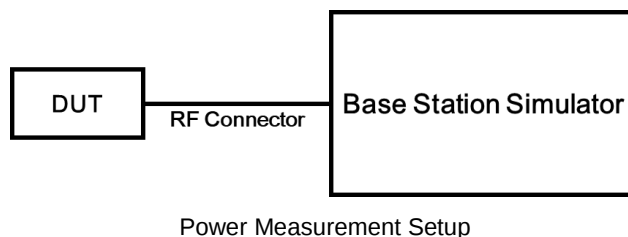


Appendix A - Conducted Power Measurements

GSM Conducted Power

According to KDB 941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.



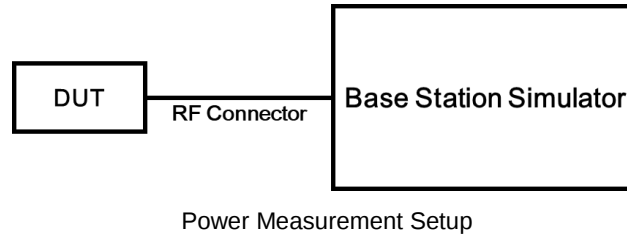
GSM850	Uplink Channel	128	189	251	Tune up (dBm)
	Uplink Frequency	824.2	836.4	848.8	
	GSM	32.58	32.62	32.58	33
	GPRS/EGPRS(GMSK)_1TX Slot	32.43	32.41	32.44	33
	GPRS/EGPRS(GMSK)_2TX Slot	30.52	30.68	30.55	31
	GPRS/EGPRS(GMSK)_3TX Slot	28.5	28.55	28.52	29
	GPRS/EGPRS(GMSK)_4TX Slot	26.59	26.51	26.58	27
	EGPRS(8PSK)_1TX Slot	25.92	25.93	25.98	26
	EGPRS(8PSK)_2TX Slot	25.18	25.25	25.3	26
	EGPRS(8PSK)_3TX Slot	23.19	23.22	23.21	23.5
	EGPRS(8PSK)_4TX Slot	20.81	20.79	20.69	21.5

Source-Based Time-Averaged Output Power					
GSM850	Uplink Channel	128	189	251	Tune up (dBm)
	Uplink Frequency	824.2	836.4	848.8	
	GSM	23.58	23.62	23.58	24
	GPRS/EGPRS(GMSK)_1TX Slot	23.43	23.41	23.44	24
	GPRS/EGPRS(GMSK)_2TX Slot	24.52	24.68	24.55	25
	GPRS/EGPRS(GMSK)_3TX Slot	24.24	24.29	24.26	24.74
	GPRS/EGPRS(GMSK)_4TX Slot	23.59	23.51	23.58	24
	EGPRS(8PSK)_1TX Slot	16.92	16.93	16.98	17
	EGPRS(8PSK)_2TX Slot	19.18	19.25	19.3	20
	EGPRS(8PSK)_3TX Slot	18.93	18.96	18.95	19.24
	EGPRS(8PSK)_4TX Slot	17.81	17.79	17.69	18.5

GSM1900	Uplink Channel	512	661	810	Tune up (dBm)
	Uplink Frequency	1850.2	1880	1909.8	
	GSM	29.07	29.11	29.37	31
	GPRS/EGPRS(GMSK)_1TX Slot	28.66	28.7	28.71	30.5
	GPRS/EGPRS(GMSK)_2TX Slot	27.08	27.11	27.13	28
	GPRS/EGPRS(GMSK)_3TX Slot	25.32	25.31	25.38	26
	GPRS/EGPRS(GMSK)_4TX Slot	23.75	23.78	23.7	24
	EGPRS(8PSK)_1TX Slot	24.66	25.08	25.17	26
	EGPRS(8PSK)_2TX Slot	23.1	23.62	23.77	24
	EGPRS(8PSK)_3TX Slot	21.43	21.27	21.66	22
	EGPRS(8PSK)_4TX Slot	20.12	20.22	20.89	21

Source-Based Time-Averaged Output Power					
GSM1900	Uplink Channel	512	661	810	Tune up (dBm)
	Uplink Frequency	1850.2	1880	1909.8	
	GSM	20.07	20.11	20.37	22
	GPRS/EGPRS(GMSK)_1TX Slot	19.66	19.7	19.71	21.5
	GPRS/EGPRS(GMSK)_2TX Slot	21.08	21.11	21.13	22
	GPRS/EGPRS(GMSK)_3TX Slot	21.06	21.05	21.12	21.74
	GPRS/EGPRS(GMSK)_4TX Slot	20.75	20.78	20.7	21
	EGPRS(8PSK)_1TX Slot	15.66	16.08	16.17	17
	EGPRS(8PSK)_2TX Slot	17.1	17.62	17.77	18
	EGPRS(8PSK)_3TX Slot	17.17	17.01	17.4	17.74
	EGPRS(8PSK)_4TX Slot	17.12	17.22	17.89	18

UMTS Conducted Power



WCDMA

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active

Rel. 5 HSDPA

Maximum output power is verified on the high, middle and low channels according to Release 5 procedures described in section 5.2 of 3GPP TS 34.121, using an FRC with H-set 1 and a 12.2 kbps RMC with TPC set to all “1’s”. When HSDPA is active, output power is measured according to requirements for HS-DPCCH Sub-test 1 - 4.

The following table specified in 3GPP TS 34.121 is applicable for tests on Transmitter Characteristics with HSDPA:

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Rel. 6 HSPA (HSDPA/HSUPA)

Maximum output power is verified on the high, middle and low channels according to Release 6 procedures in section 5.2 of 3GPP TS 34.121, using the appropriate RMC, FRC and E-DCH configurations. When E-DCH is not active, TPC is set to all "1's"; otherwise, inner loop power control with power control algorithm 2 is required to maintain E-TFCI requirements. When HSPA is active output power for the applicable HSPA modes should be measured for E-DCH Sub-test 1-5.

The following table specified in 3GPP TS 34.121 is applicable for tests on Transmitter Characteristics with HS-DPCCH and E-DCH:

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{EC}	β_{ed} (Note 4)/(Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)/(Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$ For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{HS} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Rel. 8 DC-HSDPA

Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction.

The following table specified in 3GPP TS 34.121 is applicable for tests on Transmitter Characteristics with DC-HSPDA:

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.

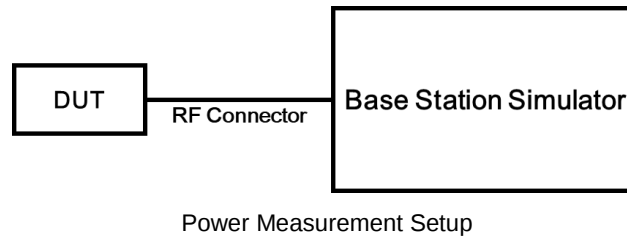
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

	Uplink Channel	9262	9400	9538	Tune up (dBm)
	Uplink Frequency	1852.4	1880.0	1907.6	
WCDMA II	RMC_12.2Kbps	23.53	23.52	23.35	25
	AMR_12.2kbps	23.52	23.51	23.42	25
	HSDPA_Subtest 1	22.52	22.57	22.44	24
	HSDPA_Subtest 2	22.56	22.58	22.47	24
	HSDPA_Subtest 3	22.07	22.1	21.98	23.5
	HSDPA_Subtest 4	22.05	22.08	21.96	23.5
	HSUPA_Subtest 1	22.56	22.06	22.45	24
	HSUPA_Subtest 2	21.55	21.18	20.63	22
	HSUPA_Subtest 3	22.58	22.68	22.55	23
	HSUPA_Subtest 4	22.51	22.57	22.44	23
	HSUPA_Subtest 5	22.56	22.62	22.47	24

	Uplink Channel	4132	4182	4233	Tune up (dBm)
	Uplink Frequency	826.4	836.4	846.6	
WCDMA V	RMC_12.2Kbps	24.04	24.06	23.73	25
	AMR_12.2kbps	23.99	24.05	23.65	25
	HSDPA_Subtest 1	22.99	23.05	22.82	24
	HSDPA_Subtest 2	23	23.07	22.87	24
	HSDPA_Subtest 3	22.53	22.58	22.36	23.5
	HSDPA_Subtest 4	22.51	22.57	22.35	23.5
	HSUPA_Subtest 1	23.62	23.81	23.6	24
	HSUPA_Subtest 2	21.17	21.25	20.99	22
	HSUPA_Subtest 3	22.96	22.85	22.9	23
	HSUPA_Subtest 4	23	22.03	22.78	23
	HSUPA_Subtest 5	23.02	22.57	22.79	24

LTE Conducted Power

The following test were implemented according to KDB 941225 D05, 3GPP TS36.101 and 3Gpp TS36.521-1 specification. All the LTE measurements were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements. The parameter of frequency band, channel bandwidth, RB allocation configuration and power control were set up in base station for LTE tests according to the 3GPP 36.521-1.



<Maximum power reduction (MPR) >

MPR is enabled for this device, according to the following table specified in 3GPP TS36.101:

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR(dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

<Additional MPR (A-MPR)>

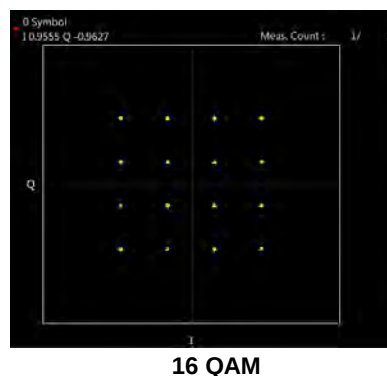
According to KDB 941225 D05, Additional MPR (A-MPR) was disabled for all SAR tests.

<Spectrum plots for RB configurations>

According to KDB 941225 D05, when a properly configured base station simulator is used for the SAR or power measurements, spectrum plots for each RB allocation and offset configuration are not required.

According to TCB workshop May.2017, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation.

The 16 QAM signal modulation were verified as follows:



<TDD Consideration >

According to KDB 941225 D05, for TDD test configurations, SAR were measured with a fixed periodic duty factor corresponding to the highest transmission duty factor implemented for the device according to the UL-DL configurations defined by 3GPP.

The support configurations described in 3GPP TS36.211 are as follows:

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$	$7680 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-
10	$13168 \cdot T_s$	$13168 \cdot T_s$	$13168 \cdot T_s$	-	-	-

Table 4.2.2 : Uplink-downlink configurations

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number										Duty Cycle
		0	1	2	3	4	5	6	7	8	9	
0	5ms	D	S	U	U	U	D	S	U	U	U	63.3%
1	5ms	D	S	U	U	D	D	S	U	U	D	43.3%
2	5ms	D	S	U	D	D	D	S	U	D	D	23.3%
3	10ms	D	S	U	U	U	D	D	D	D	D	31.7%
4	10ms	D	S	U	U	D	D	D	D	D	D	21.7%
5	10ms	D	S	U	D	D	D	D	D	D	D	11.7%
6	5ms	D	S	U	U	U	D	S	U	U	D	53.3%

Calculated Duty Cycle = Extended cyclic prefix in uplink * (Ts) * (the number of S) + (the number of U) / period

Where

$T_s = 1 / (15000 \cdot 2048)$ seconds

S = special subframe

U = uplink subframe

This device supports Uplink-downlink configuration 0-6. The SAR test were performed at maximum output power and worst-case duty factor in extended cyclic prefix: configuration 0 at 63.3% duty cycle for power class 3; configuration 1 at 43.3% duty cycle for power class 2.

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18700	18900	19100	Channel				
1860	1880	1900	Freq. (MHz)				
22.89	22.96	22.94	24	QPSK	20MHz	1	0
22.78	22.86	22.45	24	QPSK	20MHz	1	49
22.49	22.56	22.39	24	QPSK	20MHz	1	99
21.66	21.70	21.58	23	QPSK	20MHz	50	0
21.66	21.75	21.55	23	QPSK	20MHz	50	25
21.64	21.81	21.37	23	QPSK	20MHz	50	50
21.67	21.69	21.55	23	QPSK	20MHz	100	0
22.15	22.09	22.14	23	16QAM	20MHz	1	0
22.21	22.13	21.52	23	16QAM	20MHz	1	49
21.80	22.31	21.60	23	16QAM	20MHz	1	99
20.83	20.90	20.72	22	16QAM	20MHz	50	0
20.80	20.99	20.51	22	16QAM	20MHz	50	25
20.76	20.93	20.53	22	16QAM	20MHz	50	50
20.75	20.96	20.62	22	16QAM	20MHz	100	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18675	18900	19125	Channel				
1857.5	1880	1902.5	Freq. (MHz)				
22.65	22.75	22.49	24	QPSK	15MHz	1	0
22.56	22.77	22.37	24	QPSK	15MHz	1	37
22.61	22.79	22.37	24	QPSK	15MHz	1	74
21.70	21.82	21.45	23	QPSK	15MHz	36	0
21.69	21.75	21.44	23	QPSK	15MHz	36	19
21.62	21.74	21.44	23	QPSK	15MHz	36	39
21.65	21.68	21.46	23	QPSK	15MHz	75	0
22.27	21.94	21.59	23	16QAM	15MHz	1	0
22.12	21.76	21.74	23	16QAM	15MHz	1	37
21.85	21.68	21.27	23	16QAM	15MHz	1	74
20.79	20.96	20.57	22	16QAM	15MHz	36	0
20.80	20.95	20.57	22	16QAM	15MHz	36	19
20.70	20.91	20.55	22	16QAM	15MHz	36	39
20.81	20.87	20.54	22	16QAM	15MHz	75	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18650	18900	19150	Channel				
1855	1880	1905	Freq. (MHz)				
22.84	22.71	22.55	24	QPSK	10MHz	1	0
22.72	22.80	22.46	24	QPSK	10MHz	1	24
22.65	22.82	22.30	24	QPSK	10MHz	1	49
21.73	21.86	21.50	23	QPSK	10MHz	25	0
21.66	21.86	21.55	23	QPSK	10MHz	25	12
21.64	21.74	21.40	23	QPSK	10MHz	25	25
21.68	21.75	21.50	23	QPSK	10MHz	50	0
22.31	22.53	21.31	23	16QAM	10MHz	1	0
21.85	21.90	22.07	23	16QAM	10MHz	1	24
21.74	21.94	21.60	23	16QAM	10MHz	1	49
20.83	20.92	20.60	22	16QAM	10MHz	25	0
20.80	20.98	20.60	22	16QAM	10MHz	25	12
20.69	20.81	20.63	22	16QAM	10MHz	25	25
20.78	20.85	20.66	22	16QAM	10MHz	50	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18625	18900	19175	Channel				
1852.5	1880	1907.5	Freq. (MHz)				
22.74	22.70	22.43	24	QPSK	5MHz	1	0
22.64	22.79	22.28	24	QPSK	5MHz	1	12
22.54	22.65	22.29	24	QPSK	5MHz	1	24
21.60	21.76	21.42	23	QPSK	5MHz	12	0
21.58	21.75	21.49	23	QPSK	5MHz	12	6
21.59	21.75	21.40	23	QPSK	5MHz	12	13
21.56	21.66	21.42	23	QPSK	5MHz	25	0
21.89	21.61	21.93	23	16QAM	5MHz	1	0
21.87	21.73	21.99	23	16QAM	5MHz	1	12
21.55	22.02	21.45	23	16QAM	5MHz	1	24
20.76	20.82	20.59	22	16QAM	5MHz	12	0
20.70	20.95	20.52	22	16QAM	5MHz	12	6
20.70	20.82	20.45	22	16QAM	5MHz	12	13
20.73	20.86	20.43	22	16QAM	5MHz	25	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18615	18900	19185	Channel				
1851.5	1880	1908.5	Freq. (MHz)				
22.75	22.75	22.46	24	QPSK	3MHz	1	0
22.86	22.70	22.35	24	QPSK	3MHz	1	7
22.73	22.66	22.40	24	QPSK	3MHz	1	14
21.78	21.78	21.37	23	QPSK	3MHz	8	0
21.75	21.75	21.49	23	QPSK	3MHz	8	3
21.73	21.82	21.38	23	QPSK	3MHz	8	7
21.70	21.72	21.44	23	QPSK	3MHz	15	0
22.31	22.09	21.52	23	16QAM	3MHz	1	0
22.37	22.00	21.99	23	16QAM	3MHz	1	7
22.21	22.23	21.65	23	16QAM	3MHz	1	14
20.96	20.86	20.52	22	16QAM	3MHz	8	0
20.92	21.04	20.73	22	16QAM	3MHz	8	3
21.01	20.97	20.52	22	16QAM	3MHz	8	7
20.82	20.79	20.62	22	16QAM	3MHz	15	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18607	18900	19193	Channel				
1850.7	1880	1909.3	Freq. (MHz)				
22.64	22.72	22.34	24	QPSK	1.4MHz	1	0
22.68	22.80	22.44	24	QPSK	1.4MHz	1	2
22.78	22.69	22.24	24	QPSK	1.4MHz	1	5
22.74	22.77	22.32	24	QPSK	1.4MHz	3	0
22.71	22.69	22.38	24	QPSK	1.4MHz	3	1
22.70	22.73	22.34	24	QPSK	1.4MHz	3	3
21.63	21.59	21.41	23	QPSK	1.4MHz	6	0
22.03	22.31	21.63	23	16QAM	1.4MHz	1	0
22.04	21.93	21.67	23	16QAM	1.4MHz	1	2
22.07	21.71	21.40	23	16QAM	1.4MHz	1	5
21.85	21.78	21.42	23	16QAM	1.4MHz	3	0
21.78	21.66	21.55	23	16QAM	1.4MHz	3	1
21.79	21.68	21.44	23	16QAM	1.4MHz	3	3
20.81	20.91	20.58	22	16QAM	1.4MHz	6	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20050	20175	20300	Channel				
1720	1732.5	1745	Freq. (MHz)				
22.32	22.43	22.42	24	QPSK	20MHz	1	0
22.28	22.28	22.14	24	QPSK	20MHz	1	49
22.28	22.11	22.18	24	QPSK	20MHz	1	99
21.31	21.43	21.32	23	QPSK	20MHz	50	0
21.41	21.30	21.31	23	QPSK	20MHz	50	25
21.33	21.27	21.21	23	QPSK	20MHz	50	50
21.34	21.39	21.30	23	QPSK	20MHz	100	0
21.58	21.66	21.91	23	16QAM	20MHz	1	0
21.40	21.57	21.48	23	16QAM	20MHz	1	49
21.76	21.58	21.37	23	16QAM	20MHz	1	99
20.40	20.43	20.36	22	16QAM	20MHz	50	0
20.50	20.53	20.43	22	16QAM	20MHz	50	25
20.41	20.38	20.29	22	16QAM	20MHz	50	50
20.53	20.34	20.29	22	16QAM	20MHz	100	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20025	20175	20325	Channel				
1717.5	1732.5	1747.5	Freq. (MHz)				
22.33	22.39	22.38	24	QPSK	15MHz	1	0
22.36	22.31	22.18	24	QPSK	15MHz	1	37
22.27	22.23	22.11	24	QPSK	15MHz	1	74
21.35	21.35	21.29	23	QPSK	15MHz	36	0
21.29	21.37	21.26	23	QPSK	15MHz	36	19
21.36	21.28	21.21	23	QPSK	15MHz	36	39
21.40	21.28	21.23	23	QPSK	15MHz	75	0
21.64	21.61	21.42	23	16QAM	15MHz	1	0
21.33	21.49	21.75	23	16QAM	15MHz	1	37
21.66	21.33	21.20	23	16QAM	15MHz	1	74
20.33	20.46	20.37	22	16QAM	15MHz	36	0
20.36	20.50	20.42	22	16QAM	15MHz	36	19
20.56	20.35	20.42	22	16QAM	15MHz	36	39
20.51	20.44	20.33	22	16QAM	15MHz	75	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20000	20175	20350	Channel				
1715	1732.5	1750	Freq. (MHz)				
22.14	22.39	22.26	24	QPSK	10MHz	1	0
22.31	22.37	22.12	24	QPSK	10MHz	1	24
22.20	22.08	22.20	24	QPSK	10MHz	1	49
21.27	21.32	21.26	23	QPSK	10MHz	25	0
21.27	21.30	21.28	23	QPSK	10MHz	25	12
21.16	21.34	21.25	23	QPSK	10MHz	25	25
21.21	21.32	21.34	23	QPSK	10MHz	50	0
21.07	21.66	21.74	23	16QAM	10MHz	1	0
21.11	21.47	21.77	23	16QAM	10MHz	1	24
21.41	21.55	21.05	23	16QAM	10MHz	1	49
20.31	20.44	20.39	22	16QAM	10MHz	25	0
20.25	20.36	20.42	22	16QAM	10MHz	25	12
20.22	20.42	20.24	22	16QAM	10MHz	25	25
20.31	20.41	20.44	22	16QAM	10MHz	50	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19975	20175	20375	Channel				
1712.5	1732.5	1752.5	Freq. (MHz)				
22.29	22.29	22.18	24	QPSK	5MHz	1	0
22.22	22.21	22.19	24	QPSK	5MHz	1	12
22.12	22.15	22.06	24	QPSK	5MHz	1	24
21.19	21.30	21.27	23	QPSK	5MHz	12	0
21.25	21.30	21.27	23	QPSK	5MHz	12	6
21.20	21.24	21.21	23	QPSK	5MHz	12	13
21.24	21.31	21.29	23	QPSK	5MHz	25	0
21.37	21.39	21.48	23	16QAM	5MHz	1	0
21.06	21.20	21.40	23	16QAM	5MHz	1	12
21.00	21.13	21.60	23	16QAM	5MHz	1	24
20.22	20.35	20.39	22	16QAM	5MHz	12	0
20.25	20.46	20.50	22	16QAM	5MHz	12	6
20.20	20.39	20.37	22	16QAM	5MHz	12	13
20.16	20.45	20.44	22	16QAM	5MHz	25	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19965	20175	20385	Channel				
1711.5	1732.5	1753.5	Freq. (MHz)				
22.17	22.26	22.20	24	QPSK	3MHz	1	0
22.17	22.40	22.25	24	QPSK	3MHz	1	7
22.10	22.20	22.13	24	QPSK	3MHz	1	14
21.20	21.31	21.29	23	QPSK	3MHz	8	0
21.22	21.33	21.31	23	QPSK	3MHz	8	3
21.14	21.31	21.20	23	QPSK	3MHz	8	7
21.19	21.30	21.28	23	QPSK	3MHz	15	0
21.63	21.39	21.42	23	16QAM	3MHz	1	0
21.75	21.83	21.79	23	16QAM	3MHz	1	7
21.71	21.70	21.62	23	16QAM	3MHz	1	14
20.32	20.42	20.39	22	16QAM	3MHz	8	0
20.44	20.44	20.53	22	16QAM	3MHz	8	3
20.32	20.40	20.45	22	16QAM	3MHz	8	7
20.30	20.43	20.42	22	16QAM	3MHz	15	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19957	20175	20393	Channel				
1710.7	1732.5	1754.3	Freq. (MHz)				
22.13	22.27	22.11	24	QPSK	1.4MHz	1	0
22.10	22.29	22.22	24	QPSK	1.4MHz	1	2
22.08	22.13	22.03	24	QPSK	1.4MHz	1	5
22.16	22.29	22.13	24	QPSK	1.4MHz	3	0
22.17	22.41	22.29	24	QPSK	1.4MHz	3	1
22.15	22.27	22.19	24	QPSK	1.4MHz	3	3
21.22	21.34	21.14	23	QPSK	1.4MHz	6	0
21.20	21.70	21.67	23	16QAM	1.4MHz	1	0
21.49	21.75	21.38	23	16QAM	1.4MHz	1	2
21.15	21.15	21.41	23	16QAM	1.4MHz	1	5
21.13	21.41	21.18	23	16QAM	1.4MHz	3	0
21.17	21.23	21.29	23	16QAM	1.4MHz	3	1
21.21	21.30	21.34	23	16QAM	1.4MHz	3	3
20.23	20.41	20.36	22	16QAM	1.4MHz	6	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20450	20525	20600	Channel				
829	836.5	844	Freq. (MHz)				
22.95	22.97	22.79	23	QPSK	10MHz	1	0
22.74	22.80	22.77	23	QPSK	10MHz	1	24
22.85	22.82	22.56	23	QPSK	10MHz	1	49
21.83	21.93	21.84	22	QPSK	10MHz	25	0
21.92	21.97	21.90	22	QPSK	10MHz	25	12
21.96	21.90	21.82	22	QPSK	10MHz	25	25
21.92	21.94	21.84	22	QPSK	10MHz	50	0
22.00	21.95	21.91	22	16QAM	10MHz	1	0
21.91	21.96	21.92	22	16QAM	10MHz	1	24
21.89	21.86	21.96	22	16QAM	10MHz	1	49
20.94	20.95	20.90	21	16QAM	10MHz	25	0
20.90	20.96	20.84	21	16QAM	10MHz	25	12
20.99	20.99	20.84	21	16QAM	10MHz	25	25
20.94	20.90	20.88	21	16QAM	10MHz	50	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20425	20525	20625	Channel				
826.5	836.5	846.5	Freq. (MHz)				
22.94	22.90	22.79	23	QPSK	5MHz	1	0
22.91	22.94	22.77	23	QPSK	5MHz	1	12
22.92	22.80	22.74	23	QPSK	5MHz	1	24
21.95	21.95	21.73	22	QPSK	5MHz	12	0
21.90	21.91	21.80	22	QPSK	5MHz	12	6
21.91	21.96	21.80	22	QPSK	5MHz	12	13
21.91	21.97	21.84	22	QPSK	5MHz	25	0
21.93	21.80	21.78	22	16QAM	5MHz	1	0
21.92	21.94	21.77	22	16QAM	5MHz	1	12
21.63	21.86	21.66	22	16QAM	5MHz	1	24
20.97	20.99	20.76	21	16QAM	5MHz	12	0
21.00	20.98	20.92	21	16QAM	5MHz	12	6
20.93	20.93	20.99	21	16QAM	5MHz	12	13
20.94	20.95	20.99	21	16QAM	5MHz	25	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20415	20525	20635	Channel				
825.5	836.5	847.5	Freq. (MHz)				
22.89	22.85	22.70	23	QPSK	3MHz	1	0
22.93	22.90	22.81	23	QPSK	3MHz	1	7
22.73	22.92	22.70	23	QPSK	3MHz	1	14
21.97	21.94	21.82	22	QPSK	3MHz	8	0
22.00	21.97	21.86	22	QPSK	3MHz	8	3
21.90	21.98	21.77	22	QPSK	3MHz	8	7
21.99	21.93	21.86	22	QPSK	3MHz	15	0
21.93	21.94	21.96	22	16QAM	3MHz	1	0
21.99	21.97	21.98	22	16QAM	3MHz	1	7
22.00	21.89	21.84	22	16QAM	3MHz	1	14
20.90	20.95	20.86	21	16QAM	3MHz	8	0
20.92	20.88	20.94	21	16QAM	3MHz	8	3
20.91	20.88	20.73	21	16QAM	3MHz	8	7
20.90	20.97	20.83	21	16QAM	3MHz	15	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20407	20525	20643	Channel				
824.7	836.5	848.3	Freq. (MHz)				
22.82	22.87	22.73	23	QPSK	1.4MHz	1	0
22.93	22.93	22.88	23	QPSK	1.4MHz	1	2
22.86	22.81	22.91	23	QPSK	1.4MHz	1	5
22.83	22.92	22.74	23	QPSK	1.4MHz	3	0
22.94	22.94	22.80	23	QPSK	1.4MHz	3	1
22.94	22.89	22.78	23	QPSK	1.4MHz	3	3
21.95	21.95	21.82	22	QPSK	1.4MHz	6	0
21.99	21.93	21.09	22	16QAM	1.4MHz	1	0
21.93	21.92	21.60	22	16QAM	1.4MHz	1	2
21.96	21.85	21.60	22	16QAM	1.4MHz	1	5
21.84	21.98	21.67	22	16QAM	1.4MHz	3	0
21.78	21.96	21.66	22	16QAM	1.4MHz	3	1
21.94	21.96	21.67	22	16QAM	1.4MHz	3	3
20.96	20.97	20.83	21	16QAM	1.4MHz	6	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20850	21100	21350	Channel				
2510	2535	2560	Freq. (MHz)				
21.79	21.81	21.68	22	QPSK	20MHz	1	0
21.16	21.12	21.40	22	QPSK	20MHz	1	49
21.27	21.32	21.26	22	QPSK	20MHz	1	99
20.50	20.52	20.44	21	QPSK	20MHz	50	0
20.28	20.31	20.19	21	QPSK	20MHz	50	25
20.26	20.27	20.15	21	QPSK	20MHz	50	50
20.39	20.40	20.39	21	QPSK	20MHz	100	0
20.20	20.27	19.15	21	16QAM	20MHz	1	0
20.26	20.24	19.64	21	16QAM	20MHz	1	49
20.12	20.27	20.22	21	16QAM	20MHz	1	99
19.50	19.33	19.29	20	16QAM	20MHz	50	0
19.32	19.37	19.29	20	16QAM	20MHz	50	25
19.37	19.26	19.33	20	16QAM	20MHz	50	50
19.39	19.26	19.37	20	16QAM	20MHz	100	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20825	21100	21375	Channel				
2507.5	2535	2562.5	Freq. (MHz)				
21.08	21.25	21.10	22	QPSK	15MHz	1	0
21.14	21.12	21.24	22	QPSK	15MHz	1	37
21.25	21.18	21.10	22	QPSK	15MHz	1	74
20.43	20.20	20.33	21	QPSK	15MHz	36	0
20.34	20.17	20.32	21	QPSK	15MHz	36	19
20.26	20.22	20.36	21	QPSK	15MHz	36	39
20.32	20.17	20.23	21	QPSK	15MHz	75	0
20.82	20.24	20.85	21	16QAM	15MHz	1	0
20.76	19.98	20.35	21	16QAM	15MHz	1	37
20.50	20.76	20.25	21	16QAM	15MHz	1	74
19.44	19.22	19.35	20	16QAM	15MHz	36	0
19.47	19.27	19.42	20	16QAM	15MHz	36	19
19.41	19.31	19.46	20	16QAM	15MHz	36	39
19.49	19.26	19.44	20	16QAM	15MHz	75	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20800	21100	21400	Channel				
2505	2535	2565	Freq. (MHz)				
21.02	21.07	21.24	22	QPSK	10MHz	1	0
20.97	21.13	21.21	22	QPSK	10MHz	1	24
21.28	21.24	21.22	22	QPSK	10MHz	1	49
20.23	20.21	20.37	21	QPSK	10MHz	25	0
20.40	20.19	20.30	21	QPSK	10MHz	25	12
20.21	20.19	20.42	21	QPSK	10MHz	25	25
20.33	20.32	20.29	21	QPSK	10MHz	50	0
20.15	20.21	20.42	21	16QAM	10MHz	1	0
20.35	20.19	20.31	21	16QAM	10MHz	1	24
20.22	20.00	20.43	21	16QAM	10MHz	1	49
19.41	19.23	19.40	20	16QAM	10MHz	25	0
19.52	19.21	19.38	20	16QAM	10MHz	25	12
19.30	19.35	19.39	20	16QAM	10MHz	25	25
19.39	19.24	19.35	20	16QAM	10MHz	50	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20775	21100	21425	Channel				
2502.5	2535	2567.5	Freq. (MHz)				
20.58	21.16	21.12	22	QPSK	5MHz	1	0
20.18	21.15	21.23	22	QPSK	5MHz	1	12
20.23	21.12	21.20	22	QPSK	5MHz	1	24
20.46	20.15	20.37	21	QPSK	5MHz	12	0
20.43	20.22	20.37	21	QPSK	5MHz	12	6
20.41	20.22	20.34	21	QPSK	5MHz	12	13
20.37	20.15	20.41	21	QPSK	5MHz	25	0
20.30	20.59	20.47	21	16QAM	5MHz	1	0
20.06	20.31	20.80	21	16QAM	5MHz	1	12
20.52	20.33	20.80	21	16QAM	5MHz	1	24
19.63	19.27	19.48	20	16QAM	5MHz	12	0
19.68	19.36	19.51	20	16QAM	5MHz	12	6
19.62	19.27	19.52	20	16QAM	5MHz	12	13
19.45	19.33	19.53	20	16QAM	5MHz	25	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23060	23095	23130	Channel				
704	707.5	711	Freq. (MHz)				
23.13	23.19	23.14	23.5	QPSK	10MHz	1	0
22.92	23.18	23.03	23.5	QPSK	10MHz	1	24
22.91	22.84	23.01	23.5	QPSK	10MHz	1	49
22.23	22.27	22.18	22.5	QPSK	10MHz	25	0
22.15	22.16	22.13	22.5	QPSK	10MHz	25	12
22.17	22.17	22.15	22.5	QPSK	10MHz	25	25
22.35	22.27	22.14	22.5	QPSK	10MHz	50	0
22.31	22.19	22.50	22.5	16QAM	10MHz	1	0
22.09	22.42	22.15	22.5	16QAM	10MHz	1	24
22.43	22.40	22.16	22.5	16QAM	10MHz	1	49
21.11	21.31	21.11	21.5	16QAM	10MHz	25	0
21.29	21.31	21.23	21.5	16QAM	10MHz	25	12
21.31	21.24	21.11	21.5	16QAM	10MHz	25	25
21.21	21.29	21.19	21.5	16QAM	10MHz	50	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23035	23095	23155	Channel				
701.5	707.5	713.5	Freq. (MHz)				
22.91	23.08	22.85	23.5	QPSK	5MHz	1	0
23.08	23.16	23.01	23.5	QPSK	5MHz	1	12
23.07	23.05	23.17	23.5	QPSK	5MHz	1	24
22.14	22.12	21.95	22.5	QPSK	5MHz	12	0
22.06	22.18	21.95	22.5	QPSK	5MHz	12	6
22.03	22.15	21.93	22.5	QPSK	5MHz	12	13
22.03	22.24	21.93	22.5	QPSK	5MHz	25	0
22.21	21.96	22.03	22.5	16QAM	5MHz	1	0
22.22	22.42	21.95	22.5	16QAM	5MHz	1	12
22.35	22.48	21.92	22.5	16QAM	5MHz	1	24
21.20	21.26	21.07	21.5	16QAM	5MHz	12	0
21.10	21.29	20.99	21.5	16QAM	5MHz	12	6
21.13	21.26	21.08	21.5	16QAM	5MHz	12	13
21.19	21.31	21.01	21.5	16QAM	5MHz	25	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23025	23095	23165	Channel				
700.5	707.5	714.5	Freq. (MHz)				
22.35	22.41	22.47	23.5	QPSK	3MHz	1	0
22.41	22.48	22.38	23.5	QPSK	3MHz	1	7
22.40	22.43	22.31	23.5	QPSK	3MHz	1	14
21.60	21.52	21.34	22.5	QPSK	3MHz	8	0
21.58	21.58	21.40	22.5	QPSK	3MHz	8	3
21.49	21.57	21.40	22.5	QPSK	3MHz	8	7
21.61	21.62	21.46	22.5	QPSK	3MHz	15	0
21.49	21.96	21.28	22.5	16QAM	3MHz	1	0
21.75	22.16	21.51	22.5	16QAM	3MHz	1	7
21.45	22.06	21.49	22.5	16QAM	3MHz	1	14
20.64	20.70	20.19	21.5	16QAM	3MHz	8	0
20.52	20.72	20.49	21.5	16QAM	3MHz	8	3
20.56	20.74	20.48	21.5	16QAM	3MHz	8	7
20.46	20.61	20.51	21.5	16QAM	3MHz	15	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23017	23095	23173	Channel				
699.7	707.5	715.3	Freq. (MHz)				
22.71	22.63	22.51	23.5	QPSK	1.4MHz	1	0
22.66	22.71	22.67	23.5	QPSK	1.4MHz	1	2
22.65	22.67	22.47	23.5	QPSK	1.4MHz	1	5
22.82	22.86	22.75	23.5	QPSK	1.4MHz	3	0
22.89	22.85	22.65	23.5	QPSK	1.4MHz	3	1
22.88	22.75	22.66	23.5	QPSK	1.4MHz	3	3
21.70	21.71	21.62	22.5	QPSK	1.4MHz	6	0
21.67	22.02	21.74	22.5	16QAM	1.4MHz	1	0
21.83	22.34	21.80	22.5	16QAM	1.4MHz	1	2
22.14	22.25	21.86	22.5	16QAM	1.4MHz	1	5
21.65	21.79	21.50	22.5	16QAM	1.4MHz	3	0
21.68	21.90	21.57	22.5	16QAM	1.4MHz	3	1
21.68	21.69	21.38	22.5	16QAM	1.4MHz	3	3
20.76	20.86	20.70	21.5	16QAM	1.4MHz	6	0

LTE Band 17							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23780	23790	23800	Channel				
709	710	711	Freq. (MHz)				
22.76	22.89	22.86	23	QPSK	10MHz	1	0
22.73	22.88	22.84	23	QPSK	10MHz	1	24
22.70	22.88	22.82	23	QPSK	10MHz	1	49
21.65	21.92	21.83	22	QPSK	10MHz	25	0
21.91	21.87	21.88	22	QPSK	10MHz	25	12
21.88	21.93	21.89	22	QPSK	10MHz	25	25
21.89	21.83	21.86	22	QPSK	10MHz	50	0
21.65	21.74	21.82	22	16QAM	10MHz	1	0
21.90	21.92	21.95	22	16QAM	10MHz	1	24
21.91	21.78	21.47	22	16QAM	10MHz	1	49
20.86	20.82	20.89	21	16QAM	10MHz	25	0
20.93	20.90	20.85	21	16QAM	10MHz	25	12
20.93	20.84	20.86	21	16QAM	10MHz	25	25
20.93	20.88	20.90	21	16QAM	10MHz	50	0

LTE Band 17							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23755	23790	23825	Channel				
706.5	710	713.5	Freq. (MHz)				
22.86	22.65	22.62	23	QPSK	5MHz	1	0
22.74	22.69	22.66	23	QPSK	5MHz	1	12
22.62	22.76	22.66	23	QPSK	5MHz	1	24
21.69	21.82	21.78	22	QPSK	5MHz	12	0
21.89	21.89	21.76	22	QPSK	5MHz	12	6
21.83	21.89	21.76	22	QPSK	5MHz	12	13
21.68	21.87	21.93	22	QPSK	5MHz	25	0
21.94	21.86	21.83	22	16QAM	5MHz	1	0
21.84	21.73	21.73	22	16QAM	5MHz	1	12
21.90	21.83	21.76	22	16QAM	5MHz	1	24
20.82	20.91	20.88	21	16QAM	5MHz	12	0
20.86	20.95	20.89	21	16QAM	5MHz	12	6
20.90	20.99	20.77	21	16QAM	5MHz	12	13
20.78	20.79	20.86	21	16QAM	5MHz	25	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37850	38000	38150	Channel				
2580	2595	2610	Freq. (MHz)				
22.93	23.00	22.84	23.5	QPSK	20MHz	1	0
22.86	22.65	22.78	23.5	QPSK	20MHz	1	49
22.90	22.64	22.79	23.5	QPSK	20MHz	1	99
21.93	21.97	21.93	22.5	QPSK	20MHz	50	0
21.92	21.80	21.88	22.5	QPSK	20MHz	50	25
21.89	21.85	21.85	22.5	QPSK	20MHz	50	50
22.04	21.84	21.88	22.5	QPSK	20MHz	100	0
22.05	22.05	21.84	22.5	16QAM	20MHz	1	0
22.05	21.88	21.93	22.5	16QAM	20MHz	1	49
21.94	21.80	21.97	22.5	16QAM	20MHz	1	99
21.23	20.89	20.98	21.5	16QAM	20MHz	50	0
21.06	20.98	21.14	21.5	16QAM	20MHz	50	25
21.03	20.90	21.10	21.5	16QAM	20MHz	50	50
21.05	20.92	20.95	21.5	16QAM	20MHz	100	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37825	38000	38175	Channel				
2577.5	2595	2612.5	Freq. (MHz)				
22.85	22.91	22.99	23.5	QPSK	15MHz	1	0
22.83	22.73	22.81	23.5	QPSK	15MHz	1	37
22.87	22.86	22.92	23.5	QPSK	15MHz	1	74
22.12	21.78	22.03	22.5	QPSK	15MHz	36	0
21.97	21.81	21.98	22.5	QPSK	15MHz	36	19
21.92	21.75	22.00	22.5	QPSK	15MHz	36	39
21.97	21.83	22.03	22.5	QPSK	15MHz	75	0
22.18	21.93	22.04	22.5	16QAM	15MHz	1	0
22.22	21.81	21.99	22.5	16QAM	15MHz	1	37
22.04	21.77	22.09	22.5	16QAM	15MHz	1	74
21.07	20.80	21.04	21.5	16QAM	15MHz	36	0
20.99	20.84	20.99	21.5	16QAM	15MHz	36	19
20.96	20.87	21.12	21.5	16QAM	15MHz	36	39
21.02	20.91	21.10	21.5	16QAM	15MHz	75	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37800	38000	38200	Channel				
2575	2595	2615	Freq. (MHz)				
22.91	22.74	22.87	23.5	QPSK	10MHz	1	0
22.96	22.69	22.97	23.5	QPSK	10MHz	1	24
22.97	22.75	22.94	23.5	QPSK	10MHz	1	49
22.07	21.70	22.03	22.5	QPSK	10MHz	25	0
22.07	21.90	21.99	22.5	QPSK	10MHz	25	12
22.06	21.80	21.95	22.5	QPSK	10MHz	25	25
22.01	21.76	22.06	22.5	QPSK	10MHz	50	0
22.20	21.87	22.05	22.5	16QAM	10MHz	1	0
22.17	21.78	21.90	22.5	16QAM	10MHz	1	24
22.07	21.91	22.01	22.5	16QAM	10MHz	1	49
21.23	20.90	21.01	21.5	16QAM	10MHz	25	0
21.15	20.99	21.07	21.5	16QAM	10MHz	25	12
21.16	20.88	21.12	21.5	16QAM	10MHz	25	25
21.11	20.85	21.04	21.5	16QAM	10MHz	50	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37775	38000	38225	Channel				
2572.5	2595	2617.5	Freq. (MHz)				
22.92	22.75	22.82	23.5	QPSK	5MHz	1	0
22.93	22.80	22.88	23.5	QPSK	5MHz	1	12
22.87	22.78	22.82	23.5	QPSK	5MHz	1	24
22.04	21.82	22.10	22.5	QPSK	5MHz	12	0
22.09	21.83	21.93	22.5	QPSK	5MHz	12	6
22.05	21.88	22.09	22.5	QPSK	5MHz	12	13
22.08	21.77	21.87	22.5	QPSK	5MHz	25	0
22.06	21.82	21.95	22.5	16QAM	5MHz	1	0
22.02	21.89	21.89	22.5	16QAM	5MHz	1	12
22.15	21.84	21.97	22.5	16QAM	5MHz	1	24
21.10	20.84	20.92	21.5	16QAM	5MHz	12	0
21.07	20.95	21.16	21.5	16QAM	5MHz	12	6
21.04	20.91	21.13	21.5	16QAM	5MHz	12	13
21.17	20.86	20.98	21.5	16QAM	5MHz	25	0

LTE Band 41								
Maximum Average Power (dBm)				Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
40190	40490	40790	41090	Channel				
2550	2580	2610	2640	Freq. (MHz)				
23.99	23.64	23.32	23.33	24.5	QPSK	20MHz	1	0
23.38	23.17	23.11	23.10	24.5	QPSK	20MHz	1	49
23.35	22.92	23.04	23.03	24.5	QPSK	20MHz	1	99
22.70	22.21	22.26	22.25	23.5	QPSK	20MHz	50	0
22.69	22.27	22.28	22.30	23.5	QPSK	20MHz	50	25
22.58	22.17	22.23	22.15	23.5	QPSK	20MHz	50	50
22.54	22.24	22.24	22.11	23.5	QPSK	20MHz	100	0
23.05	22.50	22.37	22.43	23.5	16QAM	20MHz	1	0
23.10	22.38	22.23	22.55	23.5	16QAM	20MHz	1	49
22.74	22.22	22.33	22.39	23.5	16QAM	20MHz	1	99
21.80	21.39	21.32	21.36	22.5	16QAM	20MHz	50	0
21.71	21.35	21.34	21.41	22.5	16QAM	20MHz	50	25
21.74	21.24	21.31	21.38	22.5	16QAM	20MHz	50	50
21.66	21.42	21.31	21.45	22.5	16QAM	20MHz	100	0

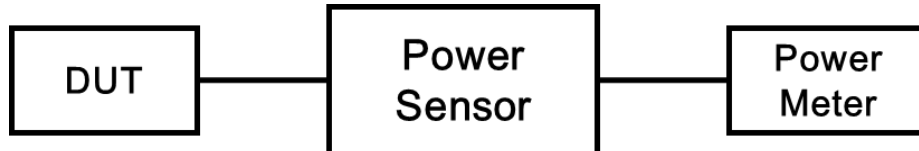
LTE Band 41								
Maximum Average Power (dBm)				Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
40165	40482	40798	41115	Channel				
2547.5	2579.2	4610.8	2642.5	Freq. (MHz)				
23.39	23.13	22.99	23.31	24.5	QPSK	15MHz	1	0
23.49	23.08	23.04	23.08	24.5	QPSK	15MHz	1	37
23.53	23.20	23.10	23.16	24.5	QPSK	15MHz	1	74
22.71	22.23	22.18	22.30	23.5	QPSK	15MHz	36	0
22.62	22.27	22.24	22.19	23.5	QPSK	15MHz	36	19
22.69	22.22	22.22	22.30	23.5	QPSK	15MHz	36	39
22.61	22.22	22.29	22.26	23.5	QPSK	15MHz	75	0
23.02	22.47	22.30	22.44	23.5	16QAM	15MHz	1	0
22.89	22.40	22.35	22.65	23.5	16QAM	15MHz	1	37
22.96	22.43	22.32	23.22	23.5	16QAM	15MHz	1	74
22.01	21.45	21.18	21.43	22.5	16QAM	15MHz	36	0
21.94	21.39	21.27	21.24	22.5	16QAM	15MHz	36	19
21.67	21.26	21.15	21.46	22.5	16QAM	15MHz	36	39
21.74	21.40	21.29	21.35	22.5	16QAM	15MHz	75	0

LTE Band 41								
Maximum Average Power (dBm)				Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
40140	40473	40807	41140	Channel				
2545	2578.3	2611.7	2645	Freq. (MHz)				
23.24	22.79	22.69	22.78	24.5	QPSK	10MHz	1	0
22.86	22.85	22.83	22.74	24.5	QPSK	10MHz	1	24
23.35	22.71	22.73	22.77	24.5	QPSK	10MHz	1	49
22.40	21.96	21.98	21.96	23.5	QPSK	10MHz	25	0
22.45	21.91	22.02	21.84	23.5	QPSK	10MHz	25	12
22.37	21.84	21.92	21.87	23.5	QPSK	10MHz	25	25
22.45	21.96	21.99	22.01	23.5	QPSK	10MHz	50	0
22.77	22.19	22.07	22.32	23.5	16QAM	10MHz	1	0
22.82	22.23	22.38	22.14	23.5	16QAM	10MHz	1	24
22.74	22.10	22.02	22.20	23.5	16QAM	10MHz	1	49
21.56	21.15	20.99	21.07	22.5	16QAM	10MHz	25	0
21.63	21.10	21.03	21.05	22.5	16QAM	10MHz	25	12
21.66	21.03	21.04	21.20	22.5	16QAM	10MHz	25	25
21.60	21.03	20.97	21.08	22.5	16QAM	10MHz	50	0

LTE Band 41								
Maximum Average Power (dBm)				Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
40115	40465	40815	41165	Channel				
2542.5	2577.5	2612.5	2647.5	Freq. (MHz)				
23.35	22.80	22.70	22.64	24.5	QPSK	5MHz	1	0
23.23	22.92	22.67	22.83	24.5	QPSK	5MHz	1	12
23.24	22.69	22.70	22.71	24.5	QPSK	5MHz	1	24
22.45	21.89	21.94	21.80	23.5	QPSK	5MHz	12	0
22.49	22.03	21.97	21.89	23.5	QPSK	5MHz	12	6
22.47	21.87	21.84	21.85	23.5	QPSK	5MHz	12	13
22.40	21.85	21.82	21.81	23.5	QPSK	5MHz	25	0
22.74	22.20	22.02	22.25	23.5	16QAM	5MHz	1	0
22.72	22.19	22.05	22.22	23.5	16QAM	5MHz	1	12
22.74	22.05	21.94	22.23	23.5	16QAM	5MHz	1	24
21.52	21.06	20.92	20.98	22.5	16QAM	5MHz	12	0
21.64	21.10	21.05	21.09	22.5	16QAM	5MHz	12	6
21.51	21.04	20.92	21.05	22.5	16QAM	5MHz	12	13
21.57	21.06	21.03	21.13	22.5	16QAM	5MHz	25	0

WLAN Conducted Power

1. As per FCC OET KDB 248227 D01, conducted output power and SAR testing are not required for 802.11g/n20/n40/ax channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2\text{W/kg}$.
2. When the reported SAR of the initial test configuration is $> 0.8\text{ W/kg}$, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.
3. Additional conducted power measurement is required when reported SAR is $> 1.2\text{W/kg}$. In case the subsequent test configuration and the channel bandwidth is smaller than the initial test configuration, all channels that overlap with the larger channel bandwidth in the initial configuration should be tested.
4. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac/ax) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac then ax)
5. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure requirements, is adjusted by the ratio of the subsequent test configuration to the initial test configuration specified maximum output power and the adjusted SAR is $\leq 1.2\text{ W/Kg}$, SAR is not required for that subsequent test configuration.



Power Measurement Setup

WLAN2.4GHz				
Mode	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune-Up Limit
802.11b	1	2412	16.19	16.50
	6	2437	16.25	16.50
	11	2462	16.15	16.50
	12	2467	16.06	16.50
	13	2472	15.57	16.50
802.11g	1	2412	13.36	14.00
	6	2437	13.35	14.00
	11	2462	12.89	14.00
	12	2467	12.03	14.00
	13	2472	0.25	0.50
802.11n HT20	1	2412	13.11	14.00
	6	2437	13.12	14.00
	11	2462	13.22	14.00
	12	2467	10.45	11.50
	13	2472	0.24	1.00
802.11n HT40	3	2422	13.40	14.00
	6	2437	13.44	14.00
	9	2452	13.37	14.00
	10	2457	13.36	14.00
	11	2462	5.08	5.50

U-NII-1				
Mode	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune-Up Limit
802.11a	36	5180	14.18	14.50
	40	5200	14.08	14.50
	44	5220	14.05	14.50
	48	5240	13.89	14.50
802.11n HT20	36	5180	13.93	14.50
	40	5200	14.30	14.50
	44	5220	14.21	14.50
	48	5240	14.20	14.50
802.11n HT40	38	5190	14.26	14.50
	46	5230	13.73	14.50
802.11ac VHT20	36	5180	13.99	14.50
	40	5200	14.36	14.50
	44	5220	14.32	14.50
	48	5240	14.27	14.50
802.11ac VHT40	38	5190	14.27	14.50
	46	5230	13.79	14.50
802.11ac VHT80	42	5210	12.72	13.50

U-NII-2A				
Mode	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune-Up Limit
802.11a	52	5260	13.91	14.50
	56	5280	13.93	14.50
	60	5300	13.89	14.50
	64	5320	14.06	14.50
802.11n HT20	52	5260	14.15	14.50
	56	5280	14.09	14.50
	60	5300	14.09	14.50
	64	5320	13.77	14.50
802.11n HT40	54	5270	14.05	14.50
	62	5310	13.77	14.50
802.11ac VHT20	52	5260	14.25	14.50
	56	5280	14.21	14.50
	60	5300	14.19	14.50
	64	5320	13.87	14.50
802.11ac VHT40	54	5270	14.08	14.50
	62	5310	13.81	14.50
802.11ac VHT80	58	5290	13.07	13.50

U-NII-2C				
Mode	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune-Up Limit
802.11a	100	5500	13.85	14.50
	116	5580	13.75	14.50
	124	5620	13.72	14.50
	132	5660	13.68	14.50
	140	5700	13.76	14.50
	144	5720	12.53	14.50
802.11n HT20	100	5500	14.09	14.50
	116	5580	14.04	14.50
	124	5620	13.94	14.50
	132	5660	13.93	14.50
	140	5700	13.98	14.50
	144	5720	12.52	14.50
802.11n HT40	102	5510	13.97	14.50
	110	5550	13.96	14.50
	126	5630	13.88	14.50
	134	5670	13.87	14.50
	142	5710	12.80	14.50
802.11ac VHT20	100	5500	14.19	14.50
	116	5580	14.07	14.50
	124	5620	14.06	14.50
	132	5660	14.04	14.50
	140	5700	14.08	14.50
	144	5720	12.56	14.50
802.11ac VHT40	102	5510	13.99	14.50
	110	5550	13.97	14.50
	126	5630	13.93	14.50
	134	5670	13.89	14.50
	142	5710	12.91	14.50
802.11ac VHT80	106	5530	12.81	13.00
	122	5610	12.90	13.00
	138	5690	11.37	13.00

U-NII-3				
Mode	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune-Up Limit
802.11a	149	5745	14.18	14.50
	157	5785	14.26	14.50
	165	5825	13.93	14.50
802.11n HT20	149	5745	13.88	14.50
	157	5785	13.96	14.50
	165	5825	14.16	14.50
802.11n HT40	151	5755	13.96	14.50
	159	5795	13.98	14.50
802.11ac VHT20	149	5745	13.93	14.50
	157	5785	14.09	14.50
	165	5825	14.19	14.50
802.11ac VHT40	151	5755	13.98	14.50
	159	5795	14.02	14.50
802.11ac VHT80	155	5775	12.47	13.00

Band	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune up Limit
Bluetooth BR GFSK	0	2402	11.21	12.00
	39	2441	10.54	12.00
	78	2480	11.04	12.00
Bluetooth EDR $\pi/4$ -DQPSK	0	2402	8.87	9.00
	39	2441	7.89	9.00
	78	2480	8.57	9.00
Bluetooth EDR 8DPSK	0	2402	8.94	9.00
	39	2441	8.09	9.00
	78	2480	8.71	9.00

Band	Channel	Frequency (MHz)	Main	
			Average power (dBm)	Tune up Limit
Bluetooth LE 1Mbps	0	2402	-0.27	1.50
	39	2440	-0.57	1.50
	78	2480	0.9	1.50
Bluetooth LE 2Mbps	0	2402	-0.61	1.50
	39	2440	-0.85	1.50
	78	2480	0.93	1.50