



**SPORTS SELECT USA INC. TEST REPORT**  
**FOR THE**  
**900MHZ TRANSMITTER, BV900**  
**FCC PART 15 SUBPART C SECTION 15.207**  
**COMPLIANCE**

**DATE OF ISSUE: JANUARY 5, 2006**

**PREPARED FOR:**

Sports Select USA Inc.  
1920 North Shadeland Ave.  
Indianapolis, IN 46219

W.O. No.: 84593

**PREPARED BY:**

Joyce Walker  
CKC Laboratories, Inc.  
5046 Sierra Pines Drive  
Mariposa, CA 95338

Date of test: January 2, 2006

**Report No.: FC06-001**

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## **ADMINISTRATIVE INFORMATION**

**DATE OF TEST:** January 2, 2006

**DATE OF RECEIPT:** January 2, 2006

**MANUFACTURER:** Sports Select USA Inc.  
1920 North Shadeland Ave.  
Indianapolis, IN 46219

**REPRESENTATIVE:** Jon Sinder

**TEST LOCATION:** CKC Laboratories, Inc.  
5046 Sierra Pines Drive  
Mariposa, CA 95338

**TEST METHOD:** ANSI C63.4 (2003)

**PURPOSE OF TEST:** To demonstrate the compliance of the 900MHz Transmitter, BV900 with the requirements for FCC Part 15 Subpart C Section 15.207 devices.

**CONDITIONS FOR COMPLIANCE**

No modifications to the EUT were necessary to comply.

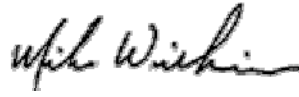
**APPROVALS**

Steve Behm, Director of Engineering Services

**QUALITY ASSURANCE:**

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Joyce Walker, Quality Assurance Administrative  
Manager

**TEST PERSONNEL:**

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Mike Wilkinson, Lab Manager

### FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted Emissions: 150 kHz – 30 MHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz

### EUT Operating Frequency

The EUT was operating at 902-928MHz.

### Temperature And Humidity During Testing

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

### EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

### EQUIPMENT UNDER TEST

#### EUT Power Supply

Manuf: Sports Select USA, Inc.  
Model: D35W120200-02/1  
Serial: 0450YW  
FCC ID: DoC

#### 900MHz Transmitter

Manuf: Sports Select USA, Inc.  
Model: BV900  
Serial: 15481  
FCC ID: M3R-BV900

### PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

#### Input Signal Source

Manuf: HP  
Model: 204D  
Serial: 1105A02034  
FCC ID: DoC

## REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the EUT. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Cable dB	Lisn dB	HPF dB	Att dB				
0.157272	12.9	0.1	0.3	2.0	10.2	25.5	55.6	-30.1	B
0.242355	9.6	0.1	0.3	0.36	10.3	20.6	52.0	-31.4	B
0.620502	3.9	0.1	0.2	0.3	10.3	14.8	46.0	-31.2	B
1.783035	4.2	0.2	0.3	0.14	10.3	15.1	46.0	-30.9	B
9.976770	11.2	0.3	0.4	0.1	10.3	22.3	50.0	-27.7	B
9.976770	7.9	0.3	0.5	0.1	10.3	19.1	50.0	-30.9	W

Test Method: ANSI C63.4 (2003)  
Spec Limit: FCC Part 15 Subpart C Section 15.207

NOTES: B = Black Lead  
W = White Lead

COMMENTS: Equipment is a transmitter operating in the 902-928MHz range that sends audio input signal to local receiver stations. EUT is operating on Channel 1. A 1kHz tone is supplied to the audio input via a support audio oscillator. Audio input is set such that the nominal reference input of 0dB is achieved. Transmit antenna is set vertically. EUT power supply is connected to 120VAC/60Hz AC mains supply via EUT LISN. Frequency Range Investigated: 150kHz to 30MHz. Temperature: 16°C, Relative Humidity: 42%.

## EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

## CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB $\mu$ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB $\mu$ V/m)

## **TEST INSTRUMENTATION AND ANALYZER SETTINGS**

The test instrumentation and equipment listed in Appendix B were used to collect the conducted emissions data. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer.

## **SPECTRUM ANALYZER DETECTOR FUNCTIONS**

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

### **Peak**

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

### **Quasi-Peak**

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

### **Average**

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.



## **EUT TESTING**

### **Mains Conducted Emissions**

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50  $\mu$ H/+50 ohms. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

**APPENDIX A**

**TEST SETUP PHOTOGRAPHS**

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Front View

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Side View

## APPENDIX B

### TEST EQUIPMENT LIST

#### *Conducted Emissions*

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
150kHz HP Filter TTE	G7754	04/20/2004	04/20/2006	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	06/03/2005	06/03/2007	1248 & 1249
10 dB Attenuator 10W	None	08/18/2005	08/18/2007	P04255

**APPENDIX C:**  
**MEASUREMENT DATA SHEETS**

Test Location: CKC Laboratories • 4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Sports Select USA Inc.**

Specification: **FCC 15.207 - AVE**

Work Order #: **84593**

Test Type: **Conducted Emissions**

Equipment: **900MHz Transmitter**

Manufacturer: Sports Select USA, Inc.

Model: BV900

S/N: 15481

Date: 1/2/2006

Time: 2:45:15 PM

Sequence#: 1

Tested By: Mike Wilkinson

120V 60Hz

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
EUT Power Supply	Sports Select USA, Inc.	D35W120200-02/1	0450YW
900MHz Transmitter*	Sports Select USA, Inc.	BV900	15481

**Support Devices:**

Function	Manufacturer	Model #	S/N
Input Signal Source	HP	204D	1105A02034

**Test Conditions / Notes:**

Equipment is a transmitter operating in the 902-928MHz range that sends audio input signal to local receiver stations. EUT is operating on Channel 1. A 1kHz tone is supplied to the audio input via a support audio oscillator. Audio input is set such that the nominal reference input of 0dB is achieved. Transmit antenna is set vertically. EUT power supply is connected to 120VAC/60Hz AC mains supply via EUT LISN. Frequency Range Investigated: 150kHz to 30MHz. Temperature: 16°C, Relative Humidity: 42%.

**Transducer Legend:**

T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n280
T3=HP Filter AN02608	T4=ATT 10d B Site D Conducted

**Measurement Data:**

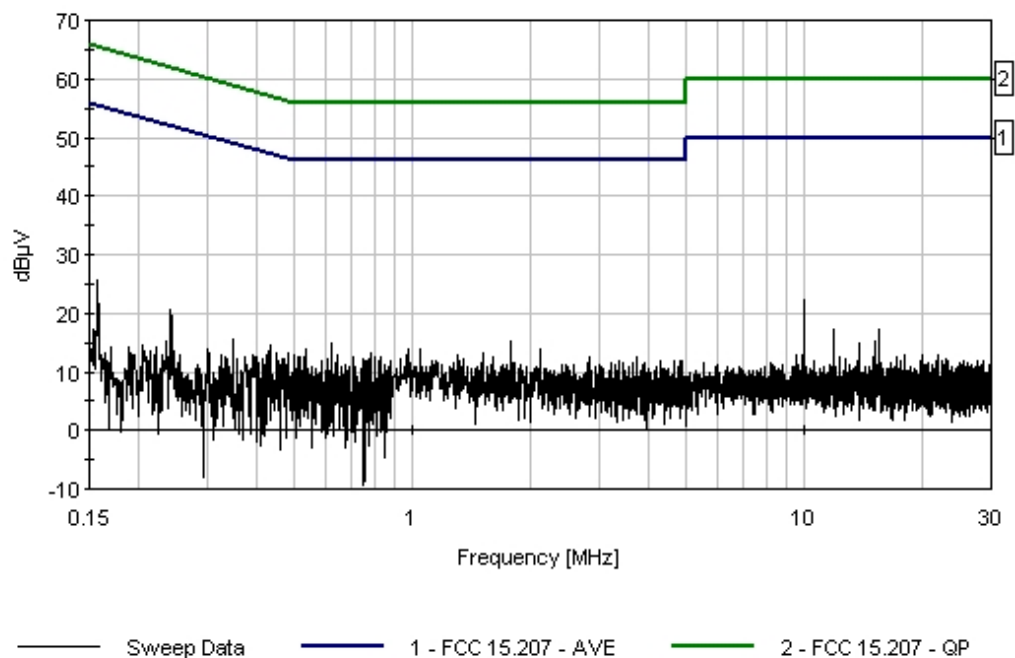
Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	9.977M	11.2	+0.3	+0.4	+0.1	+10.3	+0.0	22.3	50.0	-27.7	Black
2	157.272k	12.9	+0.1	+0.3	+2.0	+10.2	+0.0	25.5	55.6	-30.1	Black
3	1.783M	4.2	+0.2	+0.3	+0.1	+10.3	+0.0	15.1	46.0	-30.9	Black
4	620.502k	3.9	+0.1	+0.2	+0.3	+10.3	+0.0	14.8	46.0	-31.2	Black
5	242.355k	9.6	+0.1	+0.3	+0.3	+10.3	+0.0	20.6	52.0	-31.4	Black
6	1.052M	3.0	+0.2	+0.3	+0.2	+10.3	+0.0	14.0	46.0	-32.0	Black
7	2.115M	3.1	+0.2	+0.3	+0.1	+10.3	+0.0	14.0	46.0	-32.0	Black
8	533.965k	2.9	+0.1	+0.3	+0.3	+10.3	+0.0	13.9	46.0	-32.1	Black
9	979.270k	2.9	+0.2	+0.3	+0.2	+10.3	+0.0	13.9	46.0	-32.1	Black

10	433.610k	3.7	+0.1	+0.3	+0.2	+10.3	+0.0	14.6	47.2	-32.6	Black
11	786.305k	2.4	+0.1	+0.2	+0.3	+10.3	+0.0	13.3	46.0	-32.7	Black
12	1.043M	2.3	+0.2	+0.3	+0.2	+10.3	+0.0	13.3	46.0	-32.7	Black
13	1.515M	2.4	+0.2	+0.3	+0.1	+10.3	+0.0	13.3	46.0	-32.7	Black
14	15.445M	6.1	+0.4	+0.4	+0.1	+10.3	+0.0	17.3	50.0	-32.7	Black
15	11.896M	5.9	+0.4	+0.4	+0.1	+10.3	+0.0	17.1	50.0	-32.9	Black
16	483.060k	2.2	+0.1	+0.3	+0.2	+10.3	+0.0	13.1	46.3	-33.2	Black
17	497.605k	1.9	+0.1	+0.3	+0.2	+10.3	+0.0	12.8	46.0	-33.2	Black
18	966.512k	1.8	+0.2	+0.3	+0.2	+10.3	+0.0	12.8	46.0	-33.2	Black
19	1.311M	1.8	+0.2	+0.3	+0.2	+10.3	+0.0	12.8	46.0	-33.2	Black
20	640.864k	1.8	+0.1	+0.2	+0.3	+10.3	+0.0	12.7	46.0	-33.3	Black

CKC Laboratories Date: 1/2/2006 Time: 2:45:15 PM Sports Select USA Inc. WO#: 84593  
FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 1  
Sports Select USA, Inc. MN BV900





Test Location: CKC Laboratories • 4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Sports Select USA Inc.**

Specification: **FCC 15.207 - AVE**

Work Order #: **84593**

Test Type: **Conducted Emissions**

Equipment: **900MHz Transmitter**

Manufacturer: Sports Select USA, Inc.

Model: BV900

S/N: 15481

Date: 1/2/2006

Time: 2:43:52 PM

Sequence#: 2

Tested By: Mike Wilkinson

120V 60Hz

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
EUT Power Supply	Sports Select USA, Inc.	D35W120200-02/1	0450YW
900MHz Transmitter*	Sports Select USA, Inc.	BV900	15481

**Support Devices:**

Function	Manufacturer	Model #	S/N
Input Signal Source	HP	204D	1105A02034

**Test Conditions / Notes:**

Equipment is a transmitter operating in the 902-928MHz range that sends audio input signal to local receiver stations. EUT is operating on Channel 1. A 1kHz tone is supplied to the audio input via a support audio oscillator. Audio input is set such that the nominal reference input of 0dB is achieved. Transmit antenna is set vertically. EUT power supply is connected to 120VAC/60Hz AC mains supply via EUT LISN. Frequency Range Investigated: 150kHz to 30MHz. Temperature: 16°C, Relative Humidity: 42%.

**Transducer Legend:**

T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n276
T3=HP Filter AN02608	T4=ATT 10d B Site D Conducted

**Measurement Data:**

Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	9.977M	7.9	+0.3	+0.5	+0.1	+10.3	+0.0	19.1	50.0	-30.9	White
2	507.058k	2.7	+0.1	+0.3	+0.2	+10.3	+0.0	13.6	46.0	-32.4	White
3	577.597k	2.7	+0.1	+0.3	+0.2	+10.3	+0.0	13.6	46.0	-32.4	White
4	680.133k	2.6	+0.1	+0.3	+0.3	+10.3	+0.0	13.6	46.0	-32.4	White
5	423.430k	3.7	+0.1	+0.4	+0.2	+10.3	+0.0	14.7	47.4	-32.7	White
6	595.777k	2.3	+0.1	+0.3	+0.3	+10.3	+0.0	13.3	46.0	-32.7	White
7	156.545k	10.0	+0.1	+0.4	+2.1	+10.2	+0.0	22.8	55.6	-32.8	White
8	651.772k	2.2	+0.1	+0.3	+0.3	+10.3	+0.0	13.2	46.0	-32.8	White
9	474.334k	2.6	+0.1	+0.3	+0.2	+10.3	+0.0	13.5	46.4	-32.9	White

10	536.146k	2.0	+0.1	+0.3	+0.3	+10.3	+0.0	13.0	46.0	-33.0	White
11	802.304k	2.1	+0.1	+0.2	+0.3	+10.3	+0.0	13.0	46.0	-33.0	White
12	497.605k	2.0	+0.1	+0.3	+0.2	+10.3	+0.0	12.9	46.0	-33.1	White
13	911.227k	1.8	+0.2	+0.3	+0.2	+10.3	+0.0	12.8	46.0	-33.2	White
14	300.532k	5.8	+0.1	+0.3	+0.2	+10.3	+0.0	16.7	50.2	-33.5	White
15	616.139k	1.5	+0.1	+0.3	+0.3	+10.3	+0.0	12.5	46.0	-33.5	White
16	811.030k	1.6	+0.1	+0.2	+0.3	+10.3	+0.0	12.5	46.0	-33.5	White
17	566.689k	1.5	+0.1	+0.3	+0.2	+10.3	+0.0	12.4	46.0	-33.6	White
18	628.502k	1.2	+0.1	+0.3	+0.3	+10.3	+0.0	12.2	46.0	-33.8	White
19	1.838M	1.2	+0.2	+0.4	+0.1	+10.3	+0.0	12.2	46.0	-33.8	White
20	1.336M	1.1	+0.2	+0.3	+0.2	+10.3	+0.0	12.1	46.0	-33.9	White

CKC Laboratories Date: 1/2/2006 Time: 2:43:52 PM Sports Select USA Inc. WO#: 84593  
FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 2  
Sports Select USA, Inc. MN BV900

