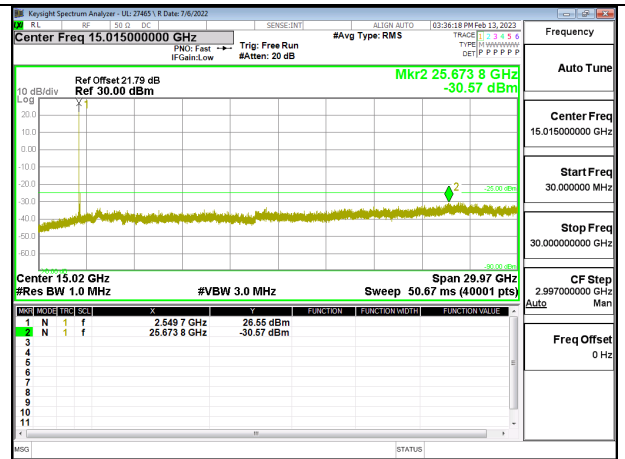
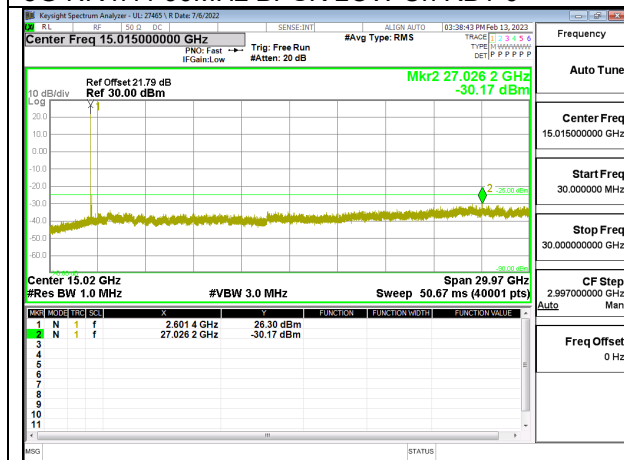


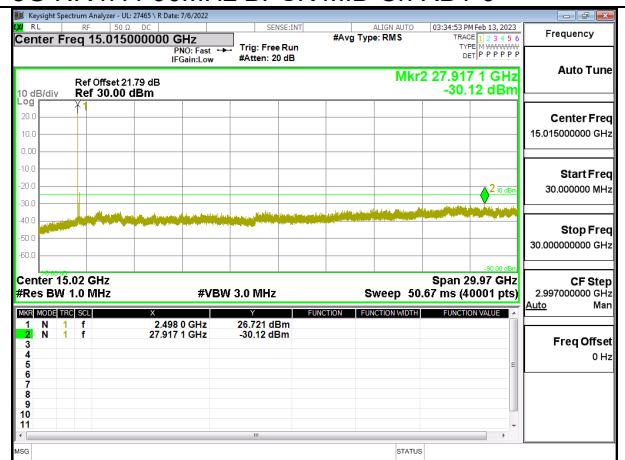
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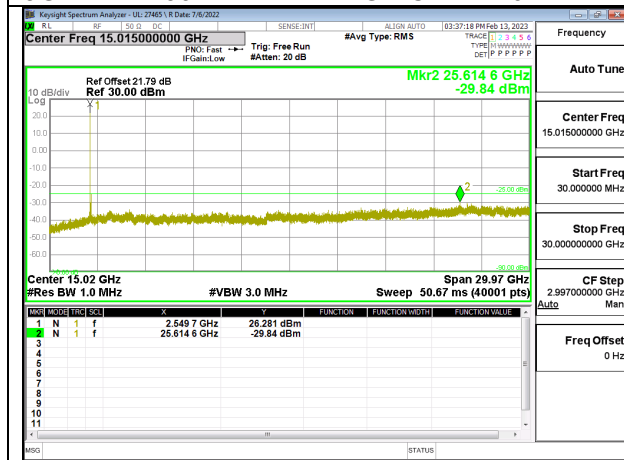
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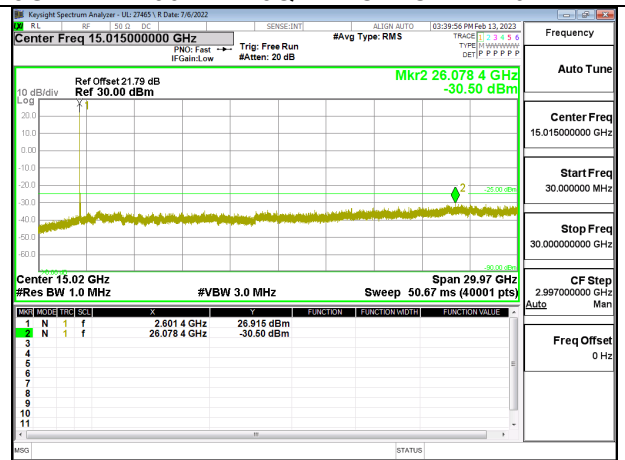
5G NR n41 90MHz BPSK HIGH Ch RB1-0



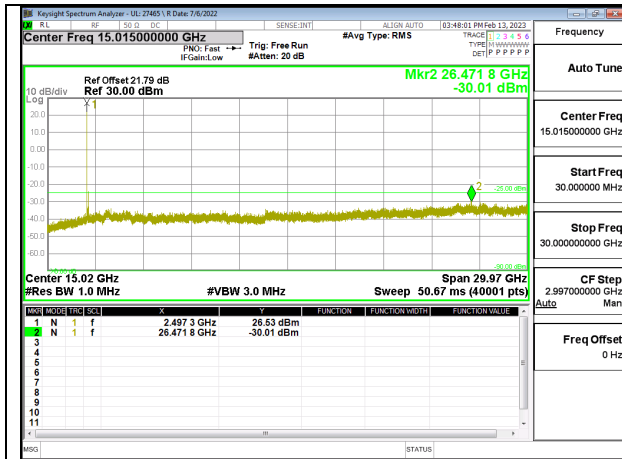
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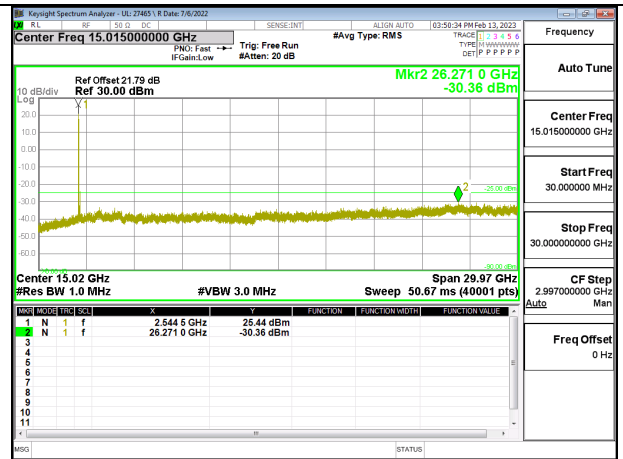
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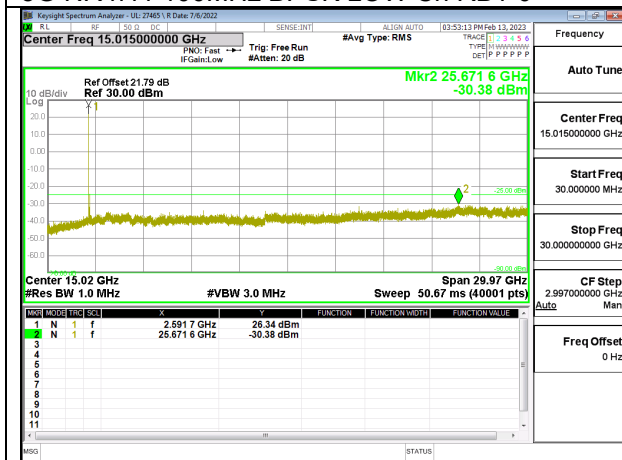
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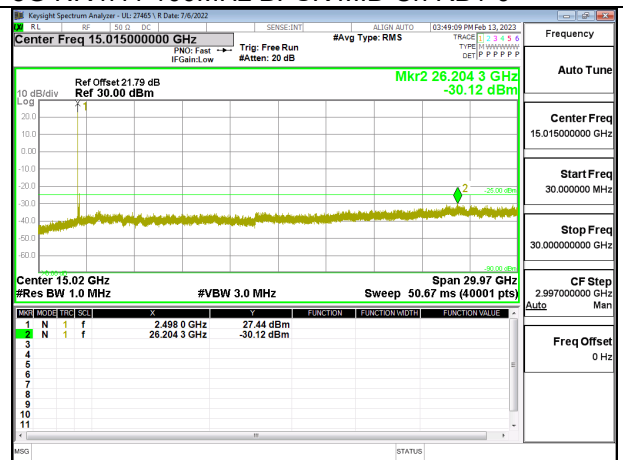
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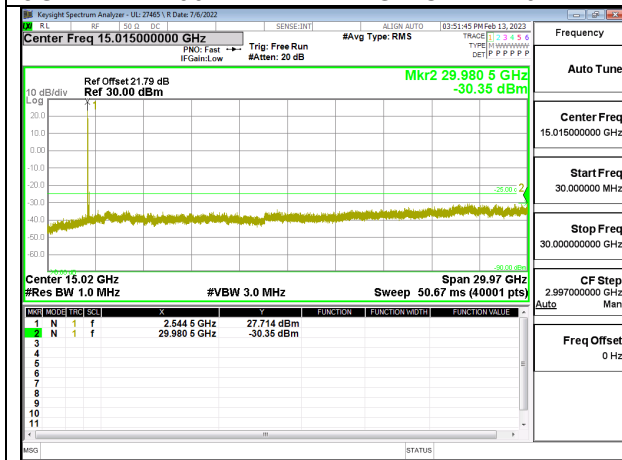
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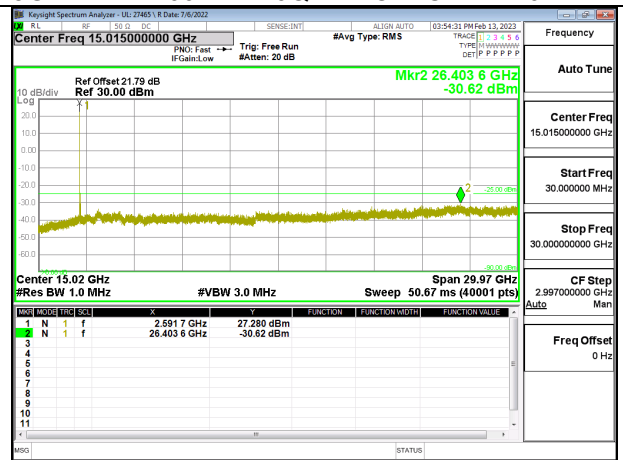
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5G NR n41 100MHz 16QAM LOW Ch RB1-0



5G NR n41 100MHz 16QAM MID Ch RB1-0



5G NR n41 100MHz 16QAM HIGH Ch RB1-0

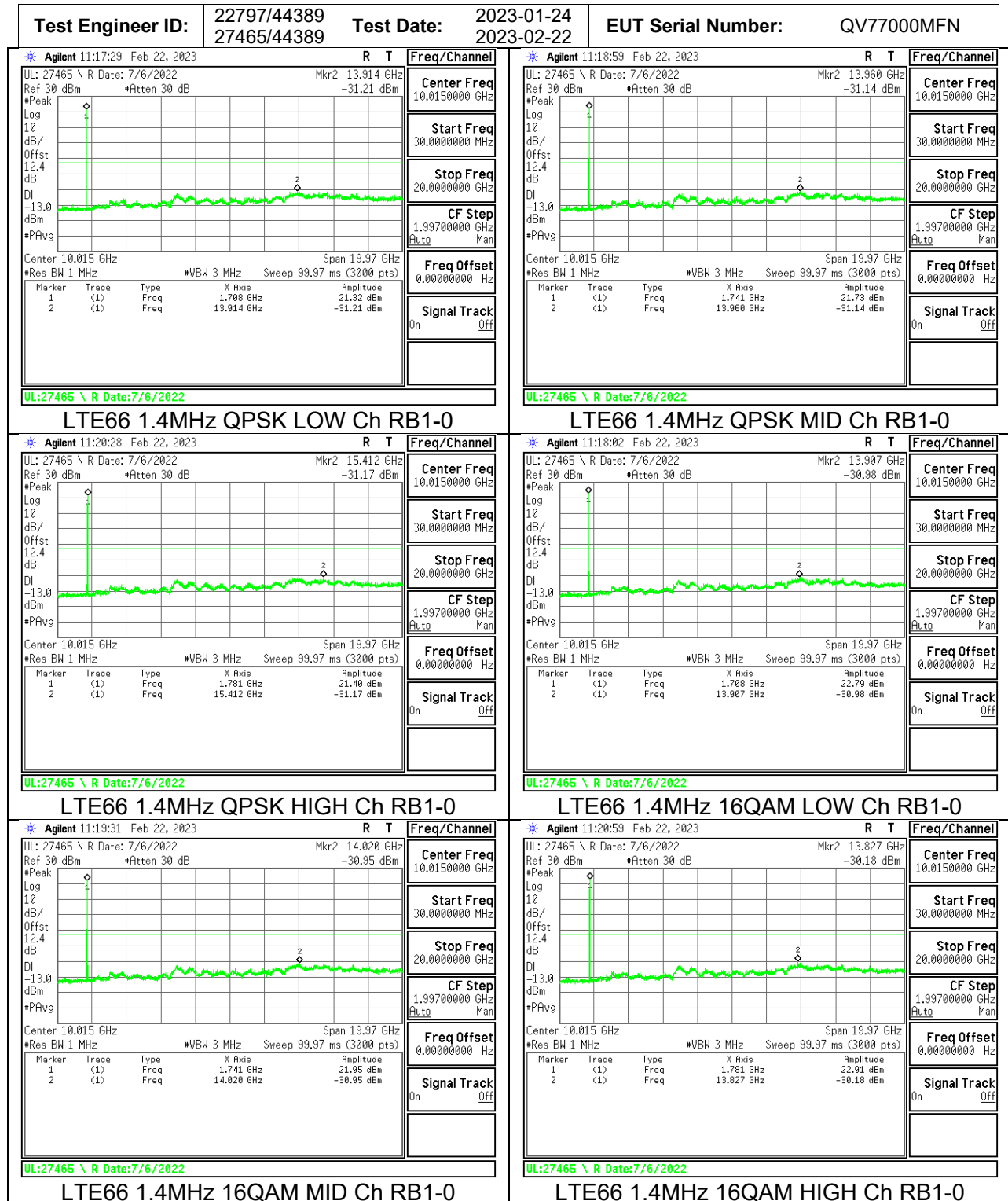
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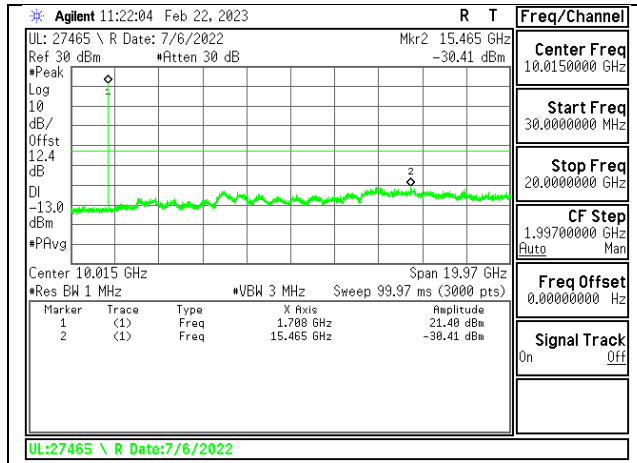
#### **LIMITS**

FCC: §27.53(h)

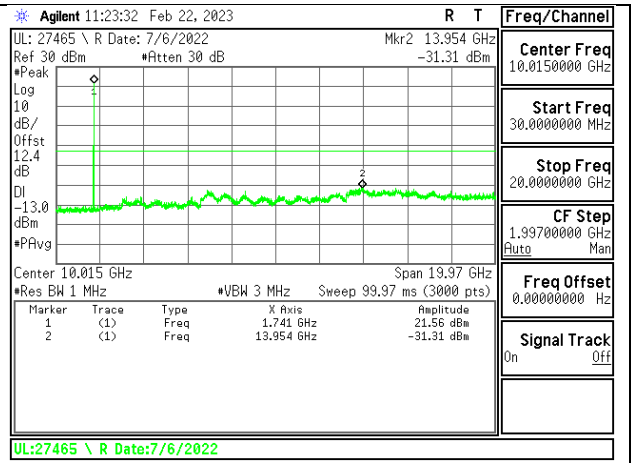
The minimum permissible attenuation level of any spurious emissions is  $43 + 10 \log (P)$  dB where transmitting power (P) in Watts.

Main Antenna

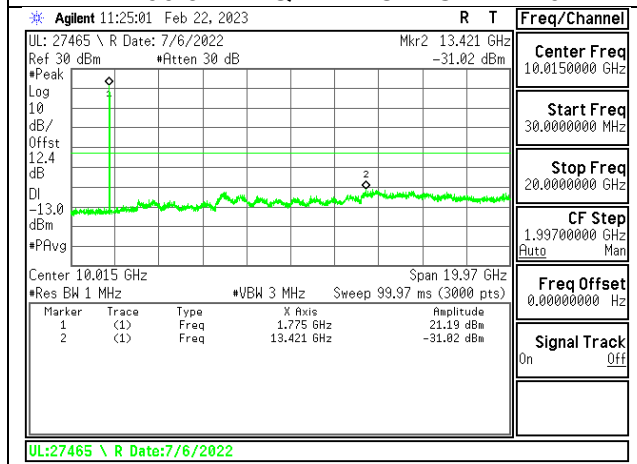




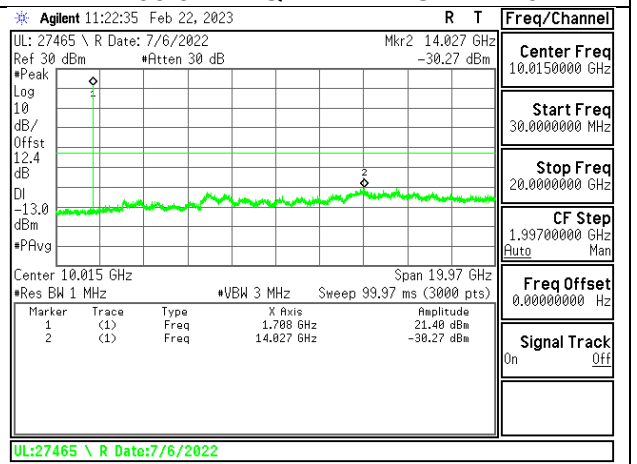
LTE66 3MHz QPSK LOW Ch RB1-0



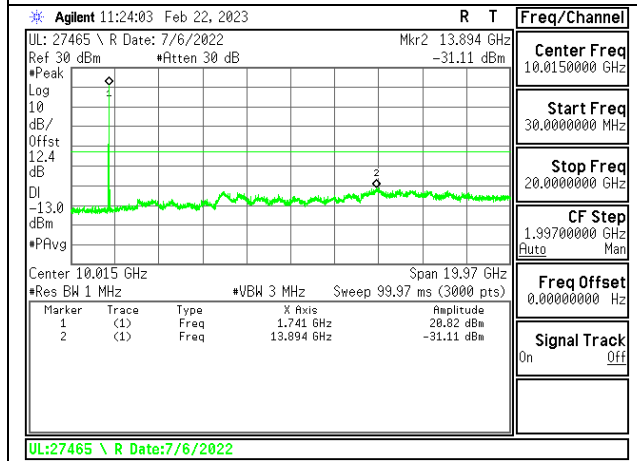
LTE66 3MHz QPSK MID Ch RB1-0



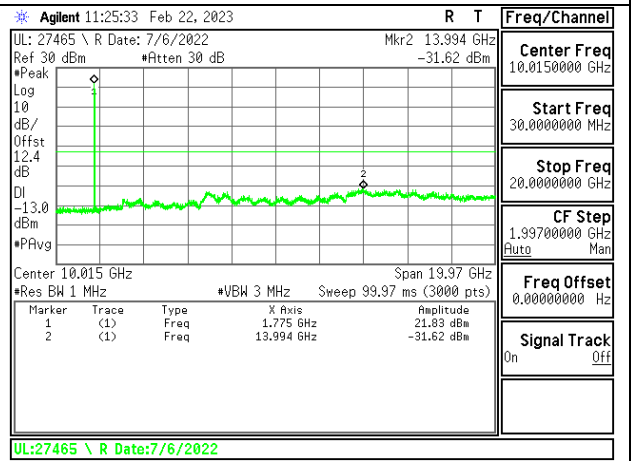
LTE66 3MHz QPSK HIGH Ch RB1-0



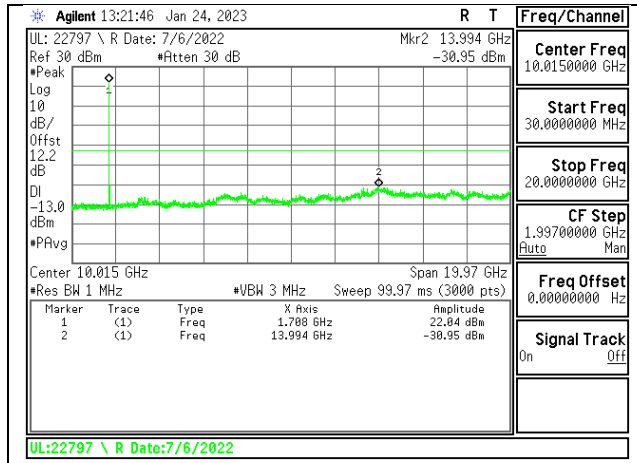
LTE66 3MHz 16QAM LOW Ch RB1-0



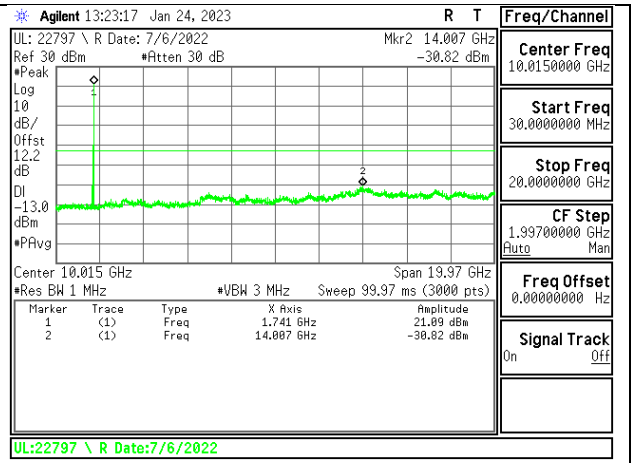
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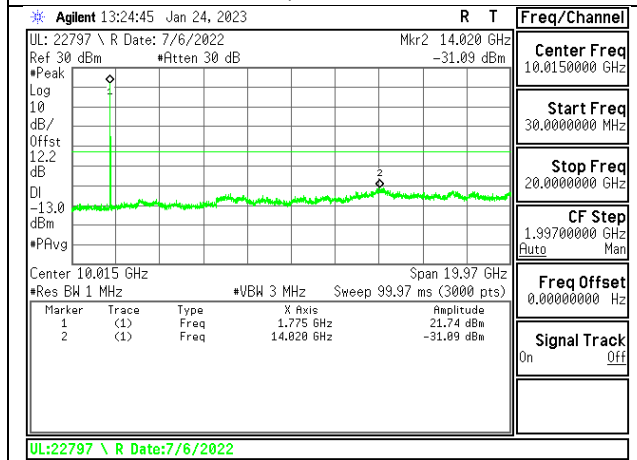
LTE66 3MHz 16QAM HIGH Ch RB1-0



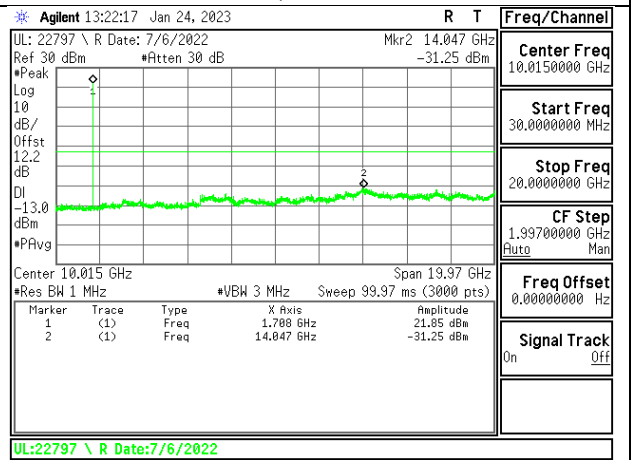
LTE66 5MHz QPSK LOW Ch RB1-0



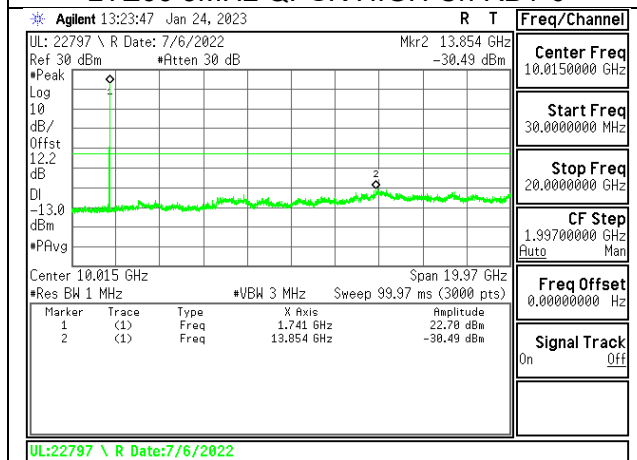
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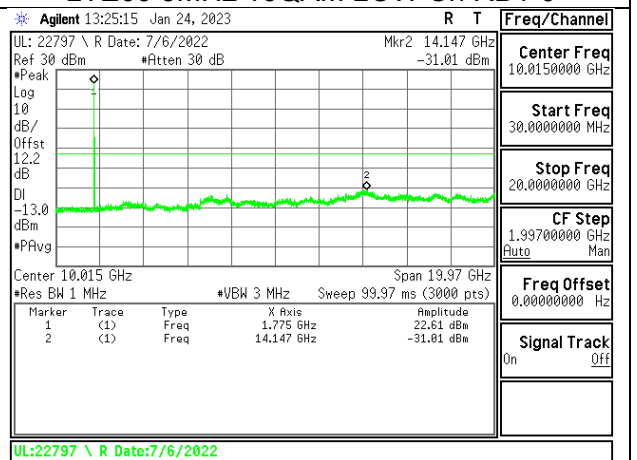
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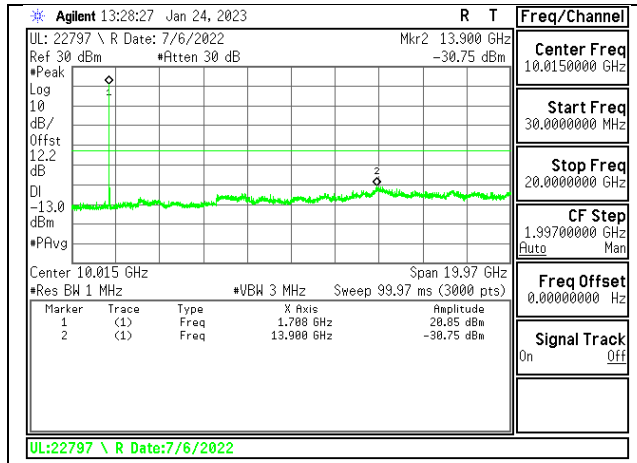
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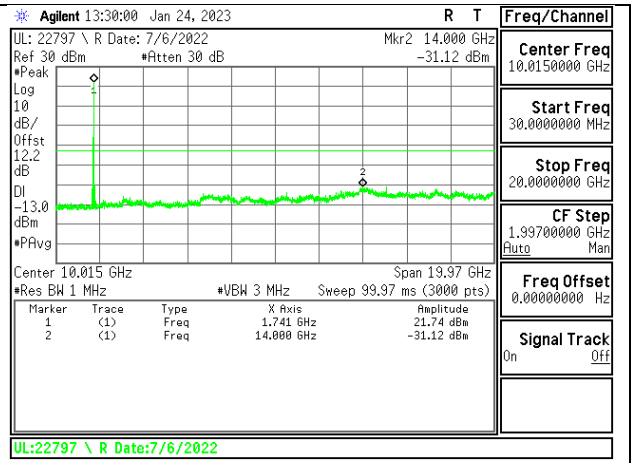
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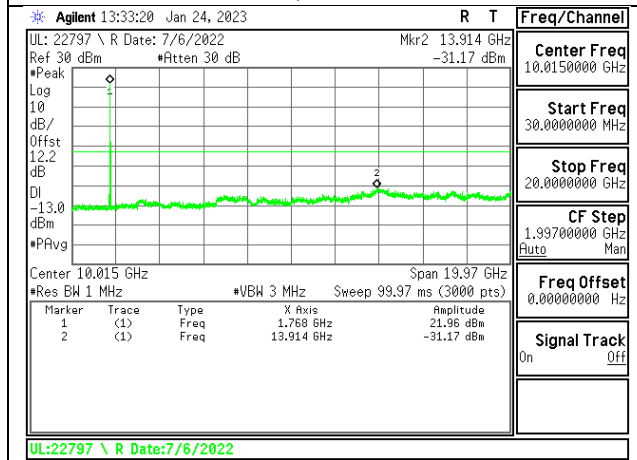
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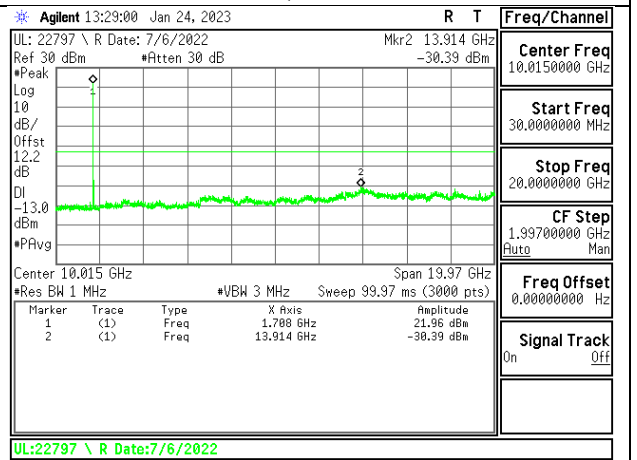
LTE66 10MHz QPSK LOW Ch RB1-0



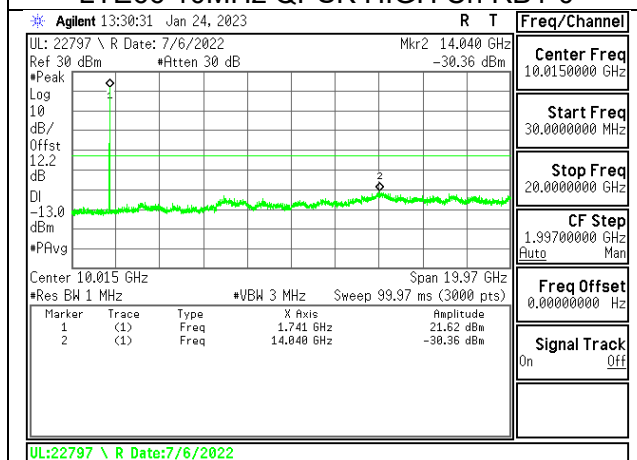
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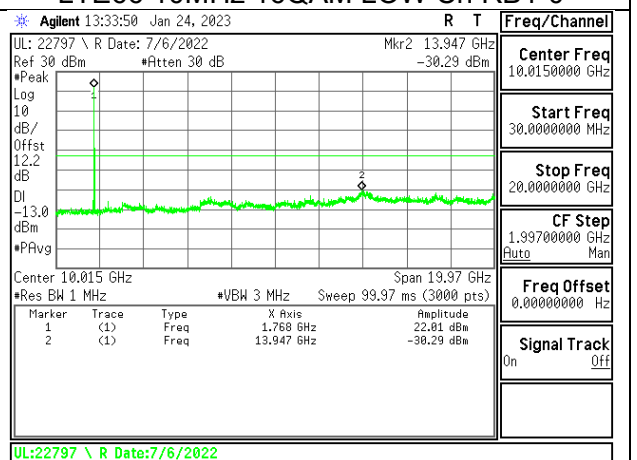
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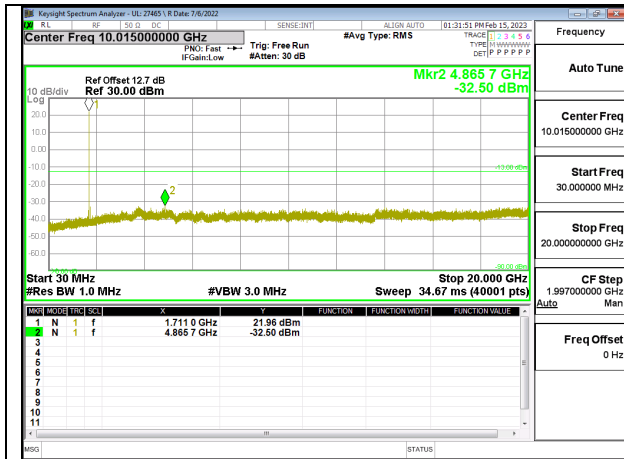
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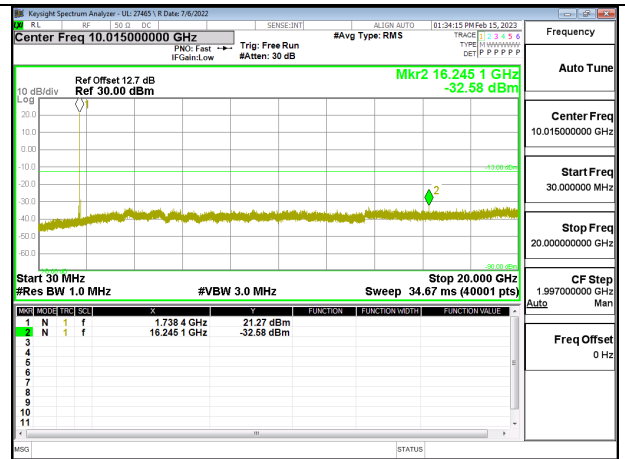
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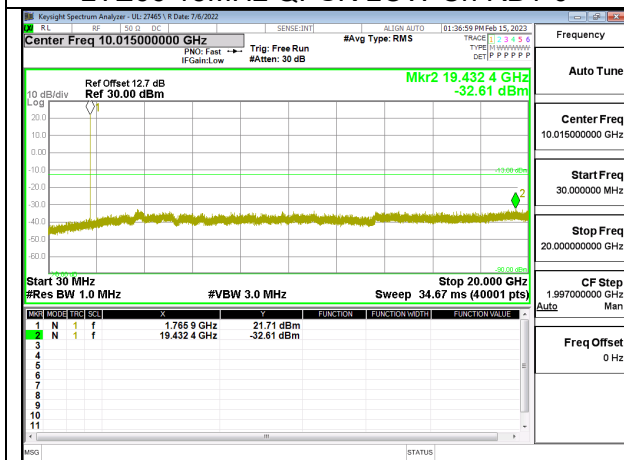
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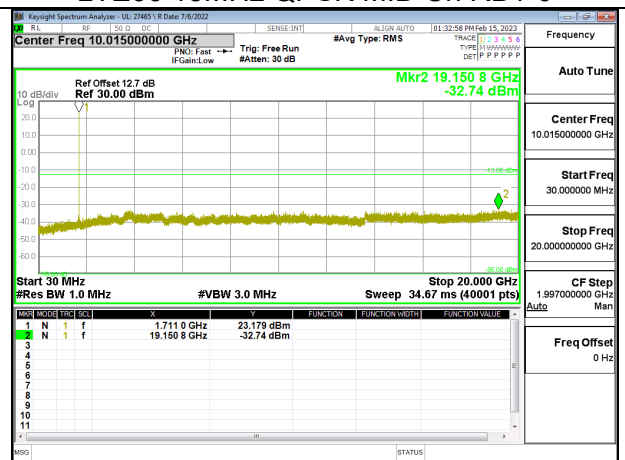
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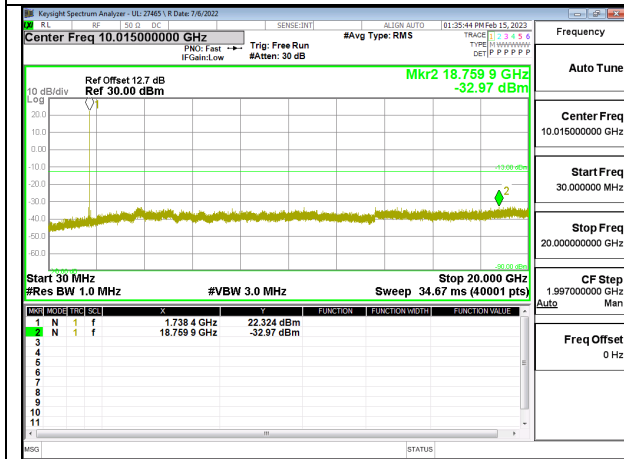
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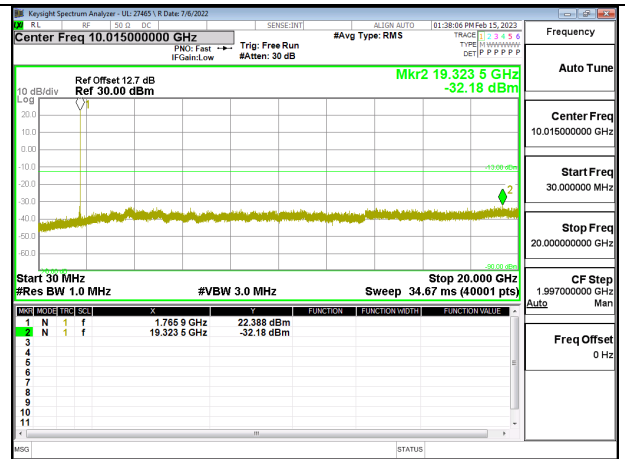
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LTE66 15MHz 16QAM LOW Ch RB1-0

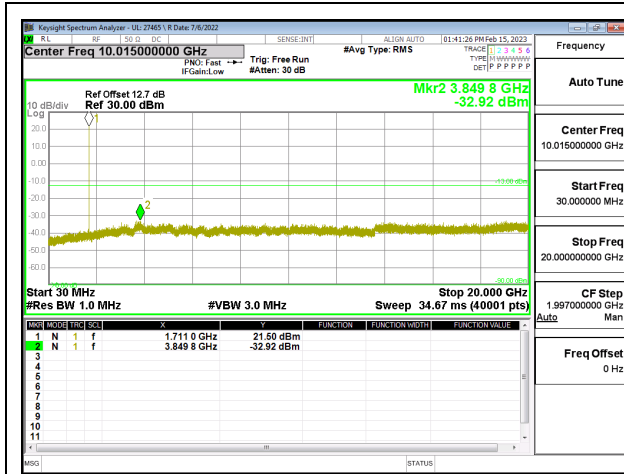


LTE66 15MHz 16QAM MID Ch RB1-0

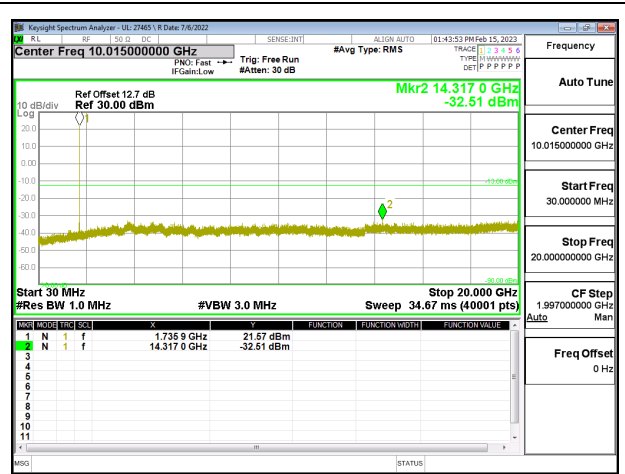


LTE66 15MHz 16QAM HIGH Ch RB1-0

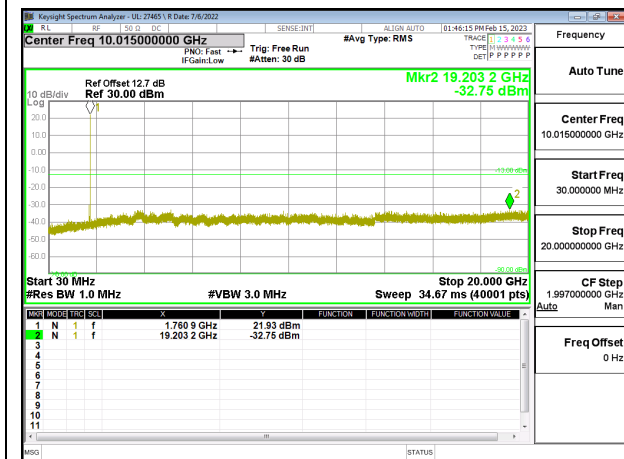




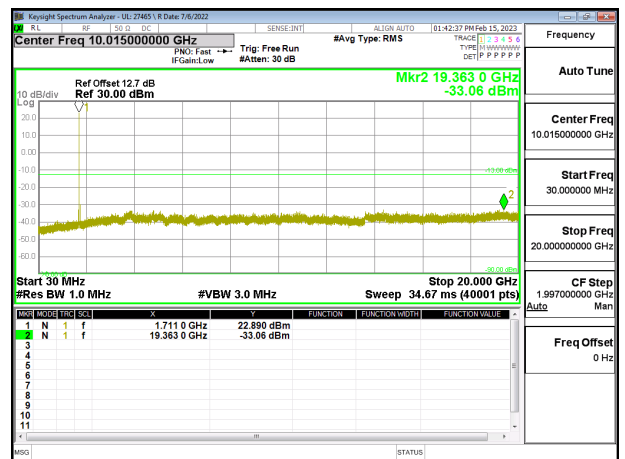
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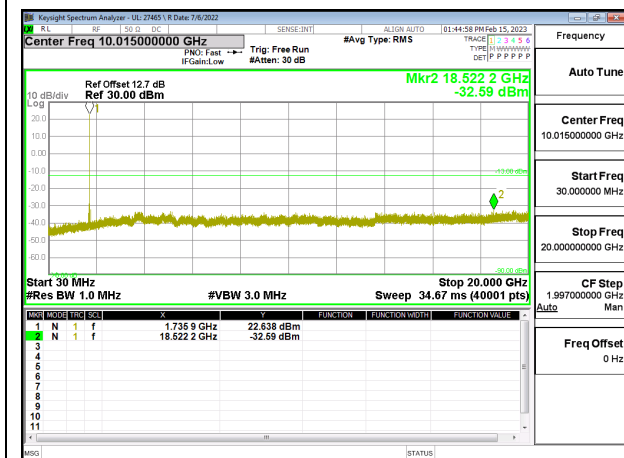
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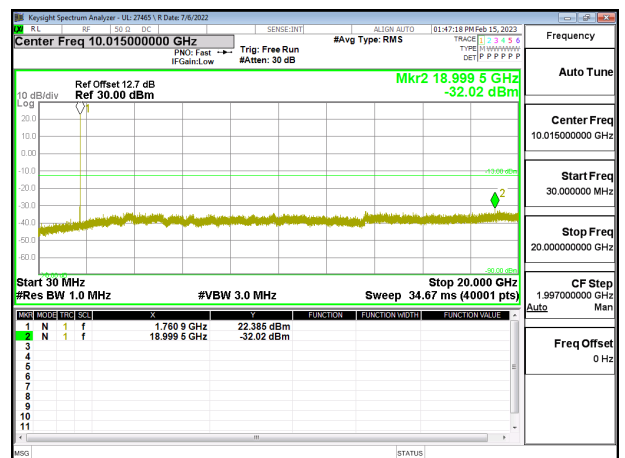
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LTE66 20MHz 16QAM LOW Ch RB1-0

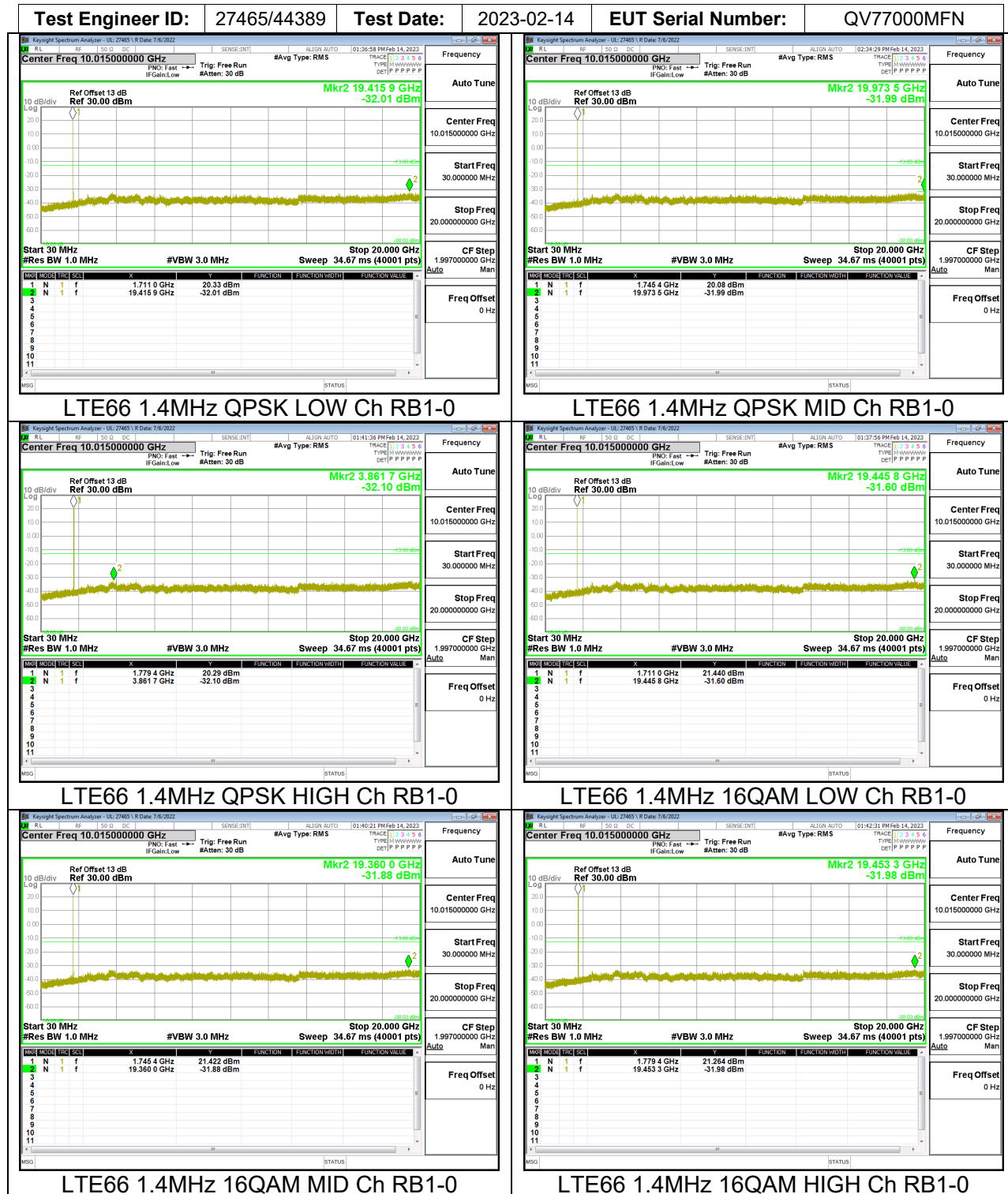


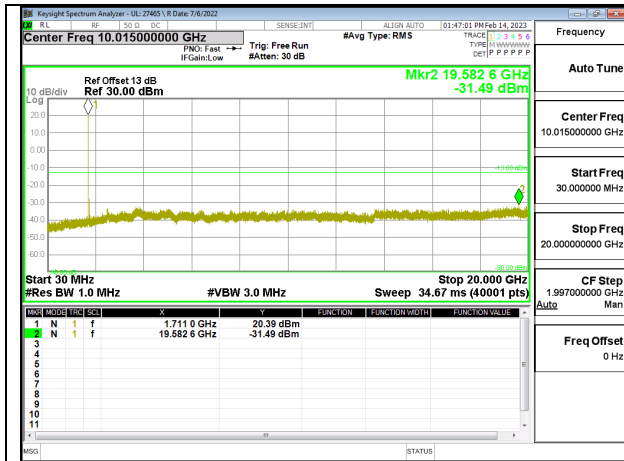
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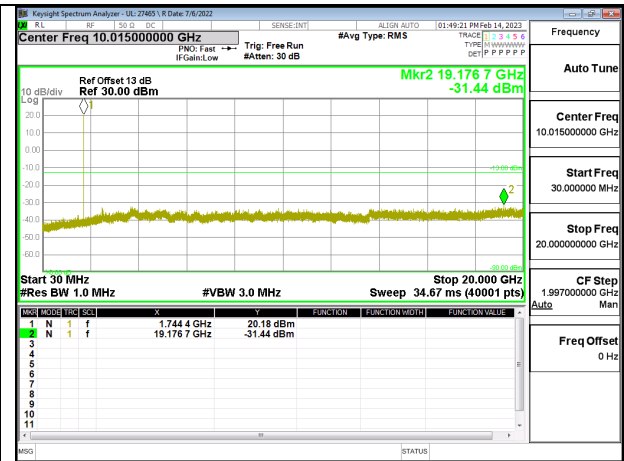
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Sub Antenna

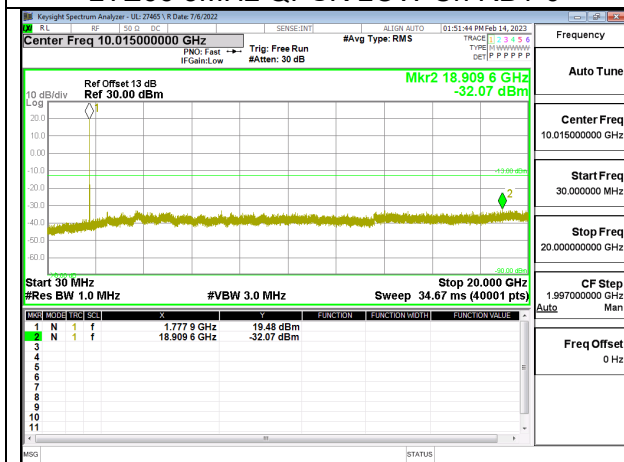




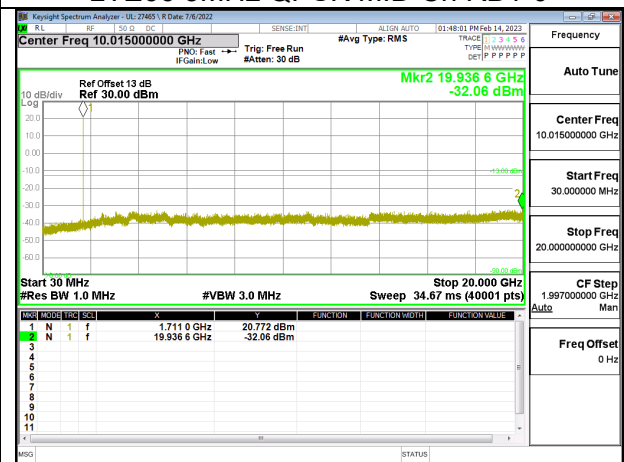
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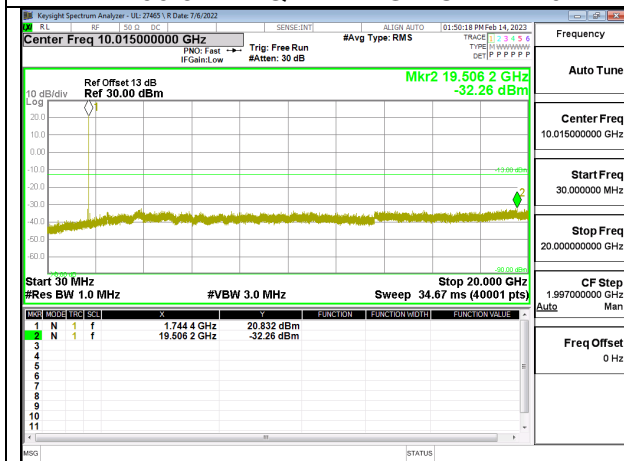
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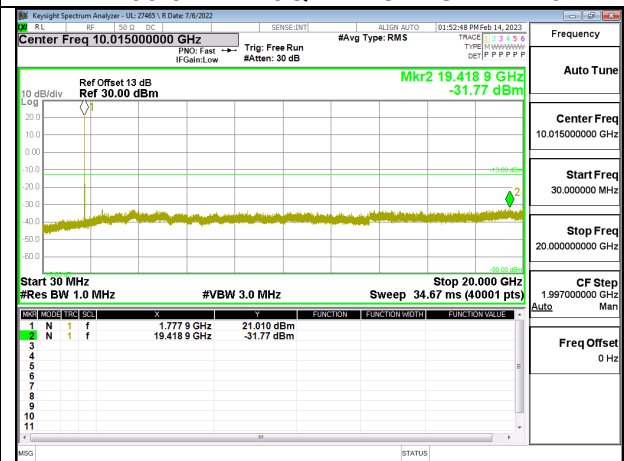
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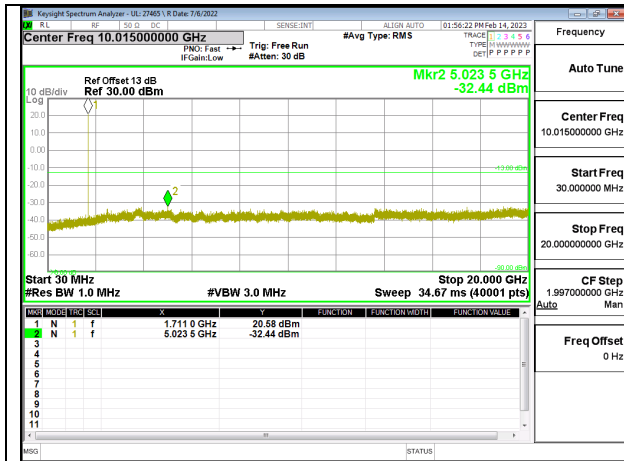
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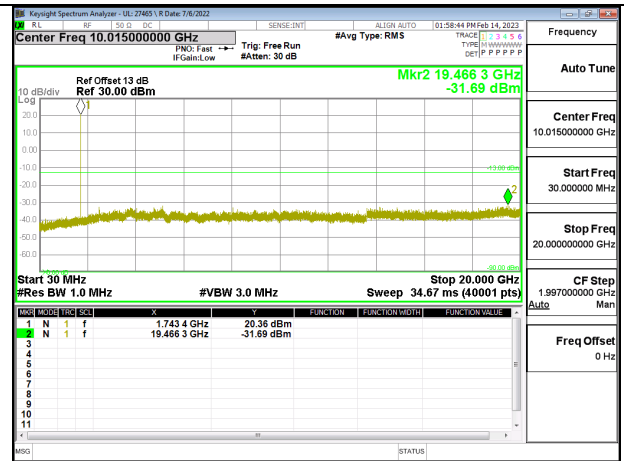
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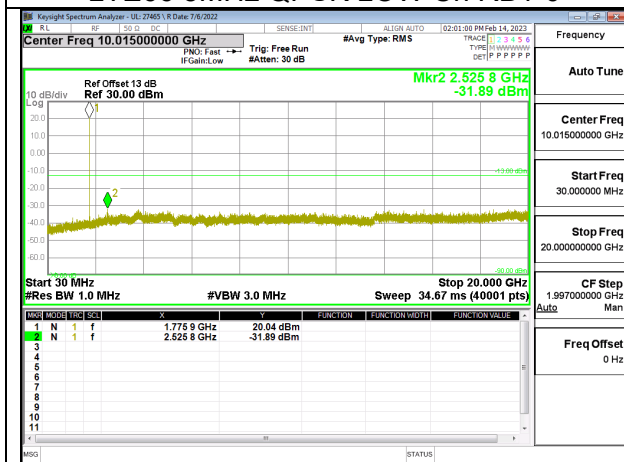
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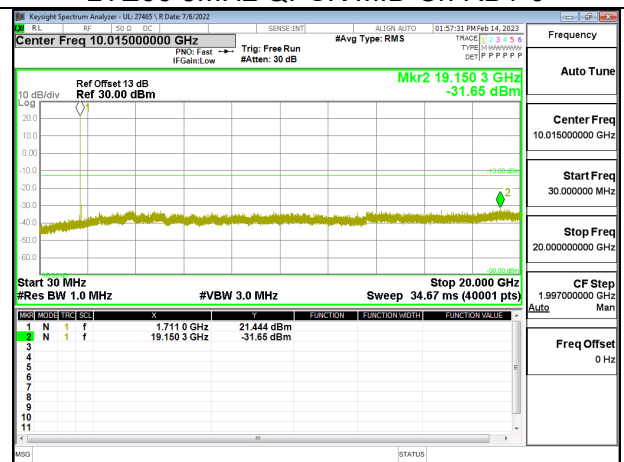
LTE66 5MHz QPSK LOW Ch RB1-0



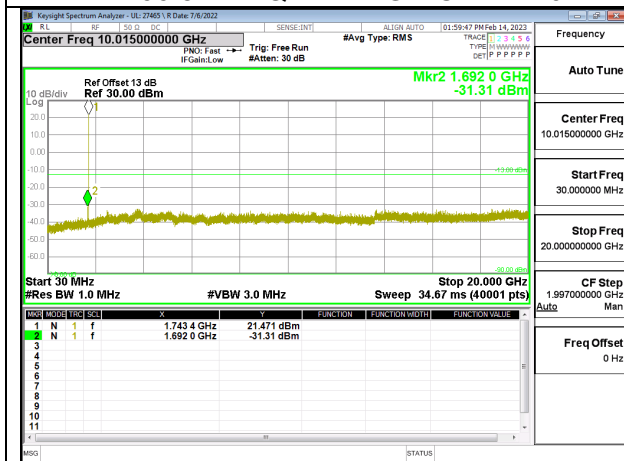
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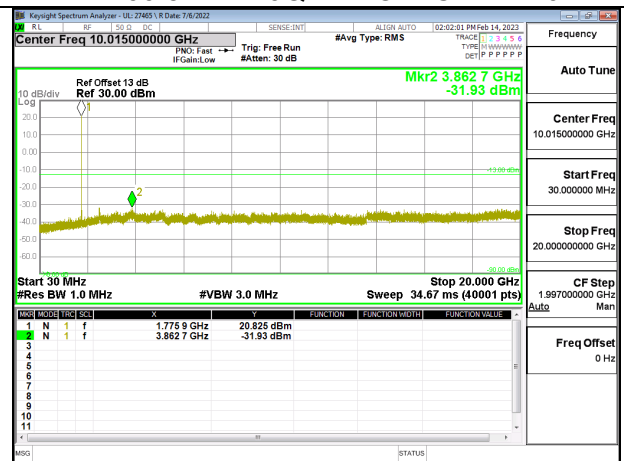
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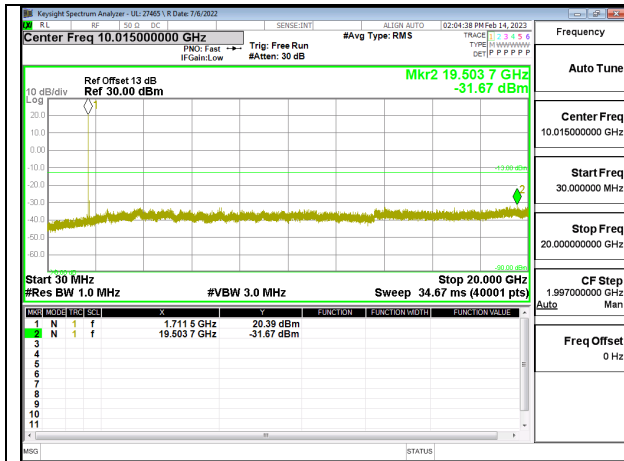
LTE66 5MHz 16QAM LOW Ch RB1-0



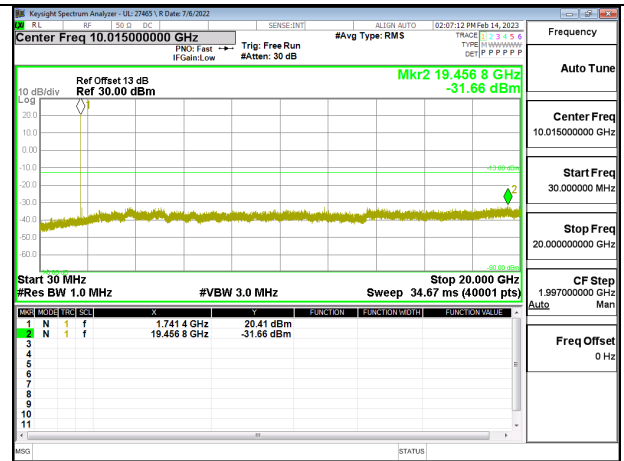
LTE66 5MHz 16QAM MID Ch RB1-0



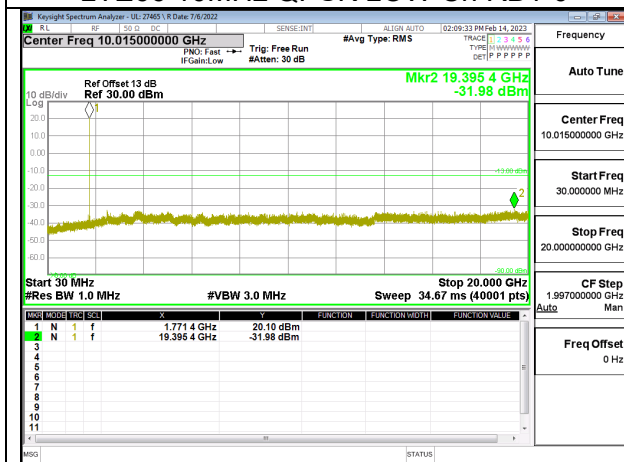
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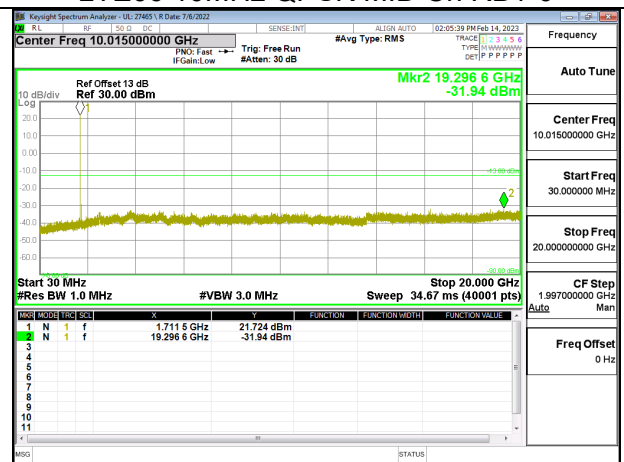
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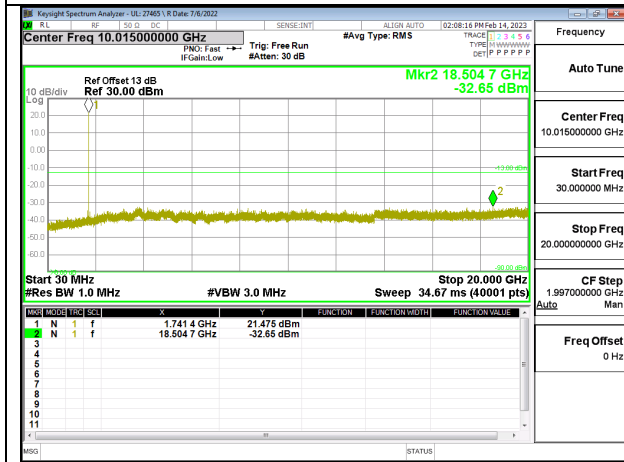
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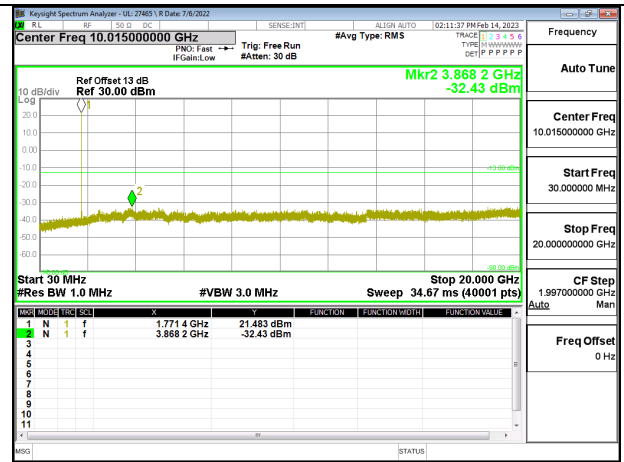
LTE66 10MHz QPSK HIGH Ch RB1-0



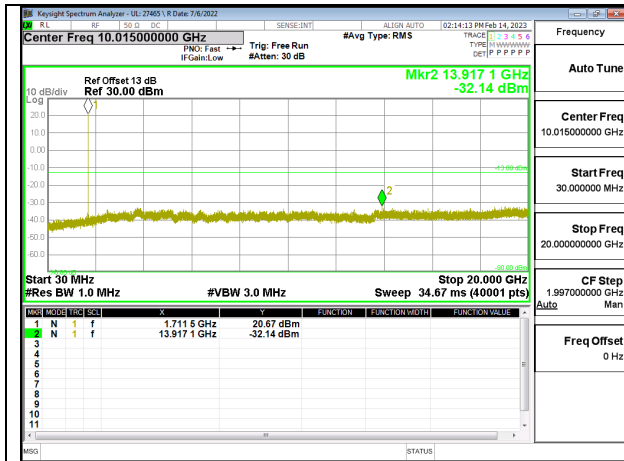
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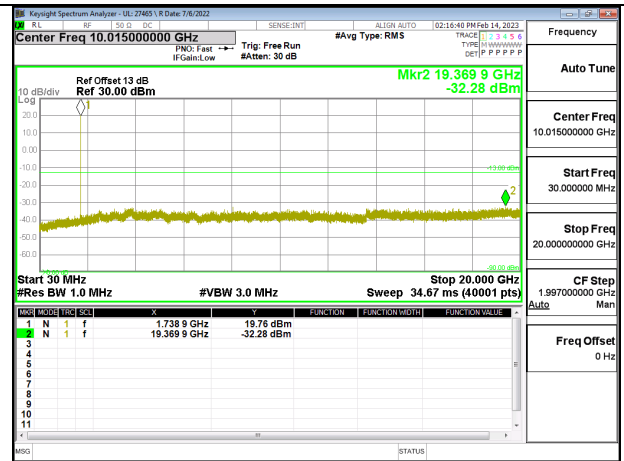
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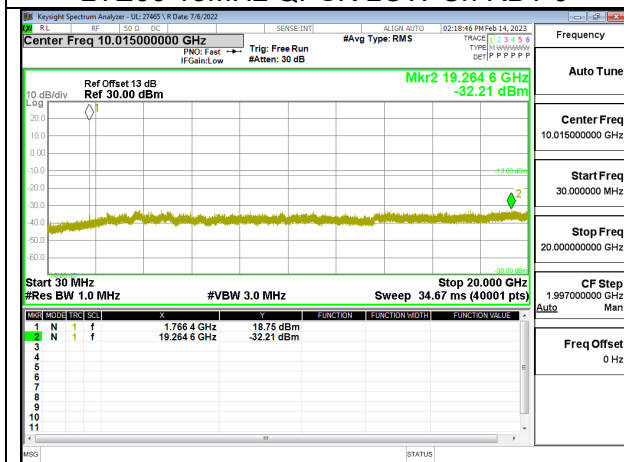
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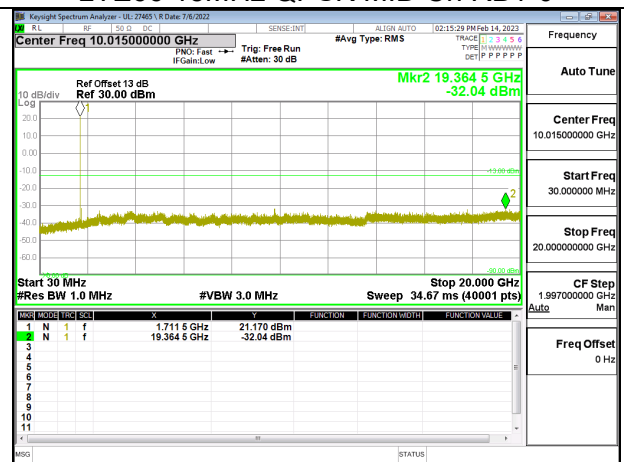
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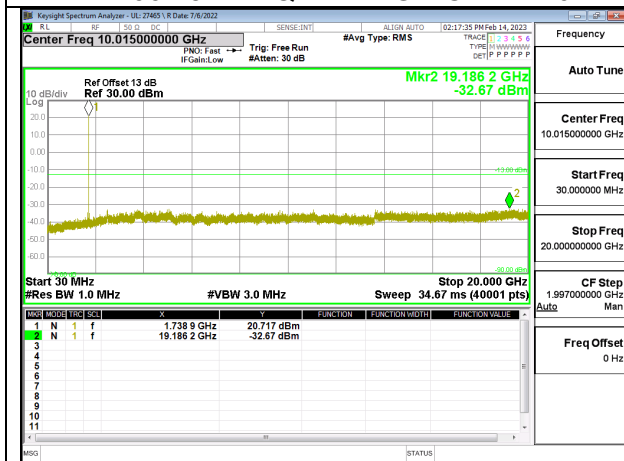
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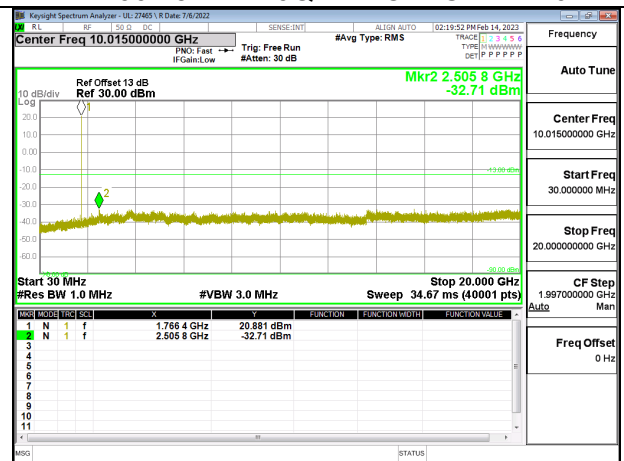
LTE66 15MHz QPSK HIGH Ch RB1-0



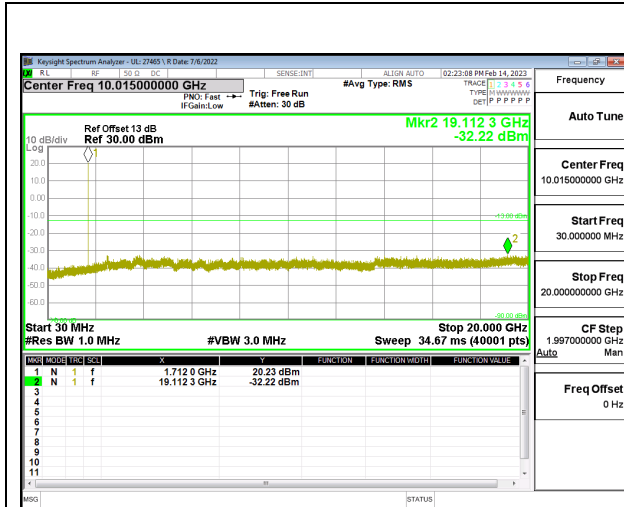
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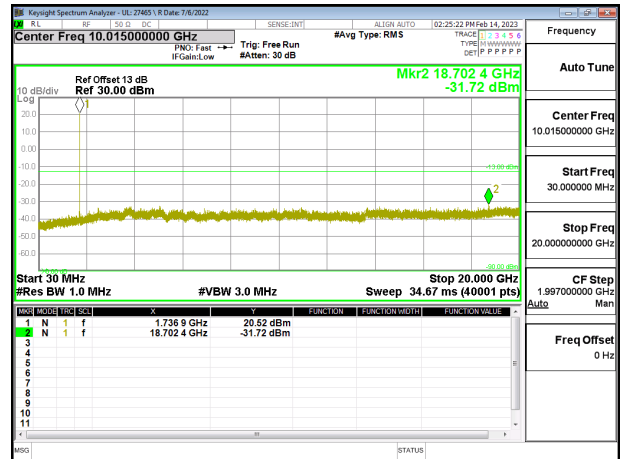
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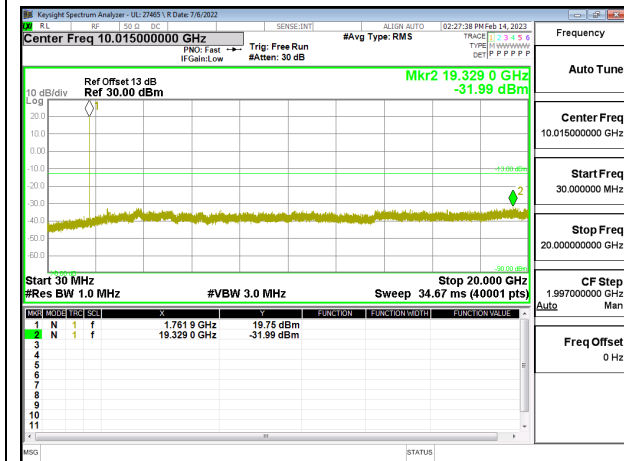
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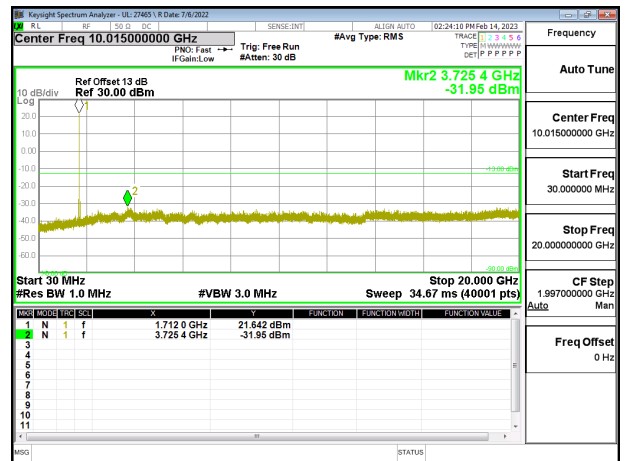
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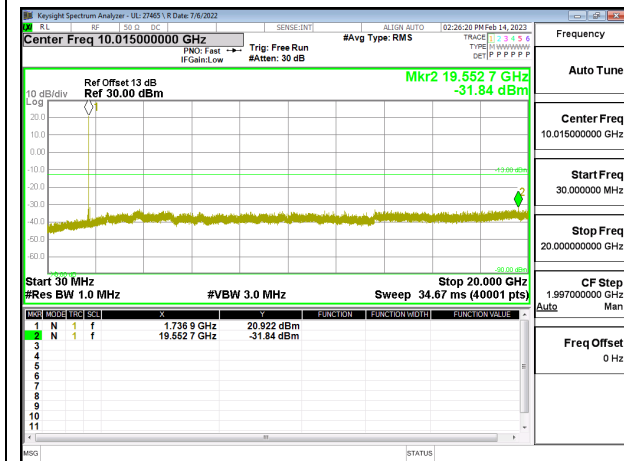
LTE66 20MHz QPSK MID Ch RB1-0



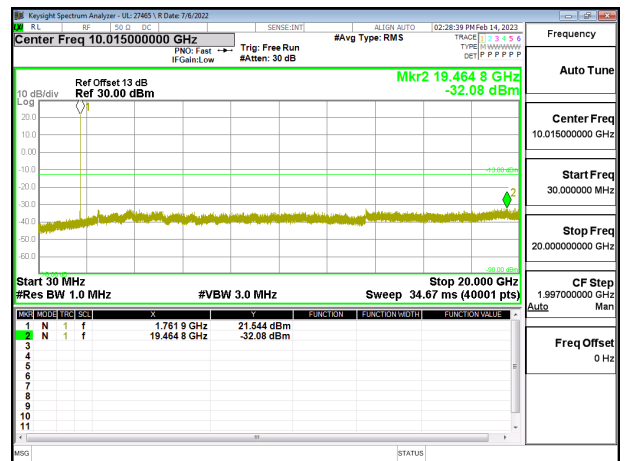
LTE66 20MHz QPSK HIGH Ch RB1-0



LTE66 20MHz 16QAM LOW Ch RB1-0



LTE66 20MHz 16QAM MID Ch RB1-0



LTE66 20MHz 16QAM HIGH Ch RB1-0

## 9.4. FREQUENCY STABILITY

### **TEST PROCEDURE**

Use CMW 500 with Frequency Error measurement capability. A Spectrum analyzer was used for FR1 bands. CW mode was used for FR1 Bands.

- Temp. = -30°C to +50°C
- Normal Voltage, 3.89VDC.
- End Voltage, 3.69VDC.

### **Frequency Stability vs Temperature:**

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

### **Frequency Stability vs Voltage:**

The peak frequency error is recorded (worst-case).

### **RESULTS**

See the following pages.



### 9.4.1. GSM

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-27	<b>EUT Serial Number:</b>	QV7700HTFN
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#### GSM850

Band	850	Frequency Range		Frequency Error Reading (Hz)	Limit	
		824.2	848.8		2.5	
Condition		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	824.2000	848.8000			
Extreme (50°C)		824.2000	848.8001	24.71	0.030	Yes
Extreme (40°C)		824.2000	848.8000	21.67	0.026	Yes
Extreme (30°C)		824.2000	848.8000	21.98	0.026	Yes
Extreme (10°C)		824.2000	848.8001	24.02	0.029	Yes
Extreme (0°C)		824.2001	848.8001	28.7	0.034	Yes
Extreme (-10°C)		824.2001	848.8001	31.55	0.038	Yes
Extreme (-20°C)		824.2001	848.8001	30.77	0.037	Yes
Extreme (-30°C)		824.2001	848.8001	31.32	0.037	Yes
20°C		End Point Voltage	824.2000	848.8001	24.96	0.030

**GSM1900**

Band	1900	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1850	1910		2.5	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	
Normal (20°C)	Normal	1850.2000	1909.8000			
Extreme (50°C)		1850.2001	1909.8001	28.14	0.015	Yes
Extreme (40°C)		1850.2000	1909.8001	25.45	0.014	Yes
Extreme (30°C)		1850.2000	1909.8001	26.7	0.014	Yes
Extreme (10°C)		1850.2001	1909.8001	28.35	0.015	Yes
Extreme (0°C)		1850.2000	1909.8001	25.01	0.013	Yes
Extreme (-10°C)		1850.2001	1909.8001	31.13	0.017	Yes
Extreme (-20°C)		1850.2001	1909.8001	28.2	0.015	Yes
Extreme (-30°C)		1850.2001	1909.8001	27.34	0.015	Yes
20°C		End Point Voltage	1850.2000	1909.8001	24.73	0.013

**9.4.2. WCDMA**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-26	<b>EUT Serial Number:</b>	QV7700HTFN
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**BAND 5**

Band	5	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849		2.5	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	
Normal (20°C)	Normal	826.4000	846.6000			
Extreme (50°C)		826.4000	846.6000	-4.76	-0.006	Yes
Extreme (40°C)		826.4000	846.6000	-3.53	-0.004	Yes
Extreme (30°C)		826.4000	846.6000	-2.36	-0.003	Yes
Extreme (10°C)		826.4000	846.6000	0.82	0.001	Yes
Extreme (0°C)		826.4000	846.6000	2.41	0.003	Yes
Extreme (-10°C)		826.4000	846.6000	2.29	0.003	Yes
Extreme (-20°C)		826.4000	846.6000	3.19	0.004	Yes
Extreme (-30°C)		826.4000	846.6000	2.58	0.003	Yes
20°C		End Point Voltage	826.4000	846.6000	-3.19	-0.004

**9.4.3. LTE5**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-27	<b>EUT Serial Number:</b>	QV7700HTFN
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**QPSK (10MHz)**

Band	5	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849		2.5	Within Authorized Frequency Block (Hz)
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	
Normal (20°C)	Normal	829.0000	844.0000			
Extreme (50°C)		829.0000	844.0000	-0.53	-0.001	Yes
Extreme (40°C)		829.0000	844.0000	-1.07	-0.001	Yes
Extreme (30°C)		829.0000	844.0000	1.18	0.001	Yes
Extreme (10°C)		829.0000	844.0000	1.52	0.002	Yes
Extreme (0°C)		829.0000	844.0000	1.5	0.002	Yes
Extreme (-10°C)		829.0000	844.0000	1.46	0.002	Yes
Extreme (-20°C)		829.0000	844.0000	-2.39	-0.003	Yes
Extreme (-30°C)		829.0000	844.0000	-1.24	-0.001	Yes
20°C		End Point Voltage	829.0000	844.0000	0.86	0.001

**9.4.4. 5G NR n5**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-02-23	<b>EUT Serial Number:</b>	QV7700HTFN
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**QPSK (20MHz)**

Band		5		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849	2.5	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)					
Normal (20°C)	Normal	834.0001	841.5000					
Extreme (50°C)		833.9997	841.4996	-420	-0.502	Yes		
Extreme (40°C)		833.9999	841.4998	-233.75	-0.279	Yes		
Extreme (30°C)		833.9999	841.4998	-210	-0.251	Yes		
Extreme (10°C)		834.0005	841.5005	428.75	0.513	Yes		
Extreme (0°C)		833.9995	841.4995	-561.25	-0.671	Yes		
Extreme (-10°C)		834.0003	841.5002	201.25	0.241	Yes		
Extreme (-20°C)		834.0002	841.5001	53.75	0.064	Yes		
Extreme (-30°C)		834.0004	841.5003	250	0.299	Yes		
20°C		End Point Voltage	834.0010	841.5009	868.75	1.039	Yes	

**9.4.5. LTE12**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-25	<b>EUT Serial Number:</b>	QV7700HTFN
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**QPSK (10MHz)**

Band		12		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		699	716	2.5	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)					
Normal (20°C)	Normal	704.0000	711.0000					
Extreme (50°C)		704.0000	711.0000	-1.18	-0.002	Yes		
Extreme (40°C)		704.0000	711.0000	0.43	0.001	Yes		
Extreme (30°C)		704.0000	711.0000	1.49	0.002	Yes		
Extreme (10°C)		704.0000	711.0000	1.77	0.003	Yes		
Extreme (0°C)		704.0000	711.0000	1.33	0.002	Yes		
Extreme (-10°C)		704.0000	711.0000	-1.88	-0.003	Yes		
Extreme (-20°C)		704.0000	711.0000	1.43	0.002	Yes		
Extreme (-30°C)		704.0000	711.0000	-0.3	0.000	Yes		
20°C		End Point Voltage	704.0000	711.0000	1.8	0.003	Yes	

**9.4.6. LTE13**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-25	<b>EUT Serial Number:</b>	QV7700HTFN
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**QPSK (10MHz)**

Band		13		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		777	787	2.5	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)					
Normal (20°C)	Normal	779.5000	784.5000					
Extreme (50°C)		779.5000	784.5000	0.21	0.000	Yes		
Extreme (40°C)		779.5000	784.5000	1.35	0.002	Yes		
Extreme (30°C)		779.5000	784.5000	2.19	0.003	Yes		
Extreme (10°C)		779.5000	784.5000	2.99	0.004	Yes		
Extreme (0°C)		779.5000	784.5000	3.76	0.005	Yes		
Extreme (-10°C)		779.5000	784.5000	3.08	0.004	Yes		
Extreme (-20°C)		779.5000	784.5000	1.67	0.002	Yes		
Extreme (-30°C)		779.5000	784.5000	2.77	0.004	Yes		
20°C		End Point Voltage	779.5000	784.5000	2.13	0.003	Yes	

**9.4.7. LTE41**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-26	<b>EUT Serial Number:</b>	QV7700HTFN
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**QPSK (20MHz)**

Band		41		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690	2.5	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)				Frequency Stability (ppm)	
Normal (20°C)	Normal	2506.0000	2680.0000					
Extreme (50°C)		2506.0000	2680.0000	2.89	0.001	Yes		
Extreme (40°C)		2506.0000	2680.0000	-4.61	-0.002	Yes		
Extreme (30°C)		2506.0000	2680.0000	2.95	0.001	Yes		
Extreme (10°C)		2506.0000	2680.0000	-3.59	-0.001	Yes		
Extreme (0°C)		2506.0000	2680.0000	-1.84	-0.001	Yes		
Extreme (-10°C)		2506.0000	2680.0000	-3.09	-0.001	Yes		
Extreme (-20°C)		2506.0000	2680.0000	-3.74	-0.001	Yes		
Extreme (-30°C)		2506.0000	2680.0000	-4.28	-0.002	Yes		
20°C		End Point Voltage	2506.0000	2680.0000	-3.57	-0.001	Yes	



**9.4.8. 5G NR n41**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-02-23	<b>EUT Serial Number:</b>	QV7700HTFN
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**BPSK (100MHz)**

Band		41		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690	2.5	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)				Frequency Stability (ppm)	
Normal (20°C)	Normal	2555.9753	2639.9690					
Extreme (50°C)		2555.9758	2639.9695	433.5	0.167	Yes		
Extreme (40°C)		2555.9758	2639.9695	477.5	0.184	Yes		
Extreme (30°C)		2555.9757	2639.9694	397.5	0.153	Yes		
Extreme (10°C)		2555.9760	2639.9697	720	0.278	Yes		
Extreme (0°C)		2555.9755	2639.9692	201	0.078	Yes		
Extreme (-10°C)		2555.9762	2639.9699	845	0.326	Yes		
Extreme (-20°C)		2555.9764	2639.9701	1105	0.426	Yes		
Extreme (-30°C)		2555.9765	2639.9702	1205	0.465	Yes		
20°C		End Point Voltage	2555.9768	2639.9705	1496	0.577	Yes	

**9.4.9. LTE BAND 66**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-01-26 2023-02-26	<b>EUT Serial Number:</b>	QV7700HTFN
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**QPSK 20MHz – Main Antenna**

Band		66		Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1710	1780	2.5	Within Authorized Frequency Block (Hz)			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)					
Normal (20°C)	Normal	1720.0000	1770.0000					
Extreme (50°C)		1720.0000	1770.0000	-3.15	-0.002	Yes		
Extreme (40°C)		1720.0000	1770.0000	-2.86	-0.002	Yes		
Extreme (30°C)		1720.0000	1770.0000	-2.74	-0.002	Yes		
Extreme (10°C)		1720.0000	1770.0000	-2.07	-0.001	Yes		
Extreme (0°C)		1720.0000	1770.0000	-1.63	-0.001	Yes		
Extreme (-10°C)		1720.0000	1770.0000	-2.25	-0.001	Yes		
Extreme (-20°C)		1720.0000	1770.0000	2.66	0.002	Yes		
Extreme (-30°C)		1720.0000	1770.0000	-3.7	-0.002	Yes		
20°C		End Point Voltage	1720.0000	1770.0000	-2.9	-0.002	Yes	

**QPSK 20MHz – Sub Antenna**

Band	66	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1710	1780			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	1720.0000	1770.0000			
Extreme (50°C)		1720.0000	1770.0000	6	0.003	Yes
Extreme (40°C)		1720.0000	1770.0000	15	0.009	Yes
Extreme (30°C)		1720.0000	1770.0000	18.2	0.010	Yes
Extreme (10°C)		1720.0000	1770.0000	12.2	0.007	Yes
Extreme (0°C)		1720.0000	1770.0000	17.1	0.010	Yes
Extreme (-10°C)		1720.0000	1770.0000	20.7	0.012	Yes
Extreme (-20°C)		1720.0000	1770.0000	14.3	0.008	Yes
Extreme (-30°C)		1720.0000	1770.0000	20.1	0.012	Yes
20°C		End Point Voltage	1720.0000	1770.0000	17.8	0.010

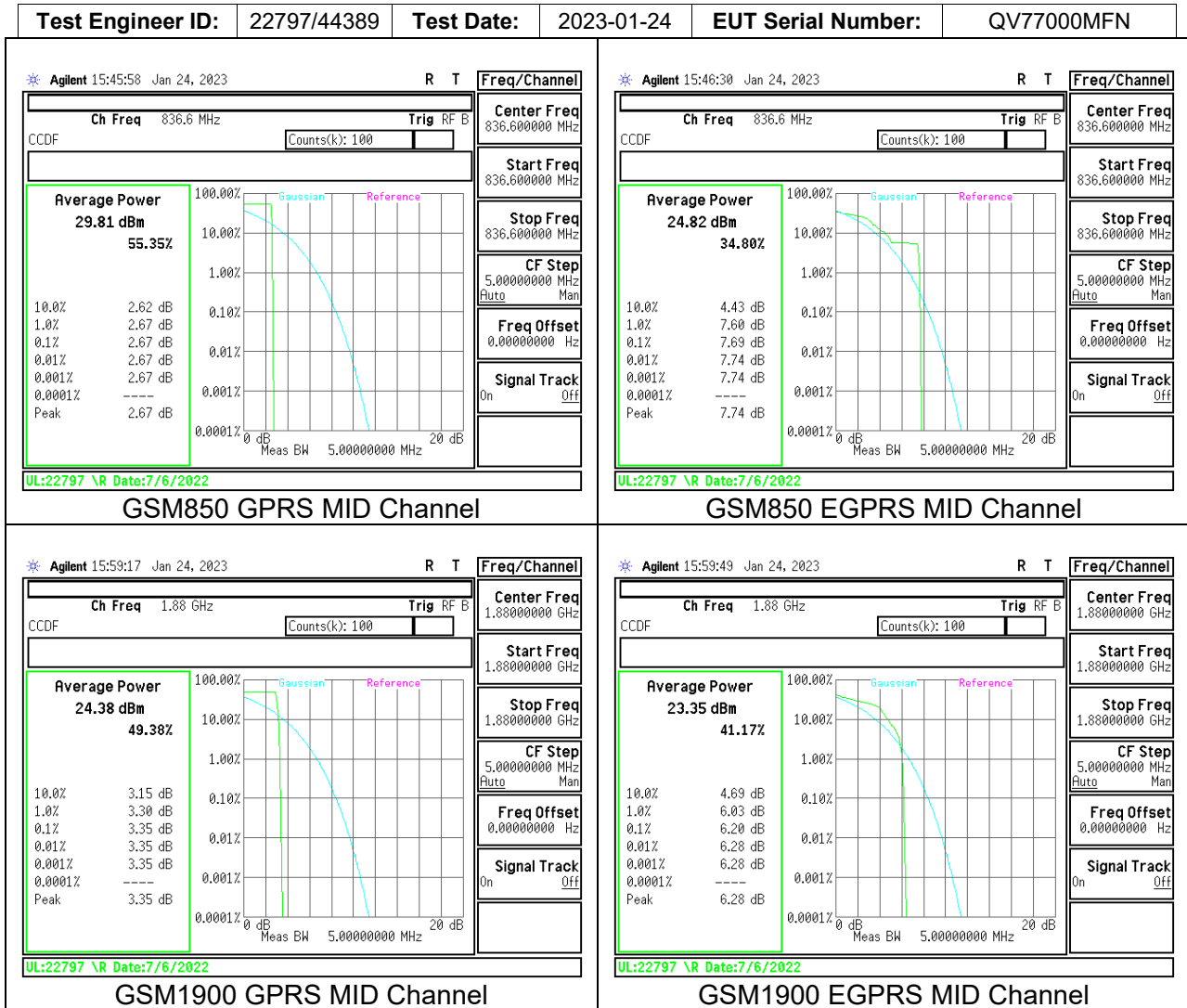
## 9.5. PEAK TO AVERAGE RATIO

### LIMITS

In addition, the peak to average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

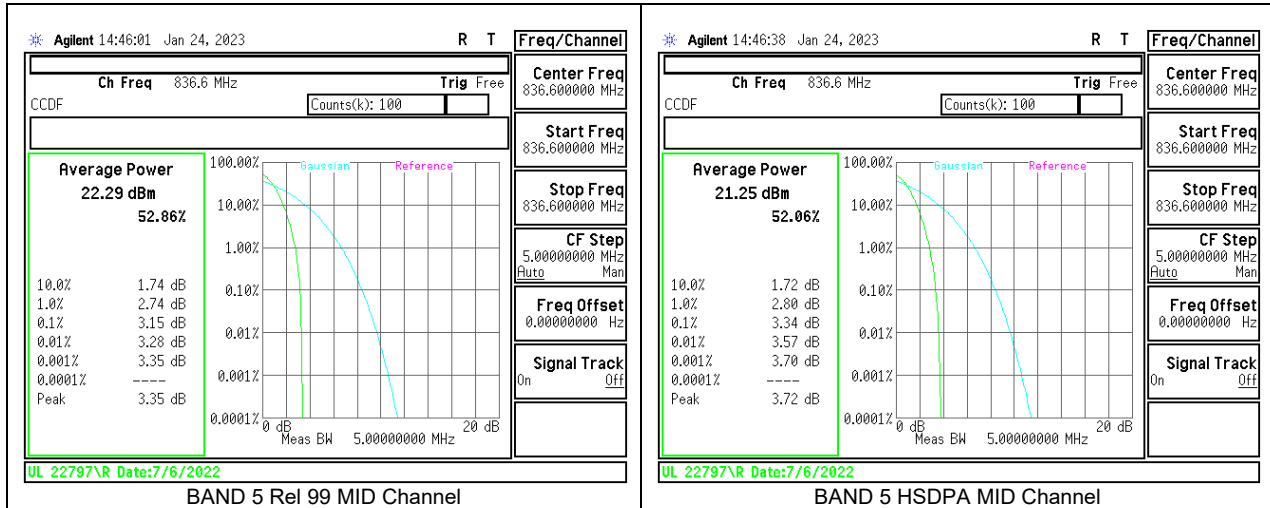
### RESULT

9.5.1. GSM



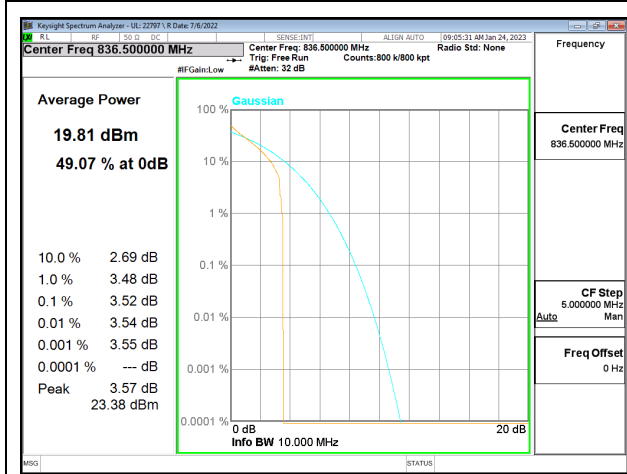
9.5.2. WCDMA

Test Engineer ID:	22797/44389	Test Date:	2023-01-24	EUT Serial Number:	QV77000MFN
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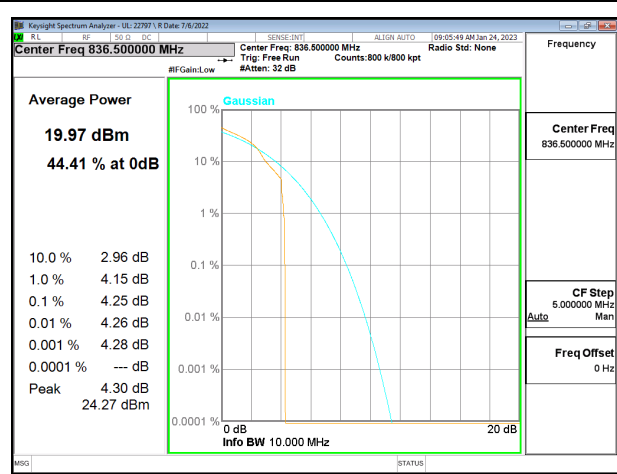


9.5.3. LTE5

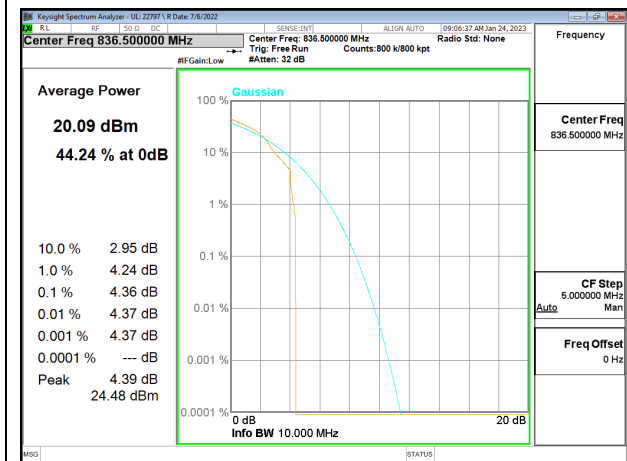
Test Engineer ID:	22797/44389	Test Date:	2023-01-24	EUT Serial Number:	QV77000MFN
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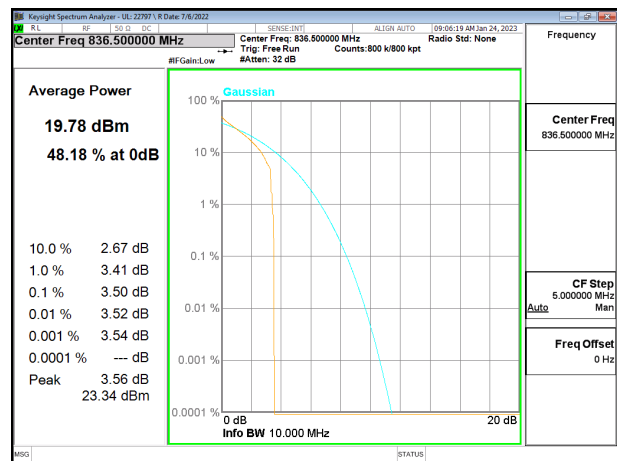
LTE5 1.4MHz QPSK MID Ch



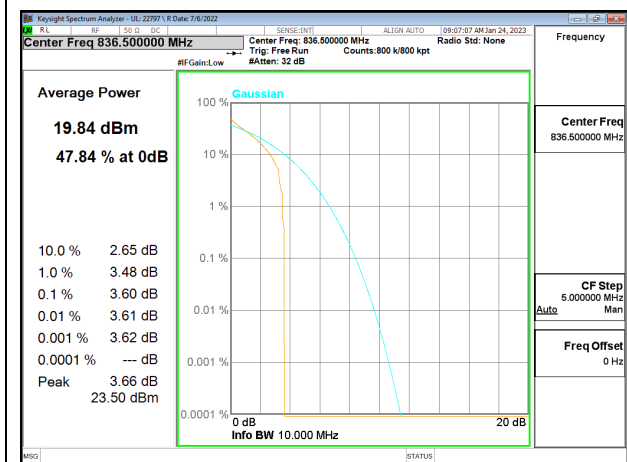
LTE5 1.4MHz 16QAM MID Ch



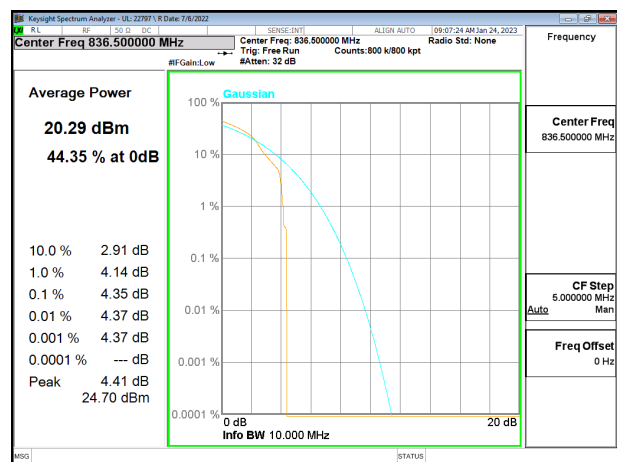
LTE5 3MHz QPSK MID Ch



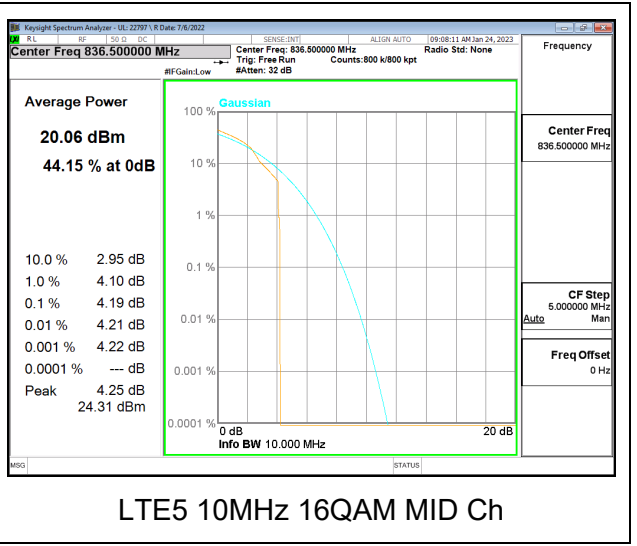
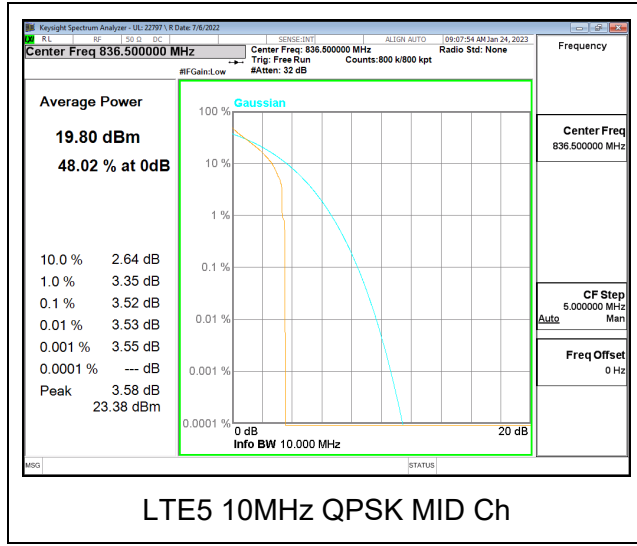
LTE5 3MHz 16QAM MID Ch



LTE5 5MHz QPSK MID Ch



LTE5 5MHz 16QAM MID Ch





**9.5.4. 5G NR n5**

<b>Test Engineer ID:</b>	27465/44389	<b>Test Date:</b>	2023-02-21	<b>EUT Serial Number:</b>	QV77000MFN
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
5G NR n5	5MHz	836.5	25	0	QPSK	27.14	21.69	5.45
					16QAM	27.44	20.74	6.70
	10MHz		50	0	QPSK	27.52	21.75	5.77
					16QAM	27.42	20.71	6.71
	15MHz		75	0	QPSK	27.51	21.82	5.69
					16QAM	27.48	20.83	6.65
	20MHz		100	0	QPSK	27.61	21.78	5.83
					16QAM	27.59	20.83	6.76

Duty Cycle Correction Factor (dB) = 0.00

Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor

**9.5.5. LTE BAND 66**

<b>Test Engineer ID:</b>	27465/44389 22797/44389	<b>Test Date:</b>	2023-01-26 2023-02-06 2023-02-21	<b>EUT Serial Number:</b>	QV77000MFN
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**LTE BAND 66 – Main Antenna**

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
LTE Band 66	1.4MHz	1745.0	6	0	QPSK	22.21	18.39	3.82
					16QAM	23.12	18.47	4.65
	3MHz		15	0	QPSK	22.37	18.36	4.01
					16QAM	23.47	18.39	5.08
	5MHz		25	0	QPSK	22.65	18.34	4.31
					16QAM	23.75	18.43	5.32
	10MHz		50	0	QPSK	22.70	18.37	4.33
					16QAM	23.72	18.4	5.32
	15MHz		75	0	QPSK	22.66	18.24	4.42
					16QAM	23.78	18.26	5.52
	20MHz		100	0	QPSK	22.64	18.25	4.39
					16QAM	23.72	18.27	5.45
Duty Cycle Correction Factor (dB) =						0.00		
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

**LTE BAND 66 – Sub Antenna**

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
LTE Band 66	1.4MHz	1747.5	6	0	QPSK	21.04	16.03	5.01
					16QAM	21.94	16.13	5.81
	3MHz		15	0	QPSK	20.96	16.03	4.93
					16QAM	21.86	16.06	5.80
	5MHz		25	0	QPSK	21.05	16.08	4.97
					16QAM	21.97	16.09	5.88
	10MHz		50	0	QPSK	21.35	16.1	5.25
					16QAM	22.23	16.12	6.11
	15MHz		75	0	QPSK	20.96	16.01	4.95
					16QAM	21.94	15.79	6.15
	20MHz		100	0	QPSK	20.90	16.13	4.77
					16QAM	21.92	16.13	5.79
Duty Cycle Correction Factor (dB) =						0.00		
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

## 10. RADIATED TEST RESULTS

### Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, We measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement method.

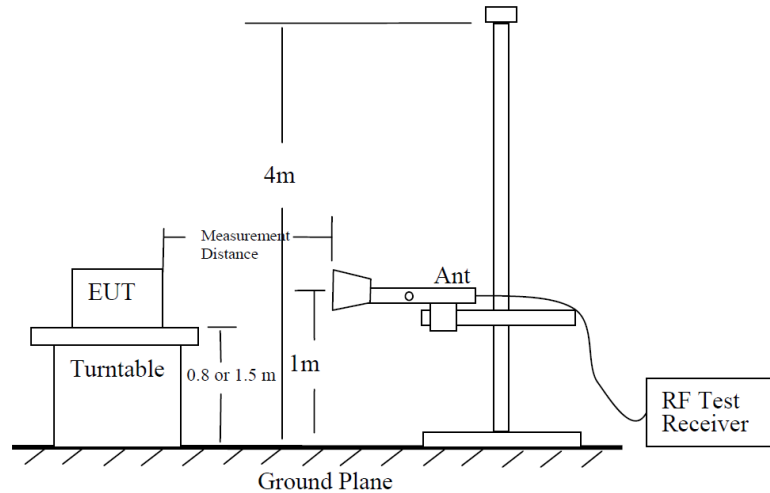


Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

### Radiated Power Measurement Calculation According to ANSI C63.26-2015

- a)  $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$ .
- b)  $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$ .
- c)  $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$ ; where D is the measurement distance (in the far field region) in m.
- d)  $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$ ; where D is the measurement distance (in the far field region) in m.

So, from d)

The measuring distance is usually at 3m, then  $20 \cdot \log(3) = 9.5424$

Then,  $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

## 10.1. FIELD STRENGTH OF SPURIOUS RADIATION, ABOVE 1GHz

### TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz

### RESULTS

### 10.1.1. GSM850

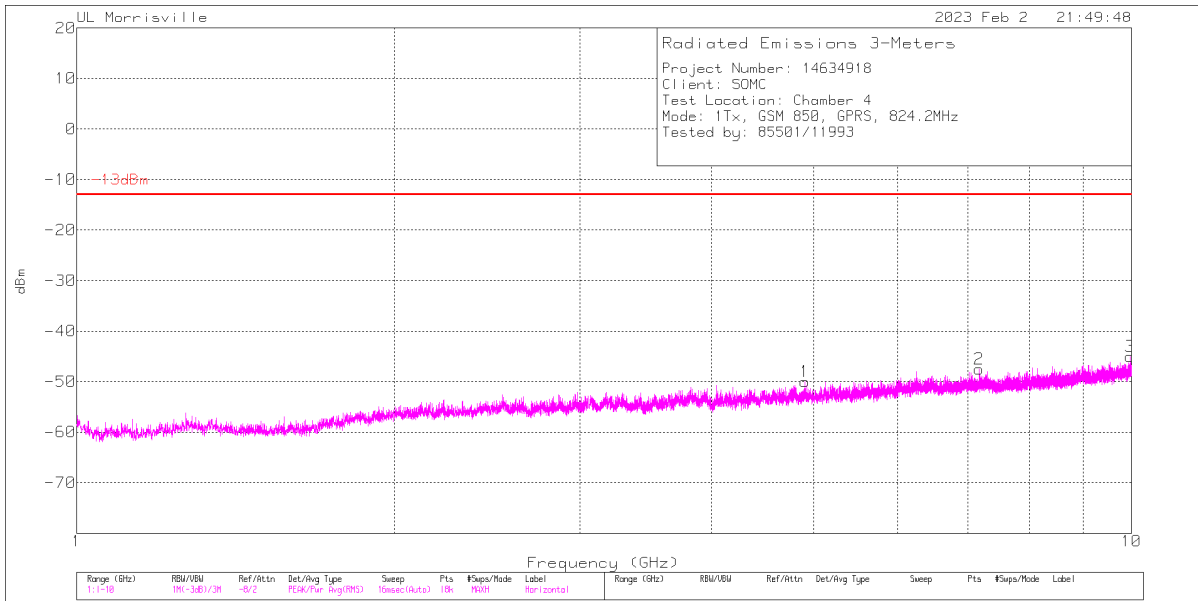
#### LIMITS

FCC: §22.917 (a)

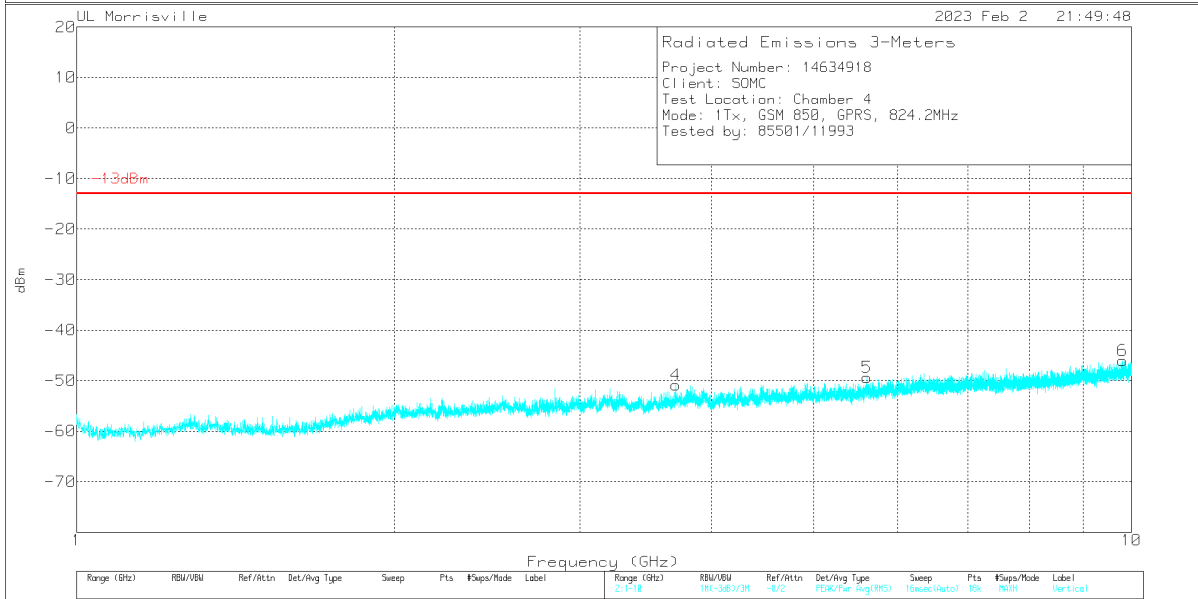
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

EUT Serial Number: QV7700EYFN

**GPRS Low Channel**



Rev 9.5 18 Oct 2021

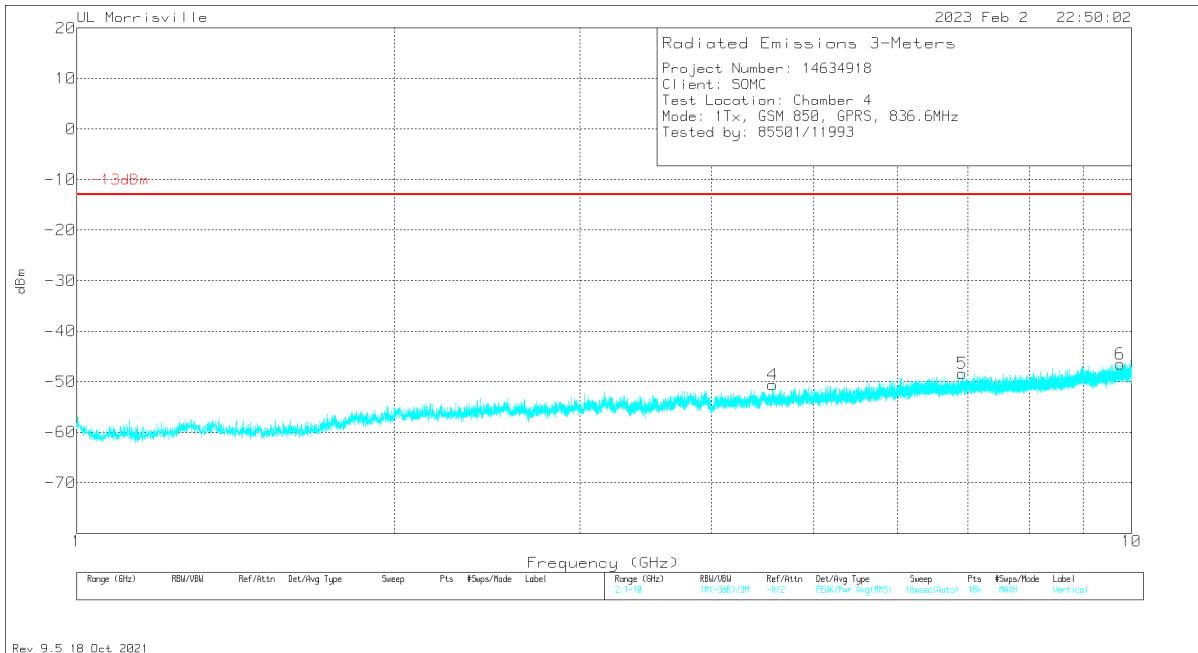
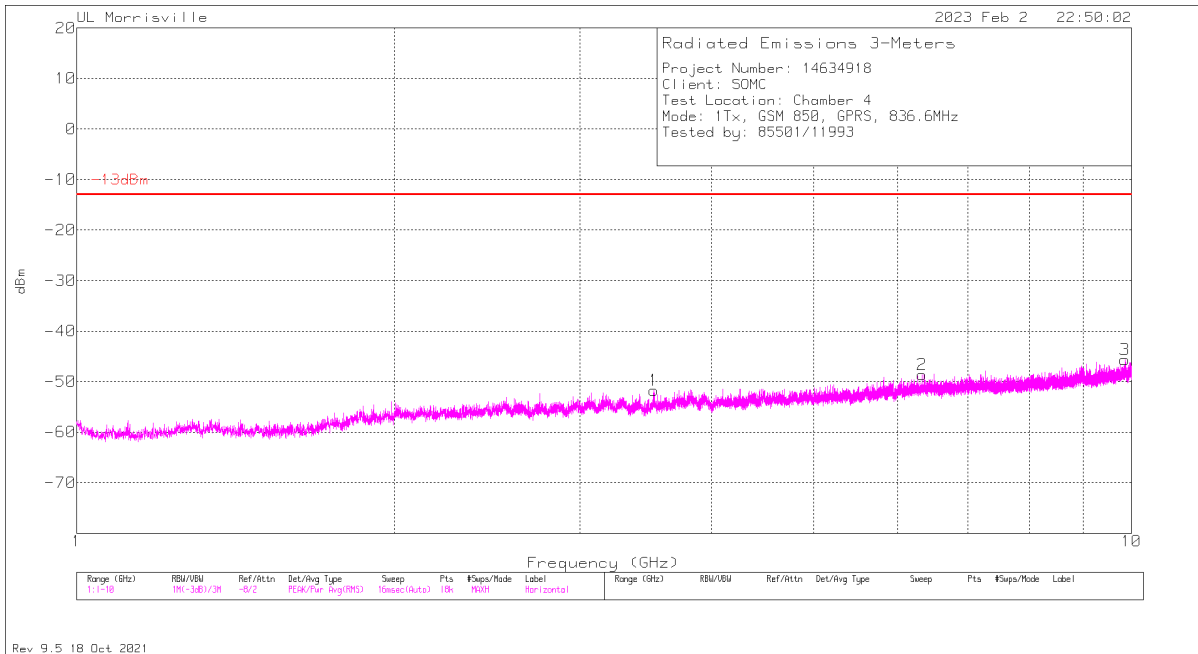


Rev 9.5 18 Oct 2021

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	3.69885	-62.59	Pk	33.2	-33.9	.6	11.8	-50.89	-13	-37.89	0-360	200	V
1	4.90528	-64.01	Pk	34	-32.2	.4	11.8	-50.01	-13	-37.01	0-360	100	H
5	5.61024	-64.91	Pk	34.8	-31.5	.4	11.8	-49.41	-13	-36.41	0-360	300	V
2	7.16665	-66.57	Pk	35.7	-28.8	.4	11.8	-47.47	-13	-34.47	0-360	100	H
6	9.81201	-68.79	Pk	36.9	-26.5	.6	11.8	-45.99	-13	-32.99	0-360	300	V
3	9.9695	-68.11	Pk	37.1	-26.7	.9	11.8	-45.01	-13	-32.01	0-360	100	H

Pk - Peak detector

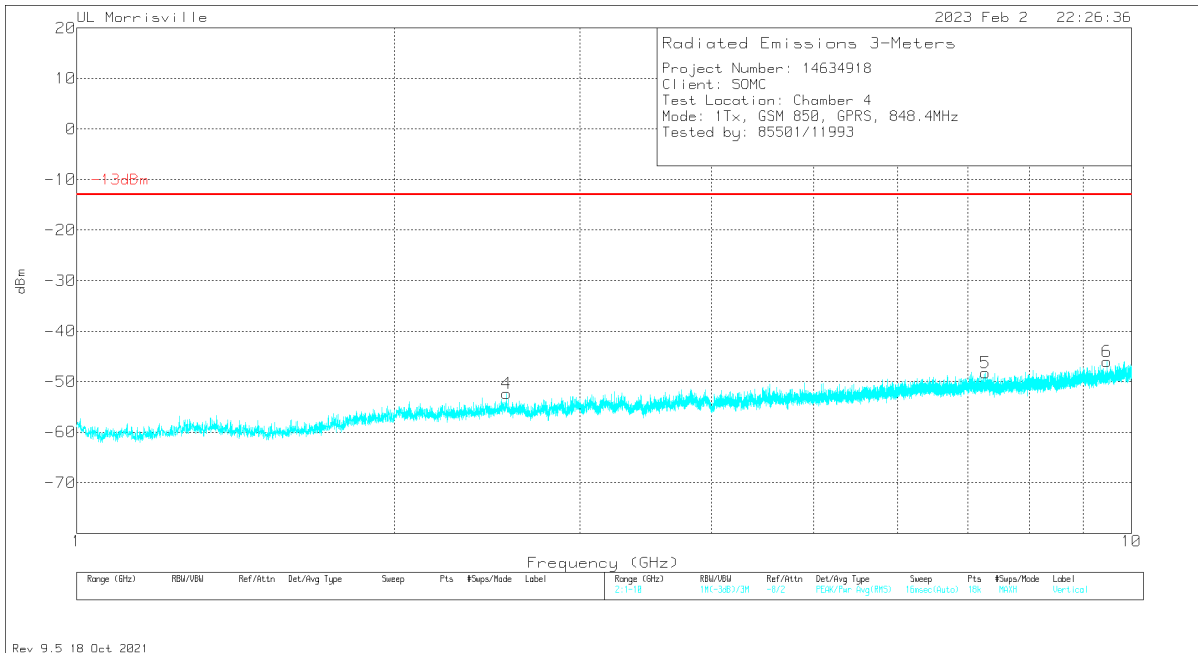
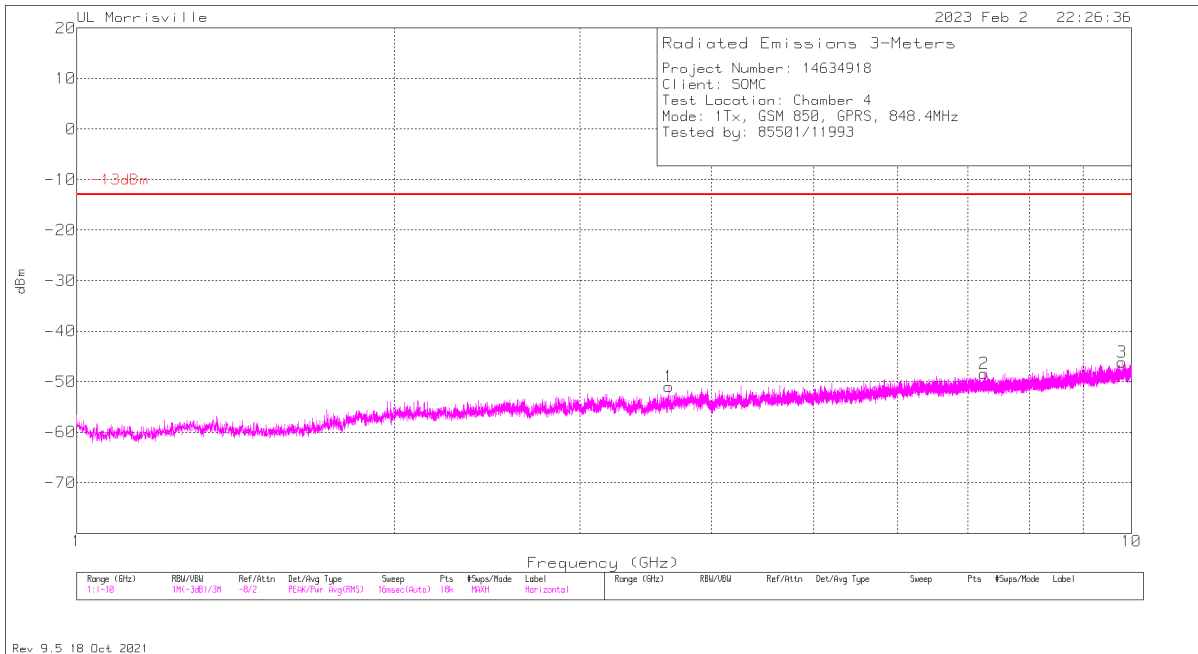
**GPRS Mid channel**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.52736	-62.5	Pk	33	-34.5	.5	11.8	-51.7	-13	-38.7	0-360	100	H
4	4.5688	-64.27	Pk	34.1	-32.4	.2	11.8	-50.57	-13	-37.57	0-360	300	V
2	6.3352	-66.58	Pk	35.5	-29.8	.4	11.8	-48.68	-13	-35.68	0-360	100	H
5	6.91017	-67.32	Pk	35.6	-28.8	.4	11.8	-48.32	-13	-35.32	0-360	200	V
6	9.75701	-68.67	Pk	36.8	-26.7	.3	11.8	-46.47	-13	-33.47	0-360	200	V
3	9.857	-68.42	Pk	36.9	-26.5	.6	11.8	-45.62	-13	-32.62	0-360	200	H

Pk - Peak detector

**GPRS High Channel**

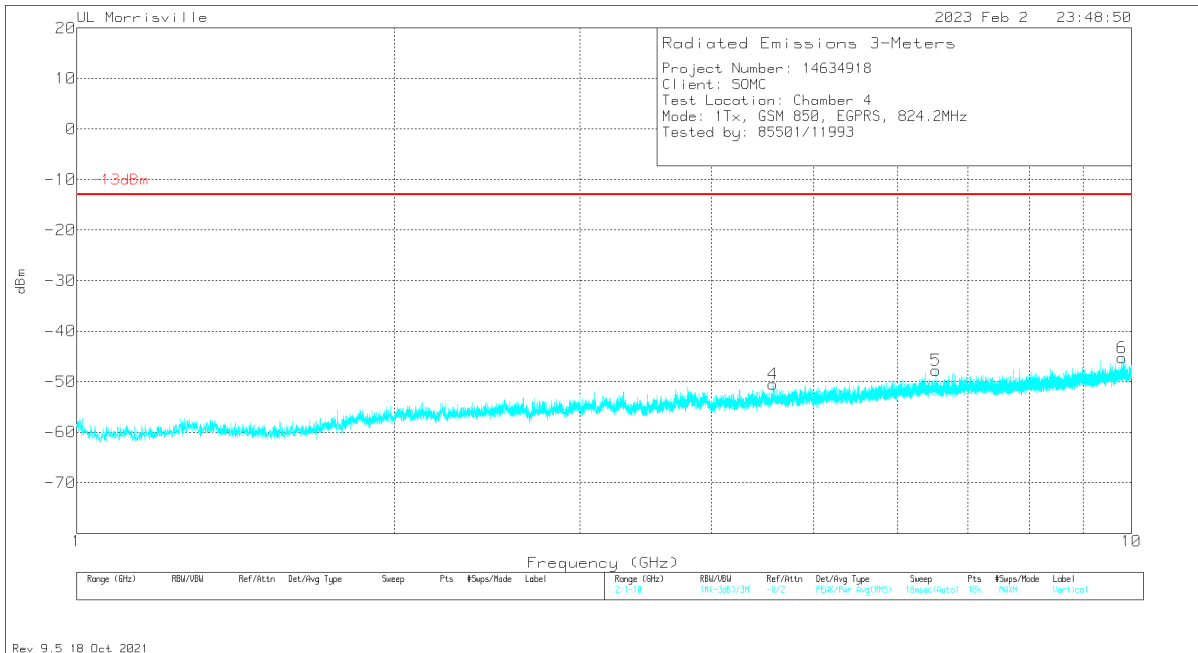
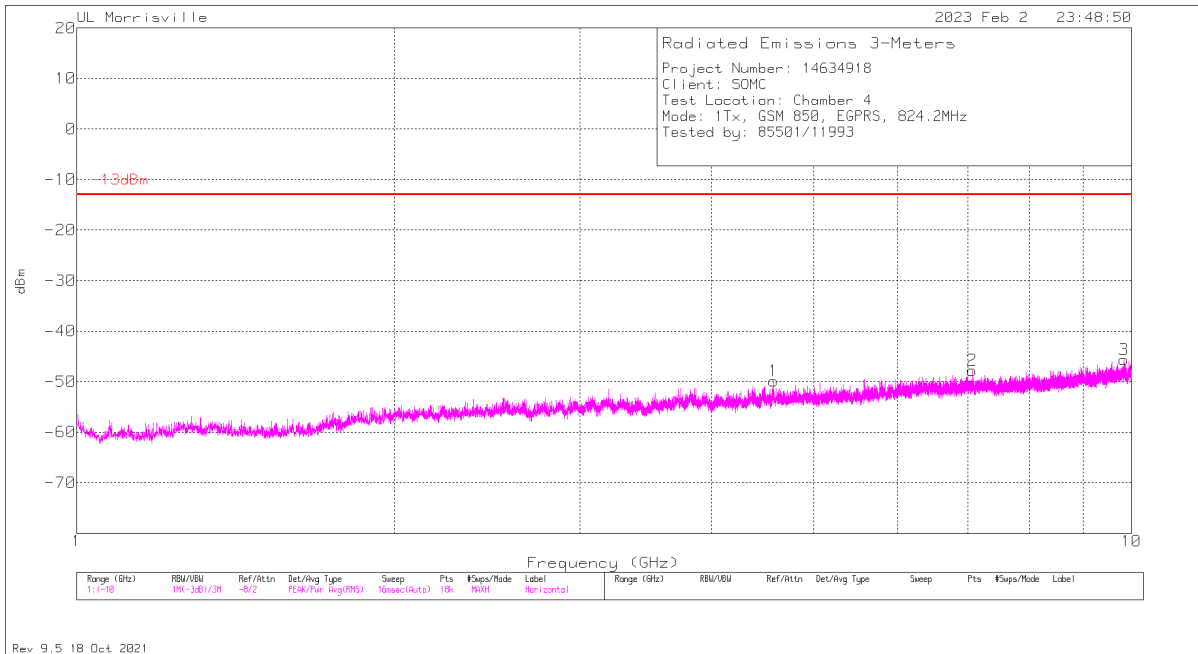


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	2.55591	-61	Pk	32.7	-36.2	.4	11.8	-52.3	-13	-39.3	0-360	300	V
1	3.64285	-61.93	Pk	33.1	-34.2	.3	11.8	-50.93	-13	-37.93	0-360	200	H
2	7.25315	-67.35	Pk	35.7	-28.9	.4	11.8	-48.35	-13	-35.35	0-360	200	H
5	7.27315	-67.61	Pk	35.7	-28.5	.4	11.8	-48.21	-13	-35.21	0-360	200	V
6	9.47853	-68.25	Pk	36.5	-26.5	.4	11.8	-46.05	-13	-33.05	0-360	200	V
3	9.79501	-68.62	Pk	36.9	-26.6	.4	11.8	-46.12	-13	-33.12	0-360	100	H

Pk - Peak detector



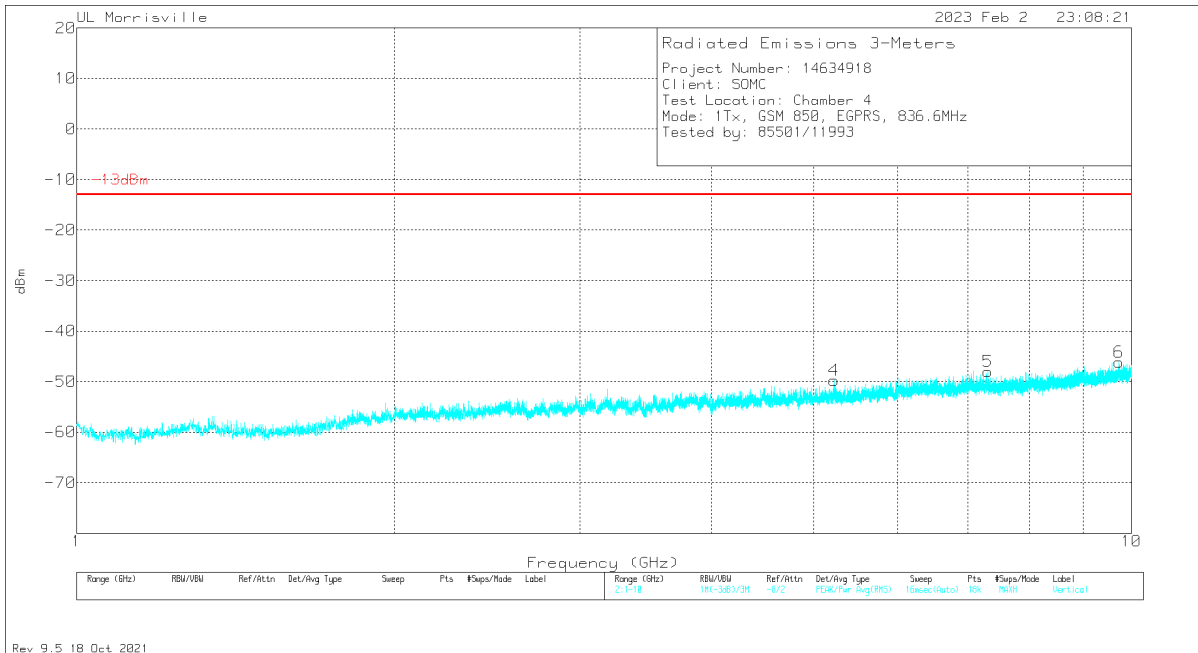
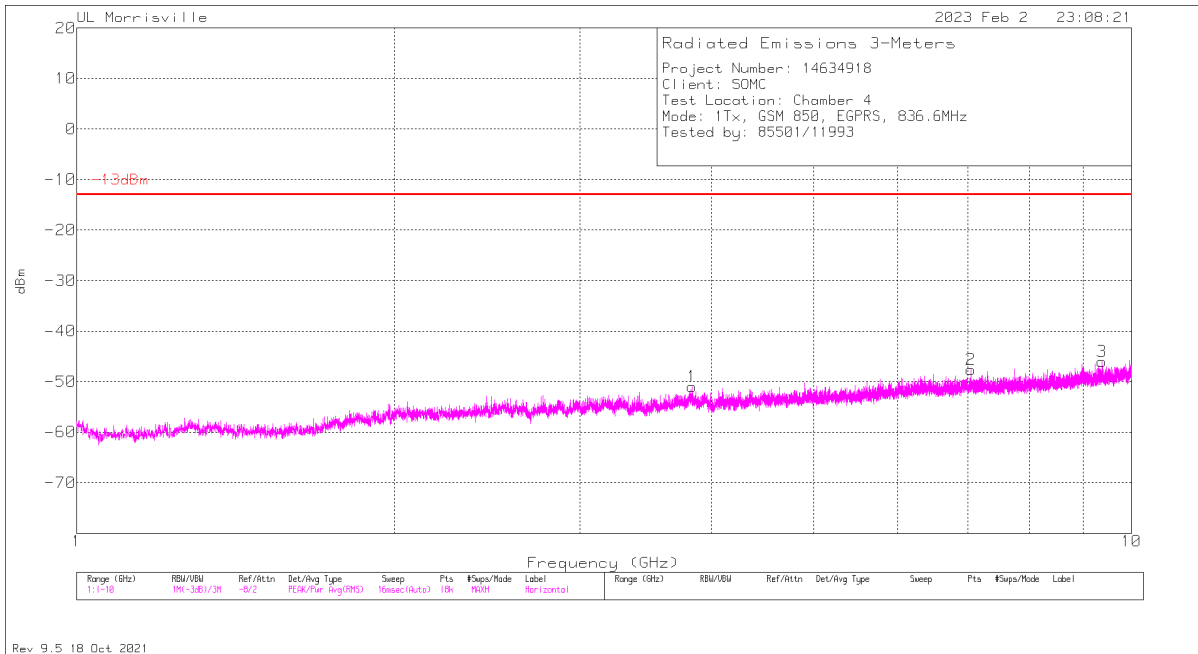
**EGPRS Low Channel**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	4.5748	-64.16	Pk	34.1	-32.4	.2	11.8	-50.46	-13	-37.46	0-360	300	V
1	4.5783	-63.54	Pk	34.1	-32.4	.2	11.8	-49.84	-13	-36.84	0-360	100	H
5	6.52819	-66.11	Pk	35.6	-29.4	.4	11.8	-47.71	-13	-34.71	0-360	300	V
2	7.06416	-66.92	Pk	35.6	-28.6	.4	11.8	-47.72	-13	-34.72	0-360	100	H
6	9.80051	-67.83	Pk	36.9	-26.6	.5	11.8	-45.23	-13	-32.23	0-360	300	V
3	9.843	-68.47	Pk	36.9	-26.5	.6	11.8	-45.67	-13	-32.67	0-360	100	H

Pk - Peak detector

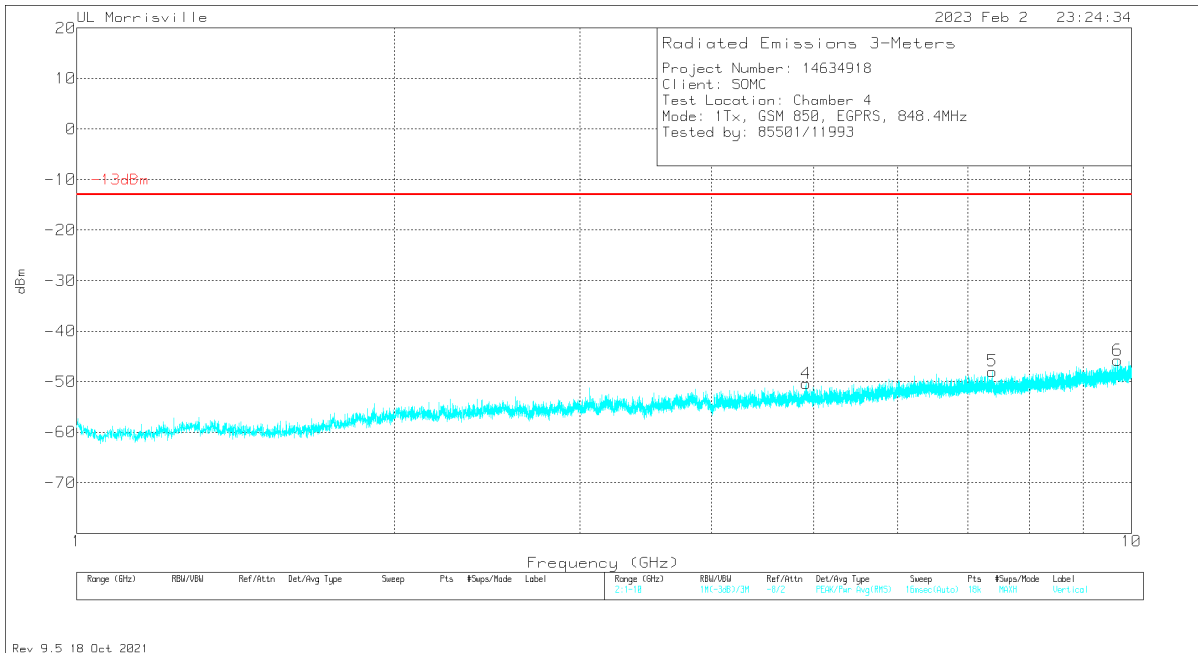
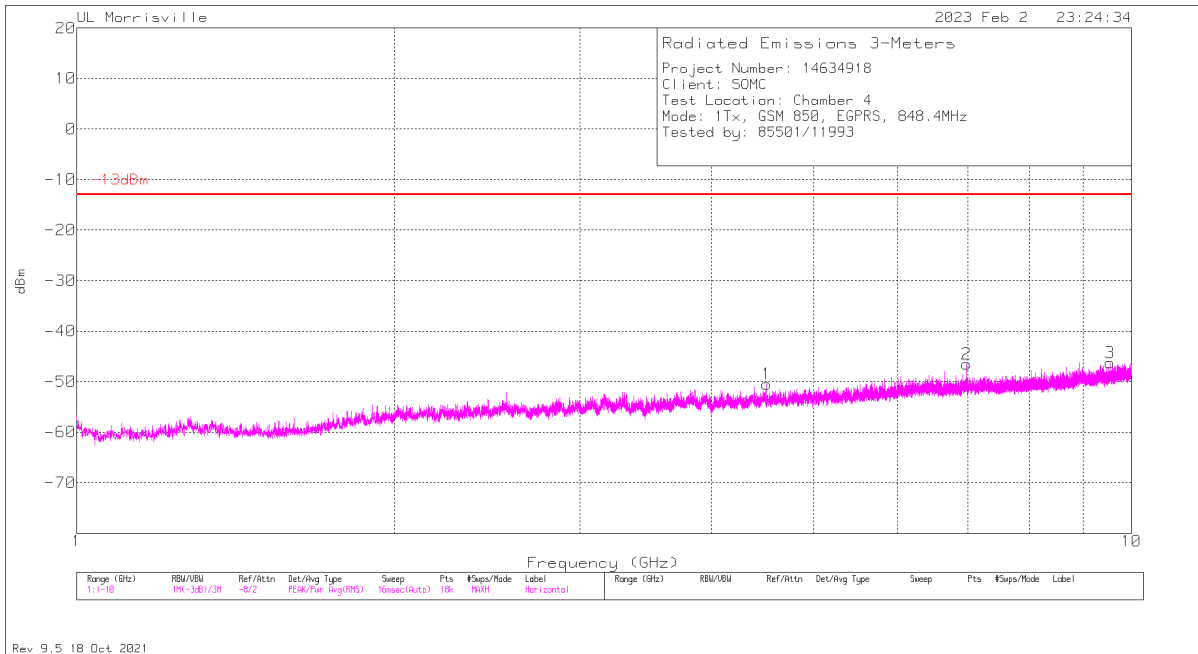
**EGPRS Mid Channel**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.83434	-62.98	Pk	33.5	-33.9	.6	11.8	-50.98	-13	-37.98	0-360	100	H
4	5.22426	-63.95	Pk	34.2	-32.1	.3	11.8	-49.75	-13	-36.75	0-360	300	V
2	7.04666	-66.67	Pk	35.6	-28.8	.4	11.8	-47.67	-13	-34.67	0-360	200	H
5	7.31365	-67.11	Pk	35.6	-28.7	.4	11.8	-48.01	-13	-35.01	0-360	300	V
3	9.37653	-68.41	Pk	36.5	-26.5	.6	11.8	-46.01	-13	-33.01	0-360	100	H
6	9.72701	-68.46	Pk	36.8	-26.7	.4	11.8	-46.16	-13	-33.16	0-360	300	V

Pk - Peak detector

**EGPRS High Channel**



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	4.5083	-64.41	Pk	33.8	-32.2	.5	11.8	-50.51	-13	-37.51	0-360	200	H
4	4.91828	-64.13	Pk	34	-32.3	.3	11.8	-50.33	-13	-37.33	0-360	300	V
2	6.97717	-65.67	Pk	35.7	-28.7	.3	11.8	-46.57	-13	-33.57	0-360	100	H
5	7.37564	-67.04	Pk	35.6	-28.7	.4	11.8	-47.94	-13	-34.94	0-360	300	V
3	9.54202	-69.08	Pk	36.6	-26.1	.5	11.8	-46.28	-13	-33.28	0-360	100	H
6	9.70101	-68.22	Pk	36.7	-26.5	.5	11.8	-45.72	-13	-32.72	0-360	300	V

Pk - Peak detector

## 10.1.2. GSM1900

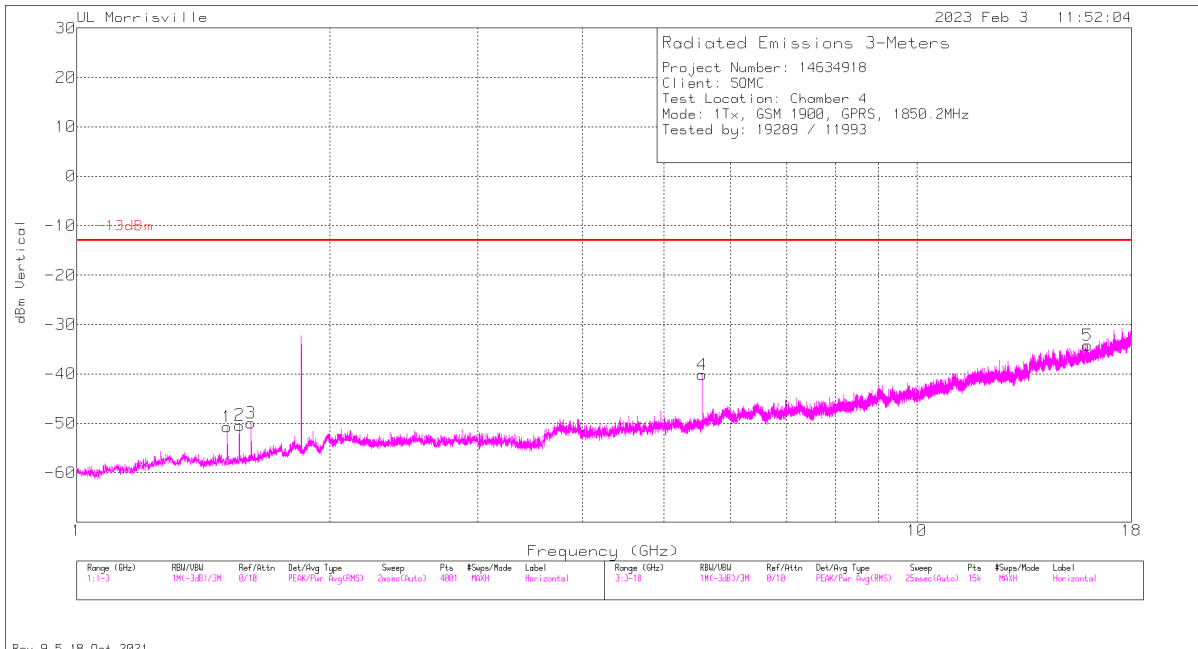
### LIMITS

FCC: §24.238 (a)

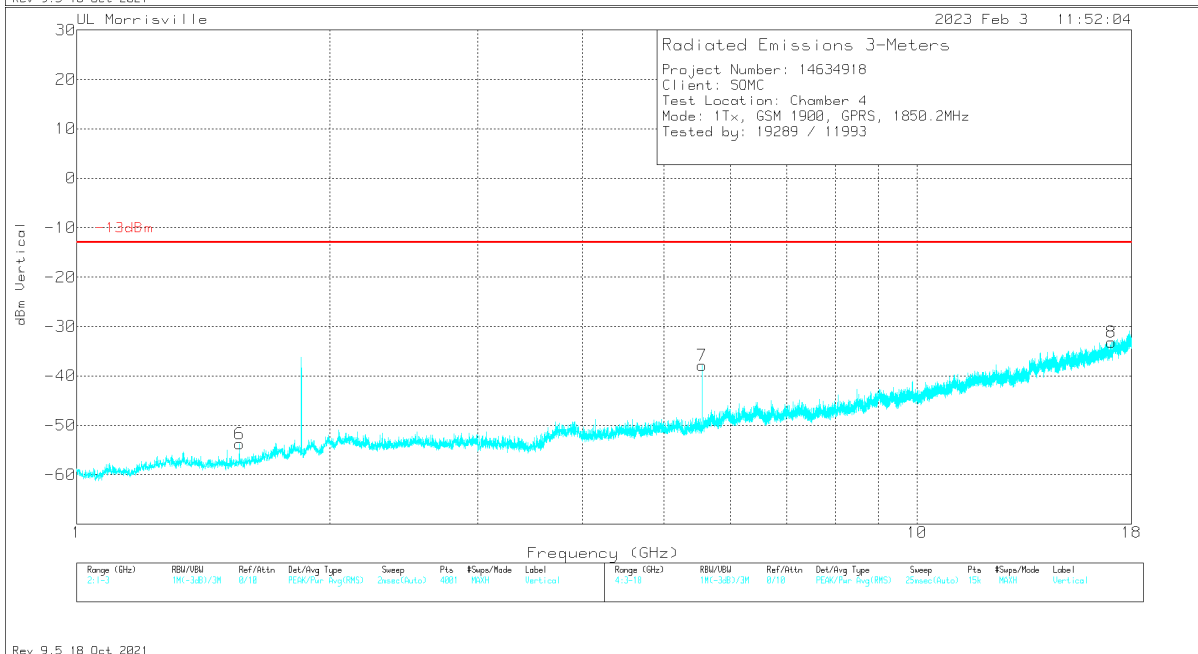
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

EUT Serial Number: QV7700EYFN

**GPRS Low Channel**



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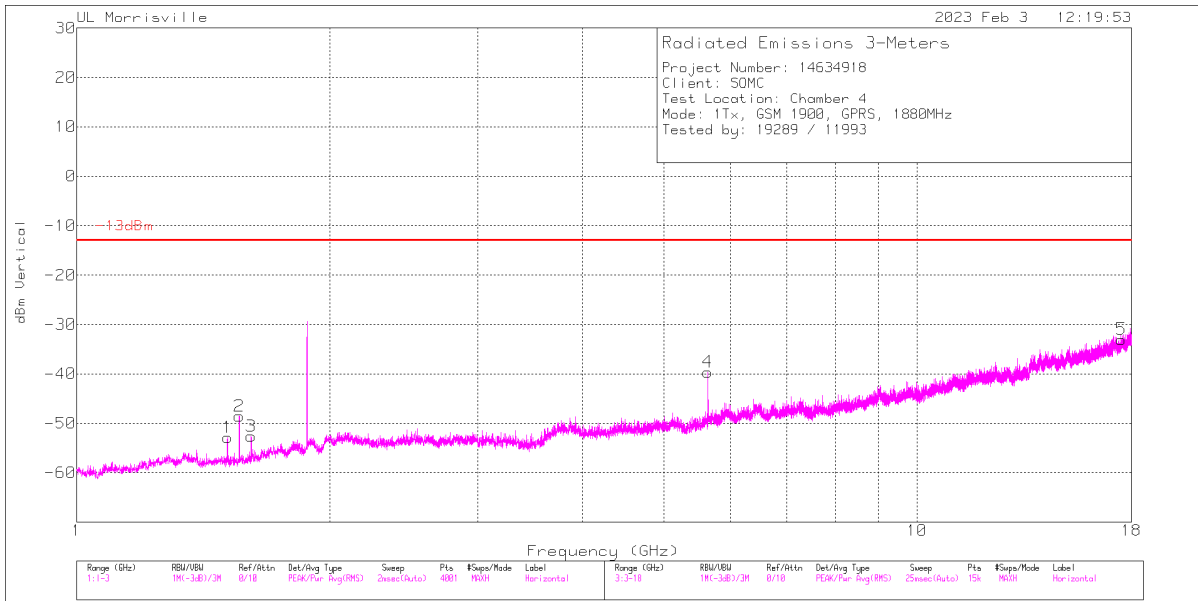


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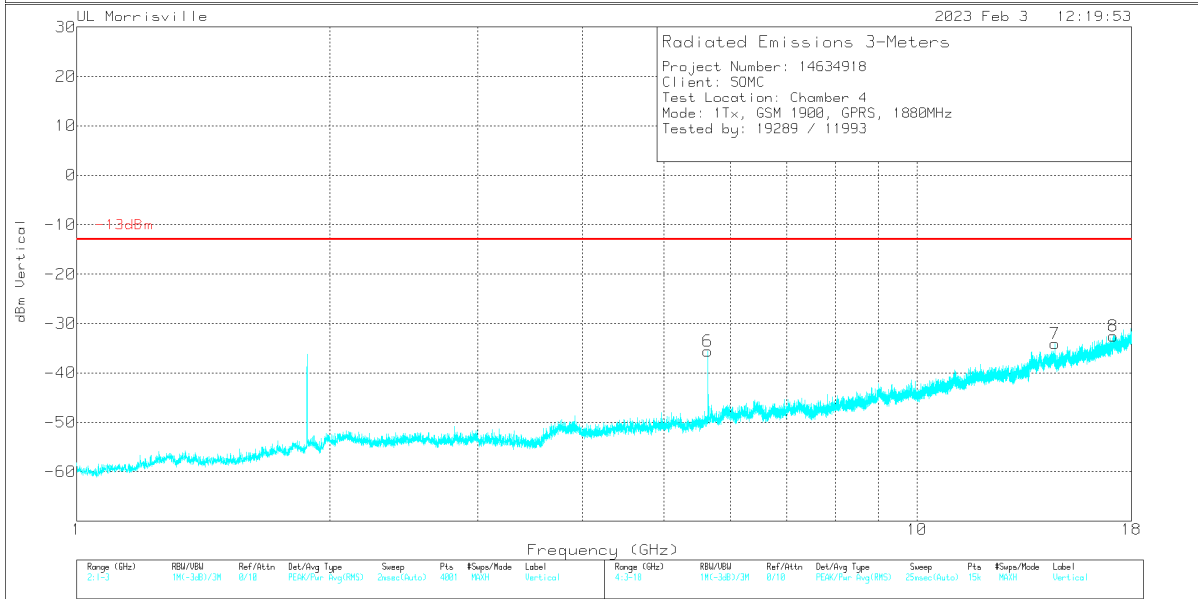
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5105	-55.83	Pk	28.4	-36.1	11.8	1	-50.73	-13	-37.73	0-360	100	H
6	1.5615	-58.7	Pk	28.4	-36.2	11.8	1	-53.7	-13	-40.7	0-360	200	V
2	1.562	-55.38	Pk	28.4	-36.2	11.8	1	-50.38	-13	-37.38	0-360	200	H
3	1.612	-55.45	Pk	28.8	-36.4	11.8	1.3	-49.95	-13	-36.95	0-360	100	H
4	5.55	-55	Pk	34.7	-31.7	11.8	0	-40.2	-13	-27.2	0-360	200	H
7	5.551	-52.65	Pk	34.7	-31.7	11.8	0	-37.85	-13	-24.85	0-360	300	V
5	15.955	-66	Pk	40.6	-20.6	11.8	0	-34.2	-13	-21.2	0-360	100	H
8	17.04	-66.74	Pk	41.3	-19.5	11.8	0	-33.14	-13	-20.14	0-360	300	V

Pk - Peak detector

**GPRS Mid Channel**



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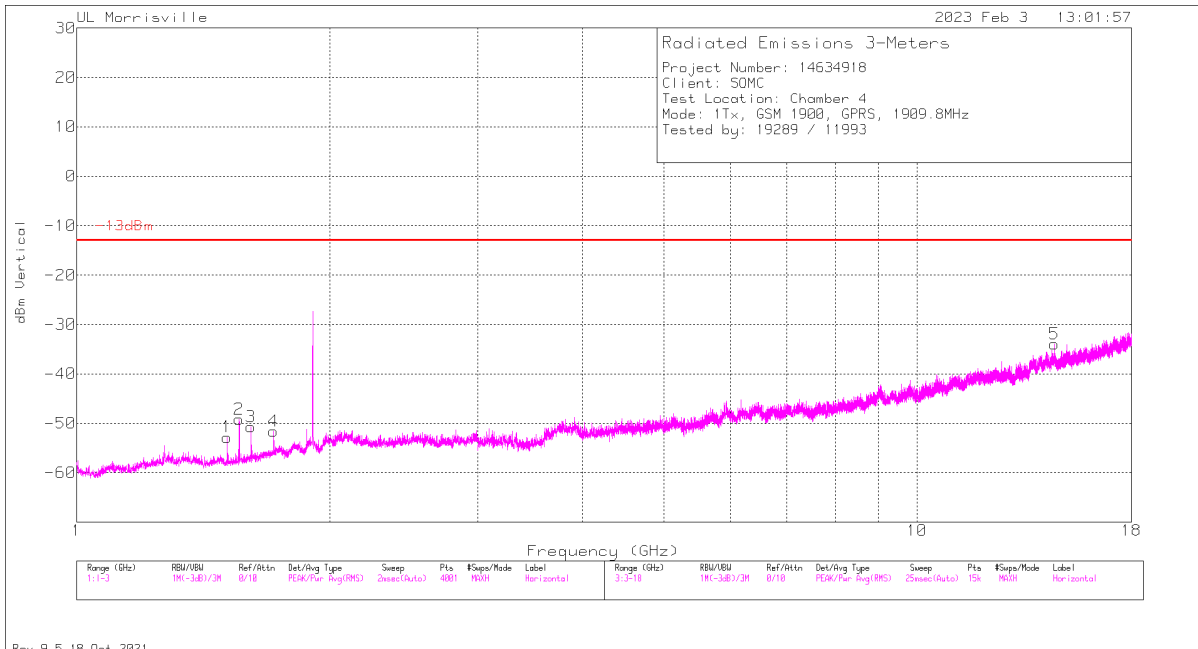


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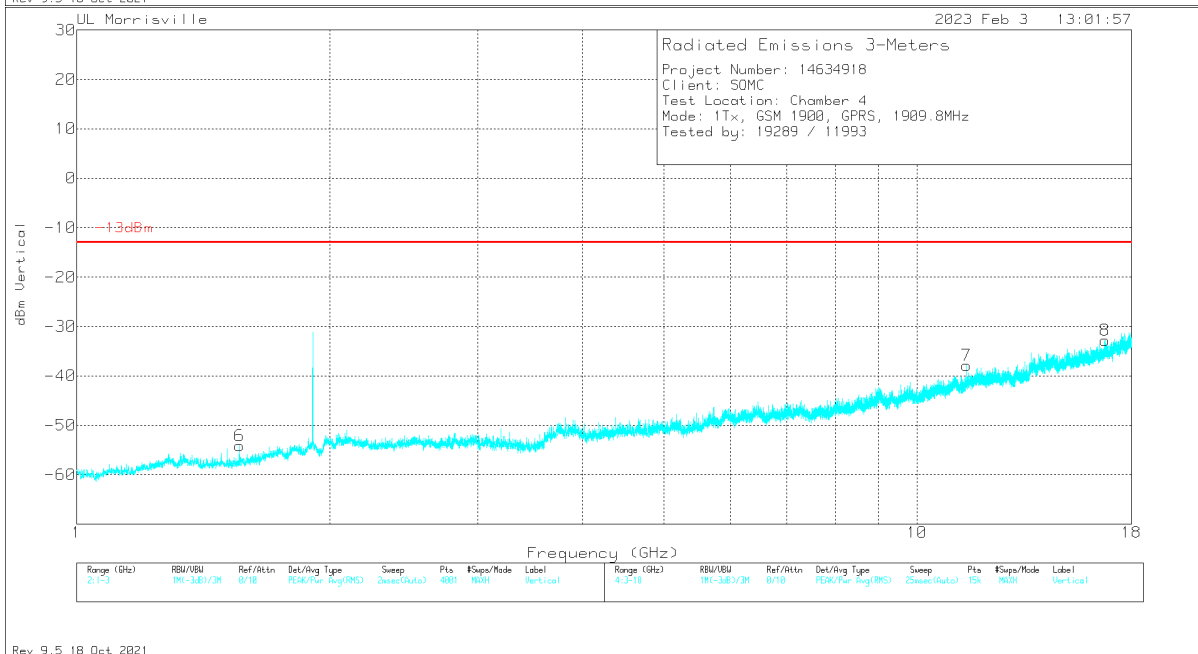
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5115	-58	Pk	28.4	-36.1	11.8	1	-52.9	-13	-39.9	0-360	100	H
2	1.56125	-53.56	Pk	28.4	-36.2	11.8	1	-48.56	-13	-35.56	0-360	100	H
3	1.613	-58.24	Pk	28.8	-36.3	11.8	1.3	-52.64	-13	-39.64	0-360	100	H
4	5.64	-55.99	Pk	34.8	-30.2	11.8	0	-39.59	-13	-26.59	0-360	100	H
6	5.64	-52.03	Pk	34.8	-30.2	11.8	0	-35.63	-13	-22.63	0-360	200	V
7	14.588	-64.31	Pk	39.6	-21.2	11.8	0	-34.11	-13	-21.11	0-360	300	V
8	17.117	-66	Pk	41.1	-19.4	11.8	0	-32.5	-13	-19.5	0-360	300	V
5	17.504	-66.69	Pk	40.7	-18.8	11.8	0	-32.99	-13	-19.99	0-360	100	H

Pk - Peak detector

**GPRS High Channel**



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Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5105	-57.89	Pk	28.4	-36.1	11.8	1	-52.79	-13	-39.79	0-360	200	H
2	1.561	-54.15	Pk	28.4	-36.2	11.8	1	-49.15	-13	-36.15	0-360	200	H
6	1.5615	-59.1	Pk	28.4	-36.2	11.8	1	-54.1	-13	-41.1	0-360	300	V
3	1.6125	-56.27	Pk	28.8	-36.3	11.8	1.3	-50.67	-13	-37.67	0-360	100	H
4	1.7155	-58.34	Pk	29.3	-36.2	11.8	1.8	-51.64	-13	-38.64	0-360	200	H
7	11.459	-64.19	Pk	38.1	-23.6	11.8	0	-37.89	-13	-24.89	0-360	200	V
5	14.567	-64.4	Pk	39.5	-20.8	11.8	0	-33.9	-13	-20.9	0-360	200	H
8	16.745	-66.11	Pk	41.3	-19.8	11.8	0	-32.81	-13	-19.81	0-360	300	V

Pk - Peak detector