

*FCC PART 15, SUBPART C  
TEST METHOD: ANSI C63.4-1992  
TEST REPORT*

*for*

900 MHz REMOTE TX

Model: SSBT-900

Prepared for

SPORTABLE SCOREBOARDS, INC.  
88 SPRUCE STREET  
MURRAY, KENTUCKY 42071

Prepared by: *Kyle Fujimoto*

KYLE FUJIMOTO

Approved by: *Scott McCutchan*

SCOTT McCUTCHAN

COMPATIBLE ELECTRONICS INC.  
114 OLINDA DRIVE  
BREA, CALIFORNIA 92823  
(714) 579-0500

DATE: JANUARY 23, 1999

	REPORT BODY	APPENDICES				TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	
PAGES	15	2	2	10	14	43

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## TABLE OF CONTENTS

Section / Title	PAGE
<b>GENERAL REPORT SUMMARY</b>	<b>4</b>
<b>SUMMARY OF TEST RESULTS</b>	<b>4</b>
<b>1. PURPOSE</b>	<b>5</b>
<b>2. ADMINISTRATIVE DATA</b>	<b>6</b>
2.1 Location of Testing	6
2.2 Traceability Statement	6
2.3 Cognizant Personnel	6
2.4 Date Test Sample was Received	6
2.5 Disposition of the Test Sample	6
2.6 Abbreviations and Acronyms	6
<b>3. APPLICABLE DOCUMENTS</b>	<b>7</b>
<b>4. Description of Test Configuration</b>	<b>8</b>
4.1 Description of Test Configuration - EMI	8
<b>5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT</b>	<b>10</b>
5.1 EUT and Accessory List	10
5.2 EMI Test Equipment	11
<b>6. TEST SITE DESCRIPTION</b>	<b>12</b>
6.1 Test Facility Description	12
6.2 EUT Mounting, Bonding and Grounding	12
<b>7. Test Procedures</b>	<b>13</b>
7.1 Radiated Emissions (Spurious and Harmonics) Test	13
7.2 Band Edge Plots of the Low and High Channels	14
<b>8. CONCLUSIONS</b>	<b>15</b>



**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>TITLE</b>
A	Modifications to the EUT
B	Additional Models Covered Under This Report
C	Diagrams, Charts, and Photos <ul style="list-style-type: none"> <li>• Test Setup Diagrams</li> <li>• Radiated Emissions Photos</li> <li>• Antenna and Effective Gain Factors</li> </ul>
D	Data Sheets

**LIST OF TABLES**

<b>TABLE</b>	<b>TITLE</b>
1	Radiated Emissions Test Results

**LIST OF FIGURES**

<b>FIGURE</b>	<b>TITLE</b>
1	Radiated Emissions Test Setup



## GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full with the written permission of Compatible Electronics.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested: 900 MHz Remote TX  
Model: SSBT-900  
S/N: N/A

Product Description: The EUT will be used in industrial applications for Remote Telemetry under normal/dry locations.

Modifications: The EUT was not modified during the testing.

Manufacturer: Sportable Scoreboards, Inc.  
88 Spruce Street  
Murray, Kentucky 42071

Test Date: January 23, 1999

Test Specifications: EMI requirements  
FCC Title 47, Part 15 Subpart C, Sections 15.205 and 15.249

Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

## SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	This test was not performed because the EUT runs off a nine volt battery only and cannot be powered by any device that runs off of the AC public mains.
2	Radiated RF Emissions, 10 kHz - 9300 MHz	Complies with FCC Title 47, Part 15 Subpart C, sections 15.205, 15.209, and 15.249



## 1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the 900 MHz Remote TX Model: SSBT-900. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined by FCC Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249.



## **2. ADMINISTRATIVE DATA**

### **2.1 Location of Testing**

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

### **2.2 Traceability Statement**

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

### **2.3 Cognizant Personnel**

Sportable Scoreboards, Inc.

Bob Emery VP of Engineering

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer

Scott McCutchan Lab Manager

### **2.4 Date Test Sample was Received**

The test sample was received on January 23, 1999

### **2.5 Disposition of the Test Sample**

The test sample was returned to Sportable Scoreboards, Inc. on January 25, 1999.

### **2.6 Abbreviations and Acronyms**

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network



### 3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Subpart C.	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators.
ANSI C63.4 1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.



#### **4. DESCRIPTION OF TEST CONFIGURATION**

##### **4.1 Description of Test Configuration - EMI**

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The 900 MHz Remote TX Model: SSBT-900 (EUT) was tested as a stand alone unit in three different orthogonal axis. The EUT was continuously transmitting during the test. The antenna connector on the PCB has a reverse SMA connector.

Final radiated data was taken in the mode above.





#### 4.1.1 Cable Construction and Termination

Cable 1 This is a 6 inch unshielded cable connecting the EUT to the 9 volt battery. It has a 6 pin mini DIN connector at the EUT end and a standard 9 volt battery connector at the other end.



## 5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

### 5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
900 MHz REMOTE TX (EUT)	SPORTABLE SCOREBOARDS, INC.	SSBT-900	N/A	NXL900TX



## 5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	Hewlett Packard	8566B	3638A08784	Nov. 16, 1998	May 16, 1999
Preamplifier	Com Power	PA-102	1017	Feb. 16, 1998	Feb. 16, 1999
Quasi-Peak Adapter	Hewlett Packard	85650A	3303A01688	June 23, 1998	June 23, 1999
RF Attenuator	Com-Power	A-410	1602	Nov. 25, 1998	Nov. 25, 1999
Biconical Antenna	Com Power	AB-100	1548	Oct. 15, 1998	Oct. 15, 1999
Log Periodic Antenna	Com Power	AL-100	1117	Oct. 15, 1998	Oct. 15, 1999
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Amplifier	Com-Power	PA-122	25321	Oct. 13, 1998	Oct. 13, 1999
Horn Antenna	Antenna Research	DRG-118/A	1053	Dec. 8, 1995	N/A
Loop Antenna	Com-Power	AL-130	25309	Feb. 5, 1998	Feb. 5, 1999



## **6. TEST SITE DESCRIPTION**

### **6.1 Test Facility Description**

Please refer to section 2.1 and 7.1 of this report for EMI test location.

### **6.2 EUT Mounting, Bonding and Grounding**

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.



## 7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

### 7.1 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, and the Com Power Microwave Amplifier Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets. The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 1 Hz and slowing the sweep time to keep the amplitude reading calibrated. The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.



**Radiated Emissions (Spurious and Harmonics) Test (con't)**

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data.

**7.2****Band Edge Plots of the Low and High Channels**

Spectral plots of both the low and high channels were taken of the EUT to show that the emissions at the band edges (902 and 928 MHz) were attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in FCC Title 47, Subpart C, section 15.209, whichever is the lesser attenuation.



## 8. CONCLUSIONS

The 900 MHz Remote TX Model: SSBT-900 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249.





## ***MODIFICATIONS TO THE EUT***





## MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

Modifications:

No modifications were made to the EUT.





**APPENDIX B**

***ADDITIONAL MODELS COVERED  
UNDER THIS REPORT***

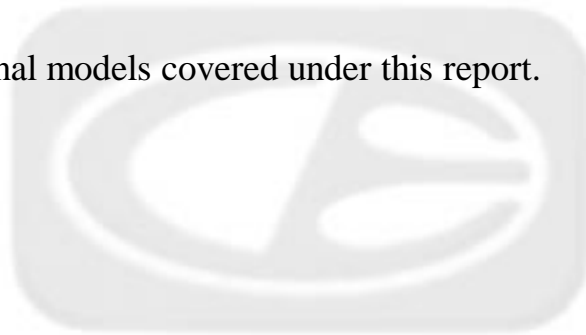


## **ADDITIONAL MODELS COVERED UNDER THIS REPORT**

USED FOR THE PRIMARY TEST

900 MHz Remote TX  
Model: SSBT-900  
S/N: N/A

There were no additional models covered under this report.





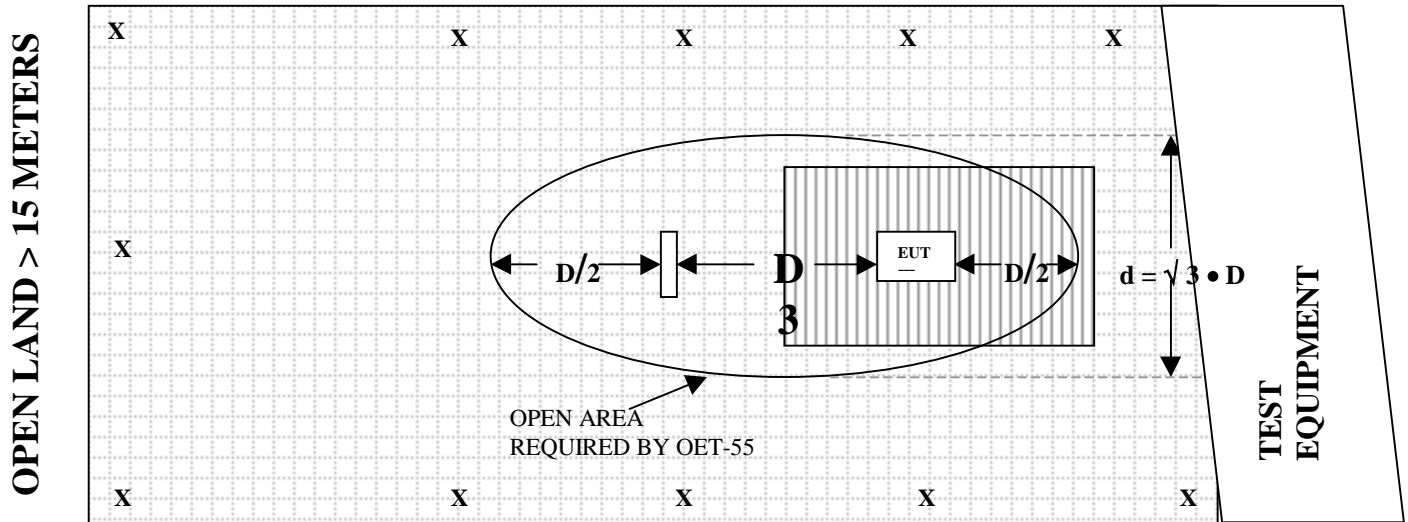
**APPENDIX C**

***DIAGRAMS, CHARTS AND PHOTOS***

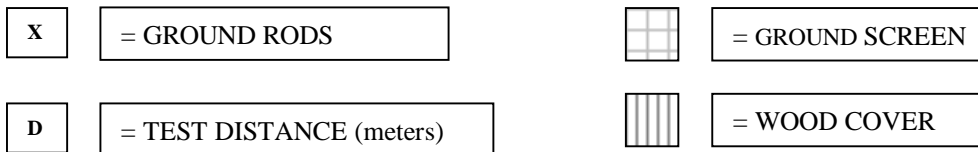


# **FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE**

## **OPEN LAND > 15 METERS**



## **OPEN LAND > 15 METERS**





**FRONT VIEW**

SPORTABLE SCOREBOARDS, INC.

900 MHz REMOTE TX

Model: SSBT-900

FCC SUBPART C - RADIATED EMISSIONS – 1-23-99

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**





**REAR VIEW**

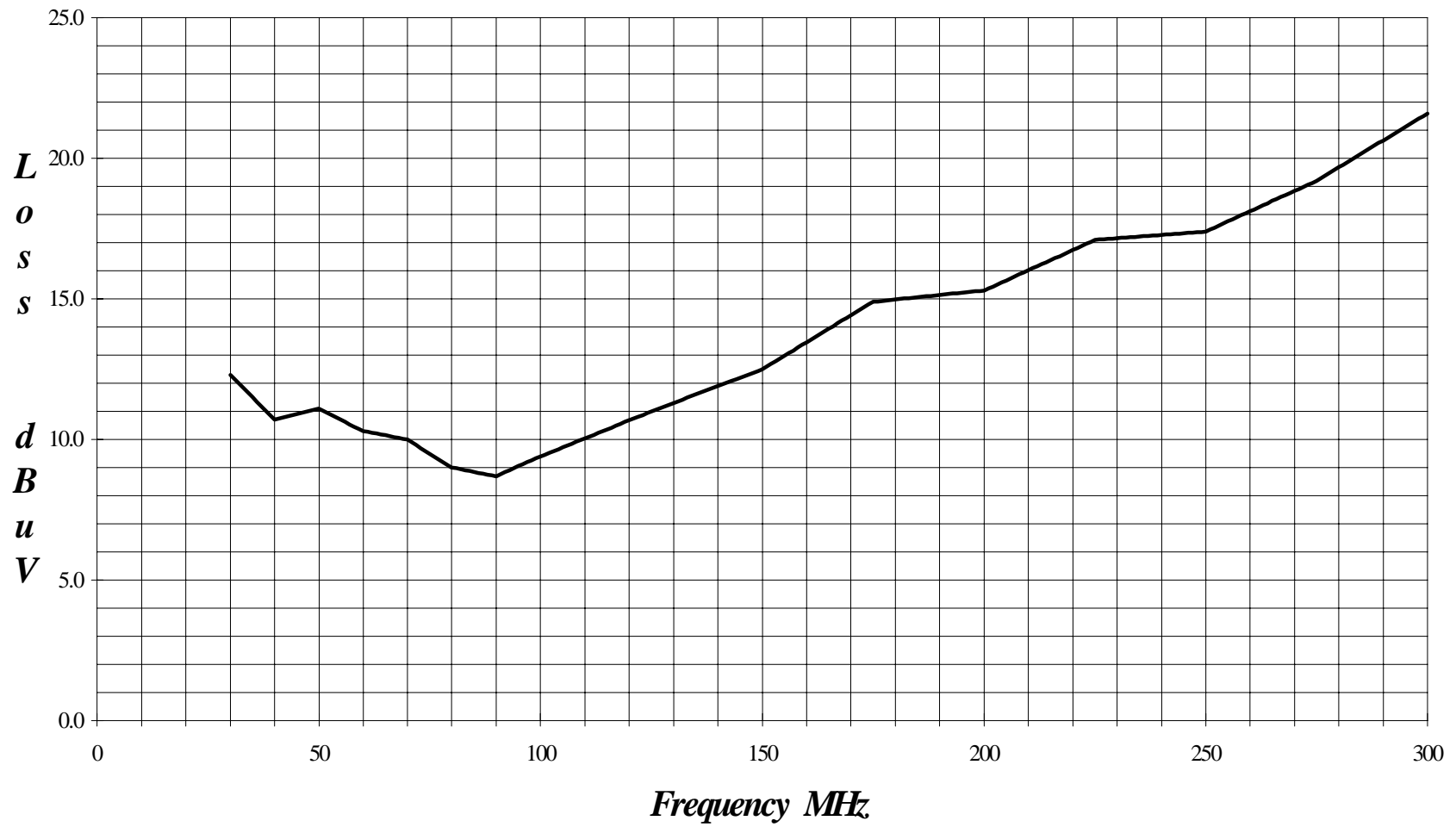
SPORTABLE SCOREBOARDS, INC.  
900 MHz REMOTE TX  
Model: SSBT-900  
FCC SUBPART C - RADIATED EMISSIONS – 1-23-99

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**



Cal: 10/15/98

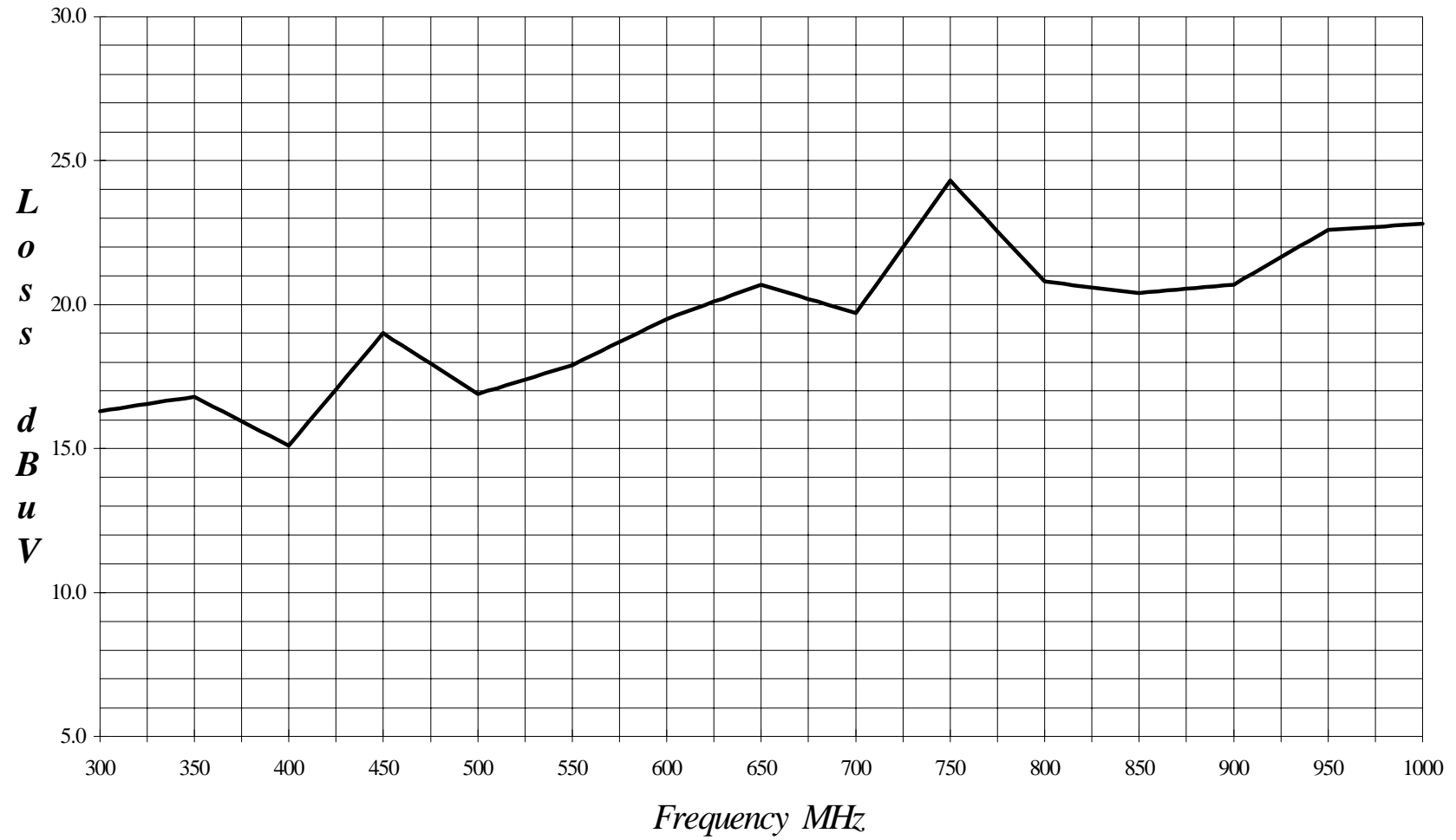
***LAB 'D' BICONICAL ANTENNA AB-100 S/N 01548***



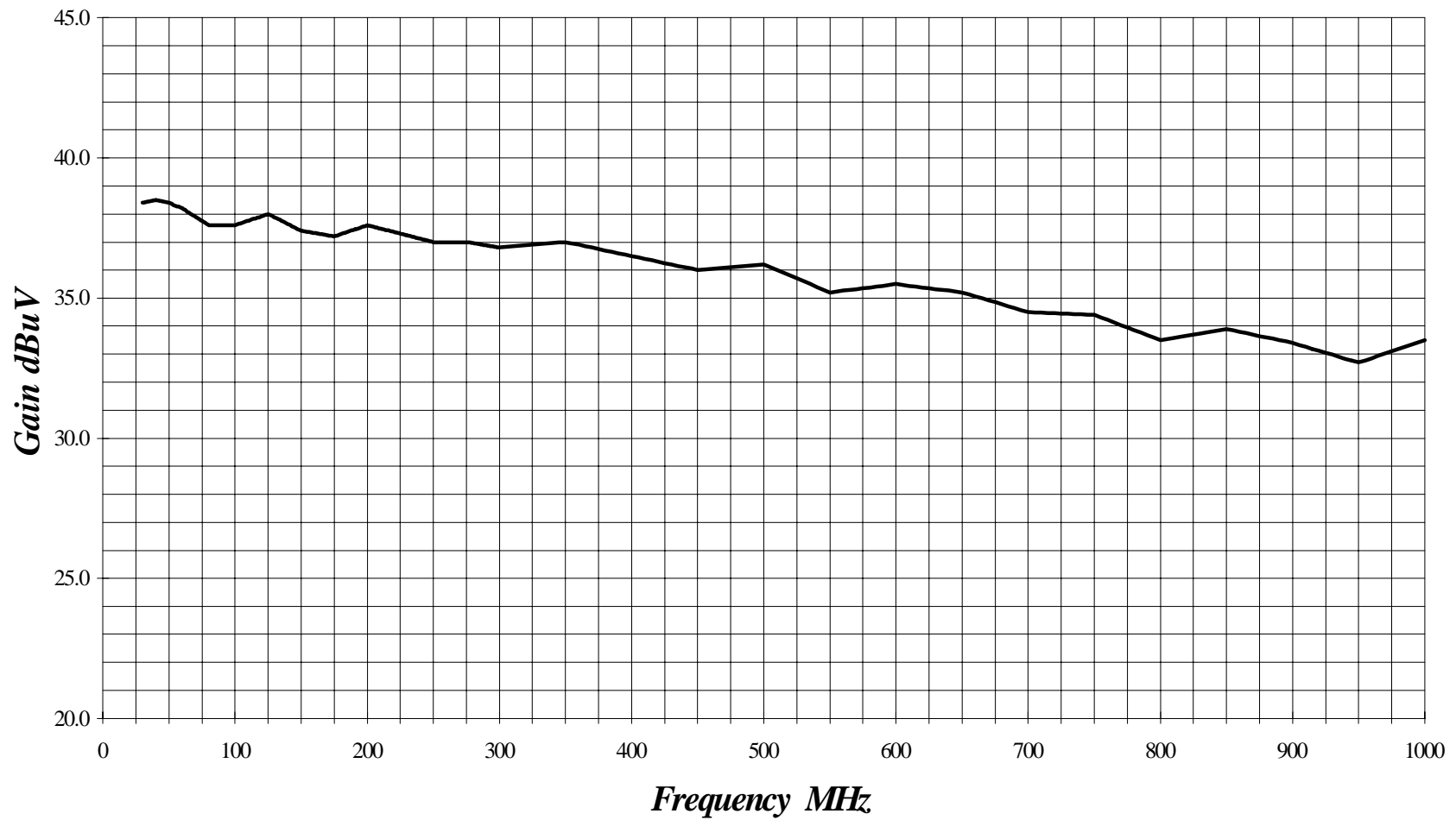


*Cal: 10/15/98*

***LAB "D" LOG PERIODIC ANTENNA AL-100 S/N 01117***



***PREAMPLIFIER EFFECTIVE GAIN AT 3 METERS PA-102 S/N: 1017***



# COM-POWER PA-122

## MICROWAVE PREAMPLIFIER

S/N: 25132

CALIBRATION DATE: OCTOBER 13, 1998

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	33.7	8.0	32.9
1.1	33.5	8.5	32.7
1.2	33.5	9.0	33.2
1.3	33.6	9.5	33.7
1.4	33.5	10.0	34.6
1.5	33.0	10.5	32.7
1.6	33.4	11.0	30.8
1.7	33.5	11.5	32.1
1.8	33.6	12.0	31.7
1.9	33.5	12.5	32.9
2.0	33.9	13.0	27.8
2.5	33.9	13.5	30.7
3.0	33.6	14.0	30.4
3.5	33.5	14.5	31.7
4.0	33.4	15.0	32.2
4.5	32.9	15.5	34.0
5.0	32.4	16.0	31.6
5.5	32.7	16.5	32.7
6.0	33.6	17.0	31.7
6.5	32.5	17.5	31.2
7.0	33.0	18.0	30.2
7.5	33.7		



# E-FIELD ANTENNA FACTOR CALIBRATION

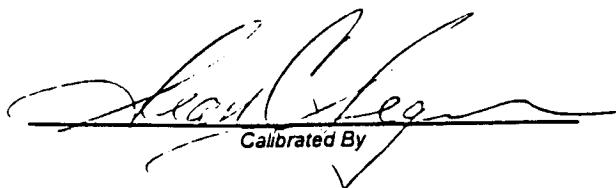
$$E(\text{dB V/m}) = V_o(\text{dB V}) + AFE(\text{dB/m})$$

Model number : DRG-118/A

Frequency GHz	AFE dB/m	Gain dBi
1	22.3	8.0
2	26.7	9.5
3	29.7	10.1
4	29.5	12.8
5	32.3	12.0
6	32.4	13.4
7	36.1	11.0
8	37.4	10.9
9	36.8	12.5
10	39.5	10.7
11	39.6	11.5
12	39.8	12.0
13	39.7	12.8
14	41.8	11.3
15	41.9	11.9
16	38.1	16.3
17	41.0	13.9
18	46.5	8.9

Serial number : 1053  
Job number : 96-092  
Remarks : 3 meter calibration  
Standards : LPD-118/A, TE-1000

Temperature : 72° F  
Humidity : 56 %  
Traceability : A01887  
Date : December 08, 1995

  
Calibrated By

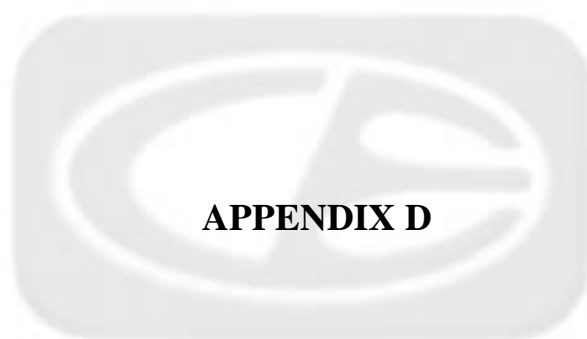
**Com-Power Corporation**

(714) 587-9800

**Antenna Calibration**

Antenna Type:	Loop Antenna
Model:	AL-130
Serial Number:	25309
Calibration Date:	2/5/98

Frequency MHz	Magnetic (dB/m)	Electric dB/m
0.01	-40.5	11.0
0.02	-41.6	9.9
0.03	-40.0	11.5
0.04	-40.3	11.2
0.05	-41.6	9.9
0.06	-41.1	10.4
0.07	-41.3	10.2
0.08	-41.6	9.9
0.09	-41.7	9.8
0.1	-41.8	9.7
0.2	-44.0	7.5
0.3	-41.6	9.9
0.4	-41.7	9.8
0.5	-41.7	9.8
0.6	-41.5	10.0
0.7	-41.5	10.0
0.8	-41.6	9.9
0.9	-41.6	9.9
1	-41.1	10.4
2	-40.7	10.8
3	-40.7	10.8
4	-40.9	10.6
5	-40.1	11.4
6	-40.0	11.5
7	-40.3	11.2
8	-39.8	11.7
9	-38.8	12.7
10	-40.8	10.7
12	-41.4	10.1
14	-41.4	10.1
15	-40.9	10.6
16	-40.8	10.7
18	-41.5	10.0
20	-41.5	10.0
25	-41.2	10.3
30	-41.4	10.1
Trans. Antenna Height		2 meter
Receiving Antenna Height		2 meter



**APPENDIX D**

***DATA SHEETS***





COMPANY NAME: PORTABLE SCOREBOARDS DATE: 1-23-99  
EUT: 900 MHz REMOTE TRANSMITTER EUT S/N: N/A  
EUT MODEL: SSBT-900 LOCATION: ☒ BREA ☐ SILVERADO ☐ AGOURA  
SPECIFICATION: FCC 15.249 CLASS:        TEST DISTANCE: 3M LAB: D  
ANTENNA: ☒ LOOP ☒ BICONICAL ☒ LOG ☒ HORN POLARIZATION: ☒ VERT ☒ HORIZ  
☒ QUALIFICATION ☐ ENGINEERING ☐ MFG. AUDIT ENGINEER: KYLE F.

NOTES:

[illegible]

\* **CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN**

**\*\* DELTA = CORRECTED READING - SPECIFICATION LIMIT**

BREA (714) 579-0500

**SILVERADO (714) 589-0700**

AGOURA (818) 597-0600

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>LOG PERIODIC</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency MHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
903.41	92.3	93.1	1.0	180	0.0	20.8	5.0	37.3	81.6	-12.4	94.0	Low Channel / Y Axis
903.41	89.3	89.2	2.0	90	0.0	20.8	5.0	37.3	77.7	-16.3	94.0	Low Channel / X Axis
903.41	90.6	90.5	1.0	270	0.0	20.8	5.0	37.3	79.0	-15.0	94.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
903.41	90.6	90.5	1.0	0	0.0	20.8	5.0	37.3	79.0	-15.0	94.0	Low Channel / Y Axis
903.41	96.9	96.8	3.0	90	0.0	20.8	5.0	37.3	85.3	-8.7	94.0	Low Channel / X Axis
903.41	94.7	94.6	1.0	90	0.0	20.8	5.0	37.3	83.1	-10.9	94.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
912.43	93.6	93.5	1.5	270	0.0	21.2	5.0	37.2	82.5	-11.5	94.0	Mid Channel / Y Axis
912.43	88.0	87.9	1.5	270	0.0	21.2	5.0	37.2	76.9	-17.1	94.0	Mid Channel / X Axis
912.43	90.2	90.1	1.5	90	0.0	21.2	5.0	37.2	79.1	-14.9	94.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
912.43	88.5	88.4	1.0	90	0.0	21.2	5.0	37.2	77.4	-16.6	94.0	Mid Channel / Y Axis
912.43	96.3	96.2	1.0	90	0.0	21.2	5.0	37.2	85.2	-8.8	94.0	Mid Channel / X Axis
912.43	95.4	95.3	2.0	90	0.0	21.2	5.0	37.2	84.3	-9.7	94.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
921.46	93.2	93.1	1.0	90	0.0	21.5	5.0	37.0	82.6	-11.4	94.0	High Channel / Y Axis
921.46	85.9	85.8	1.0	90	0.0	21.5	5.0	37.0	75.3	-18.7	94.0	High Channel / X Axis
921.46	83.6	83.5	1.0	90	0.0	21.5	5.0	37.0	73.0	-21.0	94.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
921.46	85.7	85.6	1.5	90	0.0	21.5	5.0	37.0	75.1	-18.9	94.0	High Channel / Y Axis
921.46	93.3	93.2	1.0	270	0.0	21.5	5.0	37.0	82.7	-11.3	94.0	High Channel / X Axis
921.46	88.6	88.5	1.0	90	0.0	21.5	5.0	37.0	78.0	-16.0	94.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHZ, QUASI-PEAK MEASUREMENT IS EMPLOYEED, ABOVE 1 GHZ, AVERAGE MEASUREMENT IS EMPLOYED



## RADIATED EMISSIONS

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/24/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency GHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
1.81	56.3	55.1	3.0	90	0.0	24.5	3.9	33.6	49.9	-4.1	54.0	Low Channel / Y Axis
1.81	55.9	54.5	3.0	90	0.0	24.5	3.9	33.6	49.3	-4.7	54.0	Low Channel / X Axis
1.81	55.3	53.7	3.0	90	0.0	24.5	3.9	33.6	48.5	-5.5	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
1.81	56.2	55.0	2.0	0	0.0	24.5	3.9	33.6	49.8	-4.2	54.0	Low Channel / Y Axis
1.81	52.6	50.8	2.0	90	0.0	24.5	3.9	33.6	45.6	-8.4	54.0	Low Channel / X Axis
1.81	54.8	53.1	2.0	90	0.0	24.5	3.9	33.6	47.9	-6.1	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
1.82	58.4	57.5	2.0	90	0.0	24.5	3.9	33.6	52.3	-1.7	54.0	Mid Channel / Y Axis
1.82	57.2	56.0	3.0	90	0.0	24.5	3.9	33.6	50.8	-3.2	54.0	Mid Channel / X Axis
1.82	56.5	55.3	3.0	90	0.0	24.5	3.9	33.6	50.1	-3.9	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
1.82	56.4	54.7	2.0	90	0.0	24.5	3.9	33.6	49.5	-4.5	54.0	Mid Channel / Y Axis
1.82	56.5	54.8	2.0	270	0.0	24.5	3.9	33.6	49.6	-4.4	54.0	Mid Channel / X Axis
1.82	55.8	54.5	2.0	90	0.0	24.5	3.9	33.6	49.3	-4.7	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
1.84	56.0	54.5	3.0	0	0.0	24.5	3.9	33.6	49.3	-4.7	54.0	High Channel / Y Axis
1.84	54.4	52.4	2.0	90	0.0	24.5	3.9	33.6	47.2	-6.8	54.0	High Channel / X Axis
1.84	54.1	52.6	2.0	90	0.0	24.5	3.9	33.6	47.4	-6.6	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
1.84	56.0	54.7	1.0	0	0.0	24.5	3.9	33.6	49.5	-4.5	54.0	High Channel / Y Axis
1.84	55.9	54.5	2.5	90	0.0	24.5	3.9	33.6	49.3	-4.7	54.0	High Channel / X Axis
1.84	54.3	52.9	3.0	90	0.0	24.5	3.9	33.6	47.7	-6.3	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYED. ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency MHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
2.71	49.0	45.8	3.0	90	0.0	28.2	5.6	33.9	45.7	-8.3	54.0	Low Channel / Y Axis
2.71	49.8	46.5	3.0	90	0.0	28.2	5.6	33.9	46.4	-7.6	54.0	Low Channel / X Axis
2.71	49.3	46.1	1.0	90	0.0	28.2	5.6	33.9	46.0	-8.0	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
2.71	50.0	46.7	2.5	90	0.0	28.2	5.6	33.9	46.6	-7.4	54.0	Low Channel / Y Axis
2.71	47.9	43.7	3.0	90	0.0	28.2	5.6	33.9	43.6	-10.4	54.0	Low Channel / X Axis
2.71	49.4	45.9	2.0	90	0.0	28.2	5.6	33.9	45.8	-8.2	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
2.74	50.2	47.1	2.0	0	0.0	28.2	5.6	33.9	47.0	-7.0	54.0	Mid Channel / Y Axis
2.74	49.3	45.2	3.5	90	0.0	28.2	5.6	33.9	45.1	-8.9	54.0	Mid Channel / X Axis
2.74	47.8	43.7	1.5	180	0.0	28.2	5.6	33.9	43.6	-10.4	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
2.74	51.4	48.5	2.0	0	0.0	28.2	5.6	33.9	48.4	-5.6	54.0	Mid Channel / Y Axis
2.74	46.2	41.0	2.0	90	0.0	28.2	5.6	33.9	40.9	-13.1	54.0	Mid Channel / X Axis
2.74	50.4	46.8	2.0	90	0.0	28.2	5.6	33.9	46.7	-7.3	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
2.76	49.1	45.5	3.0	0	0.0	29.7	6.4	33.6	48.0	-6.0	54.0	High Channel / Y Axis
2.76	49.6	46.0	2.0	90	0.0	29.7	6.4	33.6	48.5	-5.5	54.0	High Channel / X Axis
2.76	48.0	44.4	2.5	90	0.0	29.7	6.4	33.6	46.9	-7.1	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
2.76	51.1	48.6	2.0	0	0.0	29.7	6.4	33.6	51.1	-2.9	54.0	High Channel / Y Axis
2.76	45.2	40.0	2.0	90	0.0	29.7	6.4	33.6	42.5	-11.5	54.0	High Channel / X Axis
2.76	49.9	46.5	1.0	0	0.0	29.7	6.4	33.6	49.0	-5.0	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency MHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
3.61	46.4	42.6	2.0	0	0.0	29.6	7.0	33.5	45.7	-8.3	54.0	Low Channel / Y Axis
3.61	47.1	43.5	3.0	90	0.0	29.6	7.0	33.5	46.6	-7.4	54.0	Low Channel / X Axis
3.61	45.3	40.3	1.5	90	0.0	29.6	7.0	33.5	43.4	-10.6	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
3.61	47.3	44.3	2.5	90	0.0	29.6	7.0	33.5	47.4	-6.6	54.0	Low Channel / Y Axis
3.61	46.0	41.4	3.0	90	0.0	29.6	7.0	33.5	44.5	-9.5	54.0	Low Channel / X Axis
3.61	46.5	42.2	3.5	0	0.0	29.6	7.0	33.5	45.3	-8.7	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
3.65	44.7	39.5	2.5	0	0.0	29.6	7.0	33.5	42.6	-11.4	54.0	Mid Channel / Y Axis
3.65	48.5	45.0	3.0	90	0.0	29.6	7.0	33.5	48.1	-5.9	54.0	Mid Channel / X Axis
3.65	46.1	41.2	1.5	90	0.0	29.6	7.0	33.5	44.3	-9.7	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
3.65	49.7	44.5	2.0	90	0.0	29.6	7.0	33.5	47.6	-6.4	54.0	Mid Channel / Y Axis
3.65	44.5	39.4	2.0	270	0.0	29.6	7.0	33.5	42.5	-11.5	54.0	Mid Channel / X Axis
3.65	45.7	38.9	2.5	0	0.0	29.6	7.0	33.5	42.0	-12.0	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
3.69	46.7	42.7	3.0	90	0.0	29.6	7.0	33.5	45.8	-8.2	54.0	High Channel / Y Axis
3.69	49.7	47.1	3.0	90	0.0	29.6	7.0	33.5	50.2	-3.8	54.0	High Channel / X Axis
3.69	45.7	40.6	3.0	0	0.0	29.6	7.0	33.5	43.7	-10.3	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
3.69	48.0	43.8	2.0	0	0.0	29.6	7.0	33.5	46.9	-7.1	54.0	High Channel / Y Axis
3.69	44.2	39.0	2.0	0	0.0	29.6	7.0	33.5	42.1	-11.9	54.0	High Channel / X Axis
3.69	43.3	37.1	2.0	0	0.0	29.6	7.0	33.5	40.2	-13.8	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency MHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
4.52	45.0	37.6	3.0	90	0.0	30.9	8.0	32.9	43.6	-10.4	54.0	Low Channel / Y Axis
4.52	45.0	38.6	2.5	90	0.0	30.9	8.0	32.9	44.6	-9.4	54.0	Low Channel / X Axis
4.52	47.6	43.5	3.0	90	0.0	30.9	8.0	32.9	49.5	-4.5	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
4.52	50.3	47.1	1.0	180	0.0	30.9	8.0	32.9	53.1	-0.9	54.0	Low Channel / Y Axis
4.52	48.3	44.3	3.0	180	0.0	30.9	8.0	32.9	50.3	-3.7	54.0	Low Channel / X Axis
4.52	46.6	40.6	3.0	90	0.0	30.9	8.0	32.9	46.6	-7.4	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
4.56	44.9	37.7	2.0	90	0.0	30.9	8.0	32.9	43.7	-10.3	54.0	Mid Channel / Y Axis
4.56	46.3	41.2	2.0	90	0.0	30.9	8.0	32.9	47.2	-6.8	54.0	Mid Channel / X Axis
4.56	50.1	45.8	2.0	90	0.0	30.9	8.0	32.9	51.8	-2.2	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
4.56	50.7	47.5	1.0	180	0.0	30.9	8.0	32.9	53.5	-0.5	54.0	Mid Channel / Y Axis
4.56	43.9	36.5	1.0	0	0.0	30.9	8.0	32.9	42.5	-11.5	54.0	Mid Channel / X Axis
4.56	46.2	41.3	2.0	90	0.0	30.9	8.0	32.9	47.3	-6.7	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
4.60	45.3	39.3	3.0	90	0.0	30.9	8.0	32.9	45.3	-8.7	54.0	High Channel / Y Axis
4.60	44.9	39.1	2.0	90	0.0	30.9	8.0	32.9	45.1	-8.9	54.0	High Channel / X Axis
4.60	47.7	43.4	3.0	90	0.0	30.9	8.0	32.9	49.4	-4.6	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
4.60	50.4	47.3	2.0	180	0.0	30.9	8.0	32.9	53.3	-0.7	54.0	High Channel / Y Axis
4.60	44.6	38.2	2.0	0	0.0	30.9	8.0	32.9	44.2	-9.8	54.0	High Channel / X Axis
4.60	46.1	40.9	2.0	0	0.0	30.9	8.0	32.9	46.9	-7.1	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency GHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
5.42	45.6	40.3	2.0	0	0.0	32.4	9.2	32.7	49.2	-4.8	54.0	Low Channel / Y Axis
5.42	44.3	38.2	2.0	90	0.0	32.4	9.2	32.7	47.1	-6.9	54.0	Low Channel / X Axis
5.42	42.3	34.3	3.0	90	0.0	32.4	9.2	32.7	43.2	-10.8	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
5.42	44.2	38.2	1.5	90	0.0	32.4	9.2	32.7	47.1	-6.9	54.0	Low Channel / Y Axis
5.42	42.7	35.4	2.0	90	0.0	32.4	9.2	32.7	44.3	-9.7	54.0	Low Channel / X Axis
5.42	44.5	37.9	2.0	0	0.0	32.4	9.2	32.7	46.8	-7.2	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
5.47	46.0	40.3	1.0	90	0.0	32.4	9.2	32.7	49.2	-4.8	54.0	Mid Channel / Y Axis
5.47	44.2	38.1	1.0	90	0.0	32.4	9.2	32.7	47.0	-7.0	54.0	Mid Channel / X Axis
5.47	43.2	34.2	2.5	90	0.0	32.4	9.2	32.7	43.1	-10.9	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
5.47	45.2	39.7	1.0	90	0.0	32.4	9.2	32.7	48.6	-5.4	54.0	Mid Channel / Y Axis
5.47	41.4	31.5	2.0	90	0.0	32.4	9.2	32.7	40.4	-13.6	54.0	Mid Channel / X Axis
5.47	46.9	41.9	2.5	90	0.0	32.4	9.2	32.7	50.8	-3.2	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
5.52	44.5	38.1	1.5	0	0.0	32.4	9.2	32.7	47.0	-7.0	54.0	High Channel / Y Axis
5.52	44.1	37.9	2.0	90	0.0	32.4	9.2	32.7	46.8	-7.2	54.0	High Channel / X Axis
5.52	43.0	35.8	3.0	90	0.0	32.4	9.2	32.7	44.7	-9.3	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
5.52	45.6	39.3	2.0	90	0.0	32.4	9.2	32.7	48.2	-5.8	54.0	High Channel / Y Axis
5.52	39.5	30.2	2.0	0	0.0	32.4	9.2	32.7	39.1	-14.9	54.0	High Channel / X Axis
5.52	44.8	39.9	2.0	90	0.0	32.4	9.2	32.7	48.8	-5.2	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency GHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
6.32	44.3	34.6	1.0	0	0.0	34.3	9.8	32.5	46.2	-7.8	54.0	Low Channel / Y Axis
6.32	43.5	32.1	2.0	90	0.0	34.3	9.8	32.5	43.7	-10.3	54.0	Low Channel / X Axis
6.32	42.3	30.9	1.0	90	0.0	34.3	9.8	32.5	42.5	-11.5	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
6.32	40.7	32.1	1.5	90	42.3	34.3	9.8	32.5	43.7	-10.3	54.0	Low Channel / Y Axis
6.32	43.0	31.4	3.0	90	0.0	34.3	9.8	32.5	43.0	-11.0	54.0	Low Channel / X Axis
6.32	45.1	34.9	2.0	0	0.0	34.3	9.8	32.5	46.5	-7.5	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
6.39	43.1	32.8	1.0	90	0.0	34.3	9.8	32.5	44.4	-9.6	54.0	Mid Channel / Y Axis
6.39	41.3	30.4	1.0	90	0.0	34.3	9.8	32.5	42.0	-12.0	54.0	Mid Channel / X Axis
6.39	40.5	31.5	3.0	90	0.0	34.3	9.8	32.5	43.1	-10.9	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
6.39	42.6	32.5	2.0	90	0.0	34.3	9.8	32.5	44.1	-9.9	54.0	Mid Channel / Y Axis
6.39	41.1	30.4	2.0	90	0.0	34.3	9.8	32.5	42.0	-12.0	54.0	Mid Channel / X Axis
6.39	43.9	32.1	2.0	90	0.0	34.3	9.8	32.5	43.7	-10.3	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
6.45	40.0	30.7	3.0	0	0.0	34.3	9.8	32.5	42.3	-11.7	54.0	High Channel / Y Axis
6.45	41.4	29.3	3.0	90	0.0	34.3	9.8	32.5	40.9	-13.1	54.0	High Channel / X Axis
6.45	39.5	30.0	2.0	90	0.0	34.3	9.8	32.5	41.6	-12.4	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
6.45	39.9	30.6	1.0	90	0.0	34.3	9.8	32.5	42.2	-11.8	54.0	High Channel / Y Axis
6.45	39.0	30.0	1.5	90	0.0	34.3	9.8	32.5	41.6	-12.4	54.0	High Channel / X Axis
6.45	42.0	30.8	2.0	90	0.0	34.3	9.8	32.5	42.4	-11.6	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYEED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency GHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
7.23	43.1	33.9	1.0	90	0.0	36.1	10.3	33.0	47.3	-6.7	54.0	Low Channel / Y Axis
7.23	40.6	30.2	2.0	90	0.0	36.1	10.3	33.0	43.6	-10.4	54.0	Low Channel / X Axis
7.23	41.5	30.6	1.5	90	0.0	36.1	10.3	33.0	44.0	-10.0	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
7.23	41.7	31.8	1.0	90	0.0	36.1	10.3	33.0	45.2	-8.8	54.0	Low Channel / Y Axis
7.23	42.1	31.5	2.0	90	0.0	36.1	10.3	33.0	44.9	-9.1	54.0	Low Channel / X Axis
7.23	43.9	33.2	1.5	0	0.0	36.1	10.3	33.0	46.6	-7.4	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
7.30	42.7	32.7	1.0	90	0.0	36.8	10.8	33.7	46.6	-7.4	54.0	Mid Channel / Y Axis
7.30	39.5	29.9	1.5	90	0.0	36.8	10.8	33.7	43.8	-10.2	54.0	Mid Channel / X Axis
7.30	38.6	29.6	1.0	90	0.0	36.8	10.8	33.7	43.5	-10.5	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
7.30	39.7	31.0	2.0	90	0.0	36.8	10.8	33.7	44.9	-9.1	54.0	Mid Channel / Y Axis
7.30	38.3	29.5	2.0	270	0.0	36.8	10.8	33.7	43.4	-10.6	54.0	Mid Channel / X Axis
7.30	42.0	31.8	2.5	90	0.0	36.8	10.8	33.7	45.7	-8.3	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
7.37	44.5	32.9	3.0	90	0.0	36.8	10.8	33.7	46.8	-7.2	54.0	High Channel / Y Axis
7.37	43.0	33.2	2.0	90	0.0	36.8	10.8	33.7	47.1	-6.9	54.0	High Channel / X Axis
7.37	41.5	31.9	3.0	90	0.0	36.8	10.8	33.7	45.8	-8.2	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
7.37	43.1	33.2	2.0	90	0.0	36.8	10.8	33.7	47.1	-6.9	54.0	High Channel / Y Axis
7.37	41.5	32.2	3.0	90	0.0	36.8	10.8	33.7	46.1	-7.9	54.0	High Channel / X Axis
7.37	44.5	33.9	3.0	90	0.0	36.8	10.8	33.7	47.8	-6.2	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYEED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

<b>COMPANY</b>	<b>SPORTABLE SCOREBOARDS</b>	<b>DATE</b>	<b>1/23/99</b>
<b>EUT</b>	<b>900 MHz REMOTE TRANSMITTER</b>	<b>ANTENNAS</b>	<b>HORN</b>
<b>MODEL</b>	<b>SSBT-900</b>	<b>POLARIZATION</b>	<b>SEE BELOW</b>
<b>S/N</b>	<b>N/A</b>	<b>TEST DISTANCE</b>	<b>3 METERS</b>
<b>EUT MODE</b>	<b>LOW, MEDIUM, AND HIGH CHANNELS</b>	<b>LAB</b>	<b>D</b>

Frequency GHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
8.13	"--"	"--"	"--"	"--"	0.0	37.4	11.2	32.9	"--"	"--"	54.0	Low Channel / Y Axis
8.13	39.1	30.1	2.0	90	0.0	37.4	11.2	32.9	45.8	-8.2	54.0	Low Channel / X Axis
8.13	"--"	"--"	"--"	"--"	0.0	37.4	11.2	32.9	"--"	"--"	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
8.13	38.8	30.0	1.0	90.0	0.0	37.4	11.2	32.9	45.7	-8.3	54.0	Low Channel / Y Axis
8.13	"--"	"--"	"--"	"--"	0.0	37.4	11.2	32.9	"--"	"--"	54.0	Low Channel / X Axis
8.13	"--"	"--"	"--"	"--"	0.0	37.4	11.2	32.9	"--"	"--"	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
8.21	39.3	30.6	1.0	90	0.0	37.4	11.2	32.9	46.3	-7.7	54.0	Mid Channel / Y Axis
8.21	"--"	"--"	"--"	"--"	0.0	37.4	11.2	32.9	"--"	"--"	54.0	Mid Channel / X Axis
8.21	"--"	"--"	"--"	"--"	0.0	37.4	11.2	32.9	"--"	"--"	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
8.21	40.2	30.3	"--"	"--"	0.0	37.4	11.2	32.9	46.0	-8.0	54.0	Mid Channel / Y Axis
8.21	38.1	30.3	1.0	90	0.0	37.4	11.2	32.9	46.0	-8.0	54.0	Mid Channel / X Axis
8.21	40.8	30.3	1.0	0	0.0	37.4	11.2	32.9	46.0	-8.0	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
8.29	39.3	30.4	3.0	90	0.0	37.1	11.5	32.7	46.3	-7.7	54.0	High Channel / Y Axis
8.29	38.5	30.4	2.0	270	0.0	37.1	11.5	32.7	46.3	-7.7	54.0	High Channel / X Axis
8.29	40.3	30.4	2.0	270	0.0	37.1	11.5	32.7	46.3	-7.7	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
8.29	41.3	31.1	1.0	90	0.0	37.1	11.5	32.7	47.0	-7.0	54.0	High Channel / Y Axis
8.29	40.2	30.4	"--"	"--"	0.0	37.1	11.5	32.7	46.3	-7.7	54.0	High Channel / X Axis
8.29	41.7	30.3	"--"	"--"	0.0	37.1	11.5	32.7	46.2	-7.8	54.0	High Channel / Z Axis

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\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYED, ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED



# RADIATED EMISSIONS (FCC SUBPART C, SECTION 15.249)

COMPANY	SPORTABLE SCOREBOARDS	DATE	1/23/99
EUT	900 MHz REMOTE TRANSMITTER	ANTENNAS	HORN
MODEL	SSBT-900	POLARIZATION	SEE BELOW
S/N	N/A	TEST DISTANCE	3 METERS
EUT MODE	LOW, MEDIUM, AND HIGH CHANNELS	LAB	D

Frequency GHz	Peak Reading (dBuV)	Average or Quasi-Peak (dBuV)	Antenna Height (meters)	Azimuth (degrees)	Distance Factor (dB)	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
<b>VERTICAL ANTENNA POLARIZATION</b>												
9.03	"--"	"--"	"--"	"--"	0.0	36.8	12.1	33.2	"--"	"--"	54.0	Low Channel / Y Axis
9.03	41.0	30.7	2.0	90	0.0	36.8	12.1	33.2	46.4	-7.6	54.0	Low Channel / X Axis
9.03	"--"	"--"	"--"	"--"	0.0	36.8	12.1	33.2	"--"	"--"	54.0	Low Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
9.03	43.2	31.9	1.0	90	0.0	36.8	12.1	33.2	47.6	-6.4	54.0	Low Channel / Y Axis
9.03	"--"	"--"	"--"	"--"	0.0	36.8	12.1	33.2	"--"	"--"	54.0	Low Channel / X Axis
9.03	"--"	"--"	"--"	"--"	0.0	36.8	12.1	33.2	"--"	"--"	54.0	Low Channel / Z Axis
<b>VERTICAL ANTENNA POLARIZATION</b>												
9.12	42.0	30.9	1.0	0	0.0	36.8	12.1	33.2	46.6	-7.4	54.0	Mid Channel / Y Axis
9.12	"--"	"--"	"--"	"--"	0.0	36.8	12.1	33.2	"--"	"--"	54.0	Mid Channel / X Axis
9.12	"--"	"--"	"--"	"--"	0.0	36.8	12.1	33.2	"--"	"--"	54.0	Mid Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
9.12	42.0	30.3	1.0	0	0.0	36.8	12.1	33.2	46.0	-8.0	54.0	Mid Channel / Y Axis
9.12	39.3	30.4	1.0	90	0.0	36.8	12.1	33.2	46.1	-7.9	54.0	Mid Channel / X Axis
9.12	38.9	30.4	1.0	270	0.0	36.8	12.1	33.2	46.1	-7.9	54.0	Mid Channel / Z Axis
<b>VERTICAL POLARIZATION</b>												
9.21	39.5	30.4	3.0	90	0.0	36.8	12.1	33.2	46.1	-7.9	54.0	High Channel / Y Axis
9.21	38.5	30.2	2.0	90	0.0	36.8	12.1	33.2	45.9	-8.1	54.0	High Channel / X Axis
9.21	39.7	30.6	3.0	90	0.0	36.8	12.1	33.2	46.3	-7.7	54.0	High Channel / Z Axis
<b>HORIZONTAL POLARIZATION</b>												
9.21	41.5	31.2	1.0	180	0.0	36.8	12.1	33.2	46.9	-7.1	54.0	High Channel / Y Axis
9.21	40.9	30.5	3.0	90	0.0	36.8	12.1	33.2	46.2	-7.8	54.0	High Channel / X Axis
9.21	39.8	30.2	2.0	0	0.0	36.8	12.1	33.2	45.9	-8.1	54.0	High Channel / Z Axis

\* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

\*\* DELTA = SPEC LIMIT - CORRECTED READING

\*\*\* BELOW 1 GHz, QUASI-PEAK MEASUREMENT IS EMPLOYEED. ABOVE 1 GHz, AVERAGE MEASUREMENT IS EMPLOYED

BANDEDGE OF LOW CHANNEL  
REF 100.0 dB $\mu$ V ATTEN 20 dB

MKR 902.000 MHz  
45.40 dB $\mu$ V

hp  
10 dB/

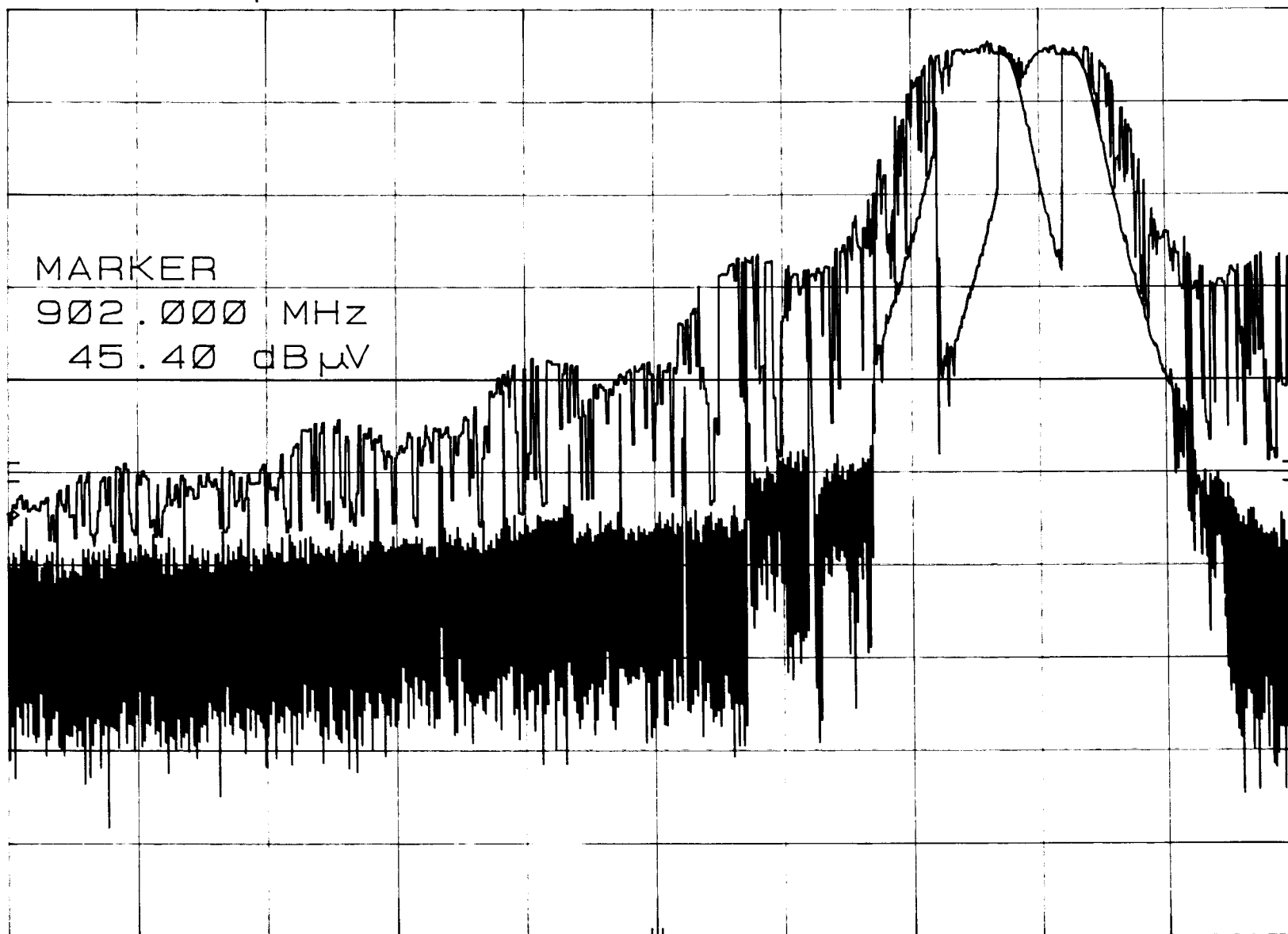
DL  
60.0  
dB $\mu$ V  
MARKER  
902.000 MHz  
45.40 dB $\mu$ V

CORR'D

START 902.00 MHz  
RES BW 1 MHz

VBW 1 MHz

STOP 903.83 MHz  
SWP 20.0 msec



BANDEDGE OF HIGH CHANNEL  
REF 100.0 dB $\mu$ V ATTEN 20 dB

MKR 928.000 MHz  
42.00 dB $\mu$ V

hp  
10 dB/

DL  
60.0  
dB $\mu$ V

MARKER  
928.000 MHz  
42.00 dB $\mu$ V

CORR'D

START 920.86 MHz  
RES BW 1 MHz

VBW 1 MHz

STOP 928.00 MHz  
SWP 20.0 msec

