



# 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	23.36	20.21	34.77	PASS
BAND13	5MHz	QPSK	23205	1RB#12	23.19	20.04	34.77	PASS
BAND13	5MHz	QPSK	23205	1RB#24	23.17	20.02	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#0	22.67	19.52	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#6	22.55	19.4	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#13	22.56	19.41	34.77	PASS
BAND13	5MHz	QPSK	23205	25RB#0	22.53	19.38	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#0	23.33	20.18	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#12	23.04	19.89	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#24	23.51	20.36	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#0	22.64	19.49	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#6	22.41	19.26	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#13	22.59	19.44	34.77	PASS
BAND13	5MHz	QPSK	23230	25RB#0	22.65	19.5	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#0	23.51	20.36	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#12	23.15	20	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#24	23.47	20.32	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#0	22.62	19.47	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#6	22.56	19.41	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#13	22.70	19.55	34.77	PASS
BAND13	5MHz	QPSK	23255	25RB#0	22.66	19.51	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#0	22.29	19.14	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#12	22.62	19.47	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#24	22.34	19.19	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#0	21.54	18.39	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#6	21.63	18.48	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#13	21.41	18.26	34.77	PASS
BAND13	5MHz	16QAM	23205	25RB#0	21.70	18.55	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#0	22.63	19.48	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#12	22.60	19.45	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#24	22.54	19.39	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#0	21.66	18.51	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#6	21.53	18.38	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#13	21.45	18.3	34.77	PASS



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BAND13	5MHz	16QAM	23230	25RB#0	21.71	18.56	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#0	22.49	19.34	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#12	22.57	19.42	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#24	22.80	19.65	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#0	21.37	18.22	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#6	21.50	18.35	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#13	21.47	18.32	34.77	PASS
BAND13	5MHz	16QAM	23255	25RB#0	21.63	18.48	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#0	23.40	20.25	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#24	23.41	20.26	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#49	23.20	20.05	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#0	22.79	19.64	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#12	22.52	19.37	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#25	22.41	19.26	34.77	PASS
BAND13	10MHz	QPSK	23230	50RB#0	22.71	19.56	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#0	22.65	19.5	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#24	22.83	19.68	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#49	22.69	19.54	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#0	21.60	18.45	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#12	21.66	18.51	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#25	21.65	18.5	34.77	PASS
BAND13	10MHz	16QAM	23230	50RB#0	21.55	18.4	34.77	PASS

Note:

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

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b: SGP=Signal Generator Level

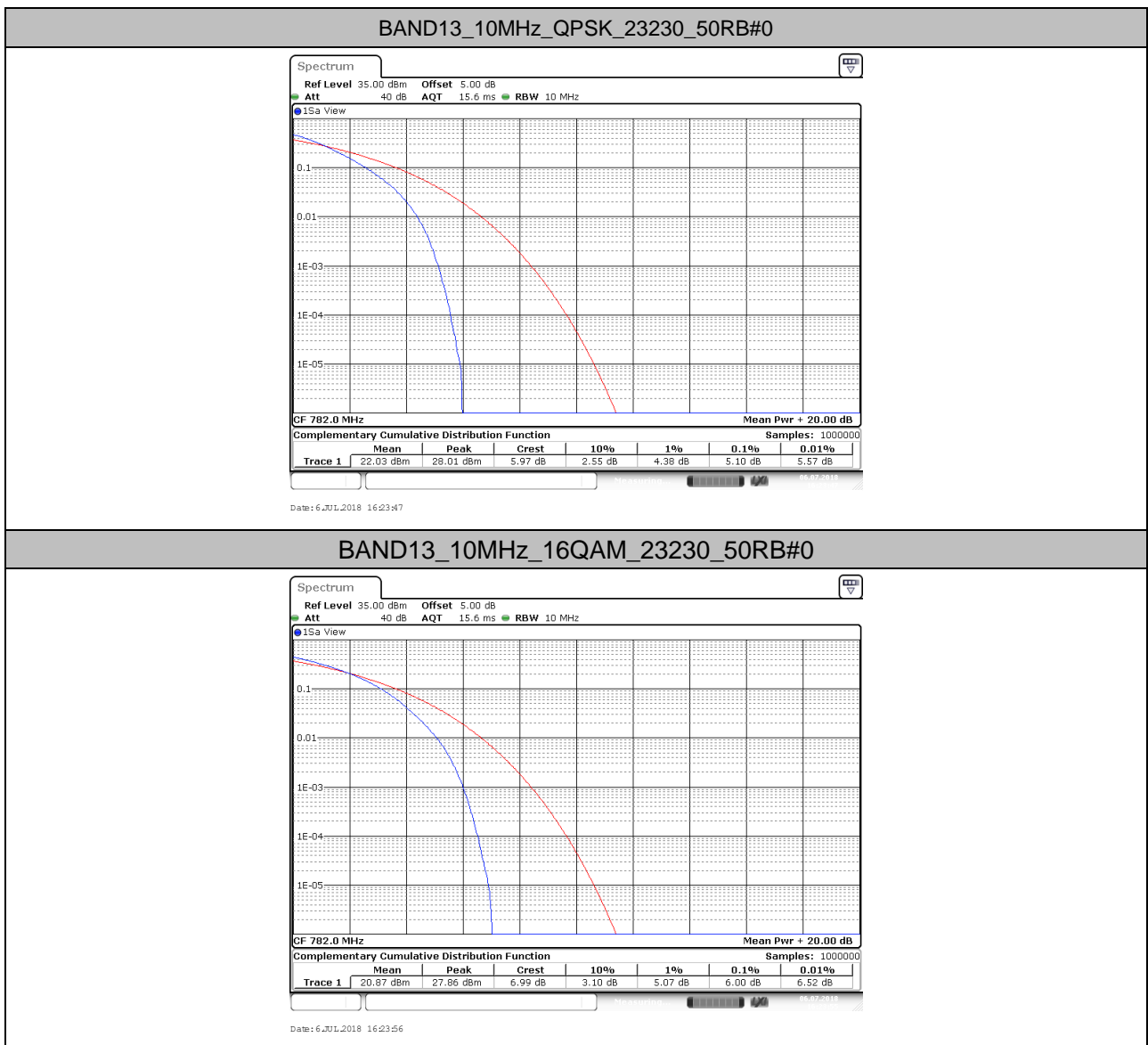


## 2. Peak-to-Average Ratio(CCDFF)

### 2.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
BAND13	10MHz	QPSK	23230	50RB#0	5.10	13	PASS
BAND13	10MHz	16QAM	23230	50RB#0	6.00	13	PASS

### 2.2. Test Plots

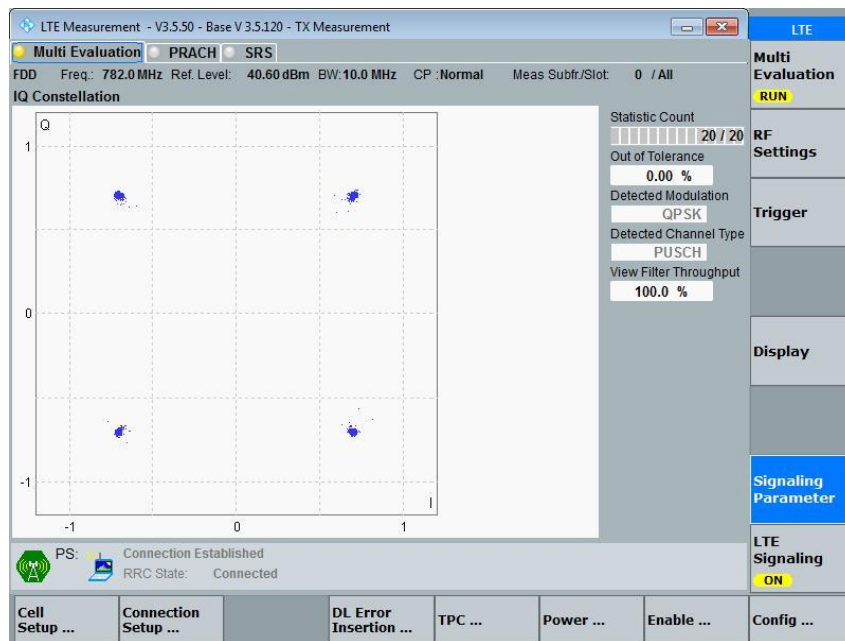


### 3. Modulation Characteristics

#### 3.1. Test BAND = LTE BAND13

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

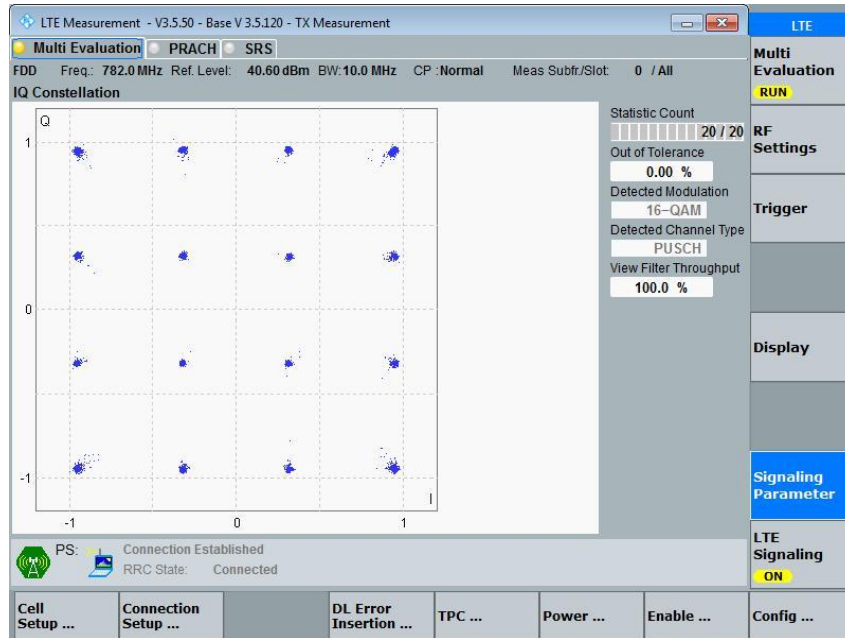
##### 3.1.1.1. Test Channel = MCH





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

#### 3.1.2.1. Test Channel = MCH



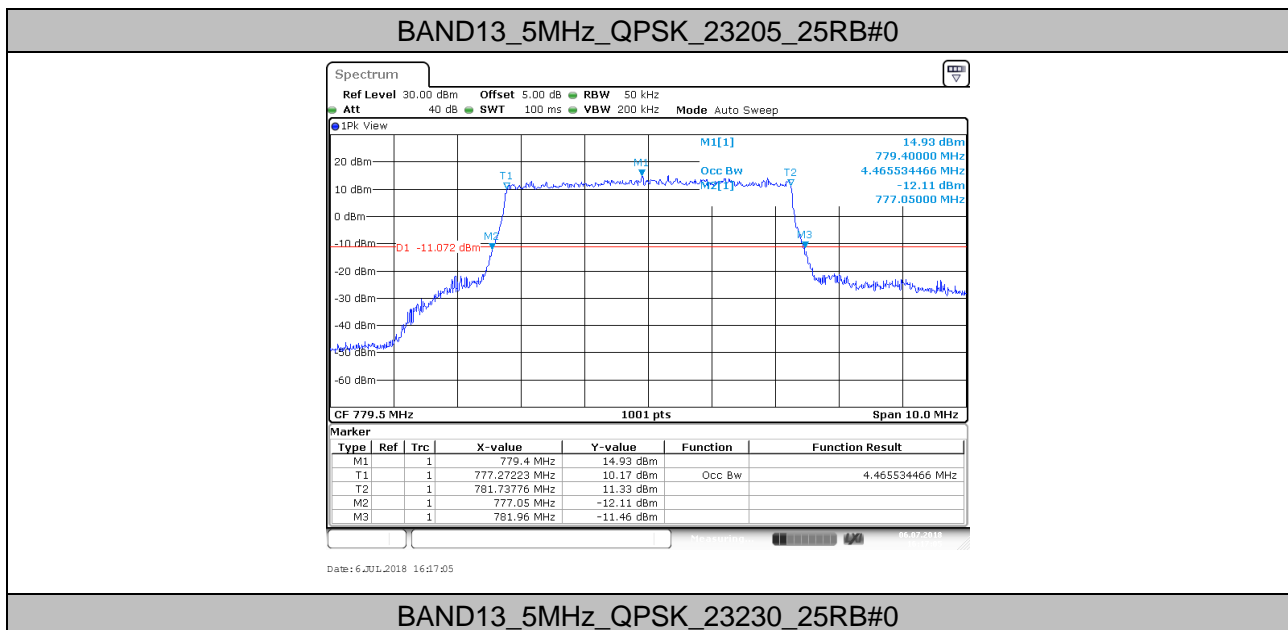


## 4. 26dB Bandwidth and Occupied Bandwidth

### 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	4.910	PASS
BAND13	5MHz	QPSK	23230	25RB#0	4.486	4.950	PASS
BAND13	5MHz	QPSK	23255	25RB#0	4.476	4.940	PASS
BAND13	5MHz	16QAM	23205	25RB#0	4.486	4.940	PASS
BAND13	5MHz	16QAM	23230	25RB#0	4.486	4.950	PASS
BAND13	5MHz	16QAM	23255	25RB#0	4.486	4.960	PASS
BAND13	10MHz	QPSK	23230	50RB#0	8.891	9.660	PASS
BAND13	10MHz	16QAM	23230	50RB#0	8.891	9.740	PASS

### 4.2. Test Plots



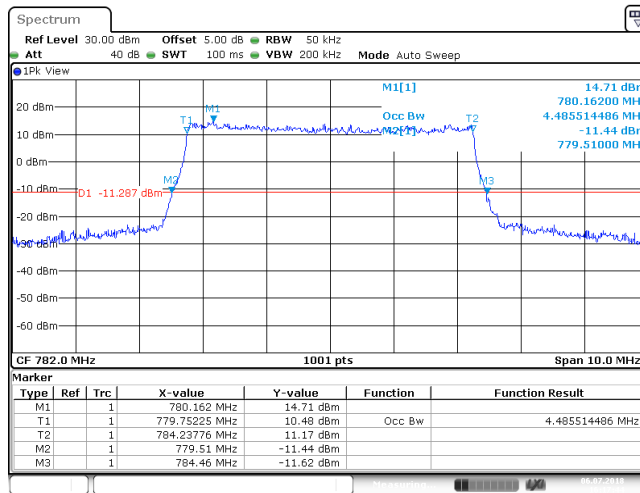




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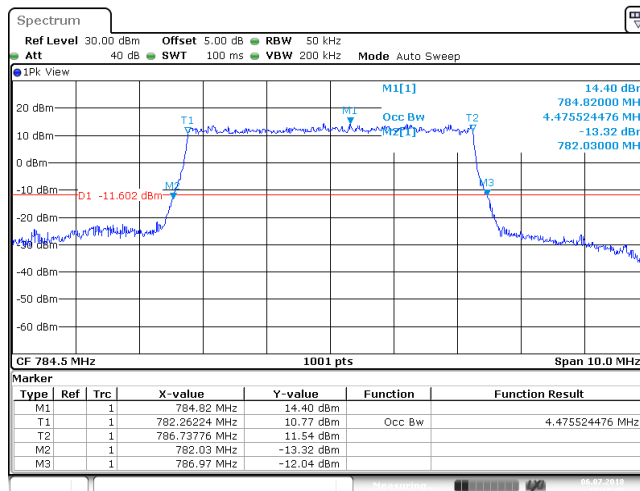
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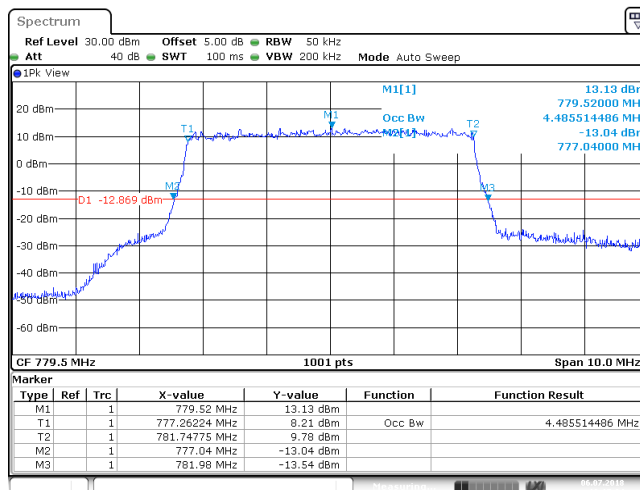
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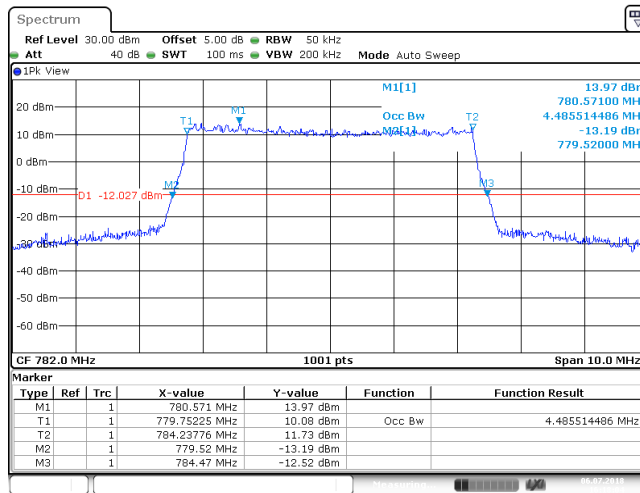
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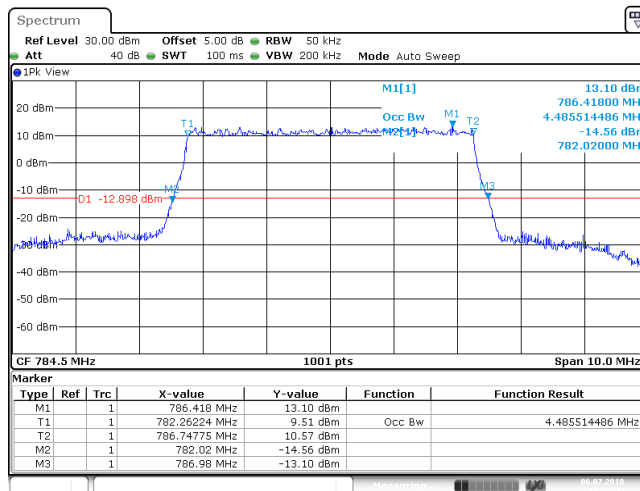
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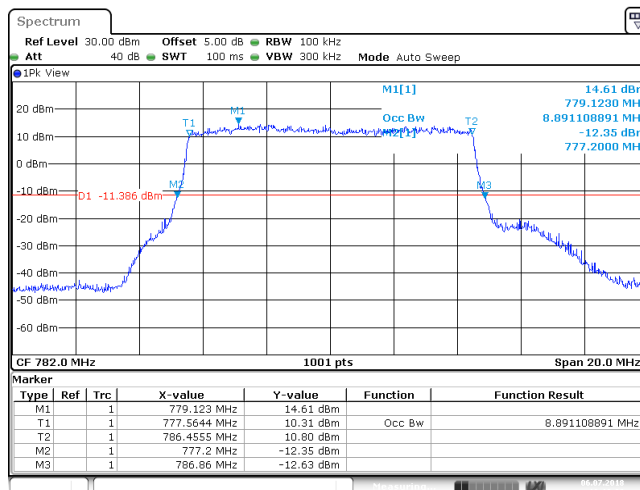
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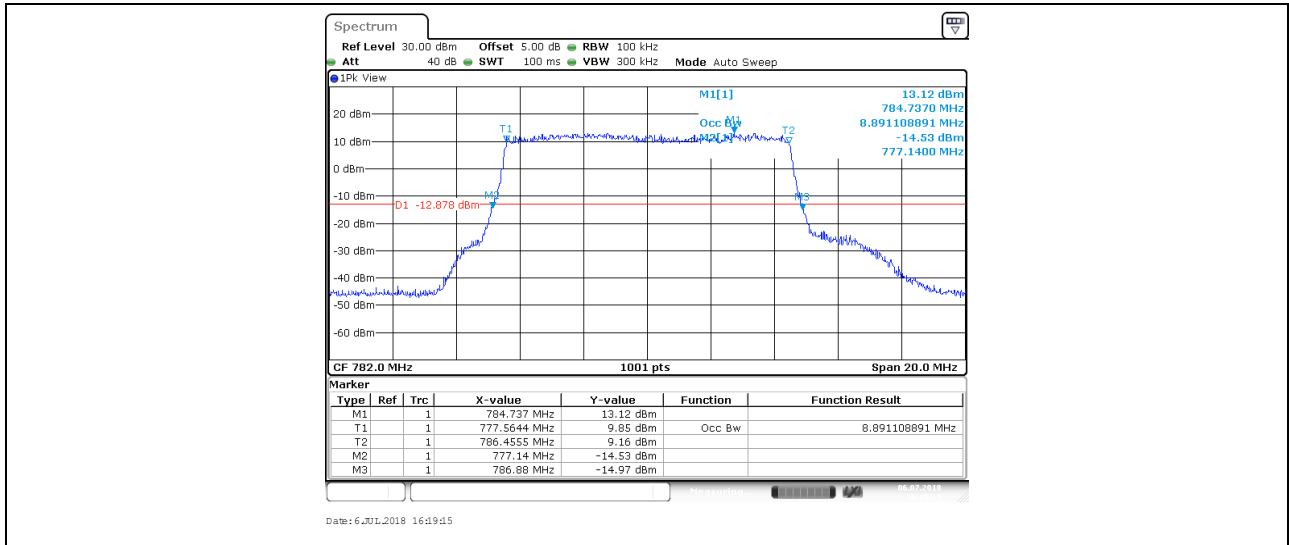
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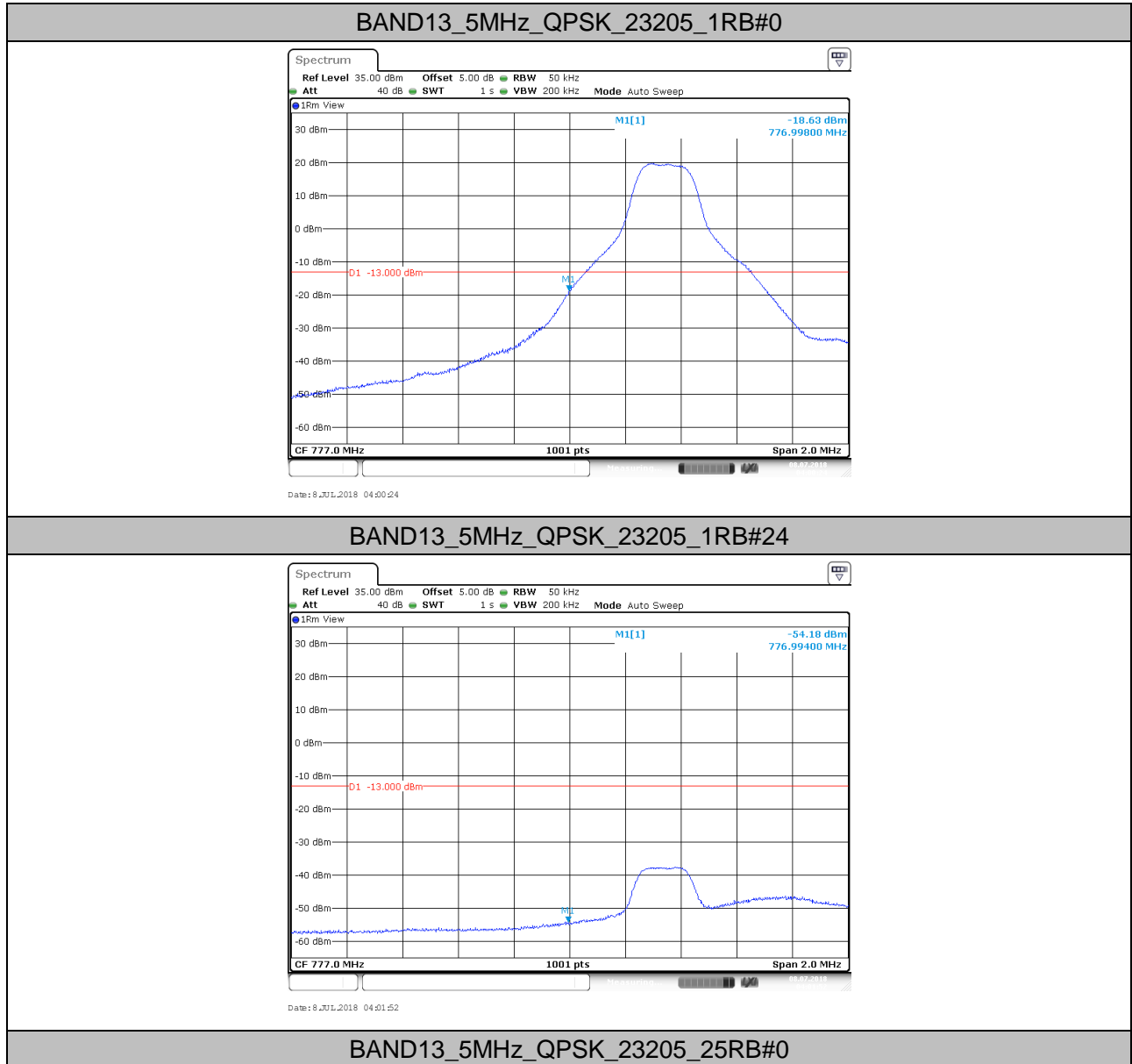
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## 5. Band Edge Compliance

### 5.1. Test Plots

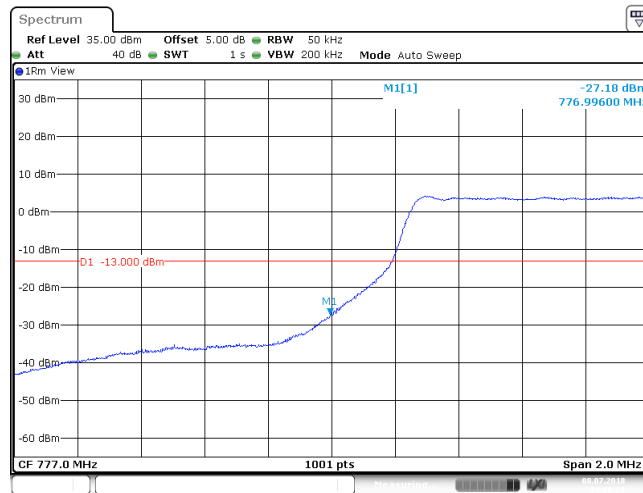




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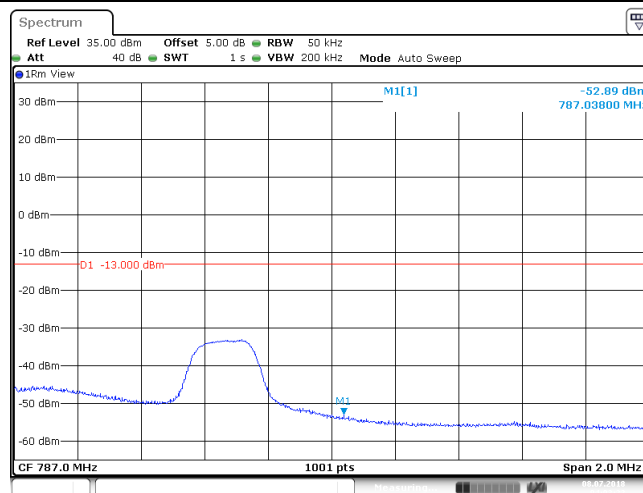
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Date: 8 JUL 2018 04:06:26

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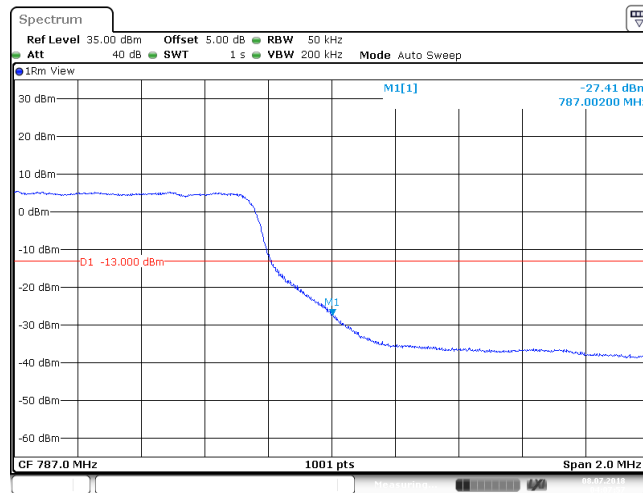
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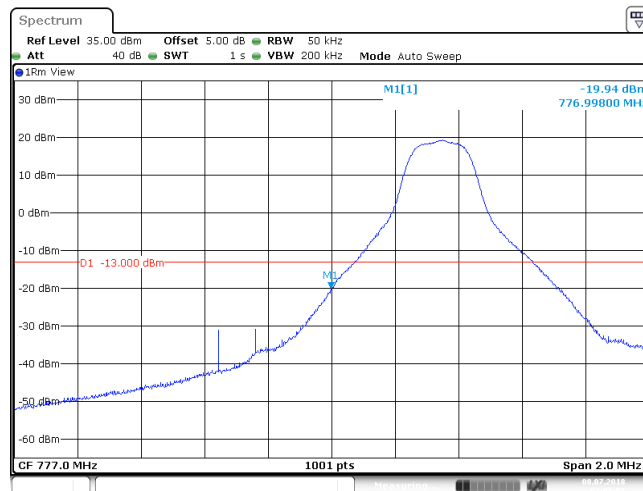
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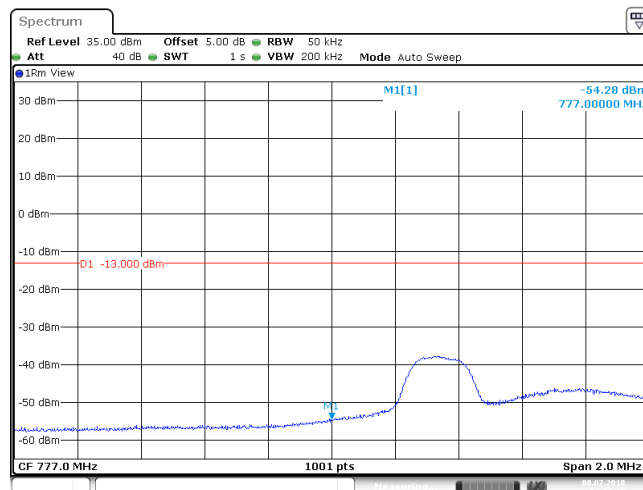
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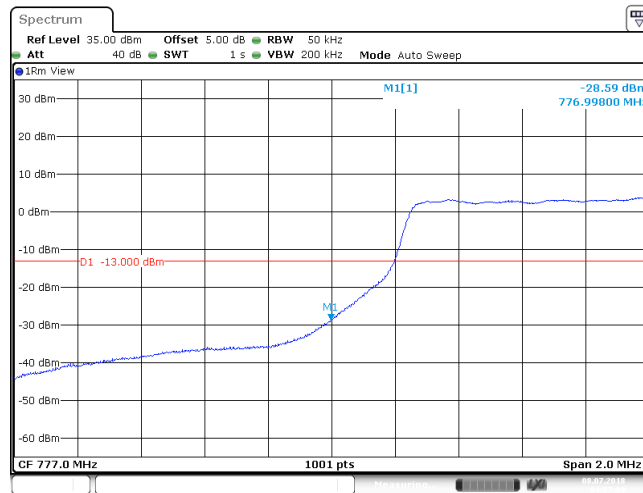
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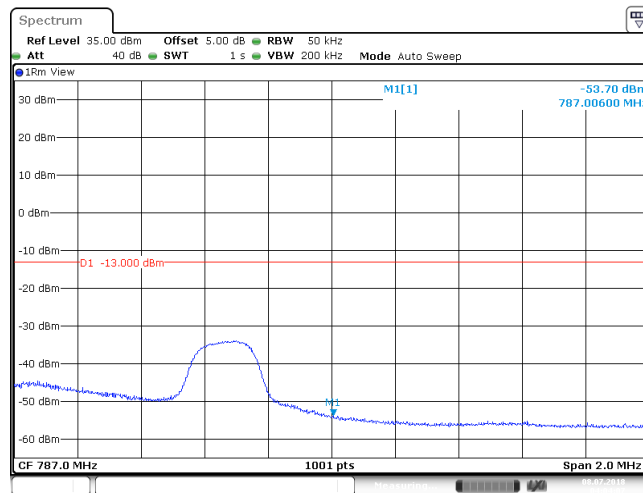
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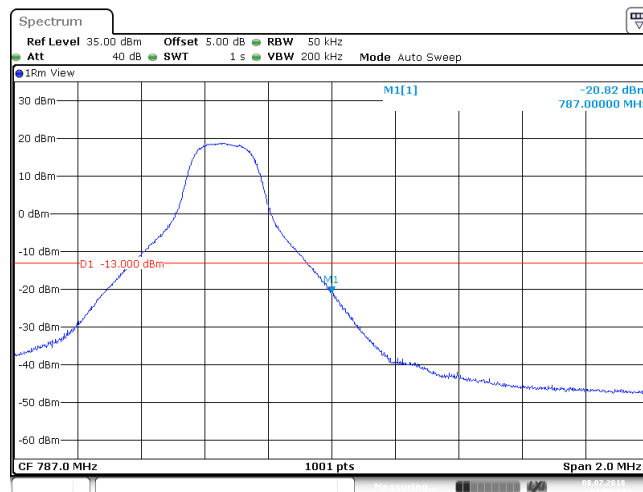
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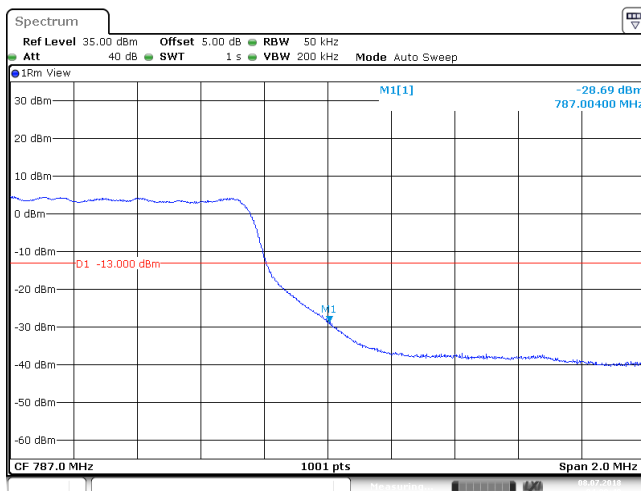
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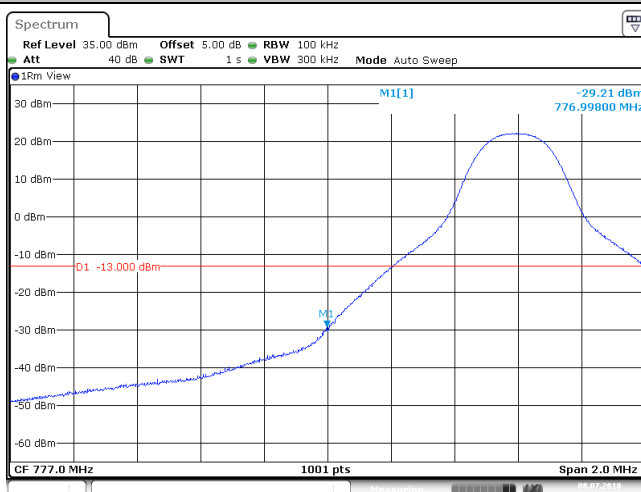
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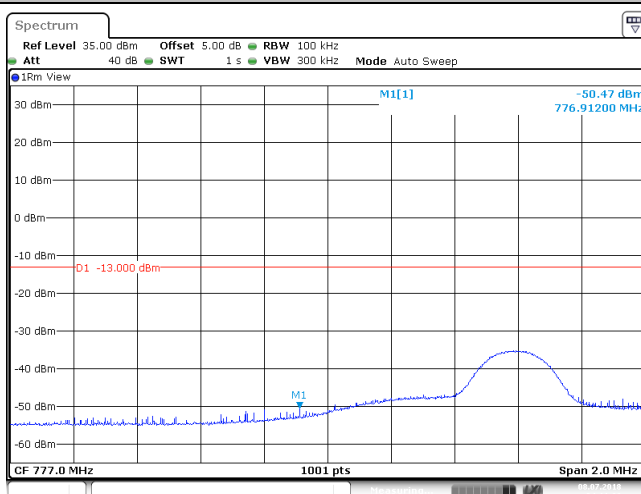
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## BAND13\_10MHz\_QPSK\_23230\_Left\_1RB#49



Date: 8 JUL 2018 04:11:22

## BAND13\_10MHz\_QPSK\_23230\_Left\_50RB#0

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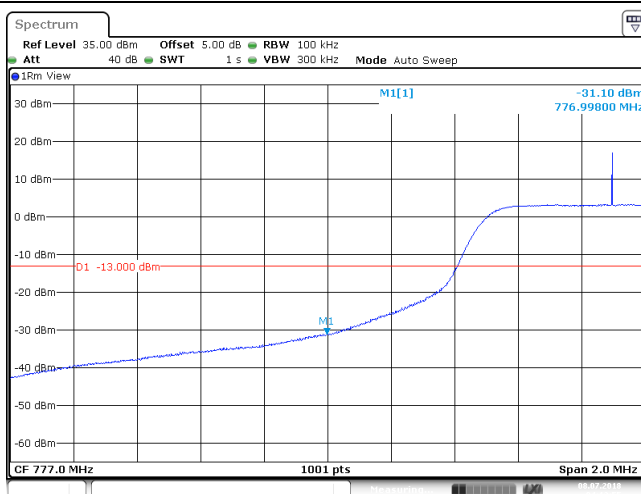




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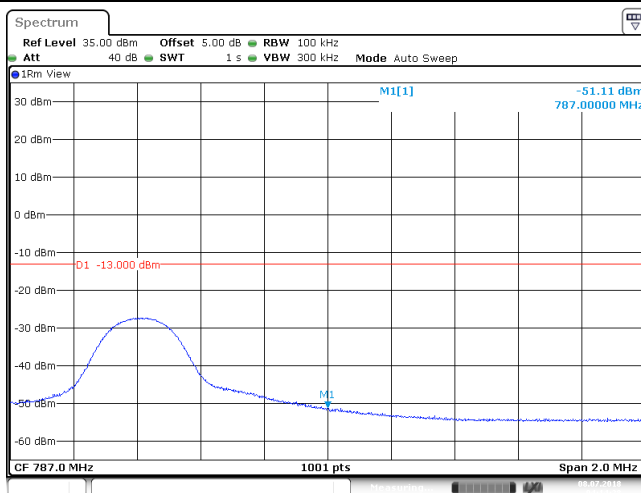
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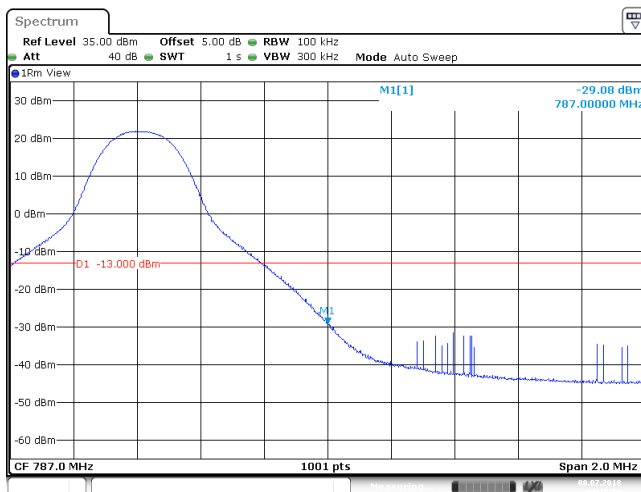
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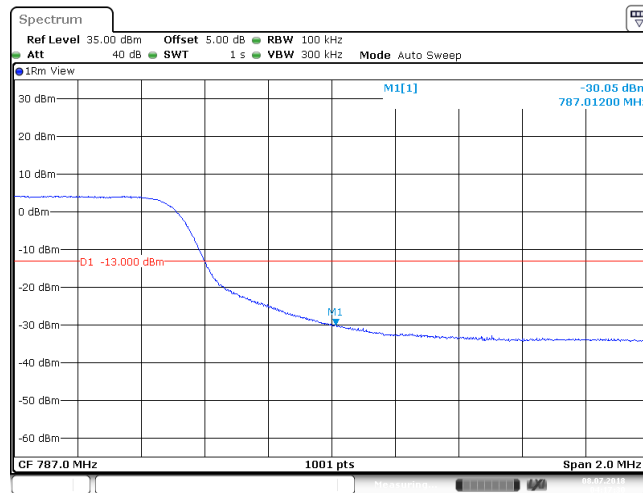
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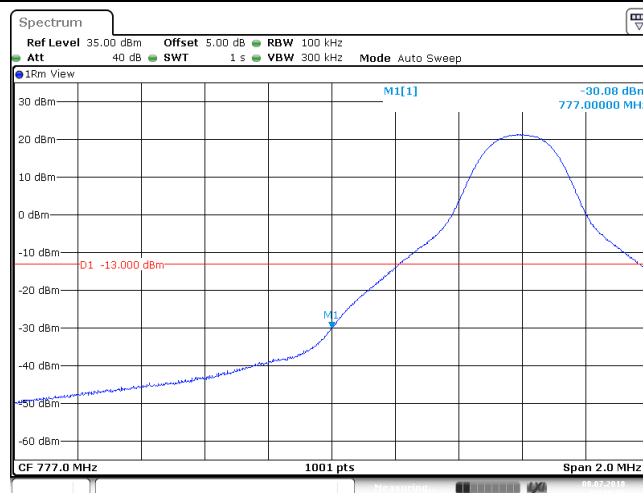
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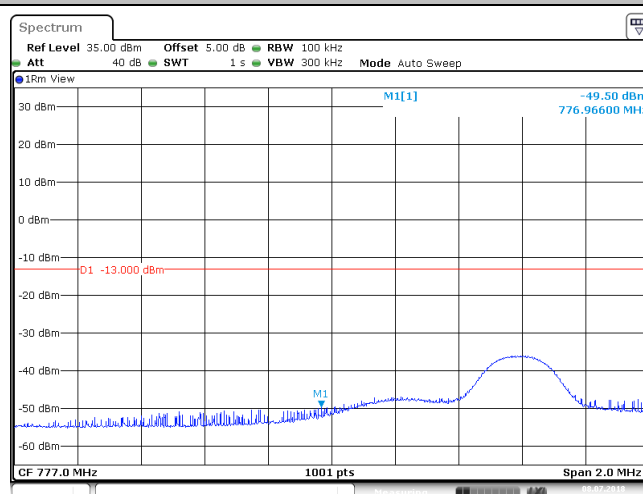
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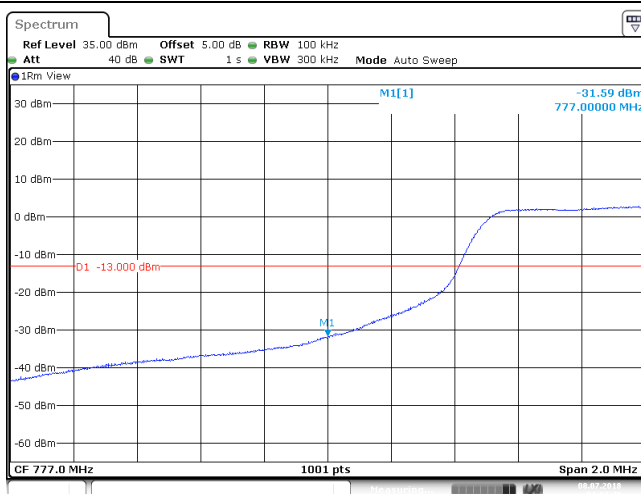
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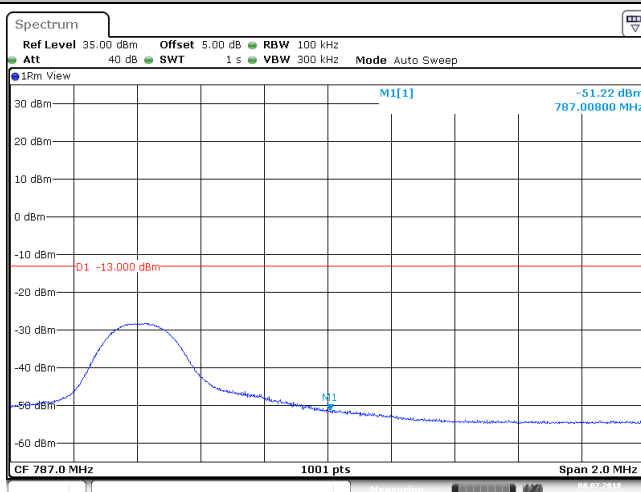
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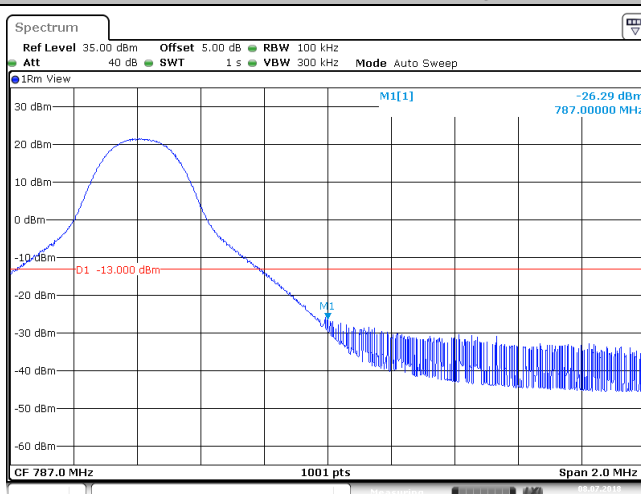
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## BAND13\_10MHz\_16QAM\_23230\_Right\_50RB#0

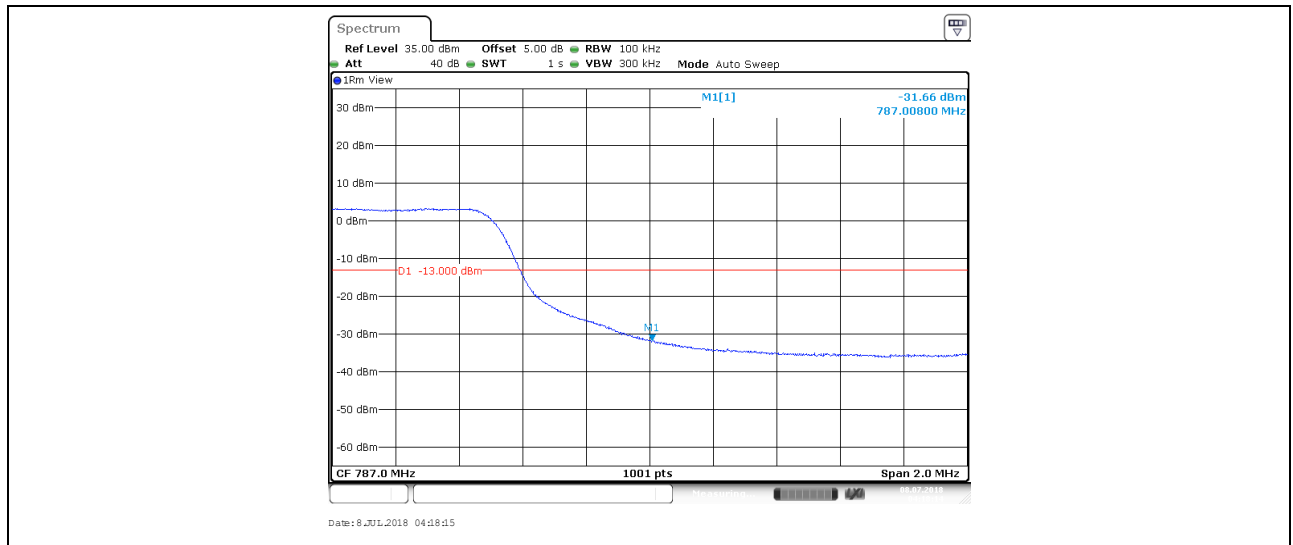
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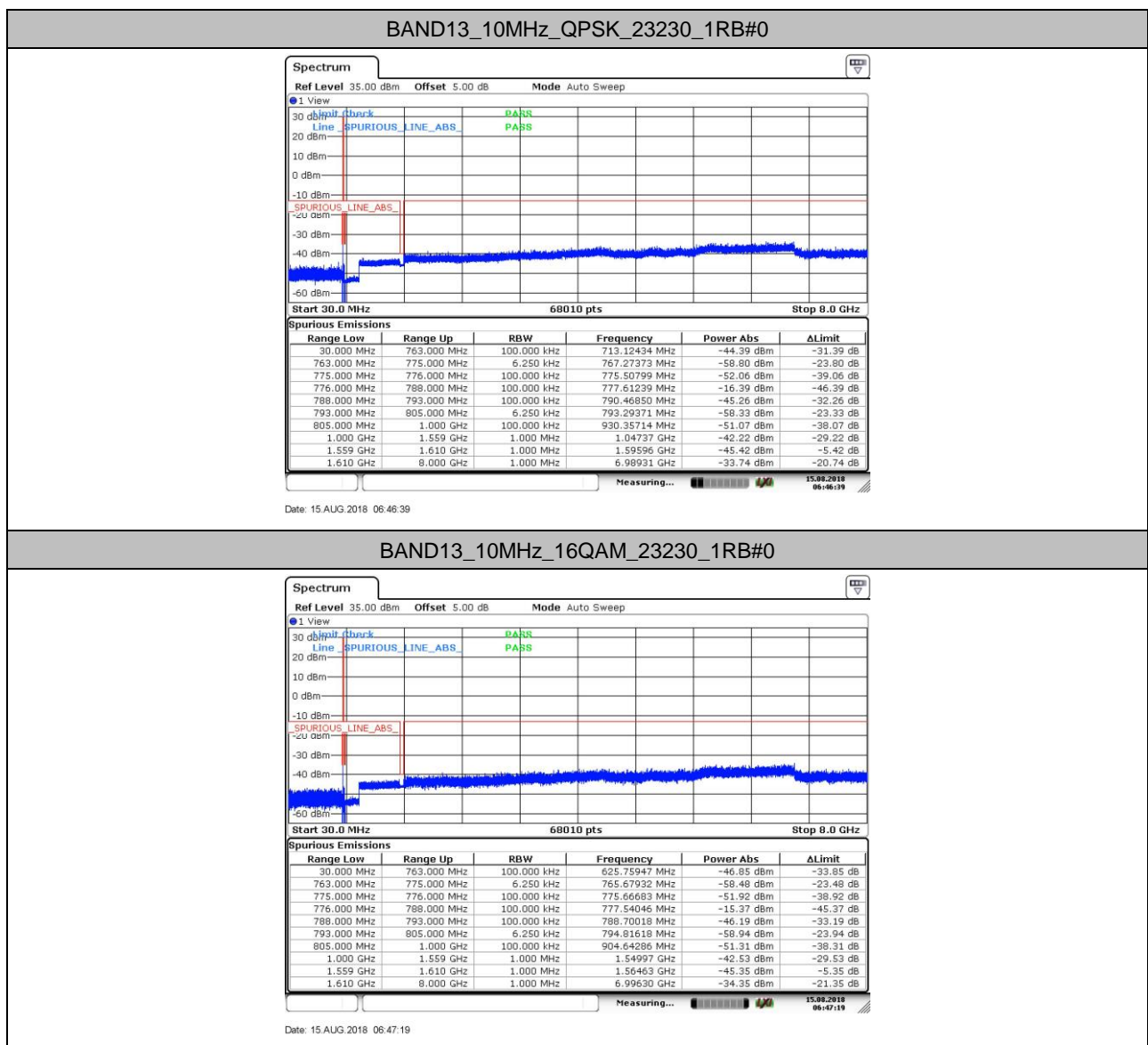




## 6. Spurious Emission at Antenna Terminal

NOTE: 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.

### 6.1. Test Plots





## **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
64.580000	-82.03	-13.00	69.03	Vertical
125.013333	-85.85	-13.00	72.85	Vertical
249.986667	-87.79	-13.00	74.79	Vertical
1561.500000	-60.53	-40.00	20.53	Vertical
2332.500000	-58.27	-13.00	45.27	Vertical
3069.712500	-68.91	-13.00	55.91	Vertical
63.273333	-77.49	-13.00	64.49	Horizontal
144.006667	-90.08	-13.00	77.08	Horizontal
250.033333	-87.77	-13.00	74.77	Horizontal
1561.500000	-56.45	-40.00	26.45	Horizontal
2332.500000	-57.91	-13.00	44.91	Horizontal
4298.212500	-66.75	-13.00	53.75	Horizontal

**NOTE:**

- 1) All modes are tested, but the data presented above is the worst case. the disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics 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	15.54	0.019872	±2.5	PASS
BAND13	10MHz	QPSK	23230	50RB#0	VN	NT	16.25	0.020780	±2.5	PASS
BAND13	10MHz	QPSK	23230	50RB#0	VH	NT	15.45	0.019757	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	VL	NT	18.51	0.023670	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	VN	NT	17.09	0.021854	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	VH	NT	17.35	0.022187	±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	16.06	0.020537	±2.5	PASS
BAND13	10MHz	QPSK	23230	50RB#0	NV	-20	15.65	0.020013	±2.5	PASS
BAND13	10MHz	QPSK	23230	50RB#0	NV	0	15.91	0.020345	±2.5	PASS
BAND13	10MHz	QPSK	23230	50RB#0	NV	10	15.75	0.020141	±2.5	PASS
BAND13	10MHz	QPSK	23230	50RB#0	NV	20	15.72	0.020102	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	NV	-30	17.90	0.022890	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	NV	-20	16.79	0.021471	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	NV	0	16.95	0.021675	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	NV	10	16.31	0.020857	±2.5	PASS
BAND13	10MHz	16QAM	23230	50RB#0	NV	20	16.91	0.021624	±2.5	PASS

The End