



# Appendix B

## E-UTRA BAND 13



## CONTENT

1. EFFECTIVE (ISOTROPIC) RADIATED POWER.....	3
1.1. Test Result.....	3
2. PEAK-TO-AVERAGE RATIO(CCDF).....	5
2.1. Test Result.....	5
2.2. Test Plots.....	5
3. MODULATION CHARACTERISTICS .....	6
3.1. Test BAND = LTE BAND13 .....	6
3.1.1. Test Mode = LTE /TM1 10MHz.....	6
3.1.1.1. Test Channel = MCH.....	6
3.1.2. Test Mode = LTE /TM2 10MHz.....	7
3.1.2.1. Test Channel = MCH.....	7
4. 26dB BANDWIDTH AND OCCUPIED BANDWIDTH .....	8
4.1. Test Result.....	8
4.2. Test Plots.....	8
5. BAND EDGE COMPLIANCE .....	12
5.1. Test Plots.....	12
6. SPURIOUS EMISSION AT ANTENNA TERMINAL .....	17
6.1. Test Plots.....	17
7. FIELD STRENGTH OF SPURIOUS RADIATION .....	18
7.1. Test BAND = LTE BAND 13.....	18
7.1.1. Test Mode =LTE/TM1 10MHz.....	18
7.1.1.1. Test Channel = MCH.....	18
8. FREQUENCY STABILITY .....	19
8.1. Frequency Vs Voltage.....	19
8.2. Frequency Vs Temperature .....	19



## 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	22.55	20.10	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#12	22.84	20.39	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	22.42	19.97	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	21.69	19.24	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	21.93	19.48	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	21.83	19.38	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	21.72	19.27	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	22.65	20.20	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	22.34	19.89	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	22.37	19.92	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	21.68	19.23	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	21.75	19.30	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	21.69	19.24	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	21.70	19.25	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	22.33	19.88	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	22.41	19.96	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	22.54	20.09	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	21.73	19.28	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	21.72	19.27	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	21.79	19.34	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	21.69	19.24	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	21.24	18.79	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	21.52	19.07	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	20.89	18.44	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	20.56	18.11	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	20.96	18.51	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	20.85	18.40	34.77	PASS
Band13	5MHz	16QAM	23205	25RB#0	20.77	18.32	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	21.87	19.42	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	21.52	19.07	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	21.27	18.82	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#0	20.59	18.14	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#6	20.48	18.03	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	20.48	18.03	34.77	PASS



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Report No.: SZEM180200152401

Page: 4 of 19

Band13	5MHz	16QAM	23230	25RB#0	20.63	18.18	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#0	21.12	18.67	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	21.66	19.21	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	21.83	19.38	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	20.47	18.02	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	20.59	18.14	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#13	20.57	18.12	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	20.82	18.37	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	22.45	20.00	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	22.58	20.13	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	22.42	19.97	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	21.86	19.41	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	21.62	19.17	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	21.62	19.17	34.77	PASS
Band13	10MHz	QPSK	23230	50RB#0	21.70	19.25	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	21.45	19.00	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	21.99	19.54	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	21.71	19.26	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	20.75	18.30	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	20.64	18.19	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	20.48	18.03	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	20.61	18.16	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,

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

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

b: SGP=Signal Generator Level

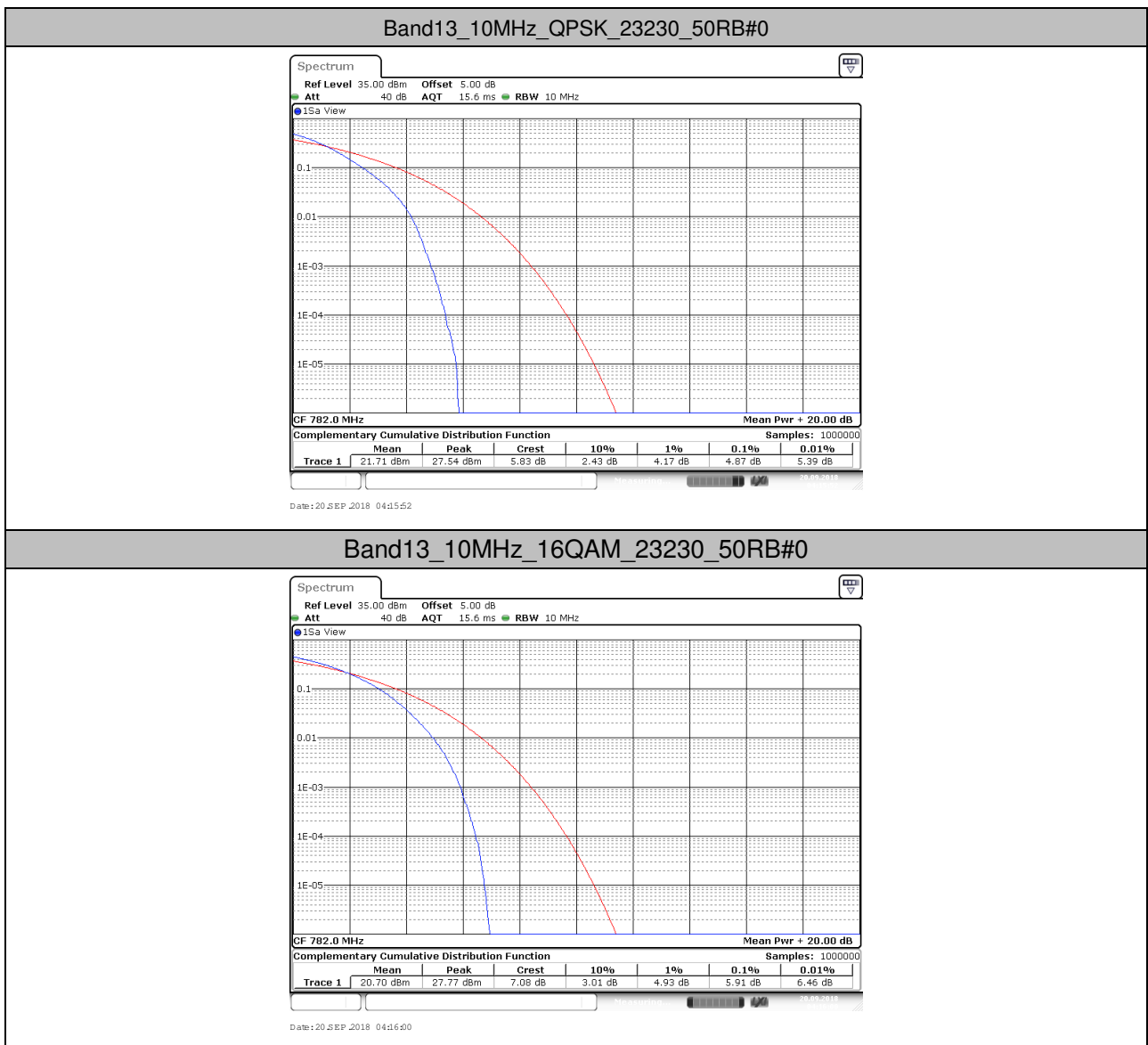


## 2. Peak-to-Average Ratio(CCDFF)

### 2.1.Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	4.87	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.91	13	PASS

### 2.2. Test Plots

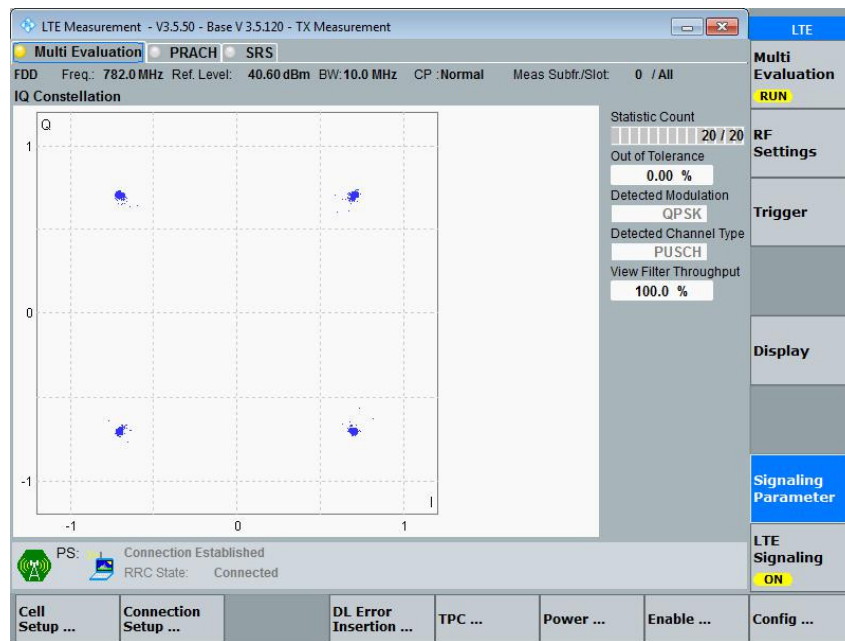


### 3. Modulation Characteristics

#### 3.1. Test BAND = LTE BAND13

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

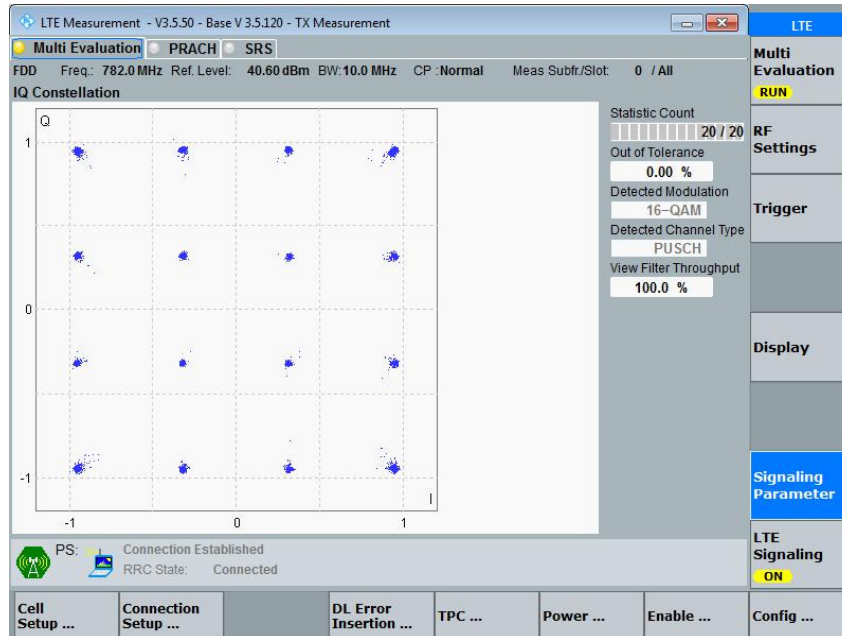
##### 3.1.1.1. Test Channel = MCH





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

#### 3.1.2.1. Test Channel = MCH



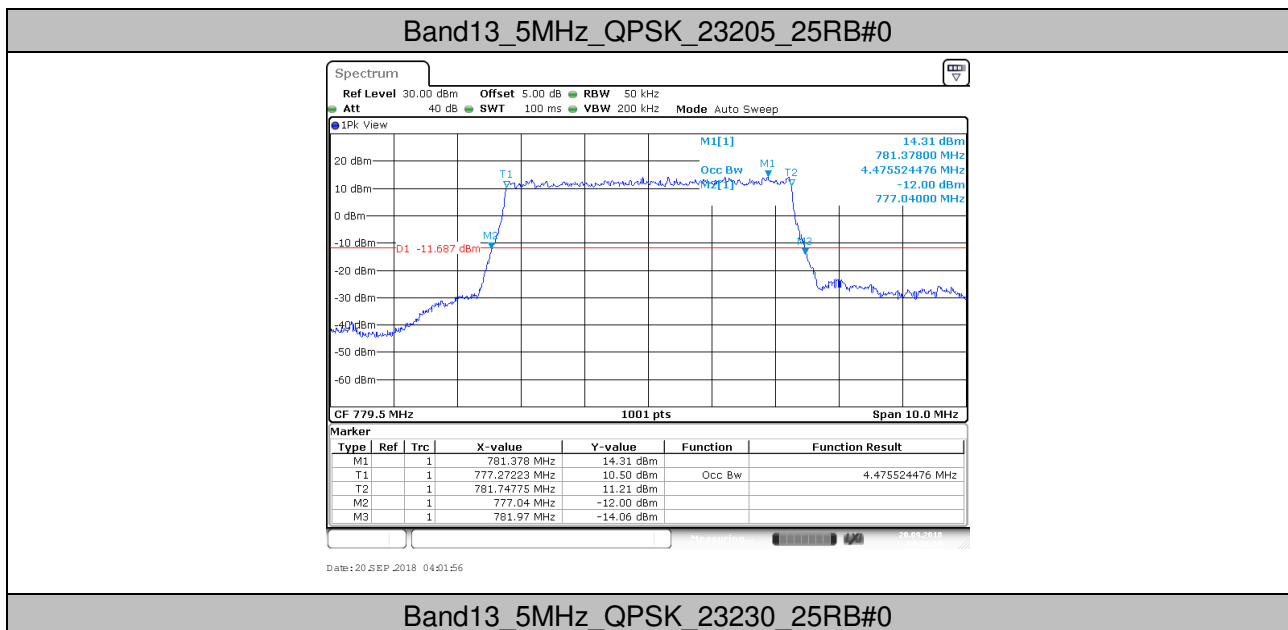


## 4. 26dB Bandwidth and Occupied Bandwidth

### 4.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.476	4.930	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.466	4.920	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.466	4.930	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	4.950	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.486	4.960	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.486	4.930	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.891	9.640	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.891	9.700	PASS

### 4.2. Test Plots



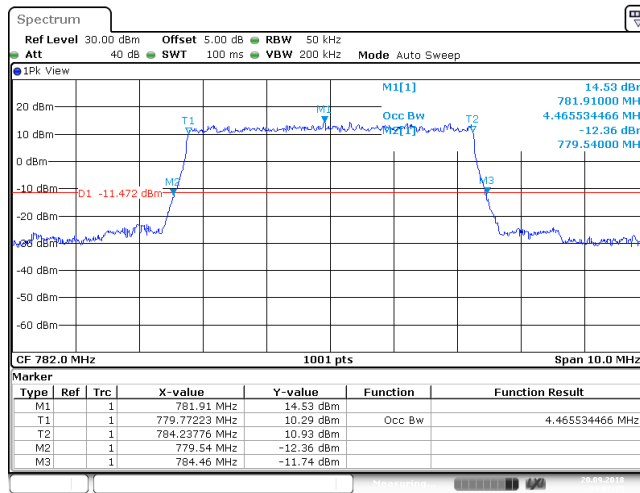




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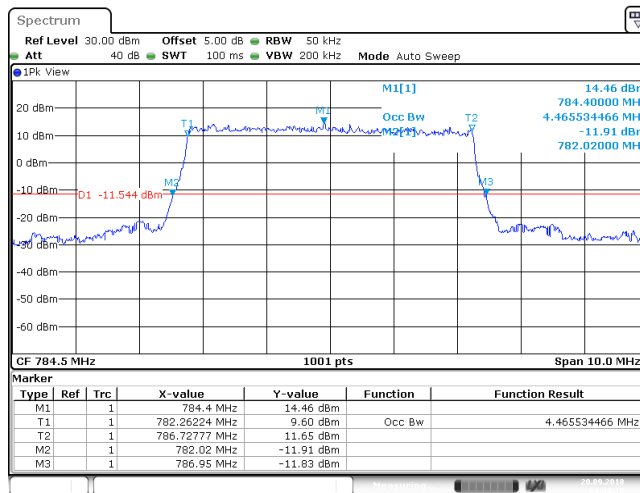
Report No.: SZEM180200152401

Page: 9 of 19



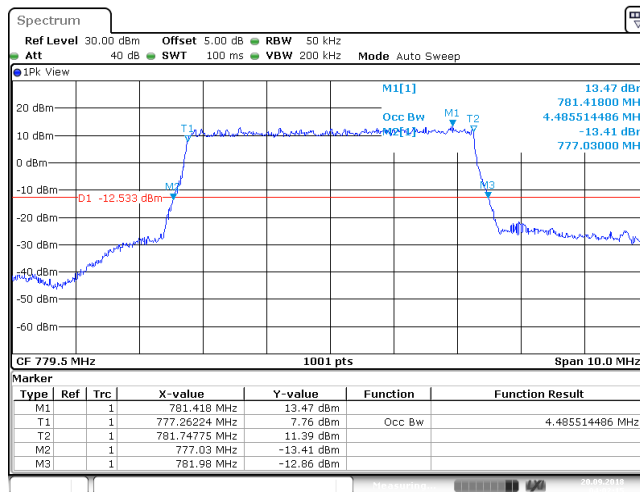
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Date: 20 SEP 2018 04:03:15

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Date: 20 SEP 2018 04:02:15

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

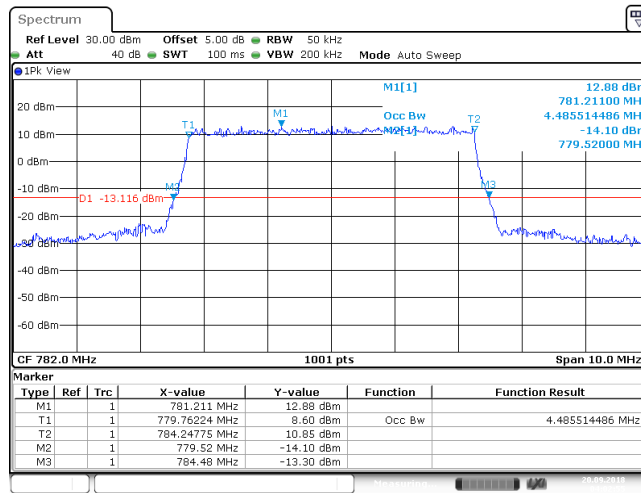
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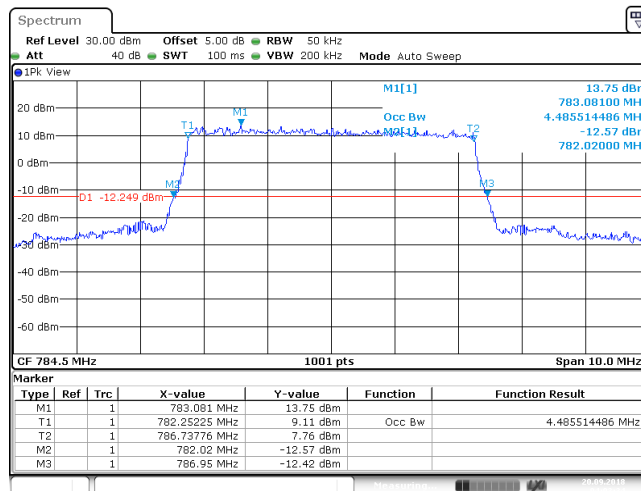
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Page: 10 of 19



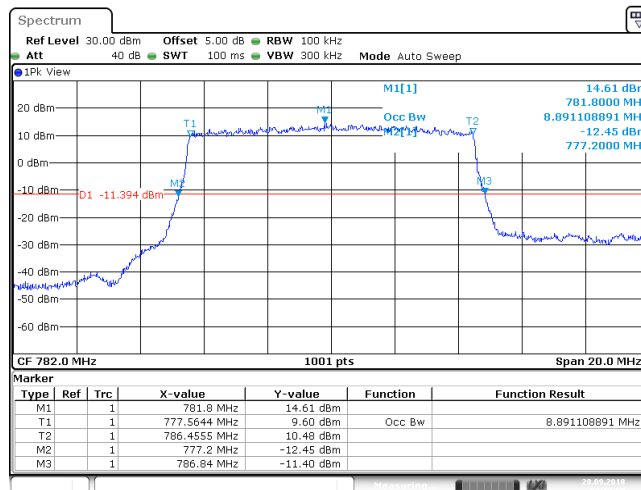
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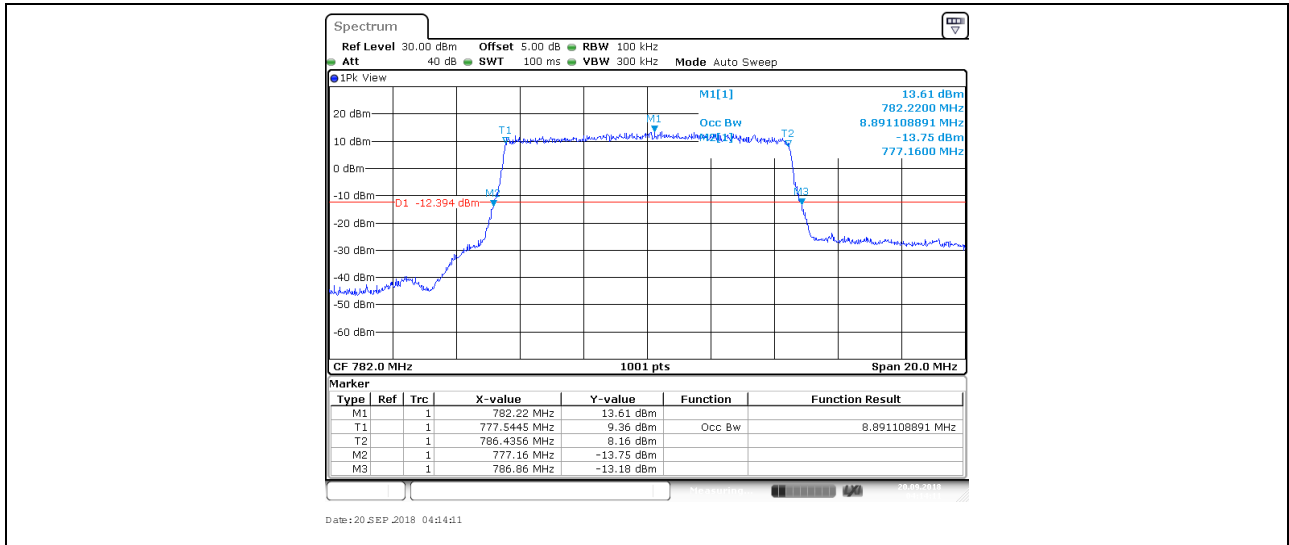
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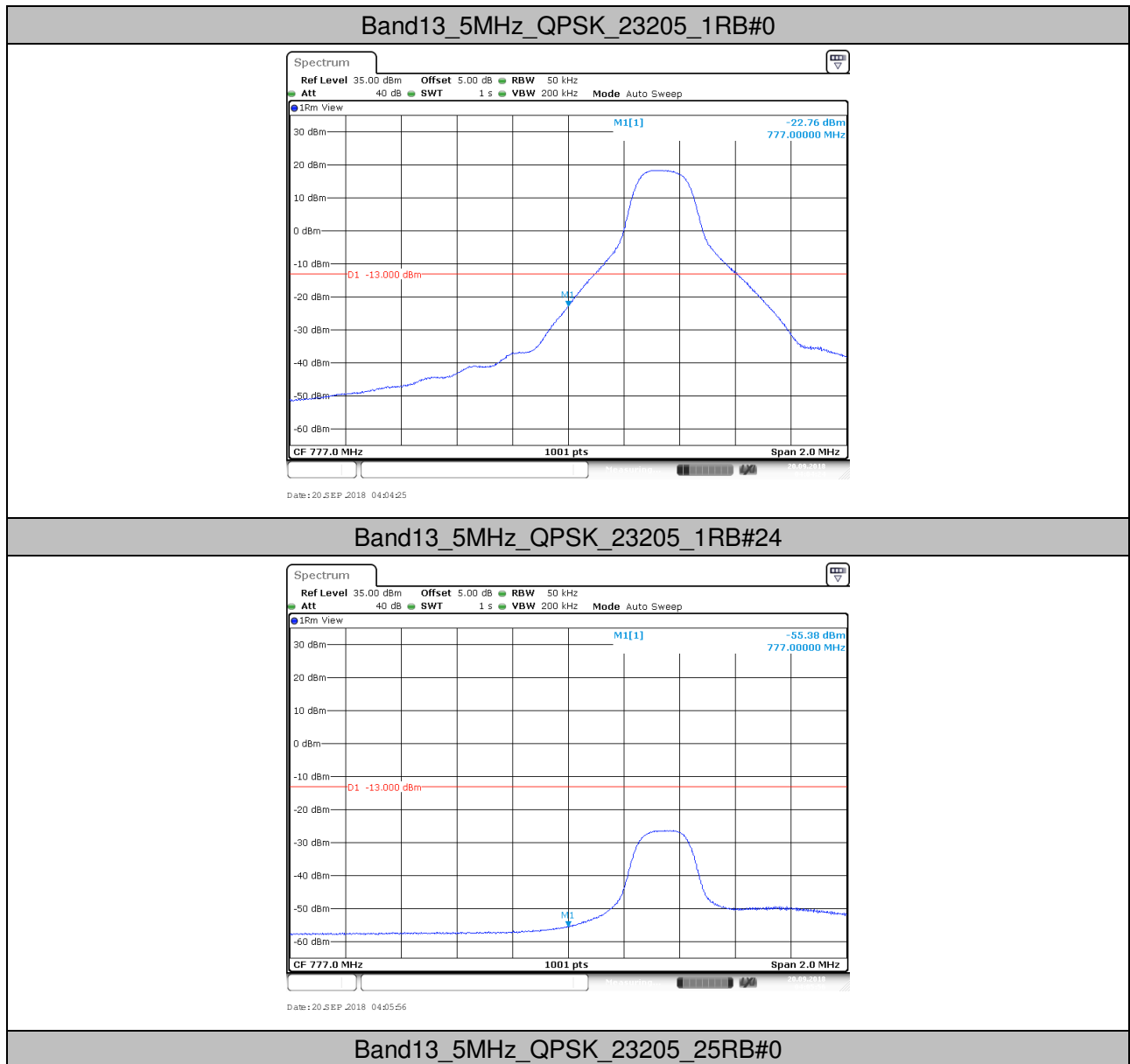
Page: 11 of 19





## 5. Band Edge Compliance

### 5.1. Test Plots

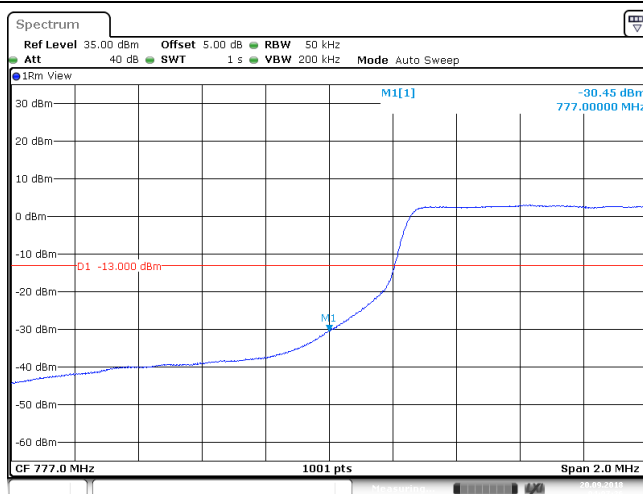




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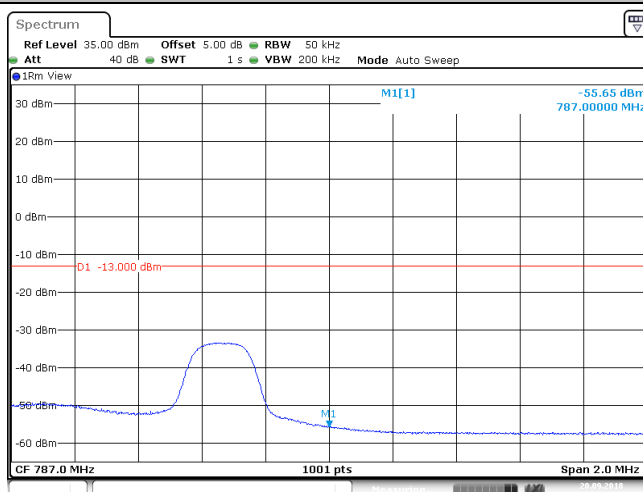
Report No.: SZEM180200152401

Page: 13 of 19



Date: 20 SEP 2018 04:07:27

## Band13\_5MHz\_QPSK\_23255\_1RB#0



Date: 20 SEP 2018 04:09:04

## Band13\_5MHz\_QPSK\_23255\_1RB#24



Date: 20 SEP 2018 04:10:35

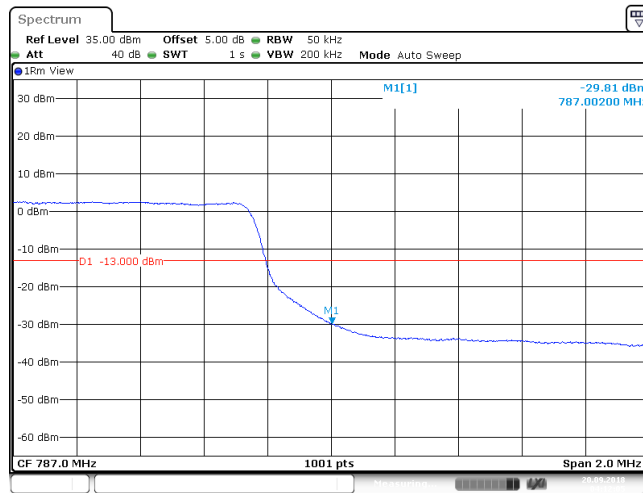
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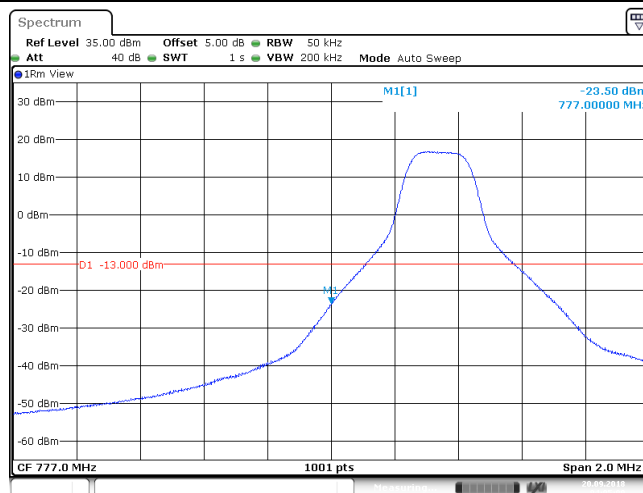
Report No.: SZEM180200152401

Page: 14 of 19



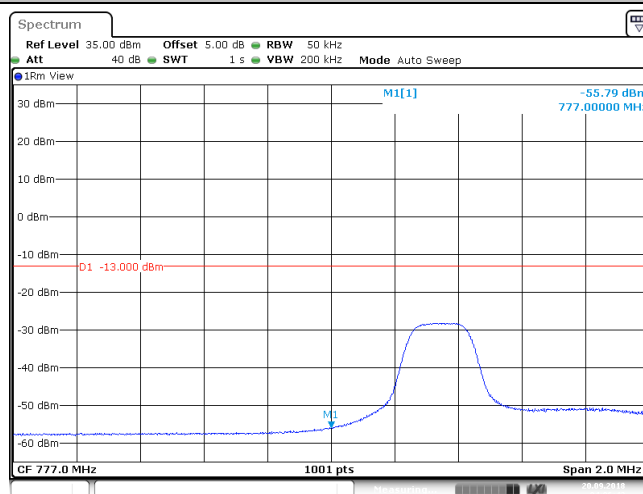
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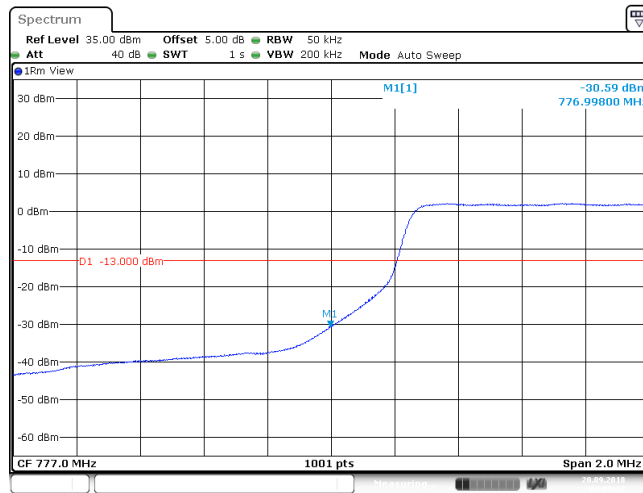
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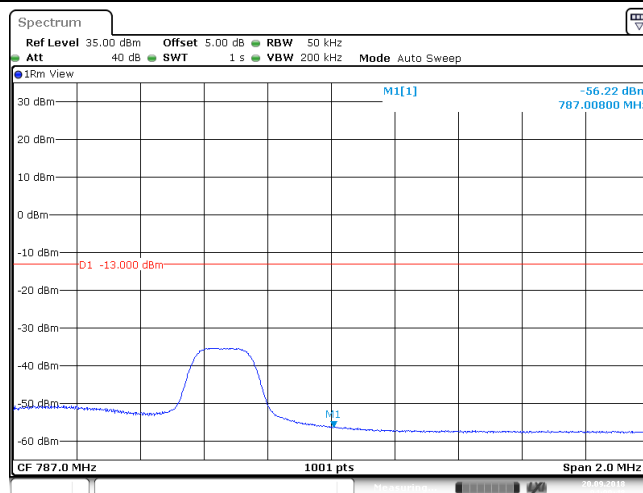
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Page: 15 of 19



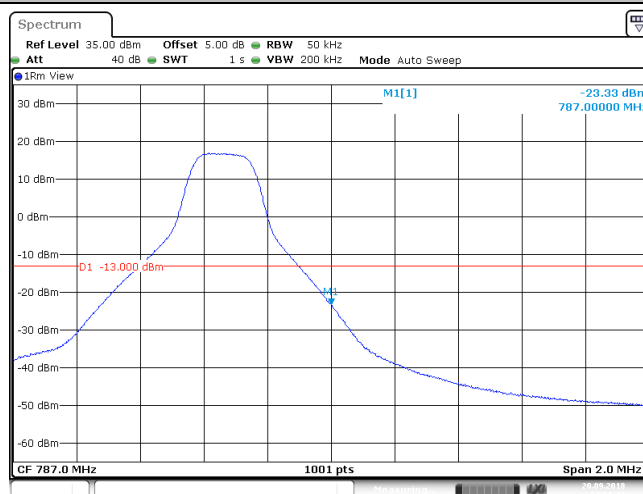
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Date: 20 SEP 2018 04:09:49

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



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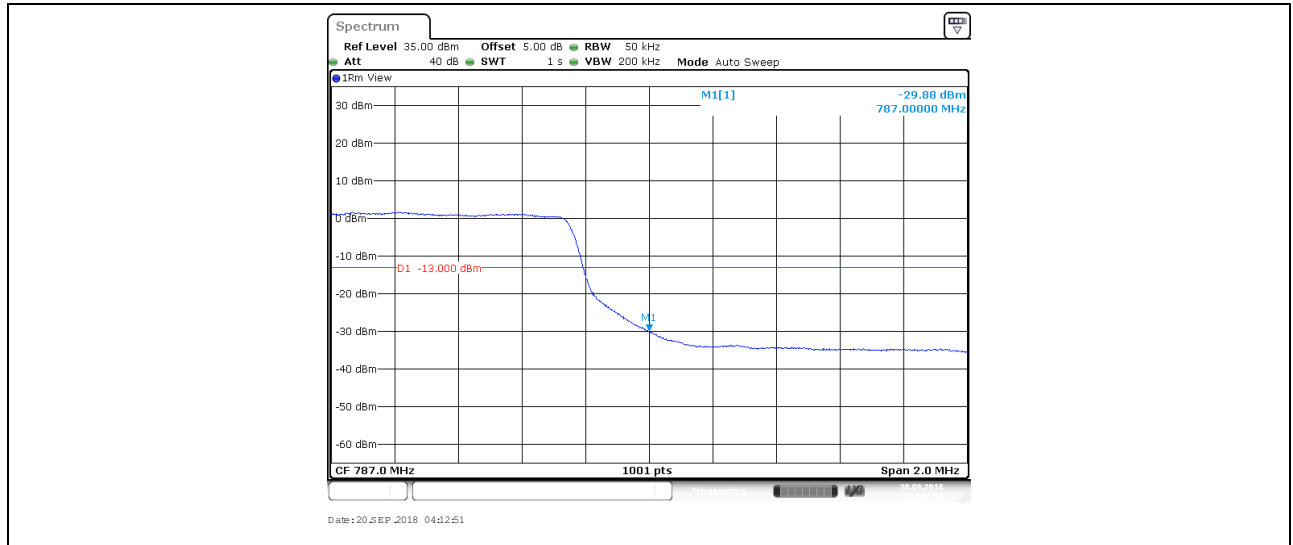
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Report No.: SZEM180200152401

Page: 16 of 19







## 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 =  $k \cdot (\text{Span} / \text{RBW})$ " 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





## **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**

<b>Frequency (MHz)</b>	<b>Level (dBm)</b>	<b>Limit Line (dBm)</b>	<b>Margin (dB)</b>	<b>Polarization</b>
74.846667	-79.68	-13.00	66.68	Vertical
143.960000	-78.98	-13.00	65.98	Vertical
288.020000	-80.55	-13.00	67.55	Vertical
1584.500000	-66.21	-40.00	26.21	Vertical
3110.175000	-63.59	-13.00	50.59	Vertical
4665.300000	-65.43	-13.00	52.43	Vertical
62.620000	-77.14	-13.00	64.14	Horizontal
143.960000	-79.71	-13.00	66.71	Horizontal
288.020000	-80.25	-13.00	67.25	Horizontal
1584.000000	-66.03	-40.00	26.03	Horizontal
2397.500000	-59.01	-13.00	46.01	Horizontal
3110.175000	-62.25	-13.00	49.25	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	-1.50	-0.001918	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-1.70	-0.002174	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-1.30	-0.001662	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	0.90	0.001151	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-0.80	-0.001023	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-0.10	-0.000128	±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	0.20	0.000256	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	0.10	0.000128	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-1.80	-0.002302	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-0.70	-0.000895	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-0.20	-0.000256	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-1.30	-0.001662	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-0.20	-0.000256	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-2.30	-0.002941	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-0.30	-0.000384	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	0.50	0.000639	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-0.50	-0.000639	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	1.40	0.001790	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	0.70	0.000895	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-0.90	-0.001151	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-1.00	-0.001279	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-0.20	-0.000256	±2.5	PASS

The End