



# Appendix B

## E-UTRA Band 13



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# 1 Effective (Isotropic) Radiated Power

## 1.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Conducted Power(dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#12	22.94	19.03	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	22.84	18.93	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#0	22.85	18.94	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	21.94	18.03	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	21.94	18.03	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	21.94	18.03	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	21.95	18.04	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	22.79	18.88	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	22.94	19.03	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	22.87	18.96	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	21.85	17.94	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	21.85	17.94	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	21.90	17.99	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	21.88	17.97	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	22.77	18.86	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	22.77	18.86	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	22.90	18.99	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	21.90	17.99	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	21.86	17.95	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	21.83	17.92	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	21.83	17.92	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	22.17	18.26	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	21.99	18.08	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	22.02	18.11	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	20.97	17.06	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	20.95	17.04	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	20.95	17.04	34.77	PASS
Band13	5MHz	16QAM	23205	25RB#0	20.90	16.99	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	21.87	17.96	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	21.91	18.00	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	21.84	17.93	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#0	20.86	16.95	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#6	20.82	16.91	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	20.87	16.96	34.77	PASS
Band13	5MHz	16QAM	23230	25RB#0	20.93	17.02	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#0	21.76	17.85	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	21.85	17.94	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	21.77	17.86	34.77	PASS



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Band13	5MHz	16QAM	23255	12RB#13	20.82	16.91	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	20.79	16.88	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	20.77	16.86	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	20.82	16.91	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	22.88	18.97	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	22.96	19.05	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	22.85	18.94	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	21.94	18.03	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	21.93	18.02	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	21.95	18.04	34.77	PASS
Band13	10MHz	QPSK	23230	50RB#0	21.93	18.02	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	22.03	18.12	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	21.96	18.05	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	22.12	18.21	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	20.93	17.02	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	20.97	17.06	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	20.95	17.04	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	20.92	17.01	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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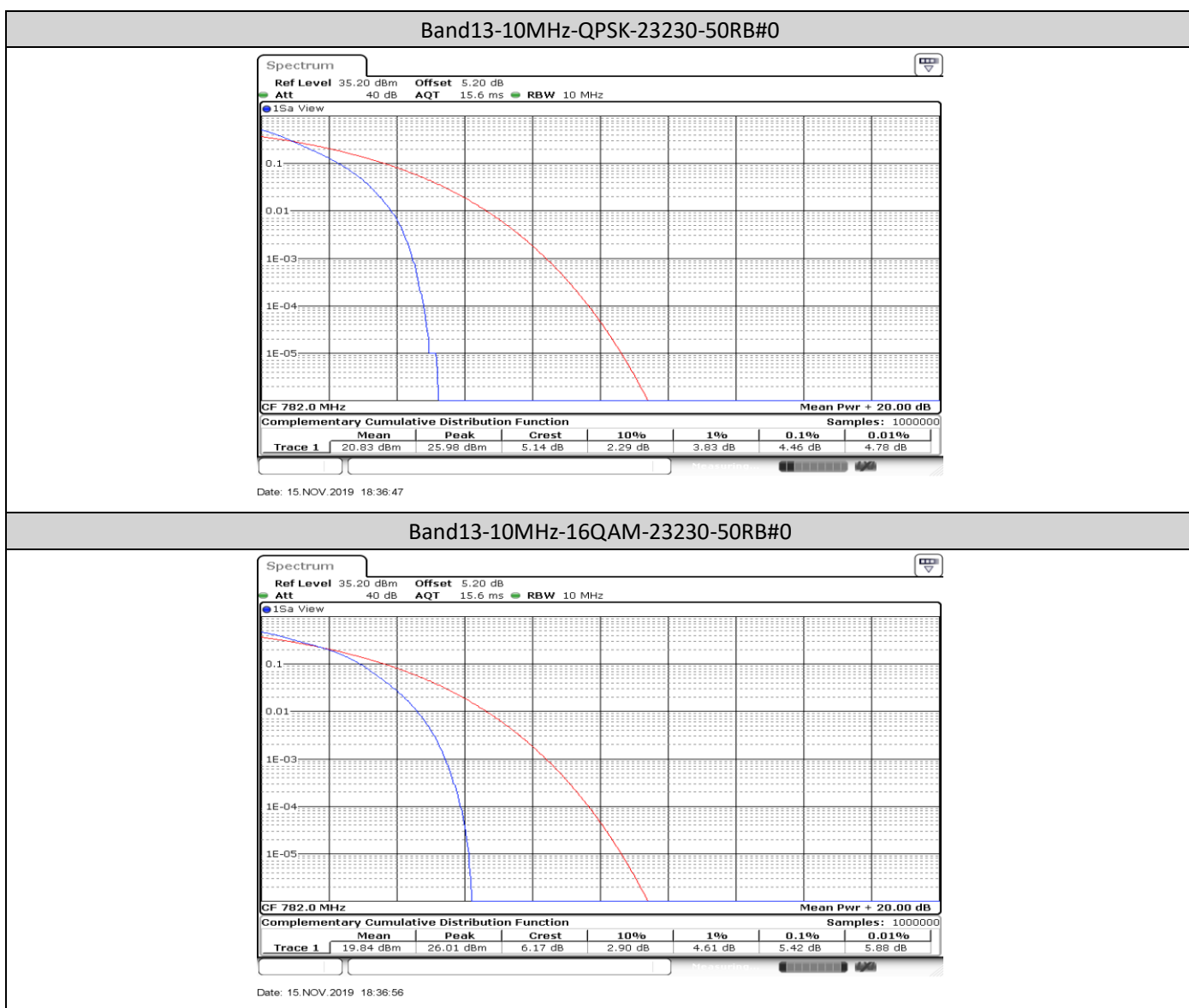


## 2. Peak-to-Average Ratio (CCDF)

### 2.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	4.46	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.42	13	PASS

### 2.2. Test Plots



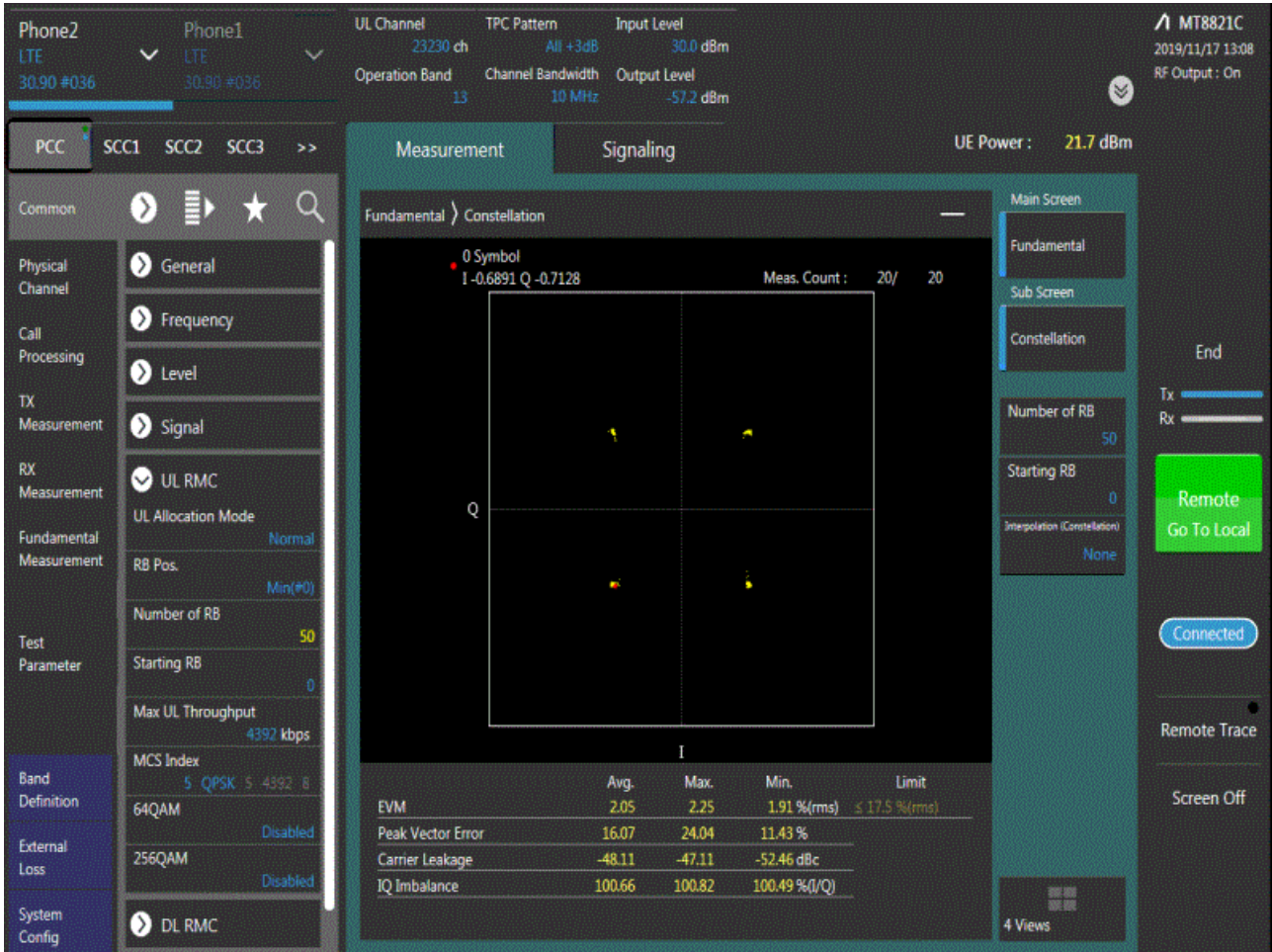
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### 3. Modulation Characteristics

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

##### 3.1.1. Test Channel = MCH



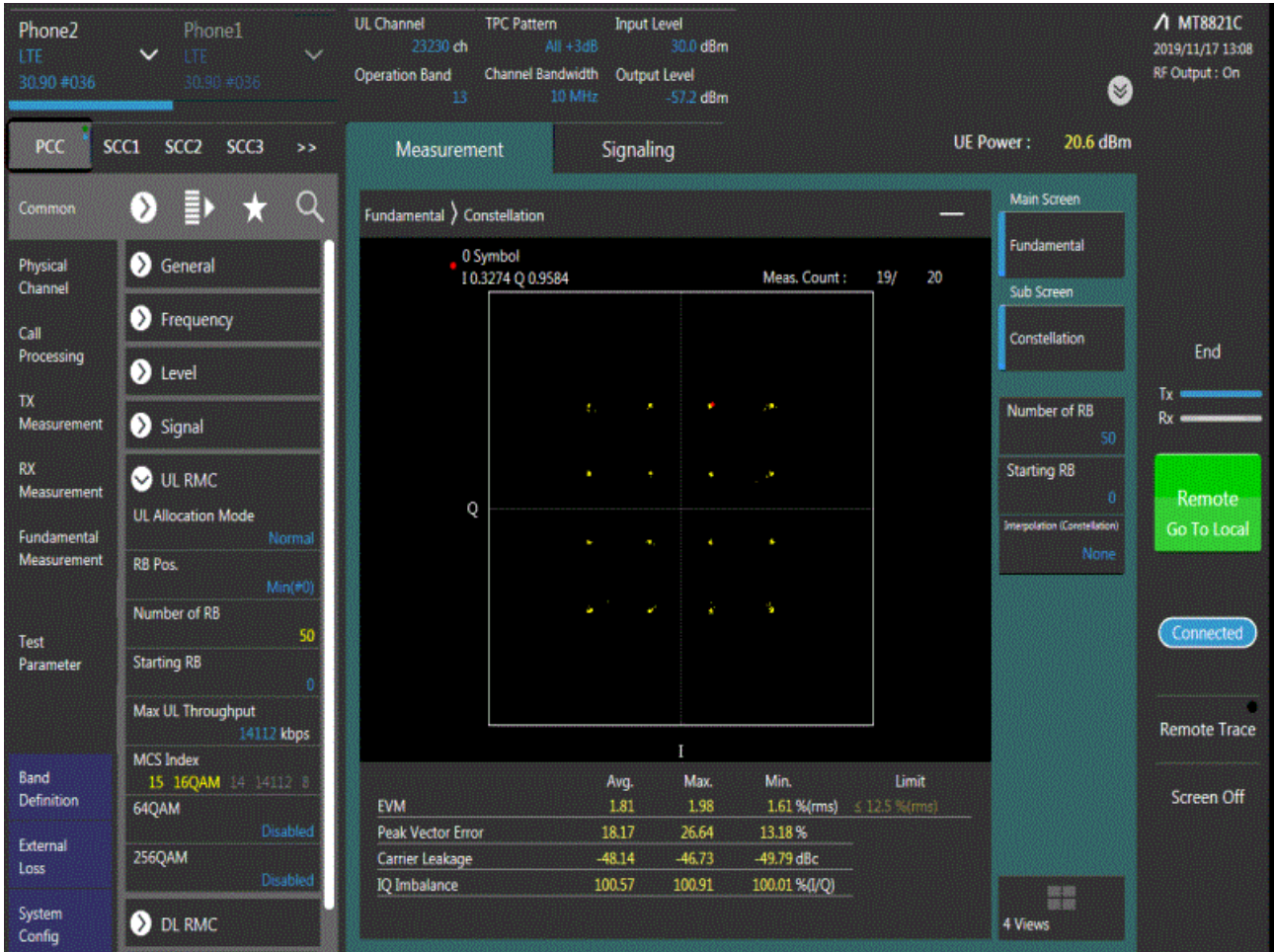
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### 3.2. Test Mode = LTE /TM2 10MHz

#### 3.2.1. Test Channel = MCH



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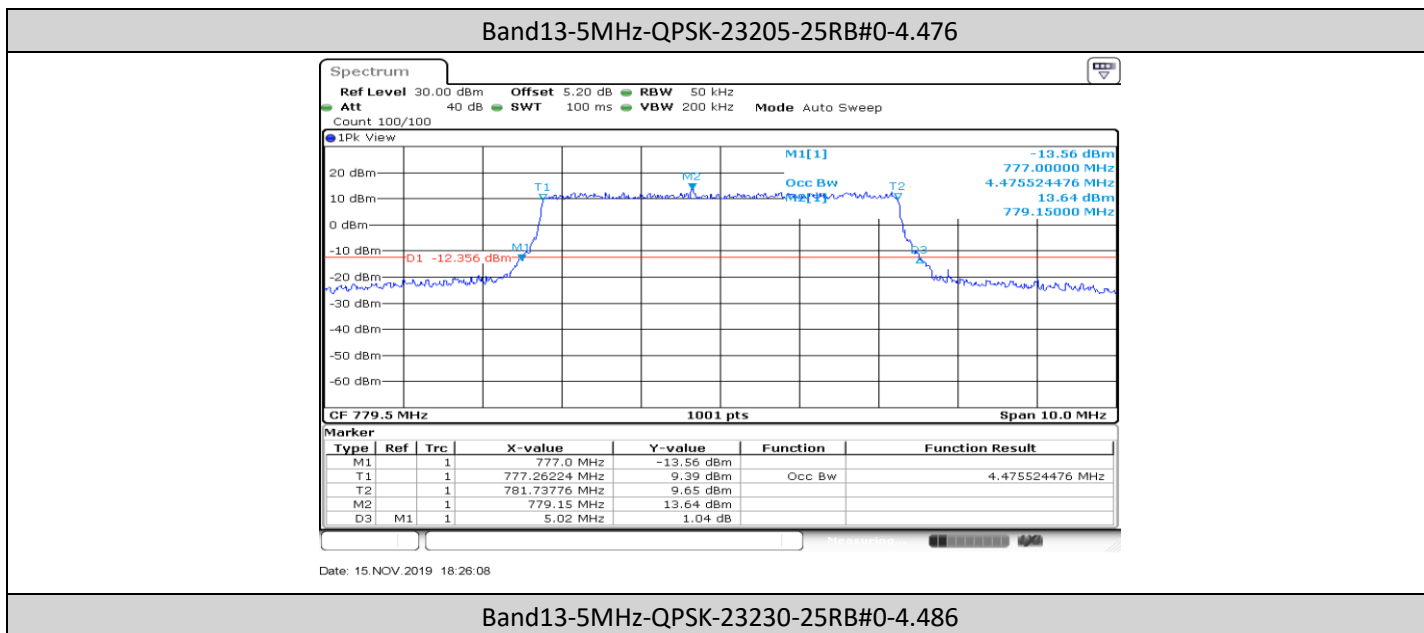


## 4. 26dB Bandwidth and Occupied Bandwidth

### 4.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.476	5.020	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.486	5.100	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.496	5.090	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	5.090	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.486	5.060	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.476	5.000	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.951	9.980	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.971	9.860	PASS

### 4.2. Test Plots

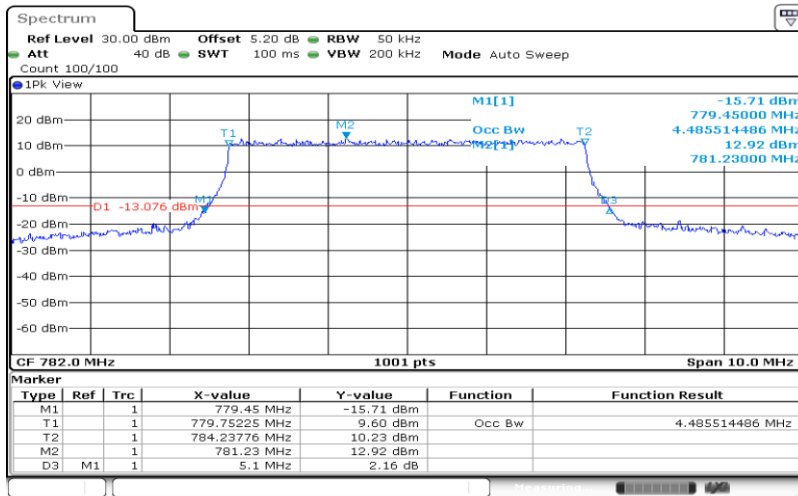


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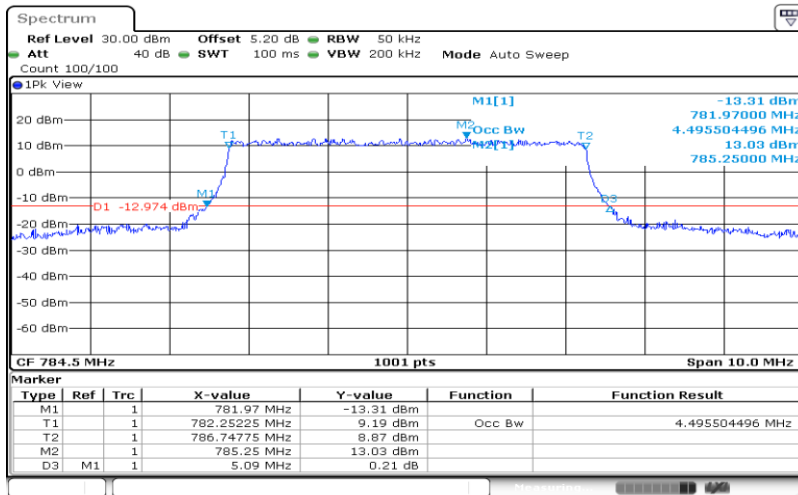
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Date: 15.NOV.2019 18:26:44

**Band13-5MHz-QPSK-23255-25RB#0-4.496**

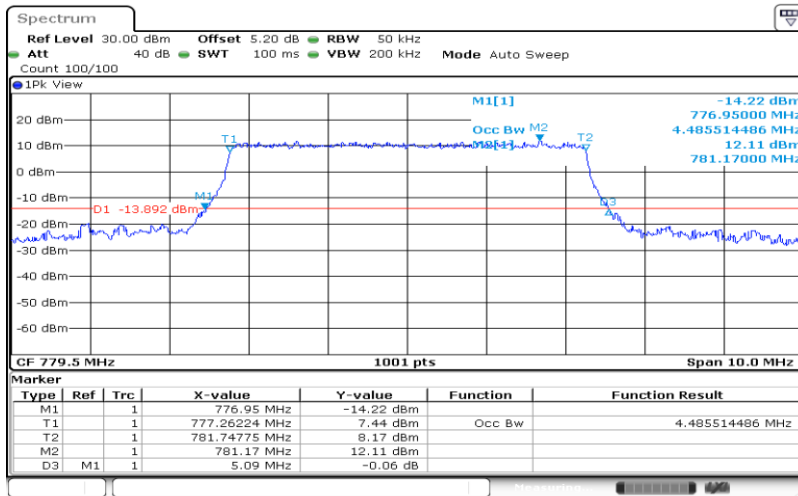


Date: 15.NOV.2019 18:27:20

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

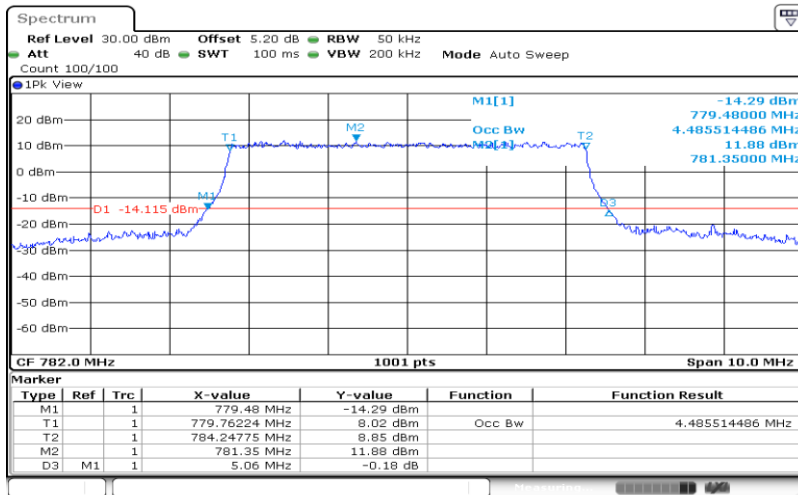


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Date: 15.NOV.2019 18:26:25

**Band13-5MHz-16QAM-23230-25RB#0-4.486**

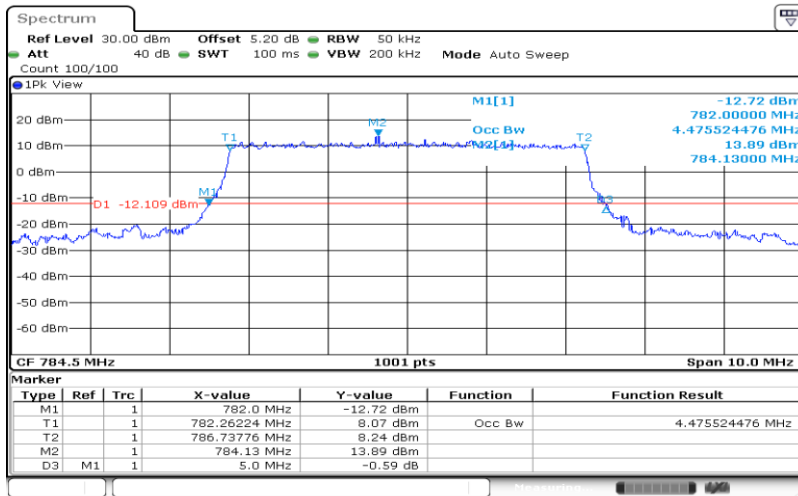


Date: 15.NOV.2019 18:27:01

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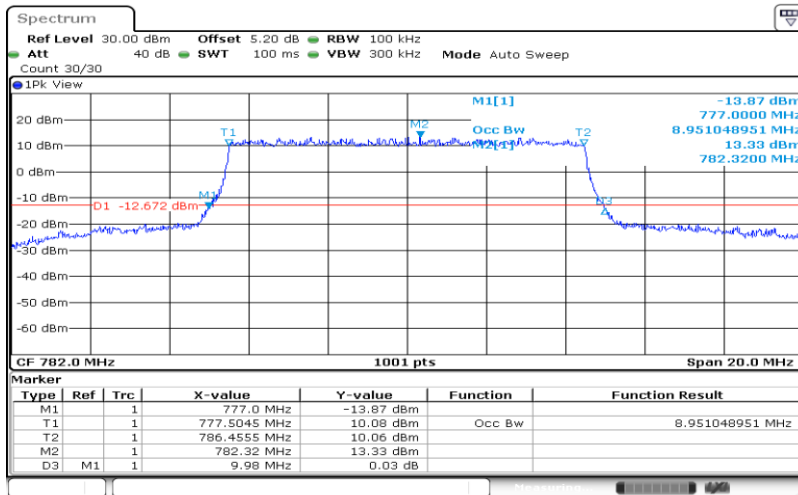


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**Band13-10MHz-QPSK-23230-50RB#0-8.951**

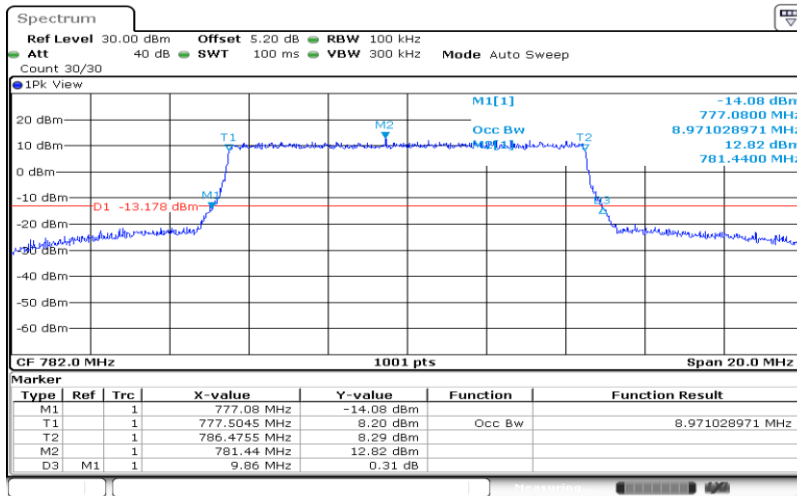


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**Band13-10MHz-16QAM-23230-50RB#0-8.971**



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Date: 15.NOV.2019 18:29:21

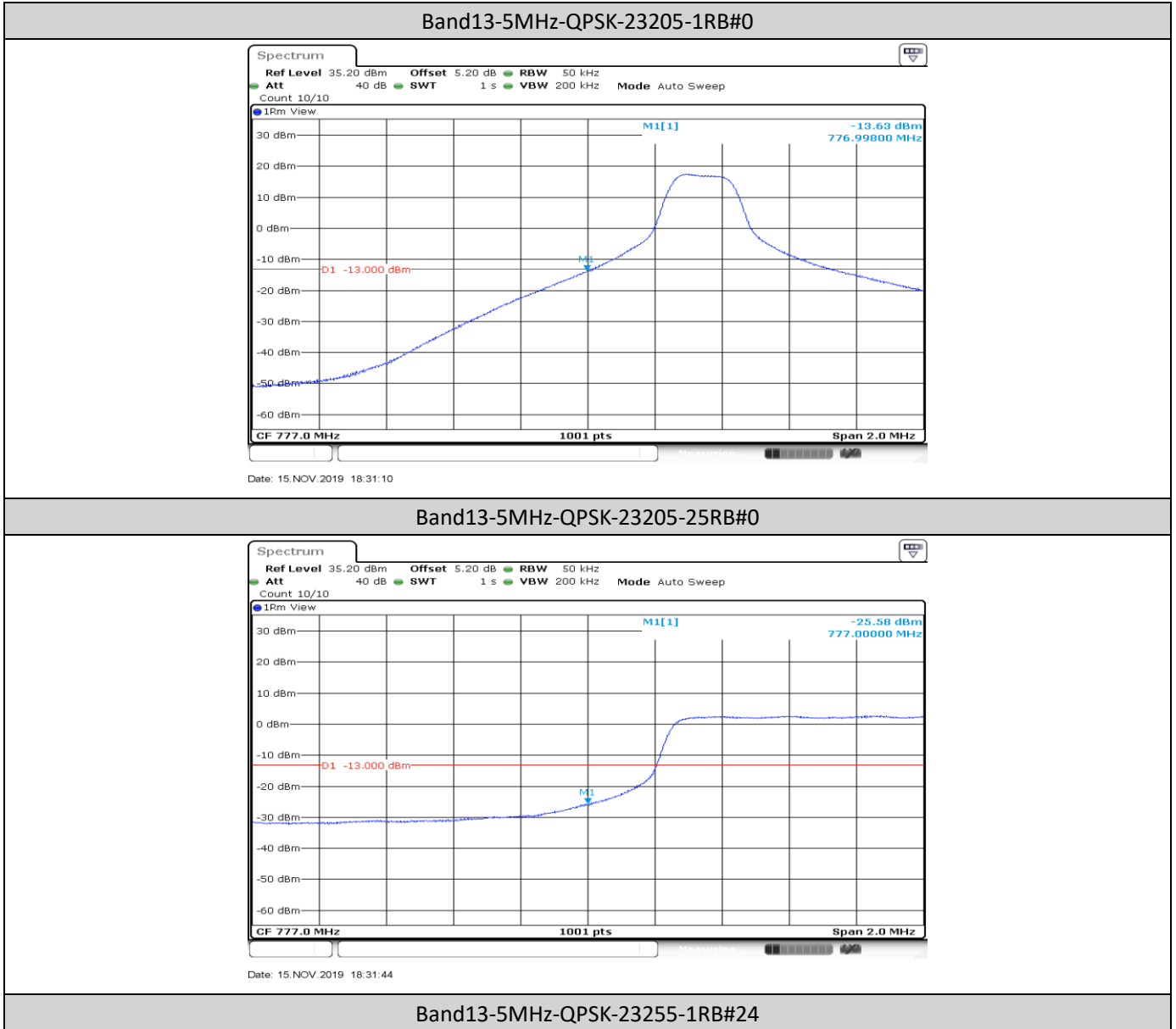


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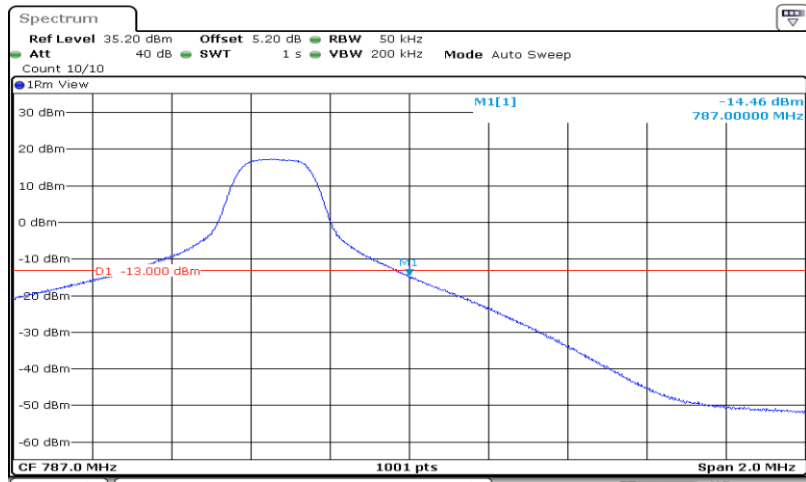
## 5. Band Edge Compliance

### 5.1. Test Plots



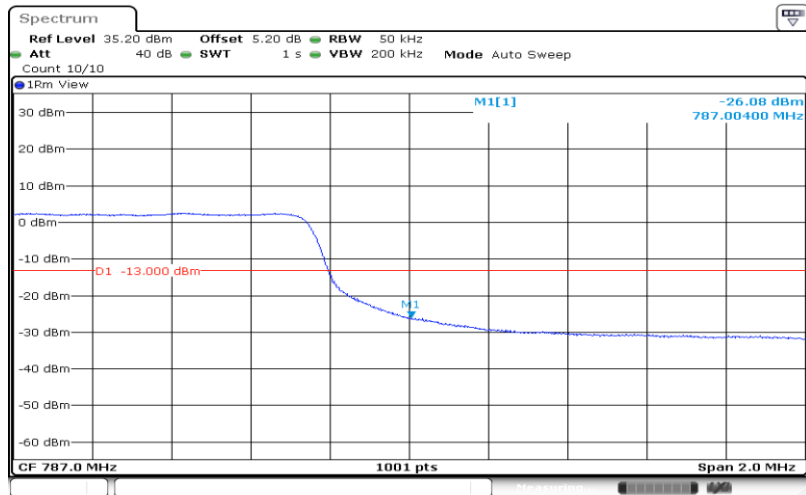
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Date: 15.NOV.2019 18:32:28

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

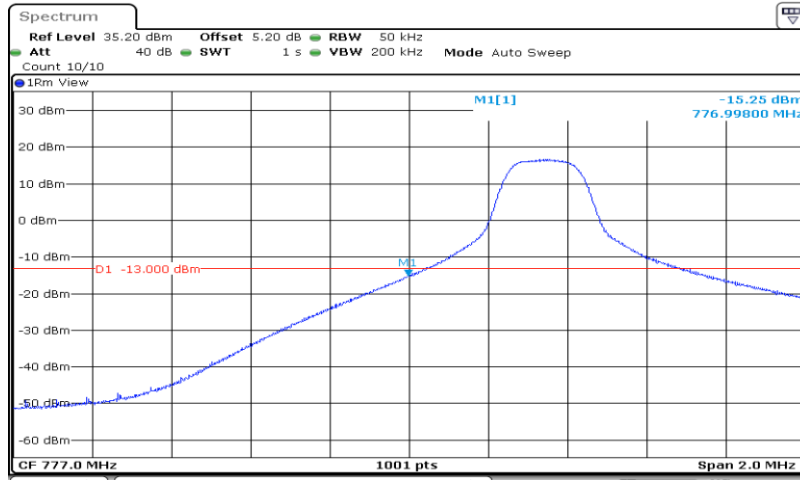


Date: 15.NOV.2019 18:33:02

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

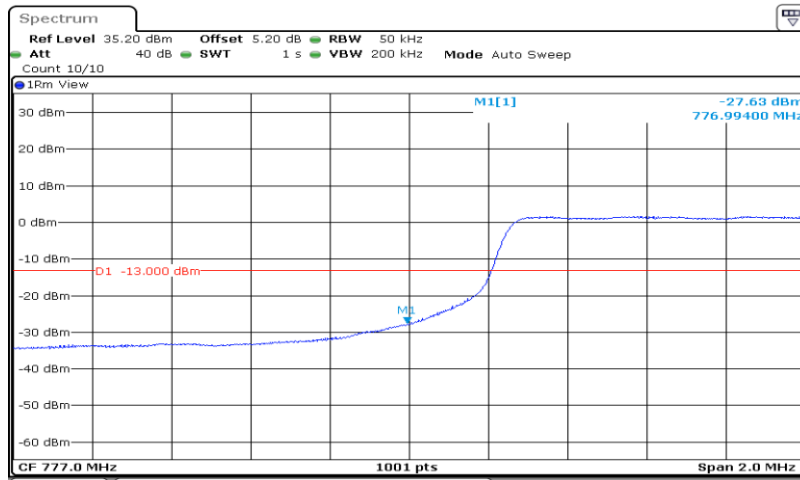


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Date: 15.NOV.2019 18:31:27

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

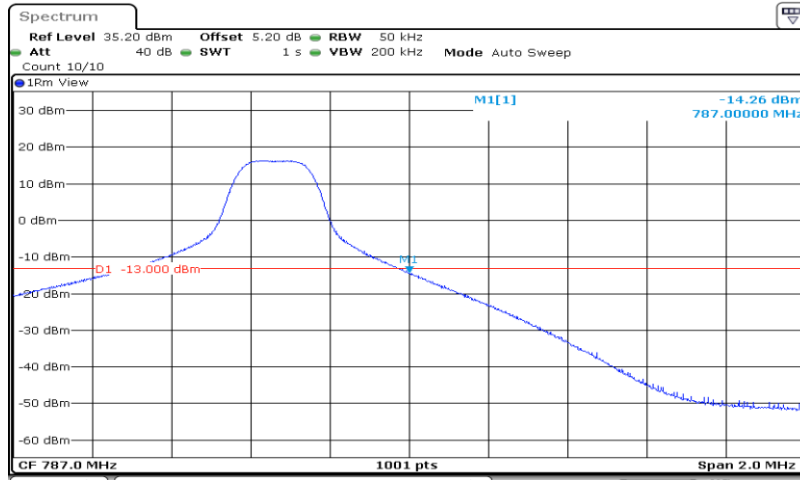


Date: 15.NOV.2019 18:32:01

**Band13-5MHz-16QAM-23255-1RB#24**

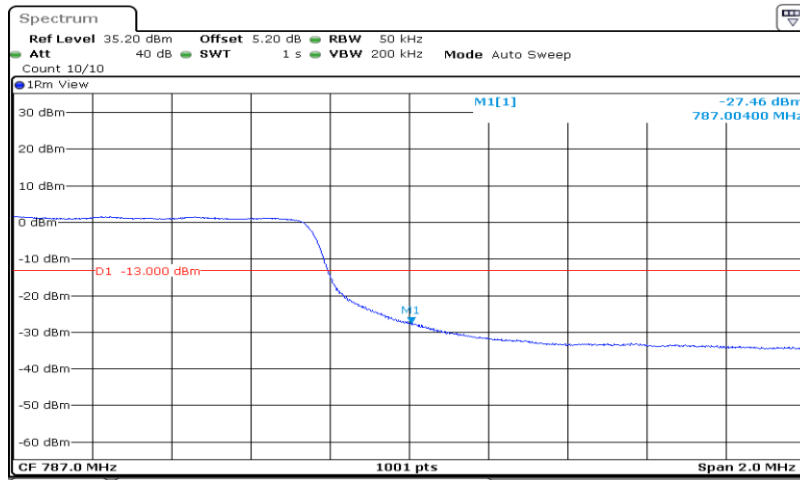


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Date: 15.NOV.2019 18:32:45

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



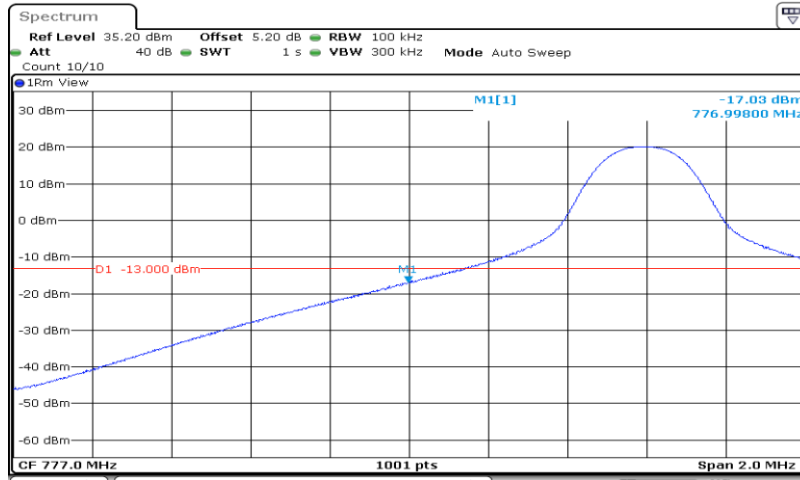
Date: 15.NOV.2019 18:33:19

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



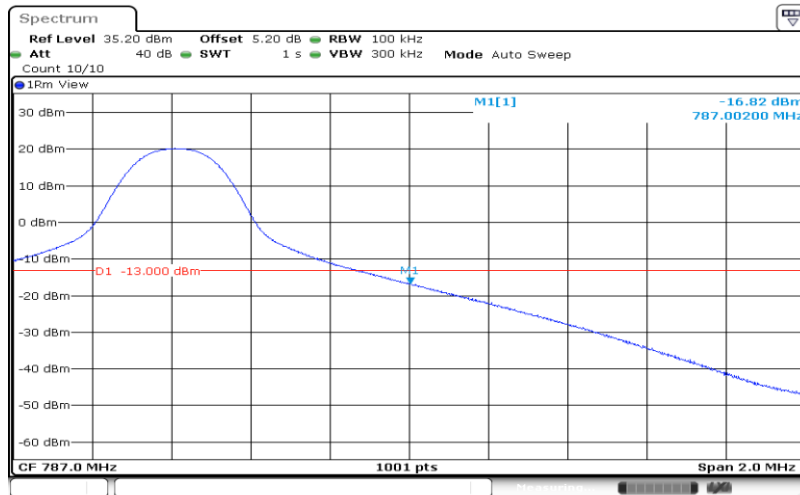
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Date: 15.NOV.2019 18:35:06

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

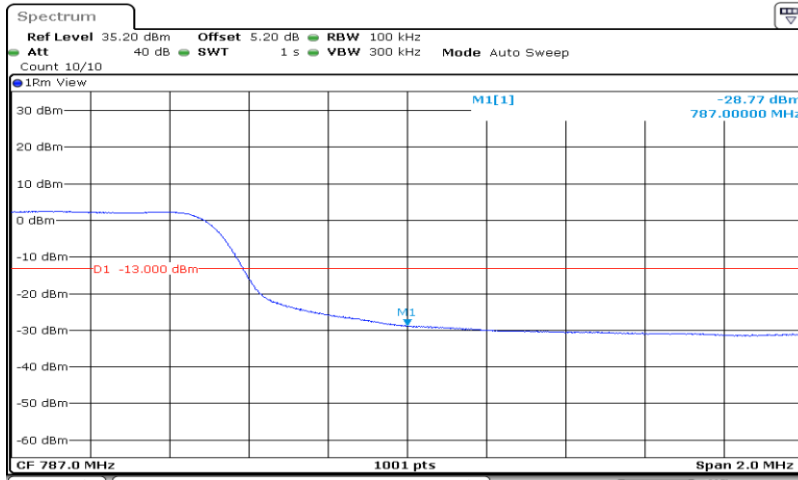


Date: 15.NOV.2019 18:35:47

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

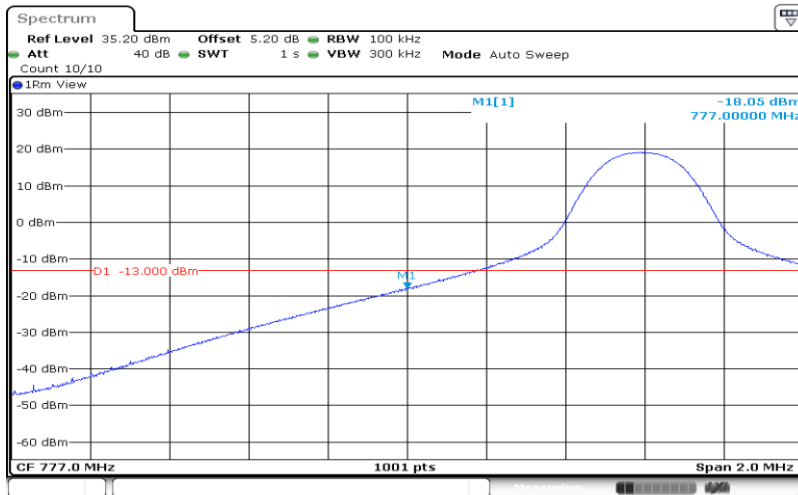


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Date: 15.NOV.2019 18:36:21

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

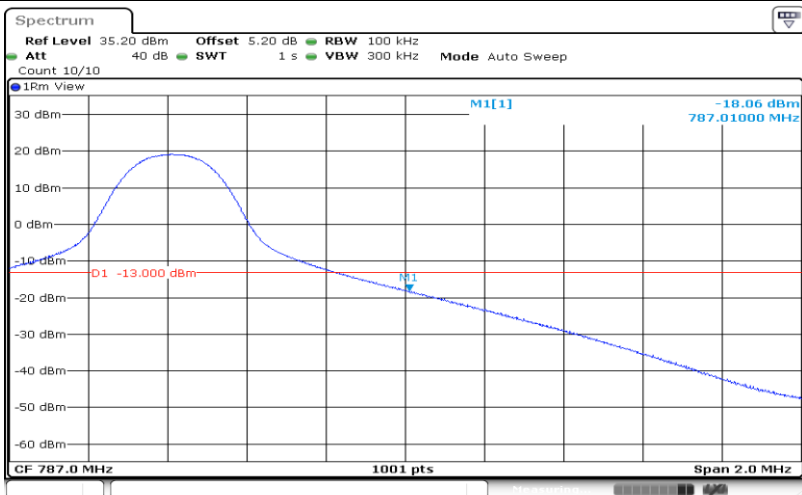


Date: 15.NOV.2019 18:35:23

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

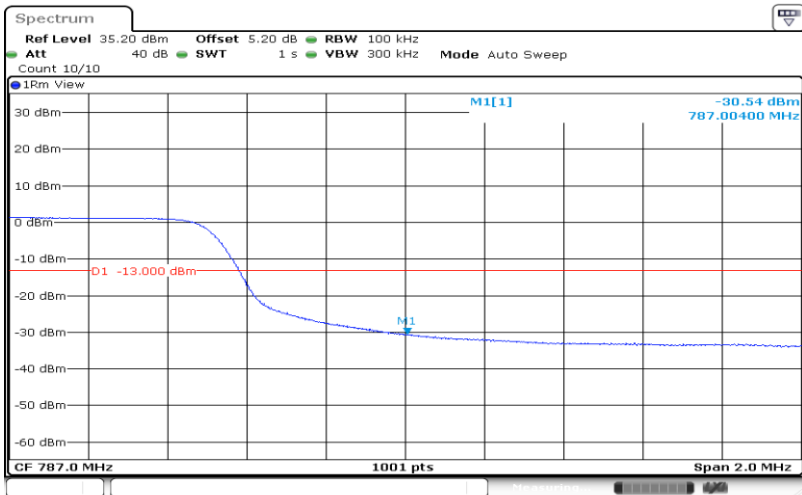


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Date: 15.NOV.2019 18:36:04

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



Date: 15.NOV.2019 18:36:39



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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 =  $k * (\text{Span} / RBW)$ " 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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## 7. Field Strength of Spurious Radiation

### 7.1. Test Mode =LTE/TM1

#### 7.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
111.7751	-64.77	-13.00	51.77	Vertical
1559.9110	-49.73	-40.00	9.73	Vertical
3110.4044	-42.20	-13.00	29.20	Vertical
4665.6666	-51.46	-13.00	38.46	Vertical
10676.1070	-46.94	-13.00	33.94	Vertical
17996.3999	-34.73	-13.00	21.73	Vertical
42.3681	-63.76	-13.00	50.76	Horizontal
226.8713	-68.46	-13.00	55.46	Horizontal
1605.3111	-48.62	-40.00	8.62	Horizontal
3109.8044	-39.91	-13.00	26.91	Horizontal
9293.6517	-48.70	-13.00	35.70	Horizontal
16400.3360	-38.63	-13.00	25.63	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

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	-8.71	-0.011138	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-15.62	-0.019974	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-10.80	-0.013811	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-13.73	-0.017558	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-13.66	-0.017468	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-15.34	-0.019616	±2.5	PASS

### 8.2. Frequency Vs 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	-12.00	-0.015345	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	-12.36	-0.015806	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-8.28	-0.010588	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-13.72	-0.017545	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-11.33	-0.014488	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-9.10	-0.011637	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-10.97	-0.014028	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-9.14	-0.011688	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-10.99	-0.014054	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-11.13	-0.014233	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-13.33	-0.017046	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-13.18	-0.016854	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-10.64	-0.013606	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-9.67	-0.012366	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-9.54	-0.012199	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-12.27	-0.015691	±2.5	PASS



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