IDT
Integrated Device Technology

Compression IP for
Wireless Infrastructure Applications

KEY FEATURES

- IP can be deployed in ASIC or FPGA with small footprint
- Based on multiple protected patents worldwide
- GSM, WCDMA and LTE support
- Compression ratios 1.5:1 to 3:1 range
- EVM Performance 0.5% to 3% for typical 3G and 4G wireless signals
- Microsecond level latency @ 307.2 MHz
- High Performance IP core supporting uncompressed data rate up to 9.8304 Gbps
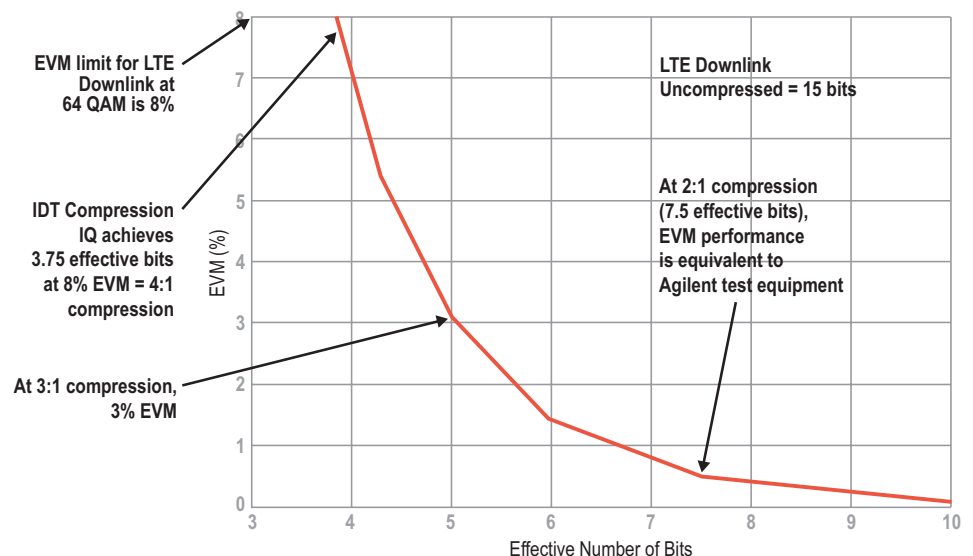- Common FPGA clock rates of 61.44 MHz and 153.6 MHz and 307.2 MHz for ASIC

BENEFITS

- **Green Network Deployment**
- Allows deployment of C-RAN and other network topologies at low cost and low network level power with twice the compression performance of others in the industry
- Compression technology applicable to IQ Samples over various protocols (e.g., Wireless Front-haul, CPRI Link etc.) in BTS designs, allowing higher data rates to be transmitted over existing low cost infrastructure
- **CAPEX**
- Reduces the number of fiber optic links required between the Baseband processing resources and the RRH, saving both fiber optic transceiver cost and fiber optic cost
- Enables reduction in the cost of the "Remote Radio Head" (RRH)
- Reduces the number and link rate of the SerDes required for a given bandwidth thus enabling lower cost FPGA implementations between the Baseband processing block and the Radio Card
- **OPEX**
- Reduces Operating Expense (OPEX) of using DWDM infrastructure to connect LTE units to centralized baseband units by reducing the number of links required to carry the same bandwidth
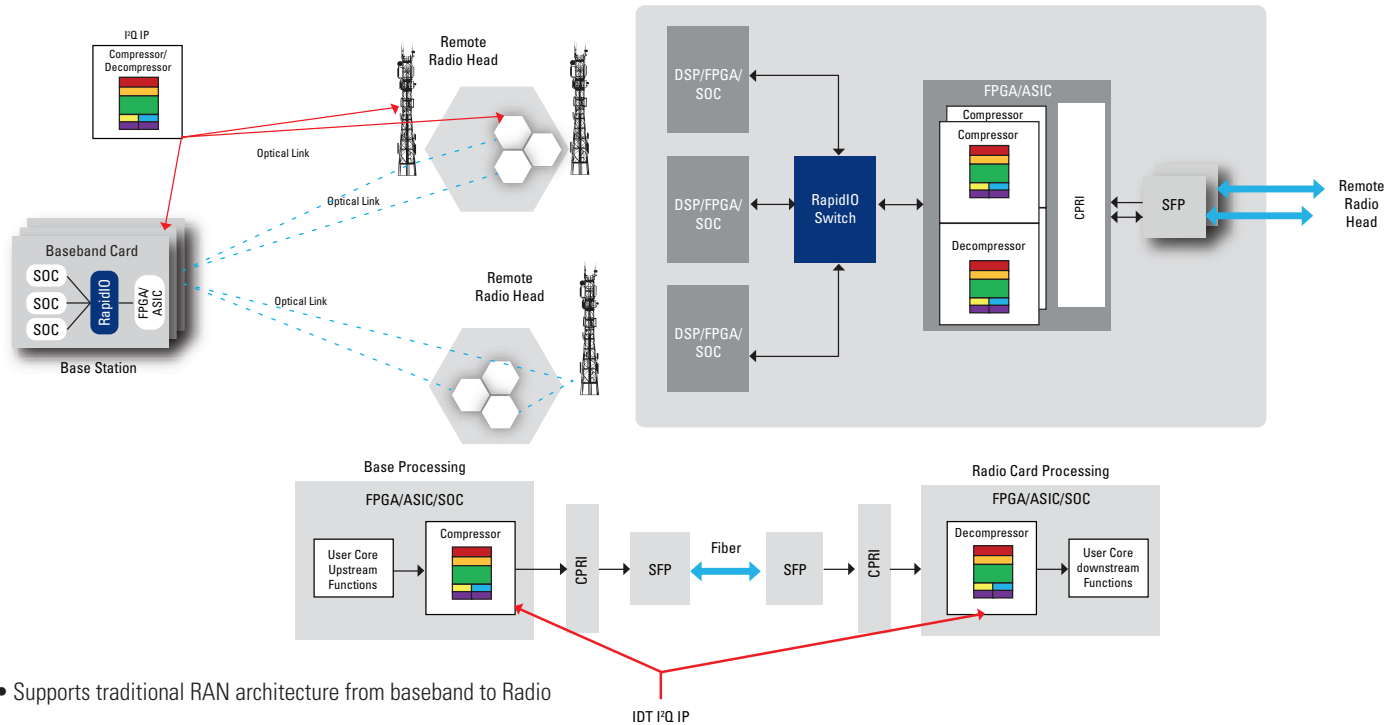
Compression IP is used to put more data into a given fiber or microwave "link" in wireless systems. Using Compression a higher data rate can be transmitted on lower speed links which are generally cheaper. This is a goal across the industry but few have achieved. When compressing data, some signal quality is lost. Based on its patented technology, IDT has proven that it can do compression with very little loss of signal quality.

Compression is used to compress data in wireless systems on the link between the Remote Radio Unit and the Baseband Card (both wired over CPRI and CPRI over wireless front haul). IDT is the first company offering commerical IP that can support GSM, WCDMA, and LTE signals at full CPRI data rates, keeping high signal quality at compression rates up to 3:1.

Compression IP makes wireless C-RAN architectures more viable by allowing RRHs to be placed remote from Baseband Pools connected with low cost fiber, saving large amounts of money at the system level. IDT Compression dramatically changes the overall cost of system deployment.

EVM limit for LTE Downlink at 64 QAM is 8%

IDT Compression IQ achieves 3.75 effective bits at 8% EVM = 4:1 compression

At 3:1 compression, 3% EVM

LTE Downlink Uncompressed = 15 bits

At 2:1 compression (7.5 effective bits), EVM performance is equivalent to Agilent test equipment

Compression IP for Wireless Infrastructure Applications

POWER MANAGEMENT | ANALOG & RF | **INTERFACE & CONNECTIVITY** | CLOCKS & TIMING | MEMORY & LOGIC | TOUCH & USER INTERFACE | VIDEO & DISPLAY | AUDIO
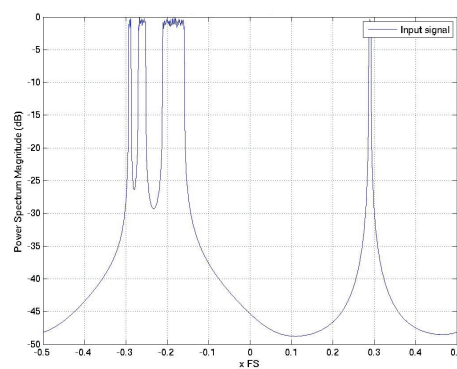
I²Q USE CASE: 3G/4G BTS-RRH

- Supports traditional RAN architecture from baseband to Radio

- Supports emerging C-RAN architecture with distributed Radio Unit

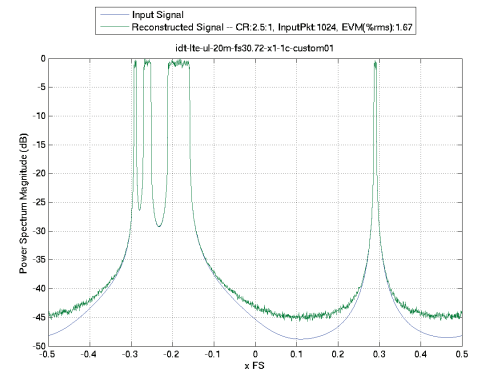- Significantly reduces TCO in wireless network infrastructure deployment.

TYPICAL PERFORMANCE WITH LTE UPLINK SIGNAL: COMPRESSION RATIO 2.5:1, AVERAGE EVM (%RMS): 1.67

INPUT SIGNAL SPECTRUM

OUTPUT SIGNAL SPECTRUM

I²Q Chronos Mode Demonstration				
Signal	**Parameters**		**Performance**	
	Bandwidth (MHz)	Sample Rate (Msps)	Average Compression Ratio	Average EVM (%RMS)
LTE	20	30.72	2.5:1	1.67

Discover what IDT know-how can do for you: www.IDT.com