Model: The Bandit

FCC PART 15, SUBPART B and C TEST REPORT

for

OUTDOOR SOUND MODULE/TRANSMITTER

MODEL: THE BANDIT

Prepared for

MINASKA OUTDOORS 6517 PLATTE AVENUE LINCOLN, NEBRASKA 68507

Prepared by: Kyle Jujinoto

KYLE FUJIMOTO

Approved by: James Ross

JAMES ROSS

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

DATE: NOVEMBER 8, 2005

	REPORT		APPENDICES				TOTAL
	BODY	A	В	С	D	E	
PAGES	16	2	2	2	12	17	51

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1	Plot Map And Layout of Radiated Test Site



Report Number: **B51031D1**FCC Part 15 Subpart B and FCC Section 15.231 Test Report
Outdoor Sound Module/Transmitter

Model: The Bandit

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 without the written permission of Compatible Electronics, unless done so in full.

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

Device Tested: Outdoor Sound Module/Transmitter

Model: The Bandit

S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified during the testing.

Manufacturer: Minaska Outdoors

6517 Platte Avenue

Lincoln, Nebraska 68507

Test Dates: October 28 and 31, 2005

Test Specifications: EMI requirements

CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209, and 15.231

Test Procedure: ANSI C63.4: 2003

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

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz	This test was not performed because the EUT operates on batteries only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions, 9 kHz - 4400 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.
3	-20 dB Bandwidth of the Fundamental	Complies with the limits of Subpart C, sections 15.231 [c].



Report Number: **B51031D1**FCC Part 15 Subpart B and FCC Section 15.231 Test Report
Outdoor Sound Module/Transmitter

Model: The Bandit

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Outdoor Sound Module/Transmitter Model: The Bandit. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. 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 **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.





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

Minaska Outdoors

Steve Borland Owner

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer James Ross Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to its qualification testing on October 27, 2005.

2.5 Disposition of the Test Sample

The test sample has not been returned to Minaska Outdoors as of November 8, 2005.

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

PCB Printed Circuit Board

TX Transmit RX Receive





Model: The Bandit

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
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





Outdoor Sound Module/Transmitter Model: The Bandit

Report Number: B51031D1

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 Outdoor Sound Module/Transmitter Model: The Bandit (EUT) was tested as a stand alone unit and tested in three orthogonal axis. The EUT was continuously transmitting.

The antenna is directly connected to the EUT's PCB via a screw.

After the EUT starts transmission by pressing a button, the transmission will cease operation once the button is released.

The final radiated data was taken in the modes described above. Please see Appendix E for the data sheets.





a Module/Transmitter Model: The Bandit

4.1.1 Cable Construction and Termination

There were no external cables connected to the EUT.





FCC Part 15 Subpart B and FCC Section 15.231 Test Report

Outdoor Sound Module/Transmitter Model: The Bandit

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL	SERIAL	FCC ID
		NUMBER	NUMBER	
OUTDOOR SOUND	MINASKA	THE BANDIT	N/A	TSNMOXLR
MODULE/TRANSMITTER	OUTDOORS			
(EUT)				





5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU- FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 10, 2005	June 16, 2006
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 10, 2005	June 16, 2006
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 11, 2005	June 11, 2006
Preamplifier	Com Power	PA-103	1582	February 3, 2005	Feb. 3, 2006
Biconical Antenna	Com Power	AB-900	15250	March 11, 2005	Mar. 11, 2006
Log Periodic Antenna	Com Power	AL-100	16247	August 22, 2005	Aug. 22, 2006
Computer	Hewlett Packard	D5251A 888	US74458128	N/A	N/A
Monitor	Hewlett Packard	D5258A	DK74889705	N/A	N/A
Loop Antenna	Com-Power	AL-130	17089	September 21, 2005	Sept. 21, 2006
Horn Antenna	Com Power	AH-118	10073	July 27, 2004	July 27, 2006
Microwave Preamplifier	Com-Power	PA-122	181917	March 3, 2005	Mar. 3, 2006
EMI Receiver	Rohde & Schwarz	ESIB40	100172	October 28, 2004	Oct. 28, 2006
Antenna Mast	Com-Power	AM-100	N/A	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A





Model: The Bandit

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 and EMI Receiver were 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-103 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier 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 and EMI Receiver record the highest measured reading over all the sweeps.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 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 4.40 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: 2003. 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. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.



Model: The Bandit

7.2 Radiated Emissions (Spurious and Harmonics) Test (continued)

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. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, Subpart B; and Subpart C, section 15.205, 15.209 and 15.231 for radiated emissions.





Model: The Bandit

7.3 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. Data sheets of the -20 dB bandwidth are located in Appendix E.

Test Results:

The EUT complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231 [c].





Model: The Bandit

8. CONCLUSIONS

The Outdoor Sound Module/Transmitter Model: The Bandit meets all of the Class B specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.







APPENDIX A

LABORATORY RECOGNITIONS





LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)



APPENDIX B

MODIFICATIONS TO THE EUT





MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 or FCC Class B specifications.

No modifications were made to the EUT during the testing.







APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT





ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Outdoor Sound Module/Transmitter Model: The Bandit S/N: N/A

There were no additional models covered under this report.





APPENDIX D

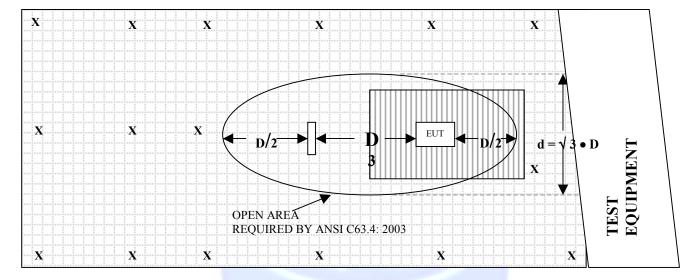
DIAGRAMS, CHARTS, AND PHOTOS



OPEN LAND > 15 METERS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED TEST SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X = GROUND RODS = GROUND SCREEN

D = TEST DISTANCE (meters) = WOOD COVER





COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15250

CALIBRATION DATE: MARCH 11, 2005

			-
FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	10.90	120	13.10
35	10.90	125	12.40
40	10.90	140	11.90
45	10.30	150	11.80
50	11.40	160	13.30
60	10.40	175	15.40
70	7.40	180	14.60
80	6.20	200	15.70
90	8.20	250	16.50
100	10.10	300	19.20





COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16247

CALIBRATION DATE: AUGUST 22, 2005

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.70	700	19.72
400	13.19	800	20.59
500	14.99	900	21.10
600	15.95	1000	24.35





COM-POWER PA-103

PREAMPLIFIER

S/N: 1582

CALIBRATION DATE: FEBRUARY 3, 2005

FREQUENCY	FACTOR	FREQUENCY	FACTOR
(MHz)	(dB)	(MHz)	(dB)
30	33.2	300	33.0
40	33.0	350	32.8
50	33.1	400	32.8
60	33.0	450	32.8
70	33.2	500	32.5
80	33.2	550	32.5
90	33.1	600	32.4
100	33.2	650	32.4
125	33.1	700	32.3
150	33.0	750	32.2
175	33.0	800	32.2
200	33.0	850	32.4
225	33.0	900	31.8
250	33.0	950	32.3
275	32.9	1000	32.0





COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 181917

CALIBRATION DATE: MARCH 3, 2005

FREQUENCY	FACTOR	FREQUENCY	FACTOR
(GHz)	(dB)	(GHz)	(dB)
1.0	34.780	6.0	35.568
1.1	34.443	6.5	34.984
1.2	33.921	7.0	33.916
1.3	33.862	7.5	33.463
1.4	33.646	8.0	33.932
1.5	33.784	8.5	34.828
1.6	33.892	9.0	36.153
1.7	33.886	9.5	36.797
1.8	33.921	10.0	36.822
1.9	33.943	11.0	33.815
2.0	34.076	12.0	33.733
2.5	34.232	13.0	34.807
3.0	34.464	14.0	34.121
3.5	34.613	15.0	33.122
4.0	34.929	16.0	34.286
4.5	35.164	17.0	34.358
5.0	35.321	18.0	33.767
5.5	35.366		





COM POWER AH-118

HORN ANTENNA

S/N: 10073

CALIBRATION DATE: JULY 27, 2004

FREQUENCY	FACTOR	FREQUENCY	FACTOR
(GHz)	(dB)	(GHz)	(dB)
1.0	25.3	10.0	39.8
1.5	28.3	10.5	38.6
2.0	31.5	11.0	38.5
2.5	31.2	11.5	40.4
3.0	30.4	12.0	42.0
3.5	30.5	12.5	41.7
4.0	30.9	13.0	41.9
4.5	32.0	13.5	43.7
5.0	34.1	14.0	45.5
5.5	33.7	14.5	45.8
6.0	34.2	15.0	40.5
6.5	35.1	15.5	41.8
7.0	37.1	16.0	41.5
7.5	40.4	16.5	40.2
8.0	39.8	17.0	43.3
8.5	38.4	17.5	46.6
9.0	37.5	18.0	47.1
9.5	42.4		





COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: SEPTEMBER 21, 2005

FREQUENCY	MAGNETIC	ELECTRIC			
(MHz)	(dB/m)	(dB/m)			
0.009	-42.84	8.66			
0.01	-41.93	9.57			
0.02	-41.29	10.21			
0.05	-42.37	9.13			
0.07	-41.80	9.70			
0.1	-41.83	9.67			
0.2	-44.13	7.37			
0.3	-41.73	9.77			
0.5	-41.80	9.70			
0.7	-41.53	9.97			
1	-41.46	10.04			
2	-41.14	10.36			
3	-41.26	10.24			
4	-41.46	10.04			
5	-41.10	10.40			
10	-40.83	10.67			
15	-41.47	10.03			
20	-35.44	16.06			
25	-42.37	9.13			
30	-42.94	8.56			





FRONT VIEW

MINASKA OUTDOORS
OUTDOOR SOUND MODULE/TRANSMITTER
MODEL: THE BANDIT
FCC SUBPART B AND C – RADIATED EMISSIONS





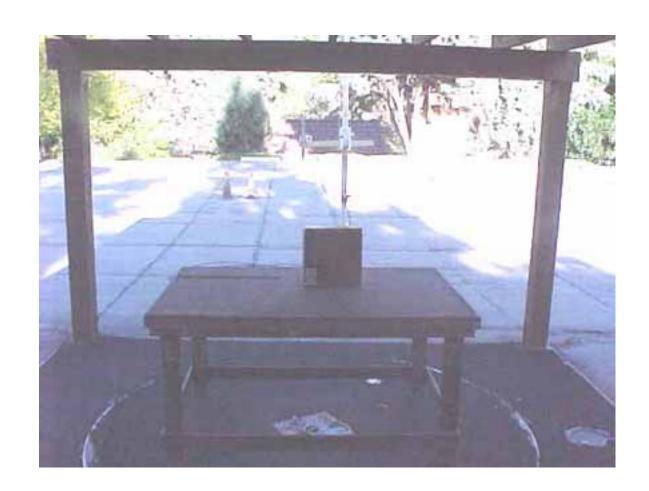
REAR VIEW

MINASKA OUTDOORS
OUTDOOR SOUND MODULE/TRANSMITTER
MODEL: THE BANDIT
FCC SUBPART B AND C – RADIATED EMISSIONS



FRONT VIEW

MINASKA OUTDOORS
OUTDOOR SOUND MODULE/TRANSMITTER
MODEL: THE BANDIT
FCC SUBPART B AND C – RADIATED EMISSIONS



REAR VIEW

MINASKA OUTDOORS
OUTDOOR SOUND MODULE/TRANSMITTER
MODEL: THE BANDIT
FCC SUBPART B AND C – RADIATED EMISSIONS

Report Number: **B51031D1 FCC Part 15 Subpart B** and **FCC Section 15.231** Test Report

Outdoor Sound Module/Transmitter Model: The Bandit

APPENDIX E

DATA SHEETS





RADIATED EMISSIONS

DATA SHEETS



COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average ((A)	Antenna	Antenna	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta	Spec Limit	
MHz	(dBuV)				-	(degrees)			(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
418.0000	66.4	44.4	A	V	1.0	180	X	LOW	13.5	5.5	0.0	0.0	0.0	63.4	-16.8	80.2	
418.0000	80.5	60.5	A	V	1.0	125	Y	LOW	13.5	5.5	0.0	0.0	0.0	79.5	-0.7	80.2	
418.0000	69.8	49.8	A	V	1.0	90	Z	LOW	13.5	5.5	0.0	0.0	0.0	68.8	-11.4	80.2	
418.0000	77.5	57.5	A	Н	1.0	175	X	LOW	13.5	5.5	0.0	0.0	0.0	76.5	-3.7	80.2	
418.0000	64.9	44.9	A	Н	1.0	225	Y	LOW	13.5	5.5	0.0	0.0	0.0	63.9	-16.3	80.2	
418.0000	75.9	55.9	A	Н	1.0	180	Z	LOW	13.5	5.5	0.0	0.0	0.0	74.9	-5.3	80.2	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

PAGE 1 of PAGE 10

^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average (A	Anteni Polar	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta **	Spec Limit	
MHz	(dBuV)			I) (meters)			Channel	(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
836.0000	52.9	32.9 A	V	1.0	60	X		20.8	6.6	32.3	0.0	0.0	28.0	-32.2	60.2	
836.0000	72.8	52.8 A	V	1.0	65	Y		20.8	6.6	32.3	0.0	0.0	47.9	-12.3	60.2	
836.0000	59.1	39.1 A	V	1.0	45	Z		20.8	6.6	32.3	0.0	0.0	34.2	-26.0	60.2	
836.0000	70.0	50.0 A	Н	1.0	90	X		20.8	6.6	32.3	0.0	0.0	45.1	-15.1	60.2	
836.0000	47.9	27.9 A	Н	1.5	125	Y		20.8	6.6	32.3	0.0	0.0	23.0	-37.2	60.2	
836.0000	64.2	44.2	Н	1.0	220	Z		20.8	6.6	32.3	0.0	0.0	39.3	-20.9	60.2	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

PAGE 2 of PAGE 10

^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average or Qua		Antenna Polar.	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected	Delta **	Spec Limit	
MHz	(dBuV)			(V or H)	(meters)	(degrees)	(X,Y,Z)	Channel	(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
1254.0000	45.1	25.1	A	V	2.3	90	X	LOW	26.8	2.7	33.9	0.0	0.0	20.7	-33.3	54.0	
1254.0000	40.8	20.8	Α	V	1.3	180	Y	LOW	26.8	2.7	33.9	0.0	0.0	16.4	-37.6	54.0	
1254.0000	43.8	23.8	A	V	1.5	180	Z	LOW	26.8	2.7	33.9	0.0	0.0	19.4	-34.6	54.0	
1254.0000	46.4	26.4	A	Н	1.1	15	X	LOW	26.8	2.7	33.9	0.0	0.0	22.0	-32.0	54.0	
1254.0000	36.2	16.2	A	Н	1.1	180	Y	LOW	26.8	2.7	33.9	0.0	0.0	11.8	-42.2	54.0	No Harmonic Detected
1254.0000	41.7	21.7	A	Н	1.4	180	Z	LOW	26.8	2.7	33.9	0.0	0.0	17.3	-36.7	54.0	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

PAGE 3 of PAGE 10

^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average or Qua	e (A)	Antenna Polar.	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta **	Spec Limit	
MHz	(dBuV)			(V or H)	(meters)	(degrees)	(X,Y,Z)	Channel	(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
1672.0000	43.4	23.4	A	V	1.2	270	X	LOW	29.4	3.7	33.9	0.0	0.0	22.6	-38.2	60.8	
1672.0000	48.1	28.1	A	V	1.7	180	Y	LOW	29.4	3.7	33.9	0.0	0.0	27.3	-33.5	60.8	
1672.0000	49.8	29.8	A	V	1.2	180	Z	LOW	29.4	3.7	33.9	0.0	0.0	29.0	-31.8	60.8	
1672.0000	48.4	28.4	A	Н	1.2	90	X	LOW	29.4	3.7	33.9	0.0	0.0	27.6	-33.2	60.8	
1672.0000	45.0	25.0	Α	Н	1.6	90	Y	LOW	29.4	3.7	33.9	0.0	0.0	24.2	-36.6	60.8	
1672.0000	45.5	25.5	Α	Н	1.6	250	Z	LOW	29.4	3.7	33.9	0.0	0.0	24.7	-36.1	60.8	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	1
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average (A) or Quasi-	Antenna Polar.	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta **	Spec Limit	
MHz	(dBuV)	Peak (QP)					Channel	(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
2090.0000	46.5	26.5 A	V	1.2	180	X	LOW	31.4	4.2	34.1	0.0	0.0	28.0	-32.8	60.8	
2090.0000	49.3	29.3 A	V	1.7	180	Y	LOW	31.4	4.2	34.1	0.0	0.0	30.8	-30.0	60.8	
2090.0000	45.3	25.3 A	V	1.3	175	Z	LOW	31.4	4.2	34.1	0.0	0.0	26.8	-34.0	60.8	
2090.0000	44.5	24.5 A	Н	1.2	90	X	LOW	31.4	4.2	34.1	0.0	0.0	26.0	-34.8	60.8	
2090.0000	50.1	30.1 A	Н	1.7	0	Y	LOW	31.4	4.2	34.1	0.0	0.0	31.6	-29.2	60.8	
2090.0000	47.2	27.2 A	Н	1.4	90	Z	LOW	31.4	4.2	34.1	0.0	0.0	28.7	-32.1	60.8	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	1
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average (A	Antenna Polar.	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta	Spec Limit	
MHz	(dBuV)	Peak (QP)						(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
2508.0000	44.7	24.7 A	V	1.0	180	X	LOW	31.2	4.6	34.2	0.0	0.0	26.2	-34.6	60.8	
2508.0000	45.9	25.9 A	V	1.0	90	Y	LOW	31.2	4.6	34.2	0.0	0.0	27.4	-33.4	60.8	
2508.0000	48.3	28.3 A	V	1.9	30	Z	LOW	31.2	4.6	34.2	0.0	0.0	29.8	-31.0	60.8	
2508.0000	46.3	26.3 A	Н	1.3	180	X	LOW	31.2	4.6	34.2	0.0	0.0	27.8	-33.0	60.8	
2508.0000	52.3	32.3 A	Н	1.5	15	Y	LOW	31.2	4.6	34.2	0.0	0.0	33.8	-27.0	60.8	
2508.0000	51.7	31.7 A	Н	2.7	280	Z	LOW	31.2	4.6	34.2	0.0	0.0	33.2	-27.6	60.8	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak Reading	Average (A	Antenna Polar.	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta **	Spec Limit	
MHz	(dBuV)		(V or H	(meters)	(degrees)	(X,Y,Z)	Channel	(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
2926.0000	41.4	21.4	V	1.0	270	X	LOW	30.5	5.0	34.4	0.0	0.0	22.5	-38.3	60.8	
2926.0000	47.1	27.1 A	V	2.1	200	Y	LOW	30.5	5.0	34.4	0.0	0.0	28.2	-32.6	60.8	
2926.0000	45.6	25.6 A	V	1.9	345	Z	LOW	30.5	5.0	34.4	0.0	0.0	26.7	-34.1	60.8	
2926.0000	42.7	22.7 A	Н	1.5	90	X	LOW	30.5	5.0	34.4	0.0	0.0	23.8	-37.0	60.8	
2926.0000	48.1	28.1 A	Н	1.7	40	Y	LOW	30.5	5.0	34.4	0.0	0.0	29.2	-31.6	60.8	
2926.0000	43.6	23.6 A	Н	2.0	225	Z	LOW	30.5	5.0	34.4	0.0	0.0	24.7	-36.1	60.8	

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	

Frequency	Peak	Average (A)		Antenna		EUT	EUT Tx	Antenna	Cable	Amplifier		Mixer	*Corrected	Delta	Spec	
MHz	Reading (dBuV)	or Quasi- Peak (QP)	Polar. (V or H)	0	Azimuth (degrees)			Factor (dB)	Loss (dB)	Gain (dB)	Factor (dB)	Factor (dB)	Reading (dBuV/m)		Limit (dBuV/m)	Comments
3344.0000		-20.0 A	V			X	LOW	30.5	6.1	34.6	0.0		-18.0		60.8	No Harmonic Detected
3344.0000		-20.0 A	V			Y	LOW	30.5	6.1	34.6	0.0		-18.0		60.8	No Harmonic Detected
3344.0000		-20.0 A	V			Z	LOW	30.5	6.1	34.6	0.0		-18.0		60.8	No Harmonic Detected
3344.0000		-20.0 A	Н			X	LOW	30.5	6.1	34.6	0.0		-18.0		60.8	No Harmonic Detected
3344.0000	44.0	24.0 A	Н	1.6	35	Y	LOW	30.5	6.1	34.6	0.0		26.0	-34.8	60.8	
3344.0000		-20.0 A	Н			Z	LOW	30.5	6.1	34.6	0.0		-18.0		60.8	No Harmonic Detected

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	•

Frequency	Peak Reading	Average (A) or Quasi-	Antenna Polar.	Antenna Height	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta **	Spec Limit	
MHz	(dBuV)	Peak (QP)		0				(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)	(dB)	(dBuV/m)	Comments
3762.0000		-20.0 A	V			X	LOW	30.7	5.7	34.8	0.0		-18.3		54.0	No Harmonic Detected
3762.0000		-20.0 A	V			Y	LOW	30.7	5.7	34.8	0.0		-18.3		54.0	No Harmonic Detected
3762.0000		-20.0 A	V			Z	LOW	30.7	5.7	34.8	0.0		-18.3		54.0	No Harmonic Detected
3762.0000		-20.0 A	Н			X	LOW	30.7	5.7	34.8	0.0		-18.3		54.0	No Harmonic Detected
3762.0000		-20.0 A	Н			Y	LOW	30.7	5.7	34.8	0.0		-18.3		54.0	No Harmonic Detected
3762.0000		-20.0 A	Н			Z	LOW	30.7	5.7	34.8	0.0		-18.3		54.0	No Harmonic Detected

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING

COMPANY	Minaska Outdoors	DATE	10/28/2005	
EUT	Transmitter	DUTY CYCLE	10	%
MODEL	The Bandit	PEAK TO AVG	-20	dB
S/N	N/A	TEST DIST.	3	Meters
TEST ENGINEER	James Ross	LAB	A	•

Frequency	Peak Reading	Average (A)	Antenna Polar.	Antenna	EUT Azimuth	EUT Axis	EUT Tx	Antenna Factor	Cable Loss	Amplifier Gain	Distance Factor	Mixer Factor	*Corrected Reading	Delta	Spec Limit	
MHz	(dBuV)	or Quasi- Peak (QP)		0				(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)	Comments
4180.0000		-20.0 A	V			X	LOW	31.3	6.6	35.0	0.0		-17.2		54.0	No Harmonic Detected
4180.0000		-20.0 A	V			Y	LOW	31.3	6.6	35.0	0.0		-17.2		54.0	No Harmonic Detected
4180.0000	48.5	28.5 A	V			Z	LOW	31.3	6.6	35.0	0.0		31.3	-22.7	54.0	
4180.0000		-20.0 A	Н			X	LOW	31.3	6.6	35.0	0.0		-17.2		54.0	No Harmonic Detected
4180.0000		-20.0 A	Н			Y	LOW	31.3	6.6	35.0	0.0		-17.2		54.0	No Harmonic Detected
4180.0000		-20.0 A	Н			Z	LOW	31.3	6.6	35.0	0.0		-17.2		54.0	No Harmonic Detected

^{*} CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

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^{**} DELTA = SPEC LIMIT - CORRECTED READING



Test Location : Compatible Electronics Page : 1/1

Customer : Mi naska Outdoors Date : 10/31/2005 Manufacturer : Mi naska Outdoors Ti me : 13:45:29

 $\hbox{ Eut name } \qquad : \ \hbox{ Outdoor Sound Module/Transmitter} \qquad \qquad \hbox{Lab} \ : \ A$

Model : The Bandit Test Distance : 3 Meters

Serial # : N/A Specification : FCC B

Distance correction factor (20 * log(test/spec)): 0.00

Test Mode : Scan Type: Qualification

Scan Range: 10 kHz to 1000 MHz
Transmit_Frequency: 418 MHz
Test Engineer: Kyle Fujimoto

Pol	Freq	Rdng	Cabl e l oss	Ant factor	Amp gai n	Cor' d rdg = R	Li mi t = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1 V	120. 091	44. 50	3. 03	13.09	33. 12	27. 50	43. 50	- 16. 00
2V	124. 020	44. 90	3. 09	12. 53	33. 10	27. 42	43. 50	- 16. 08
3V	220. 057	37. 80	3. 76	16. 04	33. 00	24. 60	46.00	- 21. 40
4V	240. 057	38. 90	3. 86	16. 35	33.00	26. 12	46.00	- 19. 88
5 V	247. 977	43. 60	3. 89	16. 47	33. 00	30. 96	46. 00	- 15. 04
6V	294. 622	38. 70	4. 20	18. 93	32. 98	28. 85	46.00	- 17. 15
7V	352. 160	30. 70	4. 92	12. 97	32.80	15. 79	46.00	- 30. 21
8H	998. 160	31.60	7. 19	24. 29	32.01	31. 07	54.00	- 22. 93





Test Location : Compatible Electronics Page : 1/1

Customer : Minaska Outdoors Date : 10/28/2005 Manufacturer : Minaska Outdoors Time : 15:50:31

Eut name : Outdoor Sound Module/Transmitter Lab : A

Model : The Bandit Test Distance : 3 Meters

Serial # : N/A Specification : FCC B

Distance correction factor (20 * log(test/spec)): 0.00

Scan Type: Spurious Emissions Qualification

Frequency Range: 1 GHz to 4.2 GHz

EUT Transmit Frequency: 418 MHz Test Engineer: James Ross

Pol Freq Rdng Cabl e Ant Amp Cor' d Limit Delta gai n loss factor rdg = R= L R-L dB dĬuV MHz dBuV dB dB dBdBuV/m

No spurious emissions detected between the above stated frequency range.



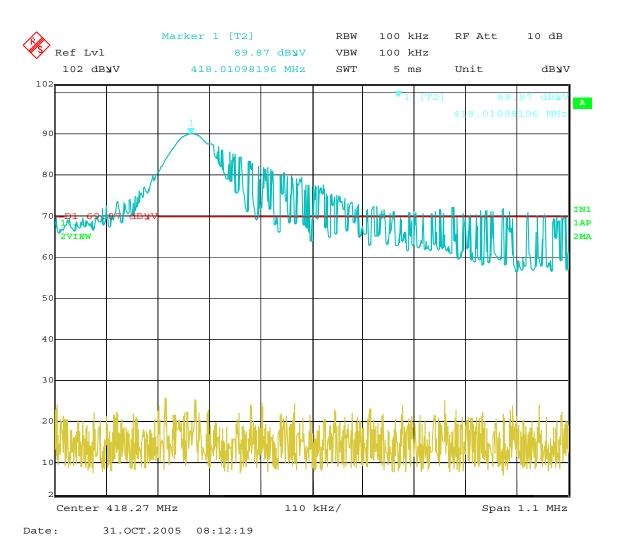
Report Number: **B51031D1 FCC Part 15 Subpart B** and **FCC Section 15.231** Test Report

Outdoor Sound Module/Transmitter Model: The Bandit

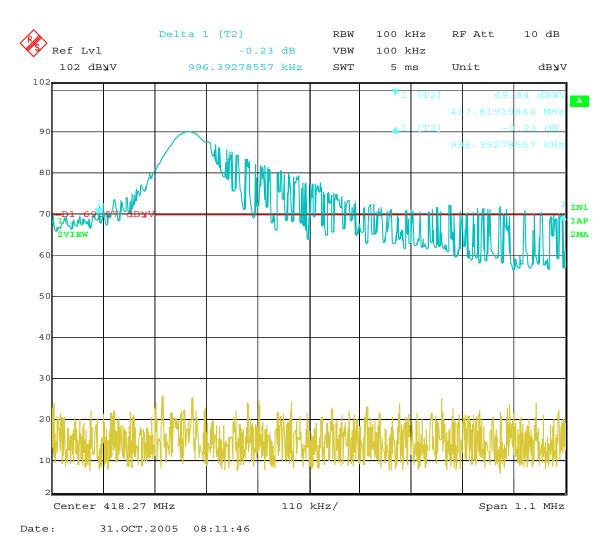
-20 dB BANDWIDTH

DATA SHEET





Reference Level of Fundamental Emissions for 20 dB Bandwidth



Bandwidth –20 dB of the Fundamental Emission