

Supra, A Division of UTCFS

Bluetooth iBox

Report No. SUPR0076

Report Prepared By



www.nwemc.com
1-888-EMI-CERT

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: September 8, 2010
Supra, A Division of UTCFS
Model: Bluetooth iBox

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions	FCC 15.247:2010	ANSI C63.10:2009	Pass

Modifications made to the product

See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.;
22975 NW Evergreen Parkway, Suite 400;
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834D-1).

Approved By:

Don Facteau, IS Manager



NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.



NVLAP

Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0
NVLAP LAB CODE 200881-0

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)



CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



NEMKO

Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).



BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017). License No.SL2-IN-E-1017.



GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification



KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157)



VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.



SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>



Northwest EMC Locations



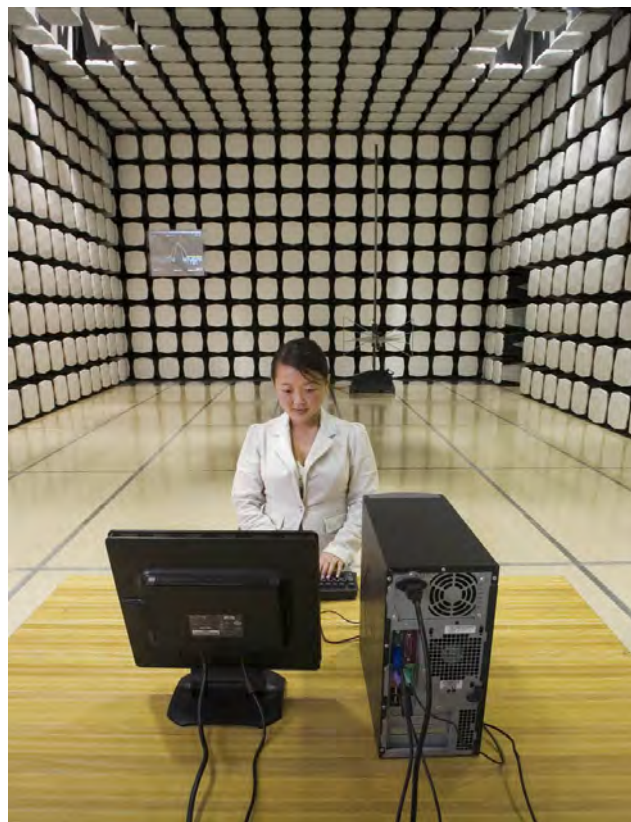
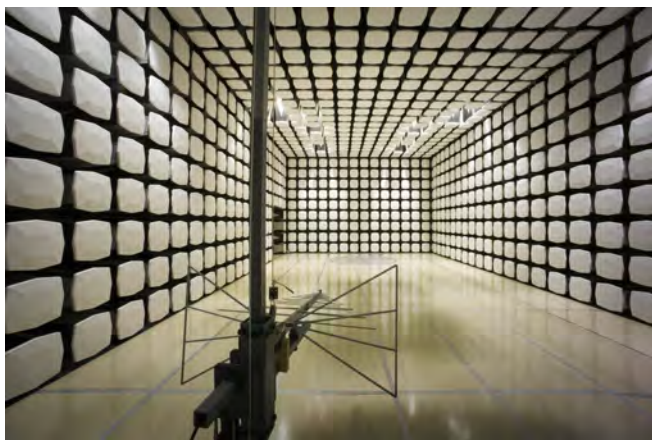
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



Party Requesting the Test

Company Name:	Supra, A Division of UTCFS
Address:	4001 Fairview Industrial Drive SE
City, State, Zip:	Salem, OR 97302-0167
Test Requested By:	Dean Sinn
Model:	Bluetooth iBox
First Date of Test:	September 8, 2010
Last Date of Test:	September 8, 2010
Receipt Date of Samples:	September 8, 2010
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test**Functional Description of the EUT (Equipment Under Test):**

Bluetooth radio inside of a battery operated key vault

Testing Objective:

Demonstrate compliance to the spurious radiated emissions requirements of FCC 15.247. The other requirements of FCC 15.247 are addressed in a separate report.

CONFIGURATION 1 SUPR0076

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth enabled key vault	Supra, A Division of UTCFS	Bluetooth iBox	L
Bluetooth enabled key vault	Supra, A Division of UTCFS	Bluetooth iBox	M
Bluetooth enabled key vault	Supra, A Division of UTCFS	Bluetooth iBox	H

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	9/8/2010	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting Ones and Zeros in GFSK modulation

MODE USED FOR FINAL DATA

Low Channel, 2402 MHz

Mid Channel, 2450 MHz

High Channel, 2480 MHz

POWER SETTINGS INVESTIGATED

Battery

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	25 MHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/6/2010	12
High Pass Filter	Micro-Tronics	HPM50111	HFO	7/9/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	7/9/2010	13
Antenna, Biconilog	EMCO	3141	AXE	1/14/2010	13
EV01 Cables	N/A	Bilog Cables	EVA	7/9/2010	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	7/9/2010	13
Antenna, Horn	EMCO	3115	AHC	7/8/2010	24
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	7/9/2010	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	8/25/2010	13
Antenna, Horn	ETS	3160-07	AHU	NCR	0
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	8/25/2010	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	8/25/2010	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	8/25/2010	13
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/19/2010	13

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

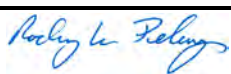
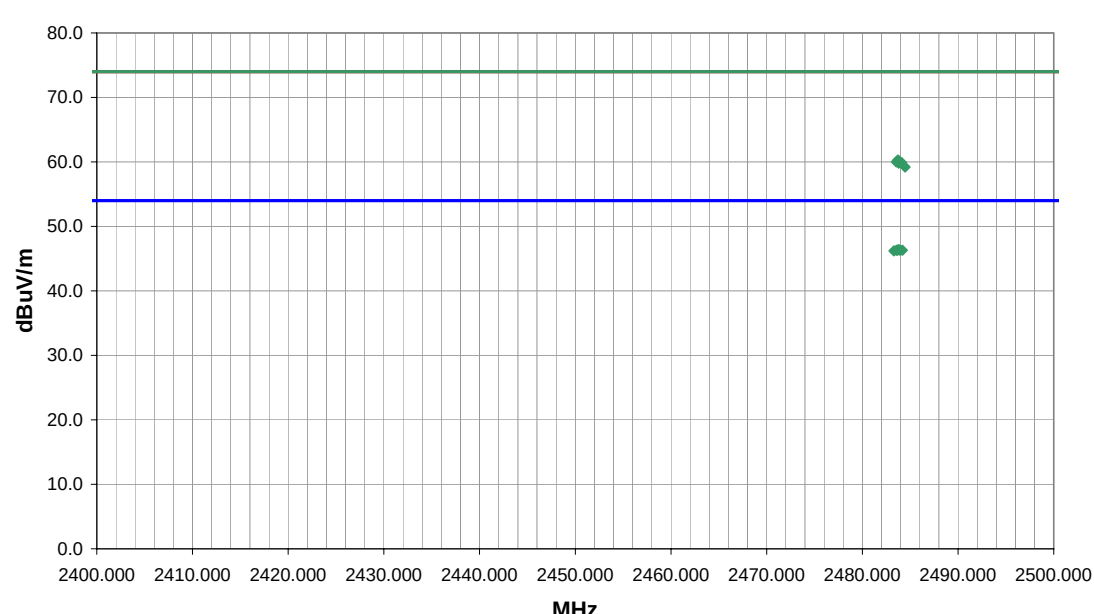
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

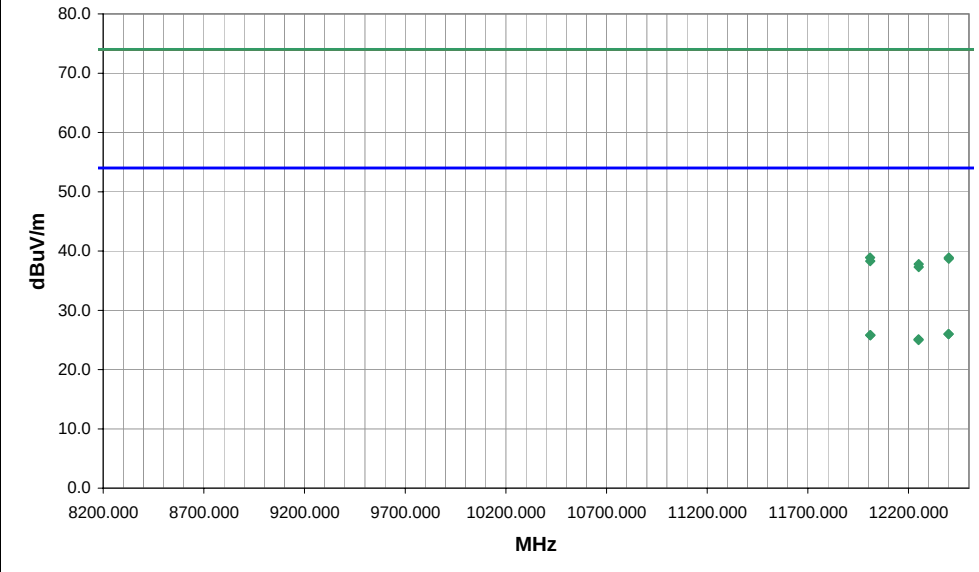
TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST EMC		PSA 2008.07.21 EMI 2008.1.9	
SPURIOUS RADIATED EMISSIONS			
EUT: Bluetooth iBox		Work Order: SUPR0076	
Serial Number: See Configuration Sheet		Date: 09/08/10	
Customer: Supra, A Division of UTCFS		Temperature: 22	
Attendees: Adam Purdue		Humidity: 45%	
Project: None		Barometric Pres.: 29.82	
Tested by: Rod Peloquin	Power: Battery	Job Site: EV01	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2010		ANSI C63.10:2009	
TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3
COMMENTS			
None			
EUT OPERATING MODES			
Transmitting Ones and Zeros			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
Run #	2	 Signature	
Configuration #	1		
Results	Pass		

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7438.523	23.4	16.1	120.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.5	54.0	-14.5	High channel, EUT on side
7438.657	23.4	16.1	3.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.5	54.0	-14.5	High channel, EUT on side
7349.193	23.4	15.8	264.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.2	54.0	-14.8	Mid channel, EUT on side
7348.583	23.4	15.7	237.0	1.6	3.0	0.0	H-Horn	AV	0.0	39.1	54.0	-14.9	Mid channel, EUT on side
4959.840	26.9	10.1	139.0	1.5	3.0	0.0	H-Horn	AV	0.0	37.0	54.0	-17.0	High channel, EUT on side
4959.757	26.7	10.1	235.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.8	54.0	-17.2	High channel, EUT on side
4959.780	26.7	10.1	29.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.8	54.0	-17.2	High channel, EUT horizontal
4803.820	26.7	9.4	11.0	1.0	3.0	0.0	H-Horn	AV	0.0	36.1	54.0	-17.9	Low channel, EUT on side
4959.793	25.4	10.1	69.0	1.6	3.0	0.0	H-Horn	AV	0.0	35.5	54.0	-18.5	High channel, EUT horizontal
4959.727	24.8	10.1	14.0	1.2	3.0	0.0	V-Horn	AV	0.0	34.9	54.0	-19.1	High channel, EUT vertical
4959.683	24.5	10.1	173.0	1.5	3.0	0.0	H-Horn	AV	0.0	34.6	54.0	-19.4	High channel, EUT vertical
4803.853	23.5	9.4	204.0	1.1	3.0	0.0	V-Horn	AV	0.0	32.9	54.0	-21.1	Low channel, EUT on side
7440.023	36.8	16.1	3.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.9	74.0	-21.1	High channel, EUT on side
7440.207	36.8	16.1	120.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.9	74.0	-21.1	High channel, EUT on side
4449.490	23.5	8.6	247.0	1.0	3.0	0.0	V-Horn	AV	0.0	32.1	54.0	-21.9	Mid channel, EUT on side
4450.123	23.5	8.6	130.0	1.0	3.0	0.0	H-Horn	AV	0.0	32.1	54.0	-21.9	Mid channel, EUT on side
7350.650	36.3	15.8	264.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.1	74.0	-21.9	Mid channel, EUT on side
7349.353	35.8	15.8	237.0	1.6	3.0	0.0	H-Horn	PK	0.0	51.6	74.0	-22.4	Mid channel, EUT on side
4959.803	39.0	10.1	139.0	1.5	3.0	0.0	H-Horn	PK	0.0	49.1	74.0	-24.9	High channel, EUT on side
4959.947	38.5	10.1	235.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.6	74.0	-25.4	High channel, EUT on side

NORTHWEST		SPURIOUS RADIATED EMISSIONS		PSA 2008.07.21									
EMC				EMI 2008.1.9									
EUT: Bluetooth iBox			Work Order: SUPR0076										
Serial Number: See Configuration Sheet			Date: 09/08/10										
Customer: Supra, A Division of UTCFS			Temperature: 22										
Attendees: Adam Purdue			Humidity: 45%										
Project: None			Barometric Pres.: 29.82										
Tested by: Rod Peloquin			Power: Battery		Job Site: EV01								
TEST SPECIFICATIONS			Test Method										
FCC 15.247:2010			ANSI C63.10:2009										
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4		Test Distance (m) 3									
COMMENTS													
None													
EUT OPERATING MODES													
Transmitting Ones and Zeros, High channel													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		1											
Configuration #		1											
Results		Pass											
 Signature													
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.777	24.1	2.3	342.0	2.6	3.0	20.0	V-Horn	AV	0.0	46.4	54.0	-7.6	EUT on side
2483.557	24.0	2.3	82.0	1.6	3.0	20.0	V-Horn	AV	0.0	46.3	54.0	-7.7	EUT vertical
2483.672	24.0	2.3	302.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	EUT vertical
2483.930	24.0	2.3	310.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	EUT on side
2484.190	24.0	2.3	246.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.3	54.0	-7.7	EUT on back
2483.303	23.9	2.3	43.0	1.6	3.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	EUT on back
2483.722	38.0	2.3	342.0	2.6	3.0	20.0	V-Horn	PK	0.0	60.3	74.0	-13.7	EUT on side
2483.773	37.9	2.3	310.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.2	74.0	-13.8	EUT on side
2483.545	37.7	2.3	82.0	1.6	3.0	20.0	V-Horn	PK	0.0	60.0	74.0	-14.0	EUT vertical
2484.105	37.6	2.3	302.0	1.0	3.0	20.0	H-Horn	PK	0.0	59.9	74.0	-14.1	EUT vertical
2483.805	37.5	2.3	246.0	1.0	3.0	20.0	H-Horn	PK	0.0	59.8	74.0	-14.2	EUT on back
2484.468	36.9	2.3	43.0	1.6	3.0	20.0	V-Horn	PK	0.0	59.2	74.0	-14.8	EUT on back

NORTHWEST		PSA 2008.07.21											
EMC		EMI 2008.1.9											
SPURIOUS RADIATED EMISSIONS													
EUT:	Bluetooth iBox		Work Order:										
Serial Number:	See Configuration Sheet		Date:										
Customer:	Supra, A Division of UTCFS		Temperature:										
Attendees:	Adam Purdue		Humidity:										
Project:	None		Barometric Pres.:										
Tested by:	Rod Peloquin	Power:	Battery										
TEST SPECIFICATIONS		Test Method											
FCC 15.247:2010		ANSI C63.10:2009											
TEST PARAMETERS													
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3										
COMMENTS													
None													
EUT OPERATING MODES													
Transmitting Ones and Zeros													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #	3	 Signature											
Configuration #	1												
Results	Pass												
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
12398.520	27.8	-1.8	76.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.0	54.0	-28.0	High channel, EUT on side
12398.870	27.8	-1.8	170.0	1.0	3.0	0.0	H-Horn	AV	0.0	26.0	54.0	-28.0	High channel, EUT on side
12009.960	30.0	-4.2	39.0	1.1	3.0	0.0	V-Horn	AV	0.0	25.8	54.0	-28.2	Low channel, EUT on side
12010.820	30.0	-4.2	271.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.8	54.0	-28.2	Low channel, EUT on side
12249.600	27.9	-2.8	338.0	1.0	3.0	0.0	H-Horn	AV	0.0	25.1	54.0	-28.9	Mid channel, EUT on side
12249.870	27.8	-2.8	354.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.0	54.0	-29.0	Mid channel, EUT on side
12399.610	40.7	-1.8	170.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.9	74.0	-35.1	High channel, EUT on side
12009.210	43.1	-4.2	39.0	1.1	3.0	0.0	V-Horn	PK	0.0	38.9	74.0	-35.1	Low channel, EUT on side
12399.550	40.5	-1.8	76.0	1.0	3.0	0.0	V-Horn	PK	0.0	38.7	74.0	-35.3	High channel, EUT on side
12009.300	42.5	-4.2	271.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.3	74.0	-35.7	Low channel, EUT on side
12250.600	40.6	-2.8	338.0	1.0	3.0	0.0	H-Horn	PK	0.0	37.8	74.0	-36.2	Mid channel, EUT on side
12250.100	40.1	-2.8	354.0	1.0	3.0	0.0	V-Horn	PK	0.0	37.3	74.0	-36.7	Mid channel, EUT on side