Tune Up Procedure

Tune-up procedure

During manufacturing each device is individually calibrated. Measurement is performed in a fully calibrated setup using an RS CMU200 base station simulator (system tester). Measurement procedure is outlined below:

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.

Maximum Target Power for Production Unit (Burst Average power)

Mode	GSM 850	GSM 1900
GSM (1 Uplink)	31.0±1	28.0±1
GPRS 8 (1 Uplink) CS1	32.0±1	29.0±1
GPRS 10 (2 Uplink) CS1	31.0±1	28.0±1
GPRS 11 (3 Uplink) CS1	30.0±1	25.8±1
GPRS 12 (4 Uplink) CS1	28.0±1	25.0±1

Power unit: dBm

Maximum Target Power for Production Unit (Burst Average power)

Mode	GSM 850	GSM 1900
EGPRS 8 (1 Uplink) CS1	27.0±1	24.0±1
EGPRS 10 (2 Uplink) CS1	26.0±1	23.0±1
EGPRS 11 (3 Uplink) CS1	25.0±1	23.0±1
EGPRS 12 (4 Uplink) CS1	23.0±1	21.0±1

Power unit: dBm

Maximum Target Power for Production Unit(Burst Average power)

Mode	UMTS V	UMTS II
RMC 12.2K	20.7±1	20.0±1
HSDPA Subtest-1	21.0±1	20.0±1
HSDPA Subtest-2	21.0±1	20.0±1
HSDPA Subtest-3	21.0±1	20.0±1
HSDPA Subtest-4	21.0±1	20.0±1
HSUPA Subtest-1	20.0±1	20.0±1
HSUPA Subtest-2	20.0±1	20.0±1
HSUPA Subtest-3	20.0±1	20.0±1
HSUPA Subtest-4	20.0±1	20.0±1
HSUPA Subtest-5	20.0±1	20.0±1

Power unit: dBm

Maximum Target Power for Production Unit (Burst Average power)

Mode	Maximum Target Value
WIFI 802.11 b	10.0
WIFI 802.11 g	13.5
WIFI 802.11 n-20MHz	14.0

Power unit: dBm

Maximum Target Power for Production Unit (Burst Average power)

Mode	Maximum Target Value
Bluetooth BDR (1Mbps)	-6.0
Bluetooth EDR (2Mbps)	-7.0
Bluetooth EDR (3Mbps)	-7.0
Bluetooth 4.0	-9.0

Power unit: dBm

Then these appropriate gain 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 in this range. The measurement is done in a 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).

HSPA Target MPR level

Based on the hardware characteristics and HSUPA measurement error inherent in the 34.121 procedure, the MPR settings are permanently implemented configured into firmware and cannot be disabled by the end user or UMTS carrier network. The following table lists the target MPR level:

HSPA MPR Targets (dB)	
HSDPA 3GPP Subtest	**Band V**
1	0
2	0
3	0.5
4	0.5

HSUPA 3GPP Subtest	**Band V**
1	0.0
2	2.0
3	1.0
4	2.0
5	0.0