

Appendix A. Test Result of RF Output Power

RF output power for DFT-s-OFDM

5G n48 Power			10MHz			20MHz			40MHz		
Modulation	Channel		637000	641666	646332	637334	641666	646000	638000	641666	645332
	Frequency (MHz)		3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98
	RB No.	RB Offset	SCS 30kHz Conducted Maximum Average Power (dBm/10MHz)								
PI/2 BPSK	100%	#0	20.48	20.88	20.34	20.58	20.98	20.34	20.64	20.90	20.29
	100%	#Max	--	--	--	20.56	20.97	20.31	20.61	20.87	20.27
QPSK	100%	#0	20.46	20.87	20.33	20.57	20.96	20.32	20.62	20.88	20.28
	100%	#Max	--	--	--	20.55	20.94	20.30	20.59	20.85	20.24
16QAM	100%	#0	20.40	20.82	20.26	20.51	20.88	20.27	20.55	20.81	20.22
	100%	#Max	--	--	--	20.50	20.86	20.25	20.53	20.78	20.21
64QAM	100%	#0	19.95	20.35	19.79	20.04	20.48	19.79	20.05	20.34	19.74
	100%	#Max	--	--	--	20.02	20.45	19.78	20.04	20.32	19.72
256QAM	100%	#0	18.07	18.43	17.92	18.12	18.57	17.85	18.14	18.42	17.81
	100%	#Max	--	--	--	18.10	18.54	17.84	18.12	18.41	17.79

EIRP for MX-220-UT-5G-A (Category A CBSD), DFT-s-OFDM**Antenna Gain: 8.9 dBi**

5G n48 EIRP			10MHz			20MHz			40MHz			
Modulation	Channel		637000	641666	646332	637334	641666	646000	638000	641666	645332	Limit
	Frequency (MHz)		3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98	
	RB No.	RB Offset	SCS 30kHz EIRP (dBm/10MHz)									
PI/2 BPSK	100%	#0	29.38	29.78	29.24	29.48	29.88	29.24	29.54	29.80	29.19	30
	100%	#Max	--	--	--	29.46	29.87	29.21	29.51	29.77	29.17	30
QPSK	100%	#0	29.36	29.77	29.23	29.47	29.86	29.22	29.52	29.78	29.18	30
	100%	#Max	--	--	--	29.45	29.84	29.20	29.49	29.75	29.14	30
16QAM	100%	#0	29.30	29.72	29.16	29.41	29.78	29.17	29.45	29.71	29.12	30
	100%	#Max	--	--	--	29.40	29.76	29.15	29.43	29.68	29.11	30
64QAM	100%	#0	28.85	29.25	28.69	28.94	29.38	28.69	28.95	29.24	28.64	30
	100%	#Max	--	--	--	28.92	29.35	28.68	28.94	29.22	28.62	30
256QAM	100%	#0	26.97	27.33	26.82	27.02	27.47	26.75	27.04	27.32	26.71	30
	100%	#Max	--	--	--	27.00	27.44	26.74	27.02	27.31	26.69	30

Note: EIRP (dBm/10MHz) = Conducted Output Power (dBm/10MHz) + Antenna Gain (dBi)

EIRP for MX-220-UT-5G-B (Category B CBSD), DFT-s-OFDM**Antenna Gain: 20.5 dBi**

5G n48 EIRP			10MHz			20MHz			40MHz			
Modulation	Channel		637000	641666	646332	637334	641666	646000	638000	641666	645332	Limit
	Frequency (MHz)		3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98	
	RB No.	RB Offset	SCS 30kHz EIRP (dBm/10MHz)									
PI/2 BPSK	100%	#0	40.98	41.38	40.84	41.08	41.48	40.84	41.14	41.40	40.79	47
	100%	#Max	--	--	--	41.06	41.47	40.81	41.11	41.37	40.77	47
QPSK	100%	#0	40.96	41.37	40.83	41.07	41.46	40.82	41.12	41.38	40.78	47
	100%	#Max	--	--	--	41.05	41.44	40.80	41.09	41.35	40.74	47
16QAM	100%	#0	40.90	41.32	40.76	41.01	41.38	40.77	41.05	41.31	40.72	47
	100%	#Max	--	--	--	41.00	41.36	40.75	41.03	41.28	40.71	47
64QAM	100%	#0	40.45	40.85	40.29	40.54	40.98	40.29	40.55	40.84	40.24	47
	100%	#Max	--	--	--	40.52	40.95	40.28	40.54	40.82	40.22	47
256QAM	100%	#0	38.57	38.93	38.42	38.62	39.07	38.35	38.64	38.92	38.31	47
	100%	#Max	--	--	--	38.60	39.04	38.34	38.62	38.91	38.29	47

Note: EIRP (dBm/10MHz) = Conducted Output Power (dBm/10MHz) + Antenna Gain (dBi)

RF output power for CP-ODFM

5G n48 Power				10MHz			20MHz			40MHz		
Modulation	Channel		Antenna Port	637000	641666	646332	637334	641666	646000	638000	641666	645332
	Frequency (MHz)			3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98
	RB No.	RB Offset		SCS 30kHz Conducted Maximum Average Power (dBm/10MHz)								
QPSK	100%	#0	ANT3	16.50	16.91	16.38	16.55	16.95	16.36	16.71	16.98	16.37
			ANT1	16.41	16.83	16.30	16.48	16.87	16.27	16.62	16.88	16.30
16QAM	100%	#0	ANT3	16.46	16.87	16.33	16.51	16.90	16.32	16.66	16.92	16.32
			ANT1	16.38	16.79	16.25	16.41	16.82	16.25	16.59	16.84	16.23
64QAM	100%	#0	ANT3	16.01	16.43	15.85	16.03	16.45	15.84	16.20	16.46	15.88
			ANT1	15.93	16.35	15.78	15.94	16.38	15.74	16.11	16.38	15.80
256QAM	100%	#0	ANT3	13.06	13.47	12.95	13.05	13.52	12.87	13.25	13.53	12.97
			ANT1	12.98	13.39	12.86	12.98	13.44	12.80	13.17	13.44	12.86

5G n48 Power				10MHz			20MHz			40MHz		
Modulation	Channel		Antenna Port	637000	641666	646332	637334	641666	646000	638000	641666	645332
	Frequency (MHz)			3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98
	RB No.	RB Offset		SCS 30kHz Conducted Maximum Average Power (dBm/10MHz)								
QPSK	100%	#0	ANT3+ANT1	19.47	19.88	19.35	19.53	19.92	19.33	19.68	19.94	19.35
16QAM	100%	#0	ANT3+ANT1	19.43	19.84	19.30	19.47	19.87	19.30	19.64	19.89	19.29
64QAM	100%	#0	ANT3+ANT1	18.98	19.40	18.83	19.00	19.43	18.80	19.17	19.43	18.85
256QAM	100%	#0	ANT3+ANT1	16.03	16.44	15.92	16.03	16.49	15.85	16.22	16.50	15.93

EIRP for MX-220-UT-5G-A (Category A CBSD), CP-OFDM**Antenna Gain: 8.9 dBi**

5G n48 EIRP						10MHz			20MHz			40MHz			
Modulation	Channel		Antenna Port	637000	641666	646332	637334	641666	646000	638000	641666	645332	Limit		
	Frequency (MHz)			3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98			
	RB No.	RB Offset		SCS 30kHz EIRP (dBm/10MHz)											
QPSK	100%	#0	ANT3+ANT1	28.37	28.78	28.25	28.43	28.82	28.23	28.58	28.84	28.25	30		
16QAM	100%	#0	ANT3+ANT1	28.33	28.74	28.20	28.37	28.77	28.20	28.54	28.79	28.19	30		
64QAM	100%	#0	ANT3+ANT1	27.88	28.30	27.73	27.90	28.33	27.70	28.07	28.33	27.75	30		
256QAM	100%	#0	ANT3+ANT1	24.93	25.34	24.82	24.93	25.39	24.75	25.12	25.40	24.83	30		

Note: EIRP (dBm/10MHz) = Conducted Output Power (dBm/10MHz) + Antenna Gain (dBi)

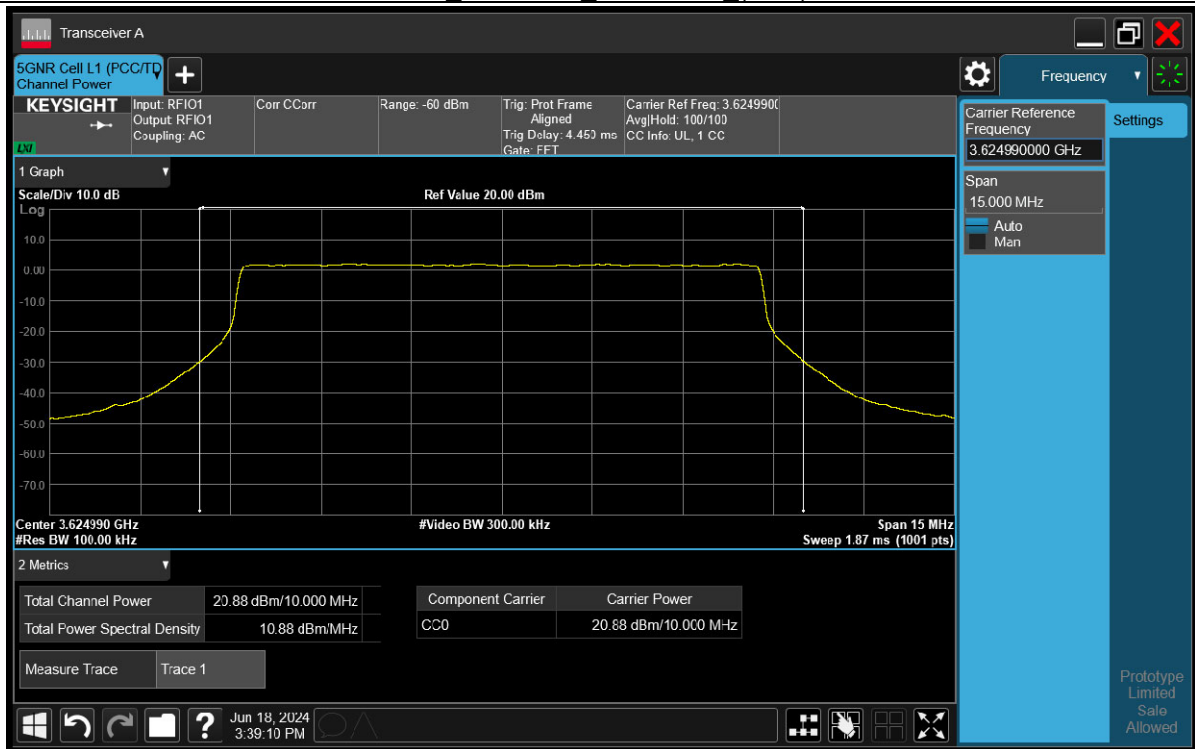
EIRP for MX-220-UT-5G-B (Category B CBSD), CP-OFDM**Antenna Gain: 20.5 dBi**

5G n48 EIRP						10MHz			20MHz			40MHz			
Modulation	Channel		Antenna Port	637000	641666	646332	637334	641666	646000	638000	641666	645332	Limit		
	Frequency (MHz)			3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98			
	RB No.	RB Offset		SCS 30kHz EIRP (dBm/10MHz)											
QPSK	100%	#0	ANT3+ANT1	39.97	40.38	39.85	40.03	40.42	39.83	40.18	40.44	39.85	47		
16QAM	100%	#0	ANT3+ANT1	39.93	40.34	39.80	39.97	40.37	39.80	40.14	40.39	39.79	47		
64QAM	100%	#0	ANT3+ANT1	39.48	39.90	39.33	39.50	39.93	39.30	39.67	39.93	39.35	47		
256QAM	100%	#0	ANT3+ANT1	36.53	36.94	36.42	36.53	36.99	36.35	36.72	37.00	36.43	47		

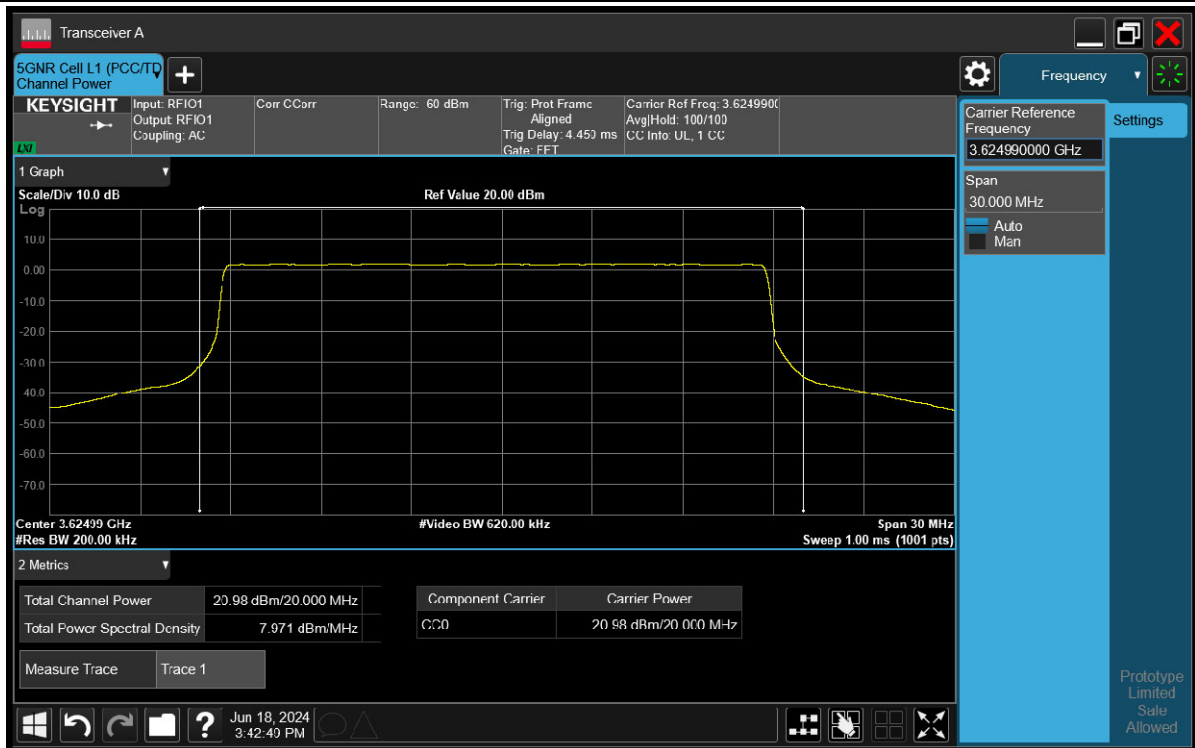
Note: EIRP (dBm/10MHz) = Conducted Output Power (dBm/10MHz) + Antenna Gain (dBi)

Spectrum plot of worst value (DFT-s-OFDM)

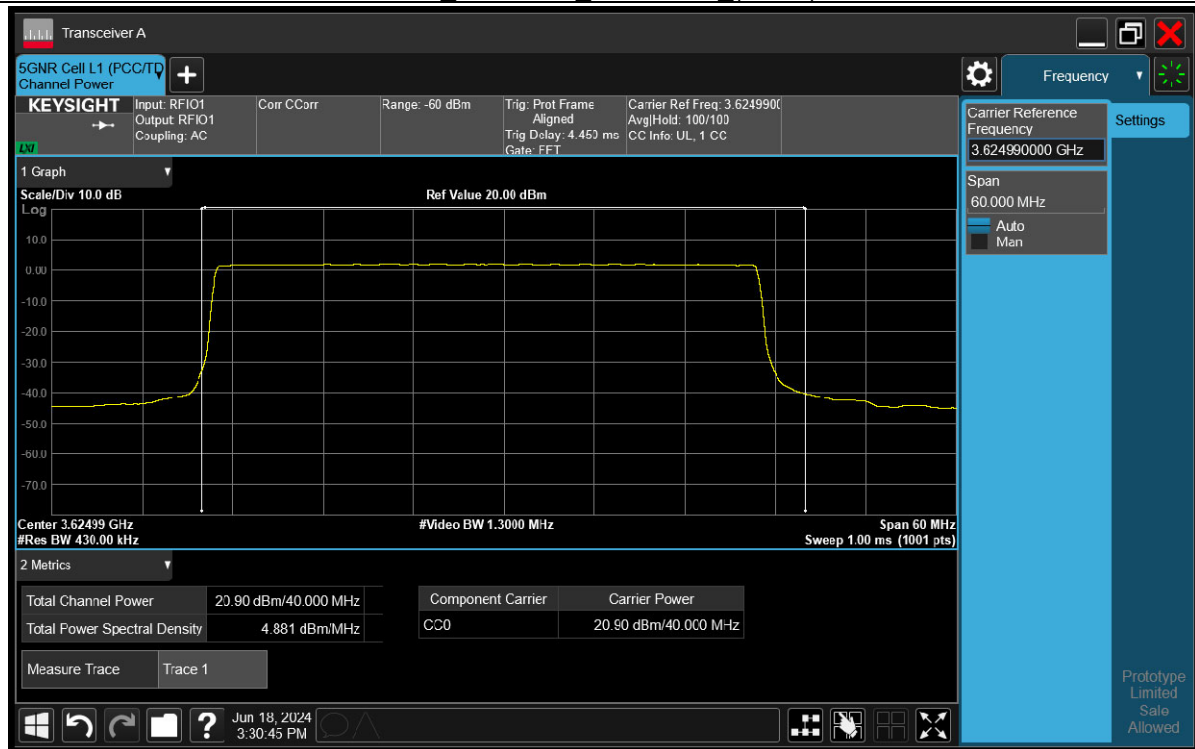
10M_PI2-BPSK_CH641666 (25,0)



20M_PI2-BPSK_CH641666 (50,0)

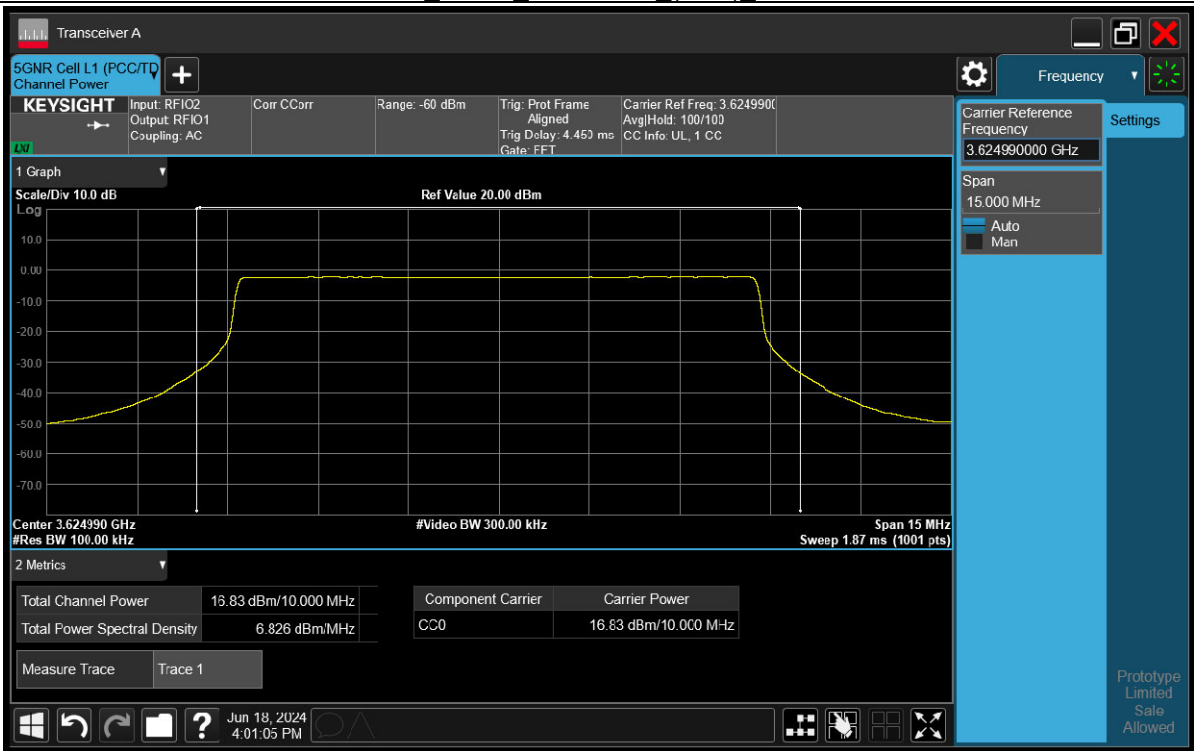


40M_PI2-BPSK_CH641666_(100,0)

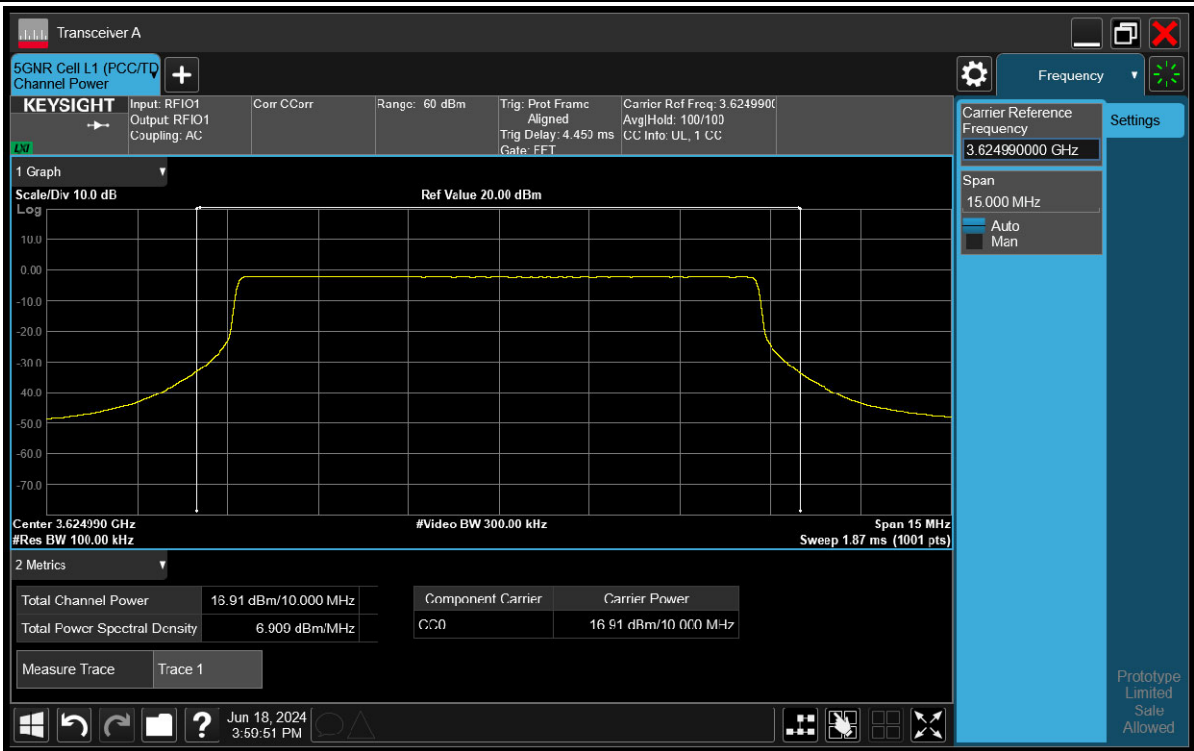


Spectrum plot of worst value (CP-OFDM)

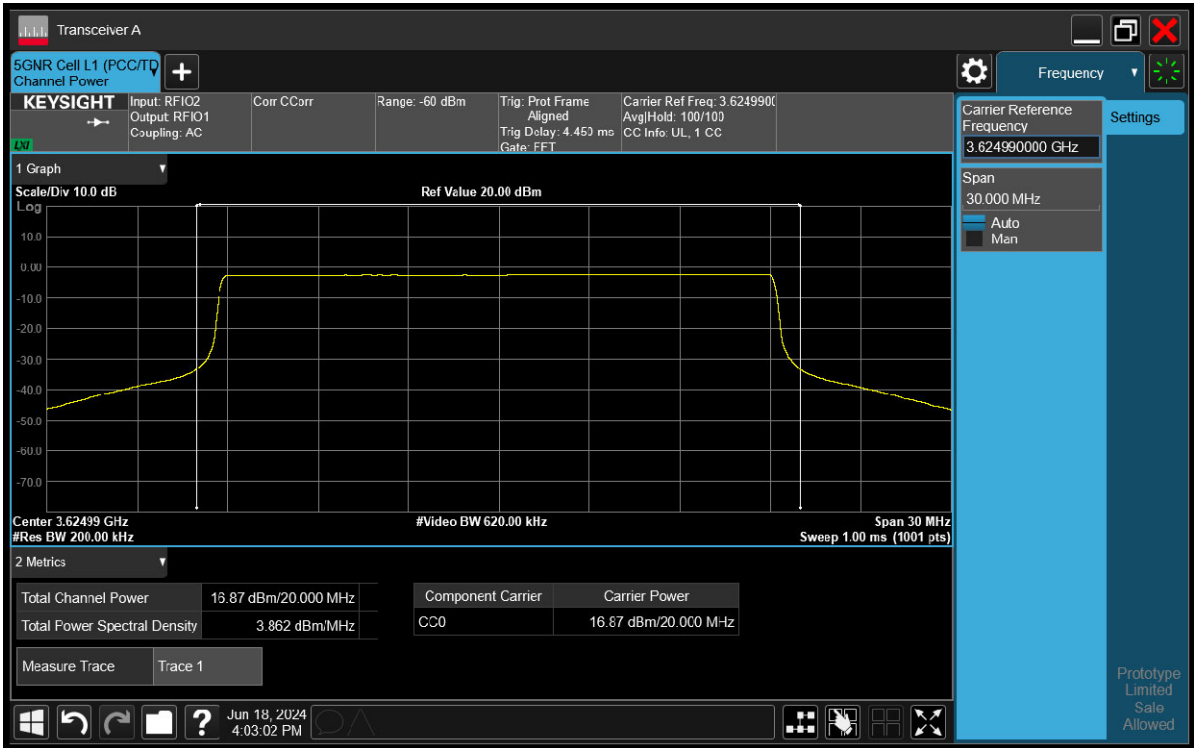
10M QPSK CH641666 (25,0) ANT1



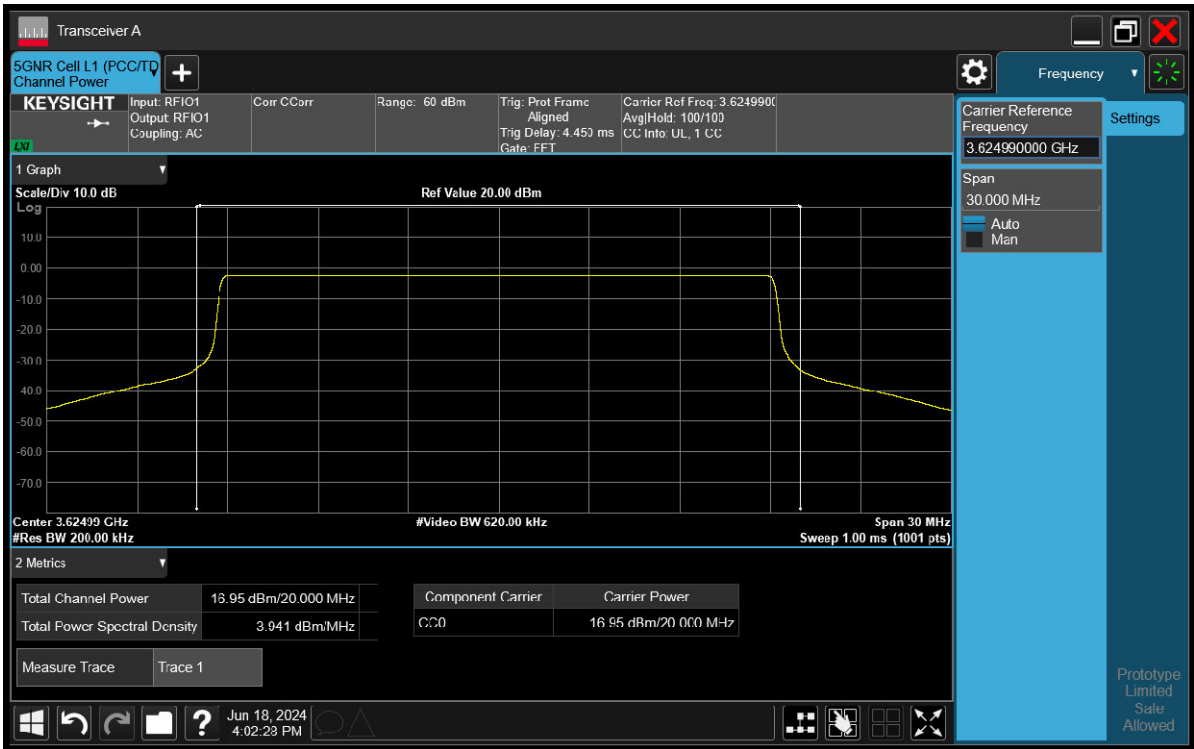
10M QPSK CH641666 (25,0) ANT3



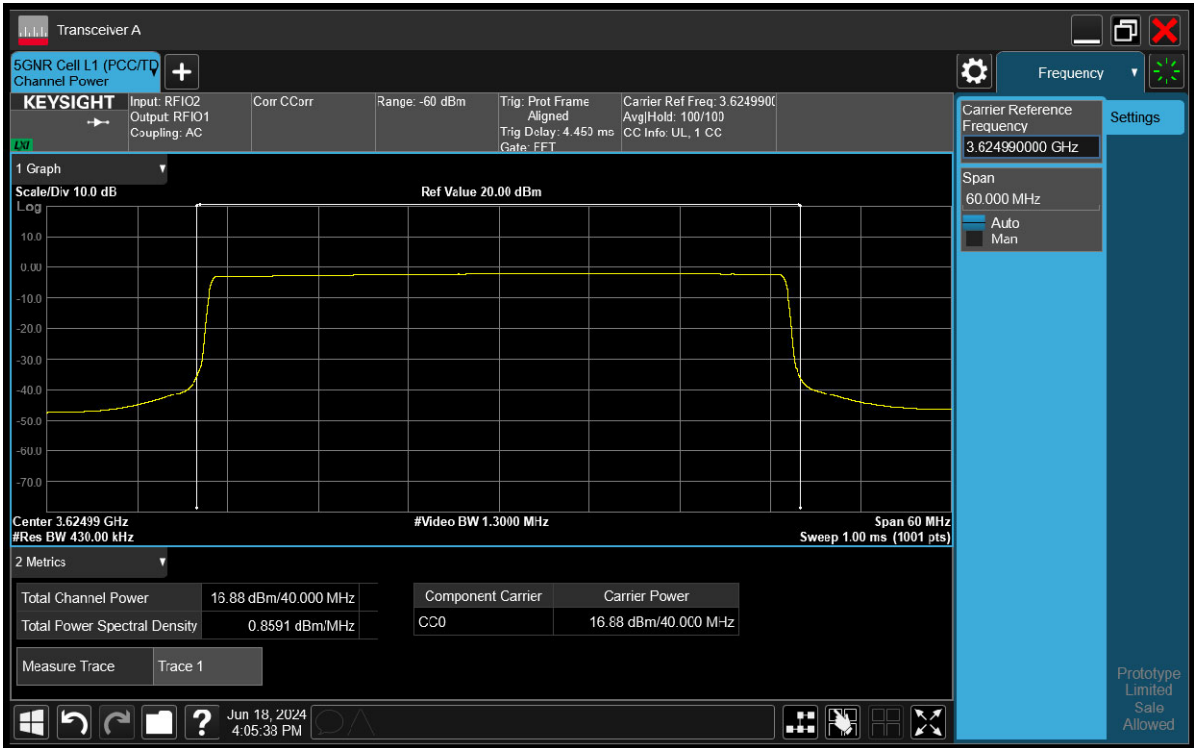
20M QPSK CH641666 (51,0) ANT1



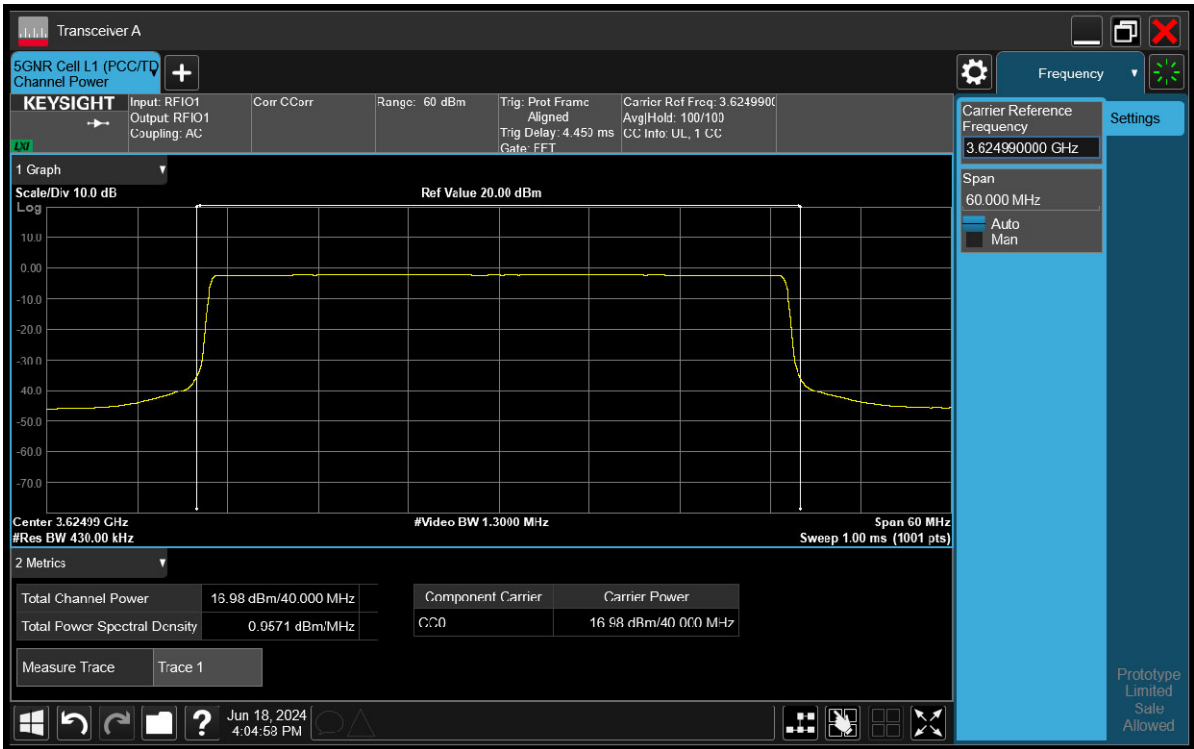
20M QPSK CH641666 (51,0) ANT3



40M_QPSK_CH641666_(106,0)_ANT1



40M_QPSK_CH641666_(106,0)_ANT3



Appendix B. Test Result of Maximum Power Spectral Density

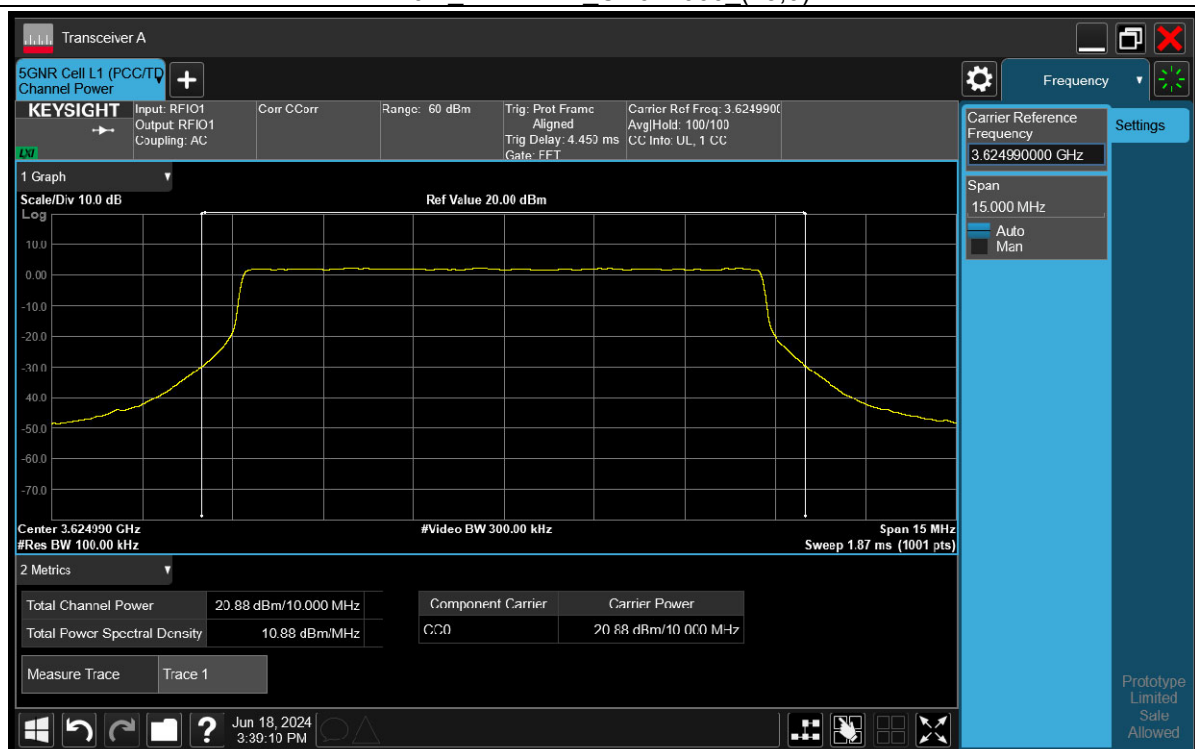
For Category A CBSD

Channel Bandwidth 10MHz, PI/2 BPSK					
Channel	Frequency (MHz)	Conducted PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	Category A CBSD Limit (dBm/MHz)	Result
637000	3555.00	10.48	19.38	20	Pass
641666	3624.99	10.88	19.78	20	Pass
646332	3694.98	10.34	19.24	20	Pass
Channel Bandwidth 20MHz, PI/2 BPSK					
Channel	Frequency (MHz)	Conducted PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	Category A CBSD Limit (dBm/MHz)	Result
637334	3560.01	7.573	16.473	20	Pass
641666	3624.99	7.971	16.871	20	Pass
646000	3690.00	7.326	16.226	20	Pass
Channel Bandwidth 40MHz, PI/2 BPSK					
Channel	Frequency (MHz)	Conducted PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	Category A CBSD Limit (dBm/MHz)	Result
638000	3570.00	4.623	13.523	20	Pass
641666	3624.99	4.881	13.781	20	Pass
645332	3679.98	4.272	13.172	20	Pass

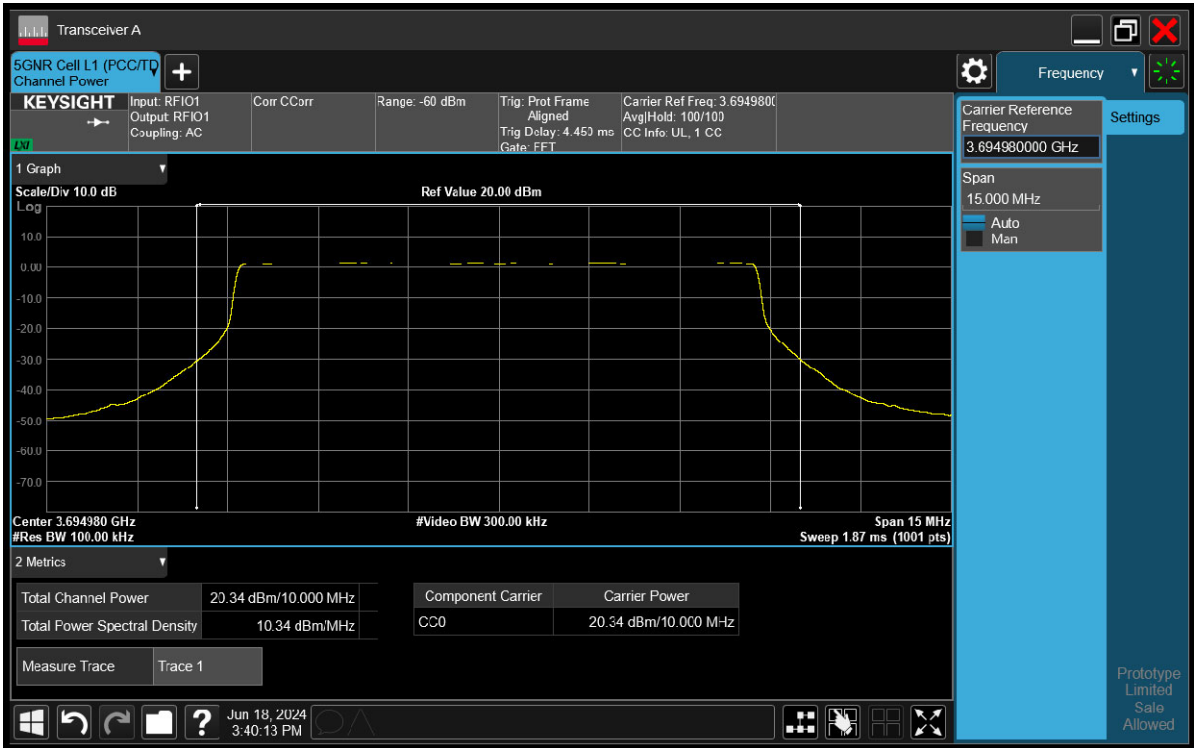
For Category B CBSD

Channel Bandwidth 10MHz, PI/2 BPSK					
Channel	Frequency (MHz)	Conducted PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	Category B CBSD Limit (dBm/MHz)	Result
637000	3555.00	10.48	30.98	37	Pass
641666	3624.99	10.88	31.38	37	Pass
646332	3694.98	10.34	30.84	37	Pass
Channel Bandwidth 20MHz, PI/2 BPSK					
Channel	Frequency (MHz)	Conducted PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	Category B CBSD Limit (dBm/MHz)	Result
637334	3560.01	7.573	28.073	37	Pass
641666	3624.99	7.971	28.471	37	Pass
646000	3690.00	7.326	27.826	37	Pass
Channel Bandwidth 40MHz, PI/2 BPSK					
Channel	Frequency (MHz)	Conducted PSD (dBm/MHz)	EIRP PSD (dBm/MHz)	Category B CBSD Limit (dBm/MHz)	Result
638000	3570.00	4.623	25.123	37	Pass
641666	3624.99	4.881	25.381	37	Pass
645332	3679.98	4.272	24.772	37	Pass

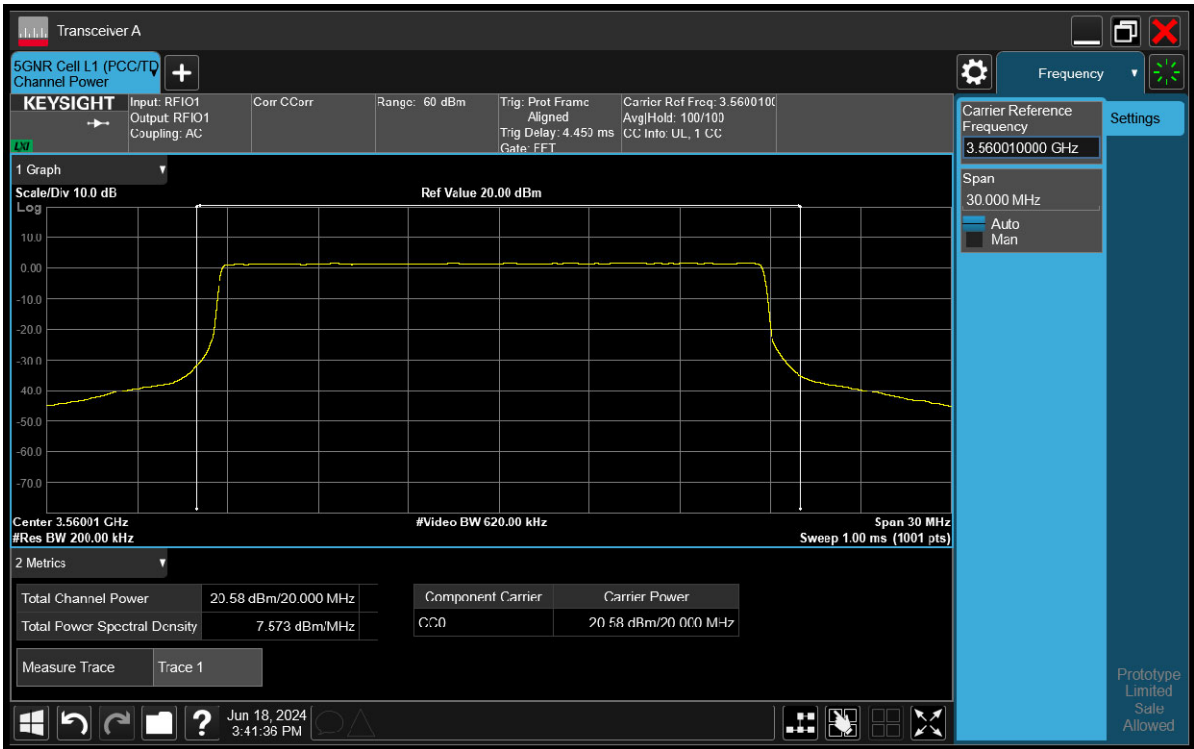
10M_PI2-BPSK_CH637000_(25,0)



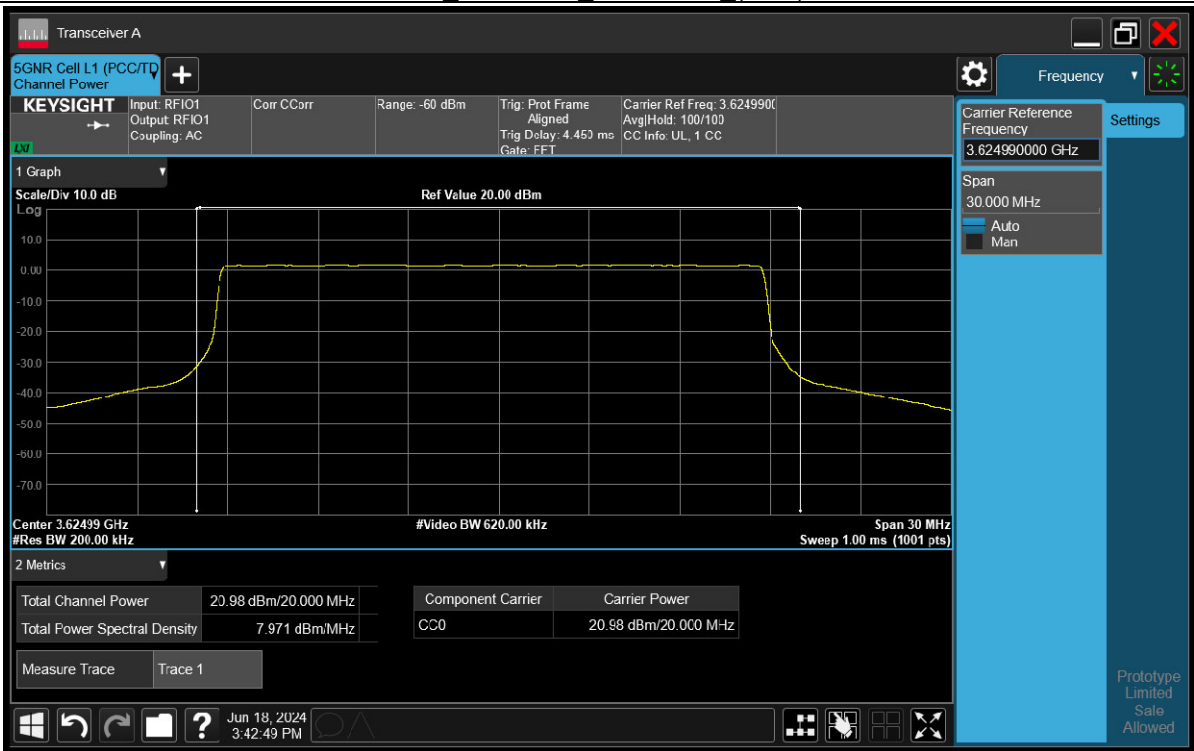
10M_PI2-BPSK_CH646332 (25,0)



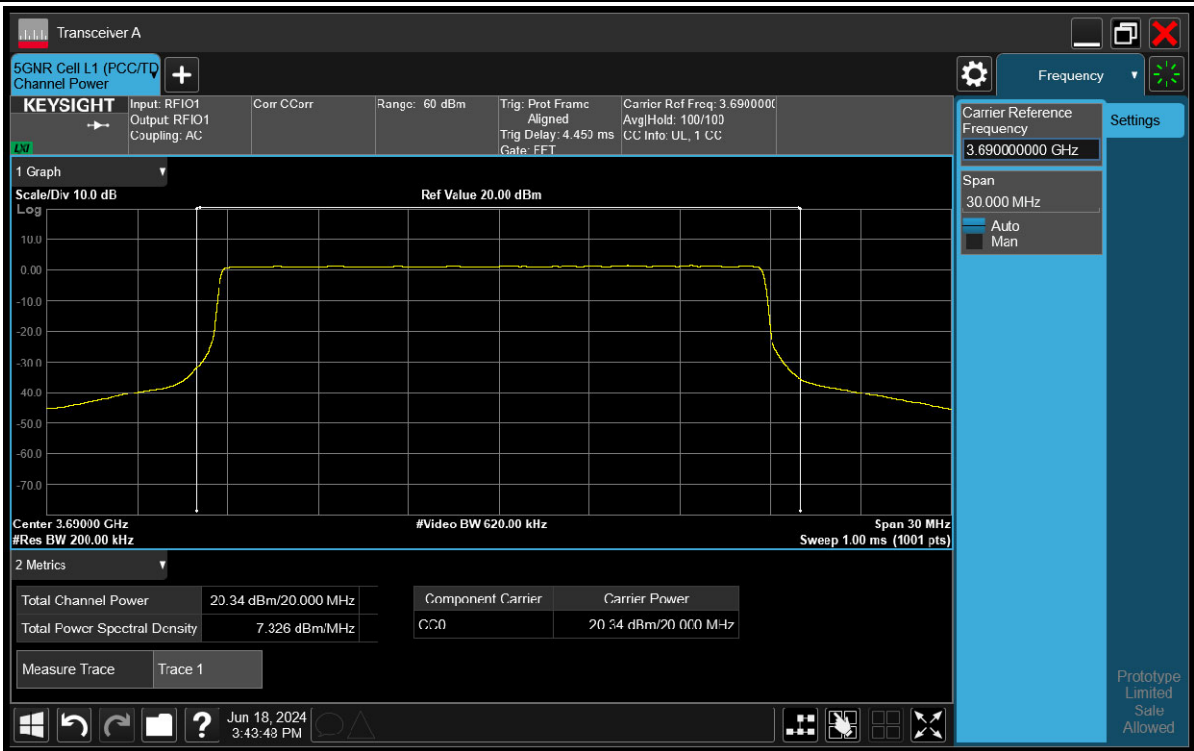
20M_PI2-BPSK_CH637334 (50,0)



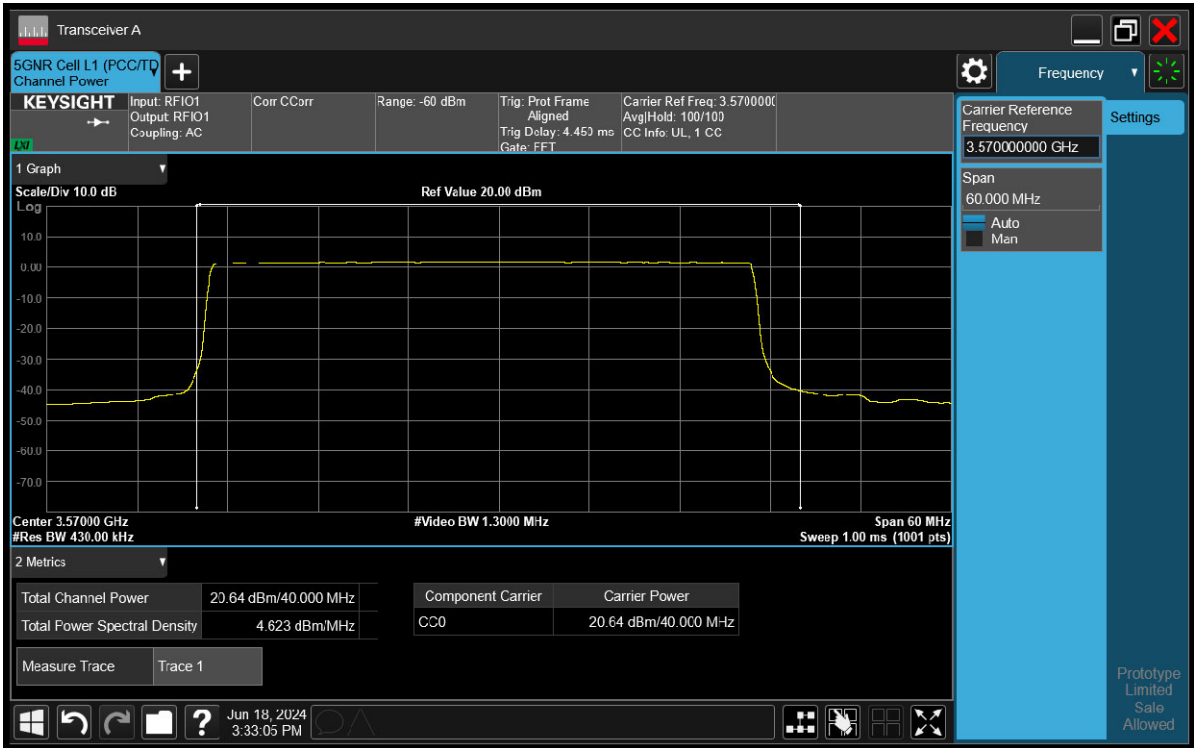
20M_PI2-BPSK_CH641666 (50,0)



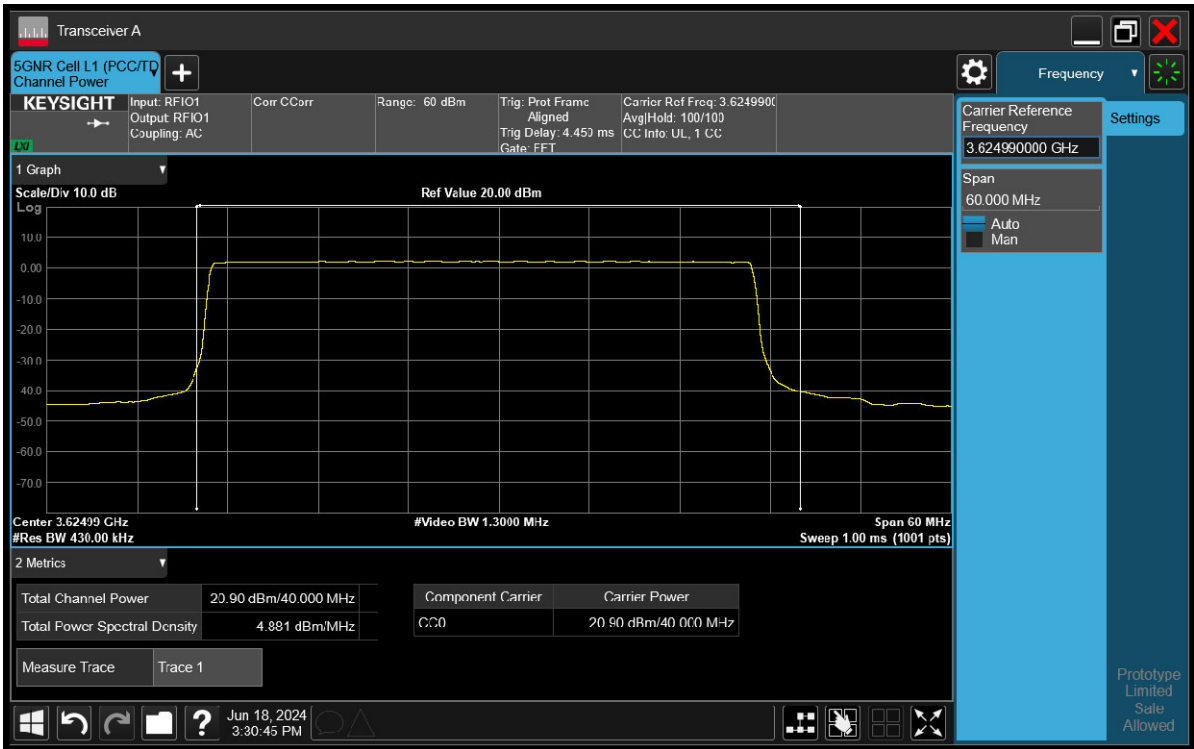
20M_PI2-BPSK_CH646000 (50,0)



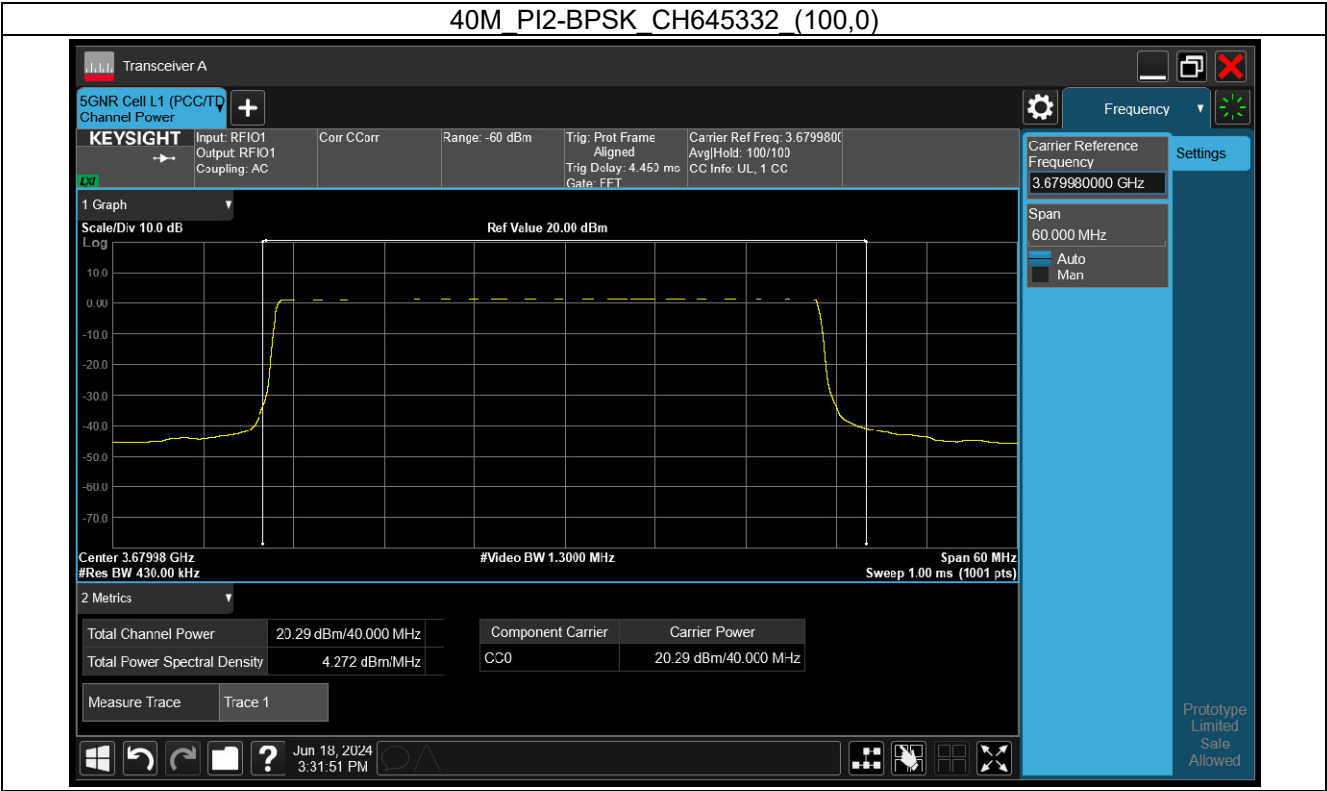
40M_PI2-BPSK_CH638000_(100,0)



40M_PI2-BPSK_CH641666_(100,0)



40M_PI2-BPSK_CH645332_(100,0)



Appendix C. Test Result of Occupied Bandwidth

DFT-s-OFDM

5G n48		10MHz			20MHz			40MHz		
Mode	Channel	637000	641666	646332	637334	641666	646000	638000	641666	645332
	Frequency (MHz)	3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98
	Modulation	SCS 30kHz Occupied Bandwidth (MHz)								
99% Occupied Bandwidth	PI/2 BPSK	8.595	8.609	8.608	17.853	17.837	17.820	35.672	35.690	35.686
	QPSK	8.616	8.592	8.595	17.840	17.851	17.859	35.761	35.762	35.727
	16QAM	8.594	8.593	8.614	17.806	17.864	17.809	35.717	35.718	35.969
	64QAM	8.577	8.574	8.571	17.819	17.842	17.841	35.675	35.679	35.665
	256QAM	8.587	8.584	8.583	17.876	17.882	17.879	35.668	35.679	35.673
26dB Bandwidth	PI/2 BPSK	9.726	9.876	9.822	19.250	19.220	19.120	37.670	37.790	37.630
	QPSK	9.737	9.706	9.683	19.500	19.410	19.370	37.760	37.800	37.610
	16QAM	9.799	9.693	9.935	19.330	19.260	19.180	37.710	37.560	37.570
	64QAM	9.497	9.665	9.632	19.100	19.390	19.430	37.870	37.660	37.650
	256QAM	9.731	9.685	9.788	19.100	19.140	19.210	37.780	37.670	37.870

CP-OFDM (ANT1)

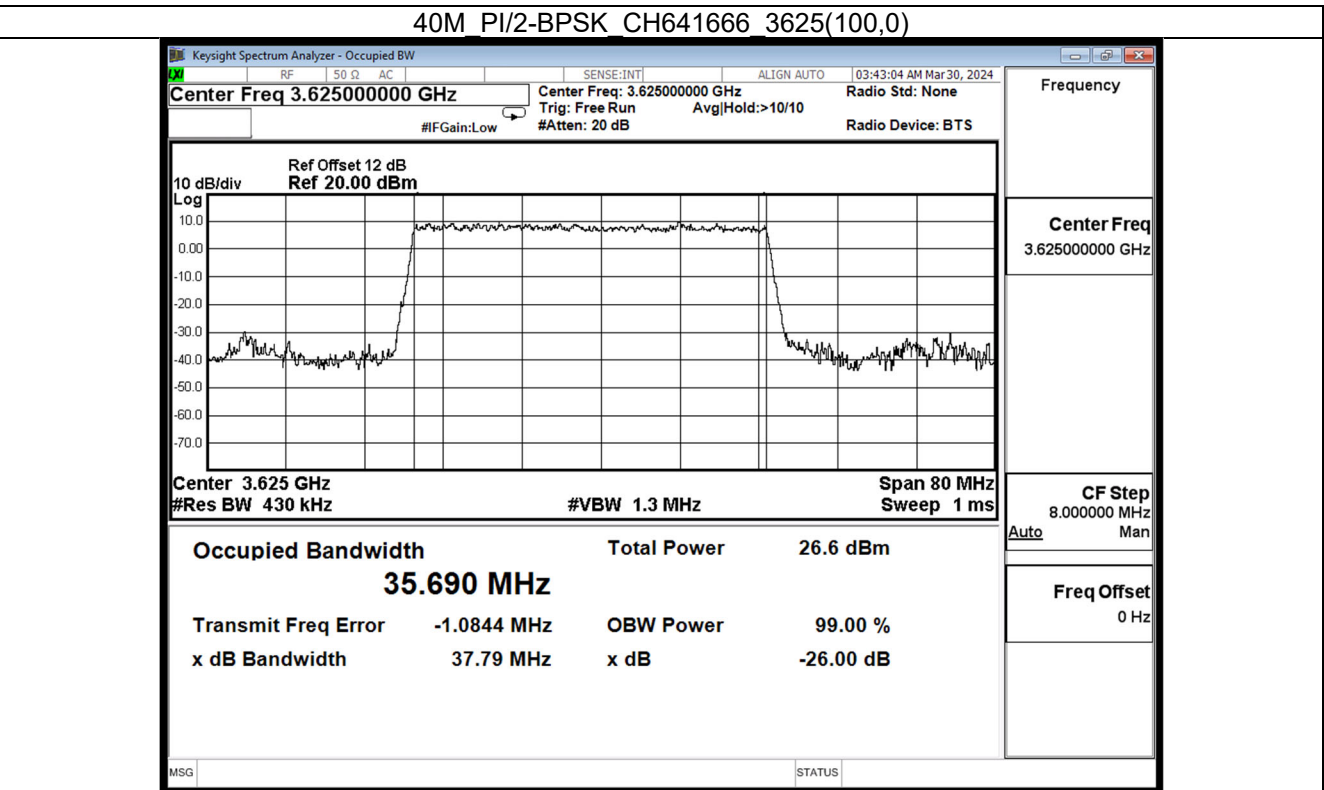
5G n48		10MHz			20MHz			40MHz		
Mode	Channel	637000	641666	646332	637334	641666	646000	638000	641666	645332
	Frequency (MHz)	3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98
	Modulation	SCS 30kHz Occupied Bandwidth (MHz)								
99% Occupied Bandwidth	QPSK	8.600	8.579	8.580	18.223	18.231	18.206	37.755	37.801	37.772
	16QAM	8.638	8.644	8.637	18.226	18.234	18.218	37.806	37.825	37.801
	64QAM	8.606	8.622	8.593	18.191	18.183	18.208	37.797	37.806	37.782
	256QAM	8.591	8.608	8.603	18.215	18.209	18.223	37.771	37.779	37.757
26dB Bandwidth	QPSK	9.793	9.793	9.862	19.840	19.800	19.780	39.820	39.890	39.860
	16QAM	9.874	10.110	9.818	19.830	19.900	19.930	39.950	39.990	39.950
	64QAM	9.719	9.887	9.638	19.670	19.630	19.800	39.790	39.710	39.800
	256QAM	9.745	9.568	9.725	19.520	19.460	19.710	39.600	39.620	39.620

CP-OFDM (ANT3)

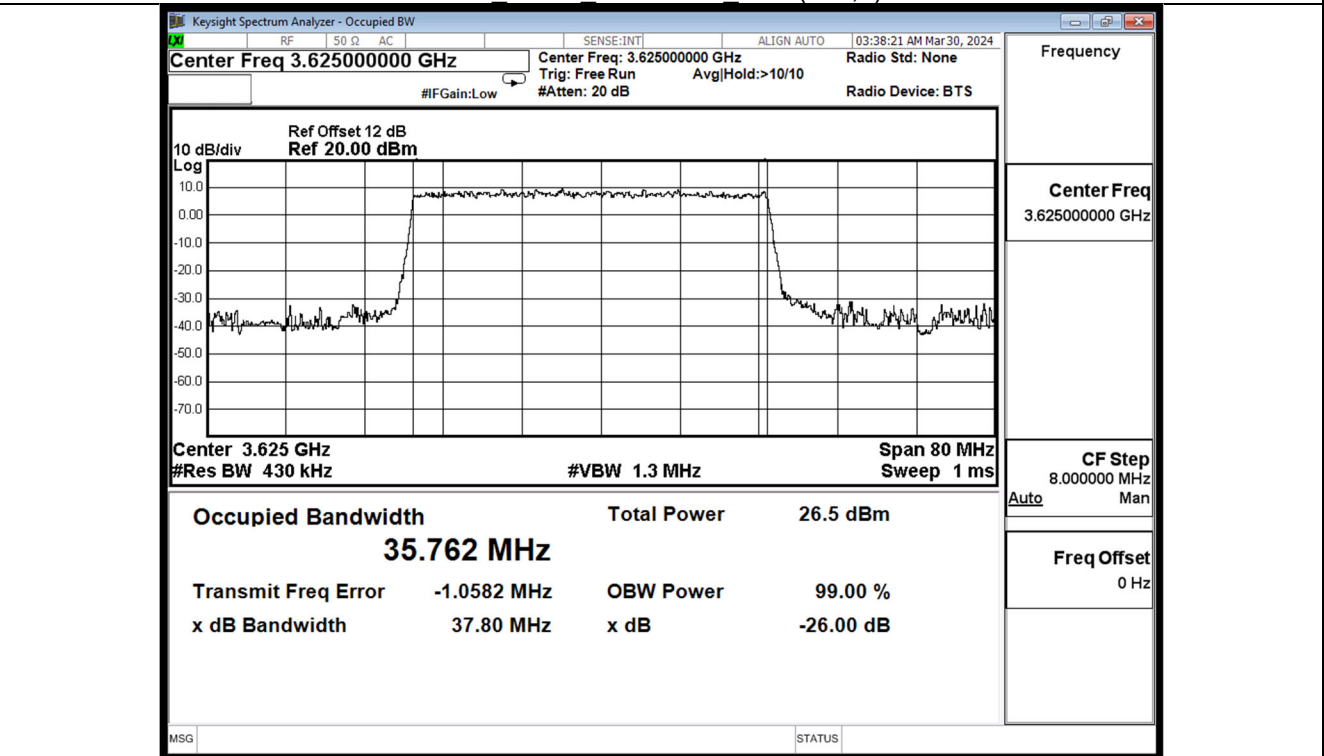
5G n48		10MHz			20MHz			40MHz		
Mode	Channel	637000	641666	646332	637334	641666	646000	638000	641666	645332
	Frequency (MHz)	3555.00	3624.99	3694.98	3560.01	3624.99	3690.00	3570.00	3624.99	3679.98
	Modulation	SCS 30kHz Occupied Bandwidth (MHz)								
99% Occupied Bandwidth	QPSK	8.590	8.589	8.596	18.217	18.216	18.224	37.838	37.848	37.825
	16QAM	8.658	8.632	8.627	18.234	18.218	18.206	37.852	37.871	37.840
	64QAM	8.597	8.628	8.619	18.236	18.241	18.251	37.849	37.869	37.849
	256QAM	8.578	8.573	8.595	18.203	18.194	18.249	37.736	37.753	37.743
26dB Bandwidth	QPSK	9.983	9.774	9.830	19.740	19.860	19.850	40.050	39.640	40.070
	16QAM	10.110	9.851	9.867	20.010	19.910	19.710	39.670	39.970	39.760
	64QAM	9.824	9.929	9.827	19.880	19.780	19.820	39.820	39.760	39.750
	256QAM	9.782	9.777	9.697	19.590	19.660	19.820	39.720	39.750	39.680

Spectrum plot of worst value (DFT-s-OFDM)

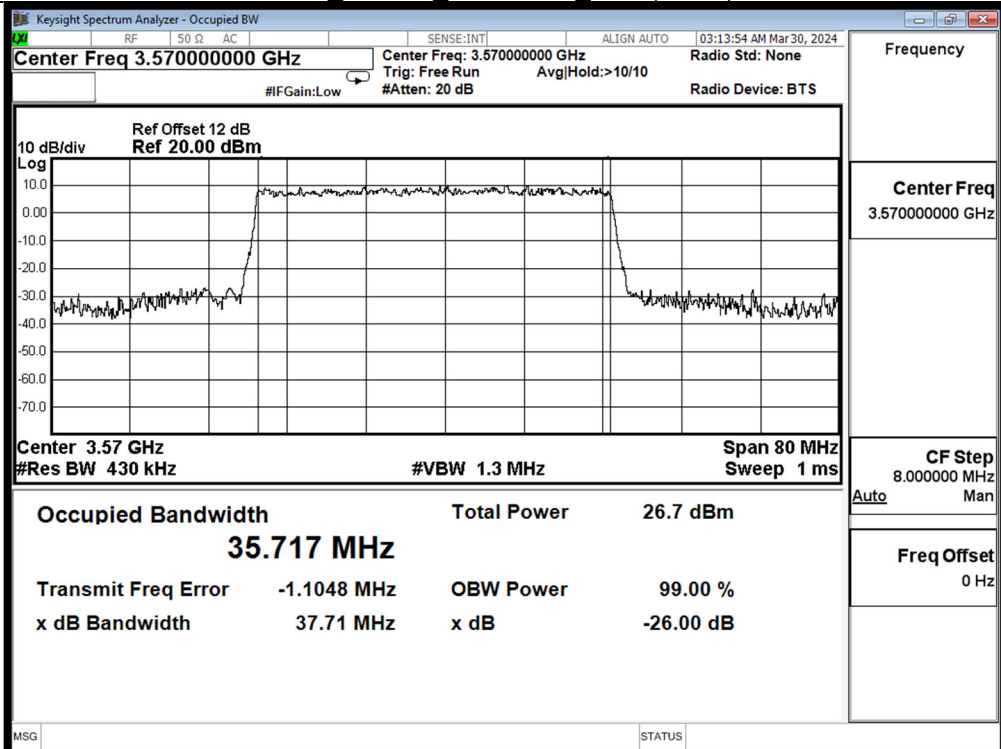
40M PI/2-BPSK CH641666 3625(100,0)



40M QPSK CH641666 3625(100,0)



40M 16QAM CH638000 3570(100,0)



40M 64QAM CH638000 3570(100,0)

