Spurious Emissions EIRP Sample Calculation (n260)

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 1.5 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
42931.00	Low	50	H	QPSK	H	26	31	-35.21	-13.00	-22.21
42931.00	Low	50	V	QPSK	H	9	7	-38.41	-13.00	-25.41
44083.00	Mid	50	H	QPSK	H	88	117	-35.88	-13.00	-22.88
44083.00	Mid	50	V	QPSK	H	288	254	-35.83	-13.00	-22.83
46233.50	High	50	H	QPSK	H	90	99	-45.55	-13.00	-32.55
46233.50	High	50	V	QPSK	H	26	48	-45.94	-13.00	-32.94

Table 7-117. Ant2 - SISO -Spurious Emissions Table (40.15GHz - 60GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-33.51	-13.00	-20.51
Mid	50	QPSK	-32.84	-13.00	-19.84
High	50	QPSK	-42.73	-13.00	-29.73

Table 7-118. Ant2 - MIMO -Spurious Emissions Table (40.15GHz - 60GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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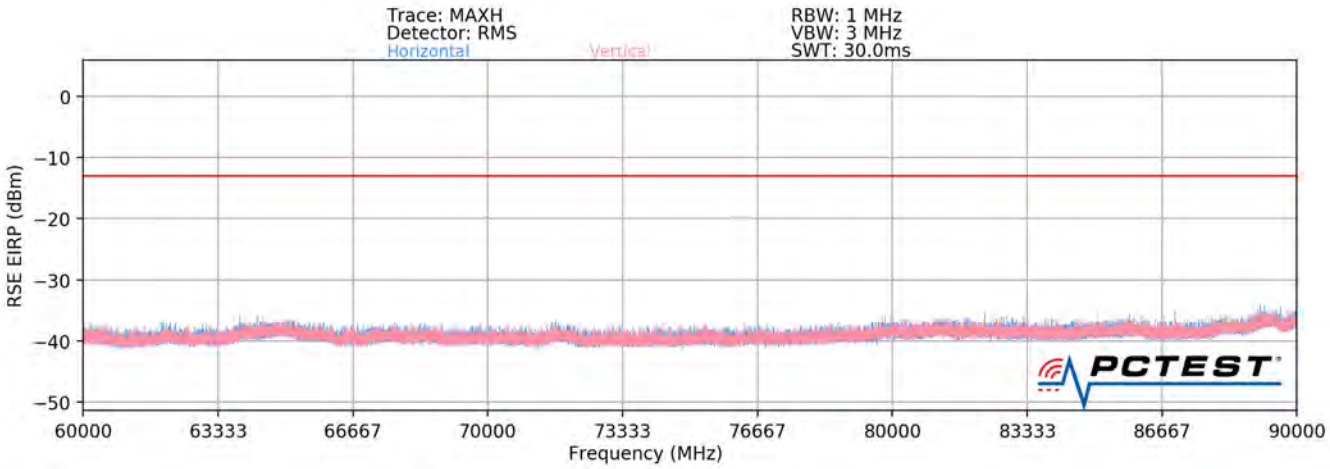
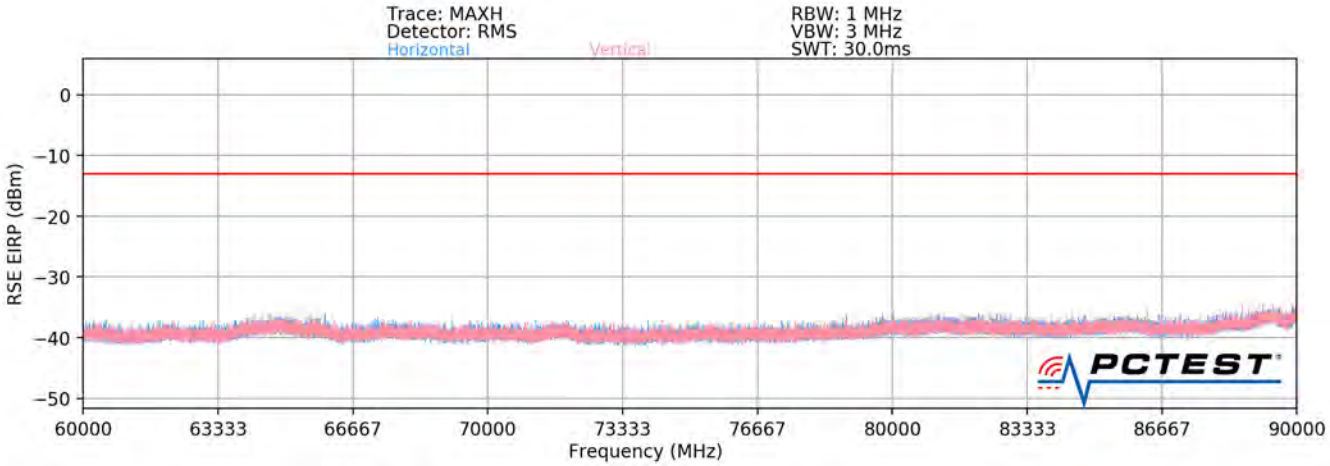
60GHz - 90GHz



Plot 7-177. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-178. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74055.48	Low	50	H	QPSK	H	358	22	-40.24	-13.00	-27.24
74055.45	Low	50	V	QPSK	H	81	6	-43.65	-13.00	-30.65
76987.47	Mid	50	H	QPSK	H	-	-	-45.22	-13.00	-32.22
76996.35	Mid	50	V	QPSK	H	-	-	-45.47	-13.00	-32.47
79933.80	High	50	H	QPSK	H	-	-	-44.32	-13.00	-31.32
79935.69	High	50	V	QPSK	H	-	-	-44.16	-13.00	-31.16

Table 7-119. Ant2 - SISO -Spurious Emissions Table (60GHz - 90GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-38.61	-13.00	-25.61
Mid	50	QPSK	-42.33	-13.00	-29.33
High	50	QPSK	-41.23	-13.00	-28.23

Table 7-120. Ant2 - MIMO -Spurious Emissions Table (60GHz - 90GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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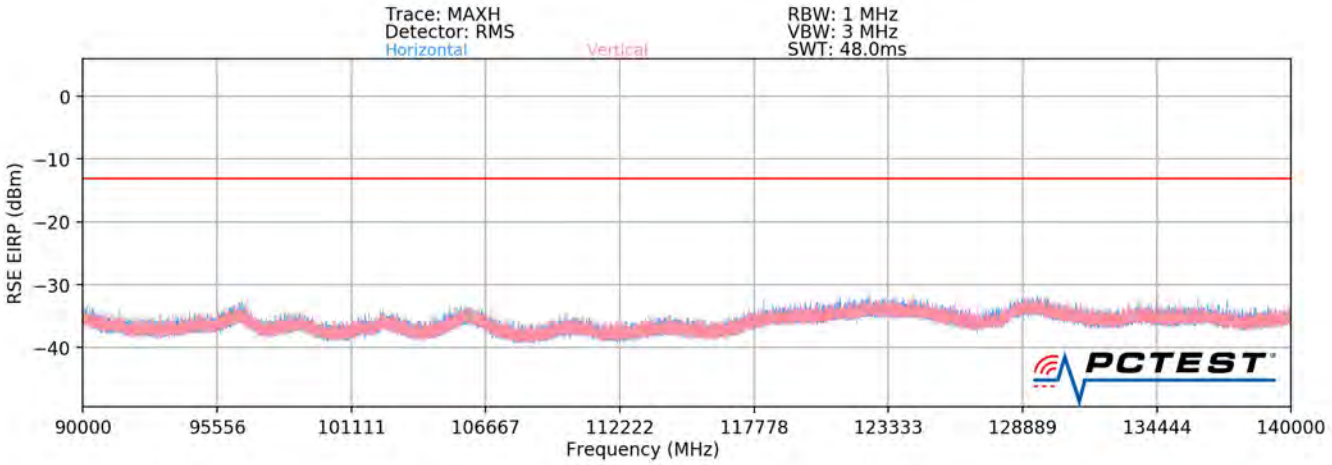
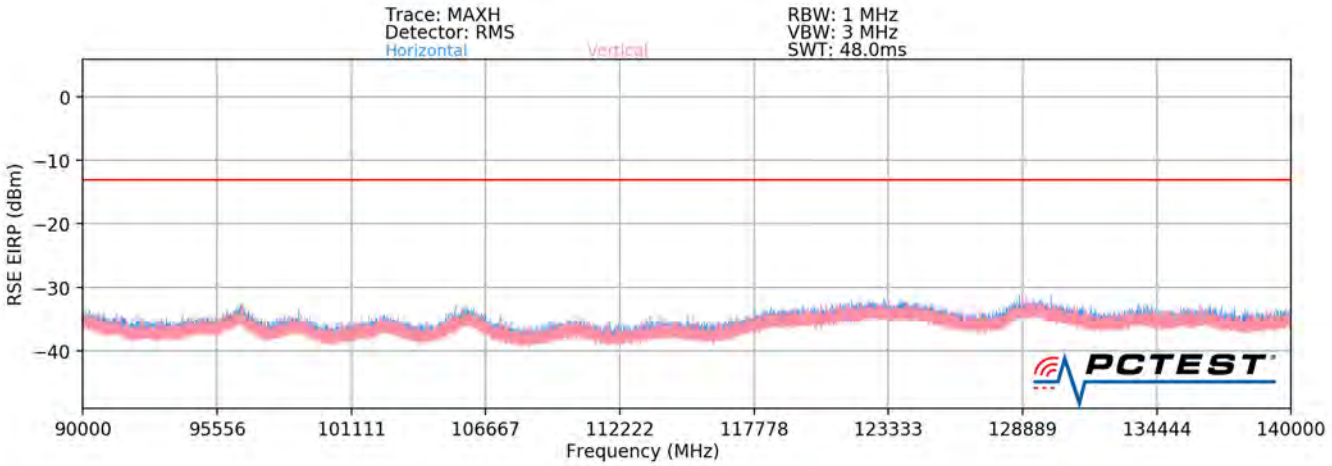
90GHz - 140GHz



Plot 7-179. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-180. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
110437.92	Low	50	H	QPSK	H	77	66	-37.10	-13.00	-24.10
110438.00	Low	50	V	QPSK	H	96	140	-37.62	-13.00	-24.62
114848.75	Mid	50	H	QPSK	H	86	153	-39.22	-13.00	-26.22
114849.00	Mid	50	V	QPSK	H	94	141	-38.47	-13.00	-25.47
119254.72	High	50	H	QPSK	H	106	134	-37.47	-13.00	-24.47
119255.00	High	50	V	QPSK	H	41	86	-36.17	-13.00	-23.17

Table 7-121. Ant2 - SISO -Spurious Emissions Table (90GHz - 140GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-34.34	-13.00	-21.34
Mid	50	QPSK	-35.82	-13.00	-22.82
High	50	QPSK	-33.76	-13.00	-20.76

Table 7-122. Ant2 - MIMO -Spurious Emissions Table (90GHz - 140GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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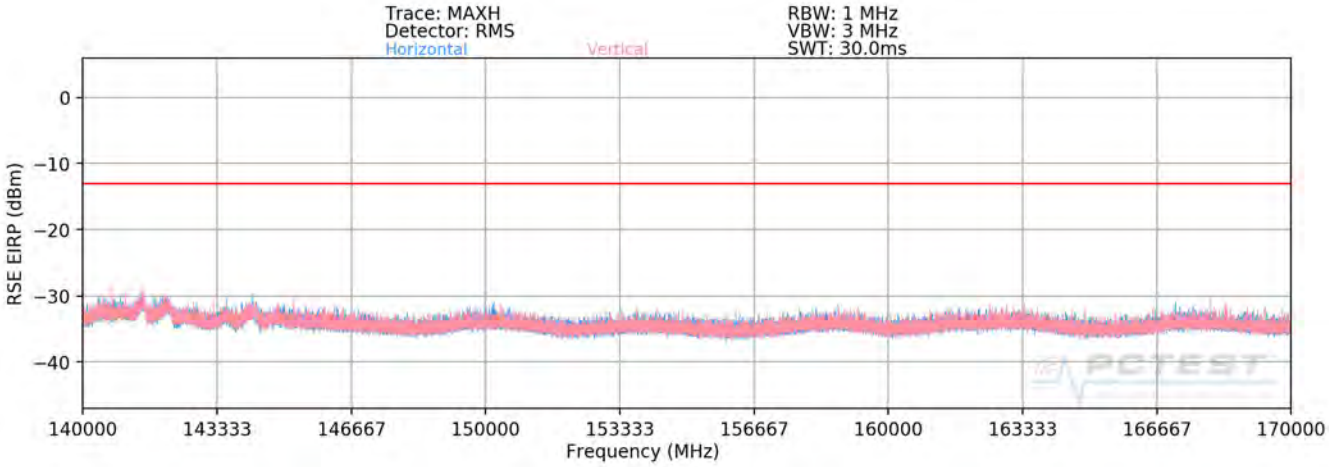
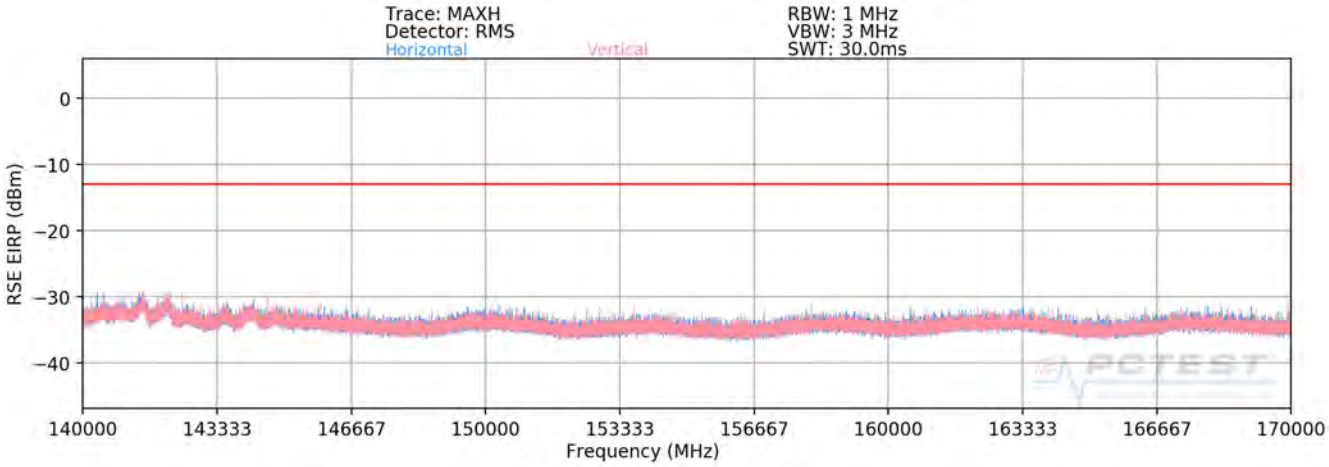
140GHz - 170GHz



Plot 7-181. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-182. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
141492.00	Low	50	H	QPSK	H	-	-	-36.73	-13.00	-23.73
141503.50	Low	50	V	QPSK	V	-	-	-36.52	-13.00	-23.52
141496.00	Mid	50	H	QPSK	H	-	-	-36.61	-13.00	-23.61
141496.00	Mid	50	V	QPSK	V	-	-	-36.40	-13.00	-23.40
141496.00	High	50	H	QPSK	H	-	-	-36.61	-13.00	-23.61
141435.00	High	50	V	QPSK	V	-	-	-36.25	-13.00	-23.25

Table 7-123. Ant2 - SISO -Spurious Emissions Table (140GHz - 170GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-33.61	-13.00	-20.61
Mid	50	QPSK	-33.49	-13.00	-20.49
High	50	QPSK	-33.42	-13.00	-20.42

Table 7-124. Ant2 - MIMO -Spurious Emissions Table (140GHz - 170GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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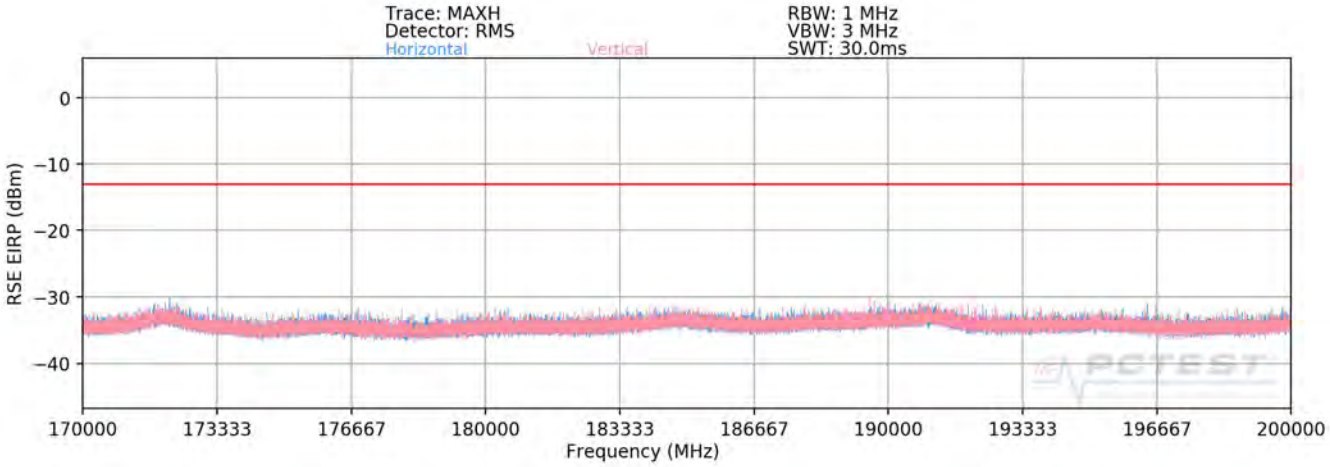
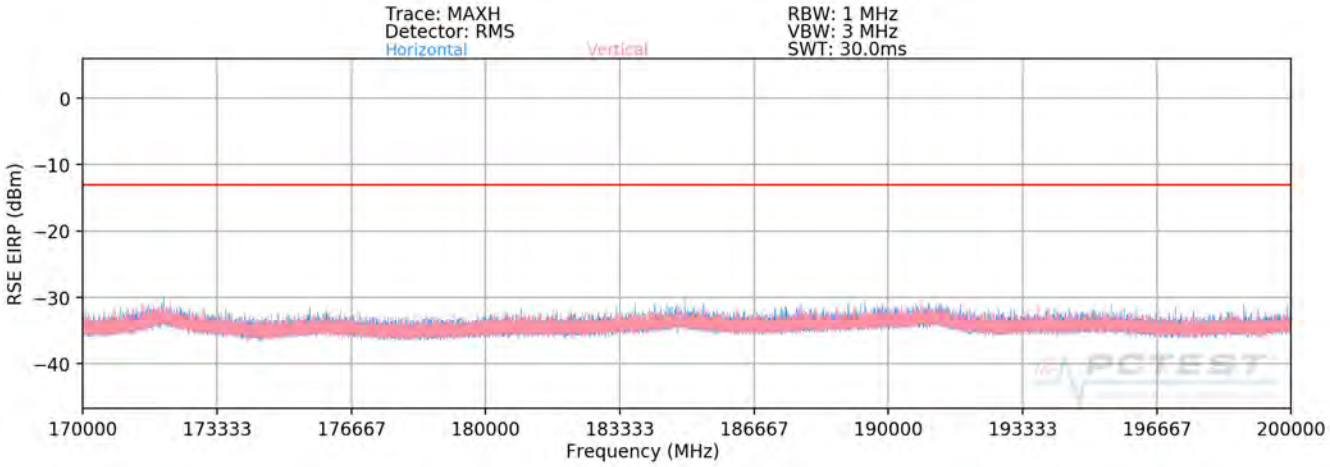
170GHz - 200GHz



Plot 7-183. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-184. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
191102.00	Low	50	H	QPSK	H	-	-	-38.51	-13.00	-25.51
171925.00	Low	50	V	QPSK	V	-	-	-38.36	-13.00	-25.36
190958.00	Mid	50	H	QPSK	H	-	-	-38.22	-13.00	-25.22
171714.50	Mid	50	V	QPSK	V	-	-	-38.36	-13.00	-25.36
171963.50	High	50	H	QPSK	H	-	-	-38.25	-13.00	-25.25
171965.00	High	50	V	QPSK	V	-	-	-38.23	-13.00	-25.23

Table 7-125. Ant2 - SISO -Spurious Emissions Table (170GHz - 200GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-35.42	-13.00	-22.42
Mid	50	QPSK	-35.28	-13.00	-22.28
High	50	QPSK	-35.23	-13.00	-22.23

Table 7-126. Ant2 - MIMO -Spurious Emissions Table (170GHz - 200GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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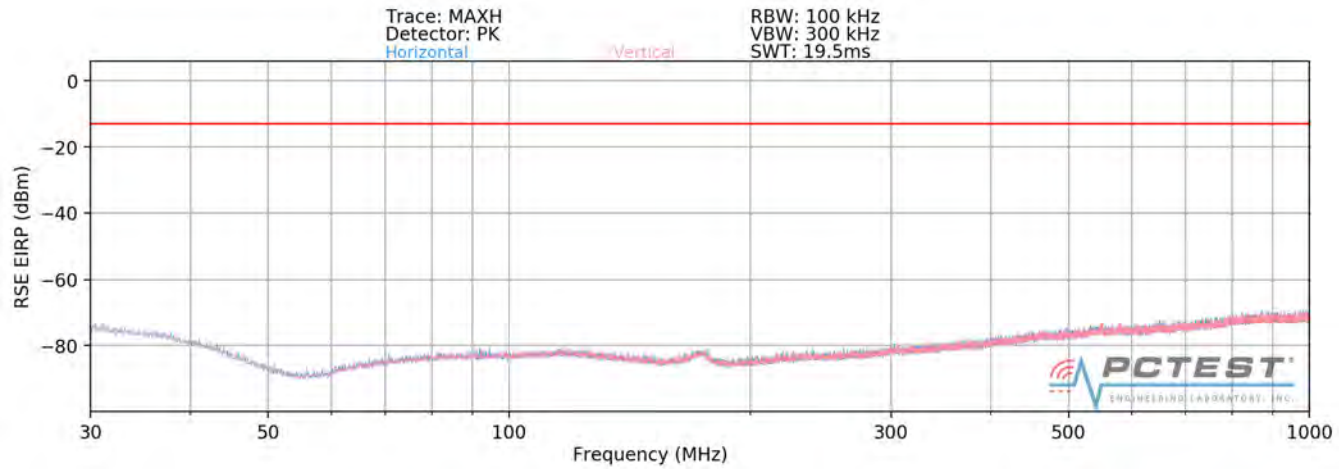
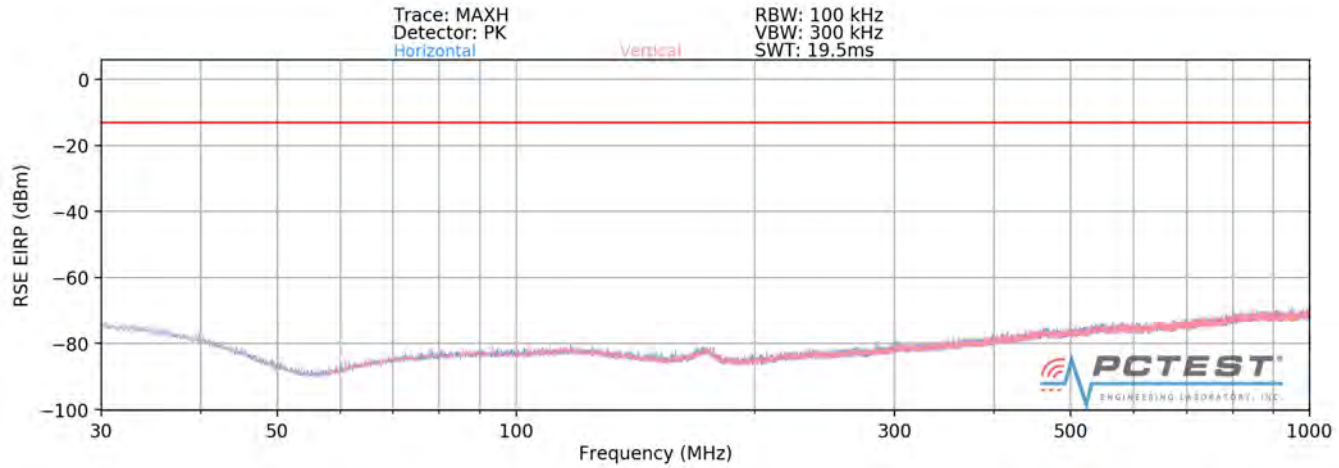
Band n260- Ant3
30MHz - 1GHz



Plot 7-185. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-186. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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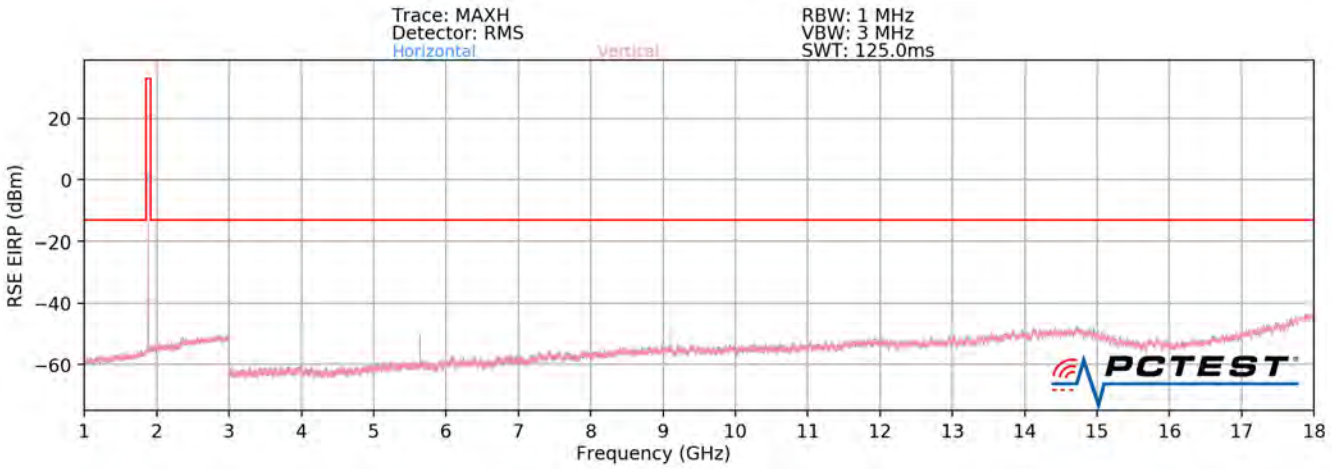
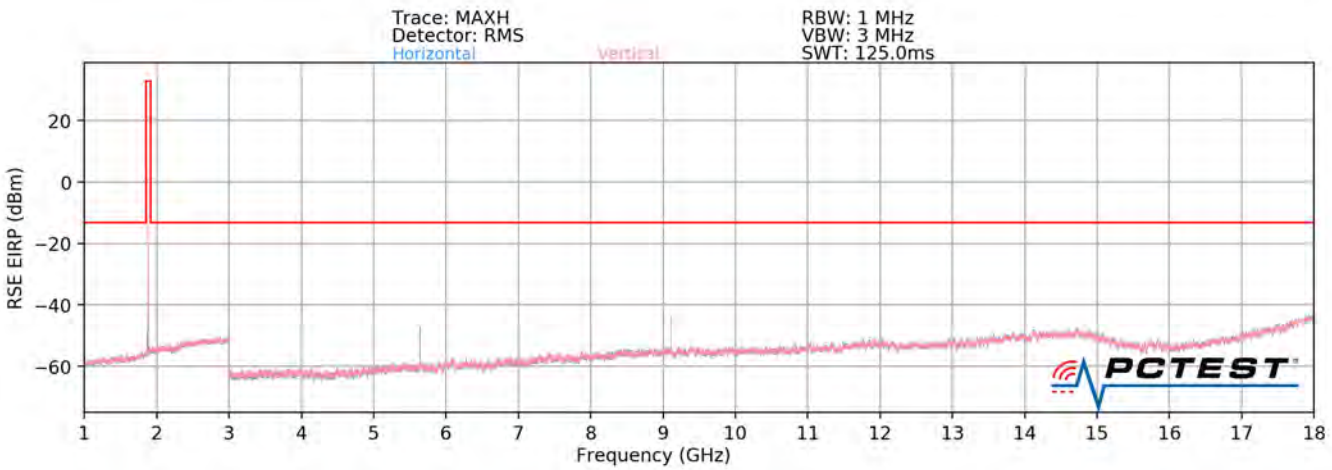
1GHz - 18GHz



Plot 7-187. Ant3-n260 Radiated Spurious Plot(1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-188. Ant3-n260 Radiated Spurious Plot(1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
8407.15	Low	50	H	QPSK	V	291	22	-47.30	-13.00	-34.30
8407.15	Low	50	V	QPSK	H	217	58	-45.79	-13.00	-32.79
9109.17	Mid	50	H	QPSK	V	395	29	-46.41	-13.00	-33.41
9109.17	Mid	50	V	QPSK	H	235	48	-42.32	-13.00	-29.32
9144.46	High	50	H	QPSK	V	144	16	-48.96	-13.00	-35.96
9144.46	High	50	V	QPSK	H	242	50	-43.16	-13.00	-30.16

Table 7-127. Ant3 - SISO -Spurious Emissions Table (1GHz - 18GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-43.47	-13.00	-30.47
Mid	50	QPSK	-40.89	-13.00	-27.89
High	50	QPSK	-42.15	-13.00	-29.15

Table 7-128. Ant3 - MIMO -Spurious Emissions Table (1GHz - 18GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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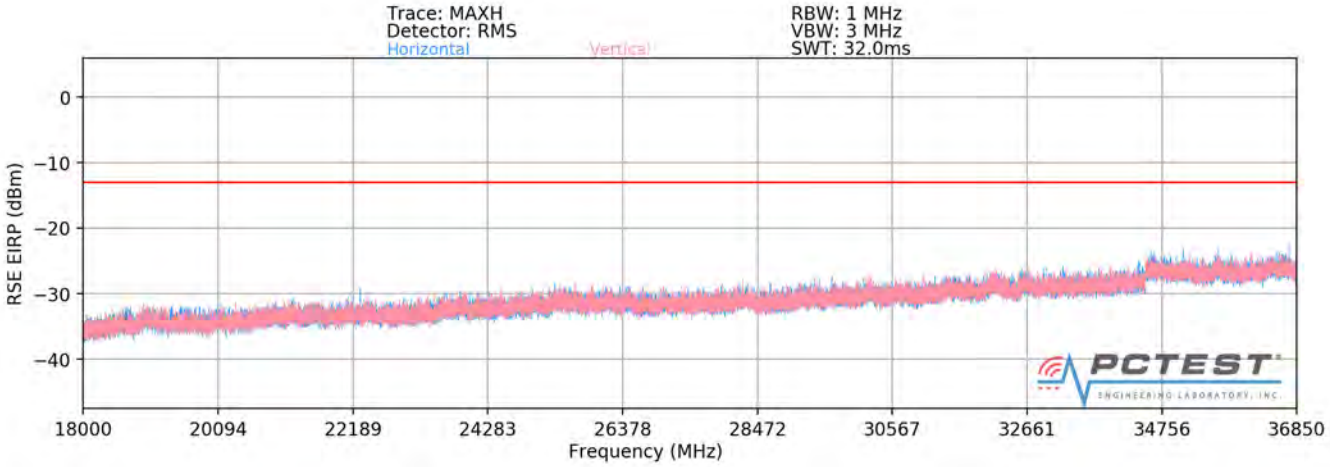
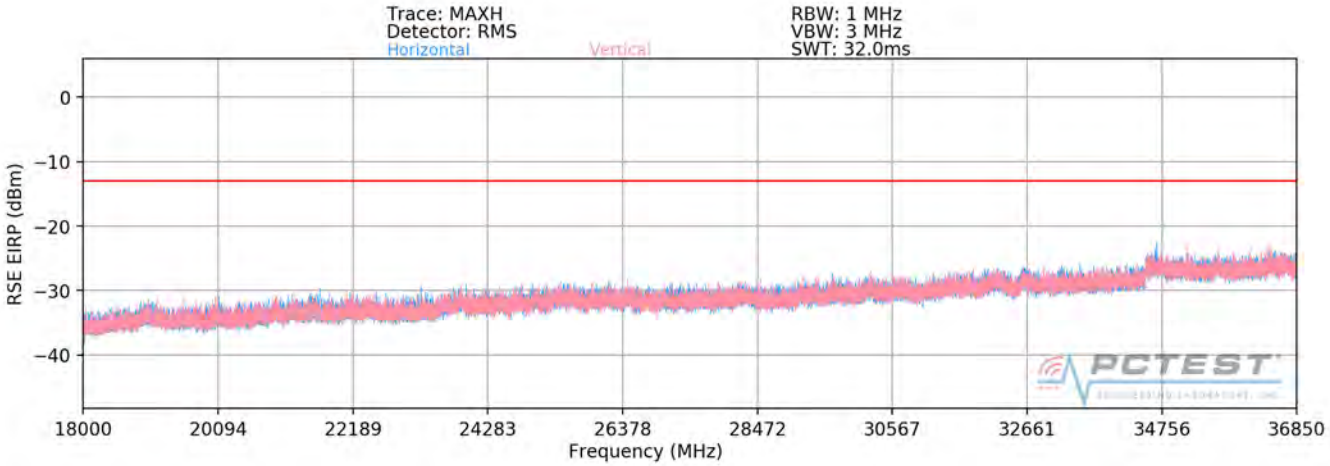
18GHz – 36.85GHz



Plot 7-189. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-190. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
36720.10	Low	50	H	QPSK	V	153	298	-26.03	-13.00	-13.03
36720.10	Low	50	V	QPSK	H	160	312	-28.75	-13.00	-15.75
36459.71	Mid	50	H	QPSK	V	-	-	-31.68	-13.00	-18.68
36498.72	Mid	50	V	QPSK	H	-	-	-31.75	-13.00	-18.75
36676.92	High	50	H	QPSK	V	-	-	-31.69	-13.00	-18.69
36.467.47	High	50	V	QPSK	H	-	-	-31.65	-13.00	-18.65

Table 7-129. Ant3 - SISO -Spurious Emissions Table (18GHz – 36.85GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-24.17	-13.00	-11.17
Mid	50	QPSK	-28.70	-13.00	-15.70
High	50	QPSK	-28.66	-13.00	-15.66

Table 7-130. Ant3 - MIMO -Spurious Emissions Table (18GHz – 36.85GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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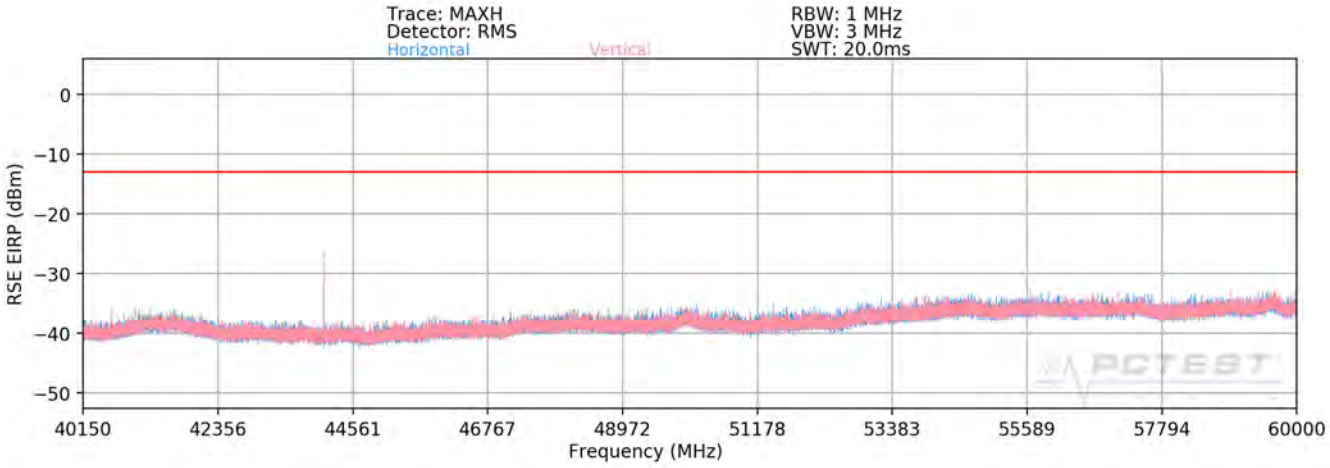
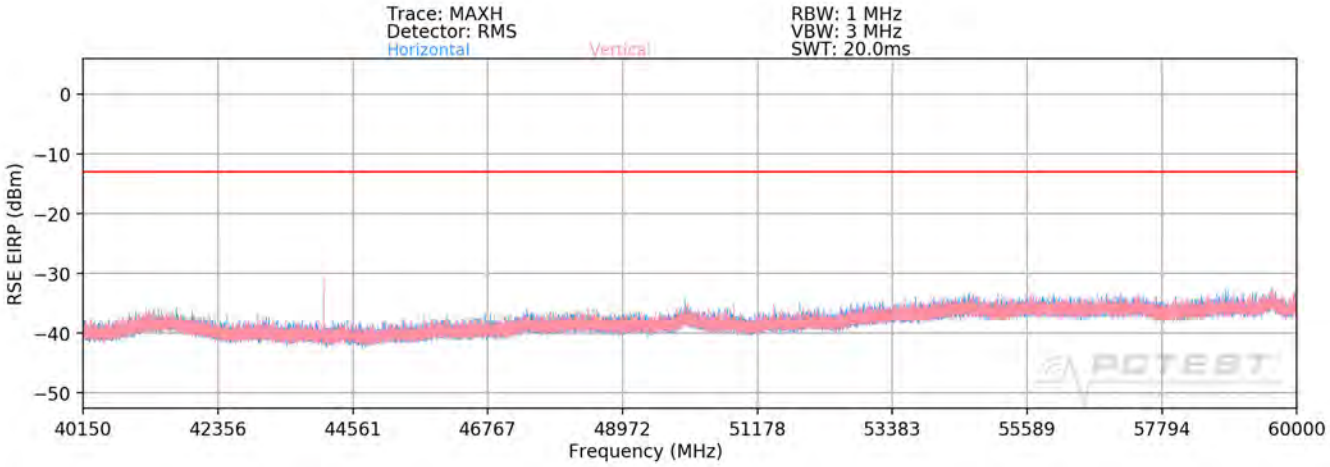
40.15GHz - 60GHz



Plot 7-191. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-192. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1.5 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
42931.00	Low	50	H	QPSK	V	61	19	-27.04	-13.00	-14.04
42931.00	Low	50	V	QPSK	V	90	321	-31.78	-13.00	-18.78
44083.00	Mid	50	H	QPSK	V	61	23	-27.57	-13.00	-14.57
44083.00	Mid	50	V	QPSK	V	95	340	-27.21	-13.00	-14.21
46233.50	High	50	H	QPSK	V	65	26	-34.39	-13.00	-21.39
46233.50	High	50	V	QPSK	V	92	4	-38.79	-13.00	-25.79

Table 7-131. Ant3 - SISO -Spurious Emissions Table (40.15GHz - 60GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-25.78	-13.00	-12.78
Mid	50	QPSK	-24.37	-13.00	-11.37
High	50	QPSK	-33.05	-13.00	-20.05

Table 7-132. Ant3 - MIMO -Spurious Emissions Table (40.15GHz - 60GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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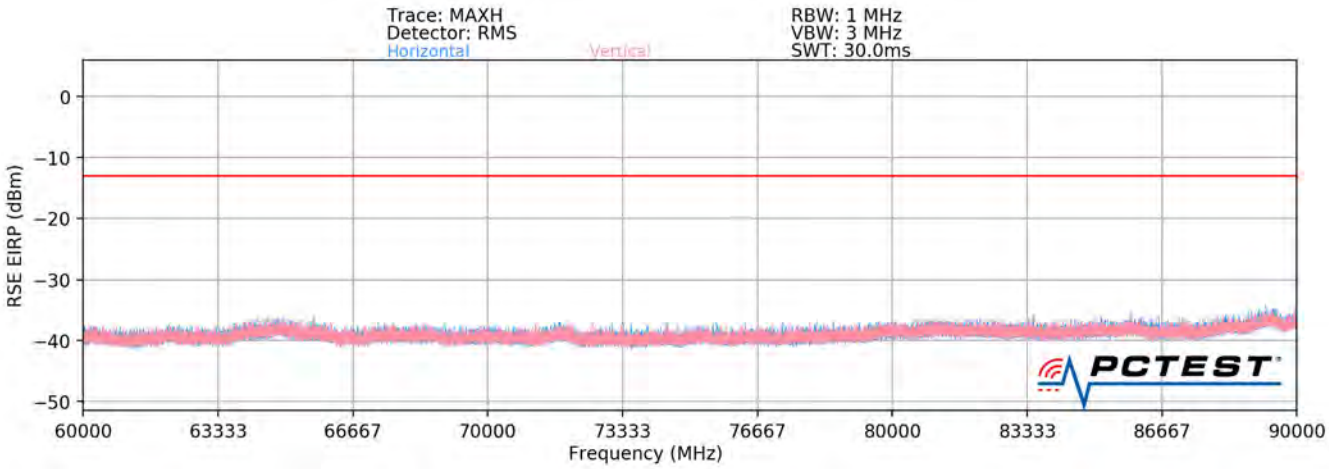
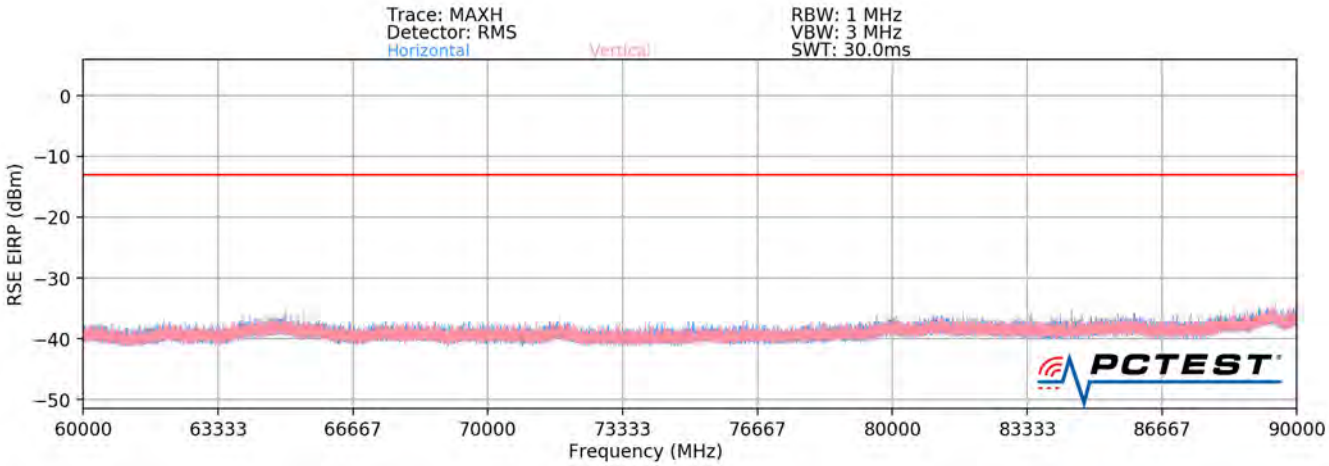
60GHz - 90GHz



Plot 7-193. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-194. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74055.72	Low	50	H	QPSK	H	335	22	-39.78	-13.00	-26.78
74055.90	Low	50	V	QPSK	H	19	227	-38.85	-13.00	-25.85
76996.32	Mid	50	H	QPSK	H	4	321	-44.09	-13.00	-31.09
76996.17	Mid	50	V	QPSK	H	232	6	-43.67	-13.00	-30.67
79935.39	High	50	H	QPSK	H	-	-	-44.44	-13.00	-31.44
79.942.53	High	50	V	QPSK	H	-	-	-44.31	-13.00	-31.31

Table 7-133. Ant1 - SISO -Spurious Emissions Table (60GHz - 90GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-36.28	-13.00	-23.28
Mid	50	QPSK	-40.86	-13.00	-27.86
High	50	QPSK	-41.36	-13.00	-28.36

Table 7-134. Ant1 - MIMO -Spurious Emissions Table (60GHz - 90GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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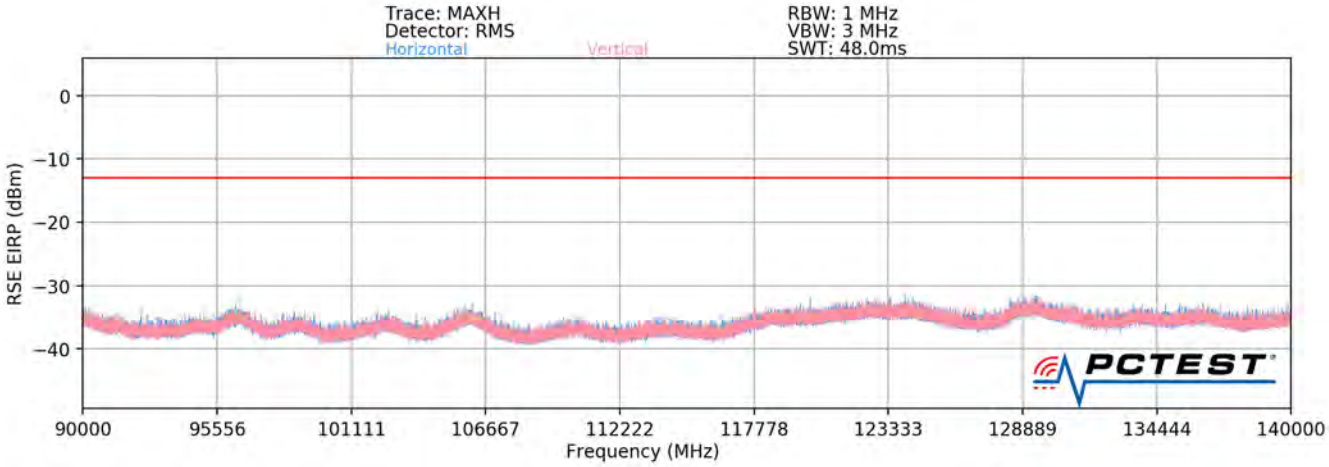
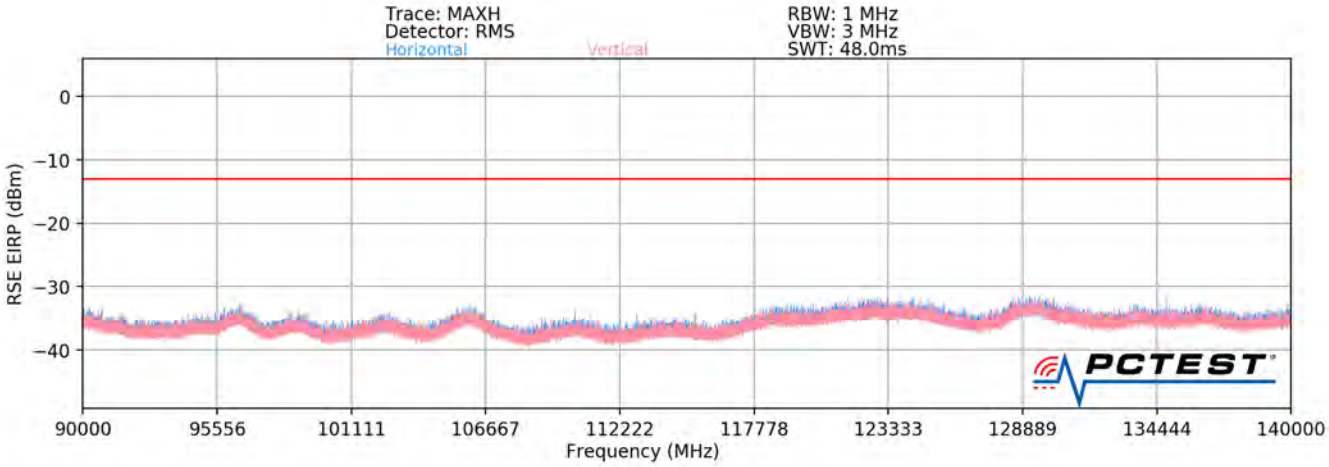
90GHz - 140GHz



Plot 7-195. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-196. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
111083.58	Low	50	H	QPSK	H	97	358	-31.94	-13.00	-18.94
111083.55	Low	50	V	QPSK	H	7	22	-36.98	-13.00	-23.98
111495.32	Mid	50	H	QPSK	H	94	327	-39.97	-13.00	-26.97
111495.32	Mid	50	V	QPSK	H	34	321	-38.85	-13.00	-25.85
119901.22	High	50	H	QPSK	H	79	355	-35.80	-13.00	-22.80
119901.50	High	50	V	QPSK	H	15	29	-35.71	-13.00	-22.71

Table 7-135. Ant3 - SISO -Spurious Emissions Table (90GHz - 140GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-30.76	-13.00	-17.76
Mid	50	QPSK	-36.36	-13.00	-23.36
High	50	QPSK	-32.74	-13.00	-19.74

Table 7-136. Ant3 - MIMO -Spurious Emissions Table (90GHz - 140GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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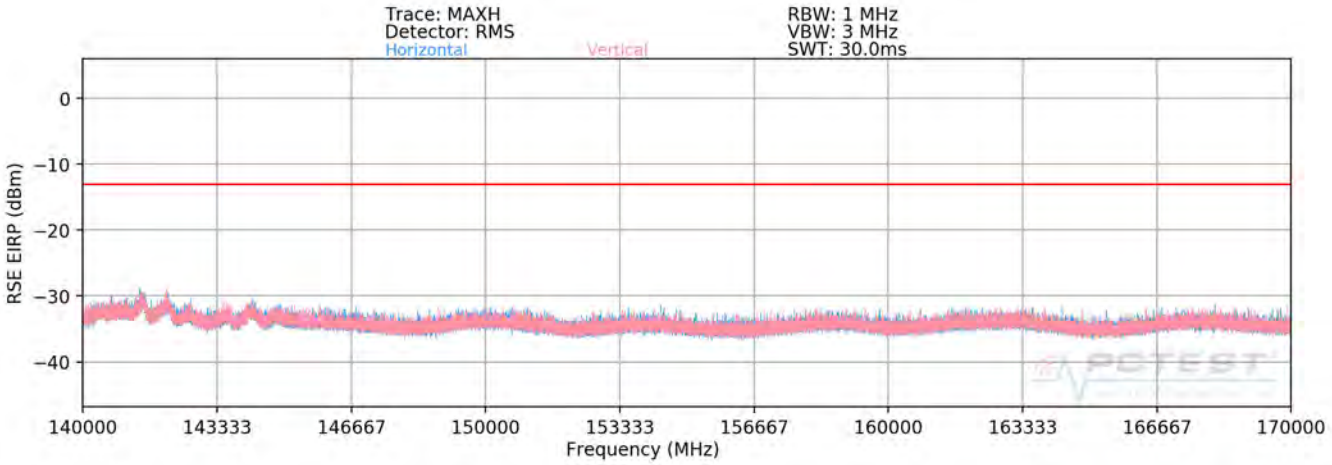
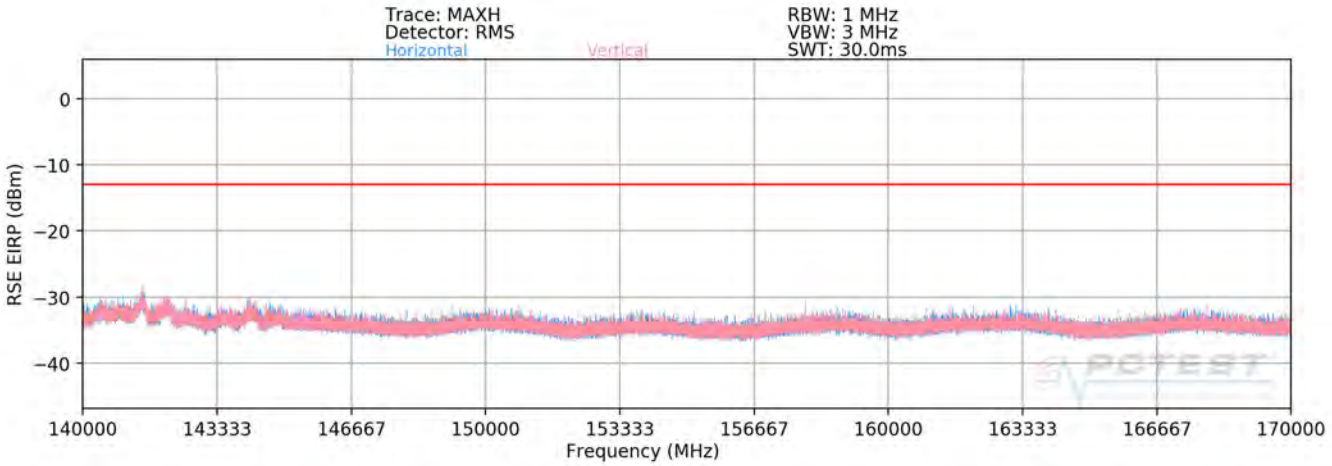
140GHz - 170GHz



Plot 7-197. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-198. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
141487.50	Low	50	H	QPSK	V	-	-	-36.31	-13.00	-23.31
141495.00	Low	50	V	QPSK	H	-	-	-36.47	-13.00	-23.47
141464.00	Mid	50	H	QPSK	V	-	-	-36.45	-13.00	-23.45
141472.00	Mid	50	V	QPSK	H	-	-	-36.60	-13.00	-23.60
141455.50	High	50	H	QPSK	V	-	-	-36.40	-13.00	-23.40
141483.50	High	50	V	QPSK	H	-	-	-36.45	-13.00	-23.45

Table 7-137. Ant3 - SISO -Spurious Emissions Table (140GHz - 170GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-33.38	-13.00	-20.38
Mid	50	QPSK	-33.51	-13.00	-20.51
High	50	QPSK	-33.41	-13.00	-20.41

Table 7-138. Ant3 - MIMO -Spurious Emissions Table (140GHz - 170GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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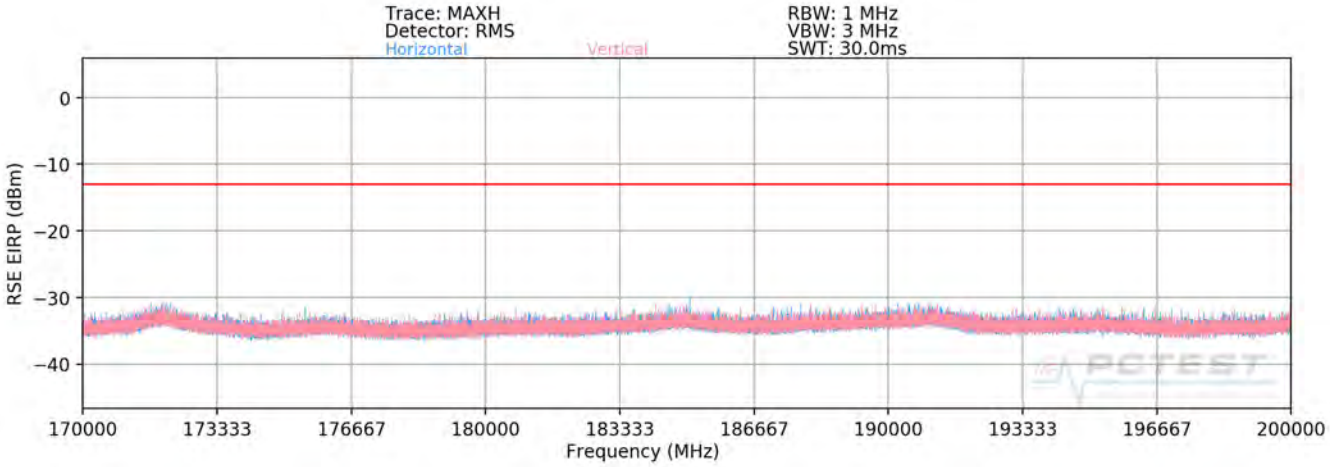
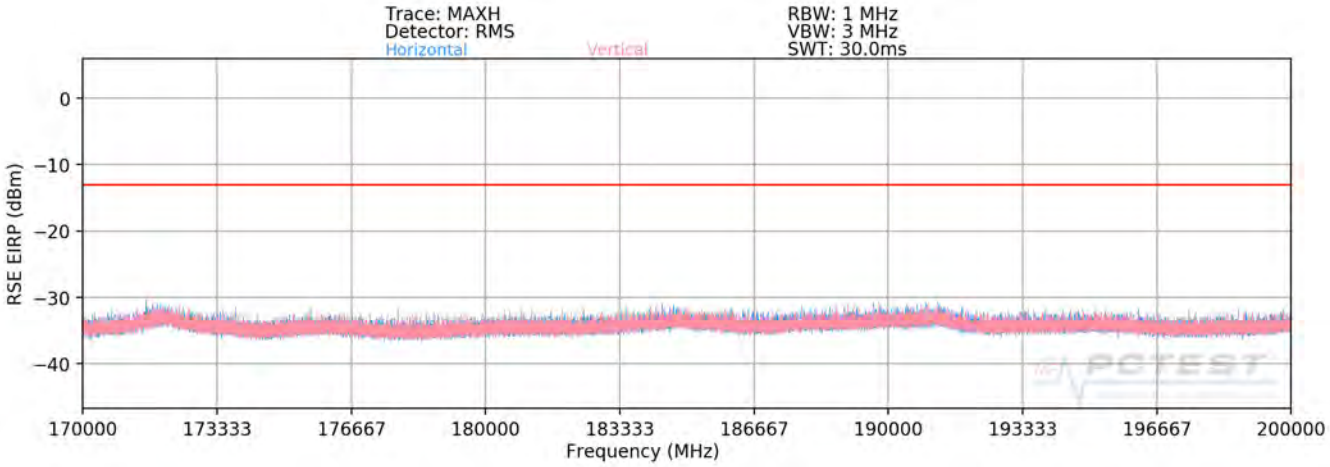
170GHz - 200GHz



Plot 7-199. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-200. Ant3-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
191258.00	Low	50	H	QPSK	V	-	-	-38.25	-13.00	-25.25
172071.50	Low	50	V	QPSK	H	-	-	-38.51	-13.00	-25.51
172058.00	Mid	50	H	QPSK	V	-	-	-38.51	-13.00	-25.51
172038.00	Mid	50	V	QPSK	H	-	-	-38.23	-13.00	-25.23
190942.50	High	50	H	QPSK	V	-	-	-38.17	-13.00	-25.17
171988.50	High	50	V	QPSK	H	-	-	-38.23	-13.00	-25.23

Table 7-139. Ant3 - SISO -Spurious Emissions Table (170GHz - 200GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-35.37	-13.00	-22.37
Mid	50	QPSK	-35.36	-13.00	-22.36
High	50	QPSK	-35.19	-13.00	-22.19

Table 7-140. Ant3 - MIMO -Spurious Emissions Table (170GHz - 200GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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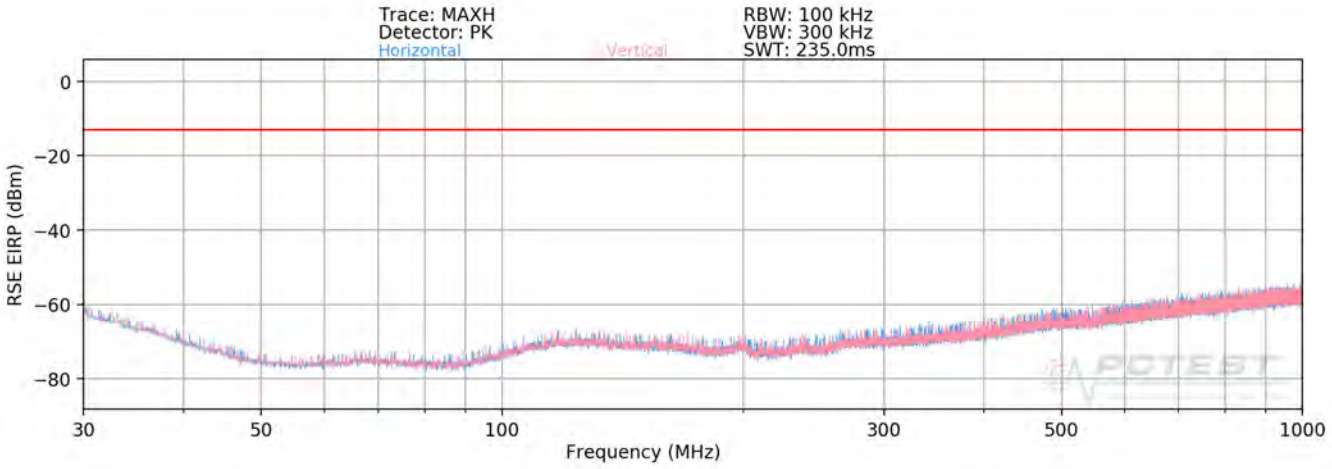
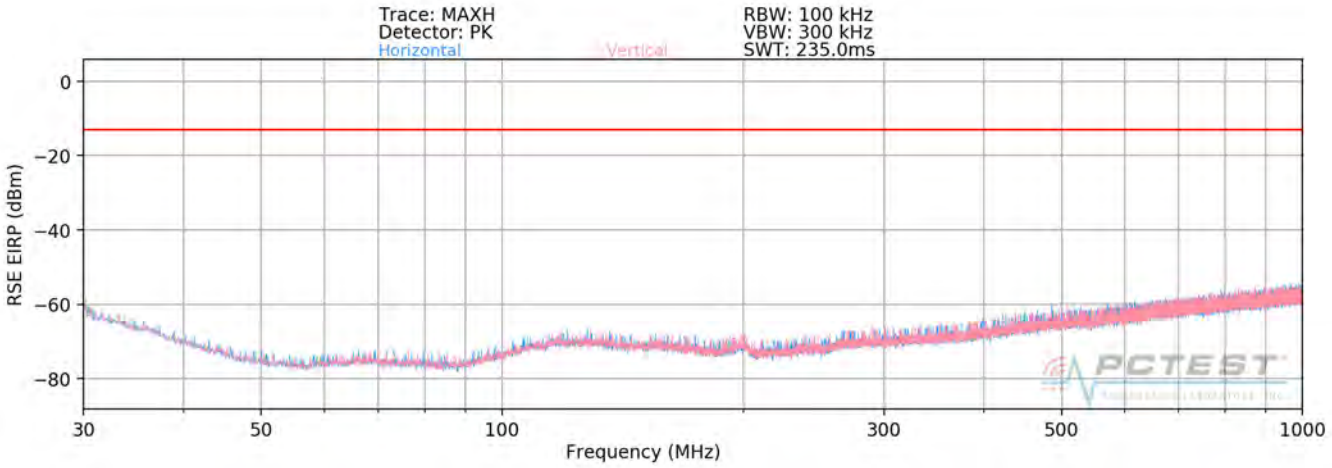
Band n260- Ant4
30MHz - 1GHz



Plot 7-201. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-202. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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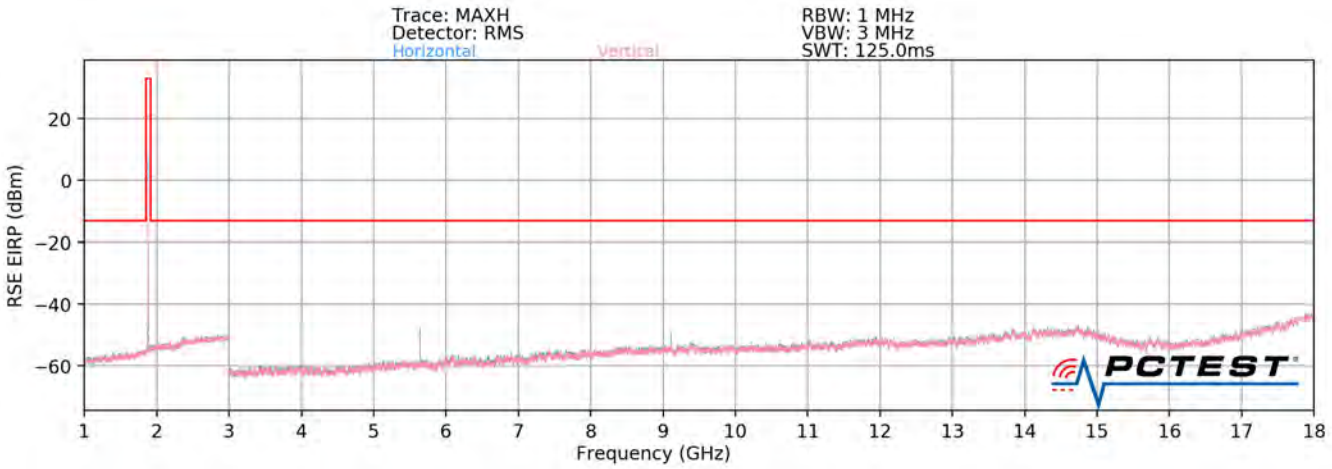
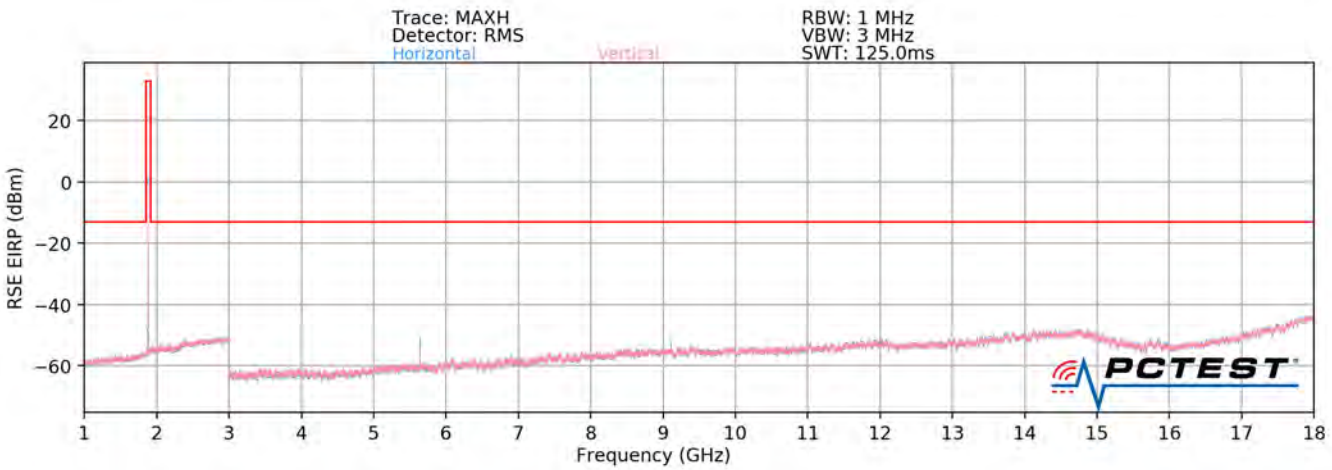
1GHz - 18GHz



Plot 7-203. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-204. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
8407.15	Low	50	H	QPSK	V	328	10	-45.95	-13.00	-32.95
8407.15	Low	50	V	QPSK	H	186	108	-48.69	-13.00	-35.69
9109.17	Mid	50	H	QPSK	V	112	40	-48.22	-13.00	-35.22
9109.17	Mid	50	V	QPSK	H	162	13	-50.02	-13.00	-37.02
9144.46	High	50	H	QPSK	V	112	42	-47.01	-13.00	-34.01
9144.46	High	50	V	QPSK	H	169	12	-50.39	-13.00	-37.39

Table 7-141. Ant4 - SISO -Spurious Emissions Table (1GHz - 18GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-44.10	-13.00	-31.10
Mid	50	QPSK	-46.02	-13.00	-33.02
High	50	QPSK	-45.37	-13.00	-32.37

Table 7-142. Ant4 - MIMO -Spurious Emissions Table (1GHz - 18GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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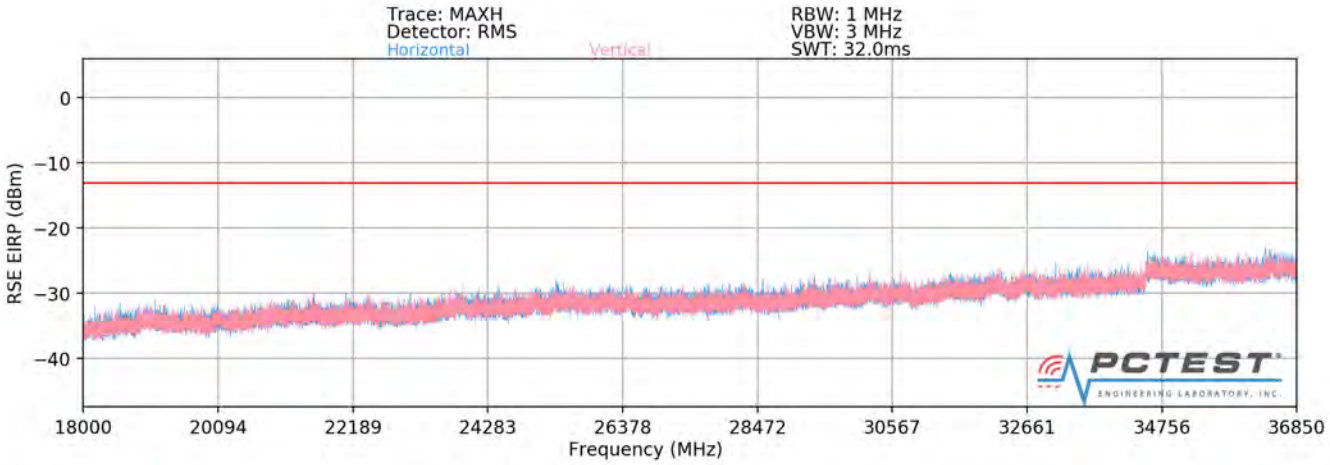
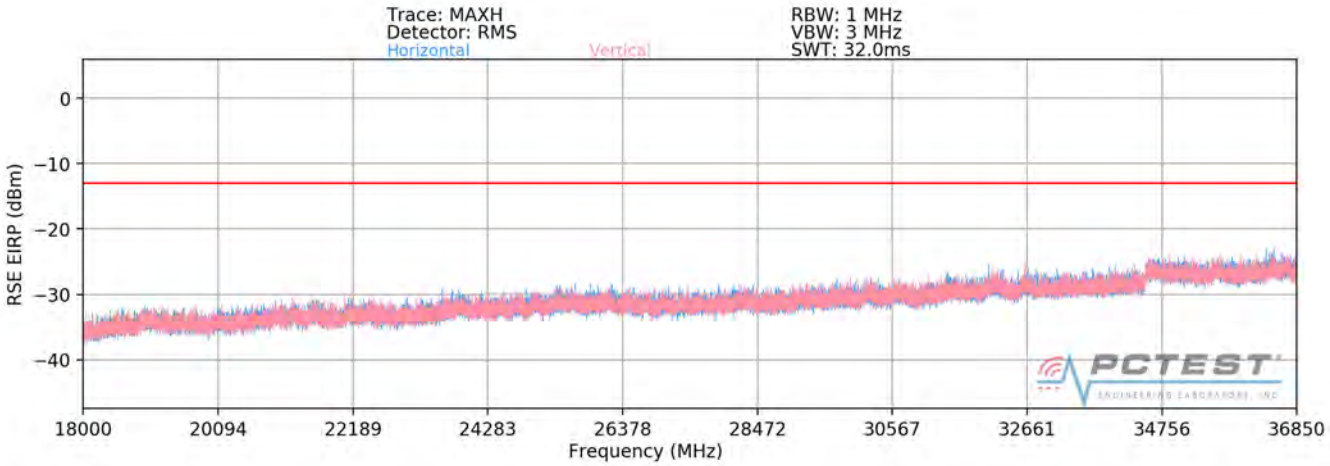
18GHz – 36.85GHz



Plot 7-205. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-206. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
36720.67	Low	50	H	QPSK	H	240	27	-28.10	-13.00	-15.10
36720.10	Low	50	V	QPSK	V	214	50	-27.19	-13.00	-14.19
36409.71	Mid	50	H	QPSK	H	-	-	-31.50	-13.00	-18.50
35608.47	Mid	50	V	QPSK	V	-	-	-31.71	-13.00	-18.71
36535.27	High	50	H	QPSK	H	-	-	-31.63	-13.00	-18.63
36636.20	High	50	V	QPSK	V	209	29	-31.10	-13.00	-18.10

Table 7-143. Ant4 - SISO -Spurious Emissions Table (18GHz – 36.85GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-24.61	-13.00	-11.61
Mid	50	QPSK	-28.60	-13.00	-15.60
High	50	QPSK	-28.35	-13.00	-15.35

Table 7-144. Ant4 - MIMO -Spurious Emissions Table (18GHz – 36.85GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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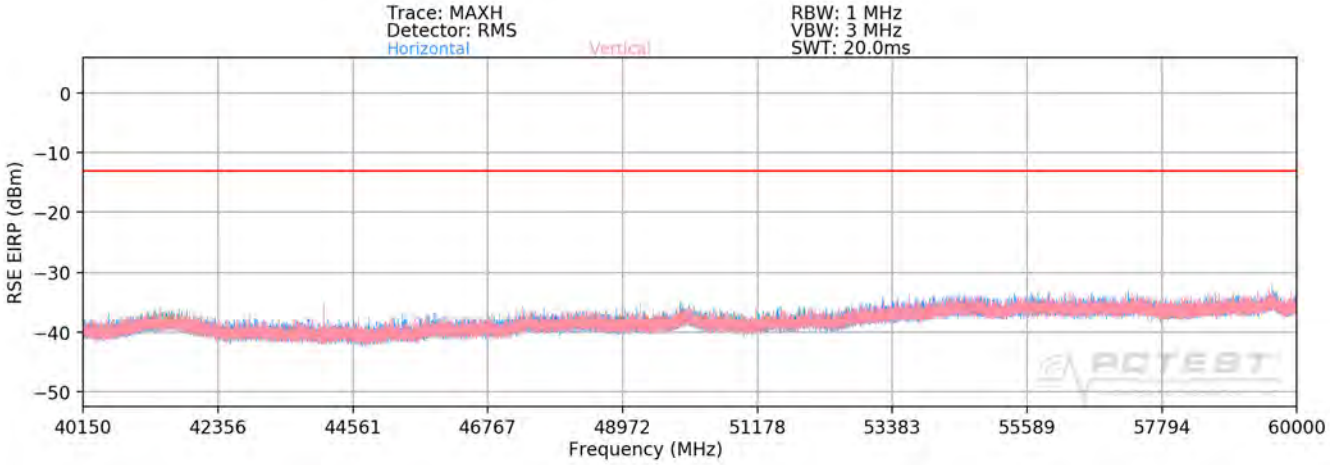
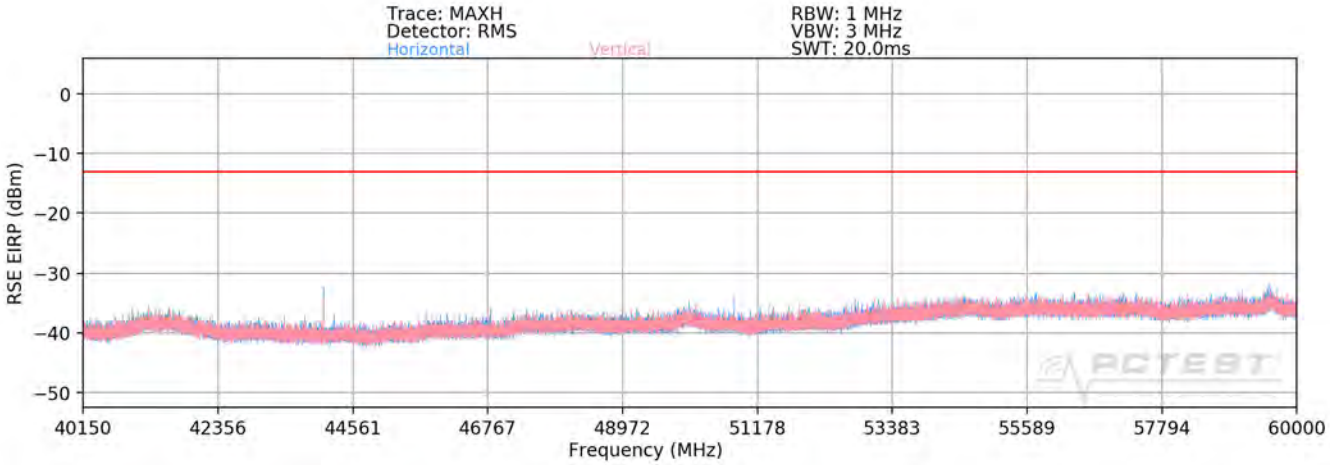
40.15GHz - 60GHz



Plot 7-207. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-208. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1.5 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
42931.00	Low	50	H	QPSK	H	333	318	-33.60	-13.00	-20.60
42931.00	Low	50	V	QPSK	H	2	215	-33.82	-13.00	-20.82
44083.00	Mid	50	H	QPSK	H	44	124	-35.95	-13.00	-22.95
44083.00	Mid	50	V	QPSK	H	29	82	-29.16	-13.00	-16.16
46233.50	High	50	H	QPSK	H	45	358	-41.51	-13.00	-28.51
46233.50	High	50	V	QPSK	H	33	33	-41.12	-13.00	-28.12

Table 7-145. Ant4 - SISO -Spurious Emissions Table (40.15GHz - 60GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-30.70	-13.00	-17.70
Mid	50	QPSK	-28.33	-13.00	-15.33
High	50	QPSK	-38.30	-13.00	-25.30

Table 7-146. Ant4 - MIMO -Spurious Emissions Table (40.15GHz - 60GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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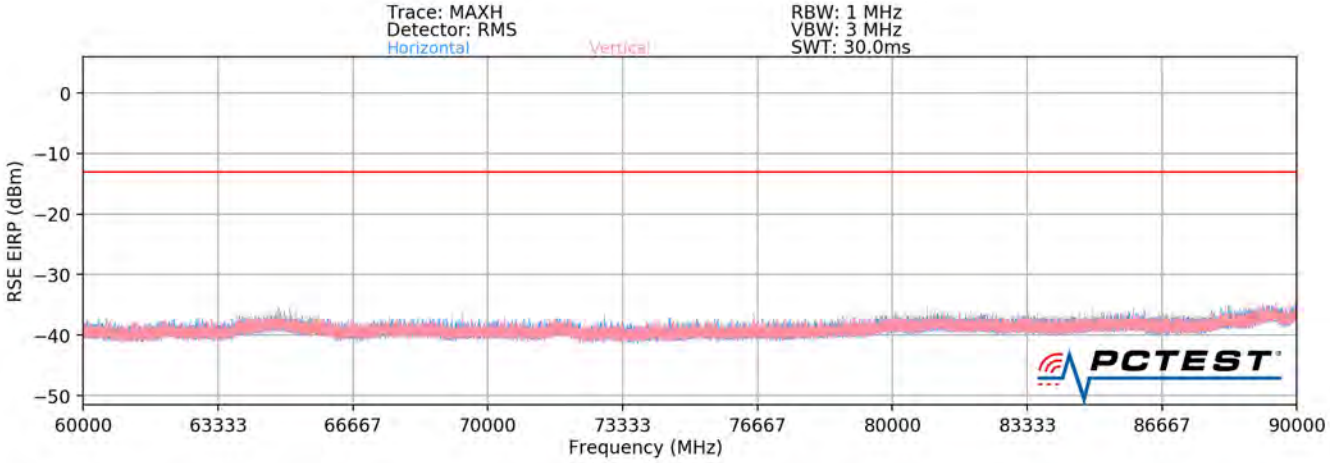
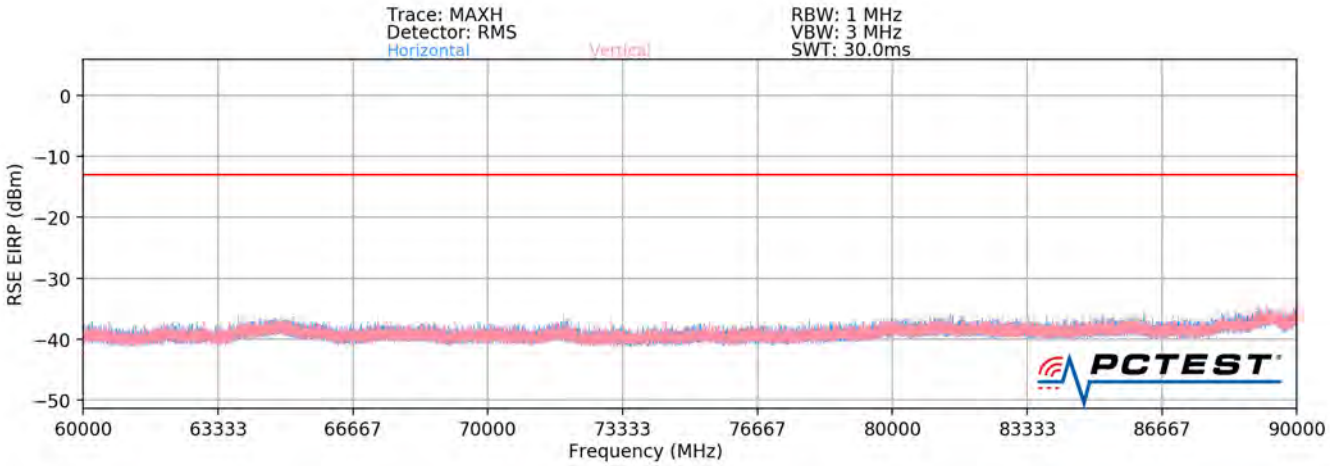
60GHz - 90GHz



Plot 7-209. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-210. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74058.87	Low	50	H	QPSK	H	111	217	-40.00	-13.00	-27.00
74058.72	Low	50	V	QPSK	H	33	336	-41.44	-13.00	-28.44
76999.11	Mid	50	H	QPSK	H	20	87	-43.00	-13.00	-30.00
76999.32	Mid	50	V	QPSK	H	26	337	-43.13	-13.00	-30.13
79943.85	High	50	H	QPSK	H	-	-	-43.25	-13.00	-30.25
79944.57	High	50	V	QPSK	H	-	-	-43.37	-13.00	-30.37

Table 7-147. Ant4 - SISO -Spurious Emissions Table (60GHz - 90GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-37.65	-13.00	-24.65
Mid	50	QPSK	-40.05	-13.00	-27.05
High	50	QPSK	-40.30	-13.00	-27.30

Table 7-148. Ant4 - MIMO -Spurious Emissions Table (60GHz - 90GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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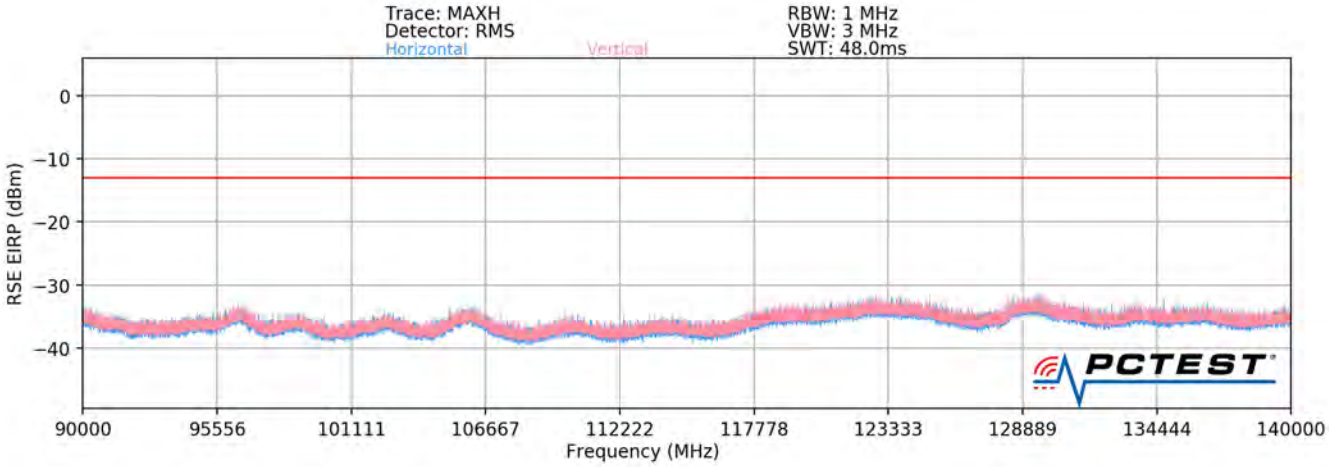
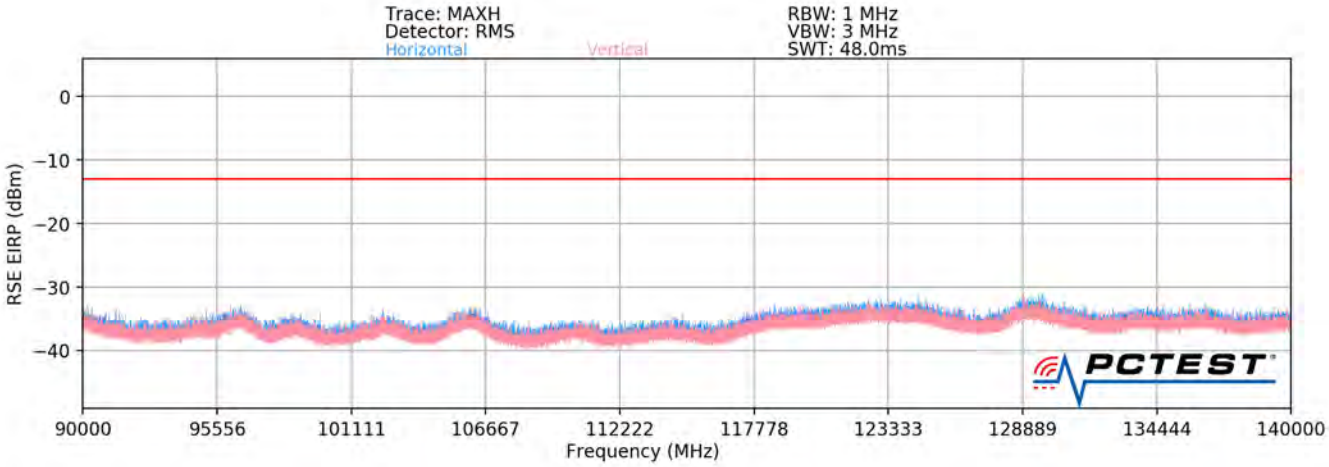
90GHz - 140GHz



Plot 7-211. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-212. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
111081.96	Low	50	H	QPSK	H	347	329	-34.87	-13.00	-21.87
111081.96	Low	50	V	QPSK	H	75	10	-36.53	-13.00	-23.53
115492.32	Mid	50	H	QPSK	H	320	6	-40.47	-13.00	-27.47
115492.32	Mid	50	V	QPSK	H	74	10	-37.95	-13.00	-24.95
119898.72	High	50	H	QPSK	H	13	16	-37.91	-13.00	-24.91
119898.72	High	50	V	QPSK	H	79	18	-37.11	-13.00	-24.11

Table 7-149. Ant4 - SISO -Spurious Emissions Table (90GHz - 140GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-32.61	-13.00	-19.61
Mid	50	QPSK	-36.02	-13.00	-23.02
High	50	QPSK	-34.48	-13.00	-21.48

Table 7-150. Ant4 - MIMO -Spurious Emissions Table (90GHz - 140GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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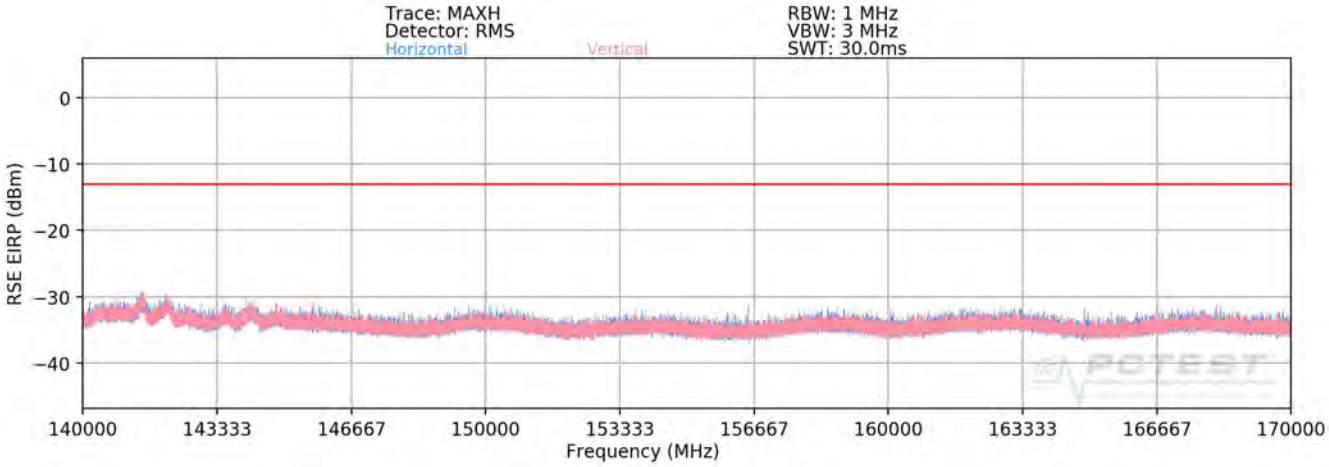
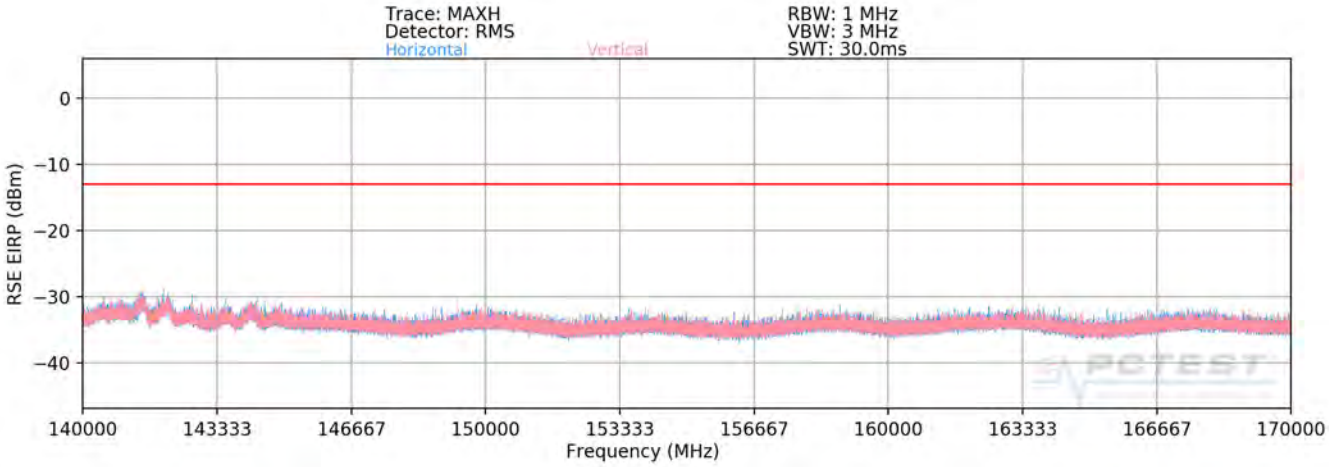
140GHz - 170GHz



Plot 7-213. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-214. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
141489.00	Low	50	H	QPSK	H	-	-	-36.43	-13.00	-23.43
141482.50	Low	50	V	QPSK	V	-	-	-36.23	-13.00	-23.23
141510.00	Mid	50	H	QPSK	H	-	-	-36.26	-13.00	-23.26
141463.00	Mid	50	V	QPSK	V	-	-	-36.27	-13.00	-23.27
141490.50	High	50	H	QPSK	H	-	-	-36.50	-13.00	-23.50
141490.00	High	50	V	QPSK	V	-	-	-36.24	-13.00	-23.24

Table 7-151. Ant4 - SISO -Spurious Emissions Table (140GHz - 170GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-33.32	-13.00	-20.32
Mid	50	QPSK	-33.25	-13.00	-20.25
High	50	QPSK	-33.36	-13.00	-20.36

Table 7-152. Ant4 - MIMO -Spurious Emissions Table (140GHz - 170GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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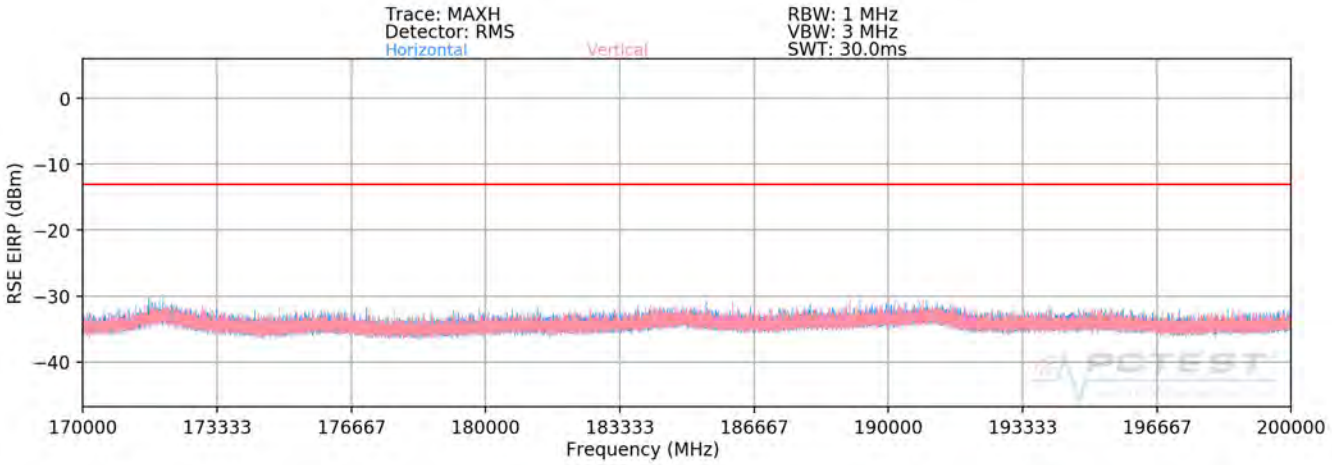
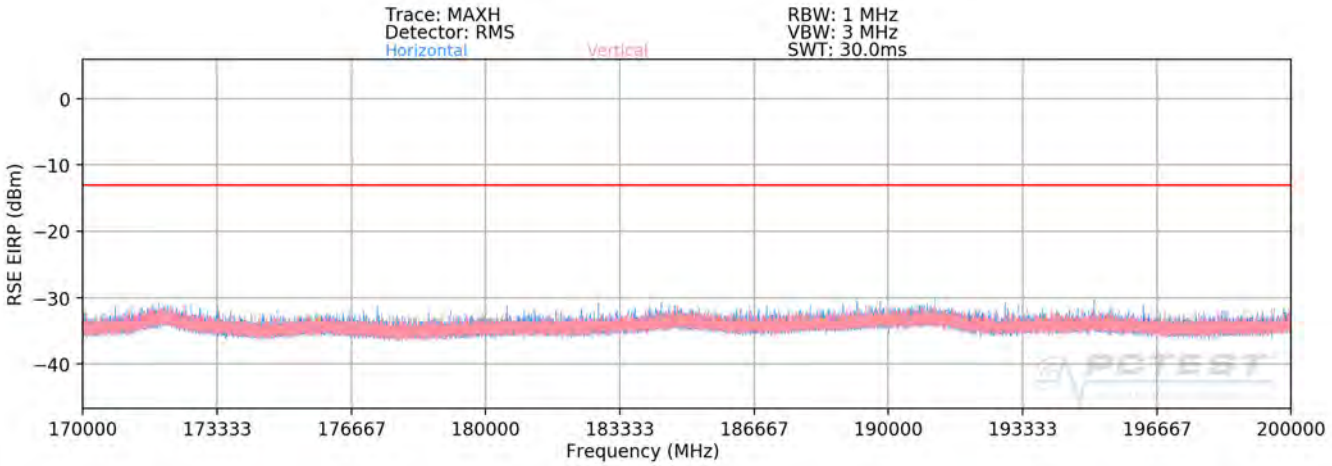
170GHz - 200GHz



Plot 7-215. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC Anchor Band 2)



Plot 7-216. Ant4-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC Anchor Band 2)

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Spurious Emissions EIRP Sample Calculation (n260)

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 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
191076.50	Low	50	H	QPSK	H	-	-	-38.08	-13.00	-25.08
190770.00	Low	50	V	QPSK	V	-	-	-38.38	-13.00	-25.38
190751.00	Mid	50	H	QPSK	H	-	-	-38.34	-13.00	-25.34
172010.00	Mid	50	V	QPSK	V	-	-	-38.26	-13.00	-25.26
171950.00	High	50	H	QPSK	H	-	-	-38.17	-13.00	-25.17
191117.00	High	50	V	QPSK	V	-	-	-38.36	-13.00	-25.36

Table 7-153. Ant4 - SISO -Spurious Emissions Table (170GHz - 200GHz)

Channnel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-35.22	-13.00	-22.22
Mid	50	QPSK	-35.29	-13.00	-22.29
High	50	QPSK	-35.25	-13.00	-22.25

Table 7-154. Ant4 - MIMO -Spurious Emissions Table (170GHz - 200GHz)

Notes

1. 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.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

EIRP(H Beam) + EIRP(V Beam) = EIRP(MIMO)

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7.5 Band Edge Emissions

§2.1051, §30.203

Test Overview

All out of band emissions are measured in a radiated setup while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All modulations were investigated to determine the worst case configuration. 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 v01 Section 4.4.2.5

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 ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 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 EUT was tested in three orthogonal planes and in all possible test configurations and positioning.
2) Band Edge measurements in this section are shown as equivalent conductive powers for direct comparison to the 30.203 limit. The condutive power at the band edge is calculated by subtracting the gain of the EUT's antenna from the measured EIRP level. Antenna Gain information is shown on the following page.
3) Band Edge emissions were measured at a 1 meter distance.
4) The spectrum analyzer for each measurement shows an offset value that was determined using the measurement antenna factor, cable loss, far field measurement distance, and EUT antenna gain. A sample calculation is shown on the following page.
5) The antenna gains applied to the measurements in the plots shown in this section are accurate for the displayed spectrum.
6) MIMO Band Edge plots shown below are mathematically summed conductive powers between spectrum analyzer measurements on H Beam and V Beam. This MIMO bandedge plot was produced by summing the following two spectrum analyzer traces: (1) the first trace is maximized while the EUT is transmitting in H-beam and (2) the second trace is maximized while the EUT is transmitting in V-beam.
7) The MIMO Band Edges were calculated by using the "measure and sum the spectra across the outputs" technique specified in Section 6.4.3.2.2 of ANSI C63.26-2015. The spectra were summed linearly and converted to dBm for comparison with the limit.

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Antenna Gain Information at the Band Edge

The following antenna gain information is provided to demonstrate the antenna performance of the 27.5 – 28.35GHz and 37 – 40GHz band. These antenna gains were subtracted from the measured EIRP levels at the lower and upper band edge frequencies to determine an equivalent conductive power that was compared directly with the §30.203 limits.

Antenna	Channel	Beam Polarization	Gain (dBi)
Ant1	Low	H	7.05
		V	6.66
	High	H	6.79
		V	6.96
Ant2	Low	H	10.36
		V	10.09
	High	H	9.92
		V	9.75
Ant3	Low	H	8.82
		V	7.92
	High	H	8.65
		V	7.94
Ant4	Low	H	8.77
		V	7.73
	High	H	9.12
		V	8.05

Table 7-155. Antenna Gains at the Band Edges(n261)

Antenna	Channel	Beam Polarization	Gain (dBi)
Ant1	Low	H	9.51
		V	8.09
	High	H	9.45
		V	6.47
Ant2	Low	H	10.60
		V	9.89
	High	H	10.03
		V	10.36
Ant3	Low	H	9.95
		V	10.25
	High	H	9.64
		V	10.36
Ant4	Low	H	10.24
		V	10.03
	High	H	9.29
		V	8.91

Table 7-156. Antenna Gains at the Band Edges(n260)

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Sample Analyzer Offset Calculation (at 27.5GHz)

Measurement Antenna Factor = 40.70dB/m

Cable Loss = 8.82dB

EUT Antenna Gain = 6.60dBi

Analyzer Offset (dB) = AF (dB/m) + CL (dB) + 107 + $20\log_{10}(D)$ – 104.8dB – Gain (dBi), where D = 1m

= 40.70dB/m + 8.82dB + 107 + $20\log_{10}(1m)$ – 104.8dB – 6.60dBi

= 45.12dB

Note:

While it is allowed to use the antenna gain subtraction method in the band edge as it is defined in Part 30, the device meets the requirements via early exit condition as specified in KDB publication 842590 D01.

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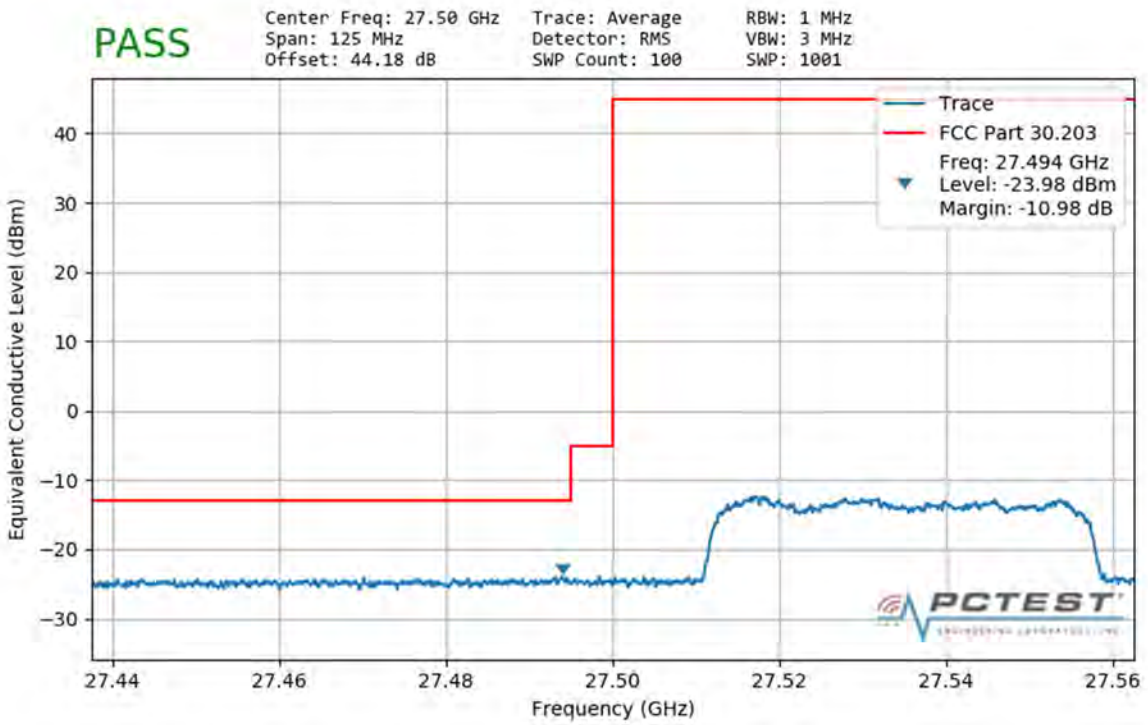
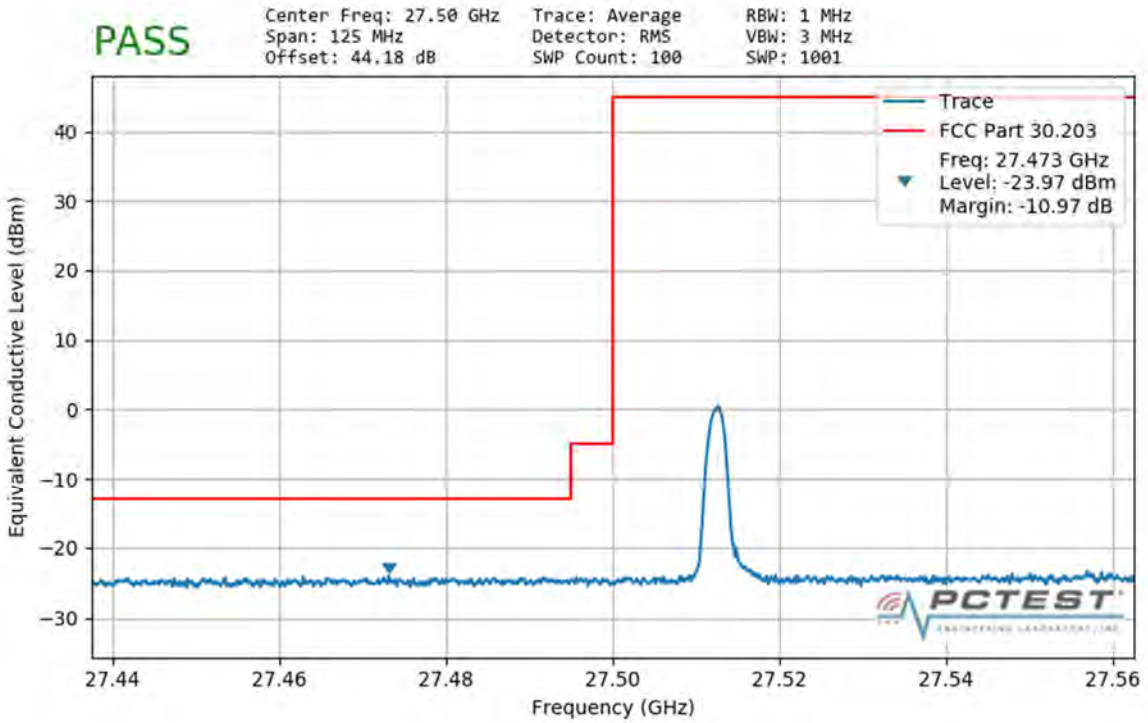
Band n261 - MIMO



Plot 7-217. Ant1 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-218. Ant1 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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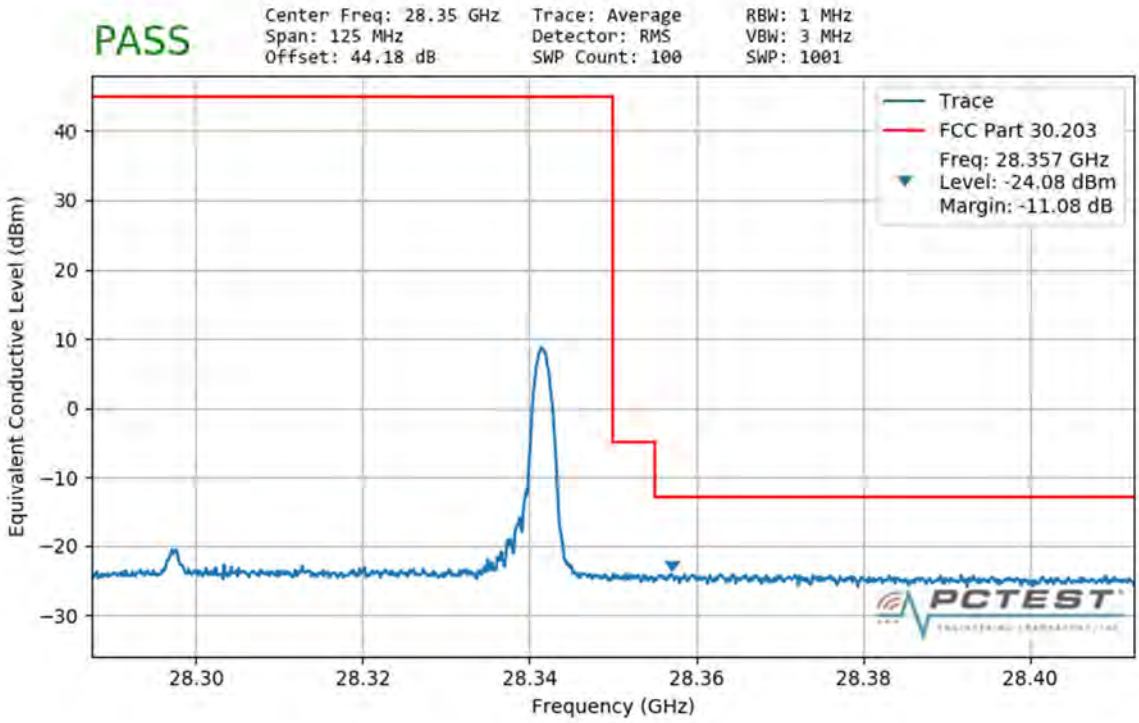
Plot 7-219. Ant1 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-220. Ant1 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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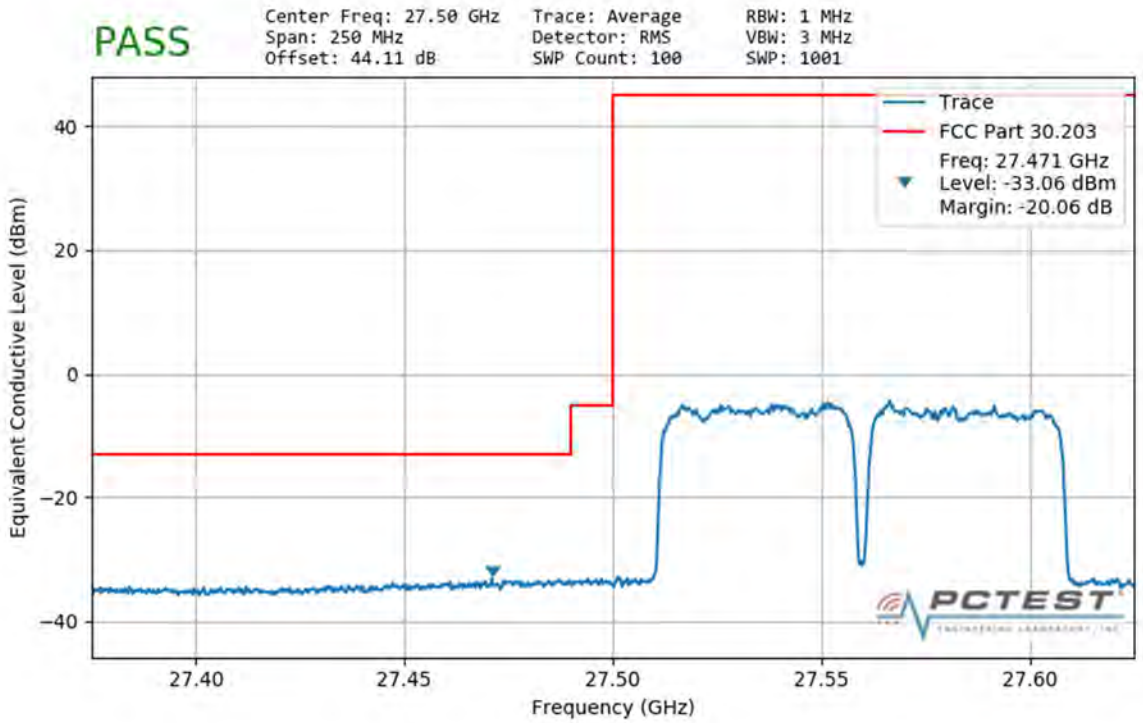
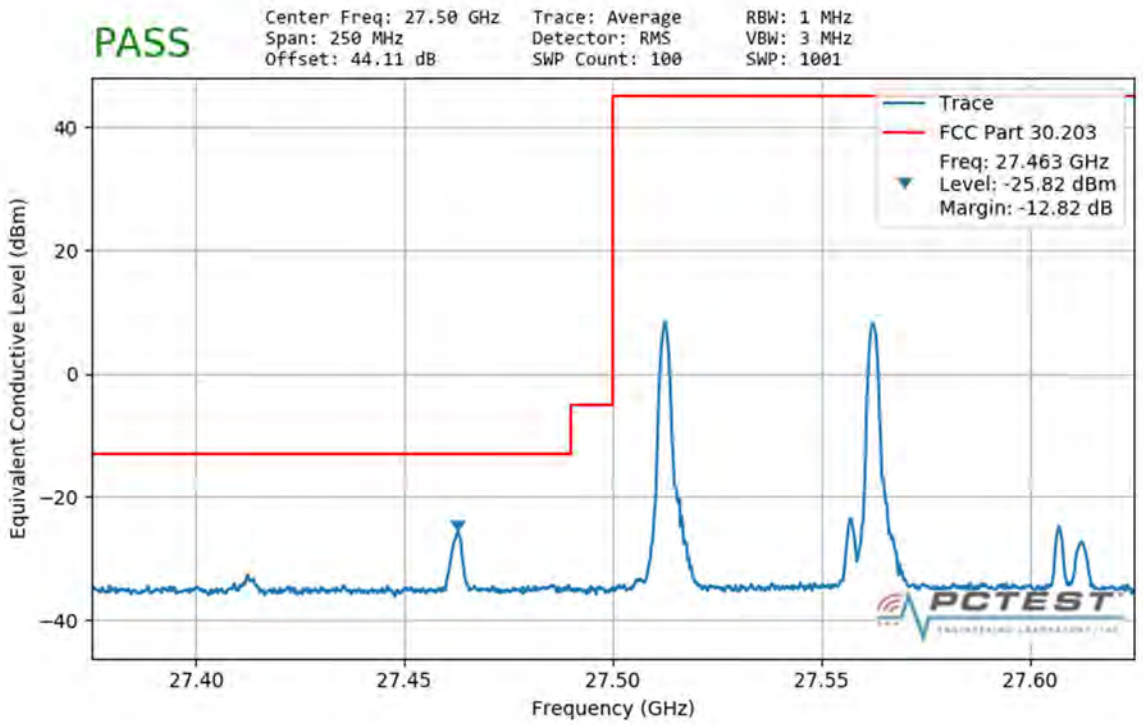


Plot 7-221. Ant1 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-222. Ant1 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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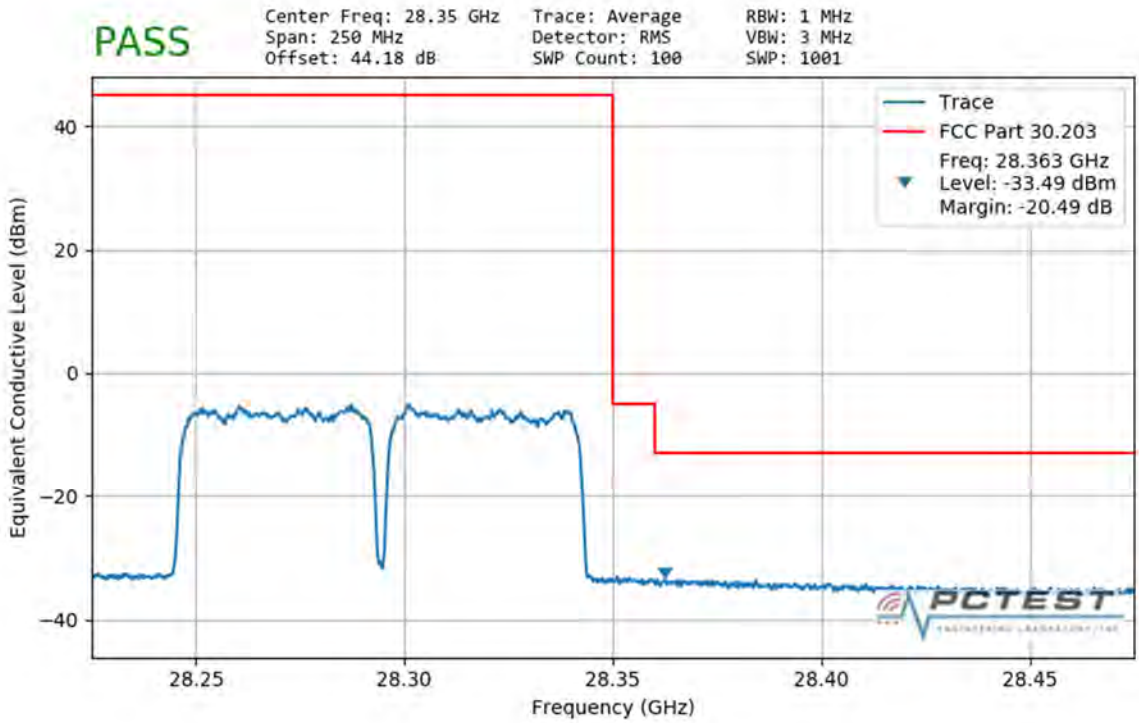
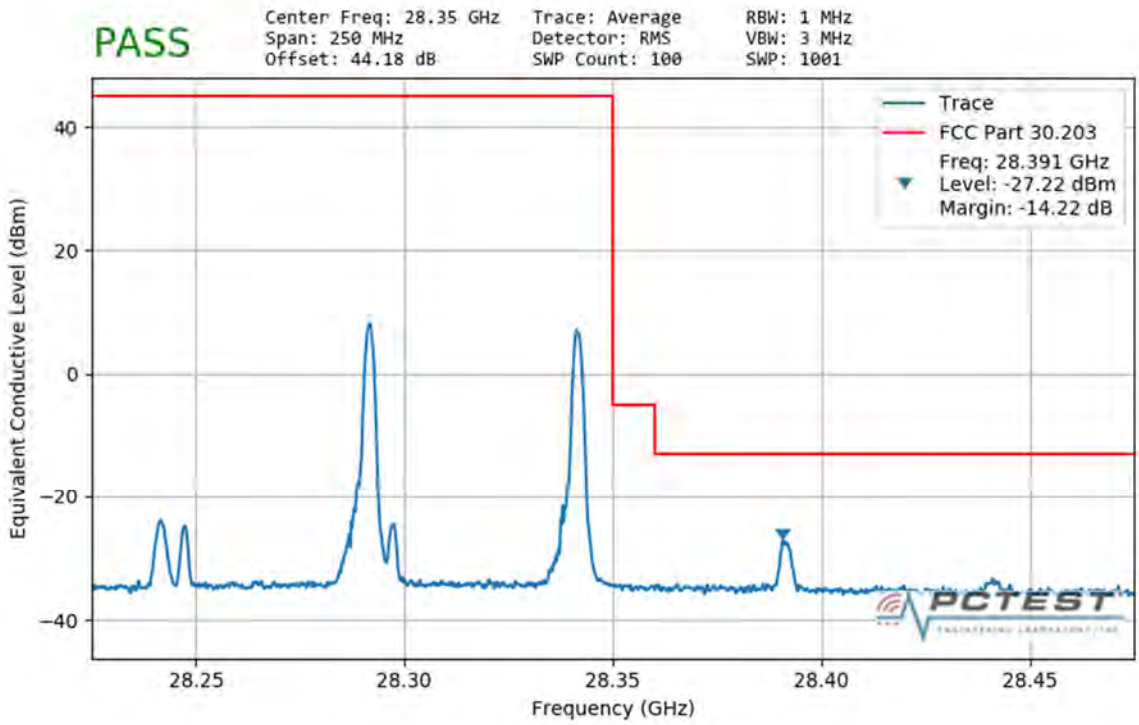


Plot 7-223. Ant1 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-224. Ant1 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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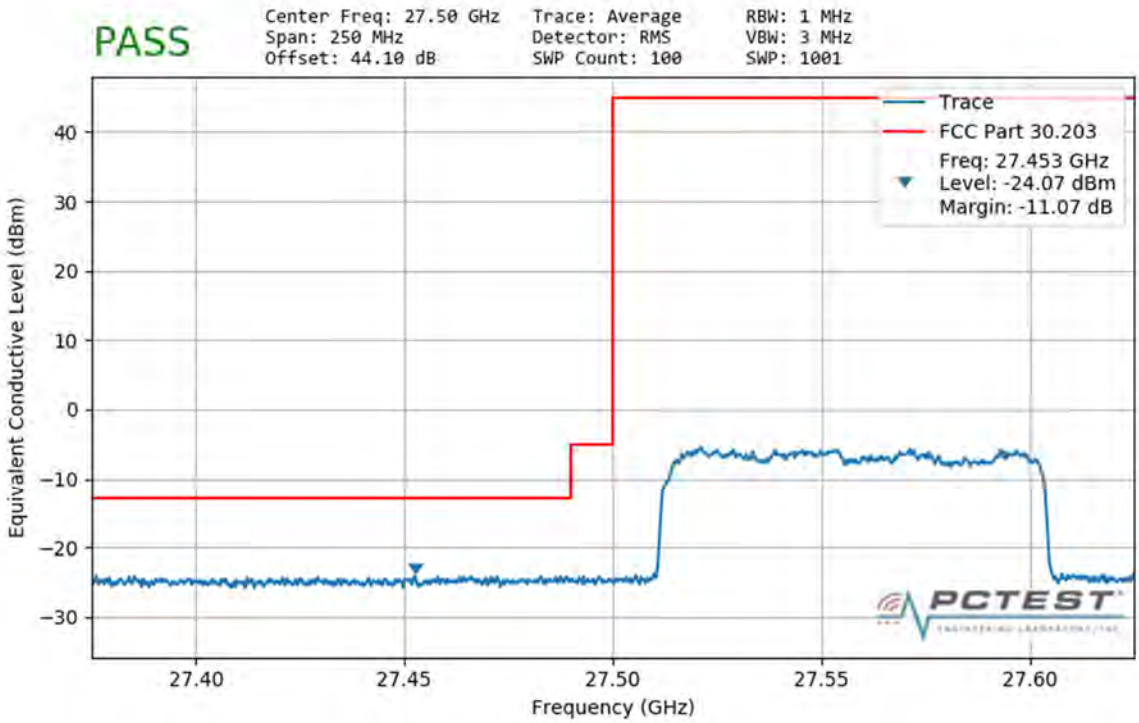
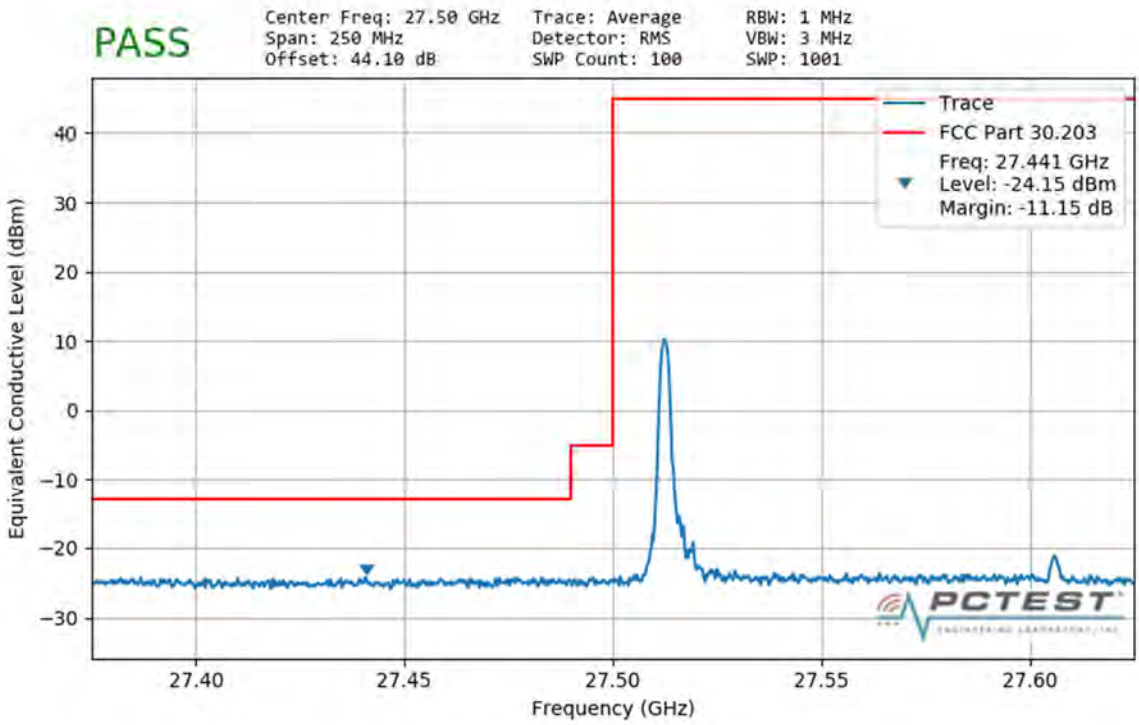


Plot 7-225. Ant1 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-226. Ant1 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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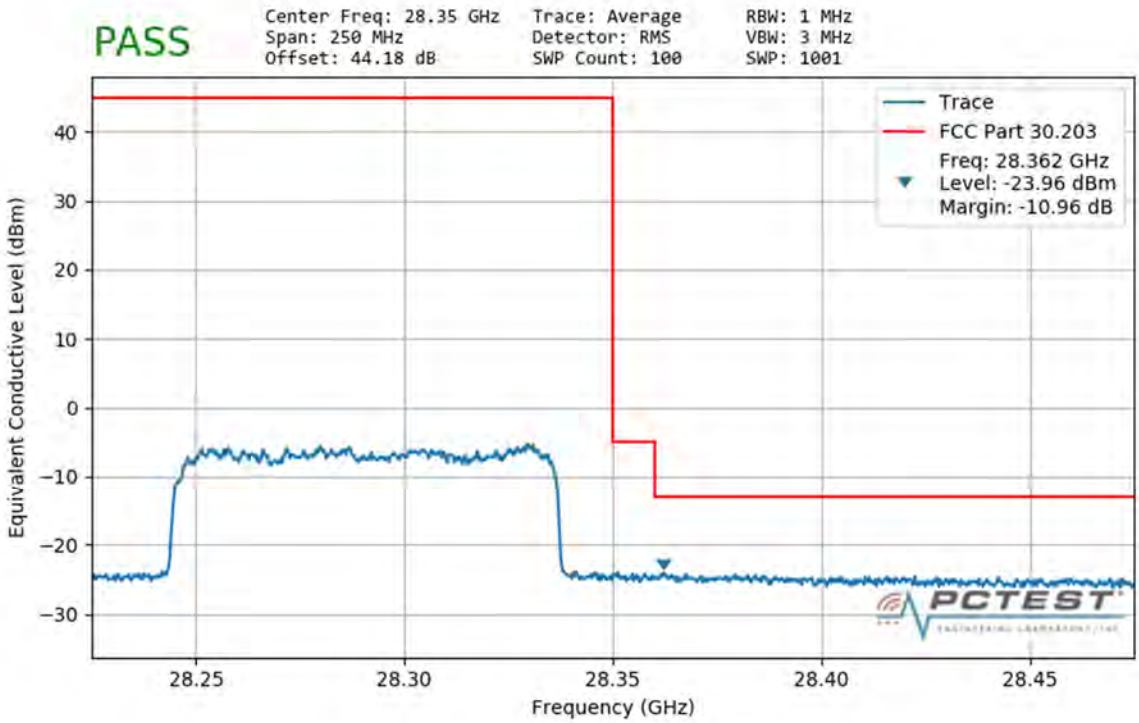
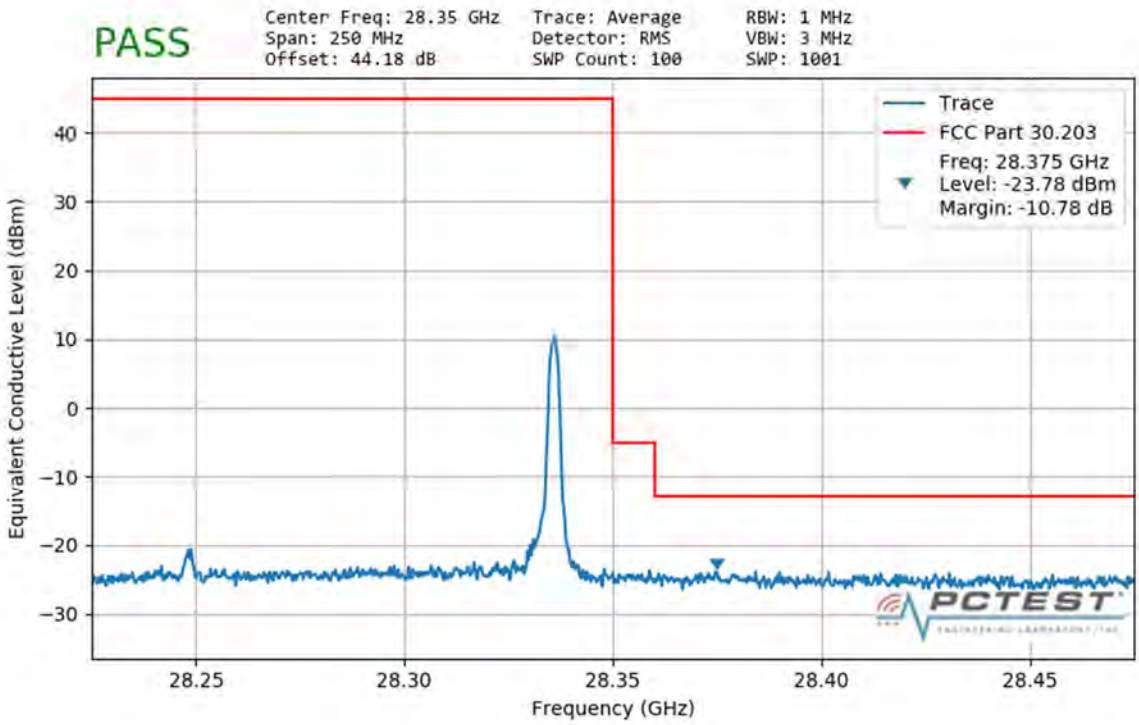


Plot 7-227. Ant1 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-228. Ant1 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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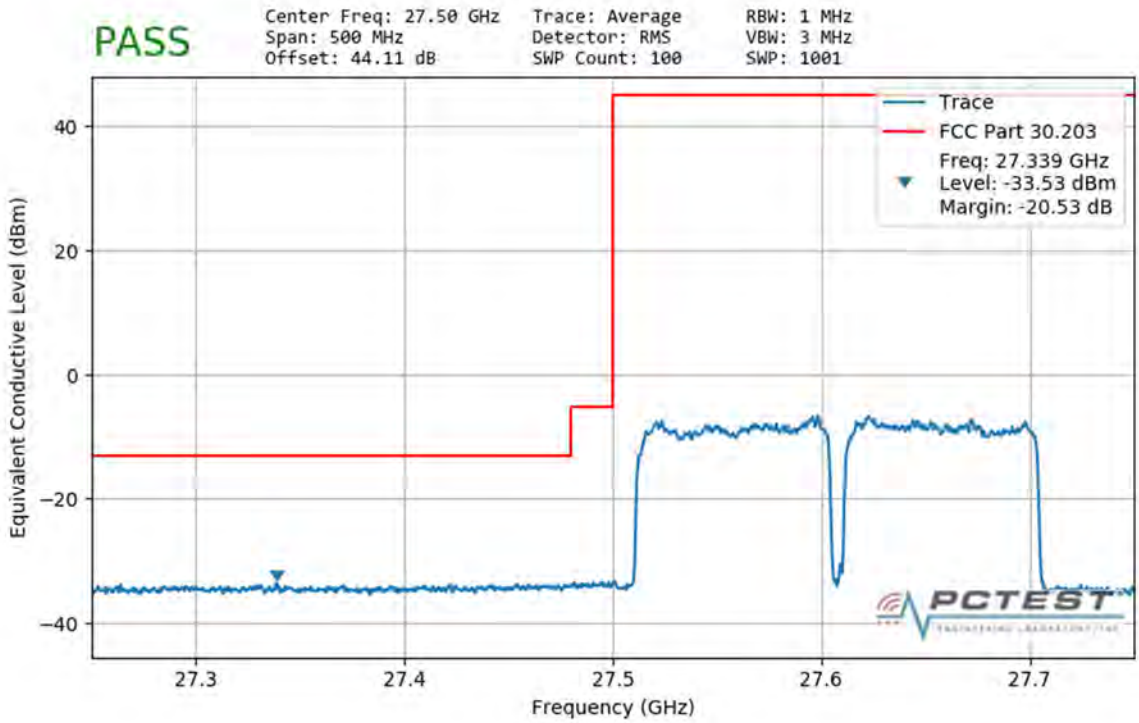
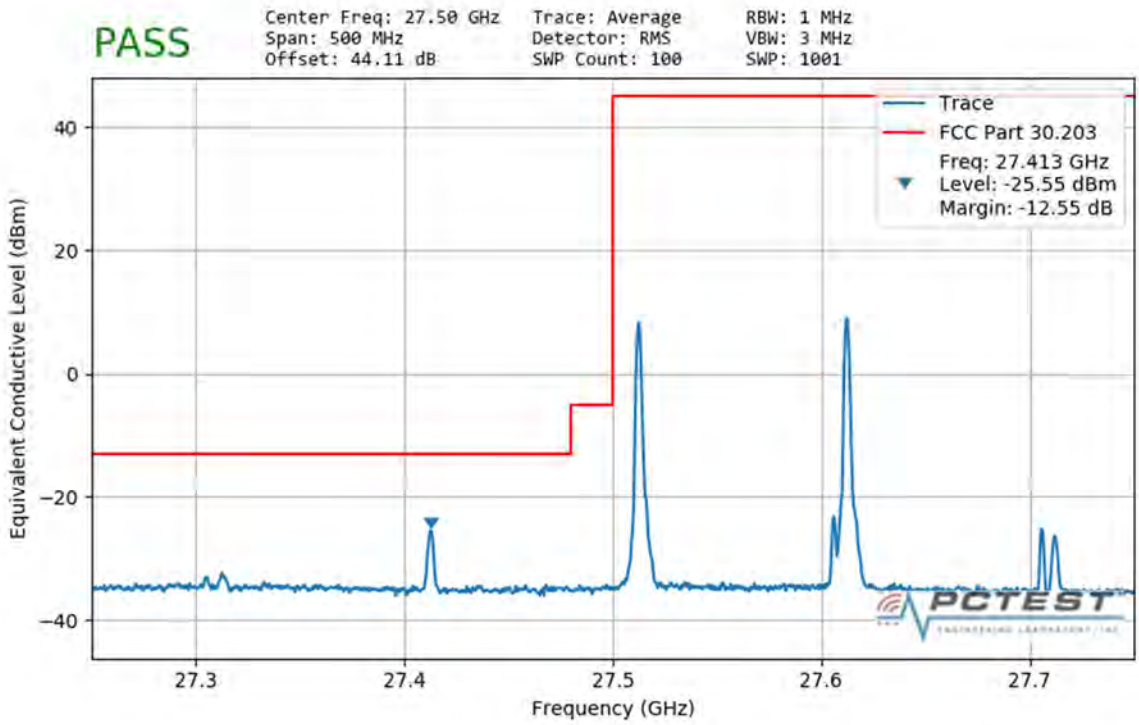


Plot 7-229. Ant1 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-230. Ant1 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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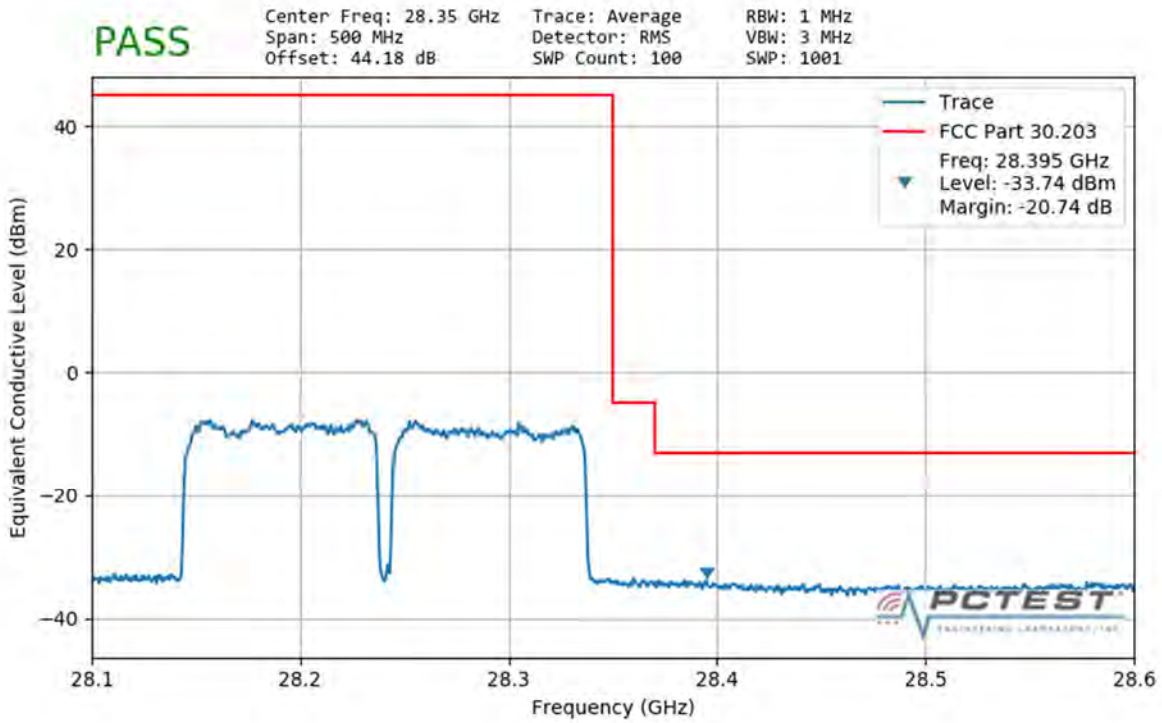
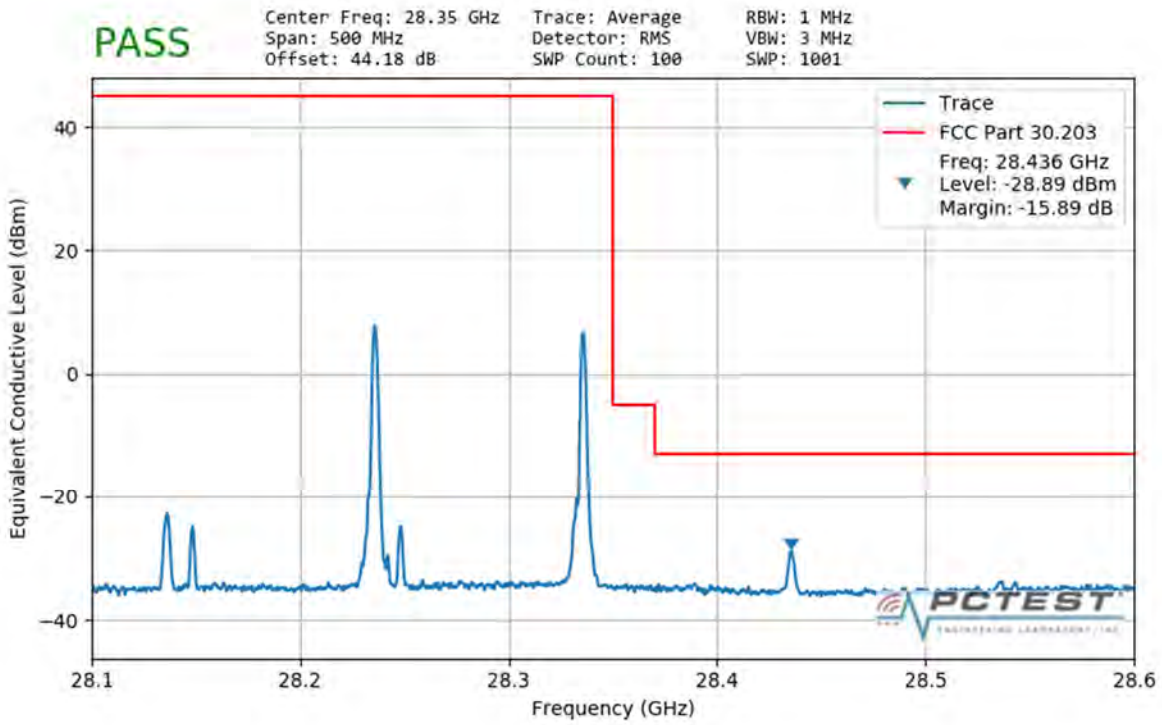


Plot 7-231. Ant1 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-232. Ant1 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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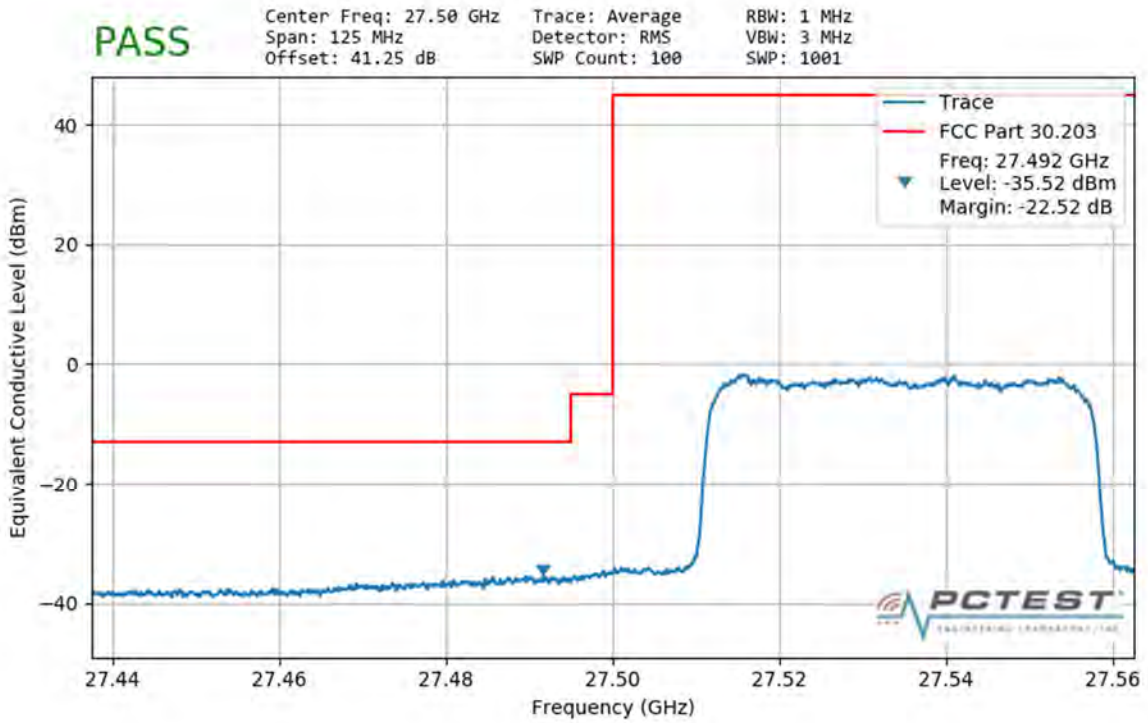
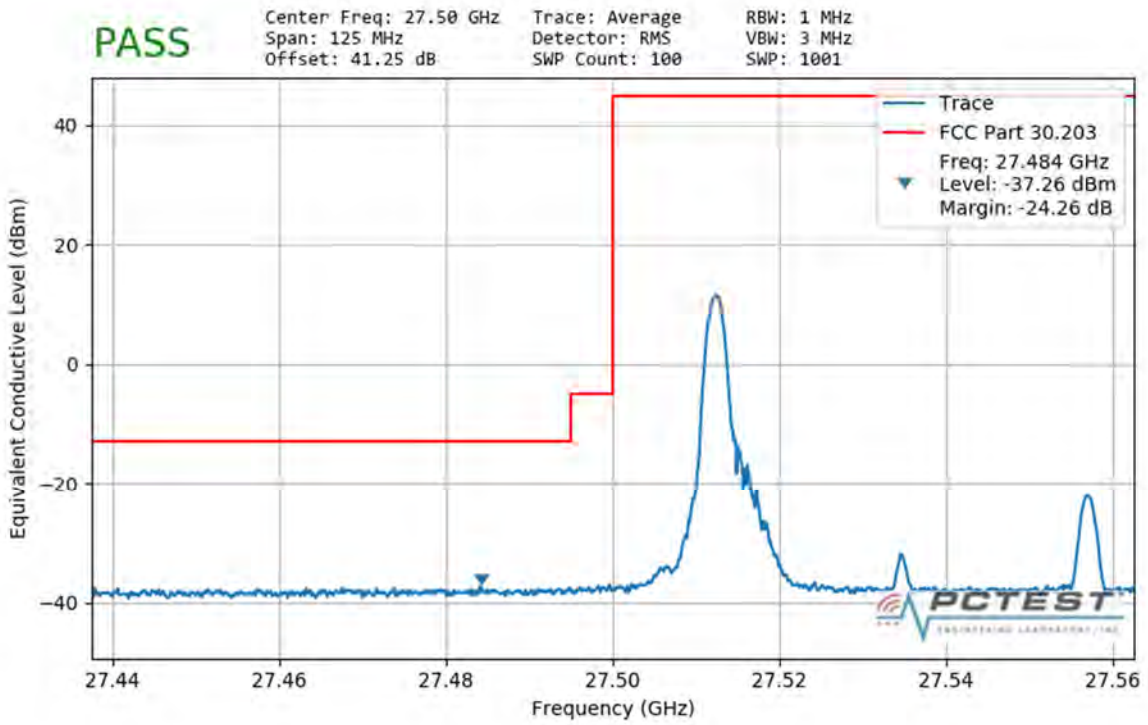


Plot 7-233. Ant2 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-234. Ant2 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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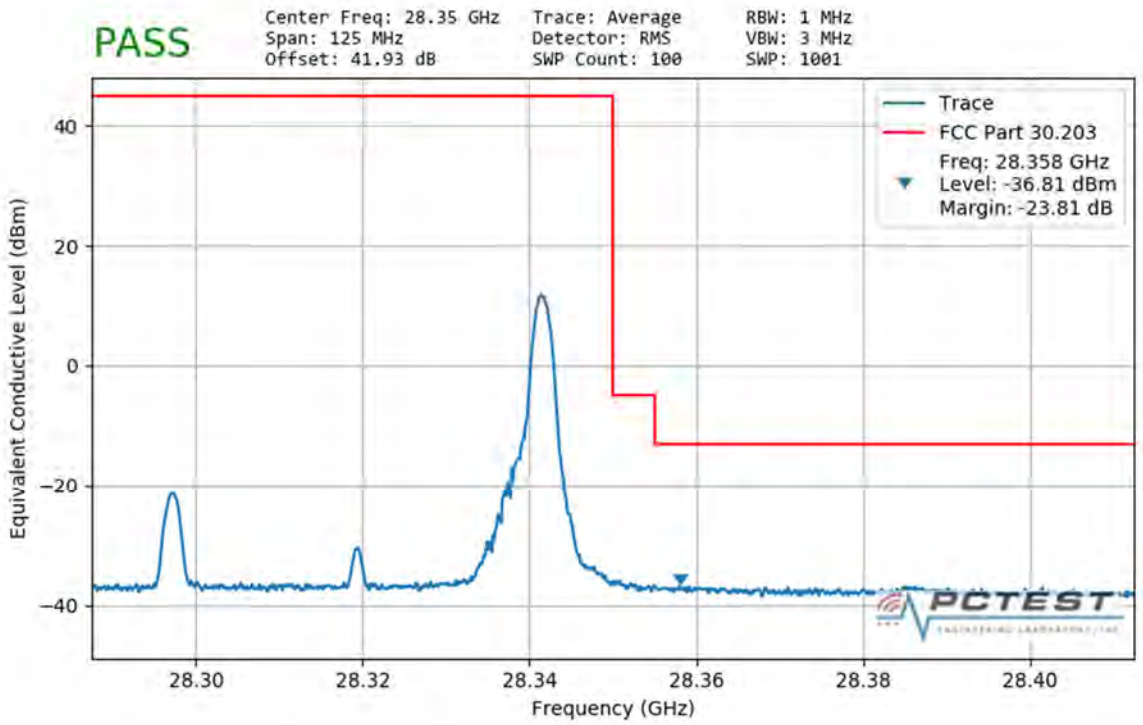
Plot 7-235. Ant2 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-236. Ant2 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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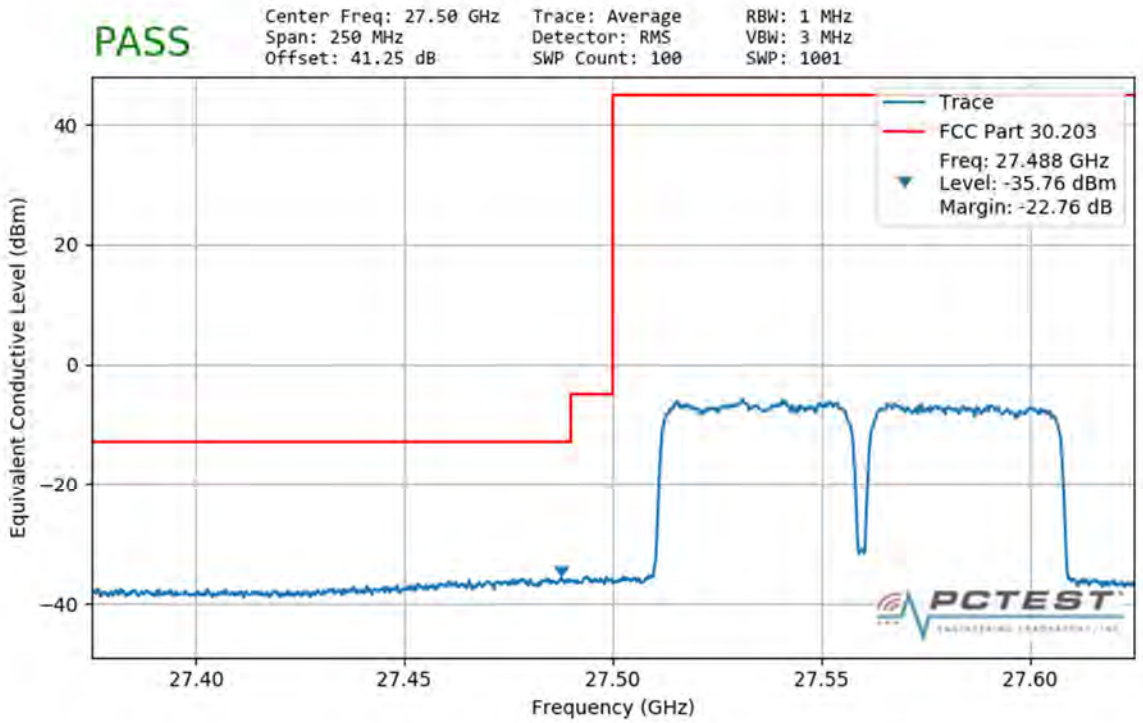
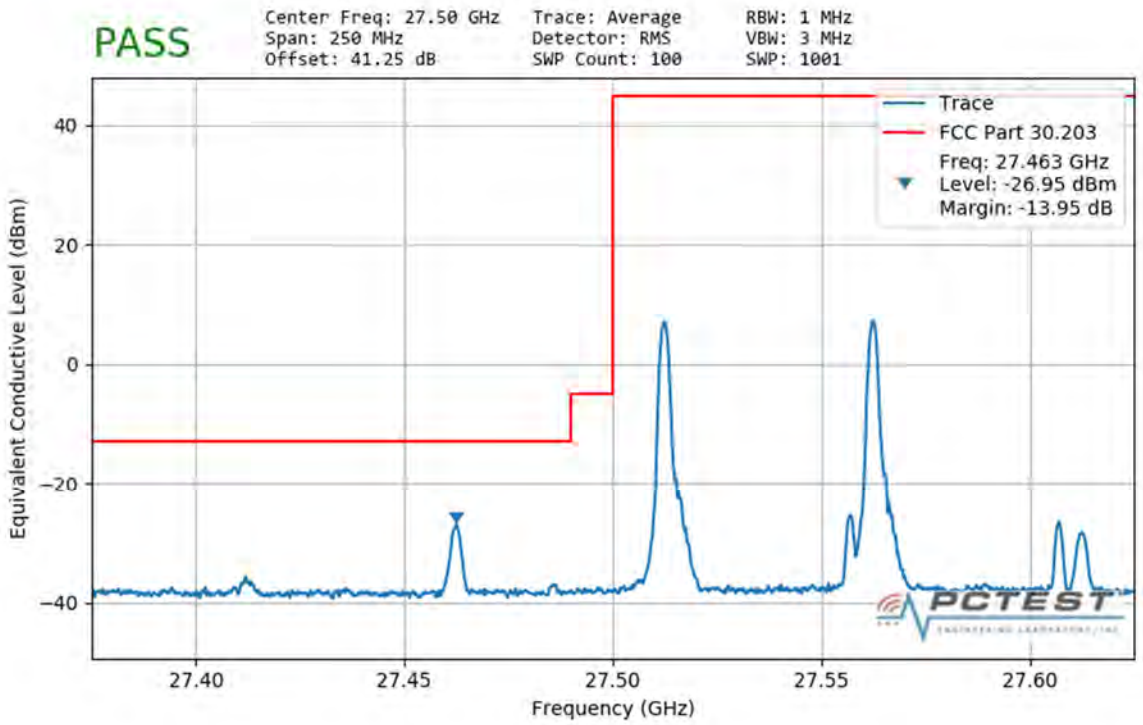


Plot 7-237. Ant2 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-238. Ant2 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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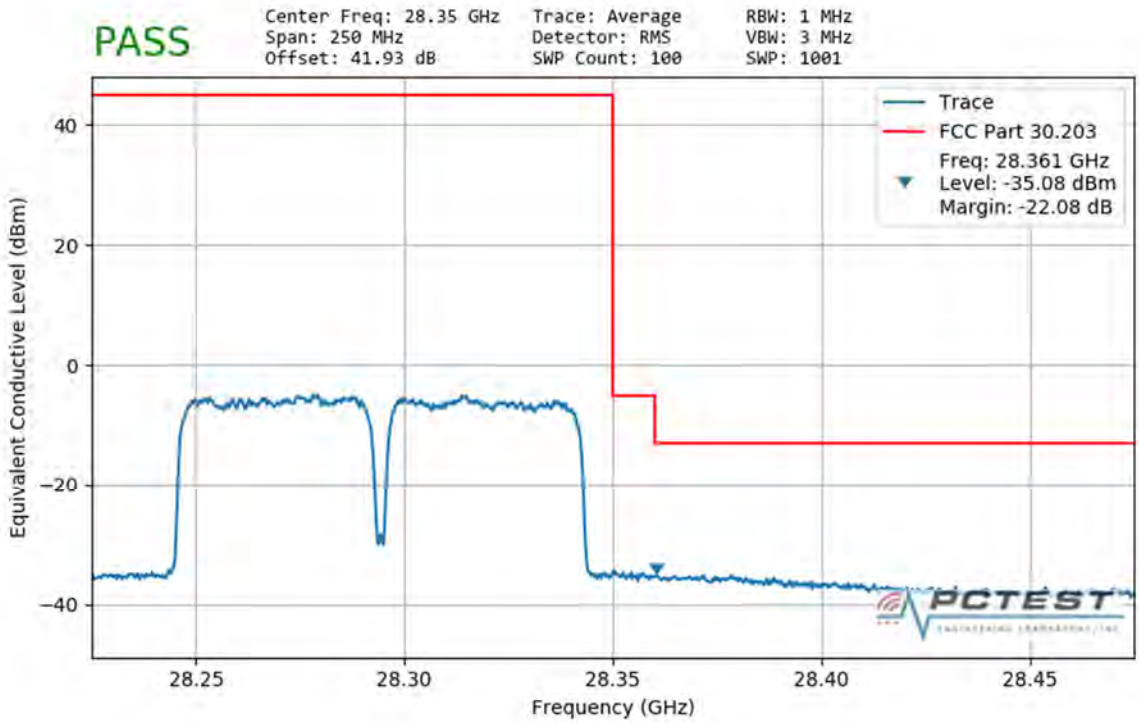
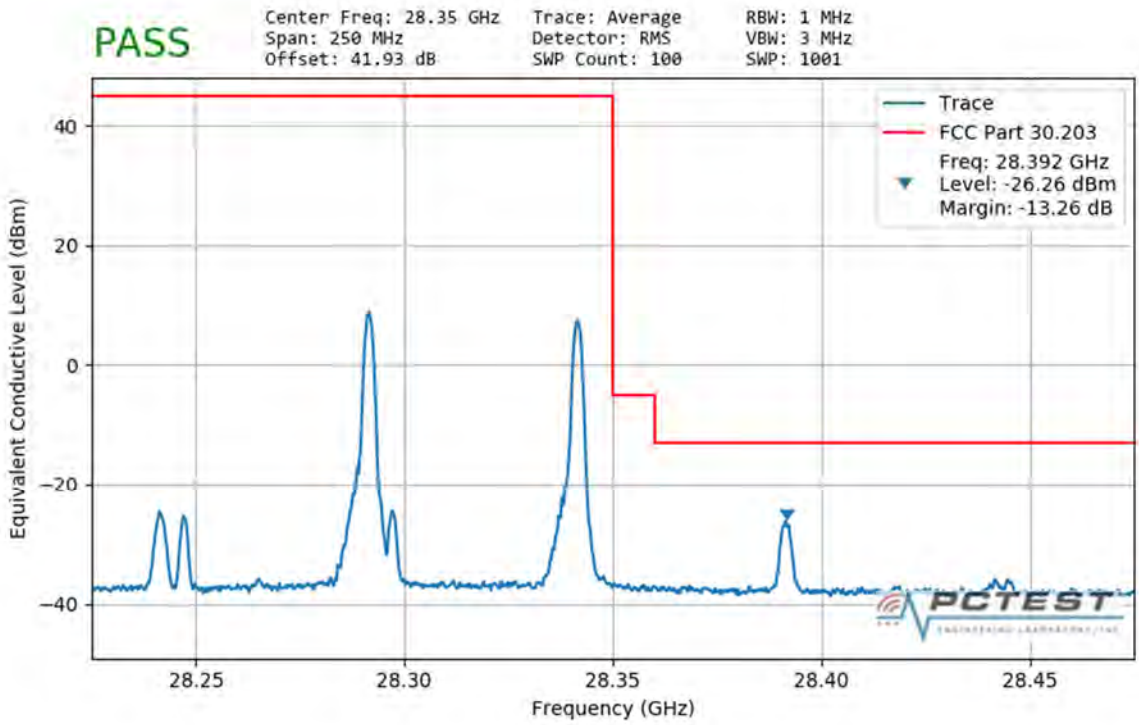


Plot 7-239. Ant2 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-240. Ant2 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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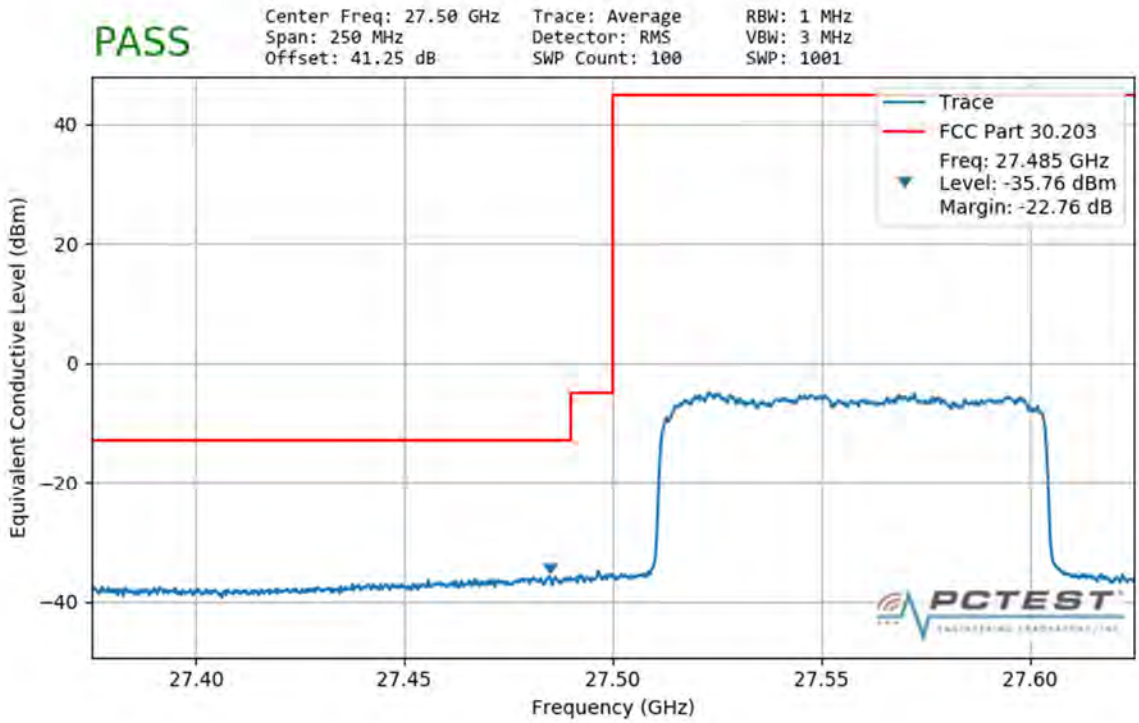
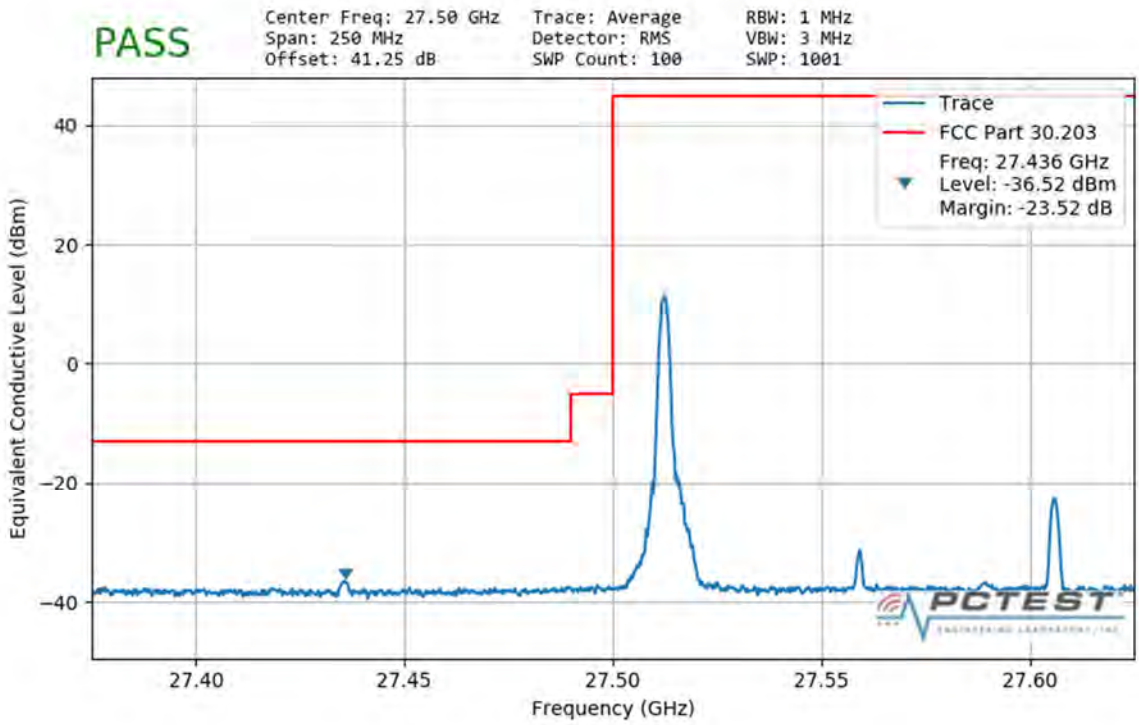


Plot 7-241. Ant2 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-242. Ant2 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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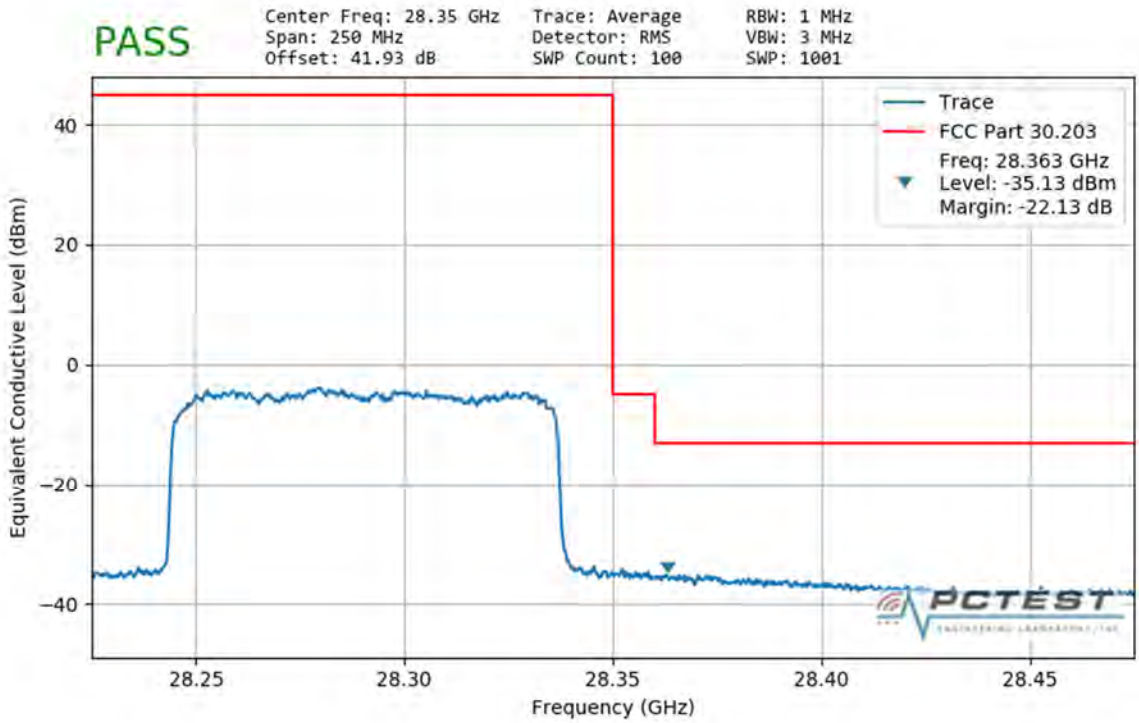
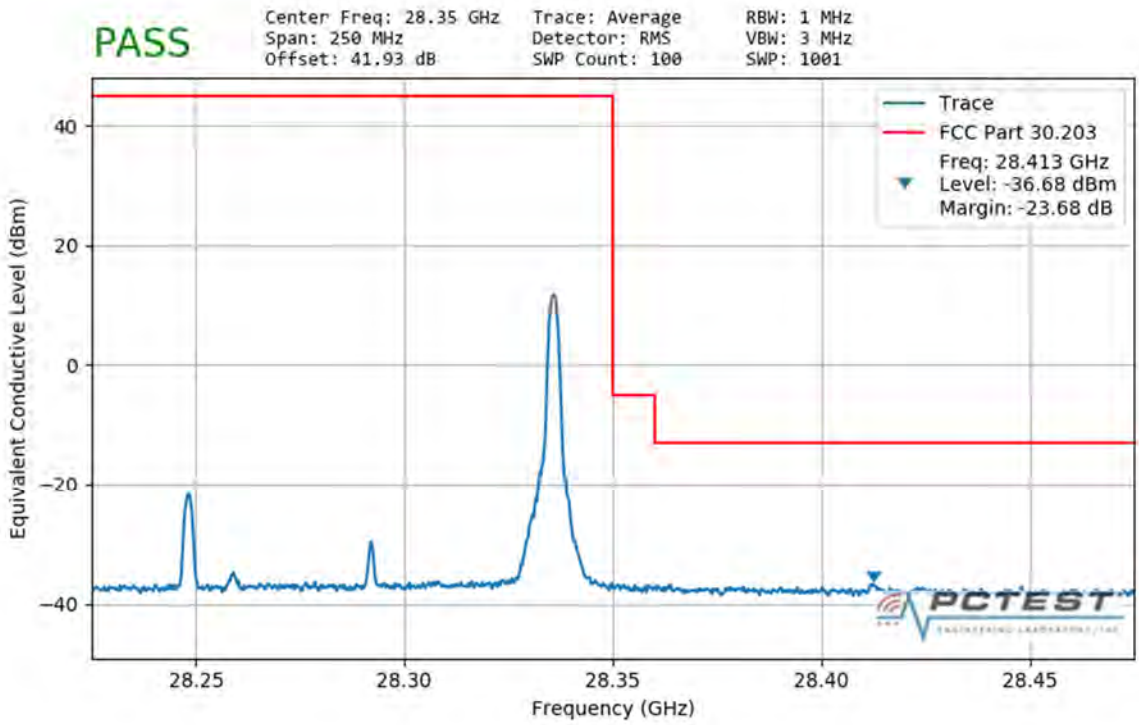


Plot 7-243. Ant2 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-244. Ant2 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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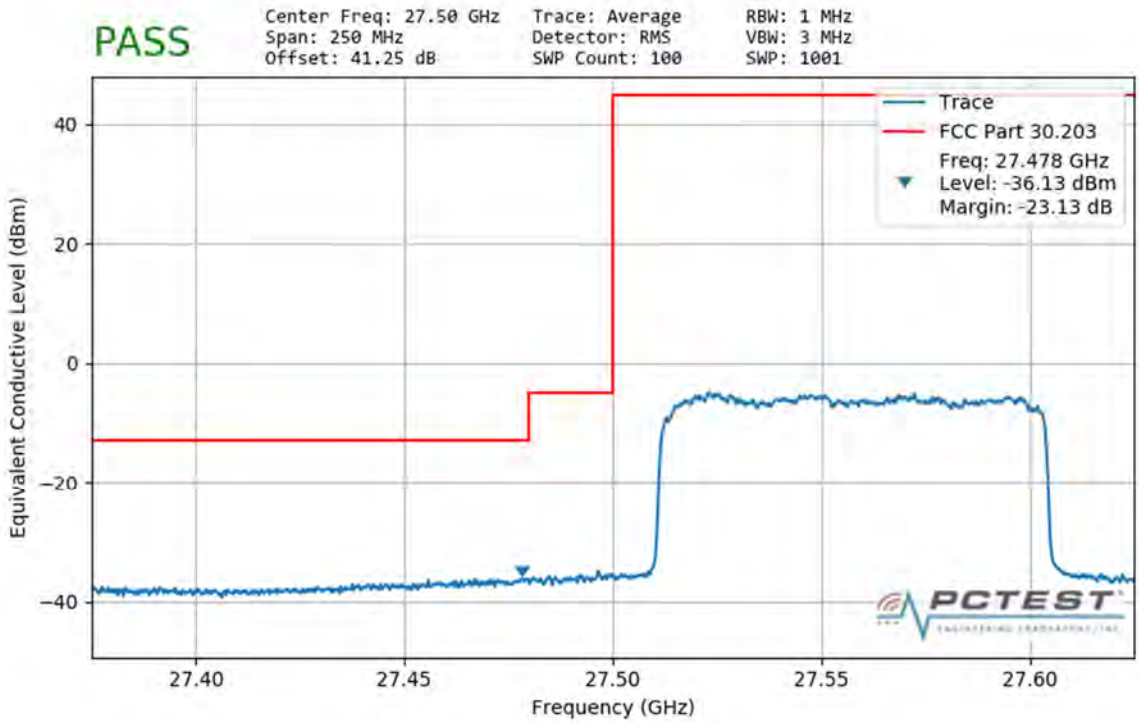
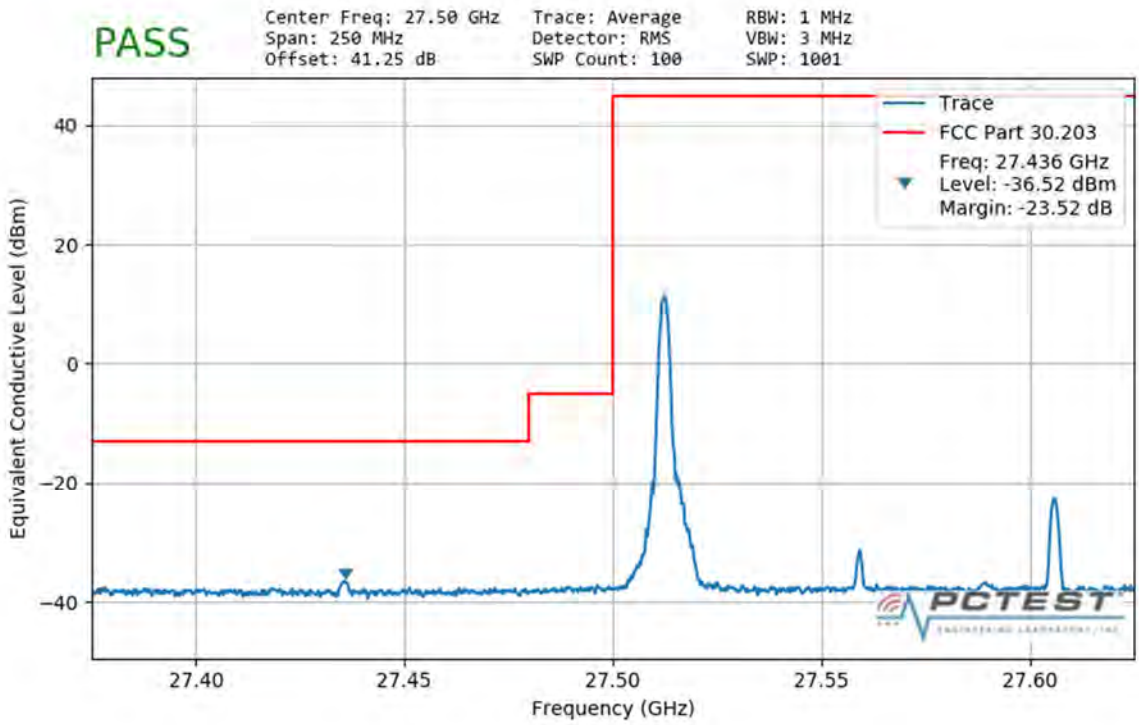


Plot 7-245. Ant2 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-246. Ant2 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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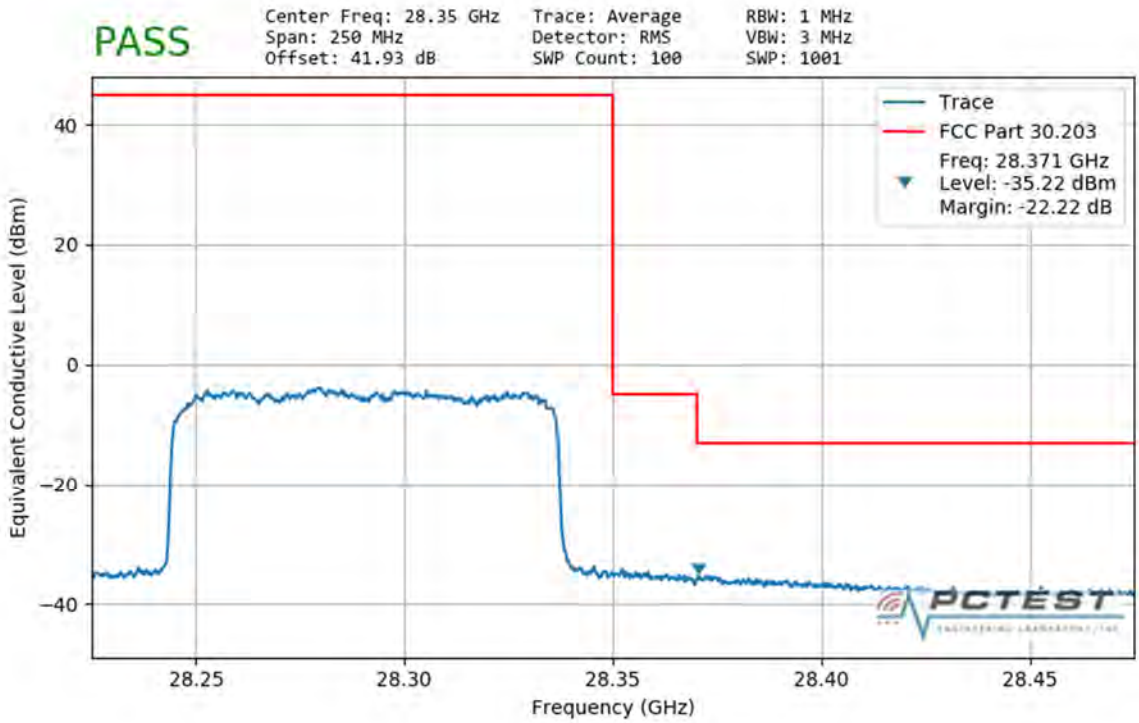
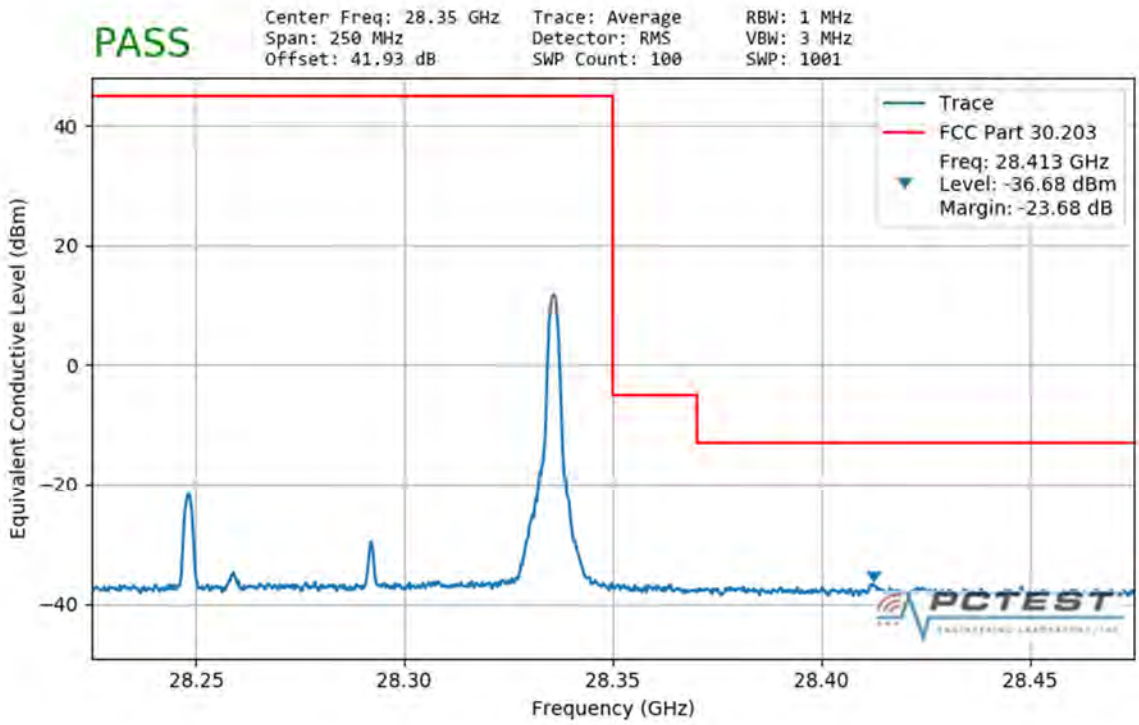


Plot 7-247. Ant2 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-248. Ant2 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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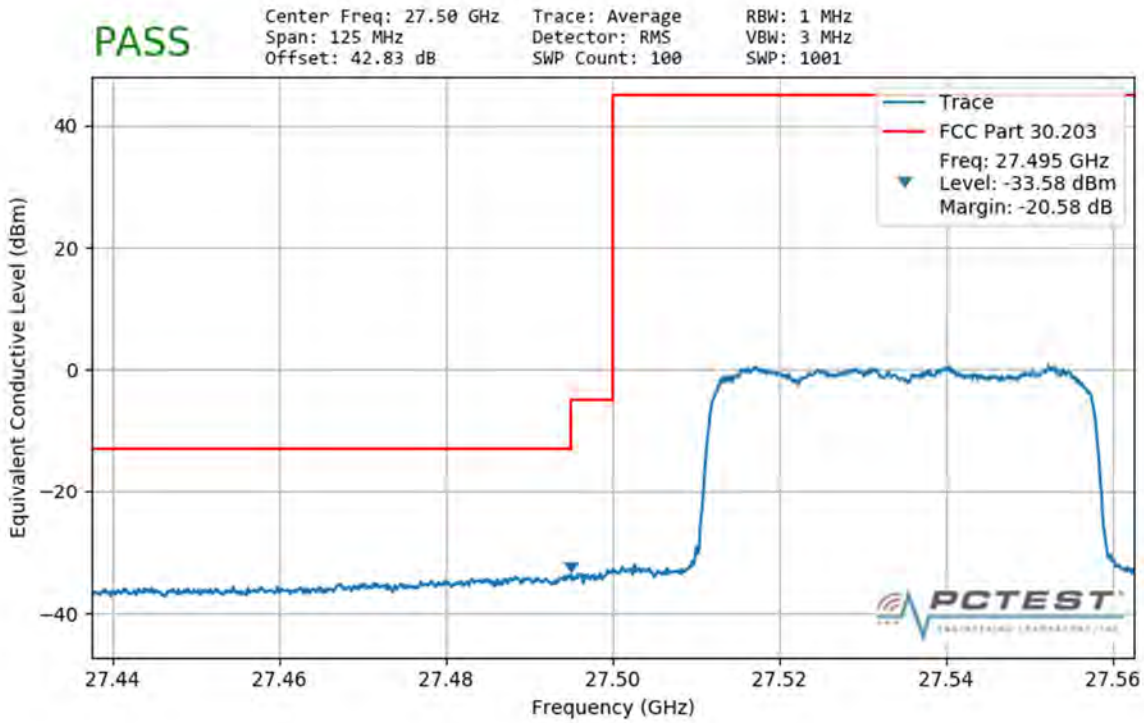
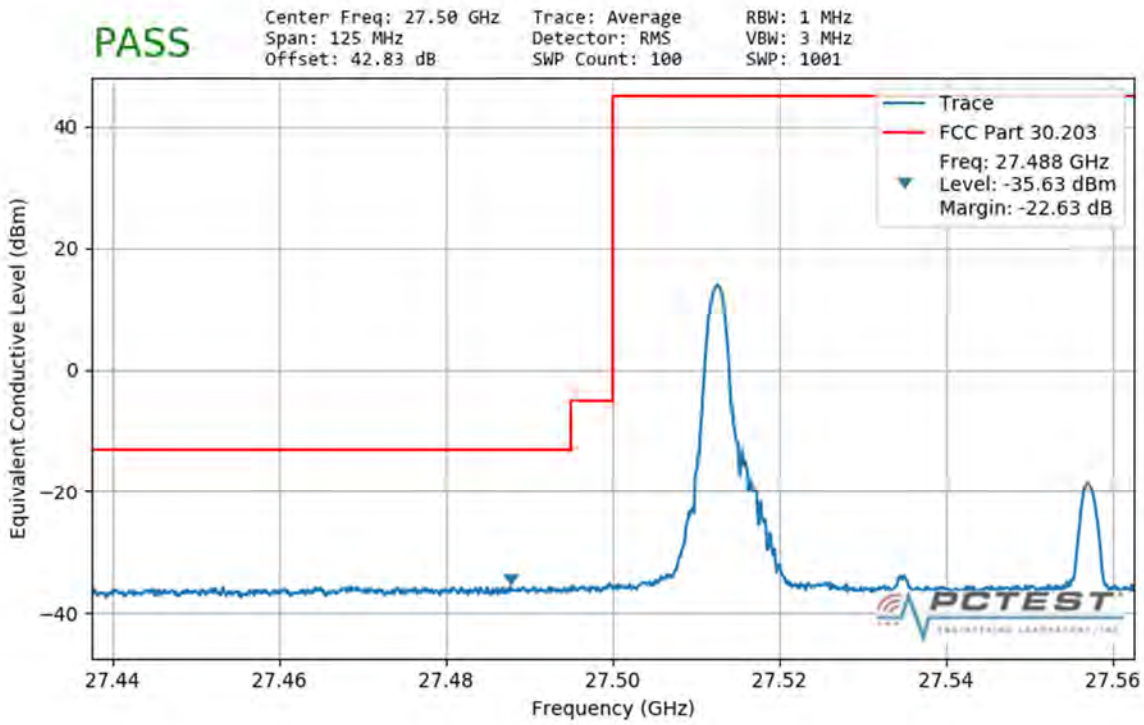


Plot 7-249. Ant3 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-250. Ant3 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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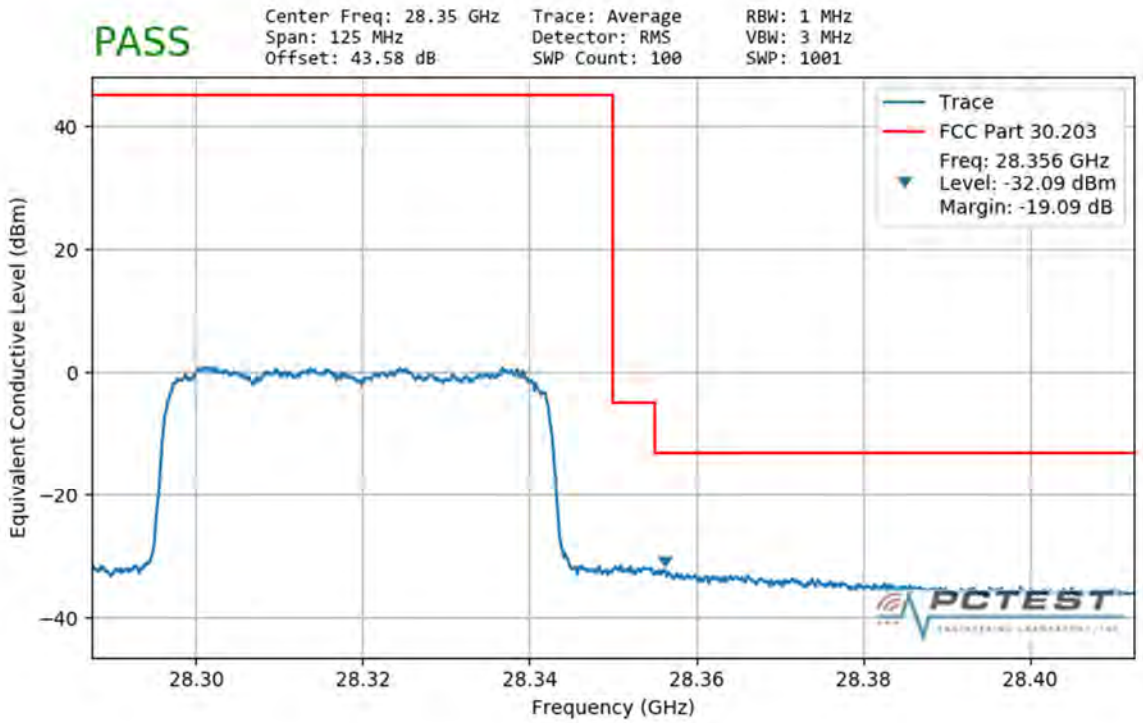
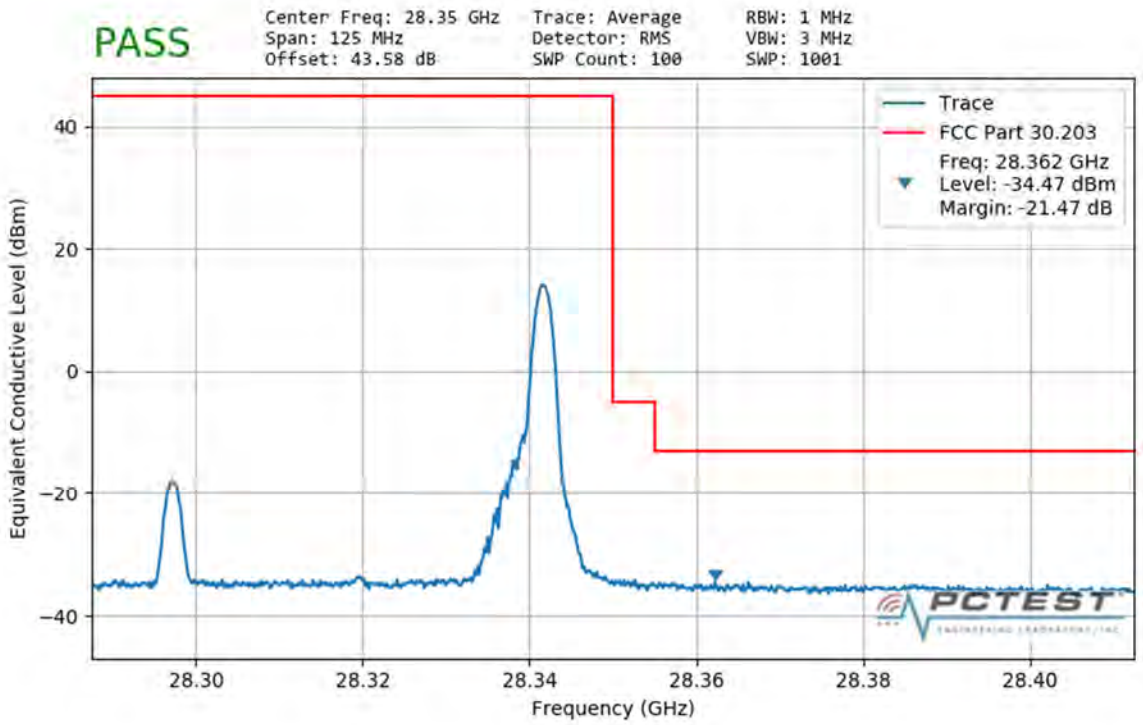


Plot 7-251. Ant3 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-252. Ant3 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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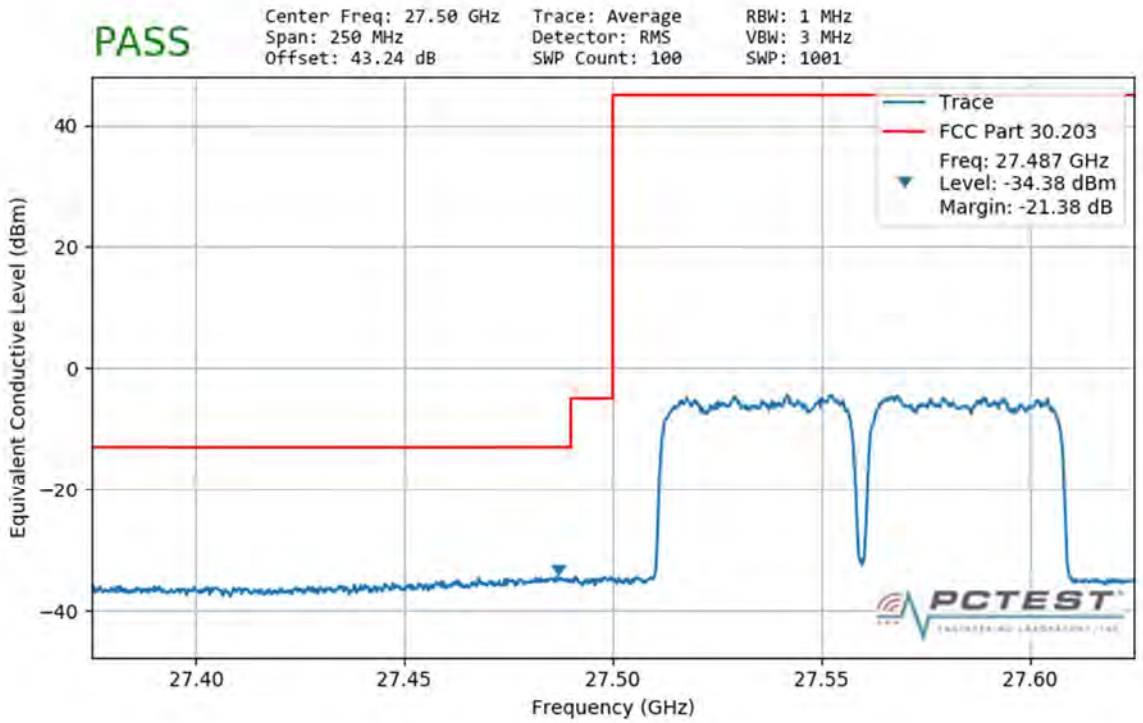
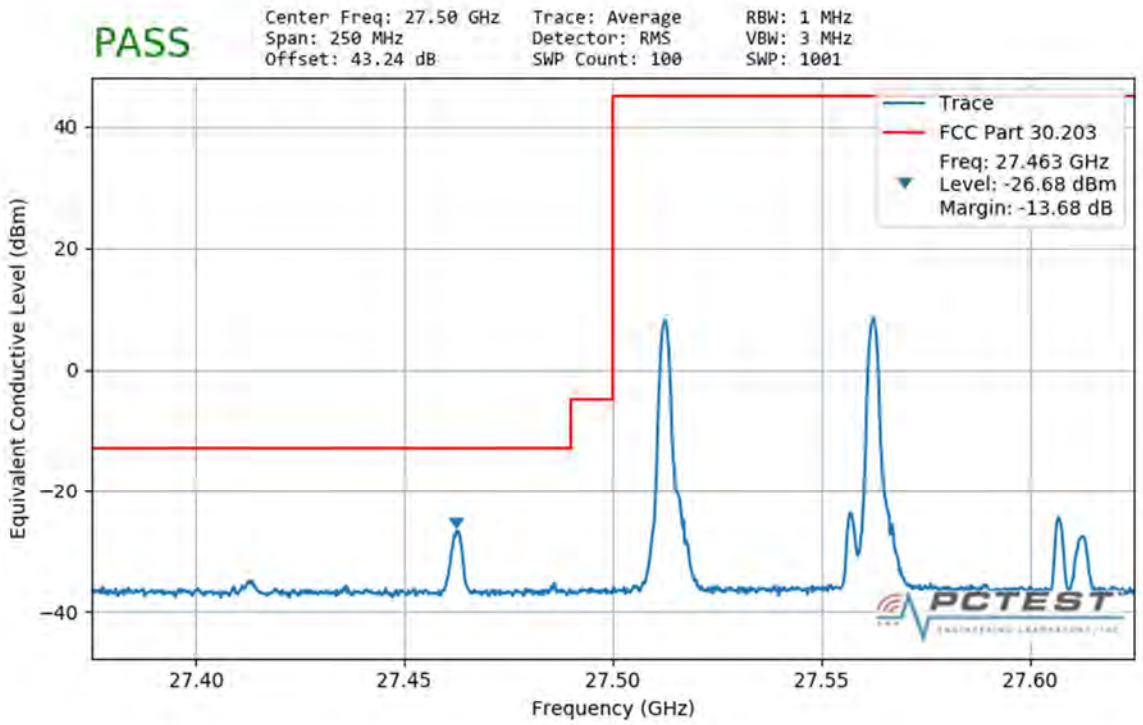


Plot 7-253. Ant3 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-254. Ant3 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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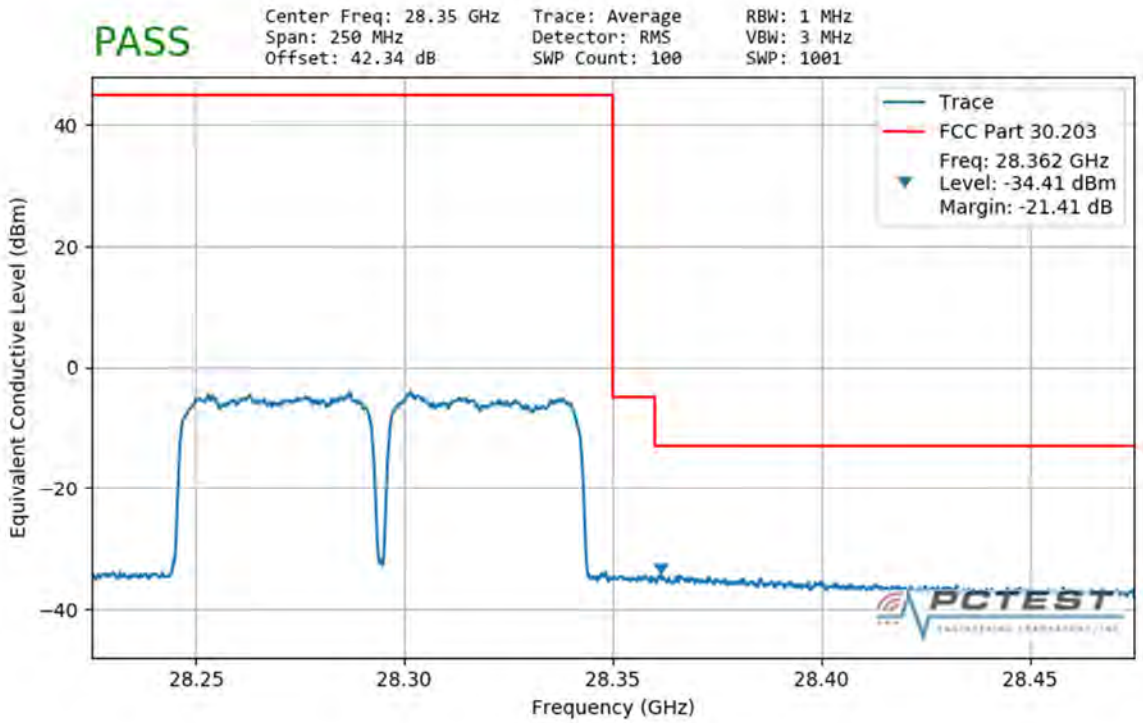
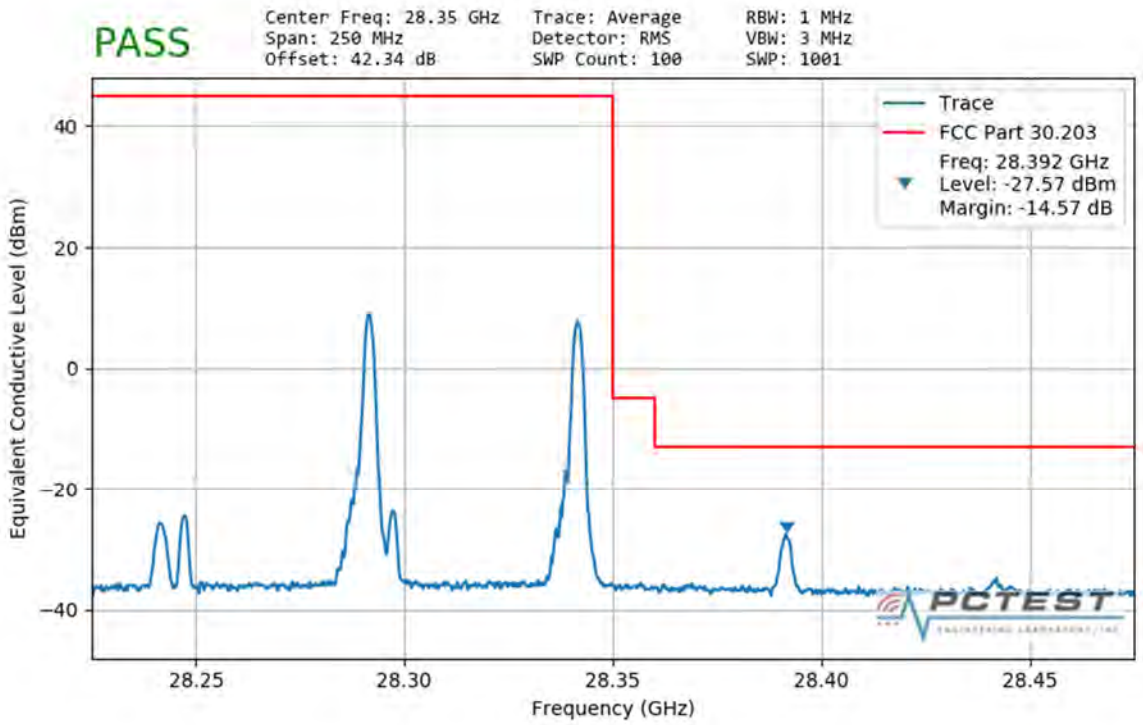


Plot 7-255. Ant3 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-256. Ant3 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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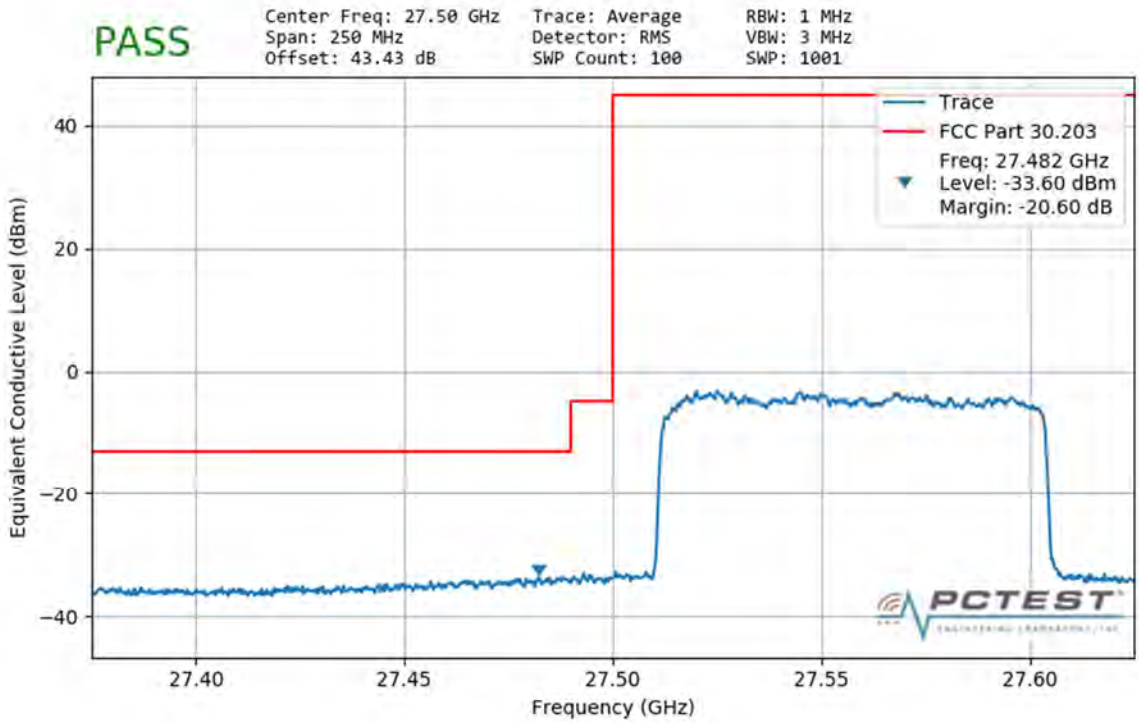
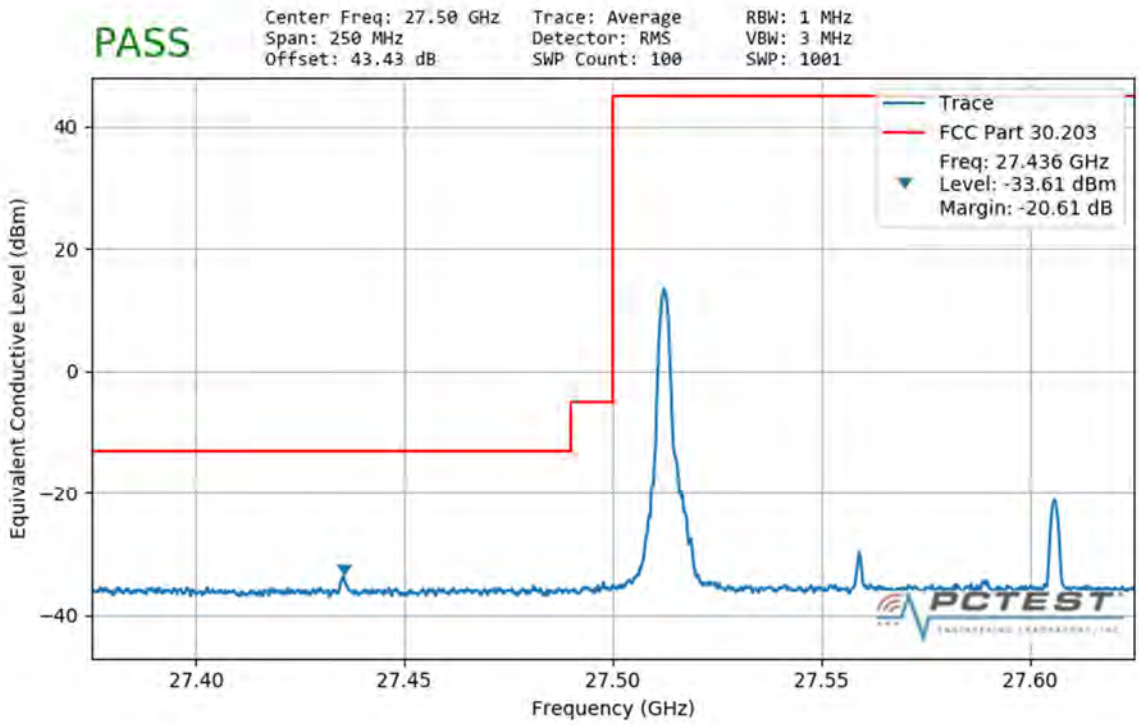


Plot 7-257. Ant3 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-258. Ant3 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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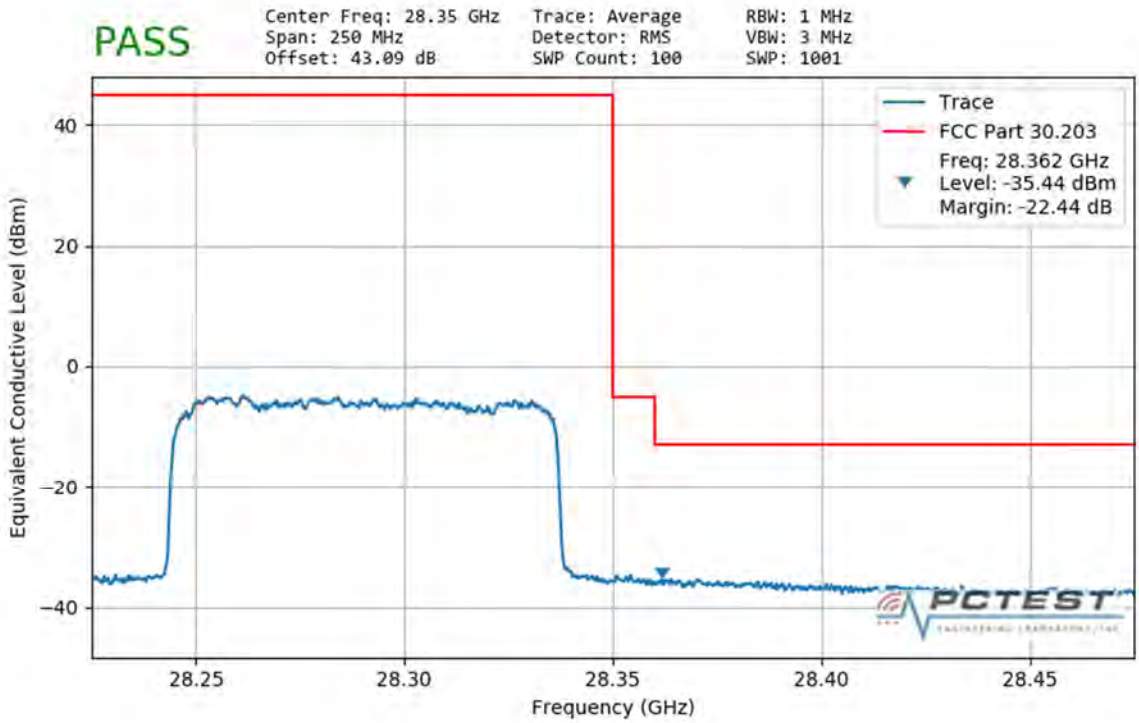
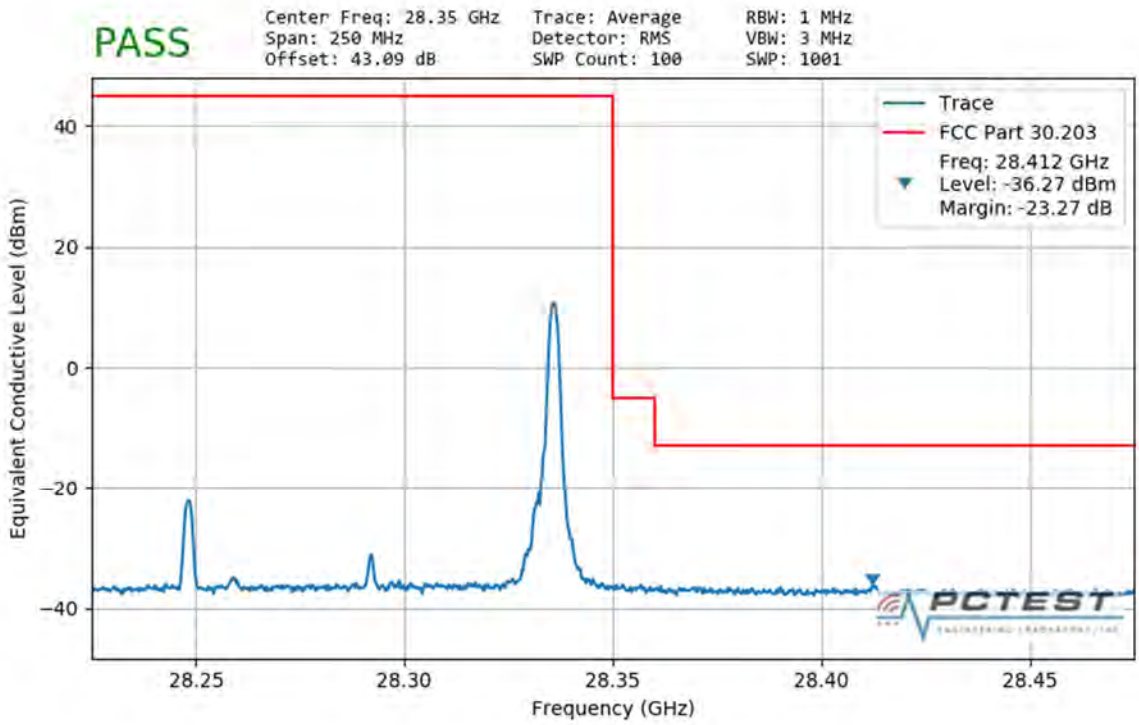


Plot 7-259. Ant3 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-260. Ant3 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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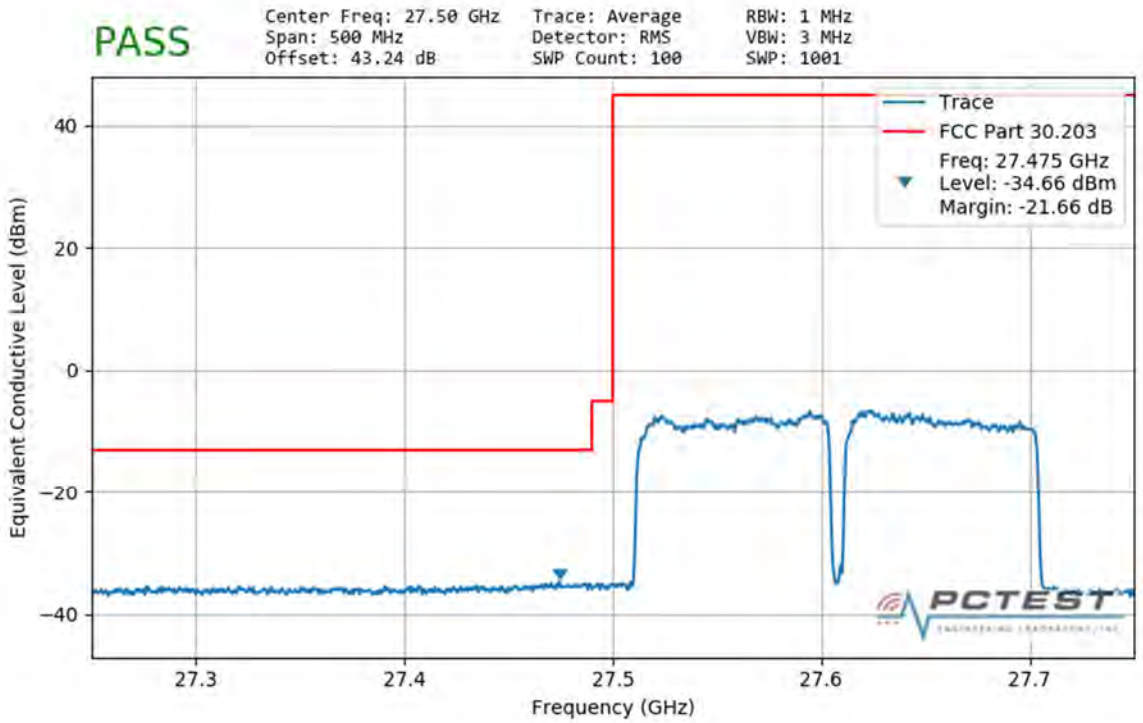
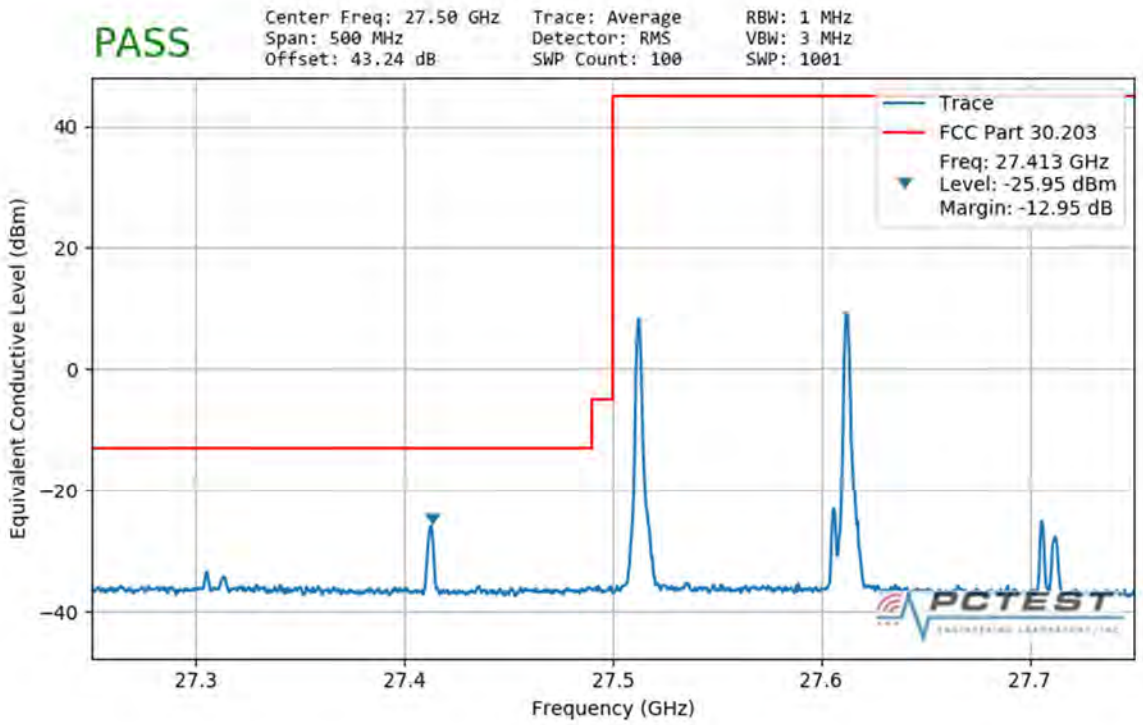


Plot 7-261. Ant3 Lower Band Edge (100MHz-2CC – QPSK 1 RB)



Plot 7-262. Ant3 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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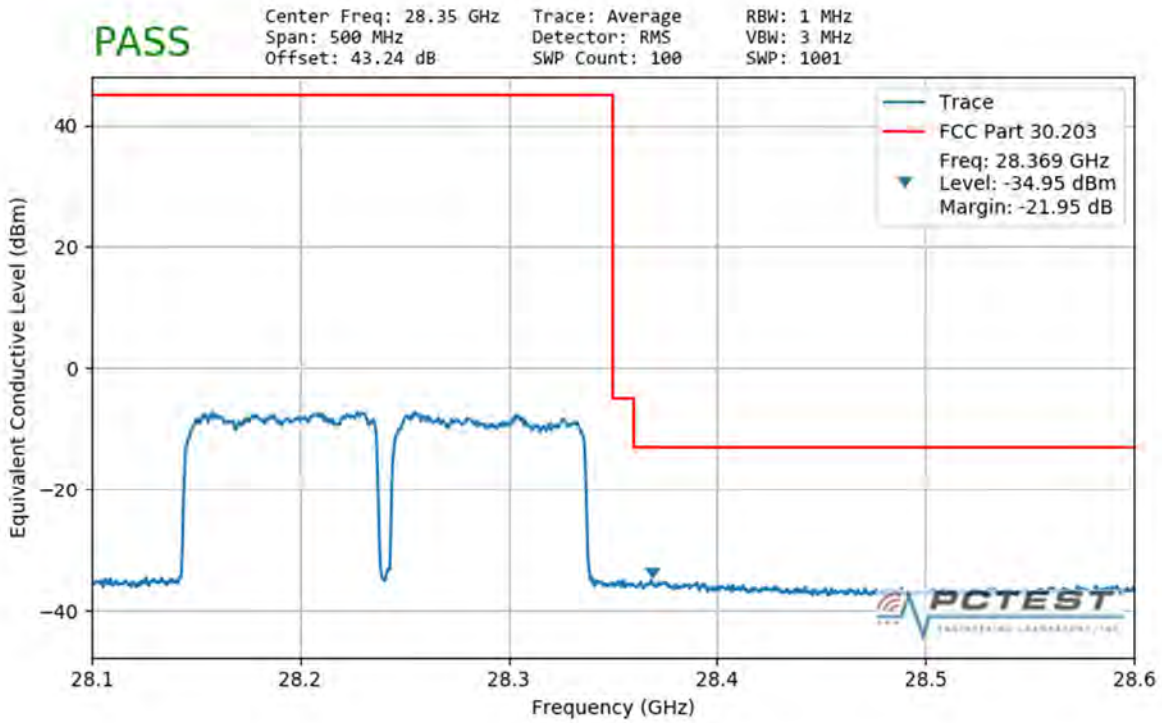
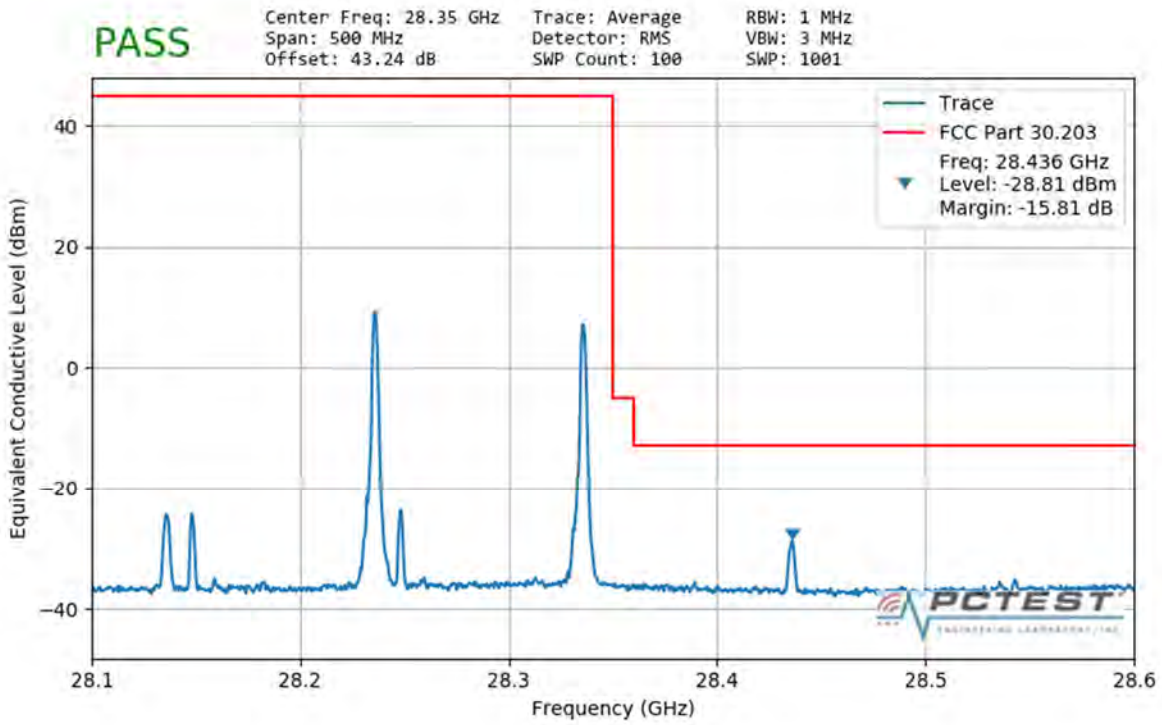


Plot 7-263. Ant3 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-264. Ant3 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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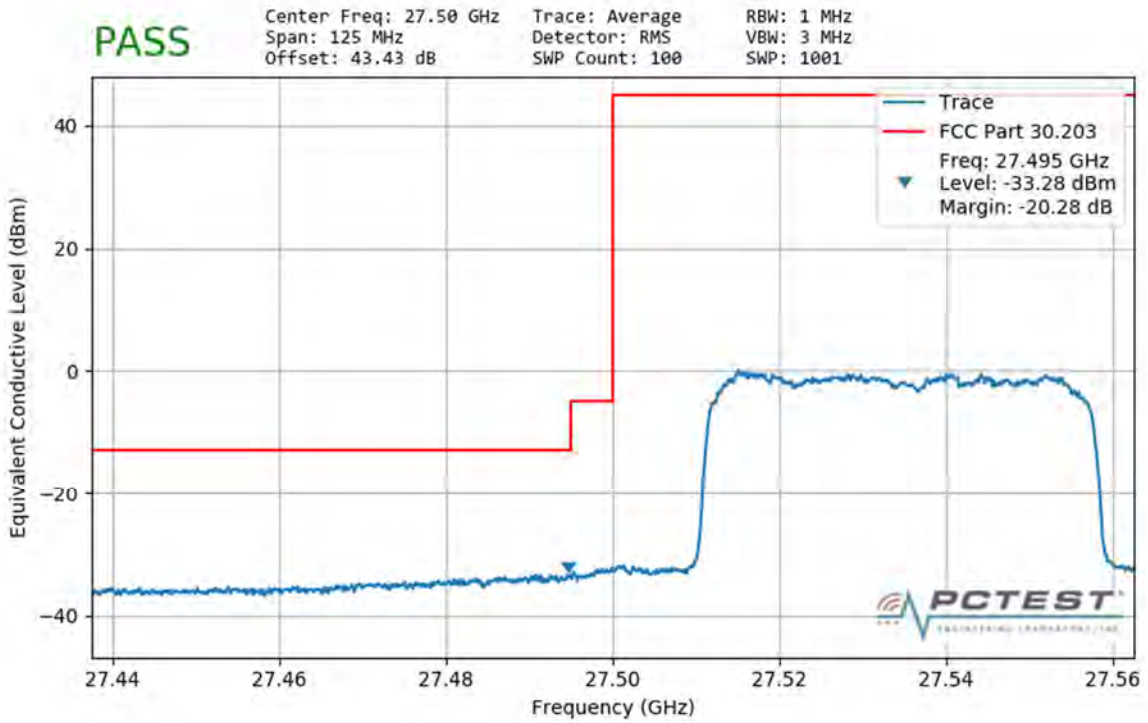
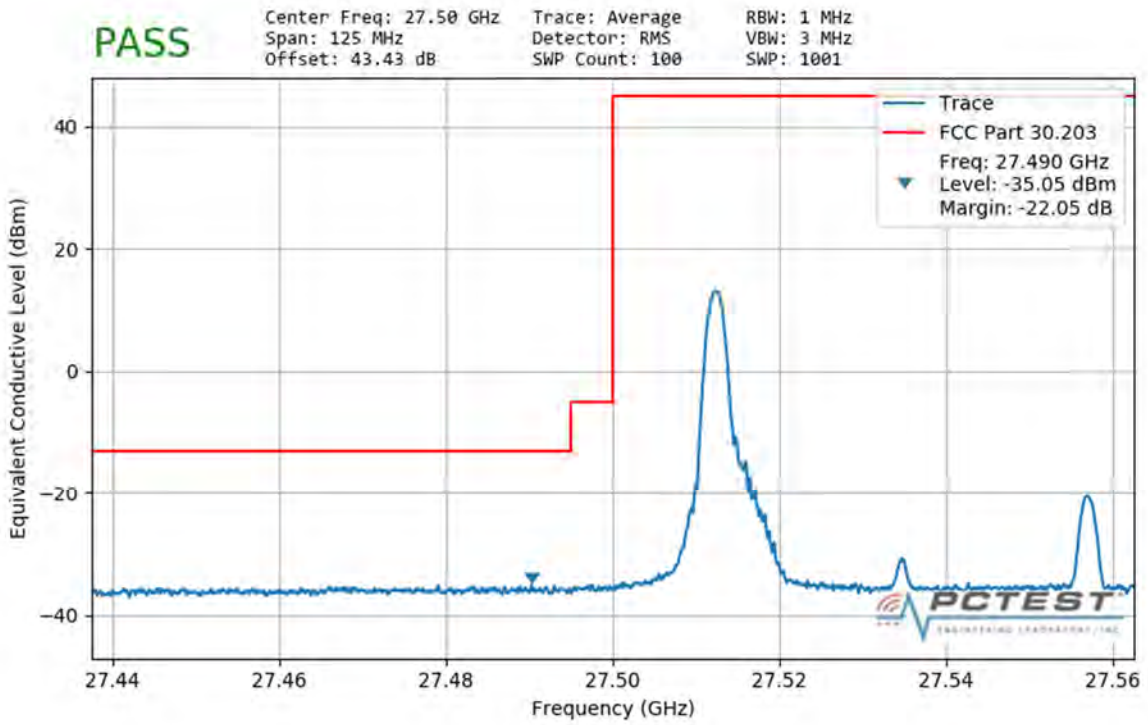


Plot 7-265. Ant4 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-266. Ant4 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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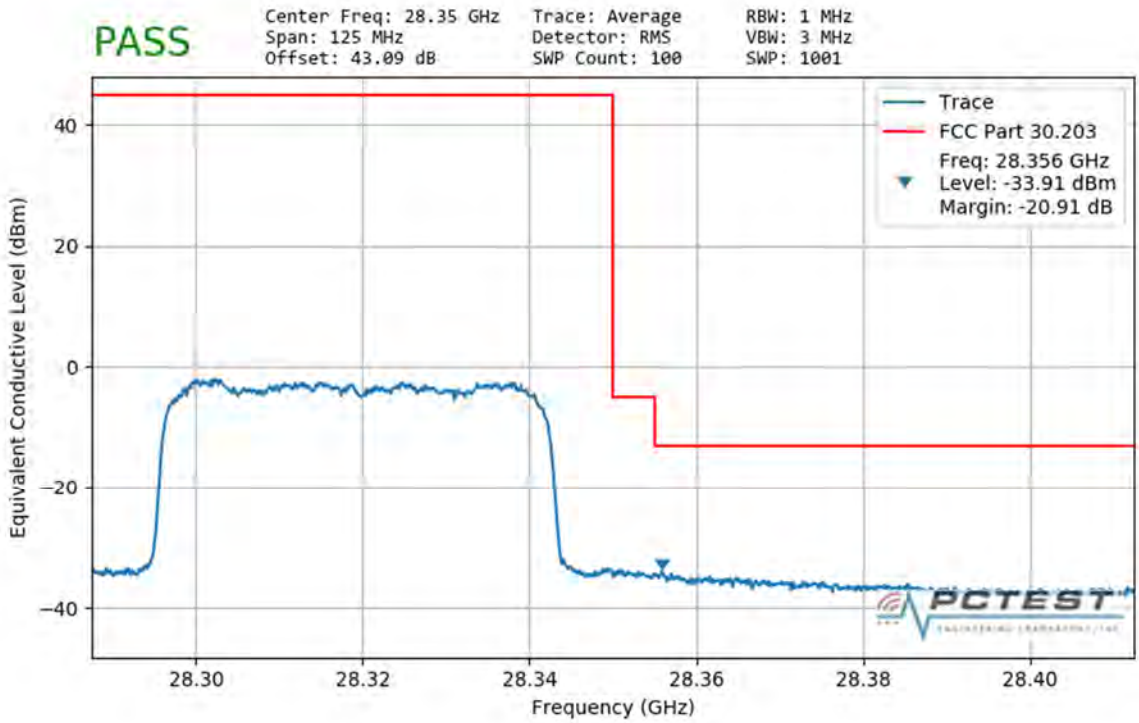
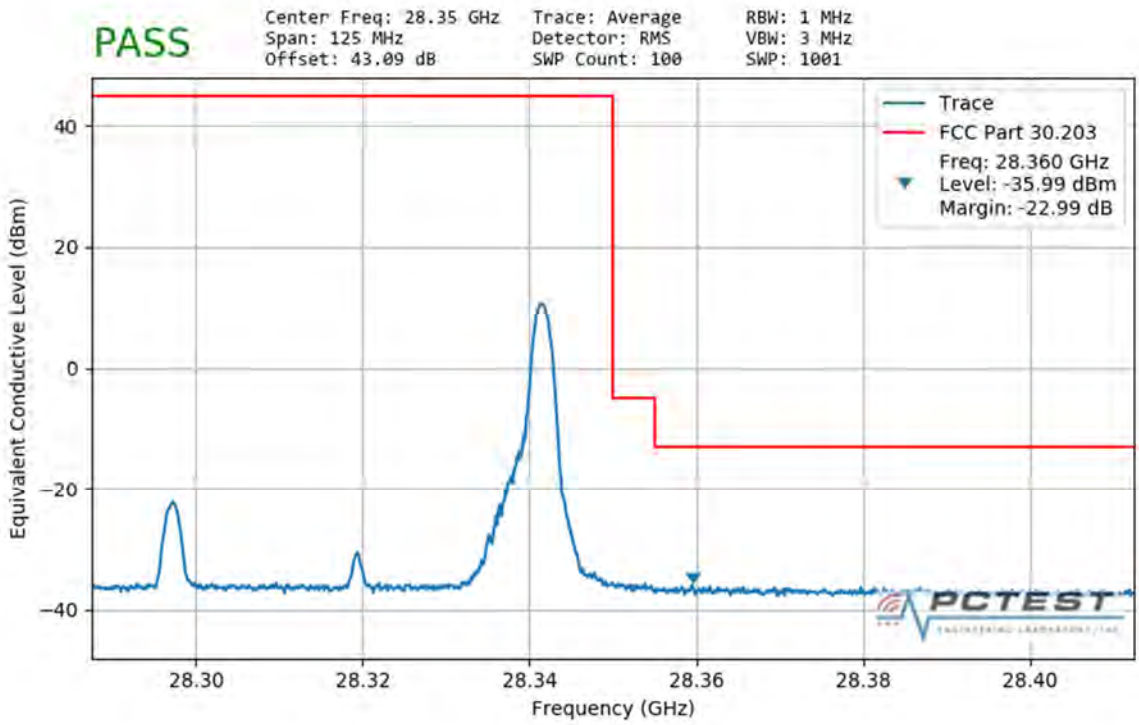


Plot 7-267. Ant4 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-268. Ant4 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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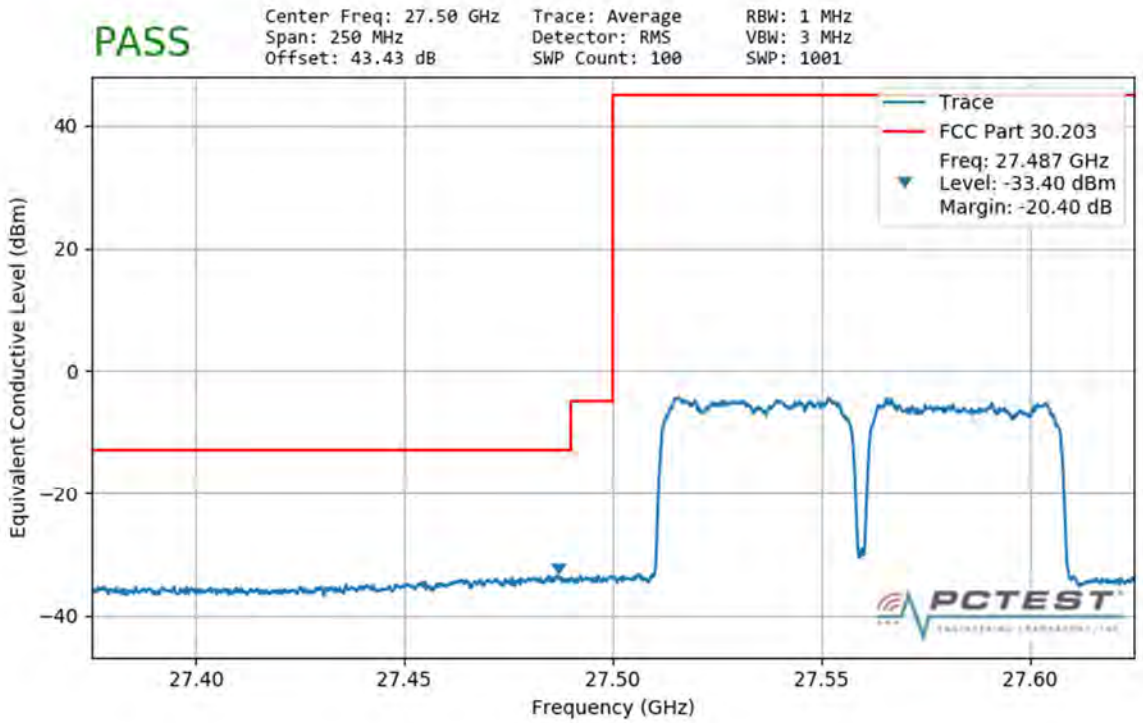
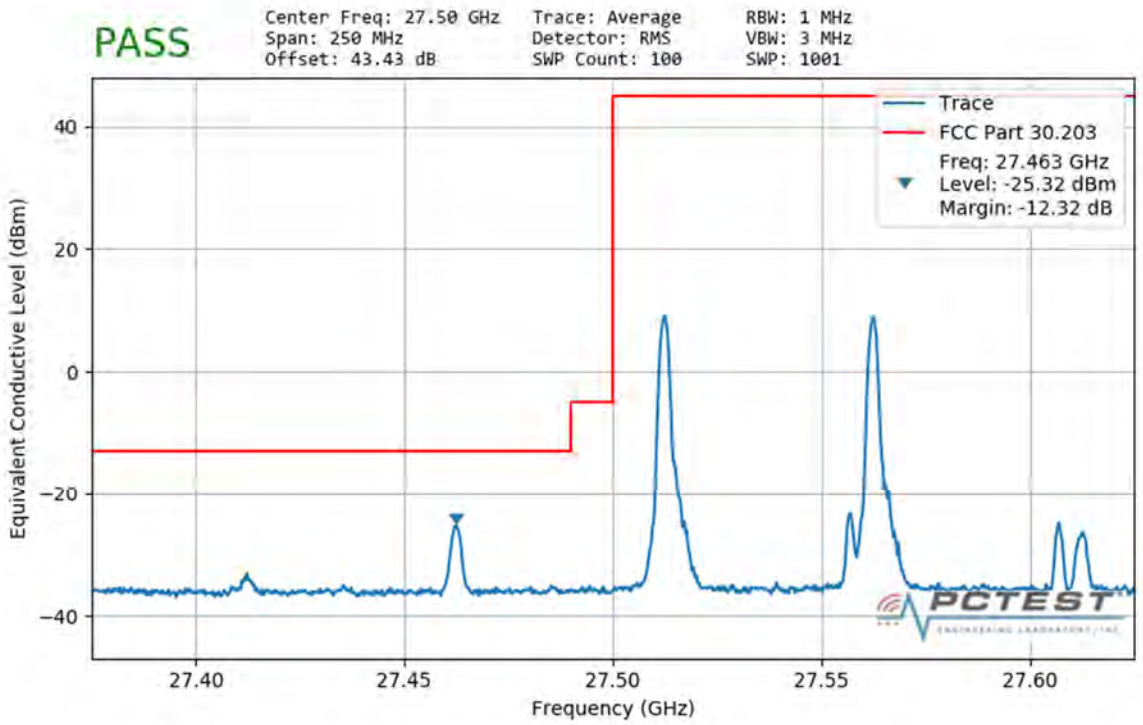


Plot 7-269. Ant4 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-270. Ant4 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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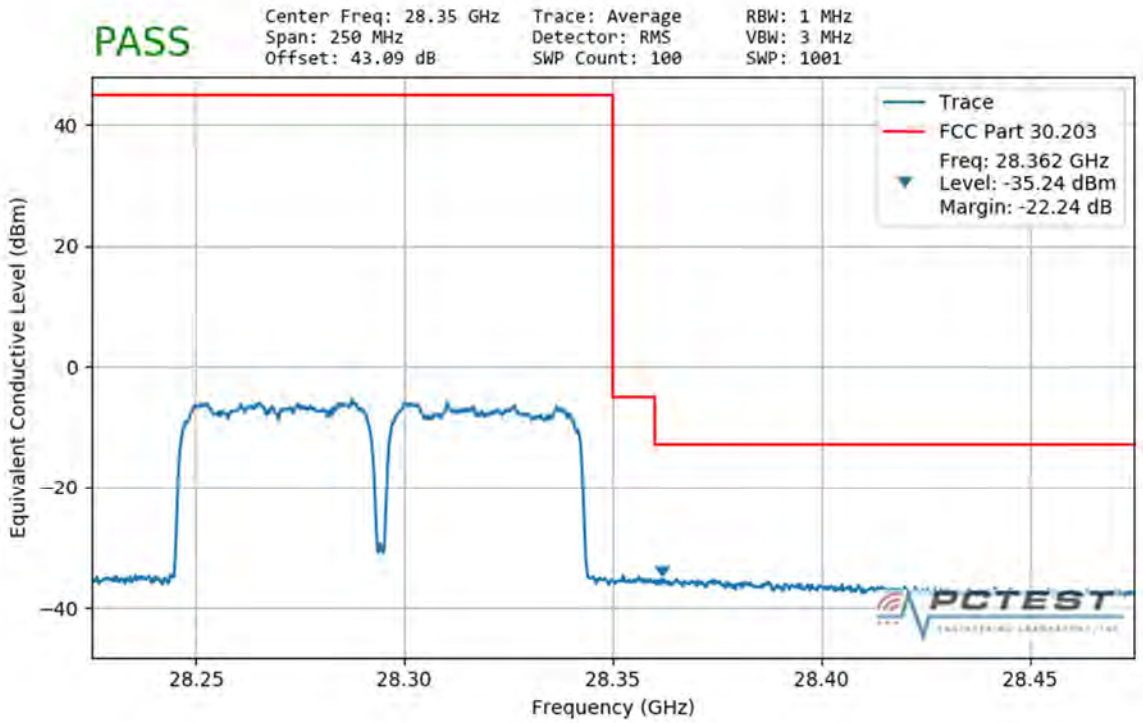
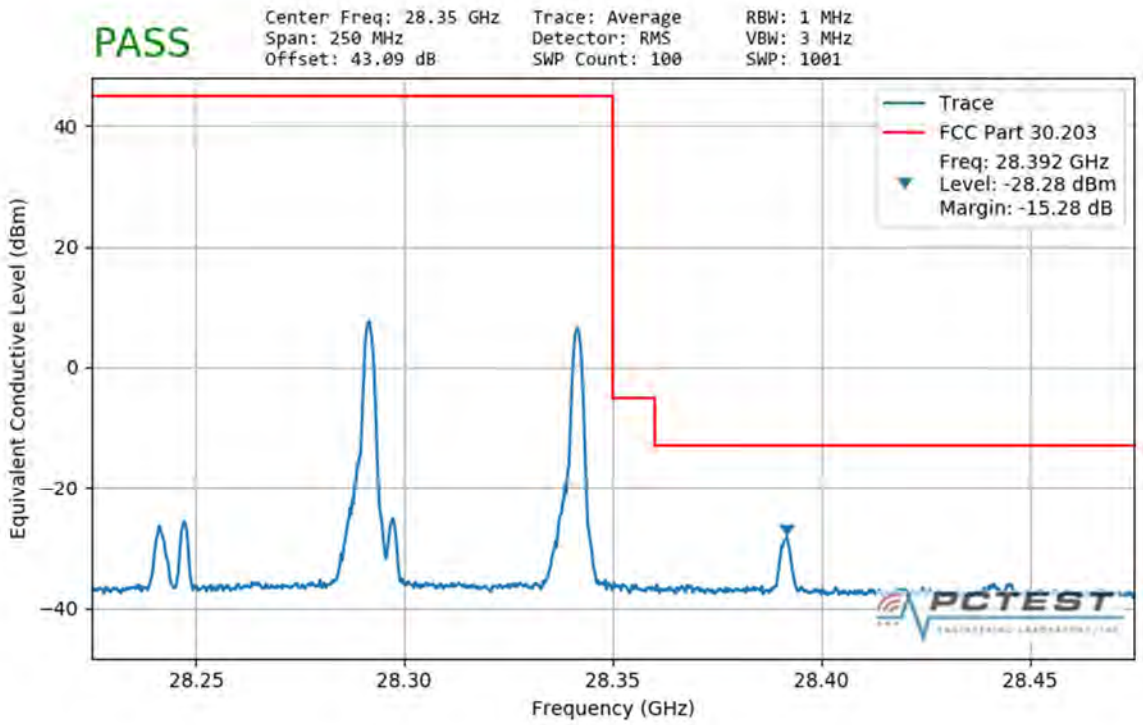


Plot 7-271. Ant4 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-272. Ant4 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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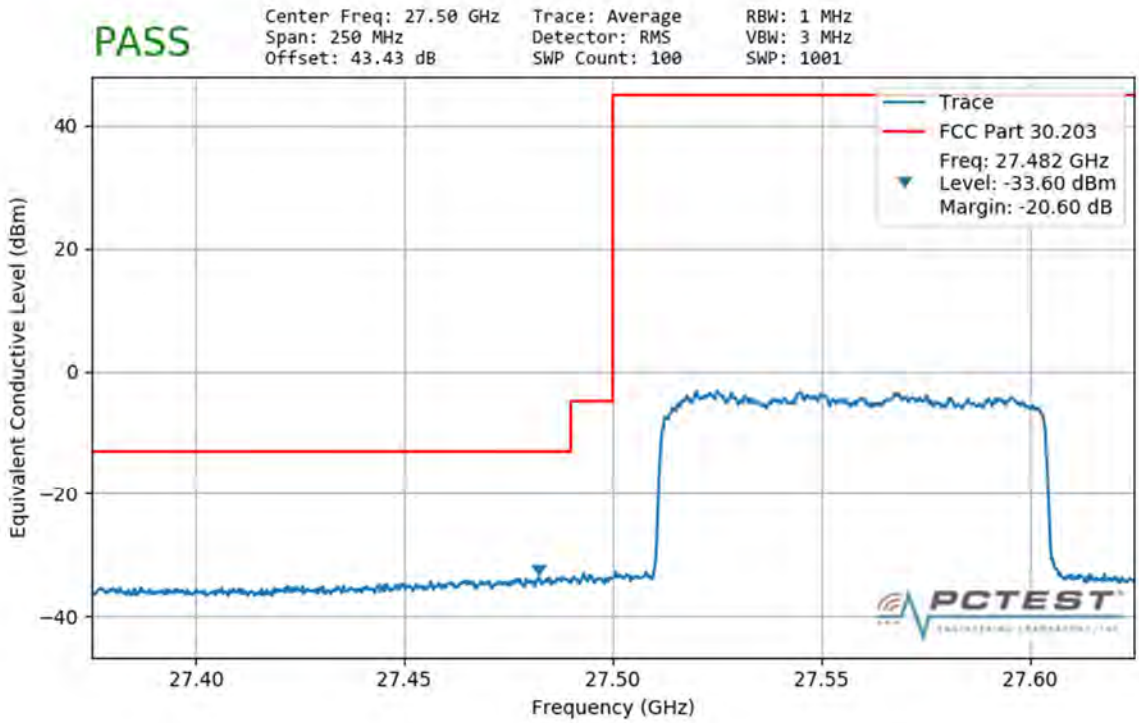
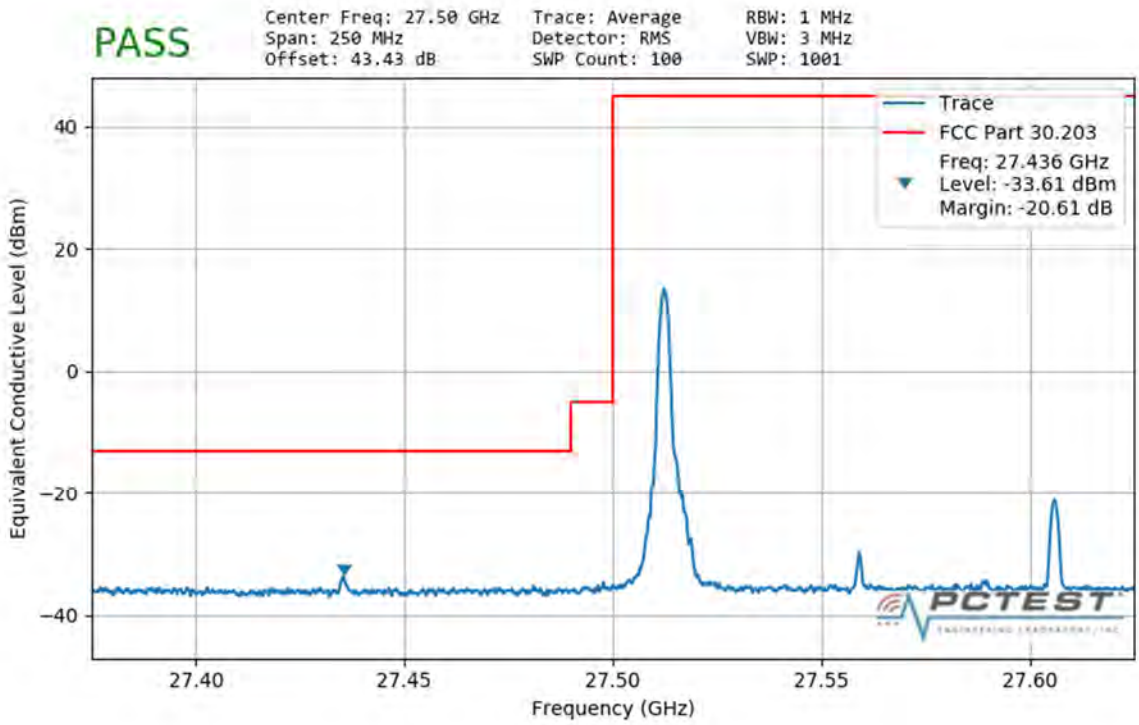


Plot 7-273. Ant4 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-274. Ant4 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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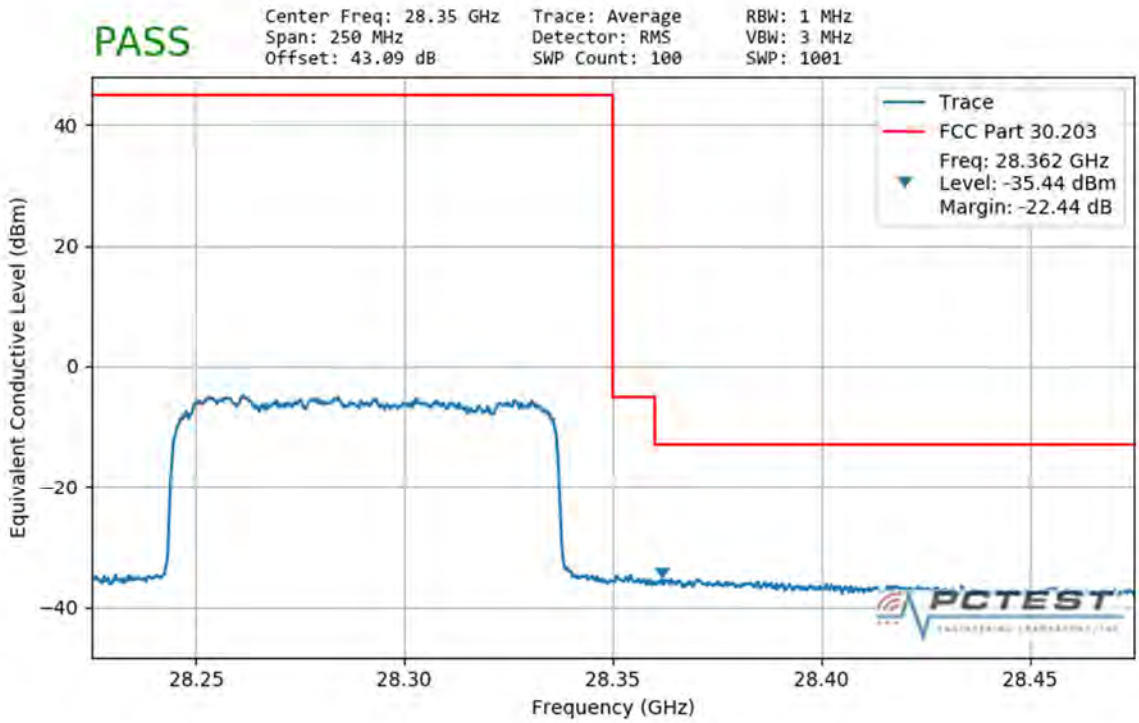
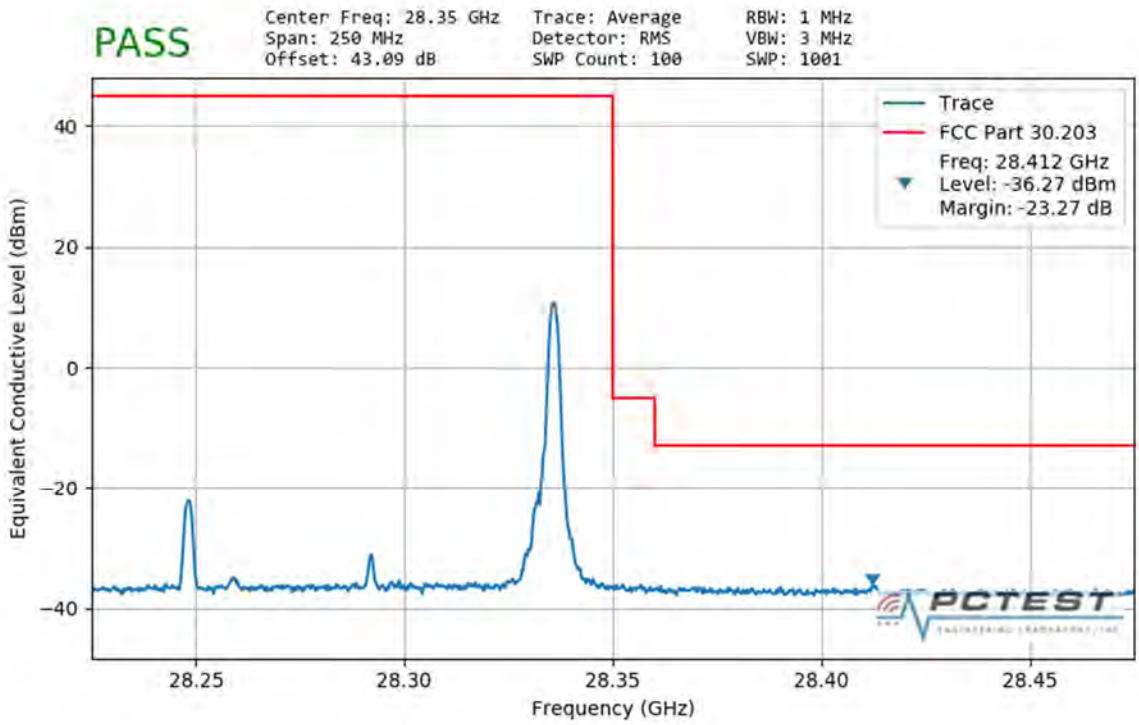


Plot 7-275. Ant4 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-276. Ant4 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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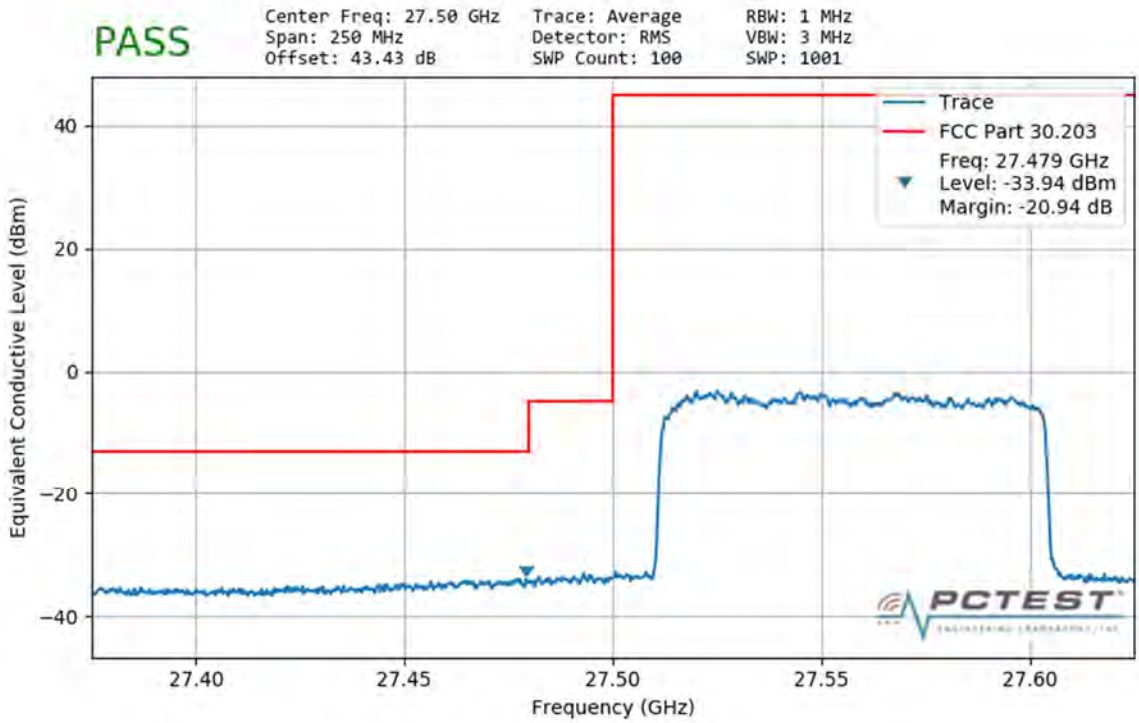
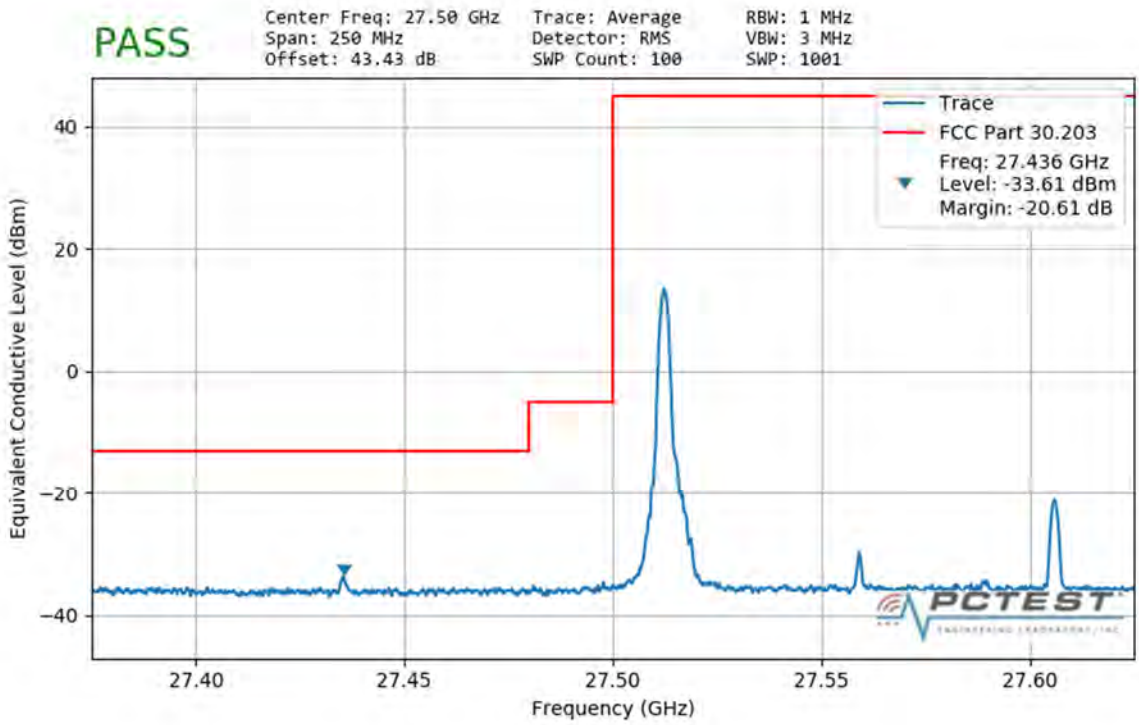


Plot 7-277. Ant4 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-278. Ant4 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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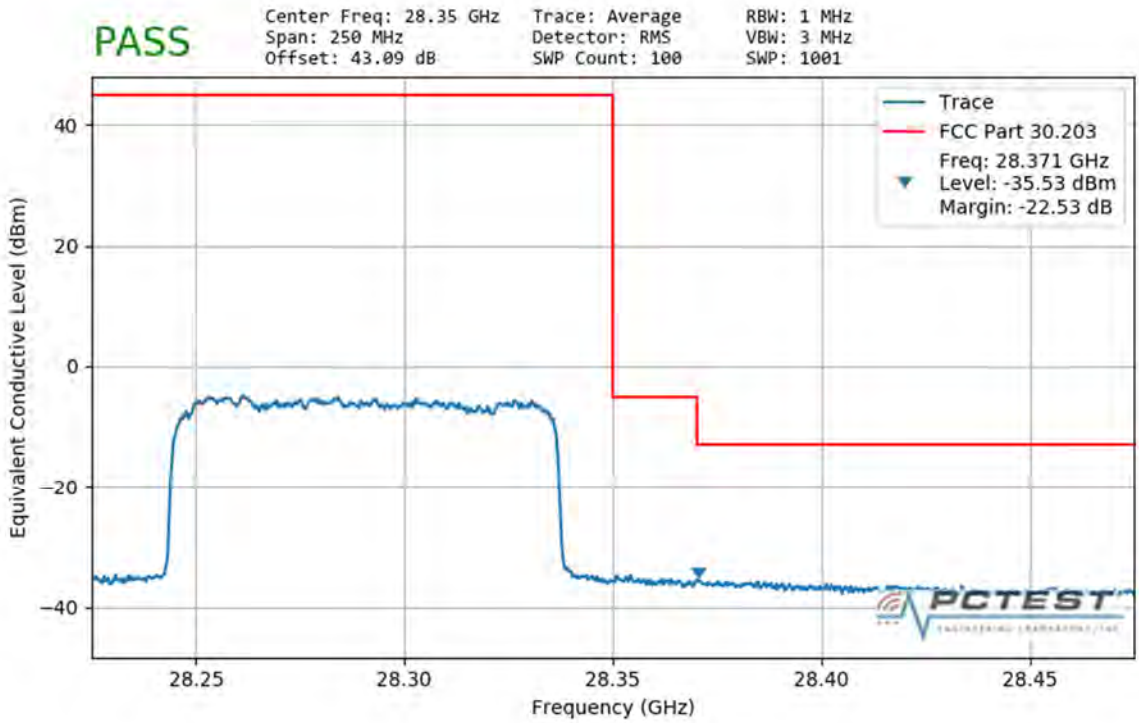
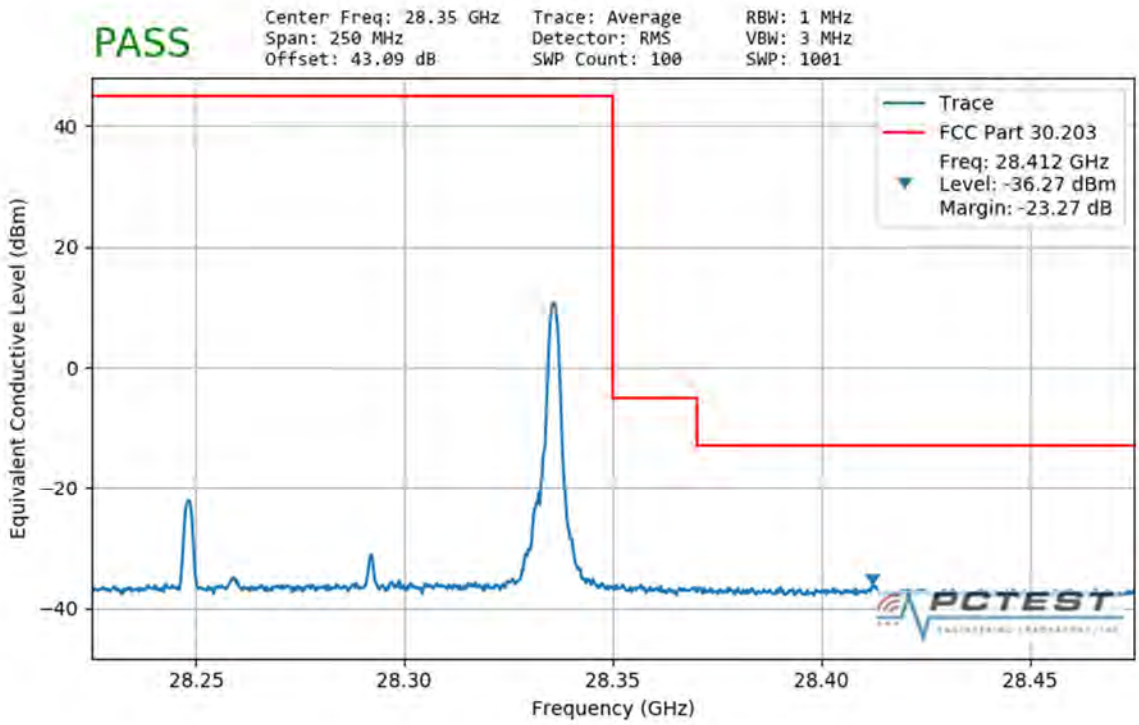


Plot 7-279. Ant4 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-280. Ant4 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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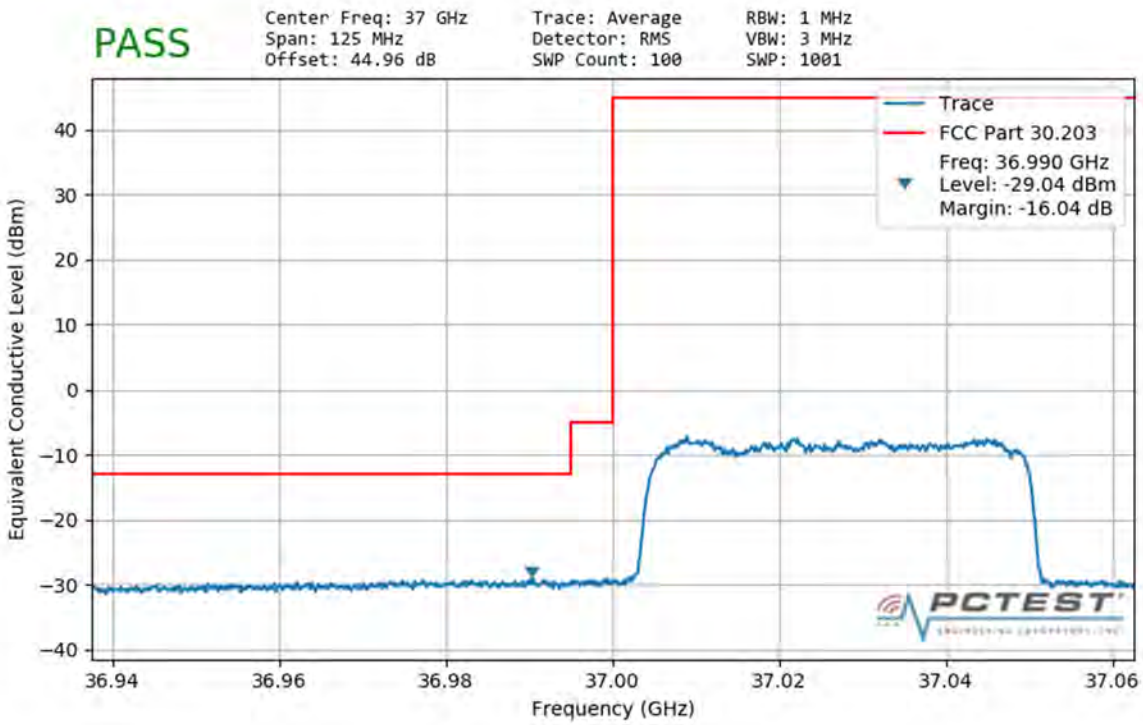
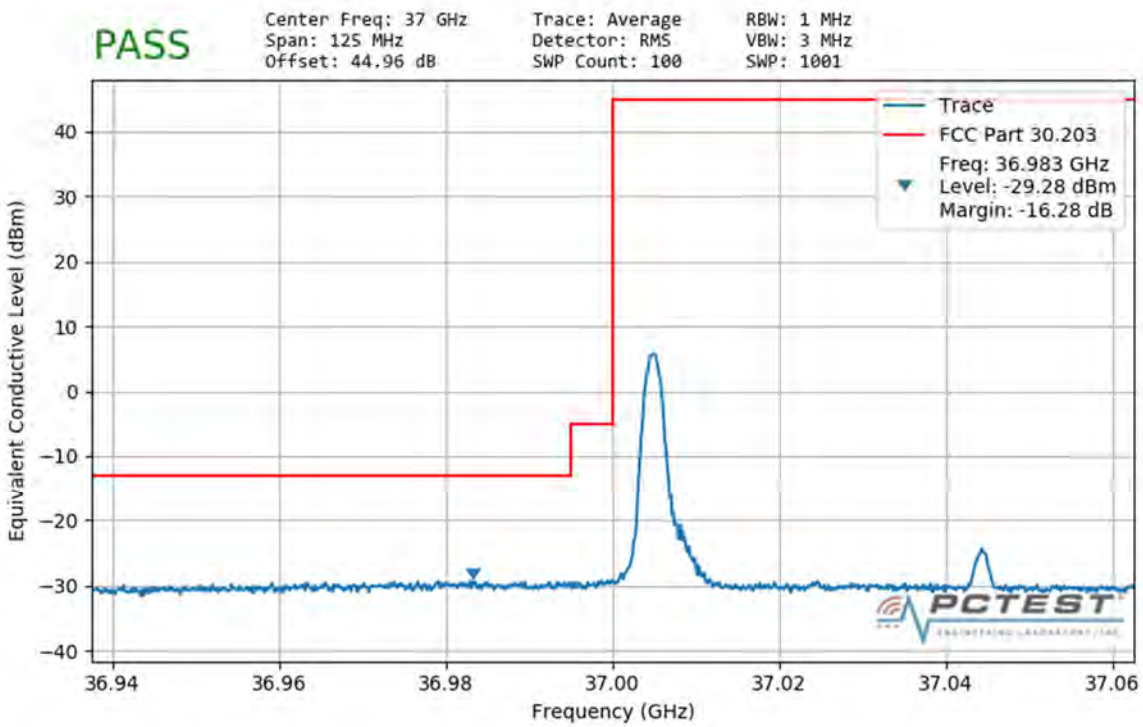
Band n260 - MIMO



Plot 7-281. Ant1 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-282. Ant1 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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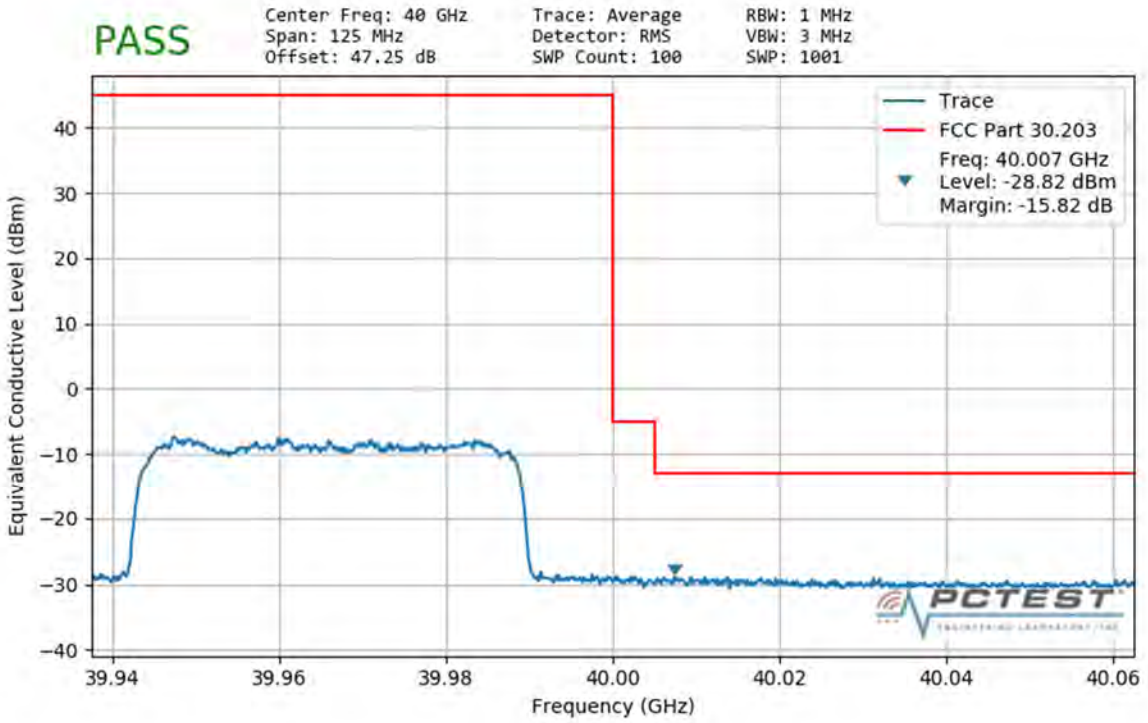
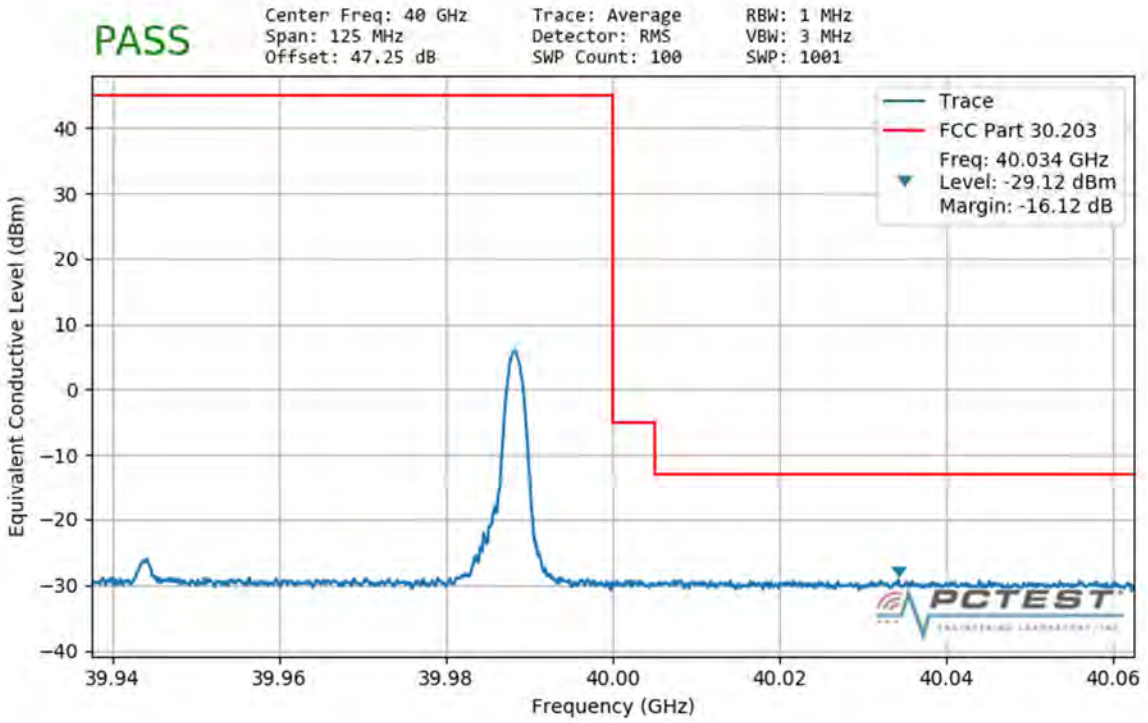


Plot 7-283. Ant1 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-284. Ant1 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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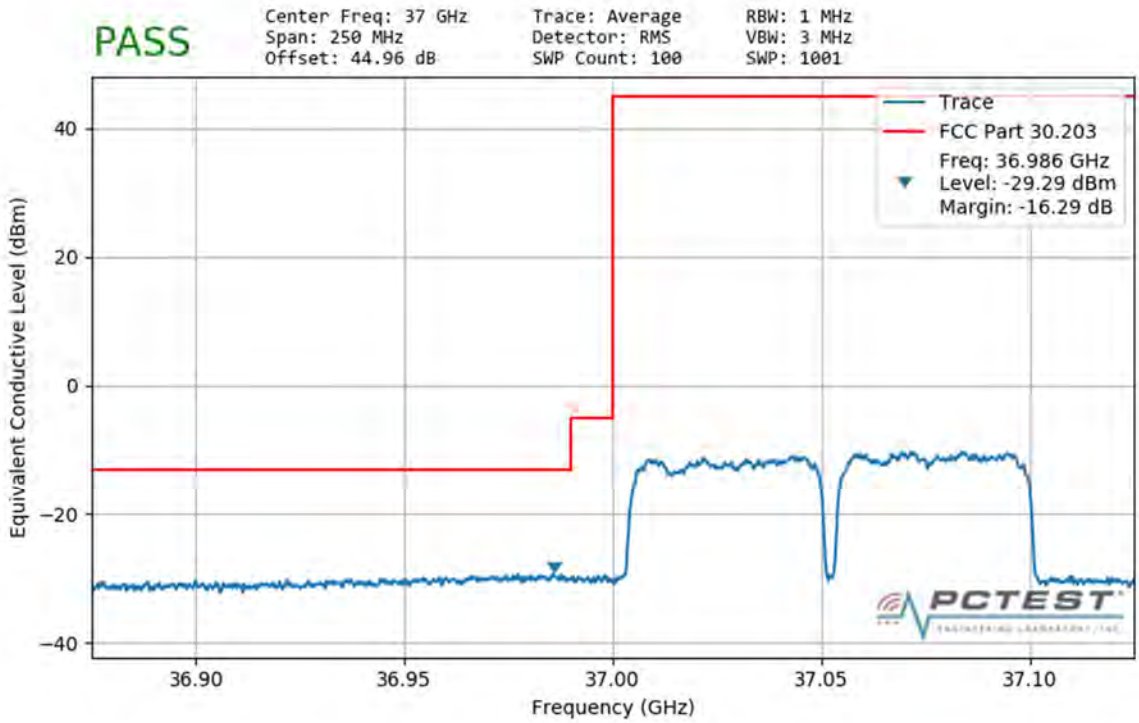
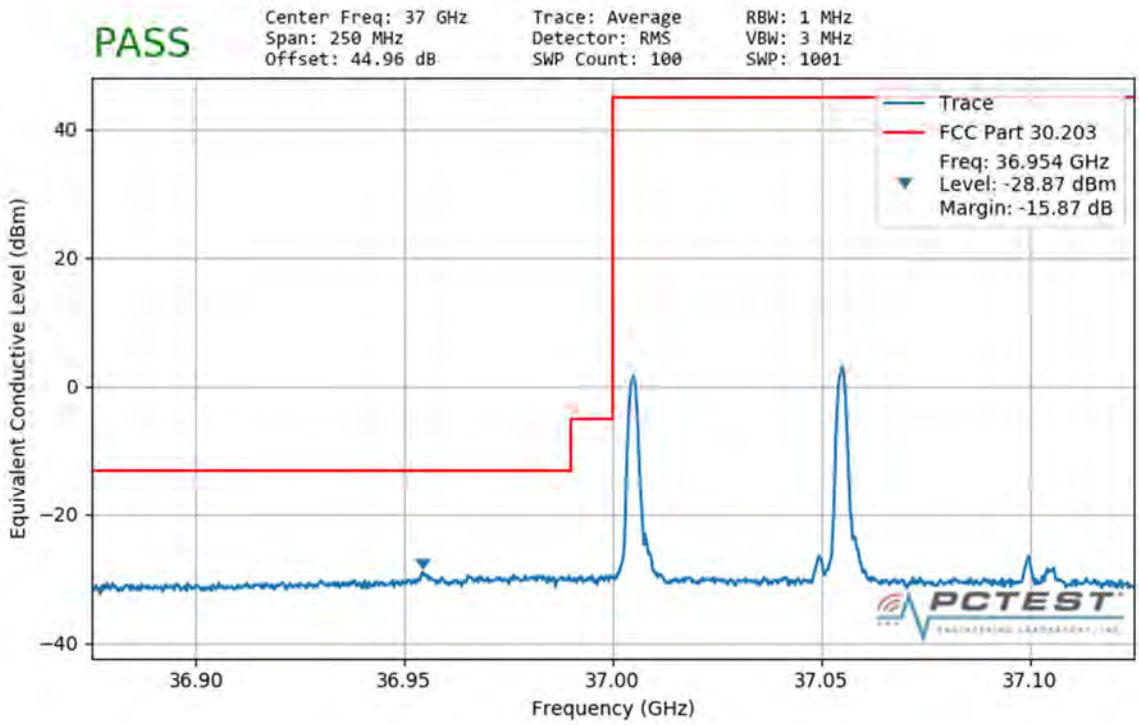


Plot 7-285. Ant1 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-286. Ant1 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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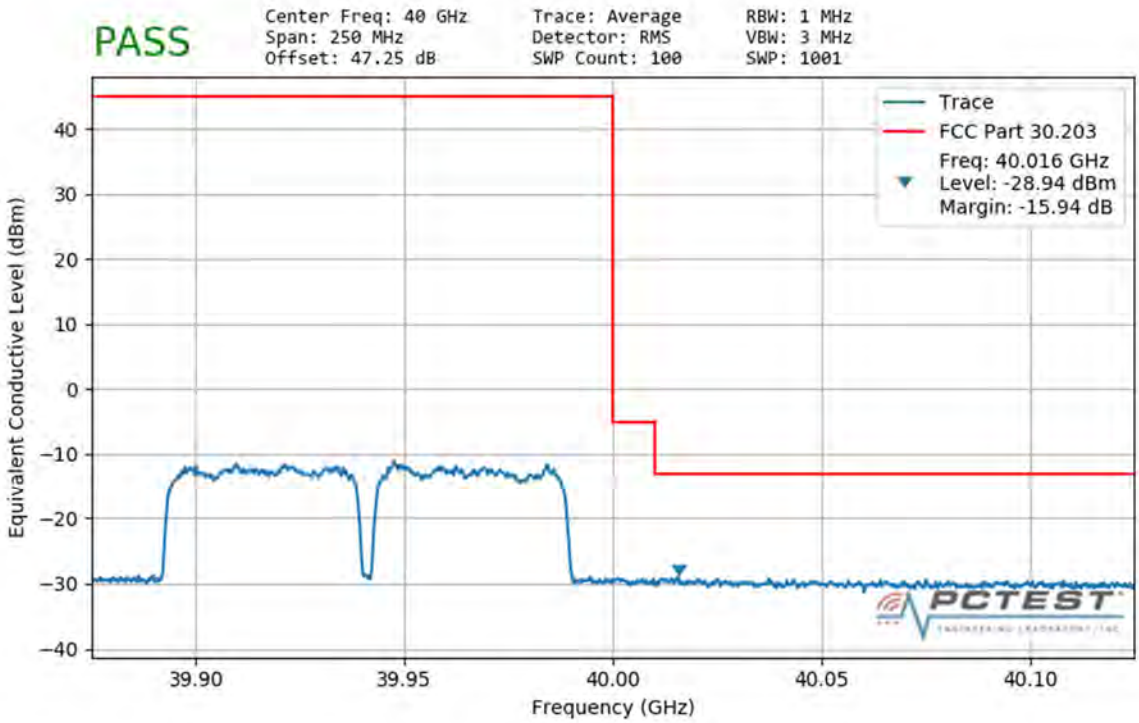
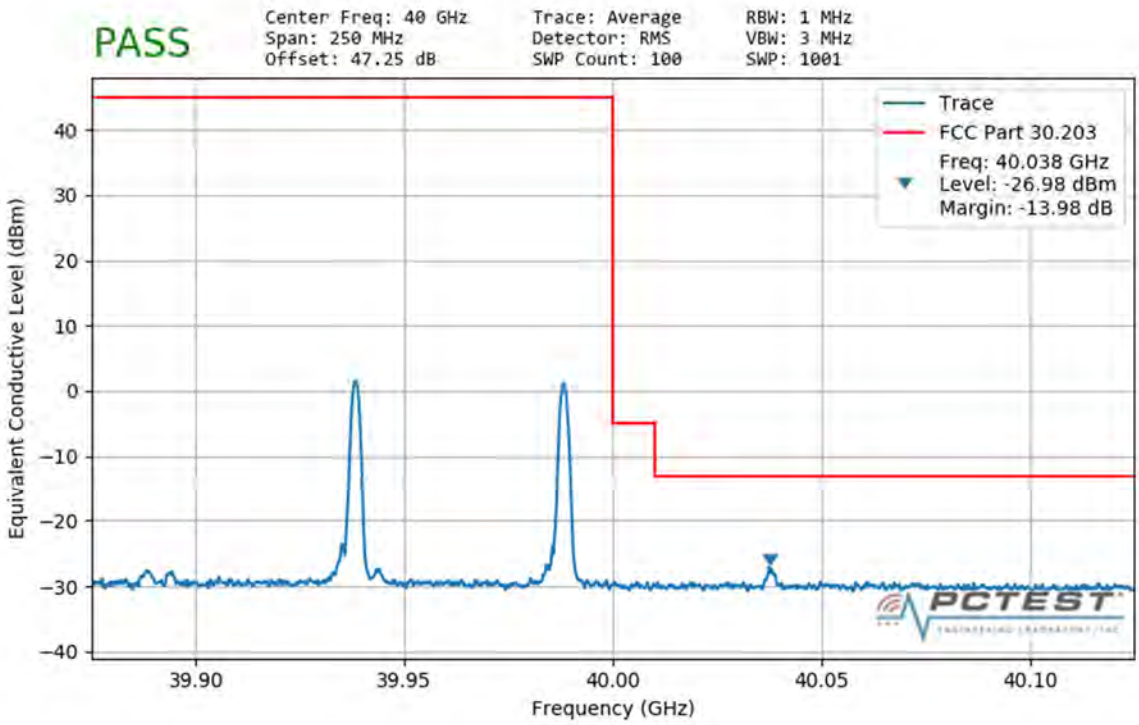


Plot 7-287. Ant1 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-288. Ant1 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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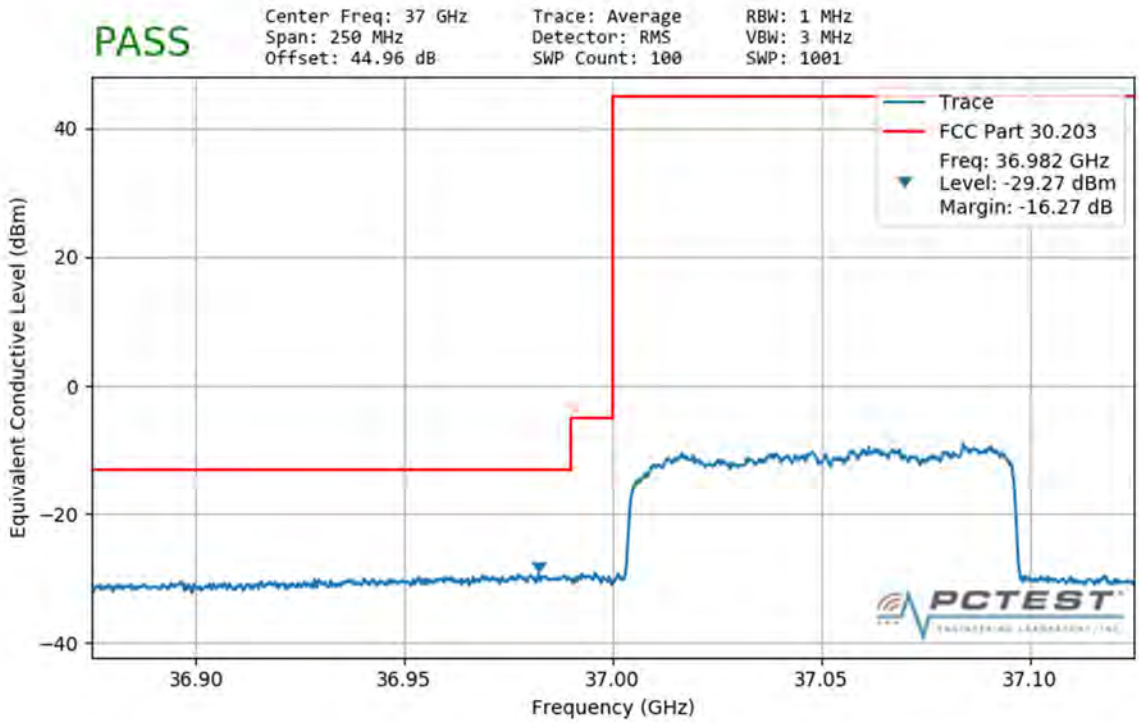
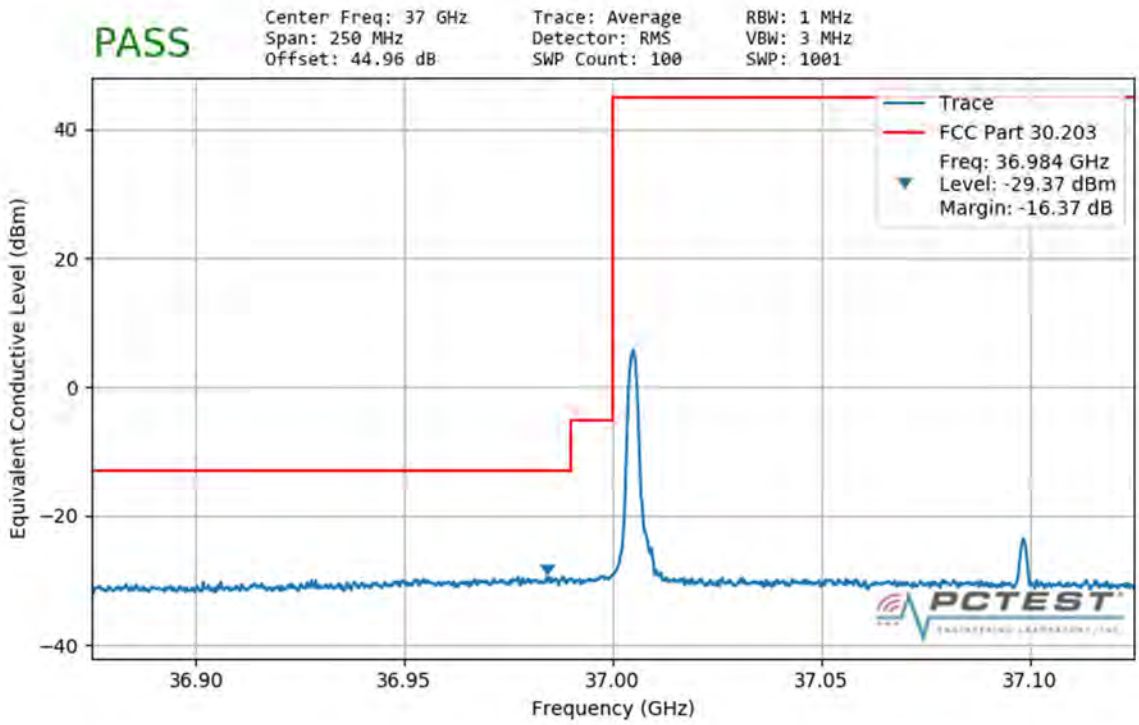


Plot 7-289. Ant1 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-290. Ant1 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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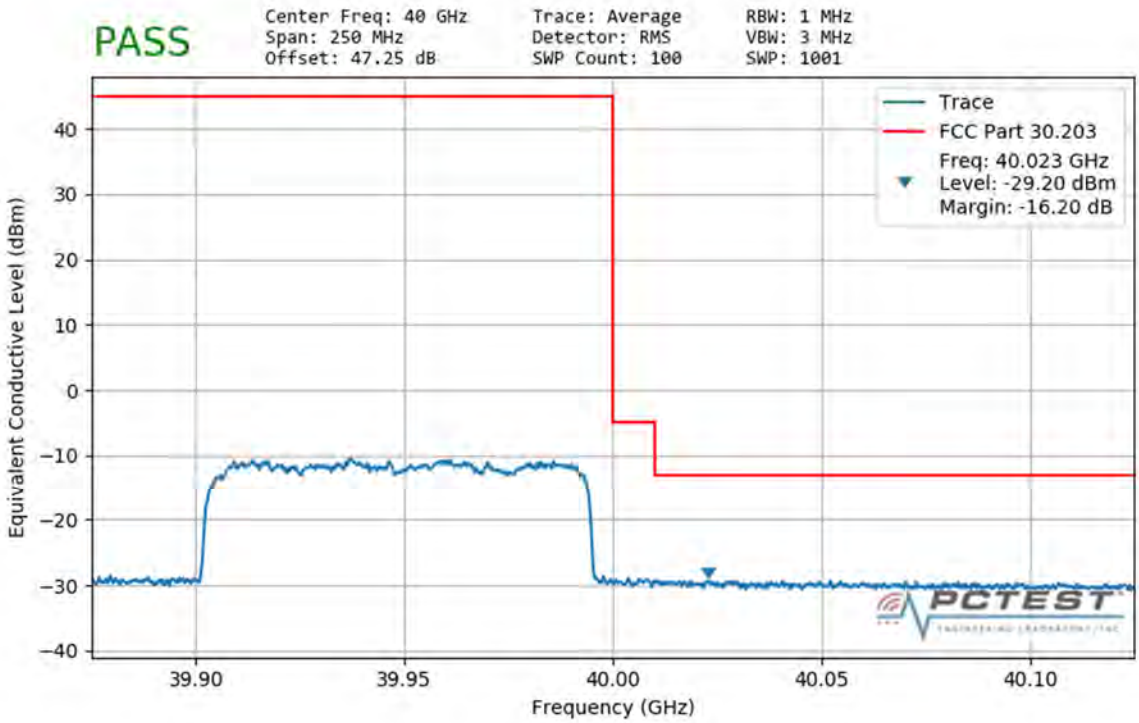
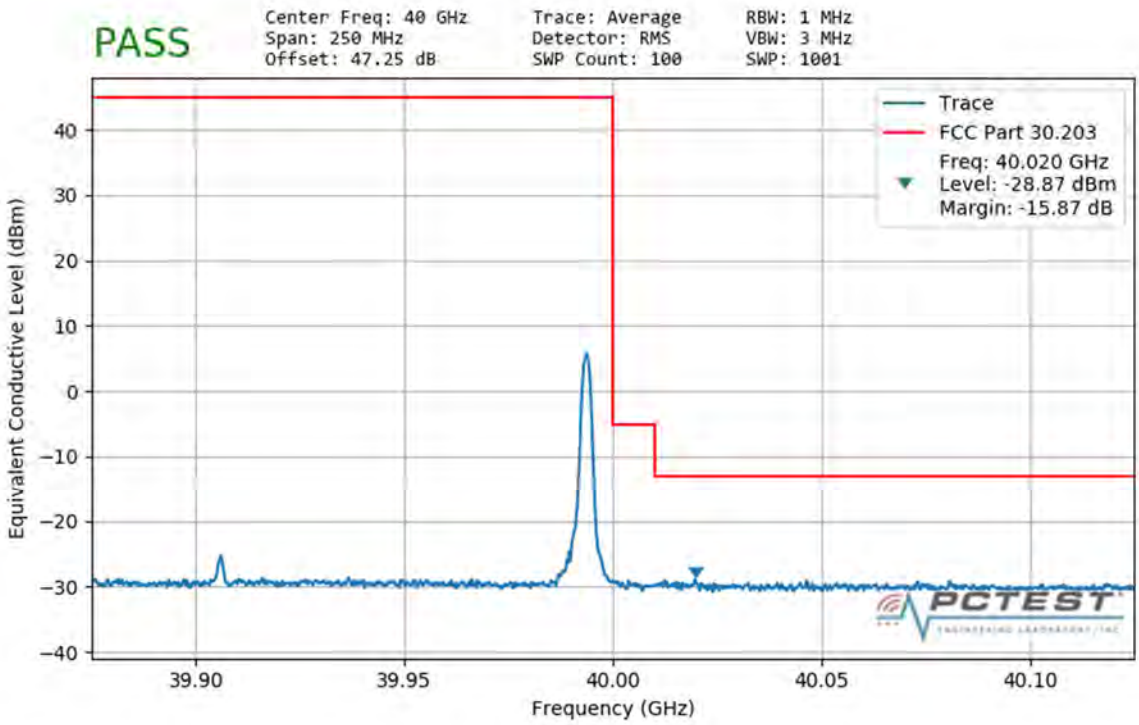


Plot 7-291. Ant1 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-292. Ant1 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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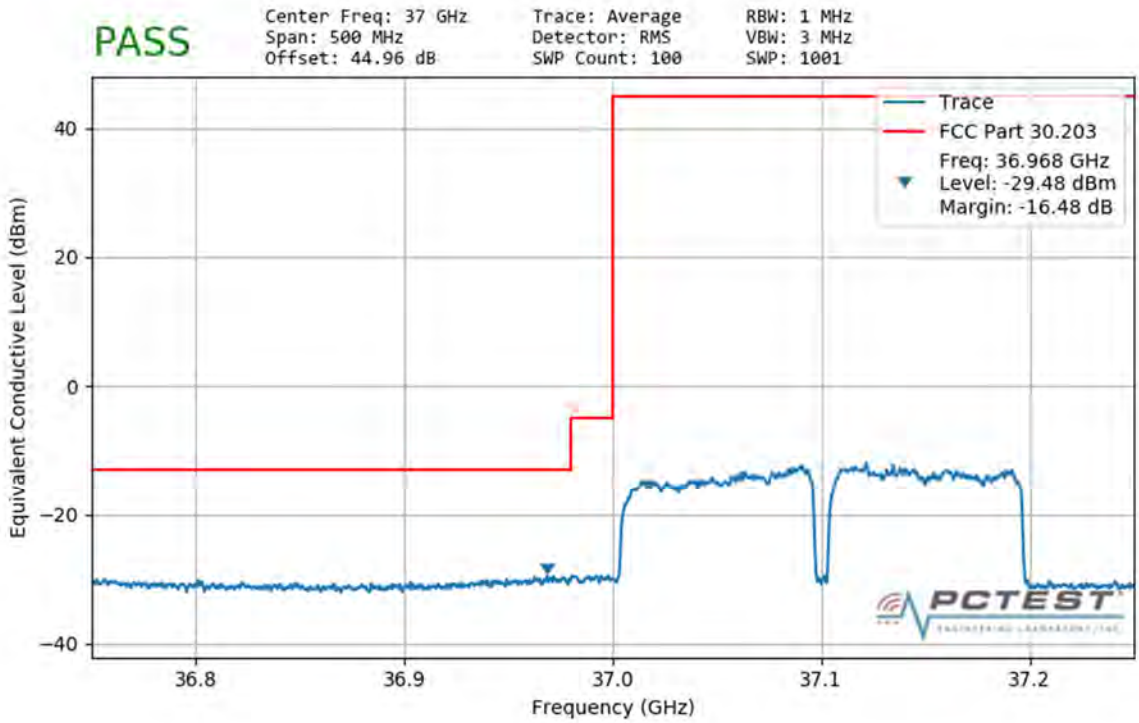
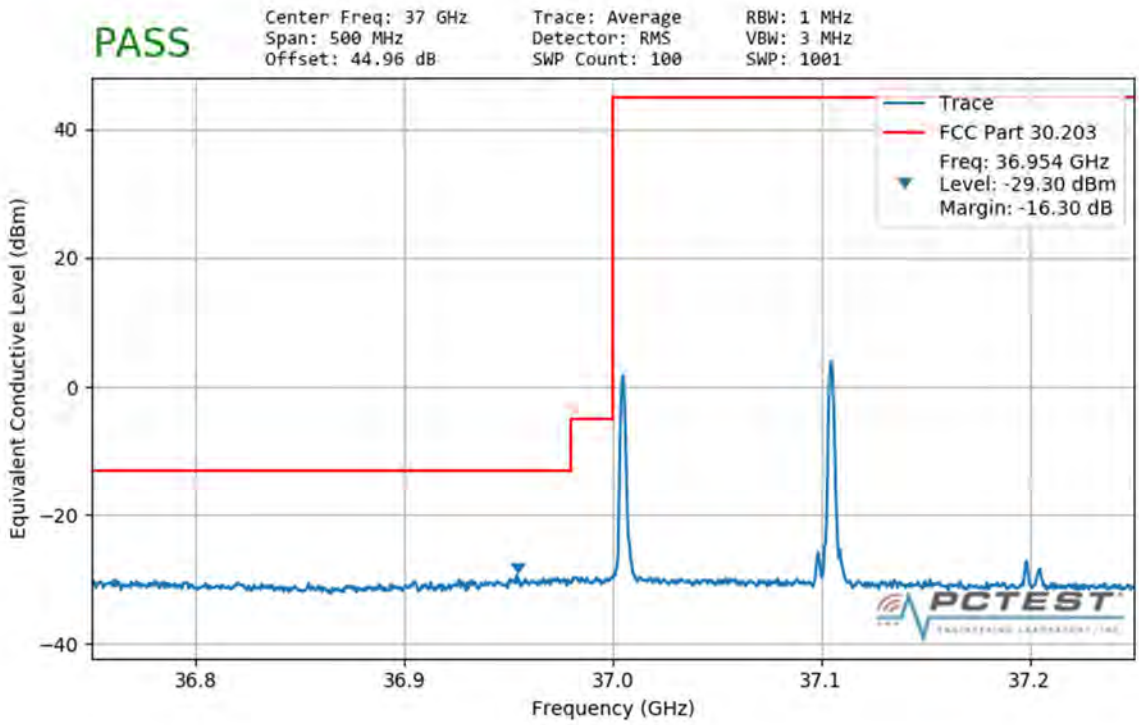


Plot 7-293. Ant1 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-294. Ant1 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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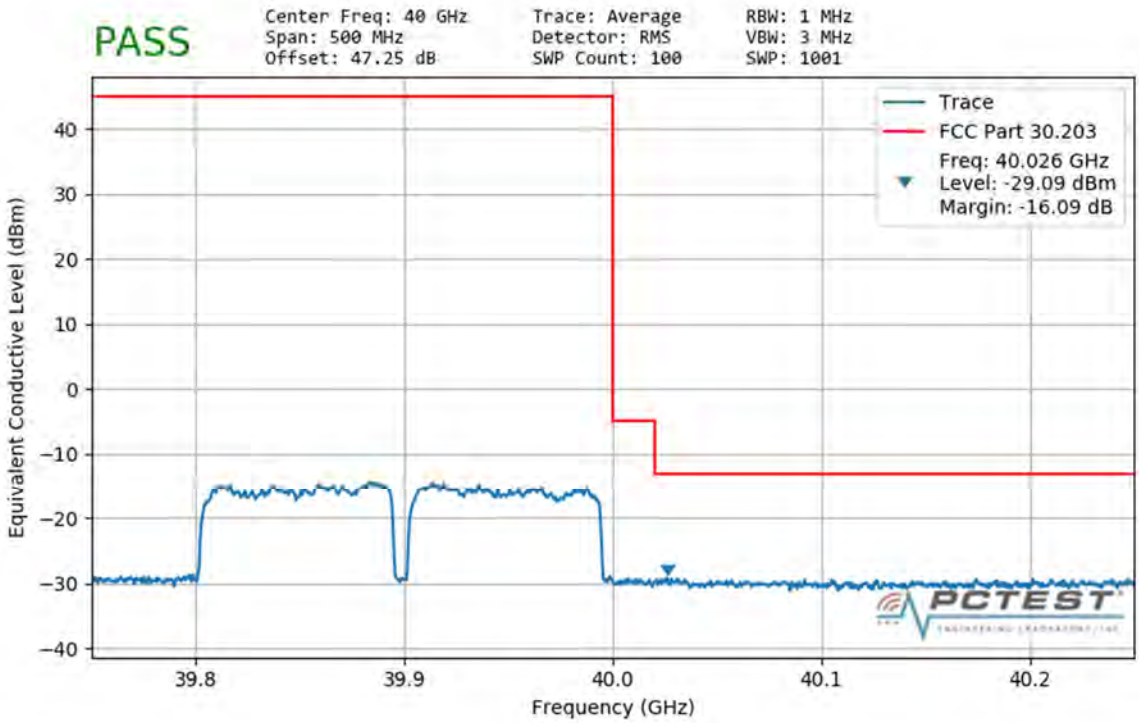
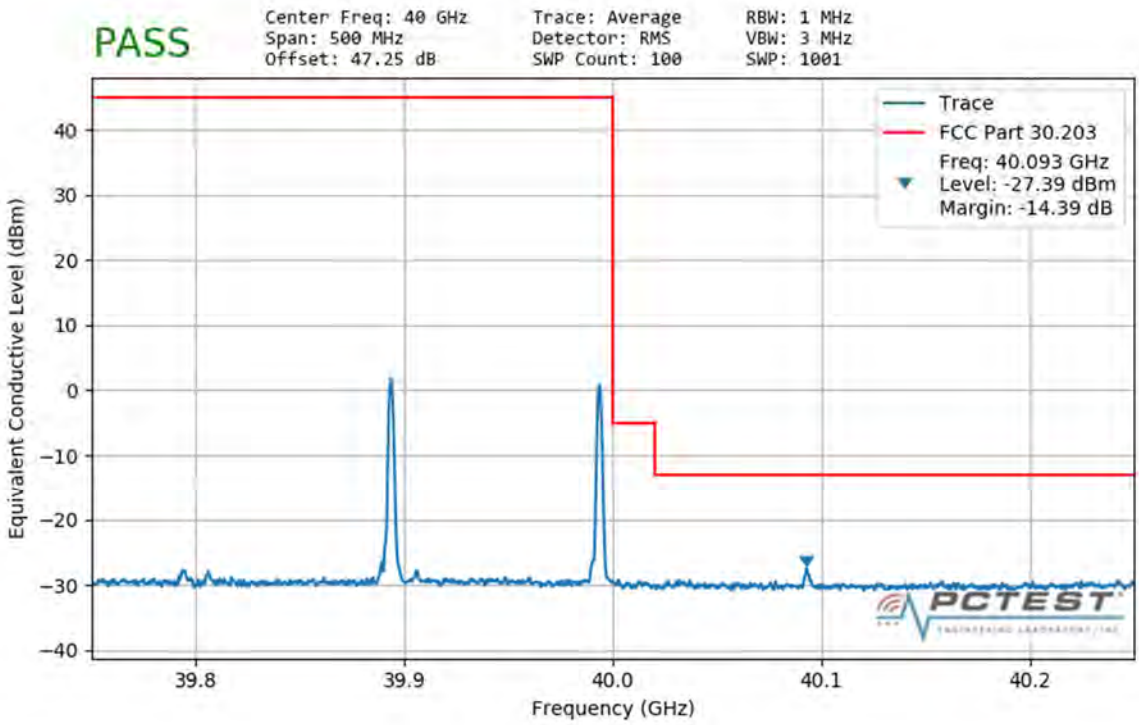


Plot 7-295. Ant1 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-296. Ant1 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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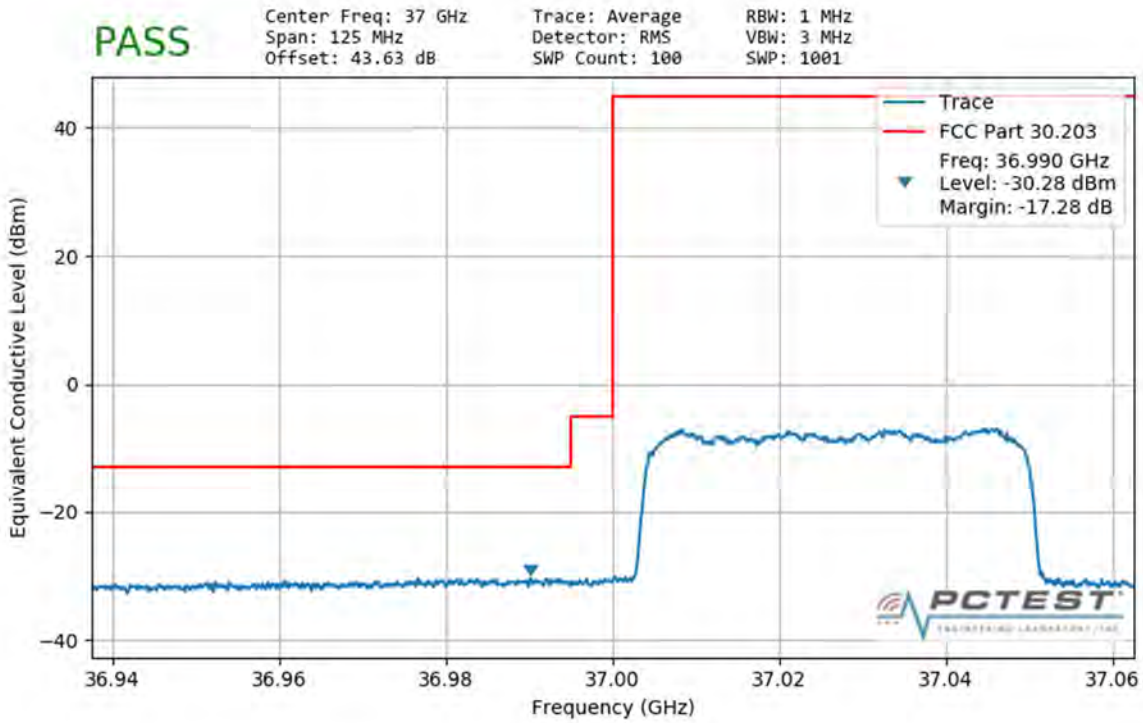
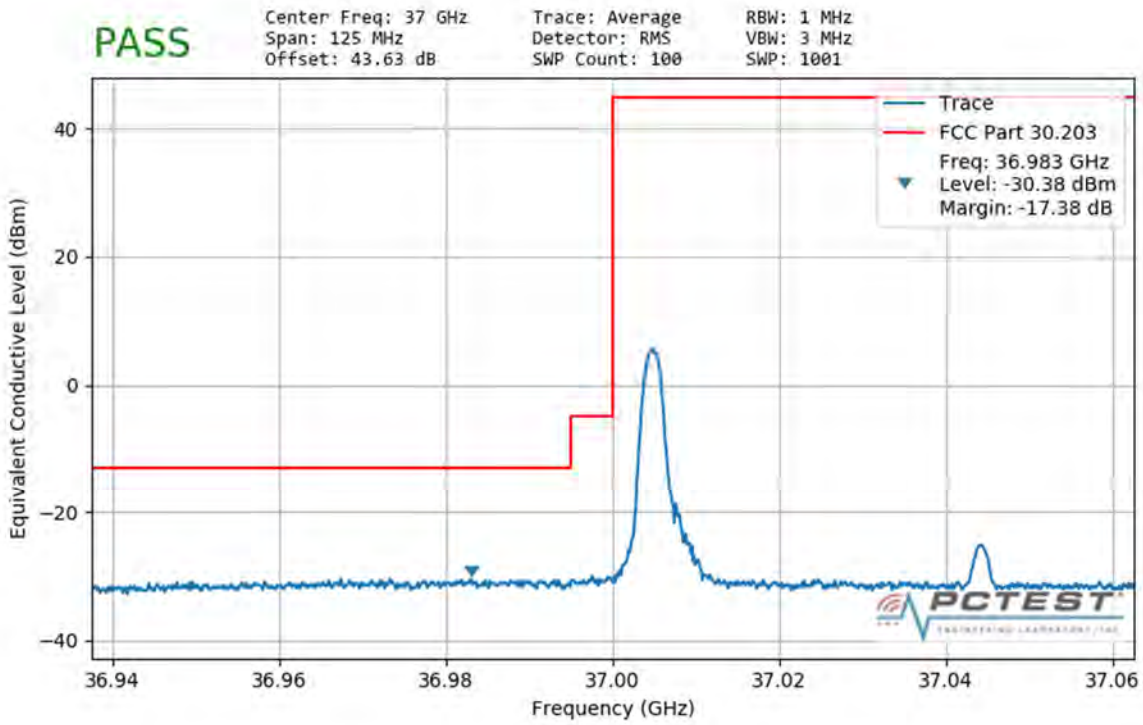


Plot 7-297. Ant2 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-298. Ant2 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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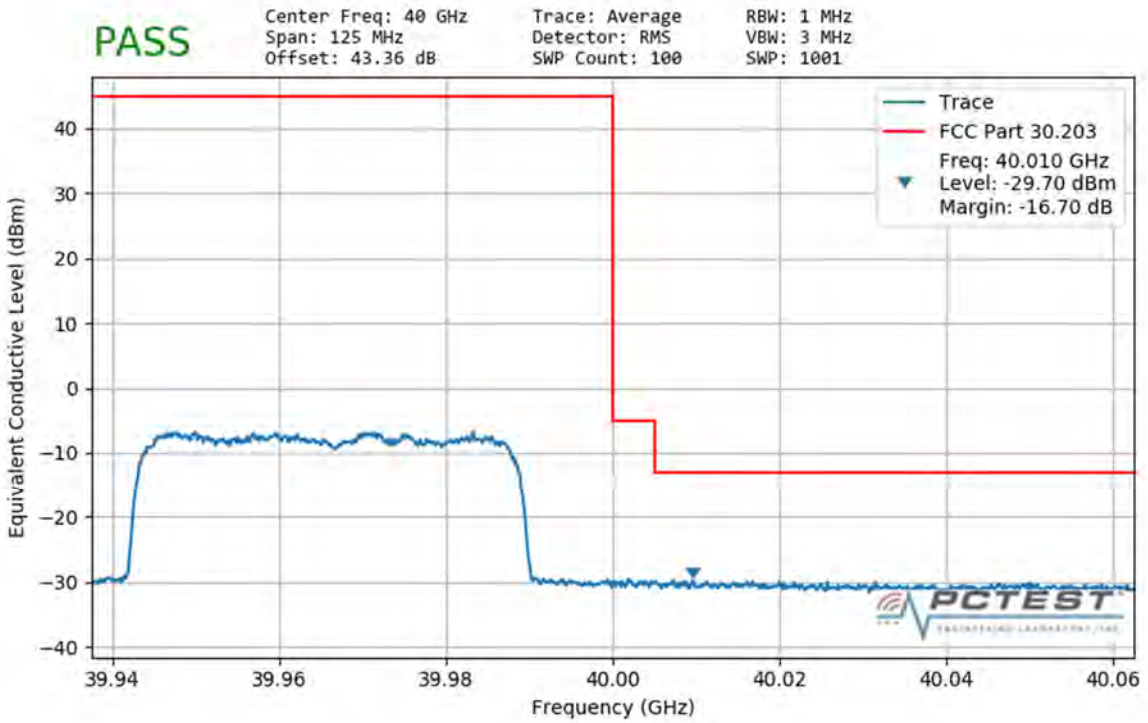
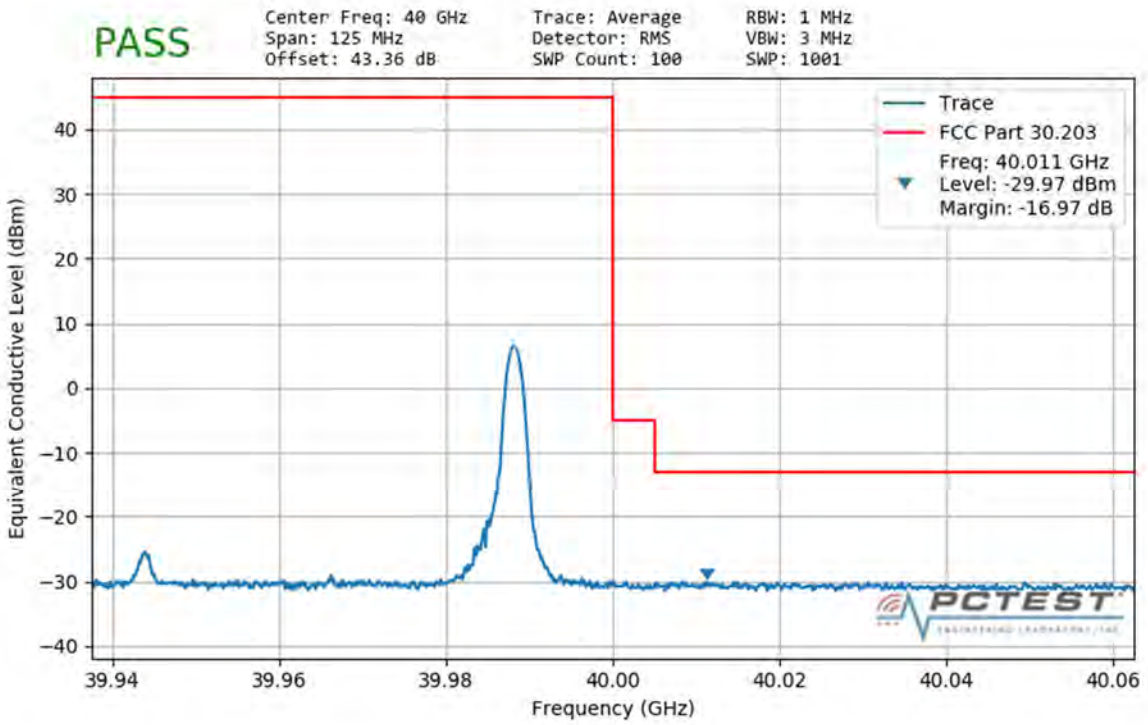


Plot 7-299. Ant2 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-300. Ant2 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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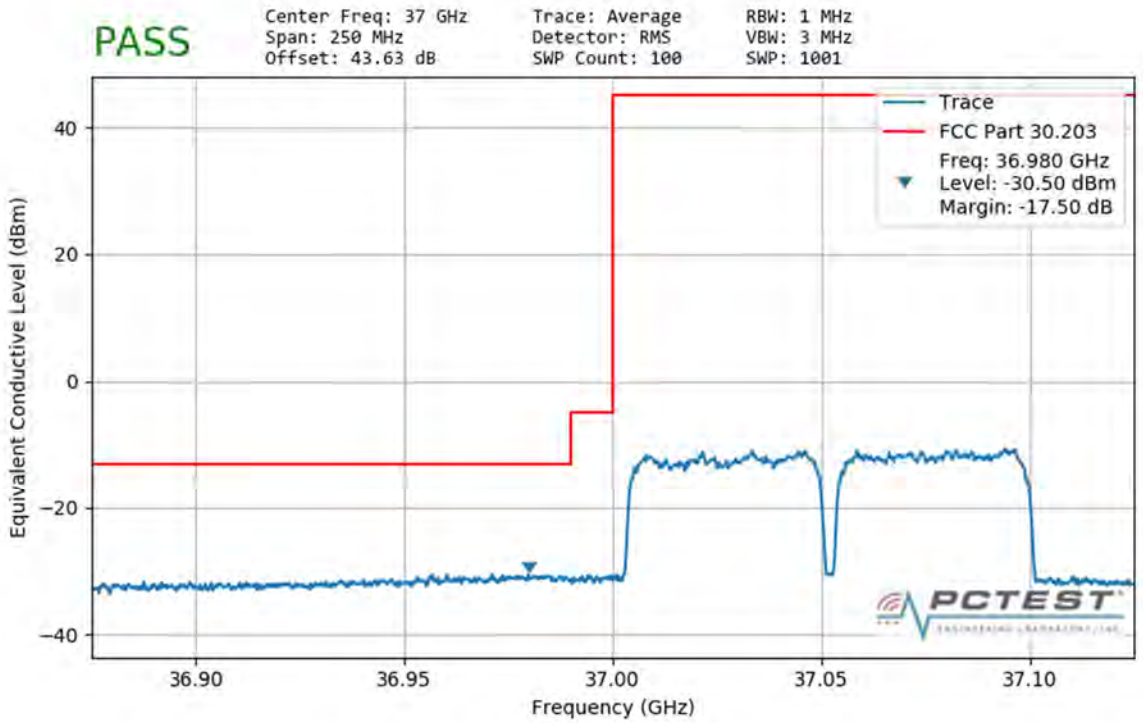
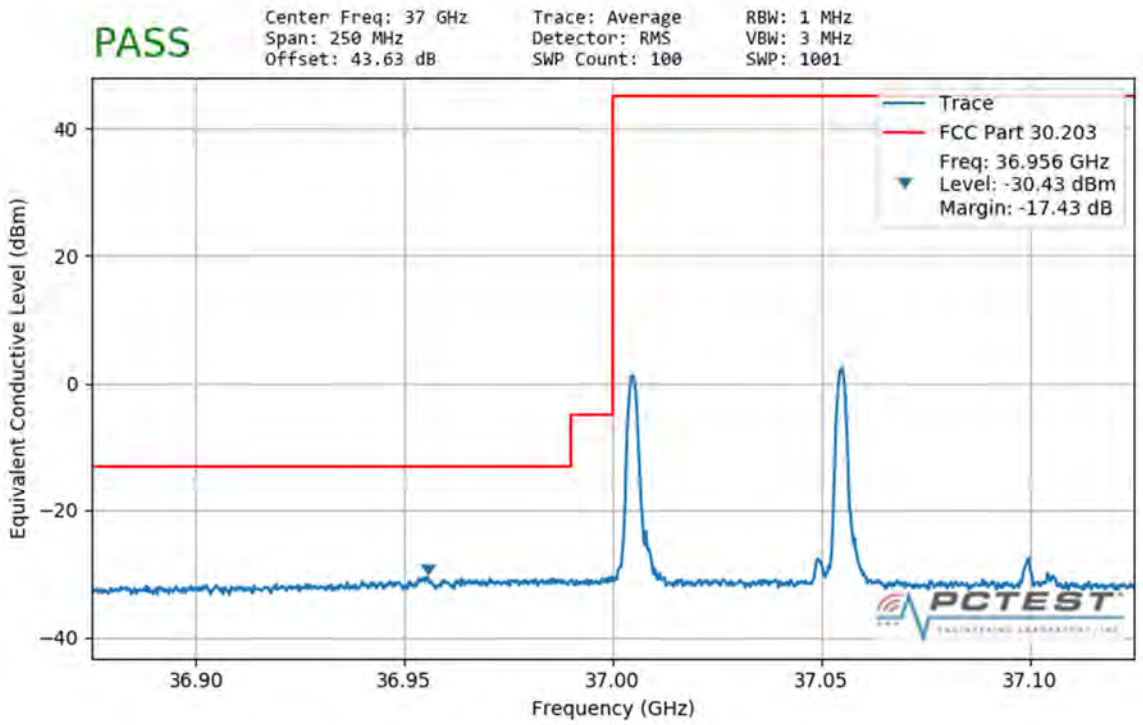


Plot 7-301. Ant2 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-302. Ant2 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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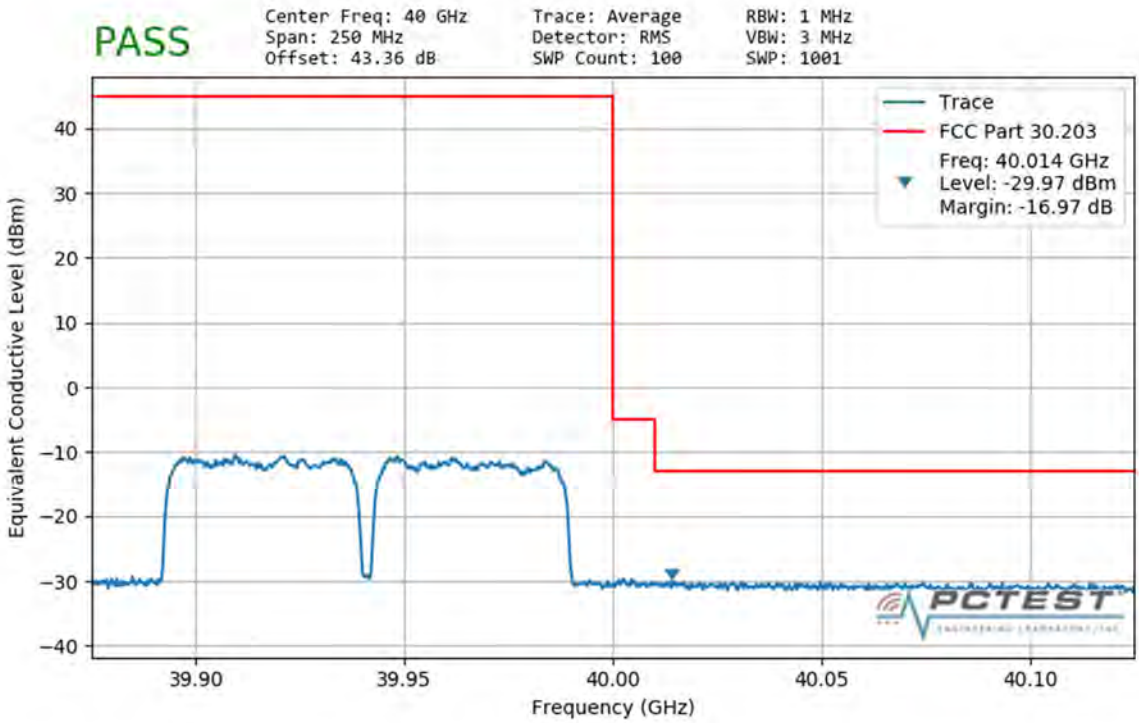
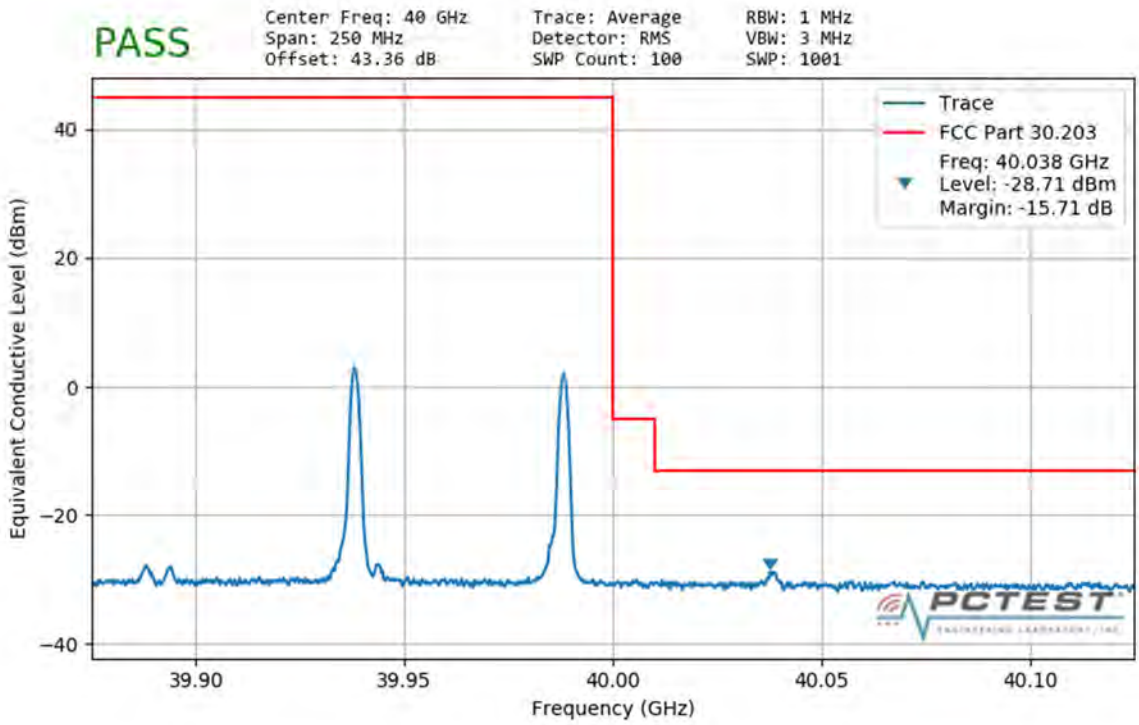


Plot 7-303. Ant2 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-304. Ant2 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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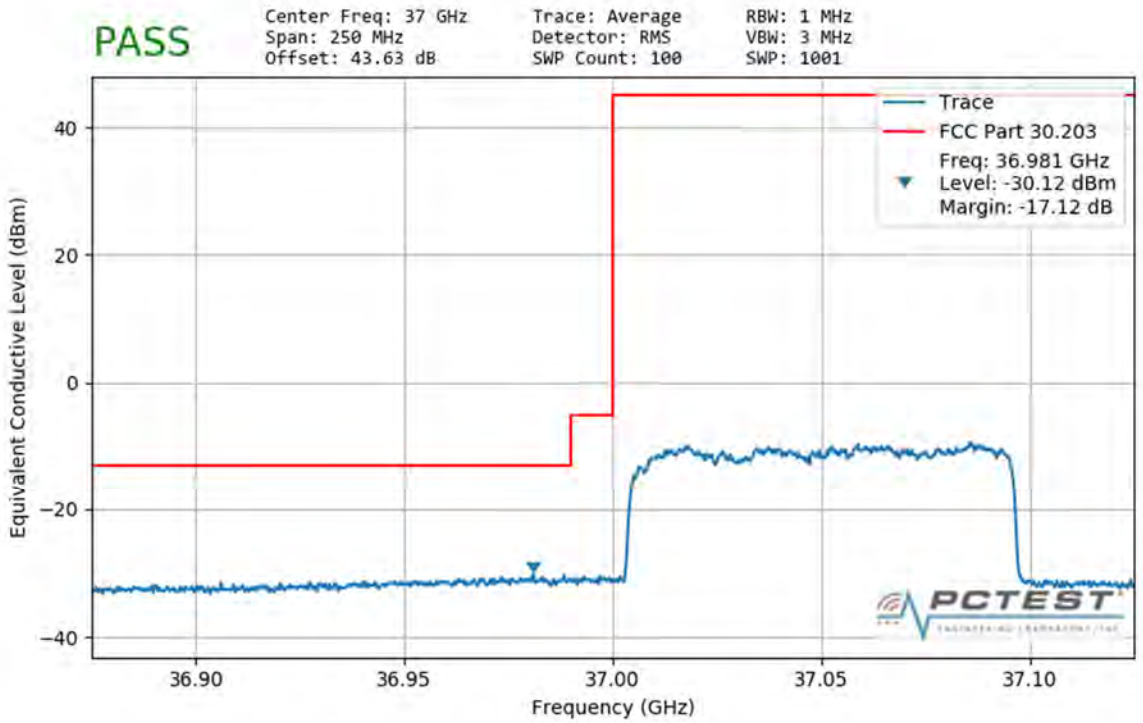
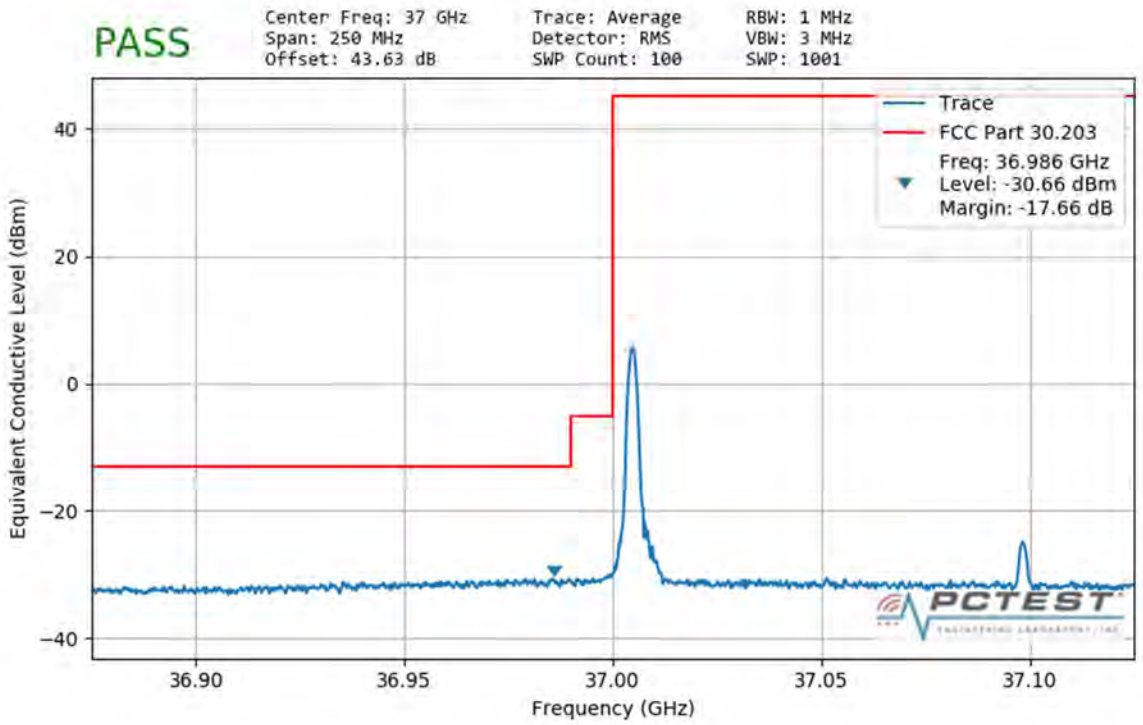


Plot 7-305. Ant2 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-306. Ant2 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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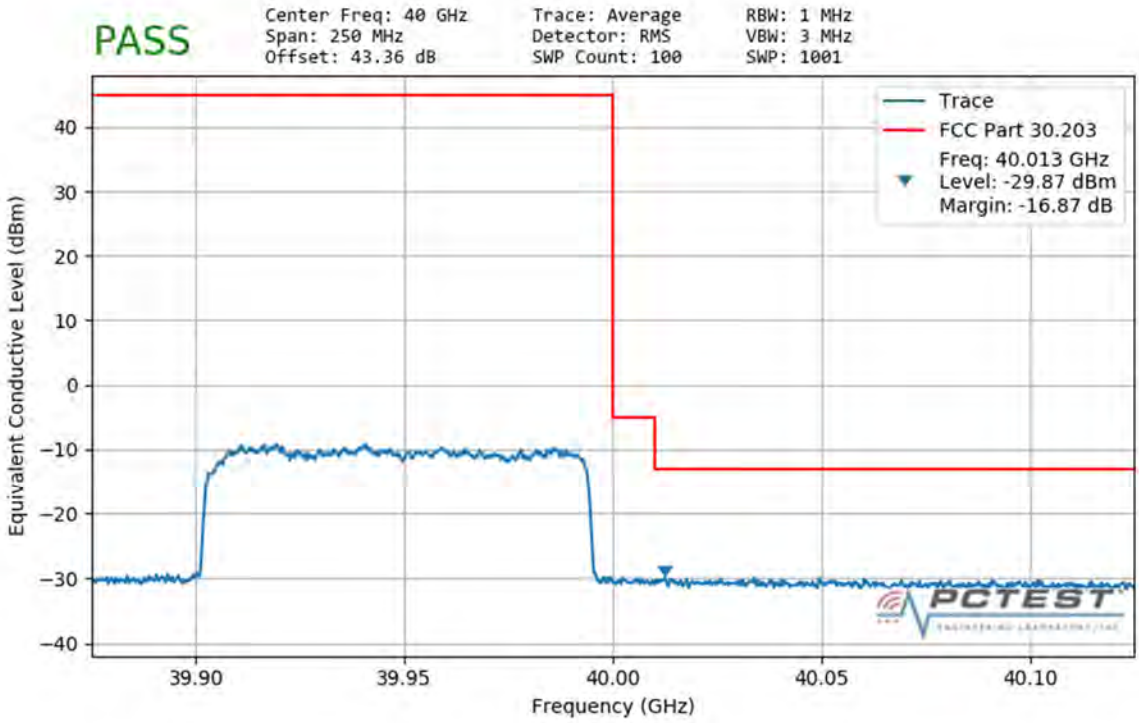
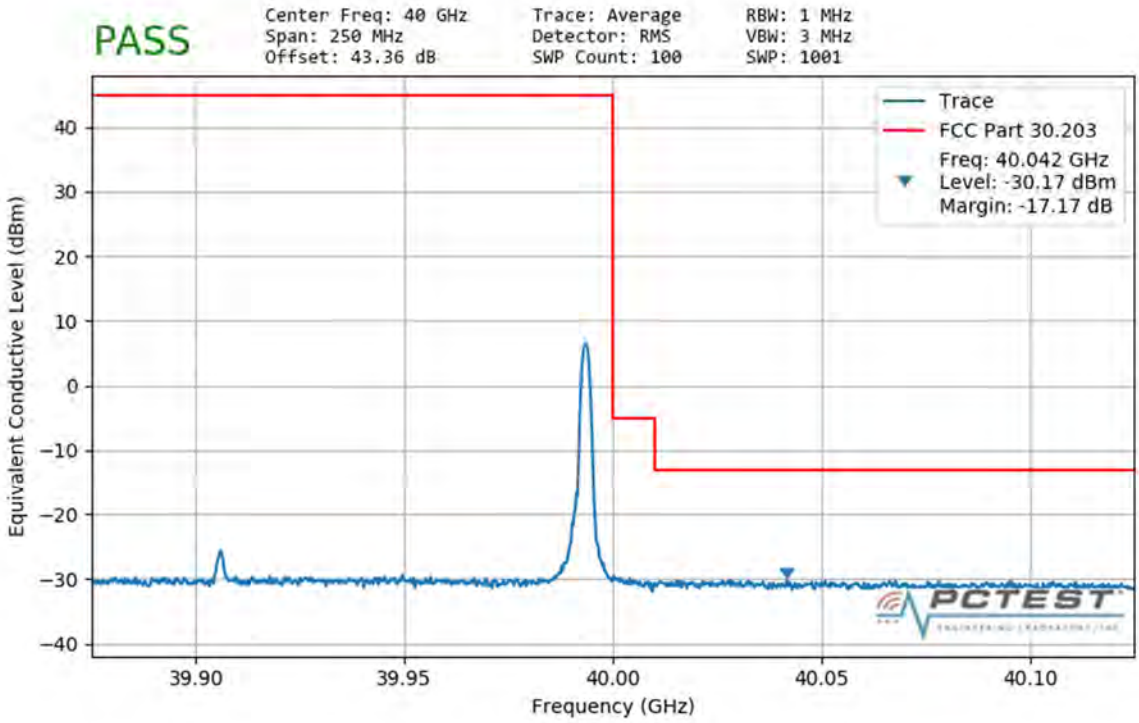


Plot 7-307. Ant2 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-308. Ant2 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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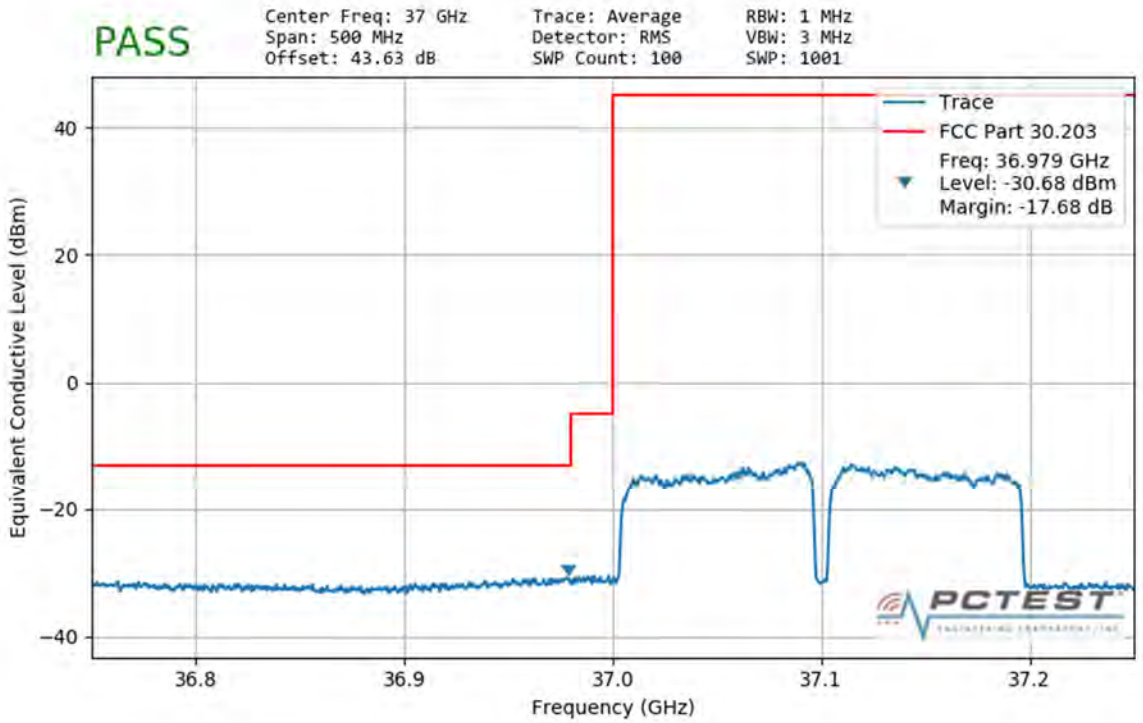
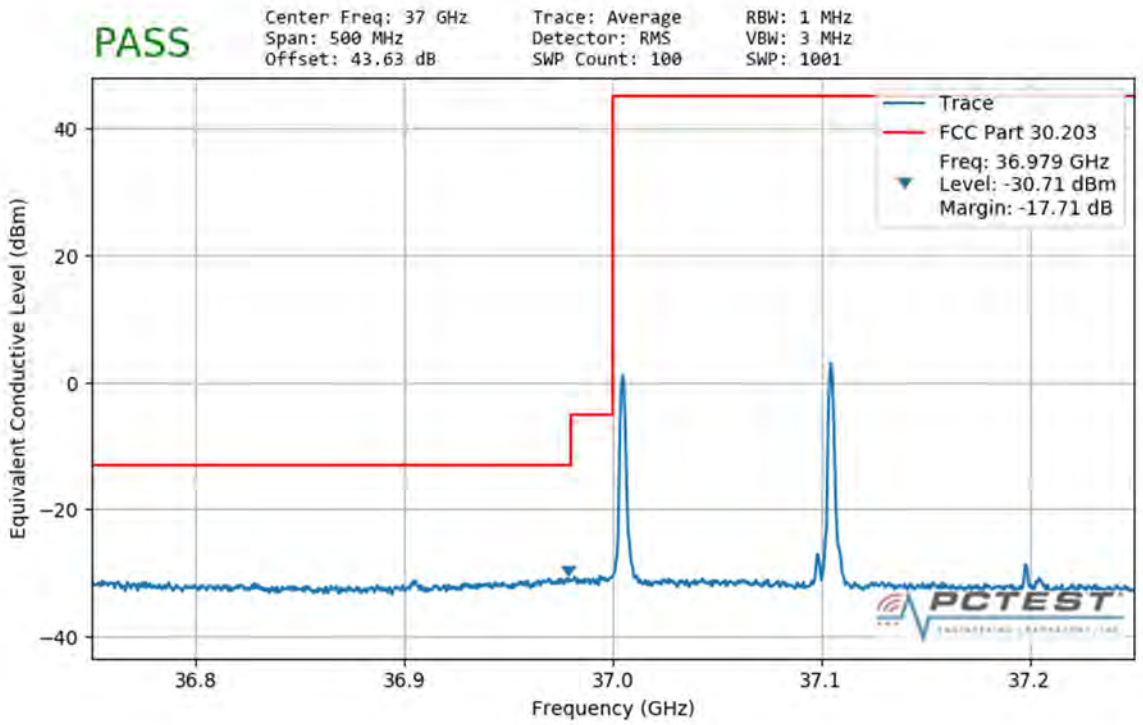


Plot 7-309. Ant2 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-310. Ant2 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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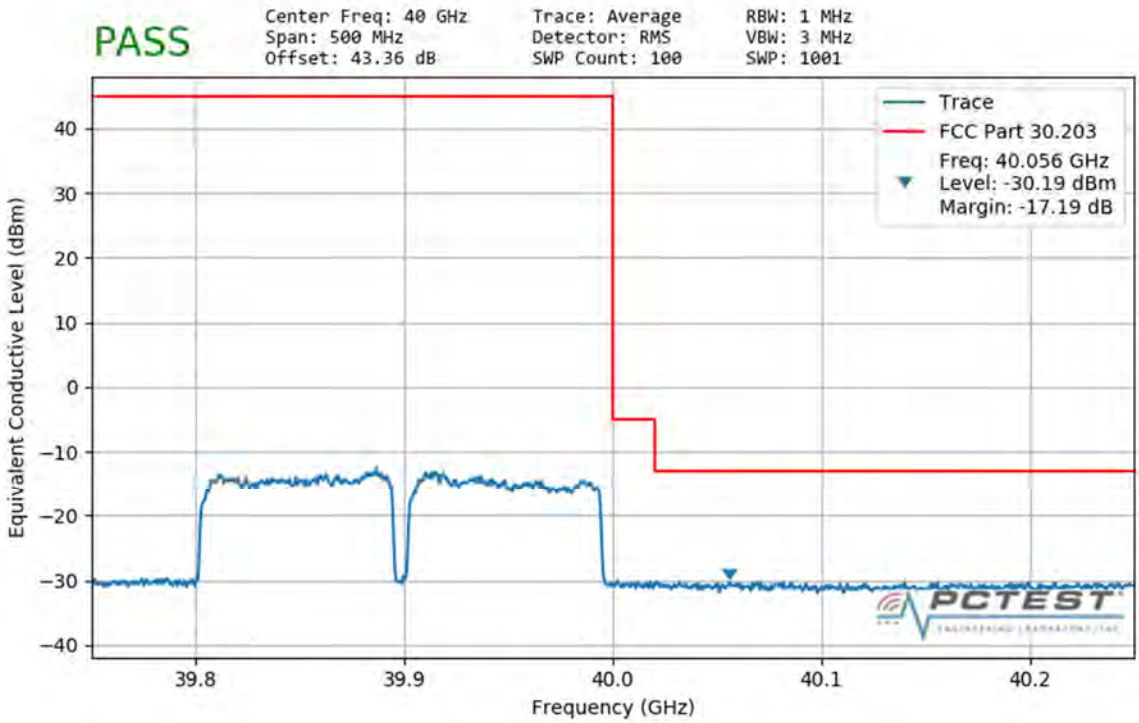
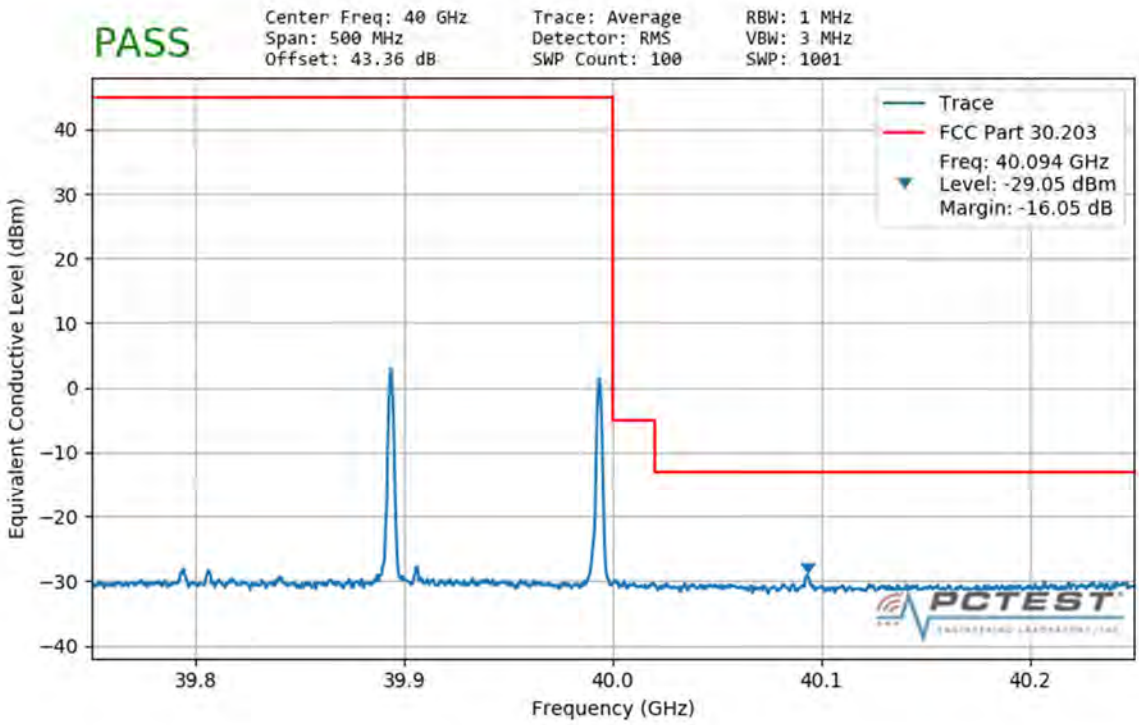


Plot 7-311. Ant2 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-312. Ant2 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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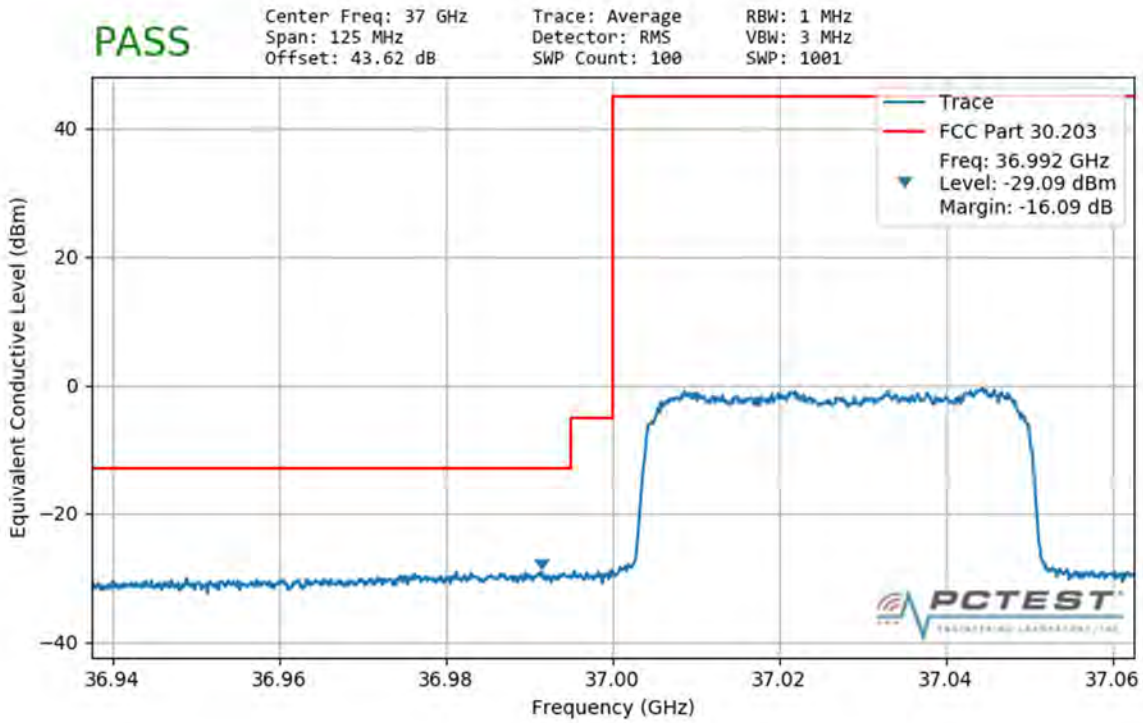
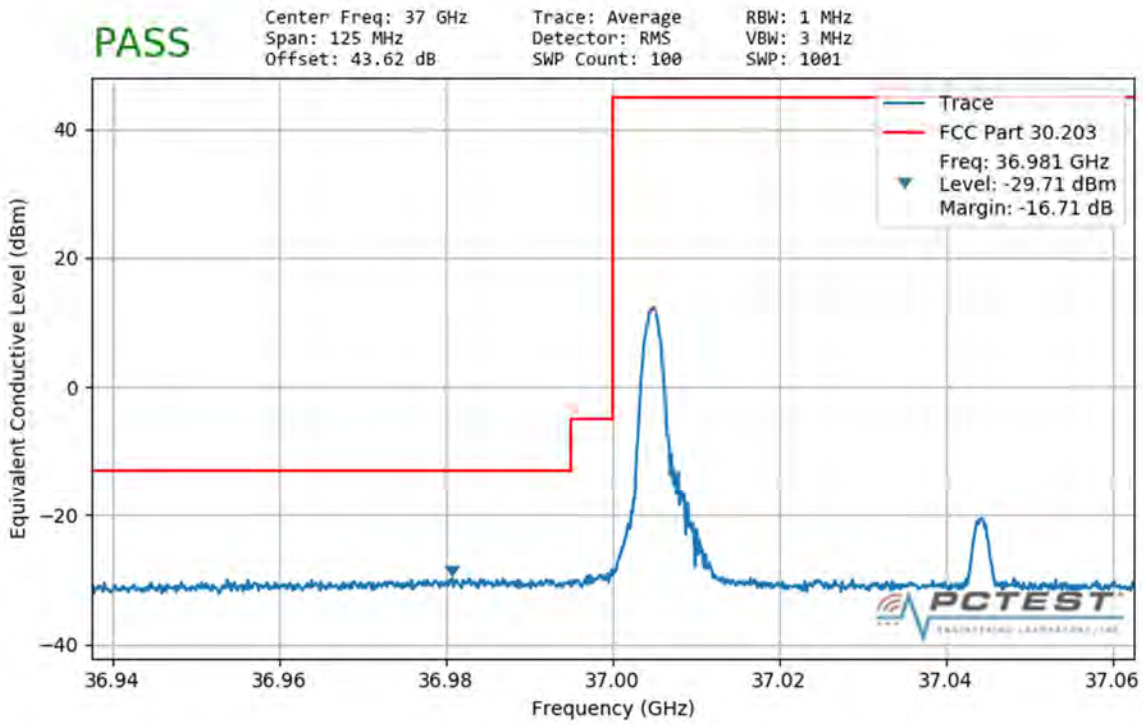


Plot 7-313. Ant3 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-314. Ant3 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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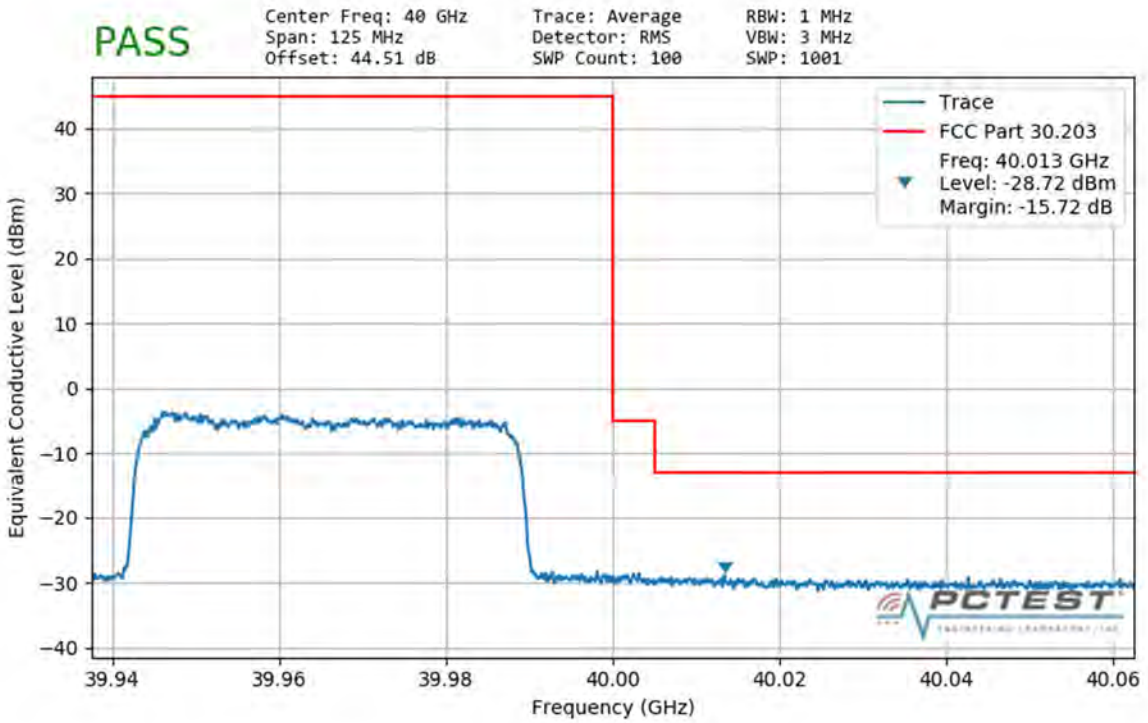
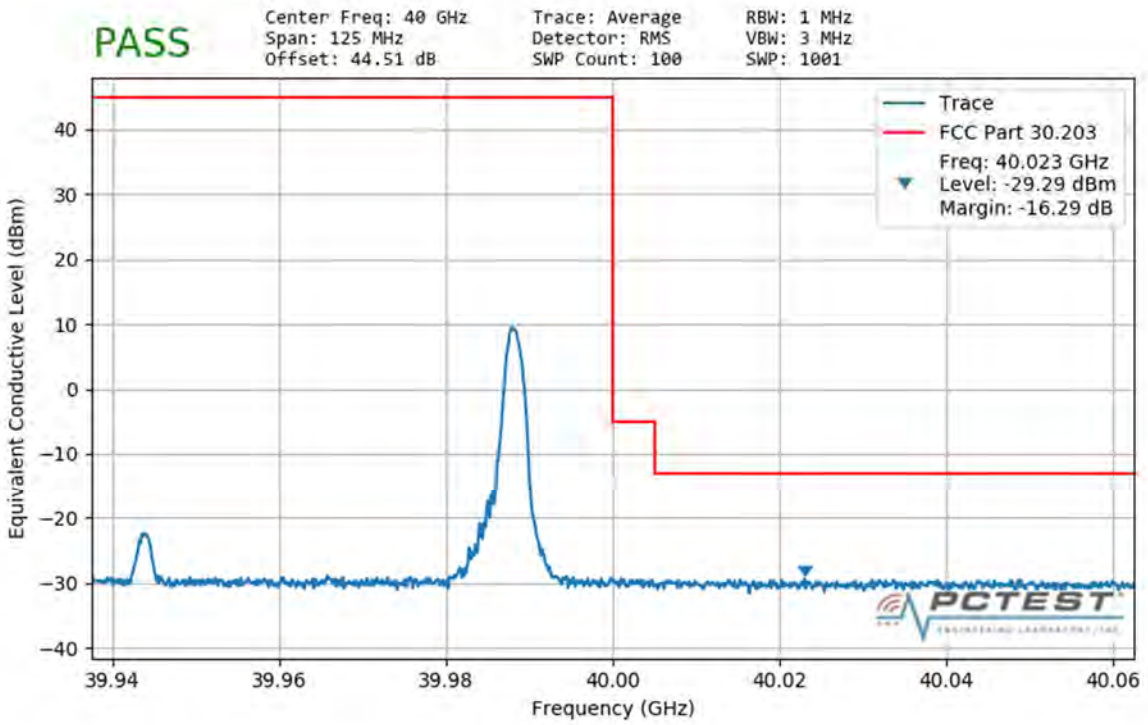


Plot 7-315. Ant3 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-316. Ant3 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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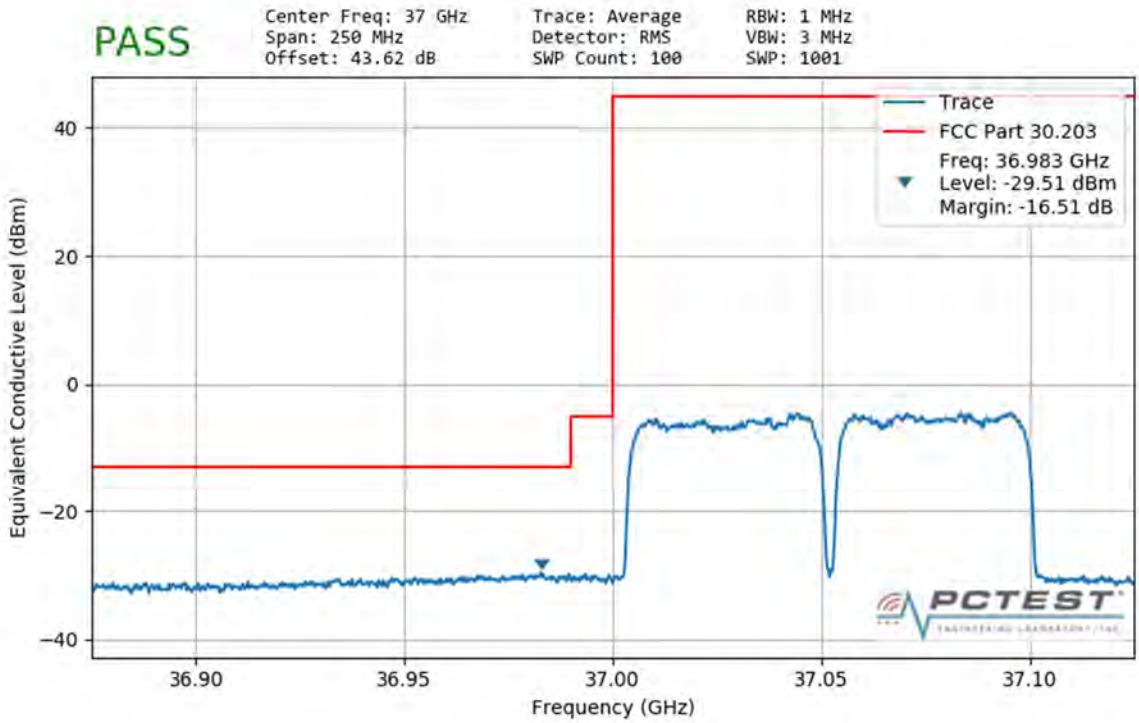
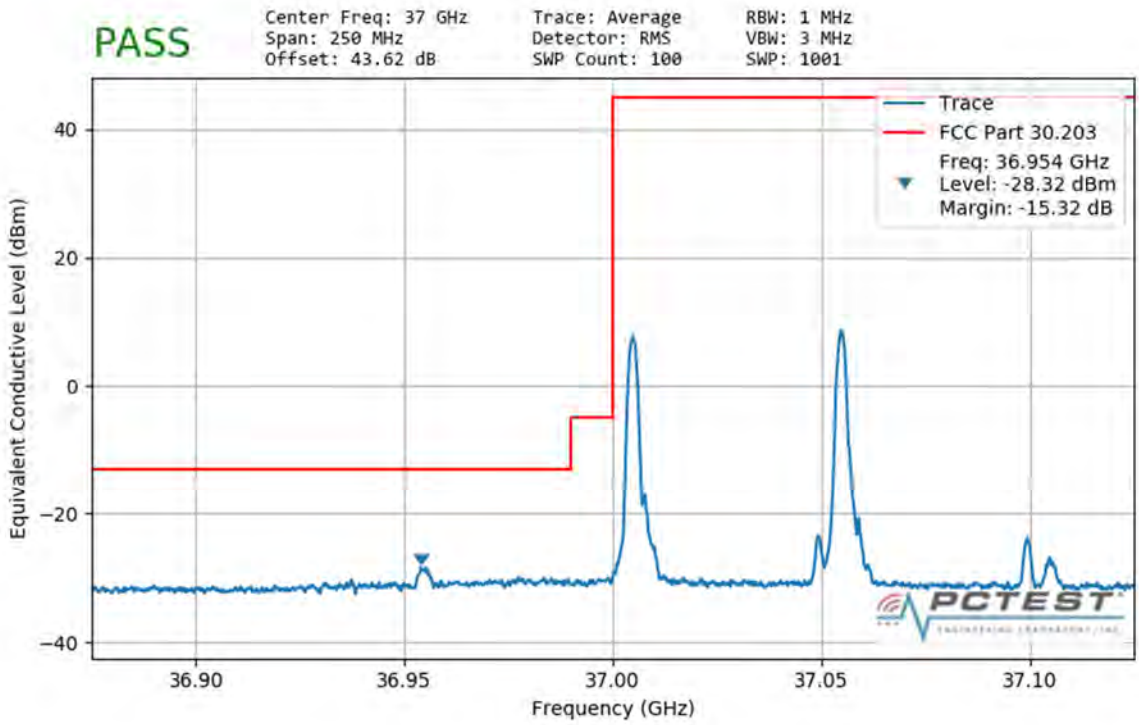


Plot 7-317. Ant3 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-318. Ant3 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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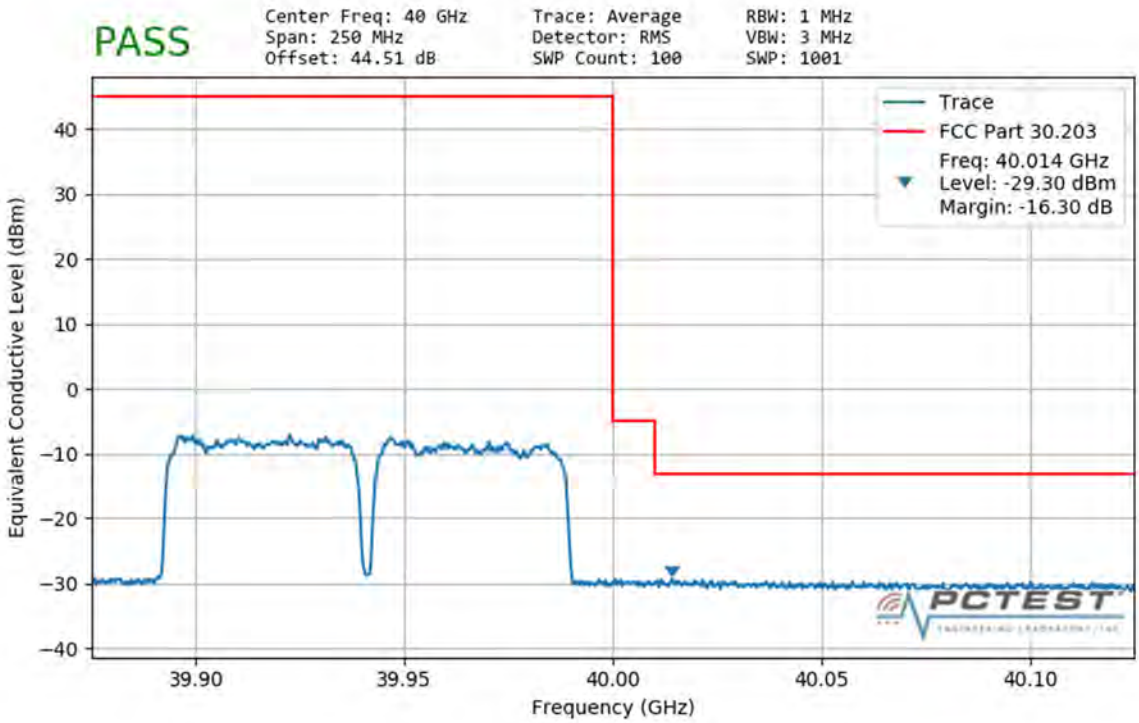
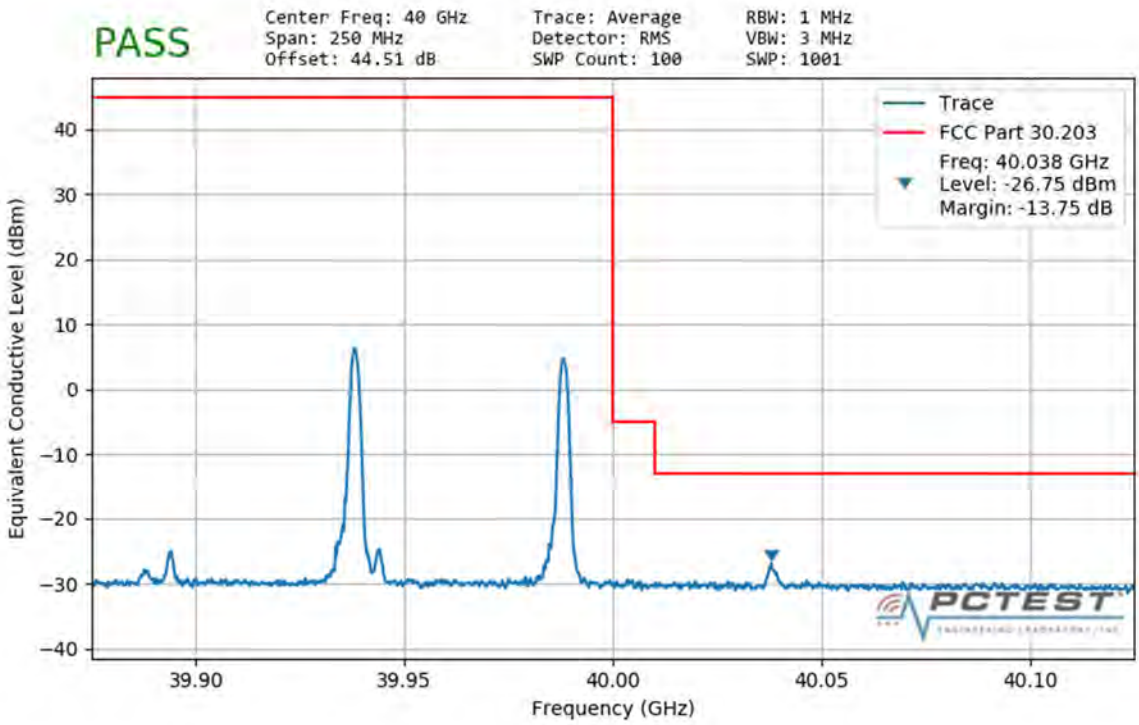


Plot 7-319. Ant3 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-320. Ant3 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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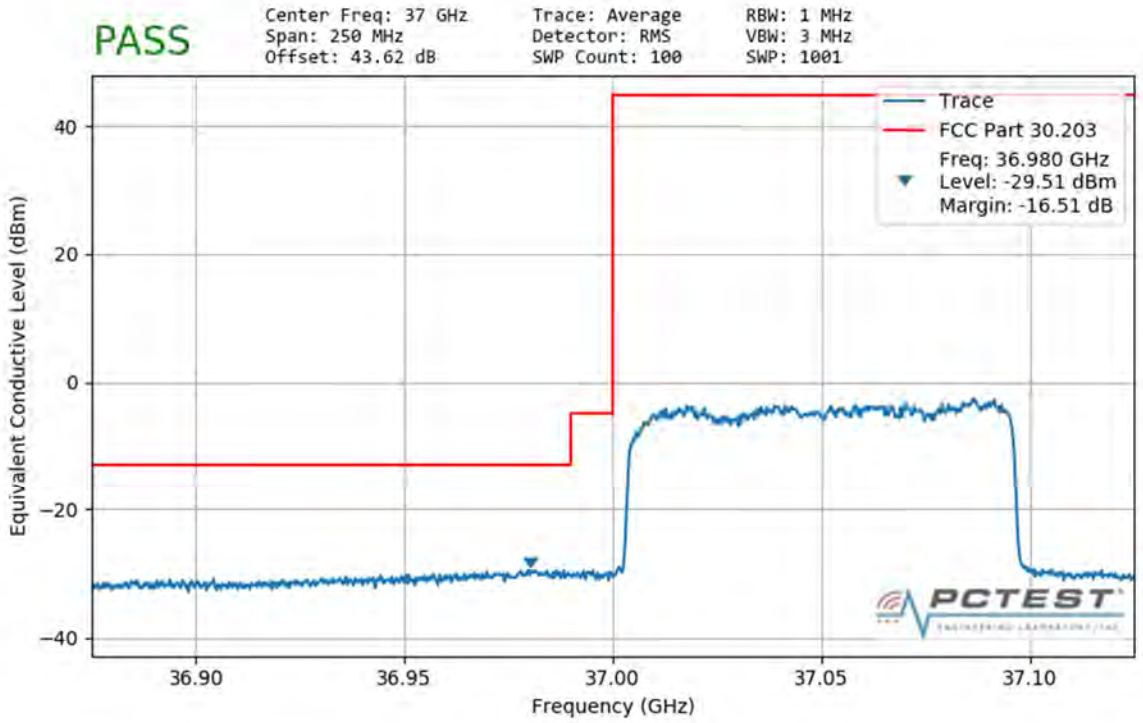
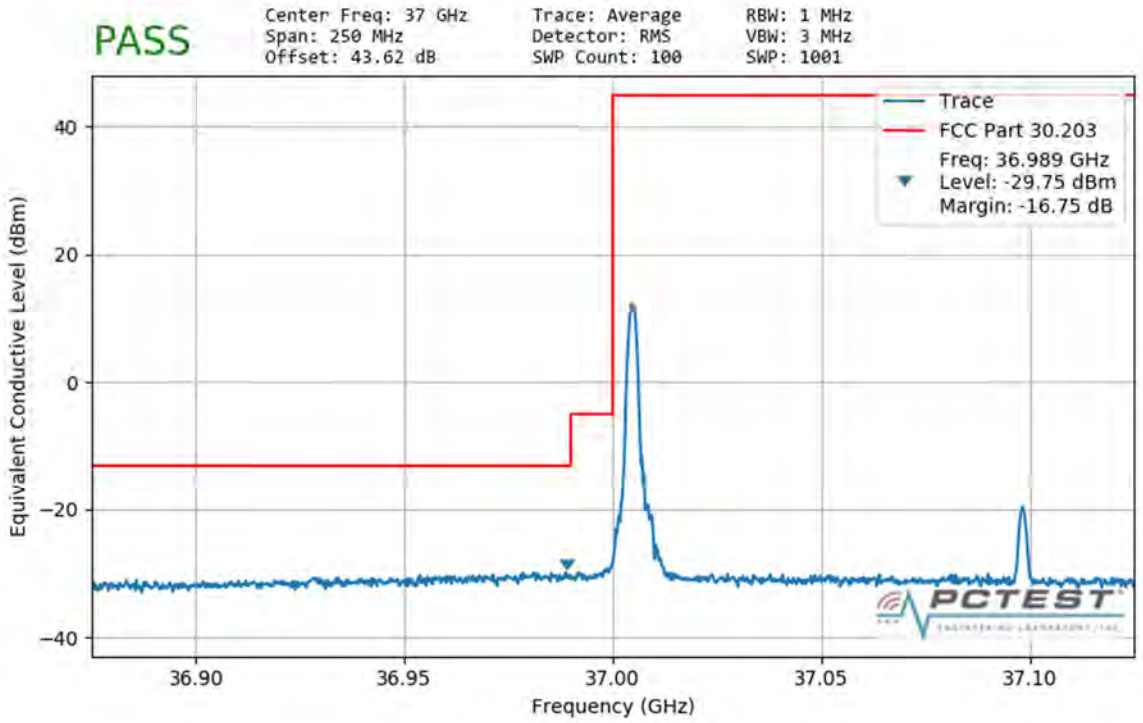


Plot 7-321. Ant3 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-322. Ant3 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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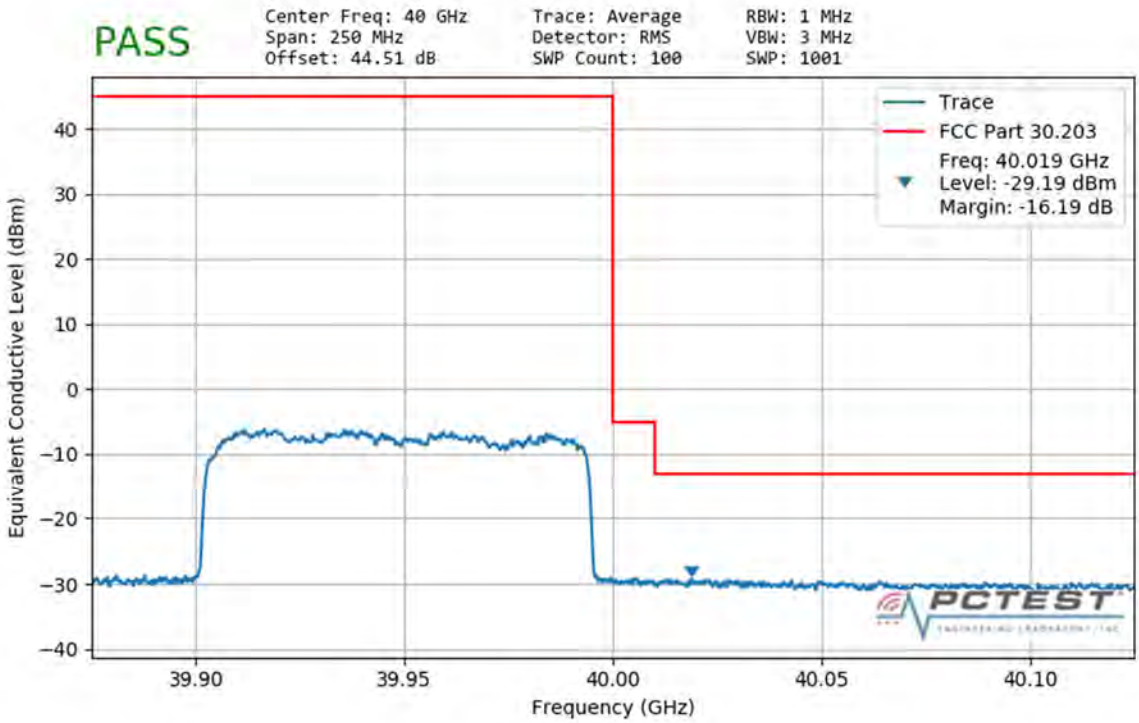
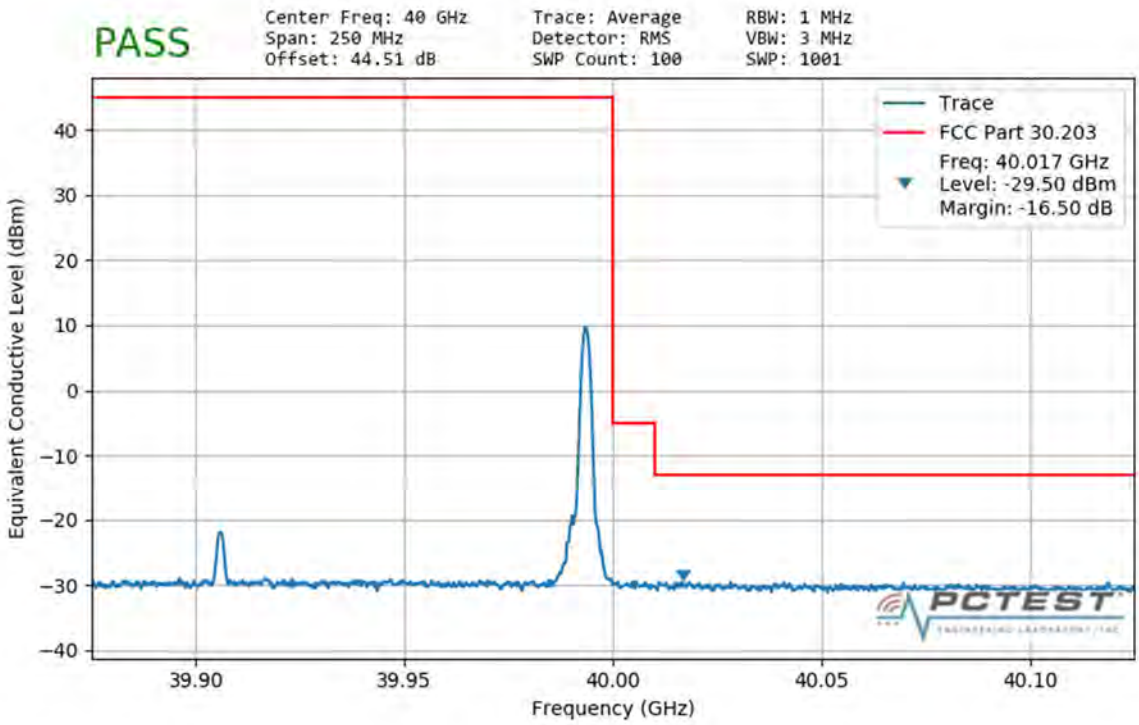


Plot 7-323. Ant3 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-324. Ant3 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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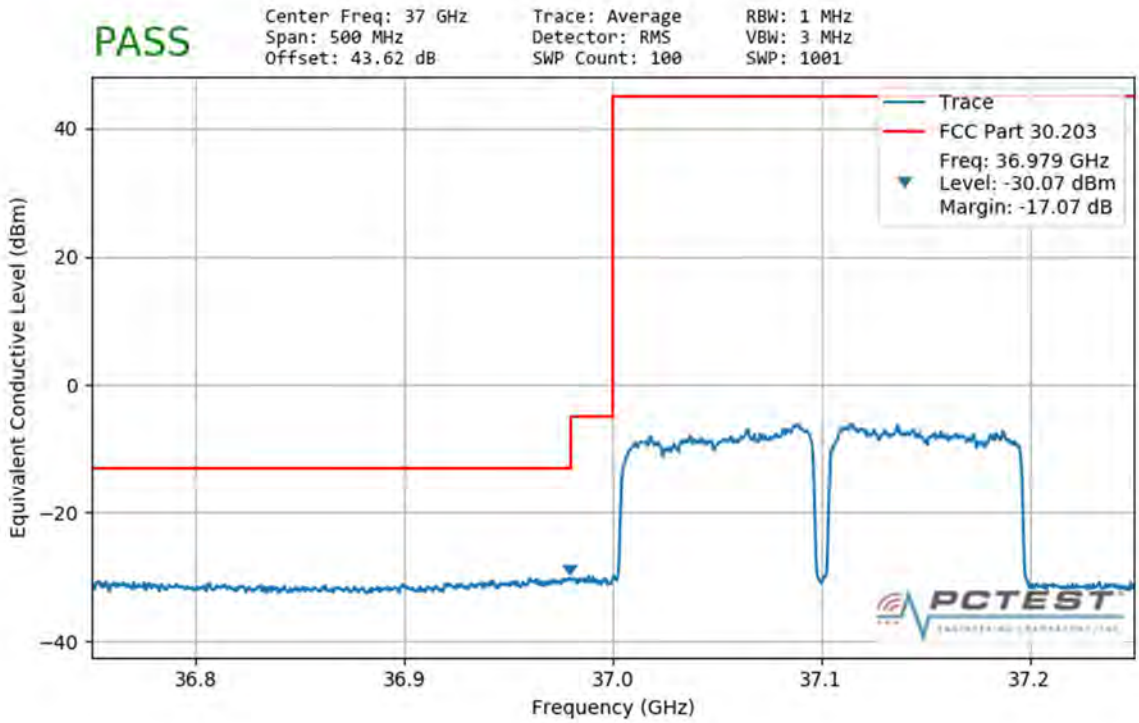
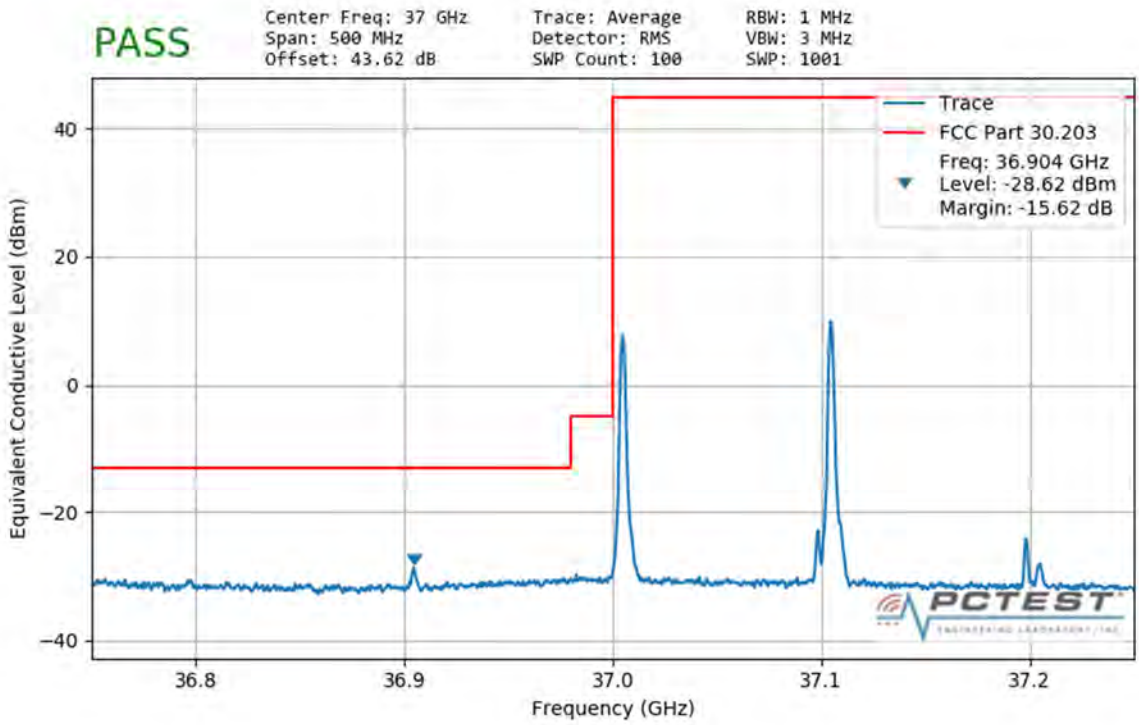


Plot 7-325. Ant3 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-326. Ant3 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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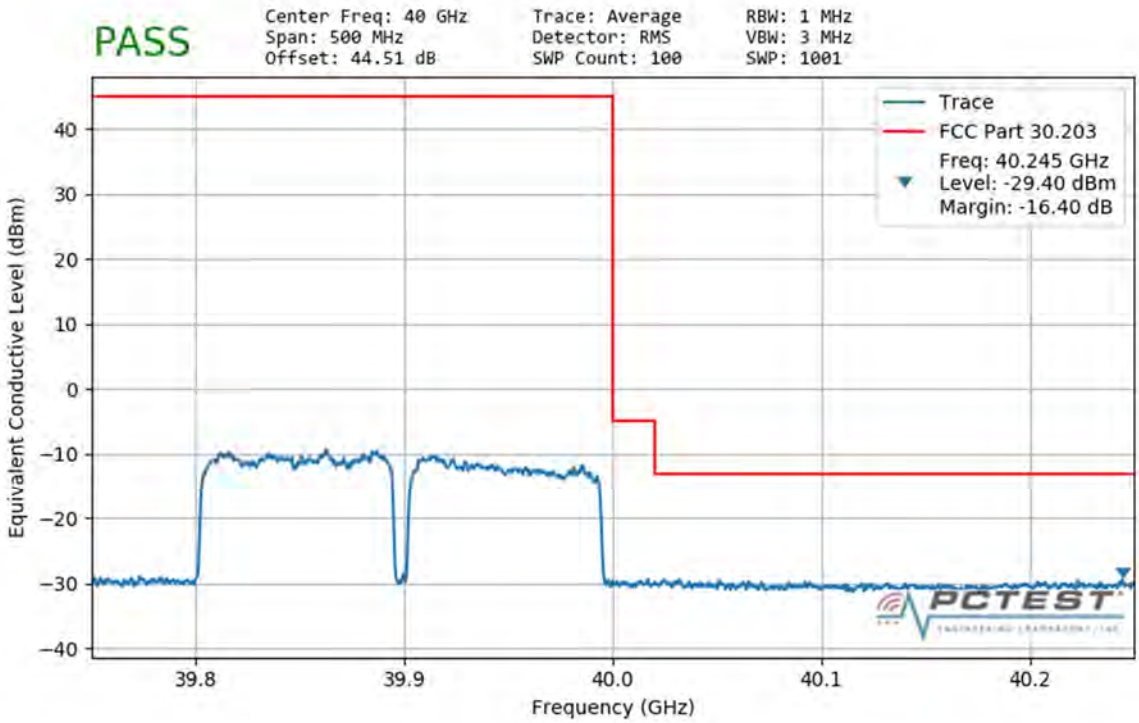
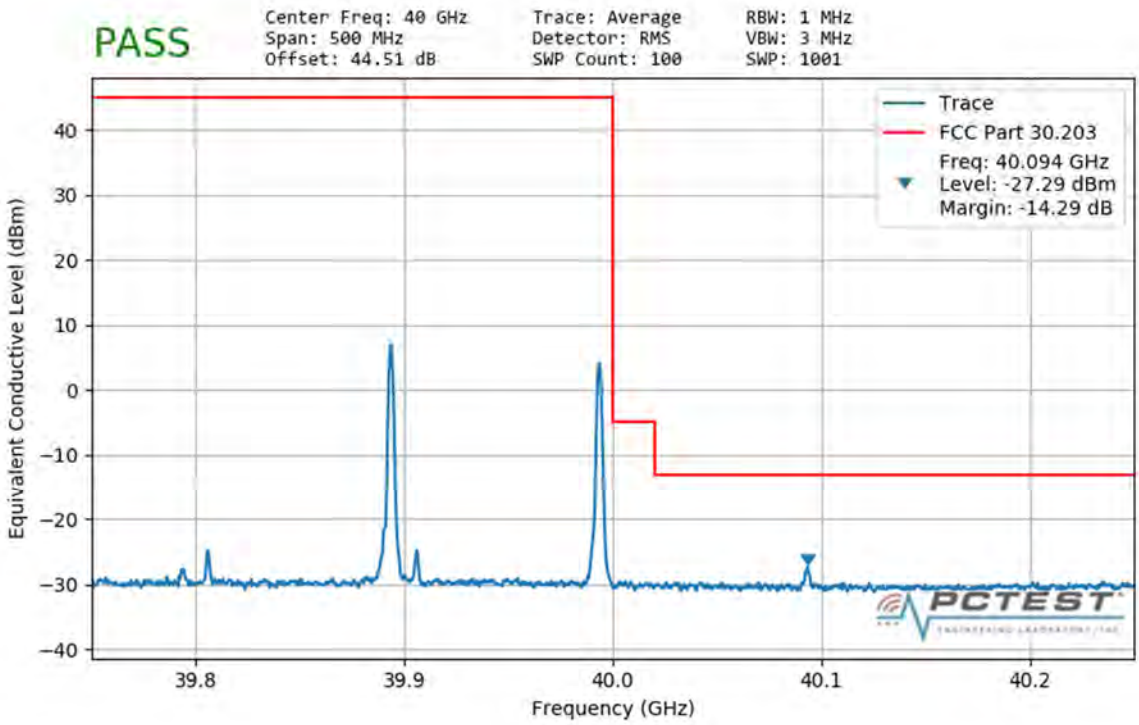


Plot 7-327. Ant3 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-328. Ant3 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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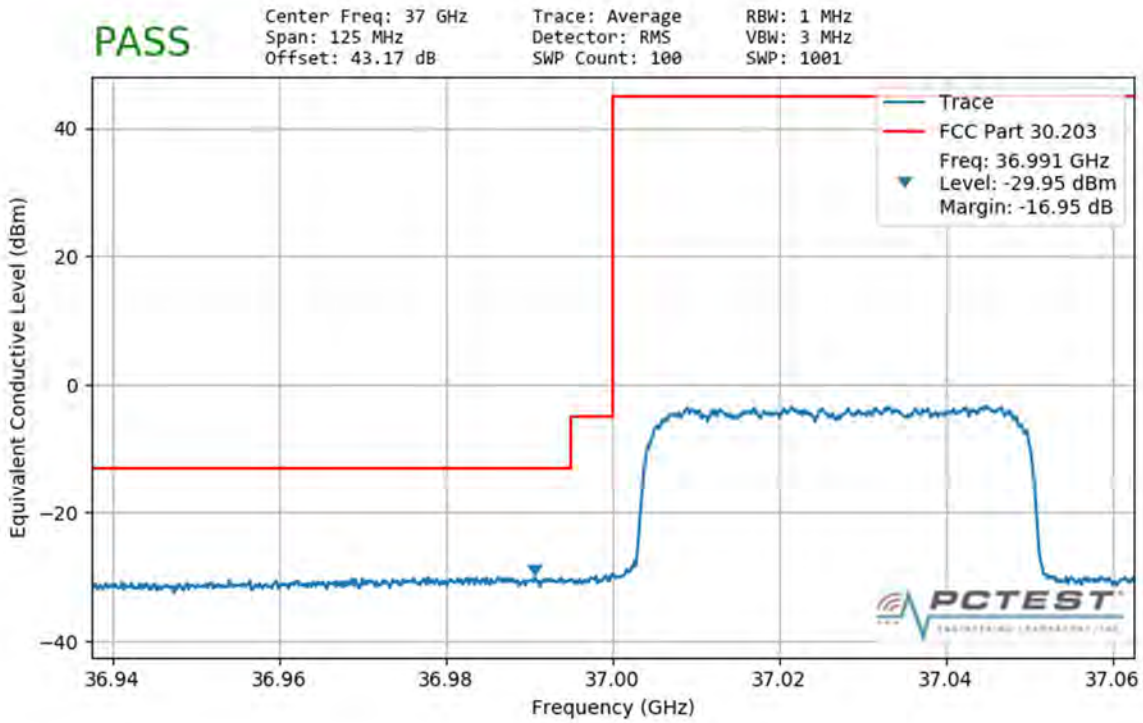
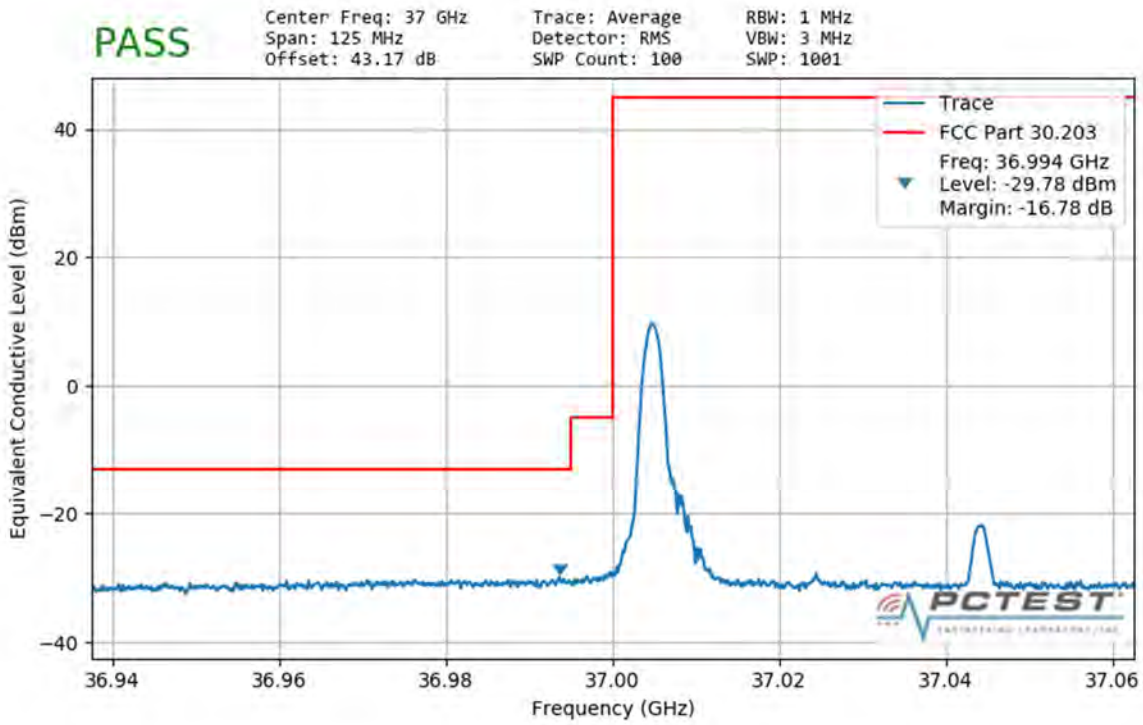


Plot 7-329. Ant4 Lower Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-330. Ant4 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

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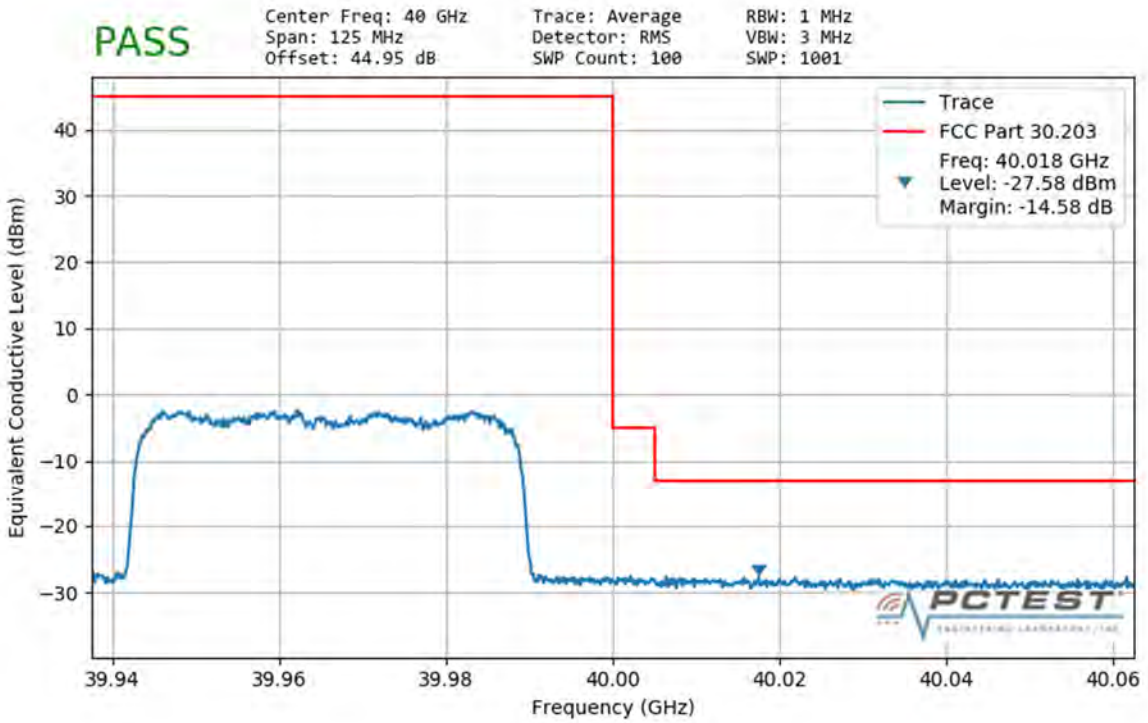
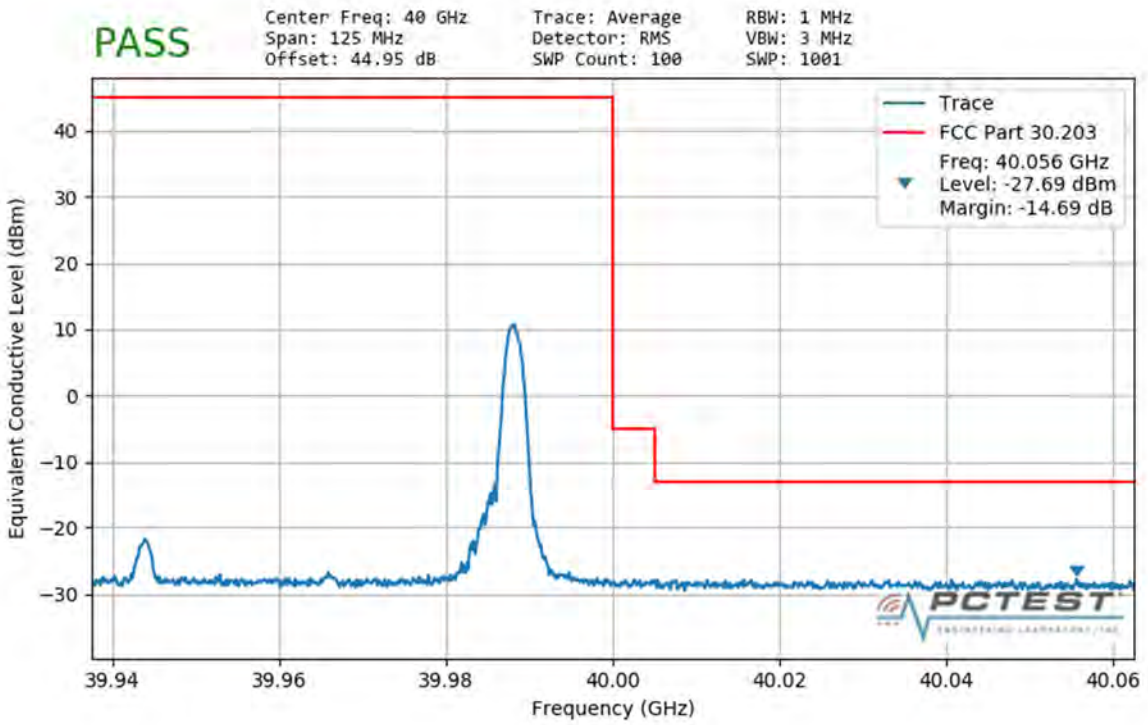


Plot 7-331. Ant4 Upper Band Edge (50MHz-1CC – QPSK Full RB)



Plot 7-332. Ant4 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

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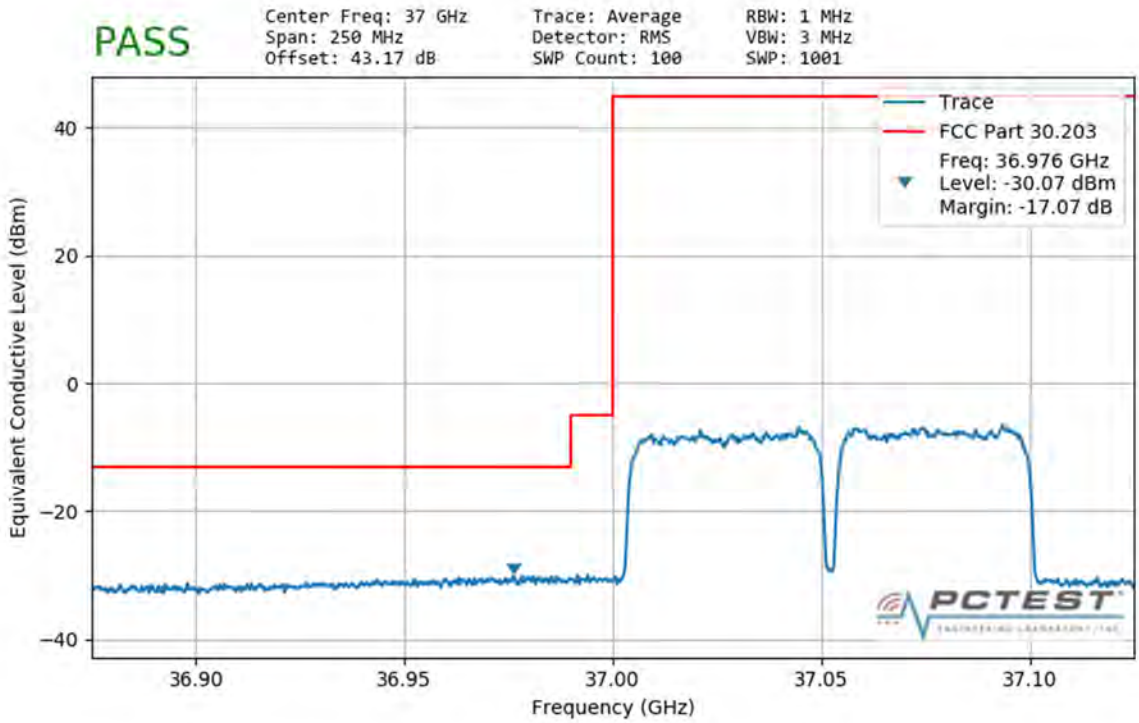
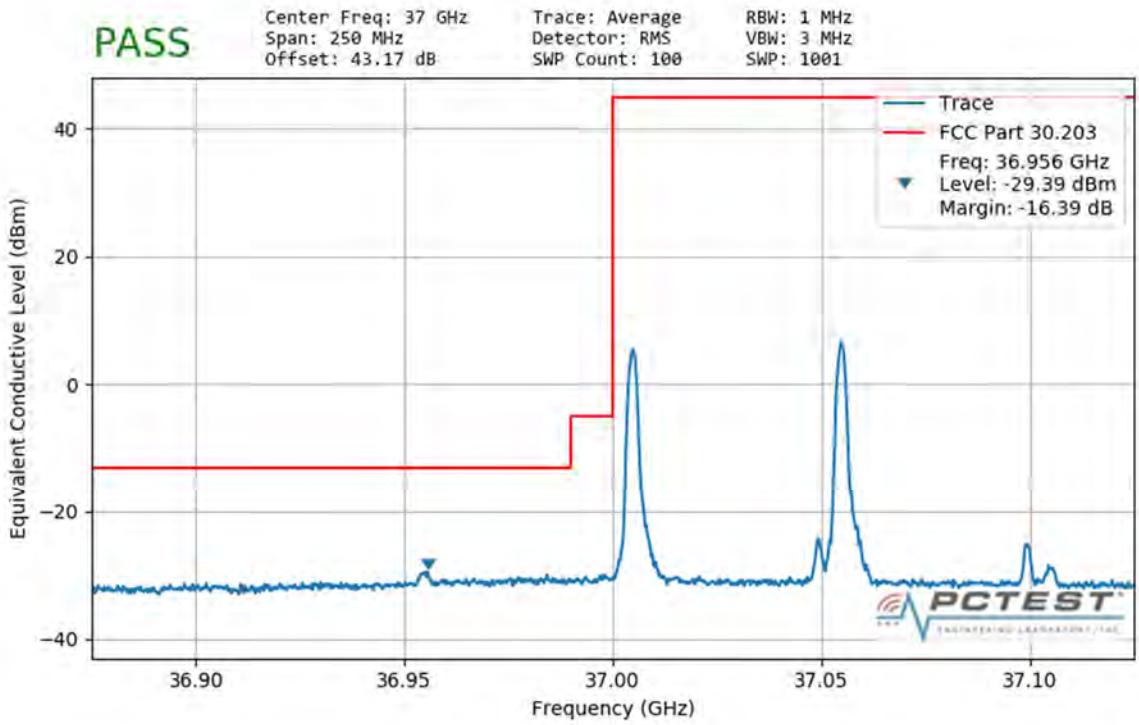


Plot 7-333. Ant4 Lower Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-334. Ant4 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

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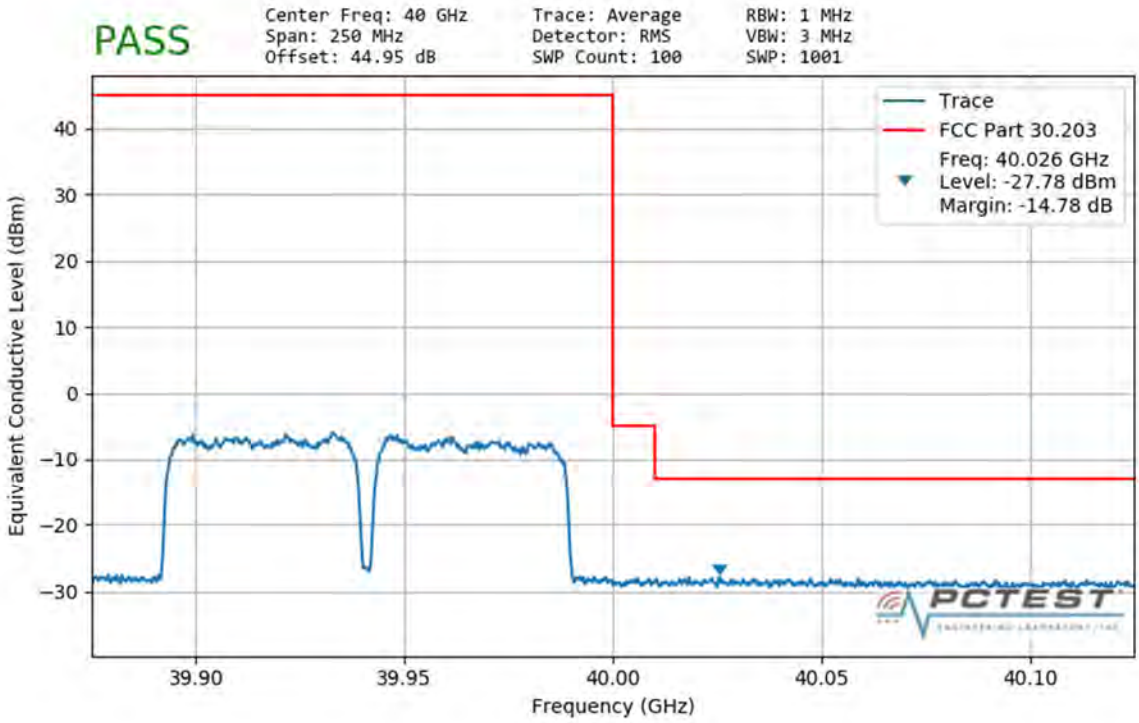
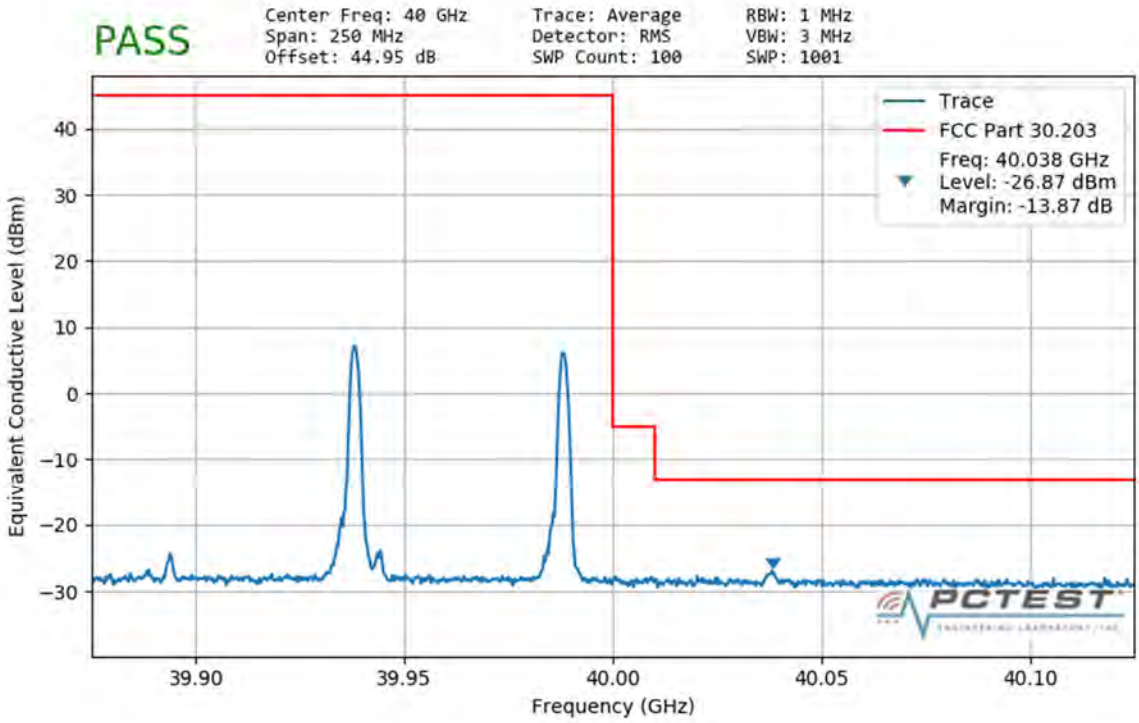


Plot 7-335. Ant4 Upper Band Edge (50MHz-2CC – QPSK Full RB)



Plot 7-336. Ant4 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

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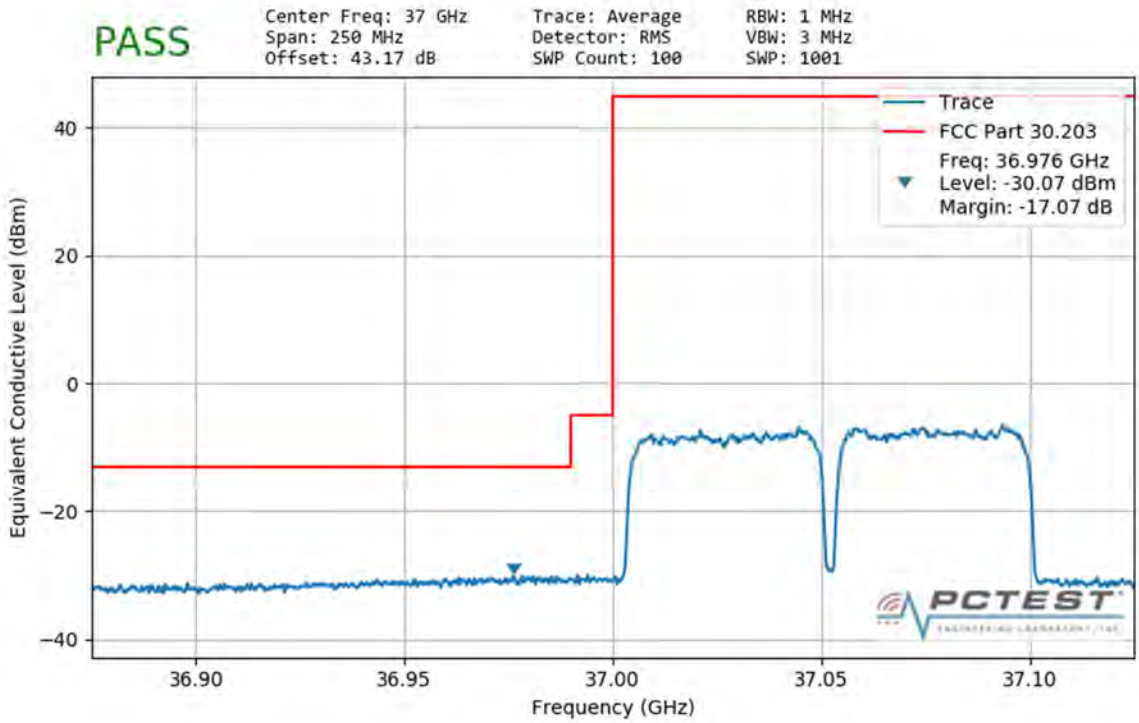
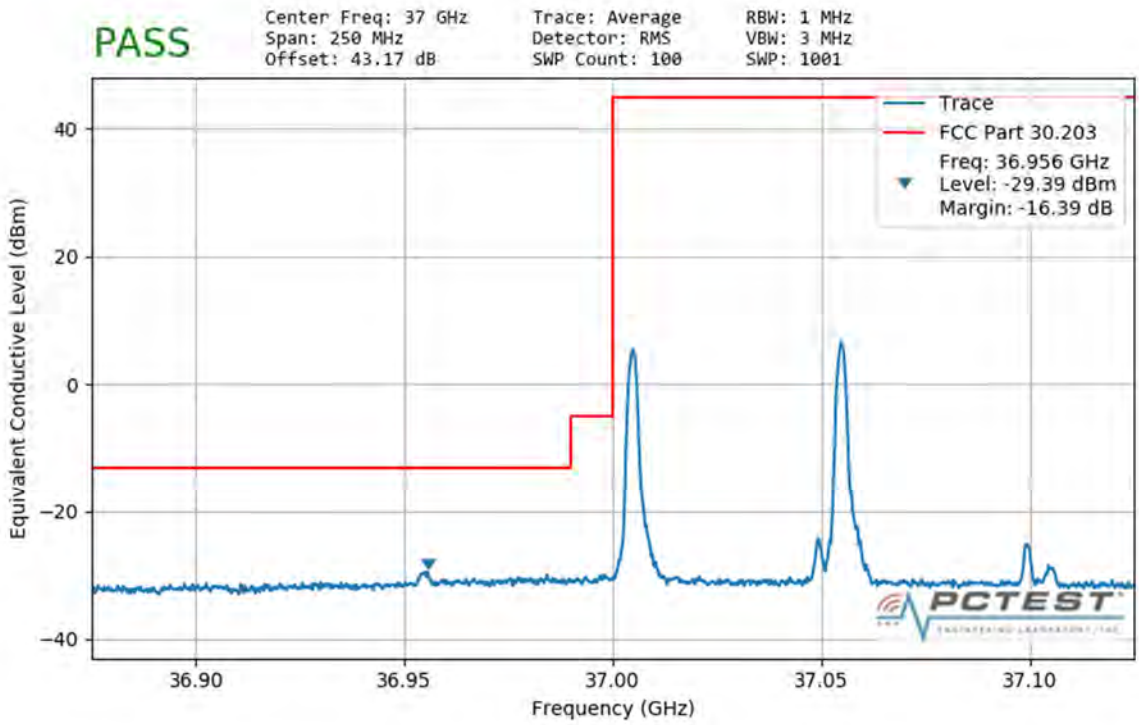


Plot 7-337. Ant4 Lower Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-338. Ant4 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

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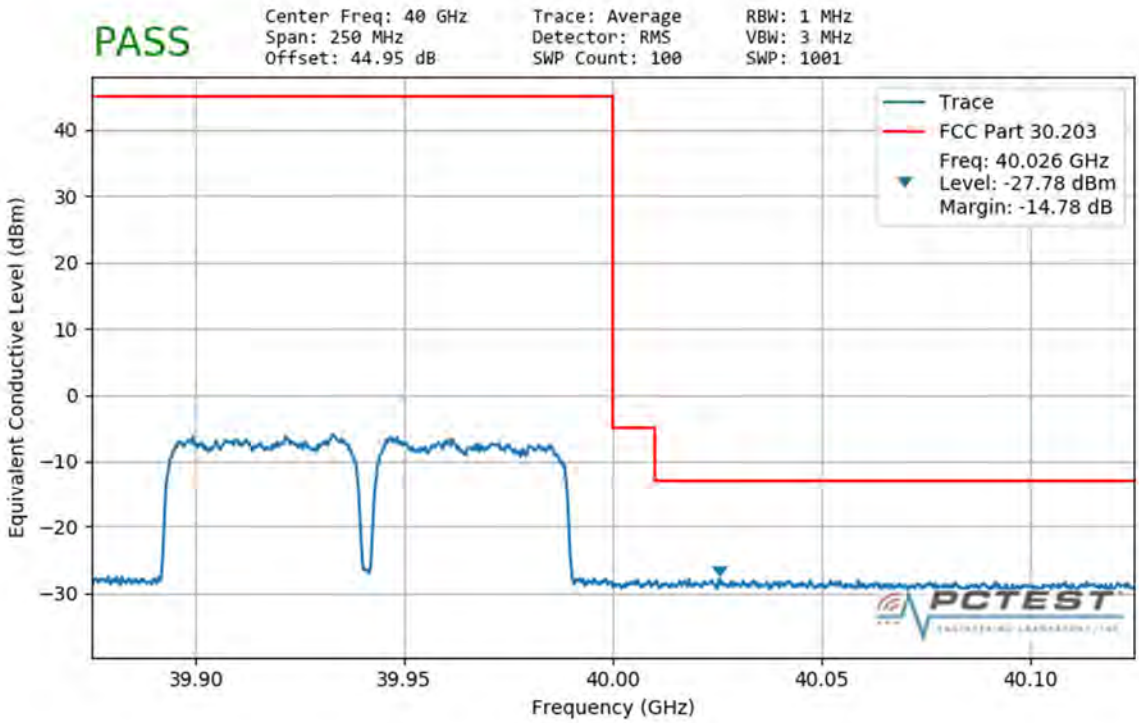
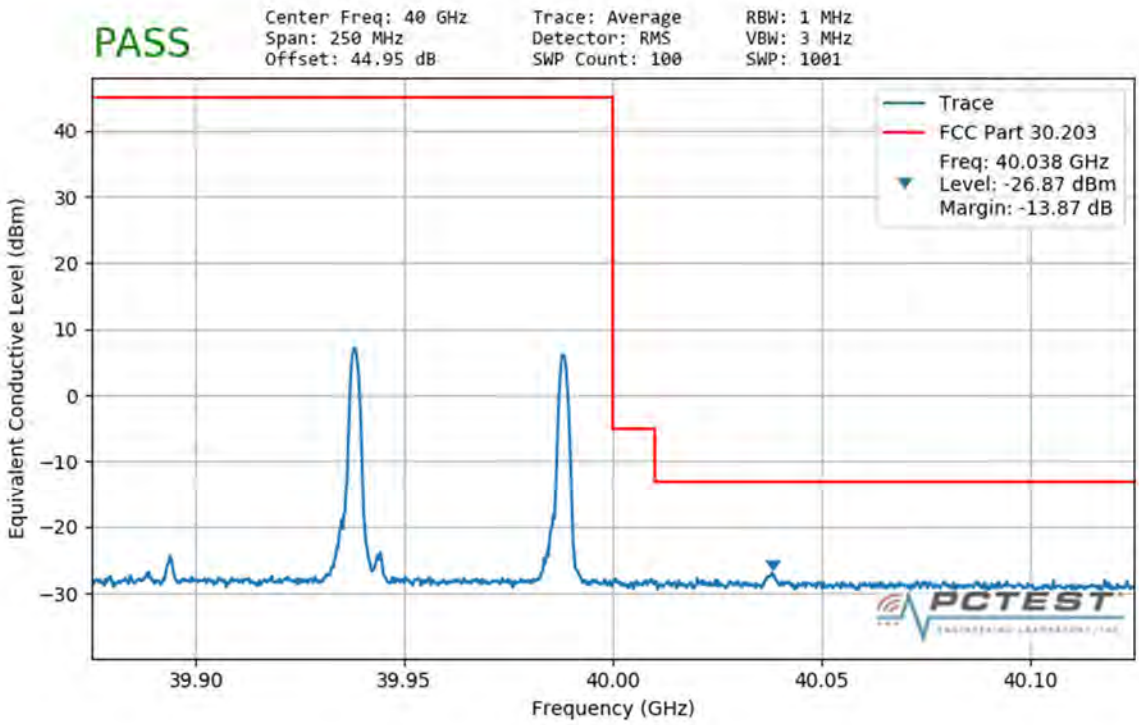


Plot 7-339. Ant4 Upper Band Edge (100MHz-1CC – QPSK Full RB)



Plot 7-340. Ant4 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

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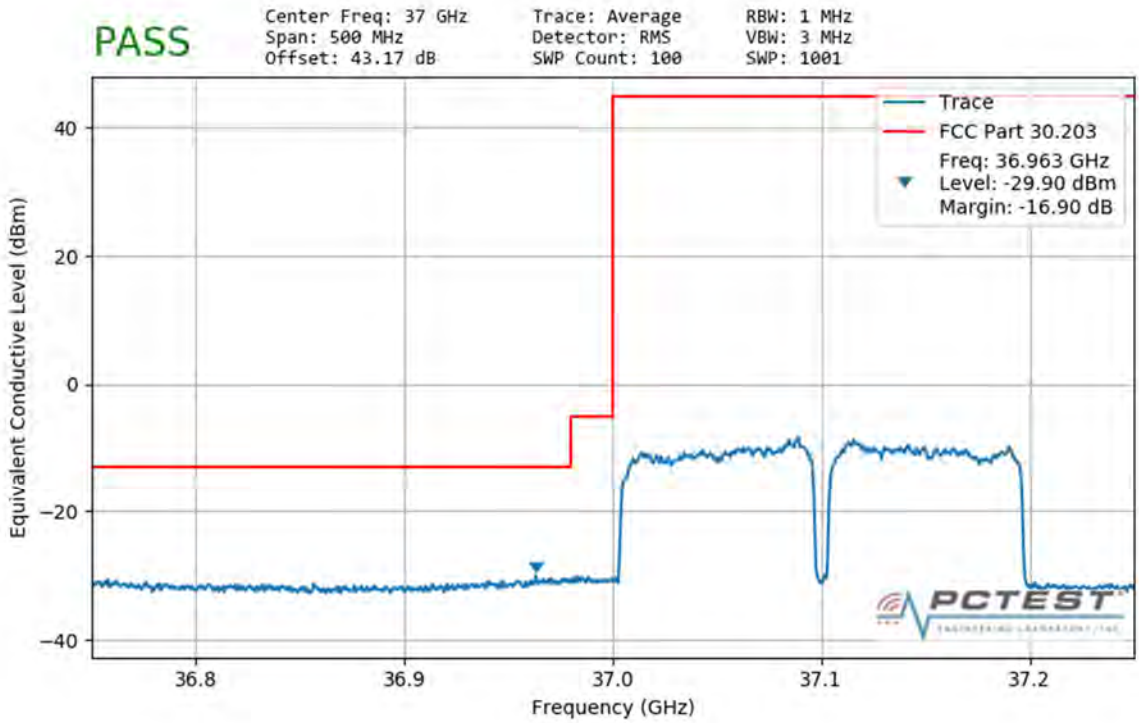
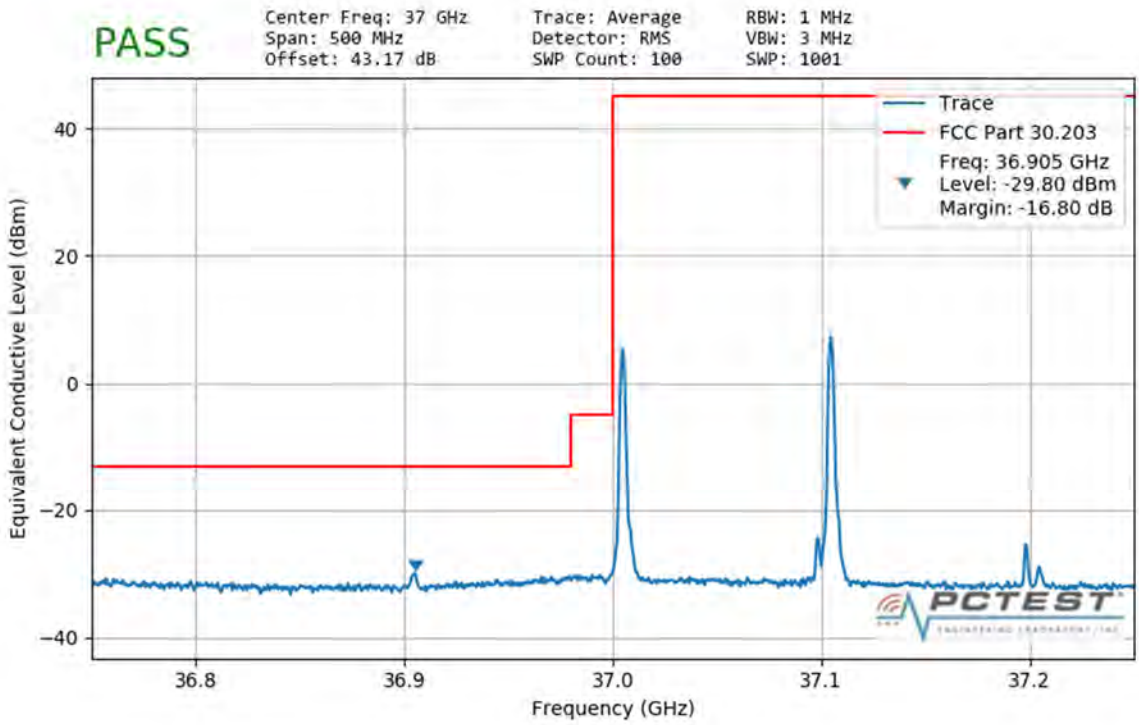


Plot 7-341. Ant4 Lower Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-342. Ant4 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

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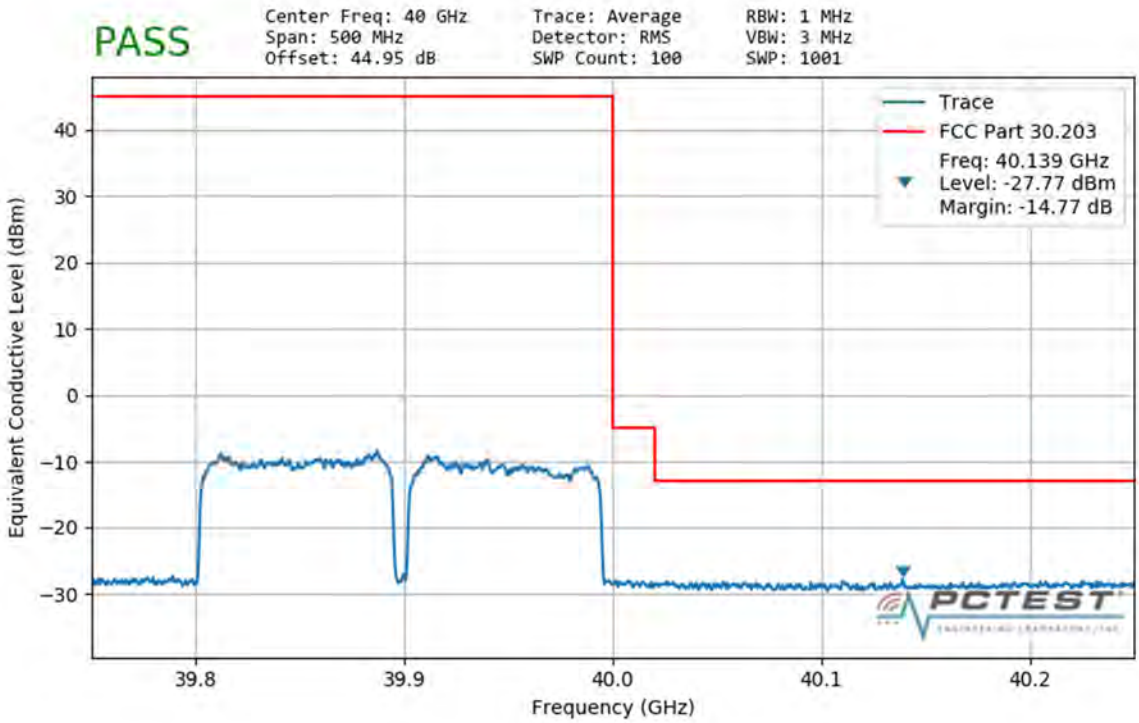
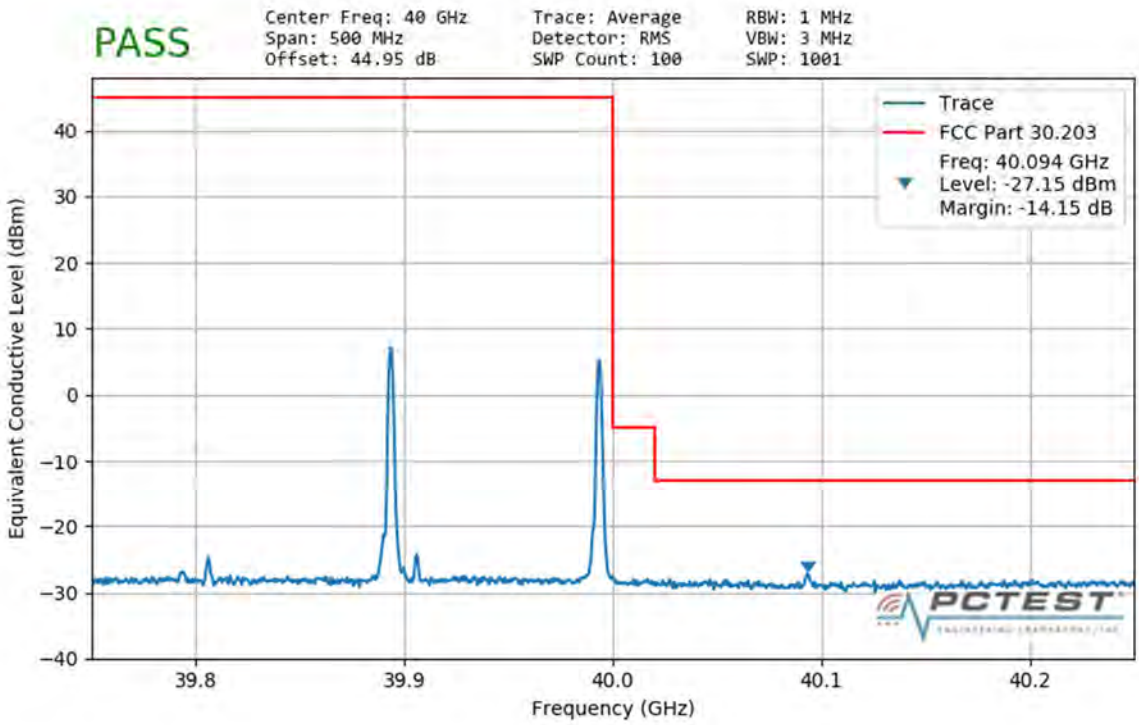


Plot 7-343. Ant4 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-344. Ant4 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

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7.6 Frequency Stability / Temperature Variation
§2.1055

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

ANSI C63.5-2015 Section 5.6
KDB 842590 D01 v01 Section 4.5

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber. Using a foam plug, the horn antenna measured the frequency of the fundamental signal.

Test Notes

The Frequency Deviation column in the table below is the amount of deviation measured from the center frequency of the Reference measurement (first row).

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Frequency Stability Measurements (Band n261)
§2.1055

OPERATING FREQUENCY:	27,922,080,000	Hz
CHANNEL:	2254091	
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (^{o}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	27,957,080,000	0	0.0000000
100 %		- 30	27,669,080,000	288,000,000	1.0314418
100 %		- 20	27,666,080,000	291,000,000	1.0421860
100 %		- 10	27,976,080,000	-19,000,000	-0.0680465
100 %		0	27,807,080,000	150,000,000	0.5372093
100 %		+ 10	27,867,080,000	90,000,000	0.3223256
100 %		+ 20	28,005,080,000	-48,000,000	-0.1719070
100 %		+ 30	27,901,080,000	56,000,000	0.2005581
100 %		+ 40	27,868,080,000	89,000,000	0.3187442
100 %		+ 50	27,962,080,000	-5,000,000	-0.0179070
BATT. ENDPOINT	2.76	+ 20	28,208,080,000	-251,000,000	-0.8989302

Table 7-157. Frequency Stability Data (n261)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Frequency Stability Measurements (Band n261)
§2.1055

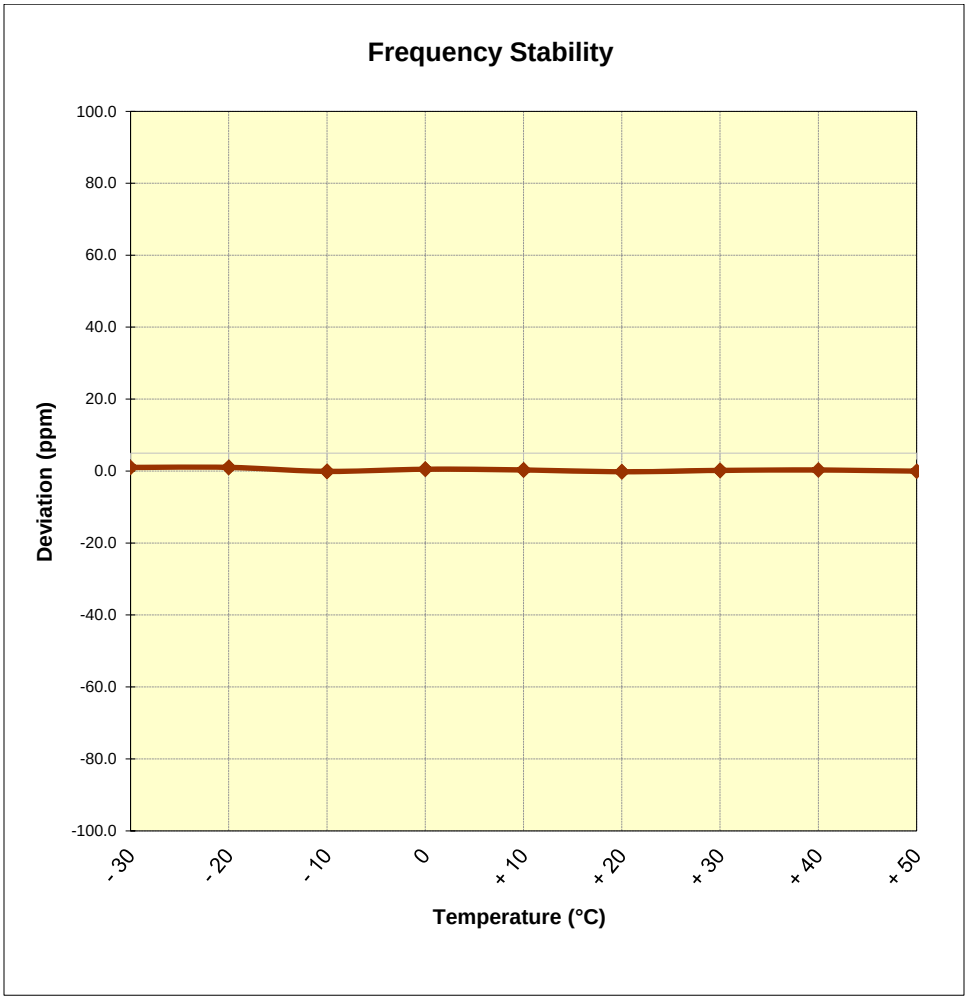

Table 7-158. Frequency Stability Graph (n261)

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Frequency Stability Measurements (Band n260)
§2.1055

OPERATING FREQUENCY:	38,495,520,000	Hz
CHANNEL:	2254091	
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (^{o}C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	38,364,520,000	0	0.0000000
100 %		- 30	38,355,520,000	9,000,000	0.0233793
100 %		- 20	38,345,520,000	19,000,000	0.0493564
100 %		- 10	38,289,520,000	75,000,000	0.1948279
100 %		0	38,416,520,000	-52,000,000	-0.1350807
100 %		+ 10	38,341,520,000	23,000,000	0.0597472
100 %		+ 20	38,235,520,000	129,000,000	0.3351039
100 %		+ 30	38,440,520,000	-76,000,000	-0.1974256
100 %		+ 40	38,262,520,000	102,000,000	0.2649659
100 %		+ 50	38,426,520,000	-62,000,000	-0.1610577
BATT. ENDPOINT	2.76	+ 20	38,350,520,000	14,000,000	0.0363679

Table 7-159. Frequency Stability Data (n260)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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Frequency Stability Measurements (Band n260)
§2.1055

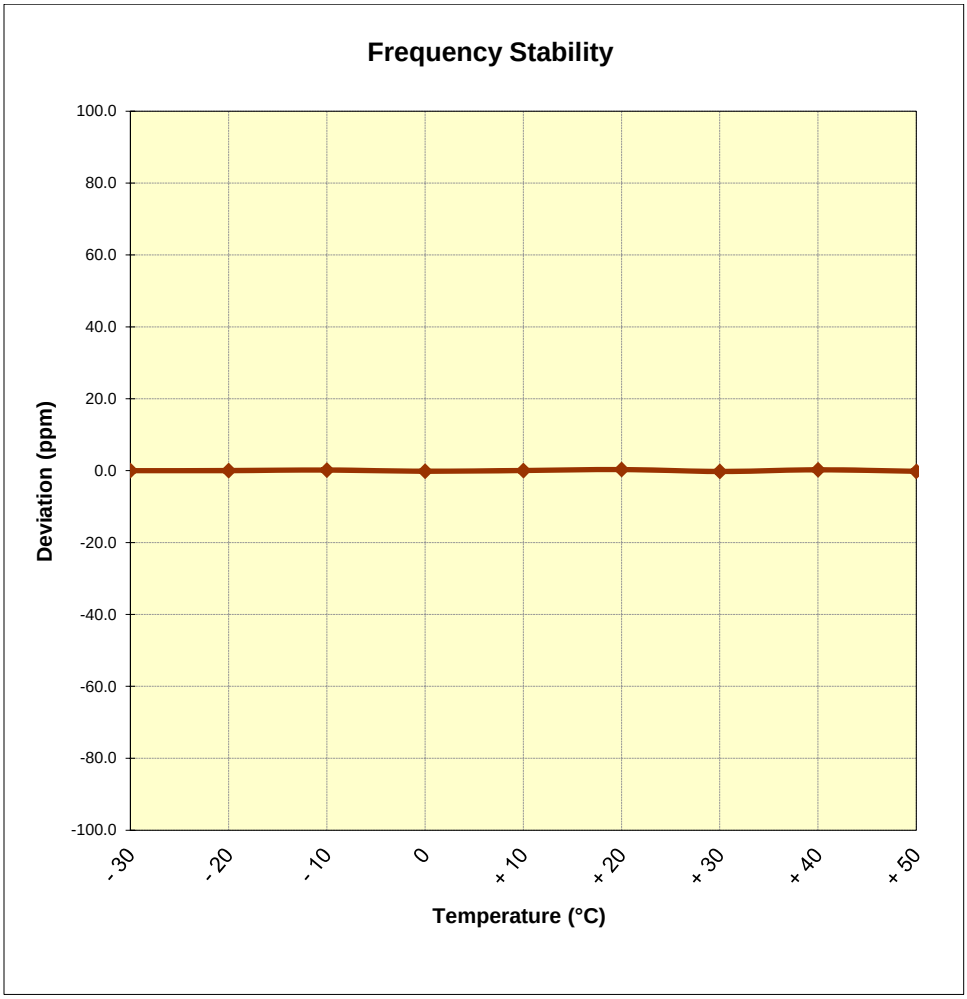

Table 7-160. Frequency Stability Graph (n260)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG988U** complies with all the requirements of Part 30.

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9.0 APPENDIX A

9.1 VDI Mixer Verification Certificate

Virginia Diodes, Inc.

Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory
7185 Oakland Mills Road
Columbia, MD 21046
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 193065 **Today's Date:** 10/02/19

Quantity Shipped	Unit	Description	Order-Job Number
1	EA	VDIWR19.0SAX WR19SAX / SN: SAX 411	19329-01

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

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Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: PCTEST Engineering Laboratory
6660-B Dobbin Road
Columbia, MD 21045
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Shipping Date: 05/14/18 **Today's Date:** 05/14/18

Quantity Shipped	Unit	Description
1	EA	VDIWR12.0SAX WR12SAX - Spectrum Analyzer Extension Module / SN: SAX 252

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

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Suite 309
Charlottesville, VA 22902

Shipping Date: 05/08/18 **Today's Date:** 05/08/18

Quantity Shipped	Unit	Description
1	EA	VDIWR8.0SAX WR8.0SAX - Spectrum Analyzer Extension Module; SN: SAX 253.

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

Authorized Signature
Virginia Diodes, Inc

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Certificate of Conformance

To: PCTEST Engineering Laboratory
6660-B Dobbin Road
Columbia, MD 21045
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Shipping Date: 05/21/18 **Today's Date:** 05/22/18

Quantity Shipped	Unit	Description
1	EA	VDIWR5.1SAX WR5.1SAX - Spectrum Analyzer Extension Module; SN: SAX 254.

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Authorized Signature
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