

**LTE Band 41C- EIRP**
**Limits:** ≤33 dBm (2W)

Mod.	Bandwidth	Frequency	Frequency	P <sub>Mea</sub> (dB)	P <sub>cl</sub> (dB)	P <sub>Ag</sub> (dB)	G <sub>a</sub> (dB)	EIRP	Limit (dB)	Marg in	Ant.P ol
QPSK	5+20	2499.30	2511.00	-29.7	3.5	45.1	6.1	21.9	33.0	11.01	H
		2583.80	2595.50	-28.6	3.6	44.9	6.2	22.8	33.0	10.1	H
		2668.30	2680.00	-28.7	3.7	44.9	6.4	22.9	33.0	10.0	H
	20+5	2506.00	2517.70	-29.5	3.6	45.1	6.1	22.1	33.0	10.8	H
		2590.50	2602.50	-28.8	3.6	44.9	6.2	22.6	33.0	10.3	H
		2675.00	2686.70	-29.1	3.7	44.9	6.4	22.5	33.0	10.4	H
	10+20	2501.50	2515.90	-29.5	3.5	45.3	6.1	22.3	33.0	10.6	H
		2583.60	2598.00	-28.3	3.6	44.9	6.2	23.1	33.0	9.85	H
		2665.60	2680.00	-28.4	3.7	44.9	6.4	23.2	33.0	9.75	H
	20+10	2506.00	2520.40	-29.2	3.6	45.1	6.1	22.4	33.0	10.5	H
		2588.10	2602.50	-28.2	3.6	44.9	6.2	23.3	33.0	9.67	H
		2670.10	2684.50	-29.3	3.7	44.9	6.4	22.3	33.0	10.6	H
	10+15	2501.50	2513.30	-29.7	3.5	45.3	6.1	22.1	33.0	10.8	H
		2585.90	2597.90	-28.5	3.6	44.9	6.2	22.9	33.0	10.0	H
		2670.50	2680.00	-28.5	3.7	44.9	6.4	23.1	33.0	9.89	H
	15+10	2503.50	2515.50	-29.1	3.5	45.1	6.1	22.5	33.0	10.4	H
		2588.10	2600.10	-28.1	3.6	44.9	6.2	23.4	33.0	9.57	H
		2672.70	2684.70	-29.2	3.7	44.9	6.4	22.4	33.0	10.5	H
	15+15	2503.50	2518.50	-28.9	3.5	44.9	6.1	22.5	33.0	10.4	H
		2585.50	2600.50	-28.5	3.6	44.9	6.2	22.9	33.0	10.0	H
		2667.50	2682.50	-28.5	3.7	44.9	6.4	23.0	33.0	9.91	H
	15+20	2503.80	2520.90	-29.2	3.6	45.1	6.1	22.4	33.0	10.5	H
		2583.30	2595.50	-28.5	3.6	44.9	6.2	22.9	33.0	10.0	H
		2662.90	2680.00	-28.6	3.7	44.9	6.4	22.9	33.0	10.0	H
	20+15	2506.00	2523.00	-29.2	3.6	45.1	6.1	22.4	33.0	10.5	H
		2585.60	2602.70	-28.2	3.6	44.9	6.2	23.3	33.0	9.65	H
		2665.10	2682.20	-28.3	3.7	44.9	6.4	23.3	33.0	9.69	H
	20+20	2506.00	2525.80	-29.3	3.5	45.1	6.1	22.3	33.0	10.6	H
		2583.10	2602.90	-29.1	3.6	44.9	6.2	22.3	33.0	10.6	H
		2660.20	2680.00	-28.8	3.7	44.9	6.3	22.7	33.0	10.2	H
16QAM	5+20	2499.30	2511.00	-30.9	3.5	45.1	6.1	20.7	33.0	12.2	H
		2583.80	2595.50	-29.9	3.6	44.9	6.2	21.5	33.0	11.43	H
		2668.30	2680.00	-30.0	3.7	44.9	6.4	21.6	33.0	11.35	H
	20+5	2506.00	2517.70	-30.8	3.6	45.1	6.1	20.8	33.0	12.1	H
		2590.50	2602.50	-30.2	3.6	44.9	6.2	21.3	33.0	11.67	H
		2675.00	2686.70	-30.2	3.7	44.9	6.4	21.3	33.0	11.61	H
	10+20	2501.50	2515.90	-30.6	3.5	45.3	6.1	21.2	33.0	11.76	H
		2583.60	2598.00	-29.4	3.6	44.9	6.2	22.0	33.0	10.9	H
		2665.60	2680.00	-29.4	3.7	44.9	6.4	22.1	33.0	10.8	H
	20+10	2506.00	2520.40	-30.3	3.6	45.1	6.1	21.3	33.0	11.65	H
		2588.10	2602.50	-29.5	3.6	44.9	6.2	21.9	33.0	11.04	H
		2670.10	2684.50	-30.5	3.7	44.9	6.4	21.1	33.0	11.85	H
10+15	2501.50	2513.30	-30.9	3.5	45.3	6.1	20.9	33.0	12.0	H	
	2585.90	2597.90	-29.6	3.6	44.9	6.2	21.8	33.0	11.12	H	

	15+10	2670.50	2680.00	-29.6	3.7	44.9	6.4	22.0	33.0	10.9	H
		2503.50	2515.50	-30.3	3.5	45.1	6.1	21.4	33.0	11.60	H
		2588.10	2600.10	-29.6	3.6	44.9	6.2	21.8	33.0	11.15	H
		2672.70	2684.70	-30.3	3.7	44.9	6.4	21.3	33.0	11.67	H
	15+15	2503.50	2518.50	-30.1	3.5	44.9	6.1	21.3	33.0	11.66	H
		2585.50	2600.50	-29.8	3.6	44.9	6.2	21.6	33.0	11.32	H
		2667.50	2682.50	-29.8	3.7	44.9	6.4	21.7	33.0	11.21	H
	15+20	2503.80	2520.90	-30.4	3.6	45.1	6.1	21.2	33.0	11.74	H
		2583.30	2595.50	-29.8	3.6	44.9	6.2	21.6	33.0	11.31	H
		2662.90	2680.00	-29.9	3.7	44.9	6.4	21.7	33.0	11.25	H
	20+15	2506.00	2523.00	-30.3	3.6	45.1	6.1	21.2	33.0	11.72	H
		2585.60	2602.70	-29.3	3.6	44.9	6.2	22.1	33.0	10.8	H
		2665.10	2682.20	-29.5	3.7	44.9	6.4	22.1	33.0	10.8	H
	20+20	2506.00	2525.80	-30.7	3.5	45.1	6.1	20.9	33.0	12.0	H
		2583.10	2602.90	-30.4	3.6	44.9	6.2	21.0	33.0	11.99	H
2660.20		2680.00	-30.1	3.7	44.9	6.3	21.4	33.0	11.53	H	
64QAM	5+20	2499.30	2511.00	-32.5	3.5	45.1	6.1	19.1	33.0	13.8	H
		2583.80	2595.50	-31.7	3.6	44.9	6.2	19.7	33.0	13.2	H
		2668.30	2680.00	-31.8	3.7	44.9	6.4	19.8	33.0	13.1	H
	20+5	2506.00	2517.70	-32.3	3.6	45.1	6.1	19.3	33.0	13.6	H
		2590.50	2602.50	-31.7	3.6	44.9	6.2	19.8	33.0	13.1	H
		2675.00	2686.70	-31.8	3.7	44.9	6.4	19.8	33.0	13.1	H
	10+20	2501.50	2515.90	-32.2	3.5	45.3	6.1	19.5	33.0	13.4	H
		2583.60	2598.00	-31.0	3.6	44.9	6.2	20.4	33.0	12.5	H
		2665.60	2680.00	-31.1	3.7	44.9	6.4	20.5	33.0	12.4	H
	20+10	2506.00	2520.40	-31.9	3.6	45.1	6.1	19.7	33.0	13.3	H
		2588.10	2602.50	-31.2	3.6	44.9	6.2	20.3	33.0	12.6	H
		2670.10	2684.50	-32.1	3.7	44.9	6.4	19.5	33.0	13.4	H
	10+15	2501.50	2513.30	-32.7	3.5	45.3	6.1	19.1	33.0	13.8	H
		2585.90	2597.90	-32.1	3.6	44.9	6.2	19.4	33.0	13.5	H
		2670.50	2680.00	-31.7	3.7	44.9	6.4	19.9	33.0	13.0	H
	15+10	2503.50	2515.50	-31.9	3.5	45.1	6.1	19.8	33.0	13.1	H
		2588.10	2600.10	-31.2	3.6	44.9	6.2	20.2	33.0	12.7	H
		2672.70	2684.70	-31.9	3.7	44.9	6.4	19.7	33.0	13.2	H
	15+15	2503.50	2518.50	-31.7	3.5	44.9	6.1	19.7	33.0	13.2	H
		2585.50	2600.50	-31.4	3.6	44.9	6.2	20.0	33.0	12.9	H
		2667.50	2682.50	-31.5	3.7	44.9	6.4	20.1	33.0	12.8	H
	15+20	2503.80	2520.90	-31.9	3.6	45.1	6.1	19.7	33.0	13.2	H
		2583.30	2595.50	-31.4	3.6	44.9	6.2	20.1	33.0	12.8	H
		2662.90	2680.00	-31.2	3.7	44.9	6.4	20.3	33.0	12.6	H
	20+15	2506.00	2523.00	-31.9	3.6	45.1	6.1	19.7	33.0	13.3	H
		2585.60	2602.70	-30.9	3.6	44.9	6.2	20.5	33.0	12.4	H
		2665.10	2682.20	-31.1	3.7	44.9	6.4	20.5	33.0	12.4	H
	20+20	2506.00	2525.80	-31.9	3.5	45.1	6.1	19.7	33.0	13.2	H
		2583.10	2602.90	-31.8	3.6	44.9	6.2	19.6	33.0	13.3	H
		2660.20	2680.00	-31.5	3.7	44.9	6.3	20.1	33.0	12.8	H
256QA	5+20	2668.30	2680.00	-33.5	3.7	44.9	6.4	18.1	33.0	14.8	H
	20+5	2675.00	2686.70	-33.2	3.7	44.9	6.4	18.4	33.0	14.6	H

M	10+20	2665.60	2680.00	-32.5	3.7	44.9	6.4	19.1	33.0	13.9	H
	20+10	2670.10	2684.50	-33.5	3.7	44.9	6.4	18.1	33.0	14.8	H
	10+15	2670.50	2680.00	-33.6	3.7	44.9	6.4	18.0	33.0	15.9	H
	15+10	2672.70	2684.70	-33.3	3.7	44.9	6.4	18.3	33.0	14.6	H
	15+15	2667.50	2682.50	-32.7	3.7	44.9	6.4	18.9	33.0	14.0	H
	15+20	2662.90	2680.00	-32.8	3.7	44.9	6.4	18.8	33.0	14.1	H
	20+15	2665.10	2682.20	-32.4	3.7	44.9	6.4	19.1	33.0	13.8	H
	20+20	2660.20	2680.00	-32.9	3.7	44.9	6.3	18.7	33.0	14.2	H

**LTE Band 66- EIRP**
**Limits:** ≤30dBm (1W)

Mod.	Bandwidth (MHz)	Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>cl</sub> (dB)	P <sub>Ag</sub> (dB)	G <sub>a</sub> (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Ant.Po I
QPSK	1.4	1710.70	-22.81	3.17	44.10	5.12	23.24	30.00	6.76	H
		1745.00	-21.13	3.68	44.16	5.06	24.41	30.00	5.59	H
		1779.30	-22.08	3.04	44.03	5.01	23.93	30.00	6.07	H
	3	1711.50	-22.66	3.40	44.10	5.12	23.16	30.00	6.84	H
		1745.00	-21.33	3.68	44.16	5.06	24.21	30.00	5.79	H
		1778.50	-22.21	3.04	44.03	5.01	23.80	30.00	6.20	H
	5	1712.50	-22.32	3.66	44.10	5.12	23.24	30.00	6.76	H
		1745.00	-21.56	3.68	44.16	5.06	23.98	30.00	6.02	H
		1777.50	-22.29	3.04	44.04	5.01	23.72	30.00	6.28	H
	10	1715.00	-22.46	3.56	44.10	5.11	23.19	30.00	6.81	H
		1745.00	-21.50	3.68	44.16	5.06	24.04	30.00	5.96	H
		1775.00	-22.28	3.05	44.05	5.01	23.73	30.00	6.27	H
	15	1717.50	-22.55	3.47	44.11	5.11	23.20	30.00	6.80	H
		1745.00	-21.53	3.68	44.16	5.06	24.01	30.00	5.99	H
		1772.50	-22.33	3.05	44.06	5.01	23.69	30.00	6.31	H
20	1720.00	-22.35	3.37	44.11	5.10	23.49	30.00	6.51	H	
	1745.00	-21.31	3.68	44.16	5.06	24.23	30.00	5.77	H	
	1770.00	-22.10	3.05	44.07	5.01	23.94	30.00	6.06	H	
16QAM	1.4	1710.70	-23.36	3.17	44.10	5.12	22.69	30.00	7.31	H
		1745.00	-21.70	3.68	44.16	5.06	23.84	30.00	6.16	H
		1779.30	-22.66	3.04	44.03	5.01	23.35	30.00	6.65	H
	3	1711.50	-23.20	3.40	44.10	5.12	22.62	30.00	7.38	H
		1745.00	-21.86	3.68	44.16	5.06	23.68	30.00	6.32	H
		1778.50	-22.77	3.04	44.03	5.01	23.24	30.00	6.76	H
	5	1712.50	-23.05	3.66	44.10	5.12	22.51	30.00	7.49	H
		1745.00	-22.10	3.68	44.16	5.06	23.44	30.00	6.56	H
		1777.50	-22.90	3.04	44.04	5.01	23.11	30.00	6.89	H
	10	1715.00	-23.04	3.56	44.10	5.11	22.61	30.00	7.39	H
		1745.00	-22.00	3.68	44.16	5.06	23.54	30.00	6.46	H
		1775.00	-22.81	3.05	44.05	5.01	23.20	30.00	6.80	H
	15	1717.50	-23.05	3.47	44.11	5.11	22.70	30.00	7.30	H
		1745.00	-22.15	3.68	44.16	5.06	23.39	30.00	6.61	H
		1772.50	-22.95	3.05	44.06	5.01	23.07	30.00	6.93	H
20	1720.00	-22.84	3.37	44.11	5.10	23.00	30.00	7.00	H	
	1745.00	-21.90	3.68	44.16	5.06	23.64	30.00	6.36	H	
	1770.00	-22.76	3.05	44.07	5.01	23.28	30.00	6.72	H	
64QAM	1.4	1710.70	-24.25	3.17	44.10	5.12	21.80	30.00	8.20	H
		1745.00	-21.78	3.68	44.16	5.06	23.76	30.00	6.24	H

	3	1779.30	-23.59	3.04	44.03	5.01	22.42	30.00	7.58	H
		1711.50	-24.09	3.40	44.10	5.12	21.73	30.00	8.27	H
		1745.00	-22.59	3.68	44.16	5.06	22.95	30.00	7.05	H
		1778.50	-23.67	3.04	44.03	5.01	22.34	30.00	7.66	H
	5	1712.50	-23.91	3.66	44.10	5.12	21.65	30.00	8.35	H
		1745.00	-24.09	3.68	44.16	5.06	21.45	30.00	8.55	H
		1777.50	-23.80	3.04	44.04	5.01	22.21	30.00	7.79	H
	10	1715.00	-23.87	3.56	44.10	5.11	21.78	30.00	8.22	H
		1745.00	-22.81	3.68	44.16	5.06	22.73	30.00	7.27	H
		1775.00	-23.75	3.05	44.05	5.01	22.26	30.00	7.74	H
	15	1717.50	-23.91	3.47	44.11	5.11	21.84	30.00	8.16	H
		1745.00	-22.86	3.68	44.16	5.06	22.68	30.00	7.32	H
		1772.50	-23.87	3.05	44.06	5.01	22.15	30.00	7.85	H
	20	1720.00	-23.67	3.37	44.11	5.10	22.17	30.00	7.83	H
		1745.00	-22.69	3.68	44.16	5.06	22.85	30.00	7.15	H
1770.00		-23.13	3.05	44.07	5.01	22.91	30.00	7.09	H	
256QAM	1.4	1745.00	-25.93	3.68	44.16	5.06	19.61	30.00	10.39	H
	3	1745.00	-25.96	3.68	44.16	5.06	19.58	30.00	10.42	H
	5	1745.00	-25.84	3.68	44.16	5.06	19.70	30.00	10.30	H
	10	1745.00	-25.64	3.68	44.16	5.06	19.90	30.00	10.10	H
	15	1745.00	-25.69	3.68	44.16	5.06	19.85	30.00	10.15	H
	20	1745.00	-25.66	3.68	44.16	5.06	19.88	30.00	10.12	H

**LTE Band 71- ERP**
**Limits:** ≤34.77 dBm (3W)

Mod.	Band width	Frequen cy	P <sub>Mea</sub> (dB)	P <sub>cl</sub> (dB)	P <sub>Ag</sub> (dB)	G <sub>a</sub> (dB)	Correcti on (dB)	EIR P	Limit (dB)	Marg in	Ant.P ol
QPSK	5	665.50	-25.9	1.8	44.7	0.7	2.15	15.5	34.7	19.1	H
		680.50	-25.0	1.8	44.7	0.7	2.15	16.3	34.7	18.3	H
		695.50	-25.2	1.8	44.6	0.7	2.15	16.2	34.7	18.5	H
	10	668.00	-25.9	1.8	44.7	0.7	2.15	15.6	34.7	19.1	H
		680.50	-25.3	1.8	44.7	0.7	2.15	16.1	34.7	18.6	H
		693.00	-25.1	1.8	44.6	0.7	2.15	16.2	34.7	18.5	H
	15	670.50	-26.0	1.8	44.7	0.7	2.15	15.4	34.7	19.2	H
		680.50	-25.2	1.8	44.7	0.7	2.15	16.2	34.7	18.5	H
		690.50	-25.1	1.8	44.7	0.7	2.15	16.3	34.7	18.4	H
	20	673.00	-25.9	1.8	44.7	0.7	2.15	15.5	34.7	19.2	H
		680.50	-25.2	1.8	44.7	0.7	2.15	16.2	34.7	18.5	H
		688.00	-25.2	1.8	44.7	0.7	2.15	16.2	34.7	18.5	H
16QAM	5	665.50	-26.4	1.8	44.7	0.7	2.15	15.0	34.7	19.7	H
		680.50	-25.6	1.8	44.7	0.7	2.15	15.8	34.7	18.9	H
		695.50	-25.7	1.8	44.6	0.7	2.15	15.6	34.7	19.1	H
	10	668.00	-26.2	1.8	44.7	0.7	2.15	15.2	34.7	19.4	H
		680.50	-25.8	1.8	44.7	0.7	2.15	15.6	34.7	19.1	H
		693.00	-25.6	1.8	44.6	0.7	2.15	15.7	34.7	19.0	H
	15	670.50	-26.5	1.8	44.7	0.7	2.15	14.9	34.7	19.8	H
		680.50	-25.7	1.8	44.7	0.7	2.15	15.6	34.7	19.0	H
		690.50	-25.9	1.8	44.7	0.7	2.15	15.5	34.7	19.2	H
	20	673.00	-26.5	1.8	44.7	0.7	2.15	14.9	34.7	19.8	H
		680.50	-25.9	1.8	44.7	0.7	2.15	15.5	34.7	19.2	H
		688.00	-25.9	1.8	44.7	0.7	2.15	15.5	34.7	19.2	H
64QAM	5	665.50	-27.4	1.8	44.7	0.7	2.15	14.0	34.7	20.7	H
		680.50	-25.8	1.8	44.7	0.7	2.15	15.6	34.7	19.1	H
		695.50	-26.7	1.8	44.6	0.7	2.15	14.6	34.7	20.1	H
	10	668.00	-27.3	1.8	44.7	0.7	2.15	14.1	34.7	20.6	H
		680.50	-26.8	1.8	44.7	0.7	2.15	14.6	34.7	20.1	H
		693.00	-26.6	1.8	44.6	0.7	2.15	14.7	34.7	20.0	H
	15	670.50	-27.7	1.8	44.7	0.7	2.15	13.7	34.7	21.0	H
		680.50	-26.8	1.8	44.7	0.7	2.15	14.6	34.7	20.1	H
		690.50	-26.8	1.8	44.7	0.7	2.15	14.6	34.7	20.1	H
	20	673.00	-27.5	1.8	44.7	0.7	2.15	13.8	34.7	20.8	H
		680.50	-26.9	1.8	44.7	0.7	2.15	14.4	34.7	20.3	H
		688.00	-26.8	1.8	44.7	0.7	2.15	14.6	34.7	20.1	H
256QAM	5	680.50	-29.7	1.8	44.7	0.7	2.15	11.7	34.7	23.0	H
	10	693.00	-29.5	1.8	44.6	0.7	2.15	11.8	34.7	22.9	H
	15	680.50	-29.8	1.8	44.7	0.7	2.15	11.5	34.7	23.1	H
	20	680.50	-29.9	1.8	44.7	0.7	2.15	11.5	34.7	23.2	H

Note: Expanded measurement uncertainty is U = 5.76 dB, k = 2.

## **A.2 Emission Limit**

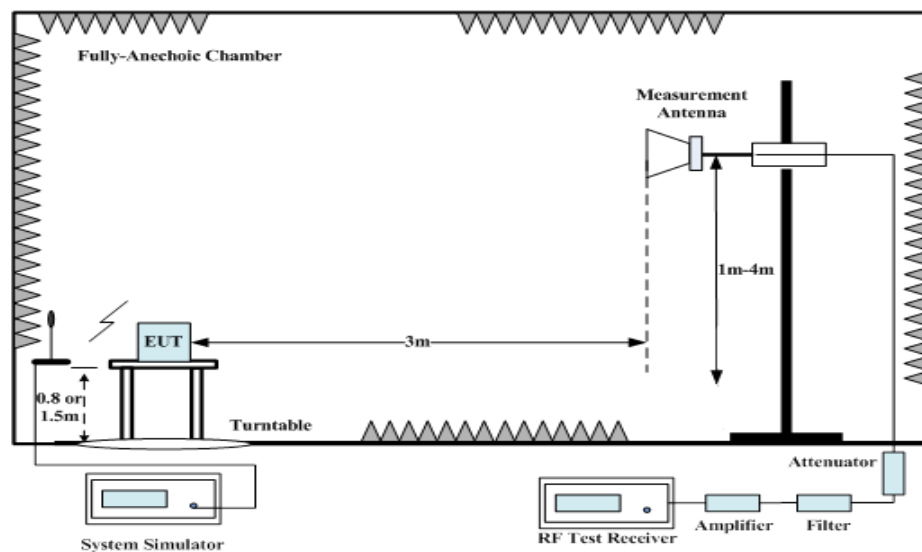
### **A.2.1 Measurement Method**

The measurement procedures in ANSI C63.26 are used.

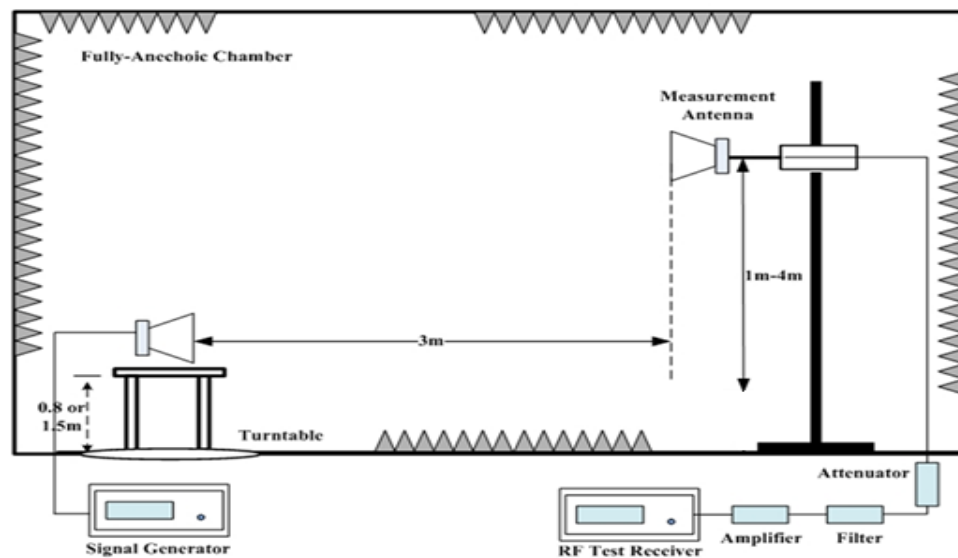
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of each LTE Band.

#### **The procedure of radiated spurious emissions is as follows:**

For measurements performed at frequencies less than or equal to 1 GHz, the EUT was placed on a 80cm-high non-conductive support; For measurements performed at frequencies above 1GHz,EUT was placed on a 1.5-meter-high non-conductive support. A measurement antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. In the initial test, the height of the measurement antenna was varied from 1 m to 4 m for the relative positioning that produces the maximum radiated signal level. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



1. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
2. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. The height of measurement antenna varied between 1 m to 4 m to maximize the received signal amplitude for each emission that was detected and measured in the initial test. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test was performed with the measurement antenna in both vertical and horizontal polarization.

3. The Path loss ( $P_{pl}$ ) between the Signal Source and the Substitution Antenna and the Substitution Antenna Gain ( $G_a$ ) were recorded after test. A amplifier was connected in for the test. The Path loss ( $P_{pl}$ ) is the summation of the cable loss and the gain of the amplifier.
4. The measurement results are obtained as described below:

$$\text{Power (EIRP)} = P_{Mea} - P_{pl} + G_a$$

This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $ERP = EIRP - 2.15\text{dBi}$ .

### A.2.2 Measurement Limit

**FDD Band 2/25:** Part 24.238 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.

**FDD Band 4/ 66:** Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.

**FDD Band 5/26(824MHz~849MHz):** Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.

**FDD Band 7/ 41:** Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X



megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

**FDD Band 12/13/71:** Part 27.53(g) states for operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee’s frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee’s frequency block, a resolution bandwidth of at least 30 kHz may be employed.

**FDD Band 14:** Part 90.543 states that for operations in the 758–768 MHz and the 788–798 MHz bands, the power of any emission outside the licensee’s frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following: (1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations. (2) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations. (3) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log (P)$  dB. (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment. (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

**FDD Band 26(814MHz–824MHz):** Part 90.691 states that out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows: For any frequency removed from the EA licensee’s frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz. For any frequency removed from the EA licensee’s frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

**FDD Band 30:** Part 27.53(a) states for mobile and portable stations operating in the 2305–2315 MHz and 2350–2360 MHz bands: By a factor of not less than:  $43 + 10 \log (P)$  dB on all frequencies

between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than  $55 + 10 \log (P)$  dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than  $61 + 10 \log (P)$  dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than  $67 + 10 \log (P)$  dB on all frequencies between 2328 and 2337MHz; By a factor of not less than  $43 + 10 \log (P)$  dB on all frequencies between 2300 and 2305 MHz,  $55 + 10 \log (P)$  dB on all frequencies between 2296 and 2300MHz,  $61 + 10 \log (P)$  dB on all frequencies between 2292 and 2296 MHz,  $67 + 10 \log (P)$  dB on all frequencies between 2288 and 2292 MHz, and  $70 + 10 \log (P)$  dB below 2288 MHz; By a factor of not less than  $43 + 10 \log (P)$  dB on all frequencies between 2360 and 2365 MHz, and not less than  $70 + 10 \log (P)$  dB above 2365 MHz.

### A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of each LTE Band. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of each LTE Band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this. The range of evaluated frequency is from 9 kHz to 26GHz.

Note 1: Both of Vertical and Horizontal polarizations are evaluated, but only the worst case is recorded in this report.

### A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
LTE Bands	Low	9kHz-26GHz	Pass
	Middle	9kHz-26GHz	Pass
	High	9kHz-26GHz	Pass

### A.2.5 Sweep Table

Subrange	RBW	VBW
9~150 kHz	0.2kHz	0.6kHz
150kHz~30MHz	9kHz	27kHz
30MHz~1 GHz	100KHz	300KHz
1~26 GHz	1 MHz	3 MHz

### A.2.6 Measurement Result

#### LTE Band 2, 1.4MHz, QPSK, Channel 18607

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3819.50	-63.20	3.93	8.63	-58.50	-13.00	45.50	H
5718.00	-60.31	5.92	10.96	-55.27	-13.00	42.27	V
7647.00	-57.31	6.83	12.30	-51.84	-13.00	38.84	V
9556.00	-53.71	8.59	13.41	-48.89	-13.00	35.89	H
11441.00	-49.40	12.42	13.58	-48.24	-13.00	35.24	H
13354.00	-47.58	13.11	14.36	-46.33	-13.00	33.33	V

#### LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3760.00	-61.88	3.81	8.62	-57.07	-13.00	44.07	V
5640.00	-51.64	5.61	11.00	-46.25	-13.00	33.25	V
7519.50	-53.72	7.71	12.37	-49.06	-13.00	36.06	H
9404.50	-54.54	9.09	13.60	-50.03	-13.00	37.03	H
11289.00	-51.66	10.62	13.59	-48.69	-13.00	35.69	H
13159.50	-47.65	13.21	14.18	-46.68	-13.00	33.68	V

#### LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3690.50	-61.48	3.69	8.23	-56.94	-13.00	43.94	H
5541.00	-61.32	5.78	10.99	-56.11	-13.00	43.11	H
7415.00	-54.81	8.01	12.16	-50.66	-13.00	37.66	V
9253.00	-54.62	8.85	13.70	-49.77	-13.00	36.77	H
11106.00	-52.35	9.76	13.50	-48.61	-13.00	35.61	H
12959.00	-49.76	12.51	13.68	-48.59	-13.00	35.59	H

**LTE Band 4, 1.4MHz QPSK, Channel 19957**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3421.50	-66.42	3.24	8.27	-61.39	-13.00	48.39	H
5132.50	-47.57	5.56	10.58	-42.55	-13.00	29.55	H
6843.00	-61.32	6.54	11.51	-56.35	-13.00	43.35	H
8554.00	-57.63	8.52	13.20	-52.95	-13.00	39.95	H
10277.00	-60.46	10.70	13.30	-57.86	-13.00	44.86	V
11979.00	-57.58	12.26	13.00	-56.84	-13.00	43.84	V

**LTE Band 4, 1.4MHz, QPSK, Channel 20175**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3465.00	-60.81	3.82	8.24	-56.39	-13.00	43.39	H
5197.50	-49.21	5.71	10.50	-44.42	-13.00	31.42	H
6930.00	-59.69	6.47	11.60	-54.56	-13.00	41.56	H
8663.00	-60.49	8.56	13.40	-55.65	-13.00	42.65	H
10391.00	-59.45	10.67	13.30	-56.82	-13.00	43.82	H
12142.00	-57.59	12.22	13.14	-56.67	-13.00	43.67	H

**LTE Band 4, 1.4MHz, QPSK, Channel 20393**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3508.50	-60.62	3.11	8.26	-55.47	-13.00	42.47	V
5263.00	-51.51	4.98	10.53	-45.96	-13.00	32.96	H
7017.00	-58.35	7.56	11.67	-54.24	-13.00	41.24	H
8772.00	-62.65	7.97	13.37	-57.25	-13.00	44.25	H
10514.00	-60.09	10.39	13.21	-57.27	-13.00	44.27	H
12277.50	-58.36	11.59	13.36	-56.59	-13.00	43.59	H

**LTE Band 5, 1.4MHz, QPSK, Channel 20407**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1654.50	-44.70	3.57	5.22	2.15	-45.20	-13.00	32.20	V
2474.00	-37.98	4.60	6.02	2.15	-38.71	-13.00	25.71	V
3286.50	-63.11	5.28	7.69	2.15	-62.85	-13.00	49.85	H
4112.00	-57.72	6.04	9.01	2.15	-56.90	-13.00	43.90	V
4940.50	-56.10	6.71	9.84	2.15	-55.12	-13.00	42.12	H
5777.50	-55.81	7.22	10.54	2.15	-54.64	-13.00	41.64	H

**LTE Band 5, 1.4MHz, QPSK, Channel 20525**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1660.00	-45.12	3.57	5.21	2.15	-45.63	-13.00	32.63	V
2511.50	-39.13	4.64	6.12	2.15	-39.80	-13.00	26.80	V
3339.00	-63.26	5.31	7.81	2.15	-62.91	-13.00	49.91	H
4177.00	-58.43	6.15	9.08	2.15	-57.65	-13.00	44.65	V
5004.00	-56.39	6.60	9.91	2.15	-55.23	-13.00	42.23	V
5863.00	-56.79	7.28	10.53	2.15	-55.69	-13.00	42.69	H

**LTE Band 5, 1.4MHz, QPSK, Channel 20643**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1698.50	-43.93	3.60	5.14	2.15	-44.54	-13.00	31.54	H
2545.00	-38.03	4.66	6.18	2.15	-38.66	-13.00	25.66	H
3403.50	-61.46	5.37	7.97	2.15	-61.01	-13.00	48.01	V
4245.50	-60.18	6.24	9.15	2.15	-59.42	-13.00	46.42	V
5099.00	-57.96	6.77	10.04	2.15	-56.84	-13.00	43.84	H
5940.50	-56.15	7.47	10.51	2.15	-55.26	-13.00	42.26	V

**LTE Band 7, 5 MHz, QPSK, Channel 20775**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5005.00	-51.91	5.15	10.51	-46.55	-25.00	21.55	H
7508.00	-40.77	7.70	12.36	-36.11	-25.00	11.11	V
10011.00	-48.99	9.35	13.38	-44.96	-25.00	19.96	H
12518.00	-49.57	12.38	13.60	-48.35	-25.00	23.35	V
15016.50	-45.82	14.74	14.10	-46.46	-25.00	21.46	H
17518.50	-36.63	19.70	14.42	-41.91	-25.00	16.91	H

**LTE Band 7, 5 MHz, QPSK, Channel 21100**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5070.00	-54.85	5.30	10.53	-49.62	-25.00	24.62	H
7605.50	-45.13	7.58	12.30	-40.41	-25.00	15.41	V
10141.00	-51.47	9.74	13.24	-47.97	-25.00	22.97	H
12663.50	-49.79	11.64	13.54	-47.89	-25.00	22.89	V
15212.00	-46.06	15.10	13.99	-47.17	-25.00	22.17	H
17754.50	-38.52	19.56	14.65	-43.43	-25.00	18.43	H

**LTE Band 7, 5 MHz, QPSK, Channel 21425**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5135.00	-55.55	5.55	10.58	-50.52	-25.00	25.52	H
7702.50	-44.95	6.72	12.40	-39.27	-25.00	14.27	H
10271.00	-49.06	10.75	13.30	-46.51	-25.00	21.51	H
12838.50	-45.52	13.04	13.50	-45.06	-25.00	20.06	H
15406.50	-44.12	14.90	13.79	-45.23	-25.00	20.23	H
17974.00	-37.78	19.99	14.80	-42.97	-25.00	17.97	H

**LTE Band 12, 1.4MHz, QPSK, Channel 23017**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1387.00	-48.11	1.83	4.16	2.15	-47.93	-13.00	34.93	H
2103.50	-41.05	3.73	5.11	2.15	-41.82	-13.00	28.82	H
2807.50	-37.16	5.22	7.26	2.15	-37.27	-13.00	24.27	H
3498.50	-57.62	2.98	8.20	2.15	-54.55	-13.00	41.55	H
4195.00	-59.91	4.14	9.31	2.15	-56.89	-13.00	43.89	H
4894.00	-59.43	4.84	10.11	2.15	-56.31	-13.00	43.31	V

**LTE Band 12, 1.4MHz, QPSK, Channel 23095**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1429.50	-48.58	1.89	5.15	2.15	-47.47	-13.00	34.47	H
2134.50	-41.56	3.69	5.24	2.15	-42.16	-13.00	29.16	H
2821.50	-37.09	5.13	7.27	2.15	-37.10	-13.00	24.10	H
3538.00	-58.44	3.28	8.29	2.15	-55.58	-13.00	42.58	H
4251.00	-59.23	4.91	9.40	2.15	-56.89	-13.00	43.89	H
4939.00	-59.76	4.90	10.28	2.15	-56.53	-13.00	43.53	H

**LTE Band 12, 1.4MHz, QPSK, Channel 23173**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1428.00	-48.70	2.13	5.14	2.15	-47.84	-13.00	34.84	H
2159.00	-41.02	3.70	5.65	2.15	-41.22	-13.00	28.22	H
2874.00	-36.47	5.40	7.08	2.15	-36.94	-13.00	23.94	H
3577.00	-59.20	3.07	8.38	2.15	-56.04	-13.00	43.04	H
4294.00	-59.17	4.65	9.40	2.15	-56.57	-13.00	43.57	H
5020.00	-59.22	5.51	10.54	2.15	-56.34	-13.00	43.34	V

**LTE Band 13, 5MHz, QPSK, Channel 23205**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1557.60	-46.80	3.47	5.40	2.15	-47.02	-13.00	34.02	V
2338.76	-34.59	4.44	5.62	2.15	-35.56	-13.00	22.56	V
3117.50	-51.25	5.38	7.28	2.15	-51.50	-13.00	38.50	H
3897.50	-57.48	6.11	8.76	2.15	-56.98	-13.00	43.98	V
4680.00	-58.81	6.49	9.58	2.15	-57.87	-13.00	44.87	H
5455.00	-57.15	6.89	10.54	2.15	-55.65	-13.00	42.65	H

**LTE Band 13, 5MHz, QPSK, Channel 23230**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1559.00	-47.62	3.47	5.39	0.00	-47.85	-40.00	7.85	H
2346.70	-34.39	4.45	5.64	2.15	-35.35	-13.00	22.35	V
3127.50	-54.75	5.40	7.31	2.15	-54.99	-13.00	41.99	V
3910.00	-57.35	6.12	8.77	2.15	-56.85	-13.00	43.85	V
4695.00	-58.58	6.50	9.60	2.15	-57.63	-13.00	44.63	H
5475.00	-56.02	6.97	10.57	2.15	-54.57	-13.00	41.57	V

**LTE Band 13, 5MHz, QPSK, Channel 23255**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1554.81	-46.94	3.47	5.40	2.15	-47.16	-13.00	34.16	V
2354.15	-30.85	4.46	5.66	2.15	-31.80	-13.00	18.80	V
3137.50	-56.83	5.39	7.33	2.15	-57.04	-13.00	44.04	H
3922.50	-58.15	6.12	8.79	2.15	-57.63	-13.00	44.63	H
4692.50	-57.70	6.50	9.59	2.15	-56.76	-13.00	43.76	V
5482.50	-57.00	6.99	10.58	2.15	-55.56	-13.00	42.56	H



**LTE Band 14, 5MHz, QPSK, Channel 23305**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1556.20	-46.78	3.47	5.40	2.15	-47.00	-13.00	34.00	V
2372.02	-34.66	4.48	5.72	2.15	-35.57	-13.00	22.57	V
3162.50	-55.12	5.35	7.39	2.15	-55.23	-13.00	42.23	H
3960.00	-57.44	6.10	8.84	2.15	-56.85	-13.00	43.85	V
4727.50	-57.66	6.53	9.63	2.15	-56.71	-13.00	43.71	H
5517.50	-55.62	7.13	10.60	2.15	-54.30	-13.00	41.30	H

**LTE Band 14, 5MHz, QPSK, Channel 23330**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1610.99	-45.25	3.53	5.30	2.15	-45.63	-13.00	32.63	H
2379.46	-34.67	4.49	5.74	2.15	-35.57	-13.00	22.57	H
3172.50	-56.06	5.34	7.41	2.15	-56.14	-13.00	43.14	V
3980.00	-57.39	6.08	8.87	2.15	-56.75	-13.00	43.75	V
4737.50	-56.99	6.55	9.64	2.15	-56.05	-13.00	43.05	H
5547.50	-56.50	7.18	10.59	2.15	-55.24	-13.00	42.24	V

**LTE Band 14, 5MHz, QPSK, Channel 23355**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1611.49	-44.81	3.53	5.30	2.15	-45.19	-13.00	32.19	V
2387.41	-33.97	4.50	5.76	2.15	-34.86	-13.00	21.86	V
3182.50	-55.25	5.32	7.44	2.15	-55.28	-13.00	42.28	H
3977.50	-56.68	6.08	8.87	2.15	-56.04	-13.00	43.04	V
4762.50	-56.86	6.60	9.66	2.15	-55.95	-13.00	42.95	V
5575.00	-55.99	7.21	10.59	2.15	-54.76	-13.00	41.76	H

**LTE Band 25, 1.4MHz, QPSK, Channel 26047**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	Path Loss(dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3701.50	-61.46	3.47	8.35	-56.58	-13.00	43.58	V
5552.00	-52.21	5.32	11.00	-46.53	-13.00	33.53	V
7402.50	-52.95	8.08	12.15	-48.88	-13.00	35.88	H
9247.50	-53.62	8.85	13.69	-48.78	-13.00	35.78	V
11102.00	-51.95	9.73	13.50	-48.18	-13.00	35.18	V
12949.50	-49.65	12.49	13.65	-48.49	-13.00	35.49	V

**LTE Band 25, 1.4MHz, QPSK, Channel 26365**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	Path Loss(dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3765.00	-62.33	3.79	8.63	-57.49	-13.00	44.49	H
5647.50	-55.83	5.60	11.00	-50.43	-13.00	37.43	H
7530.50	-52.50	7.72	12.38	-47.84	-13.00	34.84	H
9426.50	-54.24	9.02	13.60	-49.66	-13.00	36.66	V
11294.00	-49.97	10.61	13.59	-46.99	-13.00	33.99	V
13186.50	-47.69	13.12	14.26	-46.55	-13.00	33.55	H

**LTE Band 25, 1.4MHz, QPSK, Channel 26683**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	Path Loss(dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3828.50	-61.18	3.92	8.62	-56.48	-13.00	43.48	V
5743.00	-45.59	5.86	10.91	-40.54	-13.00	27.54	H
7653.00	-56.81	6.87	12.35	-51.33	-13.00	38.33	V
9559.50	-53.41	8.60	13.42	-48.59	-13.00	35.59	V
11499.50	-50.03	12.24	13.40	-48.87	-13.00	35.87	H
13386.00	-48.90	12.42	14.46	-46.86	-13.00	33.86	V

**LTE Band 26(824MHz~849MHz), 1.4MHz, QPSK, Channel 26797**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1638.00	-47.82	2.40	6.33	2.15	-46.04	-13.00	33.04	H
2469.50	-39.04	4.32	5.83	2.15	-39.68	-13.00	26.68	H
3299.00	-59.81	3.56	7.70	2.15	-57.82	-13.00	44.82	V
4111.00	-59.35	4.03	9.28	2.15	-56.25	-13.00	43.25	V
4940.00	-59.14	4.90	10.28	2.15	-55.91	-13.00	42.91	H
5787.50	-58.05	5.69	10.90	2.15	-54.99	-13.00	41.99	H

**LTE Band 26(824MHz~849MHz), 1.4MHz, QPSK, Channel 26915**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1662.00	-47.38	2.94	6.34	2.15	-46.13	-13.00	33.13	H
2515.00	-39.20	4.29	5.80	2.15	-39.84	-13.00	26.84	H
3346.00	-60.24	3.46	7.89	2.15	-57.96	-13.00	44.96	V
4179.00	-58.54	4.04	9.32	2.15	-55.41	-13.00	42.41	H
5024.50	-58.43	5.49	10.55	2.15	-55.52	-13.00	42.52	H
5844.50	-58.58	5.59	10.90	2.15	-55.42	-13.00	42.42	H

**LTE Band 26(824MHz~849MHz), 1.4MHz, QPSK, Channel 27033**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1689.50	-46.73	2.72	6.31	2.15	-45.29	-13.00	32.29	H
2545.00	-37.59	4.61	5.80	2.15	-38.55	-13.00	25.55	H
3393.00	-57.83	3.53	8.18	2.15	-55.33	-13.00	42.33	H
4232.50	-58.92	4.49	9.38	2.15	-56.18	-13.00	43.18	V
5083.50	-58.45	5.30	10.52	2.15	-55.38	-13.00	42.38	H
5932.50	-57.20	6.03	10.96	2.15	-54.42	-13.00	41.42	V

**LTE Band 26(814MHz~824MHz), 1.4MHz, QPSK, Channel 26697**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1618.50	-45.46	2.36	6.21	2.15	-43.76	-13.00	30.76	H
2453.00	-38.76	4.46	5.85	2.15	-39.52	-13.00	26.52	H
3259.00	-59.92	2.98	7.70	2.15	-57.35	-13.00	44.35	V
4087.00	-59.39	3.87	9.11	2.15	-56.30	-13.00	43.30	H
4899.00	-59.48	4.87	10.10	2.15	-56.40	-13.00	43.40	V
5697.50	-58.05	5.68	11.10	2.15	-54.78	-13.00	41.78	H

**LTE Band 26(814MHz~824MHz), 1.4MHz, QPSK, Channel 26740**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1649.50	-47.32	2.60	6.40	2.15	-45.67	-13.00	32.67	H
2457.50	-38.08	4.42	5.84	2.15	-38.81	-13.00	25.81	H
3276.00	-60.53	3.06	7.70	2.15	-58.04	-13.00	45.04	H
4100.50	-59.10	3.96	9.25	2.15	-55.96	-13.00	42.96	H
4925.50	-58.85	4.88	10.25	2.15	-55.63	-13.00	42.63	V
5734.00	-57.45	5.88	10.93	2.15	-54.55	-13.00	41.55	V

**LTE Band 26(814MHz~824MHz), 1.4MHz, QPSK, Channel 26783**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1652.50	-46.52	2.57	6.35	2.15	-44.89	-13.00	31.89	V
2471.00	-38.21	4.32	5.83	2.15	-38.85	-13.00	25.85	H
3293.00	-58.33	3.62	7.70	2.15	-56.40	-13.00	43.40	V
4114.50	-59.54	4.05	9.29	2.15	-56.45	-13.00	43.45	V
4952.00	-59.22	4.91	10.35	2.15	-55.93	-13.00	42.93	V
5749.00	-57.95	5.84	10.90	2.15	-55.04	-13.00	42.04	H

**LTE Band 30, 5MHz, QPSK, Channel 27685**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	Path Loss(dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4615.00	-67.45	4.68	9.74	-62.39	-40.00	22.39	V
6923.00	-63.21	6.47	11.60	-58.08	-40.00	18.08	H
9230.50	-54.84	8.85	13.66	-50.03	-40.00	10.03	H
11538.50	-59.70	10.59	13.36	-56.93	-40.00	16.93	H
13846.00	-55.34	13.08	14.70	-53.72	-40.00	13.72	H
16154.00	-48.94	18.62	13.51	-54.05	-40.00	14.05	H

**LTE Band 30, 5MHz, QPSK, Channel 27710**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	Path Loss(dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4620.00	-67.07	4.69	9.73	-62.03	-40.00	22.03	V
6930.50	-62.91	6.47	11.60	-57.78	-40.00	17.78	H
9241.00	-54.69	8.85	13.68	-49.86	-40.00	9.86	H
11551.00	-59.03	10.68	13.35	-56.36	-40.00	16.36	H
13861.50	-56.49	13.10	14.70	-54.89	-40.00	14.89	H
16171.50	-48.82	18.53	13.54	-53.81	-40.00	13.81	H

**LTE Band 30, 5MHz, QPSK, Channel 27735**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	Path Loss(dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4625.00	-66.29	4.71	9.72	-61.28	-40.00	21.28	V
6938.00	-62.55	6.47	11.60	-57.42	-40.00	17.42	V
9250.50	-54.85	8.85	13.70	-50.00	-40.00	10.00	H
11563.50	-58.86	10.77	13.34	-56.29	-40.00	16.29	H
13876.50	-56.68	13.12	14.70	-55.10	-40.00	15.10	H
16189.00	-46.83	18.43	13.58	-51.68	-40.00	11.68	H

**LTE Band 41 HPUE, 5MHz, QPSK, Channel 39657**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4998.00	-60.73	5.17	10.40	-55.50	-25.00	30.50	H
7496.00	-46.08	7.70	12.30	-41.48	-25.00	16.48	H
10001.00	-51.93	9.36	13.40	-47.89	-25.00	22.89	H
12493.50	-48.22	12.34	13.59	-46.97	-25.00	21.97	H
15003.00	-46.06	14.75	14.10	-46.71	-25.00	21.71	V
17486.00	-37.64	19.75	14.39	-43.00	-25.00	18.00	V

**LTE Band 41 HPUE, 5MHz, QPSK, Channel 40620**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5186.50	-56.47	5.75	10.51	-51.71	-25.00	26.71	H
7779.50	-47.55	7.37	12.40	-42.52	-25.00	17.52	V
10366.50	-50.09	10.74	13.30	-47.53	-25.00	22.53	V
12960.50	-48.86	12.52	13.68	-47.70	-25.00	22.70	V
15554.00	-43.83	16.74	13.60	-46.97	-25.00	21.97	H
17989.50	-36.26	19.96	14.80	-41.42	-25.00	16.42	H

**LTE Band 41 HPUE, 5MHz, QPSK, Channel 41565**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5375.50	-56.97	5.74	10.65	-52.06	-25.00	27.06	H
8063.00	-46.96	7.86	12.76	-42.06	-25.00	17.06	V
10746.50	-51.73	9.84	13.25	-48.32	-25.00	23.32	H
13433.50	-47.80	12.55	14.53	-45.82	-25.00	20.82	V
16114.50	-43.38	17.08	13.43	-47.03	-25.00	22.03	H
17988.50	-36.45	19.96	14.80	-41.61	-25.00	16.61	H

**LTE Band CA41\_5MHz+20MHz\_CH39683+CH39800\_QPSK**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4997.00	-59.96	6.61	9.90	-56.67	-25.00	31.67	V
7510.00	-52.00	8.35	12.21	-48.14	-25.00	23.14	V
10003.50	-52.62	9.19	12.90	-48.91	-25.00	23.91	H
12487.00	-49.32	10.21	13.19	-46.34	-25.00	21.34	V
14997.50	-48.98	11.21	14.00	-46.19	-25.00	21.19	H
17470.50	-43.21	12.66	14.84	-41.03	-25.00	16.03	V

**LTE BandCA41\_5MHz+20MHz\_CH40528+CH40645\_QPSK**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5179.50	-59.37	6.93	10.15	-56.15	-25.00	31.15	H
7763.50	-51.66	8.34	12.41	-47.59	-25.00	22.59	V
10363.50	-50.56	9.74	13.05	-47.25	-25.00	22.25	V
12897.00	-50.02	10.51	13.44	-47.09	-25.00	22.09	V
15509.50	-48.19	11.53	13.70	-46.02	-25.00	21.02	H
16807.50	-44.11	12.11	13.72	-42.50	-25.00	17.50	V

**LTE Band CA41\_5MHz+20MHz\_CH4373+CH41490\_QPSK**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5348.50	-58.89	6.94	10.39	-55.44	-25.00	30.44	H
8017.00	-47.45	8.32	12.61	-43.16	-25.00	18.16	V
10683.50	-52.90	9.30	13.14	-49.06	-25.00	24.06	V
13312.00	-47.57	10.58	13.94	-44.21	-25.00	19.21	V
15987.00	-48.37	11.80	13.70	-46.47	-25.00	21.47	H
17349.50	-43.22	12.43	14.57	-41.08	-25.00	16.08	V

**LTE Band 66, 1.4MHz QPSK, Channel 131979**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3421.50	-63.39	3.24	8.27	-58.36	-13.00	45.36	V
5132.00	-42.27	5.56	10.58	-37.25	-13.00	24.25	H
6843.00	-63.37	6.54	11.51	-58.40	-13.00	45.40	H
8554.00	-59.58	8.52	13.20	-54.90	-13.00	41.90	H
10261.50	-60.88	10.83	13.30	-58.41	-13.00	45.41	H
11965.00	-57.91	12.33	13.00	-57.24	-13.00	44.24	H

**LTE Band 66, 1.4MHz, QPSK, Channel 132322**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3490.00	-66.56	2.86	8.21	-61.21	-13.00	48.21	H
5235.00	-45.53	4.70	10.42	-39.81	-13.00	26.81	H
6980.50	-61.19	8.06	11.60	-57.65	-13.00	44.65	H
8725.50	-61.06	8.45	13.32	-56.19	-13.00	43.19	H
10459.00	-59.72	10.35	13.24	-56.83	-13.00	43.83	H
12216.00	-57.34	12.17	13.23	-56.28	-13.00	43.28	H

**LTE Band 66, 1.4MHz, QPSK, Channel 132665**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3558.50	-67.70	2.98	8.36	-62.32	-13.00	49.32	H
5338.00	-46.04	6.18	10.51	-41.71	-13.00	28.71	H
7117.50	-60.43	6.56	11.70	-55.29	-13.00	42.29	H
8897.00	-61.06	8.04	13.40	-55.70	-13.00	42.70	H
10686.00	-62.30	10.01	13.21	-59.10	-13.00	46.10	H
12465.00	-57.97	12.83	13.56	-57.24	-13.00	44.24	V



**LTE Band71\_5MHz\_CH133147\_QPSK**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1331.50	-45.78	1.84	3.94	2.15	-45.83	-13.00	32.83	H
1997.50	-42.36	3.36	4.60	2.15	-43.27	-13.00	30.27	H
2669.00	-37.79	4.97	6.50	2.15	-38.41	-13.00	25.41	H
3328.50	-57.05	3.10	7.86	2.15	-54.44	-13.00	41.44	V
3999.50	-59.68	4.65	9.10	2.15	-57.38	-13.00	44.38	V
4654.00	-59.80	5.04	9.75	2.15	-57.24	-13.00	44.24	H

**LTE Band71\_5MHz\_CH133297\_QPSK**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1349.50	-48.21	1.78	3.90	2.15	-48.24	-13.00	35.24	H
2031.00	-42.67	3.44	4.76	2.15	-43.50	-13.00	30.50	H
2722.00	-37.21	4.88	6.72	2.15	-37.52	-13.00	24.52	H
3403.00	-59.20	3.49	8.25	2.15	-56.59	-13.00	43.59	H
4070.50	-58.62	4.35	9.13	2.15	-55.99	-13.00	42.99	H
4754.00	-60.50	4.81	9.85	2.15	-57.61	-13.00	44.61	H

**LTE Band 71\_5MHz\_CH133447\_QPSK**

Frequency (MHz)	P <sub>Mea</sub> (dBm)	P <sub>pl</sub> (dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1388.50	-48.15	1.84	4.17	2.15	-47.97	-13.00	34.97	H
2086.50	-41.90	3.52	4.89	2.15	-42.68	-13.00	29.68	H
2789.00	-36.21	4.90	7.16	2.15	-36.10	-13.00	23.10	H
3478.50	-59.19	3.69	8.22	2.15	-56.81	-13.00	43.81	H
4181.50	-59.17	4.06	9.32	2.15	-56.06	-13.00	43.06	V
4872.00	-59.43	5.26	10.13	2.15	-56.71	-13.00	43.71	V

Note: Peak EIRP (dBm) = P<sub>Mea</sub>(dBm) - Path Loss(dB) + Antenna Gain(dBi)

Note: Expanded measurement uncertainty is U = 5.76 dB, k = 2.

## **A.3 Frequency Stability**

### **A.3.1 Method of Measurement**

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage. Two reference points are established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as  $F_L$  and  $F_H$  respectively.

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of CMW500.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500, and in a simulated call on middle channel for each LTE band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C decrements from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of the lower, higher and nominal voltage. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.

### A.3.2 Measurement results

#### LTE Band 2, 20MHz bandwidth QPSK (worst case of all bandwidths)

##### Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1850.801	1909.199		
50				1.76	0.0009
40				1.27	0.0007
30				1.20	0.0006
10				1.40	0.0007
0				-0.46	0.0002
-10				-0.37	0.0002
-20				0.96	0.0005
-30				-0.43	0.0002

##### Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	1850.801	1909.199	2.09	0.0011
4.4				1.90	0.0010

#### LTE Band 4, 20MHz bandwidth QPSK (worst case of all bandwidths)

##### Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.801	1754.231		
50				0.96	0.0006
40				0.73	0.0004
30				0.80	0.0005
10				0.13	0.0001
0				0.33	0.0002
-10				0.54	0.0003
-20				0.10	0.0001
-30				-0.19	0.0001

##### Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	1710.801	1754.231	0.69	0.0004
4.4				0.64	0.0004

**LTE Band 5, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.417	848.583		
50				-0.44	0.0005
40				-0.31	0.0004
30				-0.92	0.0011
10				-1.00	0.0012
0				4.46	0.0053
-10				-1.16	0.0014
-20				-1.79	0.0021
-30				5.06	0.0060

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	824.417	848.583	-1.34	0.0016
4.4				-1.54	0.0018

**LTE Band 7, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2500.673	2569.391		
50				0.56	0.0002
40				-0.19	0.0001
30				-0.10	0.0000
10				-0.93	0.0004
0				0.57	0.0002
-10				0.51	0.0002
-20				-0.57	0.0002
-30				0.72	0.0003

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	2500.673	2569.391	-10.29	0.0041
4.4				-8.84	0.0035

**LTE Band 12, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	699.481	715.519		
50				-4.63	0.0065
40				-0.17	0.0002
30				-5.49	0.0078
10				0.07	0.0001
0				-0.23	0.0003
-10				-4.13	0.0058
-20				-4.28	0.0060
-30				0.69	0.0010

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	699.481	715.519	-5.65	0.0080
4.4				-0.19	0.0003

**LTE Band 13, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	777.465	786.535		
50				-0.31	0.0004
40				-6.74	0.0086
30				-7.25	0.0093
10				-1.44	0.0018
0				-1.17	0.0015
-10				-0.86	0.0011
-20				-1.06	0.0014
-30				-0.13	0.0002

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	777.465	786.535	-1.75	0.0022
4.4				-1.53	0.0020

**LTE Band 14, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	788.476	797.519		
50				1.62	0.0020
40				0.87	0.0011
30				-0.41	0.0005
10				-5.04	0.0064
0				-5.08	0.0064
-10				1.17	0.0015
-20				0.14	0.0002
-30				-4.21	0.0053

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	788.476	797.519	-4.35	0.0055
4.4				-5.05	0.0064

**LTE Band 25, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1850.833	1914.199		
50				-0.36	0.0002
40				-1.16	0.0006
30				-0.57	0.0003
10				-1.57	0.0008
0				-2.37	0.0013
-10				-2.17	0.0012
-20				-2.82	0.0015
-30				-2.43	0.0013

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	1850.833	1914.199	-3.22	0.0017
4.4				-1.10	0.0006

**LTE Band 26(814MHz~824MHz), 10MHz bandwidth QPSK (worst case of all bandwidths)**  
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	814.385	823.620		
50				0.04	0.0000
40				0.93	0.0011
30				-0.40	0.0005
10				-5.52	0.0067
0				0.53	0.0006
-10				0.13	0.0002
-20				-6.48	0.0079
-30				0.93	0.0011

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	814.385	823.620	-5.68	0.0069
4.4				-0.13	0.0002

**LTE Band 26(824MHz~849MHz), 15MHz bandwidth QPSK (worst case of all bandwidths)**  
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.553	848.471		
50				-0.06	0.0001
40				-0.74	0.0009
30				-0.34	0.0004
10				-0.67	0.0008
0				5.15	0.0062
-10				-0.21	0.0003
-20				-1.06	0.0013
-30				6.64	0.0079

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	824.553	848.471	-0.39	0.0005
4.4				0.82	0.0010

**LTE Band 30, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2305.417	2314.583		
50				0.41	0.0002
40				2.36	0.0010
30				9.80	0.0042
10				-0.20	0.0001
0				2.00	0.0009
-10				1.89	0.0008
-20				1.85	0.0008
-30				8.88	0.0038

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	2305.417	2314.583	2.35	0.0010
4.4				8.48	0.0037

**LTE Band 41, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2496.417	2689.551		
50				-1.22	0.0005
40				-13.63	0.0053
30				-15.26	0.0059
10				-13.83	0.0053
0				-0.37	0.0001
-10				-0.94	0.0004
-20				-13.06	0.0050
-30				0.26	0.0001

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	2496.417	2689.551	0.03	0.0000
4.4				-1.73	0.0007



**LTE Band 66, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.801	1779.231		
50				0.79	0.0005
40				0.89	0.0005
30				1.04	0.0006
10				1.36	0.0008
0				1.22	0.0007
-10				-0.70	0.0004
-20				0.73	0.0004
-30				1.54	0.0009

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	1710.801	1779.231	0.57	0.0003
4.4				1.53	0.0009

**LTE Band 71, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	663.994	697.006		
50				-6.09	0.0089
40				-6.98	0.0103
30				-6.31	0.0093
10				-6.12	0.0090
0				-6.32	0.0093
-10				-6.52	0.0096
-20				-6.55	0.0096
-30				-0.14	0.0002

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	663.994	697.006	-6.29	0.0092
4.4				-6.67	0.0098

**LTE CA band 41C, 20MHz+20MHz bandwidth QPSK(worst case of all bandwidths)**
**Frequency Error vs Voltage**

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2496.880	2689.100		
50				1.42	0.0005
40				1.96	0.0008
30				1.86	0.0007
10				1.96	0.0008
0				2.35	0.0009
-10				3.46	0.0013
-20				3.28	0.0013
-30				3.00	0.0012

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.55	20	2496.880	2689.100	3.29	0.0013
4.4				3.38	0.0013

Note: Expanded measurement uncertainty is  $U = 0.01 \text{ PPM}$ ,  $k = 2$ .

#### **A.4 Occupied Bandwidth**

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the mid frequencies frequency. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

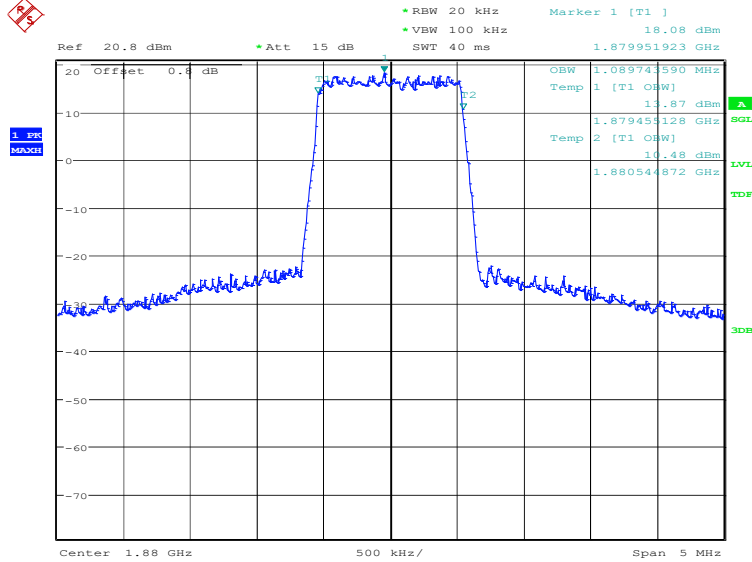
The measurement method is from ANSI C63.26:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set  $\geq 3 \times$  RBW.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- d) Set the detection mode to peak, and the trace mode to max-hold.

**LTE band 2, 1.4MHz (99%)**

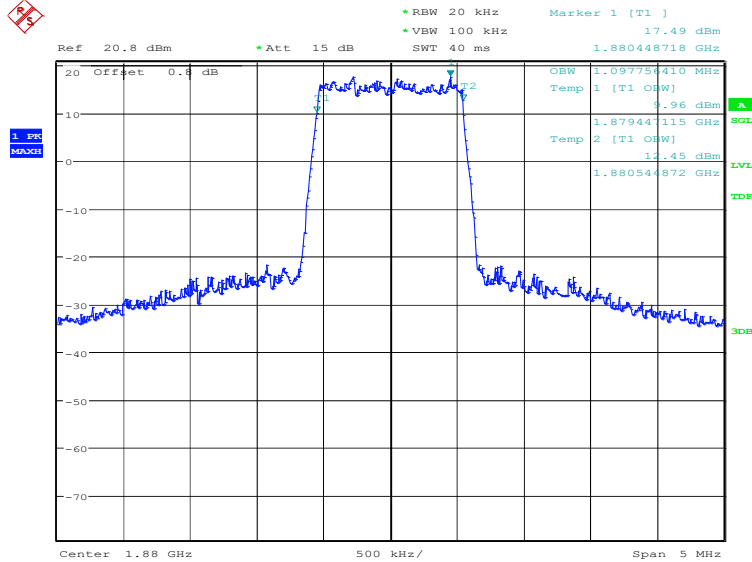
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	1089.74	1097.76

**LTE band 2, 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:14:03

**LTE band 2, 1.4MHz Bandwidth, 16QAM (99% BW)**

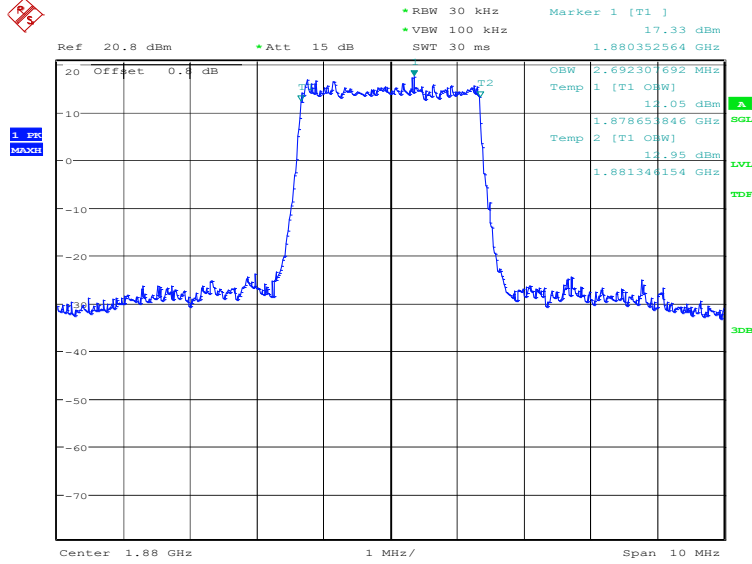


Date: 8.OCT.2023 11:14:44

**LTE band 2, 3MHz (99%)**

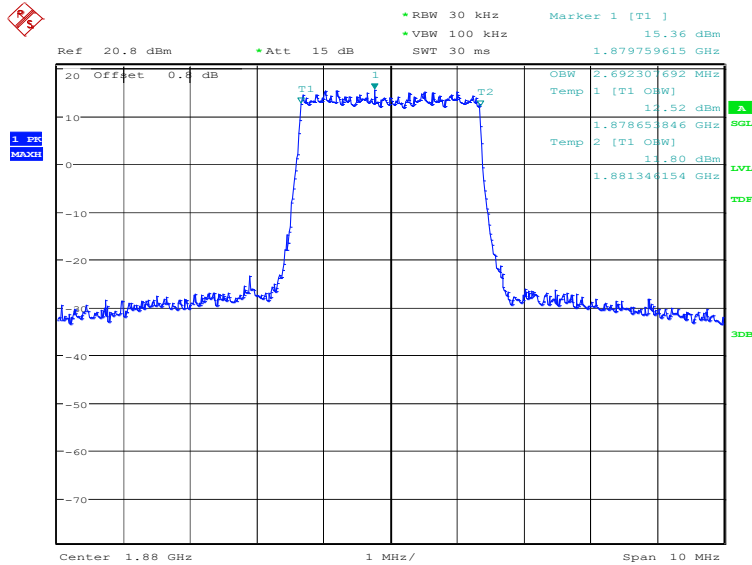
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	2692.31	2692.31

**LTE band 2, 3MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:15:29

**LTE band 2, 3MHz Bandwidth, 16QAM (99% BW)**

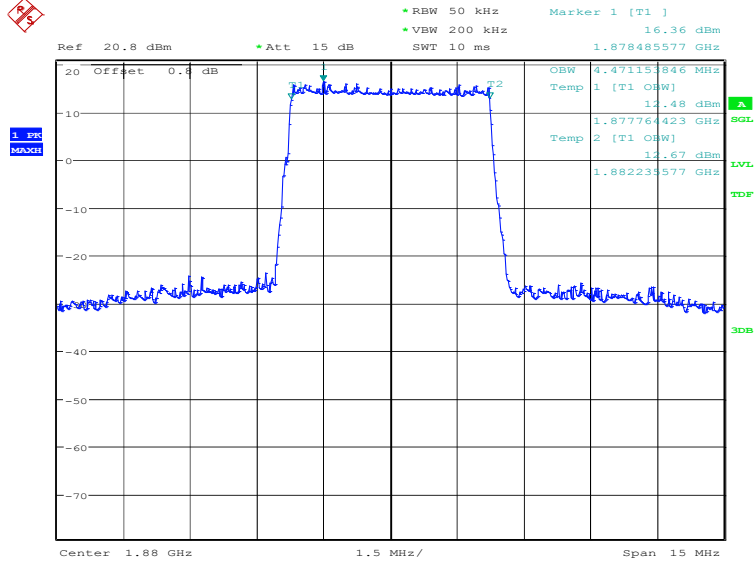


Date: 8.OCT.2023 11:16:09

**LTE band 2, 5MHz (99%)**

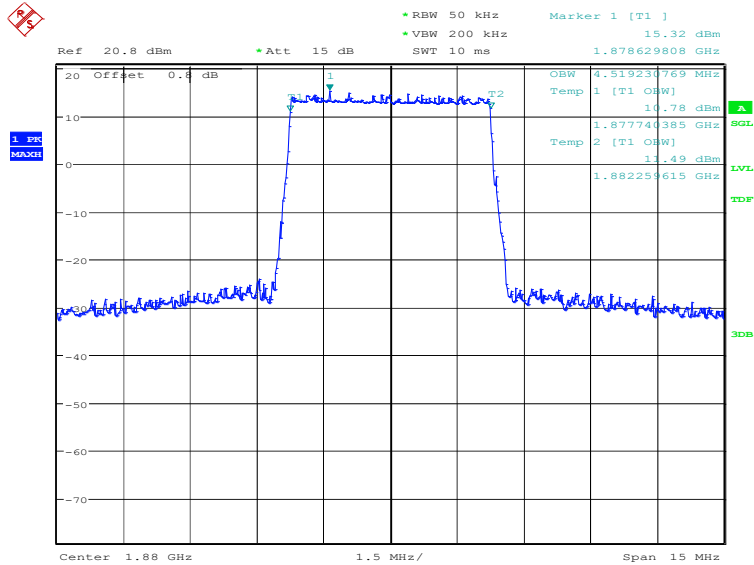
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	4471.15	4519.23

**LTE band 2, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:16:54

**LTE band 2, 5MHz Bandwidth, 16QAM (99% BW)**

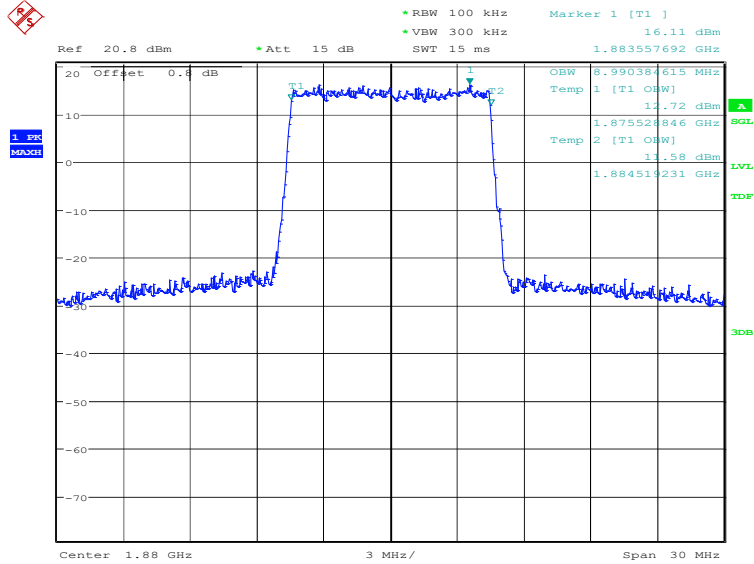


Date: 8.OCT.2023 11:17:35

**LTE band 2, 10MHz (99%)**

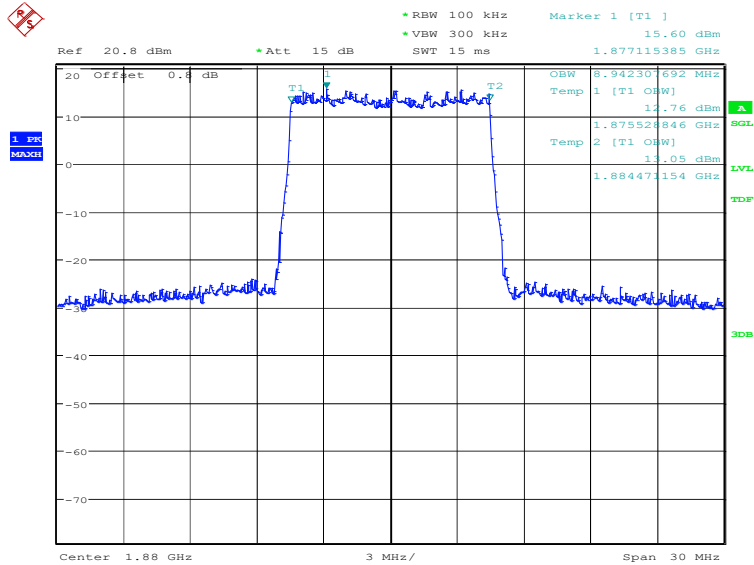
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	8990.38	8942.31

**LTE band 2, 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:18:20

**LTE band 2, 10MHz Bandwidth, 16QAM (99% BW)**

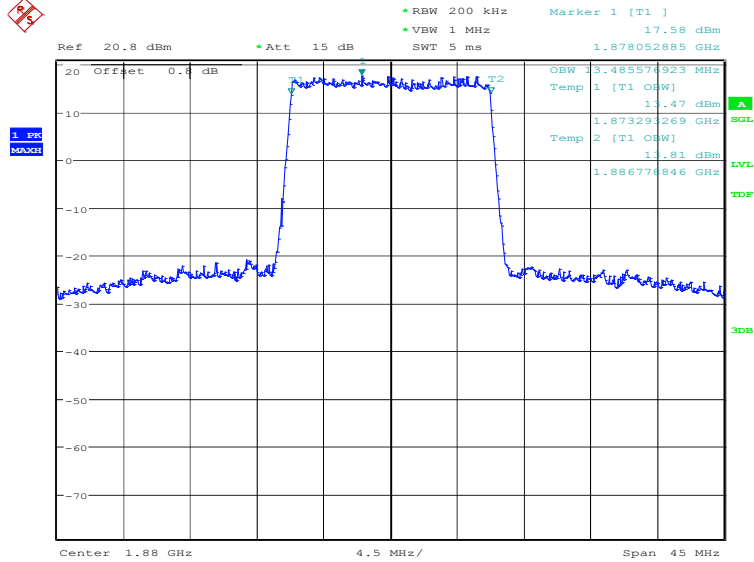


Date: 8.OCT.2023 11:19:00

**LTE band 2, 15MHz (99%)**

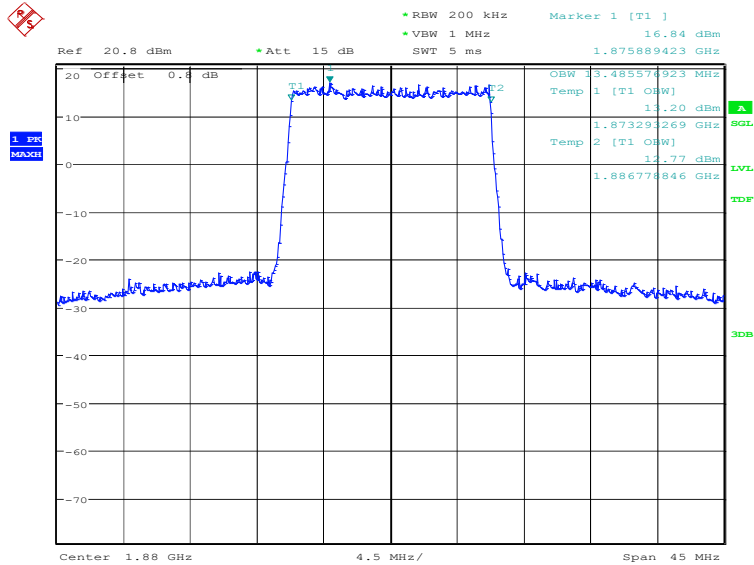
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13485.58	13485.58

**LTE band 2, 15MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:19:46

**LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)**



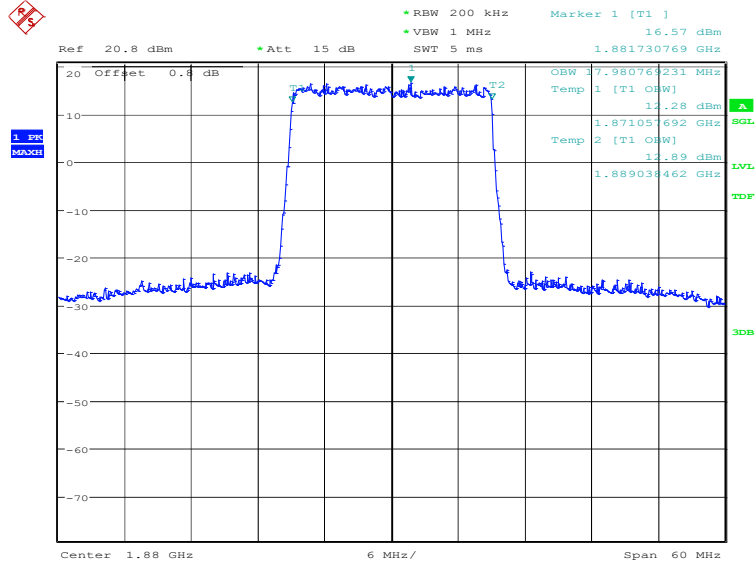
Date: 8.OCT.2023 11:20:26



### LTE band 2, 20MHz (99%)

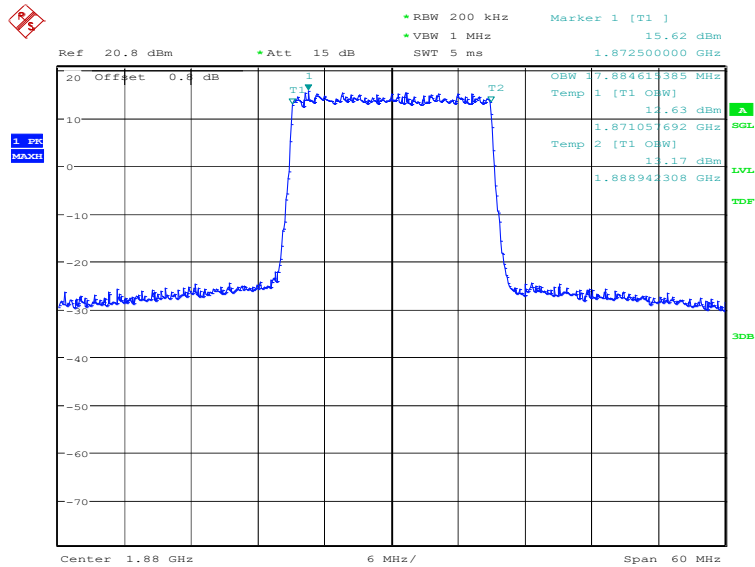
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	17980.77	17884.62

### LTE band 2, 20MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 11:21:11

### LTE band 2, 20MHz Bandwidth, 16QAM (99% BW)

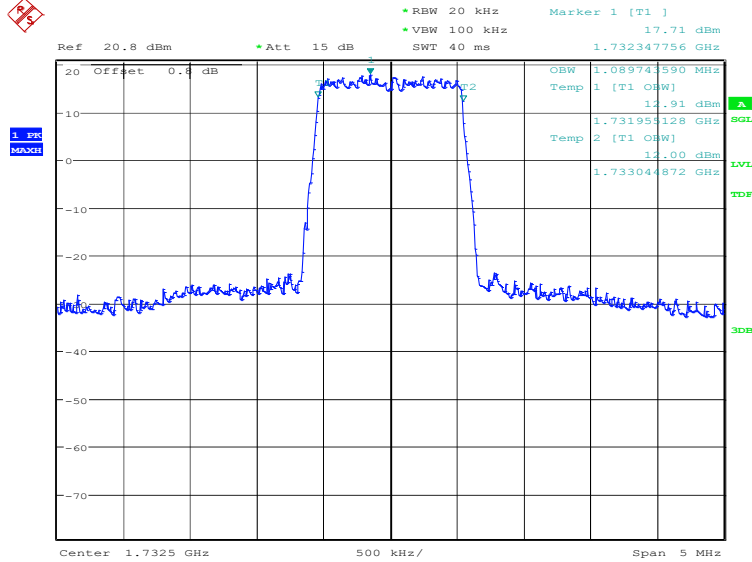


Date: 8.OCT.2023 11:21:52

**LTE band 4, 1.4MHz (99%)**

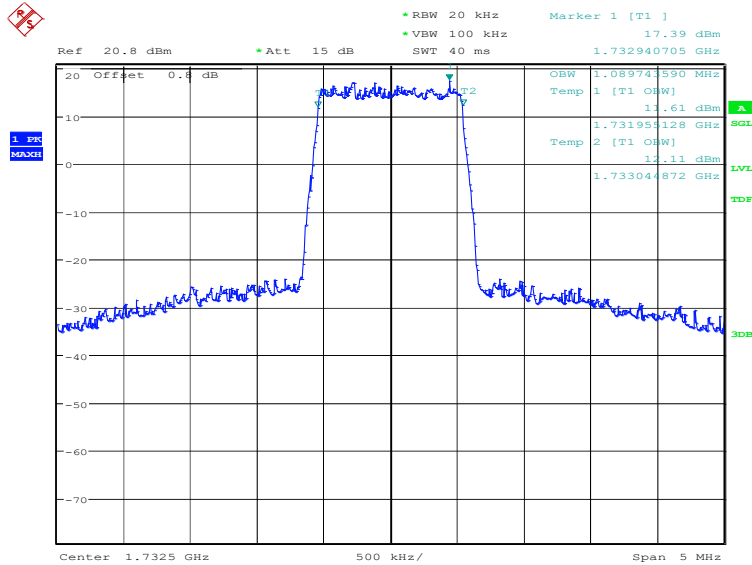
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	1089.74	1089.74

**LTE band 4, 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:22:42

**LTE band 4, 1.4MHz Bandwidth, 16QAM (99% BW)**

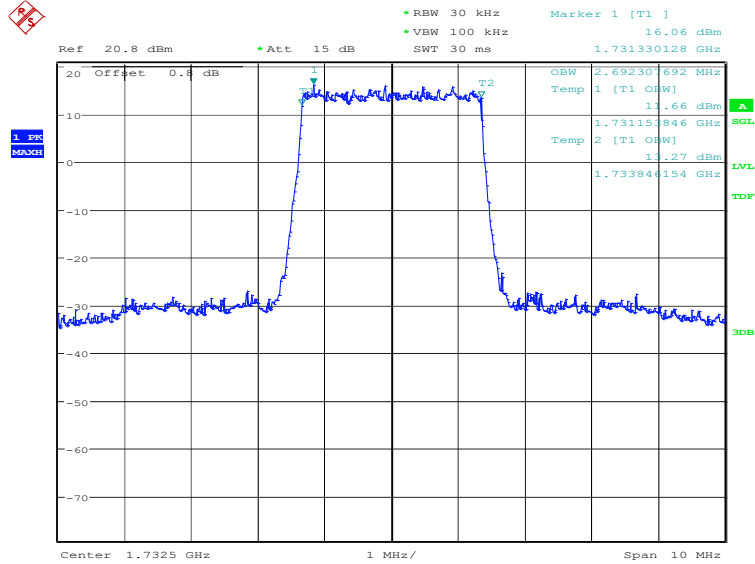


Date: 8.OCT.2023 11:23:22

### LTE band 4, 3MHz (99%)

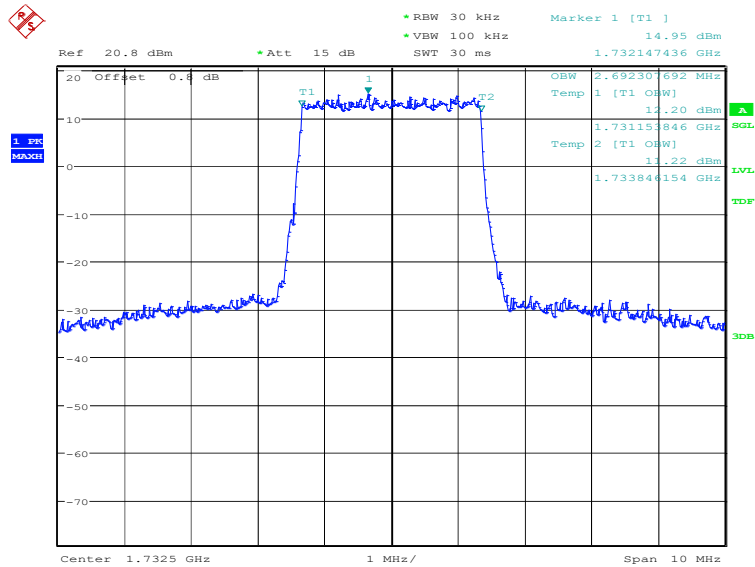
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	2692.31	2692.31

### LTE band 4, 3MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 11:24:07

### LTE band 4, 3MHz Bandwidth, 16QAM (99% BW)

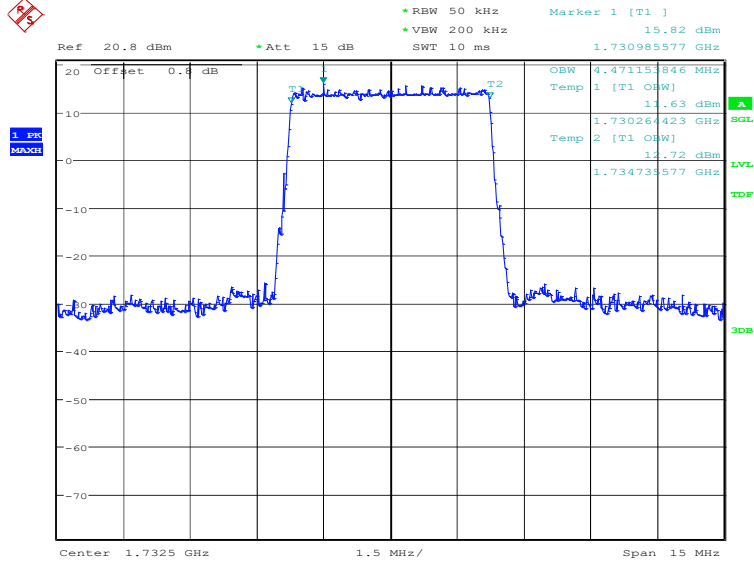


Date: 8.OCT.2023 11:24:48

### LTE band 4, 5MHz (99%)

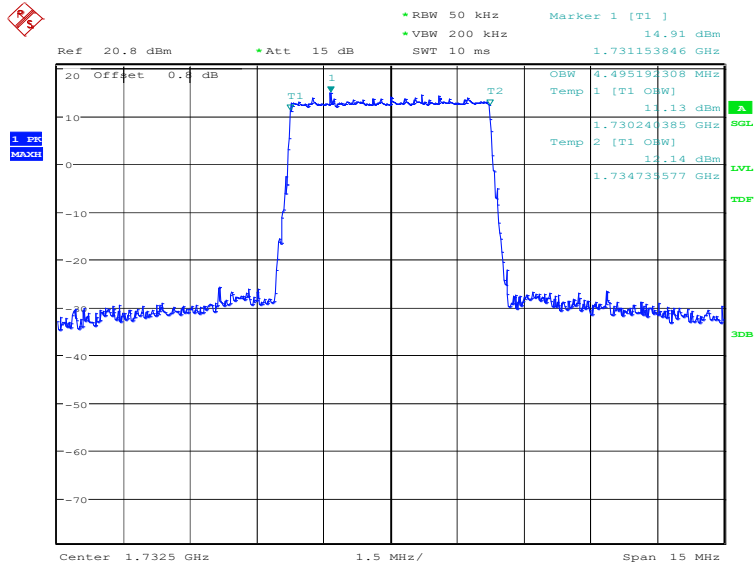
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	4471.15	4495.19

### LTE band 4, 5MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 11:25:33

### LTE band 4, 5MHz Bandwidth, 16QAM (99% BW)

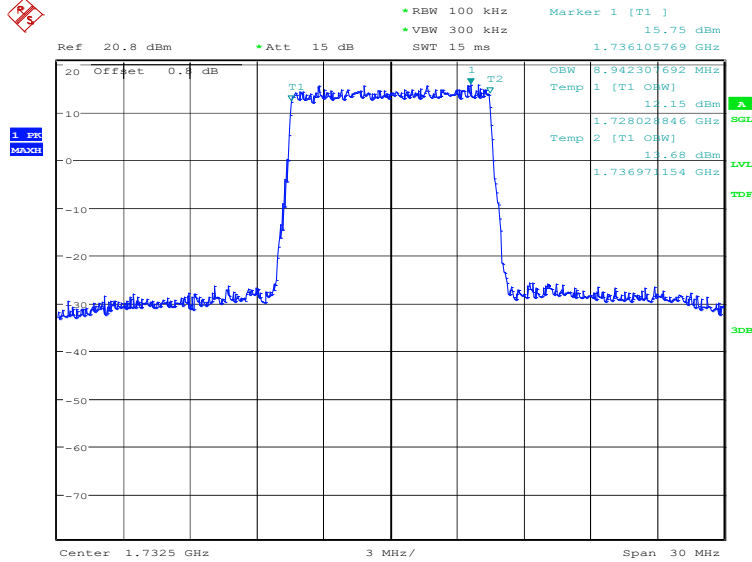


Date: 8.OCT.2023 11:26:13

**LTE band 4, 10MHz (99%)**

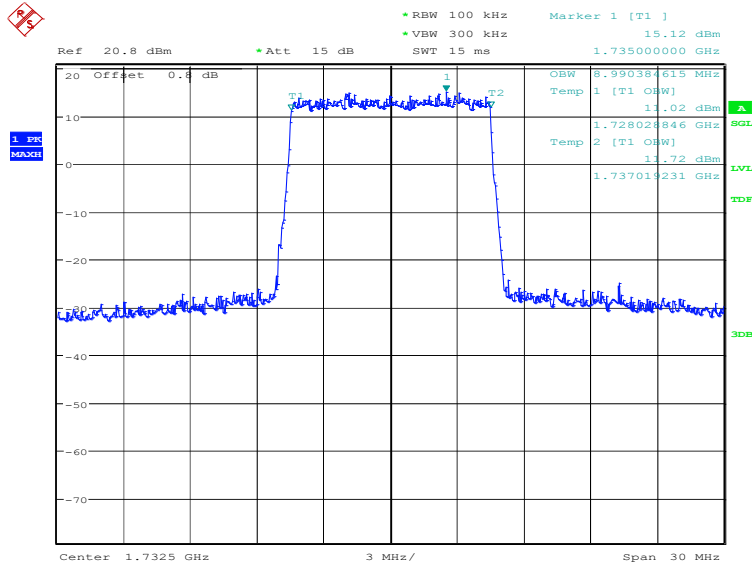
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	8942.31	8990.38

**LTE band 4, 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:26:58

**LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)**

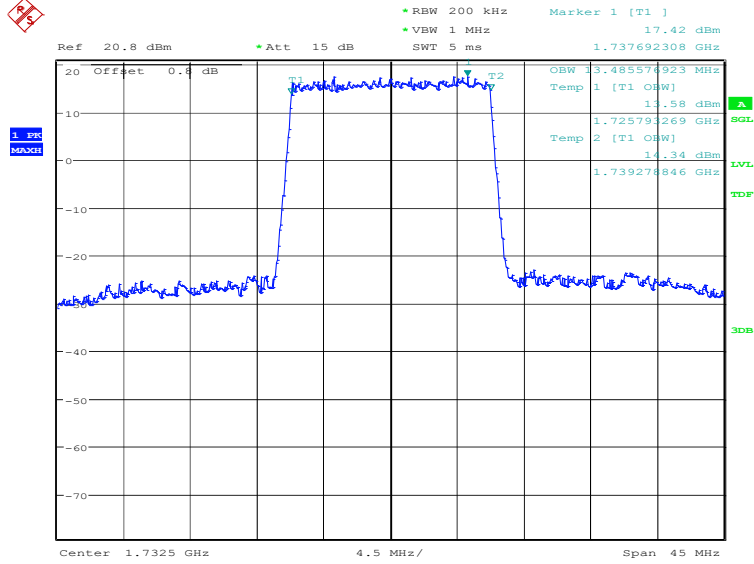


Date: 8.OCT.2023 11:27:39

**LTE band 4, 15MHz (99%)**

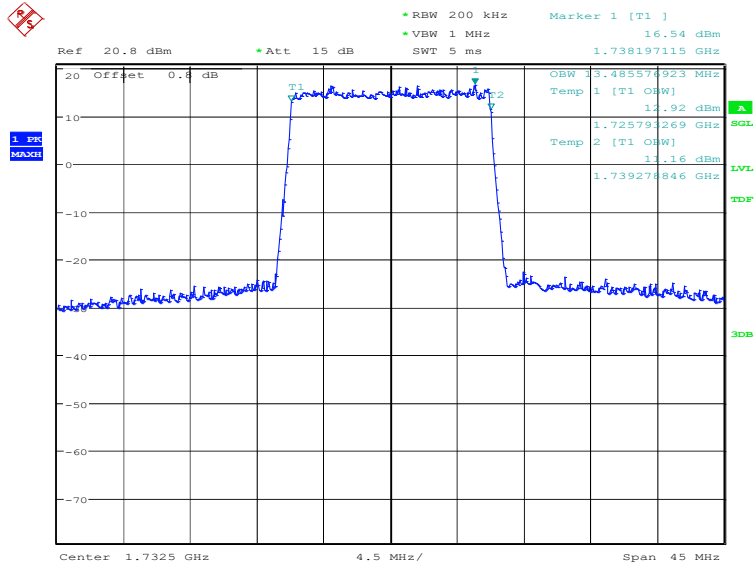
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	13485.58	13485.58

**LTE band 4, 15MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:28:24

**LTE band 4, 15MHz Bandwidth, 16QAM (99% BW)**

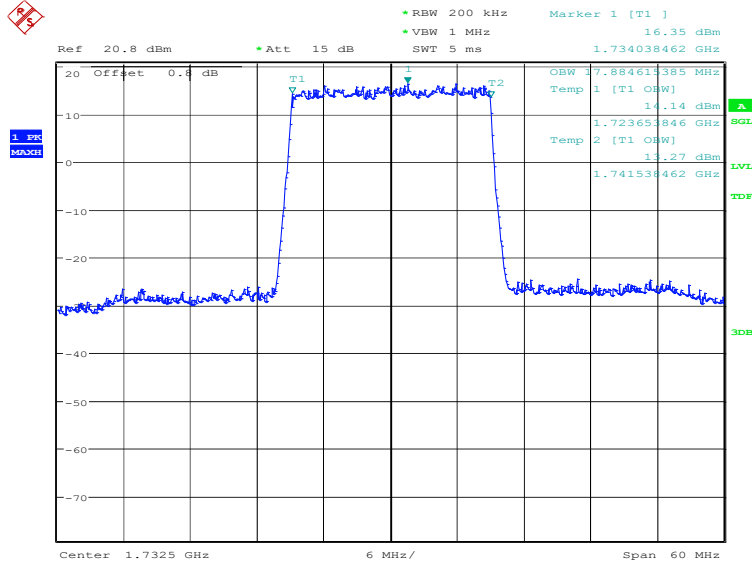


Date: 8.OCT.2023 11:29:04

**LTE band 4, 20MHz (99%)**

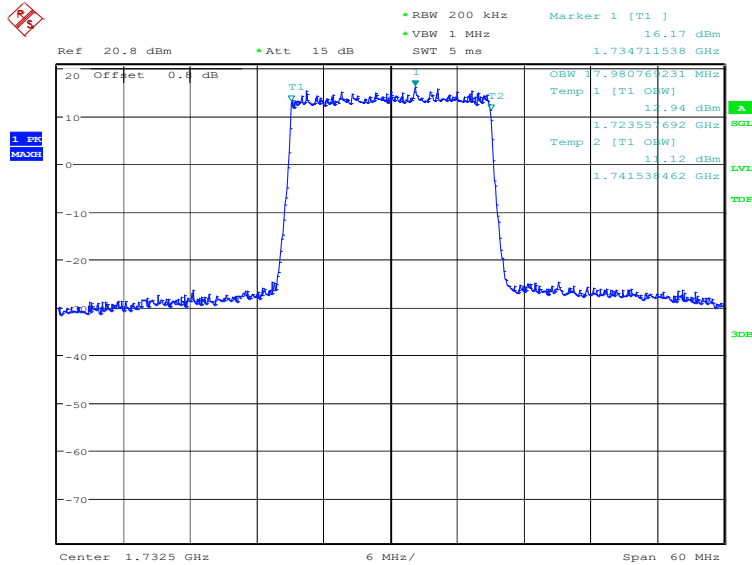
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1732.5	QPSK	16QAM
	17884.62	17980.77

**LTE band 4, 20MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:29:50

**LTE band 4, 20MHz Bandwidth, 16QAM (99% BW)**

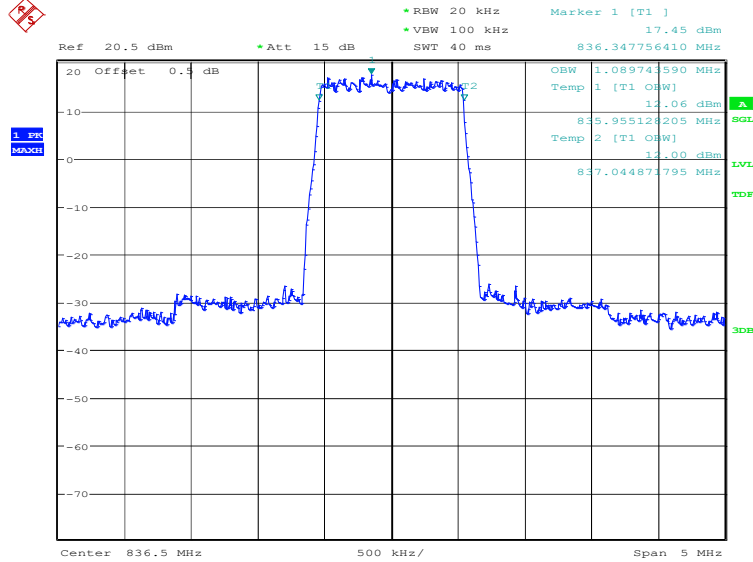


Date: 8.OCT.2023 11:30:30

**LTE band 5, 1.4MHz (99%)**

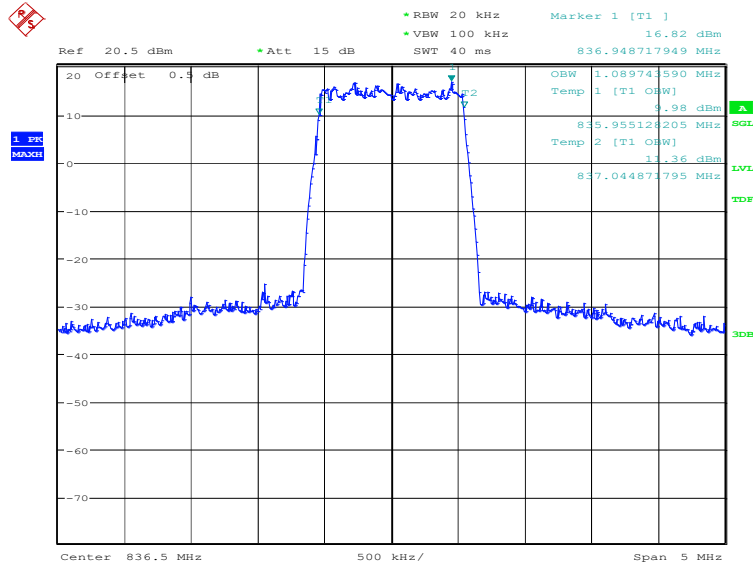
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1089.74	1089.74

**LTE band 5, 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:33:52

**LTE band 5, 1.4MHz Bandwidth, 16QAM (99% BW)**



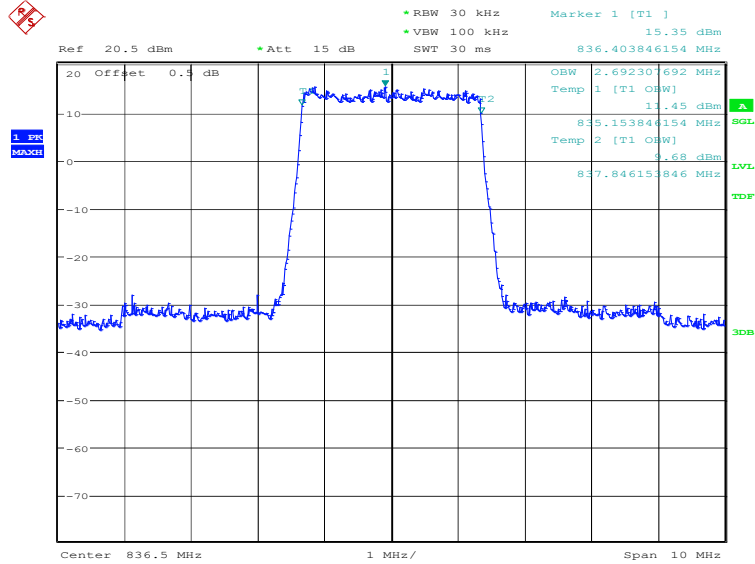
Date: 8.OCT.2023 11:34:32



### LTE band 5, 3MHz (99%)

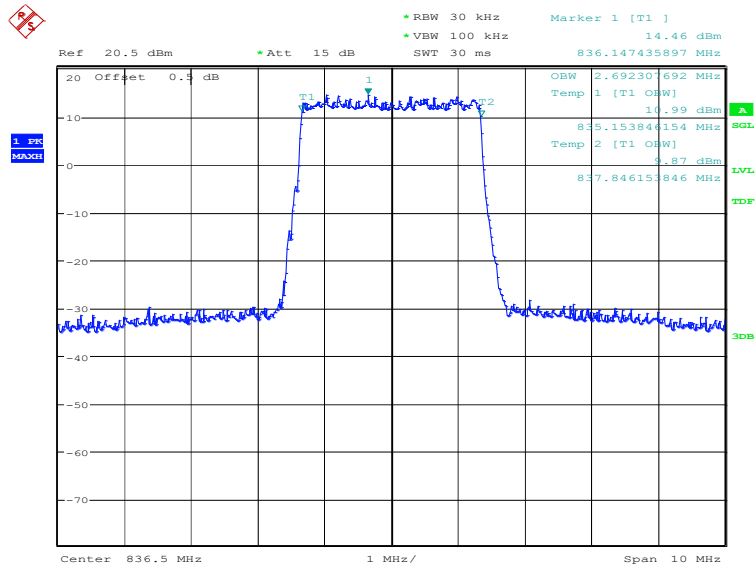
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

### LTE band 5, 3MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 11:35:17

### LTE band 5, 3MHz Bandwidth, 16QAM (99% BW)

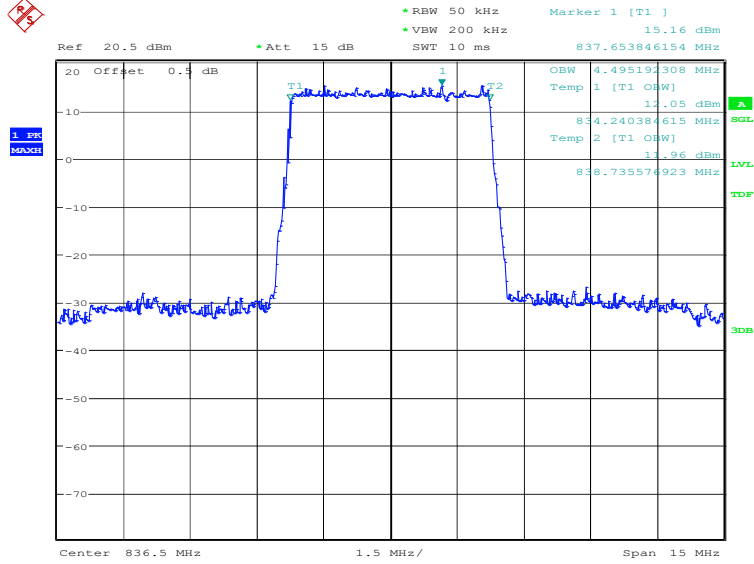


Date: 8.OCT.2023 11:35:57

**LTE band 5, 5MHz (99%)**

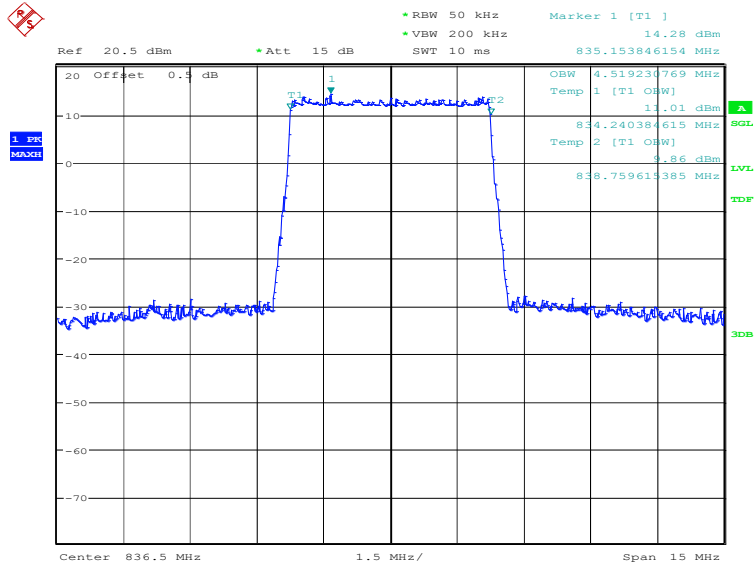
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4519.23

**LTE band 5, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:36:42

**LTE band 5, 5MHz Bandwidth, 16QAM (99% BW)**

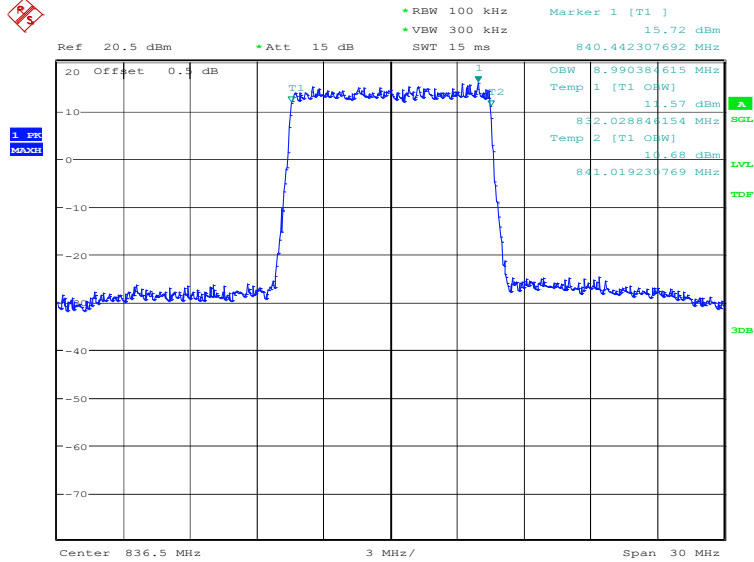


Date: 8.OCT.2023 11:37:23

**LTE band 5, 10MHz (99%)**

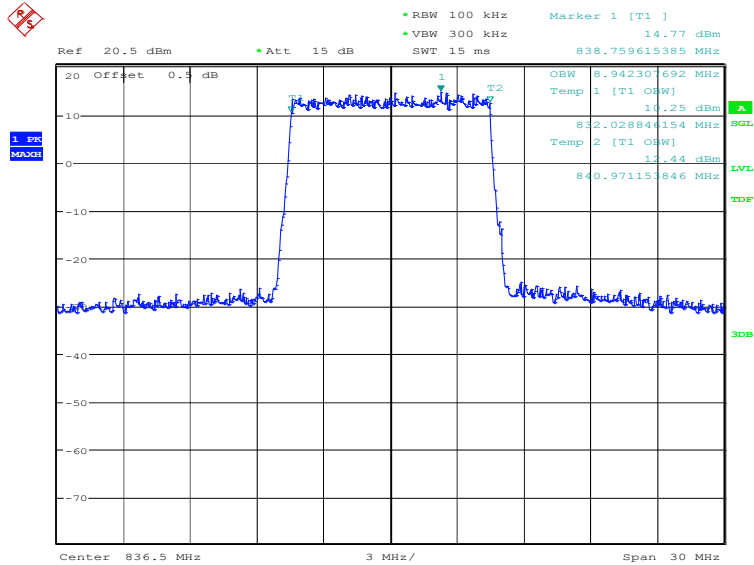
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8990.38	8942.31

**LTE band 5, 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:38:08

**LTE band 5, 10MHz Bandwidth, 16QAM (99% BW)**

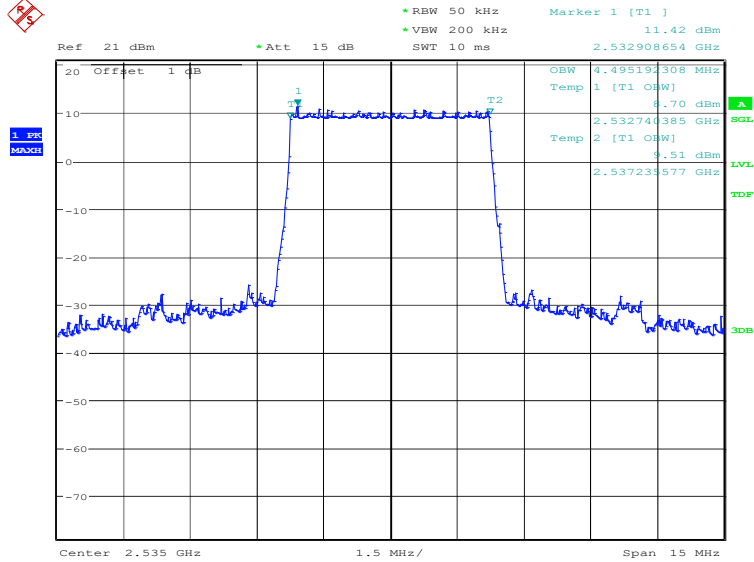


Date: 8.OCT.2023 11:38:48

**LTE band 7, 5MHz (99%)**

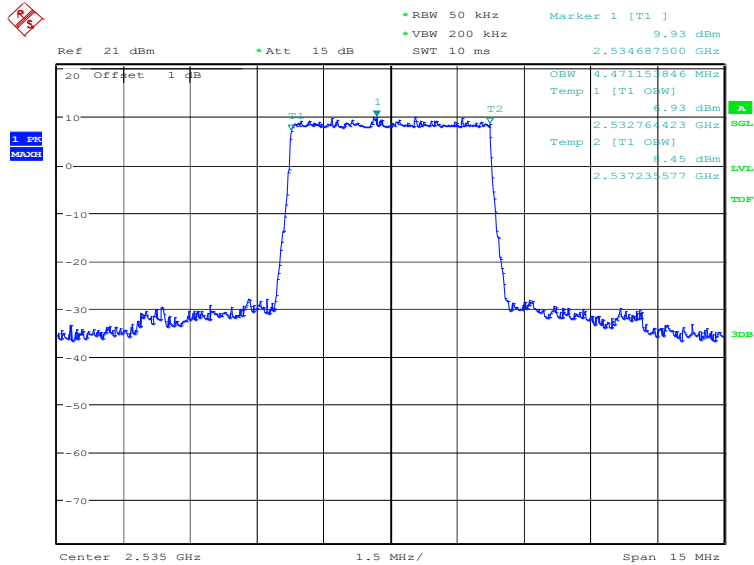
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	4495.19	4471.15

**LTE band 7, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 15:10:34

**LTE band 7, 5MHz Bandwidth, 16QAM (99% BW)**

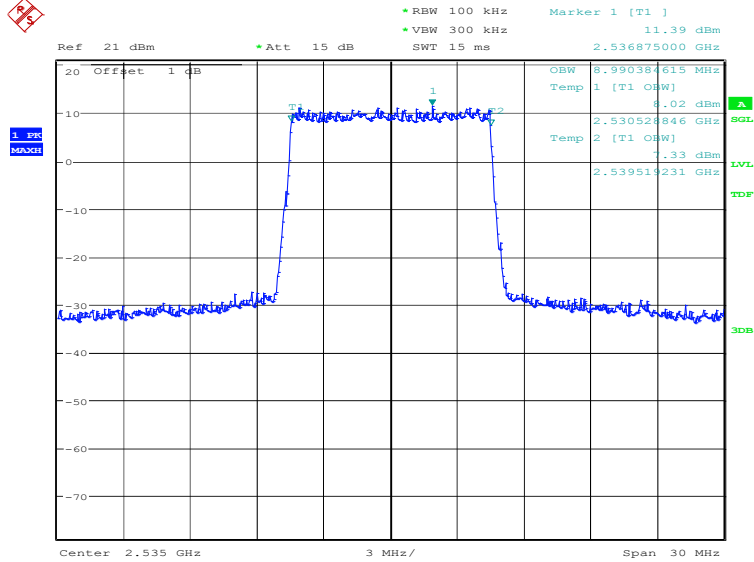


Date: 8.OCT.2023 15:11:15

**LTE band 7, 10MHz (99%)**

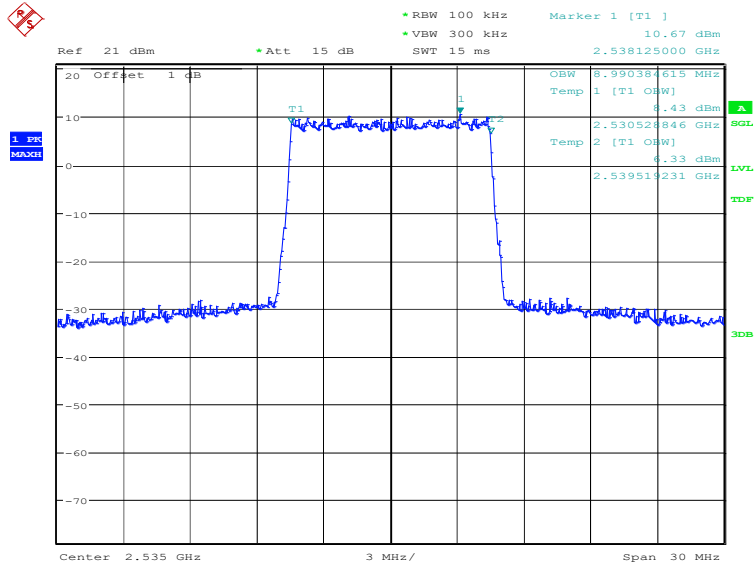
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	8990.38	8990.38

**LTE band 7, 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 15:12:00

**LTE band 7, 10MHz Bandwidth, 16QAM (99% BW)**

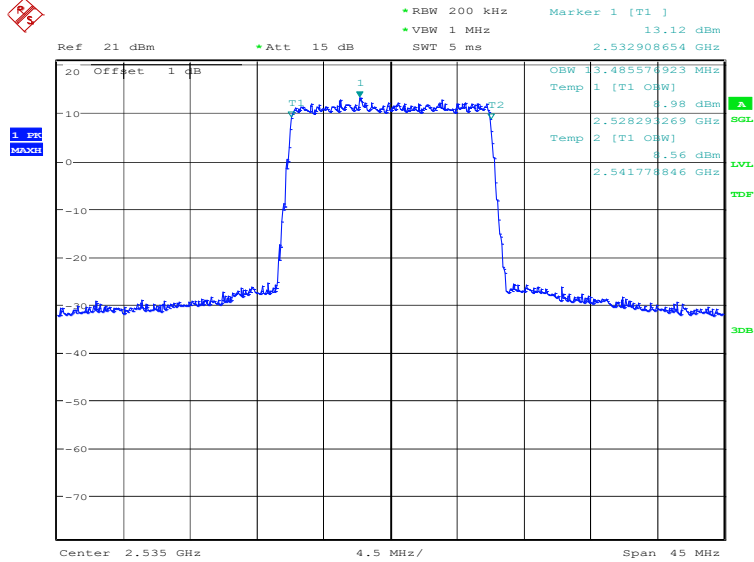


Date: 8.OCT.2023 15:12:40

**LTE band 7, 15MHz (99%)**

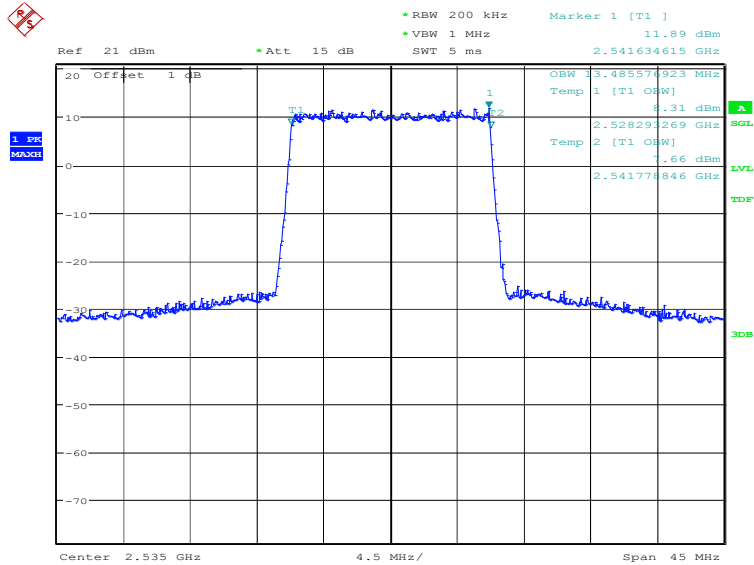
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	13485.58	13485.58

**LTE band 7, 15MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 15:13:25

**LTE band 7, 15MHz Bandwidth, 16QAM (99% BW)**

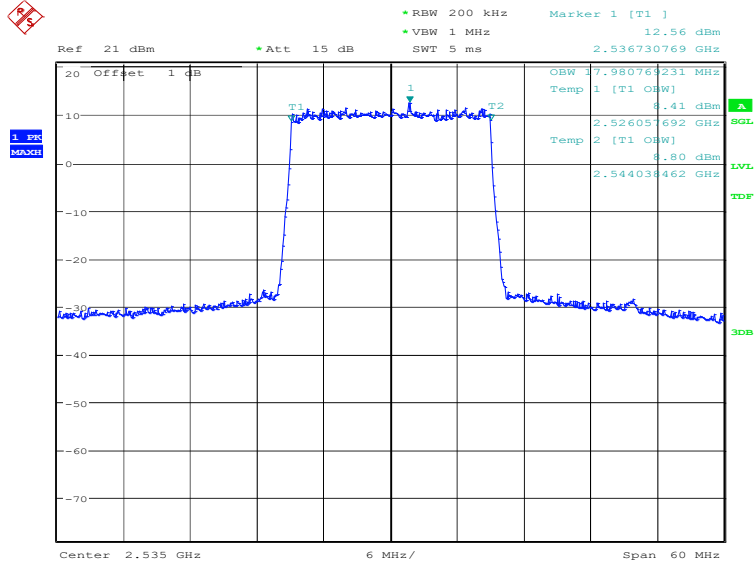


Date: 8.OCT.2023 15:14:05

### LTE band 7, 20MHz (99%)

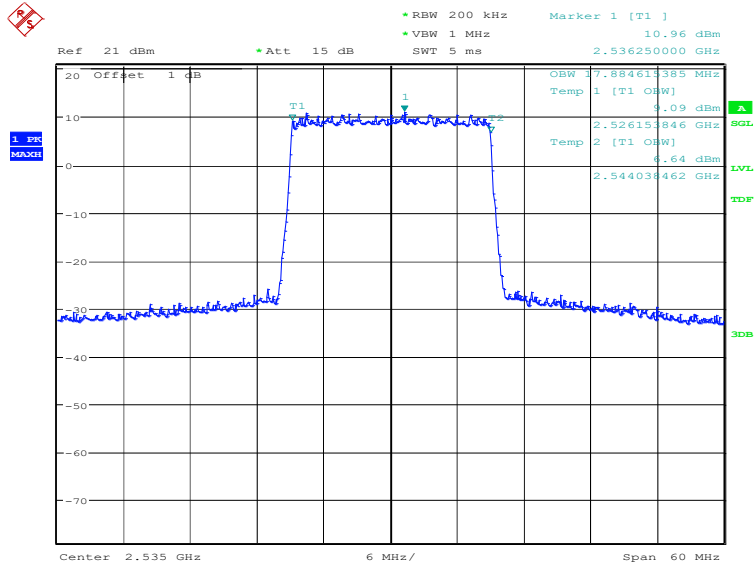
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	17980.77	17884.62

### LTE band 7, 20MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 15:14:50

### LTE band 7, 20MHz Bandwidth, 16QAM (99% BW)

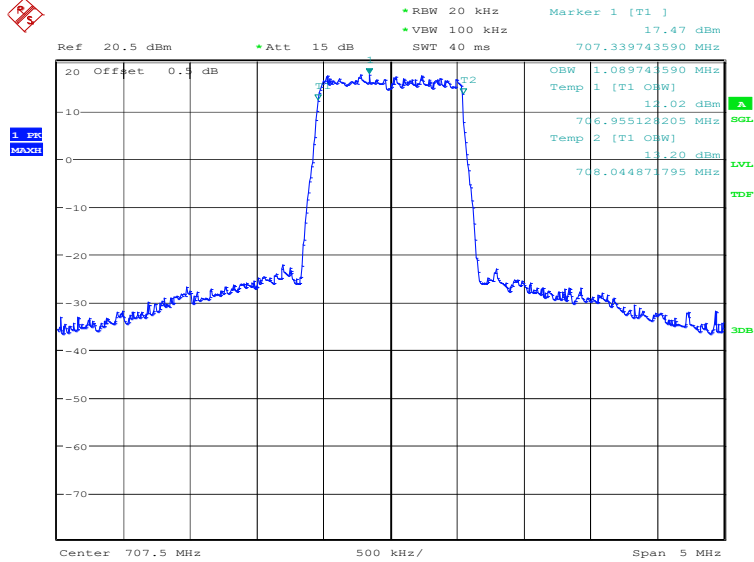


Date: 8.OCT.2023 15:15:30

**LTE band 12, 1.4MHz (99%)**

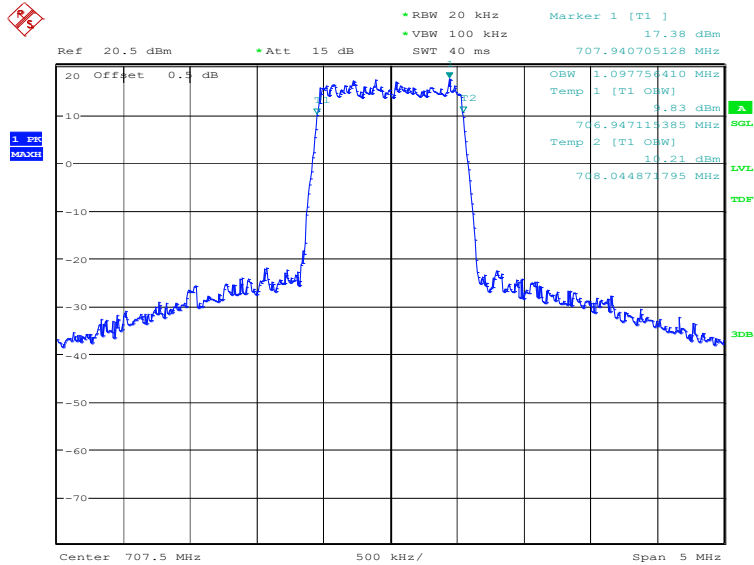
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	1089.74	1097.76

**LTE band 12, 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:39:38

**LTE band 12, 1.4MHz Bandwidth, 16QAM (99% BW)**



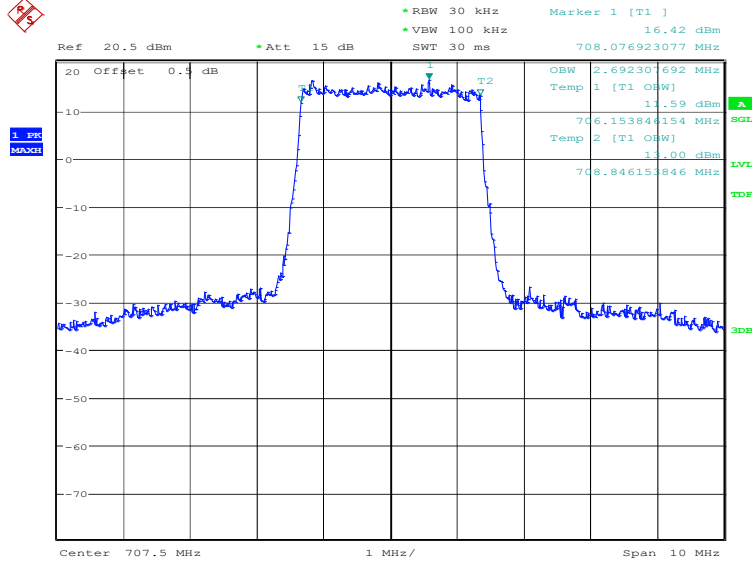
Date: 8.OCT.2023 11:40:18



**LTE band 12, 3MHz (99%)**

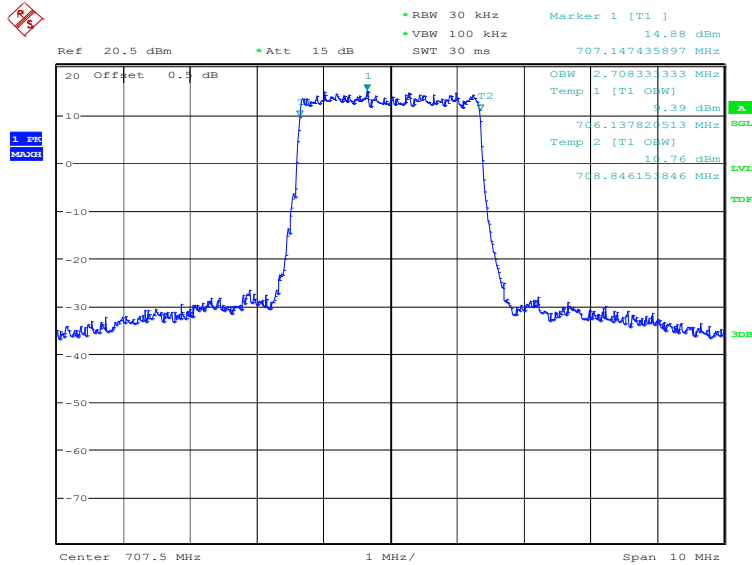
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	2692.31	2708.33

**LTE band 12, 3MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:41:03

**LTE band 12, 3MHz Bandwidth, 16QAM (99% BW)**

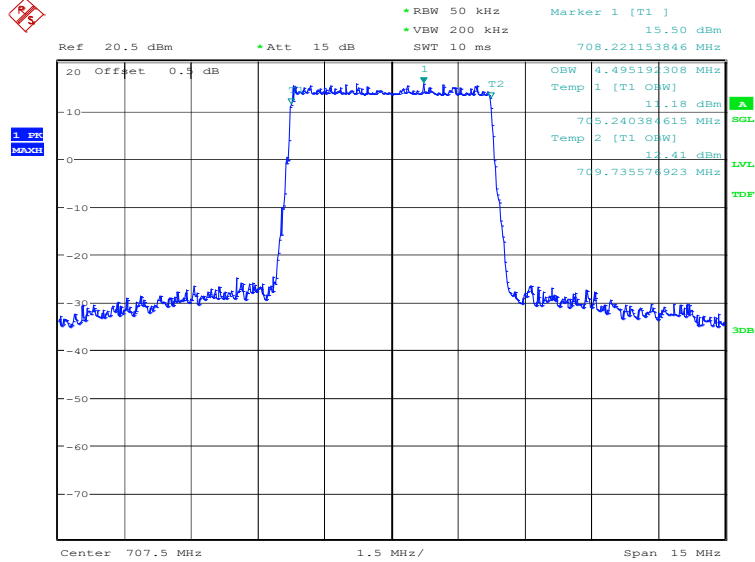


Date: 8.OCT.2023 11:41:44

**LTE band 12, 5MHz (99%)**

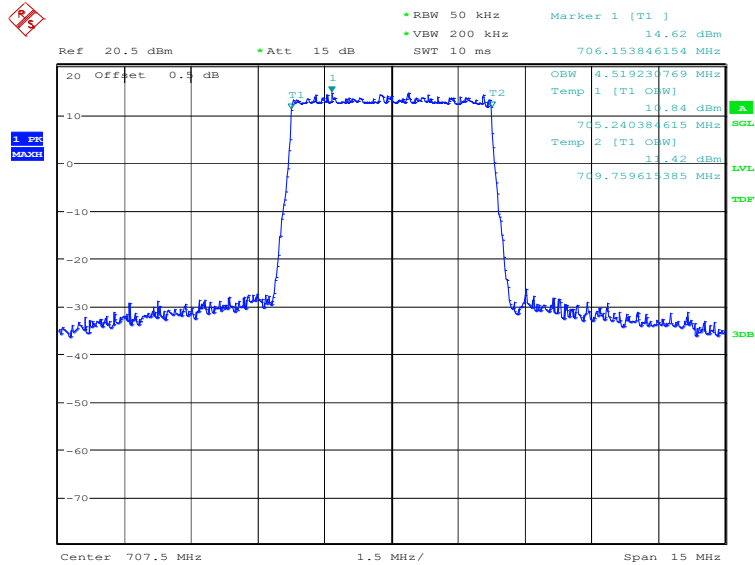
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	4495.19	4519.23

**LTE band 12, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:42:29

**LTE band 12, 5MHz Bandwidth, 16QAM (99% BW)**

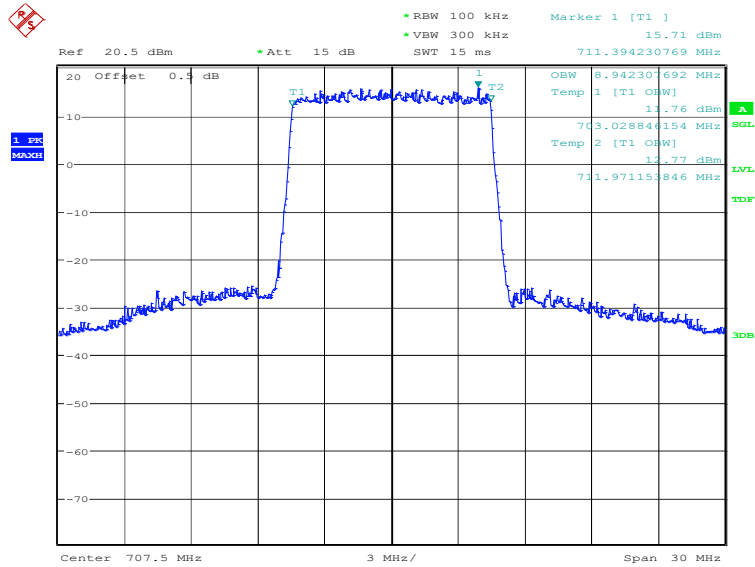


Date: 8.OCT.2023 11:43:09

### LTE band 12, 10MHz (99%)

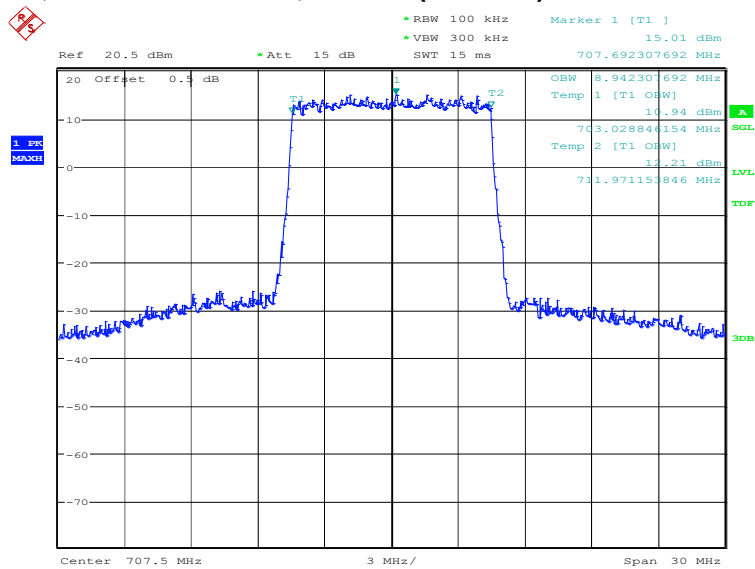
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	8942.31	8942.31

### LTE band 12, 10MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 11:43:54

### LTE band 12, 10MHz Bandwidth, 16QAM (99% BW)

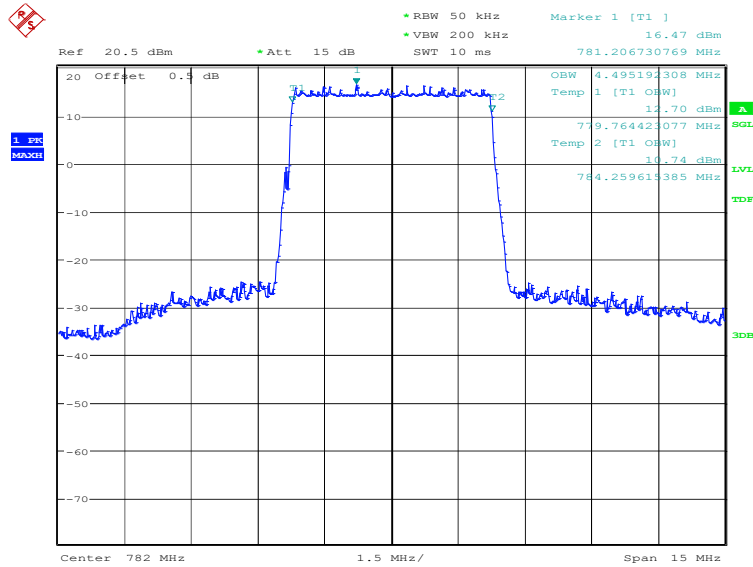


Date: 8.OCT.2023 11:44:35

**LTE band 13, 5MHz (99%)**

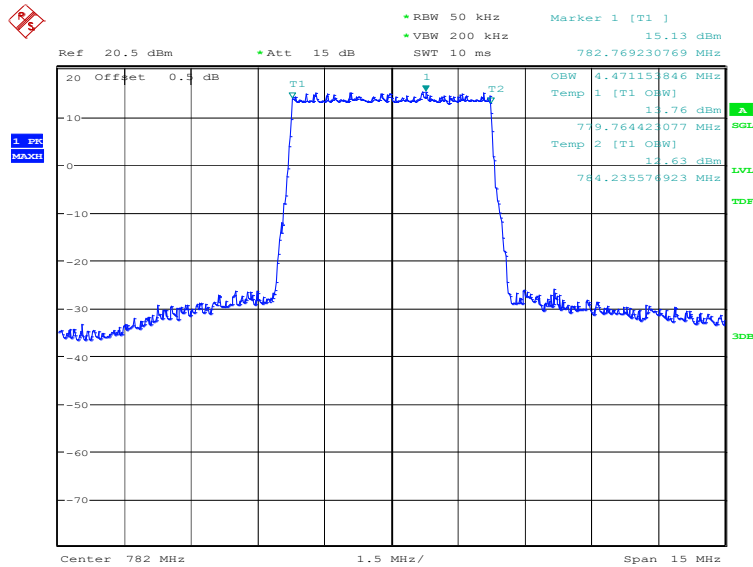
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	4495.19	4471.15

**LTE band 13, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:45:24

**LTE band 13, 5MHz Bandwidth, 16QAM (99% BW)**

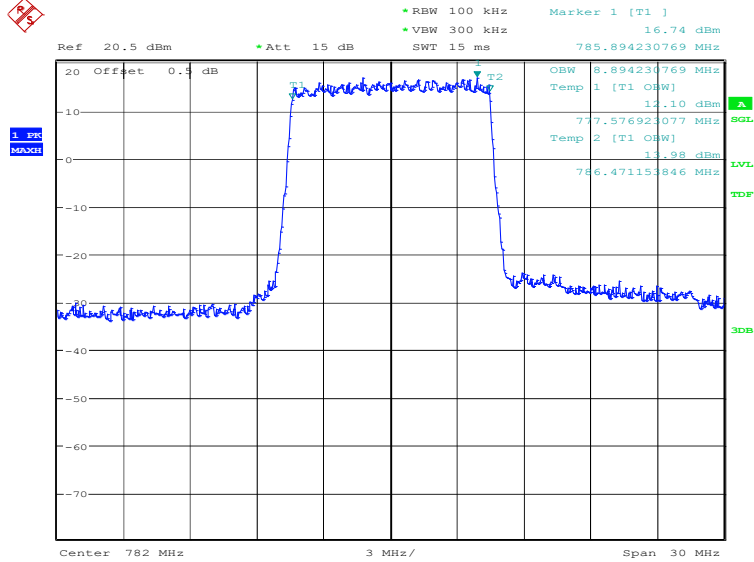


Date: 8.OCT.2023 11:46:05

### LTE band 13, 10MHz (99%)

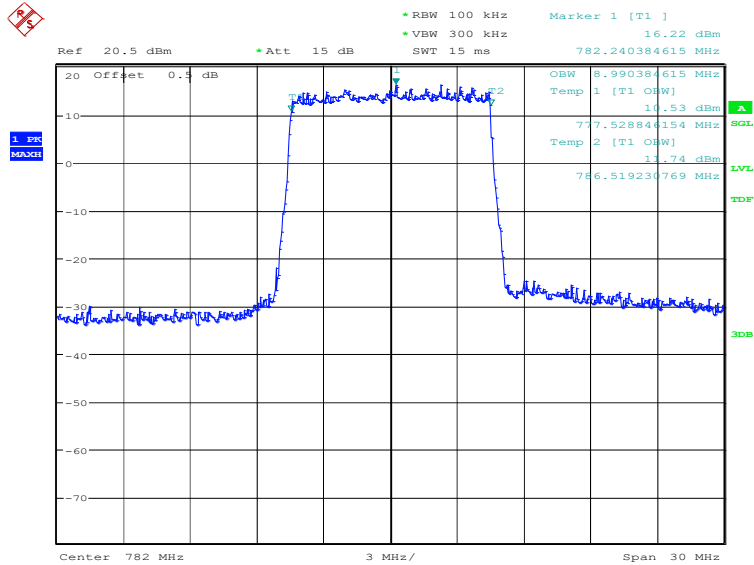
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	8894.23	8990.38

### LTE band 13, 10MHz Bandwidth, QPSK (99% BW)



Date: 8.OCT.2023 11:46:50

### LTE band 13, 10MHz Bandwidth,16QAM (99% BW)

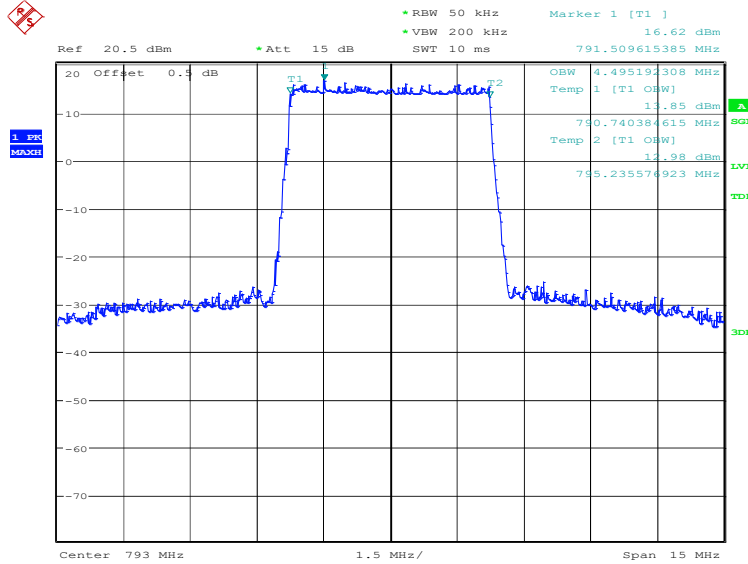


Date: 8.OCT.2023 11:47:30

**LTE band 14, 5MHz (99%)**

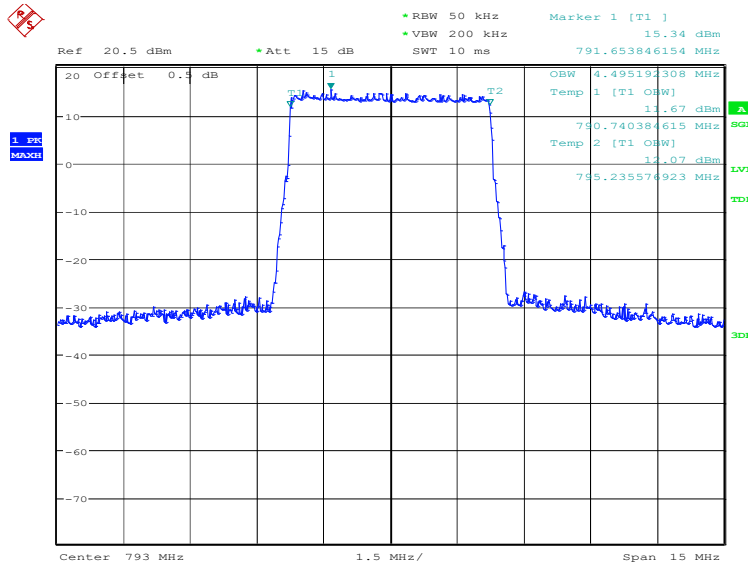
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
793.0	QPSK	16QAM
	4495.19	4495.19

**LTE band 14, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:48:20

**LTE band 14, 5MHz Bandwidth, 16QAM (99% BW)**

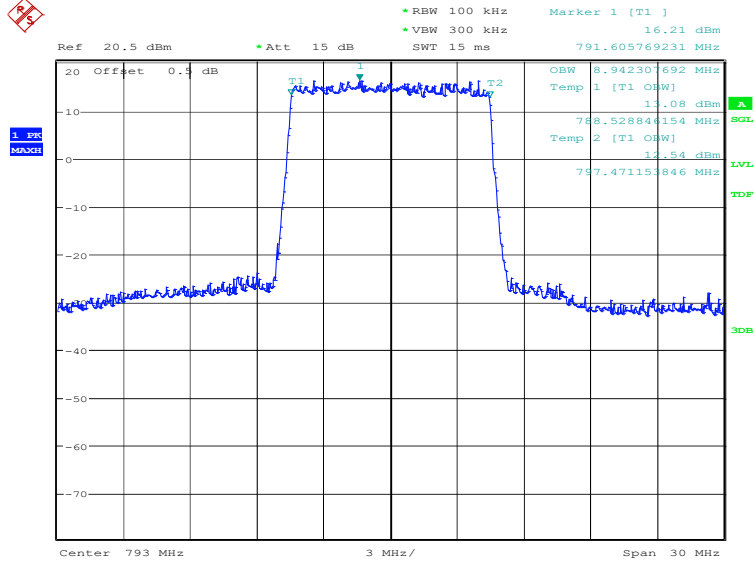


Date: 8.OCT.2023 11:49:01

**LTE band 14, 10MHz (99%)**

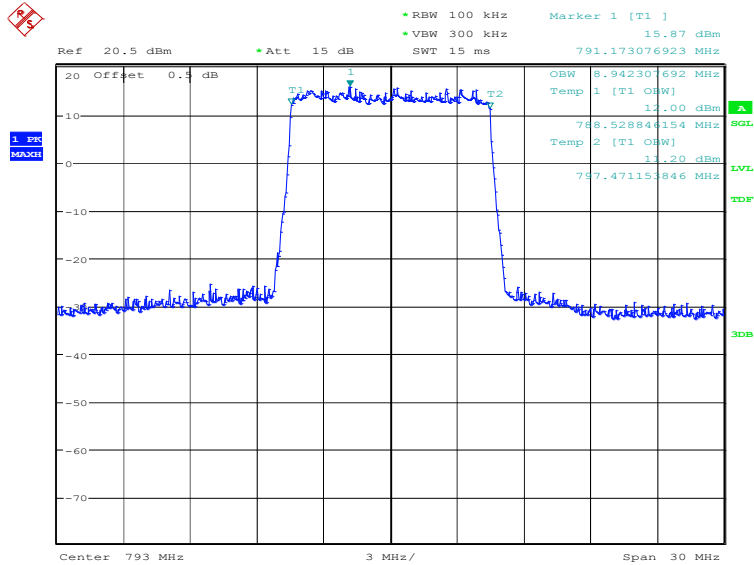
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
793.0	QPSK	16QAM
	8942.31	8942.31

**LTE band 14, 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:49:46

**LTE band 14, 10MHz Bandwidth,16QAM (99% BW)**

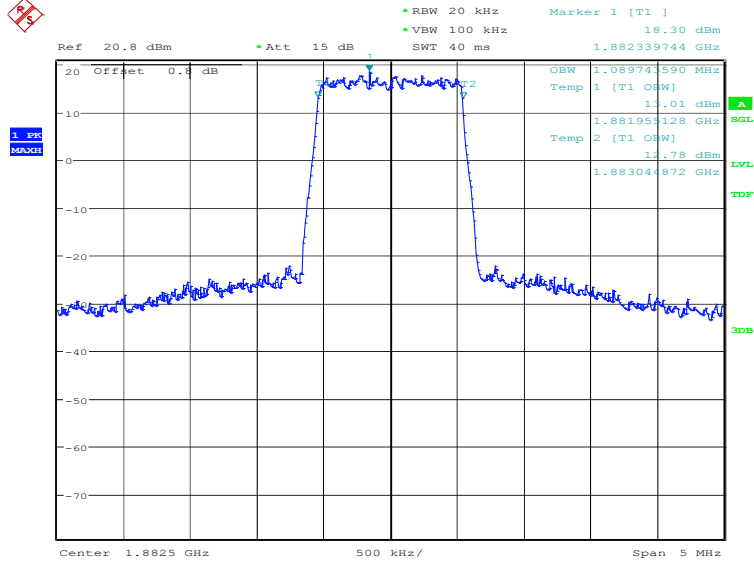


Date: 8.OCT.2023 11:50:26

**LTE band 25, 1.4MHz (99%)**

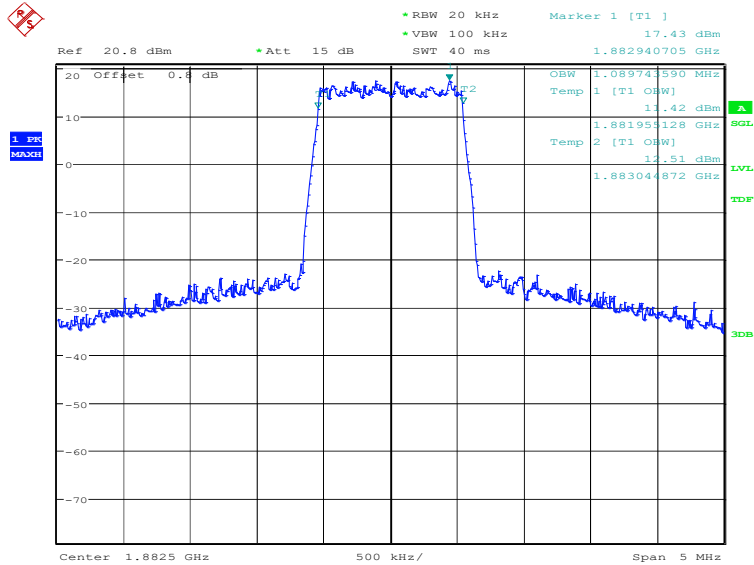
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	1089.74	1089.74

**LTE band 25, 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:51:17

**LTE band 25, 1.4MHz Bandwidth, 16QAM (99% BW)**



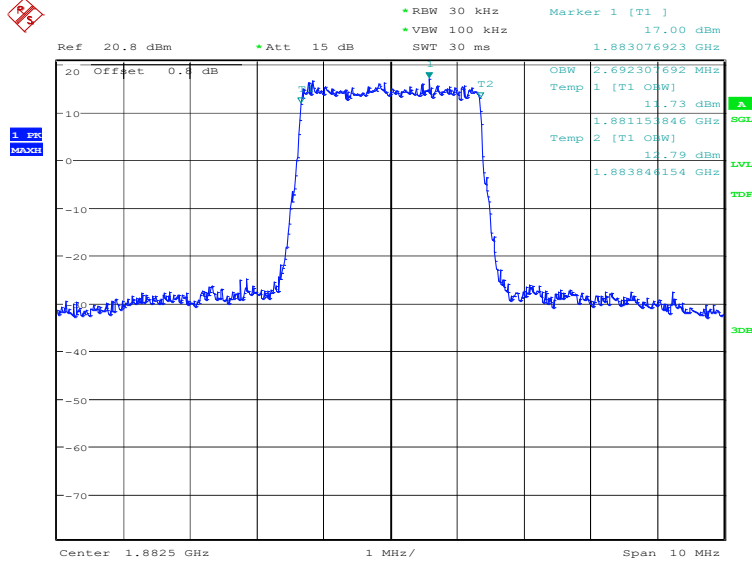
Date: 8.OCT.2023 11:51:57



**LTE band 25, 3MHz (99%)**

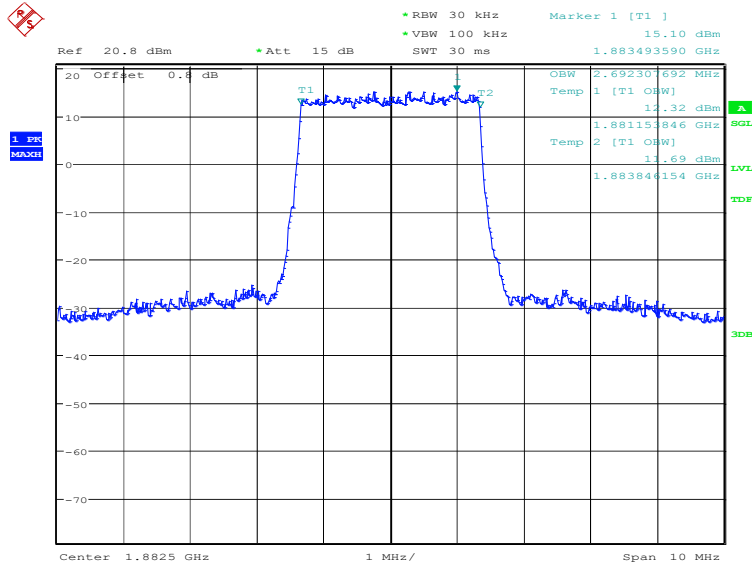
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	2692.31	2692.31

**LTE band 25, 3MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:52:43

**LTE band 25, 3MHz Bandwidth, 16QAM (99% BW)**

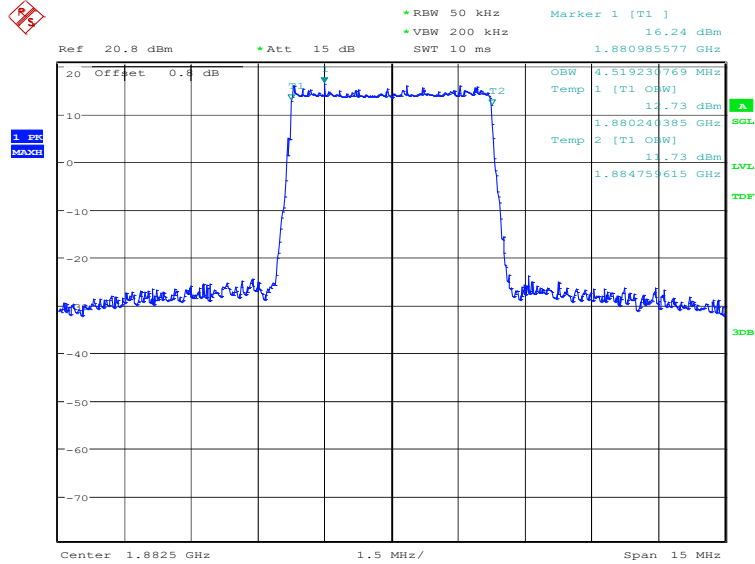


Date: 8.OCT.2023 11:53:23

**LTE band 25, 5MHz (99%)**

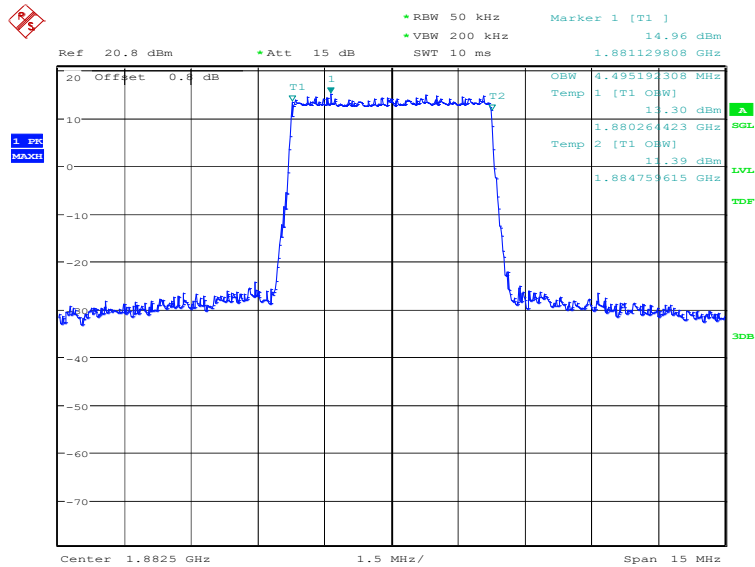
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	4519.23	4495.19

**LTE band 25, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:54:09

**LTE band 25, 5MHz Bandwidth, 16QAM (99% BW)**

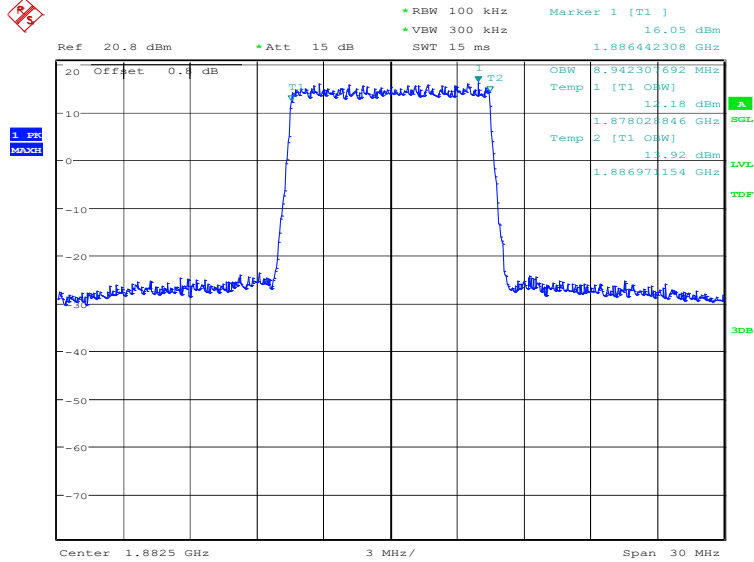


Date: 8.OCT.2023 11:54:49

**LTE band 25, 10MHz (99%)**

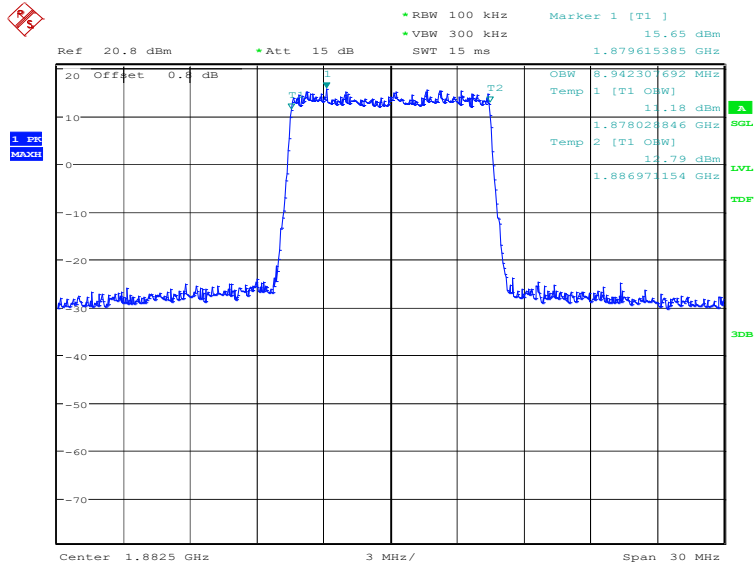
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	8942.31	8942.31

**LTE band 25, 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:55:35

**LTE band 25, 10MHz Bandwidth, 16QAM (99% BW)**

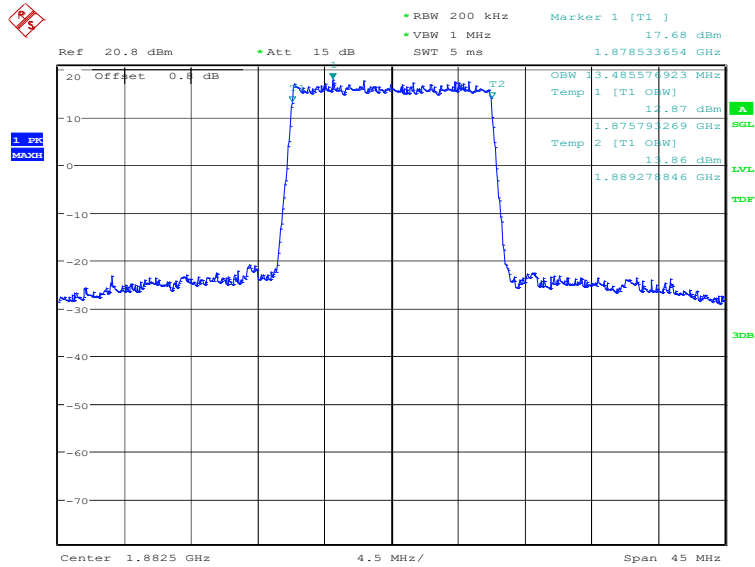


Date: 8.OCT.2023 11:56:15

**LTE band 25, 15MHz (99%)**

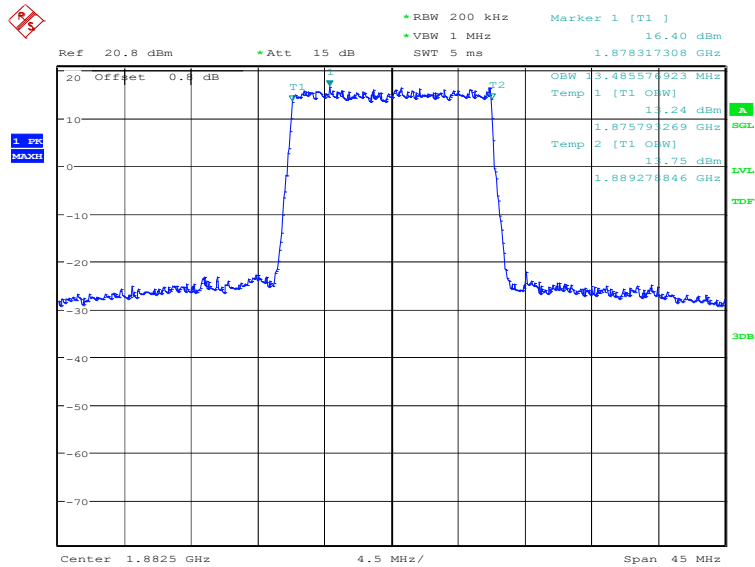
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	13485.58	13485.58

**LTE band 25, 15MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:57:01

**LTE band 25, 15MHz Bandwidth, 16QAM (99% BW)**

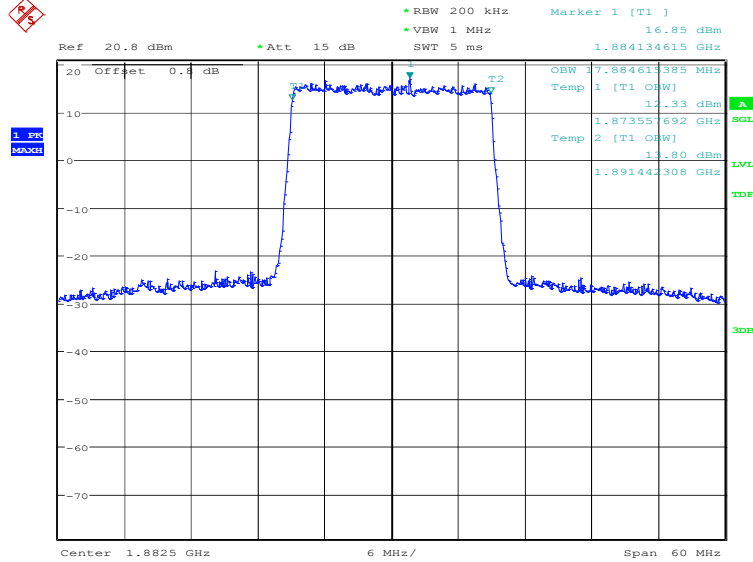


Date: 8.OCT.2023 11:57:41

**LTE band 25, 20MHz (99%)**

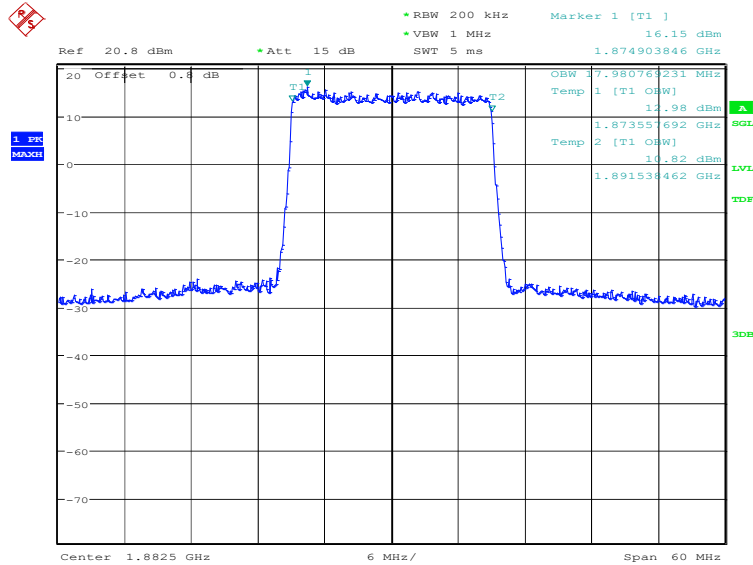
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	17884.62	17980.77

**LTE band 25, 20MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 11:58:27

**LTE band 25, 20MHz Bandwidth, 16QAM (99% BW)**

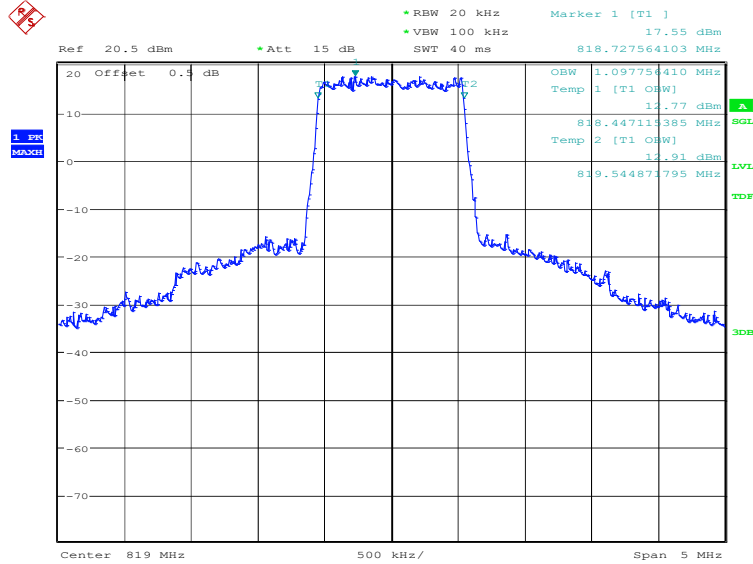


Date: 8.OCT.2023 11:59:07

**LTE band 26(814MHz~824MHz), 1.4MHz (99%)**

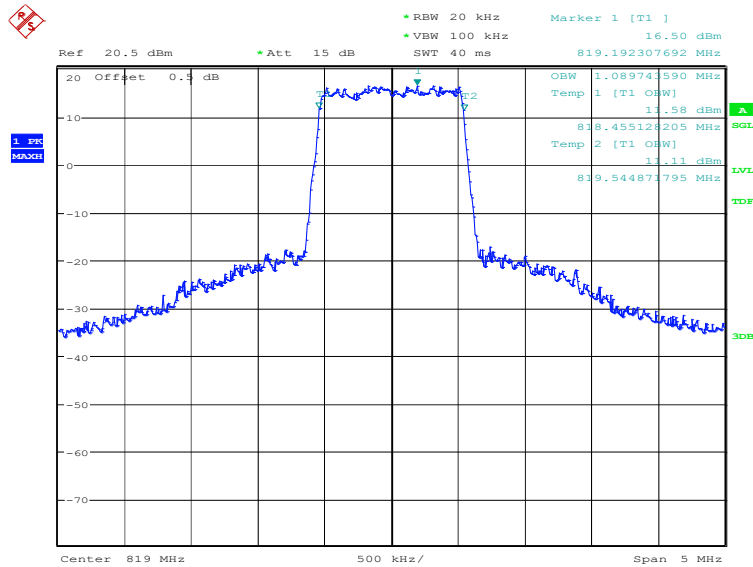
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	1097.76	1089.74

**LTE band 26(814MHz~824MHz), 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:08:40

**LTE band 26(814MHz~824MHz), 1.4MHz Bandwidth, 16QAM (99% BW)**

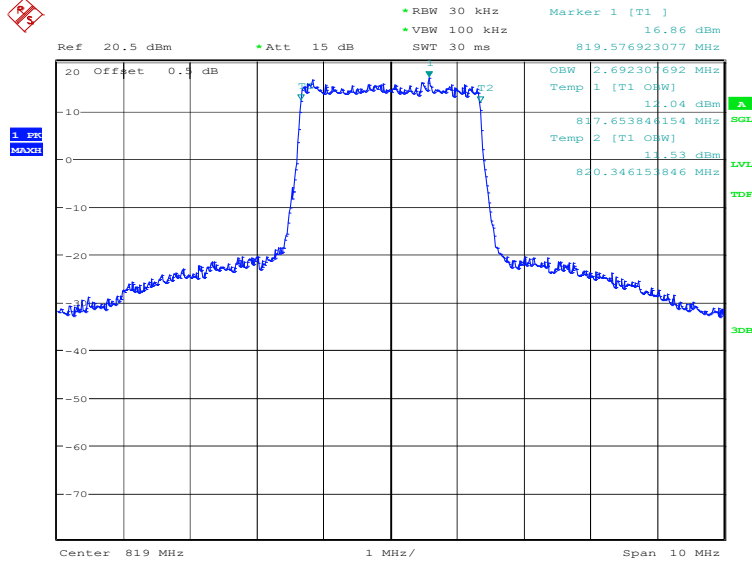


Date: 8.OCT.2023 12:09:21

**LTE band 26(814MHz~824MHz), 3MHz (99%)**

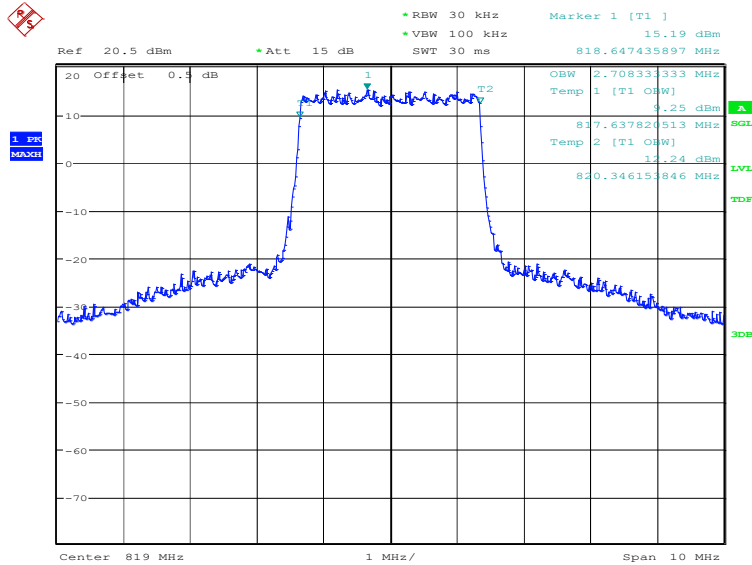
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	2692.31	2708.33

**LTE band 26(814MHz~824MHz), 3MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:10:06

**LTE band 26(814MHz~824MHz), 3MHz Bandwidth, 16QAM (99% BW)**

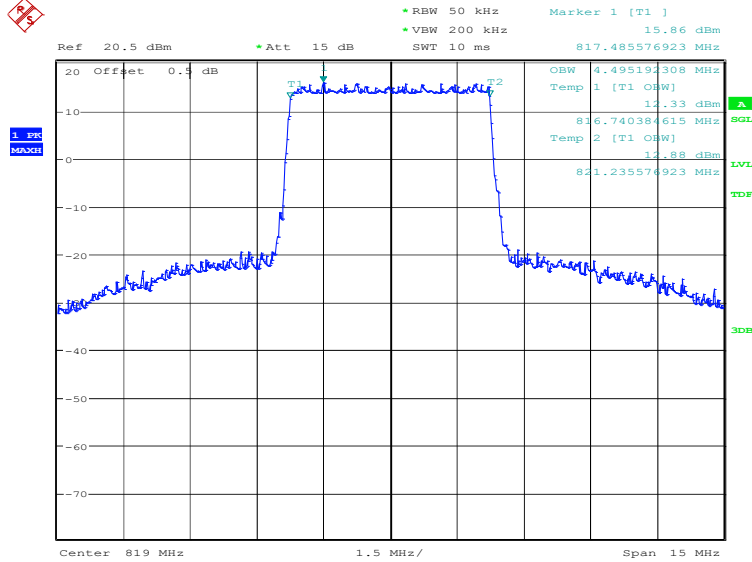


Date: 8.OCT.2023 12:10:47

**LTE band 26(814MHz~824MHz), 5MHz (99%)**

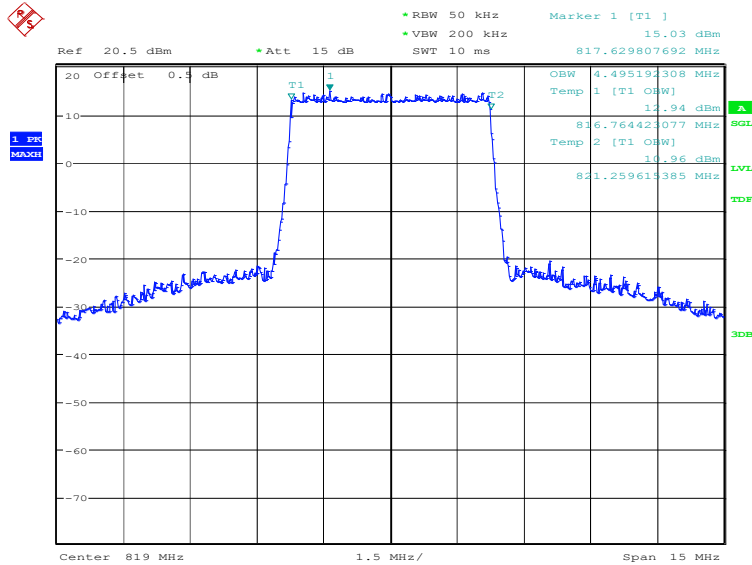
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	4495.19	4495.19

**LTE band 26(814MHz~824MHz), 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:11:32

**LTE band 26(814MHz~824MHz), 5MHz Bandwidth, 16QAM (99% BW)**

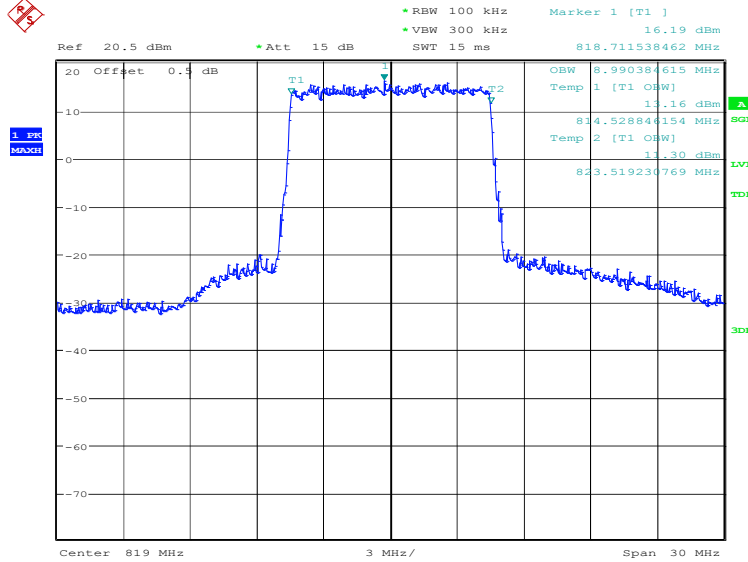


Date: 8.OCT.2023 12:12:13

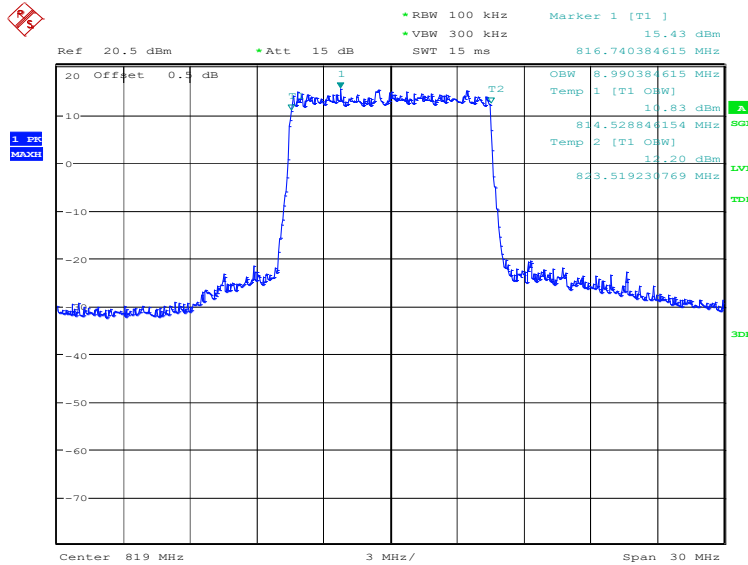


**LTE band 26(814MHz~824MHz), 10MHz (99%)**

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	8990.38	8990.38

**LTE band 26(814MHz~824MHz), 10MHz Bandwidth, QPSK (99% BW)**


Date: 8.OCT.2023 12:13:08

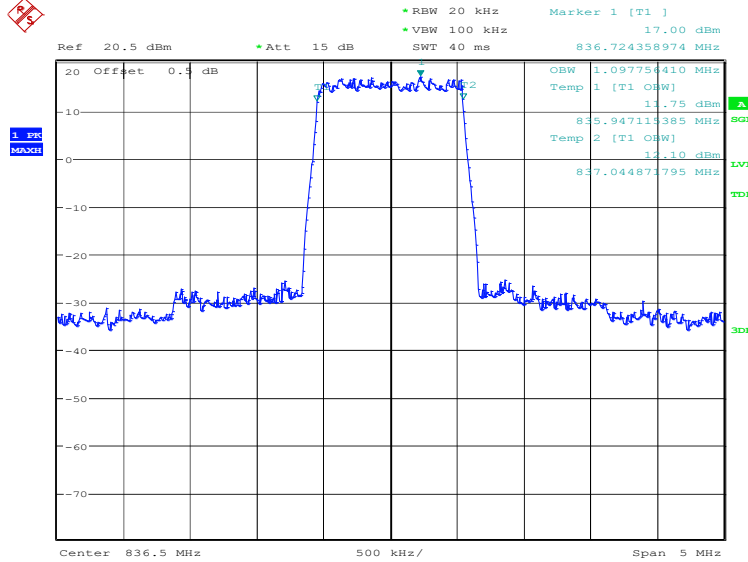
**LTE band 26(814MHz~824MHz), 10MHz Bandwidth, 16QAM (99% BW)**


Date: 8.OCT.2023 12:13:49

**LTE band 26(824MHz~849MHz), 1.4MHz (99%)**

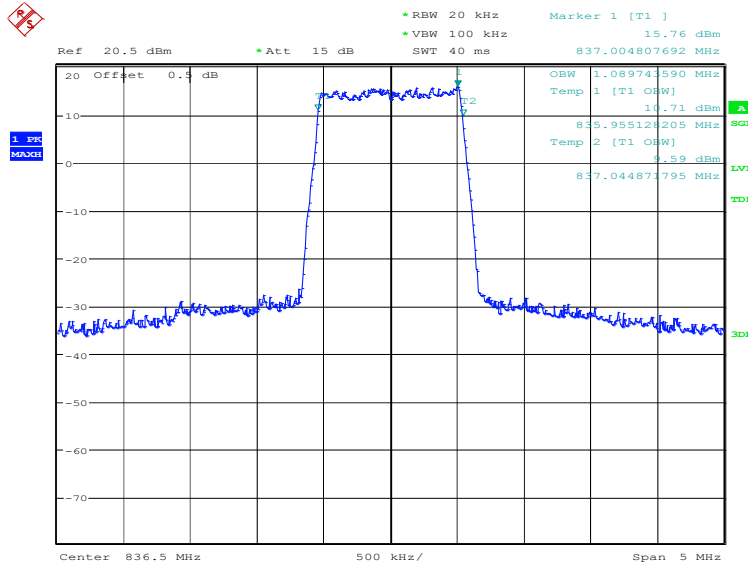
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1097.76	1089.74

**LTE band 26(824MHz~849MHz), 1.4MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:00:48

**LTE band 26(824MHz~849MHz), 1.4MHz Bandwidth, 16QAM (99% BW)**

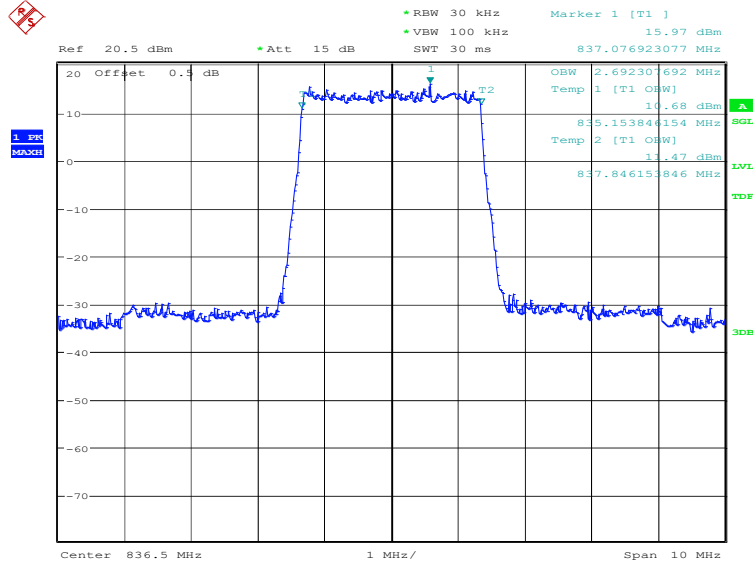


Date: 8.OCT.2023 12:01:29

**LTE band 26(824MHz~849MHz), 3MHz (99%)**

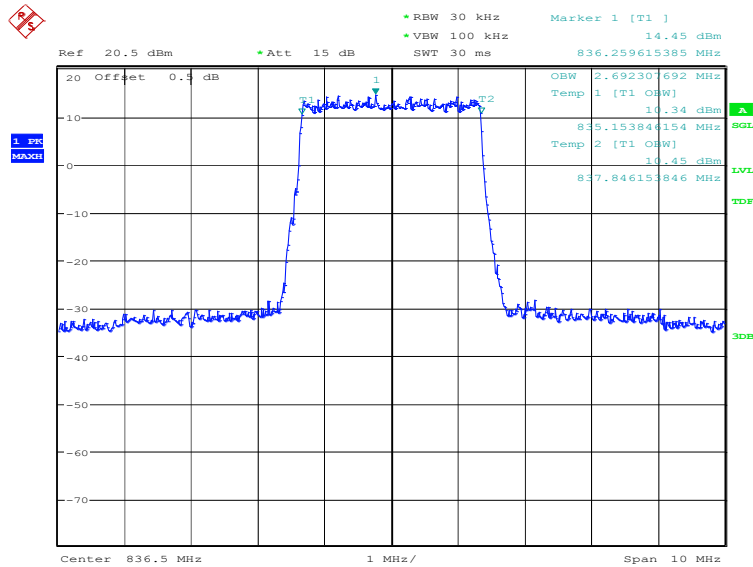
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

**LTE band 26(824MHz~849MHz), 3MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:02:14

**LTE band 26(824MHz~849MHz), 3MHz Bandwidth, 16QAM (99% BW)**

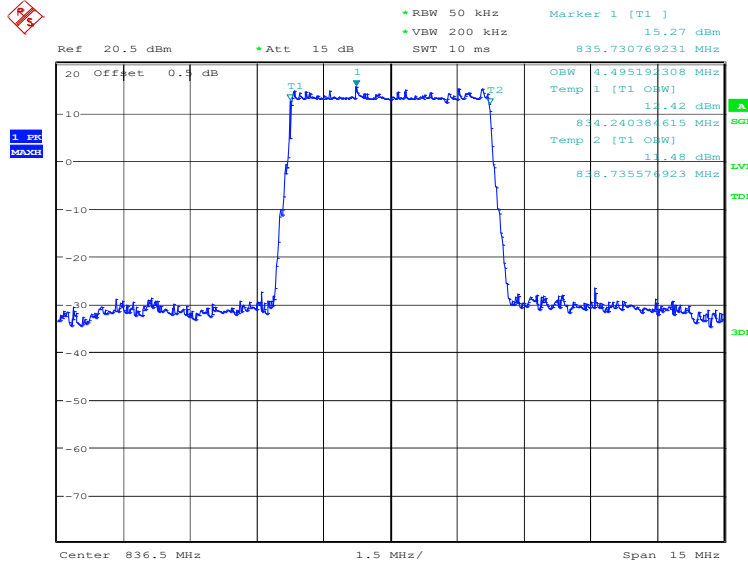


Date: 8.OCT.2023 12:02:55

**LTE band 26(824MHz~849MHz), 5MHz (99%)**

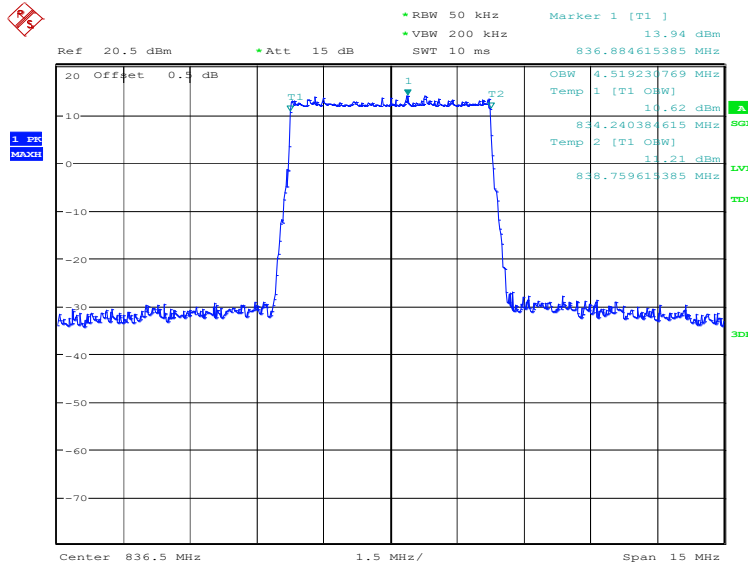
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4519.23

**LTE band 26(824MHz~849MHz), 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:03:40

**LTE band 26(824MHz~849MHz), 5MHz Bandwidth, 16QAM (99% BW)**

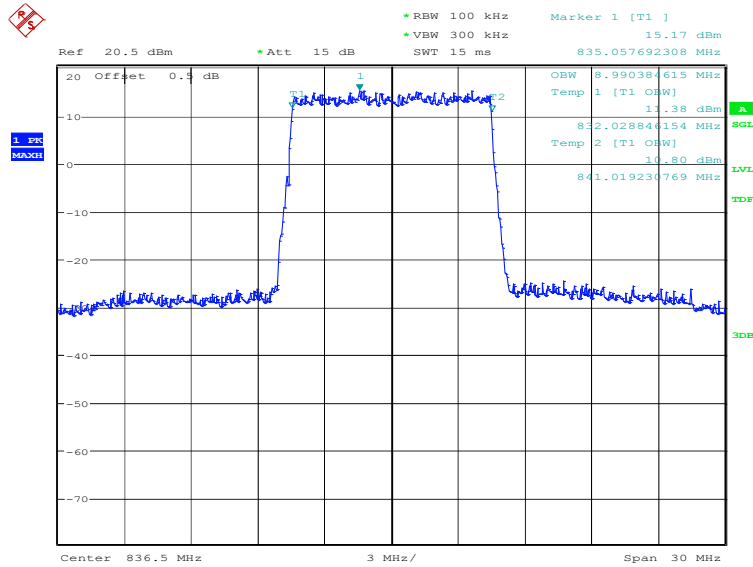


Date: 8.OCT.2023 12:04:21

**LTE band 26(824MHz~849MHz), 10MHz (99%)**

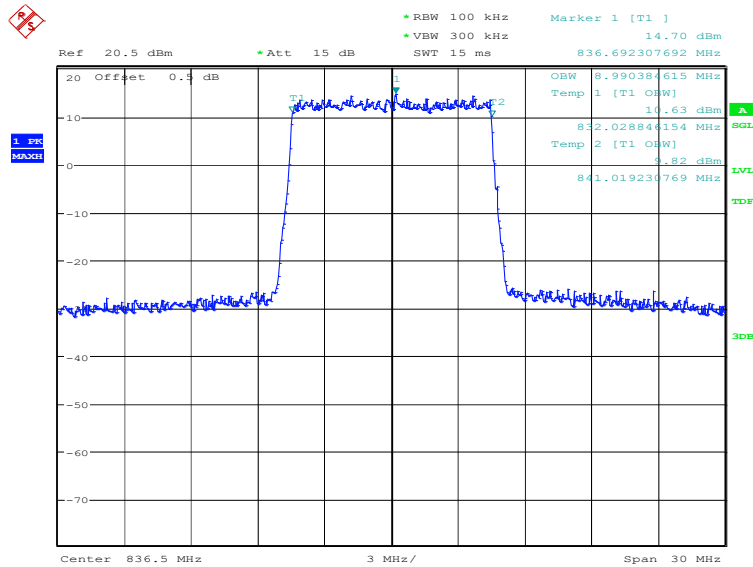
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8990.38	8990.38

**LTE band 26(824MHz~849MHz), 10MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:05:06

**LTE band 26(824MHz~849MHz), 10MHz Bandwidth, 16QAM (99% BW)**

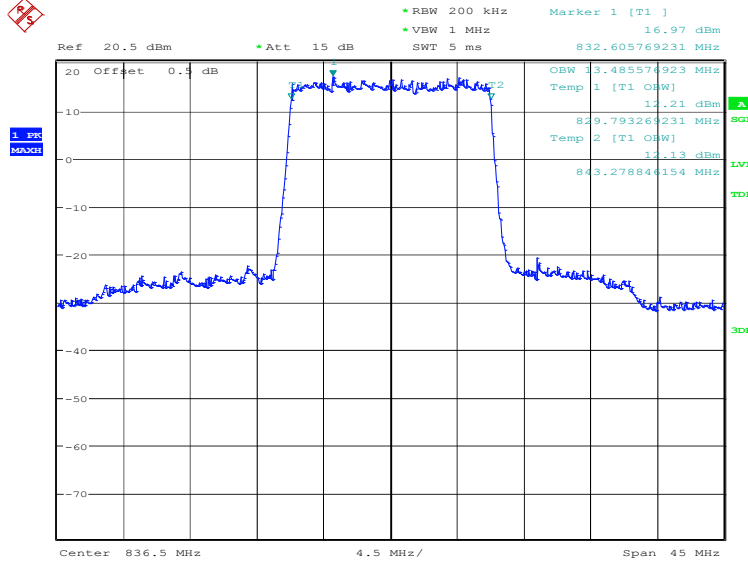


Date: 8.OCT.2023 12:05:47

**LTE band 26(824MHz~849MHz), 15MHz (99%)**

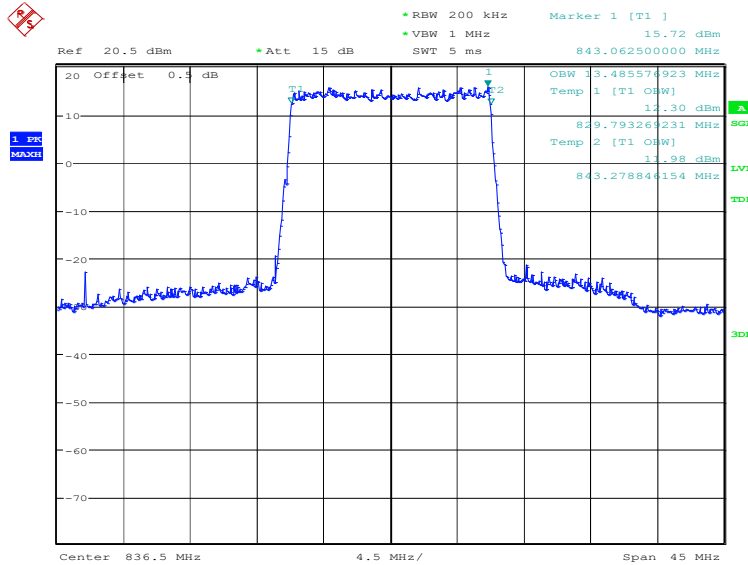
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	13485.58	13485.58

**LTE band 26(824MHz~849MHz), 15MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 12:06:32

**LTE band 26(824MHz~849MHz), 15MHz Bandwidth, 16QAM (99% BW)**

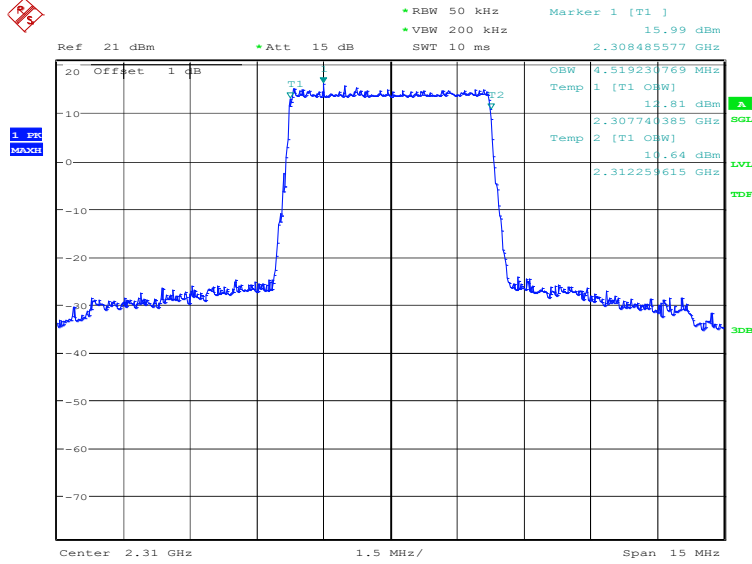


Date: 8.OCT.2023 12:07:12

**LTE band 30, 5MHz (99%)**

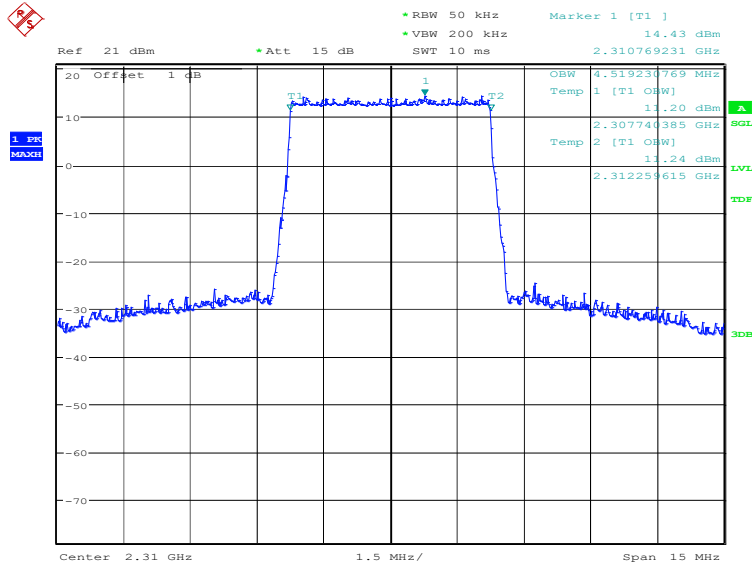
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2310.0	QPSK	16QAM
	4519.23	4519.23

**LTE band 30, 5MHz Bandwidth, QPSK (99% BW)**



Date: 8.OCT.2023 15:17:09

**LTE band 30, 5MHz Bandwidth, 16QAM (99% BW)**



Date: 8.OCT.2023 15:17:49