Theory of Operation/Technical Description –

This should be a Short descripton how the device operates
For the first 3 items, please refer also to the elements shown in the block diagram

It is necessary that the Operation/Technical Description is submitted as a separate PDF document.

It must be on Company Letterhead and it must either show the Model Number as on the label, or preferably the FCC ID.

(It may be held confidential if included in Confidentiality Request.)

Theory of Operation/Technical Description – FCC ID: 2A2OT-MMT1211

- **RF circuit function:**

The AB1611 RF transceiver is a 2.4GHz-band transceiver for Bluetooth data applications. There are three primary functions – transmitter, receiver, and synthesizer. The Baseband Processing Unit supplies the control signals for these functions.

Receiver

The AB1611 RF receiver contains two parts: An RF front-end and an IF part. The RF front-end contains an LNA and an RF mixer, and an IF Mixer. The F part contains a complex filter (CPX) and a low-pass filter (LPF) for out-band filtering.
The LNA input uses the same RF ports as the TX output. The RX front-end gain can be adjusted, and thus reduces the probability of bit errors caused by a poor signal-to-noise ratio. The LNA is followed by an RF mixer and an IF mixer that down-converts the RF signal to the IF band.
During the IF process, the down-converted signal is filtered by CPX and LPF and is then sent to the ADC for demodulation. The 3dB bandwidth of the LPF can be adjusted via the RF registers. The RX front end provides more than 80dB gain control range.

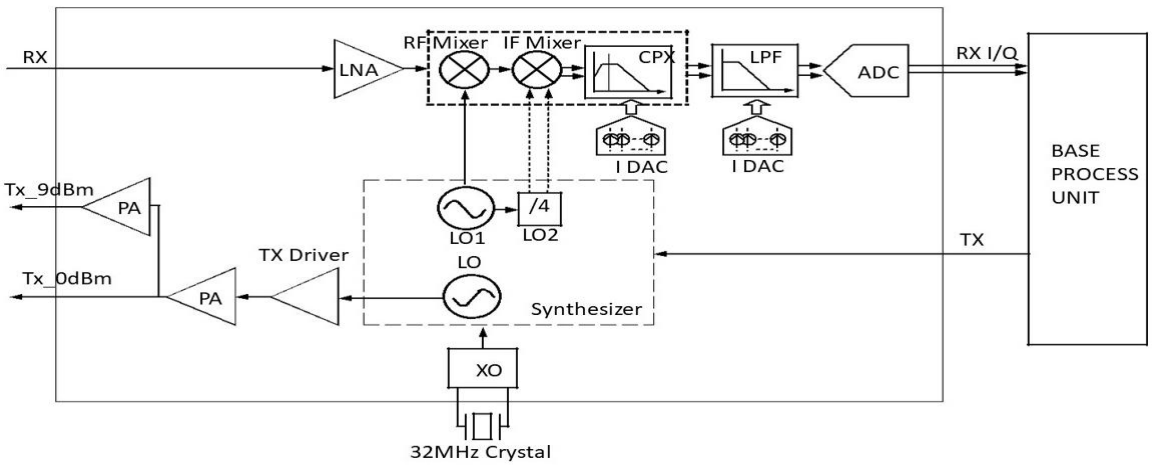
Transmitter

The AB1611 RF transmitter contains a synthesizer, a TX driver, and a TXPA stage. The TX baseband signals are fed from the digital baseband and the synthesizer is used to synthesize the channel frequency and directly convert the baseband signal to an RF modulation signal. The TX driver and TX PA amplify the output power to the necessary level.

Synthesizer

The AB1611 features a fractional-N synthesizer with an embedded VCO and loop filter without the need for external components. It also integrates an internal crystal oscillator. Only an external 32MHz crystal (mounted on MMT1211) is necessary

RF signal flow:



- Description of Antenna system (Baluns, Multiplexers)

2.4GHz Chip antenna, 2450AT18B100E/2450AT18A100E is used from Johnson Technology

- Show compliance with 15.203 antenna requirements:

The product is as per Compliance with 15.203 with no connector available for external antenna apart from what mounted on product same can be observed in DUT images (w/o shielding CAN)

- Description of all modulation schemes used in the product:

GFSK technique is used for modulation supporting 2Mbps of data rate