

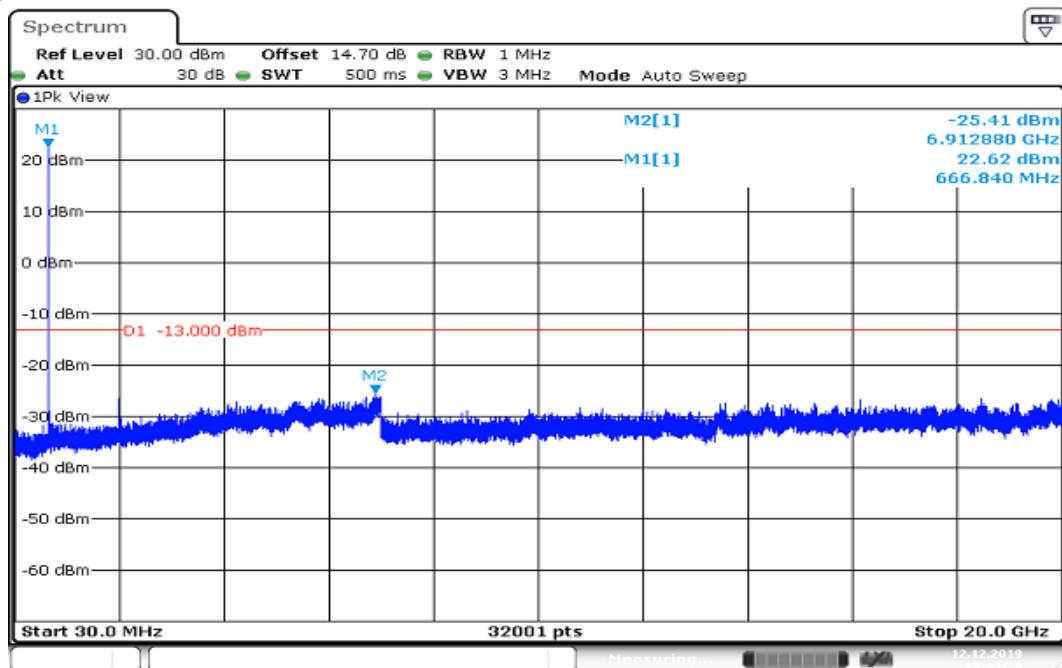
8.6 CONDUCTED SPURIOUS EMISSIONS

LIMITS

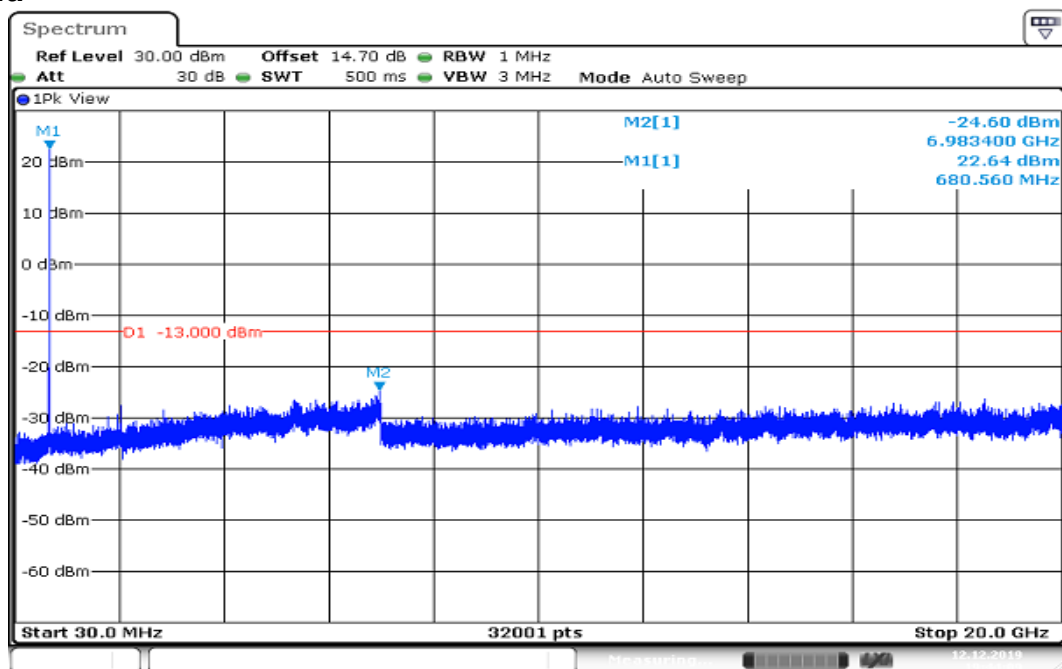
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

TEST PROCEDURES

1. According to KDB 971168D01, photograph 6.0
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.

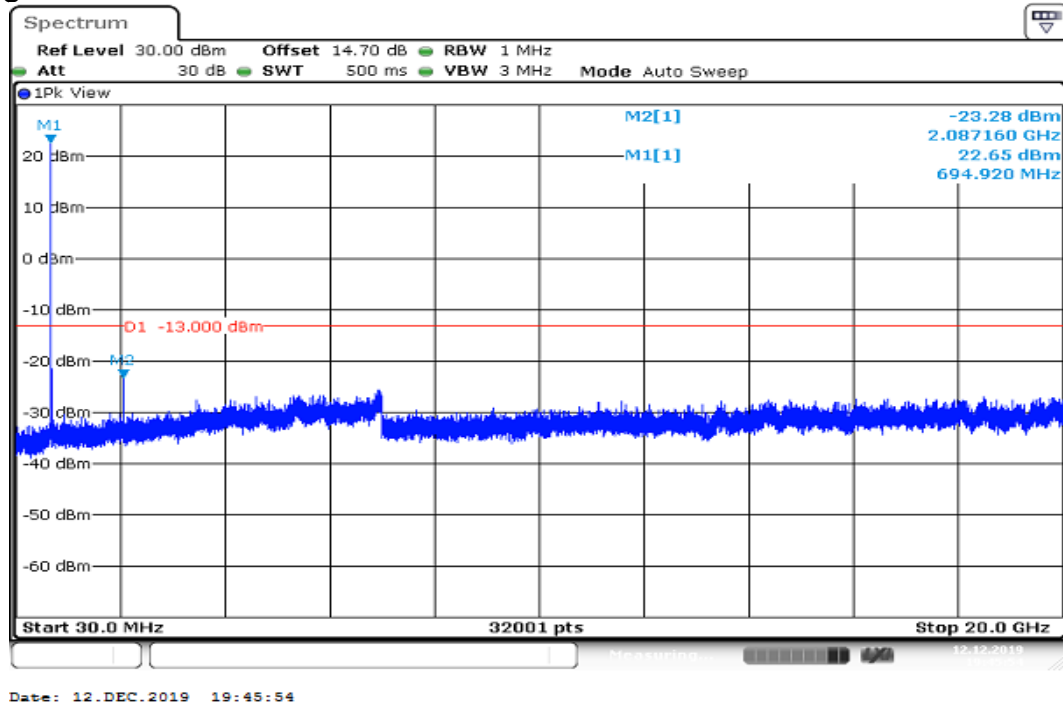
TEST RESULTS**LTE Band 71****CHANNEL BANDWIDTH: 5MHz /QPSK****CH Low**

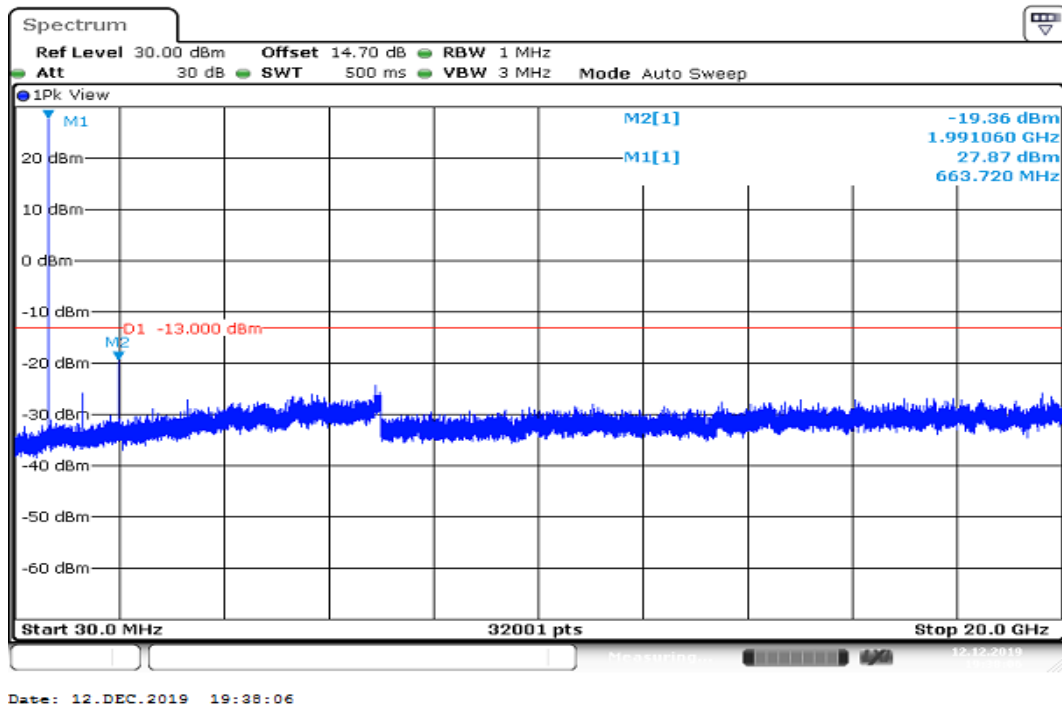
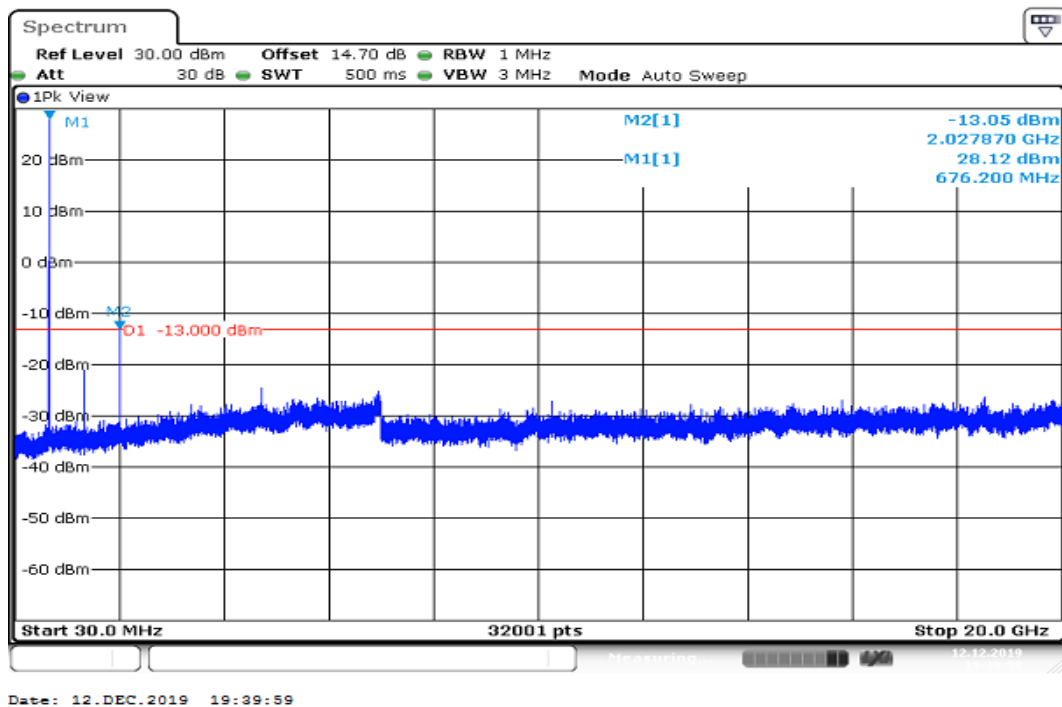
Date: 12-DEC-2019 19:43:28

CH Mid

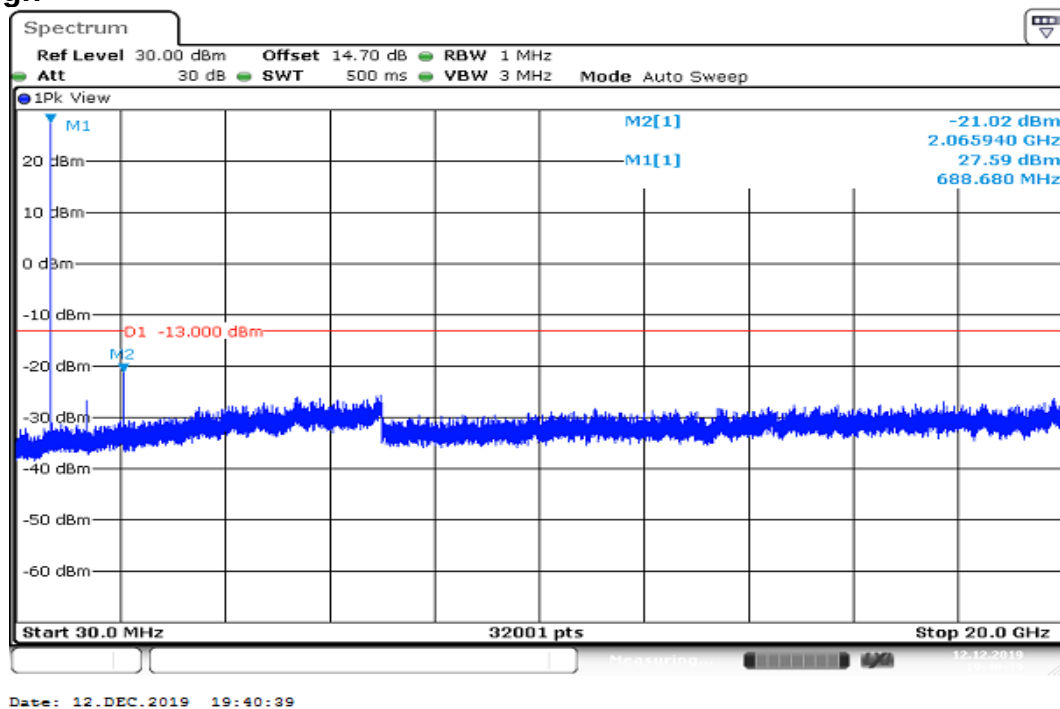
Date: 12-DEC-2019 19:44:09

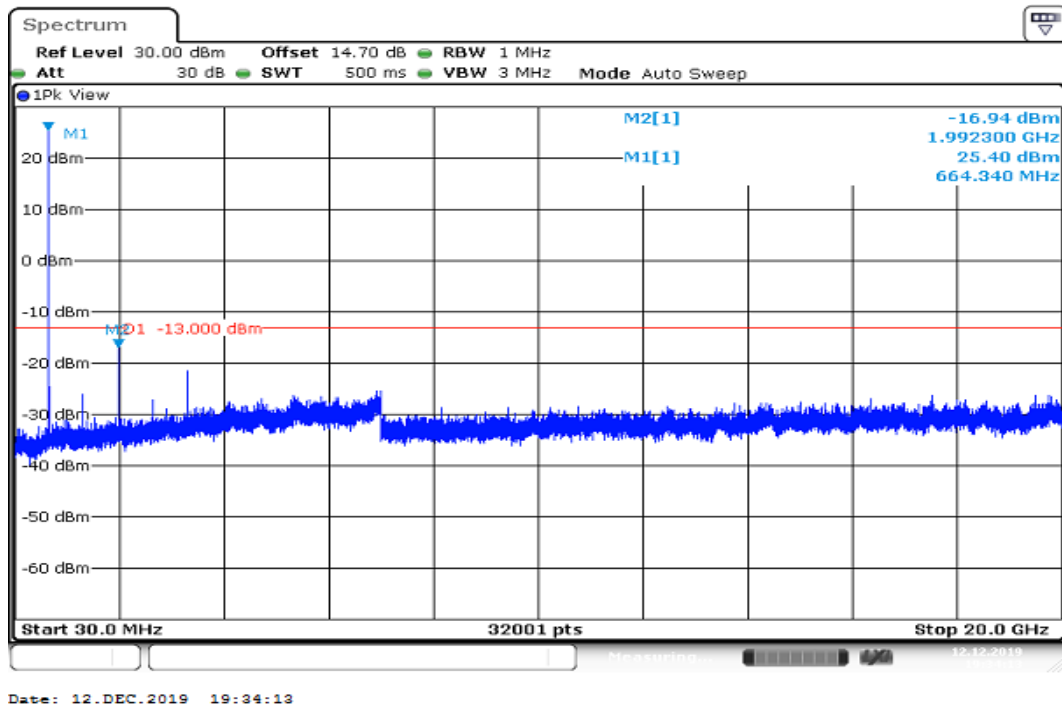
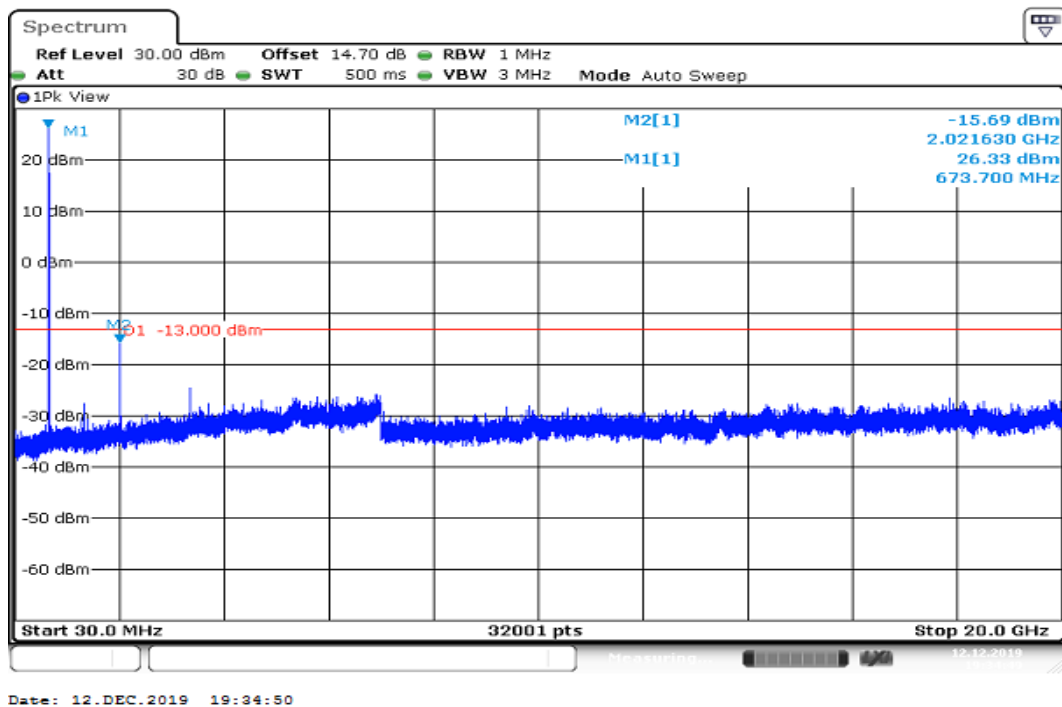
CH High



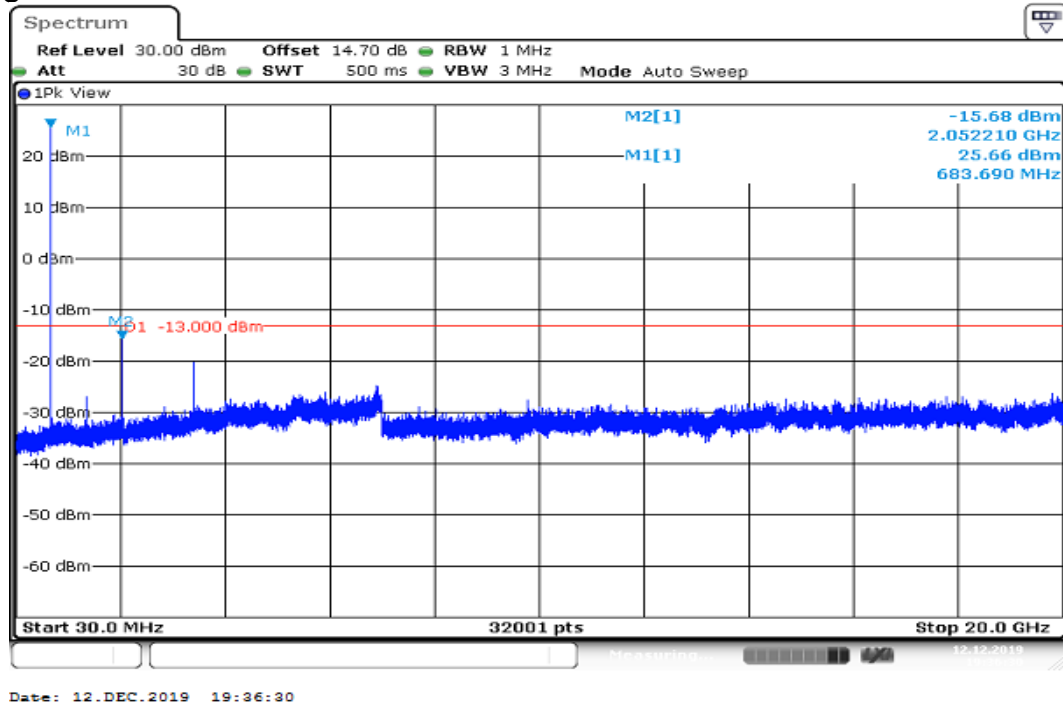
CHANNEL BANDWIDTH: 10MHz /QPSK
CH Low**CH Mid**

CH High

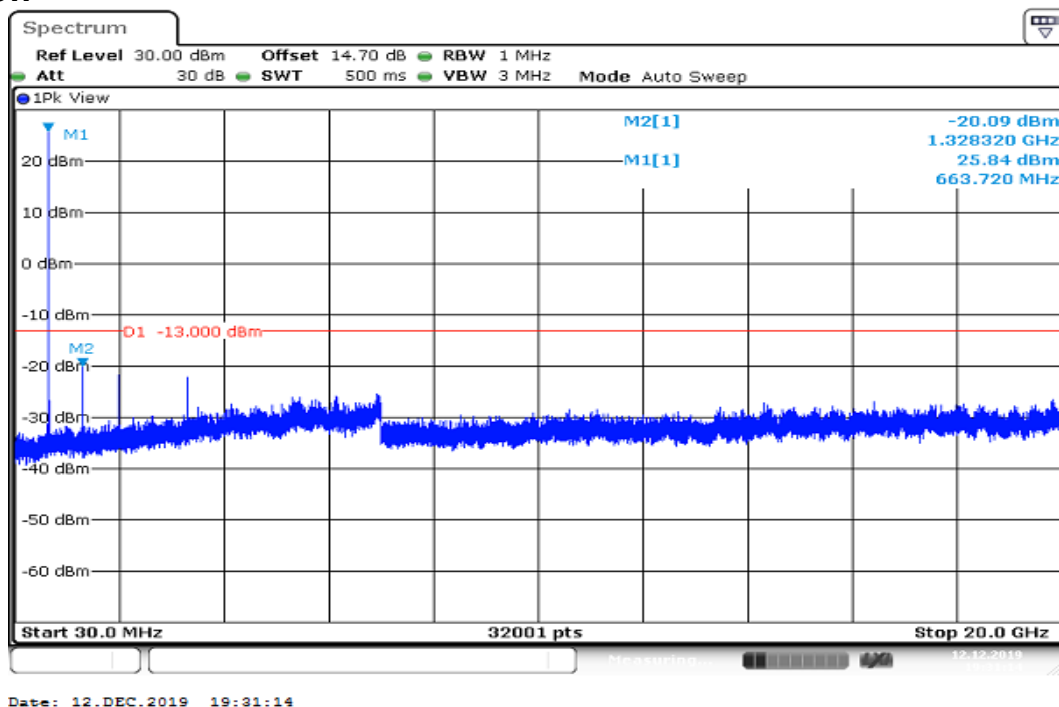


CHANNEL BANDWIDTH: 15MHz /QPSK
CH Low**CH Mid**

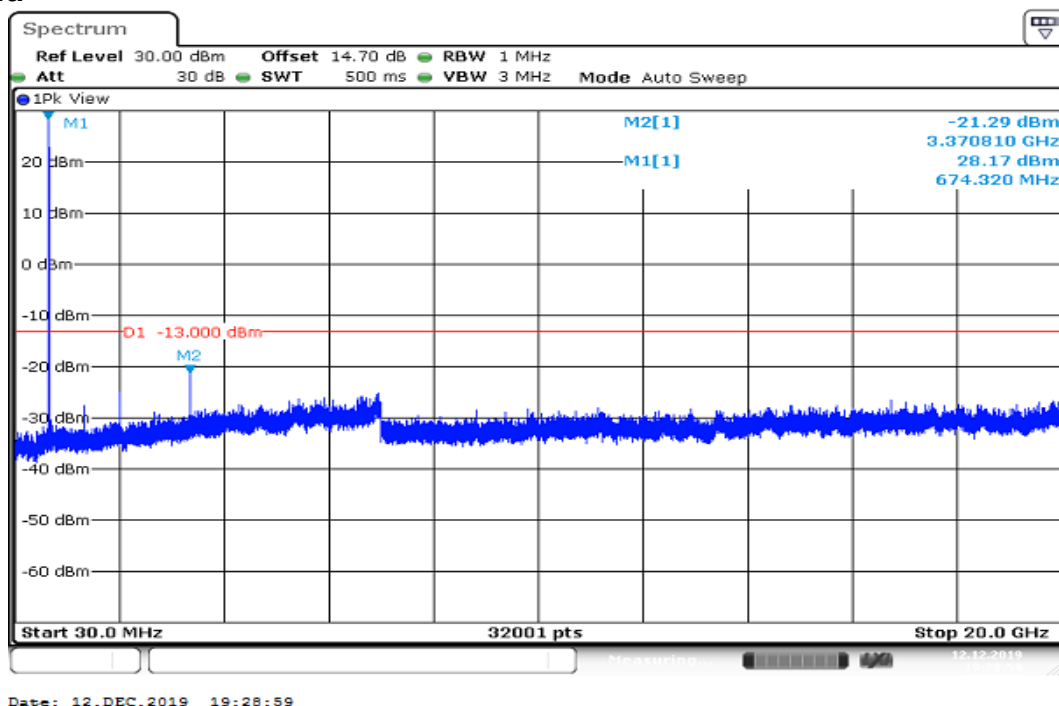
CH High



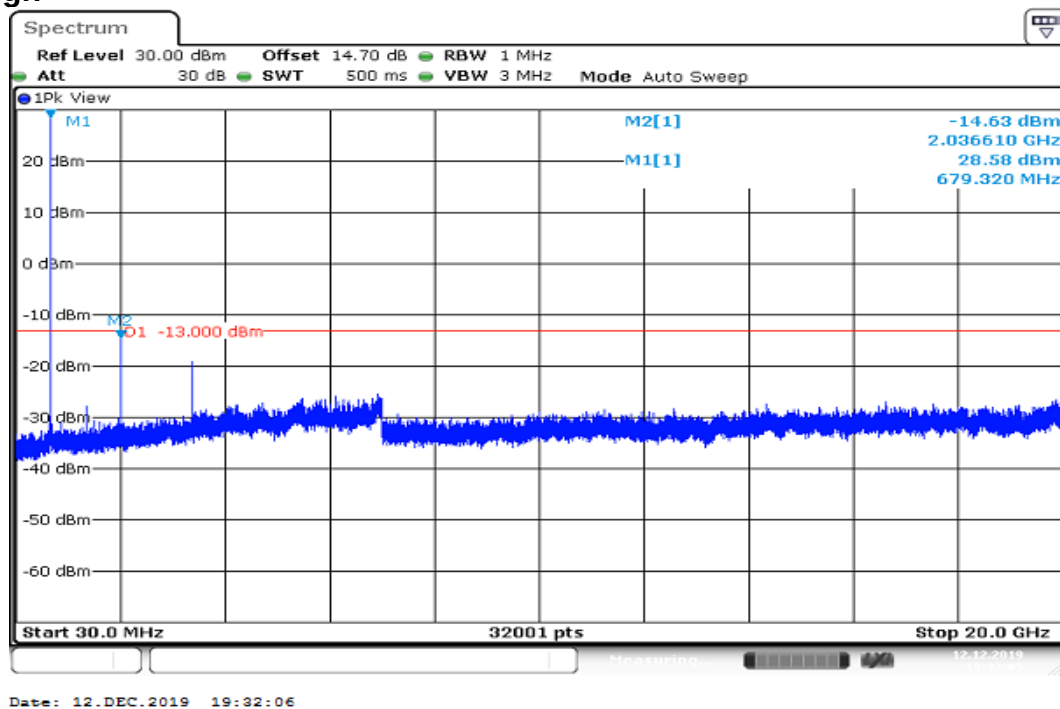
CHANNEL BANDWIDTH: 20MHz /QPSK CH Low

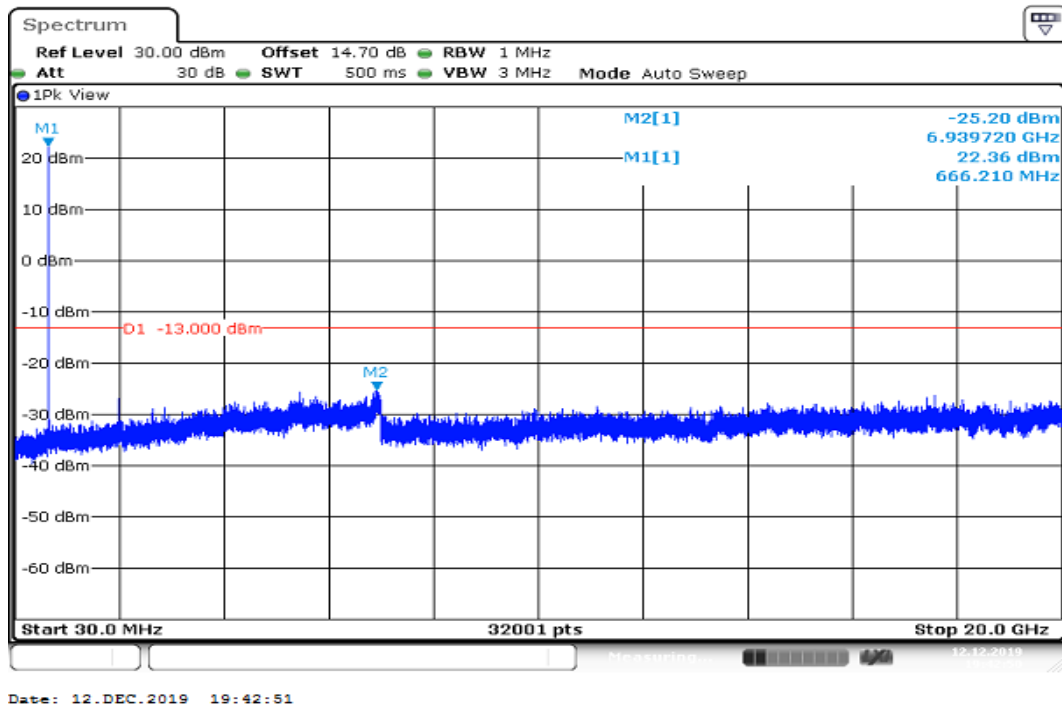
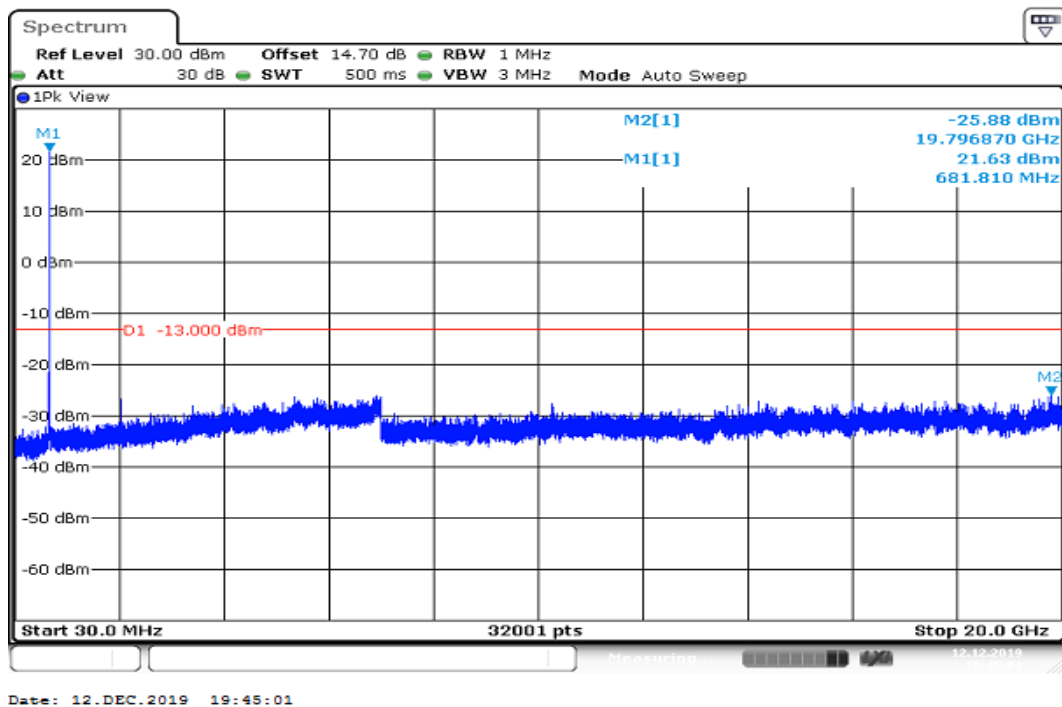


CH Mid

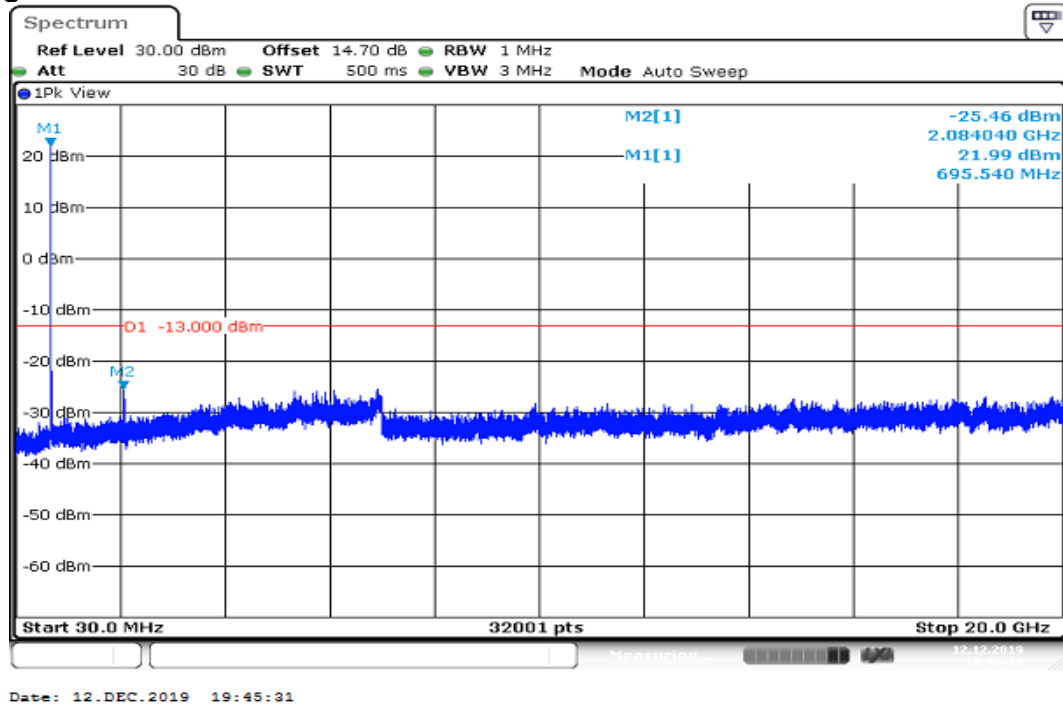


CH High

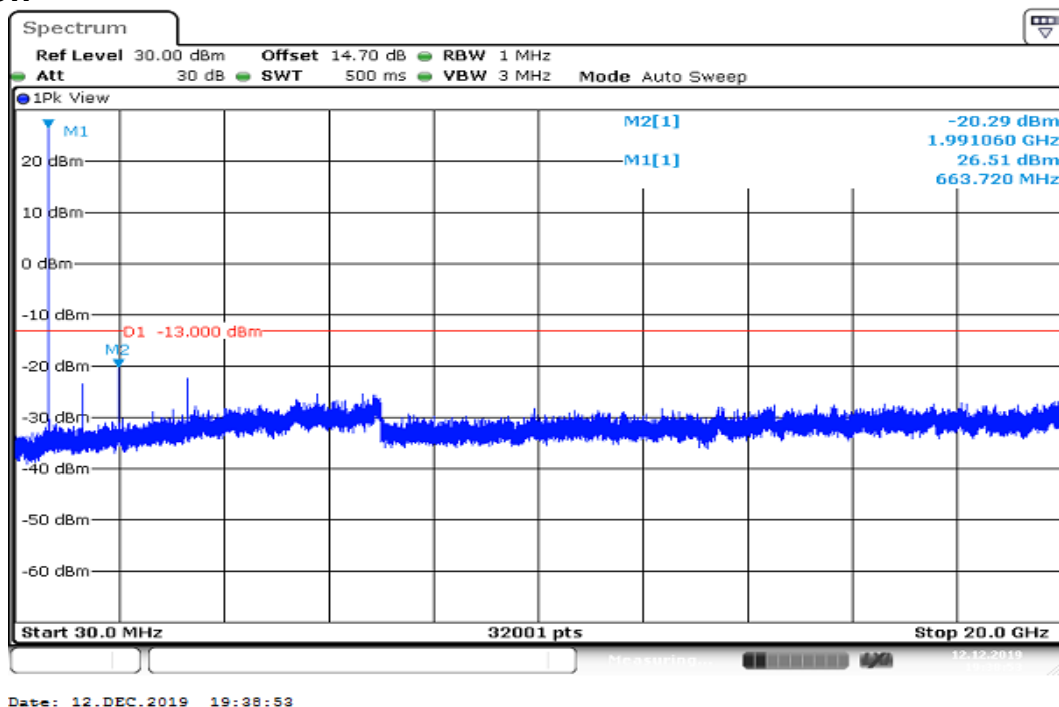


CHANNEL BANDWIDTH:5MHz /16QAM
CH Low**CH Mid**

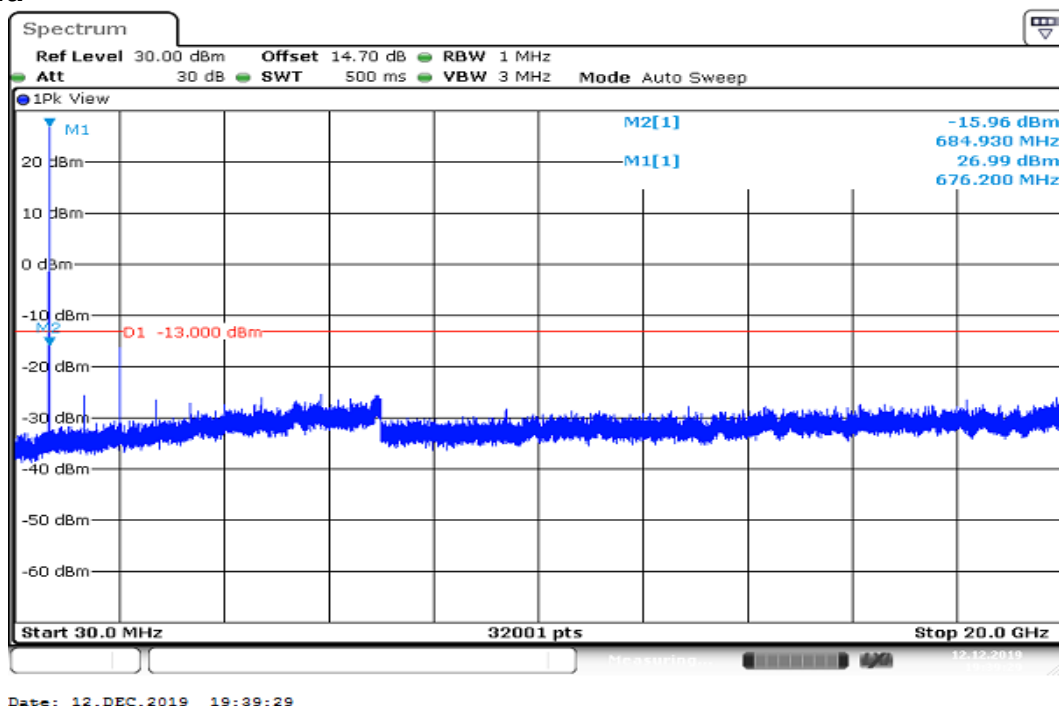
CH High



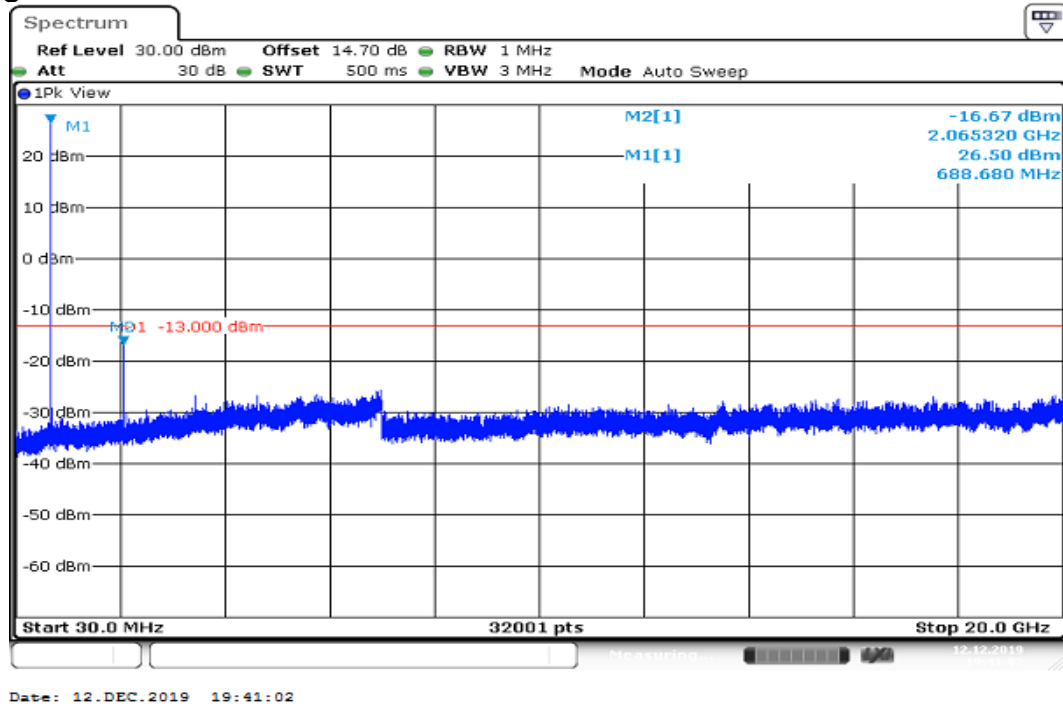
CHANNEL BANDWIDTH:10MHz /16QAM CH Low

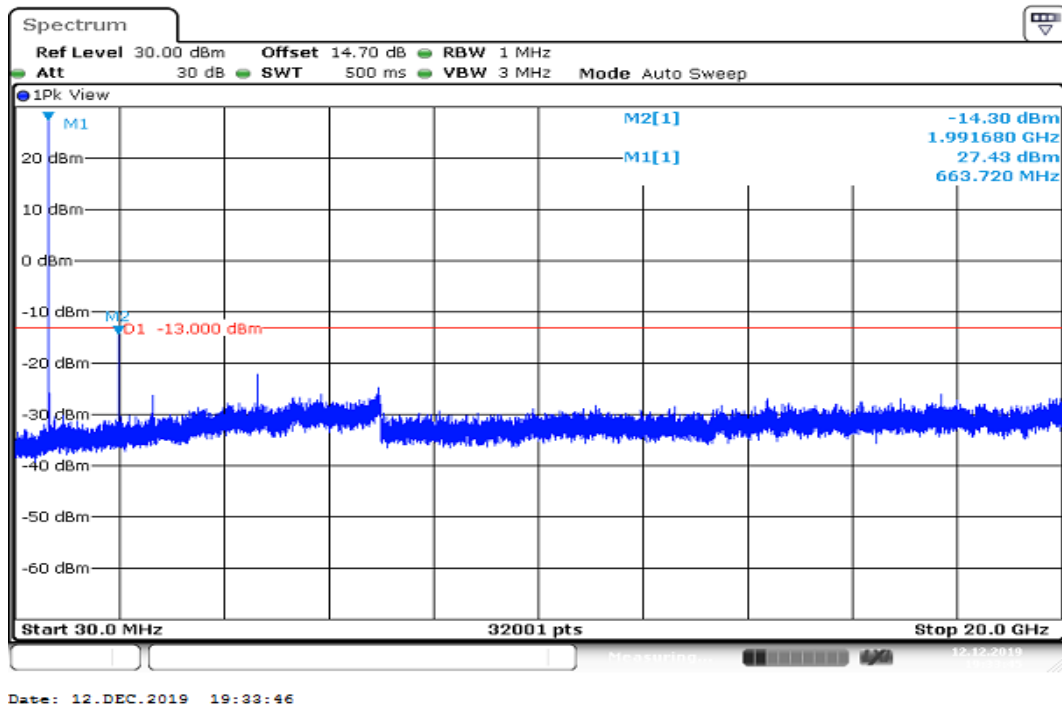
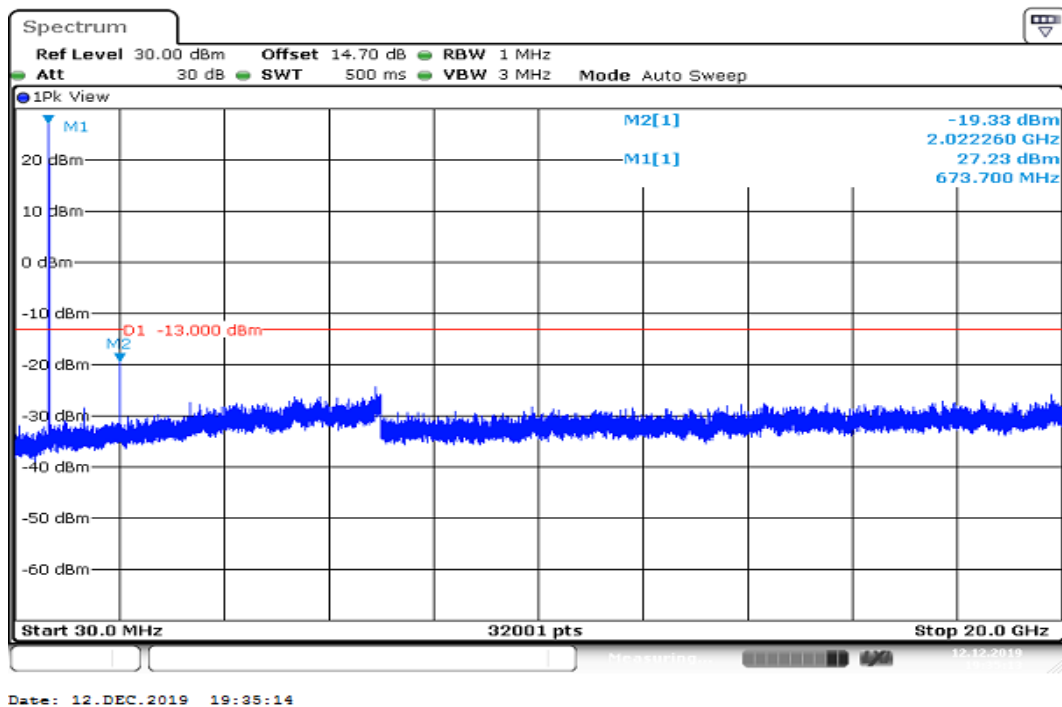


CH Mid

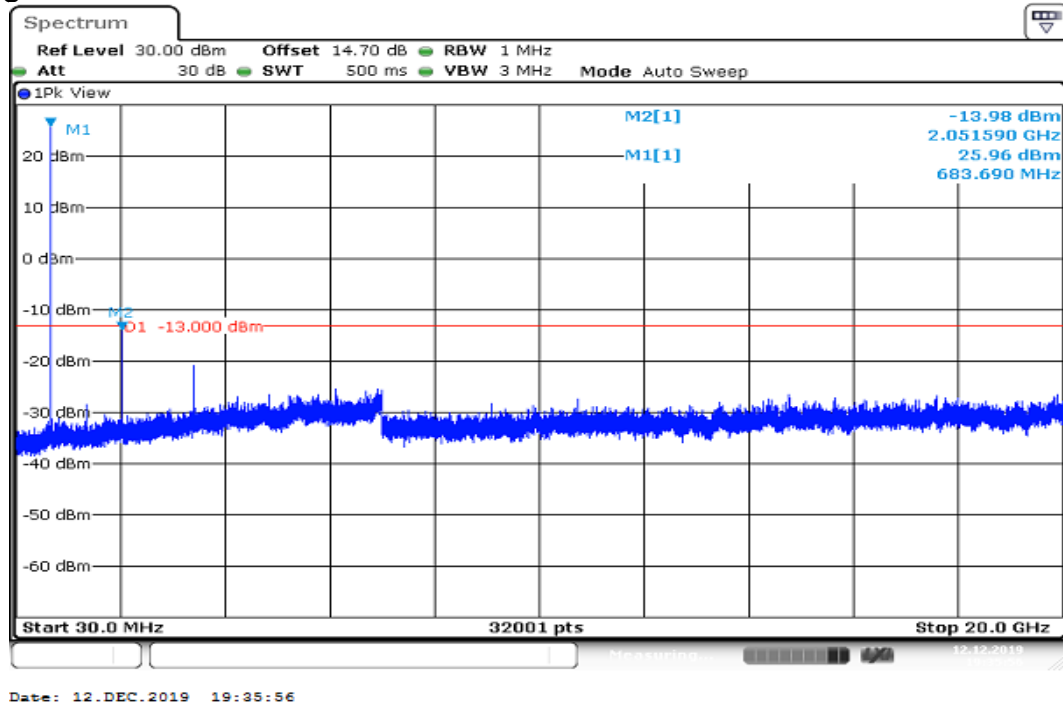


CH High

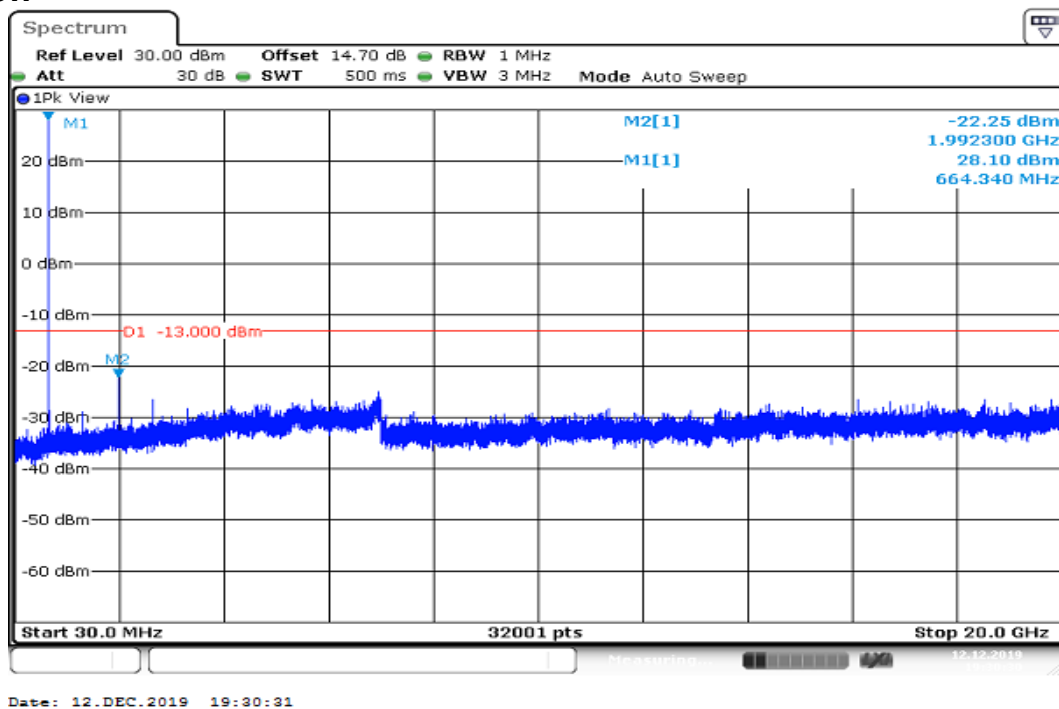


CHANNEL BANDWIDTH:15MHz /16QAM
CH Low**CH Mid**

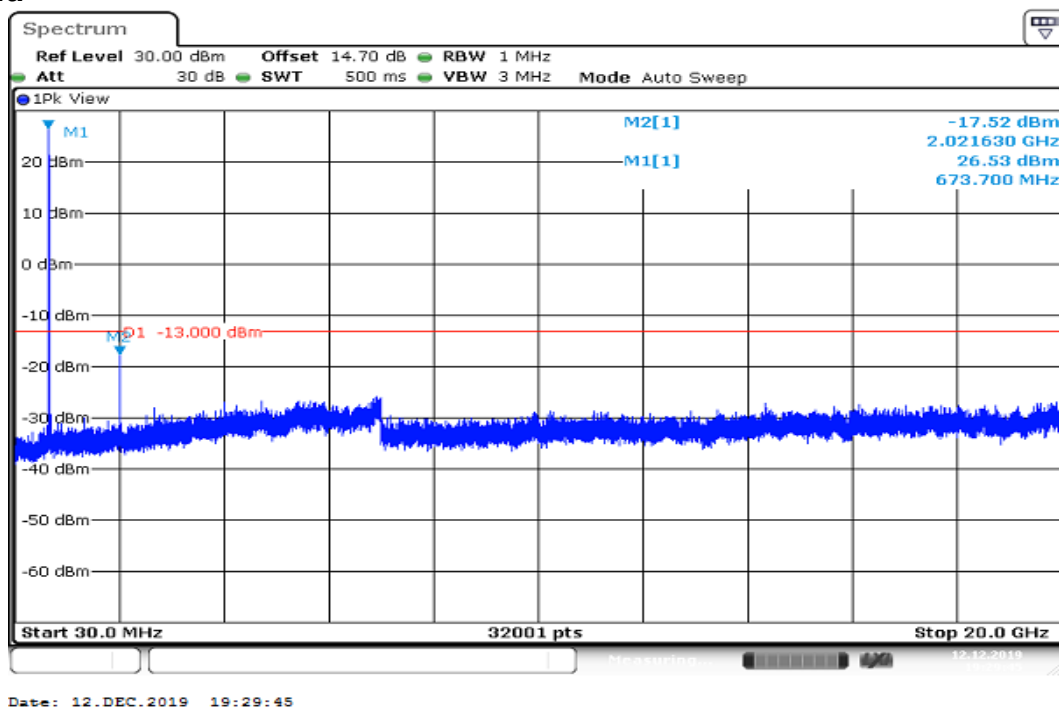
CH High



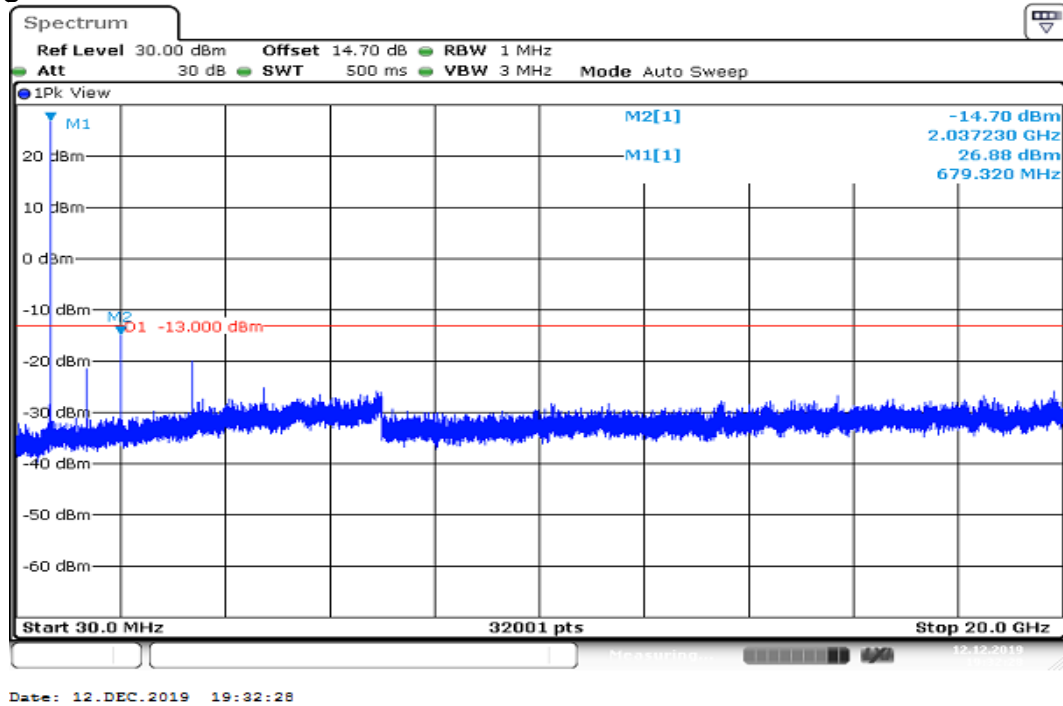
CHANNEL BANDWIDTH:20MHz /16QAM CH Low



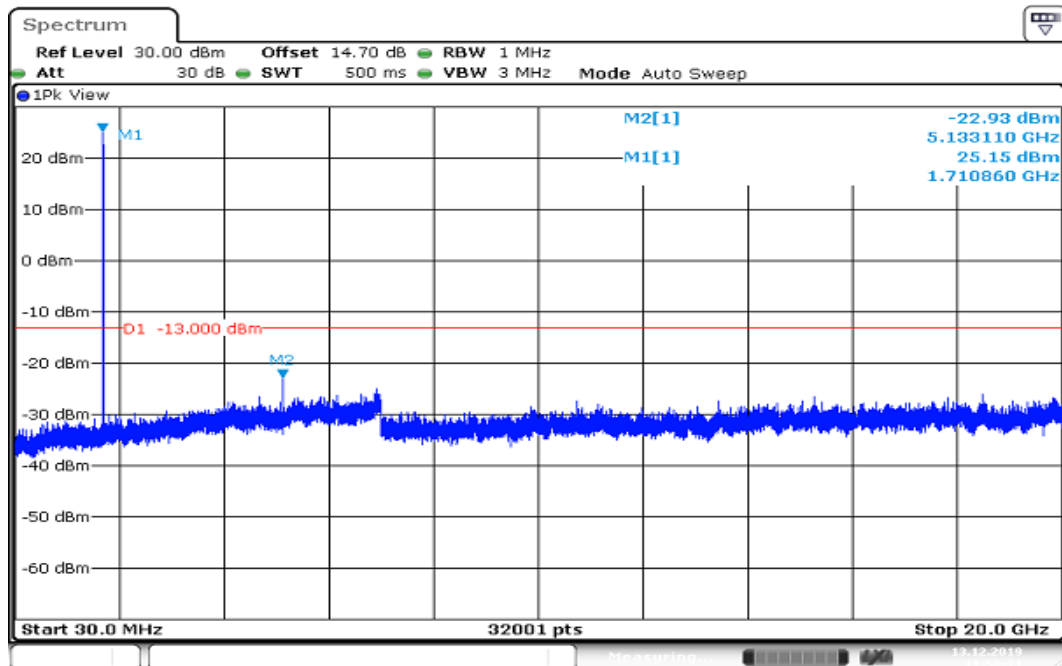
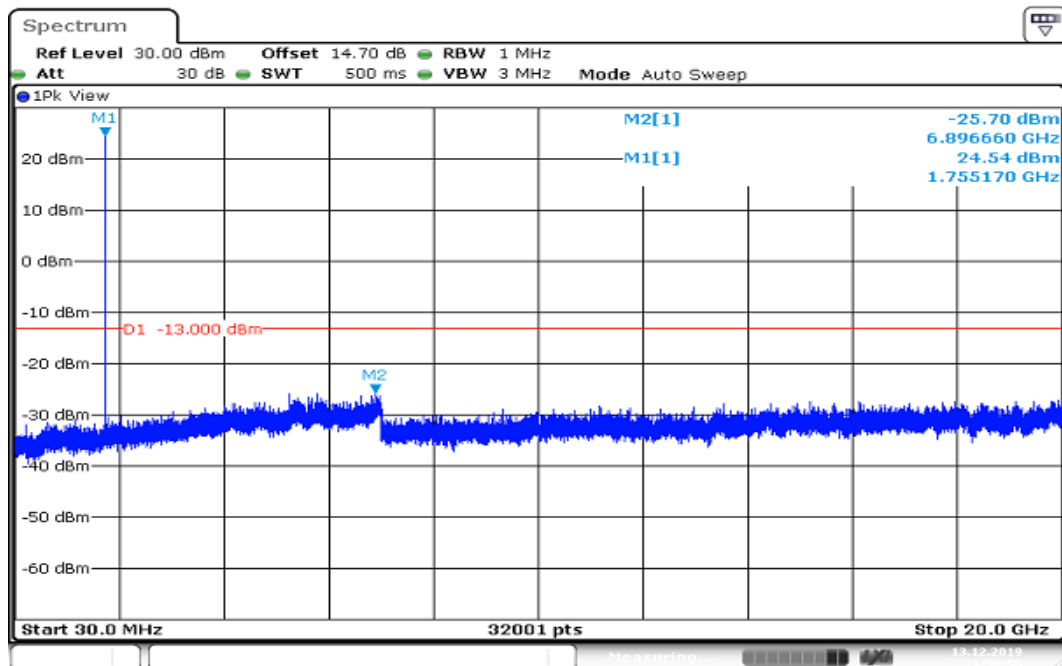
CH Mid



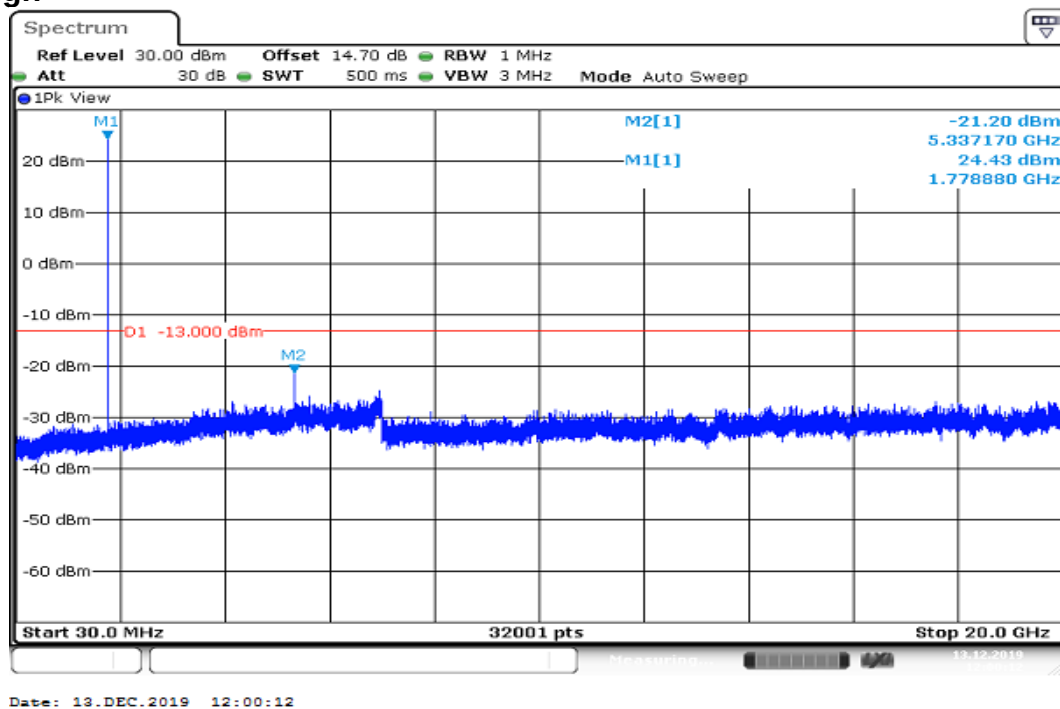
CH High



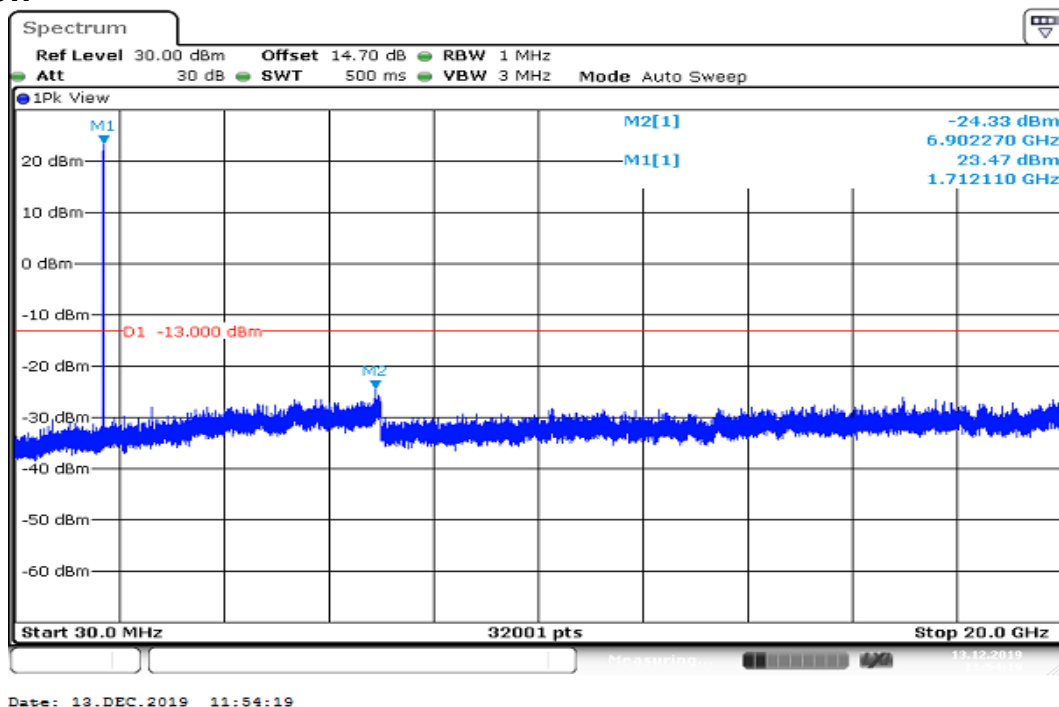
Report No.: T191105W01-RP12

LTE Band 66**CHANNEL BANDWIDTH: 1.4MHz /QPSK****CH Low****CH Mid**

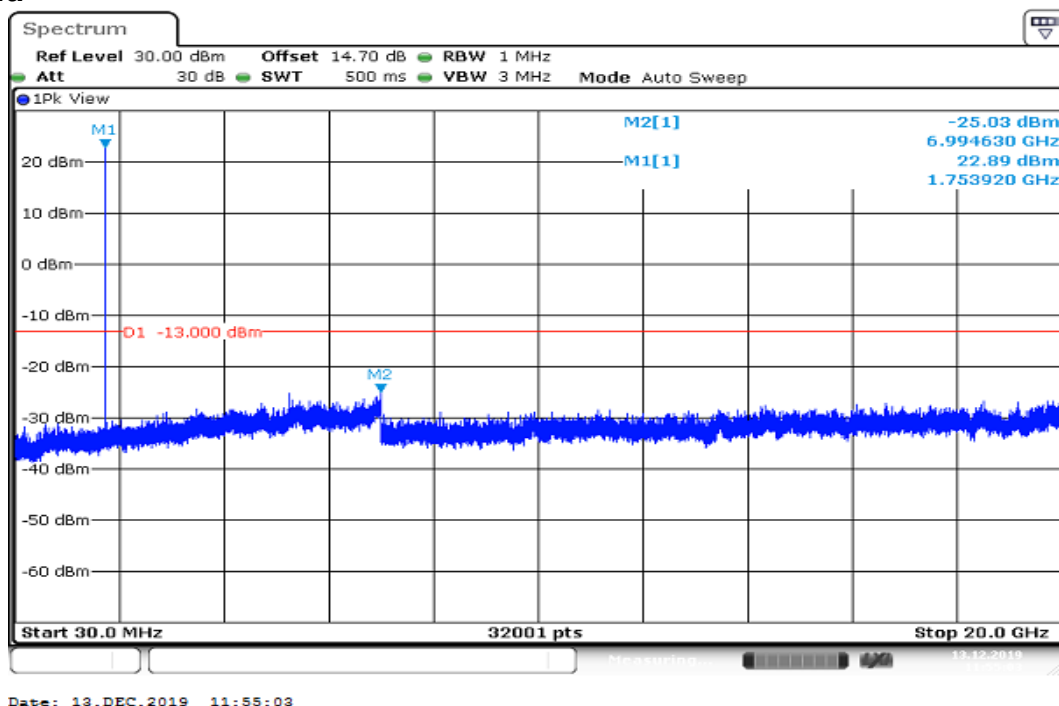
CH High



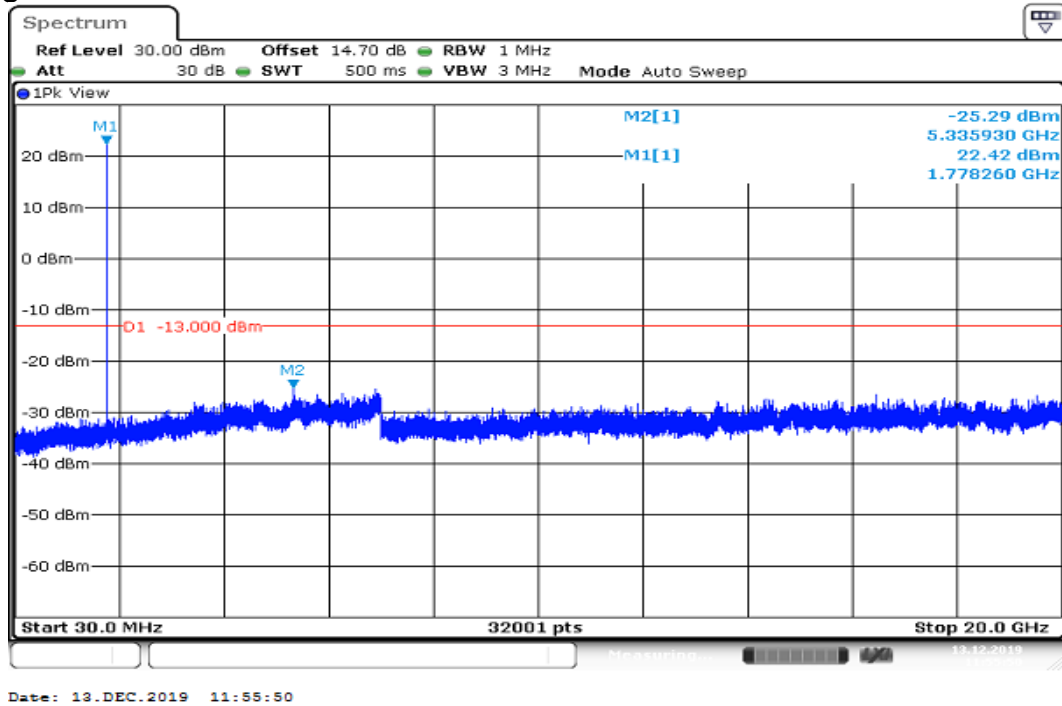
CHANNEL BANDWIDTH: 3MHz /QPSK CH Low

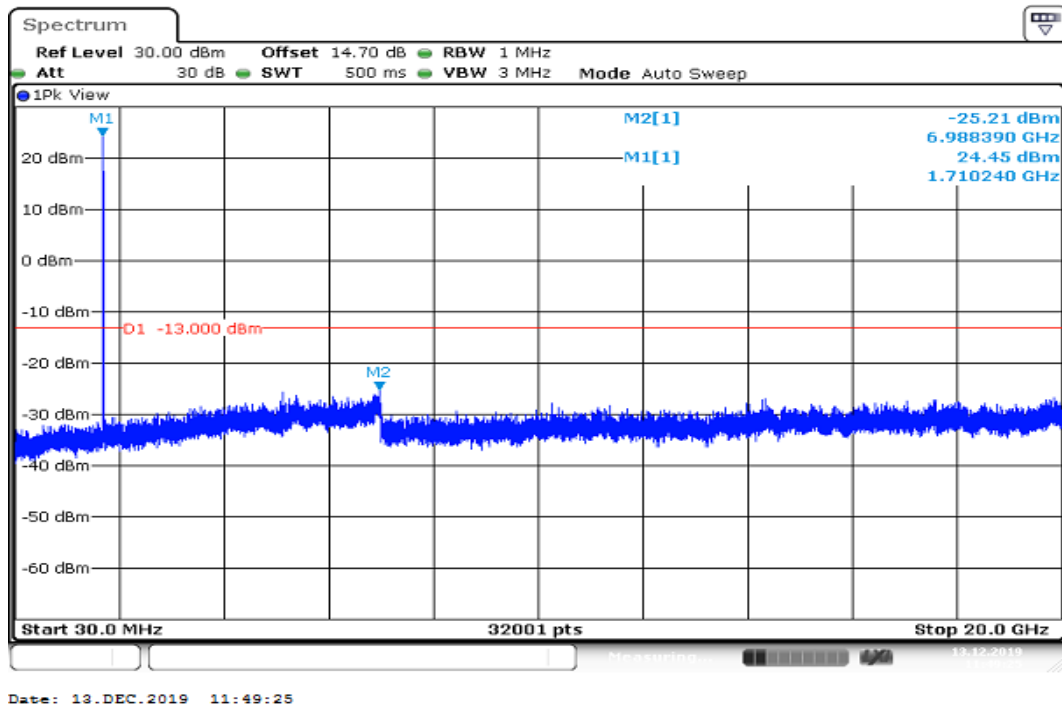
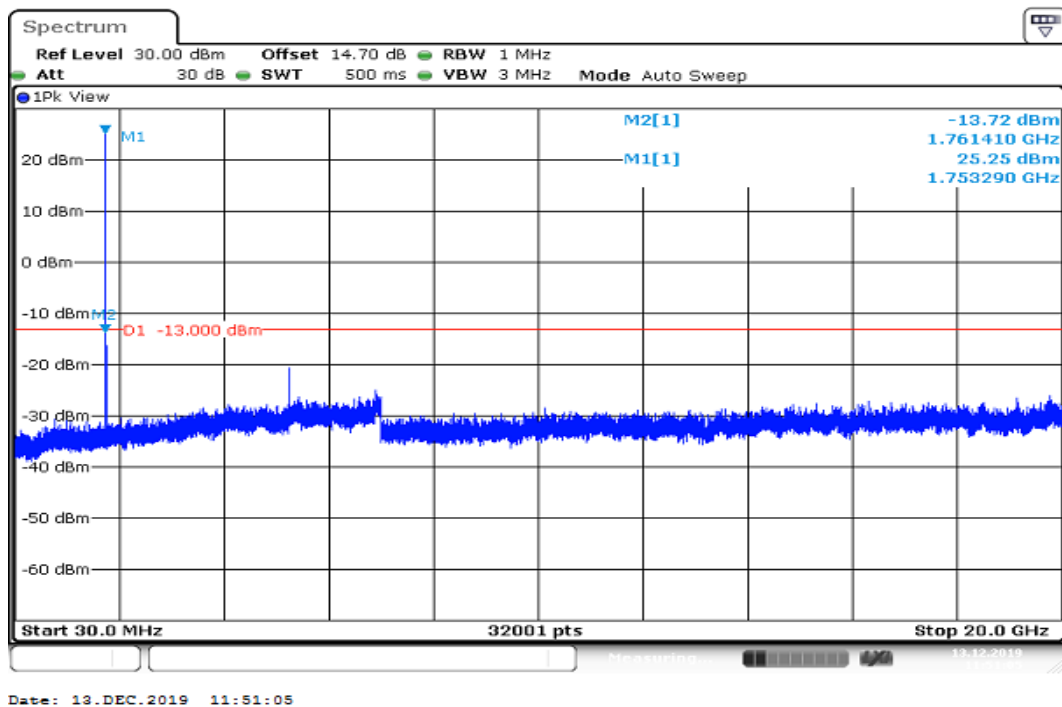


CH Mid

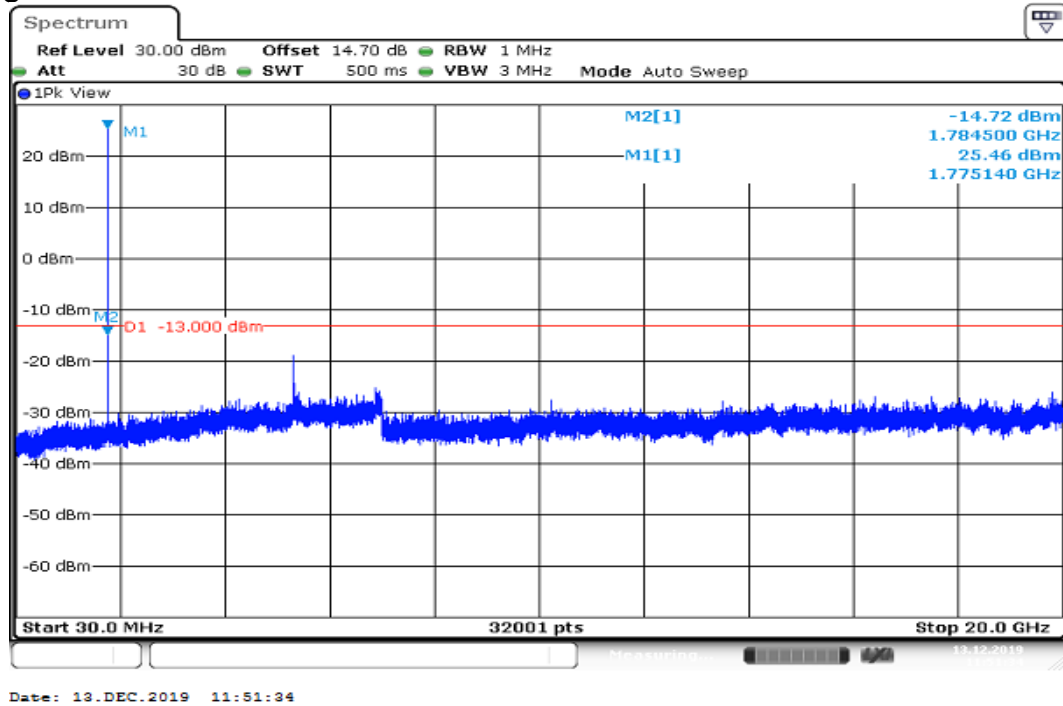


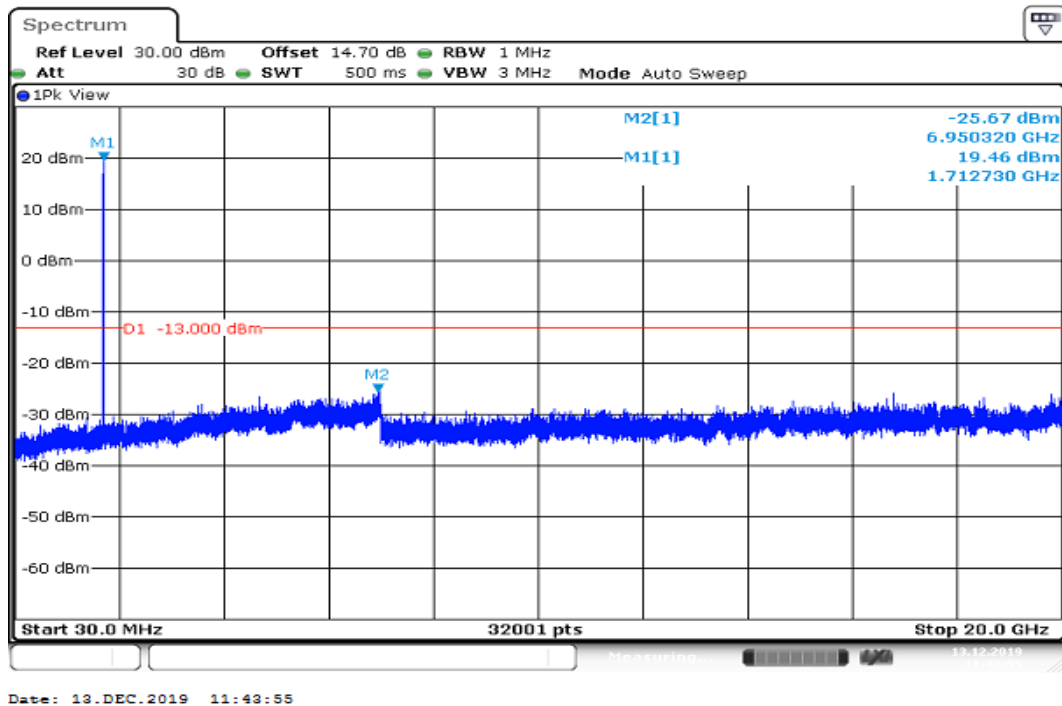
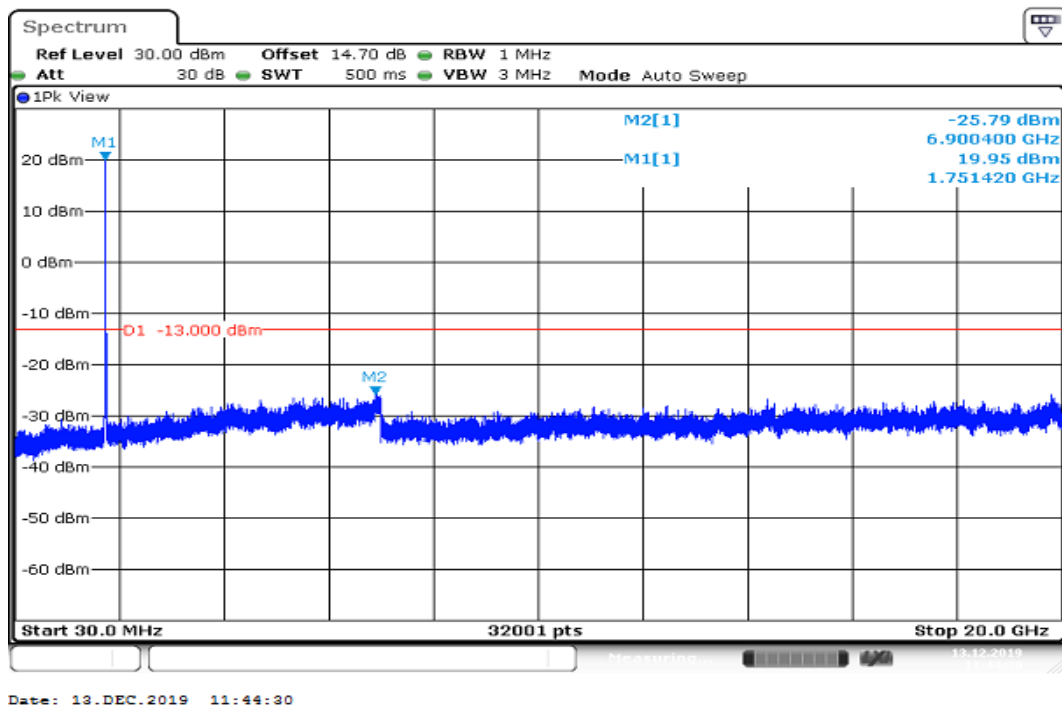
CH High



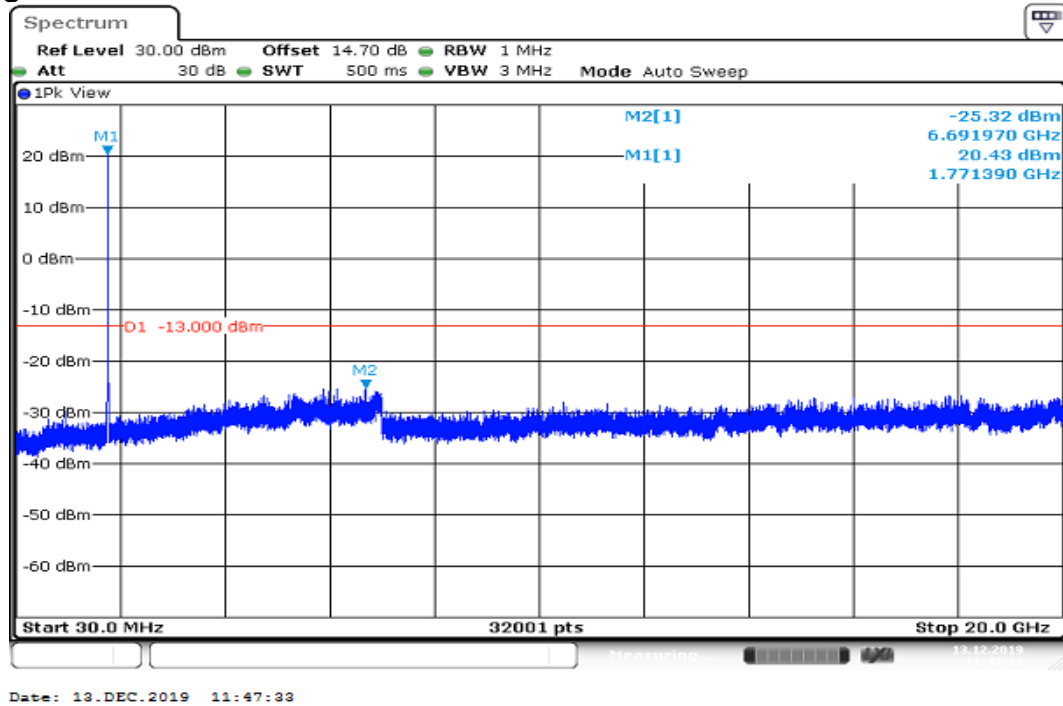
CHANNEL BANDWIDTH: 5MHz /QPSK
CH Low**CH Mid**

CH High

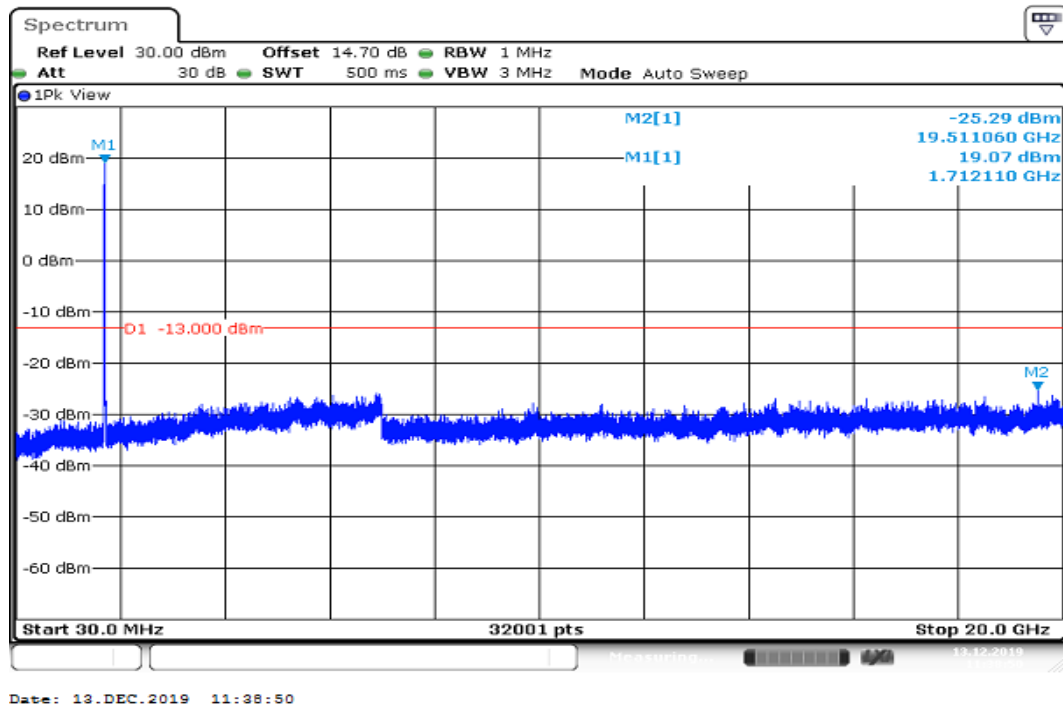


CHANNEL BANDWIDTH: 10MHz /QPSK
CH Low**CH Mid**

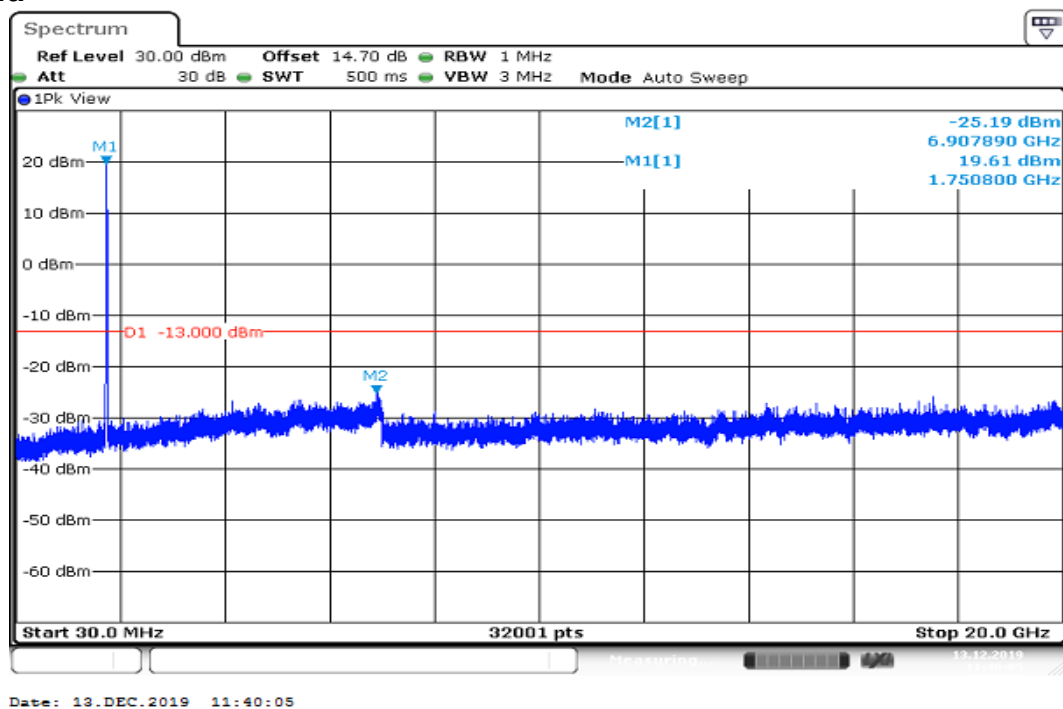
CH High



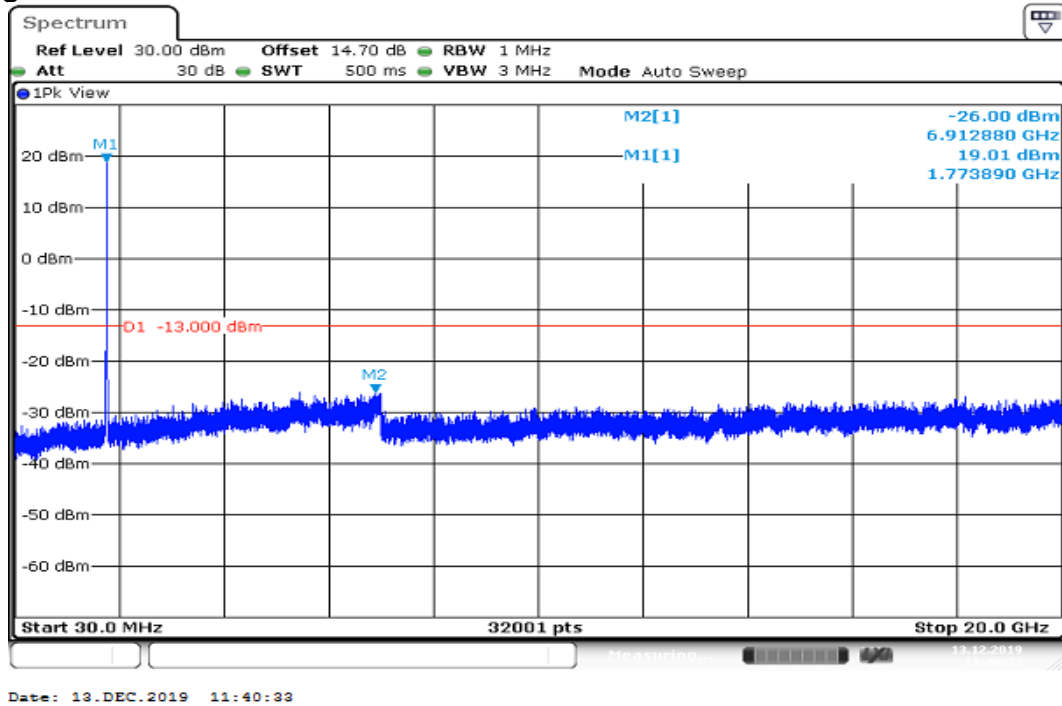
CHANNEL BANDWIDTH: 15MHz /QPSK CH Low

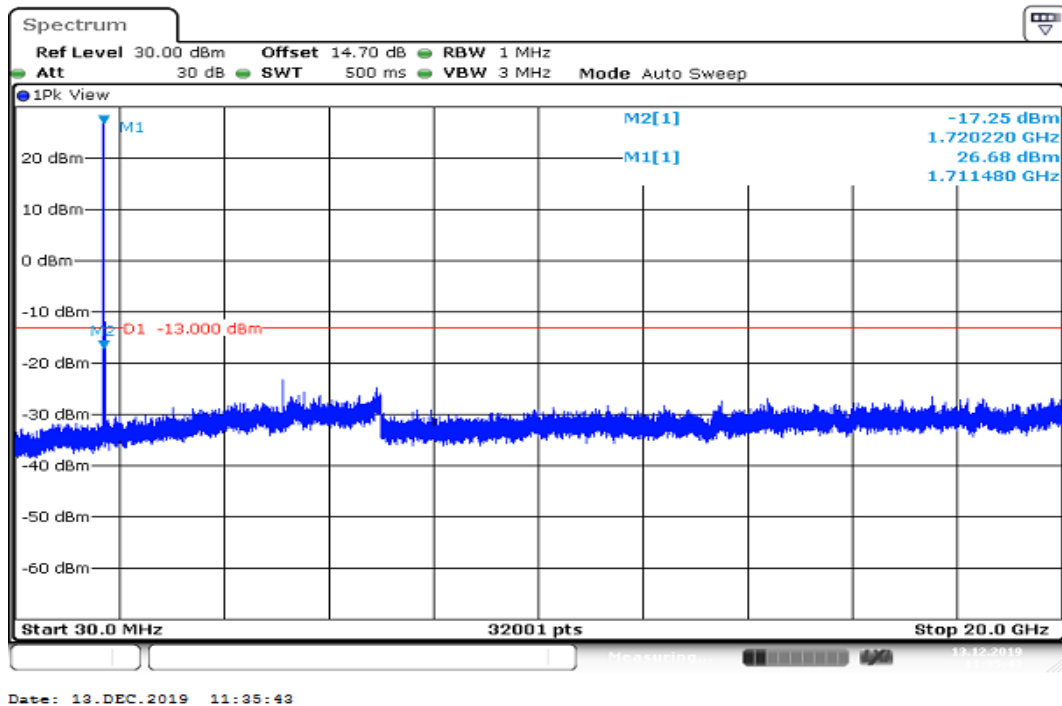
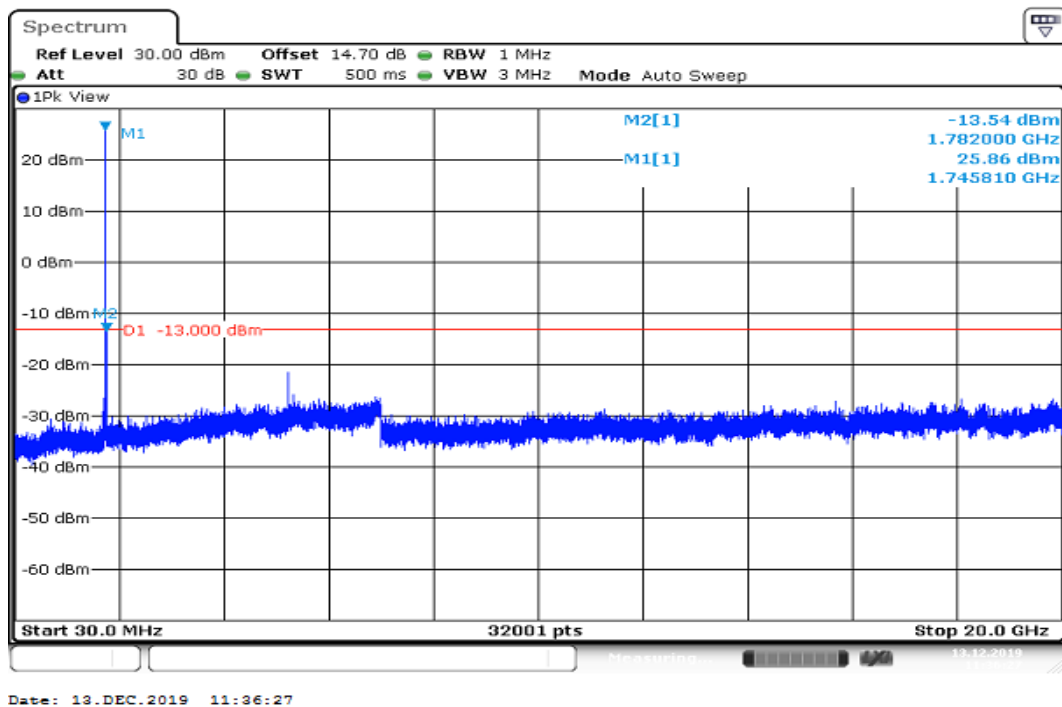


CH Mid

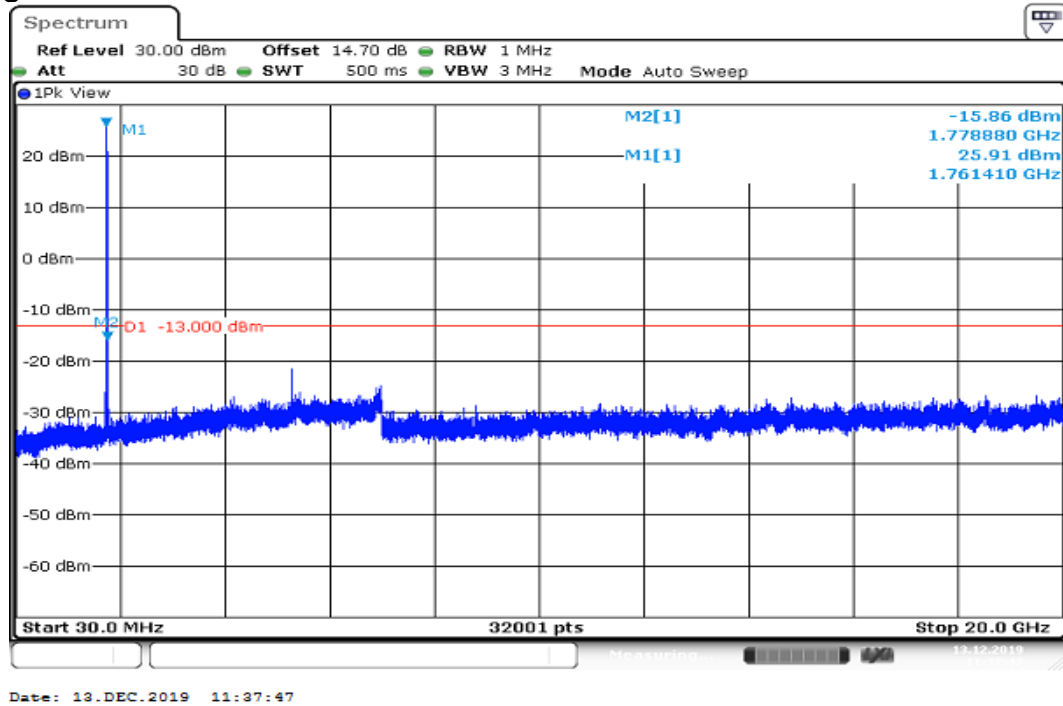


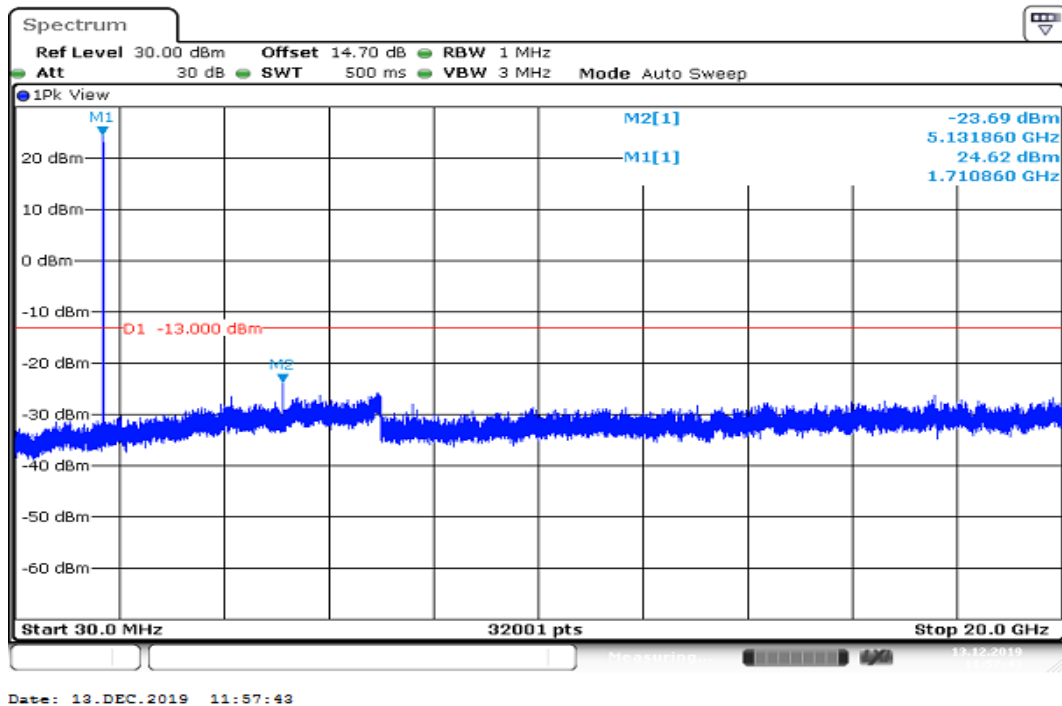
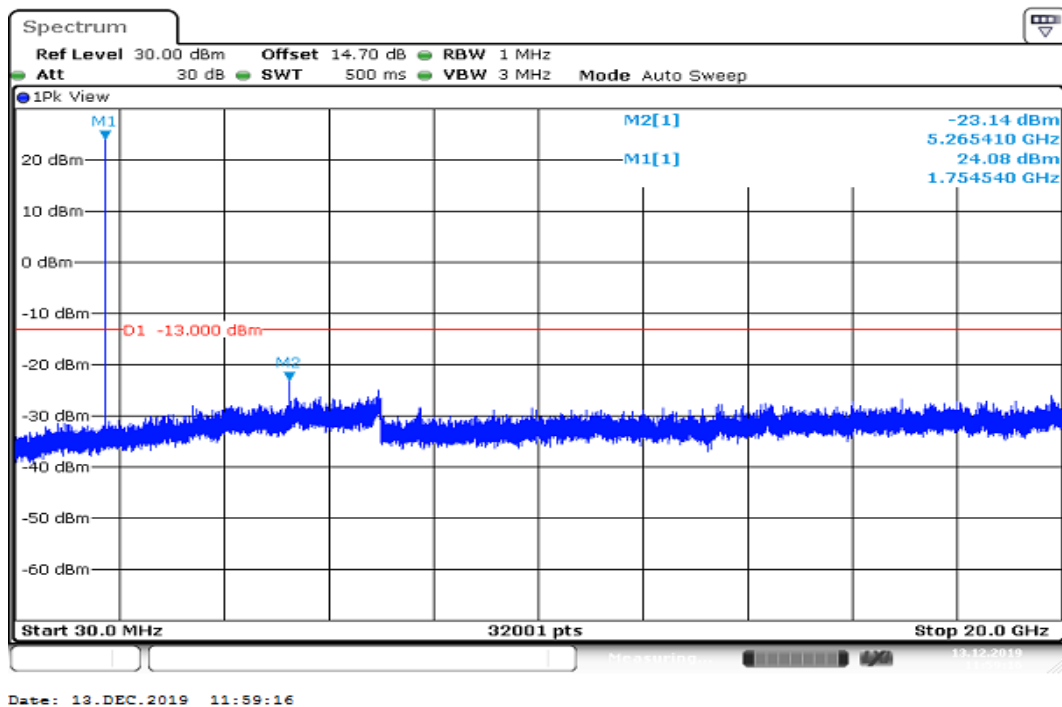
CH High



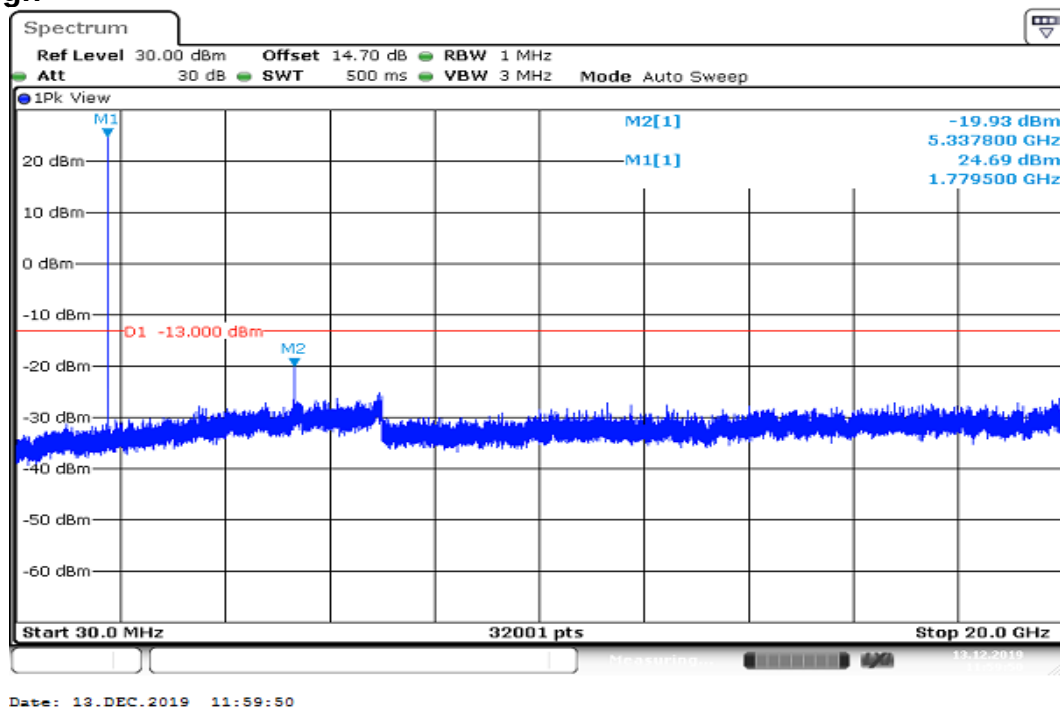
CHANNEL BANDWIDTH: 20MHz /QPSK
CH Low**CH Mid**

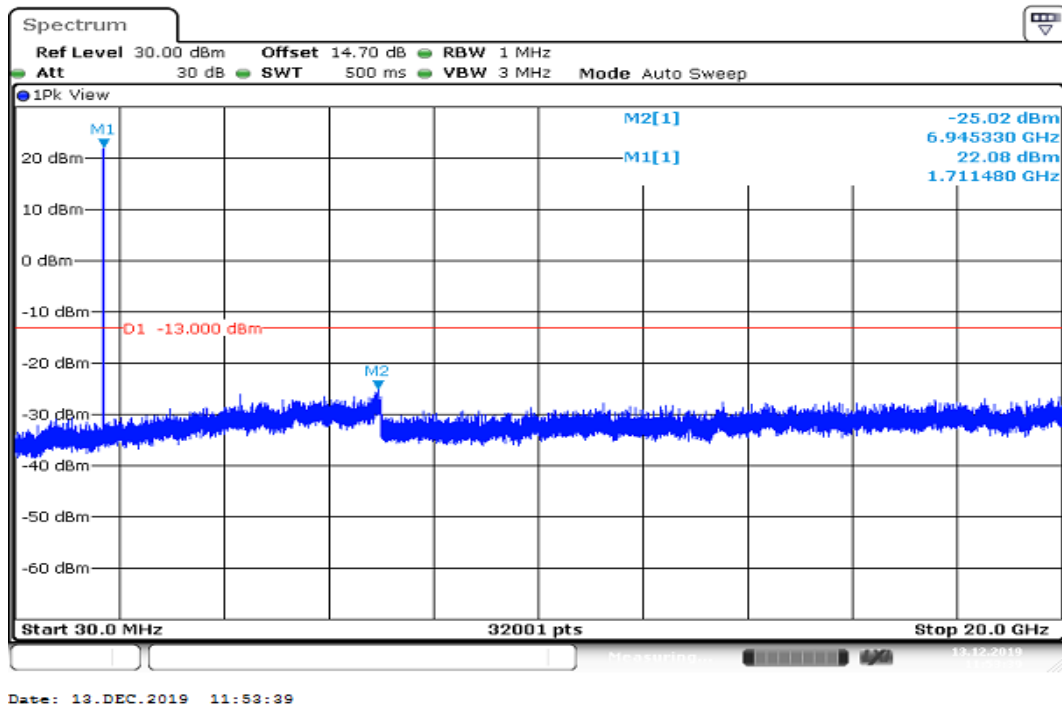
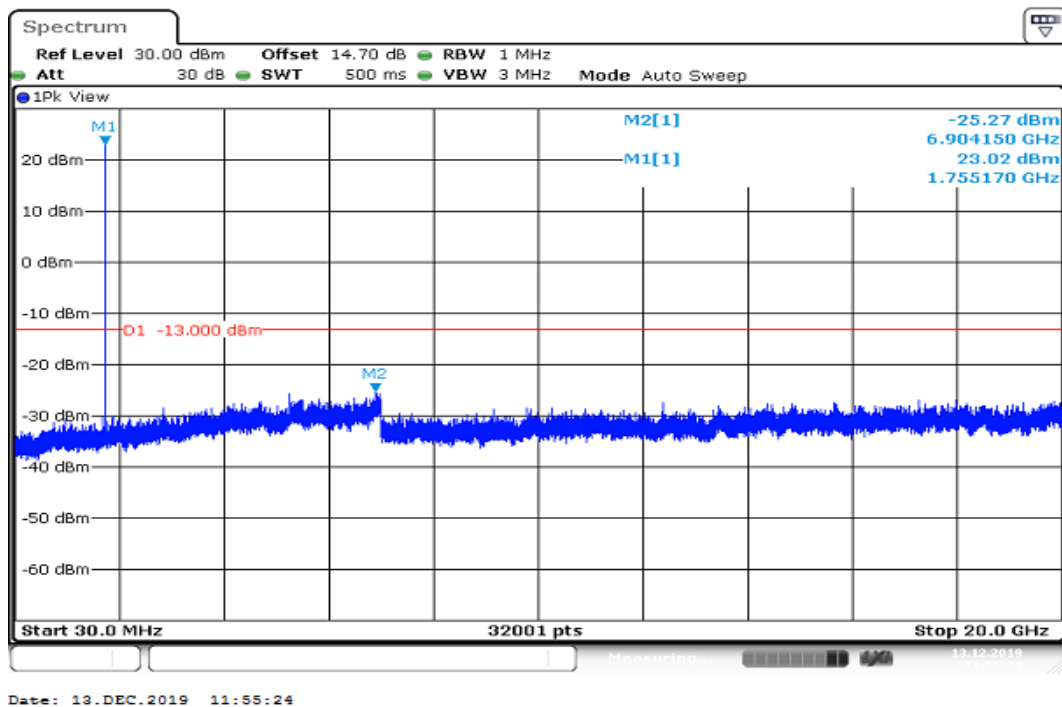
CH High



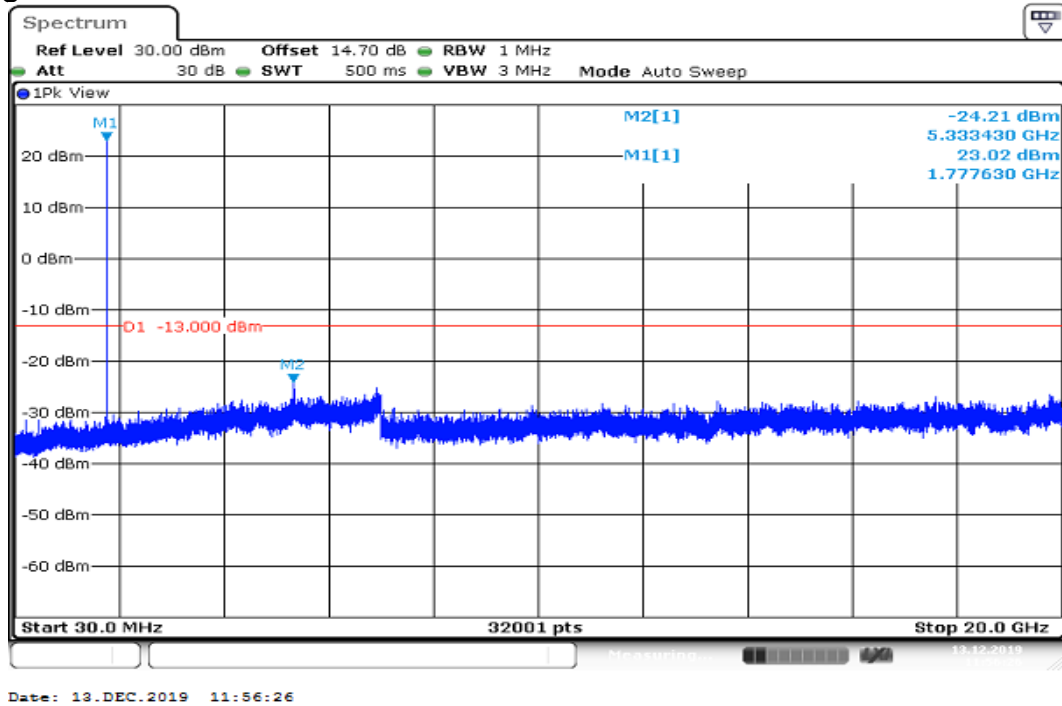
CHANNEL BANDWIDTH: 1.4MHz /16QAM
CH Low**CH Mid**

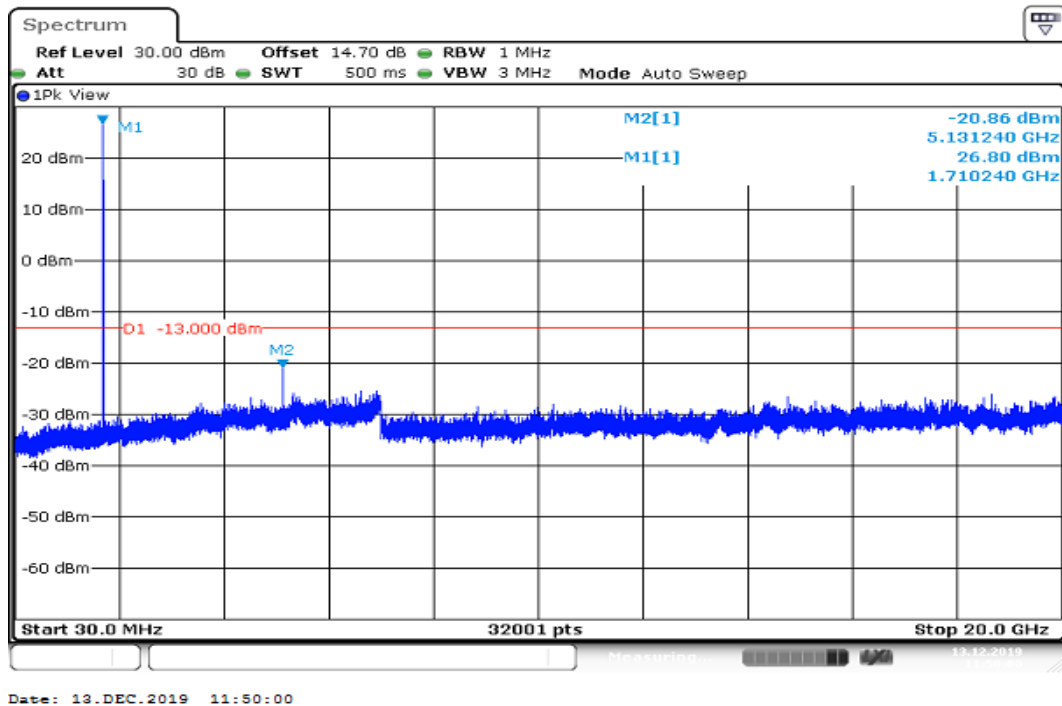
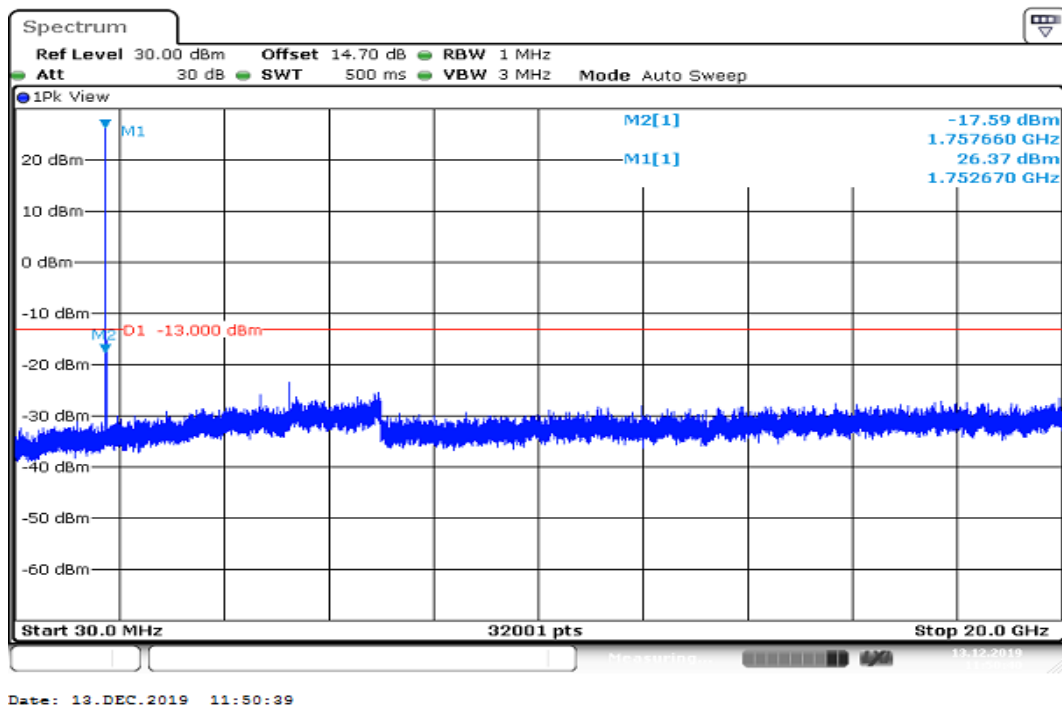
CH High



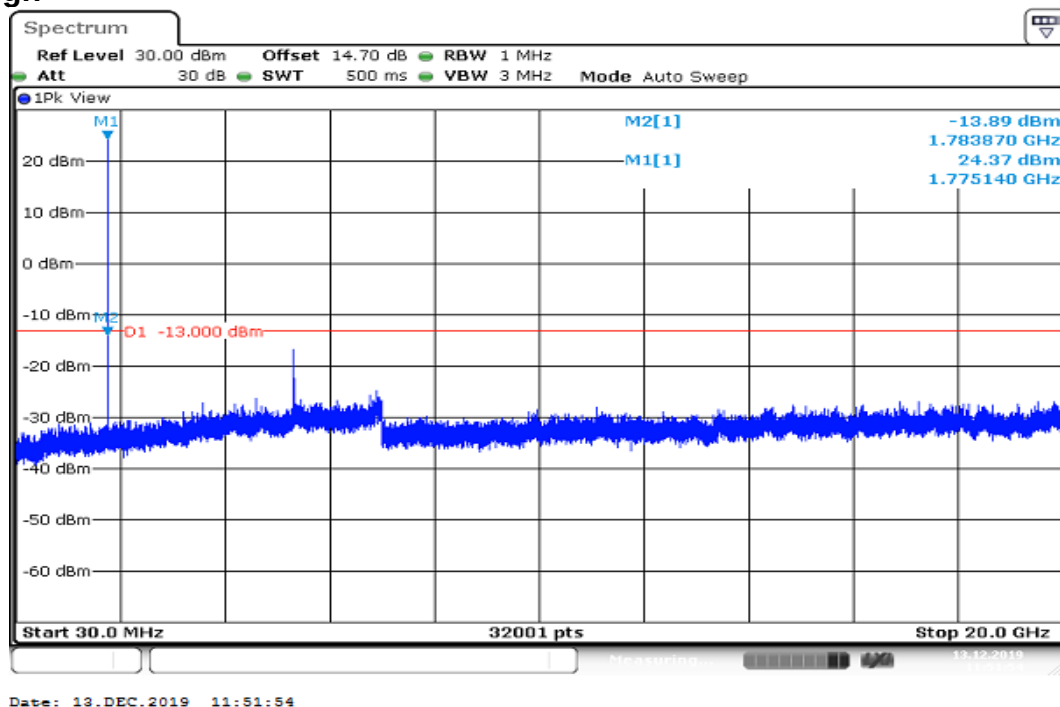
CHANNEL BANDWIDTH: 3MHz /16QAM
CH Low**CH Mid**

CH High

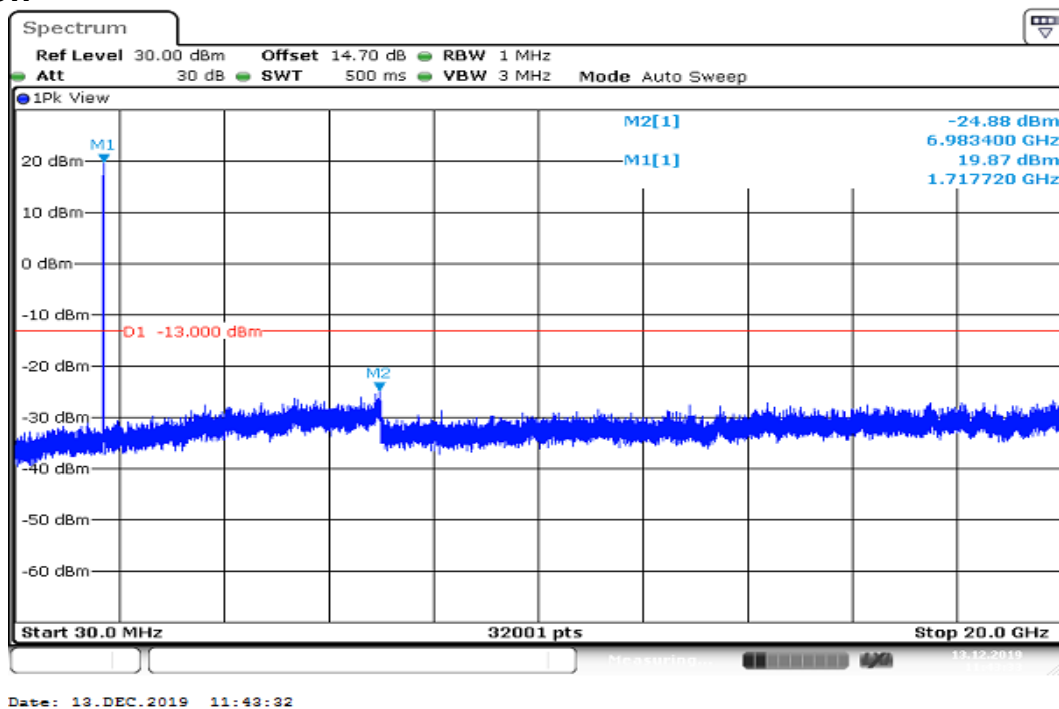


CHANNEL BANDWIDTH:5MHz /16QAM
CH Low**CH Mid**

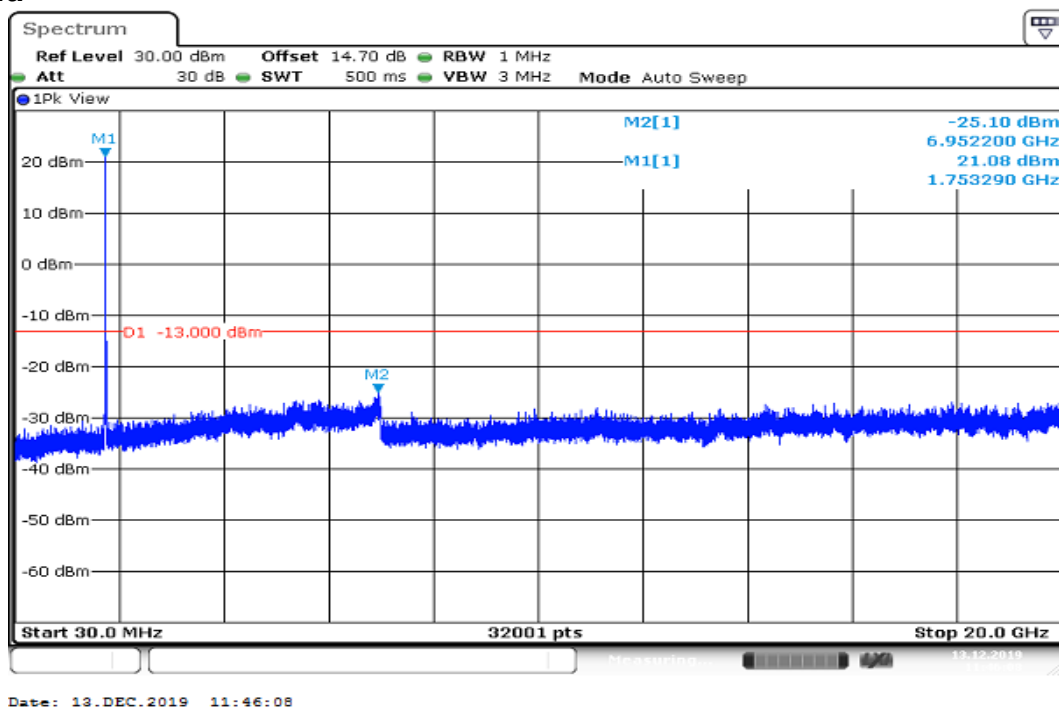
CH High



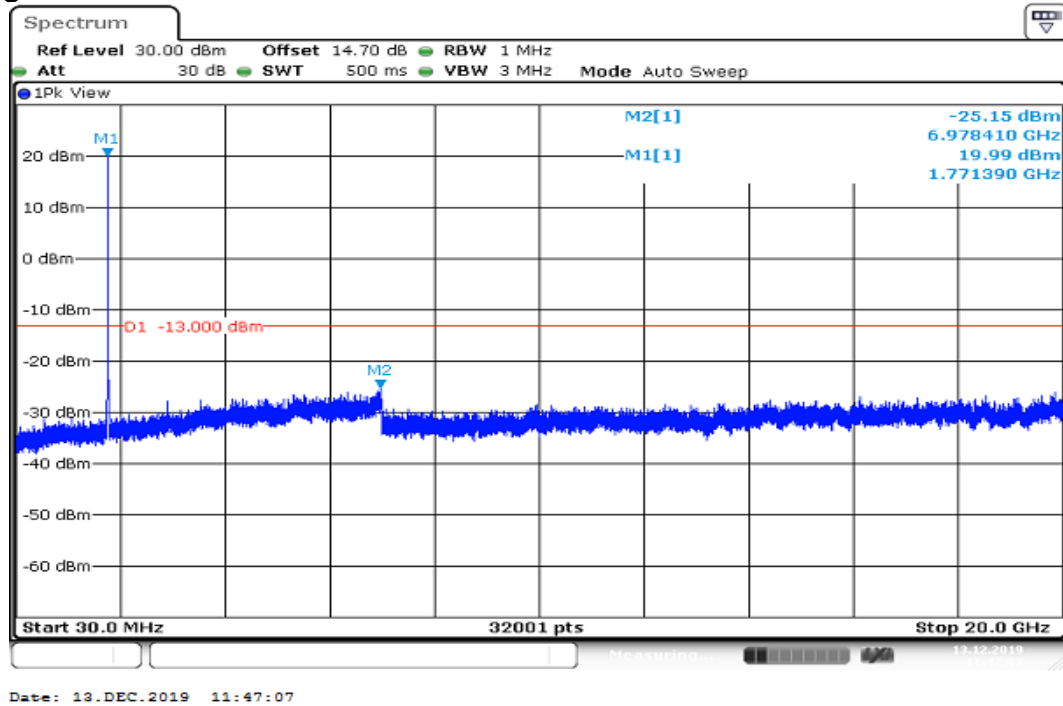
CHANNEL BANDWIDTH:10MHz /16QAM CH Low

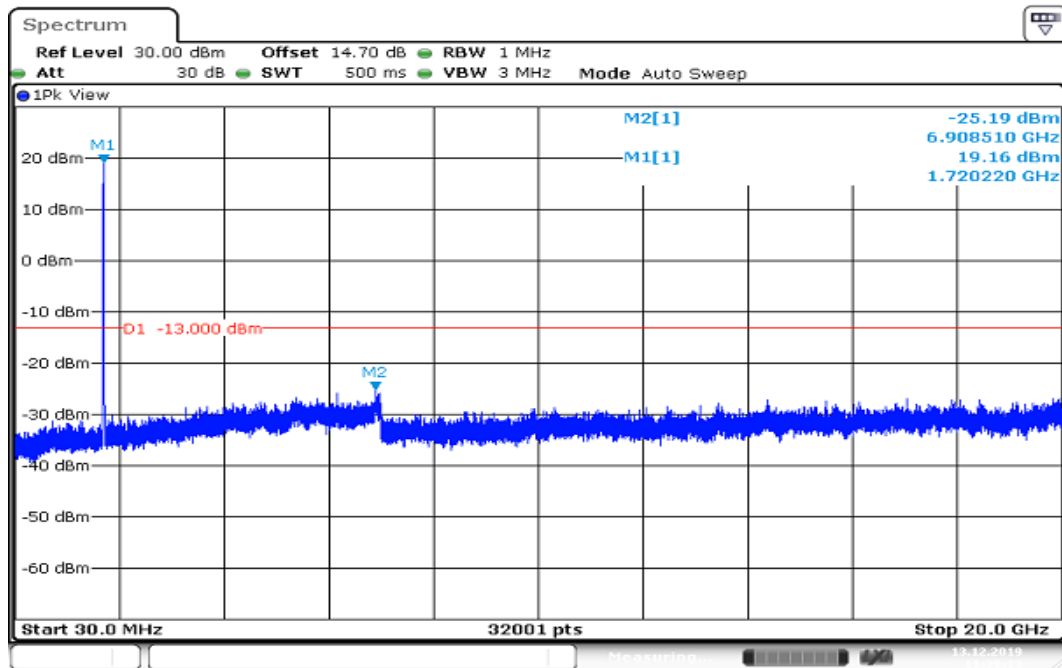


CH Mid

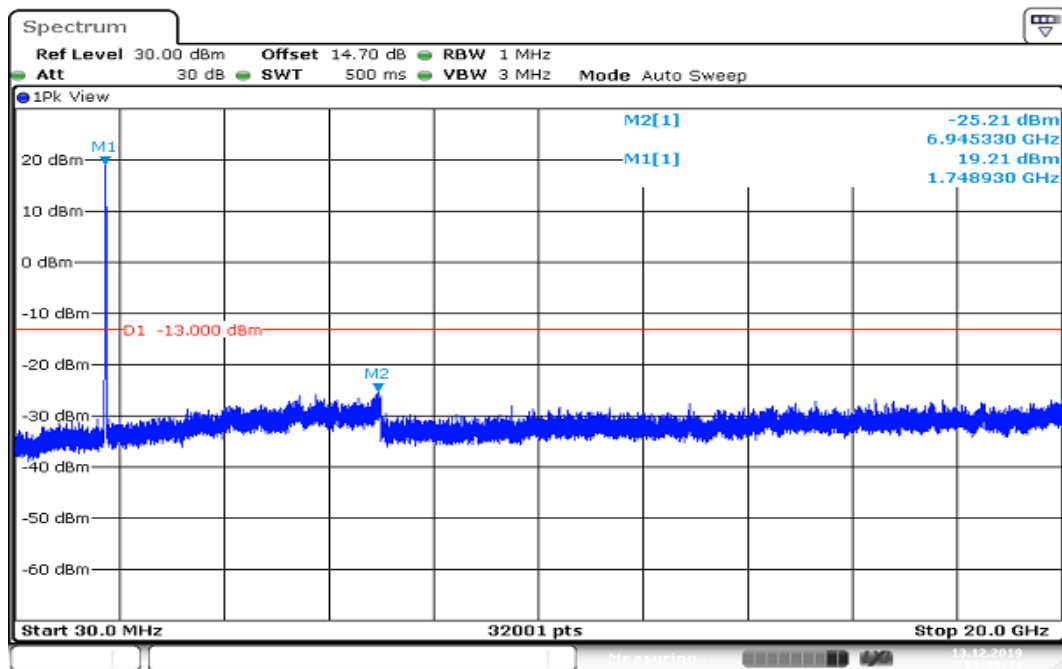


CH High



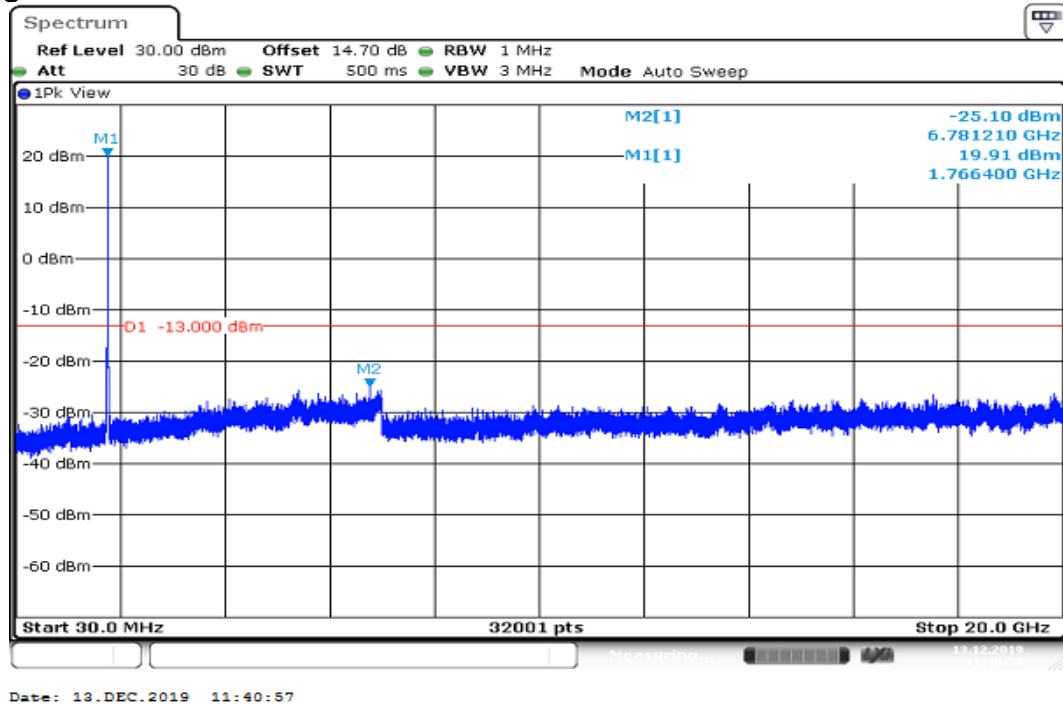
CHANNEL BANDWIDTH:15MHz /16QAM
CH Low

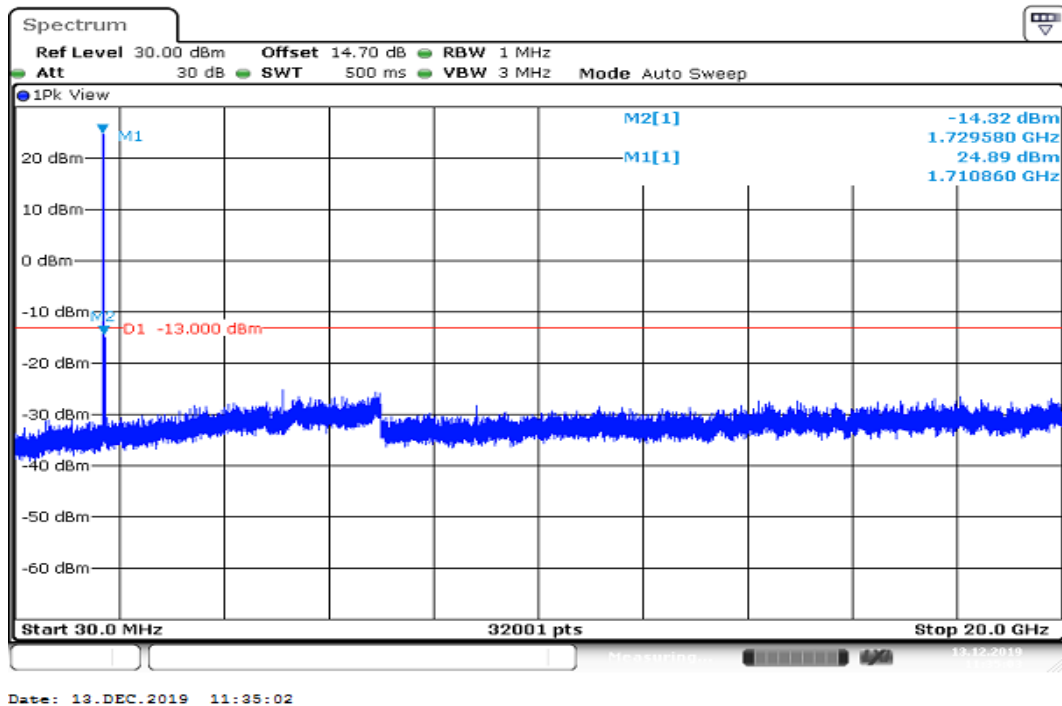
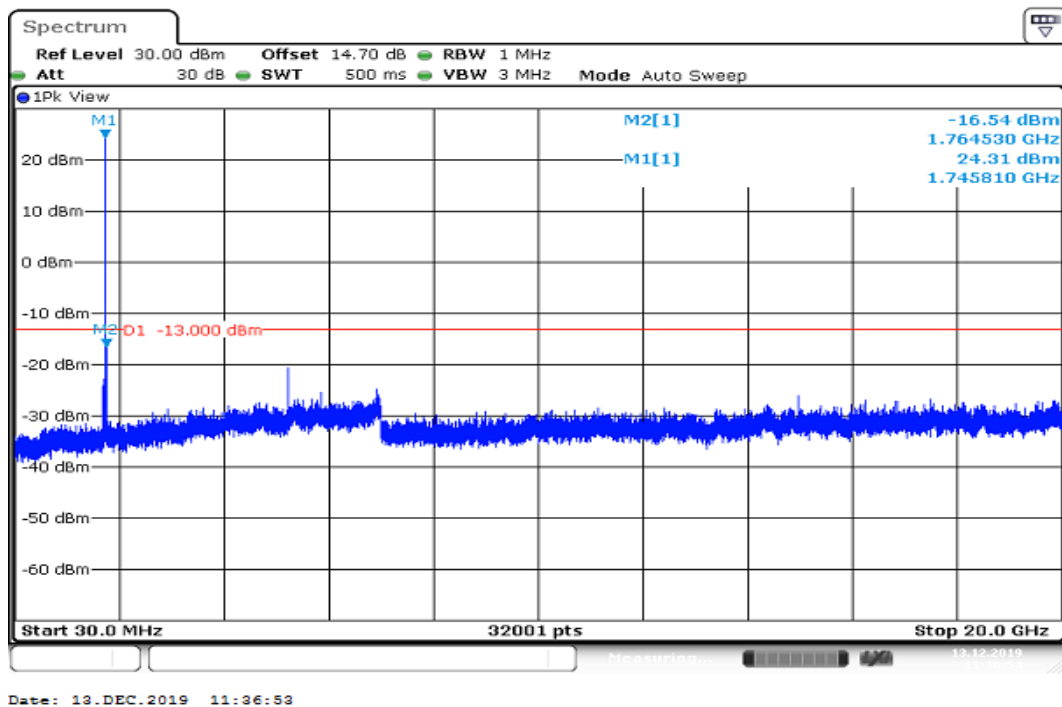
Date: 13.DEC.2019 11:39:13

CH Mid

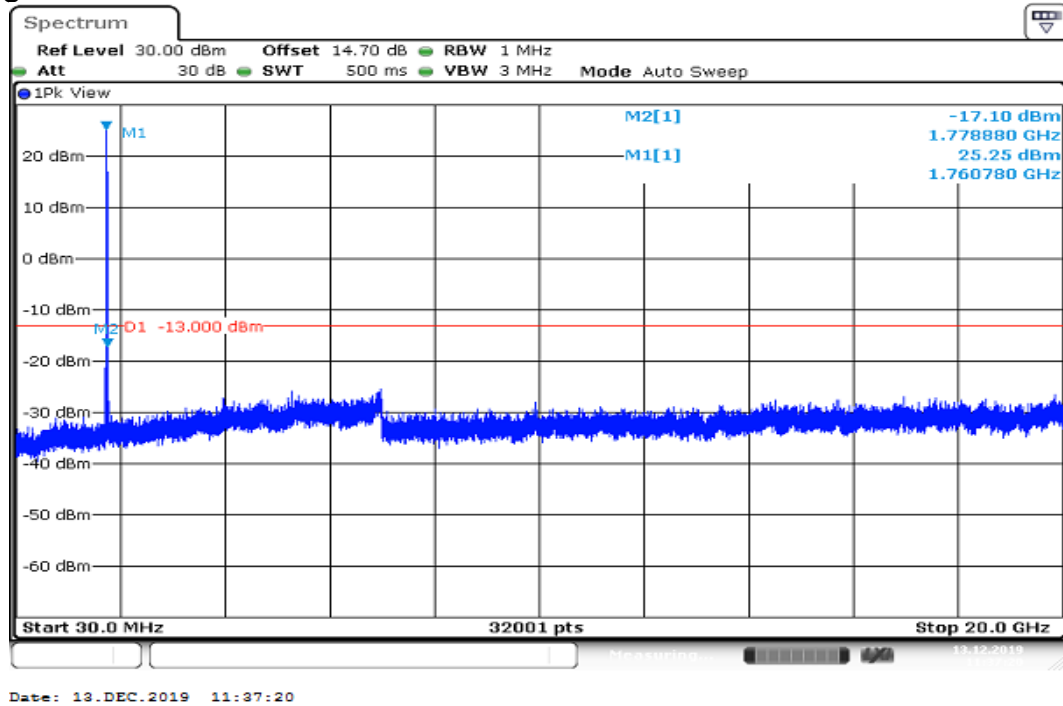
Date: 13.DEC.2019 11:39:41

CH High



CHANNEL BANDWIDTH:20MHz /16QAM
CH Low**CH Mid**

CH High



8.7 RADIATED EMISSION MEASUREMENT

LIMITS

FCC §27.53(h), Band 66

General protection levels. Except as otherwise specified below, for operations in the 1710-1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

27.53(c)(2), Band 71

For operations in the 600 MHz band and the 698-746MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log_{10}(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Limit Line: -13dBm

According to RSS-130, Band 71

The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

According to RSS-139, Band 66

For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

- (i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
- (ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
- (iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

p is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

TEST PROCEDURES

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 : 1.5m
 - (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.

Test Results**LTE Band 71 / BW: 20MHz / QPSK / RB =1, RB Offset = 0****Operation Mode:** Tx / Low CH**Test Date:**

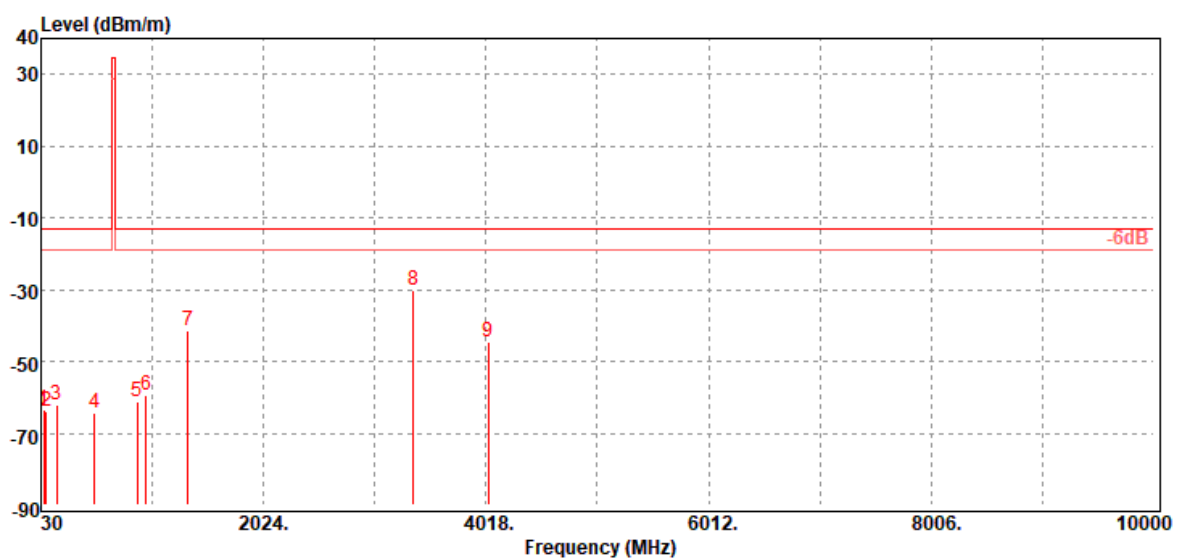
December 19, 2019

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)
56.19	-63.59	-52.48	-10.50	-0.61	-13.00	-50.59	V
78.50	-64.06	-54.78	-8.55	-0.73	-13.00	-51.06	V
173.56	-61.94	-55.87	-4.99	-1.08	-13.00	-48.94	V
507.24	-64.33	-60.63	-1.81	-1.89	-13.00	-51.33	V
890.39	-61.02	-57.28	-1.21	-2.53	-13.00	-48.02	V
973.81	-59.25	-55.23	-1.38	-2.64	-13.00	-46.25	V
1346.00	-41.57	-46.09	7.68	-3.16	-13.00	-28.57	V
3365.00	-30.12	-37.54	12.87	-5.45	-13.00	-17.12	V
4038.00	-44.52	-51.24	12.70	-5.98	-13.00	-31.52	V

Operation Mode: Tx / Low CH

Test Date:

December 19, 2019

Temperature: 18.6°C

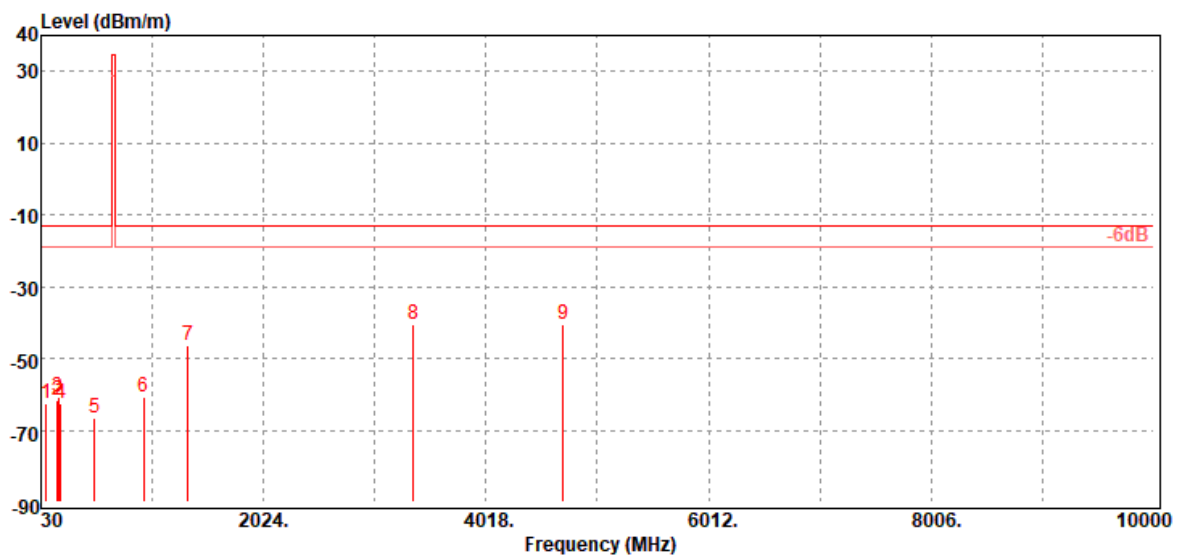
Tested by:

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)
80.44	-62.48	-53.29	-8.46	-0.73	-13.00	-49.48	H
178.41	-61.69	-56.03	-4.56	-1.10	-13.00	-48.69	H
188.11	-60.94	-55.91	-3.90	-1.13	-13.00	-47.94	H
206.54	-62.75	-58.99	-2.58	-1.18	-13.00	-49.75	H
507.24	-66.51	-62.81	-1.81	-1.89	-13.00	-53.51	H
946.65	-60.95	-57.14	-1.20	-2.61	-13.00	-47.95	H
1346.00	-46.30	-50.82	7.68	-3.16	-13.00	-33.30	H
3365.00	-40.52	-47.94	12.87	-5.45	-13.00	-27.52	H
4711.00	-40.32	-46.54	12.62	-6.40	-13.00	-27.32	H

Operation Mode: Tx / Mid CH

Test Date:

December 19, 2019

Temperature: 18.6°C

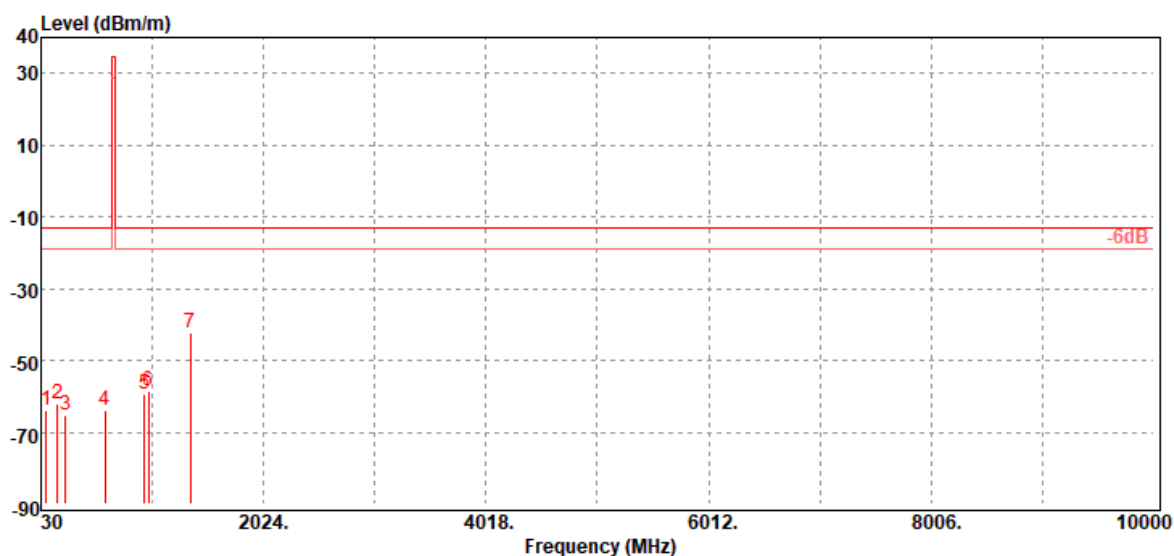
Tested by:

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)
80.44	-63.73	-54.54	-8.46	-0.73	-13.00	-50.73	V
175.50	-61.98	-56.04	-4.85	-1.09	-13.00	-48.98	V
251.16	-65.36	-62.31	-1.75	-1.30	-13.00	-52.36	V
604.24	-63.91	-60.86	-0.98	-2.07	-13.00	-50.91	V
956.35	-59.36	-55.51	-1.23	-2.62	-13.00	-46.36	V
990.30	-58.36	-54.3	-1.40	-2.66	-13.00	-45.36	V
1366.00	-42.14	-46.75	7.80	-3.19	-13.00	-29.14	V

Operation Mode: Tx / Mid CH

Test Date:

December 19, 2019

Temperature: 18.6°C

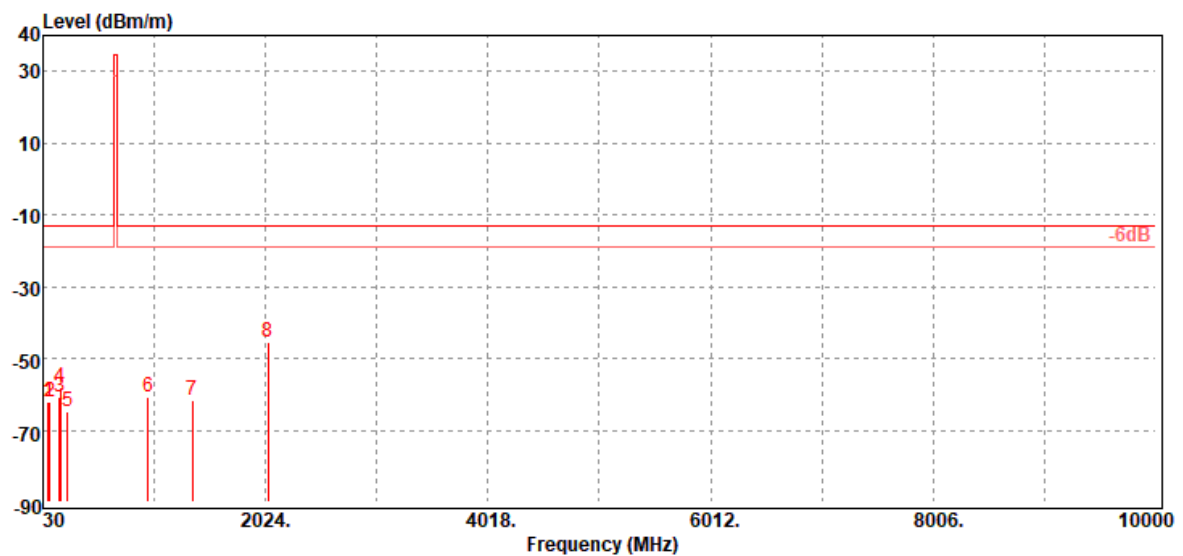
Tested by:

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)
80.44	-62.04	-52.85	-8.46	-0.73	-13.00	-49.04	H
91.11	-62.26	-54.57	-6.91	-0.78	-13.00	-49.26	H
176.47	-60.81	-55.02	-4.70	-1.09	-13.00	-47.81	H
187.14	-58.20	-53.08	-3.99	-1.13	-13.00	-45.20	H
250.19	-64.76	-61.67	-1.79	-1.30	-13.00	-51.76	H
973.81	-60.76	-56.74	-1.38	-2.64	-13.00	-47.76	H
1366.00	-61.84	-66.45	7.80	-3.19	-13.00	-48.84	H
2049.00	-45.33	-51.4	10.11	-4.04	-13.00	-32.33	H

Operation Mode: Tx / High CH

Test Date:

December 19, 2019

Temperature: 18.6°C

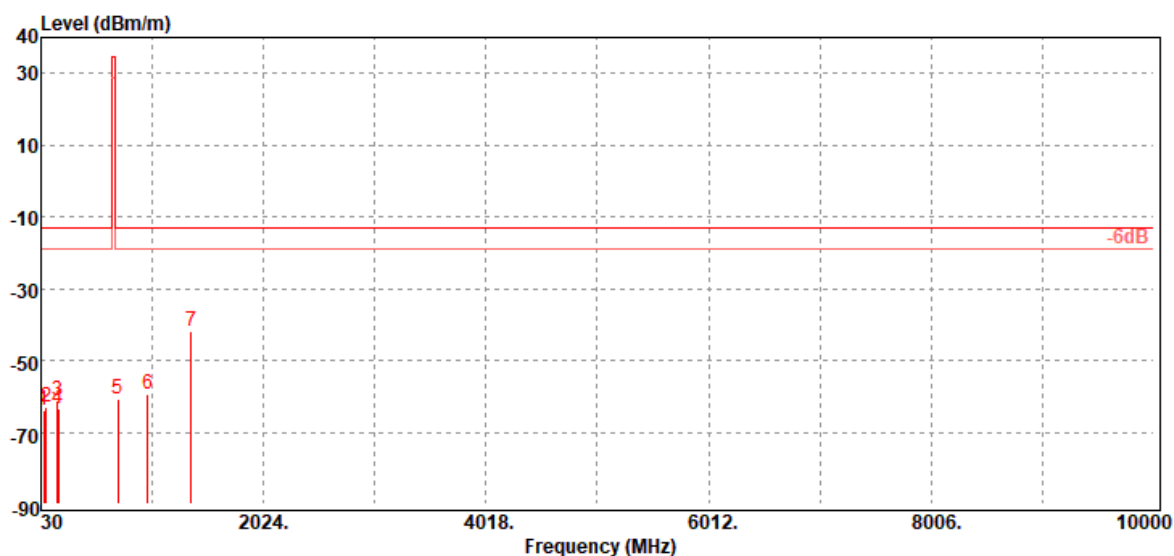
Tested by:

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)
56.19	-64.13	-53.02	-10.50	-0.61	-13.00	-51.13	V
78.50	-63.20	-53.92	-8.55	-0.73	-13.00	-50.20	V
178.41	-61.21	-55.55	-4.56	-1.10	-13.00	-48.21	V
187.14	-63.32	-58.2	-3.99	-1.13	-13.00	-50.32	V
721.61	-60.98	-57.32	-1.40	-2.26	-13.00	-47.98	V
987.39	-59.59	-55.53	-1.40	-2.66	-13.00	-46.59	V
1376.00	-41.78	-46.44	7.86	-3.20	-13.00	-28.78	V

Operation Mode: Tx / High CH

Test Date:

December 19, 2019

Temperature: 18.6°C

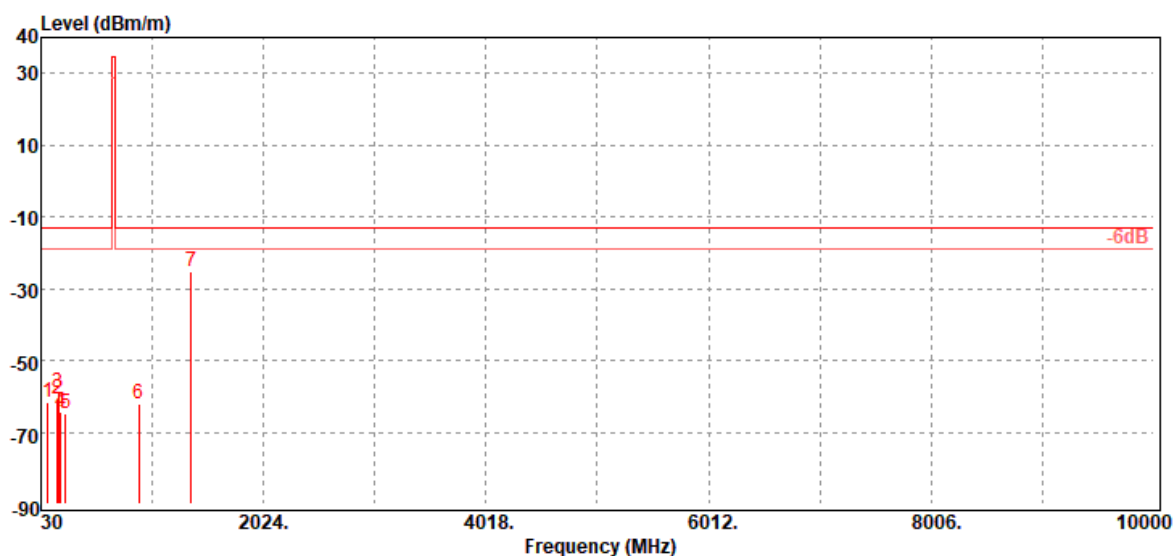
Tested by:

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)
93.05	-61.50	-53.51	-7.20	-0.79	-13.00	-48.50	H
177.44	-60.71	-54.96	-4.66	-1.09	-13.00	-47.71	H
187.14	-58.93	-53.81	-3.99	-1.13	-13.00	-45.93	H
207.51	-64.30	-60.67	-2.45	-1.18	-13.00	-51.30	H
251.16	-64.98	-61.93	-1.75	-1.30	-13.00	-51.98	H
903.00	-61.95	-58.14	-1.26	-2.55	-13.00	-48.95	H
1376.00	-25.42	-30.08	7.86	-3.20	-13.00	-12.42	H

LTE Band 66 / BW: 20MHz / QPSK / RB =1, RB Offset = 0**Operation Mode:** Tx / Low CH**Test Date:**

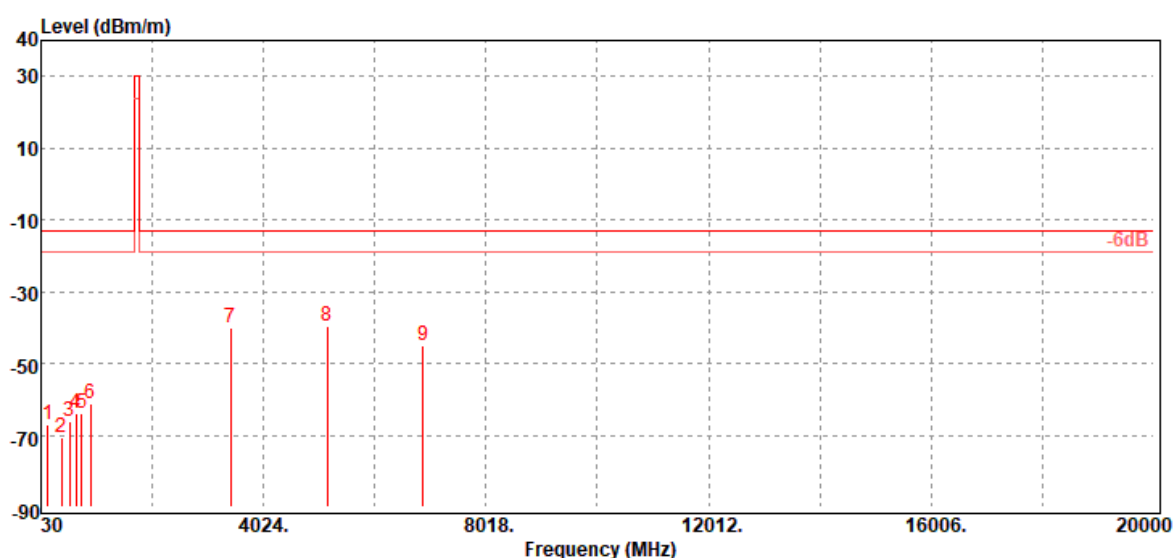
December 18, 2019

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)
154.16	-67.04	-59.24	-6.78	-1.02	-13.00	-54.04	V
405.39	-70.63	-67.16	-1.80	-1.67	-13.00	-57.63	V
548.95	-66.38	-63.23	-1.20	-1.95	-13.00	-53.38	V
665.35	-63.94	-60.27	-1.49	-2.18	-13.00	-50.94	V
754.59	-63.81	-60.09	-1.40	-2.32	-13.00	-50.81	V
919.49	-61.07	-57.2	-1.30	-2.57	-13.00	-48.07	V
3440.00	-40.15	-47.36	12.72	-5.51	-13.00	-27.15	V
5160.00	-39.52	-45.57	12.76	-6.71	-13.00	-26.52	V
6880.00	-45.00	-48.69	11.56	-7.87	-13.00	-32.00	V

Operation Mode: Tx / Low CH

Test Date:

December 18, 2019

Temperature: 18.6°C

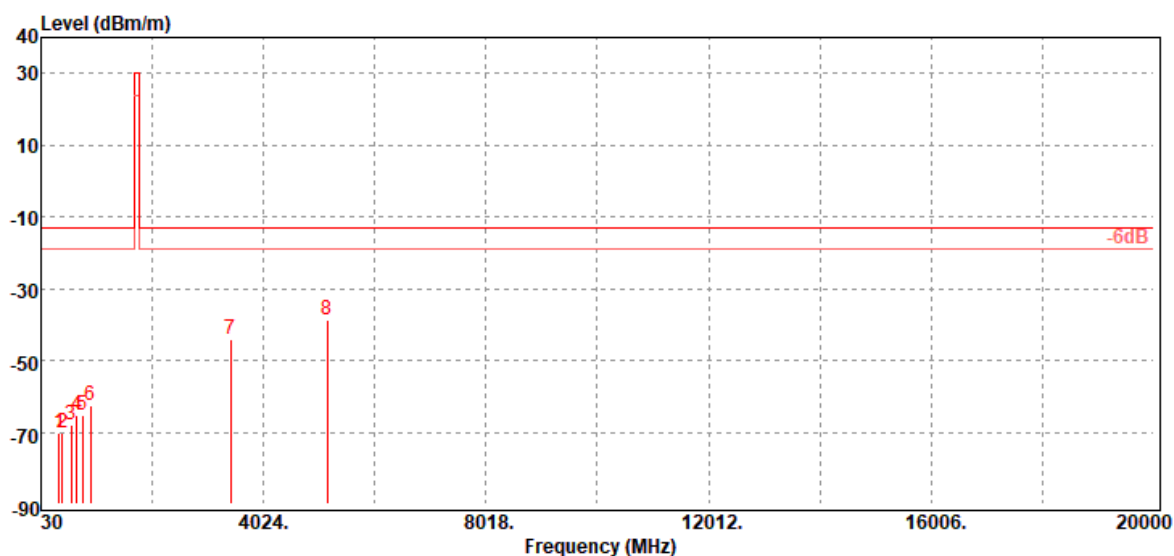
Tested by:

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)
354.95	-70.29	-67.33	-1.40	-1.56	-13.00	-57.29	H
410.24	-70.29	-66.81	-1.80	-1.68	-13.00	-57.29	H
578.05	-67.75	-64.33	-1.40	-2.02	-13.00	-54.75	H
675.05	-65.20	-61.71	-1.30	-2.19	-13.00	-52.20	H
774.96	-65.13	-61.39	-1.40	-2.34	-13.00	-52.13	H
920.46	-62.71	-58.83	-1.30	-2.58	-13.00	-49.71	H
3440.00	-44.05	-51.26	12.72	-5.51	-13.00	-31.05	H
5160.00	-38.75	-44.8	12.76	-6.71	-13.00	-25.75	H

Operation Mode: Tx / Mid CH

Test Date:

December 18, 2019

Temperature: 18.6°C

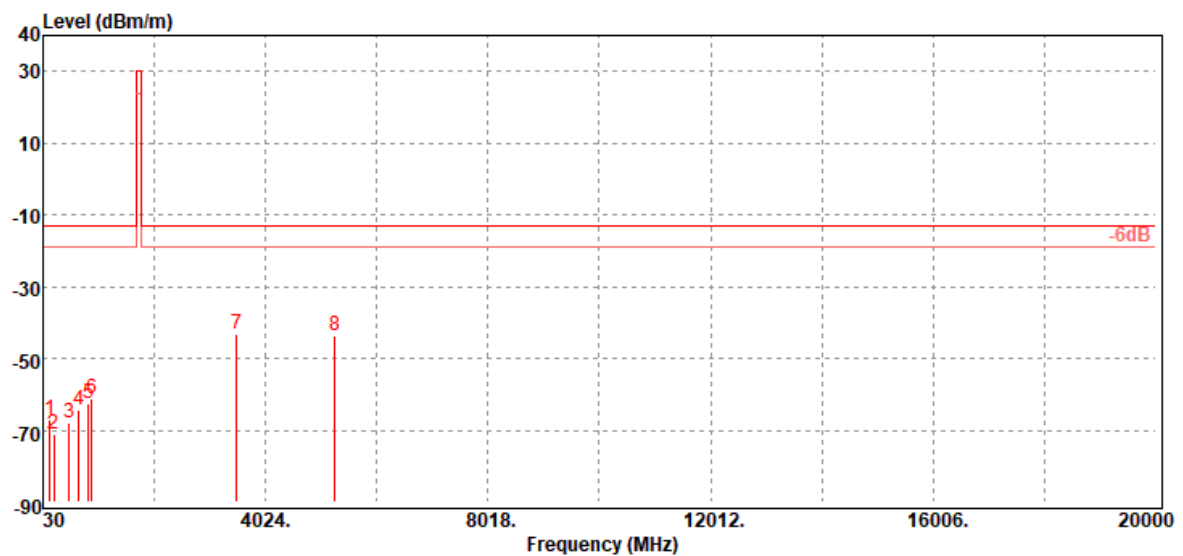
Tested by:

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)
149.31	-67.13	-58.96	-7.17	-1.00	-13.00	-54.13	V
228.85	-71.05	-67.76	-2.05	-1.24	-13.00	-58.05	V
502.39	-67.76	-63.93	-1.95	-1.88	-13.00	-54.76	V
672.14	-64.42	-60.87	-1.36	-2.19	-13.00	-51.42	V
839.95	-62.44	-58.6	-1.40	-2.44	-13.00	-49.44	V
909.79	-60.99	-57.03	-1.40	-2.56	-13.00	-47.99	V
3510.00	-43.11	-50.03	12.48	-5.56	-13.00	-30.11	V
5265.00	-43.89	-50.27	13.20	-6.82	-13.00	-30.89	V

Operation Mode: Tx / Mid CH

Test Date:

December 18, 2019

Temperature: 18.6°C

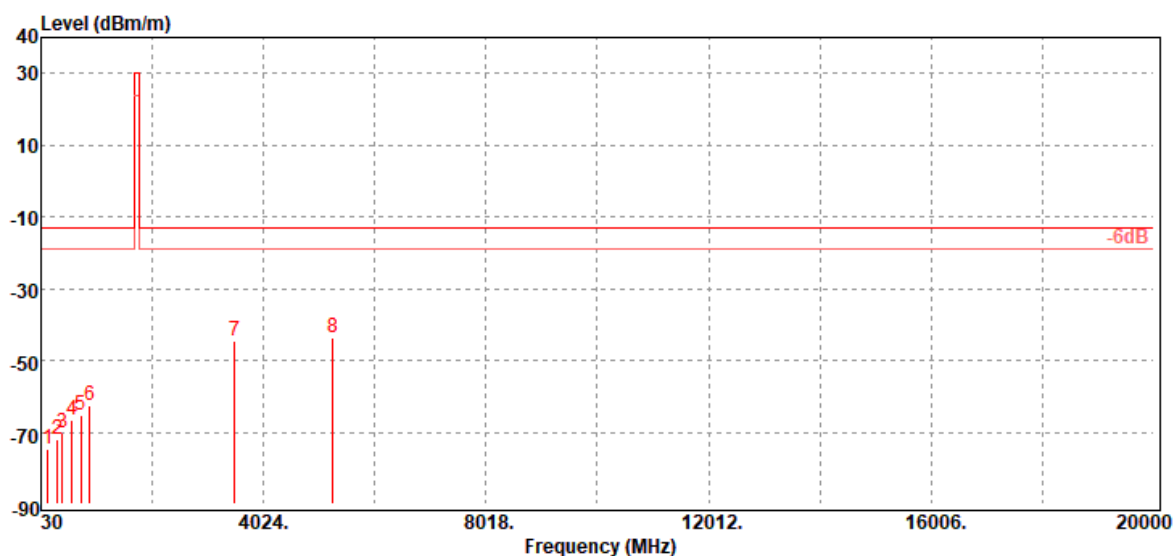
Tested by:

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)
159.01	-74.68	-67.24	-6.40	-1.04	-13.00	-61.68	H
325.85	-72.21	-68.94	-1.78	-1.49	-13.00	-59.21	H
413.15	-70.08	-66.54	-1.86	-1.68	-13.00	-57.08	H
585.81	-66.67	-63.46	-1.17	-2.04	-13.00	-53.67	H
740.04	-65.19	-61.6	-1.30	-2.29	-13.00	-52.19	H
909.79	-62.51	-58.55	-1.40	-2.56	-13.00	-49.51	H
3510.00	-44.44	-51.36	12.48	-5.56	-13.00	-31.44	H
5265.00	-43.71	-50.09	13.20	-6.82	-13.00	-30.71	H

Operation Mode: Tx / High CH

Test Date:

December 18, 2019

Temperature: 18.6°C

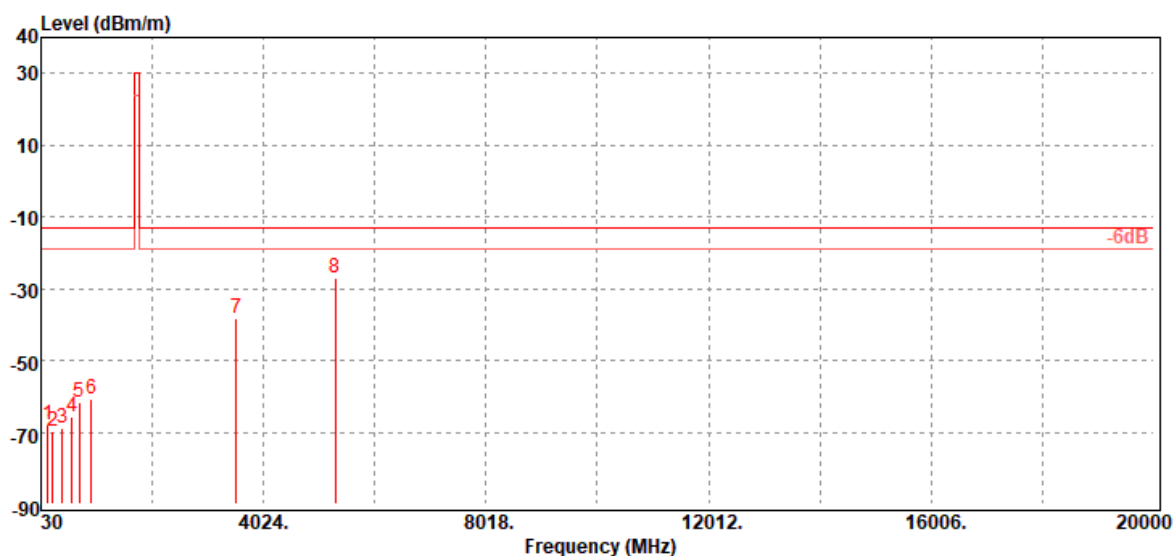
Tested by:

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)
153.19	-67.82	-60.08	-6.72	-1.02	-13.00	-54.82	V
235.64	-69.81	-66.45	-2.10	-1.26	-13.00	-56.81	V
415.09	-68.96	-65.37	-1.90	-1.69	-13.00	-55.96	V
592.60	-65.49	-62.54	-0.90	-2.05	-13.00	-52.49	V
721.61	-61.46	-57.8	-1.40	-2.26	-13.00	-48.46	V
936.95	-60.91	-57.01	-1.30	-2.60	-13.00	-47.91	V
3540.00	-38.28	-45.11	12.42	-5.59	-13.00	-25.28	V
5310.00	-27.17	-33.53	13.22	-6.86	-13.00	-14.17	V

Operation Mode: Tx / High CH

Test Date:

December 19, 2019

Temperature: 18.6°C

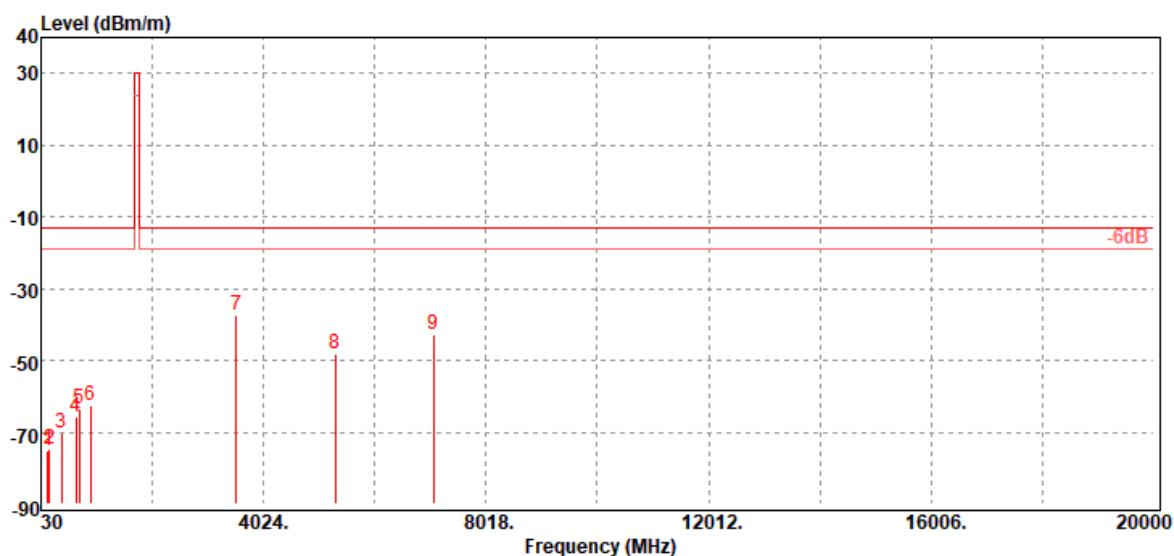
Tested by:

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)
158.04	-75.29	-67.86	-6.40	-1.03	-13.00	-62.29	H
180.35	-74.69	-69.23	-4.36	-1.10	-13.00	-61.69	H
405.39	-70.22	-66.75	-1.80	-1.67	-13.00	-57.22	H
662.44	-65.81	-62.19	-1.45	-2.17	-13.00	-52.81	H
721.61	-63.65	-59.99	-1.40	-2.26	-13.00	-50.65	H
917.55	-62.57	-58.7	-1.30	-2.57	-13.00	-49.57	H
3540.00	-37.38	-44.21	12.42	-5.59	-13.00	-24.38	H
5310.00	-48.21	-54.57	13.22	-6.86	-13.00	-35.21	H
7080.00	-42.77	-45.68	10.88	-7.97	-13.00	-29.77	H

- End of Test Report -