Tune-up(dBm) procedure

This is to formally certify that: The tune up procedures of Smart Phone (FCC ID: O39IHAND55) The tune up procedures of is not open to end user. The end user is not allowed to perform final tune. All the power and frequency set up were finished at the manufacturer stage.

Tune up procedure shall be over the power range or at specific operating power levels. Procedure:

1. Set the Mobile Phone to operational voltage and on one certain channel in a special service mode by means of company proprietary software.

2. The actual power is measured at several power levels.

3. The gain factors of each individual Mobile Phone are adjusted via the Board-test SW using automatic adjustment arithmetic until the Tune-up Range (dBm) value is met.

GSM850		Burst Average Power (dBm)			Tune-up limit (dBm)	Division Factors	Frame-Average Power (dBm)			Tune-up limit (dBm)
		CH128	CH190	CH251			CH128	CH190	CH251	
		824.2MHz	836.6MHz	848.8MHz			824.2MHz	836.6MHz	848.8MHz	
GSM		31.95	31.97	31.92	32.00	-9.03	22.92	22.94	22.89	22.97
GPRS (GMSK)	1Tx slot	31.86	31.90	31.85	32.00	-9.03	22.83	22.87	22.82	22.97
	2Tx slots	30.32	30.30	30.31	30.50	-6.02	24.30	24.28	24.29	24.48
	3Tx slots	28.42	28.41	28.42	28.50	-4.26	24.16	24.15	24.16	24.24
	4Tx slots	27.64	27.60	27.62	28.00	-3.01	24.63	24.59	24.61	24.99
EGPRS (8PSK)	1Tx slot	28.12	28.13	28.15	28.50	-9.03	19.09	19.10	19.12	19.47
	2Tx slots	26.20	26.15	26.15	26.50	-6.02	20.18	20.13	20.13	20.48
	3Tx slots	23.76	23.80	23.80	24.00	-4.26	19.50	19.54	19.54	19.74
	4Tx slots	23.07	23.03	23.03	23.50	-3.01	20.06	20.02	20.02	20.49

GSM1900		Burst Average Power (dBm)			Tune-up limit (dBm)	Division Factors	Frame-Average Power (dBm)			Tune-up limit (dBm)
		CH512	CH661	CH810			CH512	CH661	CH810	
		1850.2MHz	1880MHz	1909.8MHz			1850.2MHz	1880.0MHz	1909.8MHz	
GSM		30.30	30.27	30.28	30.50	-9.03	21.27	21.24	21.25	21.47
GPRS (GMSK)	1Tx slot	30.23	30.25	30.24	30.50	-9.03	21.20	21.22	21.21	21.47
	2Tx slots	27.48	27.53	27.50	28.00	-6.02	21.46	21.51	21.48	21.98
	3Tx slots	26.42	26.42	26.46	26.50	-4.26	22.16	22.16	22.20	22.24
	4Tx slots	25.95	25.94	25.95	26.00	-3.01	22.94	22.93	22.94	22.99
EGPRS (8PSK)	1Tx slot	27.21	27.22	27.21	27.50	-9.03	18.18	18.19	18.18	18.47
	2Tx slots	25.10	25.13	25.09	25.50	-6.02	19.08	19.11	19.07	19.48
	3Tx slots	23.81	23.78	23.78	24.00	-4.26	19.55	19.52	19.52	19.74
	4Tx slots	23.04	23.05	23.06	23.50	-3.01	20.03	20.04	20.05	20.49

WCDMA Band II		Conducted Power (dBm)			Tune-up limit (dBm)
		CH9262	CH9400	CH9538	
		1852.4MHz	1880MHz	1907.6MHz	
AMR 12.2K		23.50	22.77	22.75	24.00
RMC 12.2K		23.52	22.75	22.73	24.00
HSDPA	Subtest-1	22.51	22.47	23.33	23.50
	Subtest-2	22.52	22.44	22.69	23.00
	Subtest-3	22.75	21.63	22.59	23.00
	Subtest-4	22.45	21.05	22.71	23.00
HSUPA	Subtest-1	22.53	23.57	22.71	24.00
	Subtest-2	22.72	22.96	22.59	23.00
	Subtest-3	22.79	22.83	22.60	23.00
	Subtest-4	22.61	22.71	22.52	23.00
	Subtest-5	22.41	22.65	21.60	23.00

WCDMA Band V		Conducted Power (dBm)			Tune-up limit (dBm)
		CH4132	CH4183	CH4233	
		826.4MHz	836.6MHz	846.6MHz	
AMR 12.2K		23.29	22.61	22.72	23.50
RMC 12.2K		23.31	22.59	22.68	23.50
HSDPA	Subtest-1	22.49	22.53	23.05	23.50
	Subtest-2	22.48	22.27	22.61	23.00
	Subtest-3	22.72	21.57	22.63	23.00
	Subtest-4	22.31	21.70	22.59	23.00
HSUPA	Subtest-1	22.51	23.22	22.58	23.50
	Subtest-2	22.38	22.78	22.60	23.00
	Subtest-3	22.44	22.55	22.55	23.00
	Subtest-4	22.65	22.60	22.48	23.00
	Subtest-5	22.57	22.66	21.50	23.00

LTE-FDD Band 7				Conducted Power (dBm)			Tune-up Limit(dBm)
Band-width(MHz)	Modulation	RB allocation	RB offset	Low	Middle	High	
5	QPSK	1	0	22.13	21.48	22.16	22.50
			12	22.25	21.48	22.24	
			24	21.98	21.25	22.24	
		12	0	21.37	20.67	21.67	22.00
			6	21.41	20.68	21.62	
			13	21.28	20.57	21.73	
		25	0	20.94	20.17	21.19	21.50
	16QAM	1	0	22.17	21.45	21.44	22.50
			12	22.11	21.45	21.55	
			24	22.27	21.47	21.46	
		12	0	21.43	21.65	21.04	22.00
			6	21.59	20.75	20.90	
			13	21.52	20.86	21.09	
		25	0	21.13	20.78	20.55	21.50
10	QPSK	1	0	22.41	22.37	22.43	22.50
			24	22.39	22.34	22.45	
			49	22.35	22.45	22.37	
		25	0	21.92	22.56	21.57	23.00
			12	21.69	21.59	21.56	
			25	21.72	21.68	21.63	
		50	0	21.34	21.31	21.06	21.50
	16QAM	1	0	21.76	21.69	21.78	22.00
			24	21.63	21.67	21.77	
			49	21.62	21.84	21.66	
		25	0	21.17	21.77	20.91	22.00
			12	20.97	20.83	20.85	
			25	21.06	20.99	20.92	
		50	0	20.62	20.67	20.36	21.00

LTE-TDD Band 38				Conducted Power (dBm)			Tune-up Limit(dBm)
Band-width(MHz)	Modulation	RB allocation	RB offset	Low	Middle	High	
5	QPSK	1	0	21.26	21.83	22.67	23.00
			12	21.44	21.91	22.79	
			24	21.20	21.68	22.73	
		12	0	22.49	22.81	22.71	23.00
			6	22.40	22.87	22.76	
			13	22.34	22.83	22.82	
		25	0	22.37	22.75	22.75	23.00
	16QAM	1	0	20.53	21.14	22.04	22.50
			12	20.74	21.19	22.03	
			24	20.56	20.96	22.01	
		12	0	21.81	22.13	21.99	22.50
			6	21.72	22.12	22.09	
			13	21.66	22.14	22.15	
		25	0	21.69	21.97	22.06	22.50
10	QPSK	1	0	21.29	21.90	22.88	23.00
			24	21.64	22.24	21.01	
			49	21.43	21.78	22.80	
		25	0	22.46	22.87	22.95	23.00
			12	22.42	22.90	22.86	
			25	22.45	22.84	22.81	
		50	0	22.44	22.81	22.84	23.00
	16QAM	1	0	20.66	21.18	22.18	22.50
			24	20.94	21.55	20.29	
			49	20.75	21.07	22.02	
		25	0	21.77	22.14	22.28	22.50
			12	21.72	22.25	22.14	
			25	21.82	22.15	22.16	
		50	0	21.67	22.15	22.14	22.50

LTE-TDD Band 40(lower)				Conducted Power (dBm)			Tune-up Limit(dBm)
Band-width(MHz)	Modulation	RB allocation	RB offset	Low	Middle	High	
5	QPSK	1	0	21.72	22.26	22.99	23.00
			12	21.92	21.95	22.93	
			24	21.84	22.15	21.07	
		12	0	22.86	21.19	22.05	23.00
			6	22.87	21.27	22.10	
			13	22.87	21.04	22.16	
		25	0	22.92	21.11	22.10	23.00
	16QAM	1	0	21.07	21.55	22.33	22.50
			12	21.20	21.17	22.29	
			24	21.18	21.38	20.43	
		12	0	22.11	20.50	21.36	22.50
			6	22.15	20.52	21.43	
			13	22.18	20.32	21.42	
		25	0	22.25	20.36	21.34	22.50
10	QPSK	1	0	-	22.21	-	22.50
			24	-	21.91	-	
			49	-	21.83	-	
		25	0	-	22.86	-	23.00
			12	-	22.93	-	
			25	-	22.92	-	
		50	0	-	22.93	-	23.00
	16QAM	1	0	-	21.53	-	22.00
			24	-	21.27	-	
			49	-	21.12	-	
		25	0	-	22.18	-	22.50
			12	-	22.20	-	
			25	-	22.21	-	
		50	0	-	22.16	-	22.50

LTE-TDD Band 41				Conducted Power (dBm)					Tune-up Limit(dBm)
Band-width(MHz)	Modulation	RB allocation	RB offset	Low	Middle1	Middle2	Middle3	High	
5	QPSK	1	0	21.69	22.22	22.25	22.95	22.84	23.00
			12	21.92	21.92	21.87	22.91	22.82	
			24	21.80	22.15	22.18	21.02	20.79	
		12	0	22.80	21.17	21.12	22.05	21.94	23.00
			6	22.81	21.19	21.13	22.05	21.96	
			13	22.83	21.06	21.05	22.10	21.87	
		25	0	22.93	21.12	21.21	22.09	21.98	23.00
	16QAM	1	0	21.02	21.58	21.49	22.30	22.21	22.50
			12	21.16	21.20	21.31	22.18	21.95	
			24	21.17	21.49	21.41	20.29	20.18	
		12	0	22.09	20.48	20.39	21.38	21.29	22.50
			6	22.12	20.52	20.48	21.34	21.11	
			13	22.11	20.41	20.40	21.38	21.27	
		25	0	22.22	20.43	20.42	21.35	21.26	22.50
10	QPSK	1	0	22.23	22.31	22.25	21.10	20.87	23.00
			24	21.92	21.80	21.68	21.00	20.89	
			49	21.79	22.37	22.41	22.93	22.84	
		25	0	22.94	21.02	21.19	22.13	21.90	23.00
			12	22.96	21.20	21.28	22.08	21.97	
			25	22.91	21.13	21.17	22.13	22.04	
		50	0	22.97	21.08	21.21	22.16	21.93	23.00
	16QAM	1	0	21.57	21.68	21.61	20.38	20.27	22.50
			24	21.26	21.13	21.31	20.23	20.14	
			49	21.10	21.66	21.62	22.25	22.02	
		25	0	22.18	20.35	20.42	21.40	21.29	22.50
			12	22.26	20.56	20.50	21.41	21.32	
			25	22.18	20.45	20.42	21.38	21.15	
		50	0	22.27	20.35	20.37	21.42	21.31	22.50

WIFI 2.4G				
Mode	Channel	Frequency (MHz)	Average Power (dBm)	Tune-up limit (dBm)
802.11b	1	2412	15.94	16.00
	6	2437	15.40	15.50
	11	2462	15.32	15.50
802.11g	1	2412	14.38	14.50
	6	2437	14.72	15.00
	11	2462	14.68	15.00
802.11n (HT20)	1	2412	14.67	15.00
	6	2437	14.31	14.50
	11	2462	14.33	14.50
802.11n (HT40)	3	2422	14.33	14.50
	6	2437	14.22	14.50
	9	2452	13.97	14.00

Bluetooth					
Mode		Channel	Frequency (MHz)	Average Power (dBm)	Tune-up limit (dBm)
EDR	GFSK	0	2402	2.26	2.50
		39	2441	1.88	2.00
		78	2480	2.03	2.50
	π/4QPSK	0	2402	2.21	2.50
		39	2441	2.30	2.50
		78	2480	2.43	2.50
	8DPSK	0	2402	2.15	2.50
		39	2441	2.67	3.00
		78	2480	1.95	2.00
BLE	GFSK	0	2402	5.05	5.50
		19	2440	4.73	5.00
		39	2480	5.22	5.50