



# Appendix for LTE Band13

## FCC ID: 2AC88-GLMU19A02

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APPENDIX A: EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA ..... 3

APPENDIX B: PEAK-TO-AVERAGE RATIO(CCDF) ..... 5

APPENDIX C: 26DB BANDWIDTH AND OCCUPIED BANDWIDTH..... 13

APPENDIX D: BAND EDGE ..... 18

APPENDIX E: CONDUCTED SPURIOUS EMISSION ..... 26

APPENDIX F: FREQUENCY STABILITY ..... 48

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## Appendix A: Effective (Isotropic) Radiated Power Output Data

### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	23.94	PASS
Band13	5MHz	QPSK	23205	1RB#12	23.97	PASS
Band13	5MHz	QPSK	23205	1RB#24	23.84	PASS
Band13	5MHz	QPSK	23205	12RB#0	23.05	PASS
Band13	5MHz	QPSK	23205	12RB#6	22.97	PASS
Band13	5MHz	QPSK	23205	12RB#13	22.80	PASS
Band13	5MHz	QPSK	23205	25RB#0	22.94	PASS
Band13	5MHz	QPSK	23230	1RB#0	23.67	PASS
Band13	5MHz	QPSK	23230	1RB#12	23.71	PASS
Band13	5MHz	QPSK	23230	1RB#24	23.47	PASS
Band13	5MHz	QPSK	23230	12RB#0	22.85	PASS
Band13	5MHz	QPSK	23230	12RB#6	22.81	PASS
Band13	5MHz	QPSK	23230	12RB#13	22.70	PASS
Band13	5MHz	QPSK	23230	25RB#0	22.80	PASS
Band13	5MHz	QPSK	23255	1RB#0	23.75	PASS
Band13	5MHz	QPSK	23255	1RB#12	23.64	PASS
Band13	5MHz	QPSK	23255	1RB#24	23.74	PASS
Band13	5MHz	QPSK	23255	12RB#0	22.60	PASS
Band13	5MHz	QPSK	23255	12RB#6	22.64	PASS
Band13	5MHz	QPSK	23255	12RB#13	22.70	PASS
Band13	5MHz	QPSK	23255	25RB#0	22.63	PASS
Band13	5MHz	16QAM	23205	1RB#0	23.11	PASS
Band13	5MHz	16QAM	23205	1RB#12	22.76	PASS
Band13	5MHz	16QAM	23205	1RB#24	22.78	PASS
Band13	5MHz	16QAM	23205	12RB#0	22.97	PASS
Band13	5MHz	16QAM	23205	12RB#6	22.97	PASS
Band13	5MHz	16QAM	23205	12RB#13	22.78	PASS
Band13	5MHz	16QAM	23205	25RB#0	21.78	PASS
Band13	5MHz	16QAM	23230	1RB#0	22.88	PASS
Band13	5MHz	16QAM	23230	1RB#12	22.51	PASS
Band13	5MHz	16QAM	23230	1RB#24	22.56	PASS
Band13	5MHz	16QAM	23230	12RB#0	22.81	PASS
Band13	5MHz	16QAM	23230	12RB#6	22.78	PASS

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Band13	5MHz	16QAM	23230	12RB#13	22.69	PASS
Band13	5MHz	16QAM	23230	25RB#0	21.80	PASS
Band13	5MHz	16QAM	23255	1RB#0	22.47	PASS
Band13	5MHz	16QAM	23255	1RB#12	22.28	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.21	PASS
Band13	5MHz	16QAM	23255	12RB#0	22.73	PASS
Band13	5MHz	16QAM	23255	12RB#6	22.67	PASS
Band13	5MHz	16QAM	23255	12RB#13	22.73	PASS
Band13	5MHz	16QAM	23255	25RB#0	21.65	PASS
Band13	10MHz	QPSK	23230	1RB#0	23.97	PASS
Band13	10MHz	QPSK	23230	1RB#24	23.67	PASS
Band13	10MHz	QPSK	23230	1RB#49	23.73	PASS
Band13	10MHz	QPSK	23230	25RB#0	22.85	PASS
Band13	10MHz	QPSK	23230	25RB#12	22.87	PASS
Band13	10MHz	QPSK	23230	25RB#25	22.64	PASS
Band13	10MHz	QPSK	23230	50RB#0	22.82	PASS
Band13	10MHz	16QAM	23230	1RB#0	22.97	PASS
Band13	10MHz	16QAM	23230	1RB#24	22.79	PASS
Band13	10MHz	16QAM	23230	1RB#49	22.28	PASS
Band13	10MHz	16QAM	23230	25RB#0	22.86	PASS
Band13	10MHz	16QAM	23230	25RB#12	22.87	PASS
Band13	10MHz	16QAM	23230	25RB#25	22.66	PASS
Band13	10MHz	16QAM	23230	50RB#0	21.57	PASS

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## Appendix B: Peak-to-Average Ratio(CCDF)

### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	3.68	13	PASS
Band13	5MHz	QPSK	23205	25RB#0	5.33	13	PASS
Band13	5MHz	QPSK	23230	1RB#0	3.62	13	PASS
Band13	5MHz	QPSK	23230	25RB#0	5.36	13	PASS
Band13	5MHz	QPSK	23255	1RB#0	3.65	13	PASS
Band13	5MHz	QPSK	23255	25RB#0	5.33	13	PASS
Band13	5MHz	16QAM	23205	1RB#0	4.58	13	PASS
Band13	5MHz	16QAM	23205	25RB#0	6.17	13	PASS
Band13	5MHz	16QAM	23230	1RB#0	4.38	13	PASS
Band13	5MHz	16QAM	23230	25RB#0	6.20	13	PASS
Band13	5MHz	16QAM	23255	1RB#0	4.46	13	PASS
Band13	5MHz	16QAM	23255	25RB#0	6.20	13	PASS
Band13	10MHz	QPSK	23230	1RB#0	3.65	13	PASS
Band13	10MHz	QPSK	23230	50RB#0	5.30	13	PASS
Band13	10MHz	16QAM	23230	1RB#0	4.52	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	6.20	13	PASS

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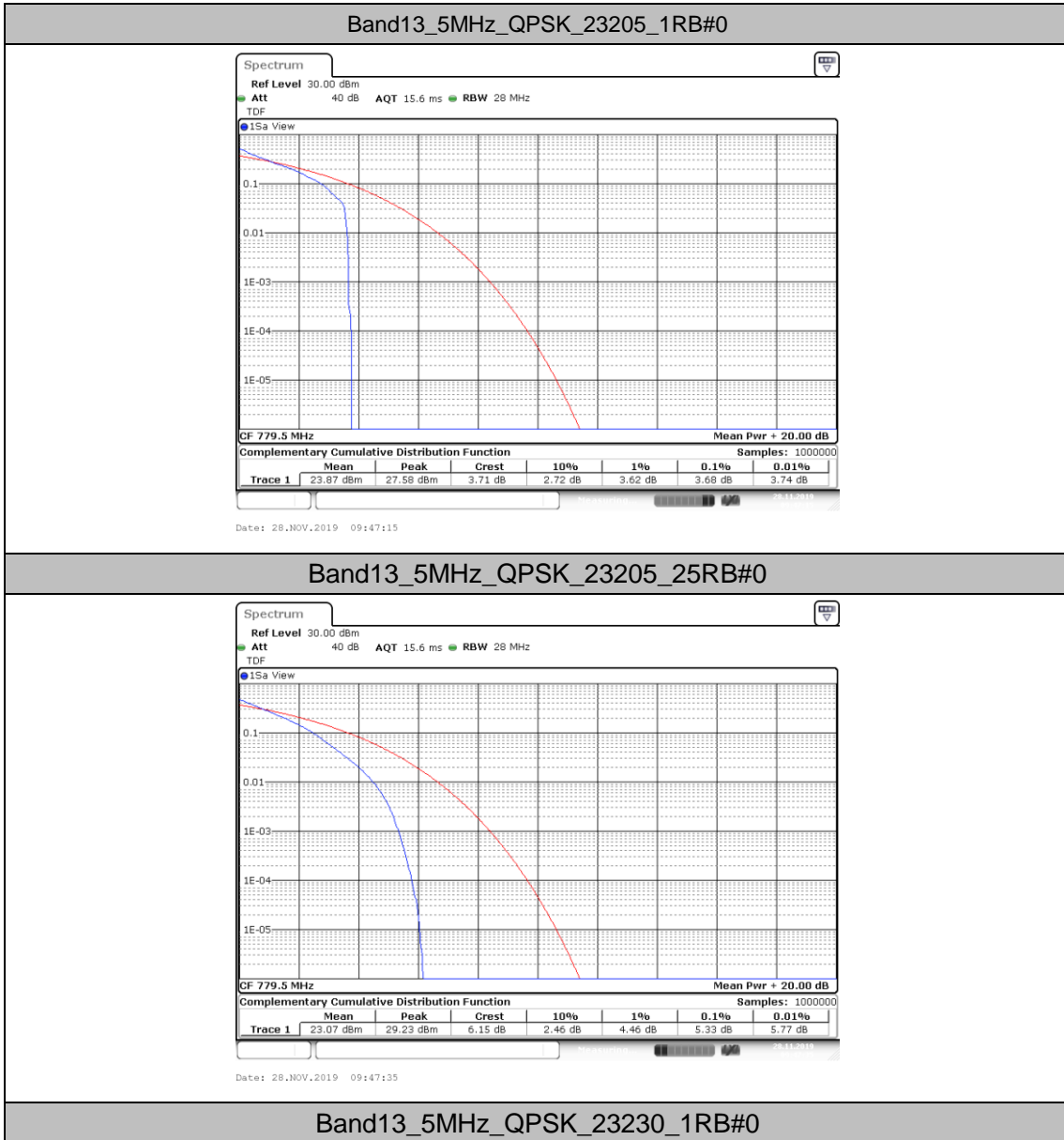
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### Test Graphs

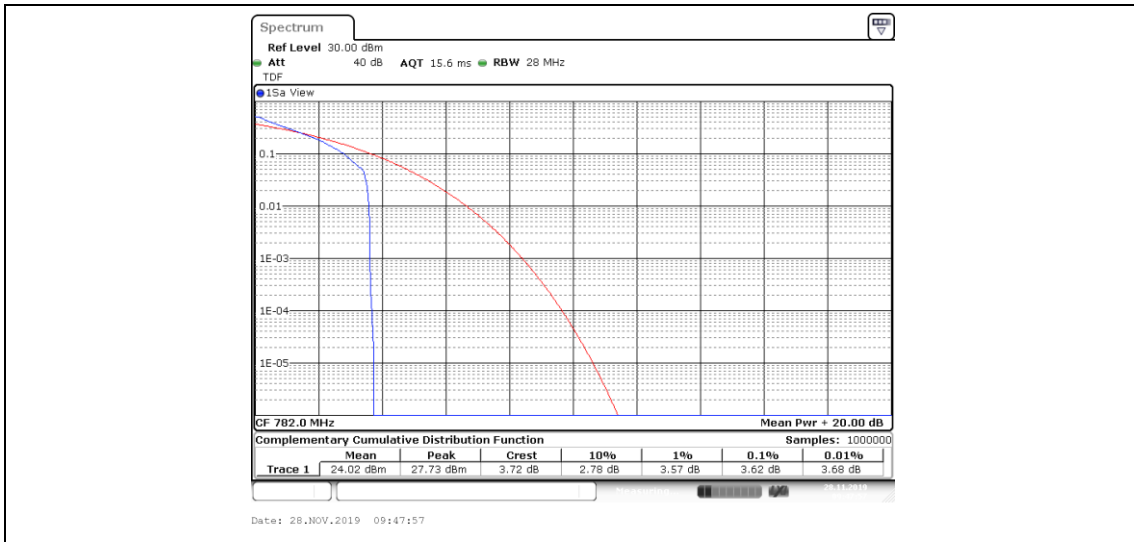


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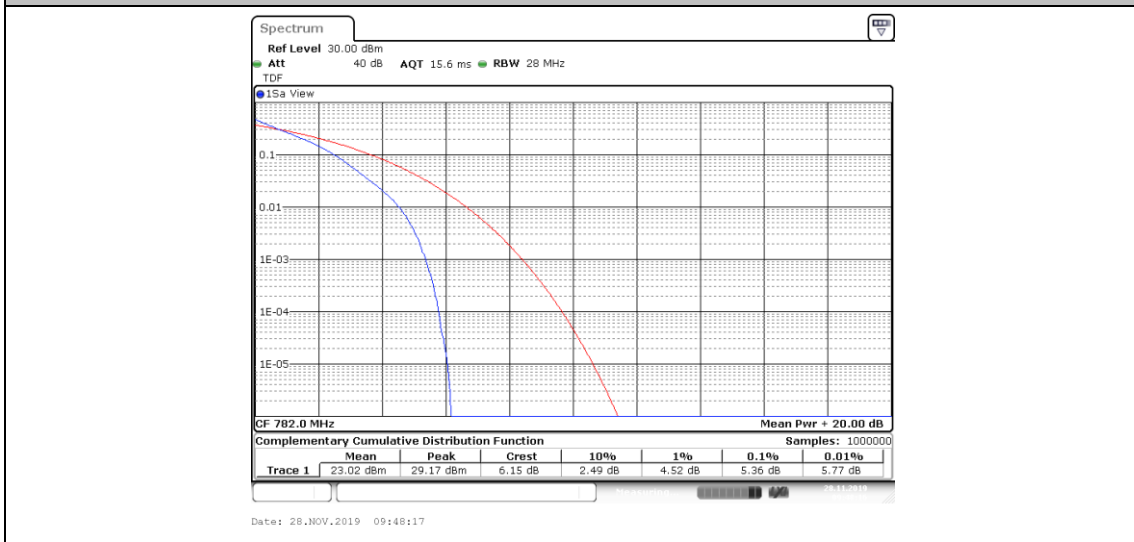
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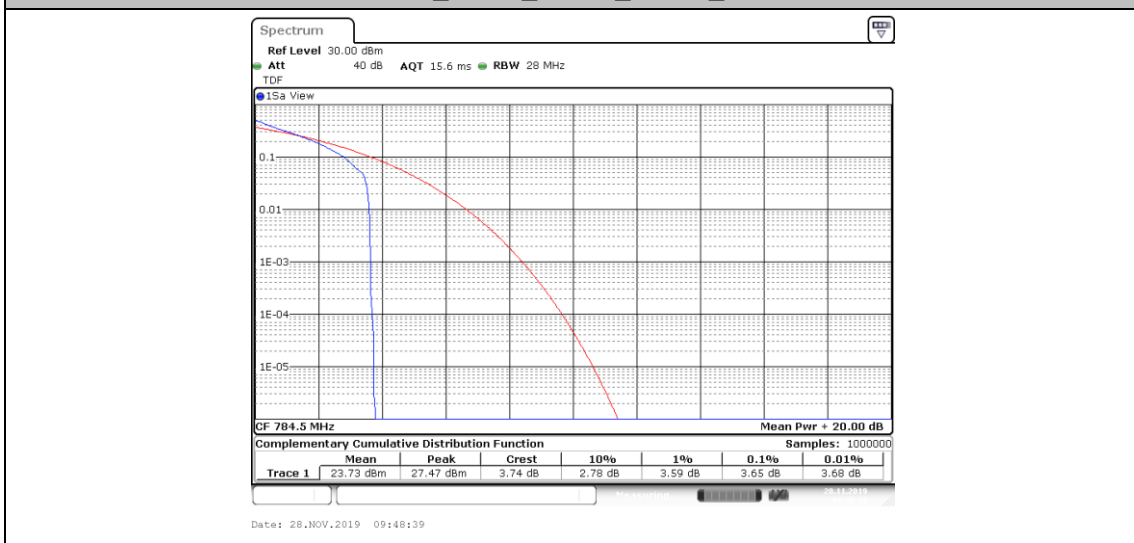
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Band13\_5MHz\_QPSK\_23230\_25RB#0



Band13\_5MHz\_QPSK\_23255\_1RB#0



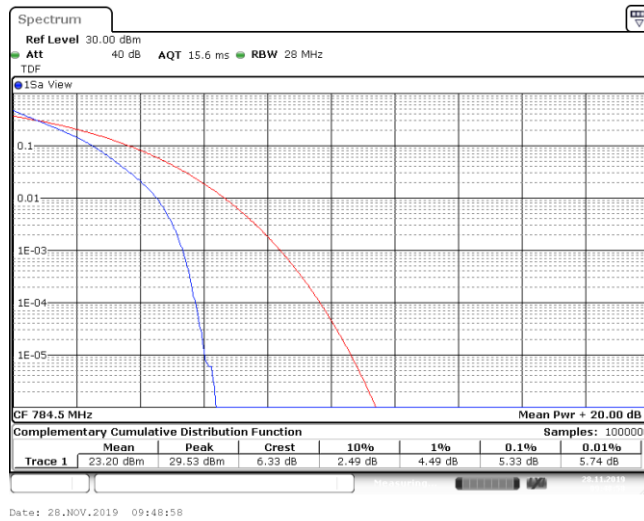
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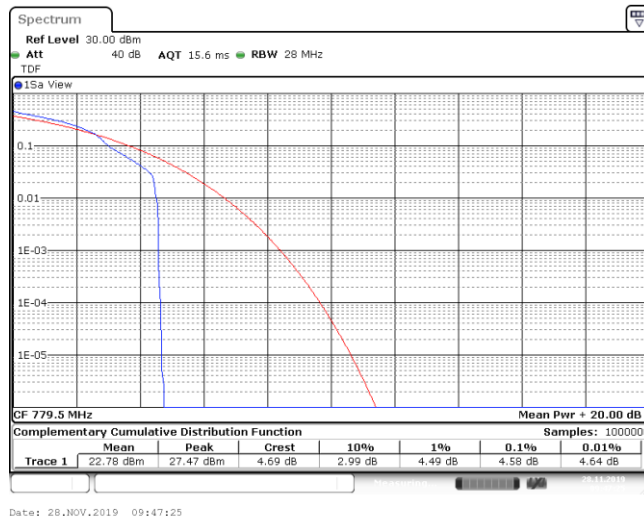


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Band13\_5MHz\_QPSK\_23255\_25RB#0



Band13\_5MHz\_16QAM\_23205\_1RB#0



Band13\_5MHz\_16QAM\_23205\_25RB#0

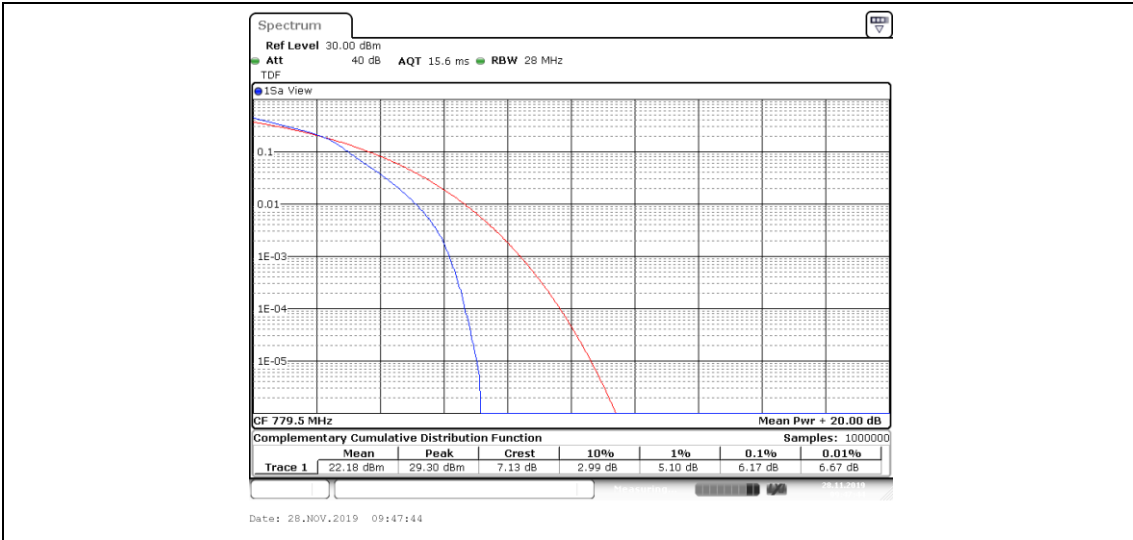
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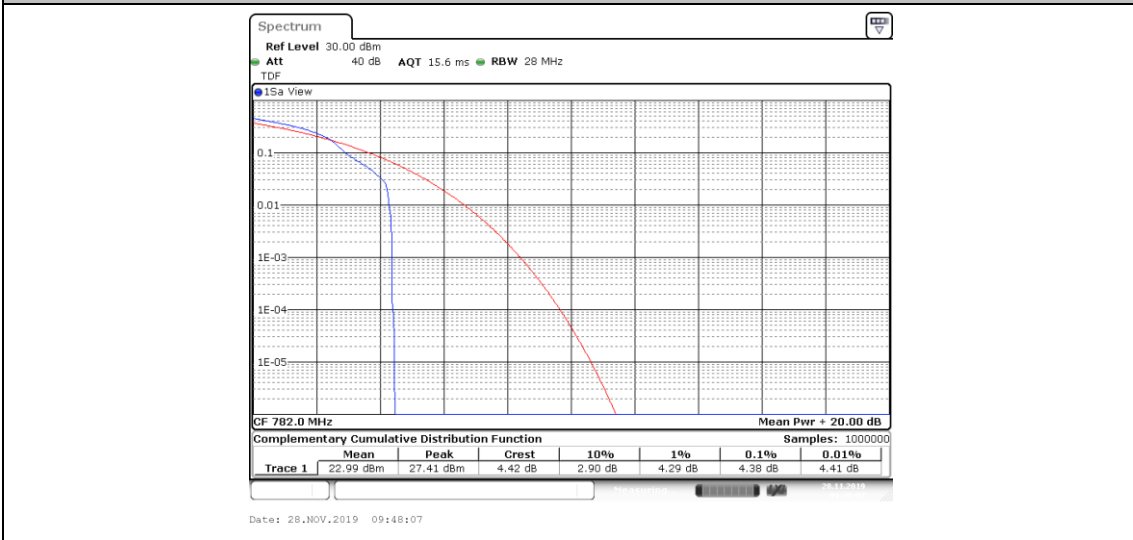


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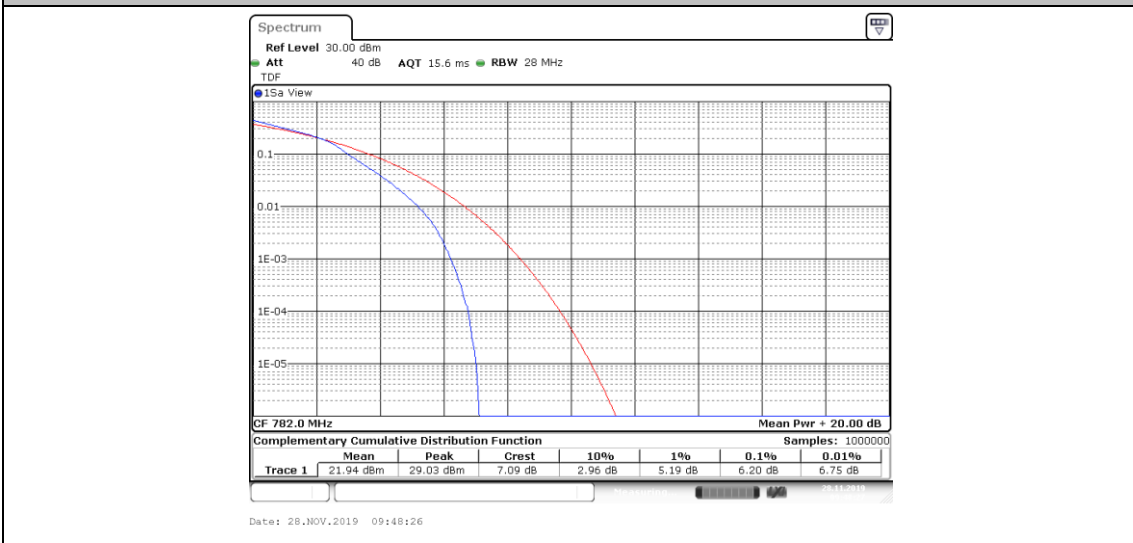




Band13\_5MHz\_16QAM\_23230\_1RB#0



Band13\_5MHz\_16QAM\_23230\_25RB#0



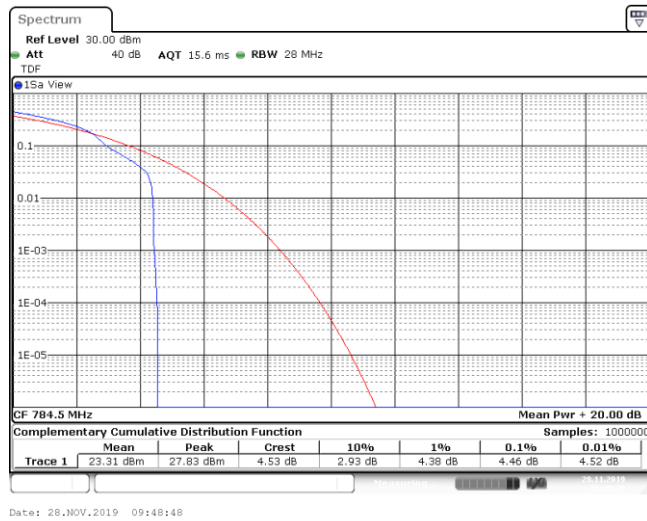
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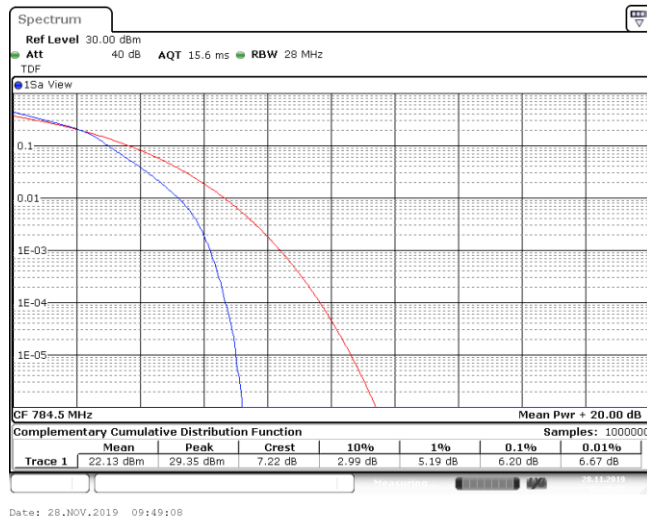


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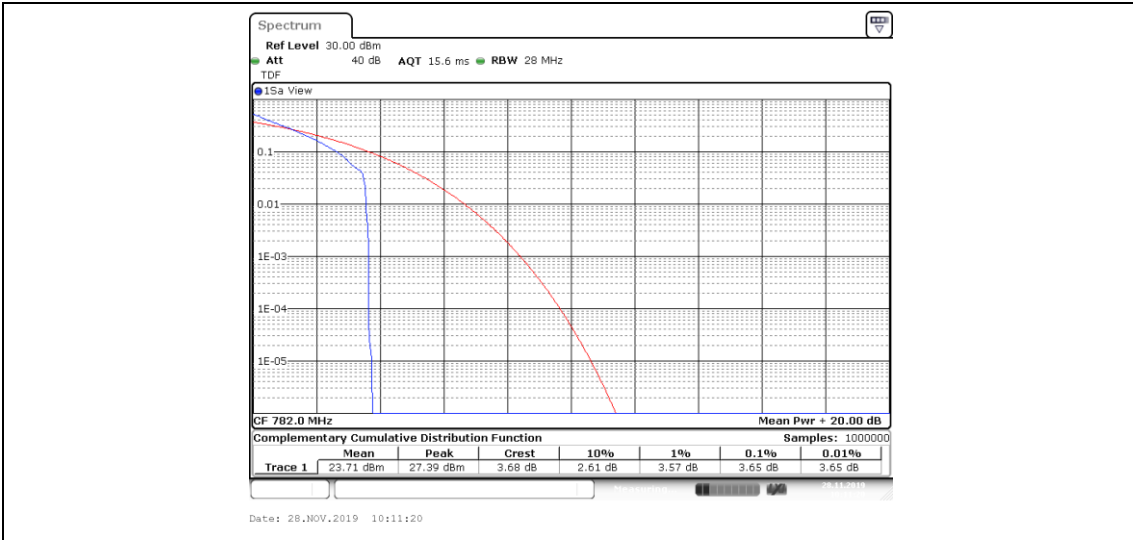
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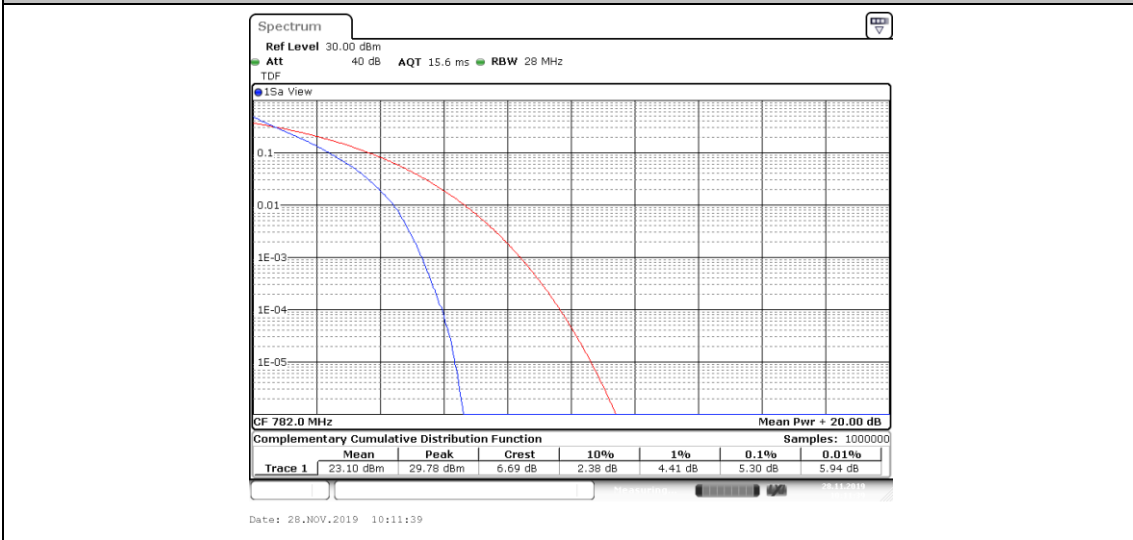
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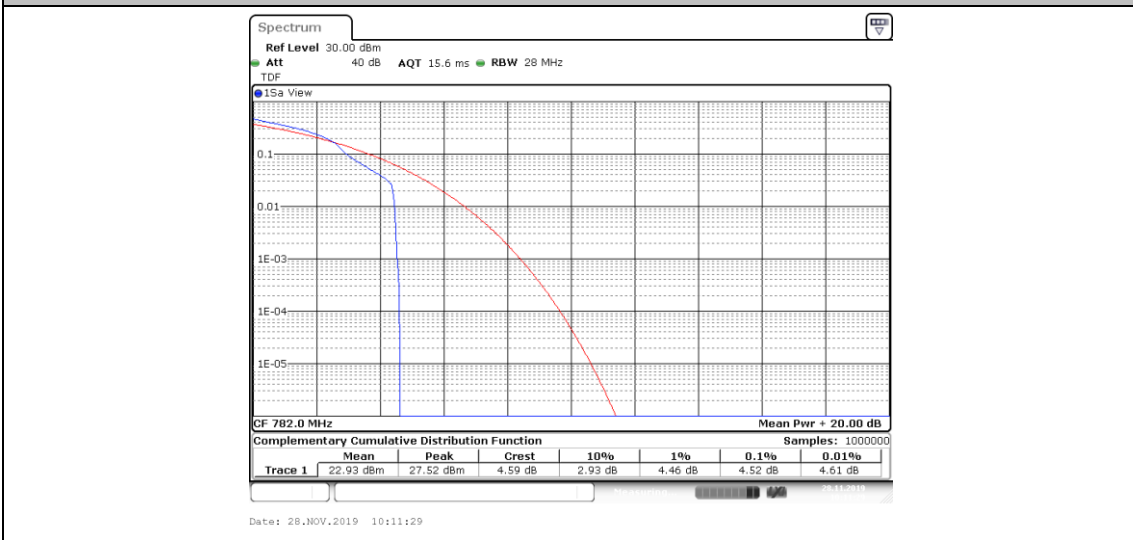
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**Band13\_10MHz\_QPSK\_23230\_50RB#0**



**Band13\_10MHz\_16QAM\_23230\_1RB#0**

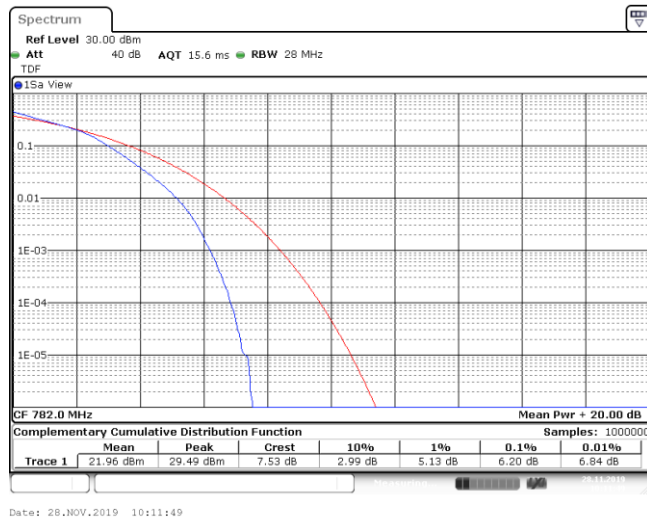


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## Band13\_10MHz\_16QAM\_23230\_50RB#0



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## Appendix C: 26dB Bandwidth and Occupied Bandwidth

### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.496	4.780	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.505	4.780	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.496	4.790	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.496	4.780	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.505	4.780	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.505	4.780	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.952	9.533	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.985	9.533	PASS

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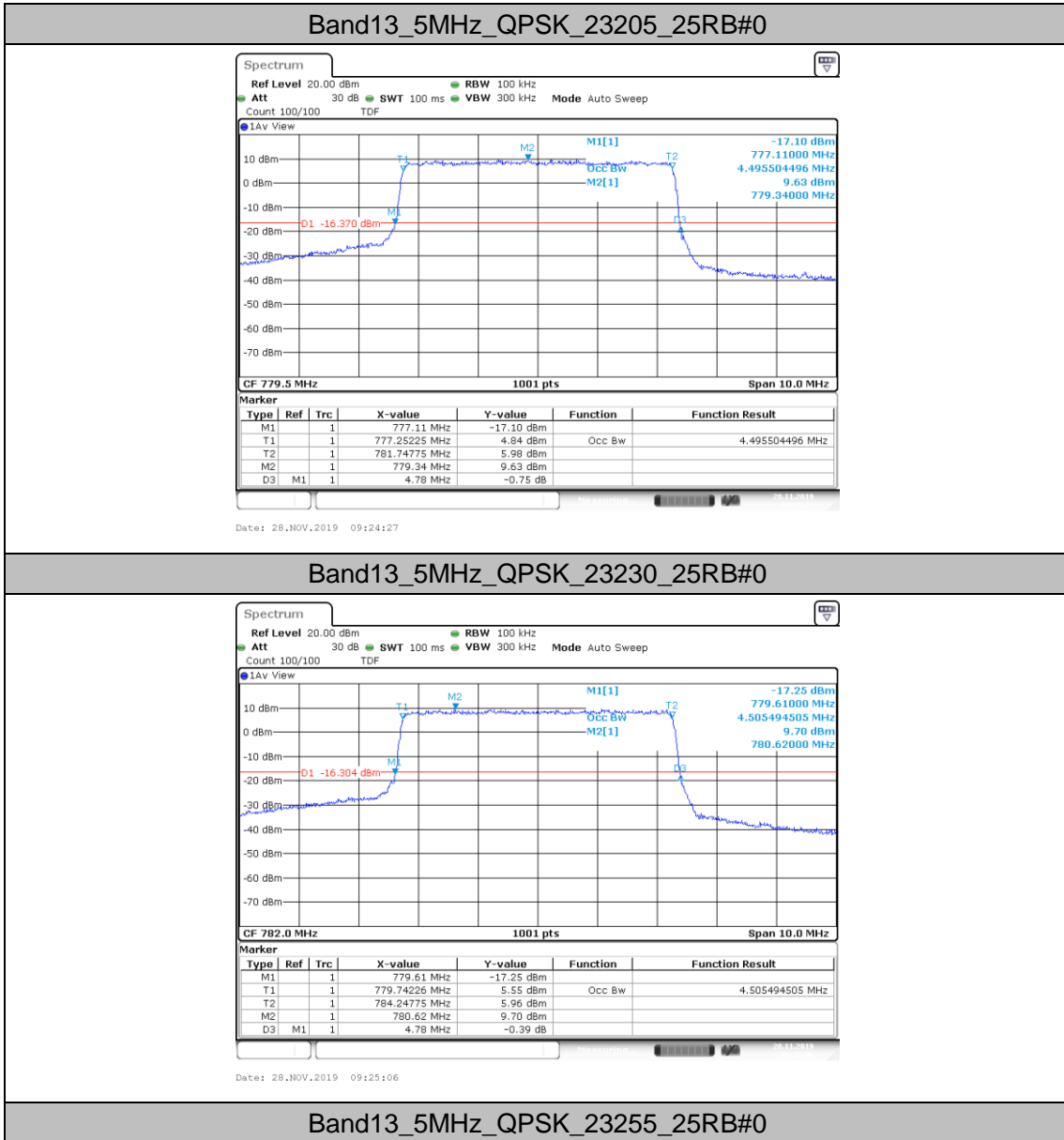
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### Test Graphs

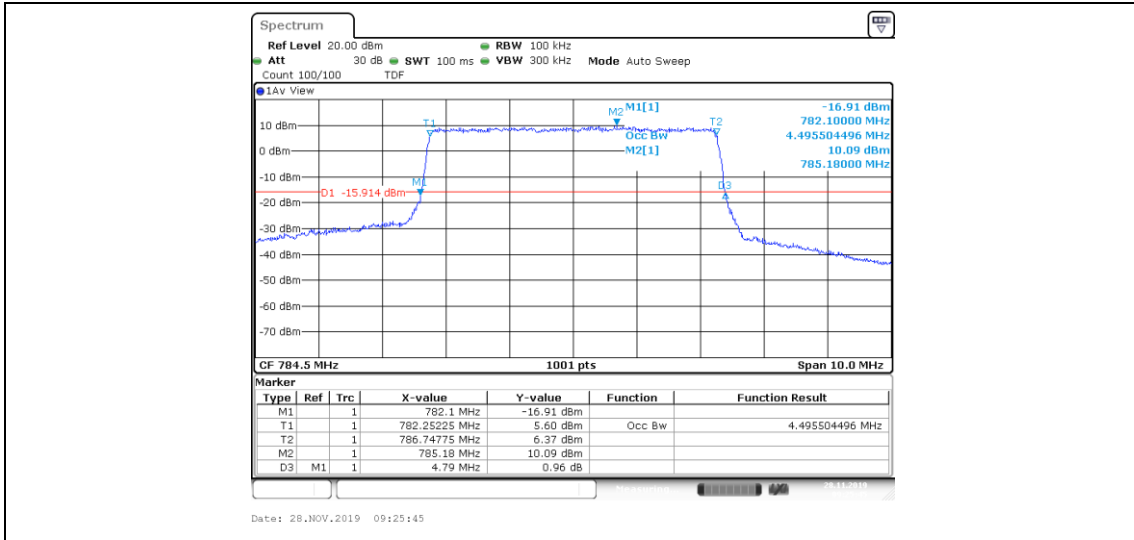


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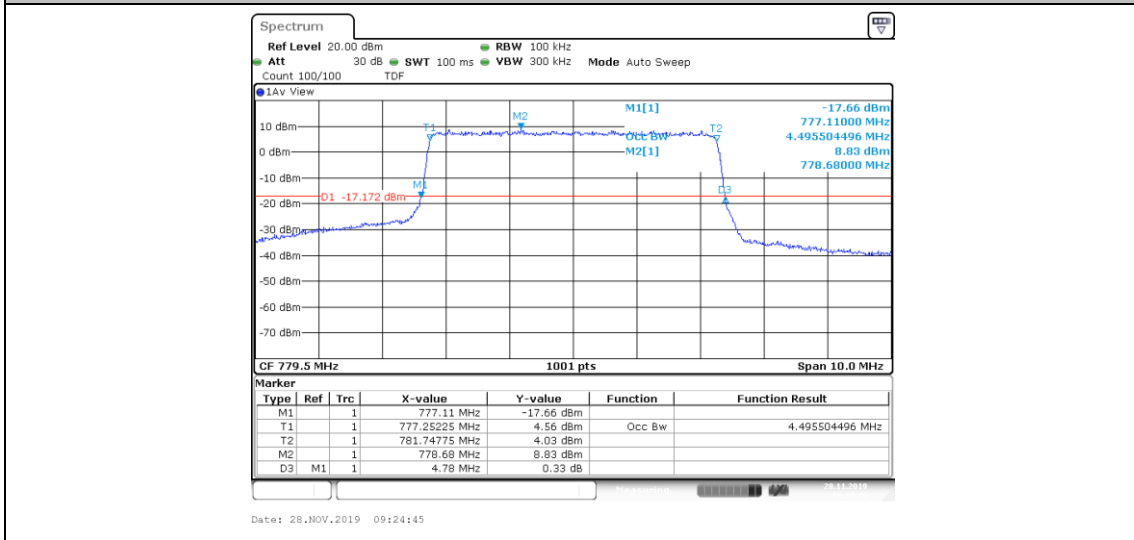
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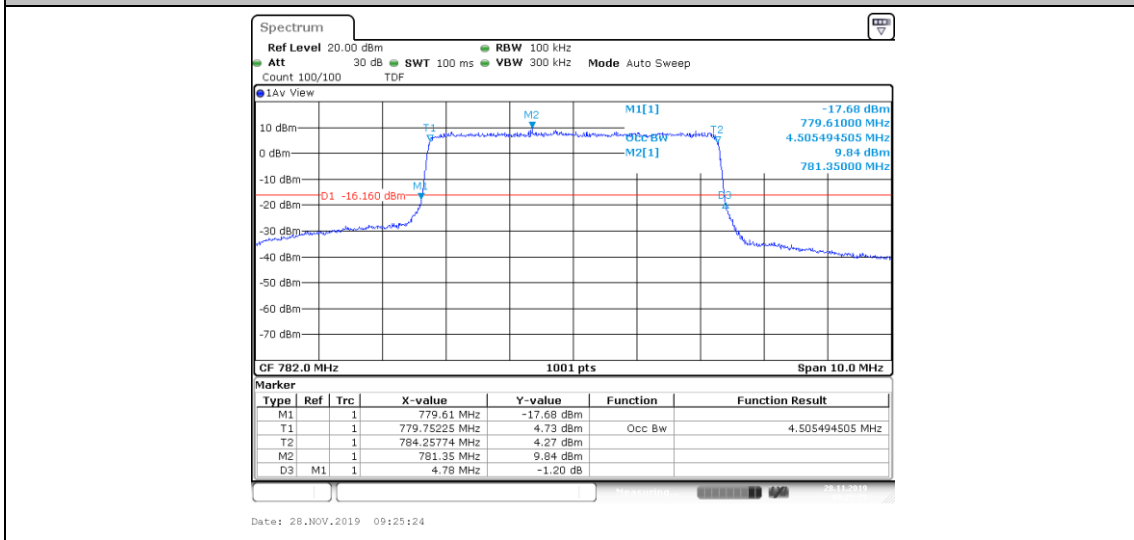
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**Band13\_5MHz\_16QAM\_23205\_25RB#0**



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



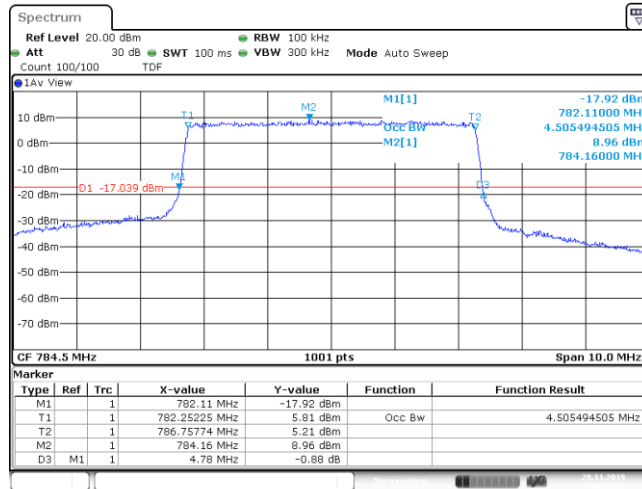
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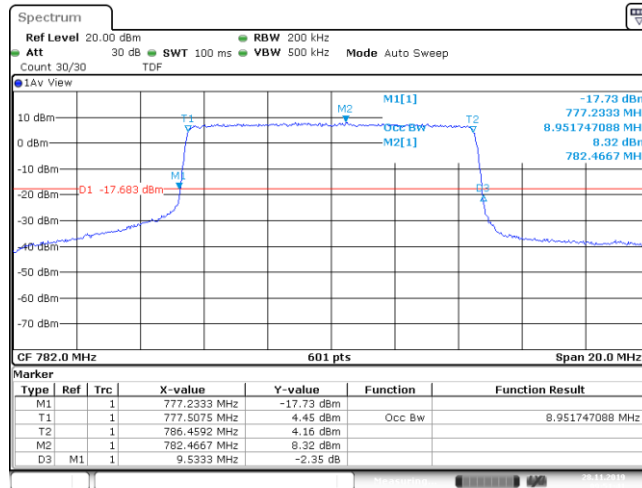
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Band13\_5MHz\_16QAM\_23255\_25RB#0



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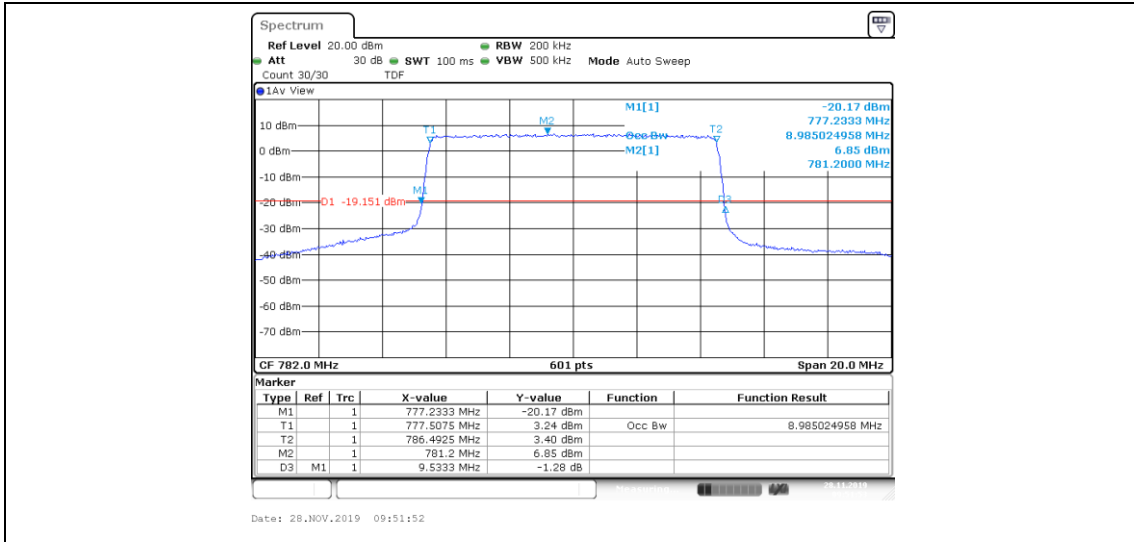
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Band13\_10MHz\_16QAM\_23230\_50RB#0





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## Appendix D: Band Edge

### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	-17.40	PASS
Band13	5MHz	QPSK	23205	1RB#12	-42.76	PASS
Band13	5MHz	QPSK	23205	1RB#24	-49.83	PASS
Band13	5MHz	QPSK	23205	25RB#0	-23.26	PASS
Band13	5MHz	QPSK	23255	1RB#0	-50.31	PASS
Band13	5MHz	QPSK	23255	1RB#12	-43.04	PASS
Band13	5MHz	QPSK	23255	1RB#24	-17.03	PASS
Band13	5MHz	QPSK	23255	25RB#0	-26.26	PASS
Band13	5MHz	16QAM	23205	1RB#0	-17.86	PASS
Band13	5MHz	16QAM	23205	1RB#12	-43.22	PASS
Band13	5MHz	16QAM	23205	1RB#24	-50.10	PASS
Band13	5MHz	16QAM	23205	25RB#0	-24.50	PASS
Band13	5MHz	16QAM	23255	1RB#0	-50.10	PASS
Band13	5MHz	16QAM	23255	1RB#12	-43.72	PASS
Band13	5MHz	16QAM	23255	1RB#24	-18.28	PASS
Band13	5MHz	16QAM	23255	25RB#0	-26.85	PASS

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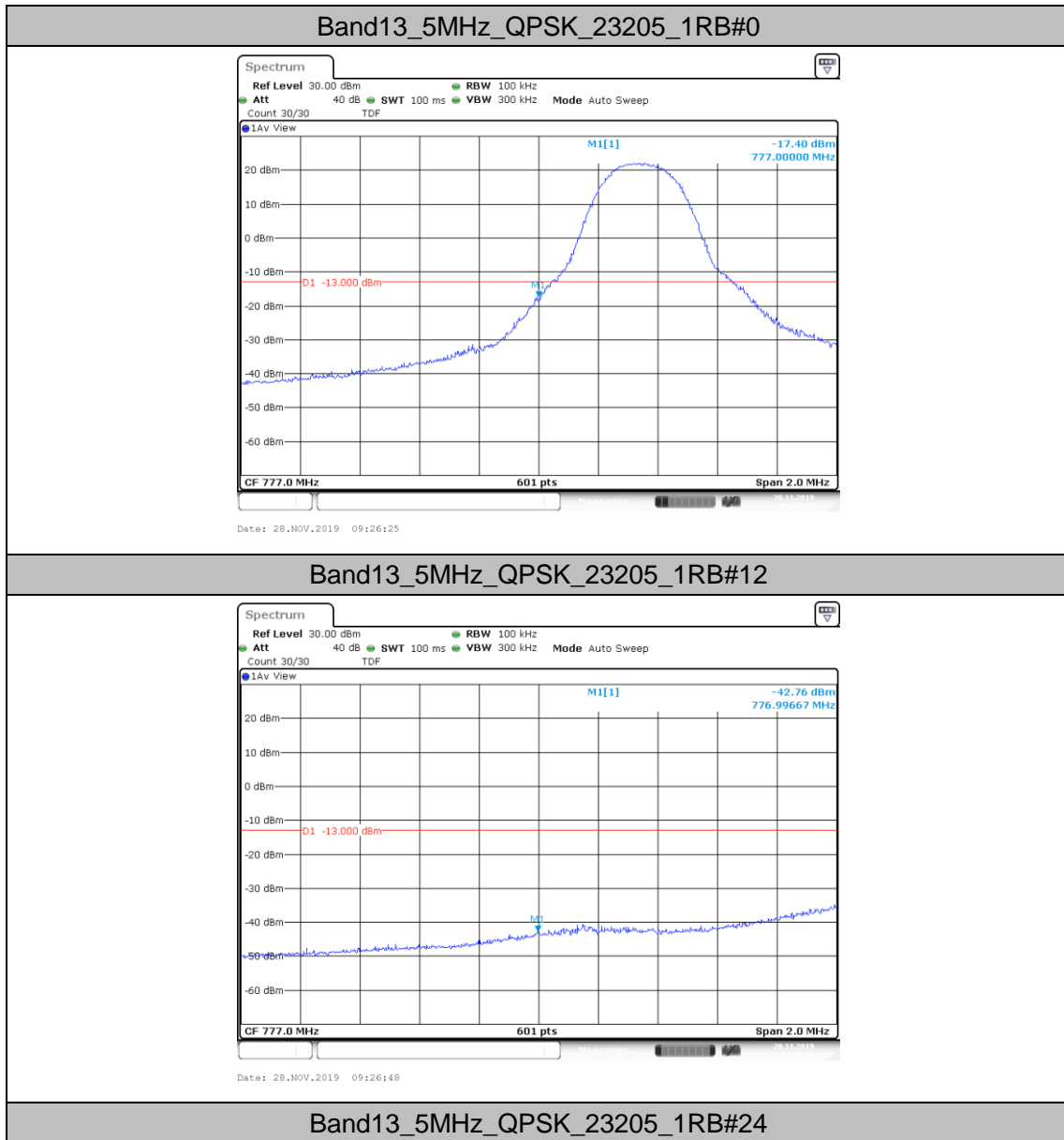
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## Test Graphs

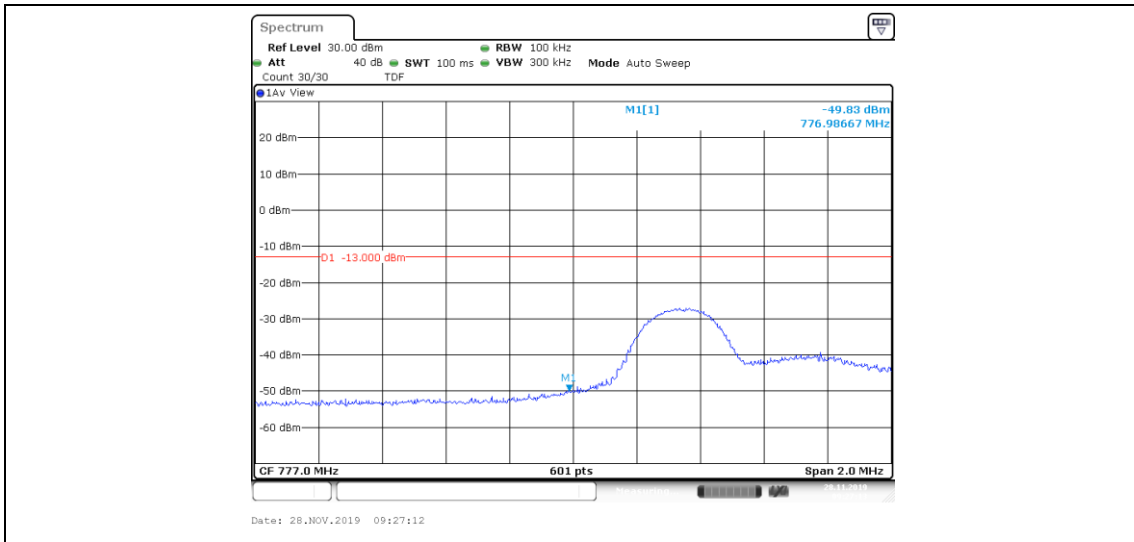


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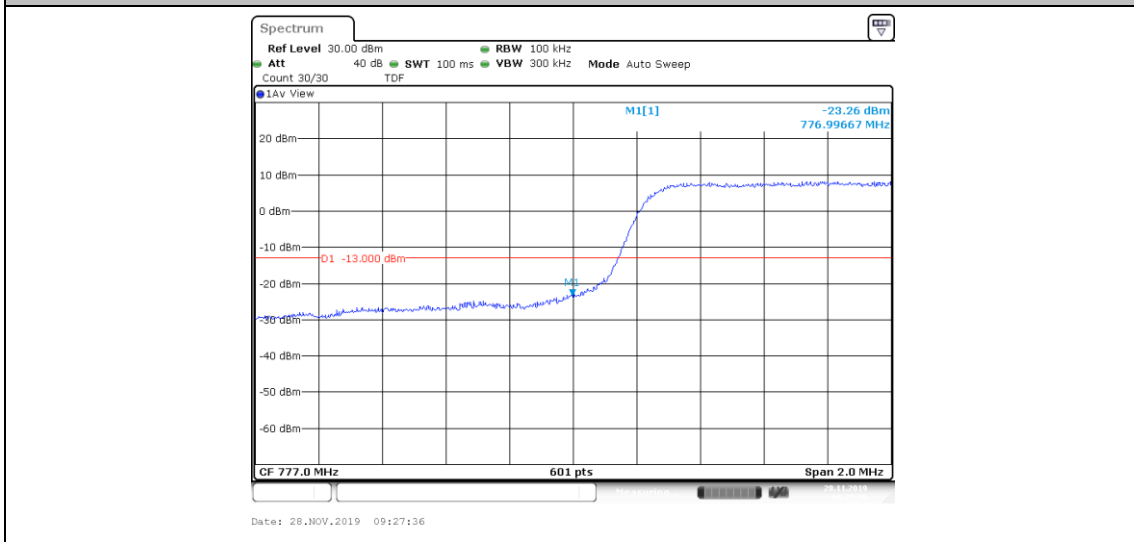
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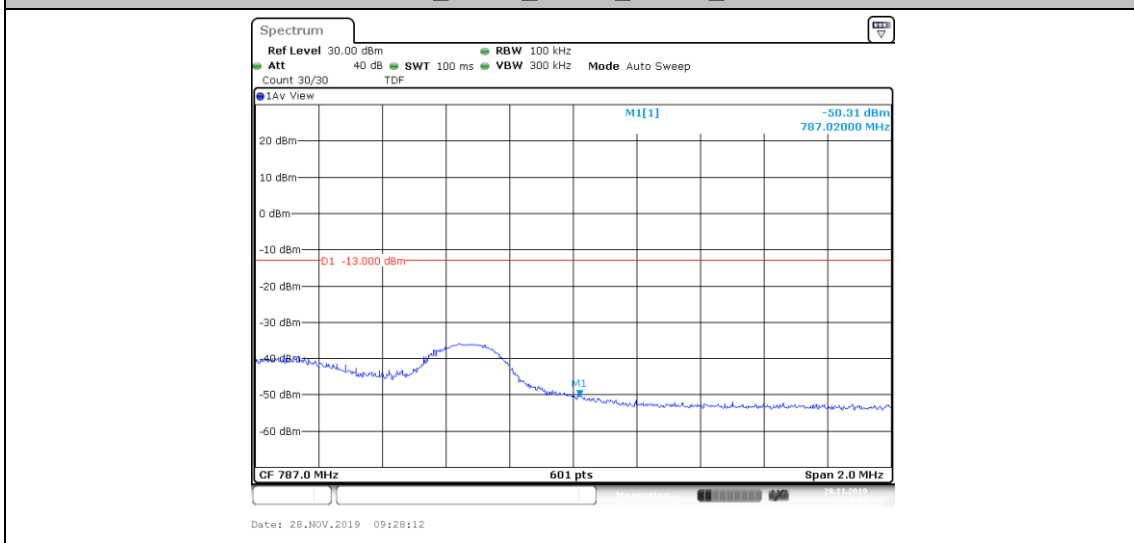
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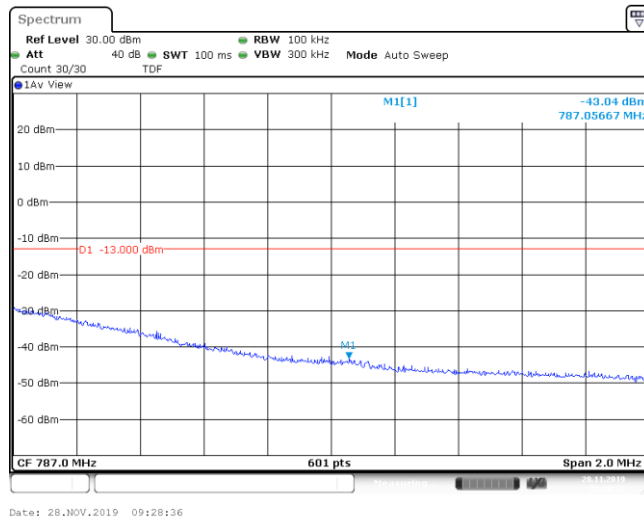
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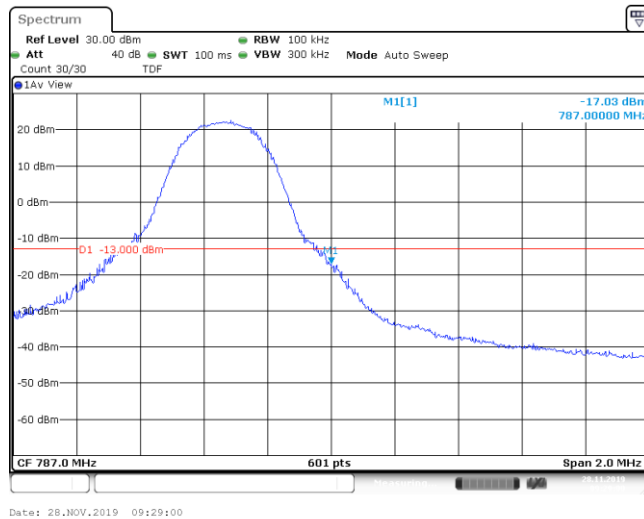
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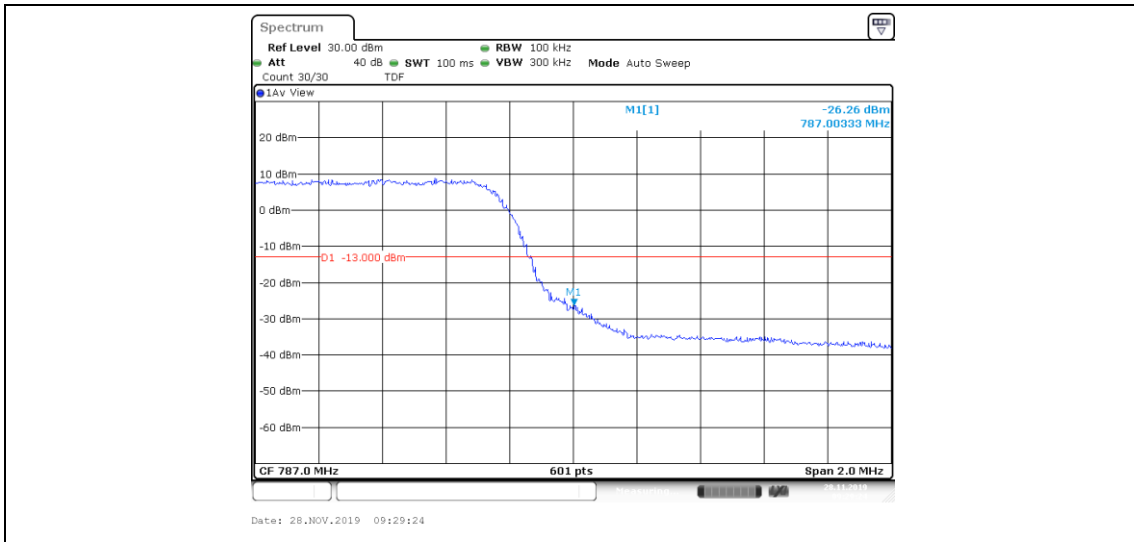
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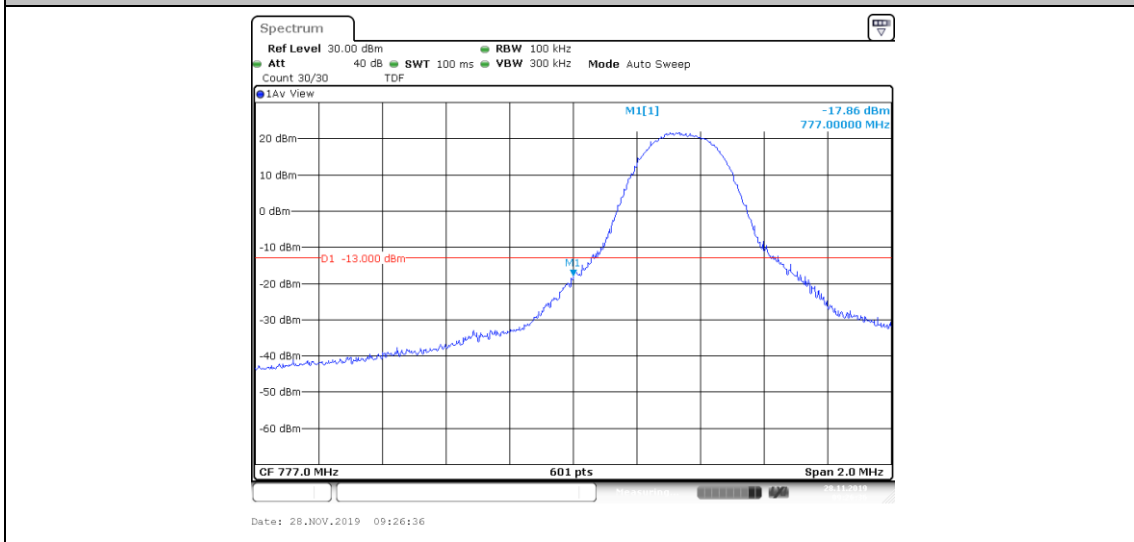
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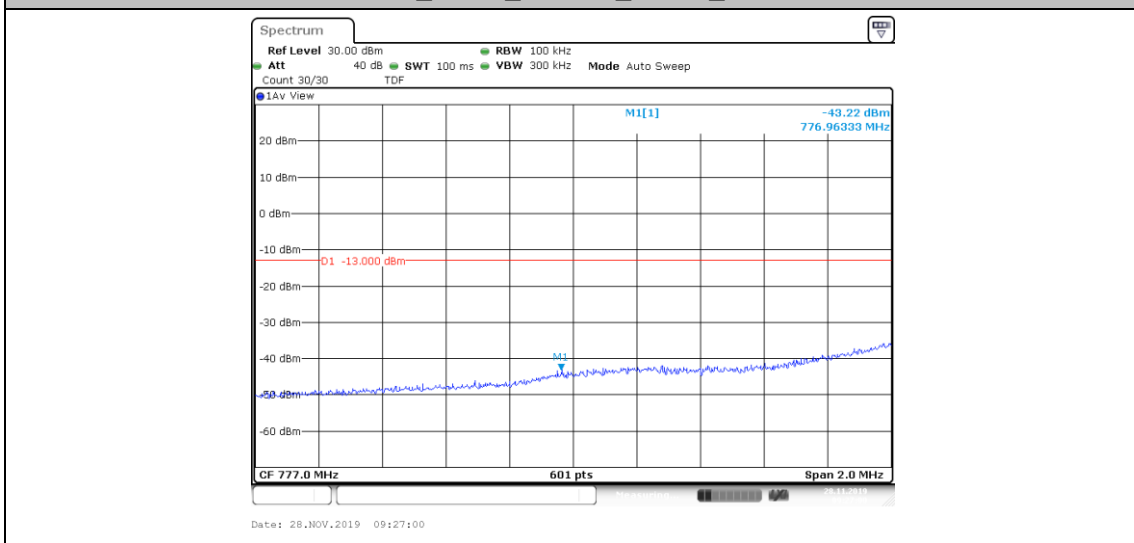
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Band13\_5MHz\_16QAM\_23205\_1RB#0



Band13\_5MHz\_16QAM\_23205\_1RB#12



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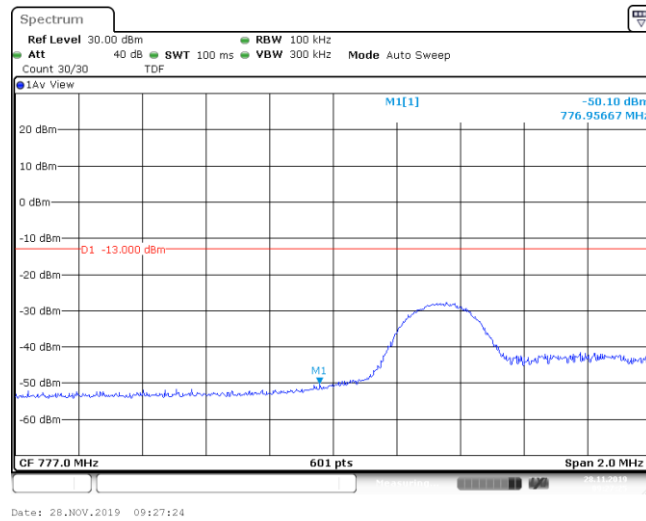
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

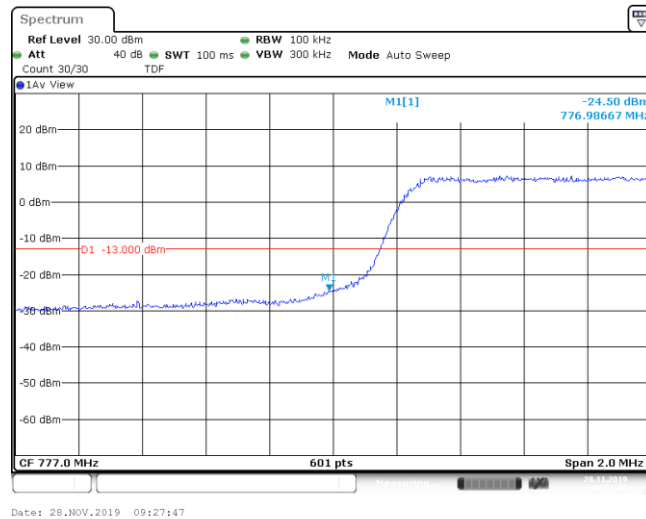
Fax: (86)755-27521011

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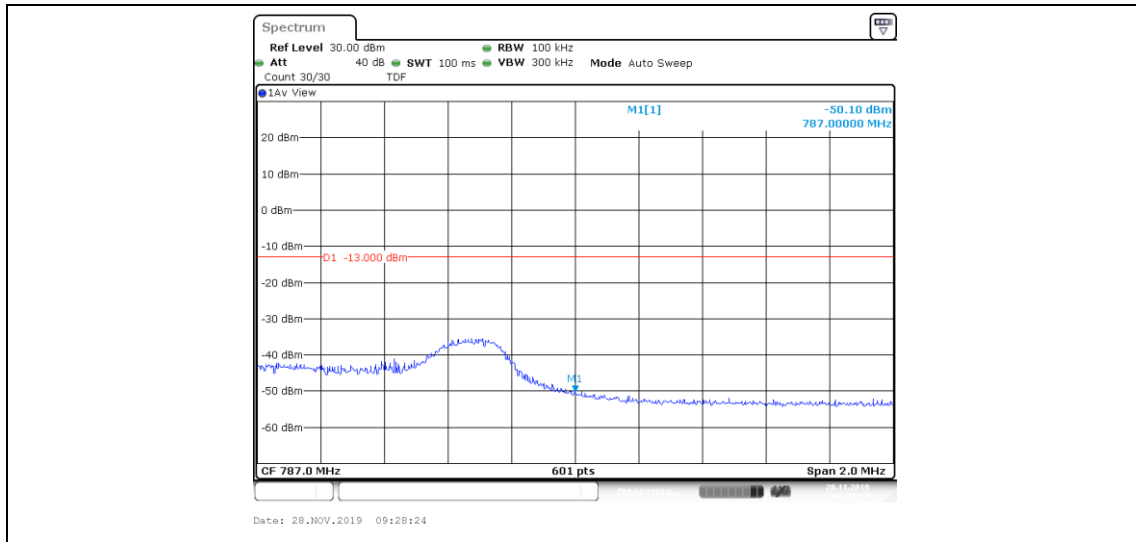
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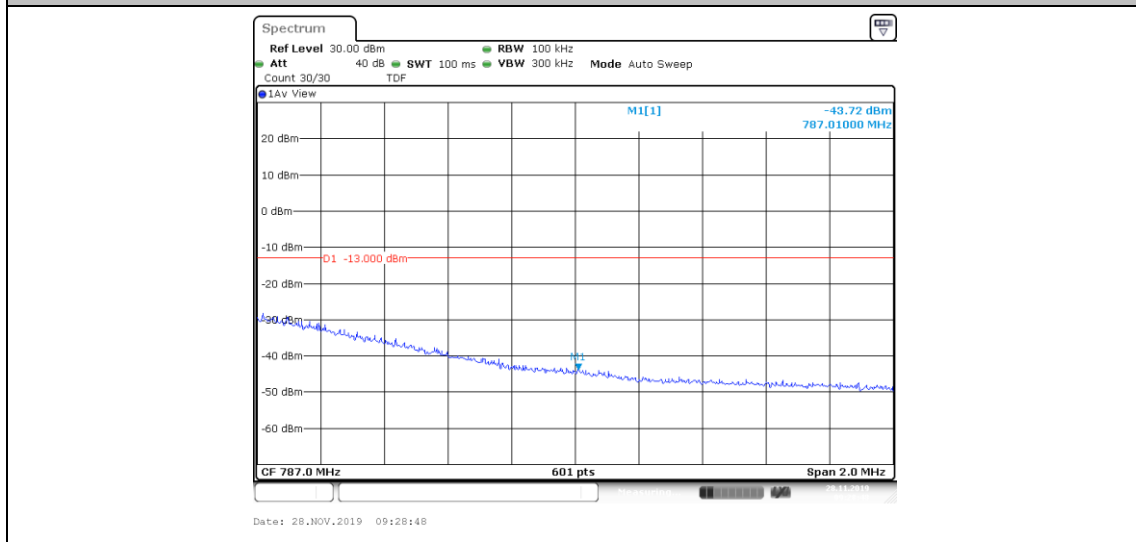
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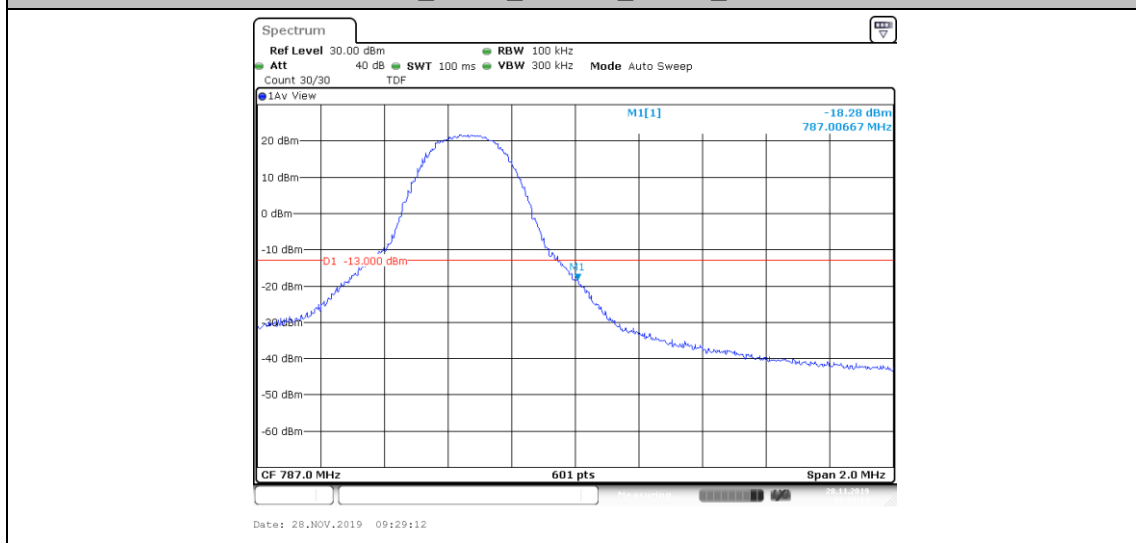
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Band13\_5MHz\_16QAM\_23255\_1RB#12



Band13\_5MHz\_16QAM\_23255\_1RB#24



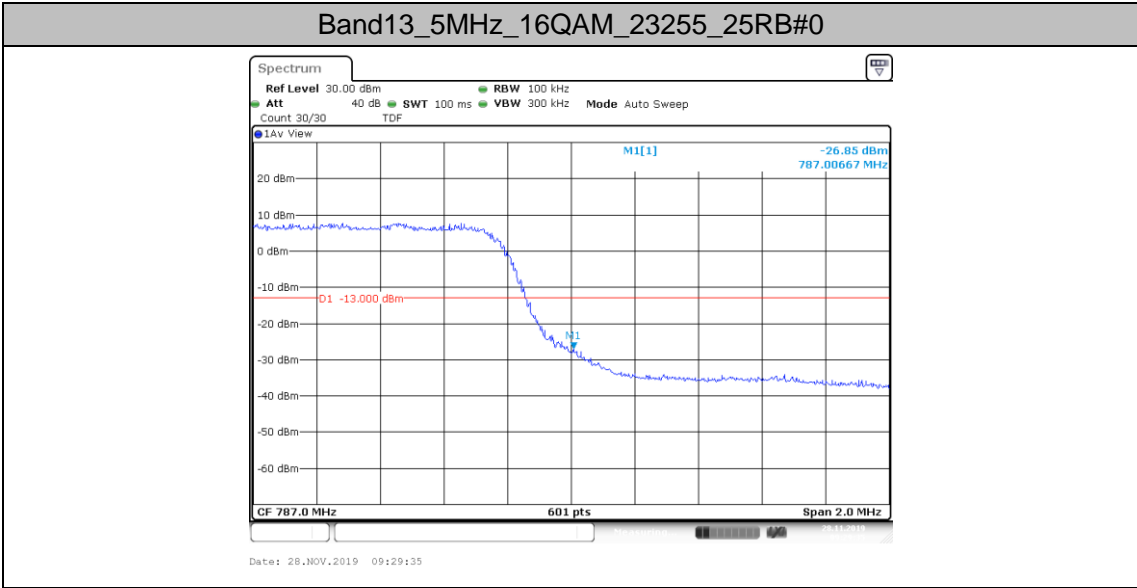
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## Appendix E: Conducted Spurious Emission

### Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Frequency Range	Result (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	Range1:0.009~0.15MHz	-63.62	PASS
Band13	5MHz	QPSK	23205	1RB#0	Range2:0.15~30MHz	-47.11	PASS
Band13	5MHz	QPSK	23205	1RB#0	Range3:30~1000MHz	-39.41	PASS
Band13	5MHz	QPSK	23205	1RB#0	Range4:1000~5000MHz	-43.8	PASS
Band13	5MHz	QPSK	23205	1RB#0	Range5:5000~12000MHz	-57.94	PASS
Band13	5MHz	QPSK	23205	1RB#0	Range6:12000~26500MHz	-58.69	PASS
Band13	5MHz	QPSK	23230	1RB#0	Range1:0.009~0.15MHz	-63.66	PASS
Band13	5MHz	QPSK	23230	1RB#0	Range2:0.15~30MHz	-49.34	PASS
Band13	5MHz	QPSK	23230	1RB#0	Range3:30~1000MHz	-36.29	PASS
Band13	5MHz	QPSK	23230	1RB#0	Range4:1000~5000MHz	-43.81	PASS
Band13	5MHz	QPSK	23230	1RB#0	Range5:5000~12000MHz	-58.06	PASS
Band13	5MHz	QPSK	23230	1RB#0	Range6:12000~26500MHz	-58.67	PASS
Band13	5MHz	QPSK	23255	1RB#0	Range1:0.009~0.15MHz	-63.8	PASS
Band13	5MHz	QPSK	23255	1RB#0	Range2:0.15~30MHz	-50.42	PASS
Band13	5MHz	QPSK	23255	1RB#0	Range3:30~1000MHz	-38.78	PASS
Band13	5MHz	QPSK	23255	1RB#0	Range4:1000~5000MHz	-43.9	PASS
Band13	5MHz	QPSK	23255	1RB#0	Range5:5000~12000MHz	-58.01	PASS
Band13	5MHz	QPSK	23255	1RB#0	Range6:12000~26500MHz	-58.64	PASS
Band13	5MHz	16QAM	23205	1RB#0	Range1:0.009~0.15MHz	-64.64	PASS
Band13	5MHz	16QAM	23205	1RB#0	Range2:0.15~30MHz	-51.78	PASS
Band13	5MHz	16QAM	23205	1RB#0	Range3:30~1000MHz	-39.7	PASS
Band13	5MHz	16QAM	23205	1RB#0	Range4:1000~5000MHz	-43.95	PASS
Band13	5MHz	16QAM	23205	1RB#0	Range5:5000~12000MHz	-58.18	PASS
Band13	5MHz	16QAM	23205	1RB#0	Range6:12000~26500MHz	-58.6	PASS
Band13	5MHz	16QAM	23230	1RB#0	Range1:0.009~0.15MHz	-64.33	PASS
Band13	5MHz	16QAM	23230	1RB#0	Range2:0.15~30MHz	-51.59	PASS
Band13	5MHz	16QAM	23230	1RB#0	Range3:30~1000MHz	-38.43	PASS
Band13	5MHz	16QAM	23230	1RB#0	Range4:1000~5000MHz	-43.93	PASS
Band13	5MHz	16QAM	23230	1RB#0	Range5:5000~12000MHz	-57.96	PASS
Band13	5MHz	16QAM	23230	1RB#0	Range6:12000~26500MHz	-58.49	PASS
Band13	5MHz	16QAM	23255	1RB#0	Range1:0.009~0.15MHz	-64.61	PASS
Band13	5MHz	16QAM	23255	1RB#0	Range2:0.15~30MHz	-46.3	PASS
Band13	5MHz	16QAM	23255	1RB#0	Range3:30~1000MHz	-39.11	PASS
Band13	5MHz	16QAM	23255	1RB#0	Range4:1000~5000MHz	-43.94	PASS

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Band13	5MHz	16QAM	23255	1RB#0	Range5:5000~12000MHz	-58.11	PASS
Band13	5MHz	16QAM	23255	1RB#0	Range6:12000~26500MHz	-58.5	PASS
Band13	10MHz	QPSK	23230	1RB#0	Range1:0.009~0.15MHz	-63.9	PASS
Band13	10MHz	QPSK	23230	1RB#0	Range2:0.15~30MHz	-50.59	PASS
Band13	10MHz	QPSK	23230	1RB#0	Range3:30~1000MHz	-38.18	PASS
Band13	10MHz	QPSK	23230	1RB#0	Range4:1000~5000MHz	-43.95	PASS
Band13	10MHz	QPSK	23230	1RB#0	Range5:5000~12000MHz	-58.09	PASS
Band13	10MHz	QPSK	23230	1RB#0	Range6:12000~26500MHz	-58.56	PASS
Band13	10MHz	16QAM	23230	1RB#0	Range1:0.009~0.15MHz	-64.4	PASS
Band13	10MHz	16QAM	23230	1RB#0	Range2:0.15~30MHz	-51.6	PASS
Band13	10MHz	16QAM	23230	1RB#0	Range3:30~1000MHz	-38.94	PASS
Band13	10MHz	16QAM	23230	1RB#0	Range4:1000~5000MHz	-43.98	PASS
Band13	10MHz	16QAM	23230	1RB#0	Range5:5000~12000MHz	-57.93	PASS
Band13	10MHz	16QAM	23230	1RB#0	Range6:12000~26500MHz	-58.47	PASS

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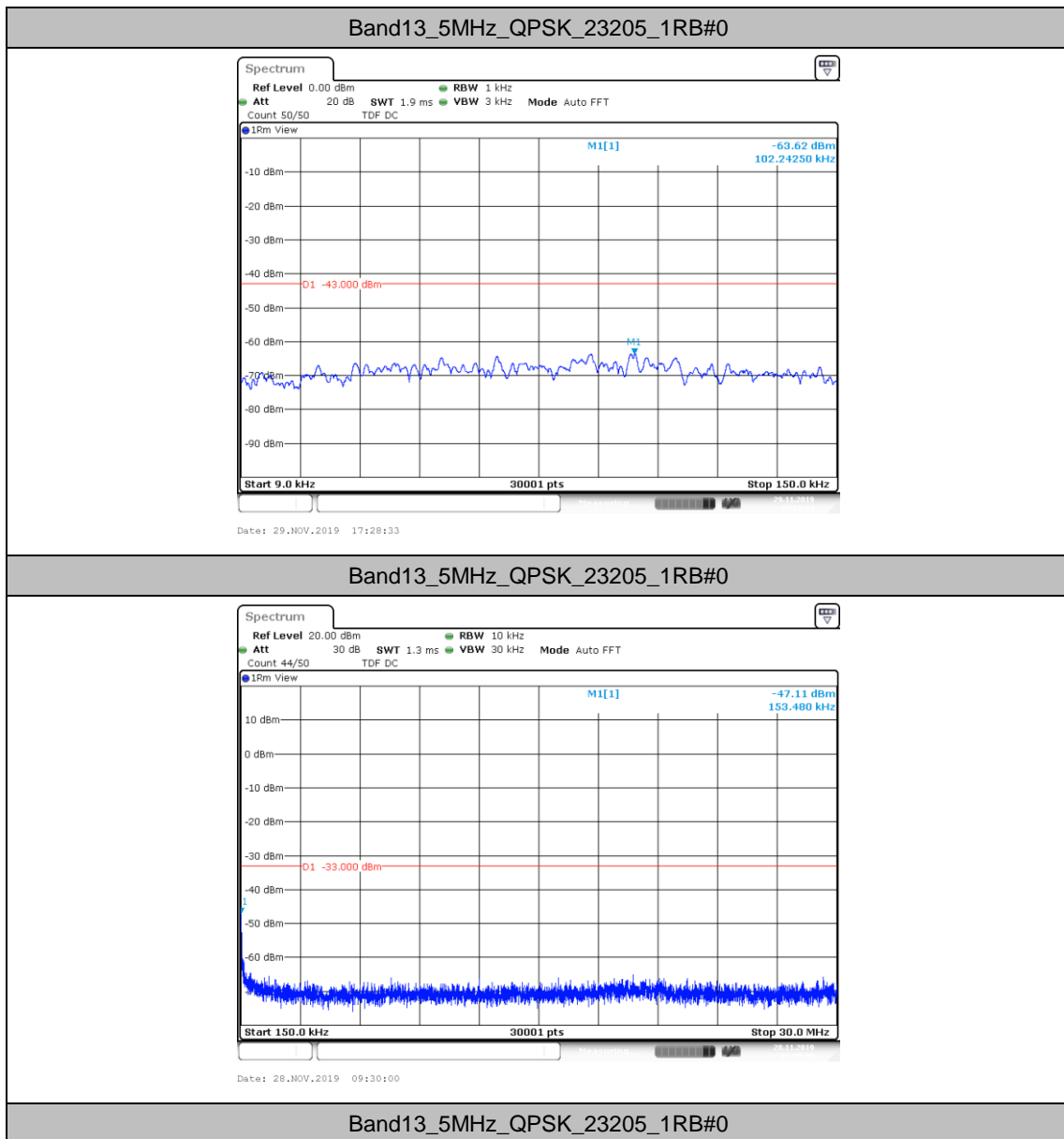
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## Test Graphs



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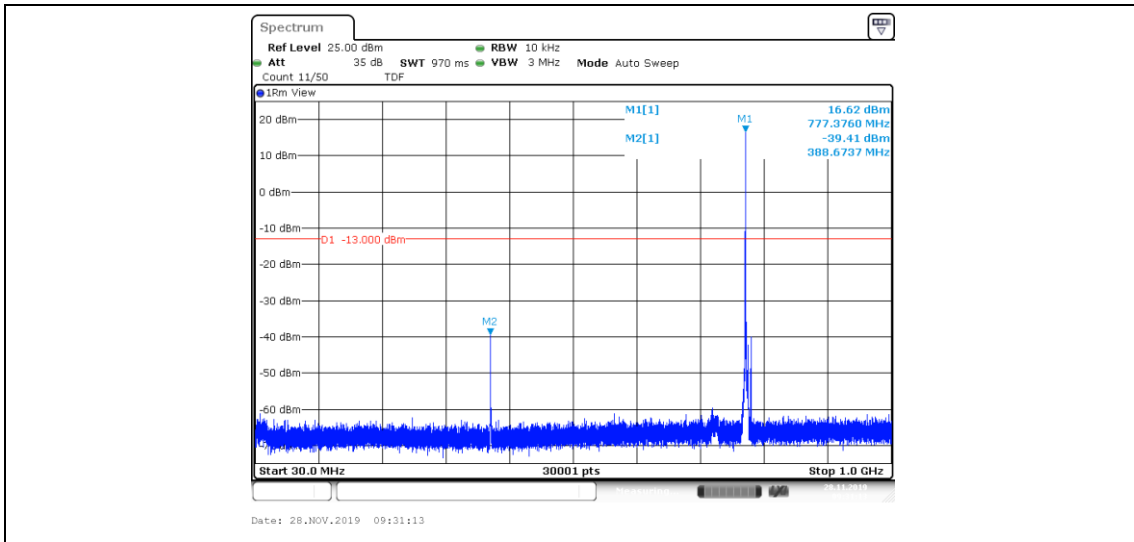
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Tel.: (86)755-27521059

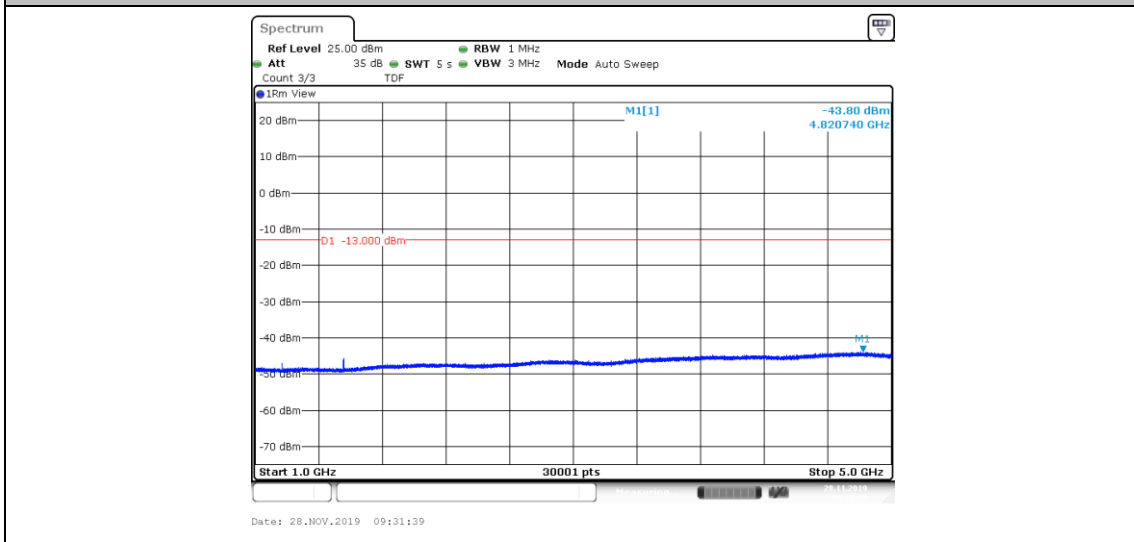
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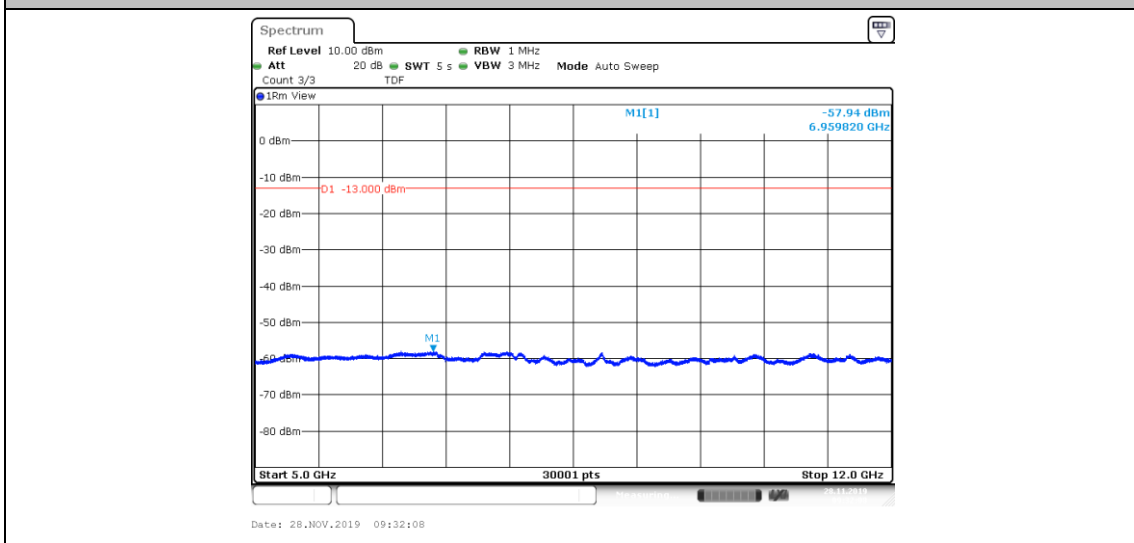
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## Band13\_5MHz\_QPSK\_23205\_1RB#0



## Band13\_5MHz\_QPSK\_23205\_1RB#0



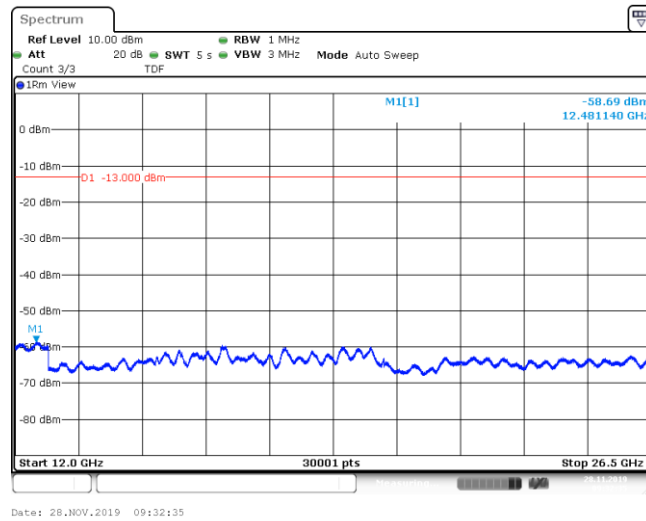
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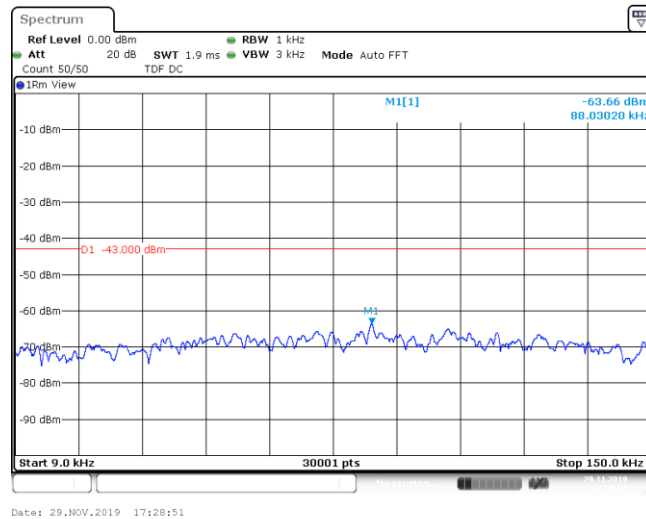
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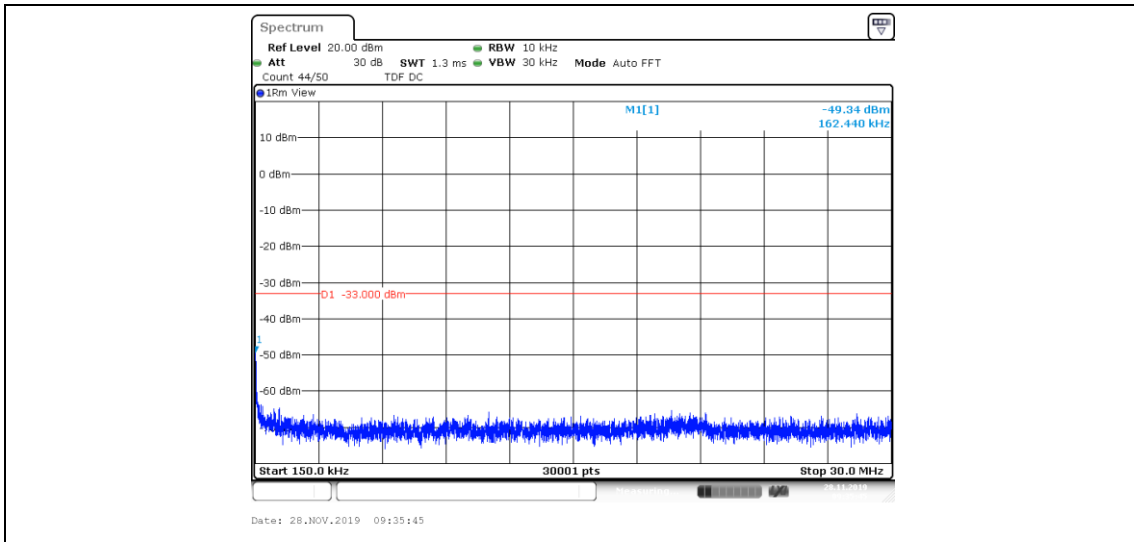
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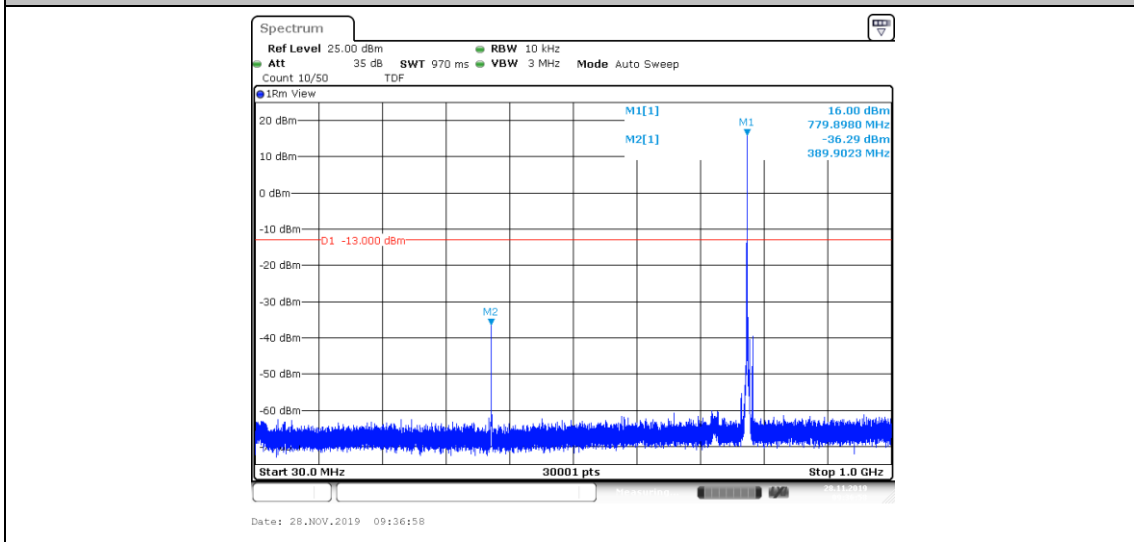
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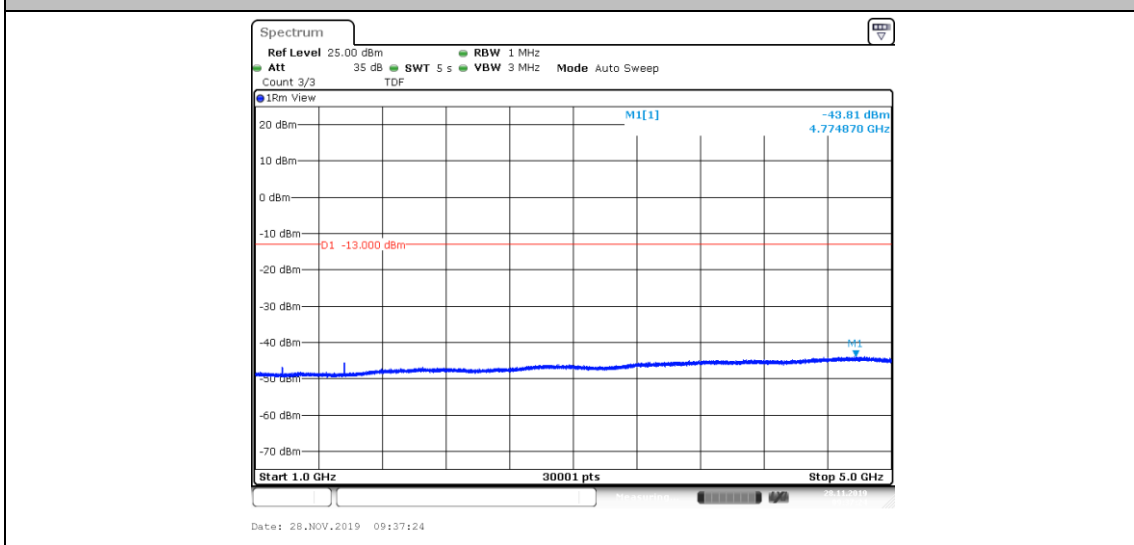
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Band13\_5MHz\_QPSK\_23230\_1RB#0



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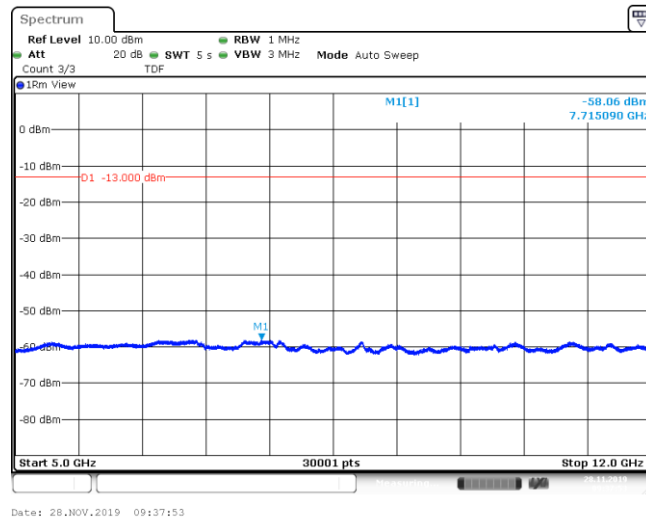
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Tel.: (86)755-27521059

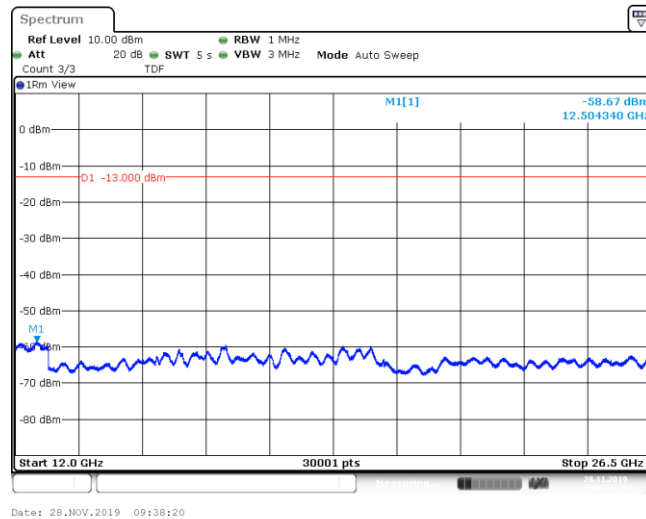
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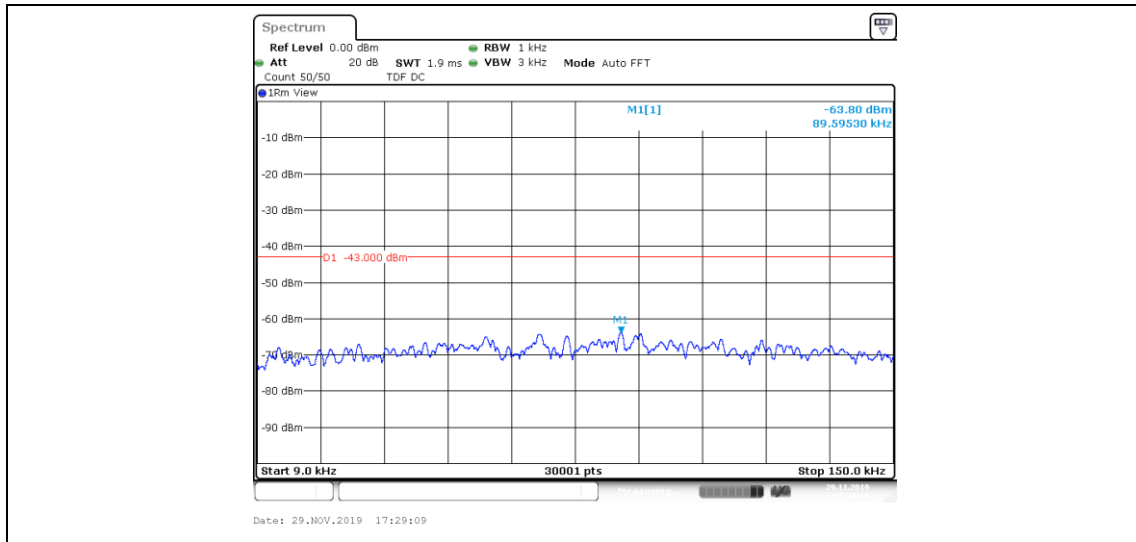


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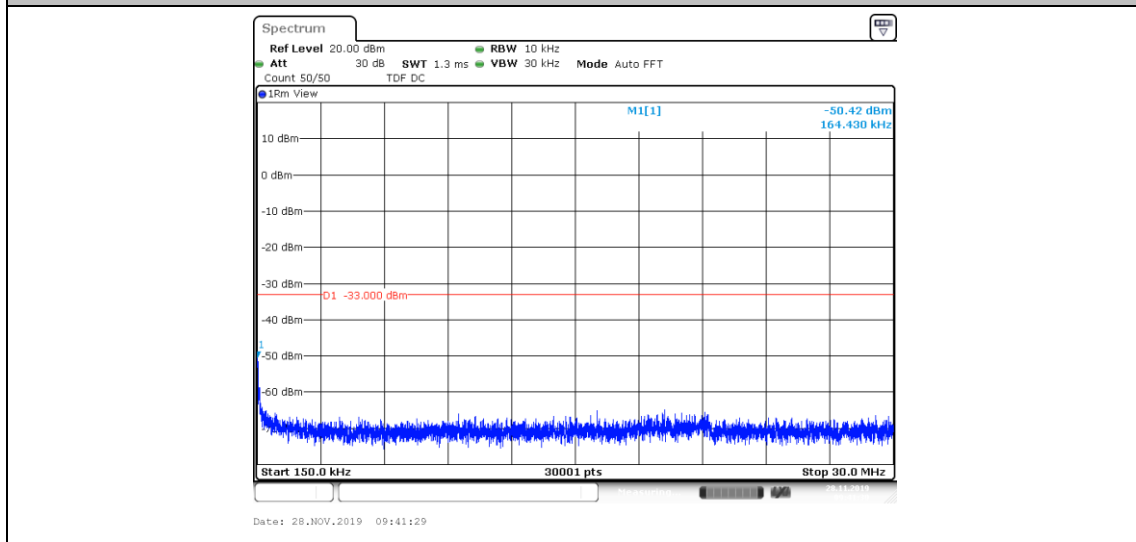


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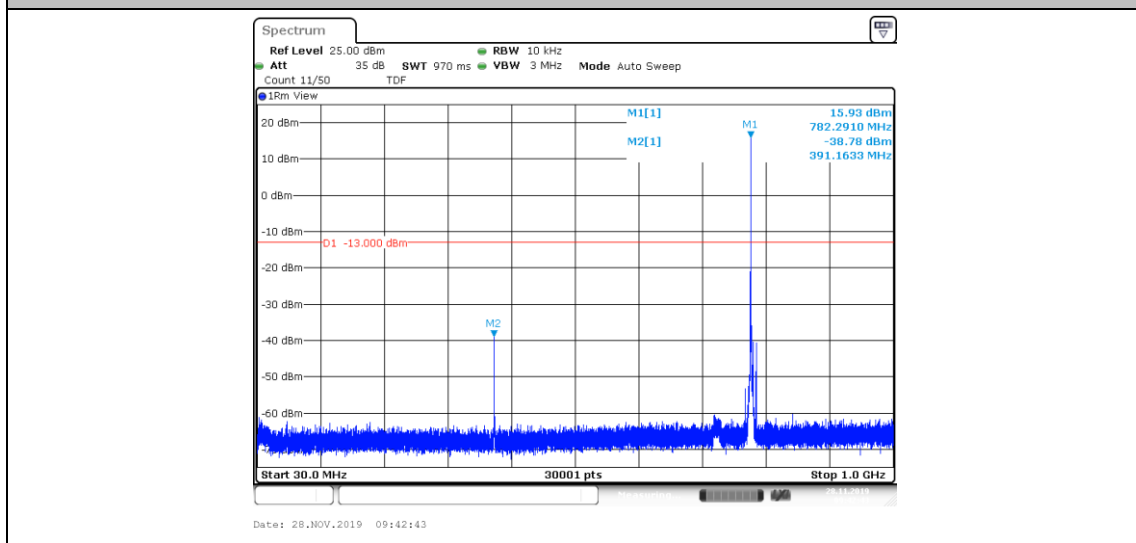




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Band13\_5MHz\_QPSK\_23255\_1RB#0



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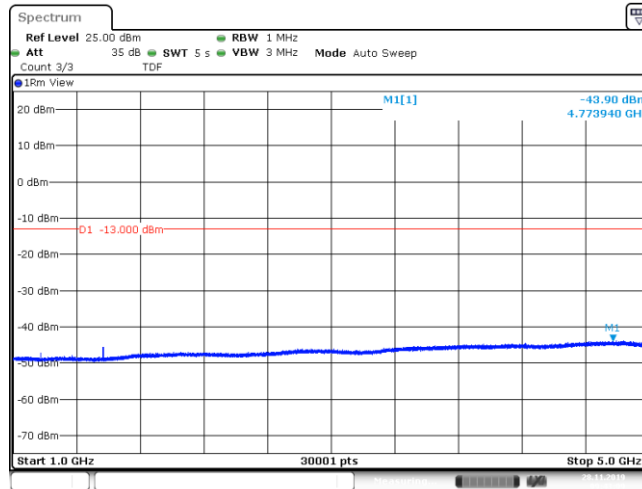
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Tel.: (86)755-27521059

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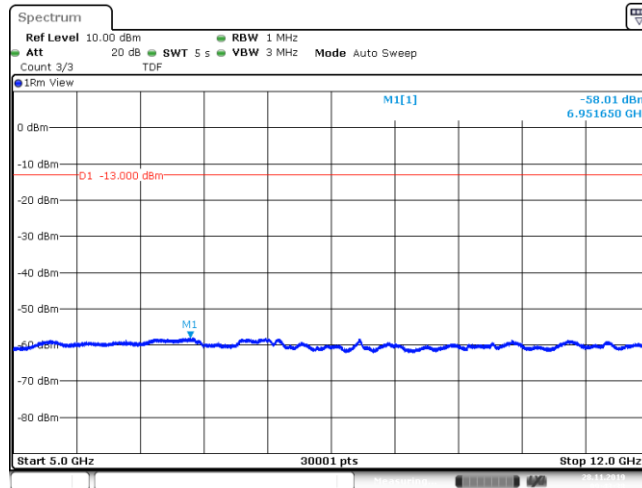
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Band13\_5MHz\_QPSK\_23255\_1RB#0



Date: 28.NOV.2019 09:43:09

Band13\_5MHz\_QPSK\_23255\_1RB#0



Date: 28.NOV.2019 09:43:38

Band13\_5MHz\_QPSK\_23255\_1RB#0

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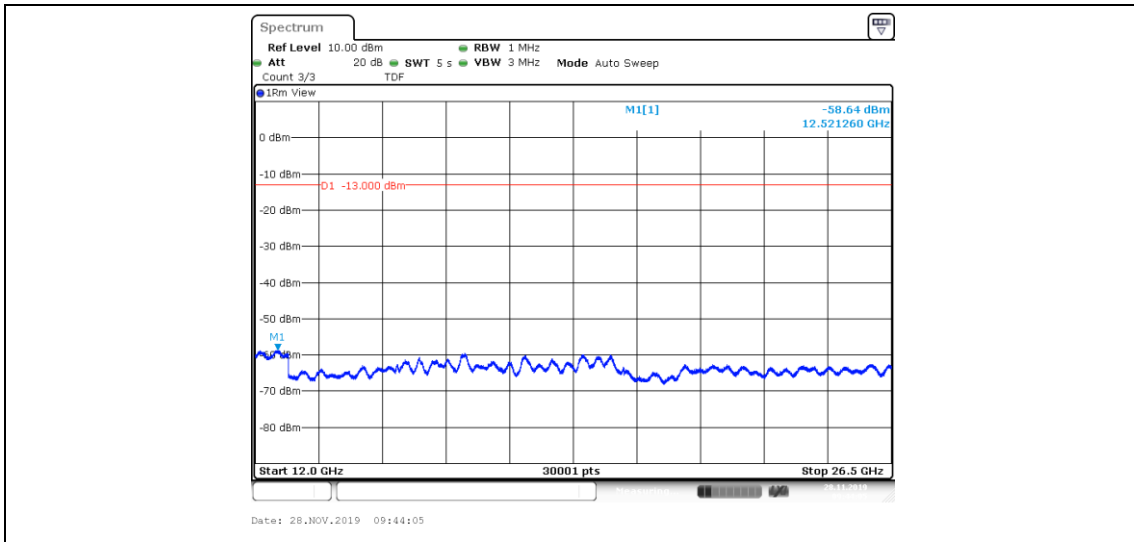
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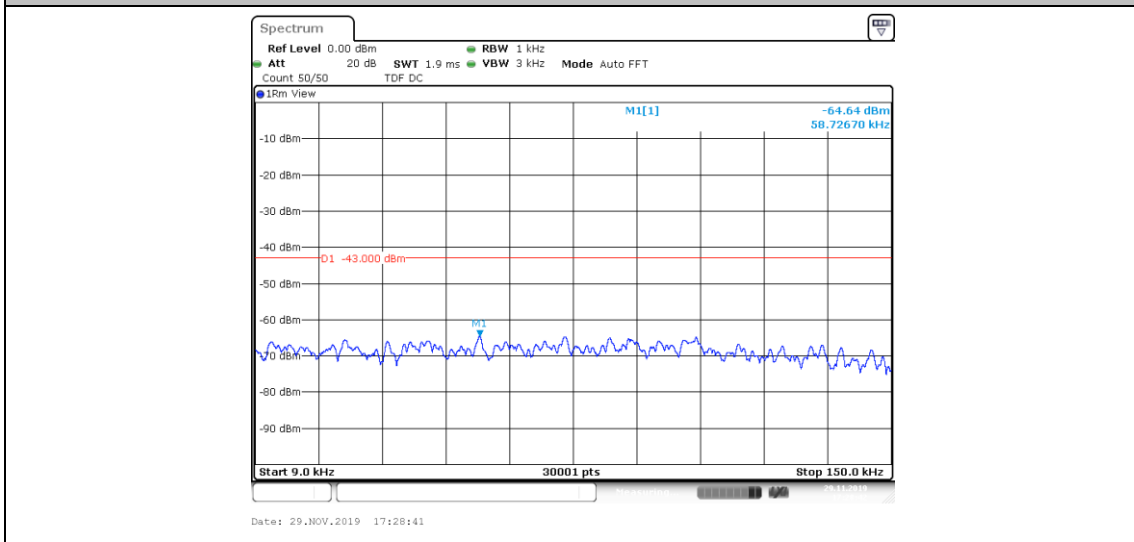
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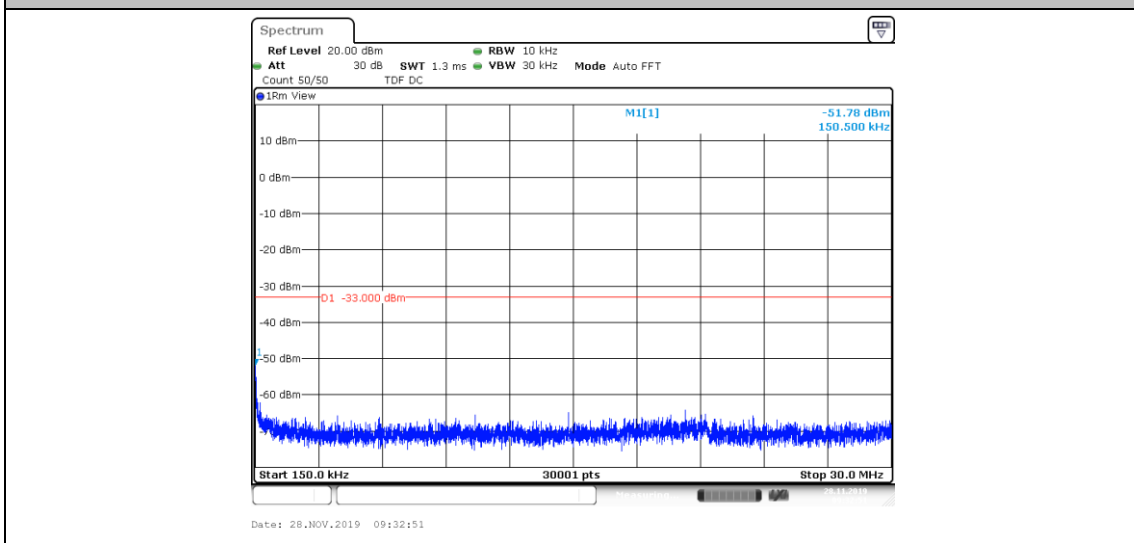
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Band13\_5MHz\_16QAM\_23205\_1RB#0



Band13\_5MHz\_16QAM\_23205\_1RB#0



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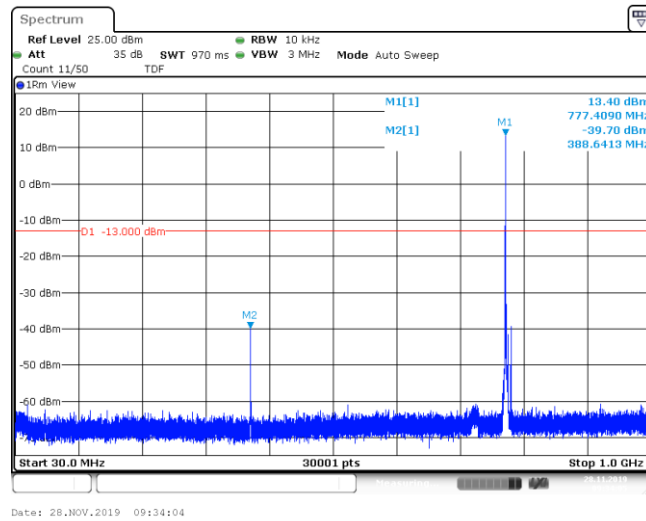
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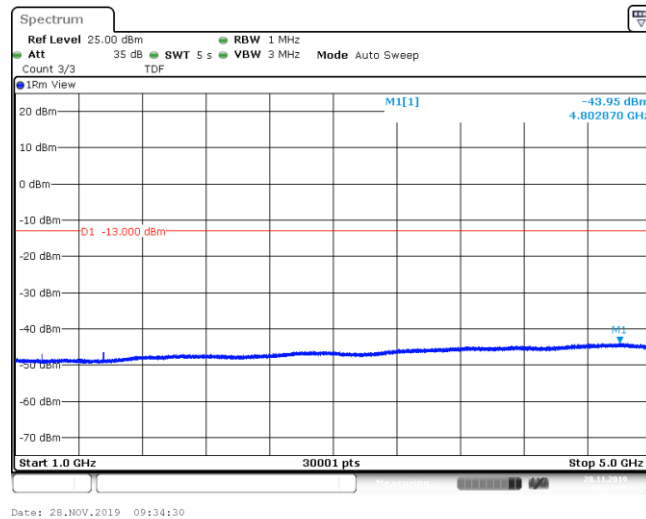
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## Band13\_5MHz\_16QAM\_23205\_1RB#0



## Band13\_5MHz\_16QAM\_23205\_1RB#0



## Band13\_5MHz\_16QAM\_23205\_1RB#0

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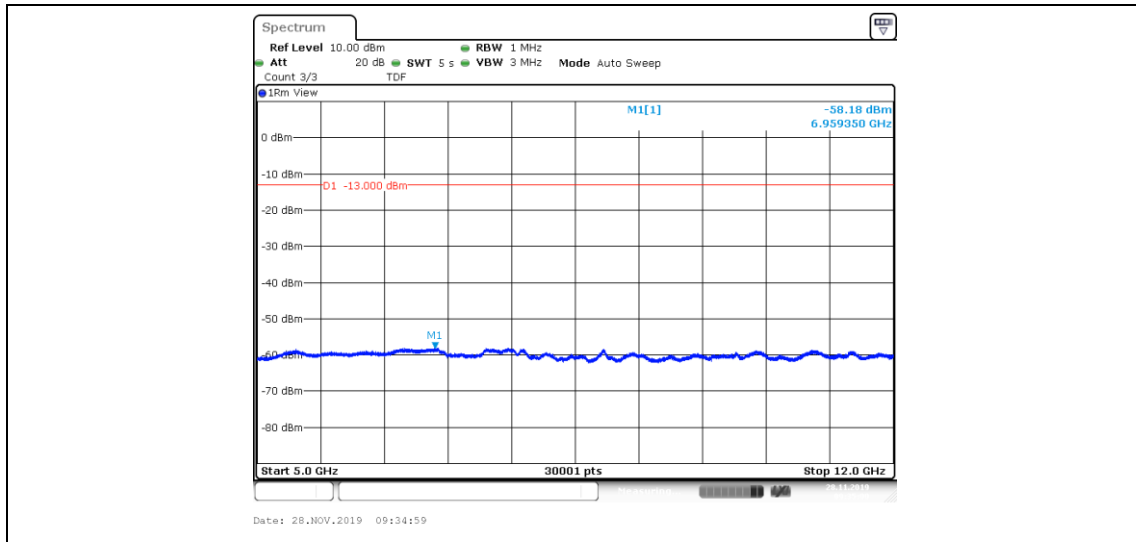
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Tel.: (86)755-27521059

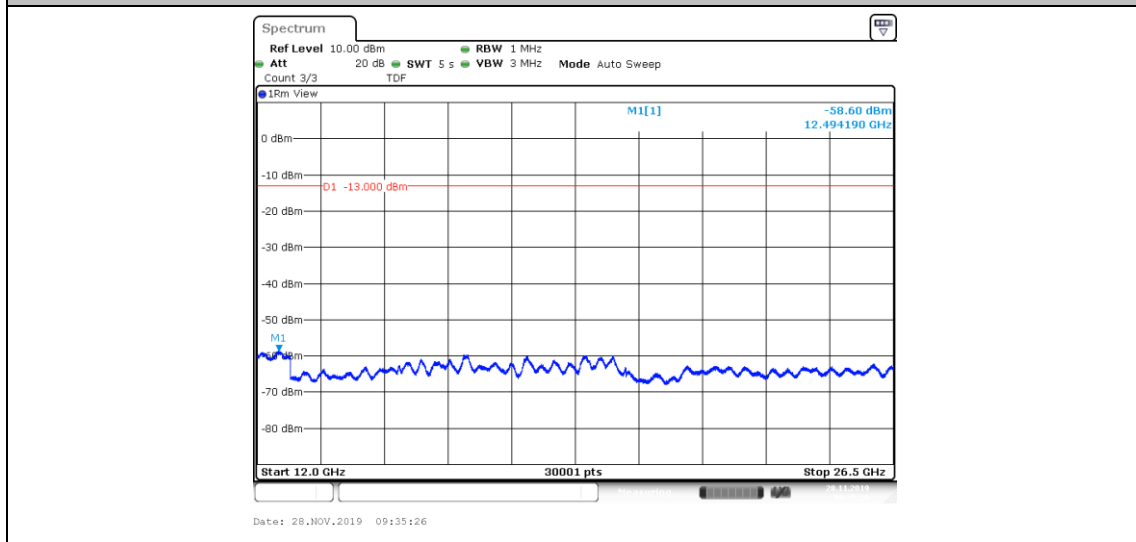
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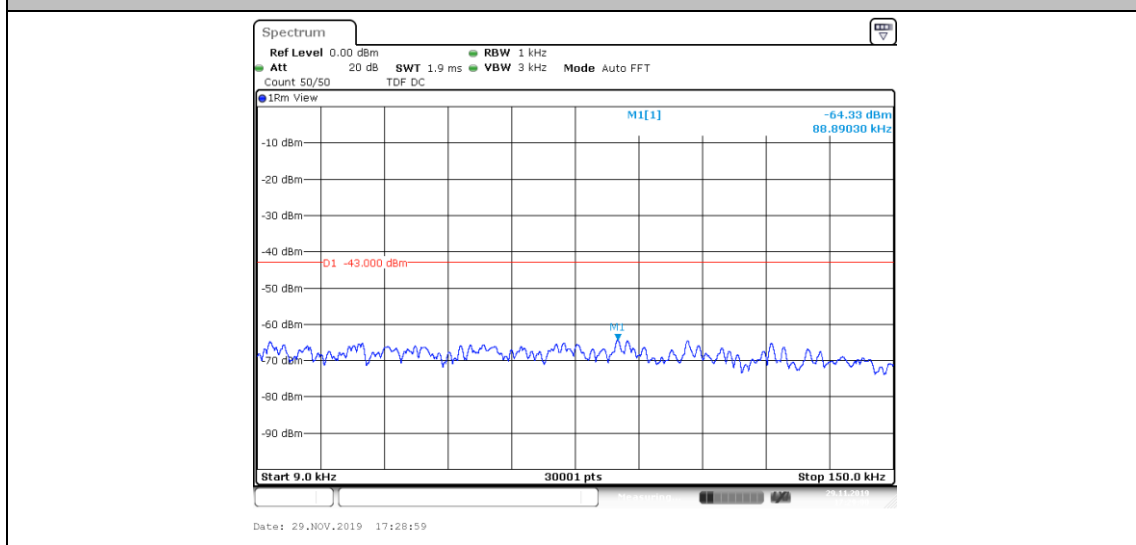
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Band13\_5MHz\_16QAM\_23205\_1RB#0



Band13\_5MHz\_16QAM\_23230\_1RB#0



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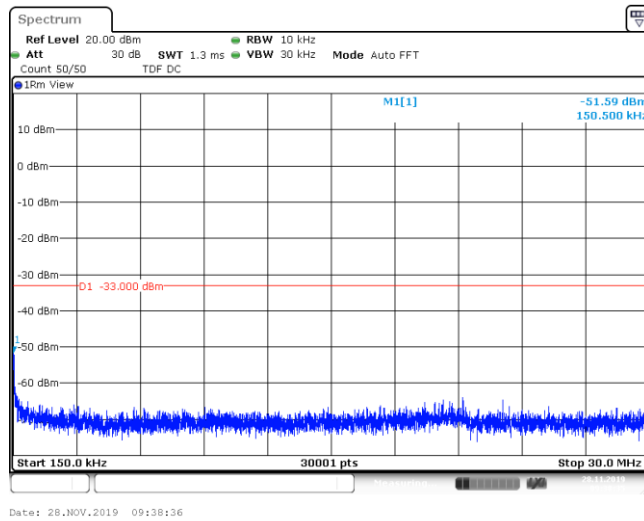
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Tel.: (86)755-27521059

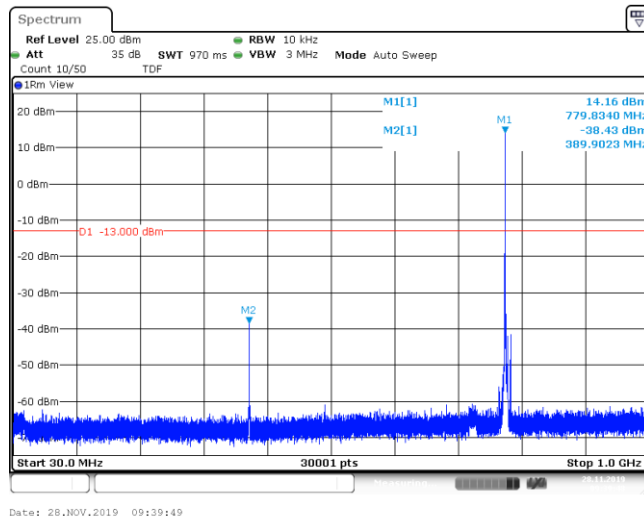
Fax: (86)755-27521011

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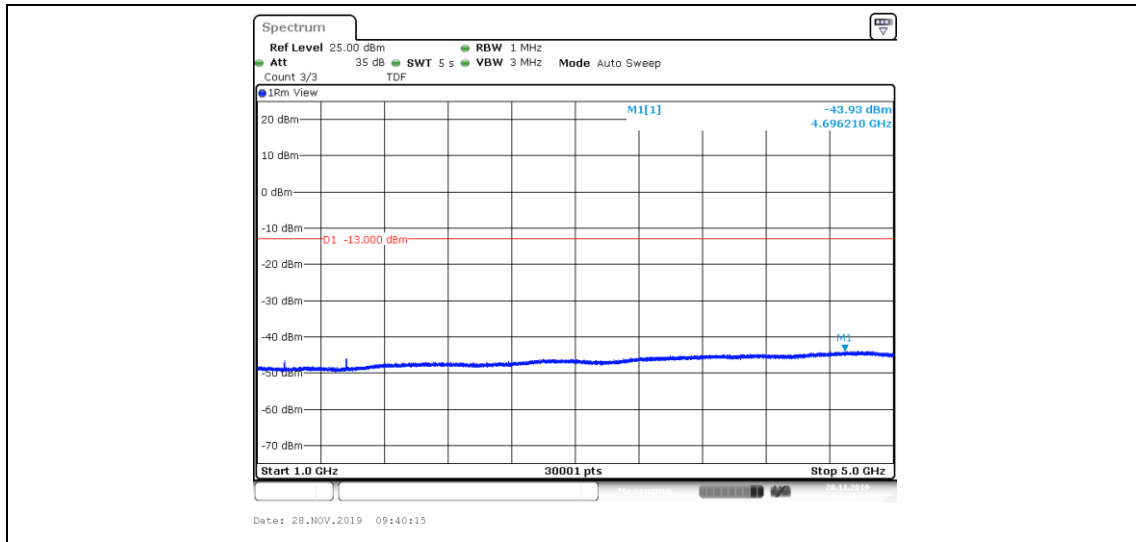
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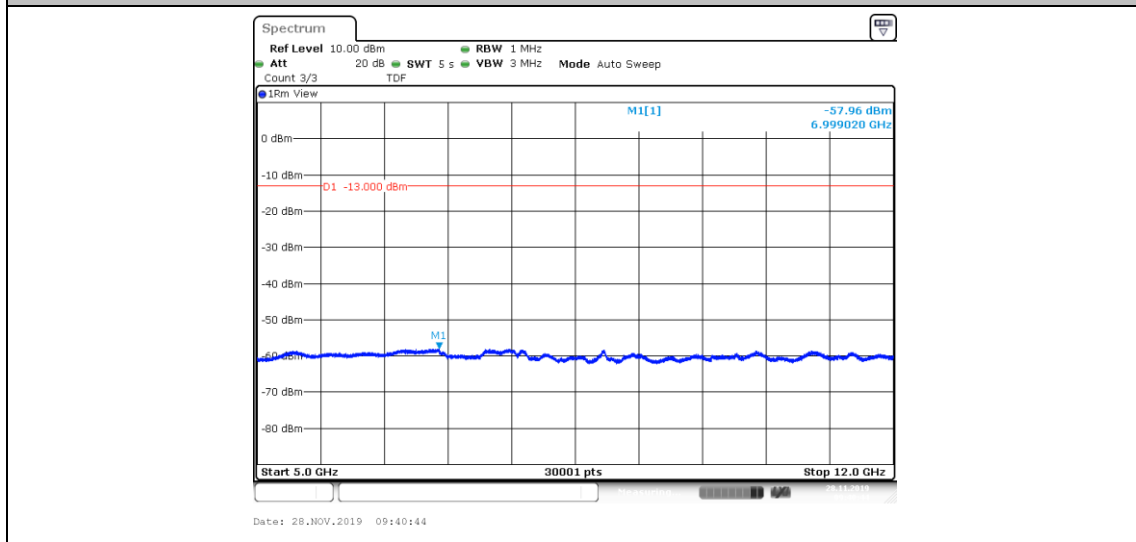
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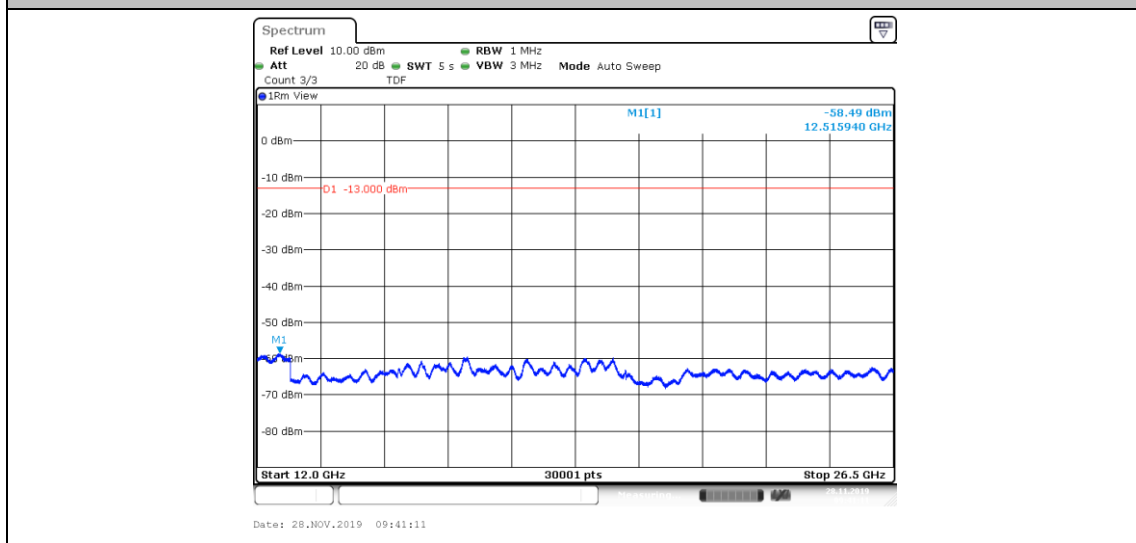
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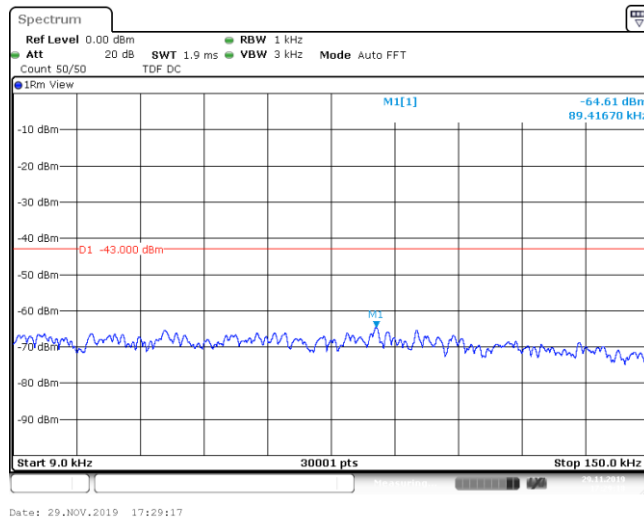
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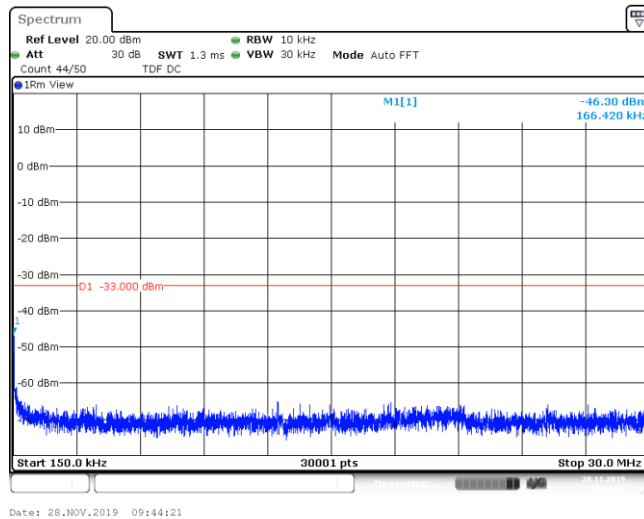
Band13\_5MHz\_16QAM\_23230\_1RB#0



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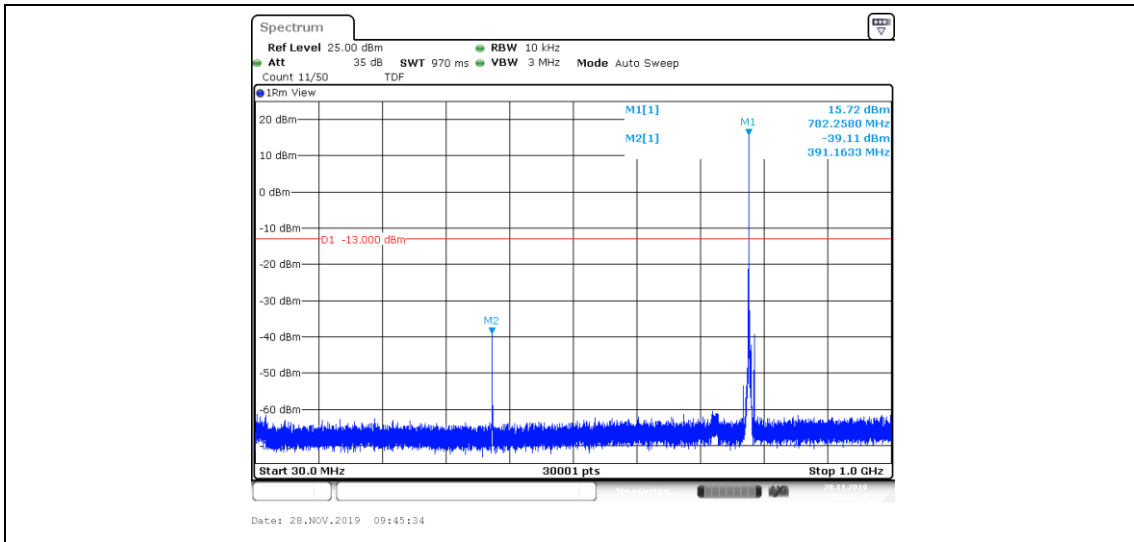


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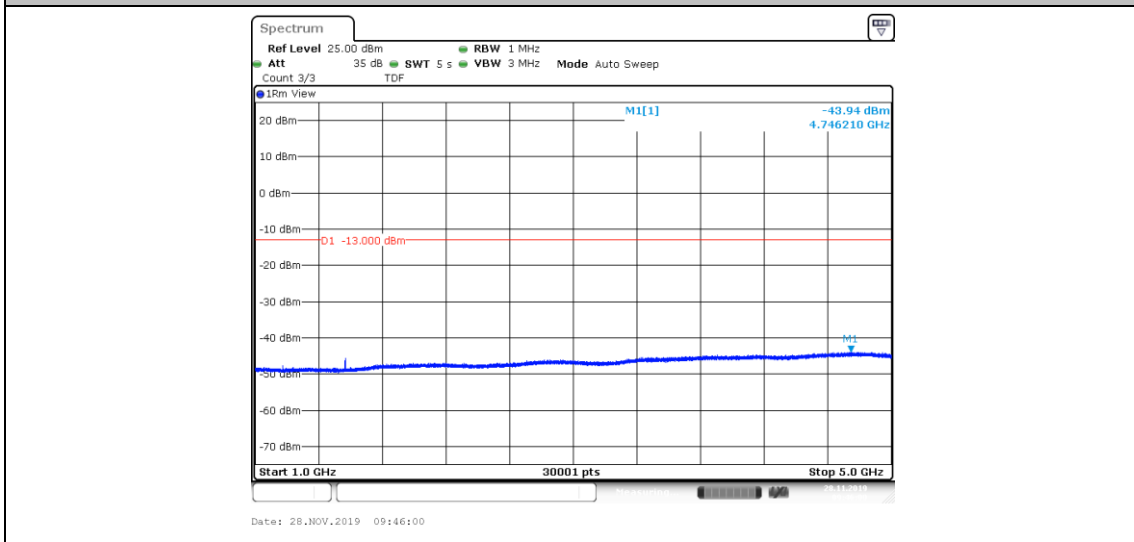


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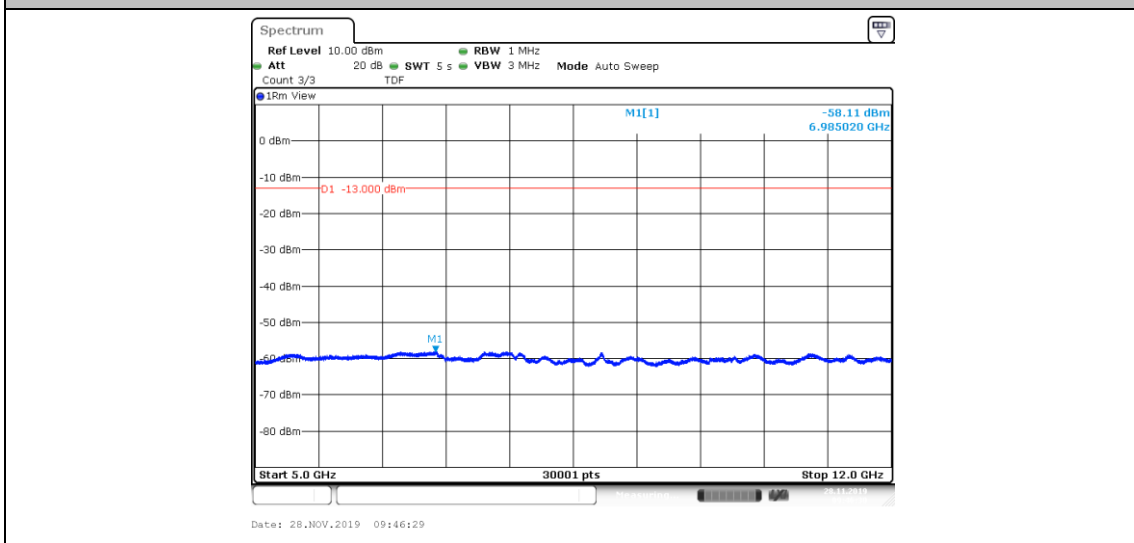




Band13\_5MHz\_16QAM\_23255\_1RB#0



Band13\_5MHz\_16QAM\_23255\_1RB#0



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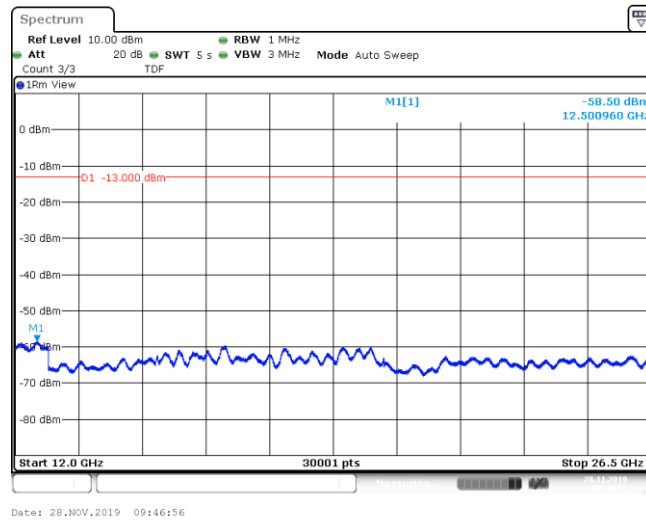
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Tel.: (86)755-27521059

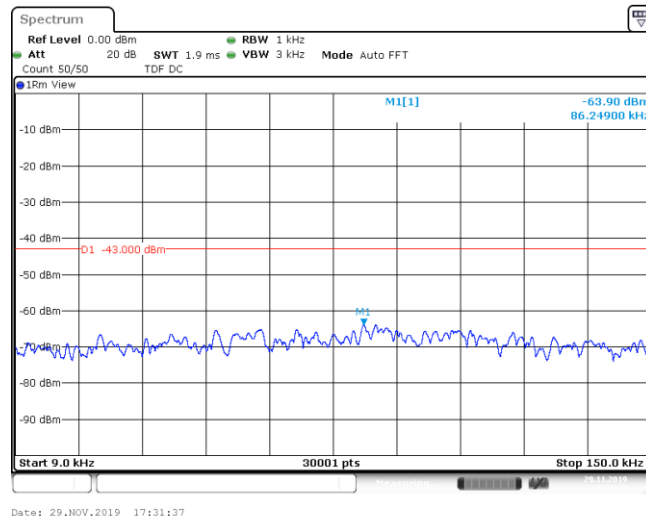
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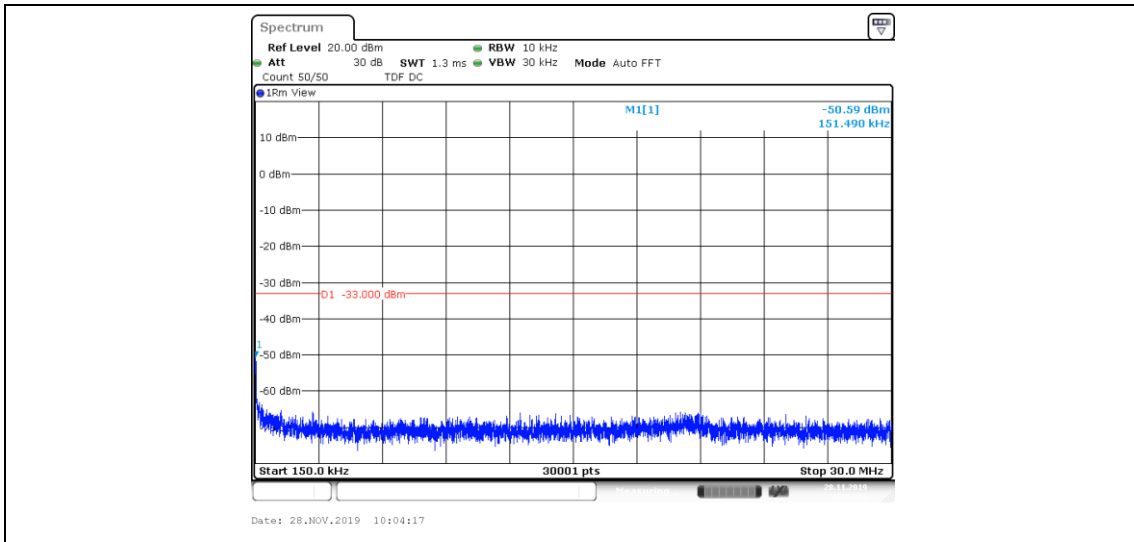
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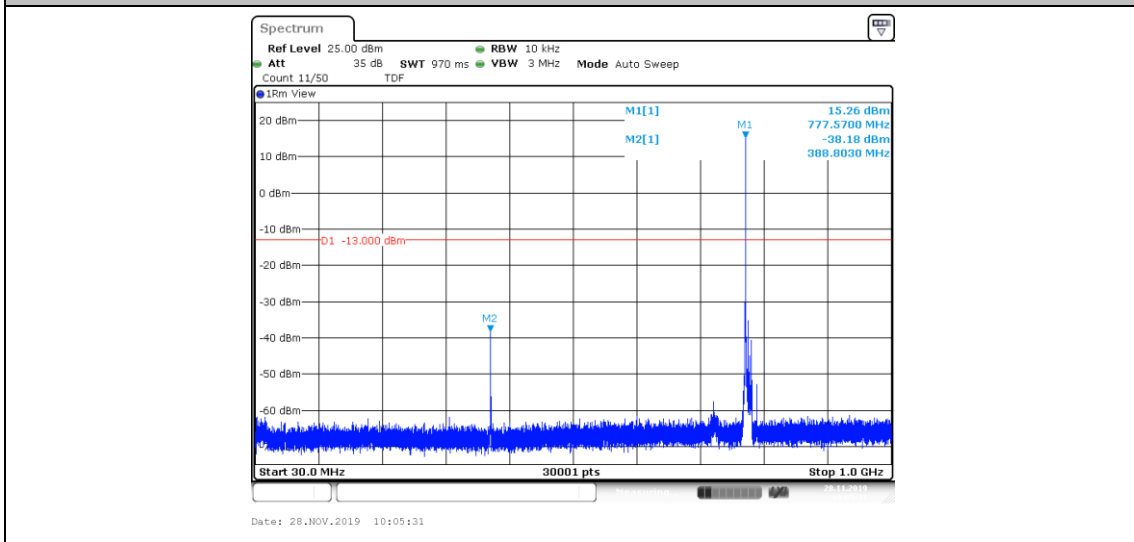
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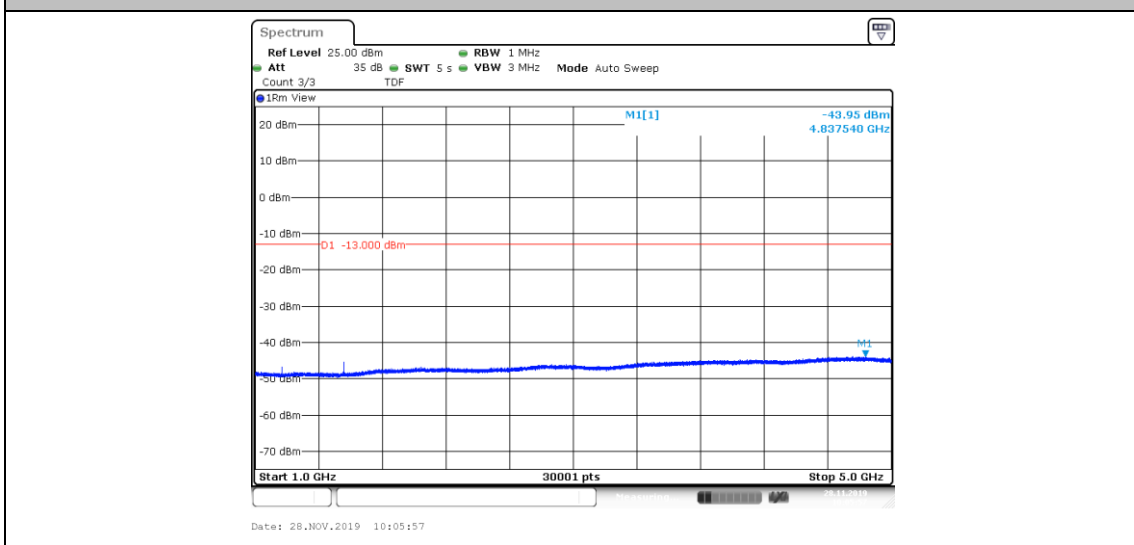
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Band13\_10MHz\_QPSK\_23230\_1RB#0



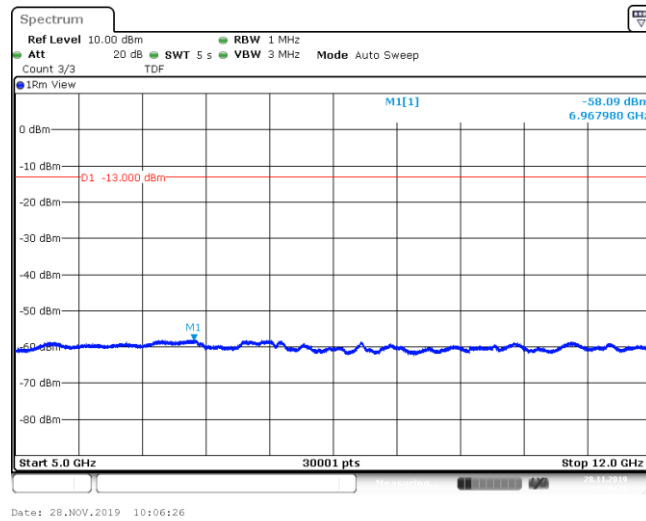
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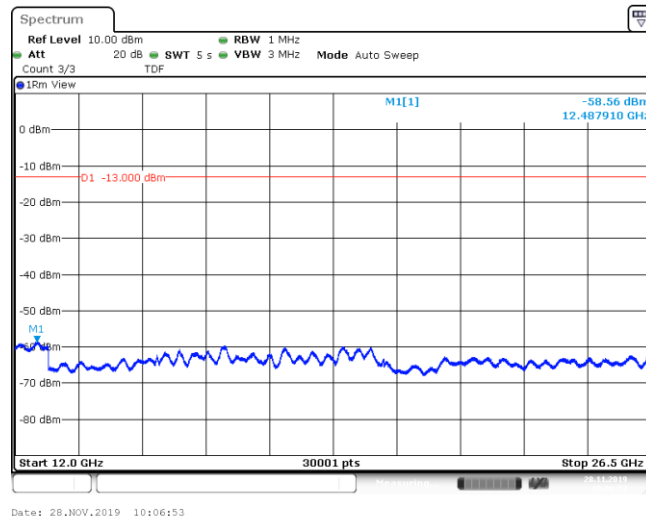
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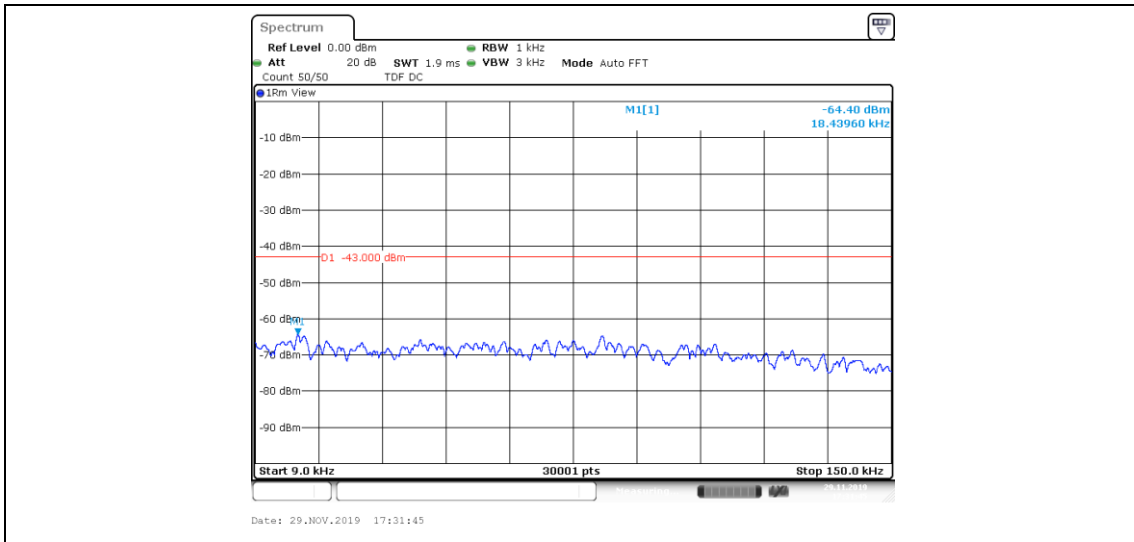
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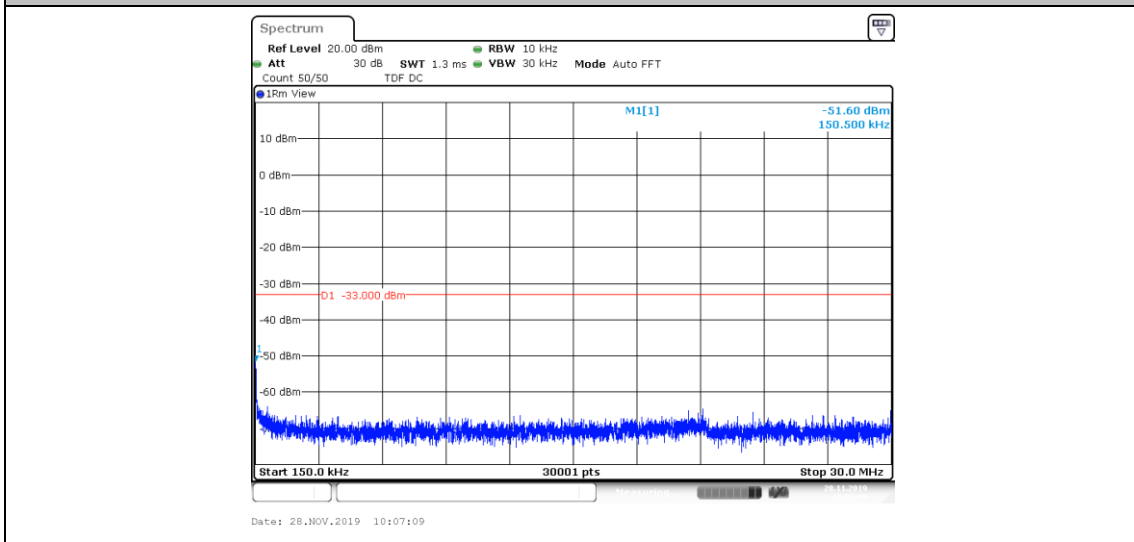
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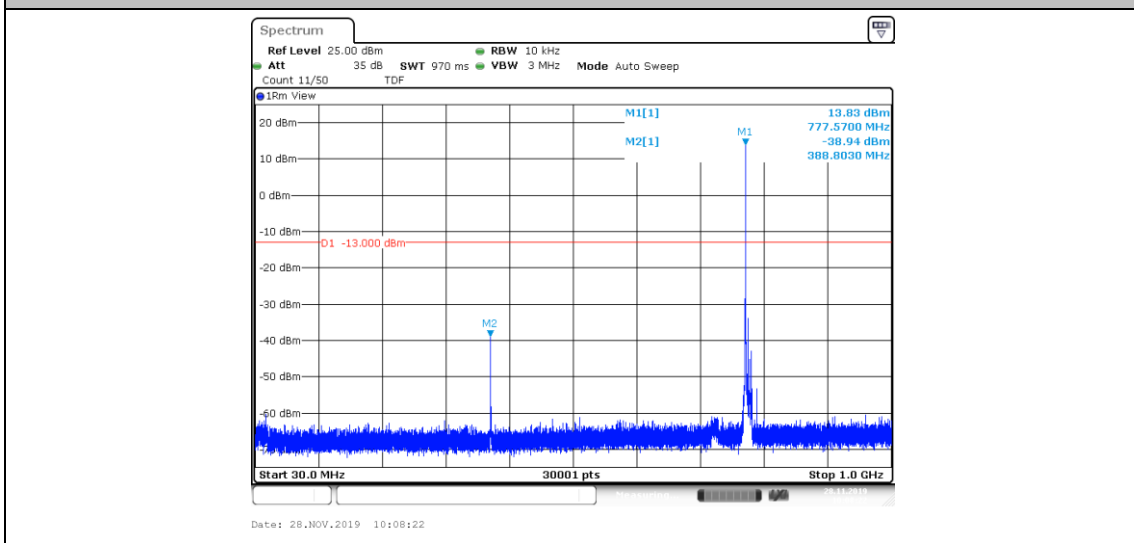
## Band13\_10MHz\_16QAM\_23230\_1RB#0



Band13\_10MHz\_16QAM\_23230\_1RB#0



Band13\_10MHz\_16QAM\_23230\_1RB#0



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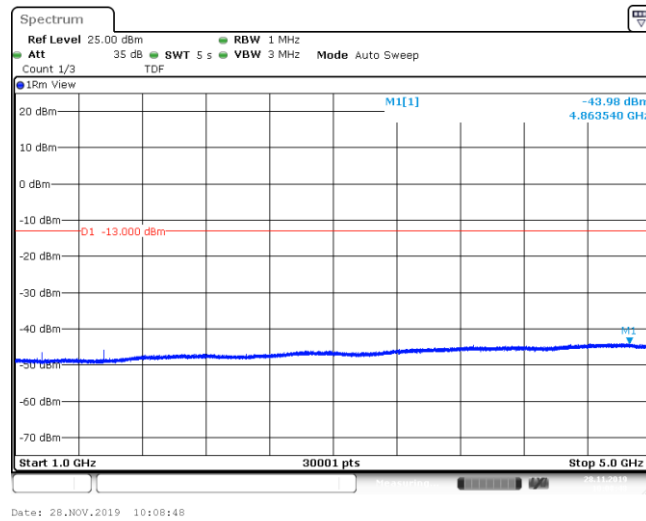
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

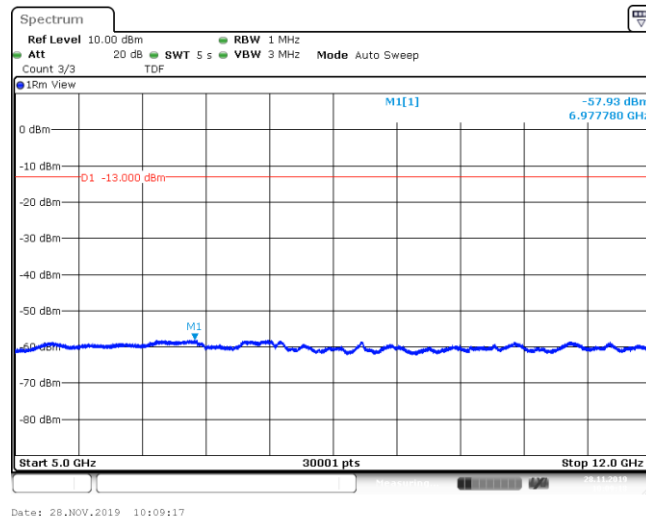
Fax: (86)755-27521011

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## Band13\_10MHz\_16QAM\_23230\_1RB#0



## Band13\_10MHz\_16QAM\_23230\_1RB#0



## Band13\_10MHz\_16QAM\_23230\_1RB#0

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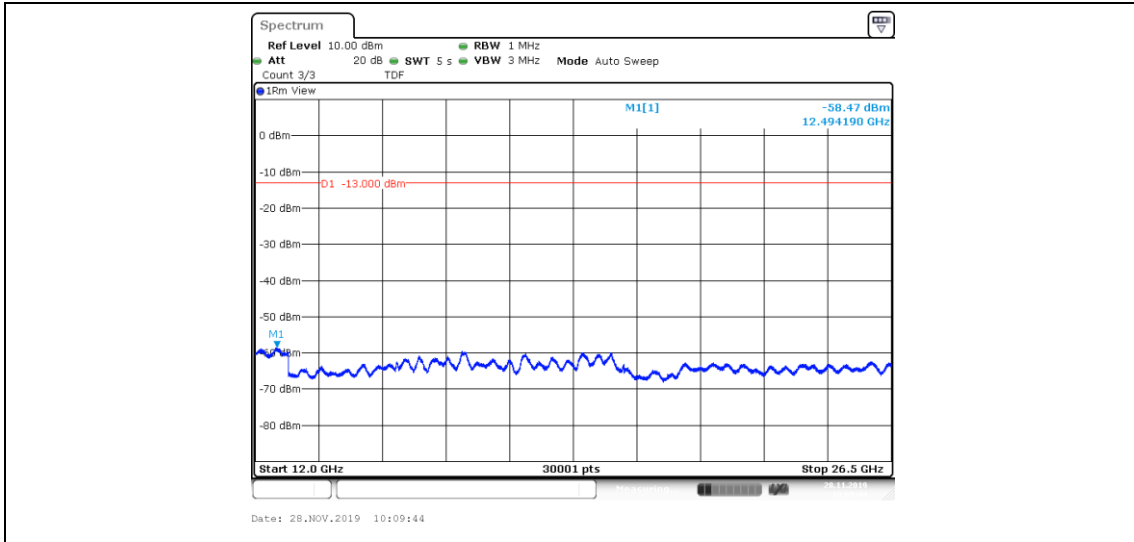
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

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## Appendix F: Frequency Stability

### Test Result

Voltage										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	5MHz	QPSK	23230	25RB#0	VL	NT	-2.95	-0.003772	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VN	NT	-3.19	-0.004079	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VH	NT	4.06	0.005192	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VL	NT	-7.21	-0.009220	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-4.42	-0.005652	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	3.79	0.004847	±2.5	PASS

Temperature										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	5MHz	QPSK	23230	25RB#0	NV	-30	-3.52	-0.004501	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-20	-4.69	-0.005997	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	0	-3.65	-0.004668	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	10	-2.42	-0.003095	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	20	-3.95	-0.005051	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-30	2.39	0.003056	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	6.09	0.007788	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-3.12	-0.003990	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-7.00	-0.008951	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-4.89	-0.006253	±2.5	PASS

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