

# Appendix B

## E-UTRA Band 13



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# 1 Effective (Isotropic) Radiated Power

## 1.1 Test Result

Band	Bandwidth	Modulation	Channel	RB Config.	Result (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	23.85	20.86	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#12	23.81	20.82	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	23.77	20.78	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	22.78	19.79	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	22.89	19.9	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	22.83	19.84	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	22.88	19.89	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	23.88	20.89	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	23.79	20.8	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	23.85	20.86	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	22.84	19.85	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	22.86	19.87	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	22.80	19.81	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	22.79	19.8	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	23.91	20.92	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	23.92	20.93	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	23.90	20.91	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	22.97	19.98	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	22.94	19.95	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	22.99	20	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	22.88	19.89	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	23.09	20.1	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	23.05	20.06	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	22.97	19.98	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	21.82	18.83	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	21.92	18.93	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	21.86	18.87	34.77	PASS
Band13	5MHz	16QAM	23205	25RB#0	21.87	18.88	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	23.01	20.02	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	22.96	19.97	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	23.04	20.05	34.77	PASS



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Band13	5MHz	16QAM	23230	12RB#0	21.90	18.91	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#6	21.89	18.9	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	21.85	18.86	34.77	PASS
Band13	5MHz	16QAM	23230	25RB#0	21.84	18.85	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#0	23.23	20.24	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	23.16	20.17	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	23.11	20.12	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	21.94	18.95	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	22.00	19.01	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#13	22.00	19.01	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	21.88	18.89	34.77	PASS
Band13	5MHz	64QAM	23205	1RB#0	22.02	19.03	34.77	PASS
Band13	5MHz	64QAM	23205	1RB#12	21.98	18.99	34.77	PASS
Band13	5MHz	64QAM	23205	1RB#24	21.97	18.98	34.77	PASS
Band13	5MHz	64QAM	23205	12RB#0	20.82	17.83	34.77	PASS
Band13	5MHz	64QAM	23205	12RB#6	20.94	17.95	34.77	PASS
Band13	5MHz	64QAM	23205	12RB#13	20.84	17.85	34.77	PASS
Band13	5MHz	64QAM	23205	25RB#0	20.90	17.91	34.77	PASS
Band13	5MHz	64QAM	23230	1RB#0	21.97	18.98	34.77	PASS
Band13	5MHz	64QAM	23230	1RB#12	21.94	18.95	34.77	PASS
Band13	5MHz	64QAM	23230	1RB#24	22.01	19.02	34.77	PASS
Band13	5MHz	64QAM	23230	12RB#0	20.89	17.9	34.77	PASS
Band13	5MHz	64QAM	23230	12RB#6	20.90	17.91	34.77	PASS
Band13	5MHz	64QAM	23230	12RB#13	20.83	17.84	34.77	PASS
Band13	5MHz	64QAM	23230	25RB#0	20.86	17.87	34.77	PASS
Band13	5MHz	64QAM	23255	1RB#0	22.03	19.04	34.77	PASS
Band13	5MHz	64QAM	23255	1RB#12	22.09	19.1	34.77	PASS
Band13	5MHz	64QAM	23255	1RB#24	22.06	19.07	34.77	PASS
Band13	5MHz	64QAM	23255	12RB#0	20.97	17.98	34.77	PASS
Band13	5MHz	64QAM	23255	12RB#6	20.98	17.99	34.77	PASS
Band13	5MHz	64QAM	23255	12RB#13	21.00	18.01	34.77	PASS
Band13	5MHz	64QAM	23255	25RB#0	20.94	17.95	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	23.77	20.78	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	23.81	20.82	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	23.76	20.77	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	22.87	19.88	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	22.85	19.86	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	22.77	19.78	34.77	PASS



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Band13	10MHz	QPSK	23230	50RB#0	22.83	19.84	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	22.95	19.96	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	23.09	20.1	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	23.00	20.01	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	21.91	18.92	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	21.89	18.9	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	21.79	18.8	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	21.84	18.85	34.77	PASS
Band13	10MHz	64QAM	23230	1RB#0	21.93	18.94	34.77	PASS
Band13	10MHz	64QAM	23230	1RB#24	21.97	18.98	34.77	PASS
Band13	10MHz	64QAM	23230	1RB#49	21.93	18.94	34.77	PASS
Band13	10MHz	64QAM	23230	25RB#0	20.90	17.91	34.77	PASS
Band13	10MHz	64QAM	23230	25RB#12	20.88	17.89	34.77	PASS
Band13	10MHz	64QAM	23230	25RB#25	20.83	17.84	34.77	PASS
Band13	10MHz	64QAM	23230	50RB#0	20.84	17.85	34.77	PASS

Remark:

a: For getting the EIRP (Efficient Isotropic Radiated Power), the following formula should be taken to calculate it,

$$ERP [dBm] = \text{Conducted Power [dBm]} + \text{Gain [dBd]}$$

$$EIRP [dBm] = \text{Conducted Power [dBm]} + \text{Gain [dBi]}$$



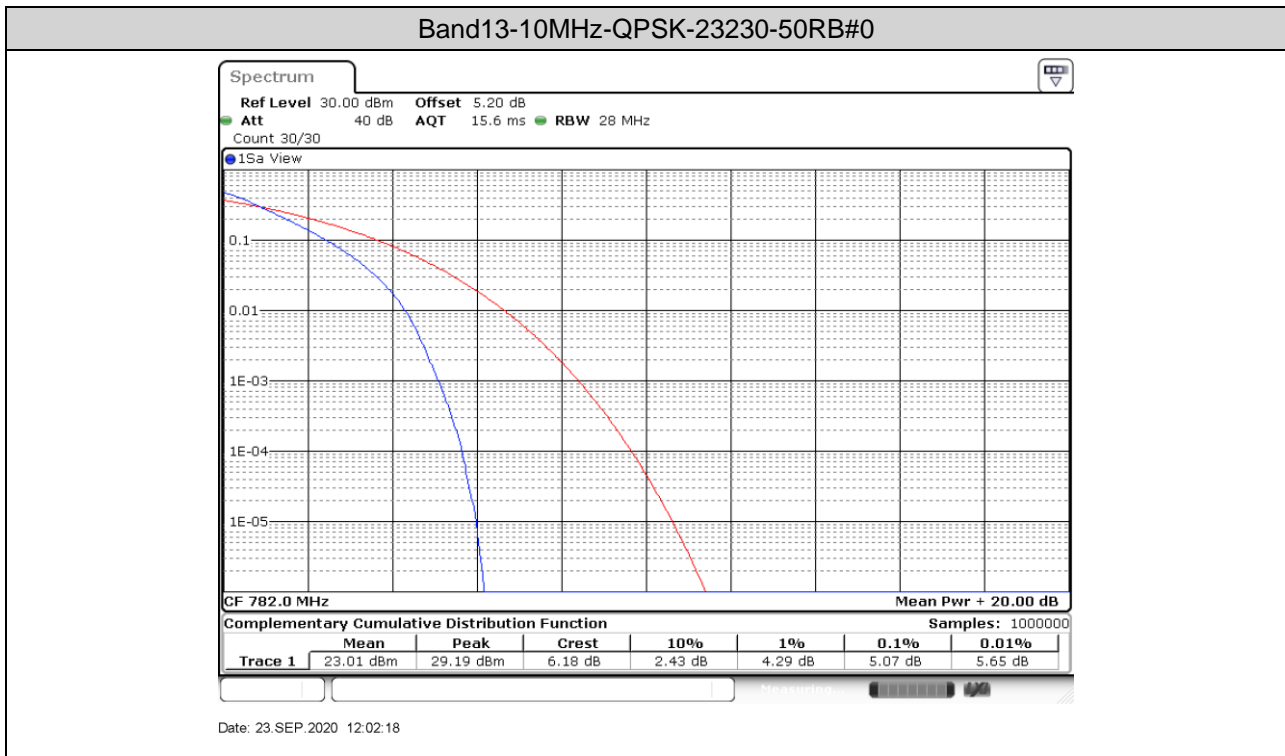
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## 2 Peak-to-Average Ratio (CCDF)

### 2.1 Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	5.07	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.88	13	PASS
Band13	10MHz	64QAM	23230	50RB#0	6.41	13	PASS

### 2.2 Test Plots



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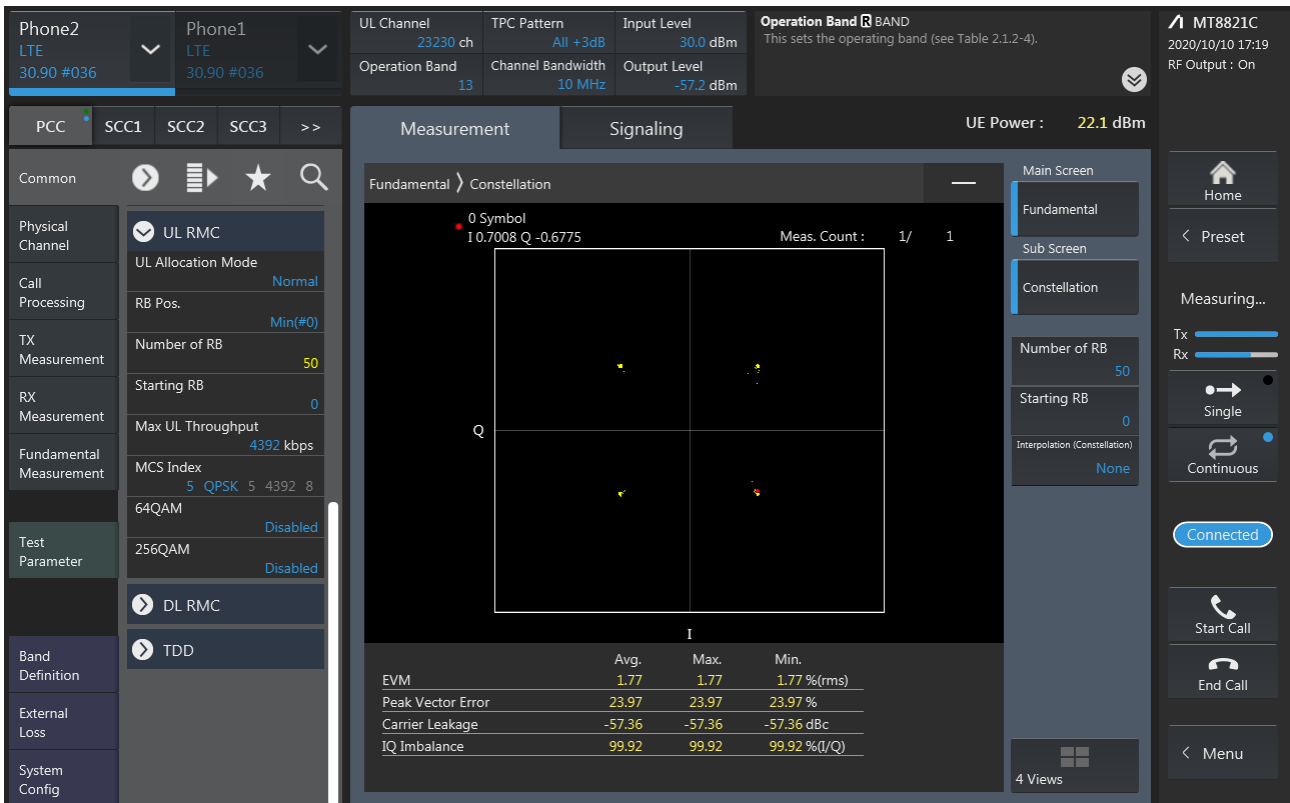
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### 3 Modulation Characteristics

#### 3.1 Test Mode = LTE /TM1 10MHz

##### 3.1.1 Test Channel = MCH



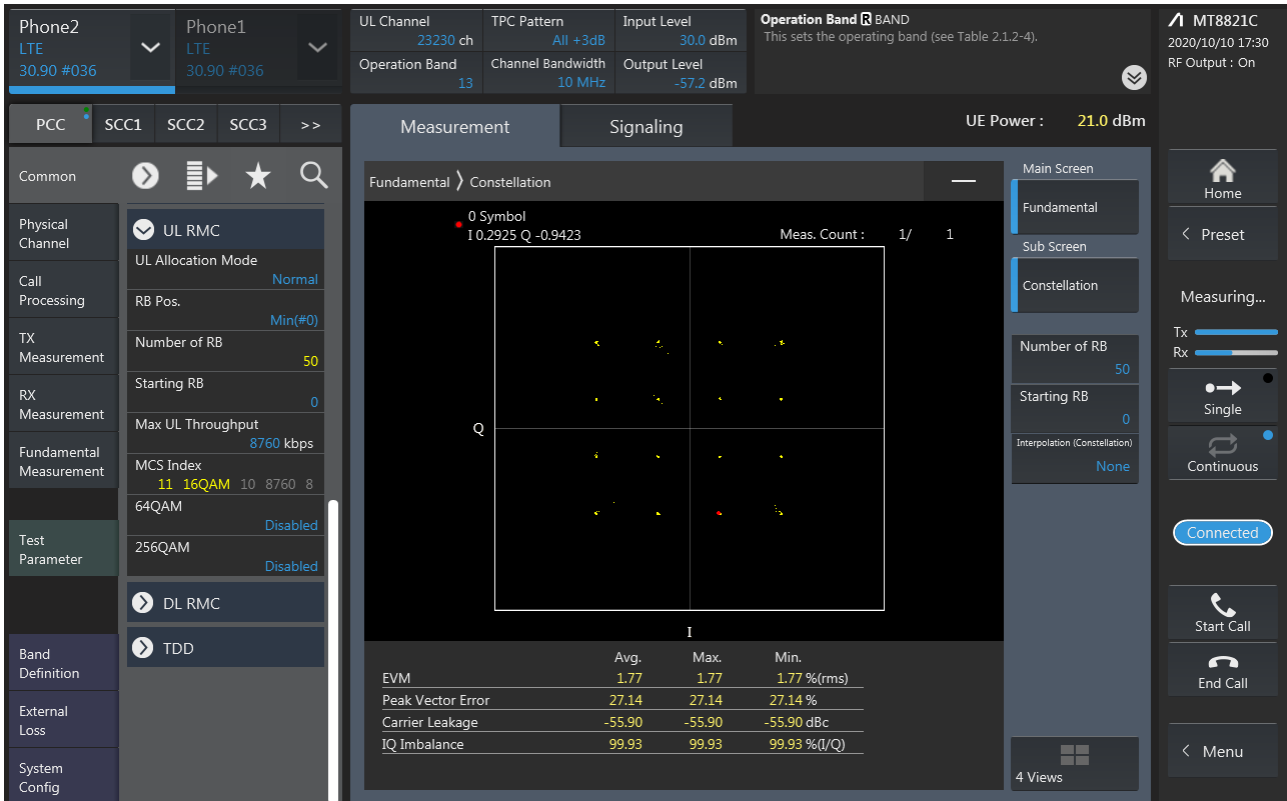
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## 3.2 Test Mode = LTE /TM2 10MHz

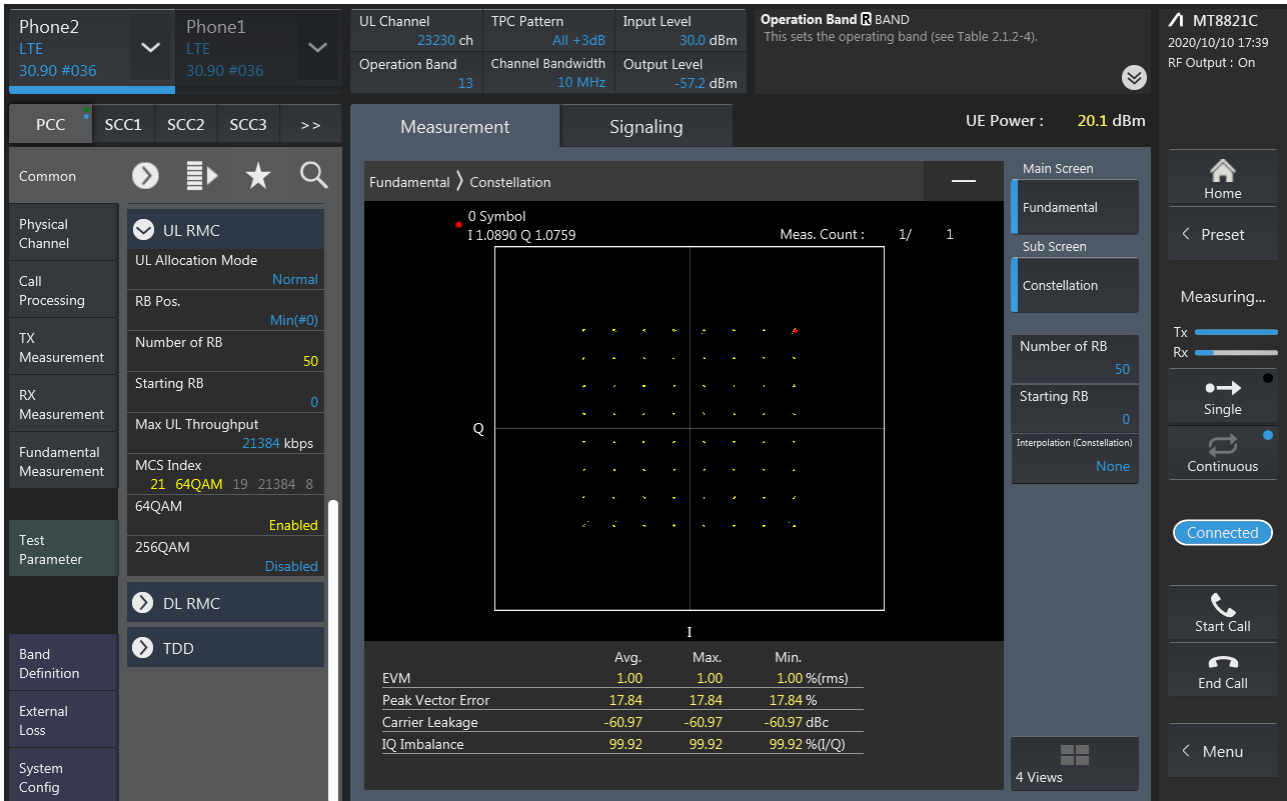
### 3.2.1 Test Channel = MCH



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### 3.3 Test Mode = LTE /TM3 10MHz

#### 3.3.1 Test Channel = MCH



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## 4 26dB Bandwidth and Occupied Bandwidth

### 4.1 Test Result

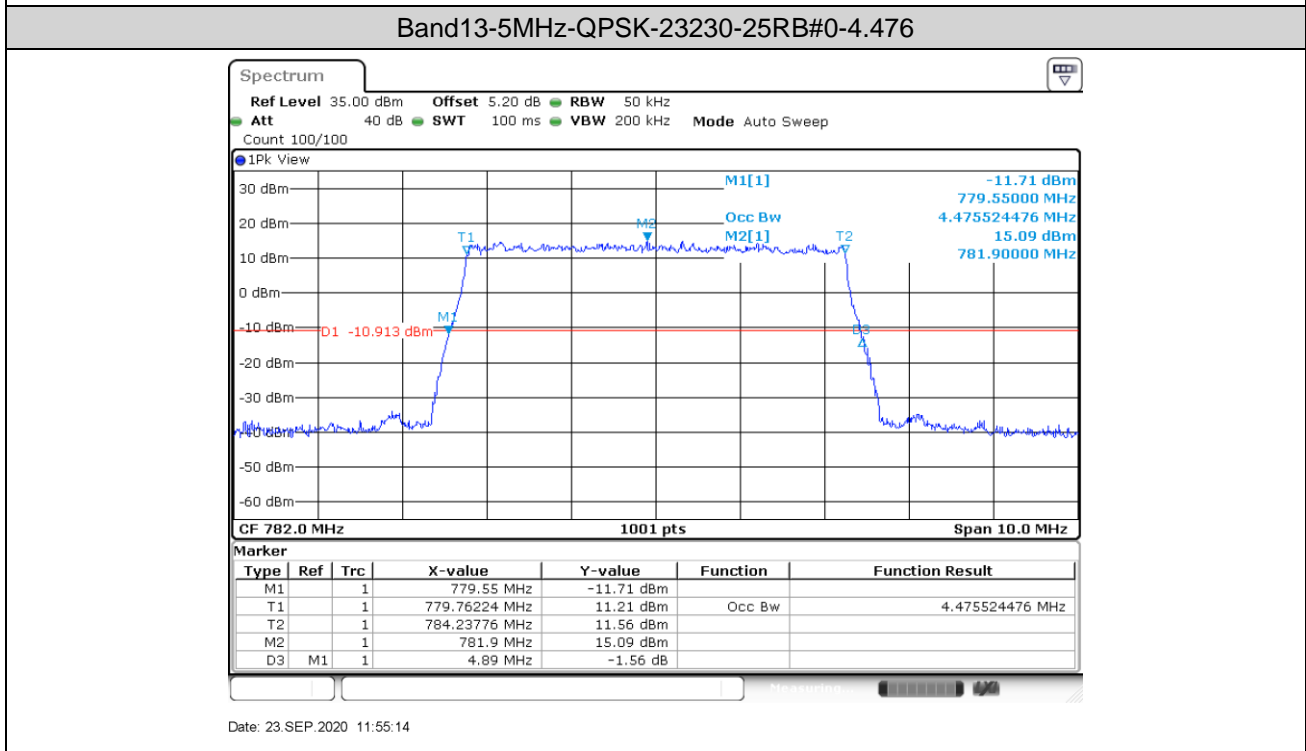
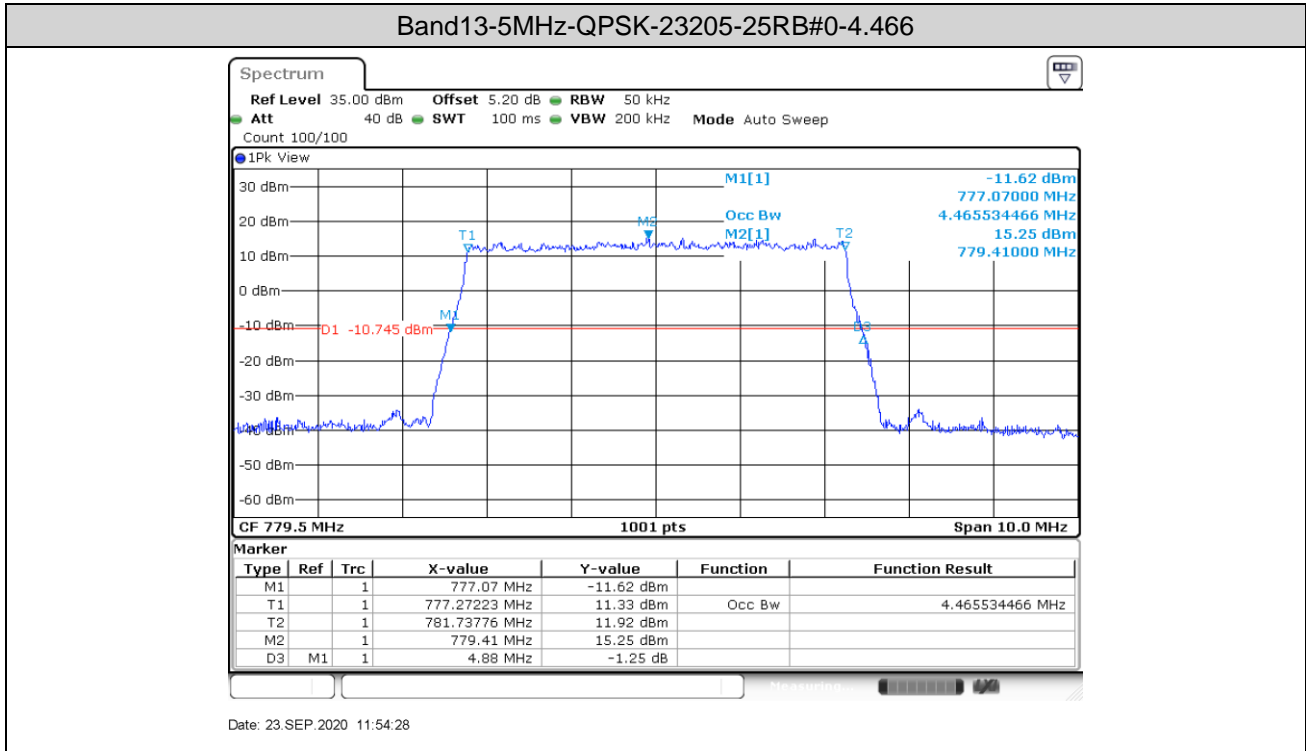
Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.466	4.880	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.476	4.890	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.476	4.900	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	4.910	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.476	4.900	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.486	4.910	PASS
Band13	5MHz	64QAM	23205	25RB#0	4.466	4.860	PASS
Band13	5MHz	64QAM	23230	25RB#0	4.476	4.880	PASS
Band13	5MHz	64QAM	23255	25RB#0	4.476	4.890	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.911	9.640	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.911	9.660	PASS
Band13	10MHz	64QAM	23230	50RB#0	8.911	9.640	PASS



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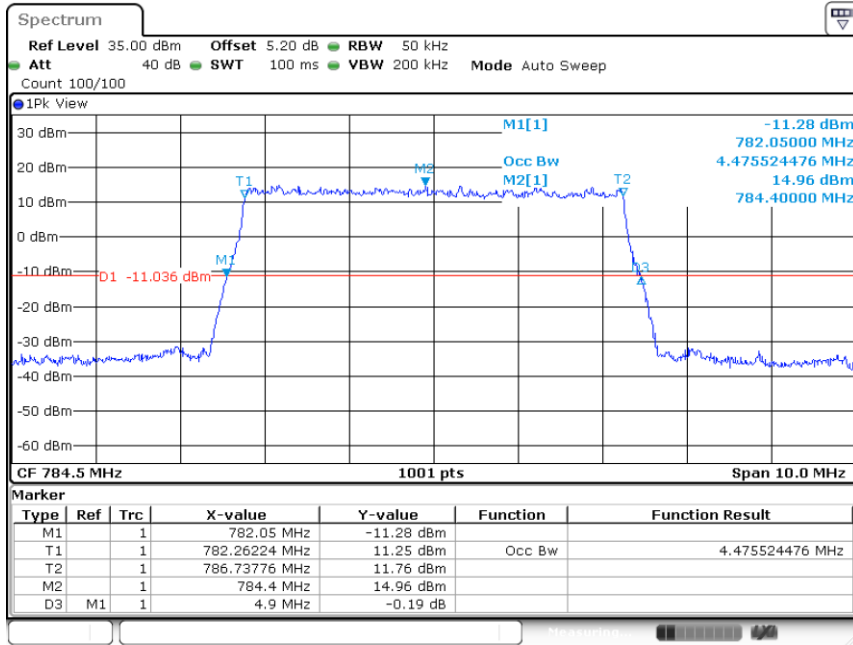
## 4.2 Test Plots



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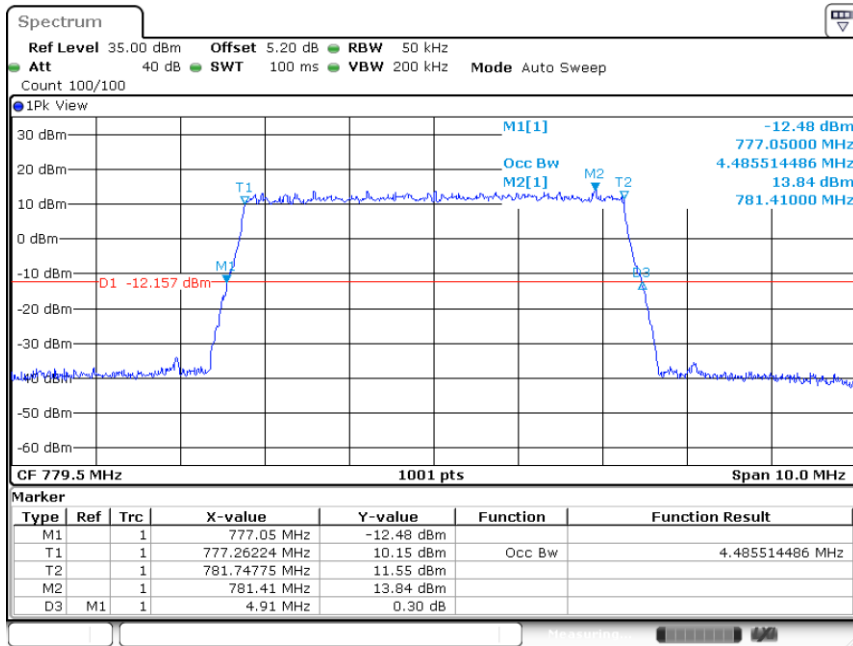


**Band13-5MHz-QPSK-23255-25RB#0-4.476**



Date: 23.SEP.2020 11:55:59

**Band13-5MHz-16QAM-23205-25RB#0-4.486**

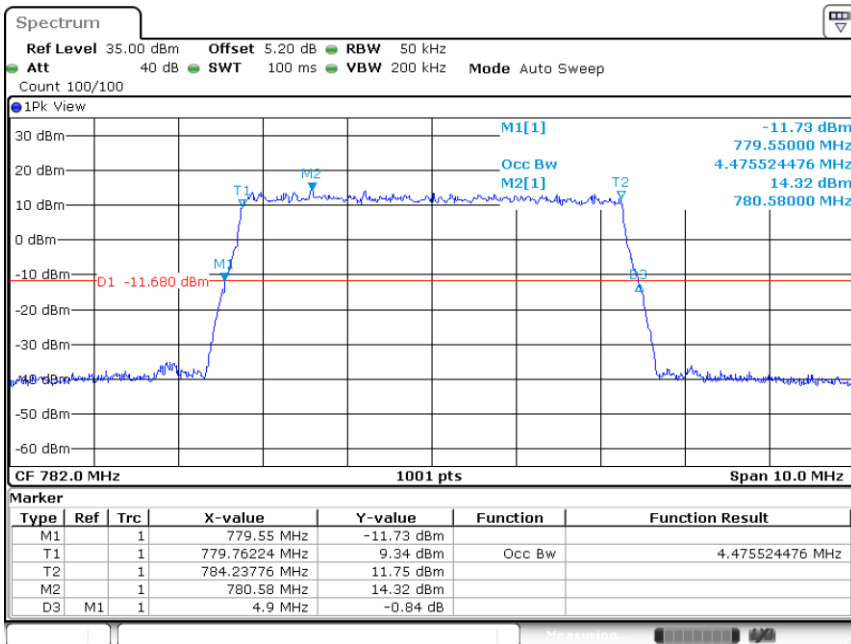


Date: 23.SEP.2020 11:54:51



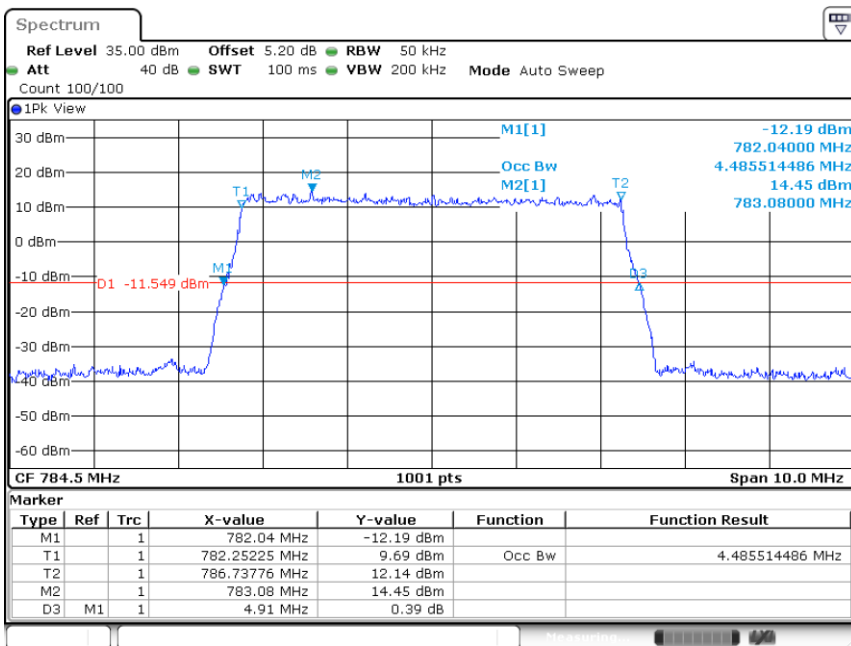
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**Band13-5MHz-16QAM-23230-25RB#0-4.476**



Date: 23.SEP.2020 11:55:36

**Band13-5MHz-16QAM-23255-25RB#0-4.486**

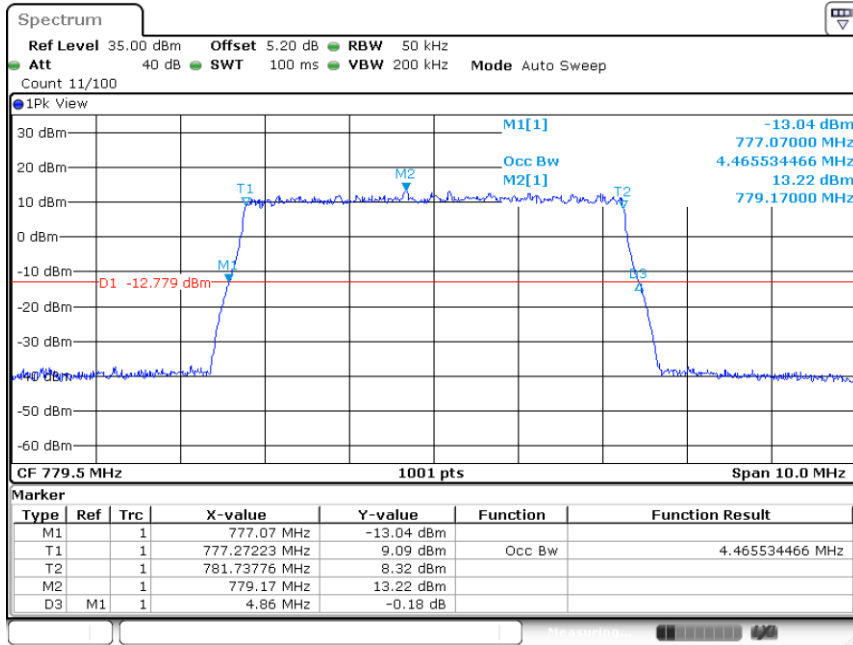


Date: 23.SEP.2020 11:56:22



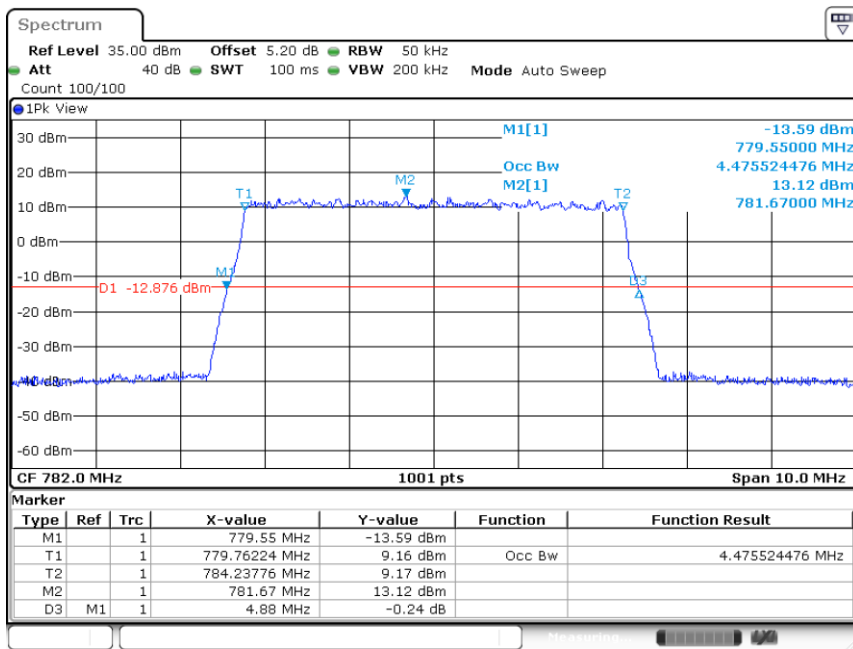
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**Band13-5MHz-64QAM-23205-25RB#0-4.466**



Date: 23.SEP.2020 12:34:20

**Band13-5MHz-64QAM-23230-25RB#0-4.476**

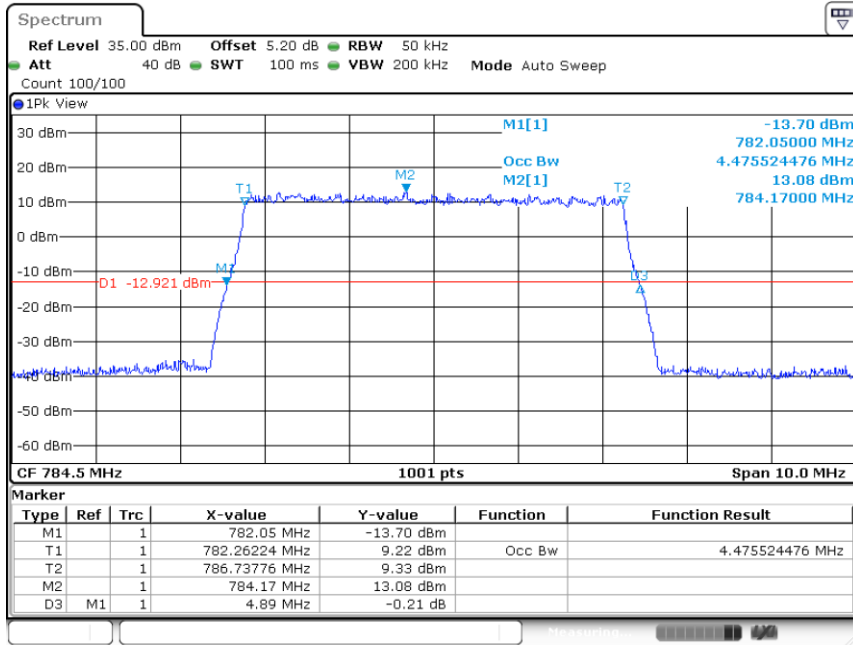


Date: 23.SEP.2020 12:34:43



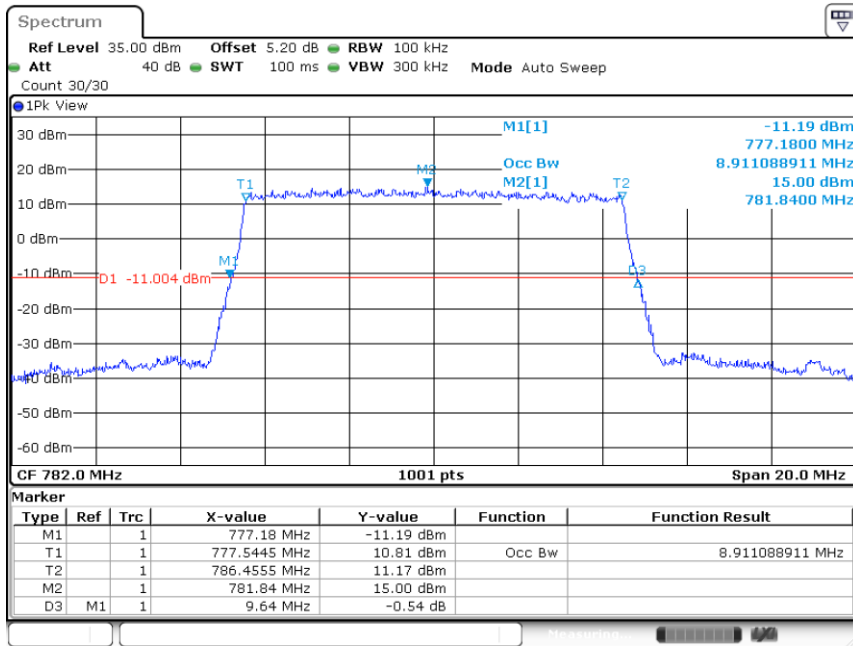
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**Band13-5MHz-64QAM-23255-25RB#0-4.476**



Date: 23.SEP.2020 12:35:07

**Band13-10MHz-QPSK-23230-50RB#0-8.911**



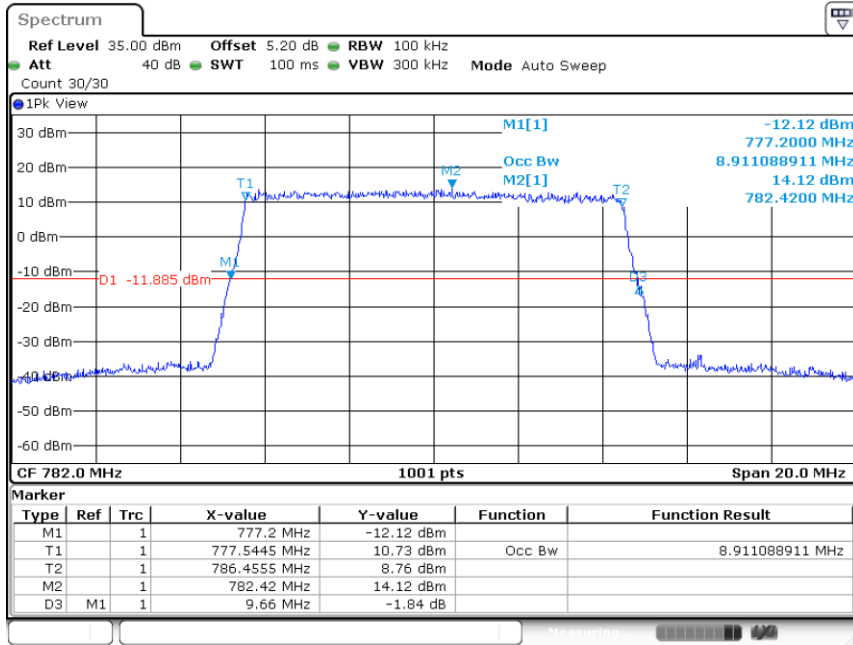
Date: 23.SEP.2020 11:56:44



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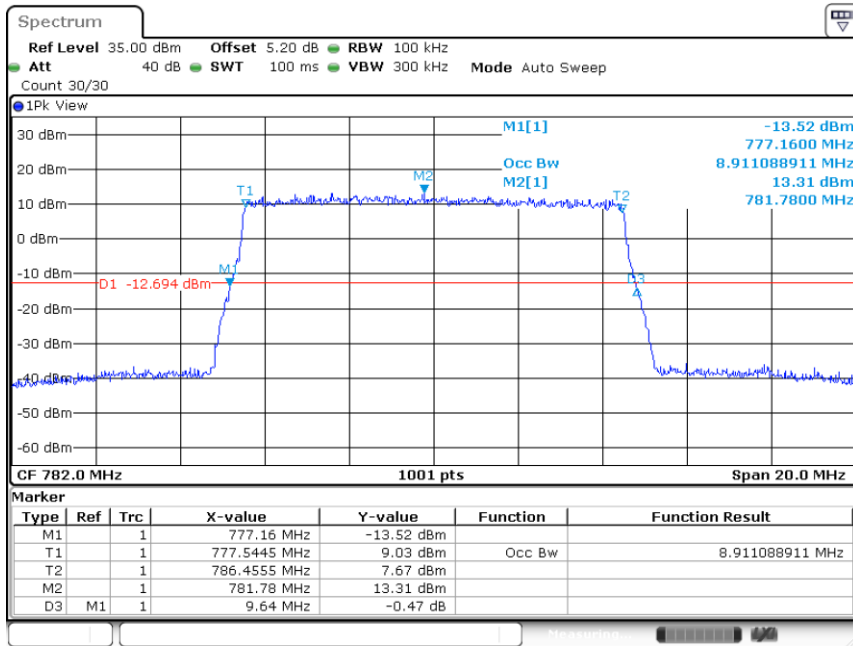


**Band13-10MHz-16QAM-23230-50RB#0-8.911**



Date: 23.SEP.2020 11:56:59

**Band13-10MHz-64QAM-23230-50RB#0-8.911**



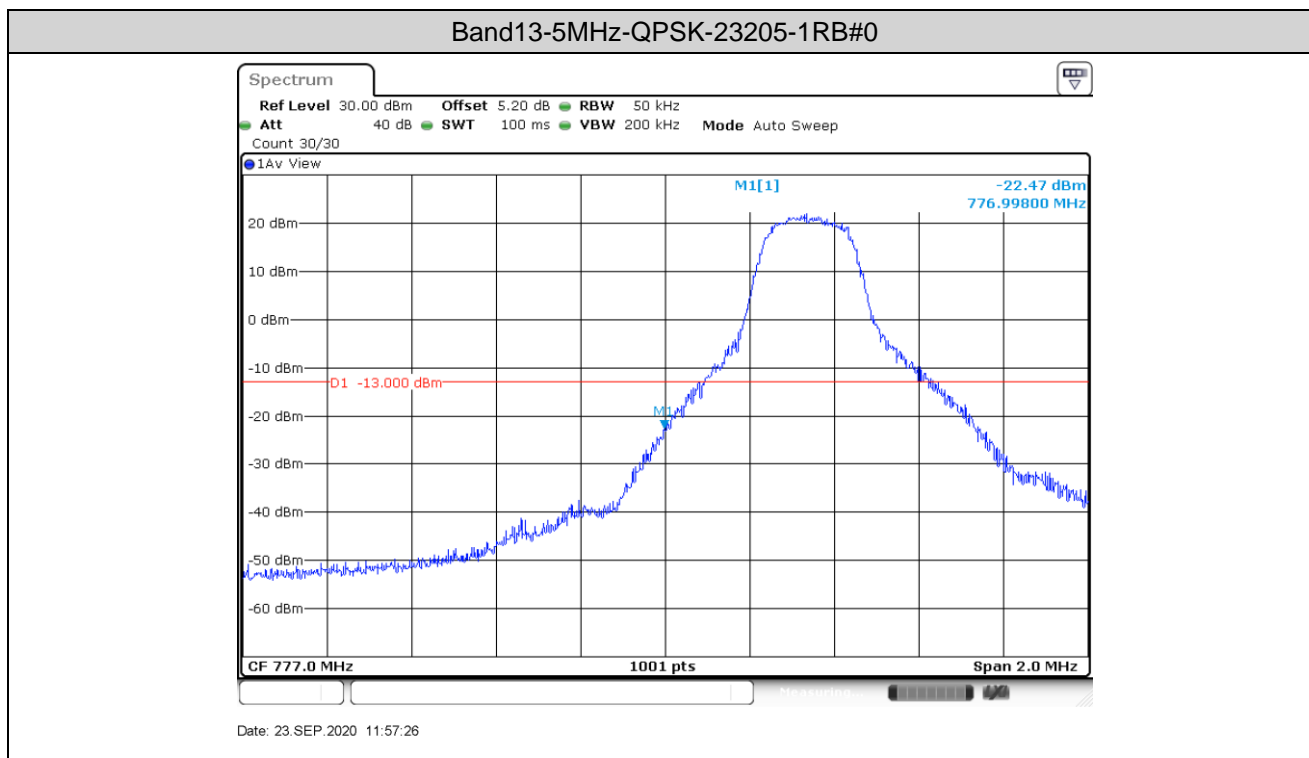
Date: 23.SEP.2020 12:35:29



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## 5 Band Edge Compliance

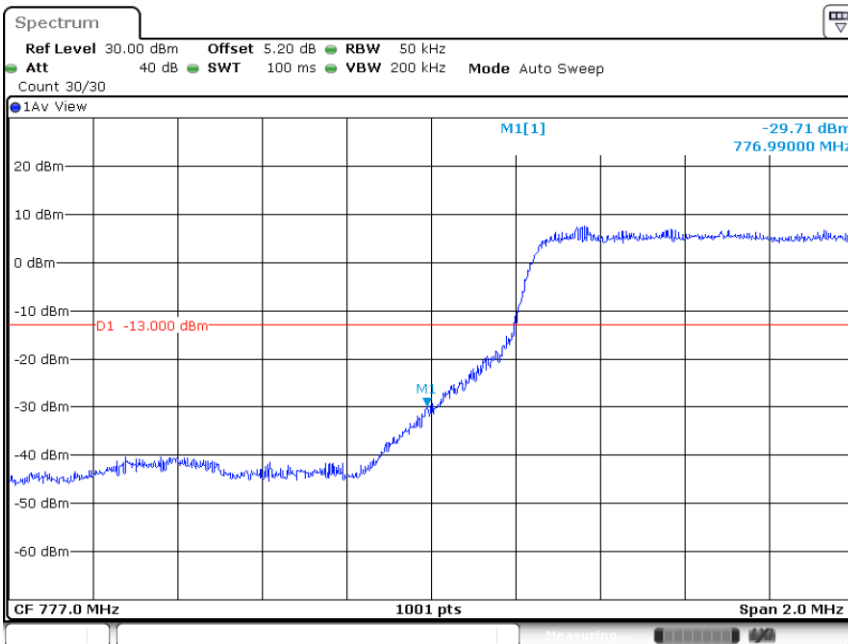
### 5.1 Test Plots



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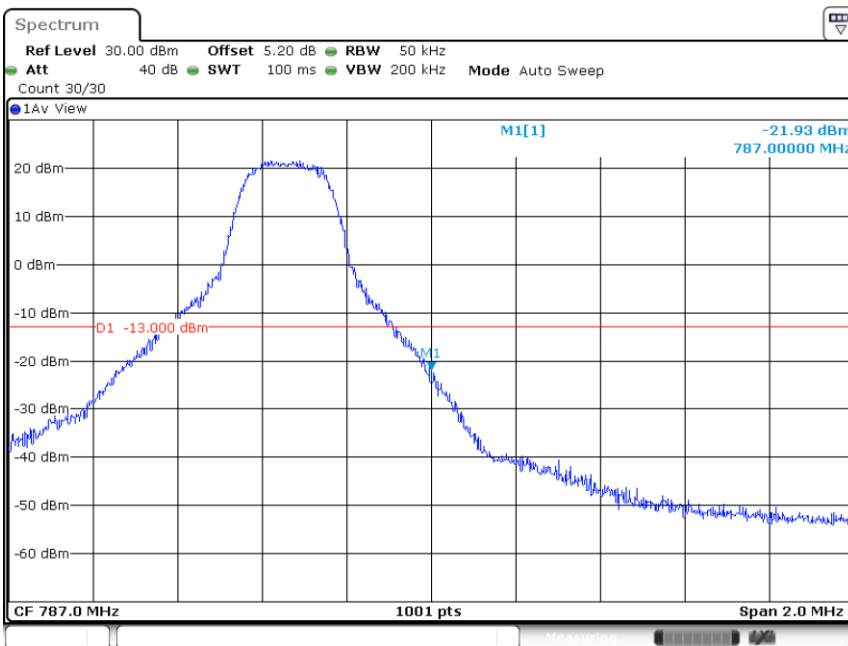
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**Band13-5MHz-QPSK-23205-25RB#0**



Date: 23.SEP.2020 11:57:59

**Band13-5MHz-QPSK-23255-1RB#24**

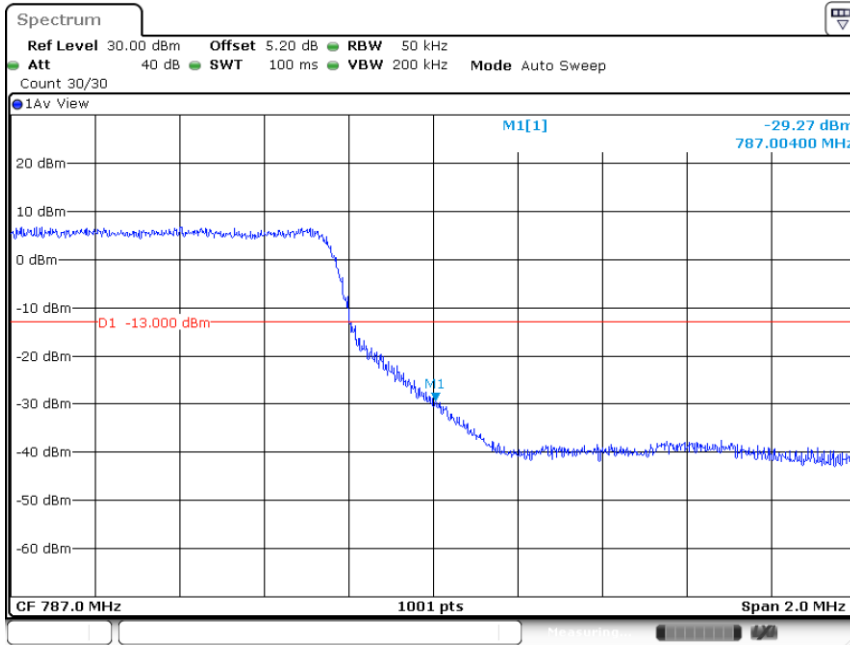


Date: 23.SEP.2020 11:58:40



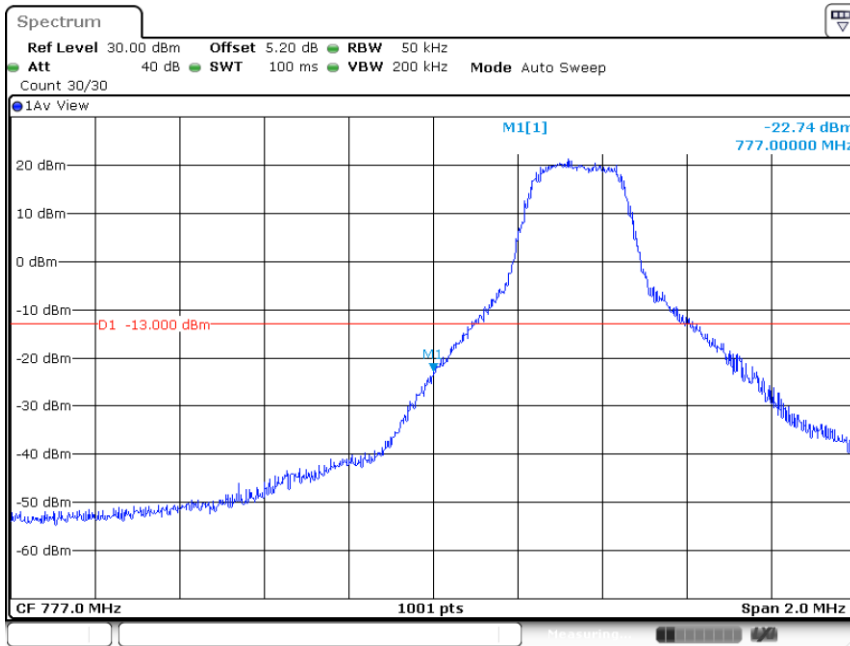
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**Band13-5MHz-QPSK-23255-25RB#0**



Date: 23.SEP.2020 11:59:13

**Band13-5MHz-16QAM-23205-1RB#0**

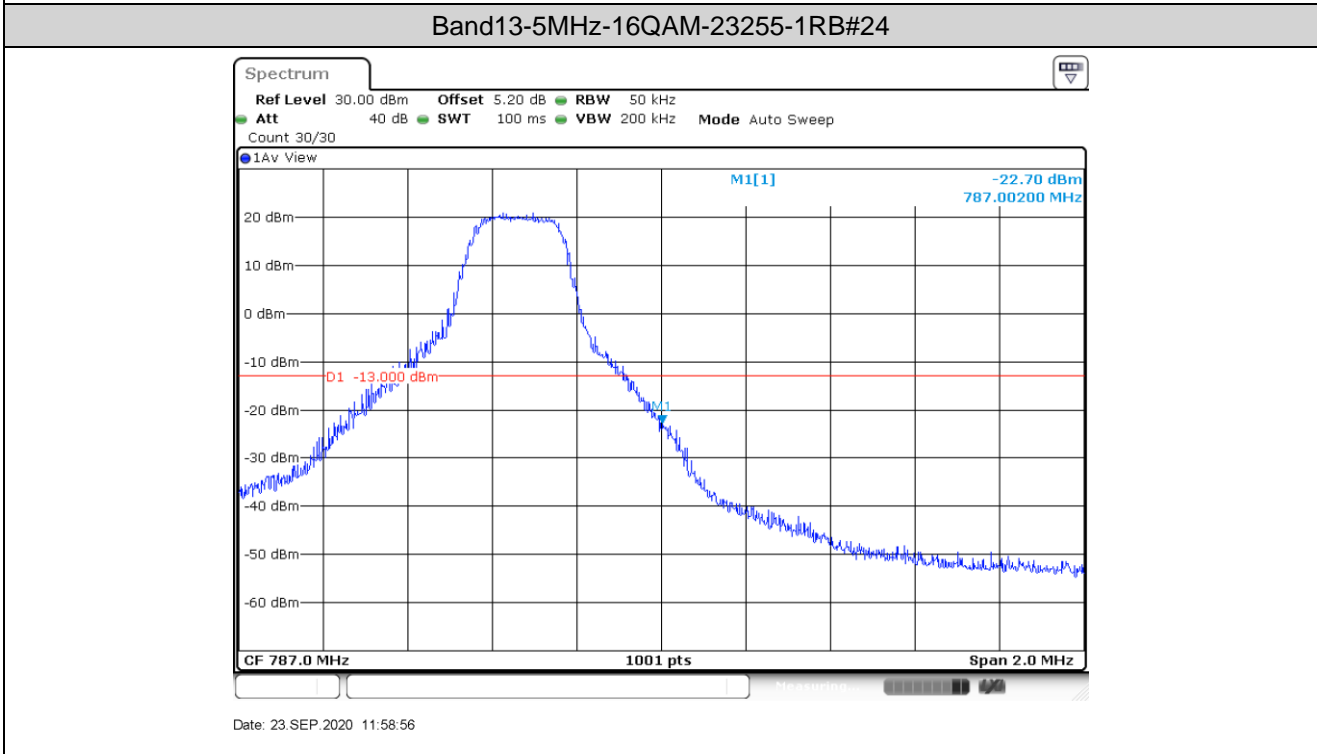
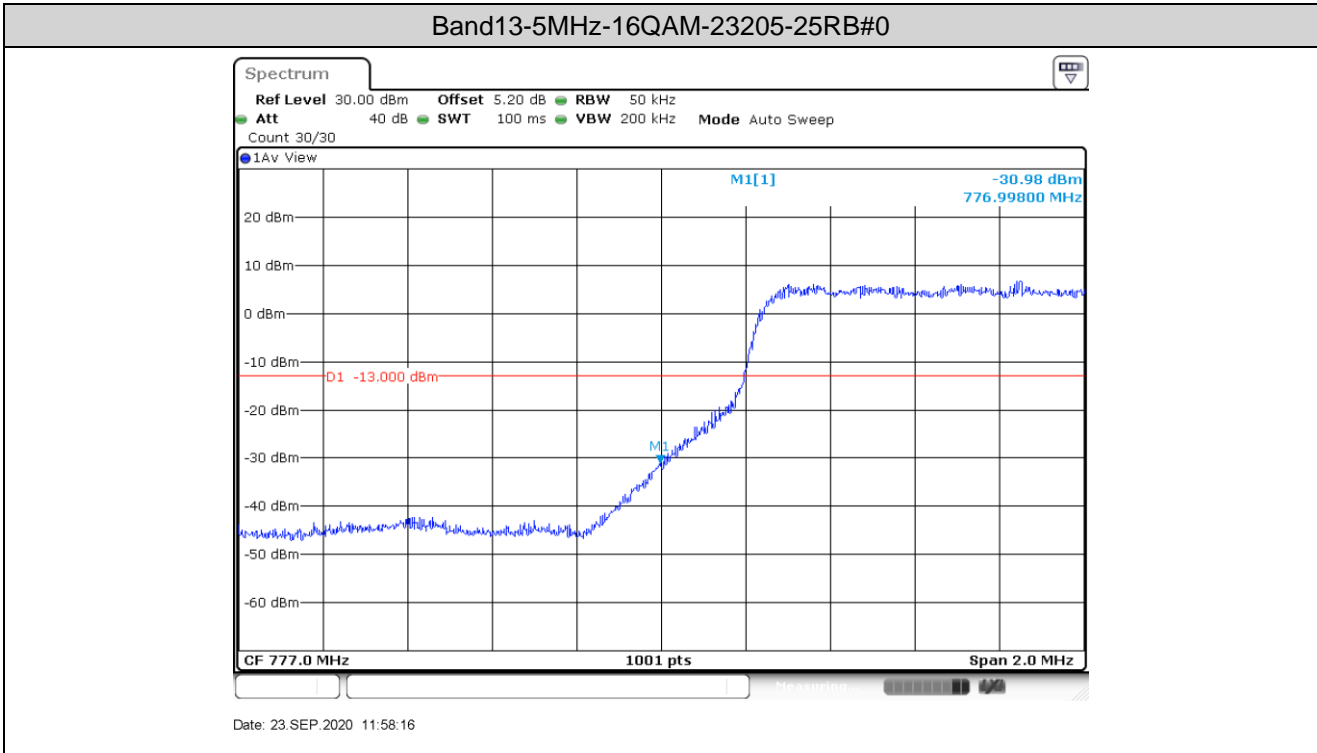


Date: 23.SEP.2020 11:57:42



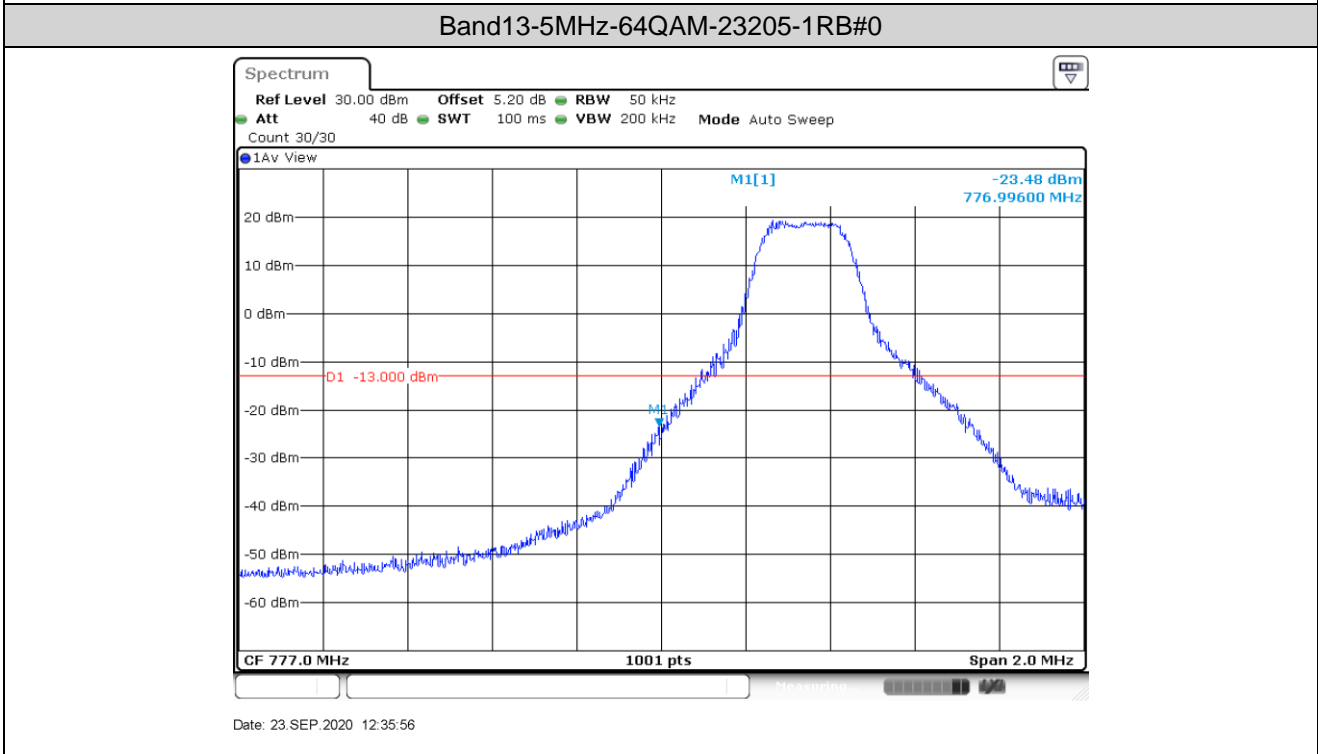
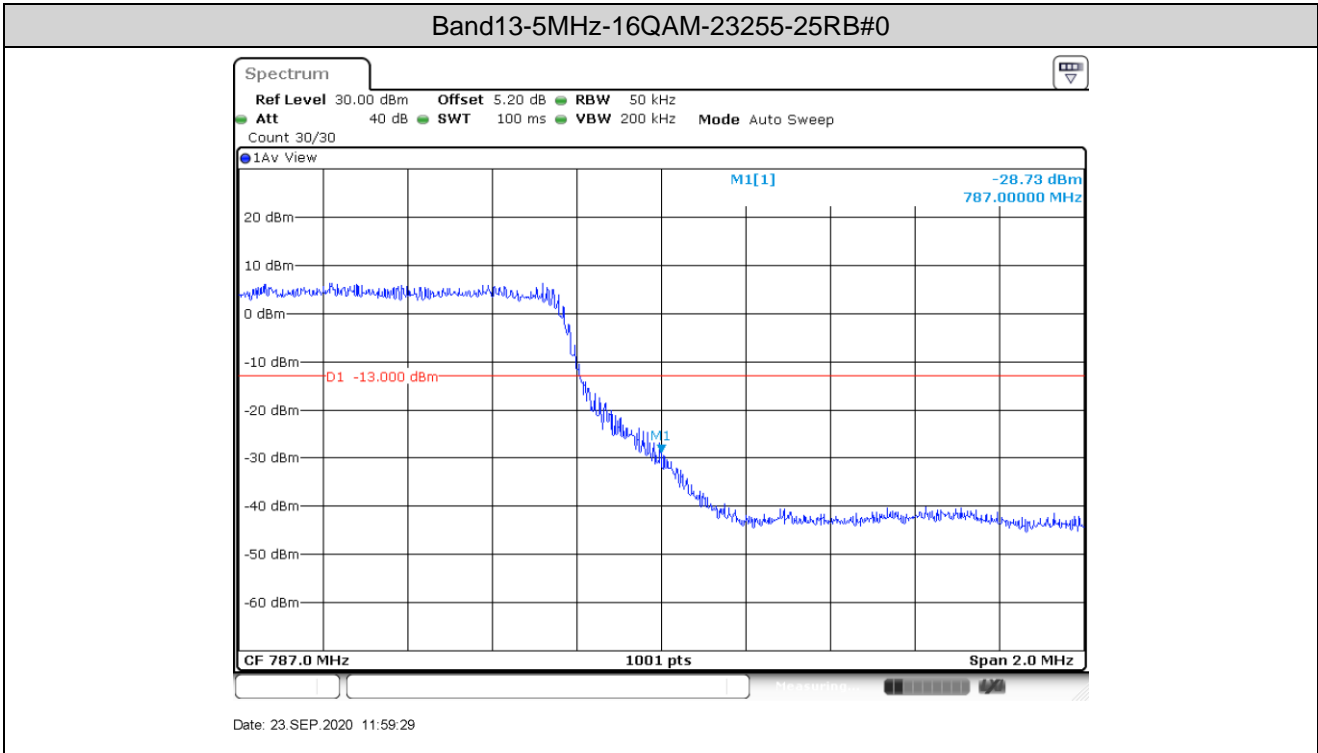
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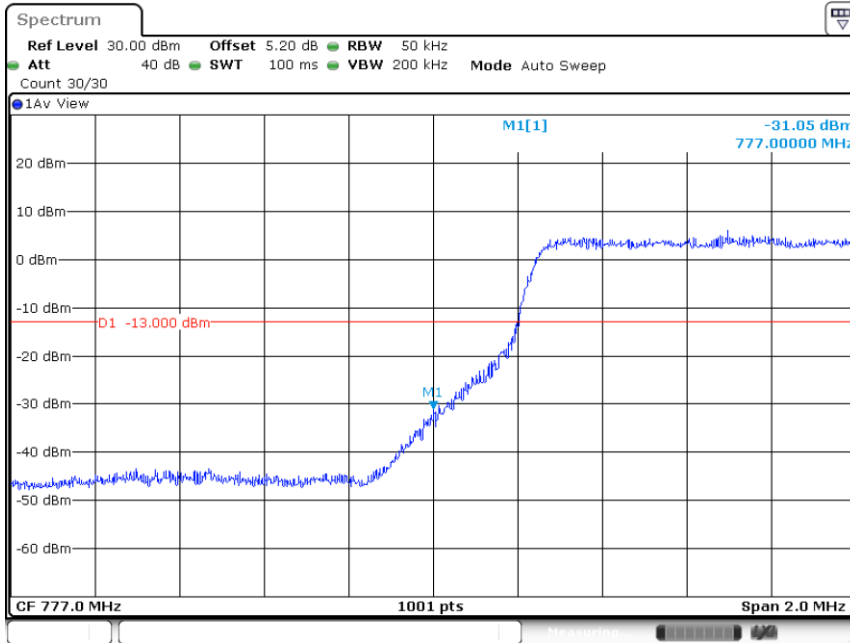


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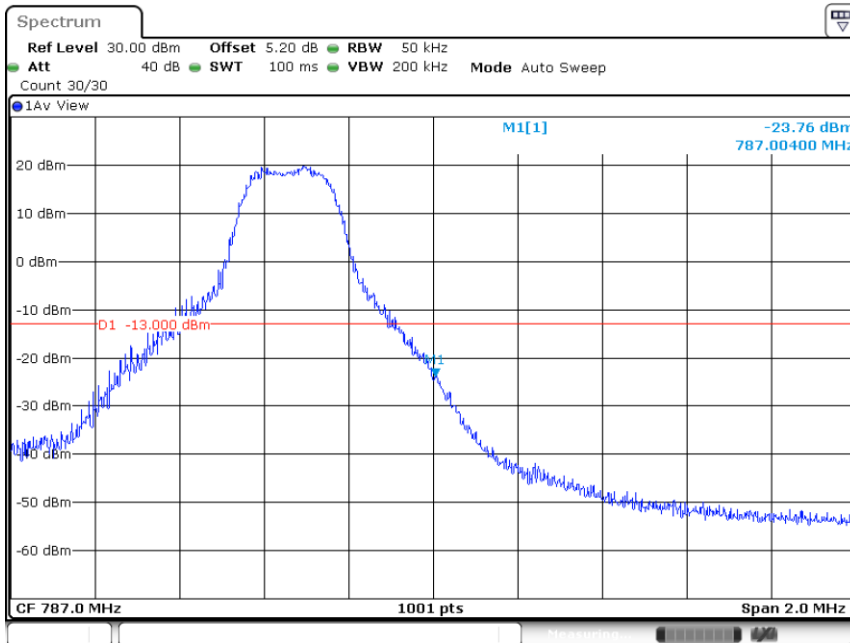
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 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

**Band13-5MHz-64QAM-23205-25RB#0**



Date: 23.SEP.2020 12:36:13

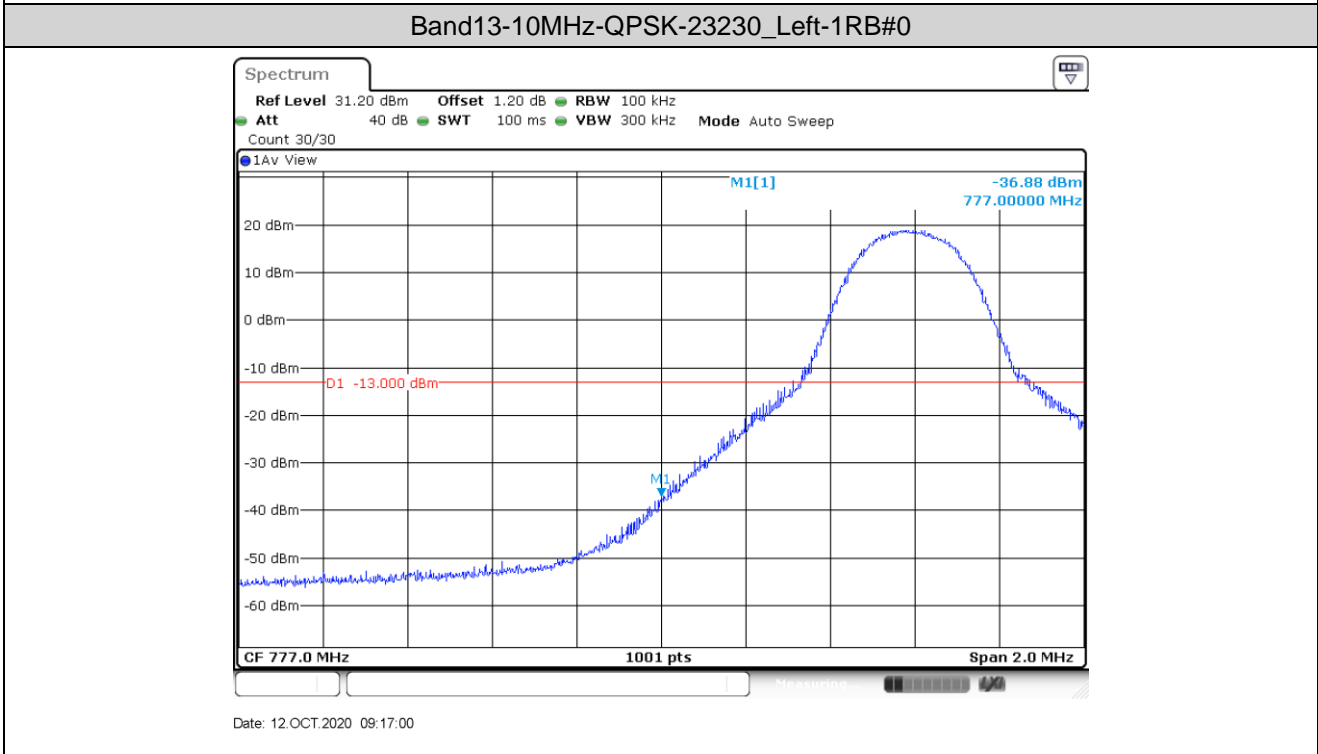
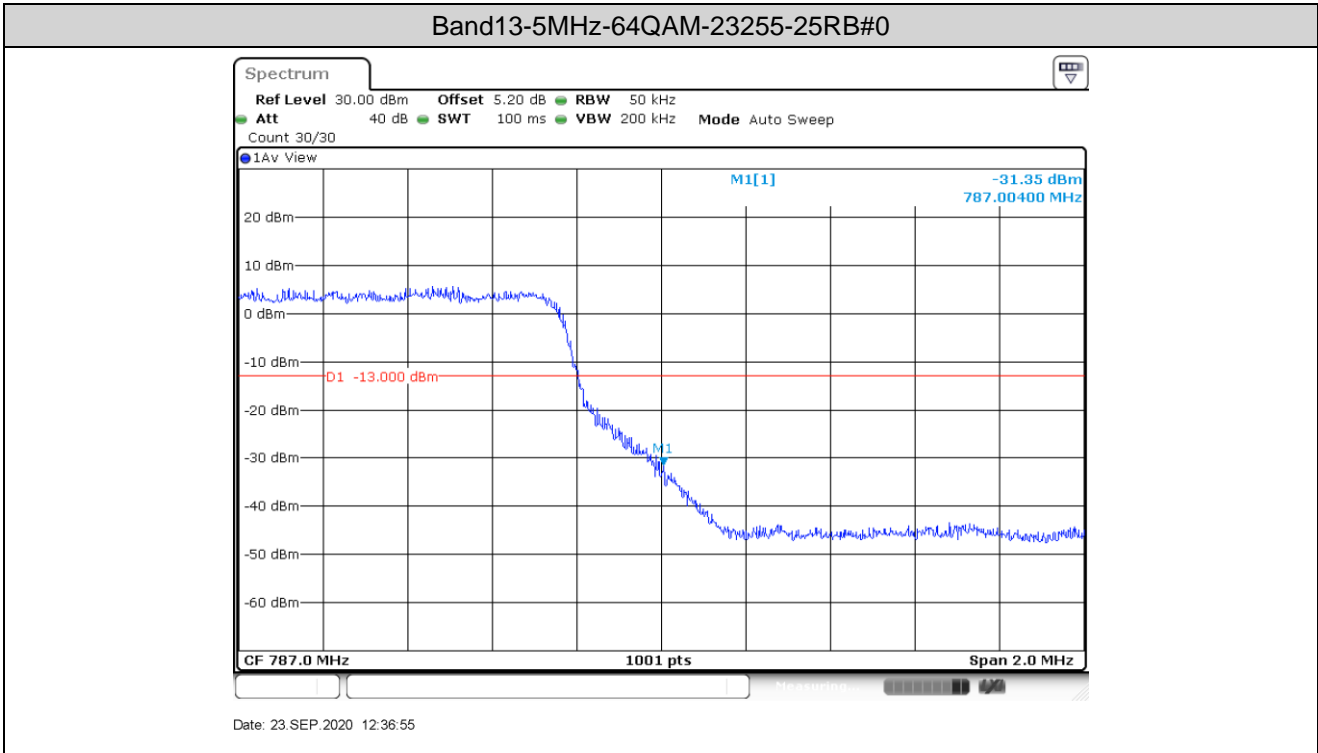
**Band13-5MHz-64QAM-23255-1RB#24**



Date: 23.SEP.2020 12:36:38



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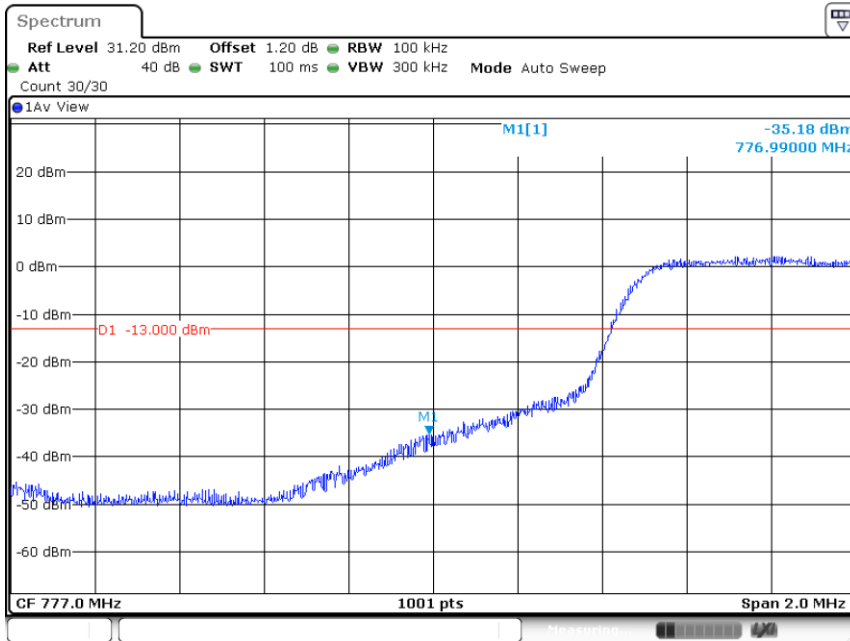


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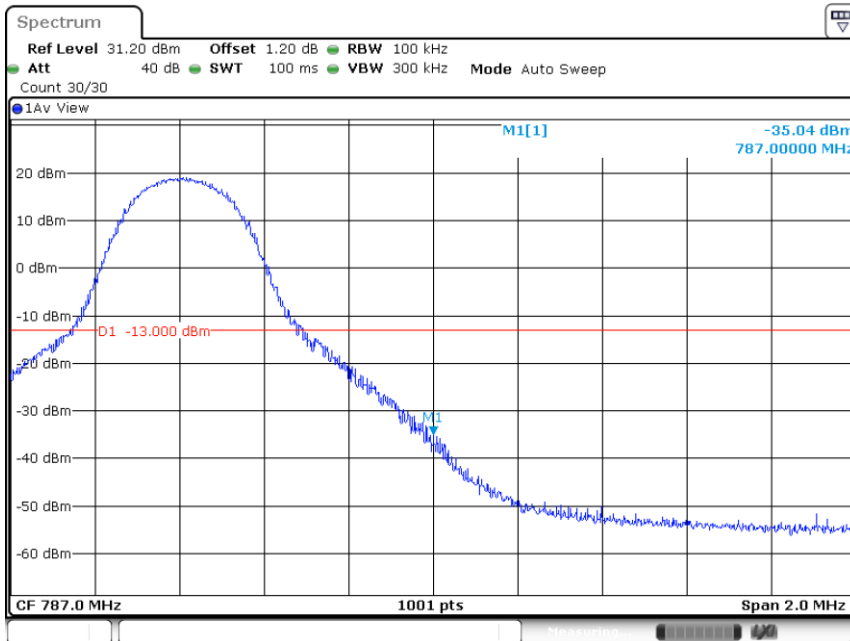


**Band13-10MHz-QPSK-23230\_Left-50RB#0**



Date: 12.OCT.2020 09:17:31

**Band13-10MHz-QPSK-23230\_Right-1RB#49**



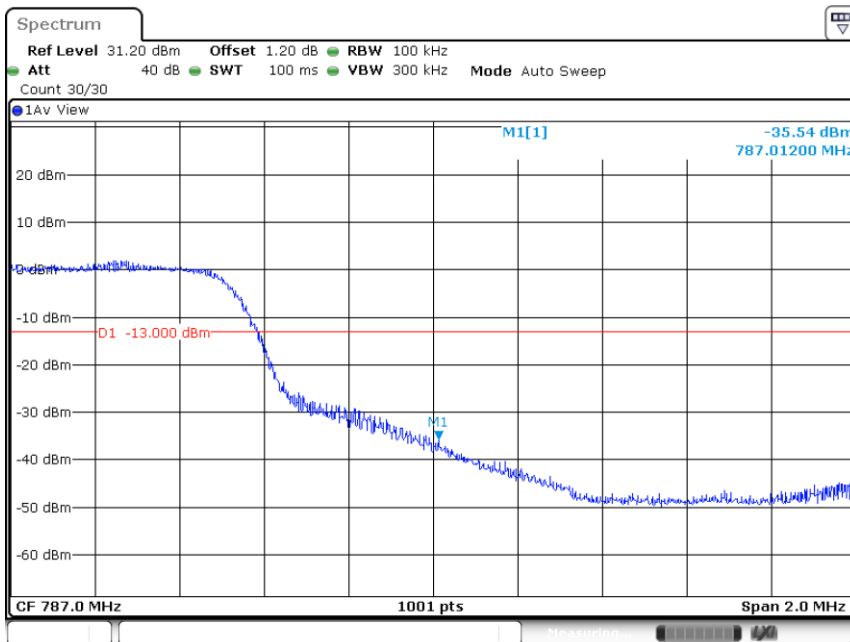
Date: 12.OCT.2020 09:18:06



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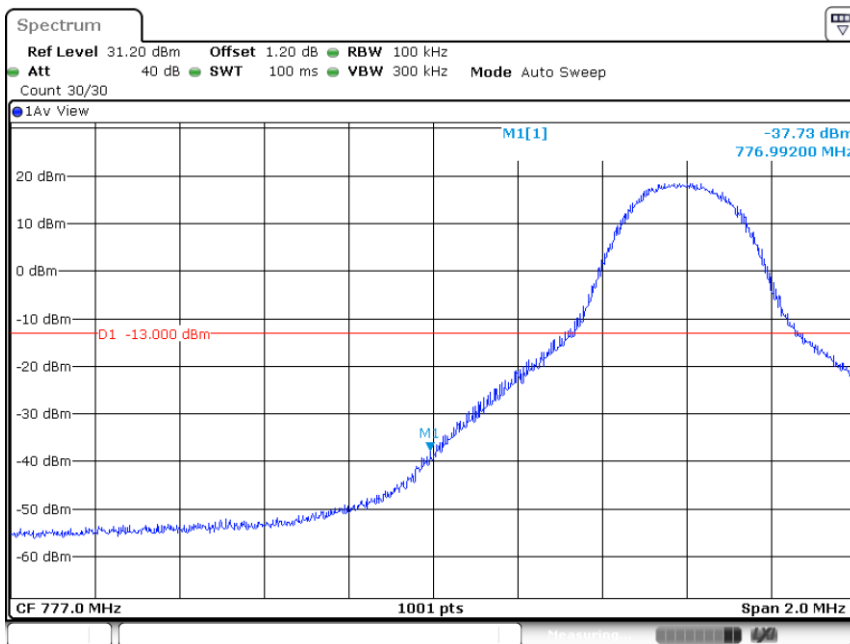
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**Band13-10MHz-QPSK-23230\_Right-50RB#0**



Date: 12.OCT.2020 09:18:37

**Band13-10MHz-16QAM-23230\_Left-1RB#0**

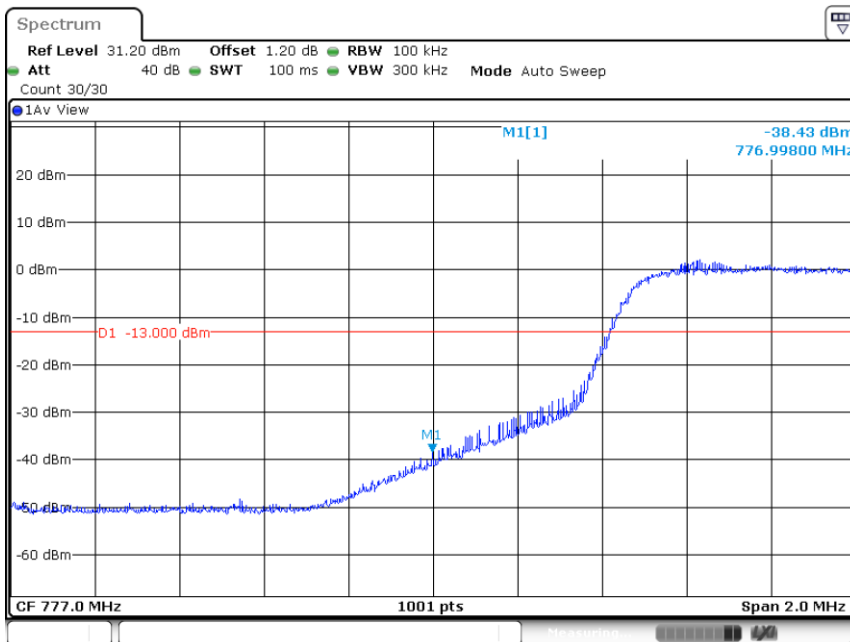


Date: 12.OCT.2020 09:17:15



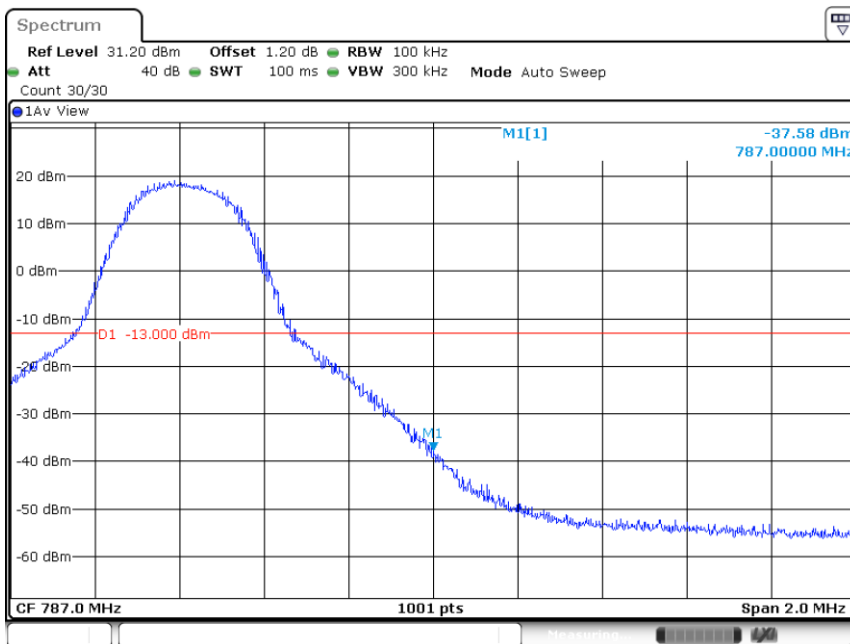
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**Band13-10MHz-16QAM-23230\_Left-50RB#0**



Date: 12.OCT.2020 09:17:46

**Band13-10MHz-16QAM-23230\_Right-1RB#49**

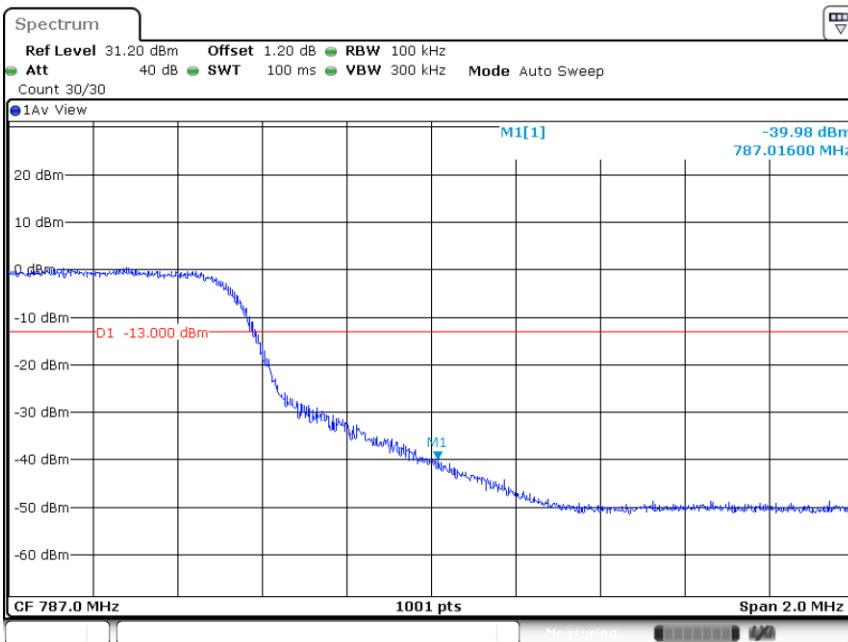


Date: 12.OCT.2020 09:18:21



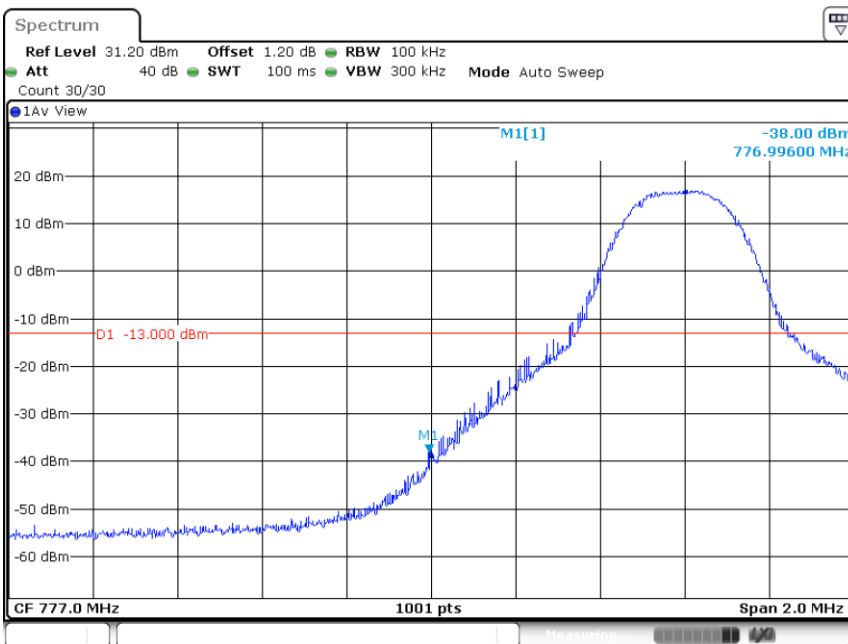
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**Band13-10MHz-16QAM-23230\_Right-50RB#0**



Date: 12.OCT.2020 09:18:52

**Band13-10MHz-64QAM-23230\_Left-1RB#0**



Date: 12.OCT.2020 09:19:12

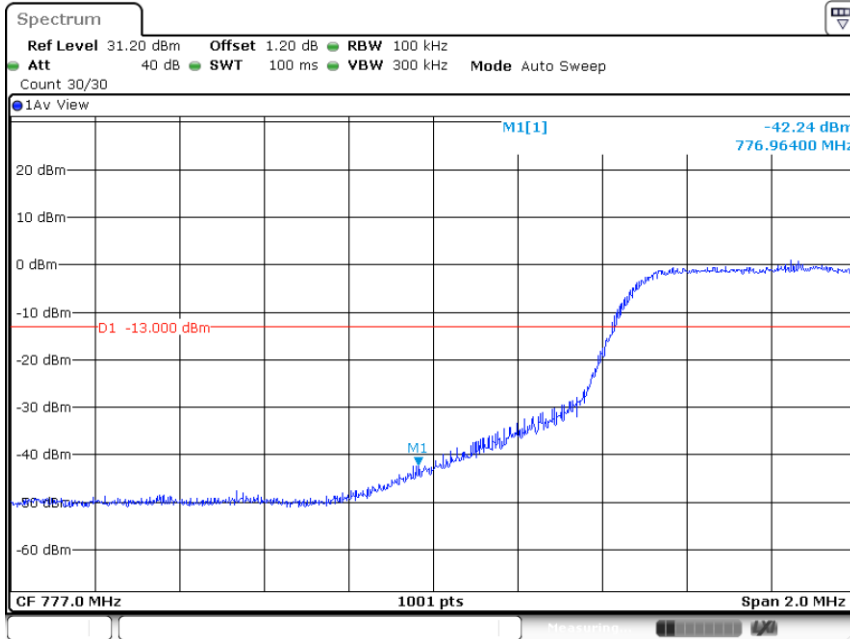


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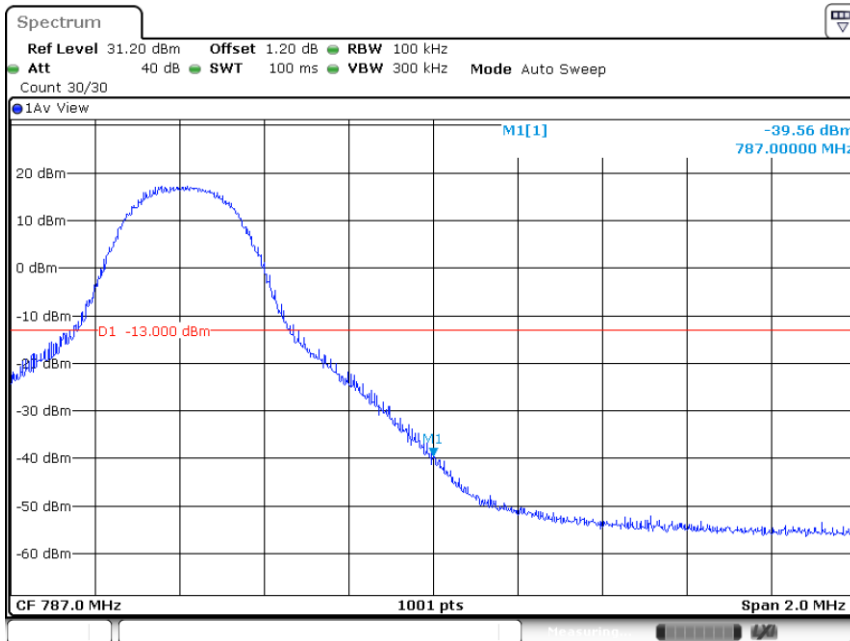


**Band13-10MHz-64QAM-23230\_Left-50RB#0**



Date: 12.OCT.2020 09:19:27

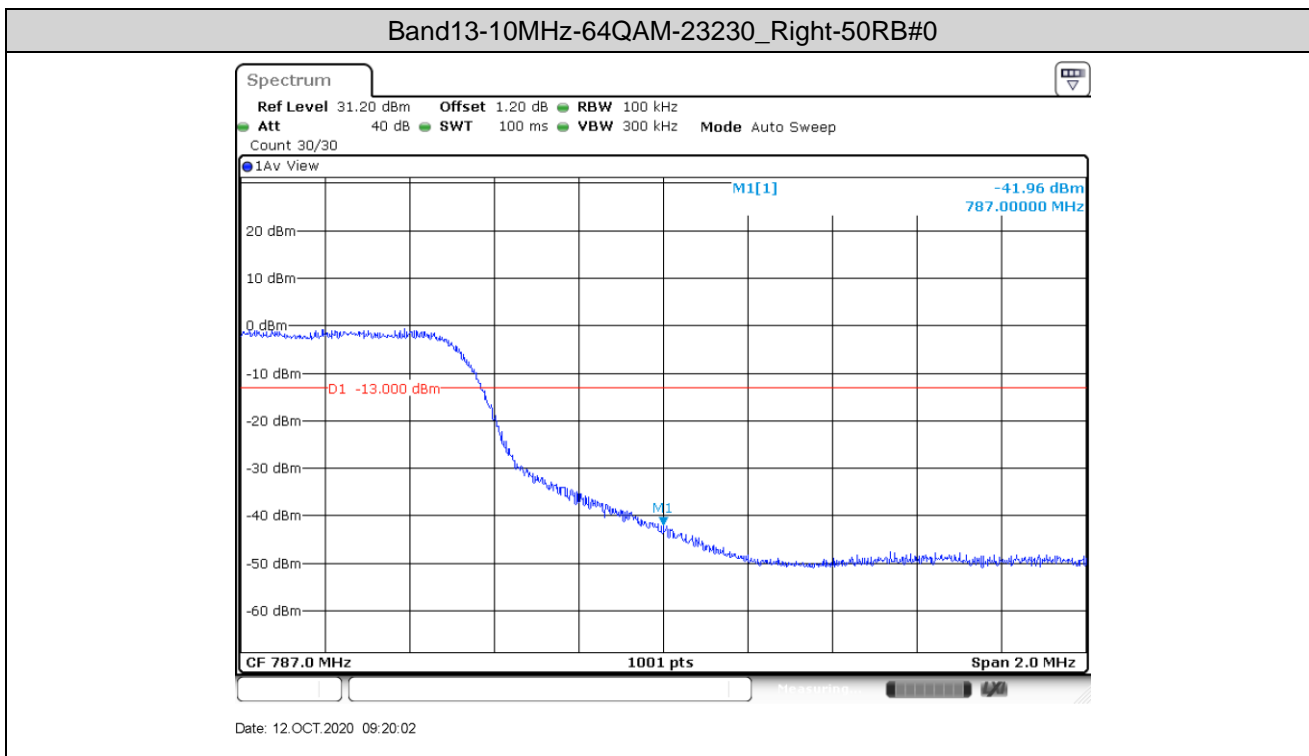
**Band13-10MHz-64QAM-23230\_Right-1RB#49**



Date: 12.OCT.2020 09:19:47



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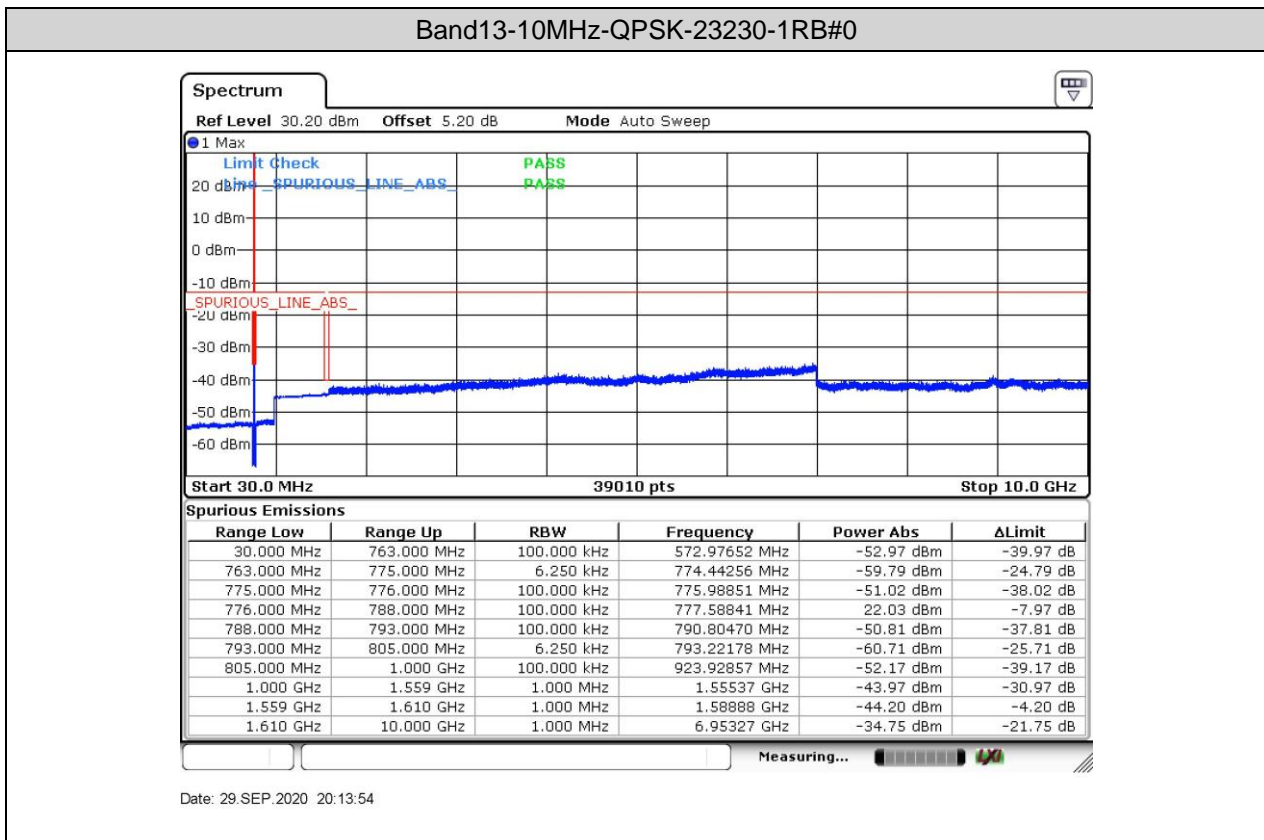
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## 6 Spurious Emission at Antenna Terminal

Remark1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of  $< RBW/2$  so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points =  $k * (Span / RBW)$ " with  $k$  between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

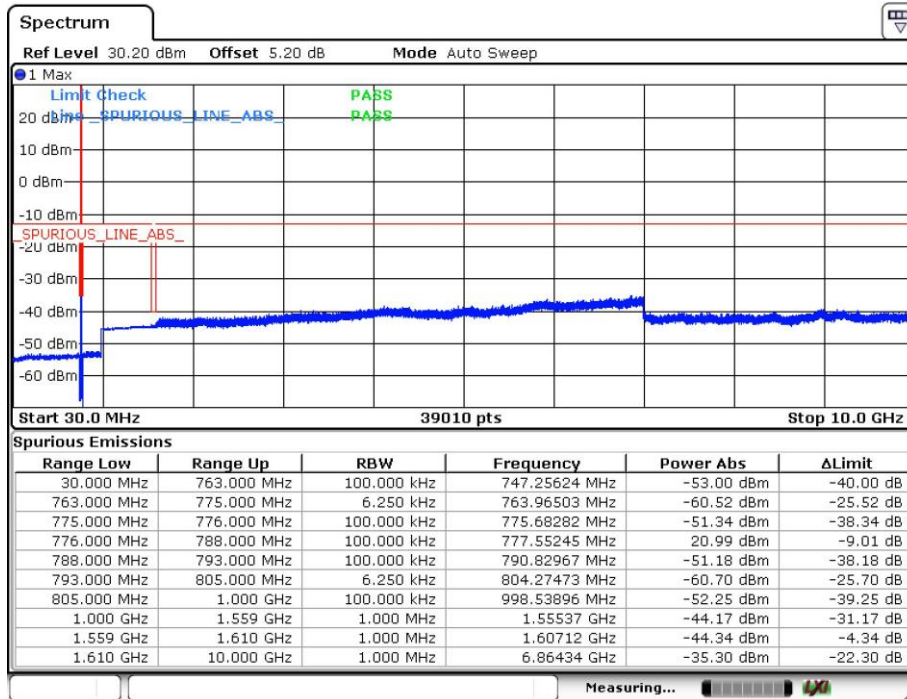
Remark2: only the worst case data displayed in this report.

### 6.1 Test Plots



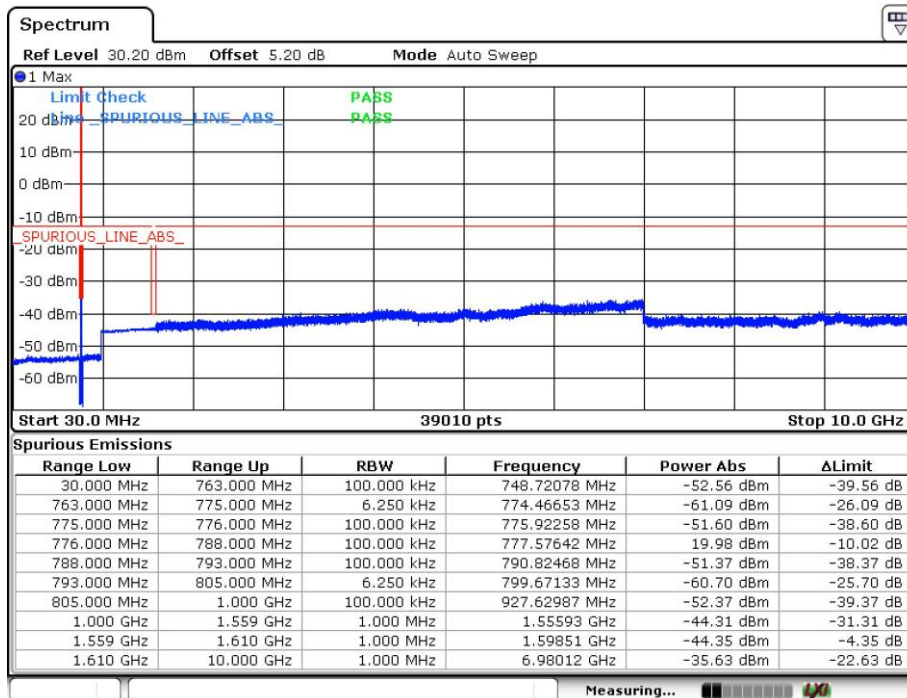
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**Band13-10MHz-16QAM-23230-1RB#0**



Date: 29.SEP.2020 20:12:27

**Band13-10MHz-64QAM-23230-1RB#0**



Date: 29.SEP.2020 20:11:44



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## 7 Field Strength of Spurious Radiation

### 7.1 Test Mode =LTE/TM1 10MHz

#### 7.1.1 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Height [cm]	Angle [°]	Polarization
47.920000	-73.71	-13.00	60.71	226	261	Vertical
125.013333	-84.78	-13.00	71.78	197	327	Vertical
456.279167	-71.47	-13.00	58.47	160	153	Vertical
1584.000000	-65.92	-40.00	25.92	199	276	Vertical
3887.737500	-55.77	-13.00	42.77	203	58	Vertical
4665.300000	-60.07	-13.00	47.07	152	13	Vertical
56.180000	-73.88	-13.00	60.88	295	329	Horizontal
184.980000	-82.58	-13.00	69.58	213	200	Horizontal
624.212500	-75.47	-13.00	62.47	251	222	Horizontal
1555.000000	-64.00	-13.00	51.00	234	27	Horizontal
3887.737500	-53.87	-13.00	40.87	185	245	Horizontal
4665.300000	-58.15	-13.00	45.15	284	151	Horizontal

**Remark:**

- 1 According to 971168 D01 Power Meas License Digital Systems, The amplitudes of unwanted emissions that are attenuated more than 20 dB below the applicable limit are not required to be reported.
- 2 The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the worst case data displayed in this report.
- 3 all modulation and all Bandwidth had been tested, but only the worst case data displayed in this report.



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## 8 Frequency Stability

### 8.1 Frequency Vs Voltage

Voltage										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	VL	NT	-5.70	-0.007289	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-6.70	-0.008568	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-1.70	-0.002174	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-3.20	-0.004092	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-5.60	-0.007161	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-7.80	-0.009974	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	VL	NT	-5.40	-0.006905	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	VN	NT	-4.80	-0.006138	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	VH	NT	-4.40	-0.005627	±2.5	PASS

### 8.2 Frequency Vs Temperature

Temperature										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	NV	-30	-0.30	-0.000384	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	-1.70	-0.002174	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-10	-2.80	-0.003581	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-3.80	-0.004859	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-4.60	-0.005882	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-5.10	-0.006522	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-4.80	-0.006138	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-6.10	-0.007801	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	0.90	0.001151	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-4.40	-0.005627	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-1.00	-0.001279	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-10	-2.90	-0.003708	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-5.40	-0.006905	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-3.60	-0.004604	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-1.70	-0.002174	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-0.30	-0.000384	±2.5	PASS



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Band13	10MHz	16QAM	23230	50RB#0	NV	40	-1.50	-0.001918	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-1.60	-0.002046	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	-30	-3.20	-0.004092	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	-20	-2.10	-0.002685	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	-10	0.30	0.000384	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	0	1.30	0.001662	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	10	-6.40	-0.008184	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	20	-5.30	-0.006777	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	30	-3.40	-0.004348	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	40	-1.70	-0.002174	±2.5	PASS
Band13	10MHz	64QAM	23230	50RB#0	NV	50	0.60	0.000767	±2.5	PASS

The End



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