



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#0 | 23.49 | 17.39 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23205 | 1RB#12 | 23.69 | 17.59 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23205 | 1RB#24 | 23.44 | 17.34 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23205 | 12RB#0 | 22.62 | 16.52 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23205 | 12RB#6 | 22.69 | 16.59 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23205 | 12RB#13 | 22.60 | 16.50 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23205 | 25RB#0 | 22.69 | 16.59 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 1RB#0 | 23.49 | 17.39 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 1RB#12 | 23.71 | 17.61 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 1RB#24 | 23.44 | 17.34 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 12RB#0 | 22.65 | 16.55 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 12RB#6 | 22.67 | 16.57 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 12RB#13 | 22.61 | 16.51 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 25RB#0 | 22.70 | 16.60 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 1RB#0 | 23.48 | 17.38 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 1RB#12 | 23.71 | 17.61 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 1RB#24 | 23.43 | 17.33 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 12RB#0 | 22.63 | 16.53 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 12RB#6 | 22.65 | 16.55 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 12RB#13 | 22.59 | 16.49 | 34.77 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 25RB#0 | 22.67 | 16.57 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 1RB#0 | 22.63 | 16.53 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 1RB#12 | 22.81 | 16.71 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 1RB#24 | 22.69 | 16.59 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 12RB#0 | 21.62 | 15.52 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 12RB#6 | 21.68 | 15.58 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 12RB#13 | 21.64 | 15.54 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 25RB#0 | 21.61 | 15.51 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 1RB#0 | 22.66 | 16.56 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 1RB#12 | 22.89 | 16.79 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 1RB#24 | 22.61 | 16.51 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 12RB#0 | 21.67 | 15.57 | 34.77 | PASS |



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| | | | | | | | | |
|--------|-------|-------|-------|---------|-------|-------|-------|------|
| Band13 | 5MHz | 16QAM | 23230 | 12RB#6 | 21.69 | 15.59 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 12RB#13 | 21.64 | 15.54 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 25RB#0 | 21.62 | 15.52 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 1RB#0 | 22.59 | 16.49 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 1RB#12 | 22.90 | 16.80 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 1RB#24 | 22.55 | 16.45 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 12RB#0 | 21.63 | 15.53 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 12RB#6 | 21.66 | 15.56 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 12RB#13 | 21.61 | 15.51 | 34.77 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 25RB#0 | 21.59 | 15.49 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 1RB#0 | 23.58 | 17.48 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 1RB#24 | 23.67 | 17.57 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 1RB#49 | 23.50 | 17.40 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 25RB#0 | 22.83 | 16.73 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 25RB#12 | 22.75 | 16.65 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 25RB#25 | 22.70 | 16.60 | 34.77 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | 22.77 | 16.67 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0 | 22.69 | 16.59 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#24 | 22.89 | 16.79 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#49 | 22.60 | 16.50 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 25RB#0 | 21.73 | 15.63 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 25RB#12 | 21.67 | 15.57 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 25RB#25 | 21.66 | 15.56 | 34.77 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | 21.69 | 15.59 | 34.77 | PASS |

Remark:

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

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

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



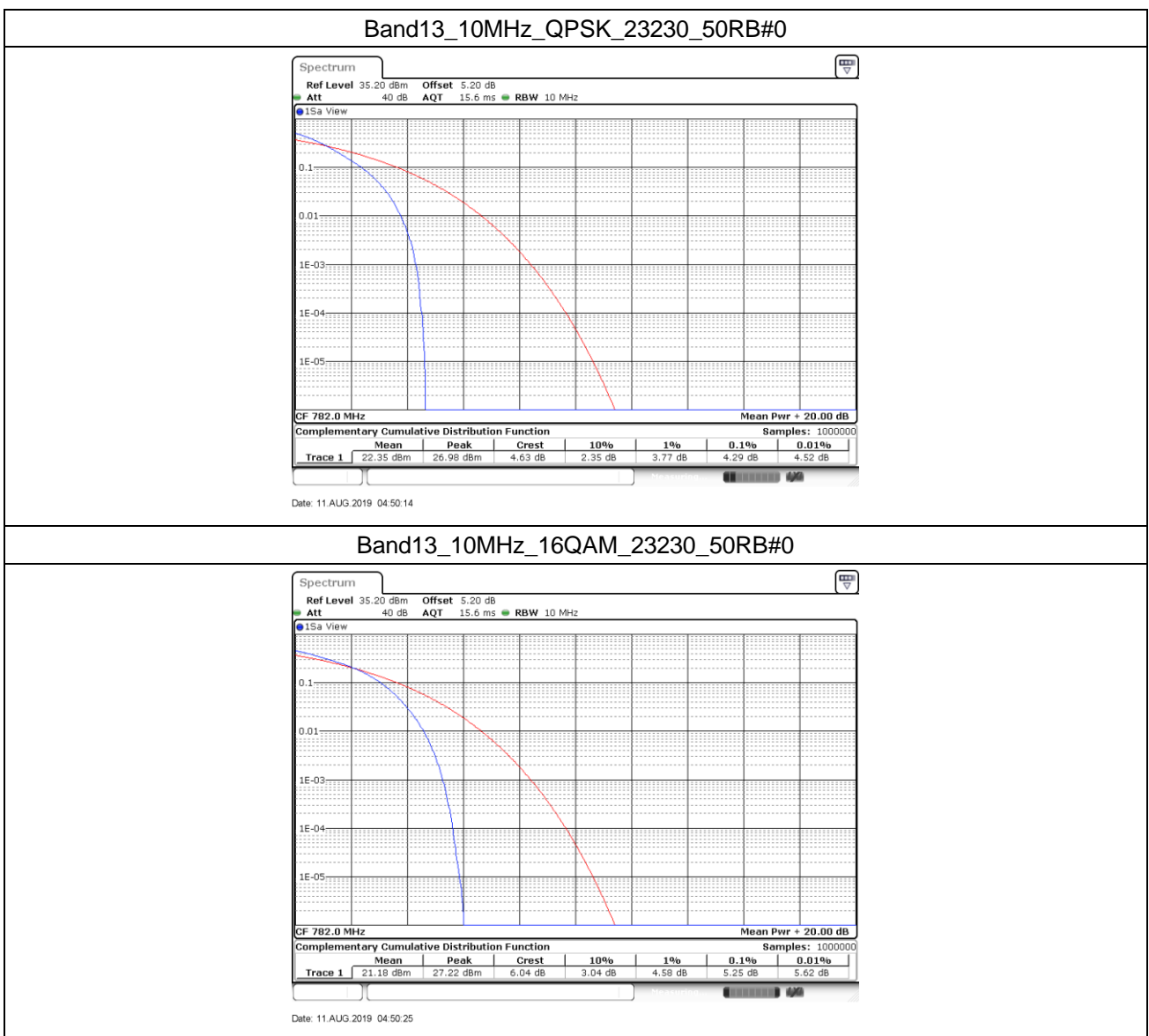
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2. Peak-to-Average Ratio (CCDF)

2.1. Test Result

| Band | Bandwidth | Modulation | Channel | RB Configuration | Result(dB) | Limit(dB) | Verdict |
|--------|-----------|------------|---------|------------------|------------|-----------|---------|
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | 4.29 | 13 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | 5.25 | 13 | PASS |

2.2. Test Plots



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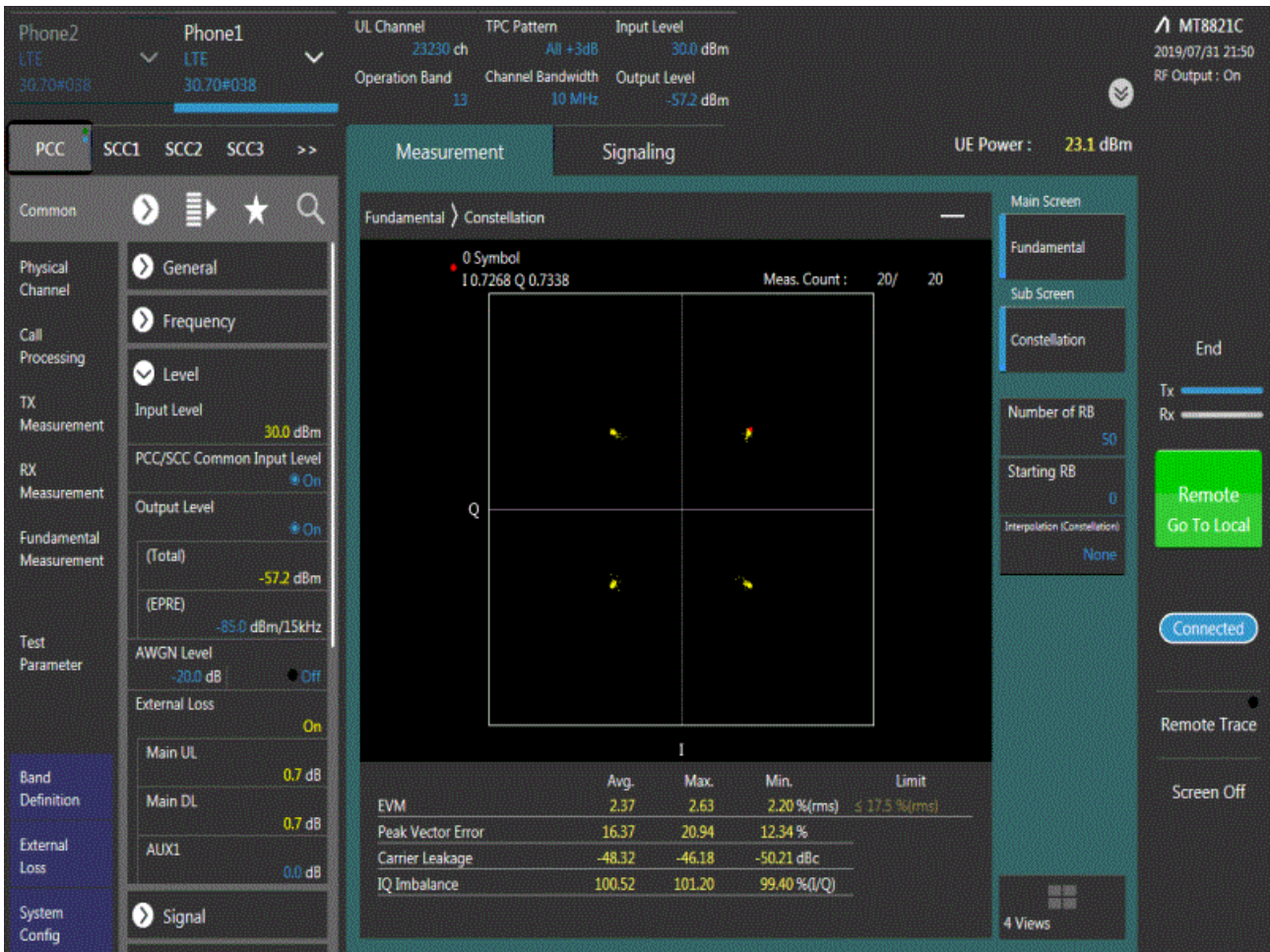
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3. Modulation Characteristics

3.1. Test Band = LTE Band 13

3.2. Test Mode = LTE /TM1 10MHz

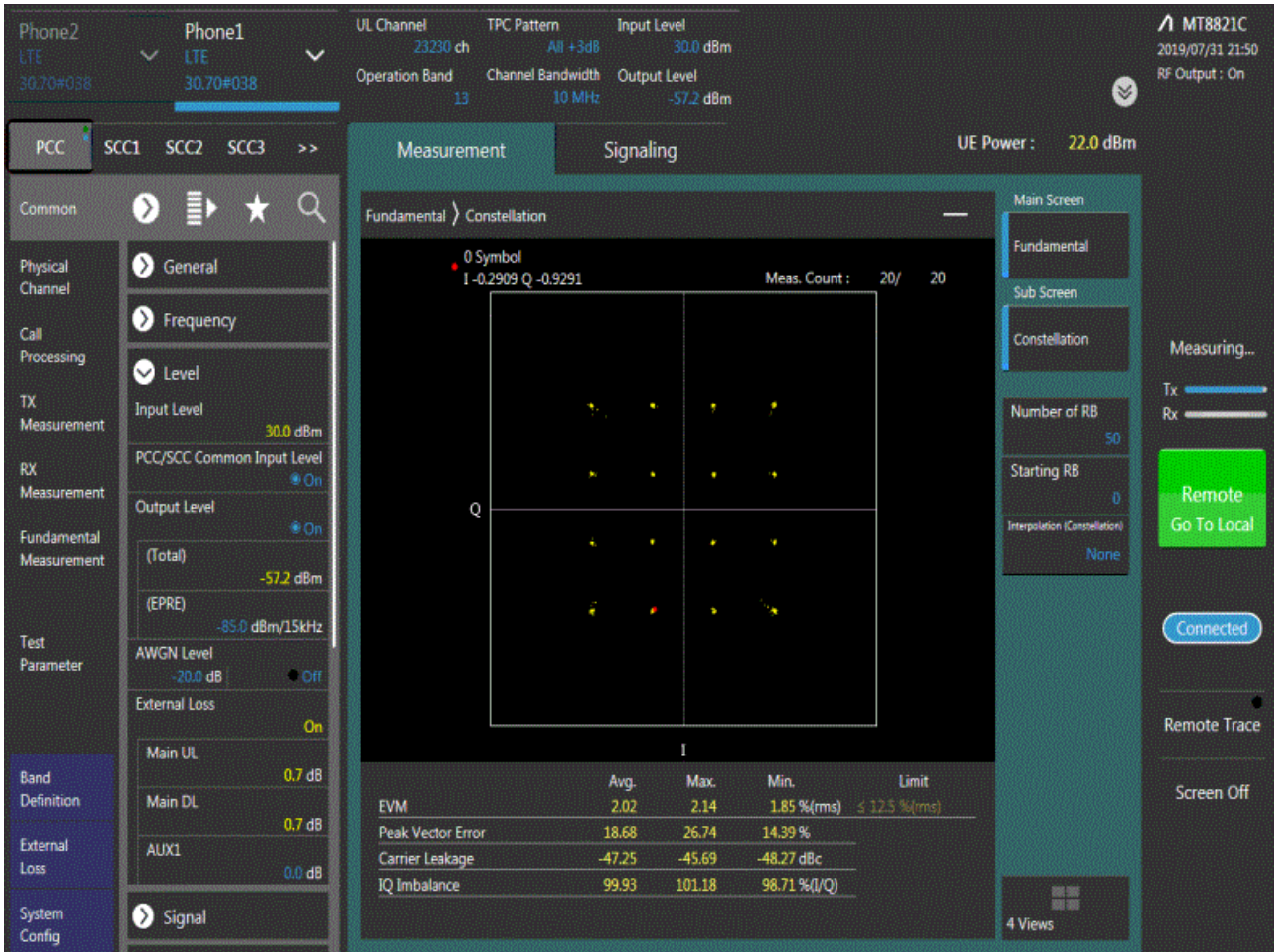
3.2.1. Test Channel = MCH



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3.3. Test Mode = LTE /TM2 10MHz

3.3.1. Test Channel = MCH



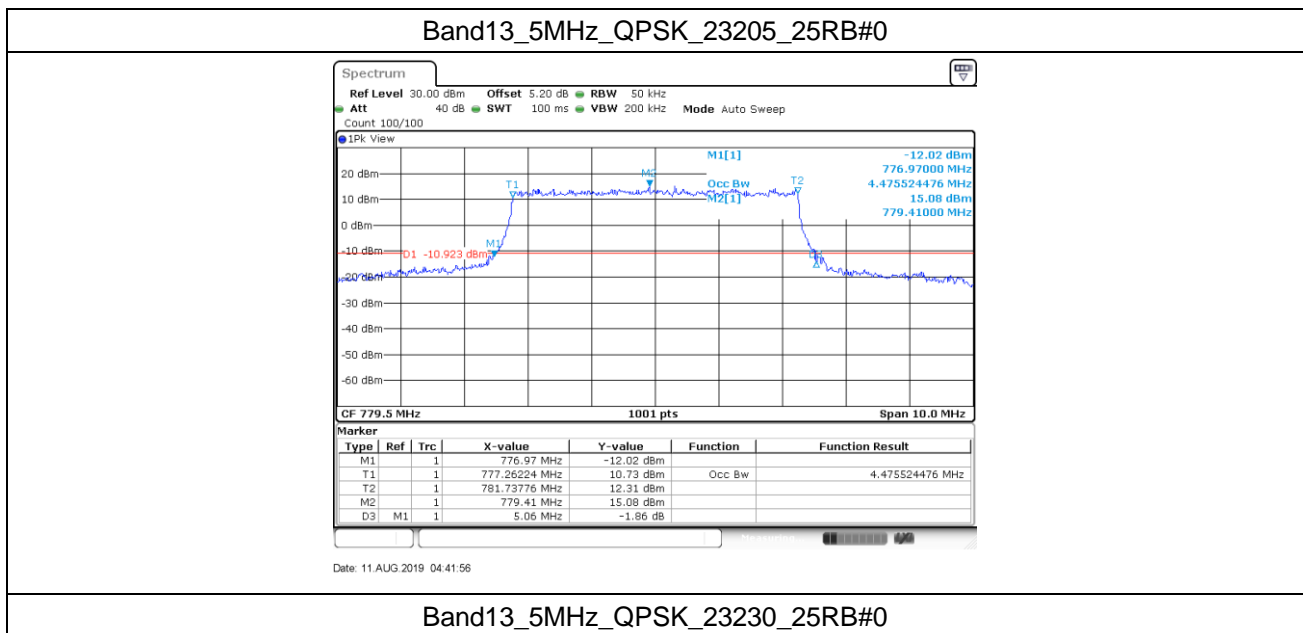
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4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

| Band | Bandwidth | Modulation | Channel | RB Configuration | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) | Verdict |
|--------|-----------|------------|---------|------------------|--------------------------|----------------------|---------|
| Band13 | 5MHz | QPSK | 23205 | 25RB#0 | 4.476 | 5.060 | PASS |
| Band13 | 5MHz | QPSK | 23230 | 25RB#0 | 4.476 | 5.100 | PASS |
| Band13 | 5MHz | QPSK | 23255 | 25RB#0 | 4.486 | 5.090 | PASS |
| Band13 | 5MHz | 16QAM | 23205 | 25RB#0 | 4.486 | 5.100 | PASS |
| Band13 | 5MHz | 16QAM | 23230 | 25RB#0 | 4.496 | 5.100 | PASS |
| Band13 | 5MHz | 16QAM | 23255 | 25RB#0 | 4.496 | 5.120 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | 8.951 | 9.880 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | 8.951 | 9.920 | PASS |

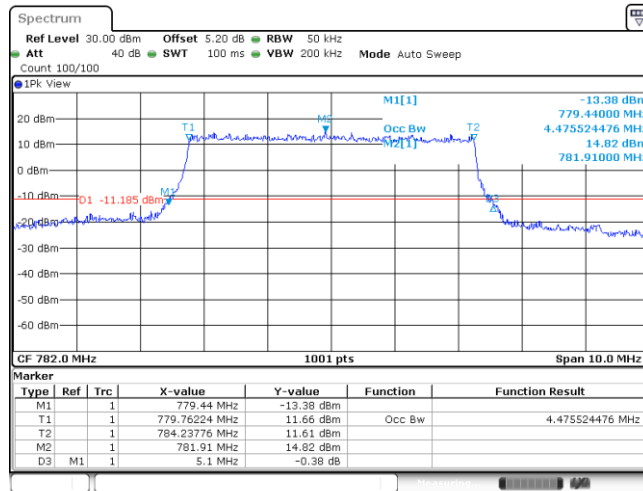
4.2. Test Plots



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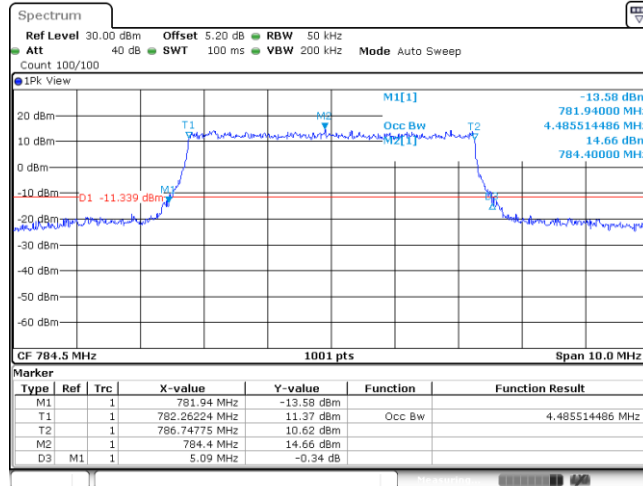
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Date: 11 AUG 2019 04:42:36

Band13_5MHz_QPSK_23255_25RB#0

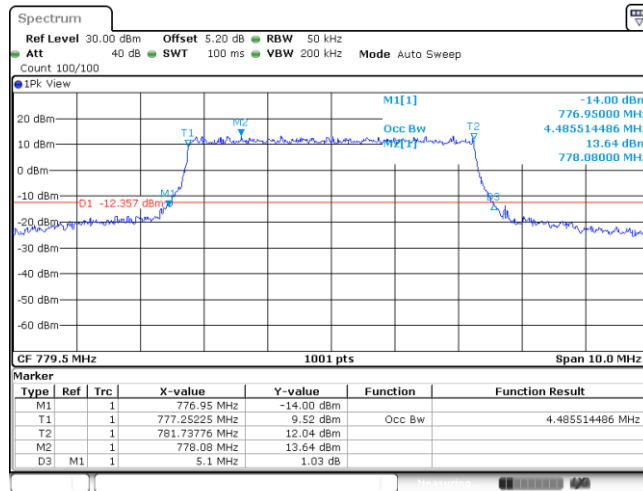


Date: 11 AUG 2019 04:43:16

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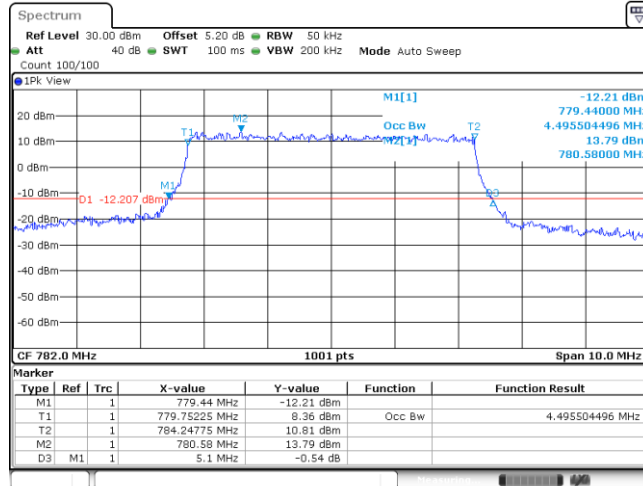


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Band13_5MHz_16QAM_23230_25RB#

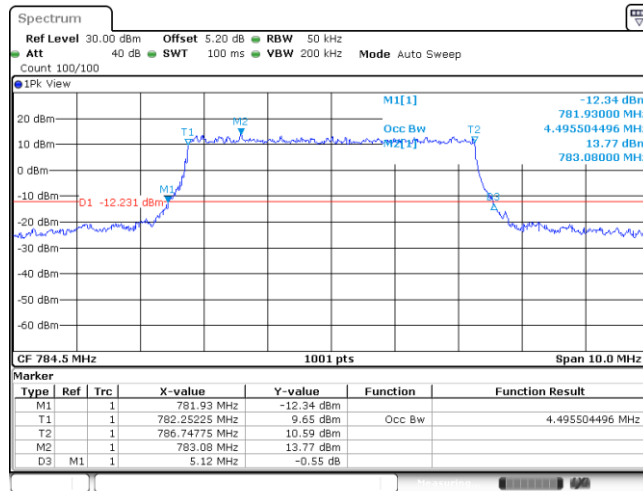


Date: 11 AUG 2019 04:42:55

Band13_5MHz_16QAM_23255_25RB#

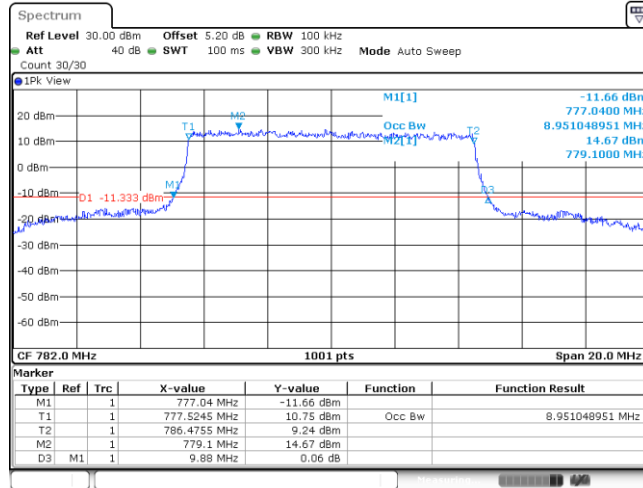


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Band13_10MHz_QPSK_23230_50RB#0

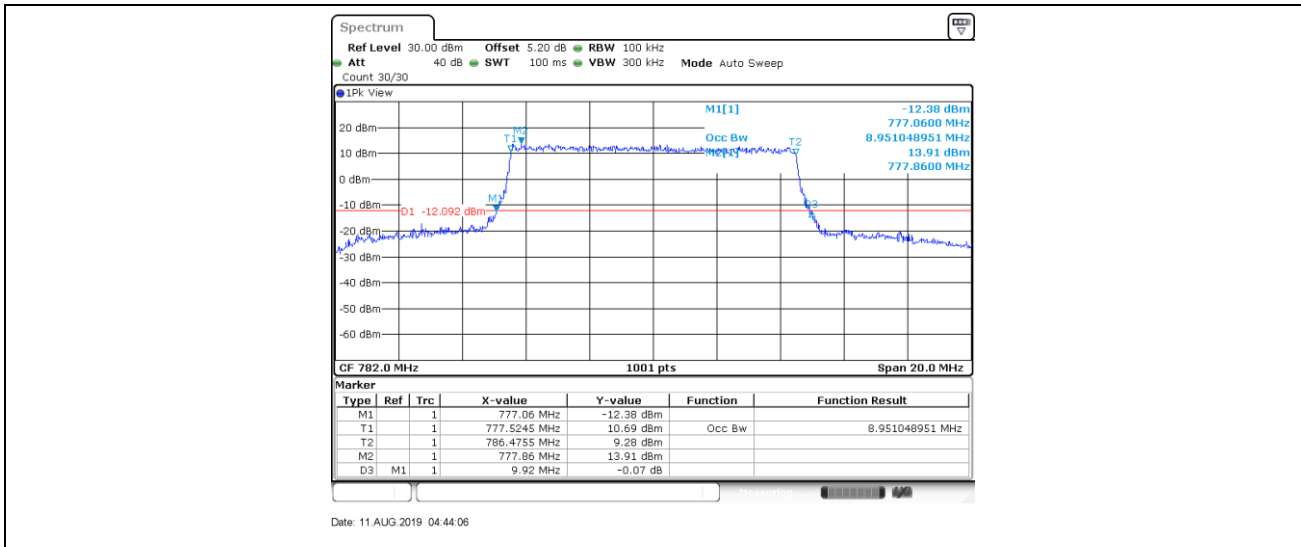


Date: 11 AUG 2019 04:43:53

Band13_10MHz_16QAM_23230_50RB#0



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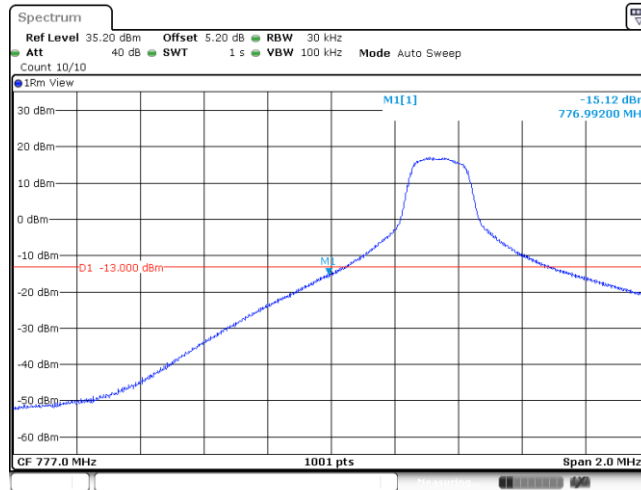
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5. Band Edge Compliance

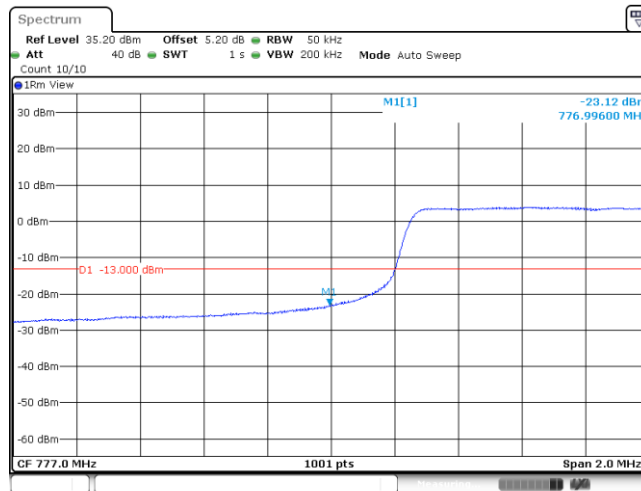
5.1. Test Plots

Band13_5MHz_QPSK_23205_1RB#0



Date: 11 AUG.2019 04:44:31

Band13_5MHz_QPSK_23205_25RB#0

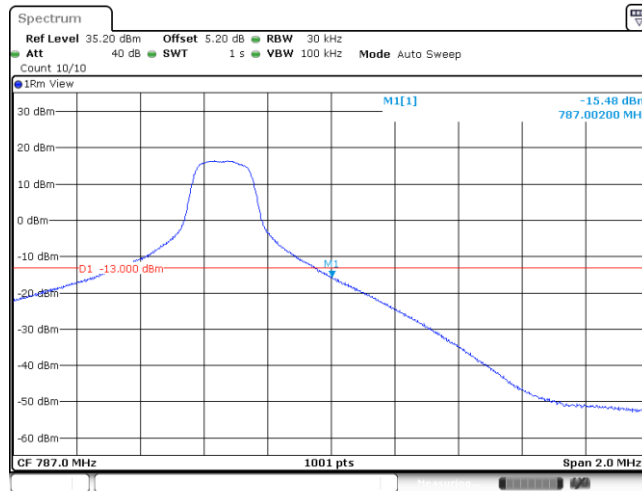


Date: 11 AUG.2019 04:45:59

Band13_5MHz_QPSK_23255_1RB#24

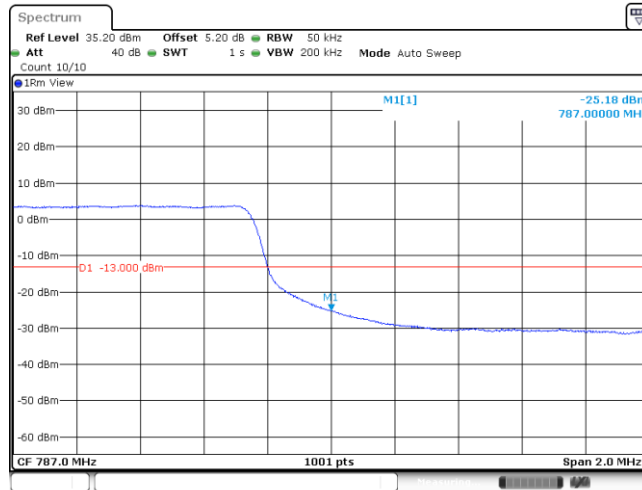


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Date: 11 AUG.2019 04:45:15

Band13_5MHz_QPSK_23255_25RB#0

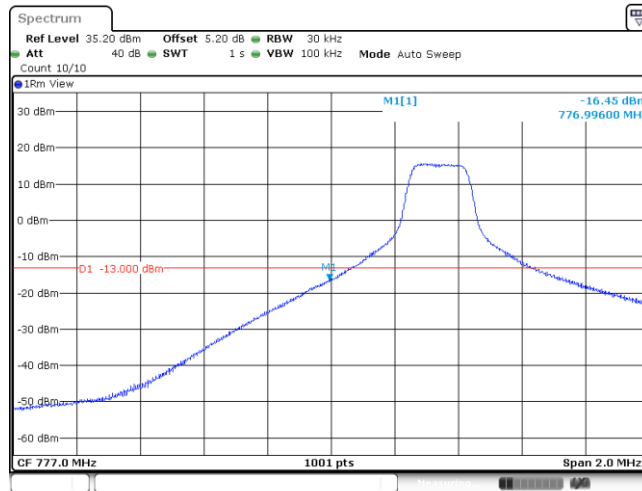


Date: 11 AUG.2019 04:46:39

Band13_5MHz_16QAM_23205_1RB#0

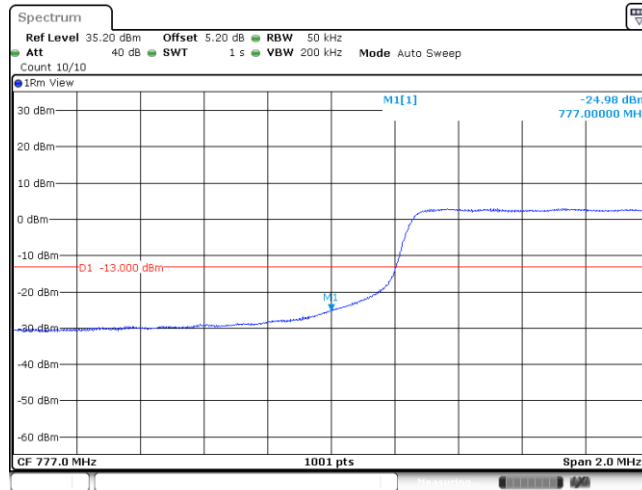


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Date: 11 AUG.2019 04:44:51

Band13_5MHz_16QAM_23205_25RB#0

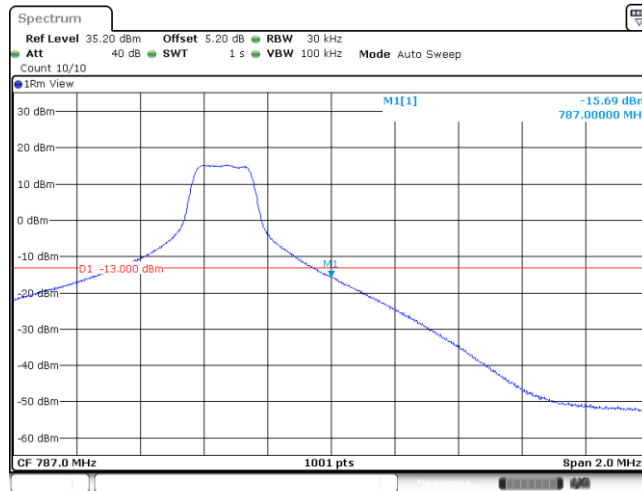


Date: 11 AUG.2019 04:46:19

Band13_5MHz_16QAM_23255_1RB#24

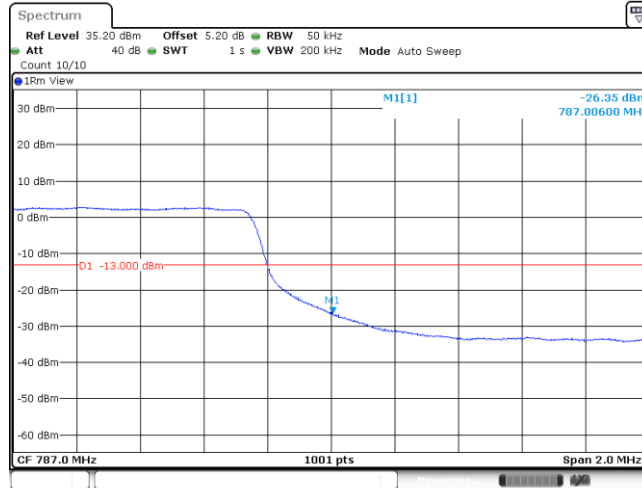


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Date: 11 AUG.2019 04:45:35

Band13_5MHz_16QAM_23255_25RB#0

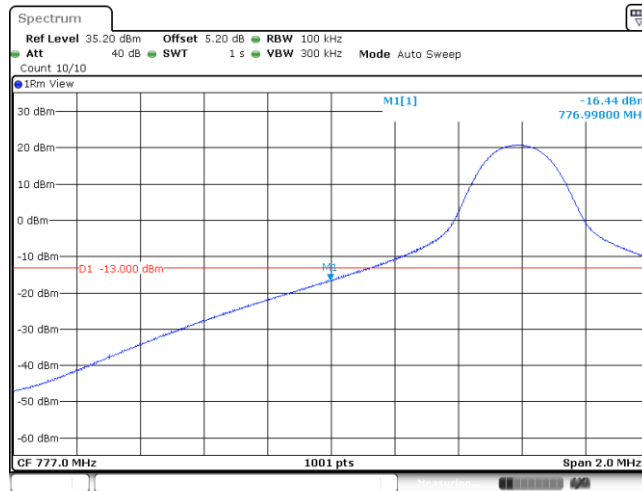


Date: 11 AUG.2019 04:46:58

Band13_10MHz_QPSK_23230_Left_1RB#0

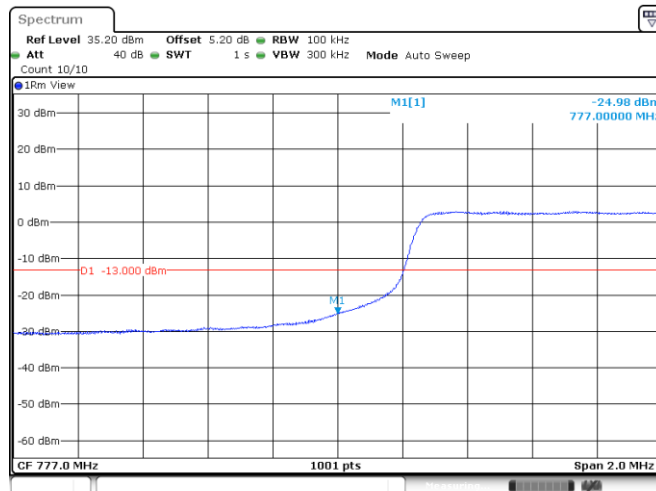


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Date: 1.AUG.2019 07:30:21

Band13_10MHz_QPSK_23230_Left_50RB#0

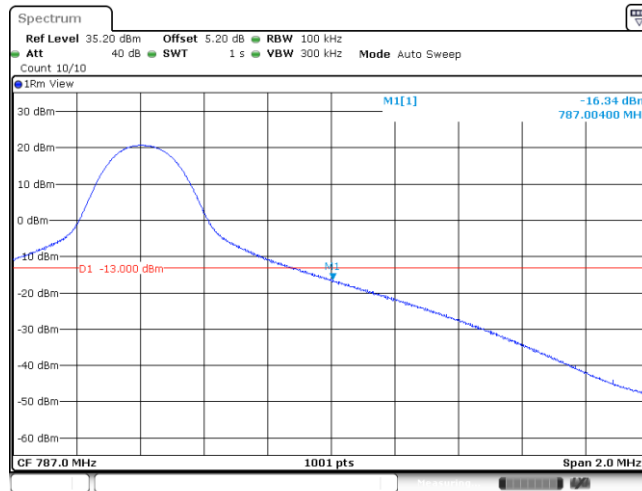


Date: 11.AUG.2019 04:46:19

Band13_10MHz_QPSK_23230_Right_1RB#49

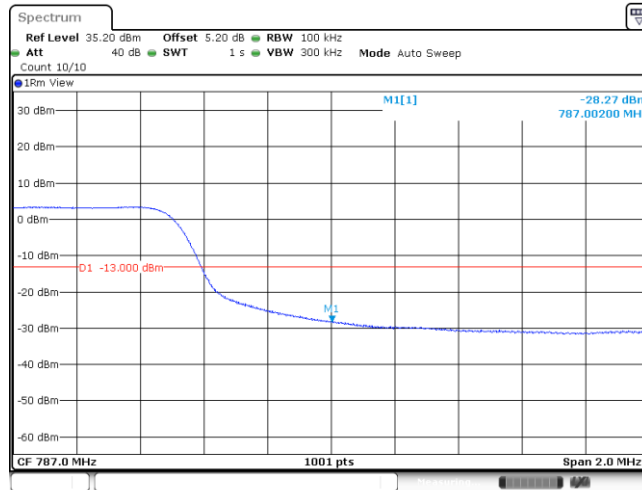


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Date: 1.AUG.2019 07:31:04

Band13_10MHz_QPSK_23230_Right_50RB#0

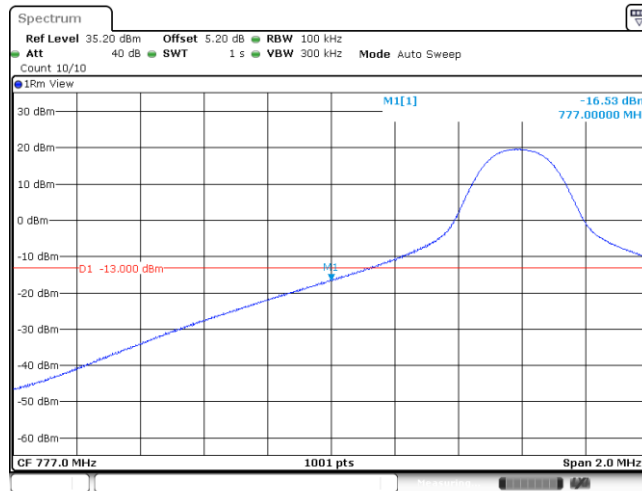


Date: 1.AUG.2019 07:31:43

Band13_10MHz_16QAM_23230_Left_1RB#0

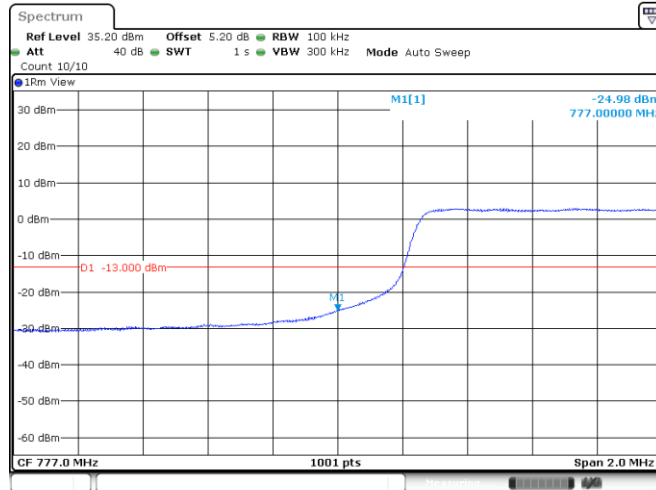


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Date: 1.AUG.2019 07:30:41

Band13_10MHz_16QAM_23230_Left_50RB#0

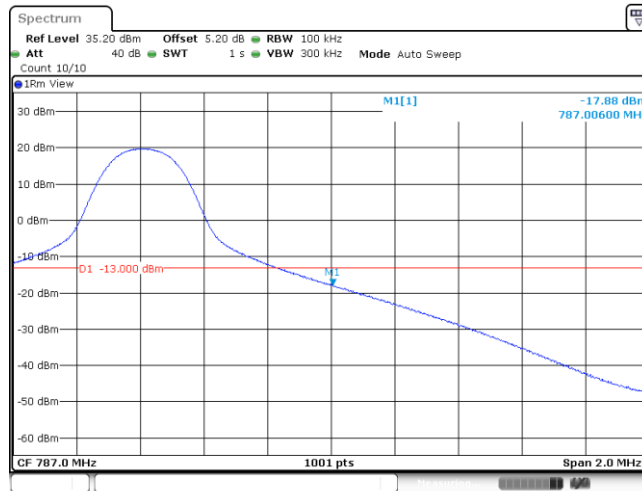


Date: 11.AUG.2019 04:46:19

Band13_10MHz_16QAM_23230_Right_1RB#49

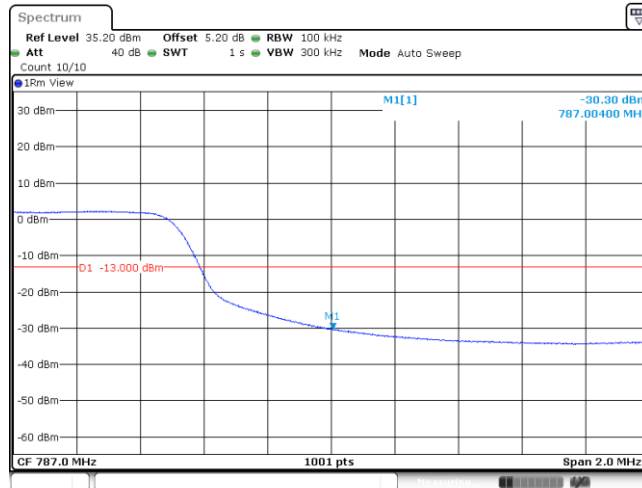


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Date: 1.AUG.2019 07:31:24

Band13_10MHz_16QAM_23230_Right_50RB#0



Date: 1.AUG.2019 07:32:03



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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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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 |
|-----------------|-------------|------------------|-------------|--------------|
| 113.0362 | -65.37 | -13.00 | 52.37 | Vertical |
| 600.7280 | -64.82 | -13.00 | 51.82 | Vertical |
| 2999.5999 | -56.31 | -13.00 | 43.31 | Vertical |
| 8048.6019 | -52.36 | -13.00 | 39.36 | Vertical |
| 14707.6683 | -42.30 | -13.00 | 29.30 | Vertical |
| 17984.9994 | -32.45 | -13.00 | 19.45 | Vertical |
| 41.5436 | -64.60 | -13.00 | 51.60 | Horizontal |
| 236.9113 | -68.30 | -13.00 | 55.30 | Horizontal |
| 2700.7401 | -56.00 | -13.00 | 43.00 | Horizontal |
| 10027.4811 | -48.94 | -13.00 | 35.94 | Horizontal |
| 16399.1360 | -37.84 | -13.00 | 24.84 | Horizontal |
| 17993.9998 | -37.40 | -13.00 | 24.40 | 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 had been displayed.
- 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 | -6.20 | -0.007928 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | VN | NT | -4.00 | -0.005115 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | VH | NT | -5.80 | -0.007417 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | VL | NT | -10.50 | -0.013427 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | VN | NT | -9.10 | -0.011637 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | VH | NT | -3.70 | -0.004731 | ±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 | -2.30 | -0.002941 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | -20 | -8.50 | -0.010870 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | 0 | -5.30 | -0.006777 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | 10 | -6.30 | -0.008056 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | 20 | -5.50 | -0.007033 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | 30 | -8.60 | -0.010997 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | 40 | -5.50 | -0.007033 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK | 23230 | 50RB#0 | NV | 50 | -8.90 | -0.011381 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | -30 | -3.40 | -0.004348 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | -20 | -7.50 | -0.009591 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | 0 | -7.10 | -0.009079 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | 10 | -2.40 | -0.003069 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | 20 | -2.00 | -0.002558 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | 30 | -2.10 | -0.002685 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | 40 | -4.90 | -0.006266 | ±2.5 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 50RB#0 | NV | 50 | -3.00 | -0.003836 | ±2.5 | PASS |

The End



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