

EMC EMISSIONS - TEST REPORT (Full)

Test Report No. **3151965DEN-002R** Issue Date: **Thursday 22/May/2008**

Model / Serial No. **MN: BR-003-02 /SN: 50015**

Product Type **2 way IR/RF Remote Control**

Client **BOCS**

Manufacturer **BOCS**

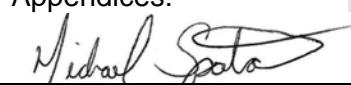
License holder **BOCS**


Address **1685 38th St.
Boulder, CO 80301**

Test Criteria Applied **FCC 47 CFR Part 15.249**
Test Result **IC RSS-210**
PASS
Test Project Number **3151965**
References
Total Pages
Including
Appendices: **33**

Title 47 CFR 15: RADIO FREQUENCY
DEVICES

Low-power Licence-exempt
Radiocommunication Devices
(All Frequency Bands):
Category 1 Equipment.


Tested By : Michael Spataro


Reviewed By :

REVISION SUMMARY - The following changes have been made to this Report:

Rev.	Revision Statement	Author	Revision Date
	Initial Release of Document	See above	See above

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Lab Code:200264-0

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STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty for Conducted Emissions in the frequency range of 150kHz – 30MHz is calculated to be $\pm 2.30\text{dB}$ and for Radiated Emissions is calculated to be $\pm 3.60\text{dB}$ in the frequency range of 30MHz – 200MHz and $\pm 3.38\text{dB}$ in the frequency range of 200MHz – 1000MHz.

EUT Received Date: 12-May-2008

Testing Start Date: 12-May-2008

Testing End Date: 15-May-2008

The tests were performed according to following regulations:

1. FCC CFR47 Part 15 subpart C
2. IC RSS-210 Issue 7:2007

Emission Test Results:

Conducted Emissions 15.207 - NA

Test Result

Minimum limit margin NA dB at NA MHz

Remarks: EUT is battery powered

Radiated Unintentional and Spurious Emissions 15.249(d) /15.205 - PASS

Test Result

Minimum limit margin -5.7 dB at 36.10 MHz

Remarks: _____

Field Strength of the Fundamental 15.249(a) - PASS

Test Result

Minimum limit margin -0.2 dB at 924.74 MHz

Remarks: High Channel

Field Strength of Harmonics 15.249(a) - PASS

Test Result

Minimum limit margin -0.2 dB at 5431.5 MHz

Remarks: Low Channel

GENERAL REMARKS:

The following remarks are to be considered as “where applicable” and are taken into account while completing any FCC/IC/ETSI radio tests at Intertek, ETL Semko.

Testing was performed in 3 different orthogonal axis to determine the worst case emissions from the device. The worst case emissions measurements are shown in this report.

FCC CFR47 Part 15.31: Measurement Standards: In any case where the device is powered off a battery, a fresh battery was used during test. In cases where the device is powered off an AC supply, voltage was varied per Part 15.31 to find worst case emissions.

FCC CFR47 Part 15.35: Measurement Detector Functions and Bandwidths: FCC Part 15.35 was utilized when performing the measurements within this report.

EUT is battery powered.

Sample:

☒ Production ☐ Prototype ☐ See RFQ

Modifications required to pass: None

Test Specification Deviations: Additions to or Exclusions from: None

Test-setup photo(s):
Radiated Intentional Emissions:



Test-setup photo(s):
Radiated Intentional Emissions:



Test-setup photo(s):
Radiated Emissions:



Test-setup photo(s):
Radiated Emissions:



Appendix A

Test Data Sheets and Test Equipment Used

**Spurious Emissions
And
Unintentional Emissions**

15.249(d)/15.205

Radiated Electromagnetic Emissions

Test Report #:	3151965 Run 04	Test Area:	Pinewood Site 1 (3m)
Test Method:	FCC Part 15.209	Test Date:	14-May-2008
EUT Model #:	XG-002-001 (Settop Box); BR-003-02 (Remote)	EUT Power:	120VAC; 60Hz; 3VDC Battery
EUT Serial #:	50001; 50015		
Manufacturer:	BOCS		
EUT Description:	Settop Box and Remote		
Notes:	Settop Box and Remote were tested at the same time.		

Temperature:	22.6	°C
Relative Humidity:	25	%
Air Pressure:	102	kPa

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
34.68	47.7 Qp	0.6 / 12.1 / 28.2	32.1	V / 1.0 / 0.0	-7.9	-7.9
53.71	47.2 Qp	0.7 / 9.3 / 28.2	29.0	V / 1.0 / 0.0	-11.0	-11.0
68.85	50.7 Qp	0.8 / 8.3 / 28.2	31.7	V / 1.0 / 0.0	-8.3	-8.3
86.61	48.8 Qp	1.0 / 7.1 / 28.1	28.8	V / 1.0 / 0.0	-11.2	-11.2
118.12	48.8 Qp	1.2 / 11.3 / 27.9	33.2	V / 1.0 / 0.0	-10.3	-10.8
180.84	40.5 Qp	1.4 / 12.4 / 27.5	26.9	V / 1.0 / 0.0	-16.6	-17.1
121.00	49.0 Qp	1.2 / 11.5 / 27.9	33.7	V / 1.0 / 0.0	-9.8	-10.3
72.46	50.1 Qp	0.8 / 7.9 / 28.1	30.7	V / 1.0 / 0.0	-9.3	-9.3
36.10	48.5 Qp	0.6 / 11.9 / 28.2	32.8	V / 1.0 / 0.0	-7.2	-7.2
36.10	49.6 Qp	0.6 / 11.9 / 28.2	33.9	V / 1.0 / 90.0	-6.1	-6.1
86.61	48.9 Qp	1.0 / 7.1 / 28.1	28.8	V / 1.0 / 90.0	-11.2	-11.2
118.12	52.2 Qp	1.2 / 11.3 / 27.9	36.7	V / 1.0 / 90.0	-6.8	-7.3
121.00	52.6 Qp	1.2 / 11.5 / 27.9	37.4	V / 1.0 / 90.0	-6.1	-6.6
180.84	41.5 Qp	1.4 / 12.4 / 27.5	27.9	V / 1.0 / 90.0	-15.6	-16.1
72.46	51.8 Qp	0.8 / 7.9 / 28.1	32.4	V / 1.0 / 180.0	-7.6	-7.6
80.98	48.6 Qp	0.9 / 6.8 / 28.1	28.2	V / 1.0 / 180.0	-11.8	-11.8
161.98	47.2 Qp	1.4 / 12.0 / 27.7	32.9	V / 1.0 / 180.0	-10.6	-11.1
188.98	39.0 Qp	1.4 / 12.7 / 27.5	25.6	V / 1.0 / 180.0	-17.9	-18.4
161.98	48.9 Qp	1.4 / 12.0 / 27.7	34.6	V / 1.0 / 270.0	-8.9	-9.4
134.98	48.5 Qp	1.3 / 12.3 / 27.8	34.3	V / 1.0 / 270.0	-9.2	-9.7
The following are maximized.						
36.10	50.0 Qp	0.6 / 11.9 / 28.2	34.3	V / 1.0 / 162.3	-5.7	-5.7
72.46	52.1 Qp	0.8 / 7.9 / 28.1	32.7	V / 1.0 / 237.3	-7.3	-7.3
118.12	52.6 Qp	1.2 / 11.3 / 27.9	37.1	V / 1.0 / 99.6	-6.4	-6.9
121.00	52.3 Qp	1.2 / 11.5 / 27.9	37.0	V / 1.0 / 111.8	-6.5	-7.0
No higher emissions found between 30 and 200MHz at 0 degrees horizontal.						

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
188.98	38.7 Qp	1.4 / 12.7 / 27.5	25.3	H / 2.5 / 90.0	-18.2	-18.7
No higher emissions found between 30 and 200MHz at 180 degrees horizontal.						
No higher emissions found between 30 and 200MHz at 270 degrees horizontal.						
The following emission is maximized.						
188.98	41.8 Qp	1.4 / 12.7 / 27.5	28.4	H / 1.8 / 122.3	-15.1	-15.6
216.00	45.0 Qp	1.6 / 11.1 / 27.3	30.3	V / 1.0 / 0.0	-13.2	-13.7
243.00	37.4 Qp	1.7 / 11.8 / 27.2	23.7	V / 1.0 / 0.0	-22.3	-22.3
270.00	27.4 Qp	1.8 / 12.5 / 27.0	14.7	V / 1.0 / 0.0	-31.3	-31.3
296.98	28.4 Qp	1.9 / 13.7 / 27.1	16.9	V / 1.0 / 0.0	-29.1	-29.1
323.99	28.2 Qp	2.0 / 14.1 / 27.1	17.2	V / 1.0 / 0.0	-28.8	-28.8
350.99	29.1 Qp	2.1 / 14.4 / 27.4	18.2	V / 1.0 / 0.0	-27.8	-27.8
377.99	28.1 Qp	2.1 / 15.0 / 27.7	17.6	V / 1.0 / 0.0	-28.4	-28.4
404.99	29.2 Qp	2.2 / 15.5 / 27.7	19.2	V / 1.0 / 0.0	-26.8	-26.8
431.96	34.0 Qp	2.3 / 16.1 / 28.0	24.4	V / 1.0 / 0.0	-21.6	-21.6
458.99	31.0 Qp	2.5 / 16.7 / 28.2	22.0	V / 1.0 / 0.0	-24.0	-24.0
513.00	35.9 Qp	2.6 / 18.0 / 28.3	28.1	V / 1.0 / 0.0	-17.9	-17.9
540.00	30.0 Qp	2.6 / 17.9 / 28.3	22.2	V / 1.0 / 0.0	-23.8	-23.8
567.00	34.2 Qp	2.7 / 18.4 / 28.4	26.9	V / 1.0 / 0.0	-19.1	-19.1
621.00	33.8 Qp	2.9 / 19.3 / 28.2	27.7	V / 1.0 / 0.0	-18.3	-18.3
648.01	29.9 Qp	3.0 / 20.0 / 28.3	24.5	V / 1.0 / 0.0	-21.5	-21.5
675.01	26.3 Qp	3.1 / 21.0 / 28.1	22.3	V / 1.0 / 0.0	-23.7	-23.7
702.01	27.1 Qp	3.3 / 21.2 / 28.0	23.5	V / 1.0 / 0.0	-22.5	-22.5
809.97	24.6 Qp	3.3 / 21.6 / 27.8	21.7	V / 1.0 / 0.0	-24.3	-24.3
836.97	26.6 Qp	3.4 / 21.9 / 27.8	24.1	V / 1.0 / 0.0	-21.9	-21.9
917.97	26.7 Qp	3.6 / 22.8 / 27.4	25.7	V / 1.0 / 0.0	-20.3	-20.3
971.97	25.2 Qp	3.7 / 23.4 / 27.3	25.0	V / 1.0 / 0.0	-29.0	-21.0
239.99	33.6 Qp	1.7 / 11.5 / 27.2	19.7	V / 1.0 / 0.0	-26.3	-26.3
263.98	30.4 Qp	1.8 / 12.7 / 27.0	17.8	V / 1.0 / 0.0	-28.2	-28.2
287.98	38.5 Qp	1.9 / 13.2 / 27.1	26.6	V / 1.0 / 0.0	-19.4	-19.4
311.98	25.8 Qp	1.9 / 14.8 / 27.0	15.5	V / 1.0 / 0.0	-30.5	-30.5
335.98	41.6 Qp	2.0 / 14.2 / 27.2	30.6	V / 1.0 / 0.0	-15.4	-15.4
359.98	43.0 Qp	2.1 / 14.8 / 27.3	32.6	V / 1.0 / 0.0	-13.4	-13.4
383.98	38.8 Qp	2.1 / 15.0 / 27.7	28.2	V / 1.0 / 0.0	-17.8	-17.8
407.98	33.4 Qp	2.2 / 15.5 / 27.8	23.3	V / 1.0 / 0.0	-22.7	-22.7
431.98	34.0 Qp	2.3 / 16.1 / 28.0	24.5	V / 1.0 / 0.0	-21.5	-21.5
455.98	31.5 Qp	2.5 / 16.6 / 28.1	22.4	V / 1.0 / 0.0	-23.6	-23.6
575.98	27.6 Qp	2.8 / 18.5 / 28.4	20.6	V / 1.0 / 0.0	-25.4	-25.4
959.98	26.8 Qp	3.7 / 23.1 / 27.3	26.2	V / 1.0 / 0.0	-19.8	-19.8
351.98	30.8 Qp	2.1 / 14.5 / 27.4	19.9	V / 1.0 / 0.0	-26.1	-26.1
399.97	28.1 Qp	2.2 / 15.4 / 27.7	18.0	V / 1.0 / 0.0	-28.0	-28.0
339.98	29.9 Qp	2.0 / 14.3 / 27.3	18.8	V / 1.0 / 0.0	-27.2	-27.2
343.98	28.3 Qp	2.0 / 14.3 / 27.3	17.4	V / 1.0 / 0.0	-28.6	-28.6
347.98	30.1 Qp	2.1 / 14.4 / 27.4	19.1	V / 1.0 / 0.0	-26.9	-26.9

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
355.99	32.2 Qp	2.1 / 14.5 / 27.4	21.4	V / 1.0 / 0.0	-24.6	-24.6
363.99	28.3 Qp	2.1 / 15.5 / 27.5	18.5	V / 1.0 / 0.0	-27.5	-27.5
371.98	27.5 Qp	2.1 / 15.8 / 27.5	17.9	V / 1.0 / 0.0	-28.1	-28.1
572.06	31.9 Qp	2.8 / 18.5 / 28.3	24.8	V / 1.0 / 0.0	-21.2	-21.2
345.93	29.6 Qp	2.1 / 14.4 / 27.3	18.6	V / 1.0 / 0.0	-27.4	-27.4
347.62	33.5 Qp	2.1 / 14.4 / 27.4	22.6	V / 1.0 / 0.0	-23.4	-23.4
349.31	34.5 Qp	2.1 / 14.4 / 27.4	23.5	V / 1.0 / 0.0	-22.5	-22.5
354.36	34.9 Qp	2.1 / 14.5 / 27.3	24.1	V / 1.0 / 0.0	-21.9	-21.9
389.71	30.4 Qp	2.2 / 15.1 / 27.7	19.9	V / 1.0 / 0.0	-26.1	-26.1
396.55	32.6 Qp	2.2 / 15.3 / 27.7	22.4	V / 1.0 / 0.0	-23.6	-23.6
403.31	32.5 Qp	2.2 / 15.4 / 27.7	22.5	V / 1.0 / 0.0	-23.5	-23.5
545.06	36.5 Qp	2.6 / 17.9 / 28.3	28.7	V / 1.0 / 0.0	-17.3	-17.3
551.81	36.8 Qp	2.7 / 18.0 / 28.4	29.1	V / 1.0 / 0.0	-16.9	-16.9
558.57	35.6 Qp	2.7 / 18.2 / 28.3	28.2	V / 1.0 / 0.0	-17.8	-17.8
216.00	45.2 Qp	1.6 / 11.1 / 27.3	30.6	V / 1.0 / 90.0	-12.9	-13.4
239.99	36.7 Qp	1.7 / 11.5 / 27.2	22.7	V / 1.0 / 90.0	-23.3	-23.3
296.98	29.7 Qp	1.9 / 13.7 / 27.1	18.2	V / 1.0 / 90.0	-27.8	-27.8
311.98	29.3 Qp	1.9 / 14.8 / 27.0	19.0	V / 1.0 / 90.0	-27.0	-27.0
345.93	30.6 Qp	2.1 / 14.4 / 27.3	19.7	V / 1.0 / 90.0	-26.3	-26.3
347.62	36.1 Qp	2.1 / 14.4 / 27.4	25.2	V / 1.0 / 90.0	-20.8	-20.8
349.31	36.5 Qp	2.1 / 14.4 / 27.4	25.5	V / 1.0 / 90.0	-20.5	-20.5
351.98	31.7 Qp	2.1 / 14.5 / 27.4	20.8	V / 1.0 / 90.0	-25.2	-25.2
404.99	30.1 Qp	2.2 / 15.5 / 27.7	20.0	V / 1.0 / 90.0	-26.0	-26.0
407.98	34.0 Qp	2.2 / 15.5 / 27.8	23.9	V / 1.0 / 90.0	-22.1	-22.1
455.98	33.8 Qp	2.5 / 16.6 / 28.1	24.7	V / 1.0 / 90.0	-21.3	-21.3
311.98	30.8 Qp	1.9 / 14.8 / 27.0	20.5	V / 1.0 / 180.0	-25.5	-25.5
323.99	30.0 Qp	2.0 / 14.1 / 27.1	19.0	V / 1.0 / 180.0	-27.0	-27.0
335.98	42.9 Qp	2.0 / 14.2 / 27.2	31.9	V / 1.0 / 180.0	-14.1	-14.1
345.93	34.5 Qp	2.1 / 14.4 / 27.3	23.5	V / 1.0 / 180.0	-22.5	-22.5
347.62	39.5 Qp	2.1 / 14.4 / 27.4	28.6	V / 1.0 / 180.0	-17.4	-17.4
349.31	39.5 Qp	2.1 / 14.4 / 27.4	28.6	V / 1.0 / 180.0	-17.4	-17.4
350.99	32.9 Qp	2.1 / 14.4 / 27.4	22.0	V / 1.0 / 180.0	-24.0	-24.0
354.36	37.0 Qp	2.1 / 14.5 / 27.3	26.3	V / 1.0 / 180.0	-19.7	-19.7
356.06	37.0 Qp	2.1 / 14.5 / 27.4	26.1	V / 1.0 / 180.0	-19.9	-19.9
377.99	31.8 Qp	2.1 / 15.0 / 27.7	21.2	V / 1.0 / 180.0	-24.8	-24.8
404.99	31.8 Qp	2.2 / 15.5 / 27.7	21.8	V / 1.0 / 180.0	-24.2	-24.2
431.98	36.4 Qp	2.3 / 16.1 / 28.0	26.9	V / 1.0 / 180.0	-19.1	-19.1
455.98	37.0 Qp	2.5 / 16.6 / 28.1	27.9	V / 1.0 / 180.0	-18.1	-18.1
342.56	38.5 Qp	2.0 / 14.3 / 27.3	27.5	V / 1.0 / 180.0	-18.5	-18.5
416.81	36.6 Qp	2.3 / 15.7 / 27.8	26.9	V / 1.0 / 180.0	-19.1	-19.1
421.87	36.0 Qp	2.3 / 15.9 / 27.8	26.4	V / 1.0 / 180.0	-19.6	-19.6
423.57	36.4 Qp	2.3 / 15.9 / 27.9	26.7	V / 1.0 / 180.0	-19.3	-19.3
428.63	35.6 Qp	2.3 / 16.0 / 27.9	26.0	V / 1.0 / 180.0	-20.0	-20.0
430.32	34.7 Qp	2.3 / 16.1 / 27.9	25.2	V / 1.0 / 180.0	-20.8	-20.8
435.38	34.0 Qp	2.4 / 16.2 / 28.0	24.6	V / 1.0 / 180.0	-21.4	-21.4

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
437.06	33.4 Qp	2.4 / 16.2 / 28.0	24.0	V / 1.0 / 180.0	-22.0	-22.0
442.12	33.3 Qp	2.4 / 16.4 / 28.0	24.1	V / 1.0 / 180.0	-21.9	-21.9
443.81	33.8 Qp	2.4 / 16.4 / 28.0	24.6	V / 1.0 / 180.0	-21.4	-21.4
448.88	34.0 Qp	2.4 / 16.5 / 28.1	24.8	V / 1.0 / 180.0	-21.2	-21.2
450.56	35.4 Qp	2.4 / 16.5 / 28.1	26.3	V / 1.0 / 180.0	-19.7	-19.7
347.98	30.6 Qp	2.1 / 14.4 / 27.4	19.6	V / 1.0 / 180.0	-26.4	-26.4
263.98	32.7 Qp	1.8 / 12.7 / 27.0	20.1	V / 1.0 / 270.0	-25.9	-25.9
270.00	29.7 Qp	1.8 / 12.5 / 27.0	17.0	V / 1.0 / 270.0	-29.0	-29.0
356.06	34.6 Qp	2.1 / 14.5 / 27.4	23.8	V / 1.0 / 270.0	-22.2	-22.2
407.98	39.0 Qp	2.2 / 15.5 / 27.8	28.9	V / 1.0 / 270.0	-17.1	-17.1
The following are maximized.						
216.00	46.6 Qp	1.6 / 11.1 / 27.3	32.0	V / 1.0 / 13.1	-11.5	-12.0
335.98	43.4 Qp	2.0 / 14.2 / 27.2	32.4	V / 1.0 / 191.3	-13.6	-13.6
359.98	42.2 Qp	2.1 / 14.8 / 27.3	31.8	V / 1.0 / 17.0	-14.2	-14.2
239.99	39.2 Qp	1.7 / 11.5 / 27.2	25.2	H / 1.6 / 0.0	-20.8	-20.8
243.00	45.2 Qp	1.7 / 11.8 / 27.2	31.5	H / 1.6 / 0.0	-14.5	-14.5
287.98	47.1 Qp	1.9 / 13.2 / 27.1	35.1	H / 1.6 / 0.0	-10.9	-10.9
311.98	34.6 Qp	1.9 / 14.8 / 27.0	24.3	H / 1.6 / 0.0	-21.7	-21.7
371.98	29.4 Qp	2.1 / 15.8 / 27.5	19.7	H / 1.6 / 0.0	-26.3	-26.3
287.98	48.5 Qp	1.9 / 13.2 / 27.1	36.6	H / 2.5 / 0.0	-9.4	-9.4
311.98	35.1 Qp	1.9 / 14.8 / 27.0	24.8	H / 2.5 / 0.0	-21.2	-21.2
216.00	48.6 Qp	1.6 / 11.1 / 27.3	34.0	H / 1.6 / 90.0	-9.5	-10.0
239.99	42.0 Qp	1.7 / 11.5 / 27.2	28.0	H / 1.6 / 90.0	-18.0	-18.0
335.98	45.7 Qp	2.0 / 14.2 / 27.2	34.7	H / 1.6 / 90.0	-11.3	-11.3
455.98	37.7 Qp	2.5 / 16.6 / 28.1	28.6	H / 1.6 / 90.0	-17.4	-17.4
311.98	36.0 Qp	1.9 / 14.8 / 27.0	25.7	H / 1.6 / 180.0	-20.3	-20.3
323.99	31.0 Qp	2.0 / 14.1 / 27.1	20.0	H / 1.6 / 180.0	-26.0	-26.0
347.98	32.5 Qp	2.1 / 14.4 / 27.4	21.6	H / 1.6 / 180.0	-24.4	-24.4
356.06	33.6 Qp	2.1 / 14.5 / 27.4	22.8	H / 1.6 / 180.0	-23.2	-23.2
377.99	32.5 Qp	2.1 / 15.0 / 27.7	21.9	H / 1.6 / 180.0	-24.1	-24.1
450.56	36.8 Qp	2.4 / 16.5 / 28.1	27.7	H / 1.6 / 180.0	-18.3	-18.3
350.99	31.9 Qp	2.1 / 14.4 / 27.4	21.0	H / 2.5 / 270.0	-25.0	-25.0
354.36	36.9 Qp	2.1 / 14.5 / 27.3	26.1	H / 2.5 / 270.0	-19.9	-19.9
356.06	36.9 Qp	2.1 / 14.5 / 27.4	26.0	H / 2.5 / 270.0	-20.0	-20.0
399.97	29.9 Qp	2.2 / 15.4 / 27.7	19.8	H / 2.5 / 270.0	-26.2	-26.2
675.01	28.9 Qp	3.1 / 21.0 / 28.1	24.9	H / 2.5 / 270.0	-21.1	-21.1
270.00	30.8 Qp	1.8 / 12.5 / 27.0	18.1	H / 1.6 / 270.0	-27.9	-27.9
356.06	33.9 Qp	2.1 / 14.5 / 27.4	23.0	H / 1.6 / 270.0	-23.0	-23.0
399.97	31.1 Qp	2.2 / 15.4 / 27.7	21.0	H / 1.6 / 270.0	-25.0	-25.0
The following are maximized.						

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
287.98	48.8 Qp	1.9 / 13.2 / 27.1	36.8	H / 2.6 / 0.0	-9.2	-9.2
216.00	49.9 Qp	1.6 / 11.1 / 27.3	35.2	H / 1.2 / 99.8	-8.3	-8.8
335.98	50.8 Qp	2.0 / 14.2 / 27.2	39.8	H / 1.0 / 108.0	-6.2	-6.2
Antenna is parallel.						
No emissions found between 5 and 30MHz at 0 degrees parallel.						
No emissions found between 5 and 30MHz at 90 degrees parallel.						
No emissions found between 5 and 30MHz at 180 degrees parallel.						
No emissions found between 5 and 30MHz at 270 degrees parallel.						
The following are noise floor.						
6.00	10.1 Qp	0.1 / 10.7 / 0.0	20.9	V / 1.0 / 270.0	-48.6	-19.1
11.00	7.0 Qp	0.2 / 10.7 / 0.0	18.0	V / 1.0 / 270.0	-51.5	-22.0
30.00	6.2 Qp	0.5 / 8.1 / 0.0	14.9	V / 1.0 / 270.0	-25.1	-25.1
No emissions found between 5 and 30MHz at 0 degrees perpendicular.						
No emissions found between 5 and 30MHz at 90 degrees perpendicular.						
No emissions found between 5 and 30MHz at 180 degrees perpendicular.						
No emissions found between 5 and 30MHz at 270 degrees perpendicular.						
The following are noise floor.						
5.00	10.0 Qp	0.2 / 10.5 / 0.0	20.6	V / 1.0 / 270.0	-48.9	-19.4
10.00	8.2 Qp	0.2 / 10.7 / 0.0	19.1	V / 1.0 / 270.0	-50.4	-20.9
25.00	6.6 Qp	0.5 / 9.1 / 0.0	16.2	V / 1.0 / 270.0	-53.3	-23.8

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
***** Measurement Summary *****						
36.10	50.0 Qp	0.6 / 11.9 / 28.2	34.3	V / 1.0 / 162.3	-5.7	-5.7
121.00	52.6 Qp	1.2 / 11.5 / 27.9	37.4	V / 1.0 / 90.0	-6.1	-6.6
335.98	50.8 Qp	2.0 / 14.2 / 27.2	39.8	H / 1.0 / 108.0	-6.2	-6.2
118.12	52.6 Qp	1.2 / 11.3 / 27.9	37.1	V / 1.0 / 99.6	-6.4	-6.9
72.46	52.1 Qp	0.8 / 7.9 / 28.1	32.7	V / 1.0 / 237.3	-7.3	-7.3
34.68	47.7 Qp	0.6 / 12.1 / 28.2	32.1	V / 1.0 / 0.0	-7.9	-7.9
68.85	50.7 Qp	0.8 / 8.3 / 28.2	31.7	V / 1.0 / 0.0	-8.3	-8.3
216.00	49.9 Qp	1.6 / 11.1 / 27.3	35.2	H / 1.2 / 99.8	-8.3	-8.8
161.98	48.9 Qp	1.4 / 12.0 / 27.7	34.6	V / 1.0 / 270.0	-8.9	-9.4
134.98	48.5 Qp	1.3 / 12.3 / 27.8	34.3	V / 1.0 / 270.0	-9.2	-9.7
287.98	48.8 Qp	1.9 / 13.2 / 27.1	36.8	H / 2.6 / 0.0	-9.2	-9.2
53.71	47.2 Qp	0.7 / 9.3 / 28.2	29.0	V / 1.0 / 0.0	-11.0	-11.0
86.61	48.9 Qp	1.0 / 7.1 / 28.1	28.8	V / 1.0 / 90.0	-11.2	-11.2
80.98	48.6 Qp	0.9 / 6.8 / 28.1	28.2	V / 1.0 / 180.0	-11.8	-11.8
359.98	43.0 Qp	2.1 / 14.8 / 27.3	32.6	V / 1.0 / 0.0	-13.4	-13.4
243.00	45.2 Qp	1.7 / 11.8 / 27.2	31.5	H / 1.6 / 0.0	-14.5	-14.5
188.98	41.8 Qp	1.4 / 12.7 / 27.5	28.4	H / 1.8 / 122.3	-15.1	-15.6
180.84	41.5 Qp	1.4 / 12.4 / 27.5	27.9	V / 1.0 / 90.0	-15.6	-16.1
551.81	36.8 Qp	2.7 / 18.0 / 28.4	29.1	V / 1.0 / 0.0	-16.9	-16.9
407.98	39.0 Qp	2.2 / 15.5 / 27.8	28.9	V / 1.0 / 270.0	-17.1	-17.1
545.06	36.5 Qp	2.6 / 17.9 / 28.3	28.7	V / 1.0 / 0.0	-17.3	-17.3
347.62	39.5 Qp	2.1 / 14.4 / 27.4	28.6	V / 1.0 / 180.0	-17.4	-17.4
349.31	39.5 Qp	2.1 / 14.4 / 27.4	28.6	V / 1.0 / 180.0	-17.4	-17.4
455.98	37.7 Qp	2.5 / 16.6 / 28.1	28.6	H / 1.6 / 90.0	-17.4	-17.4
383.98	38.8 Qp	2.1 / 15.0 / 27.7	28.2	V / 1.0 / 0.0	-17.8	-17.8
558.57	35.6 Qp	2.7 / 18.2 / 28.3	28.2	V / 1.0 / 0.0	-17.8	-17.8
513.00	35.9 Qp	2.6 / 18.0 / 28.3	28.1	V / 1.0 / 0.0	-17.9	-17.9
239.99	42.0 Qp	1.7 / 11.5 / 27.2	28.0	H / 1.6 / 90.0	-18.0	-18.0
450.56	36.8 Qp	2.4 / 16.5 / 28.1	27.7	H / 1.6 / 180.0	-18.3	-18.3
621.00	33.8 Qp	2.9 / 19.3 / 28.2	27.7	V / 1.0 / 0.0	-18.3	-18.3
342.56	38.5 Qp	2.0 / 14.3 / 27.3	27.5	V / 1.0 / 180.0	-18.5	-18.5
6.00	10.1 Qp	0.1 / 10.7 / 0.0	20.9	V / 1.0 / 270.0	-48.6	-19.1
416.81	36.6 Qp	2.3 / 15.7 / 27.8	26.9	V / 1.0 / 180.0	-19.1	-19.1
431.98	36.4 Qp	2.3 / 16.1 / 28.0	26.9	V / 1.0 / 180.0	-19.1	-19.1
567.00	34.2 Qp	2.7 / 18.4 / 28.4	26.9	V / 1.0 / 0.0	-19.1	-19.1
423.57	36.4 Qp	2.3 / 15.9 / 27.9	26.7	V / 1.0 / 180.0	-19.3	-19.3
5.00	10.0 Qp	0.2 / 10.5 / 0.0	20.6	V / 1.0 / 270.0	-48.9	-19.4
421.87	36.0 Qp	2.3 / 15.9 / 27.8	26.4	V / 1.0 / 180.0	-19.6	-19.6
354.36	37.0 Qp	2.1 / 14.5 / 27.3	26.3	V / 1.0 / 180.0	-19.7	-19.7
959.98	26.8 Qp	3.7 / 23.1 / 27.3	26.2	V / 1.0 / 0.0	-19.8	-19.8
356.06	37.0 Qp	2.1 / 14.5 / 27.4	26.1	V / 1.0 / 180.0	-19.9	-19.9
428.63	35.6 Qp	2.3 / 16.0 / 27.9	26.0	V / 1.0 / 180.0	-20.0	-20.0
311.98	36.0 Qp	1.9 / 14.8 / 27.0	25.7	H / 1.6 / 180.0	-20.3	-20.3
917.97	26.7 Qp	3.6 / 22.8 / 27.4	25.7	V / 1.0 / 0.0	-20.3	-20.3

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 <1GHz	BETS-7 <1GHz
430.32	34.7 Qp	2.3 / 16.1 / 27.9	25.2	V / 1.0 / 180.0	-20.8	-20.8
10.00	8.2 Qp	0.2 / 10.7 / 0.0	19.1	V / 1.0 / 270.0	-50.4	-20.9
971.97	25.2 Qp	3.7 / 23.4 / 27.3	25.0	V / 1.0 / 0.0	-29.0	-21.0
675.01	28.9 Qp	3.1 / 21.0 / 28.1	24.9	H / 2.5 / 270.0	-21.1	-21.1
448.88	34.0 Qp	2.4 / 16.5 / 28.1	24.8	V / 1.0 / 180.0	-21.2	-21.2
572.06	31.9 Qp	2.8 / 18.5 / 28.3	24.8	V / 1.0 / 0.0	-21.2	-21.2
435.38	34.0 Qp	2.4 / 16.2 / 28.0	24.6	V / 1.0 / 180.0	-21.4	-21.4
443.81	33.8 Qp	2.4 / 16.4 / 28.0	24.6	V / 1.0 / 180.0	-21.4	-21.4
648.01	29.9 Qp	3.0 / 20.0 / 28.3	24.5	V / 1.0 / 0.0	-21.5	-21.5
442.12	33.3 Qp	2.4 / 16.4 / 28.0	24.1	V / 1.0 / 180.0	-21.9	-21.9
836.97	26.6 Qp	3.4 / 21.9 / 27.8	24.1	V / 1.0 / 0.0	-21.9	-21.9
11.00	7.0 Qp	0.2 / 10.7 / 0.0	18.0	V / 1.0 / 270.0	-51.5	-22.0
437.06	33.4 Qp	2.4 / 16.2 / 28.0	24.0	V / 1.0 / 180.0	-22.0	-22.0
345.93	34.5 Qp	2.1 / 14.4 / 27.3	23.5	V / 1.0 / 180.0	-22.5	-22.5
702.01	27.1 Qp	3.3 / 21.2 / 28.0	23.5	V / 1.0 / 0.0	-22.5	-22.5
403.31	32.5 Qp	2.2 / 15.4 / 27.7	22.5	V / 1.0 / 0.0	-23.5	-23.5
396.55	32.6 Qp	2.2 / 15.3 / 27.7	22.4	V / 1.0 / 0.0	-23.6	-23.6
25.00	6.6 Qp	0.5 / 9.1 / 0.0	16.2	V / 1.0 / 270.0	-53.3	-23.8
540.00	30.0 Qp	2.6 / 17.9 / 28.3	22.2	V / 1.0 / 0.0	-23.8	-23.8
350.99	32.9 Qp	2.1 / 14.4 / 27.4	22.0	V / 1.0 / 180.0	-24.0	-24.0
458.99	31.0 Qp	2.5 / 16.7 / 28.2	22.0	V / 1.0 / 0.0	-24.0	-24.0
377.99	32.5 Qp	2.1 / 15.0 / 27.7	21.9	H / 1.6 / 180.0	-24.1	-24.1
404.99	31.8 Qp	2.2 / 15.5 / 27.7	21.8	V / 1.0 / 180.0	-24.2	-24.2
809.97	24.6 Qp	3.3 / 21.6 / 27.8	21.7	V / 1.0 / 0.0	-24.3	-24.3
347.98	32.5 Qp	2.1 / 14.4 / 27.4	21.6	H / 1.6 / 180.0	-24.4	-24.4
355.99	32.2 Qp	2.1 / 14.5 / 27.4	21.4	V / 1.0 / 0.0	-24.6	-24.6
399.97	31.1 Qp	2.2 / 15.4 / 27.7	21.0	H / 1.6 / 270.0	-25.0	-25.0
30.00	6.2 Qp	0.5 / 8.1 / 0.0	14.9	V / 1.0 / 270.0	-25.1	-25.1
351.98	31.7 Qp	2.1 / 14.5 / 27.4	20.8	V / 1.0 / 90.0	-25.2	-25.2
575.98	27.6 Qp	2.8 / 18.5 / 28.4	20.6	V / 1.0 / 0.0	-25.4	-25.4
263.98	32.7 Qp	1.8 / 12.7 / 27.0	20.1	V / 1.0 / 270.0	-25.9	-25.9
323.99	31.0 Qp	2.0 / 14.1 / 27.1	20.0	H / 1.6 / 180.0	-26.0	-26.0
389.71	30.4 Qp	2.2 / 15.1 / 27.7	19.9	V / 1.0 / 0.0	-26.1	-26.1
371.98	29.4 Qp	2.1 / 15.8 / 27.5	19.7	H / 1.6 / 0.0	-26.3	-26.3
339.98	29.9 Qp	2.0 / 14.3 / 27.3	18.8	V / 1.0 / 0.0	-27.2	-27.2
363.99	28.3 Qp	2.1 / 15.5 / 27.5	18.5	V / 1.0 / 0.0	-27.5	-27.5
296.98	29.7 Qp	1.9 / 13.7 / 27.1	18.2	V / 1.0 / 90.0	-27.8	-27.8
270.00	30.8 Qp	1.8 / 12.5 / 27.0	18.1	H / 1.6 / 270.0	-27.9	-27.9
343.98	28.3 Qp	2.0 / 14.3 / 27.3	17.4	V / 1.0 / 0.0	-28.6	-28.6

Radiated Electromagnetic Emissions

Test Report #:	3151965 Run 03	Test Area:	Pinewood Site 1 (3m)
Test Method:	FCC Part 15.209	Test Date:	13-May-2008
EUT Model #:	XG-002-001 (Settop Box); BR-003-02 (Remote)	EUT Power:	120VAC; 60Hz; 3VDC Battery
EUT Serial #:	50001; 50015		
Manufacturer:	BOCS		
EUT Description:	Settop Box and Remote		
Notes:	Settop Box and Remote were tested at the same time.		

Temperature:	19.9	°C
Relative Humidity:	32.3	%
Air Pressure:	102	kPa

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	15.209 >1GHz	BETS-7 >1GHz
No emissions found between 8 and 13GHz vertical.						
The following are noise floor.						
8000.00	41.9 Av	7.6 / 37.1 / 46.8	39.8	V / 1.0 / 0.0	-14.2	-26.2
11000.0	43.5 Av	9.2 / 37.8 / 48.8	41.7	V / 1.0 / 0.0	-12.3	-24.3
13000.0	42.2 Av	0.7 / 39.6 / 46.9	35.7	V / 1.0 / 0.0	-18.3	-30.3
No emissions were found between 8 and 13GHz horizontal.						
The following are noise floor.						
8500.00	43.3 Av	8.2 / 37.0 / 48.0	40.6	H / 1.0 / 0.0	-13.4	-25.4
10000.0	44.9 Av	8.8 / 38.1 / 49.3	42.4	H / 1.0 / 0.0	-11.6	-23.6
12000.0	41.9 Av	0.5 / 38.9 / 46.0	35.3	H / 1.0 / 0.0	-18.7	-30.7
No emissions were found between 4 and 8GHz horizontal.						
The following are noise floor.						
4000.00	33.5 Av	4.8 / 32.4 / 39.9	30.7	H / 1.0 / 0.0	-23.3	-25.3
6000.00	32.6 Av	6.2 / 35.1 / 39.9	34.0	H / 1.0 / 0.0	-20.0	-32.0
7500.00	32.1 Av	7.5 / 36.6 / 39.5	36.7	H / 1.0 / 0.0	-17.3	-29.3
The following 2 emissions were the only emissions found between 4 and 8GHz vertical.						
5469.42	34.8 Av	6.1 / 34.4 / 40.0	35.3	V / 1.0 / 173.8	-18.7	-30.7
5430.42	35.5 Av	6.1 / 34.4 / 39.9	36.0	V / 1.0 / 181.1	-18.0	-30.0
1555.90	36.5 Av	2.6 / 25.3 / 37.3	27.0	V / 1.0 / 0.0	-27.0	-29.0
1619.79	35.0 Av	2.6 / 25.6 / 37.4	25.7	V / 1.0 / 0.0	-28.3	-30.3
1625.00	35.1 Av	2.6 / 25.6 / 37.5	25.9	V / 1.0 / 0.0	-28.1	-30.1
No higher emissions found between 1 and 2GHz at 90 degrees vertical.						
1619.79	35.0 Av	2.6 / 25.6 / 37.4	25.7	V / 1.0 / 180.0	-28.3	-30.3
1187.94	36.6 Av	2.2 / 24.4 / 38.3	25.0	V / 1.0 / 270.0	-29.0	-31.0
No emissions between 1 and 2 GHz within 25dB of the limit vertical.						

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	15.209 >1GHz	BETS-7 >1GHz
No emissions found between 2 and 4GHz vertical.						
The following are noise floor.						
2000.00	35.8 Av	3.0 / 27.2 / 38.1	27.8	V / 1.0 / 270.0	-26.2	-28.2
3000.00	36.1 Av	3.8 / 30.9 / 38.1	32.7	V / 1.0 / 270.0	-21.3	-23.3
3950.00	35.0 Av	4.7 / 32.3 / 37.2	34.7	V / 1.0 / 270.0	-19.3	-21.3
1619.79	35.0 Av	2.6 / 25.6 / 37.4	25.7	H / 1.0 / 0.0	-28.3	-30.3
No higher emissions found between 1and 2GHz at 90 degrees horizontal.						
No higher emissions found between 1and 2GHz at 180 degrees horizontal.						
1555.90	36.2 Av	2.6 / 25.3 / 37.3	26.8	H / 1.0 / 270.0	-27.2	-29.2
No emissions between 1 and 2GHz were within 25dB of the limit horizontal.						
No emissions found between 2and 4GHz horizontal.						
The following are noise floor.						
2500.00	36.3 Av	3.2 / 28.8 / 38.5	29.8	H / 1.0 / 270.0	-24.2	-26.2
3250.00	35.7 Av	4.1 / 31.2 / 38.0	32.9	H / 1.0 / 270.0	-21.1	-23.1
3750.00	35.5 Av	4.6 / 31.9 / 38.3	33.6	H / 1.0 / 270.0	-20.4	-22.4

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA1 (dB)	DELTA2 (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV)	(m) (DEG)	15.209 >1GHz	BETS-7 >1GHz
***** Measurement Summary *****						
10000.0	44.9 Av	8.8 / 38.1 / 49.3	42.4	H / 1.0 / 0.0	-11.6	-23.6
11000.0	43.5 Av	9.2 / 37.8 / 48.8	41.7	V / 1.0 / 0.0	-12.3	-24.3
8500.00	43.3 Av	8.2 / 37.0 / 48.0	40.6	H / 1.0 / 0.0	-13.4	-25.4
8000.00	41.9 Av	7.6 / 37.1 / 46.8	39.8	V / 1.0 / 0.0	-14.2	-26.2
7500.00	32.1 Av	7.5 / 36.6 / 39.5	36.7	H / 1.0 / 0.0	-17.3	-29.3
5430.42	35.5 Av	6.1 / 34.4 / 39.9	36.0	V / 1.0 / 181.1	-18.0	-30.0
13000.0	42.2 Av	0.7 / 39.6 / 46.9	35.7	V / 1.0 / 0.0	-18.3	-30.3
5469.42	34.8 Av	6.1 / 34.4 / 40.0	35.3	V / 1.0 / 173.8	-18.7	-30.7
12000.0	41.9 Av	0.5 / 38.9 / 46.0	35.3	H / 1.0 / 0.0	-18.7	-30.7
3950.00	35.0 Av	4.7 / 32.3 / 37.2	34.7	V / 1.0 / 270.0	-19.3	-21.3
6000.00	32.6 Av	6.2 / 35.1 / 39.9	34.0	H / 1.0 / 0.0	-20.0	-32.0
3750.00	35.5 Av	4.6 / 31.9 / 38.3	33.6	H / 1.0 / 270.0	-20.4	-22.4
3250.00	35.7 Av	4.1 / 31.2 / 38.0	32.9	H / 1.0 / 270.0	-21.1	-23.1
3000.00	36.1 Av	3.8 / 30.9 / 38.1	32.7	V / 1.0 / 270.0	-21.3	-23.3
4000.00	33.5 Av	4.8 / 32.4 / 39.9	30.7	H / 1.0 / 0.0	-23.3	-25.3
2500.00	36.3 Av	3.2 / 28.8 / 38.5	29.8	H / 1.0 / 270.0	-24.2	-26.2
2000.00	35.8 Av	3.0 / 27.2 / 38.1	27.8	V / 1.0 / 270.0	-26.2	-28.2
1555.90	36.5 Av	2.6 / 25.3 / 37.3	27.0	V / 1.0 / 0.0	-27.0	-29.0
1625.00	35.1 Av	2.6 / 25.6 / 37.5	25.9	V / 1.0 / 0.0	-28.1	-30.1
1619.79	35.0 Av	2.6 / 25.6 / 37.4	25.7	H / 1.0 / 0.0	-28.3	-30.3
1187.94	36.6 Av	2.2 / 24.4 / 38.3	25.0	V / 1.0 / 270.0	-29.0	-31.0

**Fundamental field strength
And
Harmonics of the Fundamental
15.249(a)/15.205**

Field Strength Measurements

Fundamental and Spurious of the Transmitter

Test Report #: 3151965	Test Area: PW 1 (3M)	Temperature: 22.4 °C
Test Method: FCC 47 CFR part 15 subpart C	Test Date: 12-May-2008	Relative Humidity: 27.2 %
EUT Model #: BR-003-02	EUT Power: 3VDC Battery	Air Pressure: 101 kPa
EUT Serial #: 50015		
Manufacturer: BOCS		
EUT Description: Remote Control		
Notes: 2 way remote IR/RF		

Level Key

Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
The following duty cycle was declared by the manufacturer.								
40mS								
Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35 utilized to calculate field strength emissions.								
The testing performed in accordance to FCC CFR47 Part 15.205 (restricted bands of operation) and 15.249 emissions and delta limits were calculated as follows:								
Final Corrected Peak Measurement – Duty Cycle Correction Factor* = Final Calculated Emission								
The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.209 and 15.249 and the emission/limit delta was calculated. the DTCF is calculated as follows $20 \cdot \log_{10}(\text{duty cycle in 100mS})$ "not to exceed 20dB"								
Part 15.249 and 15.205 Respectively								
Axis 1 EUT is flat on the table								
Low Channel								
905.24	64.1 Pk	3.6 / 22.7 / 0.0	90.4	V / 1.6 / 174.0	0.0	90.4	94	-3.6
905.24	66.5 Pk	3.6 / 22.8 / 0.0	92.8	H / 1.0 / 129.0	0.0	92.8	94	-1.2
Mid 1 Channel								
911.74	62.7 Pk	3.6 / 22.7 / 0.0	89	H / 1.0 / 130.0	0.0	89	94	-5.0
911.74	60.5 Pk	3.6 / 22.7 / 0.0	86.8	V / 1.0 / 171.0	0.0	86.8	94	-7.2
Mid 2 Channel								
918.29	61.1 Pk	3.6 / 22.8 / 0.0	87.5	V / 1.4 / 187.0	0.0	87.5	94	-6.5
918.29	62.2 Pk	3.6 / 22.8 / 0.0	88.6	H / 1.0 / 126.0	0.0	88.6	94	-5.4
High Channel								
924.74	64.7 Pk	3.6 / 22.8 / 0.0	91.1	H / 1.0 / 319.0	0.0	91.1	94	-2.9
924.74	63.4 Pk	3.6 / 22.8 / 0.0	89.8	V / 1.5 / 180.0	0.0	89.8	94	-4.2
Axis 2 EUT is vertical on the table.								
High Channel								
924.74	64.8 Pk	3.6 / 22.8 / 0.0	91.2	V / 1.0 / 123.0	0.0	91.2	94	-2.8
924.74	61.9 Pk	3.6 / 22.8 / 0.0	88.3	H / 1.2 / 180.0	0.0	88.3	94	-5.7
Low Channel								
905.24	63.1 Pk	3.6 / 22.8 / 0.0	89.5	H / 1.2 / 0.0	0.0	89.5	94	-4.5
905.24	65.8 Pk	3.6 / 22.8 / 0.0	92.2	V / 1.2 / 155.0	0.0	92.2	94	-1.8
Mid 1 Channel								
911.74	62.5 Pk	3.6 / 22.7 / 0.0	88.8	V / 1.0 / 91.0	0.0	88.8	94	-5.2
911.79	60.3 Pk	3.6 / 22.7 / 0.0	86.6	H / 1.2 / 318.0	0.0	86.6	94	-7.4
Mid 2 Channel								
918.24	59.6 Pk	3.6 / 22.8 / 0.0	86	H / 1.2 / 318.0	0.0	86	94	-8.0
918.24	62.5 Pk	3.6 / 22.8 / 0.0	88.9	V / 1.0 / 22.0	0.0	88.9	94	-5.1
Axis 3 EUT is vertical on the resting on the right hand side.								
Mid 2 Channel								
918.24	60.8 Pk	3.6 / 22.8 / 0.0	87.2	V / 1.0 / 233.0	0.0	87.2	94	-6.8

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
918.24	64.6 Pk	3.6 / 22.8 / 0.0	91	H / 1.0 / 141.0	0.0	91	94	-3.0
High Channel								
924.74	67.3 Pk	3.6 / 22.8 / 0.0	93.8	H / 1.0 / 144.0	0.0	93.8	94	-0.2
924.74	62.8 Pk	3.6 / 22.8 / 0.0	89.2	V / 1.1 / 123.0	0.0	89.2	94	-4.8
Low Channel								
905.24	63.9 Pk	3.6 / 22.7 / 0.0	90.2	V / 1.1 / 236.0	0.0	90.2	94	-3.8
905.24	67.1 Pk	3.6 / 22.8 / 0.0	93.4	H / 1.1 / 148.0	0.0	93.4	94	-0.6
Mid 1 Channel								
911.74	64.1 Pk	3.6 / 22.7 / 0.0	90.4	H / 1.1 / 146.0	0.0	90.4	94	-3.6
911.74	60.1 Pk	3.6 / 22.7 / 0.0	86.5	V / 1.1 / 123.0	0.0	86.5	94	-7.5
Axis 3 was determined to be the worst case.								
All harmonics will be measured in this axis.								
Low Channel								
1810.47	64.0 Pk	2.8 / 26.4 / 37.3	55.9	H / 1.0 / 50.0	-8.0	47.9	54	-6.1
1810.48	60.3 Pk	2.8 / 26.4 / 37.3	52.1	V / 1.2 / 212.0	-8.0	44.1	54	-9.9
2715.77	37.2 Pk	3.5 / 29.7 / 37.9	32.5	H / 1.2 / 120.0	-8.0	24.5	54	-29.5
2715.8	49.8 Pk	3.5 / 29.7 / 37.9	45	V / 1.1 / 199.0	-8.0	37.0	54	-17.0
3621.08	44.4 Pk	4.5 / 31.7 / 38.4	42.2	V / 1.0 / 195.0	-8.0	34.2	54	-19.8
3621.11	40.6 Pk	4.5 / 31.7 / 38.4	38.3	H / 1.2 / 120.0	-8.0	30.3	54	-23.7
4526.15	43.9 Pk	5.3 / 32.3 / 40.3	41.2	V / 1.2 / 185.0	-8.0	33.2	54	-20.8
4526.34	47.8 Pk	5.3 / 32.3 / 40.3	45.1	H / 1.0 / 212.0	-8.0	37.1	54	-16.9
5431.6	61.3 Pk	6.1 / 34.4 / 39.9	61.8	H / 1.6 / 187.7	-8.0	53.8	54	-0.2
5431.64	61.1 Pk	6.1 / 34.4 / 39.9	61.6	V / 1.1 / 205.0	-8.0	53.6	54	-0.4
6336.6	59.1 Pk	6.6 / 35.2 / 40.4	60.5	V / 1.1 / 196.0	-8.0	52.5	54	-1.5
6336.65	53.1 Pk	6.6 / 35.2 / 40.4	54.6	H / 1.0 / 190.8	-8.0	46.6	54	-7.4
7241.88	43.2 Pk	7.3 / 36.3 / 40.5	46.3	H / 1.0 / 191.6	-8.0	38.3	54	-15.7
7242.16	49.5 Pk	7.3 / 36.3 / 40.5	52.5	V / 1.0 / 212.0	-8.0	44.5	54	-9.5
9052.74	59.1 Pk	8.4 / 37.9 / 48.7	56.8	H / 1.5 / 210.1	-8.0	48.8	54	-5.2
9052.75	53.2 Pk	8.4 / 37.9 / 48.7	50.9	V / 1.0 / 193.7	-8.0	42.9	54	-11.1
Harmonics not listed were not seen above the noise floor.								
Mid 1 Channel								
1823.47	59.1 Pk	2.8 / 26.4 / 37.3	51	H / 1.0 / 142.0	-8.0	43.0	54	-11.0
1823.56	59.9 Pk	2.8 / 26.4 / 37.3	51.8	V / 1.0 / 96.0	-8.0	43.8	54	-10.2
2735.19	50.1 Pk	3.5 / 29.8 / 37.9	45.5	V / 1.1 / 196.0	-8.0	37.5	54	-16.5
2735.26	41.0 Pk	3.5 / 29.8 / 37.9	36.4	H / 1.0 / 355.0	-8.0	28.4	54	-25.6
4558.83	44.4 Pk	5.3 / 32.4 / 40.3	41.7	H / 1.1 / 196.0	-8.0	33.7	54	-20.3
5470.35	60.8 Pk	6.1 / 34.4 / 39.9	61.5	H / 1.2 / 203.5	-8.0	53.5	54	-0.5
5470.35	58.1 Pk	6.1 / 34.4 / 39.9	58.7	V / 1.0 / 207.3	-8.0	50.7	54	-3.3
6382.13	57.2 Pk	6.7 / 35.2 / 40.4	58.8	V / 1.6 / 190.1	-8.0	50.8	54	-3.2
6382.42	51.3 Pk	6.7 / 35.2 / 40.4	52.9	H / 1.0 / 195.0	-8.0	44.9	54	-9.1
7293.87	47.0 Pk	7.3 / 36.3 / 40.5	50.1	V / 1.0 / 229.9	-8.0	42.1	54	-11.9
7294.2	45.0 Pk	7.3 / 36.3 / 40.5	48.1	H / 1.4 / 168.5	-8.0	40.1	54	-13.9
9117.34	52.9 Pk	8.4 / 38.0 / 48.7	50.7	V / 1.0 / 225.0	-8.0	42.7	54	-11.3
9117.74	58.4 Pk	8.4 / 38.0 / 48.7	56.1	H / 1.4 / 151.0	-8.0	48.1	54	-5.9
Harmonics not listed were not seen above the noise floor.								
Mid 2 Channel								
1836.56	59.3 Pk	2.8 / 26.5 / 37.4	51.2	H / 1.0 / 153.0	-8.0	43.2	54	-10.8
1836.56	54.0 Pk	2.8 / 26.5 / 37.4	45.9	V / 1.1 / 194.0	-8.0	37.9	54	-16.1
2754.7	49.8 Pk	3.5 / 29.9 / 37.9	45.2	V / 1.1 / 199.0	-8.0	37.2	54	-16.8
2754.74	42.0 Pk	3.5 / 29.9 / 37.9	37.5	H / 1.0 / 153.0	-8.0	29.5	54	-24.5
3672.93	46.2 Pk	4.5 / 31.8 / 38.5	44.1	V / 1.0 / 202.0	-8.0	36.1	54	-17.9
4591.12	44.1 Pk	5.3 / 32.5 / 40.3	41.6	H / 1.3 / 198.8	-8.0	33.6	54	-20.4
5509.36	58.2 Pk	6.1 / 34.5 / 39.8	59	V / 1.0 / 208.1	-8.0	51.0	54	-3.0
5509.36	60.6 Pk	6.1 / 34.5 / 39.8	61.3	H / 1.0 / 203.4	-8.0	53.3	54	-0.7
6427.65	51.1 Pk	6.7 / 35.3 / 40.3	52.8	H / 1.4 / 137.6	-8.0	44.8	54	-9.2
6427.92	56.4 Pk	6.7 / 35.3 / 40.3	58	V / 1.1 / 218.6	-8.0	50.0	54	-4.0
7345.87	46.1 Pk	7.4 / 36.4 / 40.4	49.5	V / 1.0 / 222.1	-8.0	41.5	54	-12.5
7345.89	41.6 Pk	7.4 / 36.4 / 40.4	44.9	H / 1.0 / 219.6	-8.0	36.9	54	-17.1
9182.39	52.9 Pk	8.5 / 38.1 / 48.8	50.7	V / 1.4 / 169.9	-8.0	42.7	54	-11.3
9182.76	56.2 Pk	8.5 / 38.1 / 48.8	54	H / 1.6 / 153.6	-8.0	46.0	54	-8.0
Harmonics not listed were not seen above the noise floor.								
High Channel								
1849.56	58.6 Pk	2.8 / 26.5 / 37.4	50.6	V / 1.1 / 98.0	-8.0	42.6	54	-11.4
1849.56	61.4 Pk	2.8 / 26.5 / 37.4	53.4	H / 1.0 / 150.0	-8.0	45.4	54	-8.6

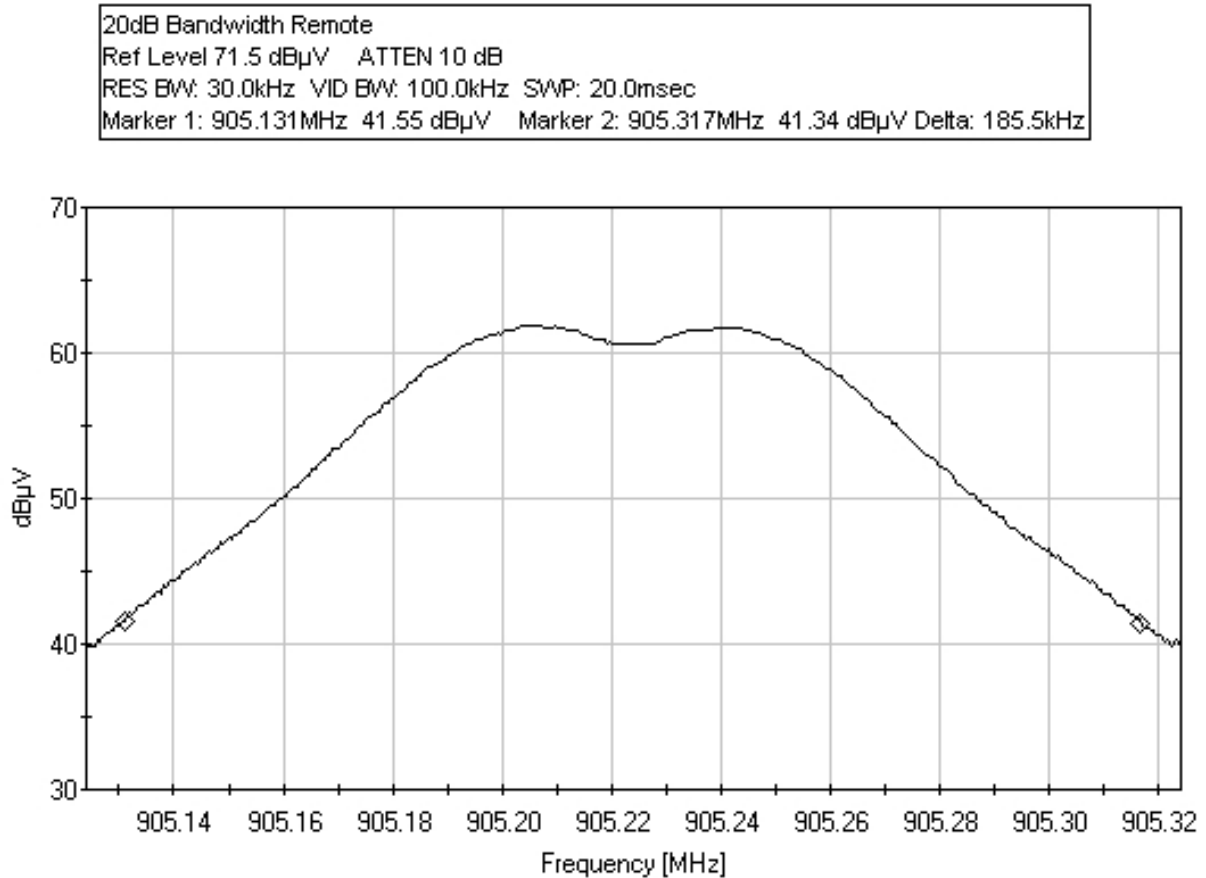
FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dBm) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
2774.23	48.7 Pk	3.5 / 30.0 / 37.9	44.3	V / 1.1 / 194.0	-8.0	36.3	54	-17.7
2774.32	43.2 Pk	3.5 / 30.0 / 37.9	38.9	H / 1.1 / 179.0	-8.0	30.9	54	-23.1
3699.12	47.4 Pk	4.5 / 31.8 / 38.5	45.3	V / 1.0 / 197.0	-8.0	37.3	54	-16.7
4623.84	45.4 Pk	5.4 / 32.6 / 40.3	43	H / 1.3 / 190.4	-8.0	35.0	54	-19.0
5548.36	58.9 Pk	6.1 / 34.6 / 39.8	59.7	V / 1.1 / 215.1	-8.0	51.7	54	-2.3
5548.6	61.2 Pk	6.1 / 34.6 / 39.8	62.1	H / 1.1 / 204.2	-8.0	54.1	54	0.1
5548.6	60.4 Pk	6.1 / 34.6 / 39.8	61.2	H / 1.1 / 202.5	-8.0	53.2	54	-0.8
6473.14	57.5 Pk	6.8 / 35.3 / 40.3	59.2	V / 1.0 / 221.5	-8.0	51.2	54	-2.8
6473.43	51.5 Pk	6.8 / 35.3 / 40.3	53.1	H / 1.5 / 137.3	-8.0	45.1	54	-8.9
7397.88	44.6 Pk	7.4 / 36.5 / 40.4	48.1	H / 1.6 / 198.3	-8.0	40.1	54	-13.9
7397.88	47.8 Pk	7.4 / 36.5 / 40.4	51.3	V / 1.0 / 223.1	-8.0	43.3	54	-10.7
9247.35	54.6 Pk	8.5 / 38.2 / 48.8	52.4	V / 1.6 / 162.8	-8.0	44.4	54	-9.6
9247.76	56.9 Pk	8.5 / 38.2 / 48.8	54.8	H / 1.6 / 152.5	-8.0	46.8	54	-7.2
Harmonics not listed were not seen above the noise floor.								

20dB Bandwidth

Test Report #:	3151965	Test Area:	PW 1 (3M)
Test Method:	FCC 47 CFR part 15 subpart C	Test Date:	15-May-2008
EUT Model #:	BR-003-02	EUT Power:	3VDC Battery
EUT Serial #:	50015		
Manufacturer:	BOCS		
EUT Description:	Remote Control		
Notes:	2 way remote IR/RF		

Temperature:	22.4	°C
Relative Humidity:	27.2	%
Air Pressure:	101	kPa

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	



List of Equipment Utilized for Final Test

Project Report

Begin Date: 5/12/2008 **End Date:** 5/15/2008

Technician Mike Spataro

Project 3151965

Capital Asset ID	Manufacturer	Model #	Serial #	Description	Test Performed	Service Type	Service Date	Service Due
18730	Hewlett-Packard	11947A	2820A00277	Transient Limiter	C Conducted Emissions	For Ver	3/4/2008	3/4/2009
18890	RHODE & SCHWARZ	ESH2-Z5	830364/002	LISN 50 ohm/50uH 3 line (1kHz - 30 MHz)	C Conducted Emissions	For Ver	3/6/2008	3/6/2009
18909	RHODE & SCHWARZ	ESHS 30	842806/001	EMI Test Receiver	C Conducted Emissions	For Cal	2/20/2008	2/20/2009
18808	EMCO	3146	9203-3376	Log Periodic Antenna	R Radiated Emissions	For Cal	10/12/2007	10/12/2008
18880	Hewlett-Packard	85650A	2811A01300	Q.P Adapter	R Radiated Emissions	For Cal	11/15/2007	11/15/2008
18882	Hewlett-Packard	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	R Radiated Emissions	For Cal	11/13/2007	11/13/2008
18887	EMCO	3115	9205-3886	Horn Antenna 1-18GHz	R Radiated Emissions	For Cal	3/6/2008	3/6/2009
18889	EMC TEST SYSTEMS	3109	3142	Biconical Antenna 30-300MHz	R Radiated Emissions	For Cal	10/11/2007	10/11/2008
18900	Avantek	AFT97-8434-10F	1007	RF Pre-Amplifier (4-8 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18901	Avantek	AWT-18037	1002	RF Pre-Amplifier (8-18 GHz)	R Radiated Emissions	For Ver	5/2/2008	5/2/2009
18906	Mini-Circuits Lab	ZHL-42	N052792-2	Amplifier	R Radiated Emissions	For Ver	5/2/2008	5/2/2009

Appendix B

Test Plan and Constructional Data Form

Appendix C

Measurement Protocol

And

Test Procedures

MEASUREMENT PROTOCOL

GENERAL INFORMATION

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in ANSI C63.4 & CNS13438.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

CONDUCTED EMISSIONS

The final level, expressed in dB μ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the applicable limit.

To convert between dB μ V and μ V, the following conversions apply:

- $\text{dB}\mu\text{V} = 20(\log \mu\text{V})$
- $\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$

RADIATED EMISSIONS

The final level, expressed in dB μ V/m, is arrived at by taking the reading from the spectrum analyzer (Level dB μ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the applicable limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment B. The amplifier gain is automatically accounted for by using an analyzer offset.

Example: At a Test Frequency of 30 MHz, with a peak reading on the spectrum analyzer or measuring receiver of 14 dB μ V:

Measured Level	+	Transducer & Cable Loss factor	=	Corrected Reading	Specification Limit	-	Corrected Reading	=	Delta Specification
(dB μ V)		(dB)		(dB μ V/m)	(dB μ V/m)		(dB μ V/m)		
14.0		14.9		28.9	40.0		28.9		-11.1

DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI C63.4-2003 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

Conducted Emissions

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω /50 μ H (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 22GHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.

Rev.No 1



Radiated Emissions Diagram:

