



# ITC 2011

## C-Band Special Session

### C-Band Vendor Products

**QUASONIX**

Terry Hill

October 26, 2010

Bally's

Las Vegas, NV



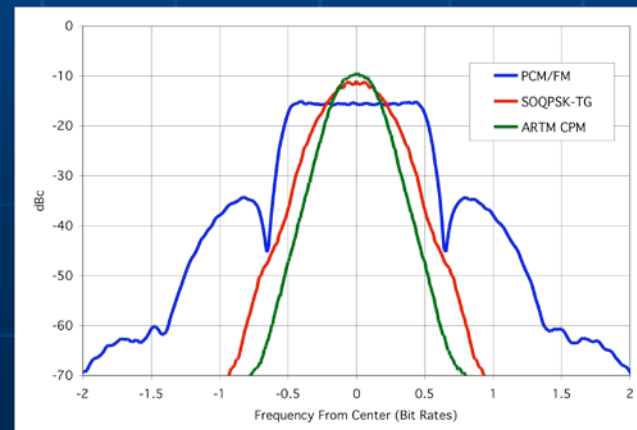
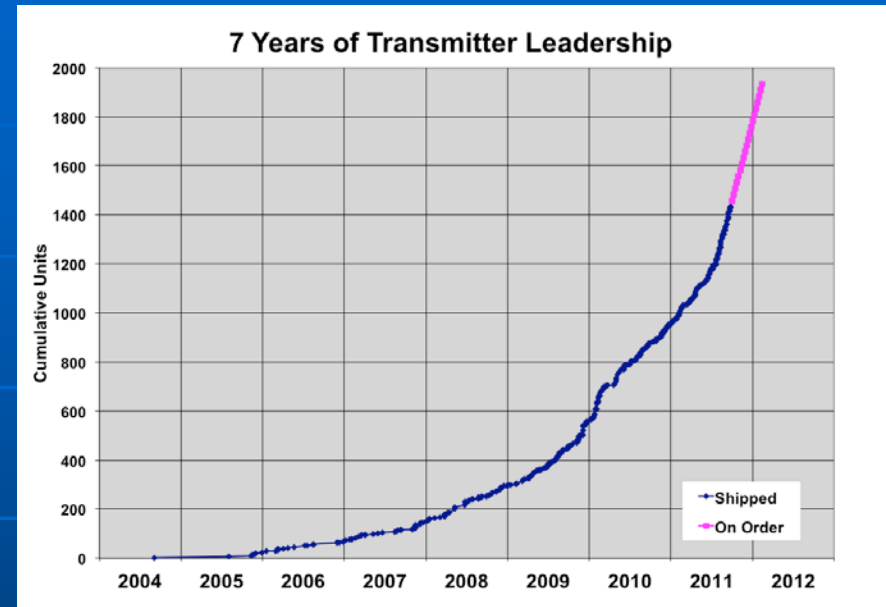
- Founded in 2002 by Terry Hill
  - Founder, President, and Chief Scientist of L3 Nova Engineering, 1989-2002
  - Invented SOQPSK in 1999, first published at ITC 2000
  - Introduced first-generation ARTM transmitters and demods
- Focused exclusively on aeronautical telemetry products
  - Transmitters
  - Receivers
  - Demodulators
- Providing TM hardware to both DoD and major primes
- OEM provider to numerous telemetry vendors





# Quasonix Transmitters

- 10 mW, 1, 2, 5, 10, or 20 watts
  - 32 power settings, spanning a 24 dB range.
- All ARTM waveforms
  - Tier 0, I, and II
- All TM bands
  - Lower L band (1435.5 to 1534.5 MHz)
  - Upper L band (1750.0 to 1855.0 MHz)
  - S band (2200.5 to 2394.5 MHz)
  - C band (4400.0 to 5150.0 MHz)
- Variable Bit Rate
  - Up to 46 Mbps in SOQPSK and Multi-h CPM
  - Up to 23 Mbps in PCM/FM.
  - Automatically scale both the premod filter bandwidth and deviation to be correct at any bit rate.
- Flight qualified
  - Five times since 2004
- Numerous options
  - Clock-free
  - Variable power
  - Forward Error Correction
- Over one billion models





# C-Band Transmitters

(4400.0 – 4940.0 MHz, 5091.0 – 5150.0 MHz )

- Shipping since mid-2010
- C-Band Output Power of 5, 10, or 20 watts
  - *Several RF output choices, along with variable power and dual power options for software or hardware based power adjustment*
- Compact Package
  - *At only 7.8 in<sup>3</sup> (2" x 3" x 1.3"), the 20W C-Band transmitter delivers an astounding 2.6W/in<sup>3</sup>*
- Exceptional DC-to-RF Conversion Efficiency
  - *The 20W C-Band transmitter draws under 3.0 A typical*
- S & C Band Configuration
  - 2200.5 MHz – 2394.5 MHz
  - 4400.0 MHz - 4940.0 MHz
  - 5091.0 MHz – 5150.0 MHz
- Continuous Tuning Configuration
  - 400.0 MHz to 5250.0 MHz
  - 10 mW output



# Quasonix Receivers

## ■ 11 Demodulators in ONE Package

- *Trellis Tier 0 (PCM/FM) with modulation index tracking, Trellis Tier I (SOQPSK), Trellis Tier II (Multi-h CPM), BPSK, QPSK, OQPSK, UQPSK, AQPSK, AUQPSK, Digital PM, & Analog FM*
- *Integral bit sync in all modes*

## ■ 5 Bands in ONE Package

- *400.0 MHz – 1150.0 MHz*
- *1435.5 MHz – 1534.5 MHz*
- *1750.0 MHz – 1855.0 MHz*
- *2200.5 MHz – 2394.5 MHz*
- *4400.0 MHz – 5250.0 MHz*

## ■ Up to 5 dB Improvement in PCM/FM BER

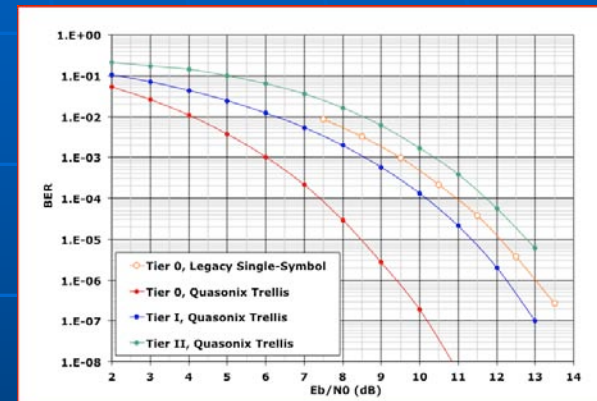
- *Improves BER performance by up to 5 dB over the best single-symbol demodulators, to within 0.2 dB of the theoretical limit*

## ■ Modulation Index Tracking for PCM/FM

- *Optimal BER performance even if the signal's modulation index is off by -50% to +1000%, relative to  $h = 0.7$*

## ■ Lowest Noise Figure

- *Typical 3.5 dB noise figure bests all other ARTM receivers on the market*



# Airborne C-band Receiver

- Complete Receiver – RF in, clock and data out
  - Downconverter – 5 bands in ONE unit
    - 400.0 MHz – 1150.0 MHz
    - 1435.5 MHz – 1534.5 MHz
    - 1750.0 MHz – 1855.0 MHz
    - 2200.5 MHz – 2394.5 MHz
    - 4400.0 MHz – 5250.0 MHz
  - Demodulators – 11 modes in ONE unit
  - Integral Bit Sync
  - Only 12 in<sup>3</sup>
    - 4" x 3" x 1"



# Rack Mount Receiver

- Up to 4 Receivers in a 1U Chassis
  - *The rack mount receiver can be configured with 1, 2, or 4 receivers*
  - ***Utilizes airborne receivers inside the 1U chassis***
- Diversity Combiner
  - *Digitally-implemented pre-detection diversity combiner available for dual or quad rack mount receiver*
- Remote Client
  - *Ethernet-based application. Intuitive layout with all primary control and monitoring functionality for Channel 1, Channel 2, and Combined Channel in one window*





# C-Band Products

QUASONIX

COME SEE US IN  
BOOTH # 105