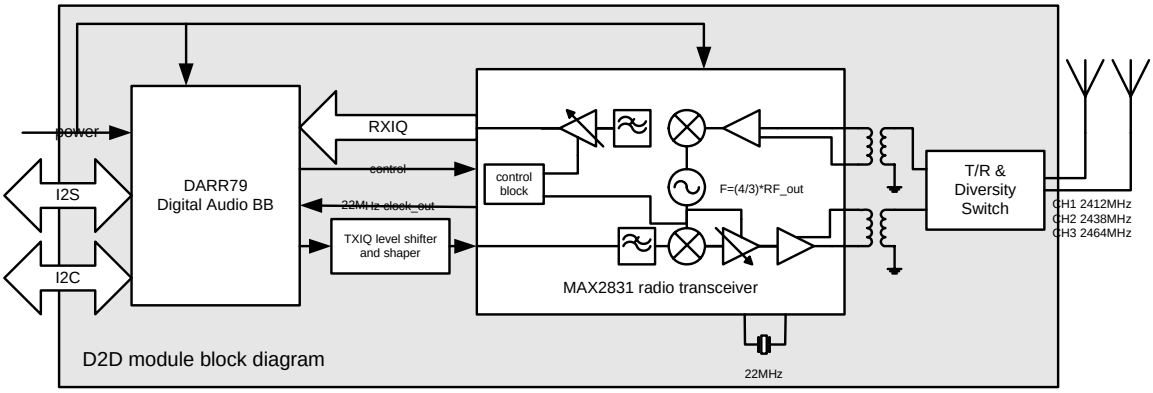
D2D Technical Description for Regulatory Compliance Testing

Product Description

The DWAM79_D2D is an OEM module (42x42mm) based on the STS DARR79 digital audio baseband processor. It is a wireless digital audio transceiver operating in the 2.4GHz ISM band. The wireless audio link supports up to 4 high quality and low latency audio channels in various network topologies. A unique set of protocols and algorithms provides extreme wireless robustness, capable of dealing with multiple interference sources as present in the 2.4 GHz band.
In addition, a wireless bi-directional data channel is available (e.g. to control the volume of the receiver from the transmitter).

The module integrates all functionality for a wireless digital audio connection, comprising:

- Wireless Audio Processor, DARR79
- 2.4 GHz radio
- Embedded or External Antennas
- Dual Antenna Connector
- Digital audio interfaces
- I^2C control interface
- 26 pins interface connector (FFC) for power, digital audio and control interface and GPIOs



The D2D module can basically be regarded as a real time I2S to packetized RF converter.

Description of operation

Receive mode

In receive mode, antenna diversity is supported. The single ended output of the TR switch is connected to the differential RF inputs through a discrete balun. Filtering and amplification is all performed by the radio transceiver. The gain setting is controlled by the BB. The analog IQ outputs are sampled by the BB by its integrated 22Msps dual channel 6b ADC. This received data is demodulated and fed to the audio processing engine controlling the I2S connections.

Transmit mode

In transmit mode, the audio engine controlled by I2S, transforms the audio data into packetized digital IQ signals that are in turn are amplitude attenuated and DC level shifted to match the radio inputs. Also the harmonics are filtered before feeding to the direct conversion upconverter radio IC. This radio IC has programmable baseband filters to lower the RF spectrum side lobes. The output power is programmable. The differential RF PA outputs are connected via a discrete balun to a transmit/receive switch with TX diversity option to the antenna outputs.

Clock and synthesizer frequencies

The main crystal is connect to the radio IC crystal oscillator. This in turn buffers this 22MHz crystal and feeds it to the BB.

The RF oscillator runs at 4/3 times the programmed RF output frequency. In standard configurations, the D2D module runs at the following frequencies:

Channel	RF frequency	VCO frequency
1	2412	3216
2	2438	3250.67
3	2464	3285.33