Appendix A: Transmitter Output Power

1 Result Table

1.1 Channel Power, Total

NOTE 1: If applicable, the EIRP [W] = 10 ^ ((Channel Power [dBm] + Combined Gain + Antenna Gain [dBi]) / 10 - 3), and the ERP [W] = EIRP [W] / 1.64.

Note 2: Antenna Gain is 0 dBi due to no integral antenna.

NOTE 3: 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]	EIRP [W]	Limit [W]	Verdict
1L_20M_B_TM1	26.78	0	9	3.78	20	Pass
1L_20M_M_TM1	26.64	0	9	3.66	20	Pass
1L_20M_T_TM1	26.52	0	9	3.56	20	Pass
2L_20M_10M_M_TM1	28.53	0	9	5.66	30	Pass
2L_20M_20M_B_TM1	29.90	0	9	7.76	40	Pass
2L_20M_20M_T_TM1	29.84	0	9	7.66	40	Pass
3L_20M_20M_10M_M_TM1	30.92	0	9	9.82	40	Pass

1.2 Power Spectral Density

NOTE 1: If applicable, the EIRP [W] = 10 ^ ((Channel Power [dBm] + Combined Gain + Antenna Gain [dBi]) / 10 - 3), and the ERP [W] = EIRP [W] / 1.64.

Note 2: Antenna Gain is 0 dBi due to no integral antenna.

NOTE 3: 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]	EIRP [W/MHz]	Limit [W/MHz]	Verdict
1L_20M_B_TM1	14.54	0	9	0.23	1	Pass
1L_20M_M_TM1	14.42	0	9	0.22	1	Pass
1L_20M_T_TM1	14.16	0	9	0.21	1	Pass
2L_20M_10M_M_TM1	14.60	0	9	0.23	1	Pass
2L_20M_20M_B_TM1	14.56	0	9	0.23	1	Pass
2L_20M_20M_T_TM1	14.65	0	9	0.23	1	Pass
3L_20M_20M_10M_M_TM1	14.59	0	9	0.23	1	Pass

1.3 Peak-to-Average Ratio

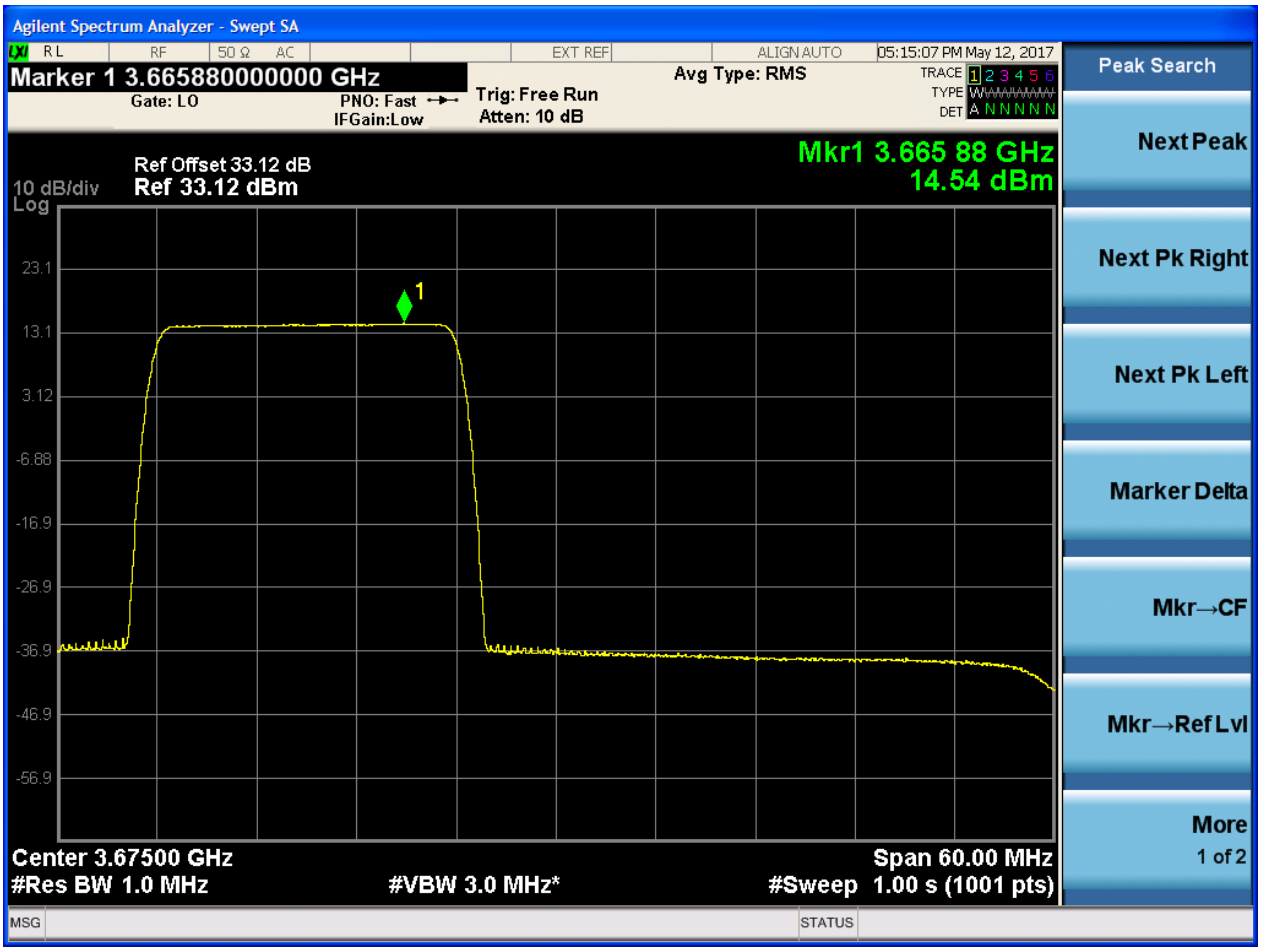
EUT Conf.	Peak-to-Average Ratio@0.1% [dB]	Verdict
1L_20M_B_TM1	8.61	---
1L_20M_M_TM1	8.69	---
1L_20M_T_TM1	8.62	---

2 Test Plot

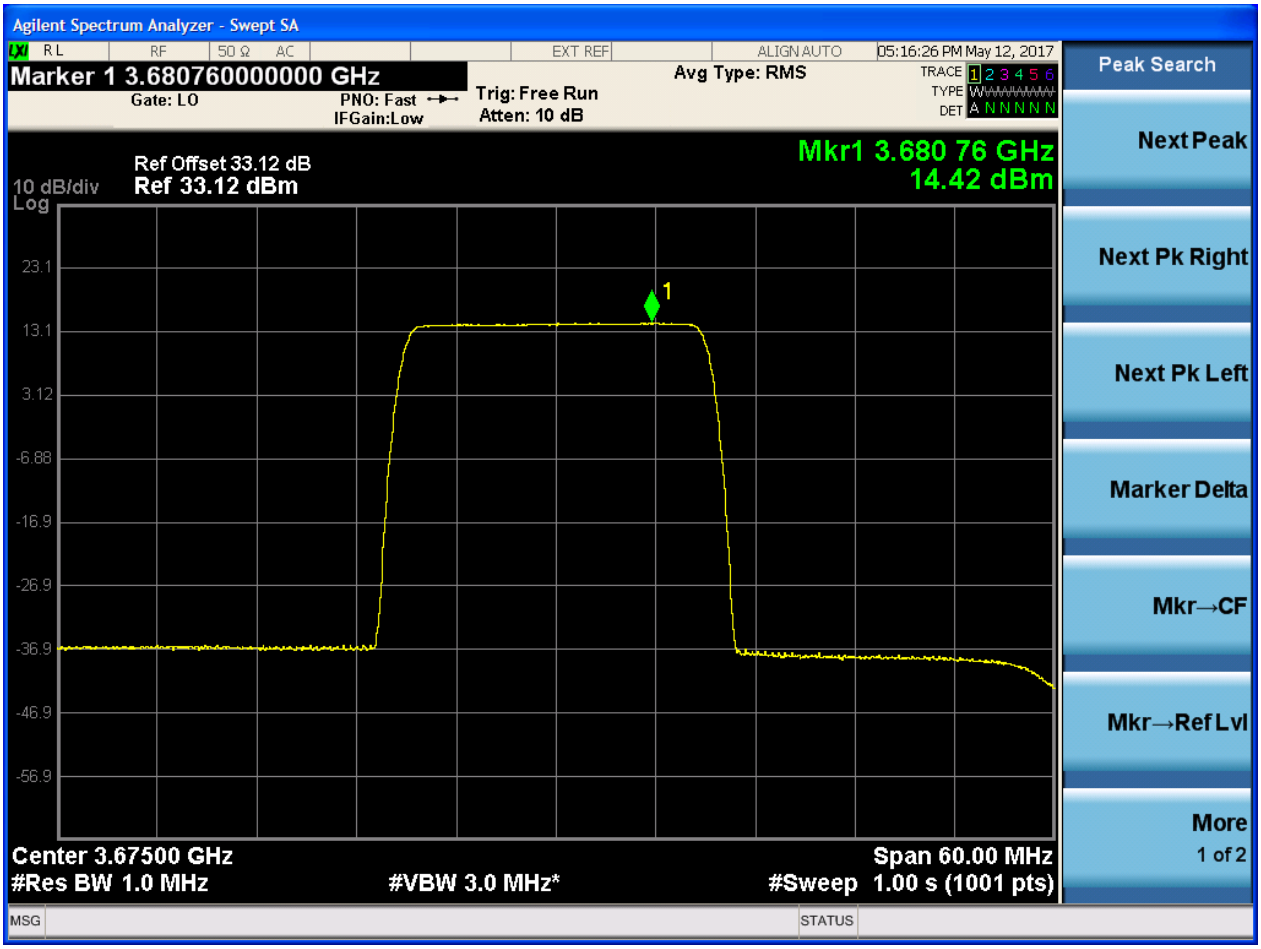
NOTE: Only the test plots for the measurements of Spectral Density and Peak-to-Average Ratio are supplied.

2.1 Power Spectral Density

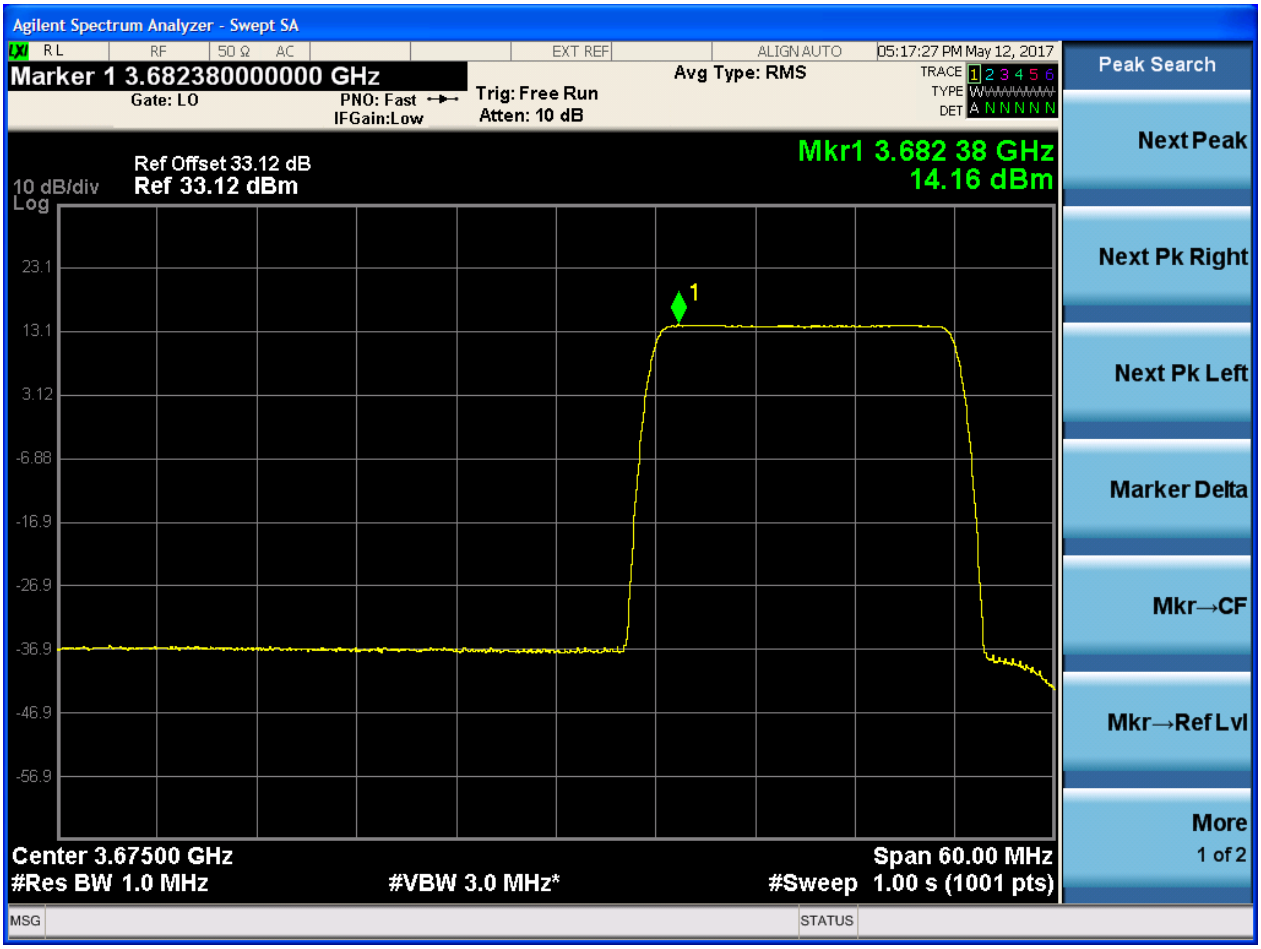
2.1.1 1L_20M_B_TM1



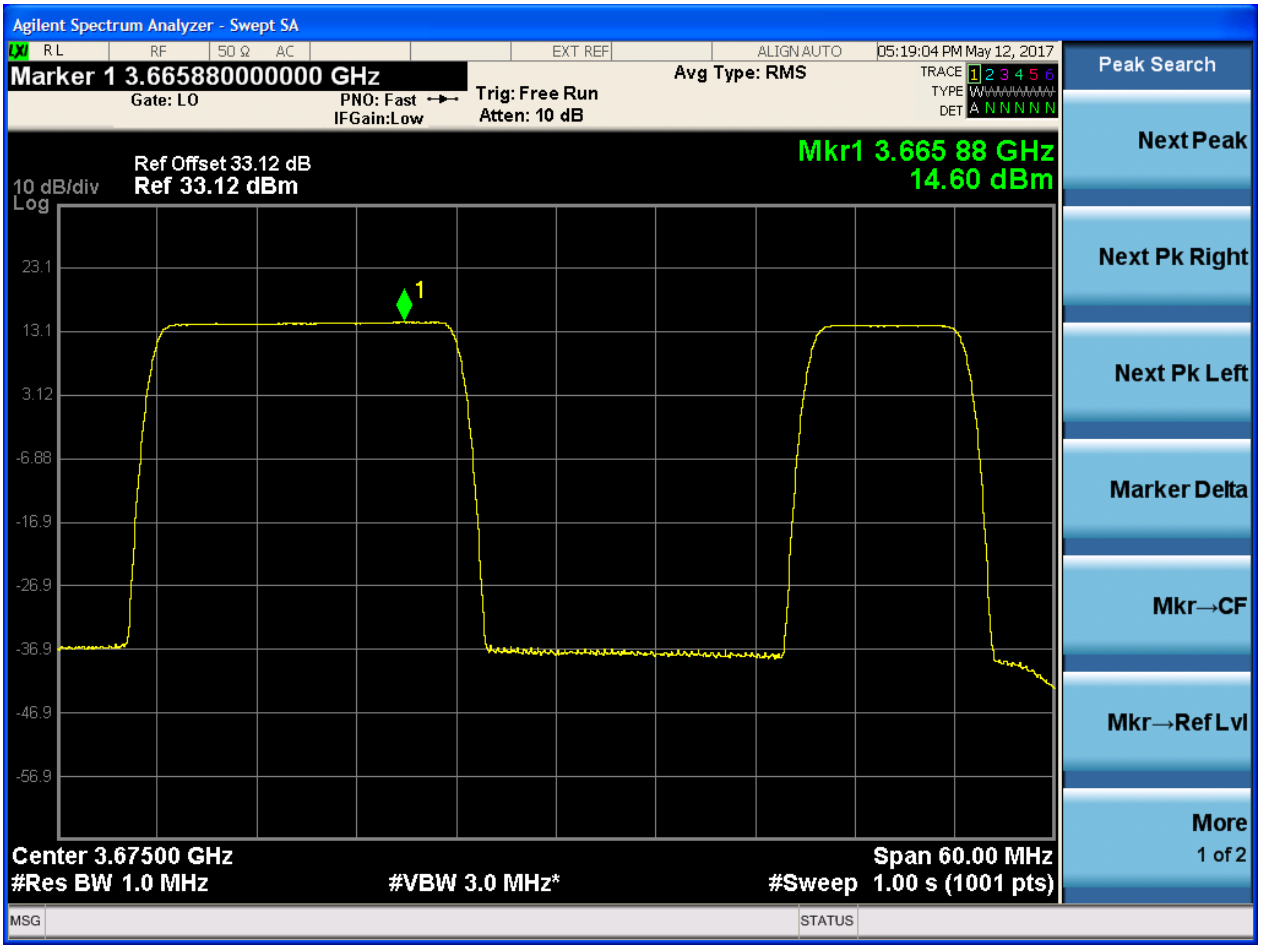
2.1.2 1L_20M_M_TM1



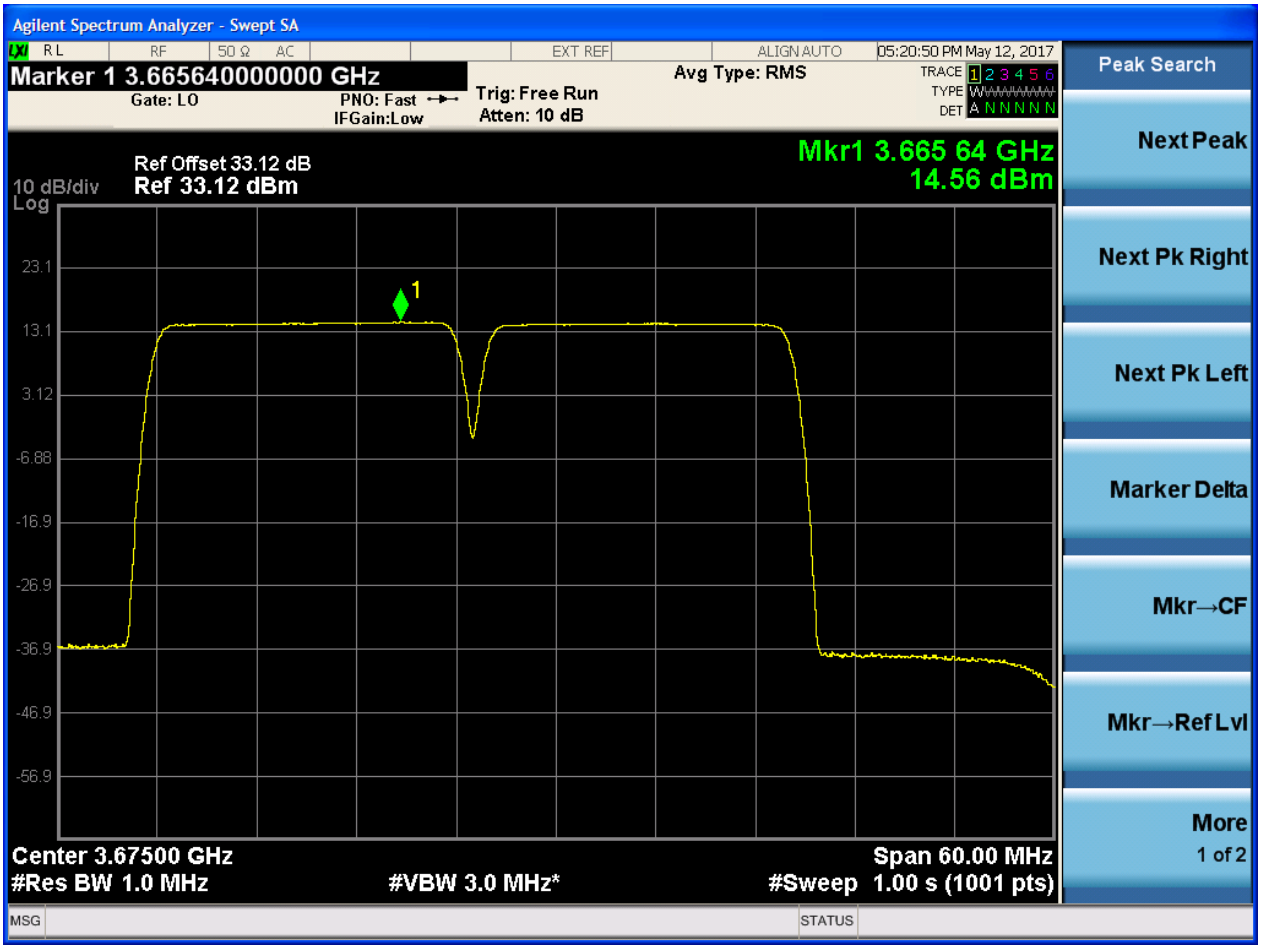
2.1.3 1L_20M_T_TM1



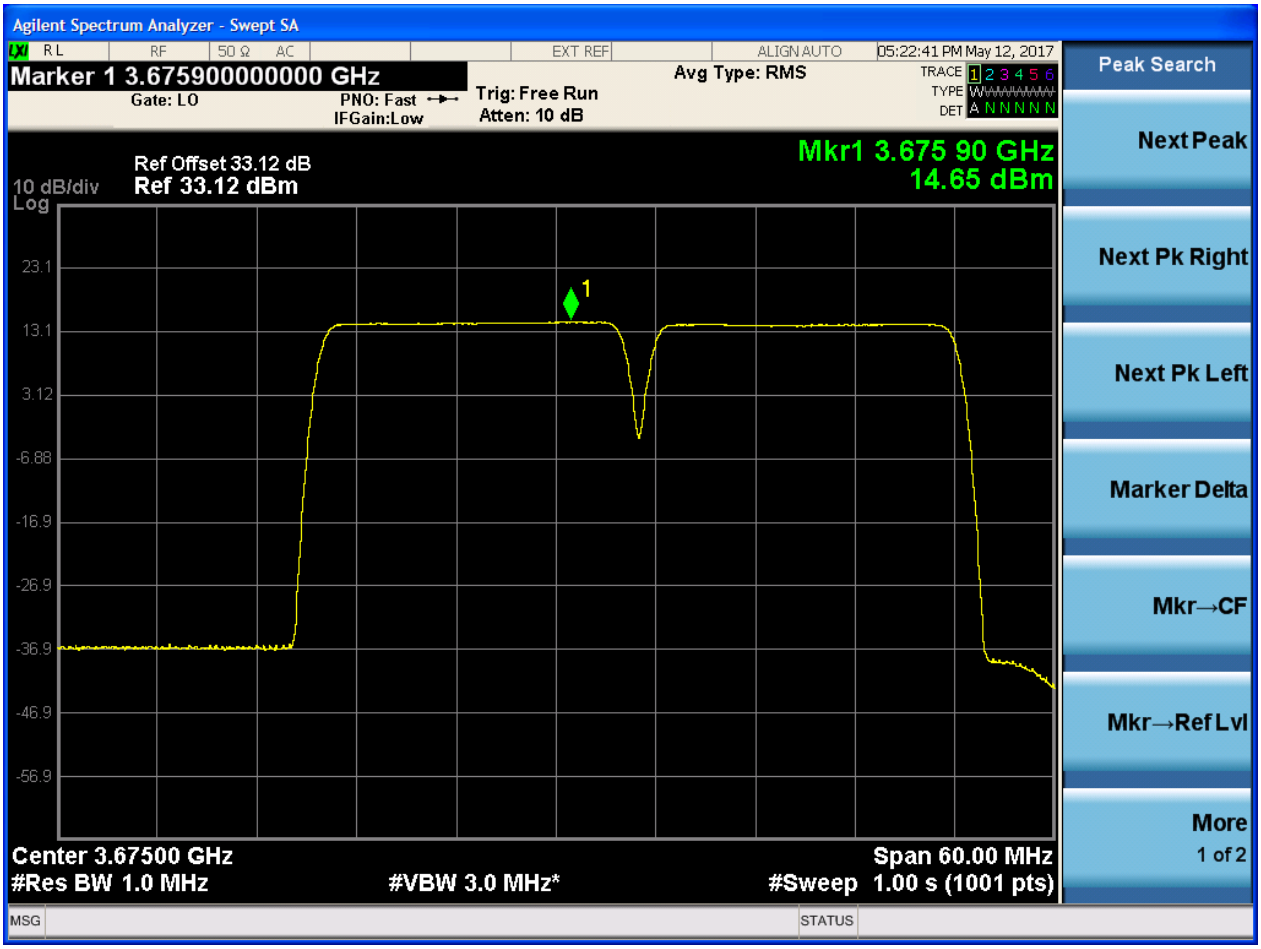
2.1.4 2L_20M_10M_M_TM1



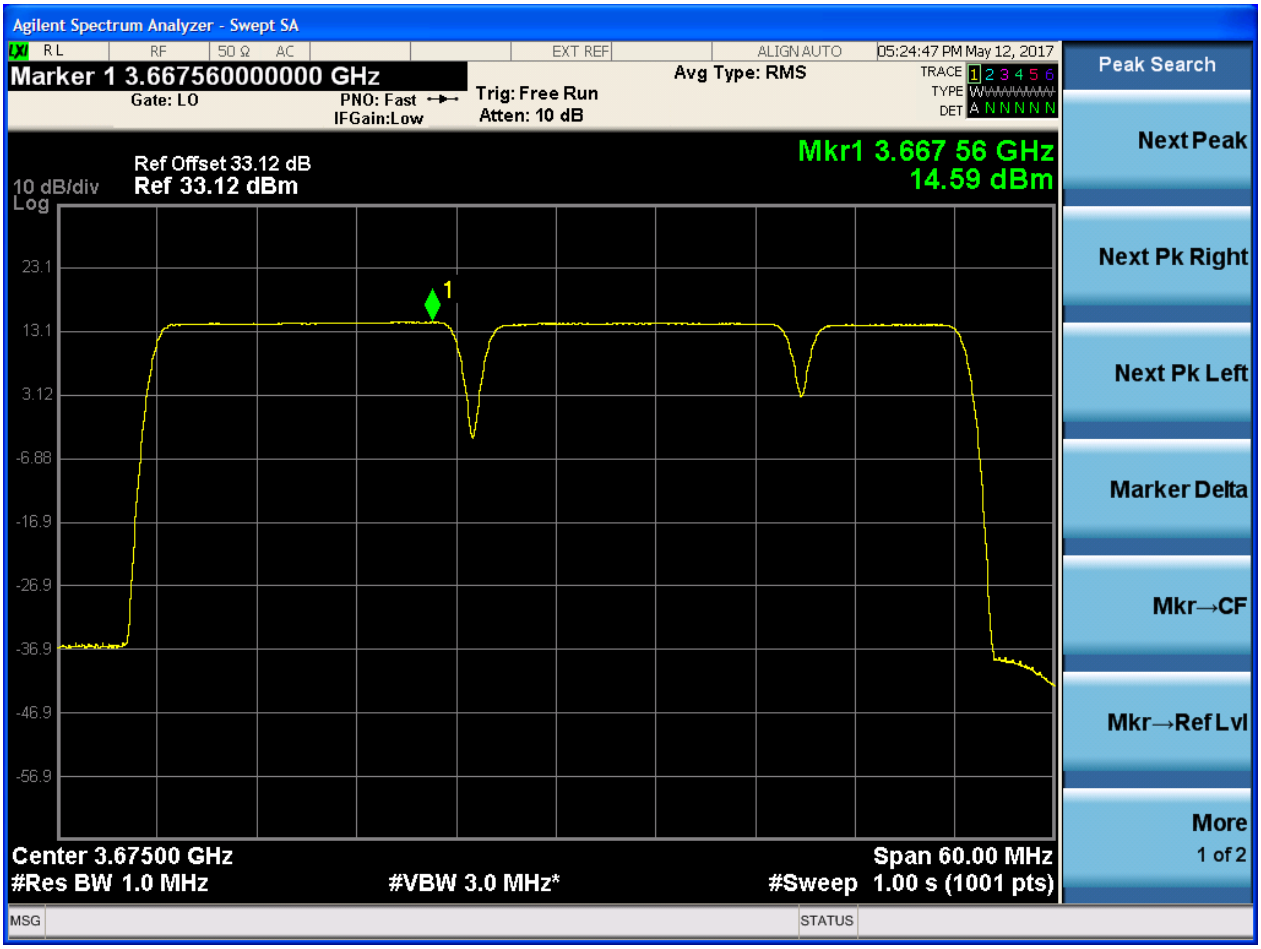
2.1.5 2L_20M_20M_B_TM1



2.1.6 2L_20M_20M_T_TM1

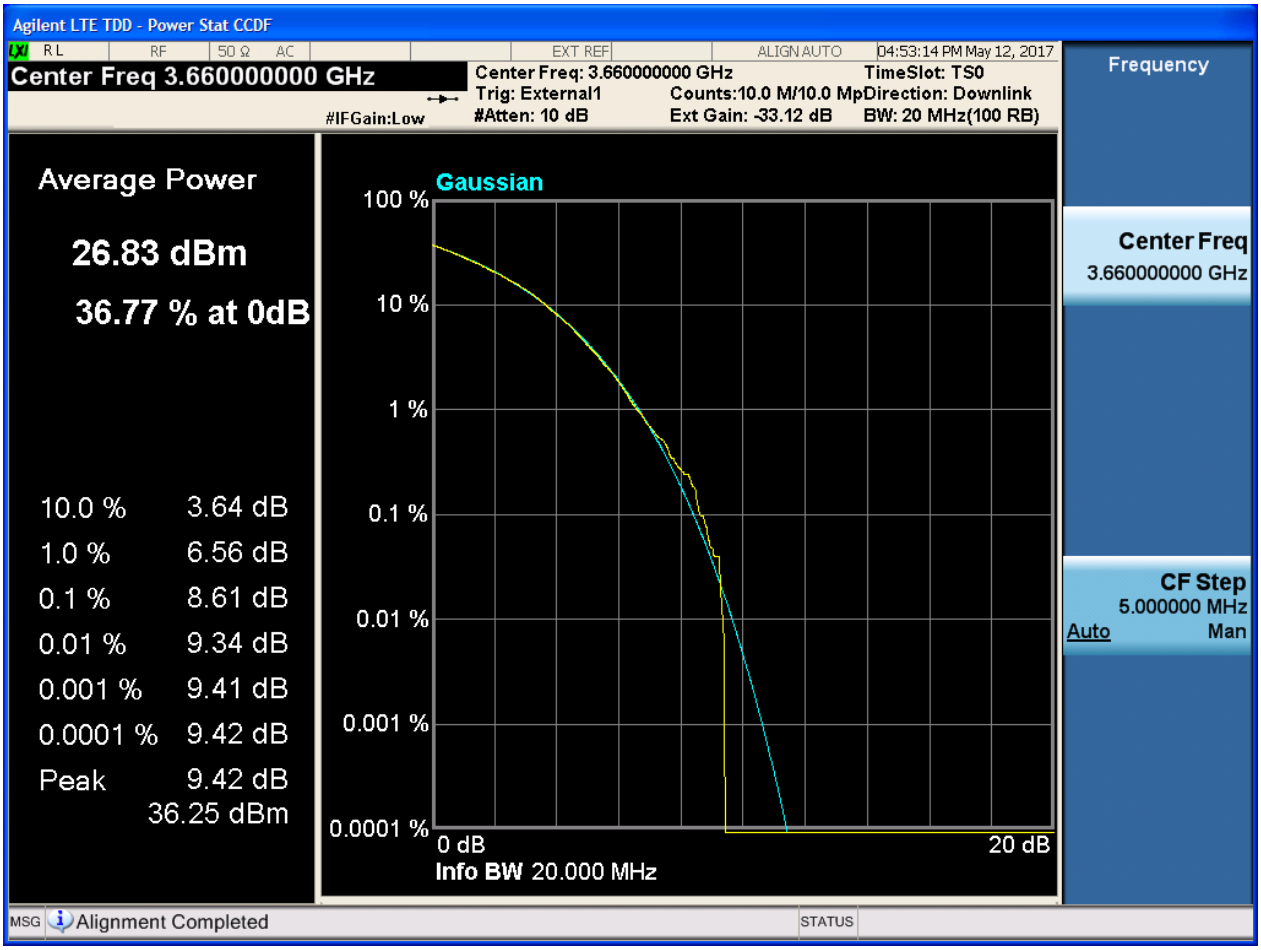


2.1.7 3L_20M_20M_10M_M_TM1

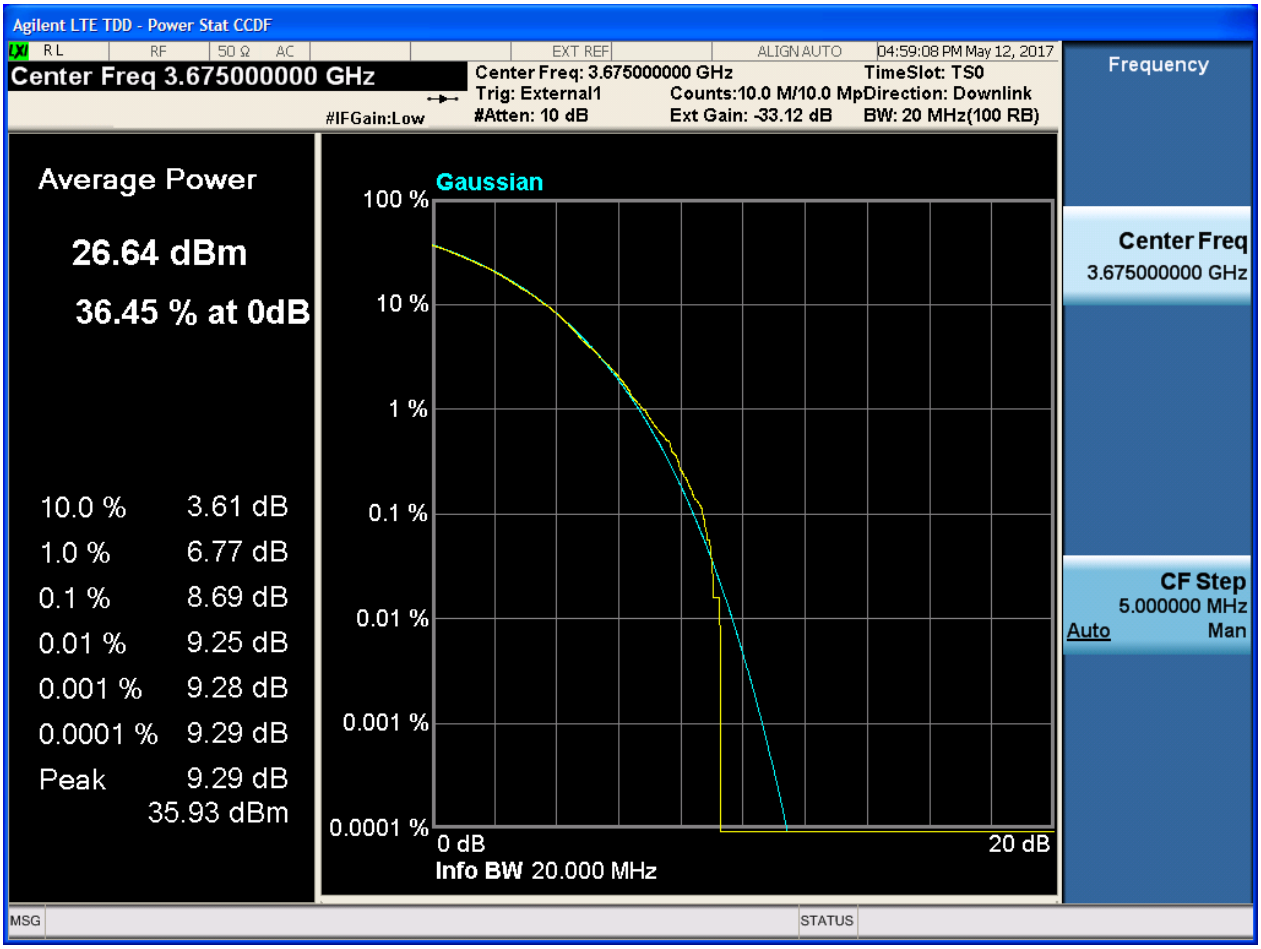


2.2 Peak-to-Average Ratio

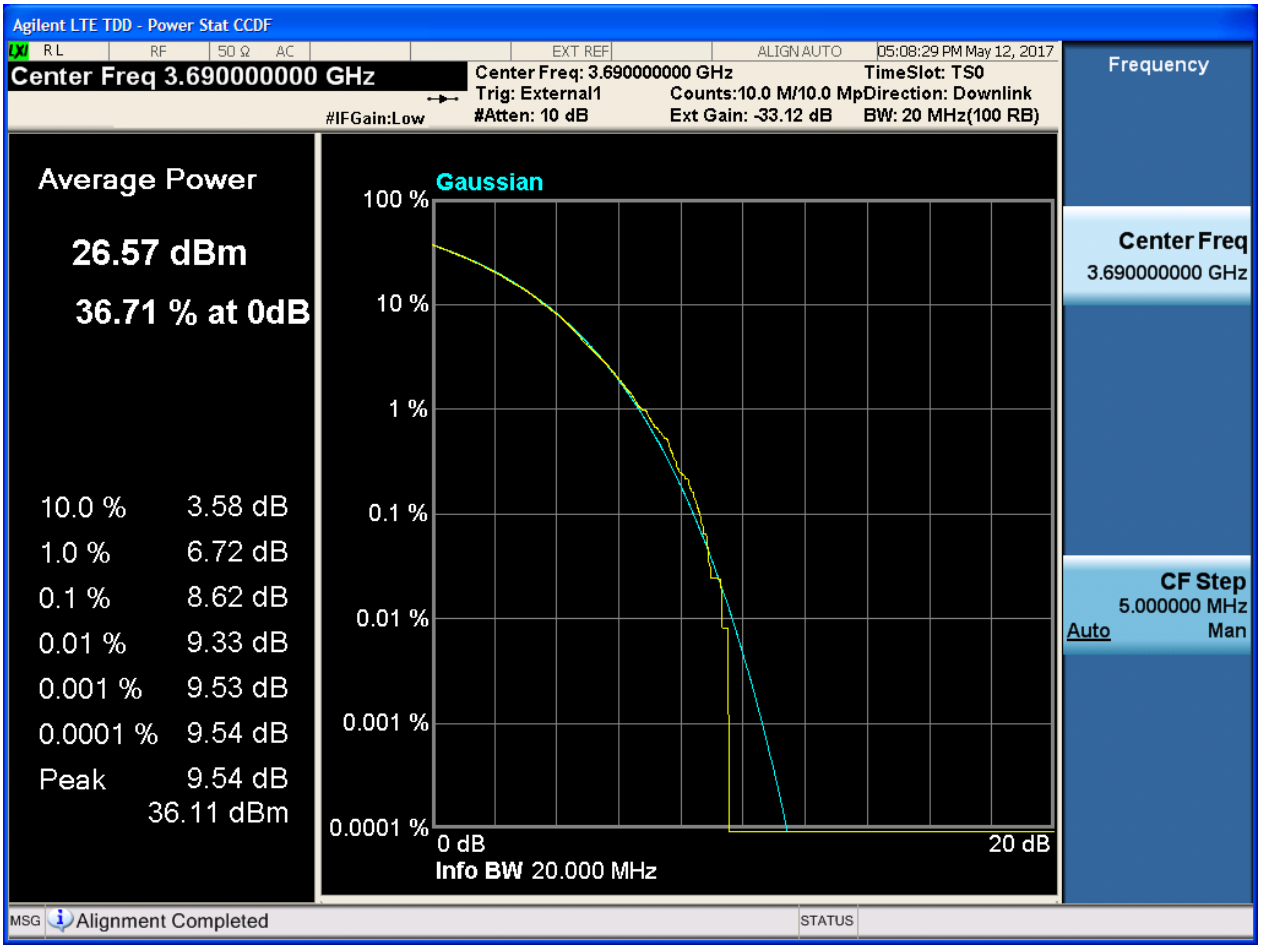
2.2.1 1L_20M_B_TM1



2.2.2 1L_20M_M_TM1



2.2.3 1L_20M_T_TM1



Appendix B: Bandwidth

1 Result Table

1.1 Occupied Bandwidth

EUT Conf.	Occupied Bandwidth [MHz]	Verdict
1L_20M_B_TM1	17.869	---
1L_20M_M_TM1	17.870	---
1L_20M_T_TM1	17.868	---

1.2 Emission Bandwidth

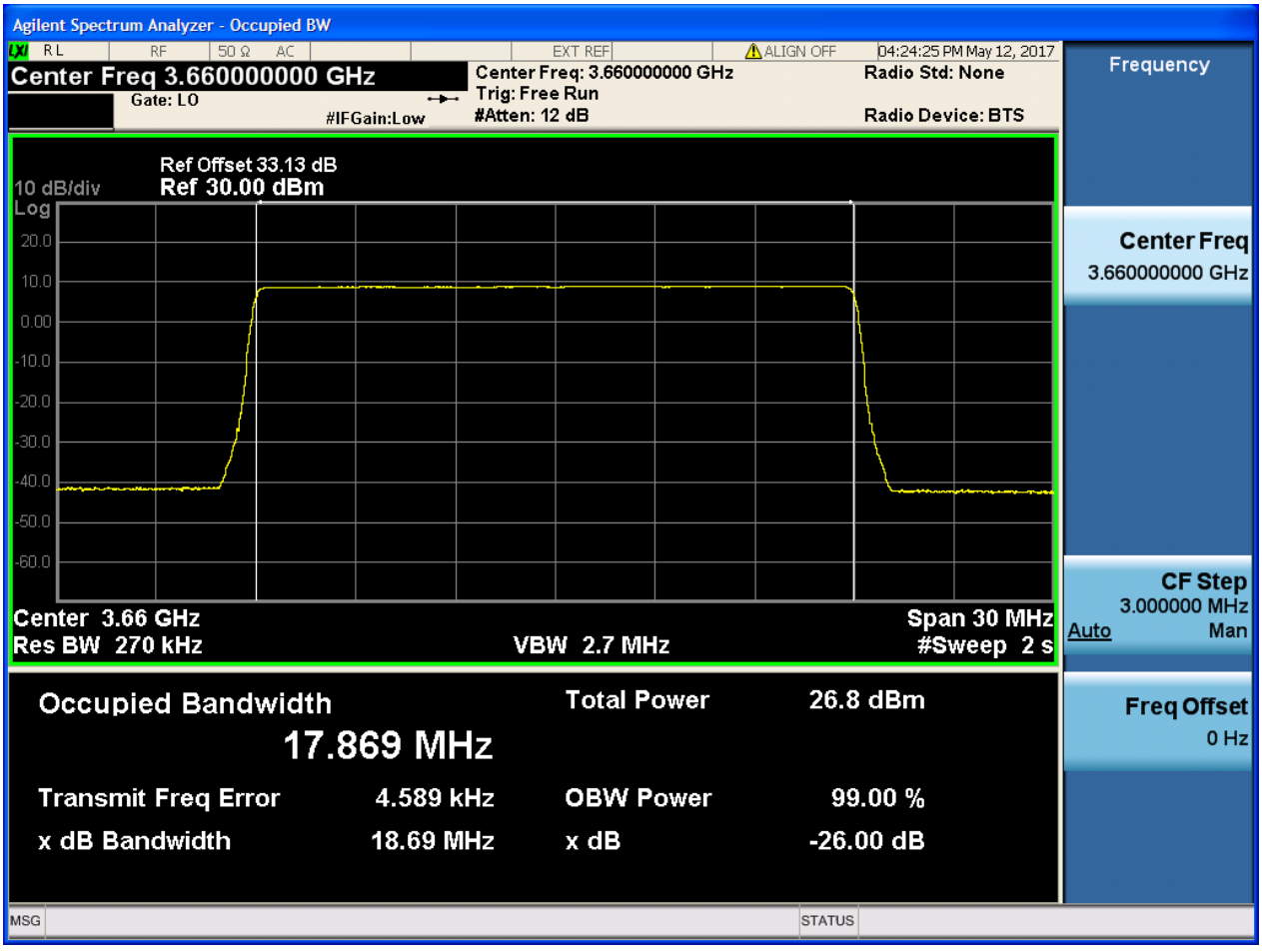
Not applicable

2 Test Plot

2.1 Occupied Bandwidth

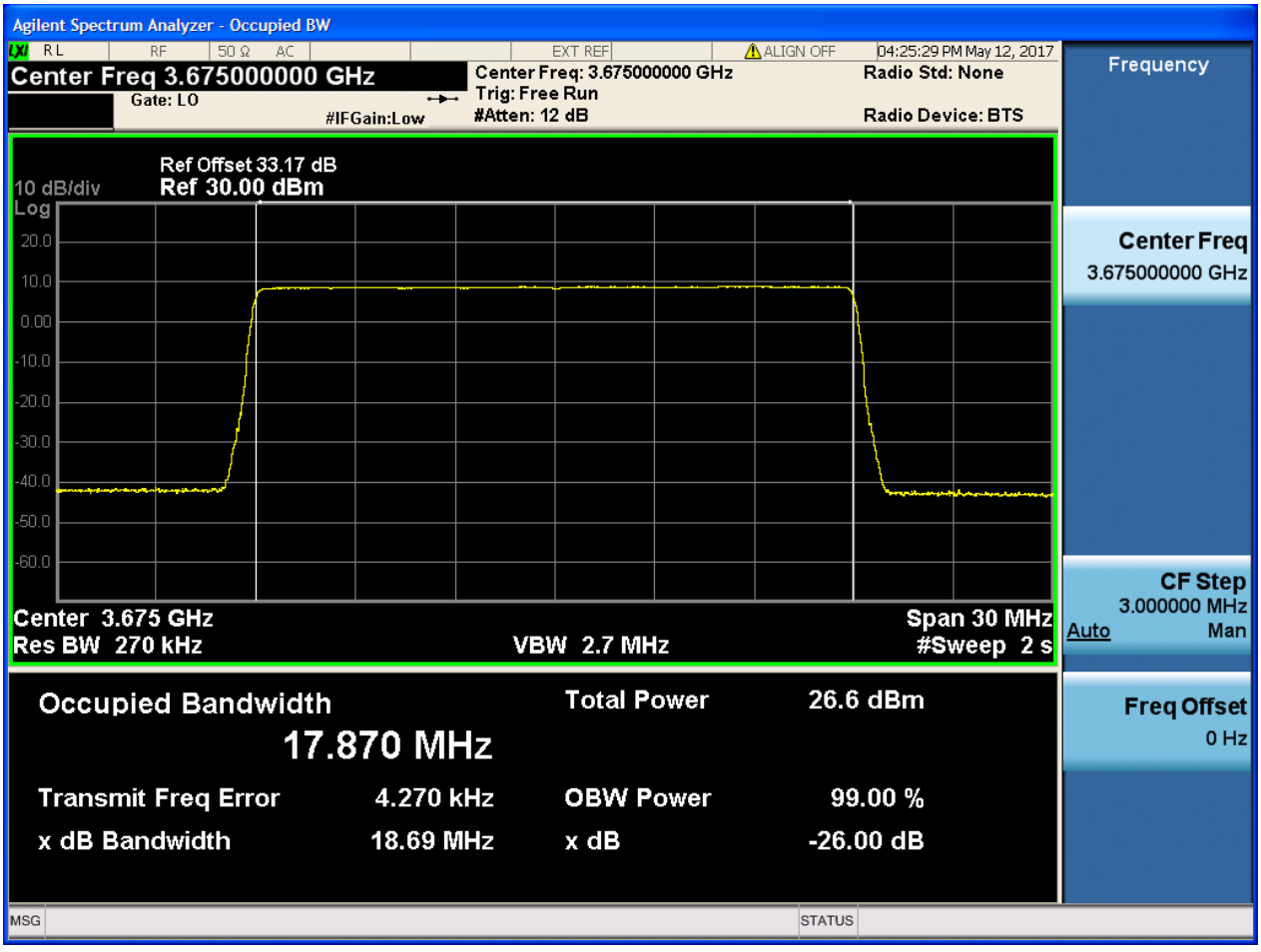
2.1.1 1L_20M_B_TM1

Center Frequency [MHz]	OBW Power [%]	RBW [MHz]	Detector	OBW [MHz]	Verdict
3660	99	Auto	RMS	17.869227	No Conclusion



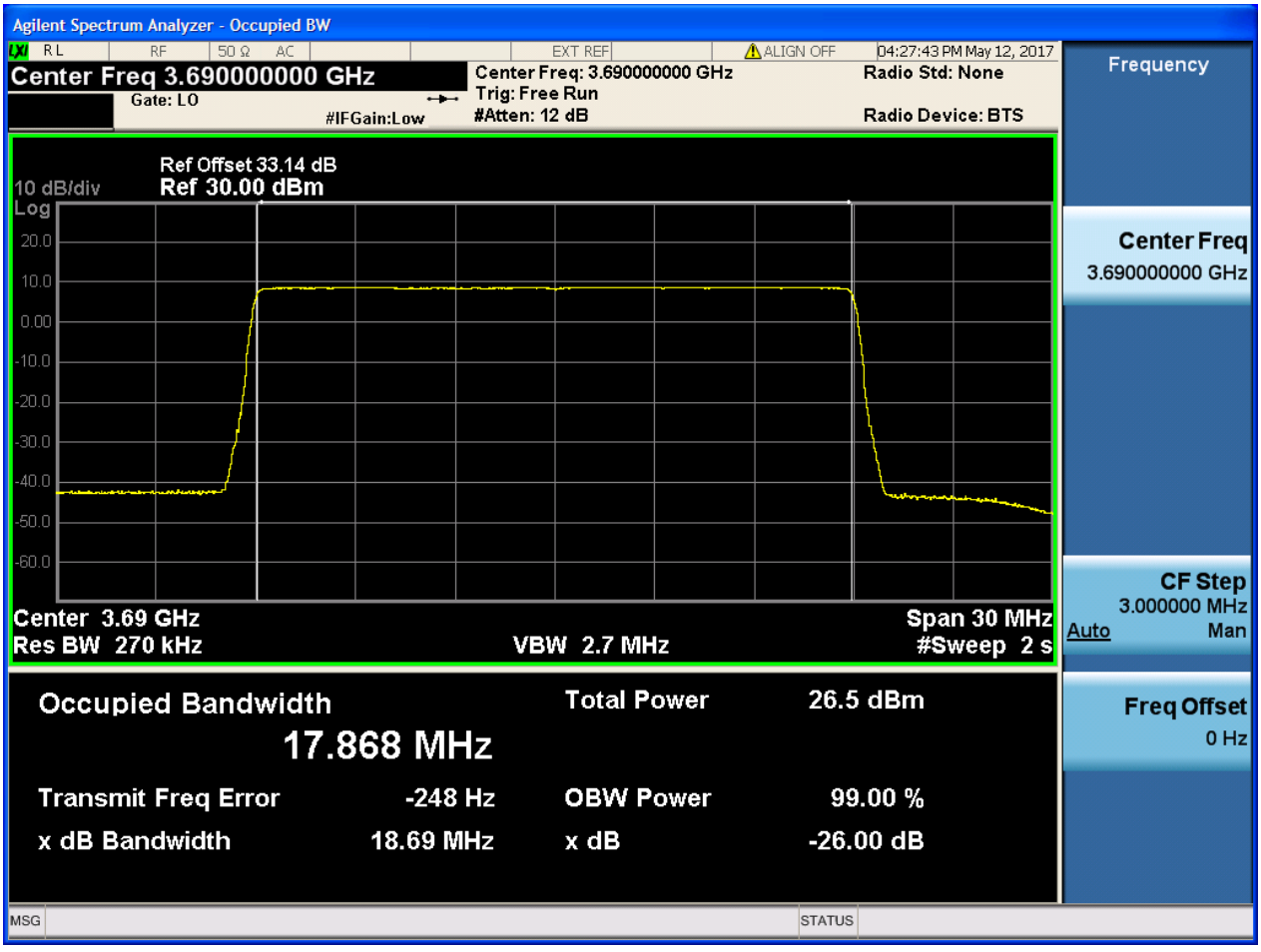
2.1.2 1L_20M_M_TM1

Center Frequency [MHz]	OBW Power [%]	RBW [MHz]	Detector	OBW [MHz]	Verdict
3675	99	Auto	RMS	17.870409	No Conclusion



2.1.3 1L_20M_T_TM1

Center Frequency [MHz]	OBW Power [%]	RBW [MHz]	Detector	OBW [MHz]	Verdict
3690	99	Auto	RMS	17.86751	No Conclusion



Appendix C: Band Edges Compliance / Emission Mask

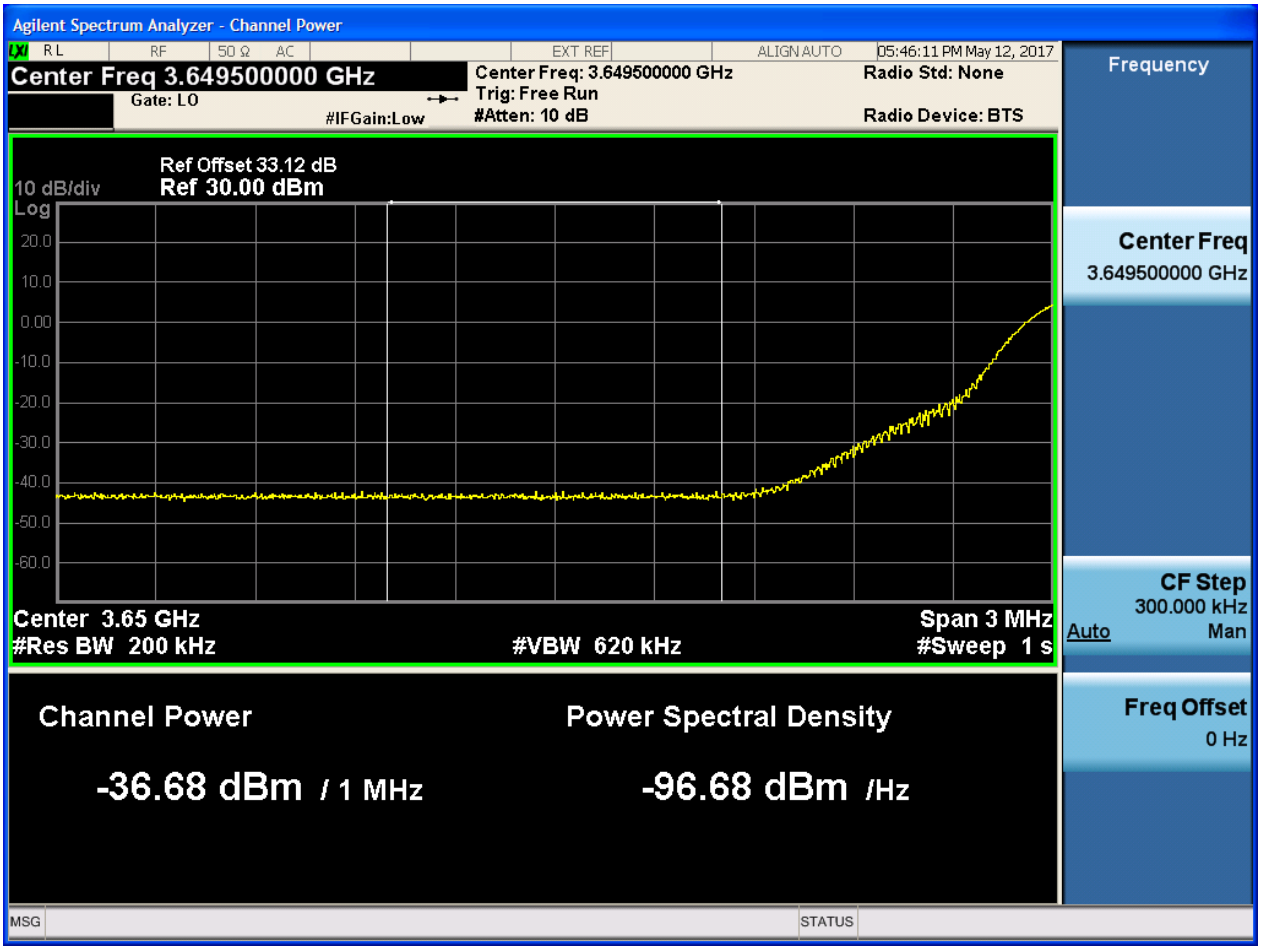
1 Result Table

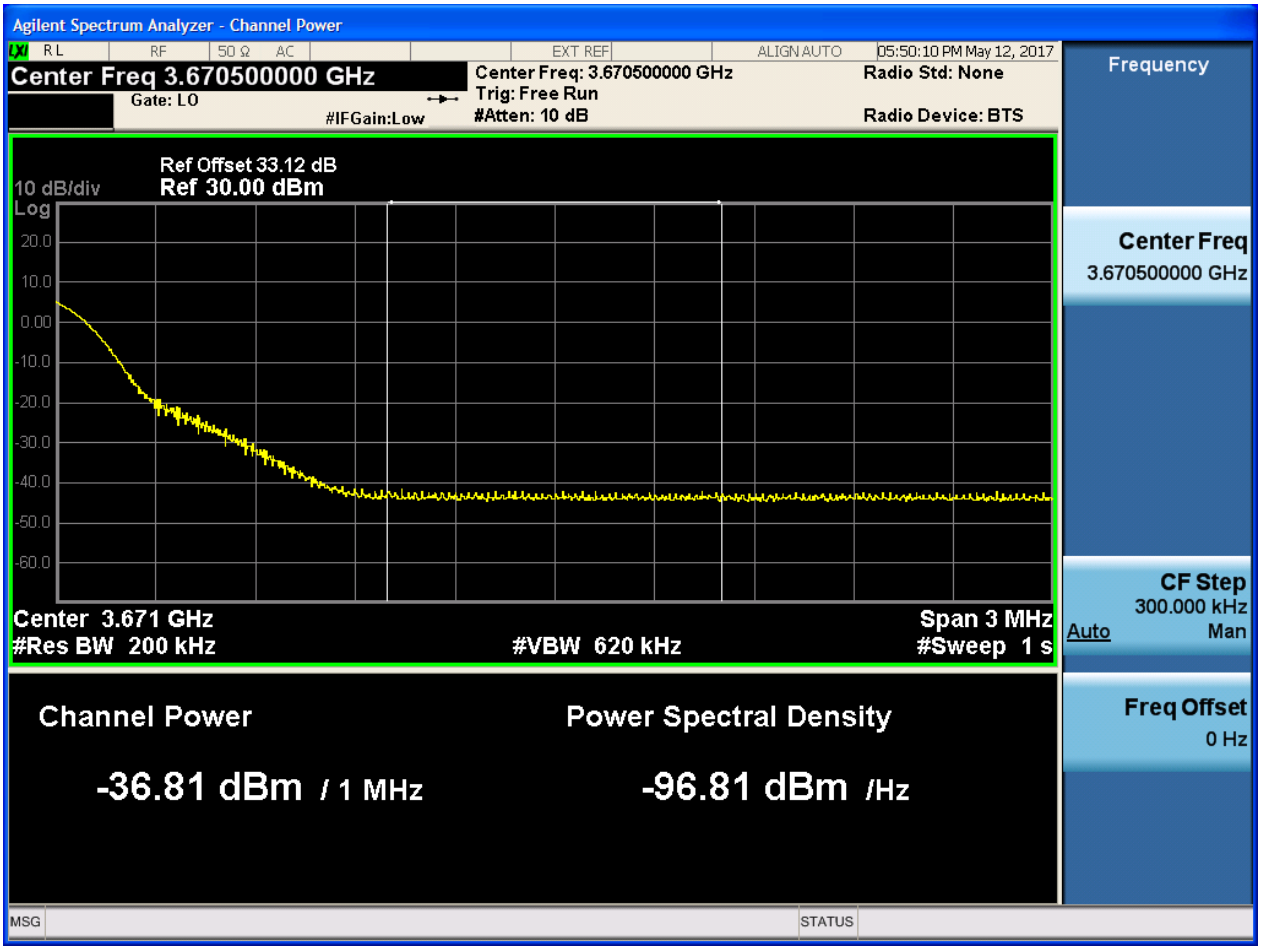
NOTE: If applicable, the offset of measurement filter -3dB point may be considered when identifying the maximum emission for e.g. the CDMA, WCDMA, WiMAX, LTE systems.

EUT Conf.	Maximum Emission [dBm]	Verdict
1L_20M_B_TM1	-36.68	Pass
1L_20M_M_TM1	-36.76	Pass
1L_20M_T_TM1	-37.56	Pass
2L_20M_10M_M_TM1	-36.63	Pass
2L_20M_20M_B_TM1	-36.66	Pass
2L_20M_20M_T_TM1	-36.94	Pass
3L_20M_20M_10M_M_TM1	-36.76	Pass

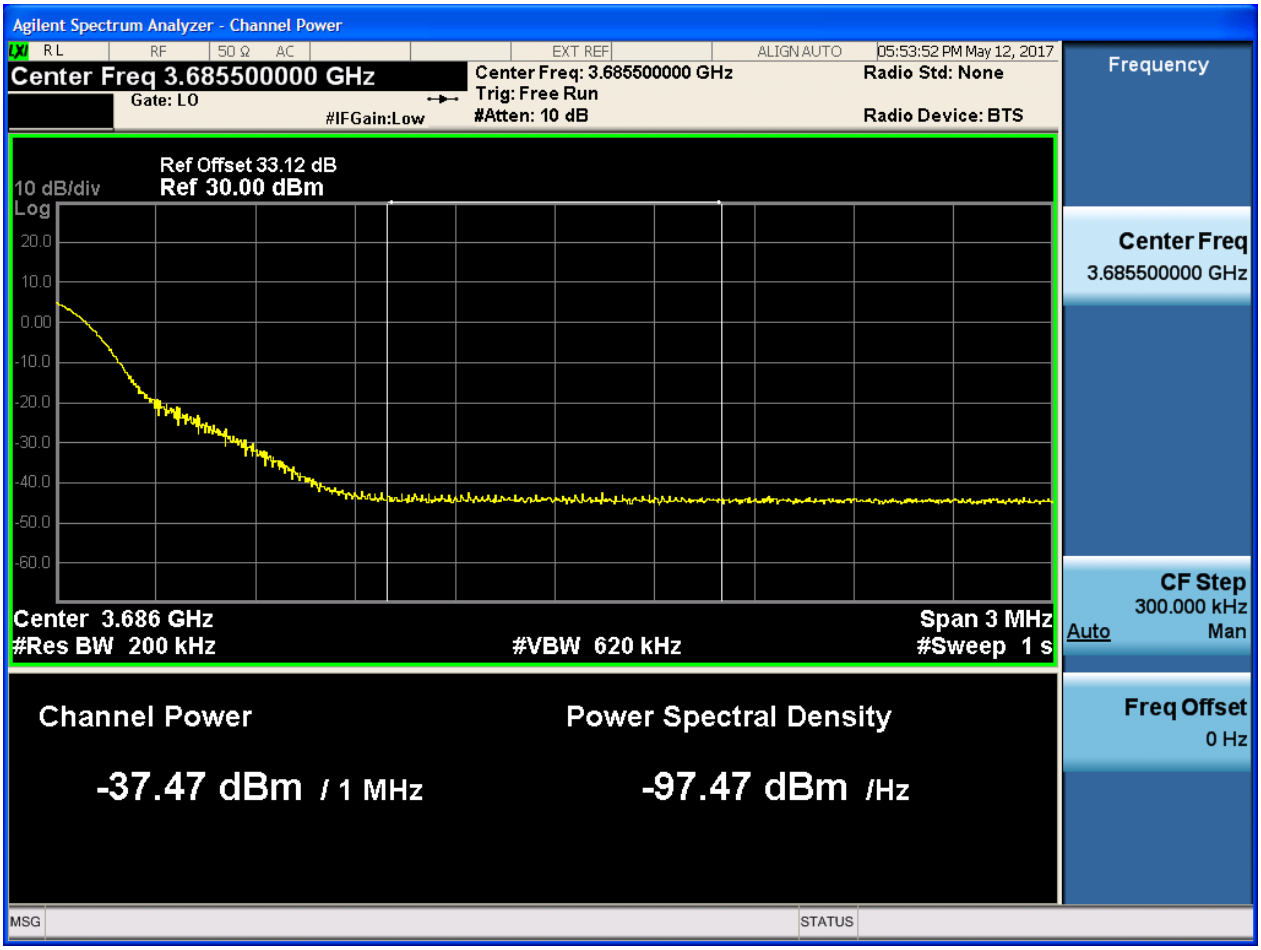
2 Test Plot

2.1.1 1L_20M_B_TM1

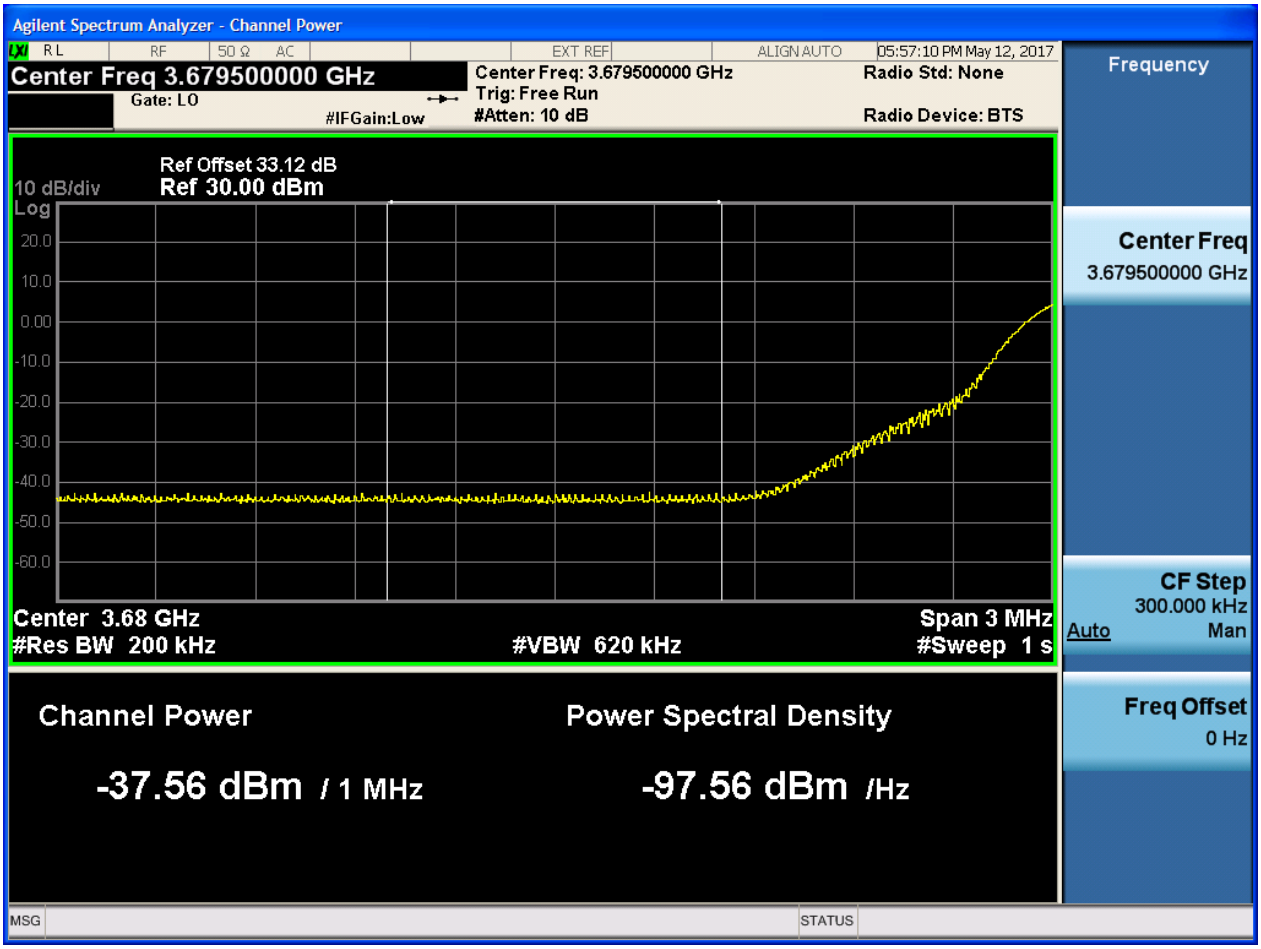


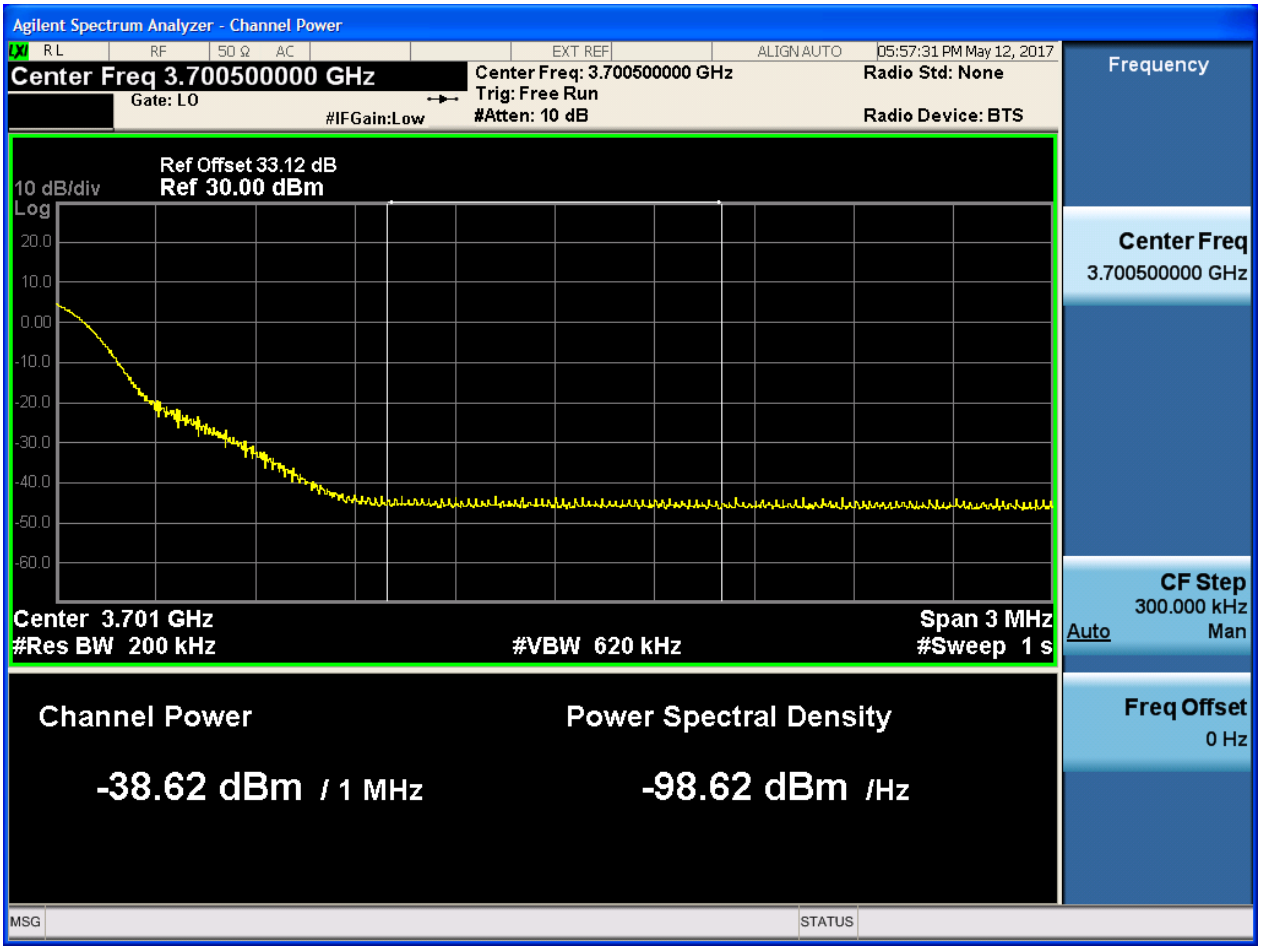


2.1.2 1L_20M_M_TM1

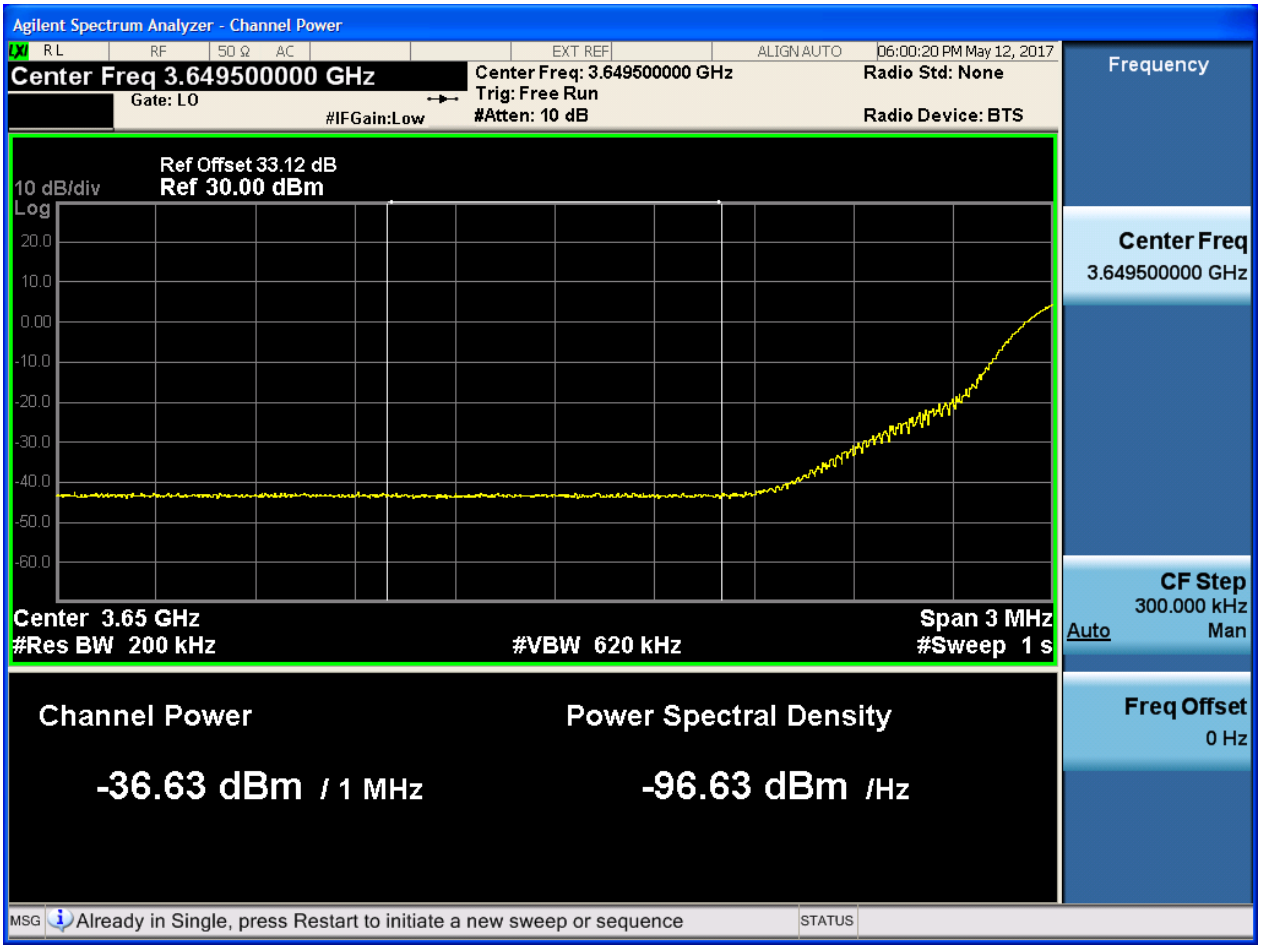


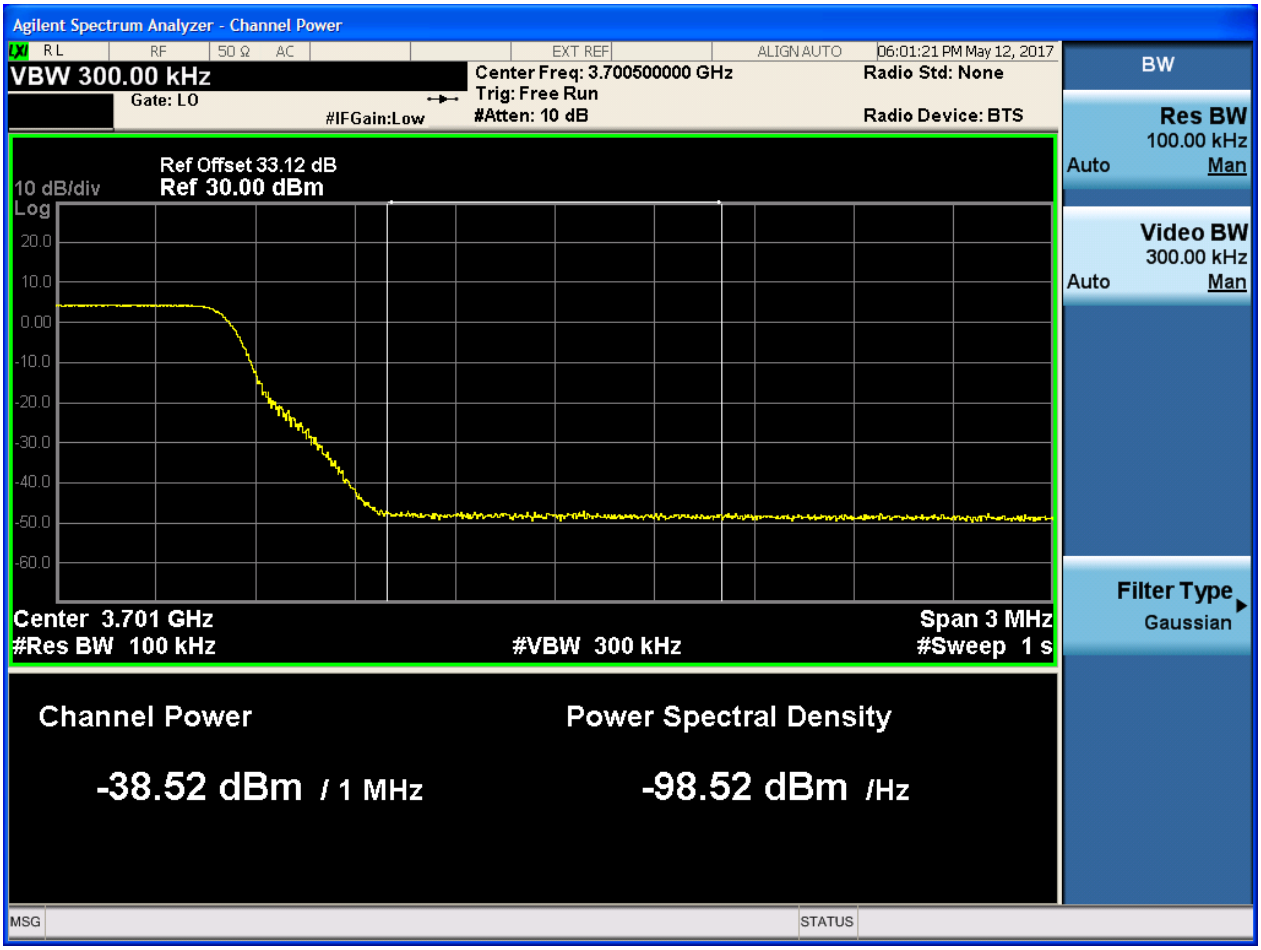
2.1.3 1L_20M_T_TM1



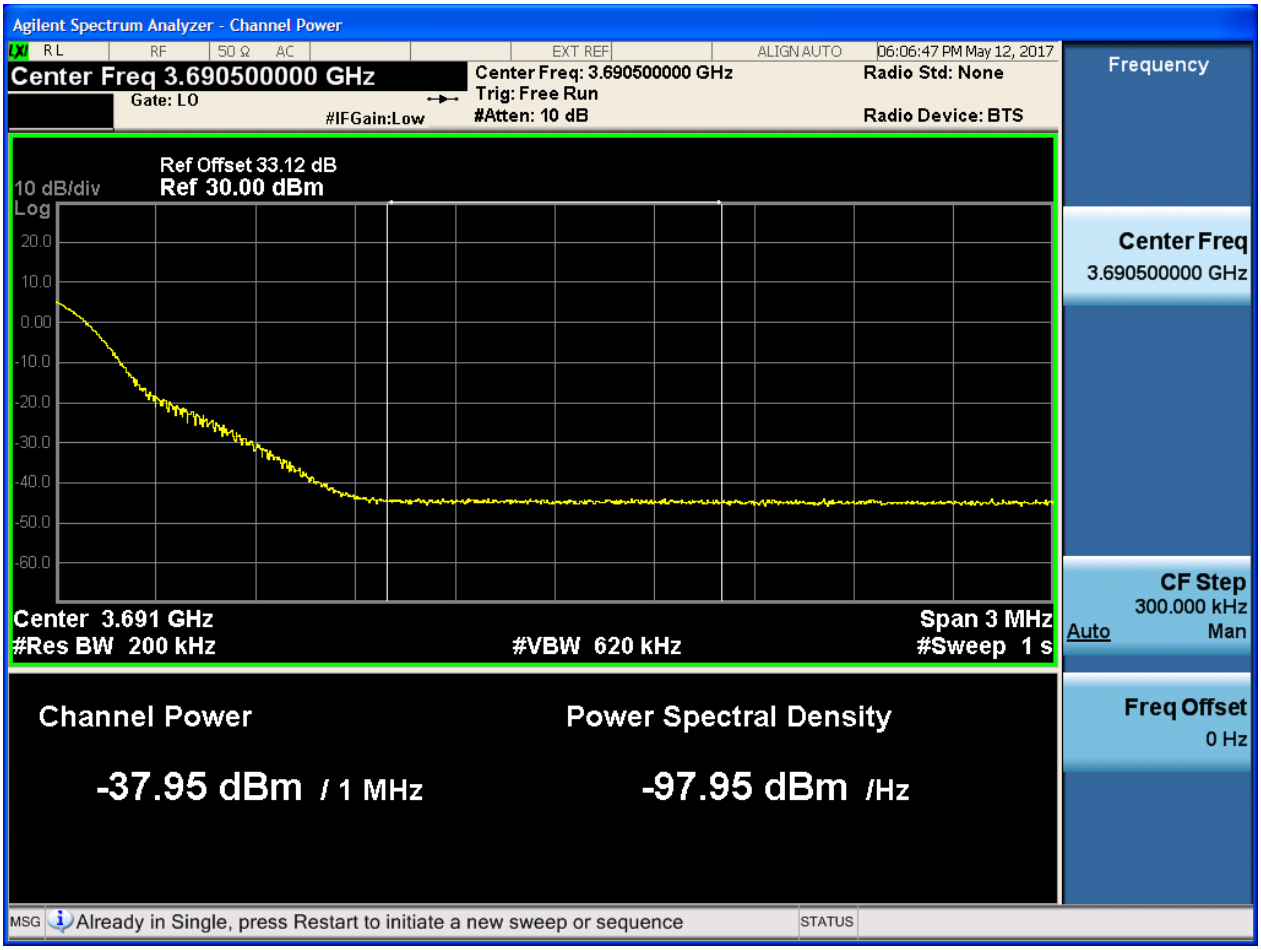


2.1.4 2L_20M_10M_M_TM1

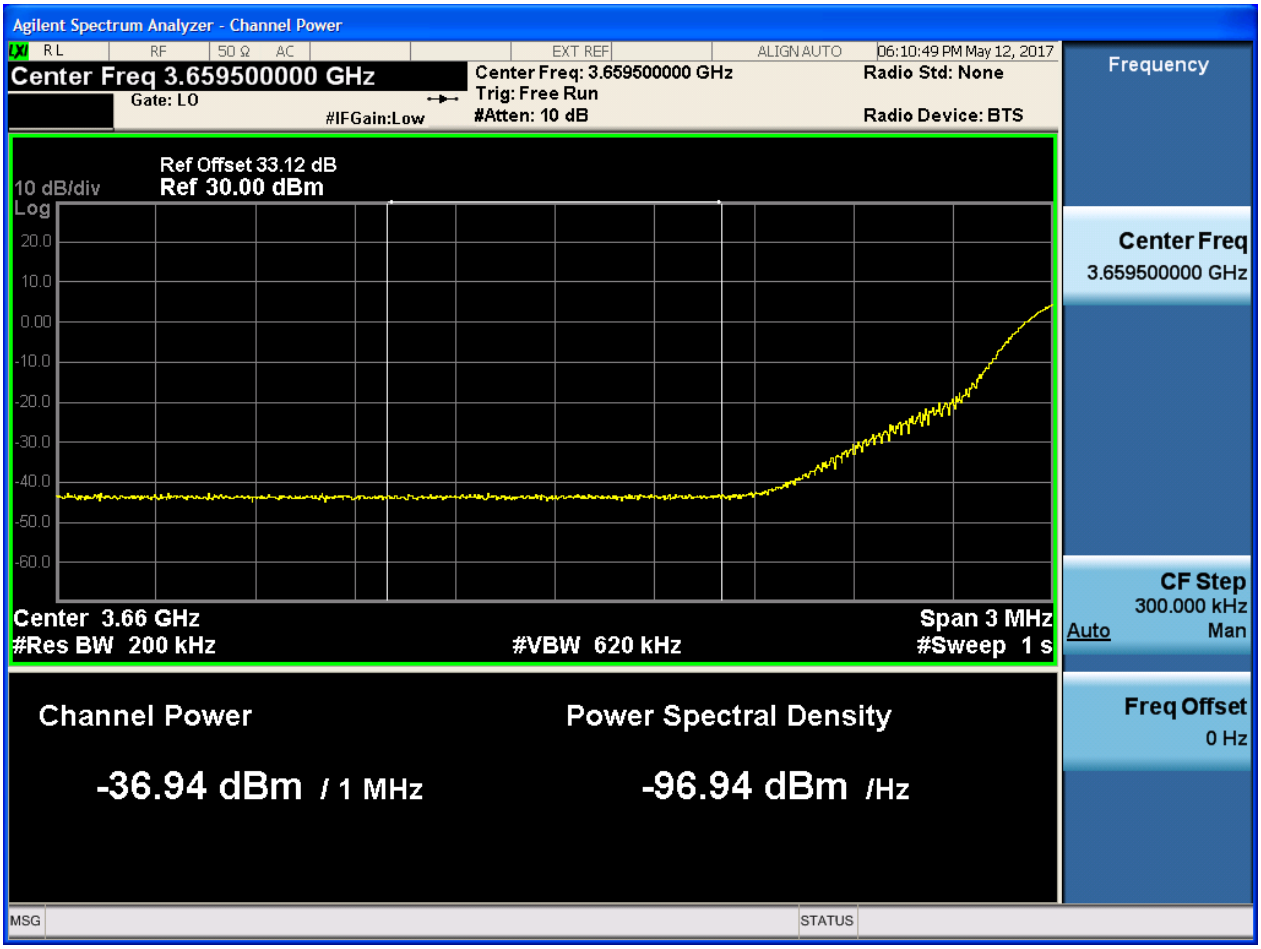


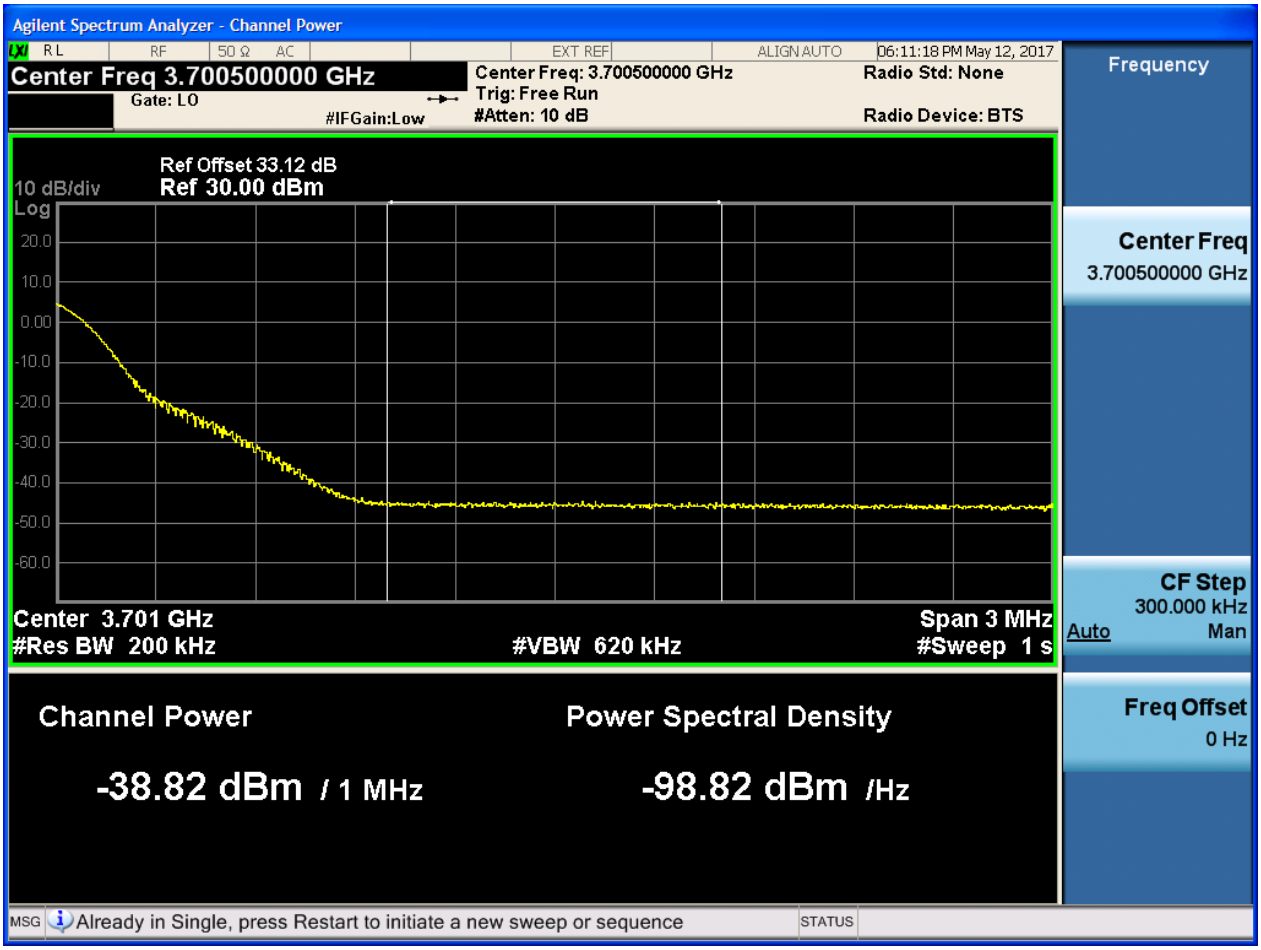


2.1.5 2L_20M_20M_B_TM1

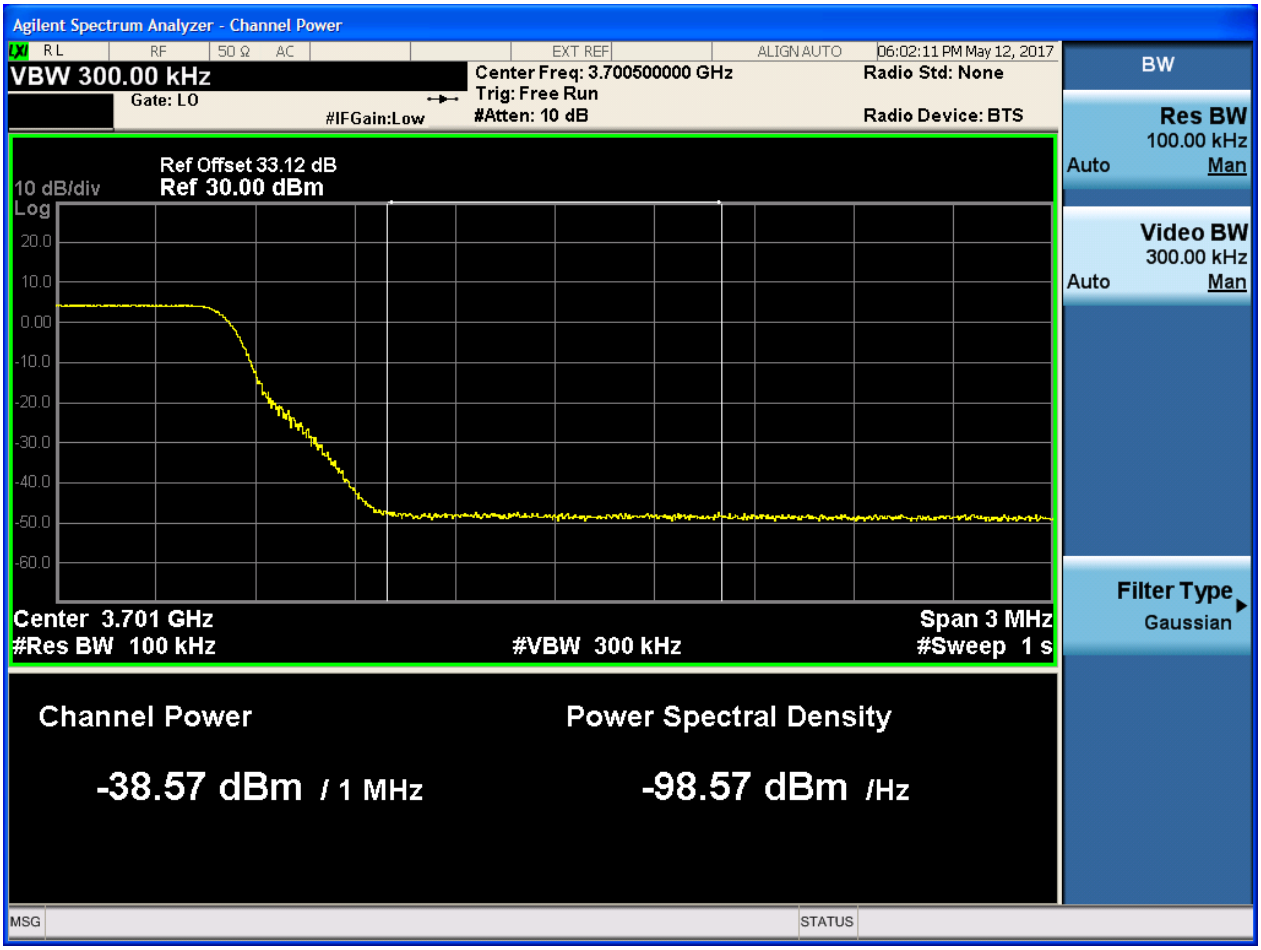

Agilent Spectrum Analyzer - Channel Power
RL
RF
50 Ω
AC
EXT REF
ALIGN AUTO
06:06:47 PM May 12, 2017
Center Freq 3.690500000 GHz
Gate: LO
#IFGain:Low
Center Freq: 3.690500000 GHz
Trig: Free Run
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
Ref Offset 33.12 dB
10 dB/div
Ref 30.00 dBm
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 3.691 GHz
#Res BW 200 kHz
#VBW 620 kHz
Span 3 MHz
#Sweep 1 s
Channel Power
-37.95 dBm / 1 MHz
Power Spectral Density
-97.95 dBm /Hz
Frequency
Center Freq
3.690500000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
MSG
Already in Single, press Restart to initiate a new sweep or sequence
STATUS

2.1.6 2L_20M_20M_T_TM1





2.1.7 3L_20M_20M_10M_M_TM1



Appendix D: Spurious Emission at Antenna Terminals

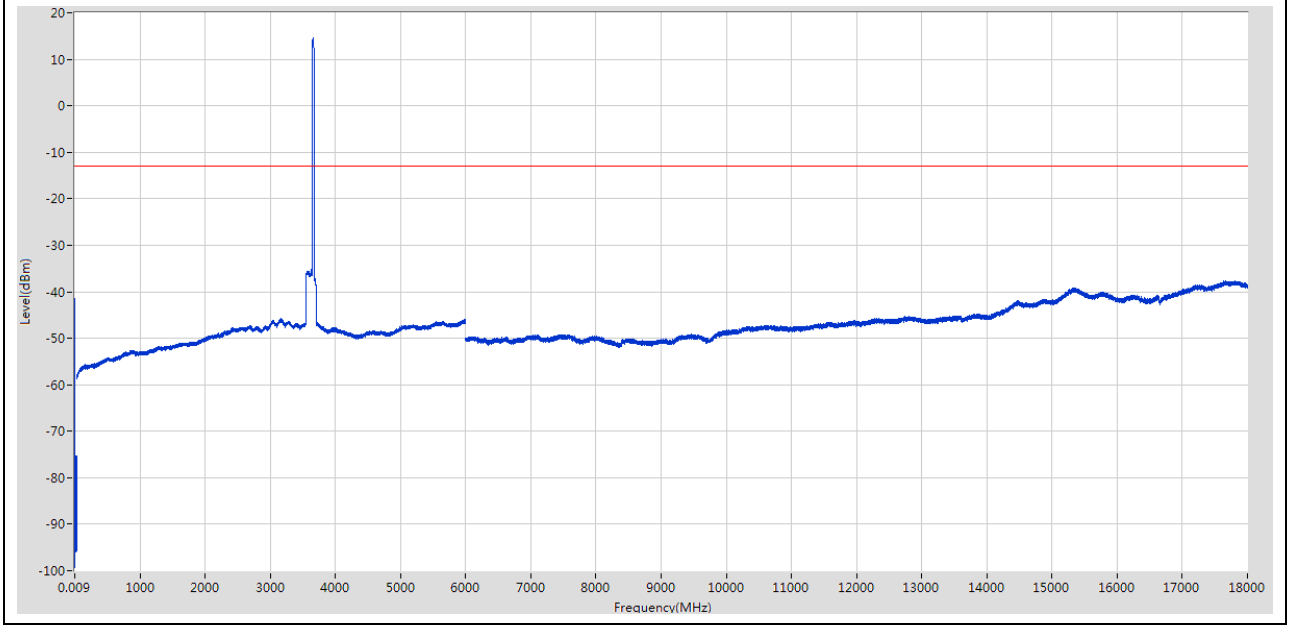
1 Result Table

EUT Conf.	Result	Verdict
1L_20M_B_TM1	No spurious emission found	Pass
1L_20M_M_TM1	No spurious emission found	Pass
1L_20M_T_TM1	No spurious emission found	Pass
3L_20M_20M_10M_M_TM1	No spurious emission found	Pass

2 Test Plot

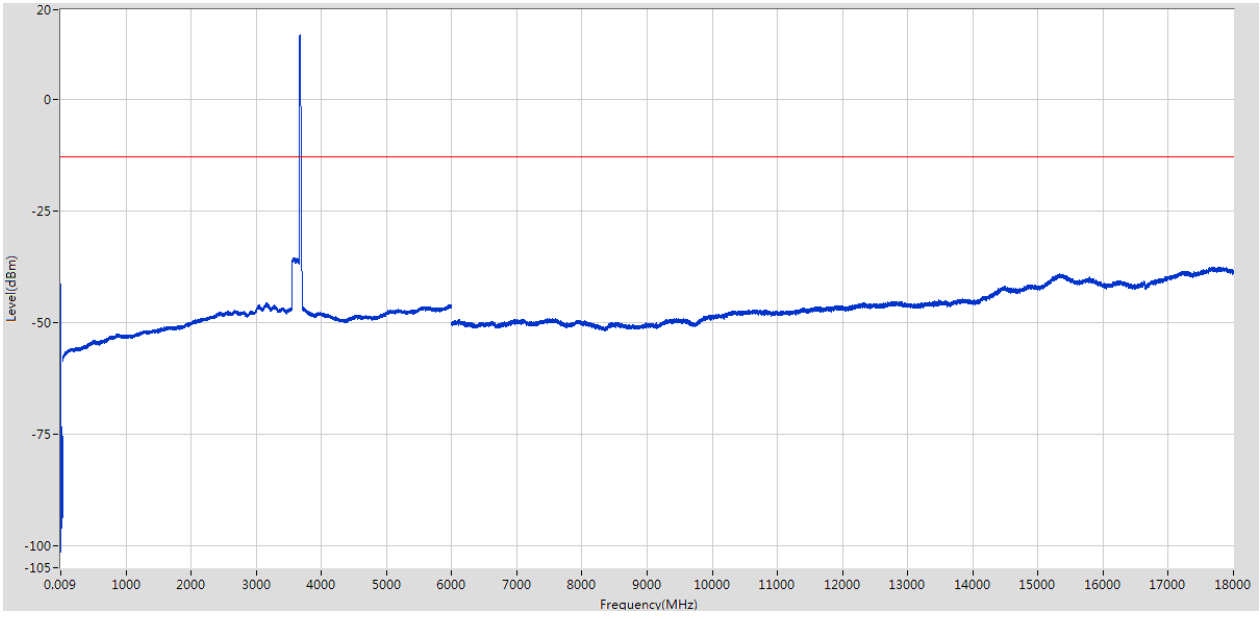
2.1.1 1L_20M_B_TM1

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	77.808 k	-73.51	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-41.5	-13	Pass	14925
30	6000	1	RMS	3665.921806 M	14.63	-13	Not applicable	29850
6000	18000	1	RMS	17814.990749 M	-37.74	-13	Pass	60000



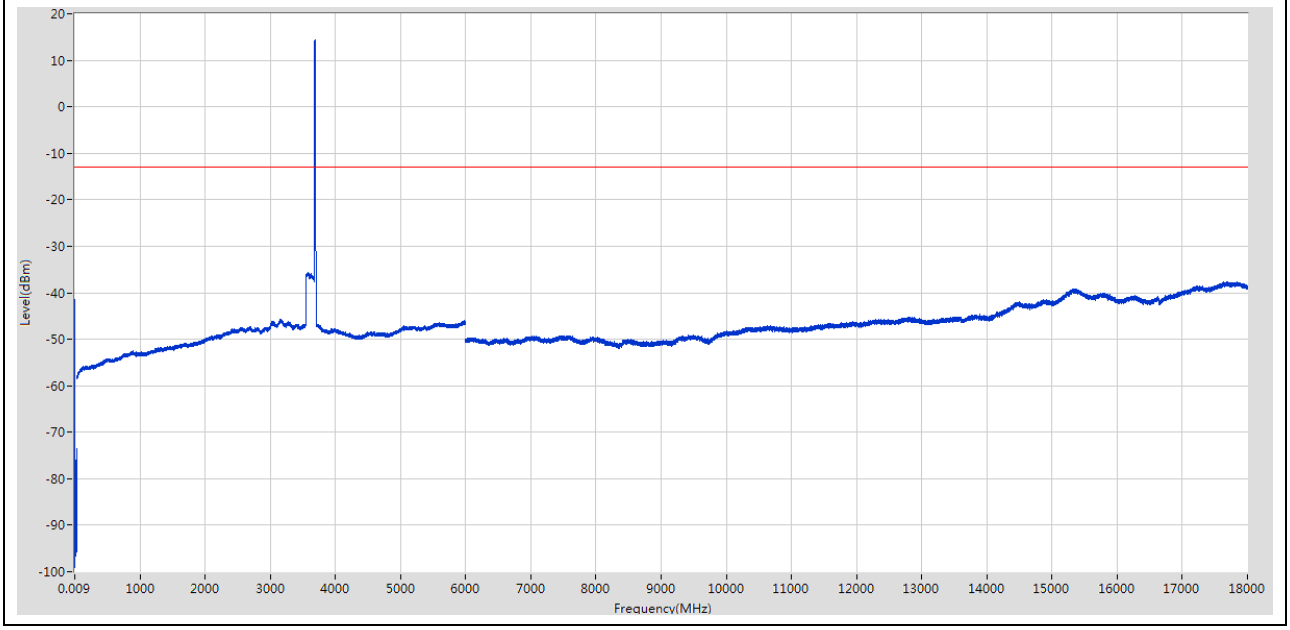
2.1.2 1L_20M_M_TM1

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	77.667 k	-73.95	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-41.45	-13	Pass	14925
30	6000	1	RMS	3681.922342 M	14.48	-13	Not applicable	29850
6000	18000	1	RMS	17658.782938 M	-37.65	-13	Pass	60000



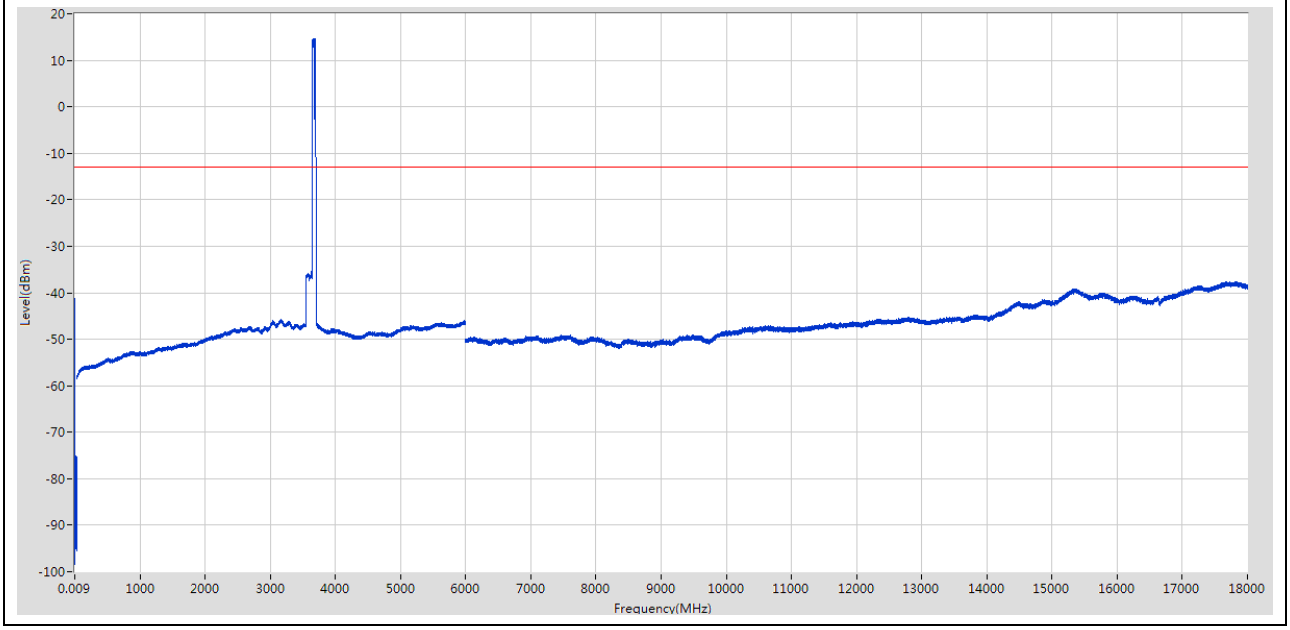
2.1.3 1L_20M_T_TM1

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	77.949 k	-73.06	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-41.53	-13	Pass	14925
30	6000	1	RMS	3695.922811 M	14.31	-13	Not applicable	29850
6000	18000	1	RMS	17673.183658 M	-37.58	-13	Pass	60000



2.1.4 3L_20M_20M_10M_M_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	77.949 k	-72.68	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-41.28	-13	Pass	14925
30	6000	1	RMS	3665.921806 M	14.71	-13	Not applicable	29850
6000	18000	1	RMS	17827.791389 M	-37.63	-13	Pass	60000



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

1 Result Table

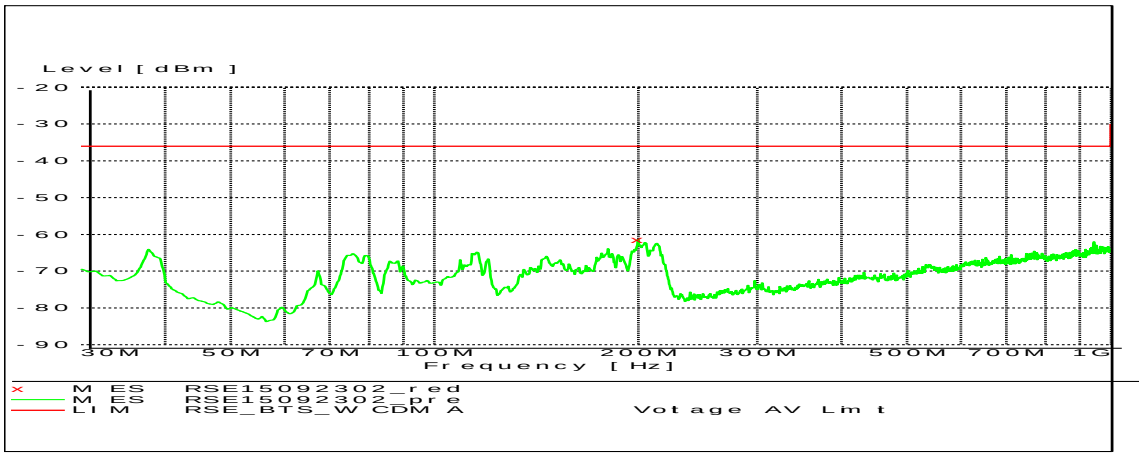
NOTE: If applicable, according to FCC KDB 971168 §5.8.3, for the requirement of a fixed limit (e.g. -13 dBm), the power limit can be mathematically converted to an equivalent field strength limit. The relationship is:
(1) E [dBμV/m] = EIRP [dBm] - 20*lg(D) + 104.8; where D is the measurement distance in meters.
(2) EIRP [dBm] = 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 dBμV/m at 3 m measurement distance, and to 93.95 dBμV/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_M_TM1	< Limit	Pass
1 GHz to 18 GHz	3L_20M_20M_10M_M_TM1	< Limit	Pass
18 GHz to 26.5 GHz	3L_20M_20M_10M_M_TM1	< Limit	Pass
26.5GHz to 40GHz	3L_20M_20M_10M_M_TM1	< Limit	Pass

2 Test Plot

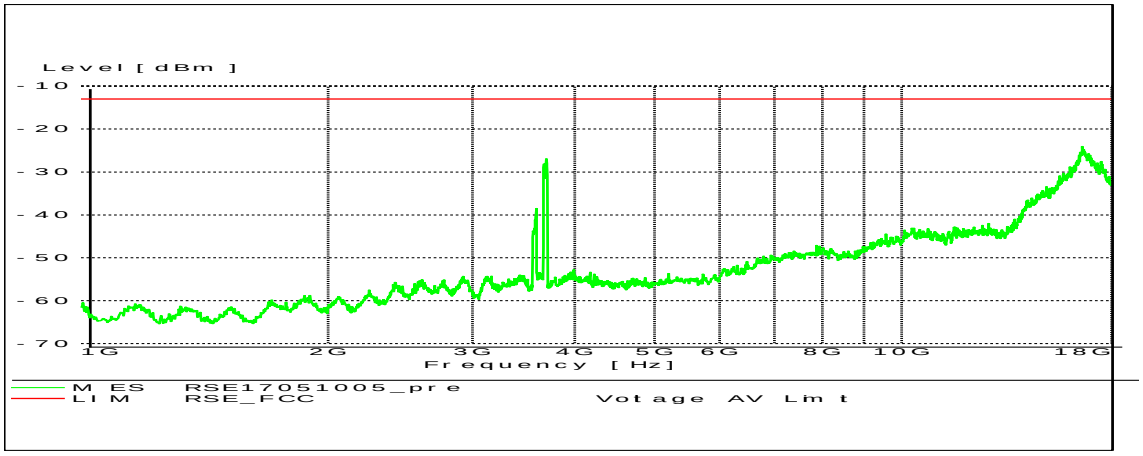
2.1 Test range of “30 MHz to 1 GHz”

2.1.1 3L_20M_20M_10M_M_TM1



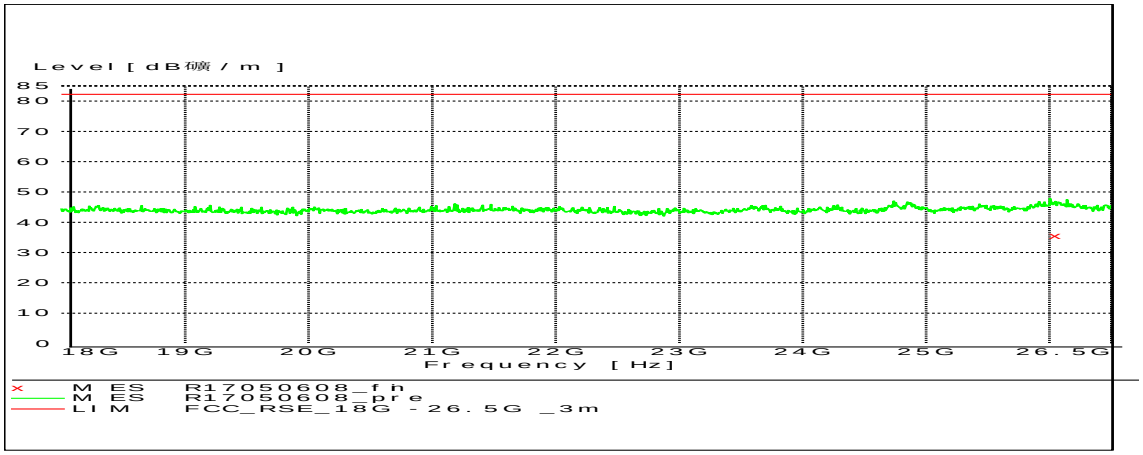
2.2 Test range of “1 GHz to 18 GHz”

2.2.1 3L_20M_20M_10M_M_TM1



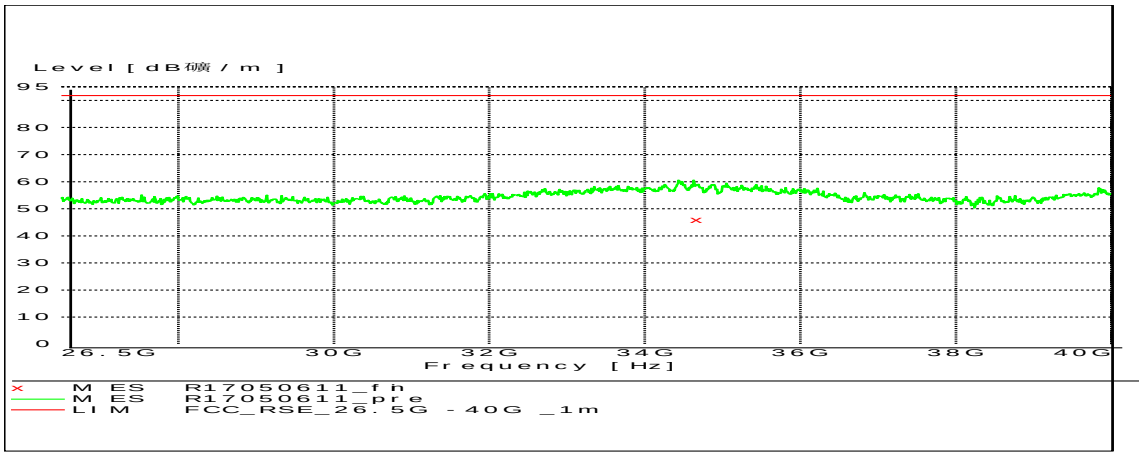
2.3 Test range of “18 GHz to 26.5 GHz”

2.3.1 3L_20M_20M_10M_M_TM1



2.4 Test range of “26.5 GHz to 40 GHz”

2.4.1 3L_20M_20M_10M_M_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_20M_B_TM1	-30 °C	100%	10.390	0.002839	Pass
	-20	100%	8.8868	0.002428	Pass
	-10	100%	8.6181	0.002355	Pass
	0	100%	13.539	0.003699	Pass
	+10	100%	9.2347	0.002523	Pass
	+20 °C	85%	4.5428	0.001241	Pass
	+20 °C	100%	12.952	0.003539	Pass
	+20 °C	115%	7.0122	0.001916	Pass
	+30	100%	7.3380	0.002005	Pass
	+40	100%	8.4914	0.00232	Pass
	+50 °C	100%	5.2227	0.001427	Pass
1L_20M_T_TM1	-30 °C	100%	7.1618	0.001941	Pass
	-20	100%	8.9103	0.002415	Pass
	-10	100%	7.0140	0.001901	Pass
	0	100%	10.932	0.002963	Pass
	+10	100%	9.8162	0.00266	Pass
	+20 °C	85%	5.3387	0.001447	Pass
	+20 °C	100%	12.616	0.003419	Pass
	+20 °C	115%	8.5237	0.00231	Pass
	+30	100%	9.2258	0.0025	Pass
	+40	100%	7.9008	0.002141	Pass
	+50 °C	100%	5.6479	0.001531	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