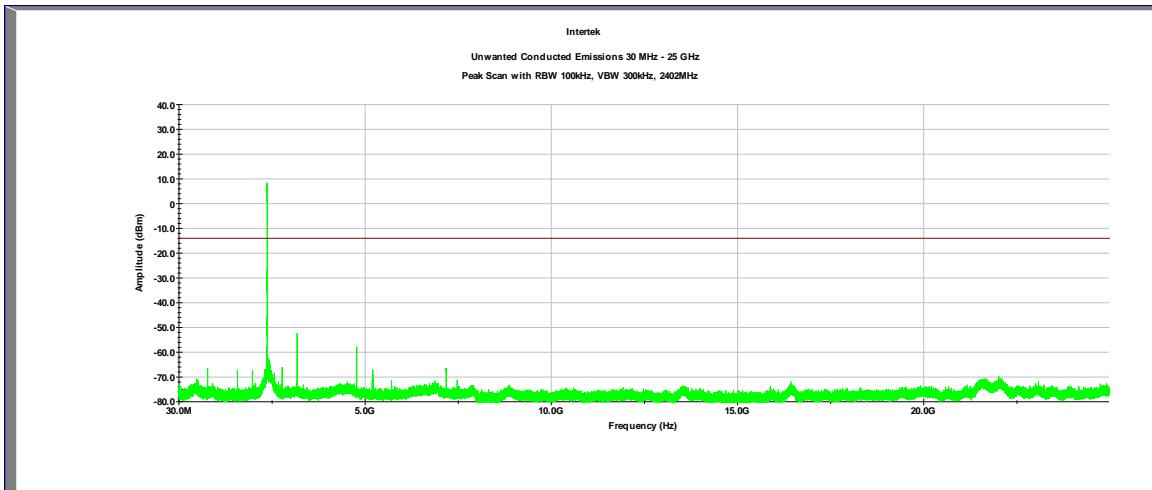
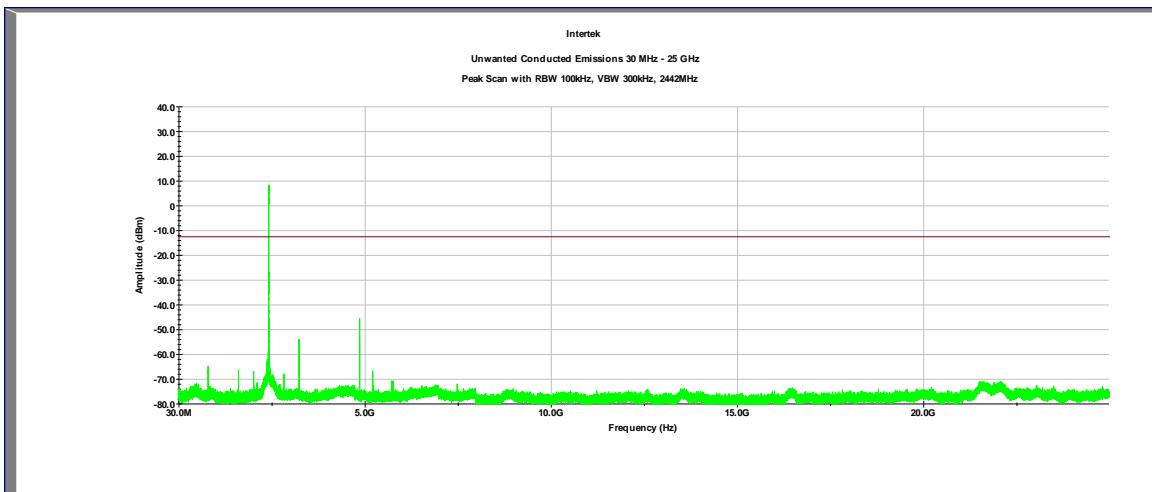


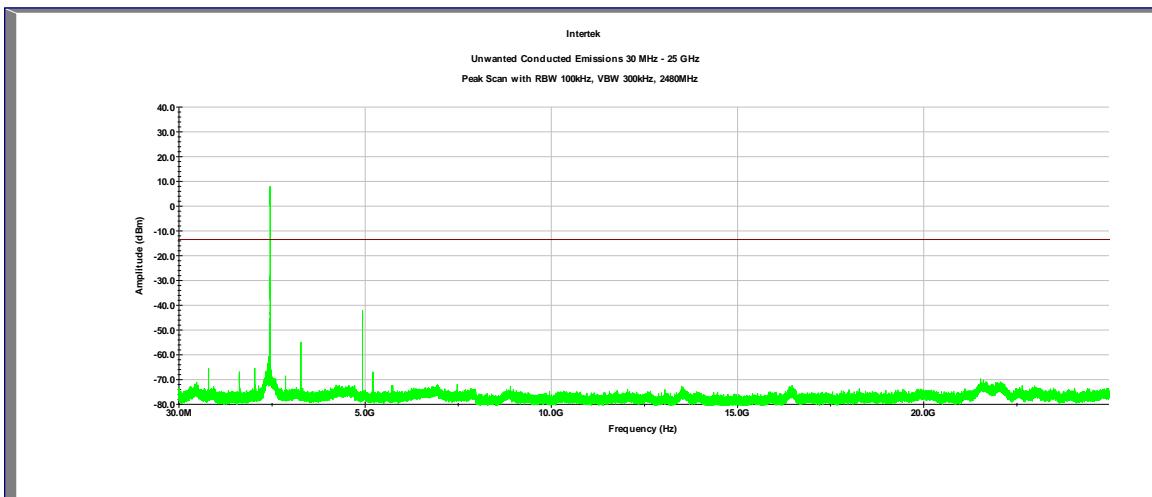
Out-of-Band Conducted Spurious Emissions, 8-DPSK, 2402 MHz



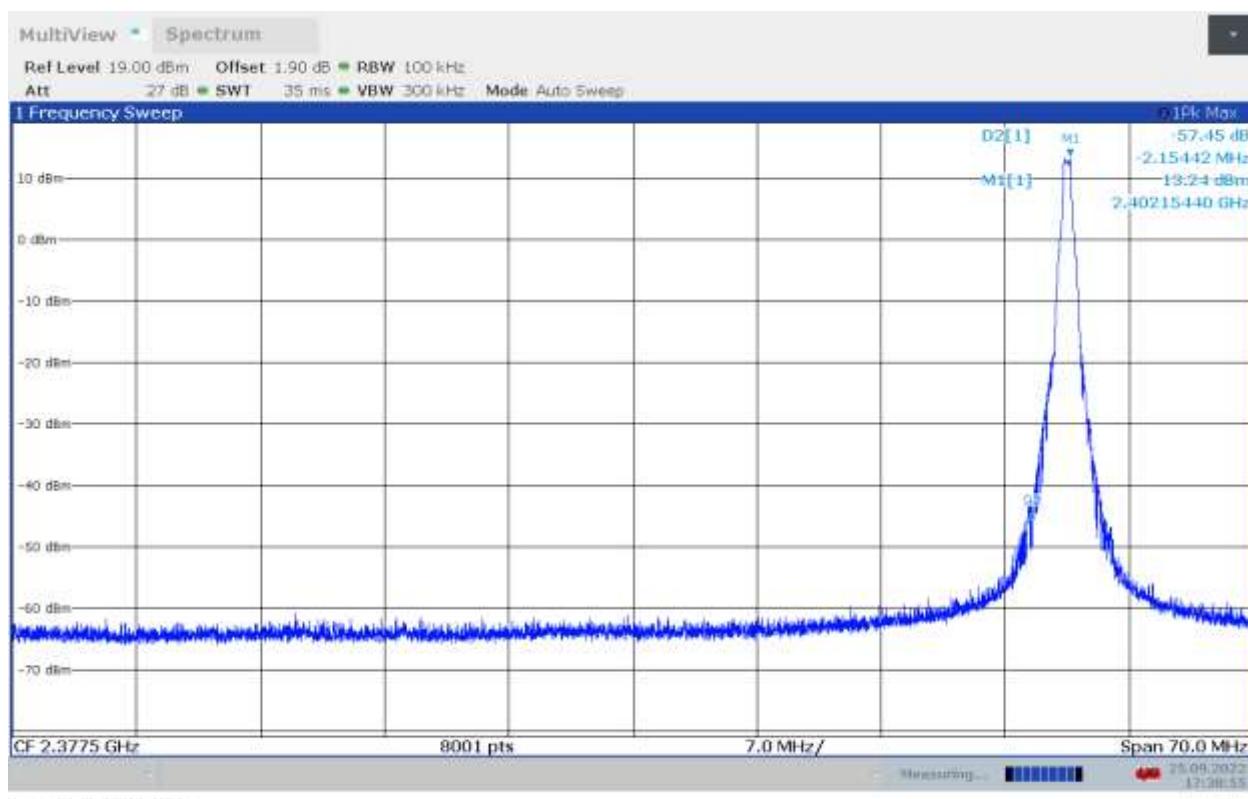
Out-of-Band Conducted Spurious Emissions, 8-DPSK, 2442 MHz



Out-of-Band Conducted Spurious Emissions, 8-DPSK, 2480 MHz

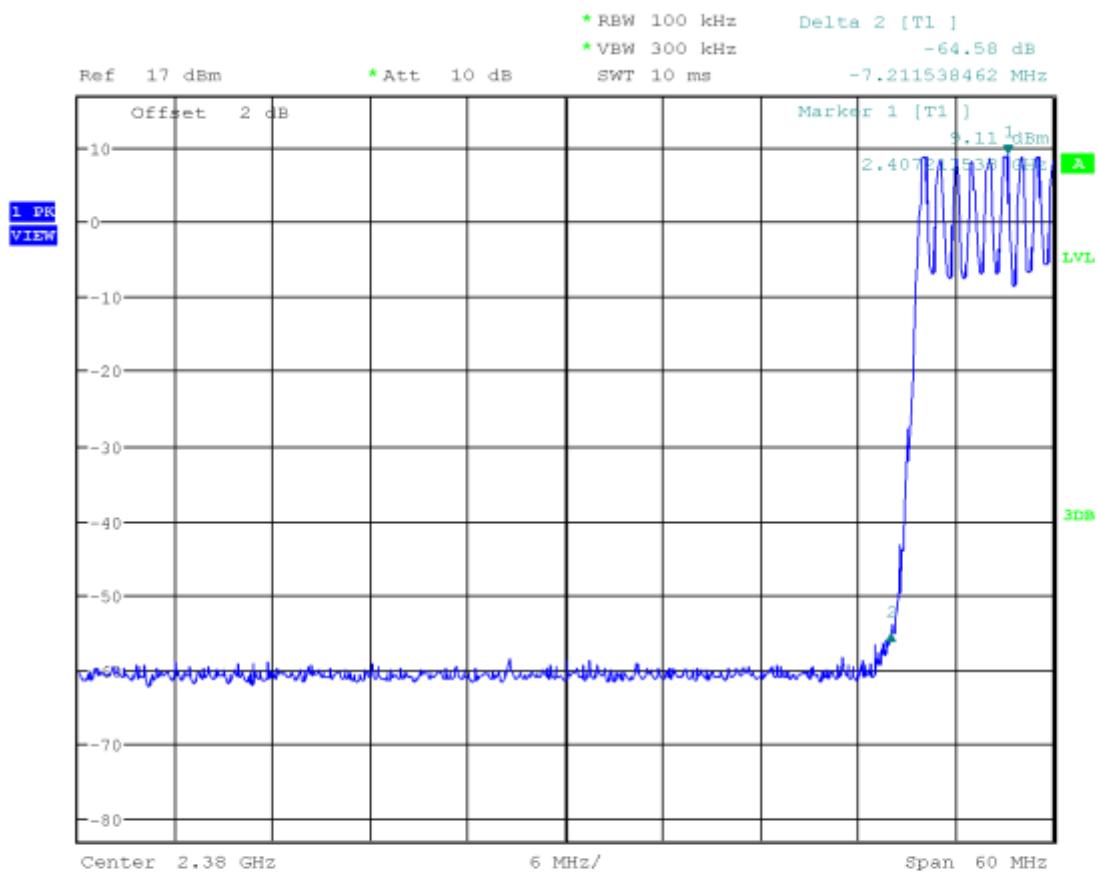


GFSK
Conducted Band Edge, Low Channel



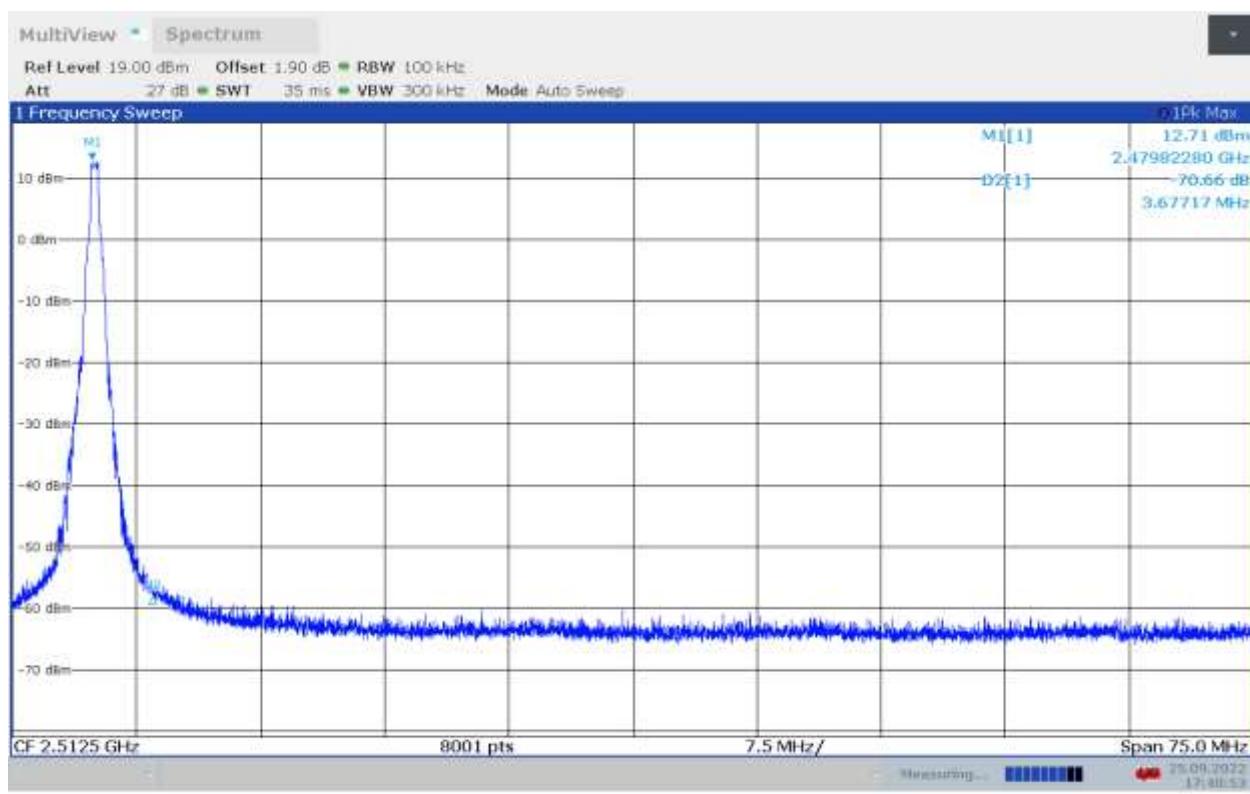
17:38:56 25.09.2022

GFSK
Conducted Band Edge (Hopping)



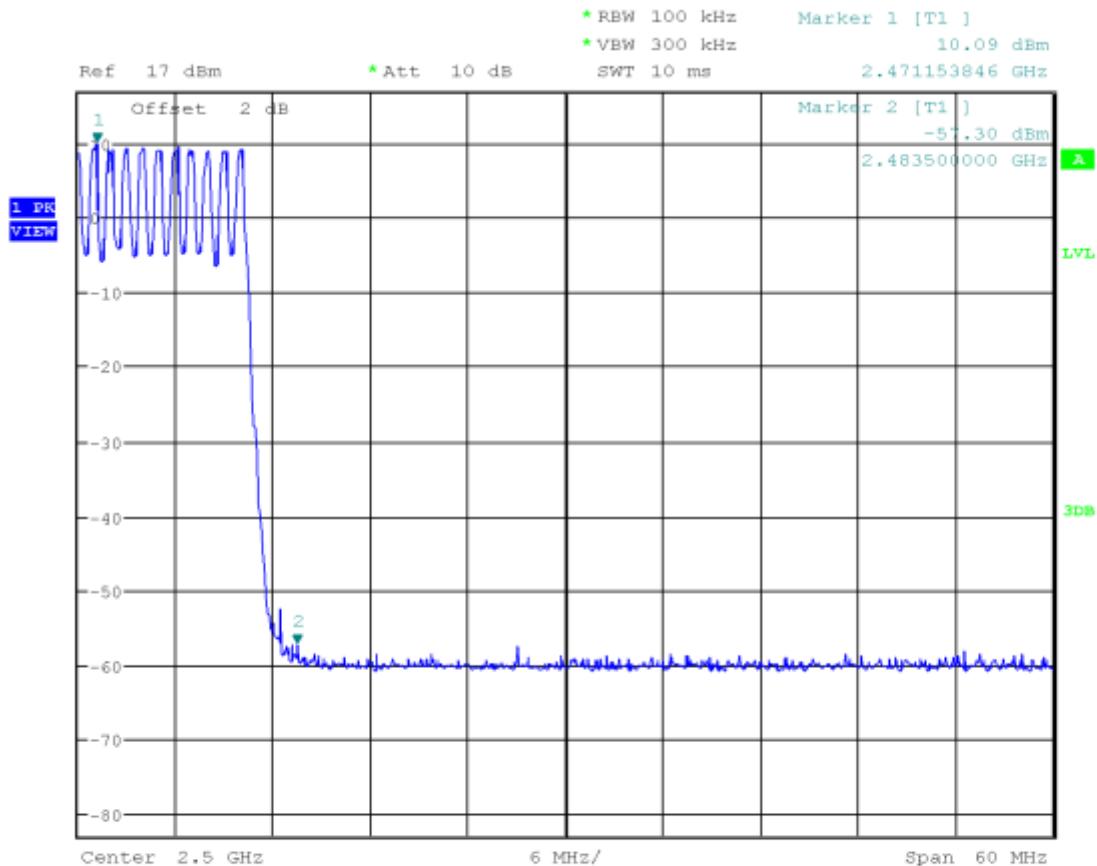
Date: 13.OCT.2022 22:54:49

GFSK
Conducted Band Edge, High Channel



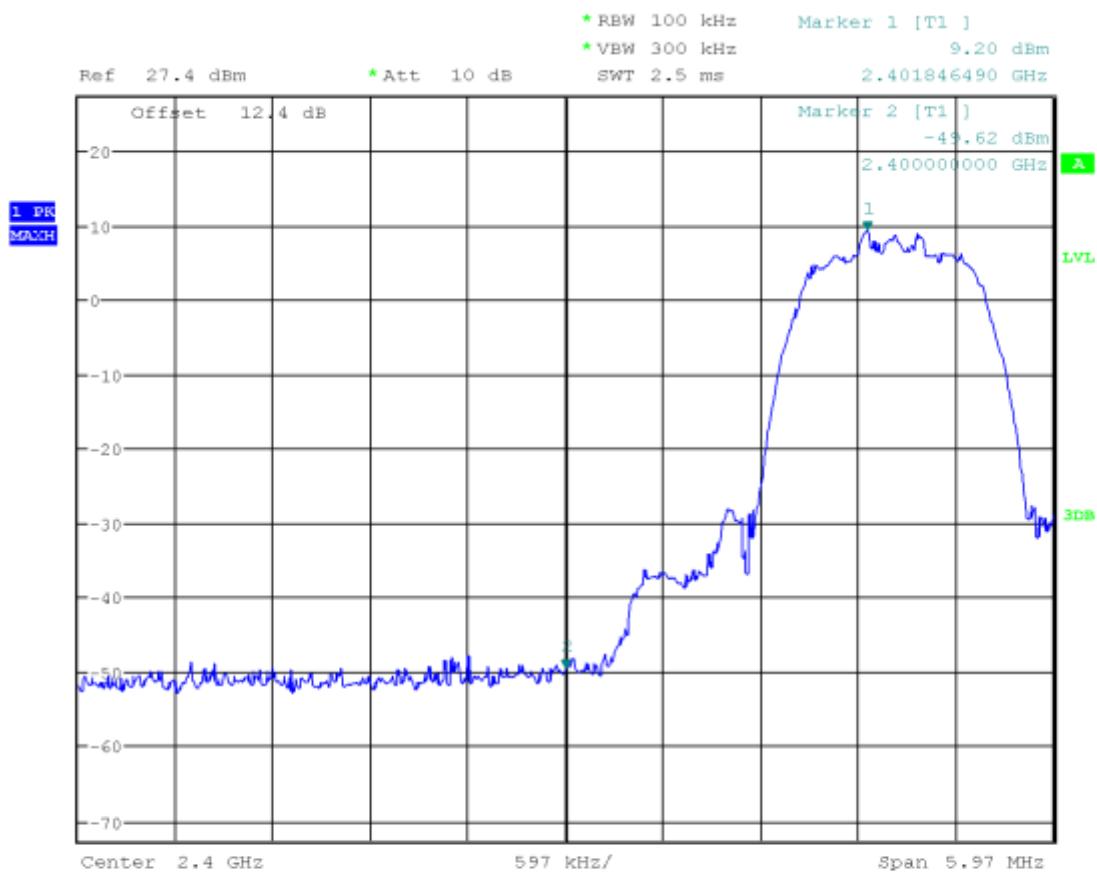
17:40:53 25.09.2022

GFSK
Conducted Band Edge (Hopping)



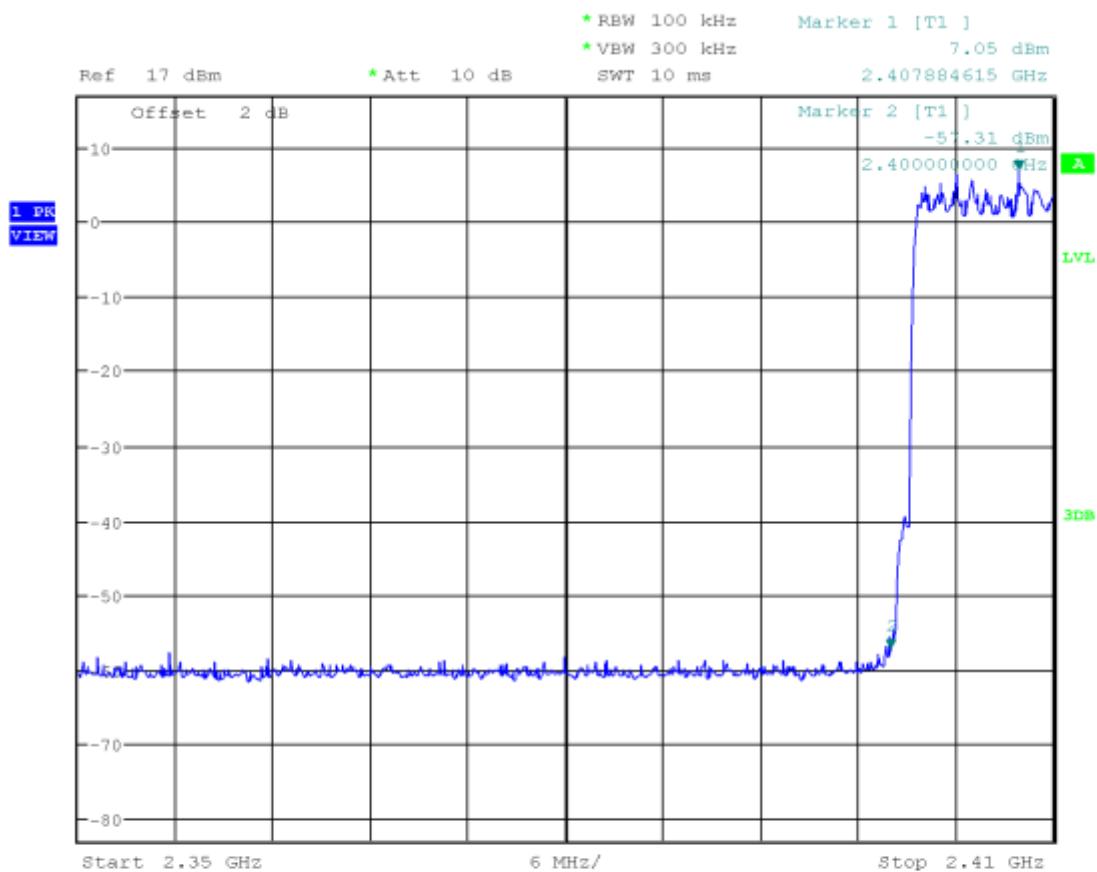
Date: 13.OCT.2022 22:57:21

$\pi/4$ -DQPSK
Conducted Band Edge, Low Channel



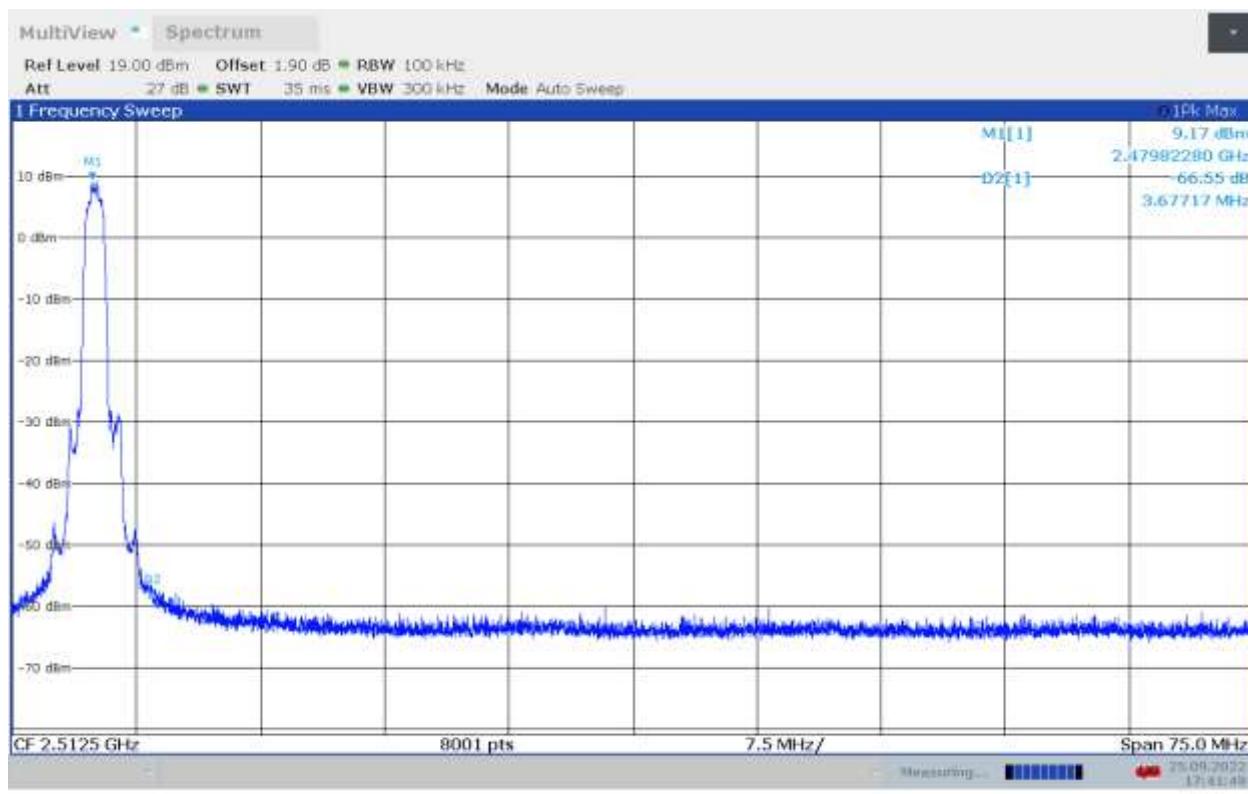
Date: 23.OCT.2022 23:36:59

$\pi/4$ -DQPSK
Conducted Band Edge (Hopping)



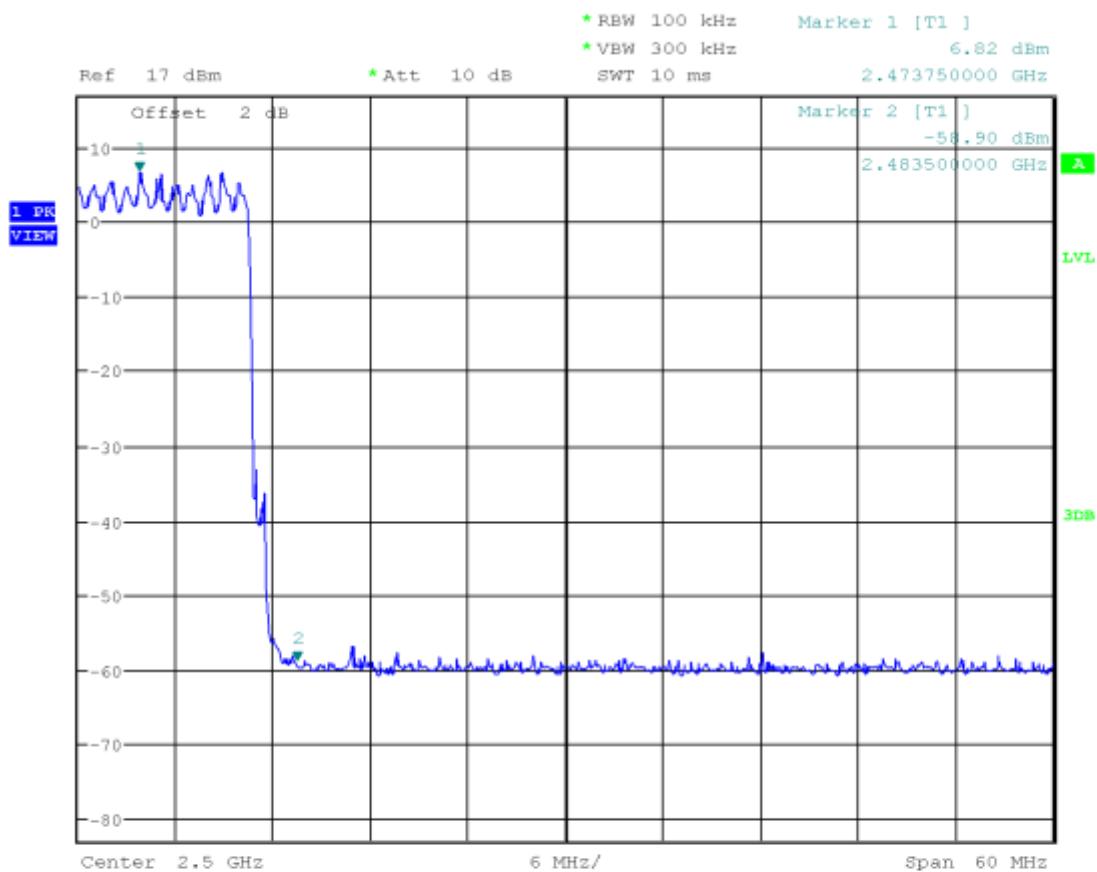
Date: 13.OCT.2022 23:01:55

$\pi/4$ -DQPSK
Conducted Band Edge, High Channel



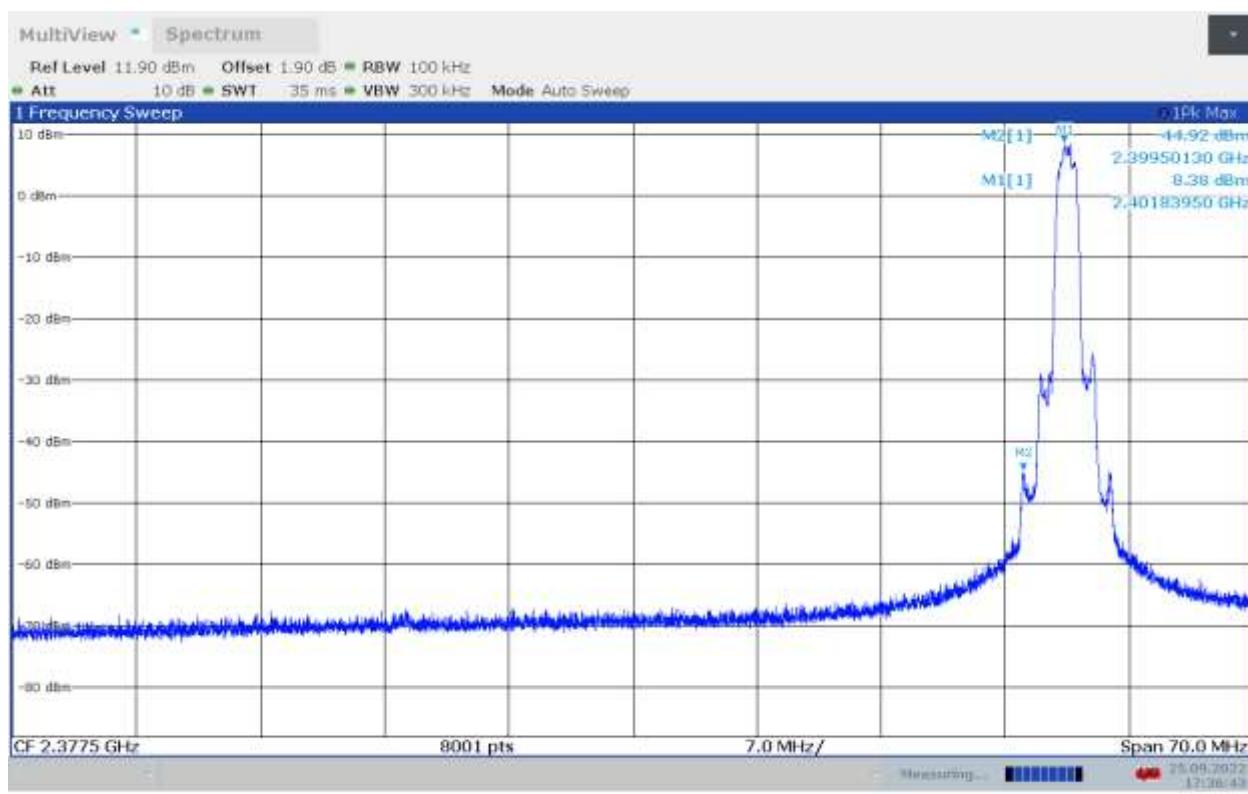
17:41:49 25.09.2022

$\pi/4$ -DQPSK
Conducted Band Edge (Hopping)



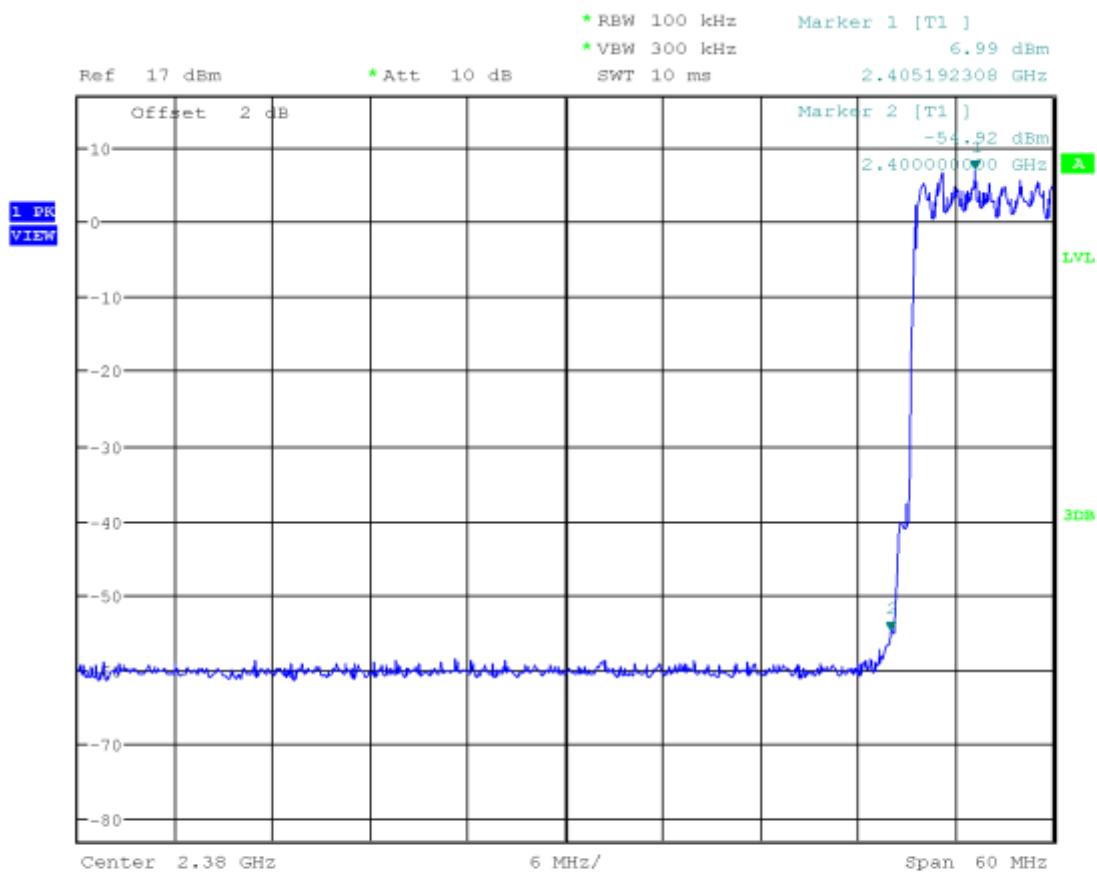
Date: 13.OCT.2022 23:00:12

8-DPSK
Conducted Band Edge, Low Channel



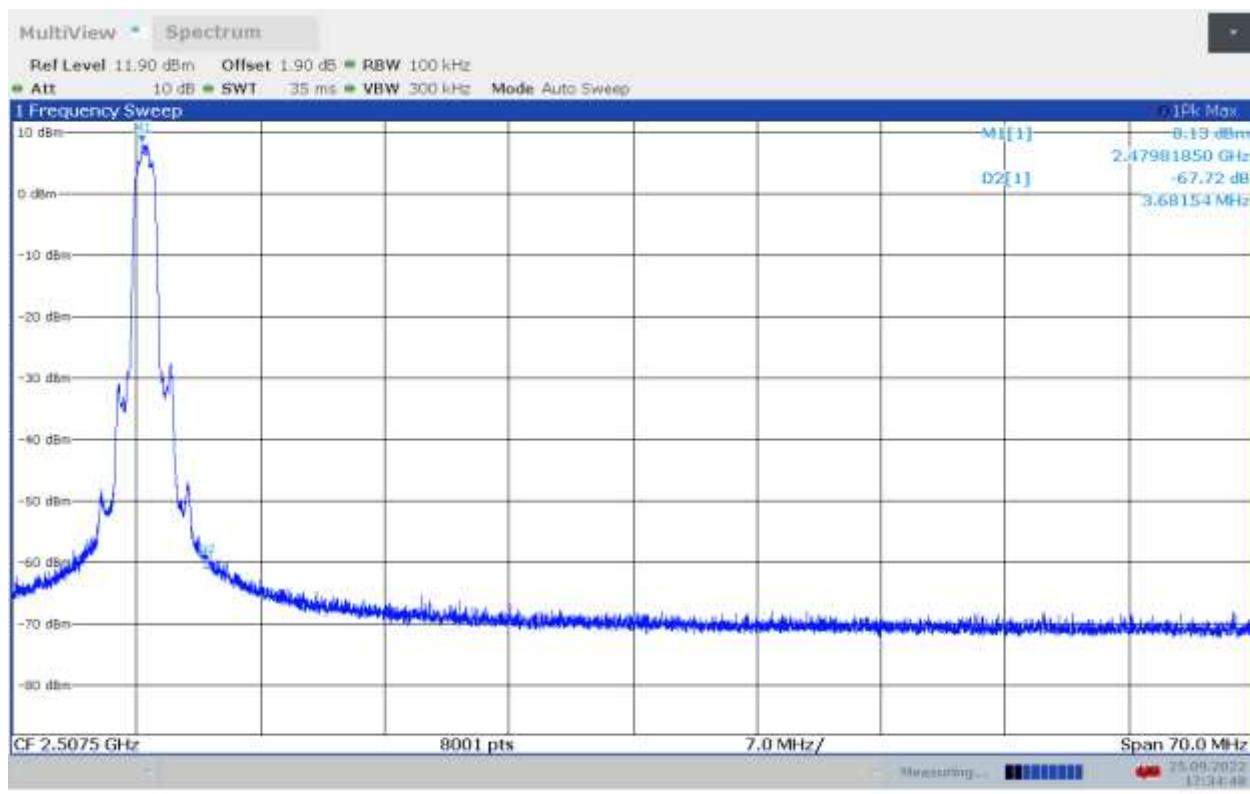
17:36:44 25.09.2022

8-DPSK
Conducted Band Edge (Hopping)



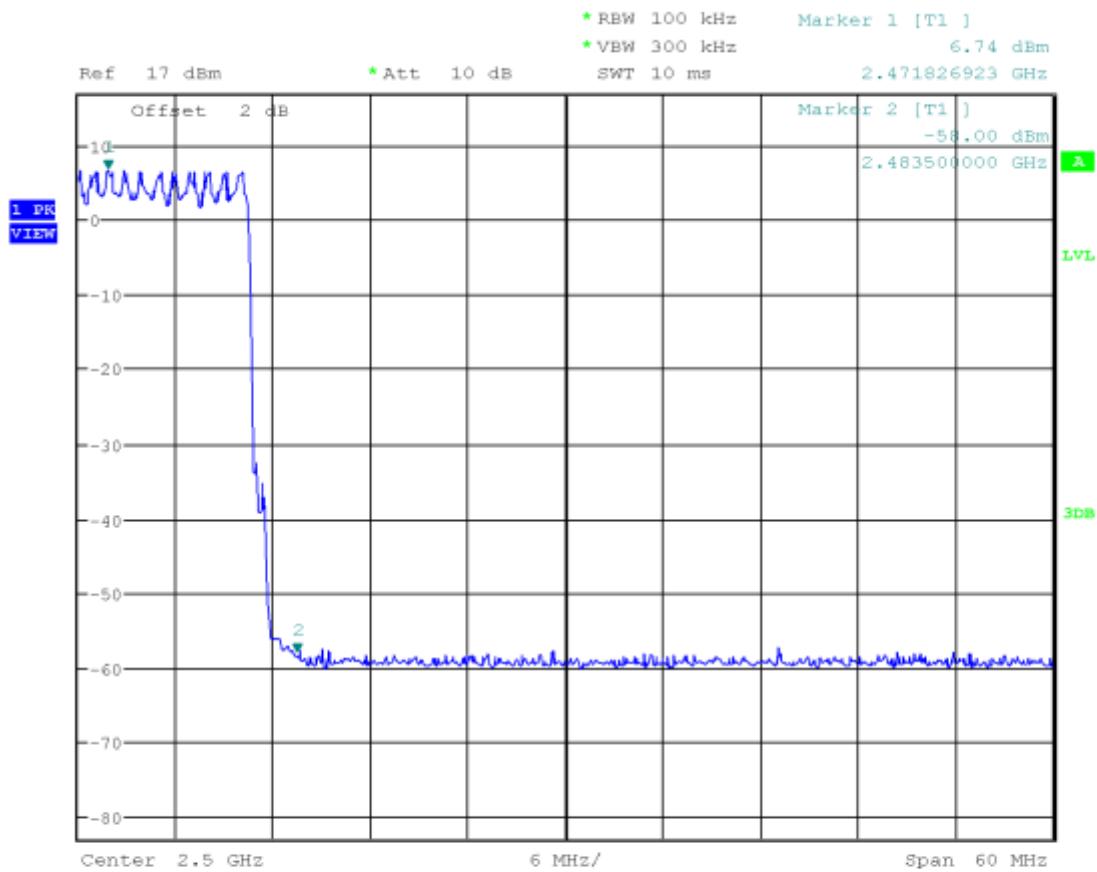
Date: 13.OCT.2022 23:03:28

8-DPSK
Conducted Band Edge, High Channel



17:34:48 25.09.2022

8-DPSK
Conducted Band Edge (Hopping)



Date: 13.OCT.2022 23:12:25

4.7 Transmitter Radiated Emissions FCC Rule 15.247(d), 15.209, 15.205

4.7.1 Requirement

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

For out of band radiated emissions (except for frequencies in restricted bands), in any 100 kHz bandwidths outside the EUT pass-band, the RF power shall be at least 20dB (peak) or 30 dB (average) below that of the maximum in-band 100 kHz emissions.

4.7.2 Procedure

Radiated emission measurements were performed from 9kHz to 25GHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz for frequencies above 1000 MHz.

If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at 3 meters for frequencies above 1 GHz and at 10 meters for frequencies below 1 GHz.

Spurious measurements are made with a preamp from 9kHz MHz to 25 GHz.

Measurements may be made with a Peak Detector and compared to QP limits for 9kHz – 1 GHz and Average limits for 1 GHz – 25 GHz.

Correlation measurements were performed below 30MHz between 10m ALSE and Open Field site according to FCC KDB 414788 D01 Radiated Test Site v01r01 section 2. All readings were within the acceptable tolerance.

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

4.7.3 Field Strength Calculation

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG; if measurement is performed at a distance other than specified in the rule, a Distance Correction Factor (DCF) shall be added.

Where FS = Field Strength in dB(μ V/m)

RA = Receiver Amplitude (including preamplifier) in dB(μ V); AF = Antenna Factor in dB(1/m)

CF = Cable Attenuation Factor in dB; AG = Amplifier Gain in dB

Assume a receiver reading of 52.0 dB(μ V) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB(μ V/m). This value in dB(μ V/m) was converted to its corresponding level in μ V/m.

RA = 52.0 dB(μ V)

AF = 7.4 dB(1/m)

CF = 1.6 dB

AG = 29.0 dB

FS = 52.0+7.4+1.6-29.0 = 32 dB(μ V/m).

Level in μ V/m = Common Antilogarithm [(32 dB μ V/m)/20] = 39.8 μ V/m.

4.7.4 Antenna-port conducted measurements

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

4.7.5 General Procedure for conducted measurements in restricted bands

- a) Measure the conducted output power (in dBm) using the detector specified for determining quasi-peak, peak, and average conducted output power, respectively.
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)
- c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies \leq 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies $>$ 1000 MHz).
- d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
$$E = EIRP - 20\log D + 104.8 + DCF$$
 (DCF for Average measurements)
where:
E = electric field strength in $\text{dB}\mu\text{V}/\text{m}$,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.
DCF = Duty Cycle Correction Factor
- f) Compare the resultant electric field strength level to the applicable limit.
- g) Perform radiated spurious emission test

4.7.6 Test Results

Tested By	Test Date
Juan Alapizco Vega	September 18, 2022

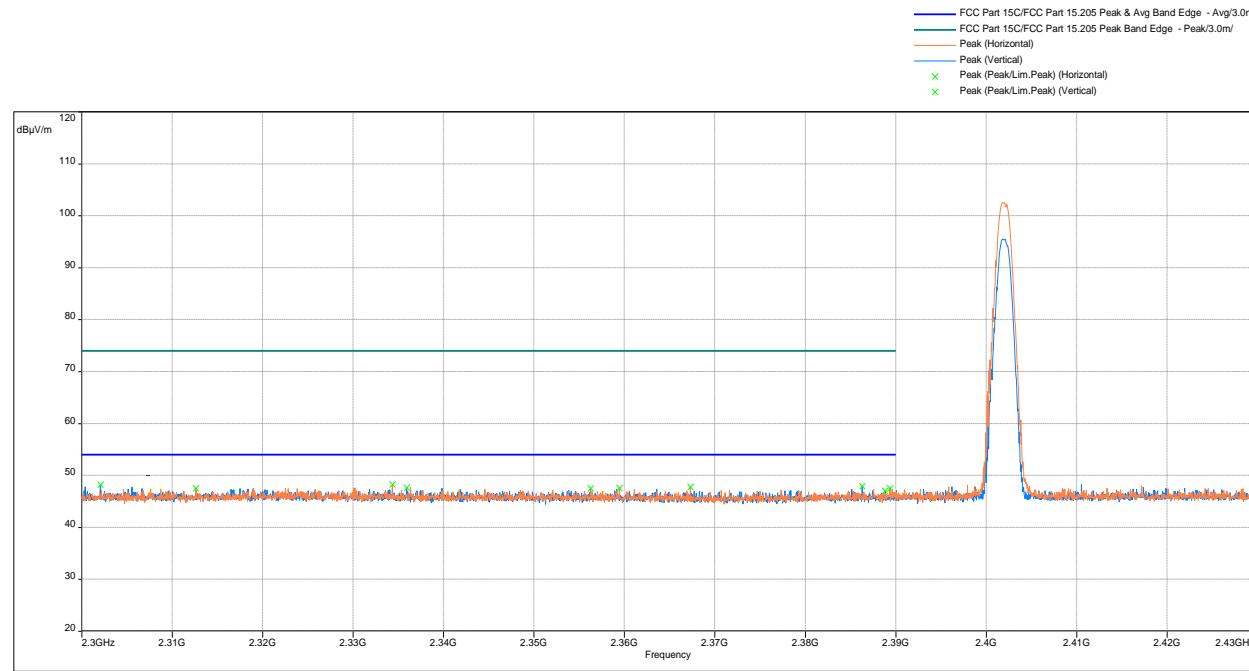
These measurements were performed with Antenna in place.

4.7.6 Test Results (Continued)

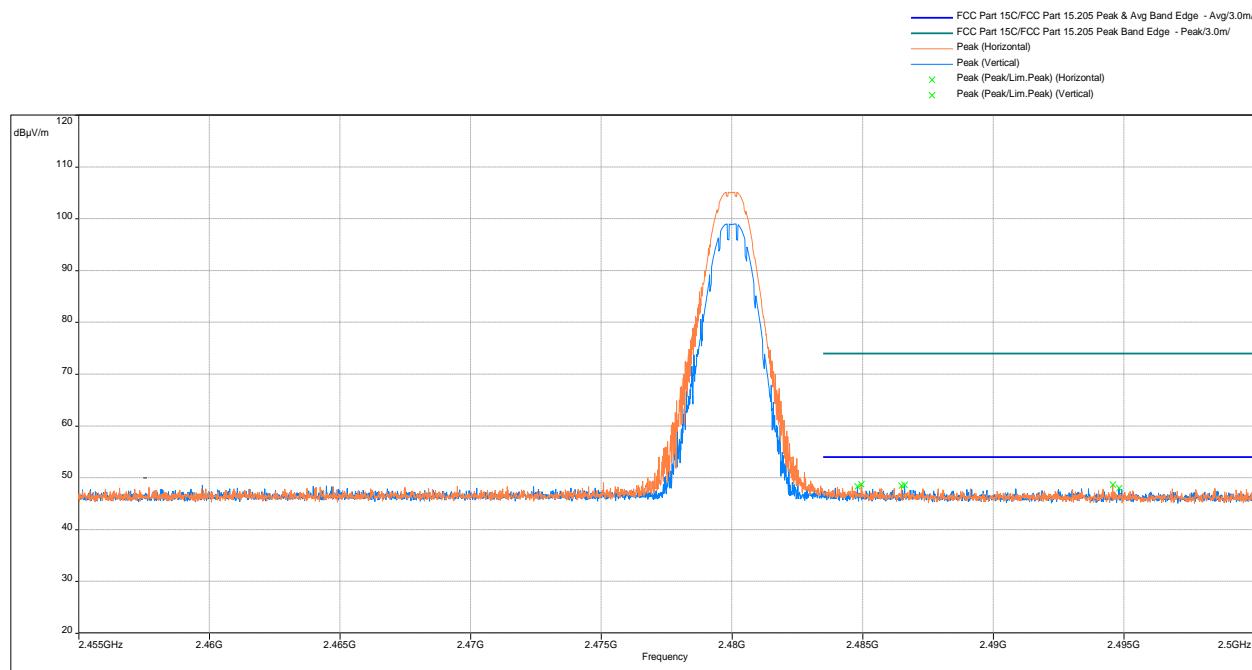
Test Results: 15.209/15.205 Radiated Restricted Band Emissions

GFSK

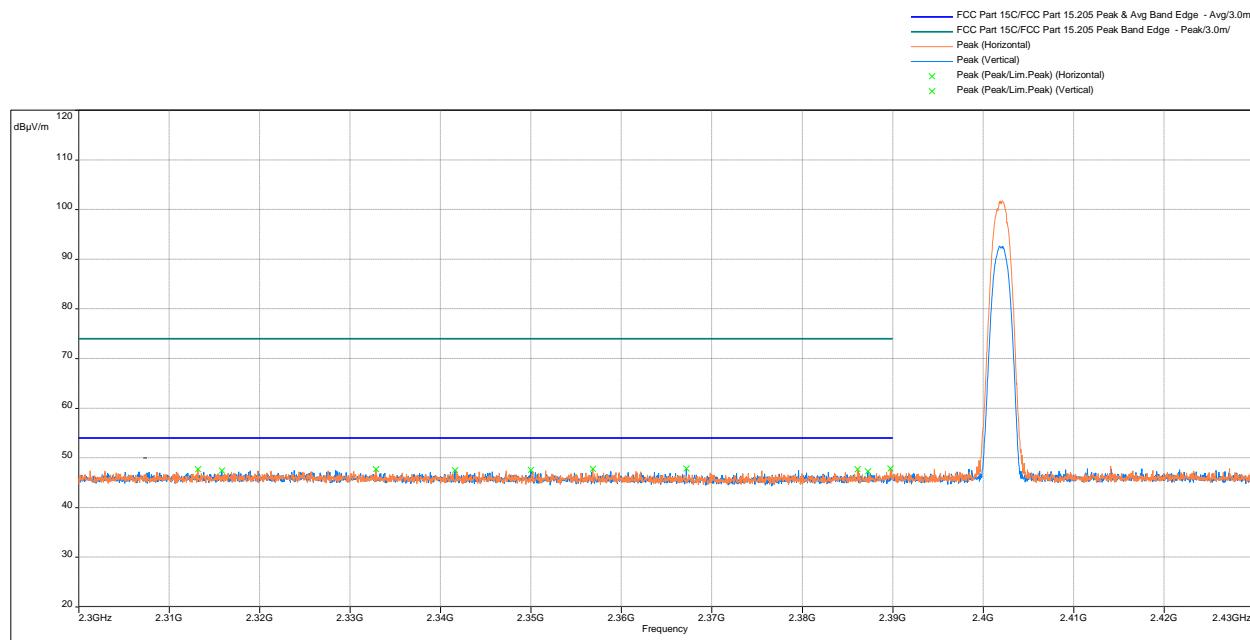
Radiated Band Edge at the Restricted Band – Tx @ Low Channel, Peak



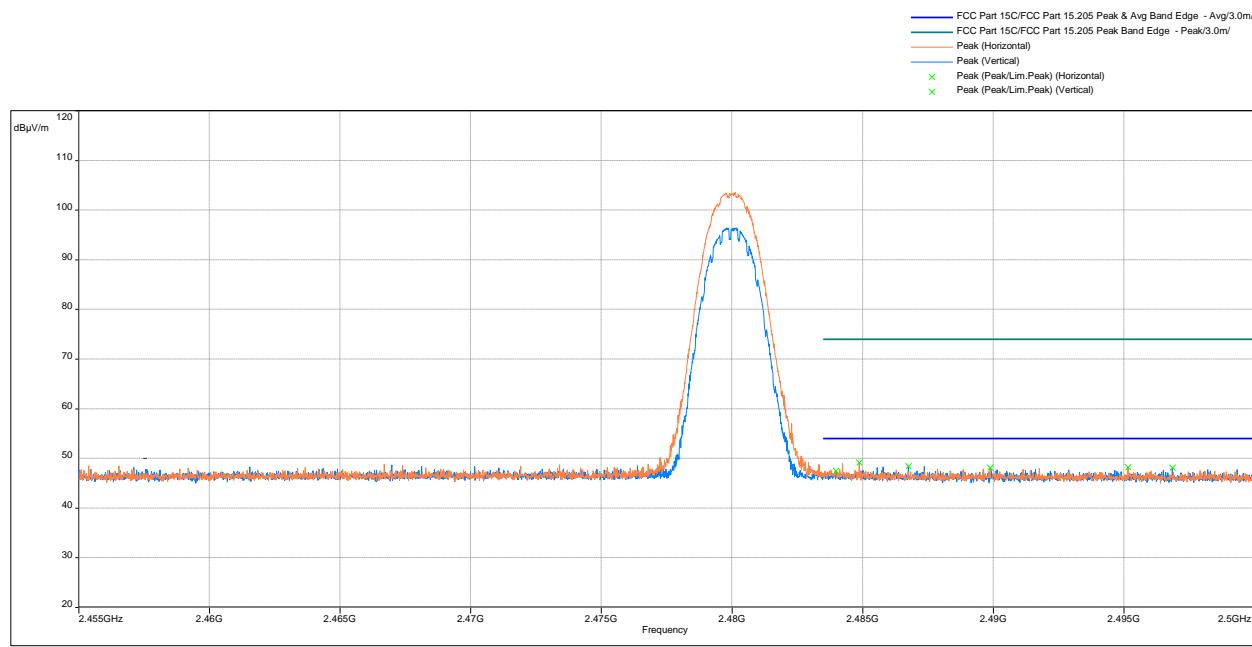
Frequency (MHz)	Peak (dB μ V/m)	Lim. Average (dB μ V/m)	Peak-Lim (dB)	Height (m)	Angle (°)	Comment	Correction (dB)
2390	45.35	54	-8.65	1.10	182	Vertical	21.46

Radiated Band Edge at the Restricted Band – Tx @ High Channel, Peak


Frequency (MHz)	Peak (dB μ V/m)	Lim. Average (dB μ V/m)	Peak-Lim (dB)	Height (m)	Angle (°)	Comment	Correction (dB)
2483.5	45.27	54	-8.23	3.41	187.5	Vertical	21.78

$\pi/4$ -DQPSK
Radiated Band Edge at the Restricted Band – Tx @ Low Channel, Peak


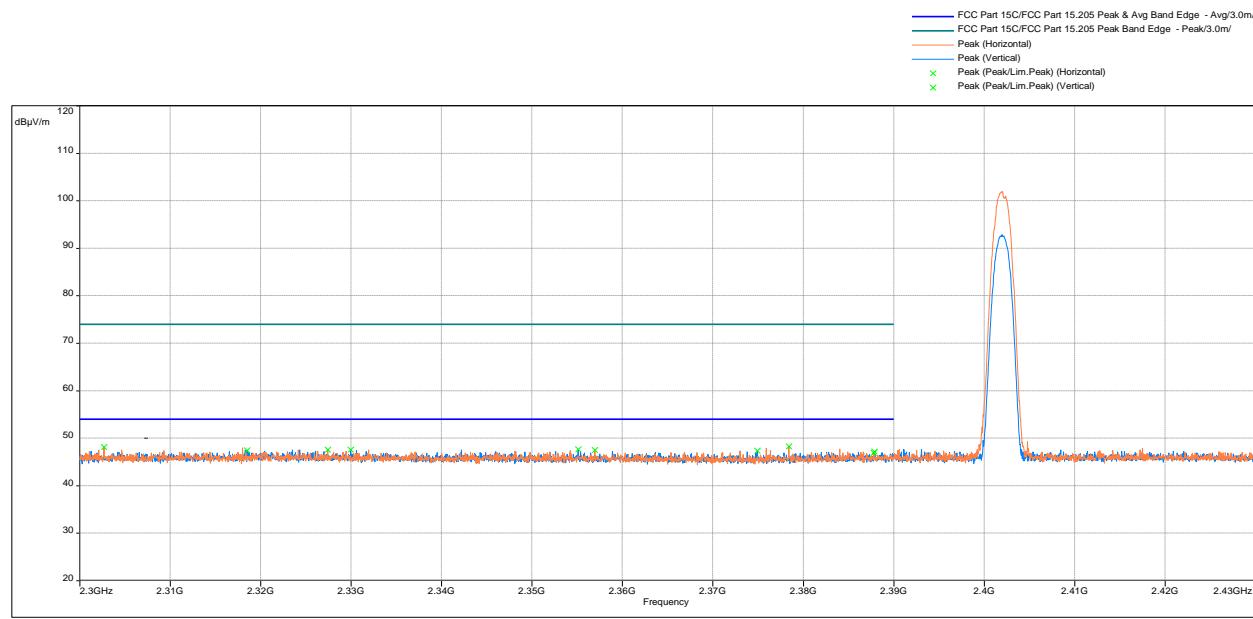
Frequency (MHz)	Peak (dB μ V/m)	Lim. Average (dB μ V/m)	Peak-Lim (dB)	Height (m)	Angle (°)	Comment	Correction (dB)
2390	44.94	54	-9.06	3.09	15	Horizontal	21.46

Radiated Band Edge at the Restricted Band – Tx @ High Channel, Peak


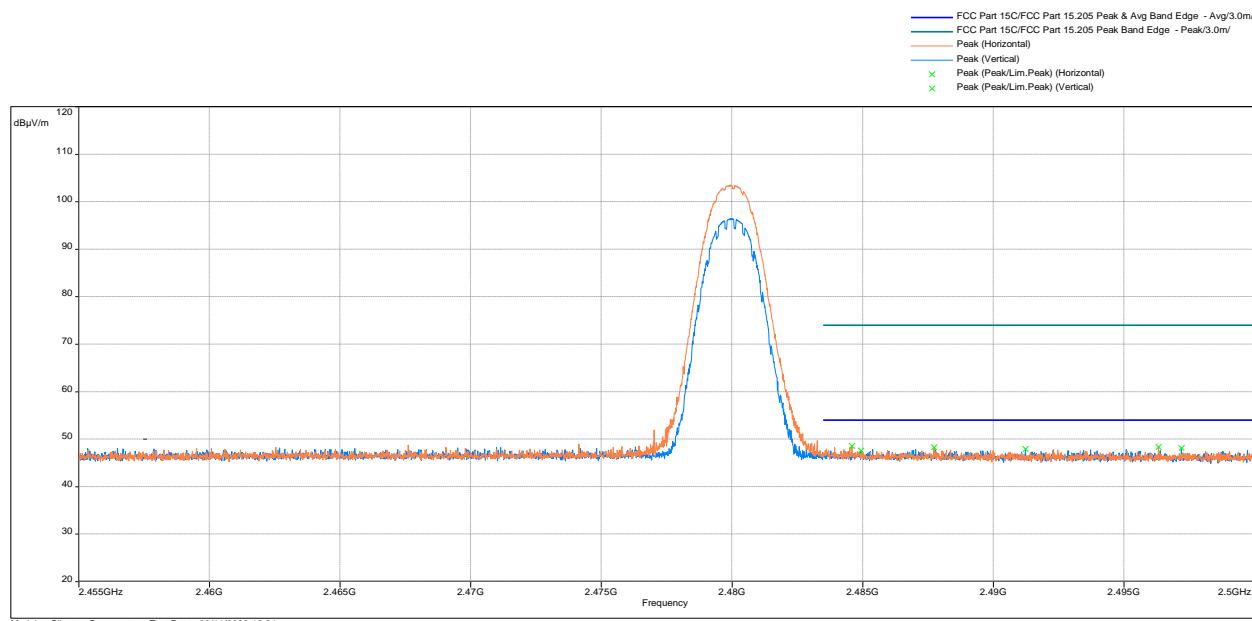
Frequency (MHz)	Peak (dB μ V/m)	Lim. Average (dB μ V/m)	Peak-Lim (dB)	Height (m)	Angle (°)	Comment	Correction (dB)
2483.5	45.79	54	-8.21	1.40	114.75	Horizontal	21.78

8-DPSK

Radiated Band Edge at the Restricted Band – Tx @ Low Channel, Peak



Frequency (MHz)	Peak (dBμV/m)	Lim. Average (dBμV/m)	Peak-Lim (dB)	Height (m)	Angle (°)	Comment	Correction (dB)
2390	44.19	54	-9.81	2.09	42.25	Horizontal	21.46

Radiated Band Edge at the Restricted Band – Tx @ High Channel, Peak


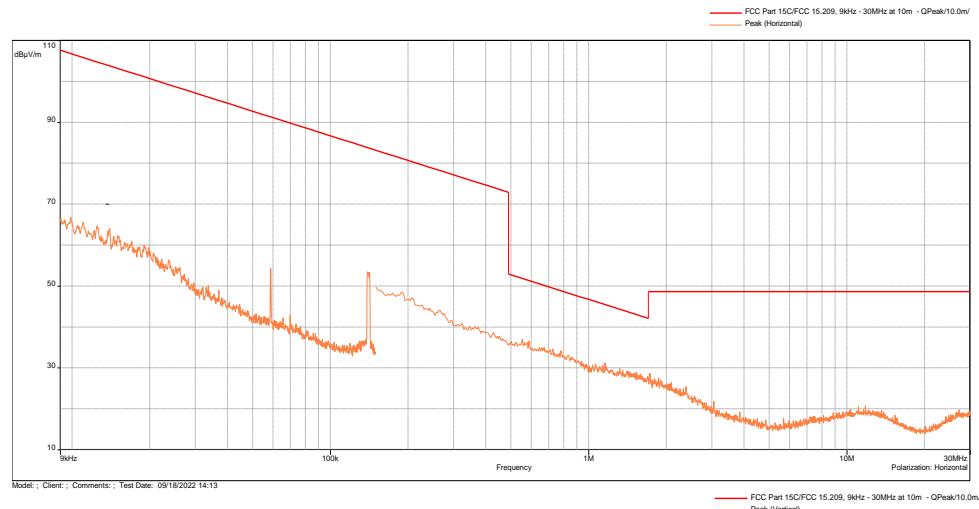
Frequency (MHz)	Peak (dB μ V/m)	Lim. Average (dB μ V/m)	Peak-Lim (dB)	Height (m)	Angle (°)	Comment	Correction (dB)
2483.5	45.29	54	-8.21	1.41	85.75	Vertical	21.78

Out-of-Band Radiated Spurious Emissions

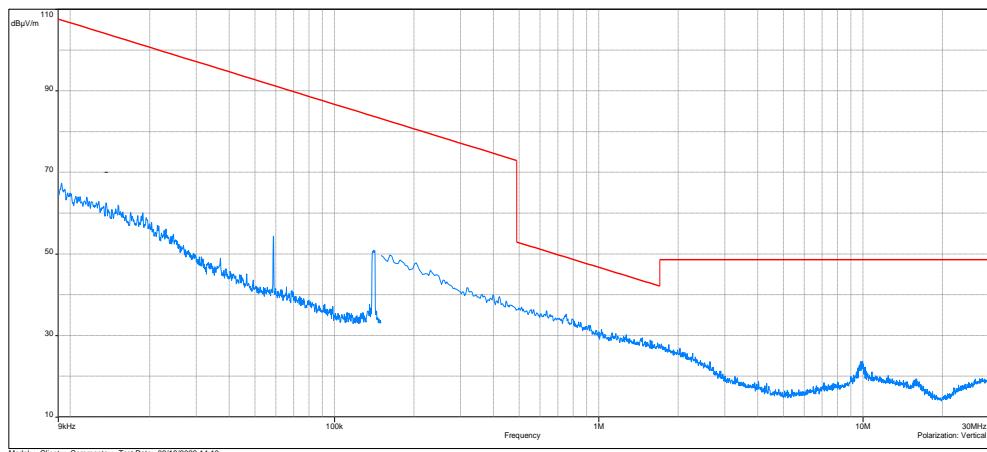
Test Results: 15.209 Radiated Spurious Emissions, GFSK

Radiated Spurious Emissions 9 kHz to 30 MHz, Peak Scan vs QP Limit

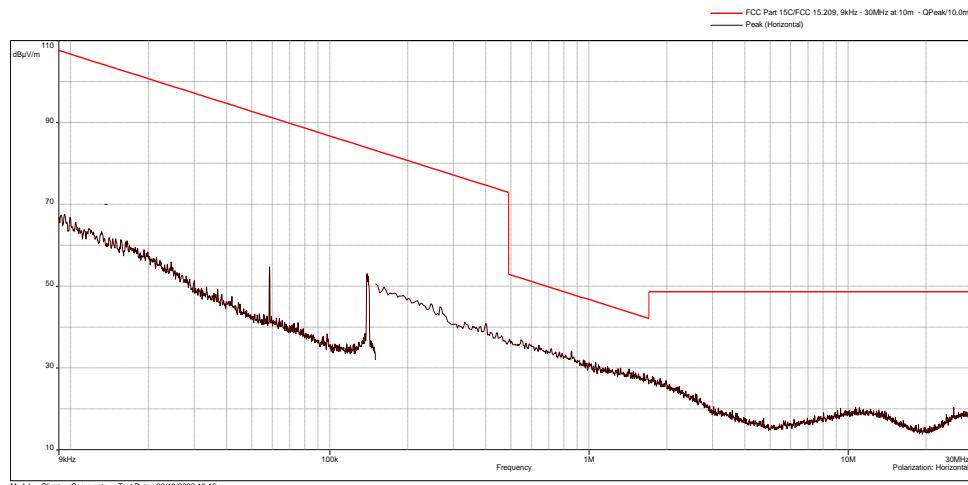
Antenna
Position -
Coaxial



Antenna
Position -
Coplanar

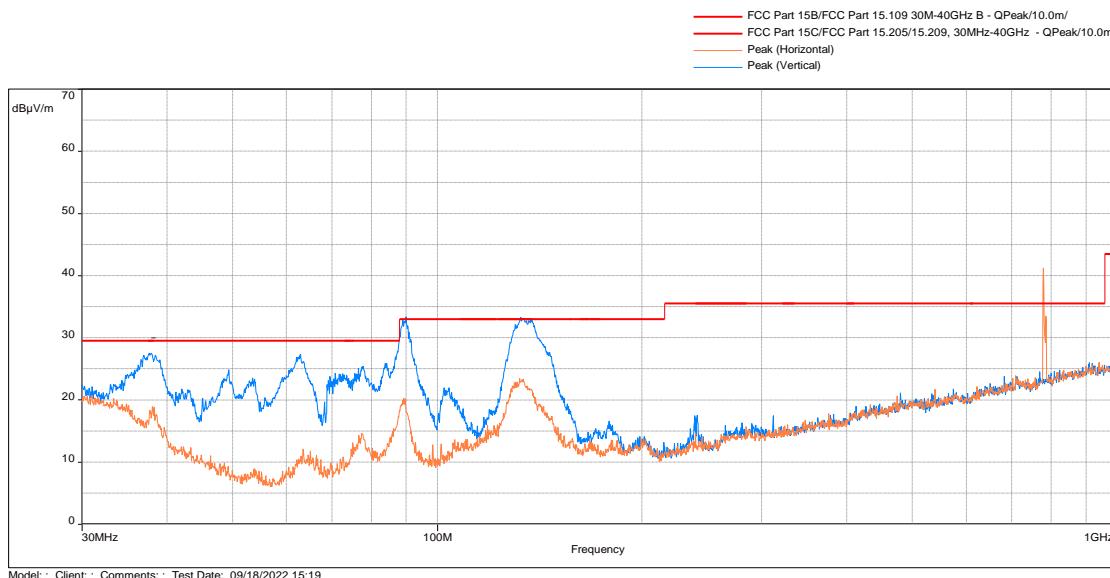


Antenna
Position -
Horizontal

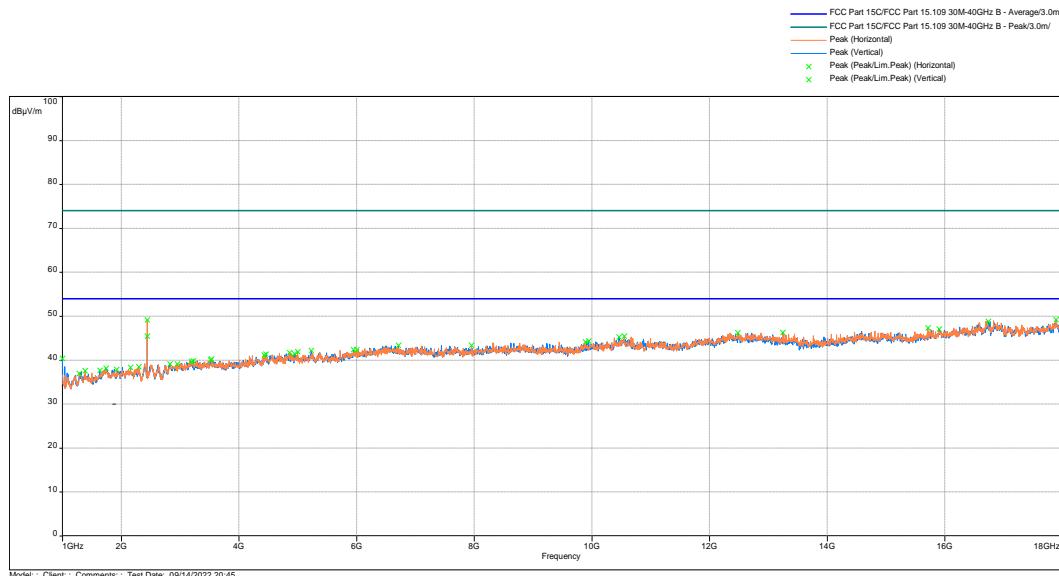


Test Results: Test Results: 15.209 Radiated Spurious Emissions, GFSK Tx at 2402MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

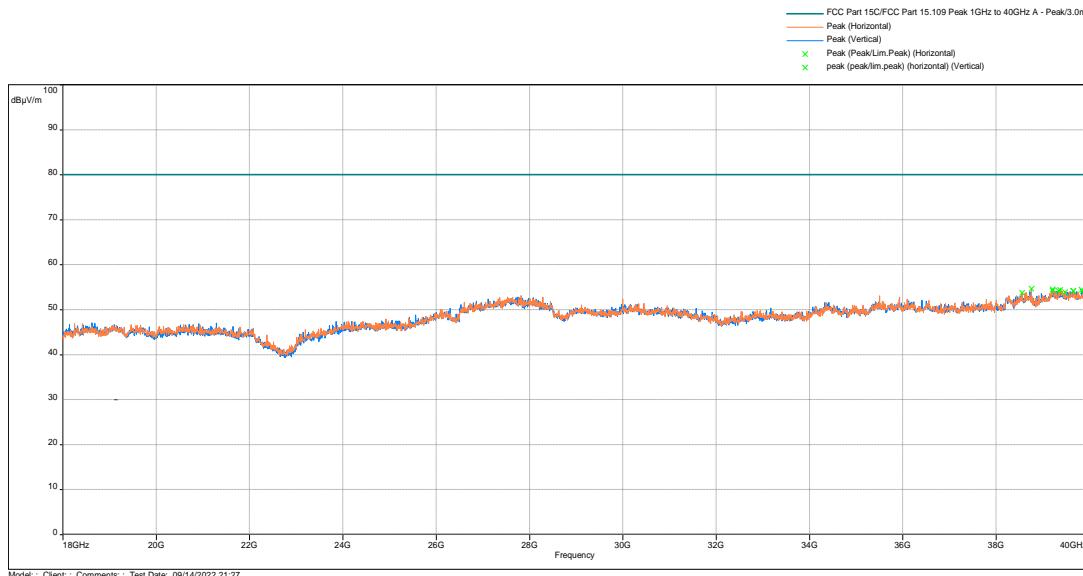


Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit

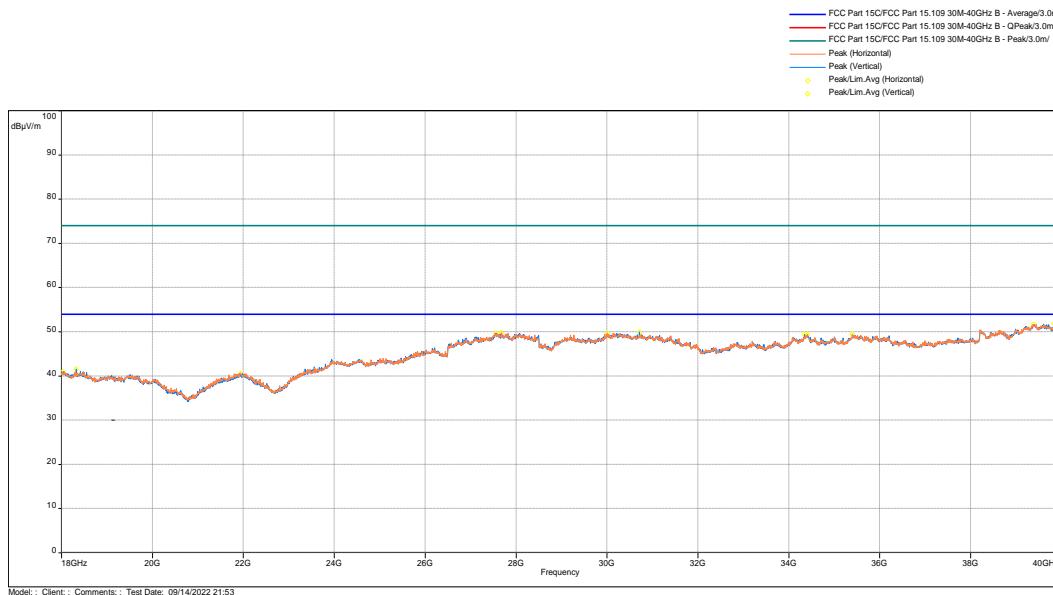


Model: ; Client: ; Comments: ; Test Date: 09/14/2022 20:45

Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
77.498	25.14	29.5	-4.36	2	281	Vertical	-18.95
89.202	32.52	33	-0.48	1	128.5	Vertical	-19.19
134.081	32.42	33	-0.48	2	184.5	Vertical	-12.78
441.603	30.06	35.5	-5.44	2.11	143	Horizontal	-7.91
532.298	33.6	35.5	-1.9	2.28	199	Horizontal	-6.39
542.063	34.6	35.5	-0.9	2.52	17	Horizontal	-6.26
543.421	31.26	35.5	-4.24	1	93	Vertical	-6.16

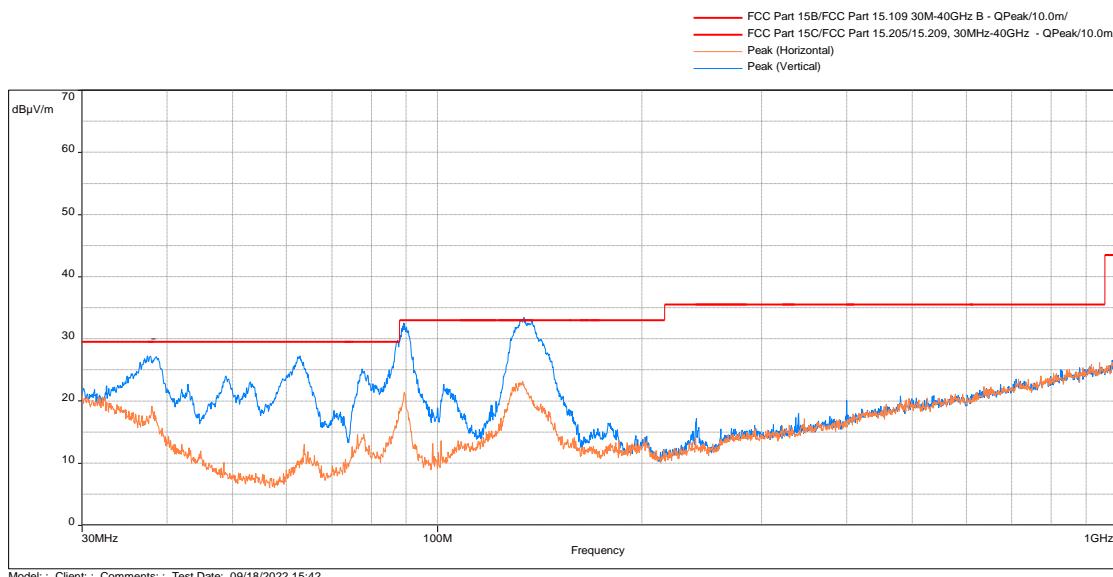
Note: 783MHz is a transient signal and not in the restricted band.

Note: Correction = AF + CF – Preamp

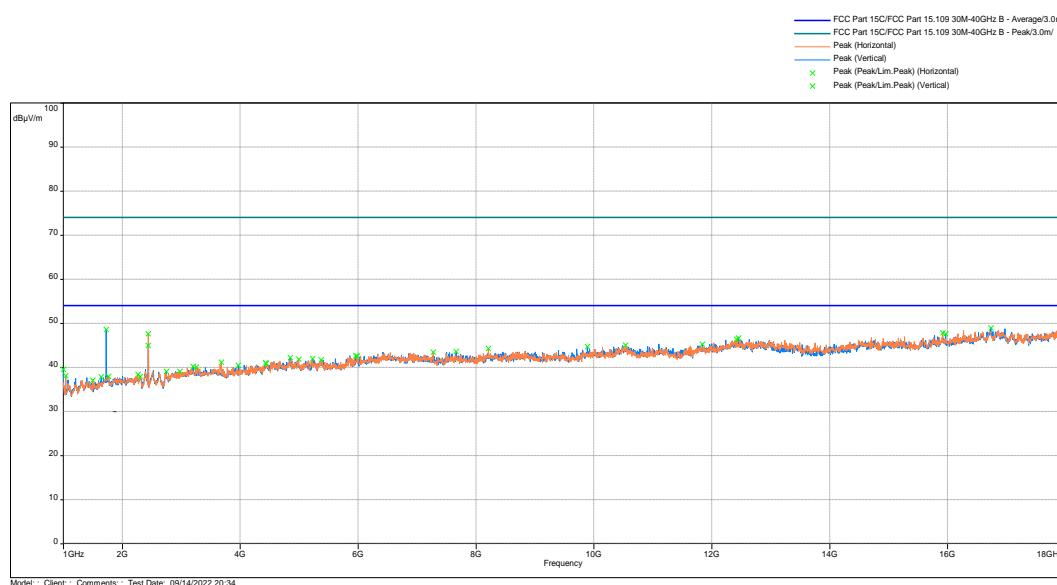
Results	Complies

Test Results: Test Results: 15.209 Radiated Spurious Emissions, GFSK Tx at 2442MHz

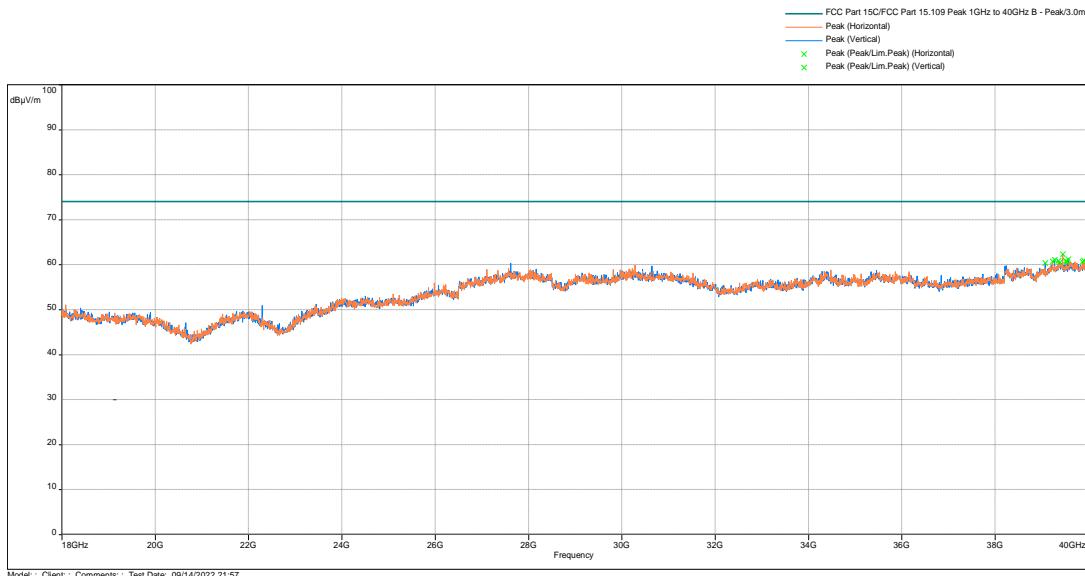
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



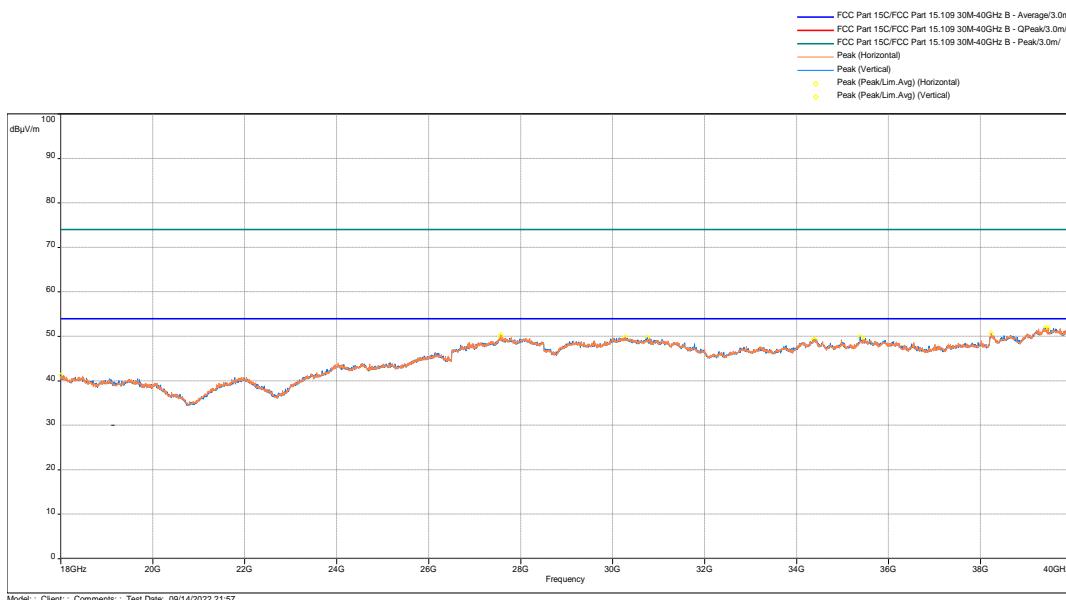
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
37.469	27.22	29.5	-1.78	3	113.5	Vertical	-11.46
48.818	24.03	29.5	-4.97	2	127.5	Vertical	-18.89
62.85067	27.25	29.5	-1.75	2	135.25	Vertical	-19.34
77.49767	25.14	29.5	-4.36	2	281	Vertical	-18.95
89.20233	32.52	33	-0.48	1	128.5	Vertical	-19.19
134.081	32.42	33	-0.58	2	184.5	Vertical	-12.78

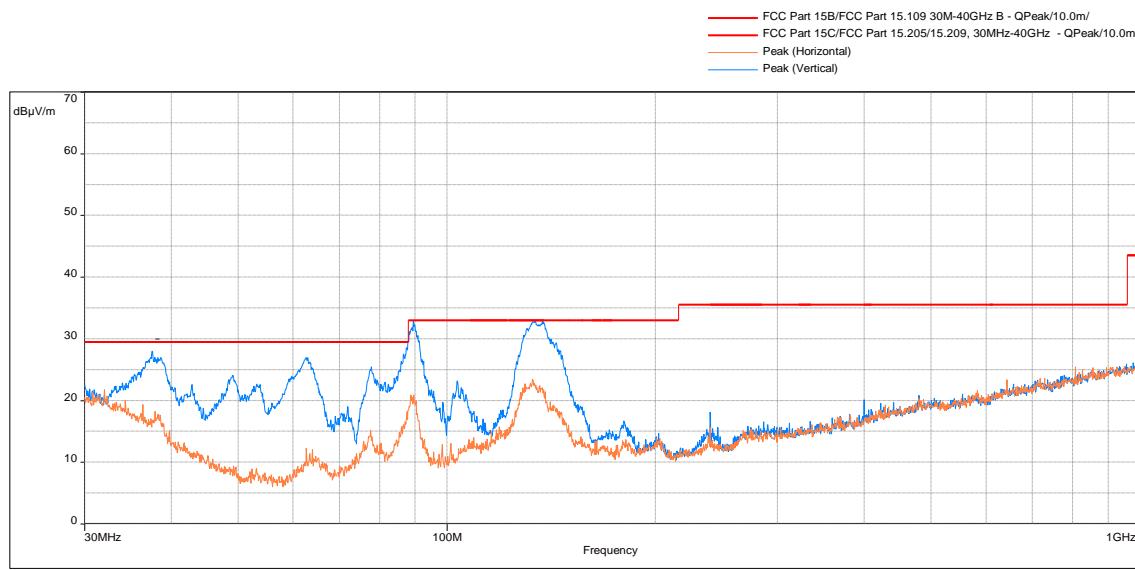
Note: Correction = AF + CF – Preamp

Results	Complies

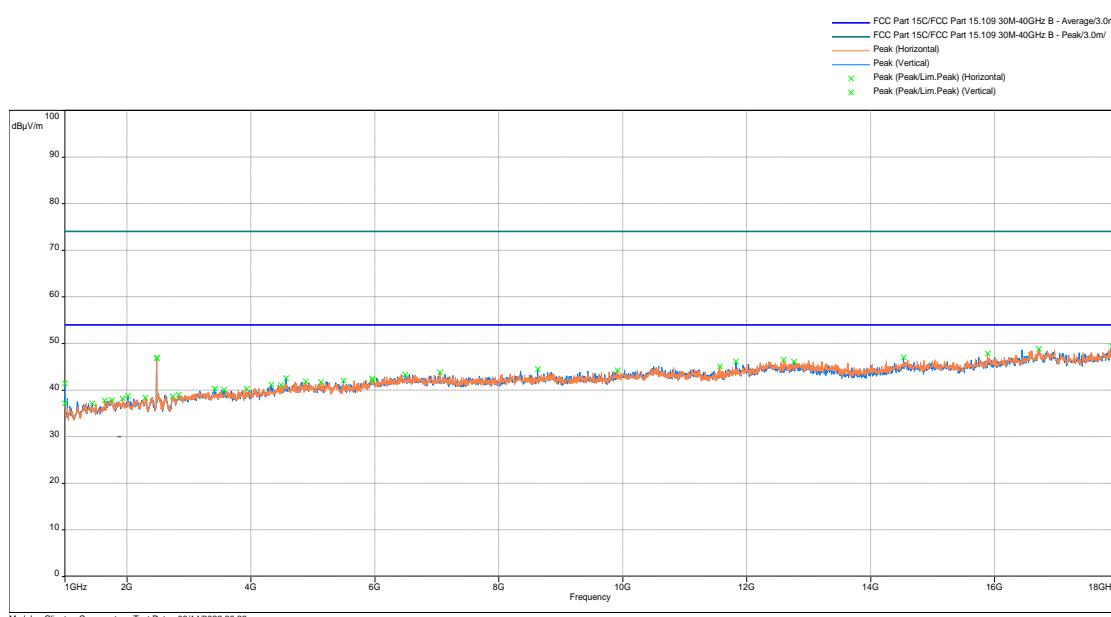
Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

Test Results: Test Results: 15.209 Radiated Spurious Emissions, GFSK Tx at 2480MHz

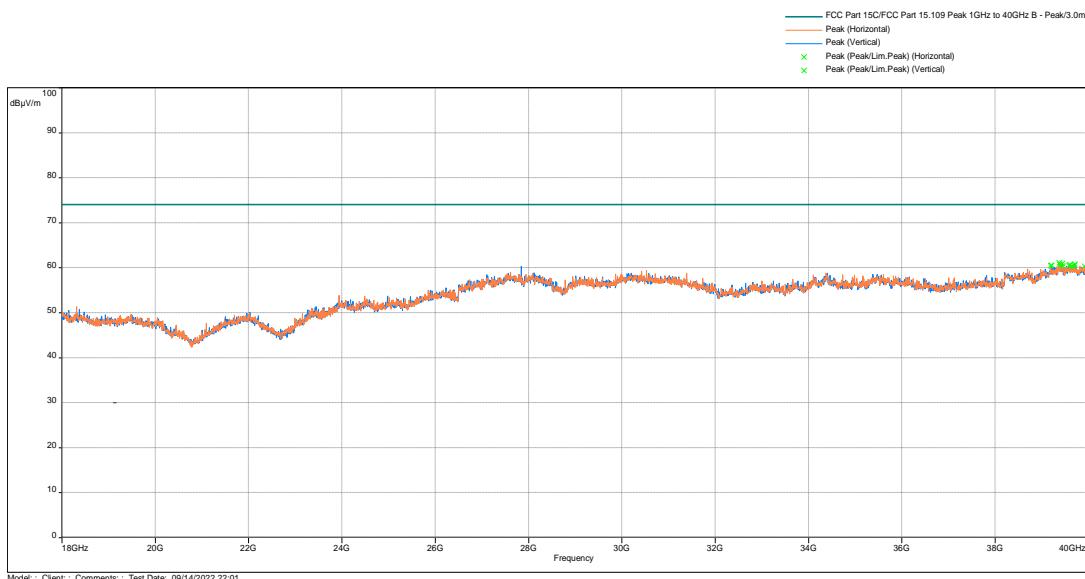
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



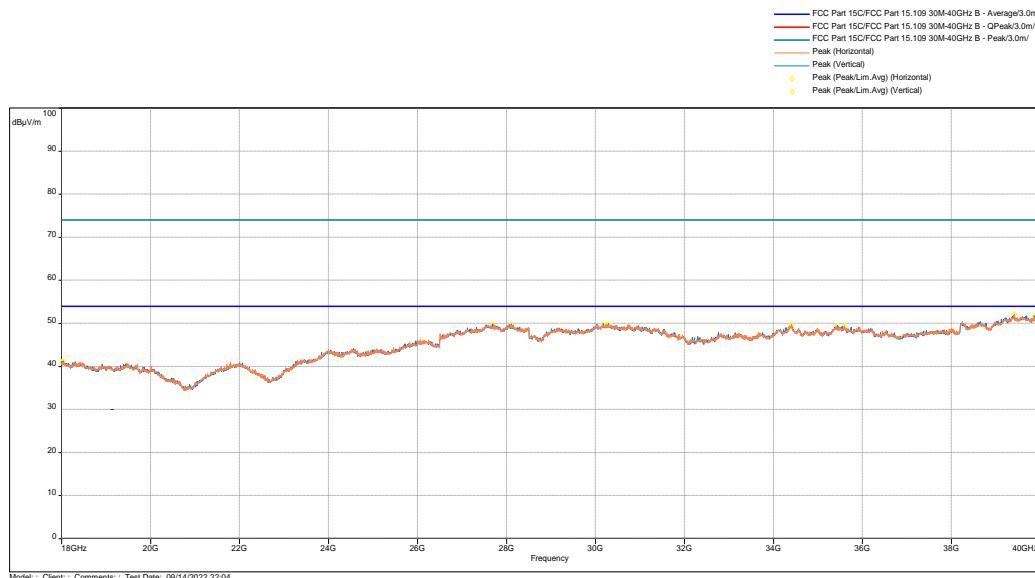
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
37.566	27.96	29.5	-1.54	2	97	Vertical	-11.54
49.109	24.08	29.5	-5.42	3	115.5	Vertical	-18.99
62.98	26.92	29.5	-2.58	2	111.25	Vertical	-19.33
77.821	25.42	29.5	-4.08	2	271.5	Vertical	-18.98
89.493	32.8	33	-0.2	1	85.75	Vertical	-19.16
137.379*	32.9	33	-0.1	3	203.5	Vertical	-12.99

Note: 137.3MHZ is found to be unintentional emission. The EUT meets FCC 15.109 Class A limit.

Note: Correction = AF + CF – Preamp

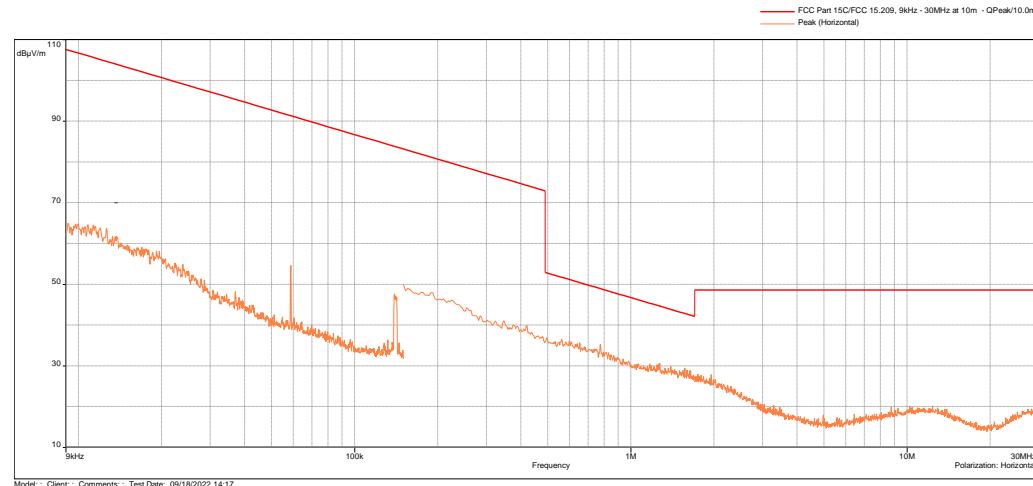
Results	Complies
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Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

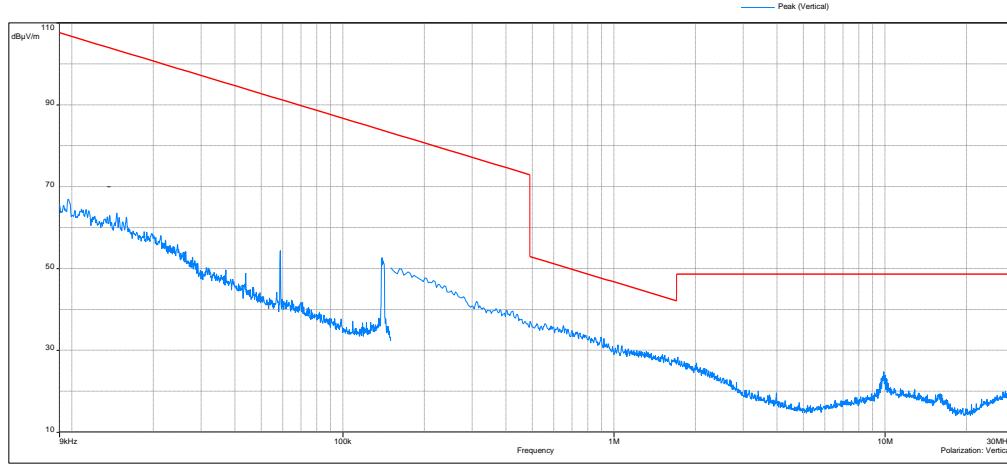
Test Results: 15.209 Radiated Spurious Emissions, $\pi/4$ -DQPSK

Radiated Spurious Emissions 9 kHz to 30 MHz, Peak Scan vs QP Limit

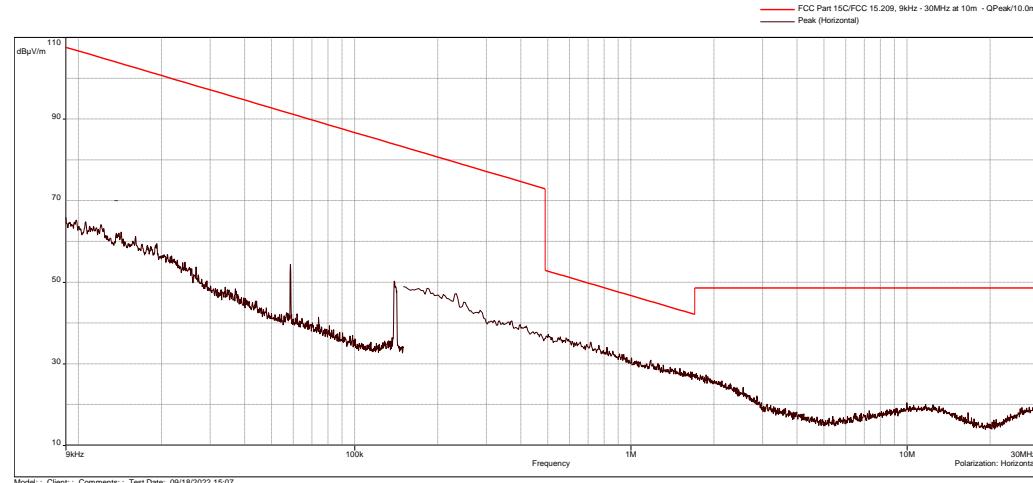
Antenna
Position -
Coaxial

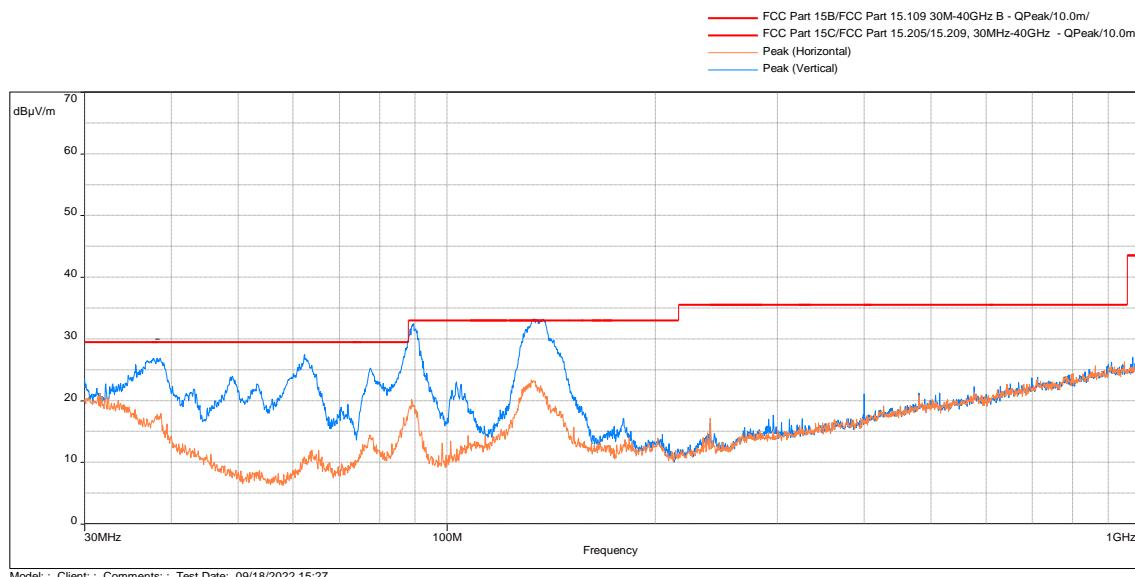
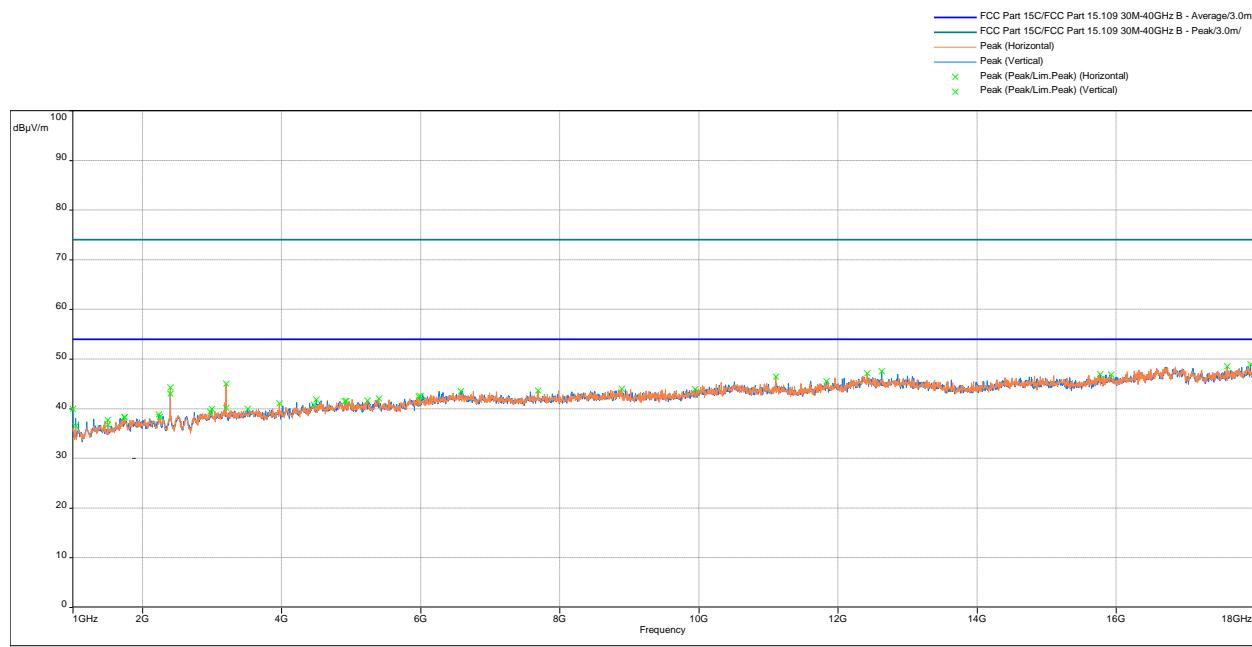


Antenna
Position -
Coplanar

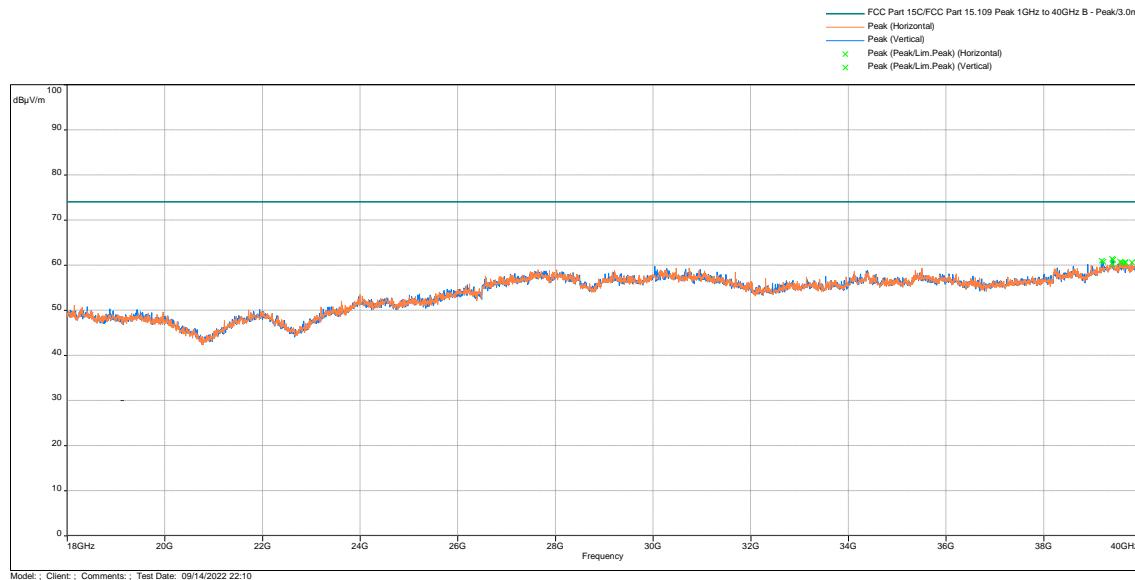


Antenna
Position -
Horizontal

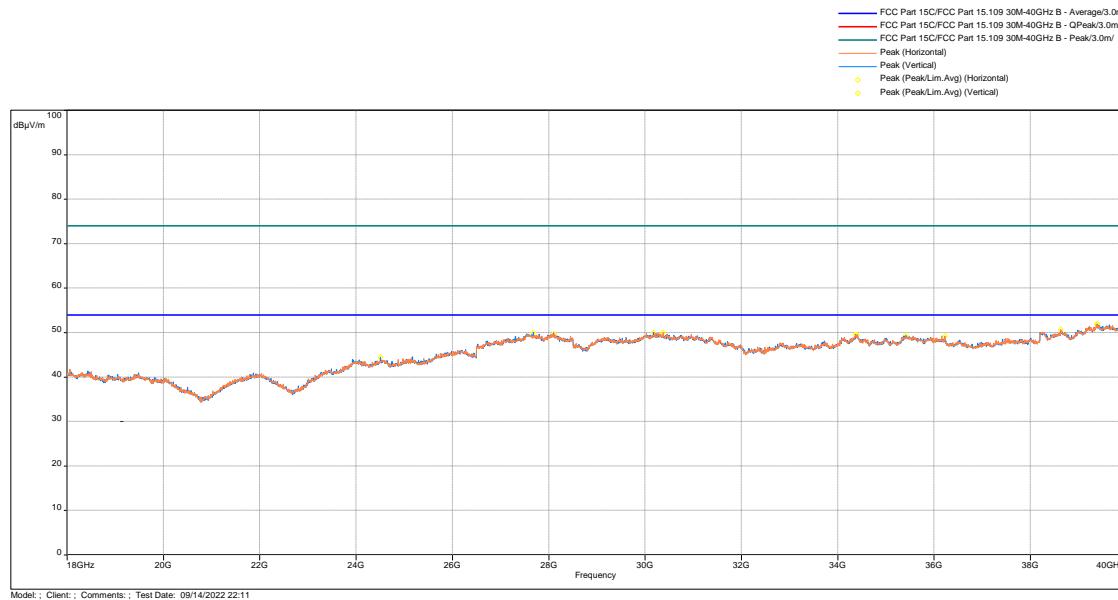


Test Results: Test Results: 15.209 Radiated Spurious Emissions, $\pi/4$ -DQPSK Tx at 2402MHz
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit


Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit

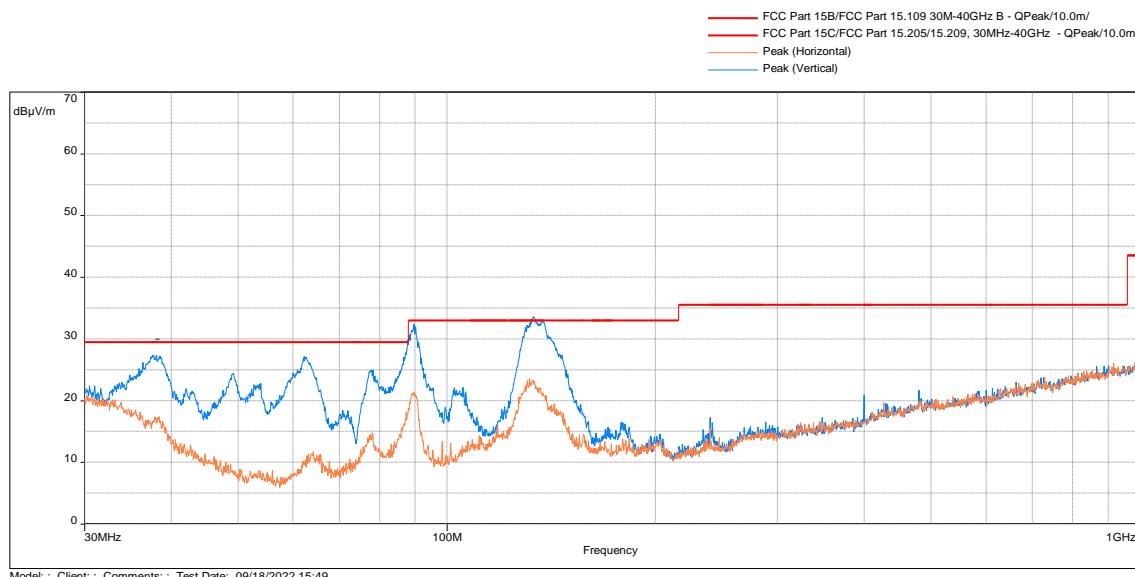
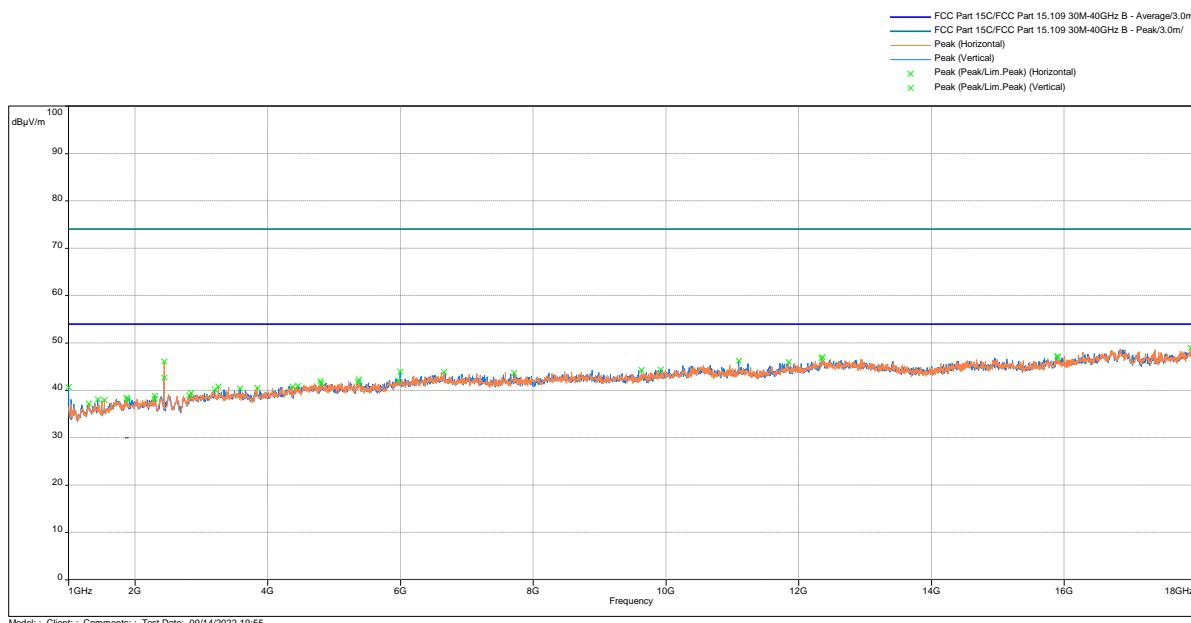


Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
38.536	26.9	29.5	-2.6	0.99	104.25	Vertical	-12.3
49.04433	23.93	29.5	-5.57	3	172.75	Vertical	-18.97
62.301	27.47	29.5	-2.03	2	132	Vertical	-19.4
77.59467	25.25	29.5	-3.5	2	293.25	Vertical	-18.96
89.558	32.48	33	-1.02	0.99	92.75	Vertical	-19.15
133.596	33.75	33	-0.25	0.99	186.5	Vertical	-12.74

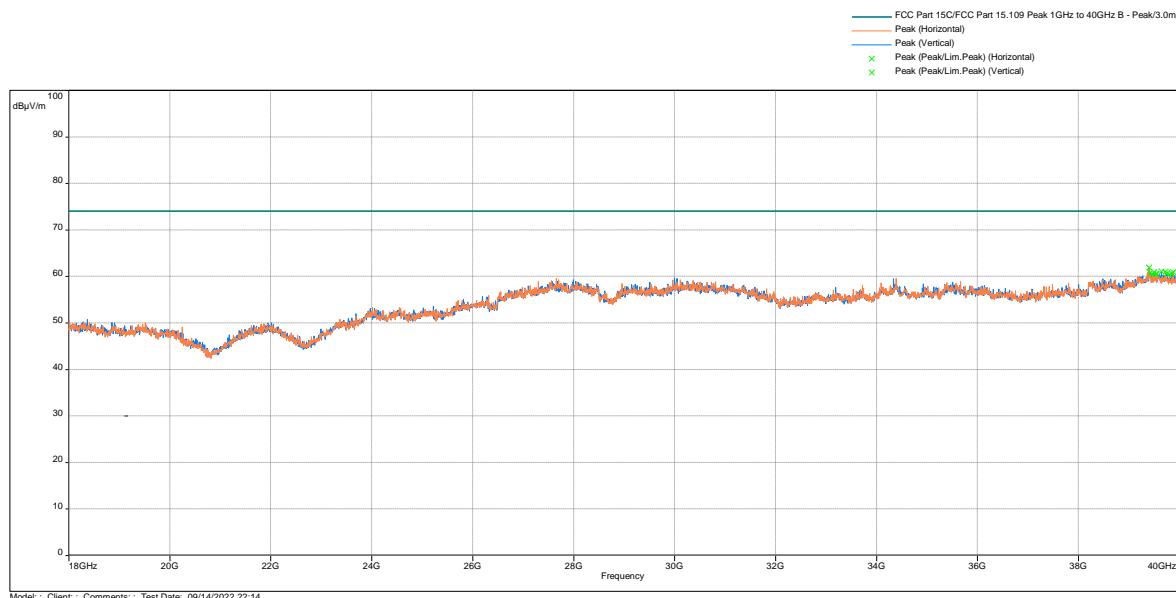
Note: Correction = AF + CF – Preamp

Results	Complies
----------------	-----------------

Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

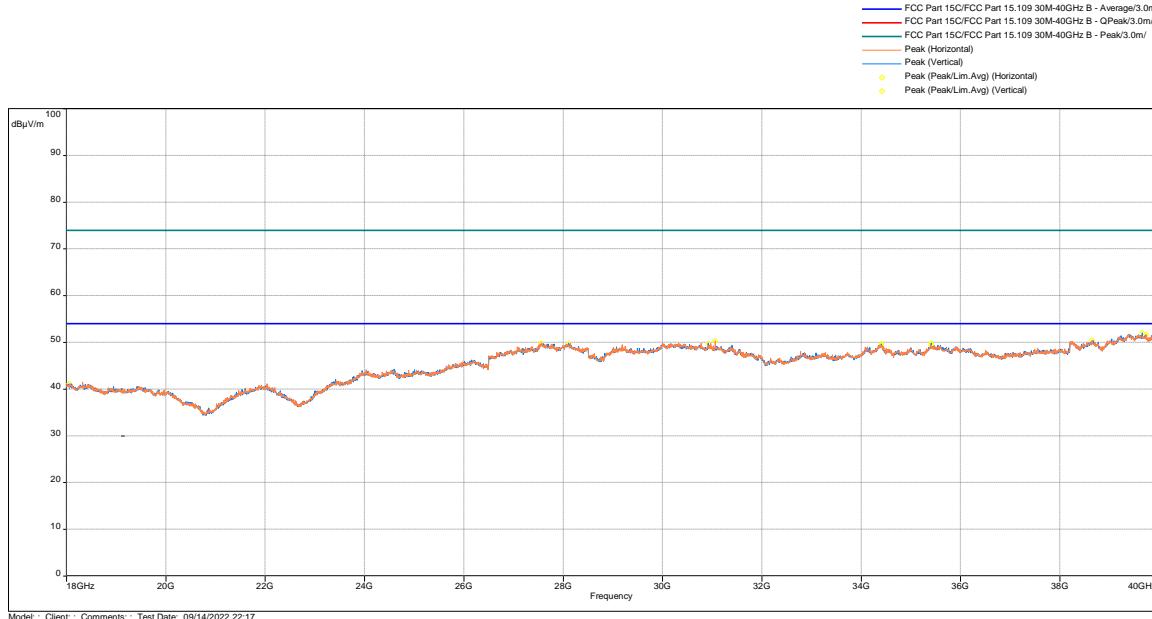
Test Results: Test Results: 15.209 Radiated Spurious Emissions, $\pi/4$ -DQPSK Tx at 2442MHz
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit


Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 09/14/2022 22:14

Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 09/14/2022 22:17

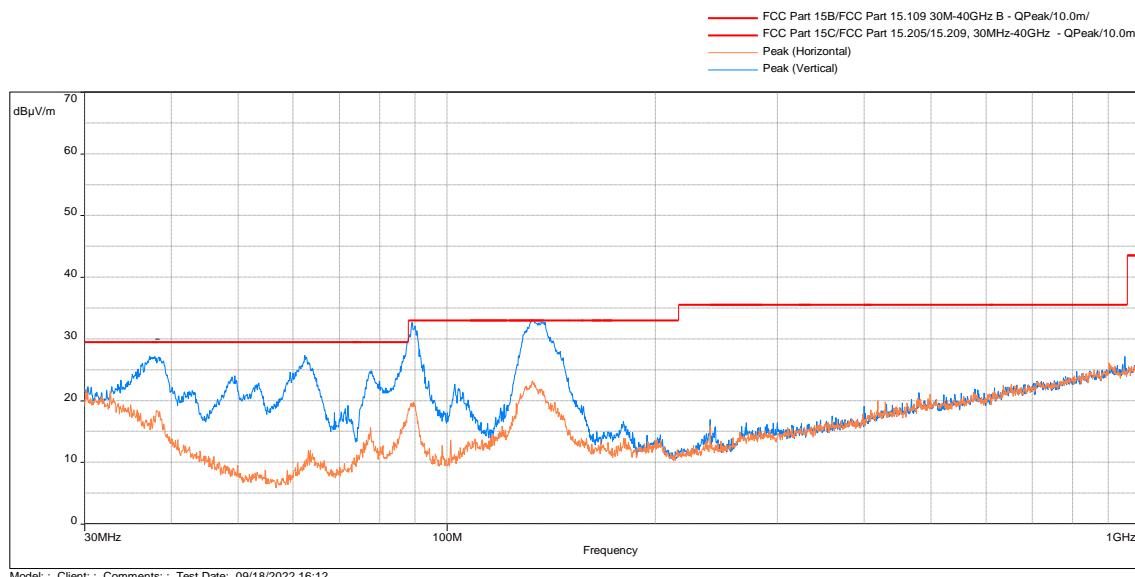
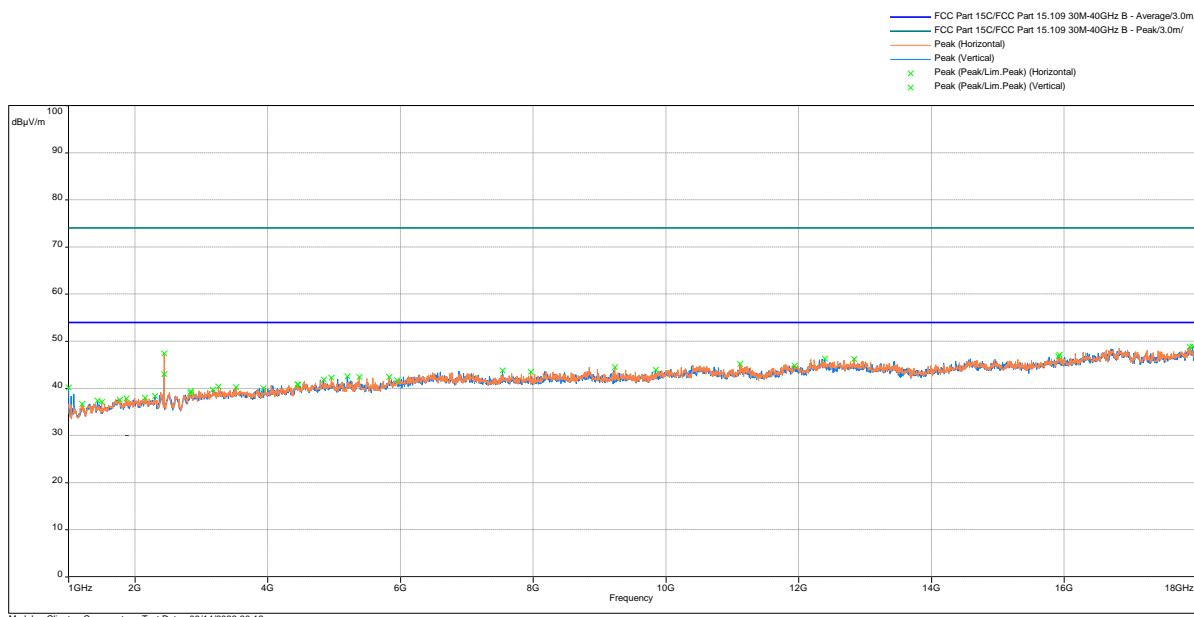
Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
38.083	27.33	29.6	-1.17	2	95.5	Vertical	-11.95
49.206	24.43	29.5	-4.07	2	136.75	Vertical	-19.02
62.268	27.12	29.5	-1.38	1	124	Vertical	-19.4
77.885	24.94	29.5	-3.56	2	286	Vertical	-18.99
89.687	32.4	33	-0.6	1	80.75	Vertical	-19.14
133.208*	33.6	33	0.6	2	208.25	Vertical	-12.7

Note: 133.208 MHZ is found to be unintentional emission. The EUT meets FCC 15.109 Class A limit.

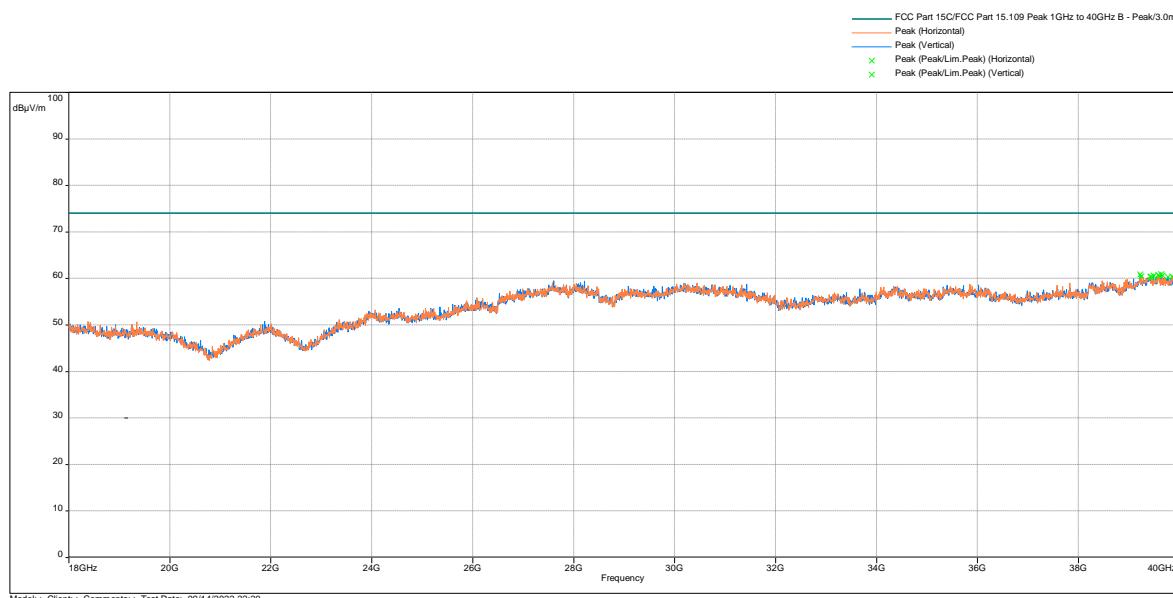
Note: Correction = AF + CF – Preamp

Results	Complies
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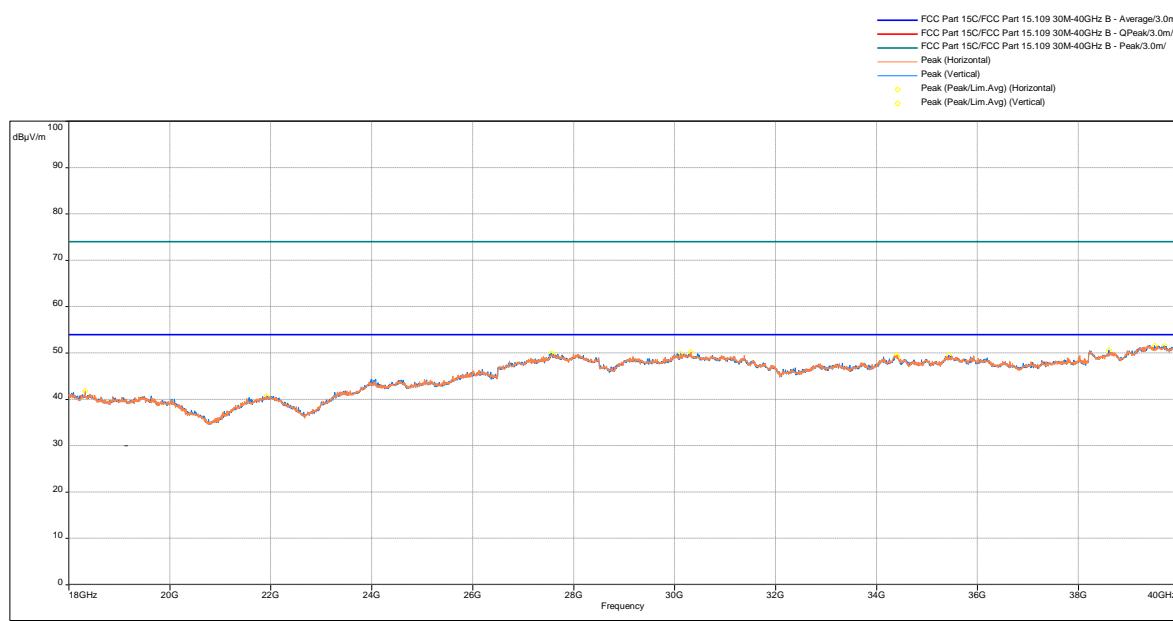
Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

Test Results: Test Results: 15.209 Radiated Spurious Emissions, $\pi/4$ -DQPSK Tx at 2480MHz
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit


Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
37.24267	27.2	29.5	-1.3	0.98	122	Vertical	-11.29
49.4	23.99	29.5	-4.51	2	137.5	Vertical	-19.07
62.36567	27.35	29.5	-1.15	0.98	127	Vertical	-19.39
77.56233	24.82	29.5	-3.68	2	1.5	Vertical	-18.96
89.073	32.65	33	-0.35	0.98	102.5	Vertical	-19.2
132.7553	32.64	33	-0.36	2	188.75	Vertical	-12.66

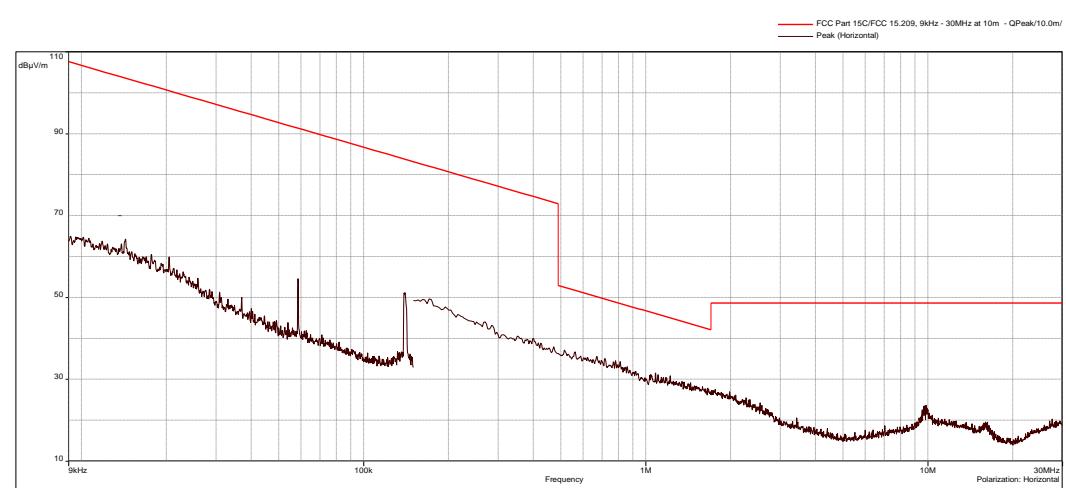
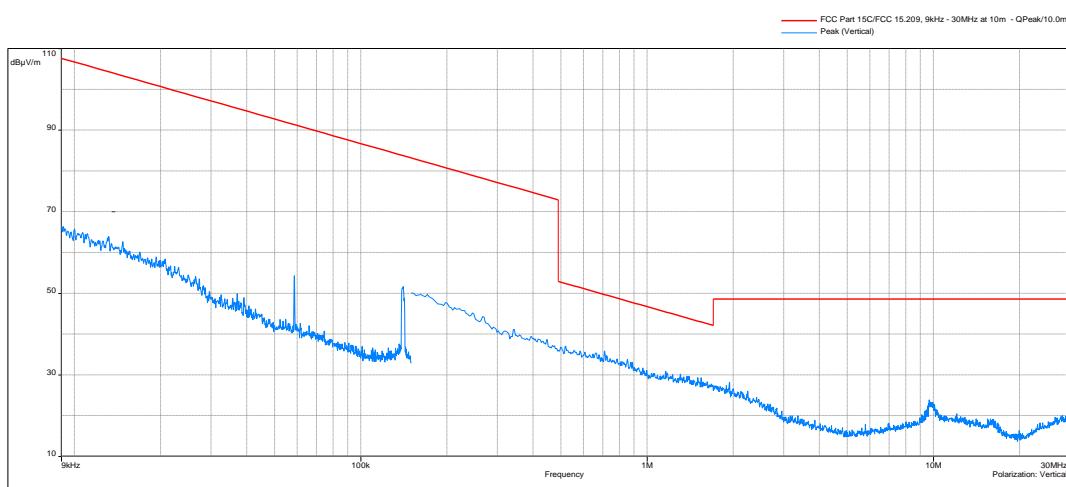
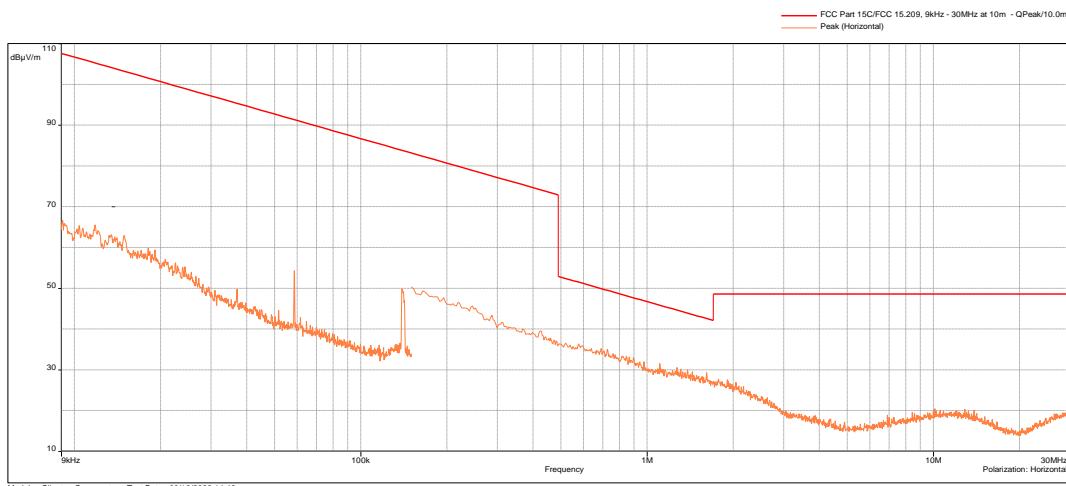
Note: Correction = AF + CF – Preamp

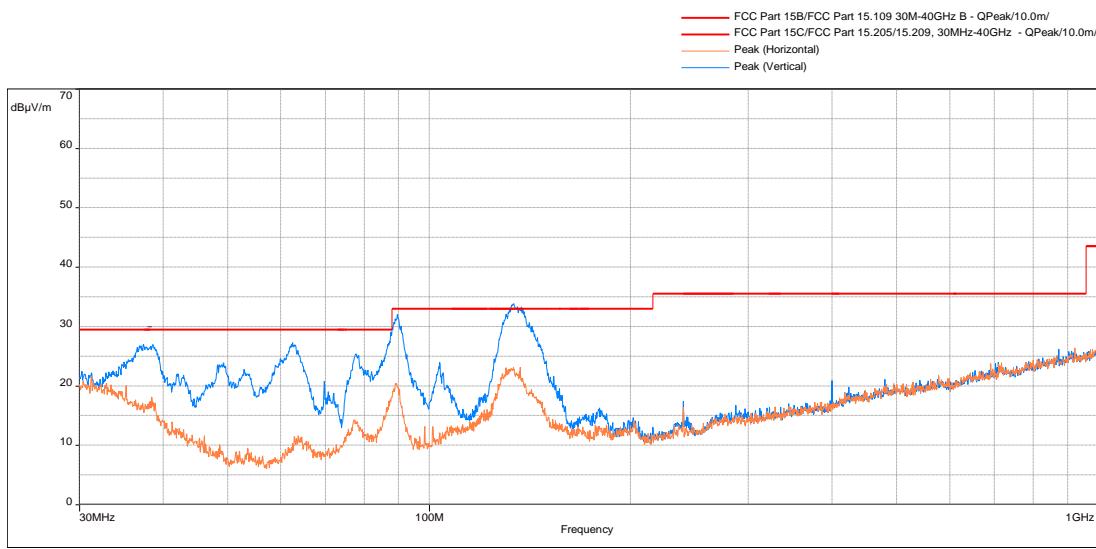
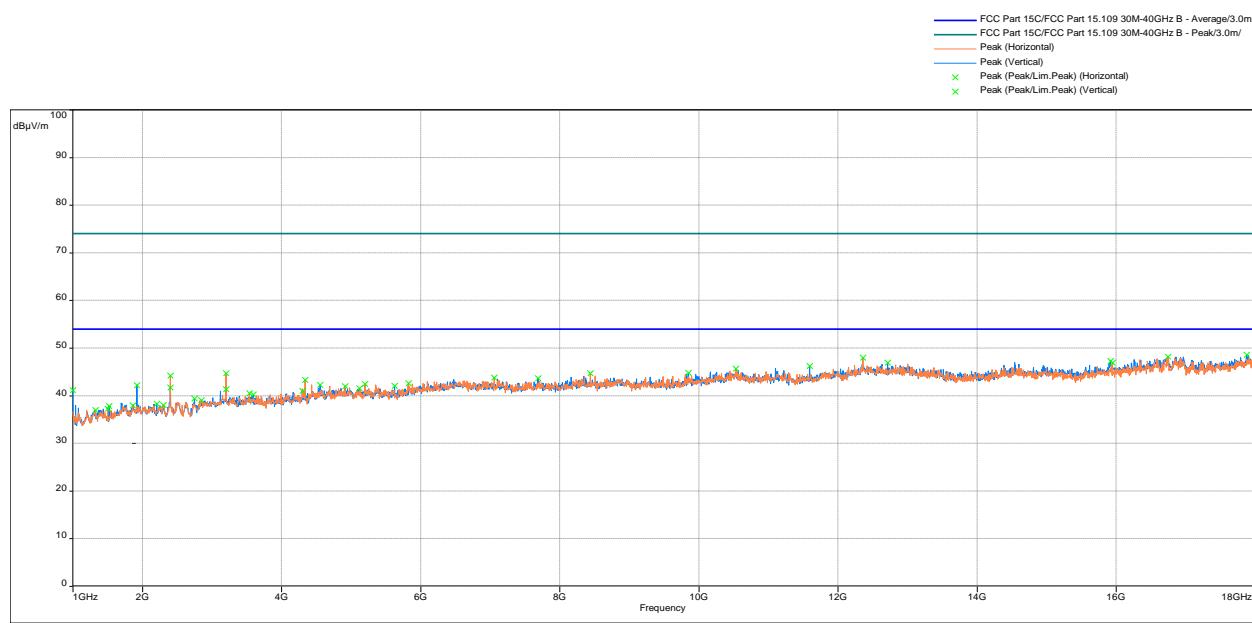
Results	Complies

Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

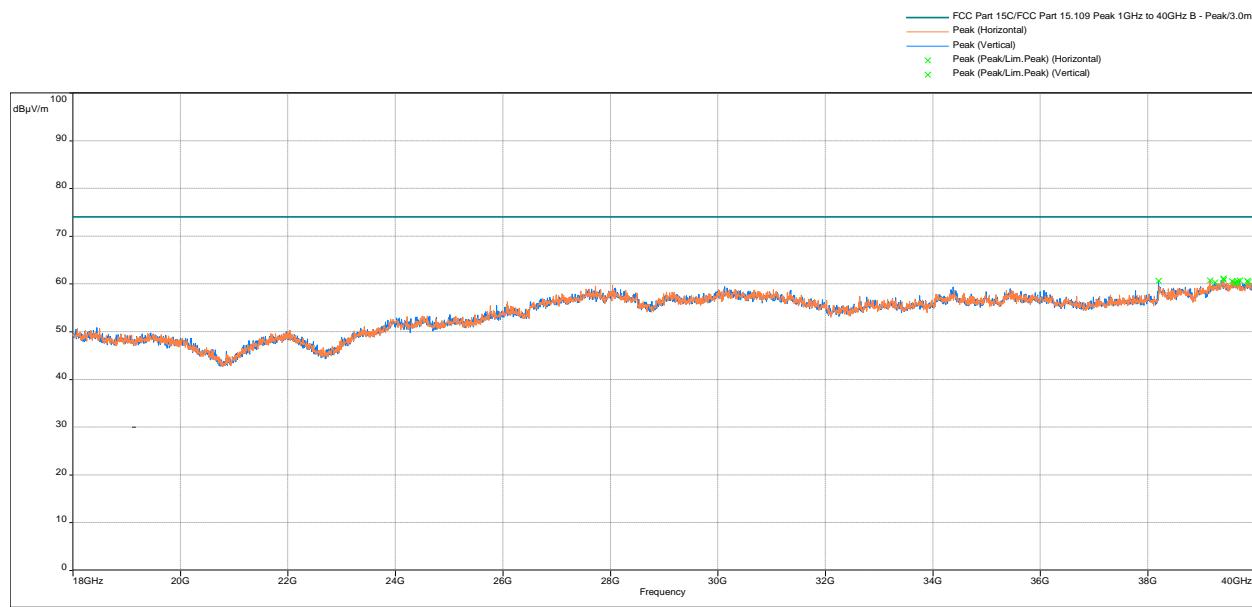
Test Results: 15.209 Radiated Spurious Emissions, 8-DPSK

Radiated Spurious Emissions 9 kHz to 30 MHz, Peak Scan vs QP Limit



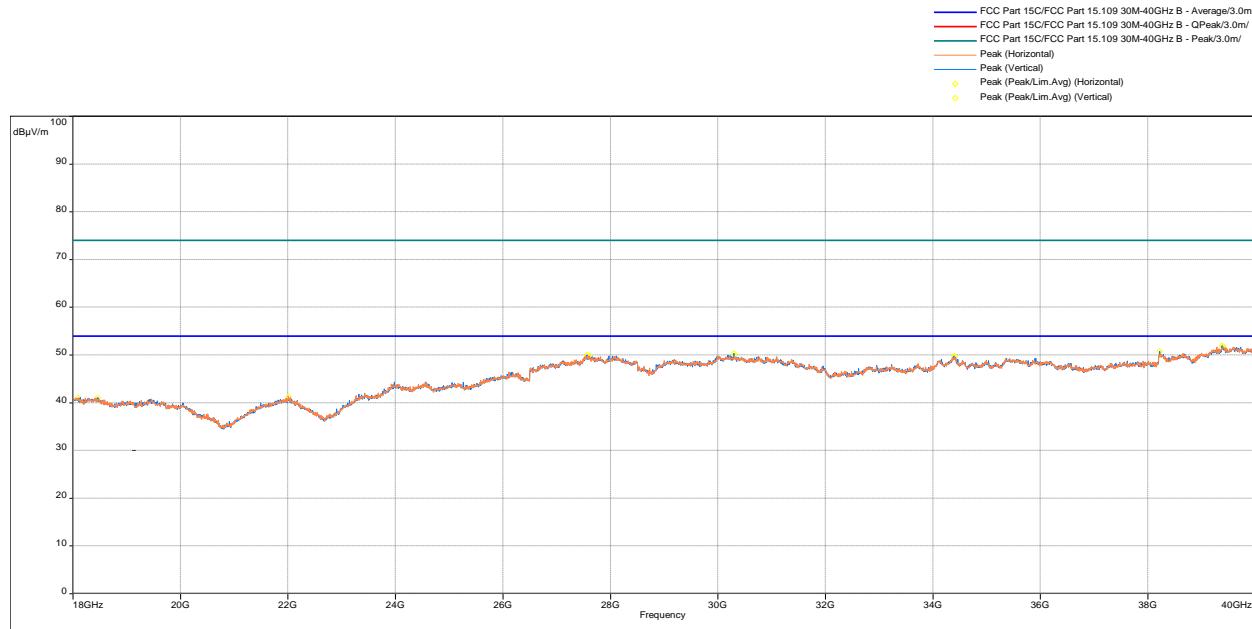
Test Results: Test Results: 15.209 Radiated Spurious Emissions, 8-DPSK Tx at 2402MHz
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit


Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Model: Client: ; Comments: ; Test Date: 09/14/2022 22:26

Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



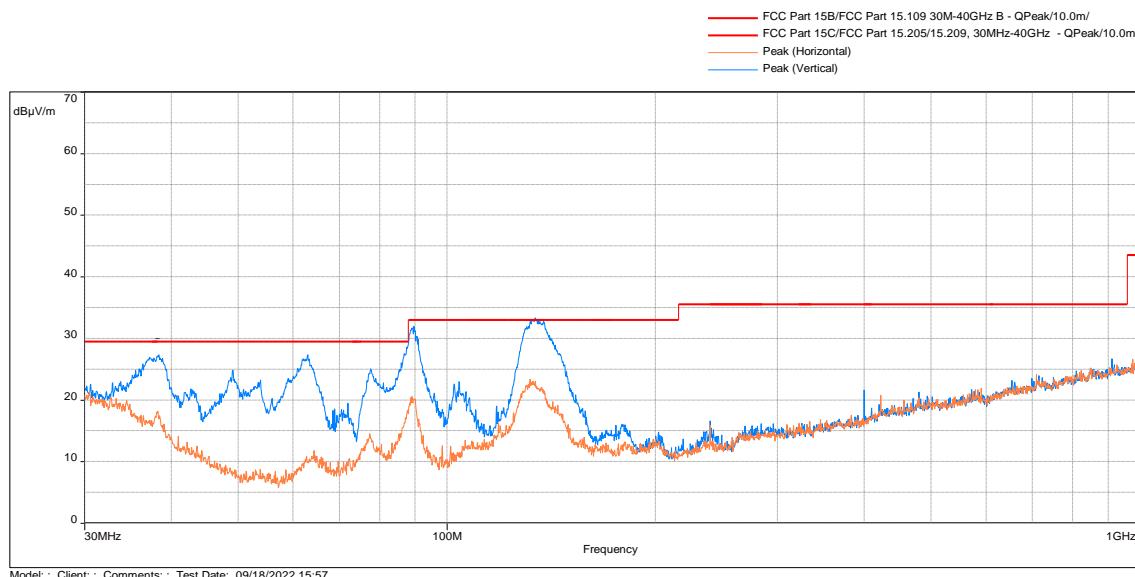
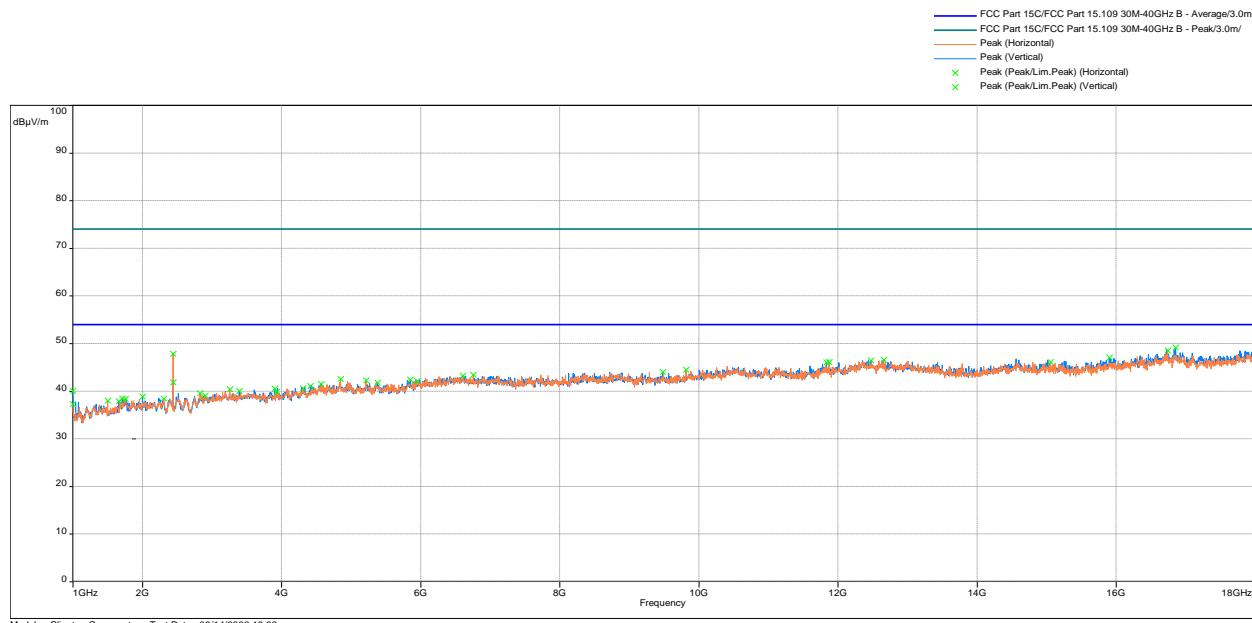
Model: Client: ; Comments: ; Test Date: 09/14/2022 22:29

Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
37.40433	27.01	29.5	-1.49	3	144.75	Vertical	-11.41
49.27067	23.91	29.5	-4.59	3	140	Vertical	-19.04
62.495	27.27	29.5	-1.23	0.99	178.5	Vertical	-19.38
77.69167	25.36	29.5	-3.14	2	271.5	Vertical	-18.97
89.71967	32.01	33	-0.99	0.99	107	Vertical	-19.13
572.747	32.32	35.5	-3.18	1.64	13.75	Horizontal	-4.21
543.453	30.77	35.5	-4.73	1.37	145	Vertical	-6.16

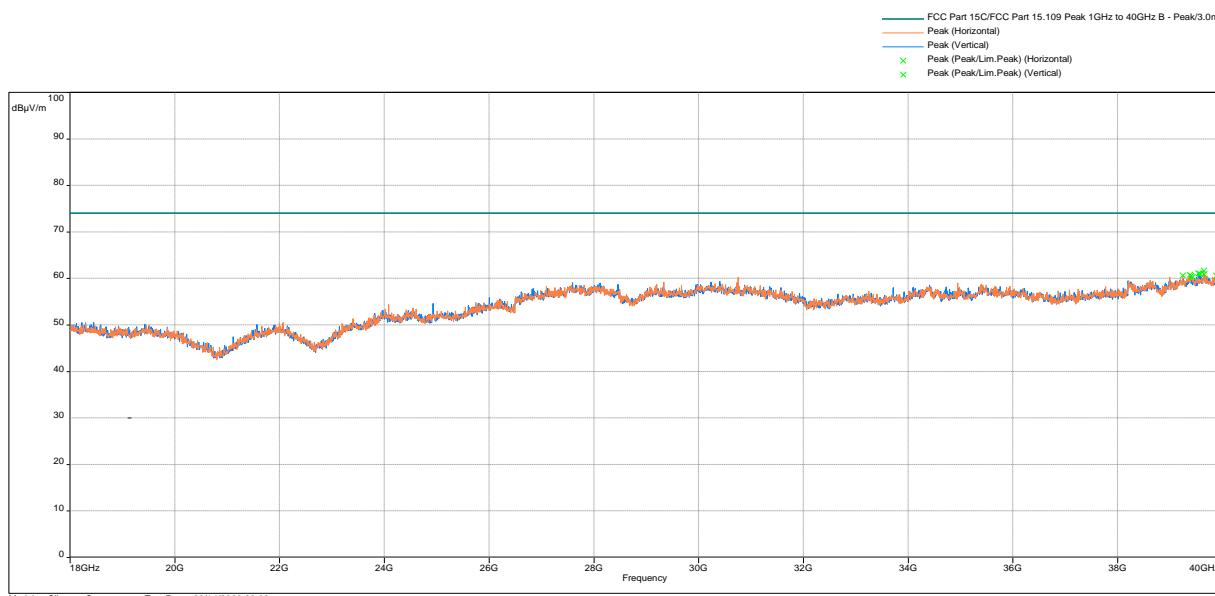
Note: Correction = AF + CF – Preamp

Results	Complies

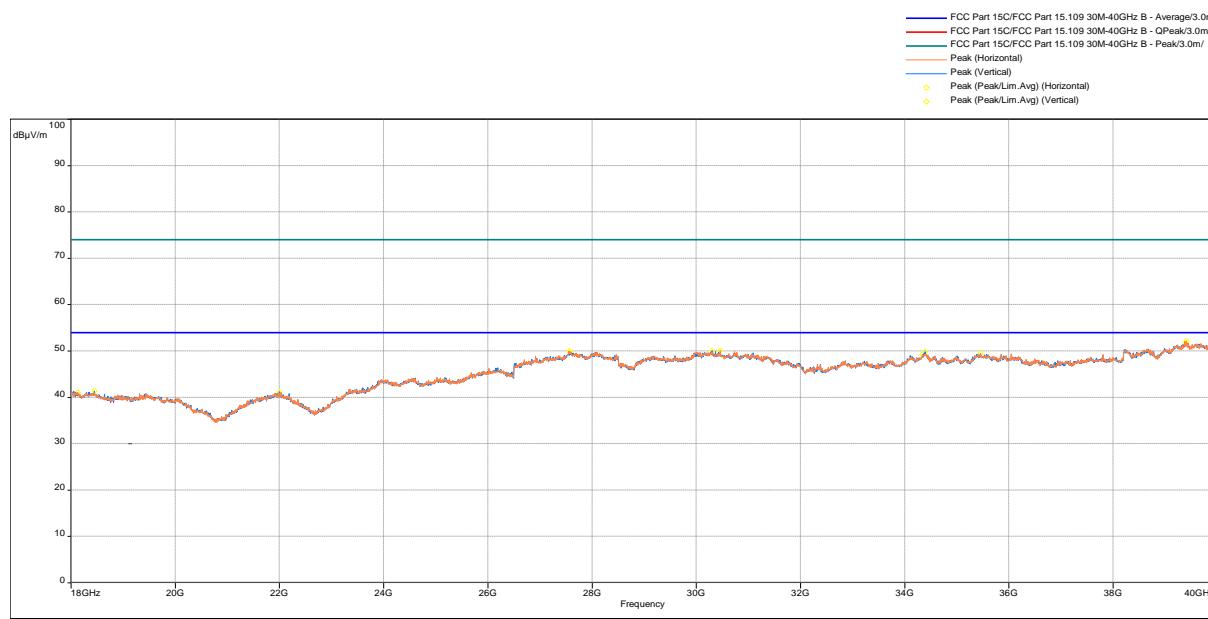
Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

Test Results: Test Results: 15.209 Radiated Spurious Emissions, 8-DPSK Tx at 2442MHz
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit


Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit

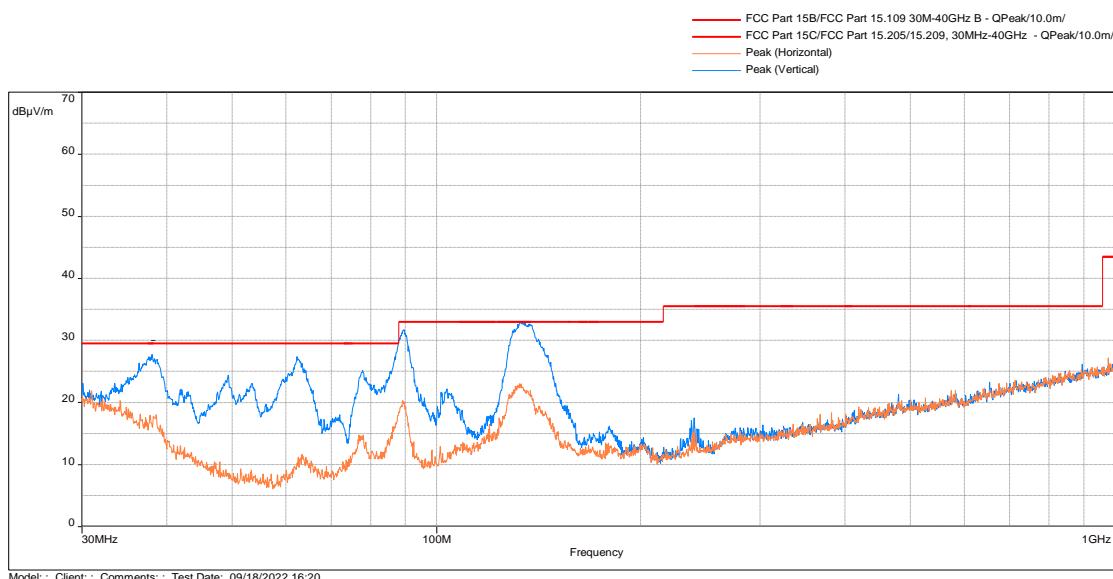


Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
38.40667	27.34	29.5	-1.16	3	126	Vertical	-12.19
49.109	24.84	29.5	-3.66	3	137.5	Vertical	-18.99
62.98	27.35	29.5	-1.15	0.99	98	Vertical	-19.33
77.56233	25.08	29.5	-3.42	2	256.5	Vertical	-18.96
89.62267	31.93	33	-1.07	0.99	104.75	Vertical	-19.15
38.40667	27.34	29.5	-1.16	3	126	Vertical	-12.19

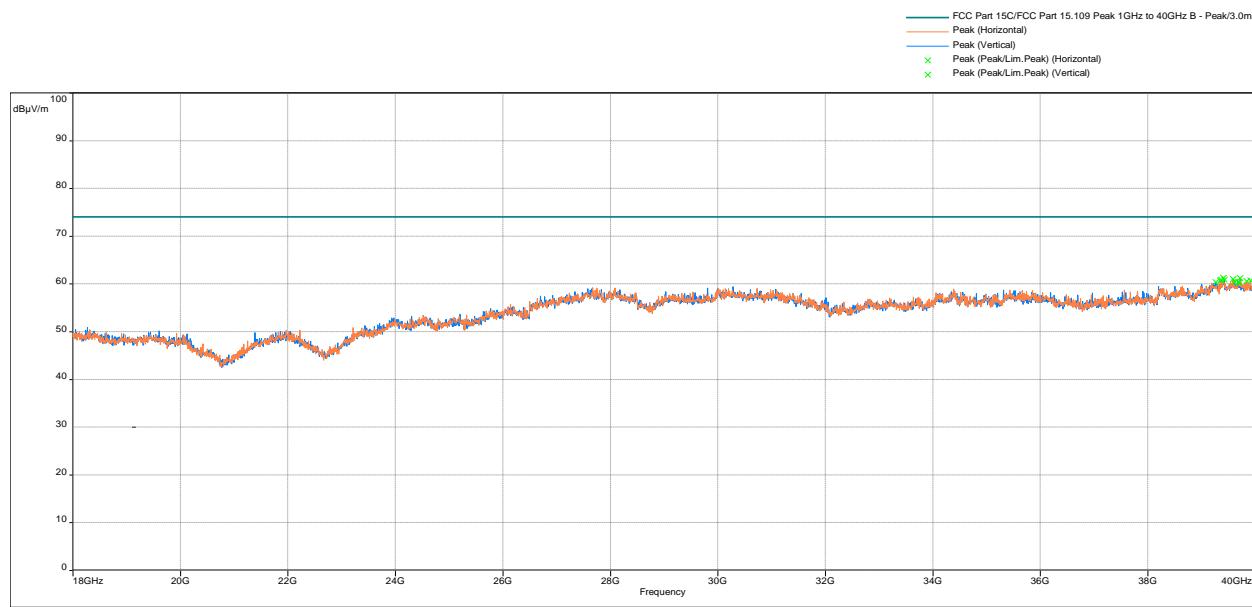
Note: Correction = AF + CF – Preamp

Results	Complies

Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

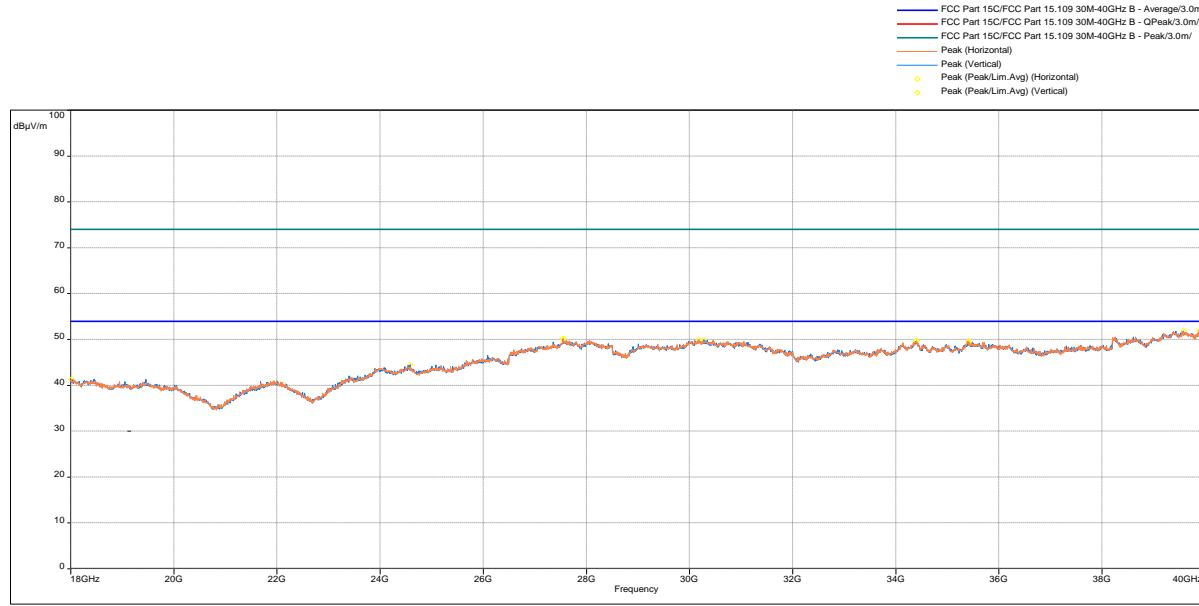
Test Results: Test Results: 15.209 Radiated Spurious Emissions, 8-DPSK Tx at 2480MHz
Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit


Radiated Spurious Emissions 18000 - 26000 MHz, Peak Scan vs Peak Limit



Model: ; Client: ; Comments: ; Test Date: 09/14/2022 22:38

Radiated Spurious Emissions 18000 - 26000 MHz, Avg Scan vs Avg Limit



Model: ; Client: ; Comments: ; Test Date: 09/14/2022 22:41

Frequency (MHz)	QP@10m (dB μ V/m)	Limit@10m (dB(μ V/m))	Margin (dB)	Height (m)	Azimuth (deg)	Polarity	Correction (dB)
38.083	27.72	29.5	-0.78	3	116.75	Vertical	-11.95
49.303	24.38	29.5	-4.12	2	121	Vertical	-19.05
62.268	27.38	29.5	-1.12	2	139.75	Vertical	-19.4
77.853	25.15	29.5	-3.35	2	299.75	Vertical	-18.98
89.590	31.7	43.5	-11.8	1	117.25	Vertical	-19.15
133.79	33.05	43.5	-10.45	2	202.5	Vertical	-12.76

Note: Correction = AF + CF – Preamp

Results	Complies

Note: Radiated emission measurements were performed up to from 9kHz to 26GHz. No Emissions were identified when scanned from 9k to 30MHz.

4.7.7 Test Setup Photographs

4.8 AC Line Conducted Emission
 FCC: 15.207; RSS-GEN;

4.8.1 Requirement

Frequency Band MHz	Class B Limit dB(µV)		Class A Limit dB(µV)	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15-0.50	66 to 56 *	56 to 46 *	79	66
0.50-5.00	56	46	73	60
5.00-30.00	60	50	73	60

*Note: *Decreases linearly with the logarithm of the frequency. At the transition frequency the lower limit applies.*

4.8.2 Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

Floor standing EUT are placed on a horizontal metal ground plane and isolated from the ground plane by resting on an insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.10-2013.

Tested By	Test Date	Results
Not Applicable	Not applicable	N/A

4.8.3 Test Result

Results	Not applicable
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5.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Asset #	Cal Int	Cal Due
9kHz-30MHz Loop Antenna	ETS Lindgren	6512	01573	12	11/09/2022
30MHz-2GHz Bi-Log	SunAR RF Motion	JB1	01577	12	02/10/2023
1-18GHz 2 meter RF Cable	TRU Corp.	TRU Core 300	01330	12	08/25/2023
1-40GHz RF Cable (SMA)	MEGAPHASE	EMC1-K1K1-20	01889	12	03/11/2023
1-40GHz DRG Horn (small)	ETS-Lindgren	3116	01894	12	06/20/2023
1-18GHz Horn Antenna	ETS Lindgren	3117-PA	01325	12	10/26/2022
9kHz-1GHz Pre-amplifier	Sonoma Instrument	310N	01713	12	02/17/2023
1-40GHz RF Cable	Mega PHASE	TM40-K1K1-59	01655	12	01/11/2023
1GHz to 40GHz RF Cable	MEGAPHASE	EMC1-K1K1-236	01484	12	06/27/2023
1-18GHz Horn Antenna	EMCO	3115	001595	12	#
18-40GHz Preamp	uComp Nordic	MCNS-50-18004000335p	01799	12	03/24/2023
EMI Test Receiver 40GHz	Rohde & Schwarz	ESU40	00961	12	03/10/2023
EMI Test Receiver	Rohde & Schwarz	ESR7	01607	12	11/19/2022
10m Chamber	Panashield	10 Meter Chamber	00984	12	#

= Calibration not required.

Software used for emission compliance testing utilized the following:

Name	Manufacturer	Version	Template/Profile
Tile	Quantum Change	3.4.K.22	Conducted Spurious_30M-26GHz Conducted Emissions
RS Commander	Rohde Schwarz	1.6.4	Not Applicable (Screen grabber)
BAT-EMC	Nexio	3.16.0.64	Lytx wifipt2.bpp

6.0 Document History

Revision/ Job Number	Writer Initials	Reviewers Initials	Date	Change
1.0 / G10514626	JAV	ML	October 29, 2022	Original Document

END OF REPORT