



# ATTACHMENT: TEST RESULTS

# Appendix A: Transmitter Output Power

## 1 Result Table

### 1.1 Channel Power, Total

NOTE 1: If applicable, the EIRP [W] =  $10^{((\text{Channel Power [dBm]} + \text{Combined Gain} + \text{Antenna Gain [dBi]} / 10 - 3)}$ , 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]	Rated Output Power [dBm]	Offset from Rated [dB]	Antenna Gain [dBi]	Combined Gain [dB]	EIRP [W]	Verdict
1L_5M_B_TM1	40.47	40	0.47	0	6	44.36	Pass
1L_5M_M_TM1	40.47	40	0.47	0	6	44.36	Pass
1L_5M_T_TM1	40.50	40	0.50	0	6	44.67	Pass
1L_10M_B_TM1	43.45	43	0.45	0	6	88.10	Pass
1L_10M_M_TM1	43.44	43	0.44	0	6	87.90	Pass
1L_10M_T_TM1	43.45	43	0.45	0	6	88.10	Pass
1L_15M_B_TM1	45.03	44.77	0.26	0	6	126.77	Pass
1L_15M_M_TM1	45.02	44.77	0.25	0	6	126.47	Pass
1L_15M_T_TM1	45.25	44.77	0.48	0	6	133.35	Pass
1L_20M_B_TM1	46.10	46	0.10	0	6	162.18	Pass
1L_20M_M_TM1	46.23	46	0.23	0	6	167.11	Pass
1L_20M_T_TM1	46.50	46	0.50	0	6	177.83	Pass
2L_10M_10M_B_TM1	46.47	46	0.47	0	6	176.60	Pass
2L_10M_10M_T_TM1	46.45	46	0.45	0	6	175.79	Pass
2L_10M_15M_B_TM1	46.43	46	0.43	0	6	174.98	Pass
2L_10M_15M_T_TM1	46.46	46	0.46	0	6	176.20	Pass
2L_20M_20M_B_TM1	46.24	46	0.24	0	6	167.49	Pass
2L_20M_20M_T_TM1	46.42	46	0.42	0	6	174.58	Pass
5L_20M_20M_20M_20M_20M_B_TM1	46.25	46	0.25	0	6	167.88	Pass
5L_20M_20M_20M_20M_20M_T_TM1	46.49	46	0.49	0	6	177.42	Pass

### 1.2 Power Spectral Density

(Not applicable)

### 1.3 Peak-to-Average Ratio



(Not applicable)

## 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

(Not applicable)

### 2.2 Peak-to-Average Ratio

(Not applicable)

# Appendix B: Bandwidth

## 1 Result Table

### 1.1 Occupied Bandwidth

EUT Conf.	Occupied Bandwidth [MHz]	Verdict
1L_5M_B_TM1	4.4829	Pass
1L_5M_M_TM1	4.4831	Pass
1L_5M_T_TM1	4.4824	Pass
1L_10M_B_TM1	8.9504	Pass
1L_10M_M_TM1	8.9516	Pass
1L_10M_T_TM1	8.9485	Pass
1L_15M_B_TM1	13.417	Pass
1L_15M_M_TM1	13.420	Pass
1L_15M_T_TM1	13.415	Pass
1L_20M_B_TM1	17.867	Pass
1L_20M_M_TM1	17.875	Pass
1L_20M_T_TM1	17.869	Pass

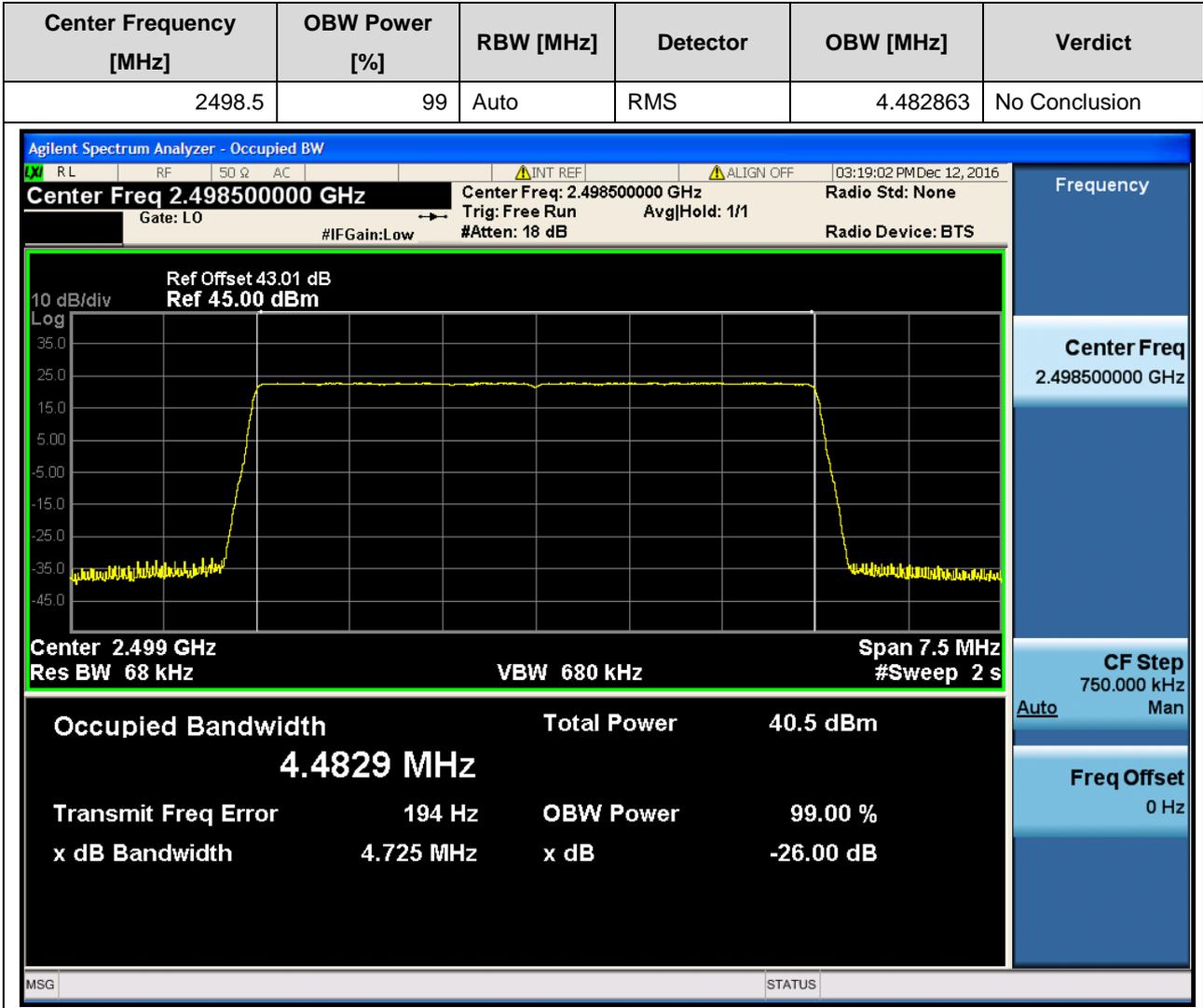
### 1.2 Emission Bandwidth

(Not applicable)

## 2 Test Plot

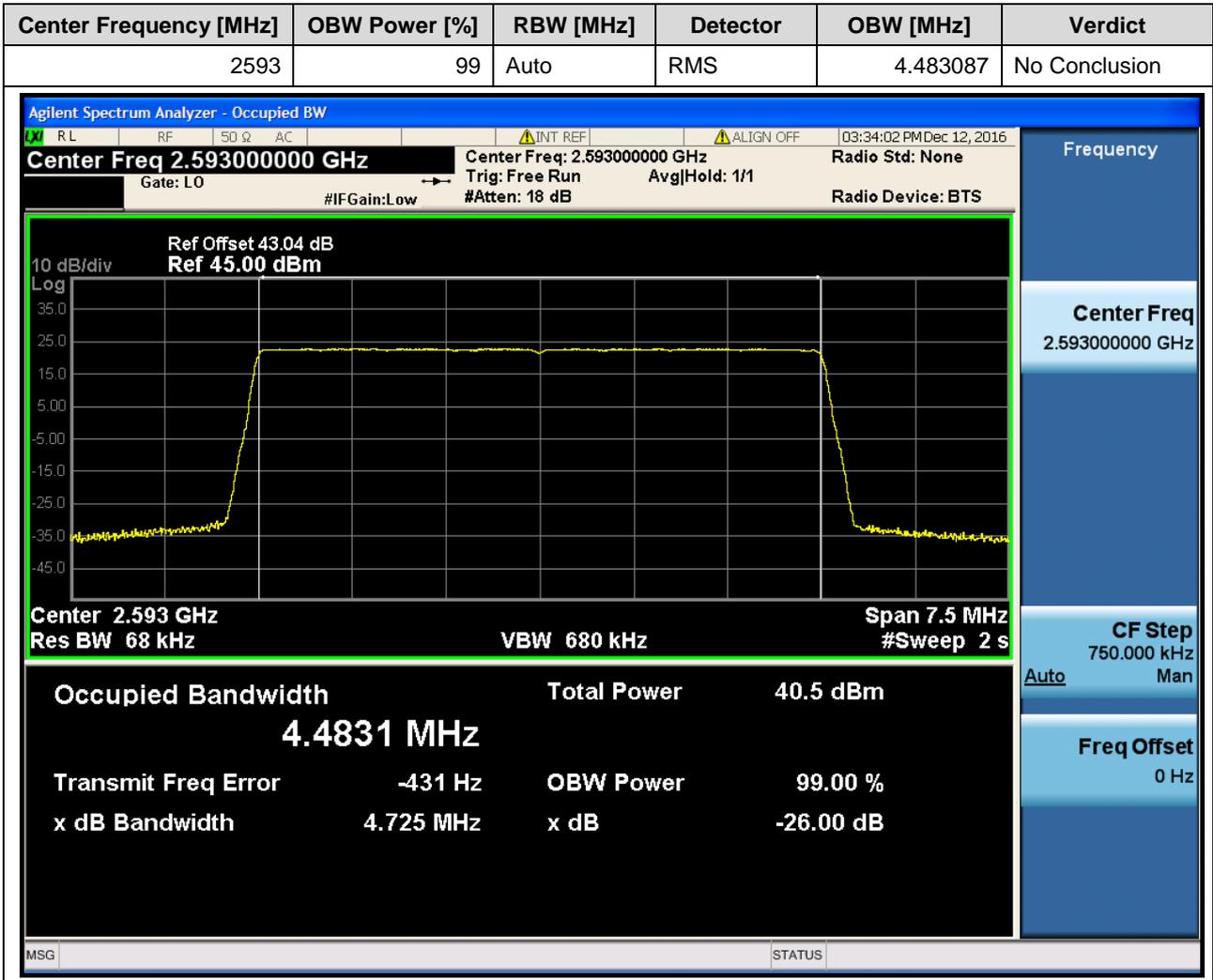
### 2.1 Occupied Bandwidth

#### 2.1.1 1L\_5M\_B\_TM1

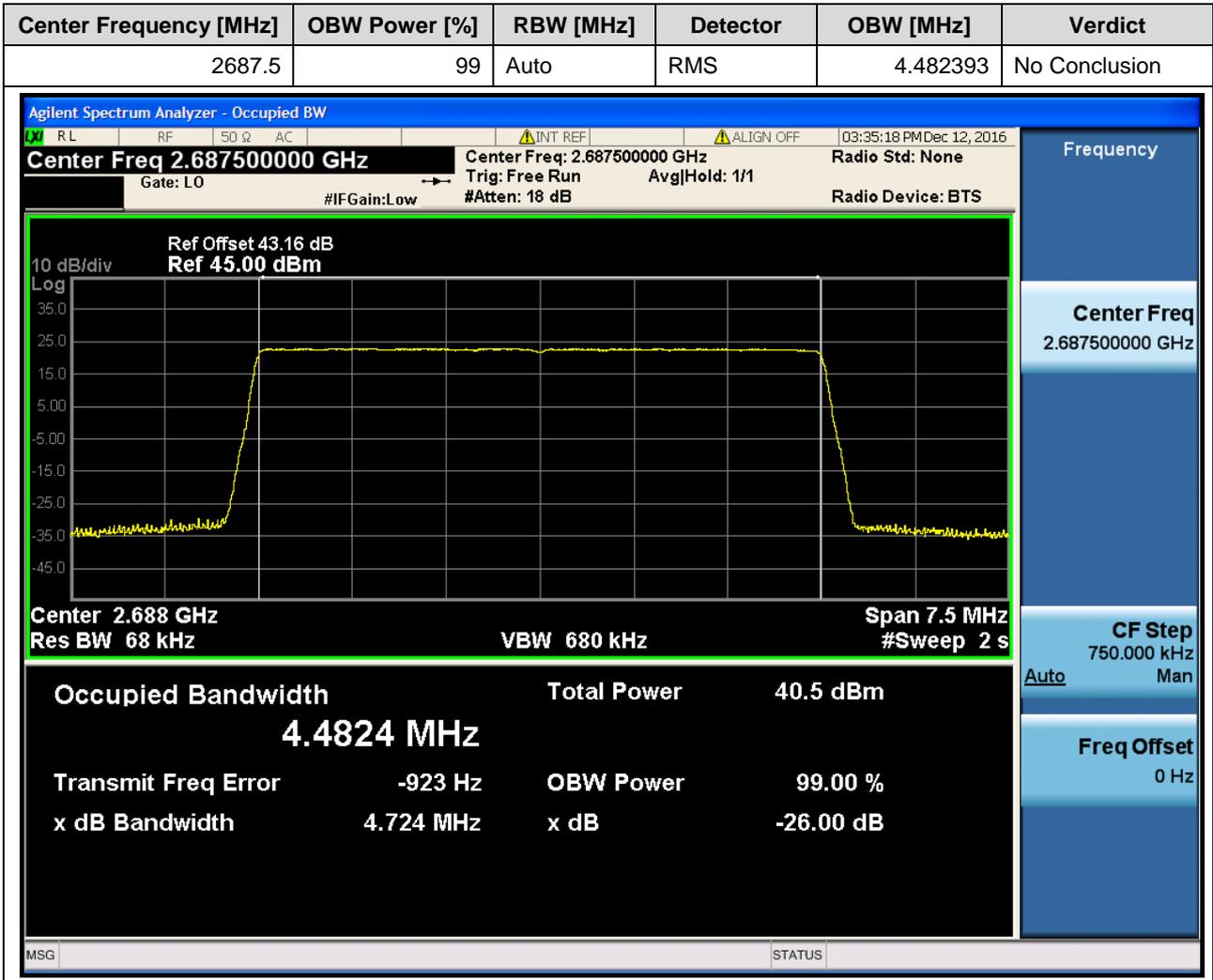




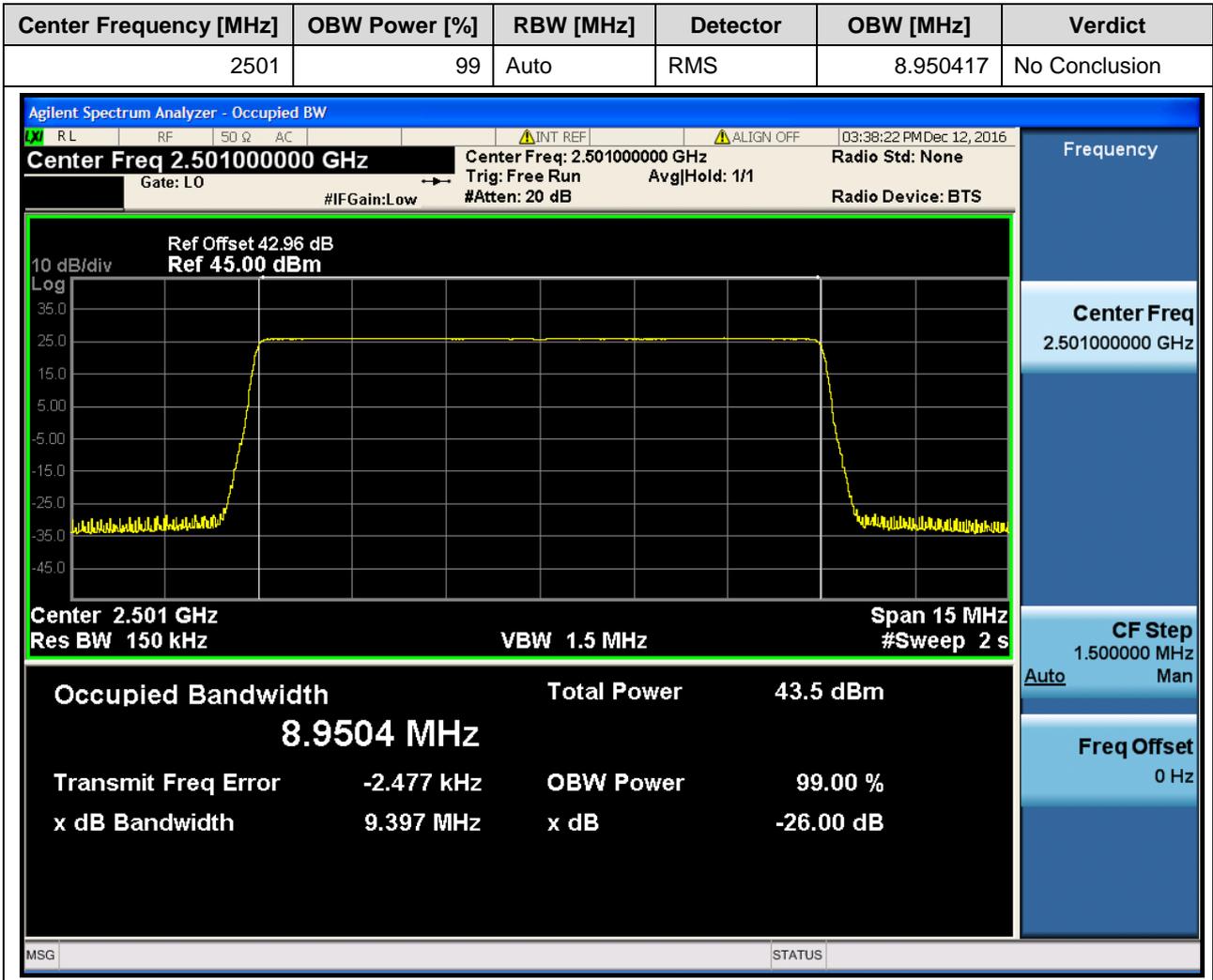
2.1.2 1L\_5M\_M\_TM1



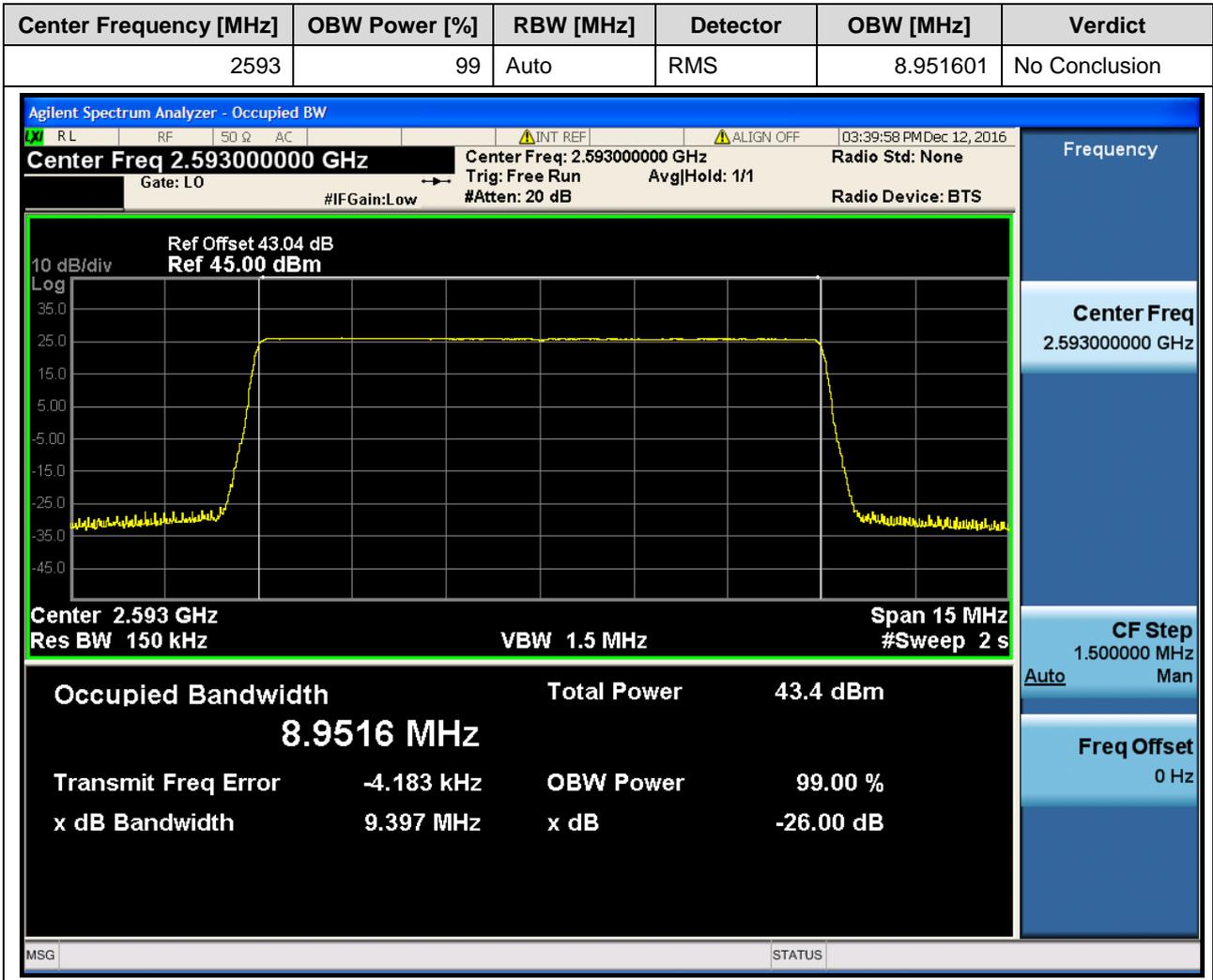
2.1.3 1L\_5M\_T\_TM1



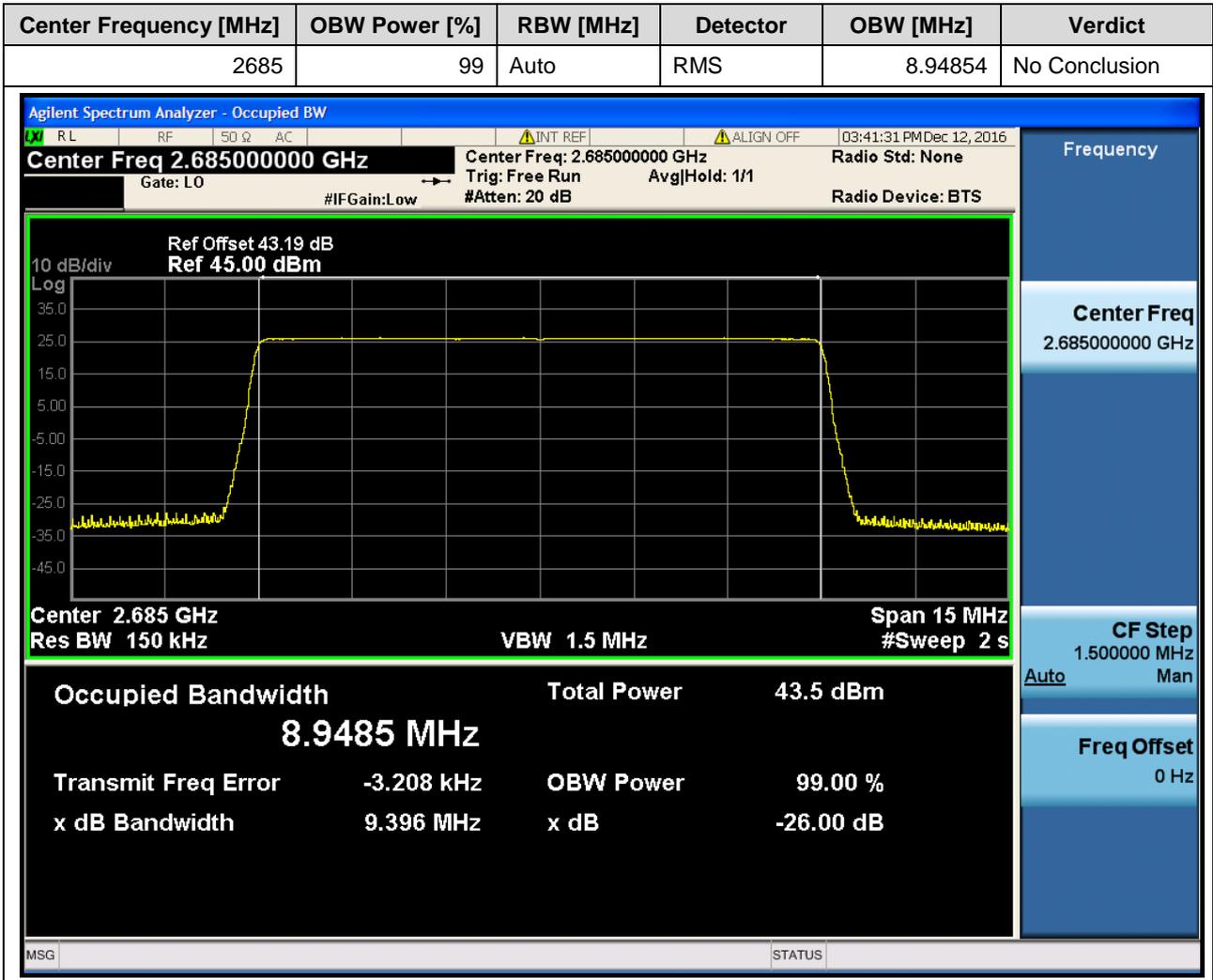
2.1.4 1L\_10M\_B\_TM1



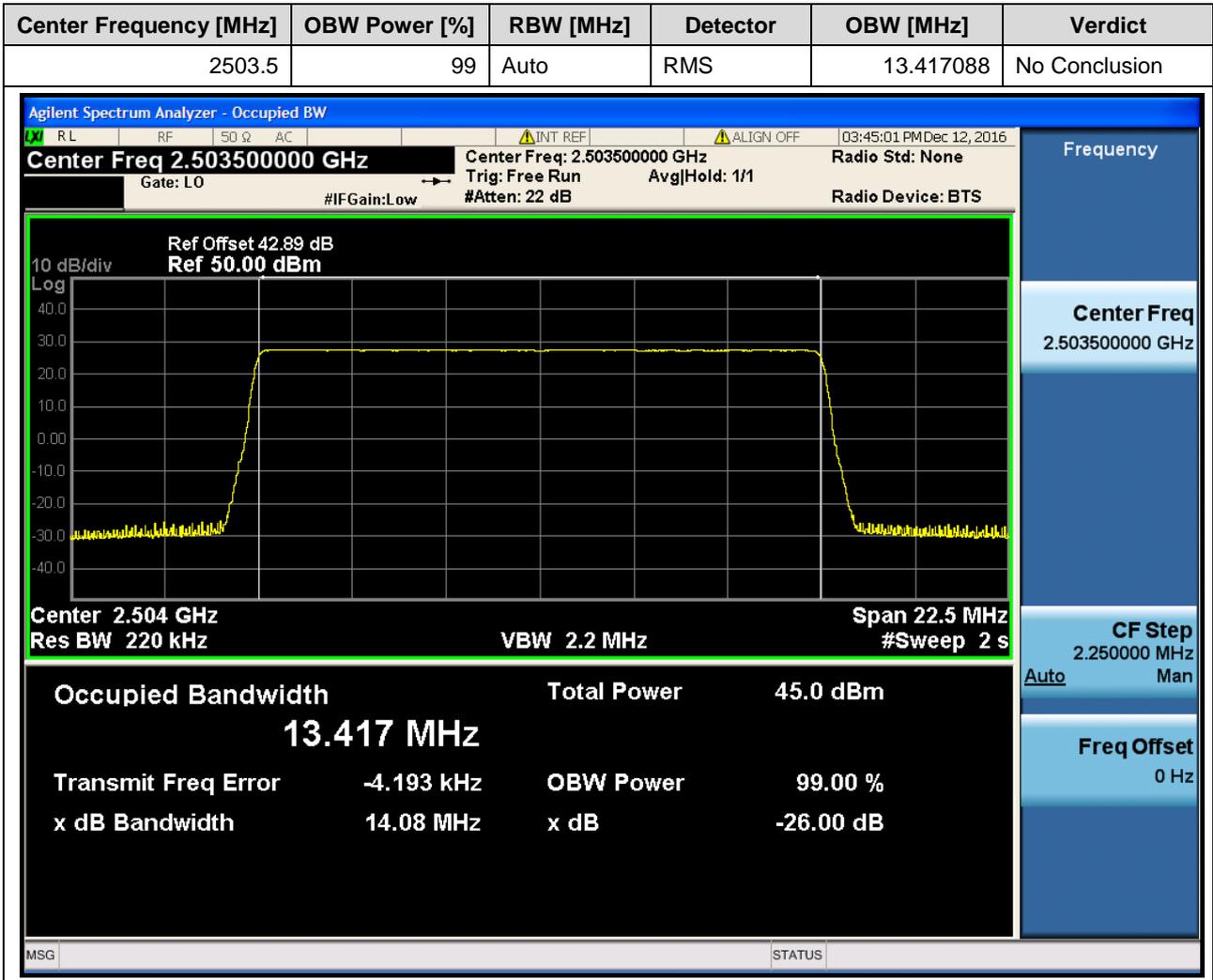
2.1.5 1L\_10M\_M\_TM1



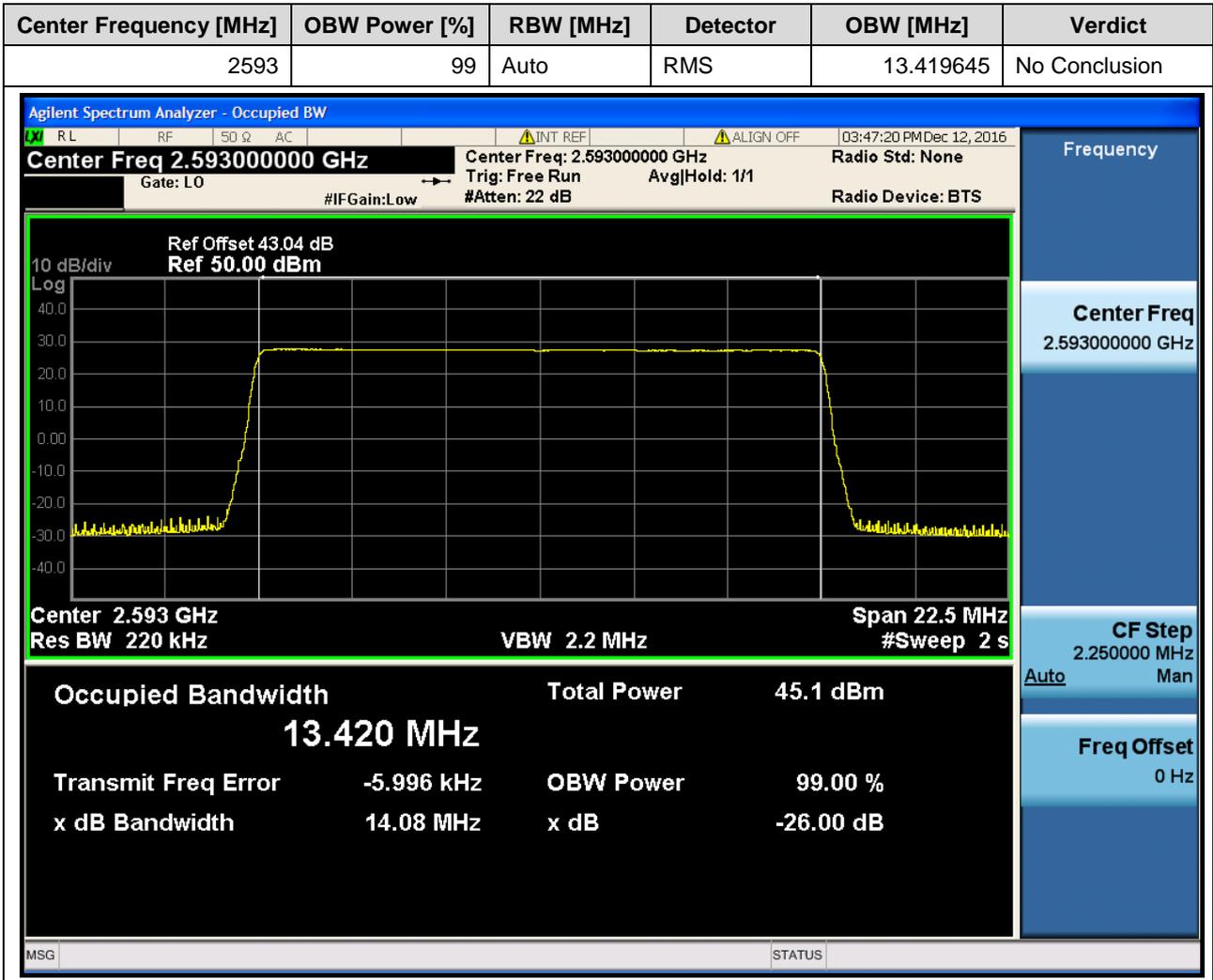
2.1.6 1L\_10M\_T\_TM1



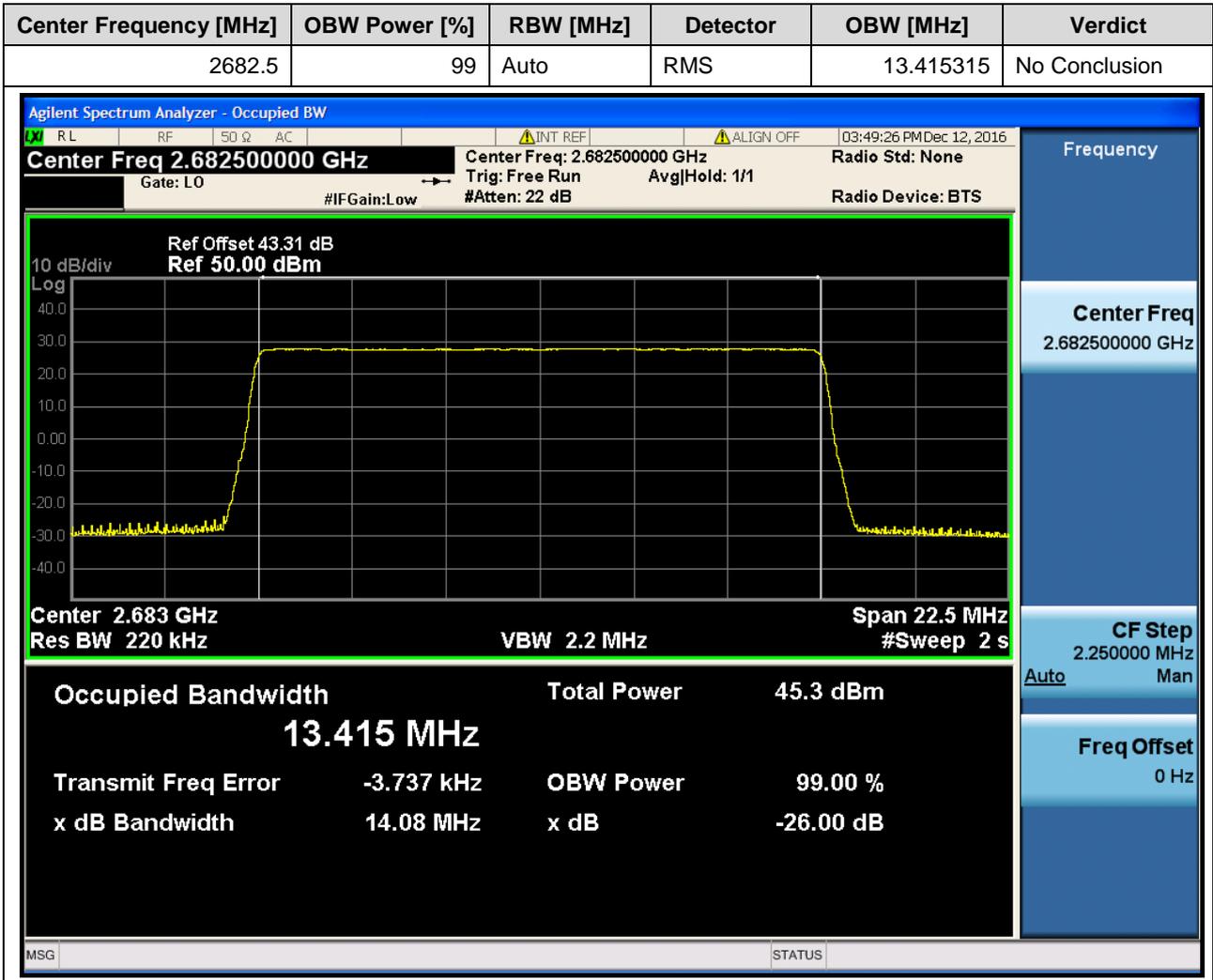
2.1.7 1L\_15M\_B\_TM1



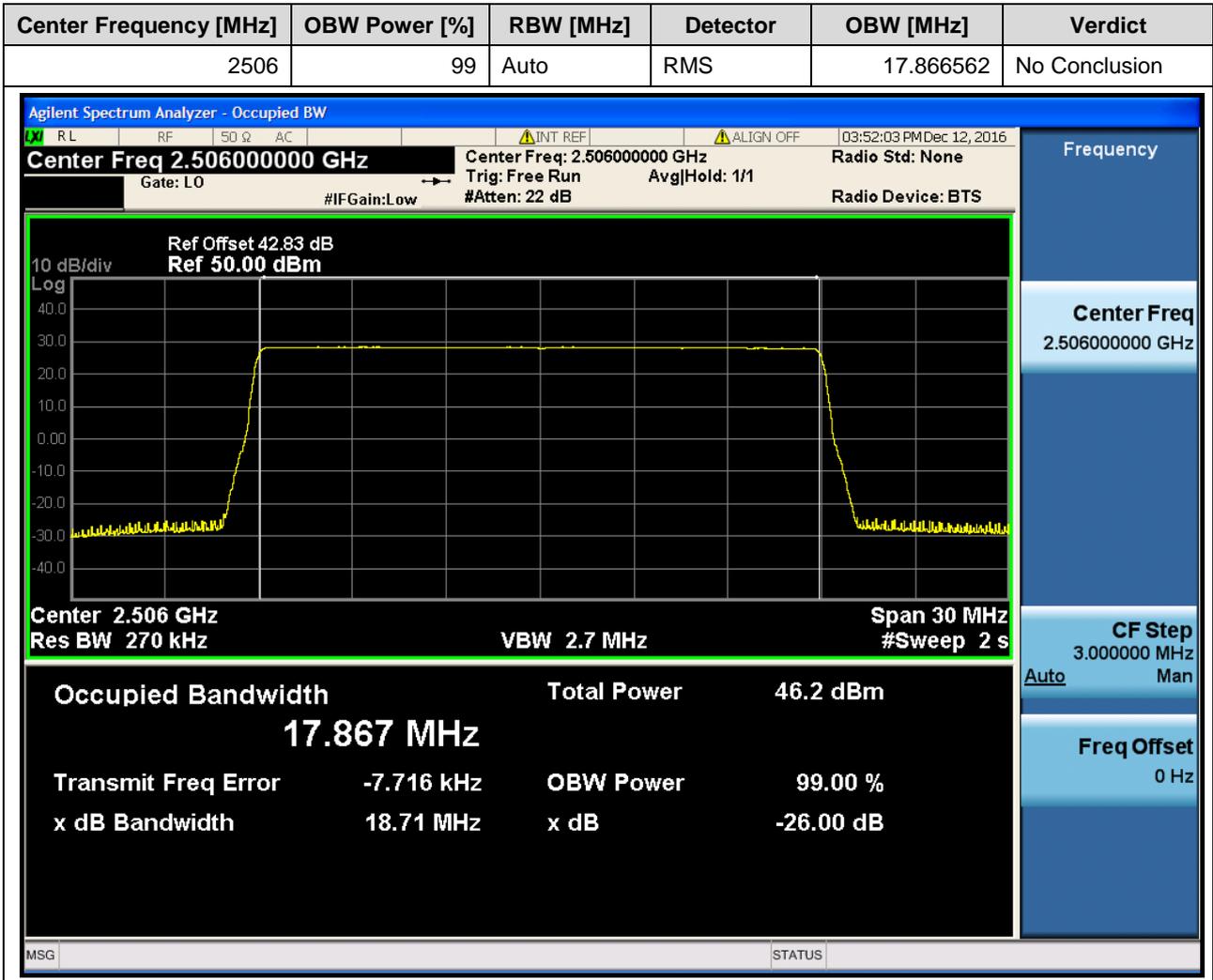
2.1.8 1L\_15M\_M\_TM1



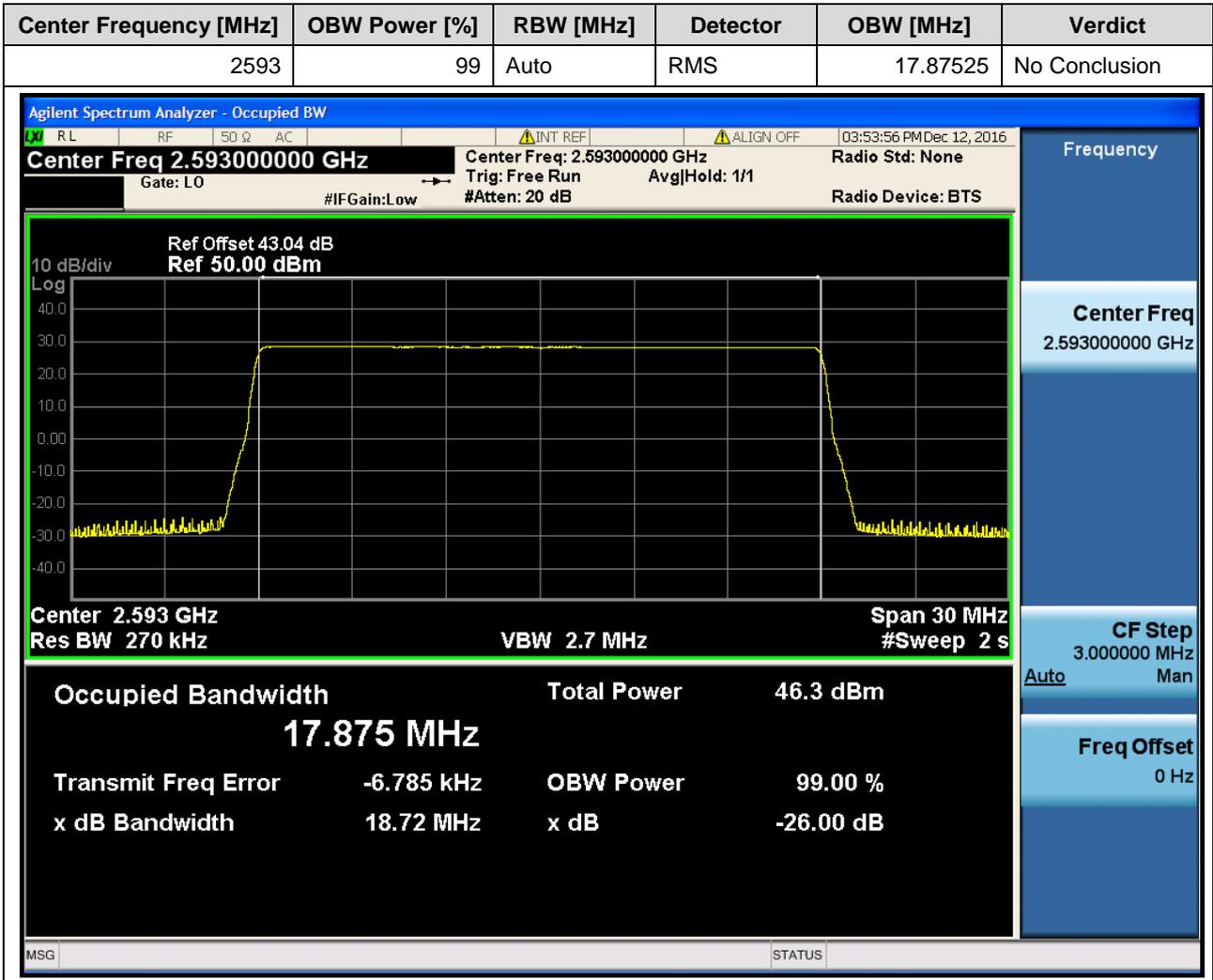
2.1.9 1L\_15M\_T\_TM1



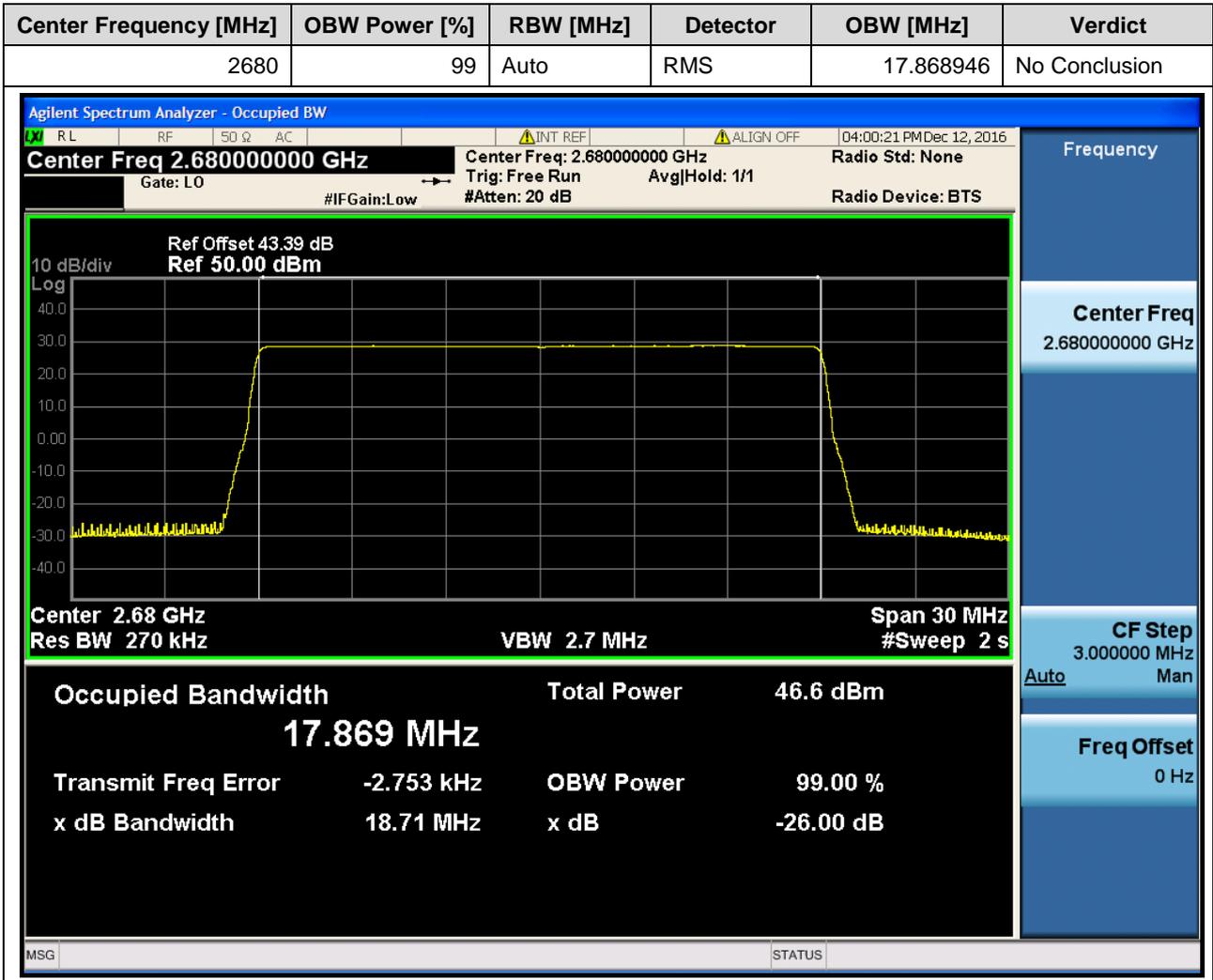
2.1.10 1L\_20M\_B\_TM1



2.1.11 1L\_20M\_M\_TM1



2.1.12 1L\_20M\_T\_TM1





## 2.2 Emission Bandwidth

(Not applicable)

# Appendix C: Band Edges Compliance / Emission Mask

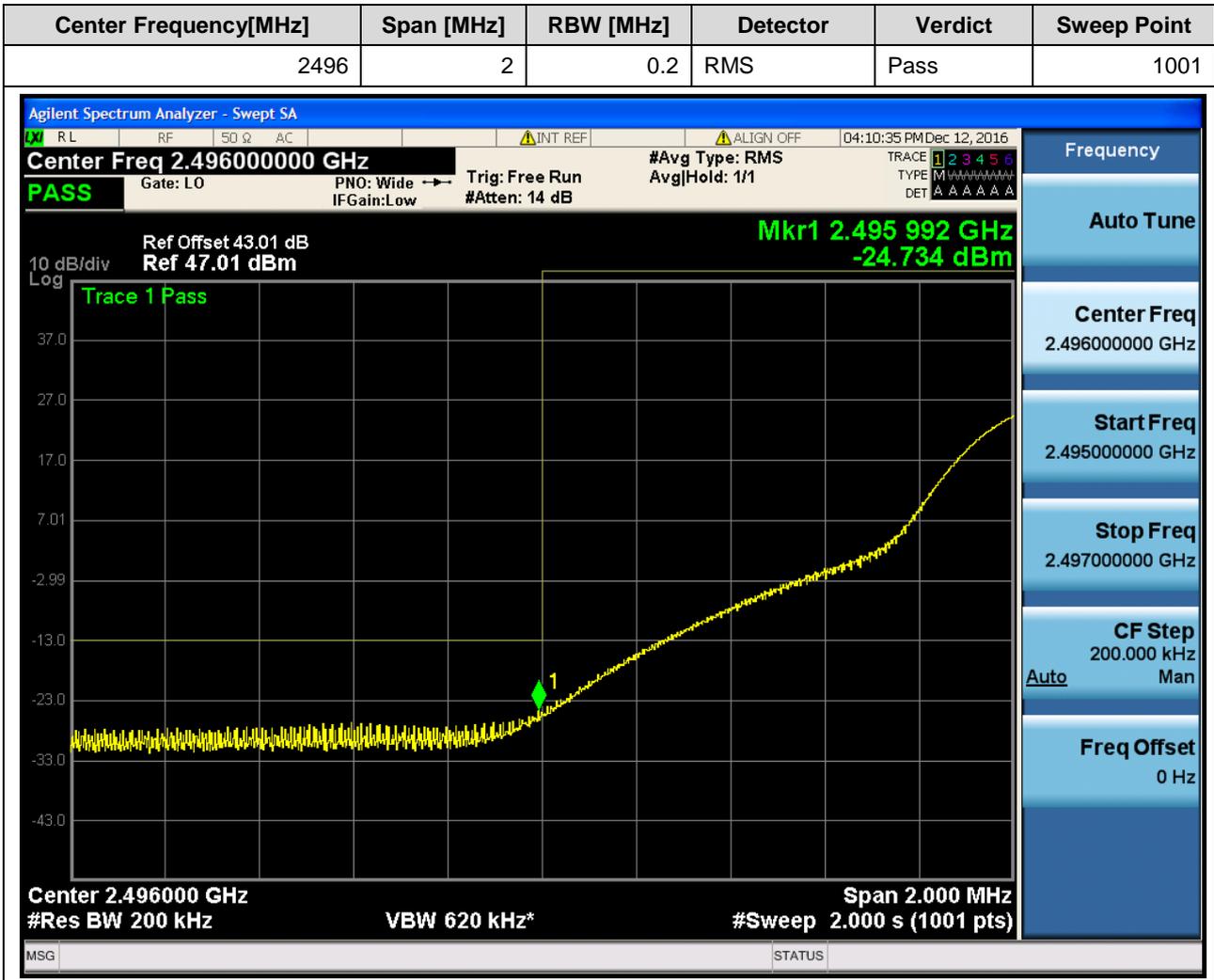
## 1 Result Table

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	-24.734	Pass
1L_20M_M_TM1	-34.102	Pass
1L_20M_T_TM1	-25.312	Pass
2L_10M_10M_B_TM1	-22.015	Pass
2L_10M_10M_T_TM1	-22.369	Pass
2L_10M_15M_B_TM1	-23.175	Pass
2L_10M_15M_T_TM1	-23.393	Pass
2L_20M_20M_B_TM1	-23.993	Pass
2L_20M_20M_T_TM1	-23.524	Pass
5L_20M_20M_20M_20M_20M_B_TM1	-25.854	Pass
5L_20M_20M_20M_20M_20M_T_TM1	-25.086	Pass

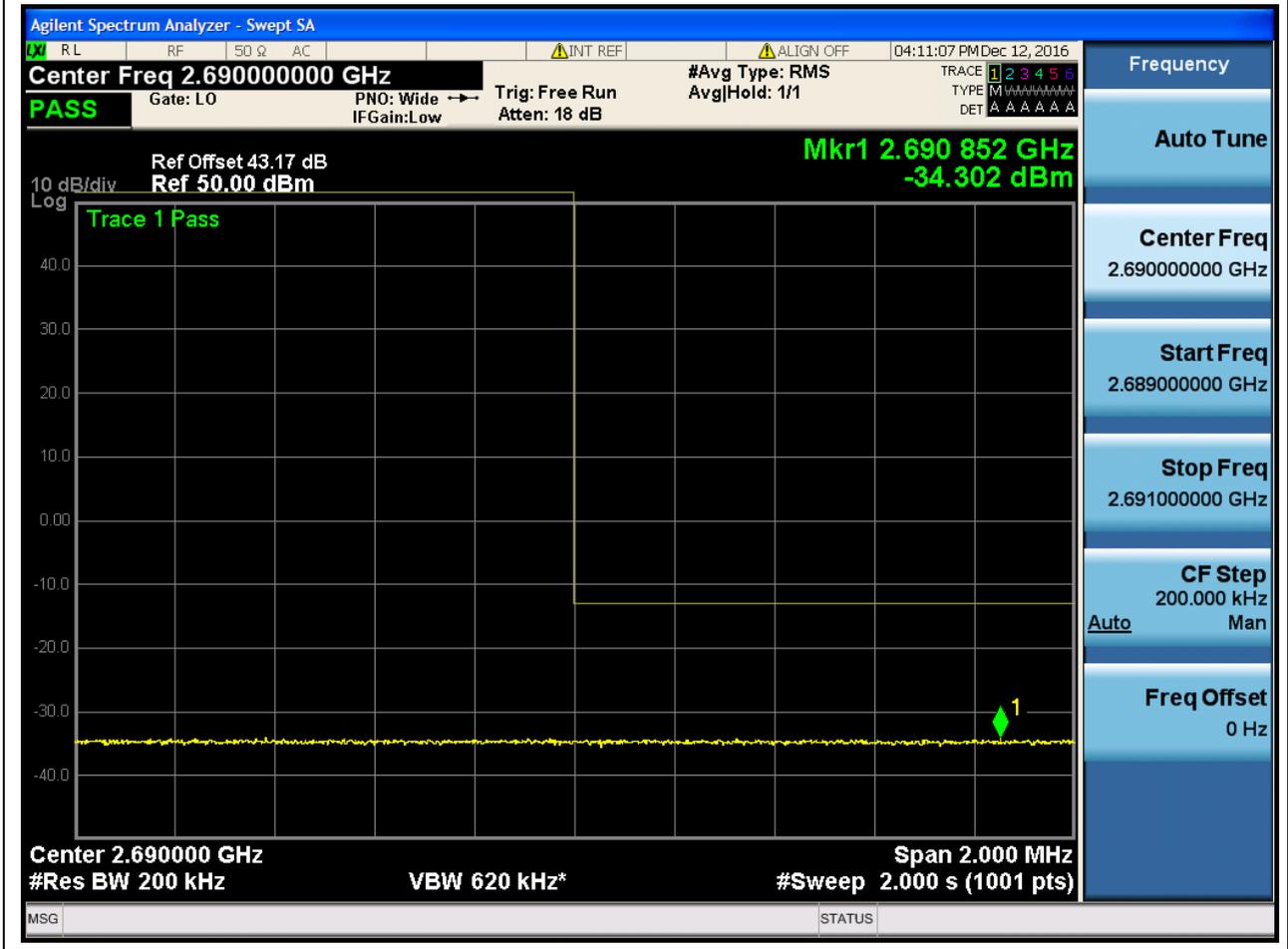
## 2 Test Plot

### 2.1.1 1L\_20M\_B\_TM1





Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001



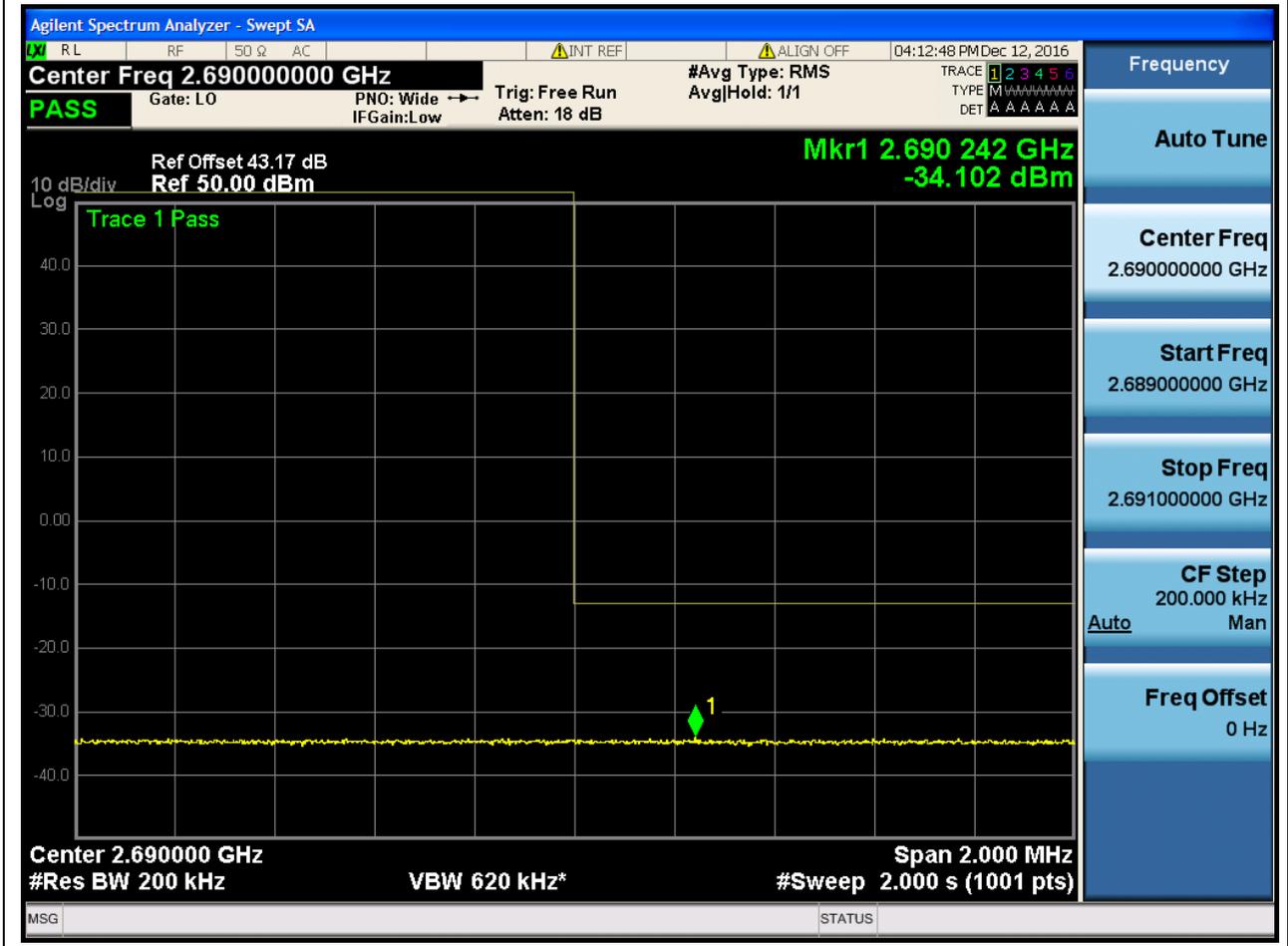


2.1.2 1L\_20M\_M\_TM1





Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001

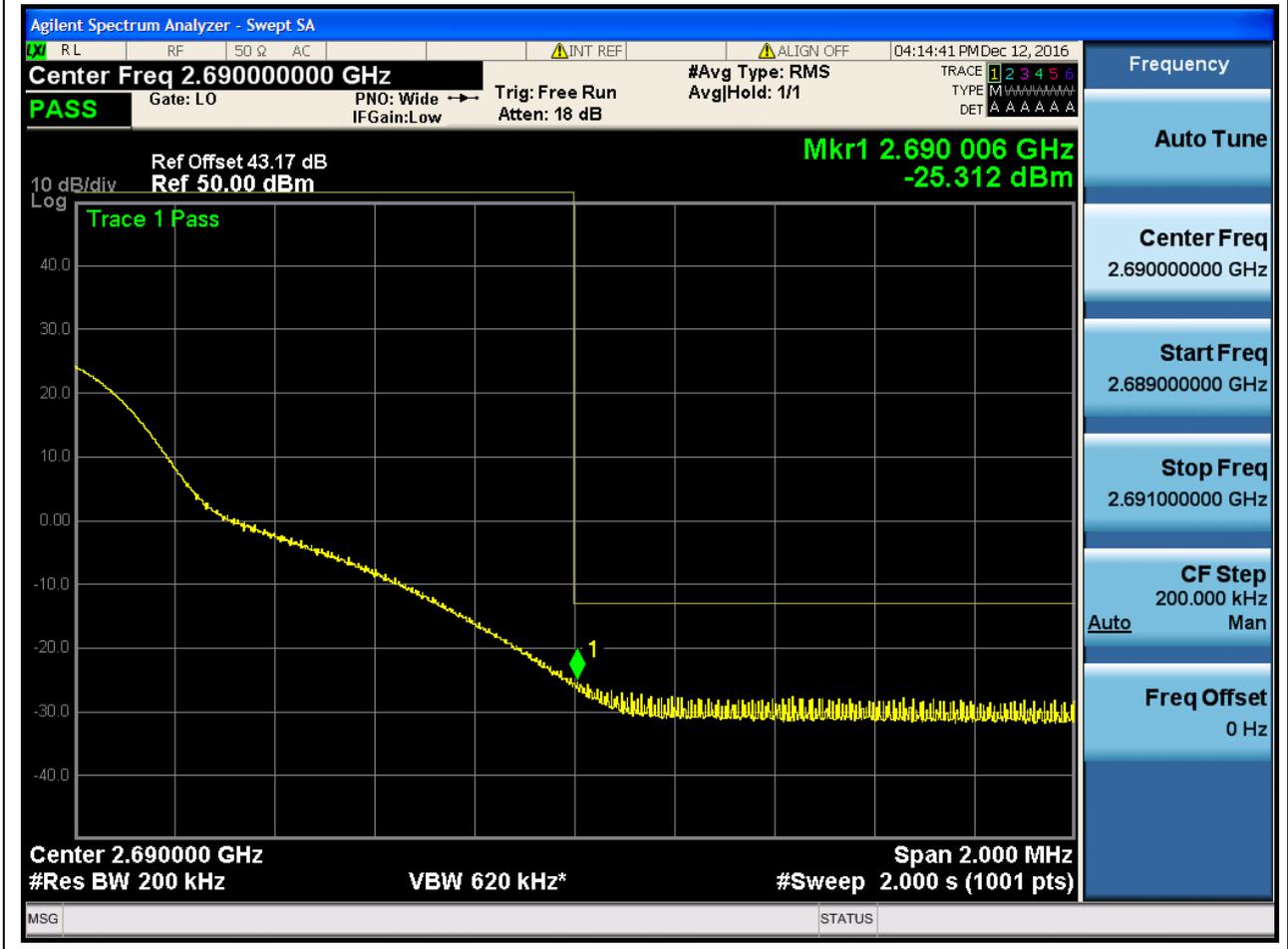


2.1.3 1L\_20M\_T\_TM1





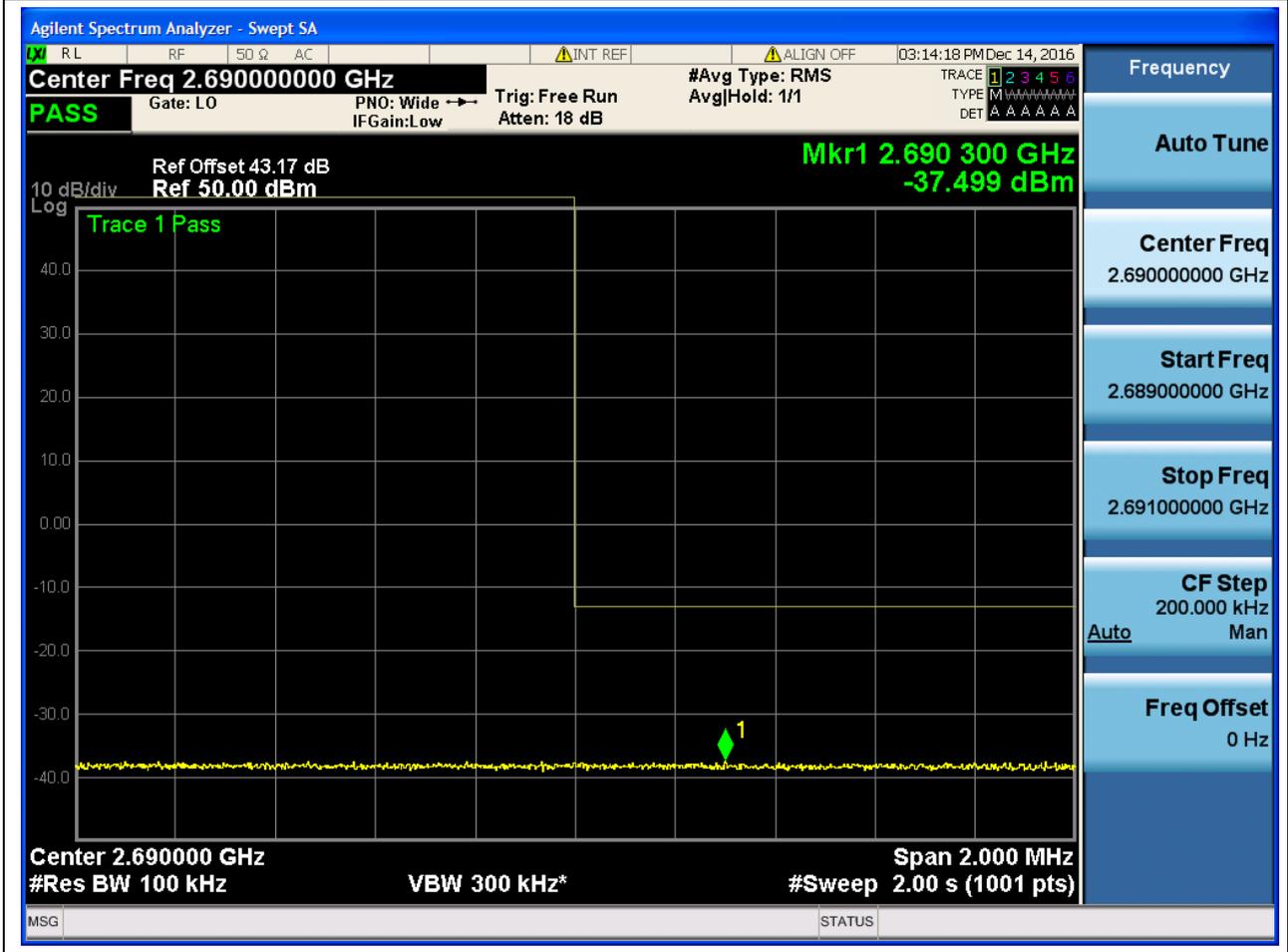
Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001



2.1.4 2L\_10M\_10M\_B\_TM1



Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.1	RMS	Pass	1001



2.1.5 2L\_10M\_10M\_T\_TM1



Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.1	RMS	Pass	1001



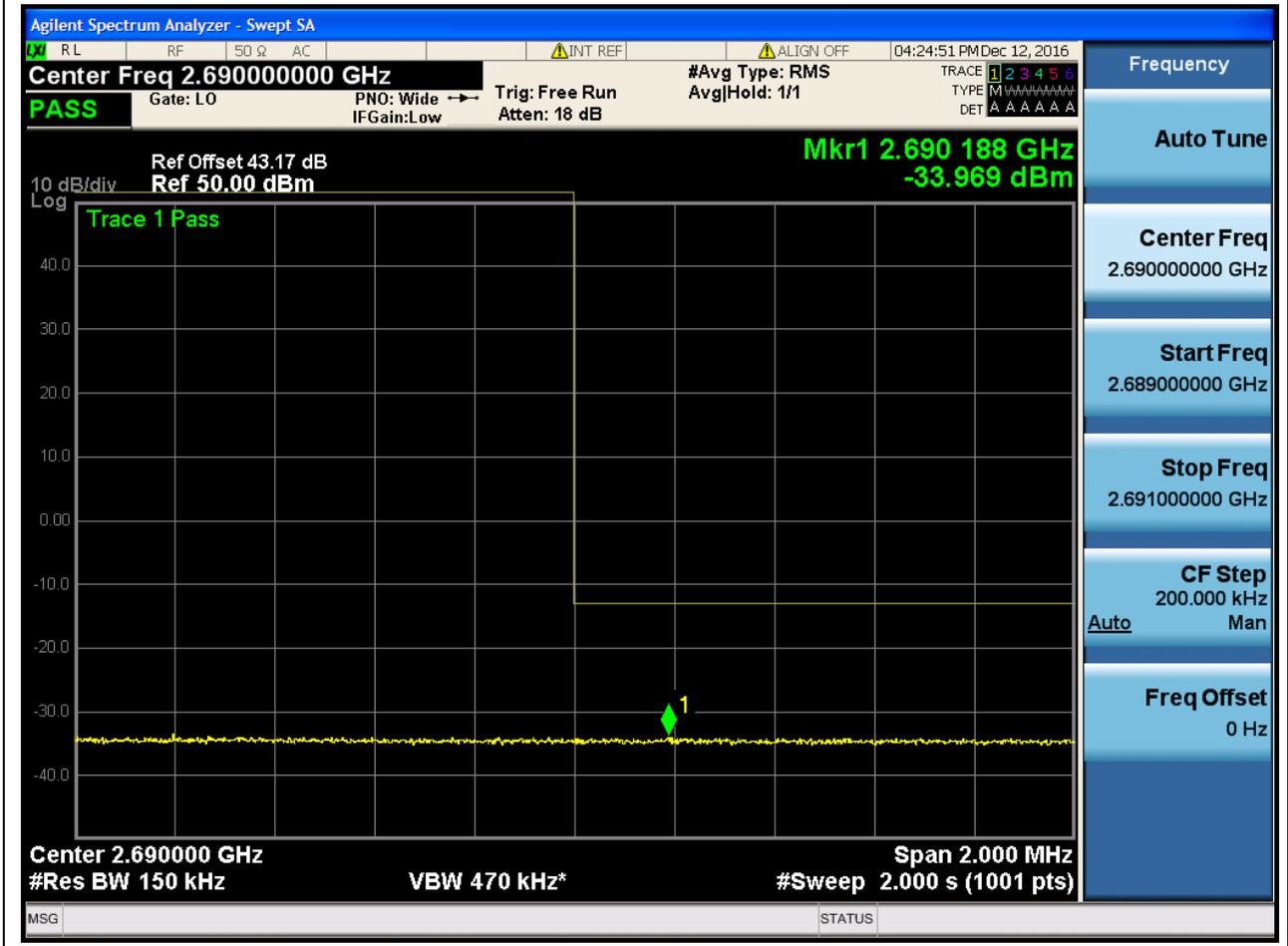


2.1.6 2L\_10M\_15M\_B\_TM1





Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.15	RMS	Pass	1001



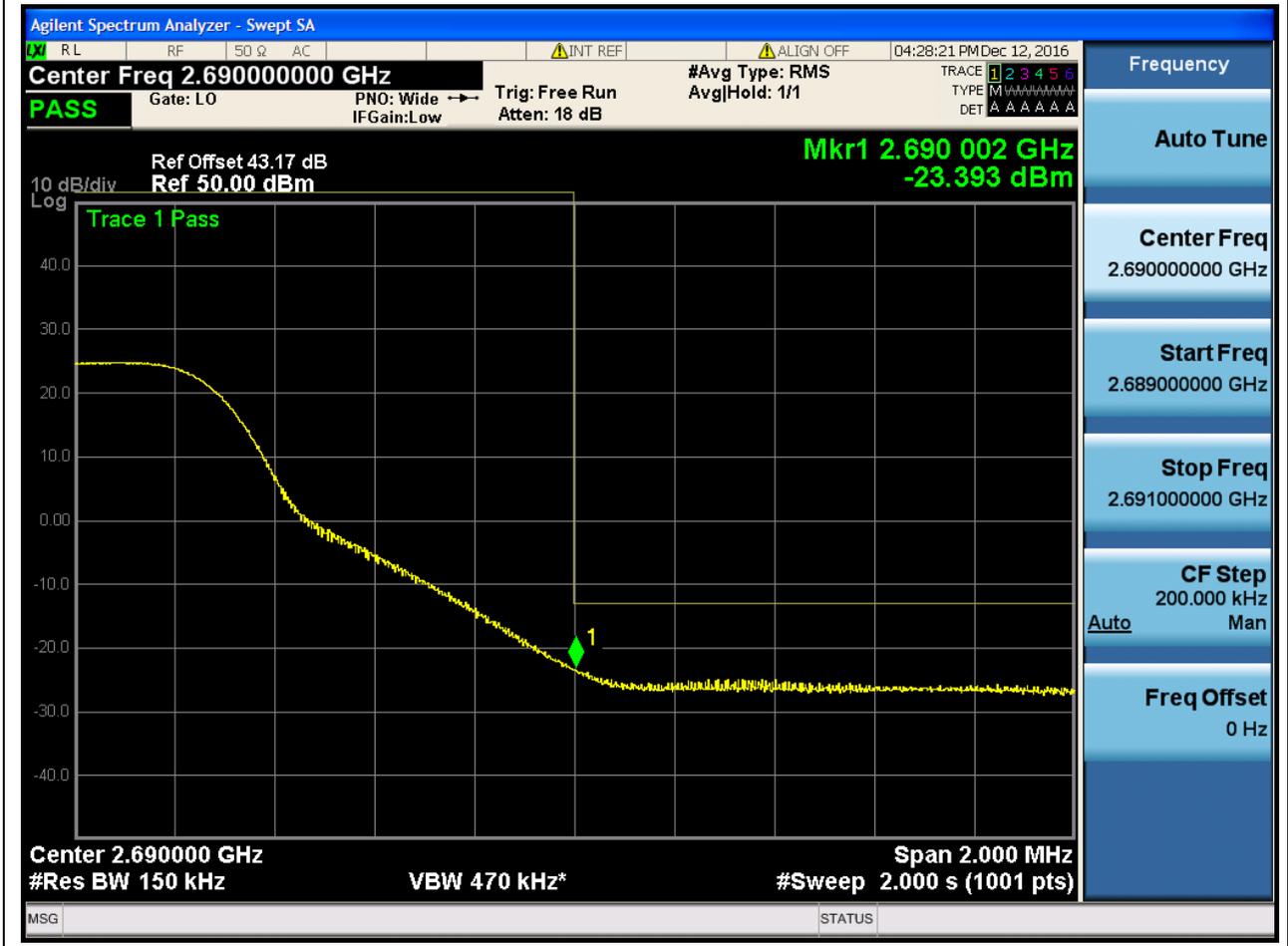


2.1.7 2L\_10M\_15M\_T\_TM1





Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.15	RMS	Pass	1001



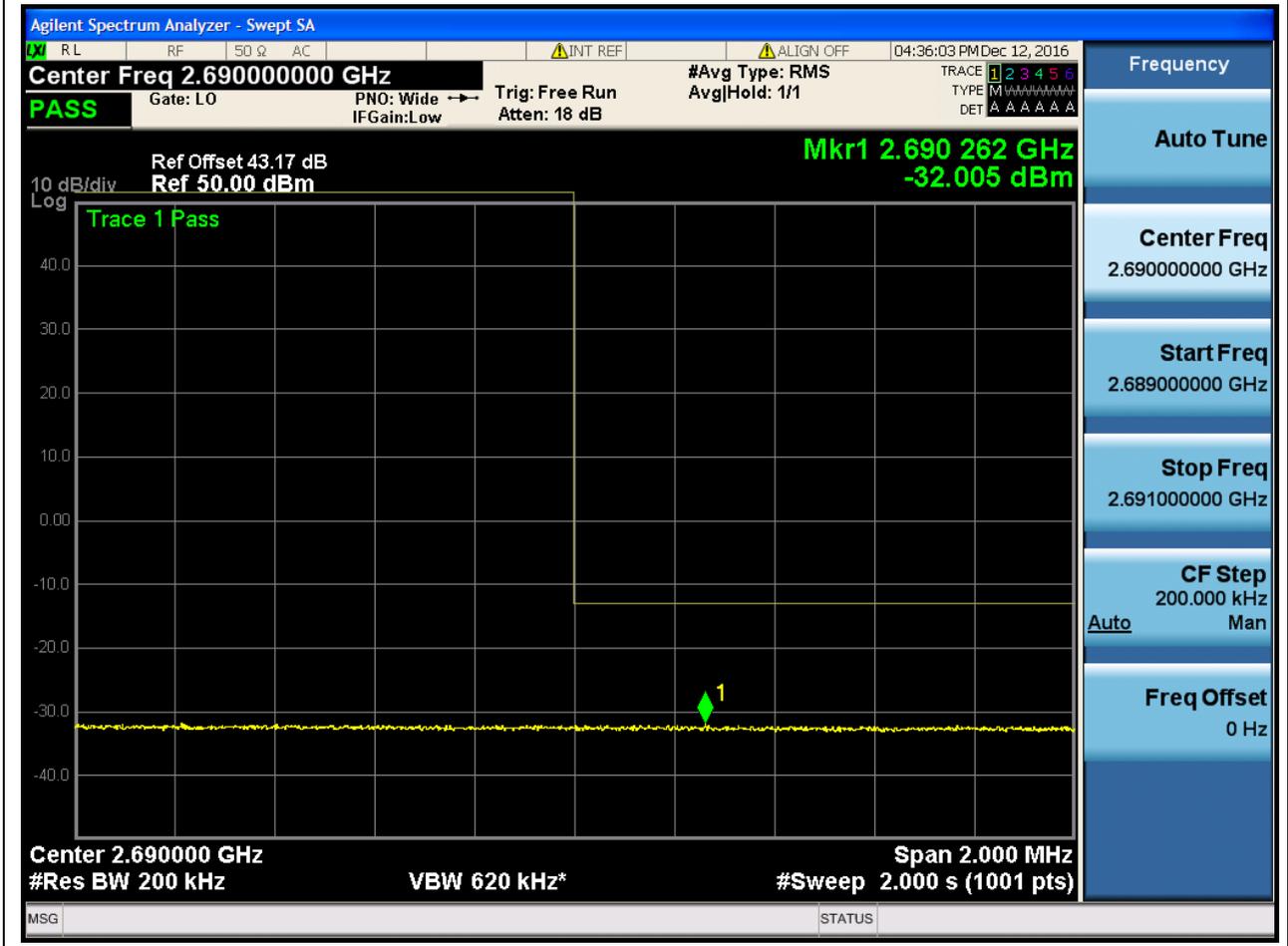


2.1.8 2L\_20M\_20M\_B\_TM1



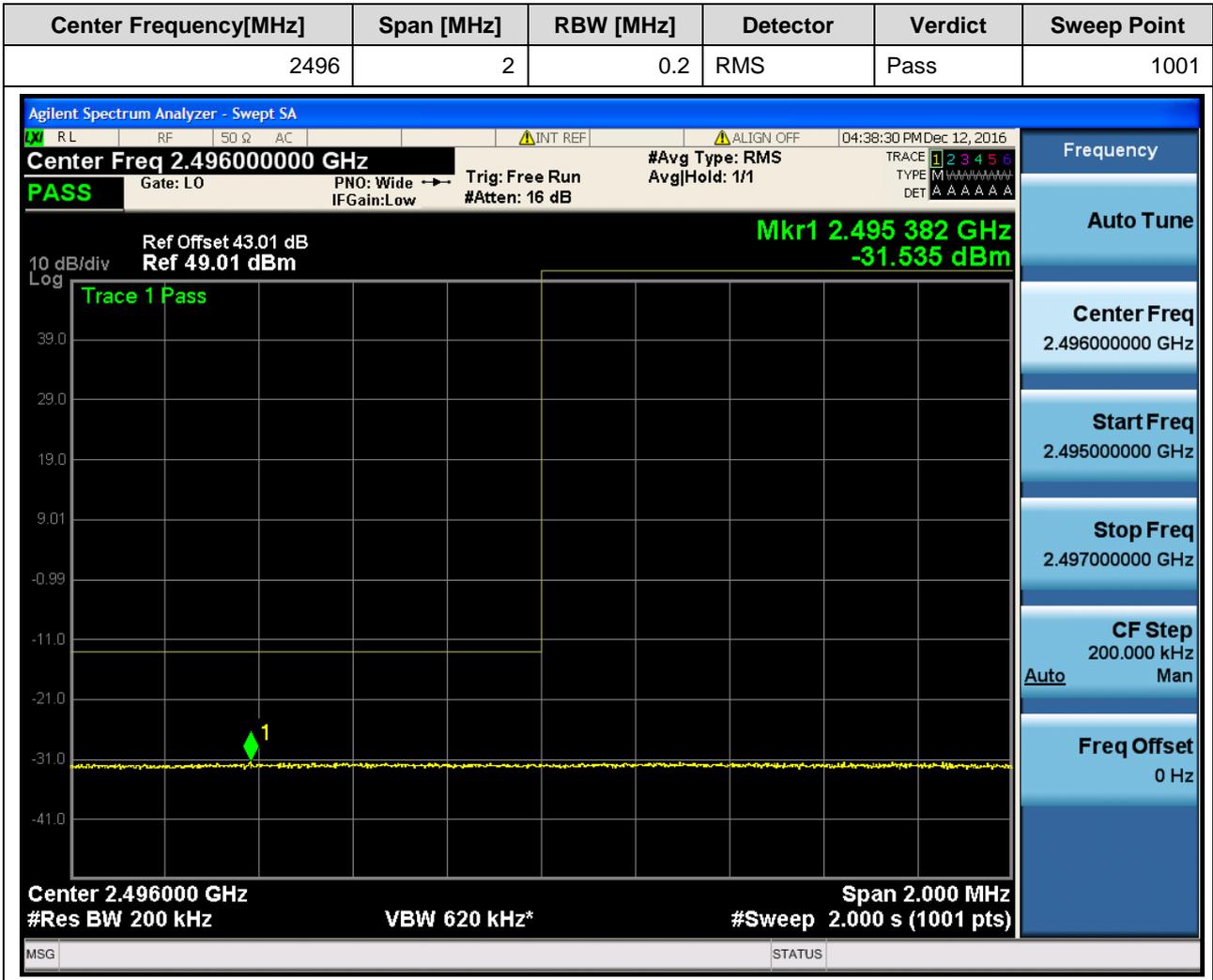


Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001





2.1.9 2L\_20M\_20M\_T\_TM1



Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001



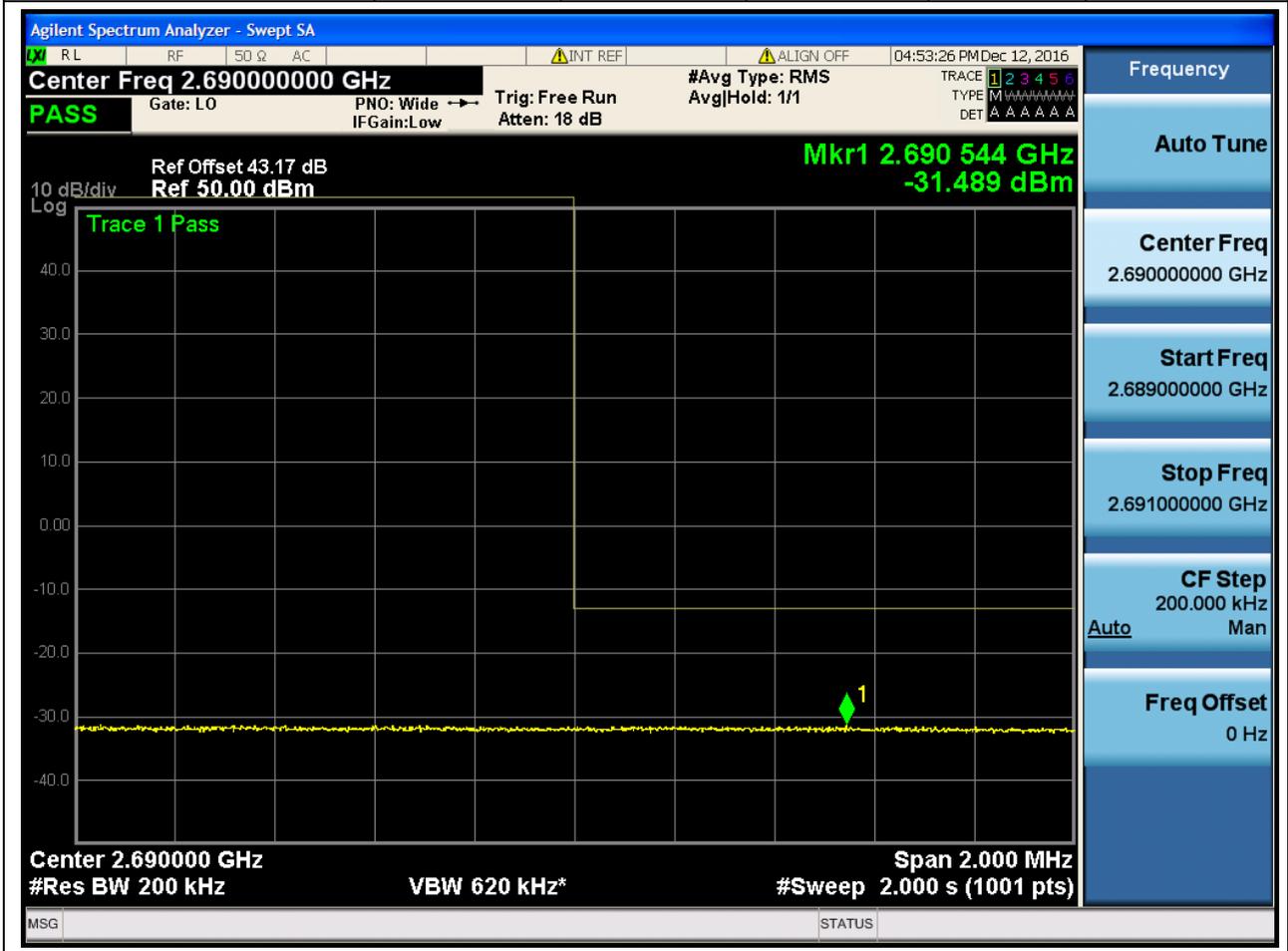


2.1.10 5L\_20M\_20M\_20M\_20M\_20M\_B\_TM1





Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001





2.1.11 5L\_20M\_20M\_20M\_20M\_T\_TM1





Center Frequency[MHz]	Span [MHz]	RBW [MHz]	Detector	Verdict	Sweep Point
2690	2	0.2	RMS	Pass	1001



# Appendix D: Spurious Emission at Antenna Terminals



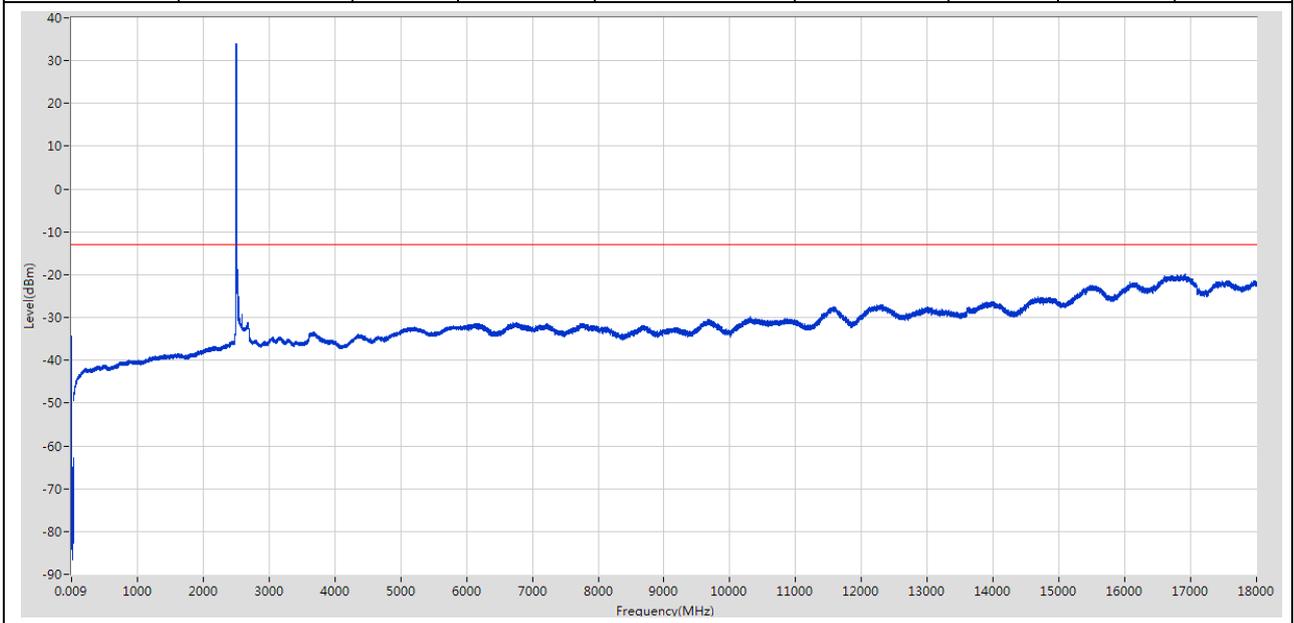
## 1 Result Table

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
2L_10M_10M_B_TM1	No spurious emission found	Pass
2L_10M_10M_T_TM1	No spurious emission found	Pass
2L_20M_20M_B_TM1	No spurious emission found	Pass
2L_20M_20M_T_TM1	No spurious emission found	Pass
5L_20M_20M_20M_20M_20M_B_TM1	No spurious emission found	Pass
5L_20M_20M_20M_20M_20M_T_TM1	No spurious emission found	Pass

## 2 Test Plot

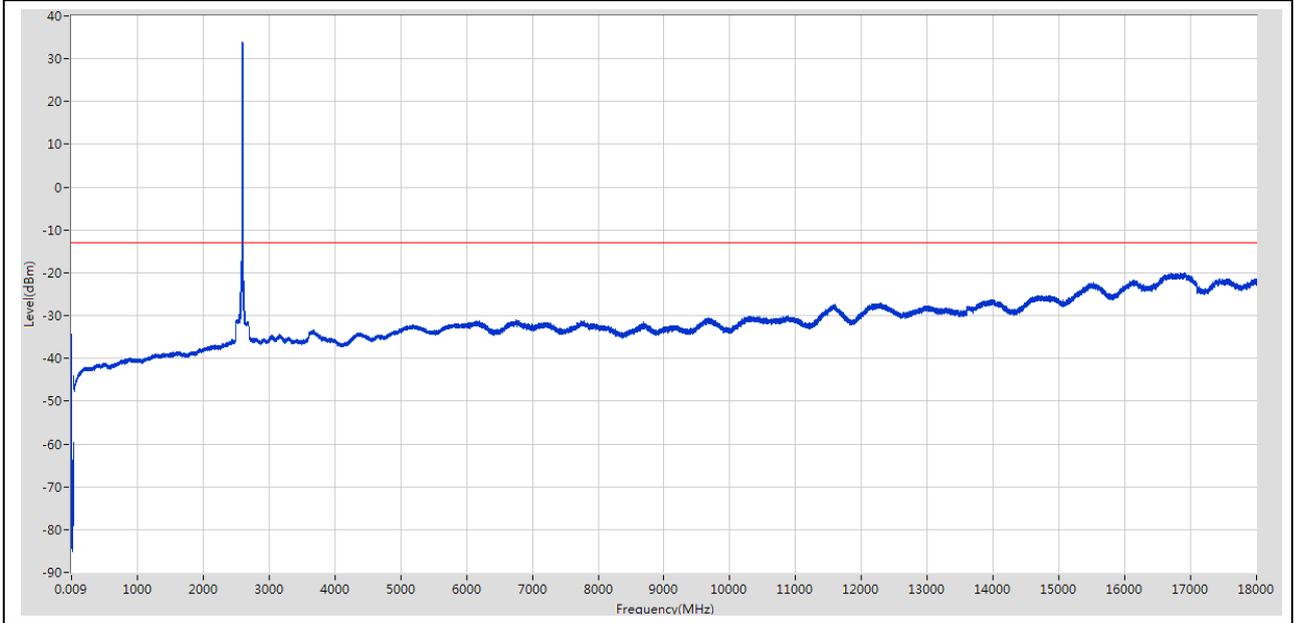
### 2.1.1 1L\_20M\_B\_TM1

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	10.269 k	-48.31	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-34.26	-13	Pass	14925
30	6000	1	RMS	2500.68277 M	33.97	-13	Fail	29850
6000	18000	1	RMS	16913.945695 M	-19.83	-13	Pass	60000



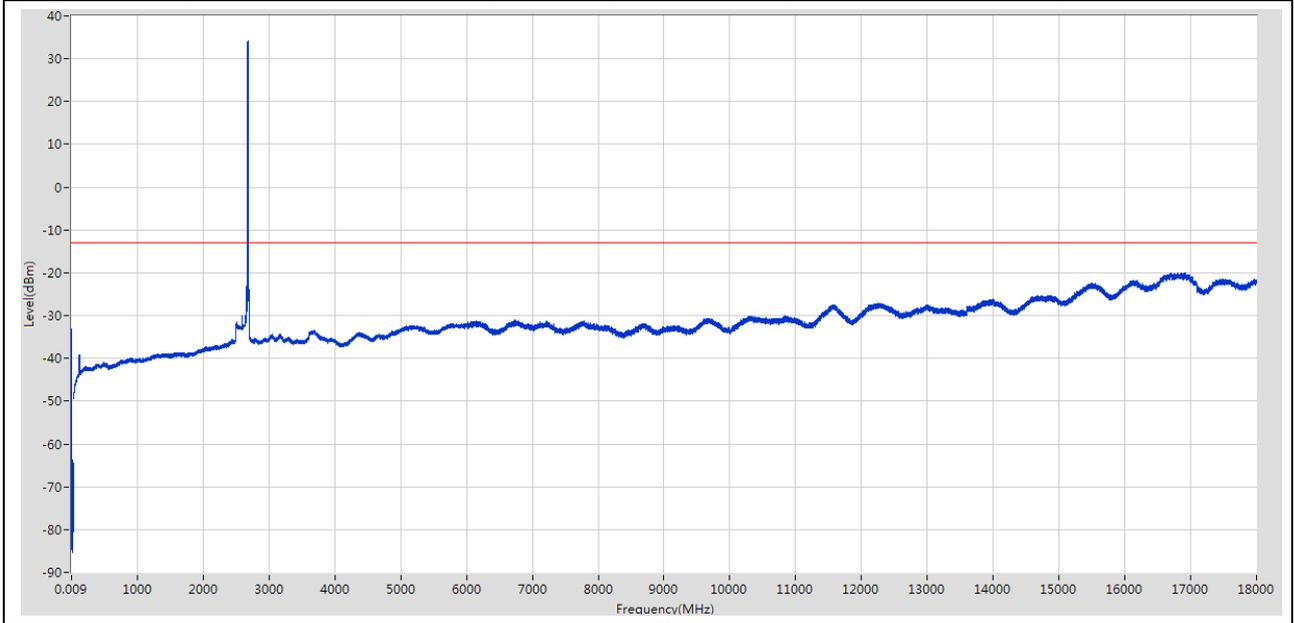
2.1.2 1L\_20M\_M\_TM1

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	9 k	-48.62	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-34.35	-13	Pass	14925
30	6000	1	RMS	2587.485678 M	33.88	-13	Fail	29850
6000	18000	1	RMS	16908.94544 5 M	-19.96	-13	Pass	60000



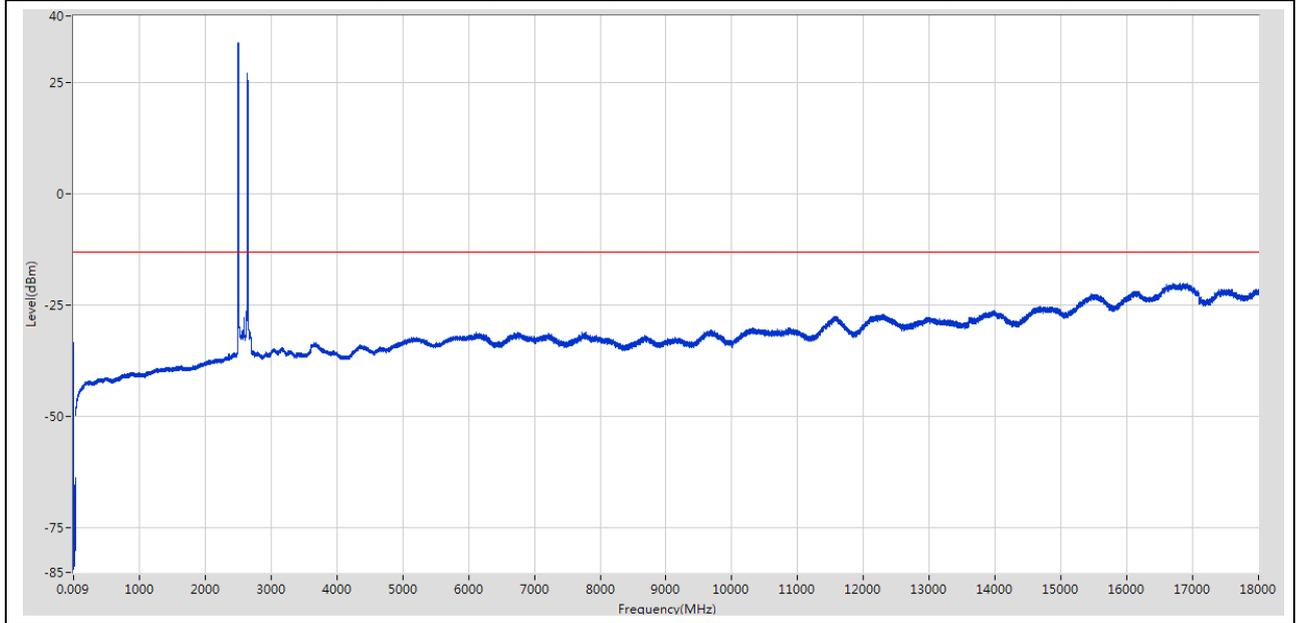
2.1.3 1L\_20M\_T\_TM1

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	9.282 k	-48.55	-13	Pass	1001
0.15	30	0.01	RMS	154 k	-33.14	-13	Pass	14925
30	6000	1	RMS	2682.488861 M	34.07	-13	Fail	29850
6000	18000	1	RMS	16697.93489 3 M	-19.92	-13	Pass	60000



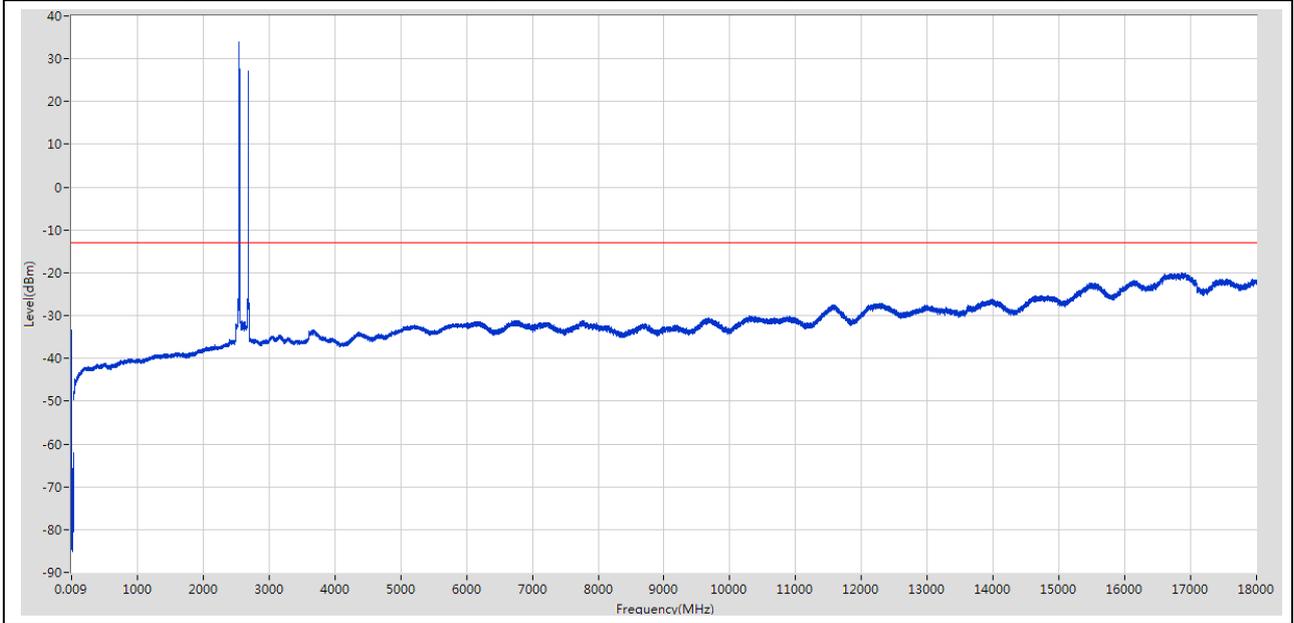
2.1.4 2L\_10M\_10M\_B\_TM1

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	9 k	-49.42	-13	Pass	1001
0.15	30	0.01	RMS	154 k	-33.29	-13	Pass	14925
30	6000	1	RMS	2500.882777 M	33.87	-13	Fail	29850
6000	18000	1	RMS	16856.14280 4 M	-19.95	-13	Pass	60000



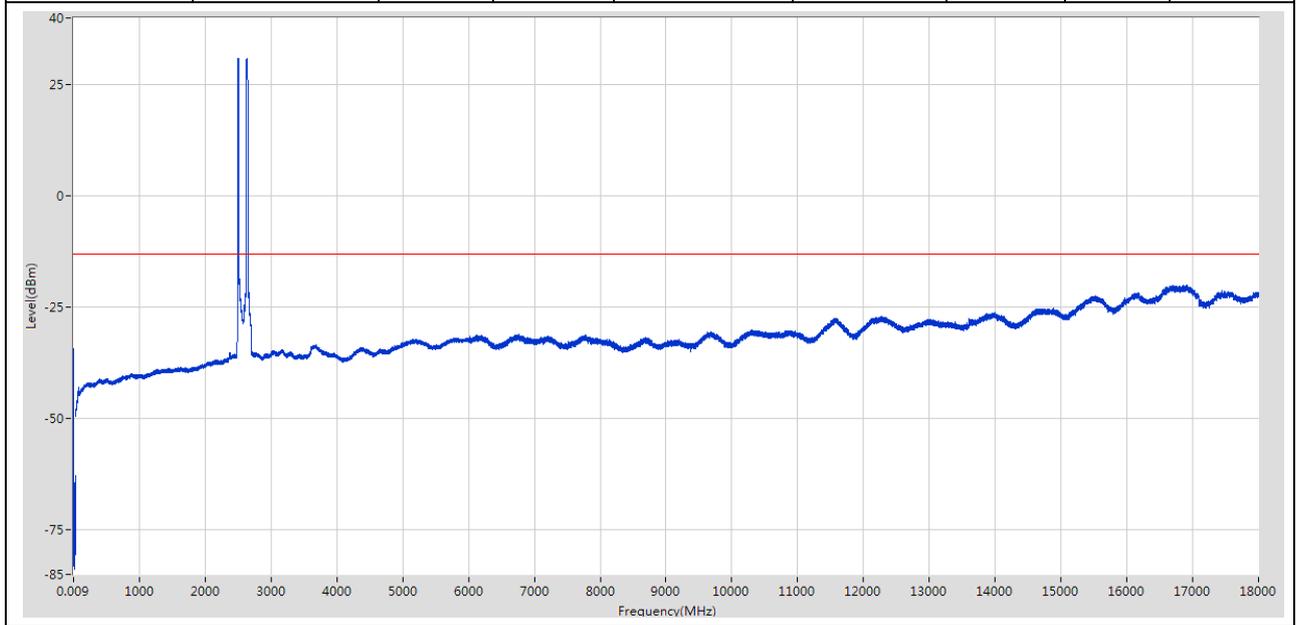
2.1.5 2L\_10M\_10M\_T\_TM1

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	10.128 k	-47.64	-13	Pass	1001
0.15	30	0.01	RMS	154 k	-33.28	-13	Pass	14925
30	6000	1	RMS	2542.084157 M	33.87	-13	Fail	29850
6000	18000	1	RMS	16866.34331 4 M	-20.09	-13	Pass	60000



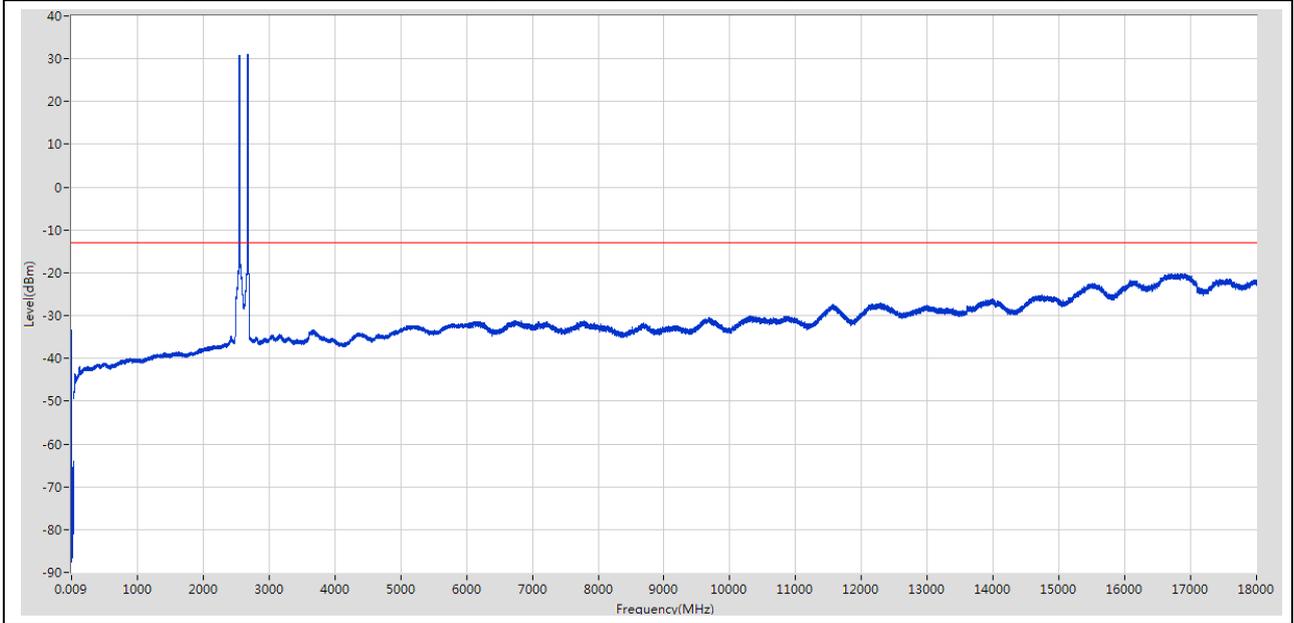
2.1.6 2L\_20M\_20M\_B\_TM1

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	9.423 k	-45.18	-13	Pass	1001
0.15	30	0.01	RMS	154 k	-34.22	-13	Pass	14925
30	6000	1	RMS	2637.287346 M	30.96	-13	Fail	29850
6000	18000	1	RMS	16857.94289 4 M	-19.95	-13	Pass	60000



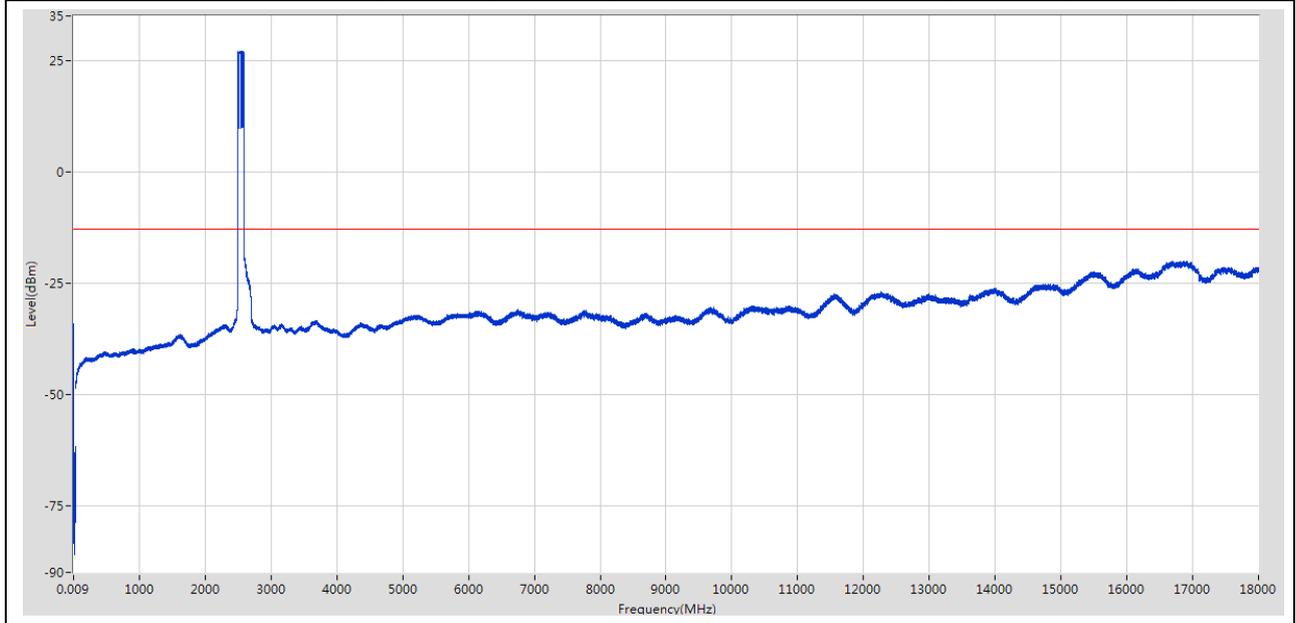
2.1.7 2L\_20M\_20M\_T\_TM1

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	9.564 k	-50.37	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-33.43	-13	Pass	14925
30	6000	1	RMS	2681.088814 M	30.94	-13	Fail	29850
6000	18000	1	RMS	16697.93489 3 M	-20.17	-13	Pass	60000



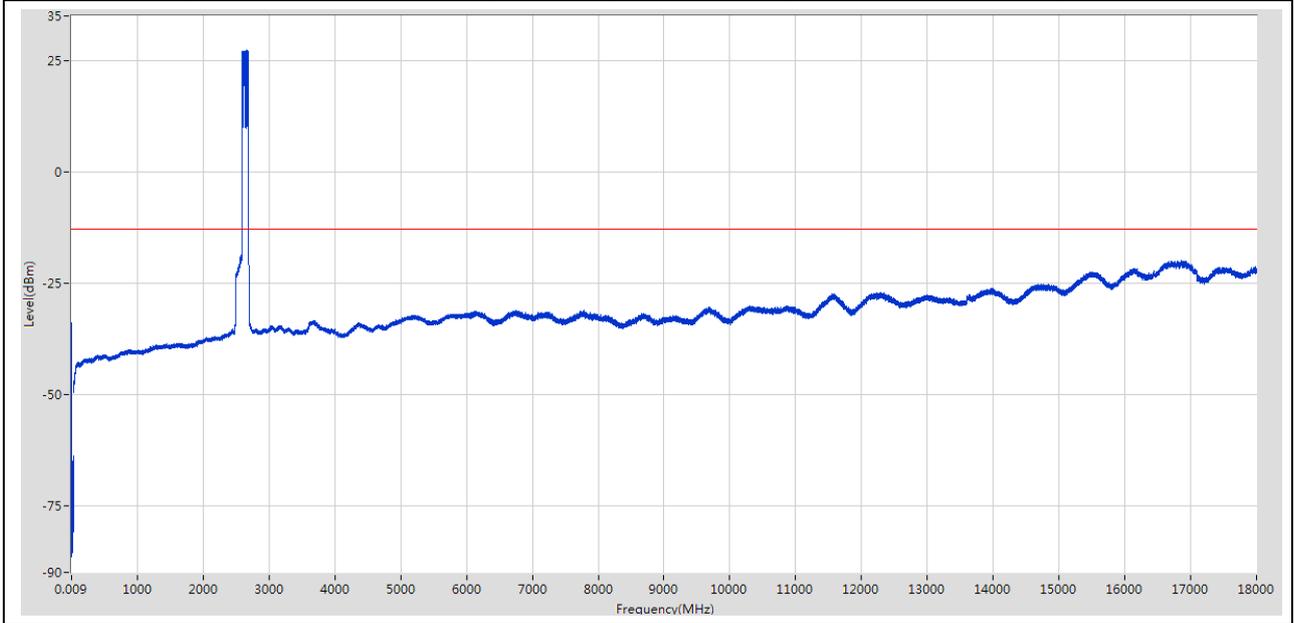
2.1.8 5L\_20M\_20M\_20M\_20M\_B\_TM1

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	9 k	-47.72	-13	Pass	1001
0.15	30	0.01	RMS	154 k	-34.19	-13	Pass	14925
30	6000	1	RMS	2559.884753 M	27.1	-13	Fail	29850
6000	18000	1	RMS	16923.34616 5 M	-20.03	-13	Pass	60000



2.1.9 5L\_20M\_20M\_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	9.423 k	-49.95	-13	Pass	1001
0.15	30	0.01	RMS	156 k	-33.93	-13	Pass	14925
30	6000	1	RMS	2667.888371 M	27.23	-13	Fail	29850
6000	18000	1	RMS	16861.54307 4 M	-19.91	-13	Pass	60000



# Appendix E: Radiation Emission

## 1 Result Table

NOTE 1: 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 $\mu$ V/m at 3 m measurement distance, and to 93.95 dB $\mu$ V/m at 1 m measurement distance assuming in the far-field region of both the transmit and receive antennas.)

NOTE 2: For radiated measurements:

(1) According to FCC §2.1053 and KDB 971168 §6.1&§5.8, in the cases of the EUTs that are portable or hand-held devices utilizing one or more integral transmit antennas, measurements cannot be performed in a conducted measurement configuration, it becomes necessary to perform the described compliance measurements in a radiated test arrangement.

(2) According to FCC §2.1053 and KDB 971168, when antenna-port conducted measurements (i.e. Spurious Emission at Antenna Terminals measurement) are performed to demonstrate compliance to the applicable unwanted emission limits, a separate radiated measurement (i.e. Field Strength of Spurious Radiation measurement) is required to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation (, and with the transmit antenna port(s) terminated). Note that when radiated measurements for spurious emissions at antenna terminals are performed to demonstrate compliance to the unwanted emission limits (e.g., an EUT with integral transmit antenna), the field strength of spurious radiation measurement is not required.

### 1.1 Field Strength of Spurious Radiation

(Not applicable)

### 1.2 Radiated Measurements for Spurious Emissions at Antenna Terminals

Test Range	EUT Conf.	Maximum Emission	Verdict
30 MHz to 1 GHz	2L_10M_10M_T_TM1	< Limit	Pass
1 GHz to 18 GHz	2L_10M_10M_T_TM1	< Limit	Pass
18 GHz to 26.5 GHz	2L_10M_10M_T_TM1	< Limit	Pass
26.5 GHz to 40 GHz	2L_10M_10M_T_TM1	< Limit	Pass



## 2 Test Plot

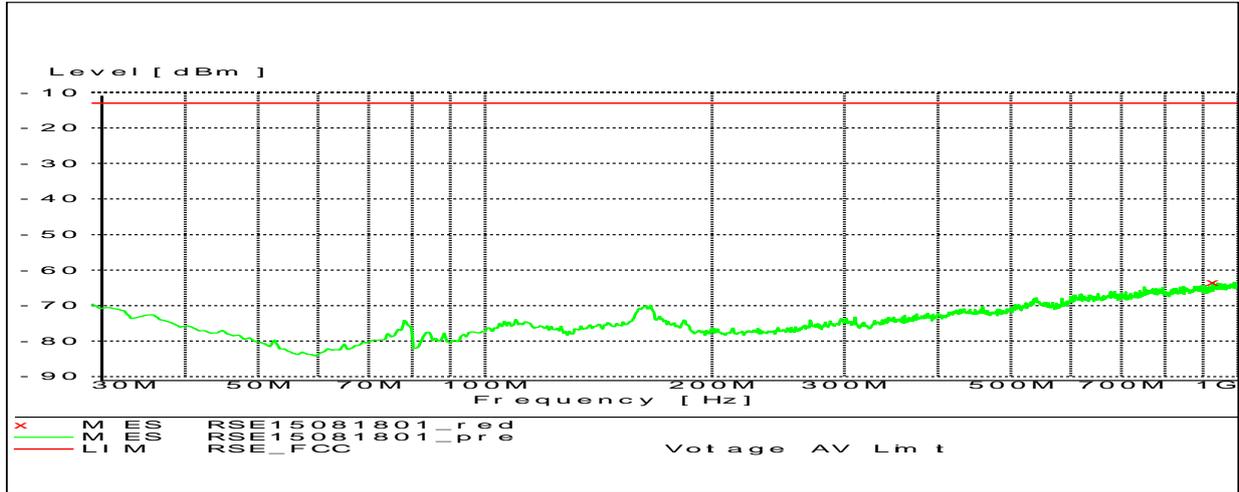
### 2.1 Field Strength of Spurious Radiation

(Not applicable)

## 2.2 Radiated Measurements for Spurious Emissions at Antenna Terminals

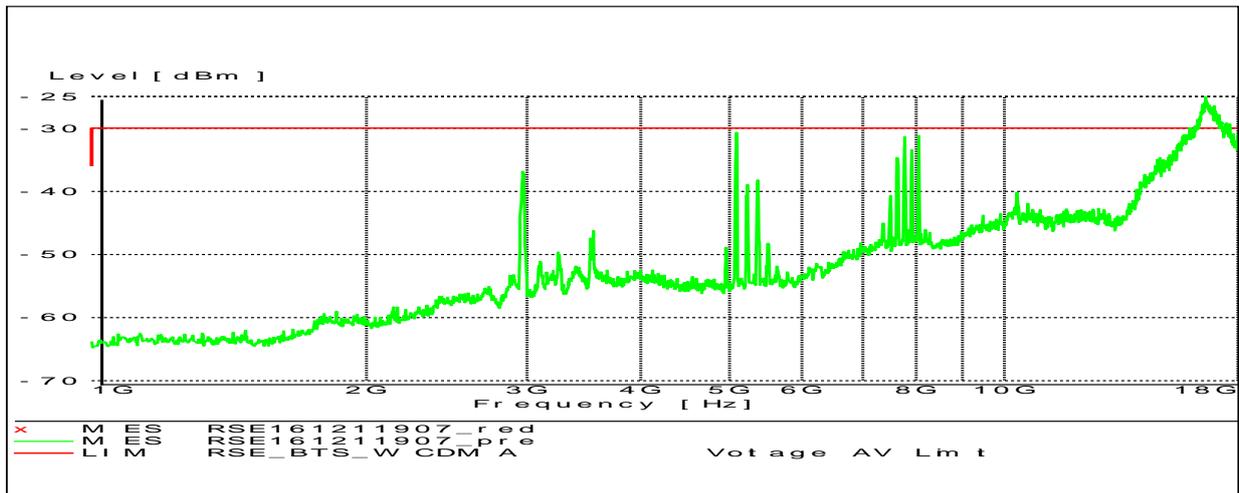
### 2.2.1 Test range of “30 MHz to 1 GHz”

#### 2.2.1.1 2L\_10M\_10M\_T\_TM1



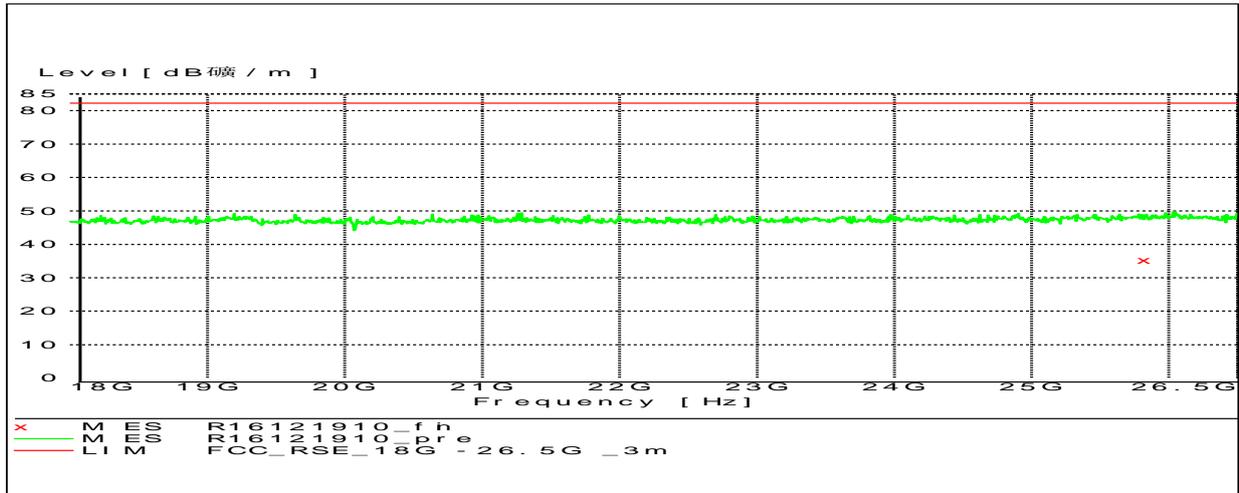
### 2.2.2 Test range of “1 GHz to 18 GHz”

#### 2.2.2.1 2L\_10M\_10M\_T\_TM1



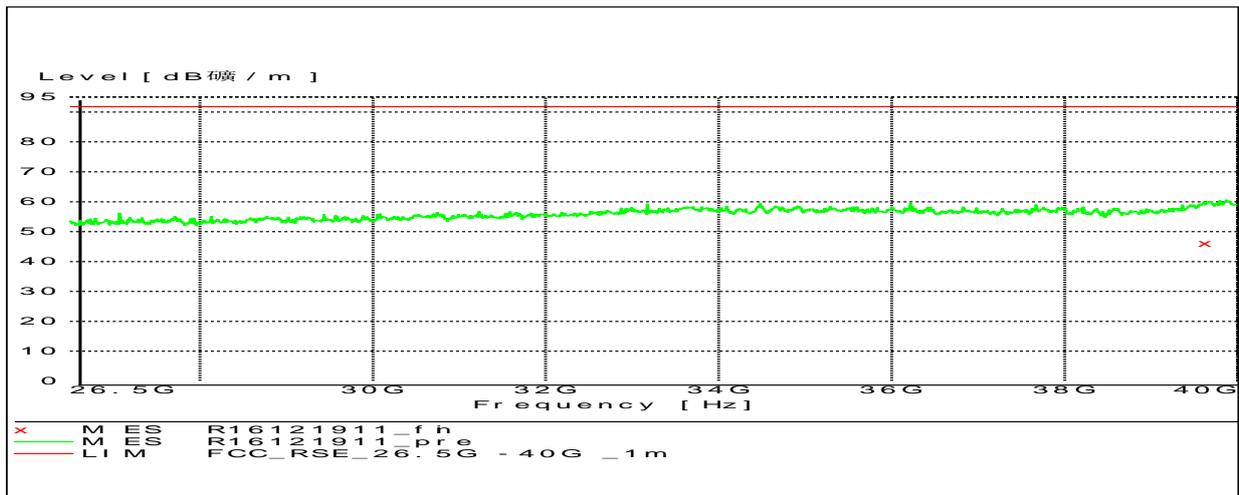
### 2.2.3 Test range of “18 GHz to 26.5 GHz”

#### 2.2.3.1 2L\_10M\_10M\_T\_TM1



## 2.2.4 Test range of “26.5 GHz to 40 GHz”

### 2.2.4.1 2L\_10M\_10M\_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]	Freq. vs. 20 °C [ppm]	Verdict
1L_5M_M_TM1	-30 °C	100%	5.7617	0.002222	-0.00034	Pass
	-20	100%	3.3160	0.001279	-0.00128	Pass
	-10	100%	2.2694	0.000875	-0.00169	Pass
	0	100%	5.0980	0.001966	-0.0006	Pass
	+10	100%	7.7830	0.003002	0.000438	Pass
	+20 °C	85%	6.6576	0.002568	4.09E-06	Pass
	+20 °C	100%	6.6470	0.002563	0	Pass
	+20 °C	115%	5.6965	0.002197	-0.00037	Pass
	+30	100%	3.8537	0.001486	-0.00108	Pass
	+40	100%	4.5455	0.001753	-0.00081	Pass
	+50 °C	100%	4.2823	0.001651	-0.00091	Pass
	1L_10M_M_TM1	-30 °C	100%	1.4351	0.000553	-0.00123
-20		100%	3.4989	0.001349	-0.00044	Pass
-10		100%	3.2100	0.001238	-0.00055	Pass
0		100%	4.3939	0.001695	-9E-05	Pass
+10		100%	2.0743	0.0008	-0.00099	Pass
+20 °C		85%	3.1945	0.001232	-0.00055	Pass
+20 °C		100%	4.6285	0.001785	0	Pass
+20 °C		115%	4.6561	0.001796	1.06E-05	Pass
+30		100%	3.0031	0.001158	-0.00063	Pass
+40		100%	3.9366	0.001518	-0.00027	Pass
+50 °C		100%	8.1203	0.003132	0.001347	Pass
1L_15M_M_TM1		-30 °C	100%	6.8526	0.002643	0.000291
	-20	100%	4.9253	0.001899	-0.00045	Pass
	-10	100%	4.6413	0.00179	-0.00056	Pass
	0	100%	5.3346	0.002057	-0.00029	Pass
	+10	100%	4.5641	0.00176	-0.00059	Pass
	+20 °C	85%	4.0590	0.001565	-0.00079	Pass
	+20 °C	100%	6.0987	0.002352	0	Pass
	+20 °C	115%	2.4731	0.000954	-0.0014	Pass
	+30	100%	6.9902	0.002696	0.000344	Pass
	+40	100%	11.991	0.004624	0.002272	Pass
	+50 °C	100%	3.5545	0.001371	-0.00098	Pass
	1L_20M_M_TM1	-30 °C	100%	4.9195	0.001897	-0.00054
-20		100%	5.5147	0.002127	-0.00031	Pass
-10		100%	7.7089	0.002973	0.000538	Pass
0		100%	5.3039	0.002045	-0.00039	Pass

EUT Conf.	Temperature	Voltage	Freq. Error, f(offset) [Hz]	Freq. vs. rated [ppm]	Freq. vs. 20 °C [ppm]	Verdict
	+10	100%	4.6462	0.001792	-0.00064	Pass
	+20 °C	85%	2.5516	0.000984	-0.00145	Pass
	+20 °C	100%	6.3148	0.002435	0	Pass
	+20 °C	115%	3.4632	0.001336	-0.0011	Pass
	+30	100%	4.3928	0.001694	-0.00074	Pass
	+40	100%	4.4271	0.001707	-0.00073	Pass
	+50 °C	100%	3.5789	0.00138	-0.00106	Pass

## 1.2 Frequency Range

(Not applicable)

## 2 Test Plot

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

(Not applicable)

# Appendix G: Receiver Spurious Emissions



(Not applicable)



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END