

Star Tune up 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.

GSM850		Tune-up
GPRS (GMSK)	1Tx slot	32.00±1.0
	2Txslots	32.00±1.0
	3Txslots	32.00±1.0
	4Txslots	32.00±1.0
EGPRS (8PSK)	1Tx slot	26.00±1.0
	2Txslots	26.00±1.0
	3Txslots	26.00±1.0
	4Txslots	26.00±1.0

GSM1900		Tune-up
GPRS (GMSK)	1Tx slot	29.00±1.0
	2Txslots	29.00±1.0
	3Txslots	29.00±1.0
	4Txslots	29.00±1.0
EGPRS (8PSK)	1Tx slot	25.00±1.0
	2Txslots	25.00±1.0
	3Txslots	25.00±1.0
	4Txslots	25.00±1.0

WCDMA BandII		Tune-up
AMR12.2K		23.00±1.0
RMC12.2K		23.00±1.0
HSDPA	Subtest-1	23.00±1.0
	Subtest-2	23.00±1.0
	Subtest-3	23.00±1.0
	Subtest-4	23.00±1.0
HSUPA	Subtest-1	23.00±1.0
	Subtest-2	23.00±1.0
	Subtest-3	23.00±1.0
	Subtest-4	23.00±1.0
	Subtest-5	23.00±1.0

WCDMA BandIV		Tune-up
AMR12.2K		23.00±1.0
RMC12.2K		23.00±1.0
HSDPA	Subtest-1	23.00±1.0
	Subtest-2	23.00±1.0
	Subtest-3	23.00±1.0
	Subtest-4	23.00±1.0
HSUPA	Subtest-1	23.00±1.0
	Subtest-2	23.00±1.0
	Subtest-3	23.00±1.0
	Subtest-4	23.00±1.0
	Subtest-5	23.00±1.0

WCDMA BandV		Tune-up
AMR12.2K		23.00±1.0
RMC12.2K		23.00±1.0
HSDPA	Subtest-1	23.00±1.0
	Subtest-2	23.00±1.0
	Subtest-3	23.00±1.0
	Subtest-4	23.00±1.0
HSUPA	Subtest-1	23.00±1.0
	Subtest-2	23.00±1.0
	Subtest-3	23.00±1.0
	Subtest-4	23.00±1.0
	Subtest-5	23.00±1.0

Mode	WiFi
Detector	AVG
IEEE 802.11b	17.0±1dBm
IEEE 802.11g	13.0±1dBm
IEEE 802.11n HT20	13.0±1dBm
IEEE 802.11n HT40	9.0±1dBm

Band2				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	22.5	±1.0
		3	22.5	±1.0
		6	22.5	±1.0
	16QAM	1	22.5	±1.0
		3	22.5	±1.0
		6	22.5	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	22.5	±1.0
		8	22.5	±1.0
		15	22.5	±1.0
	16QAM	1	21.5	±1.0
		8	21.5	±1.0
		15	21.5	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	22	±1.0
		12	22	±1.0
		25	22	±1.0
	16QAM	1	21.5	±1.0
		12	21.5	±1.0
		25	21.5	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	±1.0
		25	22	±1.0
		50	22	±1.0
	16QAM	1	22	±1.0
		25	22	±1.0
		50	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	22	±1.0
		38	21.5	±1.0
		75	22	±1.0
	16QAM	1	22	±1.0
		38	21.5	±1.0
		75	22	±1.0

Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
20MHz	QPSK	1	22.5	±1.0
		50	22	±1.0
		100	22	±1.0
	16QAM	1	22	±1.0
		50	22	±1.0
		100	22	±1.0

Band4				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	22.5	±1.0
		3	22.5	±1.0
		6	22.5	±1.0
	16QAM	1	22	±1.0
		3	22	±1.0
		6	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	22.5	±1.0
		8	22.5	±1.0
		15	22.5	±1.0
	16QAM	1	22	±1.0
		8	22	±1.0
		15	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	22.5	±1.0
		12	22.5	±1.0
		25	22.5	±1.0
	16QAM	1	22	±1.0
		12	22	±1.0
		25	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	22.5	±1.0
		25	22	±1.0
		50	22	±1.0
	16QAM	1	22	±1.0
		25	22	±1.0
		50	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	22.5	±1.0
		38	22.5	±1.0
		75	22.5	±1.0
	16QAM	1	22	±1.0
		38	22	±1.0

Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
		75	22	± 1.0
20MHz	QPSK	1	23	± 2.0
		50	22.5	± 1.0
		100	22.5	± 1.0
	16QAM	1	22	± 1.0
		50	22	± 1.0
		100	22	± 1.0

Band5				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	22.5	± 1.0
		3	22.5	± 1.0
		6	22.5	± 1.0
	16QAM	1	22	± 1.0
		3	22	± 1.0
		6	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	23	± 1.0
		8	22.5	± 1.0
		15	22.5	± 1.0
	16QAM	1	22	± 1.0
		8	22	± 1.0
		15	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	22.5	± 1.0
		12	22.5	± 1.0
		25	22.5	± 1.0
	16QAM	1	22	± 1.0
		12	22	± 1.0
		25	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	± 1.0
		25	23	± 1.0
		50	23	± 1.0
	16QAM	1	22	± 1.0
		25	22	± 1.0
		50	22	± 1.0

Band7				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	22.5	±1.0
		12	22.5	±1.0
		25	22.5	±1.0
	16QAM	1	22	±1.0
		12	22	±1.0
		25	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	22.5	±1.0
		25	22.5	±1.0
		50	22.5	±1.0
	16QAM	1	21.5	±1.0
		25	21.5	±1.0
		50	21.5	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	22.5	±1.0
		38	22.5	±1.0
		75	22.5	±1.0
	16QAM	1	22	±1.0
		38	22	±1.0
		75	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
20MHz	QPSK	1	23	±1.0
		50	22.5	±1.0
		100	22.5	±1.0
	16QAM	1	22	±1.0
		50	22	±1.0
		100	22	±1.0

Band12				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	23	±1.0
		3	23	±1.0
		6	23	±1.0
	16QAM	1	22	±1.0
		3	22	±1.0
		6	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	23	±1.0
		8	23	±1.0
		15	23	±1.0
	16QAM	1	22	±1.0
		8	22	±1.0
		15	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	23	±1.0
		12	23	±1.0
		25	23	±1.0
	16QAM	1	22	±1.0
		12	22	±1.0
		25	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	±1.0
		25	22.5	±1.0
		50	22.5	±1.0
	16QAM	1	22	±1.0
		25	22	±1.0
		50	22	±1.0

Band13				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	22.5	± 1.0
		12	22.5	± 1.0
		25	22.5	± 1.0
	16QAM	1	22	± 1.0
		12	22	± 1.0
		25	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	± 1.0
		25	23	± 1.0
		50	23	± 1.0
	16QAM	1	22	± 1.0
		25	22	± 1.0
		50	22	± 1.0

Band25				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	22.5	± 1.0
		3	22.5	± 1.0
		6	22.5	± 1.0
	16QAM	1	22	± 1.0
		3	22	± 1.0
		6	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	23	± 1.5
		8	23	± 1.0
		15	23	± 1.0
	16QAM	1	22	± 1.0
		8	22	± 1.0
		15	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	23	± 2.0
		12	23	± 1.0
		25	23	± 1.0
	16QAM	1	22	± 1.0
		12	22	± 1.0
		25	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
	QPSK	1	23	± 2.0
		25	23	± 1.0
		50	23	± 1.0

10MHz	16QAM	1	22	± 1.0
		25	22	± 1.0
		50	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	23	± 1.0
		38	23	± 1.0
		75	23	± 1.0
	16QAM	1	22	± 1.0
		38	22	± 1.0
		75	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
20MHz	QPSK	1	23	± 2.0
		50	23	± 1.0
		100	23	± 1.0
	16QAM	1	22	± 1.0
		50	22	± 1.0
		100	22	± 1.0

Band26 (814-824)				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	23	± 1.0
		3	23	± 1.0
		6	23	± 1.0
	16QAM	1	22	± 1.0
		3	22	± 1.0
		6	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	23	± 1.0
		8	23	± 1.0
		15	23	± 1.0
	16QAM	1	22	± 1.0
		8	22	± 1.0
		15	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	23	± 1.0
		12	23	± 1.0
		25	23	± 1.0
	16QAM	1	22	± 1.0
		12	22	± 1.0
		25	22	± 1.0

Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23.5	±1.0
		25	23.5	±1.0
		50	23.5	±1.0
	16QAM	1	22	±1.0
		25	22	±1.0
		50	22	±1.0

Band26 (824-849)				
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
1.4MHz	QPSK	1	23	±1.0
		3	23	±1.0
		6	23	±1.0
	16QAM	1	22	±1.0
		3	22	±1.0
		6	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
3MHz	QPSK	1	23	±1.0
		8	23	±1.0
		15	23	±1.0
	16QAM	1	22	±1.0
		8	22	±1.0
		15	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
5MHz	QPSK	1	23	±1.0
		12	23	±1.0
		25	23	±1.0
	16QAM	1	22	±1.0
		12	22	±1.0
		25	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	±1.0
		25	23	±1.0
		50	23	±1.0
	16QAM	1	22	±1.0
		25	22	±1.0
		50	22	±1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	23	±1.0
		38	23	±1.0
		75	23	±1.0
	1	22	±1.0	

	16QAM	38	22	± 1.0
		75	22	± 1.0

Band38				
5MHz	QPSK	1	23	± 1.0
		12	23	± 1.0
		25	23	± 1.0
	16QAM	1	22	± 1.0
		12	22	± 1.0
		25	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	± 1.0
		25	23	± 1.0
		50	23	± 1.0
	16QAM	1	22	± 1.0
		25	22	± 1.0
		50	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	23	± 1.0
		38	23	± 1.0
		75	23	± 1.0
	16QAM	1	22	± 1.0
		38	22	± 1.0
		75	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
20MHz	QPSK	1	23	± 2.0
		50	23	± 1.0
		100	23	± 1.0
	16QAM	1	22	± 1.0
		50	22	± 1.0
		100	22	± 1.0

Band41				
5MHz	QPSK	1	23	± 1.0
		12	23	± 1.0
		25	23	± 1.0
	16QAM	1	22	± 1.0
		12	22	± 1.0
		25	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
10MHz	QPSK	1	23	± 1.0
		25	23	± 1.0
		50	23	± 1.0
	16QAM	1	22	± 1.0
		25	22	± 1.0

		50	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
15MHz	QPSK	1	23	± 1.0
		38	23	± 1.0
		75	23	± 1.0
	16QAM	1	22	± 1.0
		38	22	± 1.0
		75	22	± 1.0
Bandwidth	Mode	RBSize	Maximum(dBm)	Tolerance
20MHz	QPSK	1	23	± 2.0
		50	23	± 1.0
		100	23	± 1.0
	16QAM	1	22	± 1.0
		50	22	± 1.0
		100	22	± 1.0

The ntheseapropriate gain setting sar estored ineach devicein dividually.

The user has nopossibility to change these setting slateron,and during manufacturing each devicewill beindivid ualcalibrated.The measurement is donein fully calibrated setup, which isbasedona CMW500 basestation simulator. Fur ther more, the highest powerlevel is verified afterwards in a call measurement on three channels (low, middle and high).