

8.5 CONDUCTED BAND EDGE MEASUREMENT

Limit

FCC §24.238(a), Band 25

For operations in the 1850-1910 and 1930-1950 MHz band , Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

RSS-133 section 6.5

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).

Test Procedures

KDB 971168 D01,

1. RBW \geq 1% of the emission bandwidth
2. VBW \geq 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

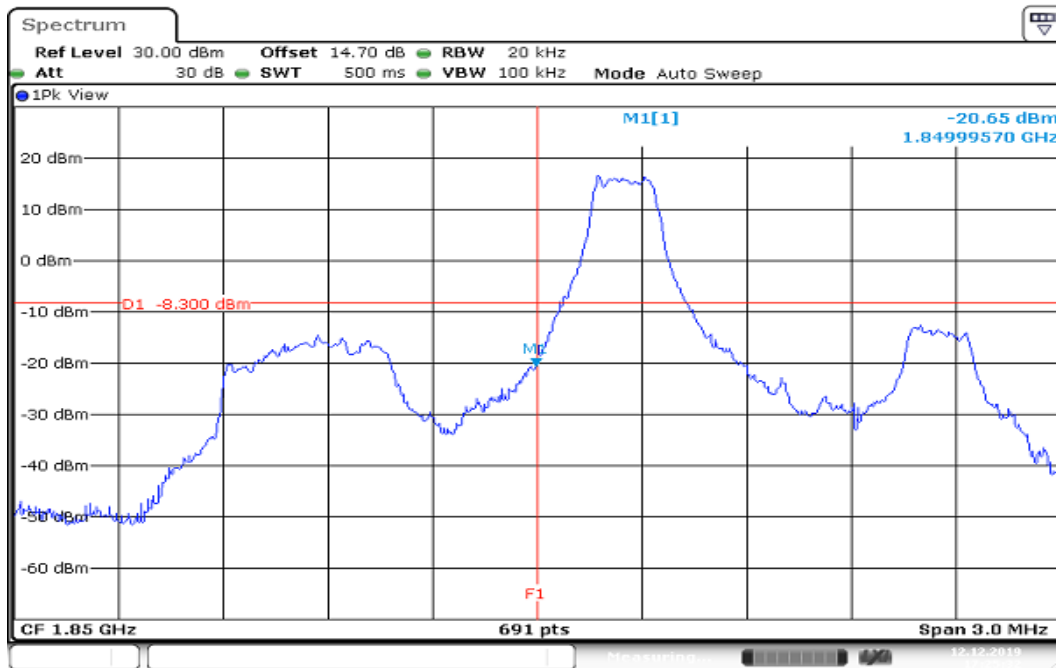
Report No.: T191105W01-RP9

Test Results:

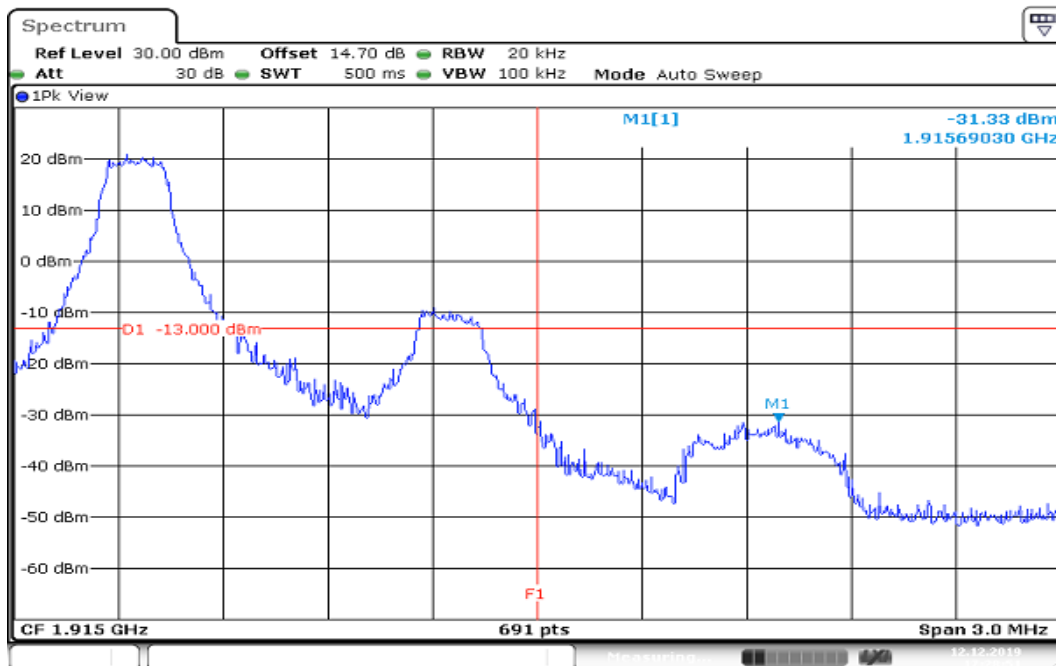
LTE Band 25

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB ALLOCATED

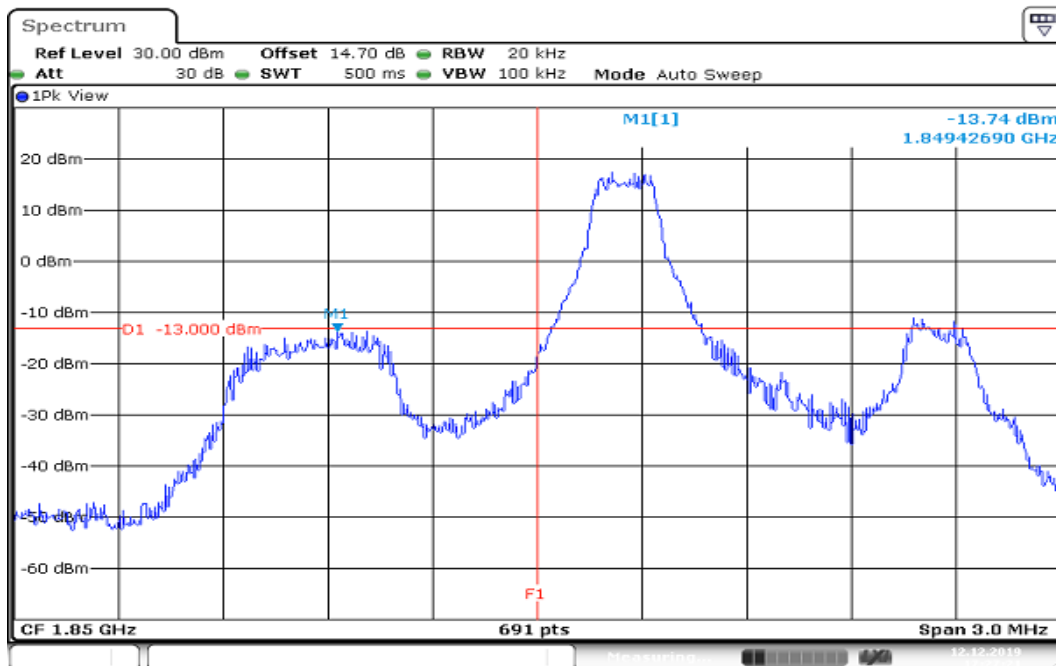
LOWER BAND EDGE



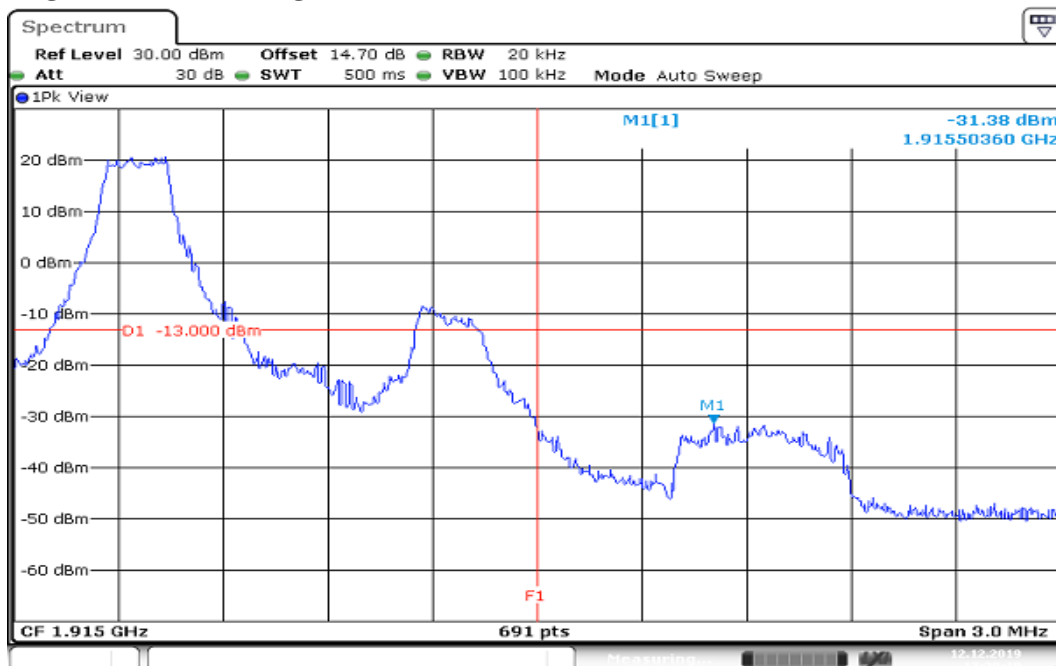
HIGHER BAND EDGE



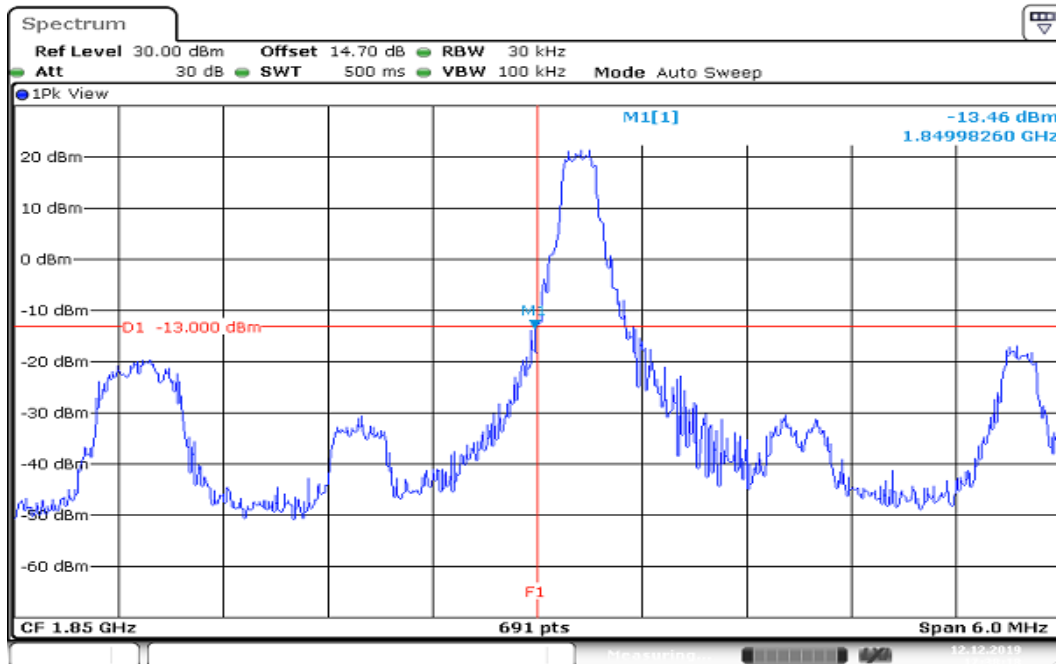
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

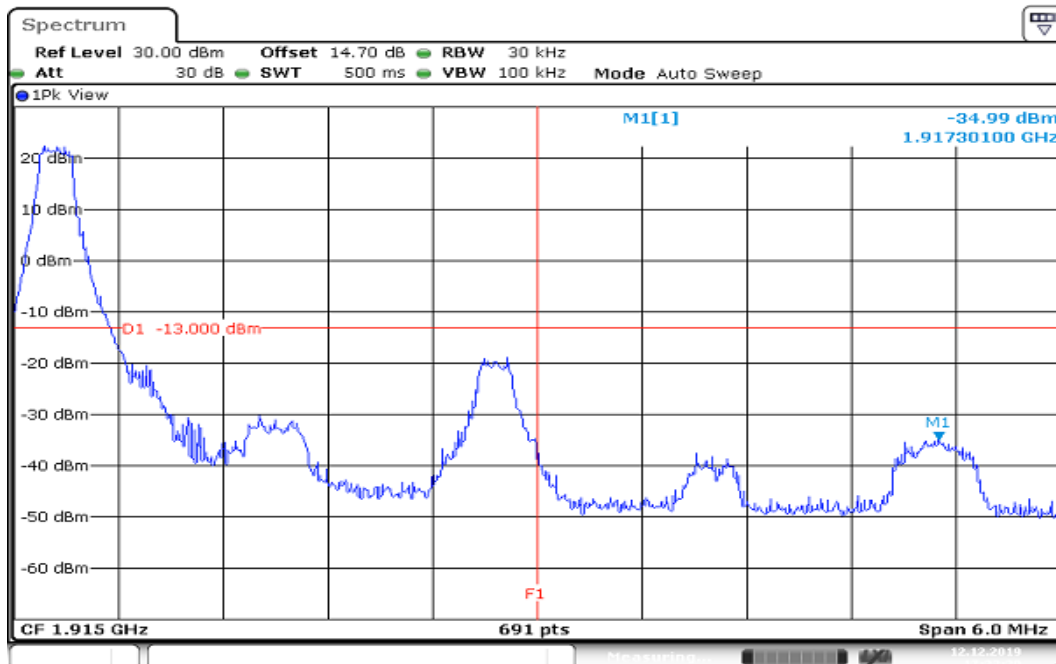


CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB ALLOCATED LOWER BAND EDGE



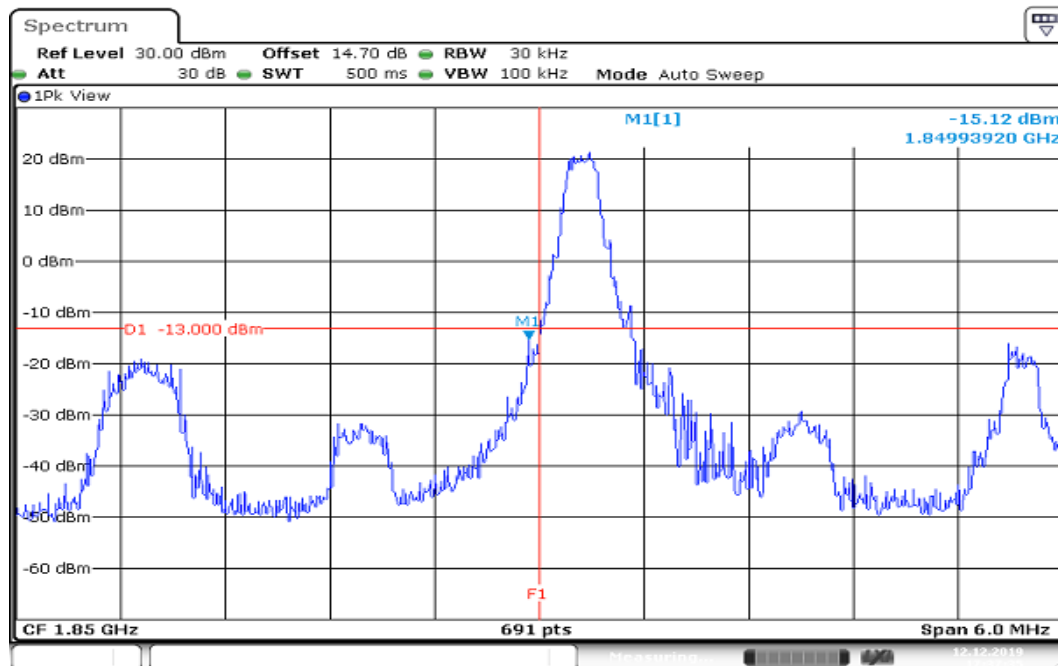
Date: 12.DEC.2019 17:38:19

HIGHER BAND EDGE



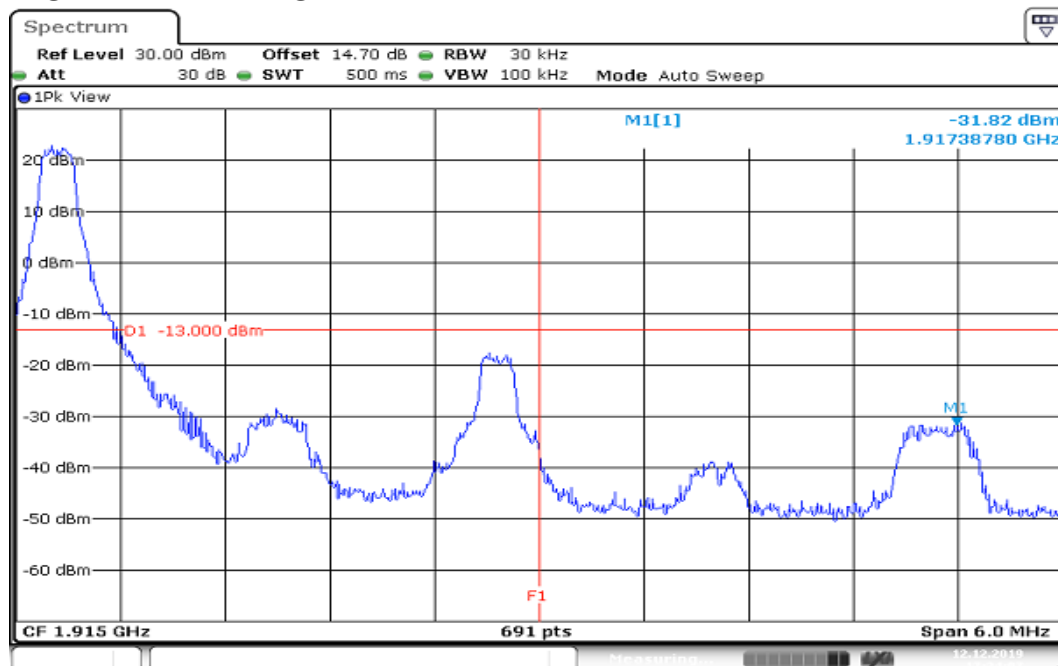
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CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



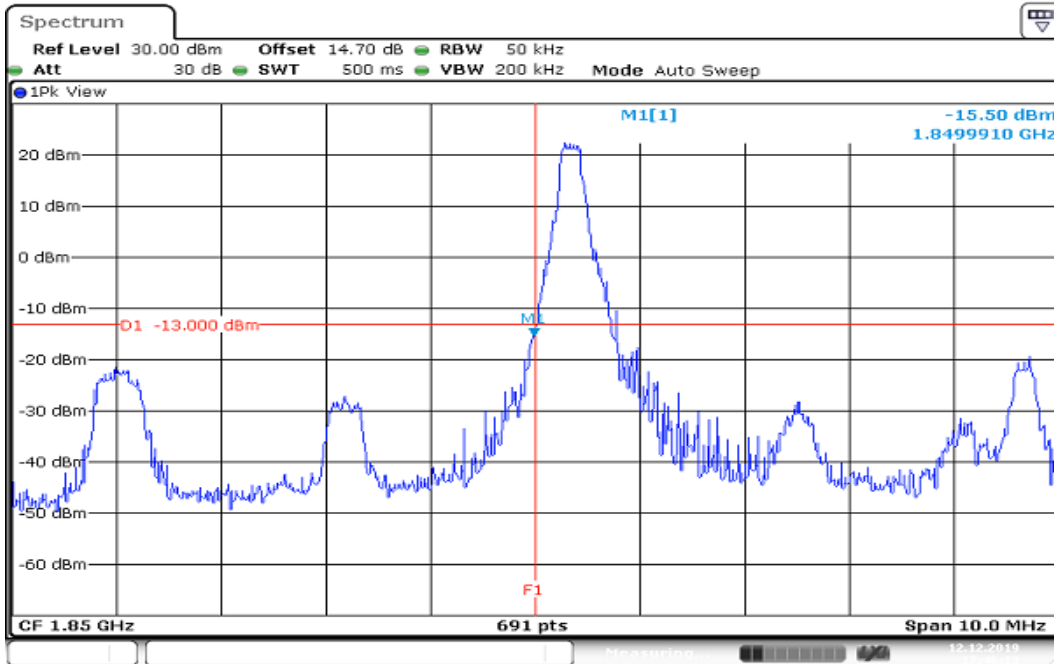
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HIGHER BAND EDGE

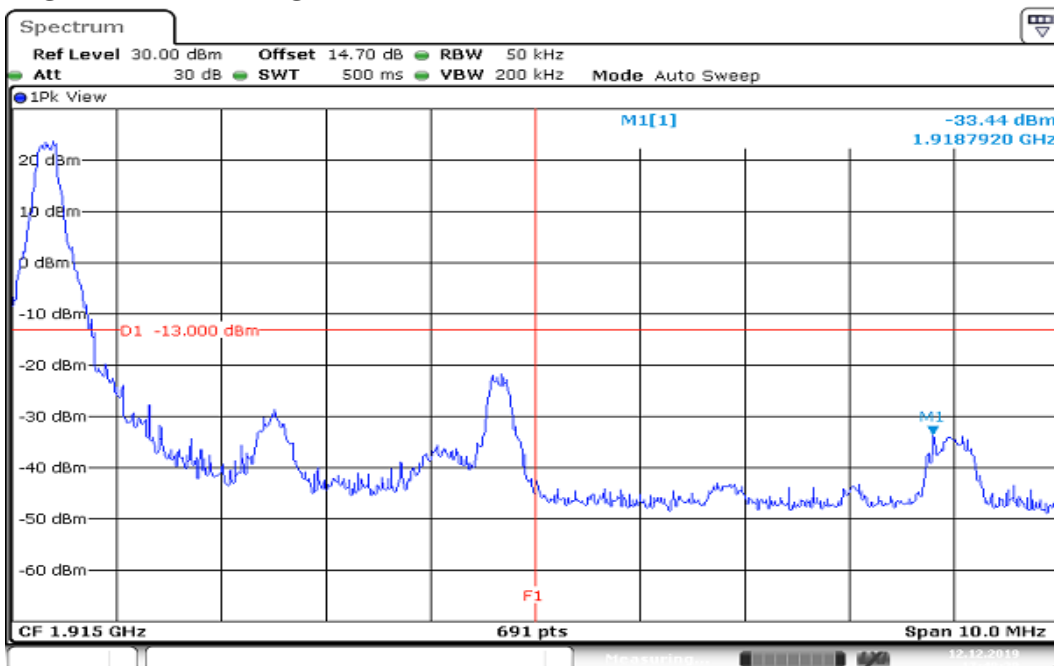


Date: 12.DEC.2019 17:34:08

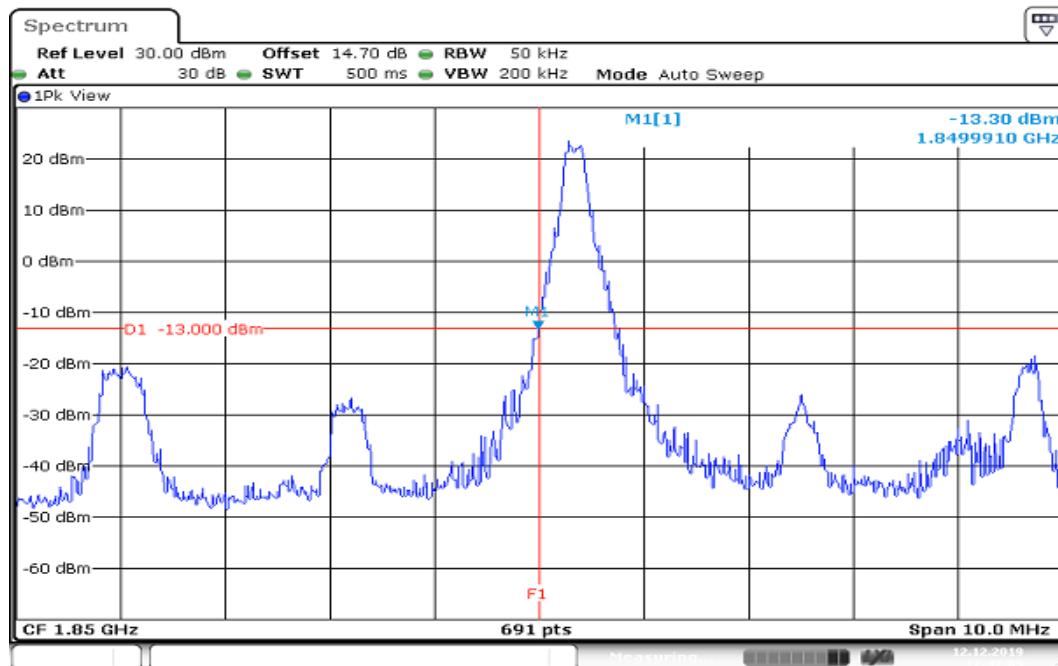
CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

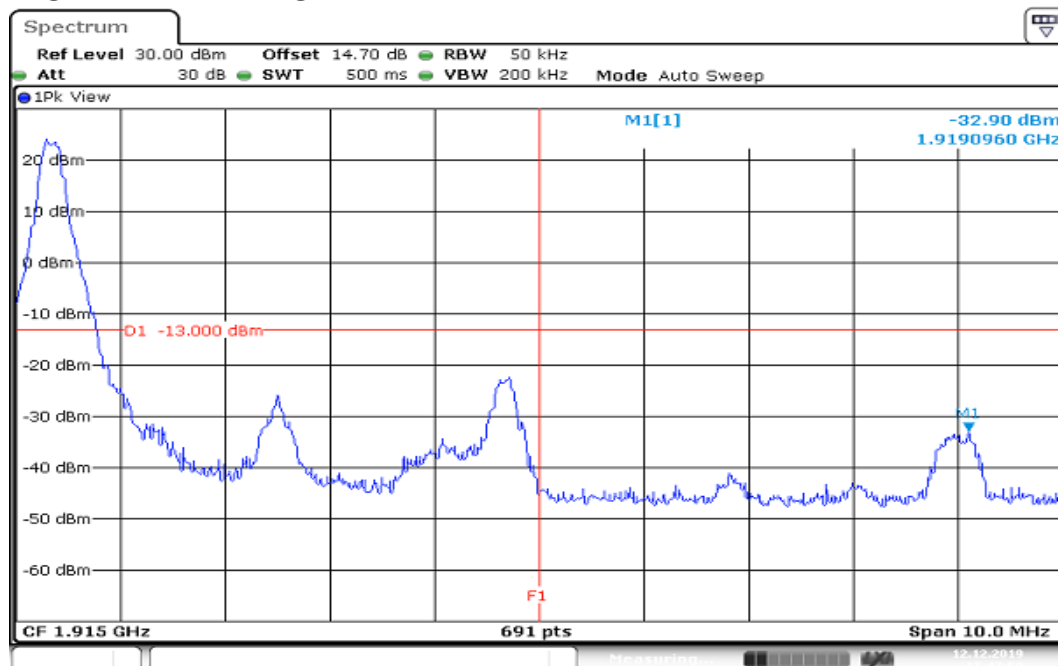


CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



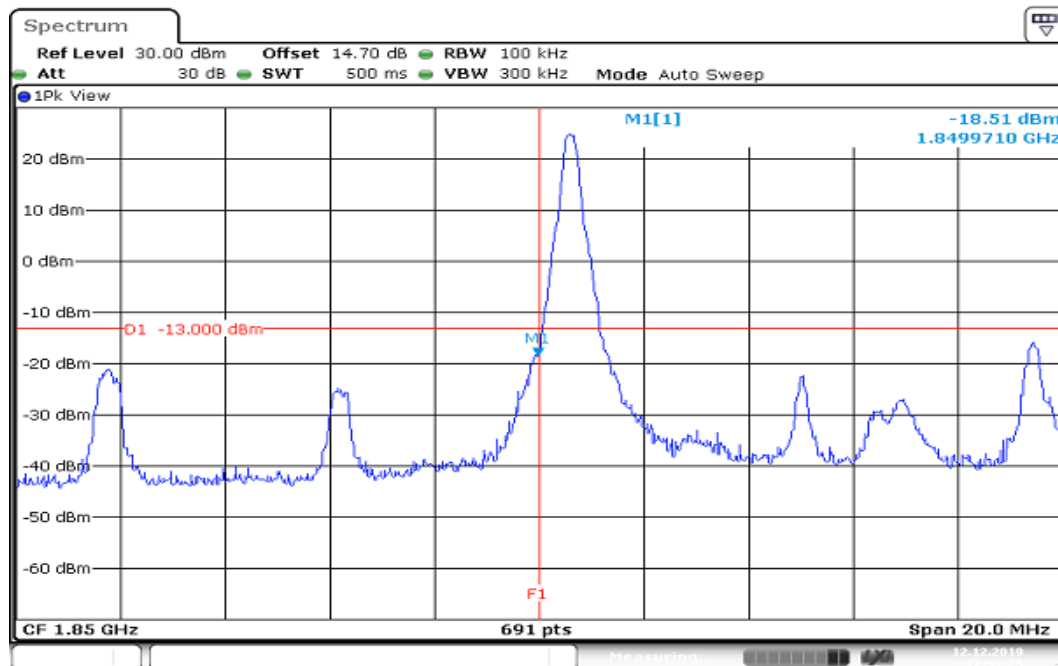
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HIGHER BAND EDGE



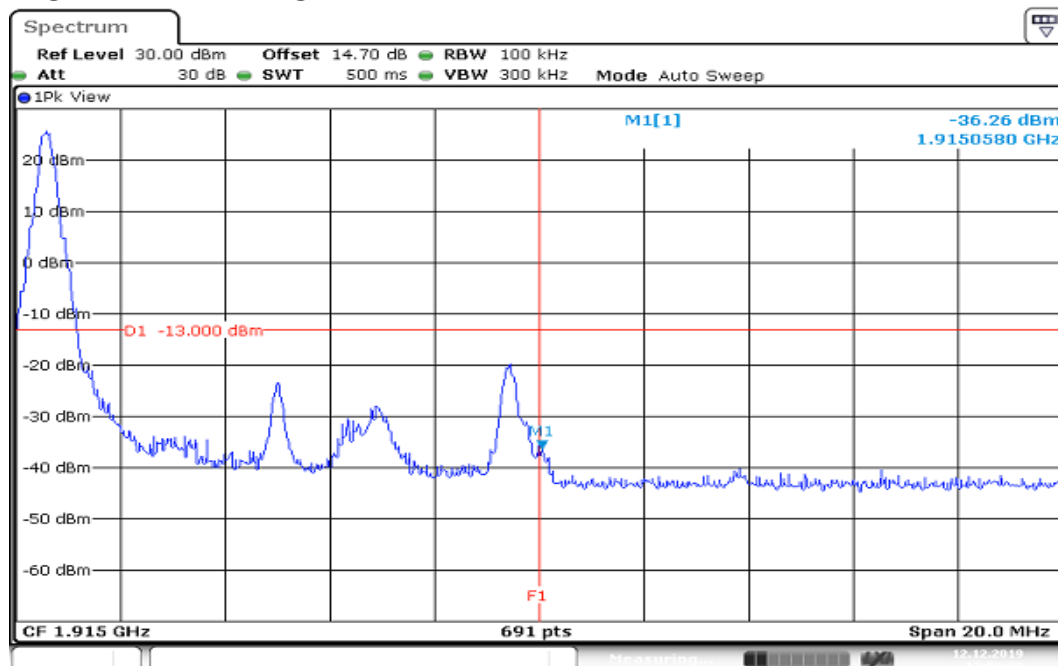
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CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB ALLOCATED LOWER BAND EDGE



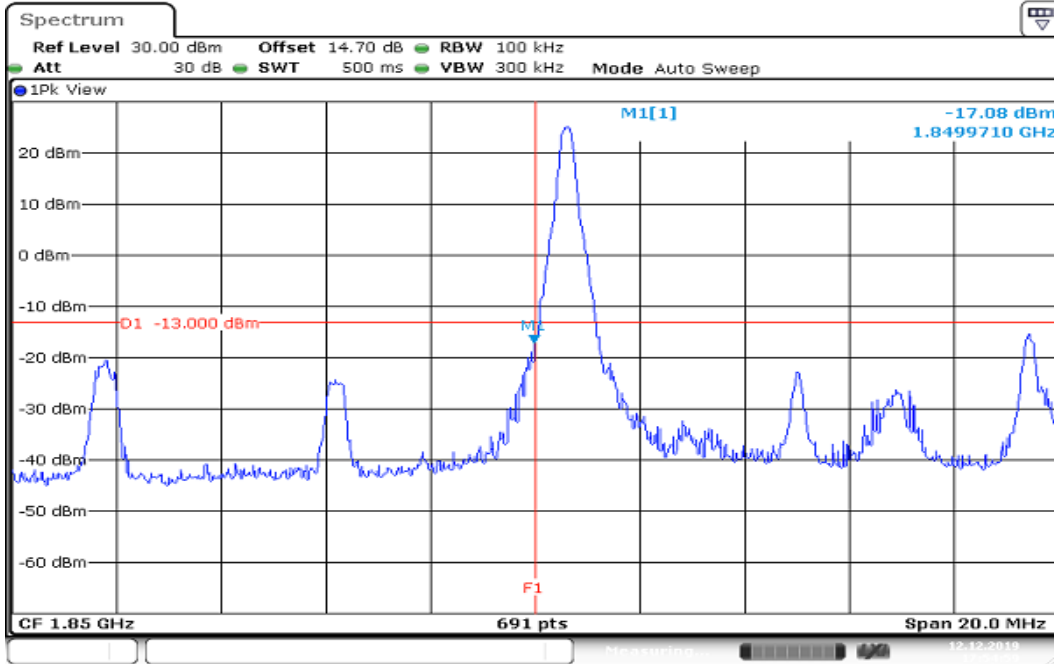
Date: 12.DEC.2019 17:54:25

HIGHER BAND EDGE

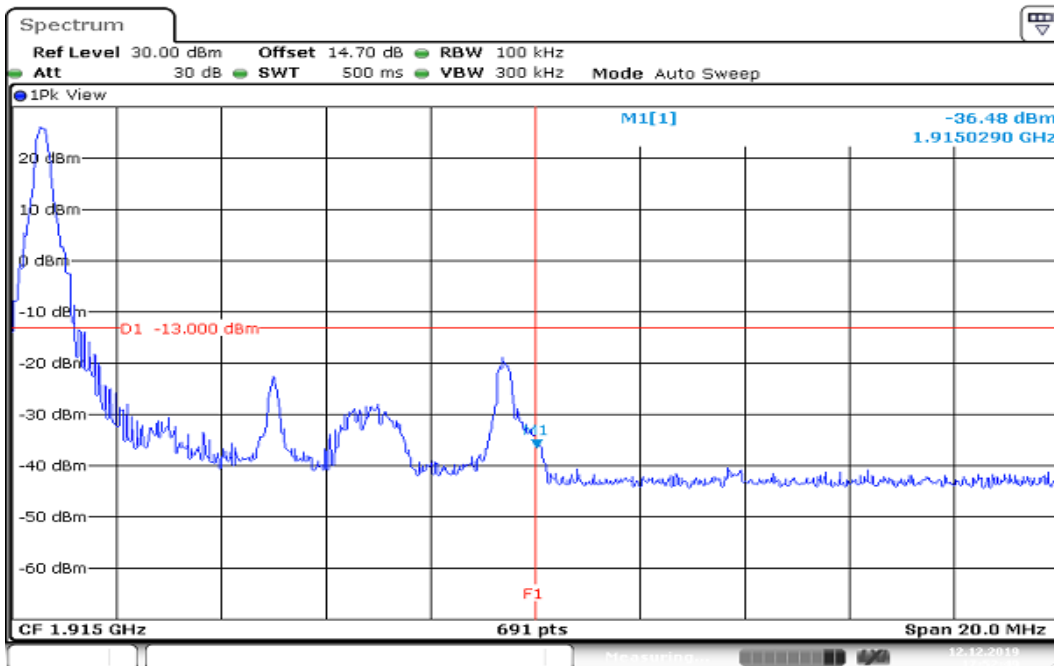


Date: 12.DEC.2019 17:53:24

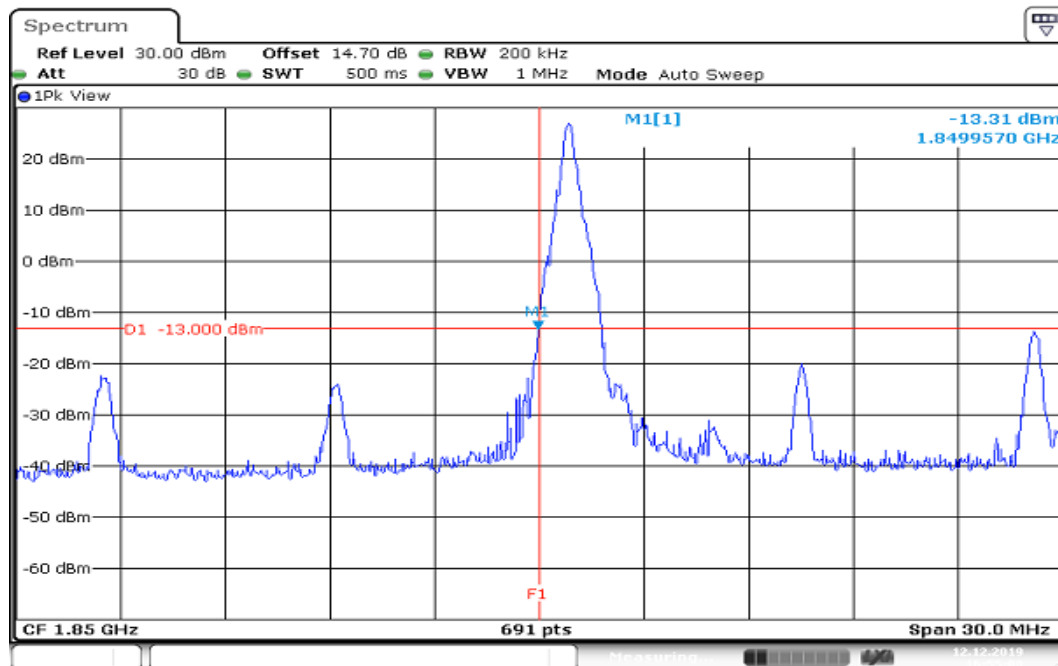
CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

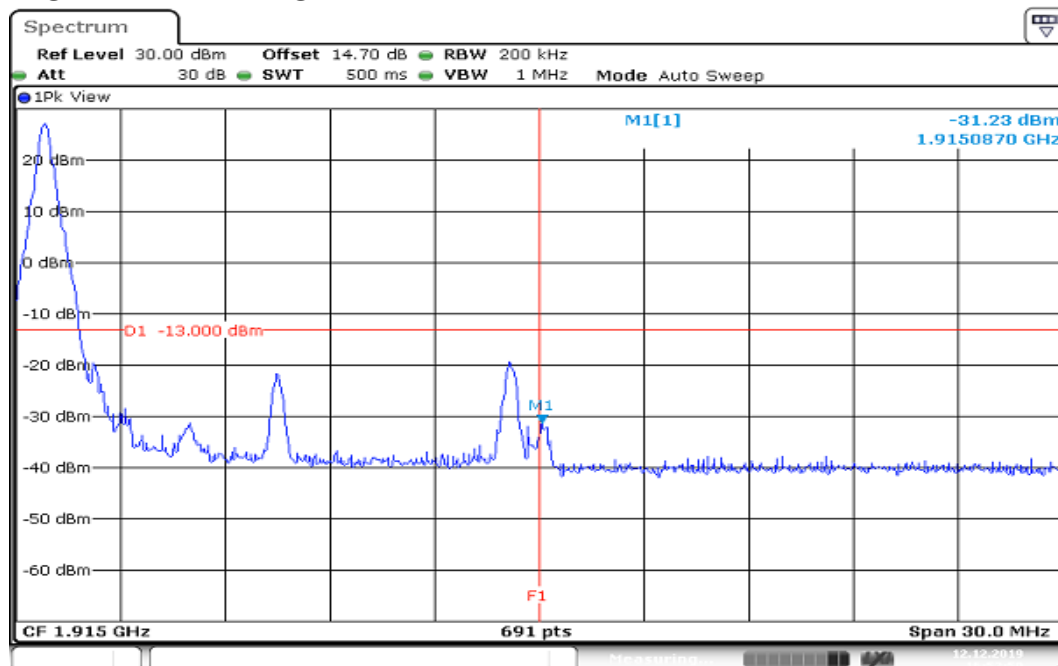


CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB ALLOCATED LOWER BAND EDGE



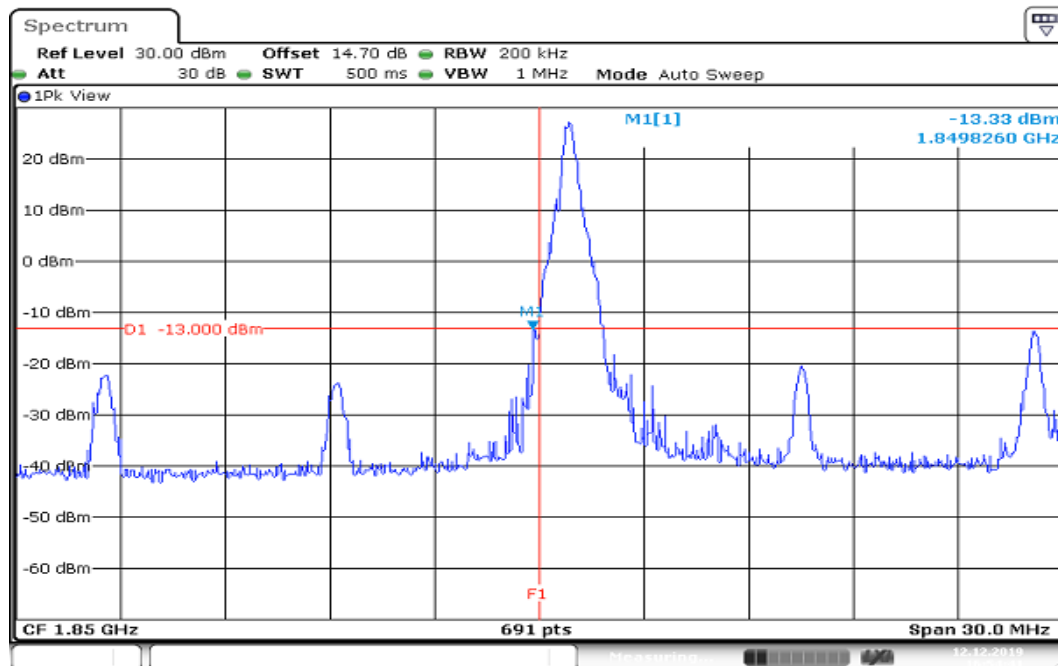
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HIGHER BAND EDGE



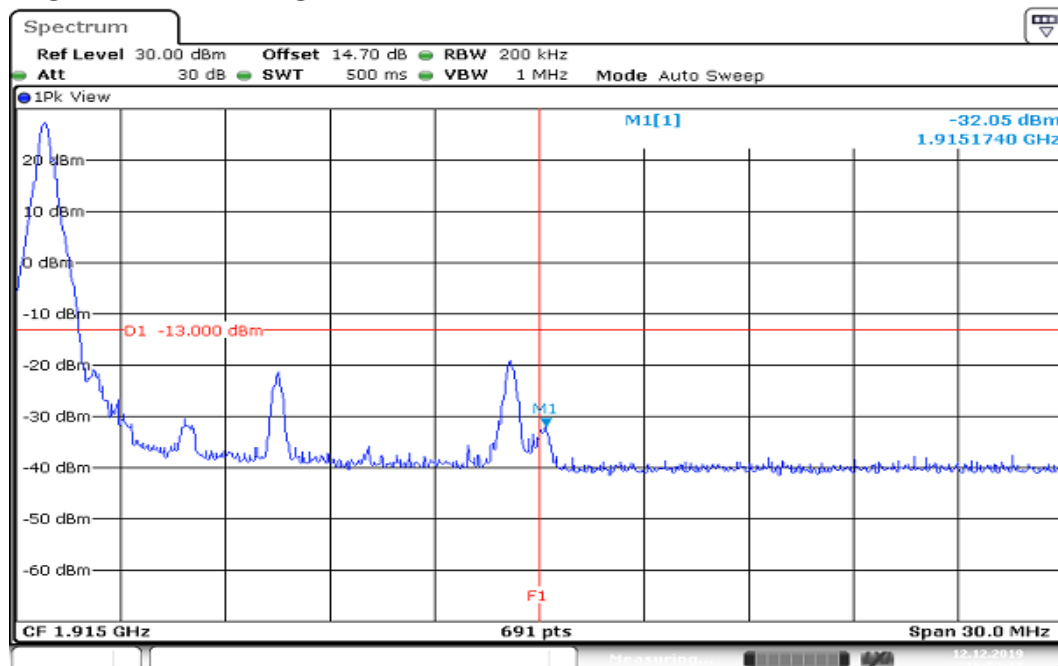
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CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



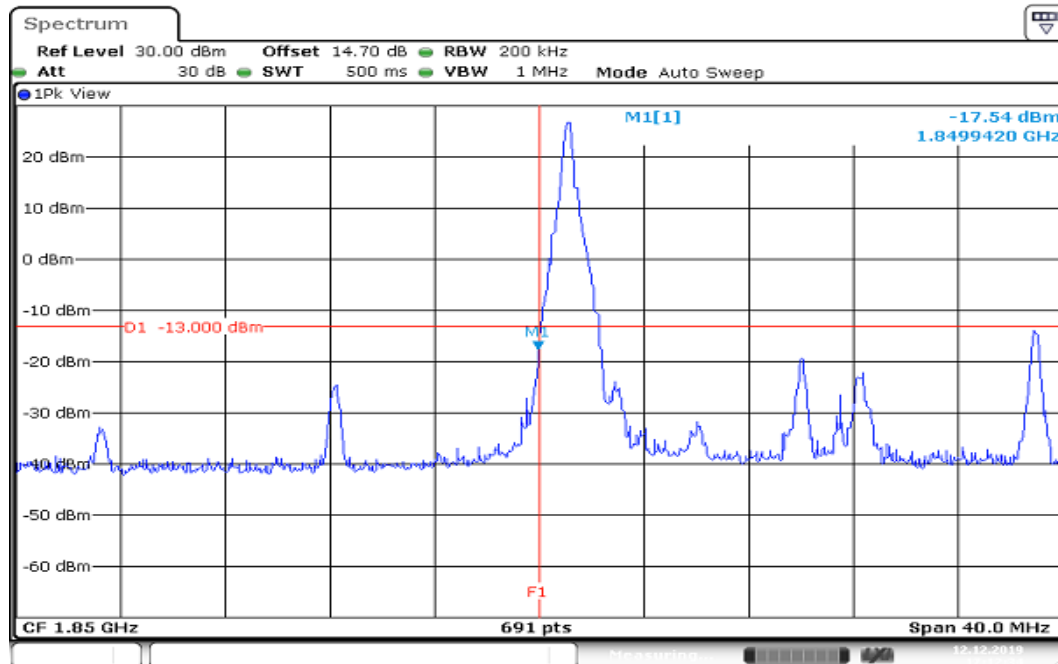
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HIGHER BAND EDGE



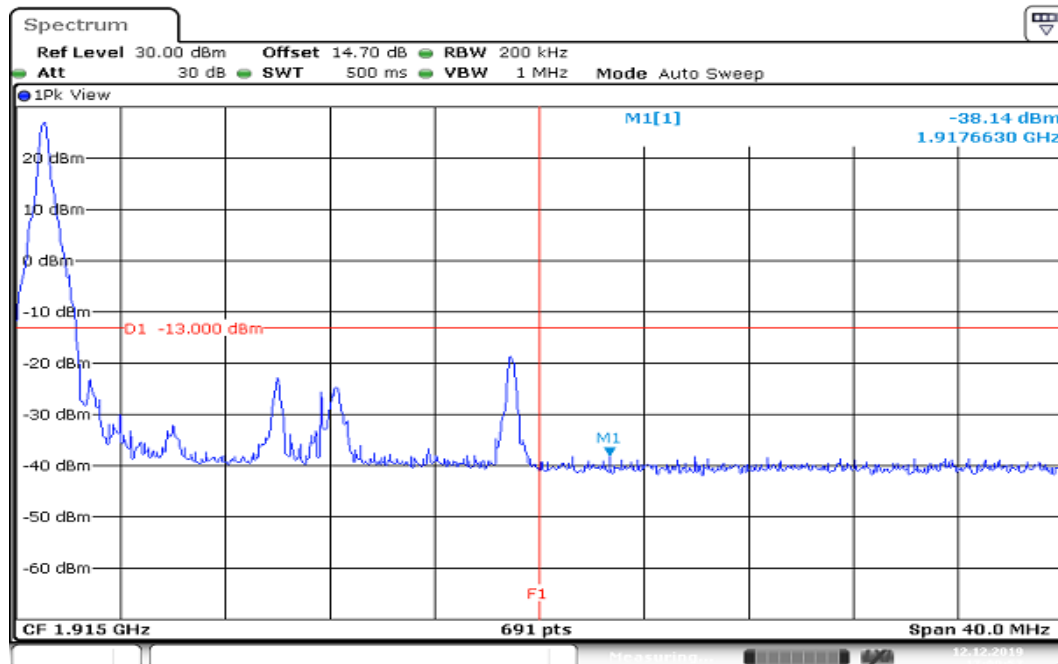
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CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB ALLOCATED LOWER BAND EDGE



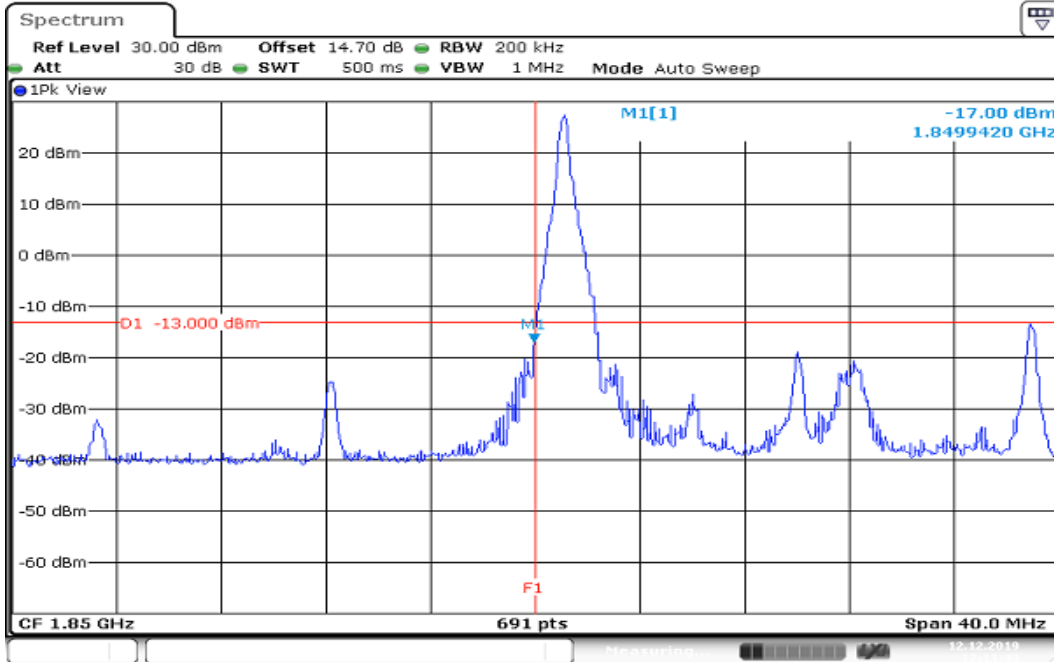
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HIGHER BAND EDGE

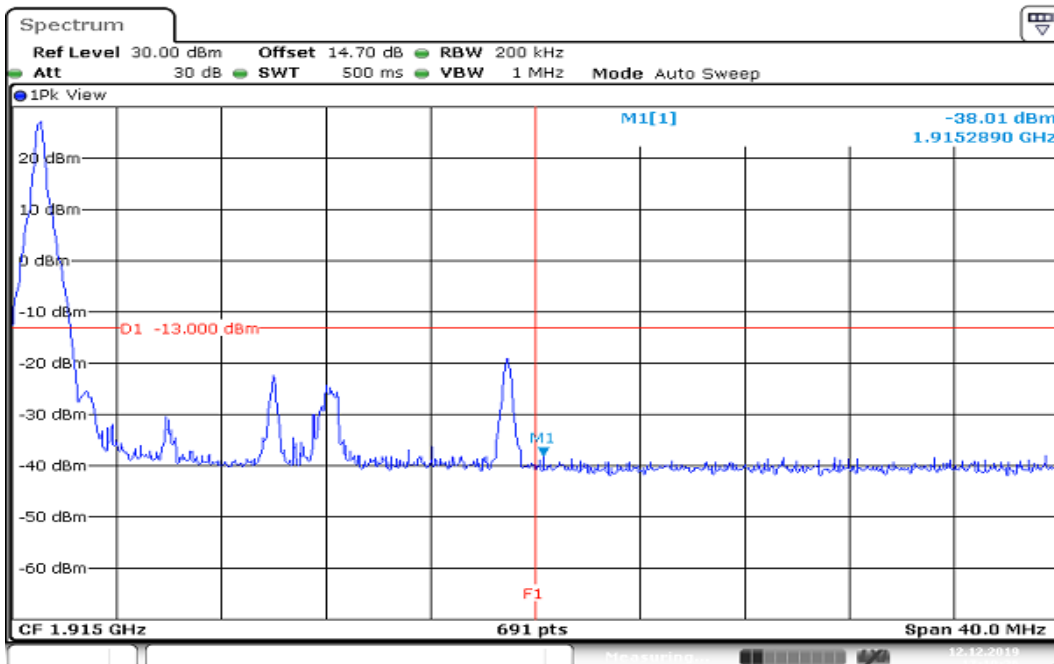


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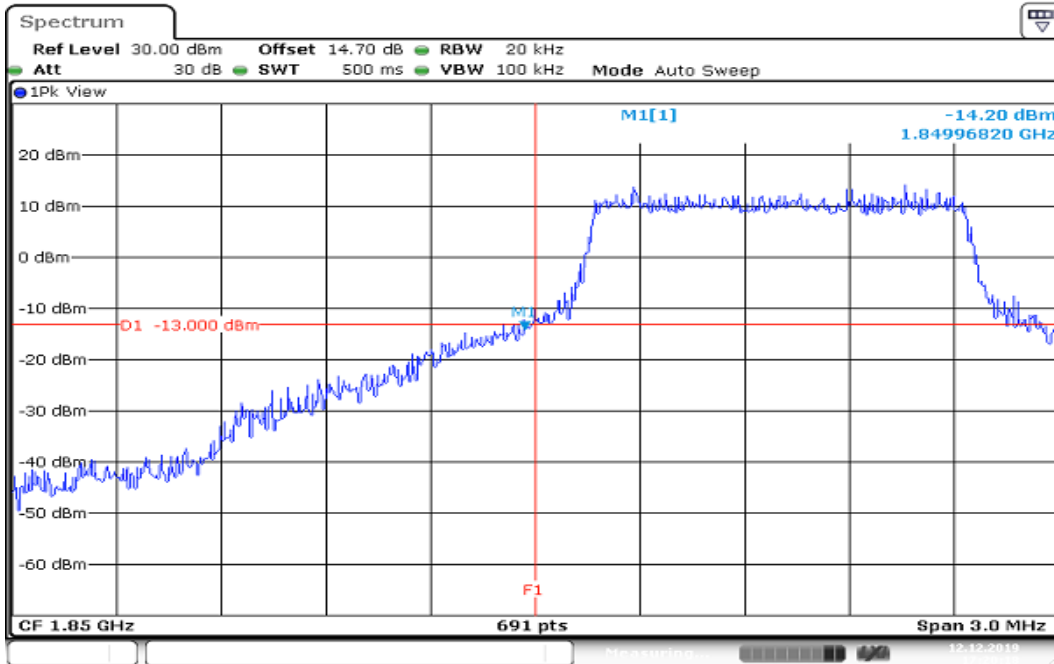
CHANNEL BANDWIDTH: 20MHz / 16QAM / 1RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

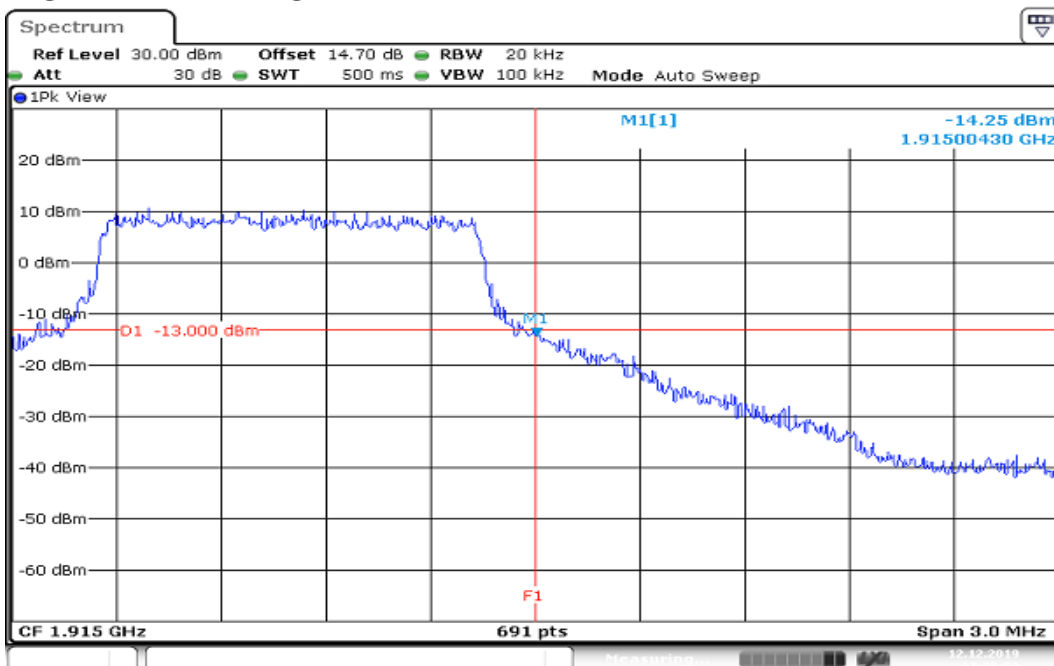


CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



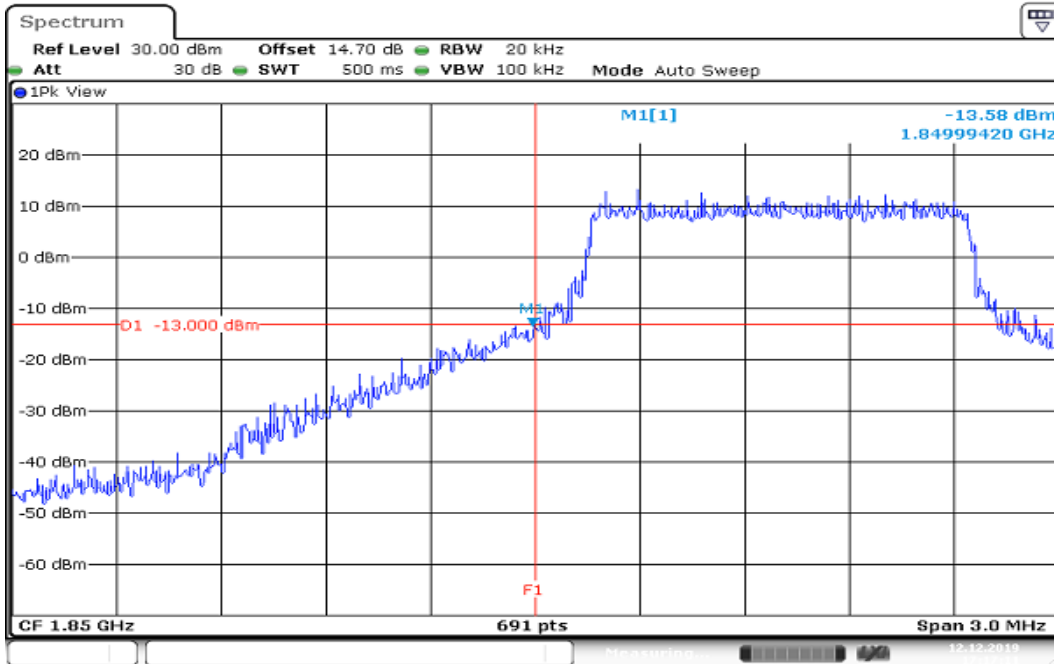
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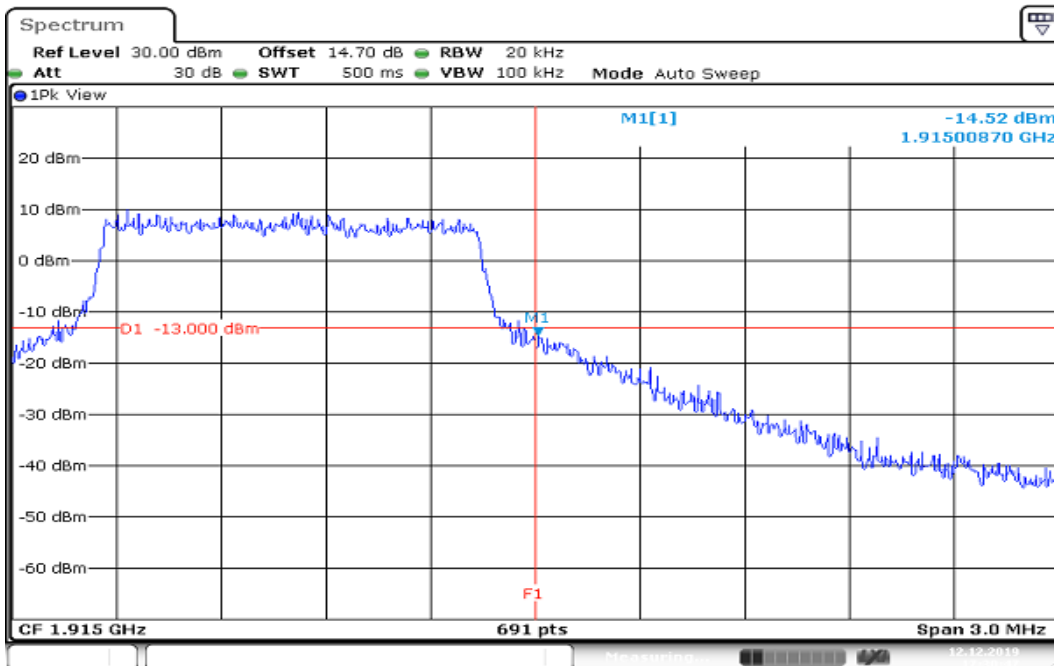


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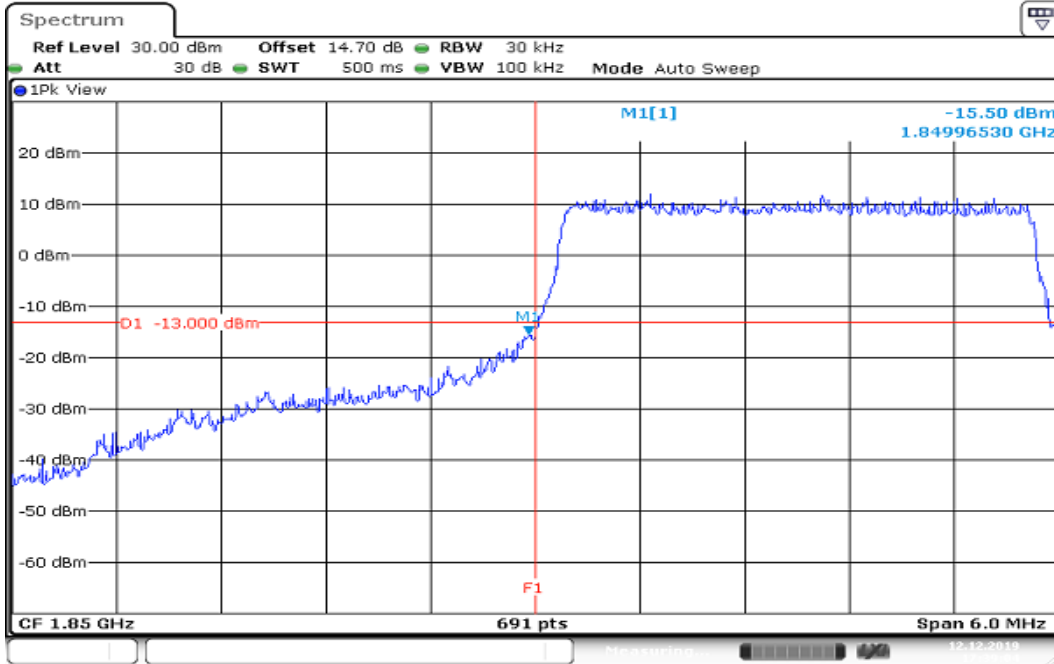
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



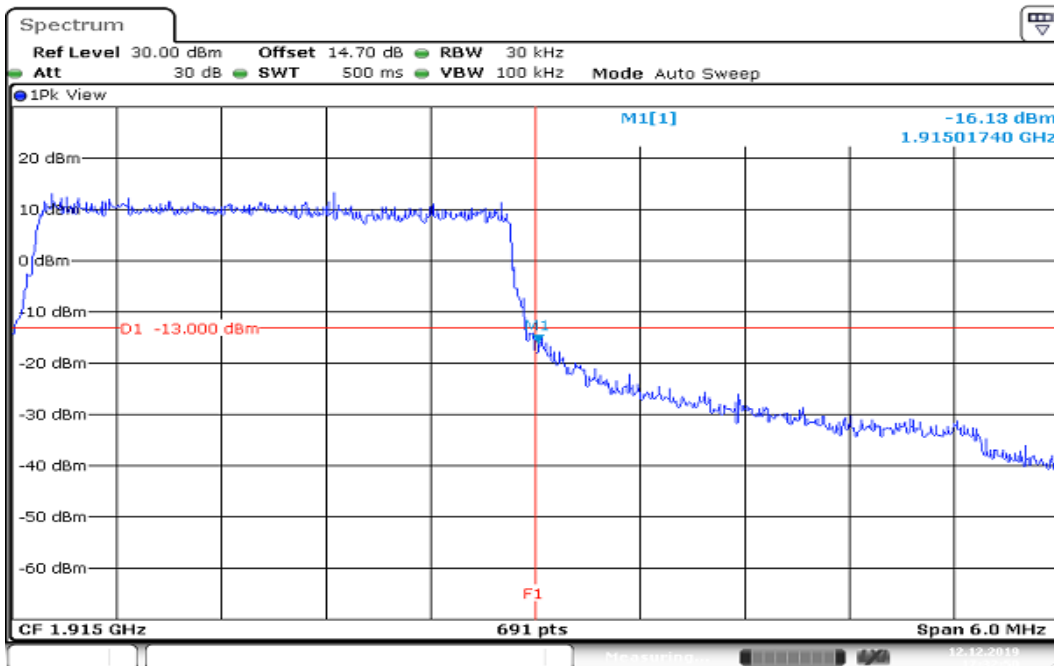
HIGHER BAND EDGE



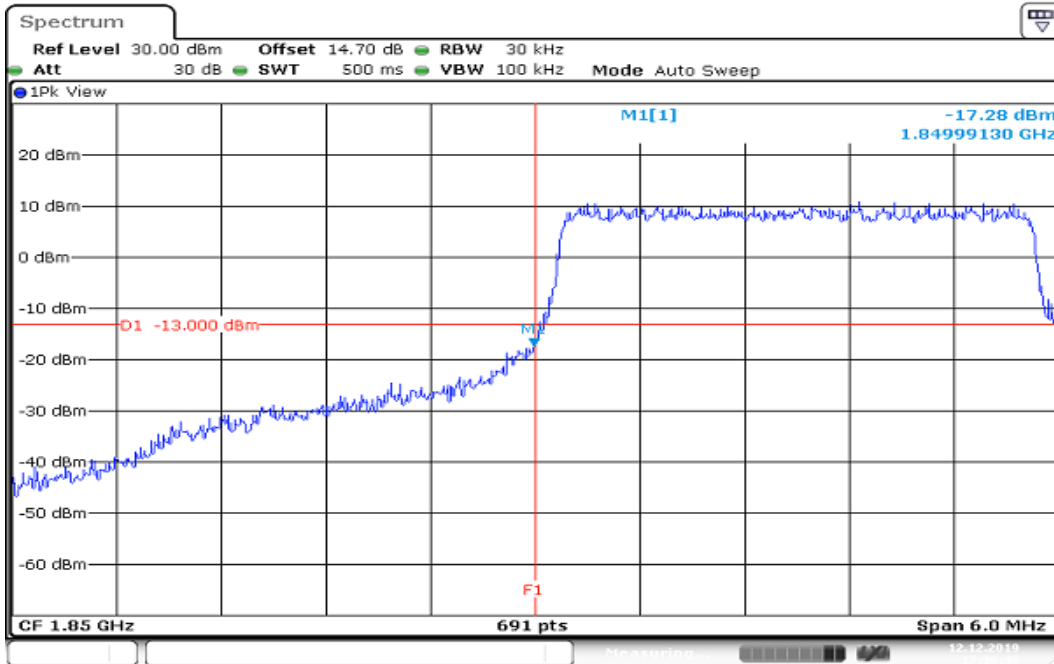
CHANNEL BANDWIDTH: 3MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



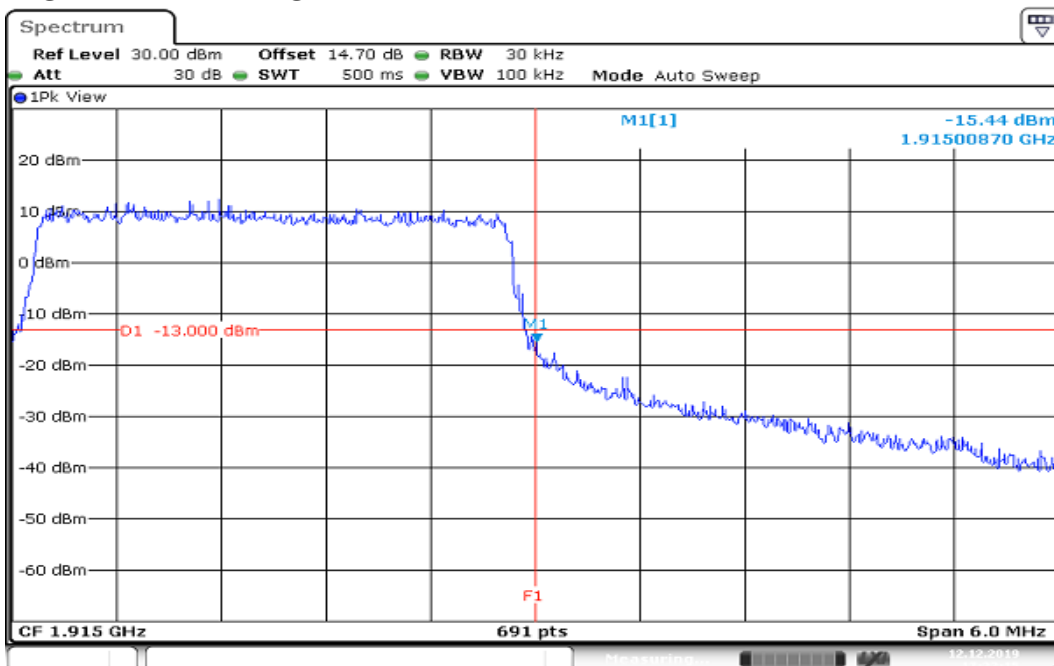
HIGHER BAND EDGE



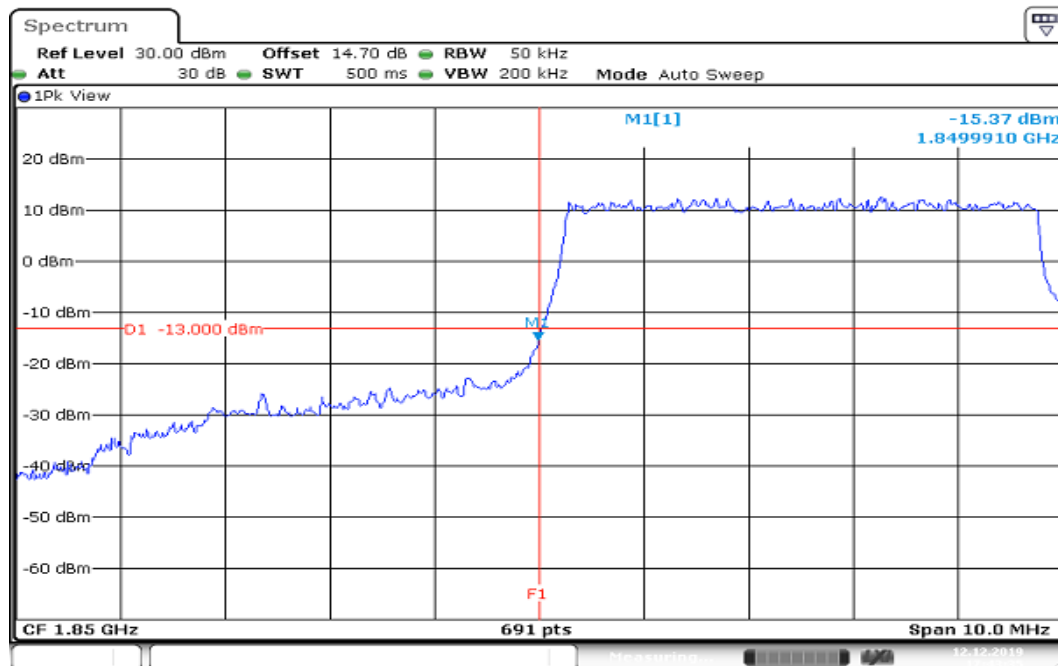
CHANNEL BANDWIDTH: 3MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

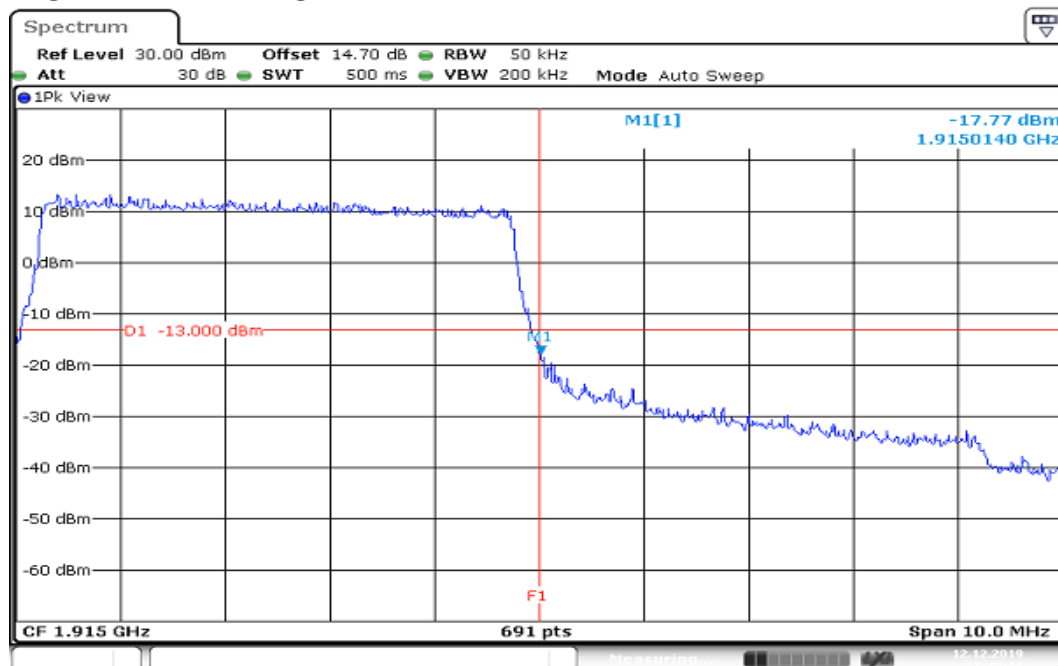


CHANNEL BANDWIDTH: 5MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



Date: 12.DEC.2019 17:43:36

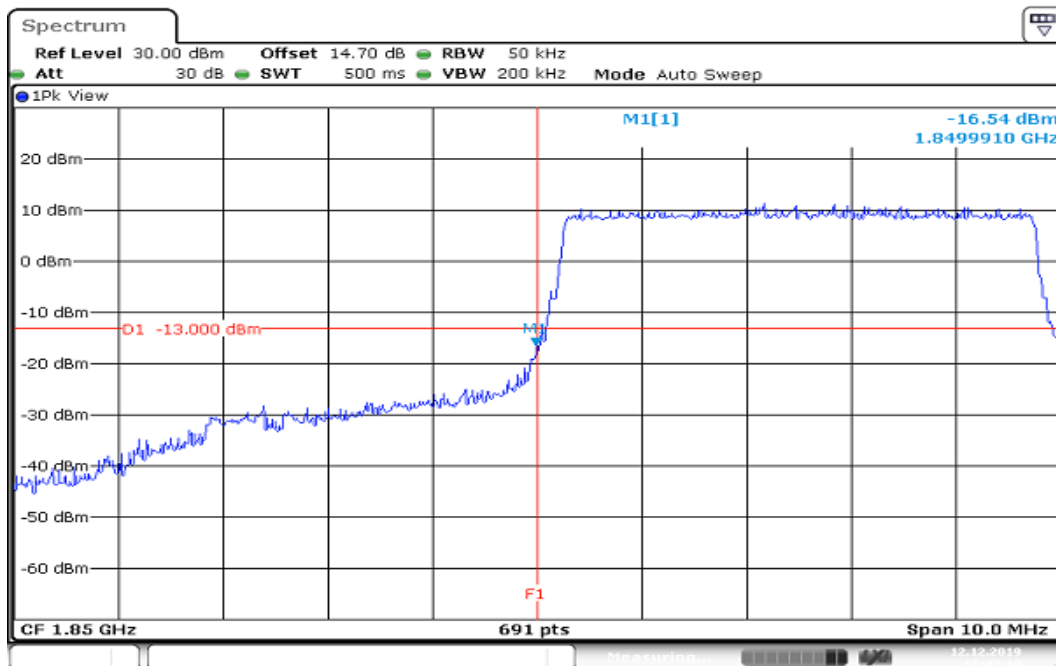
HIGHER BAND EDGE



Date: 12.DEC.2019 17:49:15

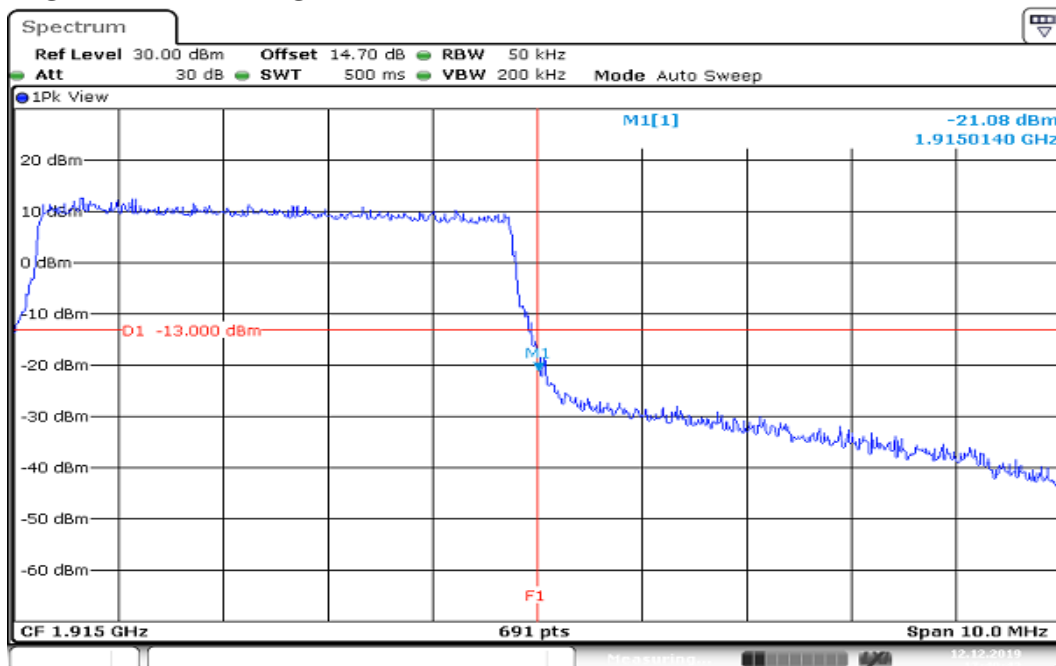
Report No.: T191105W01-RP9

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



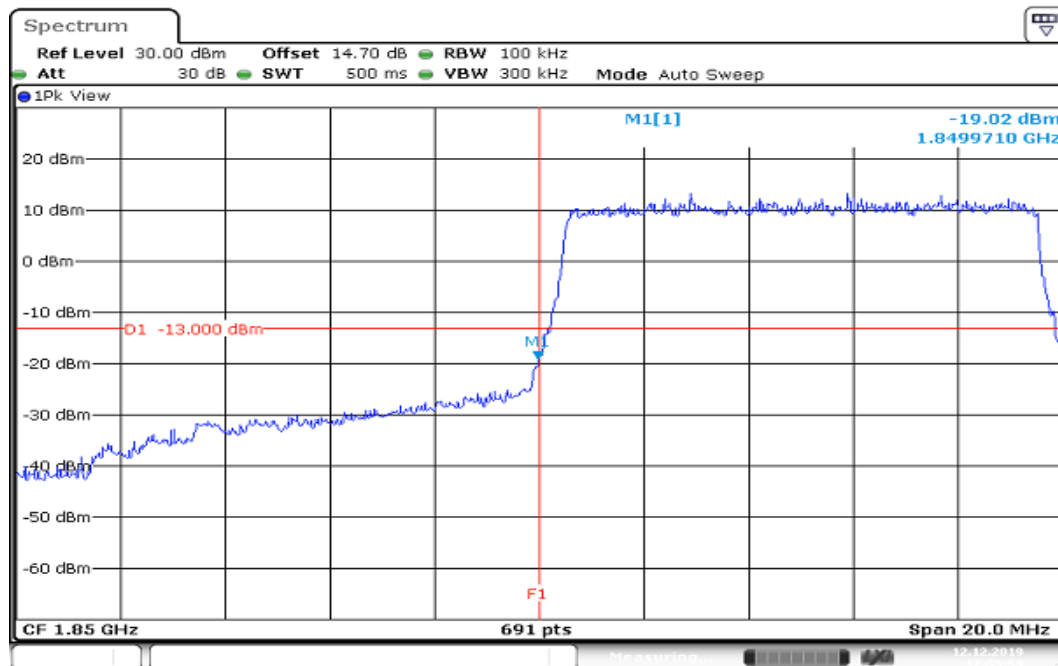
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HIGHER BAND EDGE

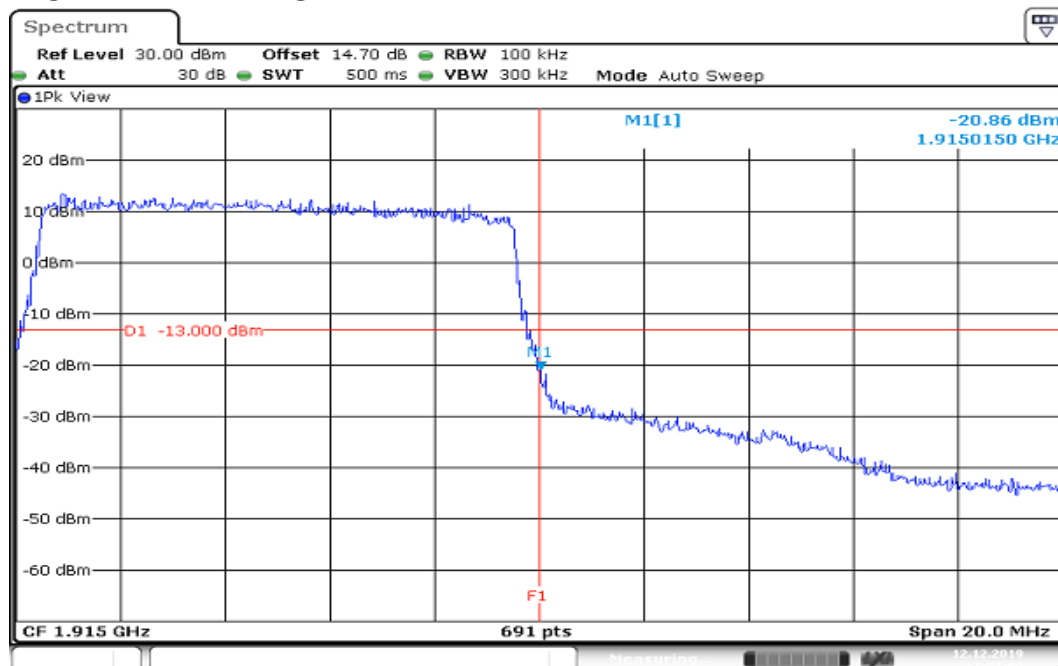


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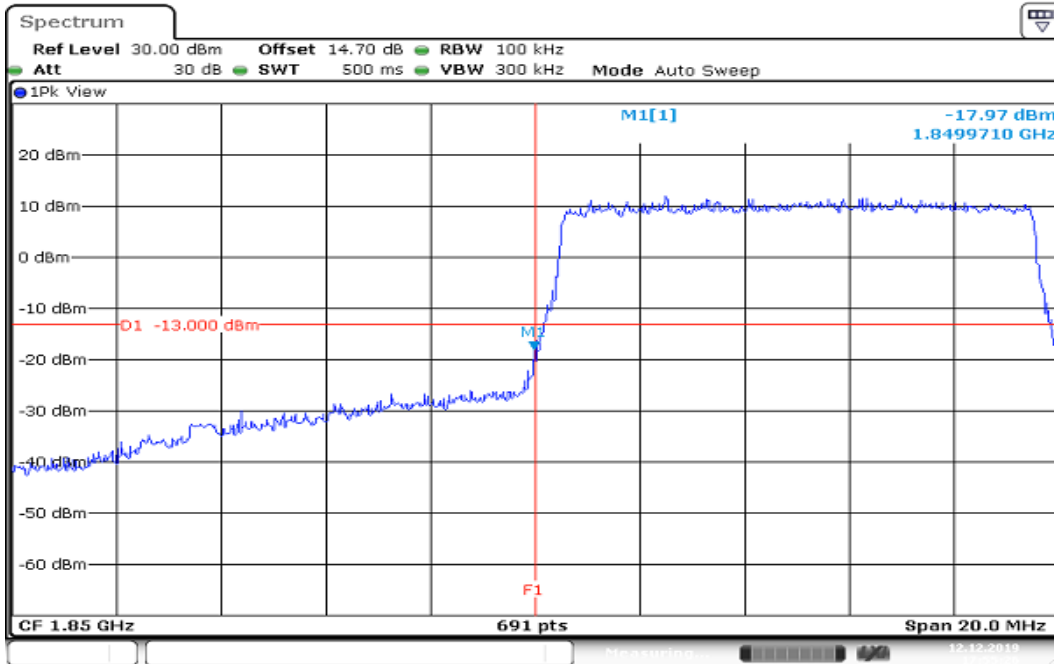
CHANNEL BANDWIDTH: 10MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



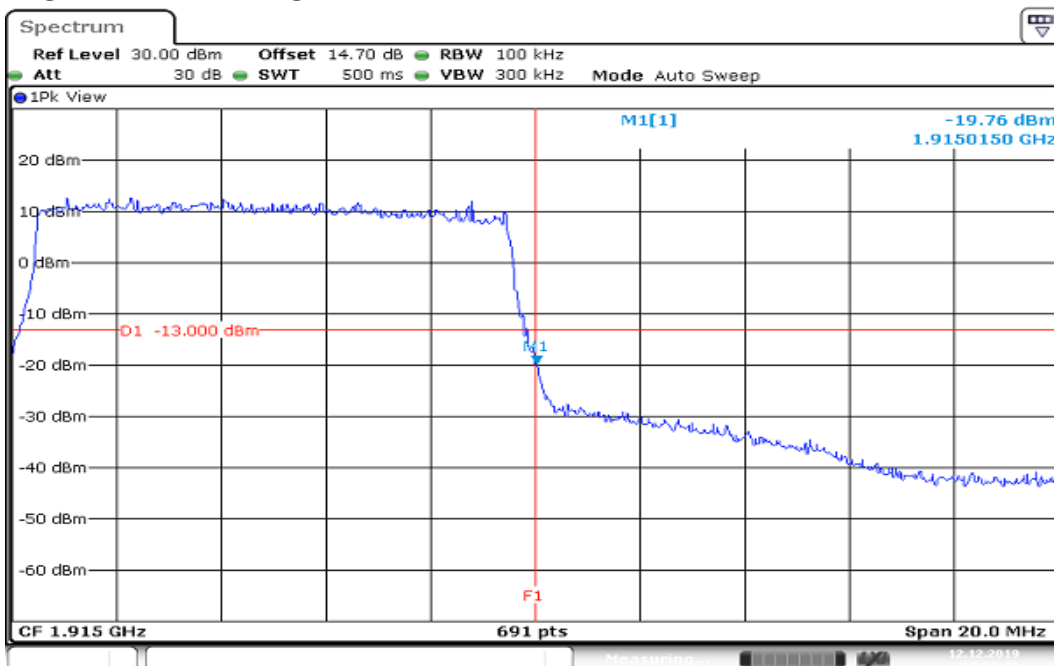
HIGHER BAND EDGE



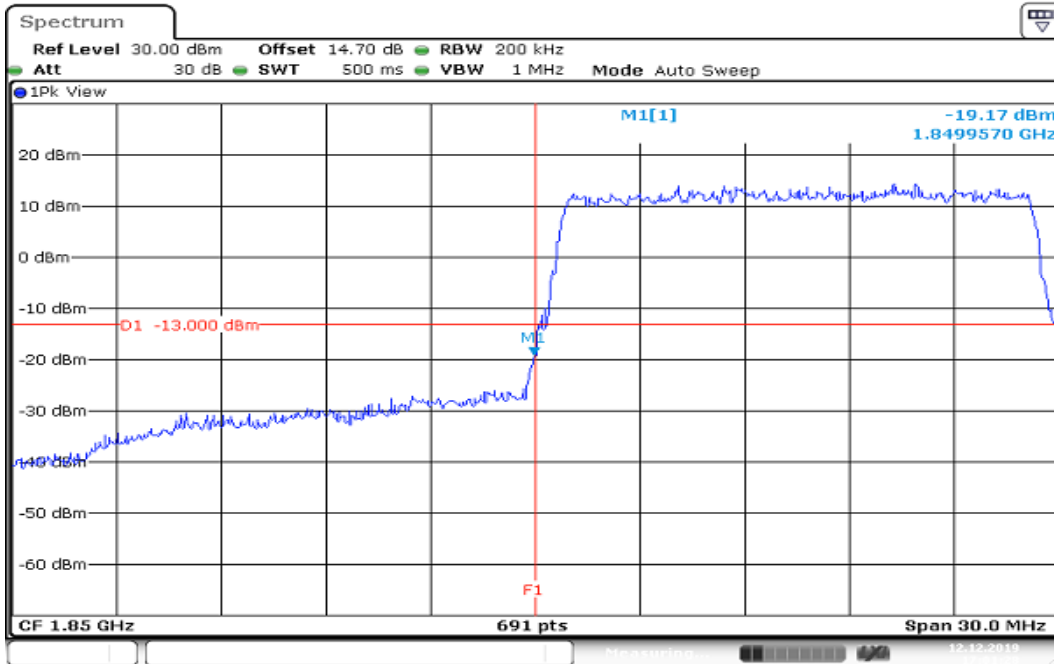
CHANNEL BANDWIDTH: 10MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



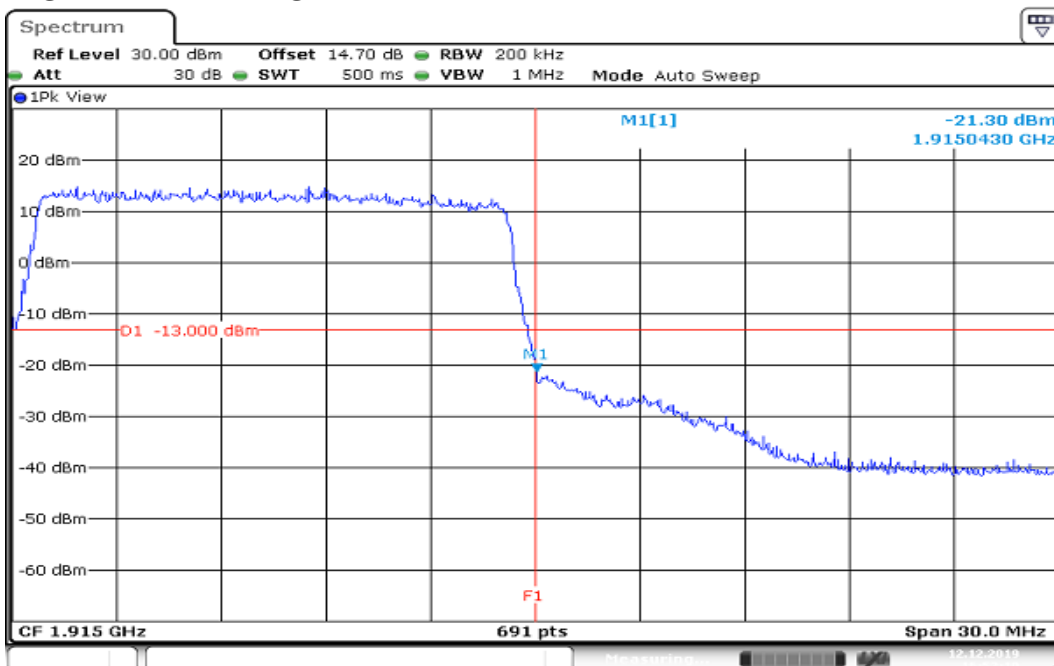
HIGHER BAND EDGE



CHANNEL BANDWIDTH: 15MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE

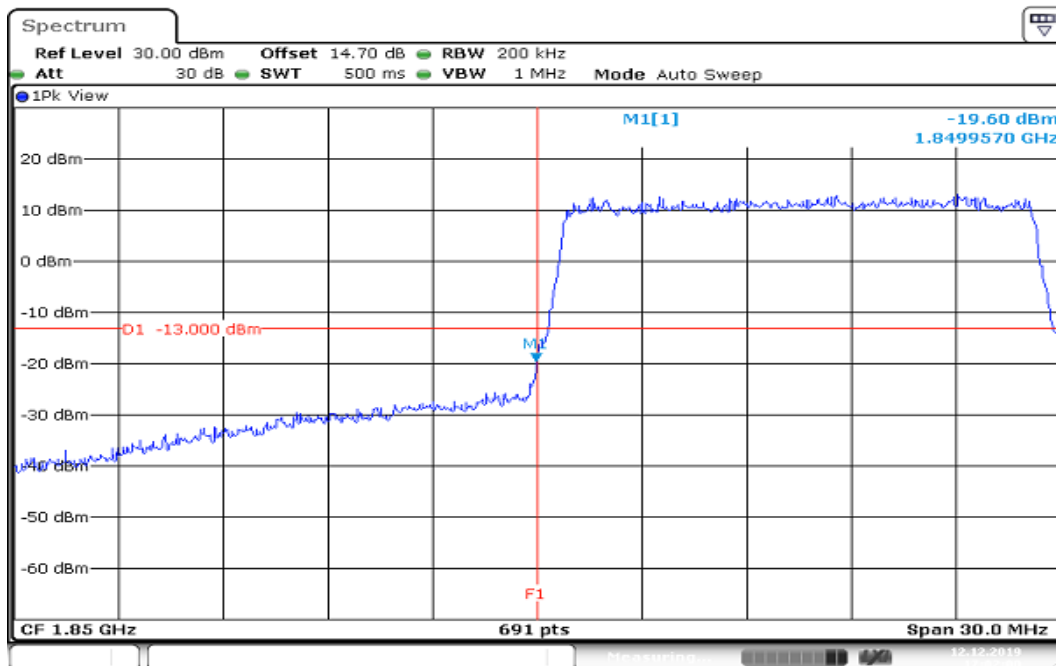


HIGHER BAND EDGE



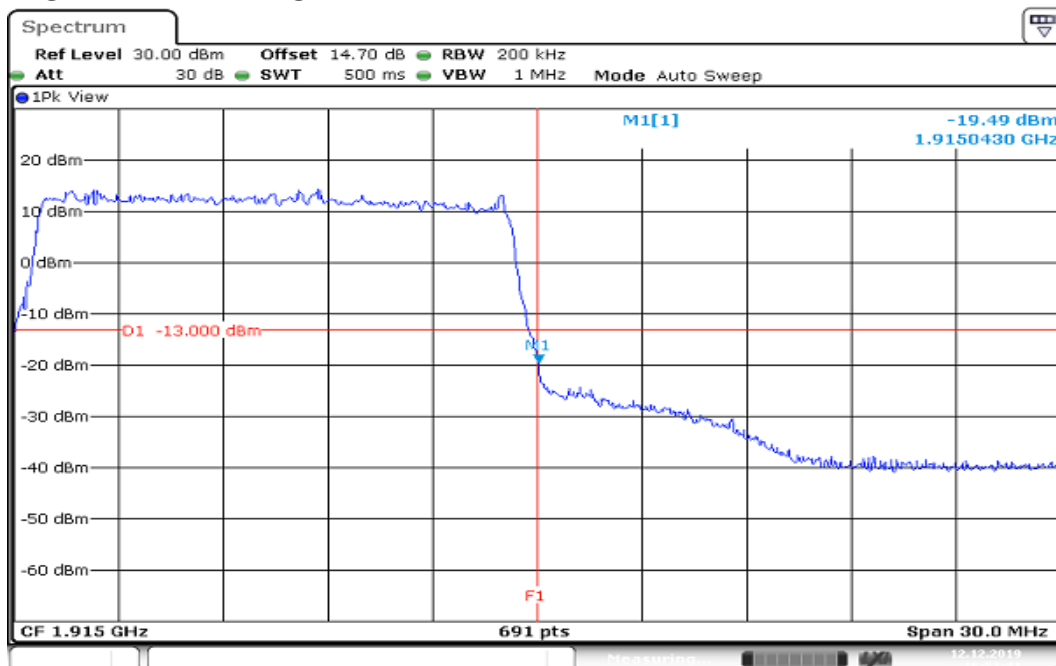
Report No.: T191105W01-RP9

CHANNEL BANDWIDTH: 15MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



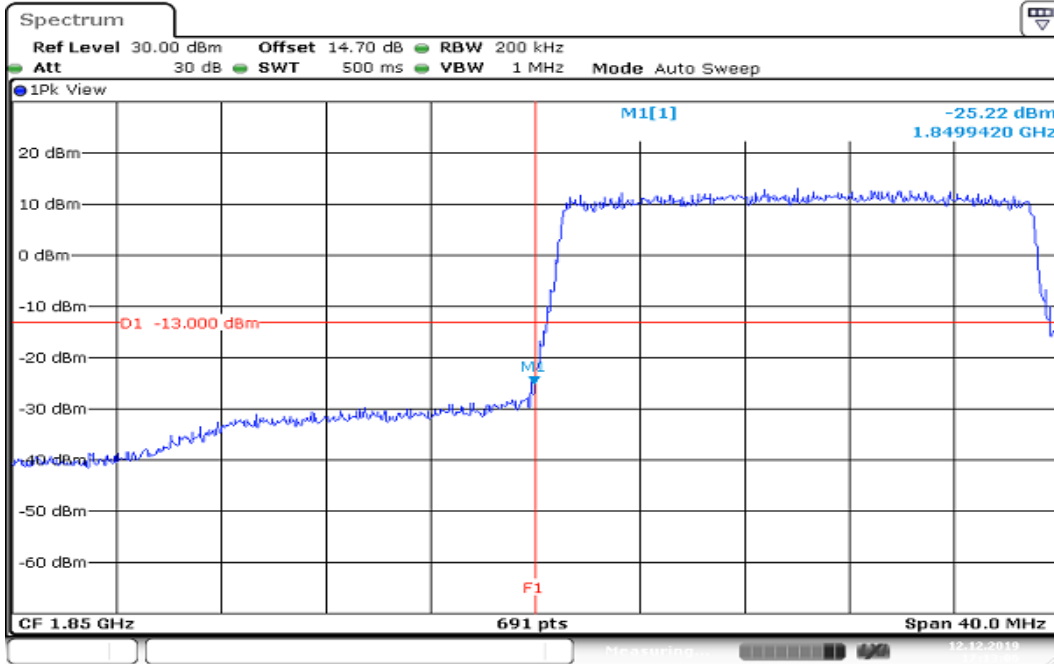
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HIGHER BAND EDGE

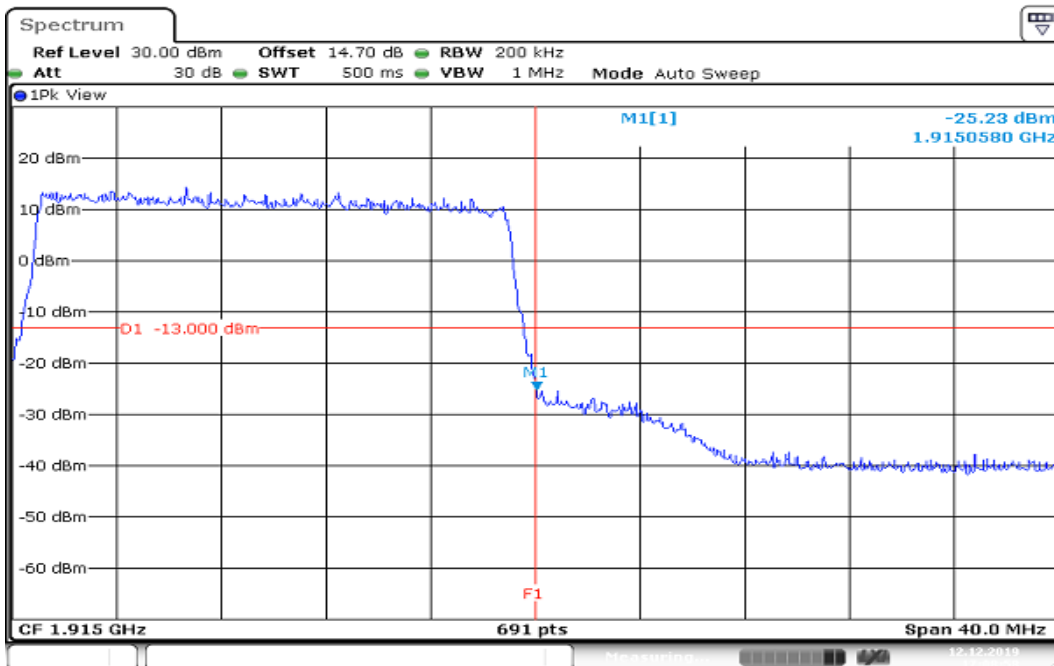


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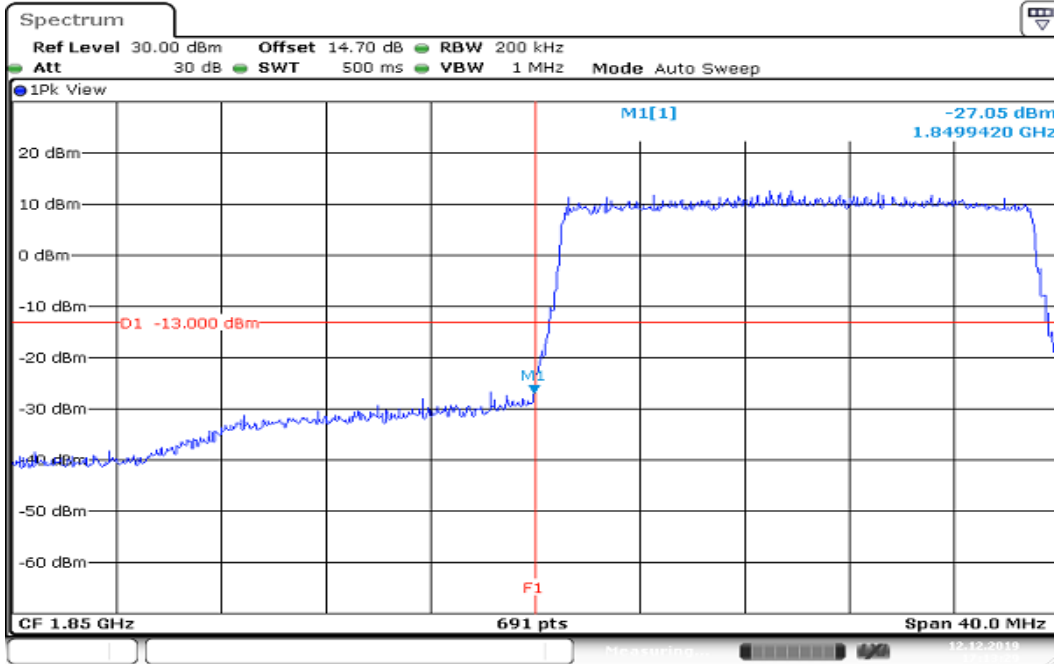
CHANNEL BANDWIDTH: 20MHz / QPSK / 100% RB ALLOCATED LOWER BAND EDGE



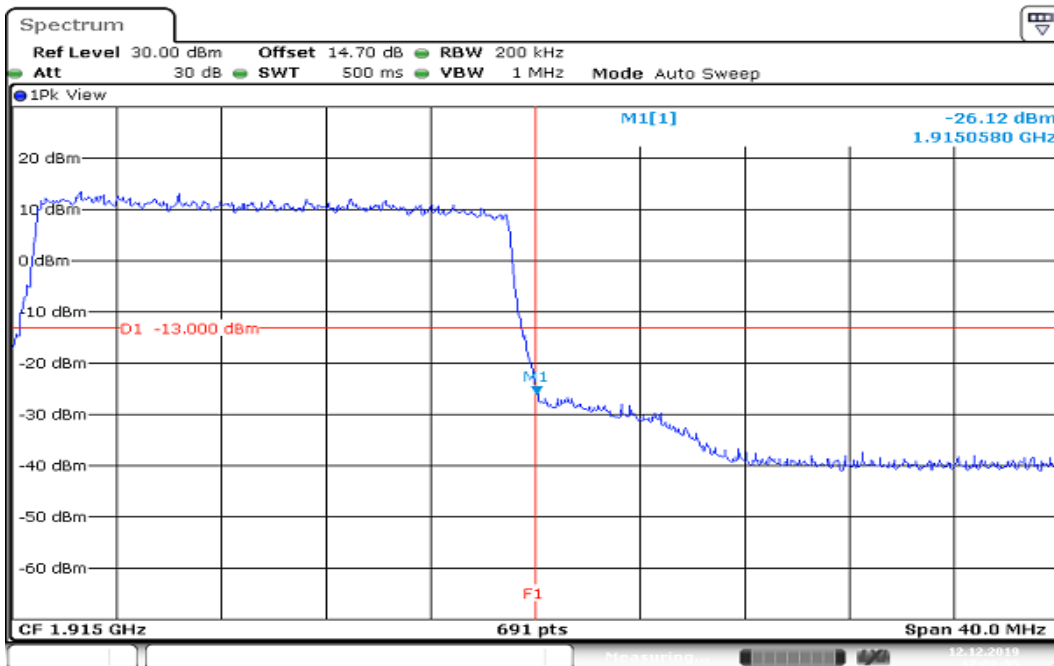
HIGHER BAND EDGE



CHANNEL BANDWIDTH: 20MHz / 16QAM / 100% RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE



8.6 CONDUCTED SPURIOUS EMISSIONS

Limits

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

Test Procedures

1. According to KDB 971168 D01,
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.
6. The fundamental frequency should be excluded against the limit in operating band.

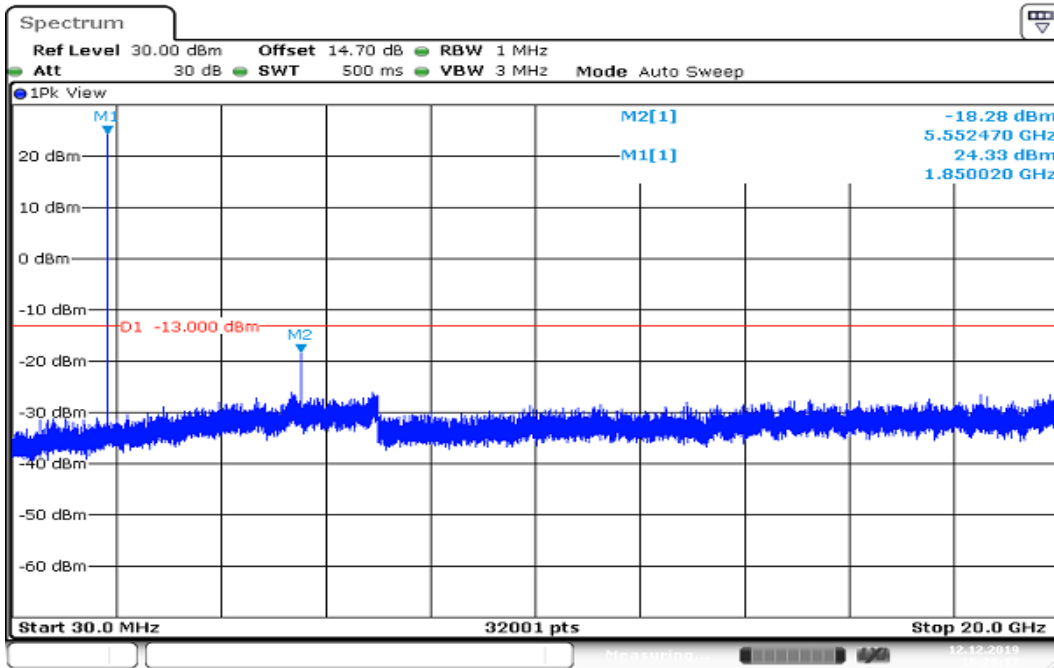
Report No.: T191105W01-RP9

Test Results

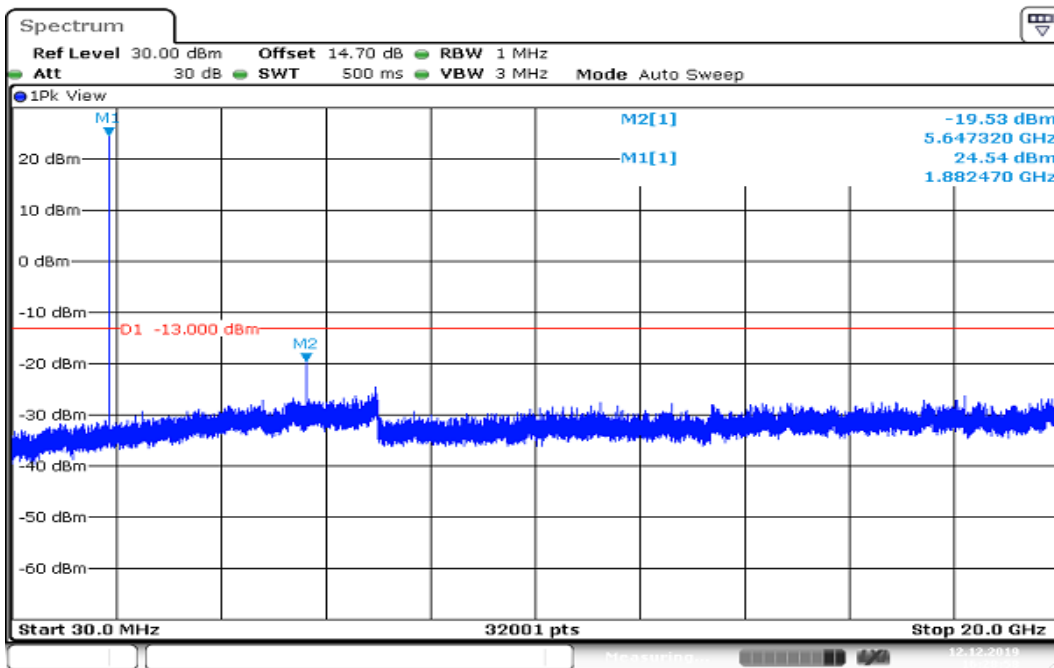
LTE Band 25

CHANNEL BANDWIDTH: 1.4MHz / QPSK

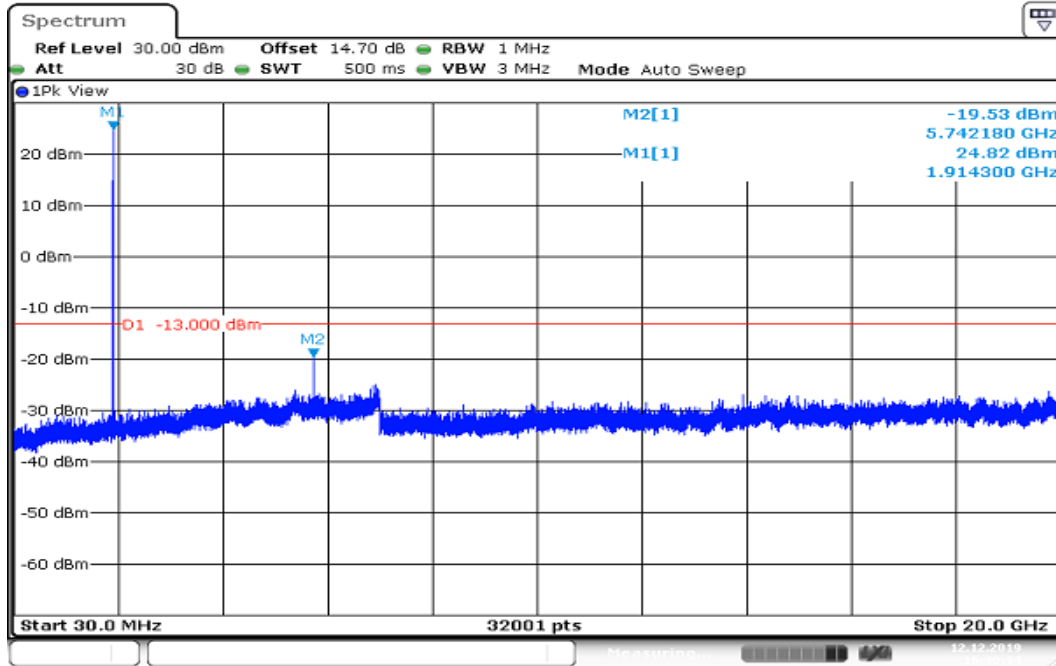
CH Low



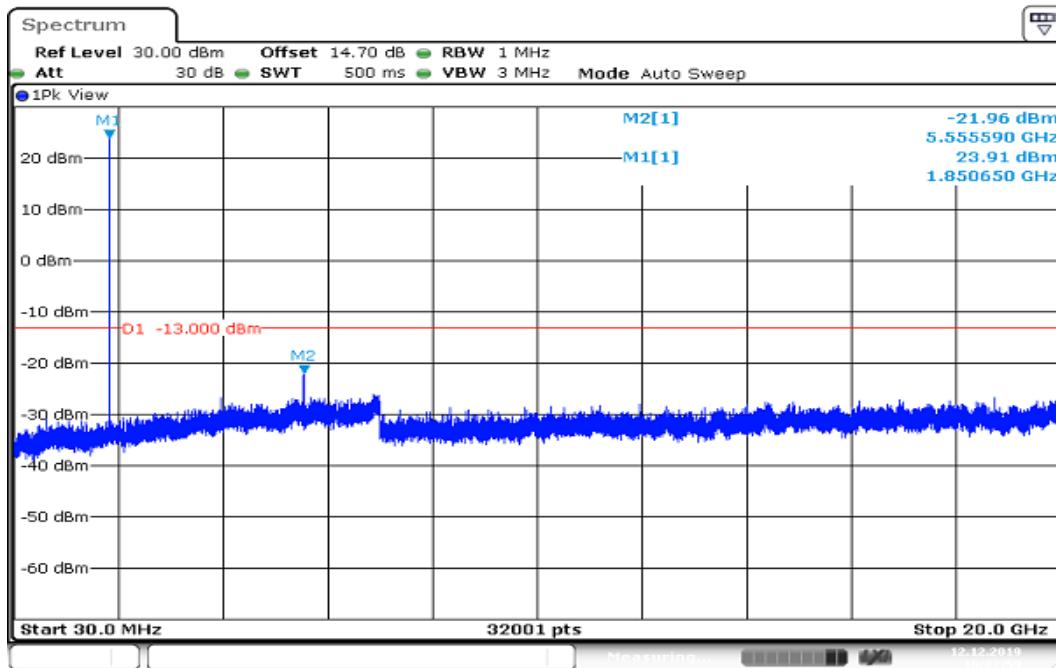
CH Mid



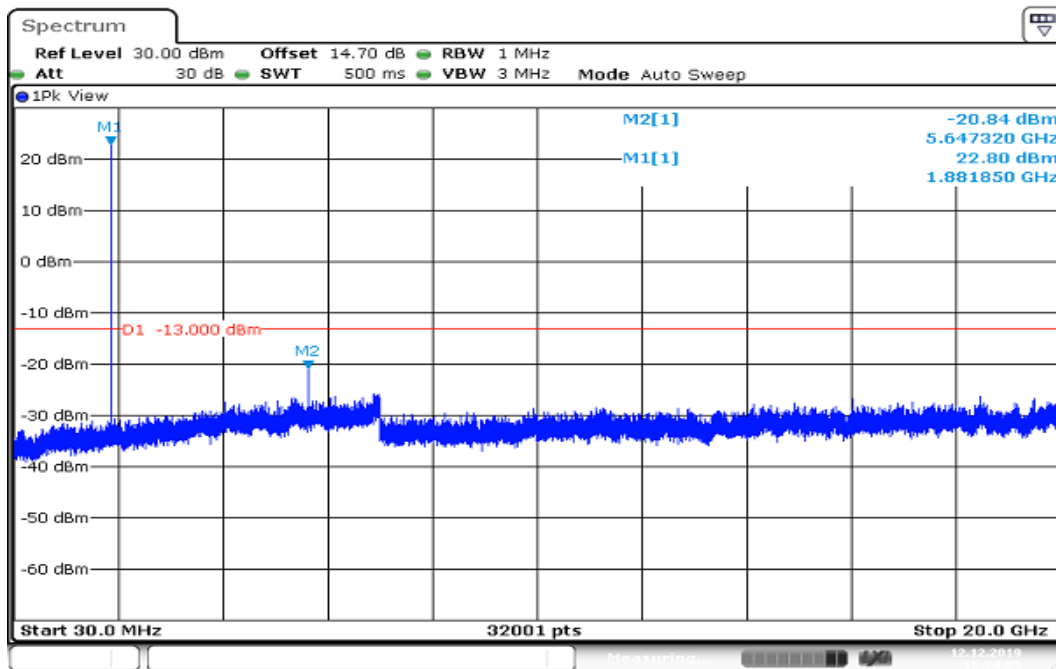
CH High



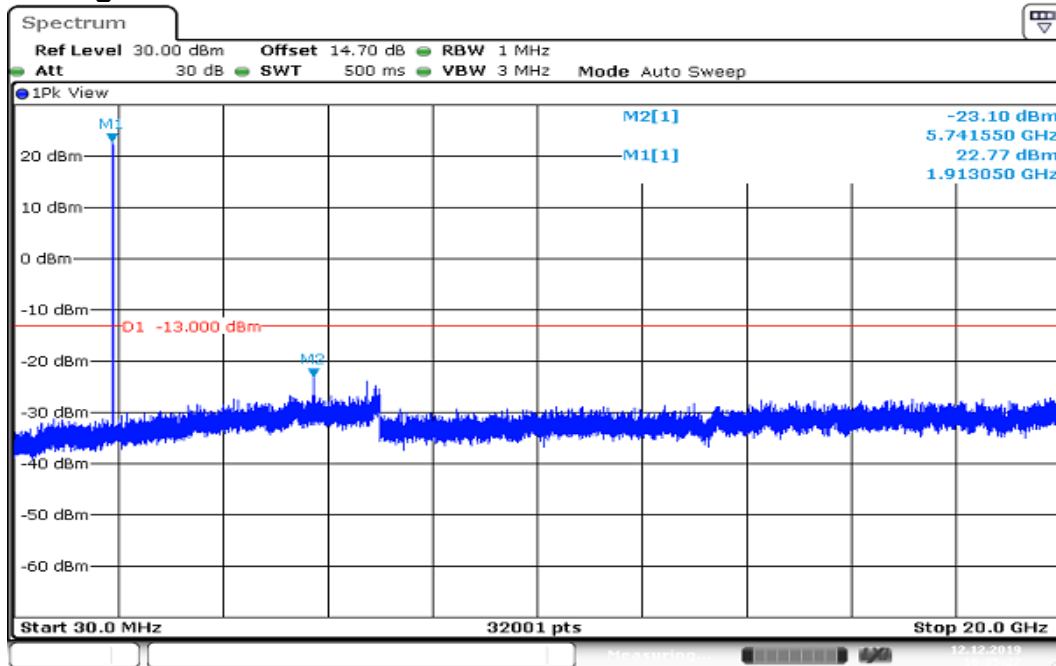
CHANNEL BANDWIDTH: 3MHz / QPSK CH Low



CH Mid

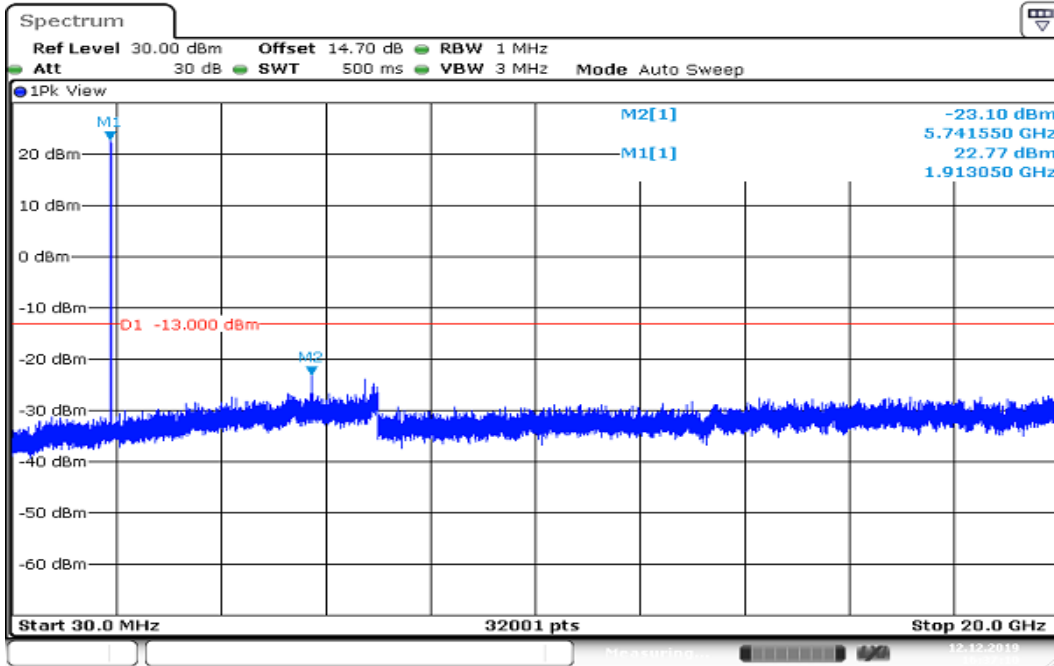


CH High

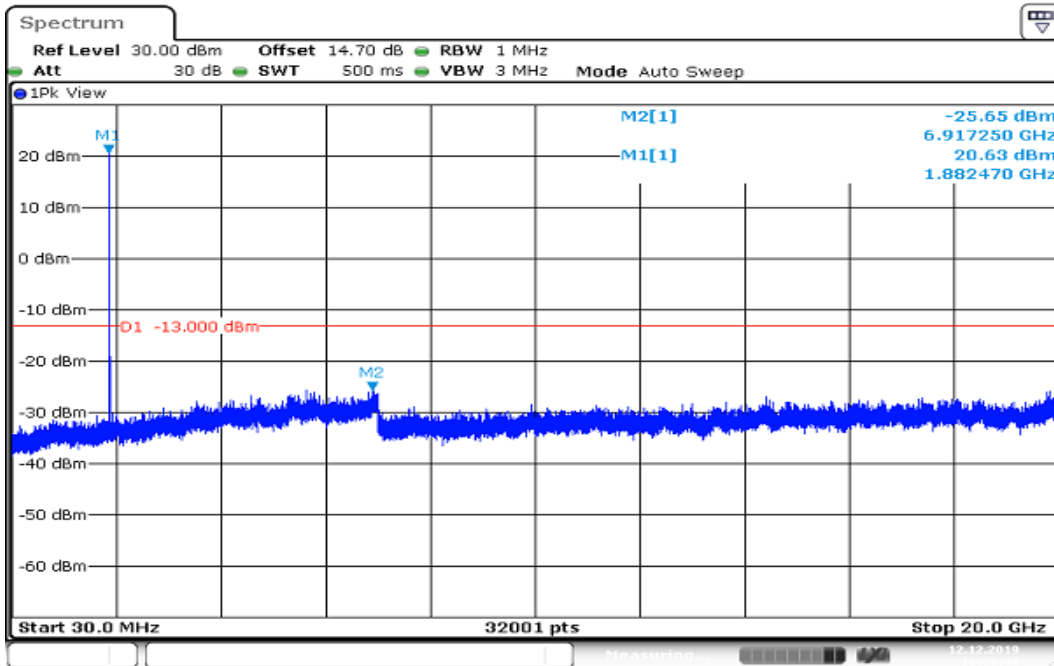


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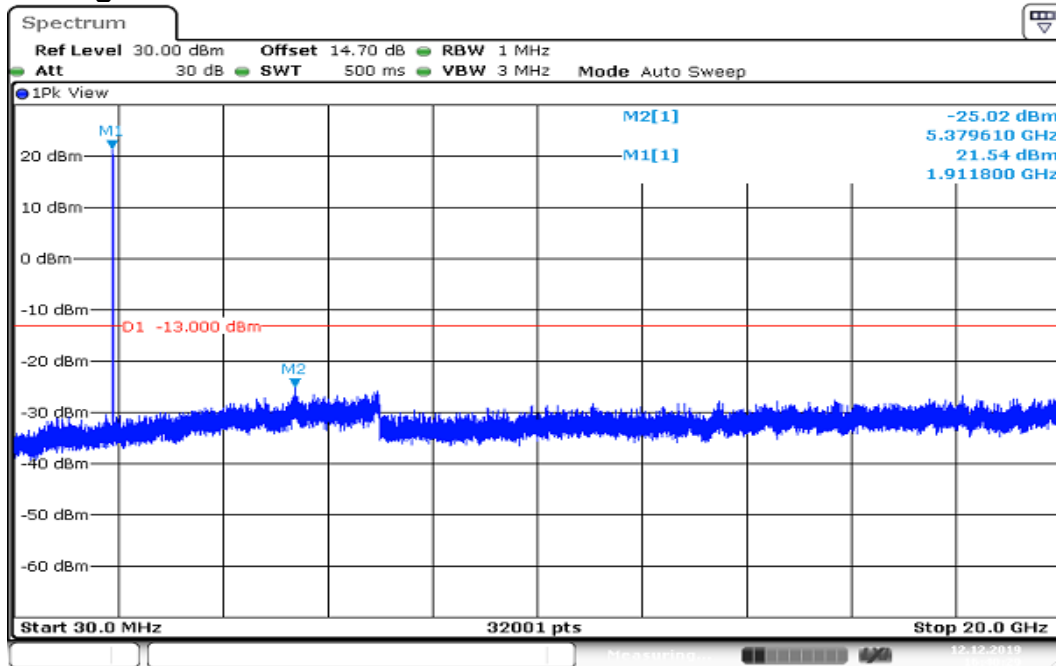
CHANNEL BANDWIDTH: 5MHz / QPSK CH Low



CH Mid

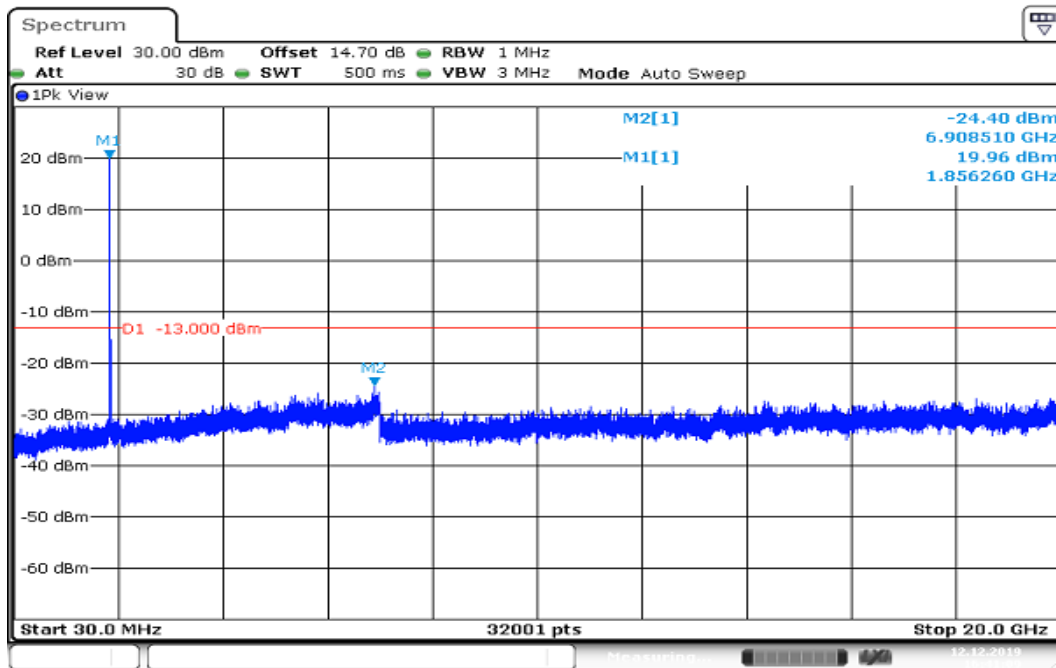


CH High

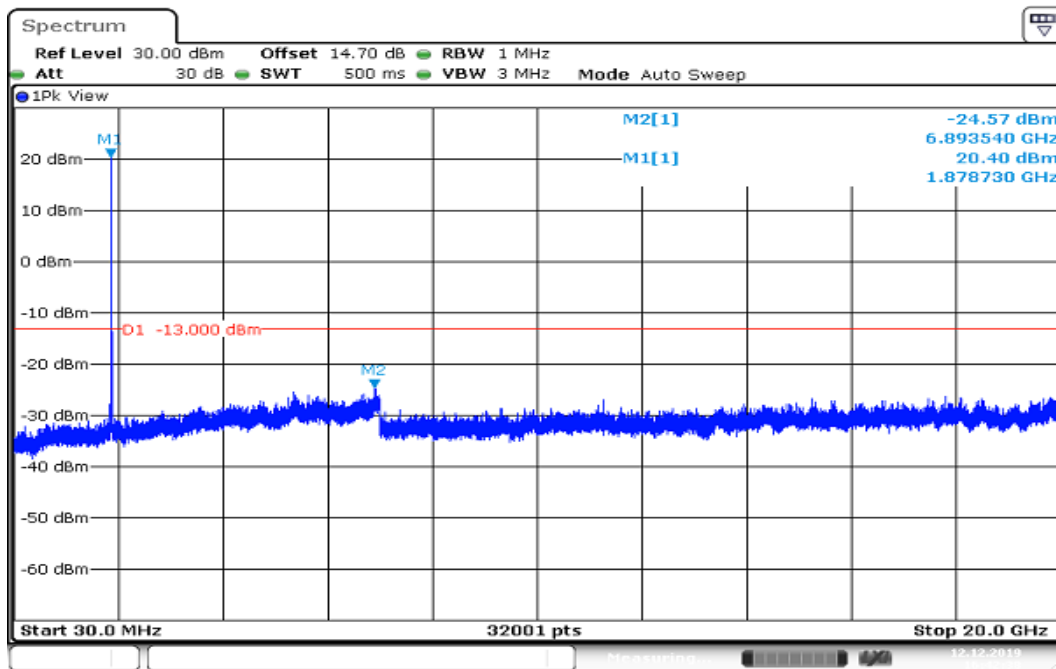


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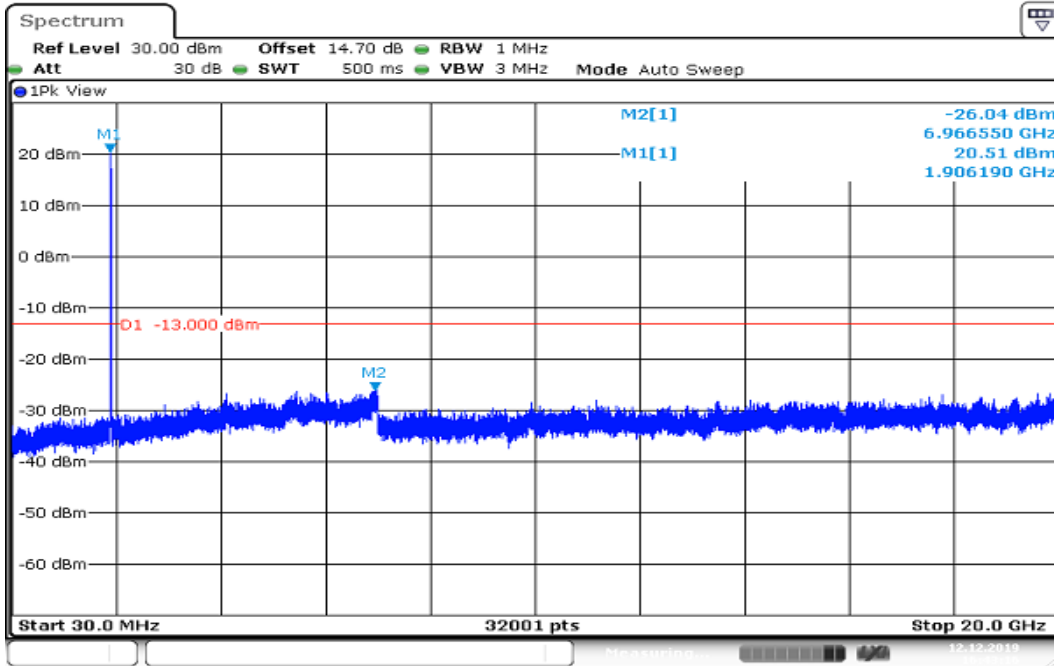
CHANNEL BANDWIDTH: 10MHz / QPSK CH Low



CH Mid



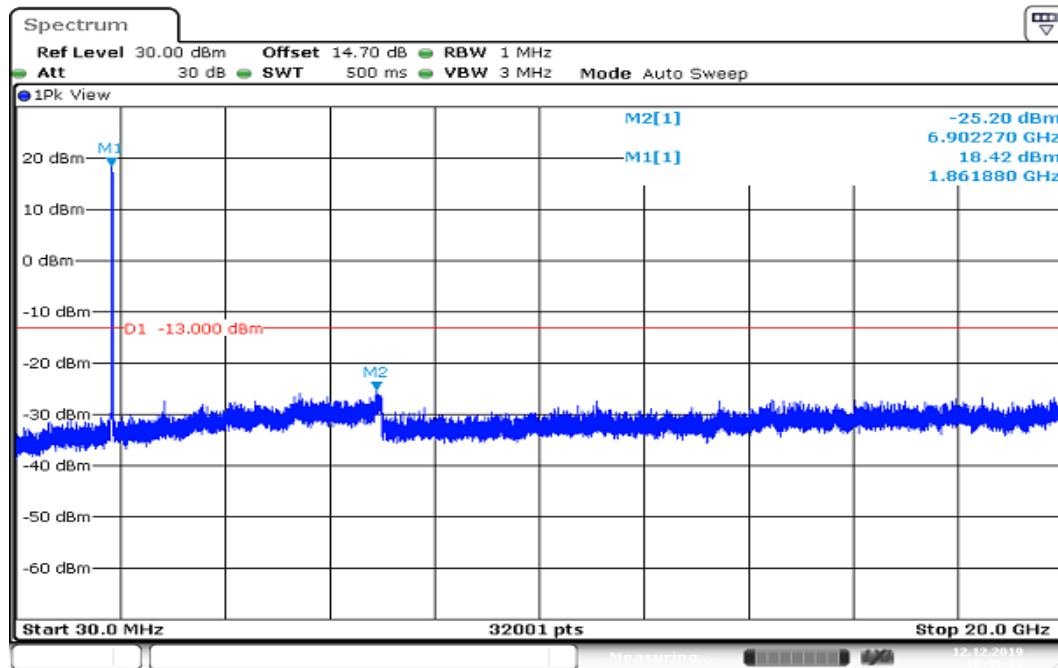
CH High



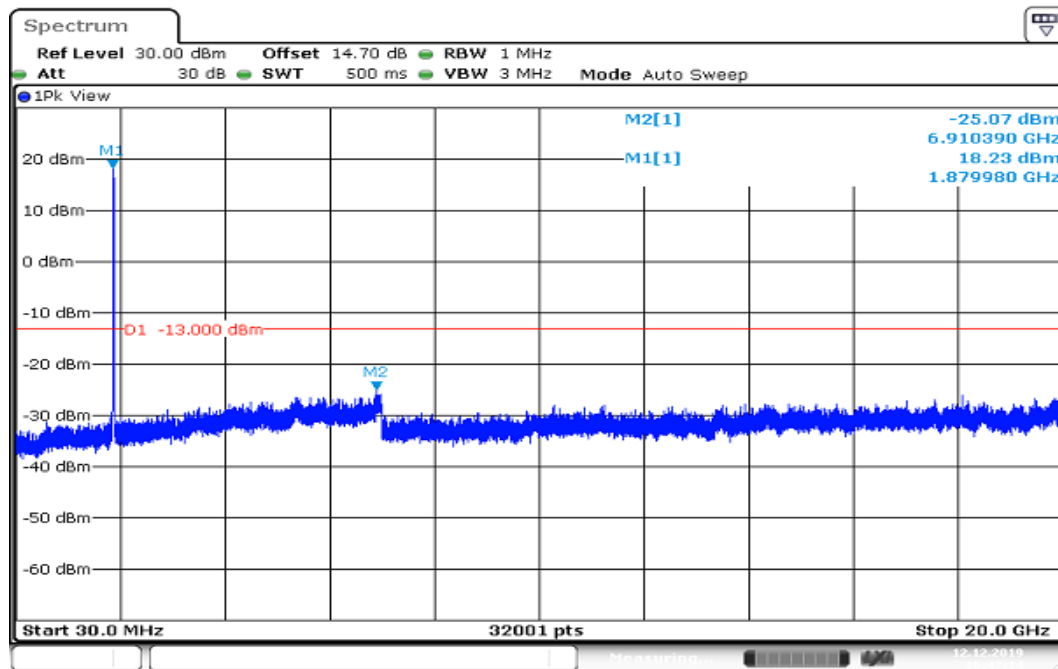
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CHANNEL BANDWIDTH: 15MHz / QPSK

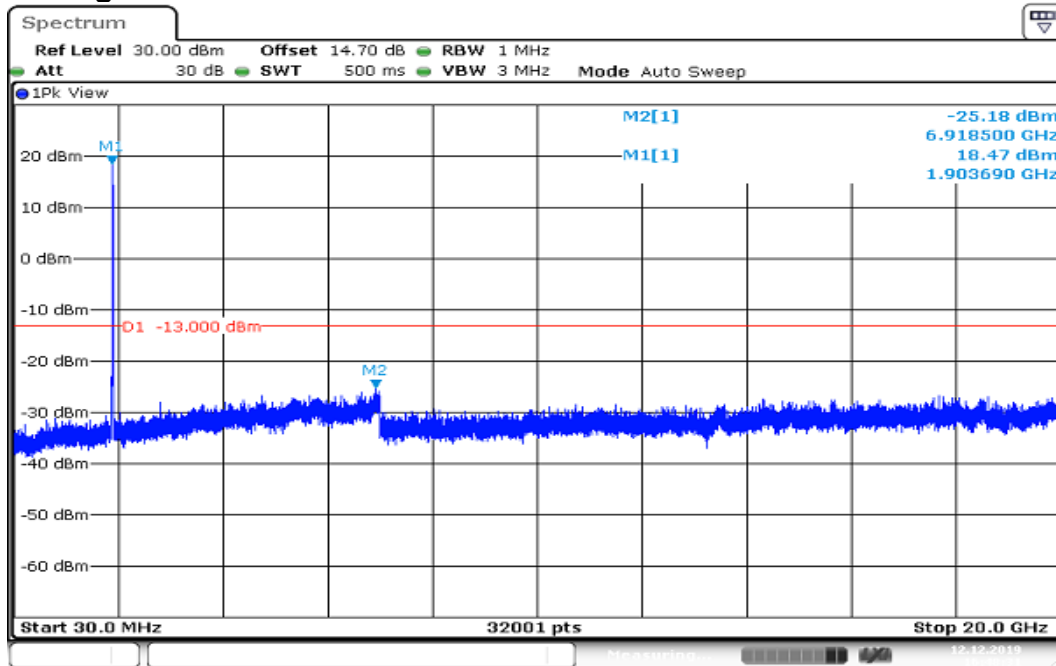
CH Low



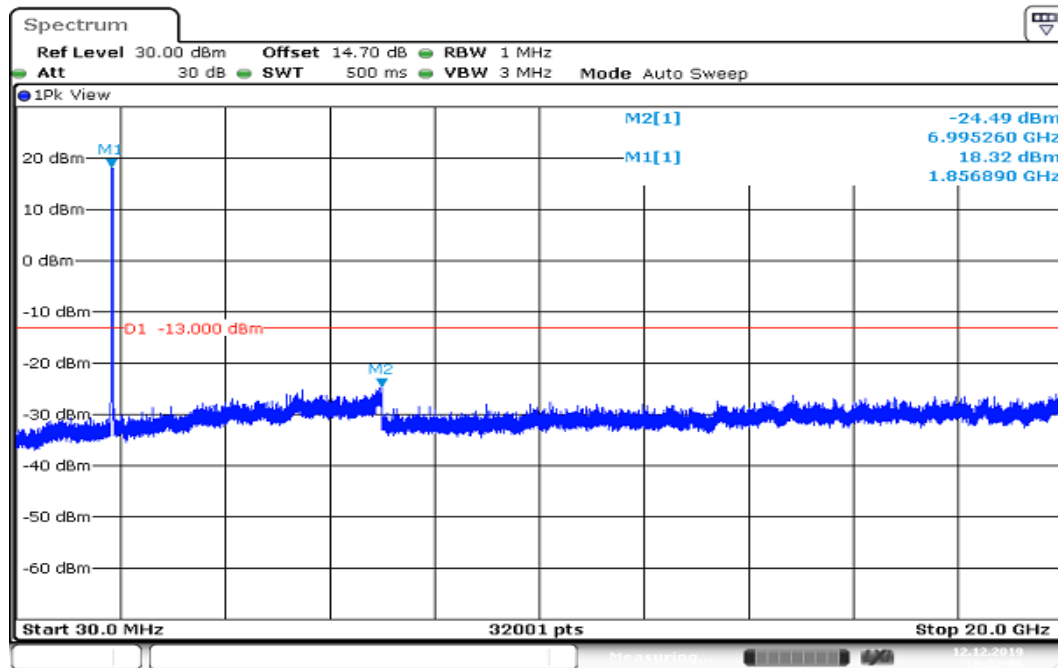
CH Mid



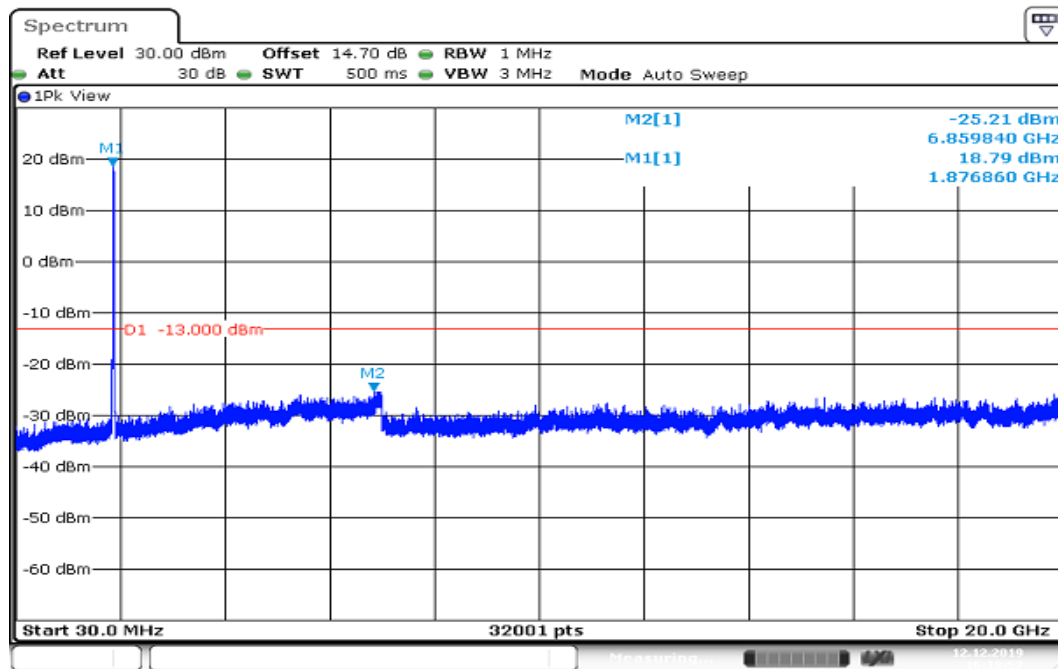
CH High



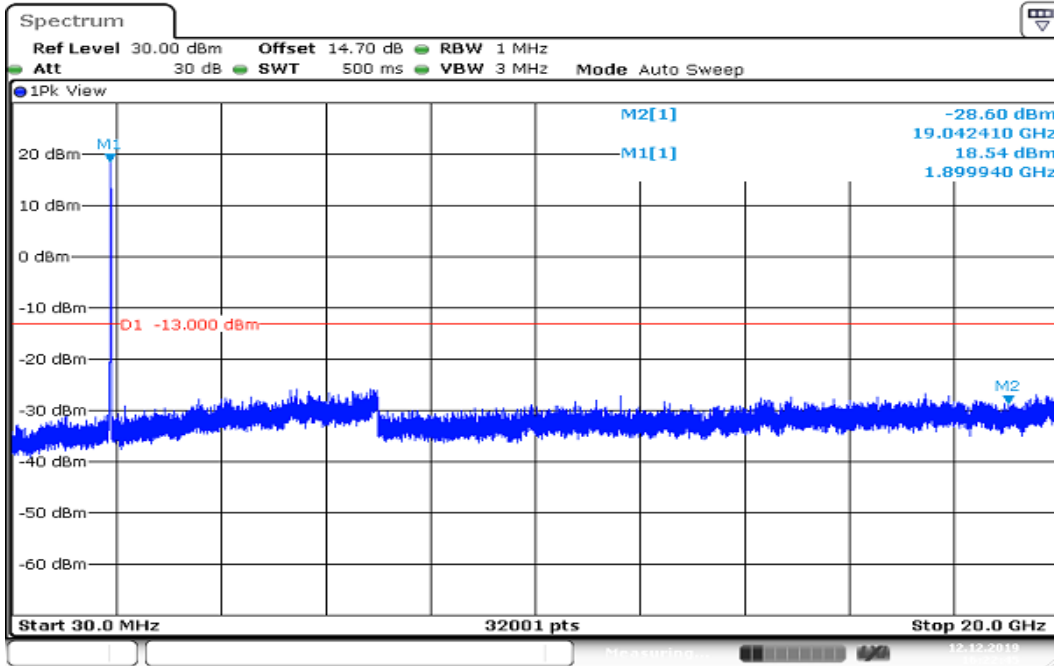
CHANNEL BANDWIDTH: 20MHz / QPSK CH Low



CH Mid

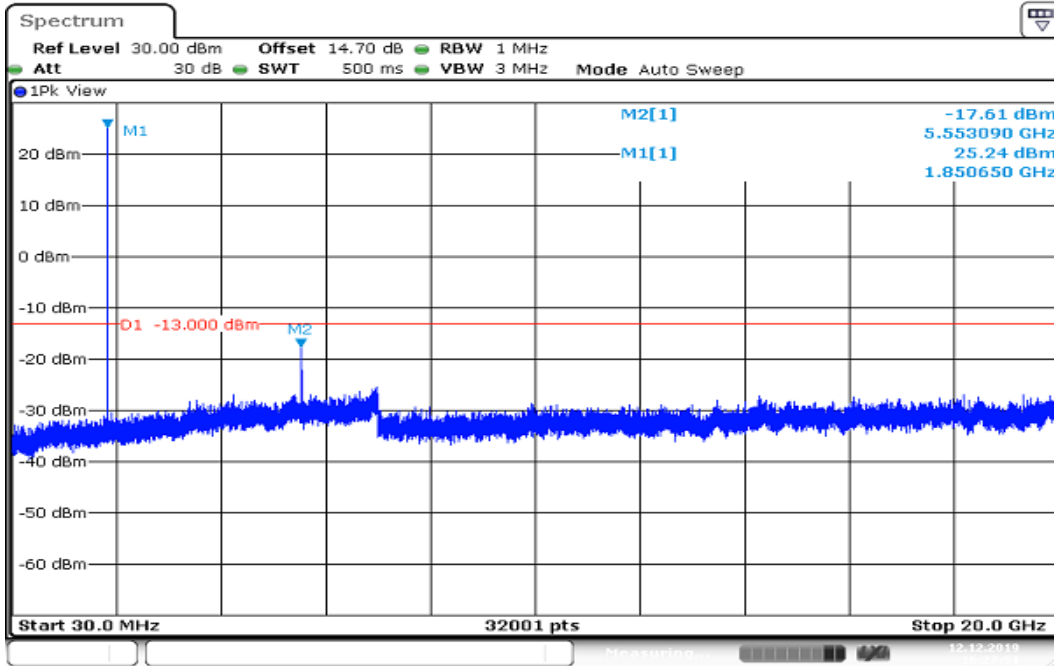


CH High

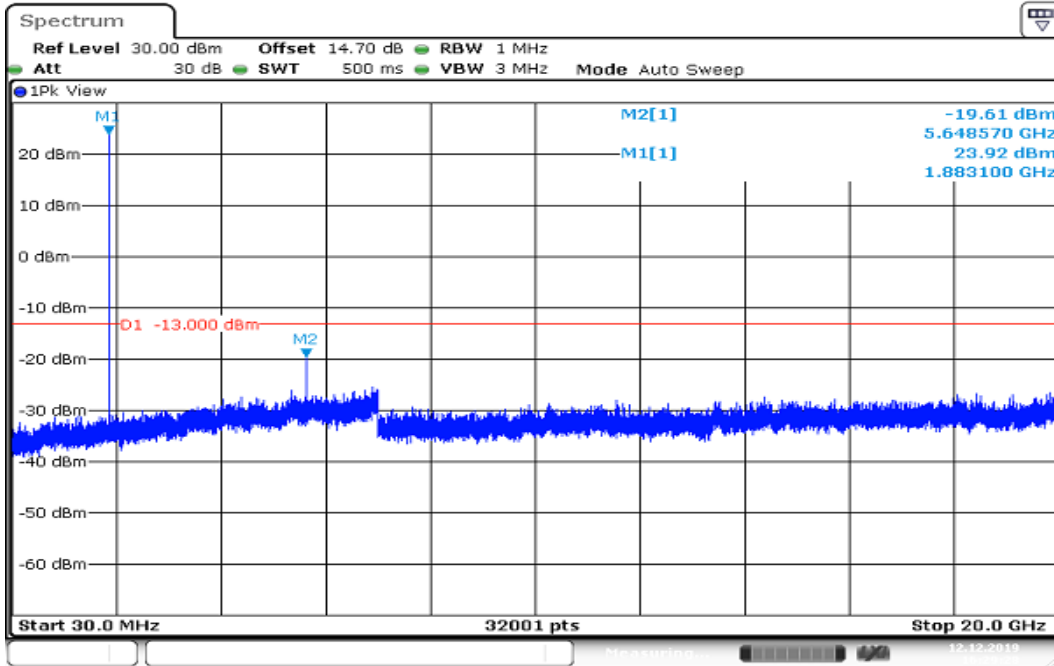


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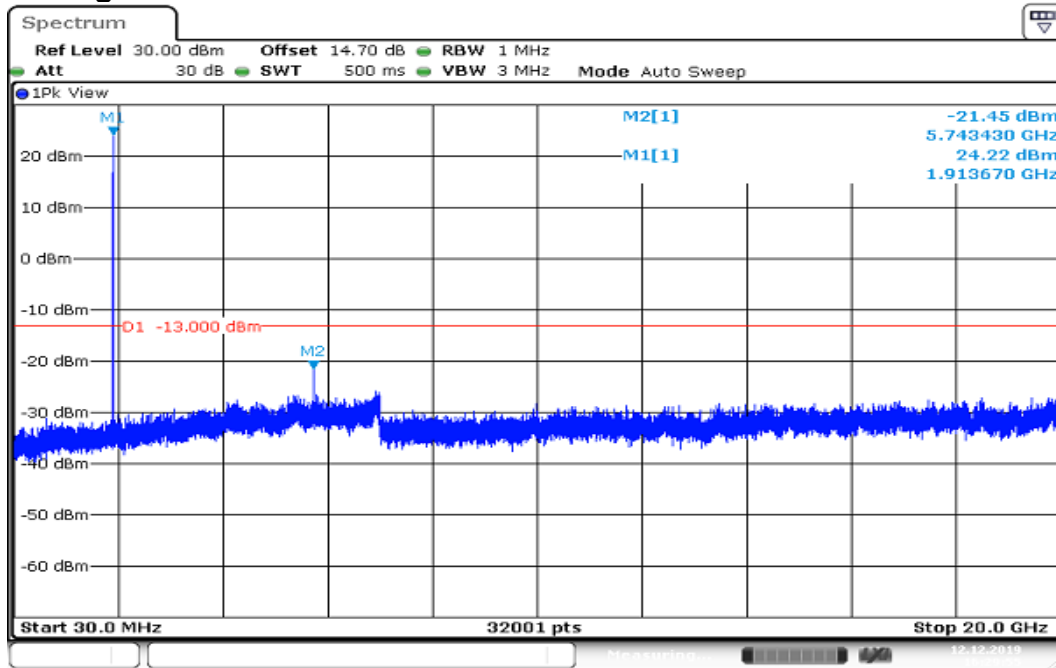
CHANNEL BANDWIDTH: 1.4MHz / 16QAM CH Low



CH Mid

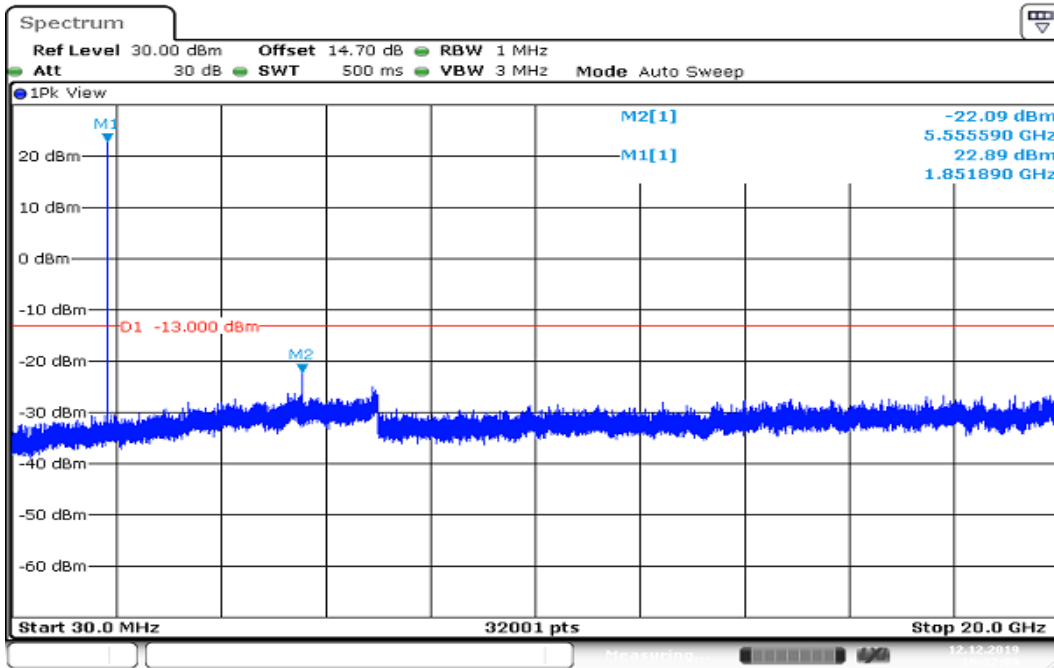


CH High

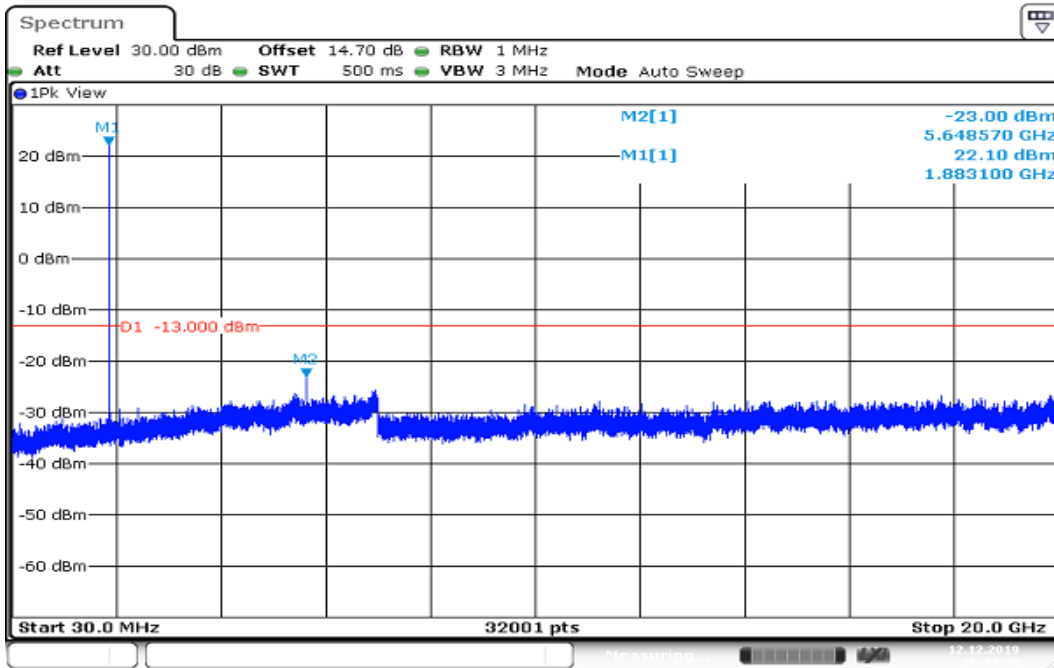


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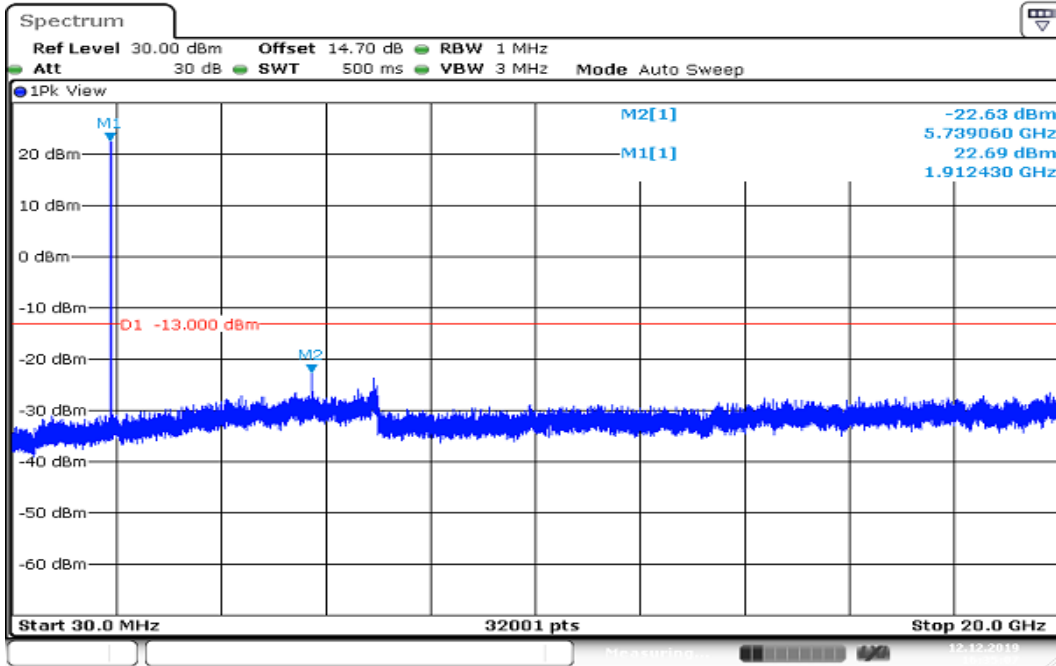
CHANNEL BANDWIDTH: 3MHz / 16QAM CH Low



CH Mid

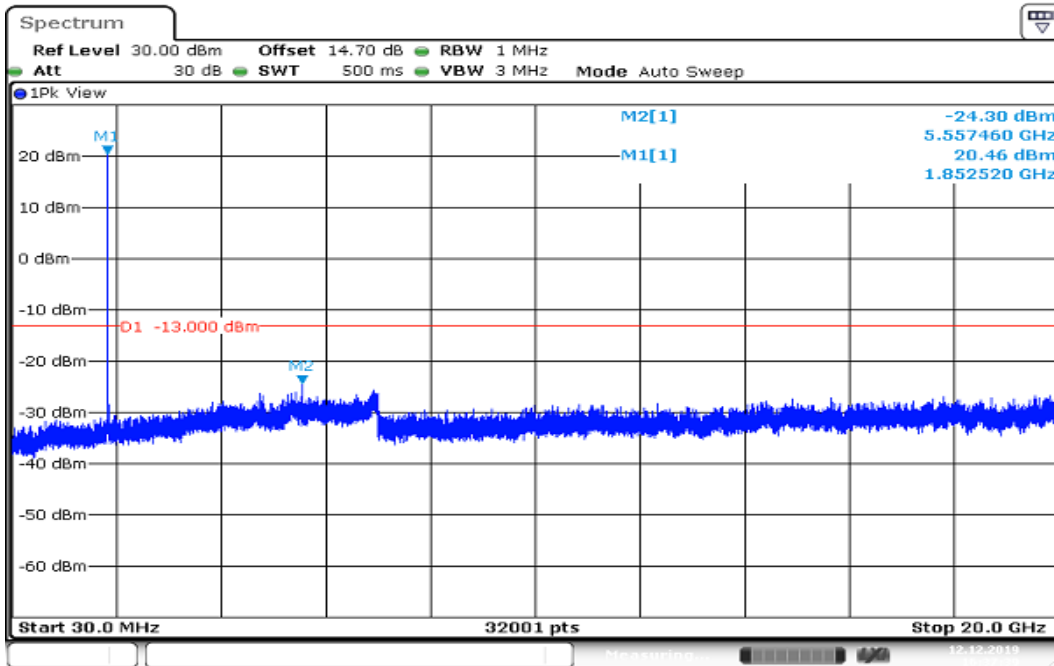


CH High

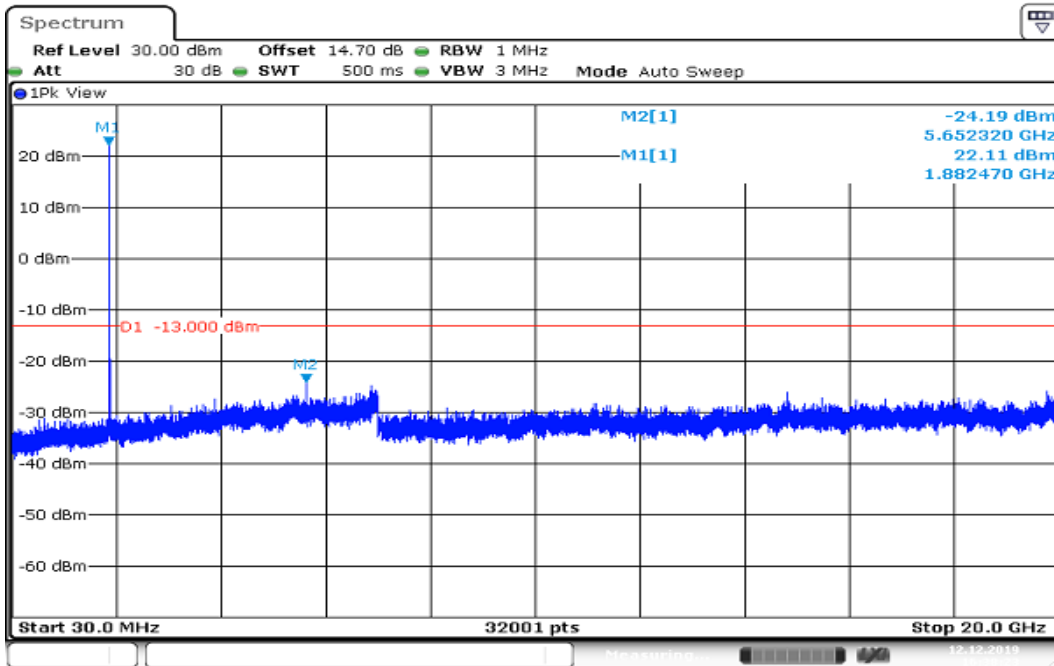


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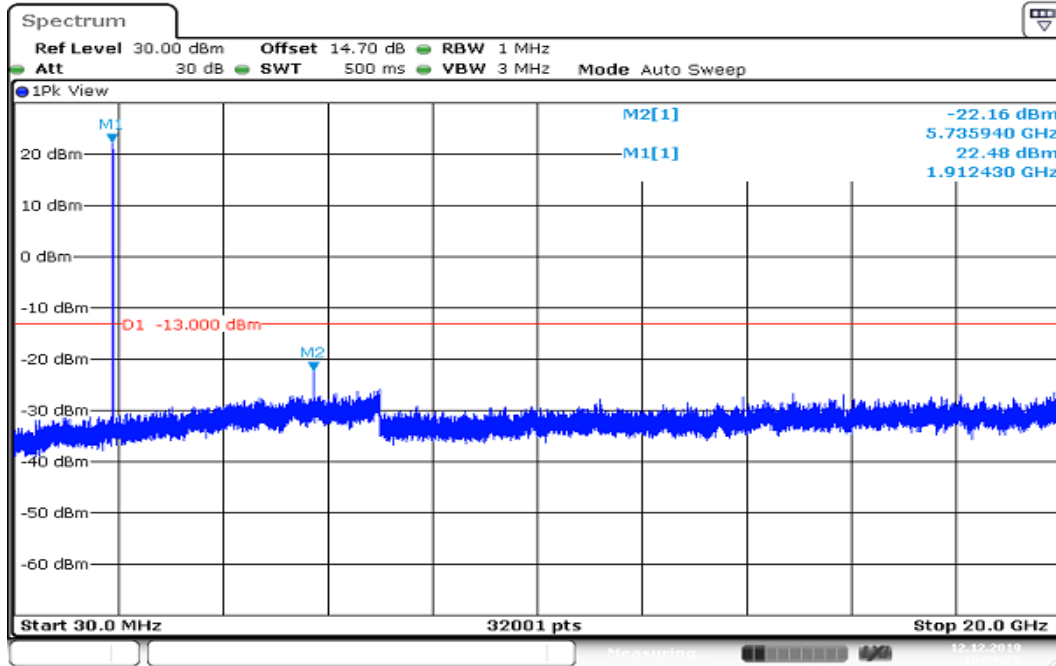
CHANNEL BANDWIDTH: 5MHz / 16QAM CH Low



CH Mid

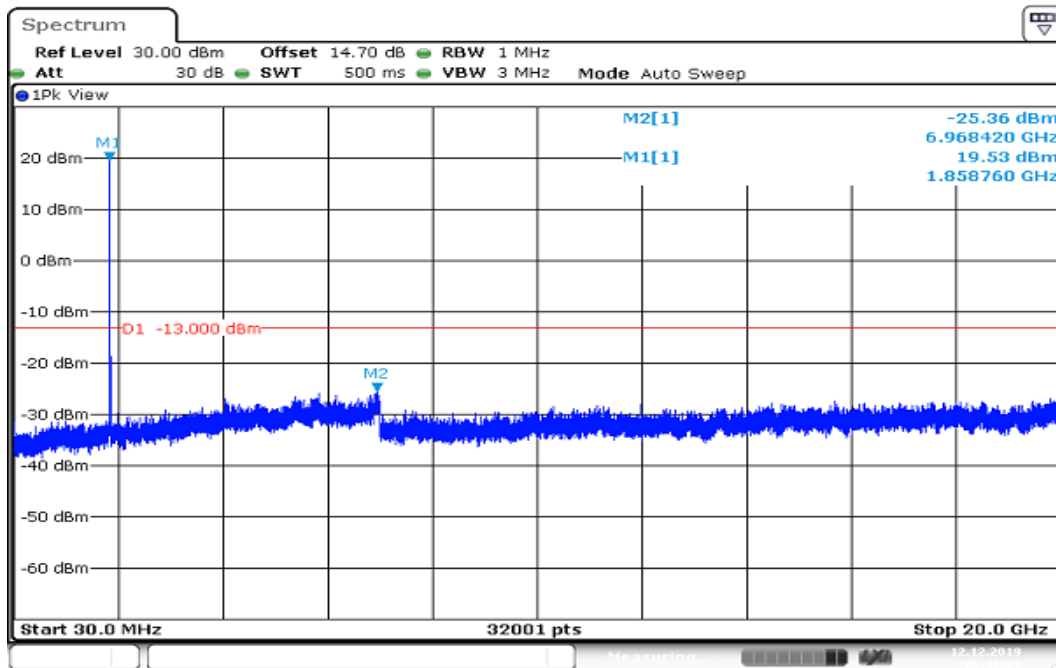


CH High

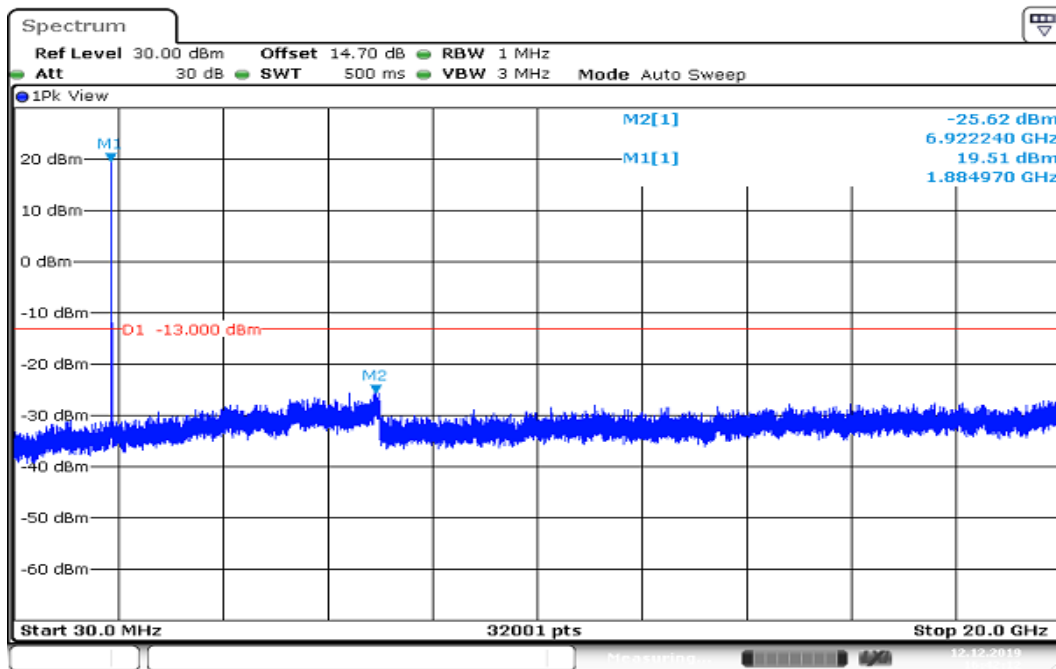


Date: 12.DEC.2019 16:39:27

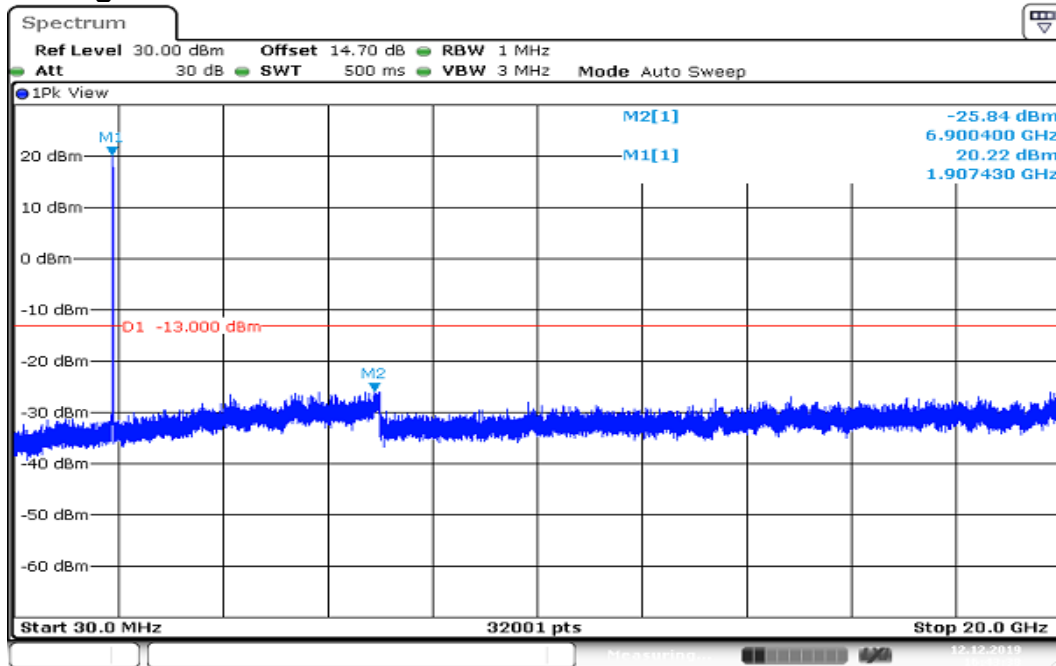
CHANNEL BANDWIDTH: 10MHz / 16QAM CH Low



CH Mid

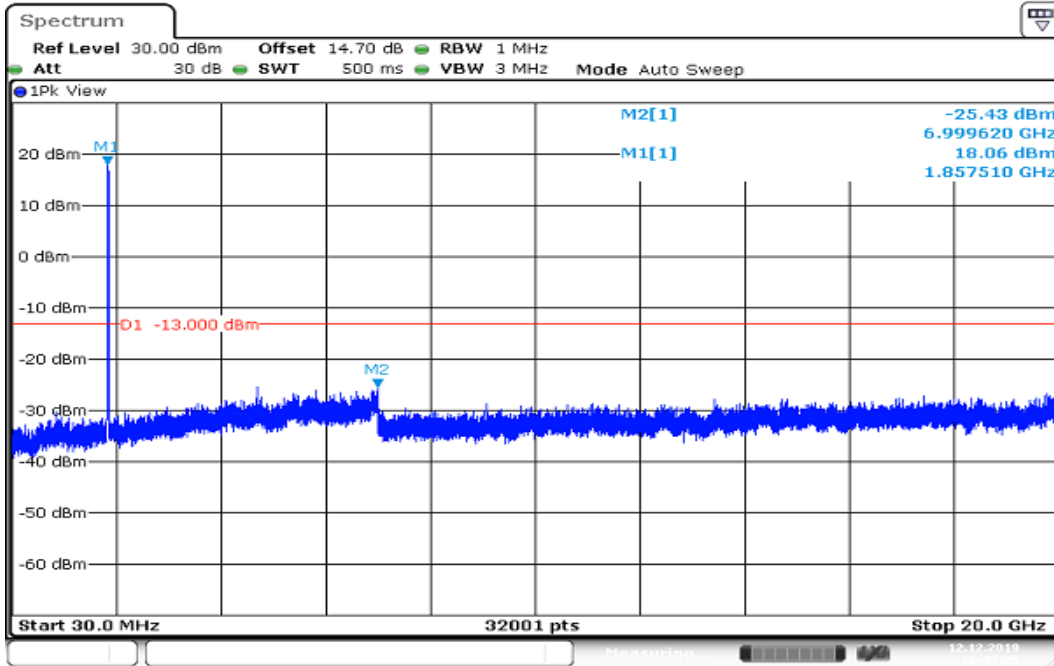


CH High

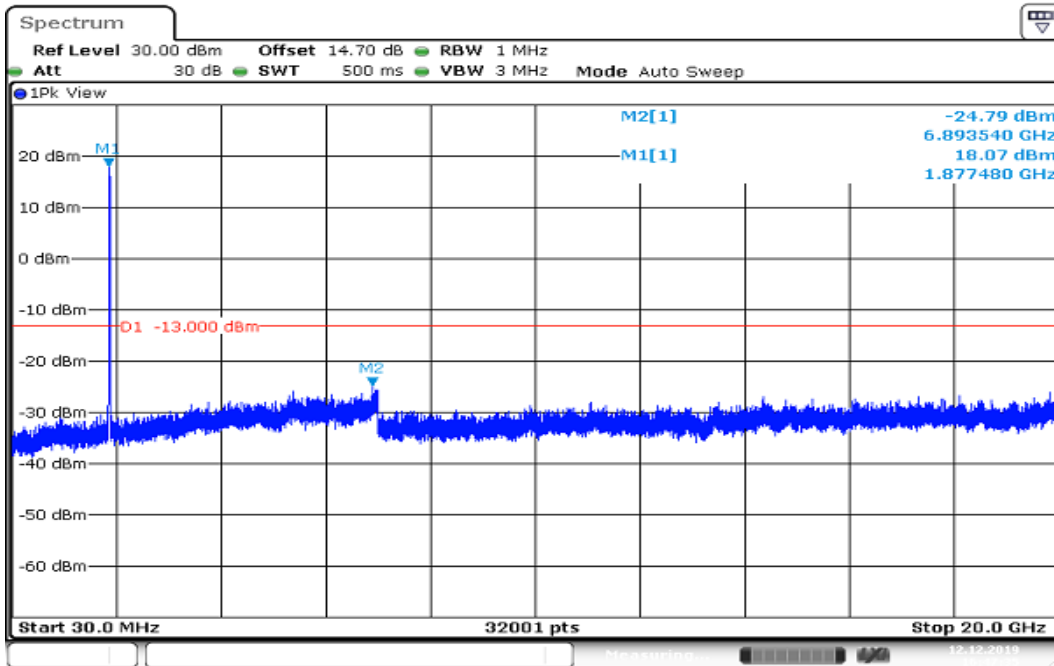


Date: 12.DEC.2019 16:43:38

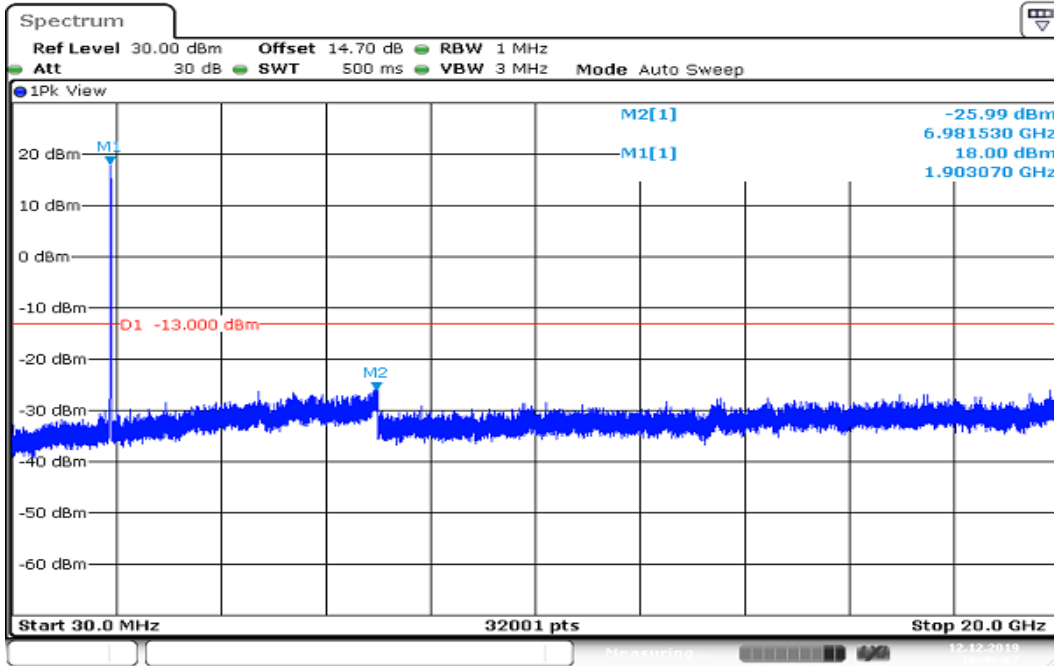
CHANNEL BANDWIDTH: 15MHz / 16QAM CH Low



CH Mid

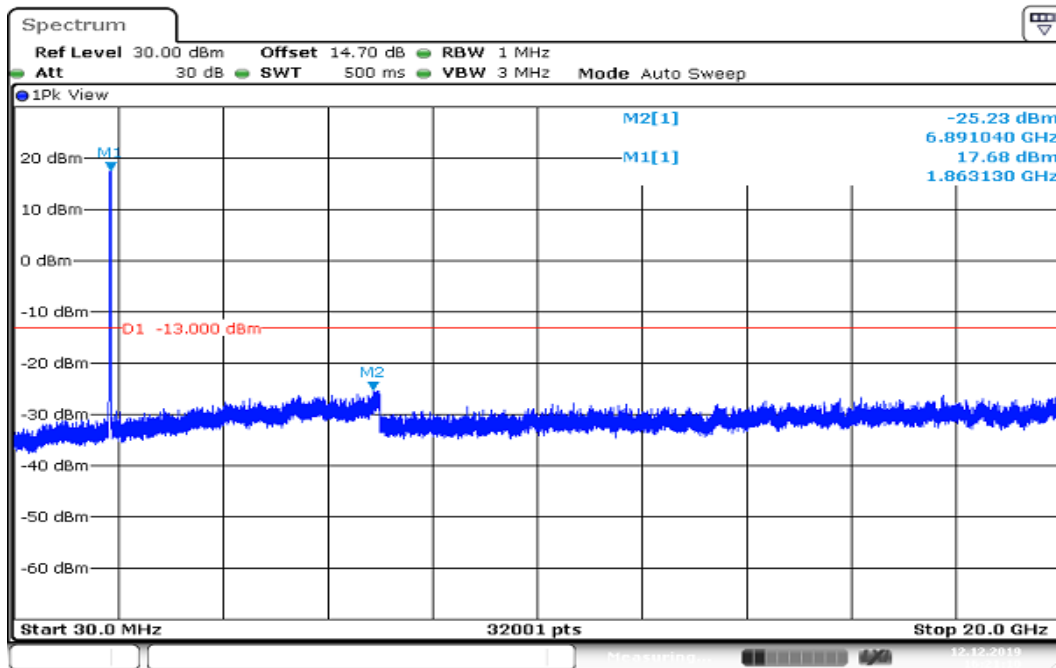


CH High

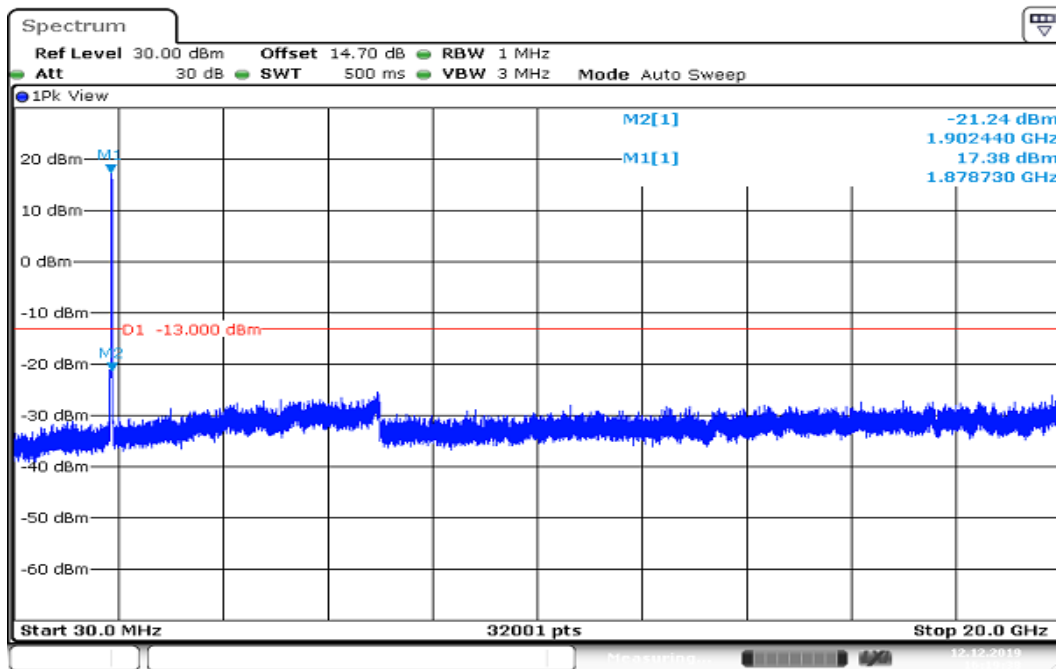


CHANNEL BANDWIDTH: 20MHz / 16QAM

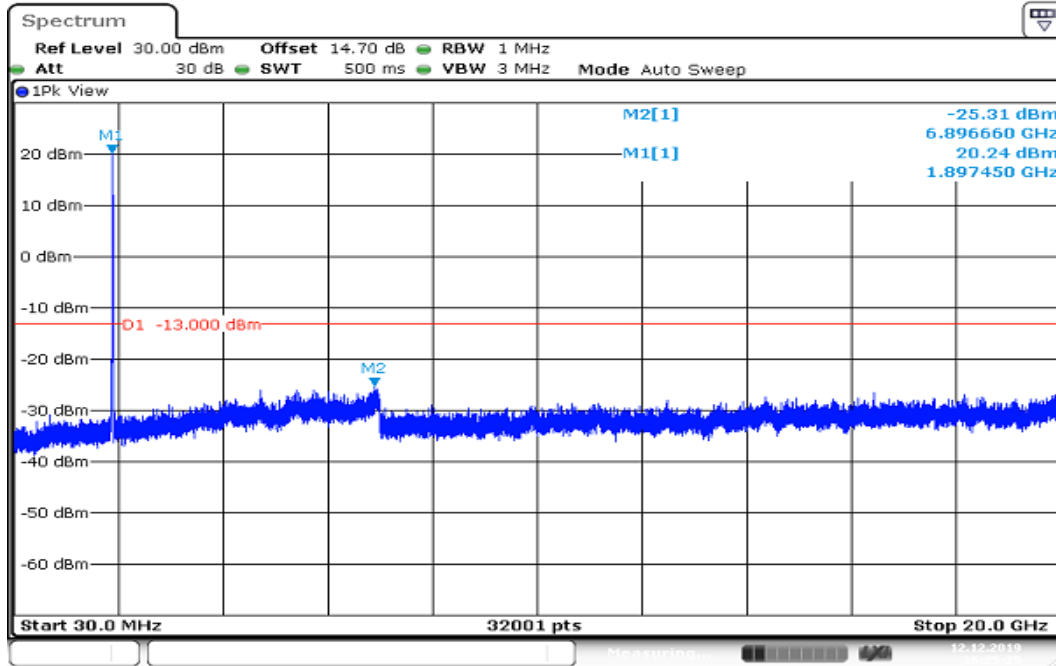
CH Low



CH Mid



CH High



Date: 12.DEC.2019 16:25:26

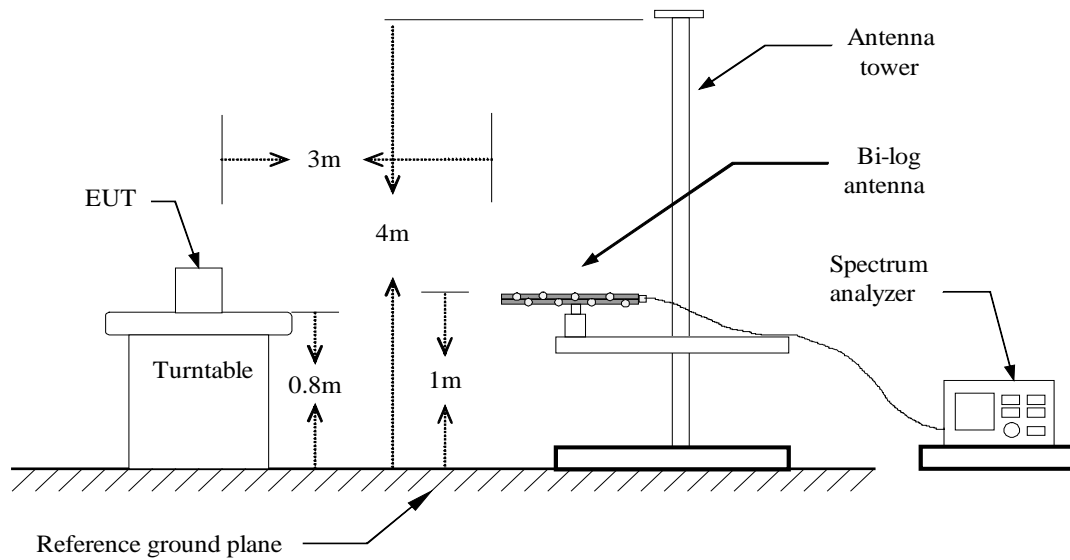
8.7 SPURIOUS RADIATION MEASUREMENT

LIMIT

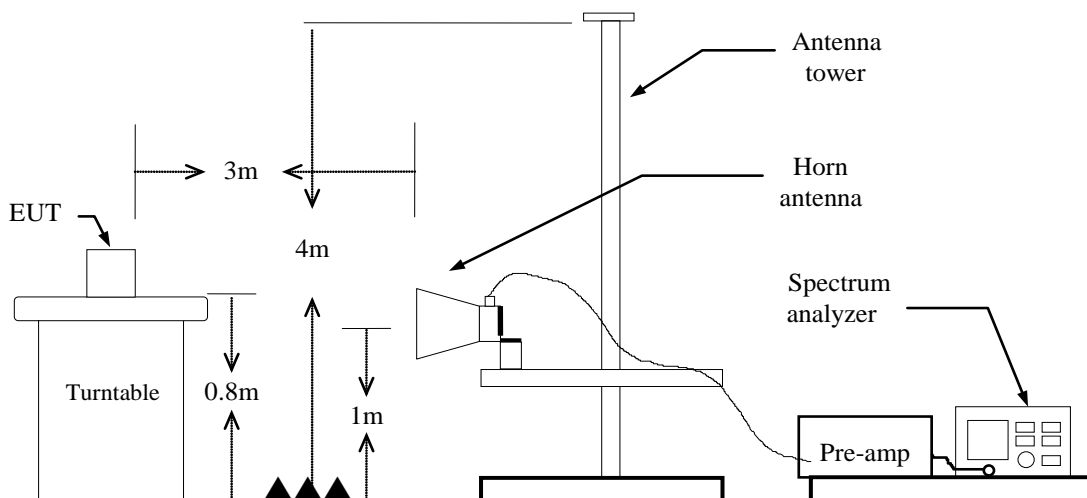
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

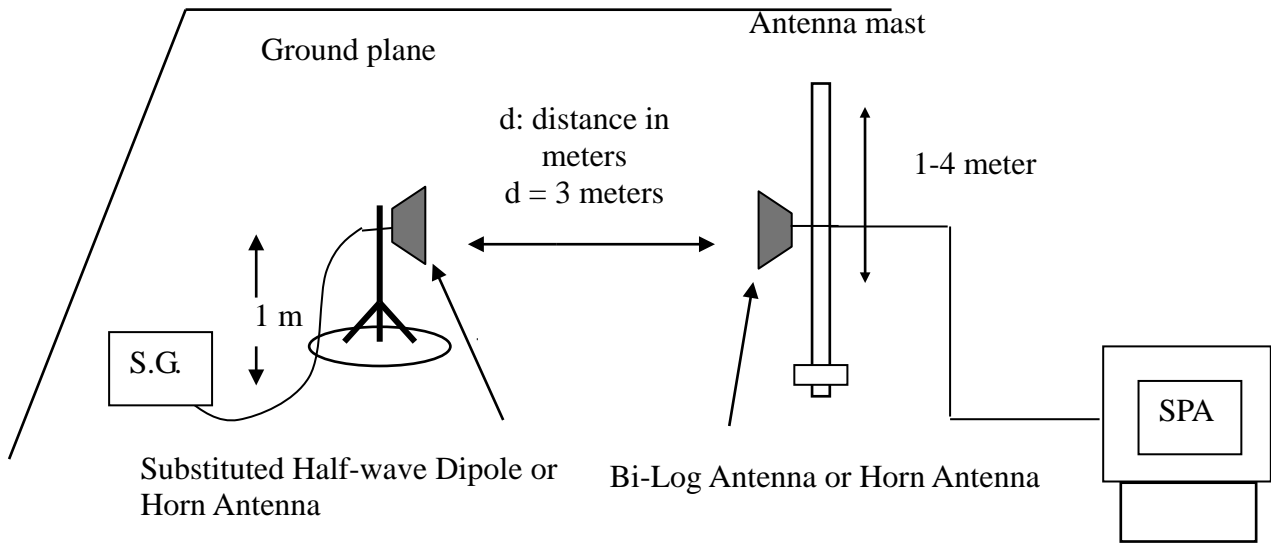
Test Configuration

Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up**TEST PROCEDURE**

1. According to KDB 971168 D01 and TIA-603-E,
2. The EUT was placed on a turntable
 - (1) Below 1G : 0.8m
 - (2) Above 1G : 0.8m
 - (3) EUT set 3m from the receiving antenna
 - (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$

TEST RESULTS

Refer to the attached tabular data sheets.

Remark: Above 1GHz

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Report No.: T191105W01-RP9

Test Results

LTE Band 25 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

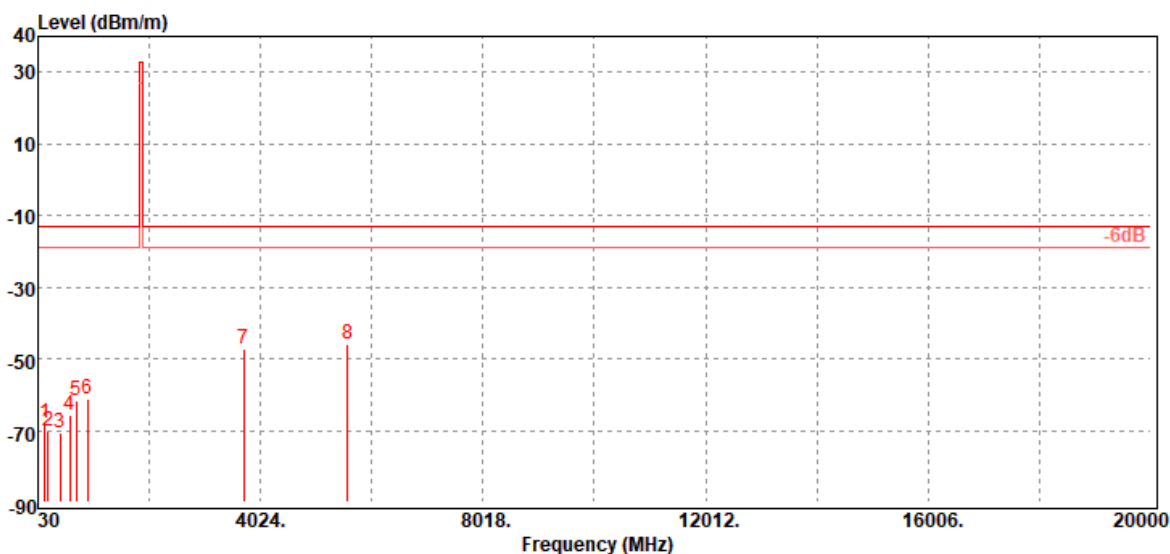
Test Date: December 18, 2019

Temperature: 18.6°C

Tested by: Jerry Chang

Humidity: 59% RH

Polarity: Ver.

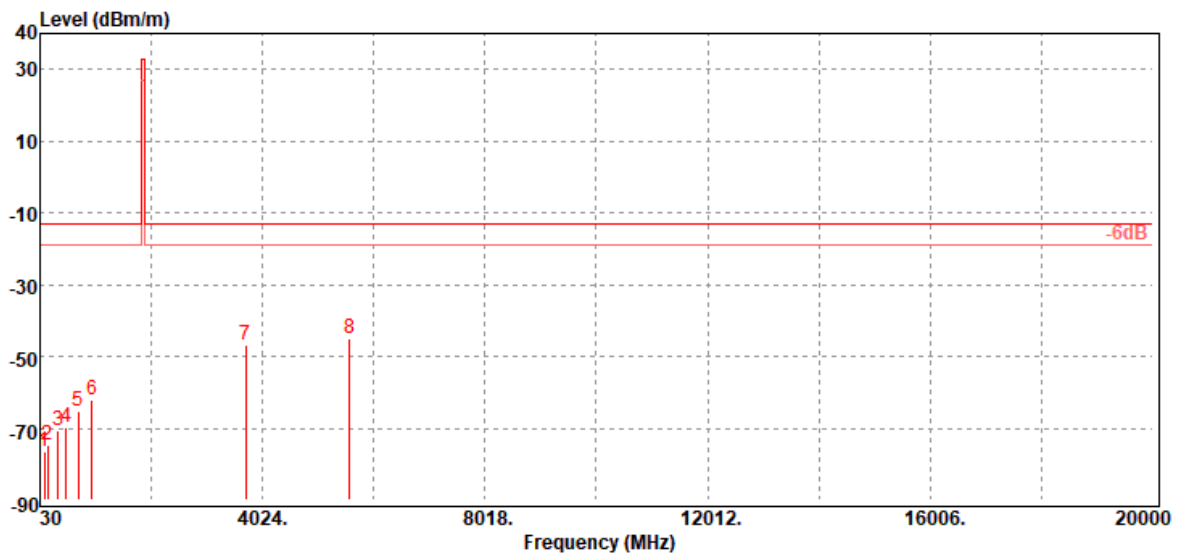


Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
158.04	-68.09	-60.66	-6.40	-1.03	-13.00	-55.09	V
209.45	-70.10	-66.73	-2.18	-1.19	-13.00	-57.10	V
424.79	-70.61	-67	-1.90	-1.71	-13.00	-57.61	V
605.21	-65.80	-62.72	-1.00	-2.08	-13.00	-52.80	V
721.61	-61.75	-58.09	-1.40	-2.26	-13.00	-48.75	V
919.49	-61.22	-57.35	-1.30	-2.57	-13.00	-48.22	V
3720.00	-47.20	-53.93	12.46	-5.73	-13.00	-34.20	V
5580.00	-45.74	-51.77	13.14	-7.11	-13.00	-32.74	V

Report No.: T191105W01-RP9

Operation Mode: Tx / Low CH
Temperature: 18.6°C
Humidity: 59% RH

Test Date: December 18, 2019
Tested by: Jerry Chang
Polarity: Hor.

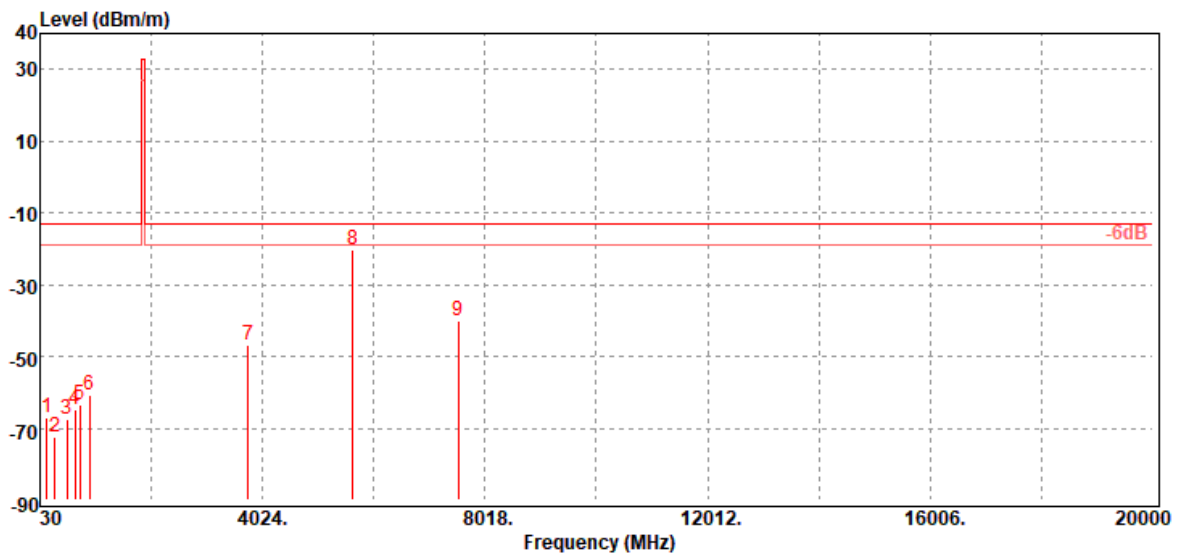


Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
102.75	-76.58	-66.87	-8.88	-0.83	-13.00	-63.58	H
170.65	-74.77	-68.37	-5.33	-1.07	-13.00	-61.77	H
353.01	-70.58	-67.59	-1.44	-1.55	-13.00	-57.58	H
497.54	-69.76	-65.9	-2.00	-1.86	-13.00	-56.76	H
721.61	-65.06	-61.4	-1.40	-2.26	-13.00	-52.06	H
968.96	-62.31	-58.37	-1.30	-2.64	-13.00	-49.31	H
3720.00	-47.03	-53.76	12.46	-5.73	-13.00	-34.03	H
5580.00	-44.94	-50.97	13.14	-7.11	-13.00	-31.94	H

Report No.: T191105W01-RP9

Operation Mode: Tx / Mid CH
Temperature: 18.6°C
Humidity: 59% RH

Test Date: December 18, 2019
Tested by: Jerry Chang
Polarity: Ver.

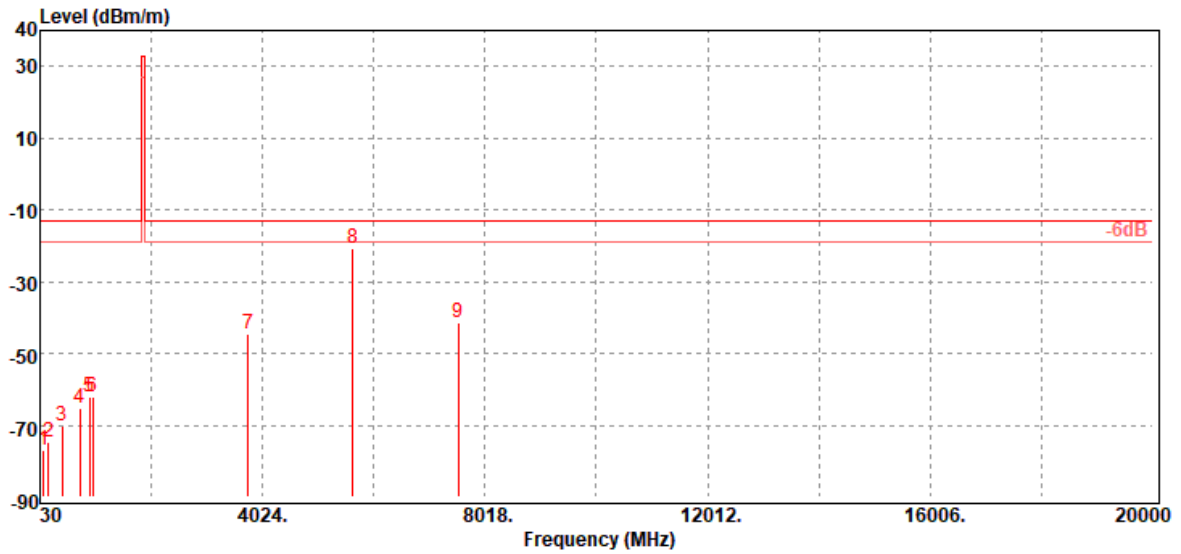


Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
150.28	-66.90	-58.79	-7.10	-1.01	-13.00	-53.90	V
294.81	-72.41	-68.89	-2.10	-1.42	-13.00	-59.41	V
508.21	-67.29	-63.63	-1.77	-1.89	-13.00	-54.29	V
660.50	-64.75	-61.17	-1.41	-2.17	-13.00	-51.75	V
747.80	-63.43	-59.72	-1.40	-2.31	-13.00	-50.43	V
919.49	-60.75	-56.88	-1.30	-2.57	-13.00	-47.75	V
3765.00	-46.80	-53.47	12.43	-5.76	-13.00	-33.80	V
5647.50	-20.21	-26.36	13.29	-7.14	-13.00	-7.21	V
7530.00	-39.98	-42.73	10.86	-8.11	-13.00	-26.98	V

Report No.: T191105W01-RP9

Operation Mode: Tx / Mid CH
Temperature: 18.6°C
Humidity: 59% RH

Test Date: December 18, 2019
Tested by: Jerry Chang
Polarity: Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
94.99	-76.87	-68.77	-7.30	-0.80	-13.00	-63.87	H
180.35	-74.51	-69.05	-4.36	-1.10	-13.00	-61.51	H
425.76	-70.04	-66.43	-1.90	-1.71	-13.00	-57.04	H
745.86	-65.07	-61.37	-1.40	-2.30	-13.00	-52.07	H
922.40	-62.31	-58.43	-1.30	-2.58	-13.00	-49.31	H
973.81	-62.29	-58.27	-1.38	-2.64	-13.00	-49.29	H
3765.00	-44.75	-51.42	12.43	-5.76	-13.00	-31.75	H
5647.50	-20.80	-26.95	13.29	-7.14	-13.00	-7.80	H
7530.00	-41.63	-44.38	10.86	-8.11	-13.00	-28.63	H

Report No.: T191105W01-RP9

Operation Mode: Tx / High CH

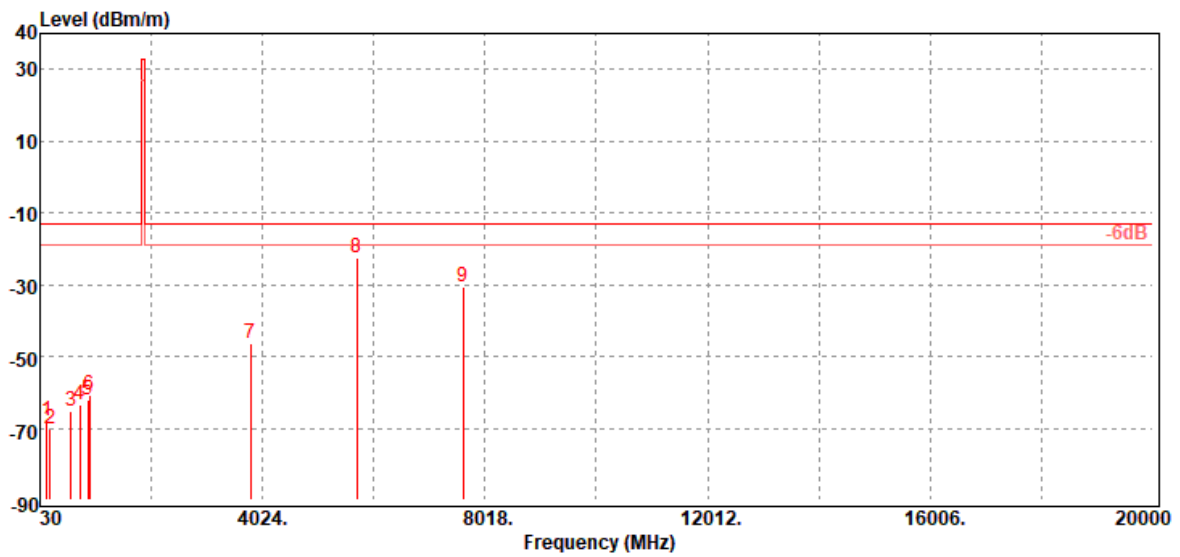
Test Date: December 18, 2019

Temperature: 18.6°C

Tested by: Jerry Chang

Humidity: 59% RH

Polarity: Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
148.34	-67.88	-59.61	-7.27	-1.00	-13.00	-54.88	V
207.51	-70.43	-66.8	-2.45	-1.18	-13.00	-57.43	V
589.69	-65.17	-62.11	-1.01	-2.05	-13.00	-52.17	V
747.80	-63.40	-59.69	-1.40	-2.31	-13.00	-50.40	V
891.36	-62.13	-58.37	-1.23	-2.53	-13.00	-49.13	V
920.46	-60.69	-56.81	-1.30	-2.58	-13.00	-47.69	V
3810.00	-46.49	-53.17	12.48	-5.80	-13.00	-33.49	V
5715.00	-22.39	-28.31	13.10	-7.18	-13.00	-9.39	V
7620.00	-30.57	-33.6	11.20	-8.17	-13.00	-17.57	V

Report No.: T191105W01-RP9

Operation Mode: Tx / High CH

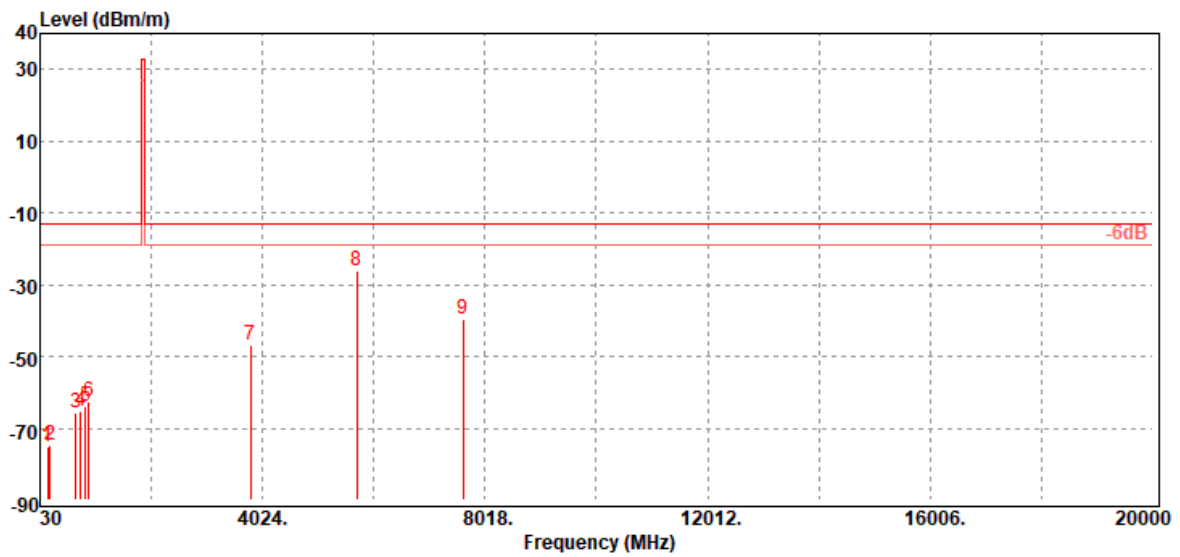
Test Date: December 18, 2019

Temperature: 18.6°C

Tested by: Jerry Chang

Humidity: 59% RH

Polarity: Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
167.74	-75.35	-68.74	-5.55	-1.06	-13.00	-62.35	H
209.45	-74.59	-71.22	-2.18	-1.19	-13.00	-61.59	H
675.05	-65.66	-62.17	-1.30	-2.19	-13.00	-52.66	H
759.44	-65.23	-61.51	-1.40	-2.32	-13.00	-52.23	H
846.74	-63.80	-59.98	-1.37	-2.45	-13.00	-50.80	H
903.00	-62.43	-58.62	-1.26	-2.55	-13.00	-49.43	H
3810.00	-46.72	-53.4	12.48	-5.80	-13.00	-33.72	H
5715.00	-25.95	-31.87	13.10	-7.18	-13.00	-12.95	H
7620.00	-39.74	-42.77	11.20	-8.17	-13.00	-26.74	H

- End of Test Report -