2

<b>Test Mode: Rx in AIR BAND @ 142.975 MHz</b>									
Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
493.127	3.0	V	32.6	18.3	32.4	5.0	23.5	46.0	-22.5
328.750	3.0	V	33.2	14.3	32.2	5.0	20.3	46.0	-25.7
328.750	3.0	H	33.8	15.3	32.2	5.0	21.9	46.0	-24.1

<b>Test Mode: Rx in FM BAND @ 88 MHz</b>									
Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.182	3.0	V	40.4	16.8	32.3	4.9	29.8	46.0	-16.2
458.179	3.0	H	35.1	17.9	32.3	4.9	25.6	46.0	-20.4
57.654	3.0	H	30.6	5.0	32.4	3.8	7.0	40.0	-33.0

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**Test Mode: Rx in FM BAND @ 98 MHz**

Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.182	3.0	V	41.3	16.8	32.3	4.9	30.7	46.0	-15.3
458.179	3.0	H	35.3	17.9	32.3	4.9	25.8	46.0	-20.2

**Test Mode: Rx in FM BAND @ 108 MHz**

Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.182	3.0	V	40.4	16.8	32.3	4.9	29.8	46.0	-16.2
458.179	3.0	H	35.3	17.9	32.3	4.9	25.8	46.0	-20.2

**Test Mode: Rx in AM BAND @ 530 kHz**

Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.182	3.0	V	39.9	16.8	32.3	4.9	29.3	46.0	-16.7
744.542	3.0	V	25.7	20.6	32.5	5.5	19.3	46.0	-26.7
801.819	3.0	V	27.3	21.1	32.4	5.8	21.8	46.0	-24.2
458.179	3.0	H	35.3	17.9	32.3	4.9	25.8	46.0	-20.2

**Test Mode: Rx in AM BAND @ 1060 kHz**

Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.182	3.0	V	40.4	16.8	32.3	4.9	29.8	46.0	-16.2
458.179	3.0	H	35.3	17.9	32.3	4.9	25.8	46.0	-20.2

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**Test Mode: Rx in AM BAND @ 1.6 MHz**

Measured	Antenna	Antenna	Receiver	Antenna	Preamp	Cable	Corrected	Limit	Margin
Frequency	Location	Polarization	Reading	Factor		Loss	Reading	At 3 m	
(MHz)	(m)	H/V	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
458.182	3.0	V	40.4	16.8	32.3	4.9	29.8	46.0	-16.2
57.275	3.0	V	30.2	5.4	32.4	3.7	6.9	40.0	-33.1
458.179	3.0	H	35.3	17.9	32.3	4.9	25.8	46.0	-20.2
57.275	3.0	V	33.0	5.0	32.4	3.7	9.3	40.0	-30.7
Notes:	Negative signs (-) in the Margin column signify levels below the limit.								
	All readings are peak measurements.								

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3.3 AC Line Conducted Emission Data

<b>Tested By:</b>	Bruce Gordon
<b>Test Date:</b>	December 26, 2002

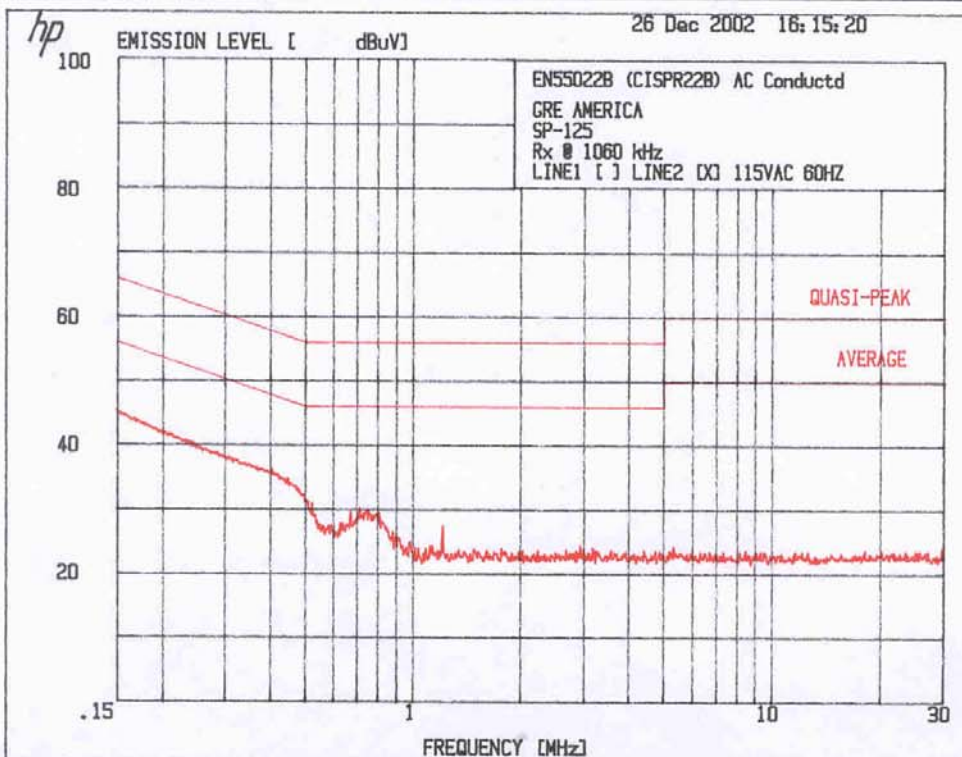
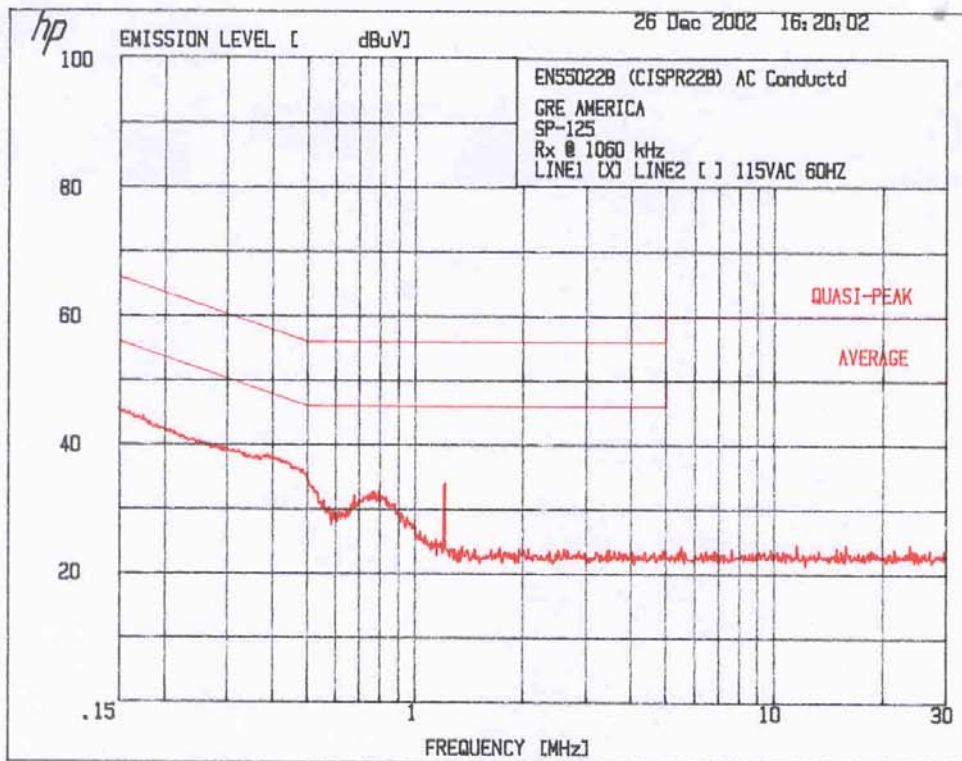
<b>Temperature</b> (°C)	22.0 <sup>0</sup> C
<b>Relative Humidity</b> (%)	45.5%

The results on the following page(s) were obtained when the device was tested in the condition described in Sections 2 and 3.

<b>Results:</b>	Complies by 8.0 dB
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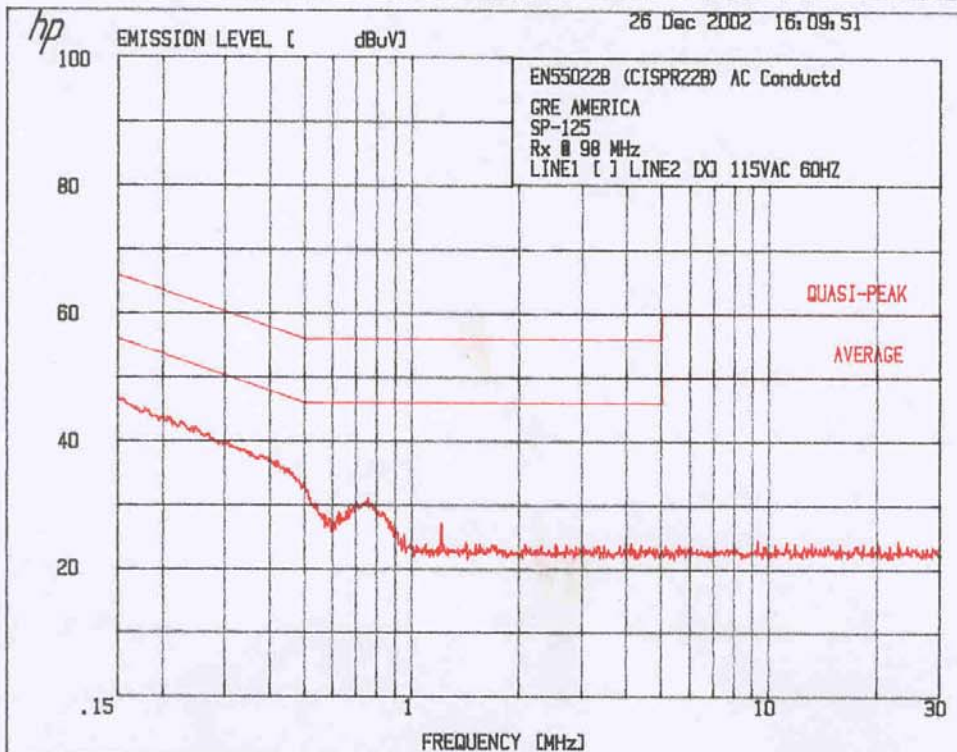
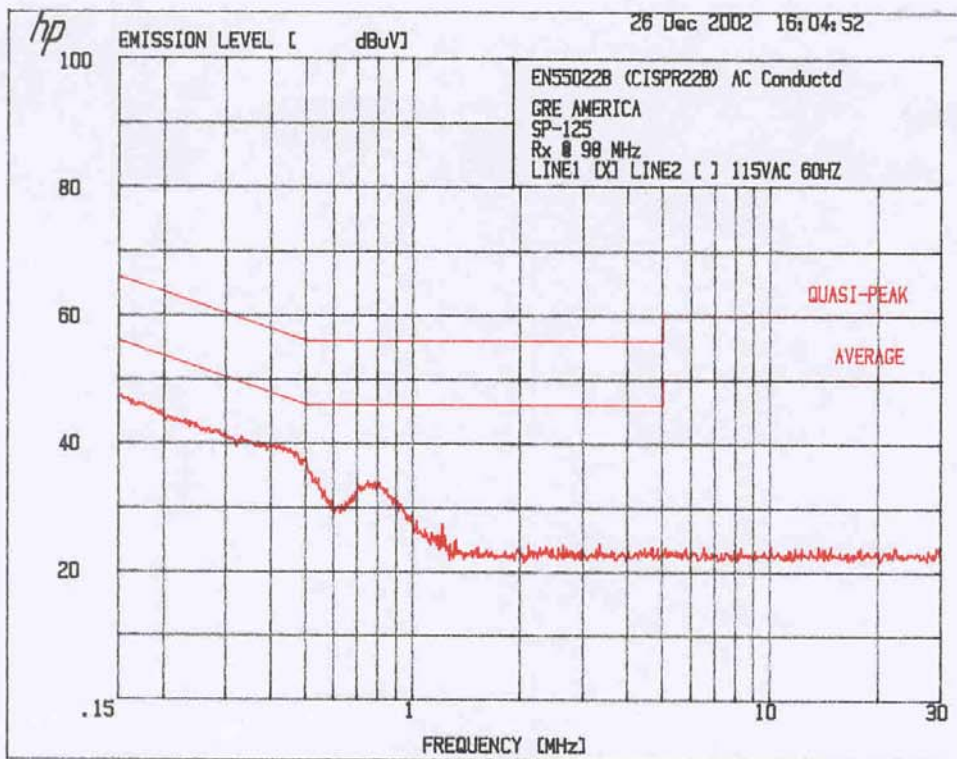
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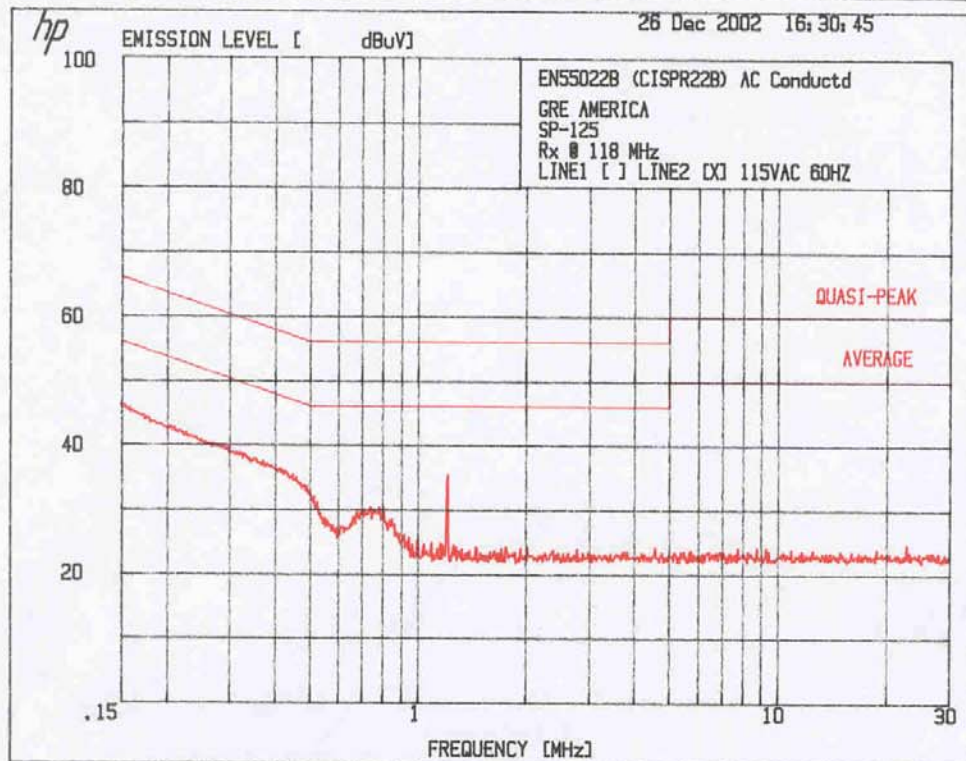
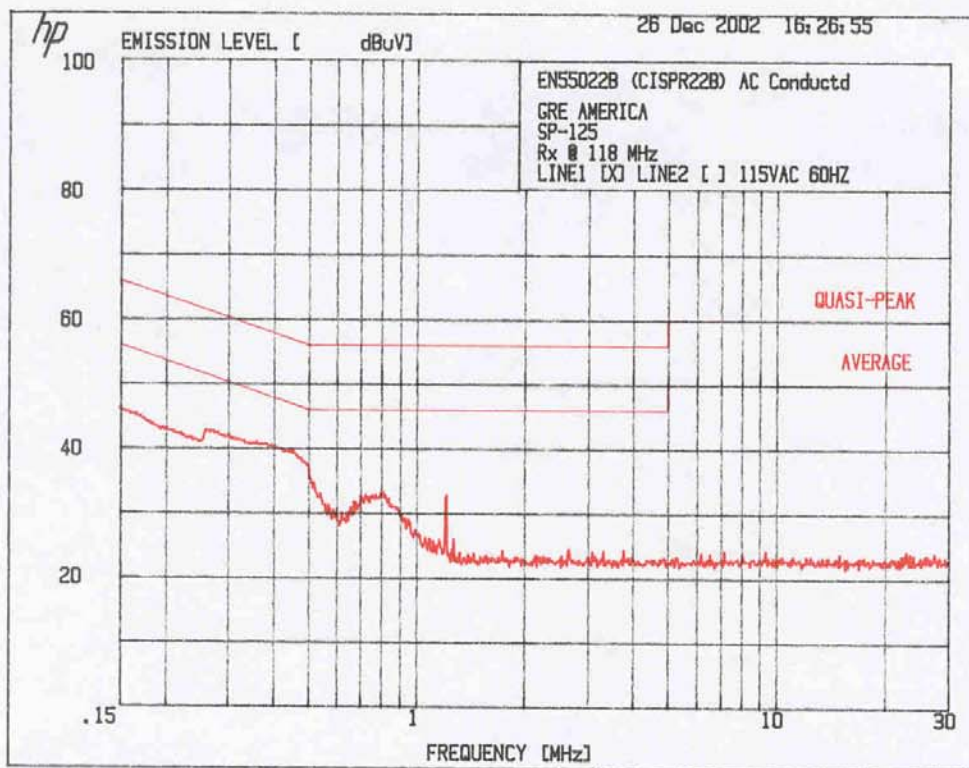
Date of Test: December 26-27, 2002





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3.4 Antenna Conducted Emission Data

<b>Tested By:</b>	Bruce Gordon
<b>Test Date:</b>	December 27, 2002

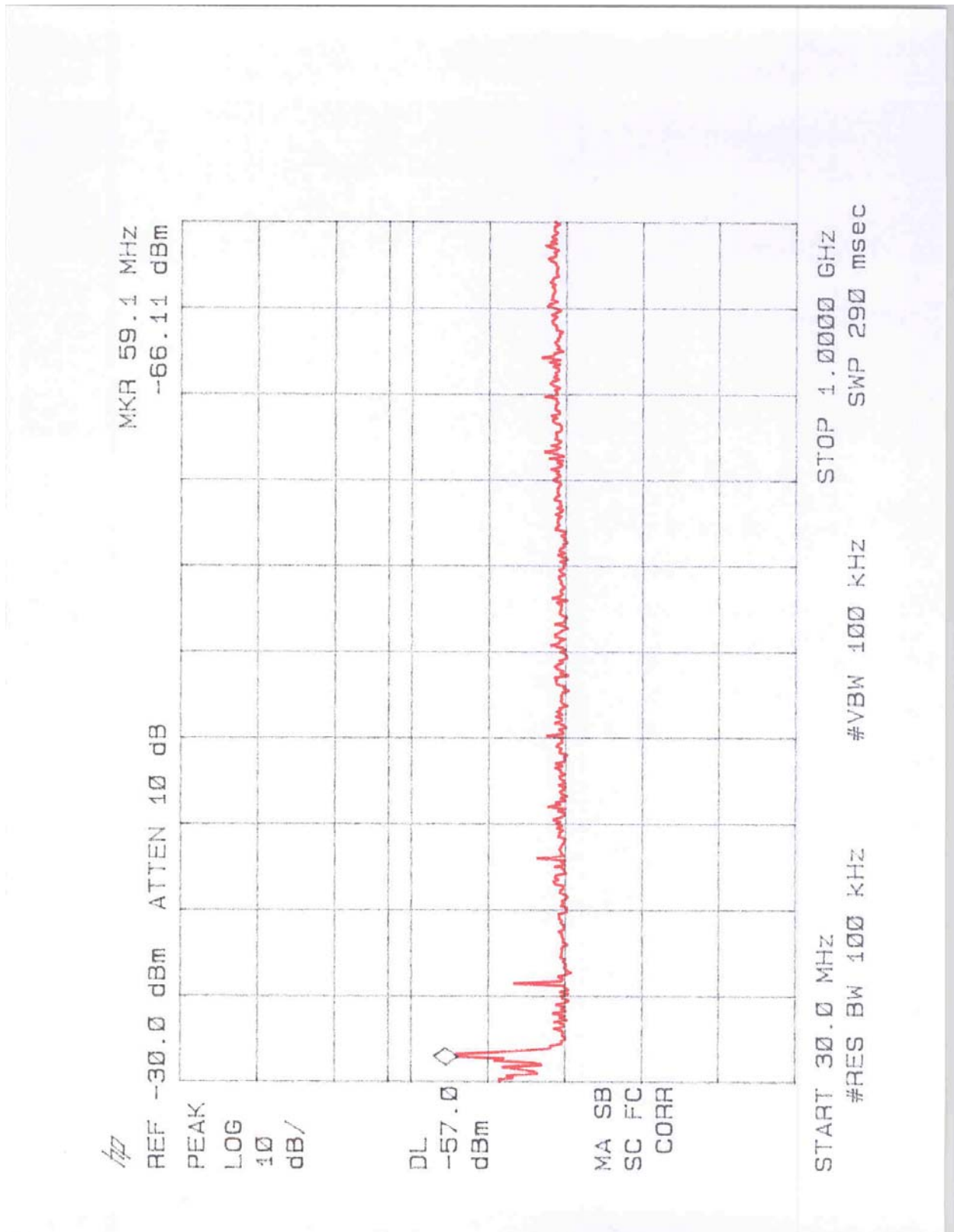
<b>Temperature</b> (°C)	22.5°C
<b>Relative Humidity</b> (%)	45.0%

The results on the following page(s) were obtained when the device was tested in the condition described in Sections 2 and 3.

<b>Results:</b>	Complies by 7.0 dB
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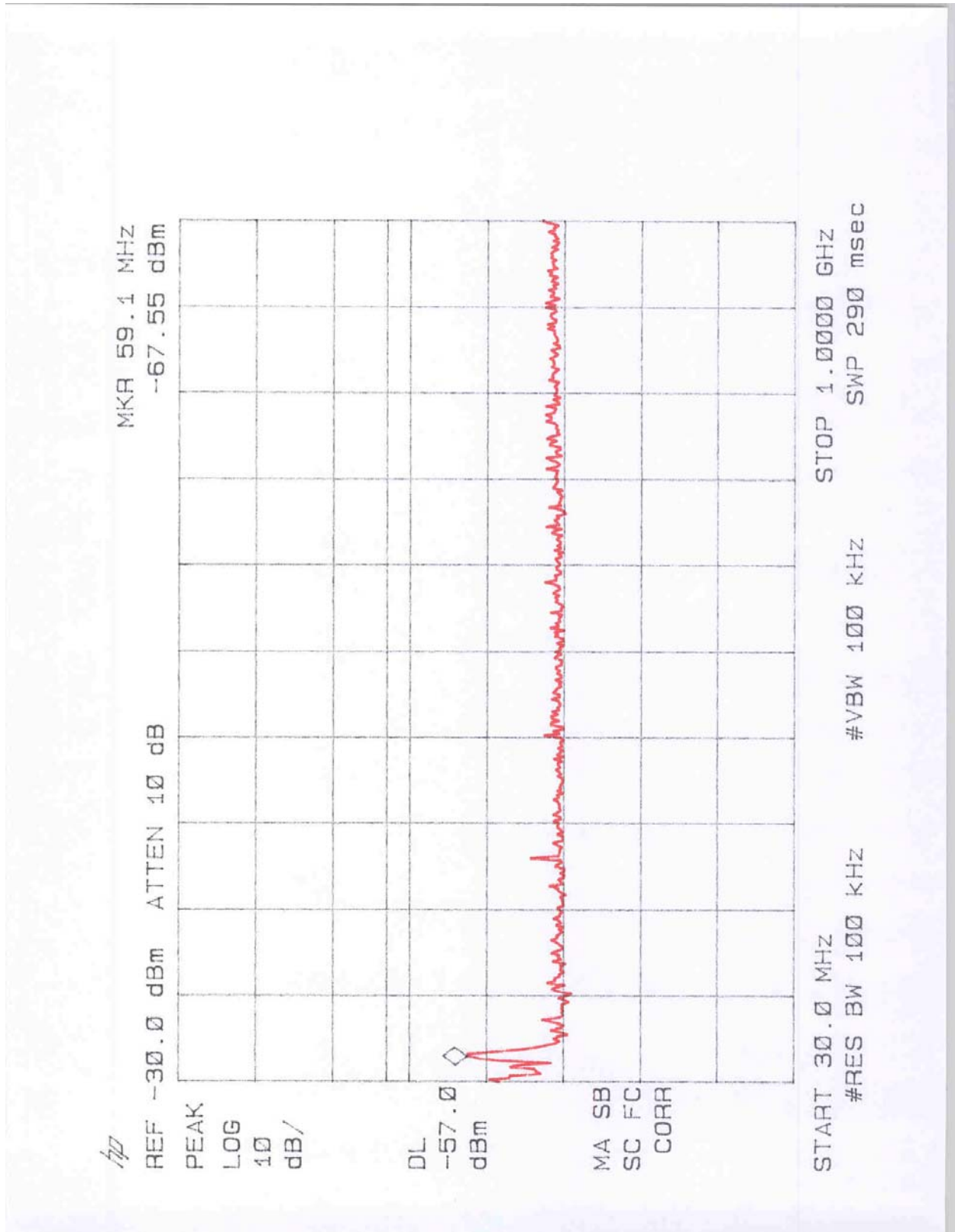
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Sportsman's Market, Inc., Model No: SP-125  
FCC ID: DY7RT2013

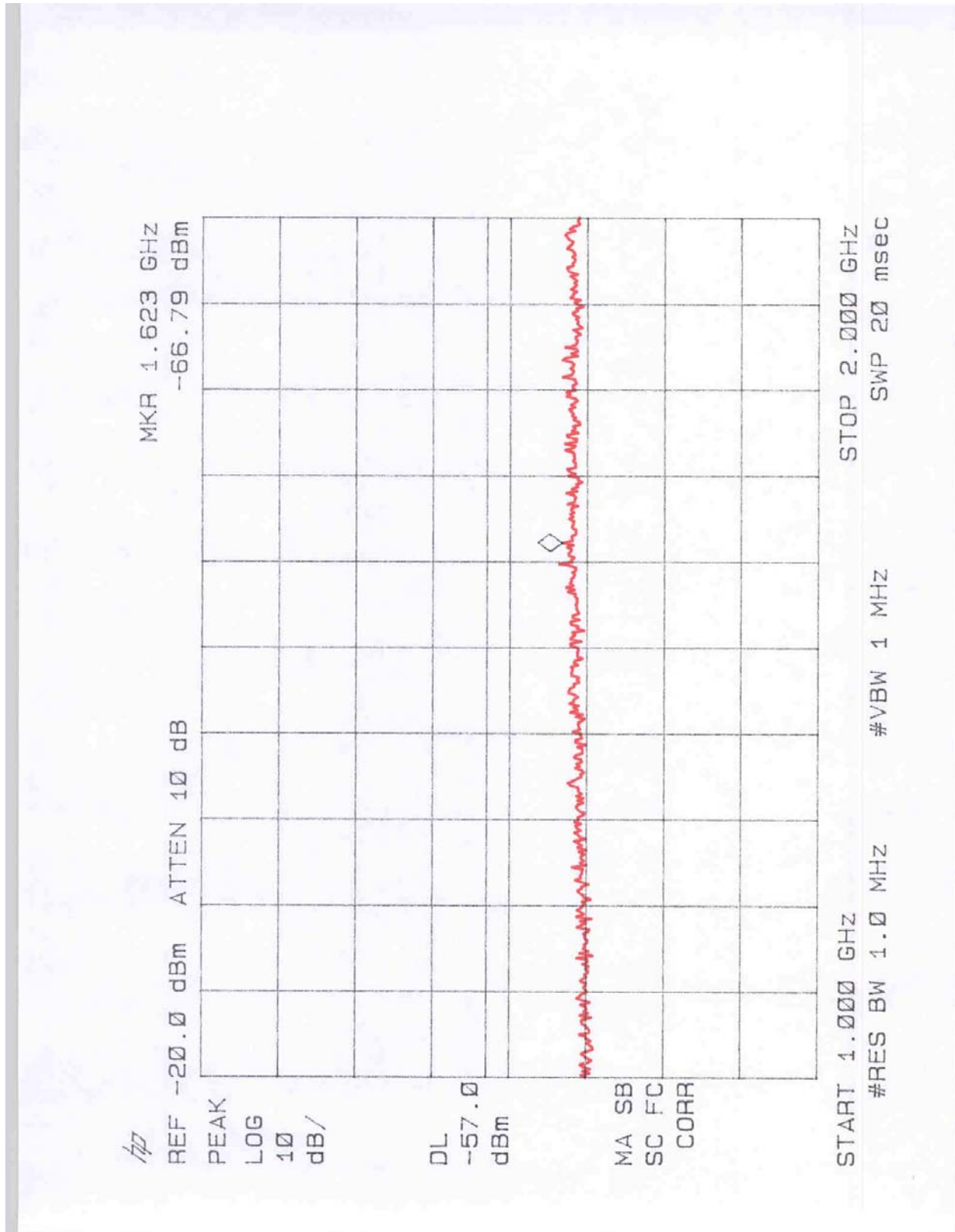
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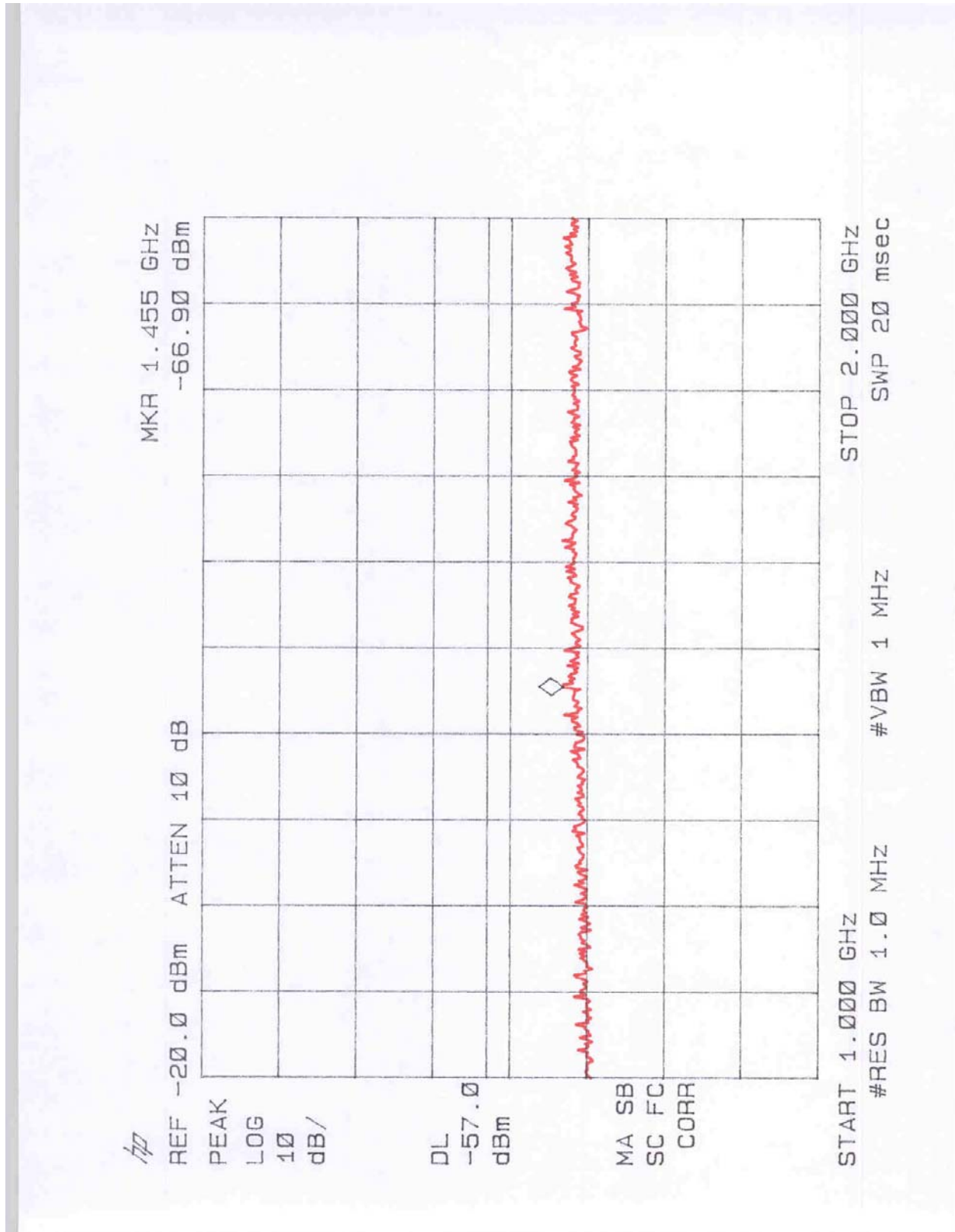
Sportsman's Market, Inc., Model No: SP-125  
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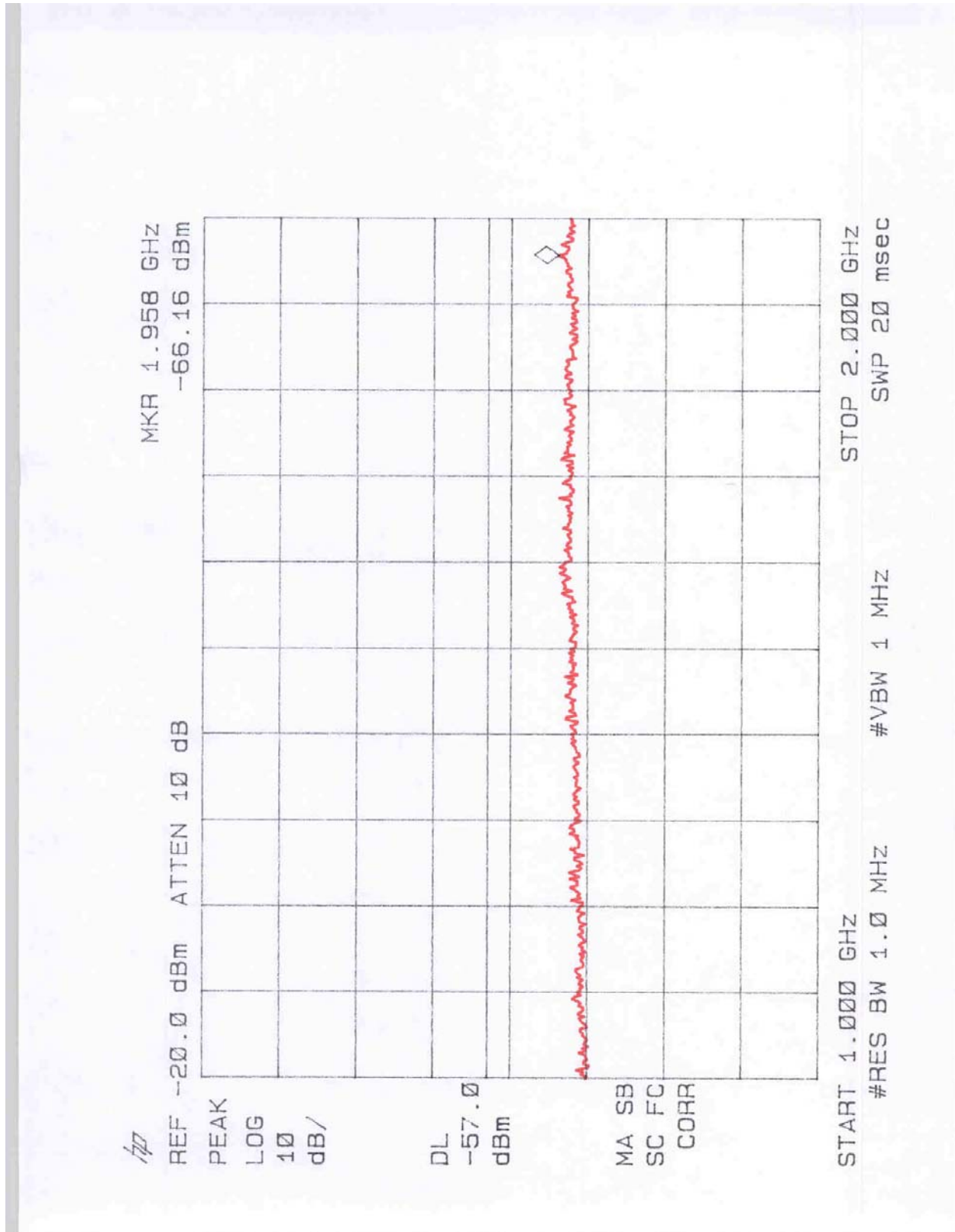
Sportsman's Market, Inc., Model No: SP-125  
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**4.0 List of Test Equipment**

Measurement equipment used for emission compliance testing utilized the equipment on the following list.

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
BI-Log Antenna	EMCO	3143	9509-1160	12	9/19/03
Horn Antenna	EMCO	3115	9170-3712	12	6/02/03
Pre-Amplifier	ITS	ITSPA-1	44156	12	3/16/03
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	7/16/03
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	7/16/03
Spectrum Analyzer w/8650 QP Adapter	Hewlett Packard	8568B	1912A0053 2521A01021	12	11/20/03
Spectrum Analyzer	Hewlett Packard	8591EM	3801A01250	12	8/07/03
LISN	FCC	FCC-LISN-50-50-M-H	2012	12	1/04/03
Pulse Limiter	Hewlett Packard	11947A	2820A00184	12	9/03/03

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## 5.0 Appendix A

**DY7RT2013**

**SPECIFICATIONS**

SUBJECT : VHF AIRCRAFT/ AM/FM BROADCAST BAND PROGRAMMABLE HANDHELD RECEIVER MODEL SP-125 (Label Name is "SPORTY'S HANGAR RADIO")

**1. GENERAL**

1.1 Programmable channel : 5 memory channels for VHF Aircraft band  
0 memory channels for AM Broadcast band  
0 memory channels for FM Broadcast band

1.2 Receiving system : PLL synthesizer

VHF Aircraft band : Dual conversion (Local oscillator is upper side of the receiving frequency), 1<sup>st</sup> IF=21.4 MHz, 2<sup>nd</sup> IF=455 kHz

AM Broadcast band : Single superheterodyne (Local oscillator is upper side of the receiving frequency), IF=450 kHz

FM Broadcast band : Single superheterodyne (Local oscillator is upper side of the receiving frequency), IF=10.7 MHz

1.3 Frequency range :

Band	Frequency	Step	Mode
VHF Aircraft band :	118 – 143 MHz	8.333 kHz	AM
AM Broadcast band :	530 – 1630 kHz	10 kHz	AM
FM Broadcast band :	88 – 108 MHz	100 kHz	FM

1.4 Priority channel

1) When listening to VHF Aircraft band:

The 1st setting channel of a programmable channel is a most High priority channel. Priority 1CH is checked once in 1 seconds.

2) When listening to AM or FM Broadcast band

Interrupt preferentially the priority channel of VHF 1, 2, 3, 4, or 5. Also in inside, VHF #1 interrupts priority most from 2, 3, 4 or 5. A priority channel is five of VHF 1, 2, 3, 4 or 5.

1.5 Scan speed : 8 channel/second

1.6 Priority check speed : 8 channel/second (AM/FM band)

: Priority channel is checked once in 0.2 seconds.

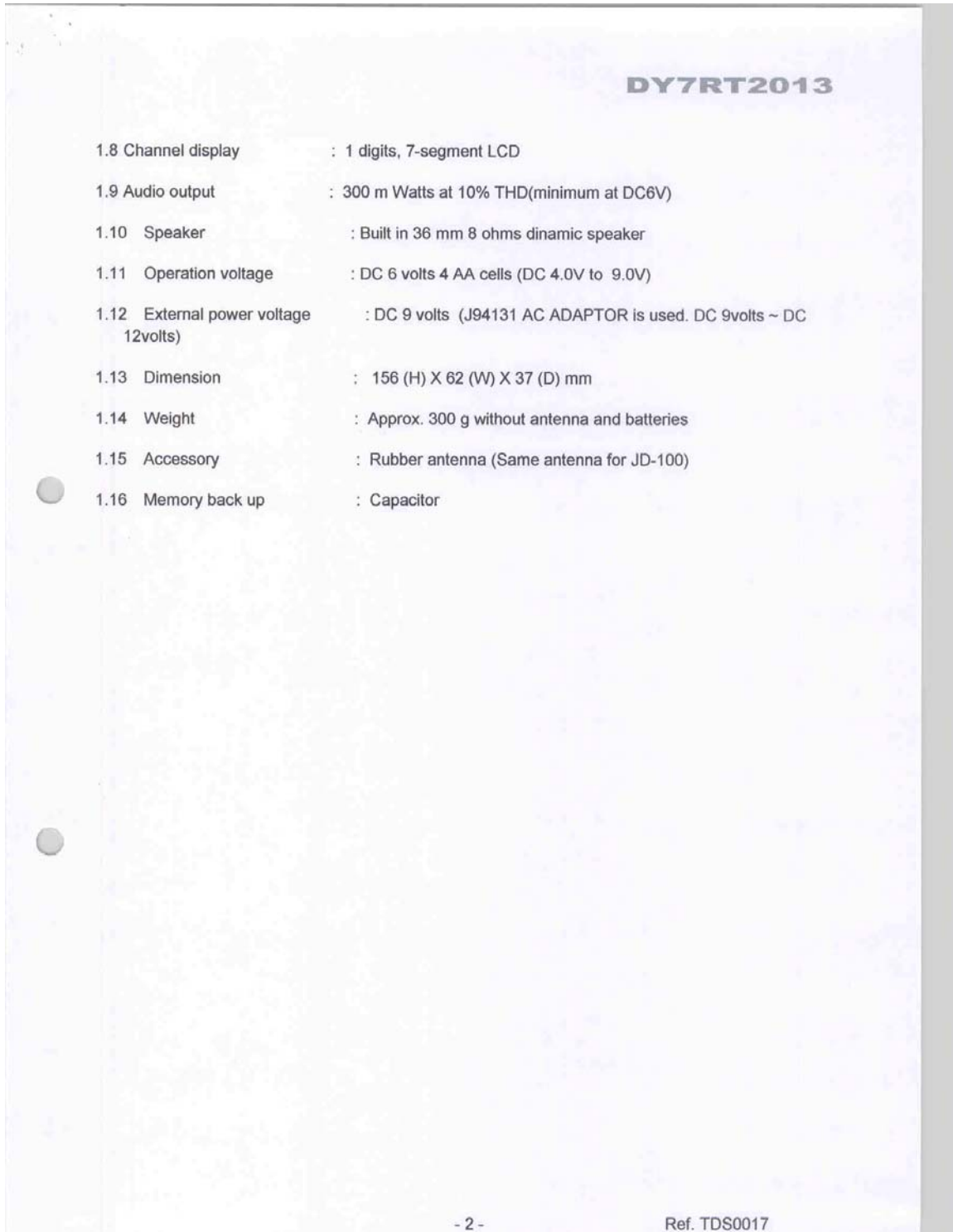
(VHF Aircraft band)

1.7 Frequency display : 6 digits, 7-segment LCD

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2. ELECTRICAL			Nominal	Limit
2.1	Frequency range	: VHF Aircraft band	118-143 MHz	
			AM Broadcast band	530-1630 kHz
			FM Broadcast band	88-108 MHz
2.2	Sensitivity	: VHF Aircraft band	AM	1 uV
	FM: (S+N)/N = 20 dB	AM Broadcast band	AM	10 uV
	DEV. : 45 kHz at 1 kHz)	FM Broadcast band	FM	2 uV
	AM: (S+N)/N = 20 dB			5 uV
	MOD.: 60% at 1 kHz)			
2.3	Image ratio 1 <sup>st</sup> IF image	: VHF Aircraft band at 124 MHz	40 dB	35 dB
		AM Broadcast band at 1000 kHz	40 dB	30 dB
		FM Broadcast band at 98 MHz	30 dB	20 dB
	2 <sup>nd</sup> IF image	: VHF High at 124 MHz	50 dB	40 dB
2.4	Squelch sensitivity (Band center)			
	Threshold:	:VHF Aircraft band (Volume control)	0.5 uV	2 uV
	Tight :	: VHF Aircraft band (Volume control)	1.5 uV	1 uV
		: AM Broadcast band(Automatic)	20 uV	15 uV
		: FM Broadcast band (Automatic)	1 uV	5 uV
2.5	Selectivity	VHF Aircraft band : - 6 dB	± 7.5 kHz	± 5 kHz
		AM Broadcast band ±10 kHz	50 dB	40 dB
		FM Broadcast band: - 6 dB	± 150 kHz	± 200 kHz
		± 500 kHz	50 dB	40 dB
2.6	Spurious rejection	: VHF Aircraft band at 124 MHz	40 dB	30 dB
	(Except Primary image)	AM Broadcast band at 1000 kHz	40 dB	30 dB
		FM Broadcast band at 100 MHz	40 dB	30 dB
2.7	IF rejection	: VHF Aircraft band at 124 MHz	70 dB	60 dB
		AM Broadcast band at 1000 kHz	60 dB	50 dB
		FM Broadcast band at 98 MHz	60 dB	50 dB
2.8	Signal to noise ratio	:	35 dB	30 dB
	RF : 100 uV			
	AM Broadcast band modulation : AM 60 % at 1 kHz			
	FM Broadcast band DEV. : 45 kHz at 1 kHz			
	VHF Aircraft band modulation : AM 60 % at 1 kHz			
2.9	Residual noise	:	3 mV	5 mV
	Vol. min. and Squelched			
2.10	Scanning rate	:	8 ch/sec.	8 ch/sec

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		<b>Nominal</b>	<b>Limit</b>
2.11	Search rate :	8 steps/sec.	8 step/sec.
2.12	Scan and Search delay time :	1.5 sec.	1.5–2.0 sec.
2.13	Maximum Audio output (T.H.D. 10 %): 300 mW (8 Ohms R Load, 1 kHz DC 6V) RF input : 100 uV 60% mode at 98 MHz		350 mW
2.14	T.H.D. at 50 mW : RF input : 100 uV AM Broadcast band :AM 60 % with 1 kHz signal at 1000kHz FM Broadcast band :DEV. 45 kHz with 1 kHz signal at 98MHz VHF Aircraft band : AM 60 % with 1 kHz 1 kHz signal at 124MHz	3 %	8 %
2.15	Audio frequency response : RF input : 100 uV AM Broadcast band :AM 60 % with 1 kHz signal at 1000kHz FM Broadcast band :DEV. 45 kHz with 1 kHz signal at 98MHz VHF Aircraft band : AM 60 % with 1 kHz 1 kHz signal at 124MHz	at –6 dB 300 Hz 2.0 kHz	200 Hz–400 Hz 1.5 kHz–3.0 kHz
2.16	Current consumption at 9 V : 8 Ohm internal speaker at 124 MHz Vol. max. Squelched (PRIORITY MODE) Squelched (FM or AM band) Squelched (AIR band)	170 mA 90 mA TYP 60mA TYP 60mA TYP	220 mA
2.17	Memory hold time :	1 Hours	0.5 Hour
2.18	Birdies and step frequency : when search	Under discussion	
2.19	Filter : 21.4 MHz monolithic crystal filter and 455 kHz ceramic filter for VHF Aircraft band 450 kHz ceramic filter for AM Broadcast band 10.7 MHz ceramic filter for FM Broadcast band		
2.20	Antenna impedance :	50 Ohms	
2.21	Temperature range : Test to specification between Operate (Need not meet spec.)	: +5°C–+35°C : –10°C–+50°C	



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### 3. OPERATING CONTROLS AND CONNECTIONS

- 3.1 Volume control with power switch
- 3.2 Squelch control (only Air band)
- 3.3 Keyboard (16 keys)
- 3.4 Key-lock key on the top.
- 3.5 LCD 6 digits frequency display
- 3.6 LCD 1 digits channel indicator
- 3.7 Indicator by LCD: FREQUENCY, CHANNEL, SCAN, SEARCH, MEM, CLR, BATT, DELAY, BATT, AIR, AM, FM, KEY LOCK
- 3.8 BNC antenna connector
- 3.9 Earphone jack (D = 3.5 mm stereo)
- 3.10 External power jack on the side

### 4 LCD-DISPLAY and keyboard Inputs

Real Frequency (MHz)	LCD display and Keyboard inputs
118.0000	118.000
118.0000	118.005
118.0083	118.010
118.0167	118.015
118.0250	118.025
118.0250	118.030
118.0333	118.035
118.0417	118.040
118.0500	118.050
118.0500	118.055
118.0583	118.060
118.0667	118.065
118.0750	118.075
118.0750	118.080
118.0833	118.085
118.0917	118.090
118.1000	118.100

Repeat