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Theory of Operation
TZ7110-MINI-PCI

The Tzero TZ7110 Mini-PCI card is an evaluation platform intended for testing wireless video streaming applications. The board employs a mini-PCI interface, and contains a chipset containing a radio chip, the *TZ7110* and a baseband/MAC chip, the *TZ7120*. The standard evaluation platform uses a Windows XP driver, a GUI-based evaluation software tool, and an omni-directional antenna with nominally 0 dBi gain.

The TZ7110 Mini-PCI card implements the WiMedia/MB-OFDM PHY 1.0 specification for Band Group 1, which occupies a frequency range between 3168-4752 MHz. Band Group 1 is in turn sub-channelized into three 528 MHz bands, with center frequencies of 3432 MHz, 4488 MHz, and 4752 MHz. This is illustrated in Figure 1.

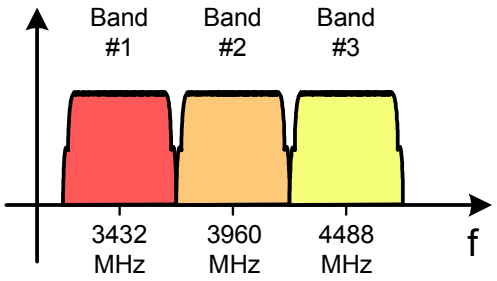

Figure 1. WiMedia/MB-OFDM Band Group 1

This specification employs Orthogonal Frequency Division Multiplexing (OFDM) modulation with 128 carriers and a carrier spacing of 4.125 MHz. The symbol length is 312.5ns. The bandwidth of the signal is above 500 MHz. There are both hopping and fixed frequency channels, known as Time-Frequency Codes (TFC). The fixed frequency channels occupy a single 528 MHz band, there is one channel for each of the three bands. The hopping channels hop on each symbol boundary through all three bands. There are four hopping sequences, each with a period of 6 symbols, for example, Band 1-Band 2-Band 3-Band 1-Band 2-Band 3. This makes a total of 7 TFCs: the hopping TFCs are labeled 1-4, the fixed frequency TFCs are labeled 5-7. The TZ7110 Mini-PCI card implements WiMedia/MB-OFDM PHY data rates ranging from 53.3 – 480 MBPS with packet sizes up to 4095 bytes.

The transmit power of the TZ7110 Mini-PCI card is limited to an EIRP of -41.3 dBm/MHz average power. The nominal channel power is -10 dBm for hopping channels and -15 dBm for fixed frequency channels. As the hopping channels use 3x the bandwidth, they employ 3x or 4.7 dB higher integrated channel transmit power than the fixed frequency channels.