REGULATORY COMPLIANCE REPORT

TITLE: FCC, CCU100TA/TB Tower, Long Message, Test Report for FHSS

AUTHOR: Jeff Delamater

REV	CCO	DESCRIPTION OF CHANGE	DATE	APPROVALS	
001	SP010217	INITIAL RELEASE	12/5/12	Engineering	J. Delamater
			12/05/12	Regulatory	J Anselmo

REVISION HISTORY

002		Added FCC ID: EO9CCU100TB, IC: 864A-CCU100TA and IC: 864A-CCU100TB. Corrected S/N on Page 2		Engineering	J. Anselmo
			06may13	Regulatory	

Test Data Summary

FCC 15.247
Frequency Hopping Transmitter, 903-926.8*MHz
FCC: EO9CCU100TA, EO9CCU100TB
IC: 864A-CCU100TA, 864A-CCU100TB

Serial Numbers: 74045191

Updated measurements:

Rule	Description	Previous reading	updated reading	Pass/Fail
Part 15.247(a)(1)(i)	Time of Occupancy	16.23 mS	23.78 mS	Pass

Validation measurements:

Rule	Description	Previous reading	Validation/updated reading	Max Variance
Part 15.247(b) (2)	Power Output – Conducted	25.3 dBm	23.85 dBm	1.45 dBm

* see supporting exhibits in this filing for compliance to 926.9MHz.

Rule versions: FCC Part 1 (01-2006), FCC Part 2 (01-2006), FCC Part 15 (02-01-2006), RSS-102 Issue 2 (11-2005), RSS-210 Issue 7 (June 2007), RSS-Gen Issue 2 (06-2007).
Reference docs: ANSI C63.4-2003, DA 00-705 (03-30-2000), OET65 (08-1997), OET65C (06-2001), IEEE C95.3-2002.

Cognizant Personnel	
Name	Title
Jon Smitham	R&D Manager
Name	Title
Jay Holcomb	Regulatory Manager
Name	Title
Jeff Delamater	Engineer

CONDITIONS DURING TESTING

No Modifications to the EUT were necessary during the testing.

EUT Operating Frequency
The EUT was operating at 903 MHz – 926.8 MHz

Temperature and Humidity During Testing
The temperature during testing was within +15º C and +35º C.
The Relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION
Itron declares that the EUT tested was representative of a production unit.

EQUIPMENT UNDER TEST

Transmitter Module

Manufacturer:	Itron, Inc.
Model:	CCU100TA, Tower CCU
Serial:	74045191

Note: The 'A' and 'B' models have the same identical ISM 902-928MHz radio, RF circuitry and operation. They differ with the WiFi module used. See other exhibits in this filing.

Filter

Itron Part No.	FLT-0094-001
Manufacturer:	Lark

15.247(a) (1) (i)

Time of Occupancy

Verify that the transmitted signal does not occupy a single frequency for more than 400 mS in a 20 second period.

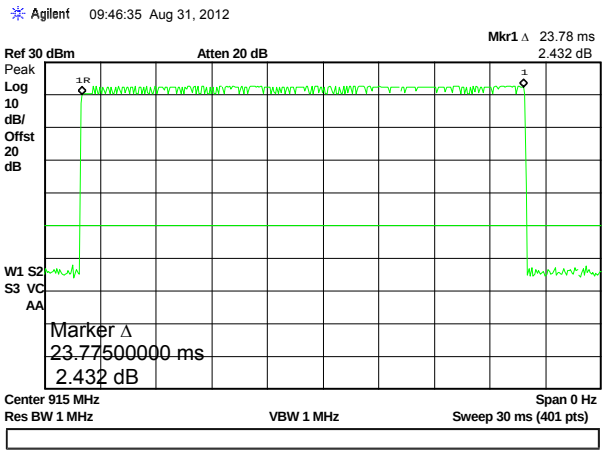
The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

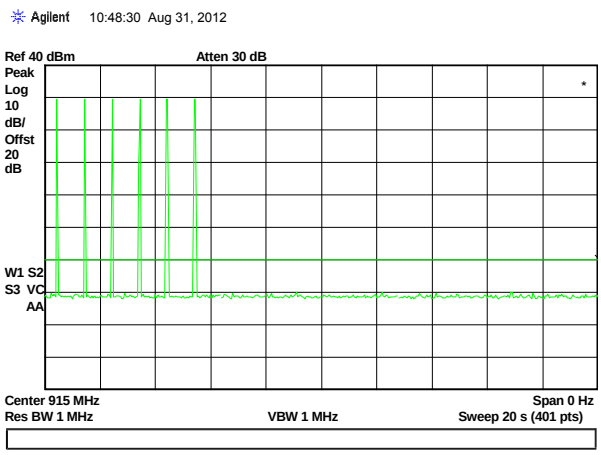
Span = zero span, centered on a hopping channel
RBW = 1 MHz
VBW ≥ RBW
Sweep = as necessary to capture the entire dwell time per hopping channel
Detector function = peak
Trace = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. Submit this plot(s).

Each transmission is now a *maximum of 23.8 ms long* (as opposed to the 16.23 ms from the original filing). Each transmission takes place on one of 120 different channels in a pseudo-random sequence. All 120 channels are used equally on the average. The algorithm that determines the pseudo-random hop sequence does not allow the device to transmit on the same channel more than 6 times in a 20 second period. The maximum possible occupancy time on any one frequency is now 142.8 mS or 6 times within a 20 second period.

Equipment Used	Serial Number	Cal Date	Due
HP4407B	MY45107856	3/11	3/13
Date	Tested by		
8/31/2012	Jeff Delamater		





15.247(b) (2)

Power Output

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels.

Use the following spectrum analyzer settings:

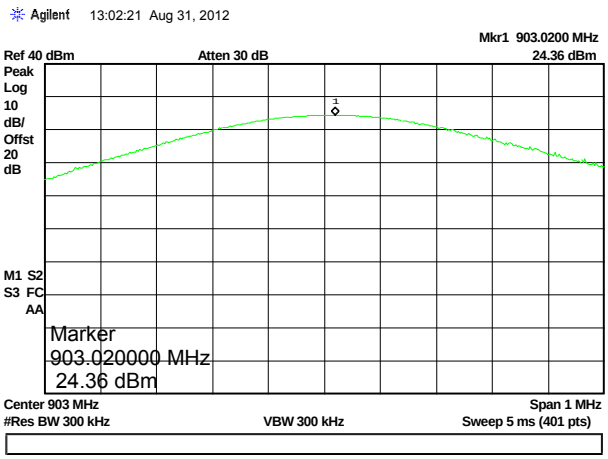
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.
RBW > the 20 dB bandwidth of the emission being measured.
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Set RF level offset=cable loss

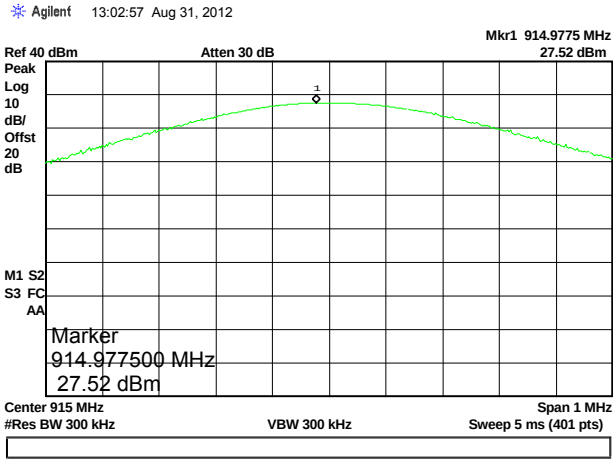
Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power. The limit is specified in one of the subparagraphs of this Section. Submit this plot. A peak responding power meter may be used instead of a spectrum analyzer.

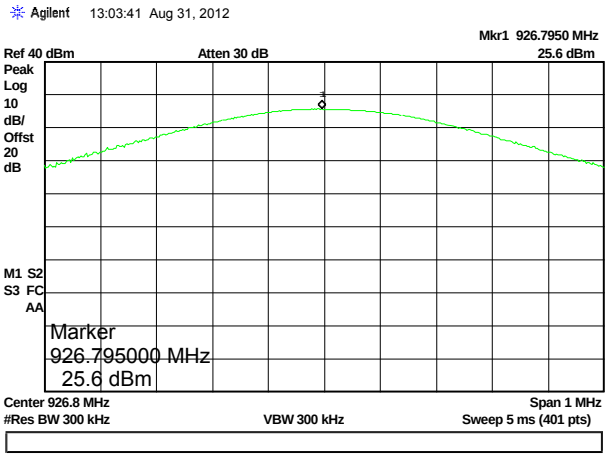
Note: The purpose of this test is to validate the report from 2011, since over a year has passed. No changes are being made to this product except for the new maximum message length.

Equipment Used	Serial Number	Cal Date	Due
HP4407B	MY45107856	3/11	3/13
Date	Tested by		
8/31/2012	Jeff Delamater		

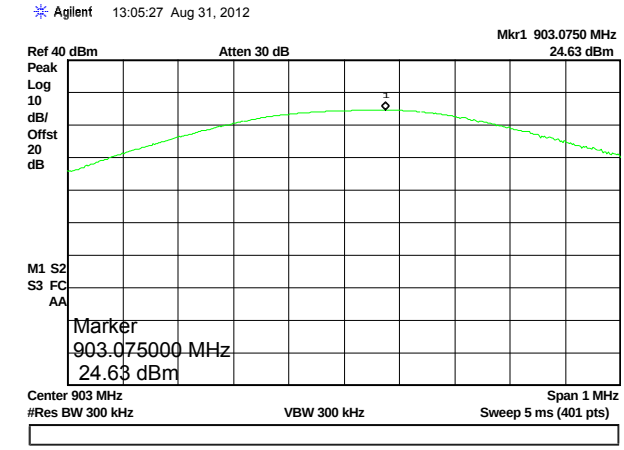
Modulation: 37.5K baud FM			
Frequency (MHz)	Power out (dB) taken 6/3/2011	Power out (dB) taken 8/31/2012	Variance dB
903	25.6	24.36	-1.24
915	27.4	27.52	0.12
926.8	26.7	25.60	-1.10

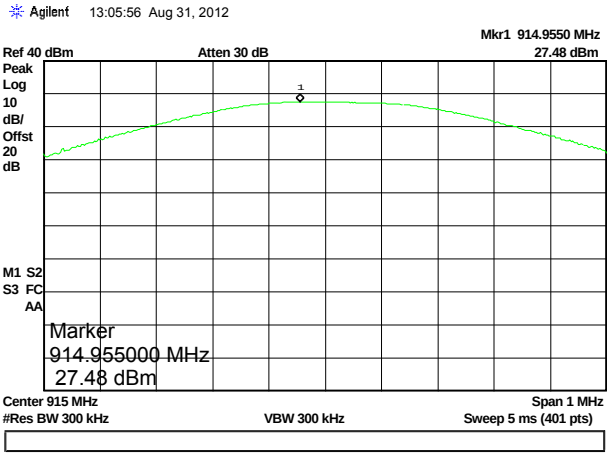


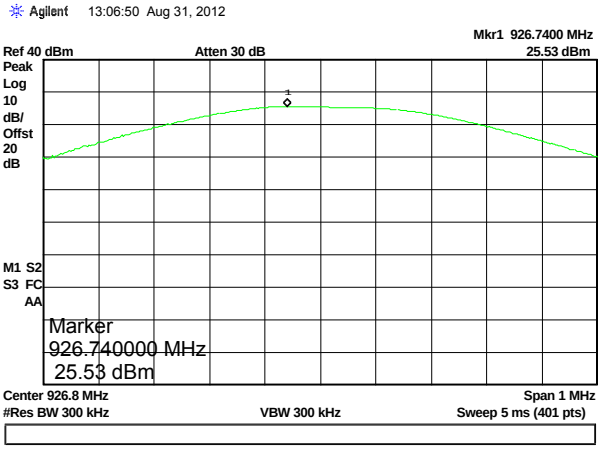




Modulation: 12.5K baud FM			
Frequency (MHz)	Power out (dB)		Variance dB
	taken 6/3/2011	taken 8/31/2012	
903	26.0	24.63	-1.37
915	27.5	27.48	-0.02
926.8	26.7	25.53	-1.17







Modulation: 16K baud AM			
Frequency (MHz)	Power out (dB)		Variance dB
	taken 6/3/2011	taken 8/31/2012	
903	25.3	23.85	-1.45
915	27.2	27.08	-0.12
926.8	26.5	25.18	-1.32