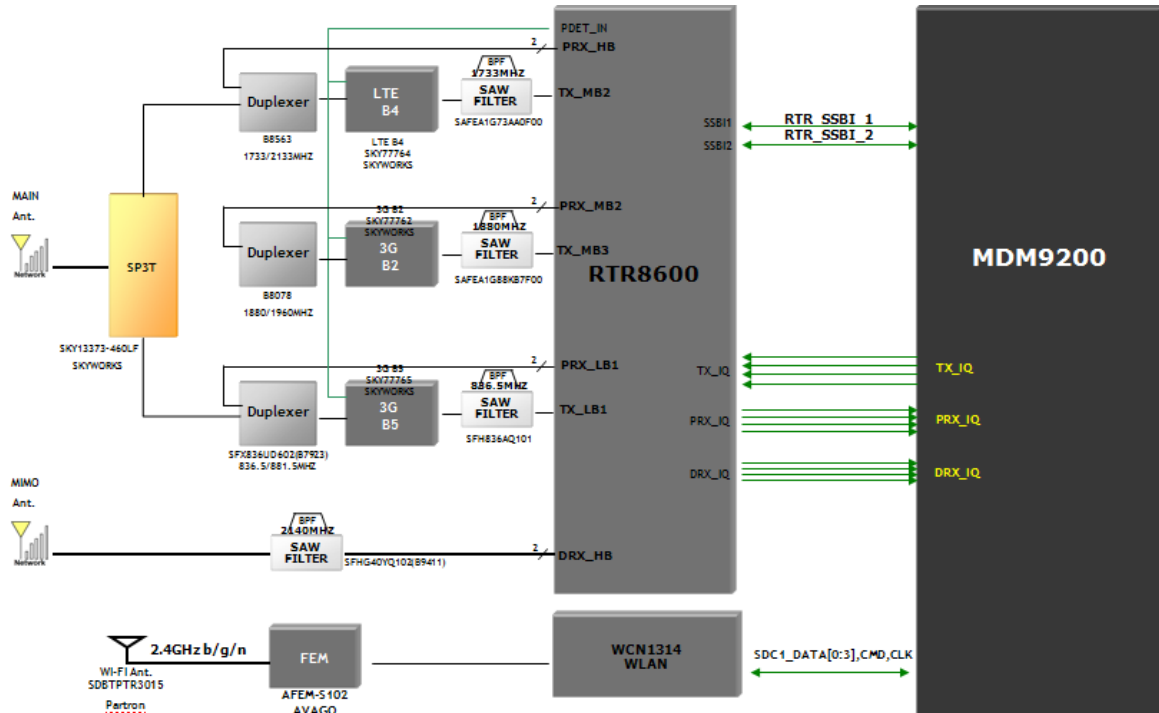
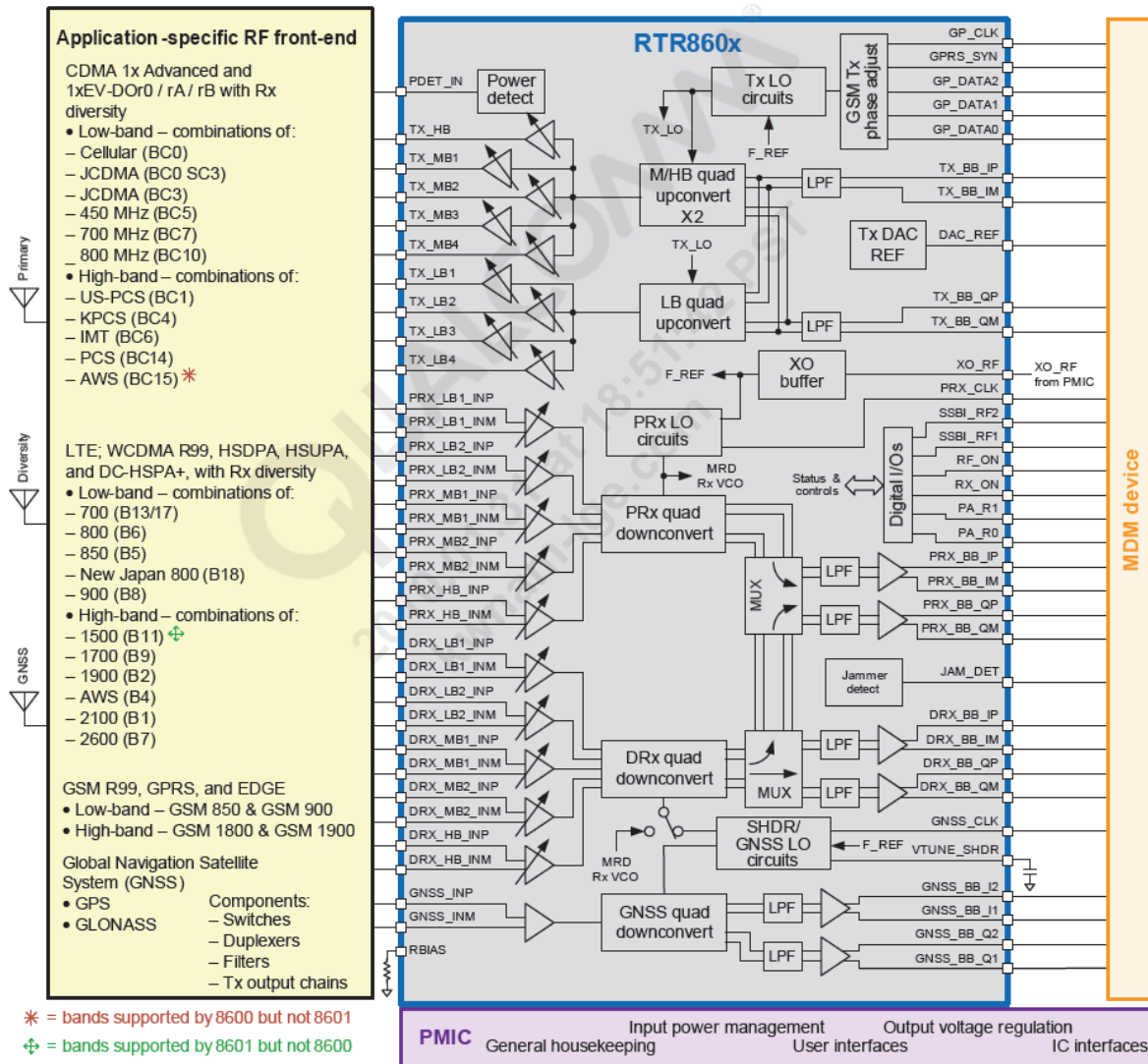


# Circuit Description

- UMTS/LTE/WLAN Block Diagram





## 6. Operating Instruction Book

- UMTS/LTE PRx : Main antenna receives B2, B4, B5 signals. SP3T induces signals to each path according to control signals from MDM9200. Duplexer filters out of band noise out. Inside RTR8600, signals are amplified through LNAs. Down converter changes RF signal to almost zero frequency signal. Digital filter throws away double frequency product component made by down converter. ADC changes analog signal to digital signal sent to MDM9200. Inside MDM9022, digital signal is demodulated.

- LTE DRx : Almost same as Primary receiver except front end filter instead of Duplexer to purify signal from out band noise. DRx circuit is physically different from PRx circuit.

- UMTS/LTE Tx : From MDM9200 modulated digital signal is outputted to RTR8600. Inside RTR8600, digital signal is changes to analog signal via DAC. Up Lo converter makes low frequency

signal to RF frequency. Digital filter eliminates double frequency product signal made from up converter. Driver amplifier makes signal bigger to be sent out. Tx RF filter removes out band noise made by driver Amp. PAM amplifies signal enough to compensate Duplexer and antenna loss. Duplexer skirt out noise made from PAM. Antenna converts conducted signal to radiated signal.

- UMTS/LTE Power Detection circuit : Inside UMTS/LTE PAMs, there are RF Tx power detectors. RF detected signal is sent to RTR8600 and converted to digital signal. Digitized signals are sent to MDM9200 to be used in control of power strength initial stage.

- VCTCXO : Makes 19.2MHz for reference frequency for UMTS/LTE up/down converters.

- WLAN TRx : WiFi antenna receives WLAN signal. WLAN FEM control Rx and Tx signal dynamically controlled by MDM9200. Inside WCN1314, LNA amplifies received signal. Down converter changes RF signal to low frequency signal. ADC changes analog signal to digital signal. Digitized signal is sent to MDM9200 and demodulated.

MDM9200 makes modulated signal and send out to WCN1314. Inside WCN1314, DAC makes digital signal to analog signal. Up converter changes low frequency signal to RF signal and send out to FEM. FEM send Tx signal to WiFi antenna in Tx time slot.

- WLAN XO : Generate 19.2MHz reference clock frequency. Different from UMTS/LTE TCXO.

- Memory : Stores compiled source code to NAND region and temporal data to DDR region.

- Power Management : Input from battery or external 5V power supply and output various voltages to MDM, RTR and so on.