



## RTX1290

2.4GHZ ISM MODULE  
W. OPTIONAL SHEERSOUND™  
**PRODUCT SHEET**

The RTX1290 is a compact, power-efficient, low latency wireless communication module. It is ideally designed to add HD audio and light data capabilities to semi-professional and professional audio devices e.g. wireless microphones, instruments, and gaming peripherals.

# HIGH-PERFORMANCE 2.4GHZ MODULE

The RTX1290 2.4GHz ISM module has been created with the objective of supporting professional and semi-professional wireless audio devices e.g. microphones, instruments, and gaming peripherals. The module enables customers to develop a high-performance end-to-end solution, without having extensive knowledge of radio technology.

## STANDARD, SMALL FORM FACTOR

The RTX1290 makes compact solutions possible. The module shares form factor and is footprint compatible with the RTX1090 DECT module (15.4 x 21.6 mm), allowing reuse of designs and even applications for multiple radios.

## A LOOK INSIDE

The RTX1290 is based on the Dialog Semiconductor DA14195 baseband chip, a Nordic nRF52810 transceiver and includes RF power amplifier, antenna diversity, and 32 Mbit flash memory as standard storage (16 or 64 Mbit is optional). Due to the powerful Tensilica DSP core of the baseband chip, the RTX1290 can support two HD audio channels using the RTX Sheersound Codec. The Sheersound codec can deliver SNR up to 89dB, has a dynamic range of up to 128dB, and a frequency response from 10Hz to 22kHz.

## SECURITY

The RTX1290 supports AES128 encryption, allowing the connection a high level of security.

## RESILIENT RADIO

Radio spectrum is a limited resource and the 2.4GHz ISM band is crowded with Wi-Fi networks and Bluetooth devices. Having multiple wireless systems to operate in close proximity to each other often cause interference or blocking. Thus, for a reliable connection, the RTX1290 module supports antenna diversity and along with the RTX 2.4GHz proprietary protocol, it also supports utilization of channel diversity and retransmission schemes. These three features can all be combined, allowing the best compromise between radio resilience and latency. The total latency ranges from 2ms and up, depending on the configuration.

## POWER EFFICIENCY

The RTX1290 is designed for power efficiency, which makes the module an obvious choice for products that require low power consumption.

## END-TO-END SOLUTION W. ONE MODULE

Using the RTX1290 module, an end-to-end solution can be designed without any host controller. With a standard RTX firmware, the module only requires a motherboard with antenna(s) and a basic power supply.

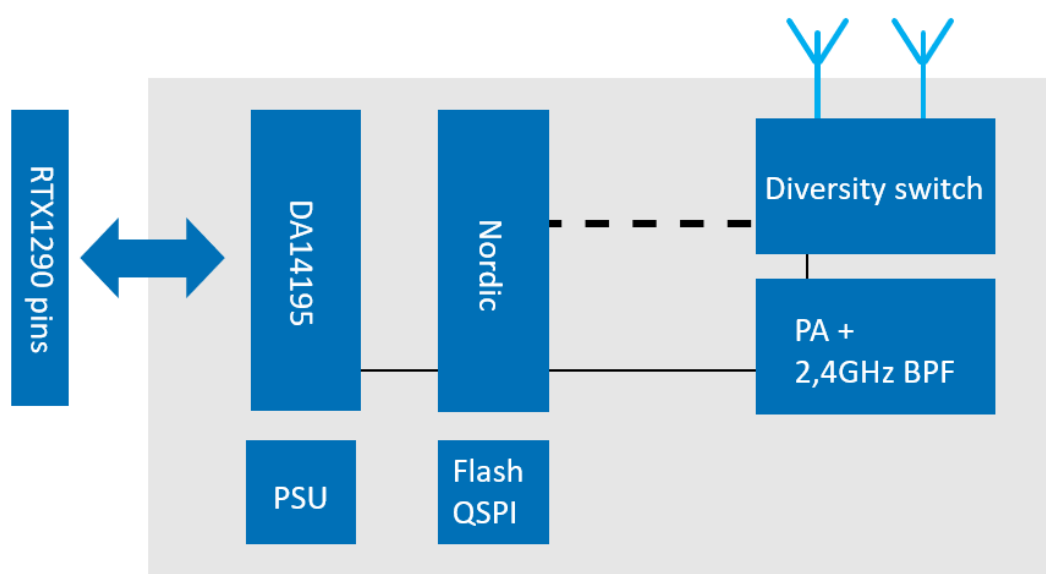


Figure 1: RTX1290 module components

# APPLICATION EXAMPLES

The RTX1290 module is primarily targeted Pro Audio products and gaming peripherals i.e. products that require HD audio and low latency. Due to its flexibility, the RTX1290 module can be used for a large range of high-end wireless applications.

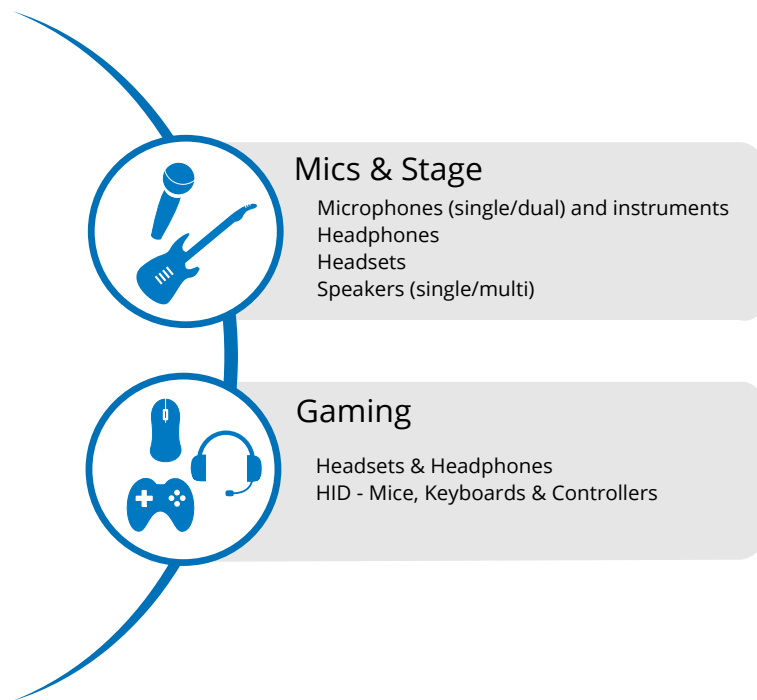


Figure 2: RTX1290 application examples

## MANUFACTURING INTEGRATION

The RTX1290 modules are delivered pre-tested on Tape & Reel and can be flash-loaded with a dedicated firmware in any manufacturing facility. The firmware is either a derived configuration of one of our standard platforms<sup>1</sup> or a more tailored design, created to match your exact requirements.

Having the programming done in the manufacturing gives maximum flexibility and ability to immediately adapt to changing market needs, which simplifies logistics to the benefit of product manufacturers. The module has a variety of external interfaces and is built to relieve design efforts by minimizing the need for external components.

A list of the interfaces can be found in the technical specifications.

An evaluation board is available with full pin-out exposed on connectors as well as add-on codec board. This minimizes the effort when building Proof-of-Concept prototypes early in the design process.

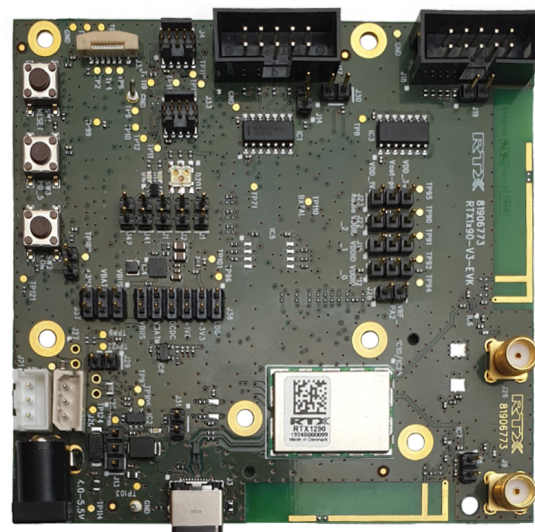


Figure 3: RTX1x90EVK mounted with RTX1290

<sup>1</sup>For more information on RTX standard platforms and Sheerlink™ go to [www.rtx.dk](http://www.rtx.dk)

# TECHNICAL SPECIFICATIONS

SUPPORTED COMPLIANCE	SPECIFICATIONS
PROTOCOL*	<ul style="list-style-type: none"><li>2.4 GHz ISM band (2.4 - 2.4835MHz)</li><li>Proprietary, low latency protocol.</li></ul>
EU STANDARDS*	<ul style="list-style-type: none"><li>Radio: ETSI EN 300 328 V2.2.2:2019</li><li>EMC: ETSI EN 301 489-1 V2.2.3:2019, ETSI EN 301 489-6 V2.2.1:2019</li><li>Safety: EN 62368-1:2020 + A11:2020</li><li>RoHS: 2011/65/EU + 2015/863/EU (the RoHS Directive)</li></ul>
US STANDARDS*	<ul style="list-style-type: none"><li>Radio &amp; EMC: FCC part 15.247</li></ul>
FEATURES	SPECIFICATIONS
SIMULTANEOUS CONNECTIONS*	<ul style="list-style-type: none"><li>Up to 8</li></ul>
SUPPORTED AUDIO CODECS AND FEATURES*	<ul style="list-style-type: none"><li>Sheersound™ (160-212 kbit/s)</li><li>G722 (64 kbit/s voice service)</li><li>ADPCM G726 (32kbit/s voice service)</li><li>CELT 4.0</li><li>PAEC 6.0</li></ul>
STANDARD SOFTWARE PACKAGES AVAILABLE*	<ul style="list-style-type: none"><li>Sheerlink™: Pro Audio, wireless microphones, instruments, headsets, and headphones</li></ul>
EXTERNAL INTERFACES*	<p>DIGITAL INTERFACES</p> <ul style="list-style-type: none"><li>USB 2.0 HS/FS Device/Host MAC/PHY with DMA</li><li>28 I/O pads with state retention and slope control</li><li>Dual UART full duplex 9.6 kBd to 812.5 kBd with FIFO and DMA support</li><li>Dual SPI+™ interface 20.736 MHz (master/slave)</li><li>I2C interface 100 kHz, 400 kHz, 1.152 MHz (M/S)</li><li>Dual PCM+ interface, M/S, 2 x 32 bits, 196 kHz, I2S</li><li>Three stereo PDM I/O for digital microphones</li></ul> <p>ANALOG INTERFACES</p> <ul style="list-style-type: none"><li>2 input 10-bit ADC, single-ended/differential</li></ul>
GENERAL DATA	SPECIFICATIONS
PHYSICAL CHARACTERISTICS	<ul style="list-style-type: none"><li>15.4 x 21.6 mm</li><li>Single-sided PCB assembly</li><li>LGA mounting</li></ul>
SUPPLY RANGE	<ul style="list-style-type: none"><li>1.9V – 5V (battery operation)</li><li>Built-in charger, supporting standard battery types with charge current up to 400mA and temperature protection (built in NTC required)</li></ul>
POWER CONSUMPTION IDLE MODE, TYPICAL* TALK MODE, TYPICAL*	ACTIVE RADIO – MINIMUM VALUES <ul style="list-style-type: none"><li>Fixed Part 12 mA / Portable Part 13 mA</li><li>Fixed Part 38 mA / Portable Part 32 mA</li></ul>
ENVIRONMENTAL CONDITIONS	SPECIFICATIONS
OPERATING TEMPERATURE RANGE	<ul style="list-style-type: none"><li>-20 °C to 60 °C</li></ul>
HUMIDITY	<ul style="list-style-type: none"><li>30-95%, non-condensing</li></ul>
ORDERING DETAILS	DESCRIPTION
RTX1290 2G4 MODULE	Contact RTX for more details and offer at <a href="mailto:sales@rtx.dk">sales@rtx.dk</a>

\*Software dependent