

Appendix A: Transmitter Output Power

1 Result Table

1.1 Channel Power, Total

NOTE 1: If applicable, the EIRP [W] = $10^{((\text{Channel Power [dBm]} + \text{Antenna Gain [dBi]} + \text{Combine Gain [dB]} - \text{Cable Loss [dB]}) / 10 - 3)}$, and the ERP [W] = EIRP [W] / 1.64.

NOTE 2: When the EUT is put into service, the practical maximum antenna gain may exceed the value as below, and if exceed, the combination of the practical output power and the practical antenna gain should NOT exceed the required ERP/EIRP limit.

EUT Conf.	Output Power [dBm]	Antenna Gain [dBi]	Combine Gain [dB]	Cable Loss	EIRP [W]	Limit [W]	Verdict
1L_10M_B_TM1	24.43	10	6	1.3	8.18	10	Pass
1L_10M_M_TM1	24.27	10	6	1.3	7.89	10	Pass
1L_10M_T_TM1	24.21	10	6	1.3	7.78	10	Pass
1L_20M_B_TM1	27.46	10	6	1.3	16.44	20	Pass
1L_20M_M_TM1	27.20	10	6	1.3	15.49	20	Pass
1L_20M_T_TM1	27.27	10	6	1.3	15.74	20	Pass
2L_10M_10M_B_TM1	27.33	10	6	1.3	15.96	20	Pass
2L_10M_10M_T_TM1	27.37	10	6	1.3	16.11	20	Pass
2L_20M_20M_B_TM1	30.30	10	6	1.3	31.62	40	Pass
2L_20M_20M_T_TM1	30.18	10	6	1.3	30.76	40	Pass
3L_10M_20M_10M_B_TM1	30.13	10	6	1.3	30.41	40	Pass
3L_10M_20M_10M_T_TM1	30.28	10	6	1.3	31.48	40	Pass

1.2 Power Spectral Density

NOTE 1: If applicable, the EIRP [W/MHz] = $10^{((\text{Power Spectral Density [dBm/MHz]} + \text{Antenna Gain [dBi]} + \text{Combine Gain [dB]} - \text{Cable Loss [dB]}) / 10 - 3)}$, and the ERP [W/MHz] = EIRP [W/MHz] / 1.64.

NOTE 2: When the EUT is put into service, the practical maximum antenna gain may exceed the value as below, and if exceed, the combination of the practical output power and the practical antenna gain should NOT exceed the required ERP/EIRP limit.

EUT Conf.	Power Spectral Density [dBm/MHz]	Antenna Gain [dBi]	Combine Gain [dB]	Cable Loss	EIRP [W/MHz]	Limit [W/MHz]	Verdict
1L_10M_B_TM1	15.21	10	6	1.3	0.98	1	Pass
1L_10M_M_TM1	14.78	10	6	1.3	0.89	1	Pass
1L_10M_T_TM1	15.08	10	6	1.3	0.95	1	Pass
1L_20M_B_TM1	14.98	10	6	1.3	0.93	1	Pass
1L_20M_M_TM1	14.97	10	6	1.3	0.93	1	Pass

EUT Conf.	Power Spectral Density [dBm/MHz]	Antenna Gain [dBi]	Combine Gain [dB]	Cable Loss	EIRP [W/MHz]	Limit [W/MHz]	Verdict
1L_20M_T_TM1	15.10	10	6	1.3	0.95	1	Pass
2L_20M_20M_B_TM1	15.07	10	6	1.3	0.95	1	Pass
2L_20M_20M_T_TM1	15.01	10	6	1.3	0.94	1	Pass
3L_10M_20M_10M_B_TM1	15.13	10	6	1.3	0.96	1	Pass
3L_10M_20M_10M_B_TM1	15.15	10	6	1.3	0.97	1	Pass

1.3 Peak-to-Average Ratio

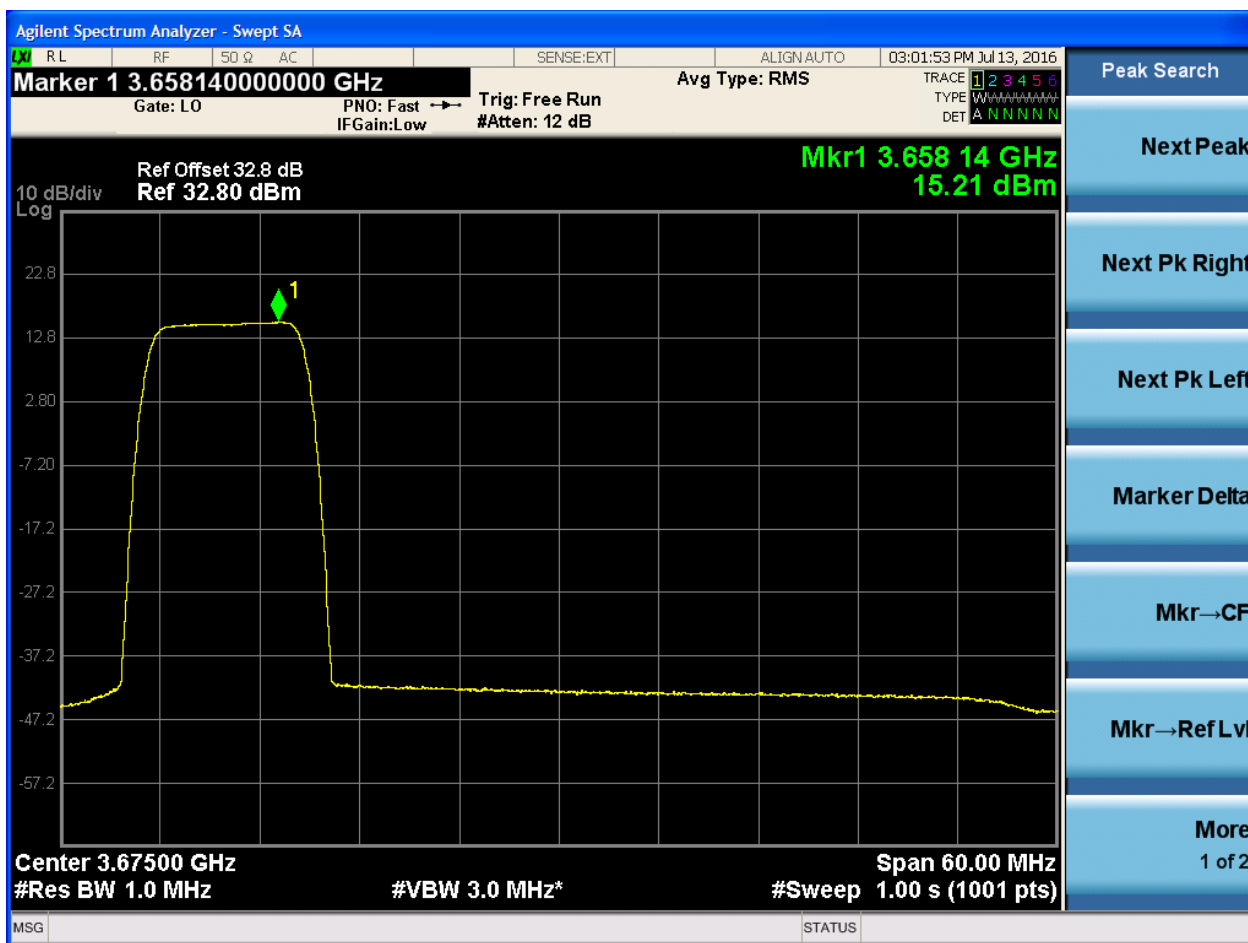
EUT Conf.	Peak-to-Average Ratio@0.1% [dB]	Verdict
1L_10M_B_TM1	8.74	---
1L_10M_M_TM1	8.60	---
1L_10M_T_TM1	8.79	---
1L_20M_B_TM1	8.60	---
1L_20M_M_TM1	8.88	---
1L_20M_T_TM1	8.87	---

2 Test Plot

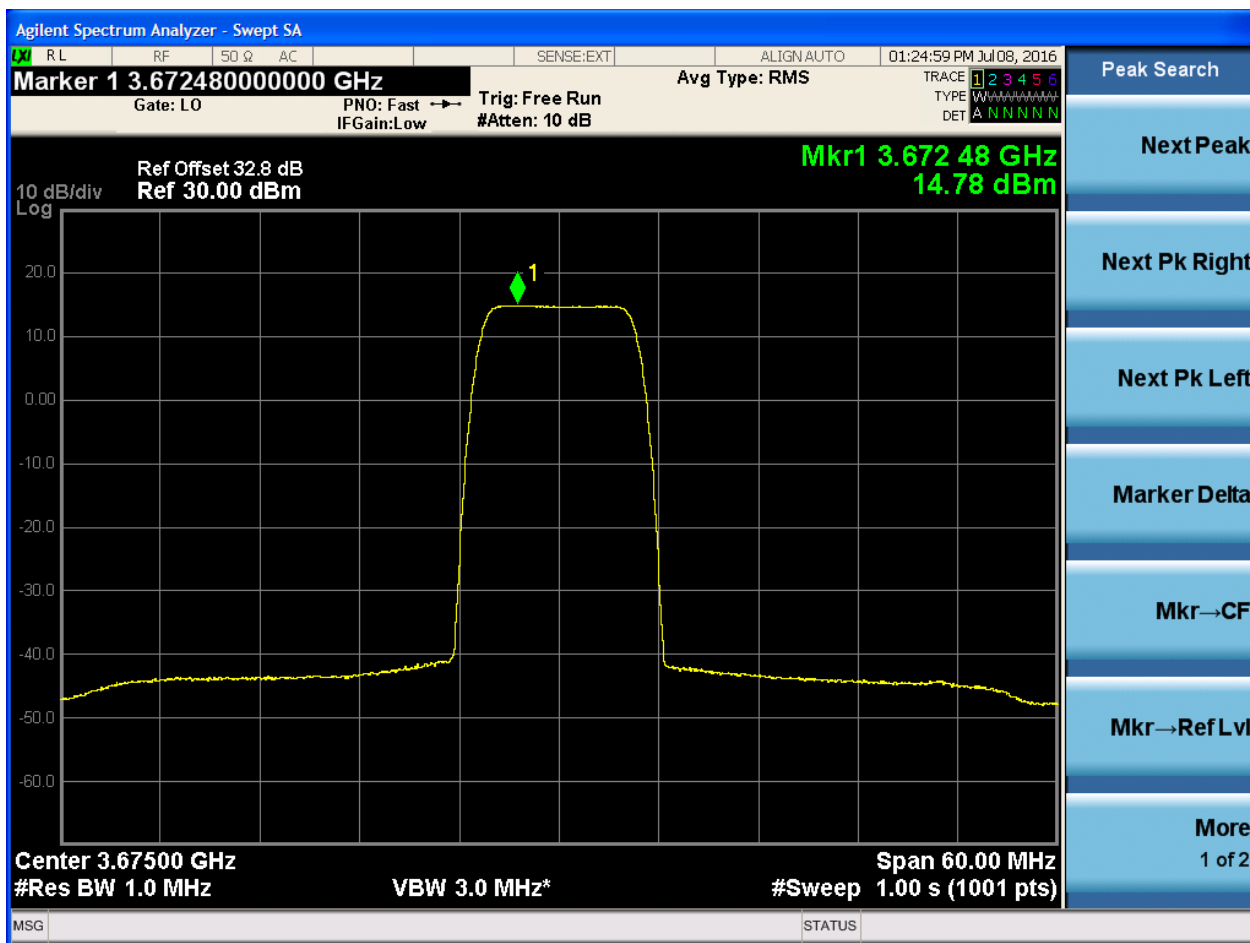
NOTE: Only the test plots for the measurements of Spectral Density and Peak-to-Average Ratio are supplied.

2.1 Power Spectral Density

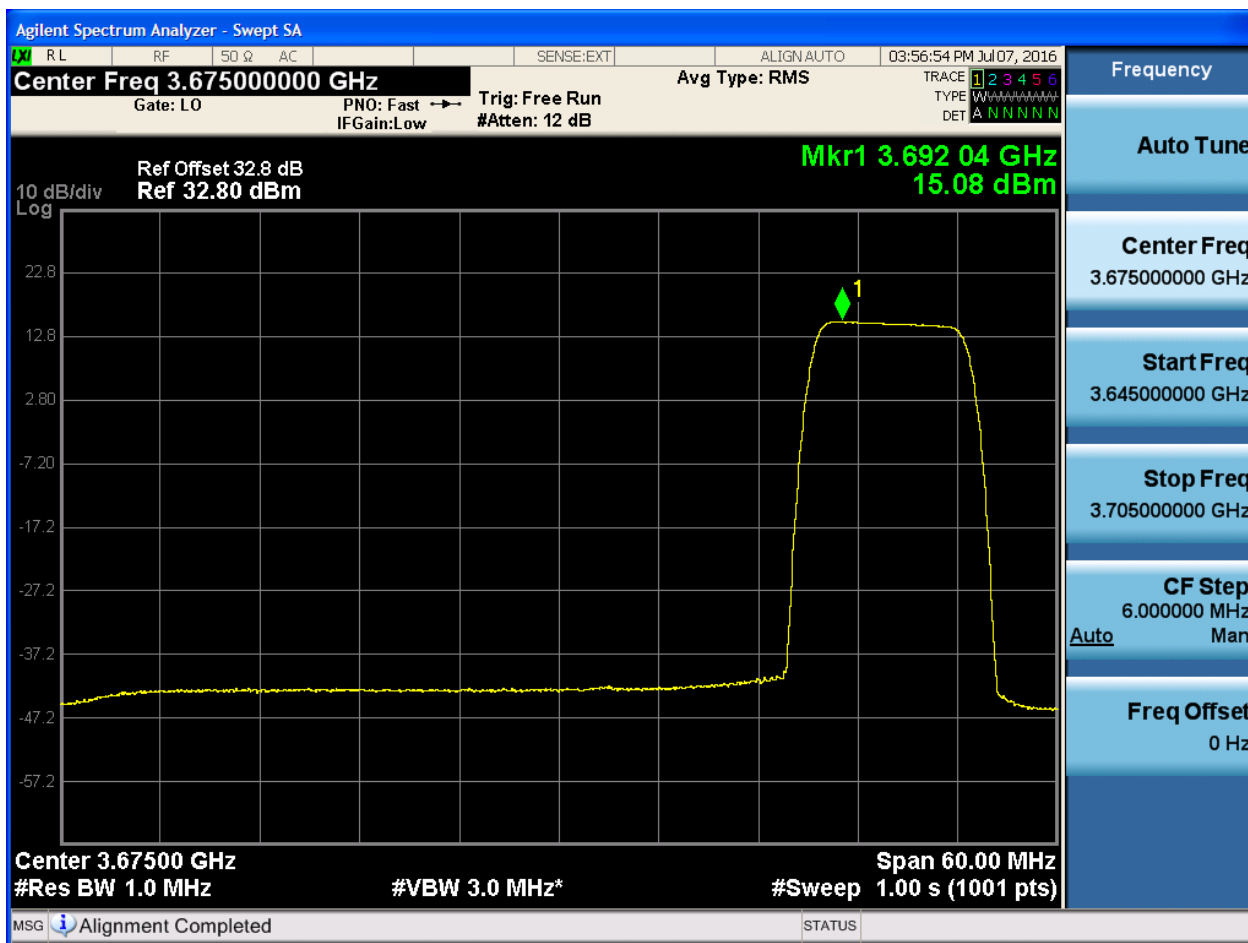
2.1.1 1L_10M_B_TM1



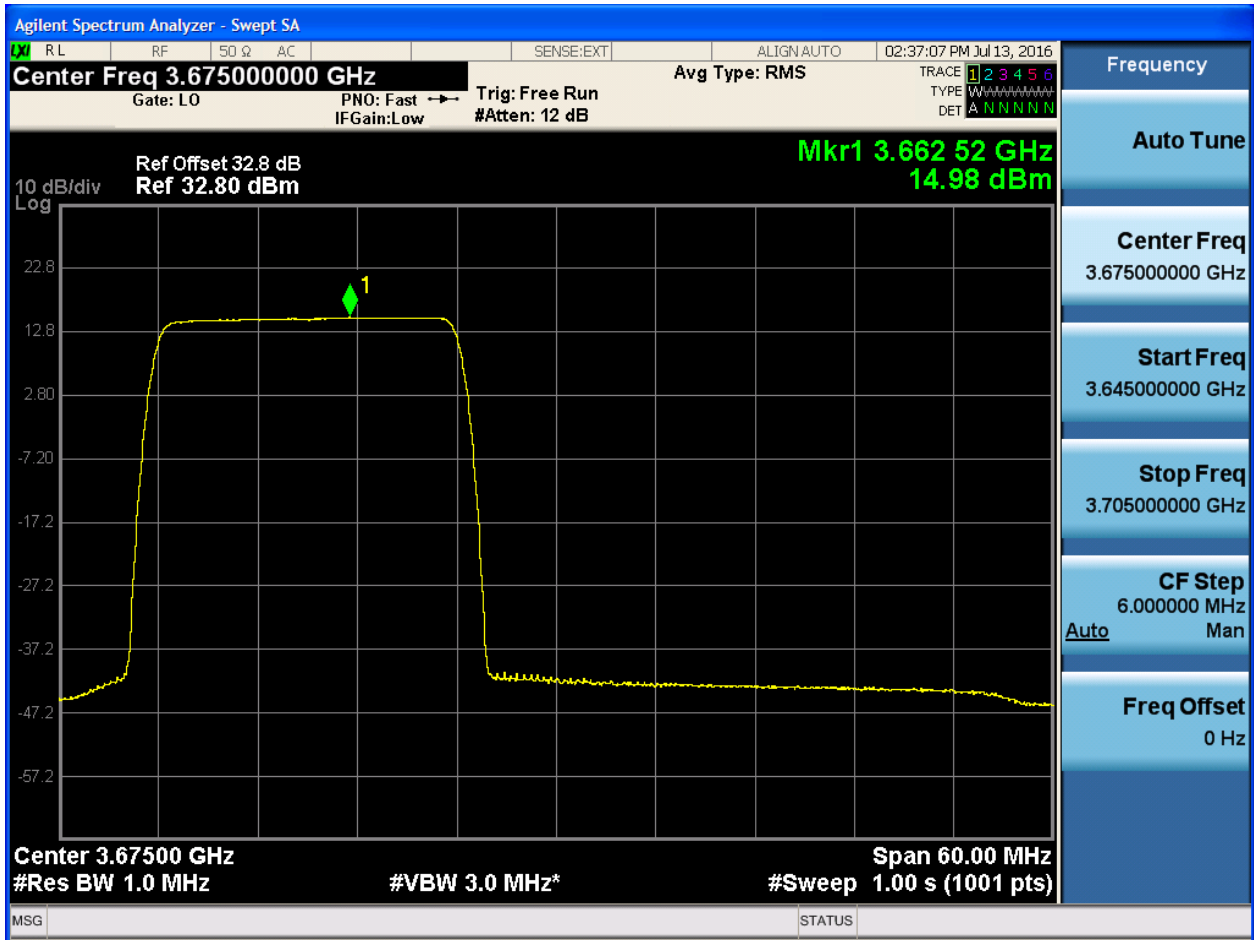
2.1.2 1L_10M_M_TM1



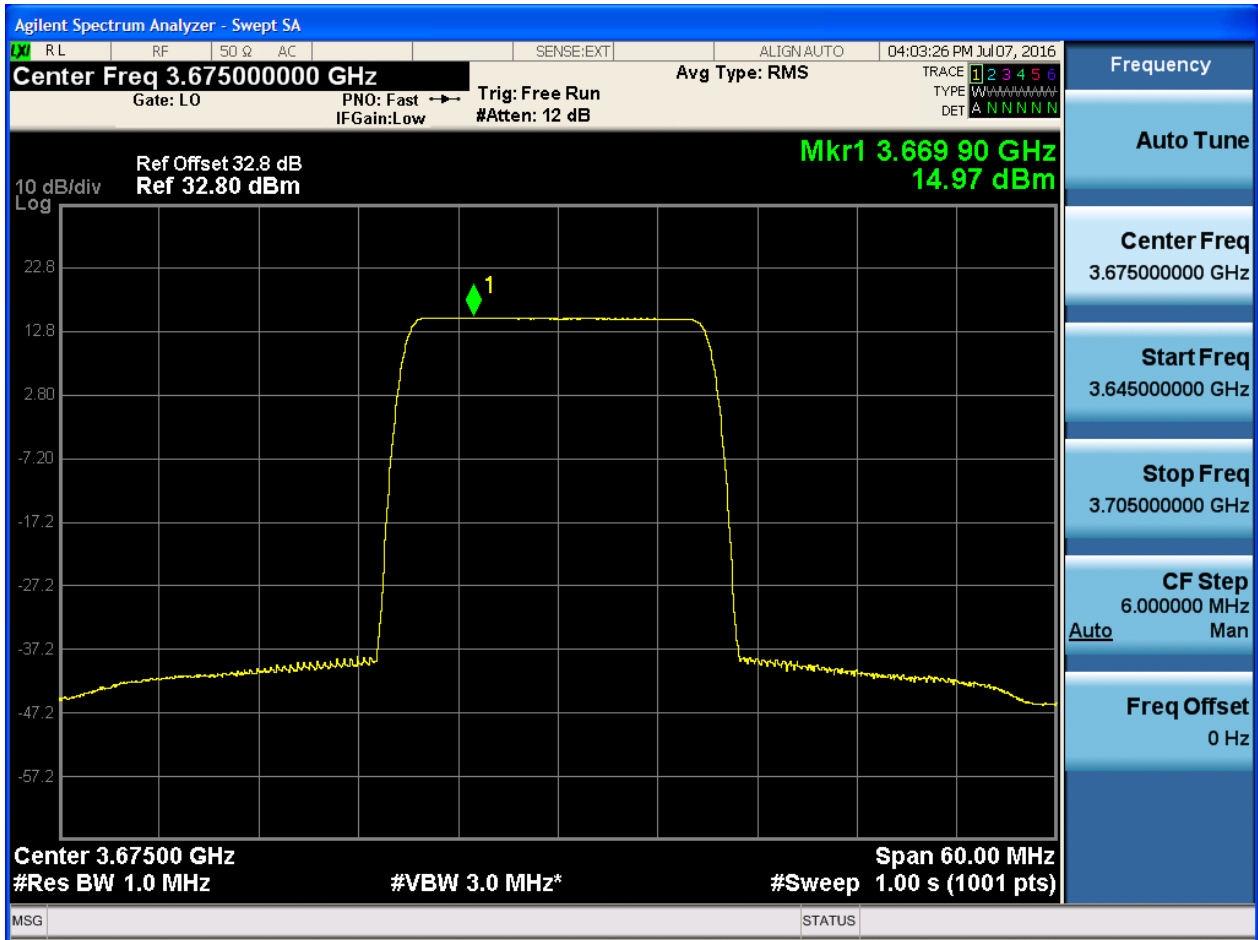
2.1.3 1L_10M_T_TM1



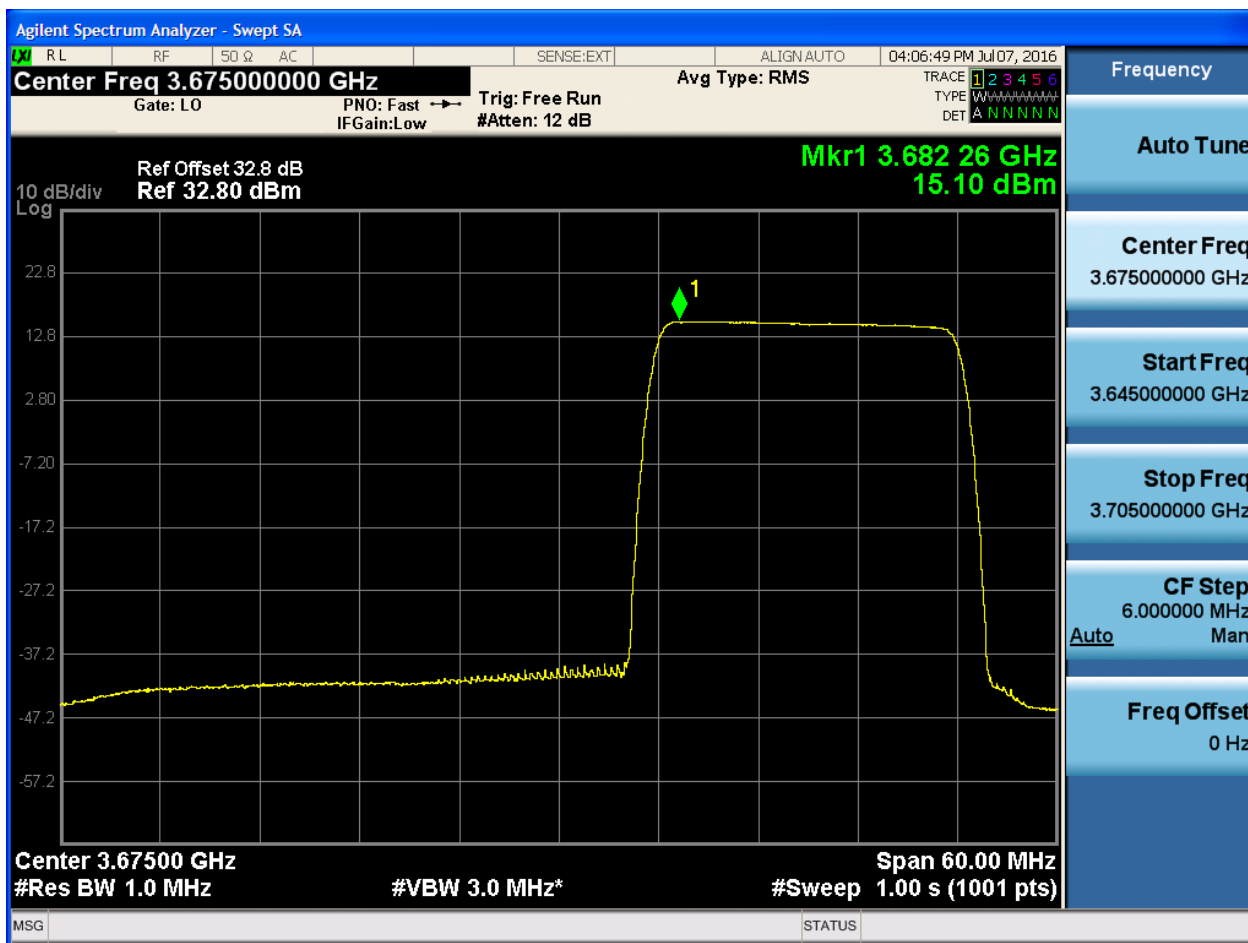
2.1.4 1L_20M_B_TM1



2.1.5 1L_20M_M_TM1

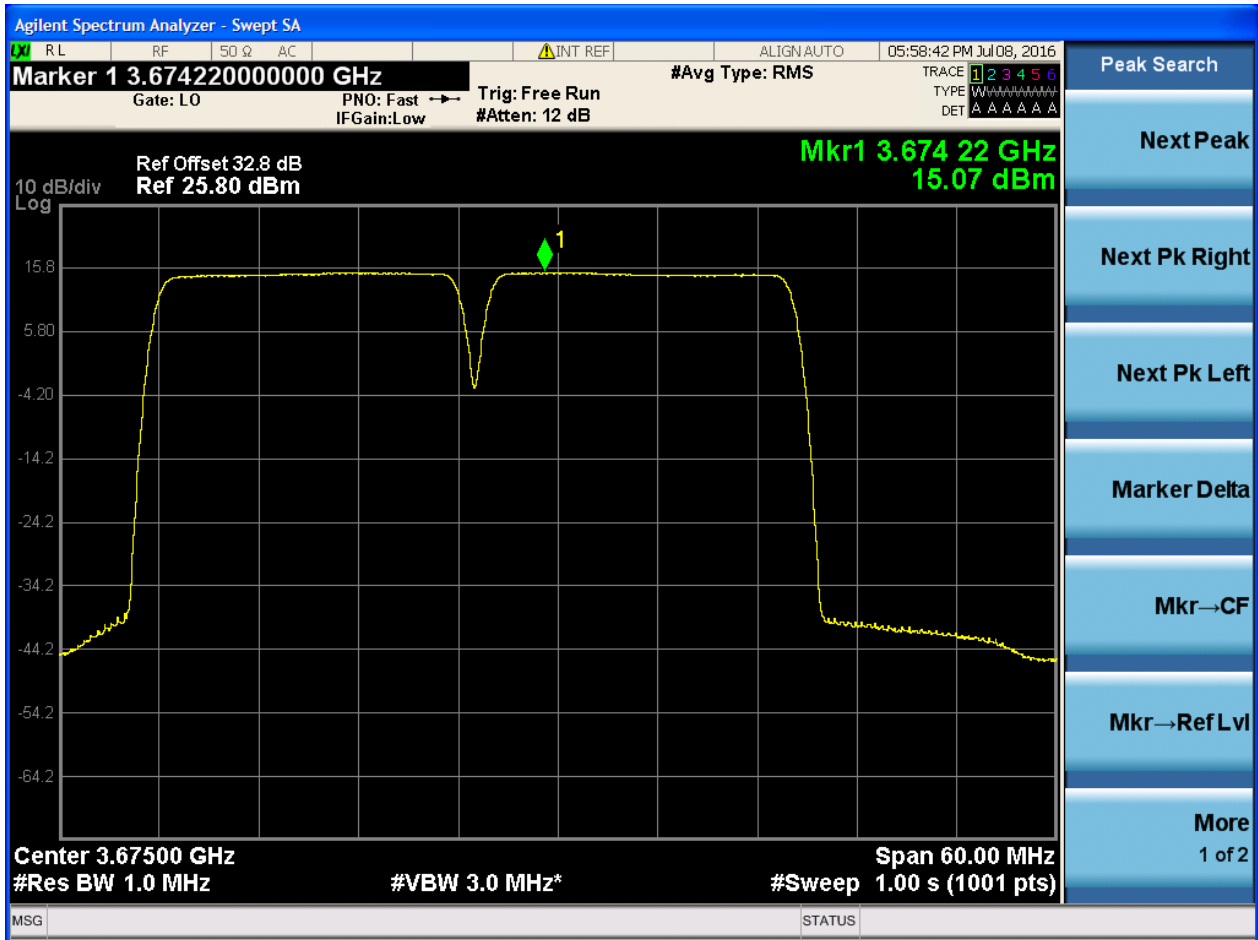


2.1.6 1L_20M_T_TM1

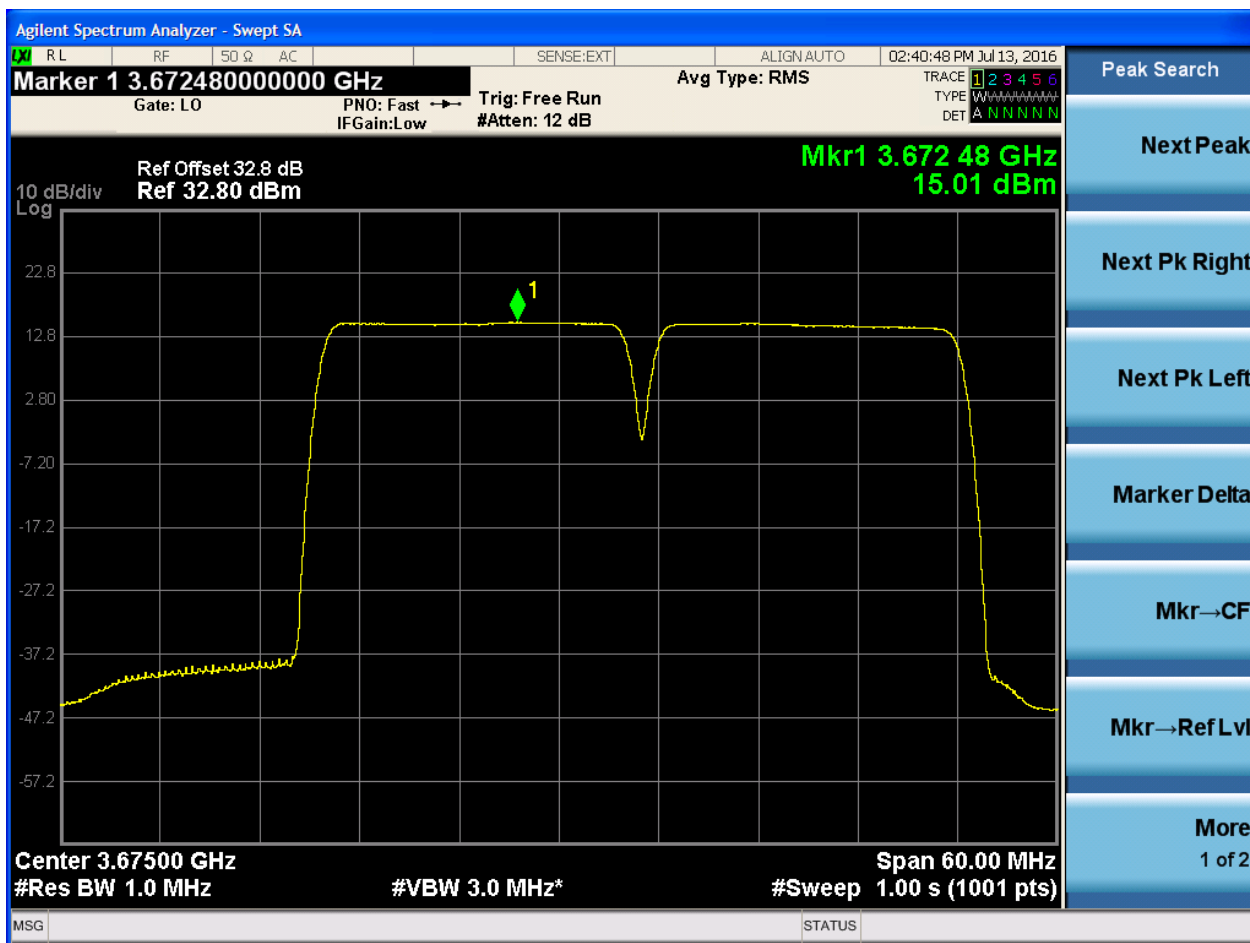




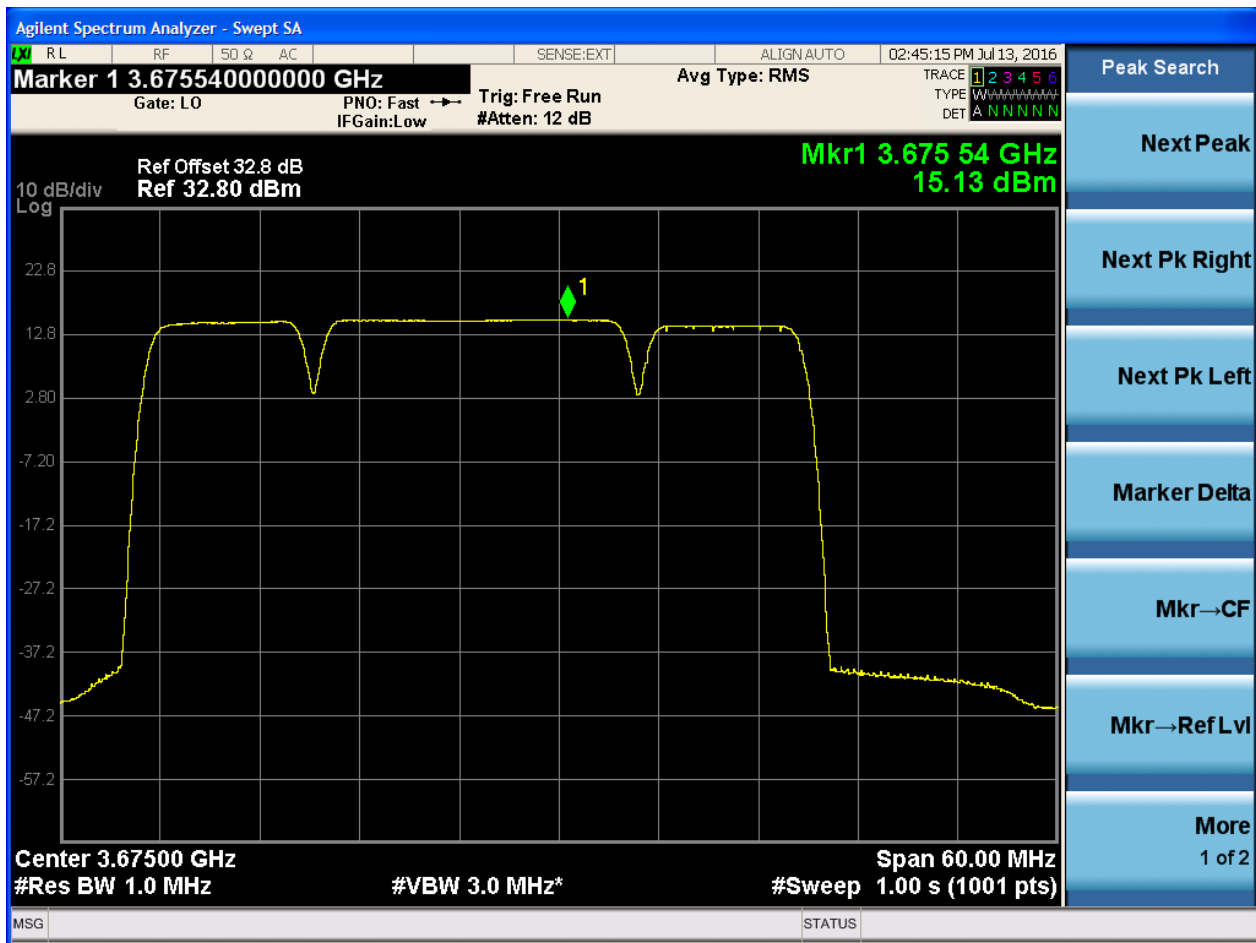
2.1.7 2L_20M_20M_B_TM1



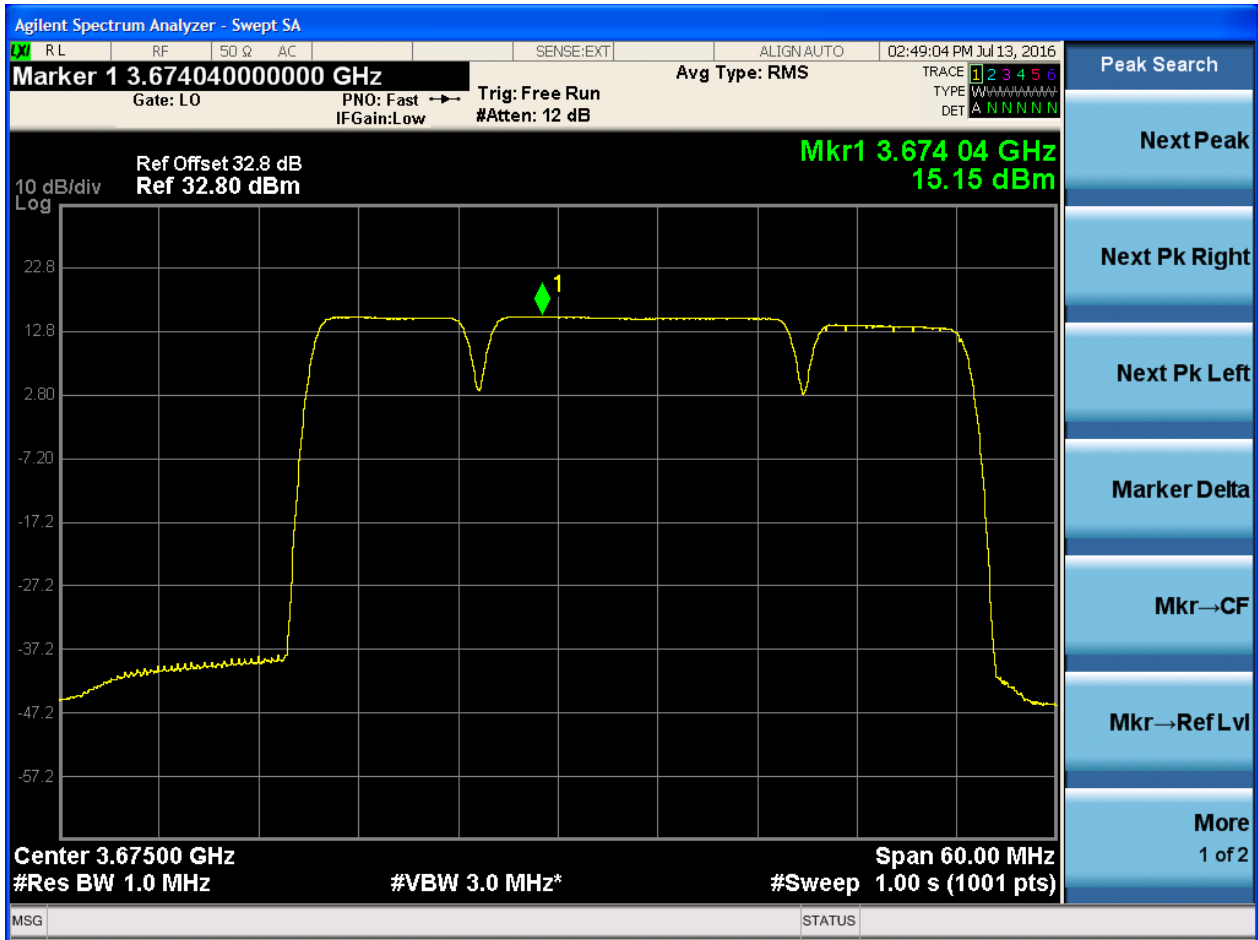
2.1.8 2L_20M_20M_T_TM1



2.1.9 3L_10M_20M_10M_B_TM1

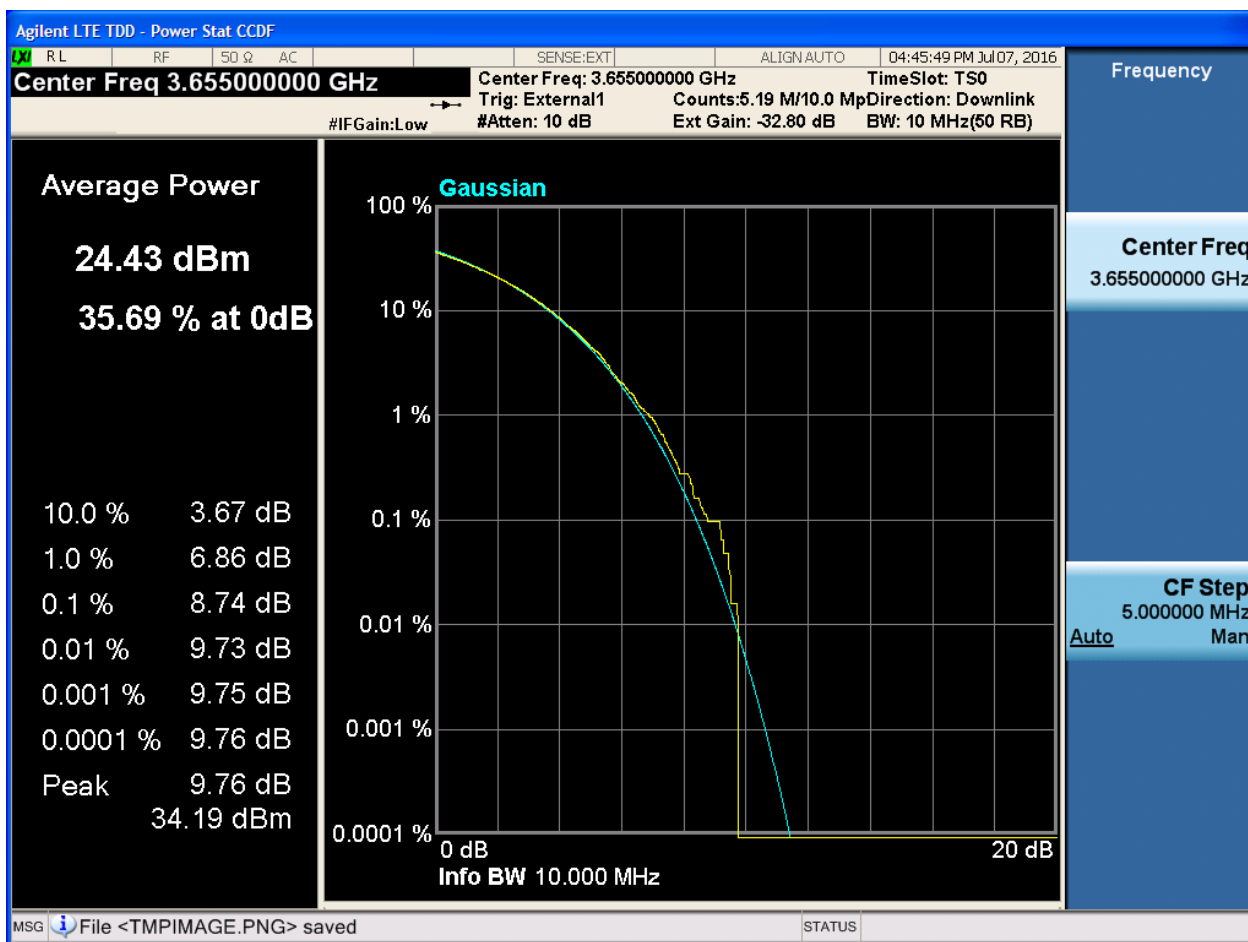


2.1.10 3L_10M_20M_10M_T_TM1

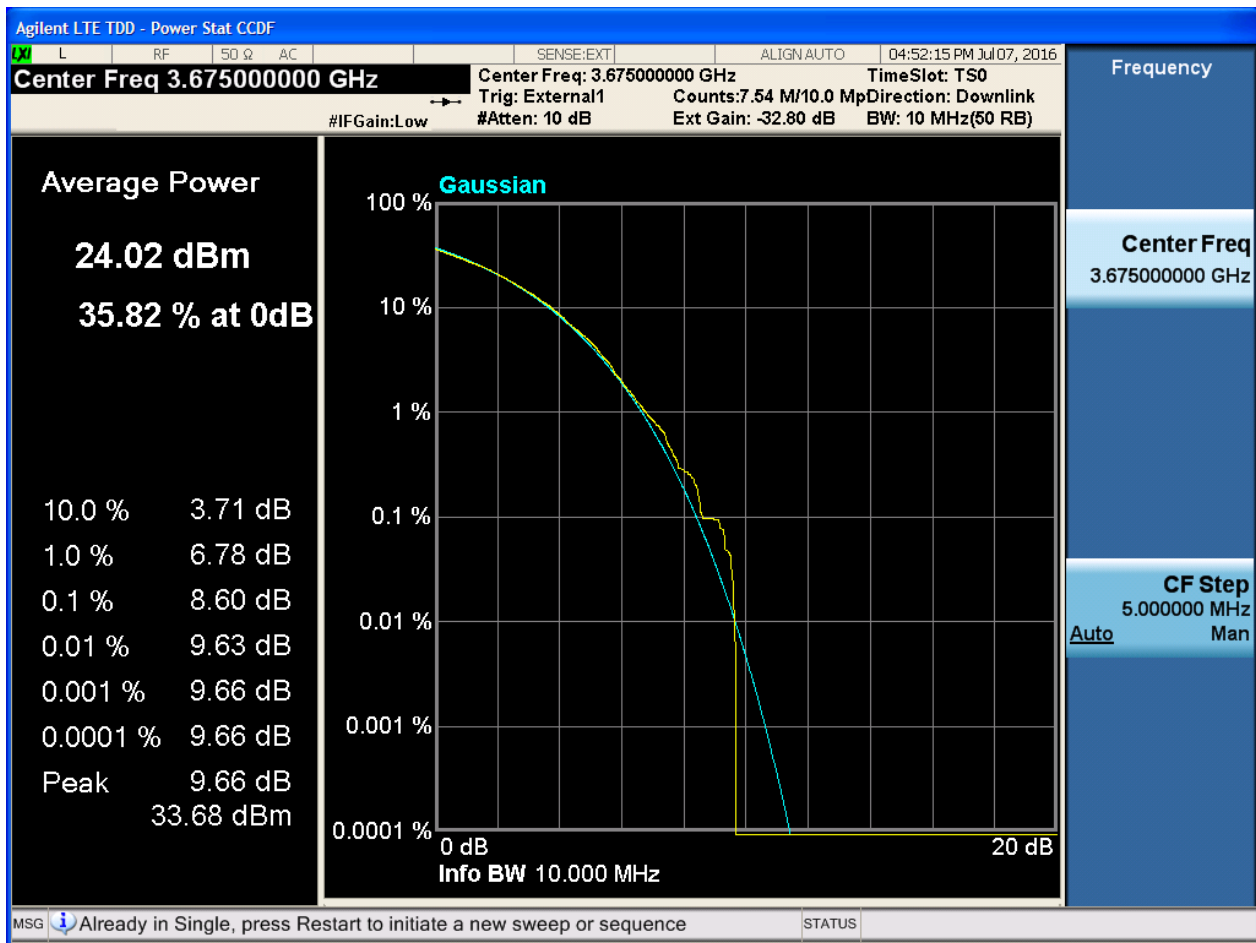


2.2 Peak-to-Average Ratio

2.2.1 1L_10M_B_TM1



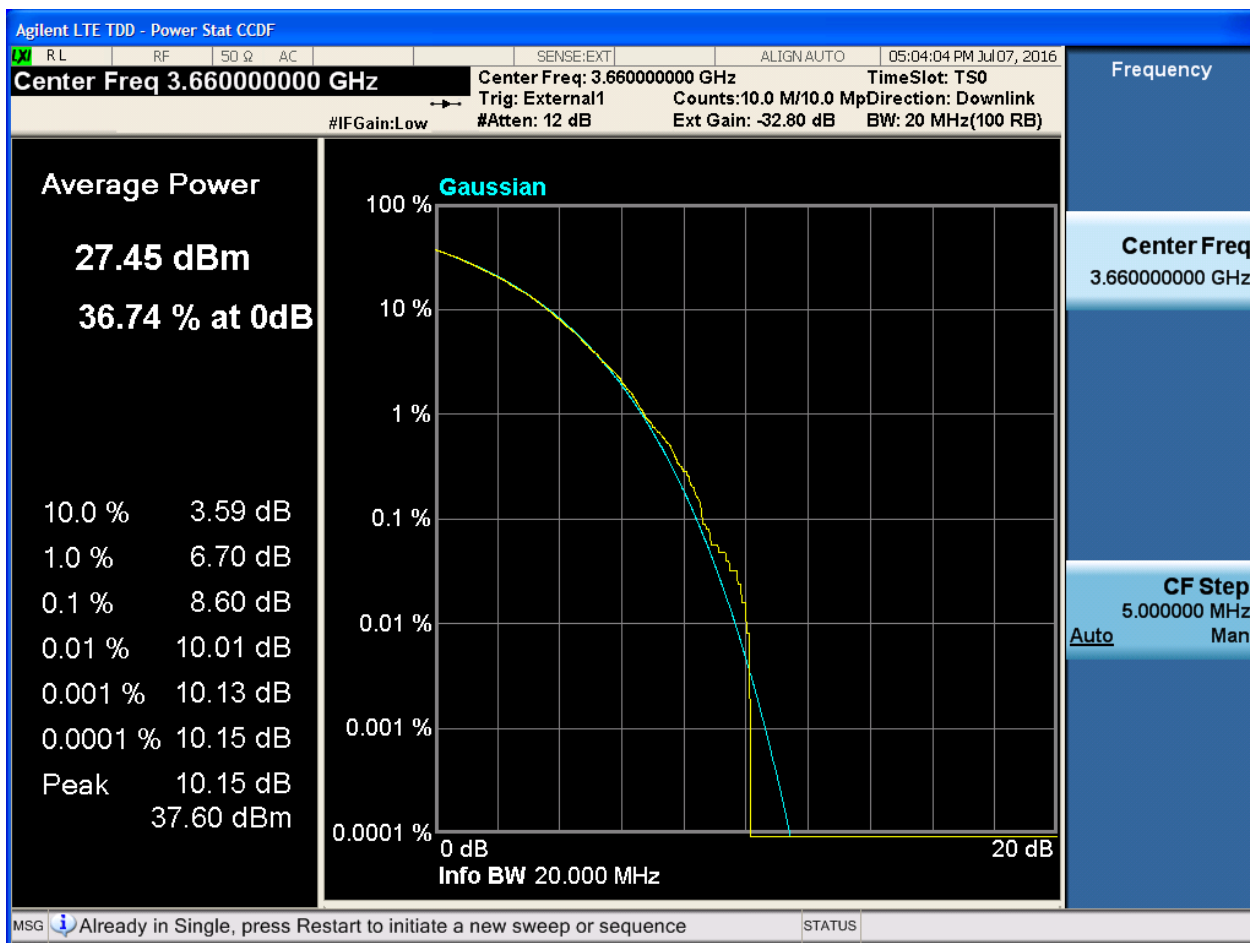
2.2.2 1L_10M_M_TM1



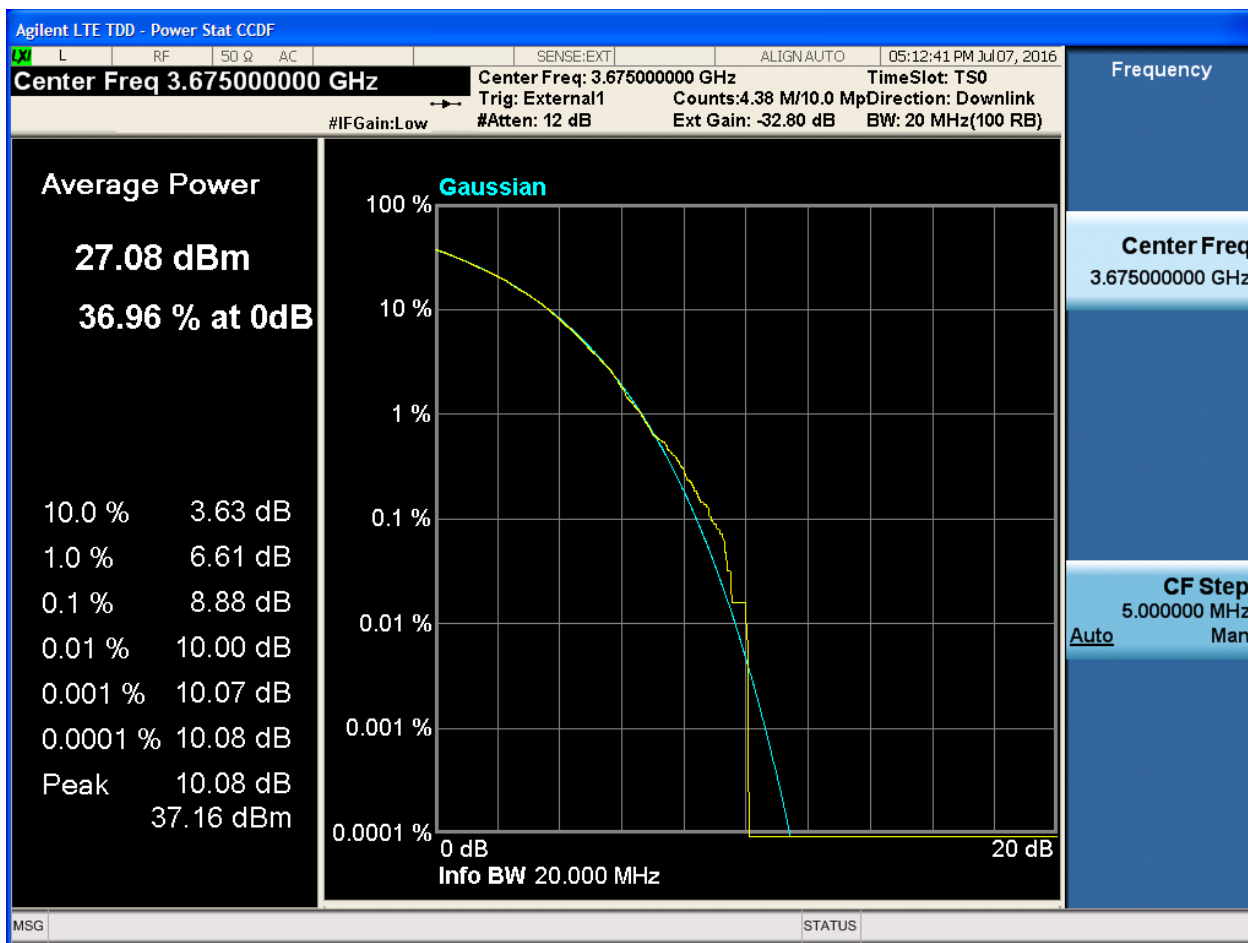
2.2.3 1L_10M_T_TM1



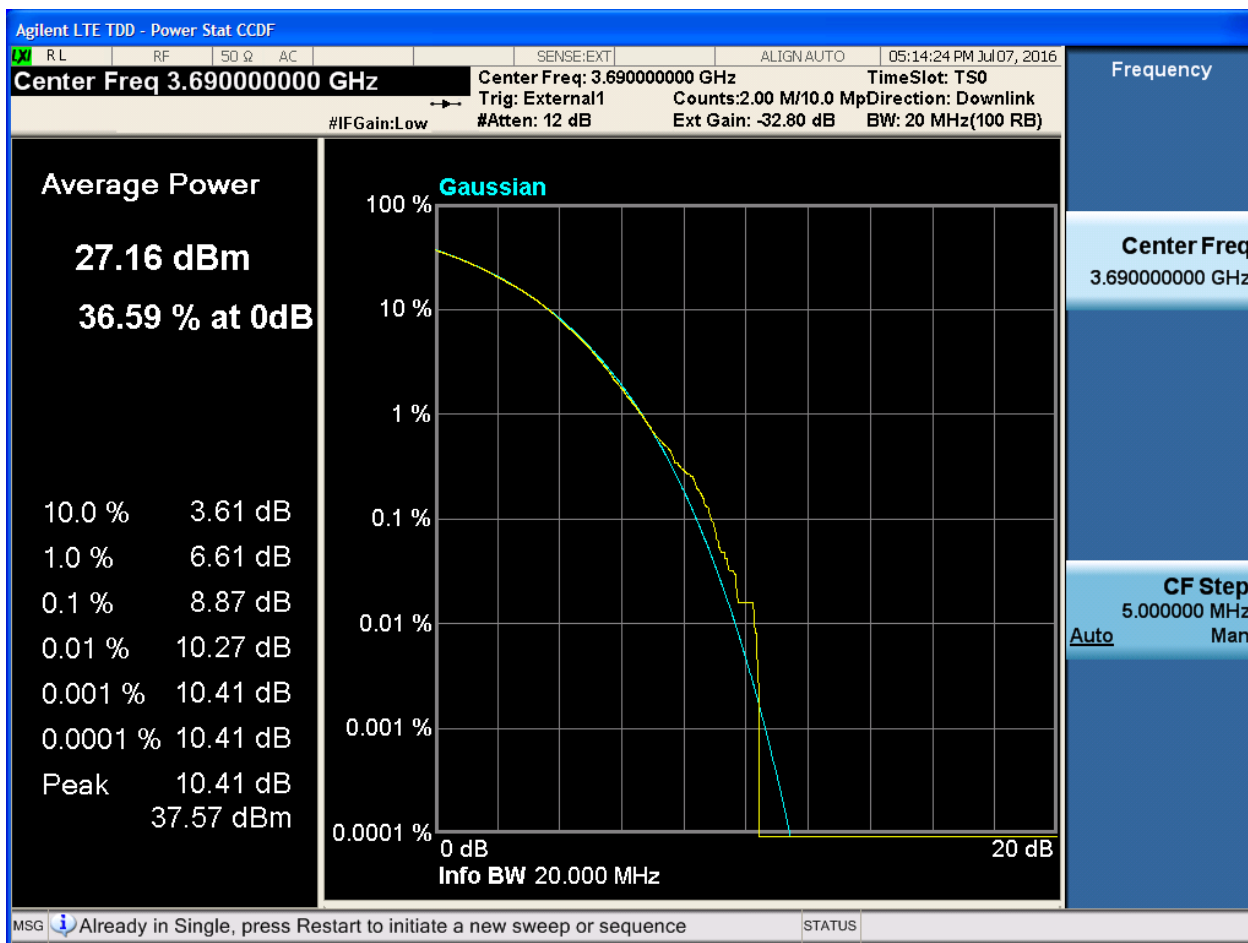
2.2.4 1L_20M_B_TM1



2.2.5 1L_20M_M_TM1



2.2.6 1L_20M_T_TM1



Appendix B: Bandwidth

1 Result Table

1.1 Occupied Bandwidth

EUT Conf.	Occupied Bandwidth [MHz]	Verdict
1L_10M_B_TM1	8.9466	---
1L_10M_M_TM1	8.9505	---
1L_10M_T_TM1	8.9465	---
1L_20M_B_TM1	17.855	---
1L_20M_M_TM1	17.869	---
1L_20M_T_TM1	17.855	---

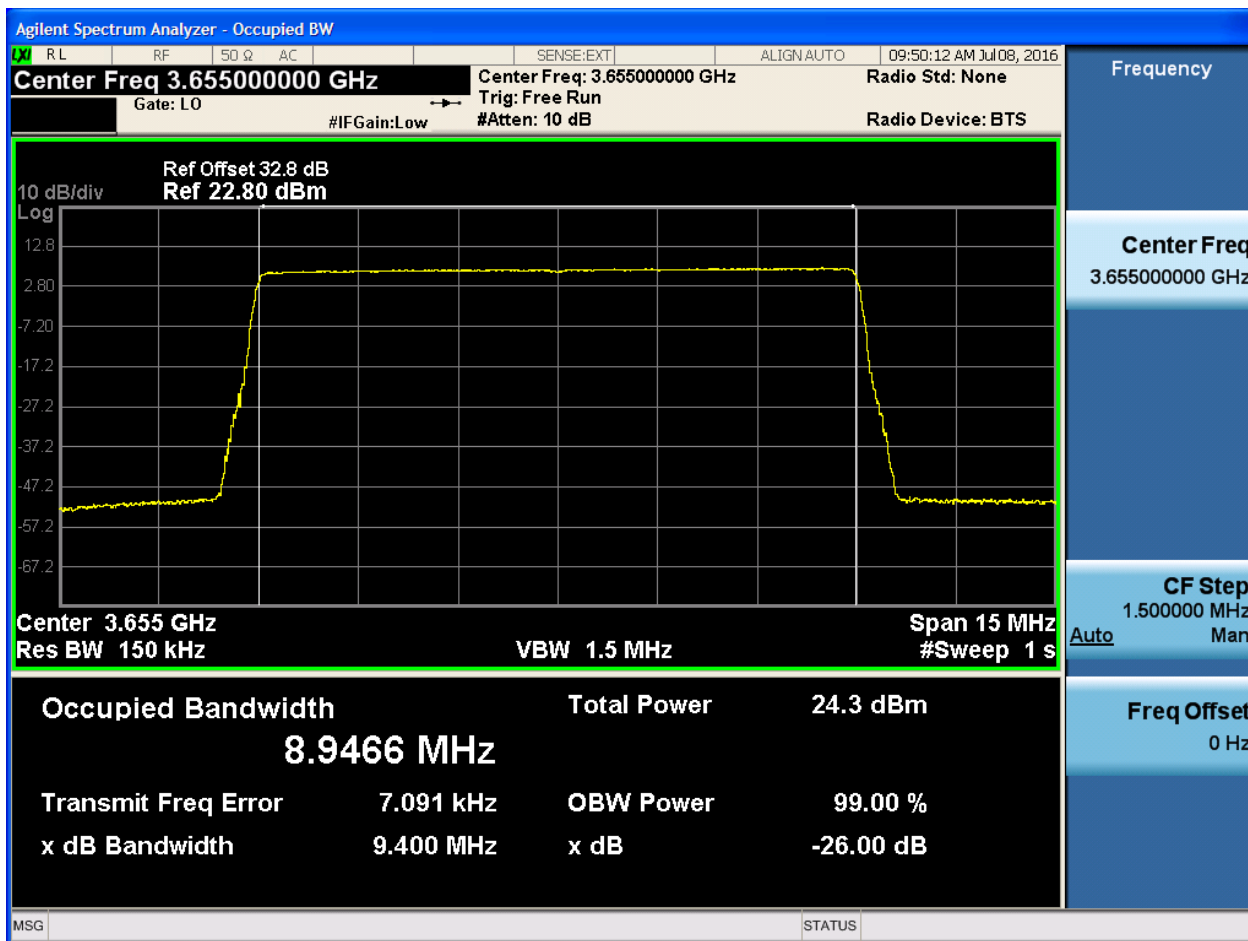
1.2 Emission Bandwidth

Not applicable

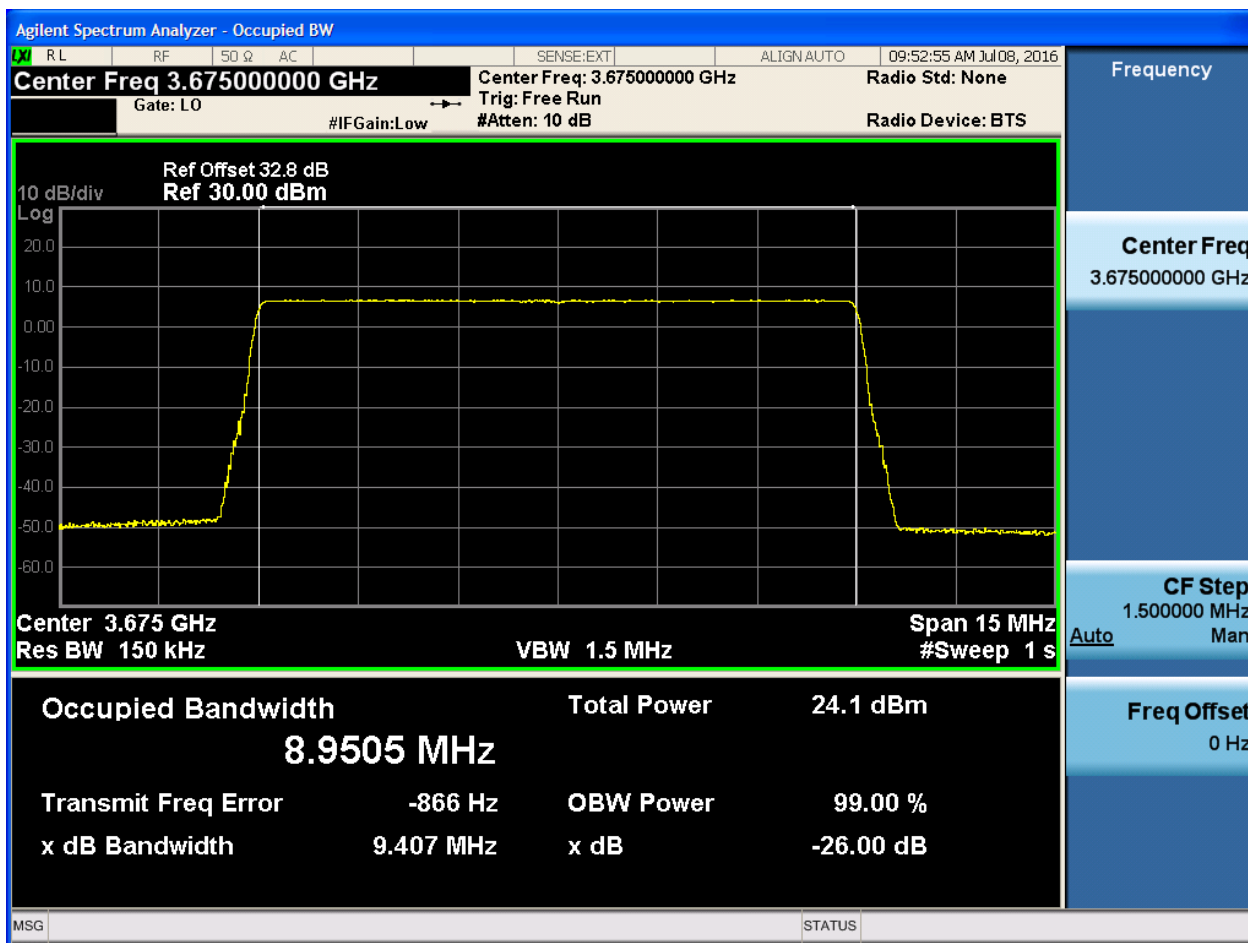
2 Test Plot

2.1 Occupied Bandwidth

2.1.1 1L_10M_B_TM1

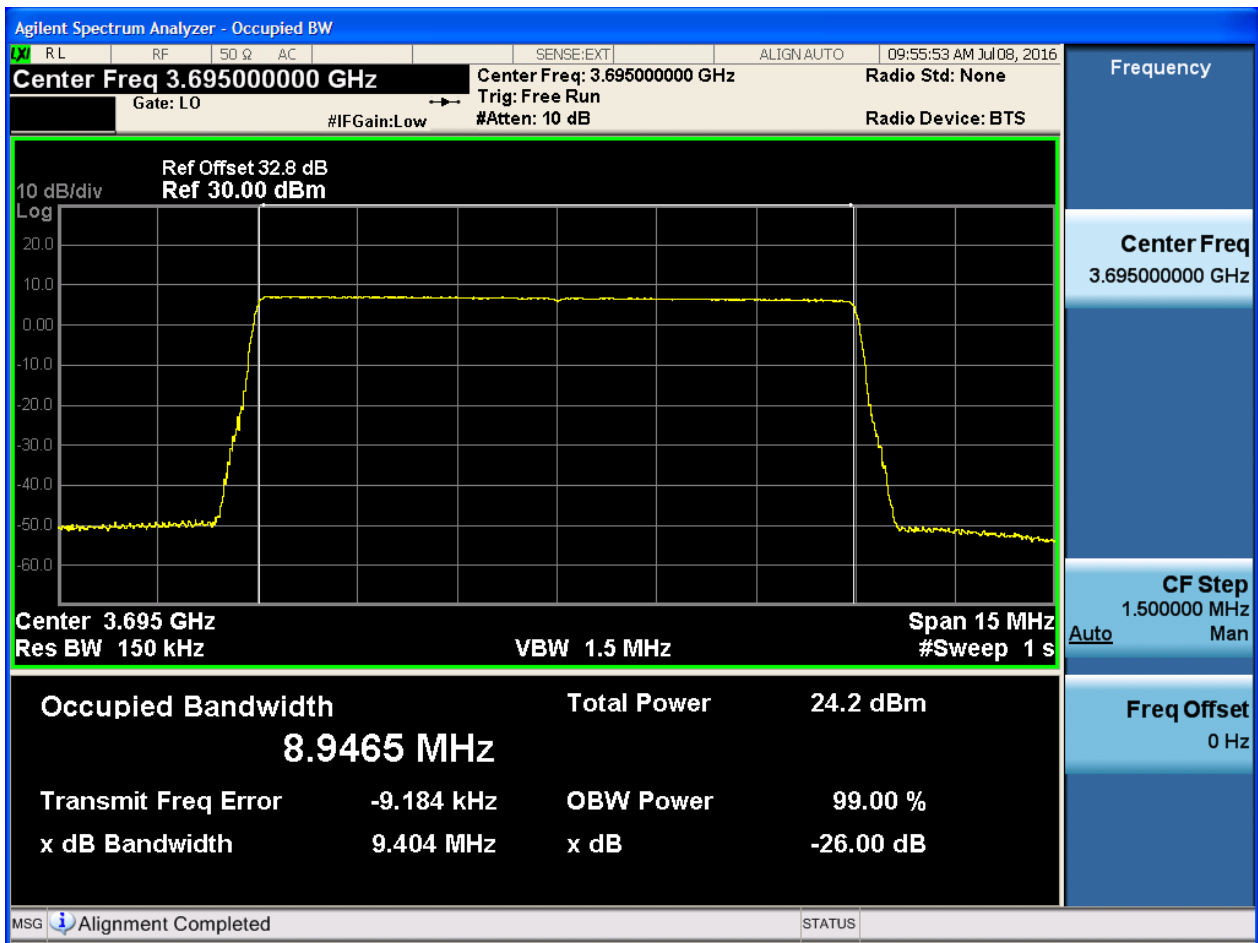


2.1.2 1L_10M_M_TM1



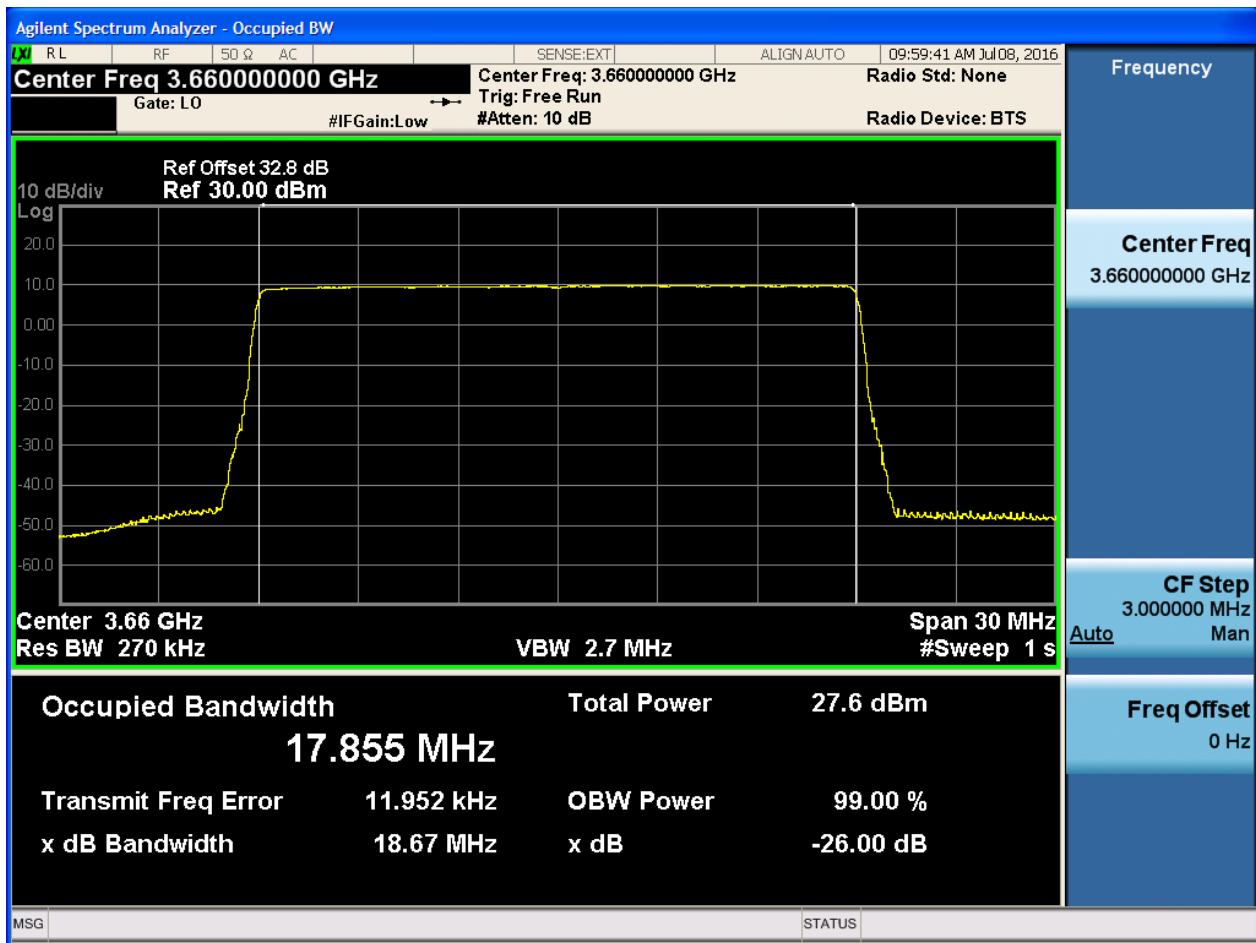


2.1.3 1L_10M_T_TM1



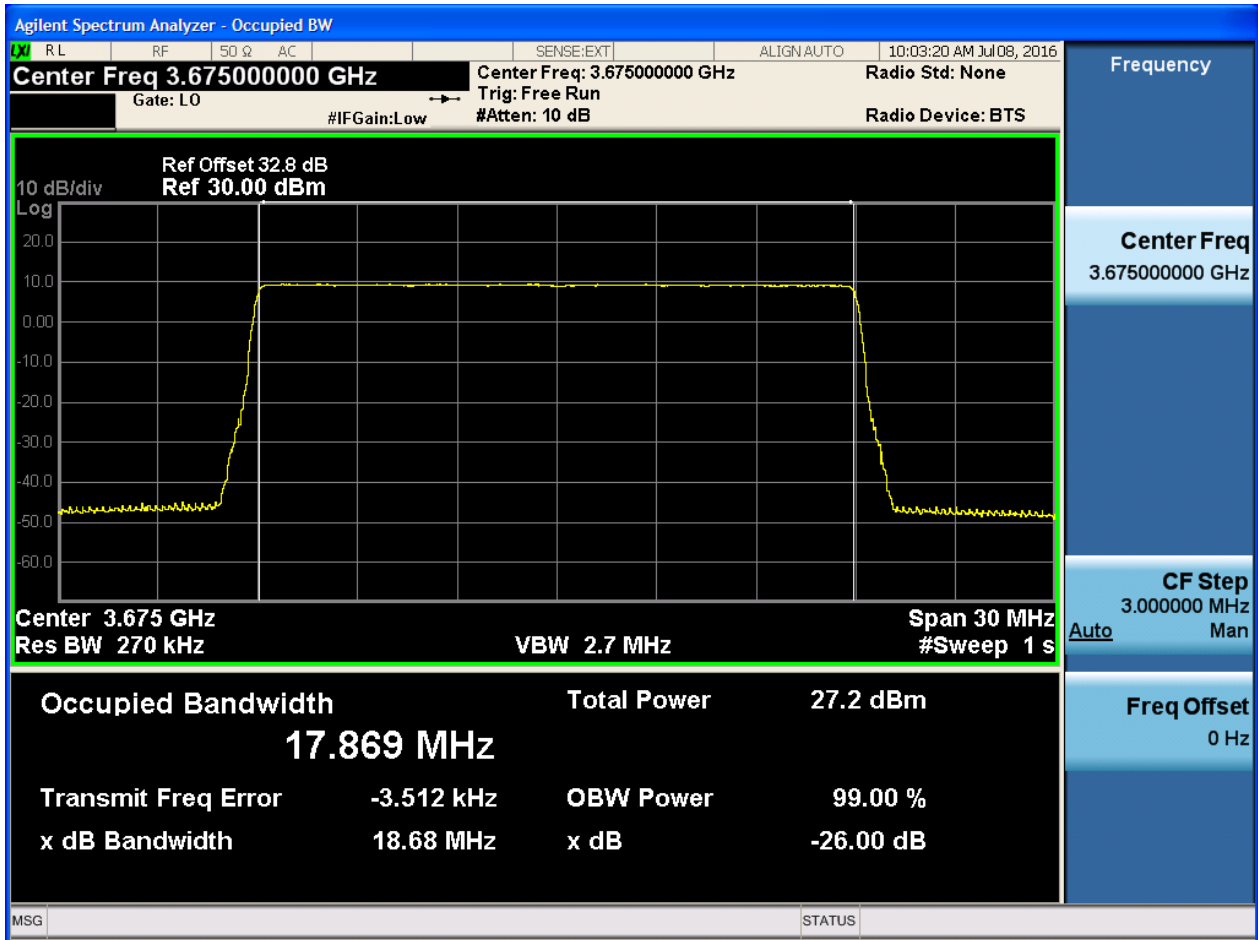


2.1.4 1L_20M_B_TM1



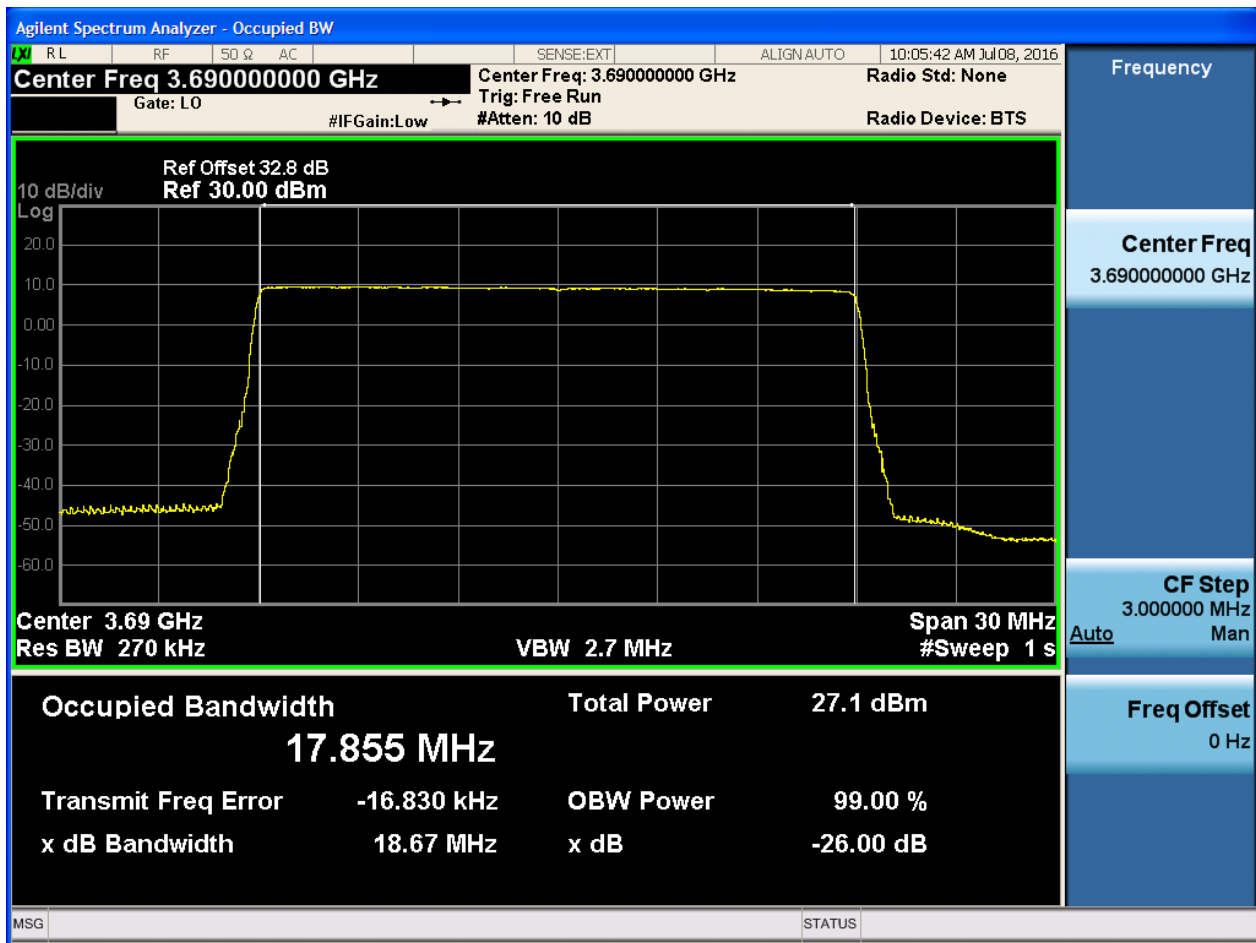


2.1.5 1L_20M_M_TM1





2.1.6 1L_20M_T_TM1



Appendix C: Band Edges Compliance / Emission Mask

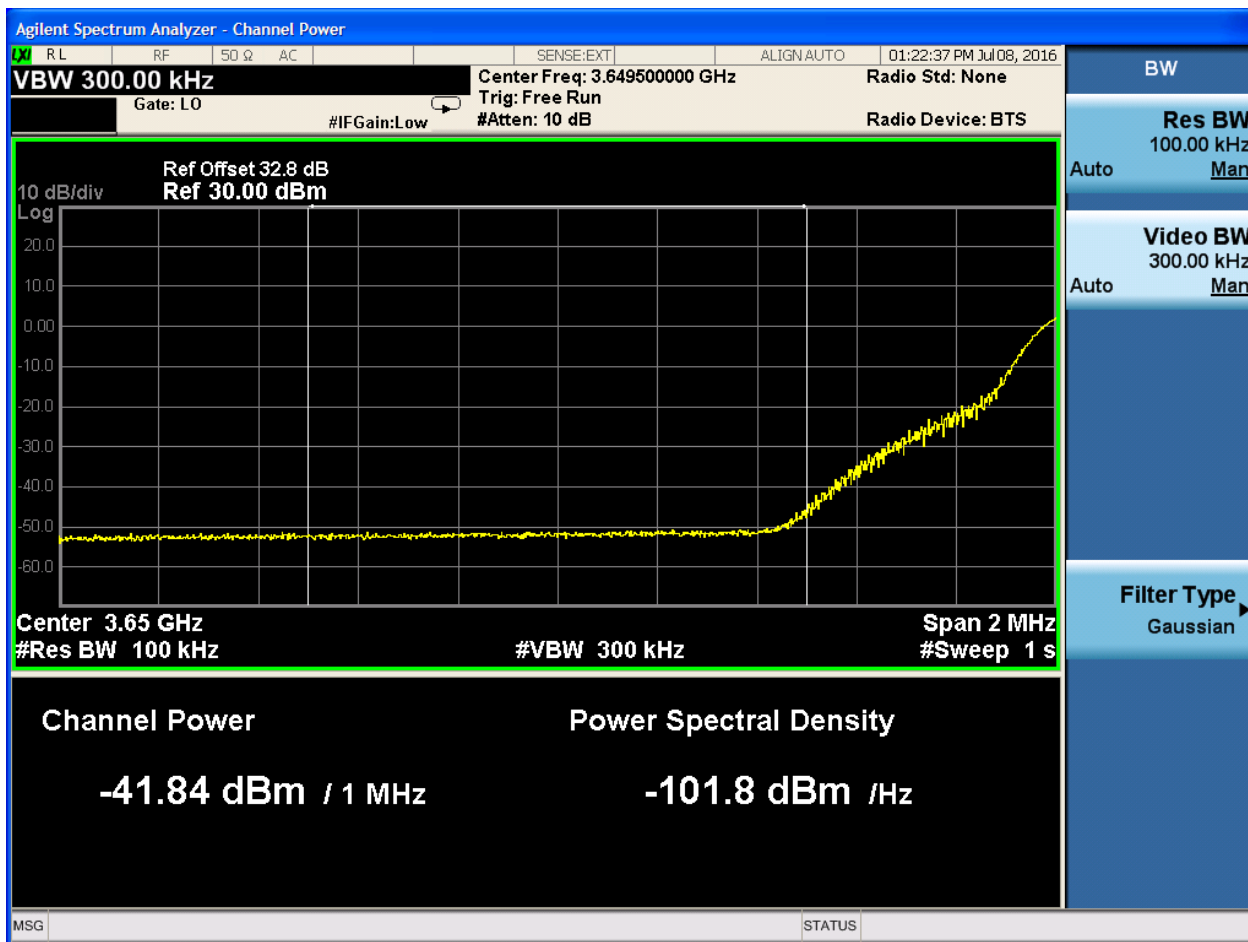
1 Result Table

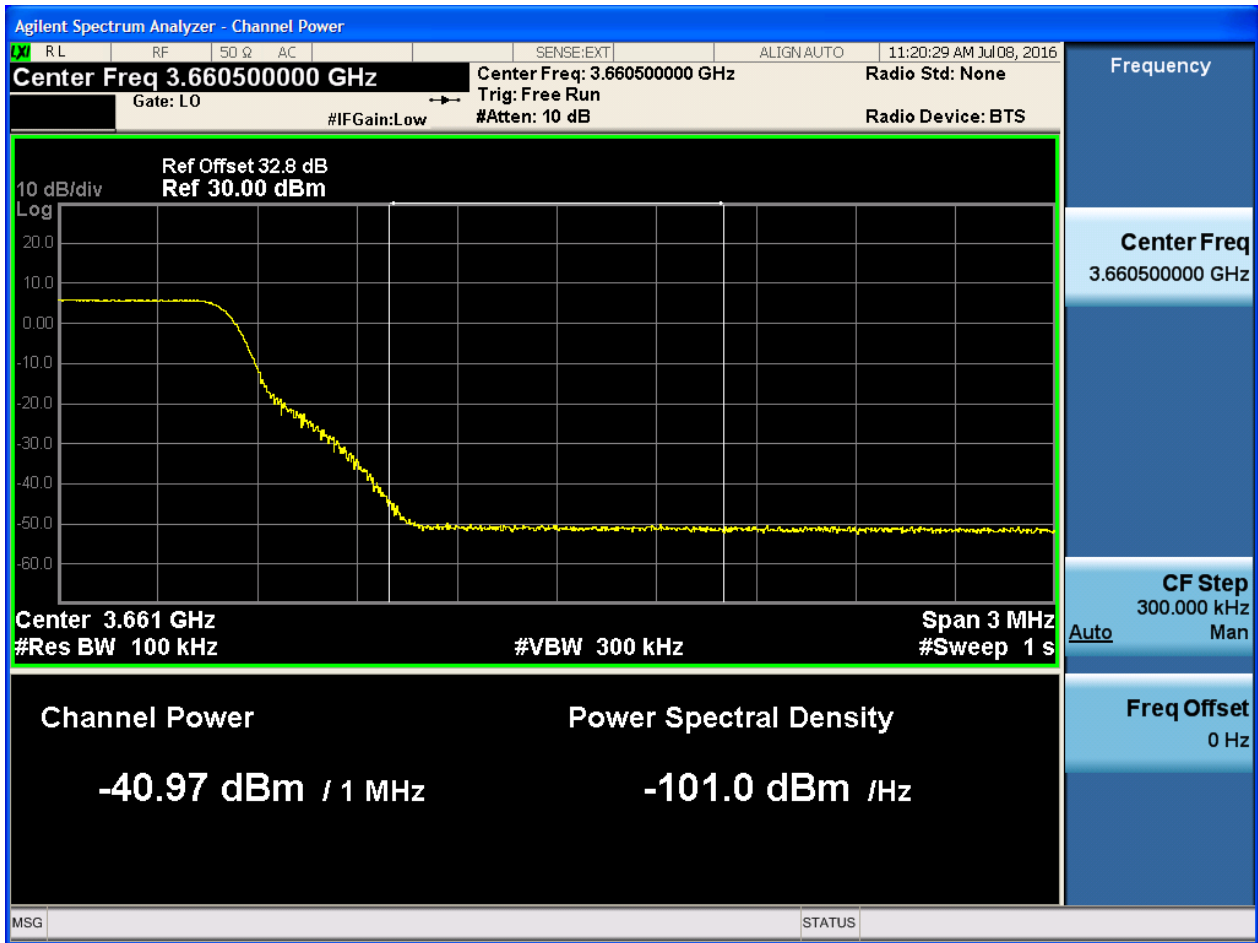
NOTE: If applicable, the offset of measurement filter -3dB point may be considered when identifying the maximum emission for e.g. the CDMA, WCDMA, WiMAX, LTE systems.

EUT Conf.	Maximum Emission [dBm]	Verdict
1L_10M_B_TM1	-40.97	Pass
1L_10M_M_TM1	-41.40	Pass
1L_10M_T_TM1	-40.35	Pass
1L_20M_B_TM1	-40.12	Pass
1L_20M_M_TM1	-40.04	Pass
1L_20M_T_TM1	-39.85	Pass
2L_20M_20M_B_TM1	-38.86	Pass
2L_20M_20M_T_TM1	-38.45	Pass
3L_10M_20M_10M_B_TM1	-38.69	Pass
3L_10M_20M_10M_B_TM1	-37.78	Pass

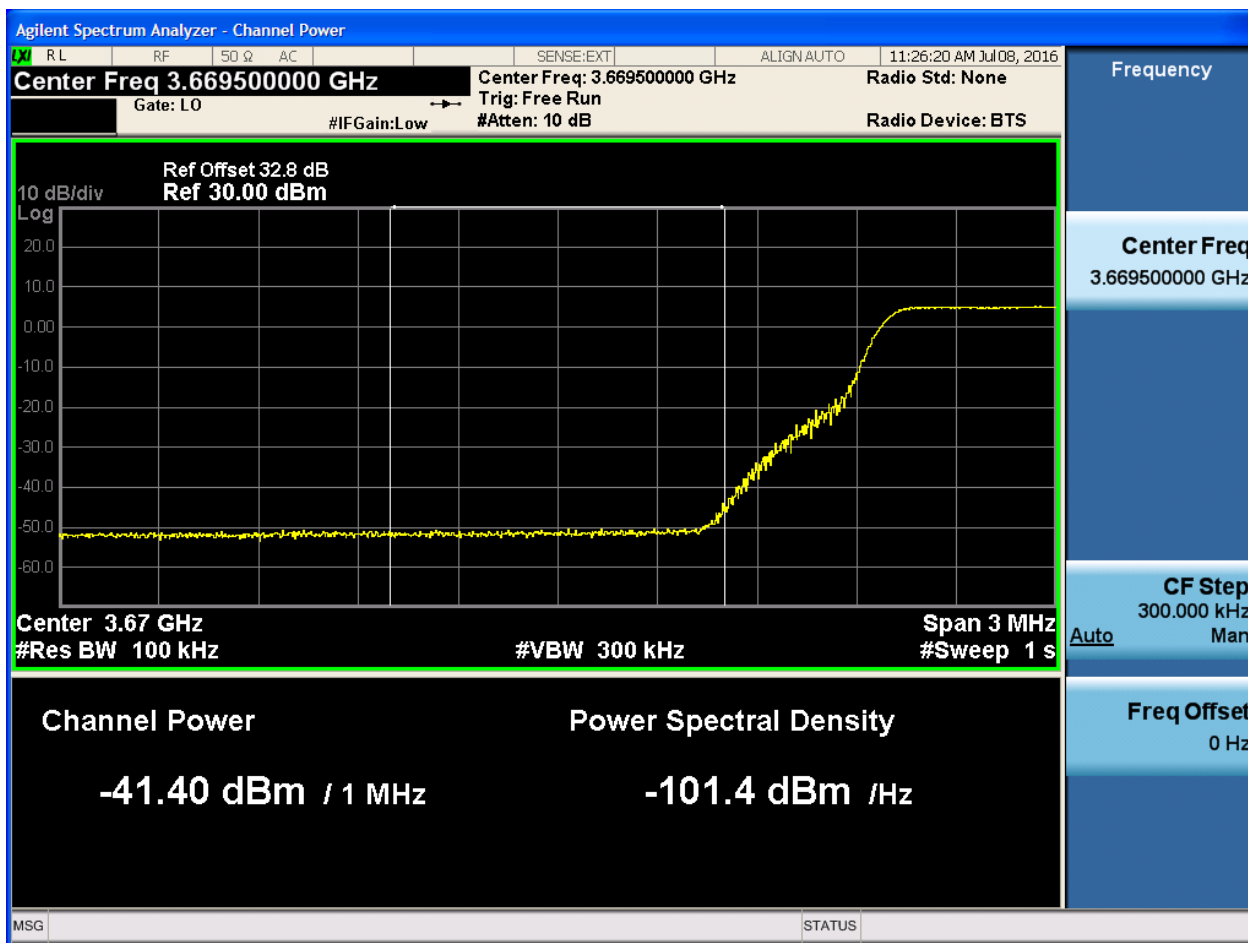
2 Test Plot

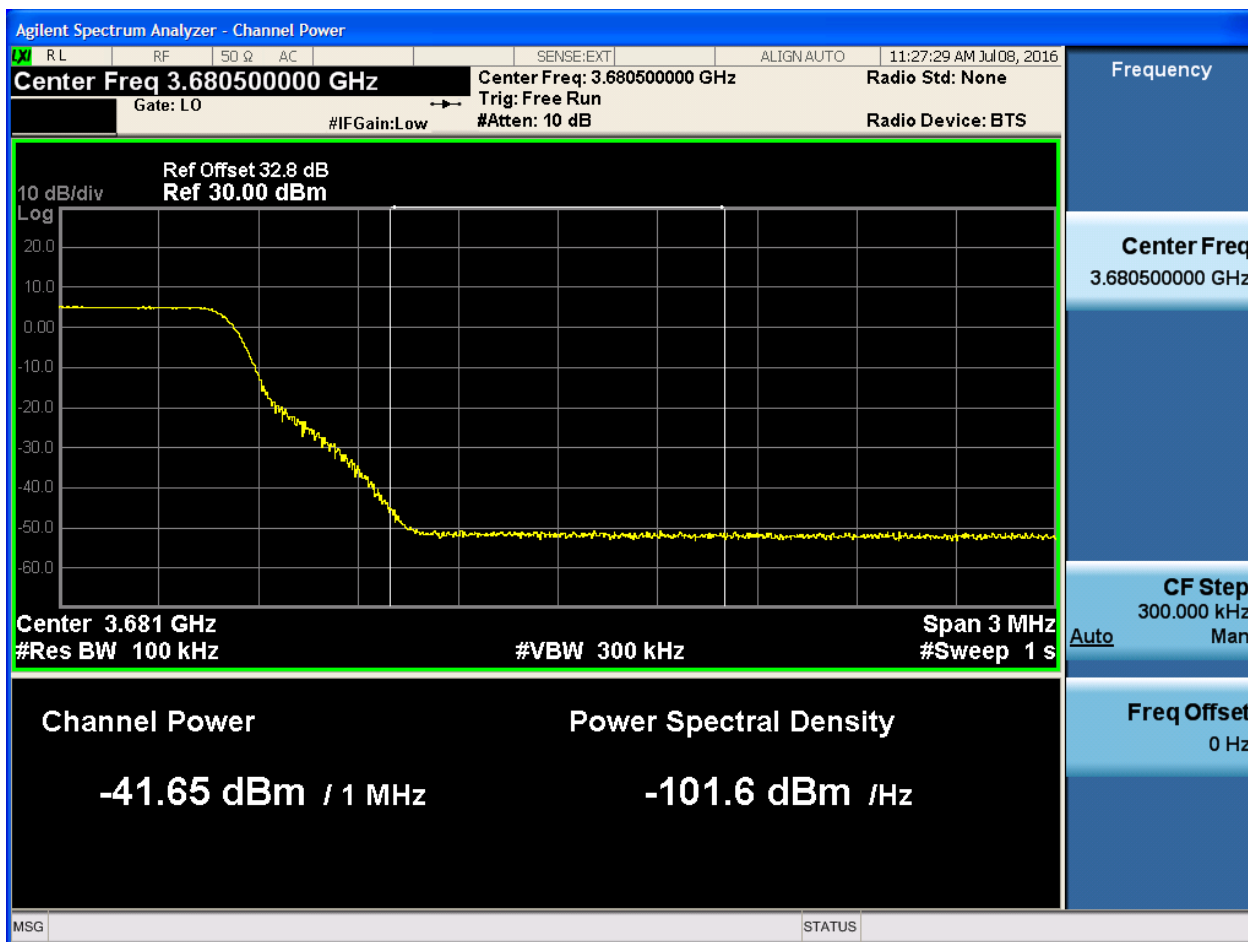
2.1.1 1L_10M_B_TM1



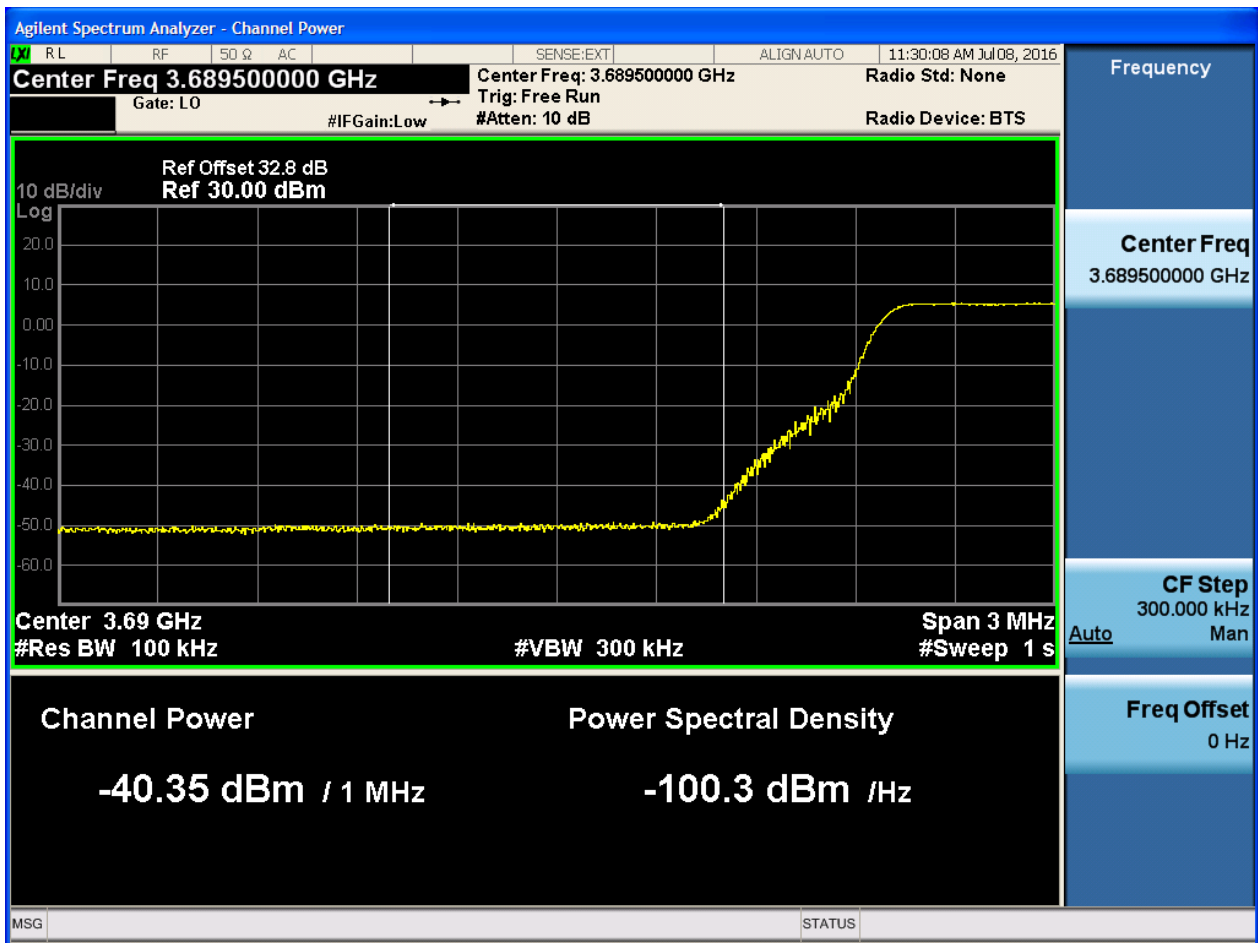


2.1.2 1L_10M_M_TM1



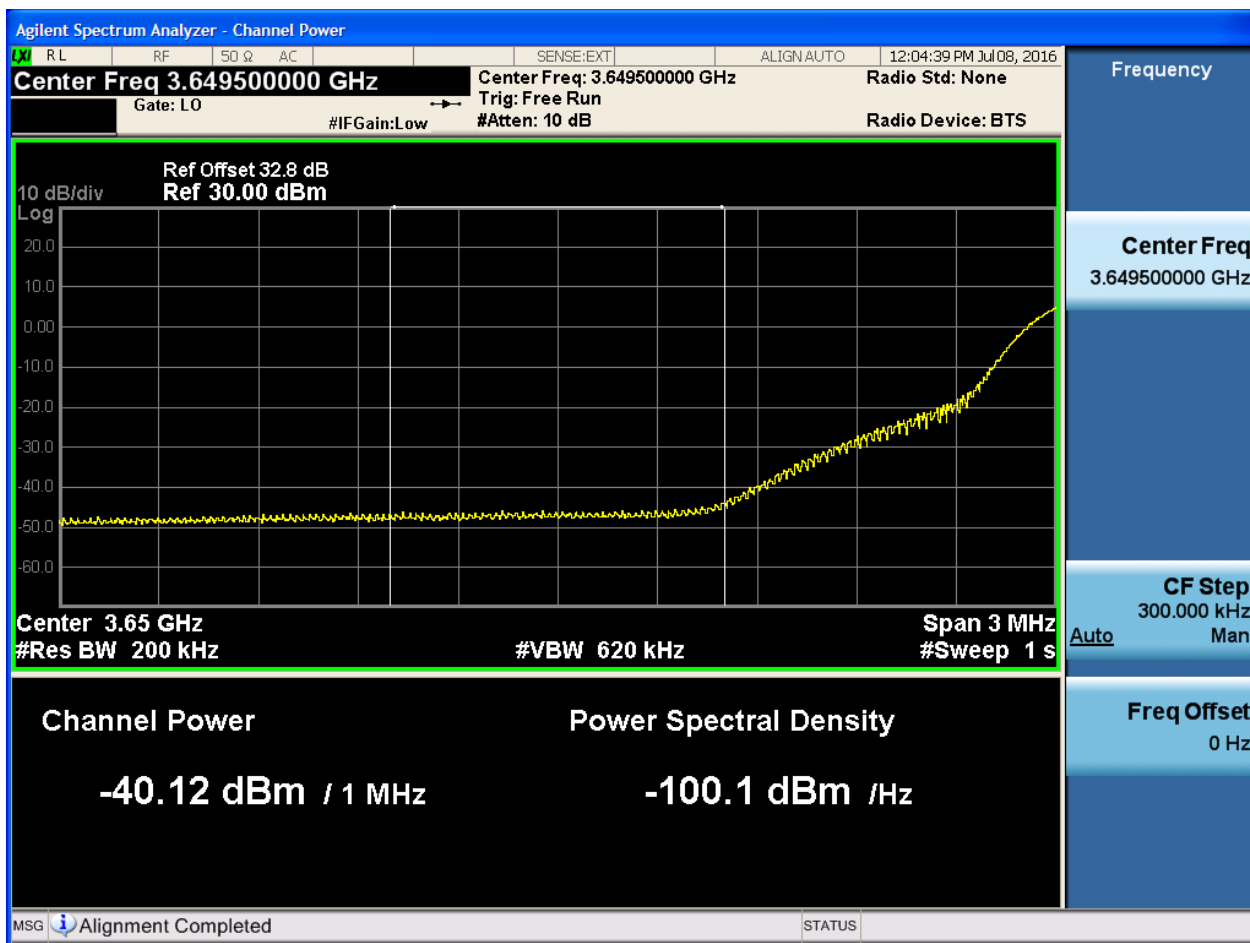


2.1.3 1L_10M_T_TM1



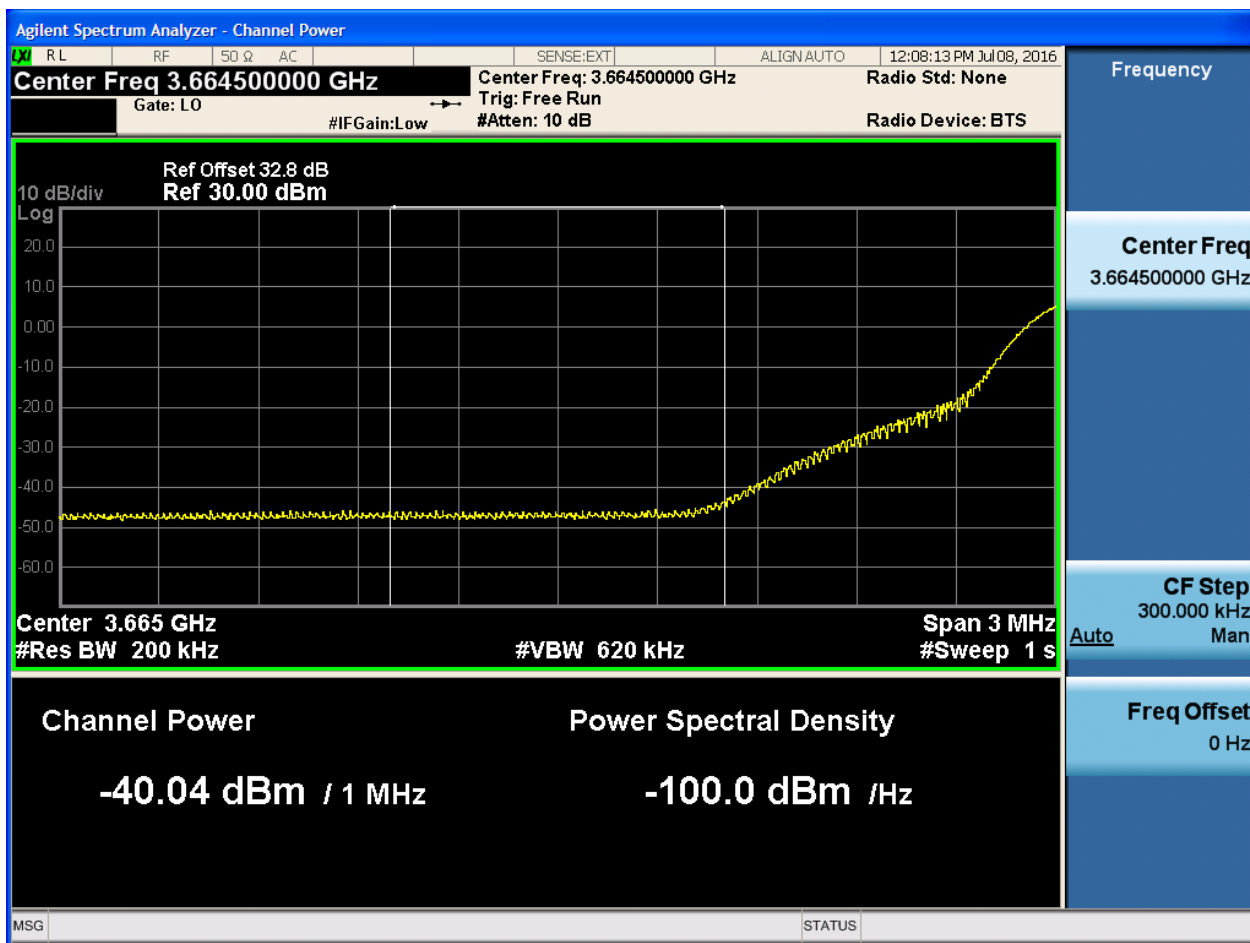


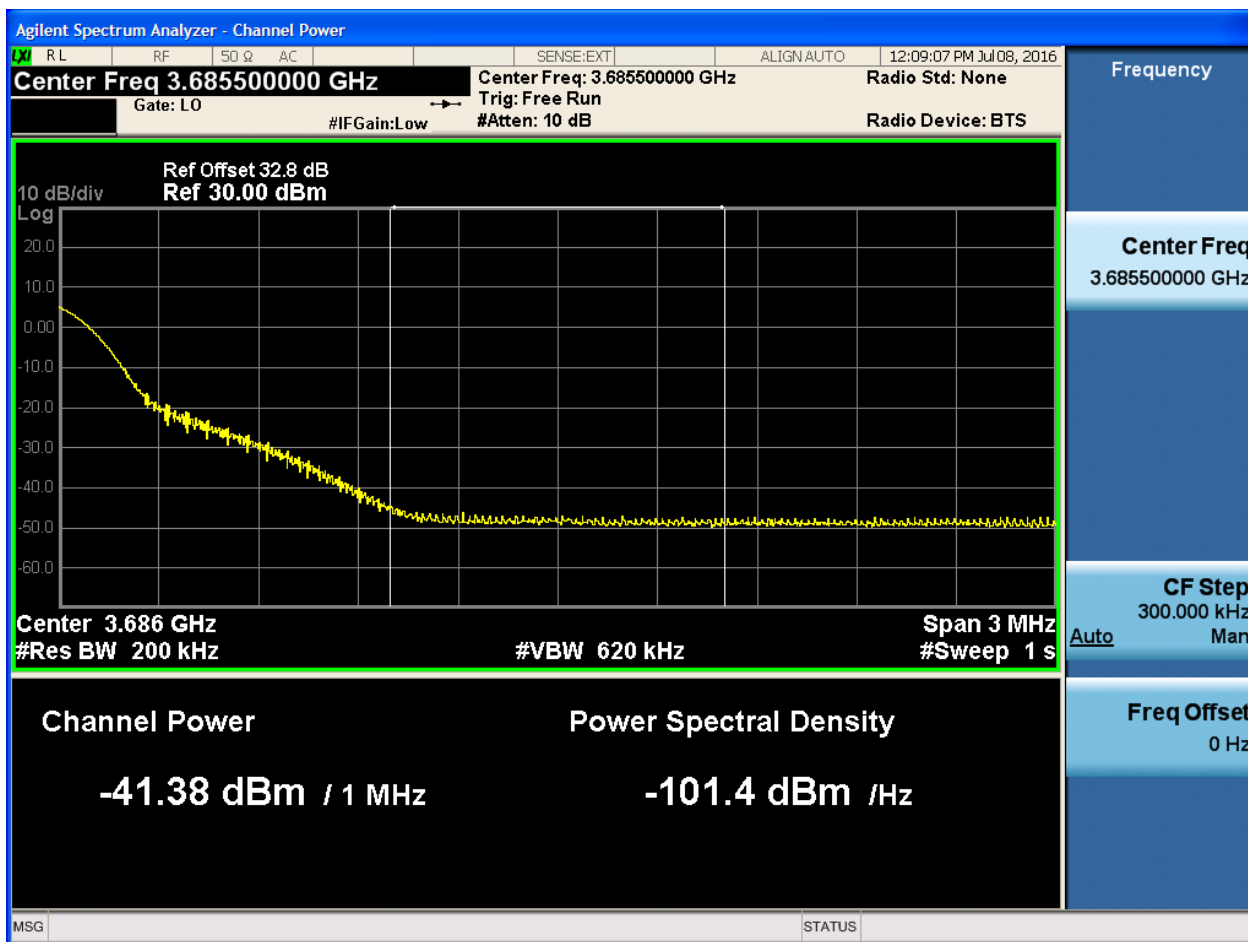
2.1.4 1L_20M_B_TM1





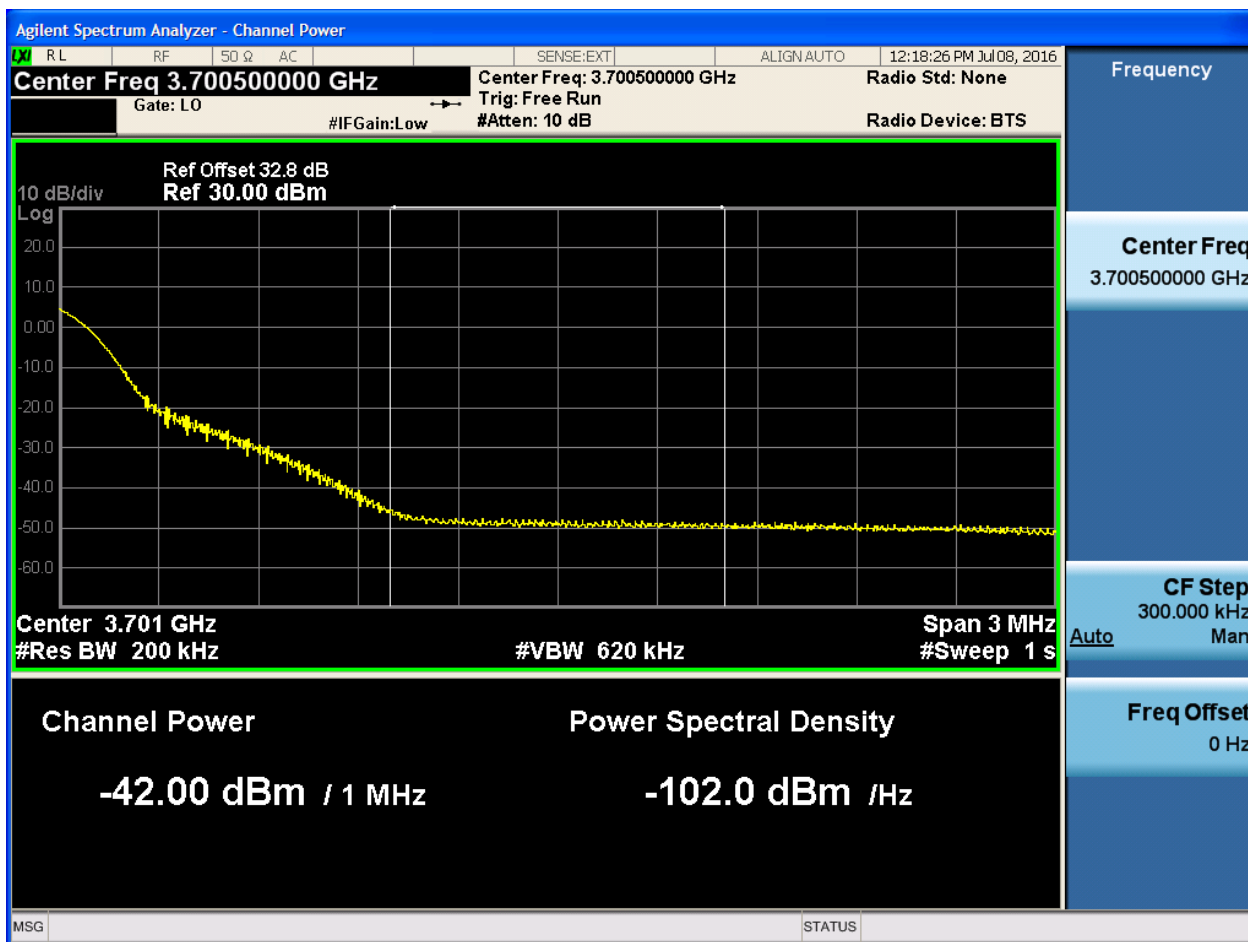
2.1.5 1L_20M_M_TM1





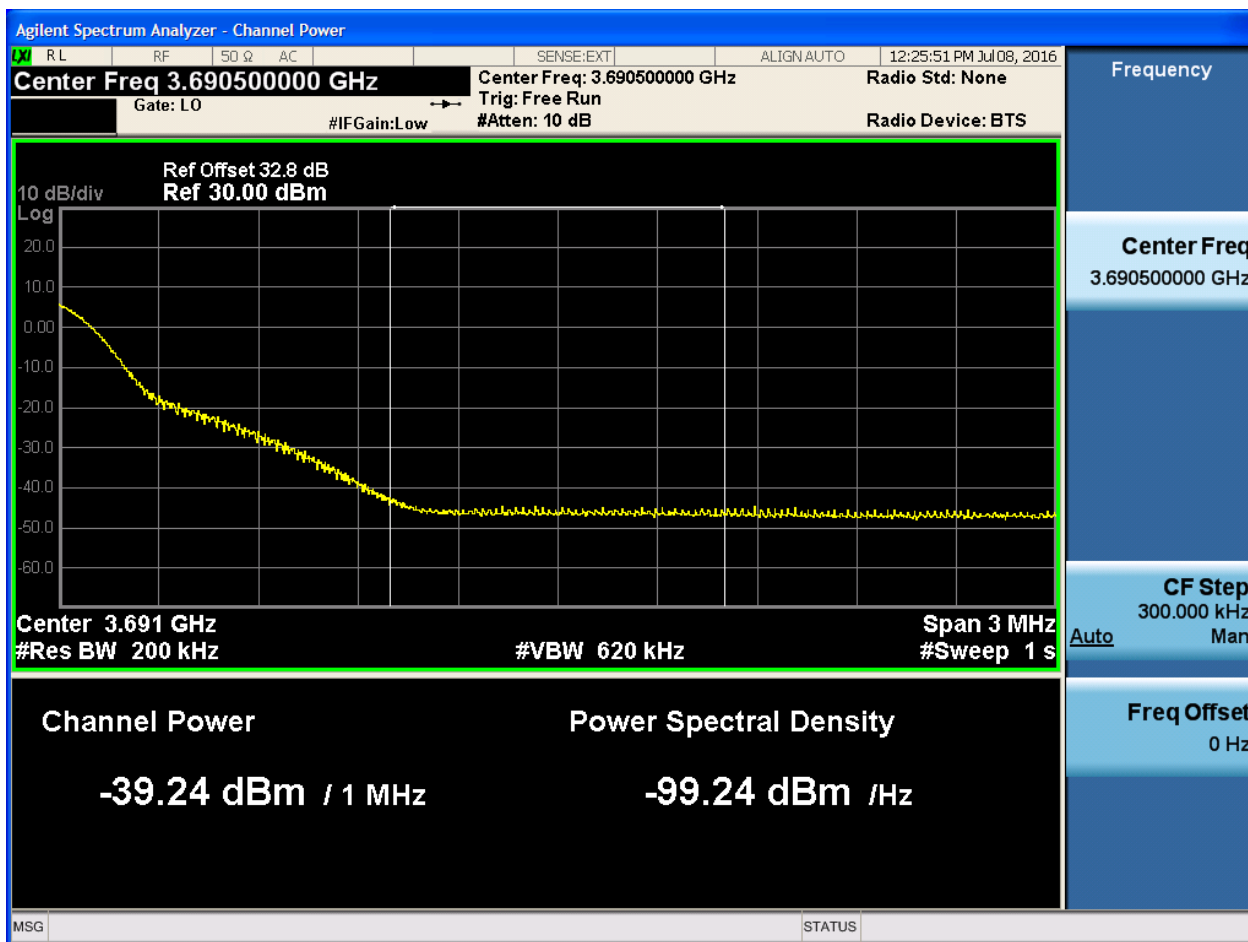
2.1.6 1L_20M_T_TM1





2.1.7 2L_20M_20M_B_TM1



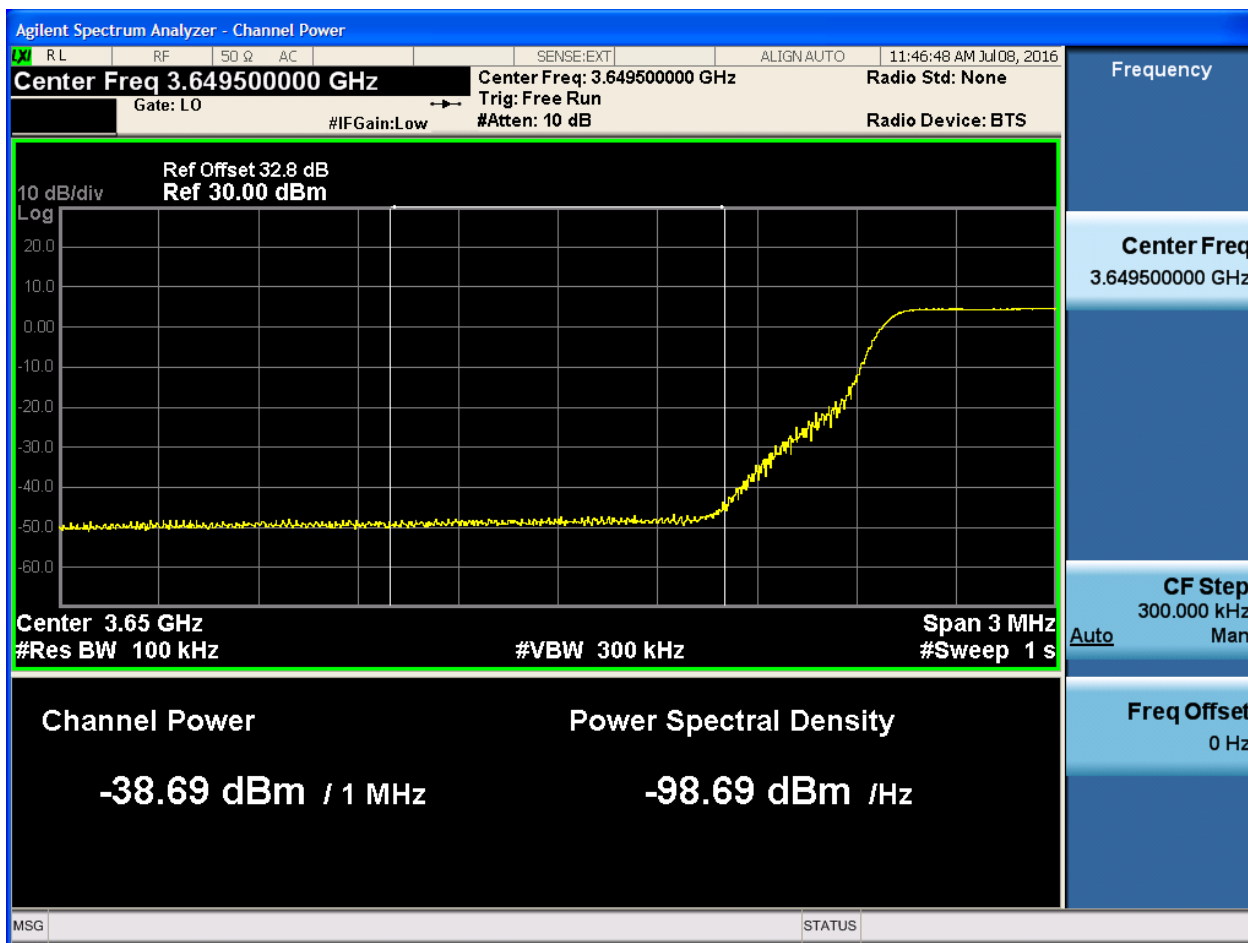


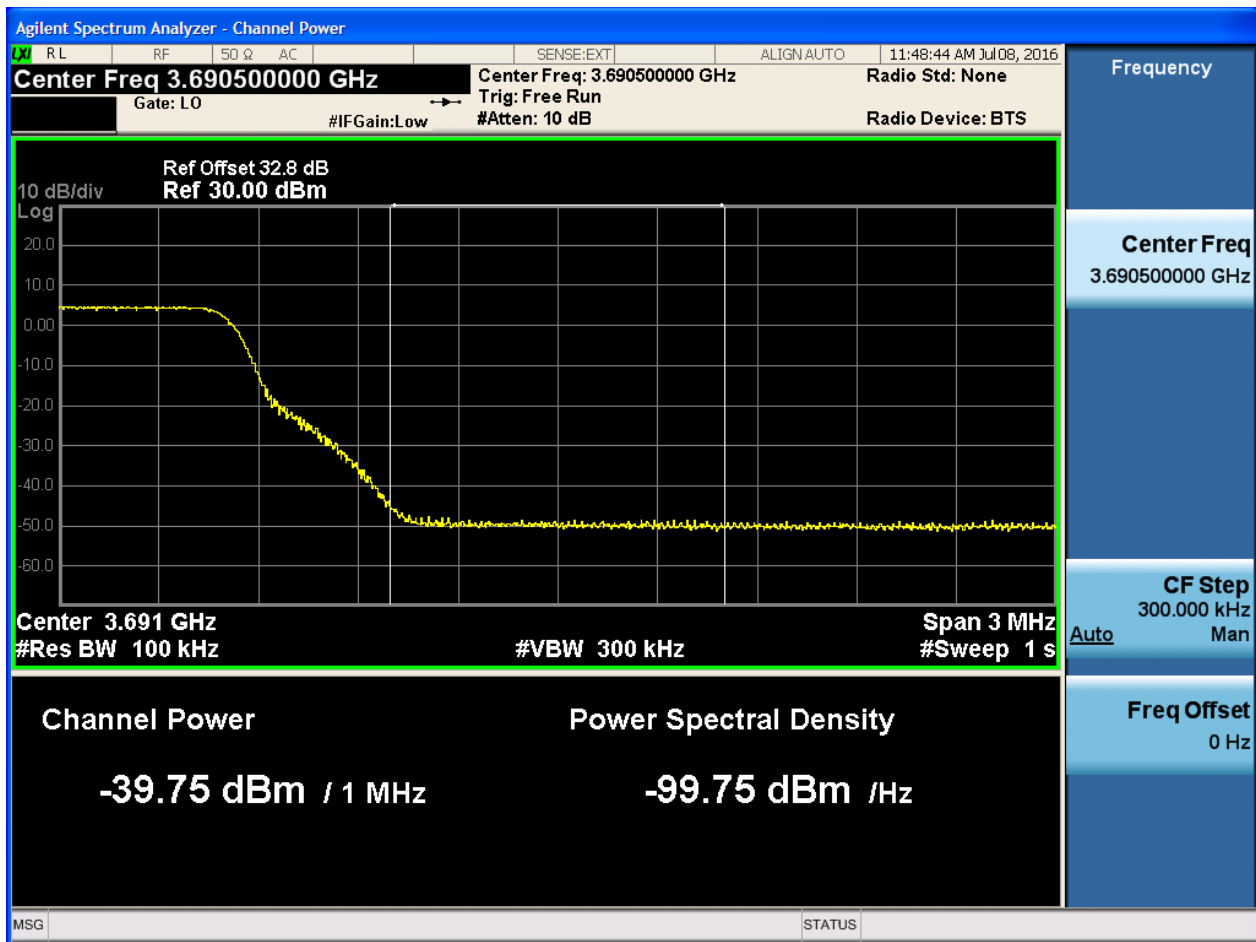
2.1.8 2L_20M_20M_T_TM1



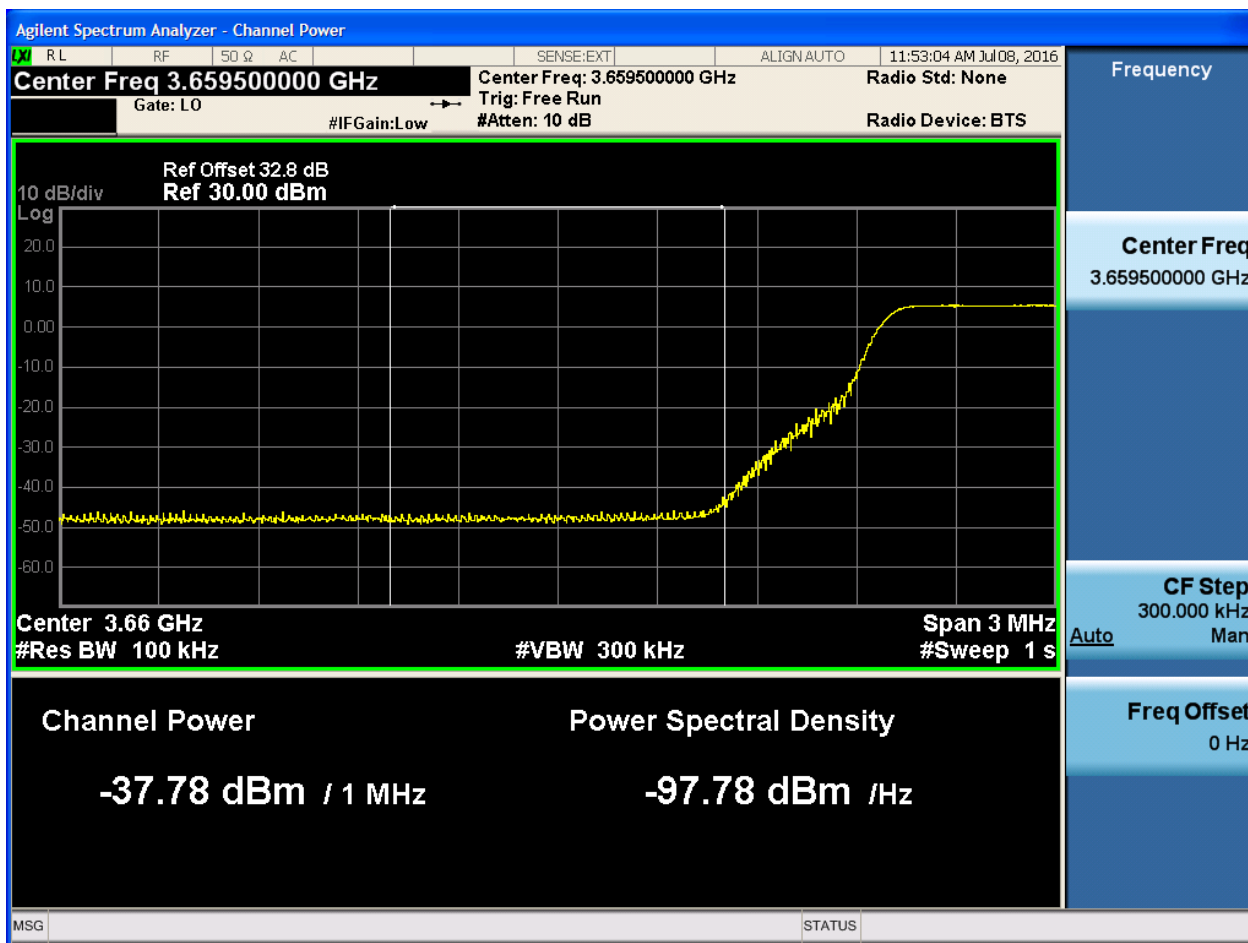


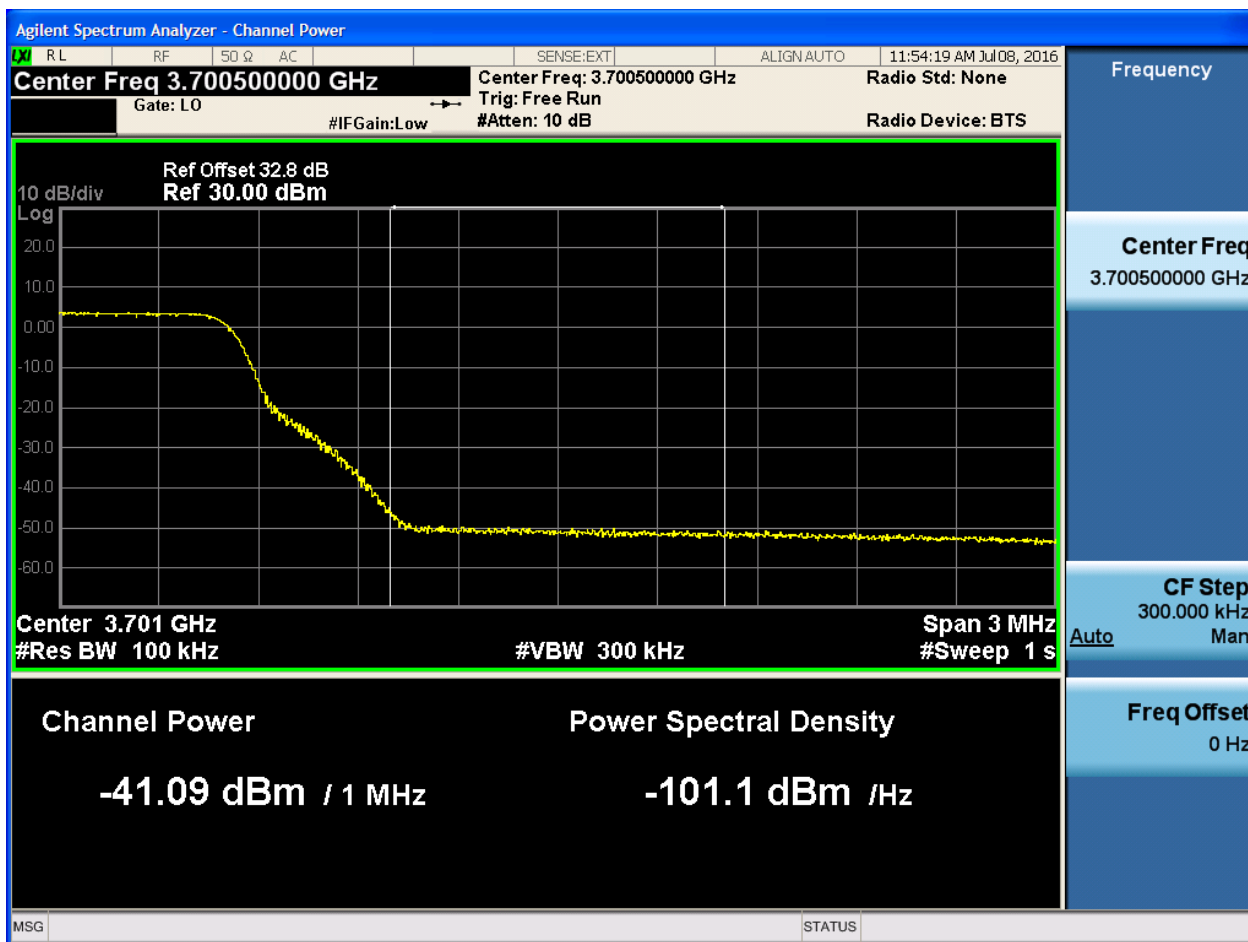
2.1.9 3L_10M_20M_10M_B_TM1





2.1.10 3L_10M_20M_10M_T_TM1





Appendix D: Spurious Emission at Antenna Terminals

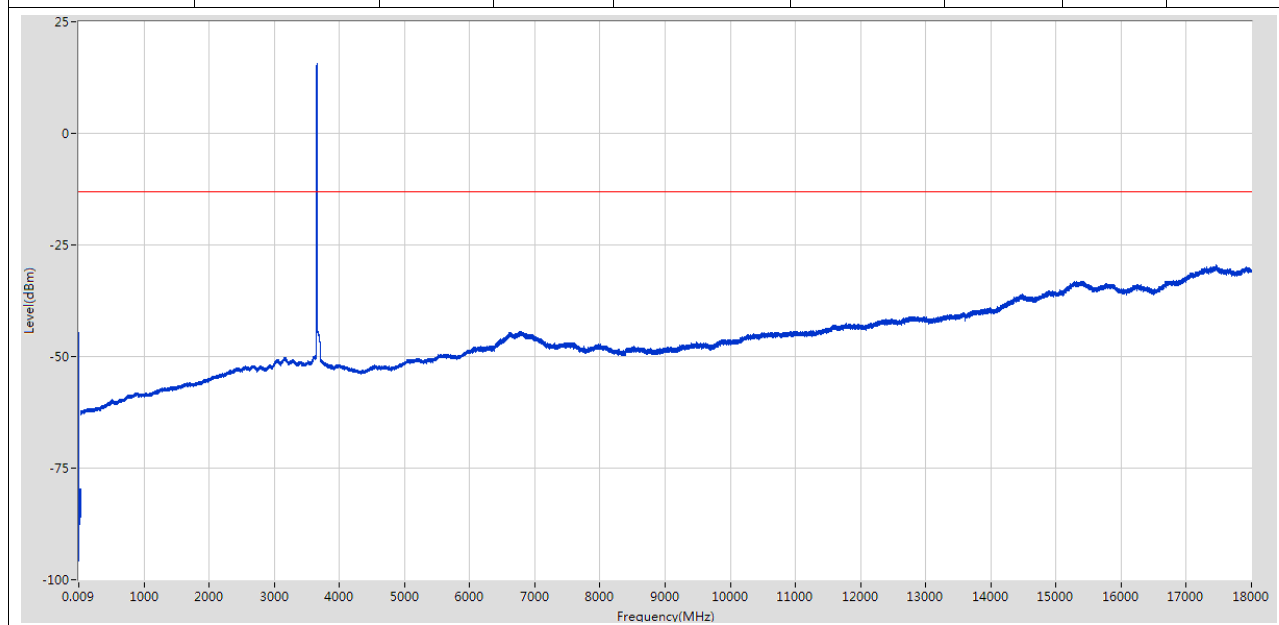
1 Result Table

EUT Conf.	Result	Verdict
1L_10M_B_TM1	No spurious emission found	Pass
1L_10M_T_TM1	No spurious emission found	Pass
1L_20M_B_TM1	No spurious emission found	Pass
1L_20M_T_TM1	No spurious emission found	Pass
2L_10M_10M_B_TM1	No spurious emission found	Pass
2L_10M_10M_T_TM1	No spurious emission found	Pass
3L_10M_20M_10M_B_TM1	No spurious emission found	Pass
3L_10M_20M_10M_B_TM1	No spurious emission found	Pass

2 Test Plot

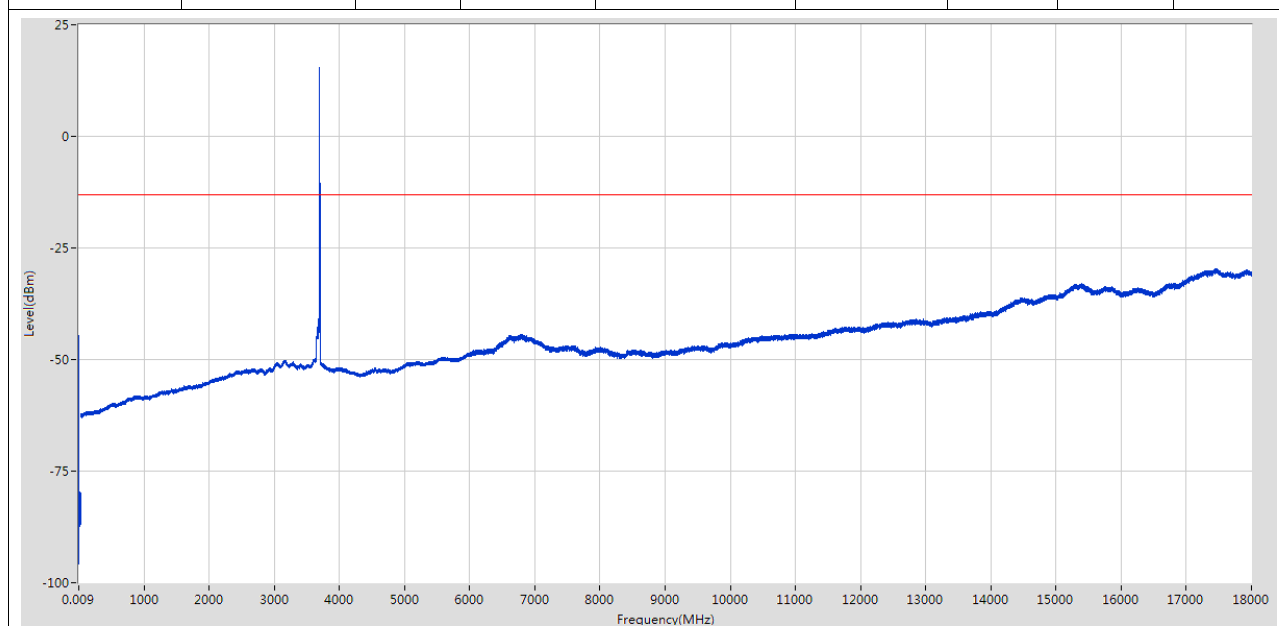
2.1.1 1L_10M_B_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	79.077 k	-65.93	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.68	-13	Pass	14925
30	6000	1	RMS	3657.721532 M	15.6	-13	Not Applicable	29850
6000	18000	1	RMS	17457.372867 M	-29.49	-13	Pass	60000



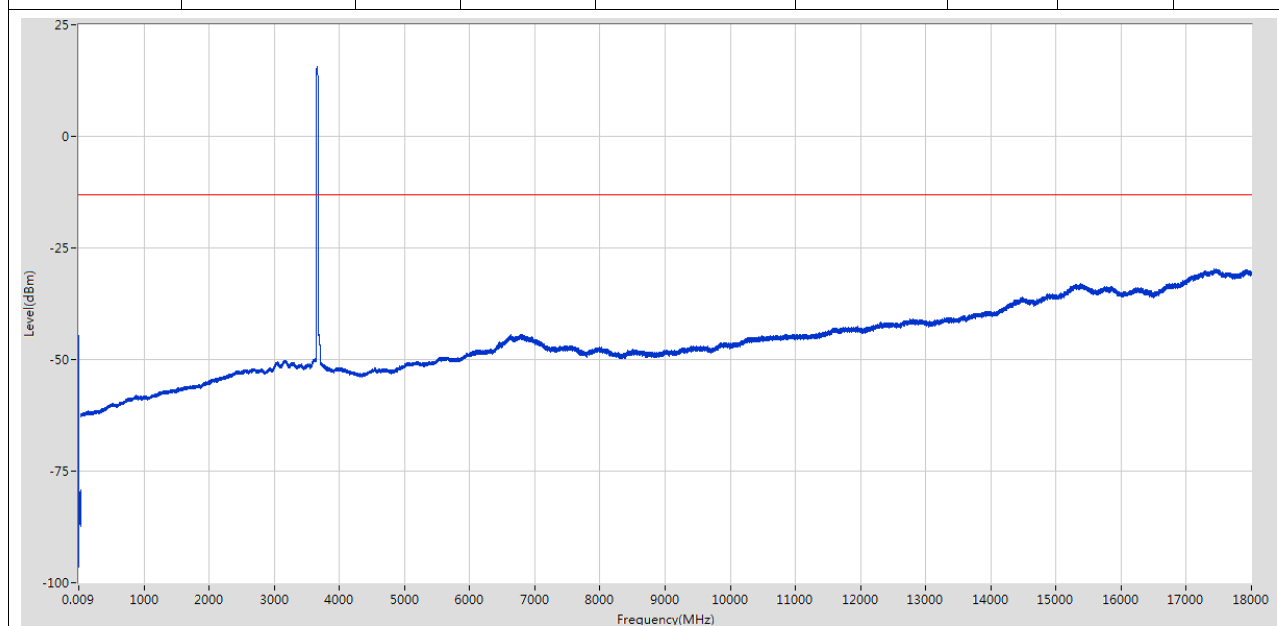
2.1.2 1L_10M_T_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	78.936 k	-66.22	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.61	-13	Pass	14925
30	6000	1	RMS	3691.722671 M	15.45	-13	Not Applicable	29850
6000	18000	1	RMS	17476.173807 M	-29.56	-13	Pass	60000



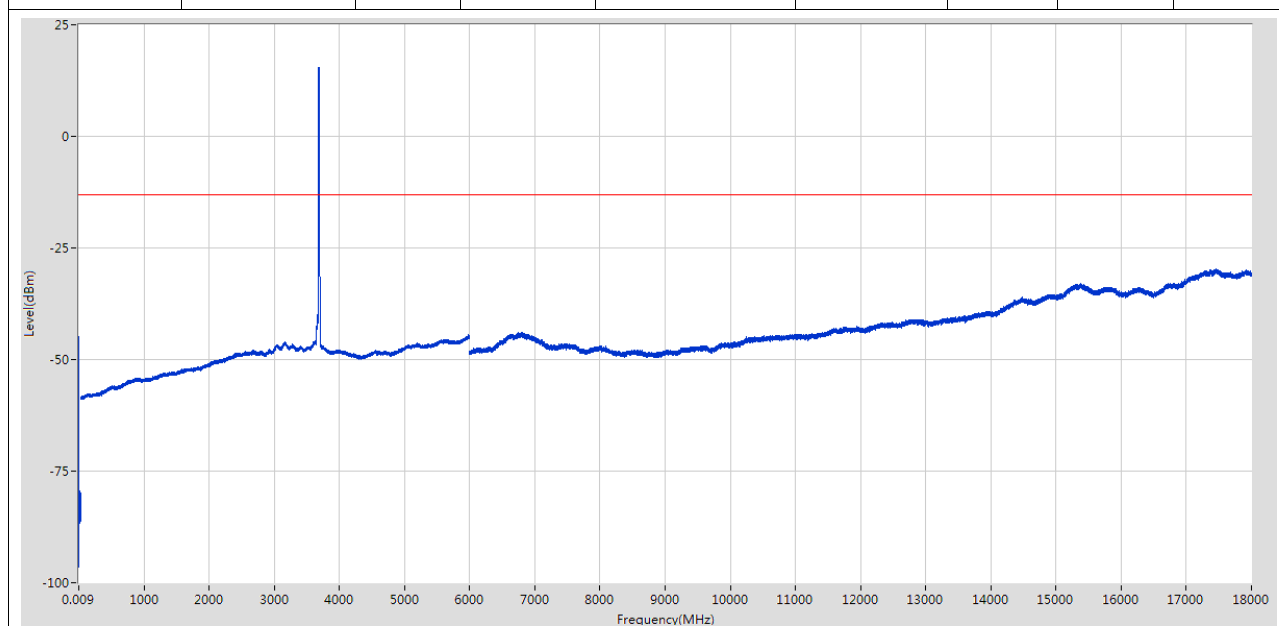
2.1.3 1L_20M_B_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	79.077 k	-66.19	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.54	-13	Pass	14925
30	6000	1	RMS	3663.321719 M	15.54	-13	Not Applicable	29850
6000	18000	1	RMS	17462.173107 M	-29.58	-13	Pass	60000



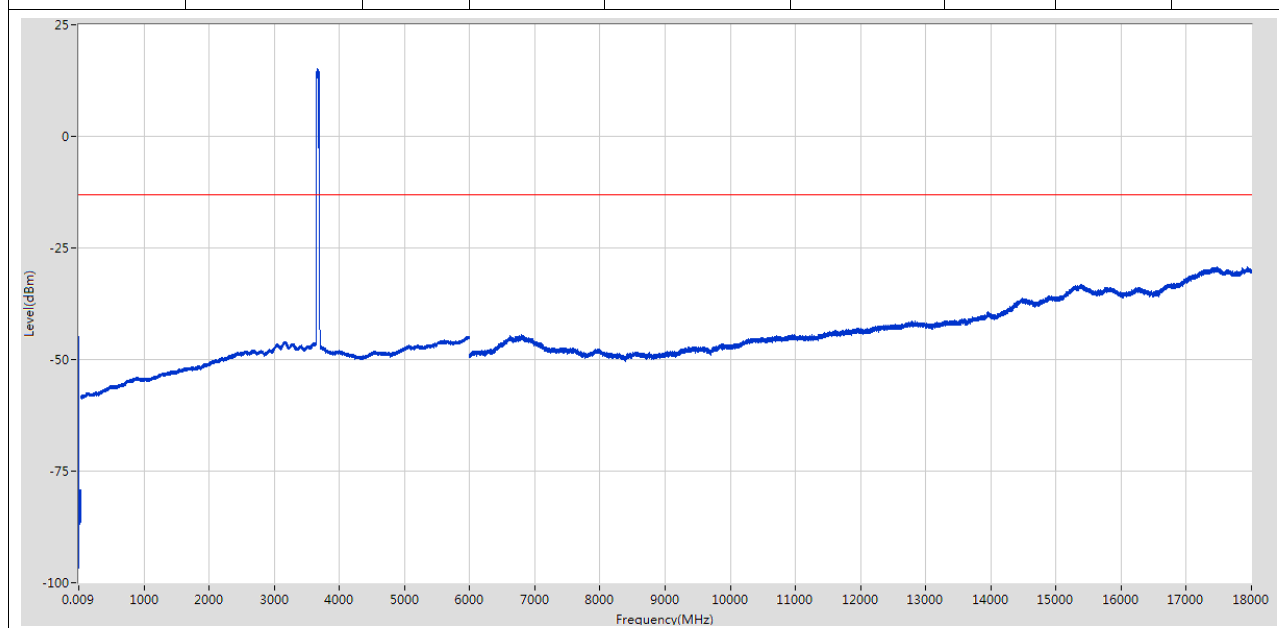
2.1.4 1L_20M_T_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	79.077 k	-66.23	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.74	-13	Pass	14925
30	6000	1	RMS	3684.922443 M	15.36	-13	Not Applicable	29850
6000	18000	1	RMS	17456.172807 M	-29.69	-13	Pass	60000



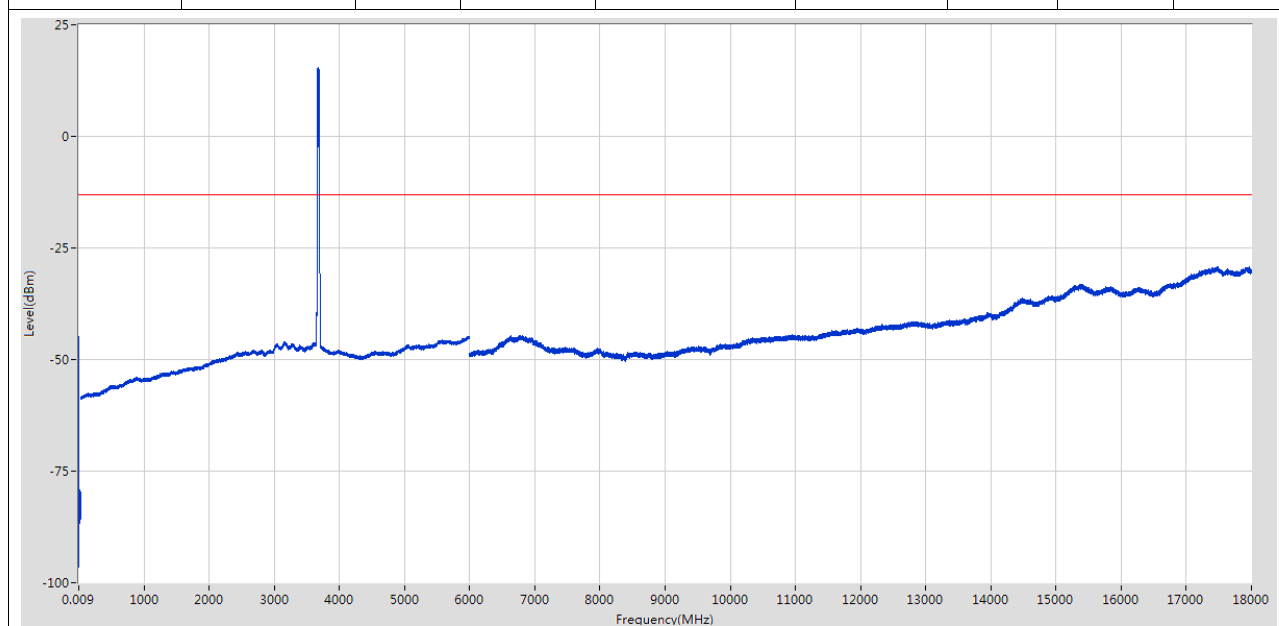
2.1.5 2L_20M_20M_B_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	78.936 k	-66.31	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.89	-13	Pass	14925
30	6000	1	RMS	3665.321786 M	15.1	-13	Not Applicable	29850
6000	18000	1	RMS	17933.19666 M	-29.26	-13	Pass	60000



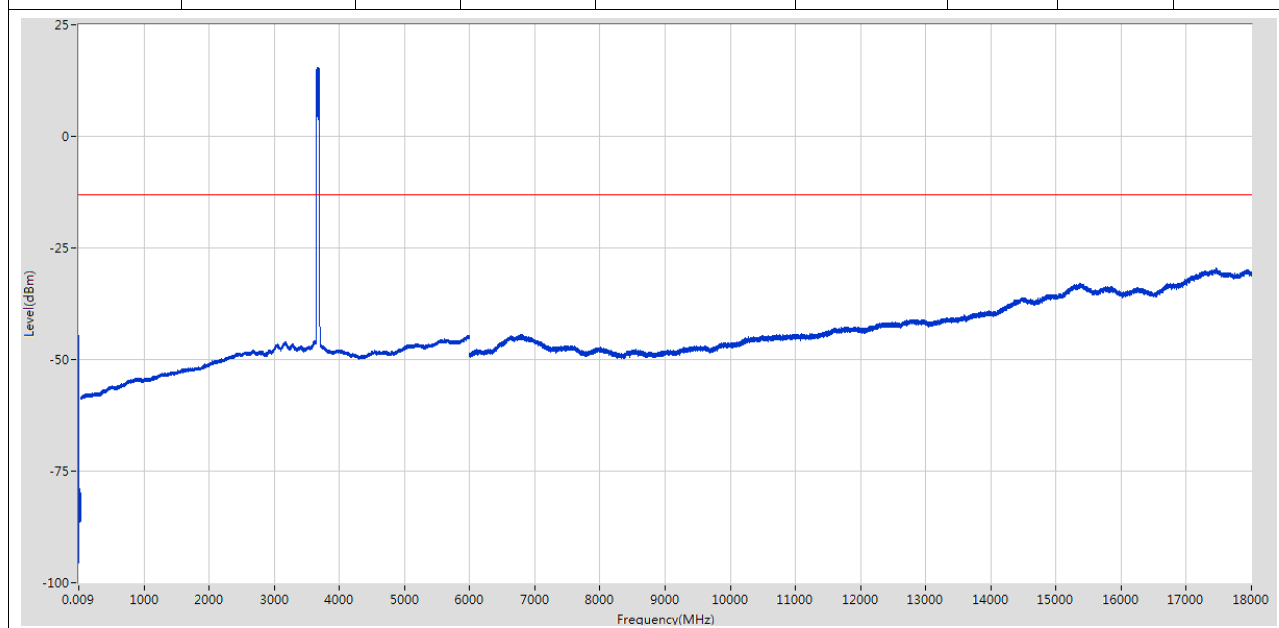
2.1.6 2L_20M_20M_T_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	78.936 k	-66.47	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.85	-13	Pass	14925
30	6000	1	RMS	3672.322021 M	15.3	-13	Not Applicable	29850
6000	18000	1	RMS	17495.574777 M	-29.24	-13	Pass	60000



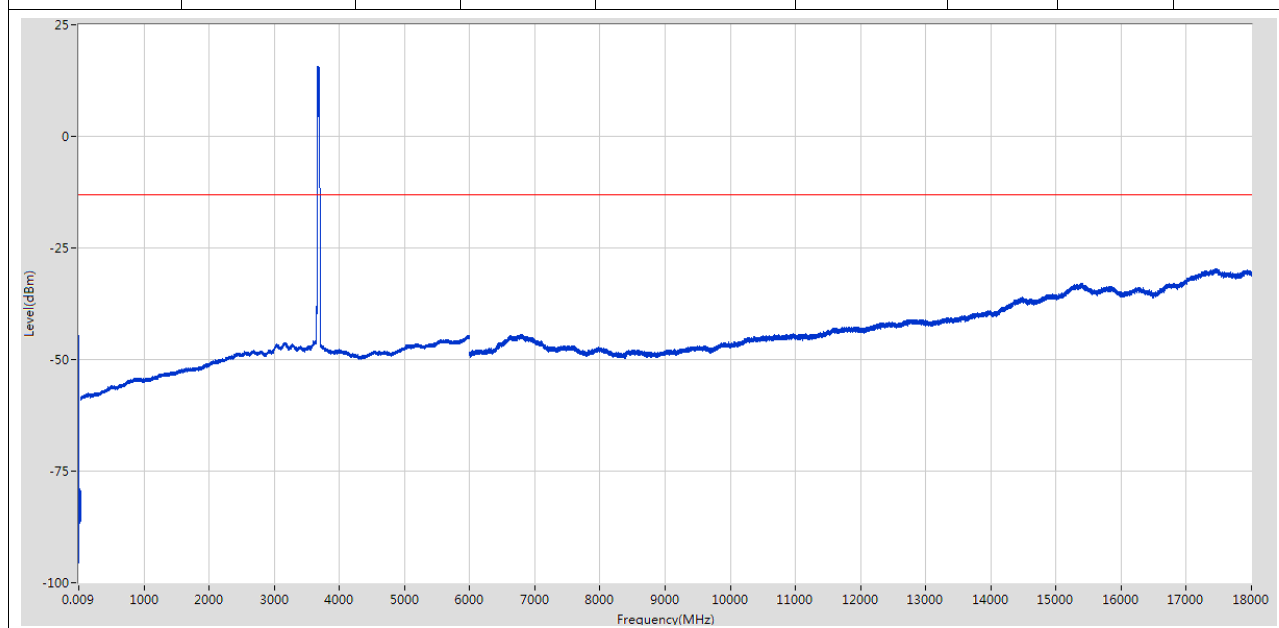
2.1.7 3L_10M_20M_10M_B_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	78.936 k	-66.43	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.59	-13	Pass	14925
30	6000	1	RMS	3676.322155 M	15.49	-13	Not Applicable	29850
6000	18000	1	RMS	17462.173107 M	-29.54	-13	Pass	60000



2.1.8 3L_10M_20M_10M_T_TM1

Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
0.009	0.15	0.001	RMS	78.936 k	-66.24	-13	Pass	1001
0.15	30	0.01	RMS	158.001 k	-44.62	-13	Pass	14925
30	6000	1	RMS	3676.722168 M	15.58	-13	Not Applicable	29850
6000	18000	1	RMS	17458.172907 M	-29.63	-13	Pass	60000



Appendix E: Field Strength of Spurious Radiation / Radiated Spurious Emissions

1 Result Table

NOTE: If applicable, according to FCC KDB 971168 §5.8.3, for the requirement of a fixed limit (e.g. -13 dBm), the power limit can be mathematically converted to an equivalent field strength limit. The relationship is:

(1) $E \text{ [dB}\mu\text{V/m]} = \text{EIRP [dBm]} - 20 \cdot \lg(D) + 104.8$; where D is the measurement distance in meters.

(2) $\text{EIRP [dBm]} = \text{ERP [dBm]} + 2.15$.

Also according to FCC §2.1053(a), emissions are assumed radiated from halfwave dipole antennas, so the power limit refer to the ERP.

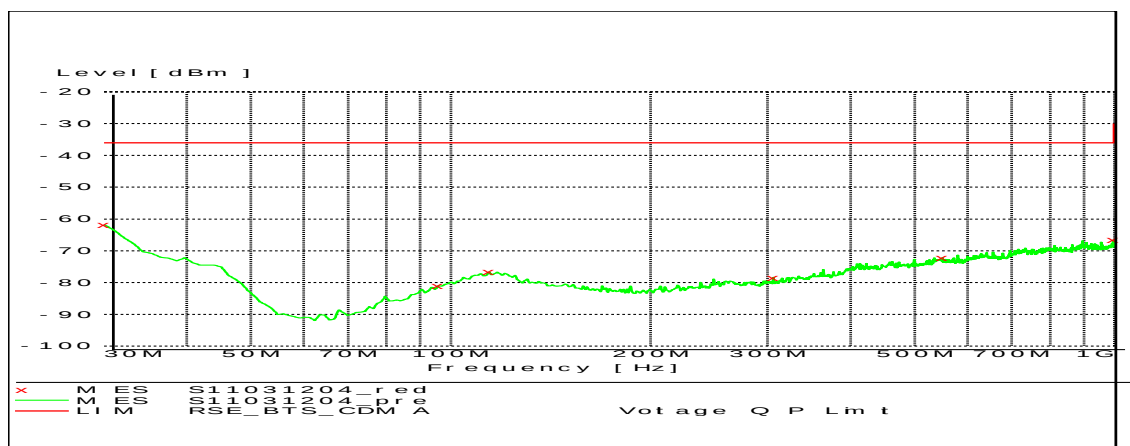
(For example, the fixed power limit -13 dBm can be converted to the field strength limit 84.4 dB μ V/m at 3 m measurement distance, and to 93.95 dB μ V/m at 1 m measurement distance assuming in the far-field region of both the transmit and receive antennas.)

Test Range	EUT Conf.	Maximum Emission	Verdict
30 MHz to 1 GHz	2L_20M_20M_T_TM1	< Limit	Pass
1 GHz to 18 GHz	2L_20M_20M_T_TM1	< Limit	Pass
18 GHz to 26.5 GHz	2L_20M_20M_T_TM1	< Limit	Pass
26.5GHz to 40GHz	2L_20M_20M_T_TM1	< Limit	Pass

2 Test Plot

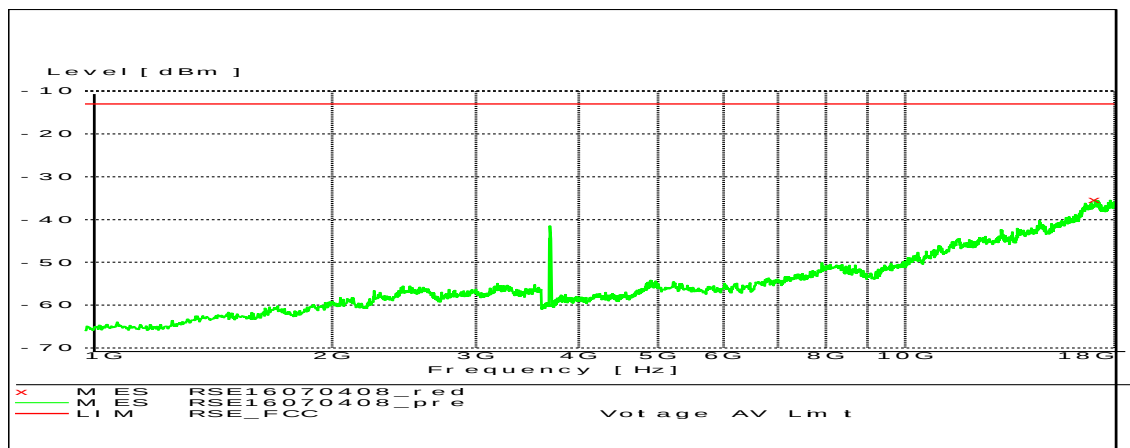
2.1 Test range of “30 MHz to 1 GHz”

2.1.1 2L_20M_20M_T_TM1



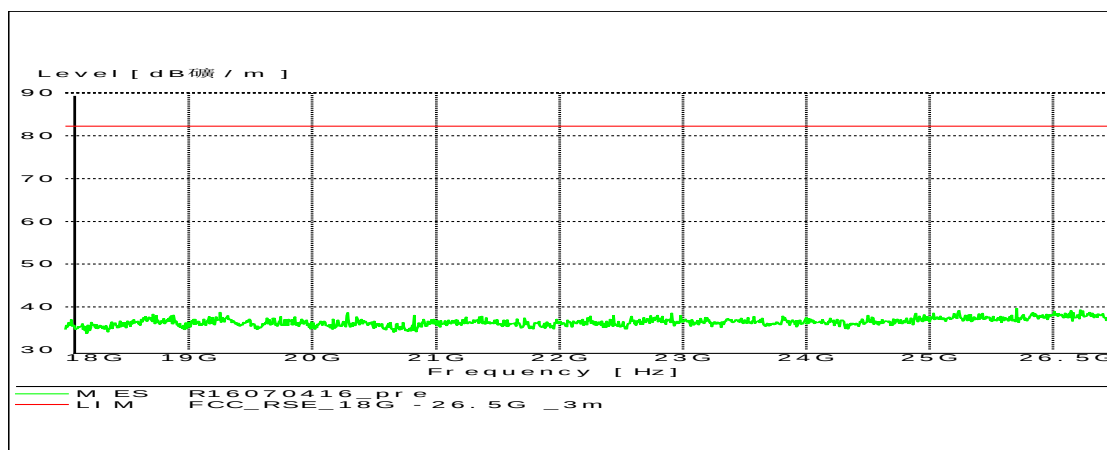
2.2 Test range of “1 GHz to 18 GHz”

2.2.1 2L_20M_20M_T_TM1



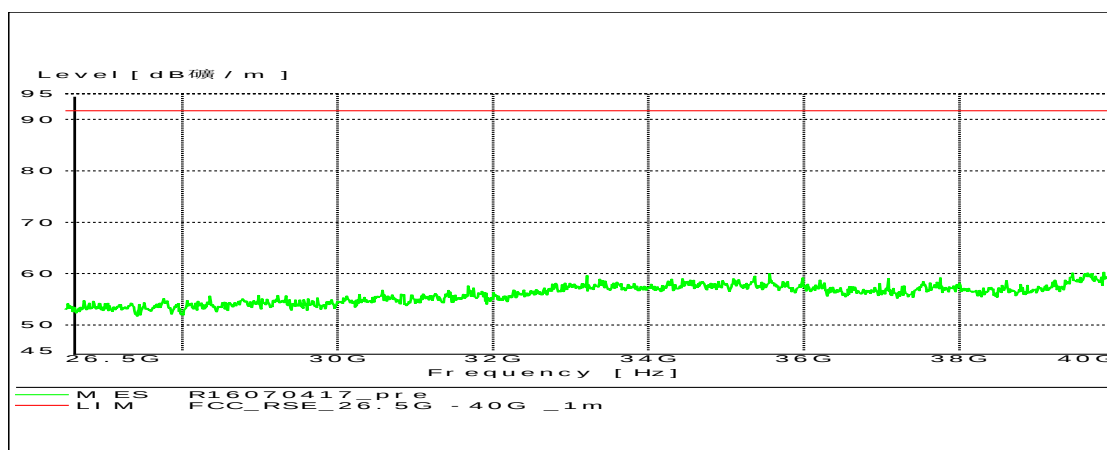
2.3 Test range of “18 GHz to 26.5 GHz”

2.3.1 2L_20M_20M_T_TM1



2.4 Test range of “26.5 GHz to 40 GHz”

2.4.1 2L_20M_20M_T_TM1



(The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.)

Appendix F: Frequency Stability

1 Result Table

1.1 Frequency Error

EUT Conf.	Temperature	Voltage	Freq. Error, f(offset) [Hz]	Freq. vs. rated [ppm]	Verdict
1L_10M_B_TM1	-30 °C	100%	11.133	0.0030	Pass
	-20	100%	-4.1714	-0.0011	Pass
	-10	100%	13.323	0.0036	Pass
	0	100%	10.630	0.0029	Pass
	+10	100%	-7.5525	-0.0021	Pass
	+20 °C	85%	-4.9457	-0.0014	Pass
	+20 °C	100%	-7.3703	-0.0020	Pass
	+20 °C	115%	-10.827	-0.0030	Pass
	+30	100%	18.126	0.0050	Pass
	+40	100%	-10.634	-0.0029	Pass
	+50 °C	100%	8.956	0.0025	Pass
1L_10M_T_TM1	-30 °C	100%	-1.2060	-0.0003	Pass
	-20	100%	2.5288	0.0007	Pass
	-10	100%	6.0008	0.0016	Pass
	0	100%	10.294	0.0028	Pass
	+10	100%	-1.2644	-0.0003	Pass
	+20 °C	85%	-5.3460	-0.0014	Pass
	+20 °C	100%	9.4247	0.0026	Pass
	+20 °C	115%	-4.5081	-0.0012	Pass
	+30	100%	-9.0647	-0.0025	Pass
	+40	100%	-6.7780	-0.0018	Pass
	+50 °C	100%	-7.0849	-0.0019	Pass
1L_20M_B_TM1	-30 °C	100%	4.9225	0.0013	Pass
	-20	100%	4.8349	0.0013	Pass
	-10	100%	2.9872	0.0008	Pass
	0	100%	-6.0763	-0.0017	Pass
	+10	100%	-5.9383	-0.0016	Pass
	+20 °C	85%	5.2341	0.0014	Pass
	+20 °C	100%	-8.9116	-0.0024	Pass
	+20 °C	115%	-9.6849	-0.0026	Pass
	+30	100%	-3.2485	-0.0009	Pass
	+40	100%	-0.711	-0.0002	Pass
	+50 °C	100%	-9.2642	-0.0025	Pass
1L_20M_T_TM1	-30 °C	100%	-5.3734	-0.0015	Pass
	-20	100%	-5.3464	-0.0014	Pass
	-10	100%	9.2269	0.0025	Pass

EUT Conf.	Temperature	Voltage	Freq. Error, f(offset) [Hz]	Freq. vs. rated [ppm]	Verdict
	0	100%	9.2570	0.0025	Pass
	+10	100%	11.899	0.0032	Pass
	+20 °C	85%	8.7740	0.0024	Pass
	+20 °C	100%	5.4684	0.0015	Pass
	+20 °C	115%	5.7123	0.0015	Pass
	+30	100%	-6.5741	-0.0018	Pass
	+40	100%	11.486	0.0031	Pass
	+50 °C	100%	5.4506	0.0015	Pass

1.2 Frequency Range

2 Test Plot

NOTE: Only the test plots for the measurements of Frequency Range are supplied.

Appendix G: Receiver Spurious Emissions



(Not applicable)

END