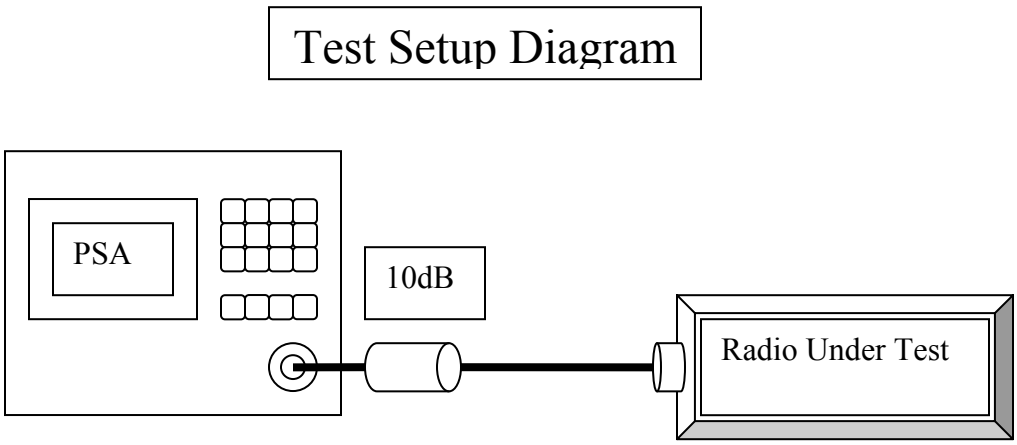
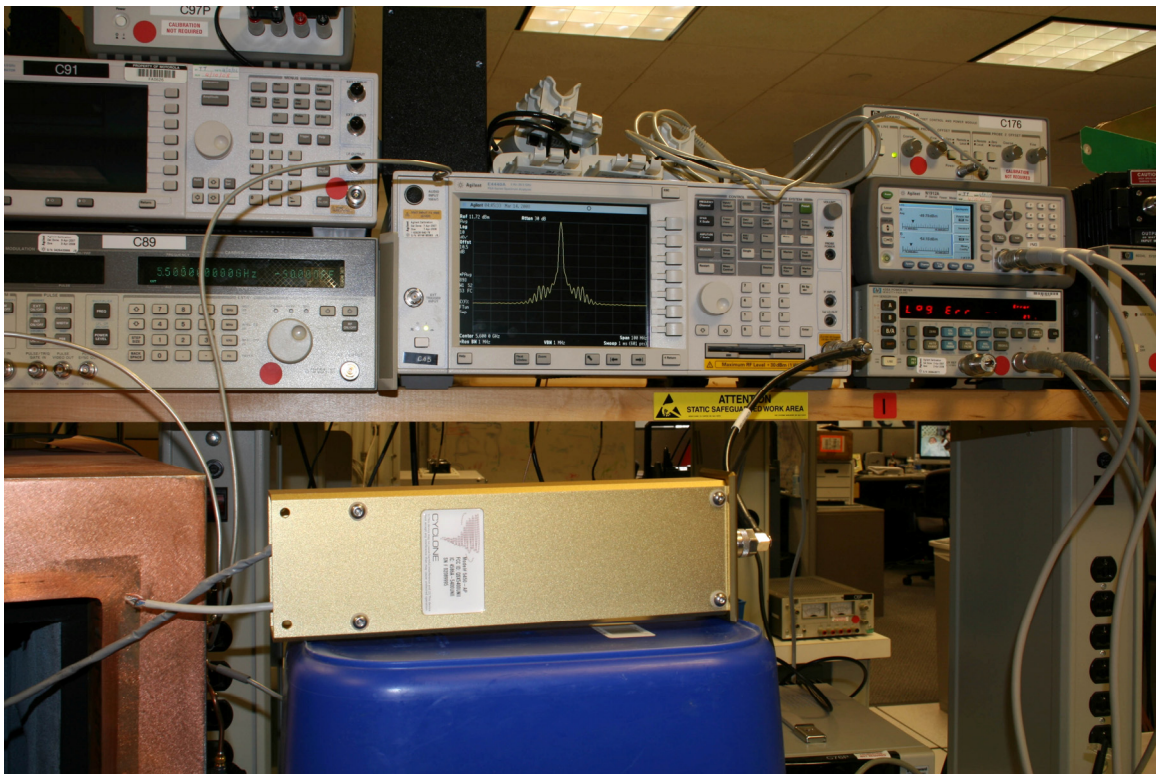
Date: March 13th, 2008

Certification Testing was performed on the CYCLONE model 5450 –AP
(FCC ID:QSX5400UNII, IC:5400UNII)
By Motorola Canopy Development Engineering.

The test setup utilized an Agilent E4440A PSA(S/N:MY46185583) with a 10dB fixed attenuator Weinschel model:2 (SER NO: BU2679) in line with the RF coaxial cable.

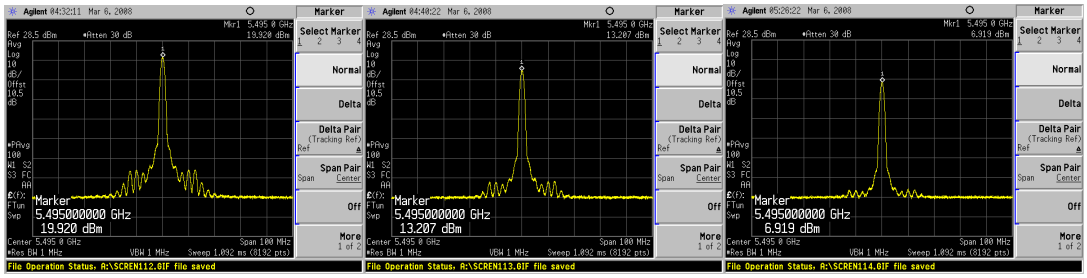




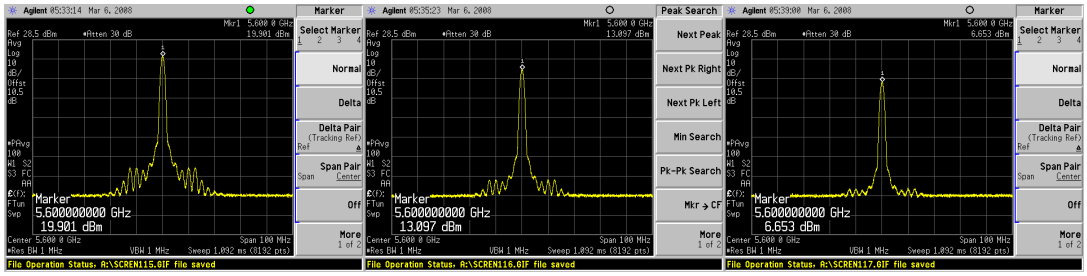
Test Photo

Three conducted carrier power levels were measured to ensure compliance of 1Watt or less EIRP when mated with the appropriate antenna. (10dBi, 16.5dBi, 23dBi)

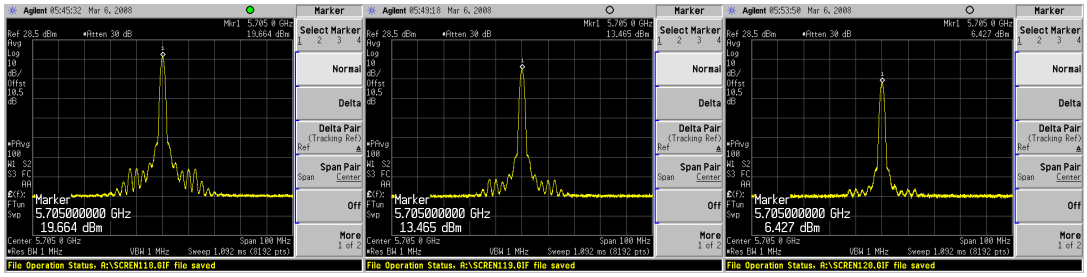
Silent carrier power was measured at three test frequencies for calibration and correlation of the measurement setup to previous Canopy test reports submitted for certification.
(F1=5495MHz, F2=5600MHz, F3=5705MHz)



Low Channel F1



Mid Channel F2

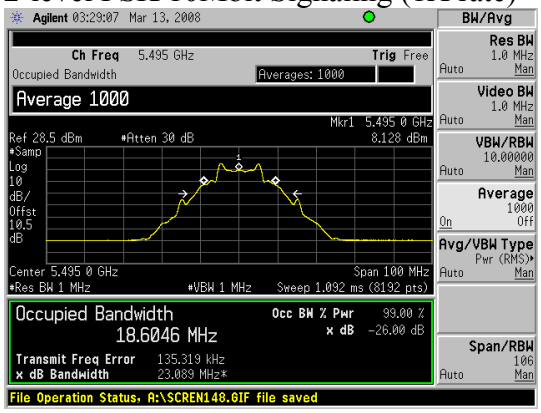


High Channel F3

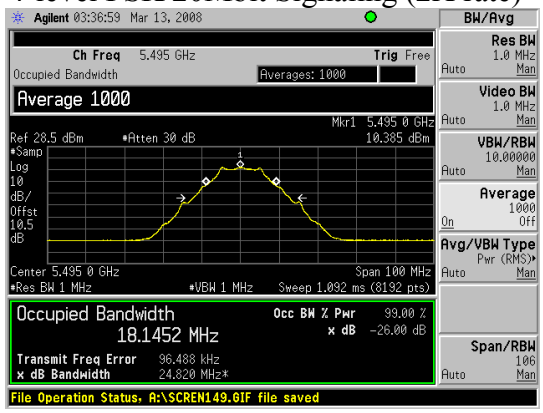
Both 1X rate and 2X rate were measured to show compliance to Part 15 of CFR47 for FCC certification as well as RSS 210 for IC certification.
Bandwidth is independent of output power due to FSK modulation.
TX bit error test pattern was initiated at maximum transmit duty cycle and data throughput for the radio under test. This resulted in 97.7% duty cycle or an average power versus maximum power ratio of 10*log(0.977) or -0.101dB.

F1 = 5495MHz

2-level FSK 10Mbit Signaling (1X rate)

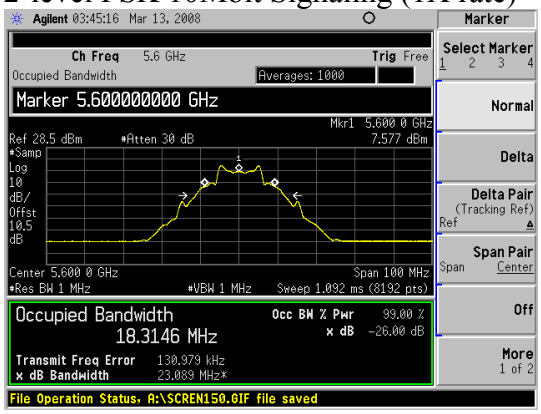


4-level FSK 20Mbit Signaling (2X rate)

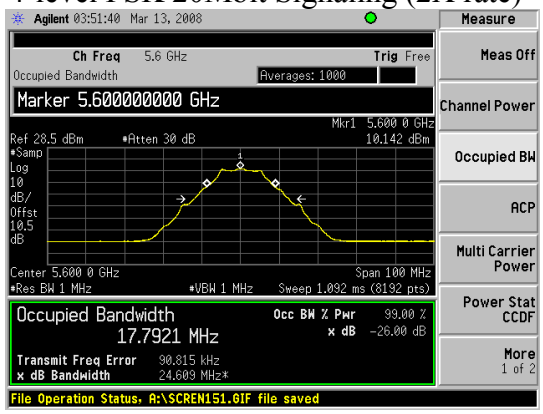


F2 = 5600MHz

2-level FSK 10Mbit Signaling (1X rate)

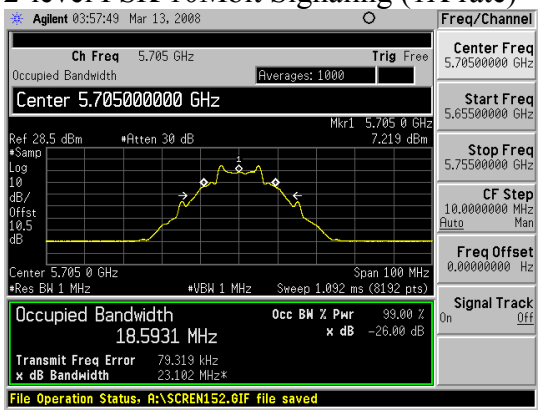


4-level FSK 20Mbit Signaling (2X rate)

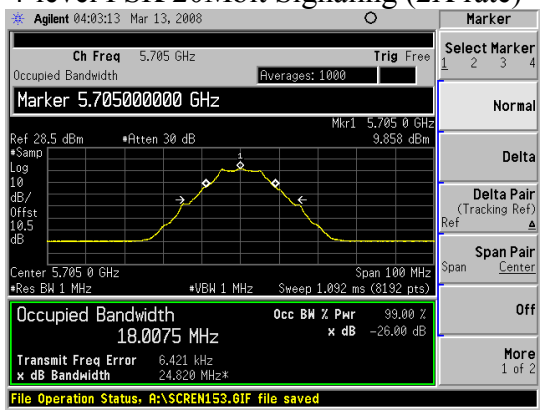


F3 = 5705MHz

2-level FSK 10Mbit Signaling (1X rate)



4-level FSK 20Mbit Signaling (2X rate)



15.407 and RSS-210 Issue 5 Conducted Peak Power Spectral Density

The following plots display the Cyclone 5450 radio's power spectral density results in the frequency band 5495MHz -5705MHz. The 26dB emission bandwidth was used to set the integration bandwidth for the PSD measurement. The Channel Power is also shown and varied using the Radio's internal digital attenuator. The plots demonstrate compliance of P.S.D. ((dBm/Hz) +60) = (dBm/MHz)

A) Maximum Conducted Power = 11dBm+10logB
(where B is the 26dB bandwidth in MHz).

Three power spectral density levels were measured to ensure compliance when mated with the appropriate antenna. (10dBi, 16.5dBi, 23dBi)

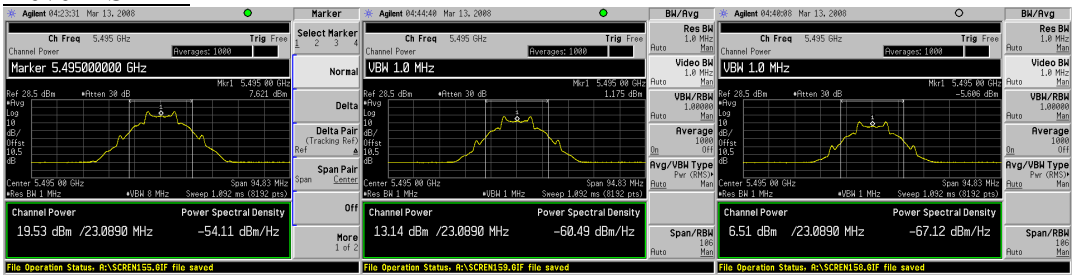
[Adjusted for antenna gain greater than 6dBi]

A1) 11dBm-[10-6]dB + 10logB = 7 dBm + 10logB

A2) 11dBm-[16.5-6]dB + 10logB = 0.5 dBm+10logB

A3) 11dBm-[23-6]dB + 10logB = -6 dBm+10logB

2level FSK F1



A1 A2 A3

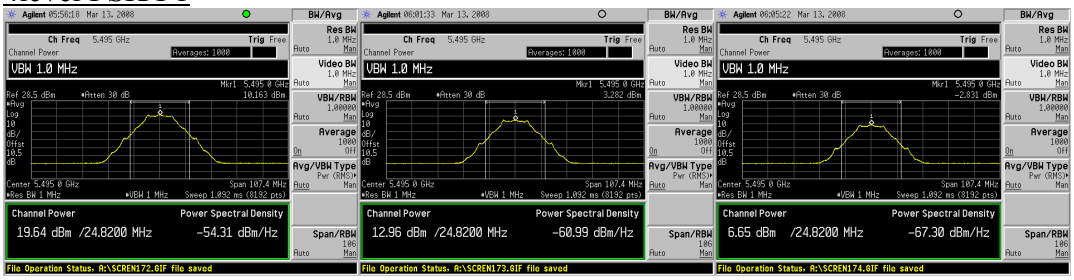
(2 level P.S.D. 5495MHz): -54.11dBm/Hz+60 = 5.89dBm/MHz Pass 1.11dB margin
Max conducted power limit [7dBm]+10log(23.089) = 20.6341 dBm

(2 level P.S.D. 5495MHz): -60.49dBm/Hz+60 = -0.49dBm/MHz Pass 0.99 dB margin
Max conducted power limit [0.5dBm]+10log(23.089) = 14.1341 dBm

(2 level P.S.D. 5495MHz): -67.12dBm/Hz+60 = -7.12dBm/MHz Pass 1.12 dB margin
Max conducted power limit [-6dBm]+10log(23.089) = 7.63405 dBm

---

4level FSK F1



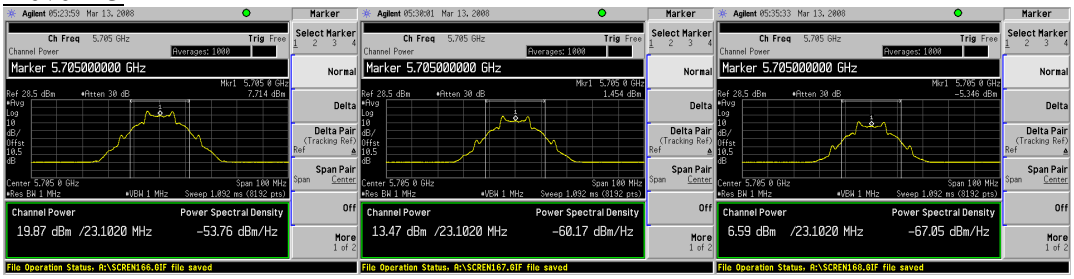
A1 A2 A3

(4 level P.S.D. 5495MHz): -54.31dBm/Hz+60 = 5.69dBm/MHz Pass 1.31 dB margin
Max conducted power limit [7dBm]+10log(24.82) = 20.948 dBm

(4 level P.S.D. 5495MHz): -60.99dBm/Hz+60 = -0.99dBm/MHz Pass 1.49 dB margin
Max conducted power limit [0.5dBm]+10log(24.82) = 14.448 dBm

(4 level P.S.D. 5495MHz): -67.30dBm/Hz+60 = -7.30dBm/MHz Pass 1.30 dB margin
Max conducted power limit [-6dBm]+10log(24.82) = 7.948 dBm

2level F3



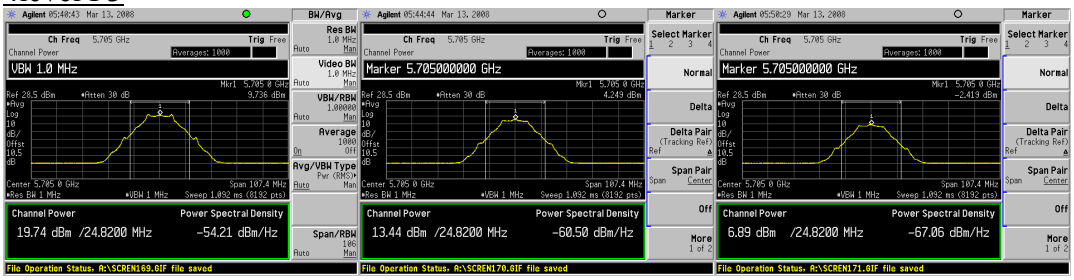
A1 A2 A3

(2 level P.S.D. 5705MHz): -53.76dBm/Hz = 6.24 dBm/MHz Pass 0.76dB margin
Max conducted power limit [7dBm]+10log(23.102) = 20.637 dBm

(2 level P.S.D. 5705MHz): -60.17dBm/Hz = -0.17 dBm/MHz Pass 0.67dB margin
Max conducted power limit [0.5dBm]+10log(23.102) = 14.137 dBm

(2 level P.S.D. 5705MHz): -67.05dBm/Hz = -7.05 dBm/MHz Pass 1.05 dB margin
Max conducted power limit [-6dBm]+10log(23.102) = 7.637 dBm

4level F3



A1 A2 A3

(4 level P.S.D. 5705MHz): -54.21dBm/Hz = 5.79dBm/MHz Pass 1.21dB margin
Max conducted power limit [7dBm]+10log(24.82) = 20.948 dBm

(4 level P.S.D. 5705MHz):-60.50dBm/Hz = -0.5dBm/MHz Pass 1.00dB margin
Max conducted power limit [0.5dBm]+10log(24.82) = 14.448 dBm

(4 level P.S.D. 5705MHz): -67.06dBm/Hz = -7.06dBm/MHz Pass 1.06dB margin
Max conducted power limit [-6dBm]+10log(24.82) = 7.948 dBm

Test results show the cyclone 5450 has 0.67dB margin worst case across the band at 5705MHz.