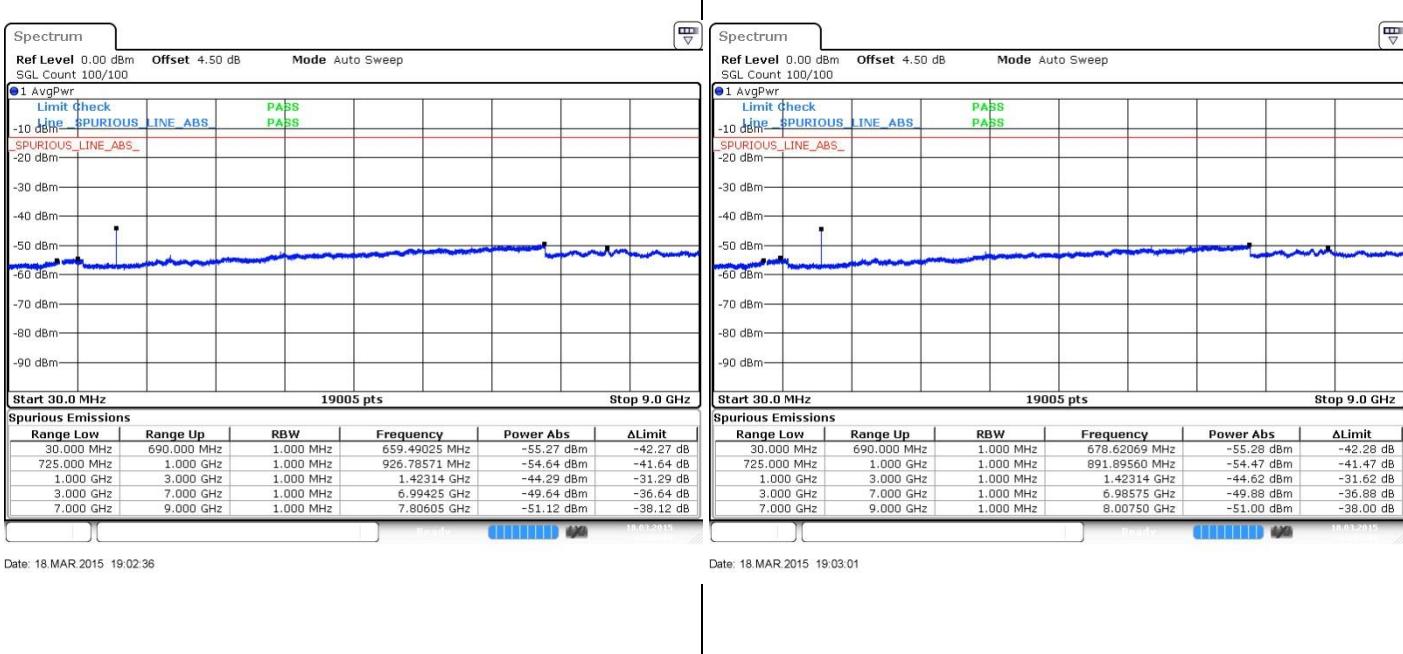




## LTE Band 12 / 5MHz

## Highest Channel / QPSK

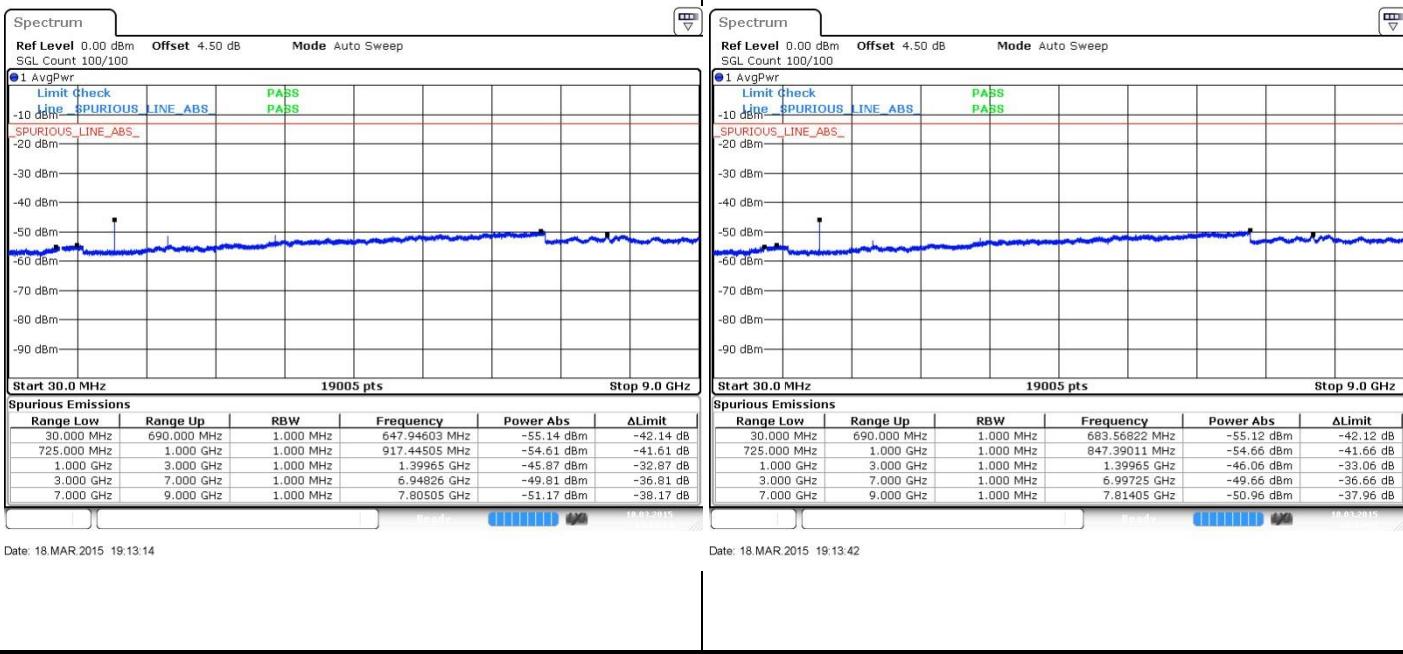
## Highest Channel / 16QAM

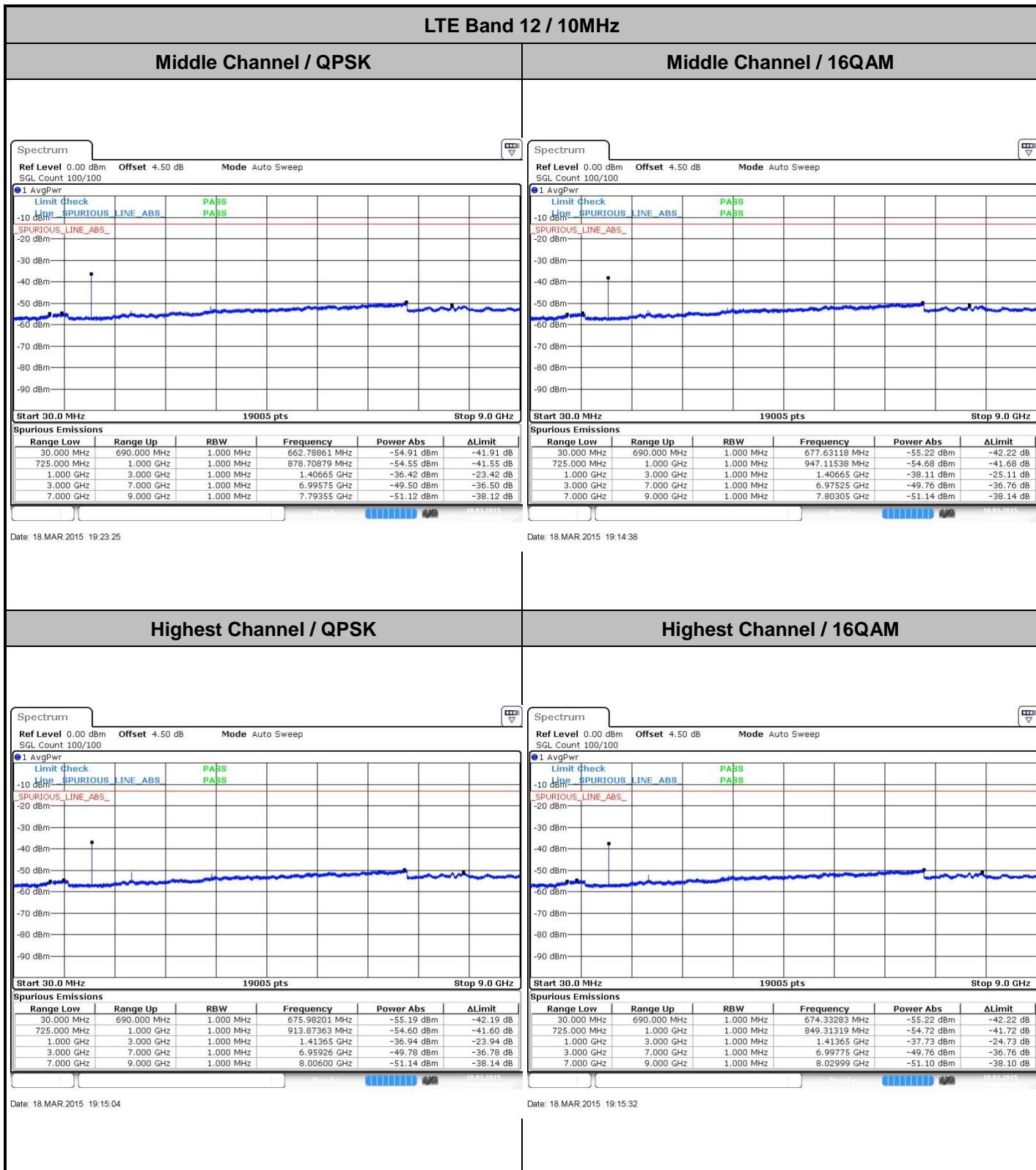


## LTE Band 12 / 10MHz

## Lowest Channel / QPSK

## Lowest Channel / 16QAM







## Frequency Stability

Test Conditions		LTE Band 2 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0012	PASS
40	Normal Voltage	0.0010	
30	Normal Voltage	0.0002	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0008	
0	Normal Voltage	0.0005	
-10	Normal Voltage	0.0007	
-20	Normal Voltage	0.0004	
-30	Normal Voltage	0.0006	
20	Maximum Voltage	0.0011	
20	Normal Voltage	0.0008	
20	Battery End Point	0.0004	

**Note:**

1. Normal Voltage = 3.80 V. ; Battery End Point (BEP) = 3.50 V. ; Maximum Voltage = 4.35 V
2. Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Test Conditions		LTE Band 4 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0010	PASS
40	Normal Voltage	0.0001	
30	Normal Voltage	0.0003	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0014	
0	Normal Voltage	0.0035	
-10	Normal Voltage	0.0002	
-20	Normal Voltage	0.0058	
-30	Normal Voltage	0.0005	
20	Maximum Voltage	0.0000	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0048	

**Note:**

1. Normal Voltage = 3.80 V. ; Battery End Point (BEP) = 3.50 V. ; Maximum Voltage = 4.35 V
2. Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



Test Conditions		LTE Band 5 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	2.5ppm
		Deviation (ppm)	Result
50	Normal Voltage	0.0185	PASS
40	Normal Voltage	0.0175	
30	Normal Voltage	0.0024	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0161	
0	Normal Voltage	0.0167	
-10	Normal Voltage	0.0048	
-20	Normal Voltage	0.0030	
-30	Normal Voltage	0.0176	
20	Maximum Voltage	0.0012	
20	Normal Voltage	0.0126	
20	Battery End Point	0.0054	

**Note:** Normal Voltage = 3.80 V. ; Battery End Point (BEP) = 3.50 V. ; Maximum Voltage = 4.35 V



Test Conditions		LTE Band 12 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0069	PASS
40	Normal Voltage	0.0045	
30	Normal Voltage	0.0035	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0013	
0	Normal Voltage	0.0040	
-10	Normal Voltage	0.0102	
-20	Normal Voltage	0.0122	
-30	Normal Voltage	0.0151	
20	Maximum Voltage	0.0170	
20	Normal Voltage	0.0189	
20	Battery End Point	0.0209	

**Note:**

1. Normal Voltage = 3.80 V. ; Battery End Point (BEP) = 3.50 V. ; Maximum Voltage = 4.35 V
2. Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.



## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power)

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	22.10	21.78	21.68
1.4	1	2		22.31	21.93	21.78
1.4	1	5		22.20	22.08	21.78
1.4	3	0		22.16	22.17	22.07
1.4	3	1		22.46	22.28	22.08
1.4	3	2		22.29	22.16	22.02
1.4	6	0		20.41	20.43	20.42
1.4	1	0		21.18	21.20	21.80
1.4	1	2	16-QAM	20.98	21.51	21.75
1.4	1	5		20.95	21.29	21.59
1.4	3	0		21.06	21.09	20.95
1.4	3	1		21.17	21.19	21.11
1.4	3	2		21.10	21.25	21.06
1.4	6	0		19.45	19.53	19.75
3	1	0	QPSK	22.13	22.09	21.87
3	1	7		22.57	22.66	21.83
3	1	14		22.17	22.14	22.15
3	8	0		20.47	20.44	20.46
3	8	4		20.45	20.49	20.41
3	8	7		20.44	20.43	20.43
3	15	0		20.40	20.41	20.41
3	1	0		21.10	20.95	21.01
3	1	7	16-QAM	21.83	21.21	21.00
3	1	14		21.63	21.16	20.92
3	8	0		19.55	19.52	19.64
3	8	4		19.47	19.46	19.60
3	8	7		19.42	19.43	19.56
3	15	0		19.45	19.46	19.45



LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	21.85	22.12	21.82
	1	12		22.08	21.83	21.87
	1	24		21.89	22.13	21.77
	12	0		20.48	20.48	20.48
	12	6		20.45	20.46	20.44
	12	11		20.41	20.42	20.45
	25	0		20.43	20.41	20.43
5	1	0	16-QAM	21.59	21.32	20.84
	1	12		21.31	21.77	21.08
	1	24		21.12	21.39	21.26
	12	0		19.62	19.62	19.57
	12	6		19.57	19.56	19.55
	12	11		19.45	19.57	19.53
	25	0		19.42	19.46	19.49
10	1	0	QPSK	22.50	22.24	22.27
	1	24		22.39	22.37	22.21
	1	49		22.19	22.05	21.91
	25	0		20.45	20.45	20.47
	25	12		20.44	20.44	20.44
	25	24		20.42	20.41	20.42
	50	0		20.41	20.42	20.41
10	1	0	16-QAM	20.81	21.42	21.60
	1	24		21.22	21.14	21.30
	1	49		20.60	21.62	21.13
	25	0		19.44	19.51	19.56
	25	12		19.42	19.49	19.52
	25	24		19.46	19.44	19.50
	50	0		19.52	19.42	19.46



LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.36	22.16	22.07
	1	37		22.50	21.95	21.91
	1	74		21.90	21.97	21.83
	36	0		20.46	20.45	20.45
	36	18		20.43	20.42	20.42
	36	37		20.41	20.42	20.43
	75	0		20.43	20.43	20.42
15	1	0	16-QAM	21.93	21.14	21.66
	1	37		21.83	21.07	21.20
	1	74		21.39	21.28	21.48
	36	0		19.57	19.58	19.58
	36	18		19.59	19.50	19.49
	36	37		19.55	19.46	19.45
	75	0		19.42	19.46	19.62
20	1	0	QPSK	22.44	22.67	22.03
	1	49		21.98	22.39	21.78
	1	99		22.04	22.26	21.76
	50	0		20.48	20.59	20.52
	50	24		20.45	20.45	20.48
	50	49		20.46	20.42	20.44
	100	0		20.42	20.66	20.42
20	1	0	16-QAM	21.40	20.98	21.85
	1	49		21.14	20.67	21.29
	1	99		21.15	20.85	21.29
	50	0		19.54	19.52	19.64
	50	24		19.51	19.59	19.62
	50	49		19.48	19.43	19.57
	100	0		19.43	19.44	19.48



LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.28	23.26	23.08
1.4	1	2		23.32	23.46	23.05
1.4	1	5		23.31	23.23	22.95
1.4	3	0		23.30	23.31	23.17
1.4	3	1		23.28	23.36	23.24
1.4	3	2		23.29	23.39	23.19
1.4	6	0		22.32	22.26	22.21
1.4	1	0	16-QAM	22.20	22.90	22.41
1.4	1	2		22.17	22.00	22.26
1.4	1	5		22.08	21.93	22.40
1.4	3	0		22.08	21.96	22.17
1.4	3	1		22.29	21.81	22.24
1.4	3	2		22.12	22.04	22.38
1.4	6	0		21.04	21.08	21.28
3	1	0	QPSK	23.24	22.99	22.94
3	1	7		23.36	23.30	23.09
3	1	14		23.32	23.28	23.04
3	8	0		22.34	22.37	22.31
3	8	4		22.43	22.34	22.20
3	8	7		22.47	22.37	22.23
3	15	0		22.30	22.34	22.22
3	1	0	16-QAM	21.97	22.57	22.28
3	1	7		22.04	22.54	22.38
3	1	14		22.90	22.55	22.28
3	8	0		21.55	21.44	21.24
3	8	4		21.49	21.38	21.11
3	8	7		21.64	21.50	21.15
3	15	0		21.23	21.53	20.85



LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.22	23.17	23.15
	1	12		23.24	23.07	23.26
	1	24		23.17	23.06	22.88
	12	0		22.33	22.24	22.27
	12	6		22.46	22.36	22.25
	12	11		22.37	22.24	22.15
	25	0		22.36	22.36	22.30
5	1	0	16-QAM	22.29	22.46	22.36
	1	12		22.17	22.40	22.53
	1	24		22.20	22.35	21.73
	12	0		21.38	21.31	21.34
	12	6		21.41	21.31	21.25
	12	11		21.48	21.40	21.15
	25	0		21.35	21.42	21.42
10	1	0	QPSK	23.16	23.30	23.29
	1	24		22.90	23.32	22.98
	1	49		22.56	23.29	22.92
	25	0		22.47	22.35	22.42
	25	12		22.41	22.36	22.24
	25	24		22.39	22.34	22.17
	50	0		22.43	22.35	22.34
10	1	0	16-QAM	22.54	22.55	22.70
	1	24		22.45	22.47	22.37
	1	49		22.06	22.48	22.37
	25	0		21.44	21.46	21.52
	25	12		21.53	21.51	21.35
	25	24		21.65	21.47	21.46
	50	0		21.46	21.43	21.38



LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	23.42	23.16	23.38
	1	37		23.30	23.13	23.19
	1	74		23.21	23.09	23.16
	36	0		22.46	22.38	22.37
	36	18		22.37	22.28	22.31
	36	37		22.23	22.23	22.23
	75	0		22.38	22.31	22.29
15	1	0	16-QAM	22.90	22.62	22.63
	1	37		22.94	22.57	22.55
	1	74		22.92	22.48	22.26
	36	0		21.56	21.44	21.42
	36	18		21.46	21.42	21.39
	36	37		21.33	21.45	21.18
	75	0		21.39	21.45	21.26
20	1	0	QPSK	23.34	<b>23.61</b>	23.26
	1	49		23.23	23.60	23.18
	1	99		23.01	23.34	23.20
	50	0		22.29	22.38	22.35
	50	24		22.25	22.26	22.32
	50	49		22.25	22.30	22.25
	100	0		22.27	22.35	22.32
20	1	0	16-QAM	22.82	22.40	22.12
	1	49		22.80	22.38	22.07
	1	99		22.77	22.34	22.11
	50	0		21.60	21.35	21.33
	50	24		21.39	21.34	21.27
	50	49		21.23	21.24	21.25
	100	0		21.58	21.41	21.31



LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.02	23.13	23.07
1.4	1	2		23.16	23.38	23.05
1.4	1	5		22.95	23.15	23.10
1.4	3	0		23.07	23.43	23.34
1.4	3	1		23.20	23.41	23.31
1.4	3	2		23.16	23.36	23.25
1.4	6	0		22.21	22.37	22.28
1.4	1	0	16-QAM	22.07	22.74	22.40
1.4	1	2		21.89	22.50	22.45
1.4	1	5		21.89	22.46	21.90
1.4	3	0		22.54	22.66	22.66
1.4	3	1		22.70	22.83	22.78
1.4	3	2		22.67	22.87	22.81
1.4	6	0		21.04	20.98	21.26
3	1	0	QPSK	22.94	23.05	23.06
3	1	7		23.34	23.12	23.33
3	1	14		23.33	23.03	23.30
3	8	0		22.23	22.23	22.25
3	8	4		22.19	22.39	22.40
3	8	7		22.27	22.30	22.24
3	15	0		22.19	22.21	22.21
3	1	0	16-QAM	21.82	22.59	21.91
3	1	7		21.90	22.54	22.09
3	1	14		21.78	22.23	22.58
3	8	0		21.22	21.36	21.08
3	8	4		21.16	21.41	21.29
3	8	7		21.27	21.24	21.50
3	15	0		21.23	21.01	21.14



LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.92	23.22	23.14
	1	12		23.15	23.36	23.22
	1	24		22.73	22.82	22.84
	12	0		22.11	22.15	22.18
	12	6		22.17	22.14	22.27
	12	11		22.20	22.15	22.19
	25	0		22.15	22.24	22.18
5	1	0	16-QAM	22.01	22.11	22.33
	1	12		22.17	22.56	22.42
	1	24		22.12	22.40	22.27
	12	0		20.97	21.12	21.13
	12	6		20.84	21.12	20.96
	12	11		20.87	21.46	20.97
	25	0		21.04	21.03	21.22
10	1	0	QPSK	23.16	23.23	23.30
	1	24		23.35	23.45	23.32
	1	49		23.19	23.14	23.30
	25	0		22.33	22.37	22.30
	25	12		22.17	22.29	22.19
	25	24		22.24	22.28	22.20
	50	0		22.22	22.30	22.21
10	1	0	16-QAM	22.38	22.94	22.39
	1	24		21.94	21.93	22.35
	1	49		22.31	22.47	22.36
	25	0		21.01	21.13	21.19
	25	12		21.28	21.06	21.05
	25	24		21.32	20.96	21.06
	50	0		21.10	21.13	21.08



LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	23.29	23.05	23.26
1.4	1	2		23.30	23.11	23.37
1.4	1	5		23.12	23.21	23.27
1.4	3	0		23.28	23.41	23.40
1.4	3	1		23.26	23.47	23.51
1.4	3	2		23.24	23.39	23.31
1.4	6	0		22.20	22.31	22.25
1.4	1	0	16-QAM	22.93	22.92	22.60
1.4	1	2		22.25	22.93	22.68
1.4	1	5		22.26	22.84	22.61
1.4	3	0		22.57	22.34	22.35
1.4	3	1		22.74	22.40	22.34
1.4	3	2		22.74	22.34	22.34
1.4	6	0		21.02	20.86	20.90
3	1	0	QPSK	23.16	23.15	23.09
3	1	7		23.26	23.37	23.42
3	1	14		23.22	23.15	23.17
3	8	0		22.39	22.27	22.42
3	8	4		22.28	22.24	22.31
3	8	7		22.35	22.31	22.42
3	15	0		22.31	22.34	22.37
3	1	0	16-QAM	22.69	22.90	22.39
3	1	7		22.58	22.23	22.60
3	1	14		22.59	22.22	22.42
3	8	0		21.51	21.51	21.53
3	8	4		21.49	21.33	21.56
3	8	7		21.48	21.31	21.66
3	15	0		21.41	21.10	21.44



LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.15	23.20	23.16
	1	12		23.32	23.40	23.28
	1	24		23.19	23.01	23.30
	12	0		22.28	22.30	22.42
	12	6		22.40	22.33	22.45
	12	11		22.38	22.36	22.46
	25	0		22.33	22.31	22.38
5	1	0	16-QAM	22.12	22.28	22.12
	1	12		22.22	22.35	22.13
	1	24		22.15	22.36	22.34
	12	0		21.06	21.32	21.40
	12	6		21.08	21.28	21.32
	12	11		21.05	21.27	21.38
	25	0		21.17	21.22	21.25
10	1	0	QPSK	23.42	23.38	<b>23.55</b>
	1	24		23.24	23.19	23.34
	1	49		23.18	23.17	23.33
	25	0		22.26	22.29	22.39
	25	12		22.32	22.34	22.38
	25	24		22.30	22.26	22.37
	50	0		22.32	22.35	22.37
10	1	0	16-QAM	22.54	22.56	22.92
	1	24		22.46	22.48	22.58
	1	49		22.65	22.42	22.83
	25	0		21.28	21.35	21.43
	25	12		21.34	21.50	21.52
	25	24		21.35	21.48	21.63
	50	0		21.21	21.16	21.21

**Peak-to-Average Ratio**

Mode	LTE Band 2 / 20MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	3.39	4.78	4.64	5.88	PASS
Middle CH	3.77	4.55	4.96	5.48	
Highest CH	3.33	4.93	4.46	5.88	

Mode	LTE Band 4 / 20MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	RB Size	Result
Lowest CH	3.94	5.04	4.41	6.03	PASS
Middle CH	4.52	5.13	5.42	6.12	
Highest CH	4.70	4.64	5.62	5.80	

Mode	LTE Band 5 / 10MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	RB Size	Result
Lowest CH	4.87	5.33	5.30	6.26	PASS
Middle CH	4.84	5.48	5.91	6.35	
Highest CH	4.90	5.39	6.09	6.38	

Mode	LTE Band 12 / 10MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	RB Size	Result
Lowest CH	3.80	4.81	4.26	5.59	PASS
Middle CH	4.14	4.81	4.99	5.68	
Highest CH	4.23	4.78	5.30	5.71	

