

Starkey Laboratories, Inc.

Surflink Media (Streamer)

Report No. STAK0004

Report Prepared By



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

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EMC Test Report

Certificate of Test
Last Date of Test: January 21, 2011
Starkey Laboratories, Inc.
Model: Surfink Media (Streamer)

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Occupied Bandwidth	FCC 15.247:2011	ANSI C63.10:2009	Pass
Radiated Output Power	FCC 15.247:2011	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2011	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2011	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2011	ANSI C63.10:2009	Pass

Modifications made to the product
See the Modifications section of this report

Test Facility

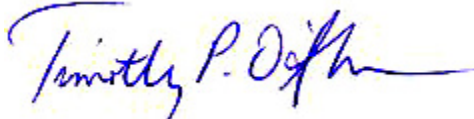
The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
9349 W Broadway Ave.
Brooklyn Park, MN 55445

Phone: (763) 425-2281 Fax: (763) 424-3469

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

Approved By:



Tim O'Shea, Operations Manager



NVLAP Lab Code: 200881-0

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 National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. 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.

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.

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).



Accreditations and Authorizations

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).

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, Brooklyn Park: US0175*)

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



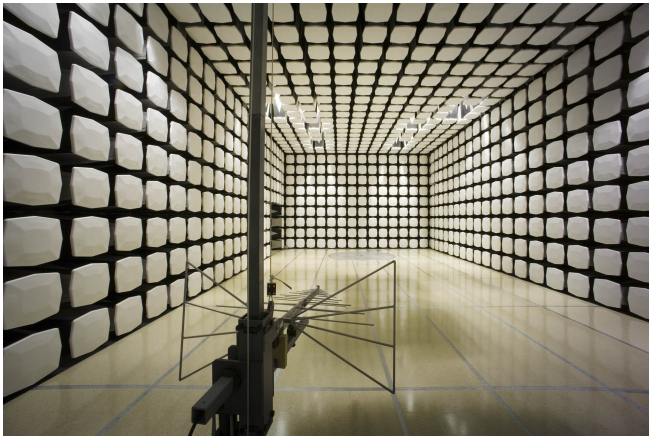
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

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:	Starkey Laboratories, Inc.
Address:	6600 Washington Ave. SO.
City, State, Zip:	Eden Prairie, MN 55344
Test Requested By:	Ken Meyer
Model:	Surflink Media (Streamer)
First Date of Test:	January 21, 2011
Last Date of Test:	January 21, 2011
Receipt Date of Samples:	January 21, 2011
Equipment Design Stage:	Production
Equipment Condition:	No Damage

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

Wireless media streamer that can accept various wired audio inputs from a TV or other audio sources for wireless transmission to hearing aids. The transmitter is a low power, short-range device operating in the 902 - 928 MHz range.

Testing Objective:

These tests were selected to satisfy the EMC requirements requested by the client.

CONFIGURATION 1 STAK0004

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Streamer	Starkey Laboratories, Inc.	200	M104300066

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
DC Wallwart	I.T.E Power supply	HK-U-050A100-CP	None
USB Hub Board	Starkey	1000030	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop DC Power	Dell	9T215	CN-09T215-71615-514-2CDA
Laptop	Dell	PP18L	3406803517

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	AC Mains	Laptop DC Power
DC Power	No	1.5m	No	DC Wallwart	USB Hub Board
RCA	No	1.0m	No	Streamer	Unterminated
USB	No	1.5m	No	Streamer	USB Hub Board
USB	No	4.9m	No	USB Hub Board	Laptop

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	1/21/2011	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	1/21/2011	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	1/21/2011	Radiated Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	1/21/2011	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	1/21/2011	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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/15/2010	13
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

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. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier full maximized for its highest radiated power. The EUT was transmitting at its maximum data rate with the typical modulation and a test duty cycle.

EMC**Occupied Bandwidth**

EUT: Surflink Media (Streamer)		Work Order: STAK0004
Serial Number: M104300066		Date: 01/21/11
Customer: Starkey Laboratories, Inc.		Temperature: 23.68°C
Attendees: Larry McNabb		Humidity: 4%
Project: None		Barometric Pres.: 1021.9
Tested by: Trevor Buls	Power: USB	Job Site: MN05

TEST SPECIFICATIONS		Test Method
FCC 15.247:2011		ANSI C63.10:2009

COMMENTS
None

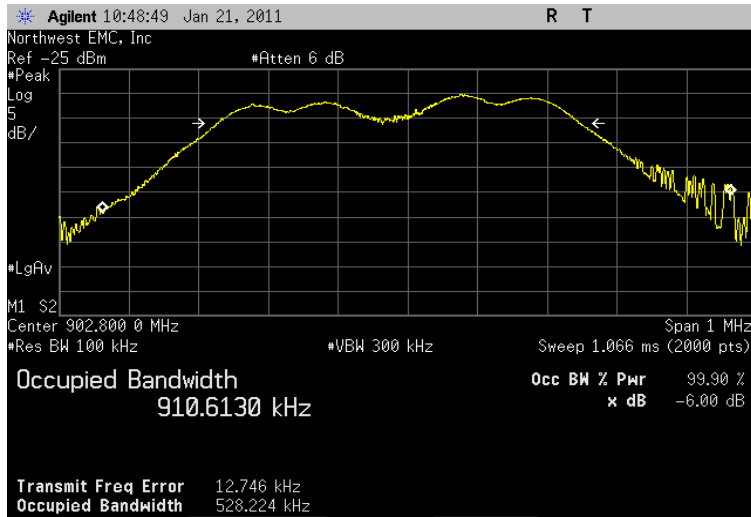
DEVIATIONS FROM TEST STANDARD
None

Configuration #	1	Signature <i>Trevor Buls</i>
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Channel	Value	Limit	Result
Low	528.224 kHz	>= 500 kHz	Pass
Mid	531.712 kHz	>= 500 kHz	Pass
High	533.366 kHz	>= 500 kHz	Pass

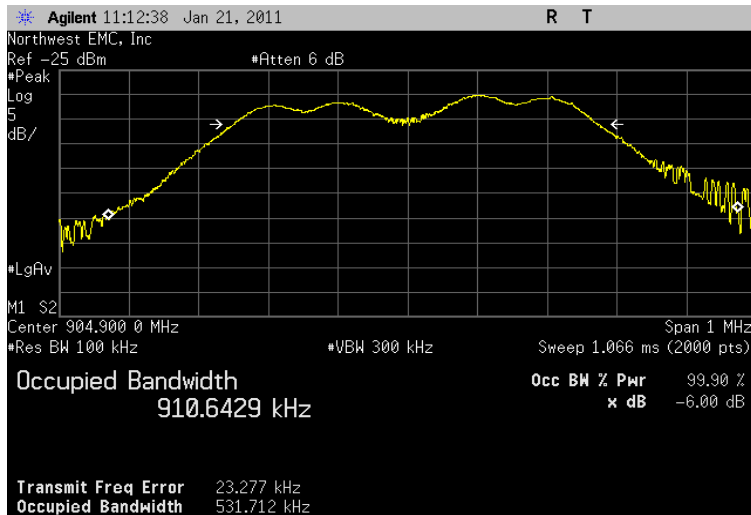
Low

Value	Limit	Result
528.224 kHz	>= 500 kHz	Pass



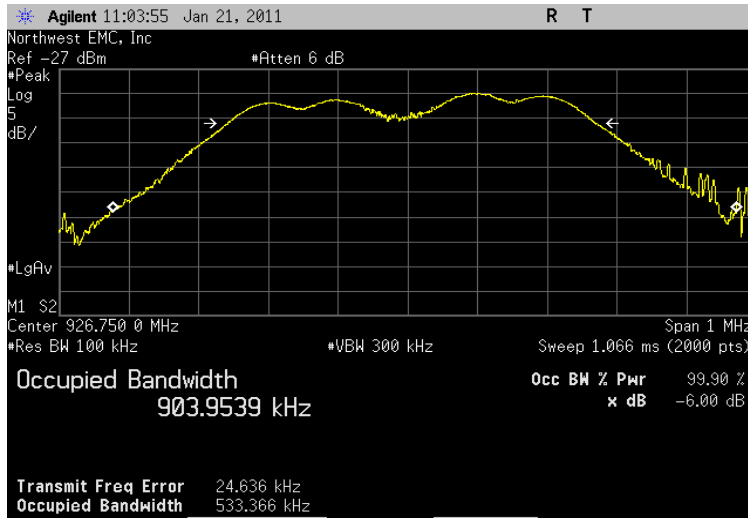
Mid

Value	Limit	Result
531.712 kHz	>= 500 kHz	Pass



High

	Value	Limit	Result
	533.366 kHz	>= 500 kHz	Pass



EMC**Radiated Output Power**

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting modulated signal. Power level 0x3E.

POWER SETTINGS INVESTIGATED

USB

CONFIGURATIONS INVESTIGATED

STAK0004 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	902 MHz	Stop Frequency	928 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
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/15/2010	13 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	13 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12 mo

MEASUREMENT BANDWIDTHS

	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth 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. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The radiated power was measured using a spectrum analyzer and horn antenna in a semi-anechoic chamber. The resolution bandwidth was set to 3 MHz and the video bandwidth was set to 8 MHz. A peak detector was used. The EUT was transmitting at its maximum data rate. The level of fundamental emission was maximized by rotating the turntable and moving the measurement antenna from 1 – 4 meters in height.

The field strength measurement was converted to effective radiated power (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 5.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

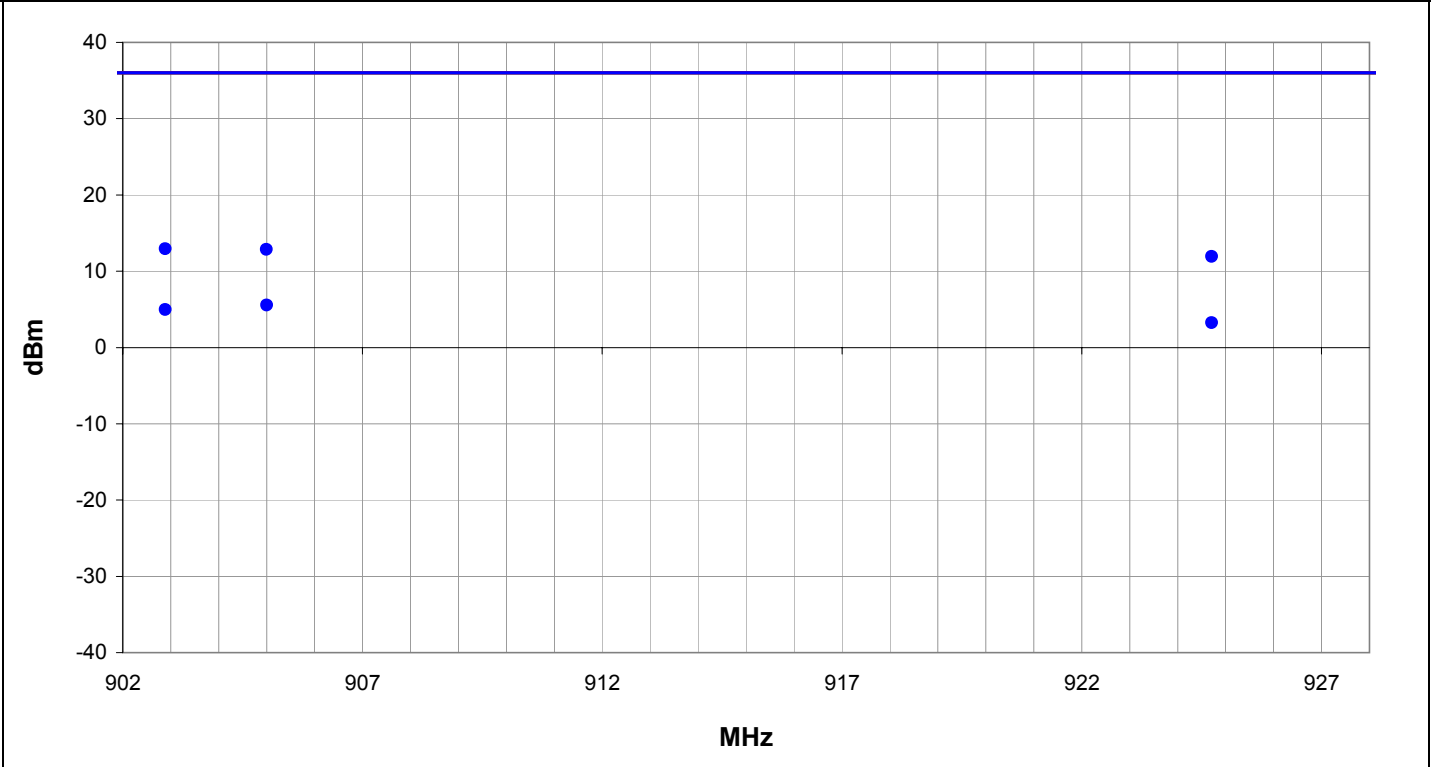
EMC

Radiated Output Power

Work Order:	STAK0004	Date:	01/21/11	<i>Trevor Buls</i> Tested by: Trevor Buls
Project:	None	Temperature:	23.68	
Job Site:	MN05	Humidity:	3.94	
Serial Number:	M104300066	Barometric Pres.:	1021.9	
EUT:	Surflink Media (Streamer)			
Configuration:	1 - STAK0004			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Larry Mcnabb			
EUT Power:	USB			
Operating Mode:	Transmitting modulated signal. Power level 0x3E.			
Deviations:	None			
Comments:	Device was tested in one position only because it will only be operated this way per the manufacturer.			

Test Specifications FCC 15.247:2011	Test Method ANSI C63.10:2009
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Run #	4	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
902.885	1.0	358.0	Horz	PK	1.98E-02	13.0	36.0	-23.0
904.999	1.0	320.0	Horz	PK	1.93E-02	12.8	36.0	-23.2
924.713	1.0	5.0	Horz	PK	1.57E-02	11.9	36.0	-24.1
905.002	2.6	114.0	Vert	PK	3.59E-03	5.5	36.0	-30.5
902.886	2.6	123.0	Vert	PK	3.13E-03	5.0	36.0	-31.0
924.712	1.5	132.0	Vert	PK	2.11E-03	3.2	36.0	-32.8

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/15/2010	13
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

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. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. A radiated measurement was made at a 3 meter test distance in a FCC-listed chamber. The emissions were maximized by varying the height of the measurement antenna and rotating the azimuth of the turntable.

The spectrum was scanned across each band edge from at least 5 MHz below the band edge to 5 MHz above the band edge.

Band Edge Compliance

EMC

EUT:	Surflink Media (Streamer)	Work Order:	STAK0004
Serial Number:	M104300066	Date:	01/21/11
Customer:	Starkey Laboratories, Inc.	Temperature:	23.68°C
Attendees:	Larry McNabb	Humidity:	4%
Project:	None	Barometric Pres.:	1021.9
Tested by:	Trevor Buls	Power:	USB
		Job Site:	MN05

TEST SPECIFICATIONS		Test Method	
FCC 15.247:2011		ANSI C63.10:2009	

COMMENTS
None

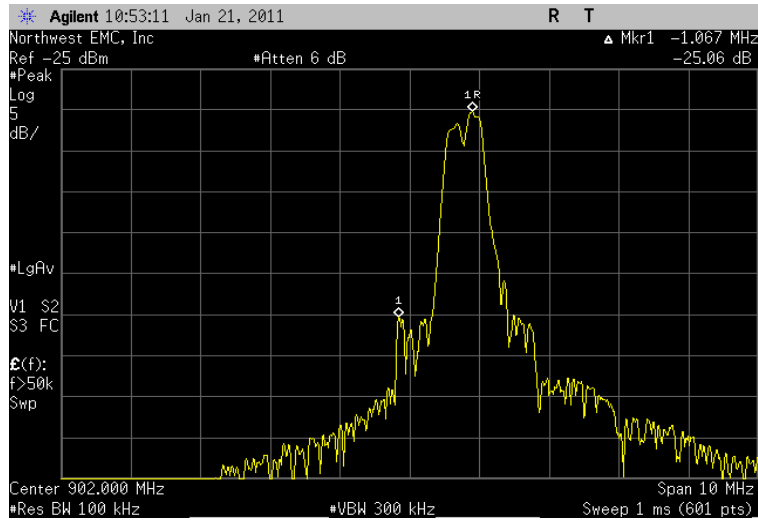
DEVIATIONS FROM TEST STANDARD
None

Configuration #	1	Signature	<i>Trevor Buls</i>
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Channel	Value	Limit	Result
Low	-25.06 dBc	≤ -20 dBc	Pass
High	-32.71 dBc	≤ -20 dBc	Pass

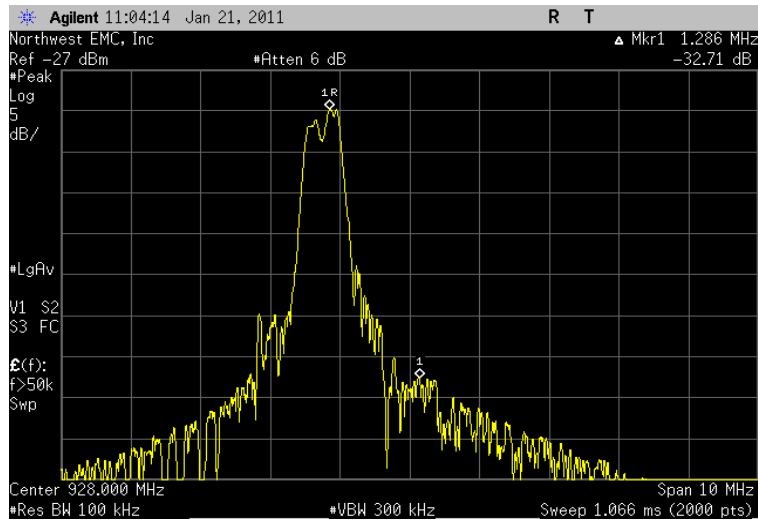
Low

Value	Limit	Result
-25.06 dBc	≤ -20 dBc	Pass



High

Value	Limit	Result
-32.71 dBc	≤ -20 dBc	Pass



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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/15/2010	13
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	13
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12

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. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. A radiated measurement was made at a 3 meter test distance in a FCC-listed chamber. The fundamental emission was maximized by varying the height of the measurement antenna and rotating the azimuth of the turntable. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 35 dB for correction to 3 kHz."

The field strength measurement of power spectral density was converted to effective radiated power spectral density (dBm/3kHz) (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 6.

EMC

Power Spectral Density

EUT: Surfink Media (Streamer)	Work Order: STAK0004
Serial Number: M104300066	Date: 01/21/11
Customer: Starkey Laboratories, Inc.	Temperature: 23.68°C
Attendees: Larry McNabb	Humidity: 4%
Project: None	Barometric Pres.: 1021.9
Tested by: Trevor Buls	Power: USB
	Job Site: MN05

TEST SPECIFICATIONS		Test Method
FCC 15.247:2011		ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

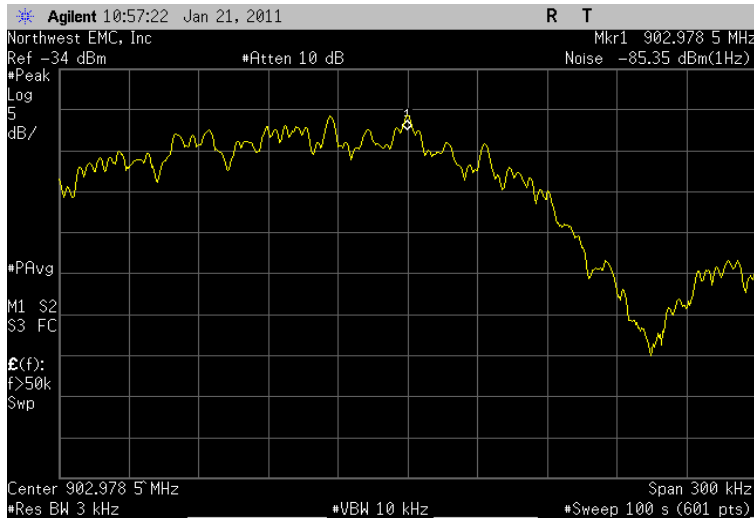
None

Configuration #	1	Signature <i>Trevor Buls</i>
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Channel	Reading (dBm/Hz)	Reading (dBm/3kHz)	Factor (dB)	Field Strength (dBm/3kHz/m)	PSD EIRP (dBm/3kHz)(EIRP)	Limit	Result
Low	-85.35	-50.55	31.4	-19.15	-7.38	8 dBm/3 kHz	Pass
Mid	-85.73	-50.93	31.4	-19.53	-7.76	8 dBm/3 kHz	Pass
High	-86.86	-52.06	31.4	-20.66	-8.89	8 dBm/3 kHz	Pass

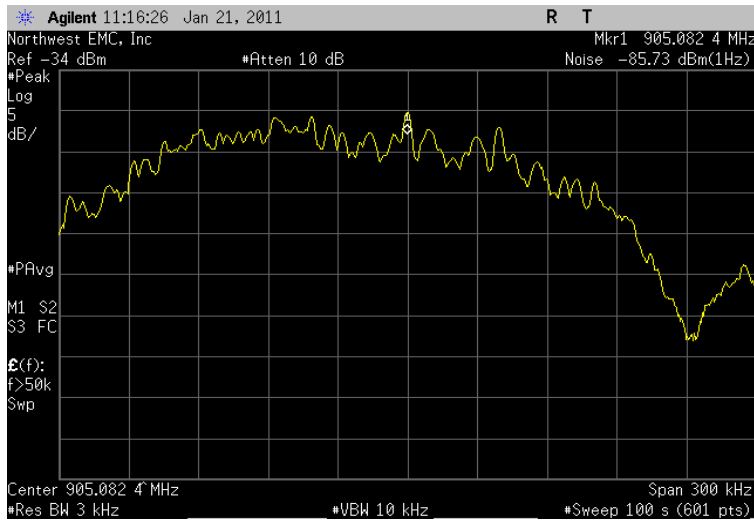
Low

Reading (dBm/Hz)	Reading (dBm/3kHz)	Factor (dB)	Field Strength (dBm/3kHz/m)	PSD (EIRP) (dBm/3kHz)	Limit	Result
-85.35	-50.55	31.4	-19.15	-7.38	8 dBm/3 kHz	Pass

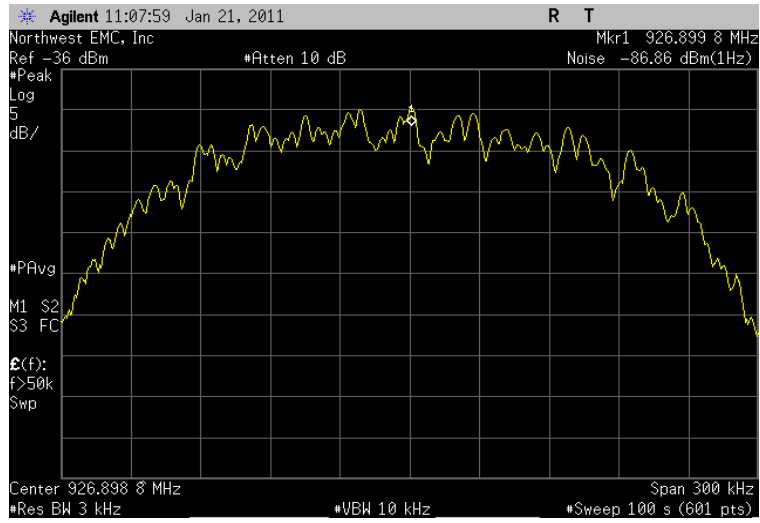


Mid

Reading (dBm/Hz)	Reading (dBm/3kHz)	Factor (dB)	Field Strength (dBm/3kHz/m)	PSD (EIRP) (dBm/3kHz)	Limit	Result
-85.73	-50.93	31.4	-19.53	-7.76	8 dBm/3 kHz	Pass



High							
Reading (dBm/Hz)	Reading (dBm/3kHz)	Factor (dB)	Field Strength (dBm/3kHz/m)	PSD (EIRP) (dBm/3kHz)	Limit	Result	
-86.86	-52.06	31.4	-20.66	-8.89	8 dBm/3 kHz	Pass	



EMC**Spurious Radiated Emissions**

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting modulated signal High channel 926.8 MHz. Power level 0x3E.
 Transmitting modulated signal Mid channel 905.1 MHz. Power level 0x3E.
 Transmitting modulated signal Low channel 902.6 MHz. Power level 0x3E.

POWER SETTINGS INVESTIGATED

USB

CONFIGURATIONS INVESTIGATED

STAK0004 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	10 GHz
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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
Attenuator, 20 dB, 'SMA'	SM Electronics	SA6-20	REO	7/9/2010	13 mo
Attenuator, 10db, 'SMA'	S.M. Electronics	SA18H-10	REN	7/9/2010	13 mo
Low Pass Filter 0-425 MHz	Micro-Tronics	LPM50003	HGO	7/9/2010	13 mo
High Pass Filter	Micro-Tronics	HPM50108	HGP	7/9/2010	13 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/19/2010	13 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/19/2010	13 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	7/19/2010	13 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	12/22/2009	24 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/19/2010	13 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/19/2010	13 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	13 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	1/15/2010	13 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/24/2010	12 mo

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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth 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. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

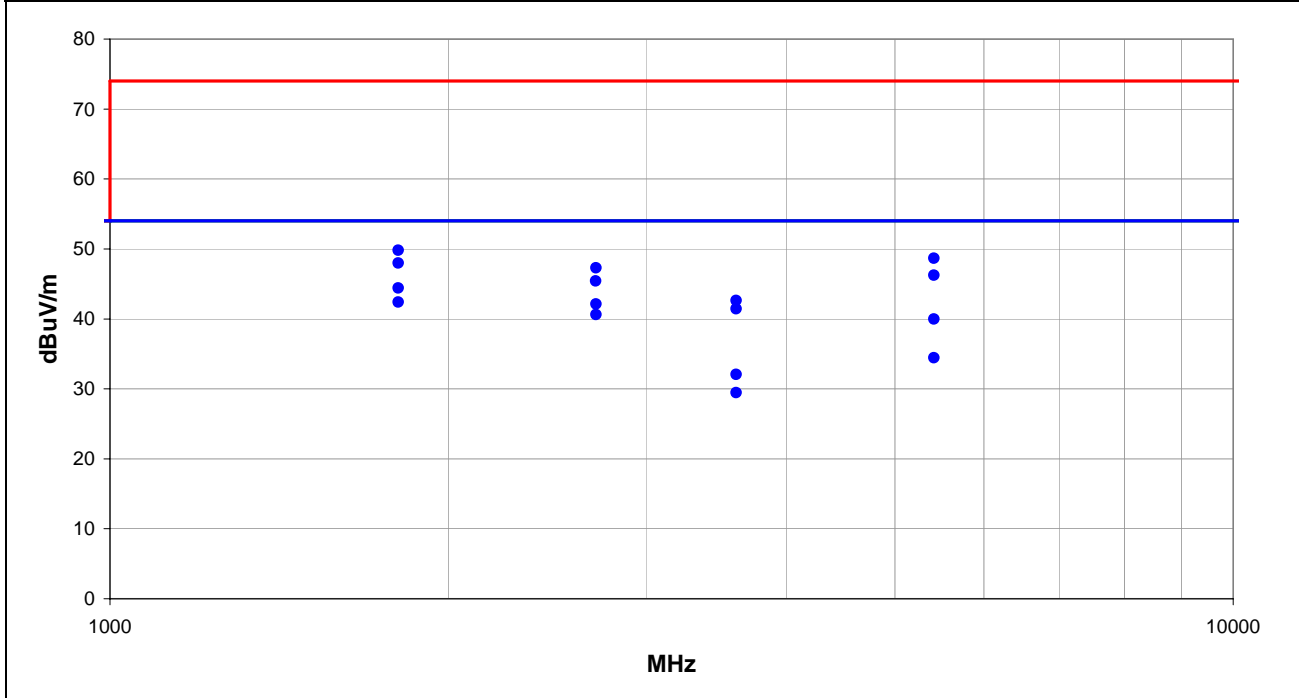
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify 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.

EMC

Spurious Radiated Emissions

Work Order:	STAK0004	Date:	01/21/11	<i>Trevor Buls</i>
Project:	None	Temperature:	23.68°C	
Job Site:	MN05	Humidity:	3.94	
Serial Number:	M104300066	Barometric Pres.:	1021.9	
EUT:	Surflink Media (Streamer)			
Configuration:	1 - STAK0004			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Larry McNabb			
EUT Power:	USB			
Operating Mode:	Transmitting modulated signal Low channel 902.6 MHz. Power level 0x3E.			
Deviations:	None			
Comments:	Device was tested in one position only because it will only be operated this way per the manufacturer.			

Test Specifications FCC 15.247:2011	Test Method ANSI C63.10:2009						
Run #	1	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
1805.836	50.6	-6.2	1.2	49.0	3.0	0.0	Horz	AV	0.0	44.4	54.0	-9.6
1805.322	48.6	-6.2	1.1	72.0	3.0	0.0	Vert	AV	0.0	42.4	54.0	-11.6
2707.936	45.7	-3.6	1.1	152.0	3.0	0.0	Vert	AV	0.0	42.1	54.0	-11.9
2707.921	44.2	-3.6	1.1	170.0	3.0	0.0	Horz	AV	0.0	40.6	54.0	-13.4
5415.812	34.5	5.5	1.4	23.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0
5415.793	29.0	5.5	1.0	4.0	3.0	0.0	Horz	AV	0.0	34.5	54.0	-19.5
3610.507	33.3	-1.3	1.6	279.0	3.0	0.0	Horz	AV	0.0	32.0	54.0	-22.0
1805.562	56.0	-6.2	1.2	49.0	3.0	0.0	Horz	PK	0.0	49.8	74.0	-24.2
3610.560	30.7	-1.3	1.0	310.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6
5415.512	43.2	5.5	1.4	23.0	3.0	0.0	Vert	PK	0.0	48.7	74.0	-25.3
1805.622	54.2	-6.2	1.1	72.0	3.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0
2708.283	50.9	-3.6	1.1	152.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7
5415.367	40.8	5.5	1.0	4.0	3.0	0.0	Horz	PK	0.0	46.3	74.0	-27.7
2707.568	49.0	-3.6	1.1	170.0	3.0	0.0	Horz	PK	0.0	45.4	74.0	-28.6
3610.687	43.9	-1.3	1.6	279.0	3.0	0.0	Horz	PK	0.0	42.6	74.0	-31.4
3610.767	42.7	-1.3	1.0	310.0	3.0	0.0	Vert	PK	0.0	41.4	74.0	-32.6

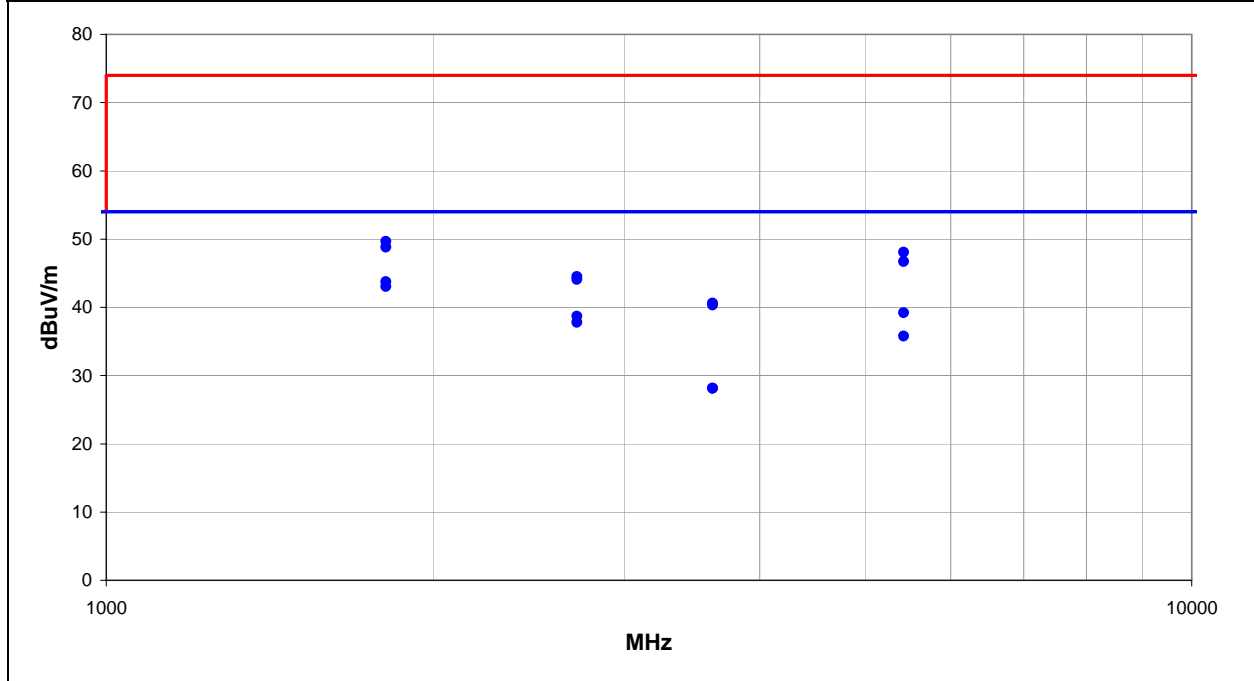
EMC

Spurious Radiated Emissions

Work Order:	STAK0004	Date:	01/21/11	<i>Trevor Buls</i>
Project:	None	Temperature:	23.68°C	
Job Site:	MN05	Humidity:	3.94	
Serial Number:	M104300066	Barometric Pres.:	1021.9	
EUT:	Surflink Media (Streamer)			
Configuration:	1 - STAK0004			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Larry McNabb			
EUT Power:	USB			
Operating Mode:	Transmitting modulated signal Mid channel 905.1 MHz. Power level 0x3E.			
Deviations:	None			
Comments:	Device was tested in one position only because it will only be operated this way per the manufacturer.			

Test Specifications FCC 15.247:2011	Test Method ANSI C63.10:2009
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Run #	14	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
1810.095	49.9	-6.2	1.2	49.0	3.0	0.0	Horz	AV	0.0	43.7	54.0	-10.3
1809.575	49.2	-6.2	1.1	68.0	3.0	0.0	Vert	AV	0.0	43.0	54.0	-11.0
5428.563	33.7	5.5	1.3	27.0	3.0	0.0	Vert	AV	0.0	39.2	54.0	-14.8
2714.312	42.3	-3.6	1.3	10.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3
2714.272	41.4	-3.6	1.2	202.0	3.0	0.0	Horz	AV	0.0	37.8	54.0	-16.2
5428.513	30.3	5.5	1.0	186.0	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2
1809.815	55.8	-6.2	1.2	49.0	3.0	0.0	Horz	PK	0.0	49.6	74.0	-24.4
1809.662	55.0	-6.2	1.1	68.0	3.0	0.0	Vert	PK	0.0	48.8	74.0	-25.2
3620.260	29.3	-1.2	1.0	89.0	3.0	0.0	Vert	AV	0.0	28.1	54.0	-25.9
3620.220	29.3	-1.2	1.0	91.0	3.0	0.0	Horz	AV	0.0	28.1	54.0	-25.9
5427.803	42.6	5.5	1.3	27.0	3.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9
5429.360	41.2	5.5	1.0	186.0	3.0	0.0	Horz	PK	0.0	46.7	74.0	-27.3
2714.278	48.1	-3.6	1.3	10.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5
2714.345	47.7	-3.6	1.2	202.0	3.0	0.0	Horz	PK	0.0	44.1	74.0	-29.9
3619.647	41.8	-1.2	1.0	91.0	3.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4
3619.840	41.5	-1.2	1.0	89.0	3.0	0.0	Vert	PK	0.0	40.3	74.0	-33.7

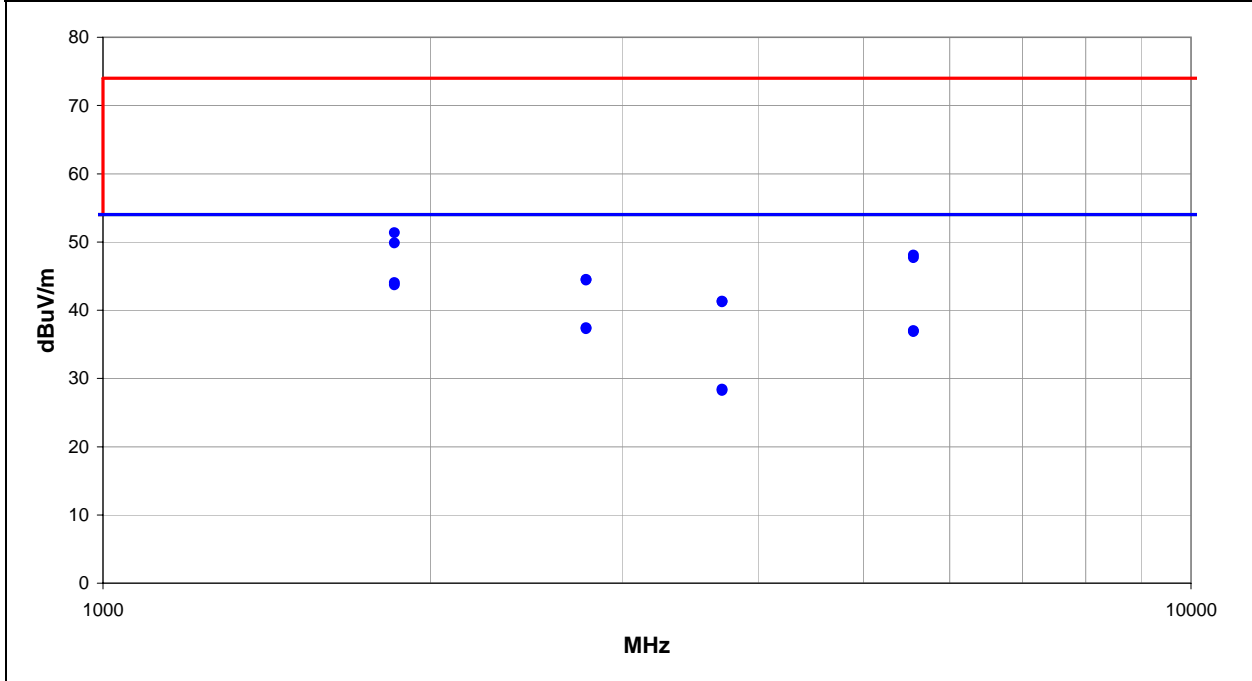
EMC

Spurious Radiated Emissions

Work Order:	STAK0004	Date:	01/21/11	<i>Trevor Buls</i> Tested by: Trevor Buls
Project:	None	Temperature:	23.68°C	
Job Site:	MN05	Humidity:	3.94	
Serial Number:	M104300066	Barometric Pres.:	1021.9	
EUT:	Surflink Media (Streamer)			
Configuration:	1 - STAK0004			
Customer:	Starkey Laboratories, Inc.			
Attendees:	Larry McNabb			
EUT Power:	USB			
Operating Mode:	Transmitting modulated signal High channel 926.8 MHz. Power level 0x3E.			
Deviations:	None			
Comments:	Device was tested in one position only because it will only be operated this way per the manufacturer.			

Test Specifications FCC 15.247:2011	Test Method ANSI C63.10:2009
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Run #	8	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
1853.259	49.8	-5.8	1.2	84.0	3.0	0.0	Vert	AV	0.0	44.0	54.0	-10.0
1853.512	49.5	-5.8	1.1	54.0	3.0	0.0	Horz	AV	0.0	43.7	54.0	-10.3
2779.816	41.2	-3.8	1.2	357.0	3.0	0.0	Vert	AV	0.0	37.4	54.0	-16.6
2779.822	41.1	-3.8	1.1	194.0	3.0	0.0	Horz	AV	0.0	37.3	54.0	-16.7
5559.678	31.3	5.7	1.1	285.0	3.0	0.0	Horz	AV	0.0	37.0	54.0	-17.0
5559.610	31.2	5.7	1.7	261.0	3.0	0.0	Vert	AV	0.0	36.9	54.0	-17.1
1853.499	57.1	-5.8	1.1	54.0	3.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7
1853.473	55.6	-5.8	1.2	84.0	3.0	0.0	Vert	PK	0.0	49.8	74.0	-24.2
3707.513	29.0	-0.6	1.0	48.0	3.0	0.0	Horz	AV	0.0	28.4	54.0	-25.6
3707.667	28.8	-0.6	1.0	199.0	3.0	0.0	Vert	AV	0.0	28.2	54.0	-25.8
5559.490	42.4	5.7	1.7	261.0	3.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9
5559.251	42.0	5.7	1.1	285.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3
2780.022	48.3	-3.8	1.2	357.0	3.0	0.0	Vert	PK	0.0	44.5	74.0	-29.5
2780.029	48.2	-3.8	1.1	194.0	3.0	0.0	Horz	PK	0.0	44.4	74.0	-29.6
3707.813	41.9	-0.6	1.0	199.0	3.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7
3707.200	41.8	-0.6	1.0	48.0	3.0	0.0	Horz	PK	0.0	41.2	74.0	-32.8