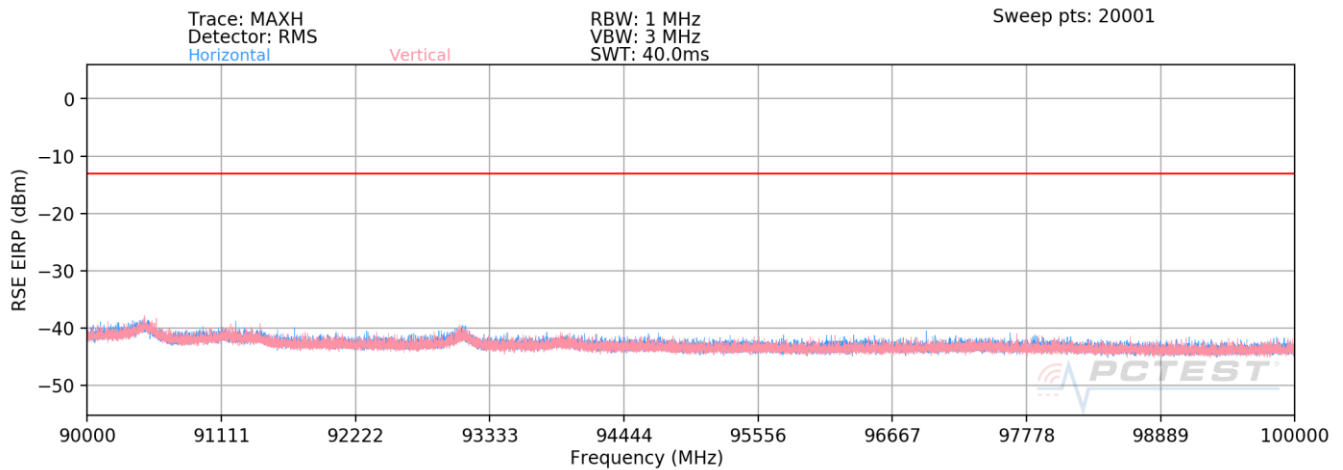


90 – 100GHz



Plot 7-71. Radiated Spurious Plot 90-100 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
90517.50	Low	50	H	QPSK	H	-	-	-37.58	-13.00	-24.58
90531.49	Mid	50	H	QPSK	H	-	-	-37.39	-13.00	-24.39
90492.89	High	50	H	QPSK	H	-	-	-37.55	-13.00	-24.55

Table 7-18. Spurious Emissions Table (90-100GHz)

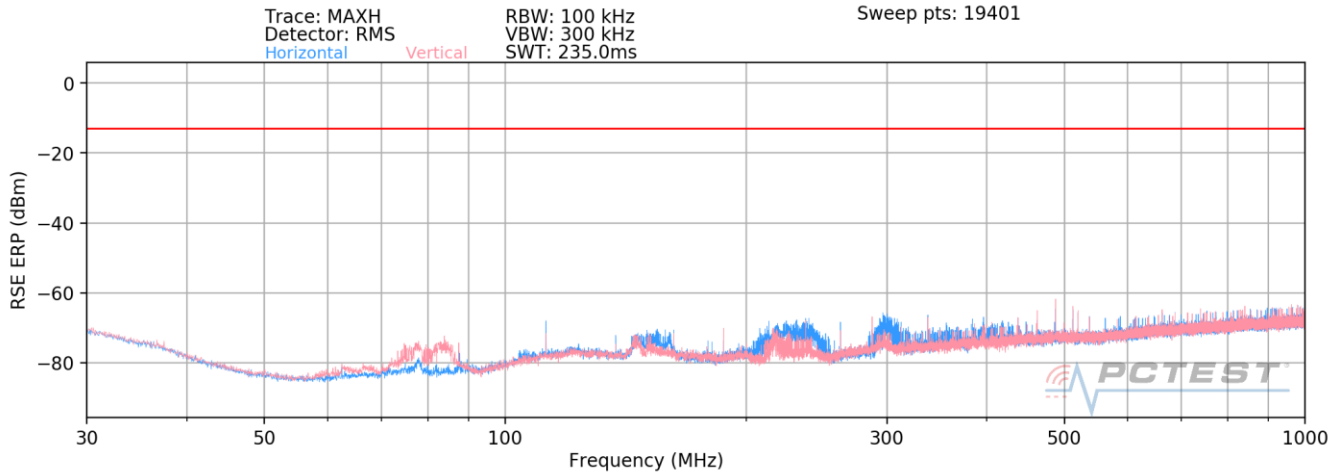
Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n261 Relay Side RSE

30MHz – 1GHz



Plot 7-72. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Mid Channel)

Spurious Emissions ERP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE ERP level is calculated by applying the additional factors shown below for a test distance of 3 meter.


$$\text{RSE ERP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} - 104.8 - 2.15\text{dB}$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
137.54	Low	50	H	QPSK	H	113	149	-70.84	-13.00	-57.84
295.29	Low	50	H	QPSK	H	31	112	-69.95	-13.00	-56.95
228.46	Mid	50	H	QPSK	H	350	153	-71.68	-13.00	-58.68
291.88	Mid	50	H	QPSK	H	37	115	-70.10	-13.00	-57.10
187.69	High	50	H	QPSK	H	89	130	-69.75	-13.00	-56.75
296.73	High	50	H	QPSK	H	36	113	-70.52	-13.00	-57.52

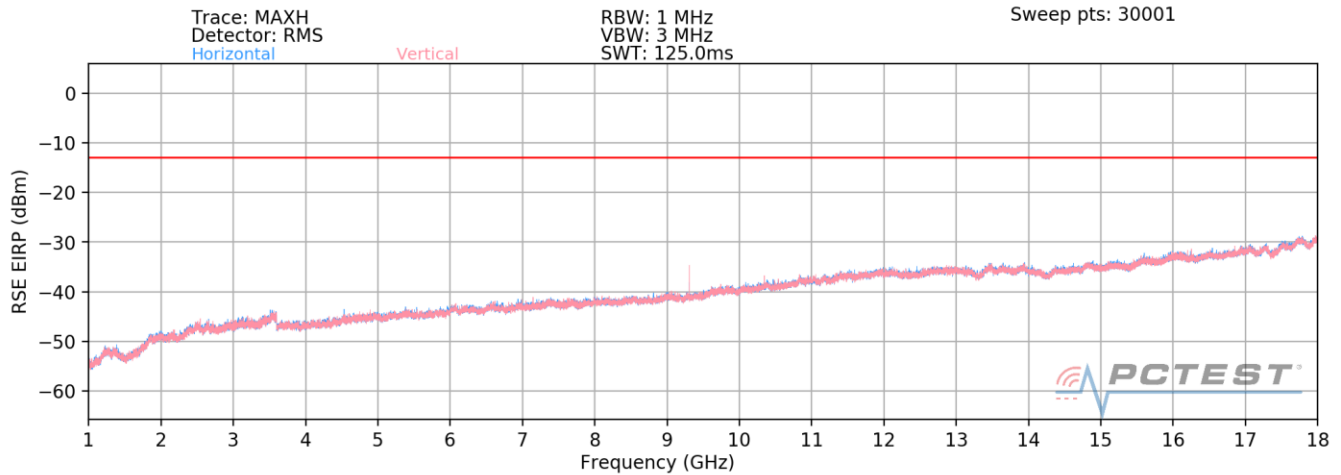
Table 7-19. Spurious Emissions Table (30MHz-1GHz)

Notes

The RSE ERP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 3 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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1 – 18GHz



Plot 7-73. Radiated Spurious Plot 1-18 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
9308.35	Low	50	H	QPSK	V	193	111	-35.71	-13.00	-22.71
9308.03	Mid	50	H	QPSK	V	191	111	-35.46	-13.00	-22.46
9308.30	High	50	H	QPSK	V	191	112	-35.54	-13.00	-22.54

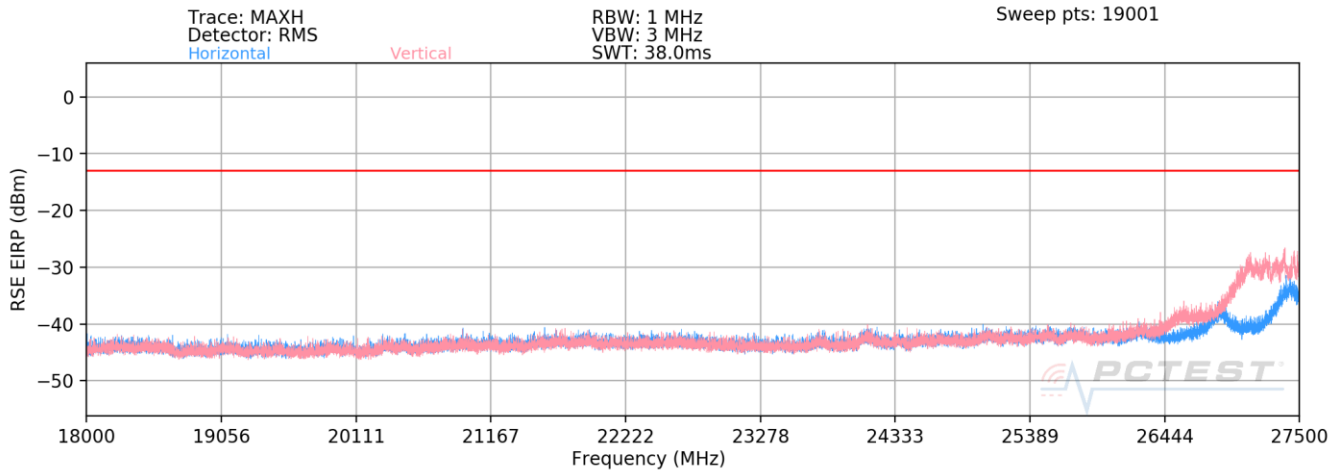
Table 7-20. Spurious Emissions Table (1GHz-18GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 3 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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18 – 27.5GHz



Plot 7-74. Radiated Spurious Plot 18-27.5 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dB μ V/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log}(D_m) - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
27089.07	Low	50	H	QPSK	V	1	1	-26.35	-13.00	-13.35
27449.75	Mid	50	H	QPSK	V	2	0	-26.96	-13.00	-13.96
27168.79	High	50	H	QPSK	V	2	0	-26.87	-13.00	-13.87

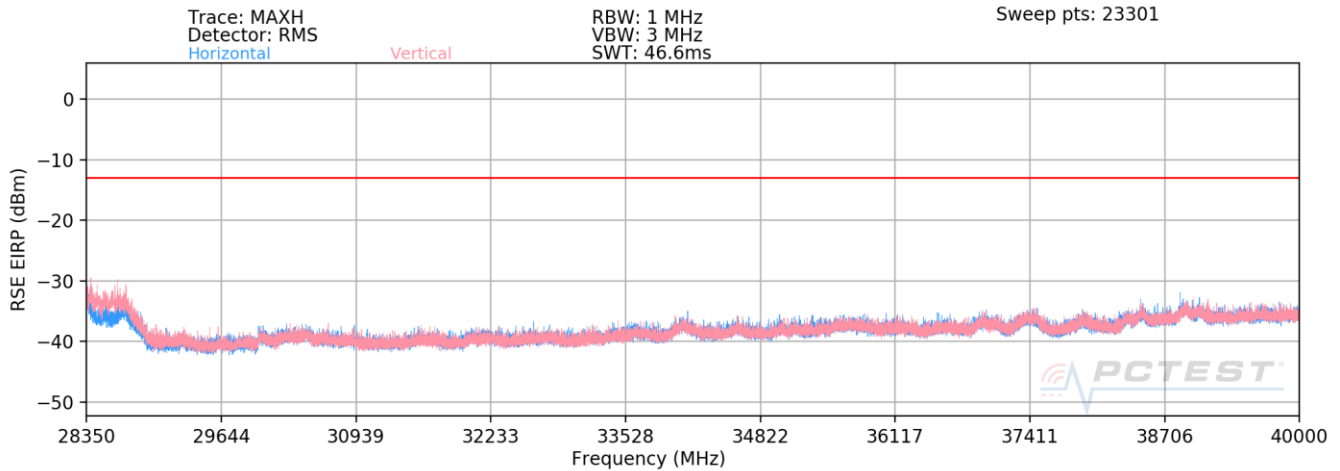
Table 7-21. Spurious Emissions Table (18-27.5GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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28.35 – 40GHz



Plot 7-75. Radiated Spurious Plot 28.35-40 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dB μ V/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log}(D_m) - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
28395.89	Low	50	H	QPSK	V	1	1	-28.93	-13.00	-15.93
28393.95	Mid	50	H	QPSK	V	2	0	-29.65	-13.00	-16.65
28393.74	High	50	H	QPSK	V	2	0	-29.07	-13.00	-16.07

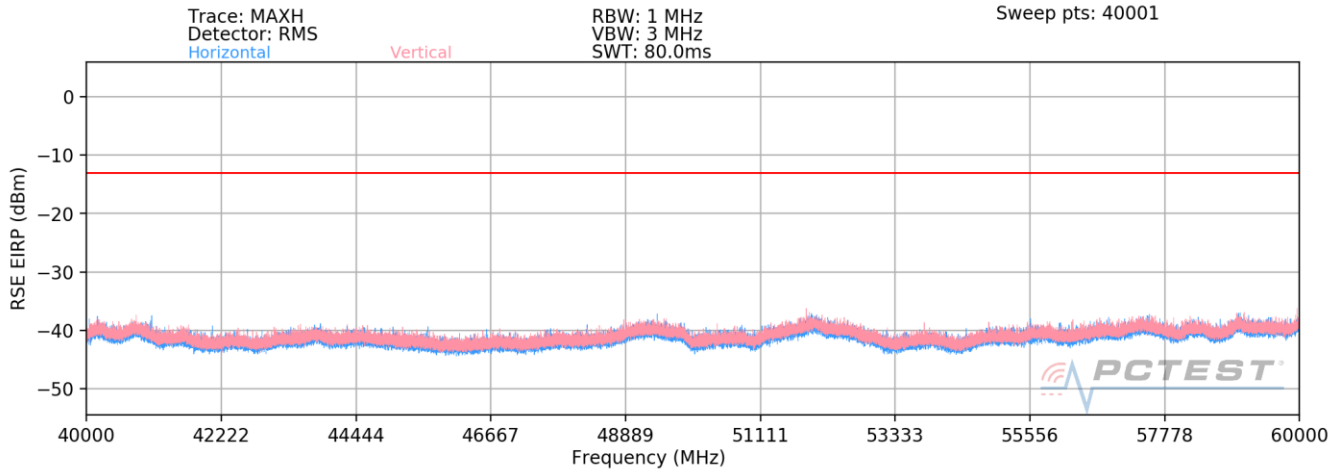
Table 7-22. Spurious Emissions Table (28.35-40 GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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40 – 60GHz



Plot 7-76. Radiated Spurious Plot 40-60 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dB μ V/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1.5 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
55050.84	Low	50	H	QPSK	H	1	0	-38.82	-13.00	-25.82
55852.02	Mid	50	H	QPSK	H	359	0	-37.83	-13.00	-24.83
56650.74	High	50	H	QPSK	H	359	0	-36.85	-13.00	-23.85

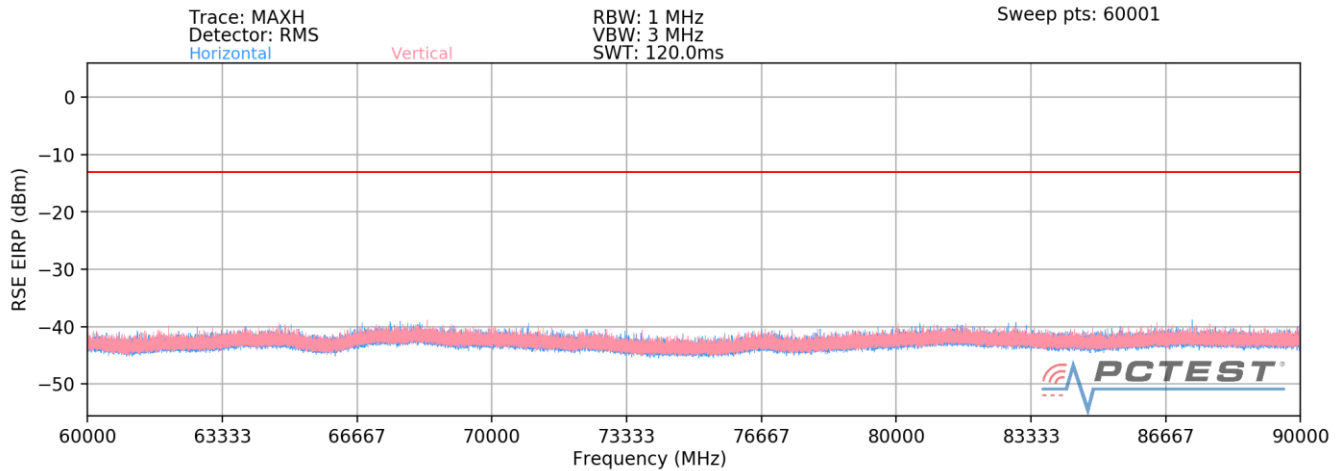
Table 7-23. Spurious Emissions Table (40 - 60GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1.5 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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60 – 90GHz



Plot 7-77. Radiated Spurious Plot 60-90 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dB μ V/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
82563.01	Low	50	H	QPSK	H	-	-	-40.91	-13.00	-27.91
83784.27	Mid	50	H	QPSK	H	-	-	-40.16	-13.00	-27.16
84967.17	High	50	H	QPSK	H	-	-	-40.54	-13.00	-27.54

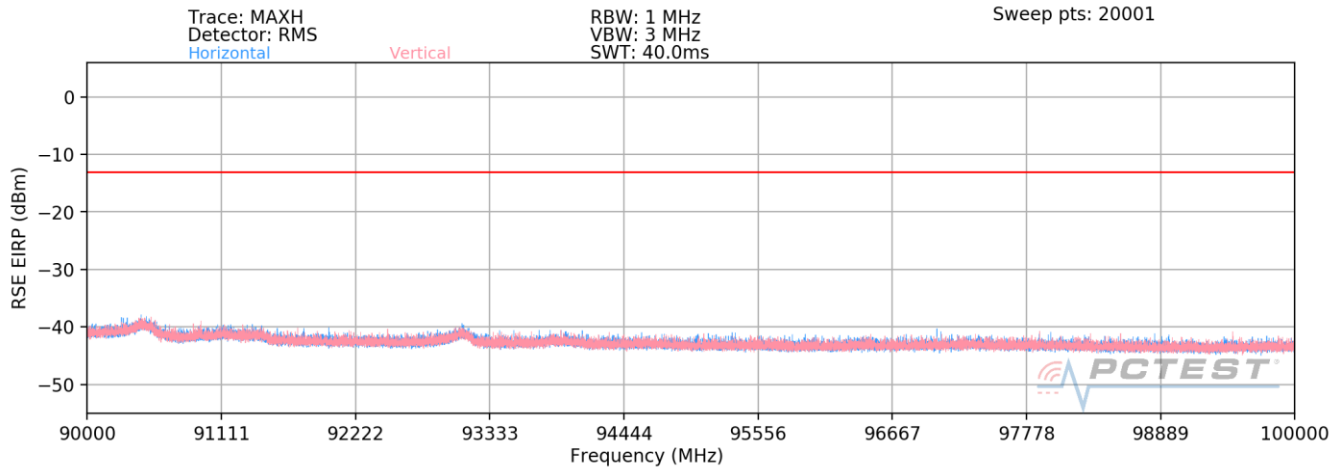
Table 7-24. Spurious Emissions Table (60-90GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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90 – 100GHz



Plot 7-78. Radiated Spurious Plot 90-100 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
90500.03	Low	50	H	QPSK	H	-	-	-36.96	-13.00	-23.96
90419.16	Mid	50	H	QPSK	H	-	-	-37.56	-13.00	-24.56
90475.11	High	50	H	QPSK	H	-	-	-37.40	-13.00	-24.40

Table 7-25. Spurious Emissions Table (90-100GHz)

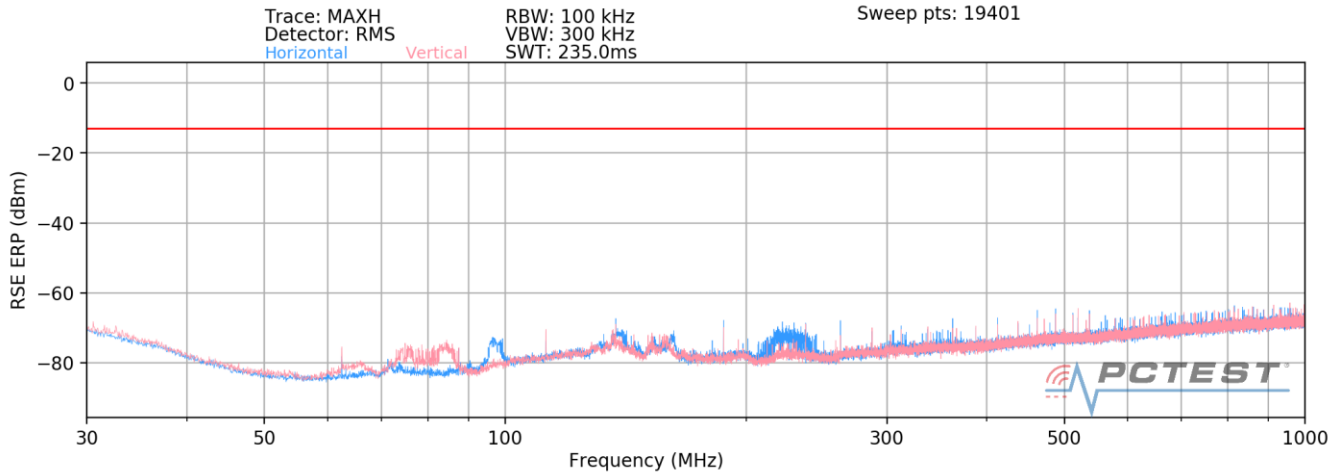
Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n260 Donor Side RSE

30MHz – 1GHz



Plot 7-79. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Mid Channel)

Spurious Emissions ERP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE ERP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

$$\text{RSE ERP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} - 104.8 - 2.15\text{dB}$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
187.48	Low	50	H	QPSK	H	111	134	-65.88	-13.00	-52.88
229.13	Low	50	H	QPSK	H	141	135	-69.71	-13.00	-56.71
137.57	Mid	50	H	QPSK	H	123	148	-68.74	-13.00	-55.74
228.27	Mid	50	H	QPSK	H	139	134	-69.54	-13.00	-56.54
187.53	High	50	H	QPSK	H	113	133	-66.26	-13.00	-53.26
487.38	High	50	H	QPSK	H	65	168	-66.50	-13.00	-53.50

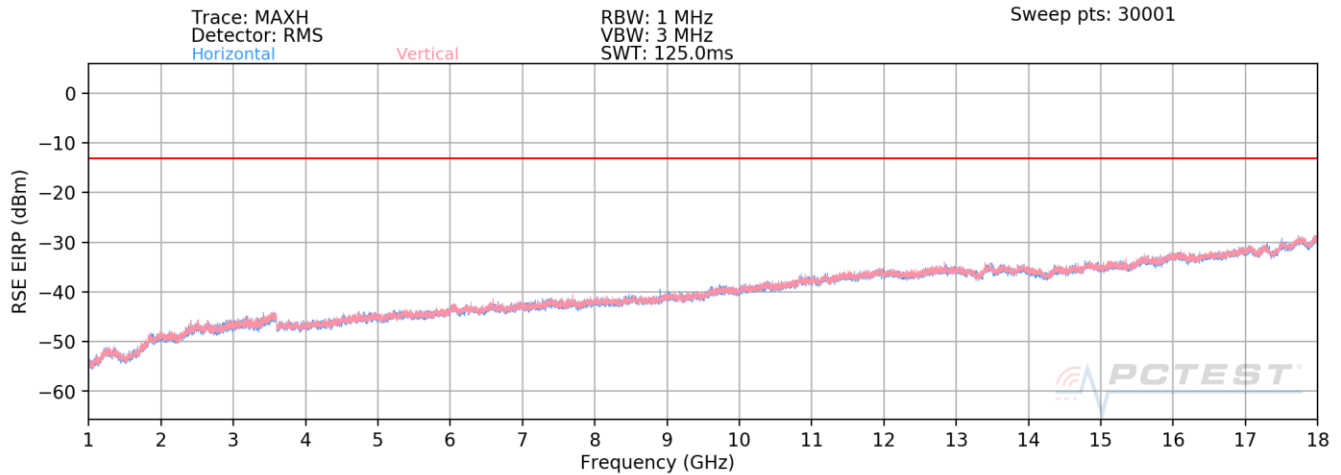
Table 7-26. Spurious Emissions Table (30MHz-1GHz)

Notes

The RSE ERP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 3 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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1 – 18GHz



Plot 7-80. Radiated Spurious Plot 1-18 GHz (1CC QPSK Mid Channel H Beam)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
17712.05	Low	50	H	QPSK	H	-	-	-29.27	-13.00	-16.27
17694.87	Mid	50	H	QPSK	H	-	-	-29.52	-13.00	-16.52
17733.97	High	50	H	QPSK	H	-	-	-29.78	-13.00	-16.78

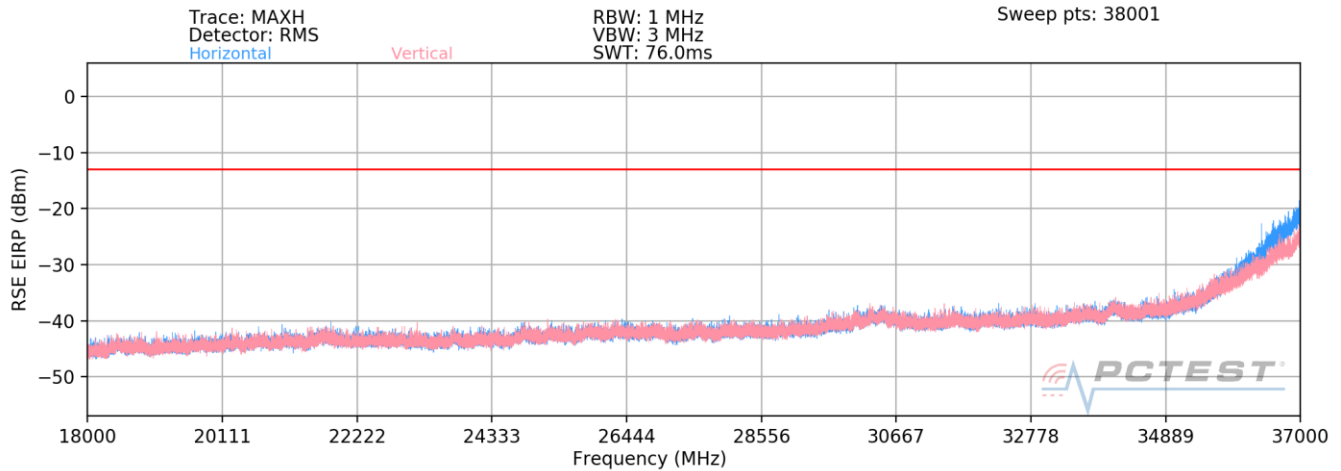
Table 7-27. Spurious Emissions Table (1GHz-18GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 3 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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18 – 37GHz



Plot 7-81. Radiated Spurious Plot 18-37 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log}(D_m) - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
36960.34	Low	50	H	QPSK	H	2	0	-19.39	-13.00	-6.39
36911.28	Mid	50	H	QPSK	H	2	0	-19.33	-13.00	-6.33
36878.77	High	50	H	QPSK	H	2	0	-19.77	-13.00	-6.77

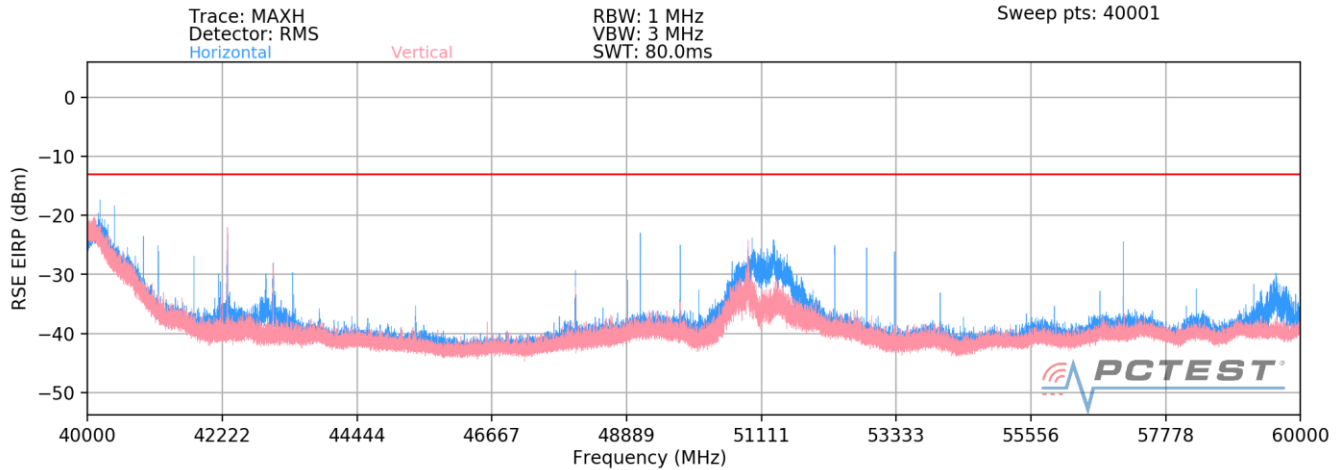
Table 7-28. Spurious Emissions Table (18-37GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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40 – 60GHz



Plot 7-82. Radiated Spurious Plot 40-60 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1.5 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
40245.90	Low	50	H	QPSK	H	1	1	-18.42	-13.00	-5.42
47269.79	Low	50	H	QPSK	H	1	1	-27.33	-13.00	-14.33
47928.89	Low	50	H	QPSK	H	1	1	-26.97	-13.00	-13.97
49621.88	Low	50	H	QPSK	H	1	1	-28.36	-13.00	-15.36
40308.00	Mid	50	H	QPSK	H	1	0	-18.37	-13.00	-5.37
49113.21	Mid	50	H	QPSK	H	1	0	-25.12	-13.00	-12.12
50629.50	Mid	50	H	QPSK	H	1	0	-26.90	-13.00	-13.90
57078.79	Mid	50	H	QPSK	H	1	0	-25.92	-13.00	-12.92
40214.52	High	50	H	QPSK	H	1	0	-19.04	-13.00	-6.04
43993.69	High	50	H	QPSK	H	1	0	-29.68	-13.00	-16.68
49814.40	High	50	H	QPSK	H	1	0	-25.68	-13.00	-12.68
52844.22	High	50	H	QPSK	H	1	0	-26.46	-13.00	-13.46

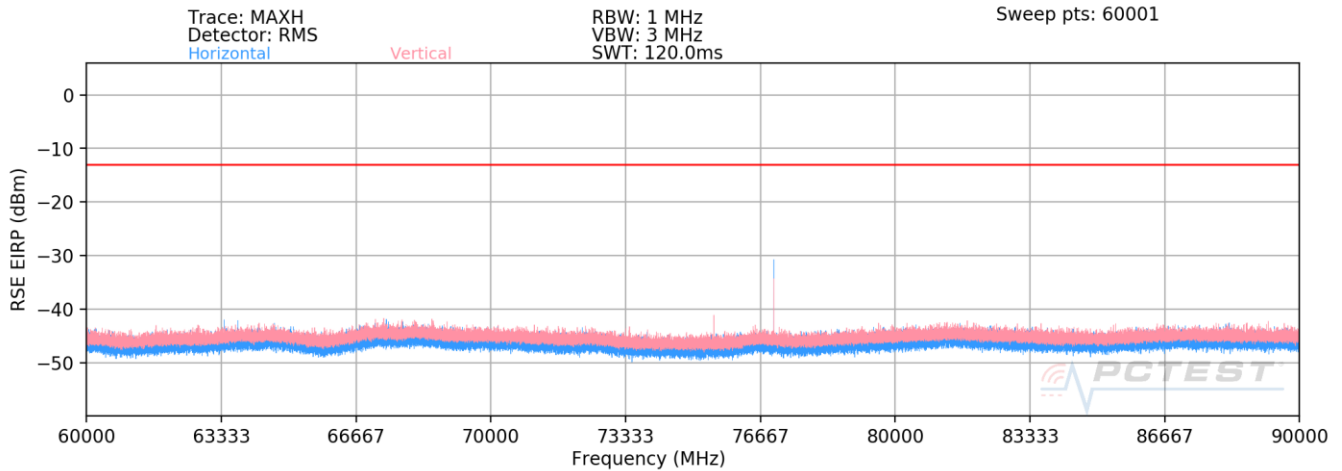
Table 7-29. Spurious Emissions Table (40 - 60GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1.5 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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60 – 90GHz



Plot 7-83. Radiated Spurious Plot 60-90 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log}(Dm) + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74051.39	Low	50	H	QPSK	H	3	0	-32.73	-13.00	-19.73
77000.59	Mid	50	H	QPSK	H	359	0	-31.07	-13.00	-18.07
79950.03	High	50	H	QPSK	H	1	0	-30.74	-13.00	-17.74

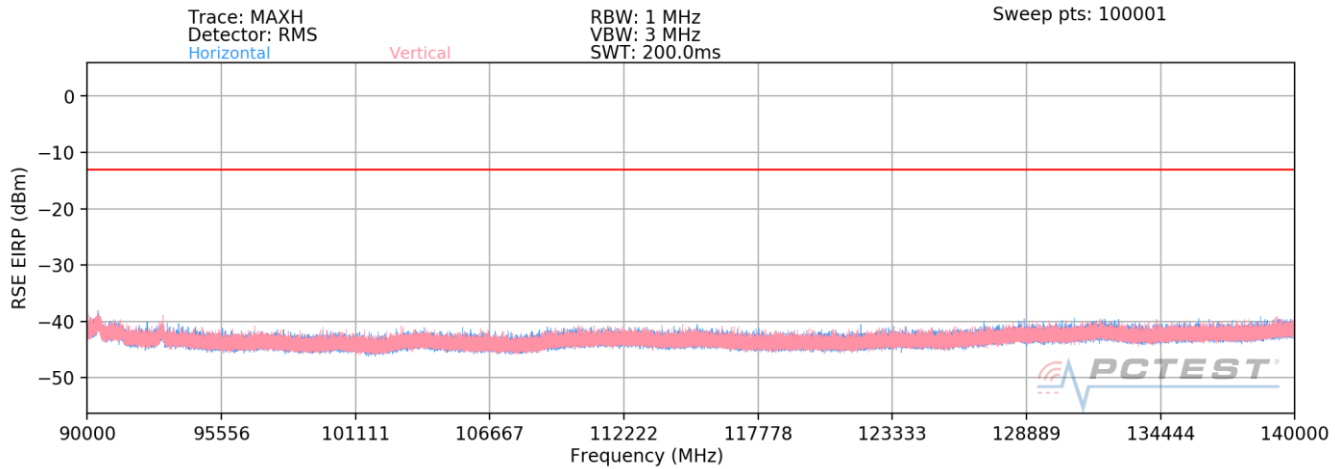
Table 7-30. Spurious Emissions Table (60-90GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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90 – 140GHz



Plot 7-84. Radiated Spurious Plot 90-140 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
111106.89	Low	50	H	QPSK	H	-	-	-39.51	-13.00	-26.51
115506.87	Mid	50	H	QPSK	H	-	-	-39.75	-13.00	-26.75
119926.10	High	50	H	QPSK	H	4	1	-36.74	-13.00	-23.74

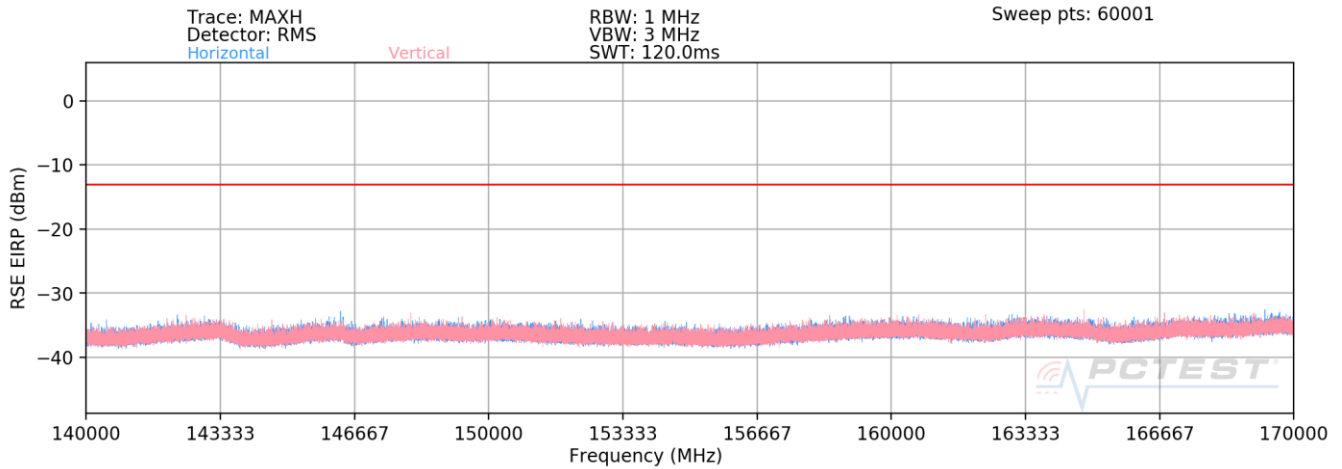
Table 7-31. Spurious Emissions Table (90-140GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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140 – 170GHz



Plot 7-85. Radiated Spurious Plot 140-170 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
148084.78	Low	50	H	QPSK	H	-	-	-34.47	-13.00	-21.47
154022.37	Mid	50	H	QPSK	H	-	-	-34.55	-13.00	-21.55
159923.28	High	50	H	QPSK	H	-	-	-33.82	-13.00	-20.82

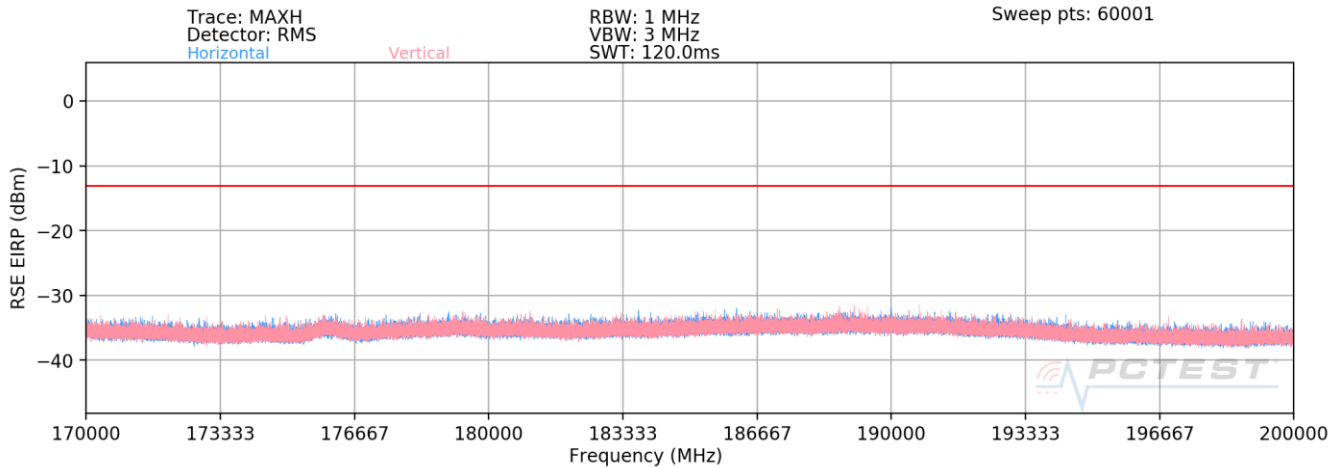
Table 7-32. Spurious Emissions Table (140-170GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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170 – 200GHz



Plot 7-86. Radiated Spurious Plot 170-200 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
185109.32	Low	50	H	QPSK	H	-	-	-33.07	-13.00	-20.07
192519.18	Mid	50	H	QPSK	H	-	-	-33.29	-13.00	-20.29
199870.95	High	50	H	QPSK	H	-	-	-33.50	-13.00	-20.50

Table 7-33. Spurious Emissions Table (170-200GHz)

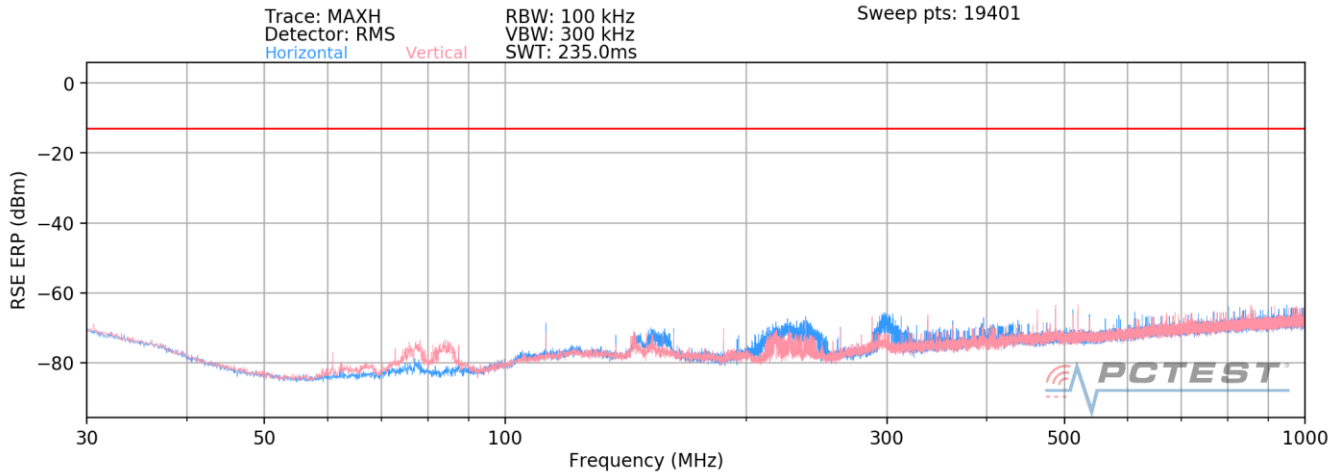
Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n260 Relay Side RSE

30MHz – 1GHz



Plot 7-87. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Mid Channel)

Spurious Emissions ERP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE ERP level is calculated by applying the additional factors shown below for a test distance of 3 meter.


$$\text{RSE ERP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} - 104.8 - 2.15\text{dB}$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
137.40	Low	50	H	QPSK	H	115	143	-71.69	-13.00	-58.69
300.63	Low	50	H	QPSK	H	32	115	-68.99	-13.00	-55.99
162.48	Mid	50	H	QPSK	H	131	137	-71.33	-13.00	-58.33
229.18	Mid	50	H	QPSK	H	319	122	-70.71	-13.00	-57.71
228.70	High	50	H	QPSK	H	308	117	-70.47	-13.00	-57.47
293.32	High	50	H	QPSK	H	38	118	-69.75	-13.00	-56.75

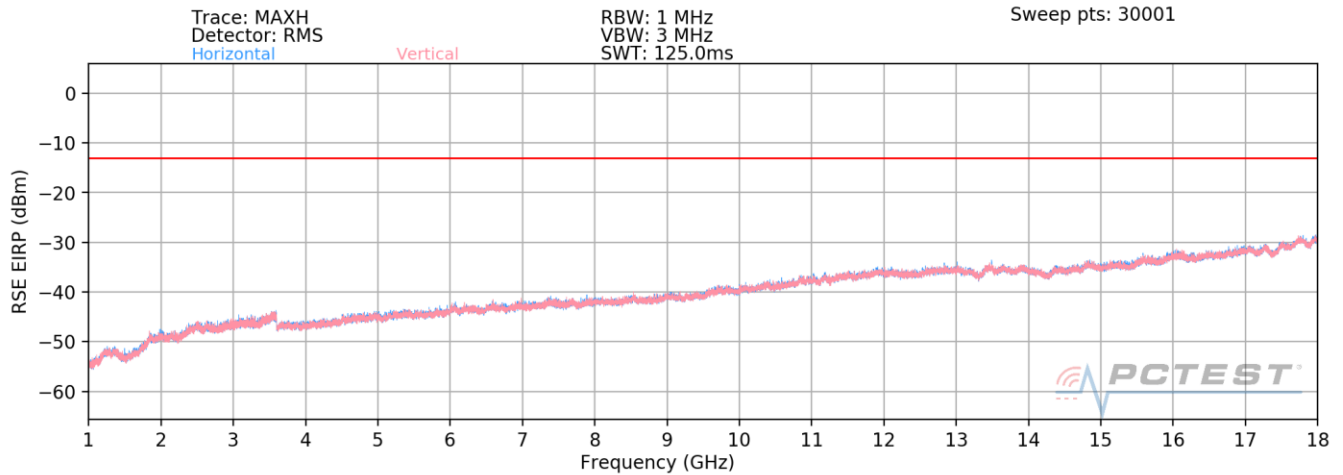
Table 7-34. Spurious Emissions Table (30MHz-1GHz)

Notes

The RSE ERP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 3 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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1 – 18GHz



Plot 7-88. Radiated Spurious Plot 1-18 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
17668.91	Low	50	H	QPSK	H	-	-	-29.14	-13.00	-16.14
17708.49	Mid	50	H	QPSK	H	-	-	-28.88	-13.00	-15.88
17793.27	High	50	H	QPSK	H	-	-	-29.53	-13.00	-16.53

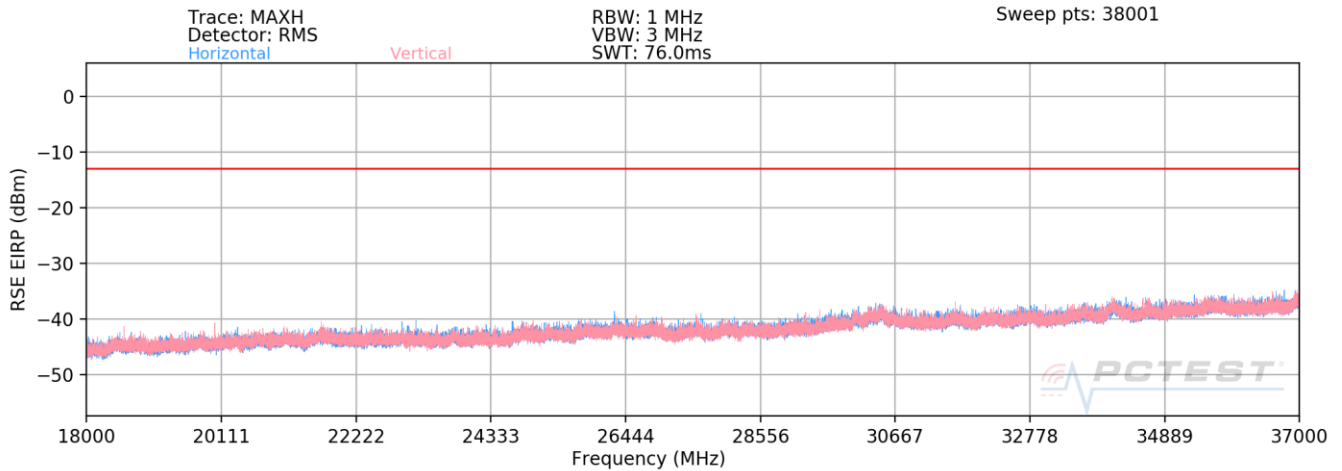
Table 7-35. Spurious Emissions Table (1GHz-18GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 3 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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18 – 37GHz



Plot 7-89. Radiated Spurious Plot 18-37 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dB μ V/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log}(D_m) - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
36874.02	Low	50	H	QPSK	H	-	-	-36.53	-13.00	-23.53
36908.64	Mid	50	H	QPSK	H	-	-	-36.03	-13.00	-23.03
36924.49	High	50	H	QPSK	H	-	-	-36.18	-13.00	-23.18

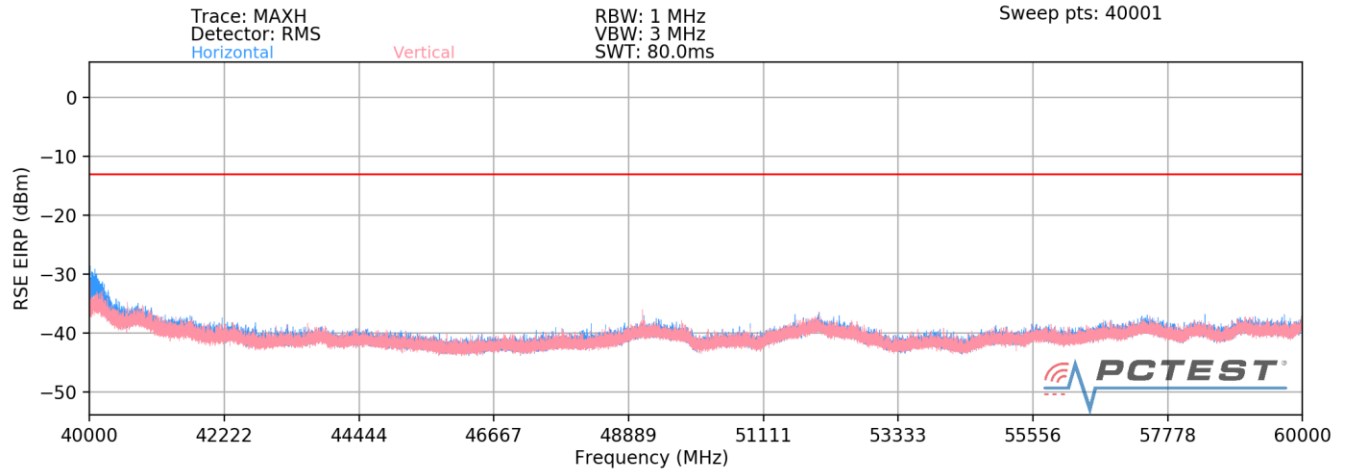
Table 7-36. Spurious Emissions Table (18-37GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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40 – 60GHz



Plot 7-90. Radiated Spurious Plot 40-60 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1.5 meter.


$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
40105.92	Low	50	H	QPSK	H	-	-	-37.66	-13.00	-24.66
40142.97	Mid	50	H	QPSK	H	1	1	-32.85	-13.00	-19.85
40269.20	High	50	H	QPSK	H	2	0	-29.69	-13.00	-16.69

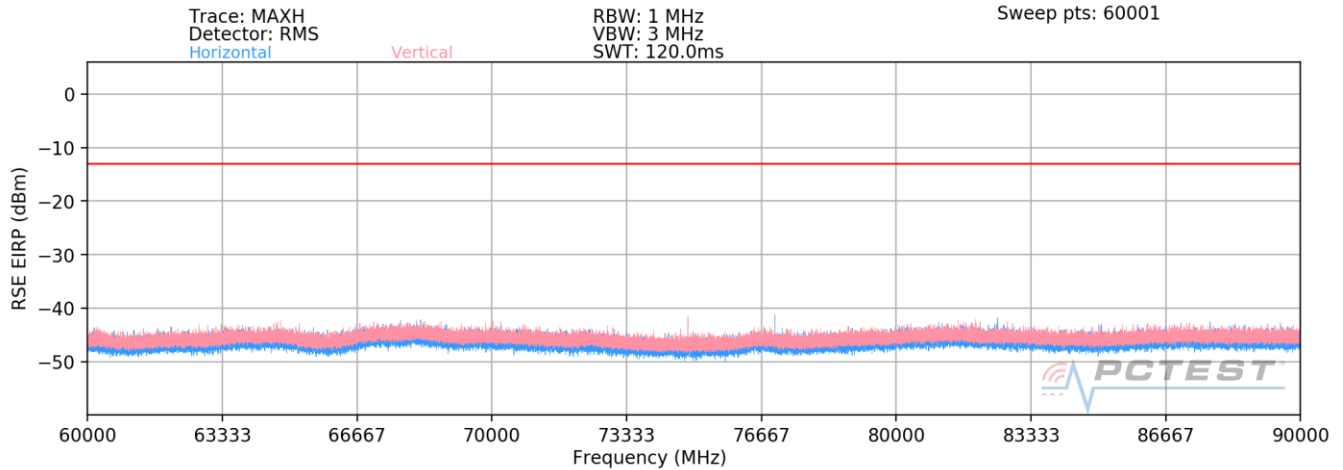
Table 7-37. Spurious Emissions Table (40 - 60GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1.5 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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60 – 90GHz



Plot 7-91. Radiated Spurious Plot 60-90 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL [dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turrtable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74051.62	Low	50	H	QPSK	H	1	1	-40.77	-13.00	-27.77
77000.42	Mid	50	H	QPSK	H	1	0	-40.33	-13.00	-27.33
79950.65	High	50	H	QPSK	H	2	1	-36.83	-13.00	-23.83

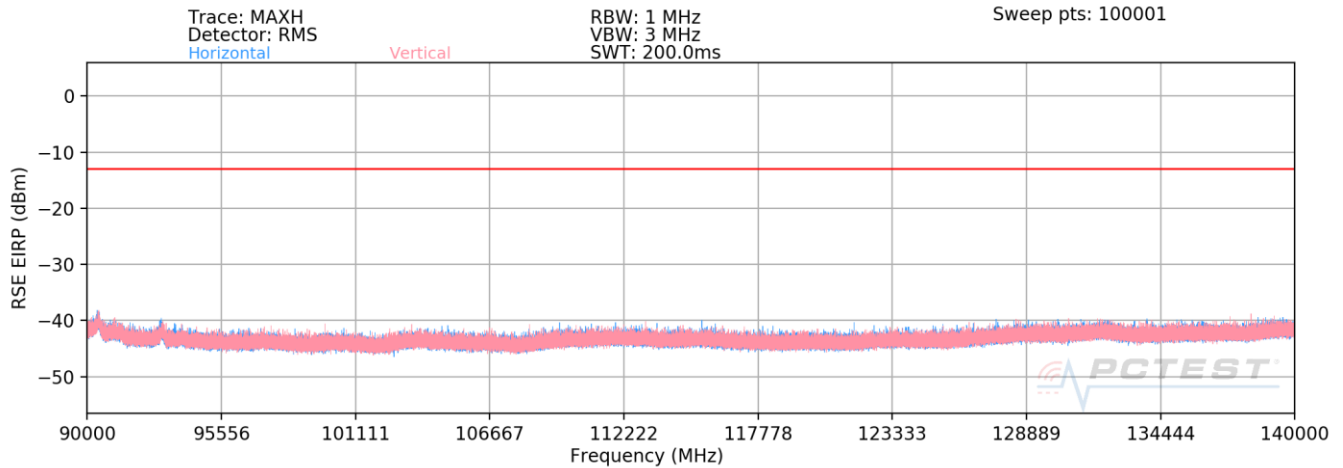
Table 7-38. Spurious Emissions Table (60-90GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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90 – 140GHz



Plot 7-92. Radiated Spurious Plot 90-140 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
111102.49	Low	50	H	QPSK	H	-	-	-39.37	-13.00	-26.37
115505.47	Mid	50	H	QPSK	H	-	-	-39.62	-13.00	-26.62
119964.76	High	50	H	QPSK	H	-	-	-39.73	-13.00	-26.73

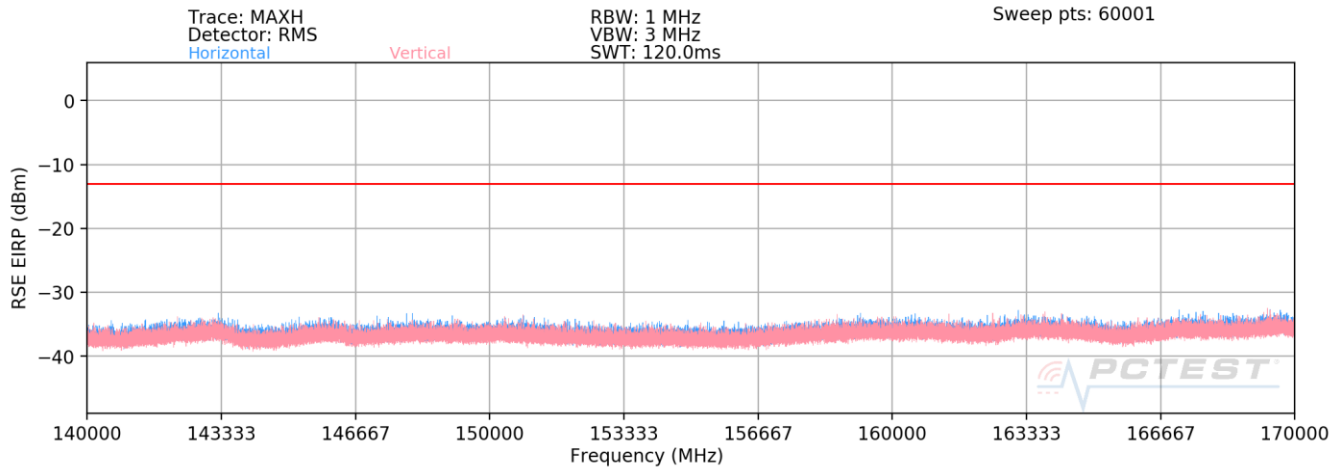
Table 7-39. Spurious Emissions Table (90-140GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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140 – 170GHz



Plot 7-93. Radiated Spurious Plot 140-170 GHz (1CC QPSK Mid Channel)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
148104.76	Low	50	H	QPSK	H	-	-	-33.52	-13.00	-20.52
153983.16	Mid	50	H	QPSK	H	-	-	-33.92	-13.00	-20.92
159924.43	High	50	H	QPSK	H	-	-	-33.50	-13.00	-20.50

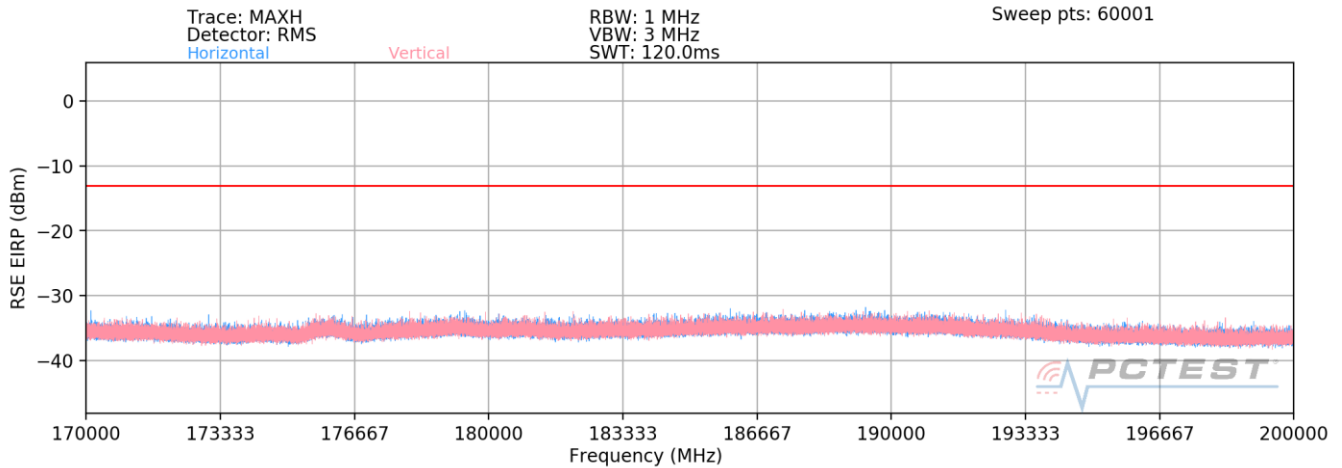
Table 7-40. Spurious Emissions Table (140-170GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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170 – 200GHz



Plot 7-94. Radiated Spurious Plot 170-200 GHz (1CC QPSK Mid Channel H Beam)

Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP [dBm]} = \text{Analyzer Level [dBm]} + 107 + \text{AFCL[dB/m]} + 20\text{Log(Dm)} + \text{Harmonic Mixer Loss (dB)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
185143.78	Low	50	H	QPSK	H	-	-	-33.61	-13.00	-20.61
192476.92	Mid	50	H	QPSK	H	-	-	-33.49	-13.00	-20.49
199856.37	High	50	H	QPSK	H	-	-	-34.34	-13.00	-21.34

Table 7-41. Spurious Emissions Table (170-200GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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7.5 Band Edge Emissions

§2.1051, §30.203

Test Overview

The EUT was fed a 5G NR mmWave representative signal via a horn antenna connects to a signal generator. All out of band emissions are measured in a radiated setup while the EUT is operating at its maximum AGC level, at maximum power, and at the appropriate frequencies. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is -13dBm/1MHz. However, in the bands immediately outside and adjacent to the licensee's frequency block, having a bandwidth equal to 10 percent of the channel bandwidth, the conductive power or the total radiated power of any emission shall be -5 dBm/MHz or lower.

Test Procedure Used


ANSI C63.26-2015 Section 5 and ANSI C63.26-2015 Section 6.4
KDB 842590 D01 v01r02 Section 4.4.2.2

Test Settings

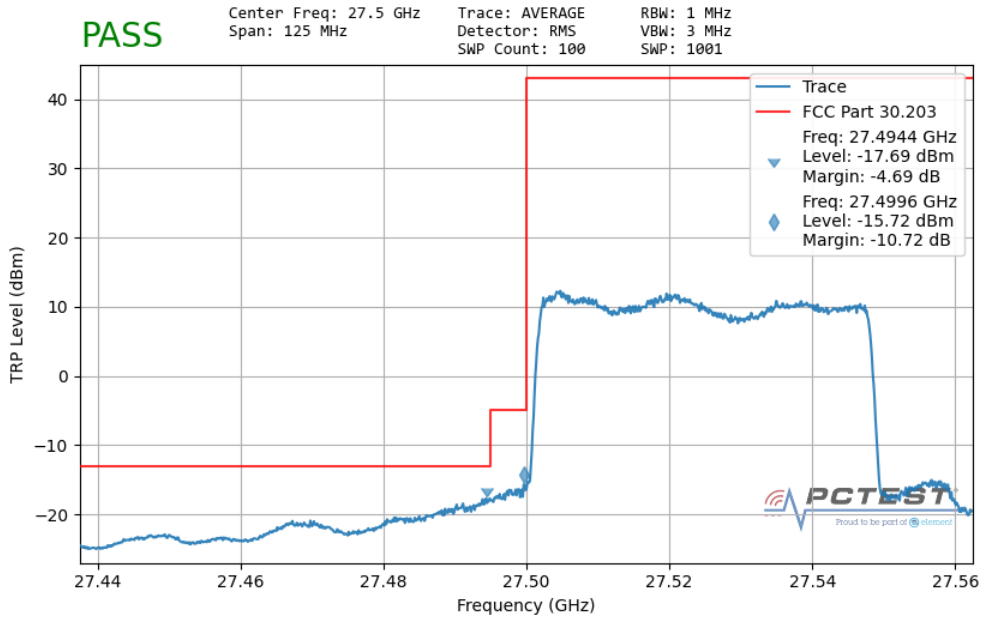
1. Start and stop frequency were set such that both upper and lower band edges are measured.
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW = 1MHz
4. VBW \geq 3 x RBW
5. Detector = RMS
6. Number of sweep points \geq 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

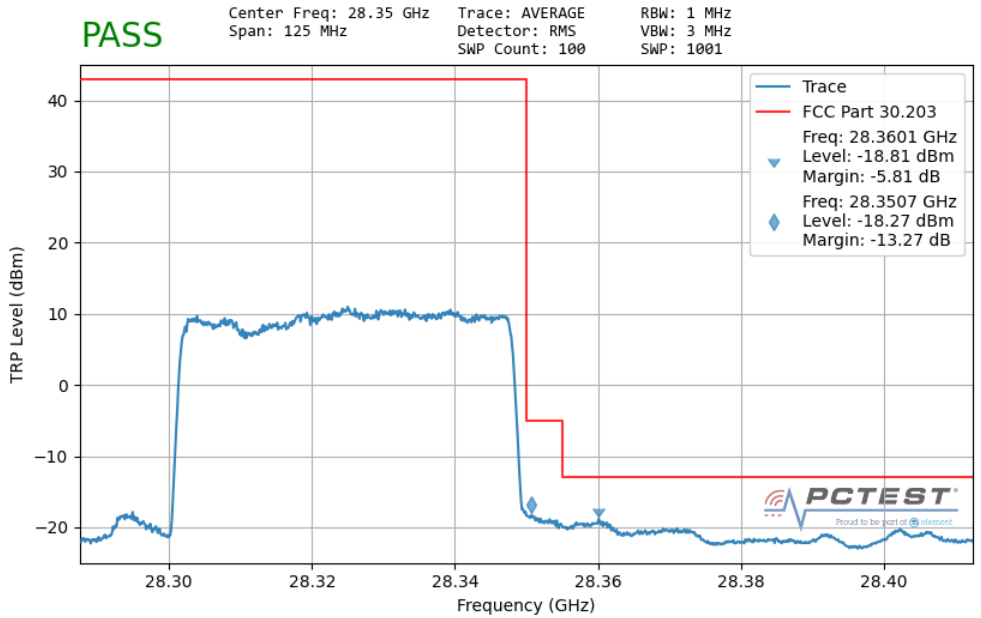
- 1) The spectrum plots in this section show measurement of some emissions that may be considered as part of the spurious domain, extending beyond the band edges by more than 10% of the occupied bandwidth of the test signal.
- 2) Since some of the Band Edge EIRP measurements exceed the emission limit, the TRP measurement was performed as the alternative method. The plots measured in TRP are labeled as "TRP" in the captions.

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n261 Donor Side

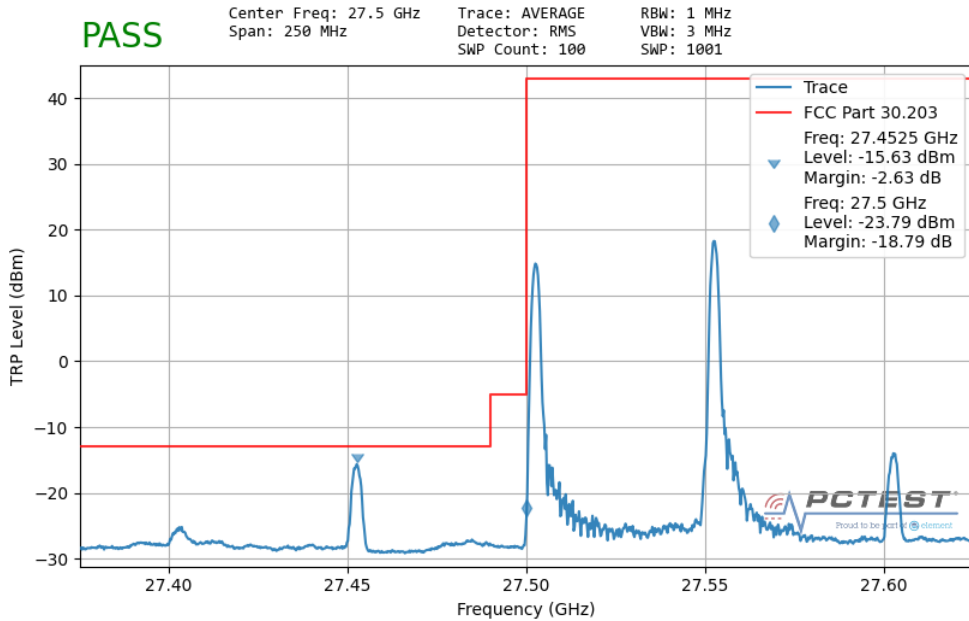


Plot 7-95. Lower Band Edge Plot (50MHz QPSK Full RB) – TRP – Donor Side – H Beam

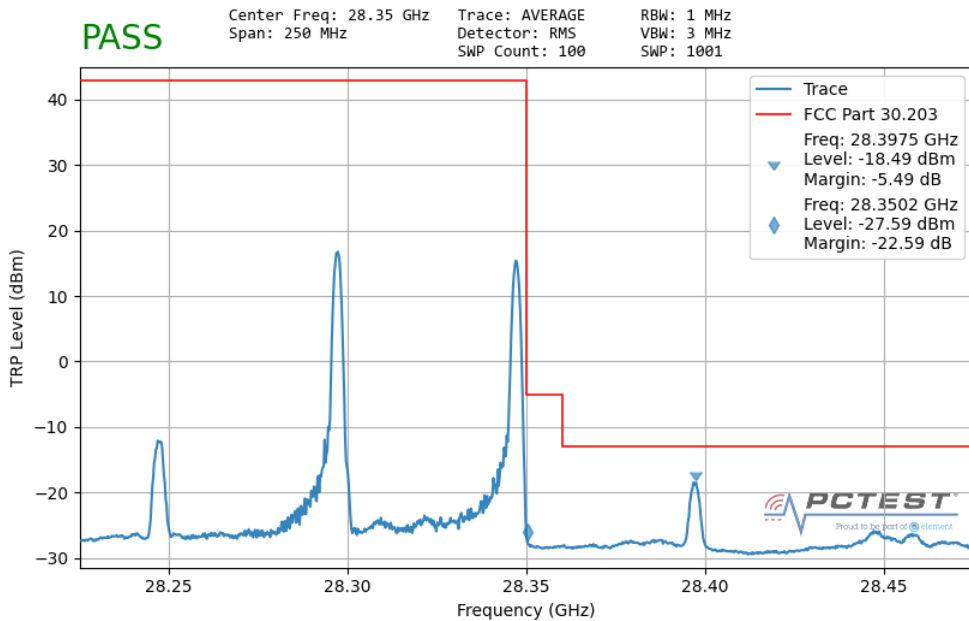


Plot 7-96. Upper Band Edge Plot (50MHz QPSK Full RB) – TRP – Donor Side – H Beam

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1M2106230069-02-R3.NKR	Test Dates: 07/12/2021-08/16/2021	EUT Type: 5G Extender Gen 2	Page 86 of 136

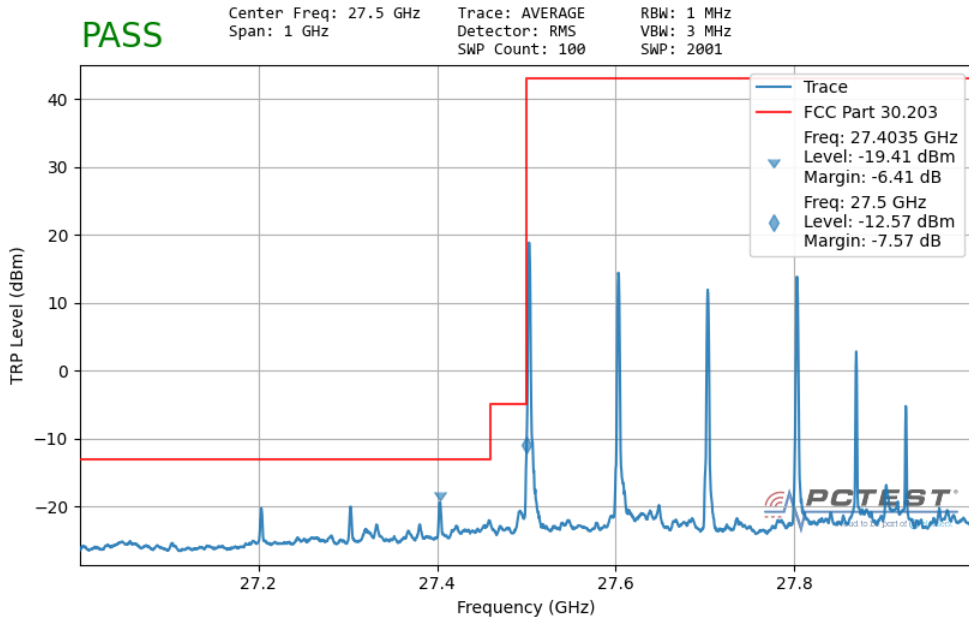


Plot 7-97. Lower Band Edge Plot (50MHz 2CC QPSK 1 RB) – TRP – Donor Side – H Beam

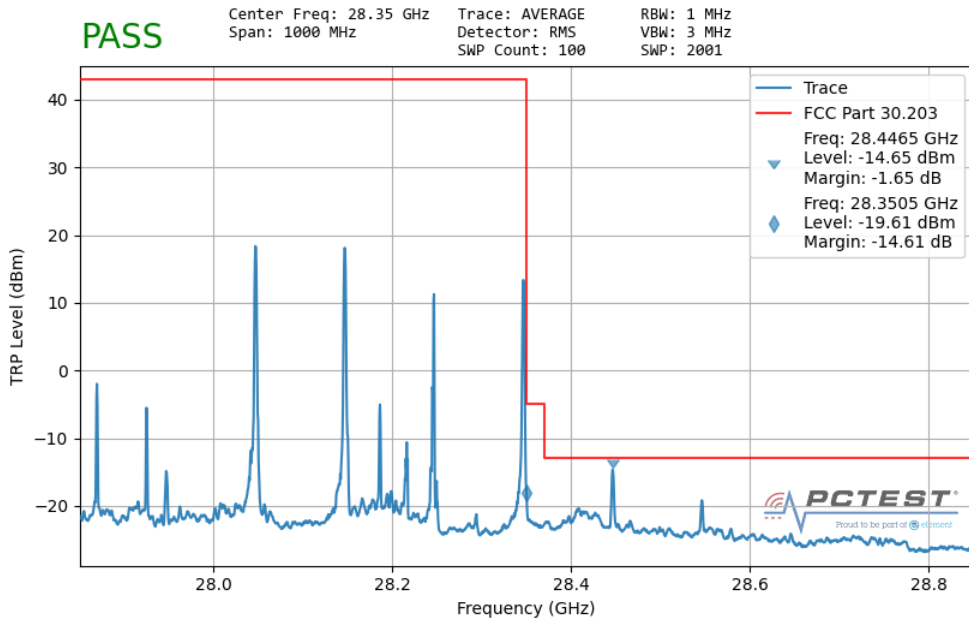


Plot 7-98. Upper Band Edge Plot (50MHz 2CC QPSK 1 RB) – TRP – Donor Side – H Beam



FCC ID: NKR-TR2V1-IDU	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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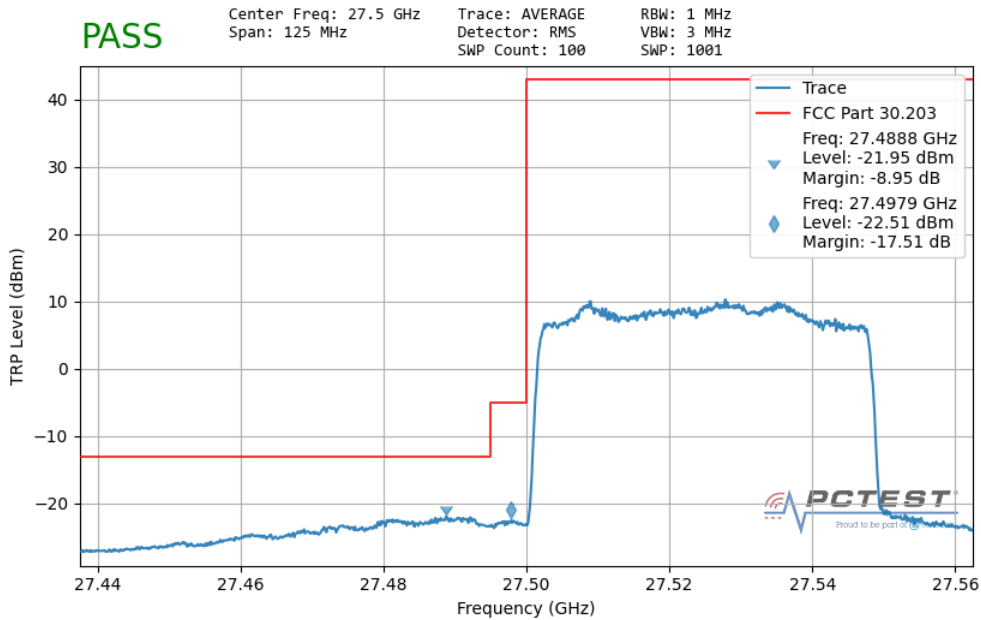
Plot 7-99. Lower Band Edge Plot (100MHz 4CC QPSK 1 RB) – TRP – Donor Side – H Beam



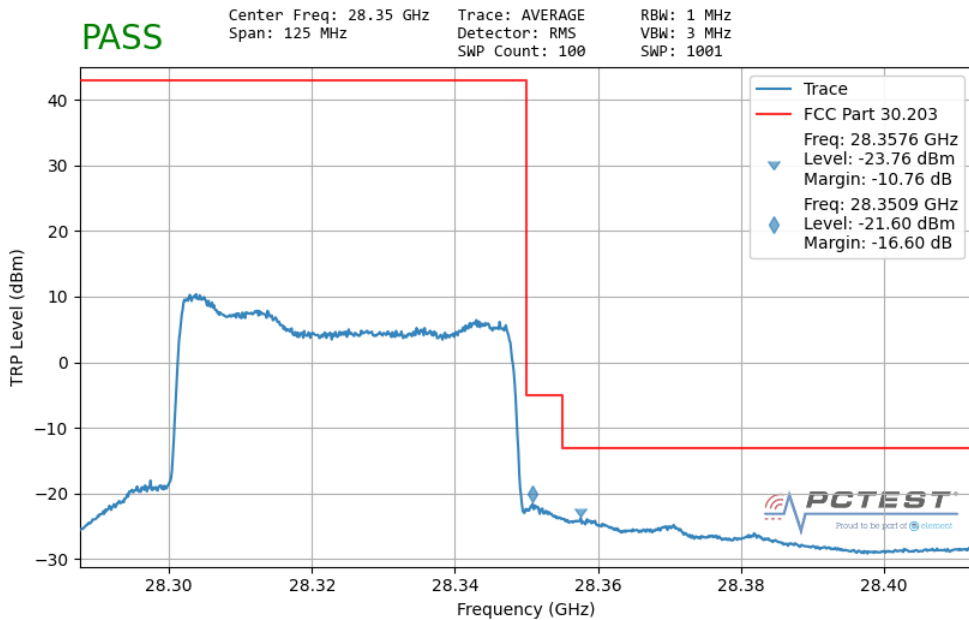
Plot 7-100. Upper Band Edge Plot (100MHz 4CC QPSK 1 RB) – TRP – Donor Side – H Beam

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n261 Donor Side

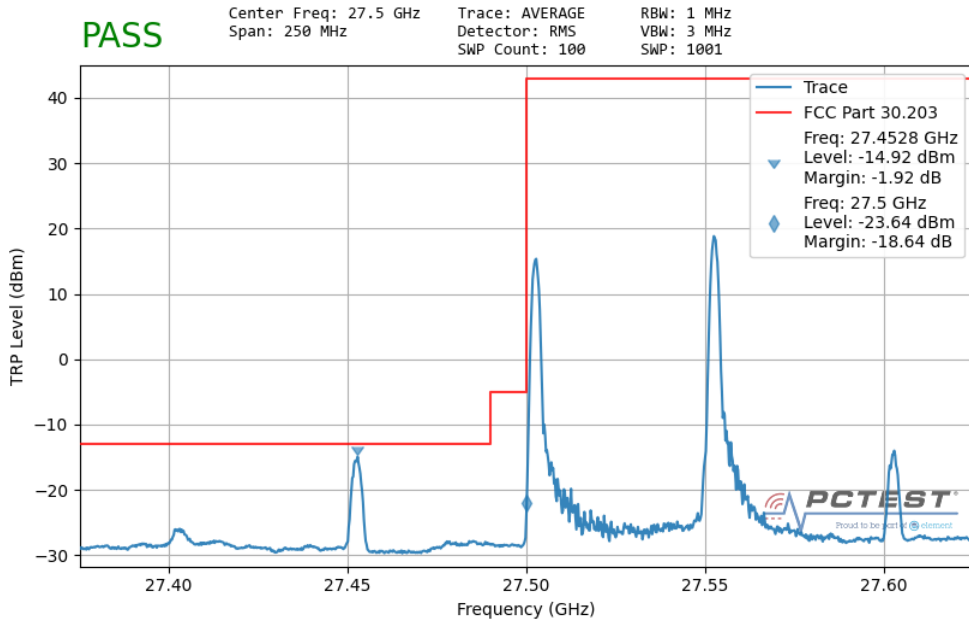


Plot 7-101. Lower Band Edge Plot (50MHz QPSK Full RB) – TRP – Donor Side – V Beam

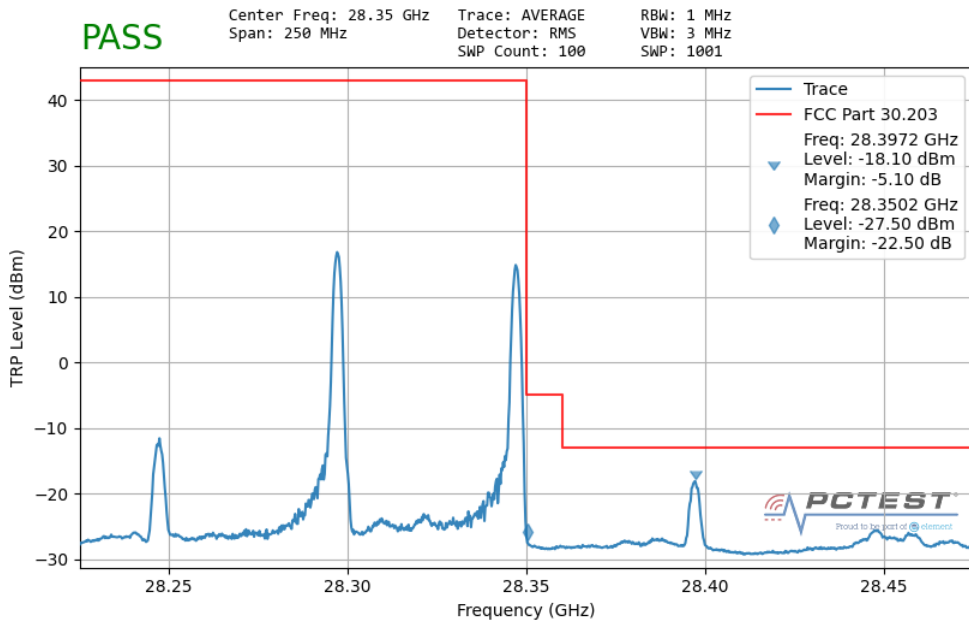


Plot 7-102. Upper Band Edge Plot (50MHz QPSK Full RB) – TRP – Donor Side – V Beam

FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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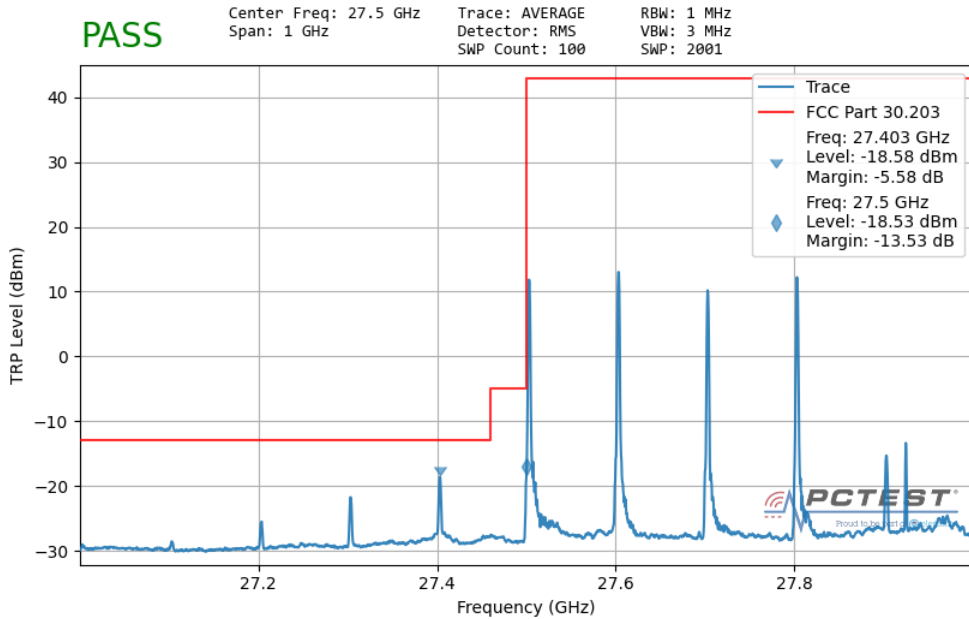


Plot 7-103. Lower Band Edge Plot (50MHz 2CC QPSK 1 RB) – TRP – Donor Side – V Beam

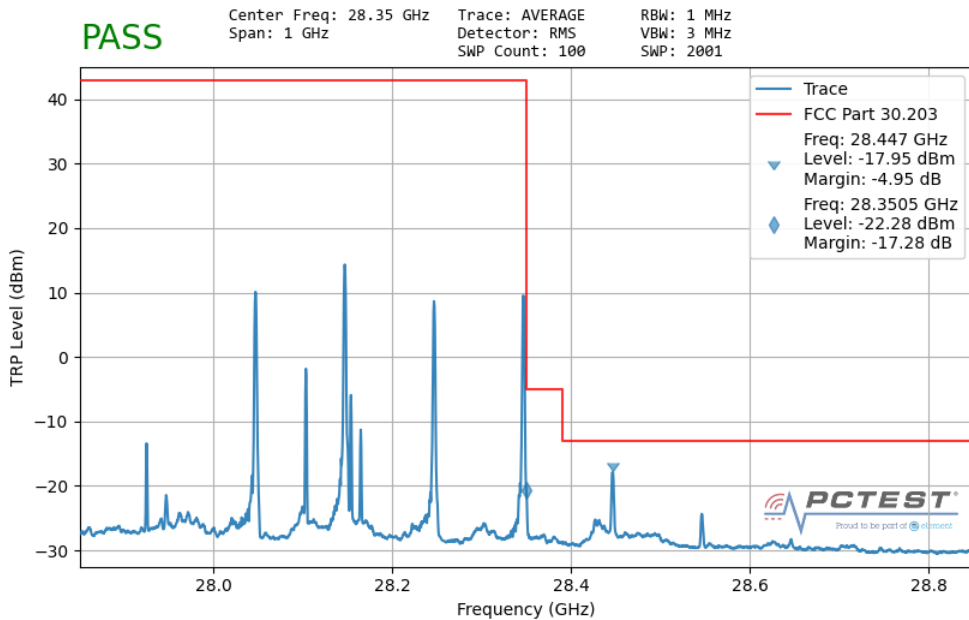


Plot 7-104. Upper Band Edge Plot (50MHz 2CC QPSK 1 RB) – TRP – Donor Side – V Beam



FCC ID: NKR-TR2V1-IDU	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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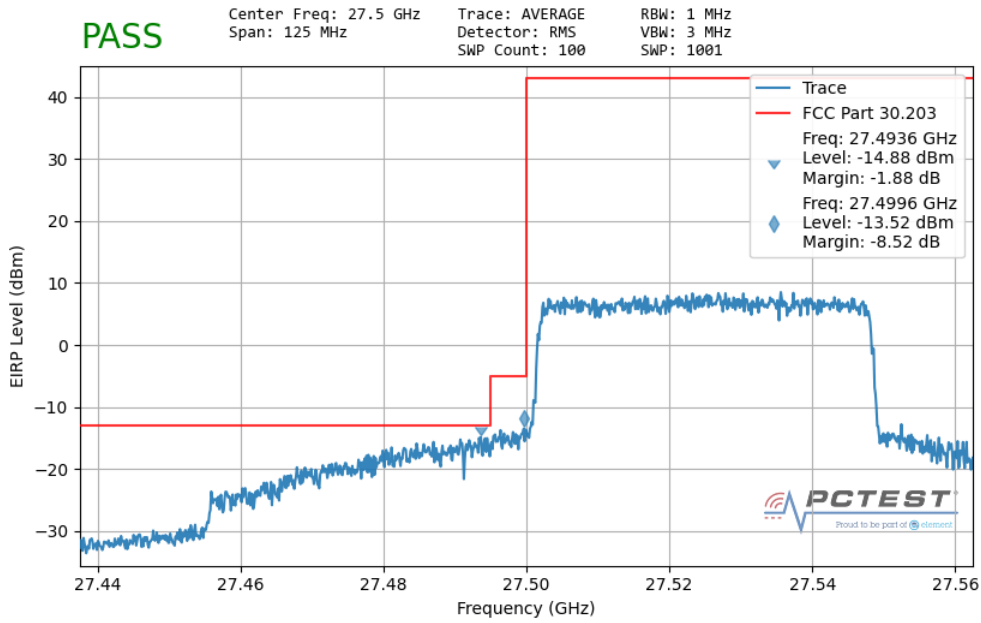
Plot 7-105. Lower Band Edge Plot (100MHz 4CC QPSK 1 RB) – TRP – Donor Side – V Beam



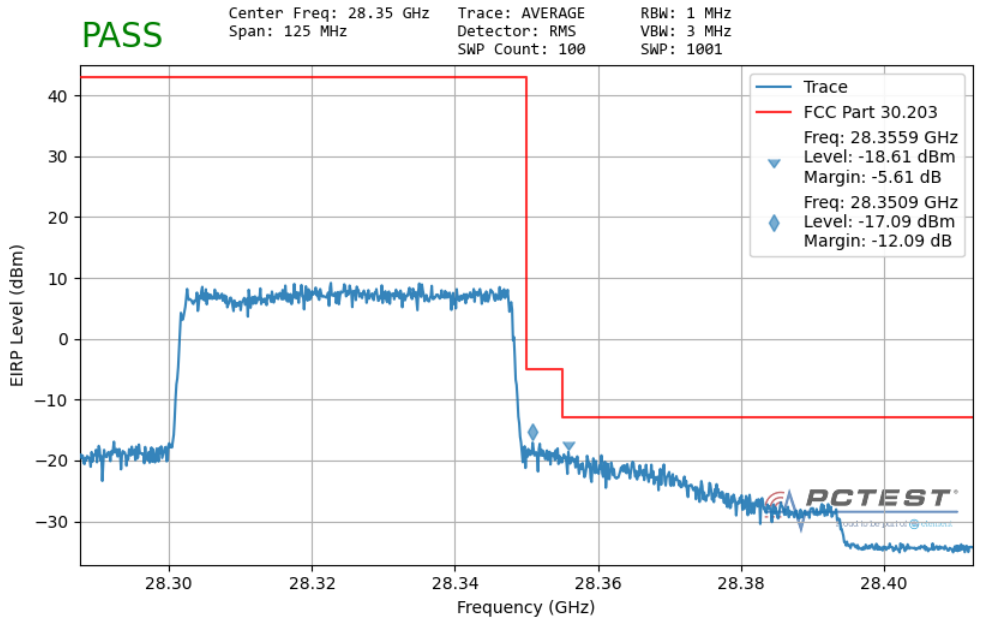
Plot 7-106. Upper Band Edge Plot (100MHz 4CC QPSK 1 RB) – TRP – Donor Side – V Beam

FCC ID: NKR-TR2V1-IDU	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n261 Relay Side

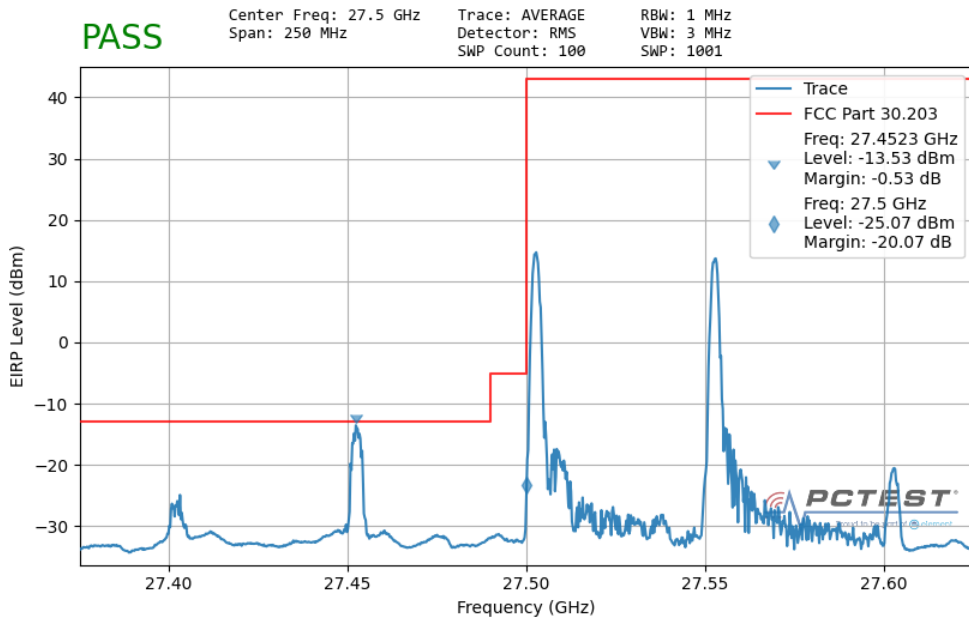


Plot 7-107. Lower Band Edge Plot (50MHz QPSK Full RB) – Relay Side – H Beam

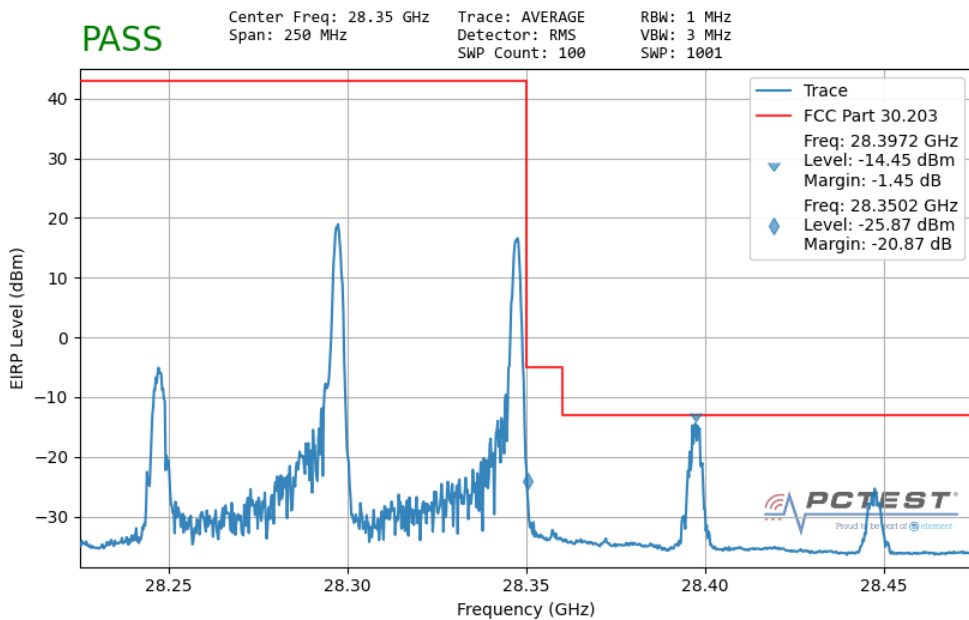


Plot 7-108. Upper Band Edge Plot (50MHz QPSK Full RB) – Relay Side – H Beam


FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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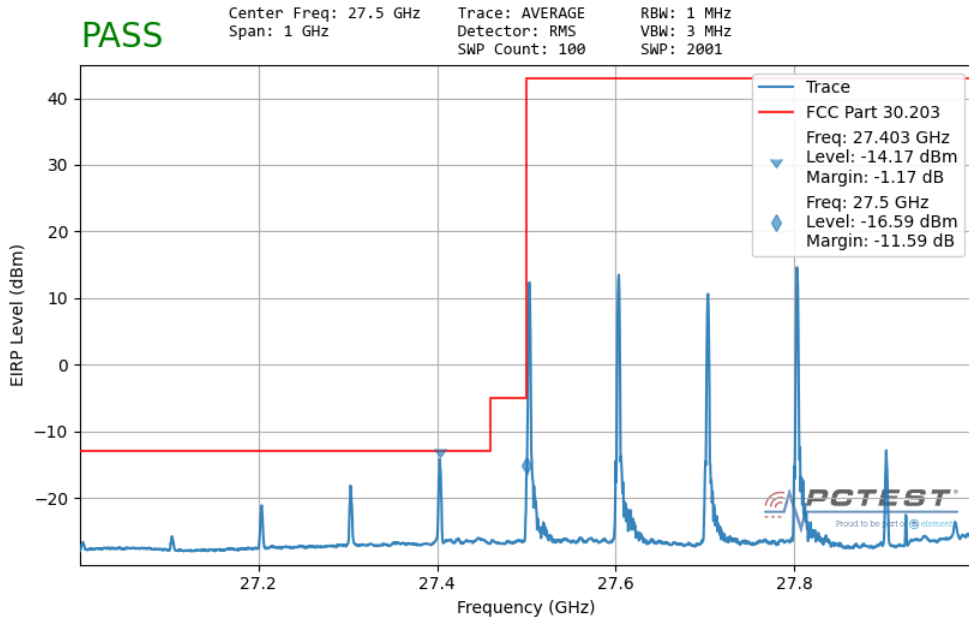


Plot 7-109. Lower Band Edge Plot (50MHz 2CC QPSK 1 RB) – Relay Side – H Beam

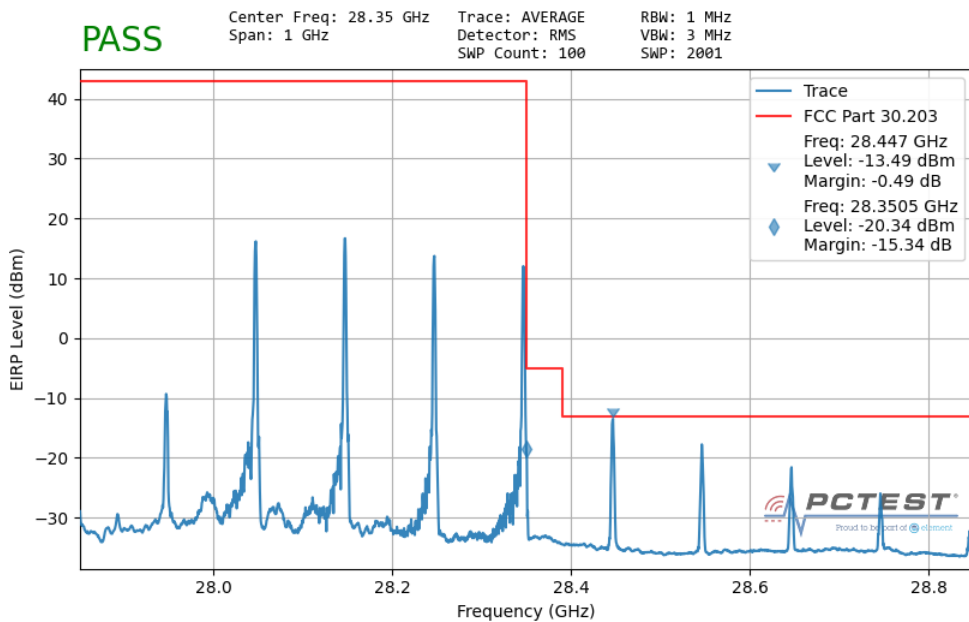


Plot 7-110. Upper Band Edge Plot (50MHz 2CC QPSK 1 RB) – Relay Side – H Beam



FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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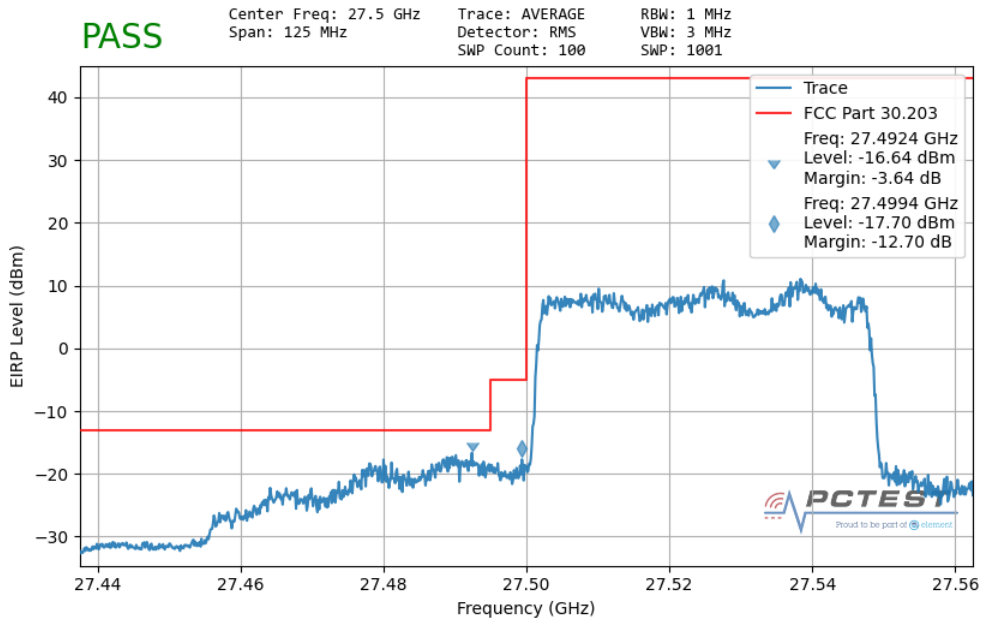
Plot 7-111. Lower Band Edge Plot (100MHz 4CC QPSK 1 RB) – Relay Side – H Beam



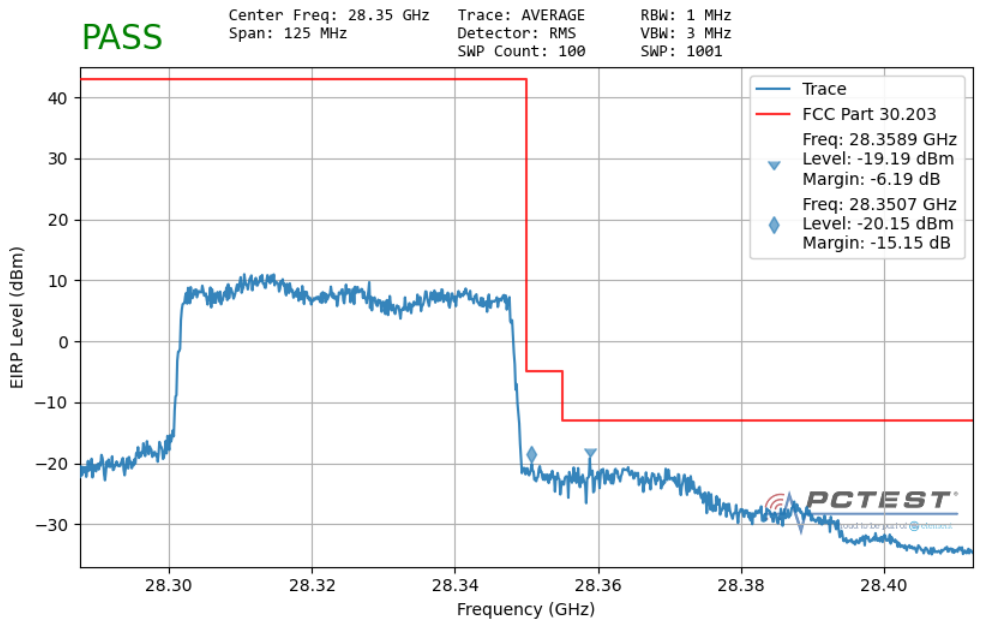
Plot 7-112. Upper Band Edge Plot (100MHz 4CC QPSK 1 RB) – Relay Side – H Beam

FCC ID: NKR-TR2V1-IDU	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n261 Relay Side

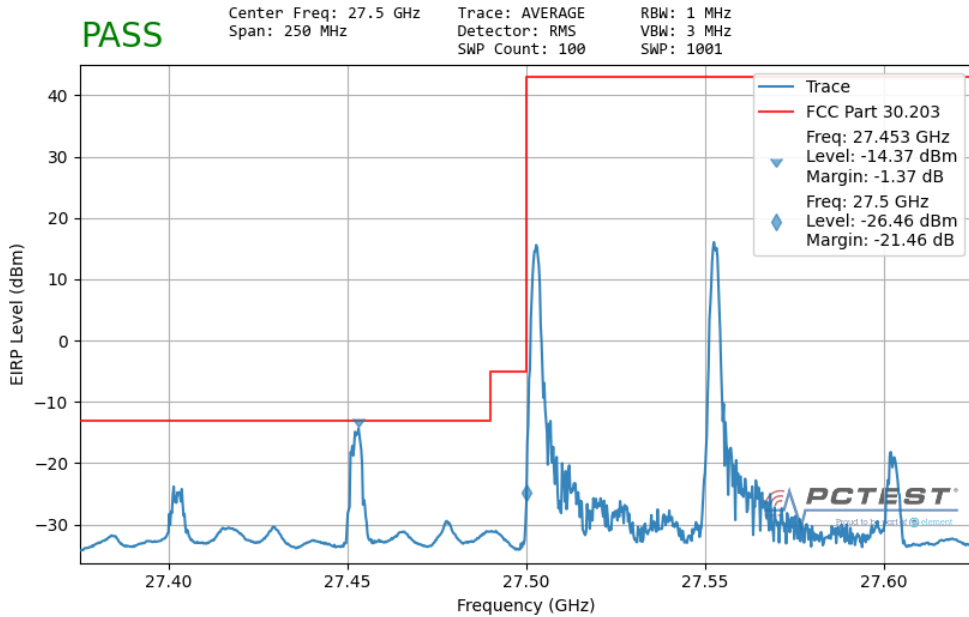


Plot 7-113. Lower Band Edge Plot (50MHz QPSK Full RB) – Relay Side – V Beam

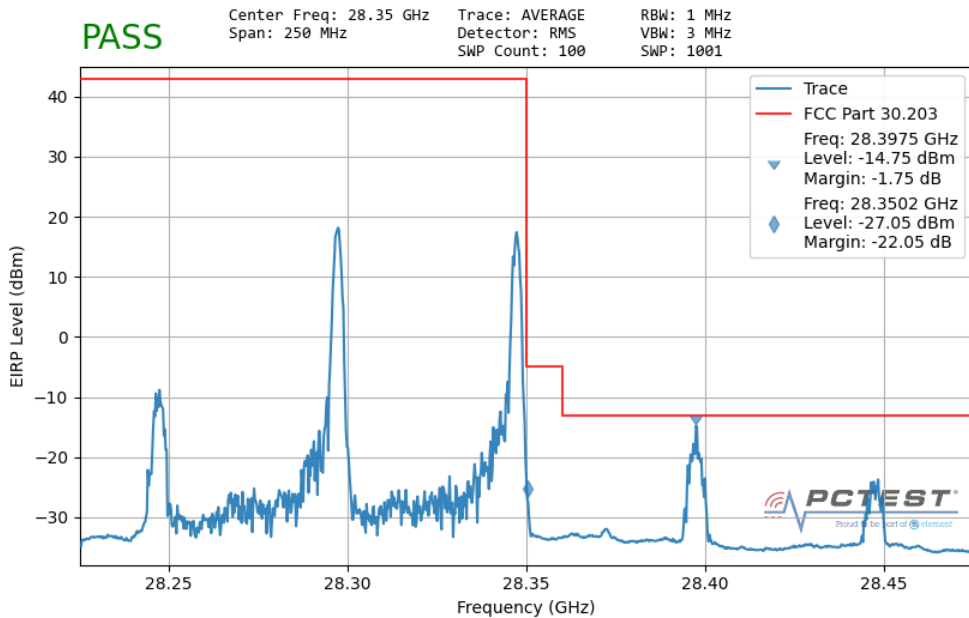


Plot 7-114. Upper Band Edge Plot (50MHz QPSK Full RB) – Relay Side – V Beam



FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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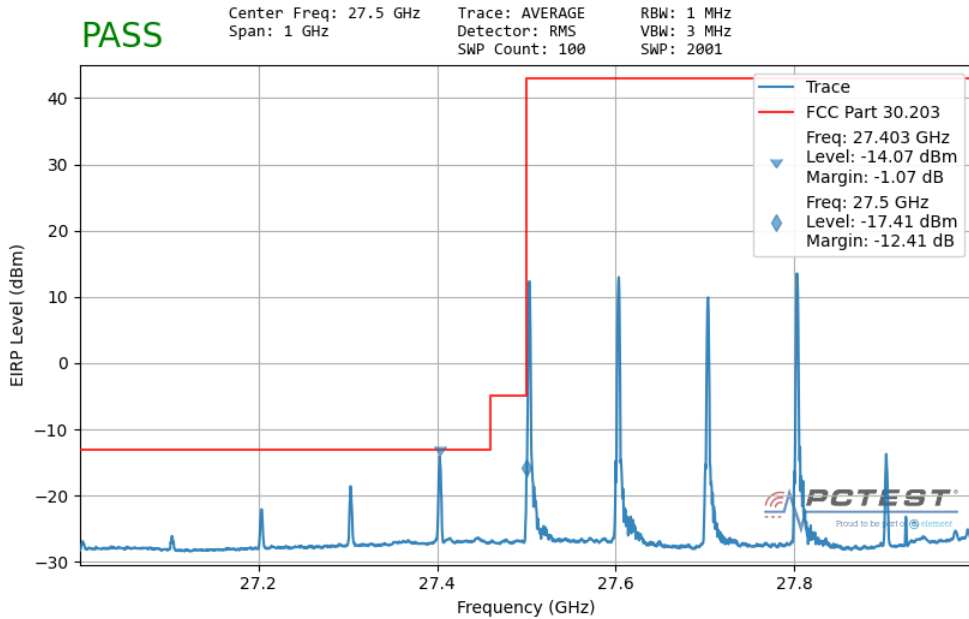


Plot 7-115. Lower Band Edge Plot (50MHz 2CC QPSK 1 RB) – Relay Side – V Beam

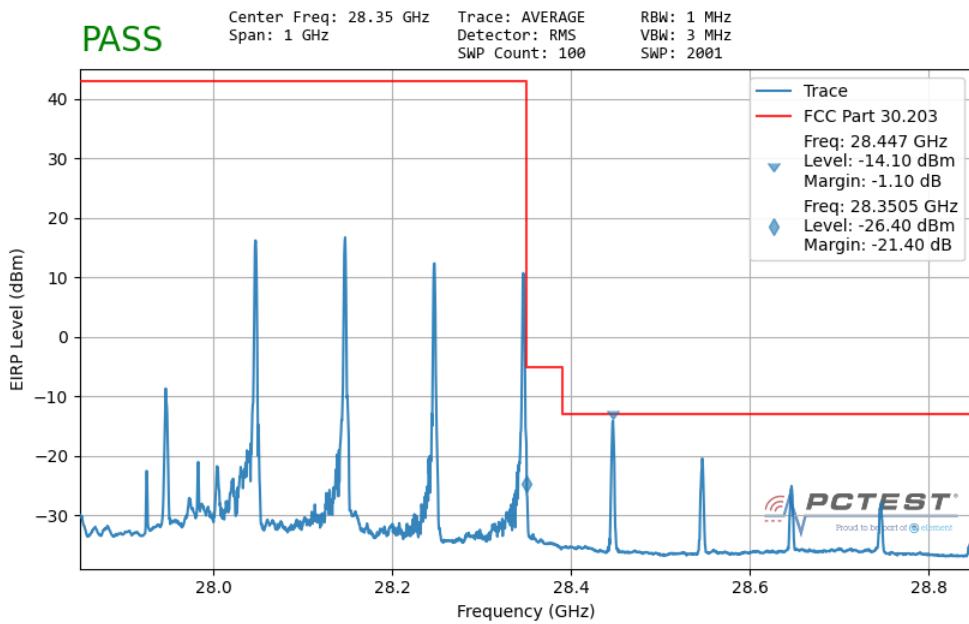


Plot 7-116. Upper Band Edge Plot (50MHz 2CC QPSK 1 RB) – Relay Side – V Beam



FCC ID: NKR-TR2V1-IDU	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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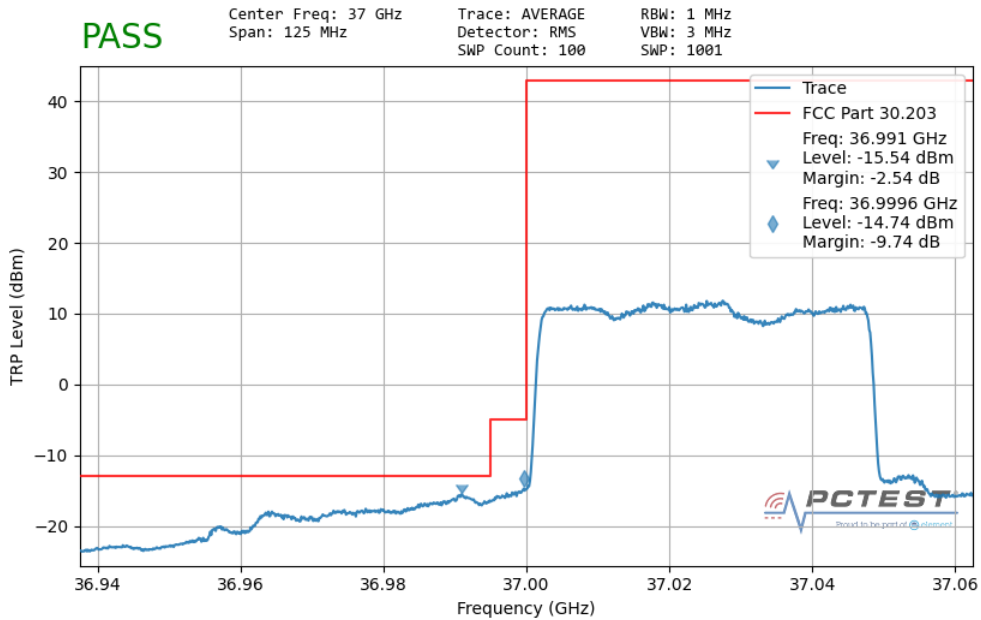
Plot 7-117. Lower Band Edge Plot (100MHz 4CC QPSK 1 RB) – Relay Side – V Beam



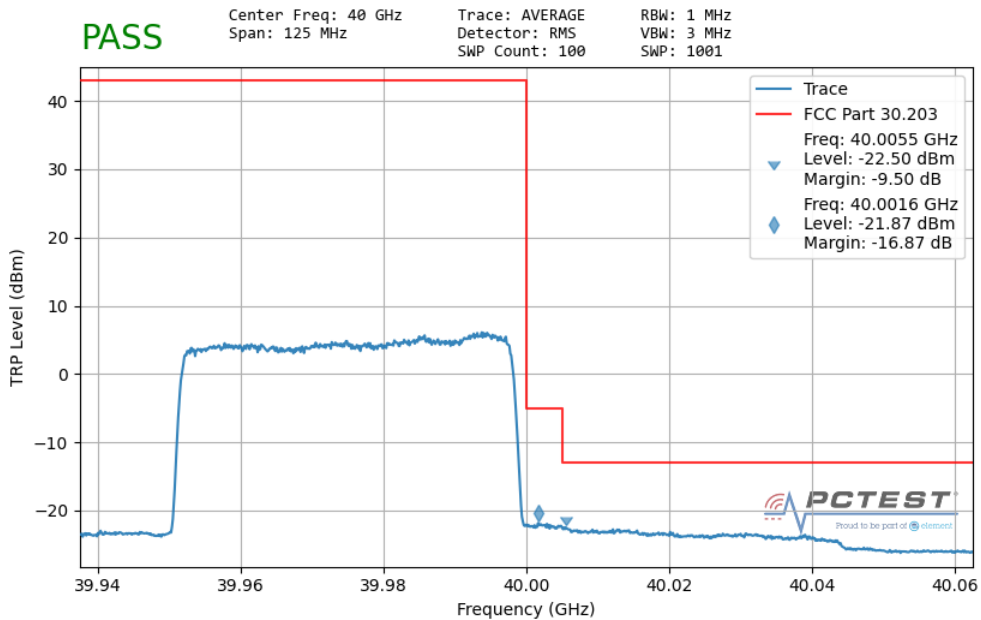
Plot 7-118. Upper Band Edge Plot (100MHz 4CC QPSK 1 RB) – Relay Side – V Beam

FCC ID: NKR-TR2V1-IDU	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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n260 Donor Side

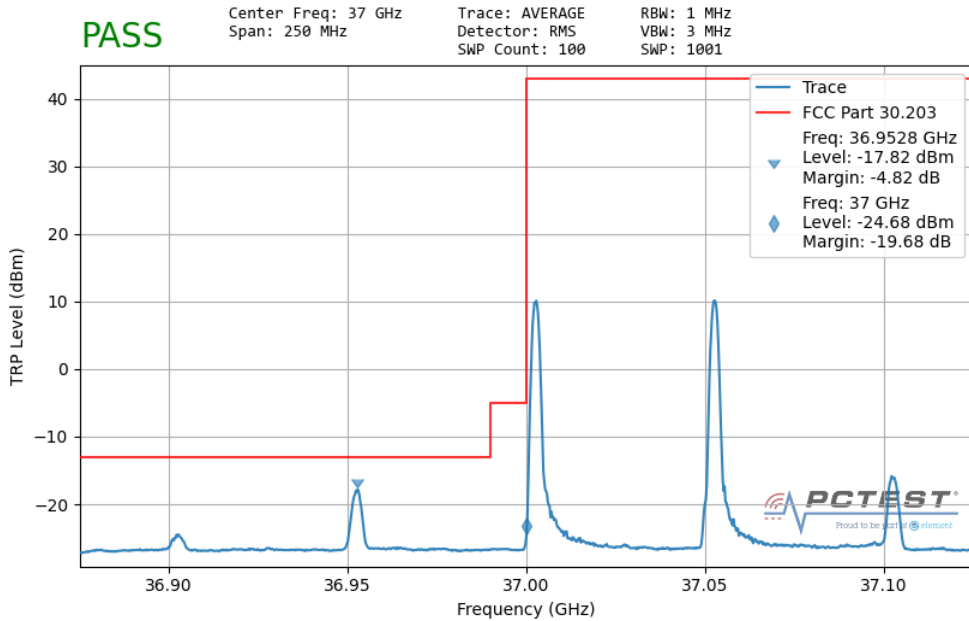


Plot 7-119. Lower Band Edge Plot (50MHz QPSK Full RB) – TRP – Donor Side – H Beam

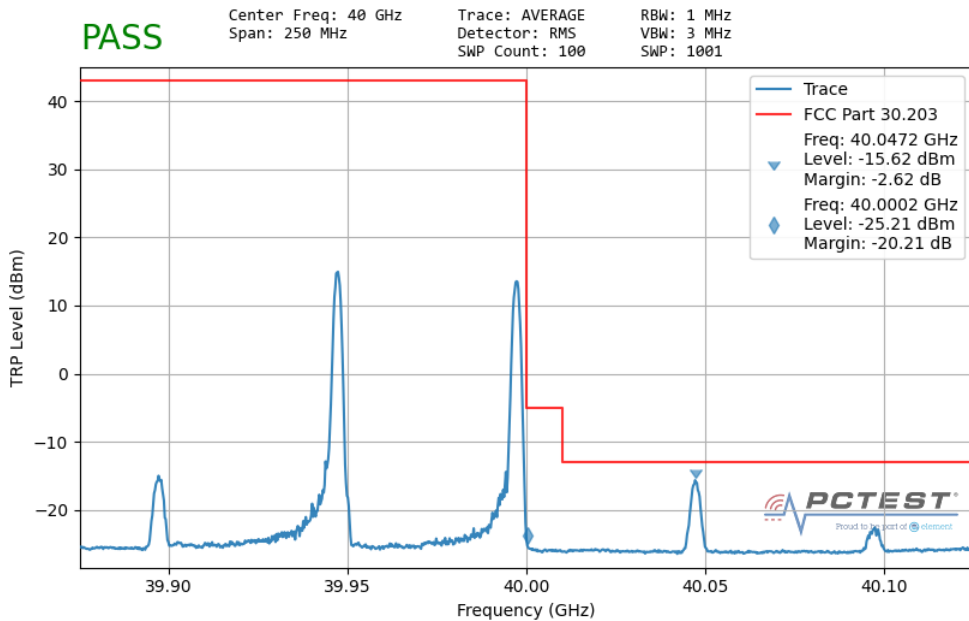


Plot 7-120. Upper Band Edge Plot (50MHz QPSK Full RB) – TRP – Donor Side – H Beam



FCC ID: NKR-TR2V1-IDU	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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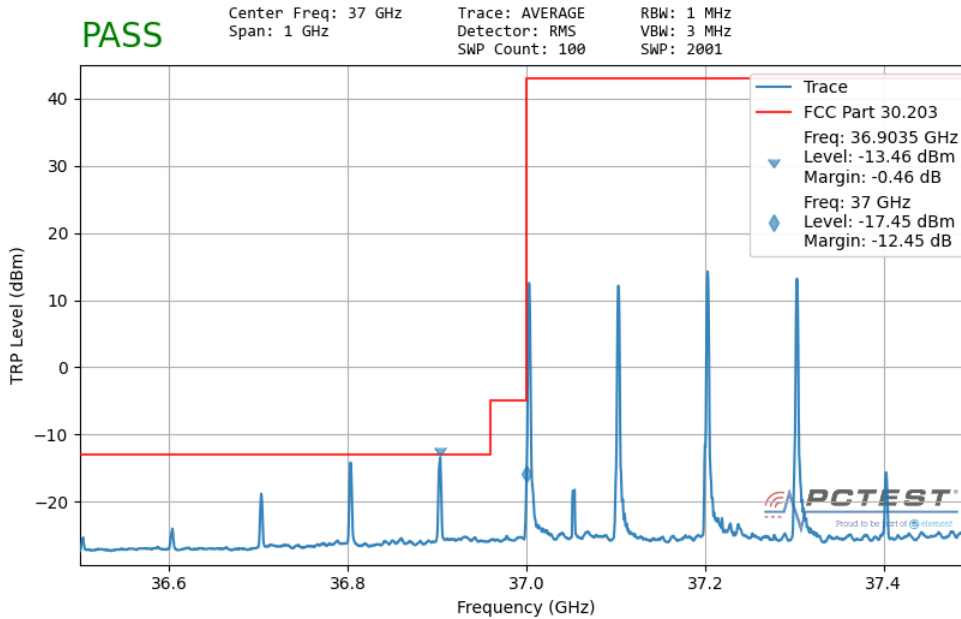


Plot 7-121. Lower Band Edge Plot (50MHz 2CC QPSK 1 RB) – TRP – Donor Side – H Beam

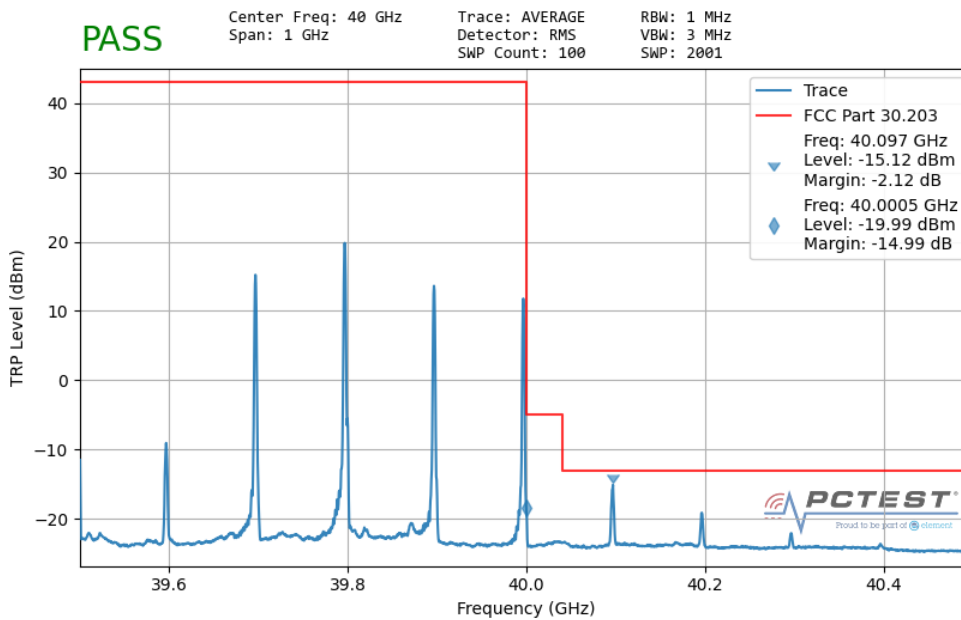


Plot 7-122. Upper Band Edge Plot (50MHz 2CC QPSK 1 RB) – TRP – Donor Side – H Beam


FCC ID: NKR-TR2V1-IDU	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-123. Lower Band Edge Plot (100MHz 4CC QPSK 1 RB) – TRP – Donor Side – H Beam



Plot 7-124. Upper Band Edge Plot (100MHz 4CC QPSK 1 RB) – TRP – Donor Side – H Beam

FCC ID: NKR-TR2V1-IDU		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1M2106230069-02-R3.NKR	Test Dates: 07/12/2021-08/16/2021	EUT Type: 5G Extender Gen 2	Page 100 of 136