## 11. Test Report

The test report containing intentional/unintentional emissions data is attached as "Test Report BC400278b-1_DS350.pdf". International Approvals Laboratories generated this report.

Additional data demonstrating compliance with 47CFR15.247 follows. For the following measurements, the antenna was replaced by a coaxial connection to an HP8594E spectrum analyzer.

Minimum Channel Separation:
Plot 1 is a spectrum plot showing a minimum channel separation of 800 kHz. Compliance with section 15.247(a)(1) is demonstrated by capturing several transmissions over a small portion of the 902-928 MHz ISM band.
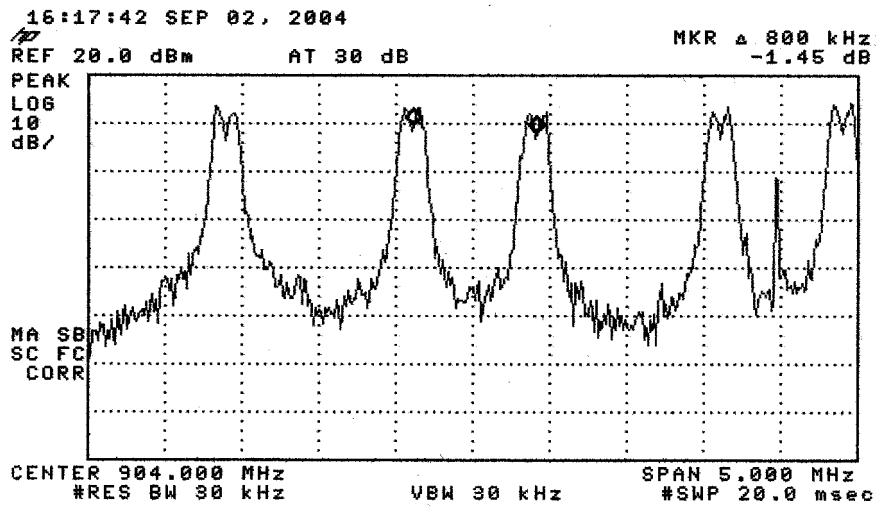
Plot 1: Demonstration of channel spacing requirement.

Number of hopping Channels:

Plot 2 demonstrates compliance with 15.247(a)(1)(i) — Number of hopping channels. This is a stored display of many sequential transmissions to show the overall band occupied by the transmitter. The marker at 919.20 MHz represents the maximum conducted transmitter power across the band.
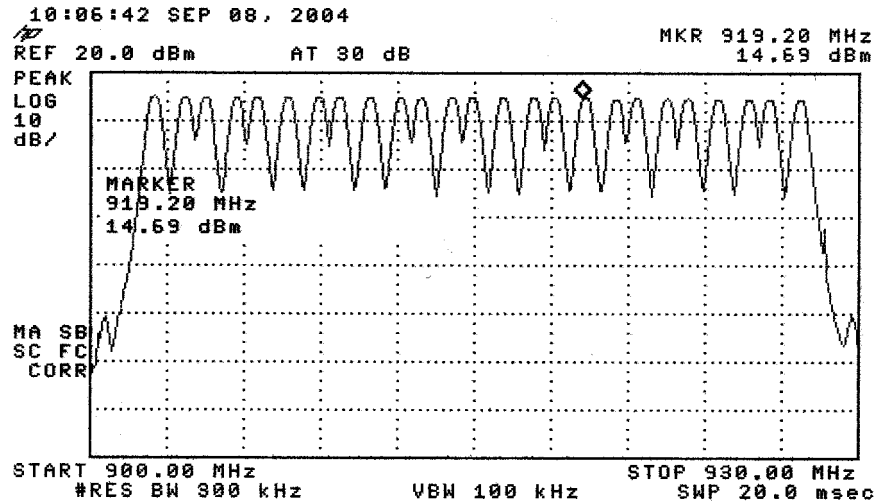
Plot 2: Demonstration of 25 hopping channels.

20 dB bandwidth of a single channel:

Plot 3 shows the 20 dB bandwidth of a single channel to demonstrate compliance with 15.247(a)(1)(i). The 20 dB occupied bandwidth is 253.8 kHz.
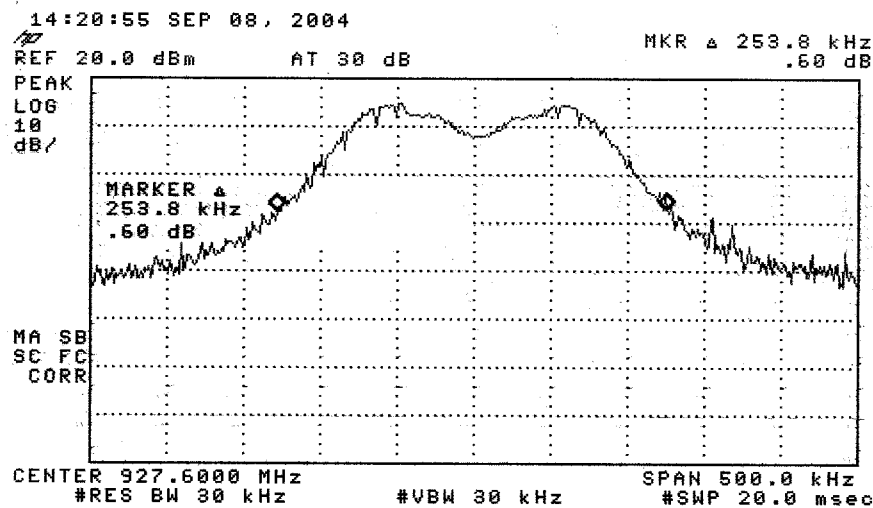
Plot 3: Demonstration of occupied bandwidth.

Average radiated measurements for harmonic and spurious emissions:
With regards to average radiated measurements for harmonic and spurious emissions that fall in the restricted bands of section 15.205 of the FCC Rules.

This device uses pulsed operation, section 15.35(c) states, "Unless otherwise specified, e.g.§ 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds."
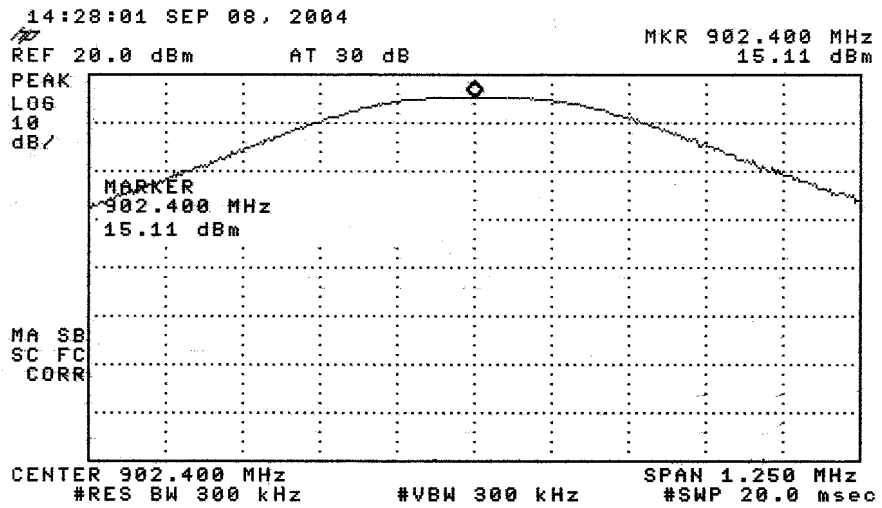
This device transmits for 20ms out of every 100ms and therefore has a duty cycle of 20%. Per section 15.35 the peak harmonic and spurious emissions may exceed the General Radiation Limit found in 15.209(a) by the ratio of the duty cycle, which in this case results in a 14 dB relaxation of the limit from 54 dB µV/m to 68 dB µV/m (above 1000 MHz) for the peak measurements shown in the report.

Peak conducted RF power output measurements:
Pursuant to FCC Public Notice DA 00-705, the following measurements were made using an Agilent 8594E spectrum analyzer having the following settings:

Span:	1250 kHz (approximately 5 times the 20dB bandwidth)
RBW:	300 kHz (RBW > the 20dB bandwidth)
VBW:	300 kHz (VWB ≥ RBW)
Sweep:	auto
Detector:	peak
Trace:	max hold

The device is modified so that the antenna is removed and a 3" semi-rigid coaxial cable having negligible insertion loss connects it to the spectrum analyzer. Please note that the device is designed to have an output power of +17dBm however a variation of +1, -2dB is anticipated.

```
 14:28:01 SEP 08, 2004
/⊅
REF 20.0 dBm        AT 30 dB              MKR 902.400 MHz
PEAK                                            15.11 dBm
LOG                              ◇
10
dB/
     MARKER
    ⌐902.400 MHz
     15.11 dBm



MA SB
SC FC
   CORR


CENTER 902.400 MHz                    SPAN 1.250 MHz
    #RES BW 300 kHz      #VBW 300 kHz   #SWP 20.0 msec
```

Plot 4: RF output at the low channel

```
 14:41:57 SEP 08, 2004
/⊅
REF 20.0 dBm        AT 30 dB              MKR 914.800 MHz
PEAK                                            15.26 dBm
LOG                              ◇
10
dB/
     MARKER
    ⌐914.800 MHz
     15.26 dBm



MA SB
SC FC
   CORR


CENTER 914.800 MHz                    SPAN 1.250 MHz
    #RES BW 300 kHz      #VBW 300 kHz   #SWP 20.0 msec
```
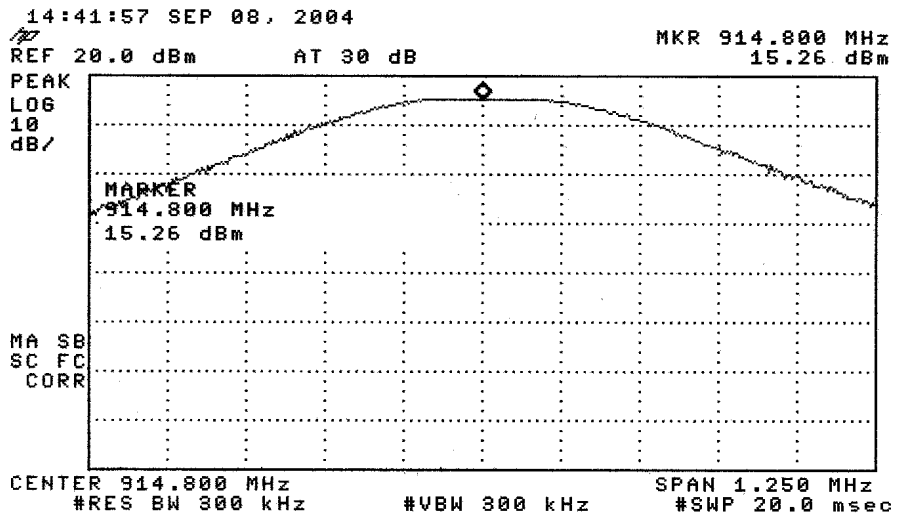
Plot 5: RF output at the middle channel

```
  14:47:46 SEP 08, 2004
 /ω                                    MKR 927.600 MHz
 REF 20.0 dBm          AT 30 dB               15.11 dBm
 PEAK
 LOG
 10
 dB/

 CENTER
 927.600 MHz



 MA SB
 SC FC
  CORR




 CENTER 927.600 MHz              SPAN 1.250 MHz
     #RES BW 300 kHz    #VBW 300 kHz   #SWP 20.0 msec
```
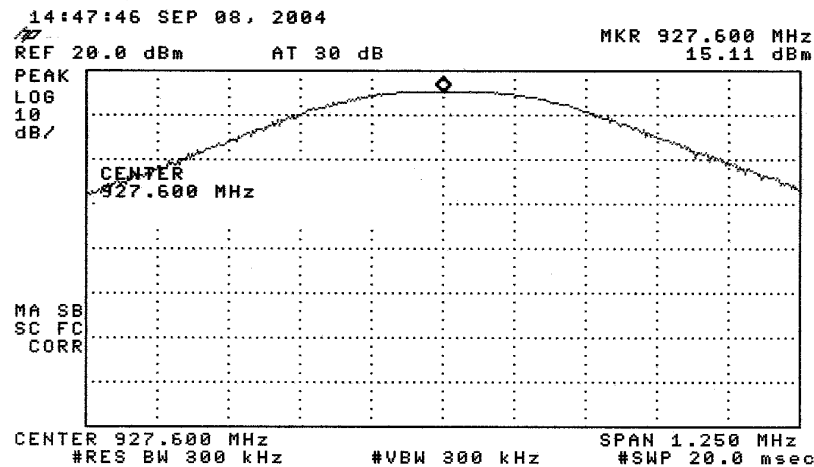
Plot 6: RF output at the high channel

Conducted spurious and harmonic emissions measurements:
There is no way to measure conducted spurious and harmonic emissions without altering the device. The device was taken to an accredited and listed lab, International Approvals Laboratories, and the relevant radiated measurements were taken using their 3-meter Open-Air Test Site.

Average time of occupancy measurement:
Section 15.247(a)(1)(i) stated, "…if the 20 dB bandwidth of the hopping channel is 250kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period"

To effectively obtain this measurement, FCC Public Notice DA 00-705 requires the following spectrum analyzer settings:

Span: 0
RBW: 1MHz
VBW: 1MHz (VBW ≥ RBW)
Sweep: 60ms (as necessary to capture the entire dwell time per hopping channel)
Detector: peak
Trace: max hold

Plot 6 below clearly shows the dwell time is less than the 0.4 seconds required by 15.247(a)(1)(i).

13:57:11 SEP 09, 2004
REF 20.0 dBm   AT 30 dB   MKR △ 21.450 msec
                                                        .28 dB
PEAK
LOG
10
dB/

MARKER △
21.450 msec
.28 dB

MA SB
SC FC
CORR

CENTER 902.400 MHz   SPAN 0 Hz
  #RES BW 1.0 MHz   #VBW 1 MHz   #SWP 60.0 msec