

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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
40516.40	Low	50	H	QPSK	V	254	316	-32.00	-13.00	-19.00
40516.33	Low	50	V	QPSK	V	23	332	-30.49	-13.00	-17.49
44083.08	Mid	50	H	QPSK	V	263	351	-34.74	-13.00	-21.74
44083.14	Mid	50	V	QPSK	V	1	281	-31.96	-13.00	-18.96
46233.54	High	50	H	QPSK	V	254	337	-35.74	-13.00	-22.74
46233.34	High	50	V	QPSK	V	24	317	-37.23	-13.00	-24.23

Table 7-51. Ant1 - SISO -Spurious Emissions Table (40.15GHz - 60GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-28.17	-13.00	-15.17
Mid	50	QPSK	-30.44	-13.00	-17.44
High	50	QPSK	-33.41	-13.00	-20.41

Table 7-52. Ant1 - MIMO -Spurious Emissions Table (40.15GHz - 60GHz)

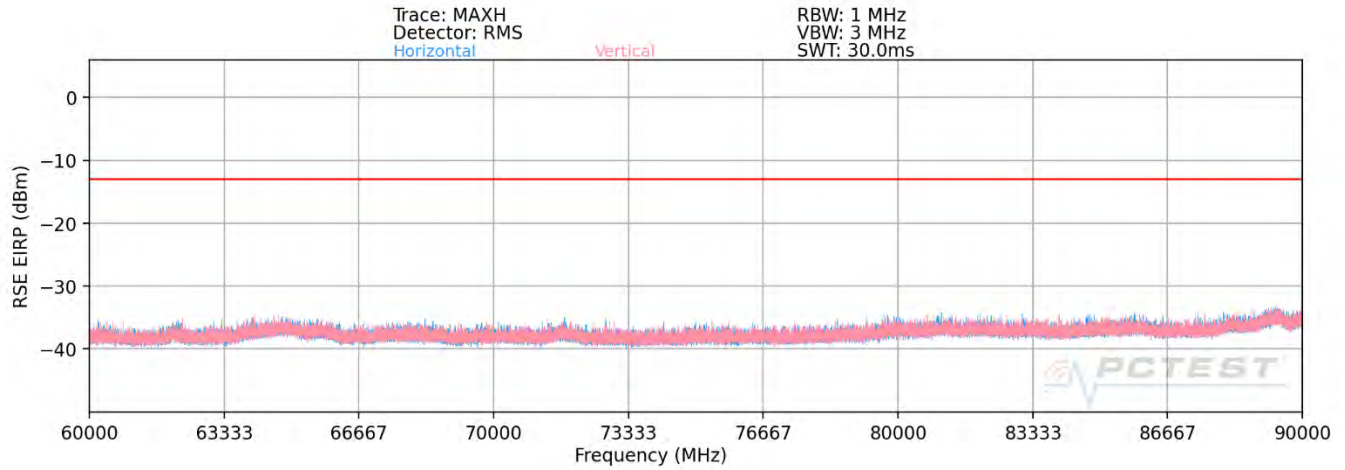
Notes

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:

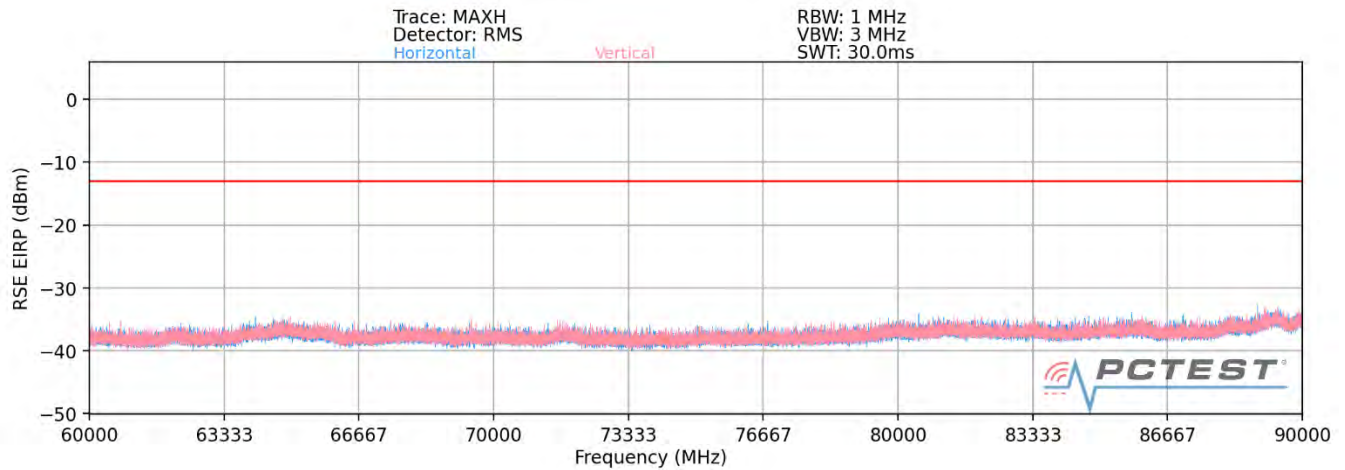
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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60GHz - 90GHz



Plot 7-99. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-100. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74054.66	Low	50	H	QPSK	V	247	253	-42.01	-13.00	-29.01
74054.68	Low	50	V	QPSK	V	144	36	-42.46	-13.00	-29.46
76996.80	Mid	50	H	QPSK	V	252	248	-42.22	-13.00	-29.22
76996.26	Mid	50	V	QPSK	V	134	32	-43.07	-13.00	-30.07
79932.48	High	50	H	QPSK	V	-	-	-44.26	-13.00	-31.26
79932.48	High	50	V	QPSK	V	-	-	-43.29	-13.00	-30.29

Table 7-53. Ant1 - SISO -Spurious Emissions Table (60GHz - 90GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-39.22	-13.00	-26.22
Mid	50	QPSK	-40.62	-13.00	-27.62
High	50	QPSK	-40.74	-13.00	-27.74

Table 7-54. Ant1 - MIMO -Spurious Emissions Table (60GHz - 90GHz)

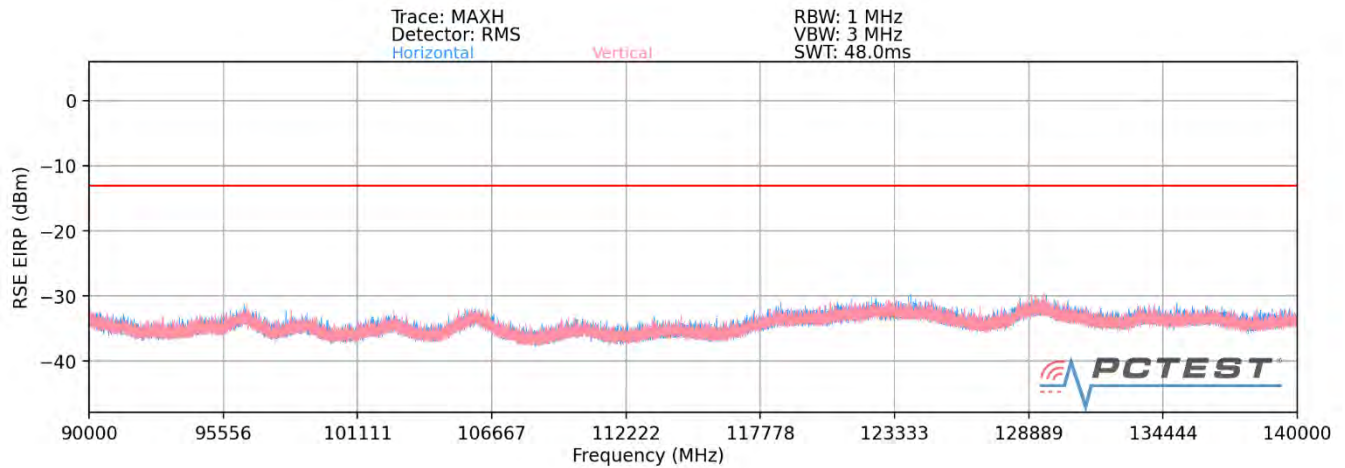
Notes

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:

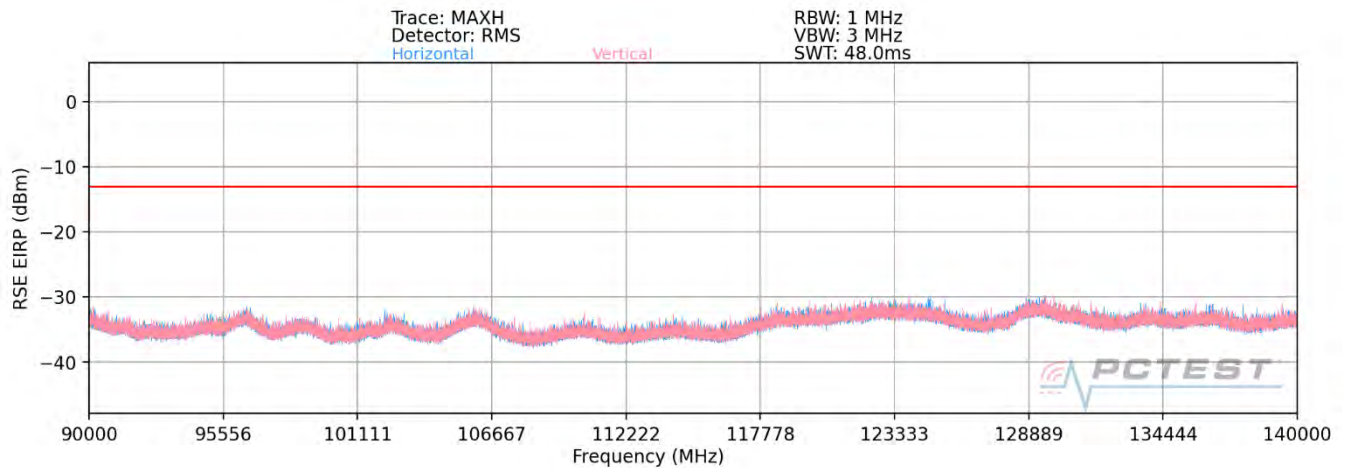
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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90GHz - 140GHz



Plot 7-101. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-102. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
111081.96	Low	50	H	QPSK	V	-	-	-38.35	-13.00	-25.35
111081.96	Low	50	V	QPSK	V	-	-	-39.25	-13.00	-26.25
115492.32	Mid	50	H	QPSK	V	-	-	-38.45	-13.00	-25.45
115492.32	Mid	50	V	QPSK	V	-	-	-39.51	-13.00	-26.51
119898.72	High	50	H	QPSK	V	-	-	-38.66	-13.00	-25.66
119898.72	High	50	V	QPSK	V	-	-	-40.01	-13.00	-27.01

Table 7-55. Ant1 - SISO -Spurious Emissions Table (90GHz - 140GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-35.77	-13.00	-22.77
Mid	50	QPSK	-36.05	-13.00	-23.05
High	50	QPSK	-36.27	-13.00	-23.27

Table 7-56. Ant1 - MIMO -Spurious Emissions Table (90GHz - 140GHz)

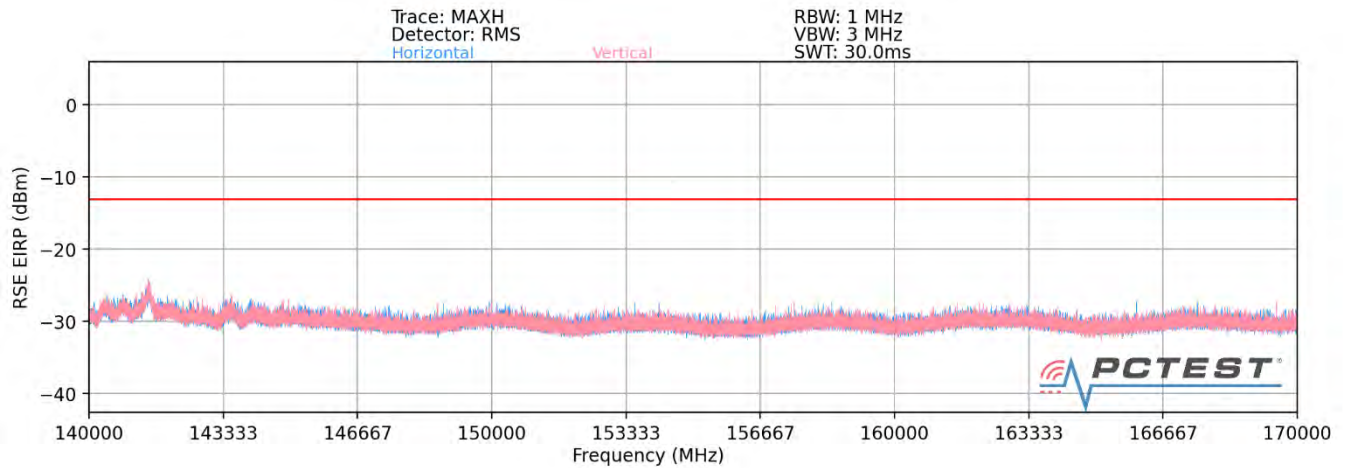
Notes

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:

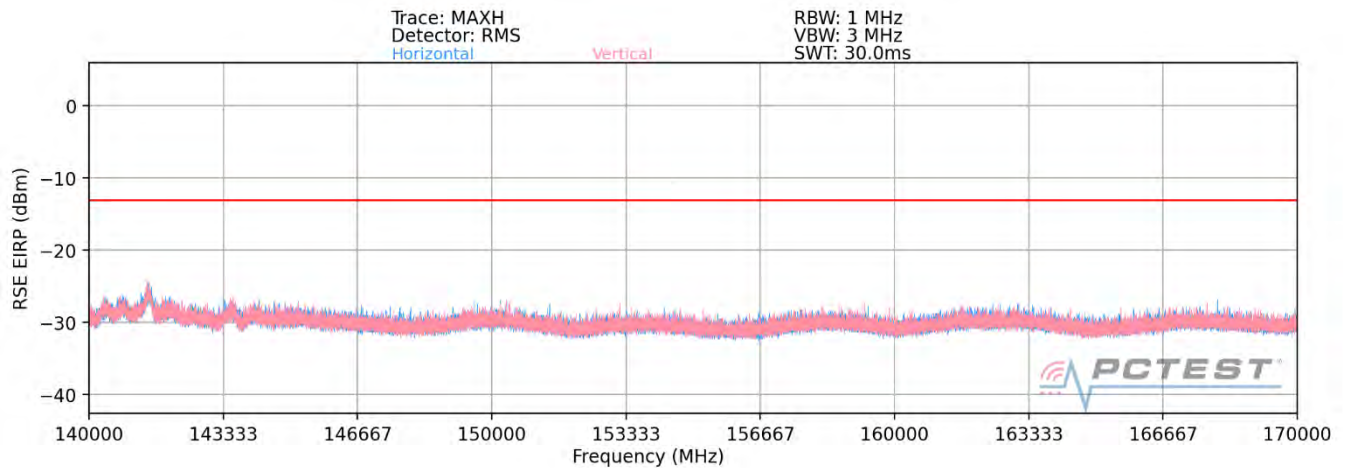
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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140GHz - 170GHz



Plot 7-103. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-104. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
141482.19	Low	50	H	QPSK	H	-	-	-32.61	-13.00	-19.61
141491.33	Low	50	V	QPSK	V	-	-	-32.54	-13.00	-19.54
141493.26	Mid	50	H	QPSK	H	-	-	-32.21	-13.00	-19.21
141460.11	Mid	50	V	QPSK	V	-	-	-32.48	-13.00	-19.48
141490.22	High	50	H	QPSK	H	-	-	-32.21	-13.00	-19.21
141490.52	High	50	V	QPSK	V	-	-	-32.40	-13.00	-19.40

Table 7-57. Ant1 - SISO -Spurious Emissions Table (140GHz - 170GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-29.56	-13.00	-16.56
Mid	50	QPSK	-29.33	-13.00	-16.33
High	50	QPSK	-29.29	-13.00	-16.29

Table 7-58. Ant1 - MIMO -Spurious Emissions Table (140GHz - 170GHz)

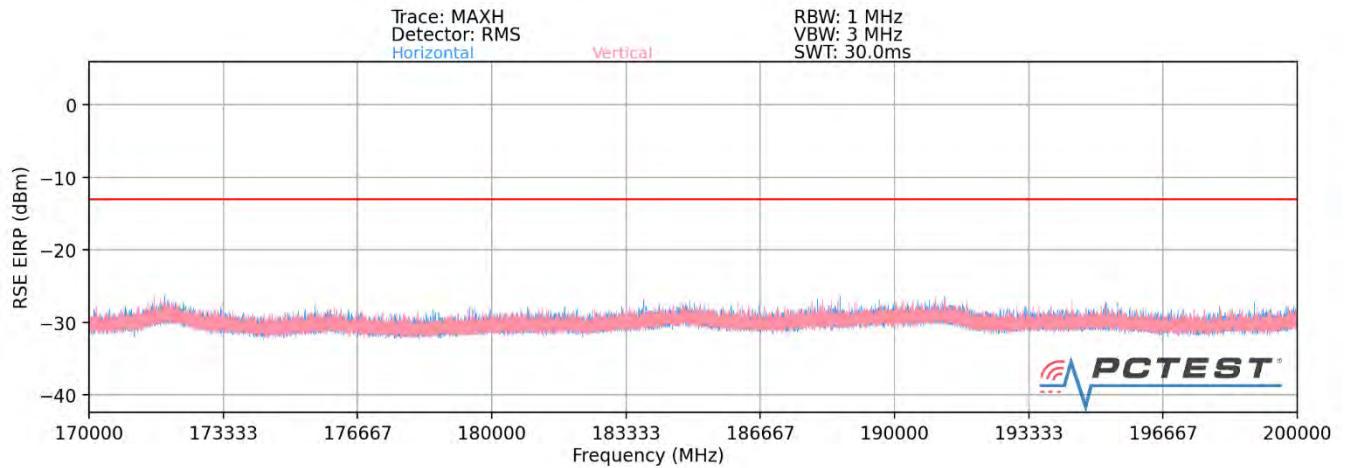
Notes

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:

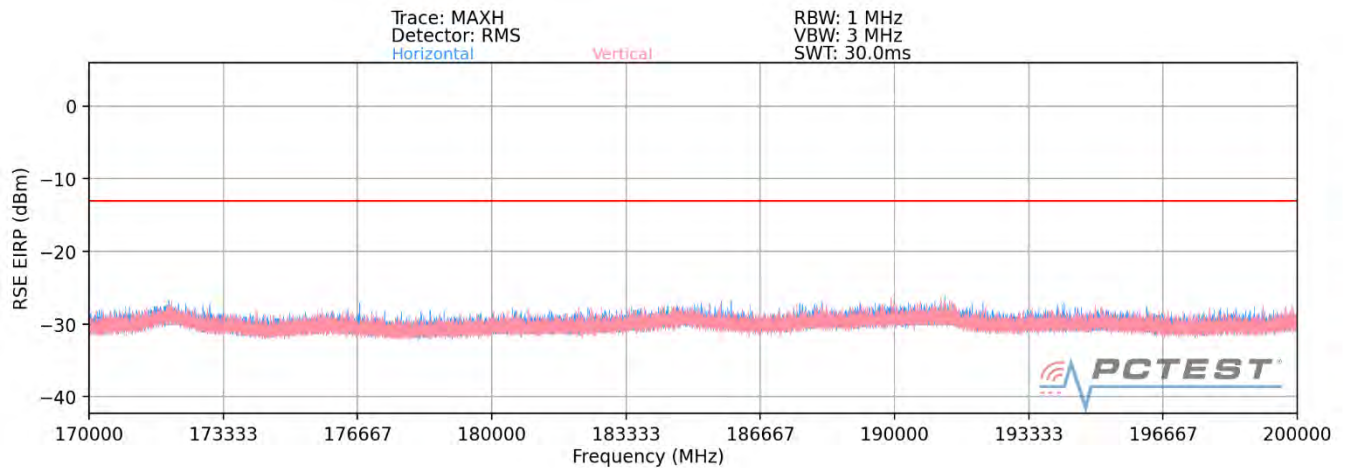
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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170GHz - 200GHz



Plot 7-105. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-106. Ant1-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
172006.95	Low	50	H	QPSK	H	-	-	-35.10	-13.00	-22.10
172007.98	Low	50	V	QPSK	V	-	-	-35.01	-13.00	-22.01
172001.10	Mid	50	H	QPSK	H	-	-	-34.98	-13.00	-21.98
171998.04	Mid	50	V	QPSK	V	-	-	-34.99	-13.00	-21.99
171.998.01	High	50	H	QPSK	H	-	-	-35.11	-13.00	-22.11
172016.36	High	50	V	QPSK	V	-	-	-35.04	-13.00	-22.04

Table 7-59. Ant1 - SISO -Spurious Emissions Table (170GHz - 200GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-32.04	-13.00	-19.04
Mid	50	QPSK	-32.04	-13.00	-19.04
High	50	QPSK	-32.06	-13.00	-19.06

Table 7-60. Ant1 - MIMO -Spurious Emissions Table (170GHz - 200GHz)

Notes

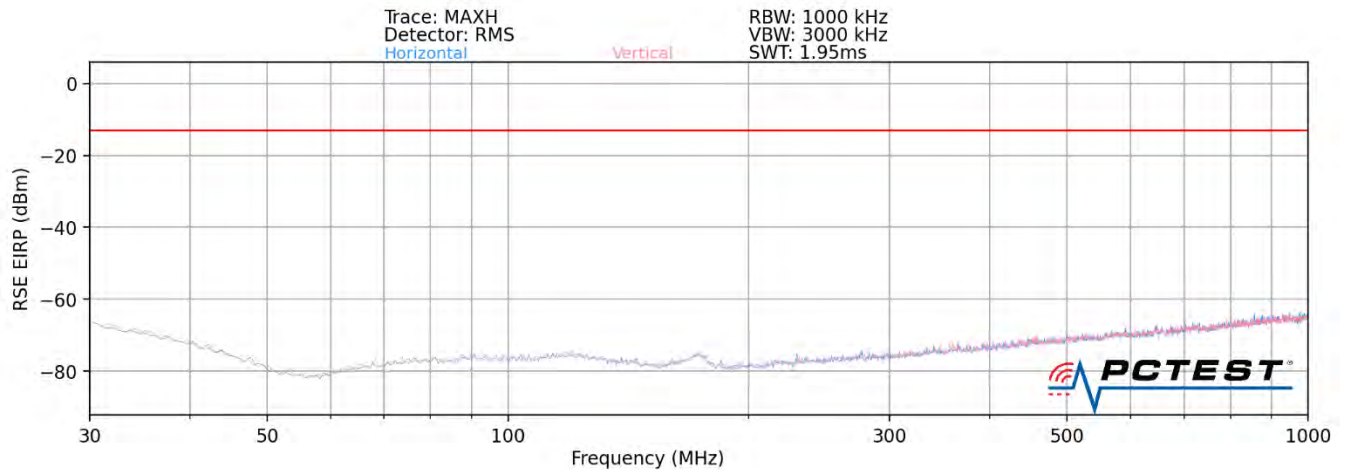
1. The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.
2. To address compliance of MIMO RSE per KDB 662911 D01, the MIMO RSE EIRP is calculated by summing the worst case H Beam EIRP and V Beam EIRP in linear powers units then converted back to dBm:

$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

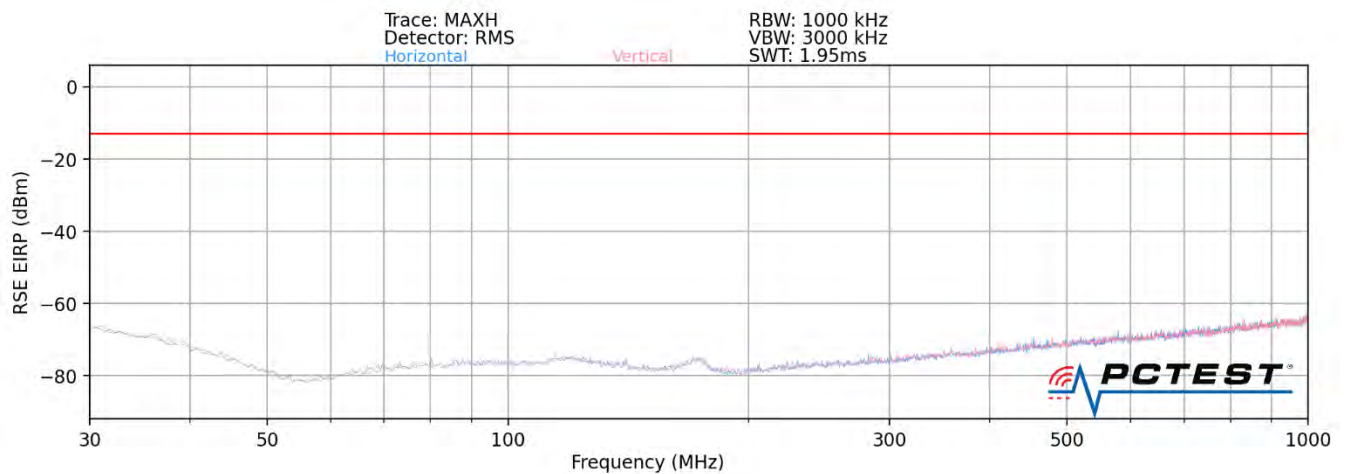
FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band n260- Ant2

30MHz - 1GHz



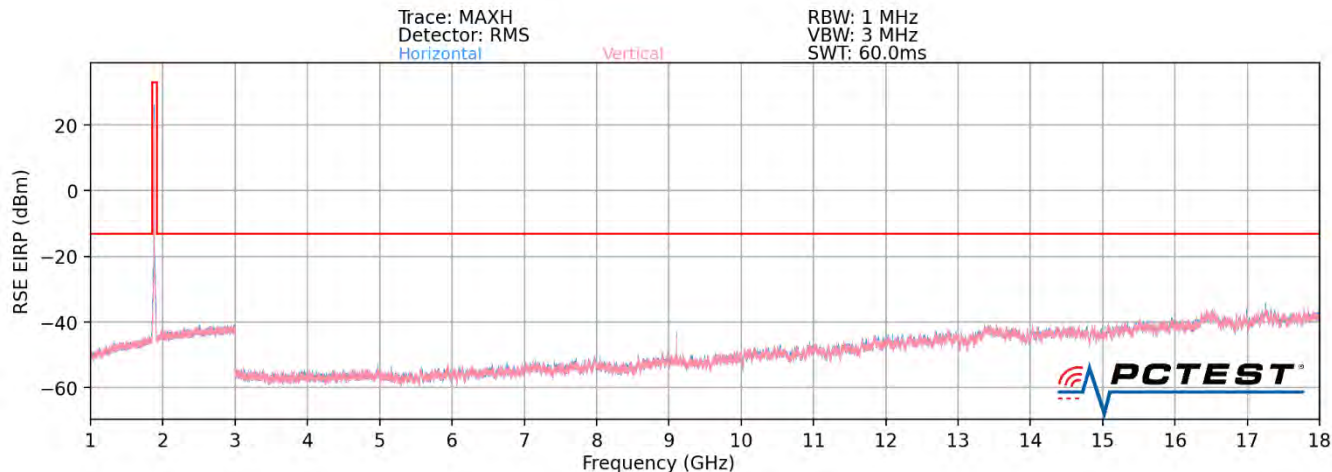
Plot 7-107. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam)



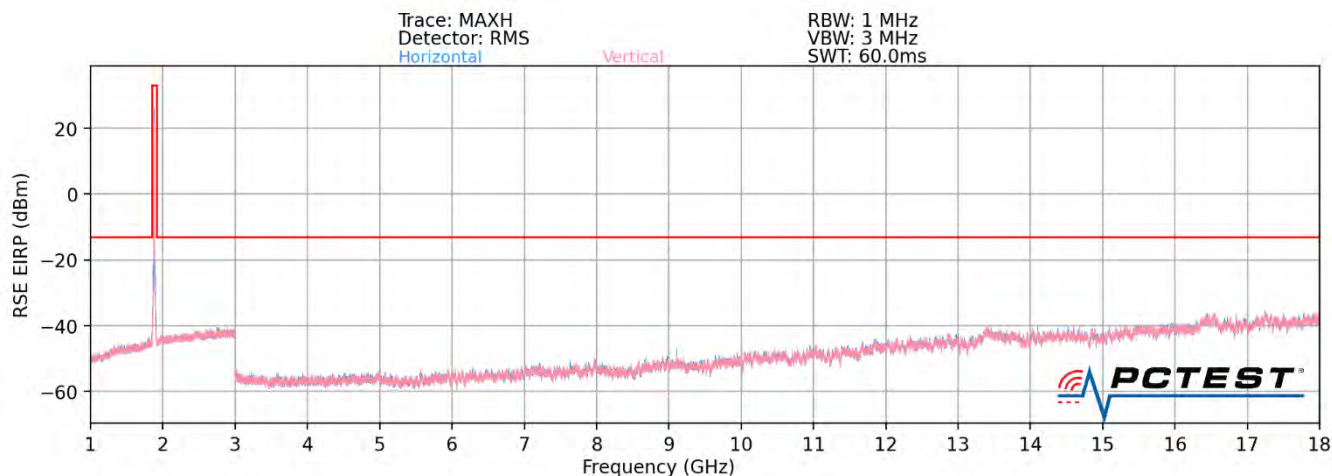
Plot 7-108. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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1GHz - 18GHz



Plot 7-109. Ant2-n260 Radiated Spurious Plot 1GHz - 18GHz (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-110. Ant2-n260 Radiated Spurious Plot 1GHz - 18GHz (1CC QPSK Mid Channel V Beam – ENDC)

FCC ID: A3LSMG981V	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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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.

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

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
8407.15	Low	50	H	QPSK	H	-	-	-40.64	-13.00	-27.64
8407.15	Low	50	V	QPSK	H	-	-	-41.34	-13.00	-28.34
9109.17	Mid	50	H	QPSK	H	-	-	-40.27	-13.00	-27.27
9109.17	Mid	50	V	QPSK	H	-	-	-41.13	-13.00	-28.13
9144.46	High	50	H	QPSK	H	-	-	-40.66	-13.00	-27.66
9144.46	High	50	V	QPSK	H	-	-	-41.14	-13.00	-28.14

Table 7-61. Ant2 - SISO -Spurious Emissions Table (1GHz - 18GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-37.97	-13.00	-24.97
Mid	50	QPSK	-37.88	-13.00	-24.88
High	50	QPSK	-37.88	-13.00	-24.88

Table 7-62. Ant2 - MIMO -Spurious Emissions Table (1GHz - 18GHz)

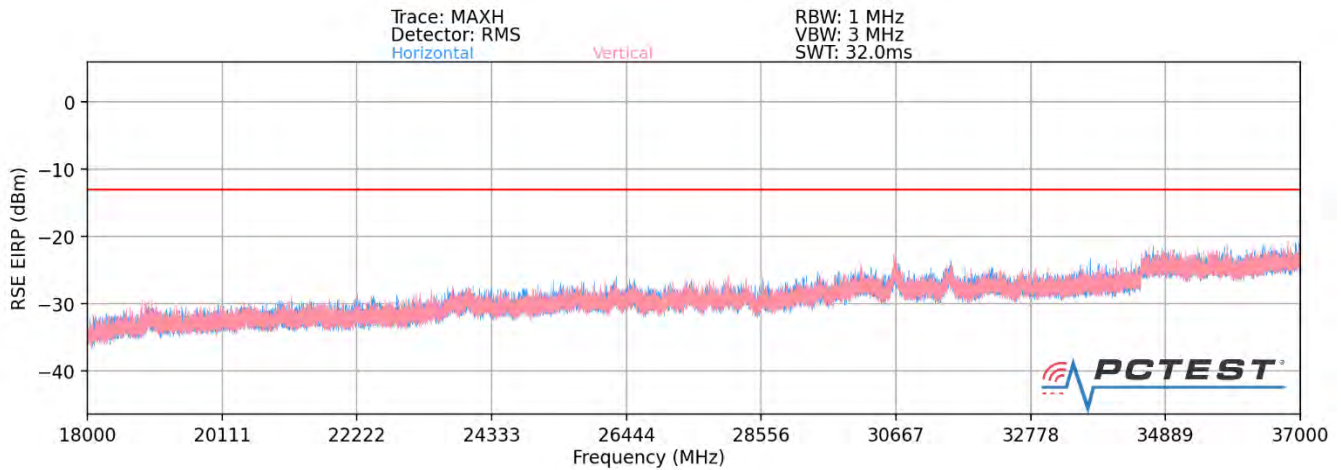
Notes

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:

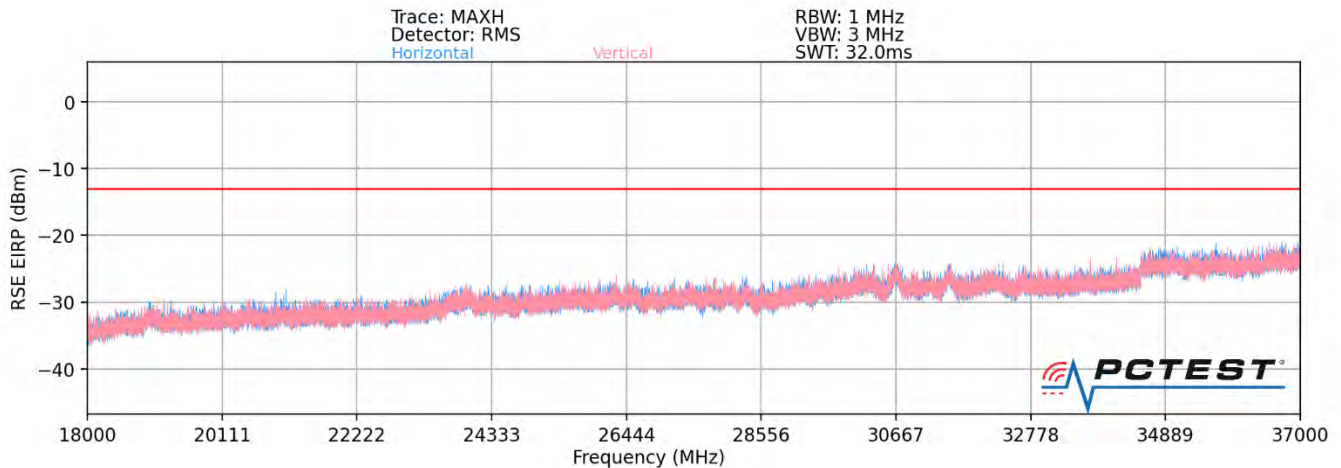
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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18GHz – 37.00GHz



Plot 7-111. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-112. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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.

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

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
36493.50	Low	50	H	QPSK	H	-	-	-25.01	-13.00	-12.01
36701.15	Low	50	V	QPSK	V	-	-	-25.16	-13.00	-12.16
36992.50	Mid	50	H	QPSK	H	-	-	-25.22	-13.00	-12.22
36468.50	Mid	50	V	QPSK	V	-	-	-25.14	-13.00	-12.14
36715.50	High	50	H	QPSK	H	-	-	-25.61	-13.00	-12.61
36459.50	High	50	V	QPSK	V	-	-	-25.51	-13.00	-12.51

Table 7-63. Ant2 - SISO -Spurious Emissions Table (18GHz – 37.00GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-22.07	-13.00	-9.07
Mid	50	QPSK	-22.36	-13.00	-9.36
High	50	QPSK	-22.55	-13.00	-9.55

Table 7-64. Ant2 - MIMO -Spurious Emissions Table (18GHz – 37.00GHz)

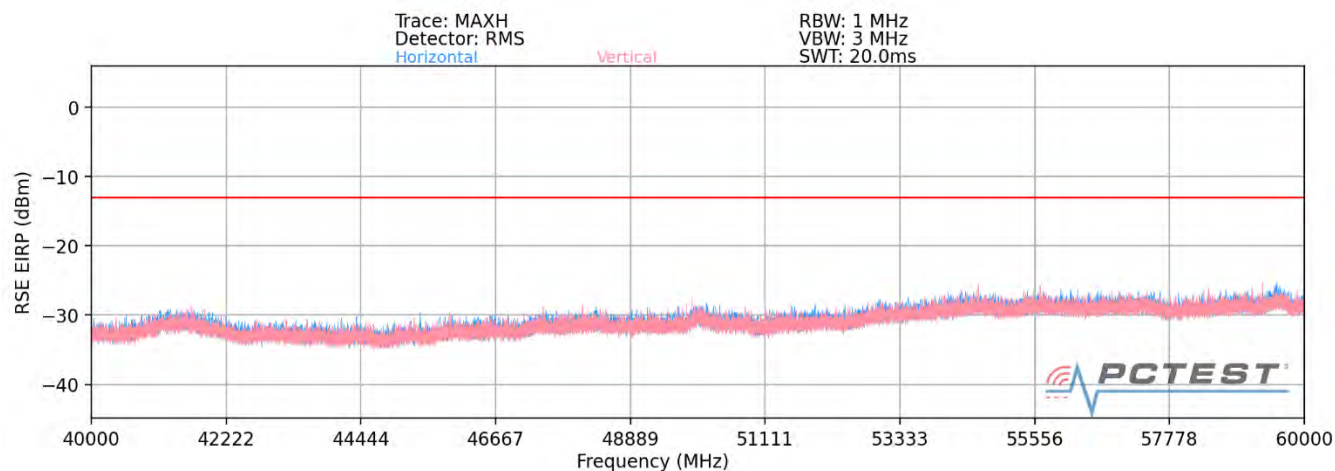
Notes

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:

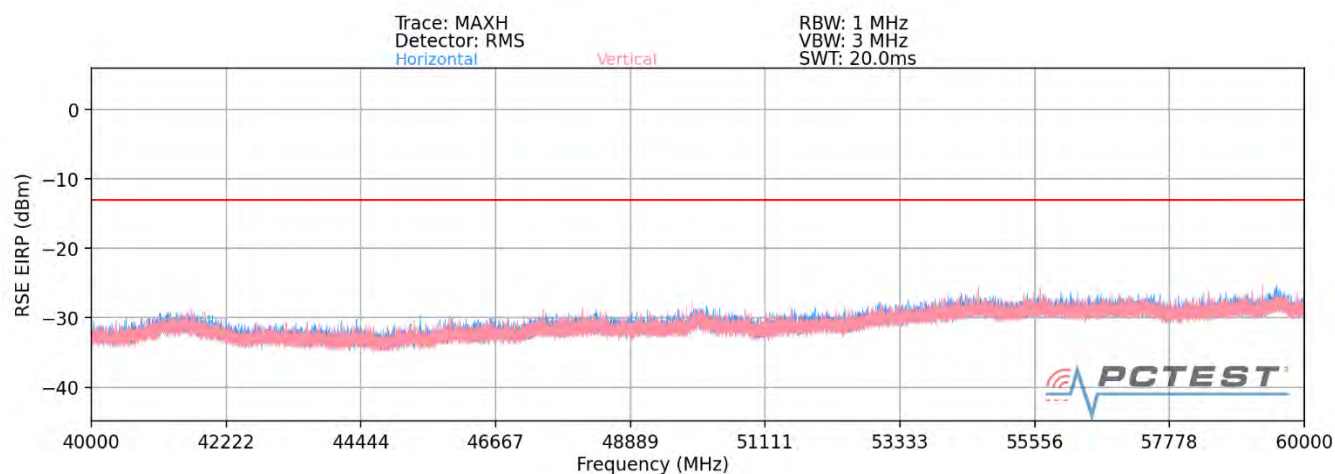
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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40.0GHz - 60GHz



Plot 7-113. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-114. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
40516.40	Low	50	H	QPSK	H	-	-	-46.01	-13.00	-33.01
40516.33	Low	50	V	QPSK	V	188	34	-34.09	-13.00	-21.09
44083.08	Mid	50	H	QPSK	H	322	351	-34.50	-13.00	-21.50
44083.14	Mid	50	V	QPSK	V	186	32	-33.06	-13.00	-20.06
42352.70	High	50	H	QPSK	H	-	-	-46.11	-13.00	-33.11
42352.88	High	50	V	QPSK	V	191	31	-35.21	-13.00	-22.21

Table 7-65. Ant2 - SISO -Spurious Emissions Table (40.15GHz - 60GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-33.82	-13.00	-20.82
Mid	50	QPSK	-32.85	-13.00	-19.85
High	50	QPSK	-34.87	-13.00	-21.87

Table 7-66. Ant2 - MIMO -Spurious Emissions Table (40.15GHz - 60GHz)

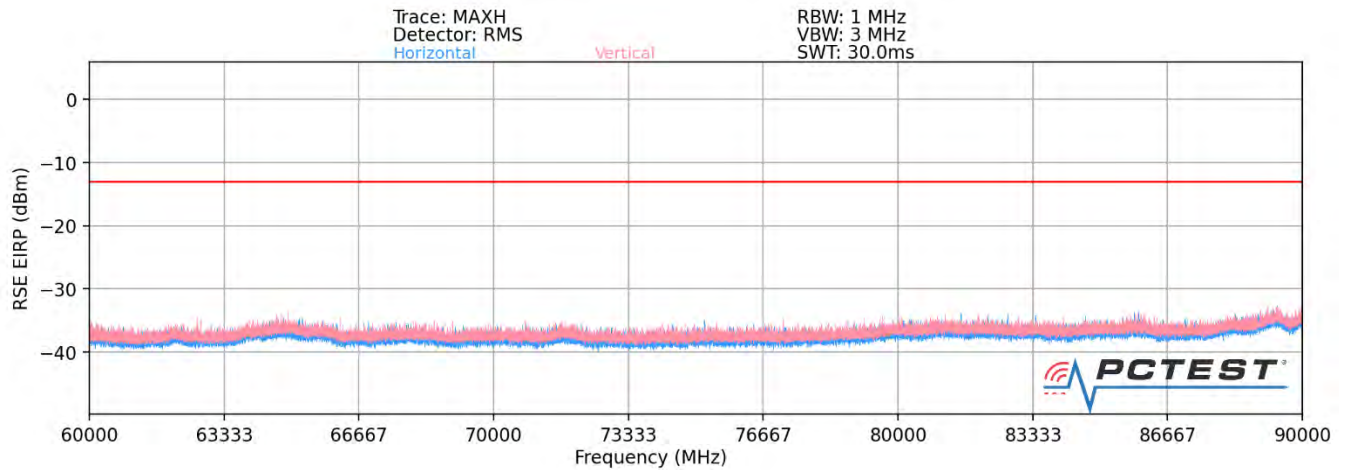
Notes

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:

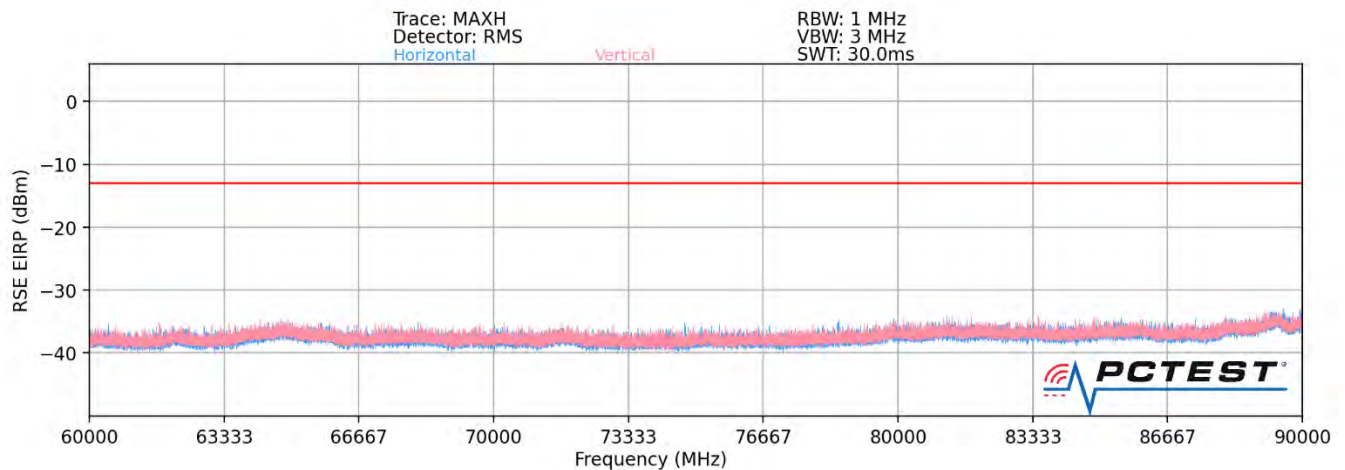
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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60GHz - 90GHz



Plot 7-115. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-116. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
74054.66	Low	50	H	QPSK	H	-	-	-43.01	-13.00	-30.01
74054.68	Low	50	V	QPSK	H	116	71	-42.99	-13.00	-29.99
76996.80	Mid	50	H	QPSK	H	146	136	-41.69	-13.00	-28.69
76996.26	Mid	50	V	QPSK	H	115	67	-42.81	-13.00	-29.81
79932.48	High	50	H	QPSK	H	-	-	-42.22	-13.00	-29.22
79932.48	High	50	V	QPSK	H	-	-	-43.21	-13.00	-30.21

Table 7-67. Ant2 - SISO -Spurious Emissions Table (60GHz - 90GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-39.99	-13.00	-26.99
Mid	50	QPSK	-39.49	-13.00	-26.49
High	50	QPSK	-39.68	-13.00	-26.68

Table 7-68. Ant2 - MIMO -Spurious Emissions Table (60GHz - 90GHz)

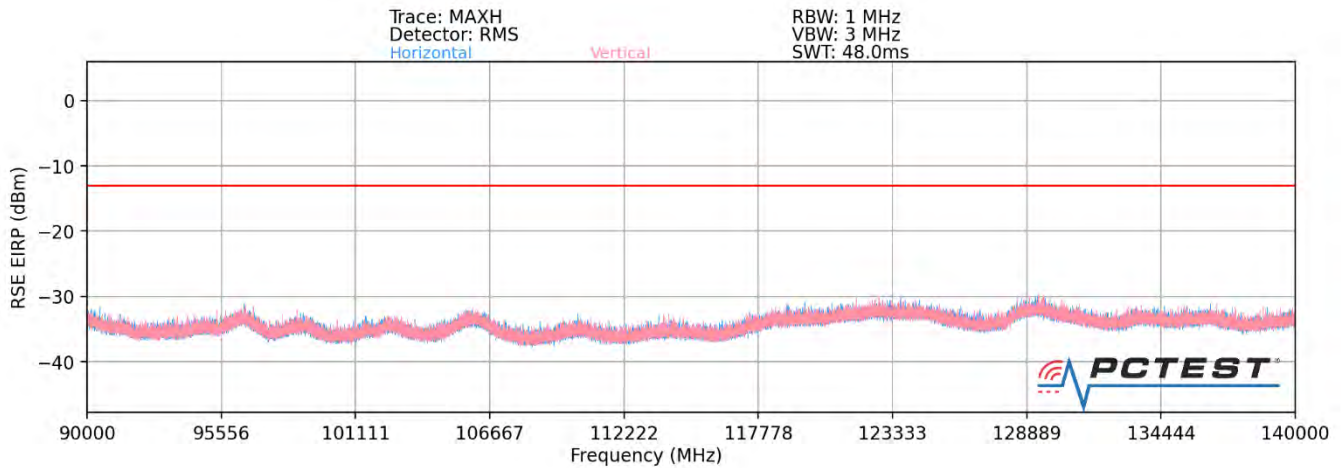
Notes

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:

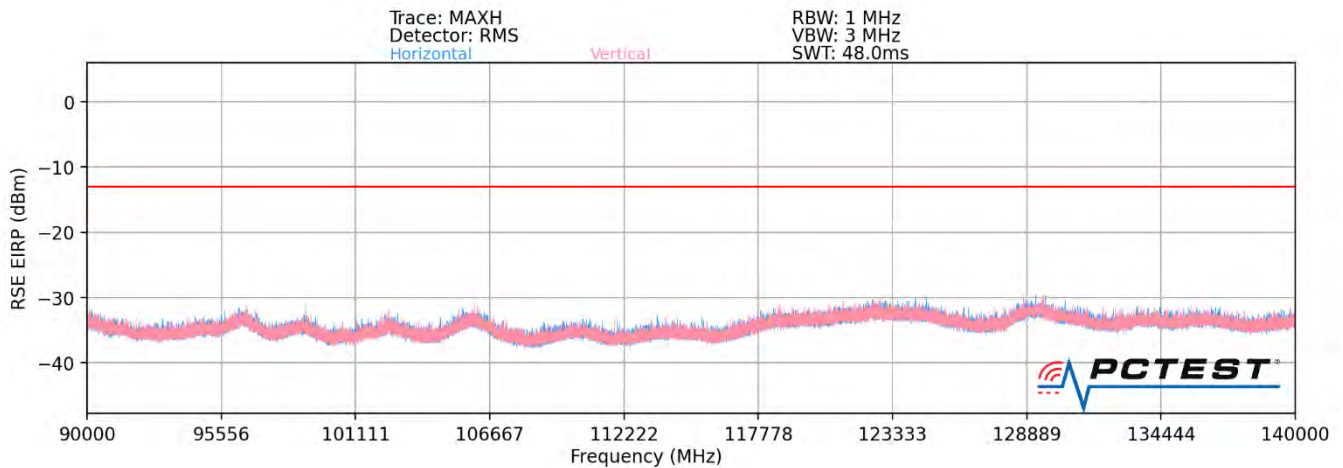
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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90GHz - 140GHz



Plot 7-117. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-118. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
111081.96	Low	50	H	QPSK	H	-	-	-40.54	-13.00	-27.54
111081.96	Low	50	V	QPSK	H	-	-	-40.82	-13.00	-27.82
115492.32	Mid	50	H	QPSK	H	-	-	-40.67	-13.00	-27.67
115492.32	Mid	50	V	QPSK	H	-	-	-41.01	-13.00	-28.01
119898.72	High	50	H	QPSK	H	-	-	-40.71	-13.00	-27.71
119898.72	High	50	V	QPSK	H	-	-	-41.21	-13.00	-28.21

Table 7-69. Ant2 - SISO -Spurious Emissions Table (90GHz - 140GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-37.67	-13.00	-24.67
Mid	50	QPSK	-37.85	-13.00	-24.85
High	50	QPSK	-37.94	-13.00	-24.94

Table 7-70. Ant2 - MIMO -Spurious Emissions Table (90GHz - 140GHz)

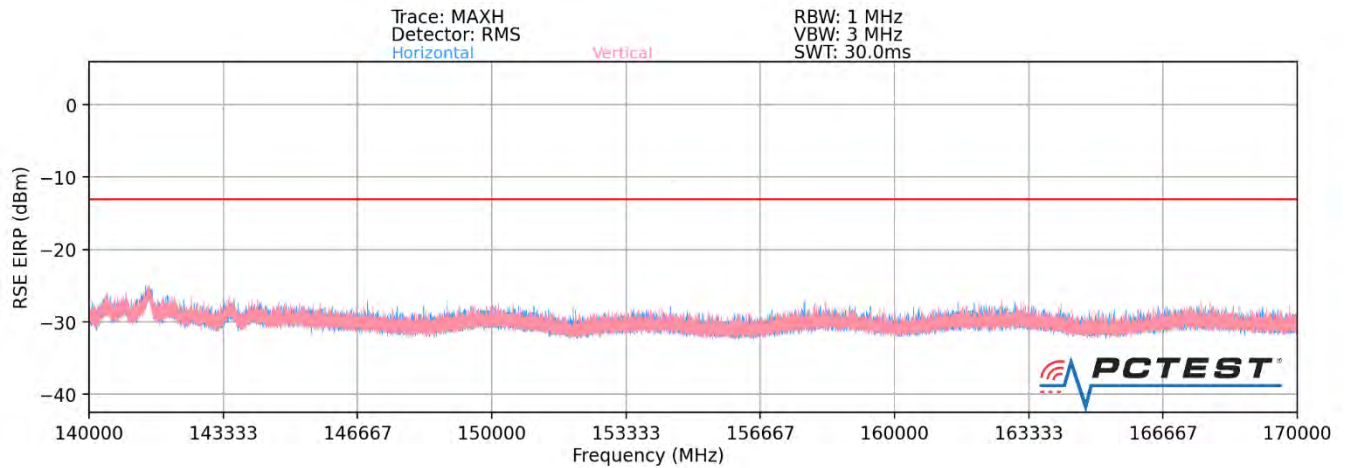
Notes

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:

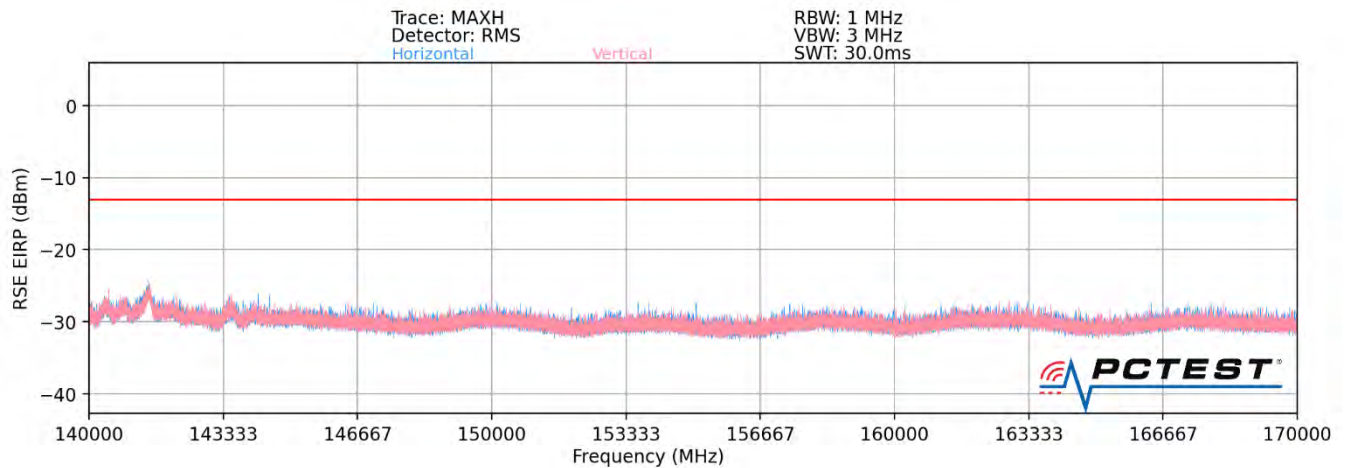
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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140GHz - 170GHz



Plot 7-119. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-120. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
141482.19	Low	50	H	QPSK	H	-	-	-32.63	-13.00	-19.63
141491.33	Low	50	V	QPSK	V	-	-	-32.19	-13.00	-19.19
141493.26	Mid	50	H	QPSK	H	-	-	-32.23	-13.00	-19.23
141438.61	Mid	50	V	QPSK	V	-	-	-32.16	-13.00	-19.16
141490.22	High	50	H	QPSK	H	-	-	-32.49	-13.00	-19.49
141490.52	High	50	V	QPSK	V	-	-	-32.47	-13.00	-19.47

Table 7-71. Ant2 - SISO -Spurious Emissions Table (140GHz - 170GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-29.39	-13.00	-16.39
Mid	50	QPSK	-29.31	-13.00	-16.31
High	50	QPSK	-29.47	-13.00	-16.47

Table 7-72. Ant2 - MIMO -Spurious Emissions Table (140GHz - 170GHz)

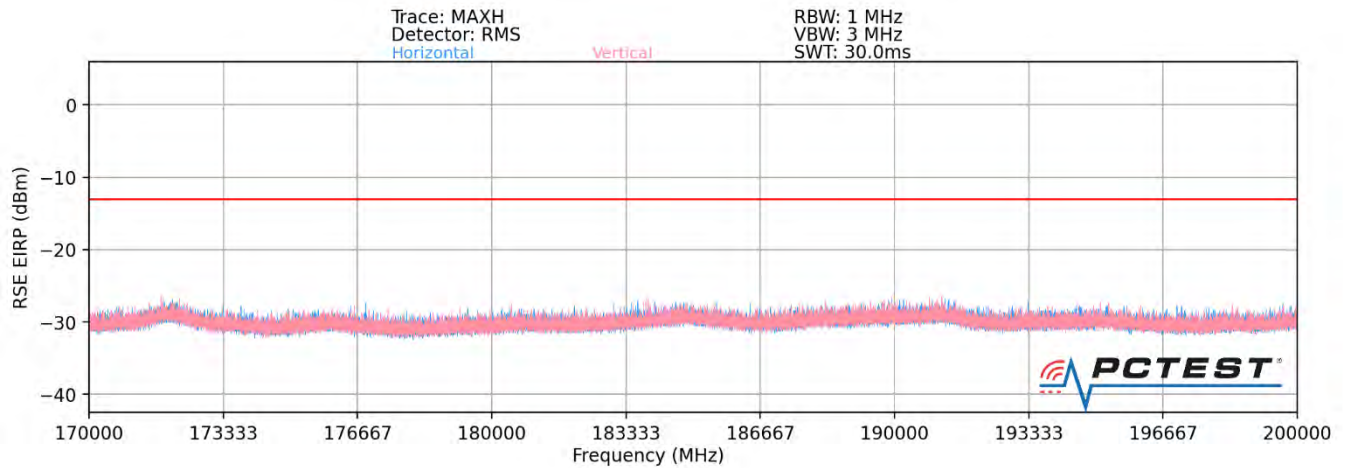
Notes

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:

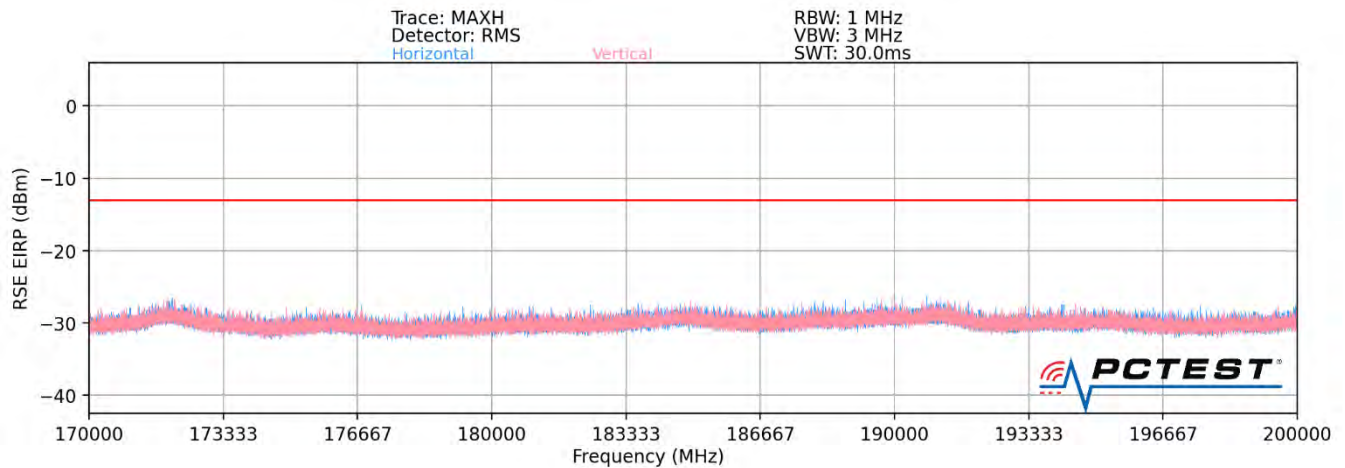
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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170GHz - 200GHz



Plot 7-121. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel H Beam – ENDC)



Plot 7-122. Ant2-n260 Radiated Spurious Plot (1CC QPSK Mid Channel V Beam – ENDC)

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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]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Positioner Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
172006.95	Low	50	H	QPSK	H	-	-	-35.26	-13.00	-22.26
172007.98	Low	50	V	QPSK	V	-	-	-35.14	-13.00	-22.14
172001.10	Mid	50	H	QPSK	H	-	-	-34.89	-13.00	-21.89
171998.04	Mid	50	V	QPSK	V	-	-	-35.01	-13.00	-22.01
171.998.01	High	50	H	QPSK	H	-	-	-35.11	-13.00	-22.11
172016.36	High	50	V	QPSK	V	-	-	-34.98	-13.00	-21.98

Table 7-73. Ant2 - SISO -Spurious Emissions Table (170GHz - 200GHz)

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-32.19	-13.00	-19.19
Mid	50	QPSK	-32.05	-13.00	-19.05
High	50	QPSK	-32.03	-13.00	-19.03

Table 7-74. 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:

$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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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 v01r01 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 $\geq 3 \times$ RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times$ 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 conductive 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	8.80
		V	7.66
	High	H	8.24
		V	8.26
Ant2	Low	H	8.56
		V	7.91
	High	H	8.32
		V	7.98

Table 7-75. Antenna Gains at the Band Edges(n261)

Antenna	Channel	Beam Polarization	Gain (dBi)
Ant1	Low	H	10.26
		V	9.78
	High	H	9.94
		V	9.62
Ant2	Low	H	9.45
		V	9.20
	High	H	10.24
		V	9.62

Table 7-76. Antenna Gains at the Band Edges(n260)

Sample Analyzer Offset Calculation (at 27.5GHz)

Measurement Antenna Factor = 40.70dB/m

Cable Loss = 8.82dB

EUT Antenna Gain = 8.80dBi

Analyzer Offset (dB) = AF (dB/m) + CL (dB) + 107 + 20log₁₀(D) – 104.8dB – Gain (dBi), where D = 1m

$$= 40.70\text{dB/m} + 8.82\text{dB} + 107 + 20\log_{10}(1\text{m}) - 104.8\text{dB} - 8.80\text{dBi}$$

$$= 42.92\text{dB}$$

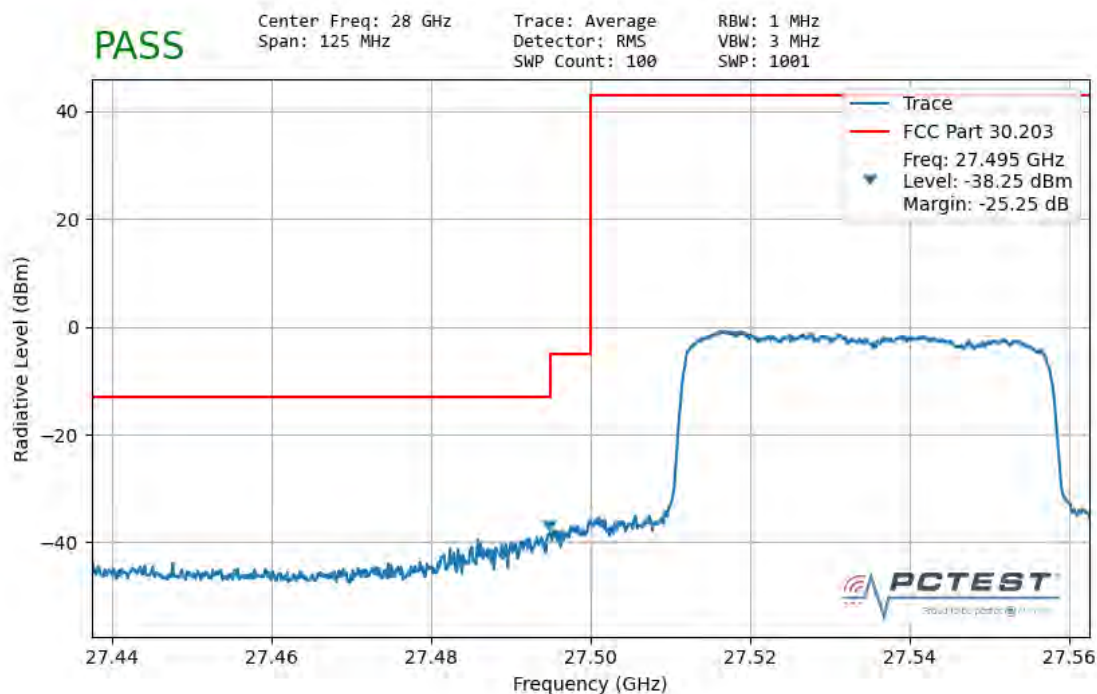
FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Note:

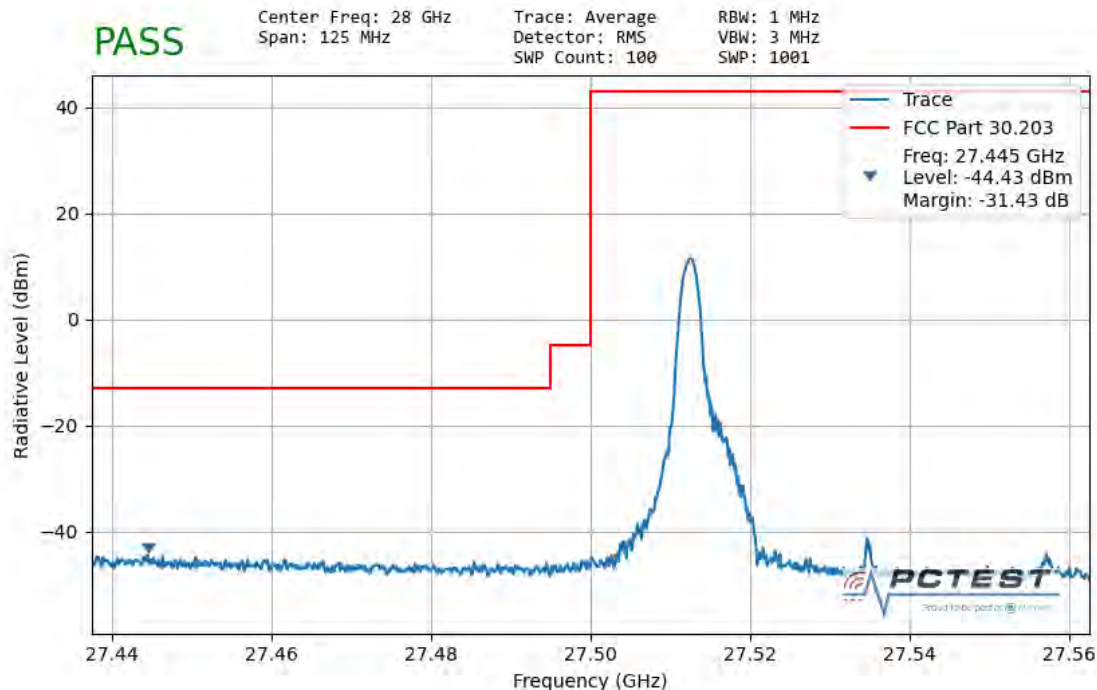
While it is allowed to use the antenna gain subtraction method in the band edge as it is defined in Part 30, the device meets the requirements via early exit condition as specified in KDB publication 842590 D01.

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Band n261 – Worst-Case

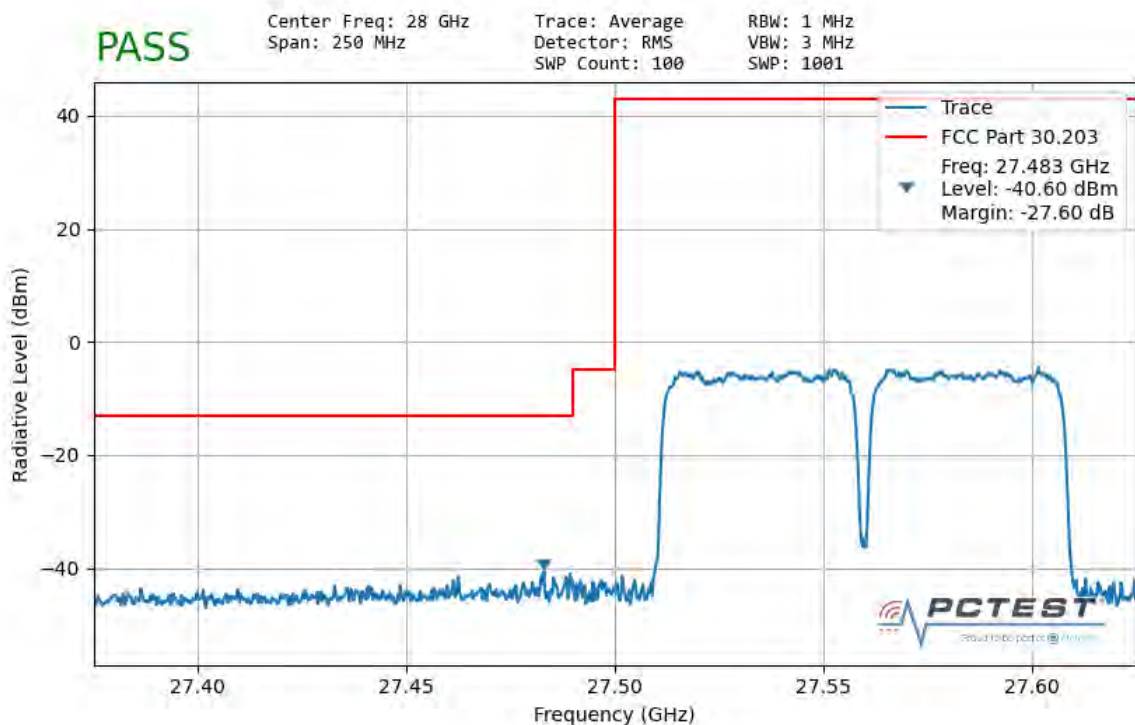


Plot 7-123. Ant1 Lower Band Edge (50MHz-1CC – QPSK Full RB)

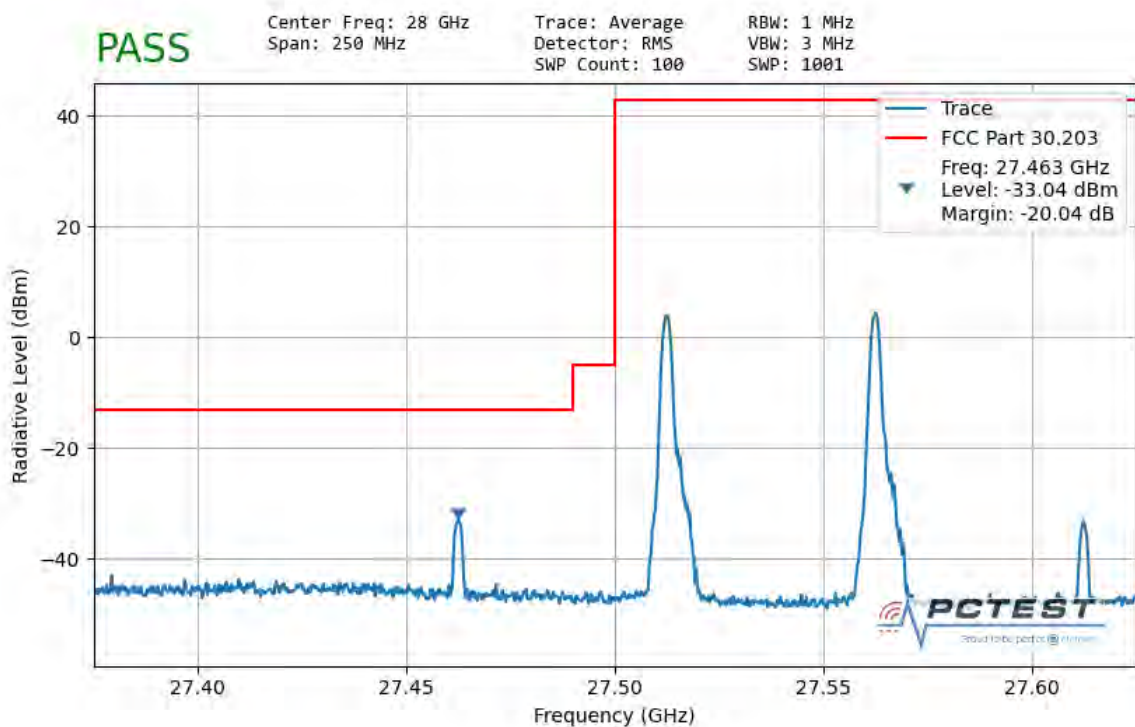


Plot 7-124. Ant1 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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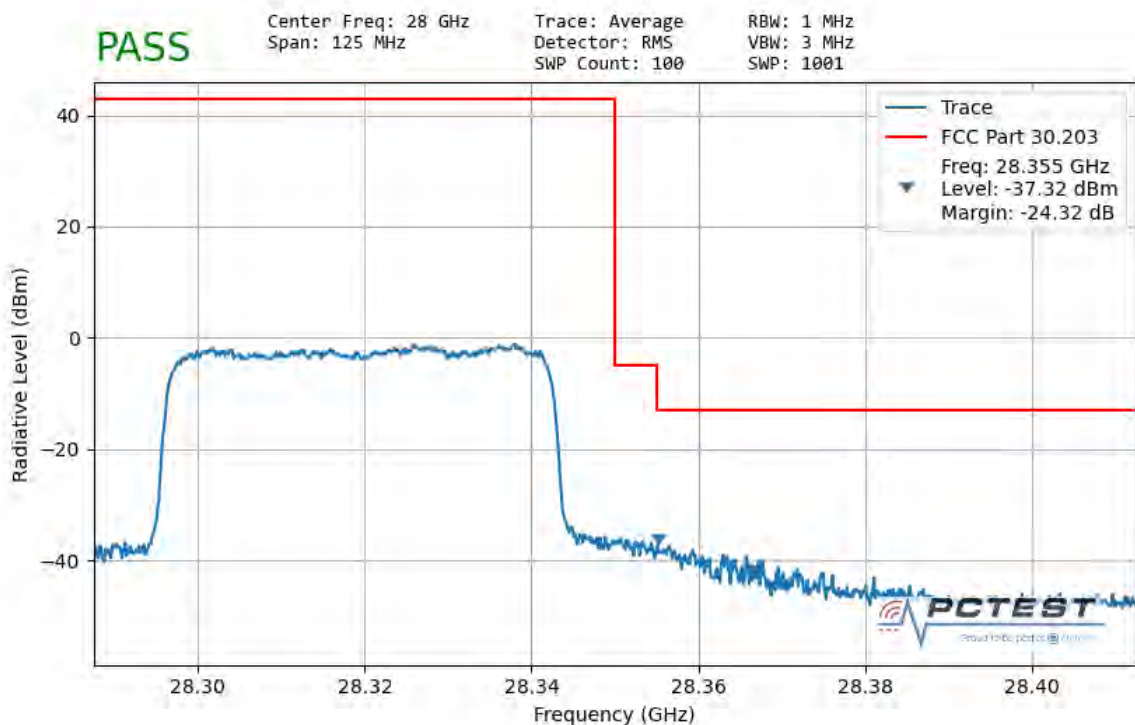


Plot 7-125. Ant1 Lower Band Edge (50MHz-2CC – QPSK Full RB)

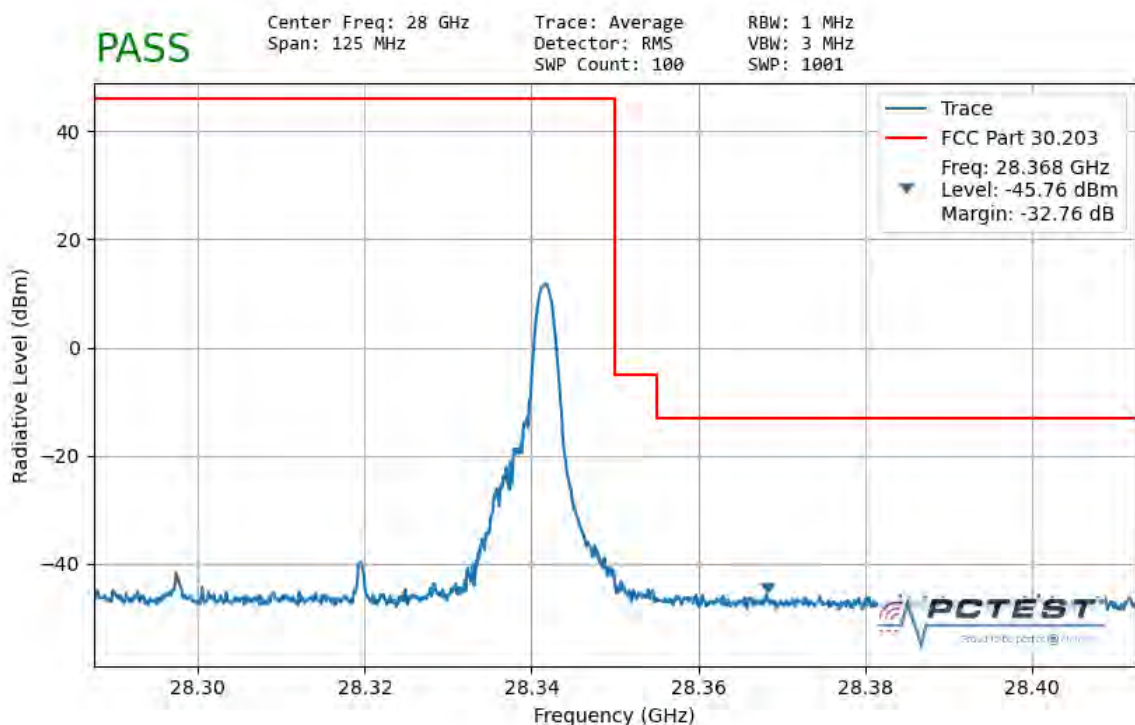


Plot 7-126. Ant1 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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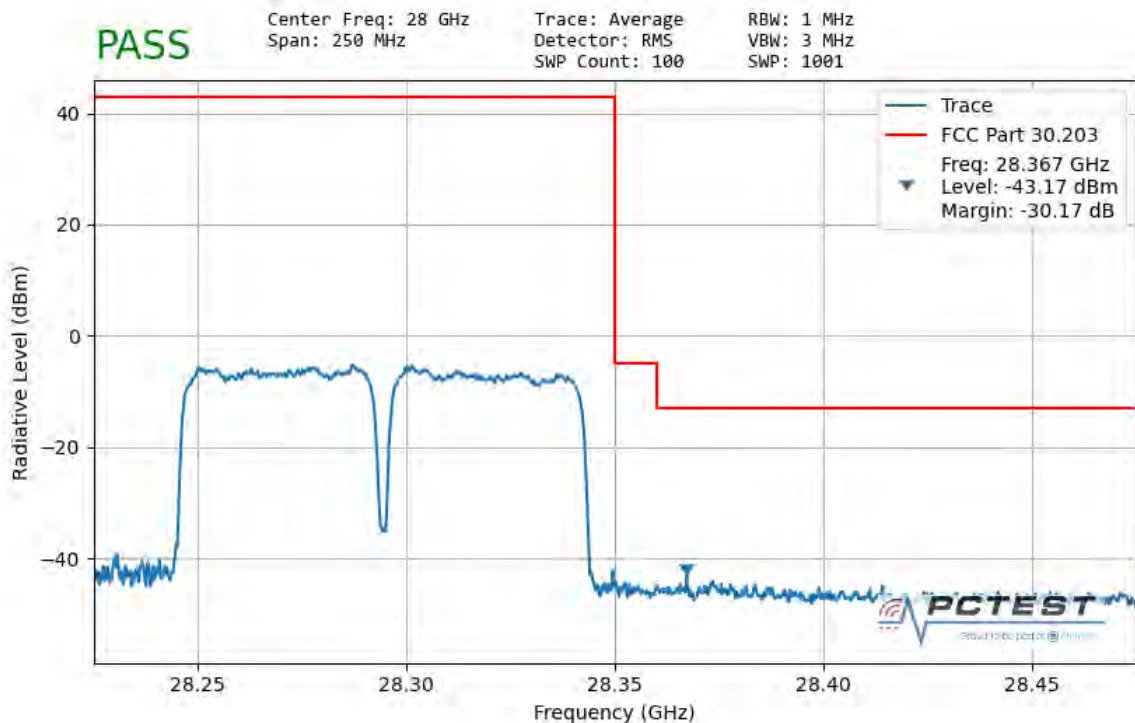


Plot 7-127. Ant1 Upper Band Edge (50MHz-1CC – QPSK Full RB)

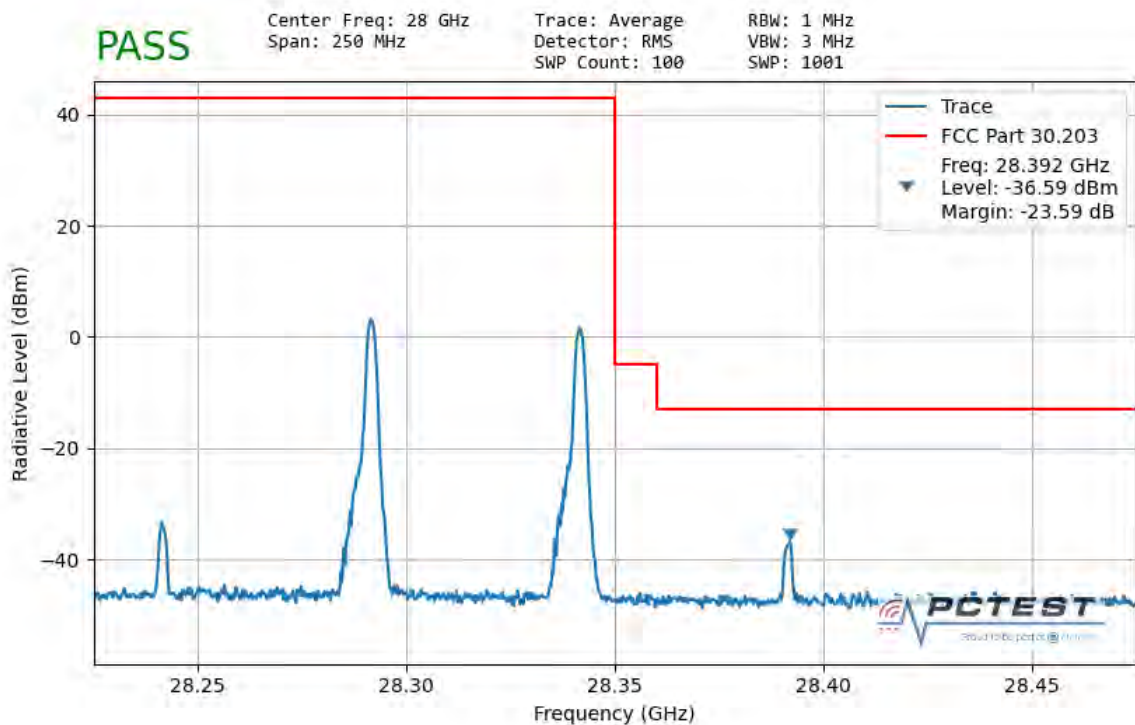


Plot 7-128. Ant1 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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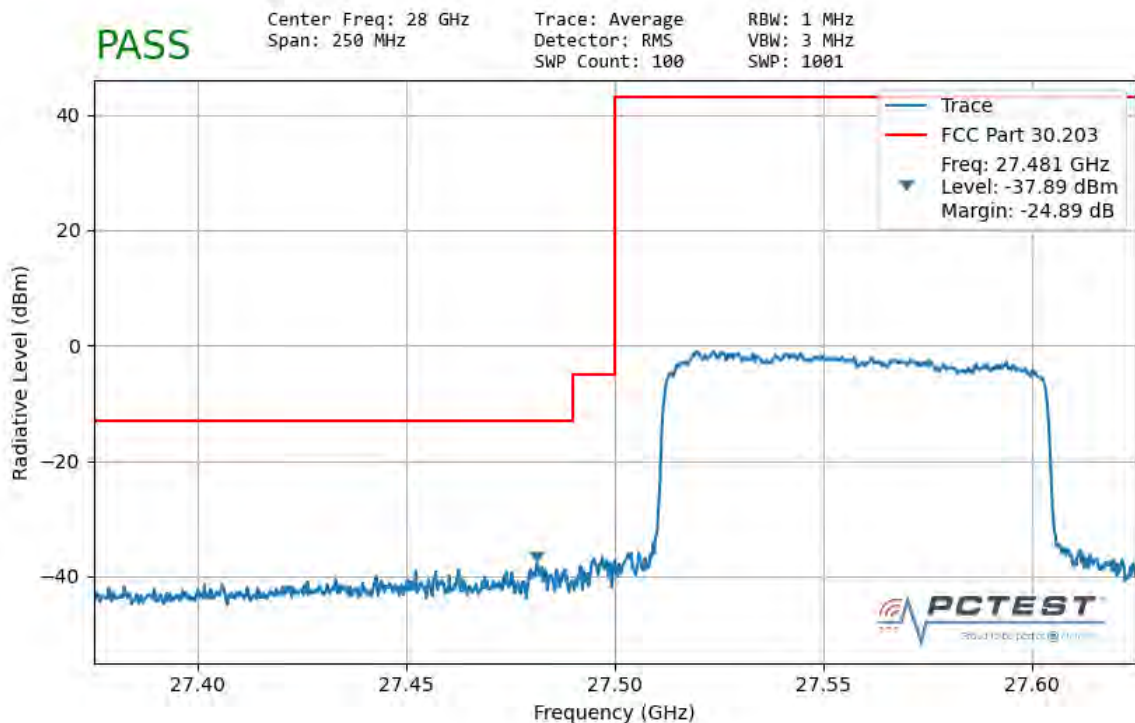


Plot 7-129. Ant1 Upper Band Edge (50MHz-2CC – QPSK Full RB)

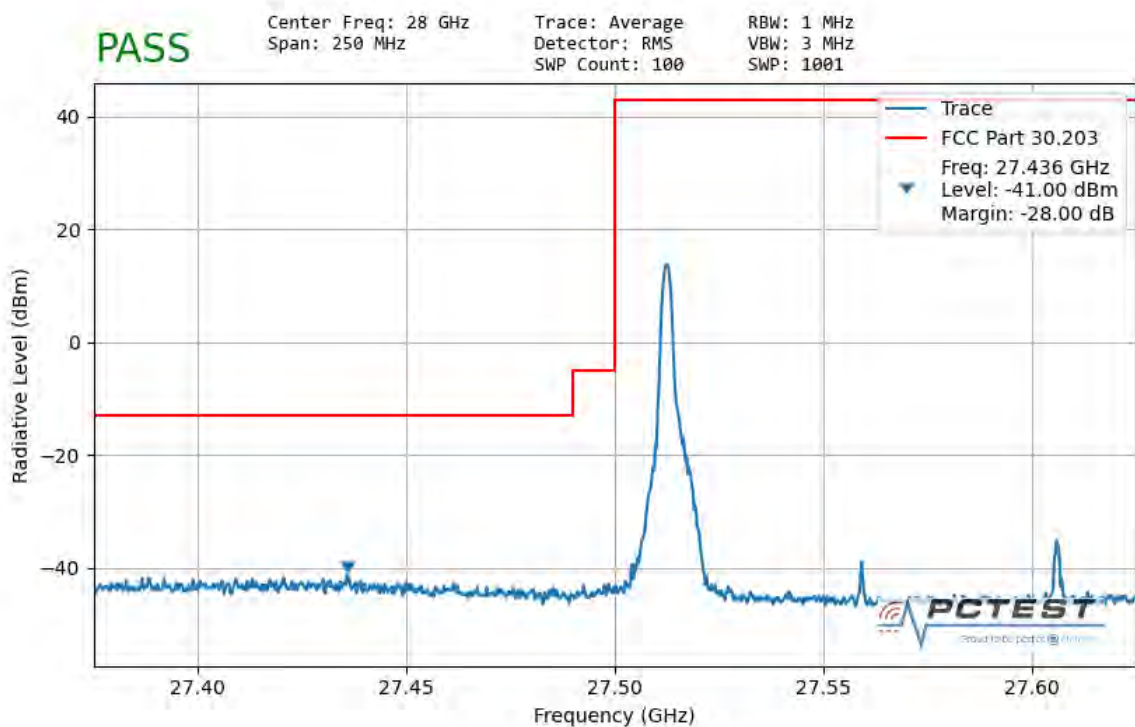


Plot 7-130. Ant1 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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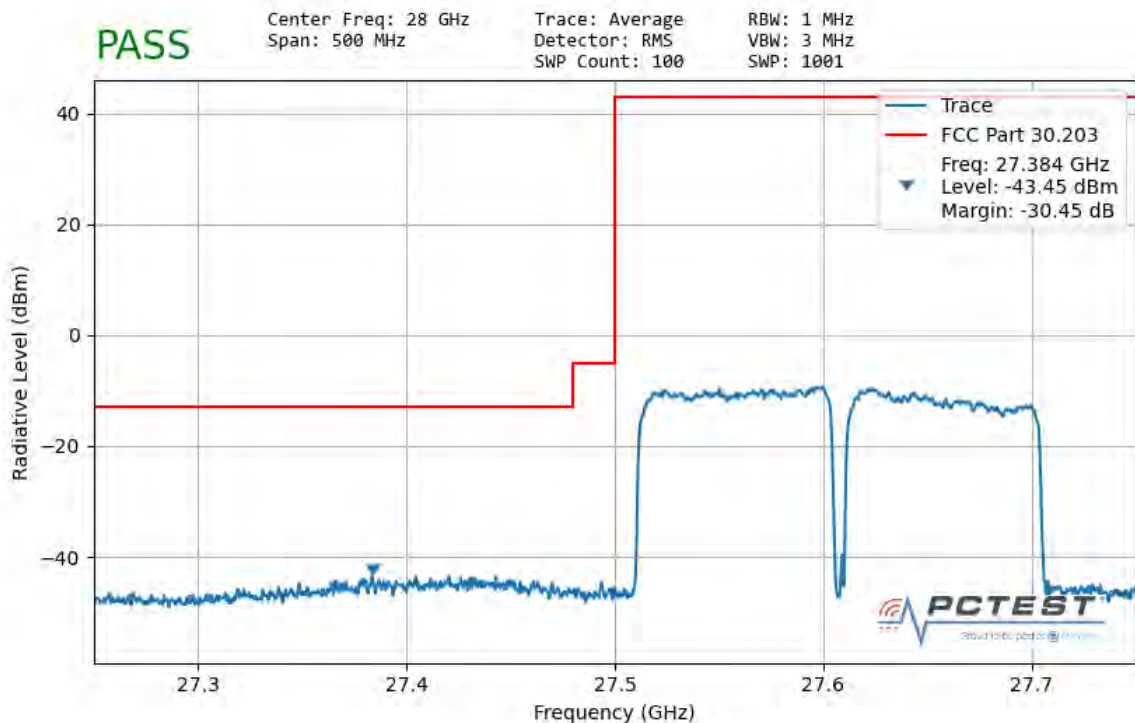


Plot 7-131. Ant1 Lower Band Edge (100MHz-1CC – QPSK Full RB)

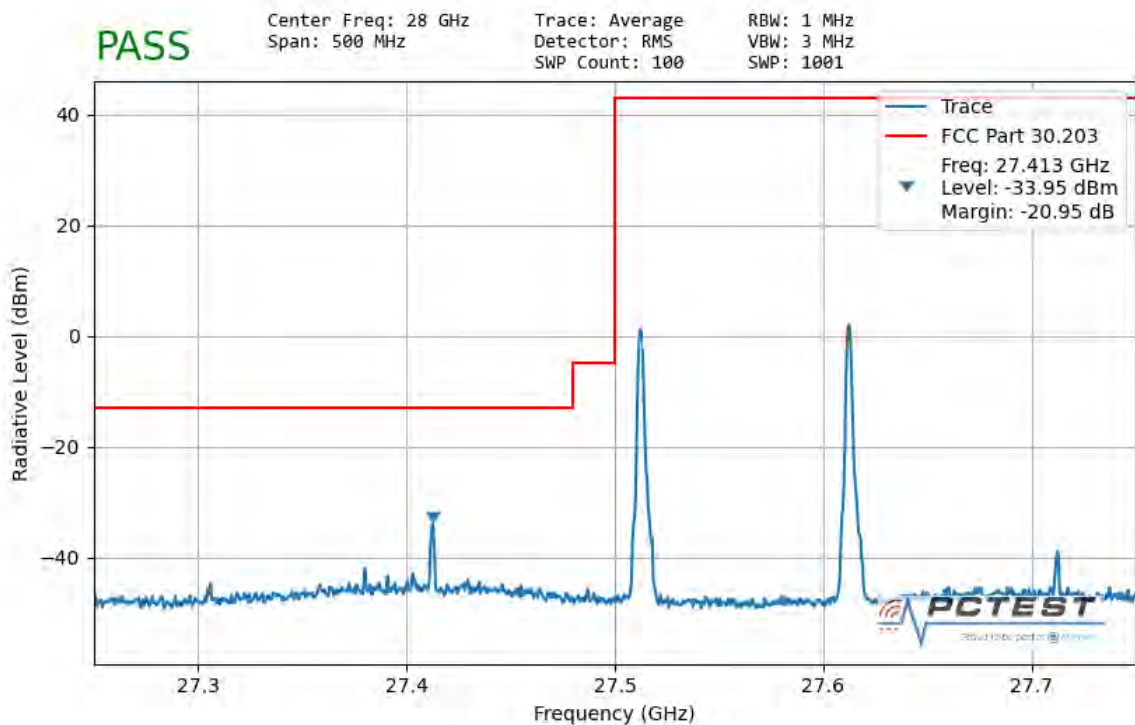


Plot 7-132. Ant1 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 124 of 161

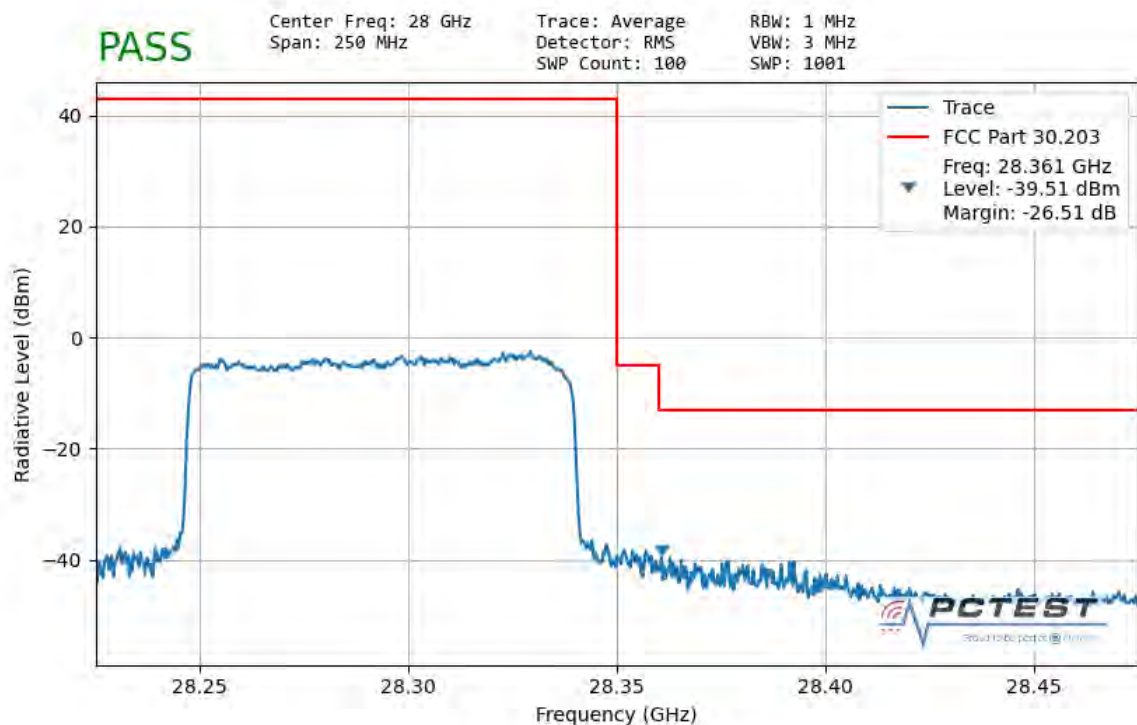


Plot 7-133. Ant1 Lower Band Edge (100MHz-2CC – QPSK Full RB)

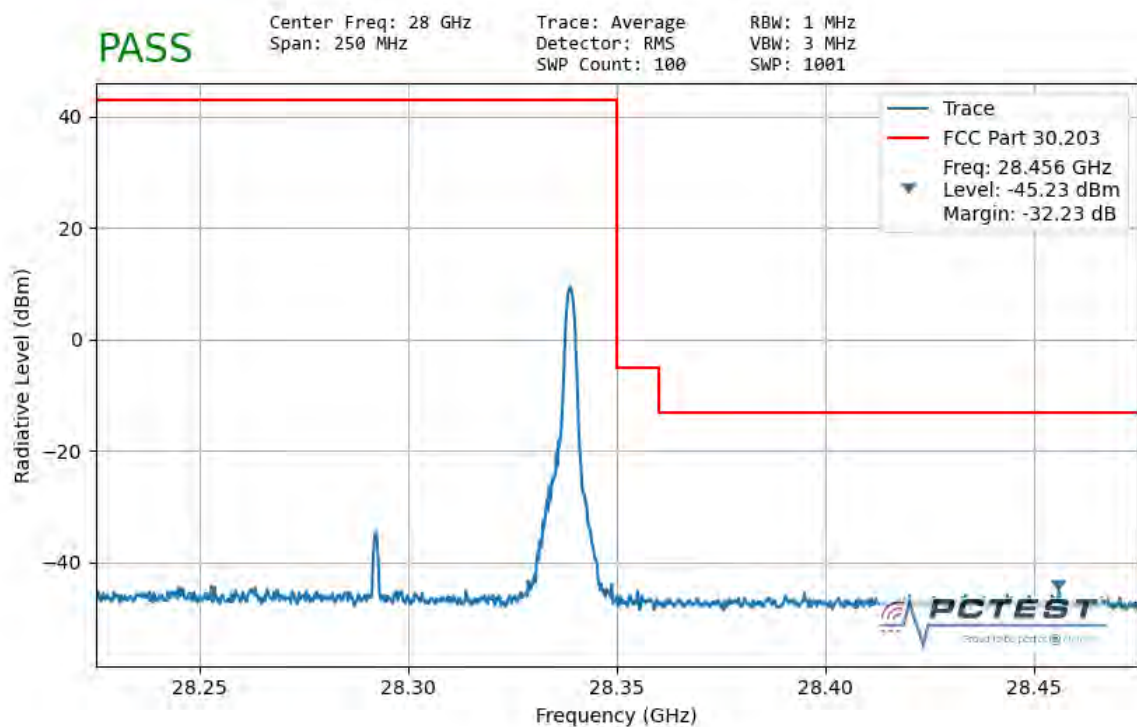


Plot 7-134. Ant1 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 125 of 161

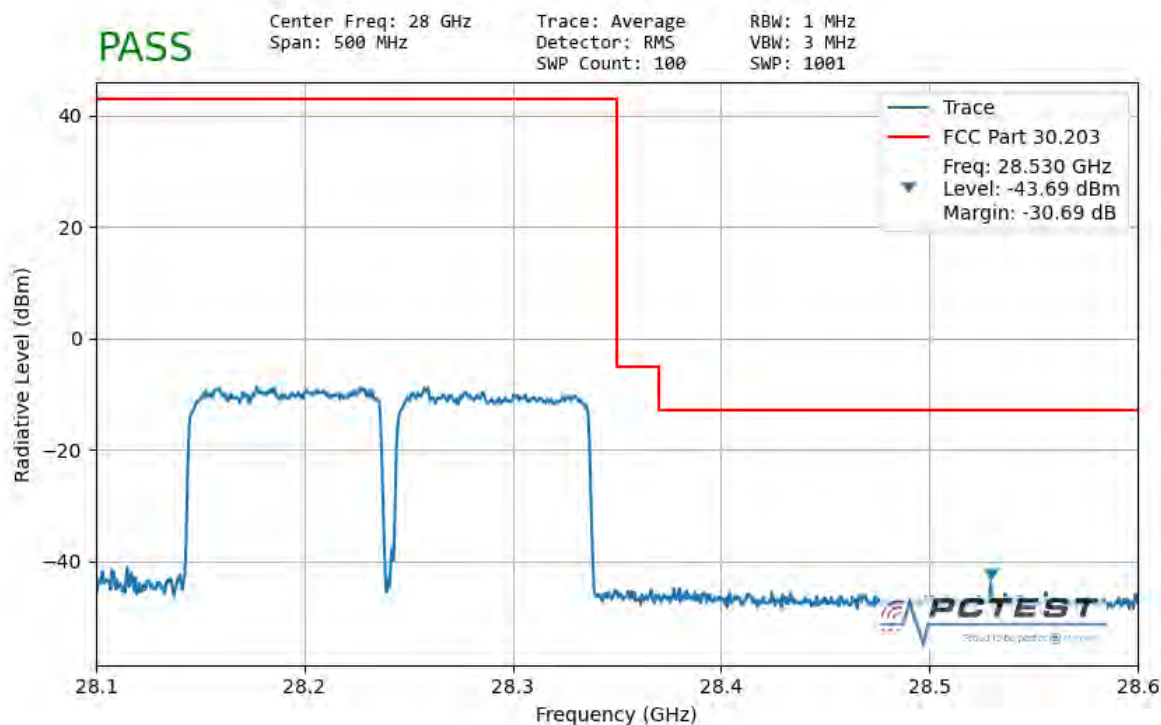


Plot 7-135. Ant1 Upper Band Edge (100MHz-1CC – QPSK Full RB)

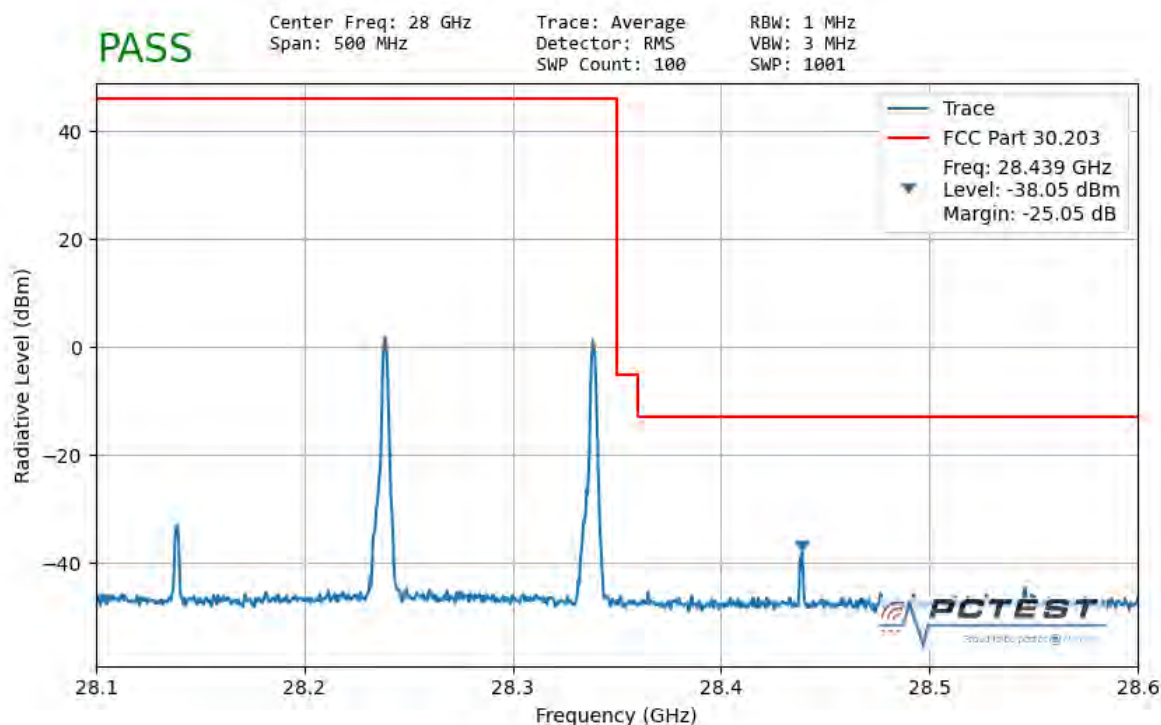


Plot 7-136. Ant1 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 126 of 161

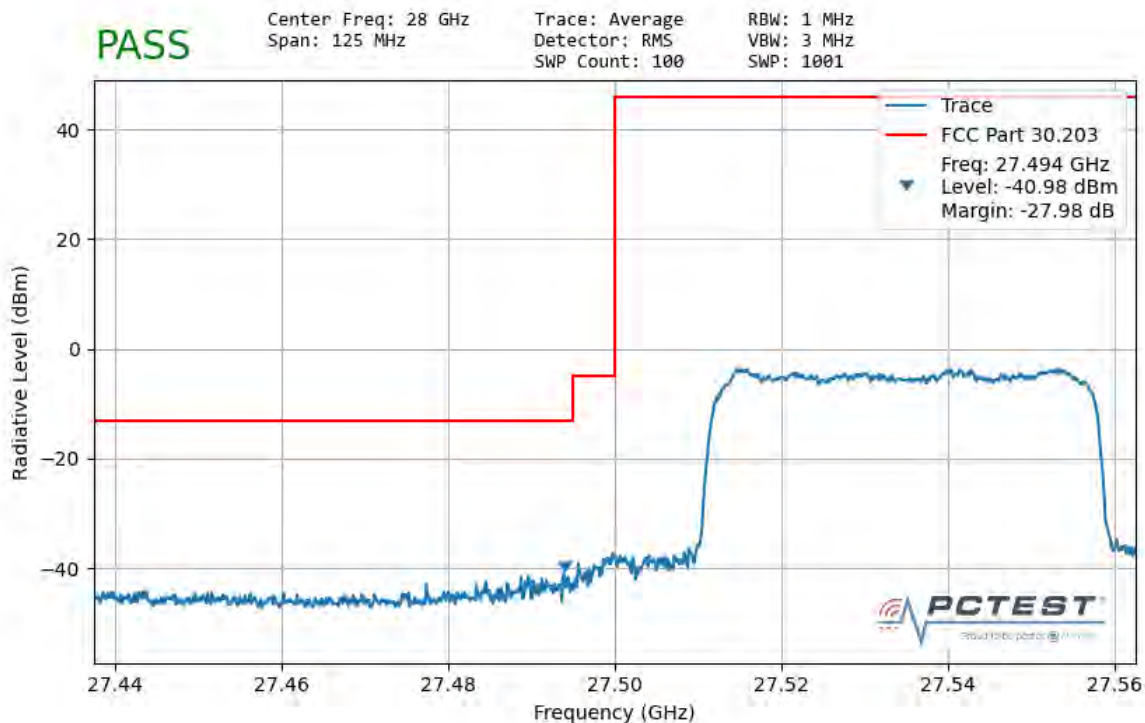


Plot 7-137. Ant1 Upper Band Edge (100MHz-2CC – QPSK Full RB)

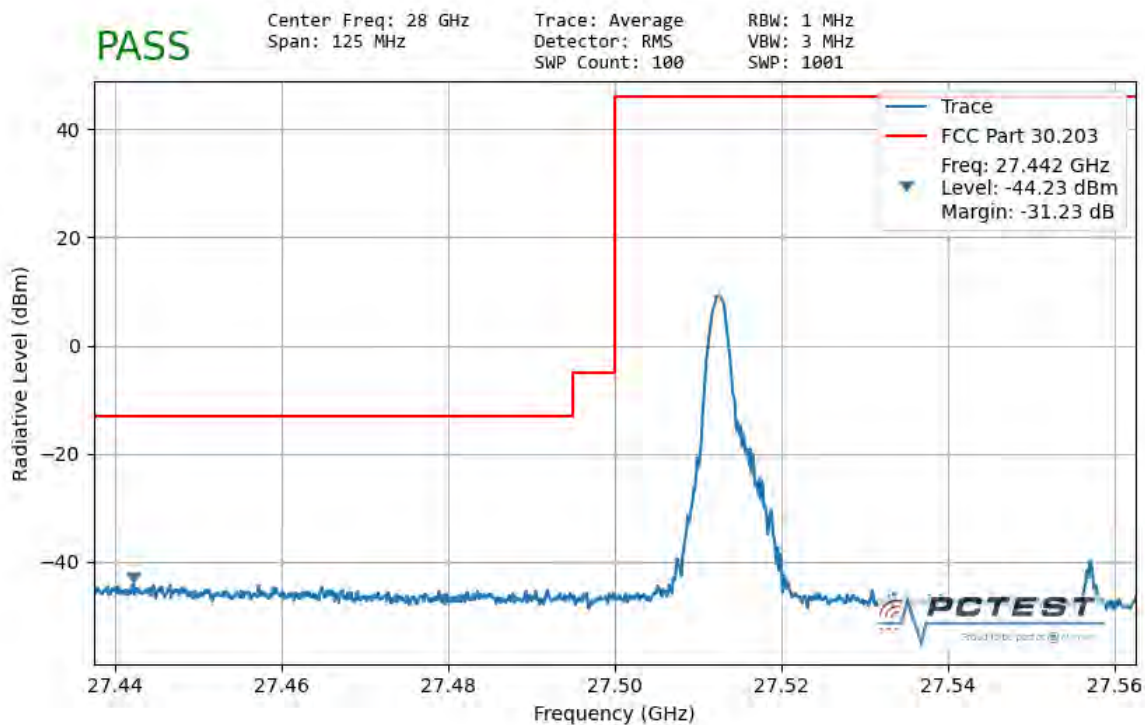


Plot 7-138. Ant1 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 127 of 161

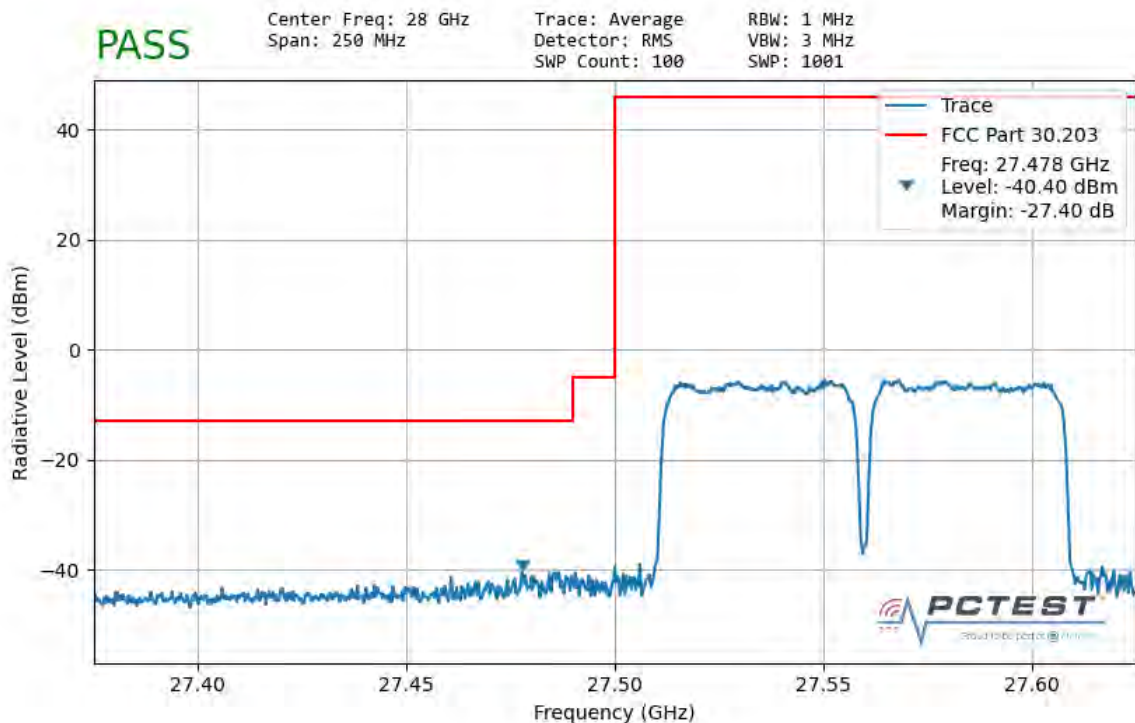


Plot 7-139. Ant2 Lower Band Edge (50MHz-1CC – QPSK Full RB)

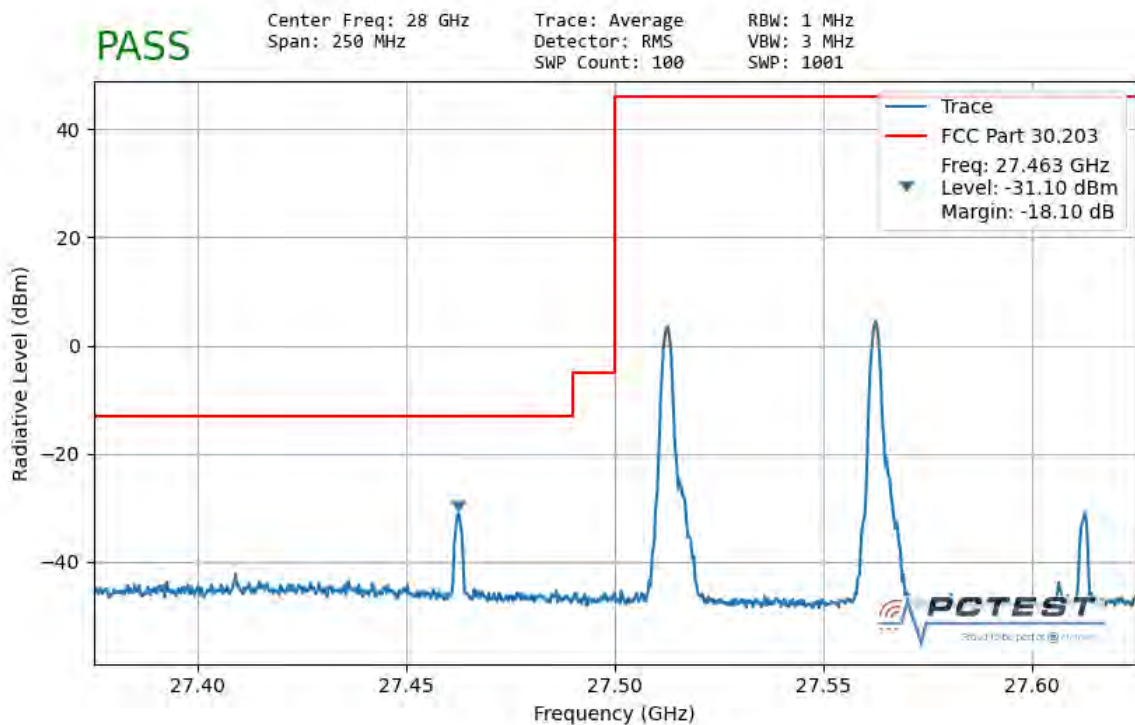


Plot 7-140. Ant2 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 128 of 161

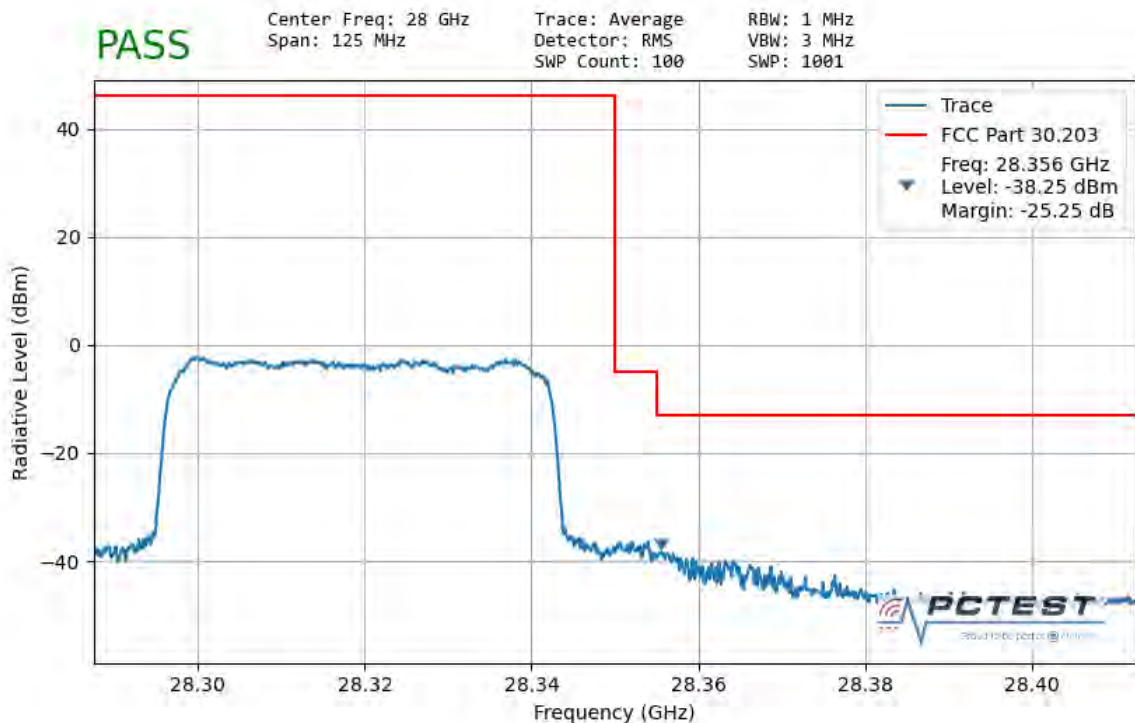


Plot 7-141. Ant2 Lower Band Edge (50MHz-2CC – QPSK Full RB)

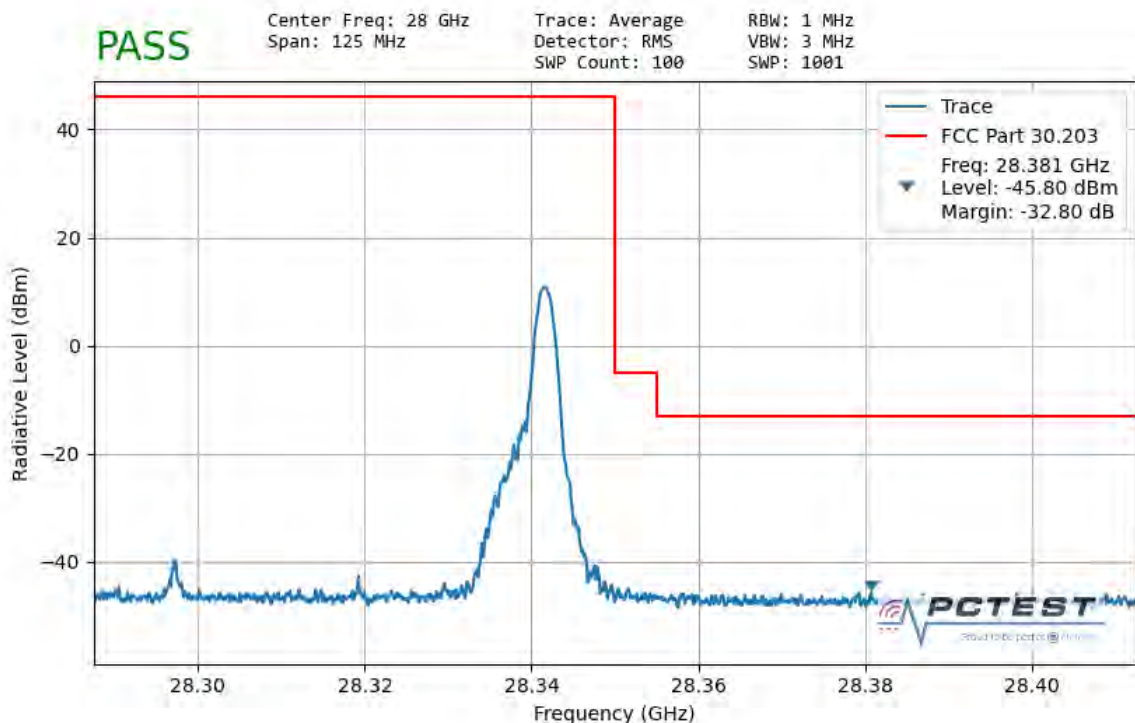


Plot 7-142. Ant2 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 129 of 161

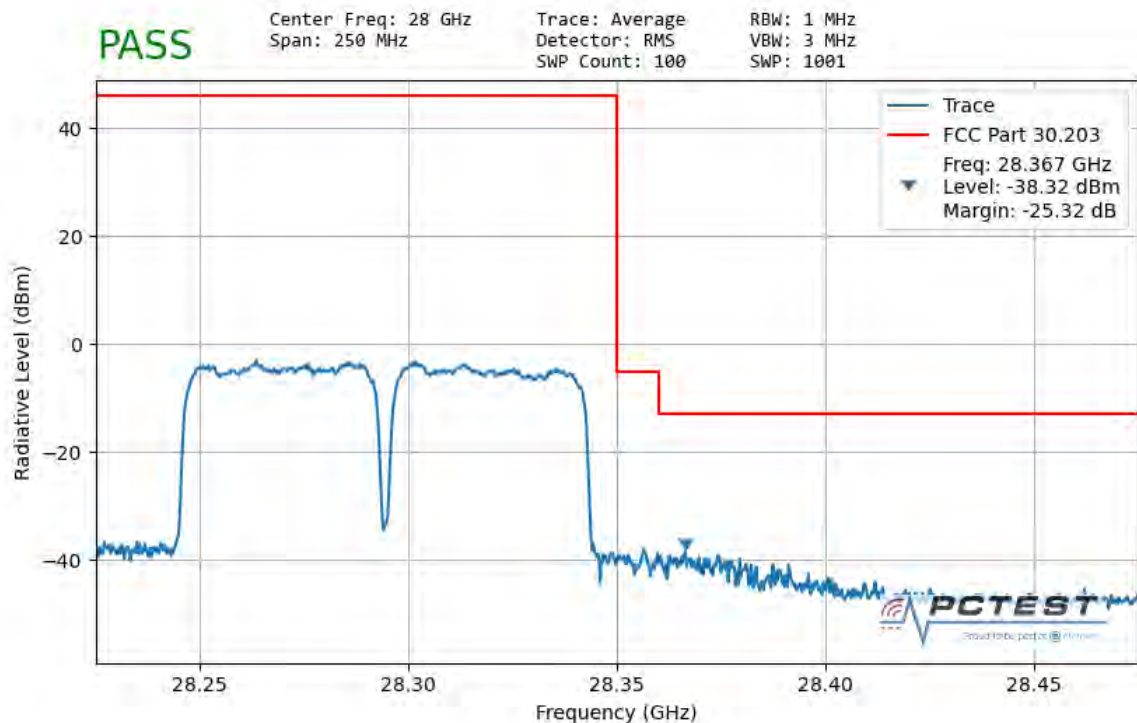


Plot 7-143. Ant2 Upper Band Edge (50MHz-1CC – QPSK Full RB)

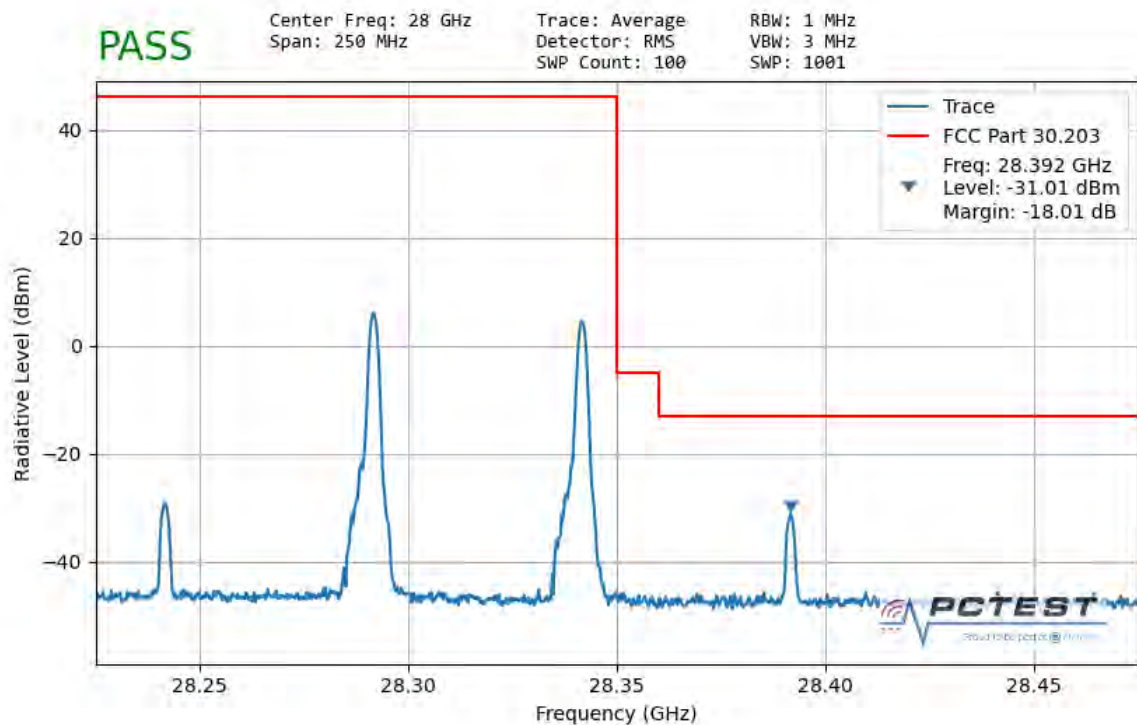


Plot 7-144. Ant2 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 130 of 161

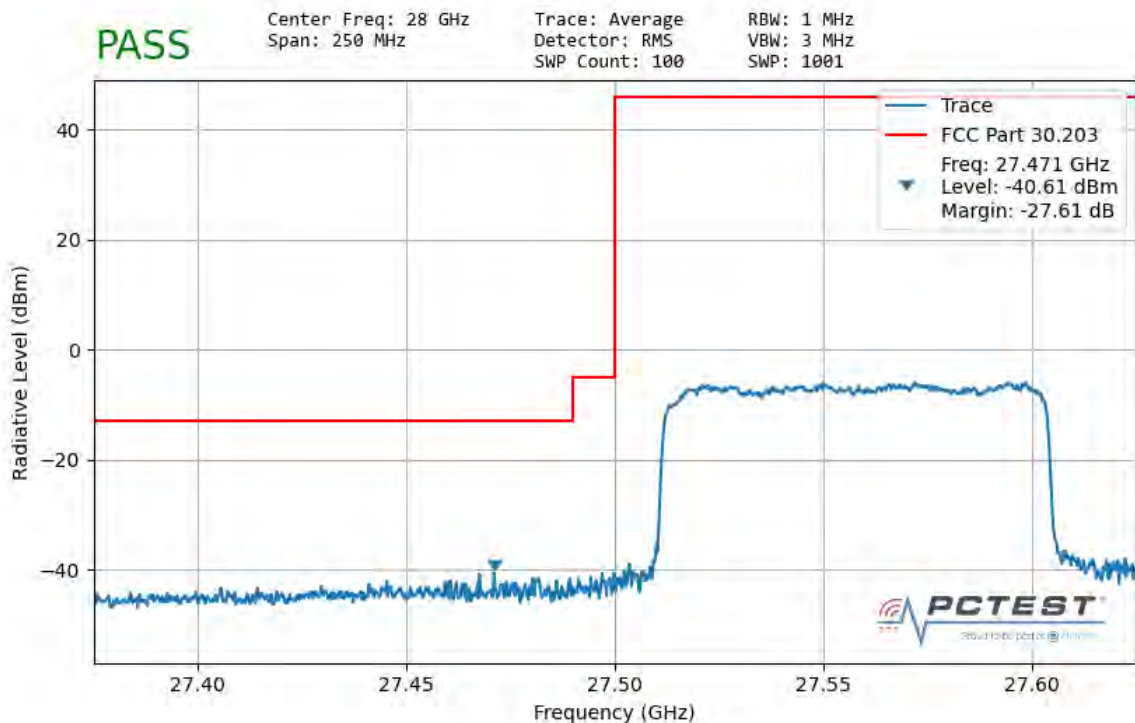


Plot 7-145. Ant2 Upper Band Edge (50MHz-2CC – QPSK Full RB)

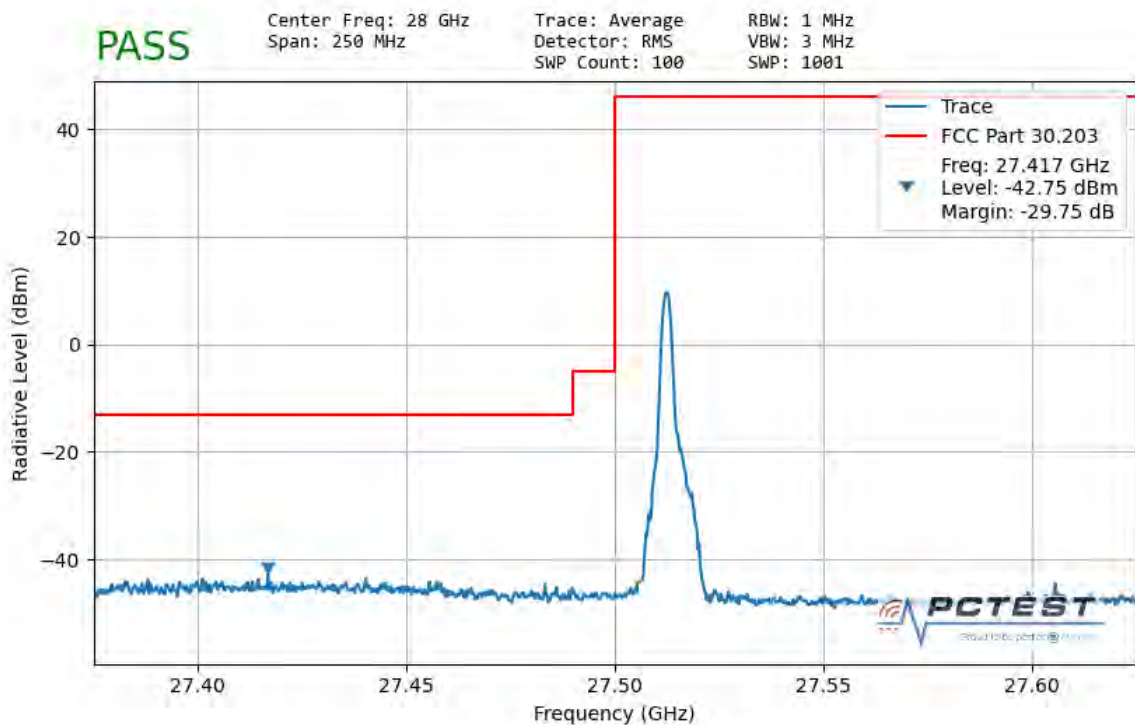


Plot 7-146. Ant2 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 131 of 161

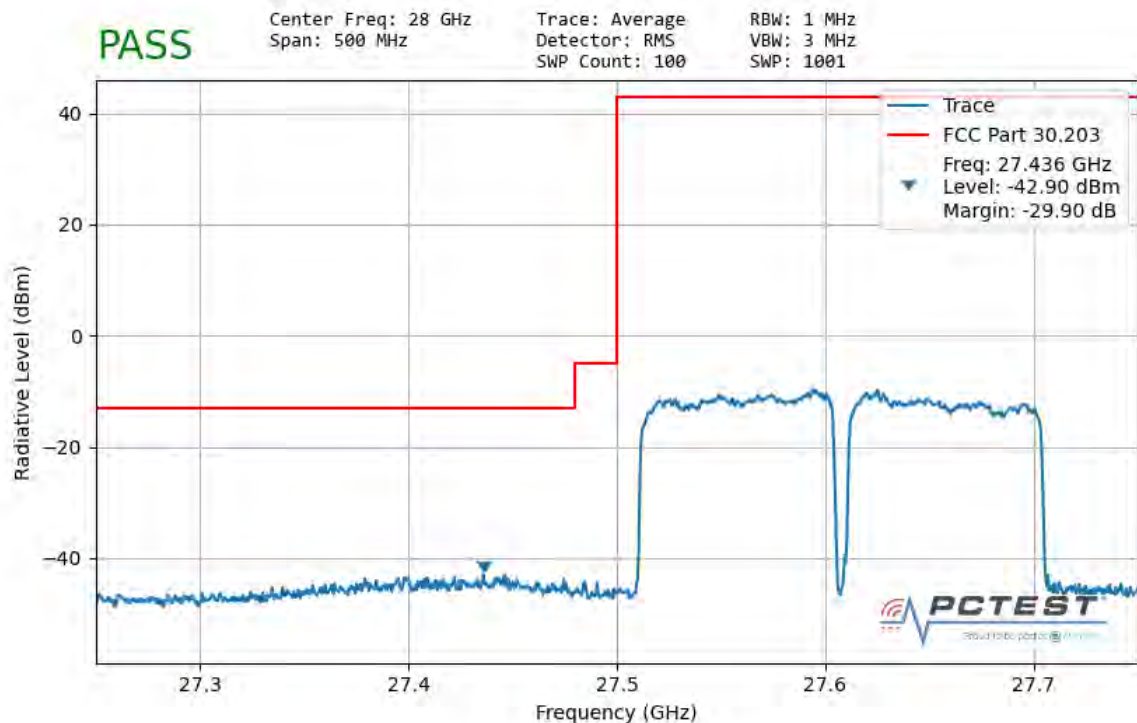


Plot 7-147. Ant2 Lower Band Edge (100MHz-1CC – QPSK Full RB)

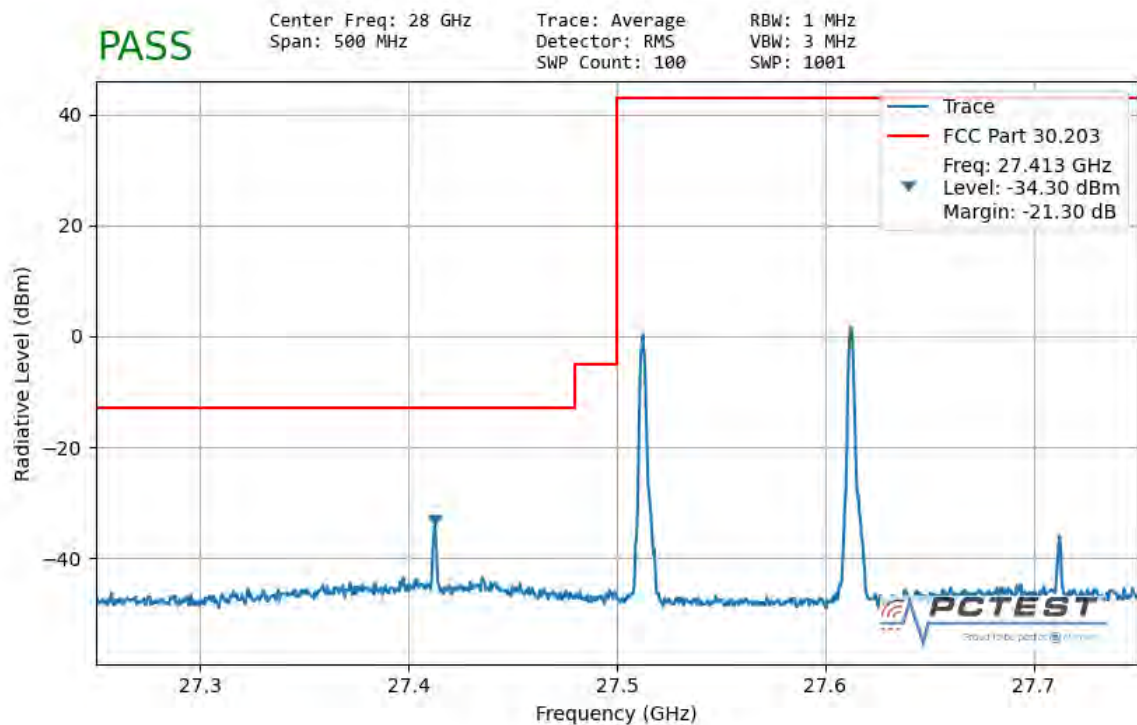


Plot 7-148. Ant2 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 132 of 161

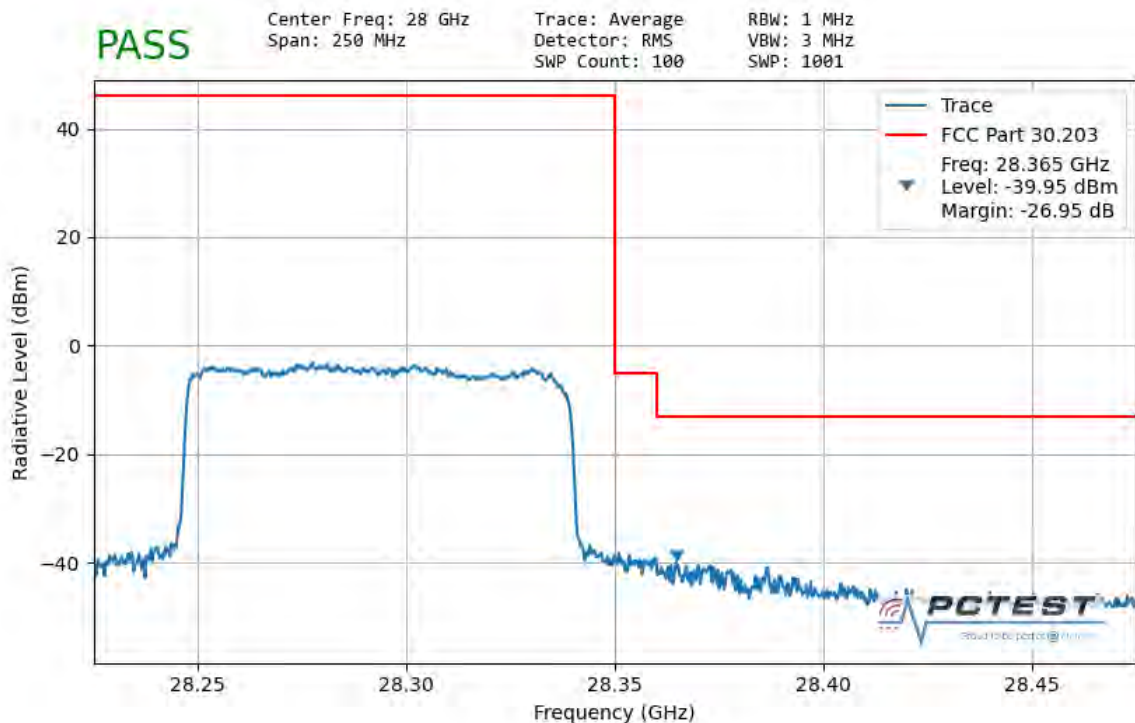


Plot 7-149. Ant2 Lower Band Edge (100MHz-2CC – QPSK Full RB)

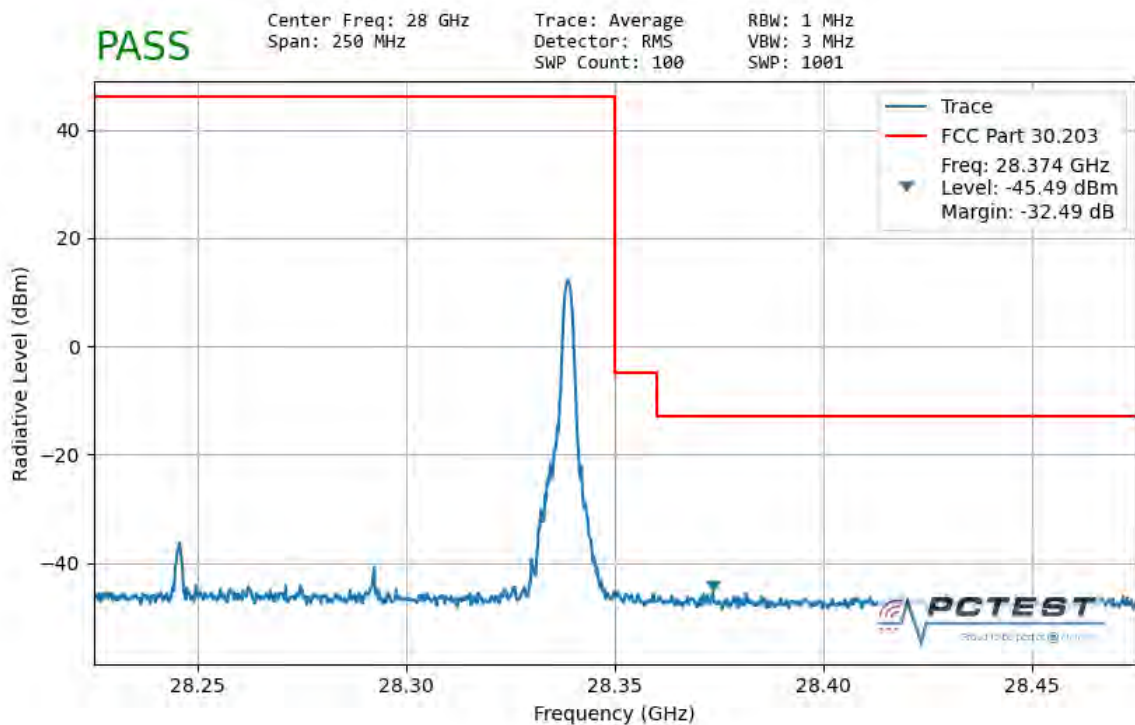


Plot 7-150. Ant2 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 133 of 161

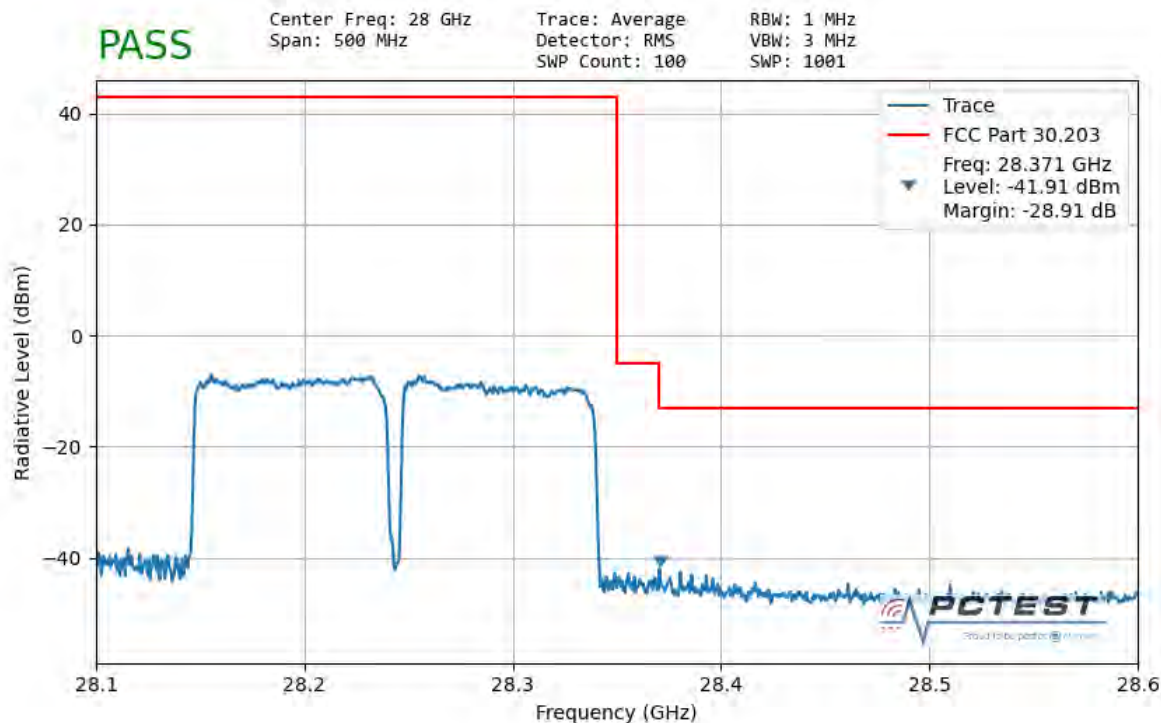


Plot 7-151. Ant2 Upper Band Edge (100MHz-1CC – QPSK Full RB)

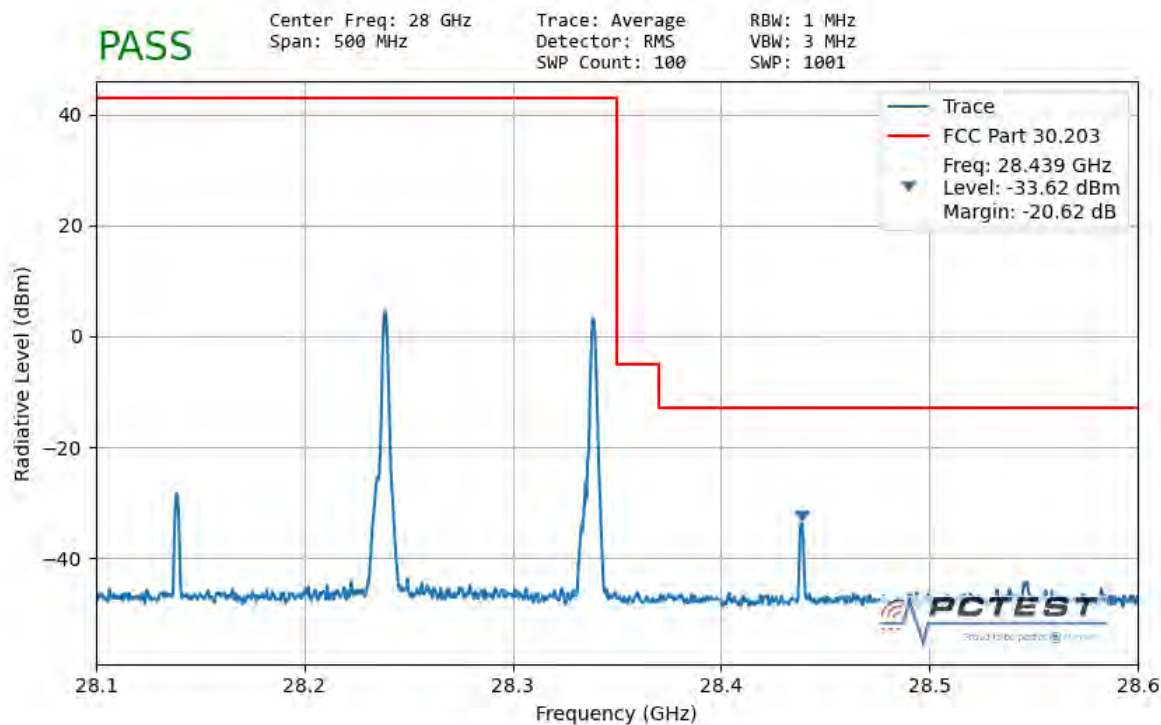


Plot 7-152. Ant2 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 134 of 161



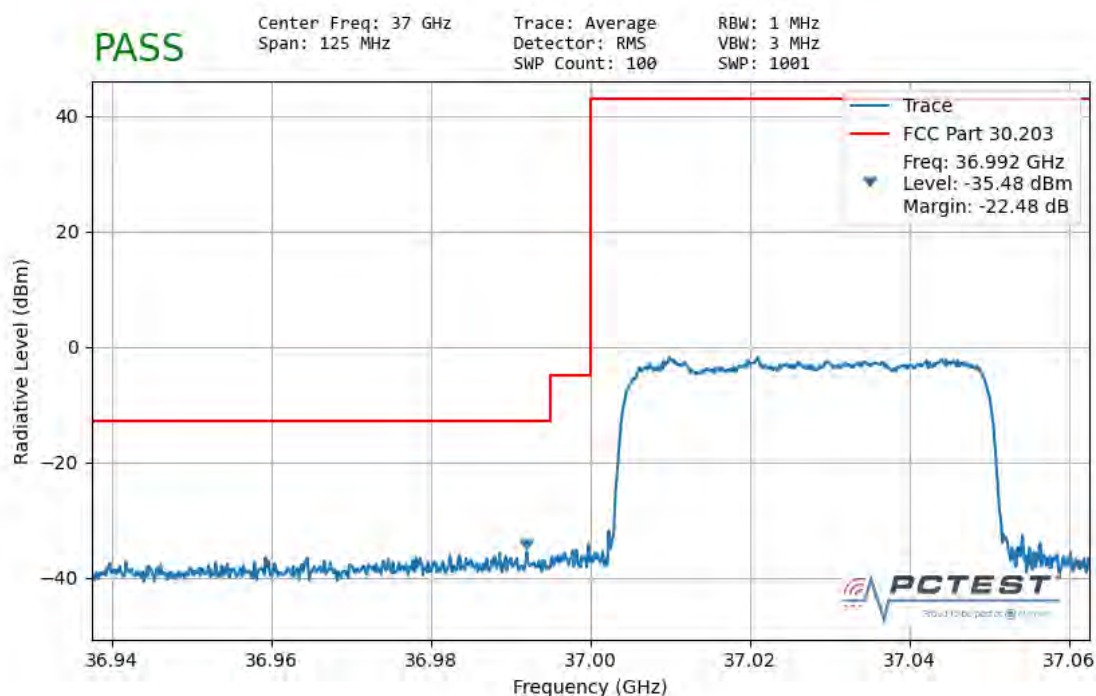
Plot 7-153. Ant2 Upper Band Edge (100MHz-2CC - QPSK Full RB)



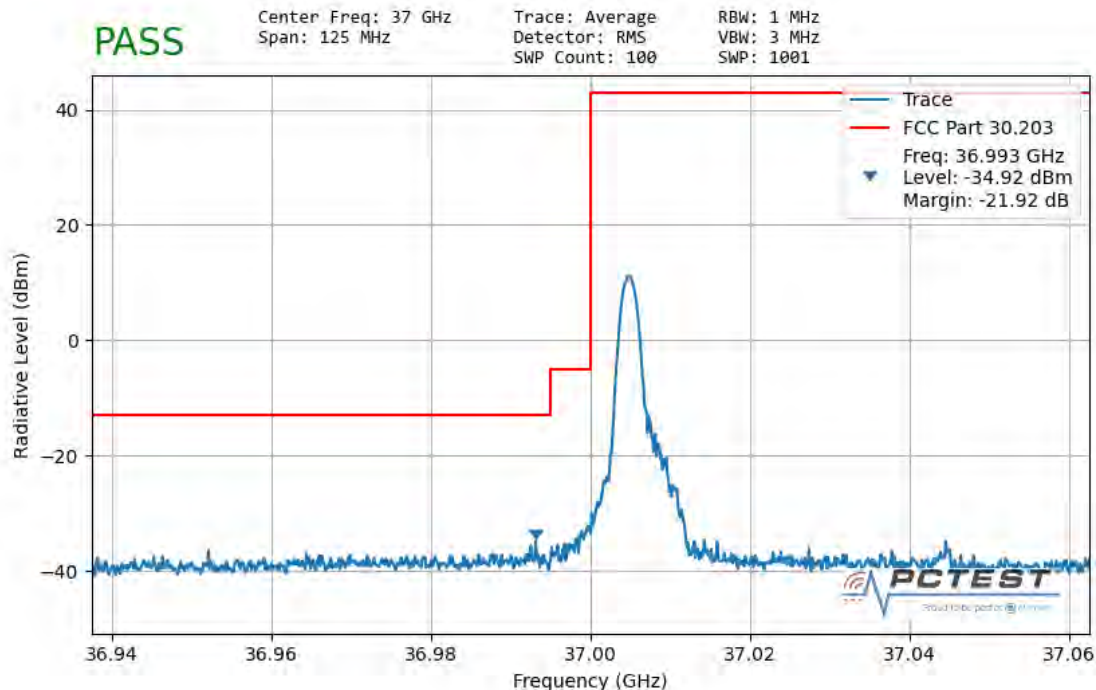
Plot 7-154. Ant2 Upper Band Edge (100MHz-2CC - QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 135 of 161

Band n260 – Worst Case

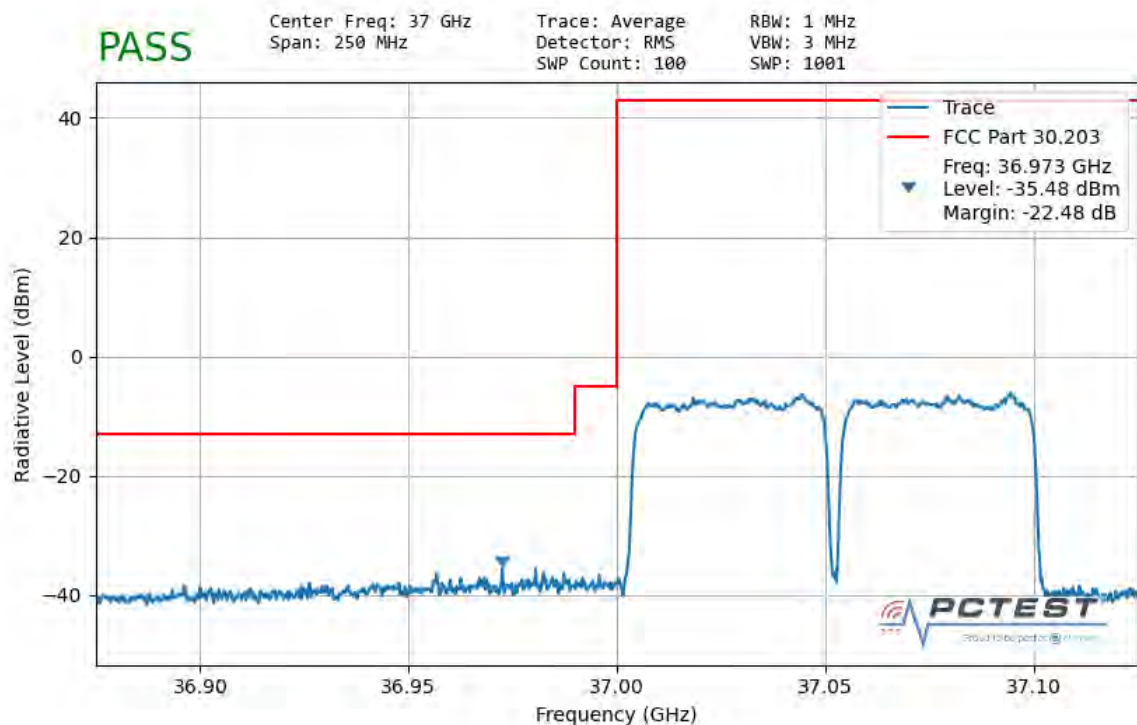


Plot 7-155. Ant1 Lower Band Edge (50MHz-1CC – QPSK Full RB)

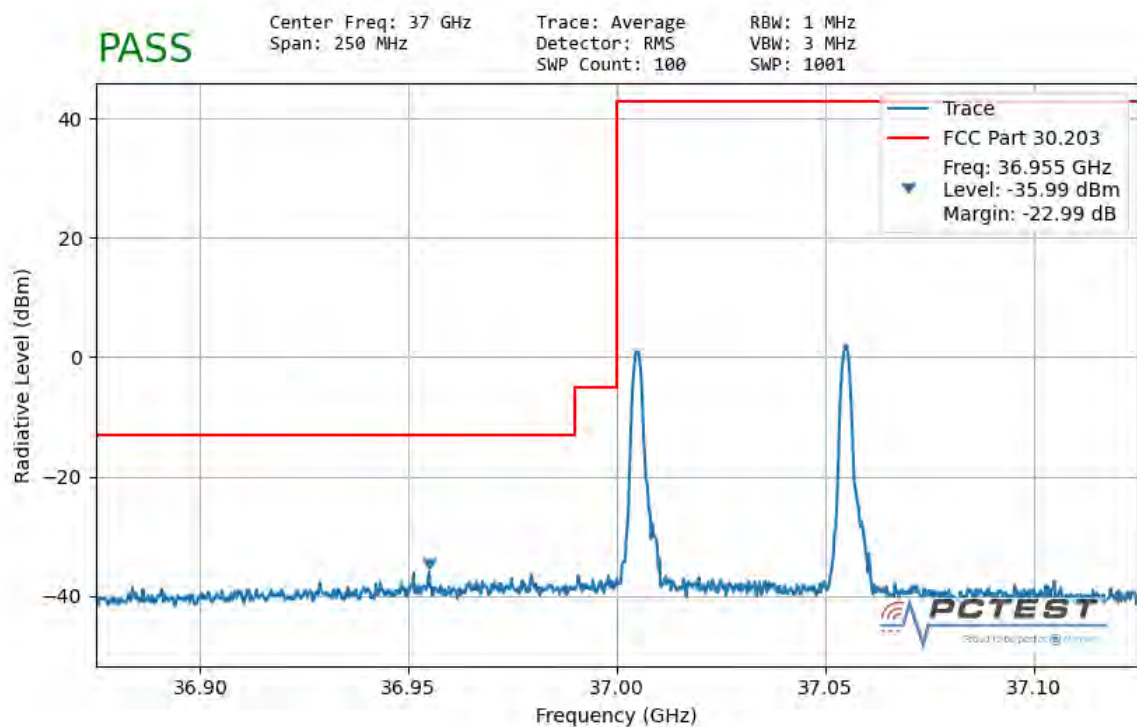


Plot 7-156. Ant1 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 136 of 161

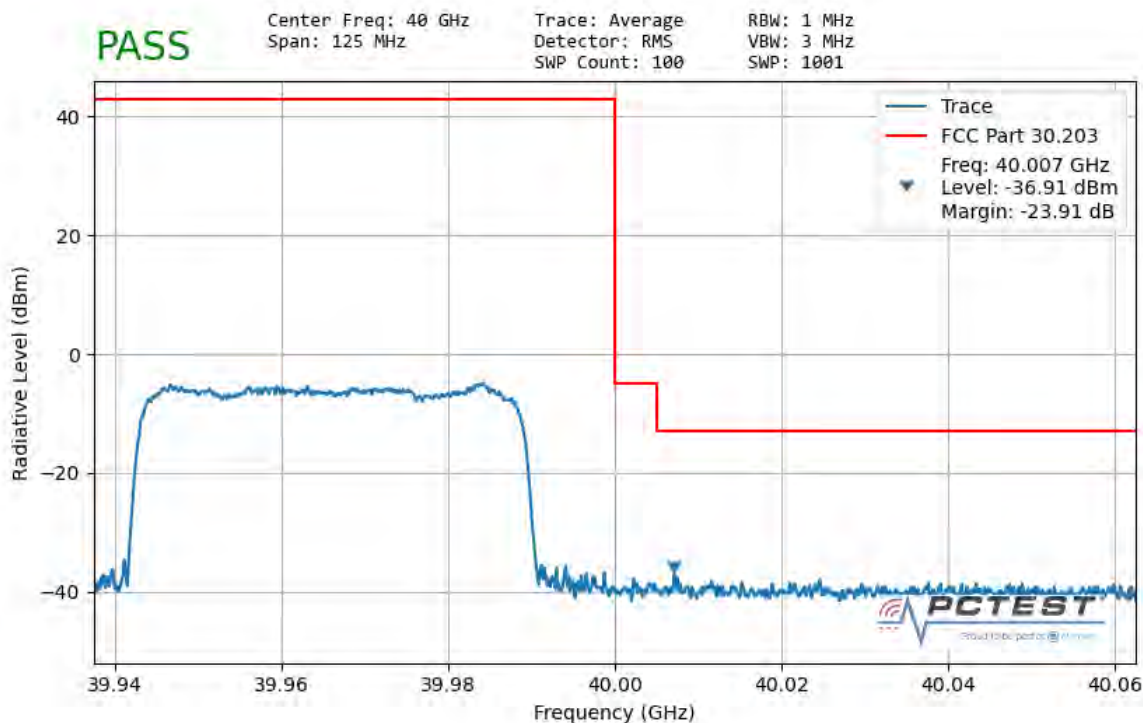


Plot 7-157. Ant1 Lower Band Edge (50MHz-2CC – QPSK Full RB)

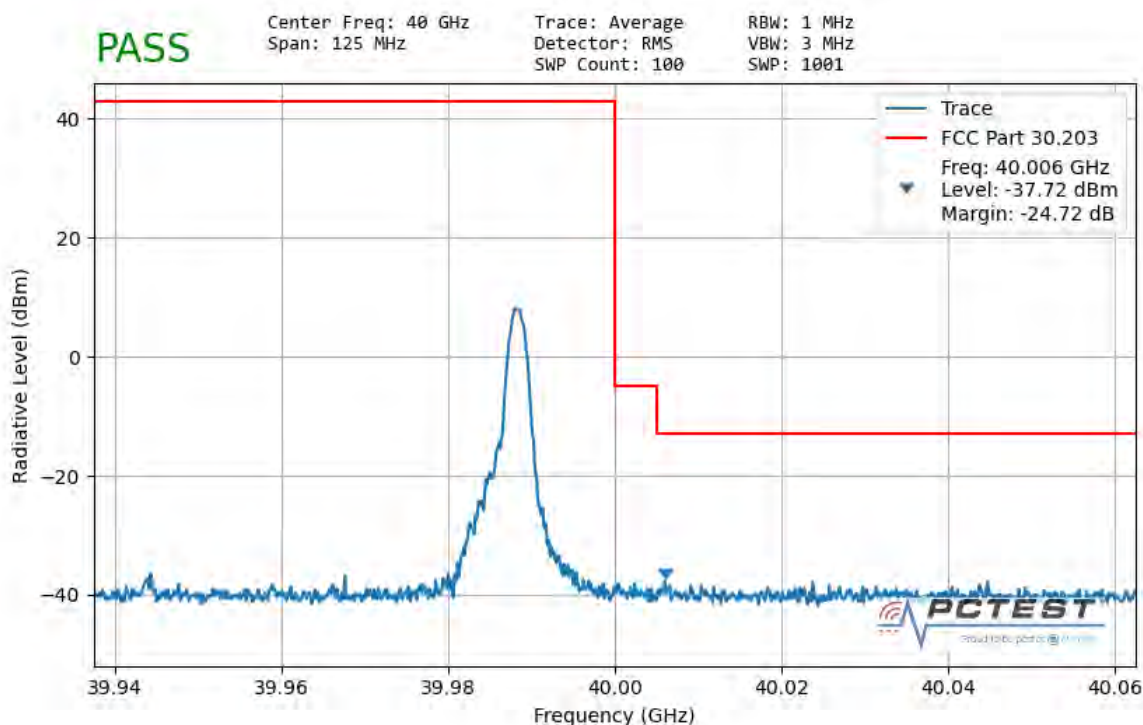


Plot 7-158. Ant1 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 137 of 161

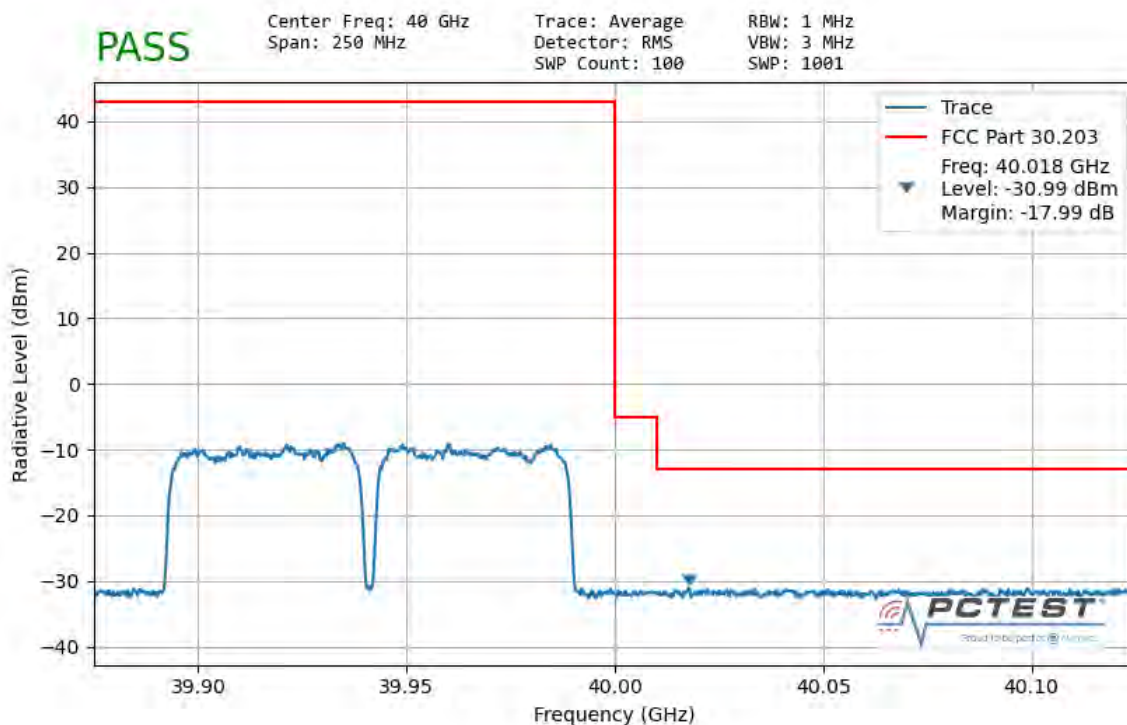


Plot 7-159. Ant1 Upper Band Edge (50MHz-1CC – QPSK Full RB)

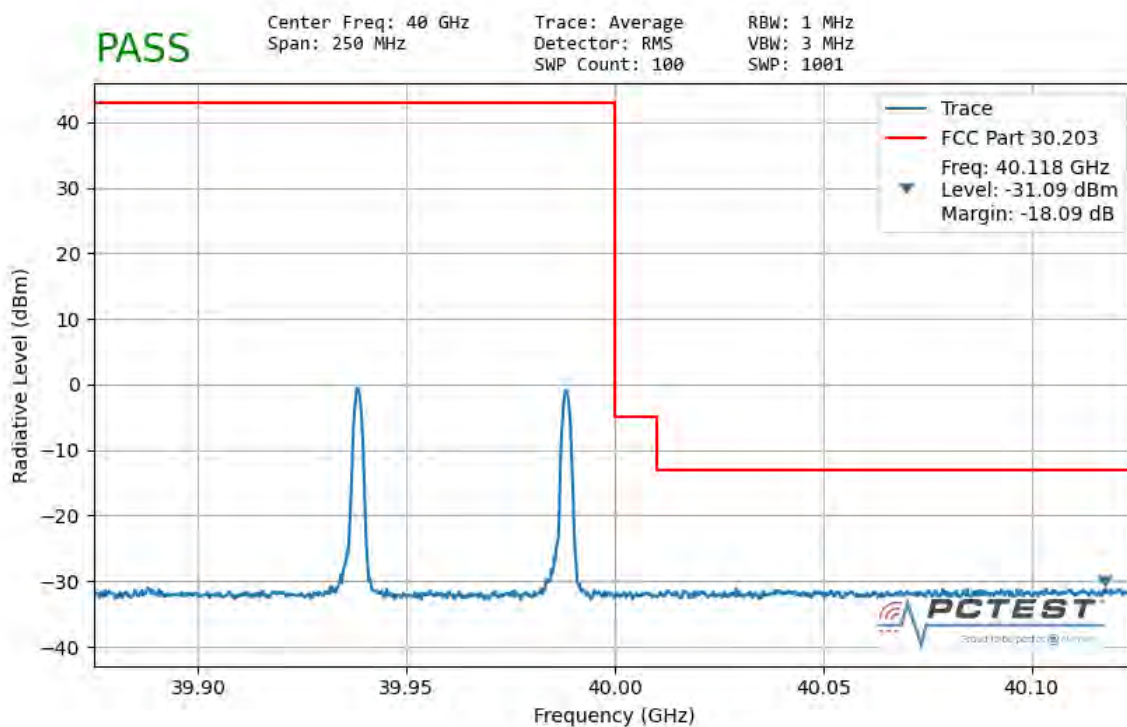


Plot 7-160. Ant1 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset	Page 138 of 161

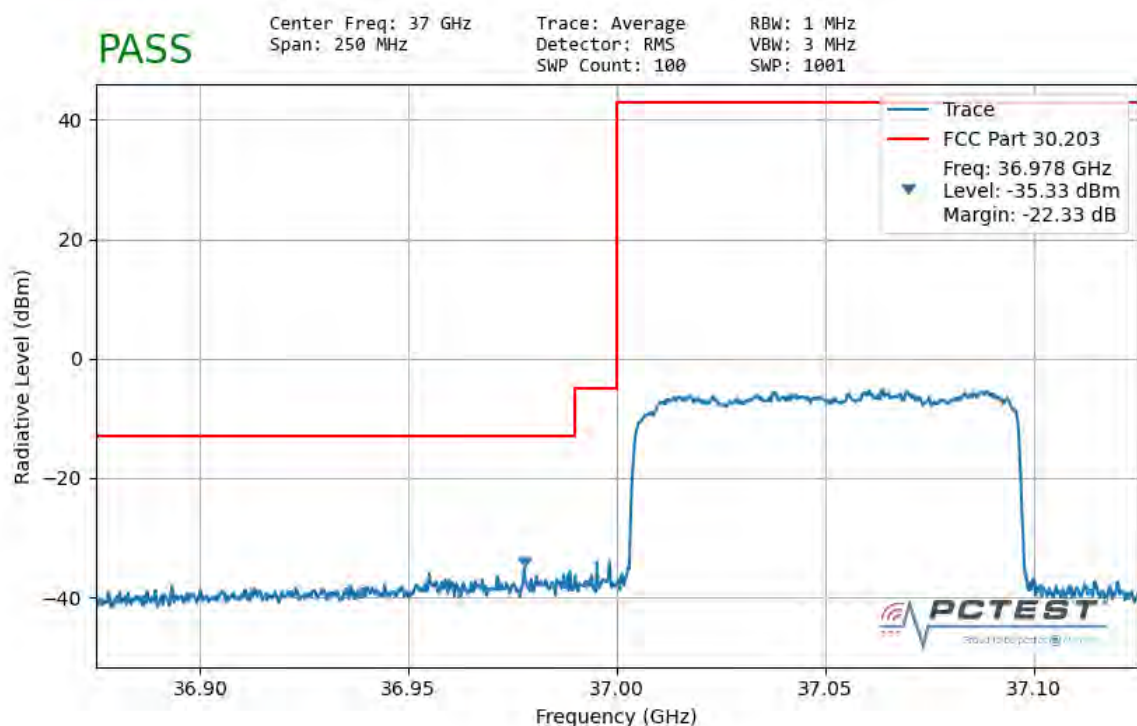


Plot 7-161. Ant1 Upper Band Edge (50MHz-2CC – QPSK Full RB)

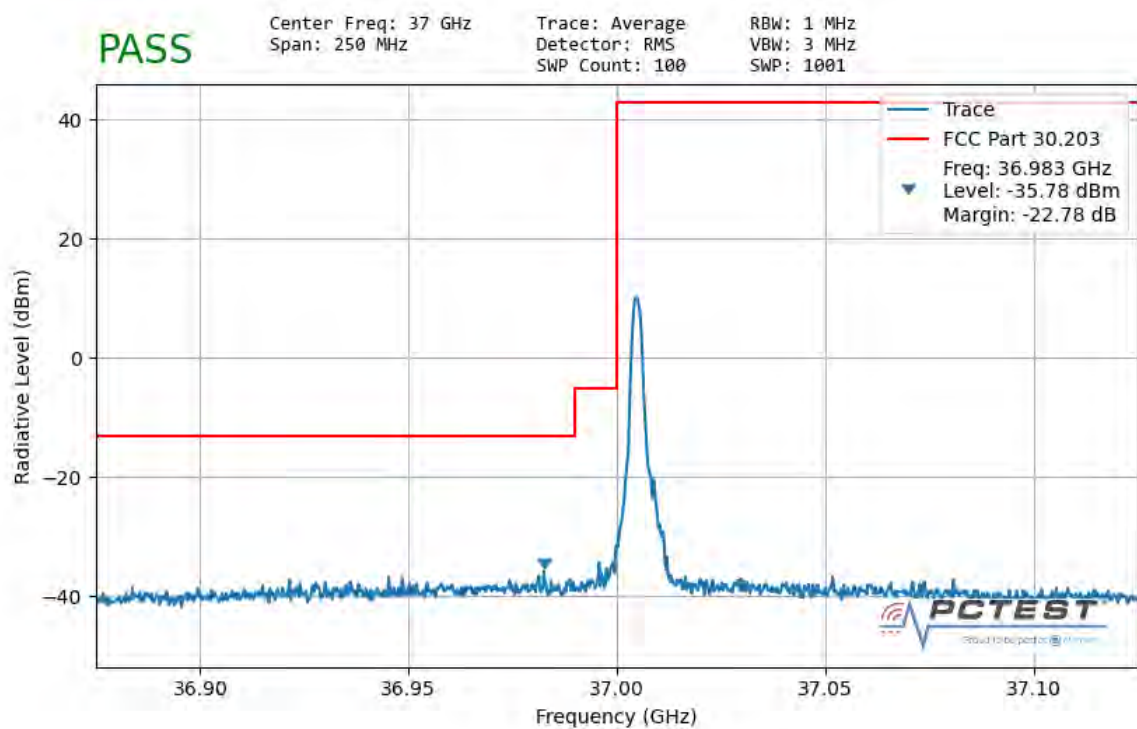


Plot 7-162. Ant1 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 139 of 161

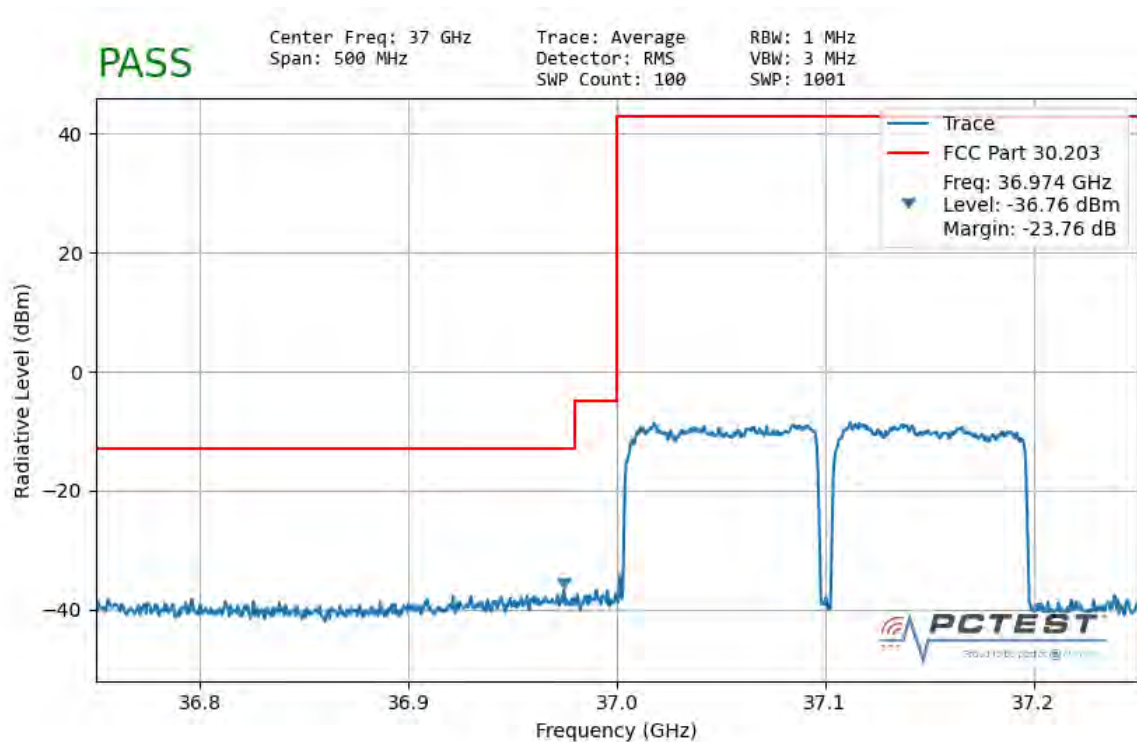


Plot 7-163. Ant1 Lower Band Edge (100MHz-1CC – QPSK Full RB)

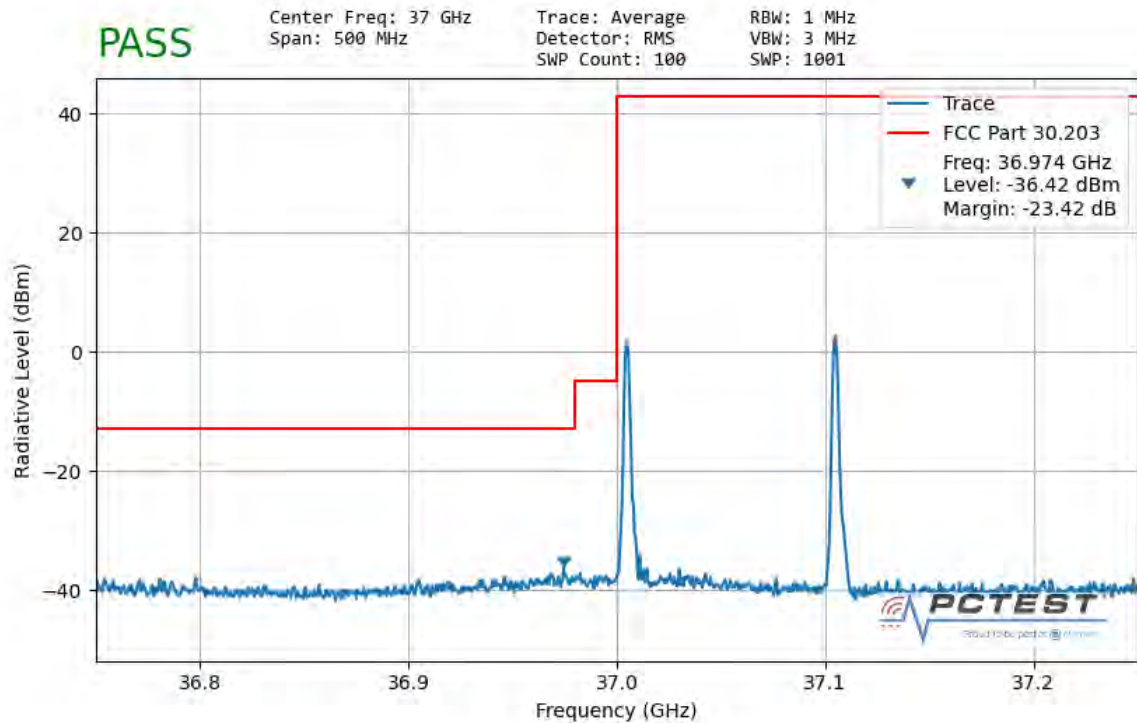


Plot 7-164. Ant1 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 140 of 161

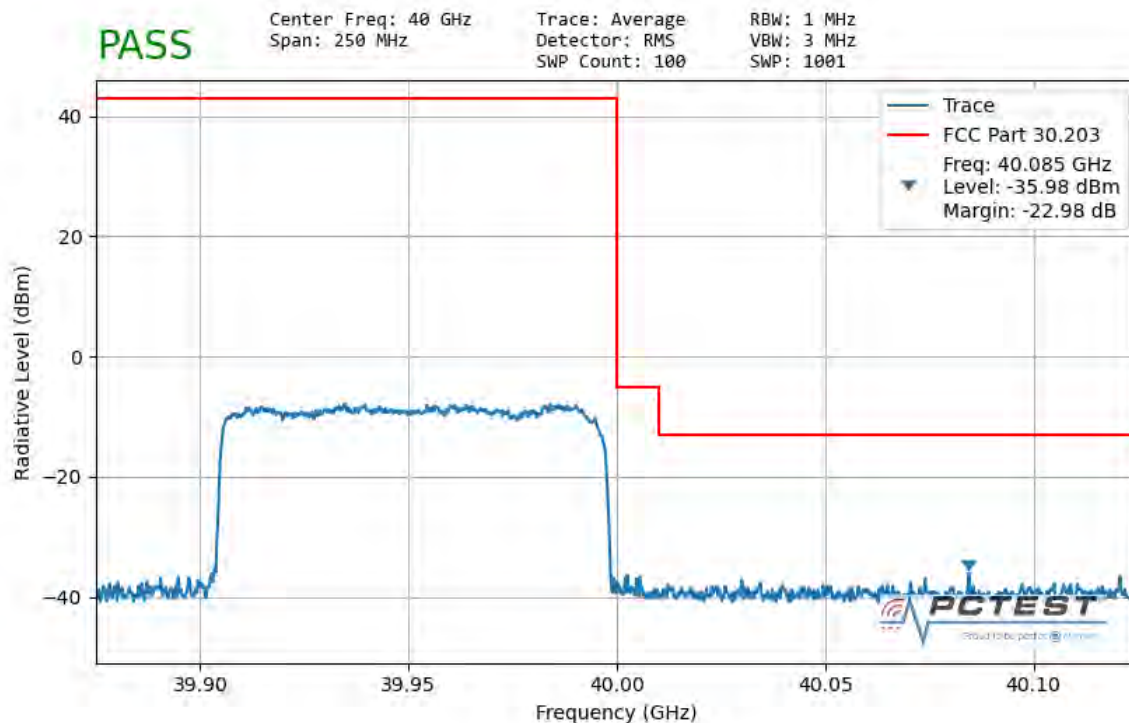


Plot 7-165. Ant1 Lower Band Edge (100MHz-2CC – QPSK Full RB)

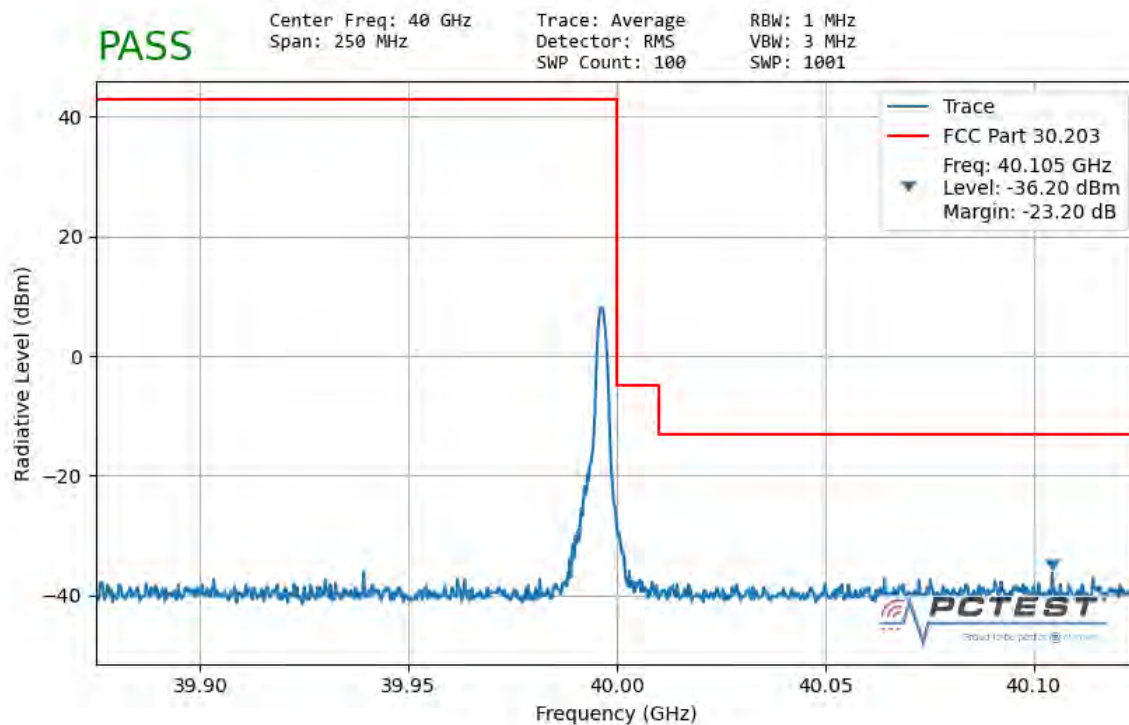


Plot 7-166. Ant1 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 141 of 161

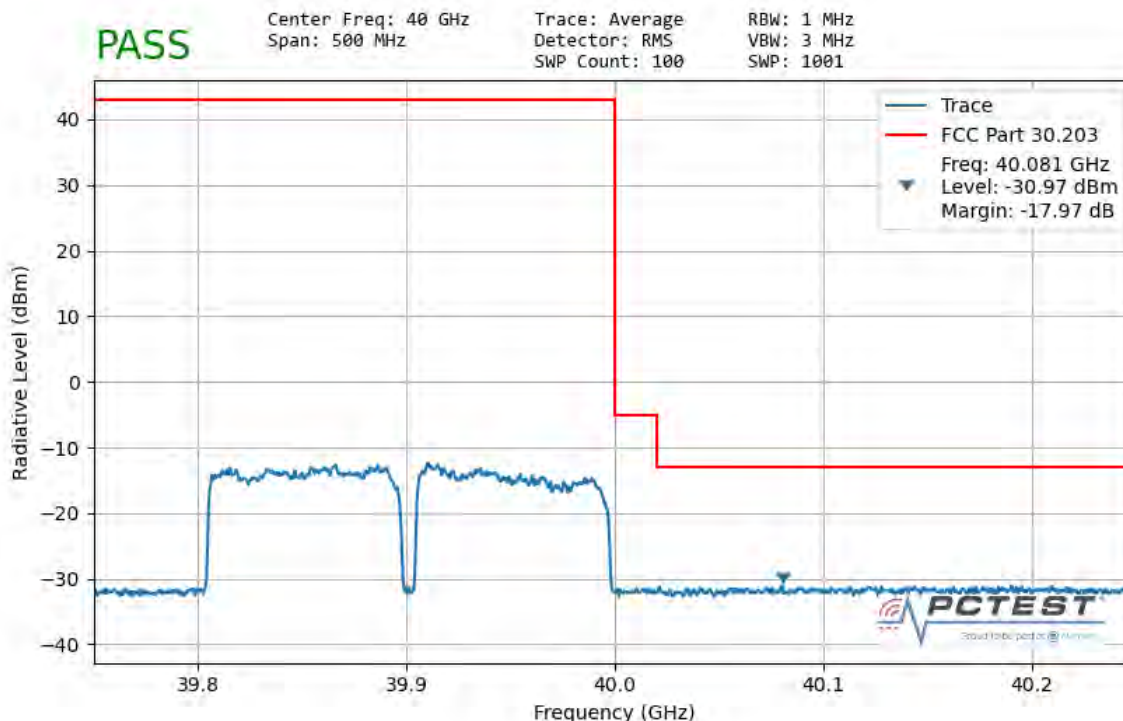


Plot 7-167. Ant1 Upper Band Edge (100MHz-1CC – QPSK Full RB)

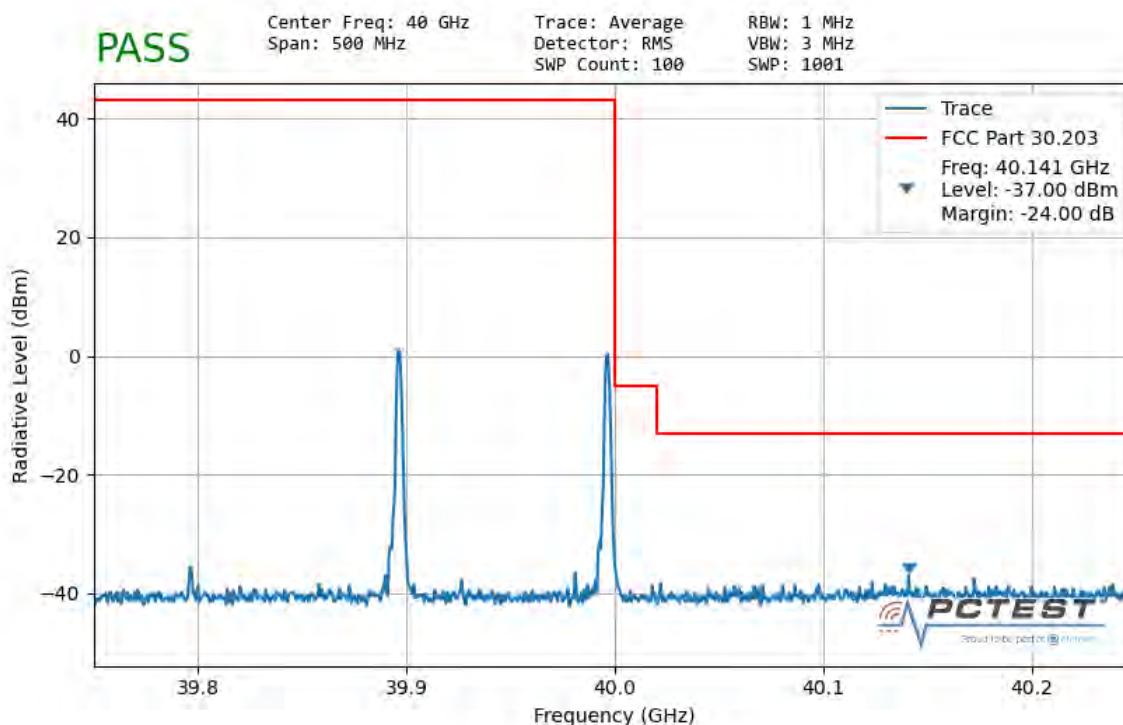


Plot 7-168. Ant1 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset	Page 142 of 161

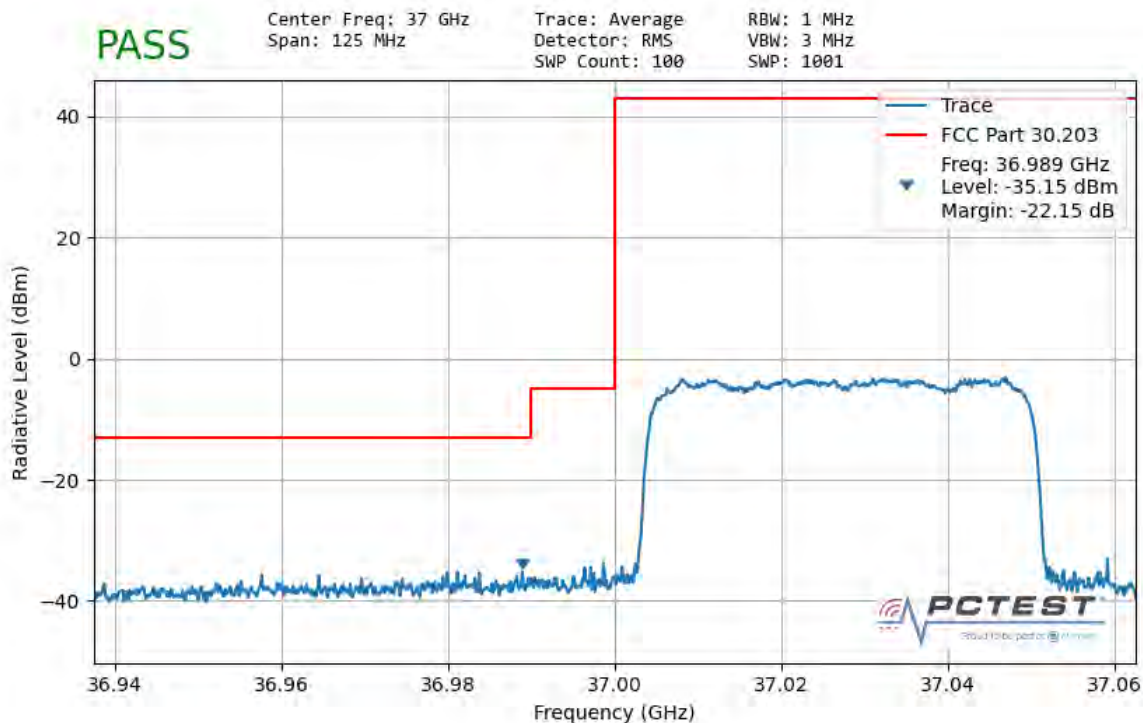


Plot 7-169. Ant1 Upper Band Edge (100MHz-2CC – QPSK Full RB)

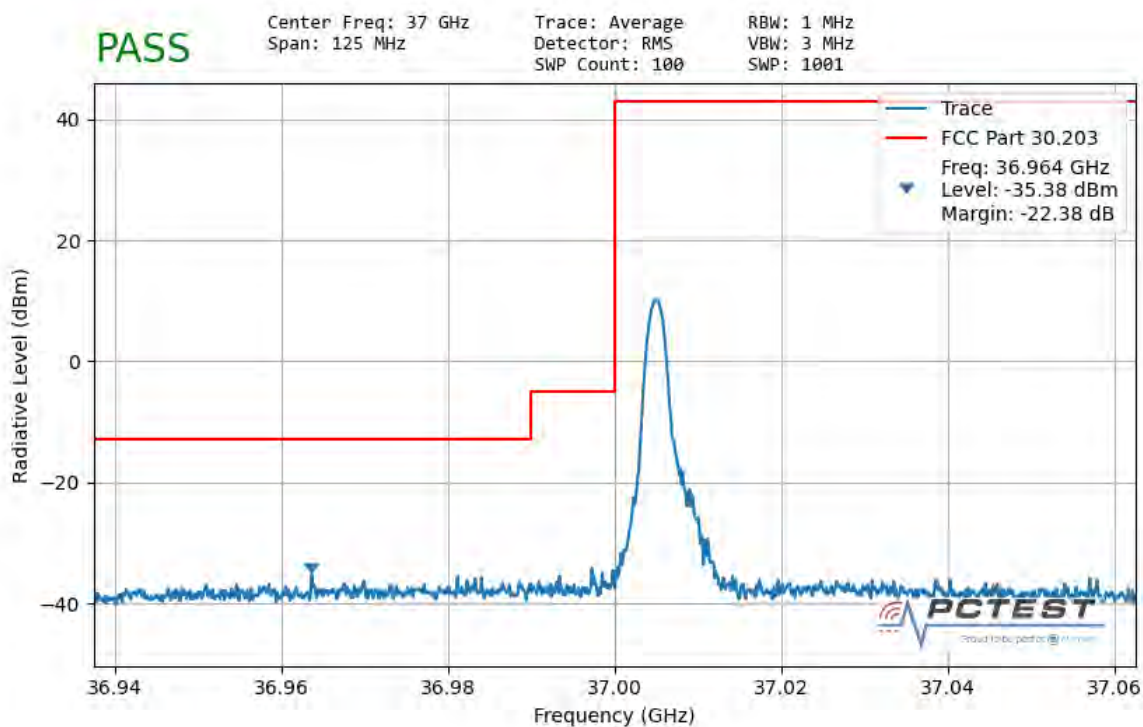


Plot 7-170. Ant1 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 143 of 161

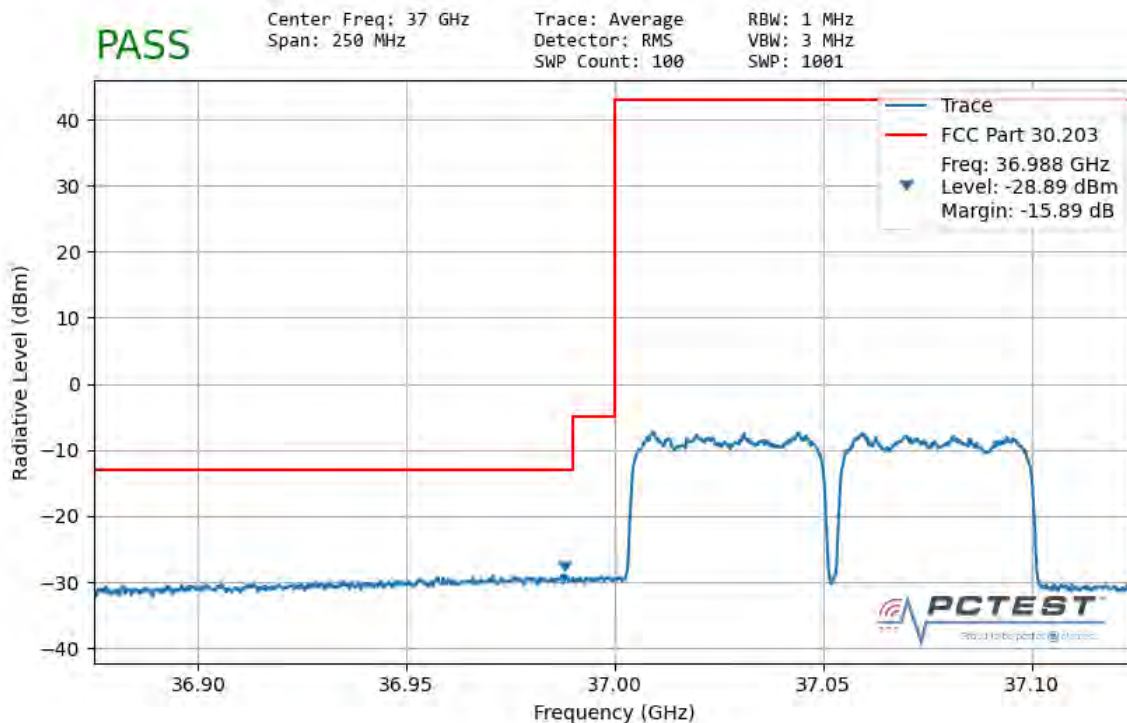


Plot 7-171. Ant2 Lower Band Edge (50MHz-1CC – QPSK Full RB)

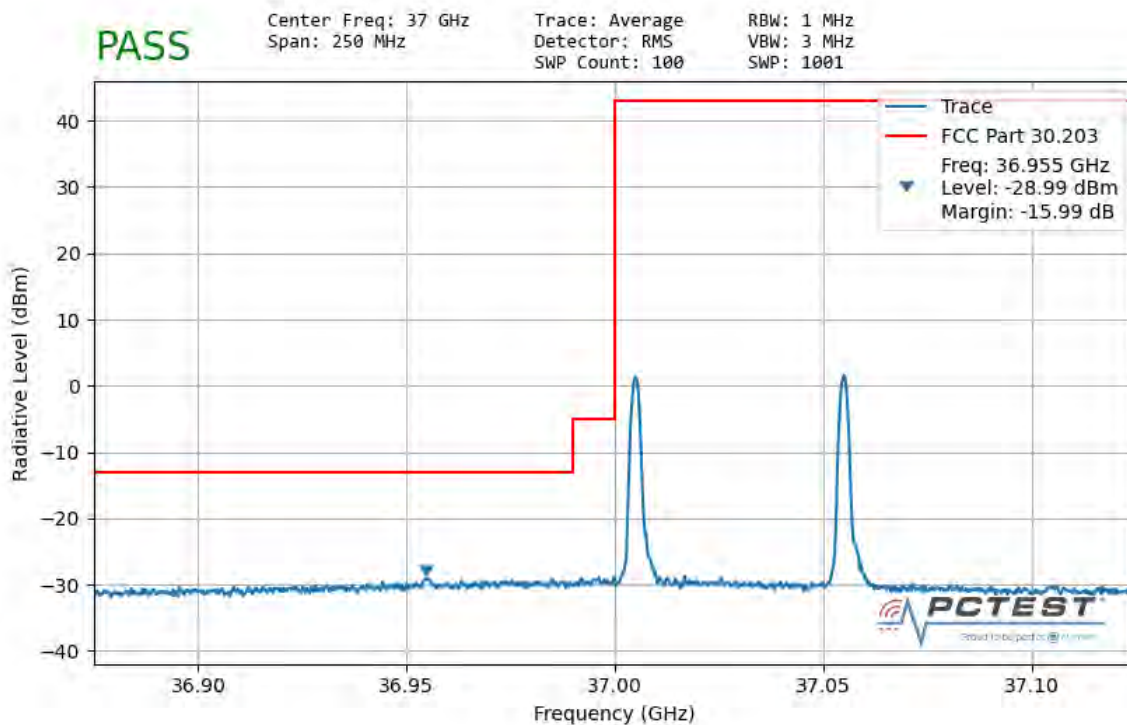


Plot 7-172. Ant2 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 144 of 161

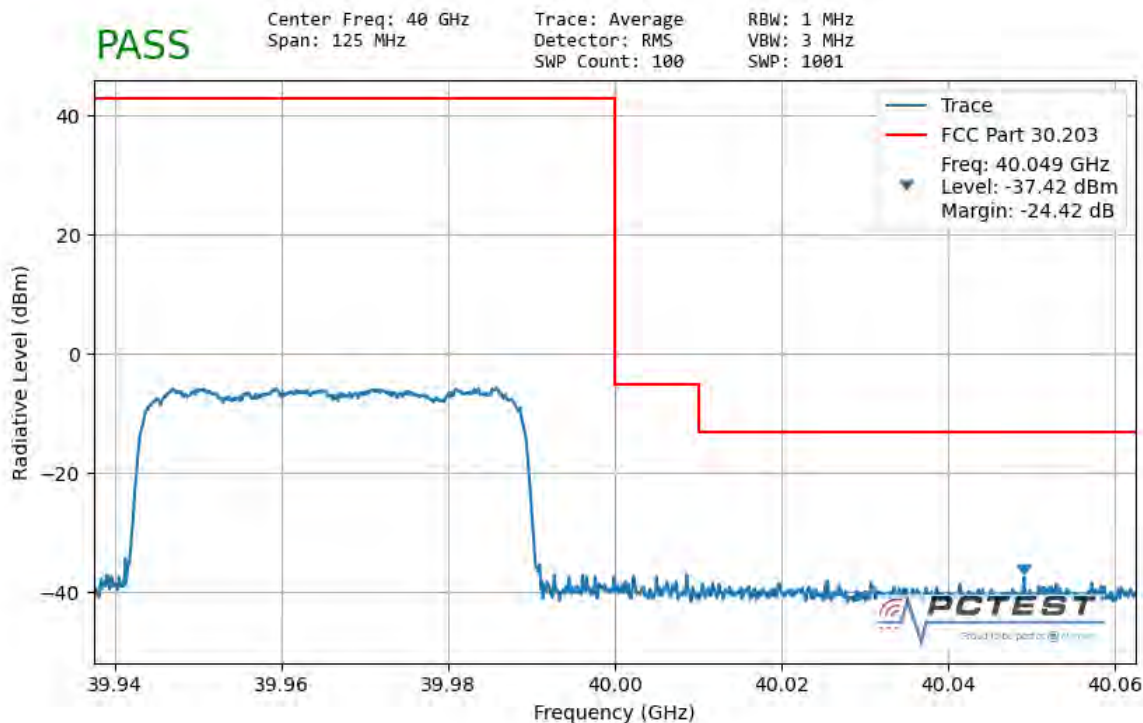


Plot 7-173. Ant2 Lower Band Edge (50MHz-2CC – QPSK Full RB)

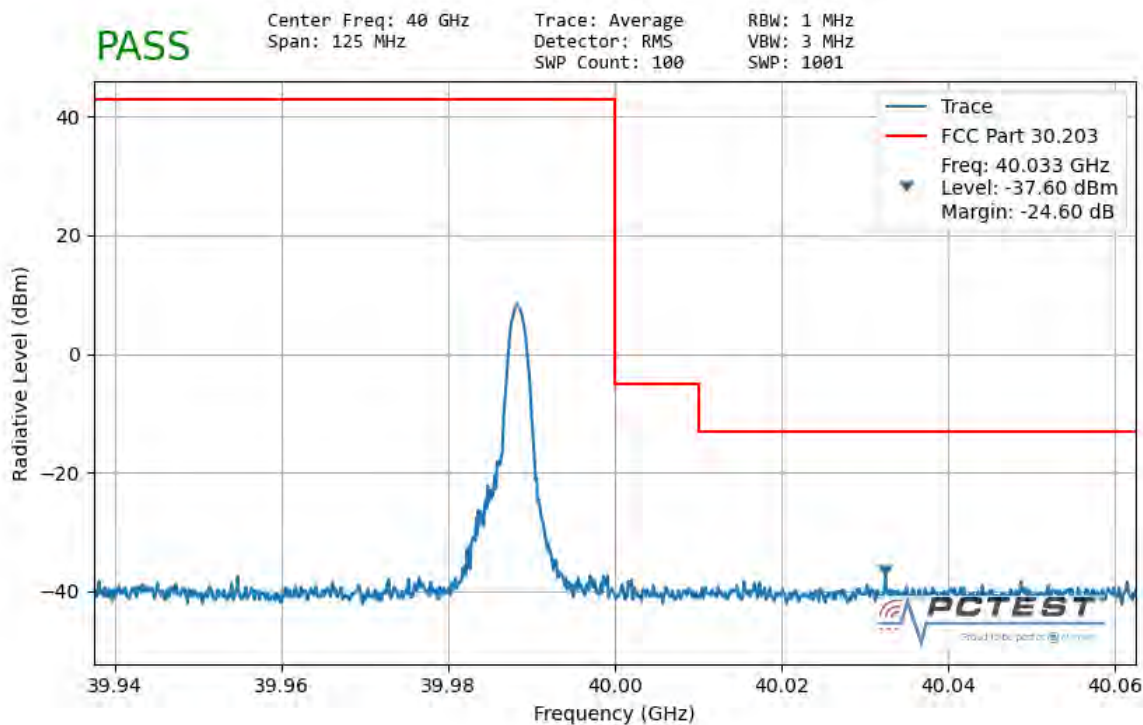


Plot 7-174. Ant2 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 145 of 161

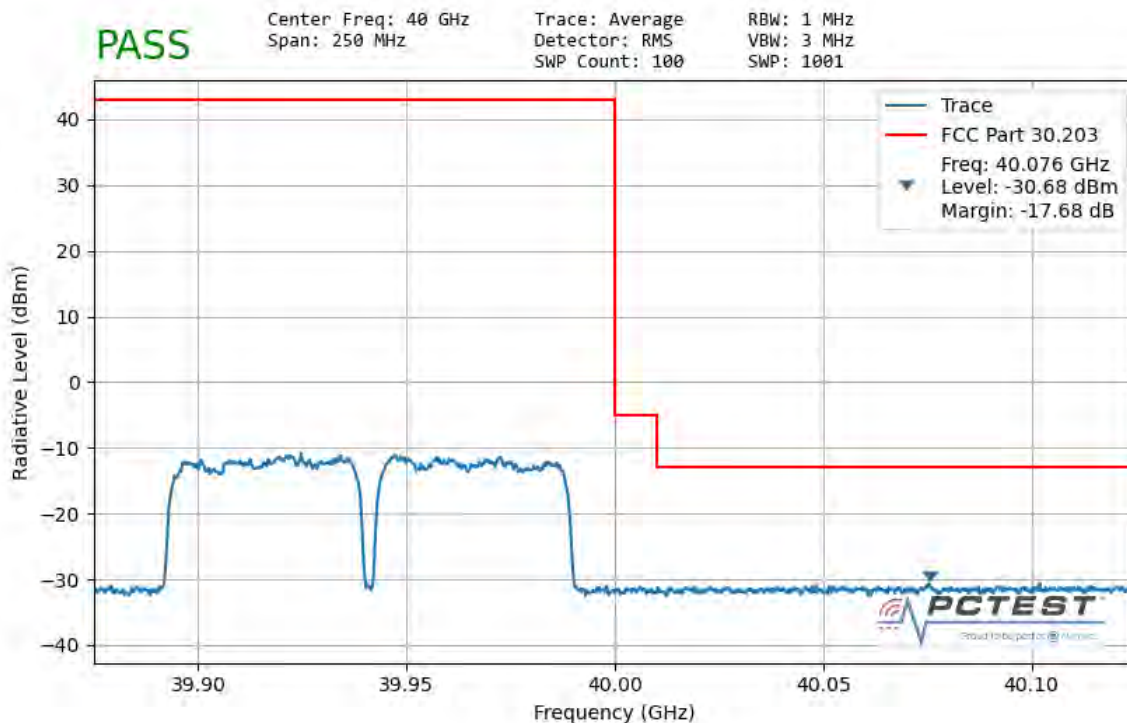


Plot 7-175. Ant2 Upper Band Edge (50MHz-1CC – QPSK Full RB)

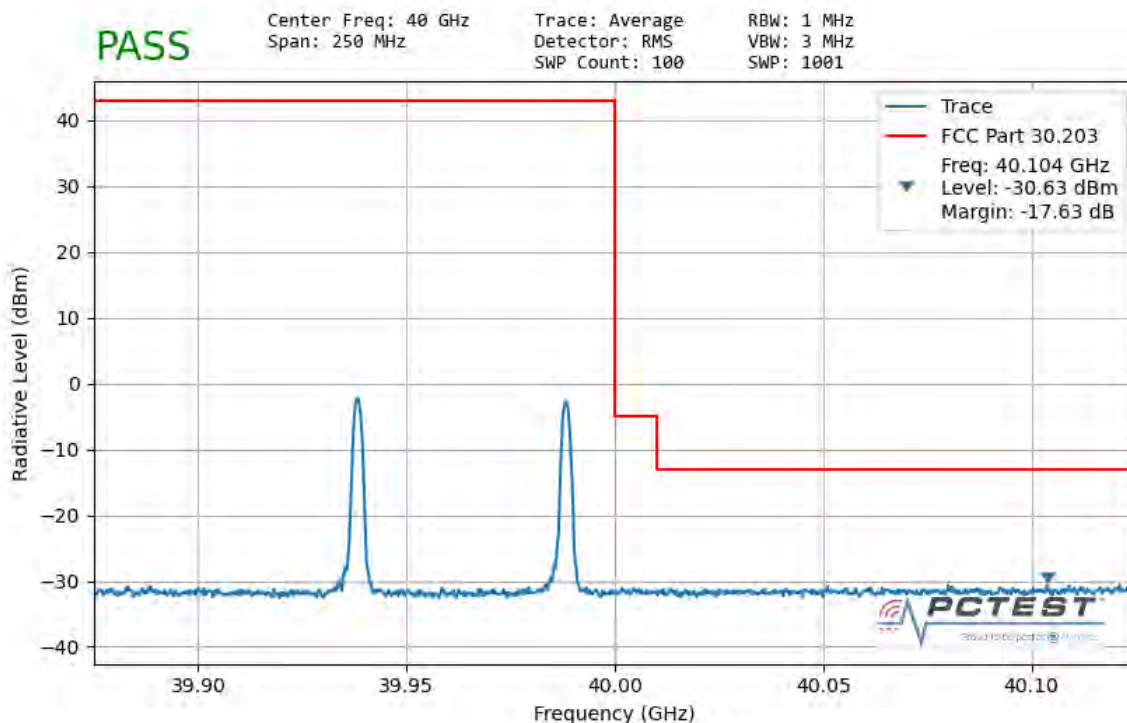


Plot 7-176. Ant2 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset	Page 146 of 161

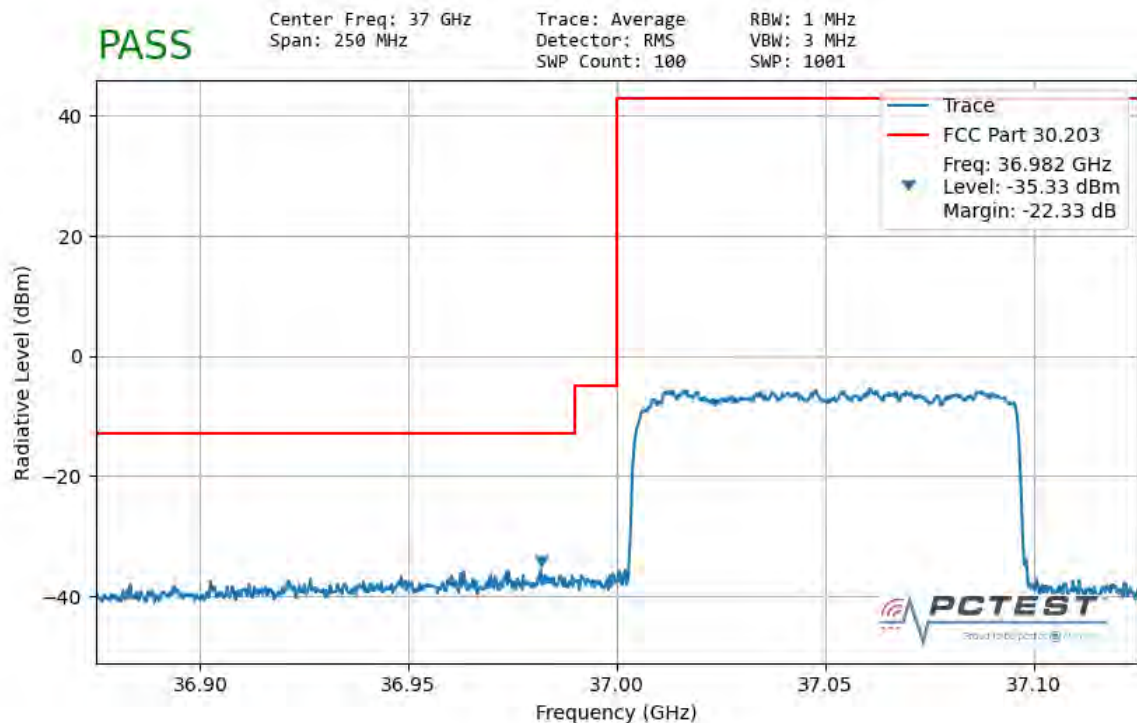


Plot 7-177. Ant2 Upper Band Edge (50MHz-2CC – QPSK Full RB)

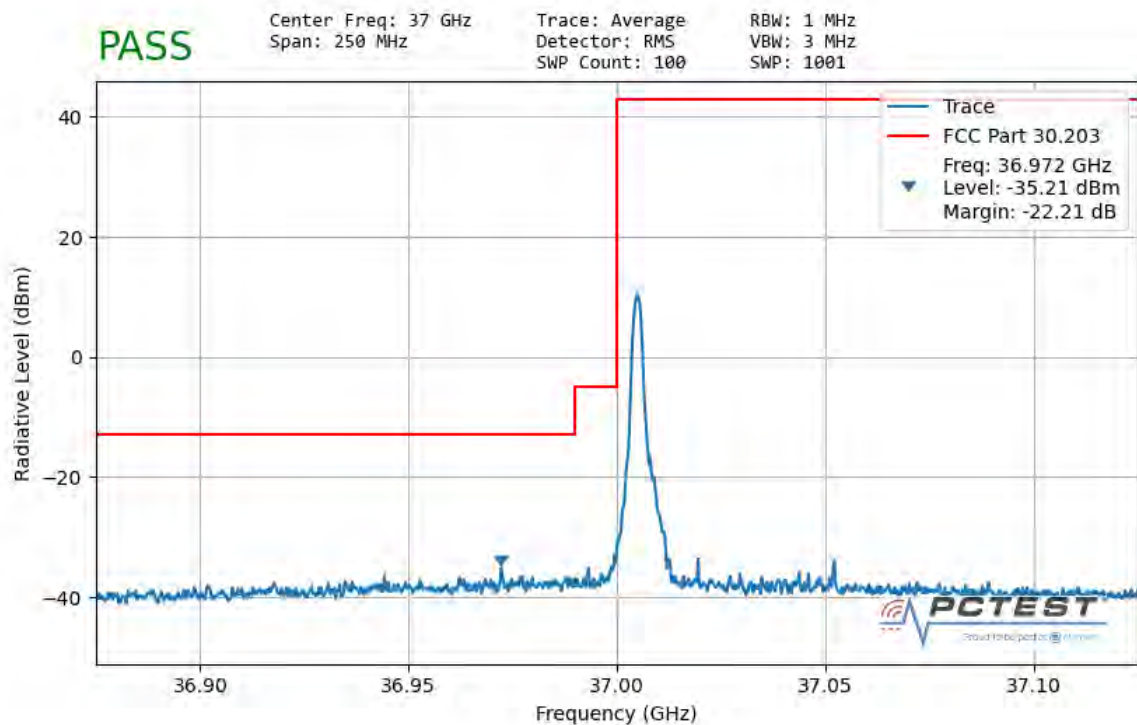


Plot 7-178. Ant2 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 147 of 161

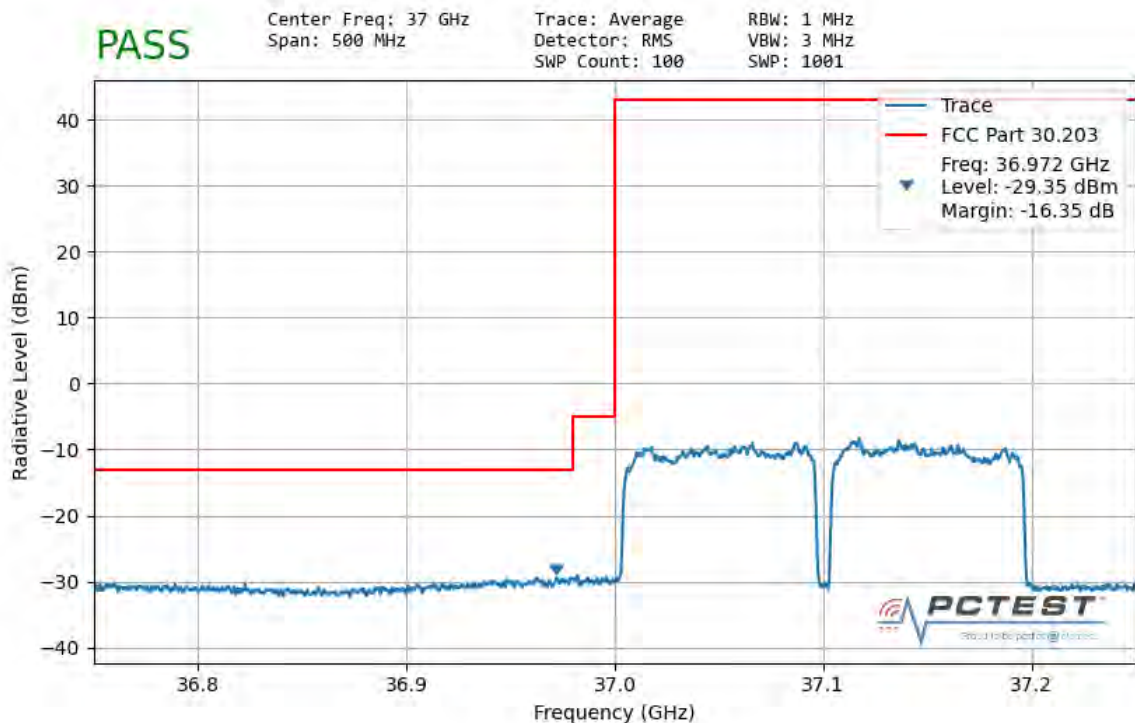


Plot 7-179. Ant2 Lower Band Edge (100MHz-1CC – QPSK Full RB)

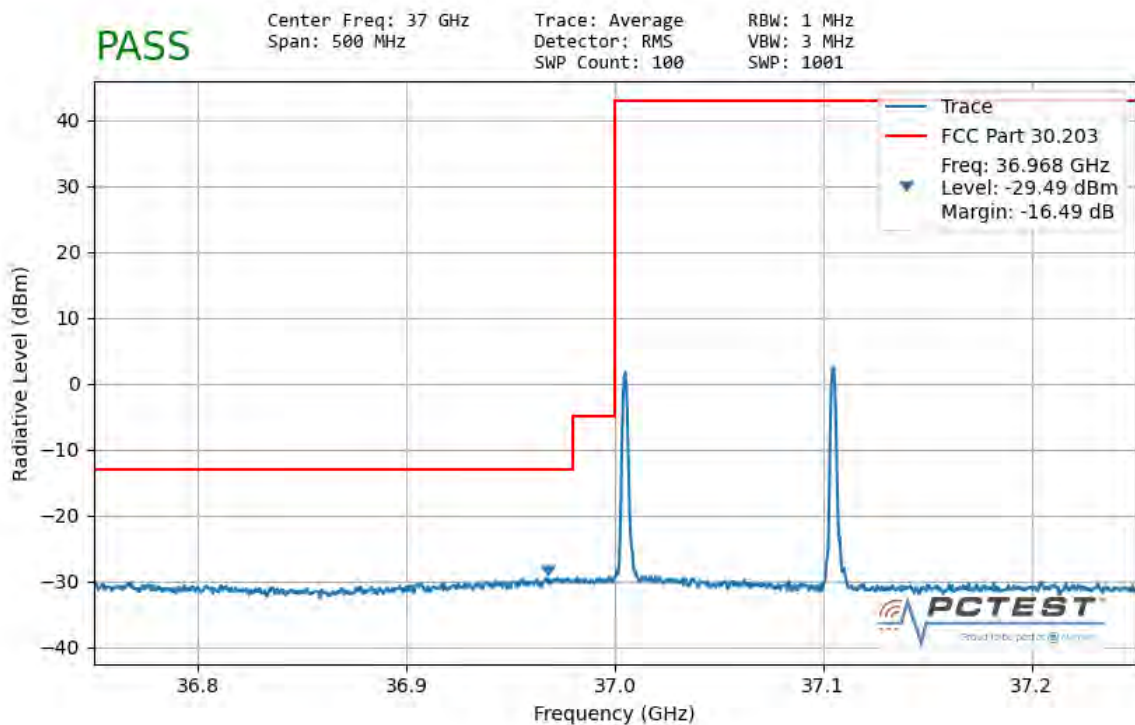


Plot 7-180. Ant2 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 148 of 161

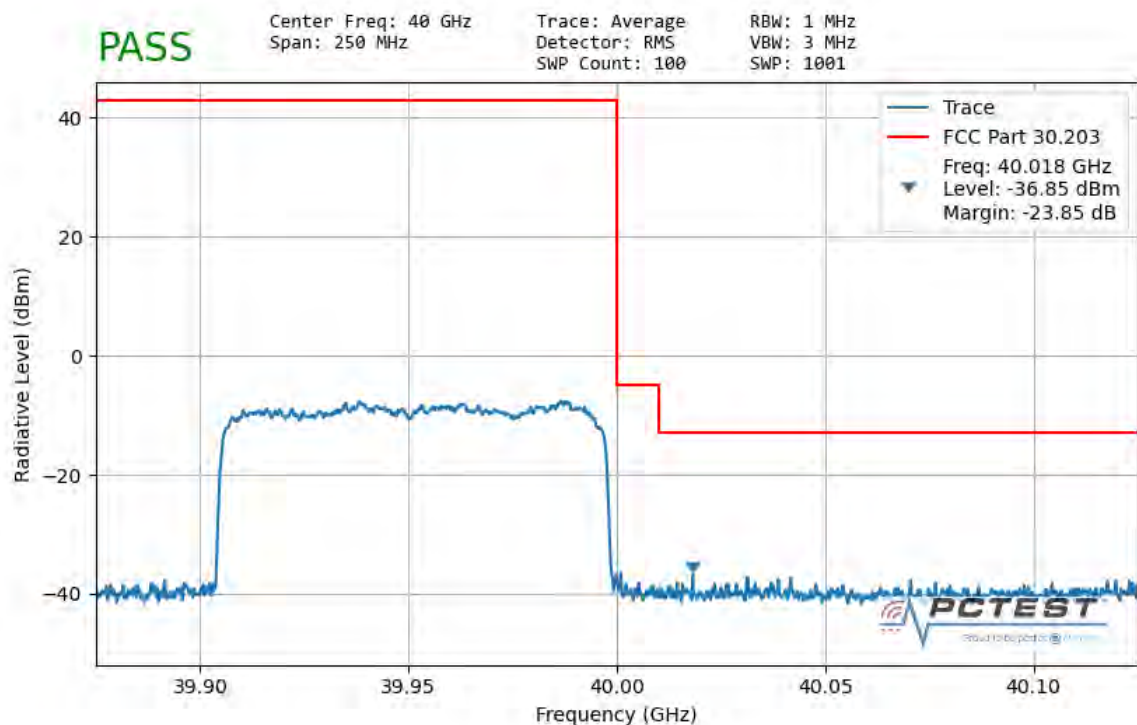


Plot 7-181. Ant2 Lower Band Edge (100MHz-2CC – QPSK Full RB)

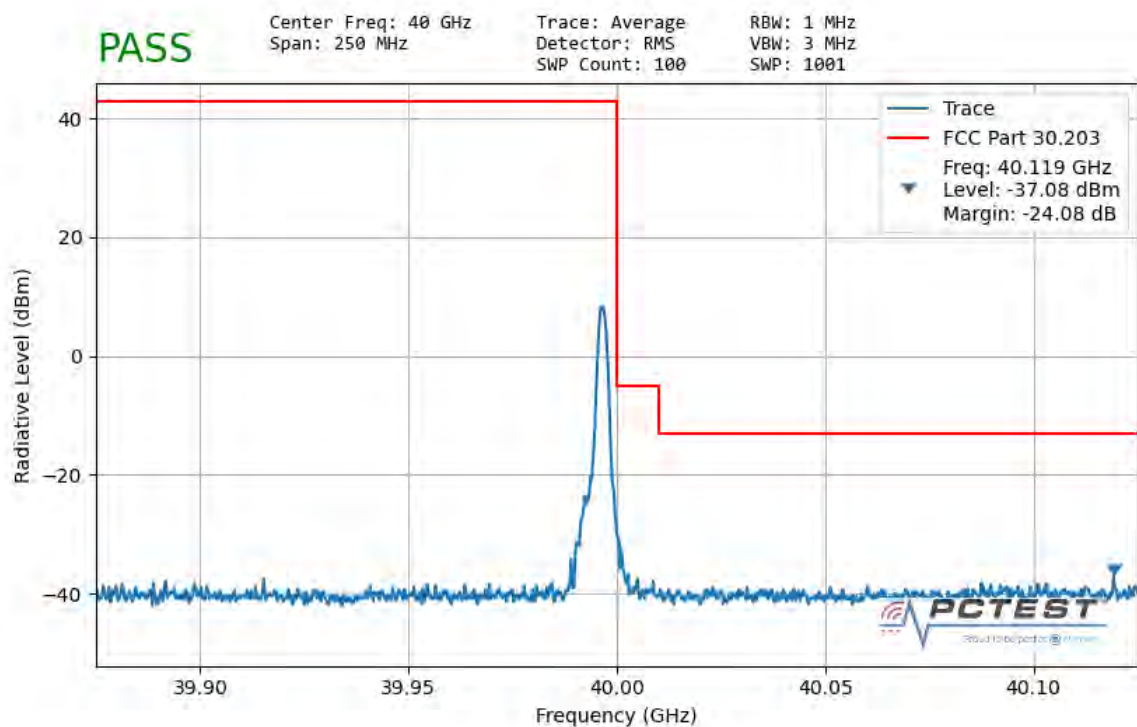


Plot 7-182. Ant2 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 149 of 161

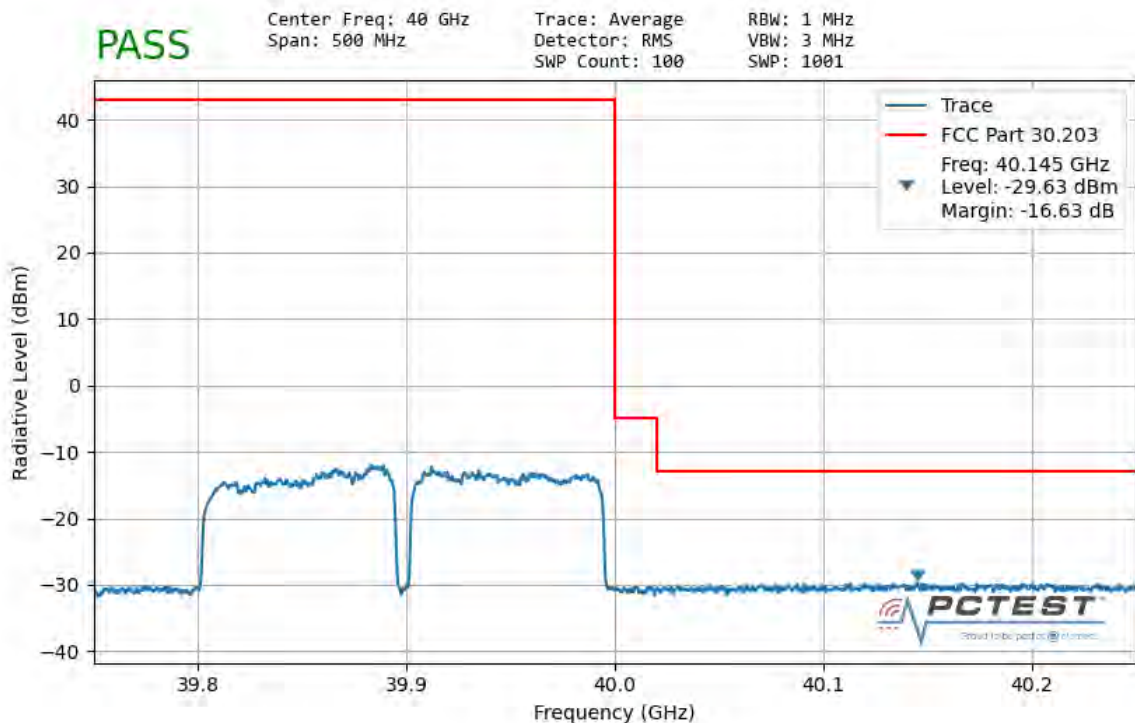


Plot 7-183. Ant2 Upper Band Edge (100MHz-1CC – QPSK Full RB)

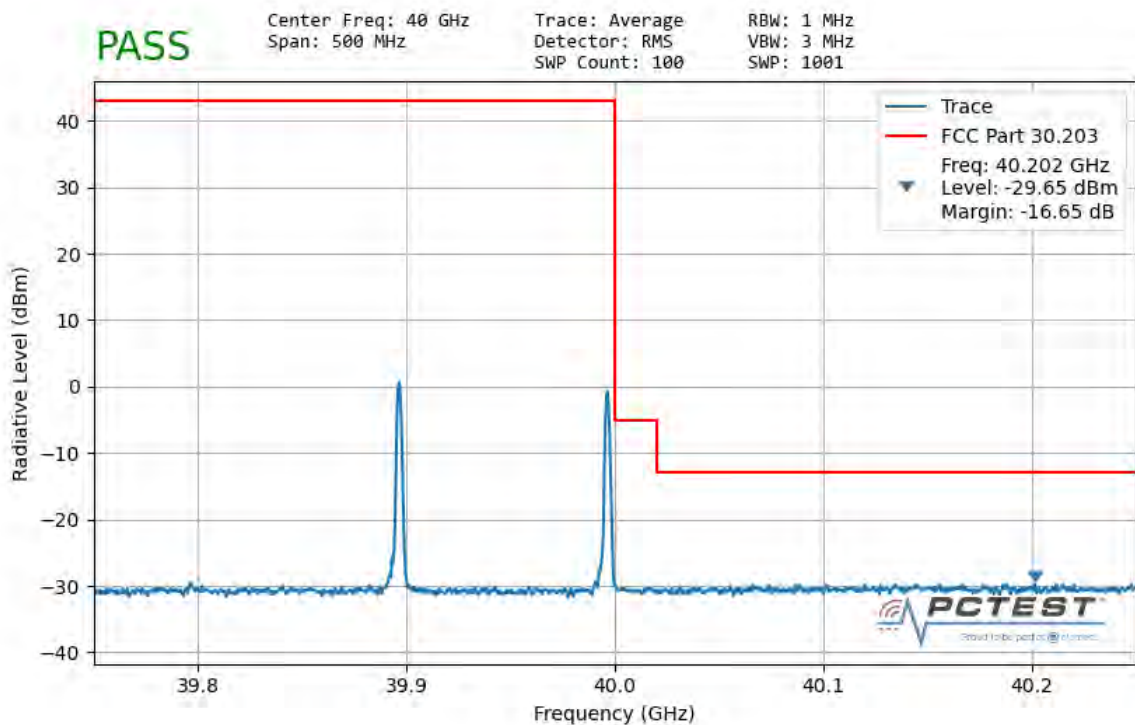


Plot 7-184. Ant2 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 150 of 161



Plot 7-185. Ant2 Upper Band Edge (100MHz-2CC – QPSK Full RB)



Plot 7-186. Ant2 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 v01r01 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: 4.16 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.16	+ 20 (Ref)	27,922,080,400	-400	-0.0000014
100 %		- 30	27,922,080,303	-97	-0.0000003
100 %		- 20	27,922,080,330	-70	-0.0000003
100 %		- 10	27,922,080,576	176	0.0000006
100 %		0	27,922,080,452	52	0.0000002
100 %		+ 10	27,922,080,511	111	0.0000004
100 %		+ 20	27,922,080,500	100	0.0000004
100 %		+ 30	27,922,080,473	73	0.0000003
100 %		+ 40	27,922,080,813	413	0.0000015
100 %		+ 50	27,922,080,154	-246	-0.0000009
BATT. ENDPOINT	3.21	+ 20	27,922,080,251	-149	-0.0000005

Table 7-77. 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

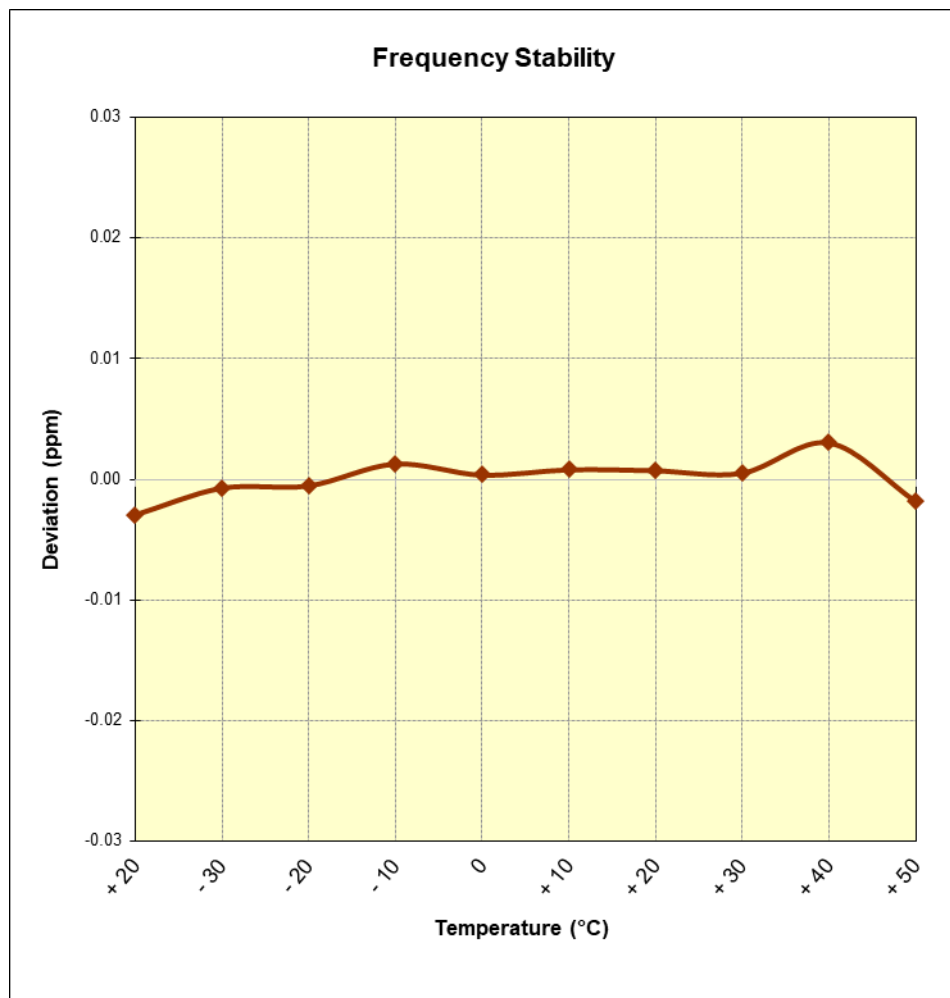


Table 7-78. Frequency Stability Graph (n261)

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability Measurements (Band n260)

§2.1055

OPERATING FREQUENCY: 38,495,520,000 Hz
 CHANNEL: 2254091
 REFERENCE VOLTAGE: 4.16 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.16	+ 20 (Ref)	38,495,519,939	-61	-0.0000002
100 %		- 30	38,495,520,075	-136	-0.0000004
100 %		- 20	38,495,519,698	241	0.0000006
100 %		- 10	38,495,519,921	18	0.0000000
100 %		0	38,495,519,849	90	0.0000002
100 %		+ 10	38,495,519,806	133	0.0000003
100 %		+ 20	38,495,519,882	57	0.0000001
100 %		+ 30	38,495,519,627	312	0.0000008
100 %		+ 40	38,495,519,579	360	0.0000009
100 %		+ 50	38,495,520,035	-96	-0.0000002
BATT. ENDPOINT	3.21	+ 20	38,495,519,958	-19	0.0000000

Table 7-79. 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.

FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability Measurements (Band n260)

§2.1055

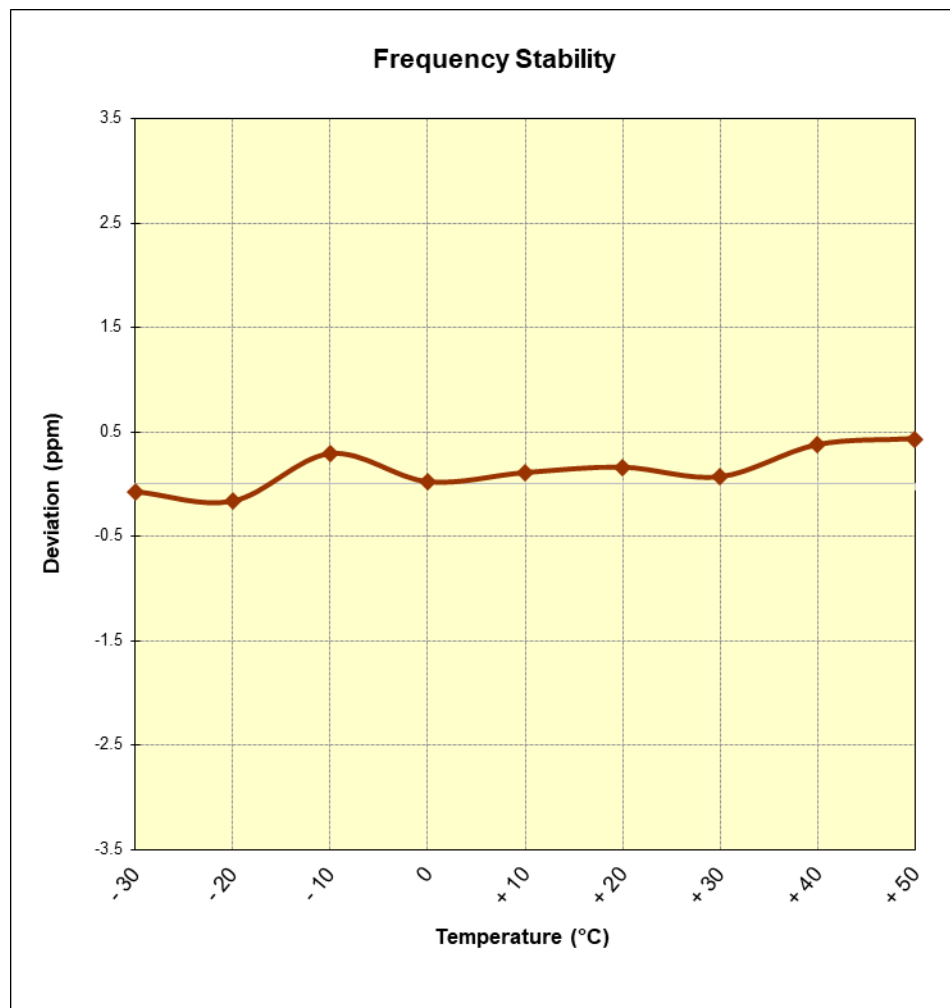


Table 7-80. Frequency Stability Graph (n260)

FCC ID: A3LSMG981V	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M2003090034-07.A3L	Test Dates: 3/17 - 5/1/2020	EUT Type: Portable Handset		Page 156 of 161

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG981V** 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
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

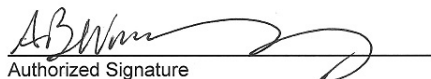
From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

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

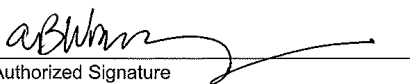
Shipping Date: 05/14/18

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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Virginia Diodes, Inc
979 2nd St. SE
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Certificate of Conformance

To: PCTEST Engineering Laboratory
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Columbia, MD 21045
United States

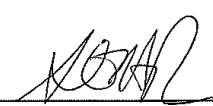
From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

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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Virginia Diodes, Inc
979 2nd St. SE
Suite 309
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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: 05/21/18	Today's Date: 05/22/18
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Quantity	Shipped	Unit	Description
	1	EA	VDIWR5.1SAX WR5.1SAX - Spectrum Analyzer Extension Module; SN: SAX 254.

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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FCC ID: A3LSMG981V		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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