

6b.2.1 MOTotalk ISM Band Carrier Separation between Hop sets – Pursuant 47 CFR, Part 15.247(a)(1)

The separation between frequencies is measured to be 501 kHz.

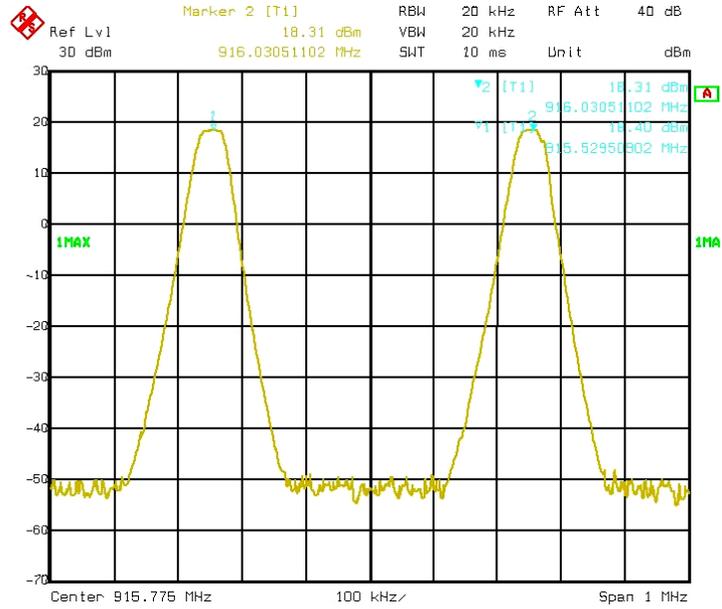


Figure 6b-2.1.1. Plot of MOTotalk ISM Band adjacent channel separation within a hop set.

6b.2.2 MOTotalk ISM Band Hopping Bandwidth between Hop sets –Pursuant 47 CRF, Part 15.247 (a)(1)(i)

The Figure below shows the plot of the 8FSK, traffic channel MOTotalk ISM Band spectrum with its bandwidth of 27.45 kHz at 902.525 MHz. The plot shows at least 20dBc with the 50 kHz offset from the carrier.

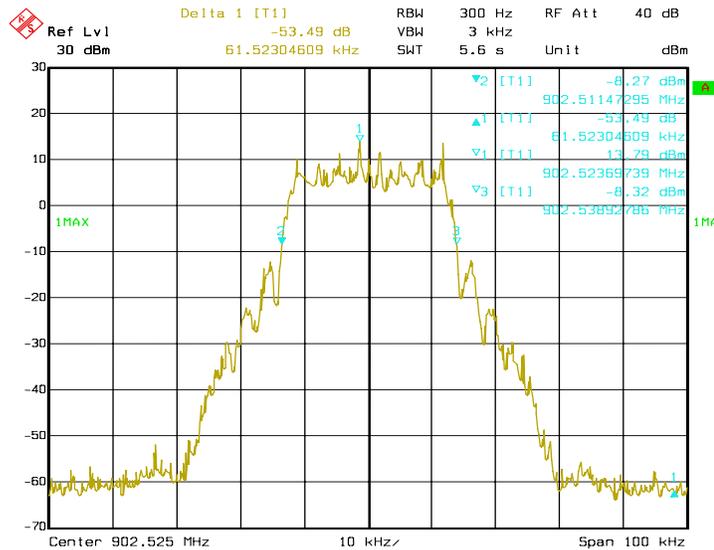


Figure 6b-2.2.1 Spectrum analyzer plot of MOTotalk ISM Band 8-FSK traffic channel signal’s 99% bandwidth at center frequency 902.525 MHz with hopping function disabled.

The adjacent hop set channel separation was measured between hopset1 at 902.525 MHz and hopset2 at 902.575 MHz which is 50 kHz.



Figure 6b-2.2.2. Adjacent hop set separation with spectrum analyzer center frequency at 902.55 MHz.

Figure 6b-2.2.3 shows that, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20dB (measured value here is 67.33dB) below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

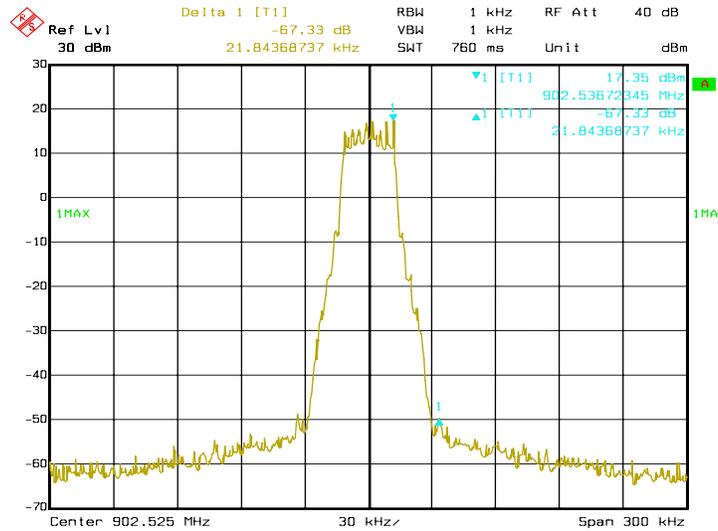


Figure 6b-2.2.3 MOTotalk ISM band occupied bandwidth with frequency span of 300 kHz with hopping function disabled at center frequency 902.525 MHz.

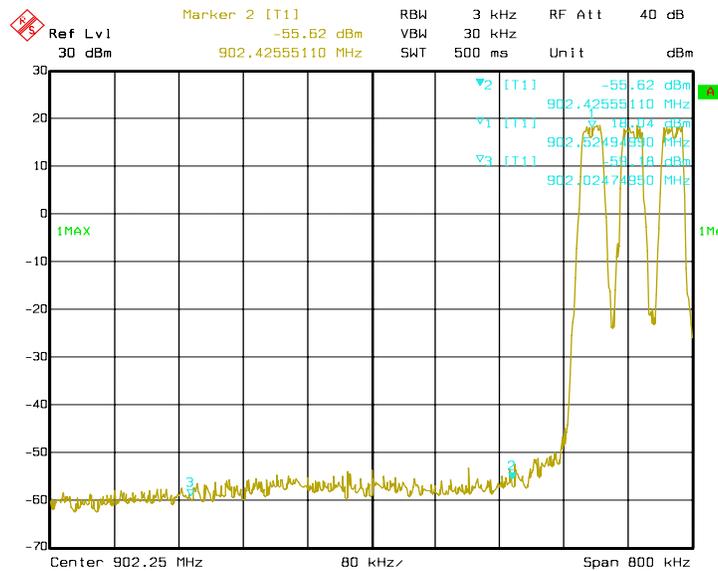


Figure 6b-2.2.4. Out-of-band transmitter spurious emissions low band edge, with hopping function enabled.

The Figure below shows the plot of the 8FSK, traffic channel MOTotalk ISM Band spectrum with its bandwidth of 27.25 kHz at 927.475 MHz. The plot shows spurious emissions attenuation of at least 20dBc, with the 50 kHz offset from the carrier.

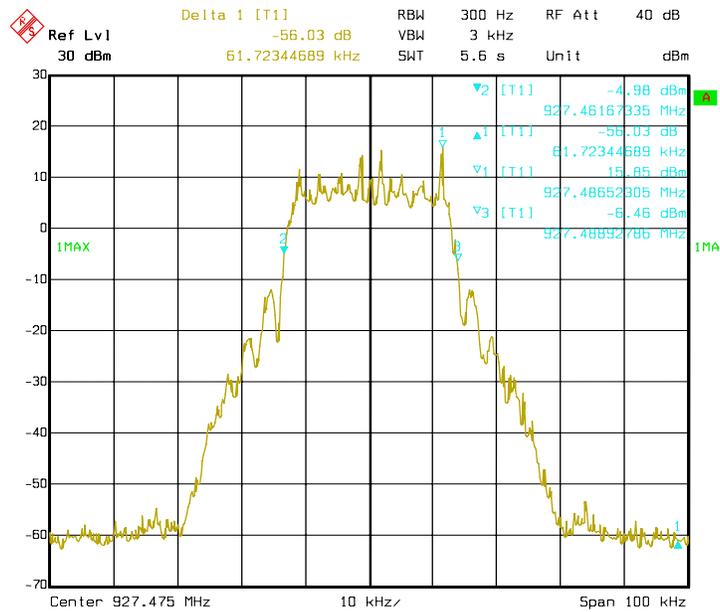


Figure 6b-2.2.5 Spectrum analyzer plot of MOTotalk ISM Band 8-FSK traffic channel signal's 99% bandwidth with hopping function disabled, at center frequency 927.475 MHz.

The adjacent hop set channel separation was measured between hopset9 @ 927.475 MHz and hopset10 @ 927.525 MHz which is 50 kHz.



Figure 6b-2.2.6. Adjacent hop set separation with spectrum analyzer center frequency 927.5 MHz.

Figure 6b-2.2.7 shows that, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20dB (measured value here is 66.46dB) below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

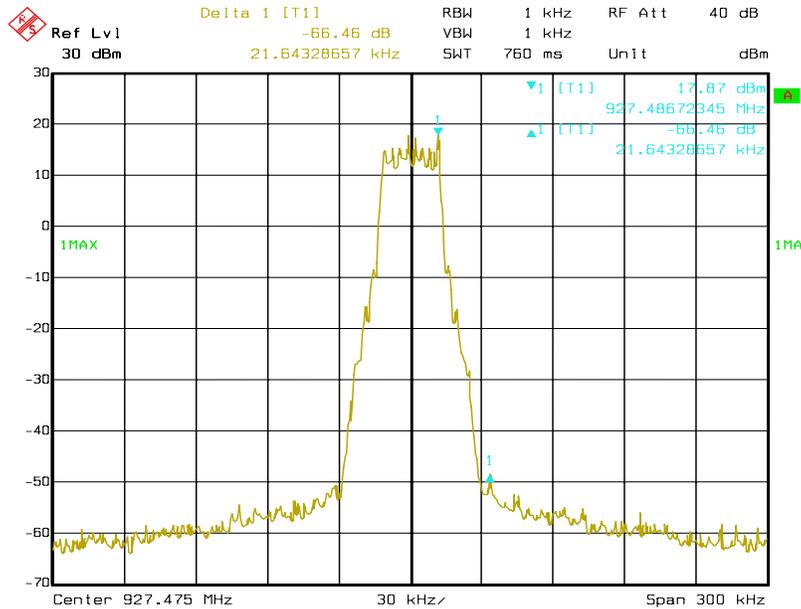


Figure 6b-2.2.7 MOTotalk ISM band occupied bandwidth with frequency span of 300 kHz with hopping function disabled, at center frequency 927.475.

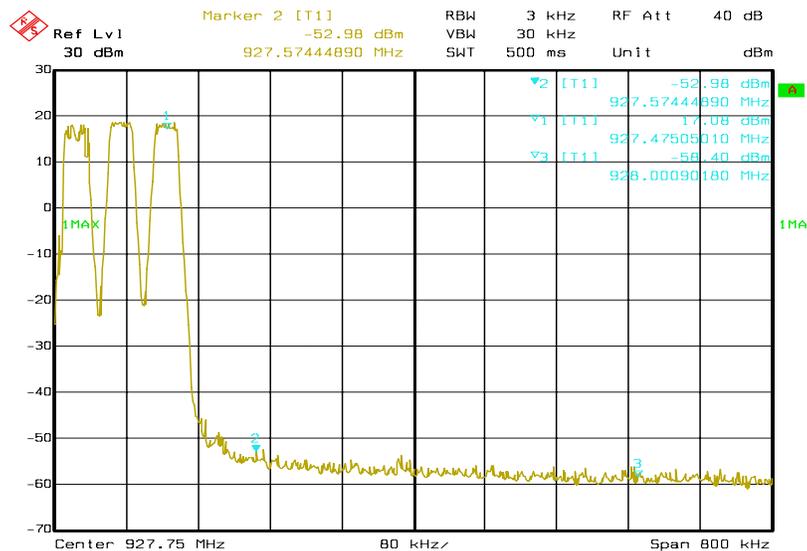


Figure 6b-2.2.8. Out-of-band transmitter spurious emissions high band edge, with hopping function enabled.

6b.2.3 MOTotalk ISM Band Receiver Bandwidth – Pursuant 47 CRF, Part 15.247(a)(1)

The receiver bandwidth is limited by a 2-pole analog filter and digital processing that includes a 5th order sin filter, IIR high-pass programmable bandwidth filter, and a 15th order programmable selectivity filter. The composite 3dB bandwidth is 28 kHz.

6b.2.4 MOTotalk ISM Band Number of Hopping Frequencies – Pursuant 47 CRF, 15.247(a)(1)(i)

The MOTotalk ISM Band transmitter uses 50 frequencies within each selected hop set.

Hopset	1 st Frequency (MHz)	Progression (MHz)	Last (50th) Frequency (MHz)
1	902.525	903.025, 903.525, 904.025...	927.025
2	902.575	903.075, 903.575, 904.075...	927.075
3	902.625	903.125, 903.625, 904.125...	927.125
4	902.675	903.175, 903.675, 904.175...	927.175
5	902.725	903.225, 903.725, 904.225...	927.225
6	902.775	903.275, 903.775, 904.275...	927.275
7	902.825	903.325, 903.825, 904.325...	927.325
8	902.875	903.375, 903.875, 904.375...	927.375
9	902.925	903.425, 903.925, 904.425...	927.425
10	902.975	903.475, 903.975, 904.475...	927.475

Table 6b-2.4.1. MOTotalk ISM Band Transmitter Frequency Hop sets.

6b.2.5 MOTotalk ISM Band Average Time of Occupancy – Pursuant 47 CFR, Part 15.247(a)(1)(i)

Worst case scenario (continuous transmission) is as follows:
 85.6 ms bursts at 90 ms intervals (hop intervals)
 20 seconds per window / 0.09 seconds per hop = 222.22 hops per window
 222.22 hops / 50 carriers = 4.444 bursts per carrier window
 4.444 bursts * 0.0856 seconds per burst = 0.38 seconds (less than the 0.4 second requirement)

The calculations show the average time of occupancy of 0.4 seconds or less.

Verification of burst is shown in the Figure below.

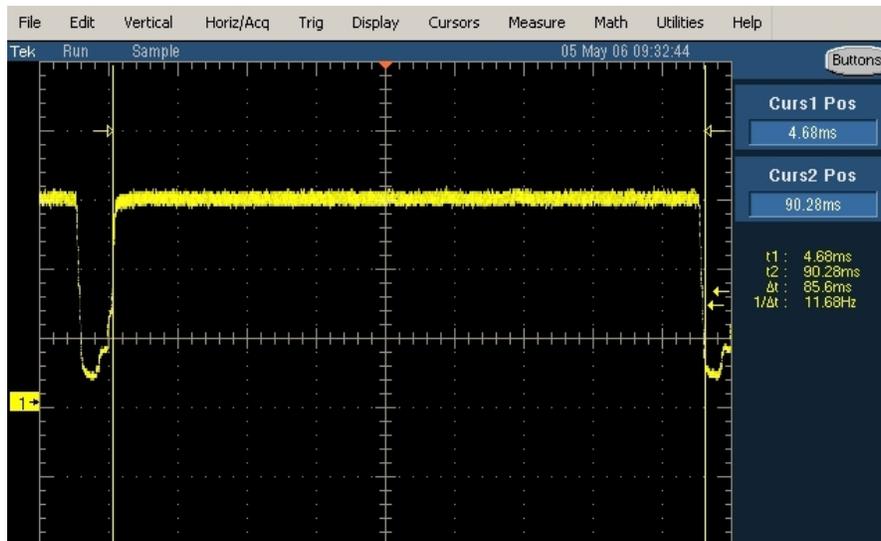


Figure 6b-2.5.1. MOTotalk ISM Band Average Measured Time of Occupancy.

6b.2.6 MOTotalk ISM Band Equal Distribution of Hopping Frequencies for Continuous Transmission – Pursuant 47 CFR, Part 15.247(a)(1)(i) & 15.247(g)

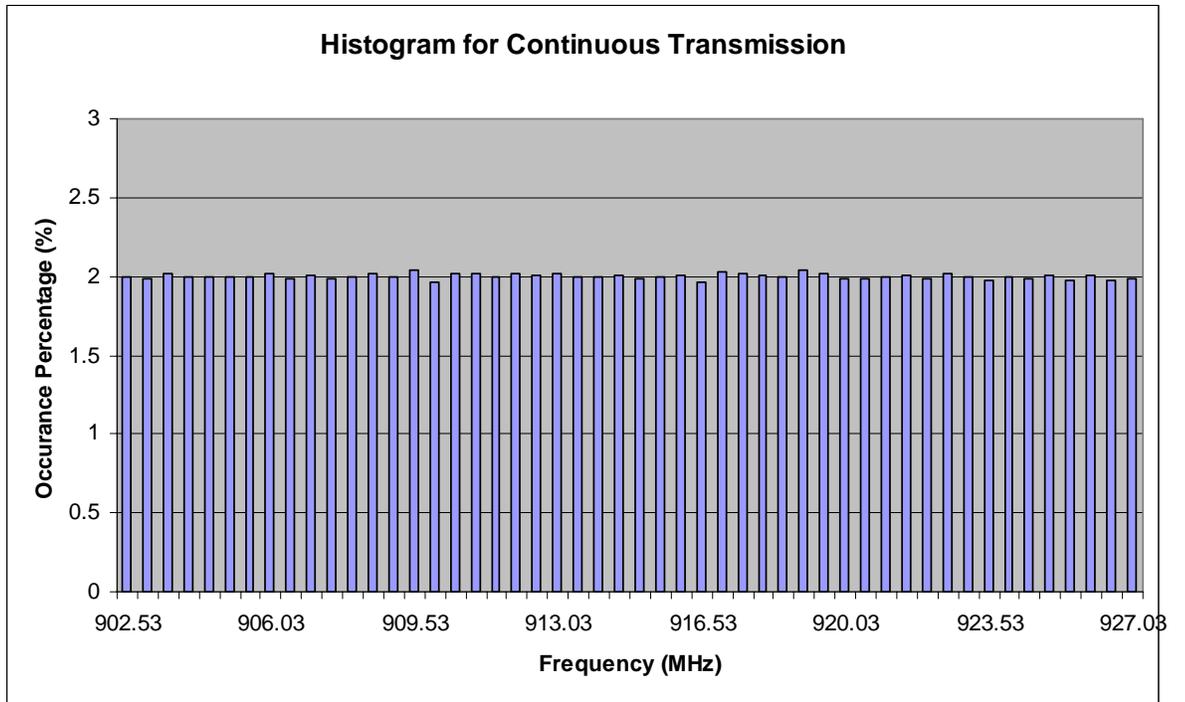


Figure 6b-2.6.1. Histogram for MOTotalk ISM Band Continuous Transmission

6b.2.7 MOTotalk ISM Band Equal Distribution of Hopping Frequencies for Discontinuous Transmission - Pursuant 47 CFR, Part 15.247(a)(1)(i) & 15.247(g)

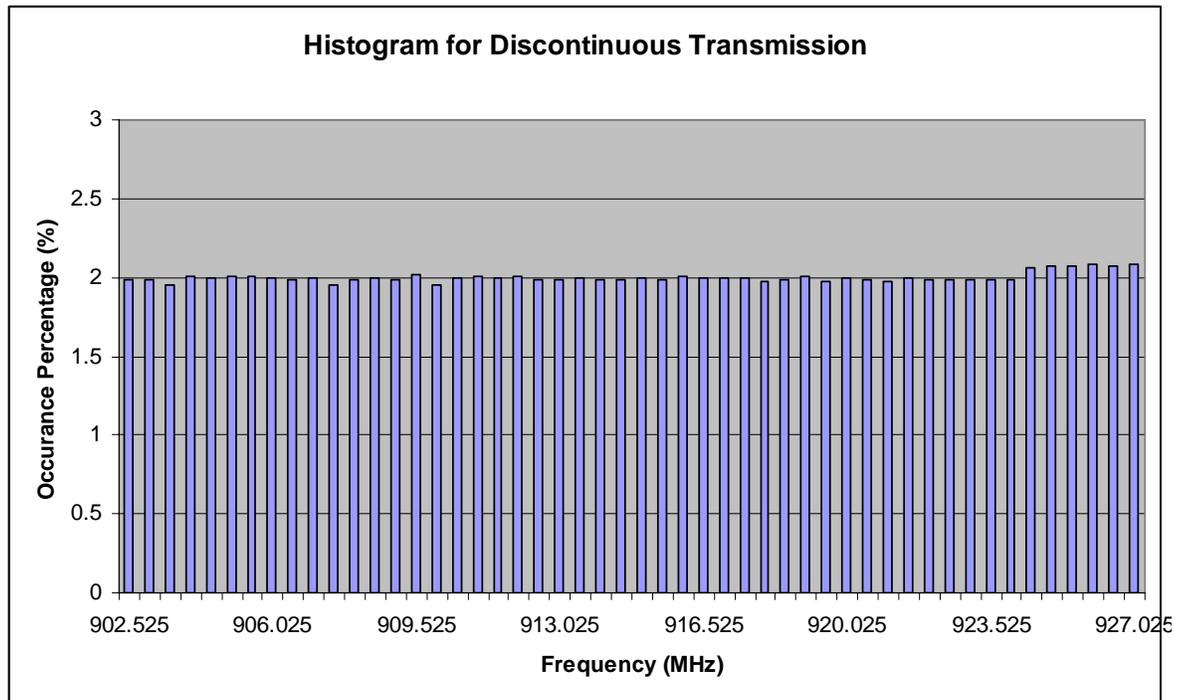


Figure 6b-2.7.1. Histogram for MOTotalk ISM Band Discontinuous Transmission