Sierra Wireless WP7610
Wireless Modem
Tune-Up Procedure

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The Sierra Wireless WP7610 wireless modem is equipped with radio to support UMTS/HSDPA/HSUPA/HSPA+/LTE technologies. The main antenna/RF port supports the following FCC regulated bands, maximum output power levels and factory tolerances:

Band		**UL Freq. (MHz)**	**DL Freq. (MHz)**	**Max Power**
LTE	B2	1850 – 1910	1930 – 1990	23 dBm (+1/-3 dB)
	B4	1710 – 1755	2110 – 2155	23 dBm (+1/-3 dB)
	B5	824 – 849	869 – 894	23 dBm (+1.5/-3 dB)
	B12	699 – 716	729 – 746	23 dBm (+1/-3 dB)
	B13	777 – 787	746 – 756	23 dBm (+1/-3 dB)
	B14	788 – 798	758 – 768	23 dBm (+1.5/-3 dB)
	B17	704 – 716	734 – 746	23 dBm (+1/-3 dB)
	B66	1710 – 1780	2110 – 2200	23 dBm (+1/-3 dB)
WCDMA / HSDPA/ HSUPA / HSPA+	B2	1850 – 1910	1930 – 1990	23 dBm (+1/-3 dB)
	B4	1710 – 1755	2110 – 2155	23 dBm (+1/-3 dB)
	B5	824 – 849	869 – 894	23 dBm (+1.5/-3 dB)

The Sierra Wireless WP7610 wireless modem calibration process is a set of RF TX, RX and modulation tests that gather tuning values, which are saved inside each DUT. Each supported band is calibrated separately, and so is each mode.

Calibration equipment consists of an RF signal generator, a power meter and a radio communication test set that combines both. A mechanical fixture holds the DUT in place and is responsible for reliably mating the RF connector of the jig to the DUT. The entire fixture is enclosed in an RF shield box whose purpose is to prevent external RF signals from interfering or contributing to measurements of the DUT's RF. RF shielded cable connecting the instrumentation to the jig is used for the same reason. All of this equipment is mounted in a rack and is known as a Calibration test station.

All TX power measurements made by the instruments must report the power at the DUT's RF connector. This is not the same power that is seen at the test instrument because the RF signal loses power as it travels through the RF cabling between the DUT and instrument, the longer the cable, the greater the decrease. This phenomenon requires us to know how much the cable loss is, and adjust for it during testing. Further test equipment and power meters have their own unique error that is usually too large to be acceptable for calibration. A process known as RF Normalization measures both the RF cable loss and meter inaccuracy values for a test station. These values allow us to calculate the real power at the DUT connector.

The Calibration process is automated, with a host PC controlling both the test equipment and DUT. The PC's Calibration program ensures that the tuning values found are reasonable by applying limits to them, and by running calibration performance tests that get the DUT to use its internal calibration values. If all these tests and limits checks pass then the DUT is shipped to the customer.