



Appendix A: Transmitter Output Power

1 Result Table

1.1 Channel Power, Total

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

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 [dB]	EIRP [dBm]	EIRP [W]	Limit [W]	Verdict
1L_20M_B	26.62	10	6	1.1	41.52	14.19	≤ 20	Pass
1L_20M_M	26.85	10	6	1.1	41.75	14.96	≤ 20	Pass
1L_20M_T	26.99	10	6	1.1	41.88	15.45	≤ 20	Pass
2L_20M_10M_B	28.25	10	6	1.1	43.15	20.65	≤ 30	Pass
2L_20M_10M_M	28.35	10	6	1.1	43.25	21.13	≤ 30	Pass
2L_20M_10M_T	28.29	10	6	1.1	43.19	20.84	≤ 30	Pass
2L_20M_20M_B	29.53	10	6	1.1	44.43	27.73	≤ 40	Pass
2L_20M_20M_T	29.47	10	6	1.1	44.37	27.35	≤ 40	Pass
3L_20M_20M_10M	30.7	10	6	1.1	45.6	36.31	≤ 50	Pass

1.2 Power Spectral Density

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

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 [dB]	EIRP [W]	Limit [W/MHz]	Verdict
1L_20M_B	14.75	10	6	1.1	0.92	≤ 1	Pass
1L_20M_M	14.49	10	6	1.1	0.87	≤ 1	Pass
1L_20M_T	15.04	10	6	1.1	0.98	≤ 1	Pass
2L_20M_10M_B	14.54	10	6	1.1	0.88	≤ 1	Pass
2L_20M_10M_M	14.31	10	6	1.1	0.83	≤ 1	Pass
2L_20M_10M_T	14.67	10	6	1.1	0.90	≤ 1	Pass



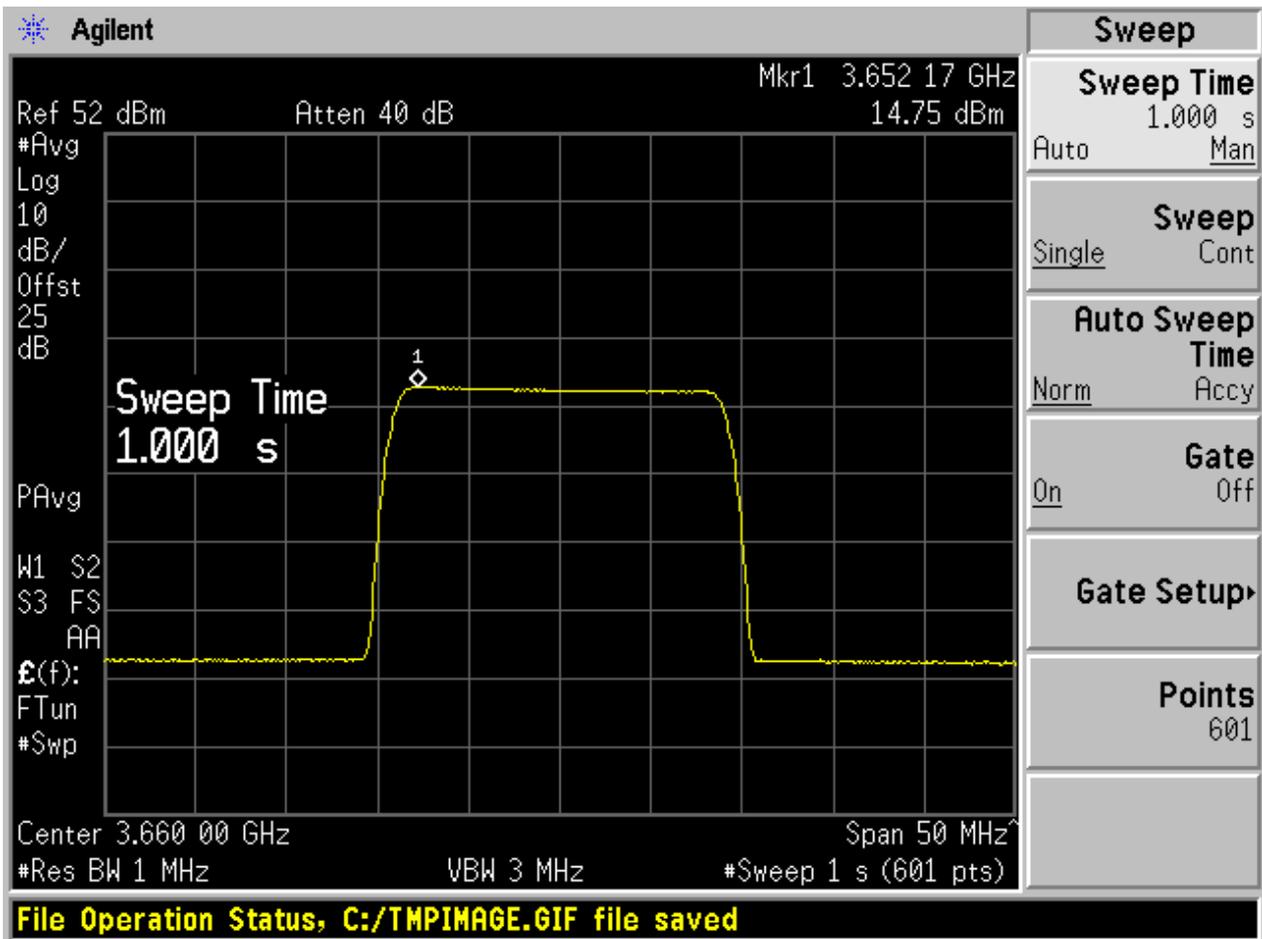
EUT Conf.	Power Spectral Density [dBm/MHz]	Antenna Gain [dBi]	Combine Gain [dB]	Cable Loss [dB]	EIRP [W]	Limit [W/MHz]	Verdict
2L_20M_20M_B	14.71	10	6	1.1	0.91	≤ 1	Pass
2L_20M_20M_T	14.38	10	6	1.1	0.85	≤ 1	Pass
3L_20M_20M_10M	14.41	10	6	1.1	0.85	≤ 1	Pass

2 Test Plot

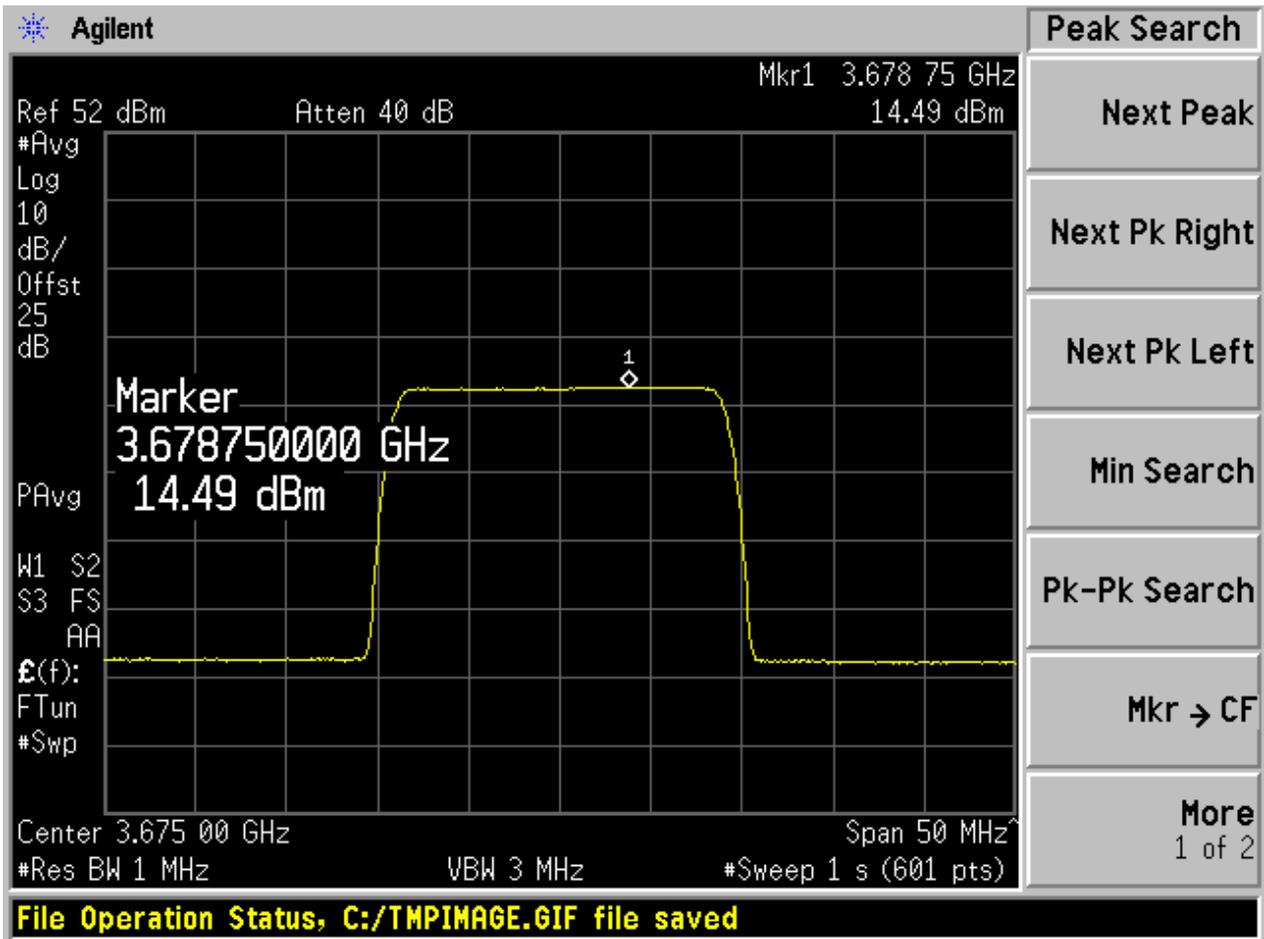
NOTE: Only the test plots for the measurements of Spectral Density and Peak-to-Average Ratio are supplied.

2.1 Power Spectral Density

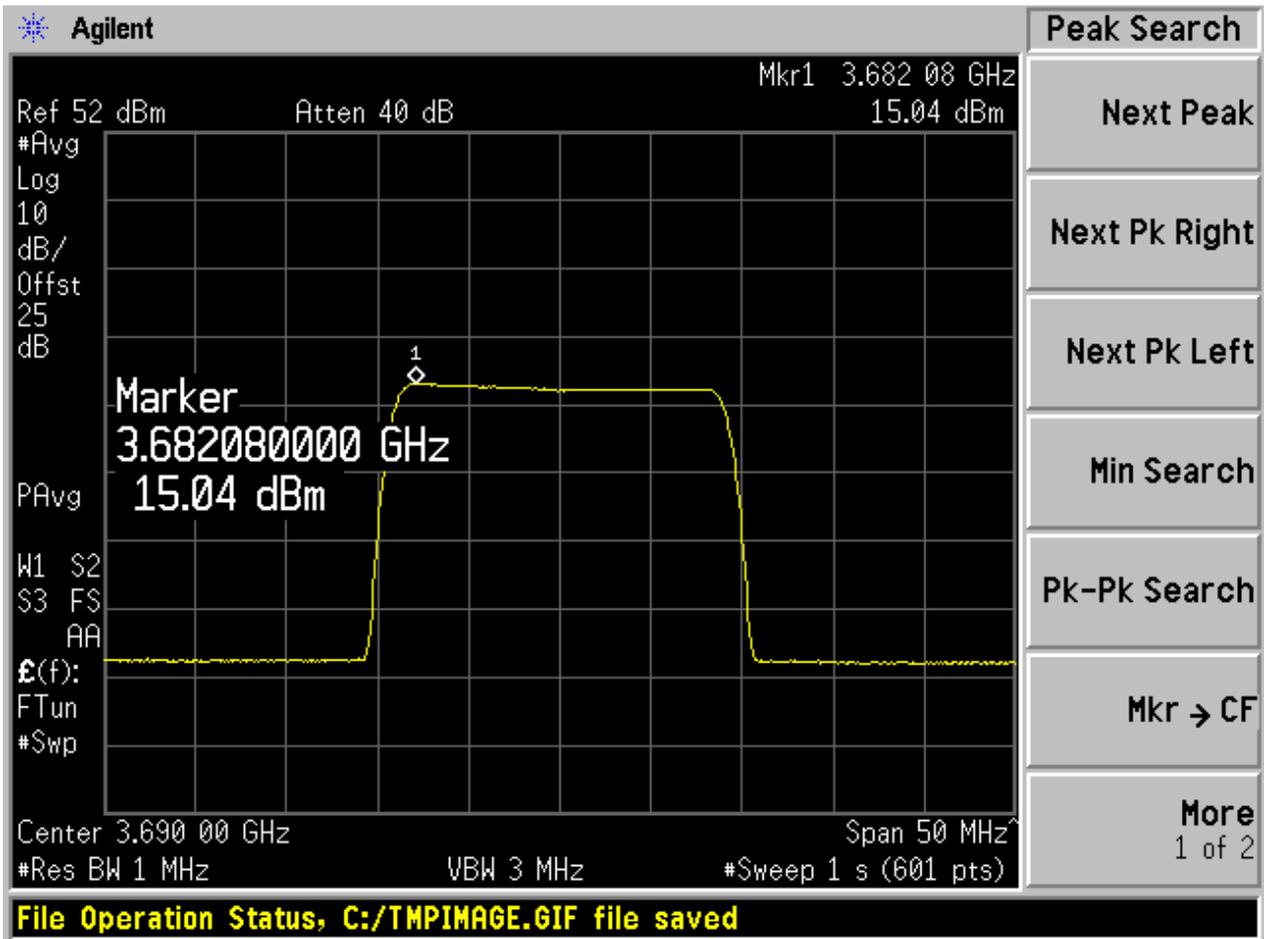
2.1.1 1L_20M_B



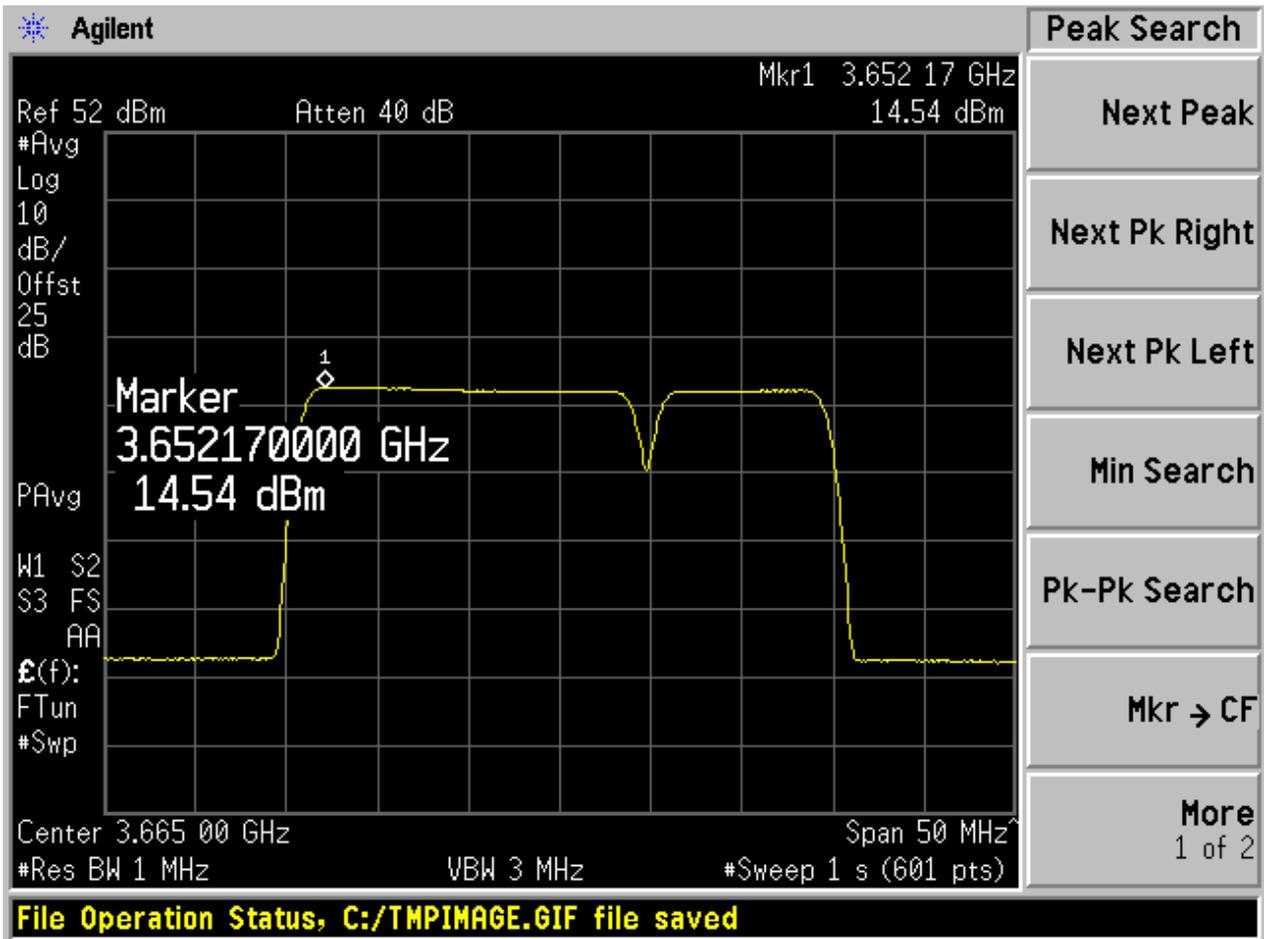
2.1.2 1L_20M_M



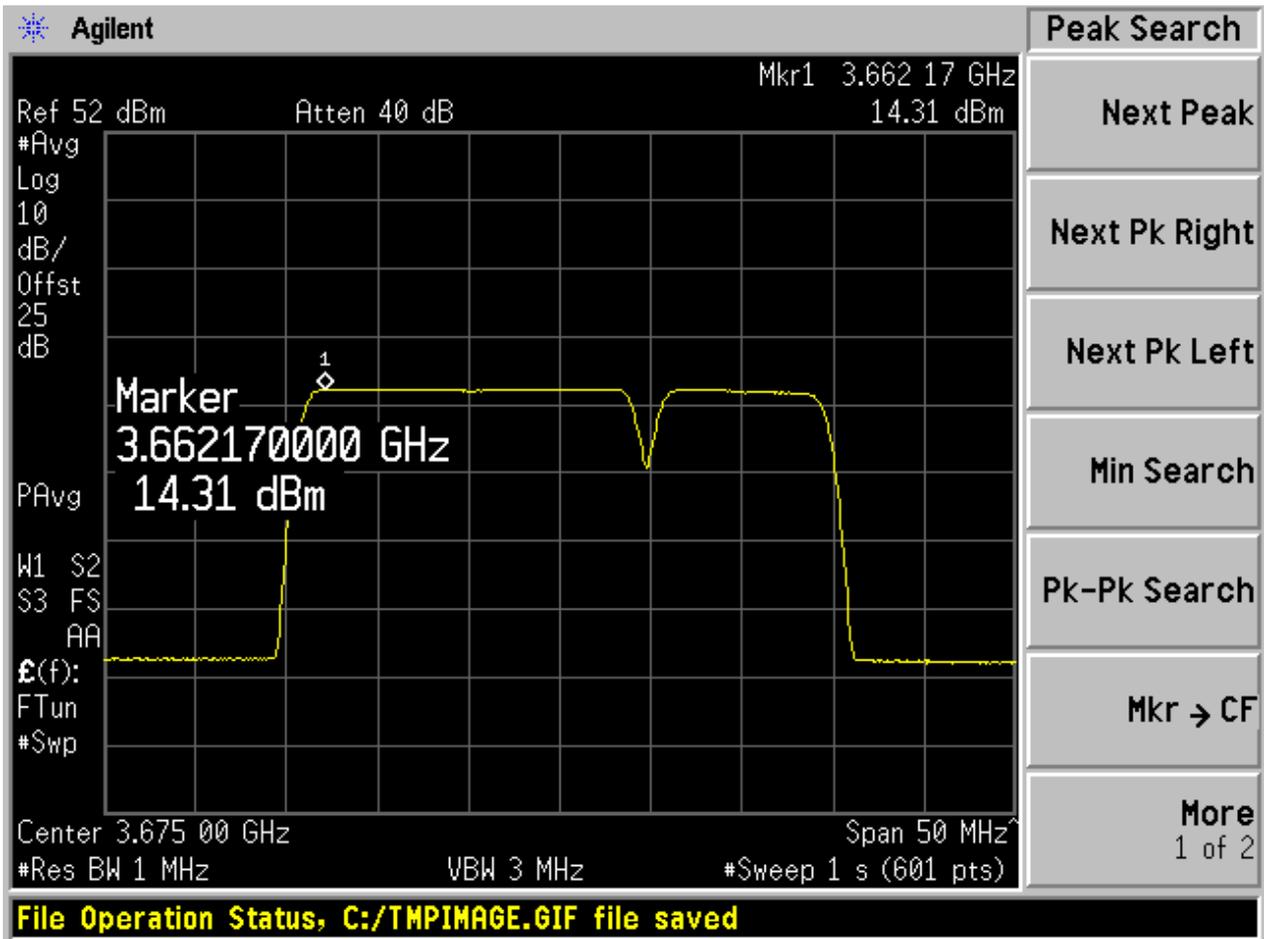
2.1.3 1L_20M_T



2.1.4 2L_20M_10M_B

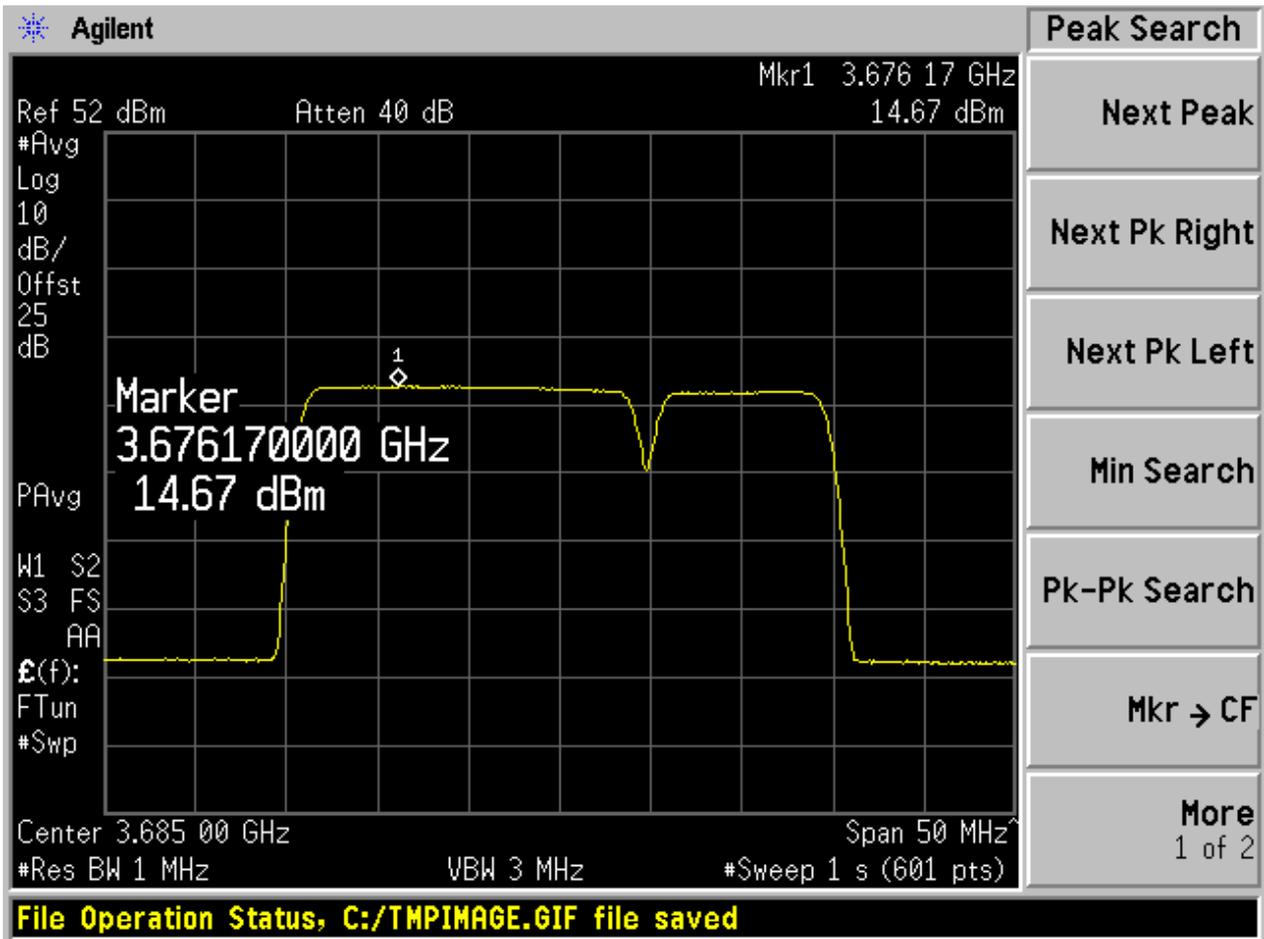


2.1.5 2L_20M_10M_M

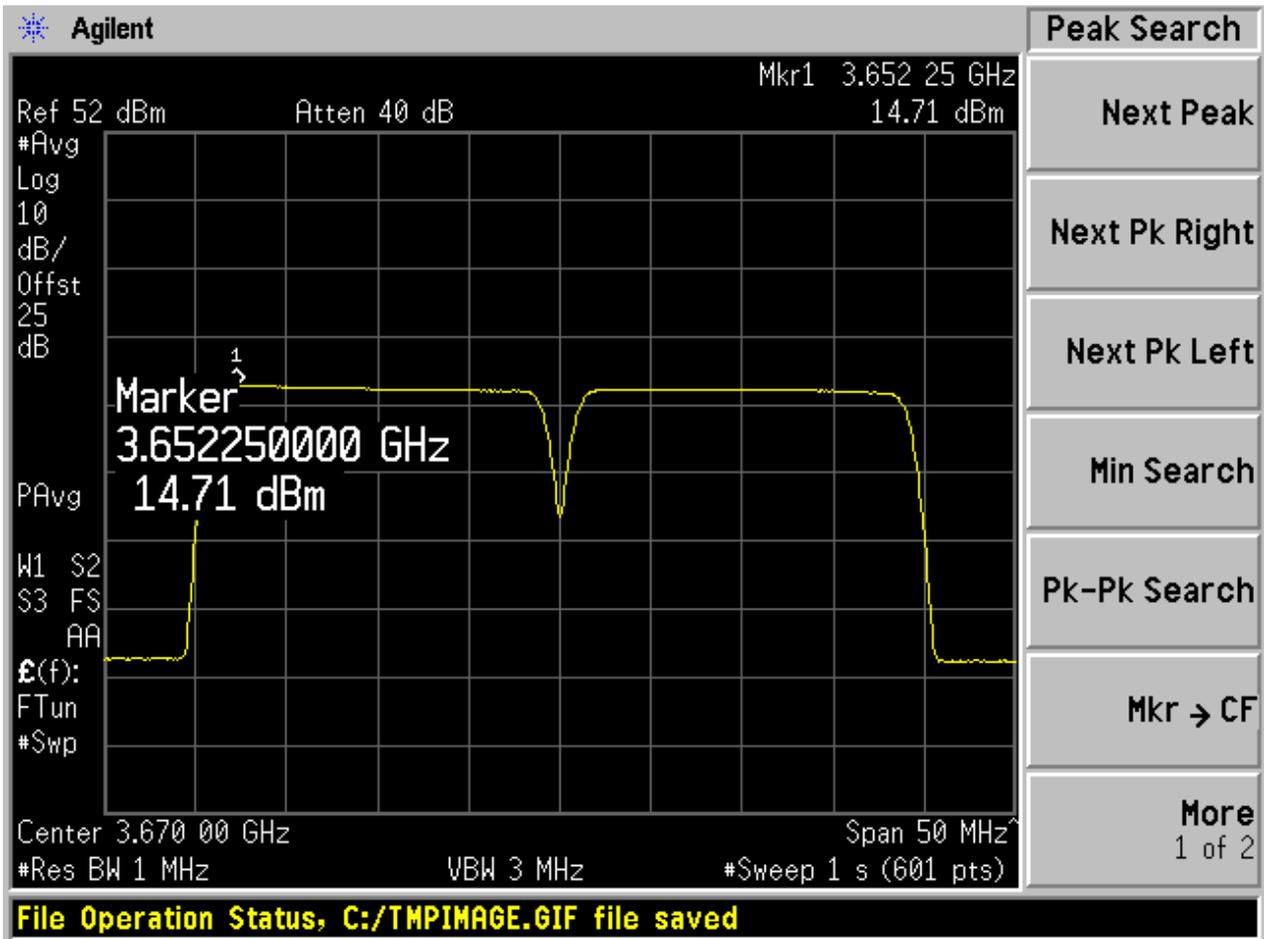




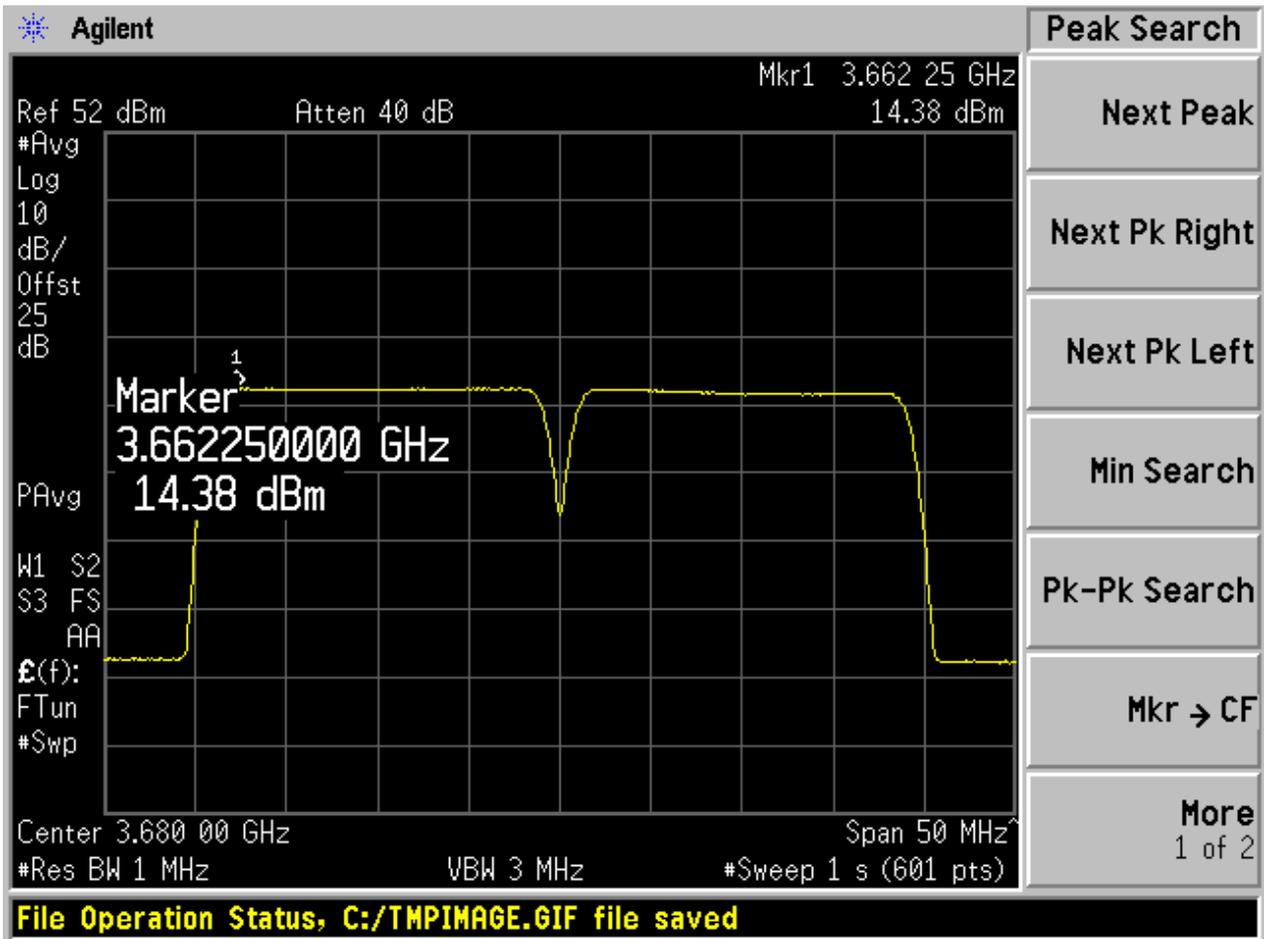
2.1.6 2L_20M_10M_T



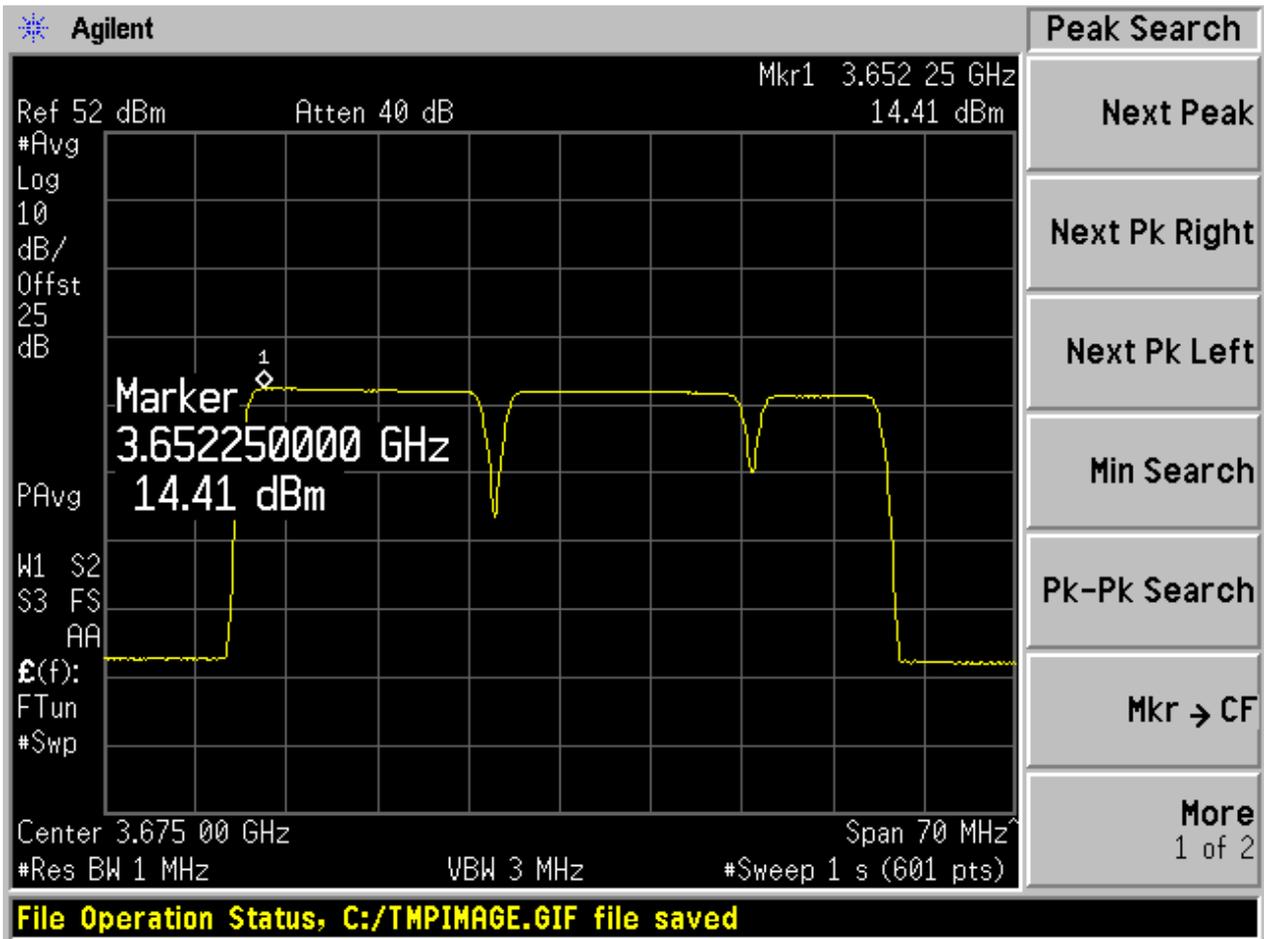
2.1.7 2L_20M_20M_B



2.1.8 2L_20M_20M_T



2.1.9 3L_20M_20M_10M





Appendix B: Bandwidth



1 Result Table

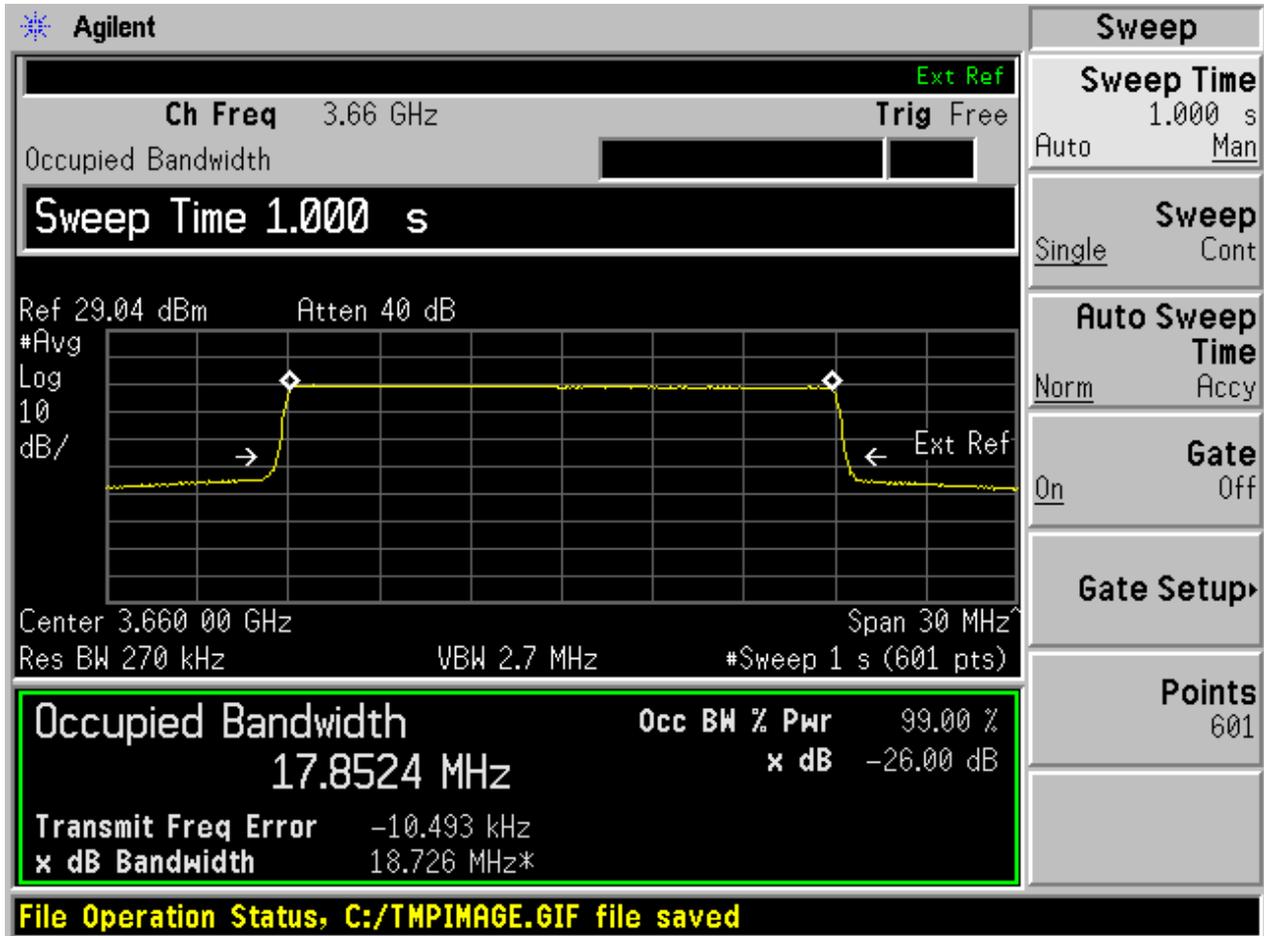
1.1 Occupied Bandwidth

EUT Conf.	Occupied Bandwidth [MHz]	Verdict
1L_20M_B	17.85	---
1L_20M_M	17.84	---
1L_20M_T	17.86	---

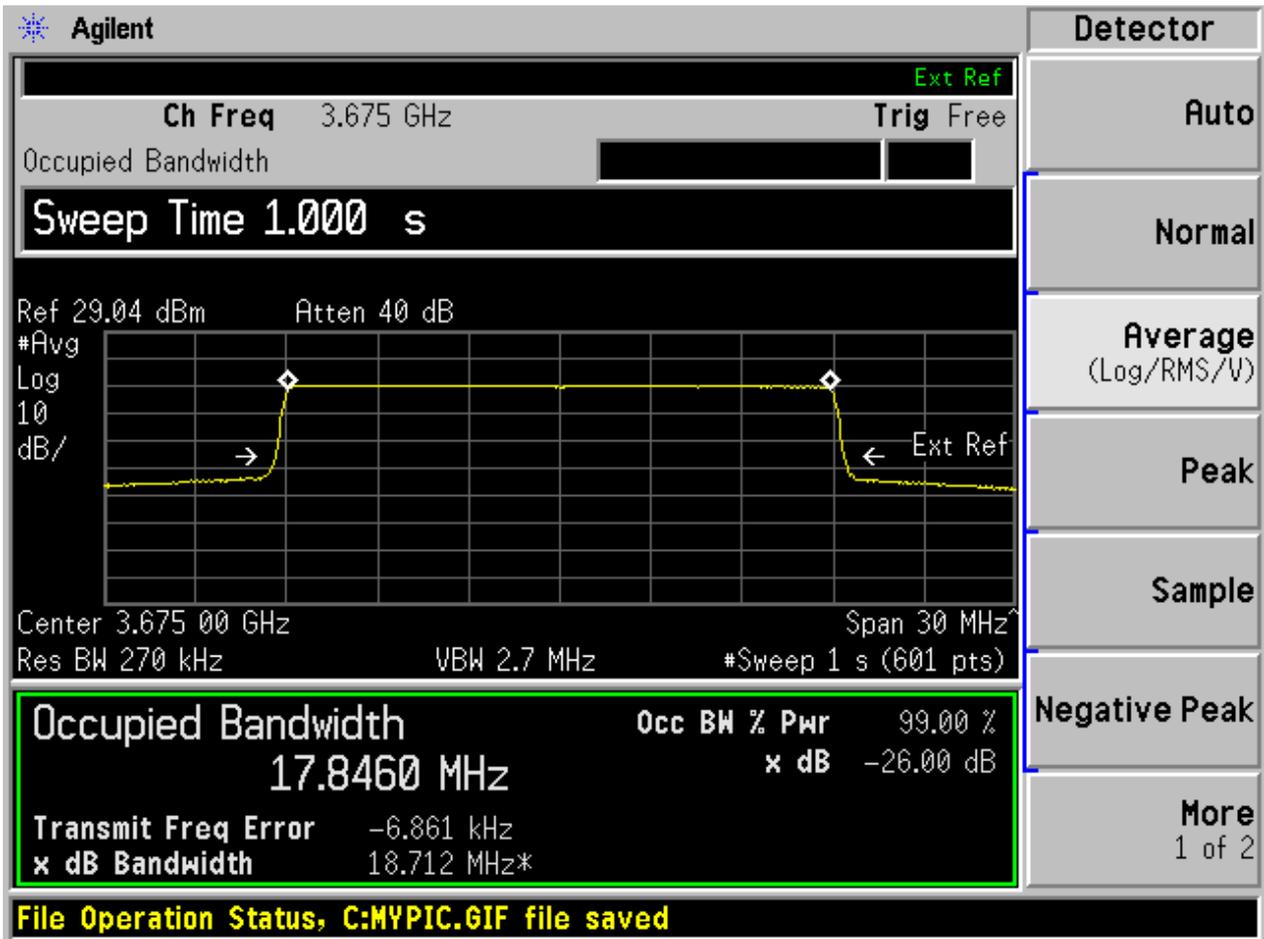
2 Test Plot

2.1 Occupied Bandwidth

2.1.1 1L_20M_B

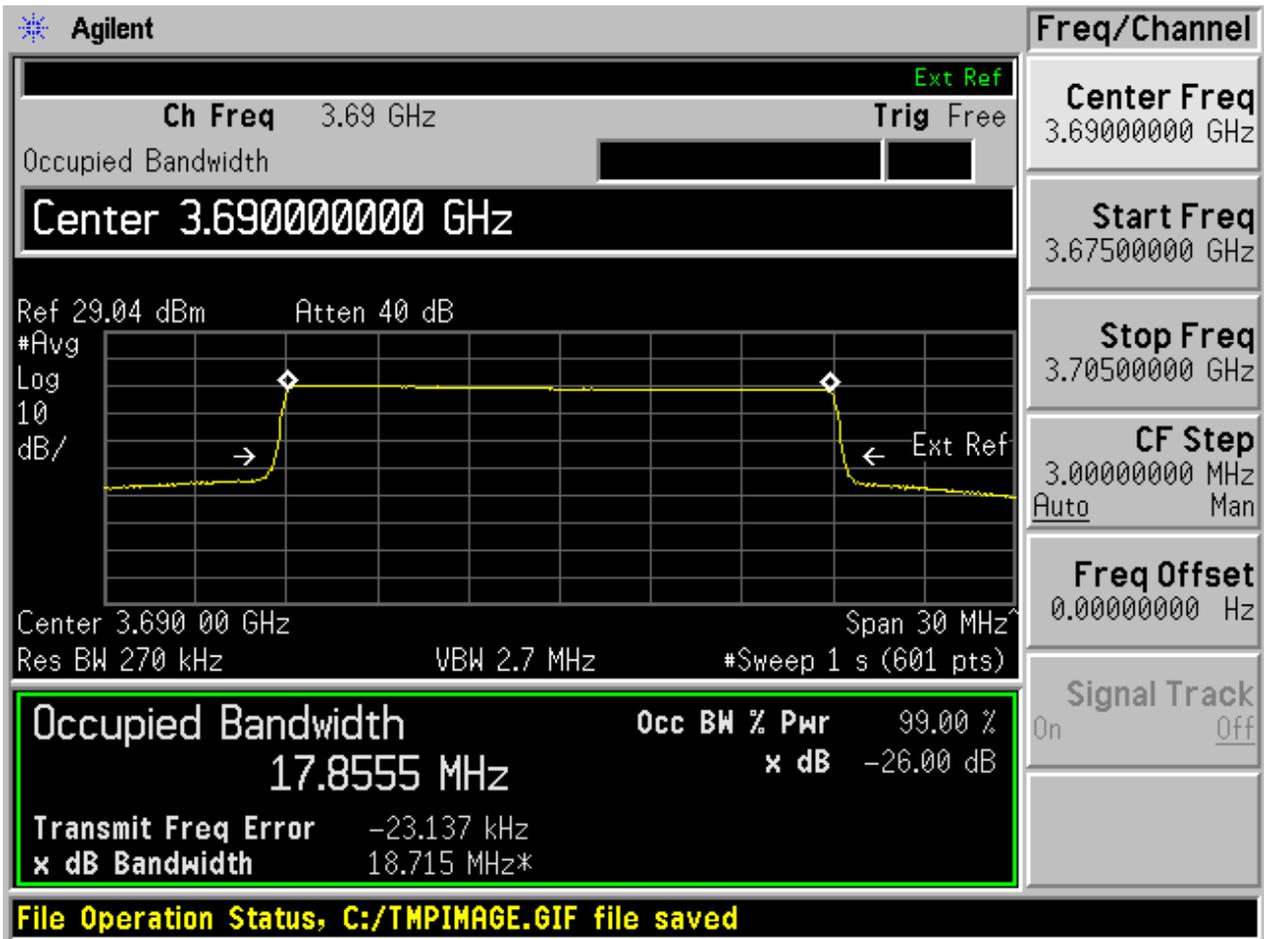


2.1.2 1L_20M_M





2.1.3 1L_20M_T





Appendix C: Band Edges Compliance



1 Result Table

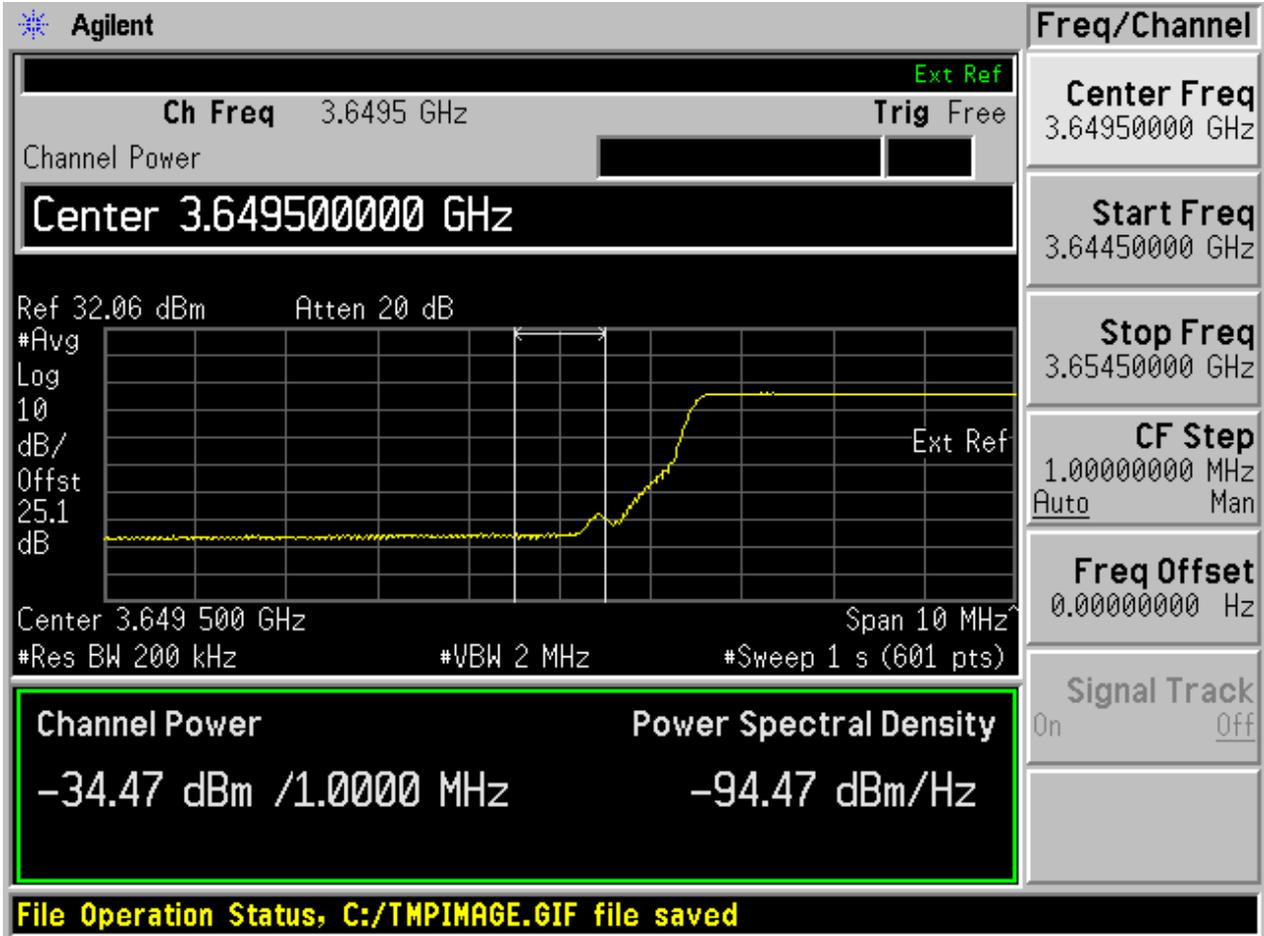
NOTE: If applicable, the offset of measurement filter -3dB point may be considered when identifying the maximum emission for e.g. the CDMA, WCDMA, WiMAX, LTE systems.

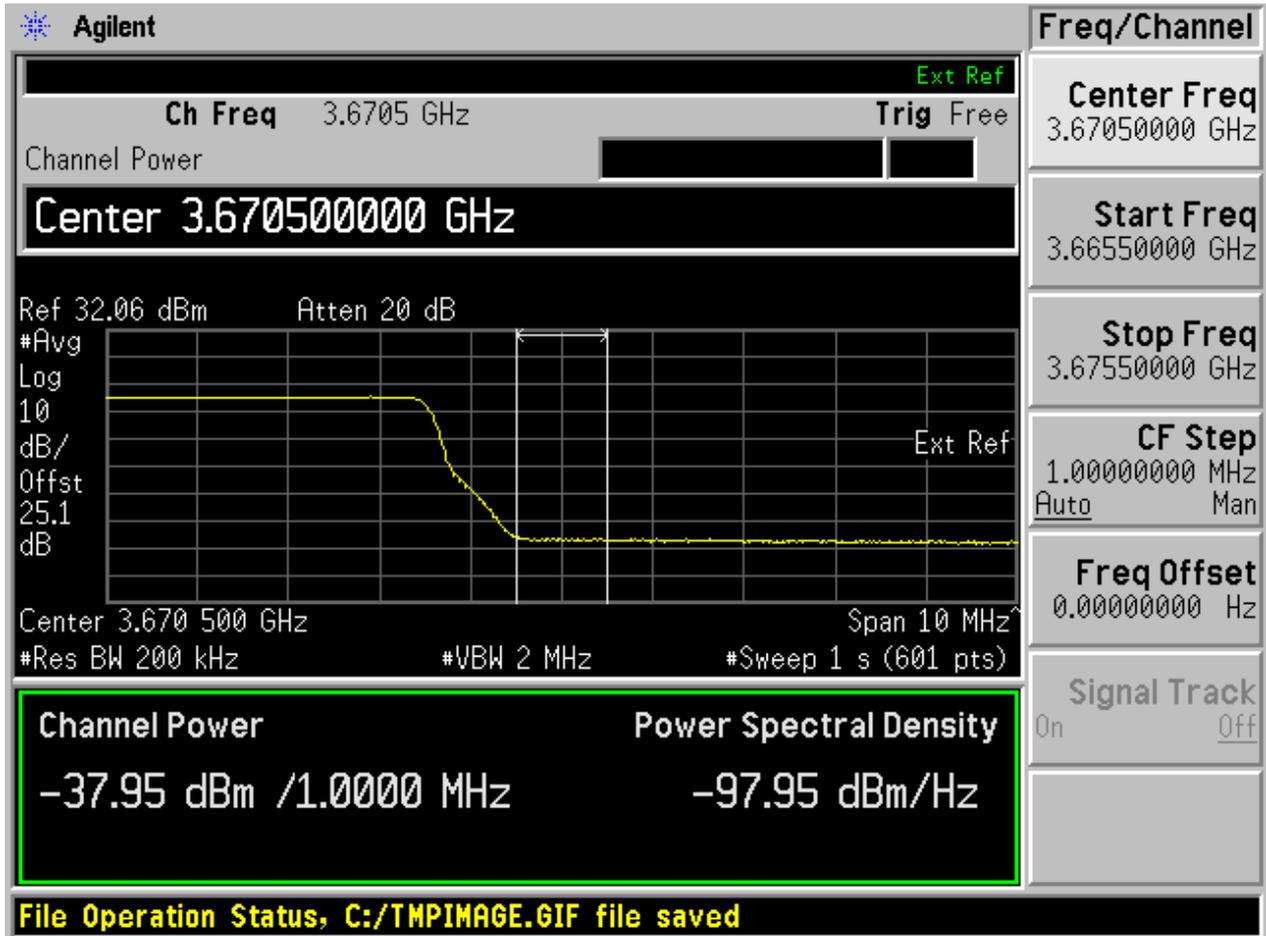
EUT Conf.	Maximum Emission [dBm]	Limit [dBm]	Verdict
1L_20M_B	-34.47	≤ -13	Pass
1L_20M_M	-33.53	≤ -13	Pass
1L_20M_T	-36.46	≤ -13	Pass
2L_20M_10M_B	-36.52	≤ -13	Pass
2L_20M_10M_M	-30.77	≤ -13	Pass
2L_20M_10M_T	-37.06	≤ -13	Pass
2L_20M_20M_B	-37.63	≤ -13	Pass
2L_20M_20M_T	-37.11	≤ -13	Pass
3L_20M_20M_10M	-36.59	≤ -13	Pass



2 Test Plot

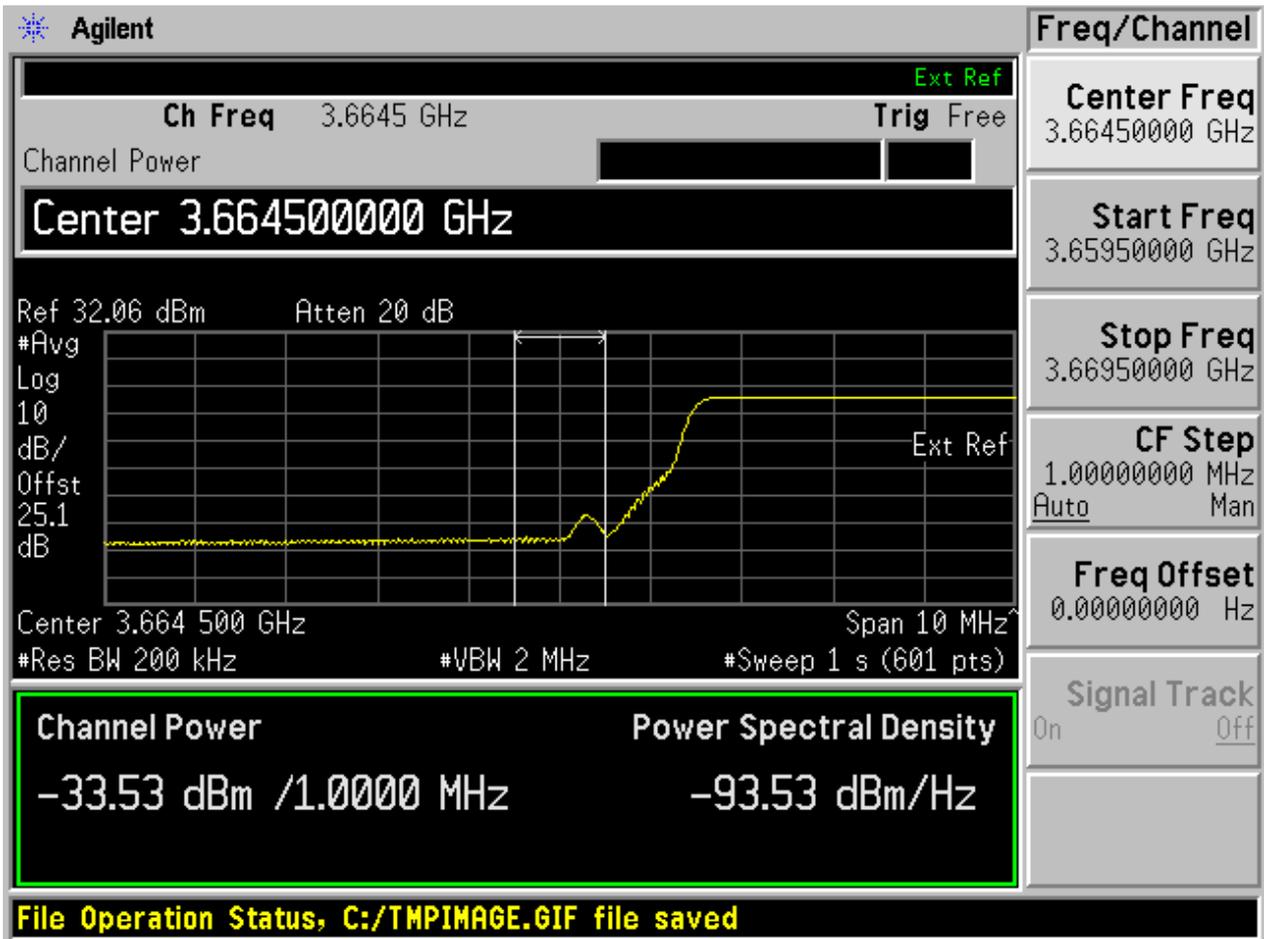
2.1.1 1L_20M_B

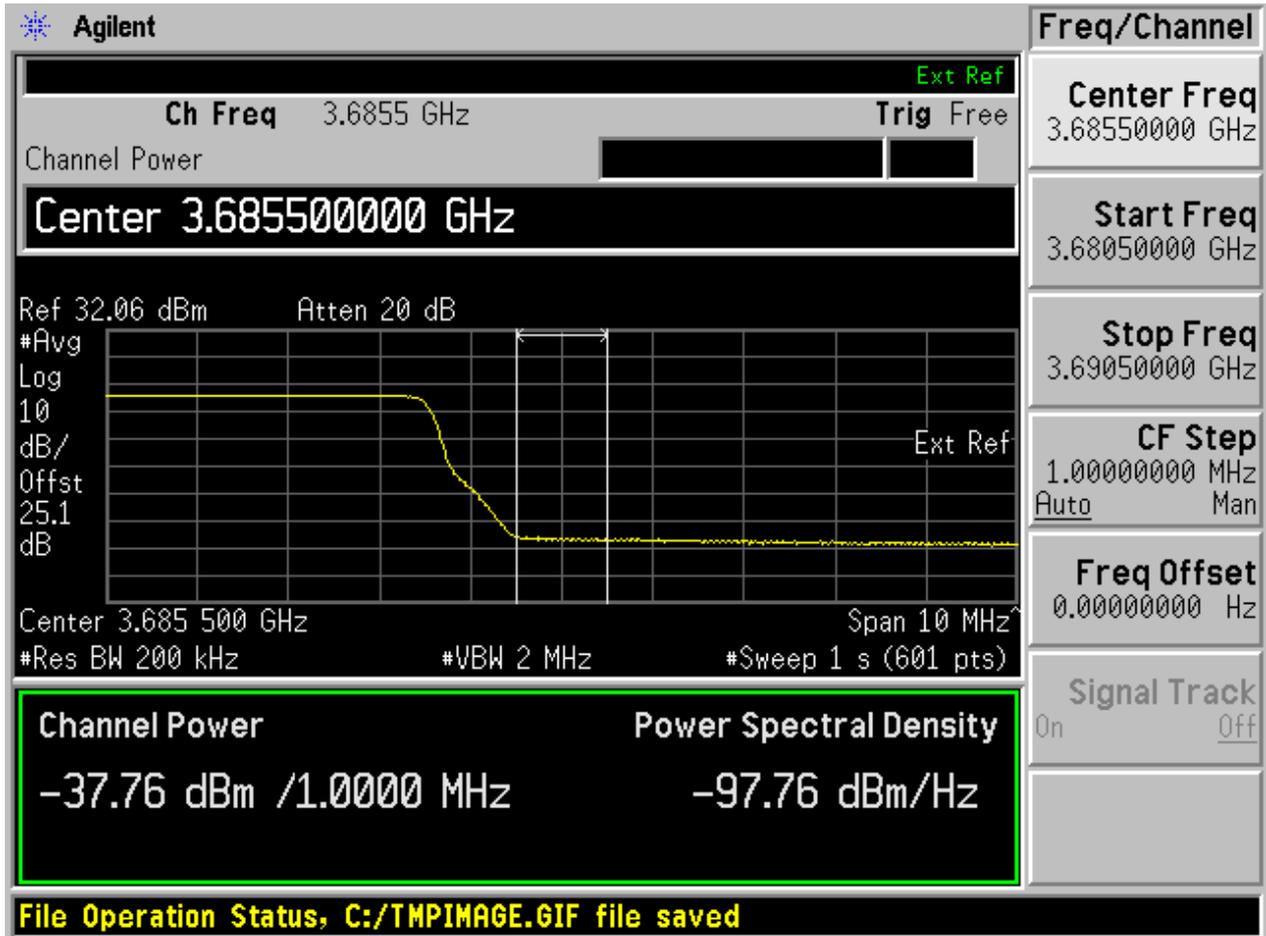




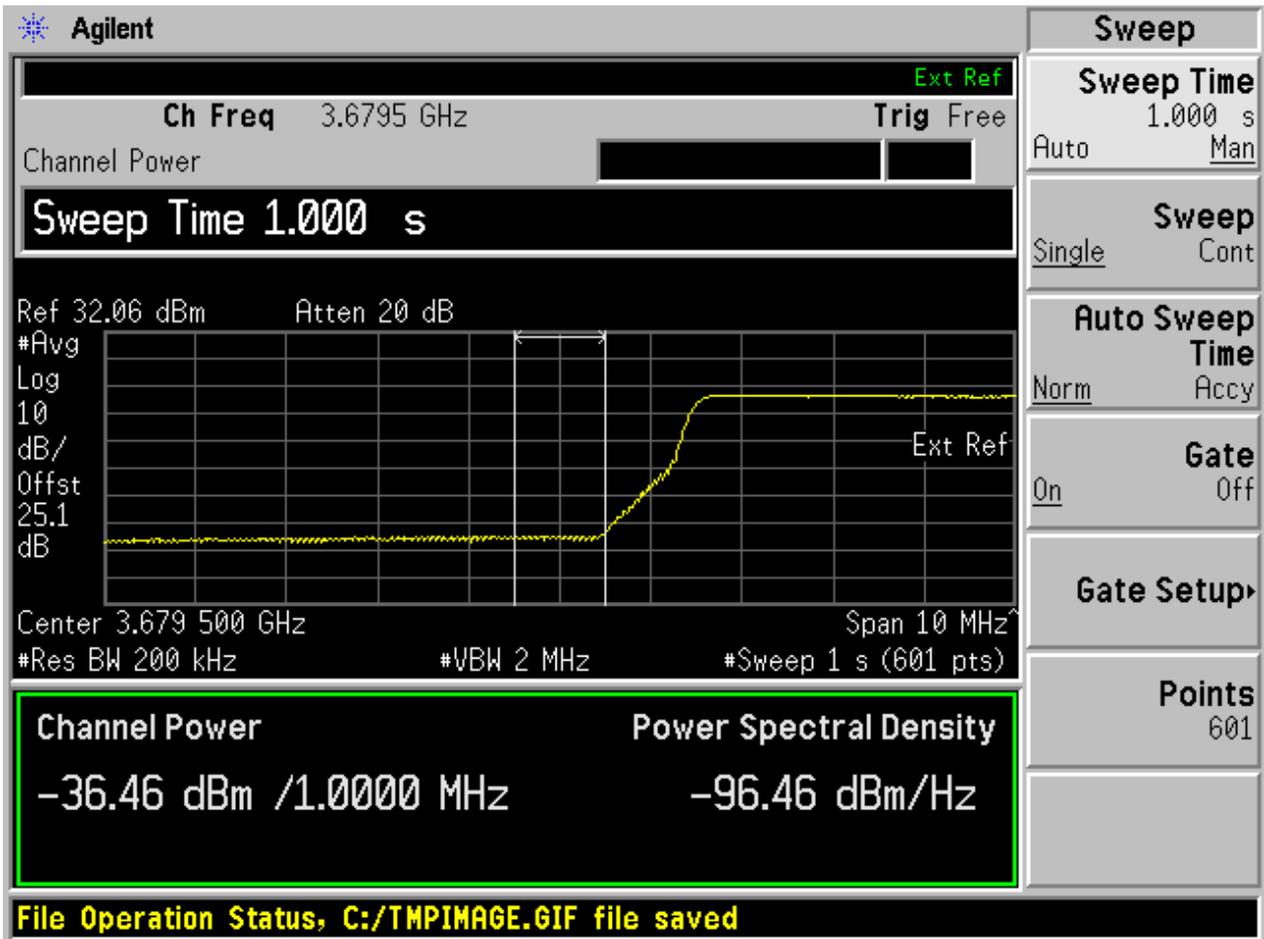


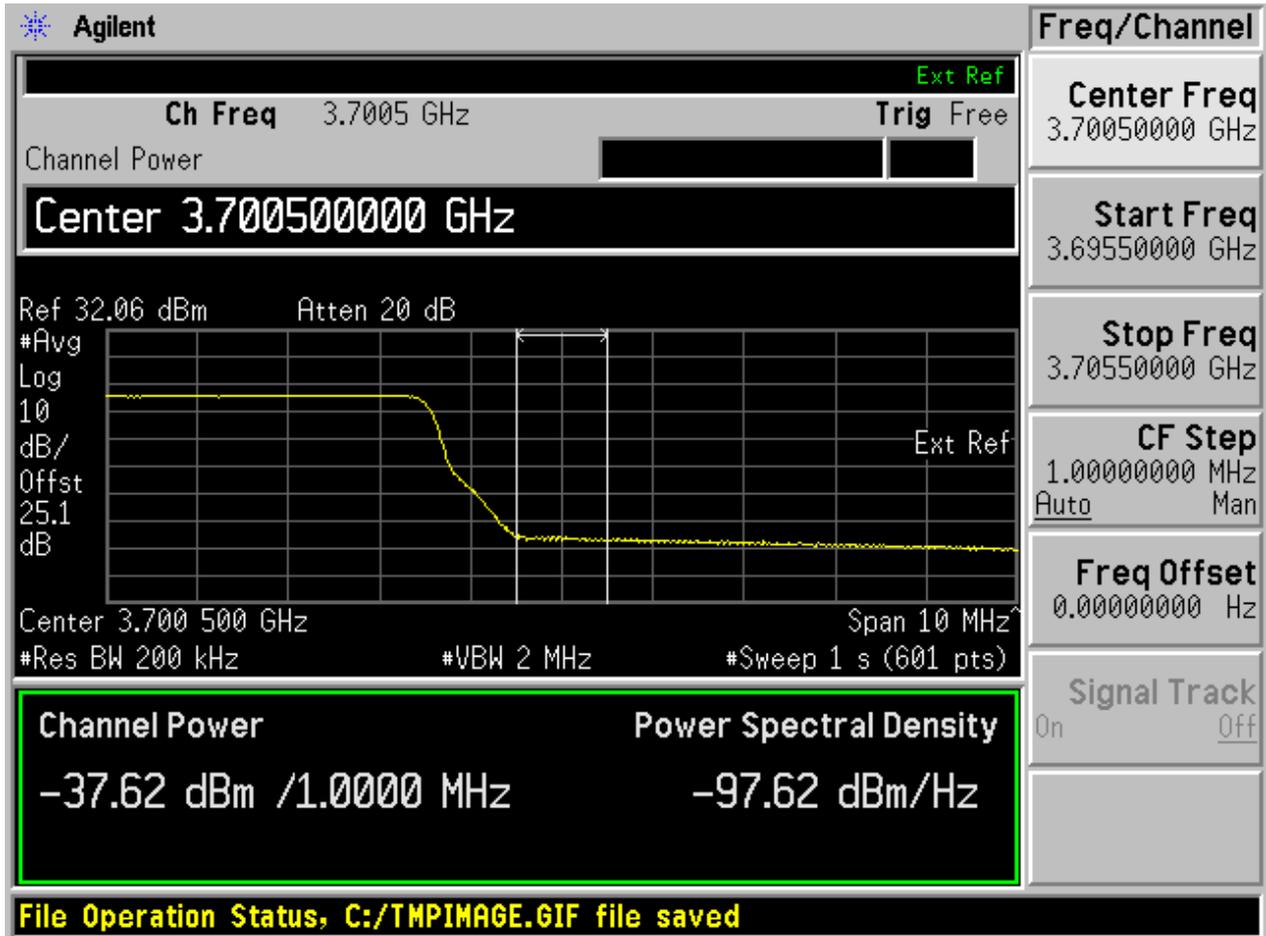
2.1.2 1L_20M_M





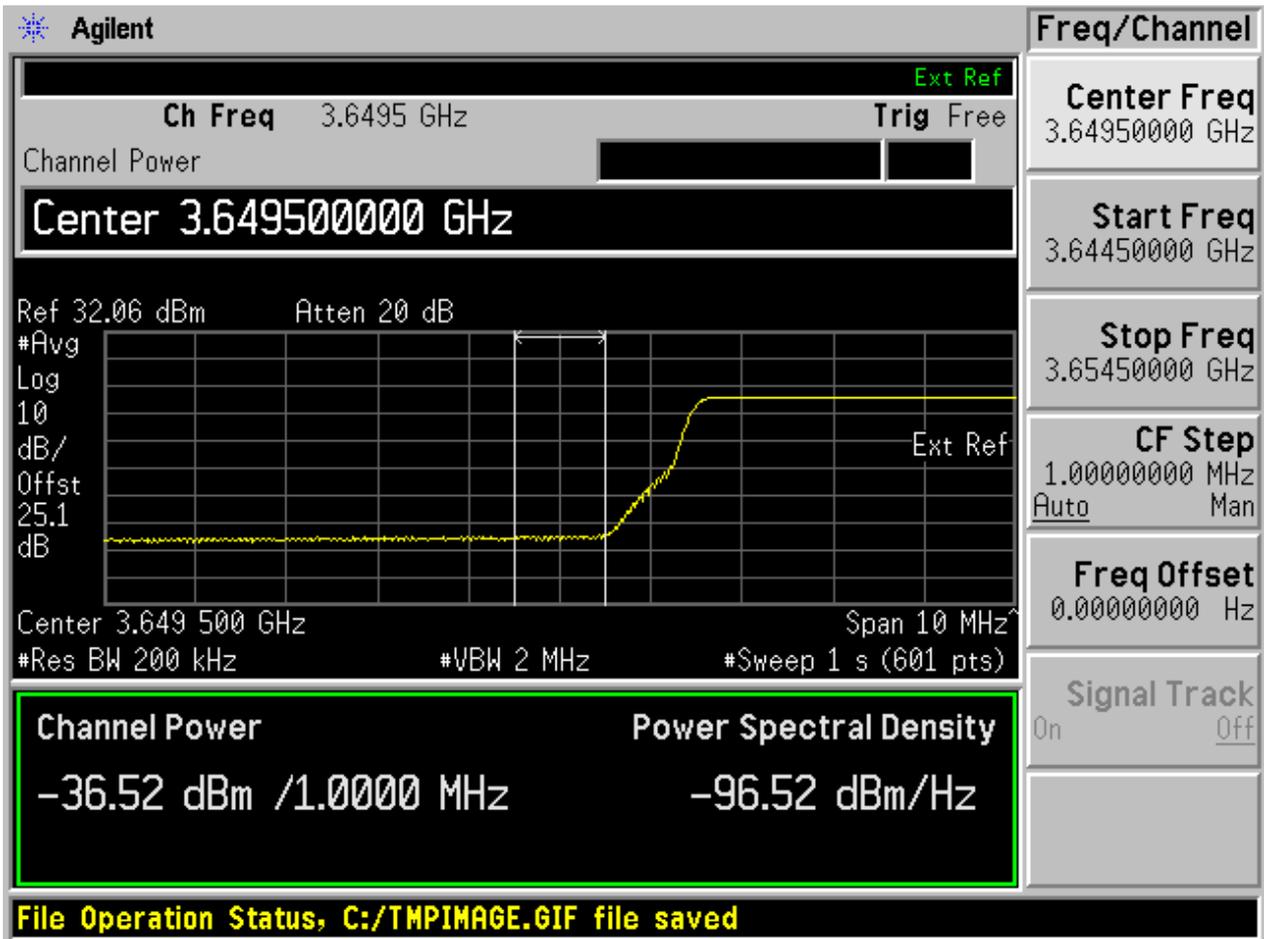
2.1.3 1L_20M_T

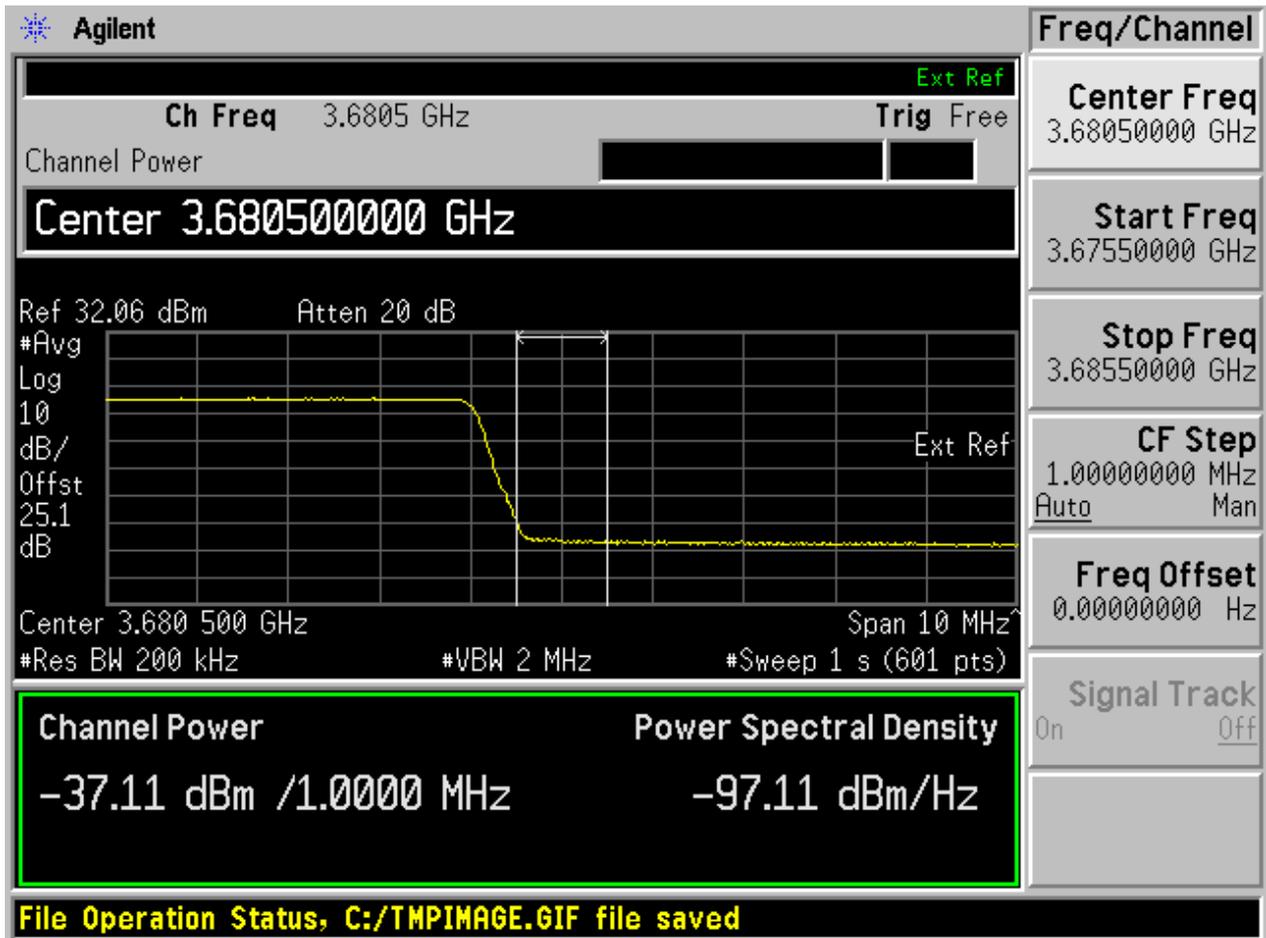






2.1.4 2L_20M_10M_B







2.1.5 2L_20M_10M_M

Agilent

Ext Ref
Ch Freq 3.6595 GHz **Trig** Free
 Channel Power

Sweep Time 1.000 s

Ref 32.06 dBm Atten 20 dB
 #Avg 10 Log dB/Offst 25.1 dB

Center 3.659 500 GHz
Span 10 MHz

#Res BW 200 kHz
#VBW 2 MHz
#Sweep 1 s (601 pts)

Channel Power
 -30.77 dBm /1.0000 MHz

Power Spectral Density
 -90.77 dBm/Hz

File Operation Status, C:/TMPIMAGE.GIF file saved

Sweep

Sweep Time
1.000 s
Auto Man

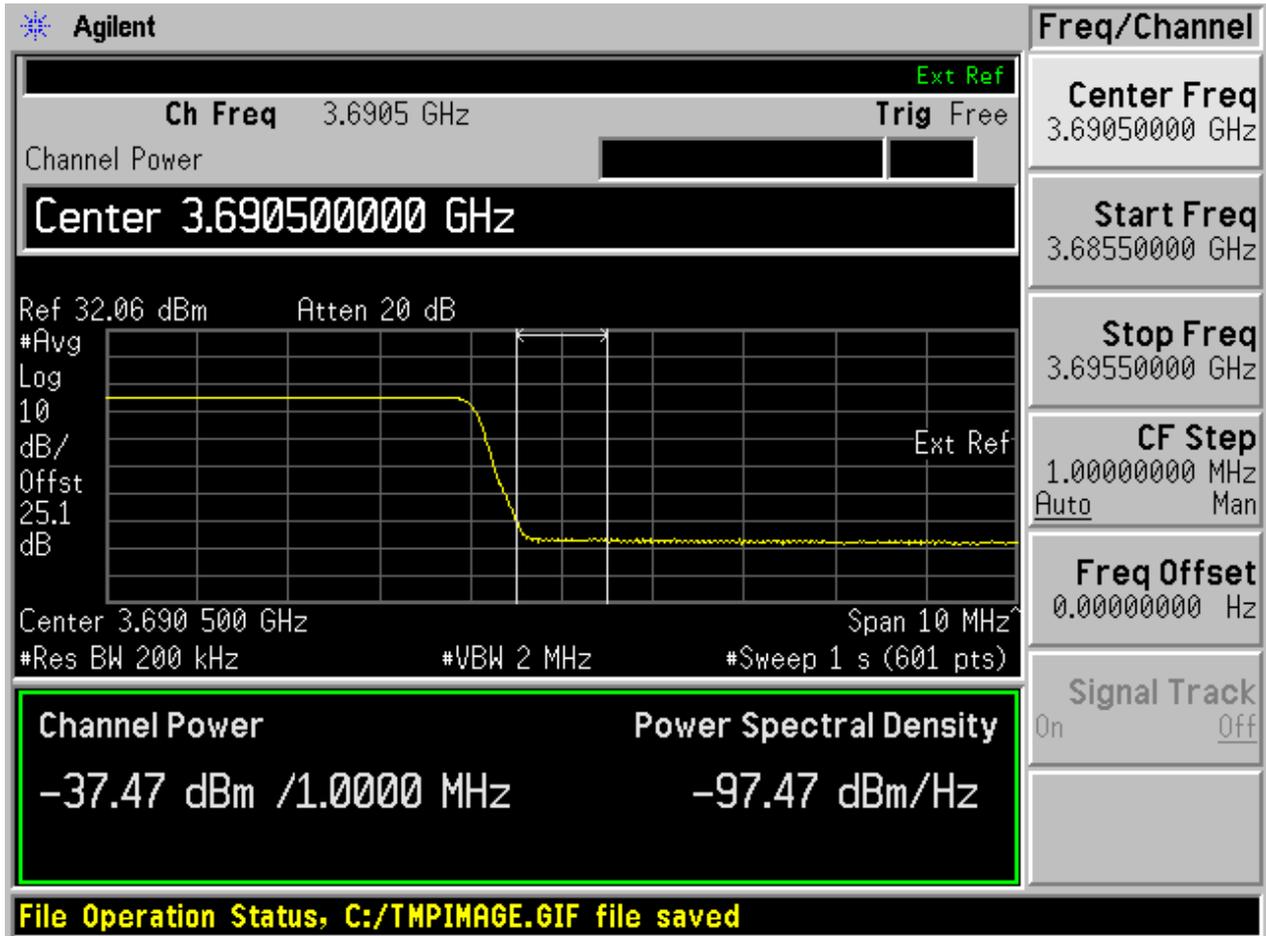
Sweep
Single Cont

Auto Sweep Time
Norm Accy

Gate
On Off

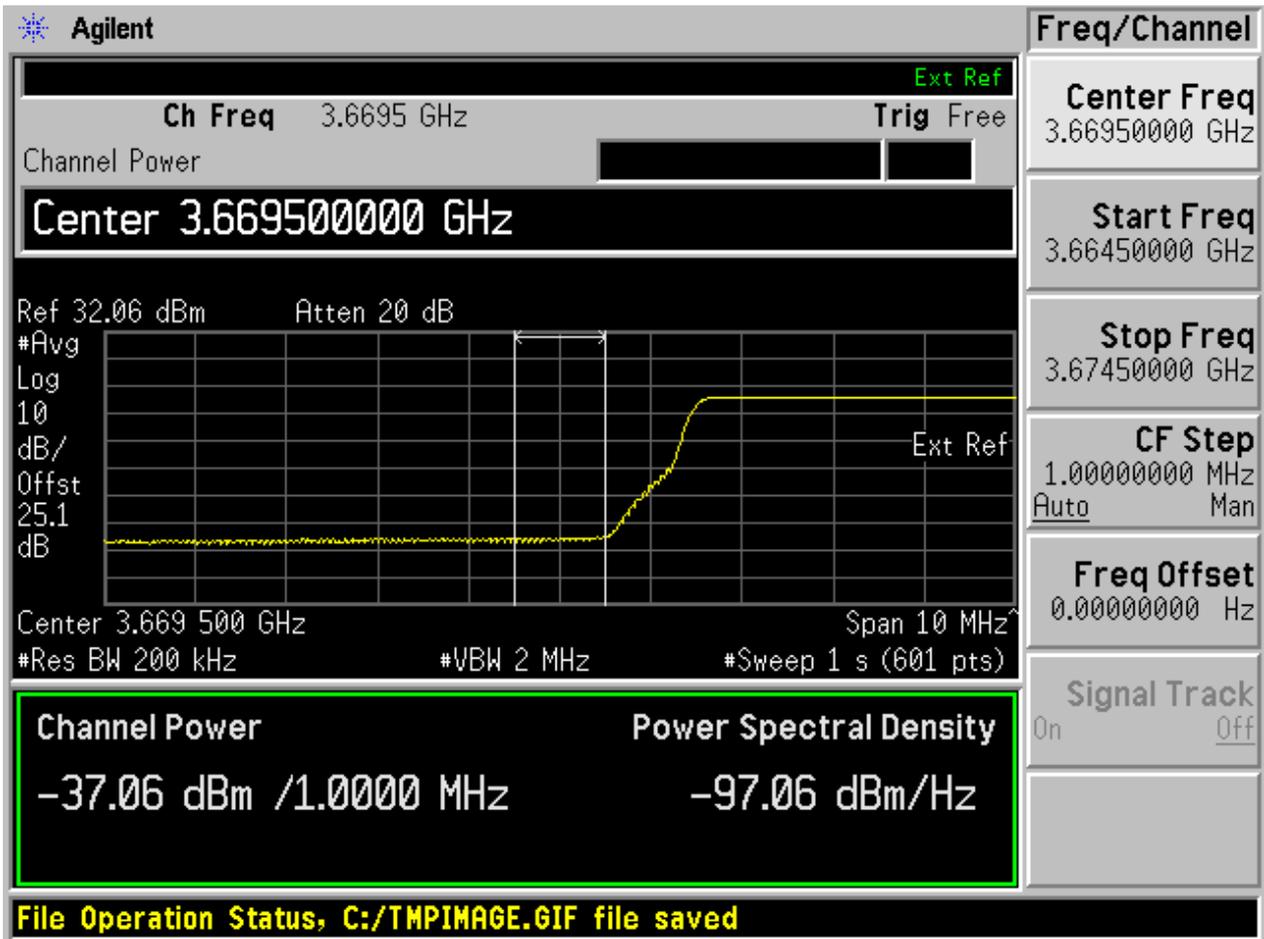
Gate Setup ▶

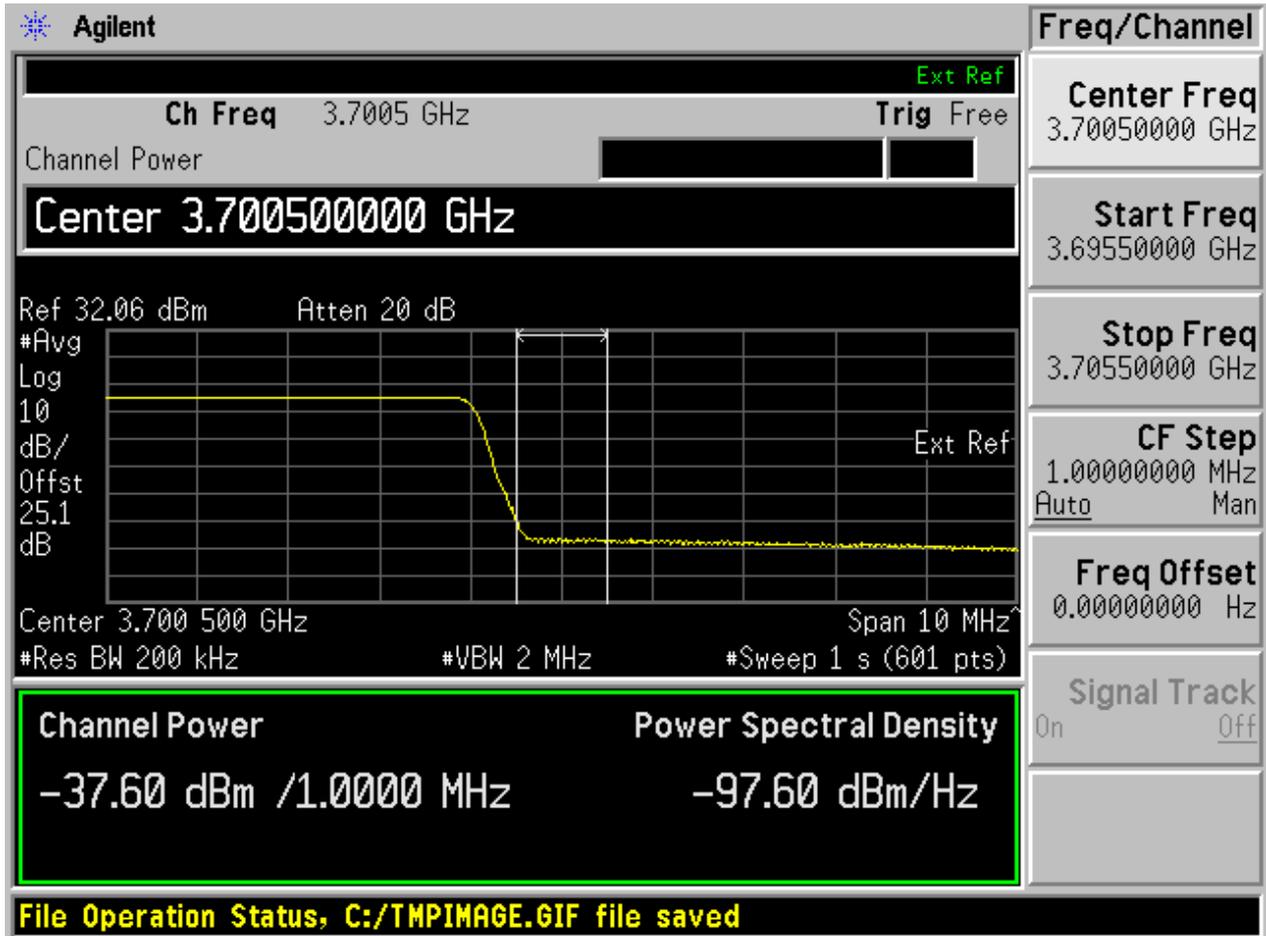
Points
601





2.1.6 2L_20M_10M_T





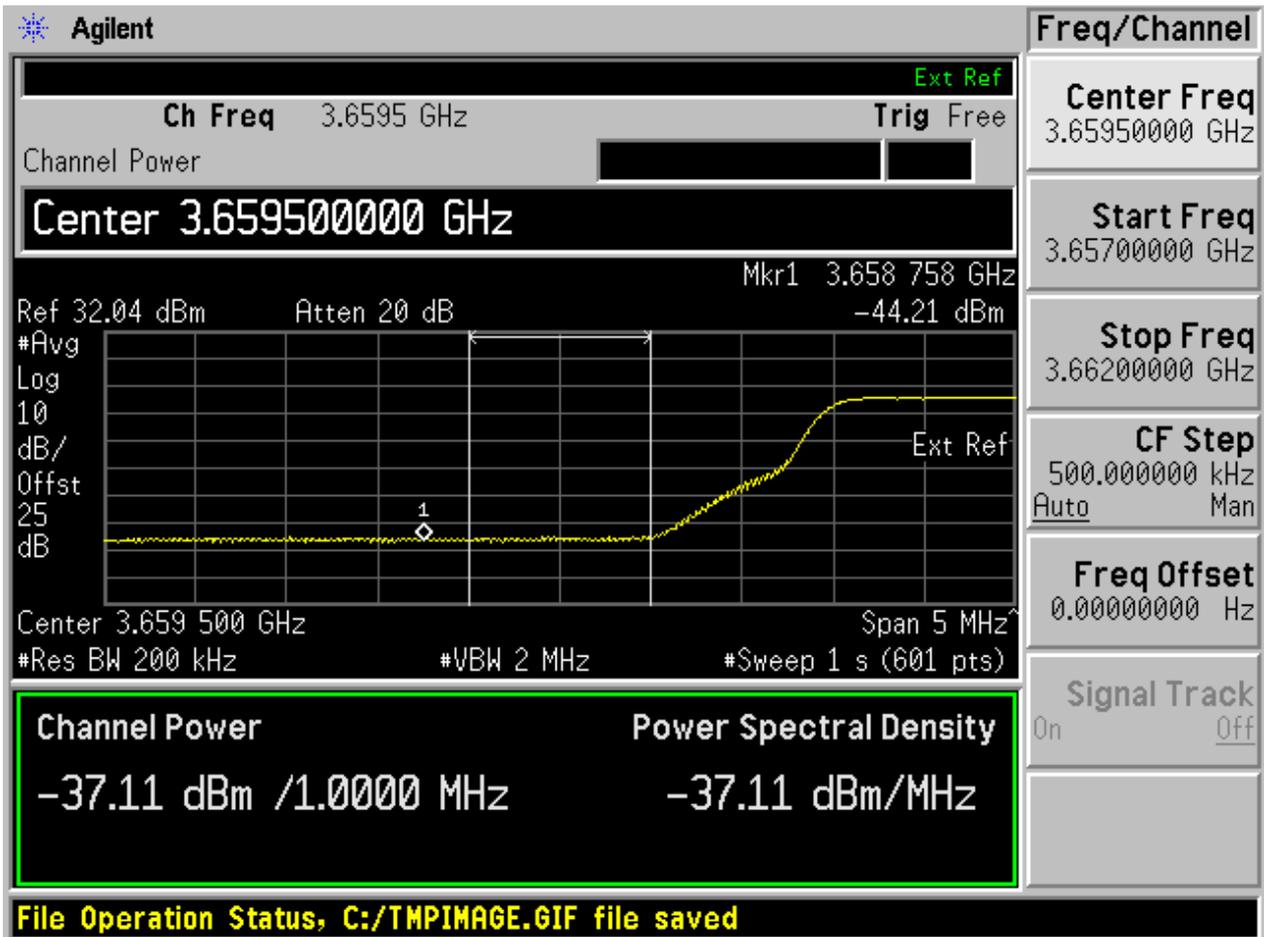


2.1.7 2L_20M_20M_B





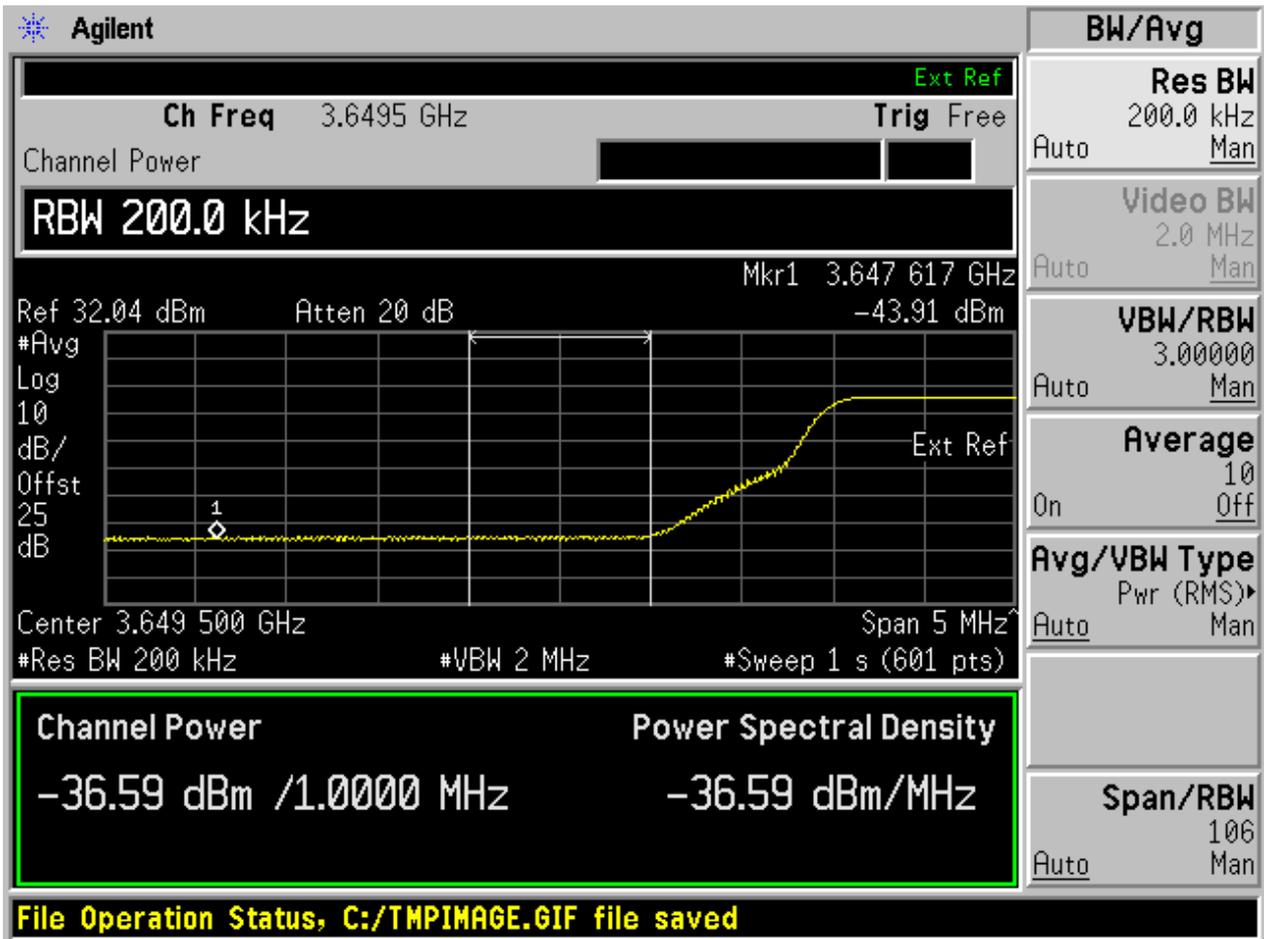
2.1.8 2L_20M_20M_T

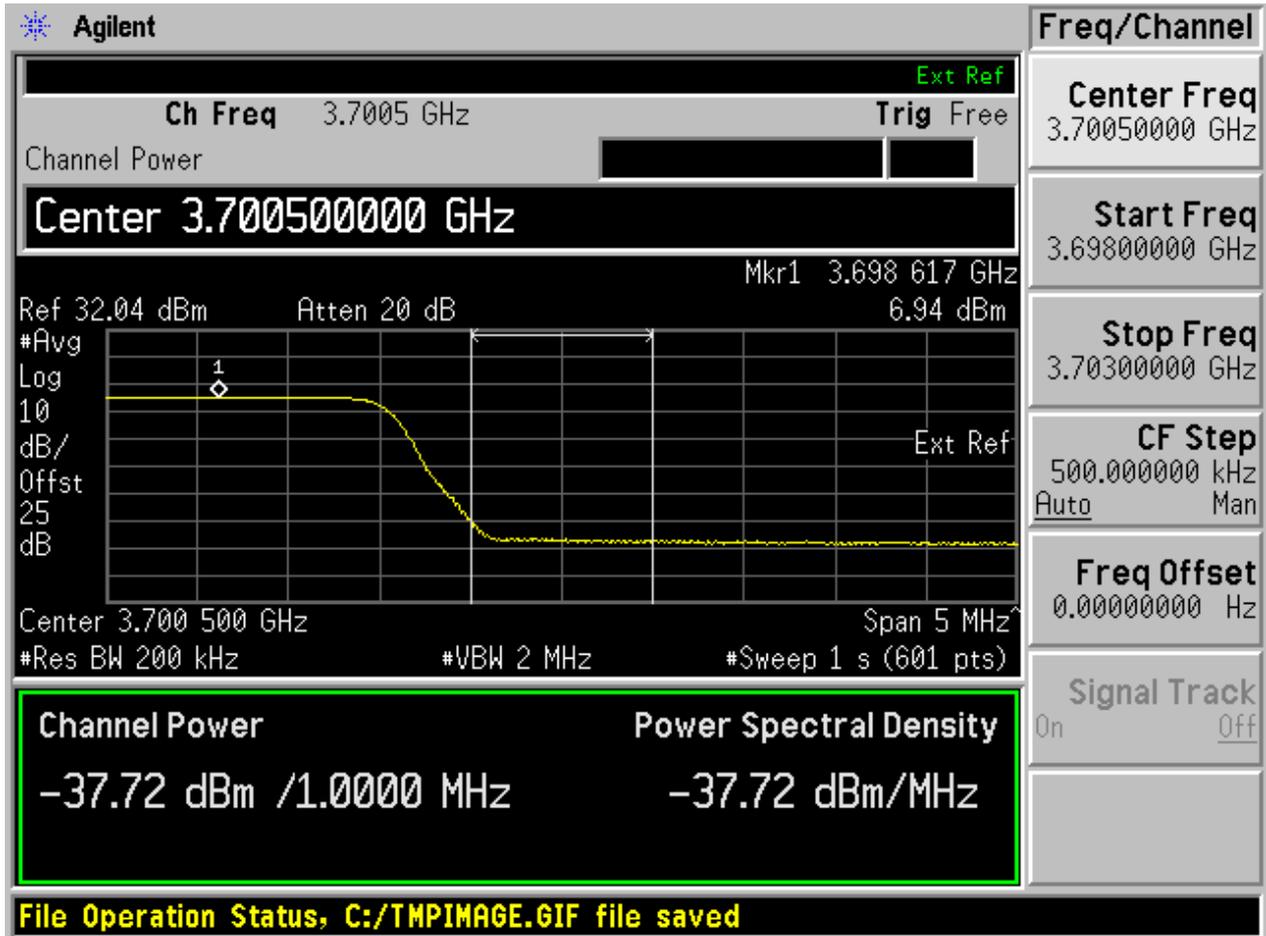






2.1.9 3L_20M_20M_10M







Appendix D: Spurious Emission at Antenna Terminals



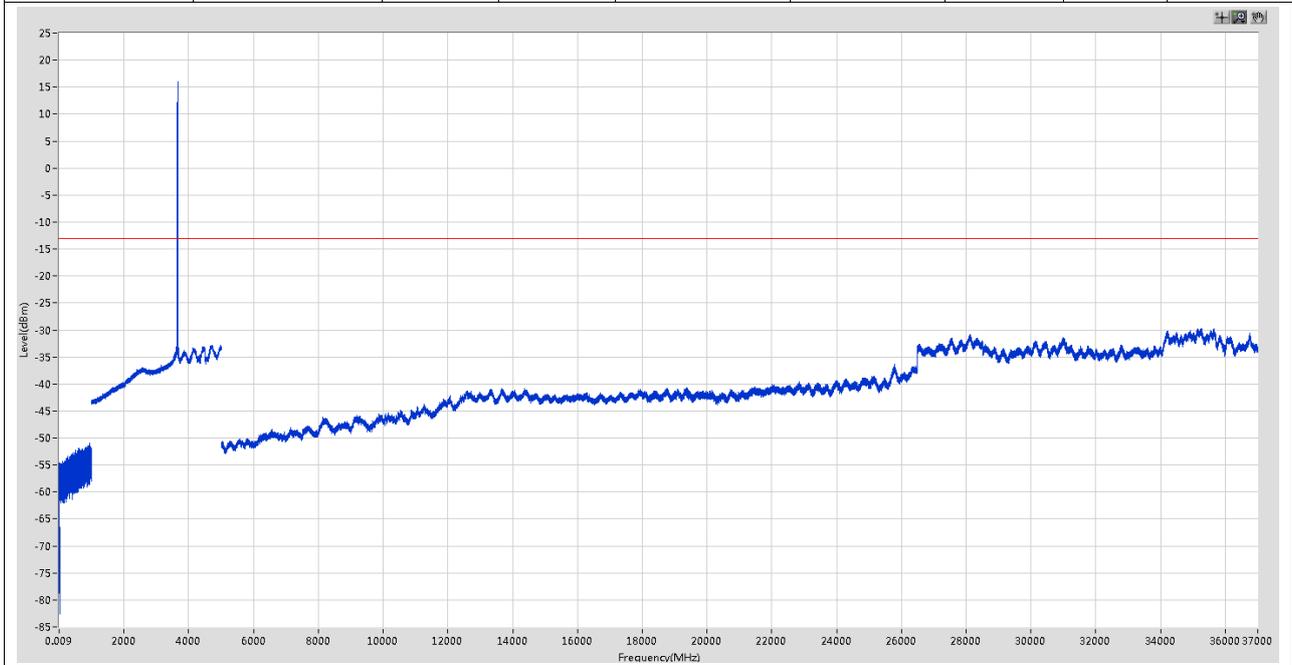
1 Result Table

EUT Conf.	Conclusion	Verdict
1L_20M_B	No spurious emissions were found	Pass
1L_20M_M	No spurious emissions were found	Pass
1L_20M_T	No spurious emissions were found	Pass
2L_20M_20M_B	No spurious emissions were found	Pass
2L_20M_20M_T	No spurious emissions were found	Pass
2L_20M_10M_B	No spurious emissions were found	Pass
2L_20M_10M_M	No spurious emissions were found	Pass
2L_20M_10M_T	No spurious emissions were found	Pass
3L_20M_20M_10M	No spurious emissions were found	Pass

2 Test Plot

2.1.1 1L_20M_B

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	66.281 k	-56.58	-13	Pass	801
0.15	30	0.01	RMS	185.82 k	-54.58	-13	Pass	15001
30	1000	0.1	RMS	951.982596 M	-50.97	-13	Pass	48502
1000	5000	1	RMS	3652.6 M	16.02	-13	NA	20001
5000	18000	1	RMS	13675.88918 7 M	-40.79	-13	Pass	65003
18000	37000	1	RMS	35150.77167 3 M	-29.77	-13	Pass	95004

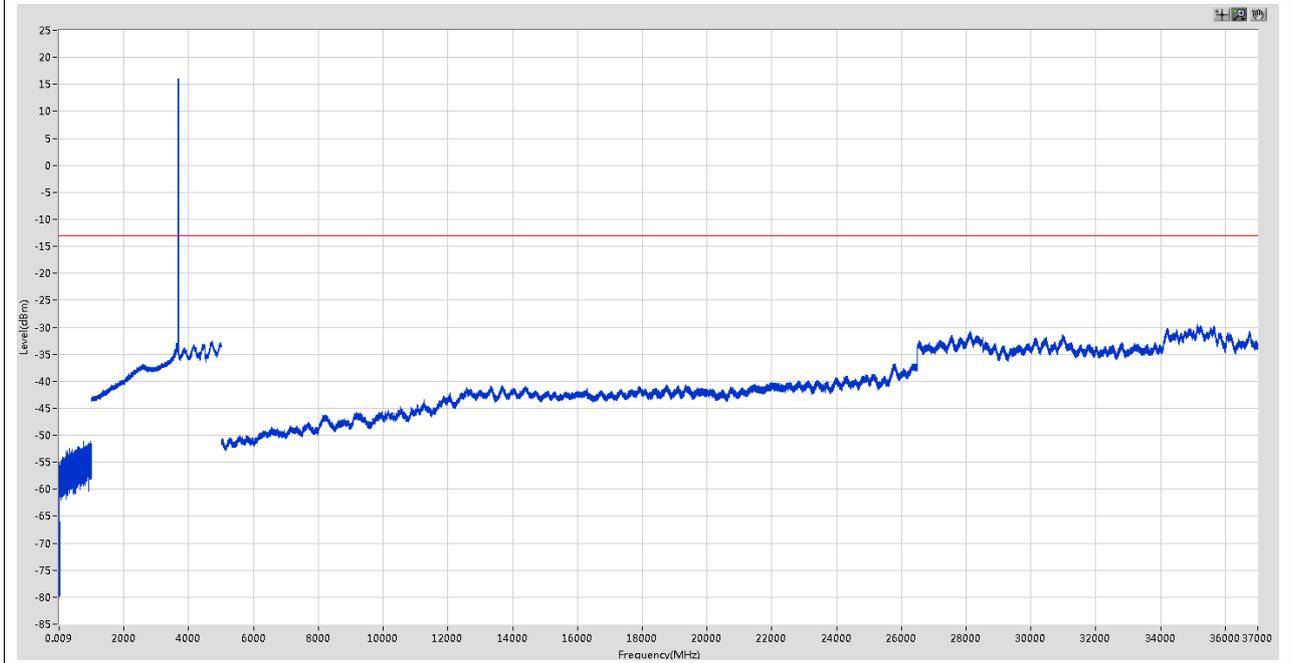


2.1.2 1L_20M_M

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	66.81 k	-56.31	-13	Pass	801
0.15	30	0.01	RMS	165.92 k	-54.91	-13	Pass	15001
30	1000	0.1	RMS	759.532999 M	-51.05	-13	Pass	48502
1000	5000	1	RMS	3678 M	16.01	-13	NA	20001
5000	18000	1	RMS	13667.68891 3 M	-40.85	-13	Pass	65003

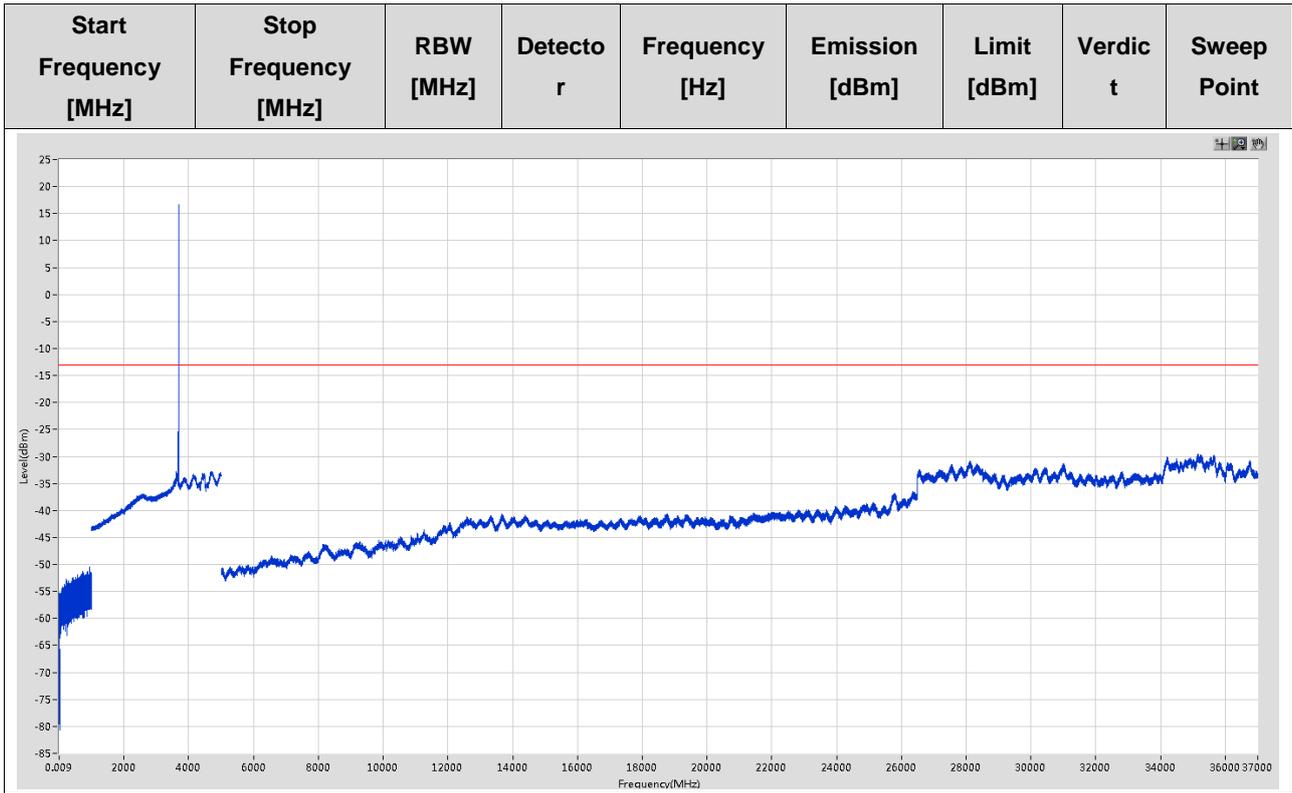


Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
18000	37000	1	RMS	35129.37096 M	-29.49	-13	Pass	95004



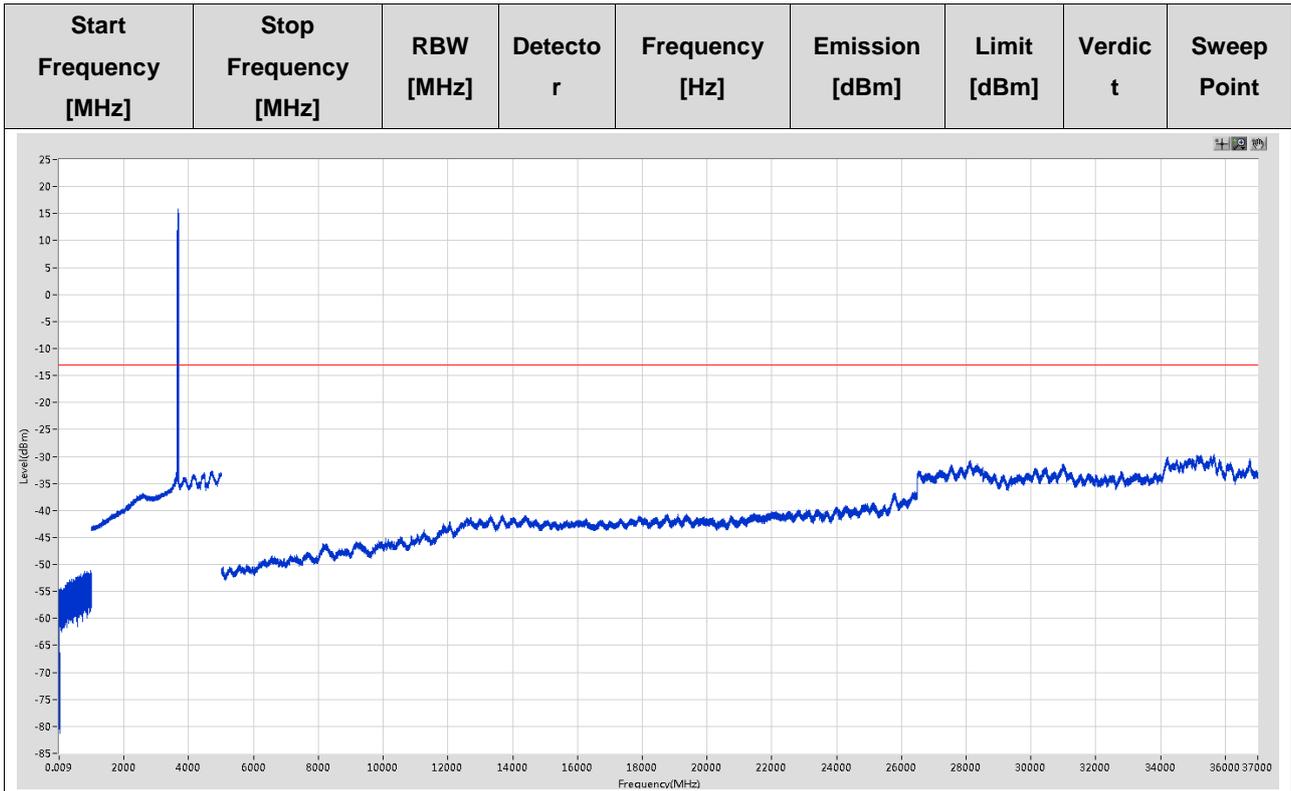
2.1.3 1L_20M_T

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	66.634 k	-55.3	-13	Pass	801
0.15	30	0.01	RMS	153.98 k	-55.56	-13	Pass	15001
30	1000	0.1	RMS	956.542349 M	-50.49	-13	Pass	48502
1000	5000	1	RMS	3682.8 M	16.59	-13	NA	20001
5000	18000	1	RMS	13675.68918 M	-40.72	-13	Pass	65003
18000	37000	1	RMS	35143.77144 M	-29.57	-13	Pass	95004



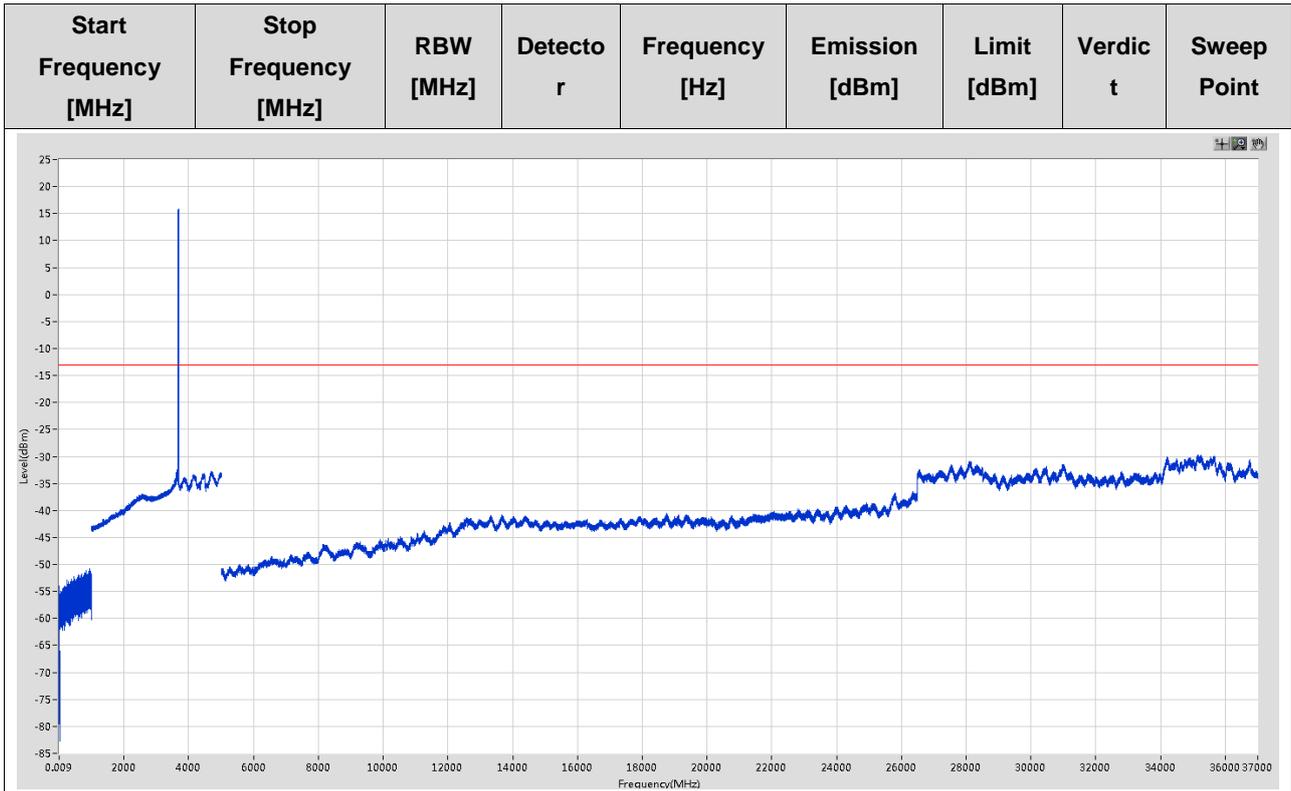
2.1.4 2L_20M_10M_B

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	66.634 k	-54.86	-13	Pass	801
0.15	30	0.01	RMS	157.96 k	-54.68	-13	Pass	15001
30	1000	0.1	RMS	972.921464 M	-51.05	-13	Pass	48502
1000	5000	1	RMS	3652.6 M	15.81	-13	NA	20001
5000	18000	1	RMS	13324.277467 M	-40.85	-13	Pass	65003
18000	37000	1	RMS	35644.78814 M	-29.62	-13	Pass	95004



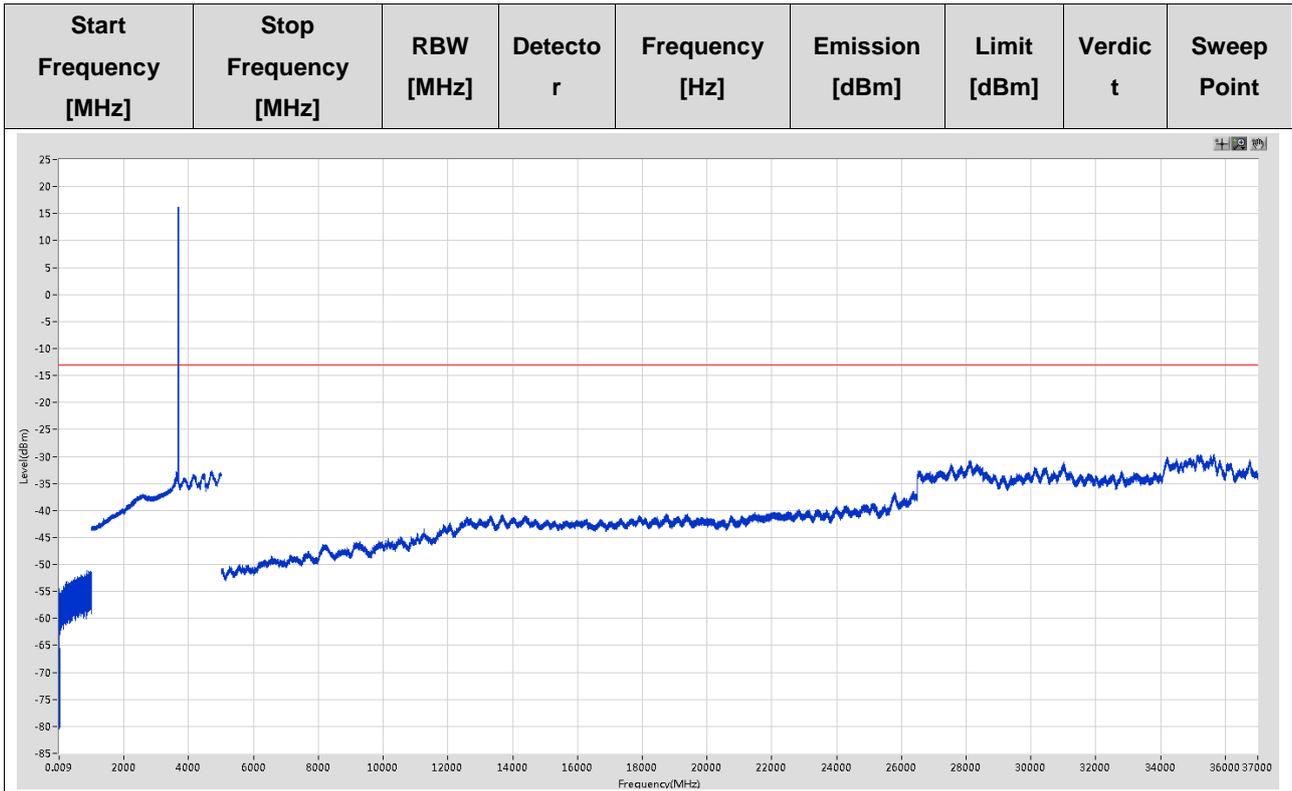
2.1.5 2L_20M_10M_M

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	66.457 k	-54.7	-13	Pass	801
0.15	30	0.01	RMS	165.92 k	-54.05	-13	Pass	15001
30	1000	0.1	RMS	950.762662 M	-50.82	-13	Pass	48502
1000	5000	1	RMS	3682.8 M	15.84	-13	NA	20001
5000	18000	1	RMS	13665.4888 4 M	-40.89	-13	Pass	65003
18000	37000	1	RMS	35235.5745 M	-29.74	-13	Pass	95004



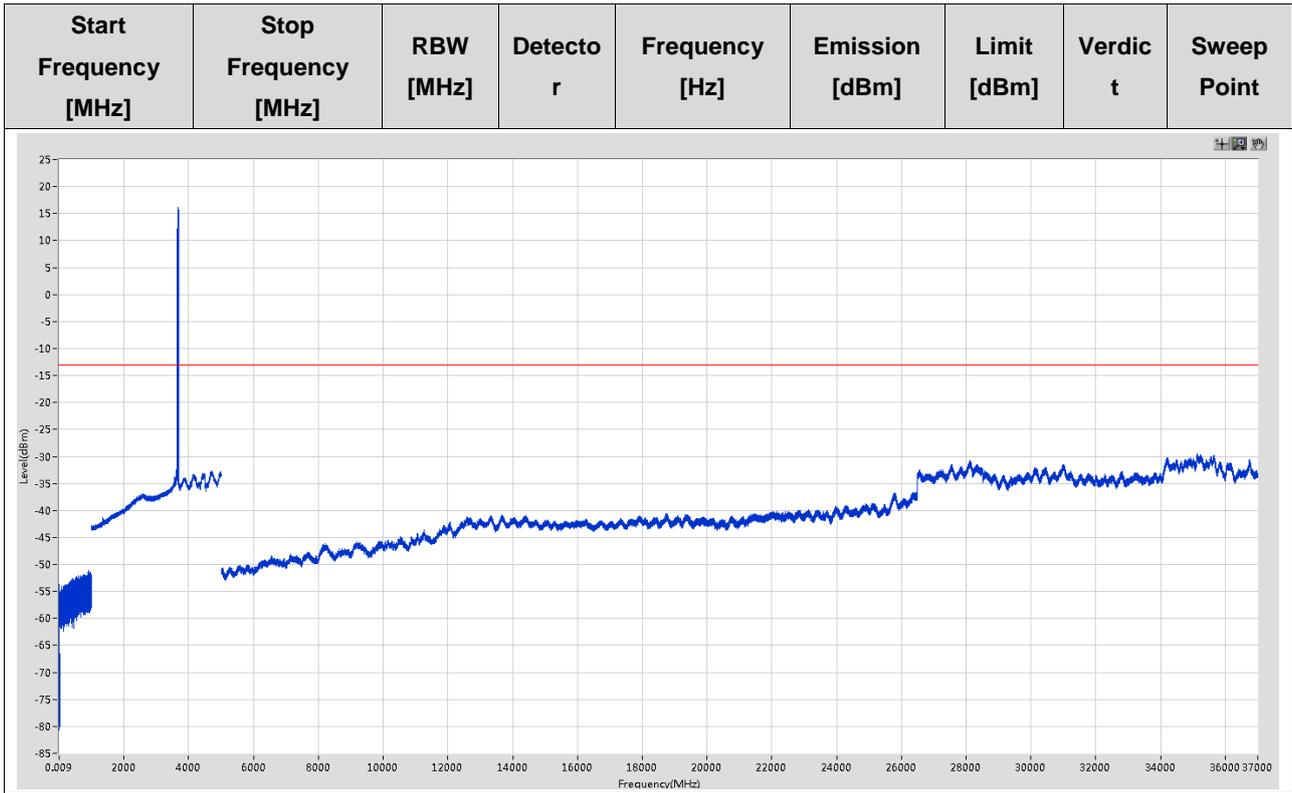
2.1.6 2L_20M_10M_T

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	66.457 k	-54.5	-13	Pass	801
0.15	30	0.01	RMS	153.98 k	-54.65	-13	Pass	15001
30	1000	0.1	RMS	863.827361 M	-51.09	-13	Pass	48502
1000	5000	1	RMS	3677.6 M	16.17	-13	NA	20001
5000	18000	1	RMS	13682.68941 3 M	-40.82	-13	Pass	65003
18000	37000	1	RMS	35653.18842 M	-29.54	-13	Pass	95004



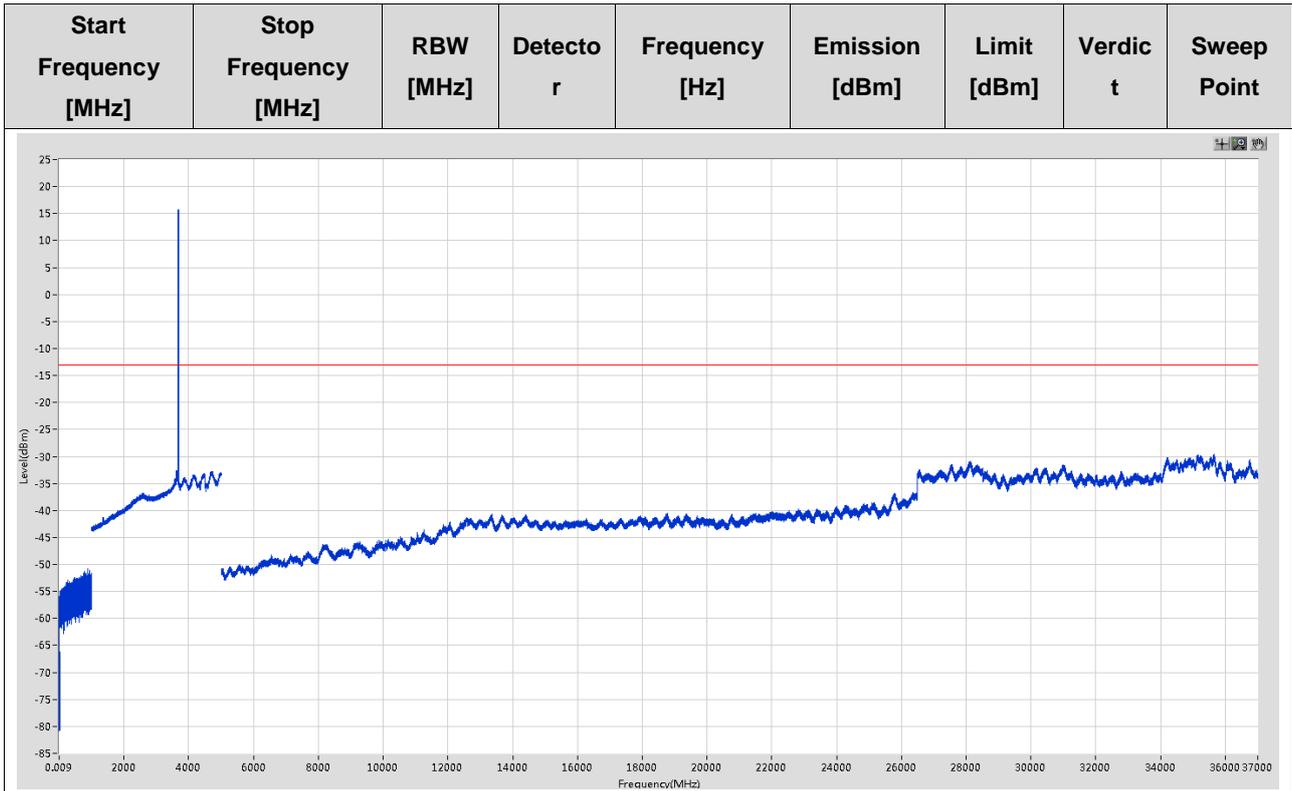
2.1.7 2L_20M_20M_B

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	66.457 k	-54.56	-13	Pass	801
0.15	30	0.01	RMS	177.86 k	-53.62	-13	Pass	15001
30	1000	0.1	RMS	927.923896 M	-51.16	-13	Pass	48502
1000	5000	1	RMS	3652.6 M	16.13	-13	NA	20001
5000	18000	1	RMS	13674.08912 7 M	-40.91	-13	Pass	65003
18000	37000	1	RMS	35131.57103 3 M	-29.49	-13	Pass	95004



2.1.8 2L_20M_20M_T

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	66.457 k	-55.91	-13	Pass	801
0.15	30	0.01	RMS	305.22 k	-56.02	-13	Pass	15001
30	1000	0.1	RMS	885.546187 M	-50.77	-13	Pass	48502
1000	5000	1	RMS	3678 M	15.68	-13	NA	20001
5000	18000	1	RMS	13356.07852 7 M	-40.7	-13	Pass	65003
18000	37000	1	RMS	35649.38829 3 M	-29.65	-13	Pass	95004

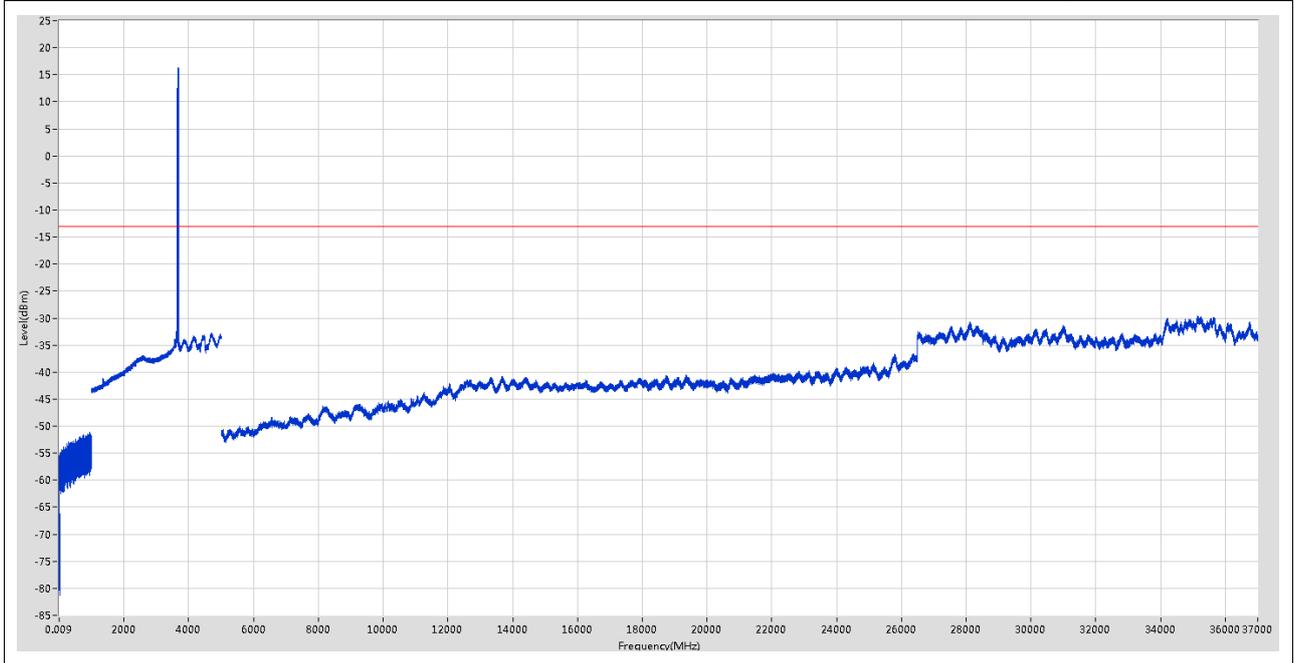


2.1.9 3L_20M_20M_10M

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	66.634 k	-55.63	-13	Pass	801
0.15	30	0.01	RMS	157.96 k	-55.5	-13	Pass	15001
30	1000	0.1	RMS	954.002486 M	-51.04	-13	Pass	48502
1000	5000	1	RMS	3652.6 M	16.33	-13	NA	20001
5000	18000	1	RMS	13675.68918 M	-40.84	-13	Pass	65003
18000	37000	1	RMS	35150.17165 3 M	-29.59	-13	Pass	95004



Start Frequency [MHz]	Stop Frequency [MHz]	RBW [MHz]	Detector	Frequency [Hz]	Emission [dBm]	Limit [dBm]	Verdict	Sweep Point
-----------------------	----------------------	-----------	----------	----------------	----------------	-------------	---------	-------------





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.)

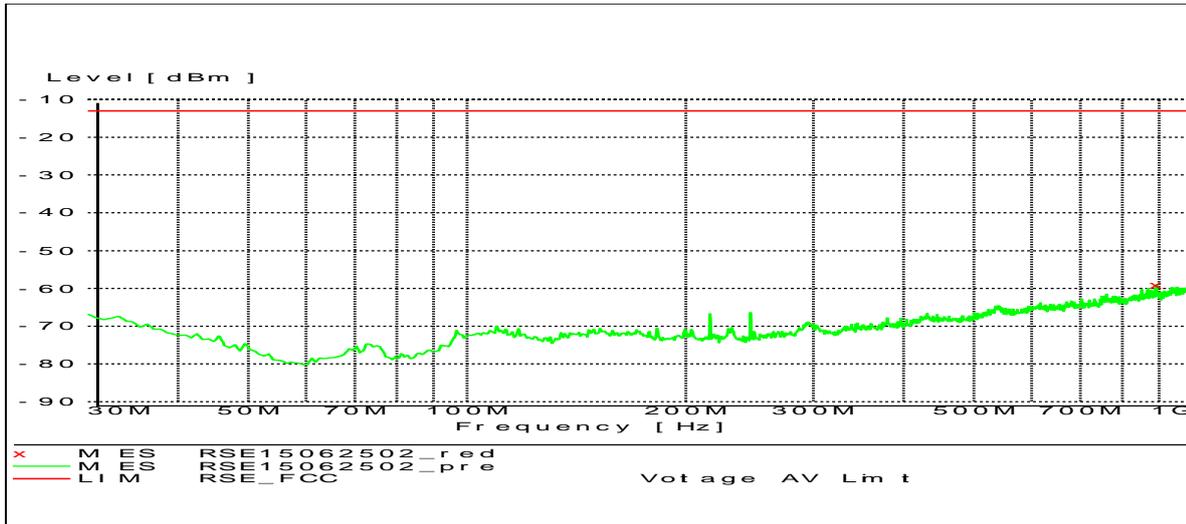
Test Range	EUT Conf.	Maximum Emission	Verdict
30 MHz to 1 GHz	3L_20M_20M_10M	< Limit	Pass
1 GHz to 18 GHz	3L_20M_20M_10M	< Limit	Pass
18 GHz to 26.5 GHz	3L_20M_20M_10M	< Limit	Pass
26.5GHz to 40GHz	3L_20M_20M_10M	< Limit	Pass

2 Test Plot

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

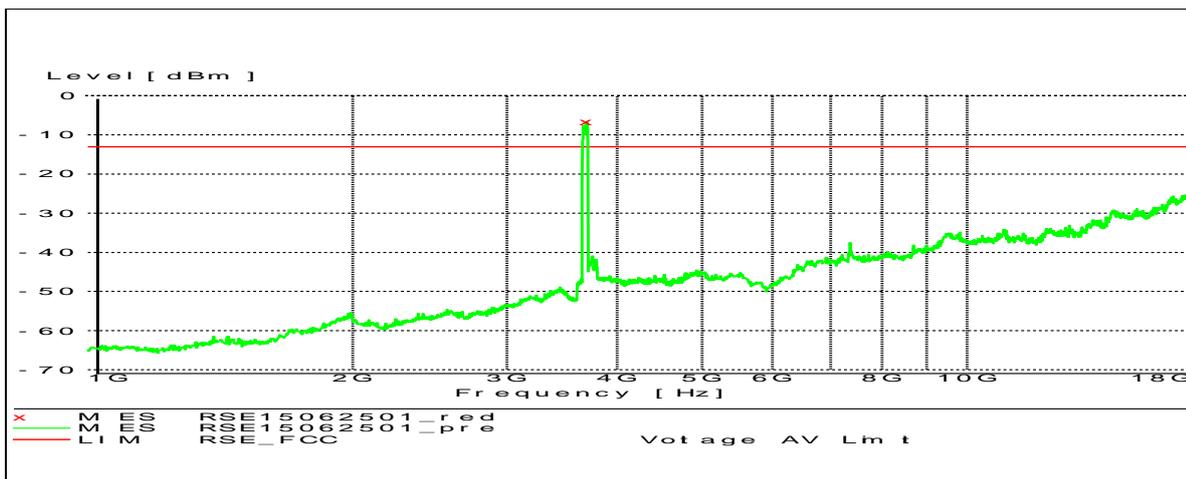
2.1 Test range of “30 MHz to 1 GHz”

2.1.1 3L_20M_20M_10M



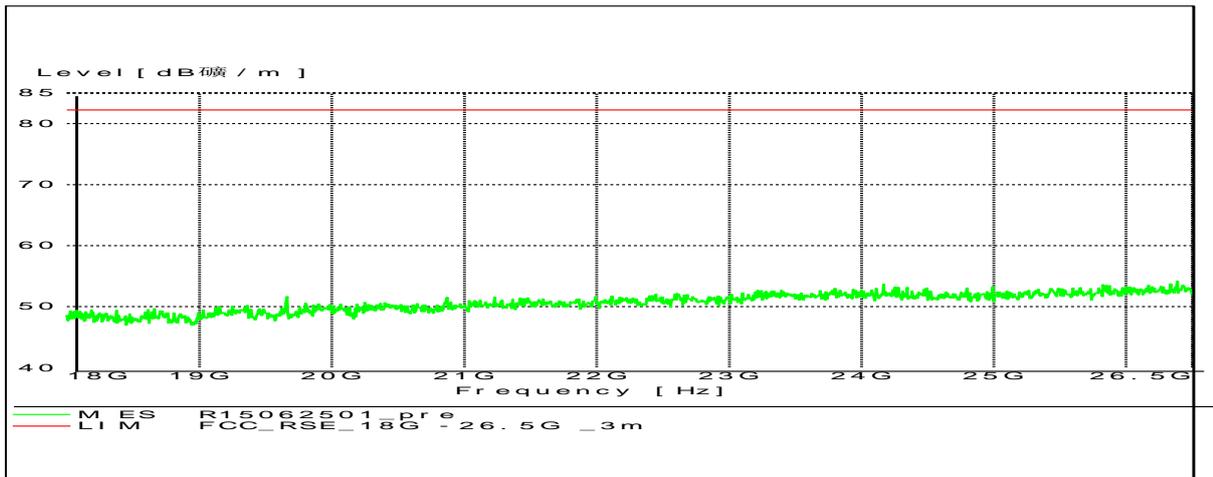
2.2 Test range of “1 GHz to 18 GHz”

2.2.1 3L_20M_20M_10M



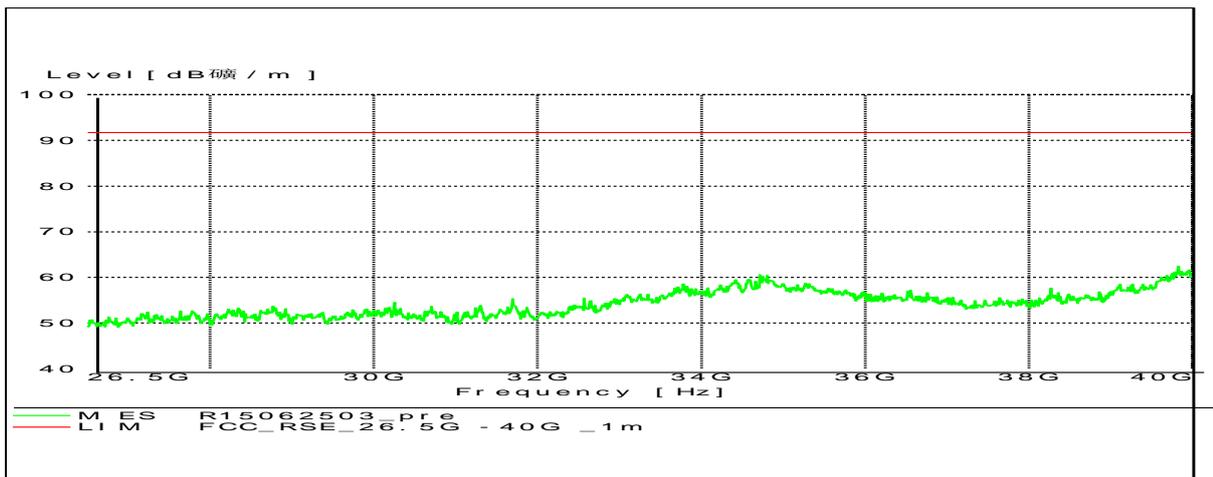
2.3 Test range of “18 GHz to 26.5 GHz”

2.3.1 3L_20M_20M_10M



2.4 Test range of "26.5 GHz to 40 GHz"

2.4.1 3L_20M_20M_10M





Appendix F: Frequency Stability



1 Result Table

1.1 Frequency Error

EUT Conf.	Temperature	Voltage	Freq. Error, f(offset) [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Verdict
1L_20M_B	-30 °C	100%	8.70	0.0024	0.0024	---
	-20 °C	100%	12.68	0.0035	0.0035	---
	-10 °C	100%	13.51	0.0037	0.0037	---
	0 °C	100%	8.06	0.0022	0.0022	---
	+10 °C	100%	11.80	0.0032	0.0032	---
	+20 °C	85 %	13.65	0.0037	0.0037	---
	+20 °C	100 %	15.99	0.0044	---	---
	+20 °C	115 %	16.19	0.0044	0.0044	---
	+30 °C	100%	9.96	0.0027	0.0027	---
	+40 °C	100%	5.68	0.0016	0.0016	---
	+50 °C	100%	6.92	0.0019	0.0019	---
1L_20M_T	-30 °C	100%	4.87	0.0013	0.0013	---
	-20 °C	100%	9.94	0.0027	0.0027	---
	-10 °C	100%	12.57	0.0034	0.0034	---
	0 °C	100%	6.79	0.0018	0.0018	---
	+10 °C	100%	5.60	0.0015	0.0015	---
	+20 °C	85 %	16.03	0.0043	0.0043	---
	+20 °C	100 %	9.96	0.0027	---	---
	+20 °C	115 %	10.29	0.0028	0.0028	---
	+30 °C	100%	10.64	0.0029	0.0029	---
	+40 °C	100%	8.87	0.0024	0.0024	---
	+50 °C	100%	7.41	0.0020	0.0020	---

END