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Test report EN1941

FCC ID: HCQ3B6ETOEMM
IC ID: 2309A-ETOEMM

Rev. Level	Description	Author	Date
A	Initial Release	HB	25-Feb-11

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Table of contents

Declarations

General

Continuous receiver operation	N/A
Continuous transmitter operation	No
Band of operation (USA)	902-928 MHz
Band of operation (Australia mode)	915-928 MHz
Band of operation (New Zealand mode)	921-928 MHz
Lower transmit frequency (Australia)	915.6 MHz
Lower transmit frequency (New Zealand)	921.6 MHz
Upper transmit frequency (AUS and NZ)	927.6 MHz
Minimum Transmit Channel Spacing	400KHz
Receiver frequencies	N/A
Frequency hopping transmitter	Yes
Integral antenna equipment	Yes
Normal battery input voltage	3V DC
Maximum TX on-time (single message)	22ms

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Test Report Additional Information

Test Method	**15.247**	Section	
UUT Model No.	EN1941	Test Date	25-Feb-11
UUT Serial Number(s)		Normal Temp	25.93 C
UUT Description	Security transmitter	Normal Humidity	31.63%
UUT MFGR:	Inovonics Wireless		
TEST NOTES			
Tested By:	HB	**Test Result**	**N/A**

Test Report Additional Information

In addition to the intentional and unintentional emissions lab test reports submitted with this application, additional test data demonstrating compliance with CFR47, 15.247 and RSS-210, A8.1 follows. For the following measurements, the antenna was replaced by a coaxial connection to a MXA N9020A spectrum analyzer.

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Minimum Channnel Seperation

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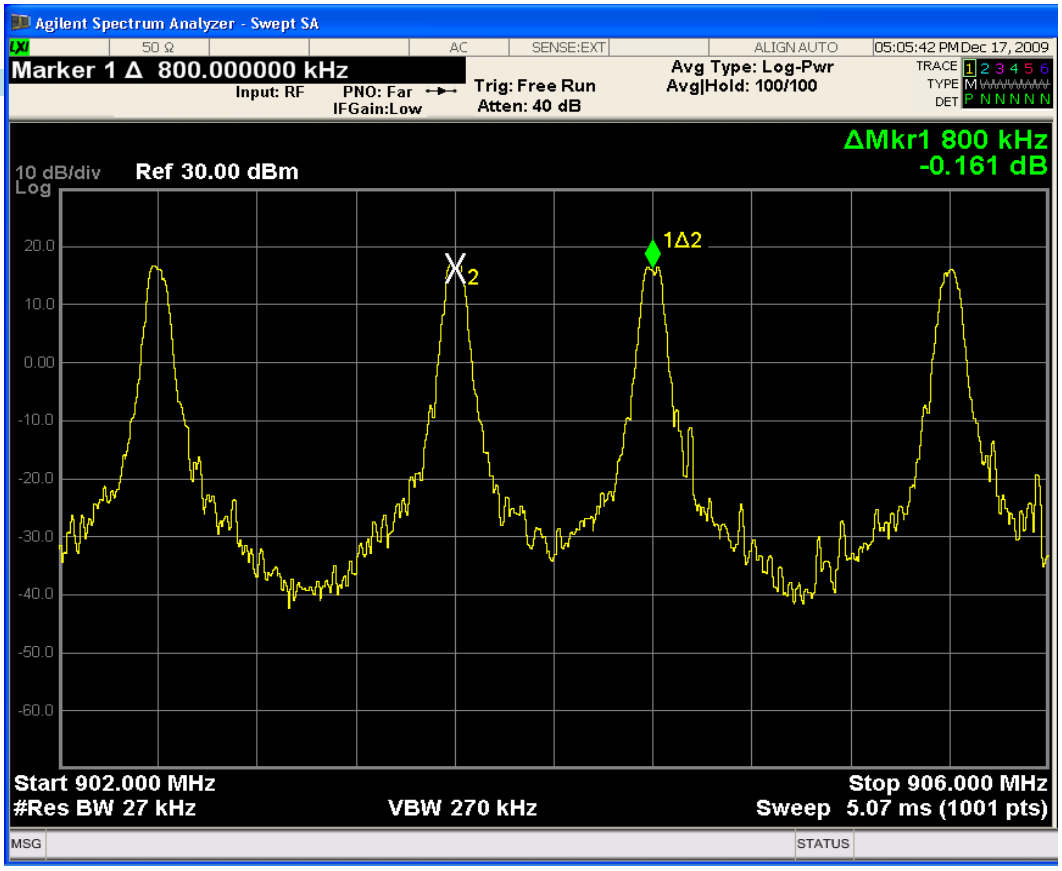
TEST NOTES			
Tested By:	HB	**Test Result**	**Pass**

Minimum Channel Separation:
Plot 1 is a spectrum plot showing a minimum channel separation of 800 kHz. Compliance with CFR47, 15.247(a)(1), and RSS-210, A8.1(b) is demonstrated by capturing several transmissions over a small portion of the 902-928 MHz ISM band.



Plot 1: Demonstration of channel spacing requirement.

Measured Ch seperation in KHz	Complies
800	Yes

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20 dB occupied Bandwidth

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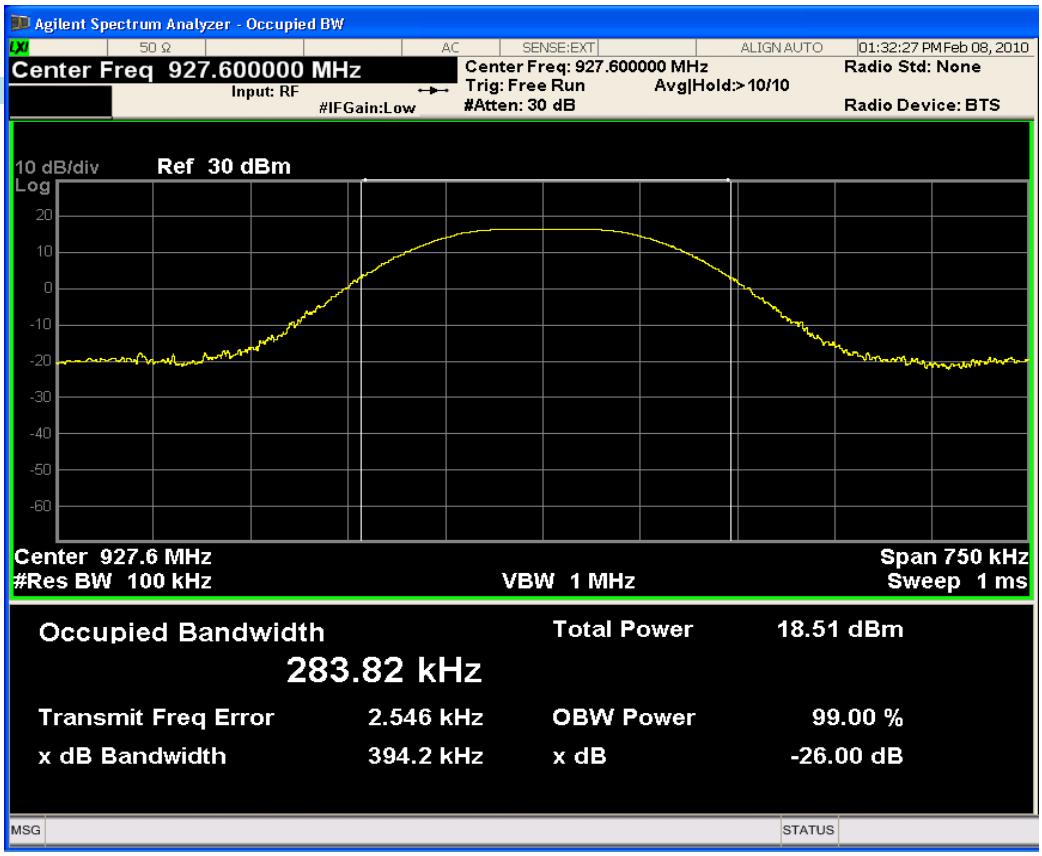
TEST NOTES				
Tested By:	HB		**Test Result**	**Pass**

20 dB occupied bandwidth:
Plot 2 shows the 20 dB occupied bandwidth of a single channel to demonstrate compliance with 15.247(a)(1)(i) and RSS-210, A8.1(c). The 20 dB occupied bandwidth is 268.5 kHz.



Plot 2: Occupied Bandwidth at lower frequency

Channel Frequency in MHz	Measured 20dB bandwidth in KHz	Maximum limit in KHz	Complies
927.6	283.82	500	Yes

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of transmitter channels

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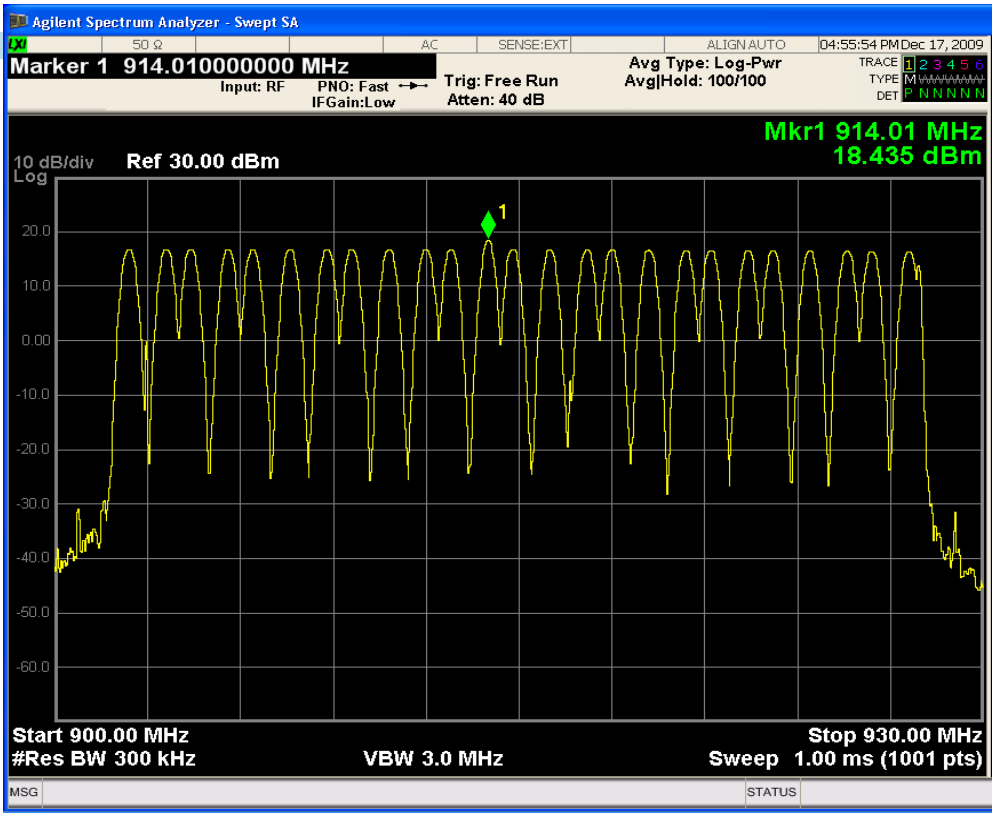
TEST NOTES			
Tested By:	HB	**Test Result**	**Pass**

Number of hopping Channels:
Plot 3 demonstrates compliance with 15.247(a)(1)(i), and RSS-210, A8.1(c). This is a stored display of many sequential transmissions to show the overall band occupied by the transmitter.



Plot 3: Demonstration of 25 hopping channels.

# of TX channels	min required # of channels	Complies
25	20	Yes

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Dwell Time

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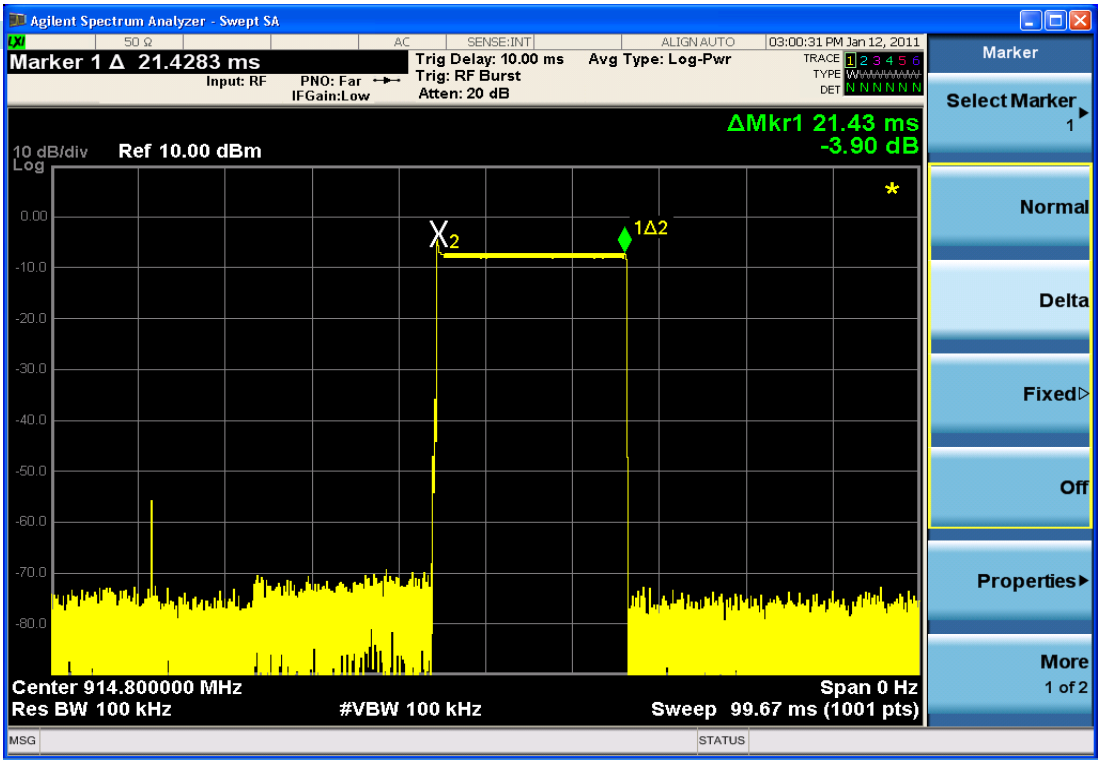
TEST NOTES			
Tested By:	HB	**Test Result**	**Pass**

Dwell Time:
Plot 4 demonstrates compliance with 15.247(a)(1)(i), and RSS-210, A8.1(c), which states "the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10 second period."



Plot 4: Demonstration of Frequency Dwell Time.

Measuresd Dwell Time in ms	Maximum limit in seconds	Complies	Complies
21.43	0.4	Yes	Yes

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Test Instrument Declarations

Test Method	**15.247**	Sections	**2, 3, 4 and 5**
UUT Model No.	EN1941		
UUT Serial Number(s)			
UUT Description	Security transmitter		
UUT MFGR:	Inovonics Wireless		
TEST NOTES			
Tested By:	HB		

TEST INSTRUMENTS

Testing Instrument **Spectrum Analyzer/RF Power meter**

Description	Signal Analyzer		
Make	Agilent	**Calibration date**	27-Sep-10
Model #	N9020A	**Calibration due date**	27-Sep-11
Serial #	MY46471353		

Alternative to Conducted Output Power Measurements:

Required conducted power output measurements at low, medium, and high channels (per 15.247(b) and (c)) could not be performed directly since the transmit antenna is integrated onto the printed circuit board. However, compliance with these requirements has been achieved by way of performing and passing the radiated tests described in the ALTERNATIVE TEST PROCEDURES in Public Notice DA 00-705, March 30, 2000.

Specifically, all radiated emissions shown in the test report are less than 119.2 dBuV/m at 3 meters. This is the field strength limit corresponding to the maximum fundamental power output of 0.25 watts from an isotropic antenna per 15.247 (b) (2) for systems employing between 25 and 49 hopping channels. The calculation as detailed in the above Public Notice is as follows:
E = Square Root of (30PG) all divided by d E = 912,871 uV/m = 119.21 dB uV/m where
E is the maximum allowable fundamental field strength in uV/m
P is the maximum allowable fundamental radiated power = 0.25 watts
G is the antenna gain = 1 (Assume 1 for the worst case (lowest allowable) final field strength.)
d is the measured distance = 3 meters
DCCF Duty Cycle Correction Factor, formula obtained from Public Notice DA 00-705

$$DCCF = 20\log\left(\frac{Dwell\ time}{100\ ms}\right)$$

$$DCCF = 20\log\left(\frac{20.8\ ms}{100\ ms}\right)$$

$$DCCF = -13.6\,dB$$