



Appendix A

Transmitter Output Power

According to FCC Part 2.1046 & FCC Part 27C & 27M



Conducted Power of Transmitter

Table 1 Measurement Results (LTE) BAND 7

TM6 & TM7 RF Output Power(Conducted) BAND 7			
Test Mode	TN/VN		
	Modulation	RB	Measured (dBm)
Channel (L) 5MHz(BW)	QPSK	1RB#0	21.69
		1RB#max	21.79
		12RB#6	22.00
		Full	21.88
	16QAM	1RB#0	21.70
		1RB#max	21.81
		12RB#6	20.92
		Full	20.78
Channel (L) 10MHz(BW)	QPSK	1RB#0	21.44
		1RB#max	22.11
		25RB#13	21.87
		Full	21.64
	16QAM	1RB#0	21.83
		1RB#max	22.25
		25RB#13	20.77
		Full	20.54
Channel (L) 15MHz(BW)	QPSK	1RB#0	21.69
		1RB#max	22.10
		36RB#18	21.86
		Full	21.74
	16QAM	1RB#0	21.69
		1RB#max	22.10
		36RB#18	20.78
		Full	20.66
Channel (L) 20MHz(BW)	QPSK	1RB#0	21.84
		1RB#max	22.28
		50RB#25	21.96
		Full	21.86
		1RB#0	21.85



	16QAM	1RB#max	22.31
		50RB#25	20.84
		Full	20.74
Channel (M) 5MHz(BW)	QPSK	1RB#0	21.93
		1RB#max	21.82
		12RB#6	22.19
		Full	22.08
	16QAM	1RB#0	21.90
		1RB#max	21.80
		12RB#6	21.15
		Full	21.01
Channel (M) 10MHz(BW)	QPSK	1RB#0	21.69
		1RB#max	22.04
		25RB#13	22.06
		Full	21.80
	16QAM	1RB#0	21.71
		1RB#max	22.07
		25RB#13	20.97
		Full	20.70
Channel (M) 15MHz(BW)	QPSK	1RB#0	21.86
		1RB#max	21.98
		36RB#18	22.09
		Full	21.94
	16QAM	1RB#0	21.91
		1RB#max	22.03
		36RB#18	21.03
		Full	20.85
Channel (M) 20MHz(BW)	QPSK	1RB#0	22.02
		1RB#max	21.91
		50RB#25	22.02
		Full	21.93
	16QAM	1RB#0	22.15
		1RB#max	22.07
		50RB#25	20.95
		Full	20.85



Channel (H) 5MHz(BW)	QPSK	1RB#0	21.55
		1RB#max	21.50
		12RB#6	21.75
		Full	21.63
	16QAM	1RB#0	21.59
		1RB#max	21.64
		12RB#6	20.79
		Full	20.67
Channel (H) 10MHz(BW)	QPSK	1RB#0	21.52
		1RB#max	21.85
		25RB#13	21.78
		Full	21.55
	16QAM	1RB#0	21.61
		1RB#max	21.92
		25RB#13	20.68
		Full	20.44
Channel (H) 15MHz(BW)	QPSK	1RB#0	21.66
		1RB#max	21.87
		36RB#18	21.66
		Full	21.76
	16QAM	1RB#0	21.82
		1RB#max	22.03
		36RB#18	20.71
		Full	20.66
Channel (H) 20MHz(BW)	QPSK	1RB#0	21.70
		1RB#max	21.82
		50RB#25	21.71
		Full	21.65
	16QAM	1RB#0	21.96
		1RB#max	22.08
		50RB#25	20.72
		Full	20.62



Peak-to-Average Ratio

Table 2 Measurement Results (LTE) BAND 7

Peak-to-Average Ratio				
Test Mode	TN/VN			
	Modulation	RB	Measured (dB)	Limit (dB)
Channel (L) 5MHz(BW)	QPSK	1RB#0	5.45	13
		1RB#max	5.47	13
		12RB#6	5.46	13
		Full	5.53	13
	16QAM	1RB#0	6.40	13
		1RB#max	6.37	13
		12RB#6	6.36	13
		Full	6.42	13
Channel (L) 10MHz(BW)	QPSK	1RB#0	5.34	13
		1RB#max	5.33	13
		25RB#13	5.37	13
		Full	5.37	13
	16QAM	1RB#0	6.24	13
		1RB#max	6.23	13
		25RB#13	6.29	13
		Full	6.31	13
Channel (L) 15MHz(BW)	QPSK	1RB#0	5.58	13
		1RB#max	5.57	13
		36RB#18	5.59	13
		Full	5.63	13
	16QAM	1RB#0	6.18	13
		1RB#max	6.15	13
		36RB#18	6.19	13
		Full	6.24	13
Channel (L) 20MHz(BW)	QPSK	1RB#0	5.29	13
		1RB#max	5.27	13
		50RB#25	5.32	13
		Full	5.33	13
	16QAM	1RB#0	6.25	13
		1RB#max	6.24	13



		50RB#25	6.27	13
		Full	6.29	13
Channel (M) 5MHz(BW)	QPSK	1RB#0	5.52	13
		1RB#max	5.50	13
		12RB#6	5.51	13
		Full	5.55	13
	16QAM	1RB#0	6.41	13
		1RB#max	6.35	13
		12RB#6	6.38	13
		Full	6.42	13
Channel (M) 10MHz(BW)	QPSK	1RB#0	5.37	13
		1RB#max	5.34	13
		25RB#13	5.32	13
		Full	5.39	13
	16QAM	1RB#0	6.30	13
		1RB#max	6.27	13
		25RB#13	6.26	13
		Full	6.32	13
Channel (M) 15MHz(BW)	QPSK	1RB#0	5.64	13
		1RB#max	5.62	13
		36RB#18	5.57	13
		Full	5.65	13
	16QAM	1RB#0	6.16	13
		1RB#max	6.19	13
		36RB#18	6.14	13
		Full	6.26	13
Channel (M) 20MHz(BW)	QPSK	1RB#0	5.32	13
		1RB#max	5.31	13
		50RB#25	5.33	13
		Full	5.37	13
	16QAM	1RB#0	6.27	13
		1RB#max	6.28	13
		50RB#25	6.29	13
		Full	6.33	13
Channel (H) 5MHz(BW)	QPSK	1RB#0	5.48	13
		1RB#max	5.47	13
		12RB#6	5.46	13
		Full	5.52	13



	16QAM	1RB#0	6.38	13
		1RB#max	6.34	13
		12RB#6	6.33	13
		Full	6.39	13
Channel (H) 10MHz(BW)	QPSK	1RB#0	5.37	13
		1RB#max	5.36	13
		25RB#13	5.32	13
		Full	5.38	13
	16QAM	1RB#0	6.25	13
		1RB#max	6.24	13
		25RB#13	6.29	13
		Full	6.31	13
Channel (H) 15MHz(BW)	QPSK	1RB#0	5.55	13
		1RB#max	5.56	13
		36RB#18	5.53	13
		Full	5.57	13
	16QAM	1RB#0	6.20	13
		1RB#max	6.23	13
		36RB#18	6.25	13
		Full	6.26	13
Channel (H) 20MHz(BW)	QPSK	1RB#0	5.29	13
		1RB#max	5.27	13
		50RB#25	5.34	13
		Full	5.35	13
	16QAM	1RB#0	6.29	13
		1RB#max	6.25	13
		50RB#25	6.24	13
		Full	6.31	13



Effective Isotropic Radiated Power of Transmitter (EIRP)

Table 3 Substitution Results (LTE) BAND 7

Test Mode			Meas. Level [dBm]	Substitution Antenna Type	SGP[dBm]	Substitution Gain [dBi]	Cable Loss [dB]	Substitution Level (EIRP) [dBm]	FCC limit [dBm]	Result	
Channel	Modulation	RB									
Channel (L) 5MHz(BW)	QPSK	1 RB/#0	24.99	Horn Ant.	21.46	4.5	1	24.96	33	Pass	
		1 RB/#max	25.09	Horn Ant.	21.56	4.5	1	25.06	33	Pass	
		12 RB/#6	25.30	Horn Ant.	21.77	4.5	1	25.27	33	Pass	
		Full	25.18	Horn Ant.	21.65	4.5	1	25.15	33	Pass	
	16QAM	1 RB/#0	250	250	Horn Ant.	21.47	4.5	1	24.97	33	Pass
		1 RB/#max	25.11	25.11	Horn Ant.	21.58	4.5	1	25.08	33	Pass
		12 RB/#6	24.22	24.22	Horn Ant.	20.69	4.5	1	24.19	33	Pass
		Full	24.08	24.08	Horn Ant.	20.55	4.5	1	24.05	33	Pass
Channel (L) 10MHz(BW)	QPSK	1 RB/#0	24.74	Horn Ant.	21.21	4.5	1	24.71	33	Pass	
		1 RB/#max	25.41	Horn Ant.	21.88	4.5	1	25.38	33	Pass	
		25 RB/#13	25.17	Horn Ant.	21.64	4.5	1	25.14	33	Pass	
		Full	24.94	Horn Ant.	21.41	4.5	1	24.91	33	Pass	
	16QAM	1 RB/#0	25.13	25.13	Horn Ant.	21.60	4.5	1	25.10	33	Pass
		1 RB/#max	25.55	25.55	Horn Ant.	22.02	4.5	1	25.52	33	Pass
		25 RB/#13	24.07	24.07	Horn	20.54	4.5	1	24.04	33	Pass



				Ant.							
		Full	23.84	Horn Ant.	20.31	4.5	1	23.81	33	Pass	
Channel (L) 15MHz(BW)	QPSK	1 RB/#0	24.99	Horn Ant.	21.46	4.5	1	24.96	33	Pass	
		1 RB/#max	25.40	Horn Ant.	21.87	4.5	1	25.37	33	Pass	
		36 RB/#18	25.16	Horn Ant.	21.63	4.5	1	25.13	33	Pass	
		Full	25.04	Horn Ant.	21.51	4.5	1	25.01	33	Pass	
	16QAM	1 RB/#0	24.99	24.99	Horn Ant.	21.46	4.5	1	24.96	33	Pass
		1 RB/#max	25.40	25.40	Horn Ant.	21.87	4.5	1	25.37	33	Pass
		36 RB/#18	24.08	24.08	Horn Ant.	20.55	4.5	1	24.05	33	Pass
		Full	23.96	23.96	Horn Ant.	20.43	4.5	1	23.93	33	Pass
Channel (L) 20MHz(BW)	QPSK	1 RB/#0	25.14	25.14	Horn Ant.	21.61	4.5	1	25.11	33	Pass
		1 RB/#max	25.58	25.58	Horn Ant.	22.05	4.5	1	25.55	33	Pass
		50 RB/#25	25.26	25.26	Horn Ant.	21.73	4.5	1	25.23	33	Pass
		Full	25.16	25.16	Horn Ant.	21.63	4.5	1	25.13	33	Pass
	16QAM	1 RB/#0	25.15	25.15	Horn Ant.	21.62	4.5	1	25.12	33	Pass
		1 RB/#max	25.61	25.61	Horn Ant.	22.08	4.5	1	25.58	33	Pass
		50 RB/#25	24.14	24.14	Horn Ant.	20.61	4.5	1	24.11	33	Pass
		Full	24.04	24.04	Horn Ant.	20.51	4.5	1	24.01	33	Pass
Channel (M)	QPSK	1 RB/#0	25.23	25.23	Horn Ant.	21.70	4.5	1	25.20	33	Pass



5MHz(B W)		1 RB/#max	25.12	Horn Ant.	21.59	4.5	1	25.09	33	Pass
		12 RB/#6	25.49	Horn Ant.	21.96	4.5	1	25.46	33	Pass
		Full	25.38	Horn Ant.	21.85	4.5	1	25.35	33	Pass
	16QA M	1 RB/#0	25.20	Horn Ant.	21.67	4.5	1	25.17	33	Pass
		1 RB/#max	25.10	Horn Ant.	21.57	4.5	1	25.07	33	Pass
		12 RB/#6	24.45	Horn Ant.	20.92	4.5	1	24.42	33	Pass
		Full	24.31	Horn Ant.	20.78	4.5	1	24.28	33	Pass
Channel (M) 10MHz(B W)	QPSK	1 RB/#0	24.99	Horn Ant.	21.46	4.5	1	24.96	33	Pass
		1 RB/#max	25.34	Horn Ant.	21.83	4.5	1	25.33	33	Pass
		25 RB/#13	25.36	Horn Ant.	21.85	4.5	1	25.35	33	Pass
		Full	25.10	Horn Ant.	21.59	4.5	1	25.09	33	Pass
	16QA M	1 RB/#0	25.01	Horn Ant.	21.50	4.5	1	25.00	33	Pass
		1 RB/#max	25.37	Horn Ant.	21.86	4.5	1	25.36	33	Pass
		25 RB/#13	24.27	Horn Ant.	20.76	4.5	1	24.26	33	Pass
		Full	24.00	Horn Ant.	20.49	4.5	1	23.99	33	Pass
Channel (M) 15MHz(B W)	QPSK	1 RB/#0	25.16	Horn Ant.	21.65	4.5	1	25.15	33	Pass
		1 RB/#max	25.28	Horn Ant.	21.77	4.5	1	25.27	33	Pass
		36 RB/#18	25.39	Horn Ant.	21.88	4.5	1	25.38	33	Pass
		Full	25.24	Horn Ant.	21.73	4.5	1	25.23	33	Pass



	16QAM	1 RB/#0	25.21	Horn Ant.	21.70	4.5	1	25.20	33	Pass
		1 RB/#max	25.33	Horn Ant.	21.82	4.5	1	25.32	33	Pass
		36 RB/#18	24.33	Horn Ant.	20.82	4.5	1	24.32	33	Pass
		Full	24.15	Horn Ant.	20.64	4.5	1	24.14	33	Pass
Channel (M) 20MHz(BW)	QPSK	1 RB/#0	25.32	Horn Ant.	21.81	4.5	1	25.31	33	Pass
		1 RB/#max	25.21	Horn Ant.	21.70	4.5	1	25.20	33	Pass
		50 RB/#25	25.32	Horn Ant.	21.81	4.5	1	25.31	33	Pass
		Full	25.23	Horn Ant.	21.72	4.5	1	25.22	33	Pass
	16QAM	1 RB/#0	25.45	Horn Ant.	21.94	4.5	1	25.44	33	Pass
		1 RB/#max	25.37	Horn Ant.	21.86	4.5	1	25.36	33	Pass
		50 RB/#25	24.25	Horn Ant.	20.74	4.5	1	24.24	33	Pass
		Full	24.15	Horn Ant.	20.64	4.5	1	24.14	33	Pass
Channel (H) 5MHz(BW)	QPSK	1 RB/#0	24.85	Horn Ant.	21.03	4.8	1	24.83	33	Pass
		1 RB/#max	24.8	Horn Ant.	20.98	4.8	1	24.78	33	Pass
		12 RB/#6	25.05	Horn Ant.	21.23	4.8	1	25.03	33	Pass
		Full	24.93	Horn Ant.	21.11	4.8	1	24.91	33	Pass
	16QAM	1 RB/#0	24.89	Horn Ant.	21.07	4.8	1	24.87	33	Pass
		1 RB/#max	24.94	Horn Ant.	21.12	4.8	1	24.92	33	Pass
		12 RB/#6	24.09	Horn Ant.	20.27	4.8	1	24.07	33	Pass



		Full	23.97	Horn Ant.	20.15	4.8	1	23.95	33	Pass
Channel (H) 10MHz(BW)	QPSK	1 RB/#0	24.82	Horn Ant.	21.00	4.8	1	24.80	33	Pass
		1 RB/#max	25.15	Horn Ant.	21.33	4.8	1	25.13	33	Pass
		25 RB/#13	25.08	Horn Ant.	21.26	4.8	1	25.06	33	Pass
		Full	24.85	Horn Ant.	21.03	4.8	1	24.83	33	Pass
	16QAM	1 RB/#0	24.91	Horn Ant.	21.09	4.8	1	24.89	33	Pass
		1 RB/#max	25.22	Horn Ant.	21.40	4.8	1	25.20	33	Pass
		25 RB/#13	23.98	Horn Ant.	20.16	4.8	1	23.96	33	Pass
		Full	23.74	Horn Ant.	19.92	4.8	1	23.72	33	Pass
Channel (H) 15MHz(BW)	QPSK	1 RB/#0	24.96	Horn Ant.	21.14	4.8	1	24.94	33	Pass
		1 RB/#max	25.17	Horn Ant.	21.35	4.8	1	25.15	33	Pass
		36 RB/#18	24.96	Horn Ant.	21.14	4.8	1	24.94	33	Pass
		Full	25.06	Horn Ant.	21.24	4.8	1	25.04	33	Pass
	16QAM	1 RB/#0	25.12	Horn Ant.	21.30	4.8	1	25.10	33	Pass
		1 RB/#max	25.33	Horn Ant.	21.51	4.8	1	25.31	33	Pass
		36 RB/#18	24.01	Horn Ant.	20.19	4.8	1	23.99	33	Pass
		Full	23.96	Horn Ant.	20.14	4.8	1	23.94	33	Pass
Channel (H) 20MHz(BW)	QPSK	1 RB/#0	25	Horn Ant.	21.18	4.8	1	24.98	33	Pass
		1 RB/#max	25.12	Horn Ant.	21.30	4.8	1	25.10	33	Pass



		50 RB/#25	25.01	Horn Ant.	21.19	4.8	1	24.99	33	Pass
		Full	24.95	Horn Ant.	21.13	4.8	1	24.93	33	Pass
	16QA M	1 RB/#0	25.26	Horn Ant.	21.44	4.8	1	25.24	33	Pass
		1 RB/#max	25.38	Horn Ant.	21.56	4.8	1	25.36	33	Pass
		50 RB/#25	24.02	Horn Ant.	20.20	4.8	1	24.00	33	Pass
		Full	23.92	Horn Ant.	20.10	4.8	1	23.90	33	Pass

Note: a, For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b, SGP=Signal Generator Level

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