

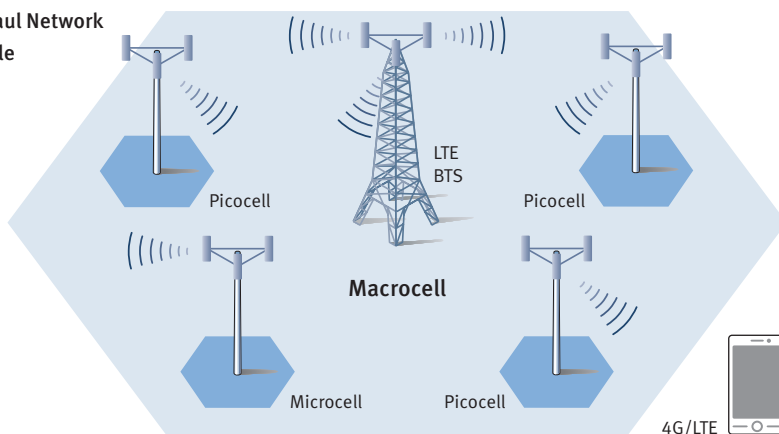
Product Brief

One-chip packaged RF Solution for E-band Radio Backhaul Transceiver Chipsets – BGT70 and BGT80

Mobile communication and especially LTE (4G) is gaining momentum these days due to the fact that all big carriers and mobile phone manufacturers are investing in the 4th generation ecosystem. The primary challenge facing this ecosystem is the fact that LTE will further enhance video and data exchange to a maximum, allowing everybody to send their latest holiday pictures and videos to friends. The bulk of today’s base station infrastructure is not equipped to support the required high data throughput.

The connection between the base station has up to now been planned for lower data rates (< 100MBit/s) and now needs increased capacity. This is where wireless backhaul technology comes into play. A solution using wireless backhaul in the E-band (71–76GHz and 81–86GHz) will enable the 10GHz frequency to support higher data rates. This enables data rates > 1Gbit/s for video and data services, sufficient for LTE.

Backhaul Network Example



Characteristics of different Base Station Sizes

Base Station	Picocell	Microcell	Macrocell
Range	10–200m	200m–2km	1–30km
No. of users	8–32	64+	200+
Typical application	SMB, enterprise, public indoor areas	Metro outdoors, city centers, capacity hotspots	Outdoor coverage
Deployment scenario	Enterprise or operator deployed	Operator deployed	Operator deployed

BGT70, BGT80 Features

Target Feature Details

- Developed for telecommunication only
- Support FDD and TDD systems (in full duplex or half-duplex mode)
- Support modulation schemes: QPSK, QAM
- Support small cell backhaul (up to 1000m)
- Support Macrocell backhaul (external PA needed depending on output power requirement)
- Direct conversion I/Q transceiver
- IF bandwidth 1000MHz
- Differential RF/IF interface for lower loss and better isolation
- Integration of VCO (Voltage Controlled Oscillator) signal generation
- PNssb (Phase Noise single side band) < -80dBc/Hz @ 100kHz offset
- 10dBm linear output power (sufficient for small cells)
- 7dB NF (Noise Figure)
- Integrated power detection function
- Integrated thermal sensor
- eWLB (embedded Wafer Level Ball Grid Array) packaged device

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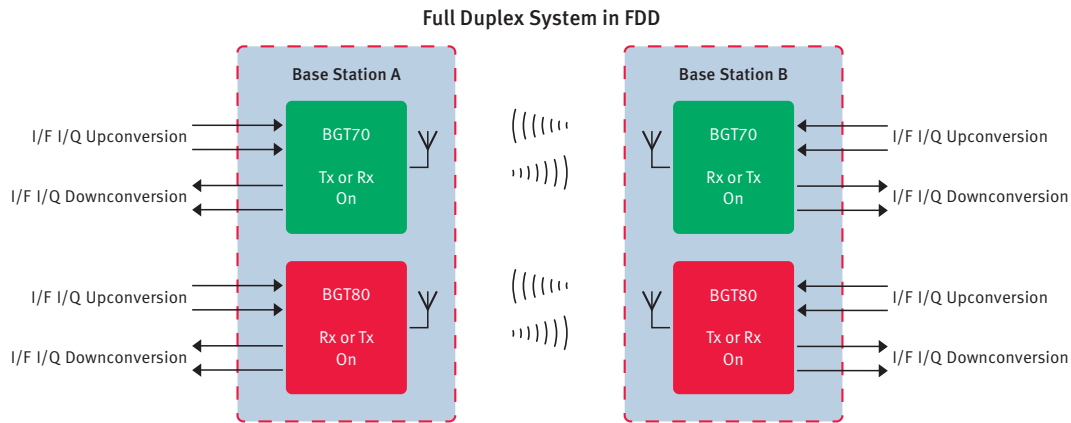
The Infineon business approach enables such a Gbit service with the latest technology. Thanks to Infineon’s advanced SiGe (Silicon Germanium) technology with a transit frequency of 200GHz, we can integrate all RF (Radio Frequency) building blocks – such as Power Amplifier (PA), Low Noise Amplifier (LNA), Mixer, Programmable Gain Amplifier (PGA), Voltage Controlled Oscillator (VCO) – into a single chip.

This technology is already proven and fully qualified for Infineon Millimeter and Microwave chipsets (e.g. 77GHz automotive radar).

Furthermore, Infineon houses this single-chip in a plastic package which makes a major difference to the market. Up to now, solutions have been bare die and require expensive tools and equipment to build up a radio system. With the Infineon packaged chipset, customers can save money and reduce the time-to-market significantly.

The E-band chipsets consists of a transceiver for 71–76GHz (BGT70) and a transceiver for 81–86GHz (BGT80), housed in an eWLB (6 x 6mm²) package.

E-Band FDD



Benefits

- Packaged solution, easy to use and standard SMT flow for mounting on customer system
- Highly integrated RF transceiver requiring no external RF discreties, thereby simplifying the customer design and time-to-market
- Architecture of Direct Conversion Zero IF eases interface to latest modem/BB designs (no external filter)
- A transceiver approach with implemented BIST (Built-In Self-Test) on the chip to enable RF testing at Infineon production
- Family concept (common architecture, package, pinning) simplifies customer designs due to modular approach

Two Transceiver Chips Solution

- BGT80 for the **High Band**, 81–86GHz
- BGT70 for the **Low Band**, 71–76GHz
- BGT70 have identical pinning and same footprint as BGT80
- Channel, Tx or Rx, selection via SPI
- Sufficient isolation between the two channels (70 and 80GHz)

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