



# 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	Result (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	24.17	20.92	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#12	23.99	20.74	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	24.00	20.75	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	23.14	19.89	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	23.06	19.81	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	23.07	19.82	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	23.01	19.76	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	24.00	20.75	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	24.16	20.91	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	24.08	20.83	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	23.32	20.07	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	23.41	20.16	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	23.24	19.99	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	23.30	20.05	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	23.97	20.72	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	24.03	20.78	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	24.26	21.01	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	23.29	20.04	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	23.31	20.06	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	23.21	19.96	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	23.24	19.99	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	22.72	19.47	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	22.18	18.93	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	22.34	19.09	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	22.21	18.96	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	22.06	18.81	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	22.07	18.82	34.77	PASS
Band13	5MHz	16QAM	23205	25RB#0	22.13	18.88	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	22.59	19.34	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	23.20	19.95	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	22.71	19.46	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#0	22.20	18.95	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#6	22.33	19.08	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	22.37	19.12	34.77	PASS
Band13	5MHz	16QAM	23230	25RB#0	22.38	19.13	34.77	PASS

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Band13	5MHz	16QAM	23255	1RB#0	22.30	19.05	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	23.34	20.09	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.68	19.43	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	21.94	18.69	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	22.10	18.85	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#13	22.17	18.92	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	21.86	18.61	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	23.84	20.59	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	24.09	20.84	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	24.09	20.84	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	23.19	19.94	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	23.27	20.02	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	23.14	19.89	34.77	PASS
Band13	10MHz	QPSK	23230	50RB#0	23.21	19.96	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	22.53	19.28	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	22.59	19.34	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	22.75	19.50	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	22.23	18.98	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	22.38	19.13	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	22.1	18.85	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	22.28	19.03	34.77	PASS

Remark:

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

$$ERP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBd]$$

$$EIRP [dBm] = SGP [dBm] - Cable Loss [dB] + Gain [dBi]$$

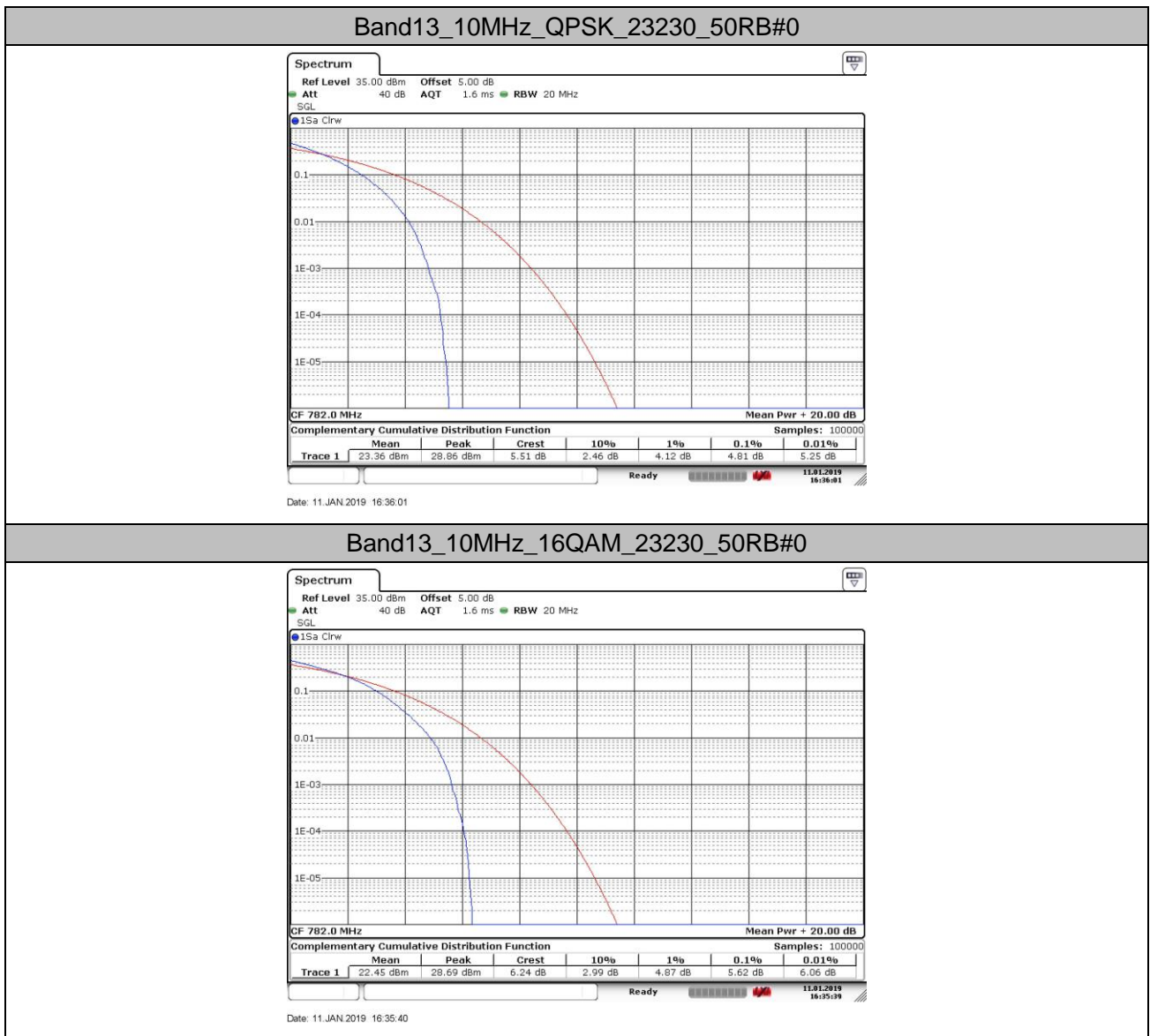
b: SGP=Signal Generator Level

## 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	4.81	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.62	13	PASS

### 2.2. Test Plots



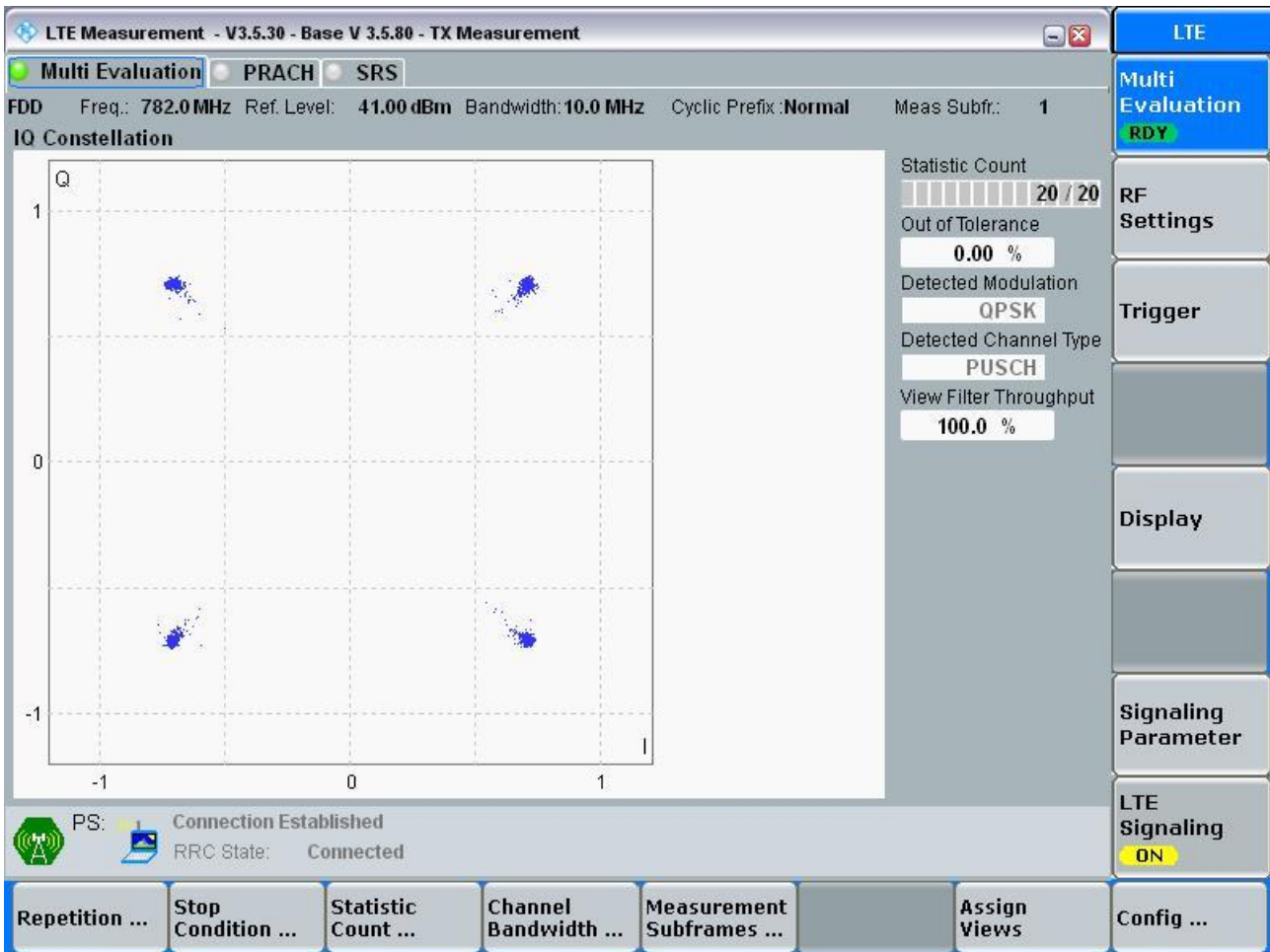
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### 3. Modulation Characteristics

#### 3.1. Test BAND = LTE Band 13

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

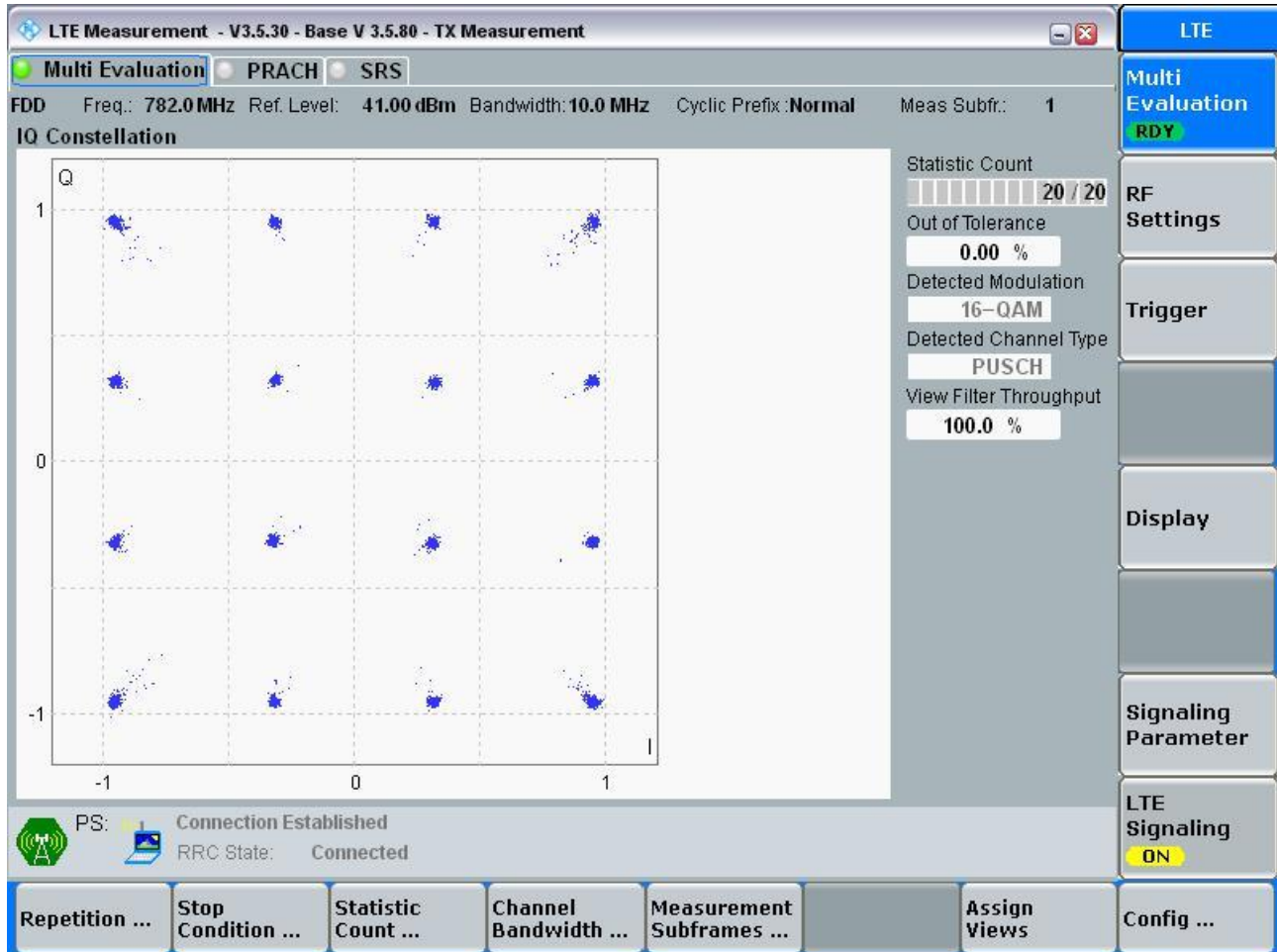
##### 3.1.1.1. Test Channel = MCH





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

#### 3.1.2.1. Test Channel = MCH

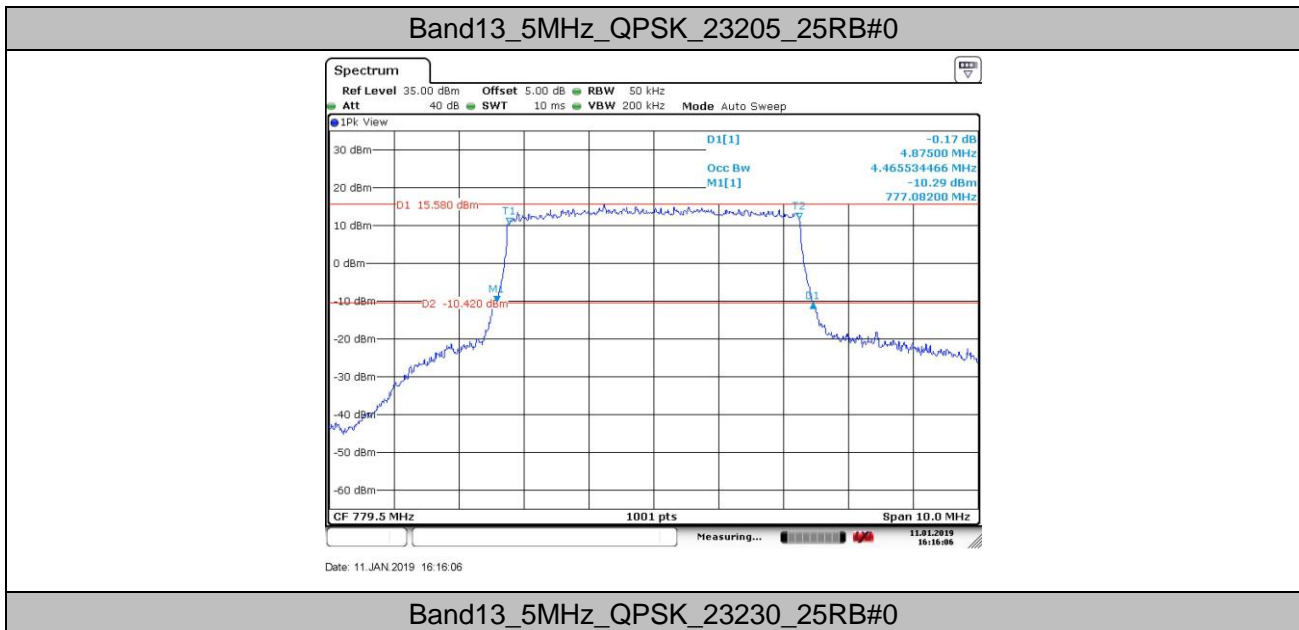


## 4. 26dB Bandwidth and Occupied Bandwidth

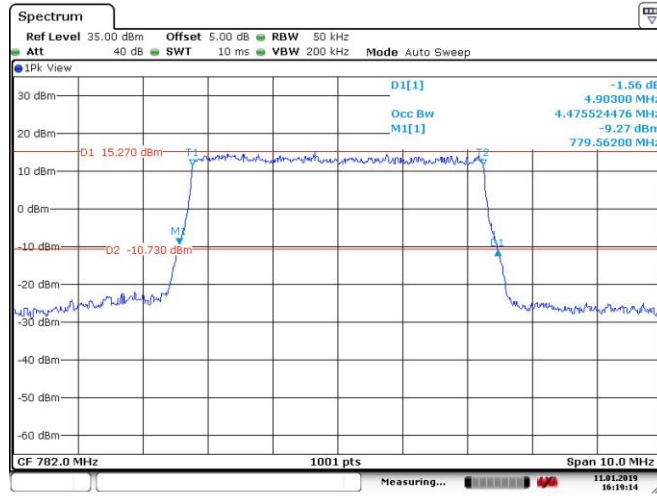
### 4.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.466	4.875	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.476	4.903	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.486	4.930	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.466	4.885	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.476	4.933	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.476	4.860	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.931	9.715	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.931	9.556	PASS

### 4.2. Test Plots

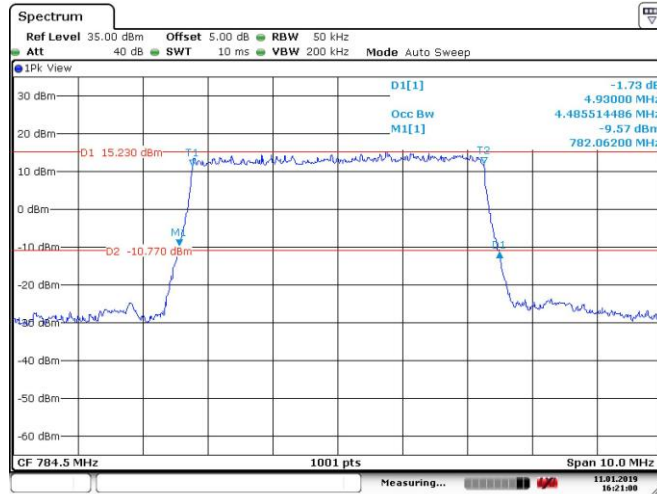






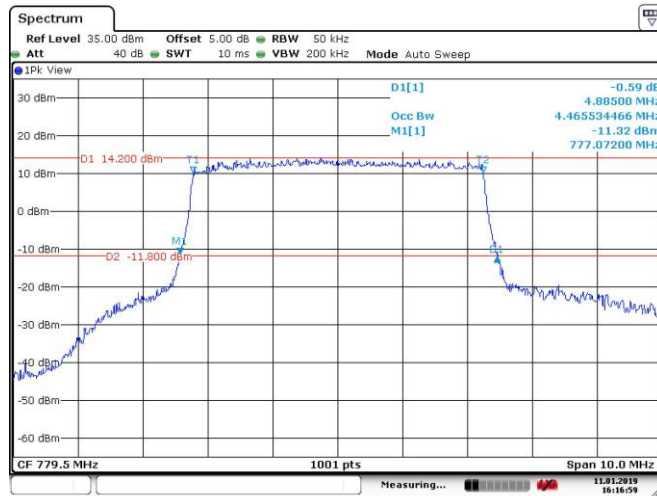
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**Band13\_5MHz\_QPSK\_23255\_25RB#0**



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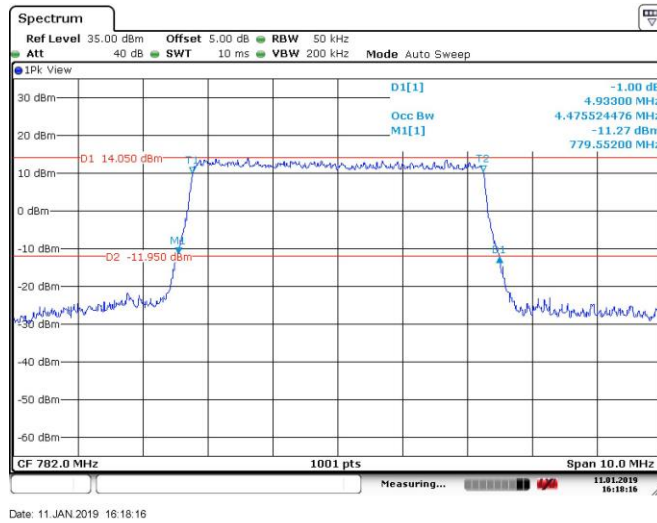
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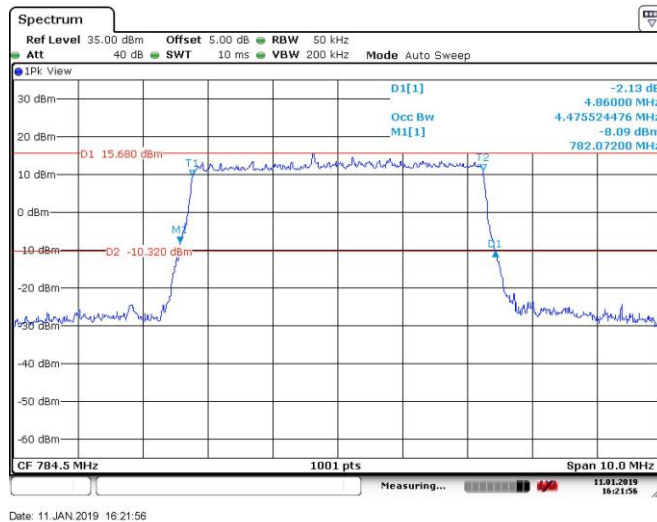
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**Band13\_5MHz\_16QAM\_23230\_25RB#0**

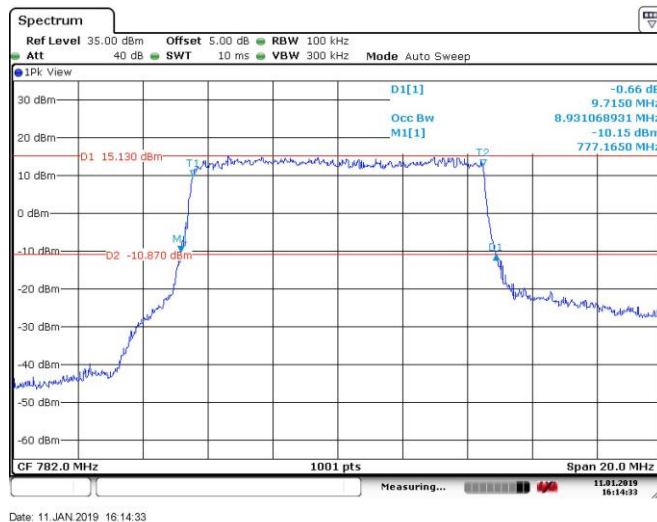
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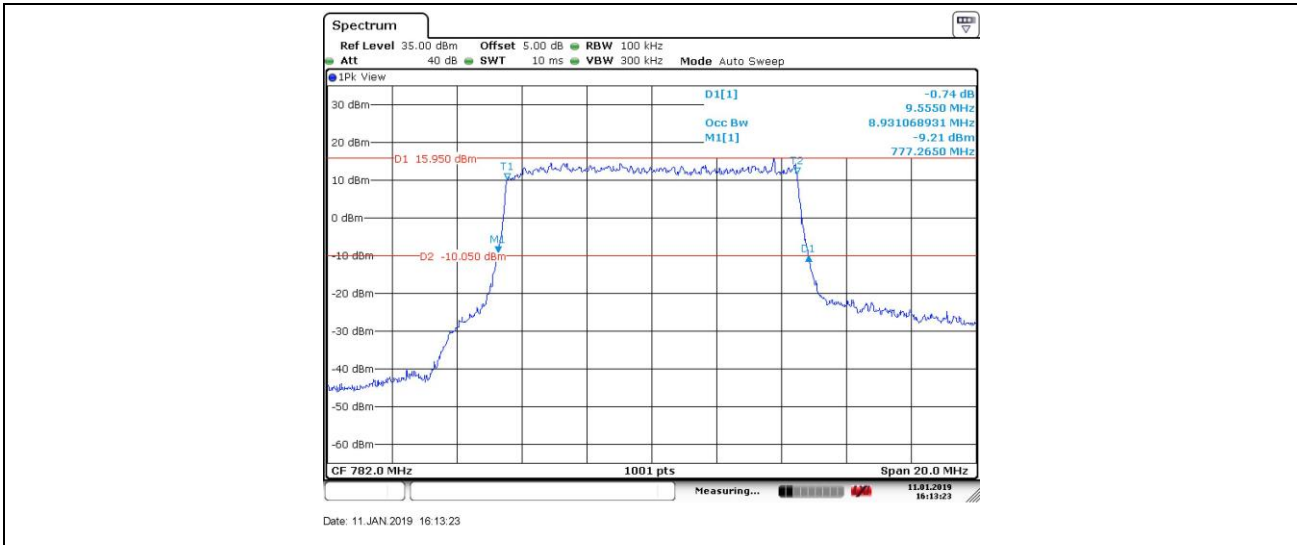
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**Band13\_10MHz\_QPSK\_23230\_50RB#0**



**Band13\_10MHz\_16QAM\_23230\_50RB#0**

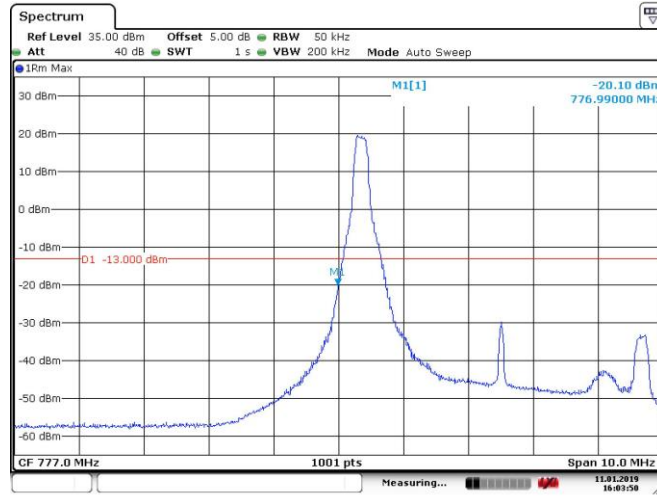


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## 5. Band Edge Compliance

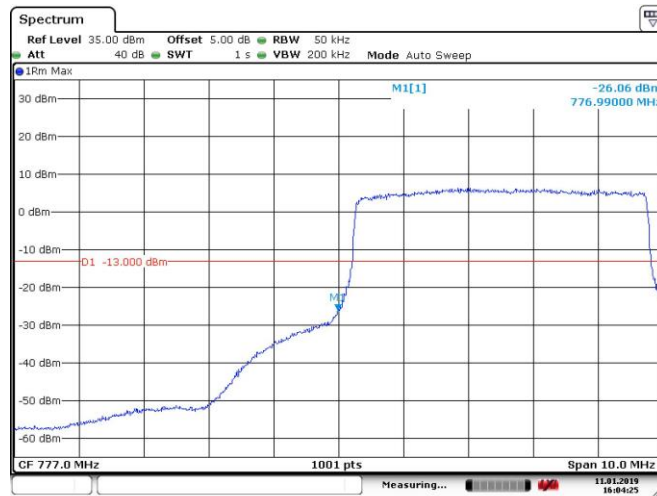
### 5.1. Test Plots

Band13\_5MHz\_QPSK\_23025\_1RB#0



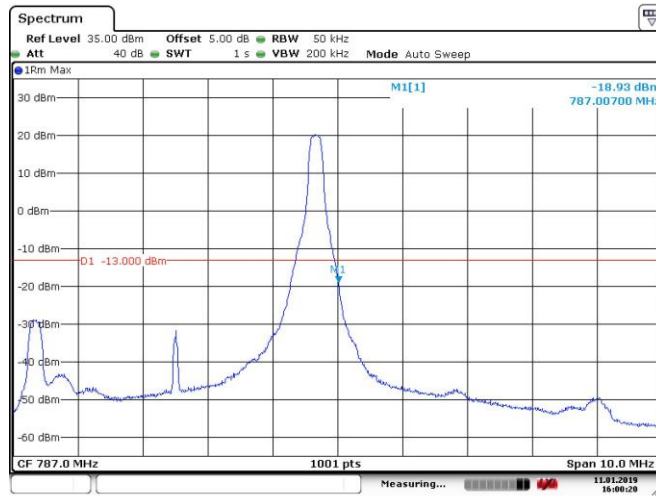
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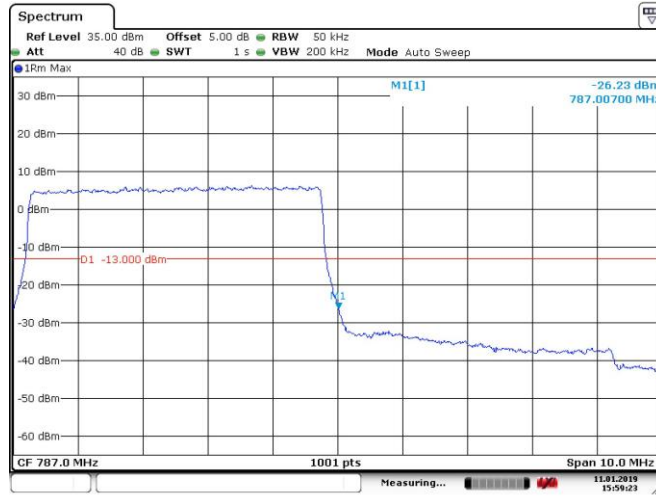


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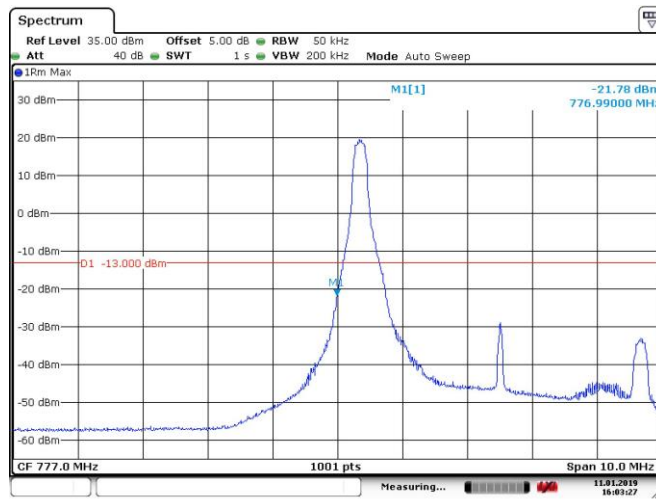
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**Band13\_5MHz\_QPSK\_23255\_25RB#0**

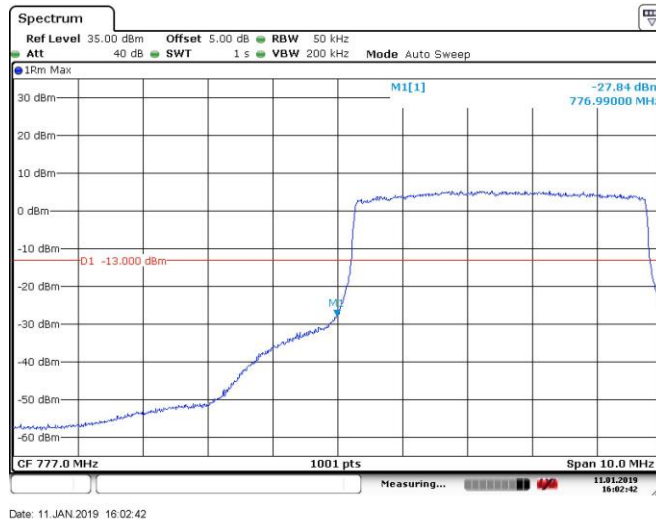


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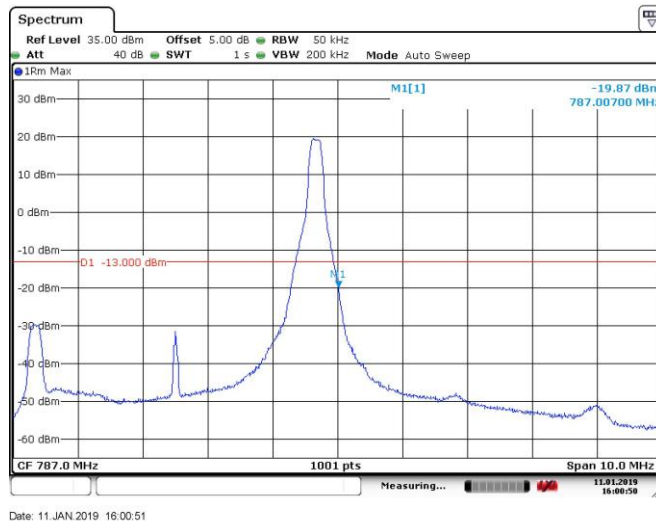


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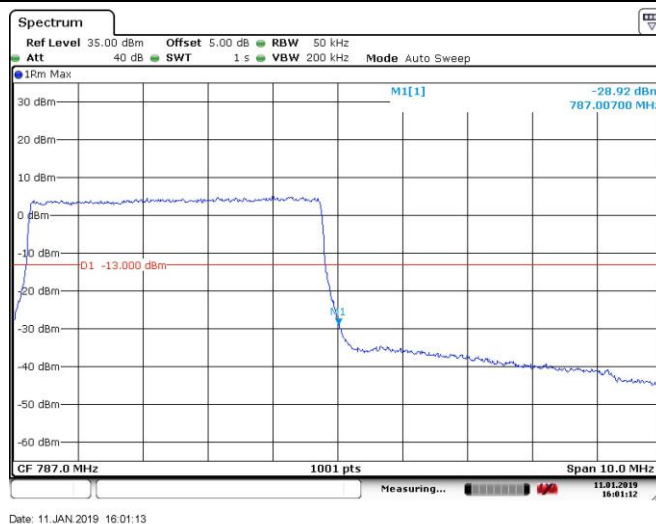
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**Band13\_5MHz\_16QAM\_23255\_1RB#24**

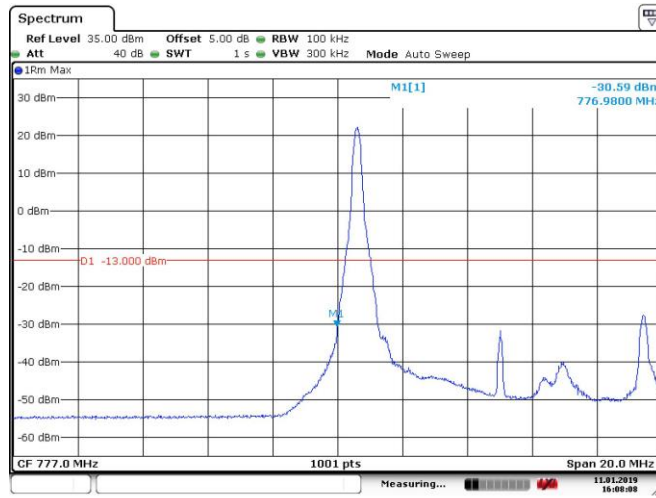


**Band13\_5MHz\_16QAM\_23255\_50RB#0**

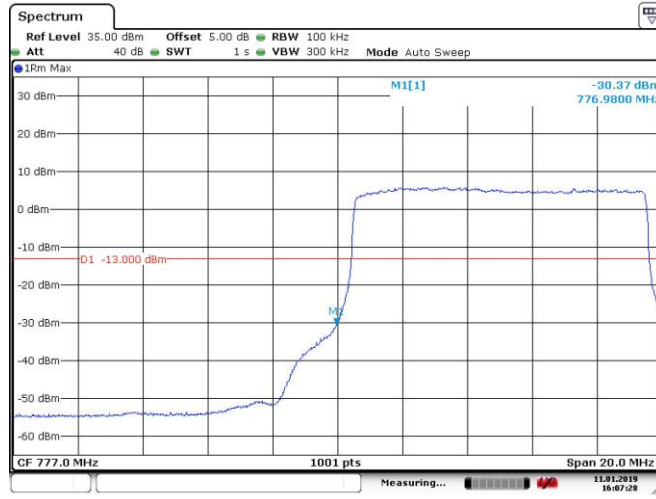


**Band13\_10MHz\_QPSK\_23230\_Left\_1RB#0**

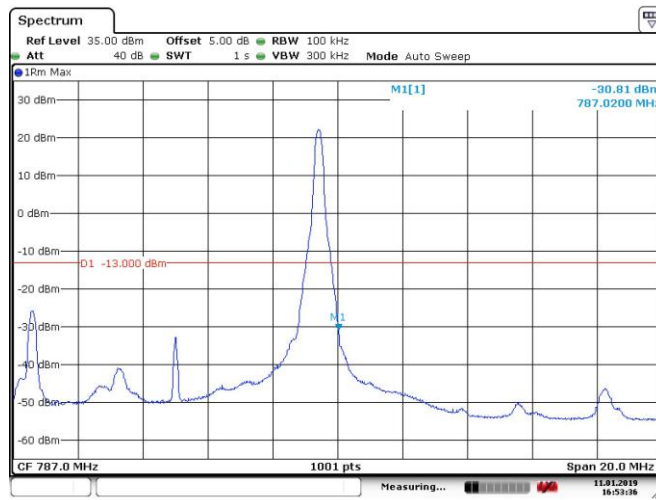
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**Band13\_10MHz\_QPSK\_23230\_Left\_50RB#0**



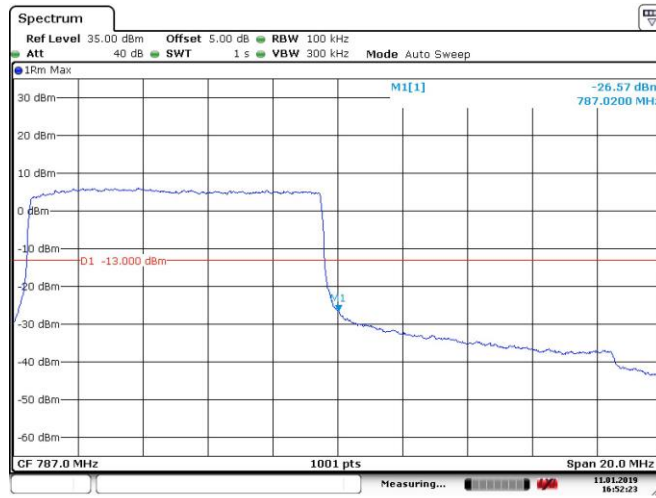
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**Band13\_10MHz\_QPSK\_23230\_Right\_50RB#0**

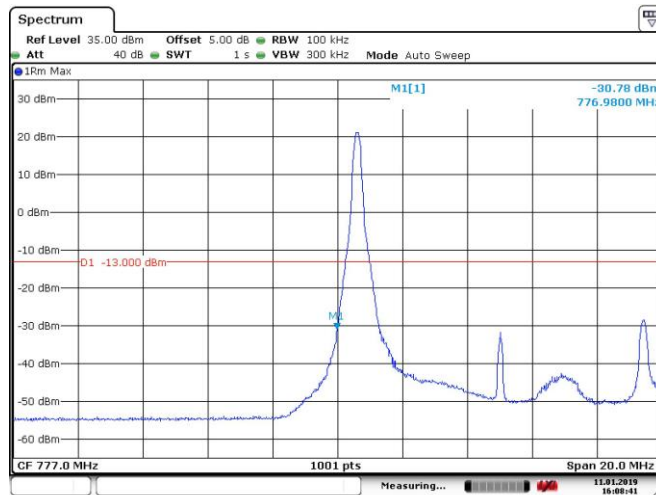
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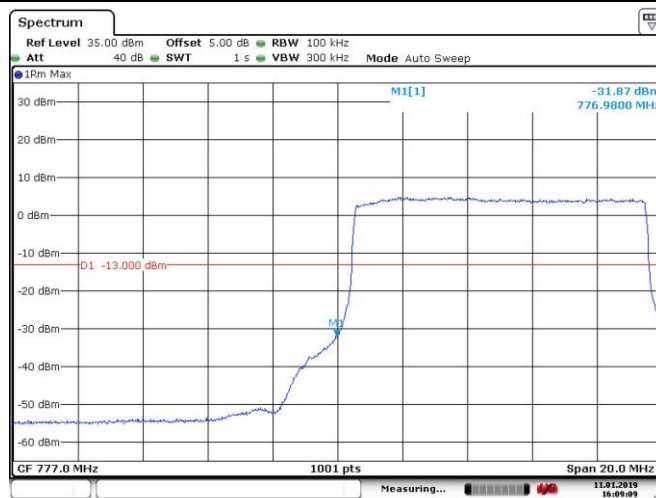
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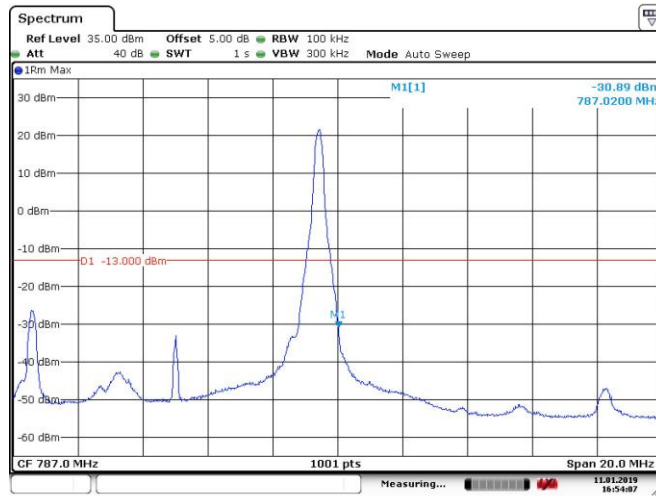
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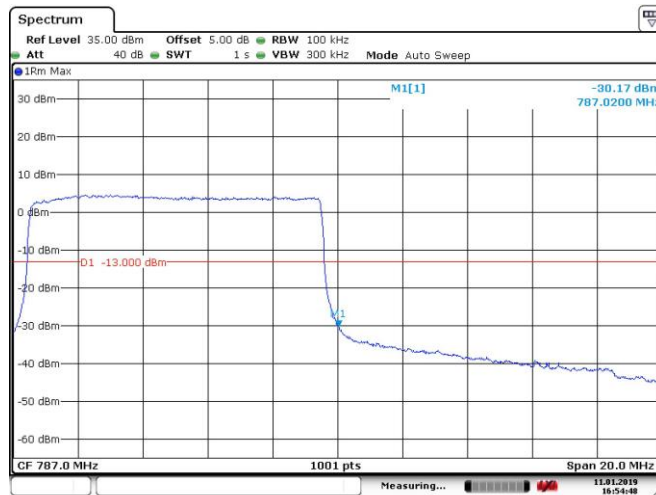
**Band13\_10MHz\_16QAM\_23230\_Right\_1RB#49**

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Date: 11.JAN.2019 16:54:07

**Band13\_10MHz\_16QAM\_23230\_Right\_50RB#0**



Date: 11.JAN.2019 16:54:48

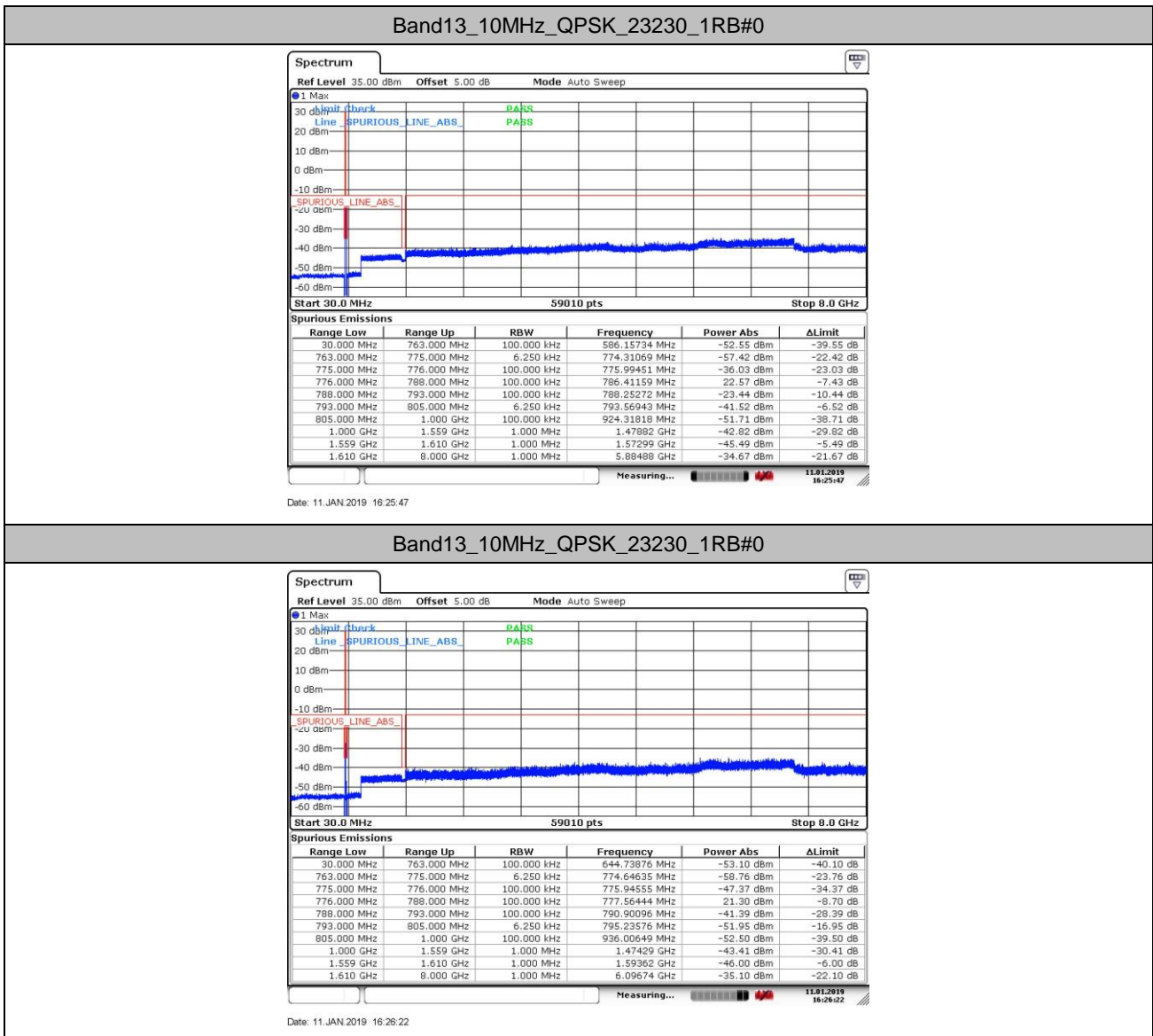
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## 6. Spurious Emission at Antenna Terminal

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 BAND = LTE Band 13

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

##### 7.1.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
64.673333	-79.95	-13.00	66.95	Vertical
1555.000000	-60.32	-13.00	47.32	Vertical
1595.000000	-65.73	-40.00	25.73	Vertical
3887.737500	-59.87	-13.00	46.87	Vertical
4665.300000	-47.42	-13.00	34.42	Vertical
5442.862500	-47.37	-13.00	34.37	Vertical
62.666667	-77.42	-13.00	64.42	Horizontal
1555.000000	-61.30	-13.00	48.30	Horizontal
1596.000000	-65.54	-40.00	25.54	Horizontal
3887.737500	-61.40	-13.00	48.40	Horizontal
4665.300000	-58.80	-13.00	45.80	Horizontal
5442.862500	-50.41	-13.00	37.41	Horizontal

Remark:

- 1) 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 had been displayed.
- 2) We have tested all modulation and all Bandwidth , but only the worst case data presented in this report.



## 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	6.18	0.007909	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	13.28	0.016983	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	7.02	0.008977	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	14.73	0.018843	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-6.27	-0.008023	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-8.88	-0.011351	±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	11.01	0.014083	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	8.64	0.011046	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	10.39	0.013288	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-4.99	-0.006381	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-1.89	-0.002415	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-7.22	-0.009228	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-6.61	-0.008455	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-9.96	-0.012734	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-7.24	-0.009254	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-11.72	-0.014991	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	9.14	0.011682	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	11.36	0.014531	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	10.89	0.013929	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-6.61	-0.008453	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-5.26	-0.006721	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	1.18	0.001506	±2.5	PASS

The End