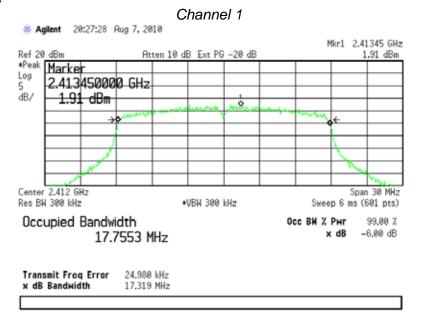
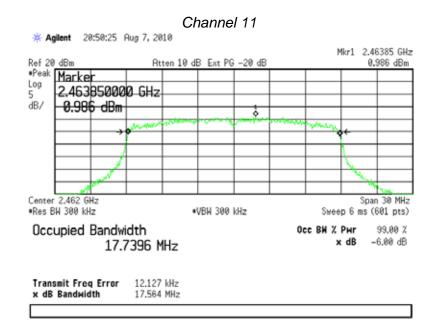
MCS7 Data Rate:



Channel 6 * Agilent 20:33:46 Aug 7, 2010 Mkr1 2.43945 GHz Atten 10 dB Ext PG -20 dB Ref 20 dBm 1.312 dBm Peak Marker Log 2.439450000 GHz 5 ď₿∕ 1.312 dBm õ Center 2.437 GHz Span 30 MHz Res BW 300 kHz •VBW 300 kHz Sweep 6 ms (601 pts) Occupied Bandwidth Осс ВМ % Рыг 99.00 % x dB -6.00 dB 17.7608 MHz **Transmit Freq Error** 3.120 kHz x dB Bandwidth 17.465 MHz

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			1 age 04 01 07
Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

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EXHIBIT 8. BAND EDGE MEASUREMENTS

8.1 - Method of Measurements

FCC 15.209(b) and 15.247(d) require a measurement of spurious emission levels to be at least 20 dB lower than the fundamental emission level, in particular at the Band-Edges where the intentional radiator operates. Also, RSS 210 Section 2.2 requires that unwanted emissions meet limits listed in tables 2 and 3 of the same standard and also to the limits in the applicable annex. The following screen captures demonstrate compliance of the intentional radiator at the 2400-2483.5 MHz Band-Edges. The EUT was operated in continuous transmit mode with continuous modulation, with internally generated data as the modulating source. The EUT was operated at the lowest channel for the investigation of the lower Band-Edge, and at the highest channel for the investigation of the higher Band-Edge.

The Lower Band-Edge limit, in this case, would be -20 dBc with respect to the fundamental level.

The Upper Band-Edge limit, in this case, would be + 54 dBµV/m at 3m.

Bluetooth with Dipole Antenna:

Screen Capture Demonstrating Compliance at the Lower Band-Edge

★ Agilent 22:18:36 Jan 23, 2012	R T Peak Search
Meas At Mkr EMI Peak:101.58 dBuV Presel: 2.48 GHz QP: 100.03 dBuV Input: RF Emissions EMI Avg: 85.44 dBuV	Path: Bypass
Marker 🛆 1.827600 MHz	Next Pk Right Mkr1 1.827 6 MHz
Ref 107 dBµV Atten 10 dB +EmiPk Log	39.75 dB Next Pk Left
10 dB/	Min Search
	Pk-Pk Search
LgAv	Mkr → CF
M1 S2	More
	Stop 2.404 00 GHz 192 ms (8192 pts)

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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

🔆 Agilent 20:59:41	Jan 23, 2012		RT	Peak Search
Meas At M 2.48 GHz Emissions	kr EMI Peak:99.32 2 0P: 97.43 EMI Avg: 82.65	dBuV Presel: dBuV Input: RF dBuV	Path: Bypass	Next Peak
			2.483 528 2 GHz	Next Pk Right
Ref 96.99 dB µ V #EmiPk Log	#Atten 0 dB		60.77 dBµV	Next Pk Left
10 dB/				Min Search
DI 74.0 IBµV				Pk-Pk Search
.gAv				Mkr → Cf
Start 2.483 50 GHz Res BW (CISPR) 1 M	Hz #VBW:		op 2.500 00 GHz 2 ms (8192 pts)	More 1 of 2

Screen Captures Demonstrating Compliance at the Higher Band-Edge

🔆 Agilent 20:59:14	Jan 23, 2012		RT	Peak Search
Meas At M 2.48 GHz Emissions	kr EMI Peak:99.32 dBuV 2 QP: 97.43 dBuV EMI Avg: 82.65 dBuV	Presel: Input: RF Pa	ath: Bypass	Next Peak
			518 1 GHz	Next Pk Right
Ref 96.99 dB µ V #EmiPk Log 10	#Atten 0 dB		4.43 dBµV	Next Pk Left
dB/				Min Search
DI 54.0				Pk-Pk Search
LgAv				Mkr → CF
Start 2.483 50 GHz Res BW (CISPR) 1 MM File Operation Stat	Hz #VBW 10 Hz tus, C:\AHORN39.ANT fi	Sweep 1.892 s	500 00 GHz (8192 pts)	More 1 of 2

LS I	Research, LLC			Page 56 of 97
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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

Bluetooth with PIFA Antenna:

Agilent 22:00:08	Jan 23, 201	<u>د</u>		R	-	Peak Search
Meas At M 2.48 GH: Emissions	Ikr EMI Peak: ^{z OP:} ÉMI Avg:	101.58 dBuV 100.03 dBuV 35.44 dBuV	Presel: Input: RF	Path: B	ypass	Next Peak
Marker 🛆 2.0	05400 MH	z	. Mbe	2 005	4 MU-	Next Pk Right
Ref 107 dB µ V ≢EmiPk	Atten 10 dE		∆ Mkr:		4 MHZ 32 dB	Next Pk Left
.og				1 1		
dB/			1 R		$\overline{}$	Min Search
	hyen hand bearing by take the	in a le al la companifica de la companya				Pk-Pk Search
.gAv						 Mkr → CF
11 \$2						
Start 2.390 00 GHz Res BW (CISPR) 1 M	Hz <u>*</u>	VBW 1 MHz	Stop Sweep 1.092	2.404 00 ms (8192		More 1 of 2

Screen Capture Demonstrating Compliance at the Lower Band-Edge

Screen Captures Demonstrating Compliance at the Higher Band-Edge

Emissions 2.48 GHz OP: EMI Avg: 85.44 dBuV Input: RF Path: Bypass Marker 2.483848500 GHz Next Ref 96.99 dBµV #Atten 0 dB 56.37 dBµV Next *EmiPk Sector Next	lext Peak
Marker 2.483848500 GHz Next Mkr1 2.483 848 5 GHz Next Ref 96.99 dBµV *Atten 0 dB 56.37 dBµV *EmiPk Image: Second se	
*EmiPk Log	t Pk Right
	kt Pk Left
	in Search
DI 74.0 dBµV	k Search
LgÁv M1 S2 M2 S2 N2 S2	Mkr → CF
Start 2.483 50 GHz Stop 2.500 00 GHz Res BW (CISPR) 1 MHz #VBW 1 MHz Sweep 1.092 ms (8192 pts)	More 1 of 2

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Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258
EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285

₩ Agilent 21:48:13	Jan 23, 2012			RT	Peak Search
Meas At Mk 2.48 GHz Emissions	(r EMI Peak:101 QP: 100 EMI Avg: 85.	58 dBuV P 1.03 dBuV I 44 dBuV	resel: nput: RF	Path: Bypass	Next Peak
			Mkr1 2.	483 504 0 GHz	Next Pk Right
Ref 96.99 dB µ V #EmiPk Log 10	#Atten 0 dB			43.79 dBµV	Next Pk Left
dB/					Min Search
DI \$					Pk-Pk Search
LgAv					Mkr → CF
Start 2.483 50 GHz Res BW (CISPR) 1 MH		W 10 Hz		2.500 00 GHz s (8192 pts)	More 1 of 2
Printer not respon	ding				

WLAN:

Screen Capture Demonstrating Compliance at the Lower Band-Edge

Trace	RT			10	Aug 8, 20	10:37:17	Agilent
2 Trace	Path: Bypass 1	Presel: Input: RF	BuV BuV BuV	c:102.90 102.50 : 100.45	kr EMI Peal UP EMI Avg	leas At M 2.41 GH	H e Emissions
Clear Write	r1 12.043 MHz	۵M					
	31.07 dB			B	Atten 20 d	BµV	ef 117 dB
Max Hold	- de						EmiPk og
Min Hold		/					Ø IB/
0.00000000			1	18			
View							
Blank							gĤv
Dian							1 \$2
More							3 FS
1 of 2	2.412 00 GHz µs (1500 pts)		MHz	•VBW 1	łz		tart 2.390 les BH (CIS

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Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258
EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285

1:32 Aug 8,	2010			F	₹ T	Peak Search
At Mkr Emii GHz Op: Emii	Peak:57.60 52.78 Avg: 45.00	dBuV P dBuV dBuV	resel: Input: RF	Path: I	Bypass	Next Peak
			Mkr1	2.488.2	11 GHz	Next Pk Right
Atten	0 dB					
					*	Next Pk Left
						Min Search
ė	\sim					Pk-Pk Search
						Mkr → CF
						More
	•VBW 1	0 Hz				1 of 2
	At Mkr EMI GHZ OP: EMI	•Atten Ø dB	At Mkr EMI Peak: 57.60 dBuV P GH2 DP: 52.78 dBuV EMI Avg: 45.00 dBuV	At Mkr EMI Pesk: 57.60 dBuV Presel: GHz DP: 52.78 dBuV Input: RF EMI Avg: 45.00 dBuV Mkr1 •Atten 0 dB 1 0 0 0 0 0 0 0 0 0 0 0 0 0	At Mkr EMI Pesk: 57.60 dBuV IGHz DP: 52.78 dBuV EMI Avg: 45.00 dBuV Presel: Input: RF Path: 6 •Atten 0 dB 48.67 •Atten 0 dB </td <td>At Mkr EMI Peak: 57.60 dBuV Presel: Input: RF Path: Bypass GHz CP: 52.78 dBuV Input: RF Path: Bypass Mkr1 2.488 211 GHz Hz •Atten Ø dB 48.67 dBµV * •Atten Ø dB 48.67 dBµV * •Atten Ø dB 48.67 dBµV * •Atten Ø dB Stop 2.500 00 GHz CHz</td>	At Mkr EMI Peak: 57.60 dBuV Presel: Input: RF Path: Bypass GHz CP: 52.78 dBuV Input: RF Path: Bypass Mkr1 2.488 211 GHz Hz •Atten Ø dB 48.67 dBµV * •Atten Ø dB 48.67 dBµV * •Atten Ø dB 48.67 dBµV * •Atten Ø dB Stop 2.500 00 GHz CHz

Screen Capture Demonstrating Compliance at the Higher Band-Edge

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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

EXHIBIT 9. POWER OUTPUT (CONDUCTED): 15.247(b)

9.1 - Method of Measurements

The conducted RF output power of the EUT was measured at the antenna port using a short RF cable. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used with resolution and video bandwidths set to 3 MHz, and a span of 20 MHz, with measurements from a peak detector presented in the chart below.

9.2 - Test Equipment List

A complete list of test equipment that was used for this test can be found in Appendix A.

9.3 - Test Data

Bluetooth with Dipole Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
1	2402	8.00	12.30	30.0	36.0
40	2442	7.70	12.00	30.0	36.0
79	2480	7.30	11.60	30.0	36.0

Bluetooth with PIFA Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
1	2402	8.00	7.40	30.0	36.0
40	2442	7.70	7.10	30.0	36.0
79	2480	7.30	6.70	30.0	36.0

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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

Bluetooth BLE with Dipole Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
0	2402	9.81	14.11	30.0	36.0
20	2442	9.86	14.16	30.0	36.0
39	2480	10.05	14.35	30.0	36.0

Bluetooth BLE with PIFA Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
0	2402	9.81	9.21	30.0	36.0
20	2442	9.86	9.26	30.0	36.0
39	2480	10.05	9.45	30.0	36.0

WLAN 1Mbps with Dipole Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
1	2412	19.54	23.84	30.00	36.0
6	2437	19.67	23.97	30.00	36.0
11	2462	18.80	23.10	30.00	36.0

WLAN 1Mbps with PIFA Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
1	2412	19.54	18.94	30.00	36.00
6	2437	19.67	19.07	30.00	36.00
11	2462	18.80	18.20	30.00	36.00

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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

WLAN MCS7 with Dipole Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
1	2412	13.07	17.37	30.00	36.00
6	2437	12.66	16.96	30.00	36.00
11	2462	12.22	16.52	30.00	36.00

WLAN MCS7 with PIFA Antenna:

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) ⁽¹⁾	Conducted Power Limit (dBm)	EIRP Limit (dBm)
1	2412	13.07	12.47	30.00	36.00
6	2437	12.66	12.06	30.00	36.00
11	2462	12.22	11.62	30.00	36.00

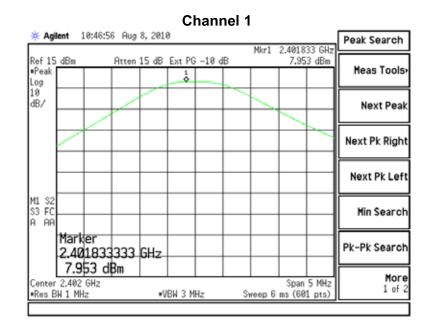
⁽¹⁾ EIRP Calculation:

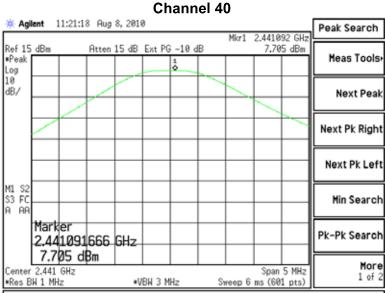
EIRP = (Peak power at antenna terminal in dBm) + (EUT Antenna gain in dBi)

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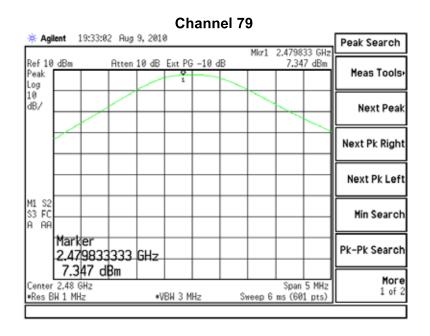
<u>9.4 - Screen Captures – Power Output (Conducted)</u>

Bluetooth:

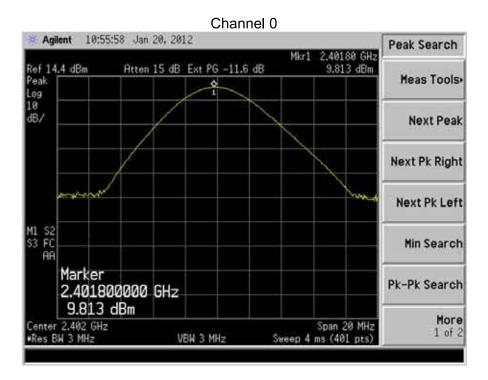




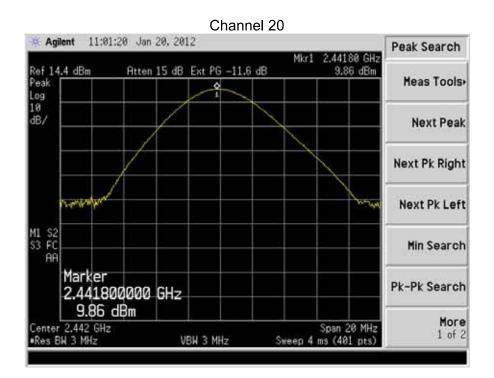
LS I	Research, LLC			Page 63 of 97
	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	



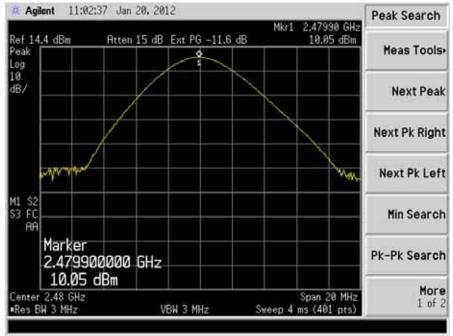
Bluetooth BLE:



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	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

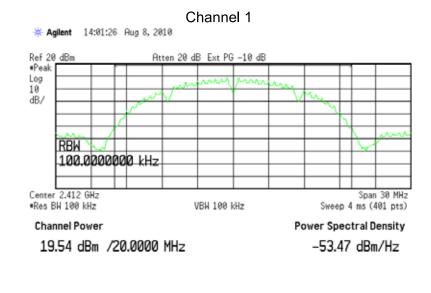


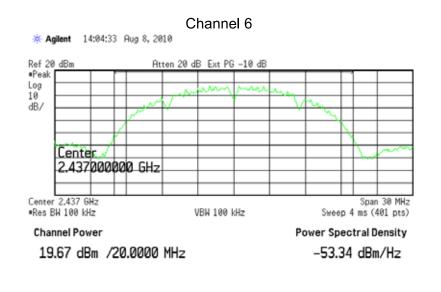




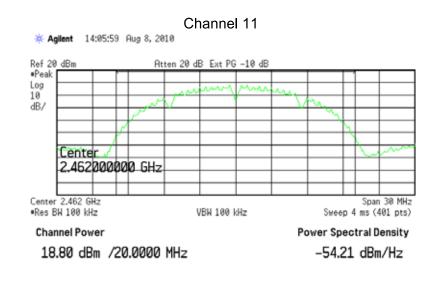
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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

WLAN 1 Mbps Data Rate:

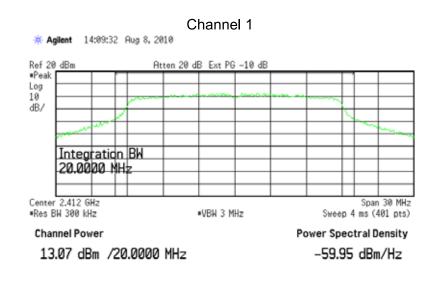




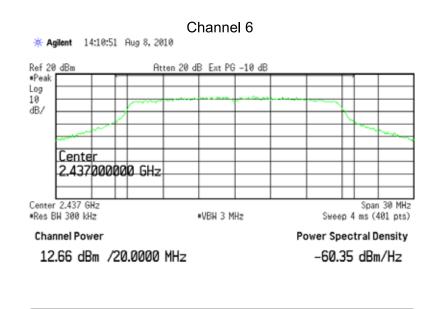
LS R	Research, LLC			Page 66 of 97
Γ	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

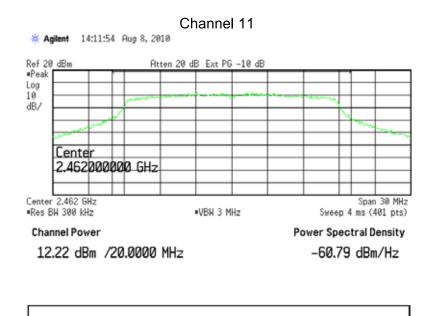


WLAN MCS7:



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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

EXHIBIT 10. POWER SPECTRAL DENSITY: 15.247(e)

<u> 10.1 - Limits</u>

For digitally modulate systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

In accordance with FCC Part 15.247(e) and RSS 210 A8.2(b), the peak power spectral density should not exceed +8 dBm in any 3 kHz band. This measurement was performed along with the conducted power output readings performed as described in previous sections. The peak output frequency for each representative frequency was scanned, with a narrow bandwidth, and reduced sweep, and a power density measurement was performed. The highest density was found to be no greater than -3.3 dBm, which is under the allowable limit by 11.3 dB.

10.2 - Test Equipment List

A complete list of test equipment can be found in Appendix A.

<u> 10.3 - Test Data</u>

Bluetooth BLE:

Transmitter Channel	Frequency (MHz)	RF Power Level In 3 kHz BW (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Comments Pass/Fail
0	2402	-4.9	8.0	12.9	Pass
20	2442	-4.9	8.0	12.9	Pass
39	2480	-4.8	8.0	12.8	Pass

WLAN 1Mbps:

Transmitter Channel	Frequency (MHz)	RF Power Level In 3 kHz BW (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Comments Pass/Fail
1	2412	-4.3	8.0	12.3	Pass
6	2437	-3.3	8.0	11.3	Pass
11	2462	-4.1	8.0	12.1	Pass

WLAN MCS7:

Transmitter Channel	Frequency (MHz)	RF Power Level In 3 kHz BW (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Comments Pass/Fail
1	2412	-16.0	8.0	24.0	Pass
6	2437	-16.0	8.0	24.0	Pass
11	2462	-15.8	8.0	23.8	Pass

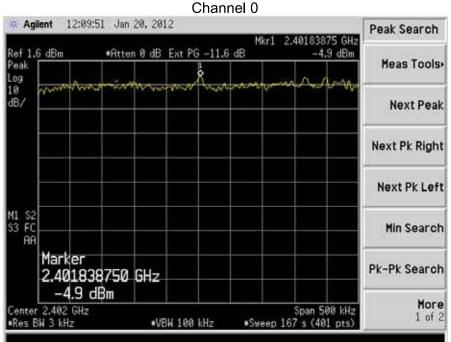
LS Research, LLC

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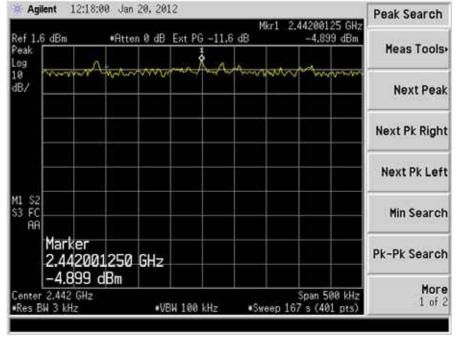
Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258
EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285

10.4 - Screen Captures – Power Spectral Density

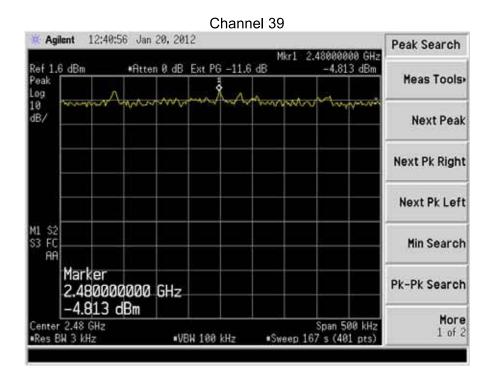
Bluetooth BLE:



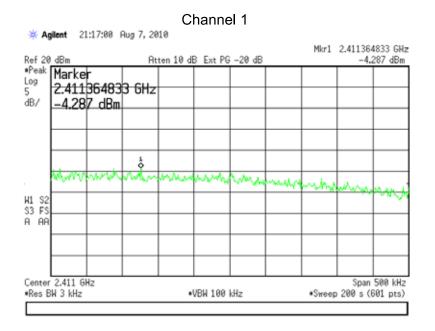
Channel 20



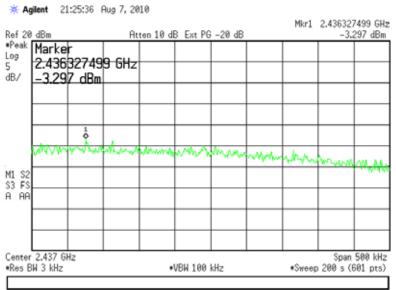
LS I	Research, LLC			Page 70 of 97
	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	



WLAN 1 Mbps:



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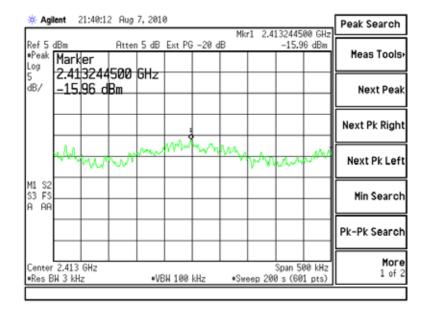
Channel 6

Channel 11

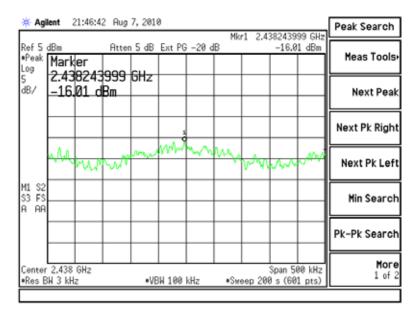
Peak Search	33 GHz	\$261.83	1 2 4	мь		8	7, 201	2 Aug	21:31:1	ent	👯 Agil
Meas Tools	5 dBm		1 6.40		6 - 20 (Ext P0	10 dB			Mark	lef 20 Peak .og
Next Pea							GHZ		2618 15 d		iB/
Next Pk Righ											
Next Pk Lef	1./N./A	at an a georgeo		mer	m	e e Ma	new	rohn	all mile	Mar NRA	
Min Searc											11 S2 33 FS A AA
Pk-Pk Searc											
Mor 1 of		Span 50 3 s (60		•S⊭	kHz	W 100	•VE			2.462 W 3 kH	

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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

Channel 1



Channel 6



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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

¥ Agi	ilent	21:52:13	2 Aug	7, 201	0		ML	1 24	632//31	66 GHz	Peak Search
Ref 5 •Peak Log	Marl	er			Ext PG	-20 d		1 2.4		9 dBm	Meas Tools
5 dB/		3243 79 d		GHz							Next Peak
						1					Next Pk Right
	~~~}/d	m	r v	man	M	~~~	m	w.	w	and the	Next Pk Left
M1 S2 S3 FS A AA											Min Search
											Pk-Pk Search
	r 2.463 3W 3 kH			•VE	W 100	kHz	•S⊯•	eep 20	\$pan 5 8 s (60		More 1 of 2

Channel 11

LS R	lesearch, LLC			Page 74 of 97
Γ	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

# **EXHIBIT 11. SPURIOUS CONDUCTED EMISSIONS: 15.247(d)**

# <u> 11.1 - Limits</u>

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 db below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

In addition, radiated emissions, which fall in the restricted band, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(e)

#### Remarks:

Applies to harmonics/spurious emissions that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209.

The emission limits as specified above are based on measurement instrument employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

MHz	MHz	MHz	GHz
0.090 – 0.110	162.0125 – 167.17	2310 – 2390	9.3 – 9.5
0.49 – 0.51	167.72 – 173.2	2483.5 – 2500	10.6 – 12.7
2.1735 – 2.1905	240 – 285	2655 – 2900	13.25 – 13.4
8.362 - 8.366	322 – 335.4	3260 – 3267	14.47 – 14.5
13.36 – 13.41	399.9 – 410	3332 – 3339	14.35 – 16.2
25.5 – 25.67	608 – 614	3345.8 – 3358	17.7 – 21.4
37.5 – 38.25	960 – 1240	3600 – 4400	22.01 – 23.12
73 – 75.4	1300 – 1427	4500 – 5250	23.6 - 24.0
108 – 121.94	1435 – 1626.5	5350 – 5460	31.2 – 31.8
123 – 138	1660 — 1710	7250 – 7750	36.43 – 36.5
149.9 – 150.05	1718.8 – 1722.2	8025 – 8500	Above 38.6
156.7 – 156.9	2200 – 2300	9000 – 9200	

FCC 47 CFR 15.205(a) - Restricted Frequency Bands

Reported data is the raw data corrected for all applicable factors such as antenna factors, cable loss, etc.

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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

# **<u>11.2 – Conducted Harmonic And Spurious RF Measurements</u>**

FCC Part 15.247(d) and IC RSS 210 A8.5 both require a measurement of conducted harmonic and spurious RF emission levels, as reference to the carrier level when measured in a 100 kHz bandwidth. For this test, the spurious and harmonic RF emissions from the EUT were measured at the EUT antenna port using a short RF cable. An Agilent E4446A spectrum analyzer was used with the resolution bandwidth set to 100 kHz for this portion of the tests. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used with measurements from a peak detector presented in the chart below. Screen captures were acquired and any noticeable spurious and harmonic signals were identified and measured.

No significant emissions could be noted within -50 dBc of the fundamental level for this product.

#### Bluetooth:

Frequency	2402 MHz [dBm]	2441 MHz [dBm]	2480 MHz [dBm]
2 nd Harmonic	- 55.9	- 59.2	- 53.7
3 rd Harmonic	- 61.1	- 62.7	- 63.0
4 th Harmonic	- 60.6	- 66.1	- 67.3
5 th Harmonic	- 69.6	Note (1)	- 67.6
6 th Harmonic	- 61.7	- 62.4	- 66.3
7 th Harmonic	- 65.7	- 66.8	- 67.7
8 th Harmonic	Note (1)	Note (1)	Note (1)
9 th Harmonic	Note (1)	Note (1)	Note (1)
10 th Harmonic	Note (1)	Note (1)	Note (1)

#### **Spurious Conducted Emissions**

Freq(MHz)	Channel	Level(dBm)					
479.40	39	-70.2					
814.10	39	-53.2					
1630.00	39	-50.3					
801.15	1	-52.0					
1600.00	1	-51.2					
827.00	79	-50.5					
1660.00	79	-50.0					

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# Bluetooth BLE:

Frequency	2402 MHz [dBm]	2442 MHz [dBm]	2480 MHz [dBm]
Fundamental	+7.19	+6.77	+6.72
2 nd Harmonic	-48.33	-48.22	-44.98
3 rd Harmonic	-65.70	Note (1)	Note (1)
4 th Harmonic	Note (1)	Note (1)	Note (1)
5 th Harmonic	Note (1)	Note (1)	Note (1)
6 th Harmonic	Note (1)	Note (1)	Note (1)
7 th Harmonic	Note (1)	Note (1)	Note (1)
8 th Harmonic	Note (1)	Note (1)	Note (1)
9 th Harmonic	Note (1)	Note (1)	Note (1)
10 th Harmonic	Note (1)	Note (1)	Note (1)

Note 1): Measurement at system noise floor.

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Spurious Conducte	d Emissions
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Freq(MHz)	Channel	Level(dBm)
827.8	.8 39 -57.73	
837.5	837.5 20 -63	
481.1	20	-62.59
801.2	0	-56.22

#### WLAN 1Mbps:

Frequency	2412 MHz [dBm]	2437 MHz [dBm]	2462 MHz [dBm]
2 nd Harmonic	- 53.0	Note (1)	- 54.8
3 rd Harmonic	Note (1)	Note (1)	Note (1)
4 th Harmonic	- 47.9	- 48.3	- 48.2
5 th Harmonic	Note (1)	Note (1)	Note (1)
6 th Harmonic	Note (1)	Note (1)	Note (1)
7 th Harmonic	Note (1)	Note (1)	Note (1)
8 th Harmonic	Note (1)	Note (1)	Note (1)
9 th Harmonic	Note (1)	Note (1)	Note (1)
10 th Harmonic	Note (1)	Note (1)	Note (1)

Note 1): Measurement at system noise floor.

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Freq(MHz)	Channel	Level(dBm)
479.40	6	-70.2
814.10	6	-53.2
1630.00	6	-50.3
801.15	1	-52.0
1600.00	1	-51.2
827.00	11	-50.5
1660.00	11	-50.0

#### WLAN MCS7:

Frequency	2412 MHz [dBm]	2437 MHz [dBm]	2462 MHz [dBm]
2 nd Harmonic	Note (1)	Note (1)	Note (1)
3 rd Harmonic	Note (1)	Note (1)	Note (1)
4 th Harmonic	- 47.9	- 48.3	- 48.2
5 th Harmonic	Note (1)	Note (1)	Note (1)
6 th Harmonic	Note (1)	Note (1)	Note (1)
7 th Harmonic	Note (1)	Note (1)	Note (1)
8 th Harmonic	Note (1)	Note (1)	Note (1)
9 th Harmonic	Note (1)	Note (1)	Note (1)
10 th Harmonic	Note (1)	Note (1)	Note (1)

Note 1): Measurement at system noise floor.

Freq(MHz)	Channel	Level(dBm)
479.40	6	-70.2
814.10	6	-53.2
1630.00	6	-50.3
801.15	1	-52.0
1600.00	1	-51.2
827.00	11	-50.5
1660.00	11	-50.0

#### **Spurious Conducted Emissions**

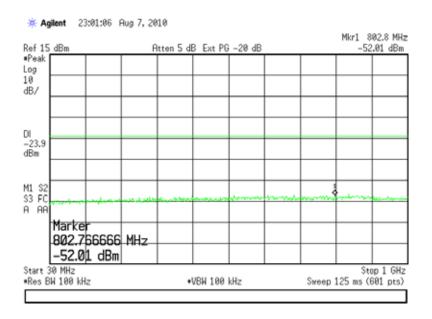
# <u> 11.3 - Test Equipment List</u>

A complete list of test equipment that was used for this test can be found in Appendix A.

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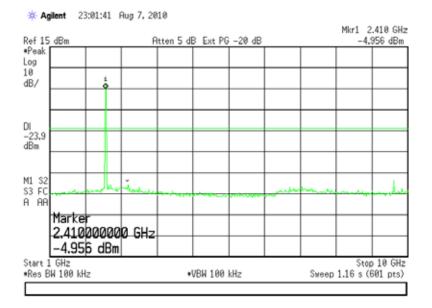
# **<u>11.4 - Screen Captures – Spurious Radiated Emissions</u>**

#### Bluetooth:

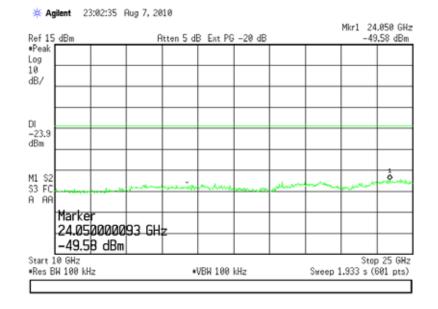


#### Channel 2402, shown from 30 MHz up to 1000 MHz

#### Channel 2402, shown from 1000 MHz up to 10000 MHz

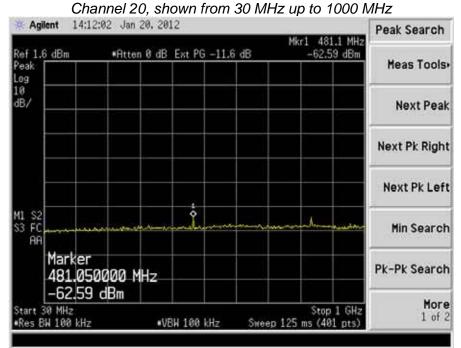


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	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

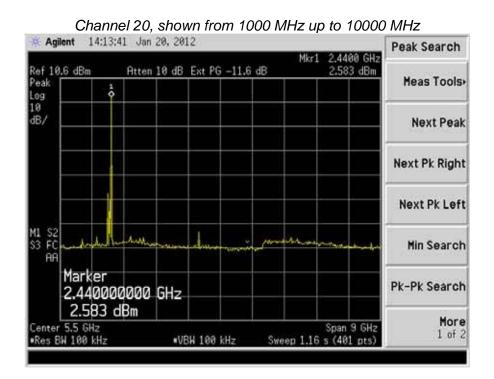


#### Channel 2402, shown from 10000 MHz up to 25000 MHz

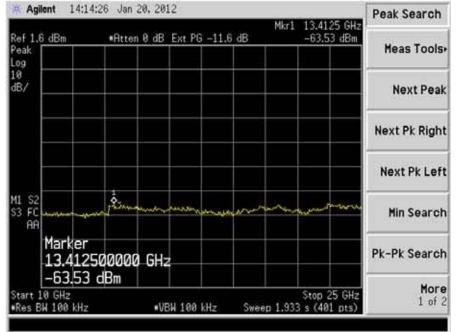
#### **Bluetooth BLE:**



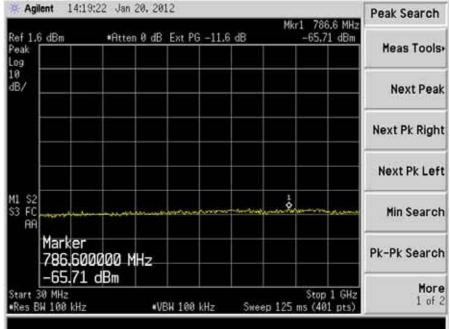
LS	Research, LLC			Page 80 of 97
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Channel 20, shown from 10000 MHz up to 25000 MHz

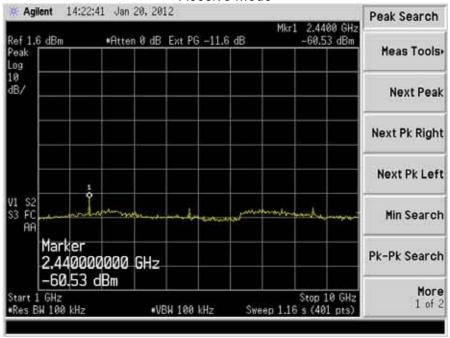


LS I	Research, LLC			Page 81 of 97
	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
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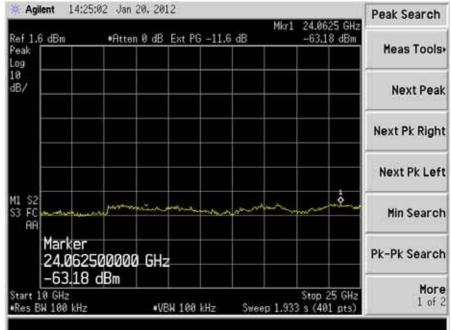


#### Channel 20, shown from 30 MHz up to 1000 MHz Receive Mode

Channel 20, shown from 1000 MHz up to 10000 MHz Receive Mode



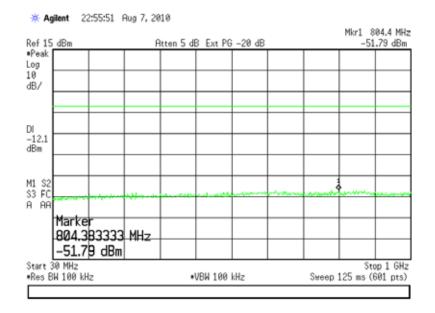
LSI	Research, LLC			Page 82 of 97
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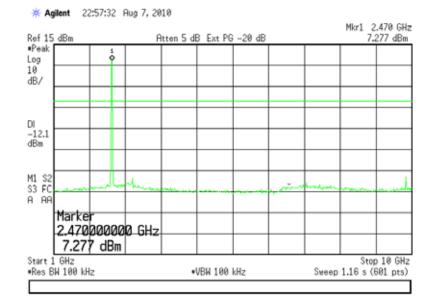
#### Channel 20, shown from 10000 MHz up to 25000 MHz **Receive Mode**

#### WLAN 1Mbps:

#### Channel 2480, shown from 30 MHz up to 1000 MHz

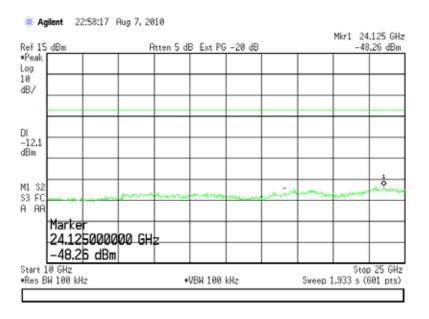


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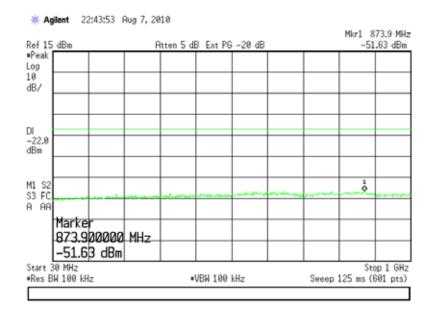


#### Channel 2480, shown from 1000 MHz up to 10000 MHz

Channel 2480, shown from 10000 MHz up to 25000 MHz

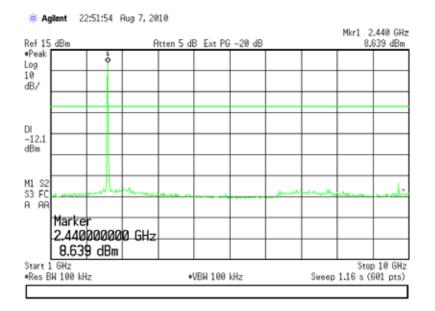


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	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

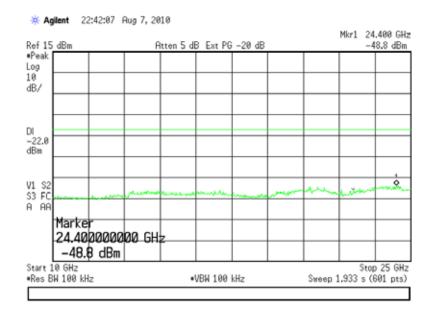


#### Channel 2437, shown from 30 MHz up to 1000 MHz





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#### Channel 2437, shown from 10000 MHz up to 25000 MHz

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# **EXHIBIT 12. FREQUENCY & POWER STABILITY OVER VOLTAGE & TEMPERATURE VARIATIONS**

A spectrum analyzer was used to measure the frequency at the appropriate frequency markers. For this test, the EUT was placed in continuous transmit CW mode. Power to the EUT was supplied by an external bench-type variable power supply. The frequency of operation was monitored using the spectrum analyzer with RBW=VBW=1 kHz settings while the voltage was varied.

	2.8VDC		2.8VDC 3.3VDC			3.8VDC
Channel	Power (dBm)	Frequency (Hz)	Power (dBm)	Frequency (Hz)	Power (dBm)	Frequency (Hz)
0	9.71	2402002000	9.757	2402002750	9.756	2402002250
20	10.02	2442254500	9.967	2442254250	9.951	2442254750
39	9.98	2479837250	9.98	2479838250	10.00	2479837000

Channel	Maximum Frequency (Hz)	Minimum Frequency (Hz)	Frequency Drift (Hz)
0	2402002750	2402002000	750
20	2442254750	2442254250	500
39	2479837250	2479835250	2000

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# **EXHIBIT 13. CHANNEL PLAN AND SEPARATION**

An HP E4407B spectrum analyzer was used with a resolution bandwidth of 30 kHz to measure the channel separation of the Bluetooth FHSS Radio on the TiWi product.

The minimum and maximum channel-separations measured for this device are 997.50 kHz and 1021.25 kHz respectively. The maximum occupied bandwidth of the device, as reported in the previous section is 875.00 kHz. The following plots describe this spacing, and also establish the channel separation and plan.

Range (MHz)	Number of Channels	Max Separation (Hz)
2400 - 2410.5	9.0	997.50
2410.5 - 2420	9.5	1021.25
2420 - 2430	10.0	1000.00
2430 - 2440	10.0	1000.00
2440-2450	10.0	1000.00
2450-2460	10.0	1000.00
2460-2470	10.0	1000.00
2470-2483.5	10.5	1011.25

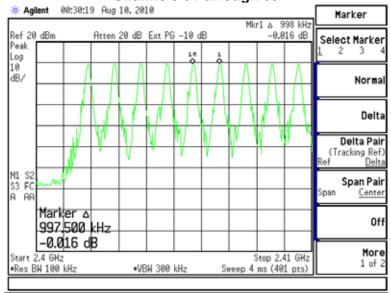
# 13.1 Data Table

# **13.2 Summary Table**

Total Channels	79
Max separation	1021.25
Min Separation	997.50

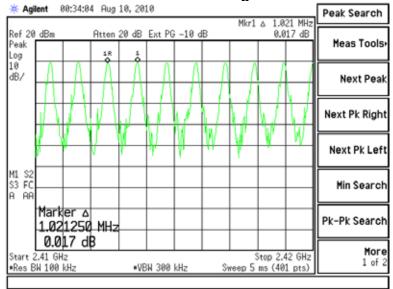
LS I	Research, LLC			Page 88 of 97
	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

# **<u>13.3 Screen Captures – Channel Separation</u>**



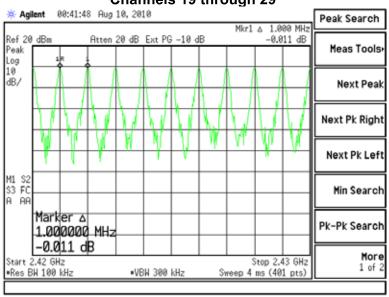
Channels 01 through 09

#### Channels 10 through 19

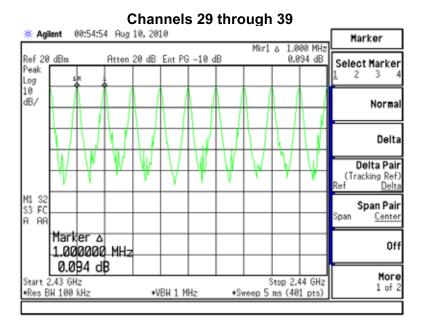


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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

### Screen Captures – Channel Separation (continued)

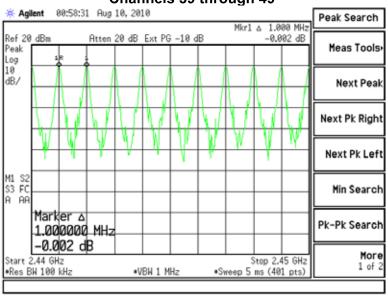




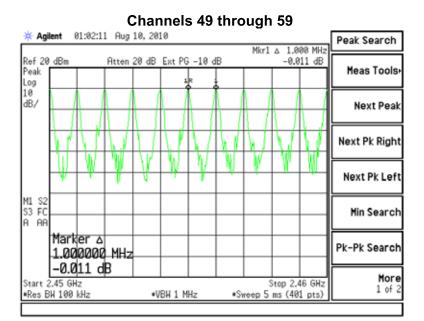


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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

### Screen Captures – Channel Separation (continued)

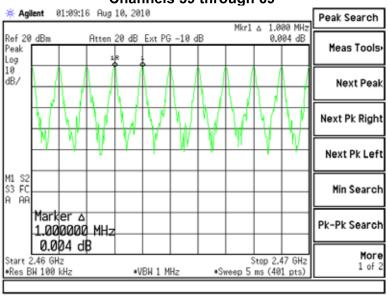


#### Channels 39 through 49

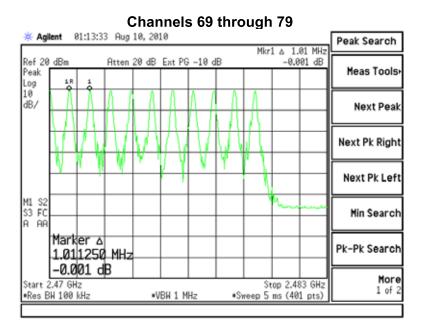


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### Screen Captures – Channel Separation (continued)



#### Channels 59 through 69



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	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

# <u> APPENDIX A – Test Equipment List</u>

	18-Jan-2012		Type Test	Spurious Emissio	ns		Job #	<u>C-1285</u>
Prepared By	Share Rismeyer		Customer:	LSR			Quote #	311258
et B	Description		Manufacturer	Model 8	Serial #	Cal Date	Cal Due Date	Equipment Status
AA 960143	Phaseflex		Gore	EKD01D01048.0	5546519	679/2011	679/2012	Active Calibration
E 960073 C 000221C	Spectrum Analyzer Spectrum Analyzer		Agilent HP	E4446A E4407B	US45300564 US39160256	4/25/2011 5/4/2011	4/25/2012 5/4/2012	Active Calibration Active Calibration
		Project Engineer:	Er h	ing/	_	Quality Assurance	leter Fride	•
<ul> <li>Wireles</li> </ul>	SEARCH LLC s Product Development pment Calibration							
Date	18-Jan-2012		Type Test:	Power Spectral D	ensity		Job # :	C-1285
Prepared By	Share Rismeyer		Customer:	LSR			Quote II:	3H258
et #	Description		Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
AA 960143	Phaselles		Gore	EX:D01D01048.0	5546519	6/M2011	6/1/2012	Active Calibration
E 960073 C 000221C	Spectrum Analyzer Spectrum Analyzer		Agilent HP	E4448A E4407B	US45300564 US39160256	4/25/2011 5/4/2011	4/25/2012 5/4/2012	Active Calibration Active Calibration
		Project Engineer:	Etar Ha	in	-	Quality Assurance:	leter Film	<u>.                                    </u>
Wireles	SEARCH LLC							
e cda	18-Jan-2012		Type Test	Occupied Bandw	idth (6d8 & 20d8	3)	Job # :	C-1285
			Customer:	LSR			Quote #:	311258
Date	Shane Rismeyer				1	Cal Date	Cal Day Date	Equipment Status
Date Prepared By	Shane Rismeyer		Manufacturer	Model #	Serial	Cabas	CEDITORY	
Date Prepared By			Manufacturer Gore Aglient	Model  EKD01D01048.0 E4446A	Serial 5546519 US45300564	6/9/2011 4/25/2011	6/9/2012	Active Calibration Active Calibration

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	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

Di	te : 18-Jan-2012	Type Test	Conducted Pow	er Output		Job # :	<u>C-1285</u>	
Prepared	Dy_Share Pismeger	Customer:	LSR			Quote #	011250	
Asset 0	Description	Manufacturer	Model #	Serial 0	CalDate	Cal Due Date	Equipment Status	
AA 960143	Phazellez	Gore	EX:D01D01048.0	5546519	6/1/2011	6792012	Active Calibration	
EE 960073	Spectrum Analyzer	Agilent	E4446A	US45300564	472572011	4/25/2012	Active Calibration	
CC 0002210	Spectrum Analyzer	HP	E4407B	U\$39160256	544/2011	544/2012	Active Calibration	
		jorer. <u>Ar</u> Va		_	Quality Assuran	er leter Faile	<u>.                                    </u>	
Wirel Ec	ESEARCH LLC ess Product Development wipment Calibration		1	_	Quality Assuran			
Wirel Ec	ESEARCH LLC		Band-Edge	_	Quality Assuran		<u>.</u> 1: <u>C-1285</u>	
Wire Eq	ESEARCH LLC ess Product Development wipment Calibration		Band-Edge	_	Quality Assuran	Job #		
Prepared	essEARCH LLC ess Product Development wipment Calibration	Type Test	Band-Edge	Secial #	Quality Assuran	Job #	1: <u>C-1285</u>	
Wirel De Prepared Asset # EE 960150	ESEARCH LLC ess Product Development wipment Calibration te: 18-Jan-2012 Es Shane Pismeyer	Type Test	Band-Edge			Job I Quote	+ <u>C-1285</u> + <u>311258</u>	
Wirel D4 Prepared Accet # EE 960158 EE 960157	ESEARCH LLC ese Product Development wipment Calibration te : 18-Jan-2012 By: Shane Pismeyer Description PF Preselecter SHo:13.20Hz Spectrum Analyzer	Type Test Customer : Manufacturet Agilent Agilent	Band-Edge	Secial #	Cal Date 6/1/2011 6/6/2011	Job II Quote 1 Cal Doe Date 6H2012 6H2012	Equipment Status Active Calibration	
Virel Di Prepared EE 960150 EE 960157 AA 960007	ESEARCH LLC ess Product Development wipment Calibration te: 18-Jan-2012 Bp: Shane Plismeyer Description RF Preselecter Stid-13-20Hz Spectrum Analgzer Double Ridge Horn Antenna	Type Test Customet : Agitent	Band-Edge	Secial # MY4652070) MY4850025 S078-108	Cal Date 6/1/2011 6/6/2011 4/27/2011	Quote 1 Quote 1 Cal Due Date 6H72012 6H72012 4127/2012	Equipment Status	
Wirel D4 Prepared Accet • EE 960158 EE 960157	ESEARCH LLC ese Product Development wipment Calibration te : 18-Jan-2012 By: Shane Pismeyer Description PF Preselecter SHo:13.20Hz Spectrum Analyzer	Type Test Customer : Manufacturet Agilent Agilent	- <u>Band-Edge</u> LSR Model # N9039A E4445A	Secial # MY46520100 MY48250225	Cal Date 6/1/2011 6/6/2011	Job II Quote 1 Cal Doe Date 6H2012 6H2012	Equipment Status Active Calibration	

#### US RESEARCH LLC Wireless Product Development Equipment Calibration

	Date :	29-Sep-2010	Type Test :	Radiated Emissio	ins		Job≢:	<u>C-884</u>
	Prepared By:	Peter	Customer :	LSR			Quote #:	310117
No	. Asset#	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960157	3Hz-13.2GHz Spectrum Analyzer	Agient	E4445A	MY48250225	3/17/2009	3/17/2010	Active Calibration
2	EE 960158	RF Preselecter	Agilent	N9039A	MY46520110	7/2/2009	7/2/2010	Active Calibration
3	AA 960007	Double Ridge Horn Antenna	EMCO	3115	9311-4138	11/10/2009	11/10/2010	Active Calibration
4	AA 960078	Log Periodic Antenna	EMCO	93146	9701-4855	10/16/2009	10/16/2010	Active Calibration
5	AA 960081	Double Ridge Horn Antenna	ENCO	3115	6907	12/22/2009	12/22/2010	Active Calibration
6	EE 960147	Pre-Amp	Adv. Micro	WL4612	123101	12/28/2009	12/28/2010	Active Calibration
7	AA 960144	Phaseflex	Gore	Ex0010010720	5800373	6/25/2009	6/25/2010	Active Calibration
8	AA 960150	Bicon Antenna	ETS	31108	0003-3346	11/3/2009	11/3/2010	Active Calibration



	Date :	29-Sep-2010	Type Test :	Spurious Emissio	ns		Job # :	C-884
	Prepared By:	Peter	Customer :	LSR			Quote #:	310117
No. A	sset#	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1 0	C 000221C	Spectrum Analyzer	HP	E44078	U\$39160258	3/9/2009	3/9/2010	Active Calibration
2 A	A 960143	Phaseflex	Gore	EKD01D01048.0	5548519	9/16/2009	9/16/2010	Active Calibration
3 EE	E 980157	3Hz-13.20Hz Spectrum Analyzer	Agilent	E4445A	MY48250225	3/17/2009	3/17/2010	Active Calibration
4 E8	E 960158	RF Preselecter	Agilent	N9039A	MY46520110	7/2/2009	7/2/2010	Active Calibration
5 A	A 960007	Double Ridge Horn Antenna	EMCO	3115	9311-4138	11/10/2009	11/10/2010	Active Calibration
- 6 A	A 960078	Log Periodic Antenna	EMCO	93146	9701-4855	10/16/2009	10/16/2010	Active Calibration
7 A	A 960081	Double Ridge Horn Antenna	EMCO	3115	6907	12/22/2009	12/22/2010	Active Calibration
8 EE	E 960147	Pre-Amp	Adv. Micro	WL4612	123101	12/28/2009	12/28/2010	Active Calibration
9 A	A 960144	Phaseflex	Gore	Ek0010010720	5800373	6/25/2009	6/25/2010	Active Calibration
10 A	A 960150	Bicon Antenna	ETS	31108	0003-3346	11/3/2009	11/3/2010	Active Calibration

LS	Research, LLC			Page 94 of 97
	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

Wireles								
	pment Calibration	Type Test	Occupied Band	width (6dB & 20d	IB)	a dol.	: <u>C-884</u>	_
Prepared By	Peter	Customer :	LSR			Quote #	t 310117	_
o. Asset#	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status	
CC 000221C	Spectrum Analyzer	HP	E44078	U\$39160256	3/9/2009	3/9/2010	Active Calibration	
AA 960143	Phasefiex	Gore	EK001001048.0	5546519	9/16/2009	9/16/2010	Active Calibration	
EE 960073	Spectrum Analyzer	Agient	E4448A	U\$45300584	9/17/2009	9/17/2010	Active Calibration	
Wireles	Phaseflex SEARCH LLC s Product Development	Gore	Ex0010010720	5800373	6/25/2009	6/25/2010	Active Calibration	
E Cqui	pment Calibration							
Date	5-Jun-2010	Type Test	Conducted Pov	ver Output		Job #	: C-884	-
Prepared By	Peter	Customer :	LSR			Quote #	t <u>310117</u>	_
1	Terraria line	U.s. to to to	Madala	Territe.	Calificate	Cal Dua Data	Taulament Carton	
Asset#	Description Phasefex	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status	
AA 960143 CC 000221C	Phaseflex Spectrum Analyzer	Gore	EKD01D01048.0 E4407B	5546519 US39160256	9/16/2009 3/9/2009	9/16/2010 3/9/2010	Active Calibration Active Calibration	
EE 960073	Spectrum Analyzer	Aglent	E4446A	US45300564	9/17/2009	9/17/2010	Active Calibration	
AA 960144	Phaseflex	Gore	Ex0010010720	5800373	6/25/2009	6/25/2010	Active Calibration	
Wireles	SEARCH LLC s Product Development prent Calibration : 15-Jun-2010	Type Test	Power Spectral	Density		# doL	: C-884	
						_		-
Prepared By	Peter	Customer :	LSR			Quote #	t 310117	-
Asset#	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status	
CC 000221C	Spectrum Analyzer	HP	E44078	U\$39160256	3/9/2009	3/9/2010	Active Calibration	
AA 960143	Phasefex	Gore	EK001001048.0	5546519	9/16/2009	9/16/2010	Active Calibration	
EE 960073 AA 950144	Spectrum Analyzer Phaseflex	Aglent Gore	E4446A Ex0010010720	US45300564 5800373	9/17/2009 6/25/2009	9/17/2010 6/25/2010	Active Calibration Active Calibration	
Wireles	SEARCH LLC s Product Development ipment Calibration	Type Test	Band-Edge			• dol	: <u>C-884</u>	_
Prepared By	Peter	Customer :	LSR			Quote #	t <u>310117</u>	_
Asset#	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status	
EE 960157	3Hz-13.20Hz Spectrum Analyzer	Agient	E4445A	MY48250225	3/17/2010	3/17/2011	Active Calibration	
EE 960158	RF Preselecter	Aglent EMCO	N9039A	MV48520110	7/2/2009	7/2/2010	Active Calibration	
Wireles	Double Ridge Horn Antenna SEARCH LLC s Product Development pment Calibration	ENCO	3115	6907	12/22/2009	12/22/2010	Active Calibration	
Date	20-Apr-2010	Type Test	Radiated Emis:	sions (109)		Job #	: C-884	_
Prepared By		Customer :	LSR			Quote #	E 310117	_
Asset#	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status	
EE 960157	3Hz-13.20Hz Spectrum Analyzer	Agilent	E4445A	MY48250225	3/17/2009	3/17/2010	Active Calibration	
EE 960158	RF Preselecter	Agient	N9039A	MY46520110	7/2/2009	7/2/2010	Active Calibration	
AA 960007	Double Ridge Horn Antenna	EMCO	3115	9311-4138	11/10/2009	11/10/2010	Active Calibration	
AA 960078	Log Periodic Antenna Double Ridge Mars Asterna	ENCO	93146	9701-4855	10/16/2009	10/16/2010	Active Calibration	
AA 960081 EE 960147	Double Ridge Horn Antenna Pre-Amp	EMCO Adv. Micro	3115 WLA612	6907 123101	12/22/2009	12/22/2010 12/28/2010	Active Calibration Active Calibration	
AA 960150	Bicon Antenna	ETS	3110B	0003-3346	12/28/2009 11/3/2009	11/3/2010	Active Calibration	
Wireles	SEARCH LLC s Product Development pment Calibration							
Date	28-Sep-2010	Type Test	Conducted AC	Emissions		a dol	<u>C-884</u>	-
Prepared By	Dates	Customer :	1 60			0	E 310117	

		Prepared By:	Peter	Customer :	LSR			Quote #:	310117
	_								
1	l¢,	A8885 #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1		AA 960008	LISN	EMCO	3816/2NM	9701-1057	12/15/2009	12/15/2010	Active Calibration
2		EE 960157	3Hz-13.2GHz Spectrum Analyzer	Agilent	E4445A	MY48250225	3/17/2009	3/17/2010	Active Calibration
3		EE 960158	RF Preselecter	Agilent	N9039A	MY46520110	7/2/2009	7/2/2010	Active Calibration
4		AA 960072	Transient Limiter	HP	11947A	3107A01708	9/15/2009	10/15/2010	Active Calibration

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# **APPENDIX B – Test Standards: CURRENT PUBLICATION DATES RADIO**

STANDARD #	DATE	Am. 1	Am. 2
ANSI C63.4	2003		
ANSI C63.10	2009		
CISPR 11	2009-05	2009-12 P	
CISPR 12	2007-05		
CISPR 14-1	2005-11	2008-11	
CISPR 14-2	2001-11	2001-11	2008-05
CISPR 16-1-1 Note 1	2010-01		
CISPR 16-1-2 Note 1	2003	2004-04	2006-07
CISPR 22	2008-09		
CISPR 24	1997-09	2001-07	2002-10
EN 55011	2009		
EN 55014-1	2006		
EN 55014-2	1997		
EN 55022	2006	2007	
EN 60601-1-2	2007-03		
EN 61000-3-2	2006-05		
EN 61000-3-3	2008-12		
EN 61000-4-2	2009-05		
EN 61000-4-3	2006-07	2008-05	
EN 61000-4-4	2004		
EN 61000-4-5	2006-12		
EN 61000-4-6	2009-05		
EN 61000-4-8	1994	2001	
EN 61000-4-11	2004-10		
EN 61000-6-1	2007-02		
EN 61000-6-2	2005-12		
EN 61000-6-3	2007-02		
EN 61000-6-4	2007-02		
FCC 47 CFR, Parts 0-15, 18, 90, 95	2009		
FCC Public Notice DA 00-1407	2000		
FCC ET Docket # 99-231	2002		
FCC Procedures	2007		
ICES 001	2006-06		
ICES 002	2009-08		
ICES 003	2004-02		
IEC 60601-1-2 Note 1	2007-03		
IEC 61000-3-2	2005-11	2008-03	2009-02
IEC 61000-3-3	2008-06		
IEC 61000-4-2	2008-12		
IEC 61000-4-3	2008-04	2008-04	2009-12 FD

STANDARD #	DATE	Am. 1
IEC 61000-4-4	2004-07	2010-10
IEC 61000-4-5	2005-11	
IEC 61000-4-6	2008-10	
IEC 61000-4-8	2009-09	
IEC 61000-4-11	2004-03	
IEC 61000-6-1	2005-03	
IEC 61326-1	2006-06	
ISO 14982	1998-07	
MIL Std. 461E	1999-08	
RSS GEN	2007-06	
RSS 119	2007-06	
RSS 123	1999-11	
RSS 125	2000-03	
RSS 131	2003-07	
RSS 136	2002-10	
RSS 137	2009-02	
RSS 210	2007-06	
RSS 213	2005-12	
RSS 243	2010-02	
RSS 310	2007-06	
Updated on 08-23-11		

Note 1: Test not on LSR Scope of Accreditation.

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	Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
	EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

# **<u>APPENDIX C - Uncertainty Statement</u>**

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k=2.

Measurement Type	Particular Configuration	Uncertainty Values	
Radiated Emissions	3 – Meter chamber, Biconical Antenna	4.24 dB	
Radiated Emissions	3-Meter Chamber, Log Periodic Antenna	4.8 dB	
Radiated Emissions	10-Meter OATS, Biconical Antenna	4.18 dB	
Radiated Emissions	10-Meter OATS, Log Periodic Antenna	3.92 dB	
Conducted Emissions	Shielded Room/EMCO LISN	1.60 dB	
Radiated Immunity	3 Volts/Meter in 3-Meter Chamber	1.128 Volts/Meter	
Conducted Immunity	3 Volts level	1.0 V	

Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

			r age or or or
Prepared For: LS Research	Model Number: TiWi-BLE	Report #: 311258	
EUT: Tiwi-BLE	Serial Number: 031202	LSR Job #: C-1285	

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