

## Tune Up Procedure

**Measurement Procedure:**

1. Set the device to operational voltage and on a predefined channel in a special test mode.
2. The actual output power is measured at several power levels.
3. The gain factors of each individual device are adjusted until the target value is met. The appropriate gain control settings for each output power level are stored in each device individually (for each power level). The user has no possibility to change these settings later on.
4. The maximum gains of each individual device are adjusted and measured until the target value is met. The production target power with tolerance compiles with the maximum power in test report.

**Rated RF power output:**

WLAN (2.4Gband)

Mode	WLAN(AVG)		
Channel	L	M	H
802.11 b	$20 \pm 1\text{mm}$	$23 \pm 1\text{mm}$	$23 \pm 1\text{mm}$
802.11 g	$24 \pm 1\text{mm}$	$24 \pm 1\text{mm}$	$24.5 \pm 1\text{mm}$
802.11 n20-HT0	$23 \pm 1\text{mm}$	$24 \pm 1\text{mm}$	$24 \pm 1\text{mm}$

WLAN (5.2Gband)

Mode	WLAN(AVG)
802.11a	$16 \pm 1\text{mm}$
802.11 n20-HT0	$16 \pm 1\text{mm}$
802.11 n40-HT0	$15 \pm 1\text{mm}$
802.11 ac20-VHT0	$16 \pm 1\text{mm}$
802.11 ac40-VHT0	$15 \pm 1\text{mm}$
802.11 ac80-VHT0	$14 \pm 1\text{mm}$

WLAN (5.3Gband)

Mode	WLAN(AVG)
802.11a	$16 \pm 1\text{mm}$
802.11 n20-HT0	$15.5 \pm 1\text{mm}$
802.11 n40-HT0	$14 \pm 1\text{mm}$
802.11 ac20-VHT0	$15 \pm 1\text{mm}$
802.11 ac40-VHT0	$14 \pm 1\text{mm}$
802.11 ac80-VHT0	$14 \pm 1\text{mm}$

WLAN (5.6Gband)

Mode	WLAN(AVG)
802.11a	17 ± 1mm
802.11 n20-HT0	17 ± 1mm
802.11 n40-HT0	16 ± 1mm
802.11 ac20-VHT0	17 ± 1mm
802.11 ac40-VHT0	16 ± 1mm
802.11 ac80-VHT0	15 ± 1mm

WLAN (5.8Gband)

Mode	WLAN(AVG)
802.11a	17 ± 1mm
802.11 n20-HT0	17 ± 1mm
802.11 n40-HT0	16 ± 1mm
802.11 ac20-VHT0	16.5 ± 1mm
802.11 ac40-VHT0	16 ± 1mm
802.11 ac80-VHT0	15 ± 1mm

BT

Mode	BT(AVG)		
Channel	L	M	H
GFSK	5 ± 1mm	4 ± 1mm	3 ± 1mm
$\pi/4$ -DQPSK	5 ± 1mm	4 ± 1mm	3 ± 1mm
8DPSK	5 ± 1mm	5 ± 1mm	3 ± 1mm

BLE

Mode	BLE(AVG)		
Channel	L	M	H
GFSK	6.5 ± 1mm	6 ± 1mm	5 ± 1mm

Then these appropriate rated RF output power settings are stored in each device individually. The user has no possibility to change these settings later on, and during manufacturing each device will be individual calibrated. The measurement is done in fully calibrated setup, which is based on the base station simulator. Furthermore, the highest power level is verified afterwards in a call measurement on three channels (low, middle and high).