ELECTROMAGNETIC COMPATIBILITY

EMC TEST REPORT

FCC 47 CFR PART 15 SUBPART C

AND

INDUSTRY CANADA RSS-210 ISSUE 6

FOR

BLUETOOTH MODULE

MODEL: IX100XUSI-WLBT

INSTALLED IN

ITRONIX CORPORATION

IX100X SERIES RUGGED HANDHELD PC

UTILIZING AN

INTERNAL PRINTED CIRCUIT ANTENNA

FCC ID: KBCIX100XUSI-WLBT

IC: 1943A-IX100Xg

Test Report Serial No.

042406KBC-T750-E15B

Test Report Revision No.

Revision 1.0 (Initial Release)

Test Location

Celltech Compliance Testing & Engineering Lab
(Celltech Labs Inc.)
1955 Moss Court
Kelowna, BC
Canada
V1Y 9L3

DECLARATION OF COMPLIANCE

Test Lab and Location	**CELLTECH LABS INC.** Testing and Engineering Services 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3	**Company Information**	**ITRONIX CORPORATION** 12825 E. Mirabeau Parkway Spokane Valley, WA 99216 United States
Phone:	250-448-7047		
Fax:	250-448-7048		
E-mail:	info@celltechlabs.com		
web site:	www.celltechlabs.com		

Lab Registration No.(s):	FCC:	714830	IC:	3874
Rule Part(s):	FCC:	§15.247; §2.1091; §1.1310	IC:	RSS-210 Issue 6
Device Classification:	FCC:	Spread Spectrum Transmitter (DSS)	IC:	Low Power Licence-Exempt Transmitter
Device Identification:	FCC ID:	KBCIX100XUSI-WLBT	IC:	1943A-IX100Xg

DUT Description:

Model(s):	IX100XUSI-WLBT				
Transmitter Type:	Bluetooth Module		USI WM-BG-MR-01		
Co-located Transmitter:	802.11bg WLAN (Combo Module)		USI WM-BG-MR-01		
Host PC Type:	Rugged Handheld PC		Itronix IX100X Series		
Tx Frequency Range:	2402 - 2480 MHz				
Max. RF Output Power:	+3.72 dBm	0.0024 Watts	Maximum peak conducted power measured (2402 MHz)		
Mode(s) of Operation:	Frequency Hopping Spread Spectrum (FHSS)				
Modulation Type(s):	GFSK				
Antenna Type(s):	Bluetooth	Internal	Right Side of LCD Display	Gain:	2.5 dBi
	802.11bg WLAN	Internal	Top Center above LCD Display	Gain:	-4 dBi
Power Source(s):	Lithium-ion Battery	4 V, 3.0 Ah		P/N: 46-0155-001	
	AC Power Adapter	Magic Power Technology Co., Ltd.		Model: MPE-C045-12-R	

This wireless device has demonstrated compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC 47 CFR Part 15C and Industry Canada RSS-210 Issue 6.

I attest to the accuracy of the data. All measurements reported herein were performed by me or were under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Test Report Approved By:
Spencer Watson
EMC Lab Manager
Celltech Labs Inc.

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FIGURES

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TEST SUMMARY

Appendix	Test Description	Procedure Reference	Limit Reference	Test Start Date	Test End Date	Result
Referenced Standard: FCC CFR Title 47 Part 15						
A	Powerline Conducted Emissions	ANSI C63.4	§15.207	26Jun06	26Jun06	Pass
B	Peak Conducted RF Output Power	FCC 97-114	§15.247 (b) (1)	6Jun06	6Jun06	Pass
C	Adjacent Channel Separation	DA 00-705	§15.247 (a) (1)	26Jun06	26Jun06	Pass
D	Number of Hopping Channels	DA 00-705	§15.247 (a) (1) (iii)	26Jun06	26Jun06	Pass
E	Channel Dwell Time	DA 00-705	§15.247 (a) (1) §15.247 (a) (1) (iii)	26Jun06	26Jun06	Pass
F	20 dB Bandwidth	DA 00-705	§15.247 (a) (1) (iii)	26Jun06	26Jun06	Pass
G	Radiated Spurious Emissions	ANSI C63.4; FCC 97-114	§15.247(c)	4May06	21Jun06	Pass
Referenced Standard: IC RSS-210 Issue 6						
A	Powerline Conducted Emissions	RSS-212, ANSI C63.4	RSS-GEN § 7.2.2	26Jun06	26Jun06	Pass
B	Peak Conducted RF Output Power	RSS-GEN § 4.6	RSS-210 A8.4(4)	6Jun06	6Jun06	Pass
C	Adjacent Channel Separation	RSS-GEN § 7.2	RSS-210 A8.1 (2)	26Jun06	26Jun06	Pass
D	Number of Hopping Channels	RSS-GEN § 7.2	RSS-210 A8.1 (4)	26Jun06	26Jun06	Pass
E	Channel Dwell Time	RSS-GEN § 7.2	RSS-210 A8.1 (4)	26Jun06	26Jun06	Pass
F	20 dB Bandwidth	RSS-GEN § 7.2	RSS-210 A8.1 (2)	26Jun06	26Jun06	Pass
G	Radiated Spurious Emissions	RSS-212, ANSI C63.4	RSS-210 §6.2.2 (o)(e1), 6.3	4May06	21Jun06	Pass
H	Conducted Rx Spurious Emissions	RSS-GEN §4.8	RSS-GEN §6	27Sept06	27Sept06	Pass

REVISION LOG

Revision No.	Description	Implemented By	Implementation Date
Revision 1.0	Initial Release	Jonathan Hughes	September 27, 2006

SIGNATORIES

Prepared By		September 27, 2006
Name/Title	Spencer Watson / EMC Lab Manager	Date
Approved By		September 27, 2006
Name/Title	Jonathan Hughes / General Manager	Date

1.0 SCOPE

This report outlines the measurements made and results collected during the electromagnetic emissions testing of the Bluetooth Module installed in the Itronix Corporation IX100X Series Rugged Handheld PC. The results were applied against the EMC requirements and limits outlined in the technical rules and regulations set forth in the Federal Communication Commission Code of Federal Regulations Title 47 Part 15 Subpart C and Industry Canada RSS-210 Issue 6.

2.0 REFERENCES

2.1 Normative References

ANSI/ISO 17025:2005	General Requirements for competence of testing and calibration laboratories
IEEE/ANSI C63.4-2003	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
IEEE/ANSI Std C95.1-1999	American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields
CFR Title 47 Part 2:2005	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
CFR Title 47 Part 15:2005	Code of Federal Regulations Title 47: Telecommunication Part 15: Radio Frequency Devices
FCC Public Notice DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems March 30, 2000
IC Spectrum Management & Telecommunications Policy	Radio Standards Specification RSS-212 Issue 1 (Provisional) - Test Facilities & Test Methods for Radio Equipment RSS-210 Issue 6 - Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment RSS-102 Issue 2 - Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

3.0 TERMS AND DEFINITIONS

AV	Average
CFR	Code of Federal Regulations
dB	decibel
dBm	dB referenced to 1 mW
dBuV	dB referenced to 1 uV
DUT	Device under Test
dBc	dB down from carrier
EBW	Emission Bandwidth
EMC	Electromagnetic Compatibility
FCC	Federal Communication Commission
FHSS	Frequency Hopping Spread Spectrum
HP	Hewlett Packard
HPF	High Pass Filter
Hpol	Horizontal Polarization
Hz	Hertz
IC	Industry Canada
kHz	kilohertz
LNA	Low Noise Amplifier
m	meter
MAP	Modulated Average Power
MHz	Megahertz
Mbps	megabits per second
na	not applicable
n/a	not available
PIFA	Planar inverted folded antenna
PK	Peak
PPSD	Peak Power Spectral Density
QP	Quasi-peak
RBW	Resolution Bandwidth
R&S	Rohde & Schwarz
RSS	Radio Standard Specification
SA	Spectrum Analyzer
VBW	Video Bandwidth
Vpol	Vertical Polarization

4.0 FACILITIES AND ACCREDITATIONS

The facilities used in collecting the test results outlined in this report are located at 1955 Moss Court, Kelowna, British Columbia, Canada, V1Y 9L3. The radiated and conducted emissions sites conform to the requirements set forth in ANSI C63.4 and are filed and listed with the FCC under Registration Number 714830 and Industry Canada under File Number IC 3874.

5.0 GENERAL INFORMATION

5.1 Applicant Information

Company Name:	**Itronix Corporation**
Address:	12825 E. Mirabeau Parkway
	Spokane Valley, WA 99216
	United States

5.2 DUT Description

The DUT consisted of the Bluetooth Module installed in the Itronix Corporation IX100X Series Rugged Handheld PC connected to an Internal Printed Circuit Antenna installed at the right side edge of the IX100X.

Device under Test:	WM-BR-MR-01 Bluetooth Module		Manufacturer: Universal Scientific Industrial	
Model:	IX100XUSI-WLBT		**S/N Tested:**	8601-600160-30
Rule Part(s):	FCC:	§15.247; §2.1091; §1.1310	IC:	RSS-210 Issue 6
Classification:	FCC:	Spread Spectrum Transmitter (DSS)	IC:	Low Power Licence-Exempt Transmitter
Power Source:	Powered from the internal PC power supply			

Antenna:	Internal Printed Circuit
Gain:	+2.5 dBi

Device:	WM-BR-MR-01 802.11b/g WLAN (Co-located)	Manufacturer: Universal Scientific Industrial
Model:	IX100XUSI-WLBT	
Antenna:	Internal Dipole	
Gain:	-4 dBi	

Host PC:	Rugged Handheld PC	Manufacturer: Itronix Corporation	
Model:	IX100X Series	**S/N Tested:**	DZGEG5326ZZ5091
Power Source(s):	AC Adapter (Magic Power Technology Co., Ltd. Model: MPE-C045-12-R, Output 12VDC, 3.75A)		
	Lithium-ion Battery 7.4V, 3.0Ah (Model: 46-0155-001)		

5.3 Mode(s) of Operation Tested

Customer supplied software was used to place the Bluetooth transmitter at the appropriate channel with the power level and modulation for the specific measurement.

Tx Frequency Range	2402 - 2480 MHz Ch. 0 (2402 MHz), Ch. 39 (2441 MHz) & Ch. 78 (2480 MHz) measured unless otherwise noted
Co-Transmit Operation	Co-transmit operations for the Bluetooth and WLAN were evaluated for Radiated Spurious emissions and found to be in compliance. The WLAN was evaluated for single-transmit operations under the DTS test procedures and the test report can be found in the DTS filing of this composite device application.
Power Gain Settings	The RF output power was tuned according to manufacturer specifications for maximum rated output power
Mode of Operation	FHSS
Modulation Type	GFSK
Power Source(s) Tested	All tests were performed with the AC Power Adapter powering the DUT

5.3.1 DUT Exercising Software Description

The DUT was configured and exercised using customer supplied test software that allows an operator to set the parameters of the Bluetooth operation. The settings used are described in each appendix. Software power settings were set as defined by the manufacturer for typical operation.

5.4 Configuration Description

The DUT was configured as described by the client to being representative of what would be delivered to the end user. This configuration included the Bluetooth and internal antenna (with co-located WLAN and internal antenna) as described in the Declaration of Compliance. More specific details may be included in each appendix.

5.4.1 Configuration Justification

The DUT was tested in a configuration described by the client as being worst-case but typical of normal use.

Radiated output power measurements of the fundamental frequency were made with the Bluetooth set at each of three frequencies describing the frequency band of operation; low (2402 MHz), mid (2441 MHz) and high (2480 MHz) to determine the highest radiated output source for the host PC orientation. The orientation with the highest radiated emissions was used for the remainder of the radiated emissions measurements.

6.0 PASS/FAIL CRITERIA

Unless otherwise noted in the Appendices, the pass/fail criteria is the limit set forth in the reference standards. The DUT is considered to have passed the requirements if the data collected during the described measurement procedure is no greater than the specified limits as defined. The pass/fail statements made in this report only apply to the unit tested.

APPENDICES

Appendix A - Powerline Conducted Emissions Measurement

A.1. REFERENCES

Normative Reference Standard	CFR 47 FCC Part 15 §15.207
Procedure Reference	ANSI C63.4

A.2. LIMITS

§15.207: Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each powerline and ground at the power terminal.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.50 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency

A.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

A.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00049	HP	85650A	Quasi-Peak Adapter	04Apr06	04Apr07
00047	HP	85685A	RF Preselector	05Apr06	05Apr07
00051	HP	8566B	Spectrum Analyzer RF Section	04Apr06	04Apr07
00083	EMCO	3825/2	Line Impedance Stabilization Network	20Apr06	20Apr07
00084	EMCO	3825/2	Line Impedance Stabilization Network	20Apr06	20Apr07

A.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT SETUP	The measurement setup and test was performed according to ANSI/TIA-603-C-2004 section 2.1.3 Power Line Conducted Spurious Output Voltage

A.6. SETUP PHOTOS

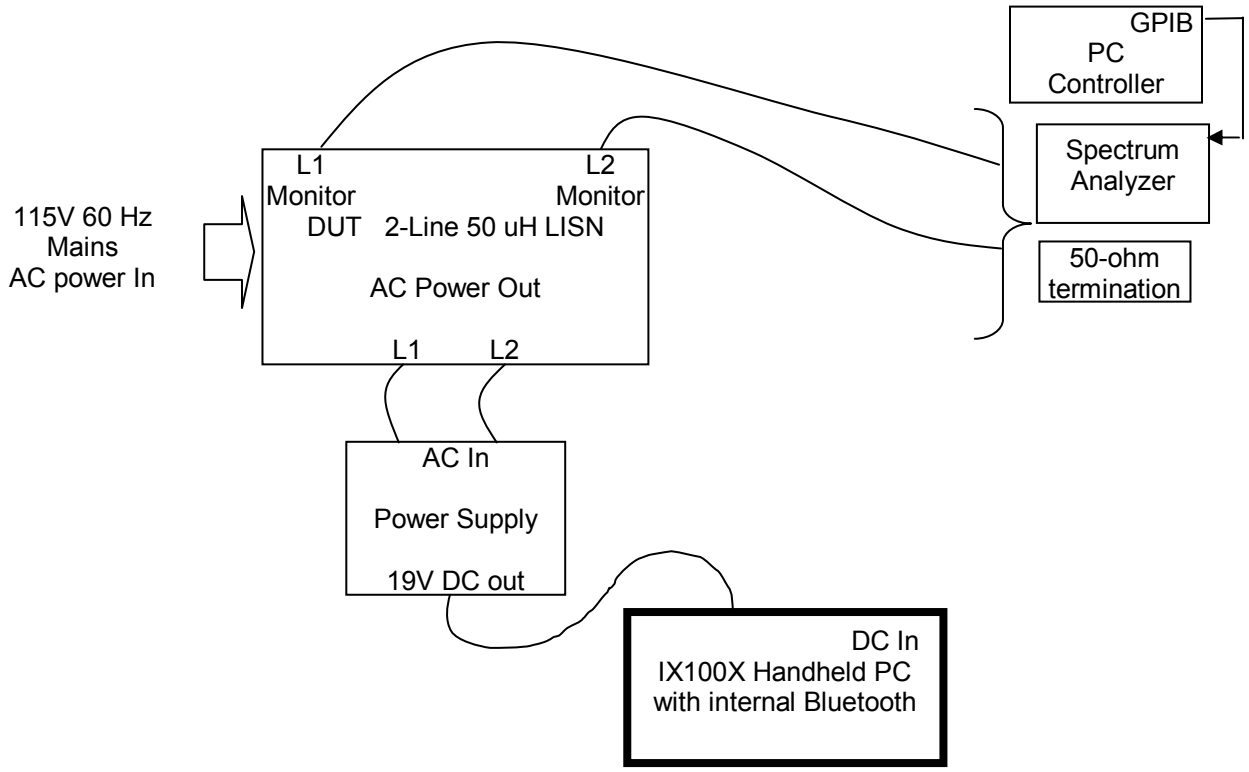
Photograph A.6-1 - AC Powerline Conducted Emissions Configuration

Photograph A.6-2 - AC Powerline Conducted Emissions Cable Placement

A.7. SETUP DRAWING

Figure A.7-1 - Setup Drawing

Conducted Emission Measurement Setup

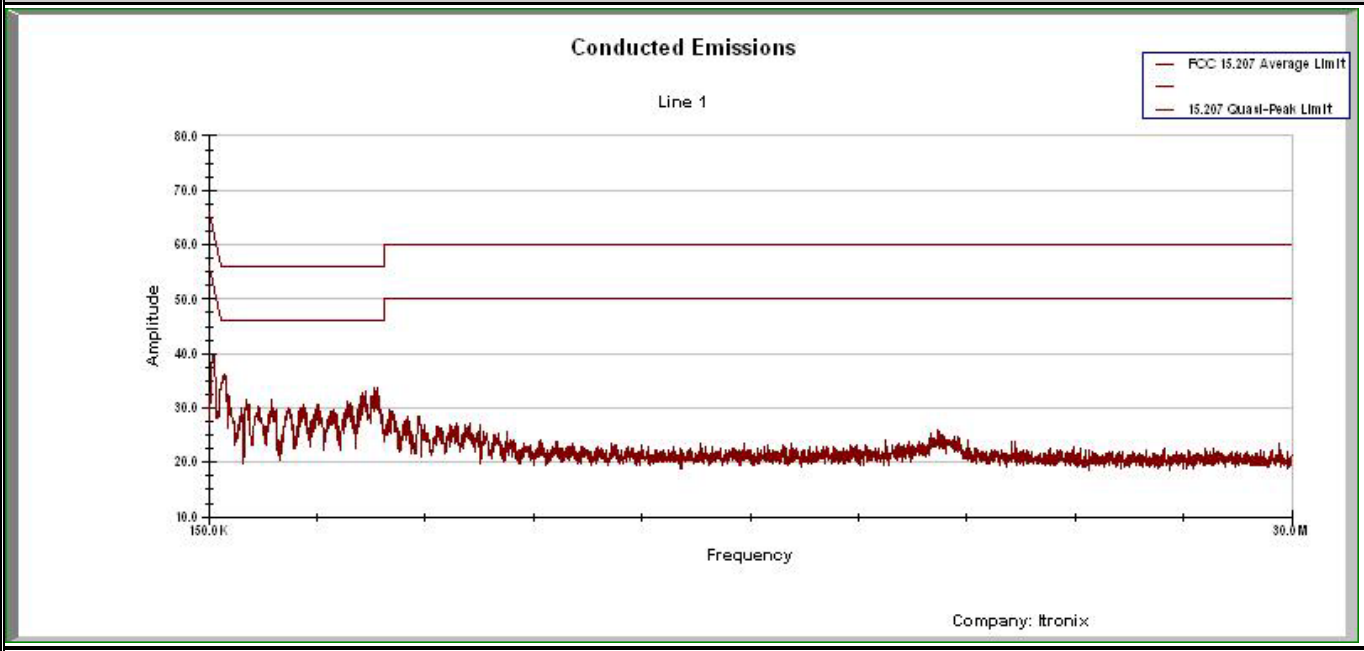


A.8. DUT OPERATING DESCRIPTION

Bluetooth	The Bluetooth transmitter was set to transmit at full power with frequency hopping turned on.
PC	Other than operating the Bluetooth software and running MS windows, no PC exercising was performed.

A.9. TEST RESULTS

Following are peak emission plots and tabular data describing the peak, quasi-peak and average measurements made of the DUT.



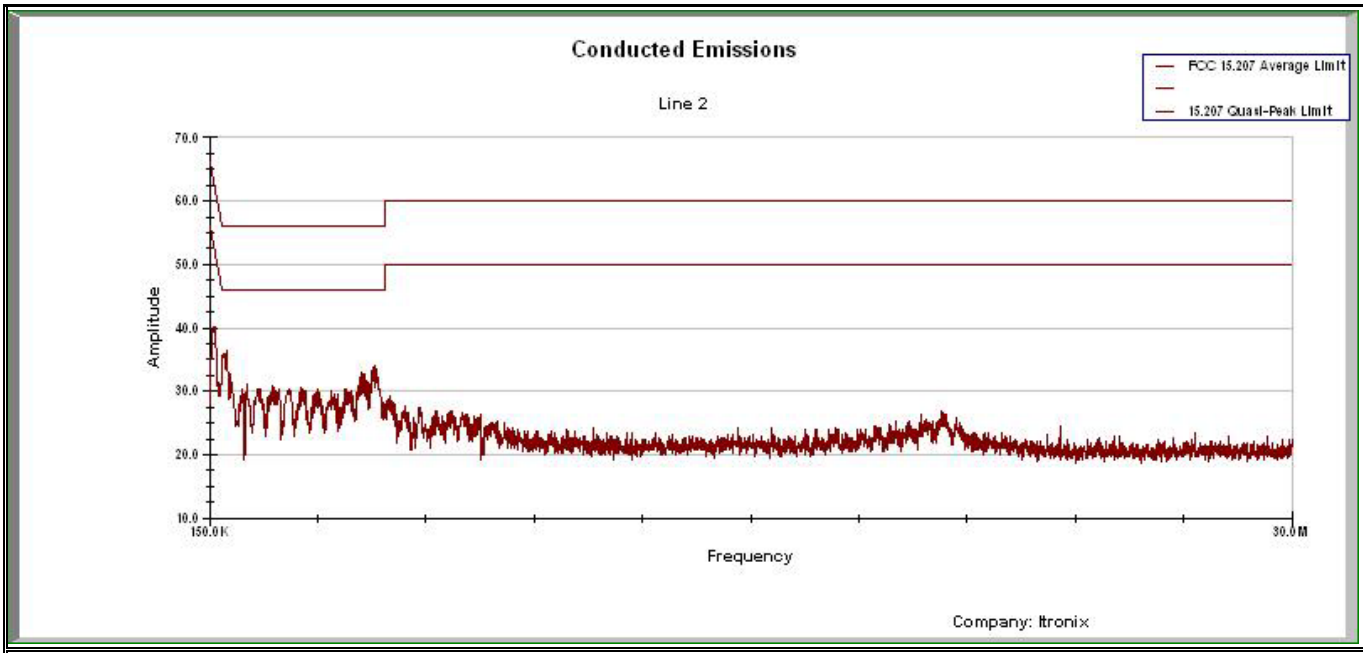
Project Number: 750
Company: Itronix
Product: IX100X with USI Bluetooth

Standard: FCC 15.207
Test Start Date: 26-Jun-05
Test End Date: 26-Jun-05

Line 1 Conducted Emissions

Frequency	Uncorrected Reading			Correction Factor	Corrected Emission Level			Quasi-Peak Limit	Quasi-Peak Margin	Average Limit	Average Margin	Pass/Fail
	Peak	Quasi-Peak	Average		Peak	Quasi-Peak	Average					
MHz	dBuV	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dBuV	dB	
0.223	31.90	21.82	18.19	-1.23	30.67	20.59	16.96	62.72	42.13	52.72	35.76	Pass
0.230	30.30	18.99	16.90	-1.18	29.12	17.81	15.72	62.45	44.64	52.45	36.73	Pass
0.230	29.50	18.99	17.25	-1.18	28.33	17.82	16.07	62.45	44.63	52.45	36.38	Pass
0.237	29.20	18.55	16.33	-1.13	28.07	17.42	15.20	62.19	44.77	52.19	36.99	Pass
0.255	27.40	18.43	15.44	-1.02	26.38	17.41	14.42	61.59	44.18	51.59	37.17	Pass
0.264	33.60	30.33	28.72	-0.97	32.63	29.36	27.75	61.30	31.94	51.30	23.54	Pass
0.264	33.20	30.62	28.71	-0.97	32.23	29.65	27.74	61.29	31.64	51.29	23.55	Pass
0.271	36.50	32.44	30.77	-0.94	35.56	31.50	29.83	61.08	29.58	51.08	21.25	Pass
0.276	27.10	18.23	14.63	-0.92	26.18	17.31	13.71	60.93	43.62	50.93	37.22	Pass
0.291	27.10	17.20	13.78	-0.86	26.24	16.34	12.91	60.50	44.16	50.50	37.59	Pass
0.299	26.50	17.06	13.44	-0.84	25.66	16.22	12.61	60.28	44.06	50.28	37.67	Pass

Corrected Emission Level (dBuV) = Uncorrected Reading (dBuV) + Correction Factor (dB)
Margin (dB) = Limit (dBuV) - Corrected Emission Level (dBuV)



Project Number: 750
Company: Itronix
Product: IX100X with USI Bluetooth

Standard: FCC 15.207
Test Start Date: 26-Jun-05
Test End Date: 26-Jun-05

Line 2 Conducted Emissions

Frequency	Uncorrected Reading			Correction Factor	Corrected Emission Level			Quasi-Peak Limit	Quasi-Peak Margin	Average Limit	Average Margin	Pass/Fail
	Peak	Quasi-Peak	Average		Peak	Quasi-Peak	Average					
MHz	dBuV	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dBuV	dB	
0.215	42.70	41.56	39.75	-1.30	41.40	40.26	38.46	63.00	22.74	53.00	14.54	Pass
0.216	42.90	41.54	39.58	-1.29	41.61	40.25	38.28	62.98	22.73	52.98	14.69	Pass
0.224	32.00	20.65	17.93	-1.22	30.78	19.43	16.71	62.67	43.24	52.67	35.96	Pass
0.238	29.60	18.83	16.49	-1.13	28.47	17.70	15.36	62.16	44.46	52.16	36.80	Pass
0.256	27.60	18.56	15.53	-1.03	26.57	17.53	14.51	61.57	44.03	51.57	37.06	Pass
0.264	33.40	28.27	26.31	-0.99	32.41	27.28	25.32	61.31	34.03	51.31	25.99	Pass
0.264	33.80	28.86	26.77	-0.98	32.82	27.88	25.78	61.31	33.43	51.31	25.53	Pass
0.271	36.60	33.99	32.76	-0.95	35.65	33.04	31.81	61.08	28.04	51.08	19.27	Pass
0.291	27.50	17.25	13.60	-0.87	26.63	16.38	12.74	60.50	44.12	50.50	37.77	Pass
0.294	26.70	17.23	13.71	-0.86	25.85	16.38	12.86	60.41	44.04	50.41	37.56	Pass
0.297	27.60	17.09	13.60	-0.84	26.76	16.25	12.76	60.32	44.07	50.32	37.56	Pass

Corrected Emission Level (dBuV) = Uncorrected Reading (dBuV) + Correction Factor (dB)
Margin (dB) = Limit (dBuV) - Corrected Emission Level (dBuV)

A.10. PASS/FAIL

In reference to the results outlined in A.9 the DUT passes the requirements as stated in the reference standards as follows:

The RF voltage measured in reference to ground on each of the power line conductors does not exceed the limits as outline in FCC 15.207.

Appendix B - Peak Conducted RF Output Power Measurement

B.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247(b) (1)
Procedure Reference	FCC 97-114

B.2. LIMITS

B.2.1. FCC CFR 47

§15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following:
*§15.247(b) (1) For frequency hopping systems operating in the 2400 – 2483.5 MHz band employing at least 75 hopping channels: 1 Watt.**

*Appendix D results confirm the number of hopping channels is at least 75.

B.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

B.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	02Feb06	02Feb07
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na*

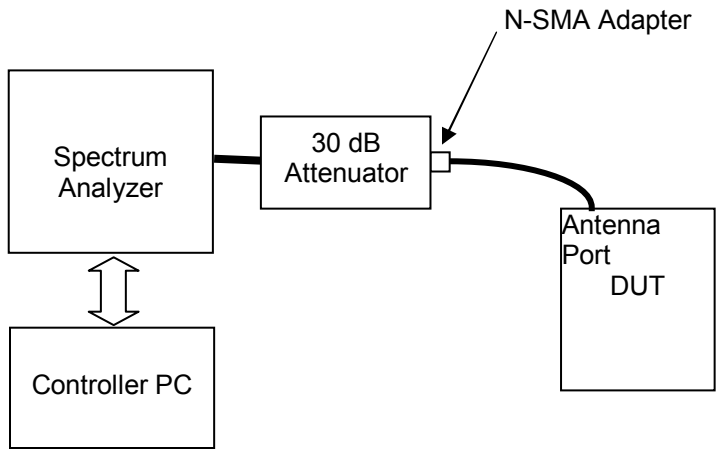
*Attenuator verified with power meter prior to use

B.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in B.6.
Measurement Equipment Settings	To evaluate the maximum peak power, with the following spectrum analyzer settings were used: RBW – 1 MHz VBW – 1 MHz Detector – Peak Trace – Max Hold Span -12 MHz
Measurement Procedure	A PC controller was used to record the spectrum analyzer display and pick the maximum level.

B.6. SETUP DRAWING

Figure B.6-1 - Setup Drawing



B.7. DUT OPERATING DESCRIPTION

The unmodulated carrier was set for its maximum rated power output or setting at each of the three frequencies representing the frequency band of operation.

B.8. TEST RESULTS

Channel	Frequency	Peak Conducted Power		Limit
	MHz	dBm	Watts	Watts
Low	2402	+3.72	0.0024	1
Mid	2441	+3.59	0.0023	1
High	2480	+3.55	0.0023	1

B.9. PASS/FAIL

In reference to the results outlined in B.8, the DUT passes the requirements as stated in the reference standards as follows:

§15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following:
§15.247(b) (1) For frequency hopping systems operating in the 2400 - 2483.5 MHz band employing at least 75 hopping channels: 1 Watt

Appendix C - Adjacent Channel Separation

C.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247 (a) (1)
Test Reference	FCC Public Notice DA 00-705 released March 30, 2000

C.2. LIMITS

§15.247(a) (1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Note: The 20 dB bandwidth of the hopping channel as outlined in Appendix F is 989.33 kHz. Therefore the channel separation must be at least 995.44 kHz.

C.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

C.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	02Feb06	02Feb07
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na*

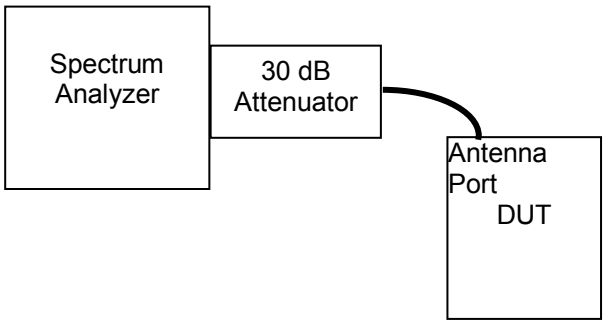
*Attenuator verified with power meter prior to use

C.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in C.6.
Measurement Equipment Settings	The channel separation is measured within the band with the following spectrum analyzer settings: Span – 2 MHz RBW – 100 kHz VBW – 300 MHz Sweep – 5 mS Detector – Peak Trace - Max Hold

C.6. SETUP DRAWING

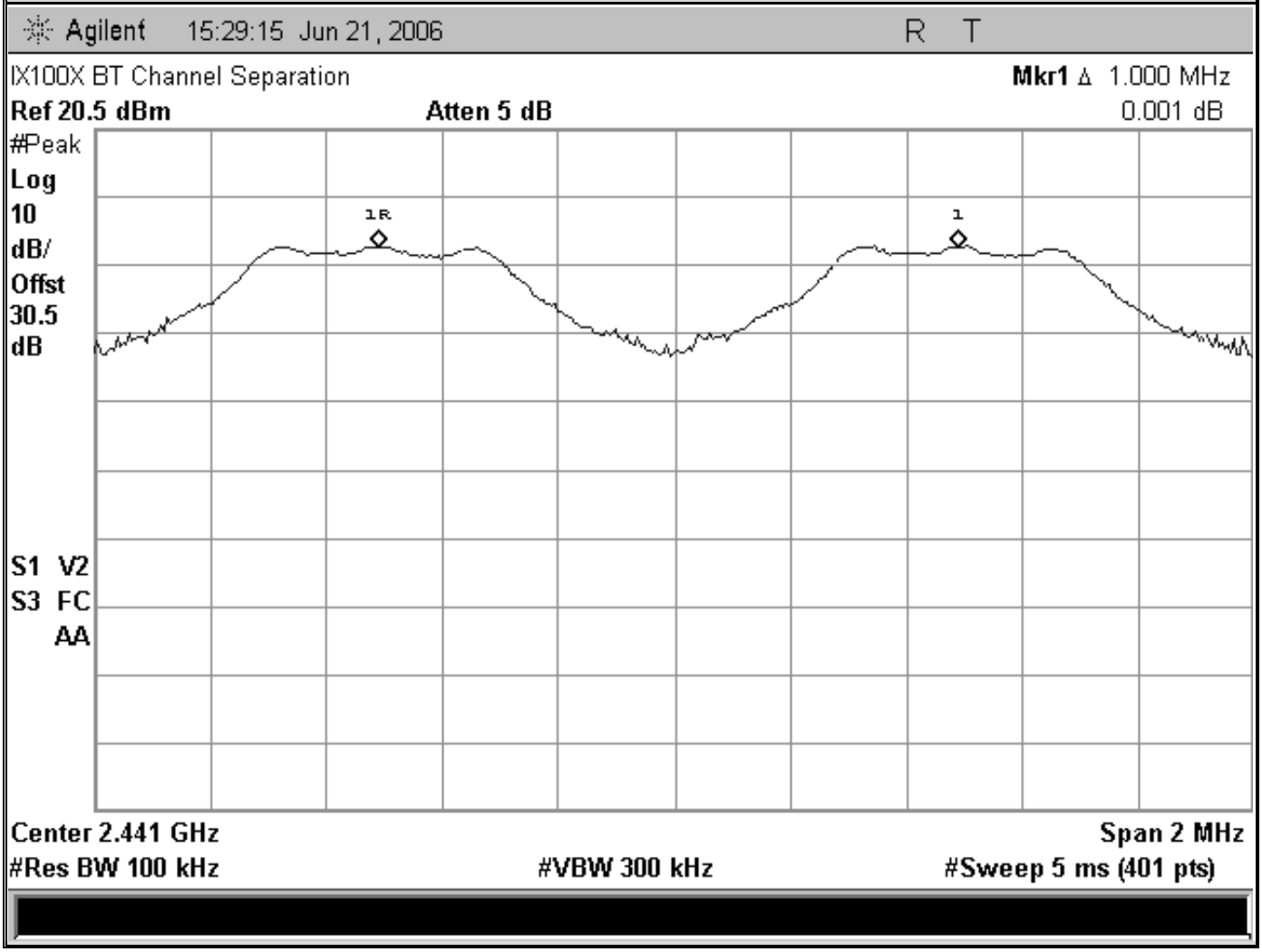
Figure C.6-1 - Setup Drawing



C.7. DUT OPERATING DESCRIPTION

The channel separation measurement was performed with the DUT set at max power and to hop through the channels with the analyzer set for max hold. Two adjacent channels near the mid channel (Channel 38 and 39) are captured on the display. Pseudo-random data was used to modulate the signal.

C.8. TEST RESULTS



C.9. PASS/FAIL

In reference to the results outlined in C.8, the DUT passes the requirements as stated in the reference standards as follows:

§15.247(a) (1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Appendix D - Number of Hopping Channels

D.1. REFERENCES	
Normative Reference Standard	FCC CFR 47 §15.247 (a) (1) (iii)
Test Reference	FCC Public Notice DA 00-705 released March 30, 2000

D.2. LIMITS
§15.247 (a) (1) (iii): Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

D.3. ENVIRONMENTAL CONDITIONS	
Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

D.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	02Feb06	02Feb07
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na*

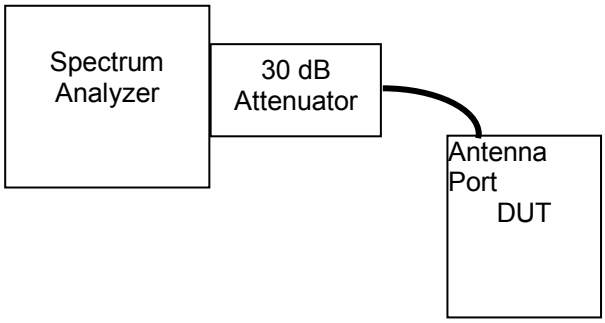
*Attenuator verified with power meter prior to use

D.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in D.6.
Measurement Equipment Settings	The number of hopping channels is measured within the band with the following spectrum analyzer settings: Span – 100 MHz RBW – 100 kHz VBW – 1 MHz Sweep – 21.74 mS Detector – Peak Trace - Max Hold

D.6. SETUP DRAWING

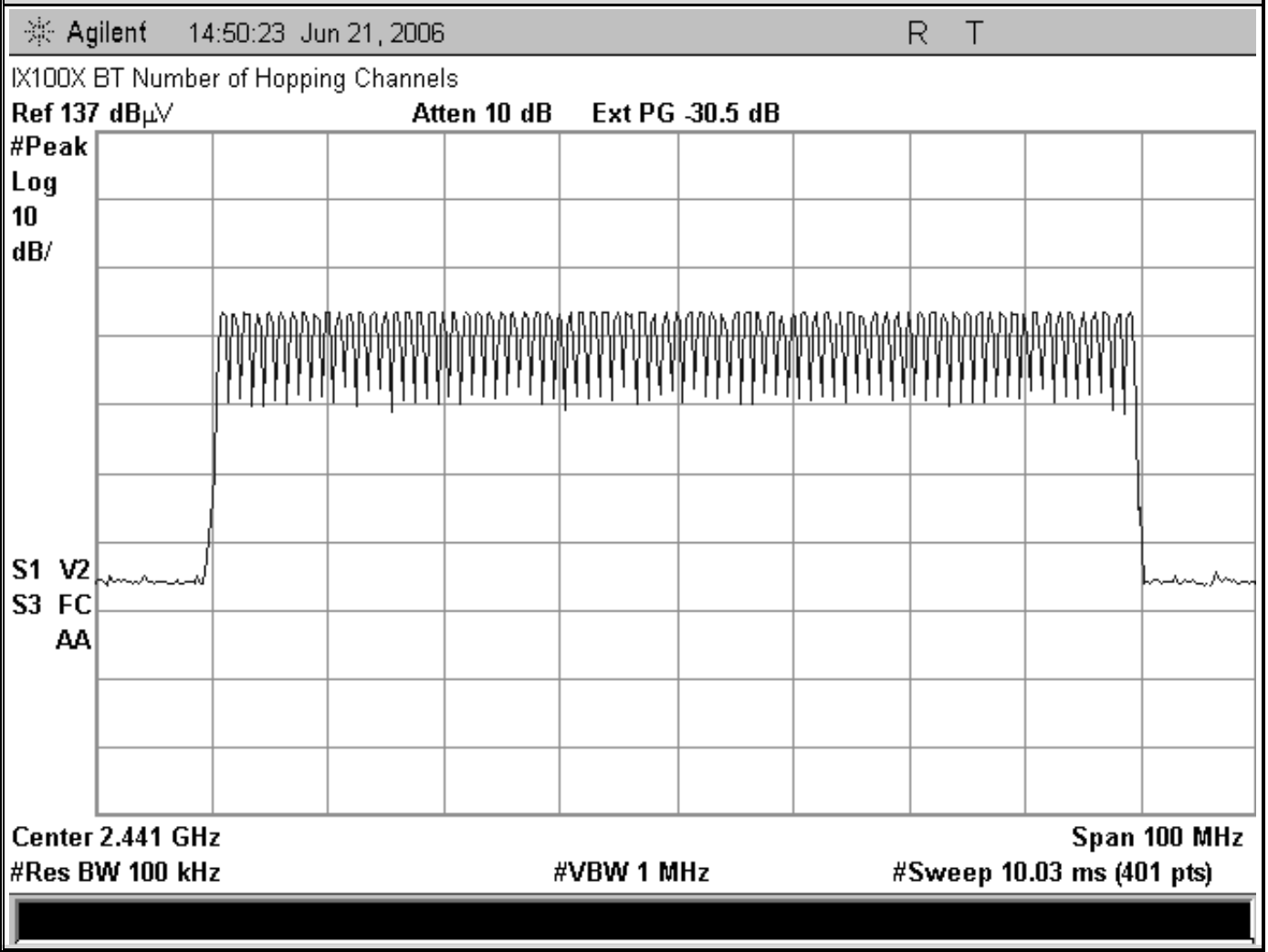
Figure D.6-1 - Setup Drawing



D.7. DUT OPERATING DESCRIPTION

The number of hopping channels is measurement with the DUT set at max power and to hop through the channels for a sufficient period of time for a display capture using the analyzer set for max hold.

D.8. TEST RESULTS



D.9. PASS/FAIL

In reference to the results outlined in D.8, the DUT passes the requirements as stated in the reference standards as follows:

§15.247 (a) (1) (iii): Frequency hopping systems in the 2400 - 2483.5 MHz band shall use at least 15 non-overlapping channels

Appendix E - Channel Dwell Time

E.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247 (a) (1), FCC CFR 47 §15.247 (a) (1) (iii)
Test Reference	FCC Public Notice DA 00-705 released March 30, 2000

E.2. LIMITS

§15.247 (a) (1): ….The system shall hop to channel frequencies that are selected at the hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter.
§15.247 (a) (1) (iii): …..The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

E.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

E.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	02Feb06	02Feb07
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na*

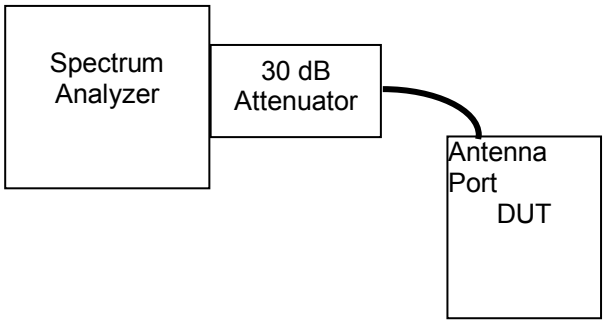
*Attenuator verified with power meter prior to use

E.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in E.6.
Measurement Equipment Settings	Two measurements are used for this determination. The first was the determination of the list repetition rate, using spectrum analyzer settings of: Frequency – 2441 MHz Span – 0 MHz RBW – 1 MHz VBW – 3 MHz Sweep – 200 mS Detector – Peak Trace - Max Hold The second measurement was the pulse width measurement, with spectrum analyzer settings of: Frequency – 2441 MHz Span – 0 MHz RBW – 1 MHz VBW – 3 MHz Sweep – 4 mS Detector – Peak Trace - Max Hold

E.6. SETUP DRAWING

Figure E.6-1 - Setup Drawing



E.7. DUT OPERATING DESCRIPTION

The hopping dwell time is measured with the DUT set at max power and to hop through the channels with the analyzer set for max hold. The analyzer trace is allowed to fill for a long enough period to show the time used for the DUT to go through the pseudo-random frequency list and restart with the channel being monitored.

E.8. TEST RESULTS

Figure E.8-1 - List Repetition Rate

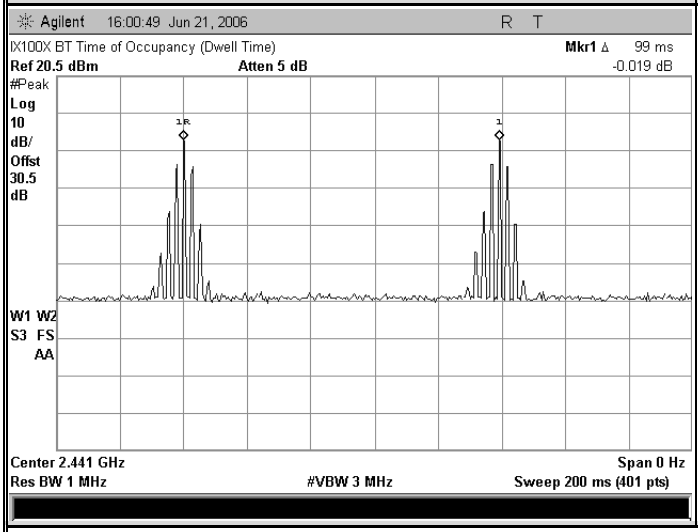
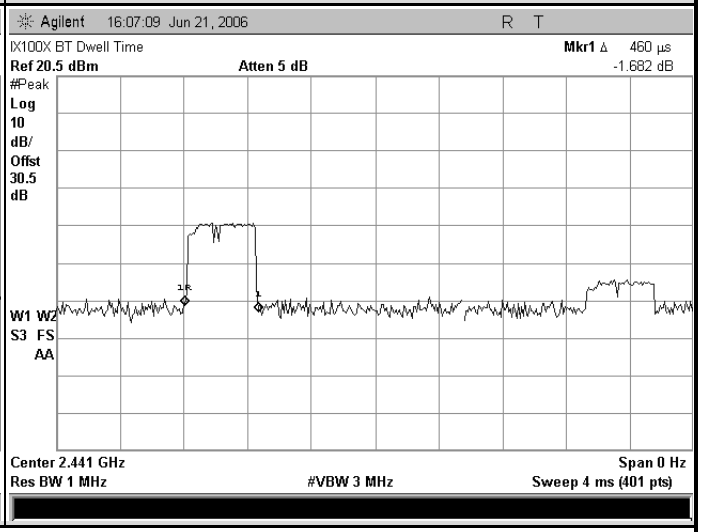


Figure E.8-2 - Pulse Width



The pseudorandom list repeats each 99 mS, therefore each channel will be active once each 99 mS. (see Figure E.8.1)
Each time the channel is active, it is for 460 uS. (Figure E.8.2)
The number of hopping channels is 79, therefore the total reference time is 79 * 0.4 seconds = 31.6 seconds.
The number of times the channel is active within the reference time of 31.6 seconds is 31.6 sec / 99 mS = 319.19 times
The average time in which a channel is active (dwell time) in the reference time (31.6 sec) = 319.19 times X 460 uS = 146.83 mS.

E.9. PASS/FAIL

In reference to the results outlined in E.8, the DUT passes the requirements as stated in the reference standards as follows:

§15.247 (a) (1): ….The system shall hop to channel frequencies that are selected at the hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter.
§15.247 (a) (1) (iii): …..The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Appendix F - 20 dB Bandwidth Measurement

F.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247 (a) (1) (iii)
Test Reference	FCC Public Notice DA 00-705 released March 30, 2000

F.2. LIMITS

§15.247 (a) (1) (iii): Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

Note: The channel width as referenced in the results outlined in Appendix D and E is 1 MHz, therefore to be non-overlapping, the 20 dB bandwidth must be no greater than 1 MHz for the system to comply.

F.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

F.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00015	Agilent	E4408B	Spectrum Analyzer	02Feb06	02Feb07
00076	Pasternack	PE7014-30	30dB 2 Watt Attenuator	na*	na*

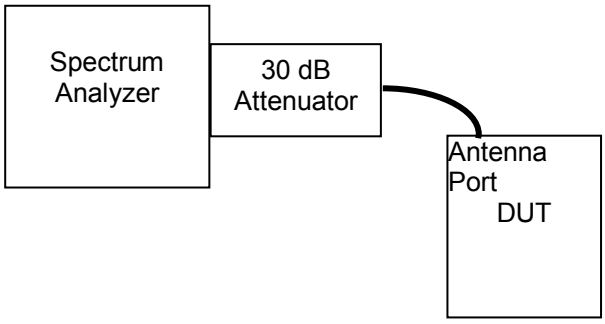
*Attenuator verified with power meter prior to use

F.5. MEASUREMENT EQUIPMENT SETUP

Measurement Equipment Connections	The equipment was connected as shown in the setup drawing in F.6.
Measurement Equipment Settings	The occupied bandwidth was measured for each channel using the spectrum analyzer with settings of: Frequency – each of three low, mid and high channels (2402, 2441 & 2480 MHz) Span – 3 MHz RBW – 100 kHz VBW – 300 kHz Sweep – 5 mS Detector – Peak Trace - Max Hold

F.6. SETUP DRAWING

Figure F.6-1 - Setup Drawing

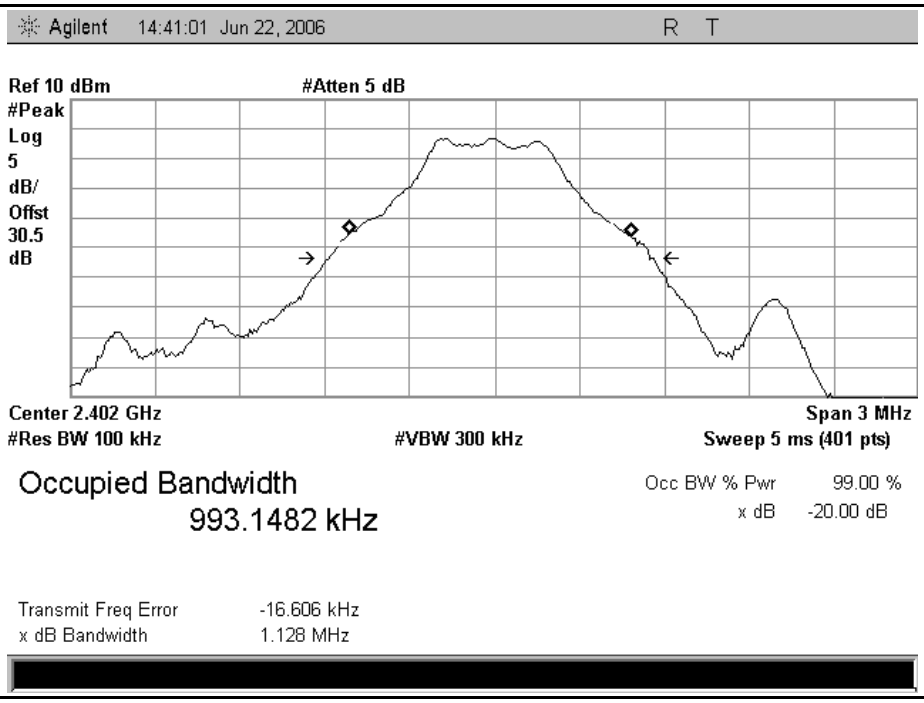


F.7. DUT OPERATING DESCRIPTION

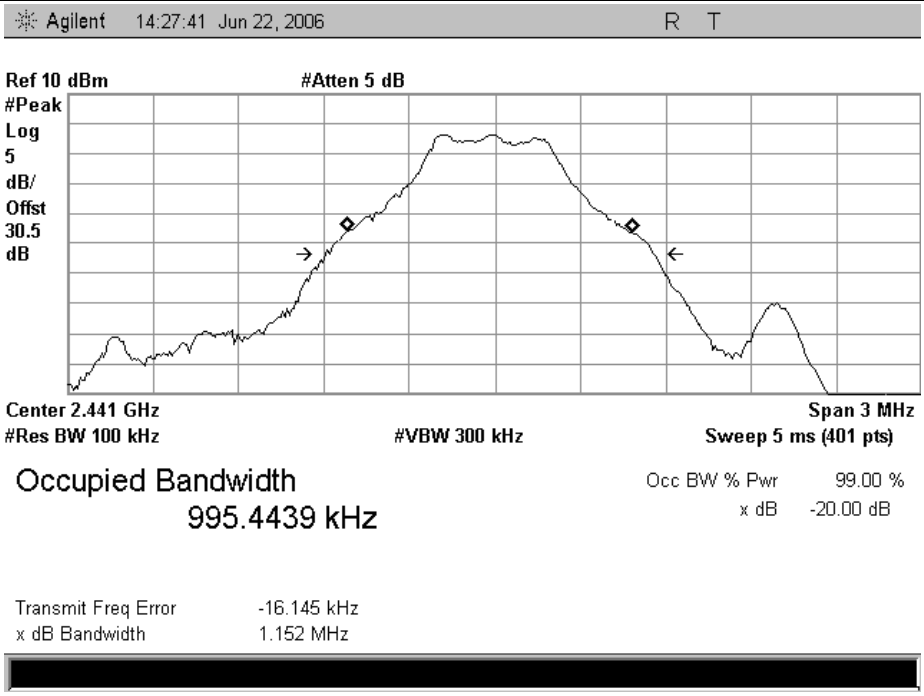
The 20 dB occupied bandwidth is measurement with the DUT set at max power for each of the three low, mid and high channels with pseudo-random modulation applied.

F.8. TEST RESULTS

Channel 0 - 2402 MHz - Occupied Bandwidth Measurement

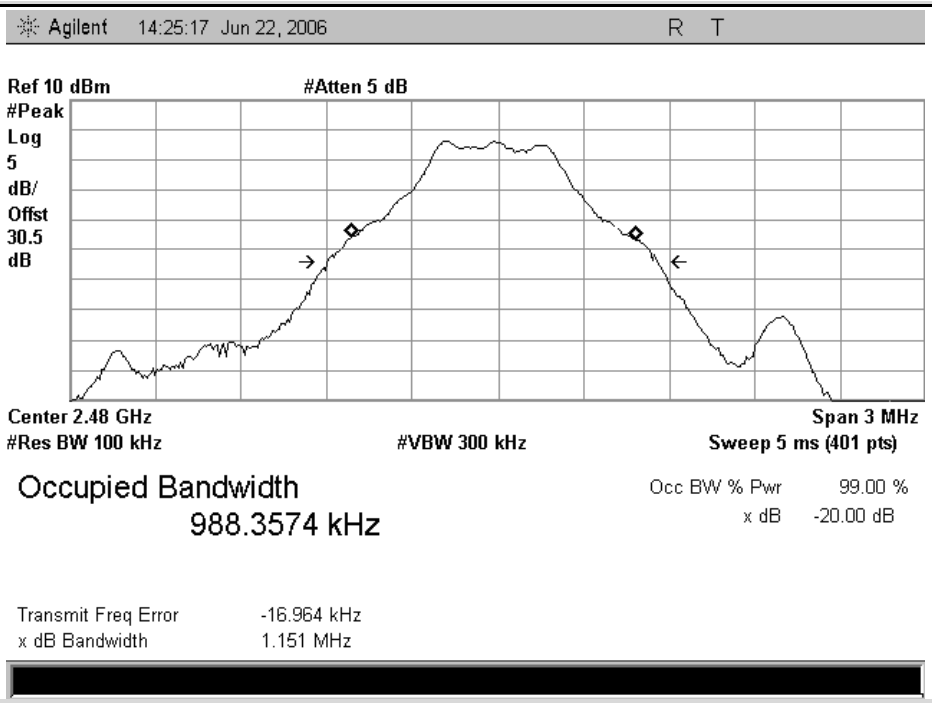


Channel 39 - 2441 MHz - Occupied Bandwidth Measurement



F.9. TEST RESULTS CONTINUED

Channel 78 - 2480 - Occupied Bandwidth



Channel	Frequency	-20 dB Bandwidth	Limit
	MHz	kHz	kHz
Low	2402	993.1482	1000
Mid	2441	995.4439	1000
High	2480	988.3574	1000

F.10. PASS/FAIL

In reference to the results outlined in F.8, the DUT passes the requirements as stated in the reference standards as follows:

§15.247 (a) (1) (iii): Frequency hopping systems in the 2400 - 2483.5 MHz band shall use at least 15 non-overlapping channels.
Note: The channel width as referenced in the results outlined in Appendix D and E is 1 MHz, therefore to be non-overlapping, the 20 dB bandwidth must be no greater than 1 MHz for the system to comply.

Appendix G - Radiated Spurious Emissions Measurement

G.1. REFERENCES

Normative Reference Standard	FCC CFR 47 §15.247(c)
Procedure Reference	ANSI C63.4; FCC 97-114

G.2. LIMITS

FCC CFR 47 §15.209

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency	Field Strength		Measurement Distance
MHz	uV/m	dBuv/m	Meters
.009 – 0.490	2400/F(kHz)	48.52 – 13.80	300
0.490 – 1.705	24000/F(kHz)	33.80 – 22.97	30
1.705 – 30.0	30	29.54	30
30 – 88	100	40.00	3
88 – 216	150	43.52	3
216 - 960	200	46.02	3
Above 960	500	53.98	3

(b) In the emission table above, the tighter limit applies at the band edges.

G.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 3 kPa

G.4. EQUIPMENT LIST

ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
00072	EMCO	2075	Mini-mast	n/a	n/a
00073	EMCO	2080	Turn Table	n/a	n/a
00071	EMCO	2090	Multi-Device Controller	n/a	n/a
00050	Chase	CBL-6111A	Bilog Antenna	04Apr06	04Apr07
00055	EMCO	3121C	Dipole Antenna	04Apr06	04Apr07
00034	ETS	3115	Double Ridged Guide Horn	11Aug05	11Aug07
00035	ETS	3115	Double Ridged Guide Horn	03Apr06	03Apr08
00161	Waveline	899	Standard Gain Horn Antenna	n/a	n/a
00051	HP	8566B	Spectrum Analyzer RF Section	04Apr06	04Apr07
00049	HP	85650A	Quasi-peak Adapter	04Apr06	04Apr07
00047	HP	85685A	RF Preselector	05Apr06	05Apr07
00048	Gore	65474	Microwave Cable	16Aug05	16Aug07
00115	Miteq	J54-00102600-35-5A	LNA	18Apr06	18Apr07
00006	R & S	SMR 20	Signal Generator (10MHz-40GHz)	06Apr06	06Apr07
00114	Amplifier Research	DC7154	Directional Coupler (0.8-4.2 GHz)	n/a	n/a
00078	Pasternack	PE2214-20	Directional Coupler (1-18 GHz)	n/a	n/a
00106	Amplifier Research	5S1G4	Power Amplifier (5W, 800MHz-4.2GHz)	n/a	n/a
00041	Amplifier Research	10W1000C	Power Amplifier (0.5 – 1 GHz)	n/a	n/a
00110	Gigatronics	8652A	Power Meter	12Apr06	12Apr07
00011	Gigatronics	80701A	Power Sensor	03Feb06	03Feb07
00208	Anritsu	MT8820A	Radio Communication Analyzer	06Jun06	06Jun07

G.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS

The measurement equipment was connected as shown in the G.6. A number of antennas were used to cover the applicable frequency range test. The ranges in which each antenna was used are as follows:

Frequency Range	Spectrum Analyzer Asset #	LNA/Filter/Attenuator Asset #	Antenna Asset #
2 GHz – 7 GHz	00051	00093/00115	00035
7 GHz – 18 GHz	00015	00093/00115	00035
18 GHz – 26 GHz	00015	00115	00161/00166

MEASUREMENT EQUIPMENT SETTINGS

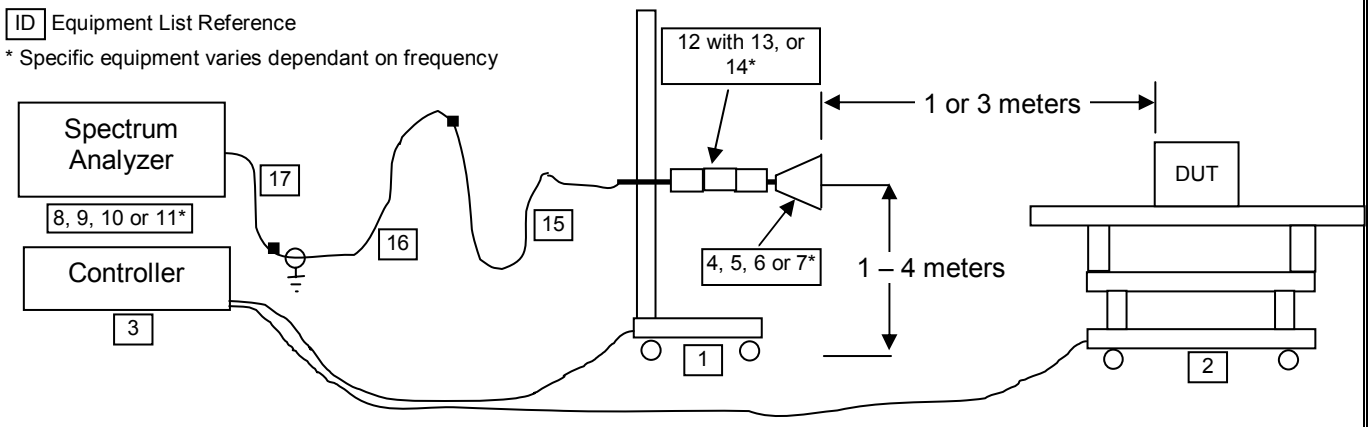
The spectrum analyzer was set to the following settings:

Frequency Range	RBW	VBW	Detector
MHz	kHz	kHz	
< 1000	1000*	1000	Peak*
> 1000	1000	1000	Peak*

*As a worst-case measurement, the average/QP limit was applied to measurements made with a peak detector using a RBW of 1 MHz (vs the specified 100 kHz), unless otherwise noted. Average measurements were performed with video averaging using a VBW of 30 Hz.

G.6. SETUP DRAWING

Figure G.6-1 - Setup Drawing



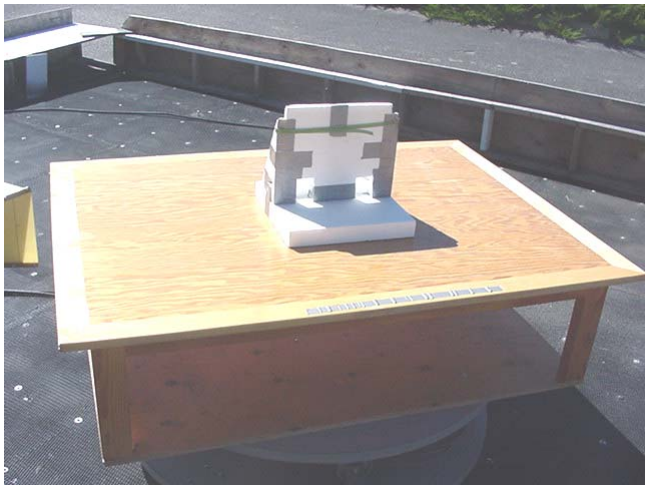
G.7. DUT OPERATING DESCRIPTION

Measurements were made at three channels, Low Channel (2402 MHz), Mid Channel (2441 MHz), High Channel (2480 MHz).

G.8. SETUP PHOTOGRAPHS

Photograph G.8-1 - Horn Receive Antenna in Horizontal Polarization

Photograph G.8-2 - Horn Receive Antenna in Vertical Polarization



G.9. TEST RESULTS

G.9.1. Carrier Field Strengths @ Specified Distance

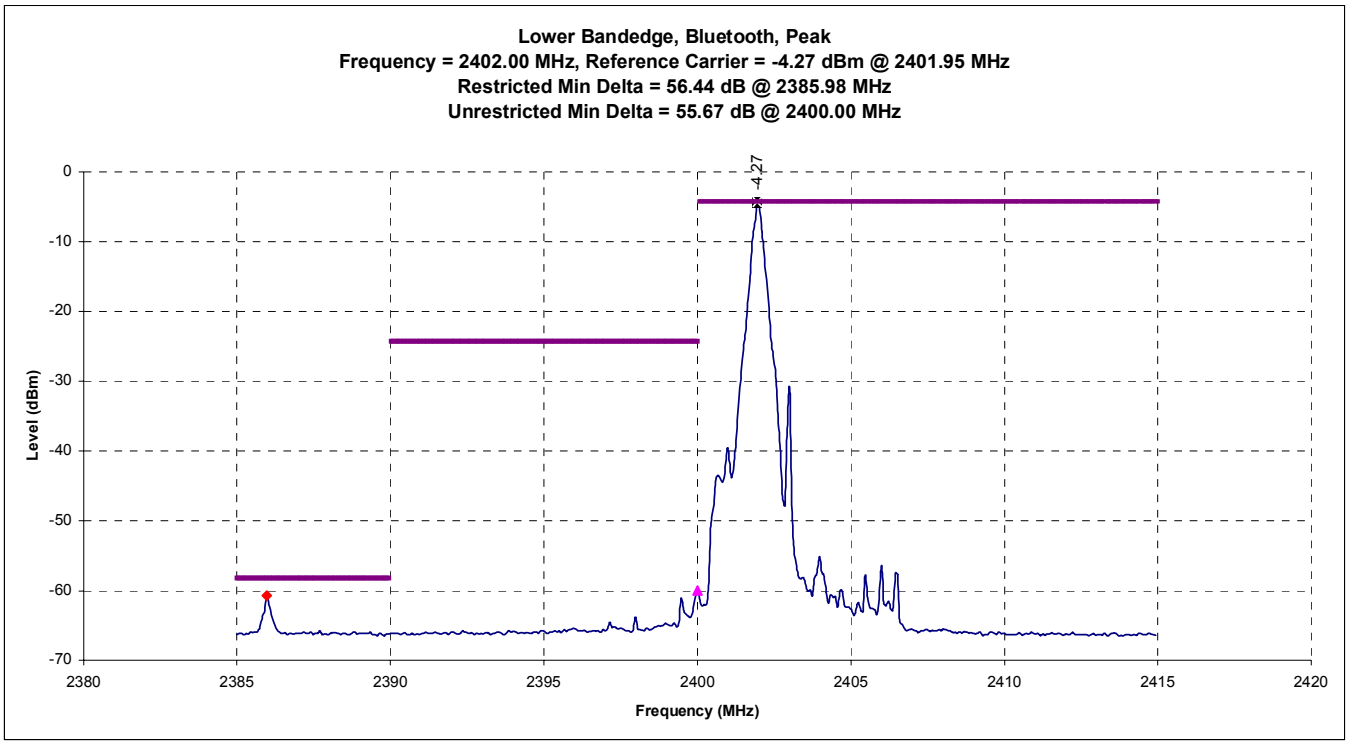
Project Number: 750
Company: Itronix
Product: IX100X with USI Bluetooth
Standard: FCC15.247a
Test Start Date: 4-May-06
Test End Date: 4-May-06

Configuration				Polarity	Distance	Carrier Channel	Frequency	Corrected Field Strength	Maximized SA Signal Level (uncorrected)	Rx AF	Rx CL	Antenna Correction Factors	Field Strength
EUT#	Orientation	Power Source	Accessory		m		MHz	dBuV/m	dBuV	dB/m	dB	dB	dBuV/m
Radiated Carrier Field Strength													
5091	Short Edge Up	P/S	None	H	3	BT-CH0	2402.0000	89.71	54.70	28.19	6.82	35.01	89.71
5091	Short Edge Up	P/S	None	V	3	BT-CH0	2402.0000	82.81	47.80	28.19	6.82	35.01	82.81
5091	Short Edge Up	P/S	None	H	3	BT-CH39	2441.0000	91.10	56.00	28.26	6.85	35.10	91.10
5091	Short Edge Up	P/S	None	V	3	BT-CH39	2441.0000	84.10	49.00	28.26	6.85	35.10	84.10
5091	Short Edge Up	P/S	None	H	3	BT-CH78	2480.0000	93.05	57.80	28.32	6.93	35.25	93.05
5091	Short Edge Up	P/S	None	V	3	BT-CH78	2480.0000	84.05	48.80	28.32	6.93	35.25	84.05

Formulae:
Total CF = AF + CL + Other
Field Strength = SA Level + Total CF
Note: Carrier is unmodulated

G.9.2. Lower Band-edge Emission Field Strengths @ Specified Distance

Channel 0 - Conducted Band-edge Plots



Channel 0 - Calculated Band-edge (Out-of-Band) Field Strengths

IX100X with USI Bluetooth, Modulated Output

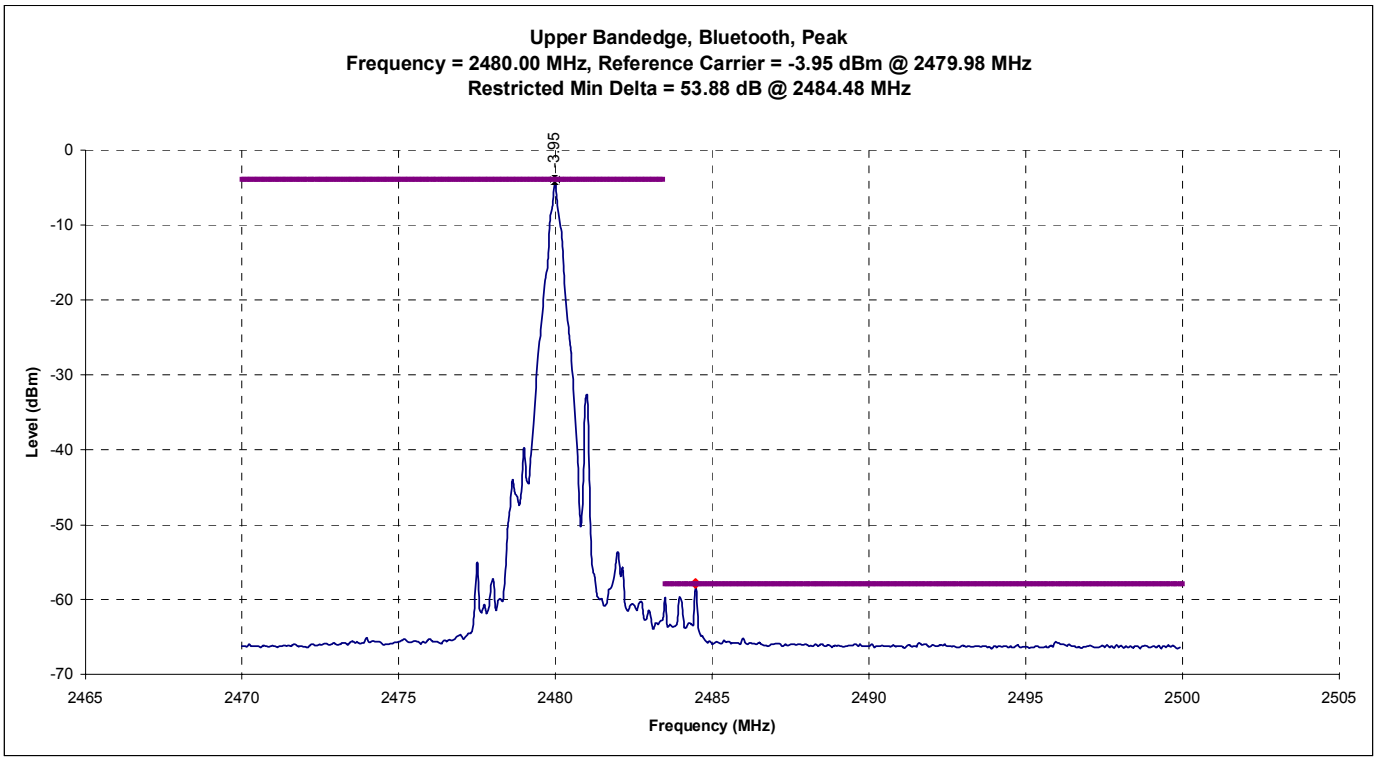
Channel	Polarity	Distance	Frequency	Carrier Radiated Field Strength	Delta Marker	Detector	Calculated Bandedge Field Strength	Duty Cycle Correction	Corrected Bandedge Field Strength	Specified Limit	Specified Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m	MHz	dBuV/m	dB		dBuV/m	dB	dBuV/m	dBuV/m	m	dB	dBuV/m	dB	
BT-CH0	H	3	2385.98	91.72	56.44	PK	35.28	0.00	35.28	73.98	3.00	0.00	73.98	38.70	PASS
BT-CH0	H	3	2385.98	90.82	58.08	AV	32.74	0.00	32.74	53.98	3.00	0.00	53.98	21.24	PASS
BT-CH0	V	3	2385.98	85.82	56.44	PK	29.38	0.00	29.38	73.98	3.00	0.00	73.98	44.60	PASS
BT-CH0	V	3	2385.98	83.62	58.08	AV	25.54	0.00	25.54	53.98	3.00	0.00	53.98	28.44	PASS

Formulae:
Calculated Bandedge Field Strength (dBuV/m) = Carrier Radiated Field Strength (dBuV/m) + Delta Marker (dB)
Corrected Bandedge Field Strength (dBuV/m) = Calculated Bandedge Field Strength (dBuV/m) + Duty Cycle Correction (dB)
Limit Distance Correction = 20 * log (measurement distance / limit distance)
Calculated Limit (dBuV/m) = Specified Limit (dBuV/m) + Limit Distance Correction (dB)
Margin (dB) = Corrected Limit (dBuV/m) – Corrected Bandedge Field Strength (dBuV/m)

Note: Measurements and calculation reference the Marker-Delta Method described in FCC Public Notice DA 00-705

G.9.3. Upper Band-edge Emission Field Strengths @ Specified Distance

Channel 78 - Conducted Band-edge Plots



Channel 78 - Calculated Band-edge (Out-of-Band) Field Strengths

IX100X with USI Bluetooth, Modulated Output

Channel	Polarity	Distance	Frequency	Carrier Radiated Field Strength	Delta Marker	Detector	Calculated Bandedge Field Strength	Duty Cycle Correction	Corrected Bandedge Field Strength	Specified Limit	Specified Limit Distance	Limit Distance Correction	Calculated Limit	Margin	Pass/Fail
		m	MHz	dBuV/m	dB		dBuV/m	dB	dBuV/m	dBuV/m	m	dB	dBuV/m	dB	
BT-CH78	H	3	2479.98	94.43	53.88	PK	40.55	0.00	40.55	73.98	3.00	0.00	73.98	33.43	PASS
BT-CH78	H	3	2483.95	93.83	53.50	AV	40.33	0.00	40.33	53.98	3.00	0.00	53.98	13.65	PASS
BT-CH78	V	3	2479.98	86.63	53.88	PK	32.75	0.00	32.75	73.98	3.00	0.00	73.98	41.23	PASS
BT-CH78	V	3	2483.95	84.53	53.50	AV	31.03	0.00	31.03	53.98	3.00	0.00	53.98	22.95	PASS

Formulae:
Calculated Bandedge Field Strength (dBuV/m) = Carrier Radiated Field Strength (dBuV/m) + Delta Marker (dB)
Corrected Bandedge Field Strength (dBuV/m) = Calculated Bandedge Field Strength (dBuV/m) + Duty Cycle Correction (dB)
Limit Distance Correction = 20 * log (measurement distance / limit distance)
Calculated Limit (dBuV/m) = Specified Limit (dBuV/m) + Limit Distance Correction (dB)
Margin (dB) = Corrected Limit (dBuV/m) – Corrected Bandedge Field Strength (dBuV/m)

Note: Measurements and calculation reference the Marker-Delta Method described in FCC Public Notice DA 00-705

G.9.4. Spurious Emission Field Strengths @ Specified Distance

Horizontal Polarization

Project Number: 750 **Standard:** FCC15.209
Company: Itronix **Test Start Date:** 20-Jun-06
Product: IX100X with USI Bluetooth **Test End Date:** 21-Jun-06

Polarity	Distance	Receive Antenna	Carrier Channel	Frequency	Maximized SA Signal Level (uncorrected)	Rx AF	Rx CL	Other Corrections	Total Correction Factors	Corrected Field Strength	Detector	Limit	Margin	Pass/Fail
	m			MHz	dBuV	dB/m	dB	dB	dBm	dBuV/m	(PK/AV/QP)	dBuV/m	dB	
H	3	Horn SN6267	BT-CH0	4804.01	34.00	32.98	10.53	-32.31	11.20	45.20	PK*	54.0	08.8	PASS
H	3	Horn SN6267	BT-CH0	7206.00	40.00	35.73	6.39	-32.15	9.97	49.97	PK*	54.0	04.0	PASS
H	3	Horn SN6267	BT-CH0	9608.00	39.20	37.95	7.49	-32.03	13.41	52.61	PK*	54.0	01.4	PASS
H	3	Horn SN6267	BT-CH0	12010.00	38.10	38.82	8.60	-31.81	15.61	53.71	PK*	54.0	00.3	PASS
H	3	Horn SN6267	BT-CH0	14412.00	39.54	41.68	9.70	-31.44	19.95	59.49	PK	74.0	14.5	PASS
H	3	Horn SN6267	BT-CH0	14412.00	28.49	41.68	9.70	-31.44	19.95	48.44	AV	54.0	05.5	PASS
H	3	Horn SN6267	BT-CH39	4882.00	32.20	33.16	10.64	-32.34	11.46	43.66	PK*	54.0	10.3	PASS
H	3	Horn SN6267	BT-CH39	7323.00	39.47	36.02	6.45	-32.14	10.32	49.79	PK*	54.0	04.2	PASS
H	3	Horn SN6267	BT-CH39	9764.00	38.84	38.05	7.56	-31.97	13.64	52.48	PK*	54.0	01.5	PASS
H	3	Horn SN6267	BT-CH39	12205.00	38.06	38.64	8.69	-31.74	15.59	53.65	PK*	54.0	00.3	PASS
H	3	Horn SN6267	BT-CH39	14646.00	39.77	41.19	9.81	-31.69	19.31	59.08	PK	74.0	14.9	PASS
H	3	Horn SN6267	BT-CH39	14646.00	28.37	41.19	9.81	-31.69	19.31	47.68	AV	54.0	06.3	PASS
H	3	Horn SN6267	BT-CH78	4960.00	31.60	33.34	10.78	-32.26	11.85	43.45	PK*	54.0	10.5	PASS
H	3	Horn SN6267	BT-CH78	7440.00	39.03	36.30	6.50	-32.14	10.67	49.70	PK*	54.0	04.3	PASS
H	3	Horn SN6267	BT-CH78	9920.00	39.29	38.15	7.64	-32.01	13.78	53.07	PK*	54.0	00.9	PASS
H	3	Horn SN6267	BT-CH78	12400.00	37.90	38.46	8.78	-31.69	15.54	53.44	PK*	54.0	00.5	PASS
H	3	Horn SN6267	BT-CH78	14880.00	38.80	40.28	9.92	-31.97	18.24	57.04	PK	74.0	16.9	PASS
H	3	Horn SN6267	BT-CH78	14880.00	28.23	40.28	9.92	-31.97	18.24	46.47	AV	54.0	07.5	PASS

Formulae:
Total CF = Antenna Factor + Cable Factor + Other Factor (Amplifier Gain, filter loss, etc)
Field Strength = SA Reading + Total CF
Limit Distance Correction = 40*log(d1/d2) for F<30 MHz, 20*log(d1/d2) for F> 30 MHz:
where d1 is the measurement distance, d2 is the published limit distance
Limit = Specified Limit + Limit Distance Correction
Margin = Limit - Field Strength

*PK = QP or Average Limits were applied to the peak emission

***The frequency points reported describe the highest emissions found and are used to describe the measured spectrum as a whole. All emissions, whether in the restricted bands or not, are evaluated against the restricted band limits as described by 15.209 above. No out-of-band emissions were measured above the levels noted.**

Vertical Polarization

Project Number: 750 **Standard:** FCC15.209
Company: Itronix **Test Start Date:** 20-Jun-06
Product: IX100X with USI Bluetooth **Test End Date:** 21-Jun-06

Polarity	Distance	Receive Antenna	Carrier Channel	Frequency	Maximized SA Signal Level (uncorrected)	Rx AF	Rx CL	Other Corrections	Total Correction Factors	Corrected Field Strength	Detector	Limit	Margin	Pass/Fail
	m			MHz	dBuV	dB/m	dB	dB	dBm	dBuV/m	(PK/AV/QP)	dBuV/m	dB	
V	3	Horn SN6267	BT-CH0	4803.78	33.50	32.98	10.53	-32.31	11.20	44.70	PK*	54.0	09.3	PASS
V	3	Horn SN6267	BT-CH0	7205.90	41.42	35.73	6.39	-32.15	9.97	51.39	PK*	54.0	02.6	PASS
V	3	Horn SN6267	BT-CH0	9608.00	38.97	37.95	7.49	-32.03	13.41	52.38	PK*	54.0	01.6	PASS
V	3	Horn SN6267	BT-CH0	12010.00	38.47	38.82	8.60	-31.81	15.61	54.08	PK	74.0	19.9	PASS
V	3	Horn SN6267	BT-CH0	12010.00	27.66	38.82	8.60	-31.81	15.61	43.27	AV	54.0	10.7	PASS
V	3	Horn SN6267	BT-CH0	14412.00	39.72	41.68	9.70	-31.44	19.95	59.67	PK	74.0	14.3	PASS
V	3	Horn SN6267	BT-CH0	14412.00	28.53	41.68	9.70	-31.44	19.95	48.48	AV	54.0	05.5	PASS
V	3	Horn SN6267	BT-CH39	4882.00	32.50	33.16	10.64	-32.34	11.46	43.96	PK*	54.0	10.0	PASS
V	3	Horn SN6267	BT-CH39	7323.00	39.42	36.02	6.45	-32.14	10.32	49.74	PK*	54.0	04.2	PASS
V	3	Horn SN6267	BT-CH39	9764.00	38.37	38.05	7.56	-31.97	13.64	52.01	PK*	54.0	02.0	PASS
V	3	Horn SN6267	BT-CH39	12205.00	38.56	38.64	8.69	-31.74	15.59	54.15	PK	74.0	19.8	PASS
V	3	Horn SN6267	BT-CH39	12205.00	27.88	38.64	8.69	-31.74	15.59	43.47	AV	54.0	10.5	PASS
V	3	Horn SN6267	BT-CH39	14646.00	39.70	41.19	9.81	-31.69	19.31	59.01	PK	74.0	15.0	PASS
V	3	Horn SN6267	BT-CH39	14646.00	28.42	41.19	9.81	-31.69	19.31	47.73	AV	54.0	06.3	PASS
V	3	Horn SN6267	BT-CH78	4960.00	31.80	33.34	10.78	-32.26	11.85	43.65	PK*	54.0	10.3	PASS
V	3	Horn SN6267	BT-CH78	7440.00	39.55	36.30	6.50	-32.14	10.67	50.22	PK*	54.0	03.8	PASS
V	3	Horn SN6267	BT-CH78	9920.00	39.55	38.15	7.64	-32.01	13.78	53.33	PK*	54.0	00.7	PASS
V	3	Horn SN6267	BT-CH78	12400.00	38.48	38.46	8.78	-31.69	15.54	54.02	PK	74.0	20.0	PASS
V	3	Horn SN6267	BT-CH78	12400.00	27.77	38.46	8.78	-31.69	15.54	43.31	AV	54.0	10.7	PASS
V	3	Horn SN6267	BT-CH78	14880.00	39.21	40.28	9.92	-31.97	18.24	57.45	PK	74.0	16.5	PASS
V	3	Horn SN6267	BT-CH78	14880.00	28.22	40.28	9.92	-31.97	18.24	46.46	AV	54.0	07.5	PASS

Formulae:
Total CF = Antenna Factor + Cable Factor + Other Factor (Amplifier Gain, filter loss, etc)
Field Strength = SA Reading + Total CF
Limit Distance Correction = 40*log(d1/d2) for F<30 MHz, 20*log(d1/d2) for F> 30 MHz:
where d1 is the measurement distance, d2 is the published limit distance
Limit = Specified Limit + Limit Distance Correction
Margin = Limit - Field Strength

*PK = QP or Average Limits were applied to the peak emission

***The frequency points reported describe the highest emissions found and are used to describe the measured spectrum as a whole. All emissions, whether in the restricted bands or not, are evaluated against the restricted band limits as described by 15.209 above. No out-of-band emissions were measured above the levels noted.**

G.10. PASS/FAIL

In reference to the results outlined in G.9, the DUT passes the requirements as stated in the reference standards as follows: FCC 15.247 (c): All emissions within any 100 kHz bandwidth outside the operating frequency band are greater than 20 dB below the maximum 100 kHz bandwidth signal within the operating band.

Appendix H - Conducted RX Spurious Emissions Measurement

H.1. REFERENCES

Normative Reference Standard	IC RSS-GEN §6
Procedure Reference	IC RSS-GEN §4.8

H.2. LIMITS

IC RSS-GEN §6	*(b) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per 4 kHz spurious frequency in the band 30 – 1000 MHz or 5 nanowatts above 1 GHz.*

H.3. ENVIRONMENTAL CONDITIONS

Temperature	25 +/- 5 ºC
Humidity	40 +/- 10 %
Barometric Pressure	101 +/- 2 kPa

H.4. EQUIPMENT LIST

RECEIVING EQUIPMENT

ID	ASSET NUMBER	MANUFACTURER	MODEL	DESCRIPTION	LAST CAL	CAL DUE
1	00015	Agilent	E4408B	Spectrum Analyzer	02Feb06	02Feb07
2	na	Itronix	na	Cable & SMA adapter	na	na*

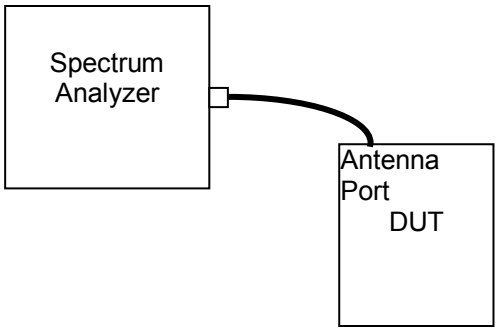
*Verified with VNA

H.5. MEASUREMENT EQUIPMENT SETUP

MEASUREMENT EQUIPMENT CONNECTIONS	The measurement equipment was connected as shown in H.6.			
MEASUREMENT EQUIPMENT SETTINGS	The spectrum analyzer was set to the following settings:			
	Frequency Range	RBW (kHz)	VBW (kHz)	Detector
	30 MHz – 1 GHz	10	10	Peak
	1 GHz – 9 GHz	100	100	Peak

H.6. SETUP DRAWING

Figure H.6-1 - Setup Drawing

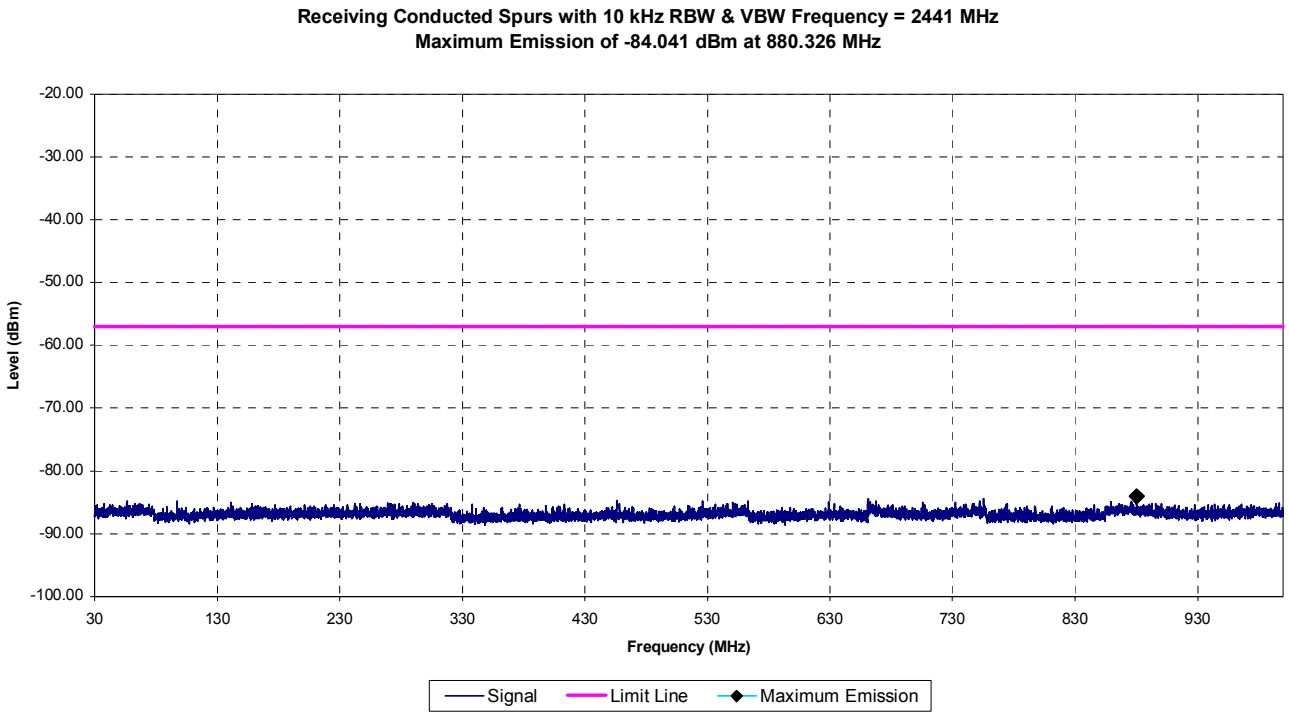


H.7. DUT OPERATING DESCRIPTION

Measurements were made with the DUT in receive mode for the mid channel (2441 MHz).

H.8. RECEIVER SPURIOUS EMISSIONS TEST RESULTS

H.8.1. Mid Channel - 30 MHz to 1 GHz



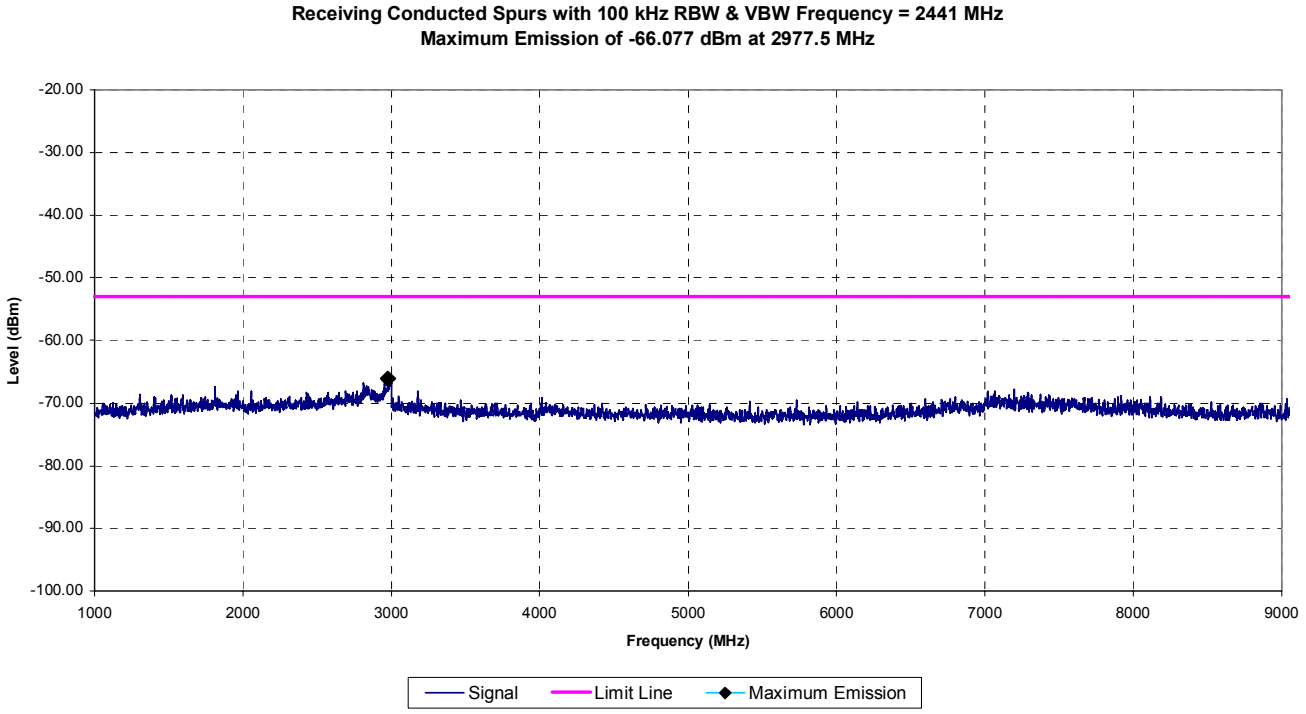
Calculations

Because the RBW of the measurement is greater than 4 kHz, no bandwidth correction is required.

Highest emission in the region from 30 MHz to 1 GHz:
-84.041 dBm or 3.94 pW

Margin (nW) = 2 nW – 0.00394 nW
= 1.996 nW

H.8.2. Mid Channel - 1 GHz to 9 GHz



Calculations

Because the RBW of the measurement is greater than 4 kHz, no bandwidth correction is required.

Highest emission in the region from 1 GHz to 9 GHz:
-66.077 dBm or 0.2468 nW

Margin (nW) = 5 nW – 0.2468 nW
= 4.753 nW

END OF DOCUMENT