20dBW Emission Bandwith 20dB

Specification

* RSS-Gen Issue 5, Clause 6.7 Occupied bandwidth (x dB bandwith):

The “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Freq (MHz)	Ebw (MHz)
2402.00000	1.190
2440.00000	1.190
2480.00000	1.190

Verdict

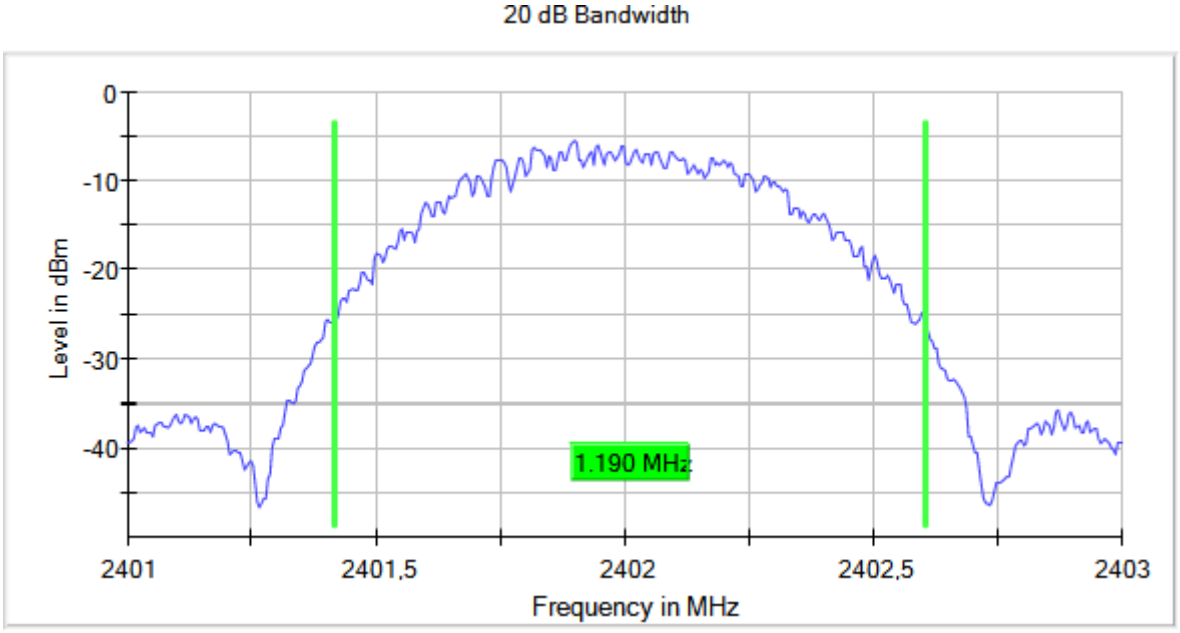
Pass

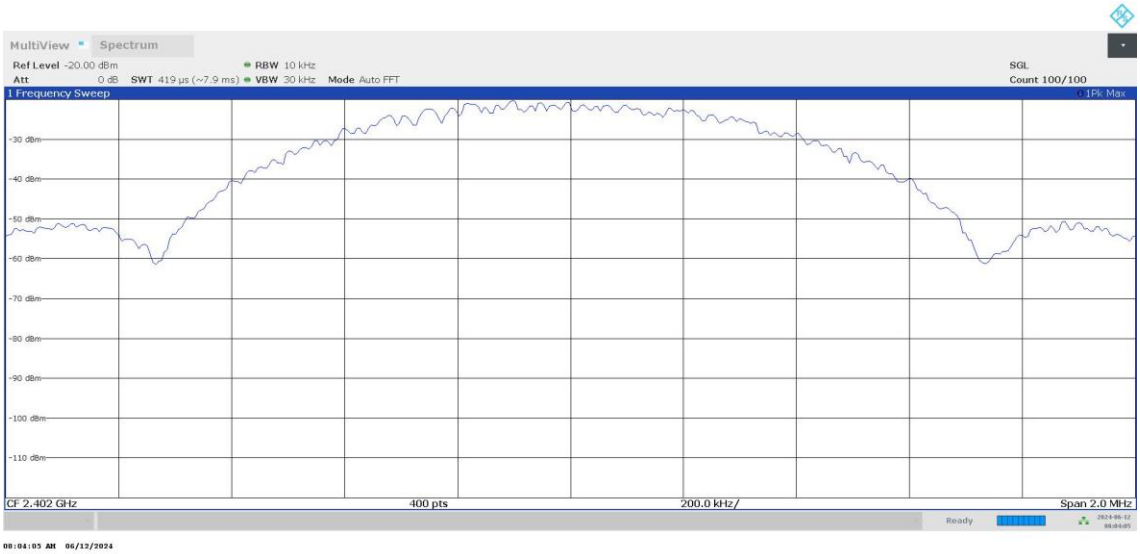
Approved by (name / position & signature)	Antonio José Jurado Industrial & Automotive Lab. Manager	80157242B ANTONIO JOSE JURADO (C:A29507456) Firmado digitalmente por 80157242B ANTONIO JOSE JURADO (C:A29507456) Fecha: 2024.08.02 12:24:33 +02'00'

Attachments

Frequency MHz = 2402.00000 Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

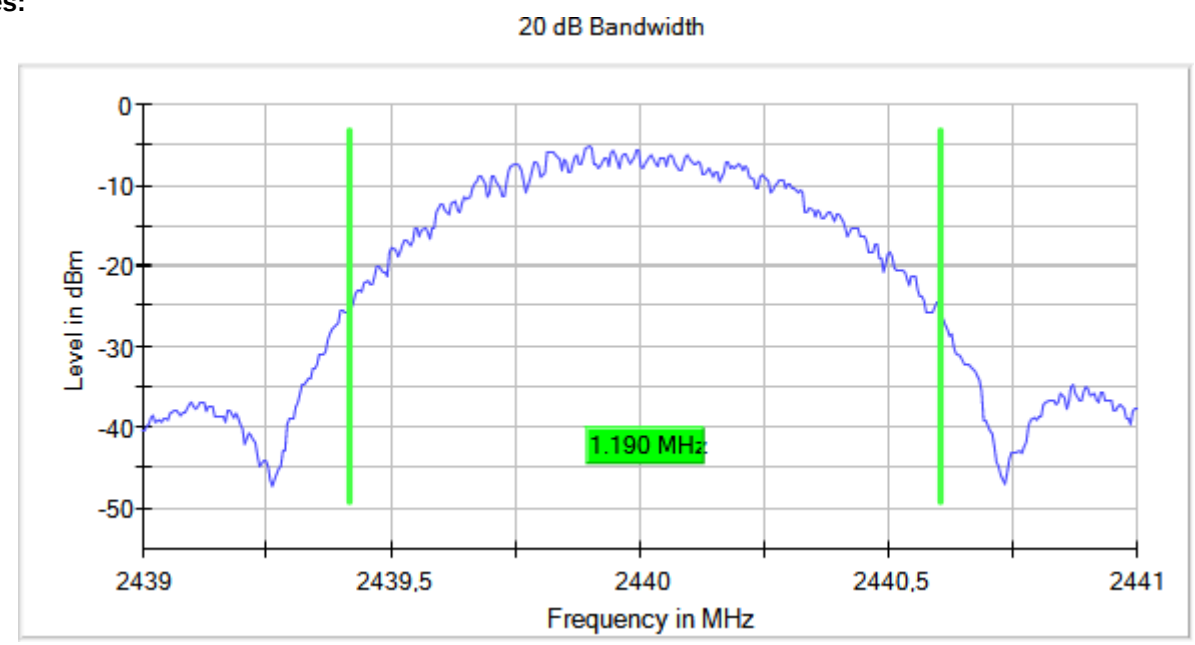
Images:

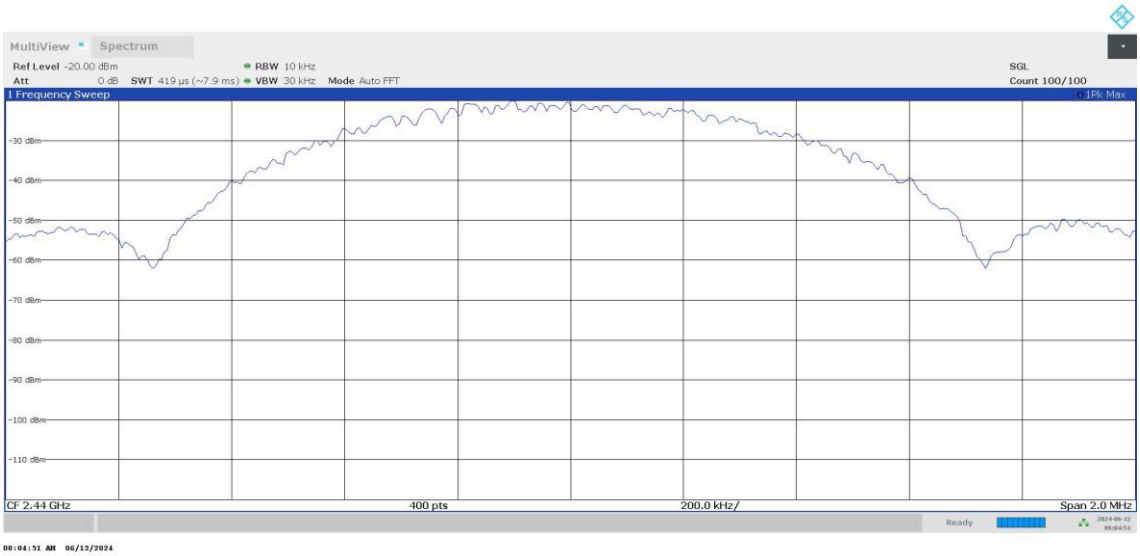




Frequency MHz = 2440.00000 Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

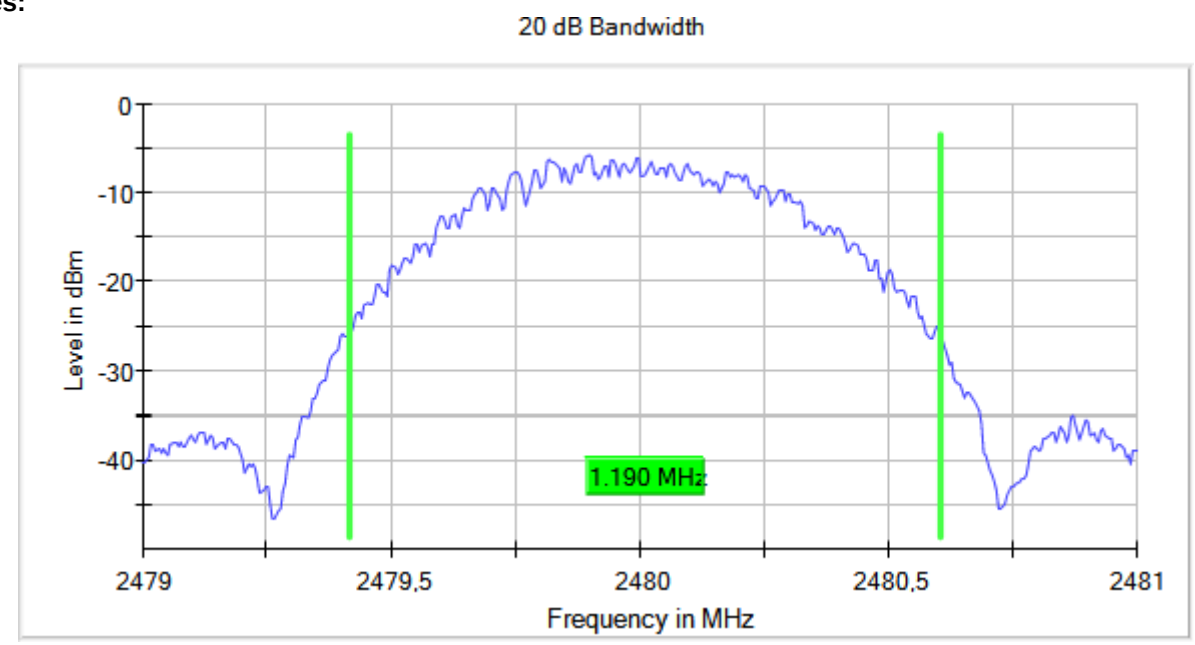
Images:

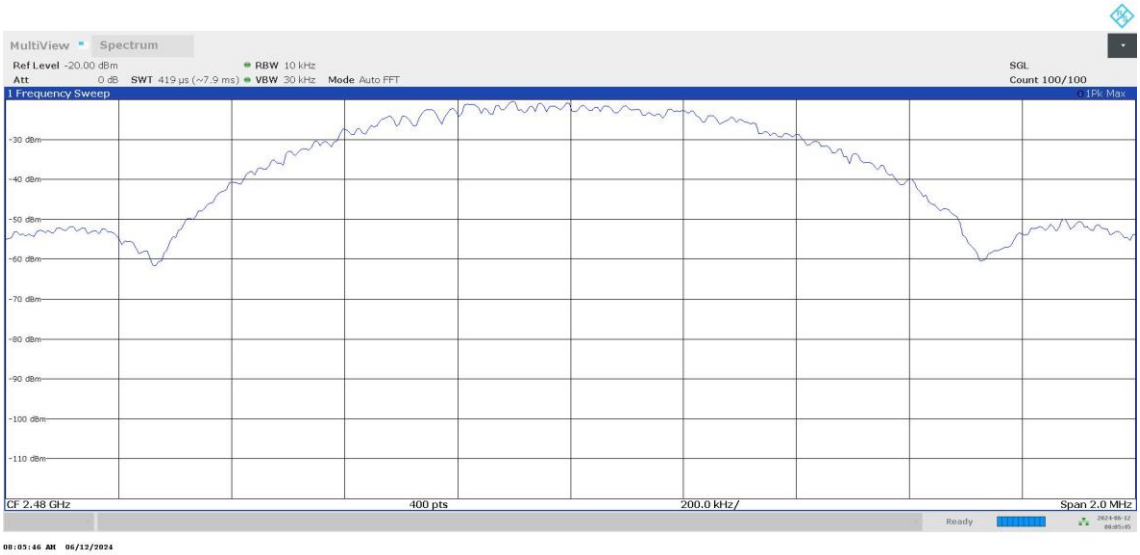




Frequency MHz = 2480.00000 Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:





Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Results

Freq (MHz)	Ebw (MHz)
2402.00000	2.380
2440.00000	2.380
2480.00000	2.380

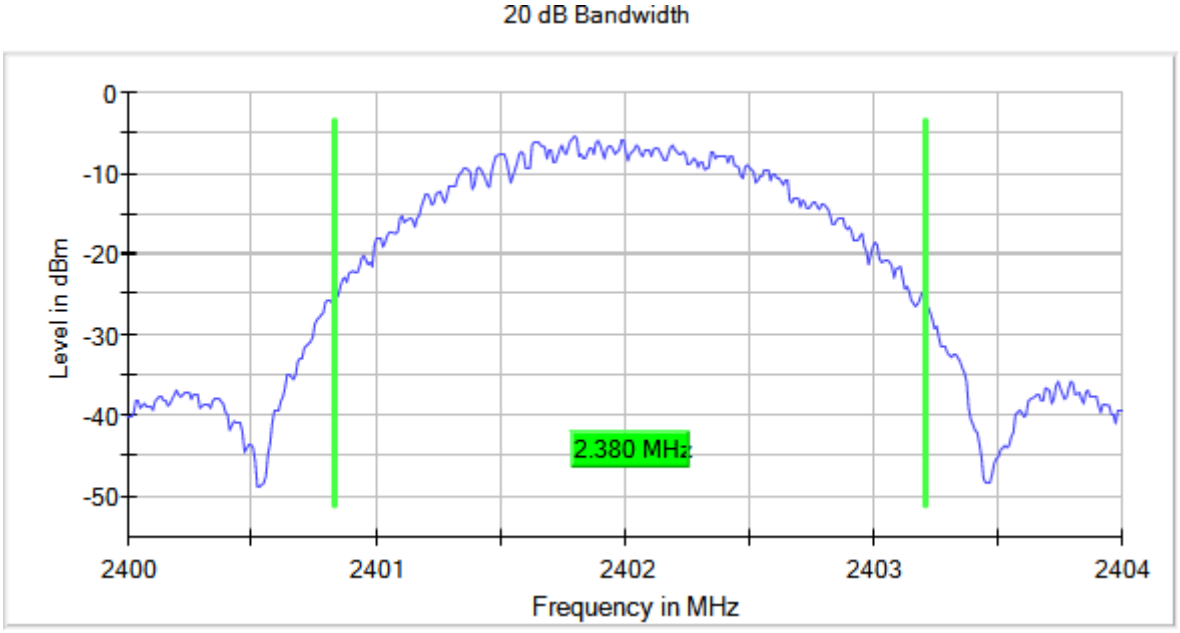
Verdict

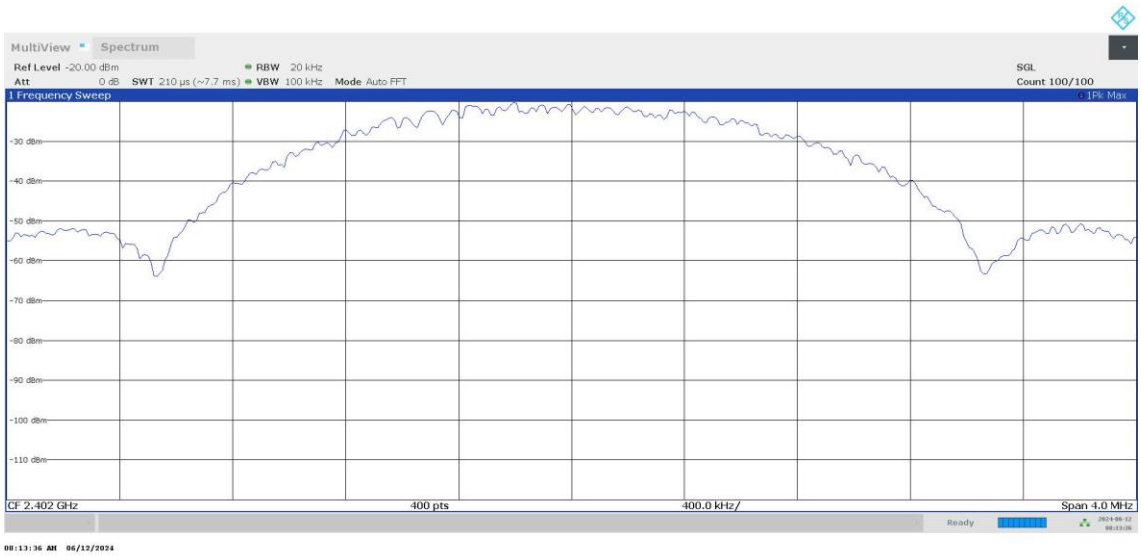
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

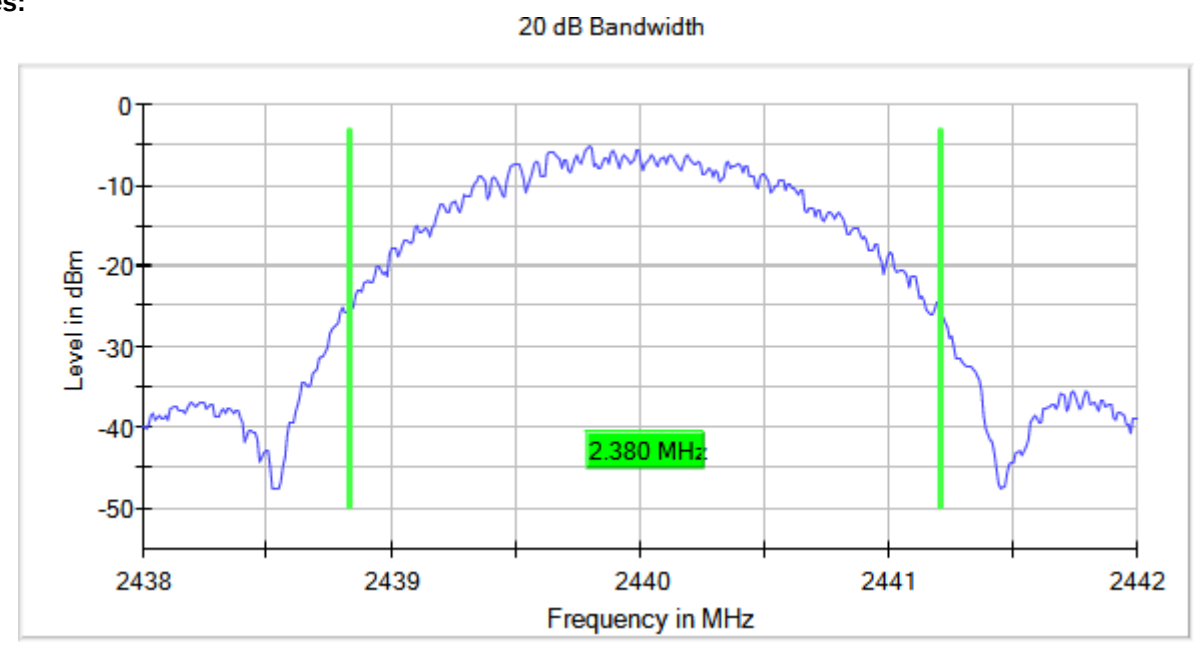
Images:

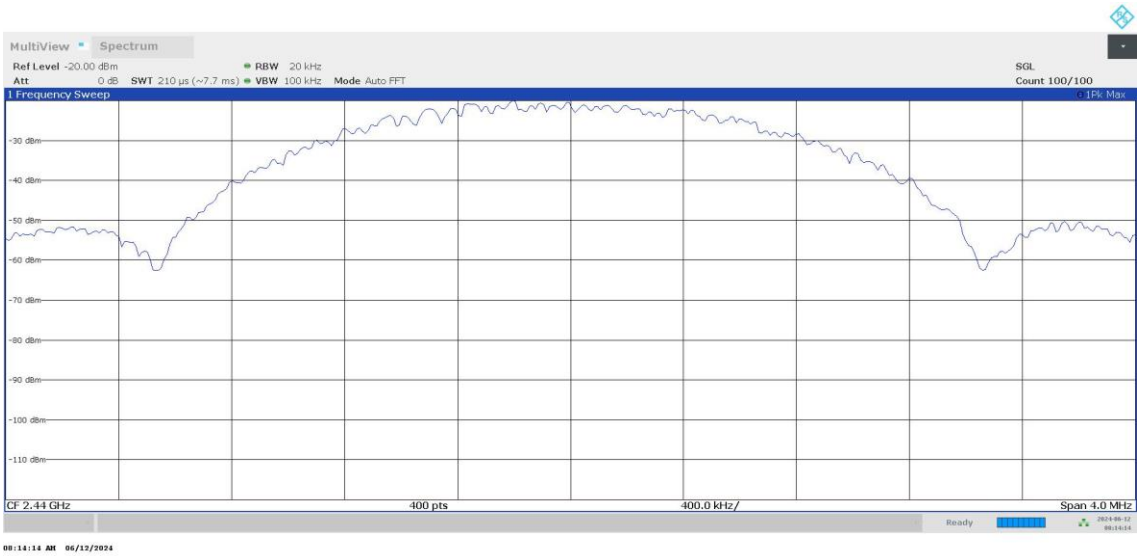




Frequency MHz = 2440.00000 Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

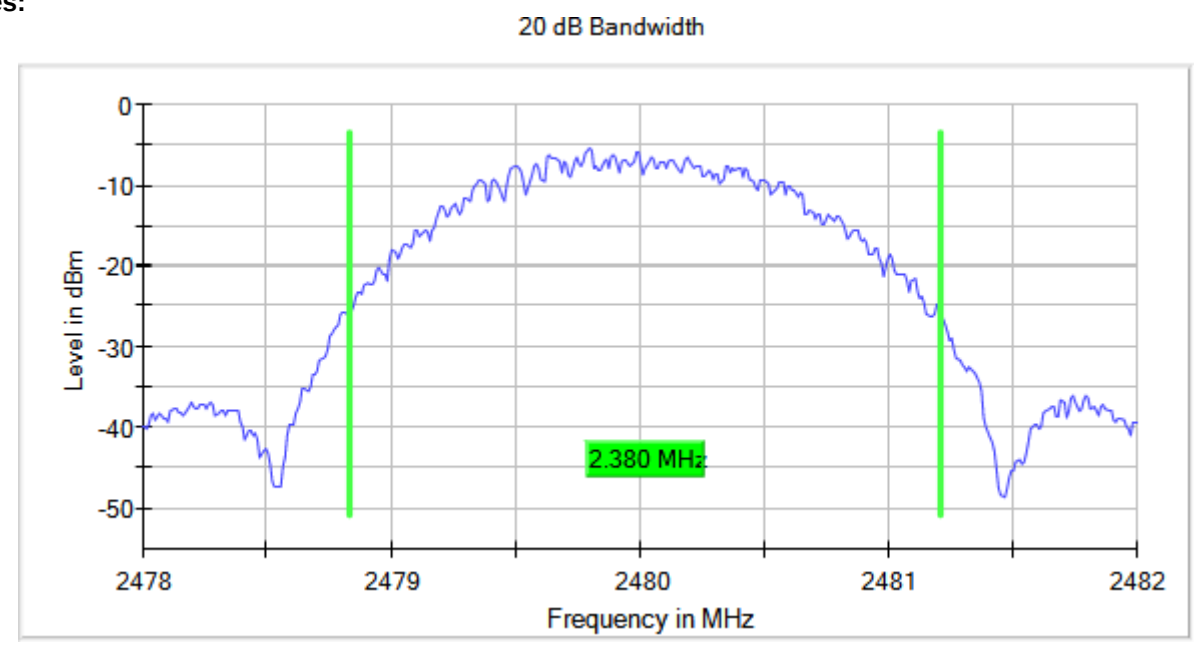
Images:

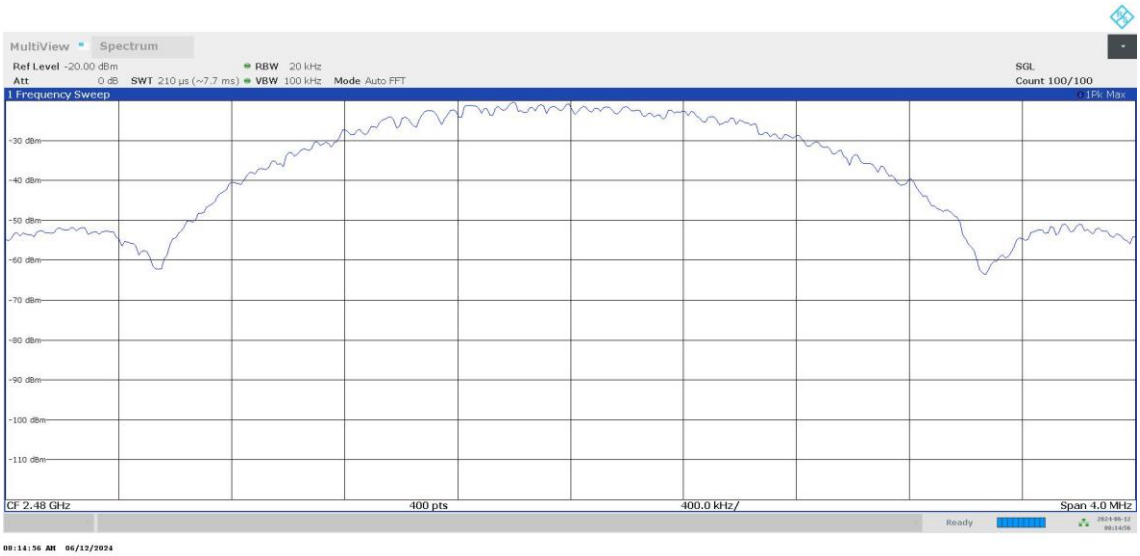




Frequency MHz = 2480.00000 Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:





Modulation: BT (GFSK)

Results

Freq (MHz)	Ebw (MHz)
2402.00000	0.930
2441.00000	0.930
2480.00000	0.930

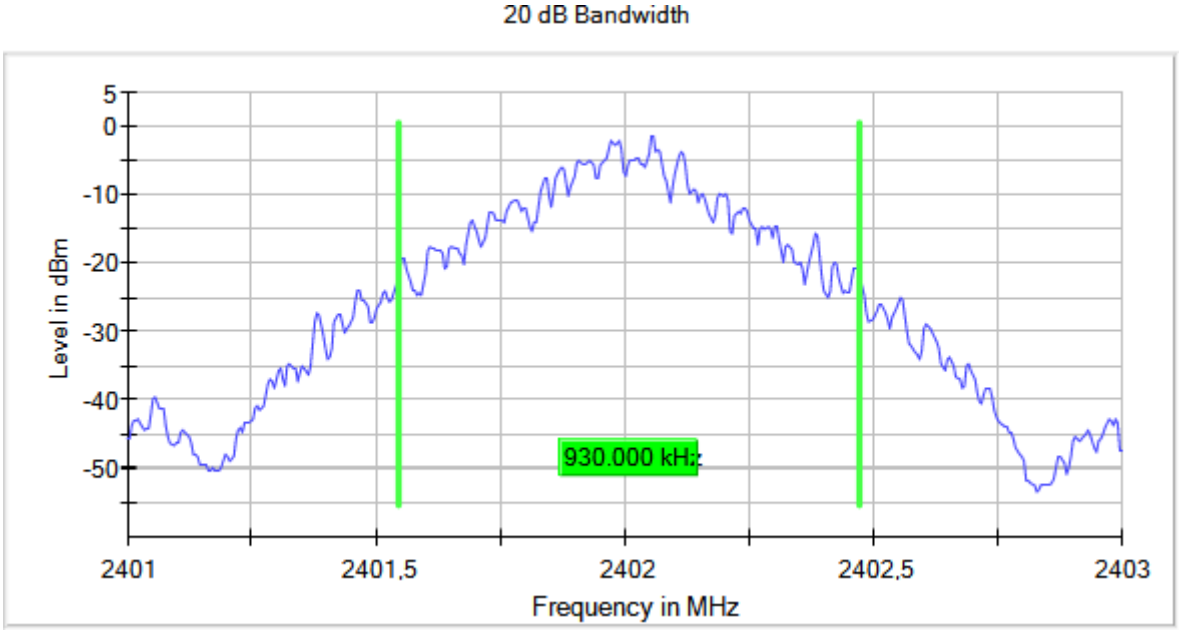
Verdict

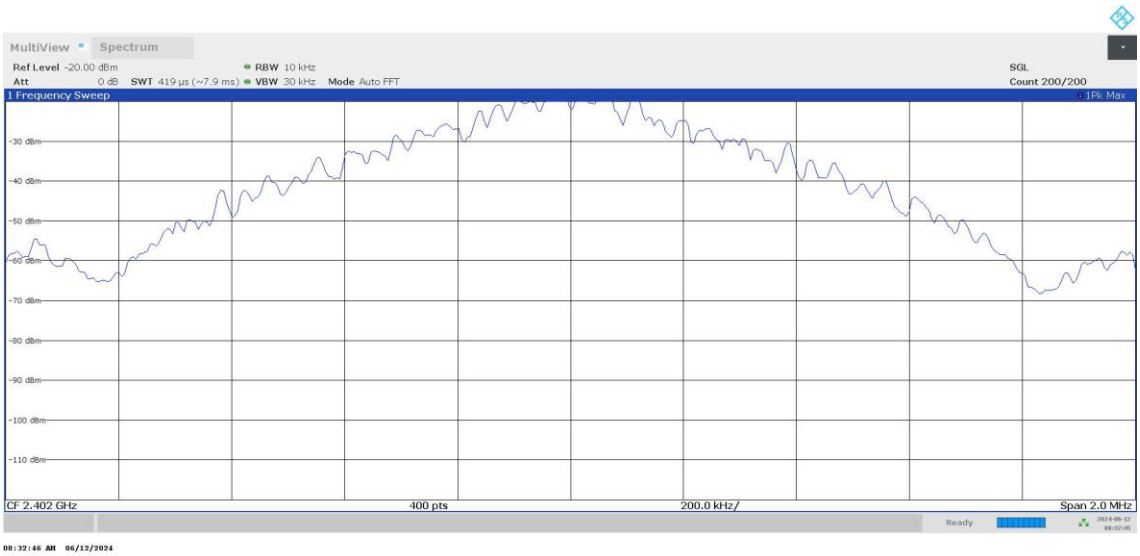
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BT (GFSK)

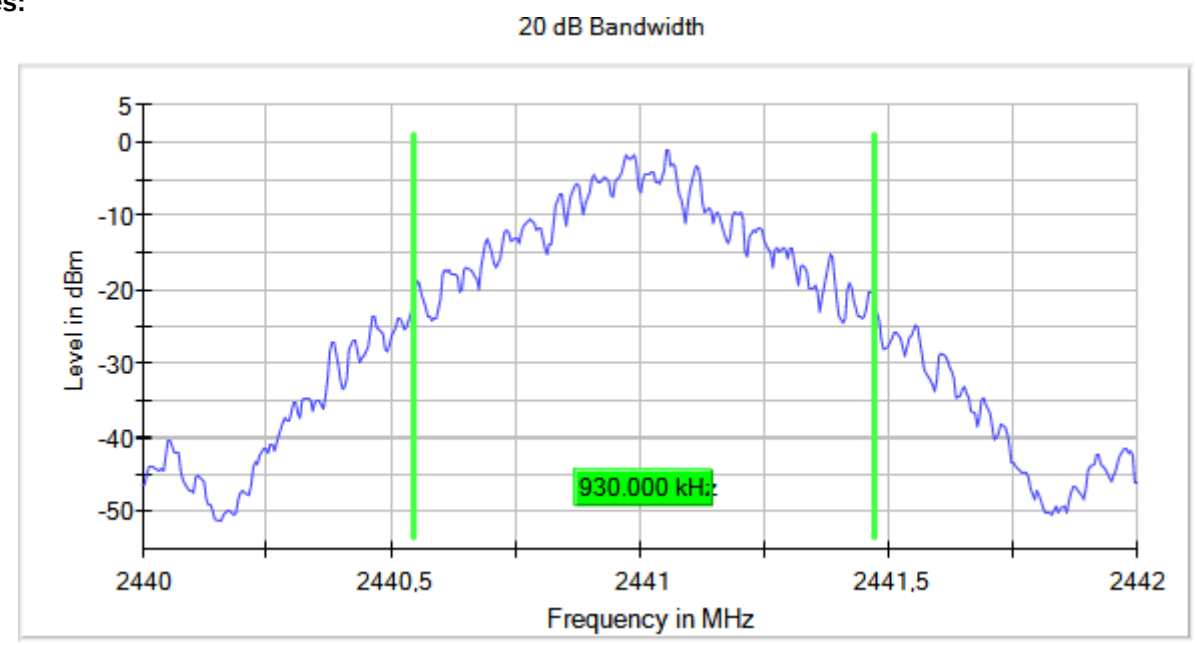
Images:

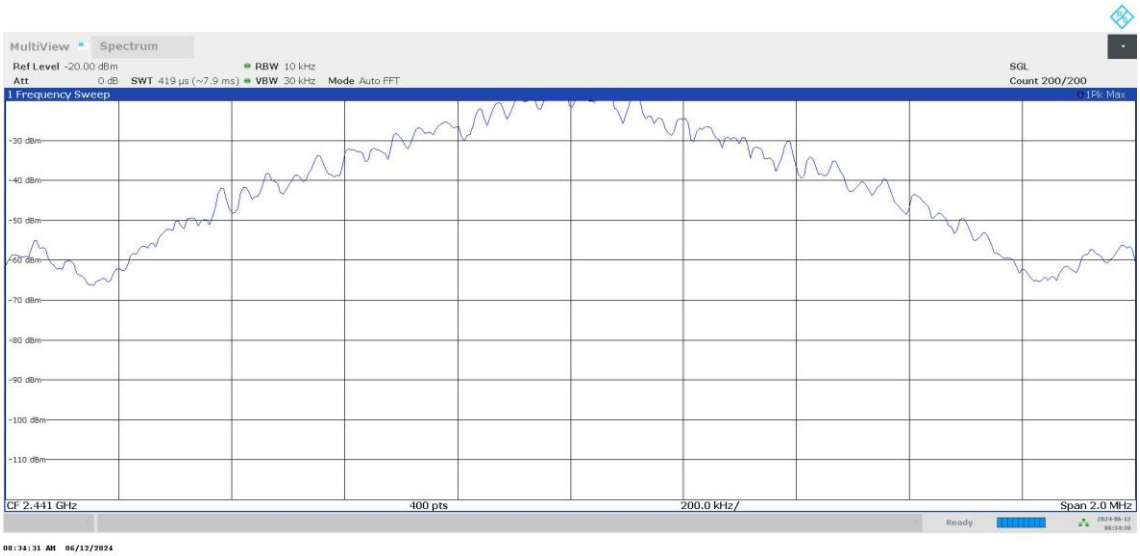




Frequency MHz = 2441.00000 Modulation = BT (GFSK)

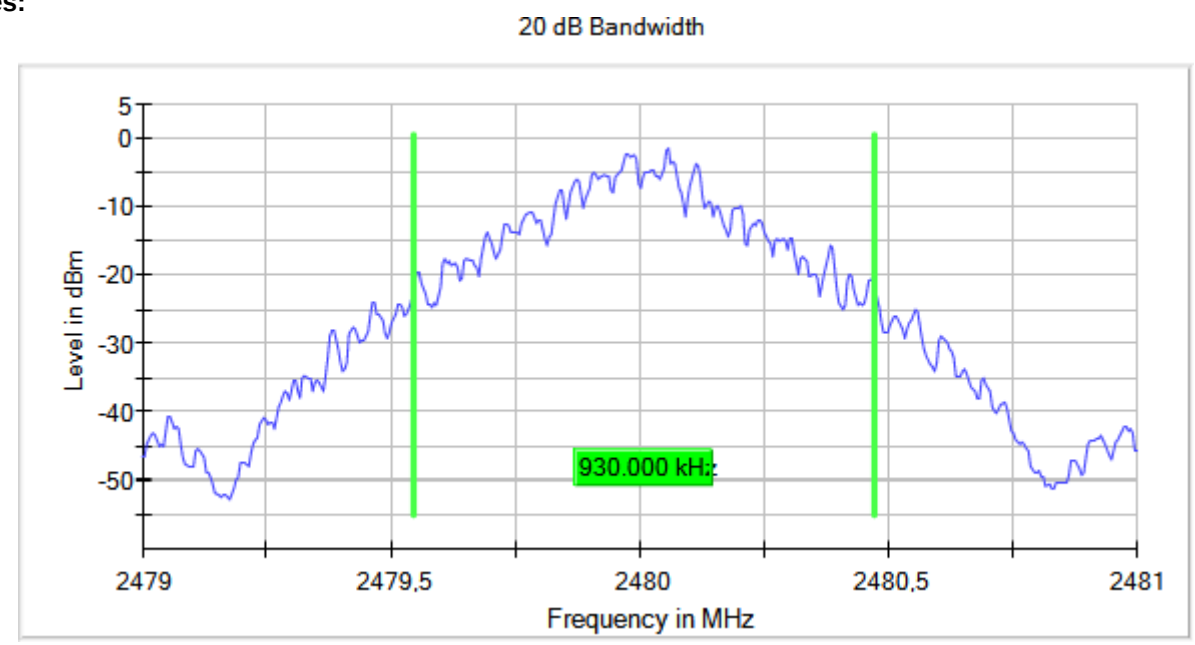
Images:

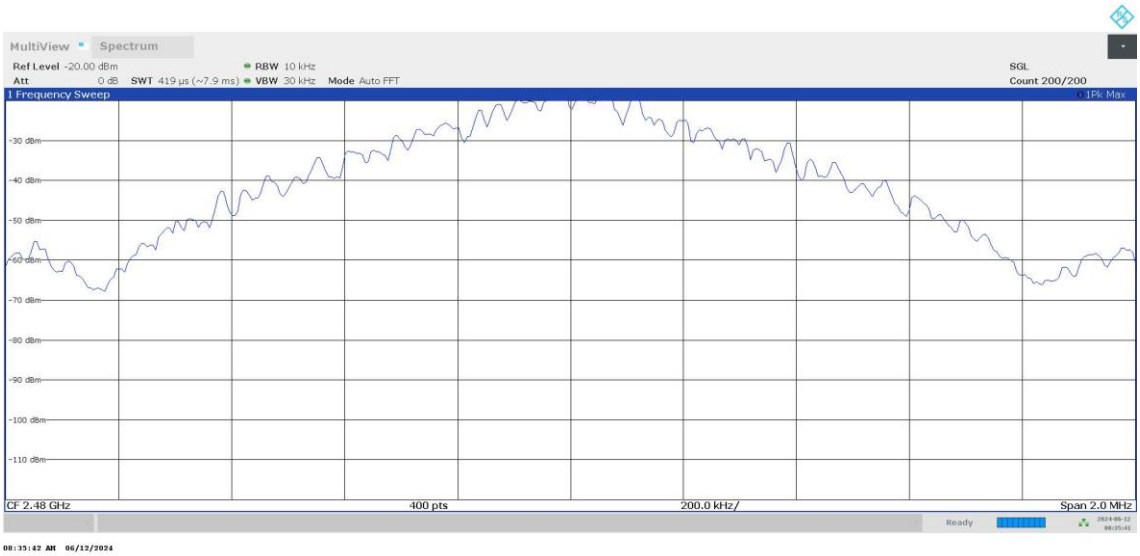




Frequency MHz = 2480.00000 Modulation = BT (GFSK)

Images:





Modulation: BT (Pi/4 DQPSK)

Results

Freq (MHz)	Ebw (MHz)
2402.00000	1.340
2441.00000	1.340
2480.00000	1.340

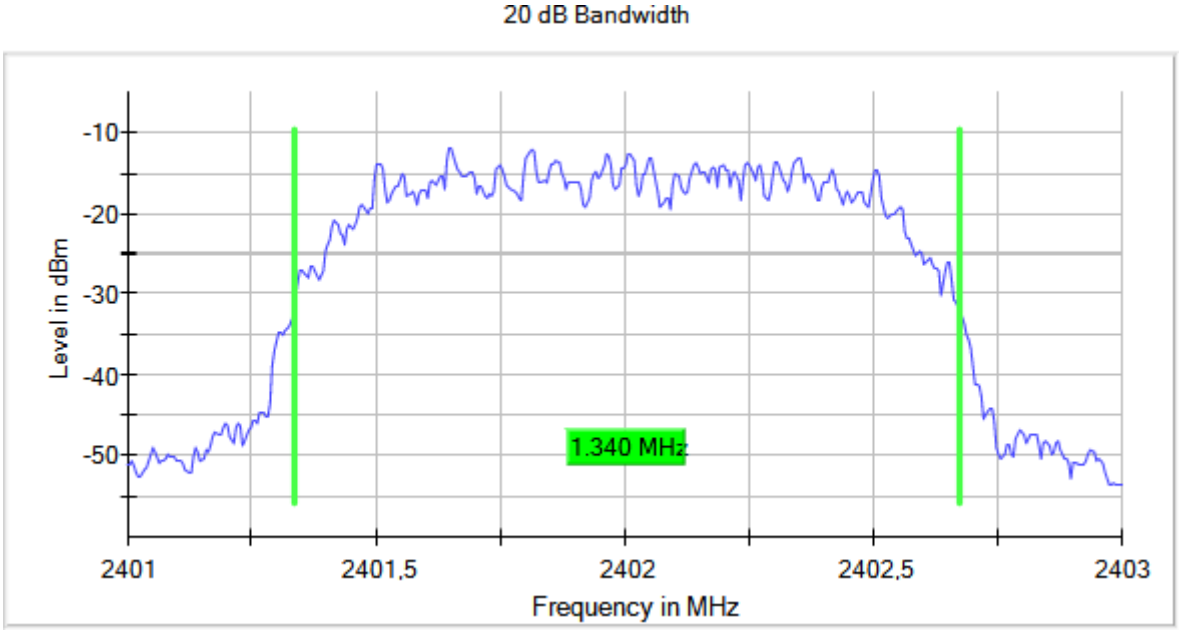
Verdict

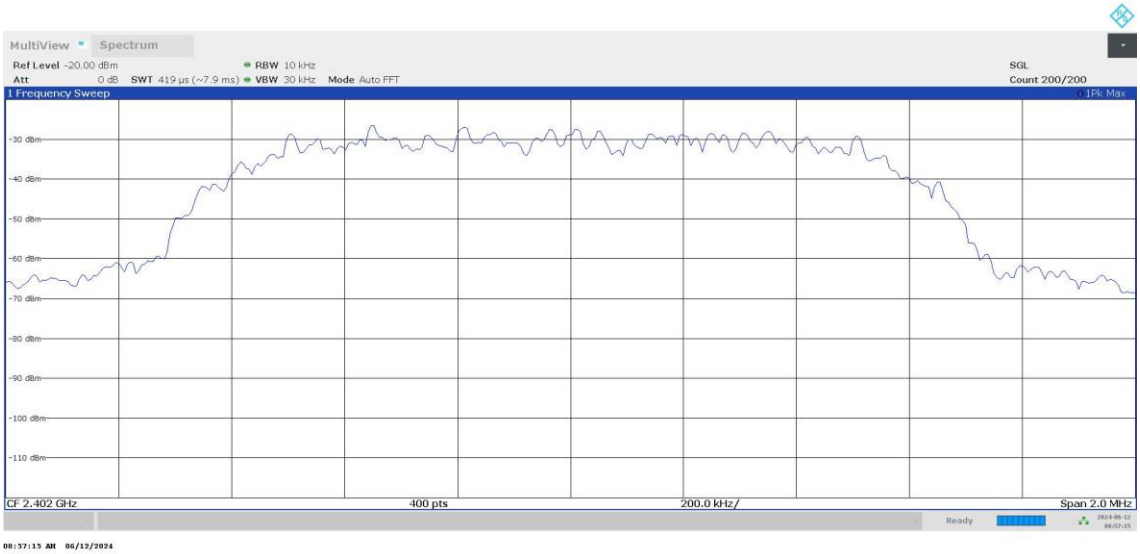
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BT (Pi/4 DQPSK)

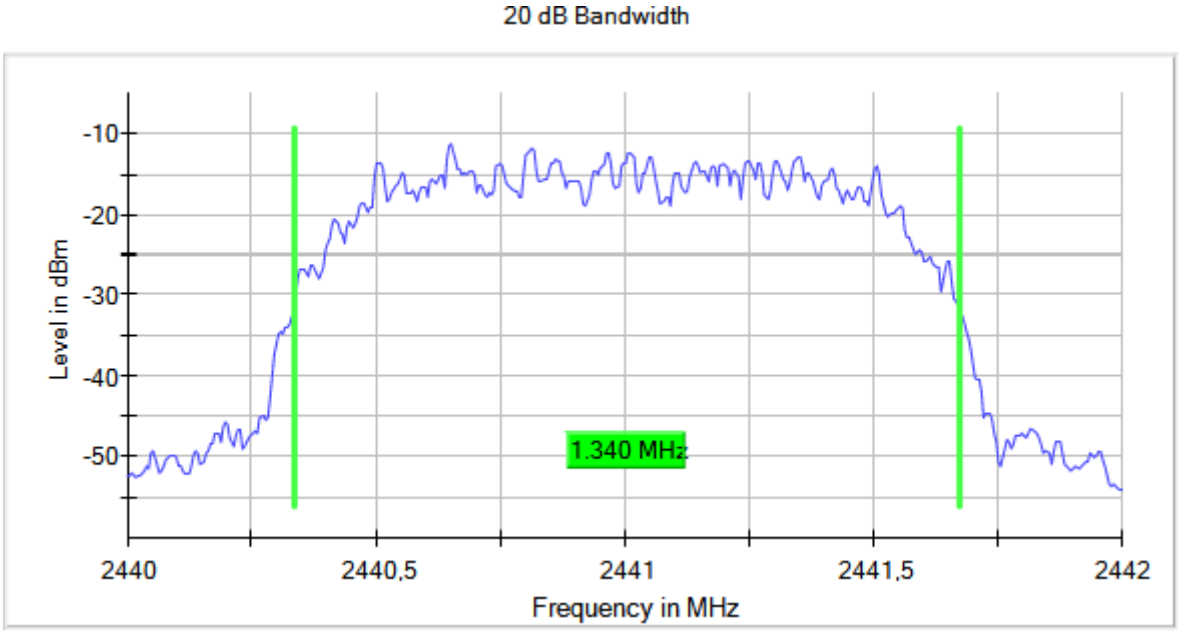
Images:

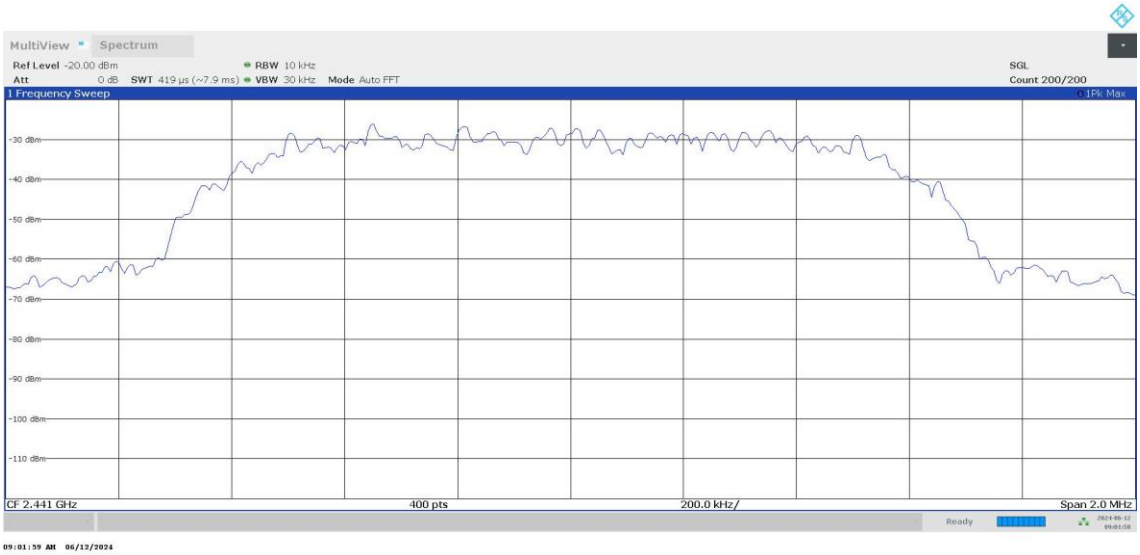




Frequency MHz = 2441.00000 Modulation = BT (Pi/4 DQPSK)

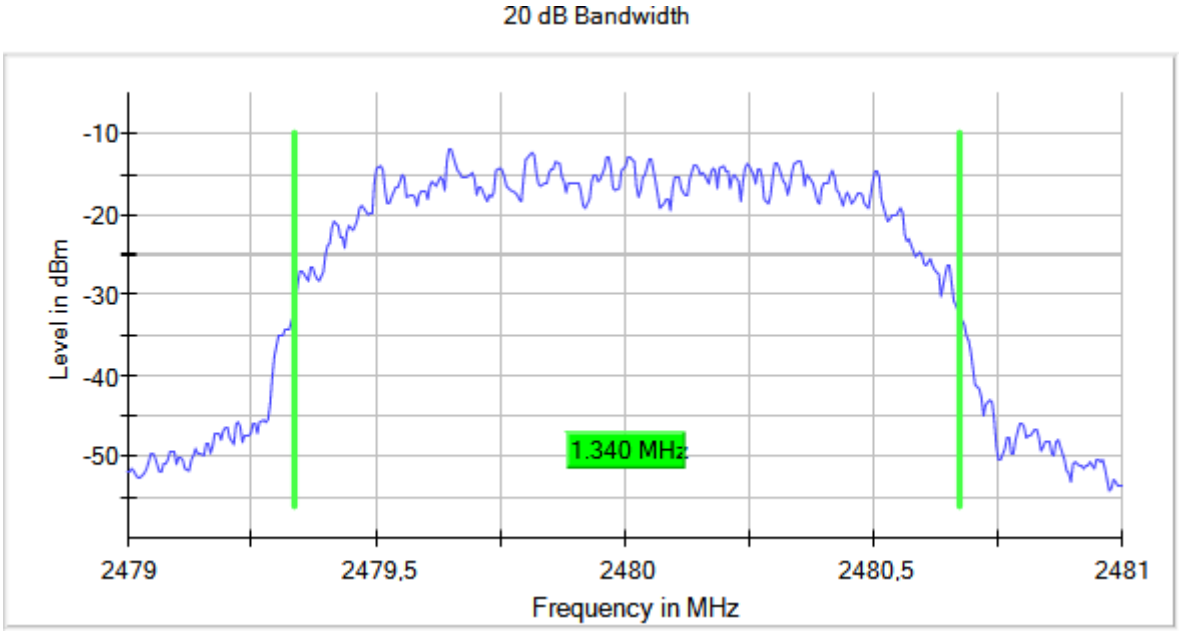
Images:

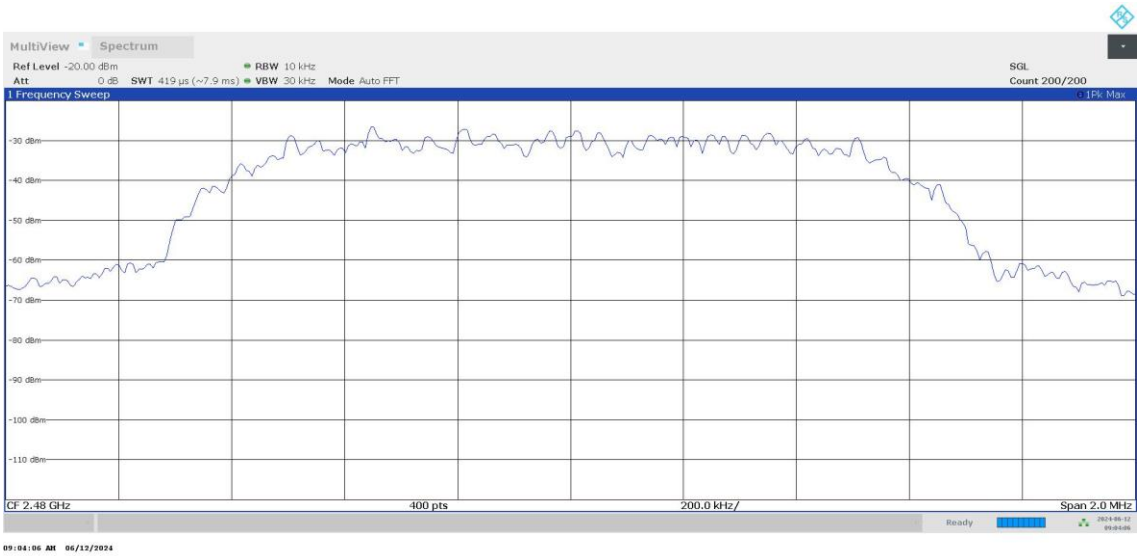




Frequency MHz = 2480.00000 Modulation = BT (Pi/4 DQPSK)

Images:





Modulation: BT (8DPSK)

Results

Freq (MHz)	Ebw (MHz)
2402.00000	1.350
2441.00000	1.350
2480.00000	1.345

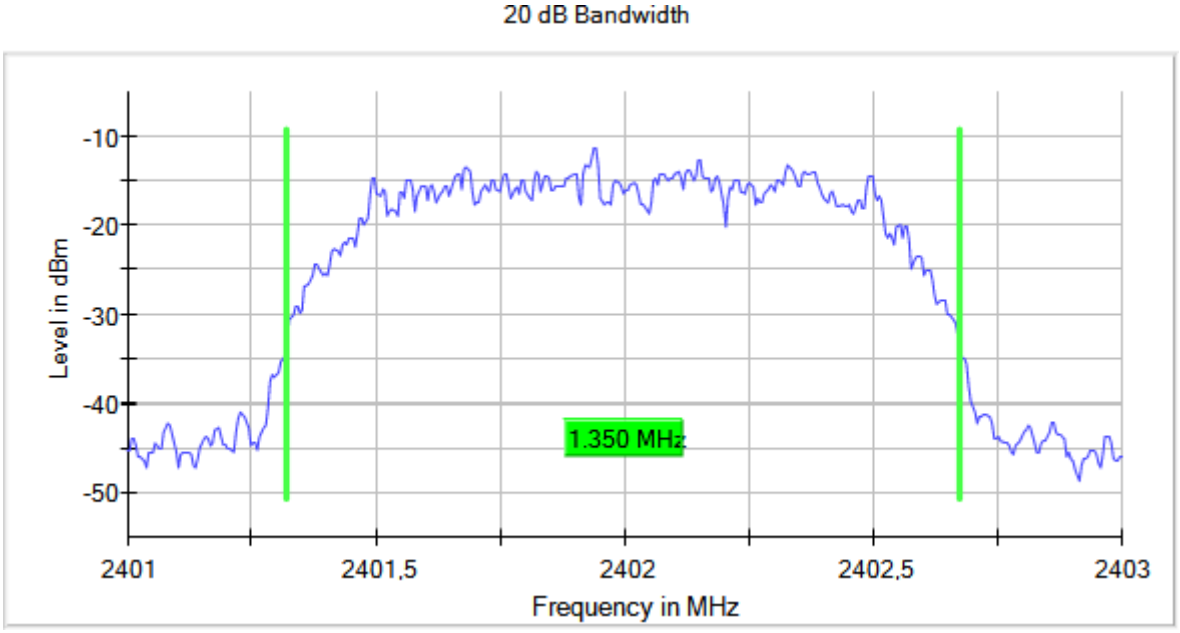
Verdict

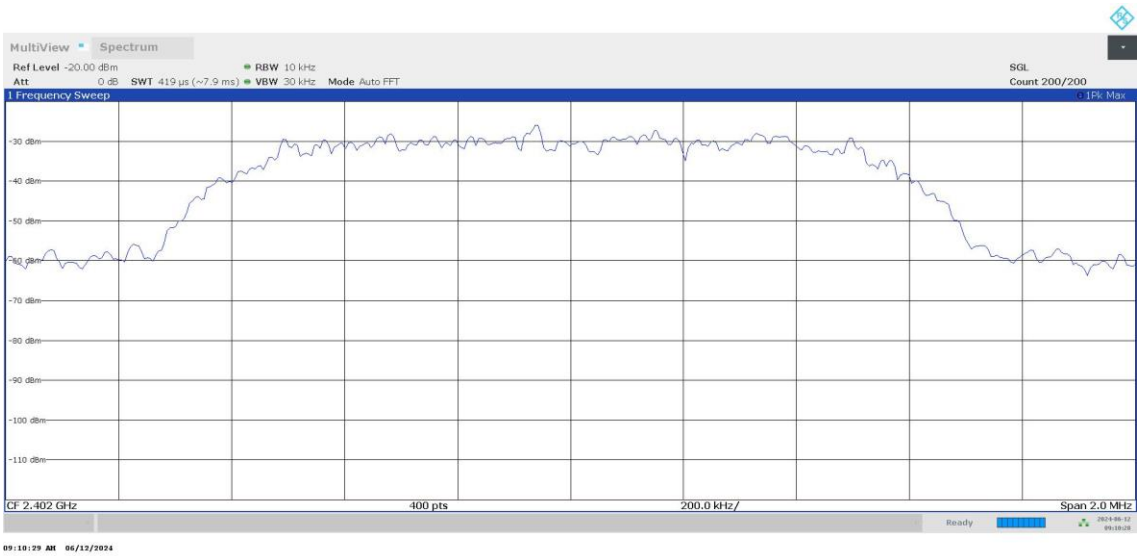
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BT (8DPSK)

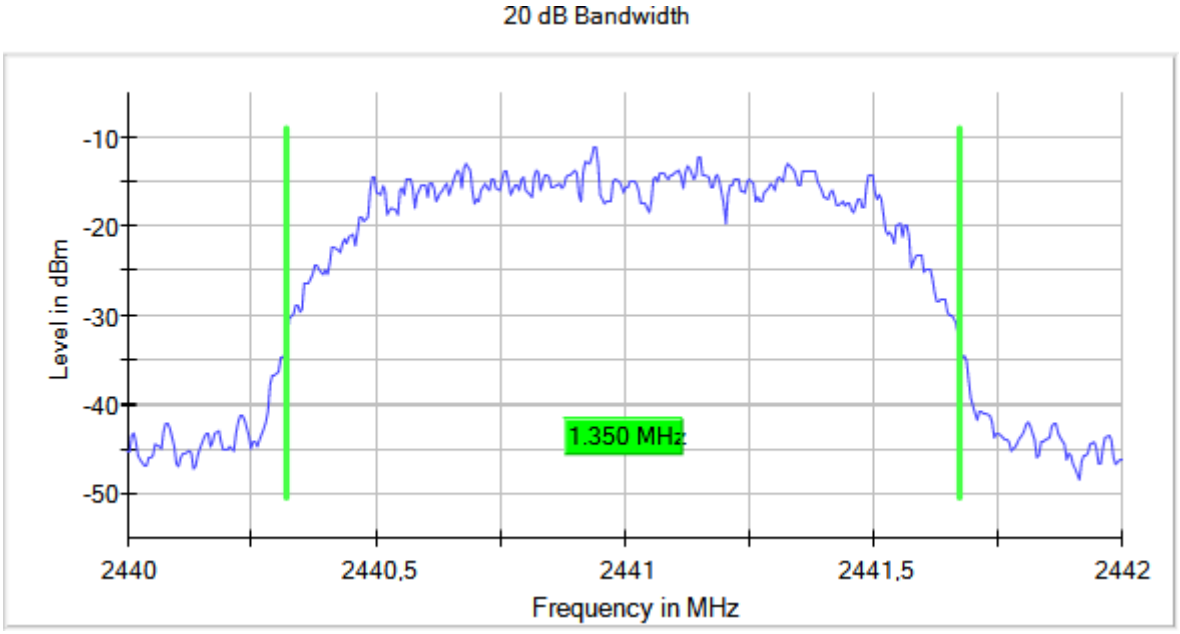
Images:

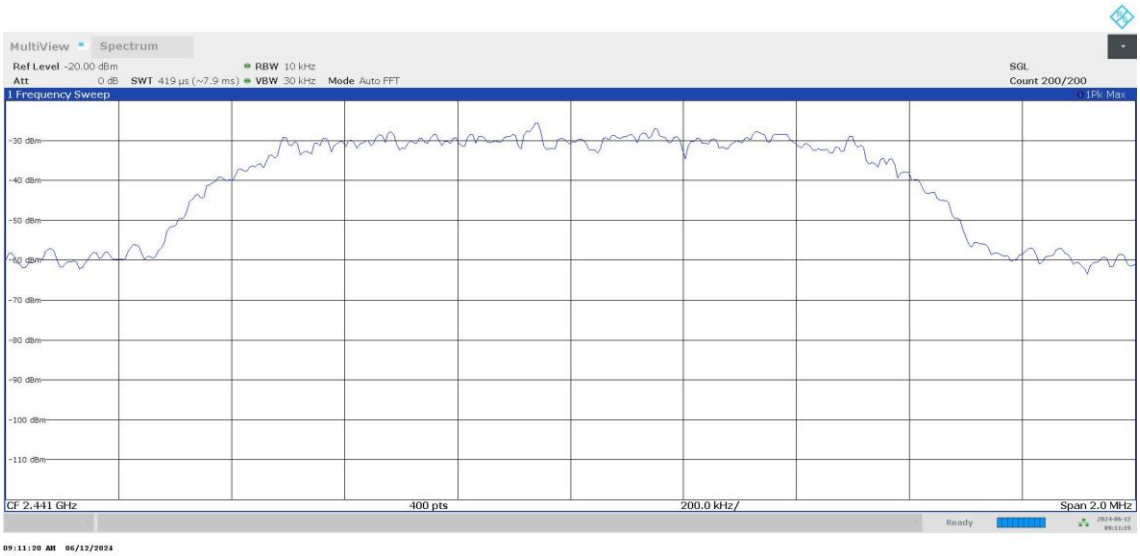




Frequency MHz = 2441.00000 Modulation = BT (8DPSK)

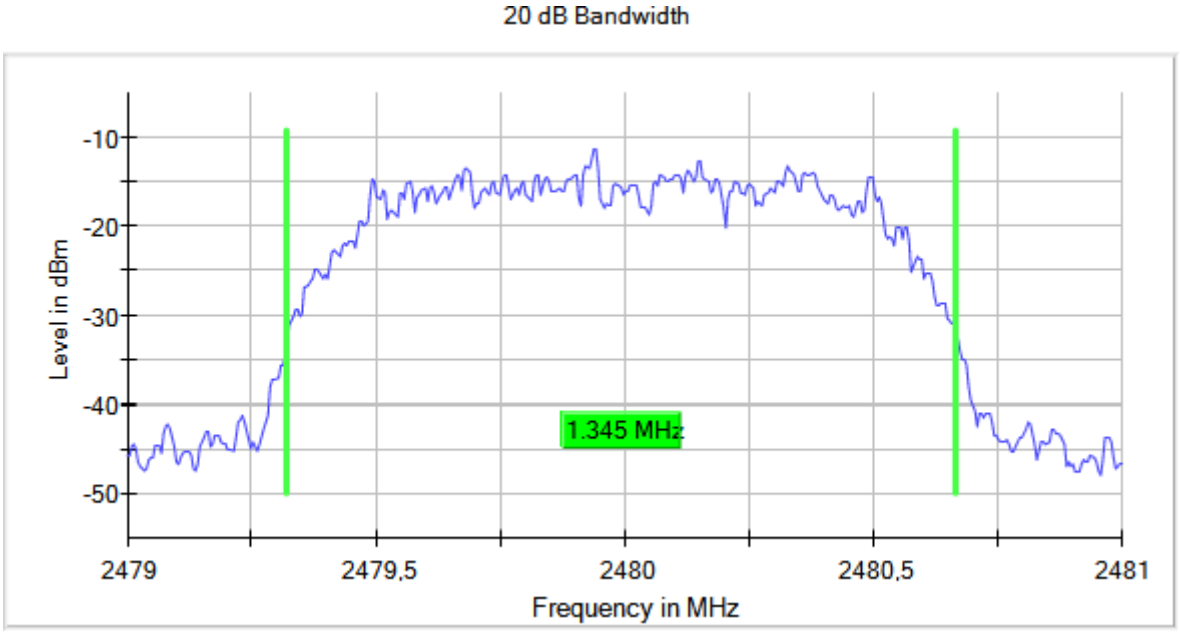
Images:

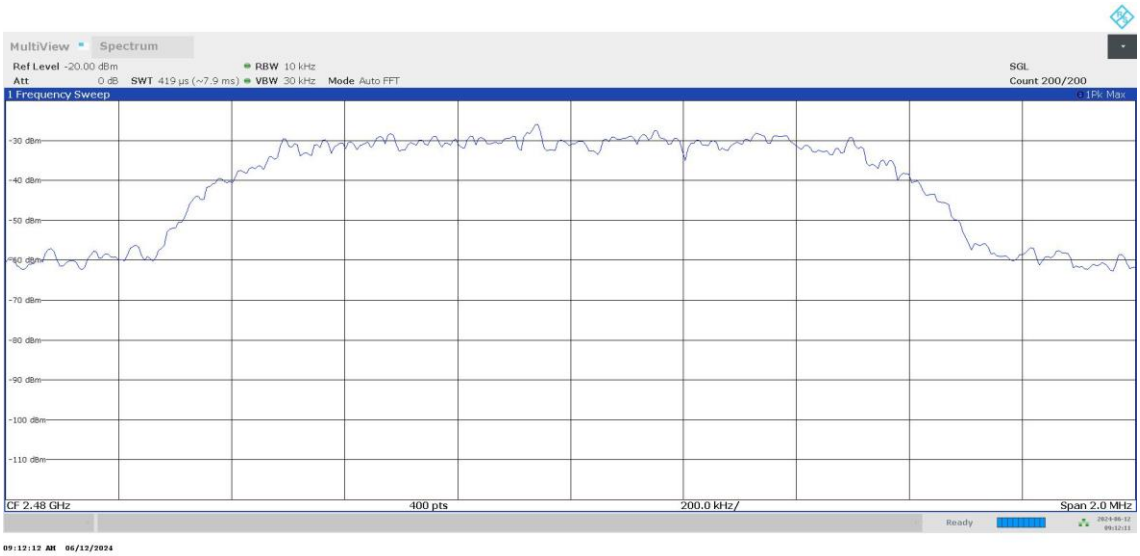




Frequency MHz = 2480.00000 Modulation = BT (8DPSK)

Images:





Modulation: DM

Results

Freq (MHz)	Ebw (MHz)
2402.00000	1.850
2440.00000	1.850
2480.00000	1.860

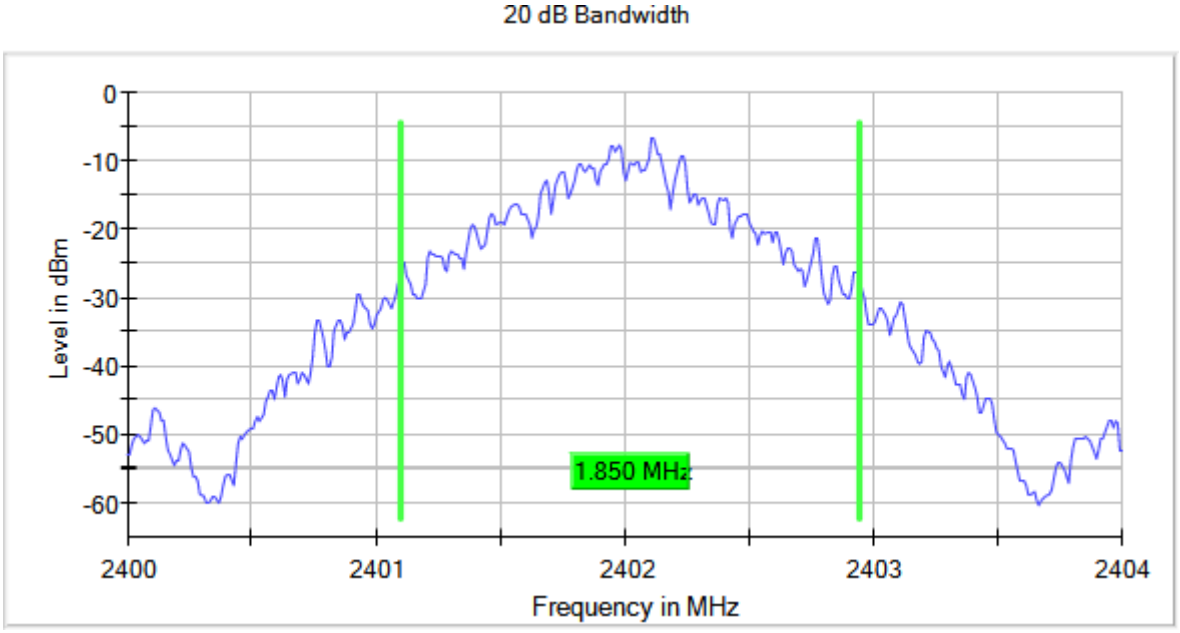
Verdict

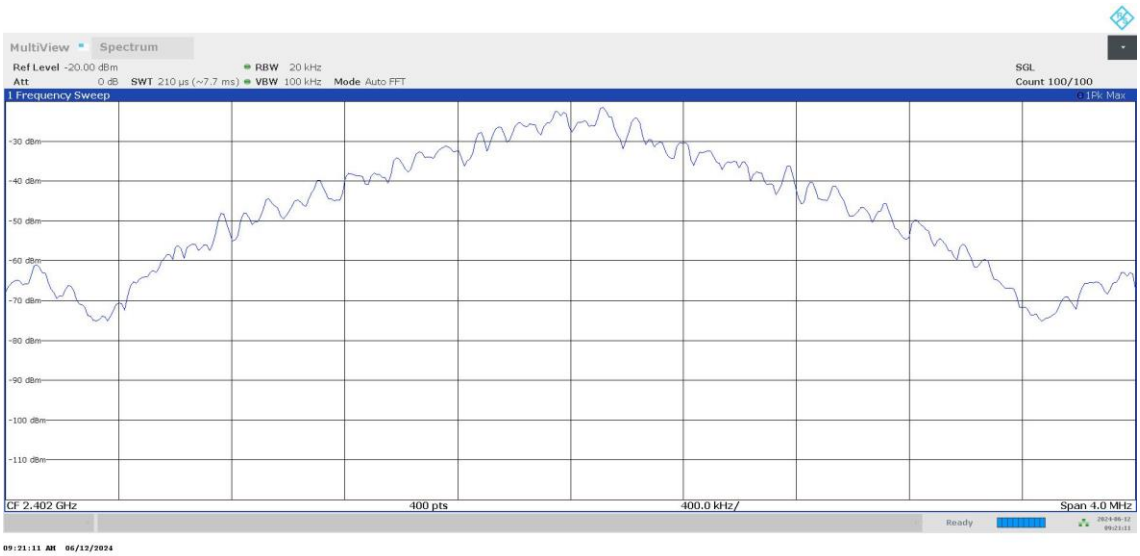
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = DM

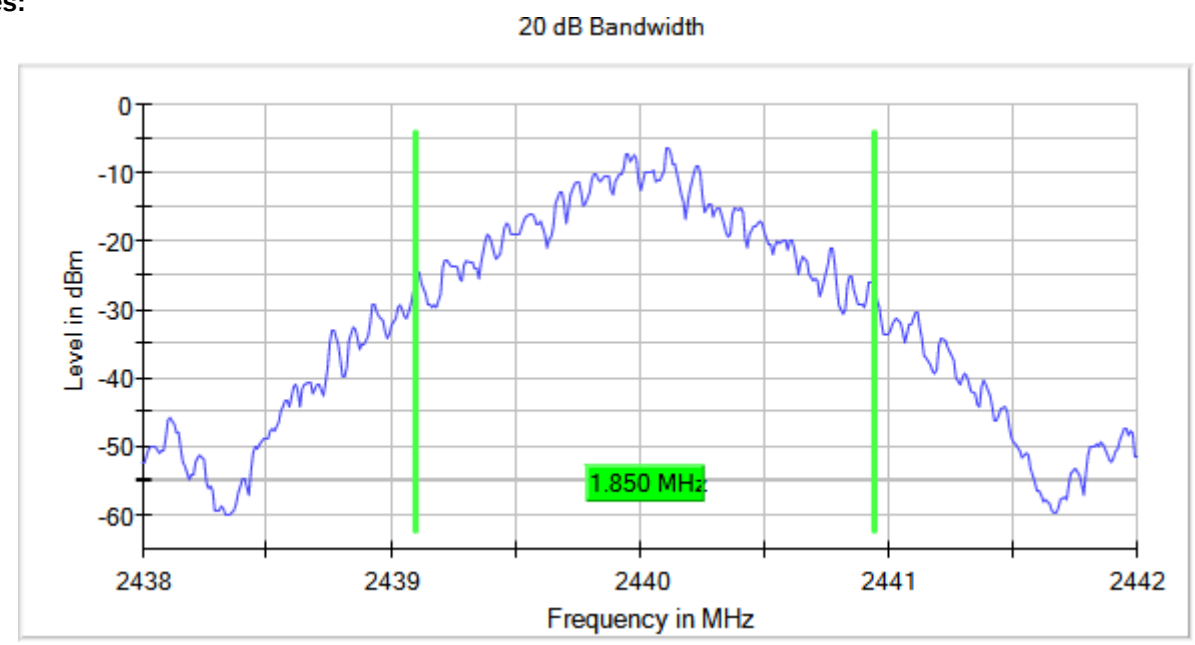
Images:

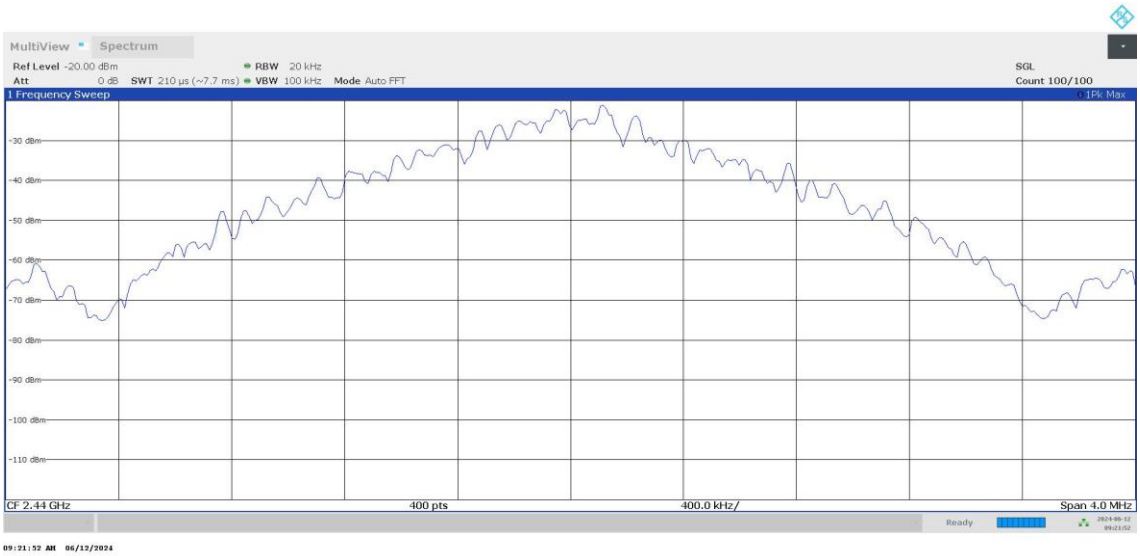




Frequency MHz = 2440.00000 Modulation = DM

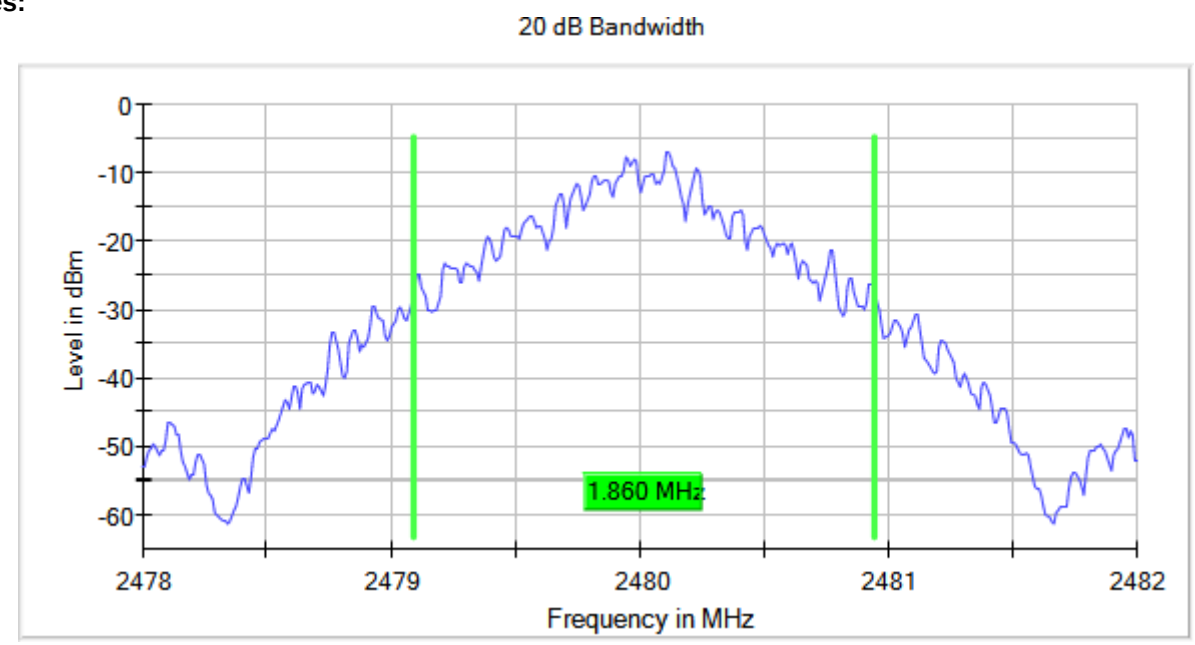
Images:

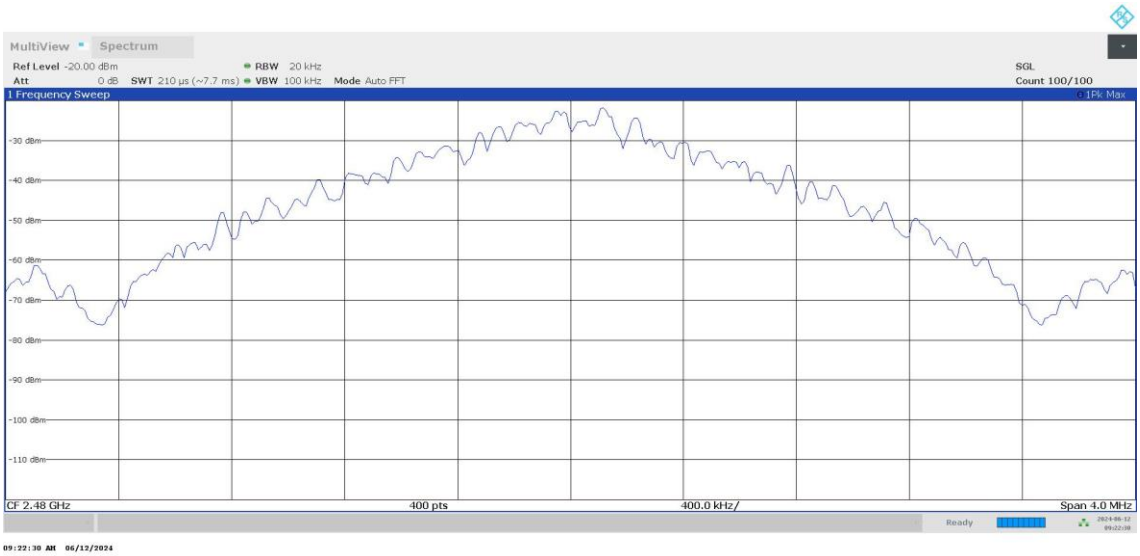




Frequency MHz = 2480.00000 Modulation = DM

Images:





Modulation: FLORA

Results

Freq (MHz)	Ebw (MHz)
2402.00000	3.140
2440.00000	3.150
2480.00000	3.150

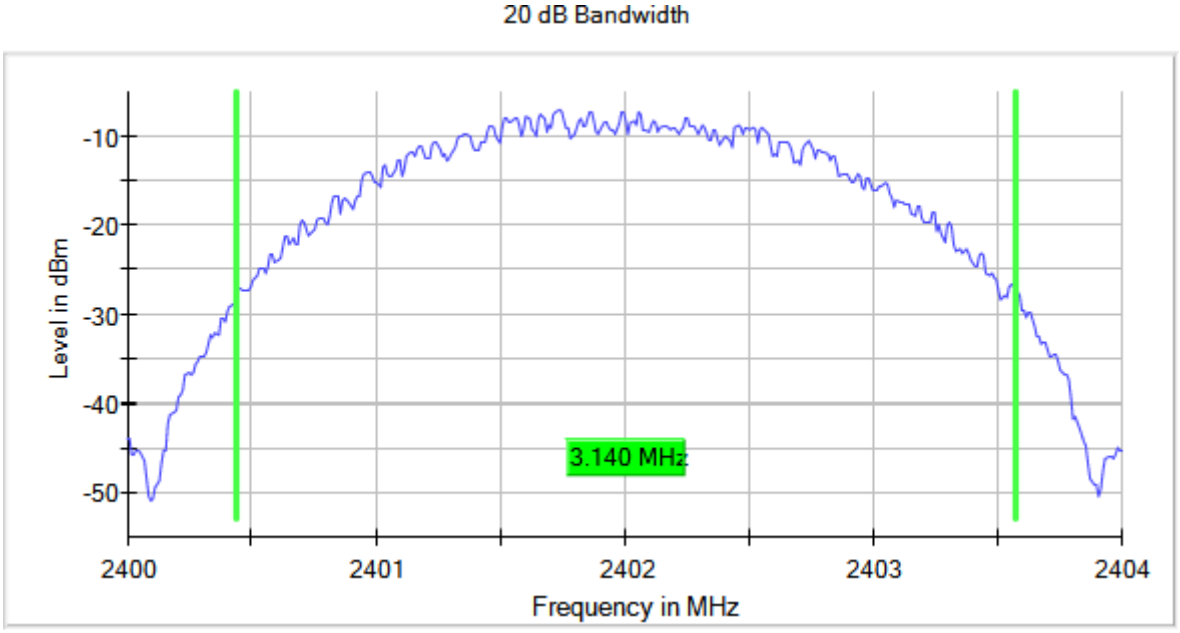
Verdict

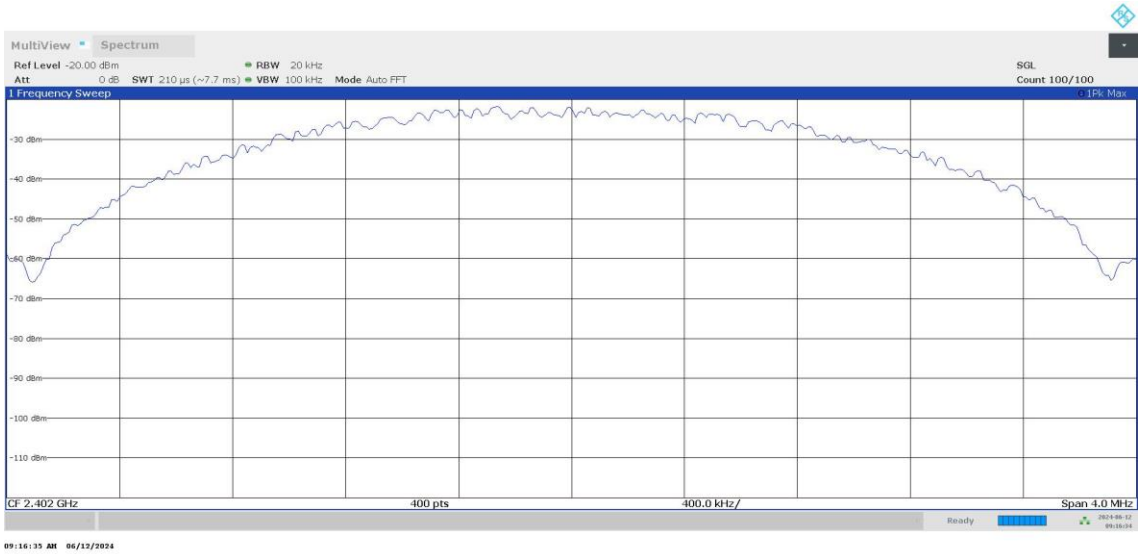
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = FLORA

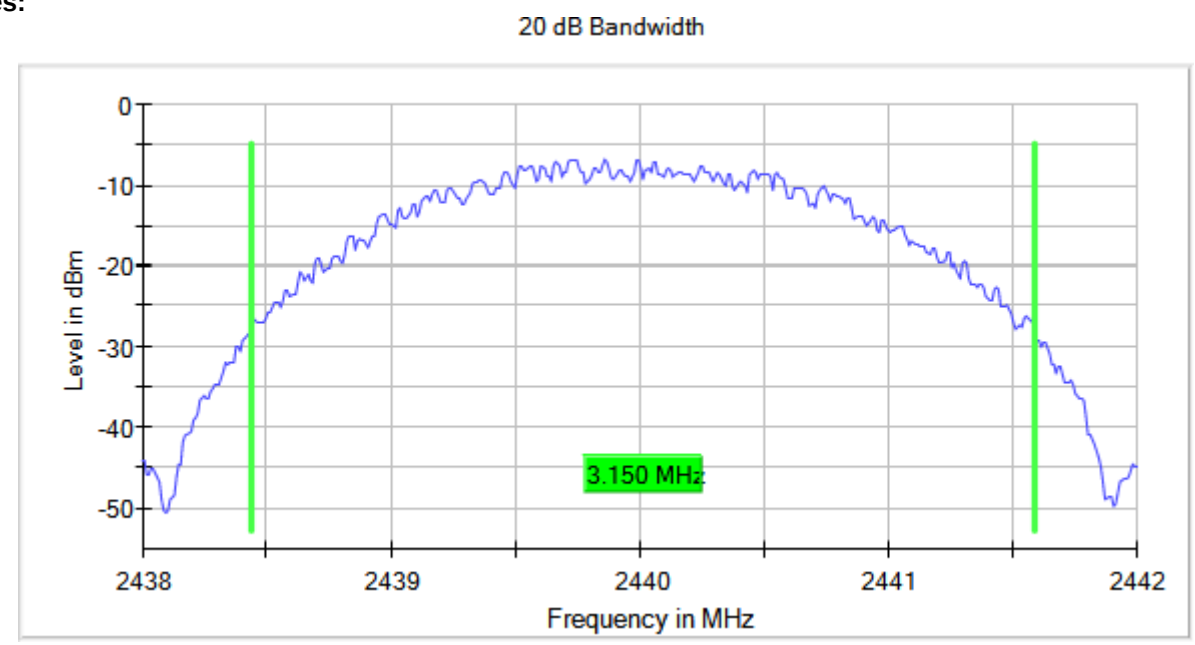
Images:

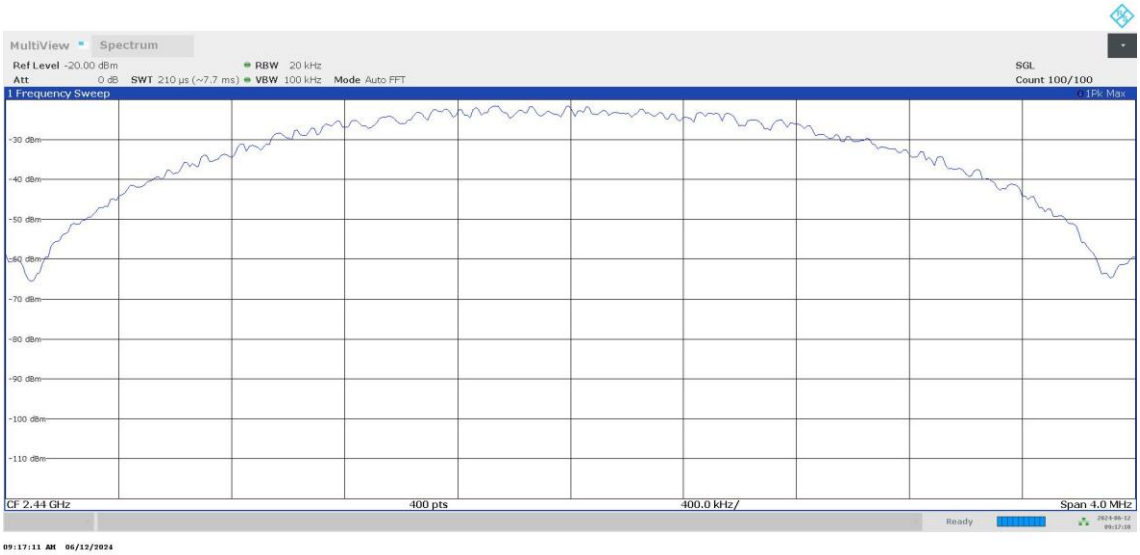




Frequency MHz = 2440.00000 Modulation = FLORA

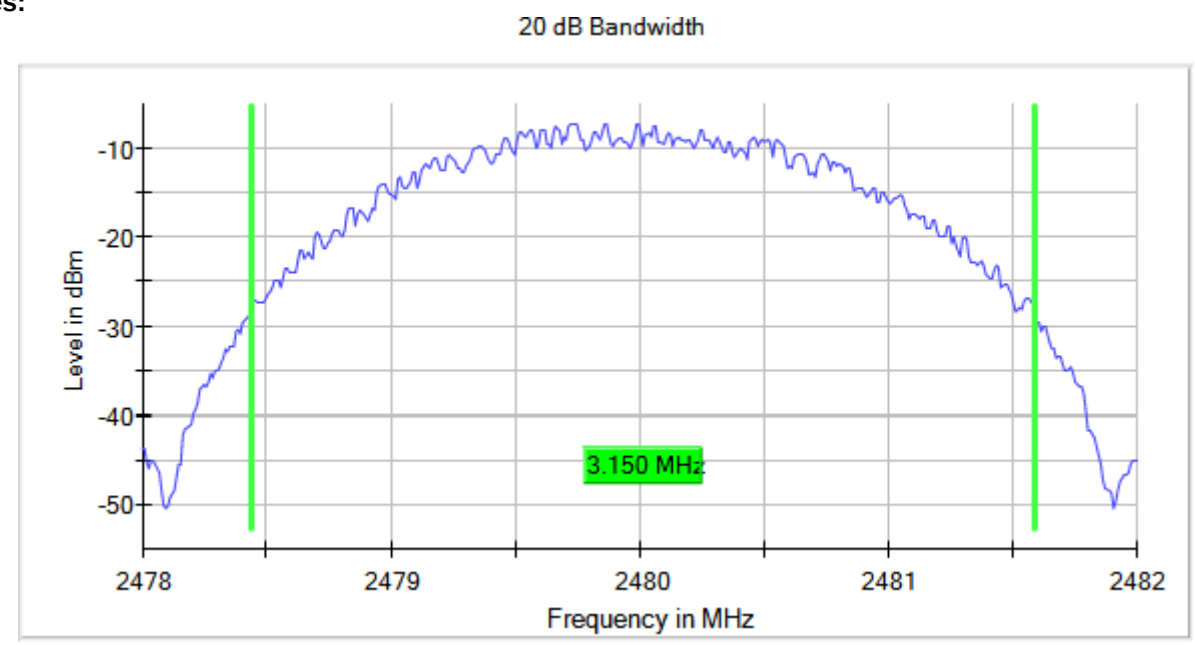
Images:

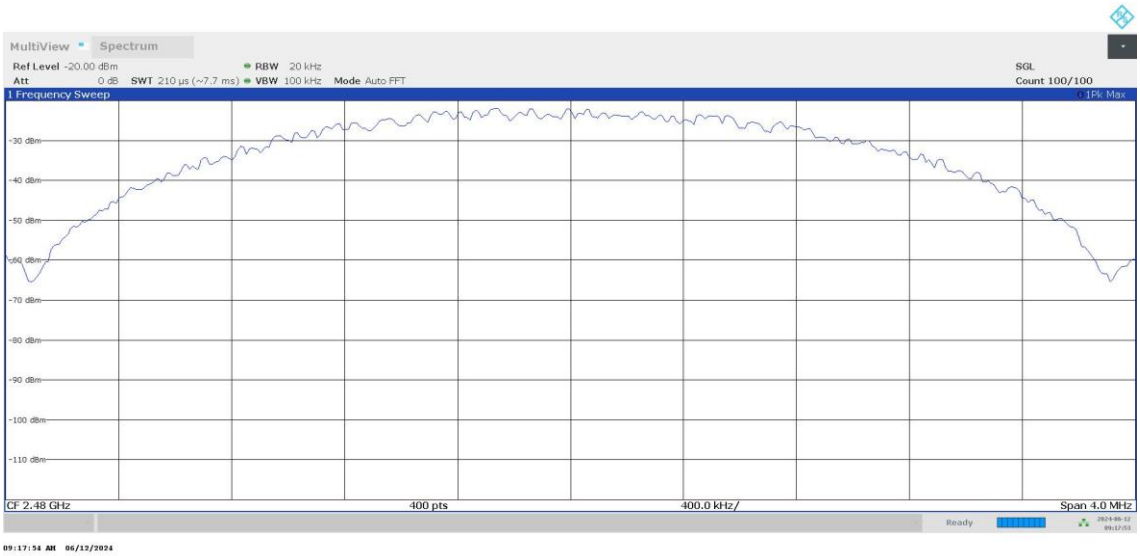




Frequency MHz = 2480.00000 Modulation = FLORA

Images:





99dBw Occupied Channel Bandwidth 99%

Specification

* RSS-Gen Issue 5, Clause 6.7 Occupied bandwidth (or 99% emission bandwidth):

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Freq (MHz)	99OBW (MHz)
2402.00000	1.025
2440.00000	1.025
2480.00000	1.025

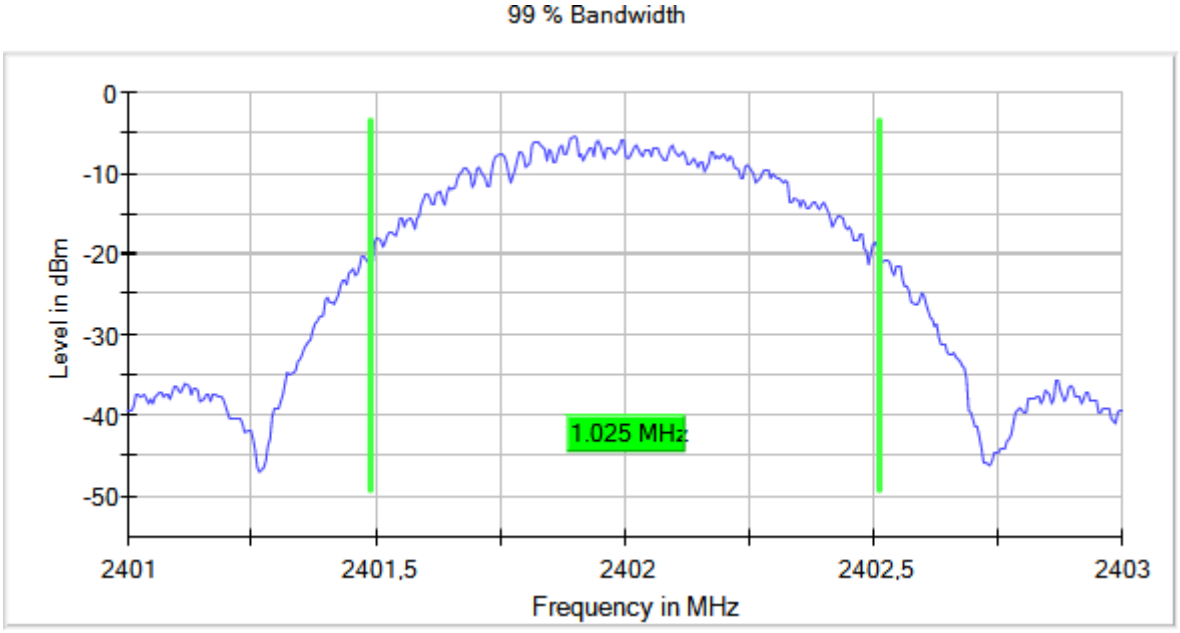
Verdict

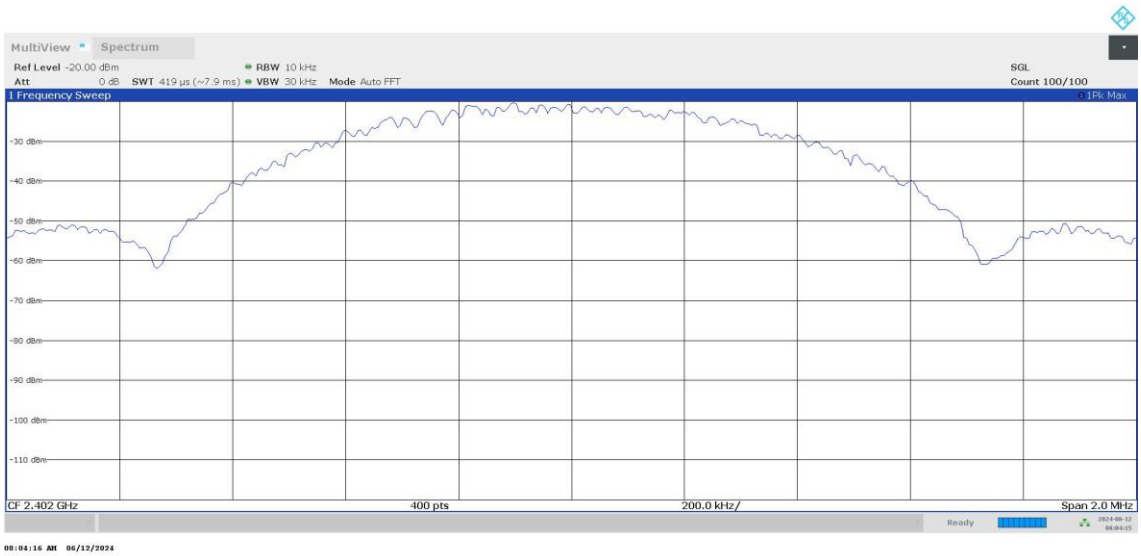
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

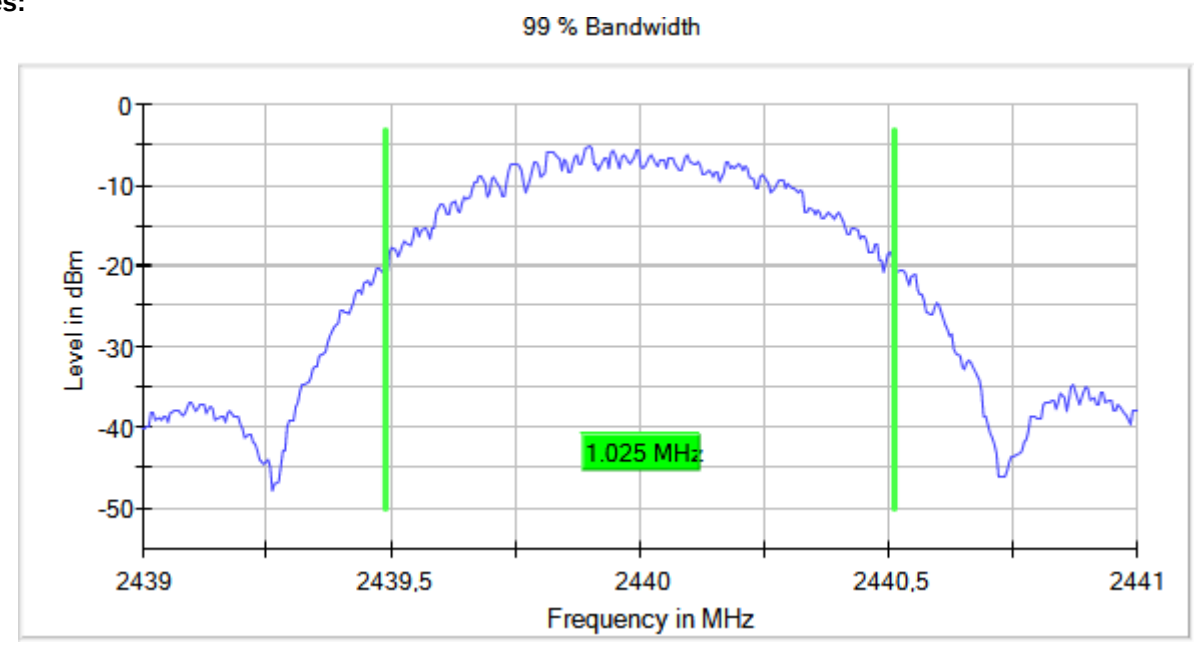
Images:

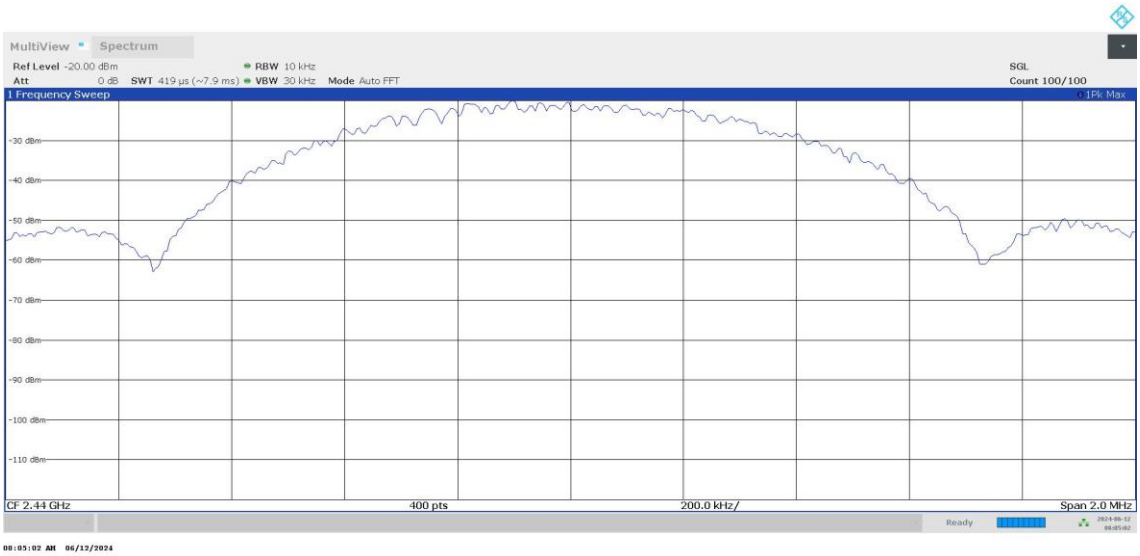




Frequency MHz = 2440.00000 Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

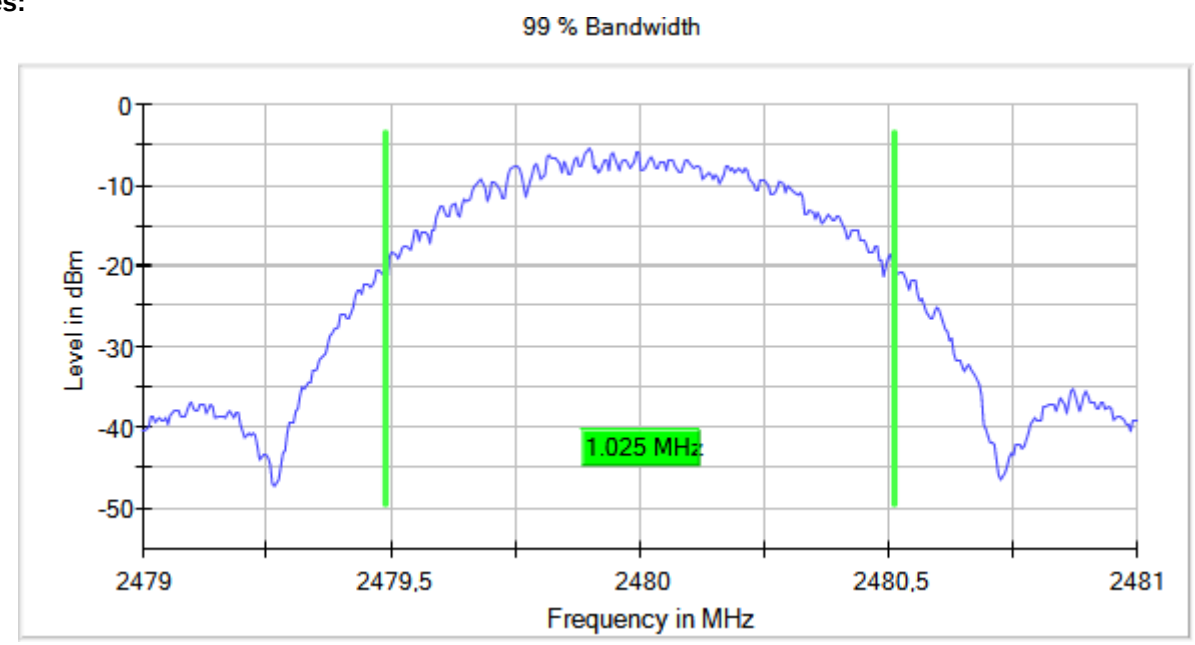
Images:

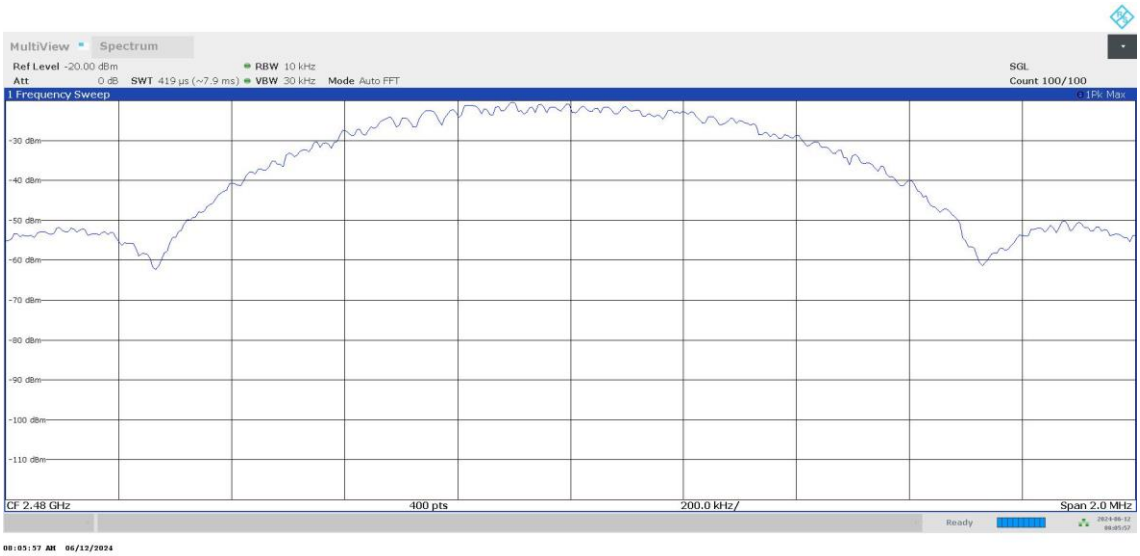




Frequency MHz = 2480.00000 Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Images:





Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Results

Freq (MHz)	99OBW (MHz)
2402.00000	2.050
2440.00000	2.050
2480.00000	2.050

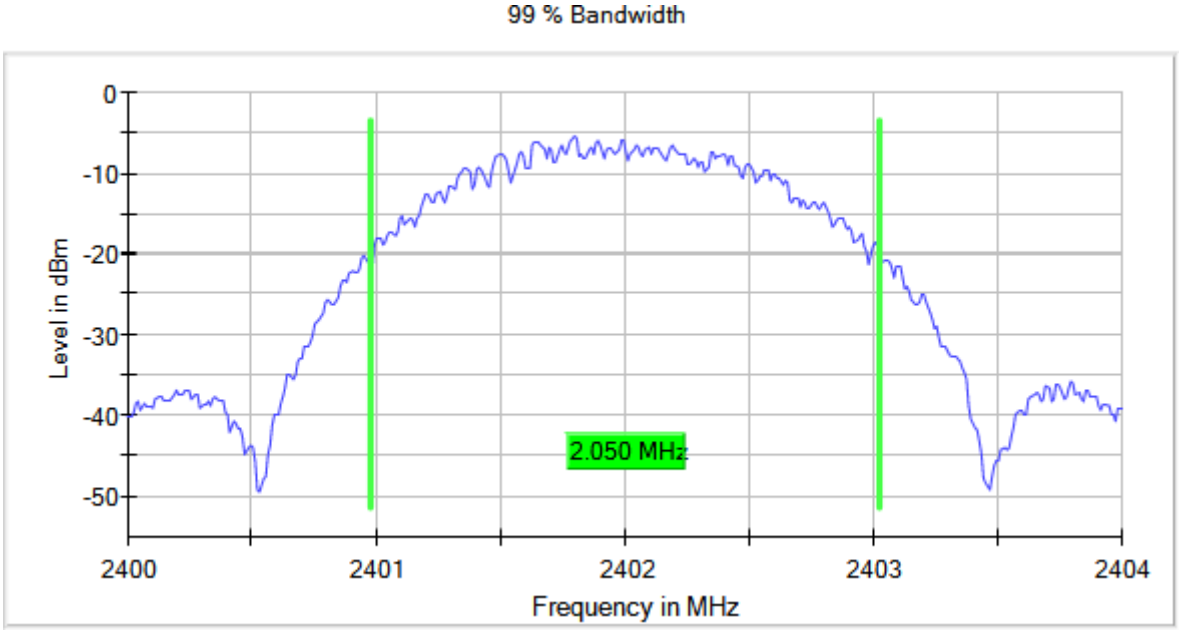
Verdict

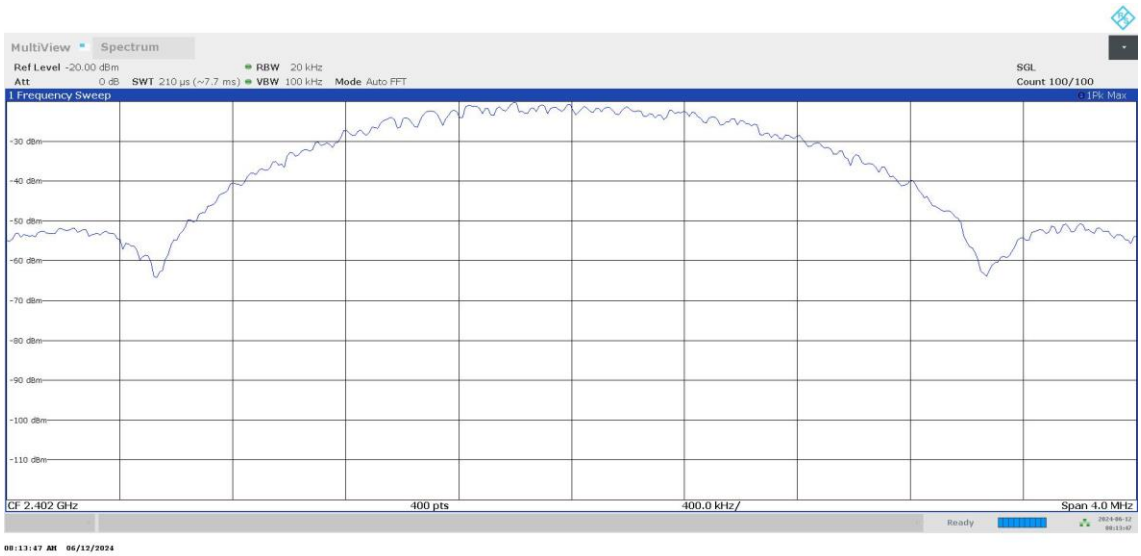
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

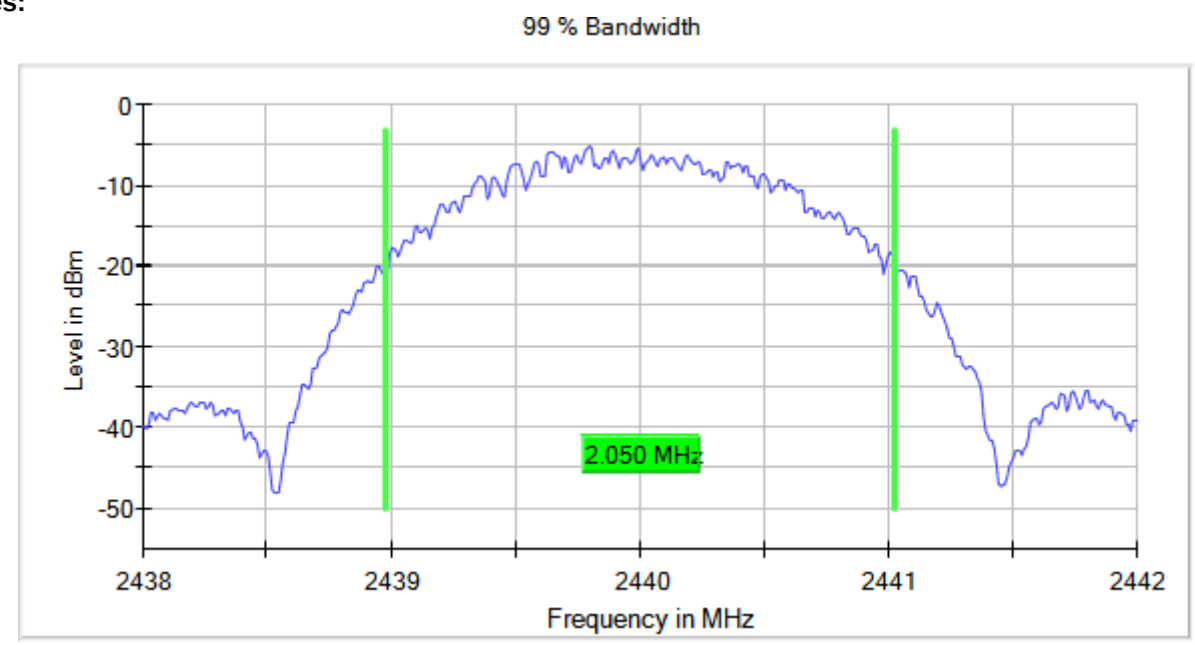
Images:

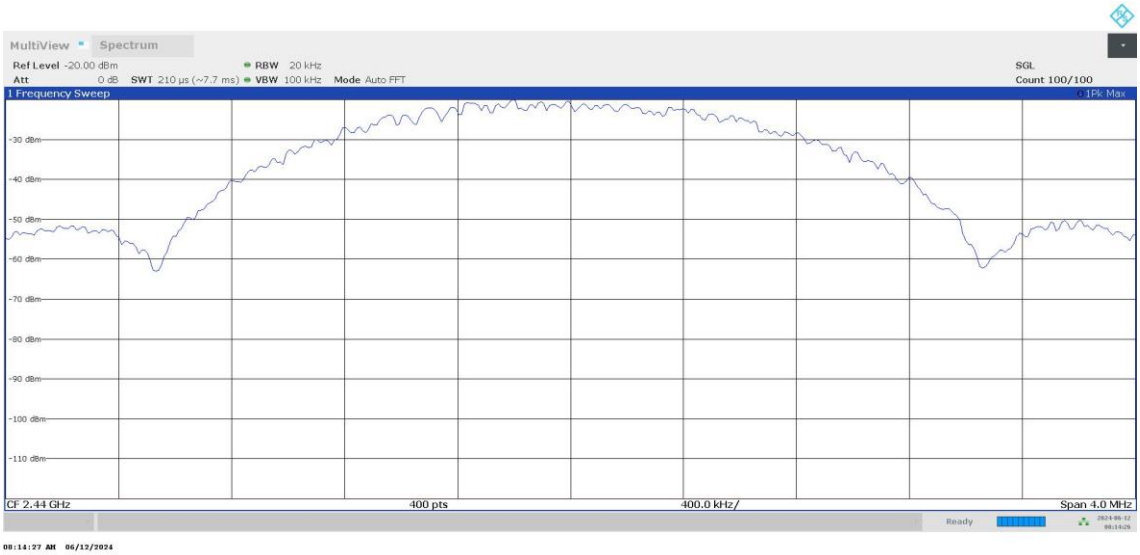




Frequency MHz = 2440.00000 Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

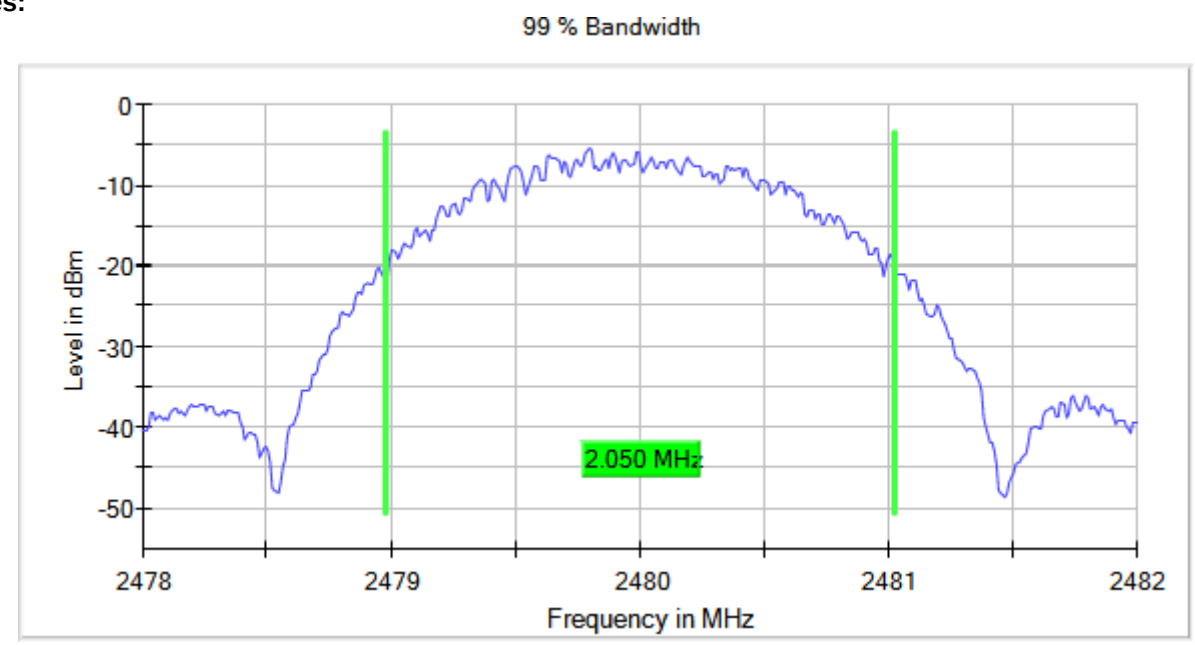
Images:

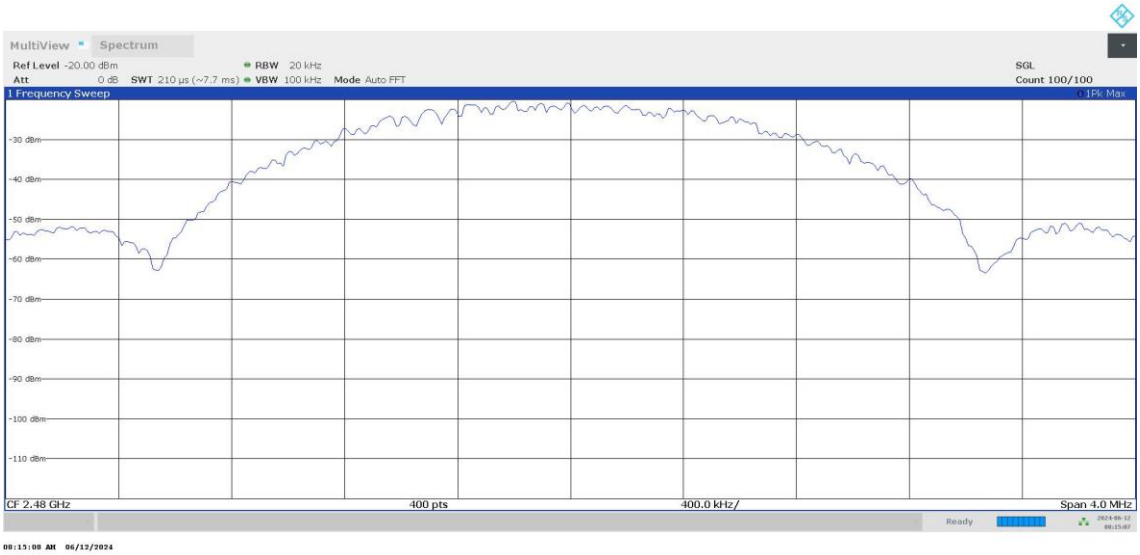




Frequency MHz = 2480.00000 Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Images:





Modulation: BT (GFSK)

Results

Freq (MHz)	99OBW (MHz)
2402.00000	0.870
2441.00000	0.875
2480.00000	0.875

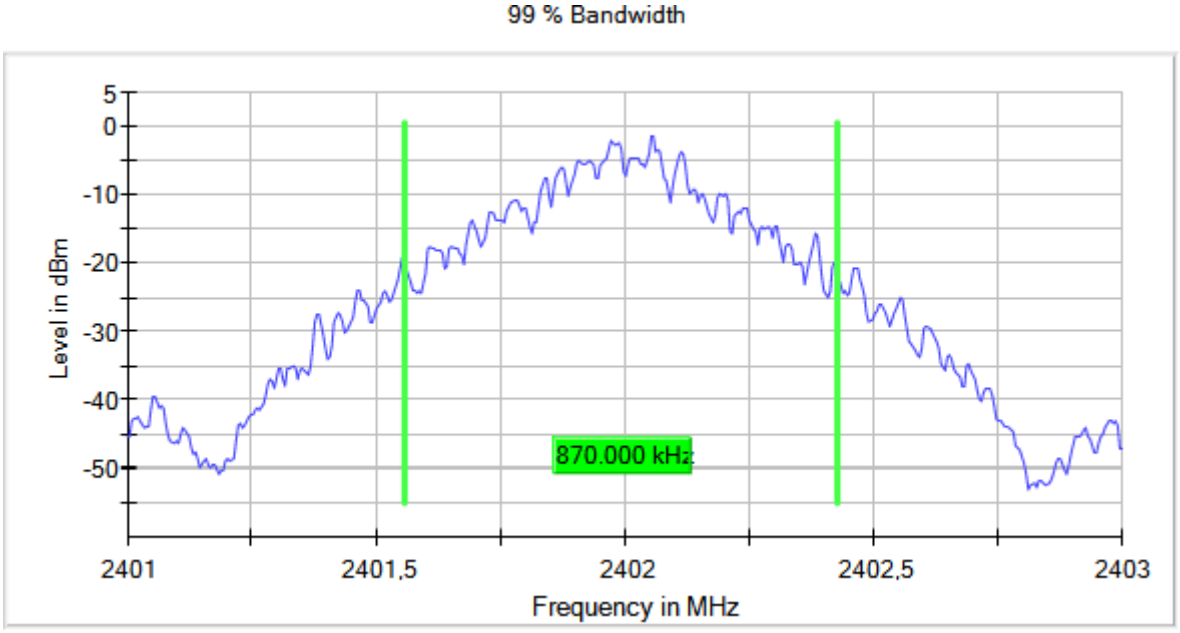
Verdict

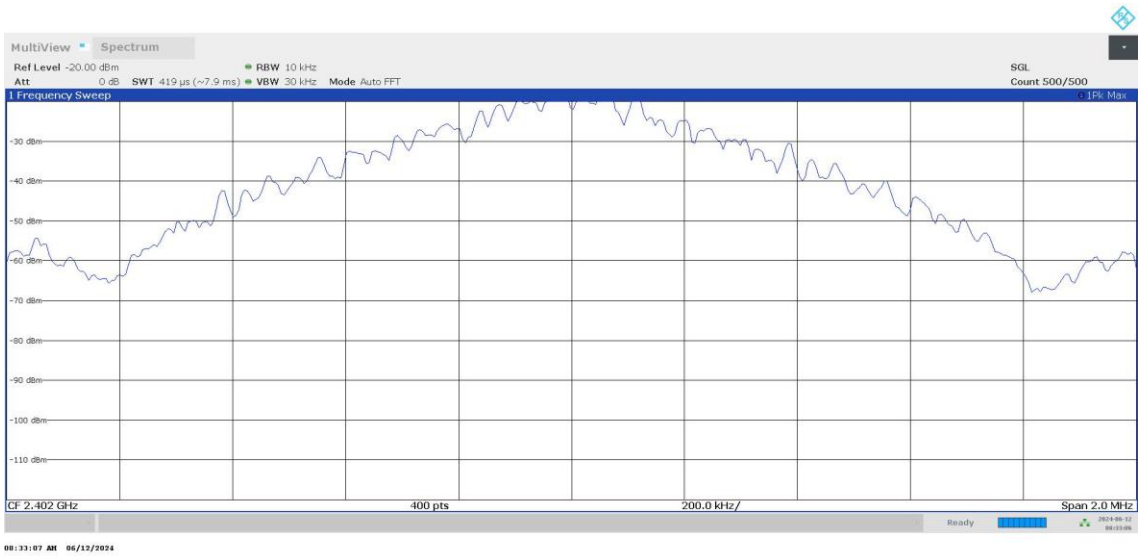
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BT (GFSK)

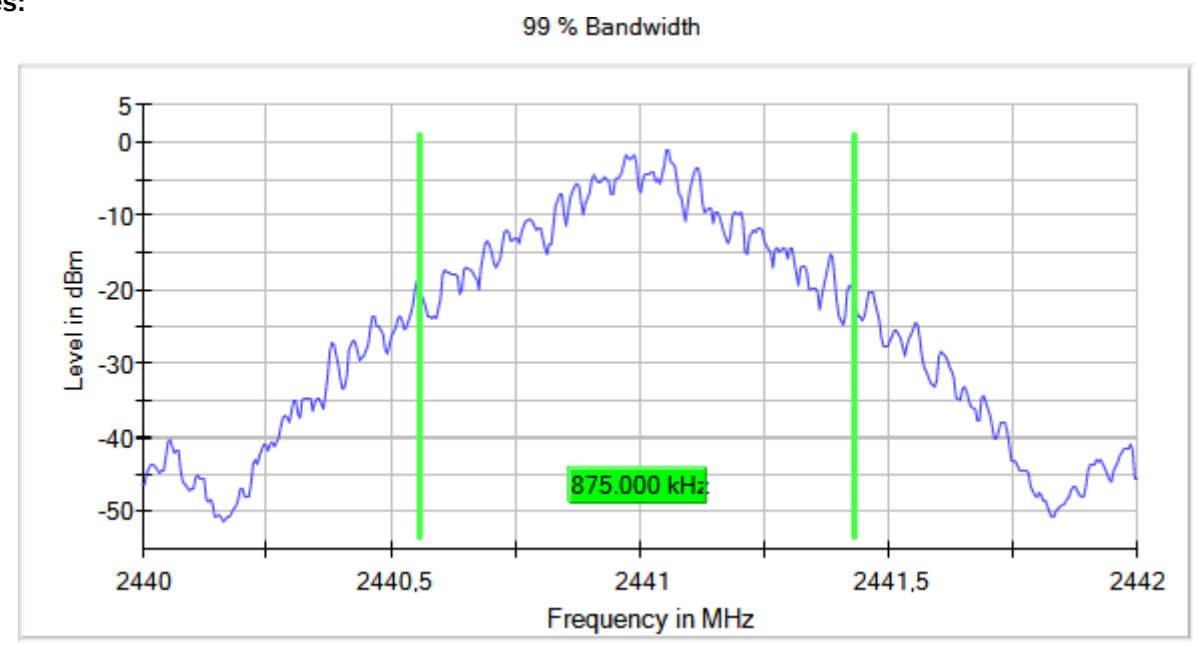
Images:

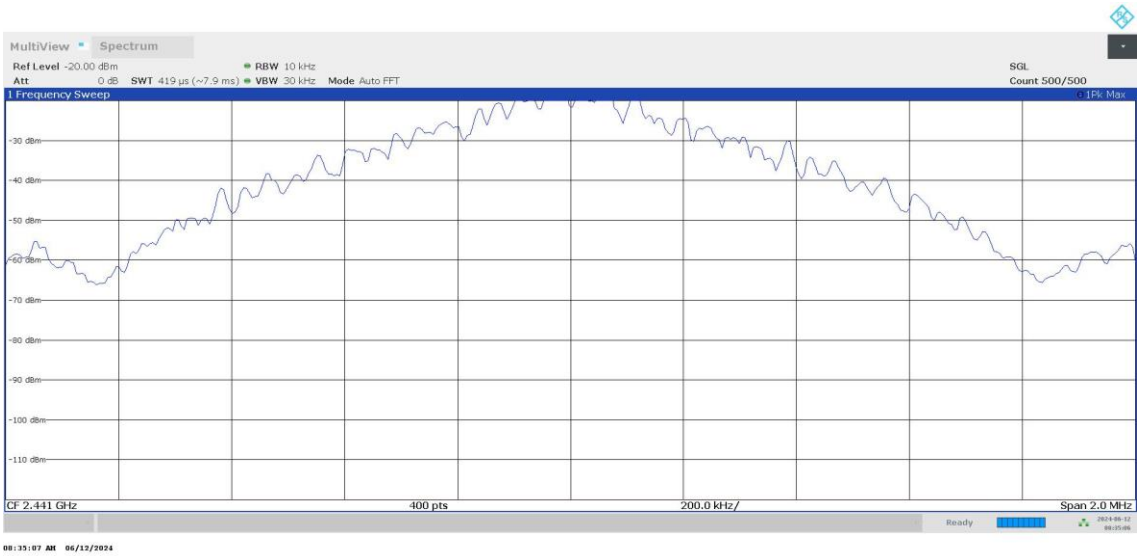




Frequency MHz = 2441.00000 Modulation = BT (GFSK)

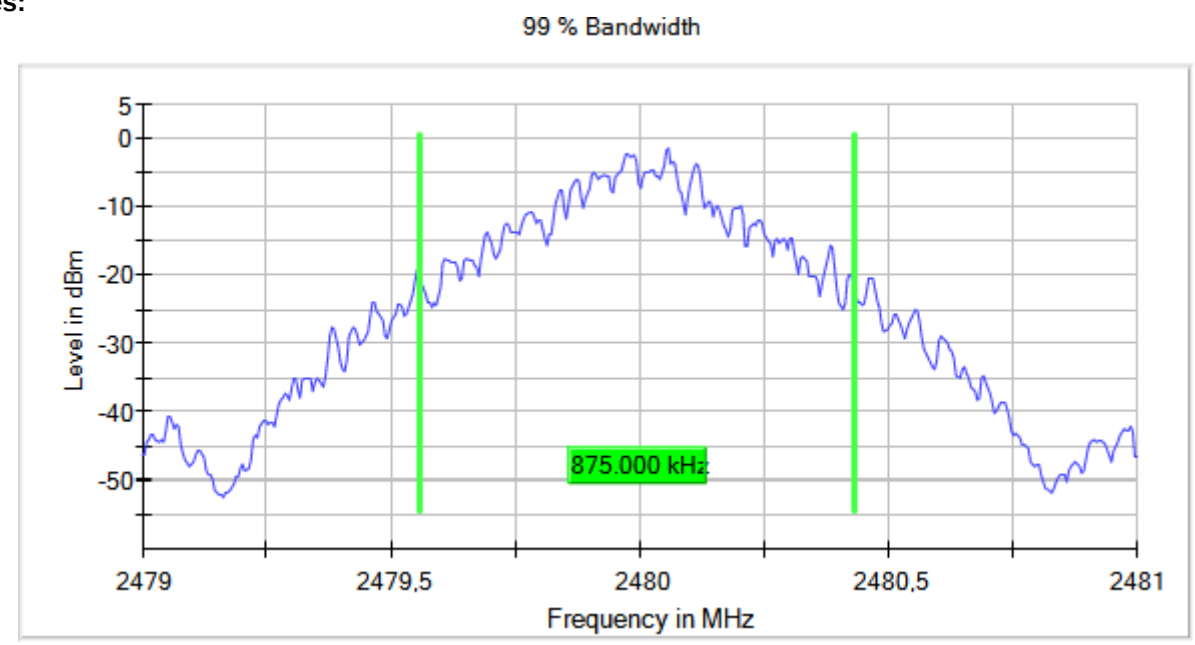
Images:

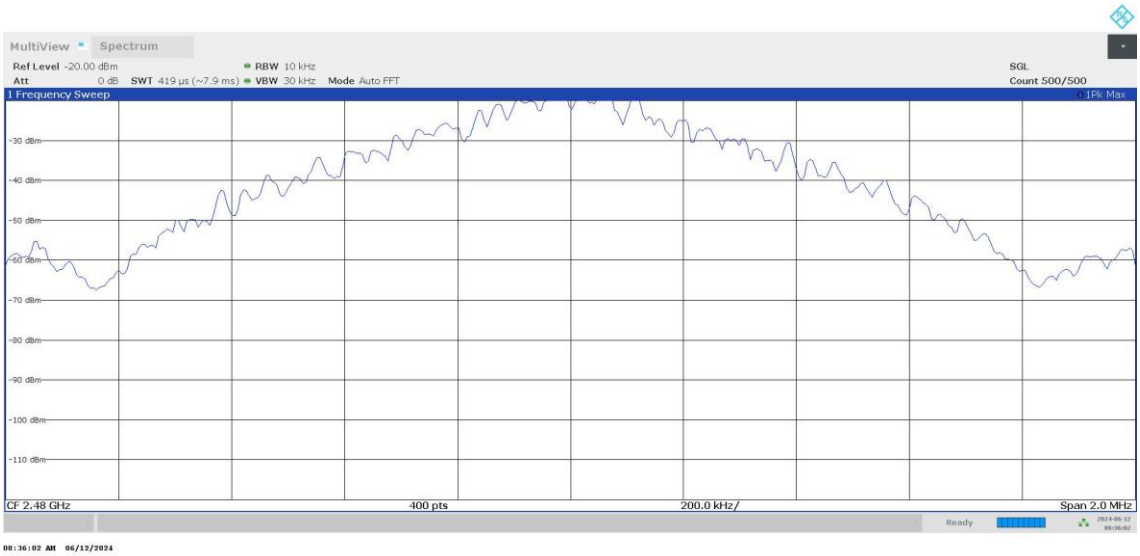




Frequency MHz = 2480.00000 Modulation = BT (GFSK)

Images:





Modulation: BT (Pi/4 DQPSK)

Results

Freq (MHz)	99OBW (MHz)
2402.00000	1.200
2441.00000	1.195
2480.00000	1.195

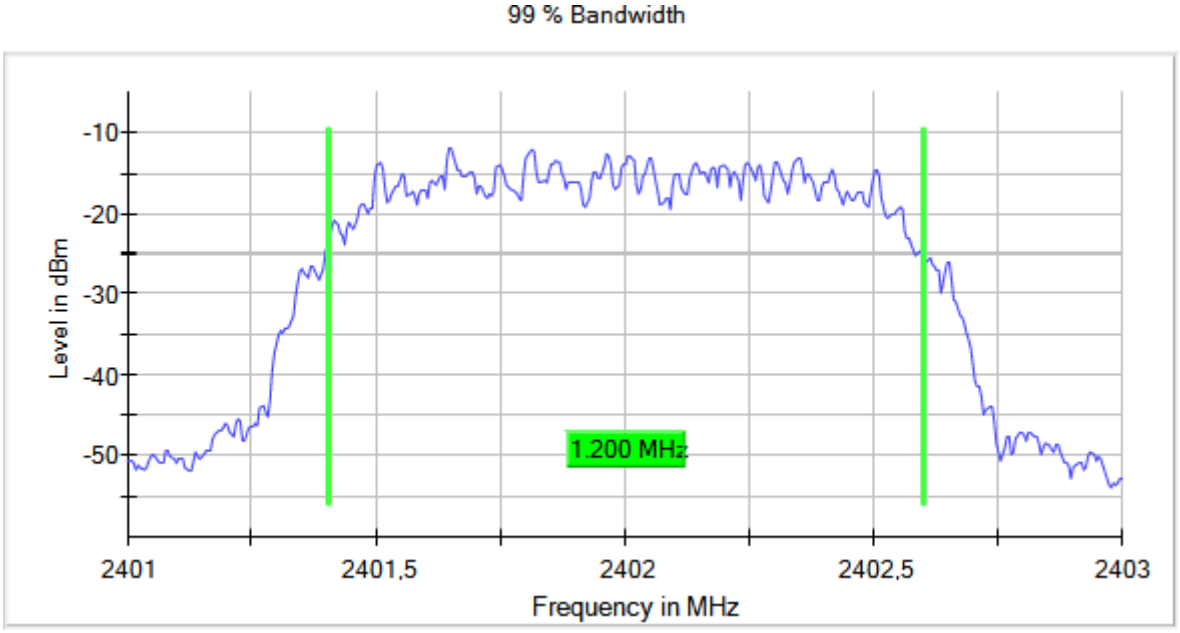
Verdict

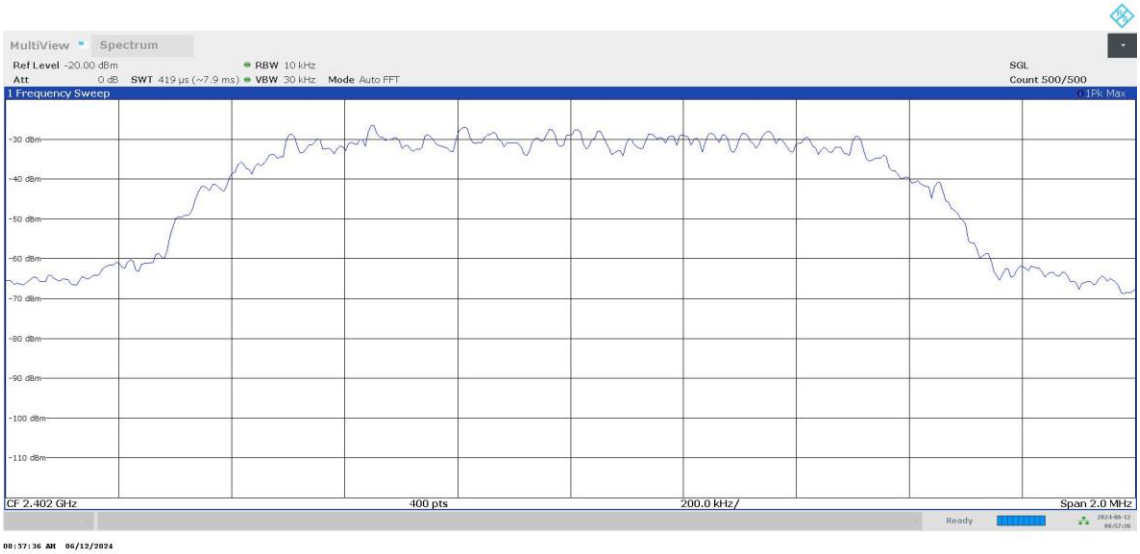
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BT (Pi/4 DQPSK)

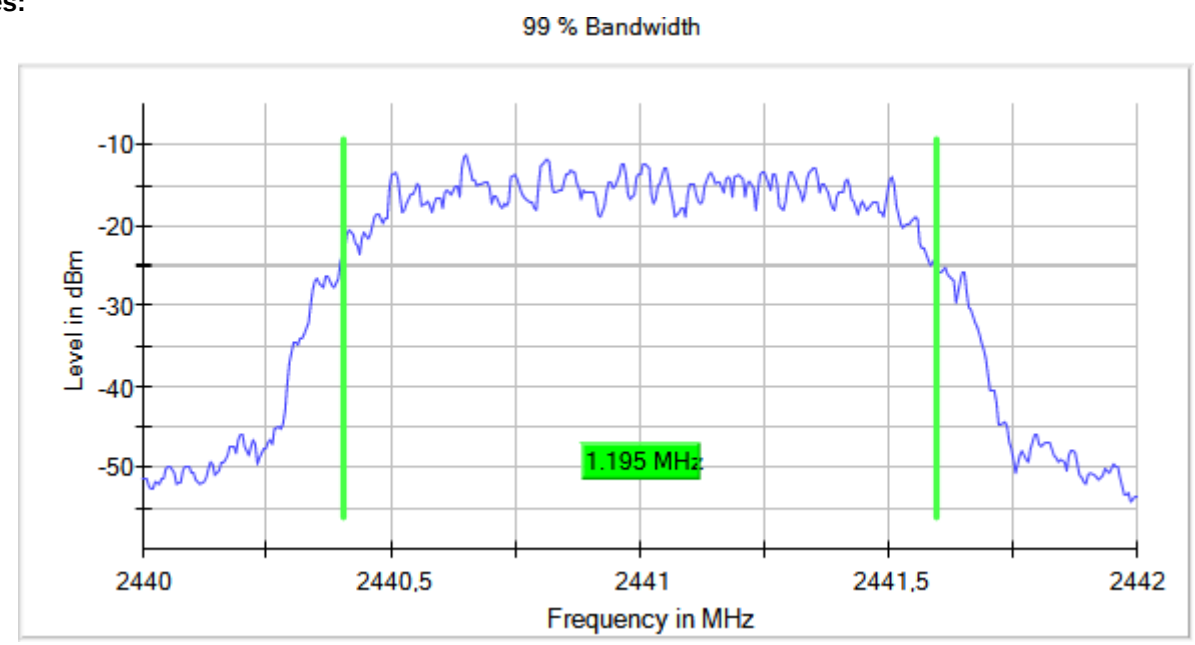
Images:

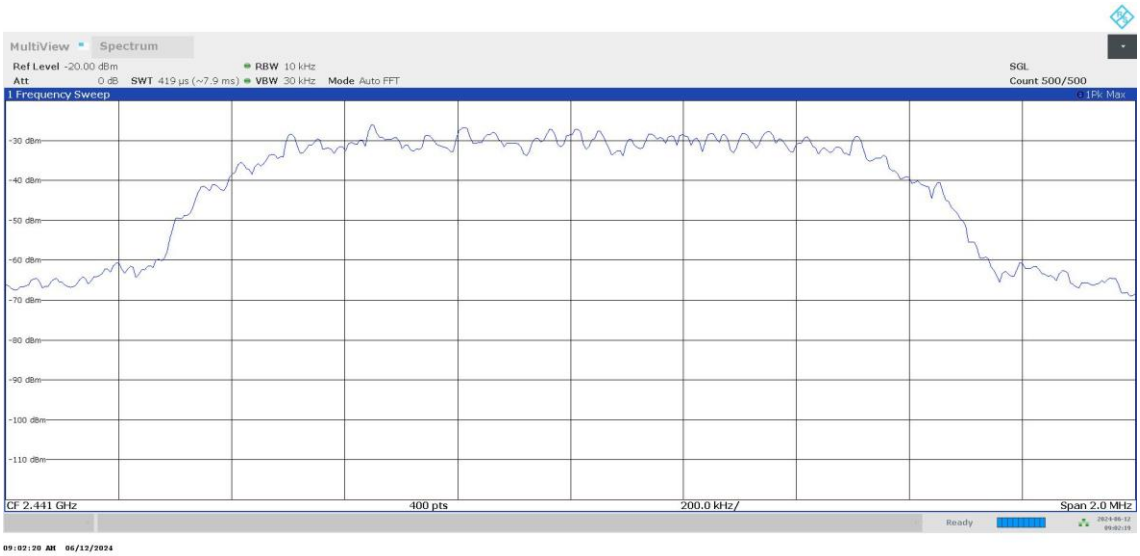




Frequency MHz = 2441.00000 Modulation = BT (Pi/4 DQPSK)

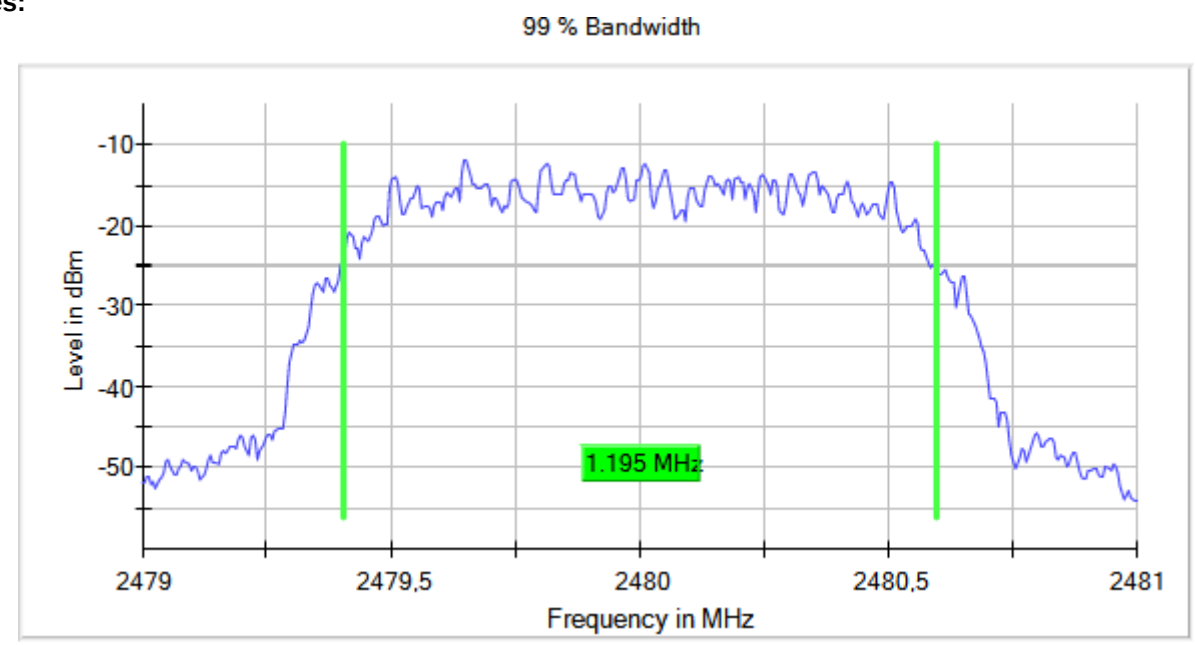
Images:

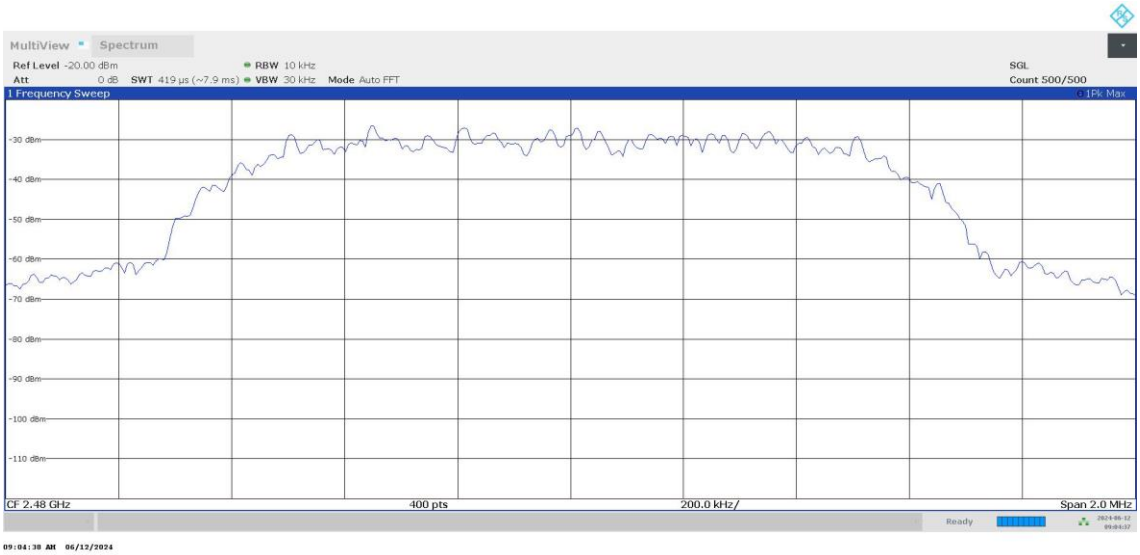




Frequency MHz = 2480.00000 Modulation = BT (Pi/4 DQPSK)

Images:





Modulation: BT (8DPSK)

Results

Freq (MHz)	99OBW (MHz)
2402.00000	1.205
2441.00000	1.205
2480.00000	1.205

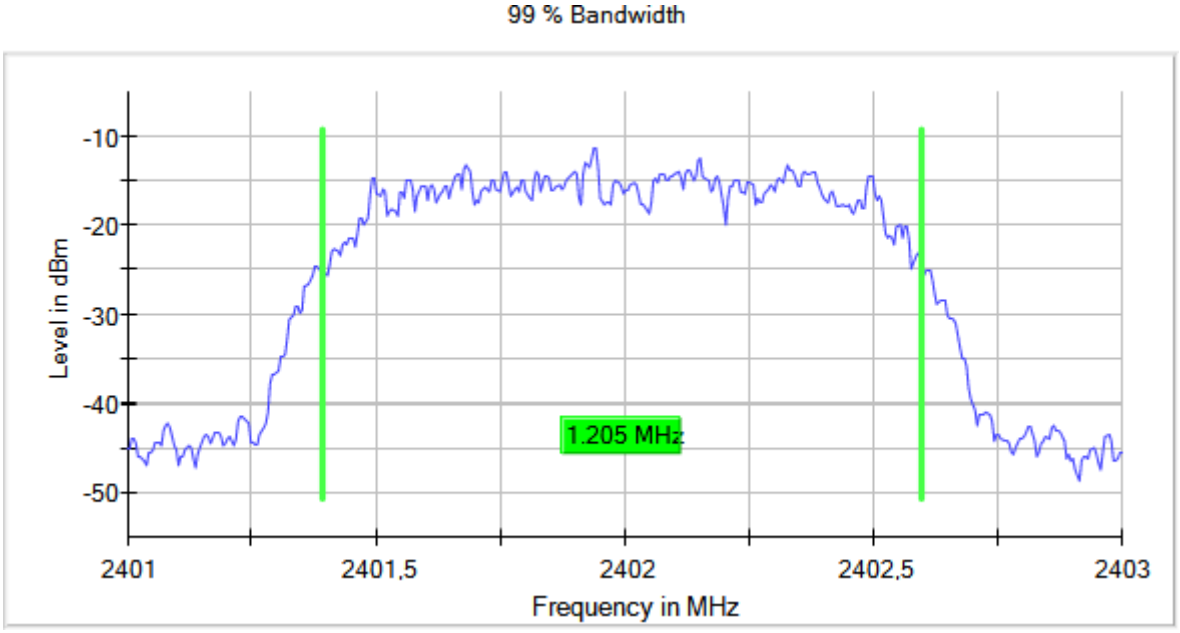
Verdict

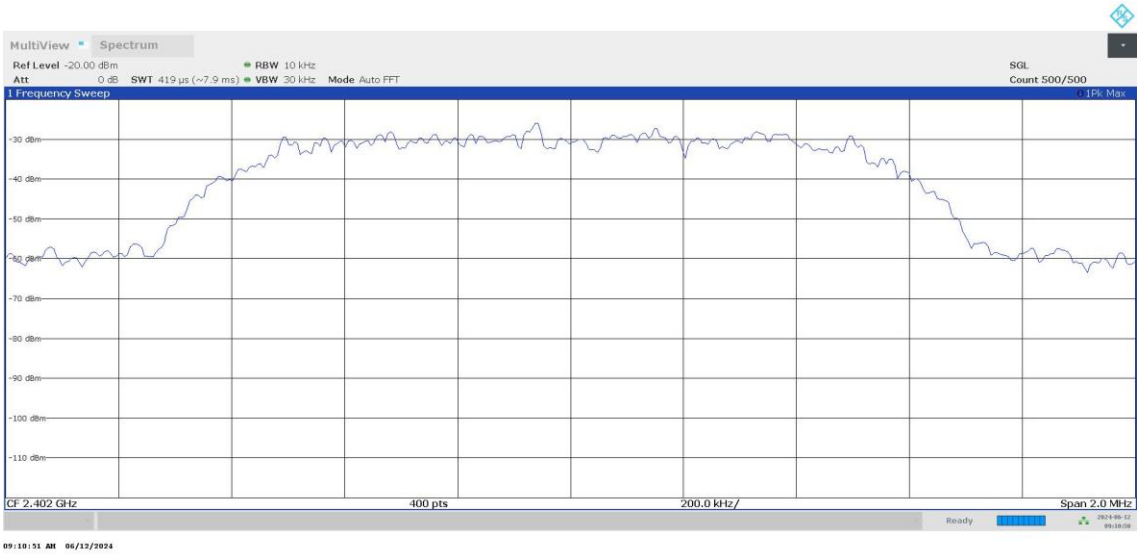
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = BT (8DPSK)

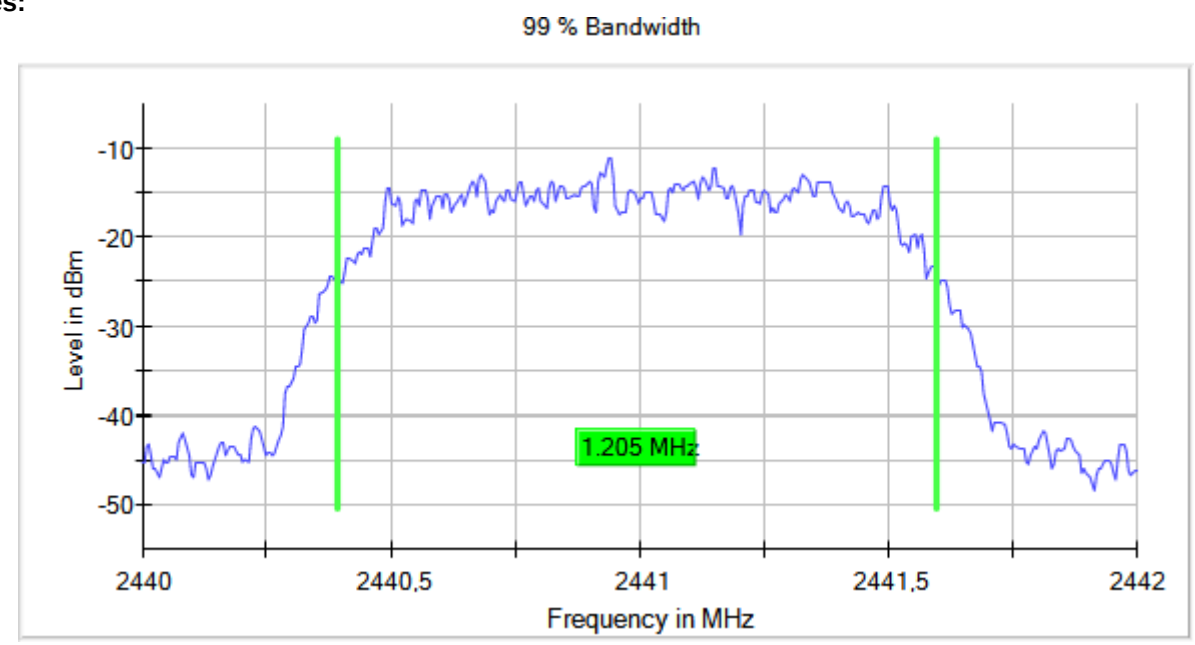
Images:

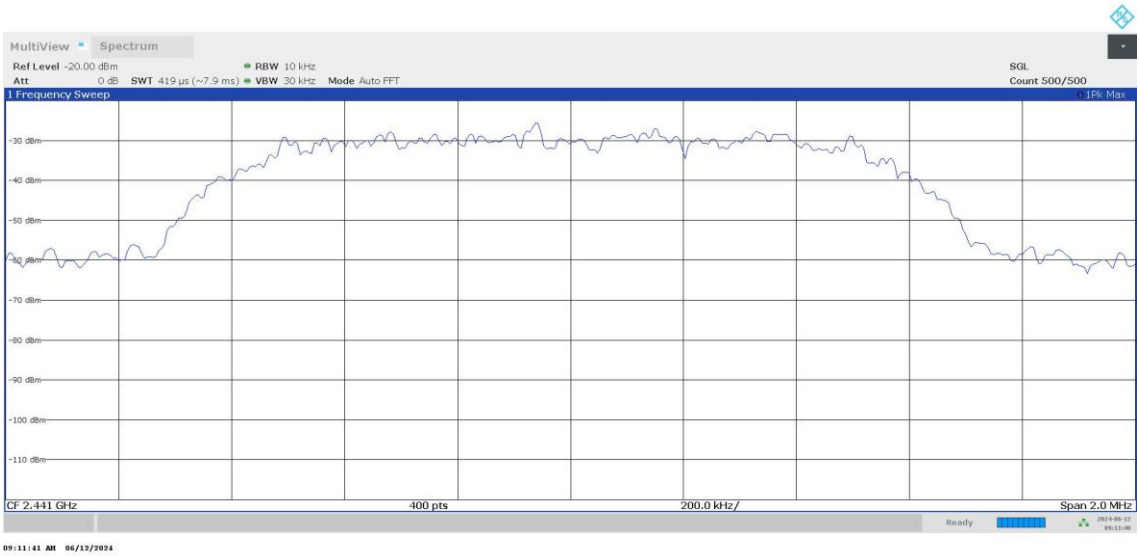




Frequency MHz = 2441.00000 Modulation = BT (8DPSK)

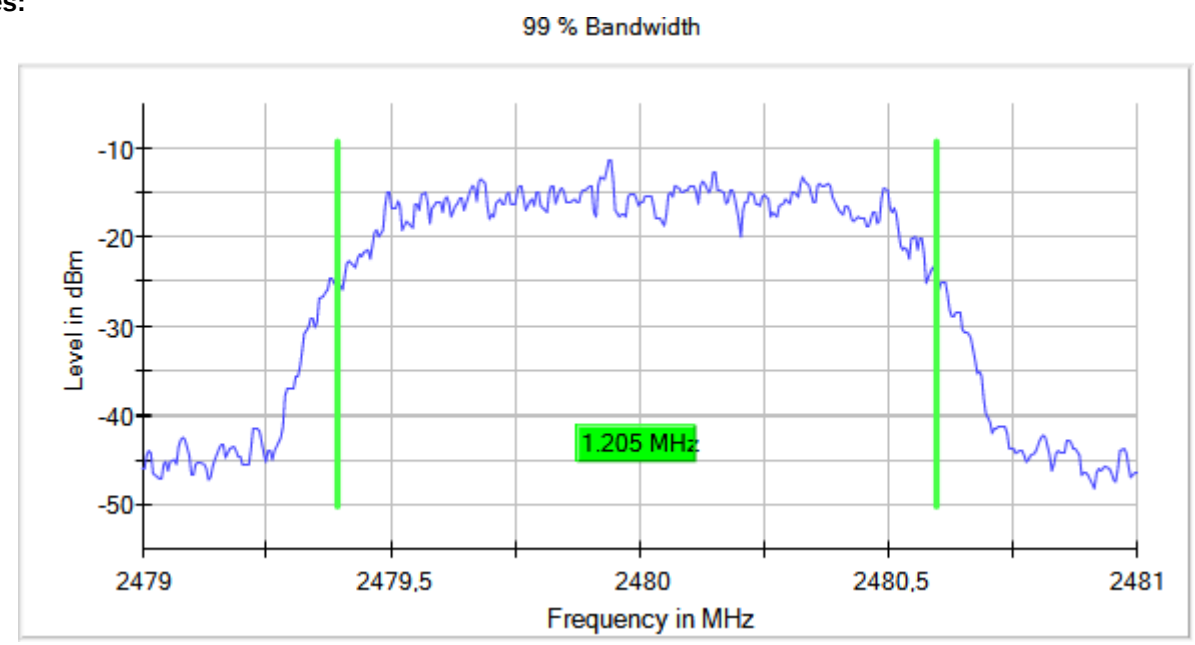
Images:

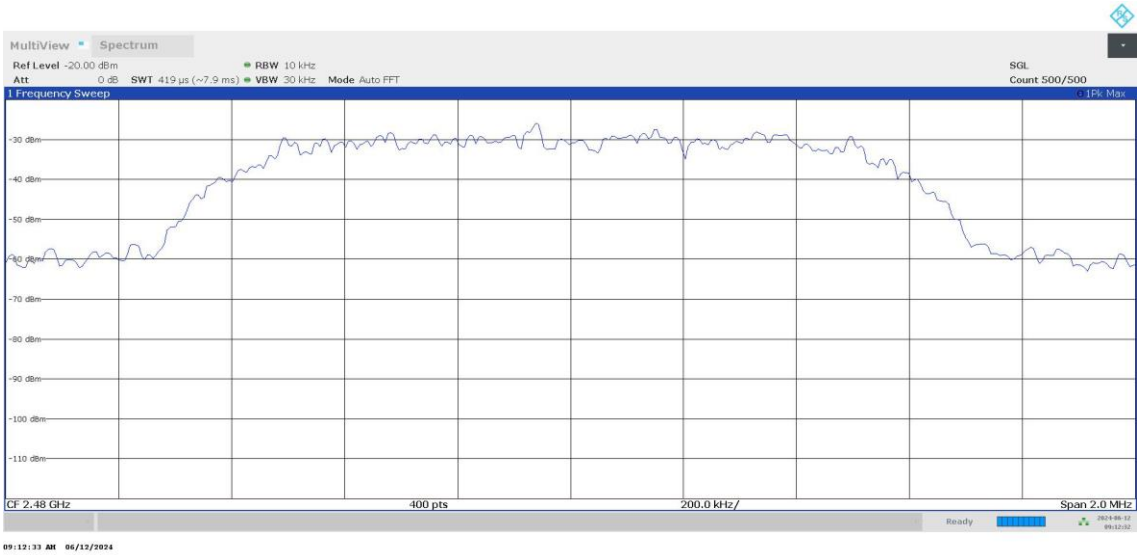




Frequency MHz = 2480.00000 Modulation = BT (8DPSK)

Images:





Modulation: DM

Results

Freq (MHz)	99OBW (MHz)
2402.00000	1.730
2440.00000	1.730
2480.00000	1.730

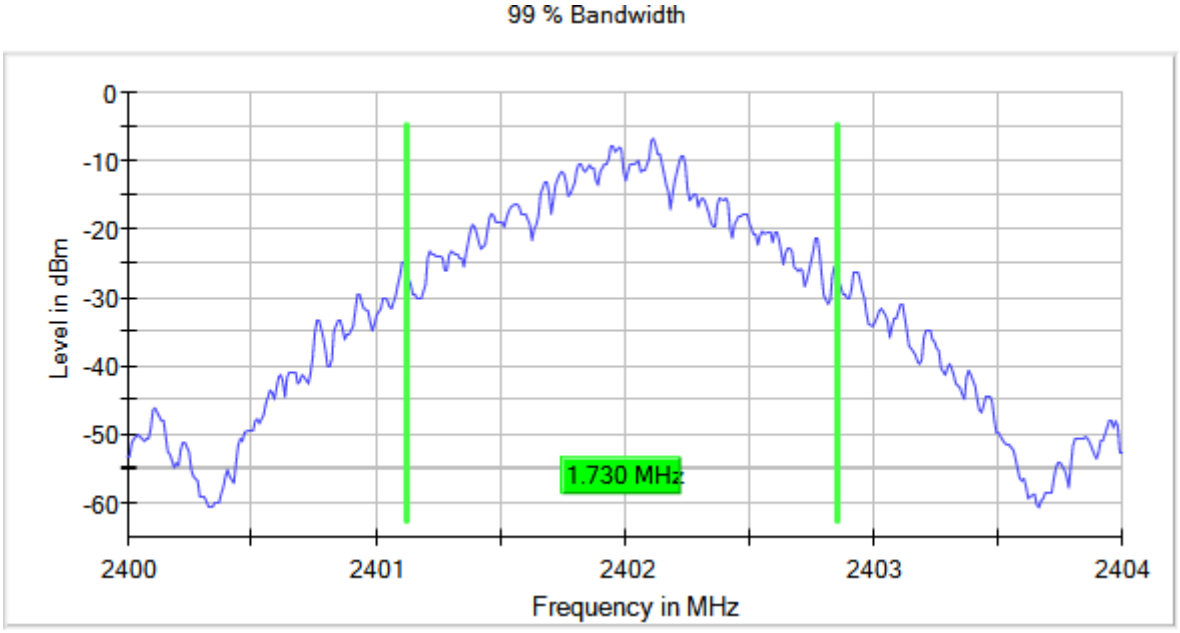
Verdict

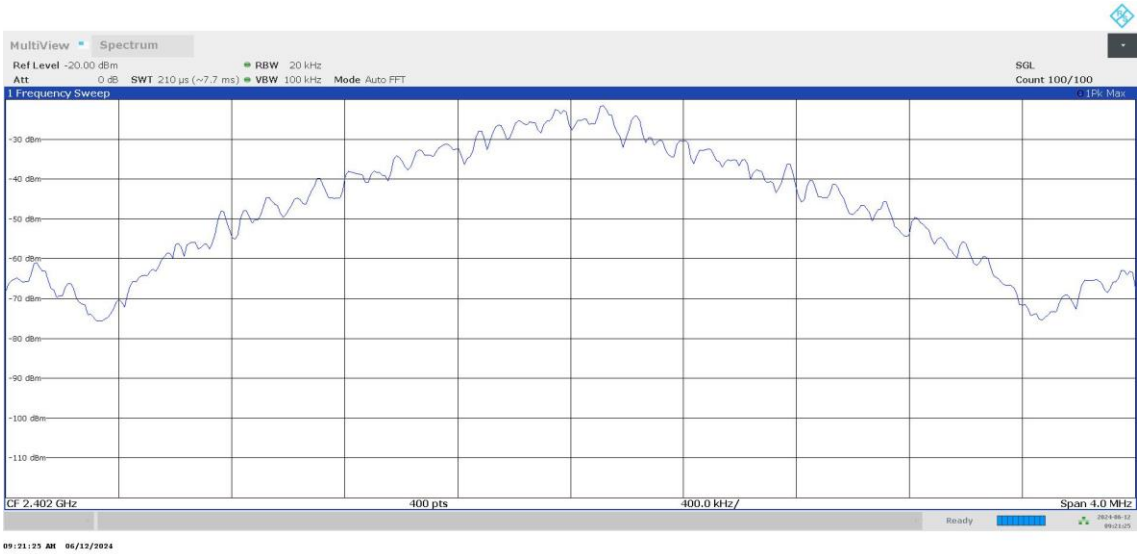
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = DM

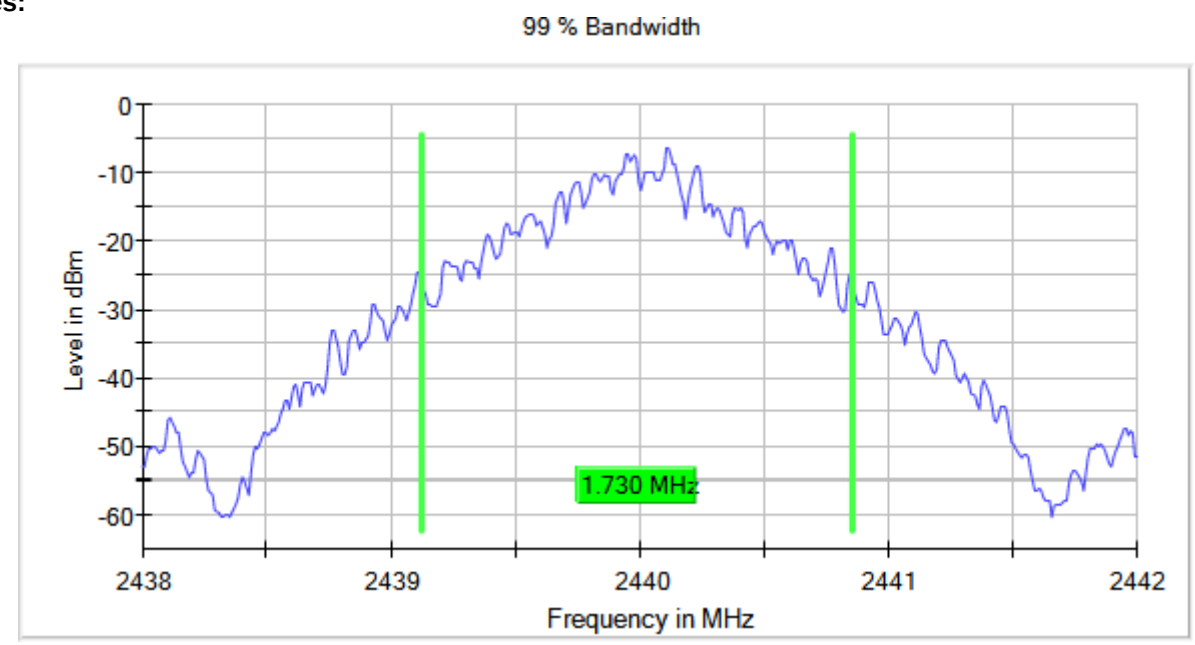
Images:

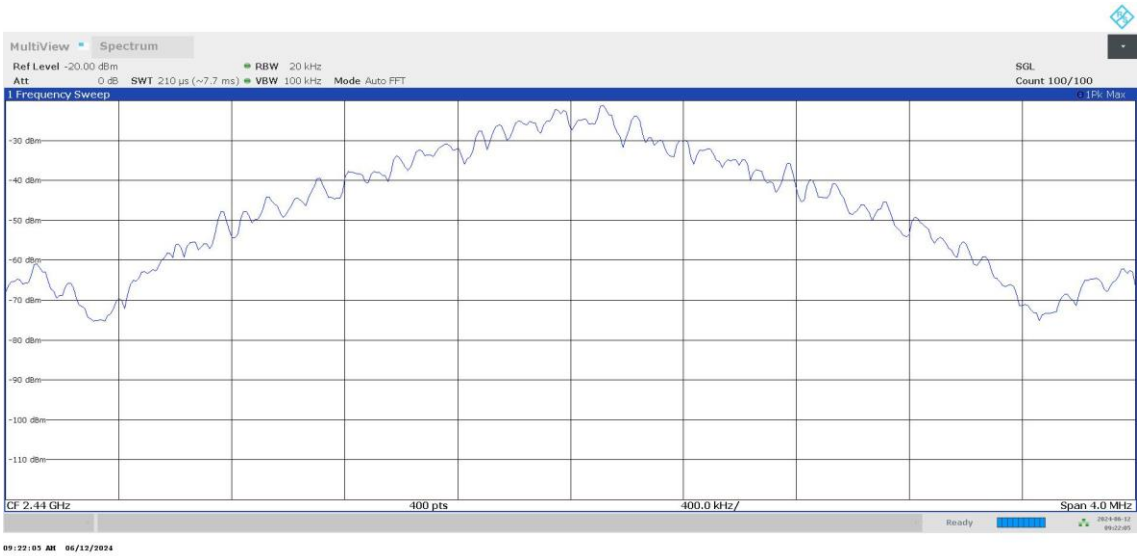




Frequency MHz = 2440.00000 Modulation = DM

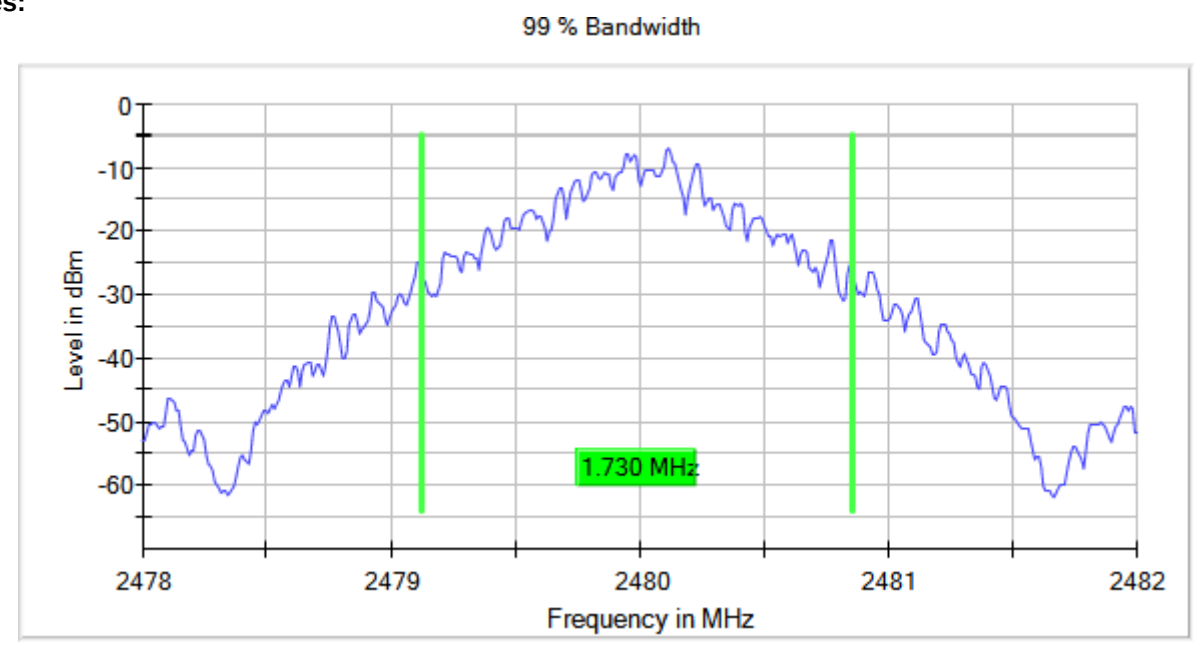
Images:

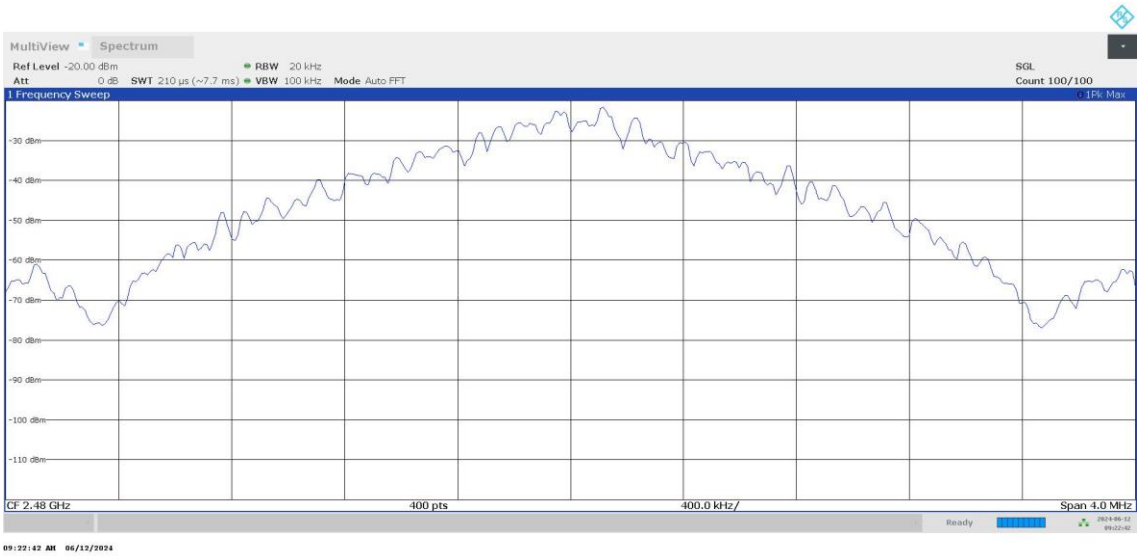




Frequency MHz = 2480.00000 Modulation = DM

Images:





Modulation: FLORA

Results

Freq (MHz)	99OBW (MHz)
2402.00000	2.640
2440.00000	2.630
2480.00000	2.640

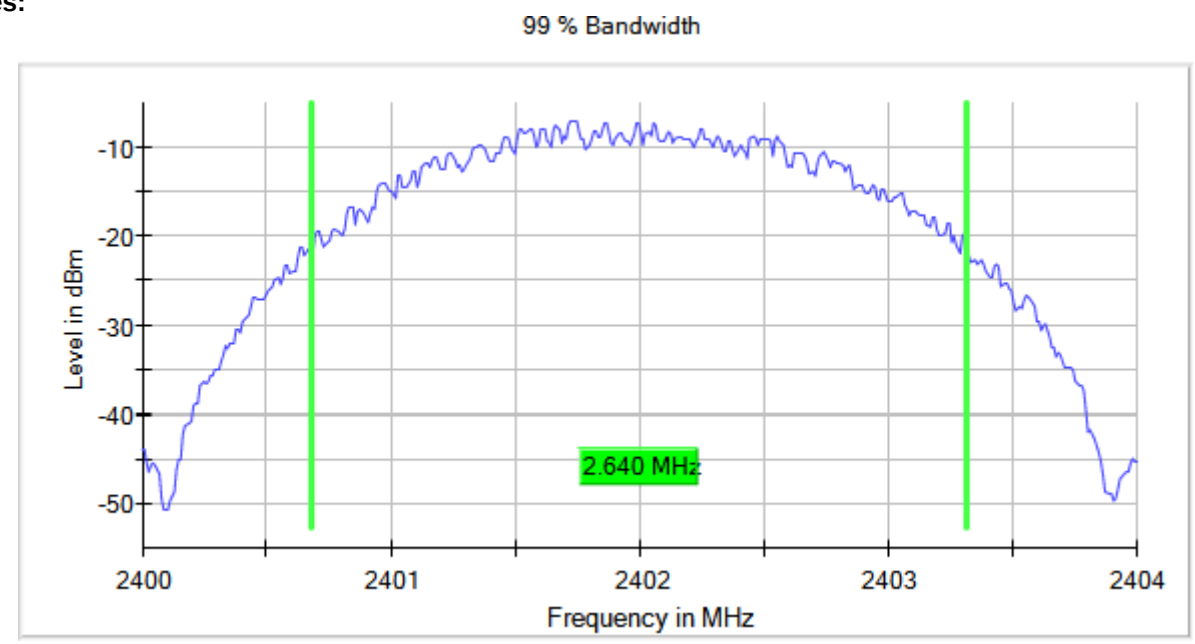
Verdict

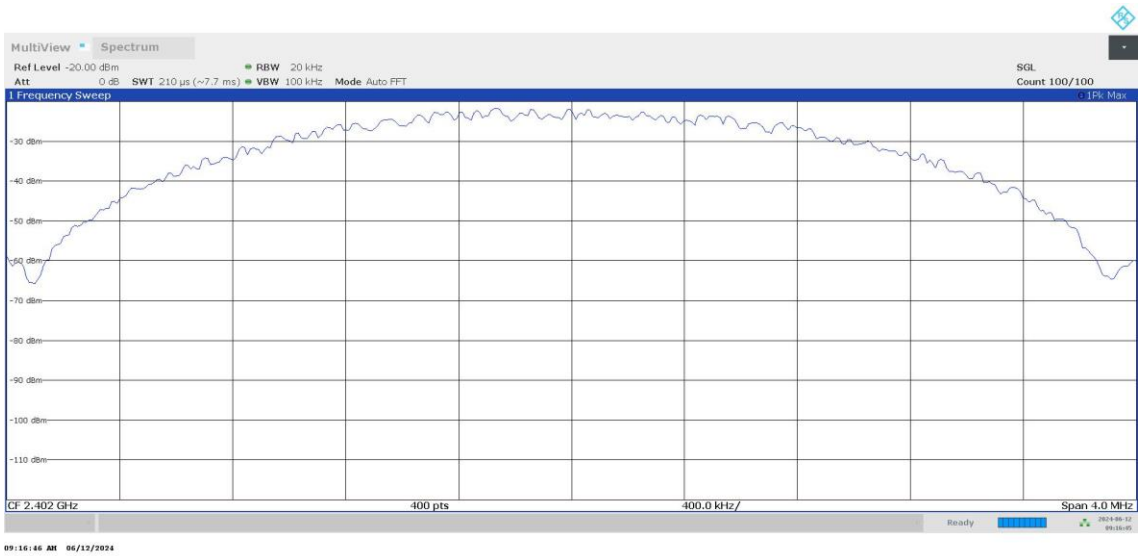
Pass

Attachments

Frequency MHz = 2402.00000 Modulation = FLORA

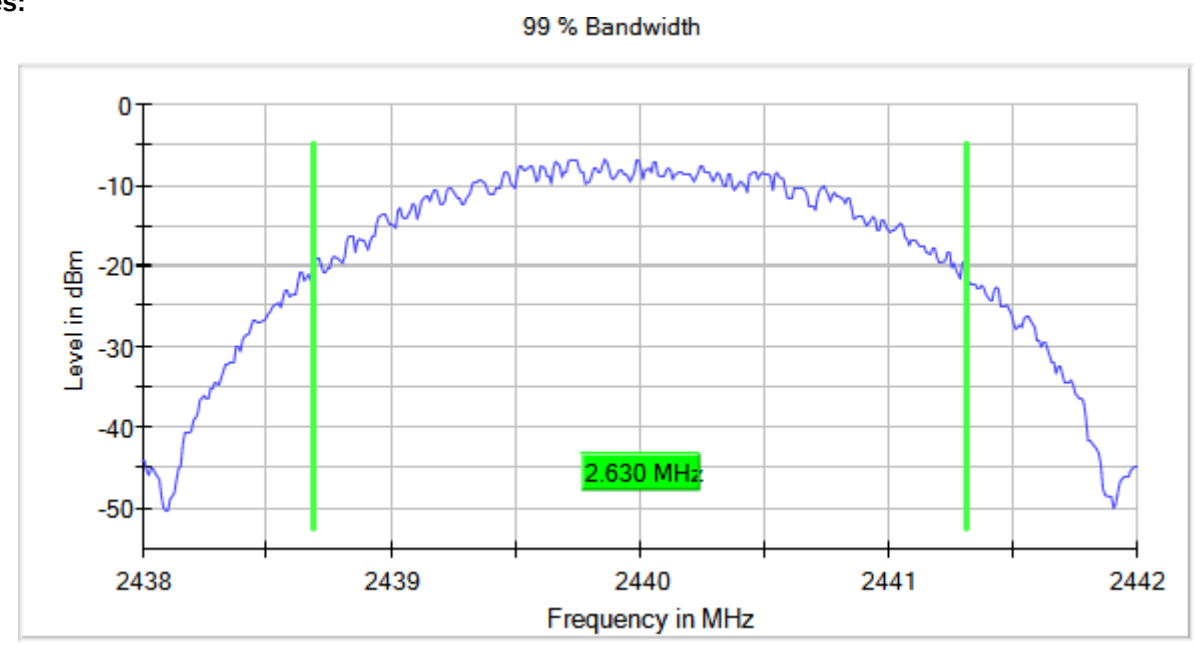
Images:

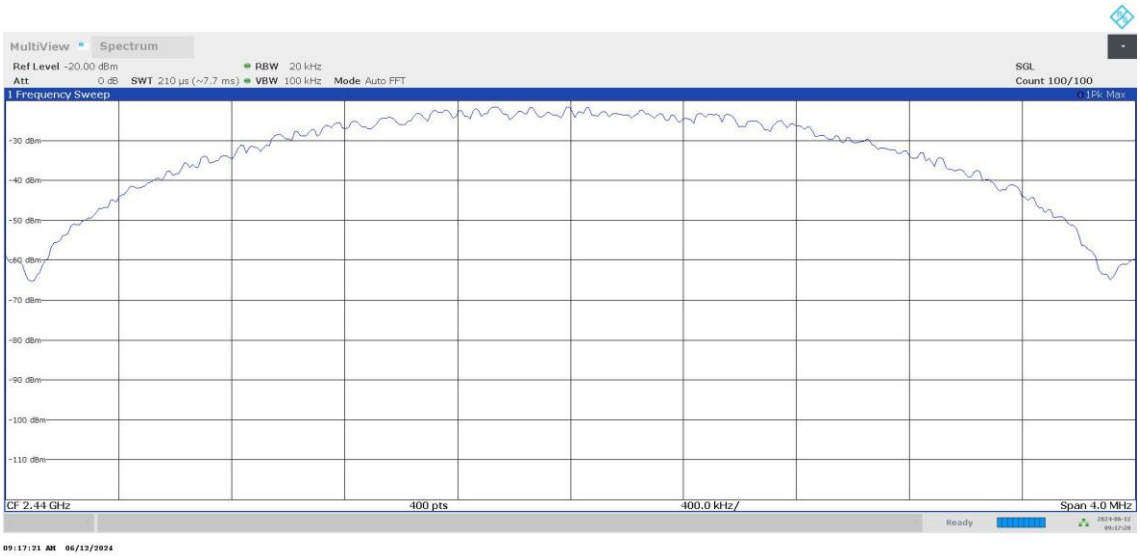




Frequency MHz = 2440.00000 Modulation = FLORA

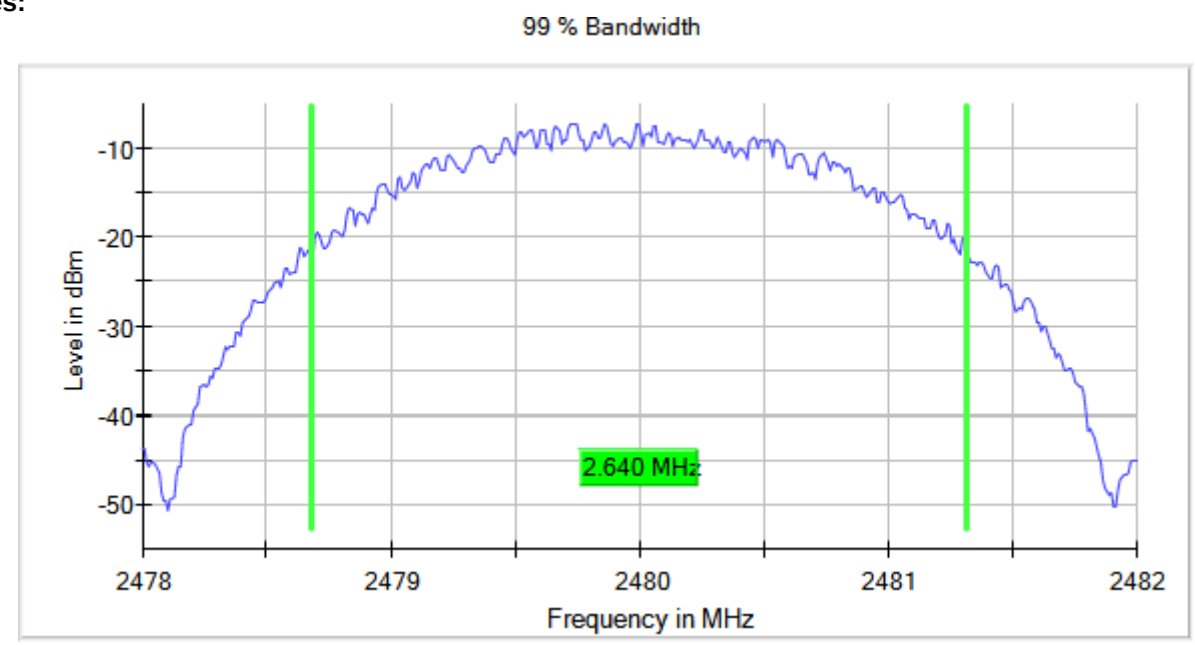
Images:

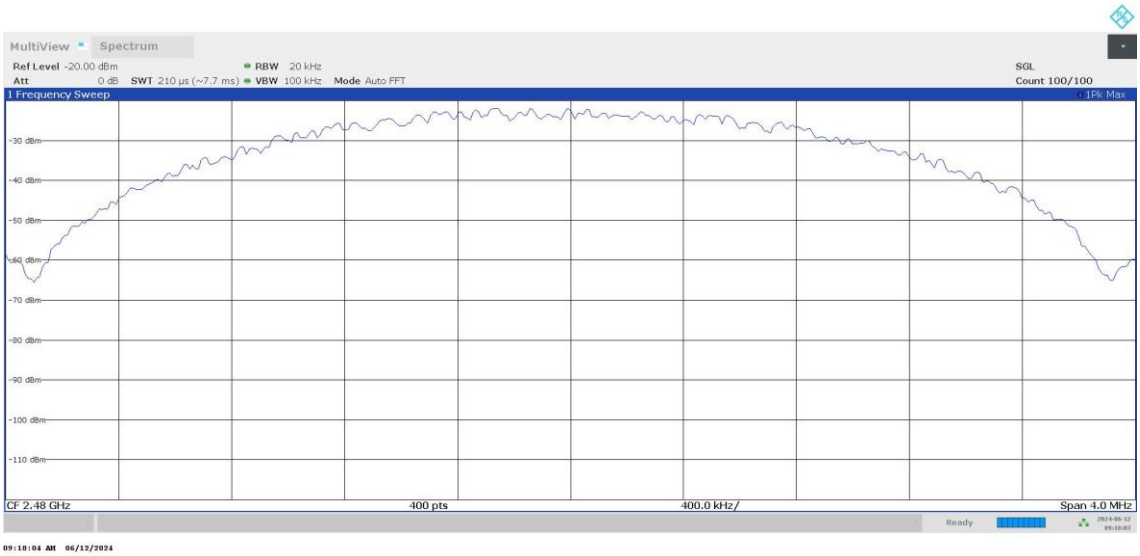




Frequency MHz = 2480.00000 Modulation = FLORA

Images:





FCC 15.249 (b) / RSS-210 B.10 (a) Field strength of fundamental and harmonics emissions

Limits

The field strength of emissions from intentional radiators shall comply with the following:

Fundamental frequency (MHz)	Field strength of fundamental (mV/m)	Field strength (dBµV/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 - 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000 - 24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Modulation: BTLE 5.0 (GFSK 1 Mbit/s)

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	92.40	90.37
	2440.00	92.67	91.07
	2480.00	91.87	90.88

Verdict

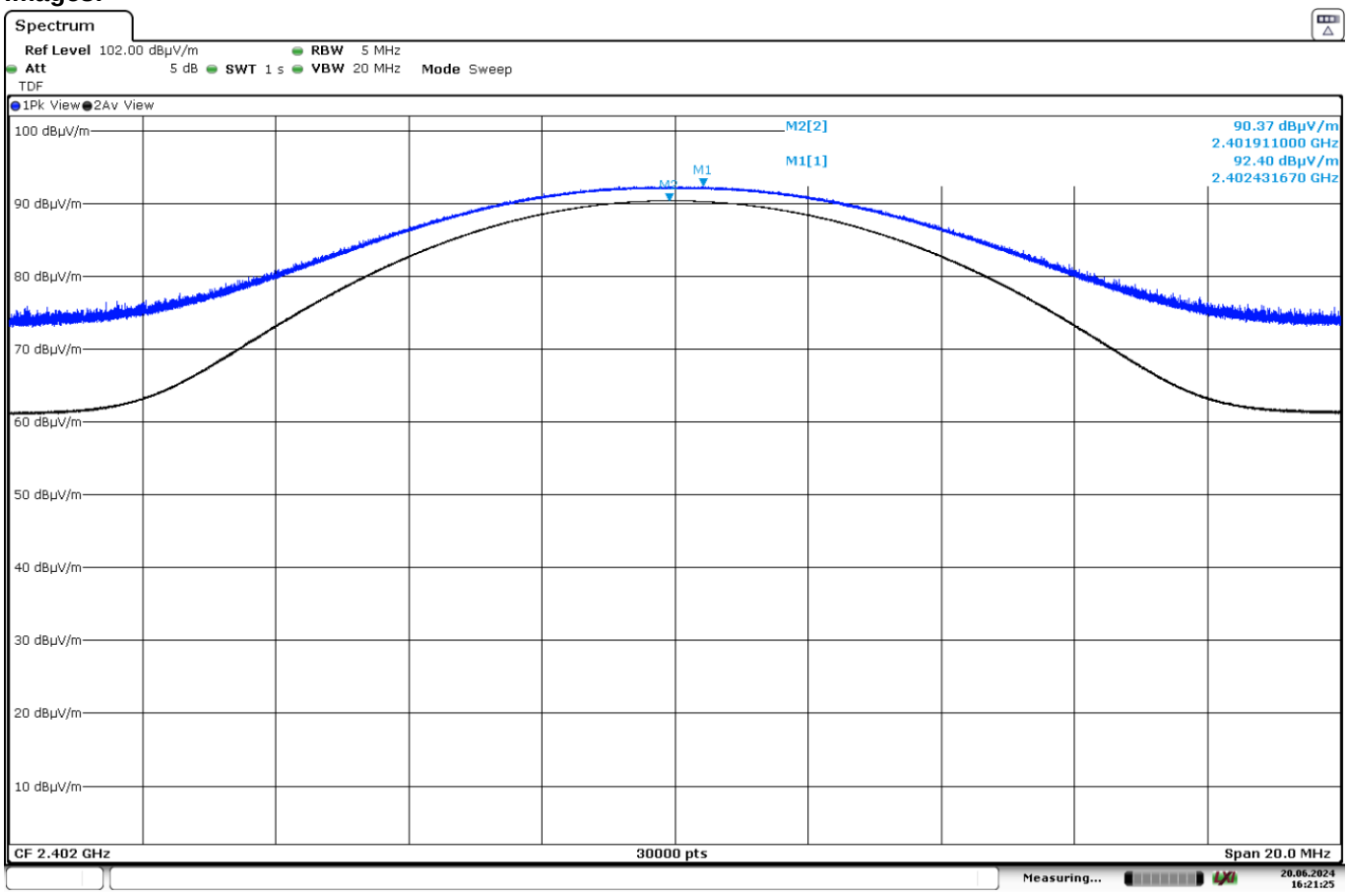
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Frequency MHz = 2402.00000

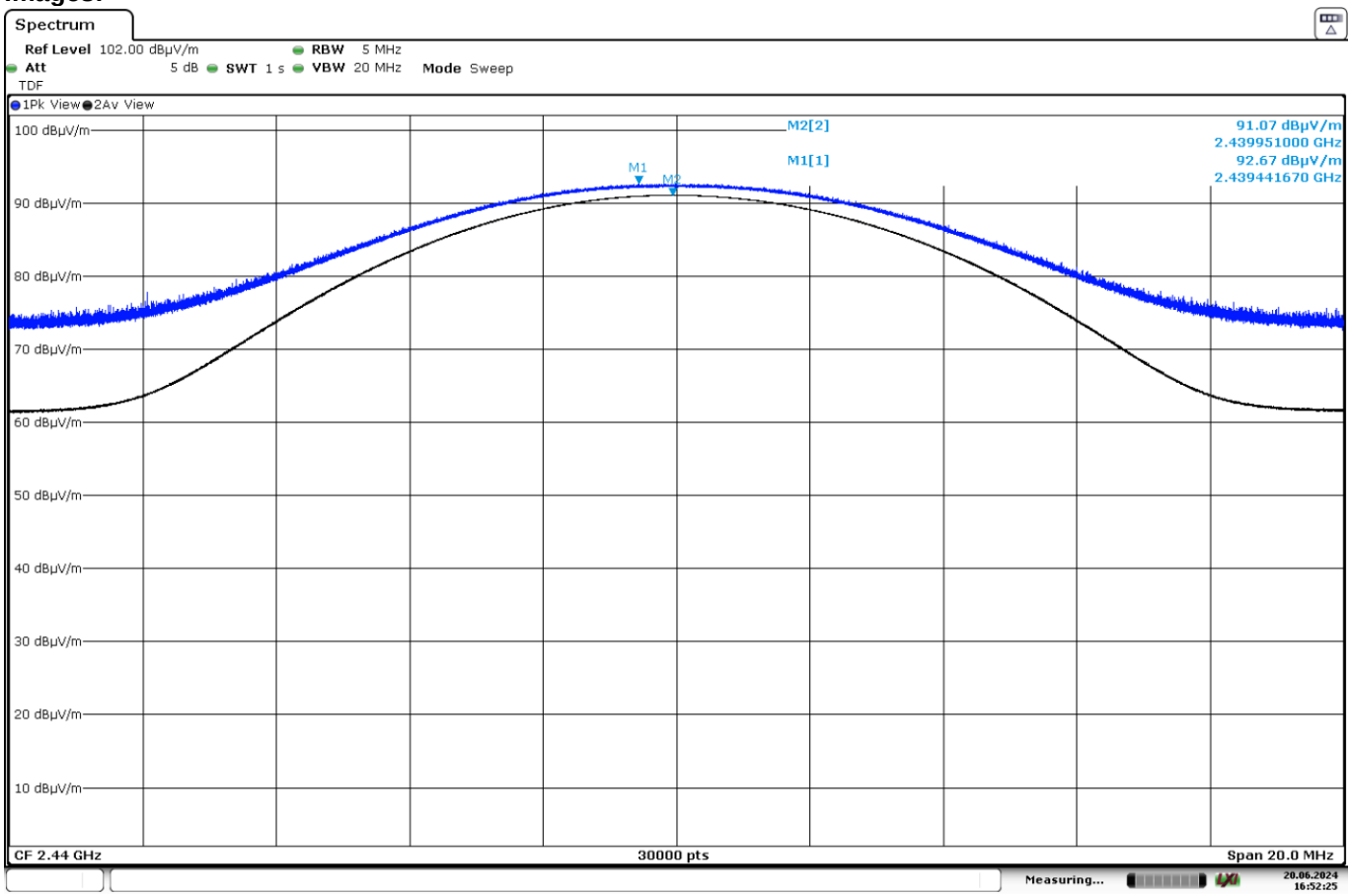
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Frequency MHz = 2440.00000

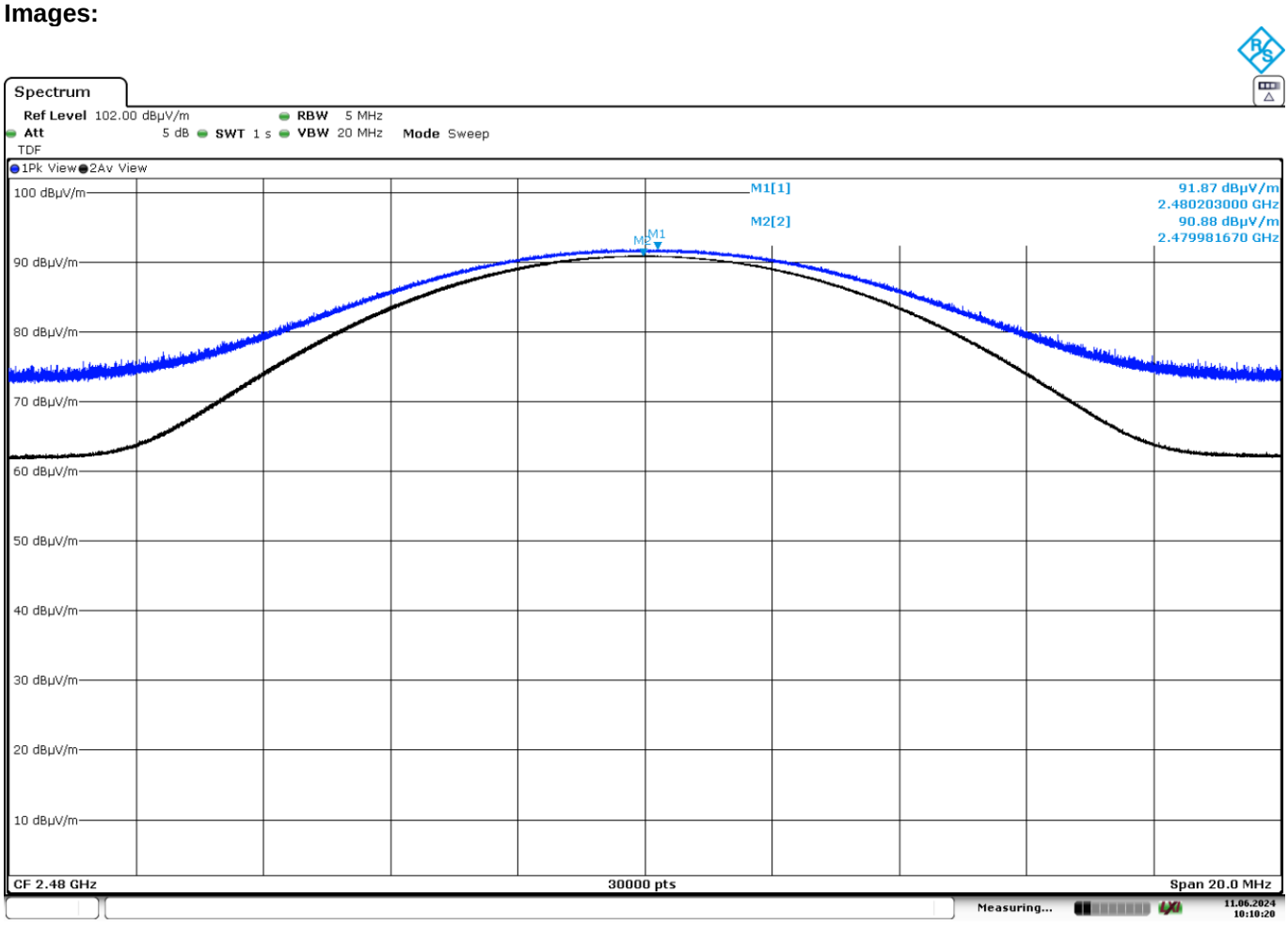
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BTLE 5.0 (GFSK 1 Mbit/s)

Frequency MHz = 2480.00000

Images:



Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	93.44	92.62
	2440.00	93.10	93.23
	2480.00	92.24	91.19

Verdict

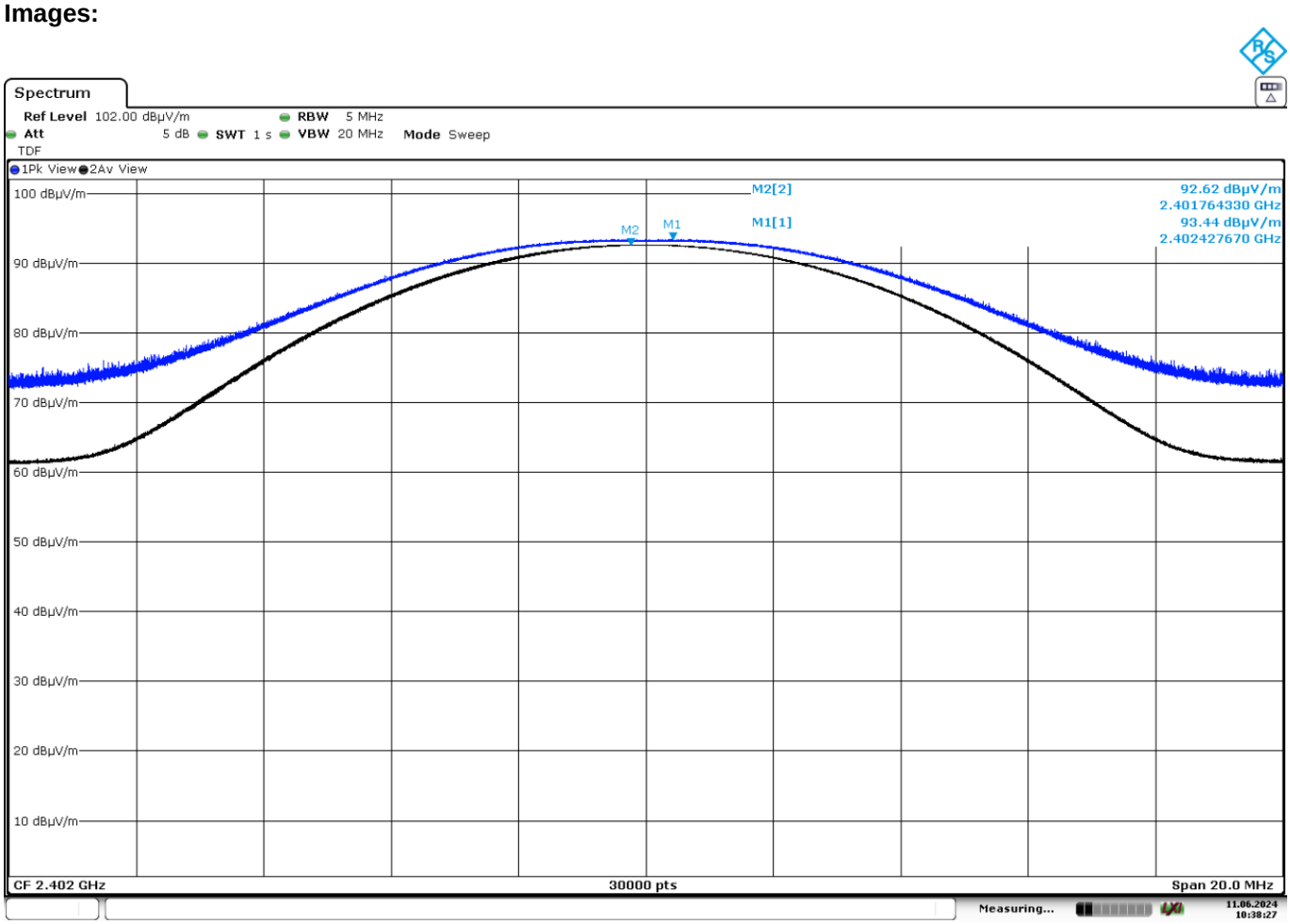
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Frequency MHz = 2402.00000

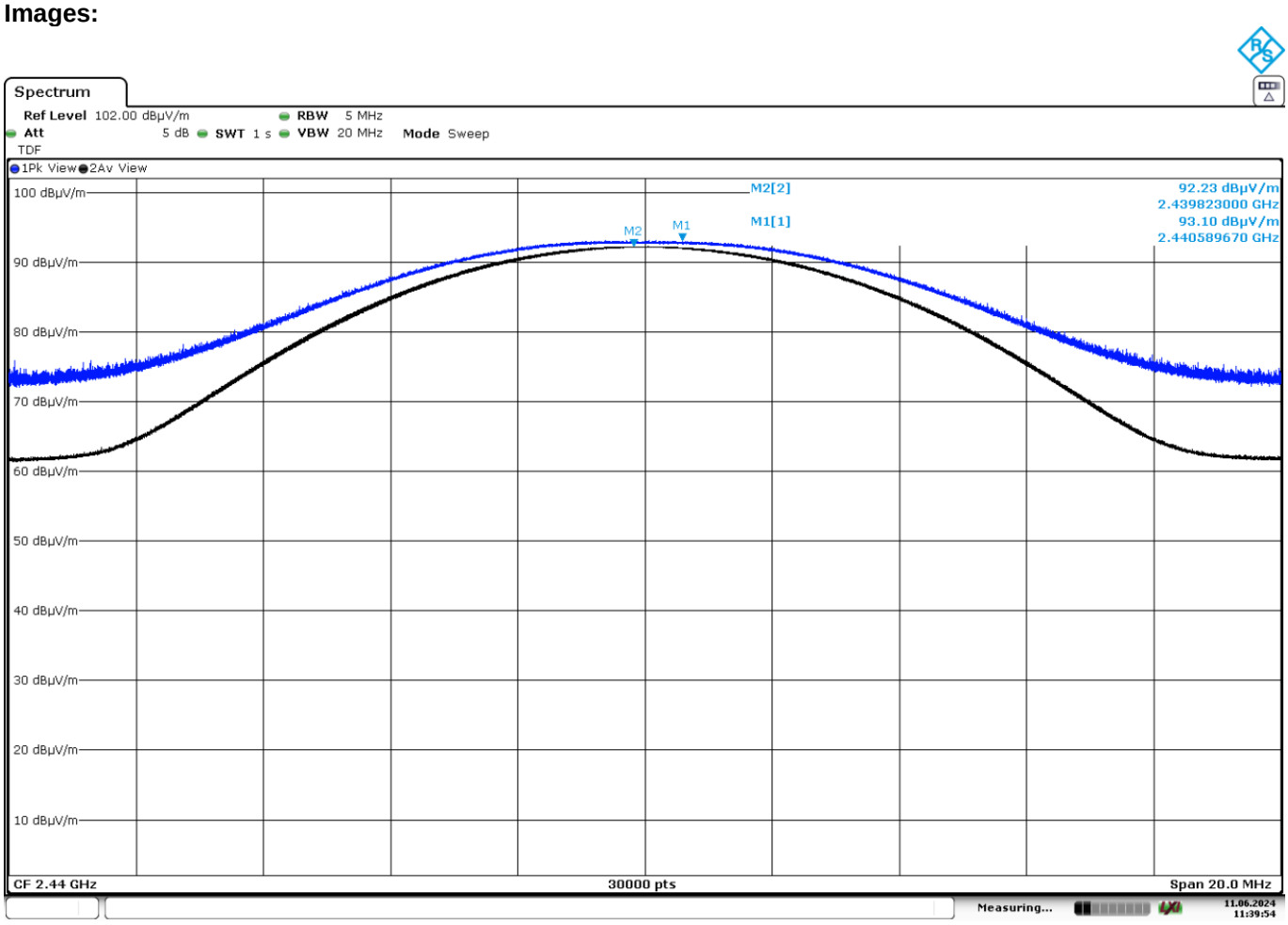
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Frequency MHz = 2440.00000

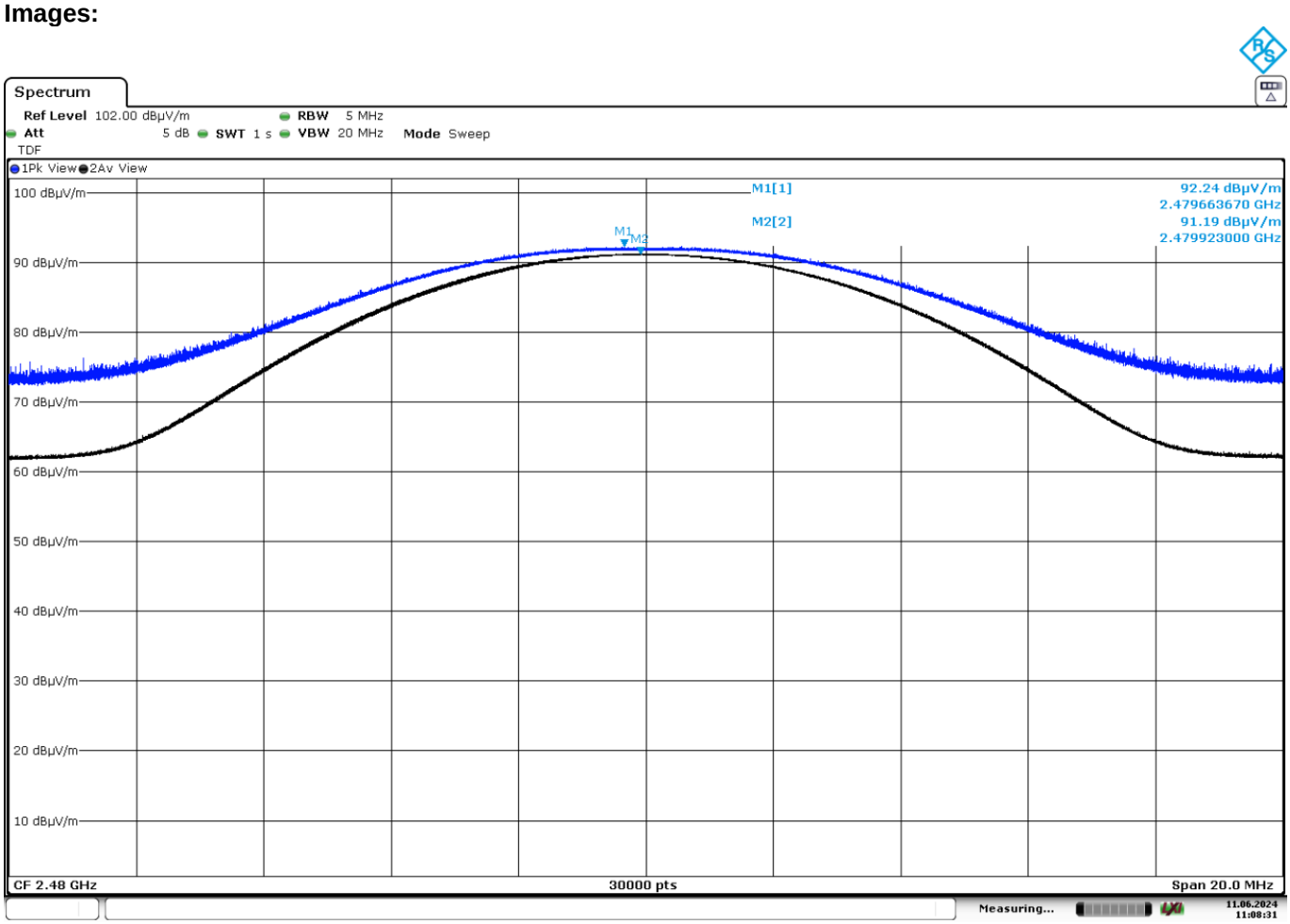
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BTLE 5.0 (GFSK 2 Mbit/s)

Frequency MHz = 2480.00000

Images:



Modulation: BT (GFSK)

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	92.90	92.04
	2441.00	93.18	91.13
	2480.00	92.38	91.37

Verdict

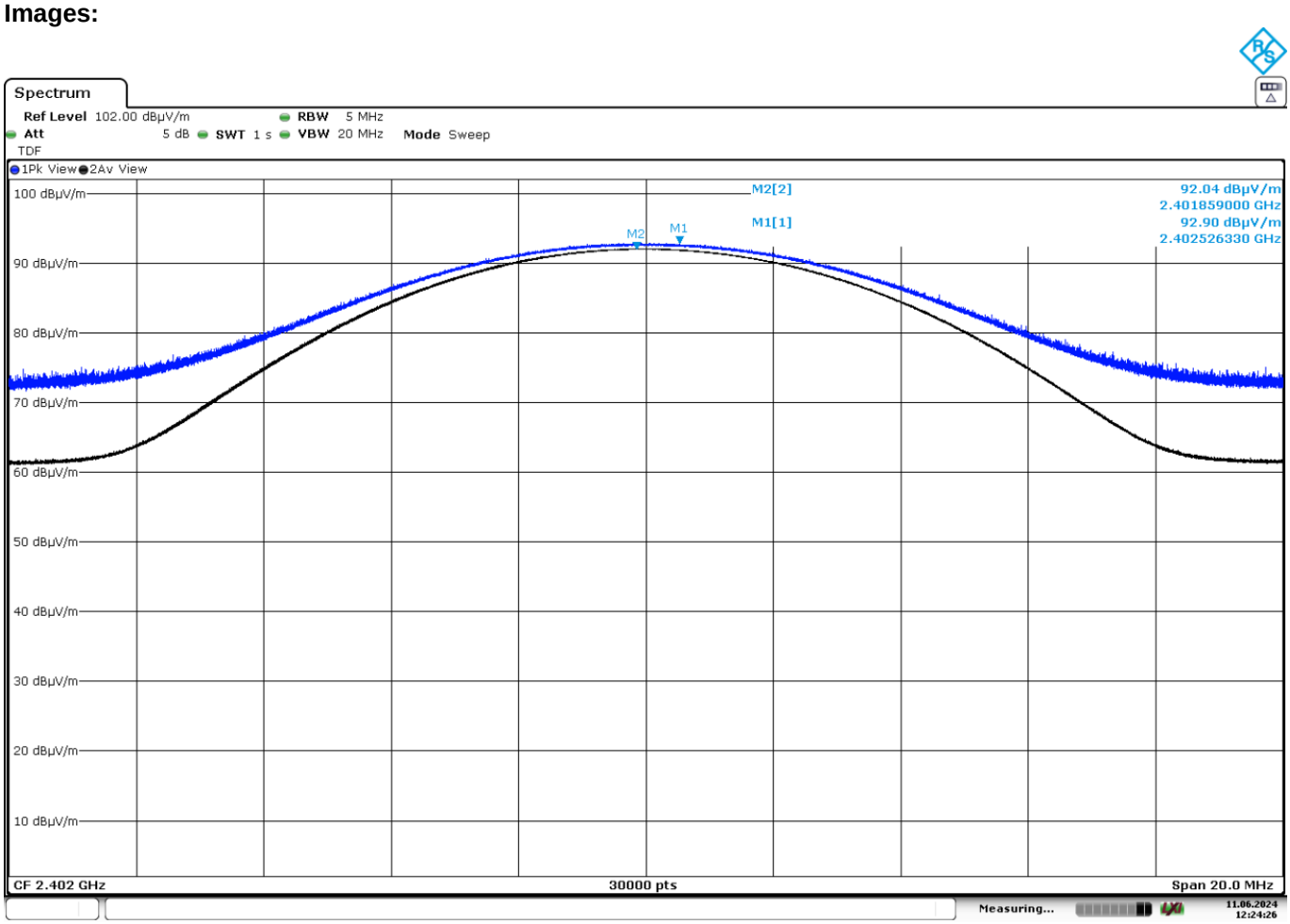
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = BT (GFSK)

Frequency MHz = 2402.00000

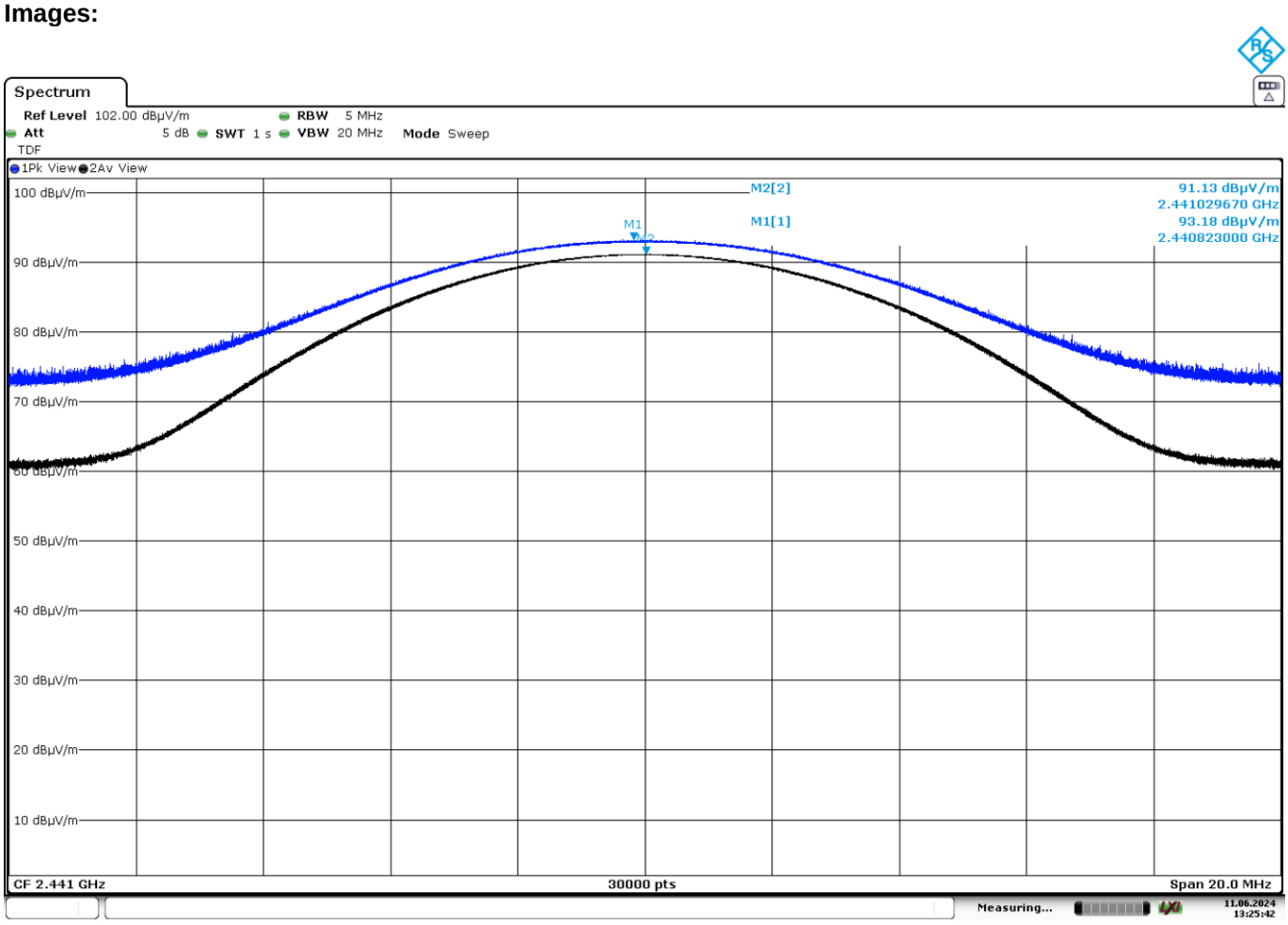
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BT (GFSK)

Frequency MHz = 2441.00000

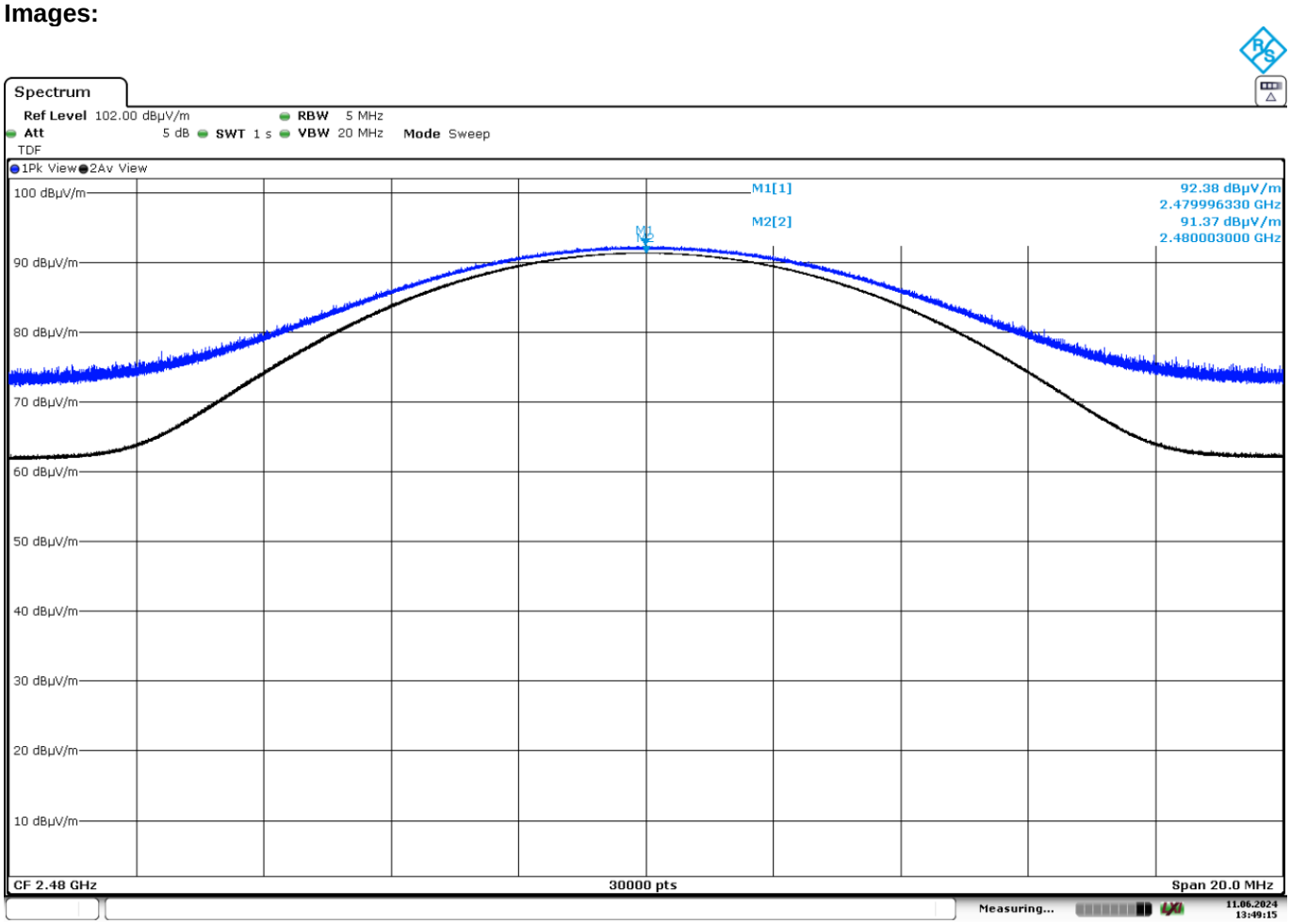
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BT (GFSK)

Frequency MHz = 2480.00000

Images:



Modulation: BT (Pi/4 DQPSK)

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	90.50	87.23
	2441.00	88.60	84.80
	2480.00	88.81	85.38

Verdict

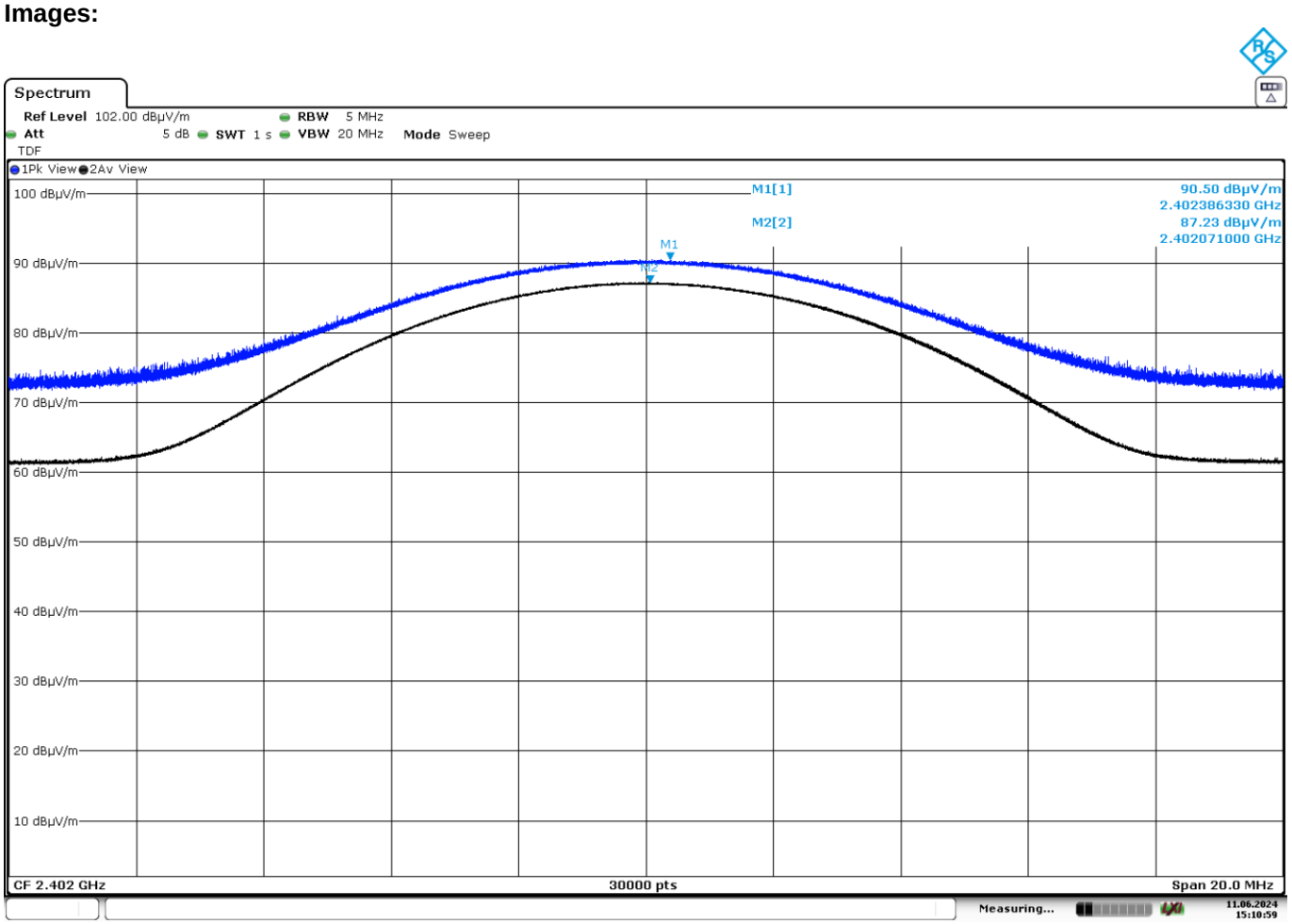
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = BT (Pi/4 DQPSK)

Frequency MHz = 2402.00000

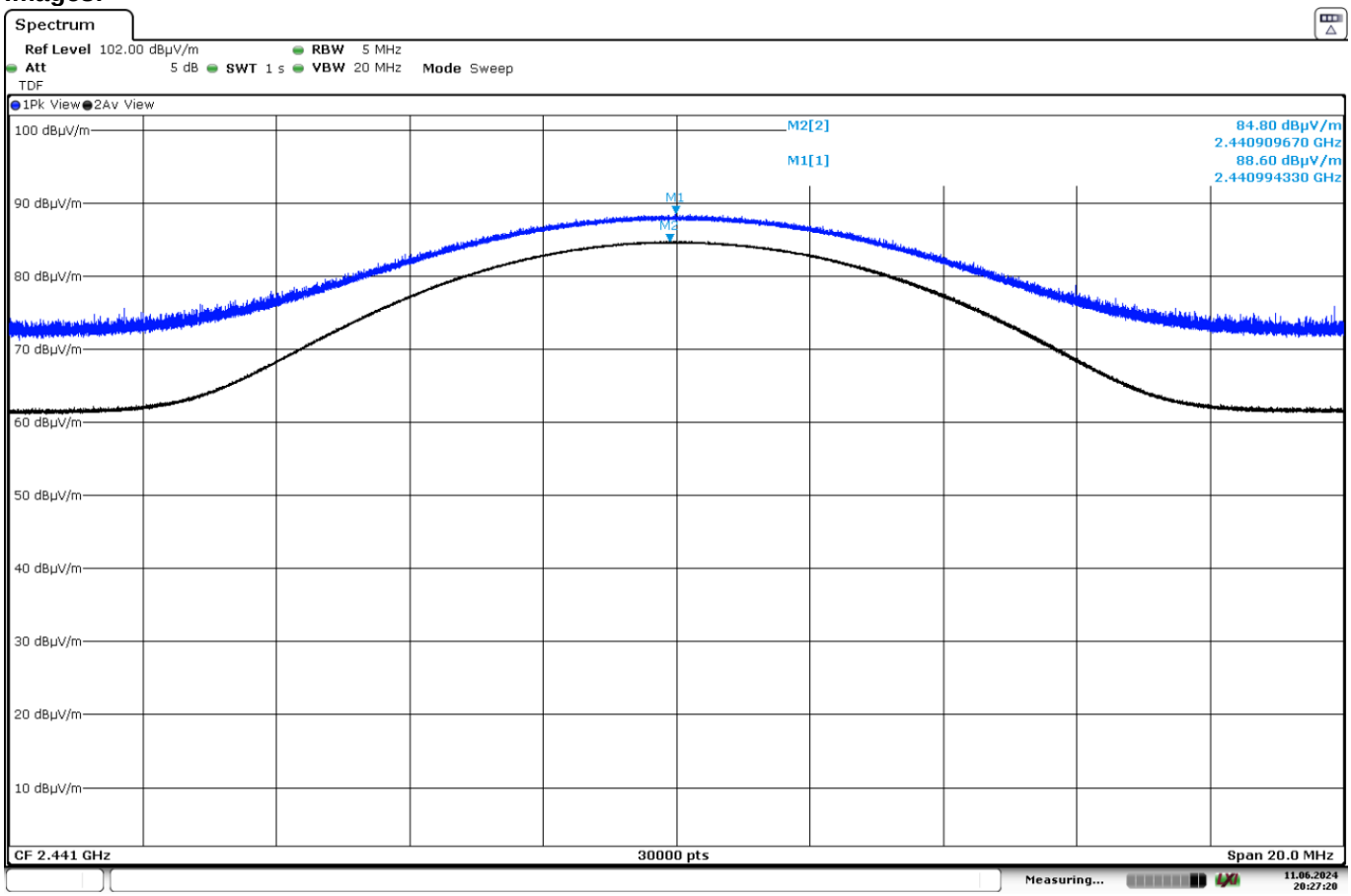
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BT (Pi/4 DQPSK)

Frequency MHz = 2441.00000

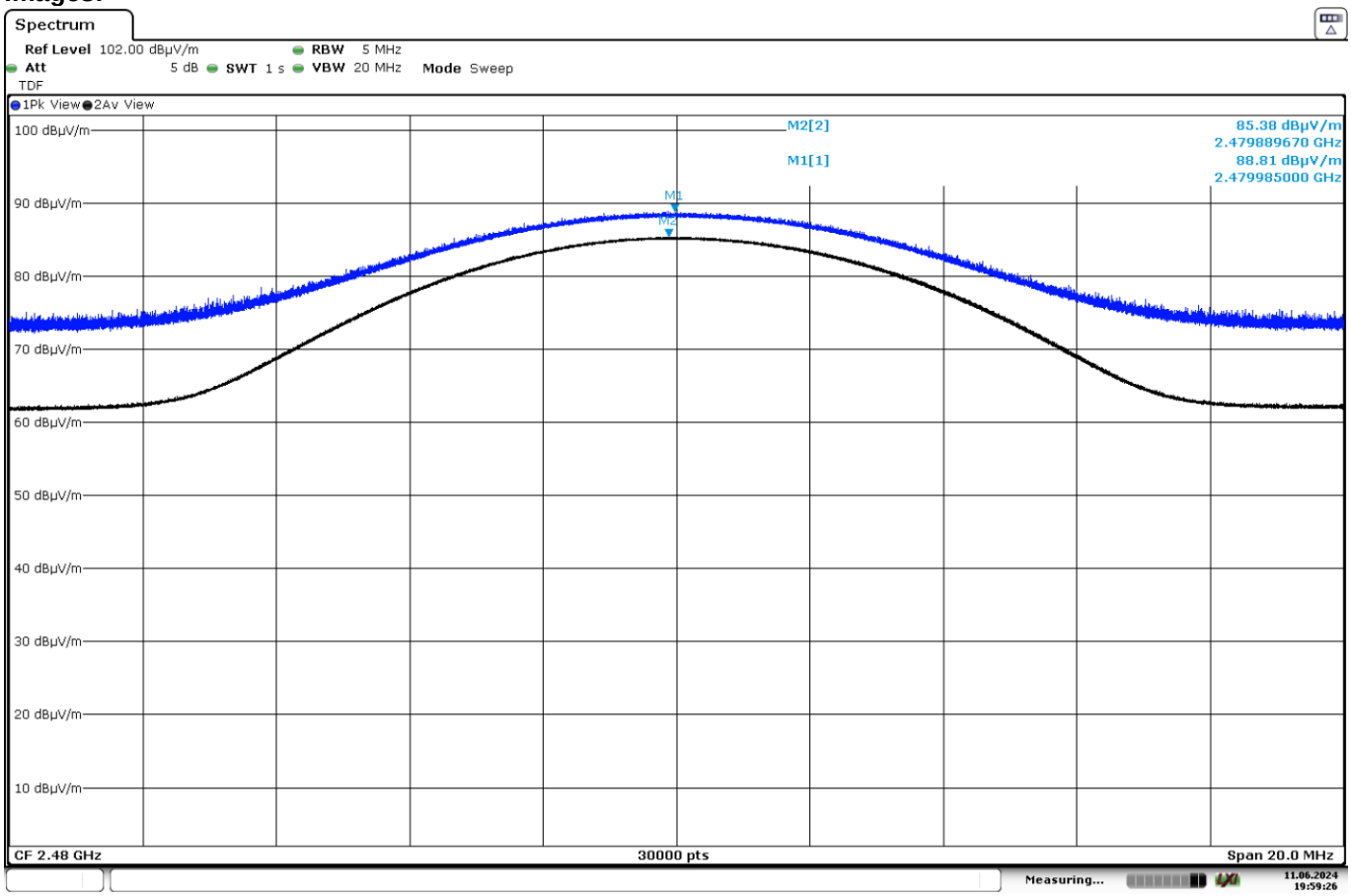
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BT (Pi/4 DQPSK)

Frequency MHz = 2480.00000

Images:



Modulation: BT (8DPSK)

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	89.30	85.38
	2441.00	90.20	86.35
	2480.00	89.57	85.75

Verdict

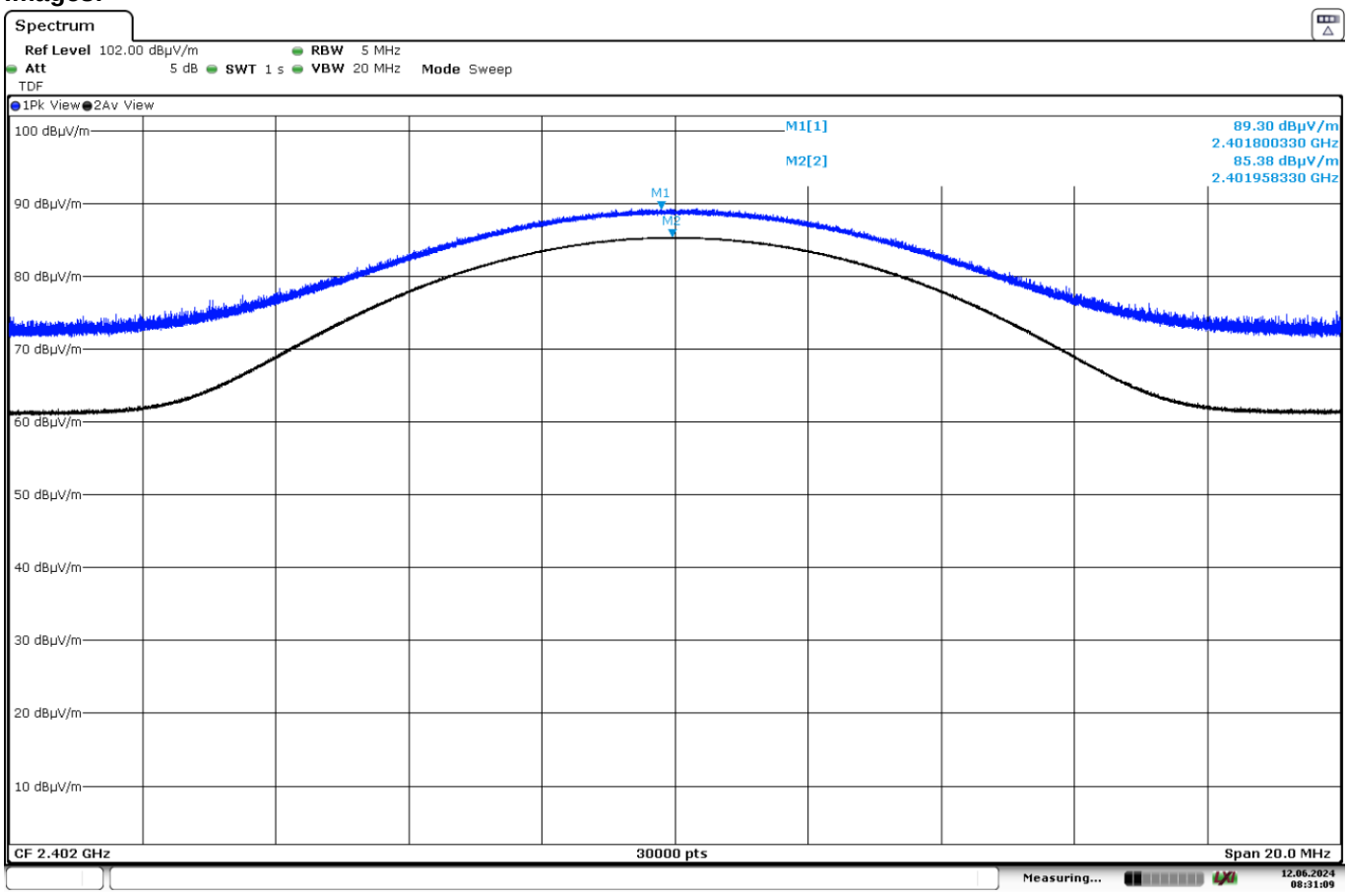
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = BT (8DPSK)

Frequency MHz = 2402.00000

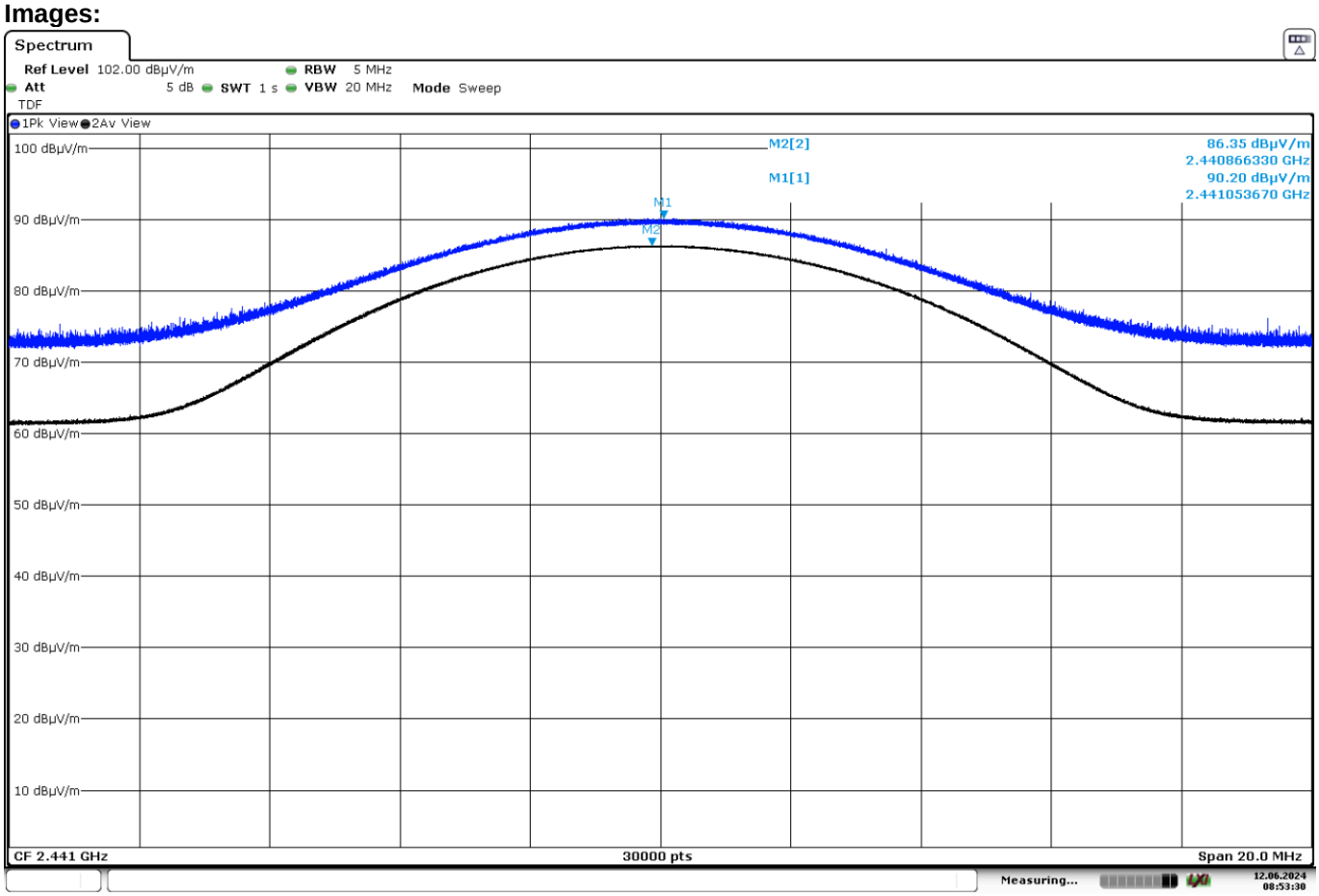
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BT (8DPSK)

Frequency MHz = 2441.00000

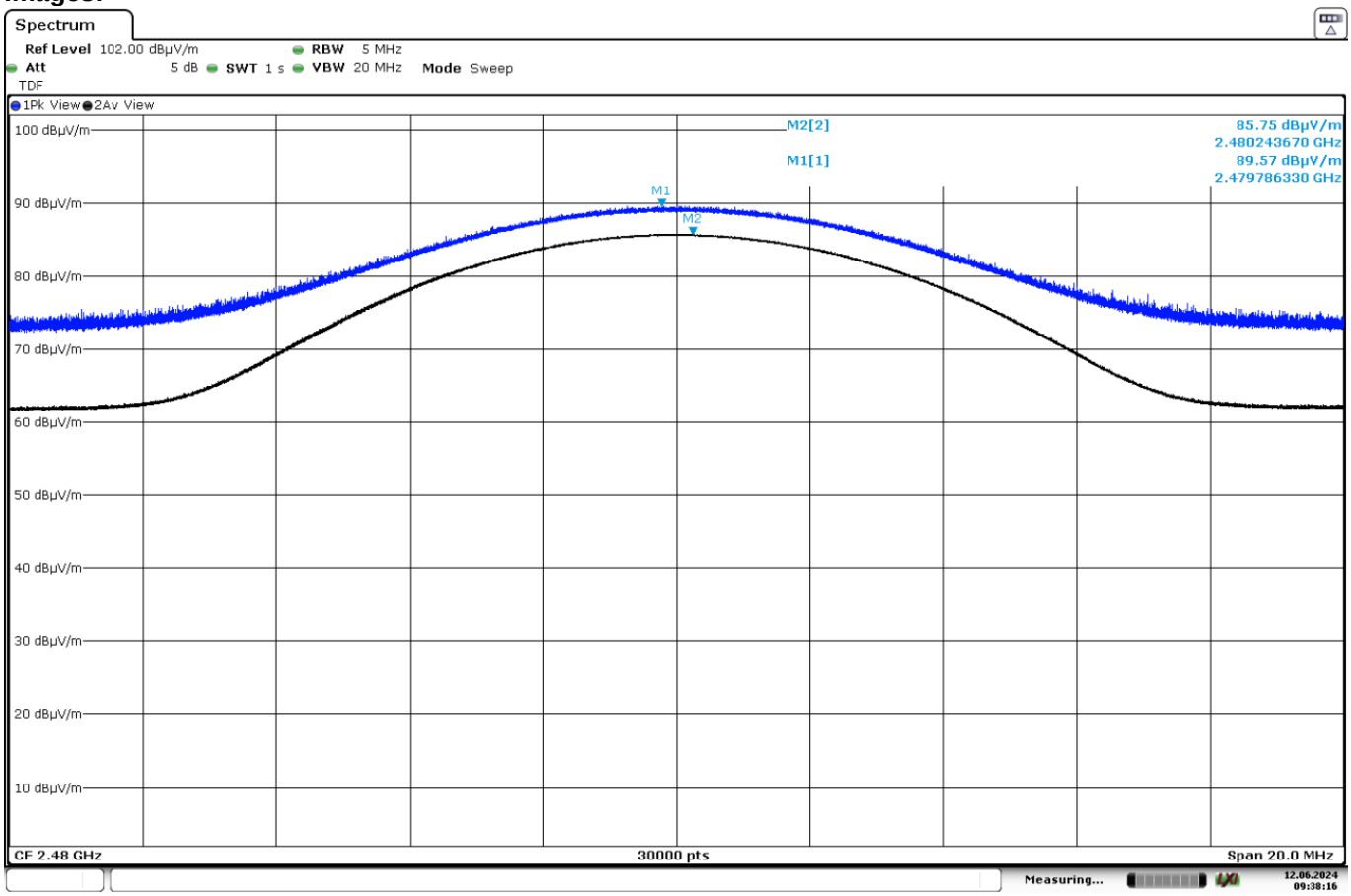
Images:



Operation Band MHz = [2400, 2483.5] Modulation = BT (8DPSK)

Frequency MHz = 2480.00000

Images:



Modulation: DM

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	87.93	86.06
	2440.00	87.97	86.35
	2480.00	87.65	85.89

Verdict

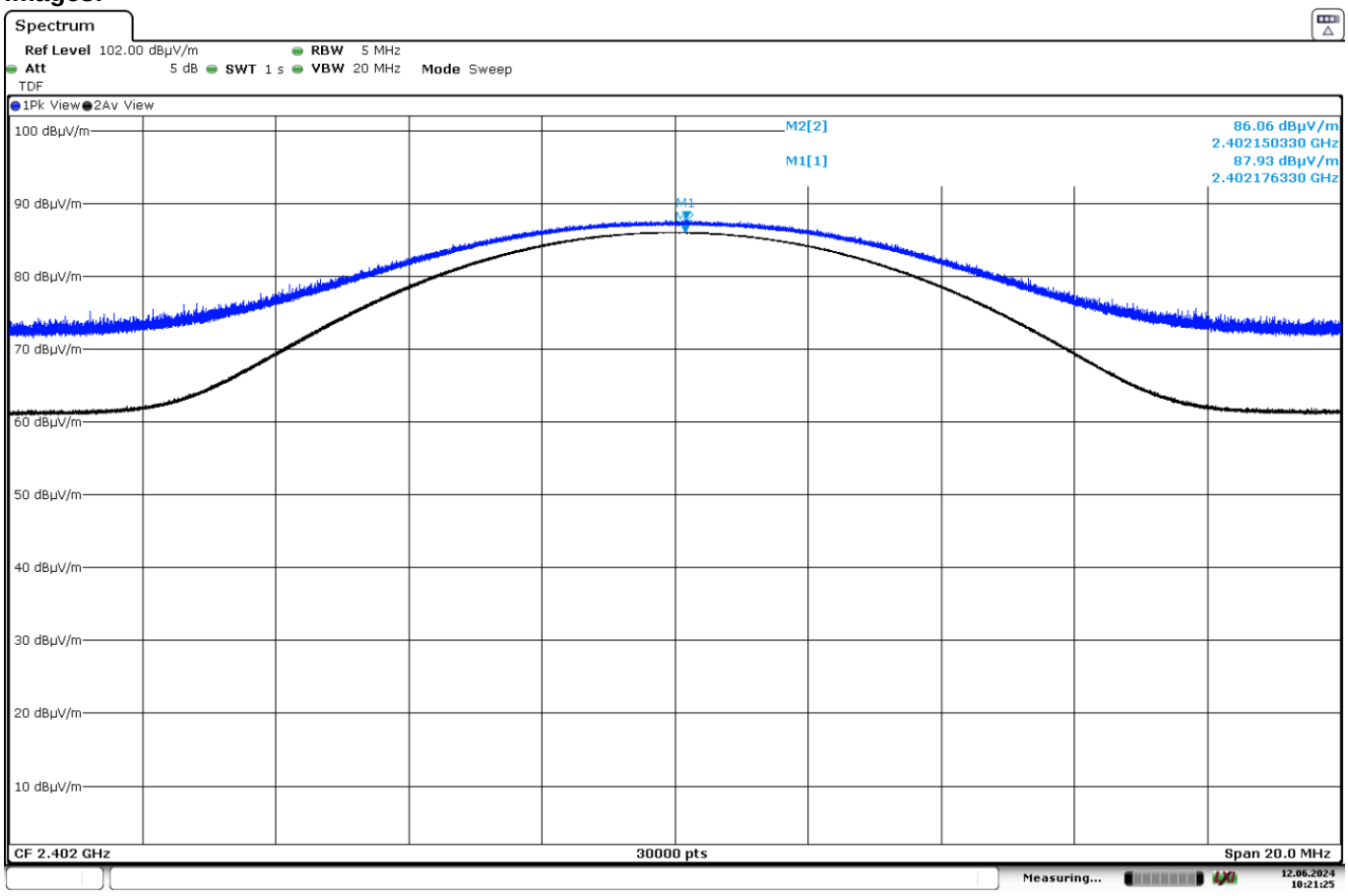
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = DM

Frequency MHz = 2402.00000

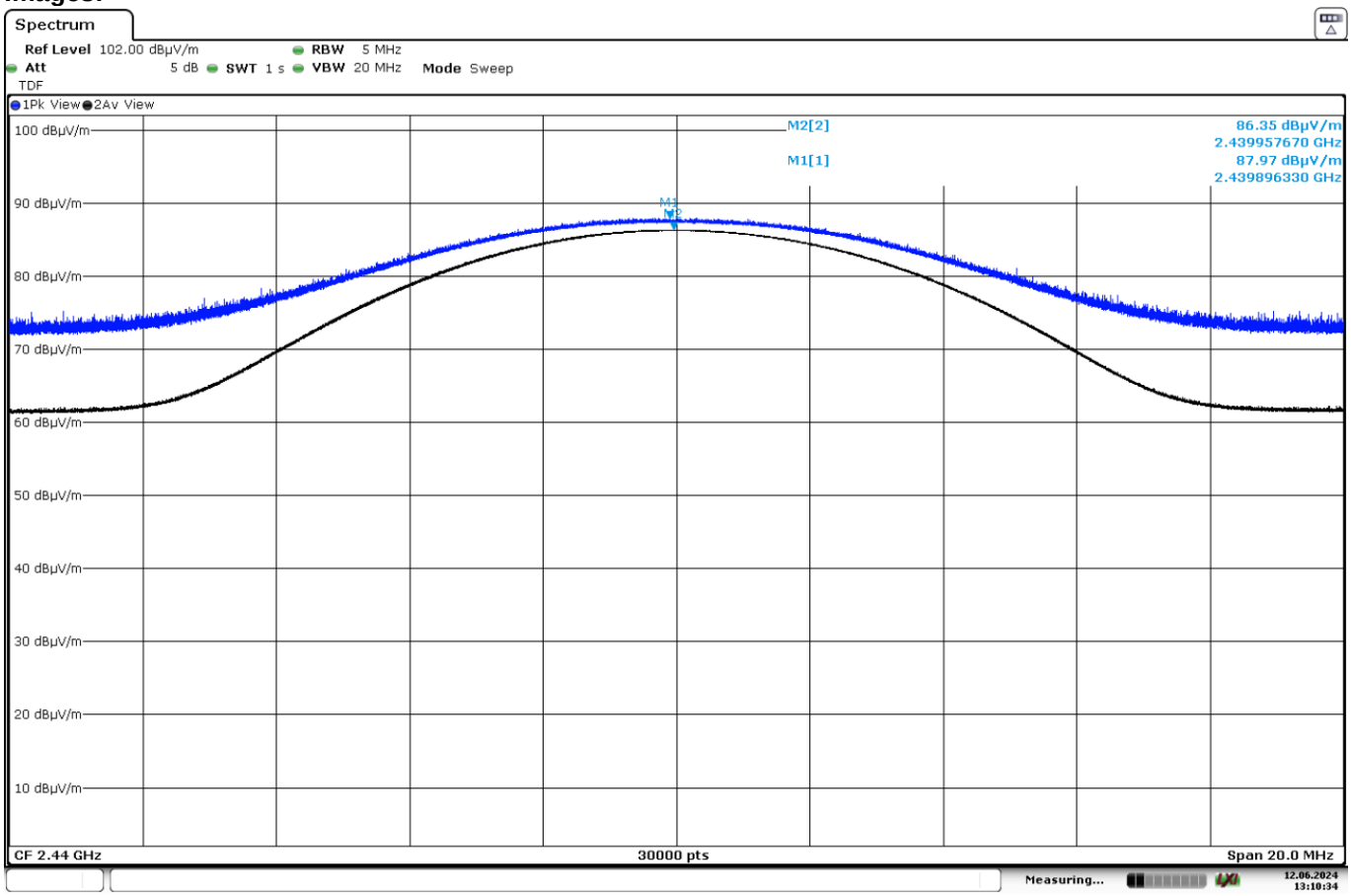
Images:



Operation Band MHz = [2400, 2483.5] Modulation = DM

Frequency MHz = 2440.00000

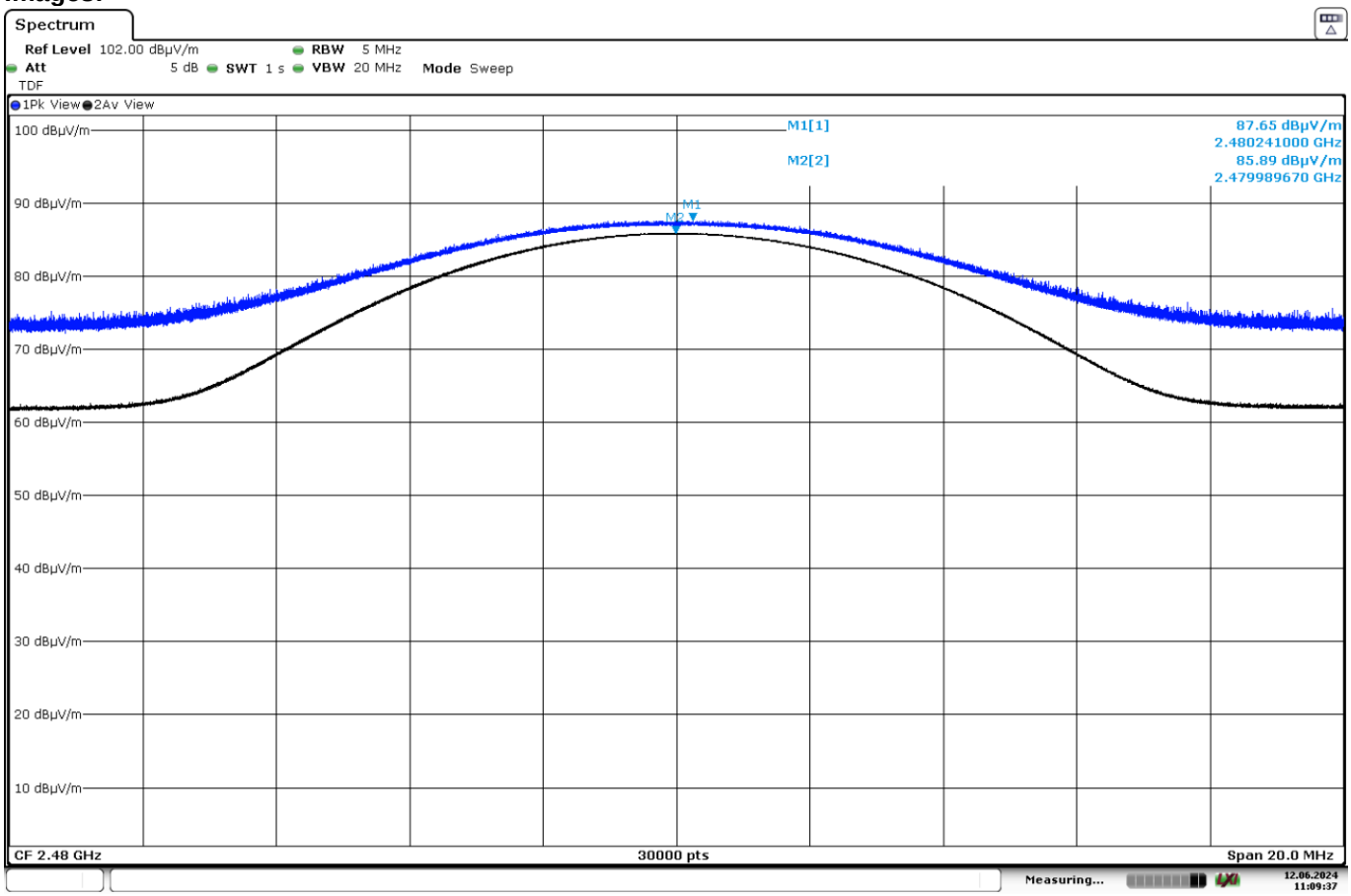
Images:



Operation Band MHz = [2400, 2483.5] Modulation = DM

Frequency MHz = 2480.00000

Images:



Modulation: Flora

Results

Operation Band (MHz)	Freq (MHz)	Pk Field (dBµV/m)	Avg Field (dBµV/m)
[2400, 2483.5]	2402.00	92.35	91.36
	2440.00	92.86	91.82
	2480.00	92.05	90.93

Verdict

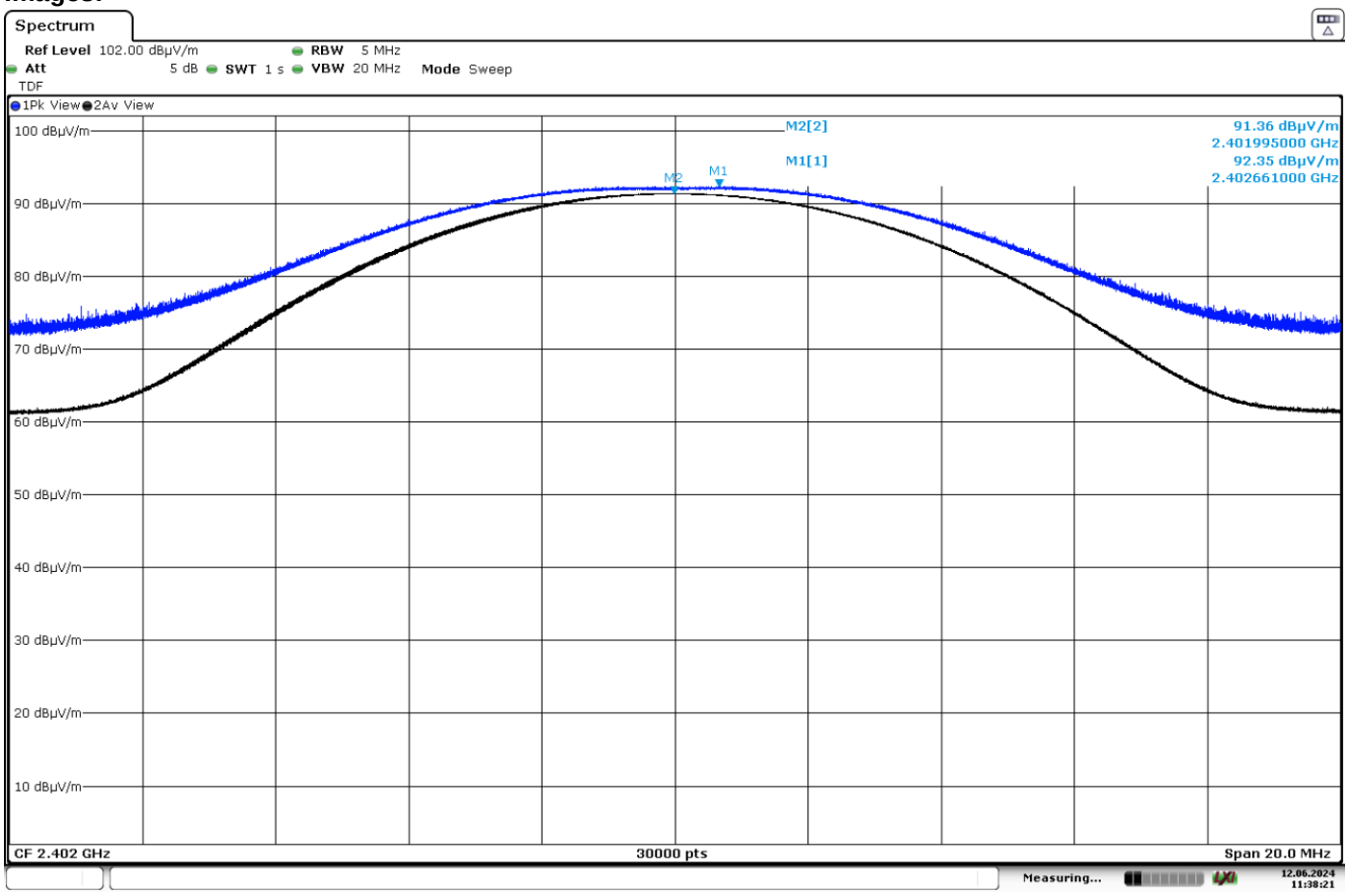
Pass

Attachments

Operation Band MHz = [2400, 2483.5] Modulation = Flora

Frequency MHz = 2402.00000

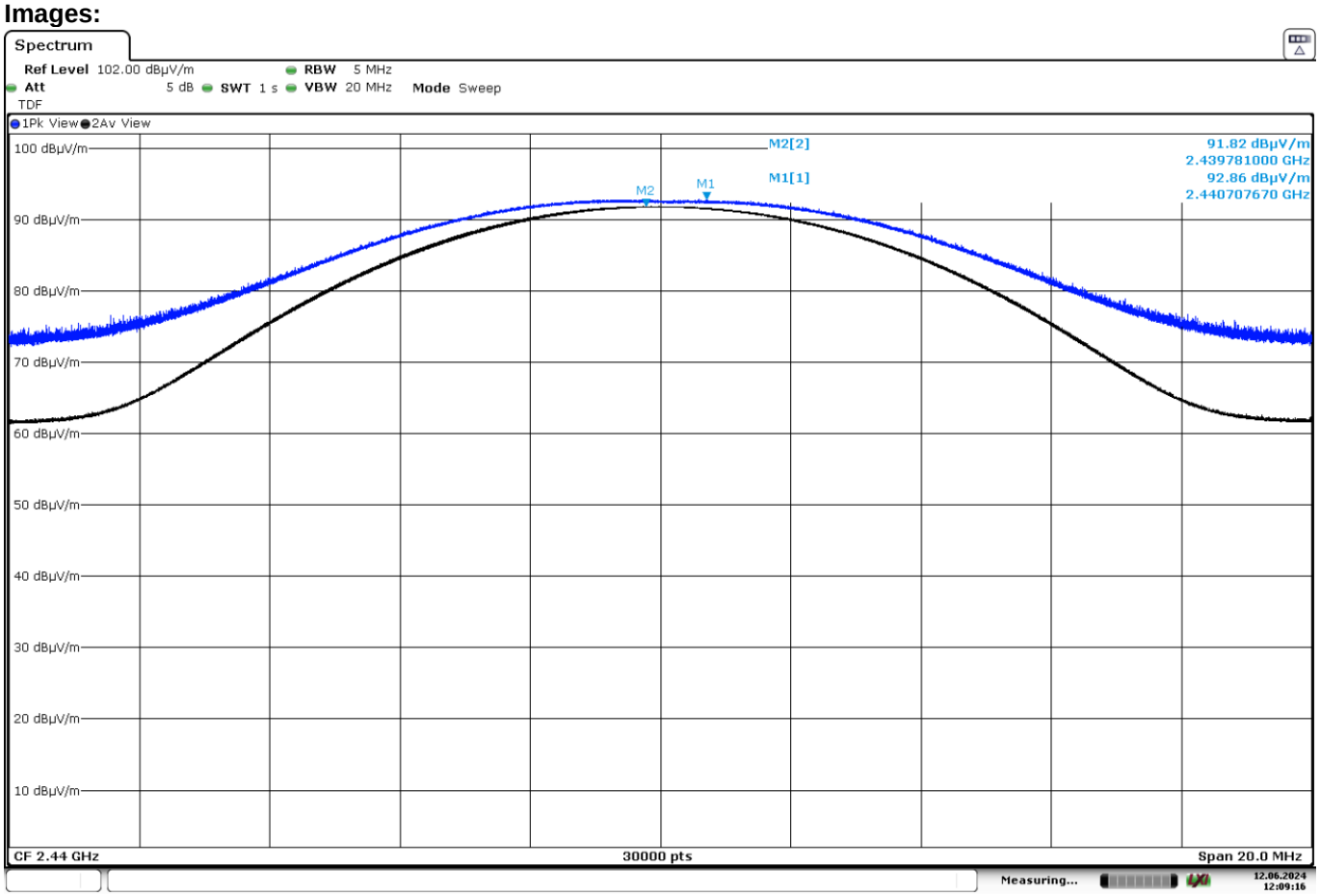
Images:



Operation Band MHz = [2400, 2483.5] Modulation = Flora

Frequency MHz = 2440.00000

Images:



Operation Band MHz = [2400, 2483.5] Modulation = Flora

Frequency MHz = 2480.00000

Images: