

TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Nextlink.
Bluespoon AX2.

To: FCC Part 15.247: 2004 (Subpart C)

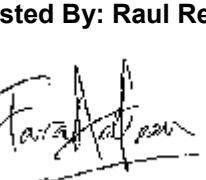
Test Report Serial No:
RFI\MPTE2\RP47519JD04A

Supersedes Test Report Serial No:
RFI/MPTE1/RP47519JD01A

This Test Report Is Issued Under The Authority
Of Andrew Brown, Operations Manager:

pp

Tested By: Raul Recio


pp

Checked By: Nigel Davison



Report Copy No: PDF01

Issue Date: 05 December 2005

Test Dates: 24 October 2005 to 31 October 2005

The Bluetooth® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by RFI Global Services Ltd. is under license. Other trademarks and trade names are those of their respective owners.

This report is issued in Adobe Acrobat portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields.

This report may be copied in full. The results in this report apply only to the sample(s) tested.

RFI Global Services Ltd

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG
Telephone: +44 (0)1256 312000 Facsimile: +44 (0)1256 312001
Email: info@rfi-global.com Website: www.rfi-global.com

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

This page has been left intentionally blank.

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

Table of Contents

1. Client Information	4
2. Equipment Under Test (EUT)	5
3. Test Results.....	10
4. Deviations from the Test Specification.....	11
5. Operation of the EUT during Testing	12
6. Summary of Test Results	13
7. Measurements, Examinations and Derived Results	14
8. Measurement Uncertainty	51
9. Measurement Methods	52
Appendix 1. Test Equipment Used	62
Appendix 2. Test Configuration Drawings.....	64

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

1. Client Information

Company Name:	Nextlink.to A/S
Address:	Sandtoften 10 DK-2820 Gentofte DENMARK
Contact Name:	Edina Mujan

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

Brand Name:	Nextlink
Model Name or Number:	Bluespoon AX2
Unique Type Identification:	None Stated
Bluetooth Address::	0014 CF00 6629
Hardware Version:	1.00 a
Software Version:	1.00 a
FCC ID Number:	QNYNXLAX2
Country of Manufacture:	Thailand
Date of Receipt:	24 October 2005

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

2.2. Accessories

The following accessories were supplied with the EUT:

Description:	AC/DC Adapter
Brand Name:	AS
Model Name or Number:	FW7600U/06
Serial Number:	0605
Cable Length and Type:	1.20m / Multi core
Connected to Port:	EUT's DC in

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

2.3. Description of EUT

The equipment under test is a *Bluetooth*® Wireless Headset.

2.4. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

2.5. Additional Information Related to Testing

Power Supply Requirement:	Internal Battery supply of 3.7 V.		
Intended Operating Environment:	Residential		
Equipment Category:	Part 15 Spread Spectrum Transmitter		
Type of Unit:	Portable (Standalone powered device)		
Transmit Frequency Range:	2400 MHz to 2483.5 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	2402.0
	Middle	40	2441.0
	Top	79	2480.0
Receive Frequency Range:	2400 MHz to 2483.5 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	1	2402.0
	Middle	40	2441.0
	Top	79	2480.0
Maximum Power Output (EIRP)	1.4 dBm		

2.6. Port Identification

Port	Description	Type/Length	Applicable
1	Antenna Port	SMA	Y
2	DC power in port	DC	Y

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

2.7. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	CSR MSP-003 Bluecore 3 Audio Development Kit
Brand Name:	Nextlink
Model Name or Number:	CSR DEV-PC-1309C
Serial Number:	140897
Cable Length and Type:	Not Applicable
Connected to Port:	Not Applicable (Test Cable soldered directly to EUT)

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	D610
Serial Number:	0D4547-48643-544-5681
Cable Length and Type:	Not Applicable
Connected to Port:	Serial Port and Parallel Port

Description:	Serial Cable RS232
Brand Name:	Not Applicable
Model Name or Number:	Not Applicable
Serial Number:	Not Applicable
Cable Length and Type:	1.8m / RS232 Serial Cable
Connected to Port:	Serial Port (COM)

Description:	Parallel Cable (LPT)
Brand Name:	Not Applicable
Model Name or Number:	Not Applicable
Serial Number:	Not Applicable
Cable Length and Type:	1.8m / Parallel Cable
Connected to Port:	PC Parallel Port (LPT)

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

3. Test Results

Reference:	FCC Part 15.247: 2004 Subpart C
Title:	Code of Federal Regulations, Part 15.247 (47 CFR Part 15) (Intentional Radiators operating within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz)

3.1. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)

Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

DA00-705 (2000)

Title: Filing and Frequency Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

3.2. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

4. Deviations from the Test Specification

None.

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

5. Operation of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated.

Continuously transmitting in test mode or stand-by mode.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

For all tests the EUT was connected to a *Bluetooth* test set using the EUT's antenna port. The AC/DC adaptor and support equipment (LPT cable, serial cable and EUT's control board) were plugged into the EUT at all times as this exhibited the worst case mode of operation.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Compliance Status
Idle Mode AC Conducted Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15: 2004 Section 15.107	AC Mains	Complied
Idle Mode Radiated Spurious Emissions	C.F.R. 47 FCC Part 15: 2004 Section 15.109	Cabinet	Complied
Transmitter AC Conducted Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15: 2004 Section 15.207	AC Mains	Complied
Transmitter 20 dB Bandwidth	C.F.R. 47 FCC Part 15: 2004 Section 15.247(a)(1)	Antenna Terminals	Complied
Transmitter Carrier Frequency Separation	C.F.R. 47 FCC Part 15: 2004 Section 15.247(a)(1)	Antenna Terminals	Complied
Transmitter Average Time of Occupancy	C.F.R. 47 FCC Part 15: 2004 Section 15.247(a)(1)(iii)	Antenna Terminals	Complied
Transmitter Maximum Peak Output Power	C.F.R. 47 FCC Part 15: 2004 Section 15.247(b)(1)	Antenna Terminals	Complied
Transmitter Conducted Emissions	C.F.R. 47 FCC Part 15: 2004 Section 15.247 (d)	Antenna Terminals	Complied
Transmitter Radiated Emissions	C.F.R. 47 FCC Part 15: 2004 Sections 15.247(d) & 15.209(a)	Cabinet	Complied
Transmitter Band Edge Conducted Emissions	C.F.R. 47 FCC Part 15: 2004 Section 15.247(d)	Antenna Terminals	Complied
Transmitter Band Edge Radiated Emissions	C.F.R. 47 FCC Part 15: 2004 Sections 15.247(d) & 15.209(a)	Cabinet	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of
 RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, England.
 RFI Global Services Ltd, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG, England.

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2. Test Results

7.2.1. Idle Mode AC Conducted Spurious Emissions: Section 15.107

The EUT was configured as for ac conducted emission measurements as described in section 9 of this report.

Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Results:

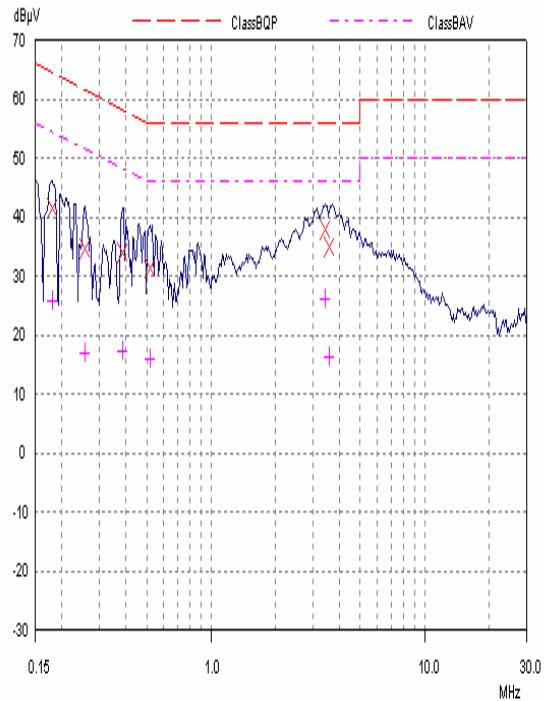
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.18014	Neutral	41.46	64.48	23.02	Complied
0.25637	Neutral	34.45	61.55	27.10	Complied
0.38493	Neutral	34.02	58.17	24.15	Complied
0.51988	Neutral	31.38	56.00	24.62	Complied
3.45559	Neutral	37.78	56.00	18.22	Complied
3.58852	Neutral	34.93	56.00	21.07	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.18014	Live	25.89	54.48	28.59	Complied
0.25637	Neutral	17.03	51.55	34.52	Complied
0.38493	Neutral	17.21	48.17	30.96	Complied
0.51988	Neutral	15.96	46.00	30.04	Complied
3.45559	Neutral	26.04	46.00	19.96	Complied
3.58852	Neutral	16.09	46.00	29.91	Complied

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

Idle Mode AC Conducted Spurious Emissions: Section 15.107 (Continued)

Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.2. Idle Mode Radiated Spurious Emissions: Section 15.109 - Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

The EUT was configured as for radiated emission testing as described in section 9 of this report.

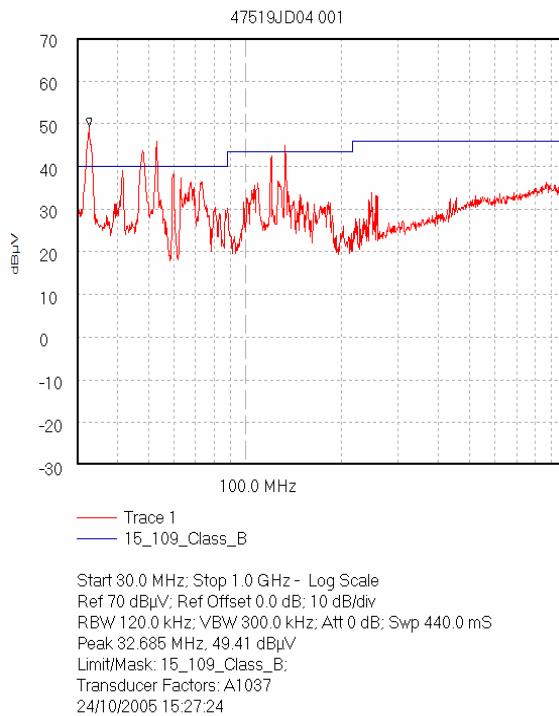
Tests were performed to identify the maximum receiver or standby radiated emission levels.

Results:

Frequency (MHz)	Antenna Polarity	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
32.914	Horizontal	27.2	40.0	12.8	Complied
48.394	Vertical	21.5	40.0	18.5	Complied
52.838	Vertical	23.2	40.0	16.8	Complied
119.970	Vertical	24.4	43.5	19.1	Complied
133.194	Vertical	23.6	43.5	19.9	Complied
250.630	Horizontal	37.6	46.0	8.4	Complied
454.630	Vertical	35.1	46.0	10.9	Complied

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Idle Mode Radiated Spurious Emissions: Section 15.109 - Electric Field Strength
Measurements (Frequency Range: 30 to 1000 MHz) (Continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.3. Idle Mode Radiated Spurious Emissions: Section 15.109 - Electric Field Strength Measurements (Frequency Range: 1 to 12.5 GHz)

Results:

Highest Peak Level:

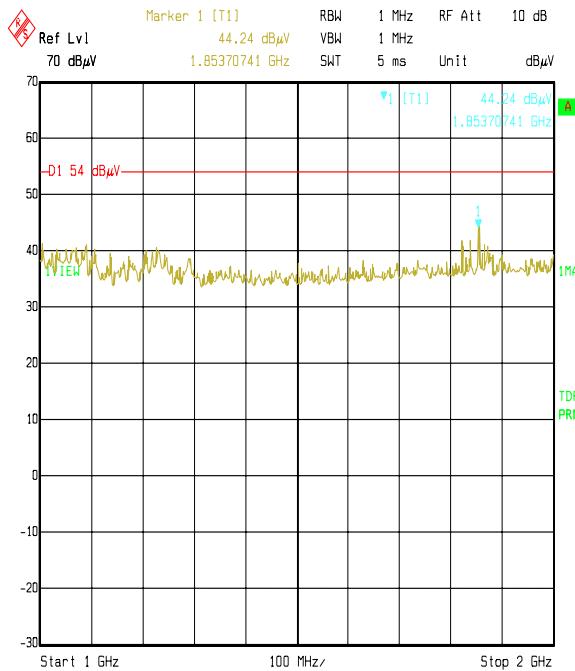
Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1852.848	Vertical	34.6	21.6	2.1	58.3	74.0	15.7	Complied

Highest Average Level:

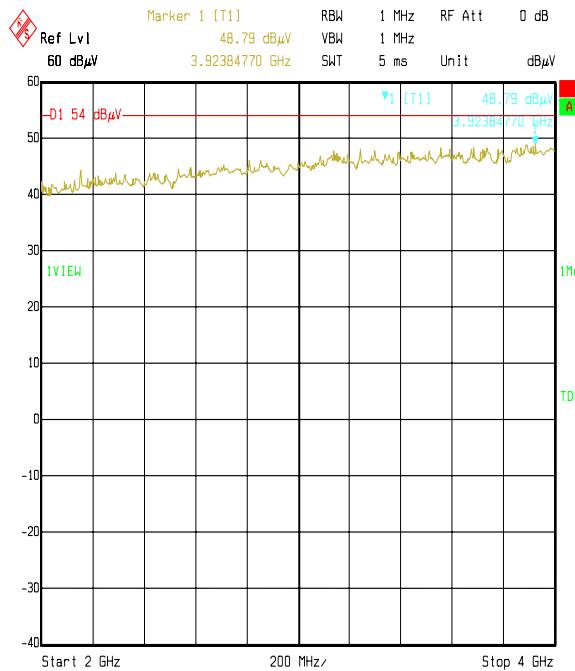
Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1852.848	Vertical	15.6	21.6	2.1	39.3	54.0	14.7	Complied

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

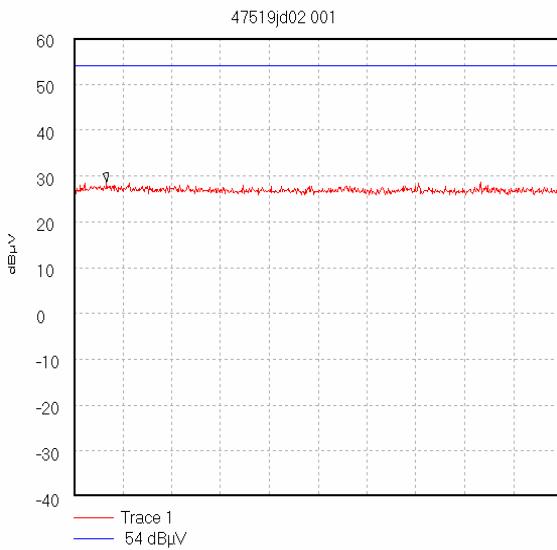
Idle Mode Radiated Spurious Emissions: Section 15.109 - Electric Field Strength Measurements (Frequency Range: 1 to 12.5 GHz) (Continued)



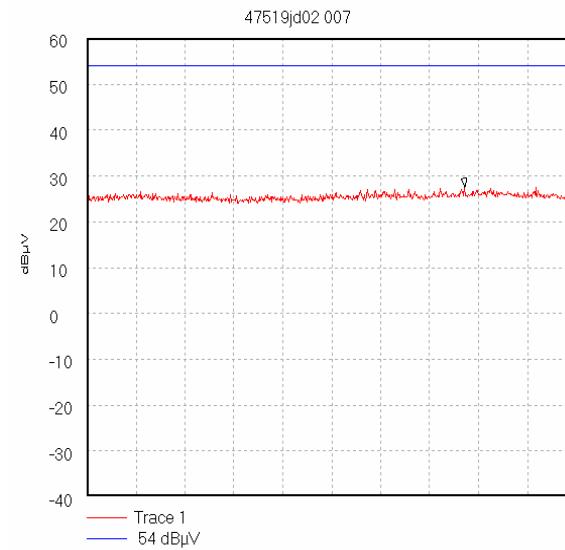
Title: Nextlink EUT: Bluespoon AX2. FCC P15.247 Radiated Emissions
 Comment A: 47519JD02 Standby Mode
 Date: 24.OCT.2005 12:14:39



Title: Nextlink EUT: Bluespoon AX2. FCC P15.247 Radiated Emissions
 Comment A: 47519JD04 Standby Mode
 Date: 24.OCT.2005 12:51:18



Start 4.0 GHz; Stop 6.0 GHz
 Ref 60 dB μ V; Ref Offset 0.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
 Peak 4.133333 GHz, 28.67 dB μ V
 Display Line: 54 dB μ V;
 Transducer Factors: 4G-6G_Horn(@1m,3m_cable,A1534)
 31/10/2005 10:50:35

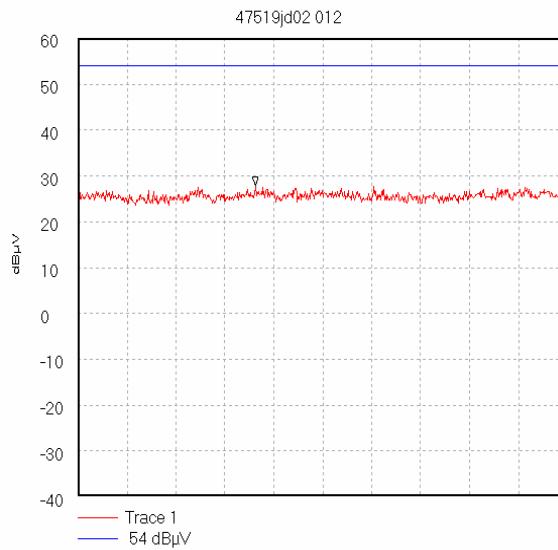


Start 6.0 GHz; Stop 8.0 GHz
 Ref 60 dB μ V; Ref Offset 0.0 dB; 10 dB/div
 RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
 Peak 7.543333 GHz, 27.5 dB μ V
 Display Line: 54 dB μ V;
 Transducer Factors: 6G-8G_Horn(@0.7m,3m_cable,A1534)
 31/10/2005 12:04:47

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Idle Mode Radiated Spurious Emissions: Section 15.109 - Electric Field Strength Measurements (Frequency Range: 1 to 12.5 GHz) (Continued)



Start 8.0 GHz; Stop 12.5 GHz
Ref 60 dB μ V; Ref Offset 0.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 90.0 mS
Peak 9.635 GHz, 27.83 dB μ V
Display Line: 54 dB μ V
Transducer Factors: 8G-12.5G_Horn(@0.7m,3m_cable,A1534)
31/10/2005 12:23:38

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.4. Transmitter AC Conducted Spurious Emissions: Section 15.207

The EUT was configured for ac conducted emission measurements as described in section 9 of this report.

Tests were performed to identify the maximum emission levels present on the ac mains line of the EUT.

Results: Top Channel

Quasi-Peak Detector Measurements on Live and Neutral Lines

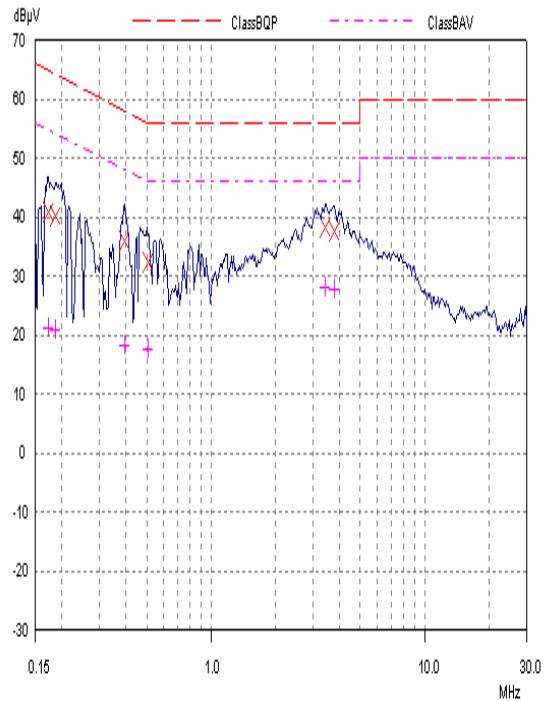
Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.17395	Neutral	40.77	64.77	24.00	Complied
0.18782	Neutral	40.21	64.13	23.92	Complied
0.39371	Neutral	35.79	57.99	22.20	Complied
0.50933	Neutral	32.42	56.00	23.58	Complied
3.44739	Neutral	38.13	56.00	17.87	Complied
3.78431	Neutral	37.67	56.00	18.33	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.17395	Neutral	21.29	54.77	33.48	Complied
0.18782	Neutral	20.79	54.13	33.34	Complied
0.39371	Neutral	18.30	47.99	29.69	Complied
0.50933	Neutral	17.49	46.00	28.51	Complied
3.44739	Neutral	28.07	46.00	17.93	Complied
3.78431	Neutral	27.80	46.00	18.20	Complied

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

Transmitter AC Conducted Spurious Emissions: Section 15.207 (Continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

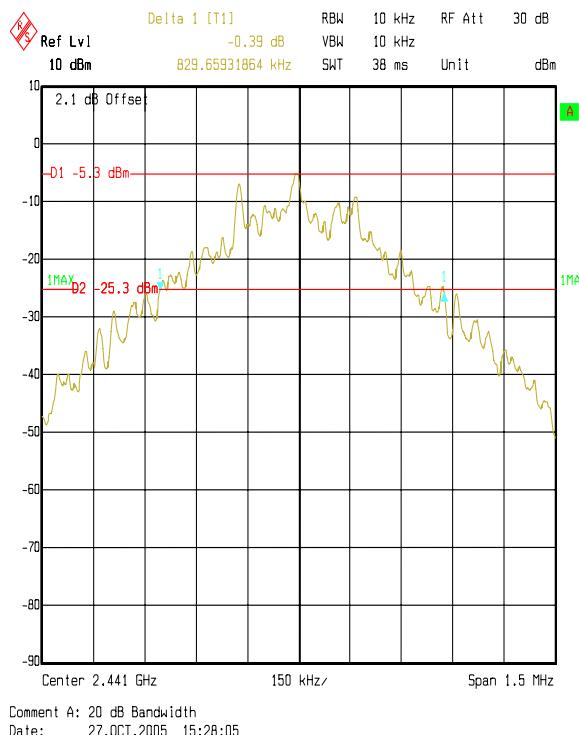
Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.5. Transmitter 20 dB Bandwidth: Section 15.247(a)(1)

The EUT was configured for 20 dB bandwidth measurements as described in section 9 of this report. Tests were performed to identify the 20 dB bandwidth.

Results:

Transmitter 20 dB Bandwidth (kHz)	Limit (kHz)
829.659	None specified



Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

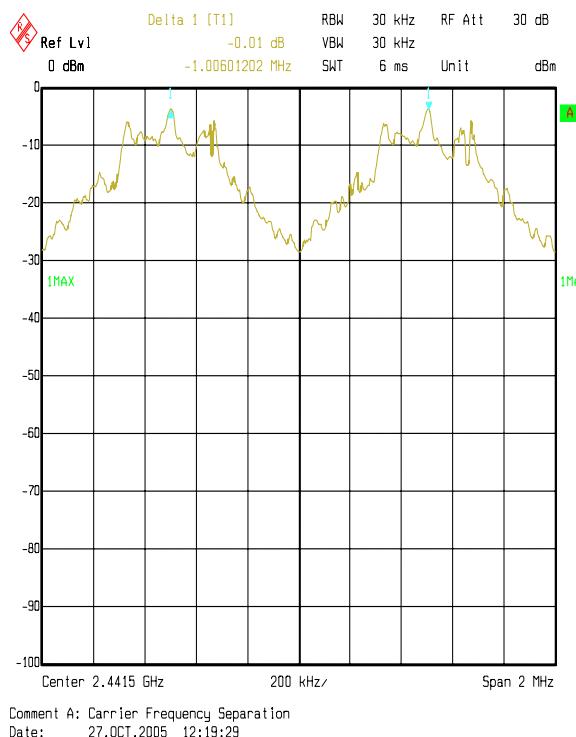
7.2.6. Transmitter Carrier Frequency Separation: Section 15.247(a)(1)

The EUT was configured for carrier frequency separation measurements as described in section 9 of this report.

Tests were performed to identify the carrier frequency separation.

Results:

Transmitter Carrier Frequency Separation (kHz)	Limit ($\frac{2}{3}$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1006.012	553.106	452.906	Complied



Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.7. Transmitter Average Time of Occupancy: Section 15.247(a)(1)(iii)

The EUT was configured for average time of occupancy measurements as described in section 9 of this report.

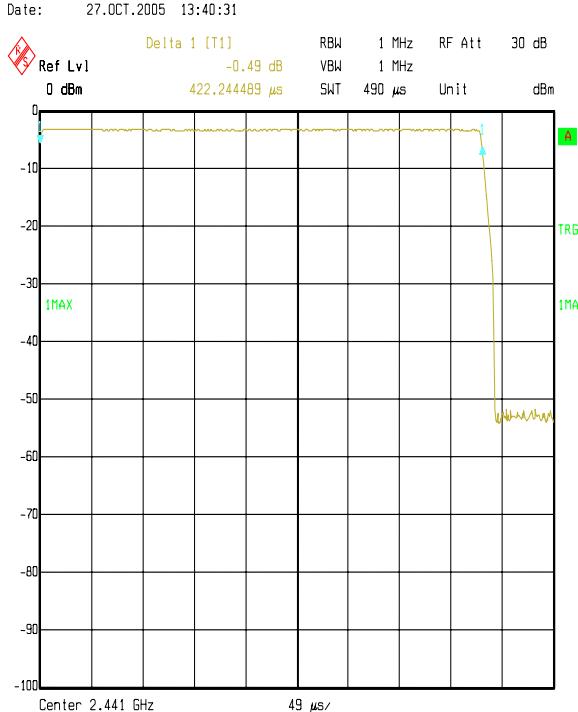
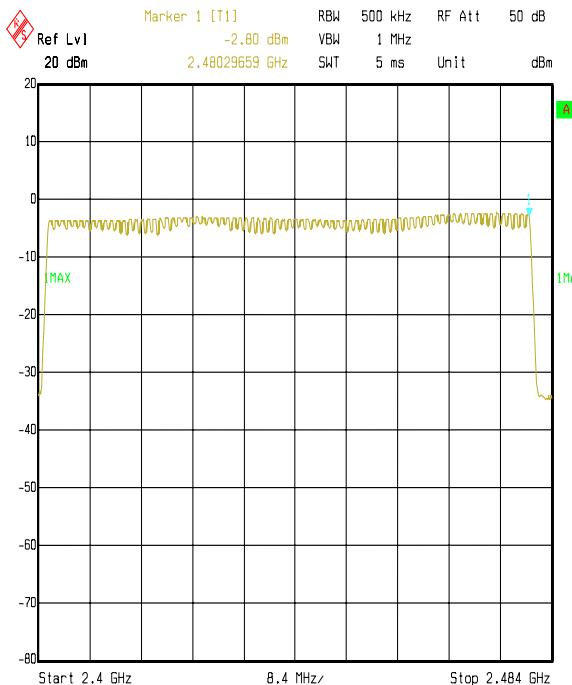
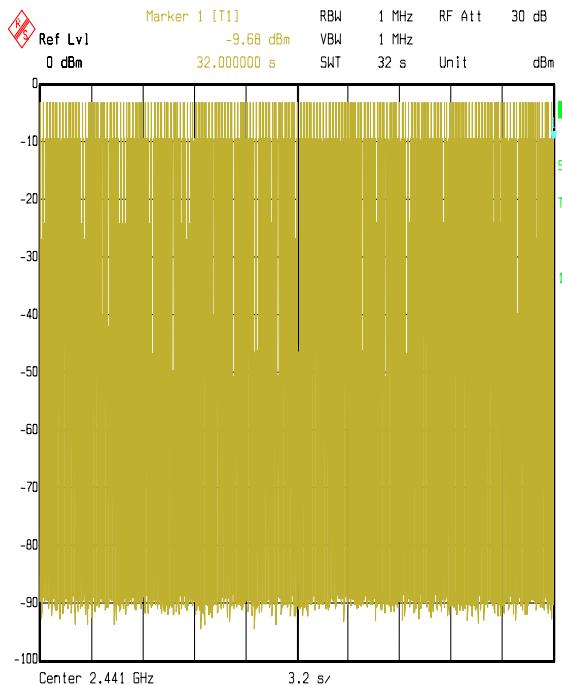
Tests were performed to identify the average time of occupancy in number of channels (79) x 0.4 seconds. The calculated period is 31.6 seconds.

Results:

Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
422	254	0.107188	0.4	0.292812	Complied

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Transmitter Average Time of Occupancy: Section 15.247(a)(1)(iii) (Continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.8. Transmitter Maximum Peak Output Power: Section 15.247(b)(1)

The EUT was configured for transmitter peak output power measurements as described in section 9 of this report and for defacto EIRP as per public notice DA 00-705.

Tests were performed to identify the transmitter maximum peak output power and EIRP of the EUT.

Results:

Battery Powered Devices

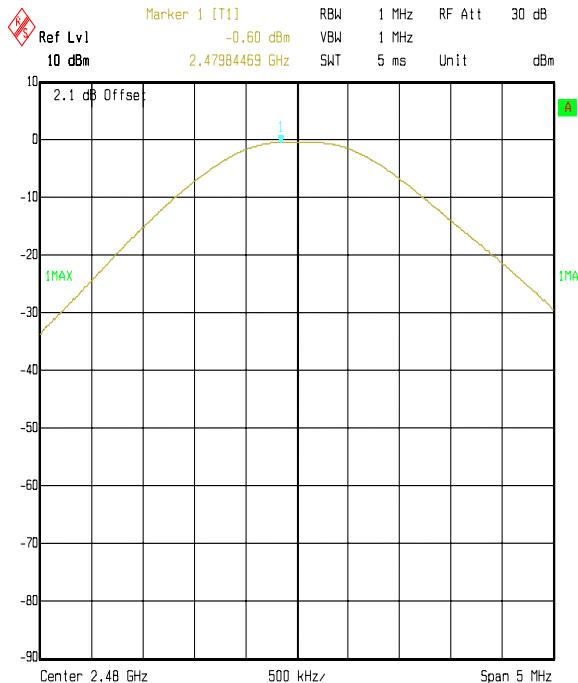
Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	-0.6	2	1.4	30.0	28.6	Complied
Middle	-1.1	2	0.9	30.0	29.1	Complied
Top	-1.7	2	0.3	30.0	29.7	Complied

Note(s):

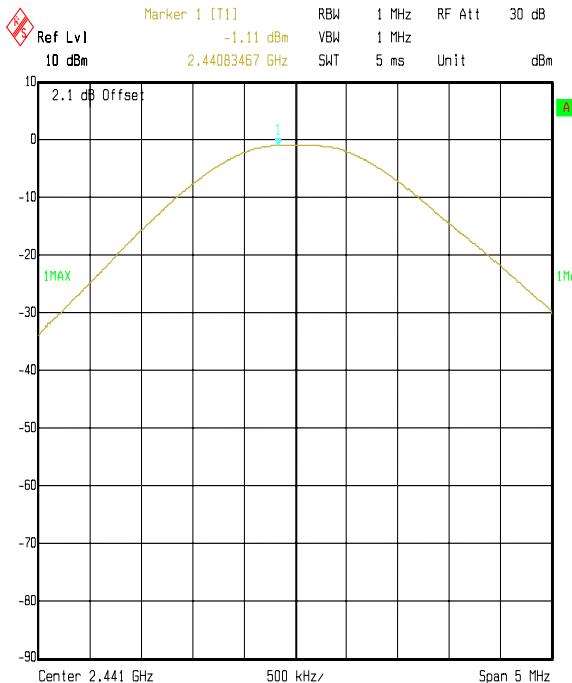
1. As per the requirements of Public Notice DA 00-705, the stated antenna gain of the EUT is 2 dBi which, when added to the highest (worst case) measured conducted peak output power of -0.6 dBm (from the table above) gives a de facto EIRP of 1.4 dBm. This is in compliance with the requirements of Section 15.247(b)(1) for de facto EIRP limitation i.e. 1 Watt (30 dBm).

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

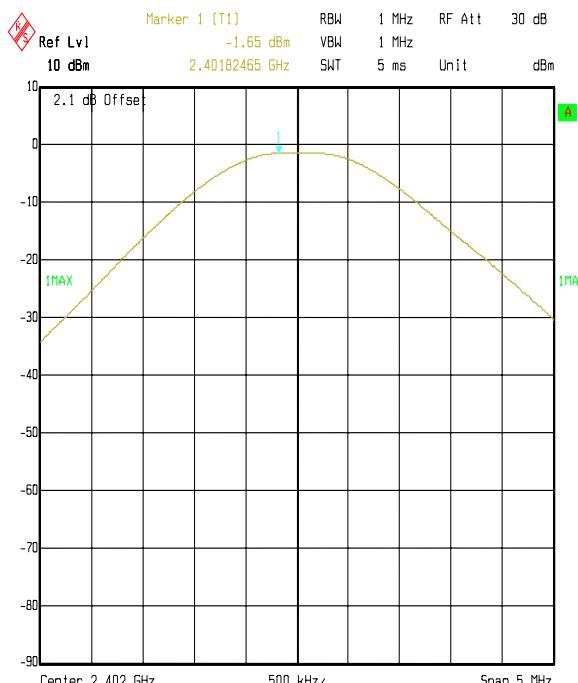
Transmitter Maximum Peak Output Power: Section 15.247(b)(1) (Continued)



Comment A: Top Channel Carrier Power
Date: 27.OCT.2005 15:22:41



Comment A: Middle Channel Carrier Power
Date: 27.OCT.2005 15:21:40



Comment A: Bottom Channel Carrier Power
Date: 27.OCT.2005 15:20:52

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.9. Transmitter Conducted Emissions: Section 15.247(d)

The EUT was configured for transmitter conducted emission measurements as described in section 9 of this report.

Tests were performed to identify the maximum transmitter conducted emission levels.

The limit lines shown in the plots below are set to a level 20 dB below the measured highest fundamental peak power with a 100 kHz bandwidth.

Results:

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4803.980	-40.6	-40.0	-20.0	20.0	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4881.976	-43.5	-42.4	-20.0	22.4	Complied

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

Transmitter Conducted Emissions: Section 15.247(d) (Continued)

Top Channel

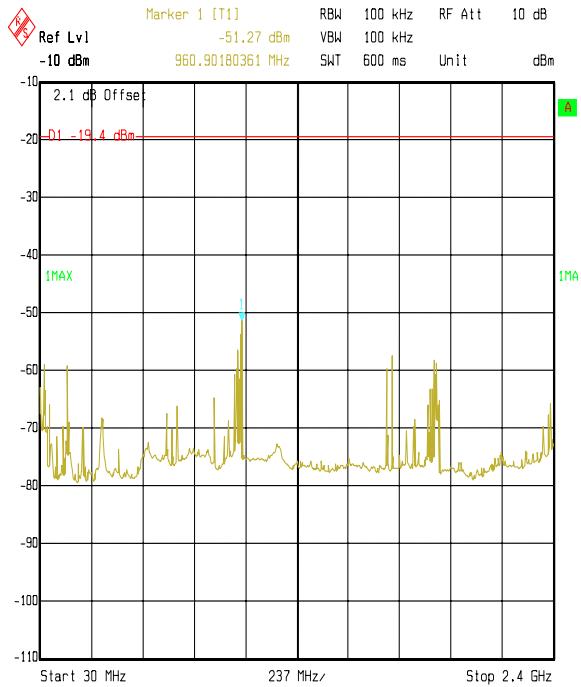
Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4959.967	-47.7	-46.0	-20.0	26.0	Complied

Hopping Channel

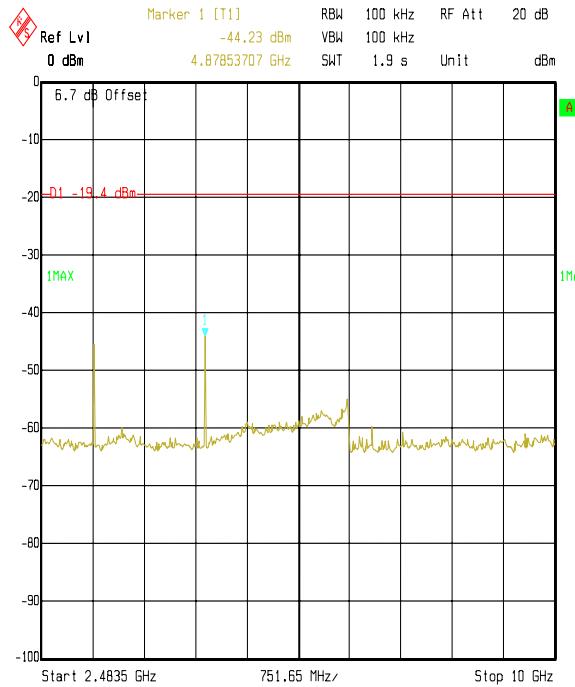
Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4804.003	-40.7	-39.0	-20.0	19.0	Complied

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Transmitter Conducted Emissions: Section 15.247(d) (Continued)



Comment A: Conducted Emissions, Static Top Channel
 Date: 27.OCT.2005 14:41:54



Comment A: Conducted Emissions, Static Top Channel
 Date: 27.OCT.2005 14:49:58

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.10. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements: 30 to 1000 MHz (emissions occurring in the restricted bands)

The EUT was configured for radiated emission testing as described in section 9 of this report. Tests were performed to identify the maximum transmitter radiated emission levels.

Results:

Top Channel

Frequency (MHz)	Antenna Polarity	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
119.970	Horizontal	26.8	43.5	16.7	Complied
133.194	Vertical	26.9	43.5	16.6	Complied
250.630	Horizontal	37.7	46.0	8.3	Complied
610.100	Horizontal	36.9	46.0	9.1	Complied
969.670	Vertical	32.2	54.0	21.8	Complied

Note(s):

1. *The preliminary scans showed similar emission levels for each mode below 1 GHz, therefore final radiated emissions measurements were performed with the EUT set to the top channel only.*

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.11. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements: 30 to 1000 MHz (emissions outside the restricted bands)

The EUT was configured for radiated emission testing as described in section 9 of this report. Tests were performed to identify the maximum transmitter radiated emission levels.

Results:

Top Channel

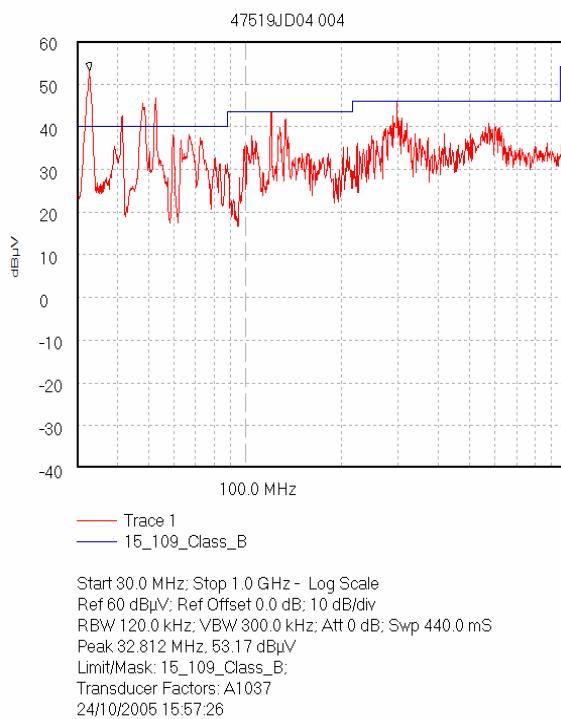
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
297.240	Horizontal	36.5	75.5	39.0	Complied
454.630	Vertical	34.8	75.5	40.7	Complied

Note(s):

1. *The preliminary scans showed similar emission levels for each mode below 1 GHz, therefore final radiated emissions measurements were performed with the EUT set to the top channel only.*

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength
Measurements: 30 to 1000 MHz (emissions outside the restricted bands) (Continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.12. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions occurring in the restricted bands)

The EUT was configured for radiated emission testing as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Results:

Highest Peak Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1008.124	Horizontal	21.7	21.6	2.1	45.5	74.0	28.6	Complied
1602.026	Horizontal	28.6	21.6	2.1	52.3	74.0	21.7	Complied
4804.000	Horizontal	40.4	24.4	3.6	64.8	74.0	5.6	Complied

Highest Average Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1008.124	Horizontal	9.1	21.6	2.1	32.8	54.0	21.2	Complied
1602.026	Horizontal	20.1	21.6	2.1	43.8	54.0	10.2	Complied
4804.000	Horizontal	13.2	24.4	3.6	41.2	54.0	12.8	Complied

Highest Peak Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1008.110	Horizontal	21.7	21.6	2.1	45.4	74.0	28.6	Complied
4882.067	Horizontal	39.4	24.4	3.6	67.4	74.0	6.6	Complied

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions occurring in the restricted bands) (Continued)

Highest Average Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1008.110	Vertical	11.5	21.6	2.1	35.2	54.0	18.8	Complied
4882.067	Horizontal	12.6	24.4	3.6	40.6	54.0	13.4	Complied

Highest Peak Level: Top Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1007.959	Horizontal	21.4	21.6	2.1	45.1	74.0	28.9	Complied
4959.967	Horizontal	38.2	24.4	3.6	66.2	74.0	7.8	Complied

Highest Average Level: Top Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1007.959	Horizontal	9.2	21.6	2.1	32.9	54.0	21.9	Complied
4959.967	Horizontal	11.6	24.4	3.6	39.6	54.0	14.4	Complied

Highest Peak Level: Hopping Mode

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1007.977	Horizontal	21.4	21.6	2.1	45.1	74.0	28.9	Complied
1645.780	Horizontal	29.6	21.6	2.1	53.3	74.0	20.7	Complied
4916.070	Horizontal	39.5	24.4	3.6	67.5	74.0	6.5	Complied

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions occurring in the restricted bands) (Continued)

Highest Average Level: Hopping Mode

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1007.977	Horizontal	9.1	21.6	2.1	32.8	54.0	21.2	Complied
1645.780	Horizontal	10.8	21.6	2.1	34.5	54.0	19.0	Complied
4916.070	Horizontal	-3.7	24.4	3.6	24.3	54.0	29.7	Complied

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.13. Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions outside the restricted bands)

The EUT was configured for radiated emission testing as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Results:

Highest Peak Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
2393.412	Horizontal	22.1	23.4	3.1	48.6	75.5	26.9	Complied
3228.461	Horizontal	24.1	23.4	3.1	50.6	75.5	24.9	Complied
3311.412	Vertical	26.7	23.4	3.1	53.2	75.5	22.3	Complied

Highest Peak Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
2392.230	Horizontal	22.7	23.4	3.1	49.2	75.5	26.3	Complied
3225.240	Vertical	24.1	23.4	3.1	50.6	75.5	24.9	Complied
3312.274	Horizontal	27.6	23.4	3.1	54.1	75.5	21.4	Complied
1628.088	Horizontal	29.0	21.6	2.1	52.7	75.5	22.8	Complied

Highest Peak Level: Top Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
2394.171	Horizontal	22.6	23.4	3.1	49.1	75.5	26.4	Complied
3229.471	Horizontal	24.3	23.4	3.1	50.8	75.5	24.7	Complied
3308.016	Horizontal	30.8	23.4	3.1	57.3	75.5	18.2	Complied
1654.017	Horizontal	30.3	21.6	2.1	54.0	75.5	21.5	Complied

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

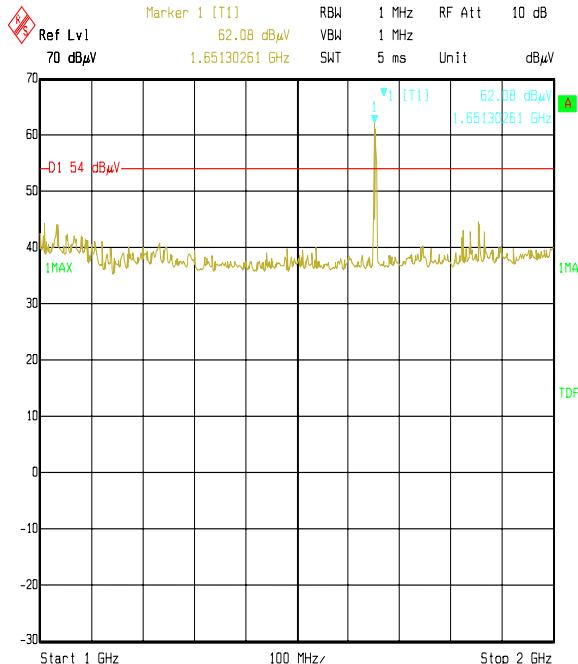
Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions outside the restricted bands) (Continued)

Highest Peak Level: Hopping Mode

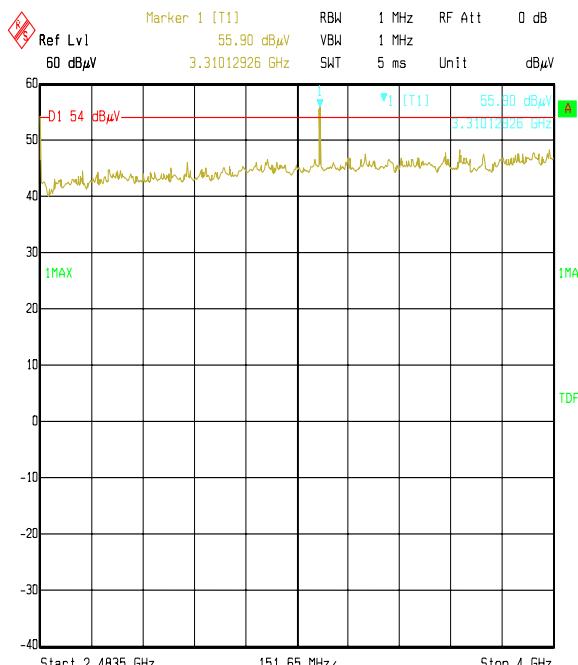
Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	-20 dBc Limit (dB μ V/m)	Margin (dB)	Result
2393.055	Horizontal	23.3	23.4	3.1	49.8	75.5	25.7	Complied
3230.621	Horizontal	30.1	23.4	3.1	56.6	75.5	18.9	Complied
3307.920	Horizontal	29.0	23.4	3.1	55.5	75.5	20.0	Complied

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

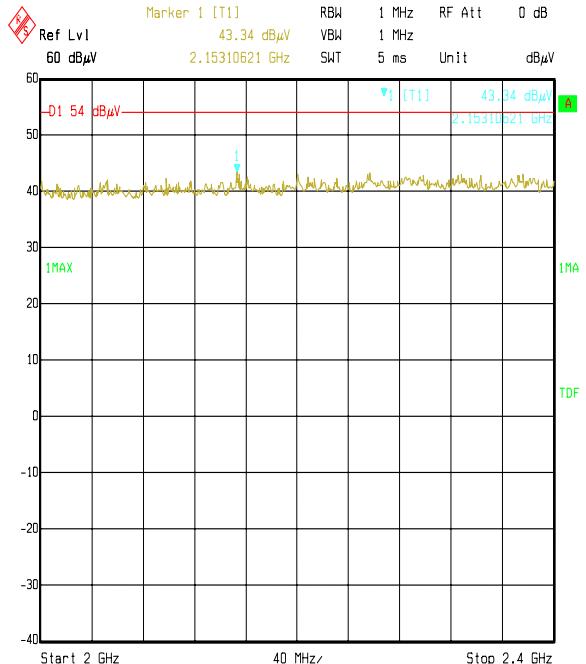
Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions outside the restricted bands) (Continued)



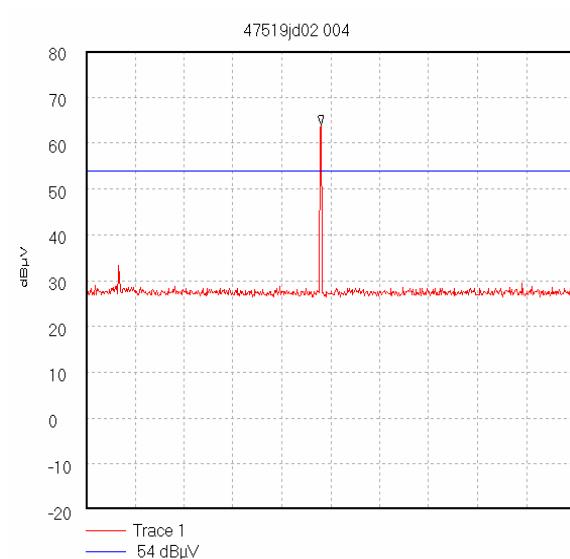
Title: Nextlink EUT: Bluespoon AX2, FCC P15.247 Radiated Emissions
Comment A: 47519JD02 Top Channel
Date: 24.OCT.2005 12:01:01



Title: Nextlink EUT: Bluespoon AX2, FCC P15.247 Radiated Emissions
Comment A: 47519JD04 Top channel
Date: 24.OCT.2005 12:42:21



Title: Nextlink EUT: Bluespoon AX2, FCC P15.247 Radiated Emissions
Comment A: 47519JD04 Top channel
Date: 24.OCT.2005 12:41:36



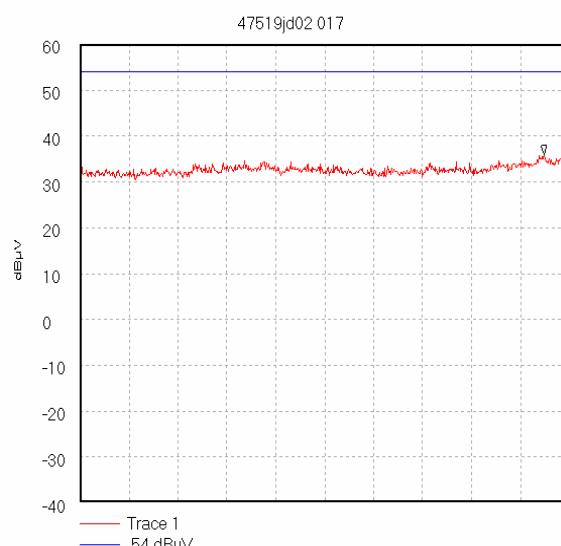
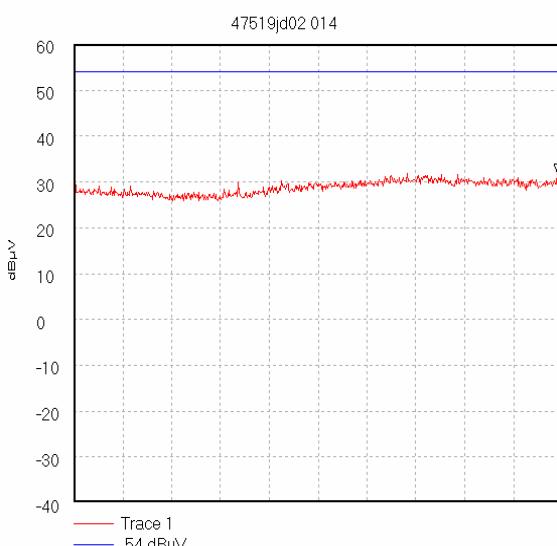
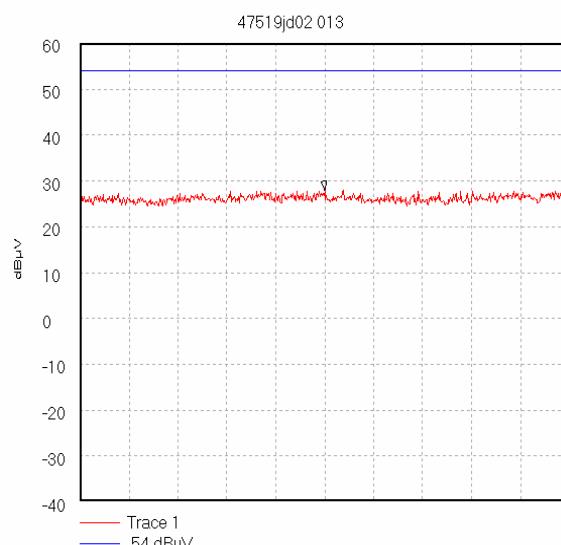
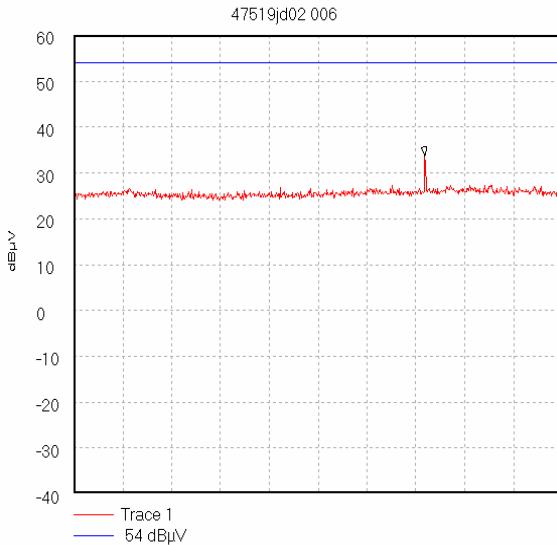
Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.*

*Note**: Pre-scans were performed using a peak detector against the tightest specified limit as this was deemed worse case. Final measurements were performed on any detected spurious using the appropriate detector and limit combination.*

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) - Electric Field Strength Measurements (Frequency Range: 1 to 25 GHz) (emissions outside the restricted bands) (Continued)



Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.*

*Note**: Pre-scans were performed using a peak detector against the tightest specified limit as this was deemed worse case. Final measurements were performed on any detected spurious using the appropriate detector and limit combination.*

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

7.2.14. Transmitter Band Edge Conducted Emissions: Section 15.247(d)

The EUT was configured for transmitter conducted emissions measurements as described in section 9 of this report.

Tests were performed to identify the maximum conducted band edge emission levels.

The limit lines shown in the hopping mode plots below are set to a level 20 dB below the measured fundamental peak power of the highest power level contained within a 100 kHz bandwidth.

The limit lines shown in the static mode plots below are set to a level 20 dB below the measured fundamental peak power of the channels closest to the lower and upper band edge in a 100 kHz bandwidth.

Results:

Peak Power Level Hopping Mode:

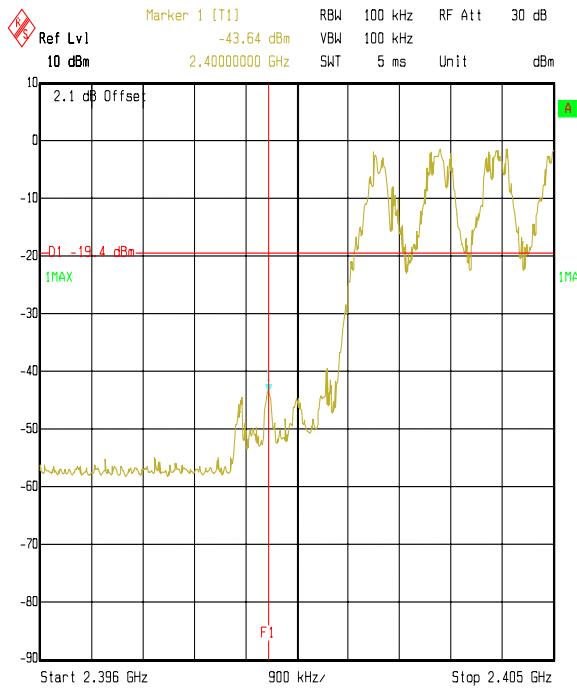
Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-43.6	-44.2	-20.0	24.2	Complied
2483.5	-50.4	-51.0	-20.0	31.0	Complied

Peak Power Level Static Mode:

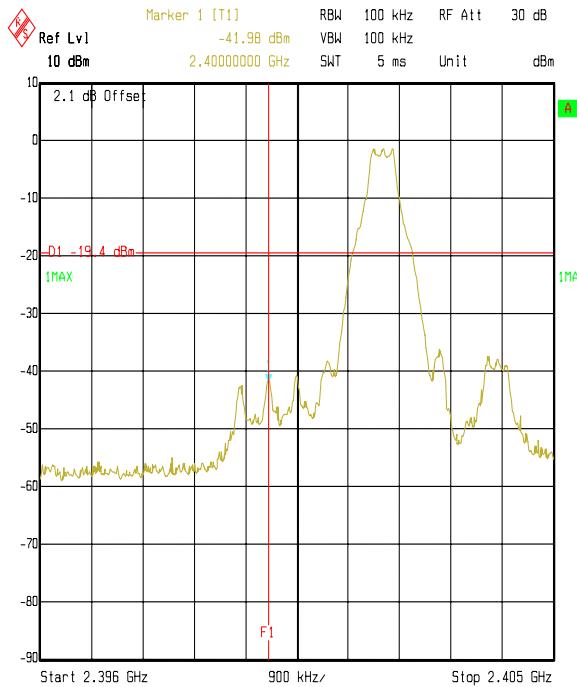
Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-42.0	-42.6	-20.0	22.6	Complied
2483.5	-52.0	-52.6	-20.0	32.6	Complied

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

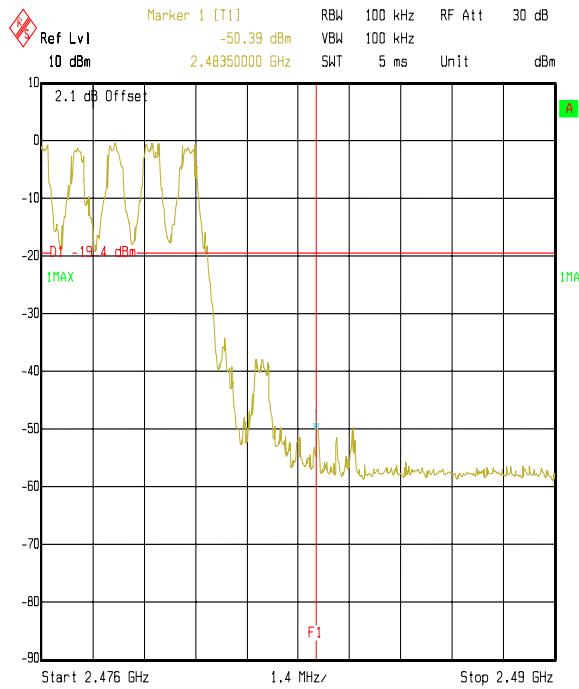
Transmitter Band Edge Conducted Emissions: Section 15.247(d) (Continued)



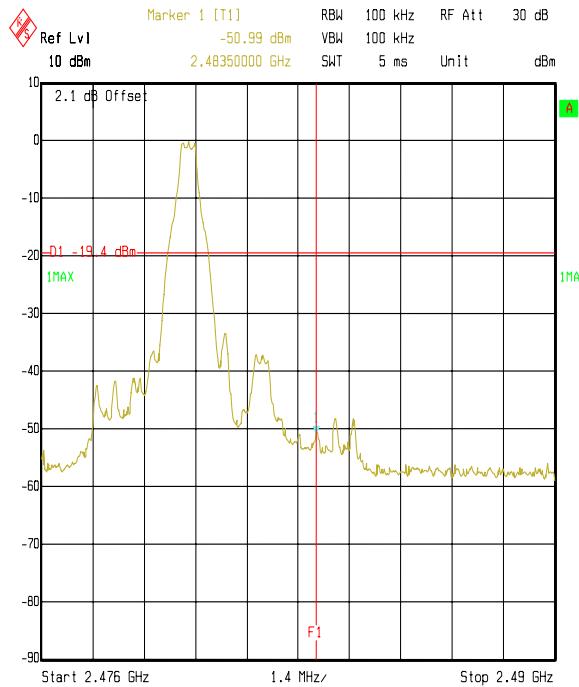
Comment A: Lower Band Edge, Hopping Mode
 Date: 27.OCT.2005 15:16:10



Comment A: Lower Band Edge, Static Mode
 Date: 27.OCT.2005 15:17:32



Comment A: Upper Band Edge, Hopping Mode
 Date: 27.OCT.2005 15:14:07



Comment A: Upper Band Edge, Static Mode
 Date: 27.OCT.2005 15:11:43

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.15. Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a) - Electric Field Strength Measurements

The EUT was configured for band edge compliance of radiated emission measurements as described in section 9 of this report.

Tests were performed to identify the maximum radiated band edge emissions.

Results:

Peak Power Level Hopping Mode:

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.4000	Horizontal	26.8	23.4	3.1	41.9	75.5*	33.6	Complied
2.4835	Horizontal	24.9	23.4	3.1	51.4	74.0	22.6	Complied

Average Power Level Hopping Mode:

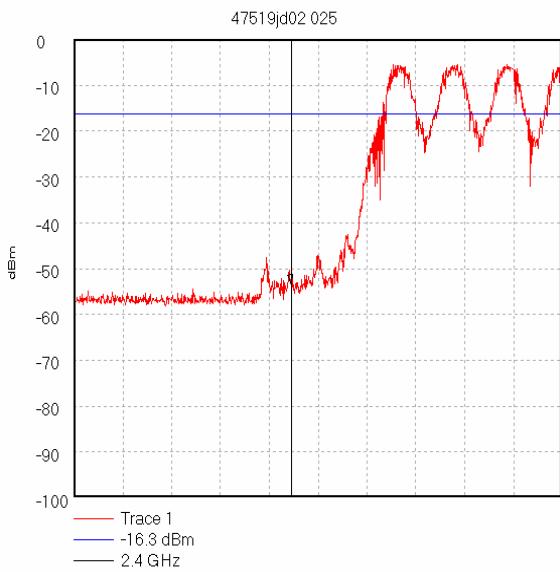
Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.4835	Horizontal	11.8	23.4	3.1	38.3	54.0	15.7	Complied

Note(s):

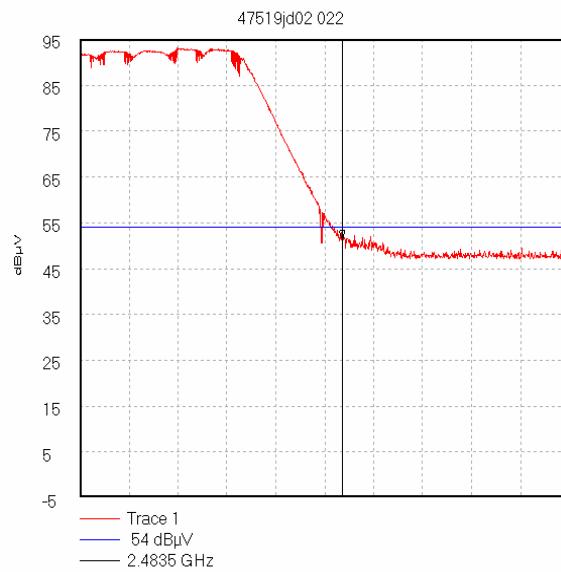
1. *-20 dBc limit

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a) - Electric Field Strength Measurements (Continued)



Centre 2.4005 GHz; Span 9.0 MHz
Ref 0 dBm; Ref Offset 38.6 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 0 dB; Swp 20.0 mS
Marker 2.4 GHz, -53.25 dBm
Display Line: -16.3 dBm; Limit Test Passed
31/10/2005 15:42:33



Centre 2.483 GHz; Span 14.0 MHz
Ref 95 dBc; Ref Offset 26.8 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 20.0 mS
Marker 2.4835 GHz, 51.3 dBc
Display Line: 54 dBc; Limit Test Passed
31/10/2005 15:30:56

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

7.2.16. Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a)

The EUT was configured for band edge compliance of radiated emission measurements as described in section 9 of this report.

Tests were performed to identify the average radiated band edge emissions.

Results:

Peak Power Level Static Mode:

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.4000	Horizontal	18.1	23.4	3.1	44.6	75.5*	30.9	Complied
2.4835	Horizontal	25.9	23.4	3.1	52.4	74.0	21.6	Complied

Average Power Level Static Mode:

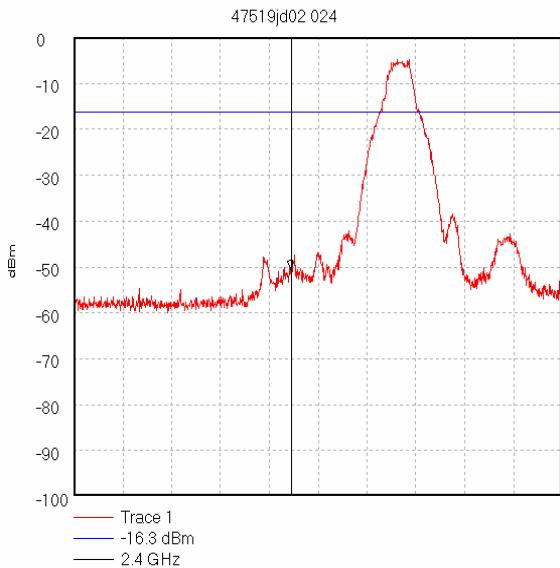
Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2.4835	Horizontal	15.6	23.4	3.1	42.1	54.0	11.9	Complied

Note(s):

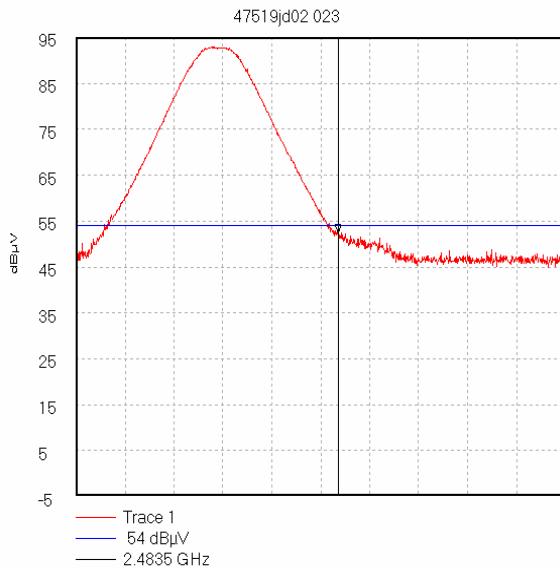
1. *-20 dBc limit

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a) (Continued)



Centre 2.4005 GHz; Span 9.0 MHz
Ref 0 dBm; Ref Offset 38.6 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 0 dB; Swp 20.0 mS
Marker 2.4 GHz, -50.58 dBm
Display Line: -16.3 dBm; Limit Test Passed
31/10/2005 15:36:57



Centre 2.483 GHz; Span 14.0 MHz
Ref 95 dB μ V; Ref Offset 26.8 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 0 dB; Swp 20.0 mS
Marker 2.4835 GHz, 52.37 dB μ V
Display Line: 54 dB μ V; Limit Test Passed
31/10/2005 15:33:25

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

8. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Transmitter Maximum Peak Output Power	Not applicable	95%	±0.46 dB
Conducted Emissions Antenna Port	30 MHz to 40 GHz	95%	±1.2 dB
Transmitter Carrier Frequency Separation	Not applicable	95%	±0.01 ppm
Transmitter Average Time of Occupancy	Not applicable	95%	±10 %
20 dB Bandwidth	Not applicable	95%	± 0.12 %
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	± 4.98 dB
Radiated Spurious Emissions	1 GHz to 40 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9. Measurement Methods

9.1. AC Mains Conducted Emissions

AC mains conducted emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

The test was performed in a shielded enclosure with the equipment arranged as detailed in the standard on a wooden bench using the floor of the screened enclosure as the ground reference plane. The EUT was powered with 110V 60 Hz ac mains supplied via a line impedance stabilisation network (LISN).

Initial measurements in the form of swept scans covering the entire measurement band were performed in order to identify frequencies on which the EUT was generating interference. In order to minimise the time taken for these swept measurements, a peak detector was used in conjunction with the appropriate detector IF measuring bandwidths (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

Following the initial scans, a graph was produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested (at individual frequencies) using the appropriate detector function.

The test equipment settings for conducted emissions measurements were as follows:

Receiver Function	Initial Scan	Final Measurements
Detector Type:	Peak	Quasi-Peak (CISPR)/Average
Mode:	Max Hold	Not applicable
Bandwidth:	10 kHz	9 kHz
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	>1 s
Observation Time:	Not applicable	>15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.2. Radiated Emissions

Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. Any emission within 20 dB of the limit were then measured on the open area test site, except in cases where the noise floor was within 20 dB of the limit, in these cases the highest point of the noise floor was measured.

Where an emission fell inside a restricted band, measurements were made at the appropriate test distance using a measuring receiver with a quasi peak detector for measurements below 1000 MHz and an average and peak detector for measurements above 1000 MHz. A peak detector was used for all other measurements.

For the final measurements the EUT was arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2003 Clause 5.4.

All measurements on the open area test site were performed using broadband antennas in both vertical and horizontal polarisations.

On the open area test site, at each frequency where a signal was to be measured, the trace was maximised by rotating a turntable through 360°. The angle at which the maximum signal was observed was locked out. For frequencies below 1000 MHz the test antenna was varied in height between 1 m and 4 m in order to further maximise the target emission.

For frequencies above 1000 MHz where a horn antenna was used, height searching was performed to locate the optimal height of the horn with respect to the EUT. At this point the horn was locked off and the turntable was again rotated through 360° to maximise the target signal. It should be noted that the received signal from the EUT would diminish very quickly after it exits the beam width of the horn antenna, for this reason it may not be necessary to fully height search with the horns.

Test of: Nextlink.
Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

Radiated Emissions (Continued)

At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT.

Scans were performed to the upper frequency limits as stated in section 15.33

The final field strength was determined as the indicated level in dB μ V plus cable loss and antenna factor.

The test equipment settings for radiated emissions measurements were as follows:

Receiver Function	Initial Scan	Final Measurements <1 GHz	Final Measurements \geq 1 GHz
Detector Type:	Peak	Quasi-Peak (CISPR)	Peak / Average
Mode:	Max Hold	Not applicable	Max Hold
Bandwidth:	(120 kHz <1 GHz) (1 MHz \geq 1 GHz)	120 kHz	1 MHz
Amplitude Range:	100 dB	100 dB	100 dB
Step Size:	Continuous sweep	Not applicable	Not applicable
Sweep Time:	Coupled	Not applicable	Not applicable

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.3. Conducted Antenna Port Emissions

Conducted antenna port emissions measurements were performed using a 100 kHz bandwidth in accordance with the standard against the appropriate limits.

Prior to testing being performed a suitable RF attenuator and cable, were calibrated for the required frequency range. For each measurement range the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

Initial measurements covering the entire measurement band in the form of swept scans were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which final measurements were necessary. To make the final measurements a peak detector was used in conjunction with the appropriate detector IF measuring bandwidth.

Repetitive scans were performed to allow for emissions with low repetition rates.

Scans were performed to the upper frequency limits as stated in 15.33(a)(1)

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.4. Carrier Frequency Separation / 20 dB Bandwidth

The EUT and spectrum analyser was configured as for conducted antenna port measurements, and as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

To determine the bandwidth and separation of each transmission channel the measurement analyser was configured to measure two adjacent channels whilst the EUT was in hopping mode. The spectrum analyser was configured with a resolution bandwidth and video bandwidth greater than 1% of the frequency span.

The analyser was set for a maximum hold scan to capture the profile of the signal. The peak points on the two adjacent channels were noted and the separation between them recorded.

To determine the occupied bandwidth, a resolution bandwidth of 10 kHz was used, which is greater than 1% of the 20 dB bandwidth. A video bandwidth of, at least, the same value was used.

The analyser was set for a maximum hold scan to capture the profile of the signal. The peak level was then determined, and a reference line was drawn 20 dB below the peak level.

The bandwidth was determined at the points where the 20 dB reference line intercepted the power envelope of the emission.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.5. Average Time of Occupancy

The EUT and spectrum analyser was configured as for conducted antenna port measurements, and as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

First the maximum packet length was determined on the centre channel.

The measurement analyser was configured to the time domain mode by setting the span to zero with a sweep time sufficiently wide enough to measure one pulse.

The EUT was configured to operate in normal mode of operation. The pulse width of one transmission was then recorded. The measurement analyser was then configured in zero span i.e. in the time domain and the sweep time was set to 32 seconds (the closest allowable setting to 31.6 seconds). This 31.6 second period was determined by multiplying the number of channels the device operates over (79) by 0.4 seconds.

The number of transmissions within this period was noted and multiplied by the pulse width recorded earlier. This gives the maximum occupancy over 31.6 seconds.

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.6. Peak Output Power

The EUT and spectrum analyser were configured as for conducted antenna port measurements and as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

Prior to testing being performed a suitable RF attenuator and cable, were calibrated for the required frequencies. For each frequency to be measured, the calibrated level of the attenuator and cable were entered as an offset into a spectrum analyser to compensate for the measurement set up.

To determine the transmitter output power, the EUT was operated at maximum power and a result was obtained from the spectrum analyser using peak detector and trace max hold

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.7. Effective Isotropic Radiated Power (EIRP)

EIRP measurements were performed in accordance with the standard, against appropriate limits.

The EIRP was measured with the EUT arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2003 Clause 5.4. The transmitter was fitted with an integral antenna; therefore all radiated tests were performed with the unit operating into the integral antenna.

The level of the EIRP was measured using a spectrum analyser.

The test antenna was positioned in the horizontal plane. The EUT was oriented in the X plane. The test antenna was then raised and lowered until a maximum peak was observed. The turntable was then rotated through 360 degrees and the maximum peak reading obtained. The height search was then repeated to take into consideration the new angular position of the turntable. The maximum reading observed was then recorded. This procedure was then repeated with the EUT oriented in the Y and Z planes. The highest reading taken in all 3 planes was recorded. The entire procedure was then repeated with the test antenna set in the vertical polarity.

Once the final amplitude (maximised) had been obtained, the EUT was substituted with a horn antenna. The centre of the substitution antenna was set to approximately the same centre location as the EUT. The substitution antenna was set to the horizontal polarity. The substitution antenna was matched into a signal generator using a 6 dB or greater attenuator. The signal generator was tuned to the EUT's frequency under test.

The test antenna was then raised and lowered to obtain a maximum reading on the spectrum analyser. The level of the signal generator output was then adjusted until the maximum recorded EUT level was observed. The signal generator level was noted. This procedure was repeated with both test antenna and substitution antenna vertically polarised. The EIRP was calculated as:-

$$\text{EIRP} = \text{Signal Generator Level} - \text{Cable Loss} + \text{Antenna Gain}$$

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Effective Isotropic Radiated Power (EIRP) (Continued)

Circumstances where the signal generator could not produce the desired a power substitution was performed with the signal generator set to 0 dBm. The radiated signal was maximised as previously described. The level indicated on the measuring receiver was noted. The delta between this level and the maximum level for the EUT was calculated and also noted. The EIRP of the signal generator was calculated using the above formulae. The recorded delta was added to the calculated EIRP to obtain the substituted EUT EIRP.

Delta (dB) = EUT – SG

where :

EUT = spectrum analyser indicated EUT raw level

SG = spectrum analyser indicated signal generator raw level

The signal generator actual EIRP is calculated as:

EIRP SG= Signal Generator Level - Cable Loss + Antenna Gain

The EUT EIRP is calculated as:

EIRP EUT = EIRP SG + Delta.

The test equipment settings for EIRP measurements were as follows:

Receiver Function	Setting
Detector Type:	Peak
Mode:	Not applicable
Bandwidth:	1 MHz
Amplitude Range:	100 dB
Sweep Time:	Coupled

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

9.8. Band Edge Compliance of RF Radiated Emissions

The EUT and spectrum analyser were configured as for radiated measurements and as per FCC Public Notice DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

To determine band edge compliance, the analyser resolution bandwidth was set to $\geq 1\%$ of the analyser span. The video bandwidth was set to be \geq to the resolution bandwidth. The sweep was set to auto and the detector to peak. The trace was set to max hold and a trace was produced.

A plot of the lower band edge of the allocated frequency band was produced. A marker was set to the level of the highest in band emission with a limit line set to 20 dB below this. The marker was then placed on the highest out of band emission (the specification states that either the band edge level must be measured or the highest out of band emission, whichever is the greater). The plots show that the highest out of band emission complies with the -20 dBc limit.

The above procedure was then repeated for the upper band edge except that, as the upper band edge fell on a restricted band edge (as defined in section 15.205(a)), the limit for the restricted band was applied instead of the -20 dBc limit i.e. the general limits defined in section 15.209(a).

Final measurements were performed on the worst-case configuration as described in Part 15.31(i).

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.
A027	Horn Antenna	Eaton	9188-2	301
A031	2 to 4 GHz Eaton Horn Antenna	Eaton	91889-2	557
A1141	HP 11691D	Hewlett Packerd	11691D	1212A02494
A1298	EMCO	EMCO	3104C and 3110	3540 and 1544
A1534	Preamplifier 1-26.5 GHz	Hewlett Packard	8449B OPT H02	3008A00405
A254	WG 14 Microwave Horn	Flann Microwave	14240-20	139
A259	Bilog Antenna	Chase	CBL6111	1513
A392	3 dB attenuator (9)	Suhner	6803.17.B	None
A425	Double Ridged Guide Antenna	EMCO	3116	9611-2330
A428	WG 12 horn	Flann	12240-20	134
A429	WG 16 horn	Flann	16240-20	561
A430	WG 18 horn	Flann	18240-20	425
A436	WG 20 horn	Flann	20240-20	330
C1082	Rosenberger Cable 2m	Rosenberger	FA210A1020M5050	28463-1
C1110	Semflex Cable	Semflex, Inc.	X116BFSX10040	None
C1122	Rosenberger	Rosenberger	FA210A1030005050	170434844-03

Test of: **Nextlink.**
Bluespoon AX2.
To: **FCC Part 15.247: 2004 (Subpart C)**

Test Equipment Used (Continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.
C1152	SMA cable	The Workhorse	WHU26-3636-036	None
C323	Cable	Rosenberger	UFA 210A-1-0788-50x50	96A0121
C461	Cable	Rosenberger	UFA210A-1-1182-704704	98H0305
C573	C573-N-N-2	Rosenberger	UFA210A-1-788-50x50	97E0936
L0794	Power Meter	Anritsu	ML243A	00500068
L0796	Swept Signal Generator	Agilent	83630B	3844A00937
L0800	Power Sensor	Anritsu	MA2474A	001688
M1008	HP 8563E	Hewlett Packard	8563E	3551A04412
M1149	Anritsu	Anritsu	MT8852A	6K00001529
M1242	FSEM30 Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986_022
S201	Site 1	RFI	1	
S202	Site 2	RFI	2	S202-15011990
S212	Site 12	RFI	12	
S240	Site 40	RFI	40	

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

Test of: **Nextlink.
Bluespoon AX2.**
To: **FCC Part 15.247: 2004 (Subpart C)**

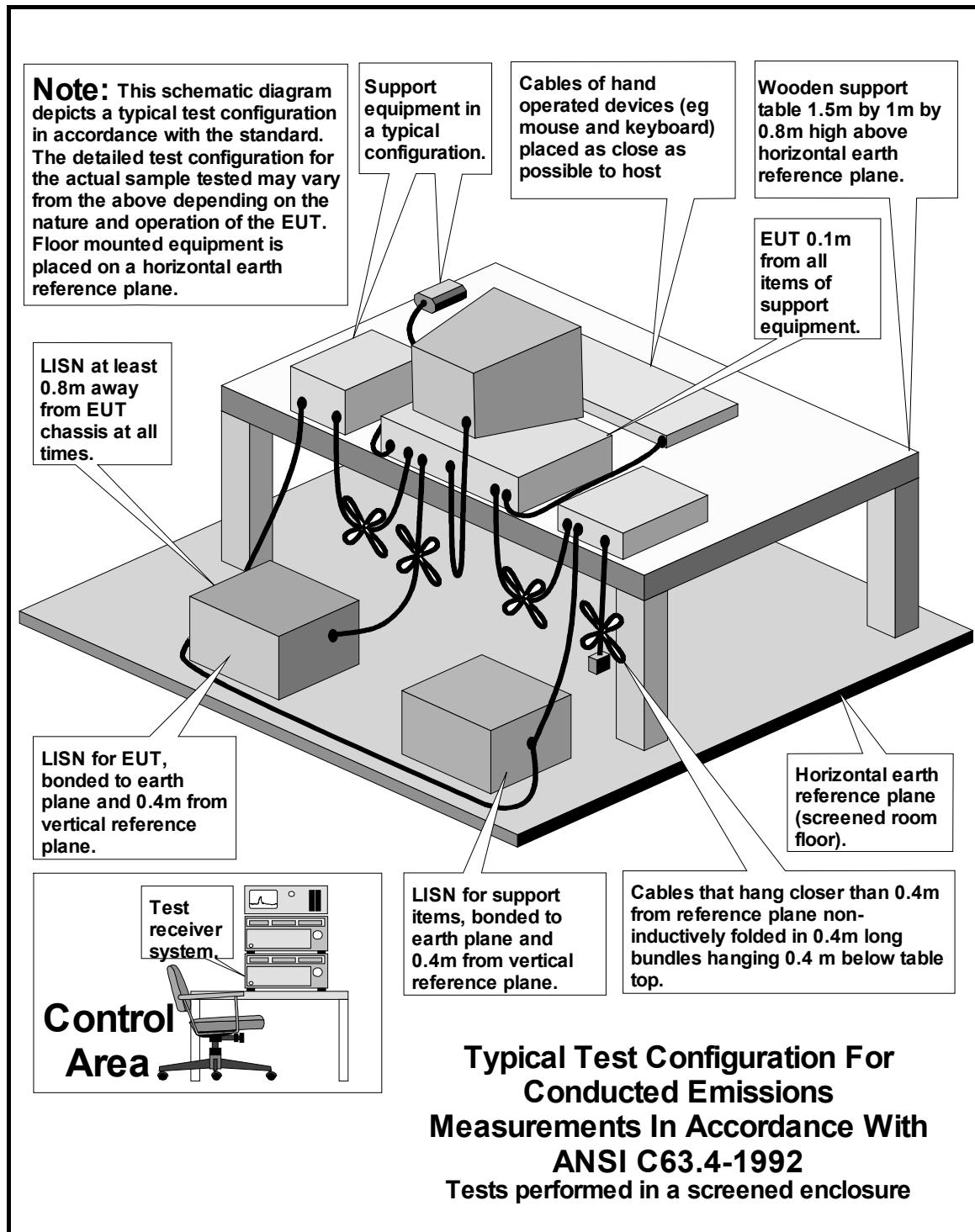
Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\47519JD04\EMICON	Test configuration for measurement of conducted emissions.
DRG\47519JD04\EMIRAD	Test configuration for measurement of radiated emissions.

Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

DRG\47519JD04\EMICON



Test of: Nextlink.
 Bluespoon AX2.
To: FCC Part 15.247: 2004 (Subpart C)

DRG\47519JD04\EMIRAD

