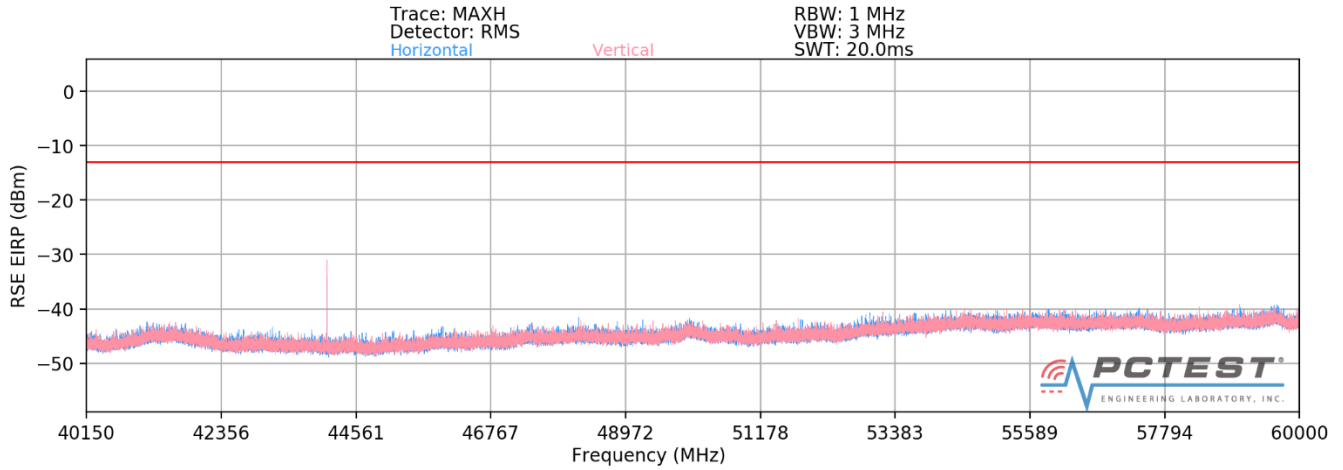
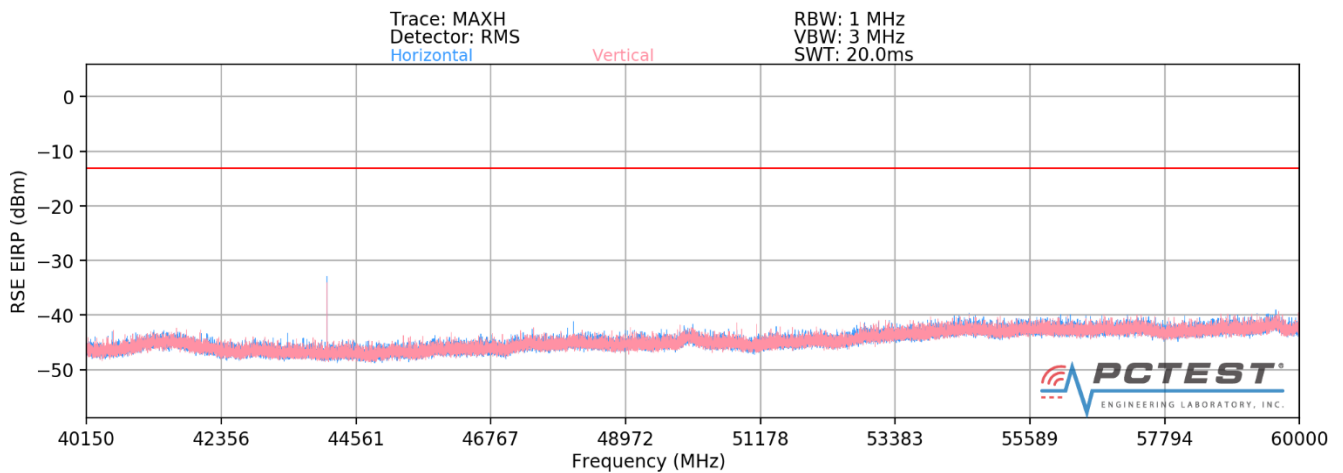


40.15GHz - 60GHz



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



Plot 7-208. Ant4-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.

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

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Turntable Azimuth [degrees]	Antenna Height [cm]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
44083.15	Low	50	H	QPSK	H	321	152	-31.06	-13.00	-18.06
44082.98	Low	50	V	QPSK	V	345	150	-33.62	-13.00	-20.62
44083.16	Mid	50	H	QPSK	H	316	155	-32.56	-13.00	-19.56
44083.15	Mid	50	V	QPSK	V	346	150	-34.47	-13.00	-21.47
44083.11	High	50	H	QPSK	H	320	150	-30.65	-13.00	-17.65
44083.16	High	50	V	QPSK	V	346	150	-31.55	-13.00	-18.55

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

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-29.14	-13.00	-16.14
Mid	50	QPSK	-30.40	-13.00	-17.40
High	50	QPSK	-28.06	-13.00	-15.06

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

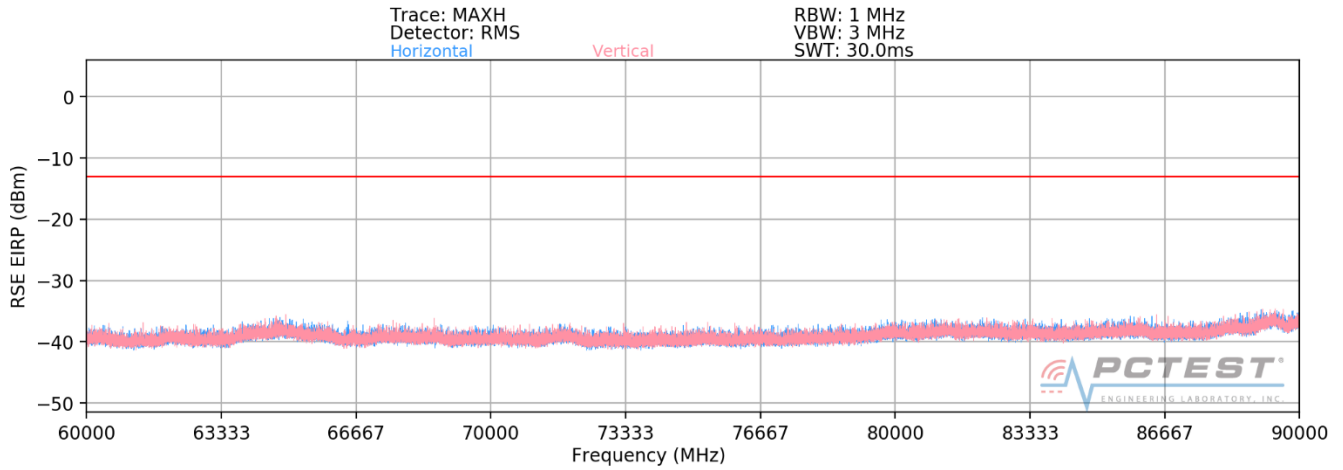
Notes

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:

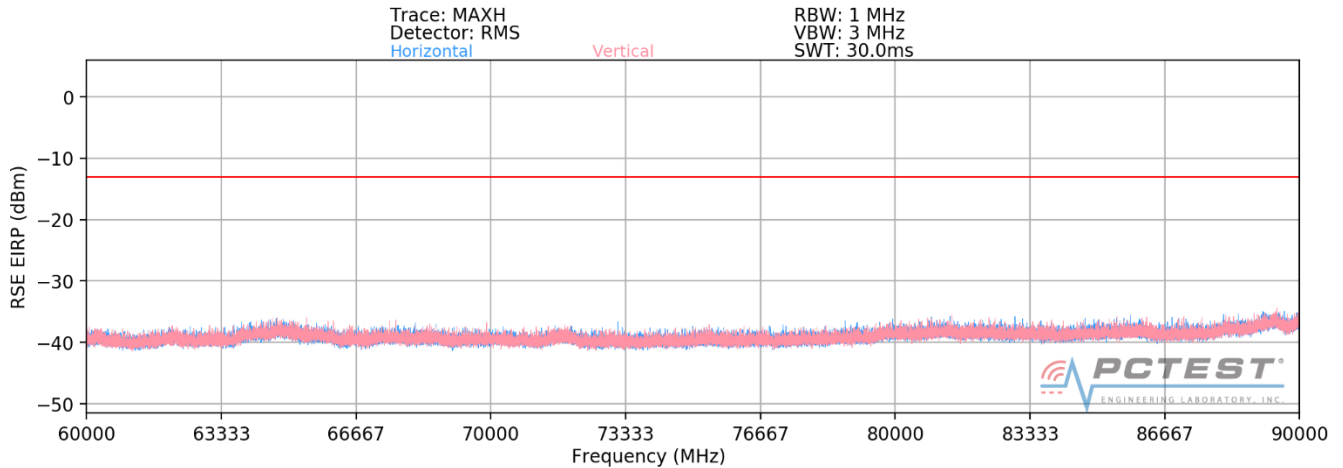
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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60GHz - 90GHz



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



Plot 7-210. Ant4-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.

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

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]
74043.72	Low	50	H	QPSK	H	-	-	-55.06	-13.00	-42.06
74055.84	Low	50	V	QPSK	V	142	293	-50.94	-13.00	-37.94
76995.63	Mid	50	H	QPSK	H	240	18	-49.98	-13.00	-36.98
76996.08	Mid	50	V	QPSK	V	195	111	-52.01	-13.00	-39.01
79936.68	High	50	H	QPSK	H	-	-	-53.86	-13.00	-40.86
79924.44	High	50	V	QPSK	V	-	-	-53.86	-13.00	-40.86

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

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-49.52	-13.00	-36.52
Mid	50	QPSK	-47.86	-13.00	-34.86
High	50	QPSK	-50.85	-13.00	-37.85

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

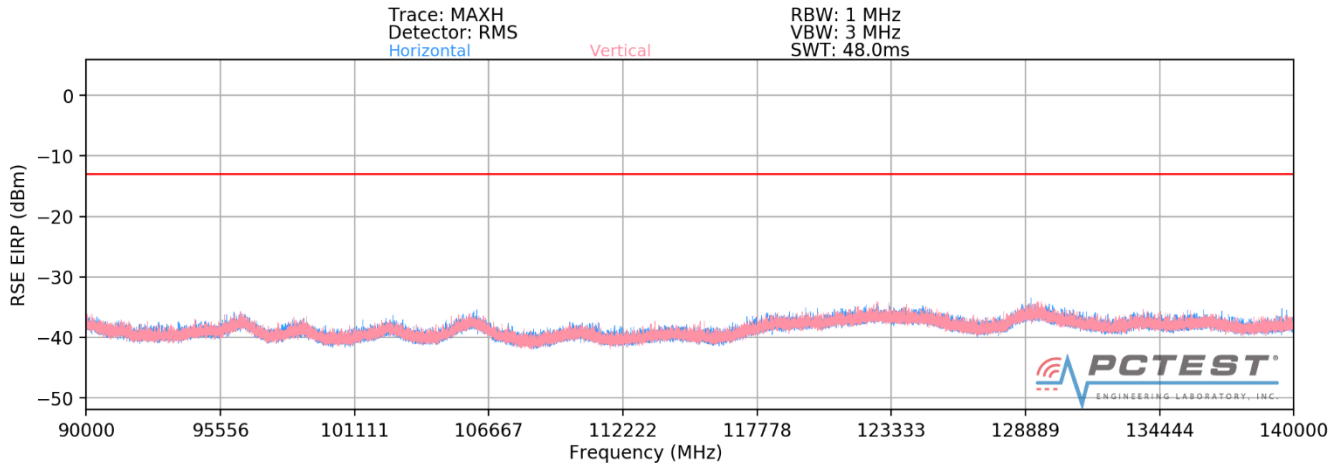
Notes

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

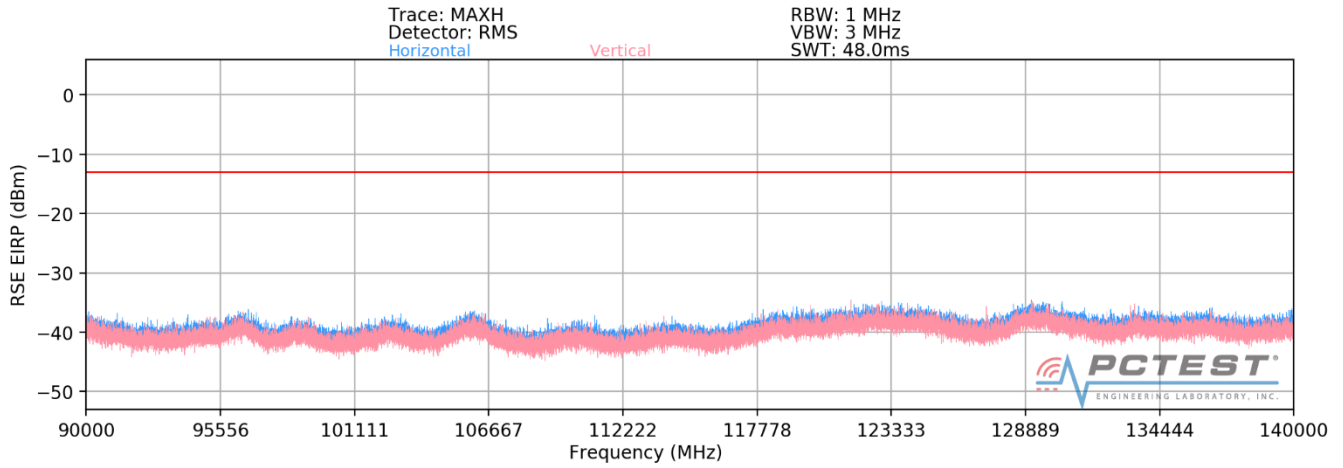
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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90GHz - 140GHz



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



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

FCC ID: A3LSMG986U		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.

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

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]
111084.06	Low	50	H	QPSK	H	275	8	-45.63	-13.00	-32.63
111084.03	Low	50	V	QPSK	V	132	237	-46.95	-13.00	-33.95
115494.33	Mid	50	H	QPSK	H	252	18	-47.58	-13.00	-34.58
115498.02	Mid	50	V	QPSK	V	-	-	-51.39	-13.00	-38.39
119895.27	High	50	H	QPSK	H	-	-	-49.15	-13.00	-36.15
119900.73	High	50	V	QPSK	V	198	131	-48.67	-13.00	-35.67

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

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-43.23	-13.00	-30.23
Mid	50	QPSK	-46.07	-13.00	-33.07
High	50	QPSK	-45.89	-13.00	-32.89

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

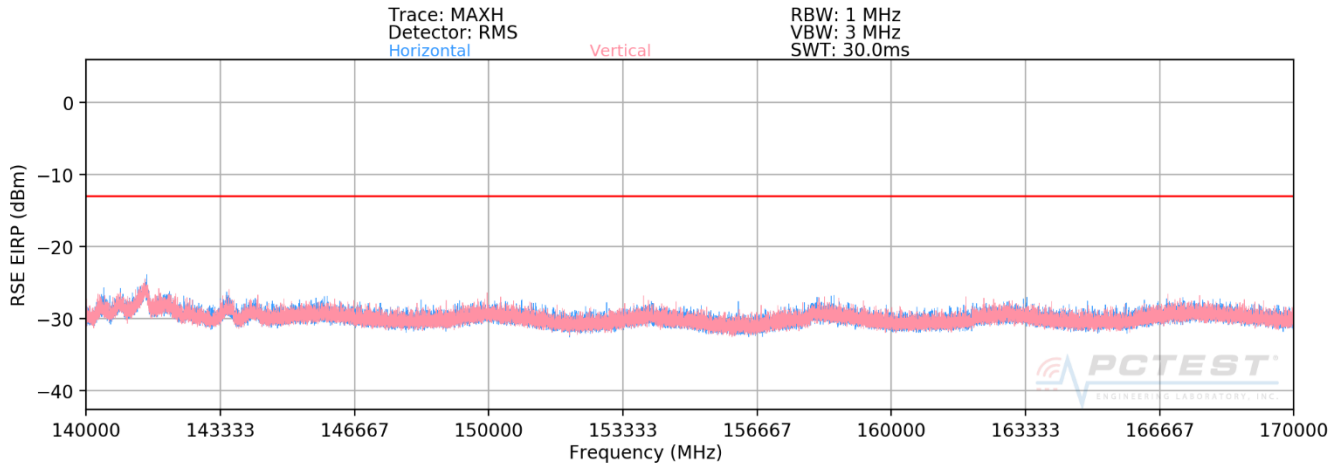
Notes

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:

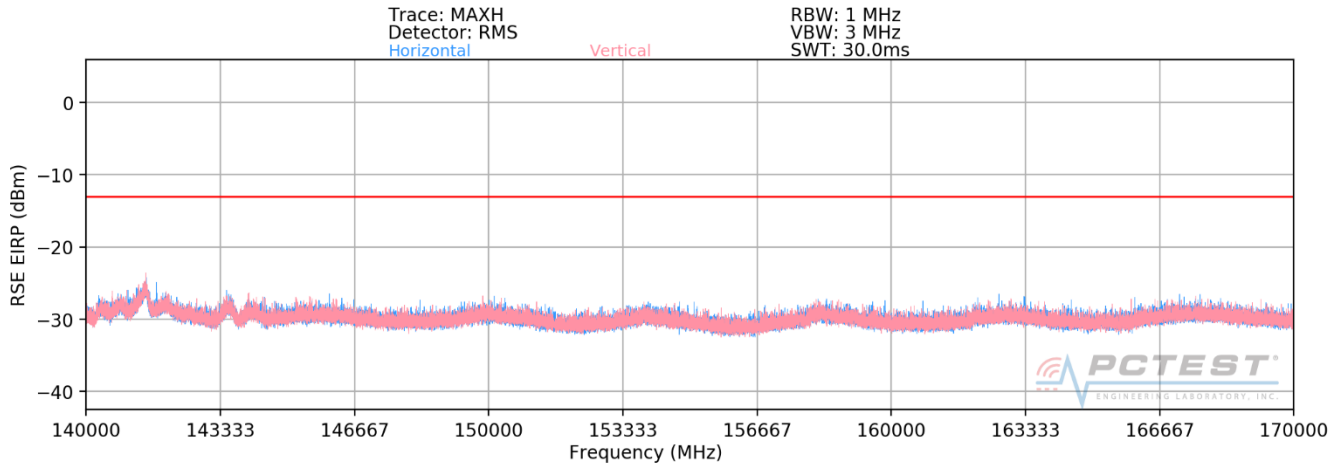
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

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140GHz - 170GHz



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



Plot 7-214. Ant4-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]
141450.00	Low	50	H	QPSK	H	-	-	-32.57	-13.00	-19.57
141489.50	Low	50	V	QPSK	V	-	-	-32.50	-13.00	-19.50
141470.50	Mid	50	H	QPSK	H	-	-	-32.14	-13.00	-19.14
141436.50	Mid	50	V	QPSK	V	-	-	-32.52	-13.00	-19.52
141432.00	High	50	H	QPSK	H	-	-	-32.30	-13.00	-19.30
141483.50	High	50	V	QPSK	V	-	-	-32.31	-13.00	-19.31

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

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-29.52	-13.00	-16.52
Mid	50	QPSK	-29.32	-13.00	-16.32
High	50	QPSK	-29.30	-13.00	-16.30

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

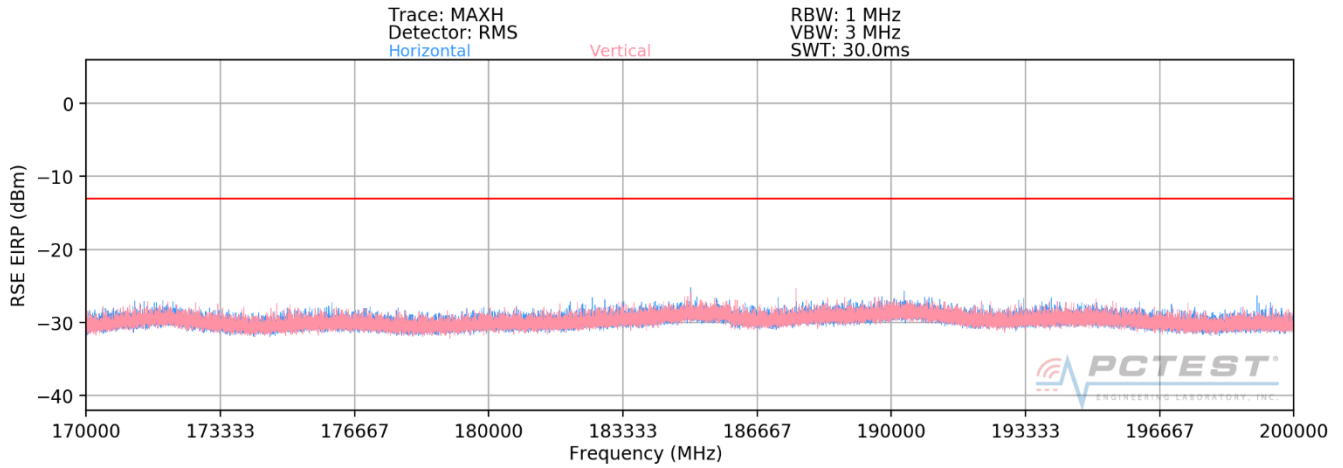
Notes

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:

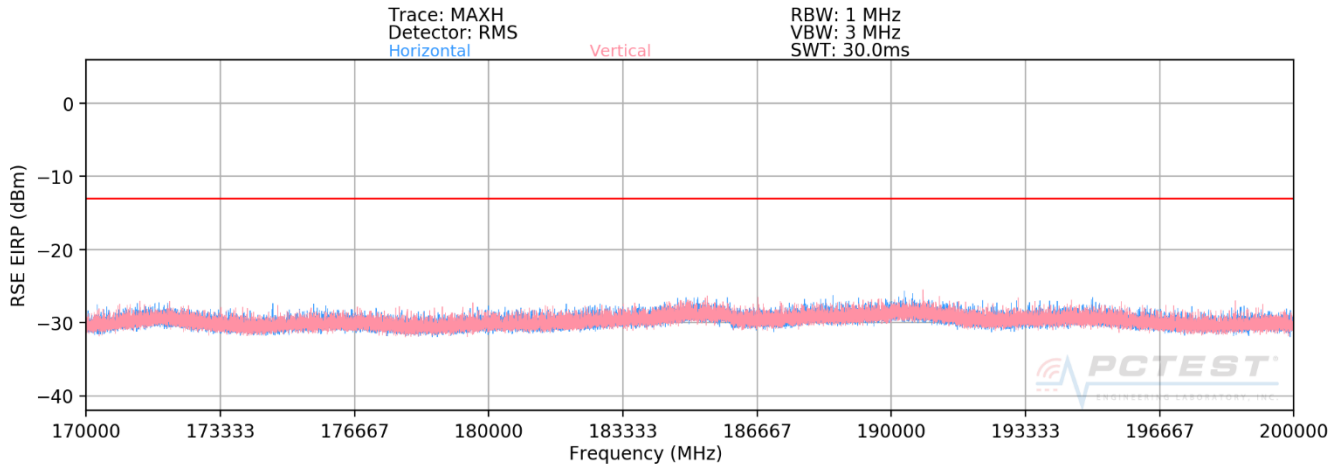
$$\text{EIRP(H Beam)} + \text{EIRP(V Beam)} = \text{EIRP(MIMO)}$$

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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170GHz - 200GHz



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



Plot 7-216. Ant4-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]
191037.00	Low	50	H	QPSK	H	-	-	-35.09	-13.00	-22.09
172008.00	Low	50	V	QPSK	V	-	-	-35.05	-13.00	-22.05
172002.50	Mid	50	H	QPSK	H	-	-	-34.99	-13.00	-21.99
171998.00	Mid	50	V	QPSK	V	-	-	-35.05	-13.00	-22.05
171997.50	High	50	H	QPSK	H	-	-	-35.09	-13.00	-22.09
172016.50	High	50	V	QPSK	V	-	-	-34.96	-13.00	-21.96

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

Channel	Bandwidth (MHz)	Modulation	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
Low	50	QPSK	-32.06	-13.00	-19.06
Mid	50	QPSK	-32.01	-13.00	-19.01
High	50	QPSK	-32.01	-13.00	-19.01

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:

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

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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 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 $\geq 3 \times$ 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	9.28
		V	10.16
	High	H	8.70
		V	9.16
Ant2	Low	H	6.93
		V	5.62
	High	H	5.75
		V	5.29
Ant3	Low	H	8.73
		V	7.61
	High	H	8.24
		V	8.07
Ant4	Low	H	8.49
		V	7.81
	High	H	8.52
		V	8.01

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

Antenna	Channel	Beam Polarization	Gain (dBi)
Ant1	Low	H	10.81
		V	9.25
	High	H	10.19
		V	10.19
Ant2	Low	H	8.91
		V	7.95
	High	H	7.20
		V	7.61
Ant3	Low	H	9.77
		V	8.90
	High	H	10.01
		V	9.83
Ant4	Low	H	9.29
		V	9.58
	High	H	9.84
		V	10.55

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

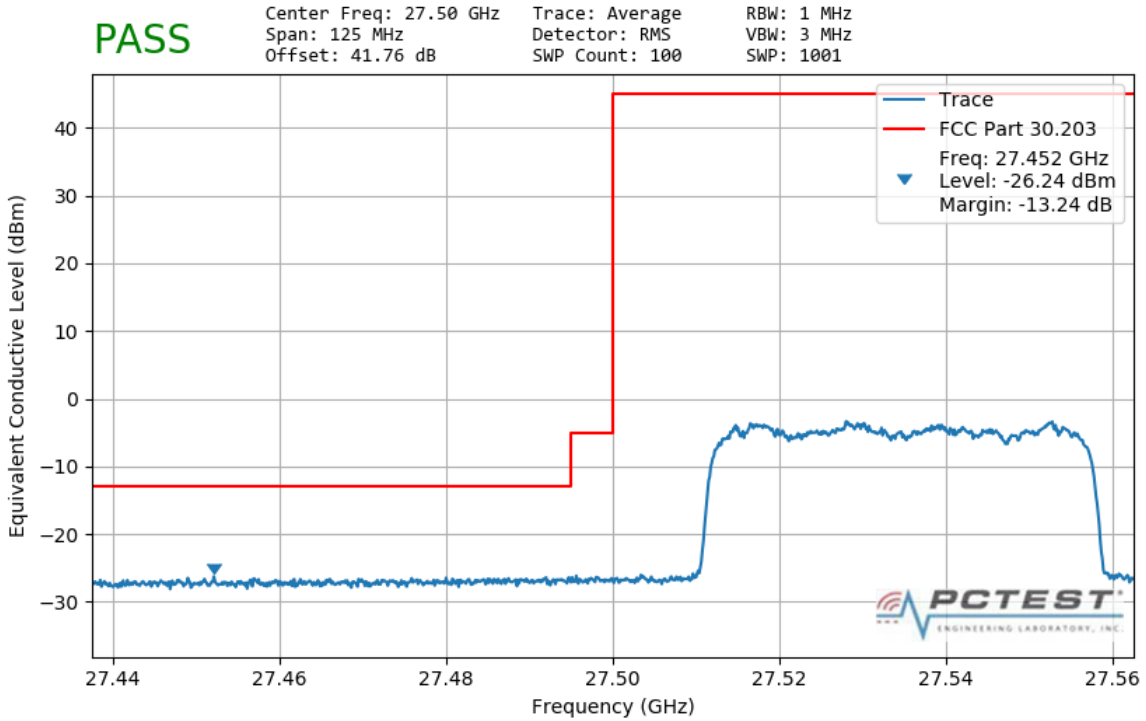
Cable Loss = 8.82dB

EUT Antenna Gain = 6.60dBi

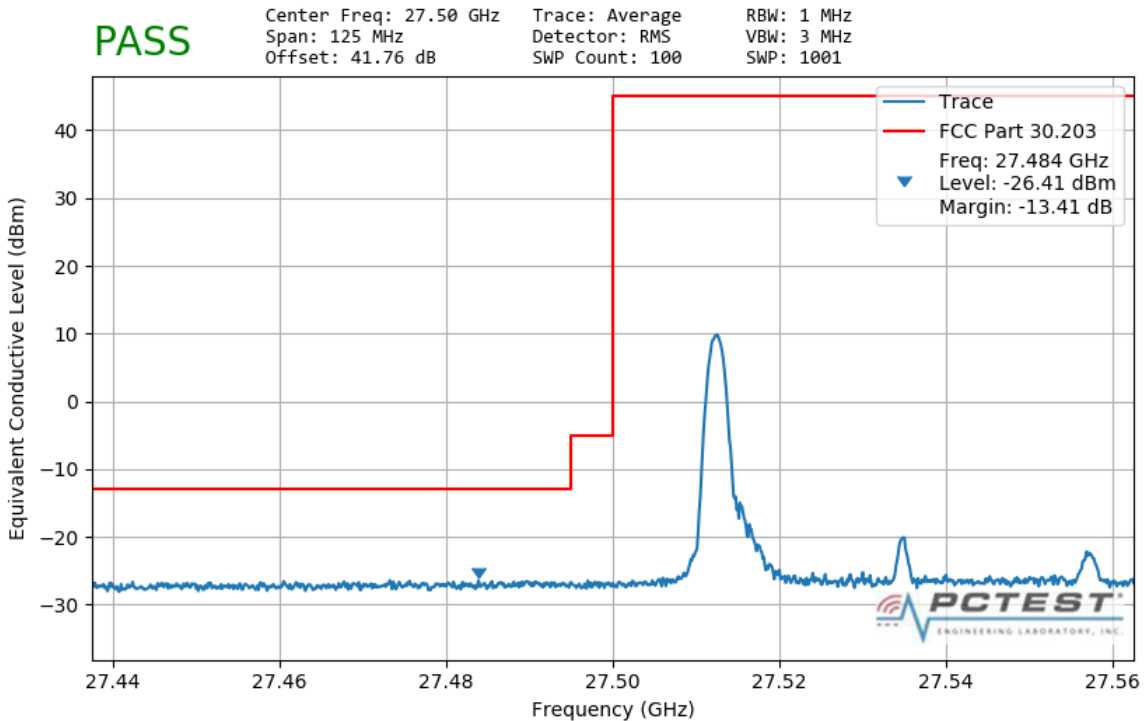
$$\begin{aligned}
 \text{Analyzer Offset (dB)} &= \text{AF (dB/m)} + \text{CL (dB)} + 107 + 20\log_{10}(D) - 104.8\text{dB} - \text{Gain (dBi)}, \text{ where } D = 1\text{m} \\
 &= 40.70\text{dB/m} + 8.82\text{dB} + 107 + 20\log_{10}(1\text{m}) - 104.8\text{dB} - 6.60\text{dBi} \\
 &= 45.12\text{dB}
 \end{aligned}$$

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Band n261 - MIMO

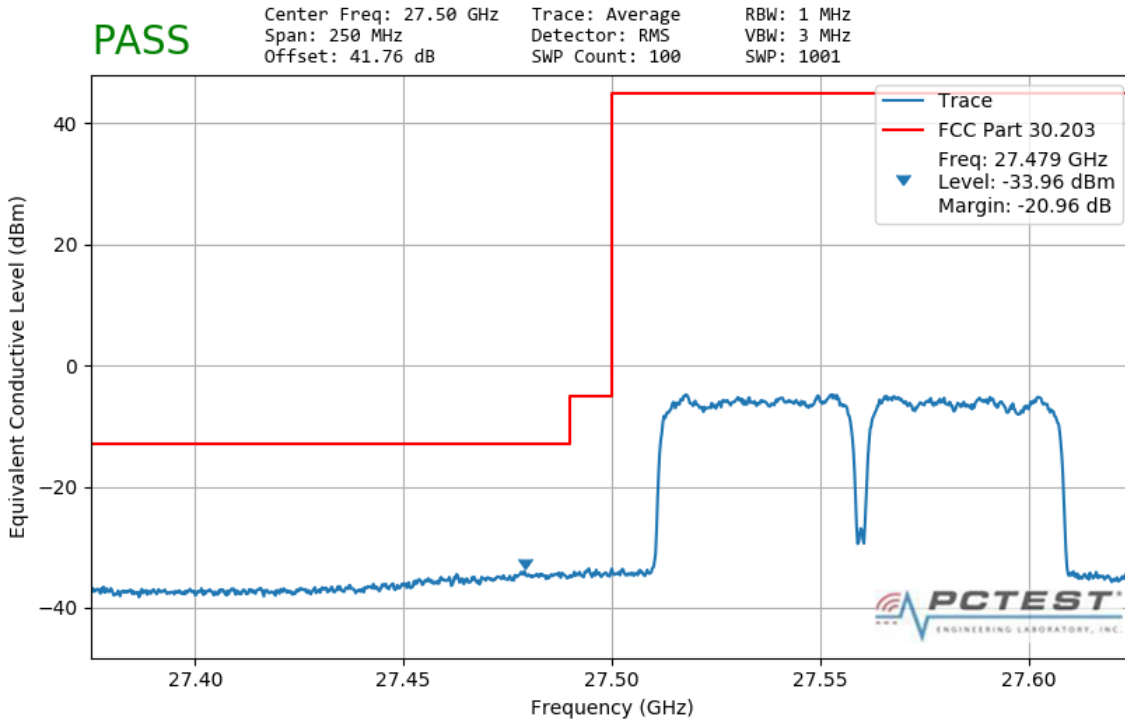


Plot 7-217. Ant1 Lower Band Edge (50MHz-1CC – QPSK Full RB)

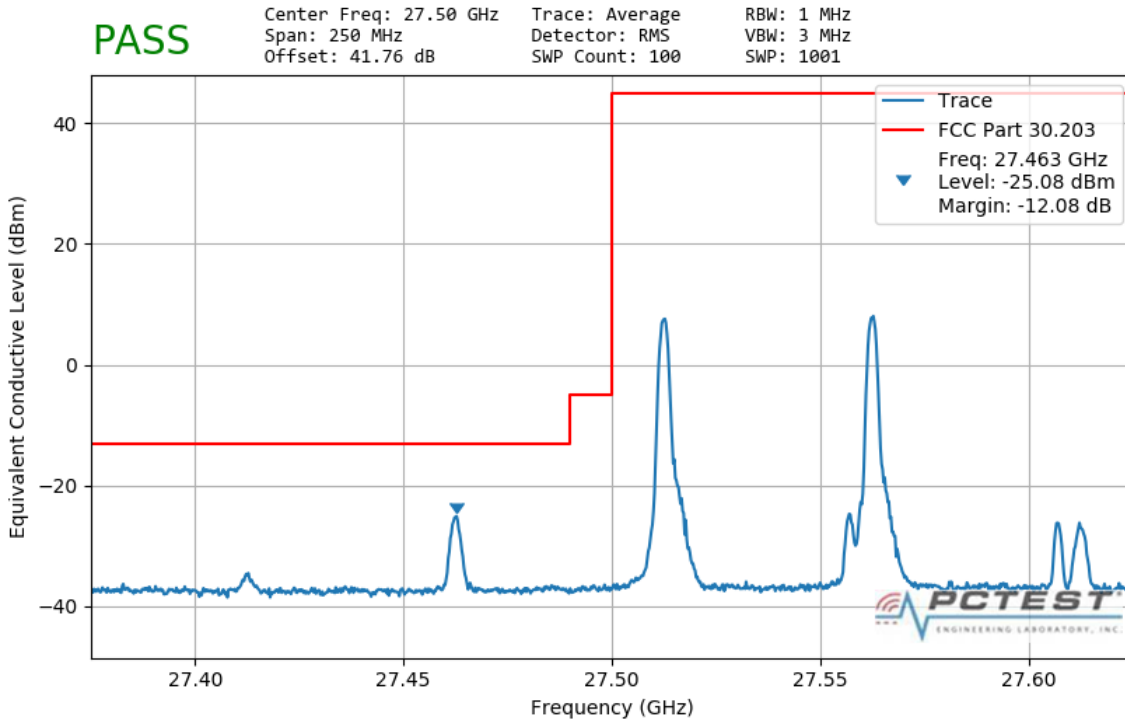


Plot 7-218. Ant1 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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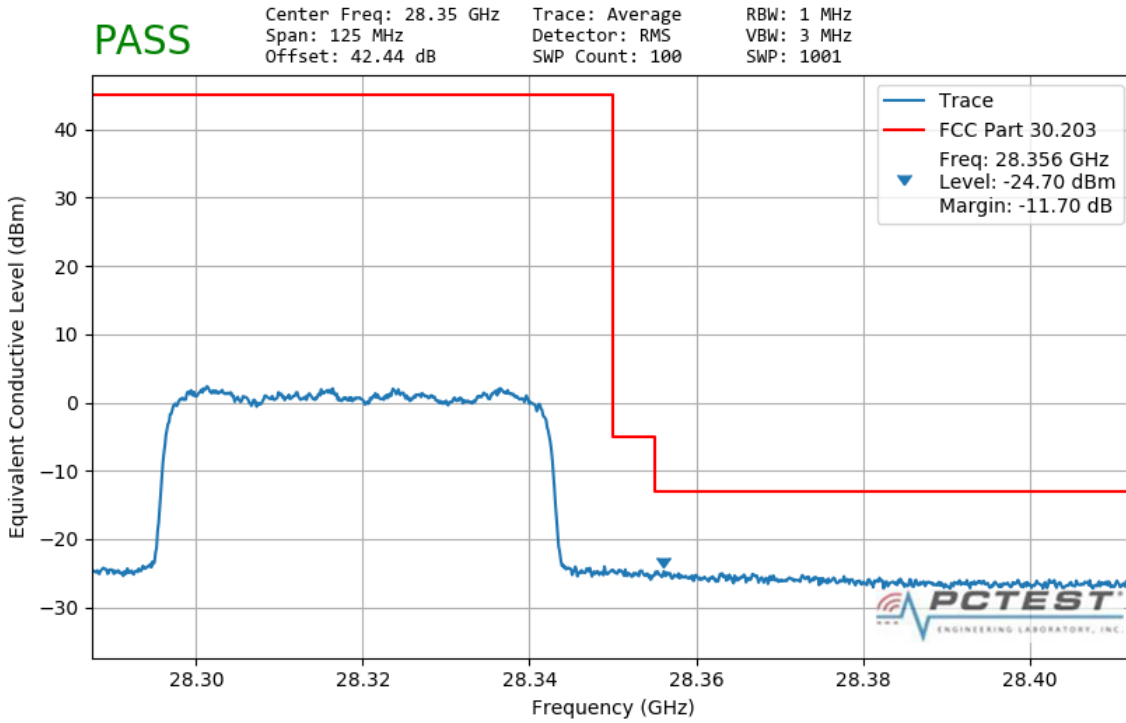


Plot 7-219. Ant1 Lower Band Edge (50MHz-2CC – QPSK Full RB)

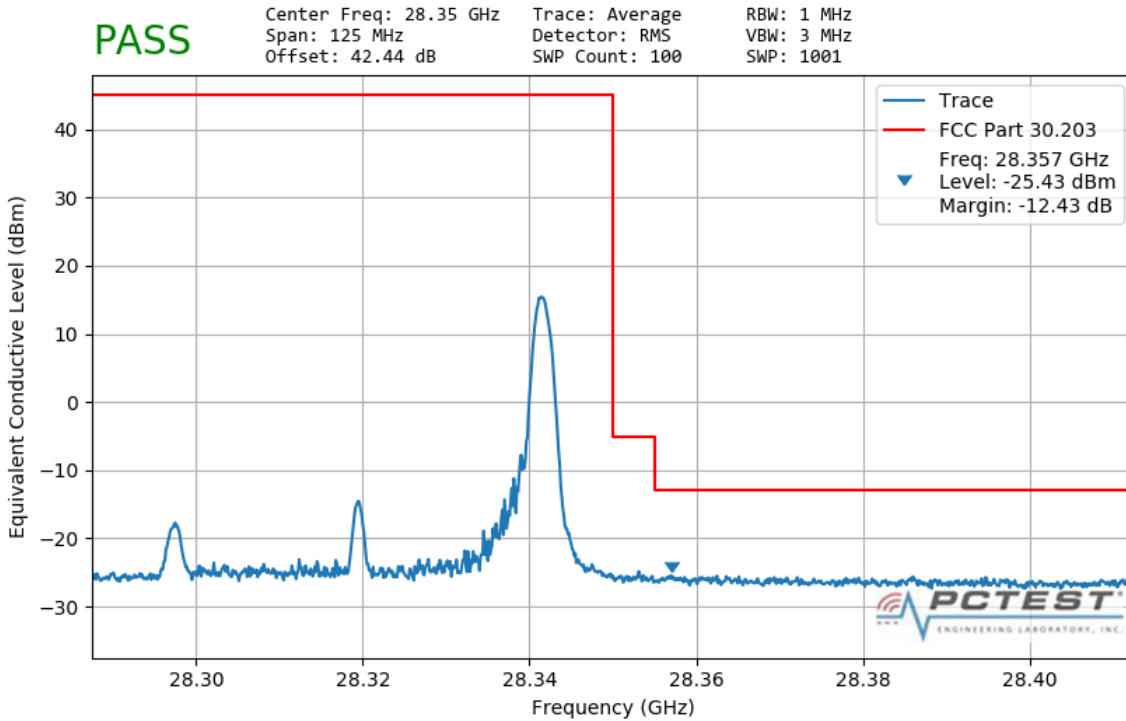


Plot 7-220. Ant1 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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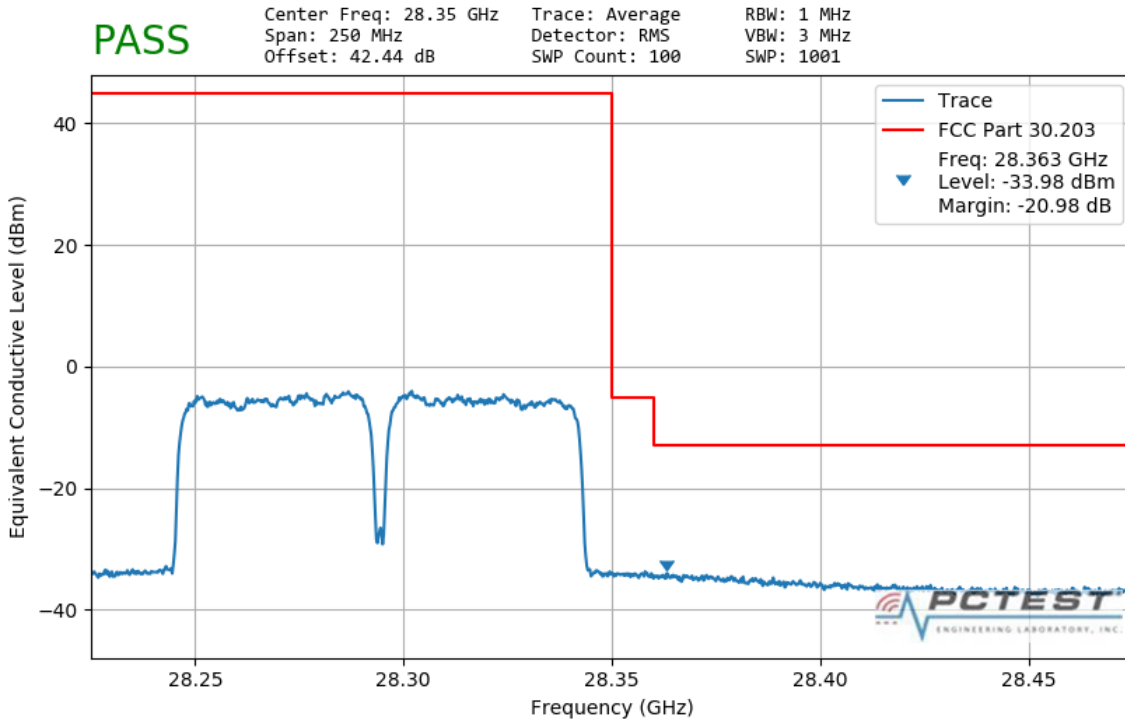


Plot 7-221. Ant1 Upper Band Edge (50MHz-1CC – QPSK Full RB)

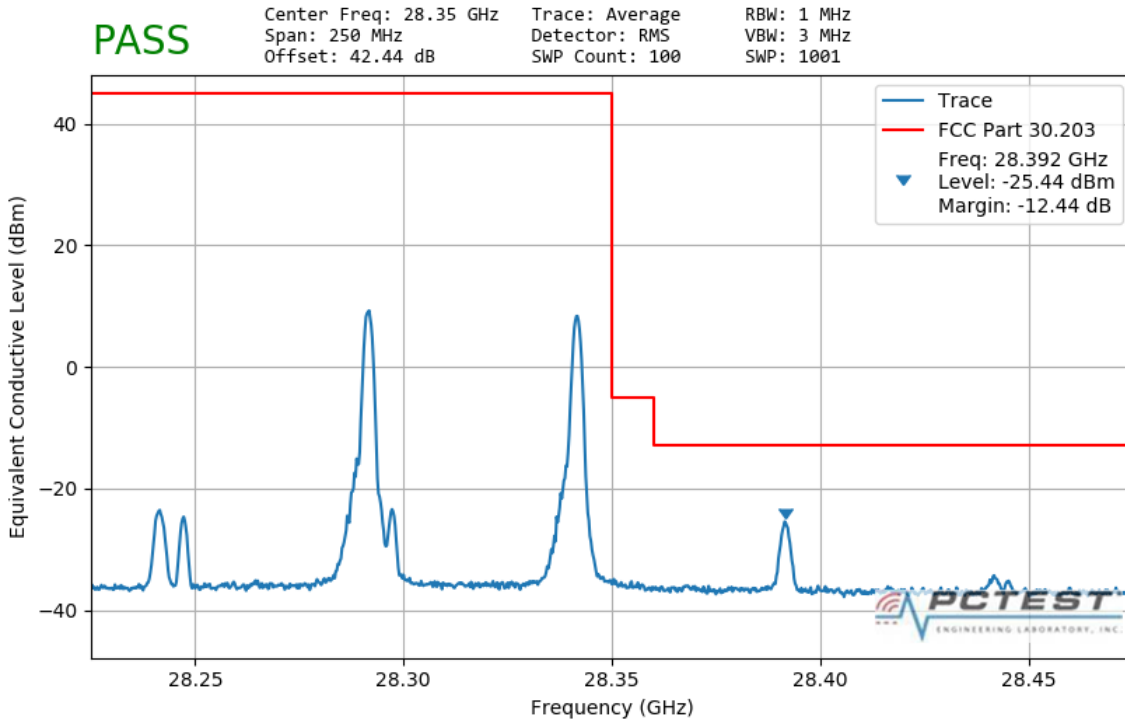


Plot 7-222. Ant1 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 215 of 286

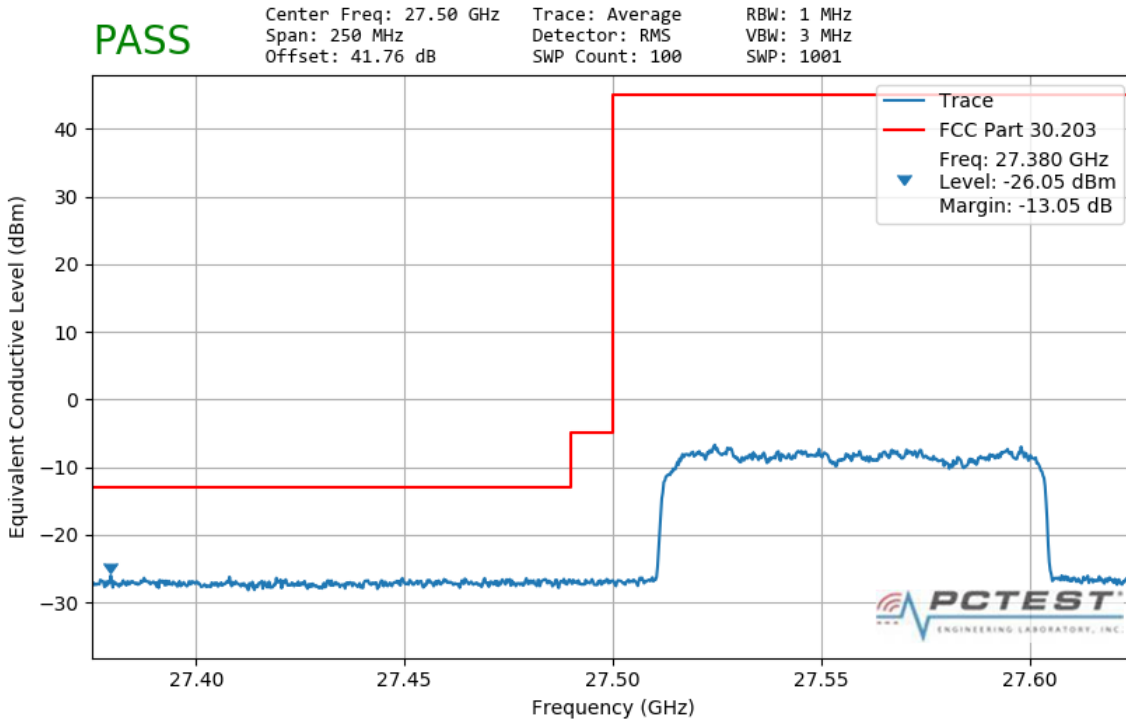


Plot 7-223. Ant1 Upper Band Edge (50MHz-2CC – QPSK Full RB)

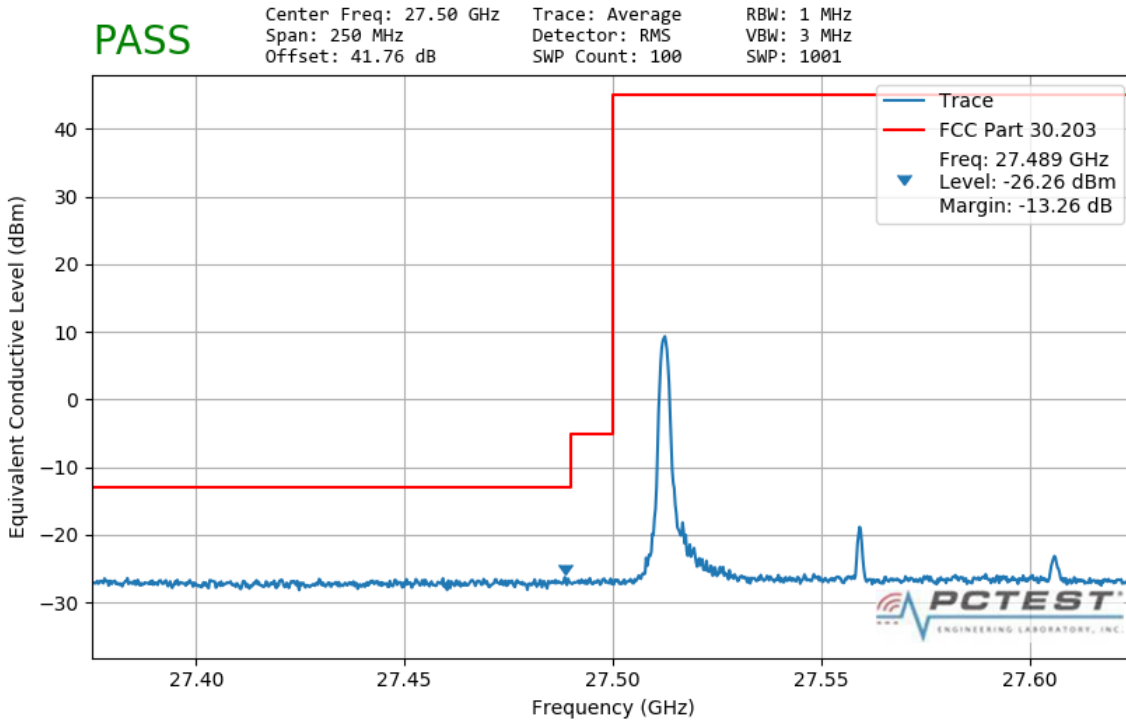


Plot 7-224. Ant1 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 216 of 286

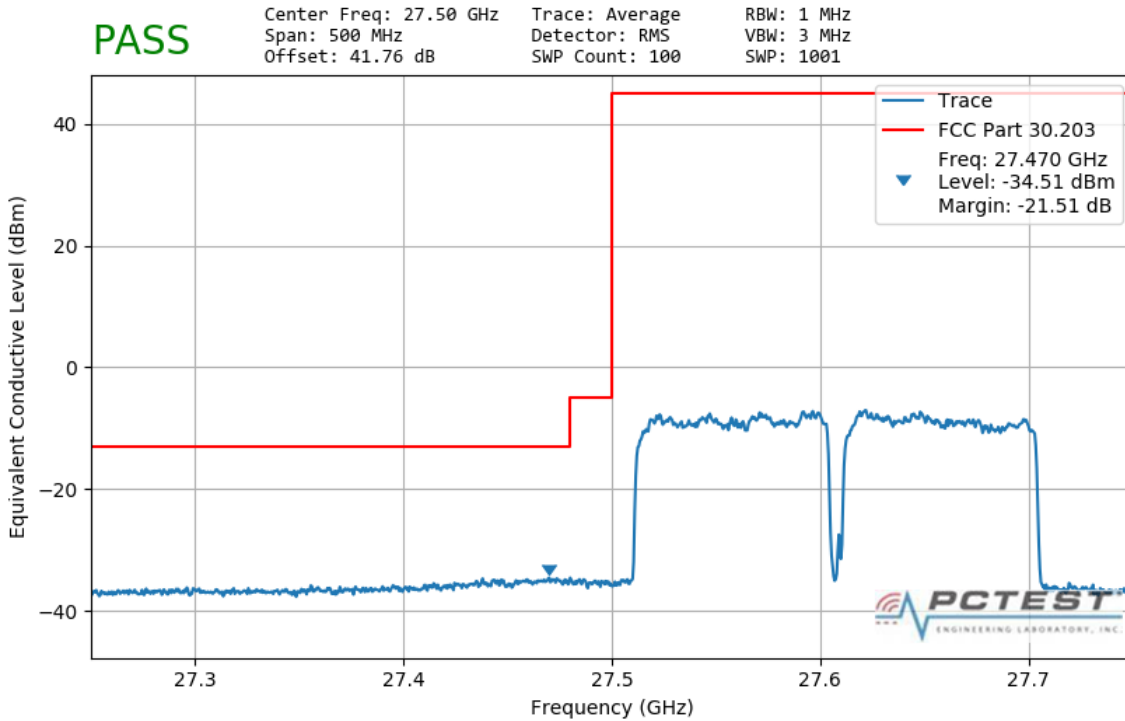


Plot 7-225. Ant1 Lower Band Edge (100MHz-1CC – QPSK Full RB)

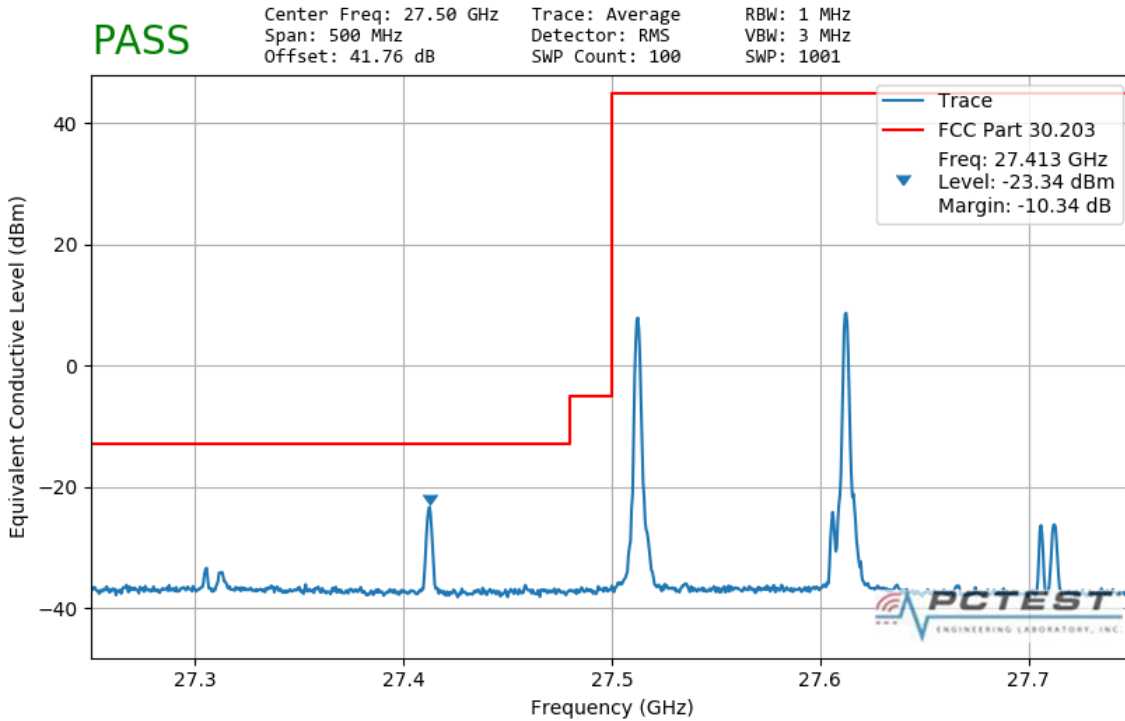


Plot 7-226. Ant1 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 217 of 286

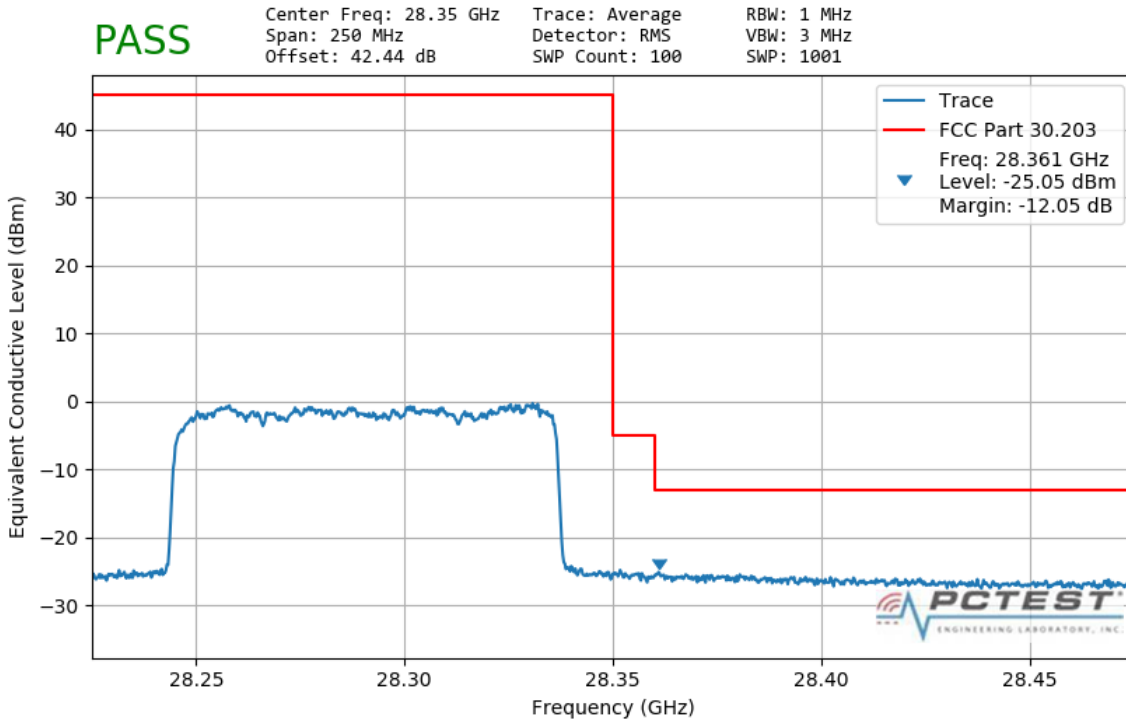


Plot 7-227. Ant1 Lower Band Edge (100MHz-2CC – QPSK Full RB)

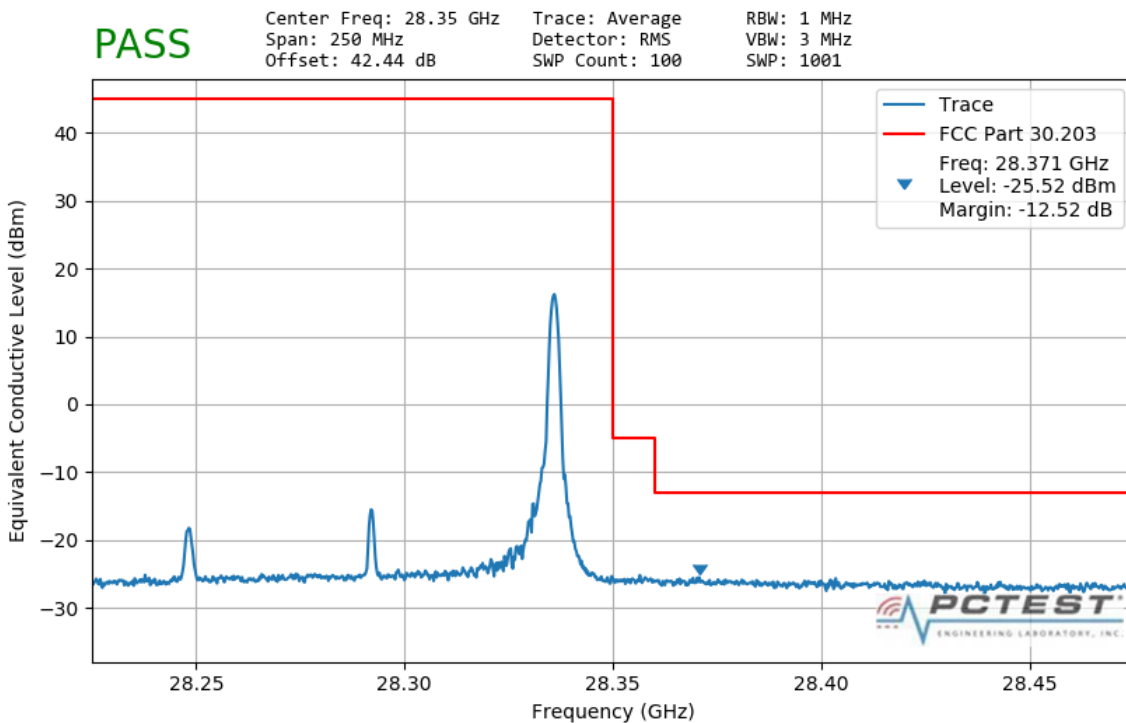


Plot 7-228. Ant1 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 218 of 286

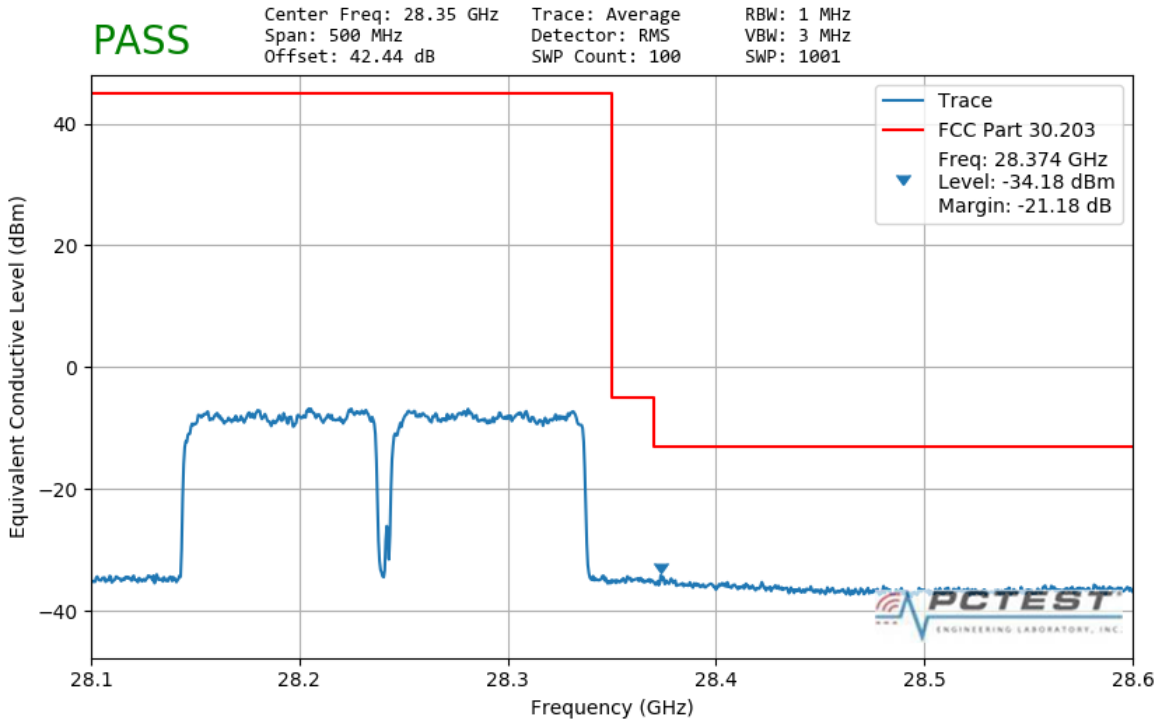


Plot 7-229. Ant1 Upper Band Edge (100MHz-1CC – QPSK Full RB)

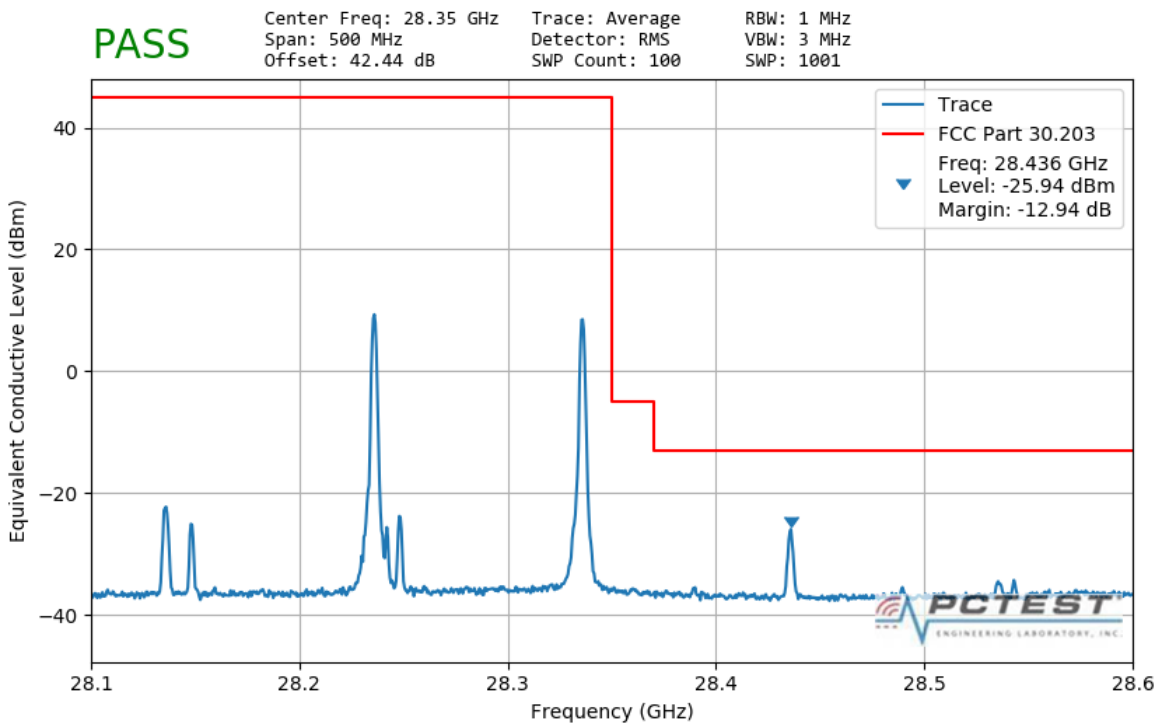


Plot 7-230. Ant1 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 219 of 286

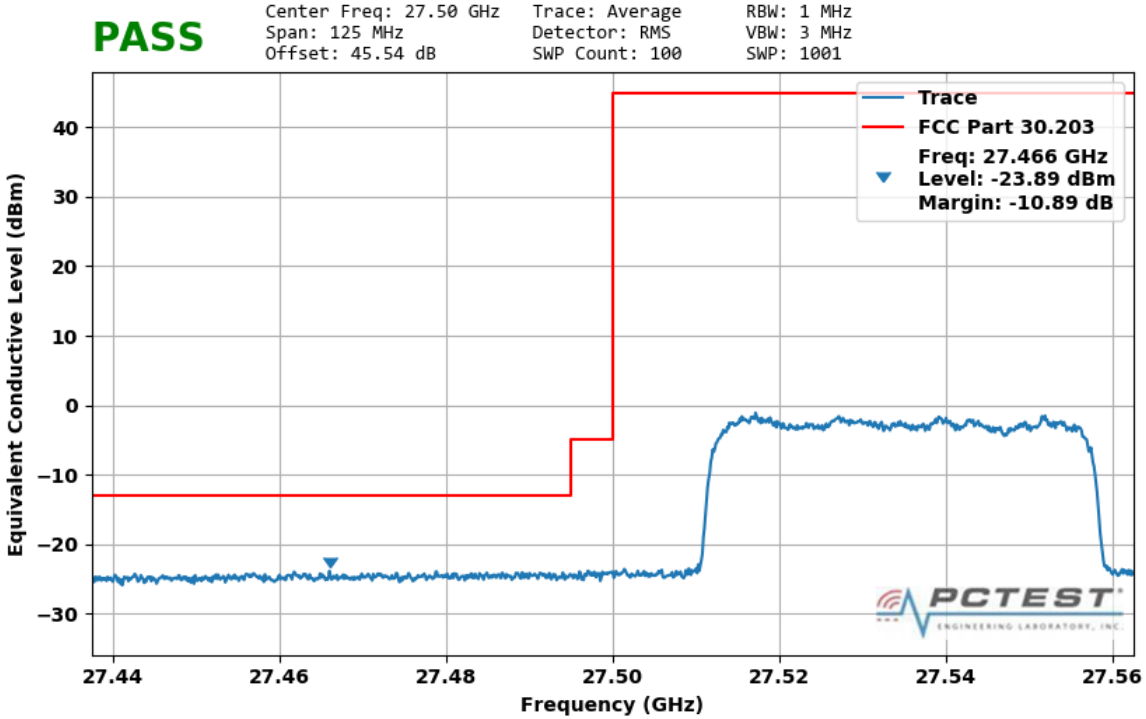


Plot 7-231. Ant1 Upper Band Edge (100MHz-2CC – QPSK Full RB)

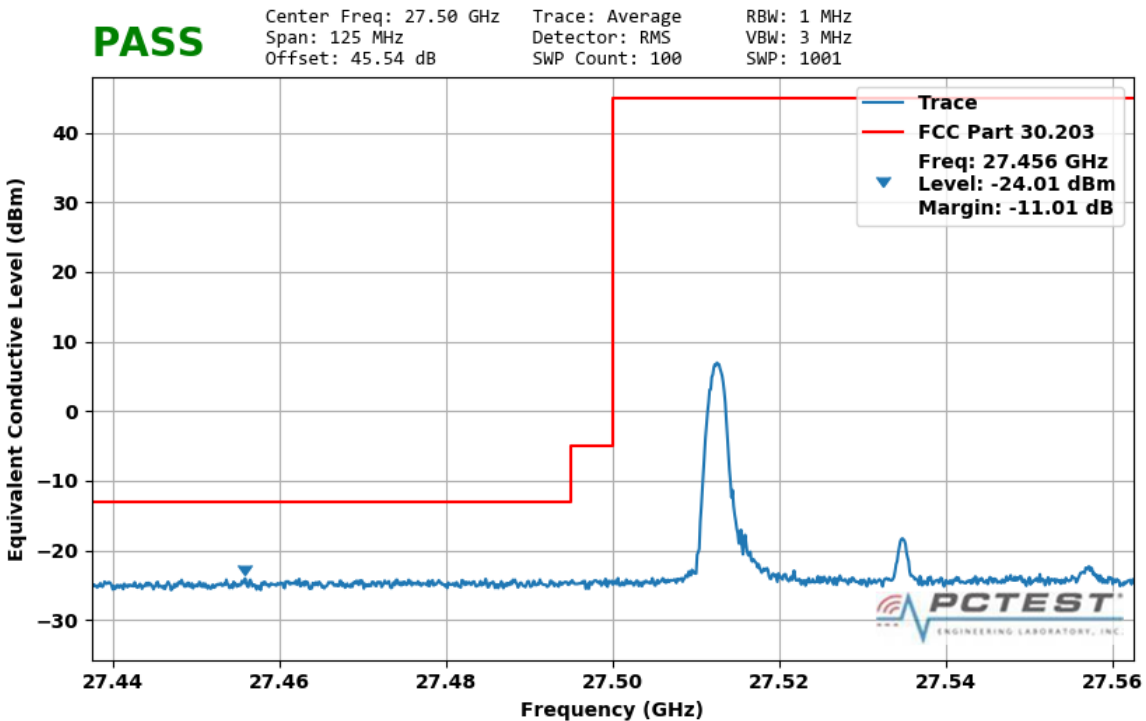


Plot 7-232. Ant1 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 220 of 286

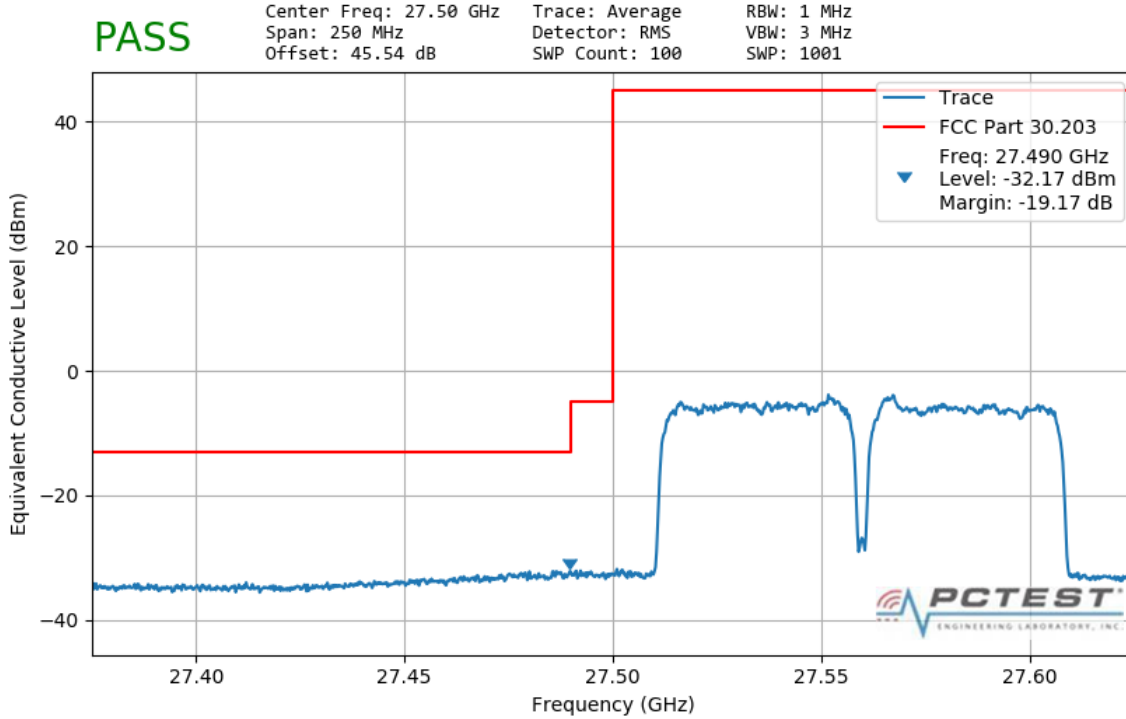


Plot 7-233. Ant2 Lower Band Edge (50MHz-1CC – QPSK Full RB)

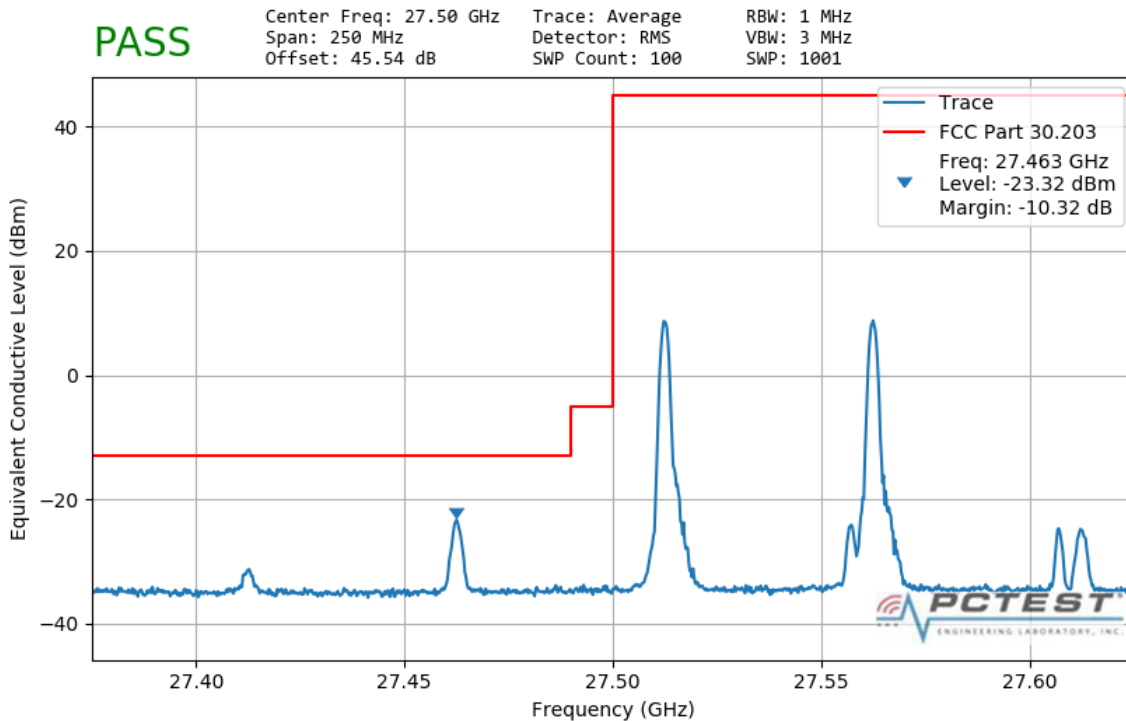


Plot 7-234. Ant2 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 221 of 286

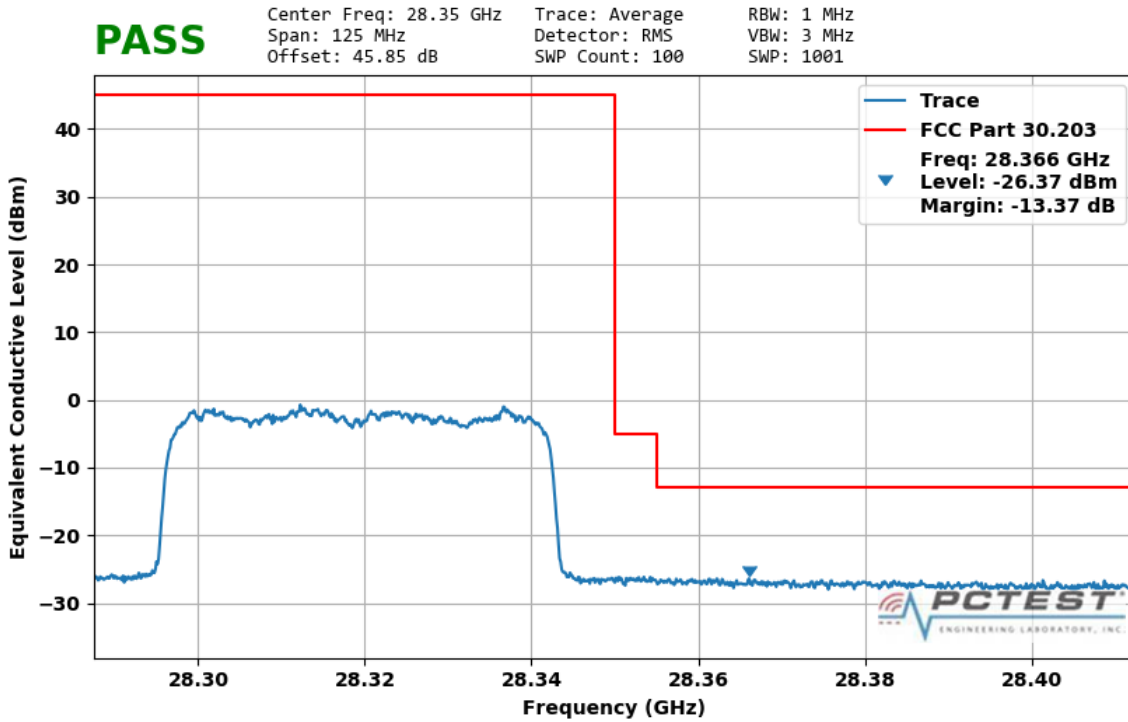


Plot 7-235. Ant2 Lower Band Edge (50MHz-2CC – QPSK Full RB)

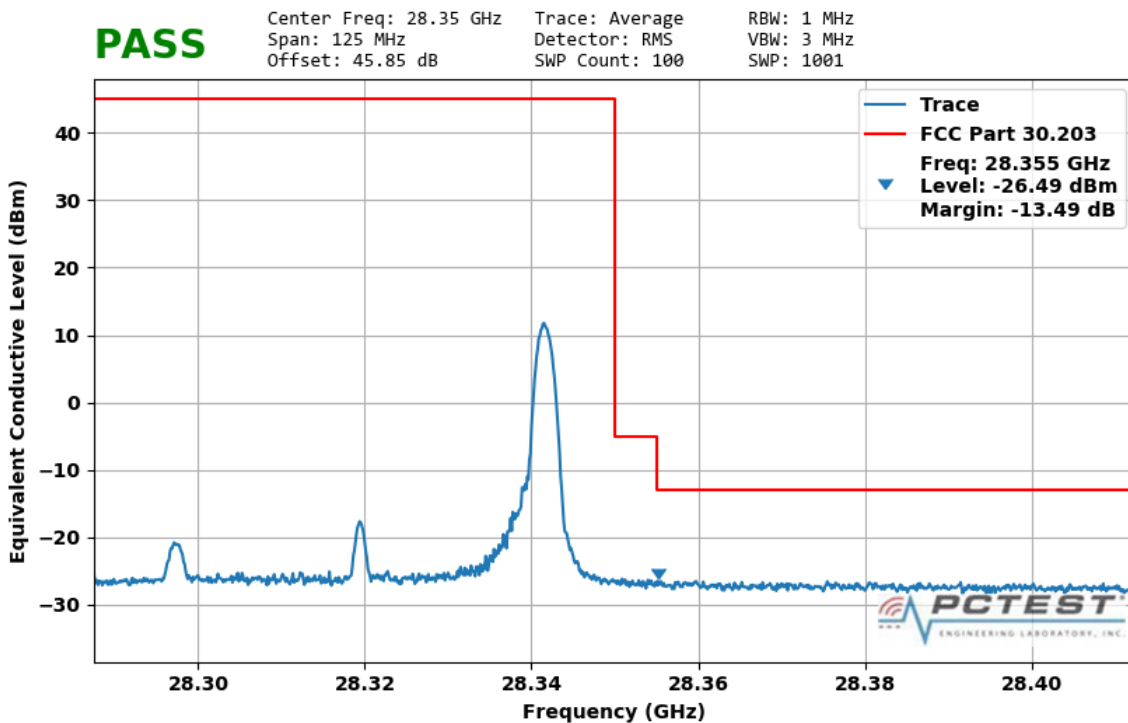


Plot 7-236. Ant2 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 222 of 286

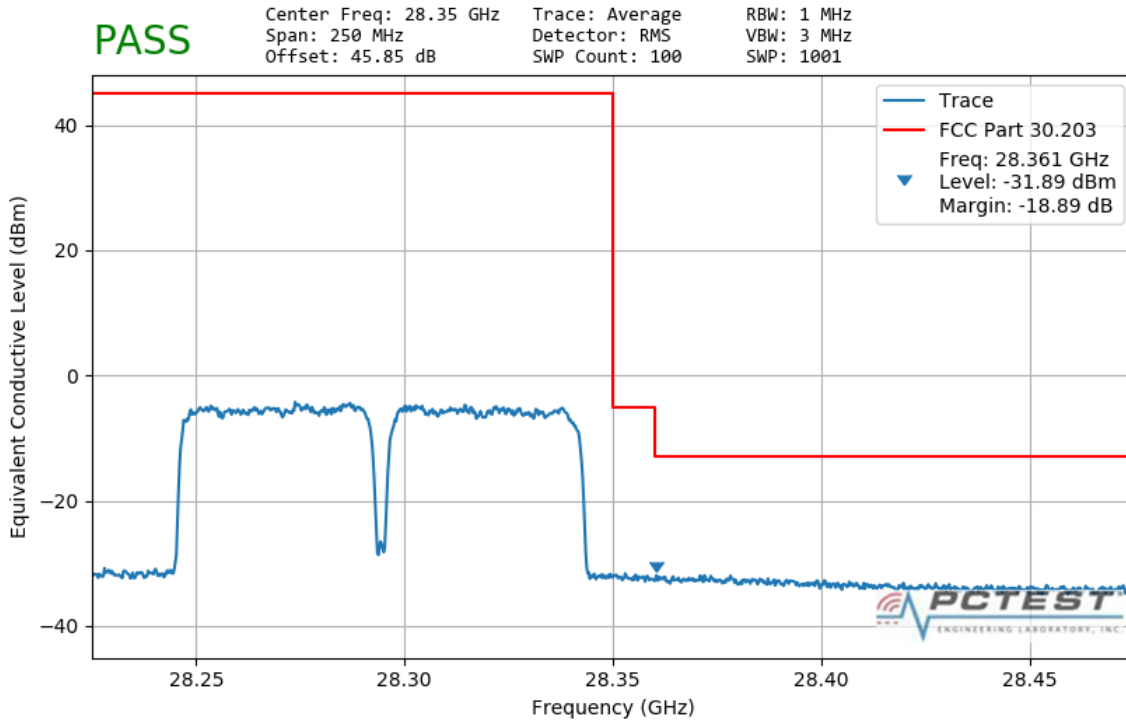


Plot 7-237. Ant2 Upper Band Edge (50MHz-1CC – QPSK Full RB)

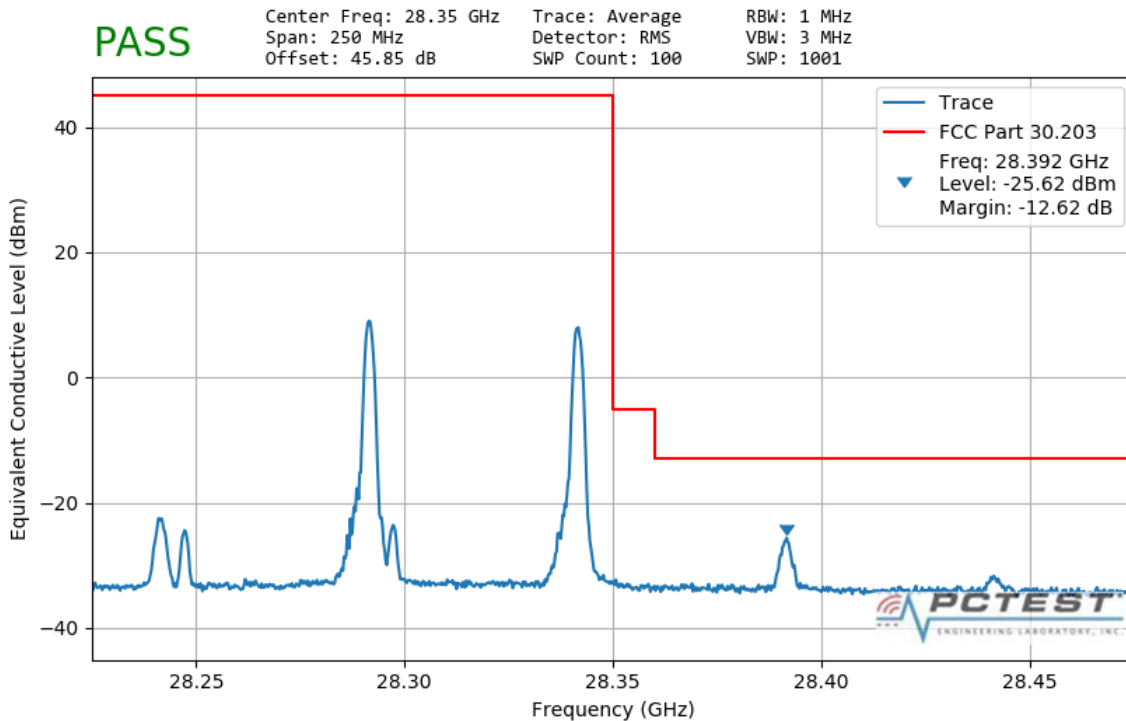


Plot 7-238. Ant2 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 223 of 286

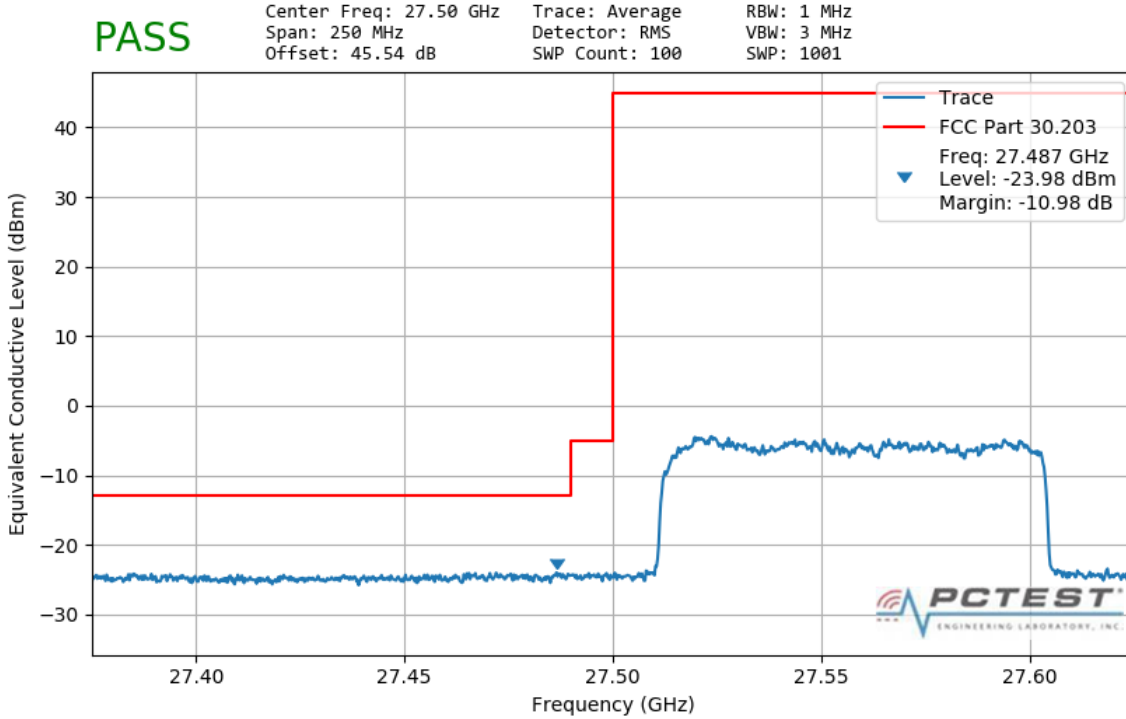


Plot 7-239. Ant2 Upper Band Edge (50MHz-2CC – QPSK Full RB)

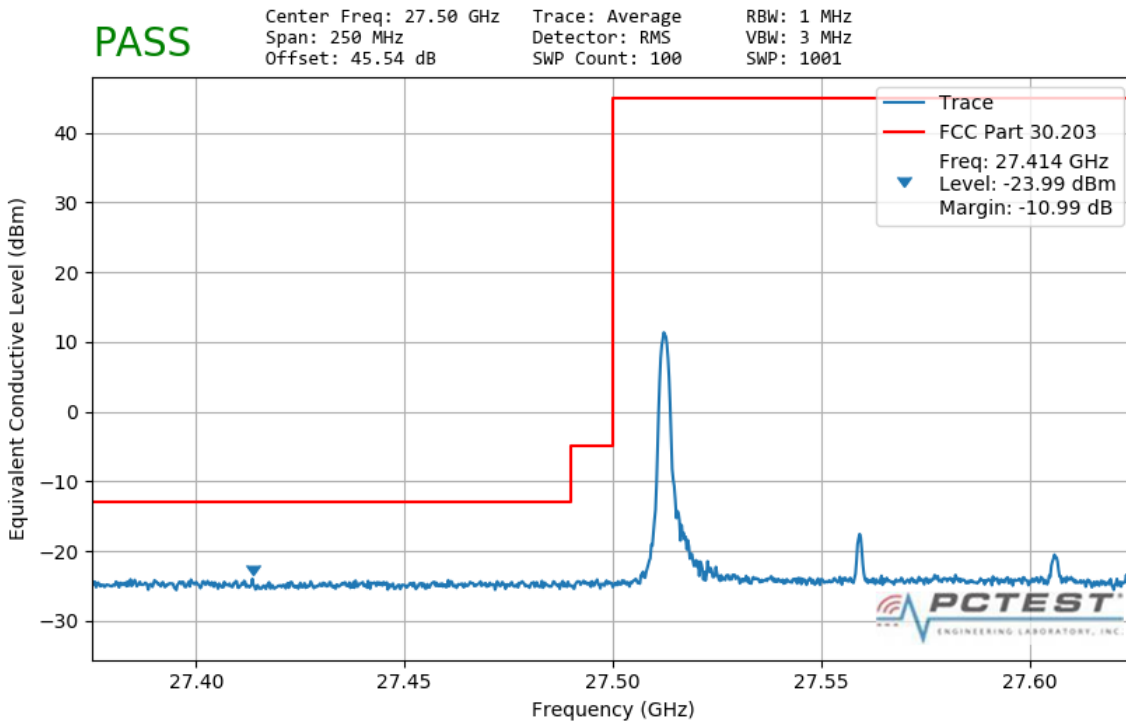


Plot 7-240. Ant2 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 224 of 286

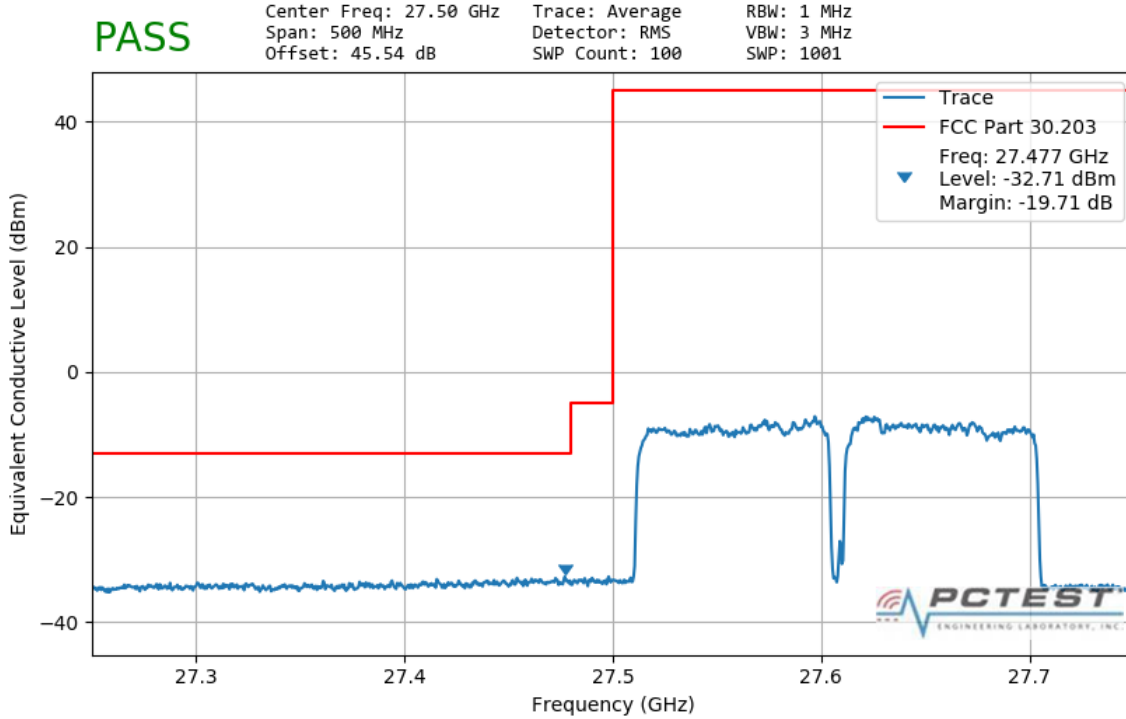


Plot 7-241. Ant2 Lower Band Edge (100MHz-1CC – QPSK Full RB)

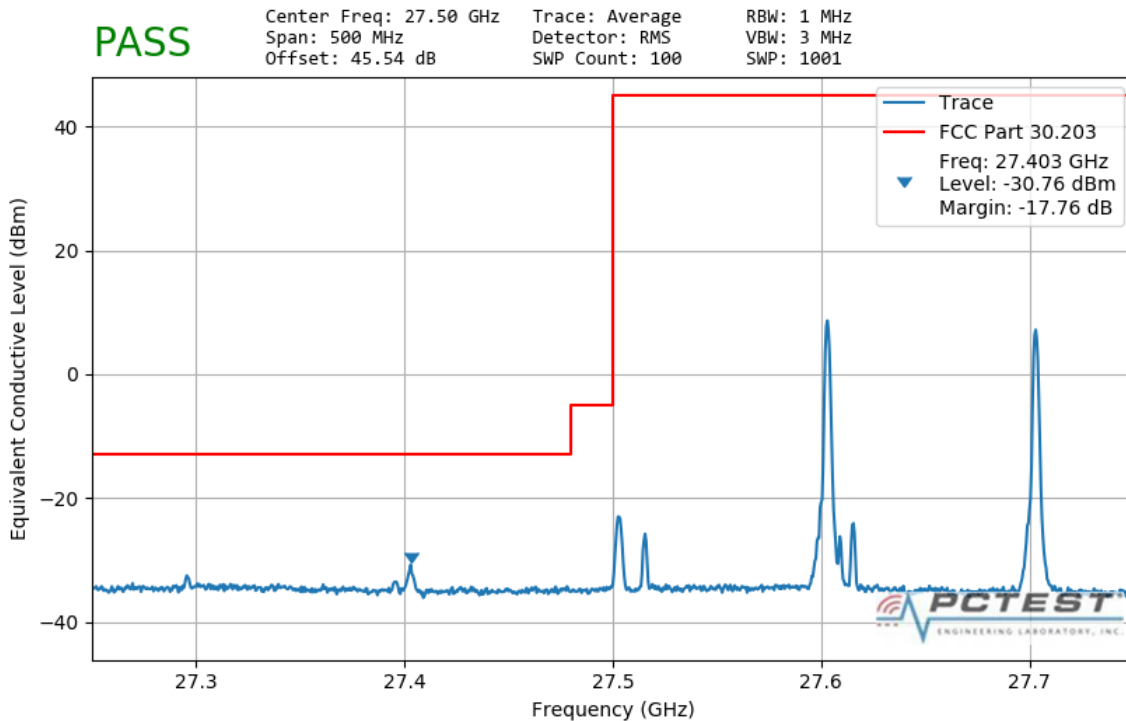


Plot 7-242. Ant2 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 225 of 286

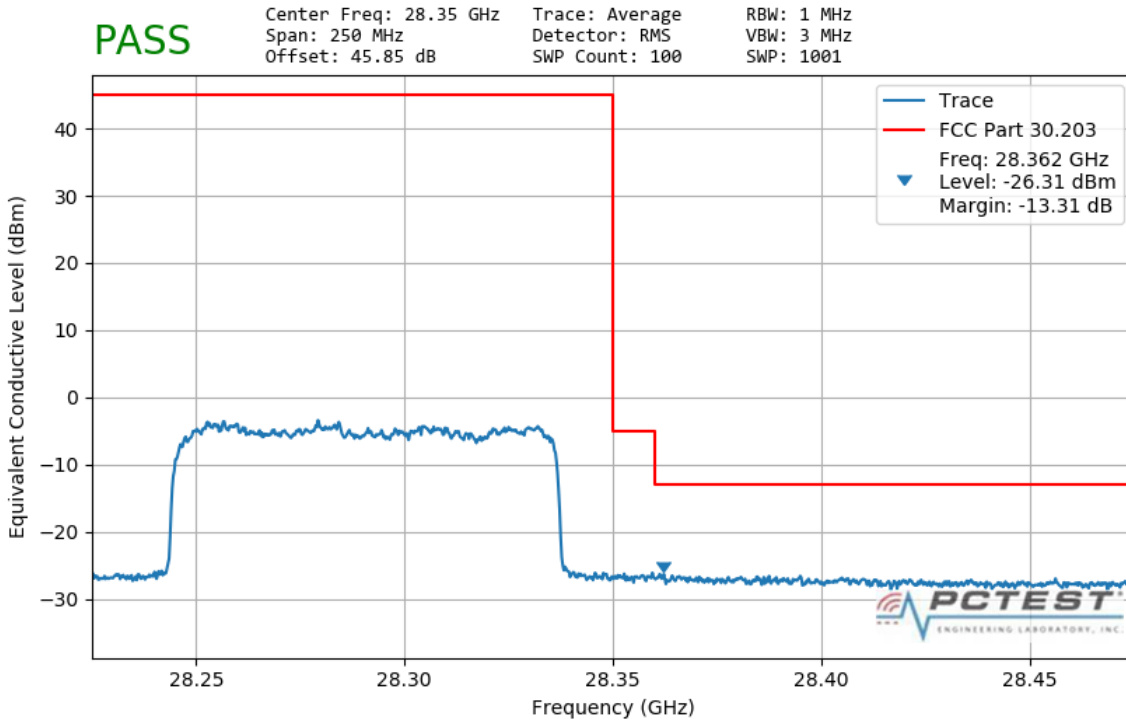


Plot 7-243. Ant2 Lower Band Edge (100MHz-2CC – QPSK Full RB)

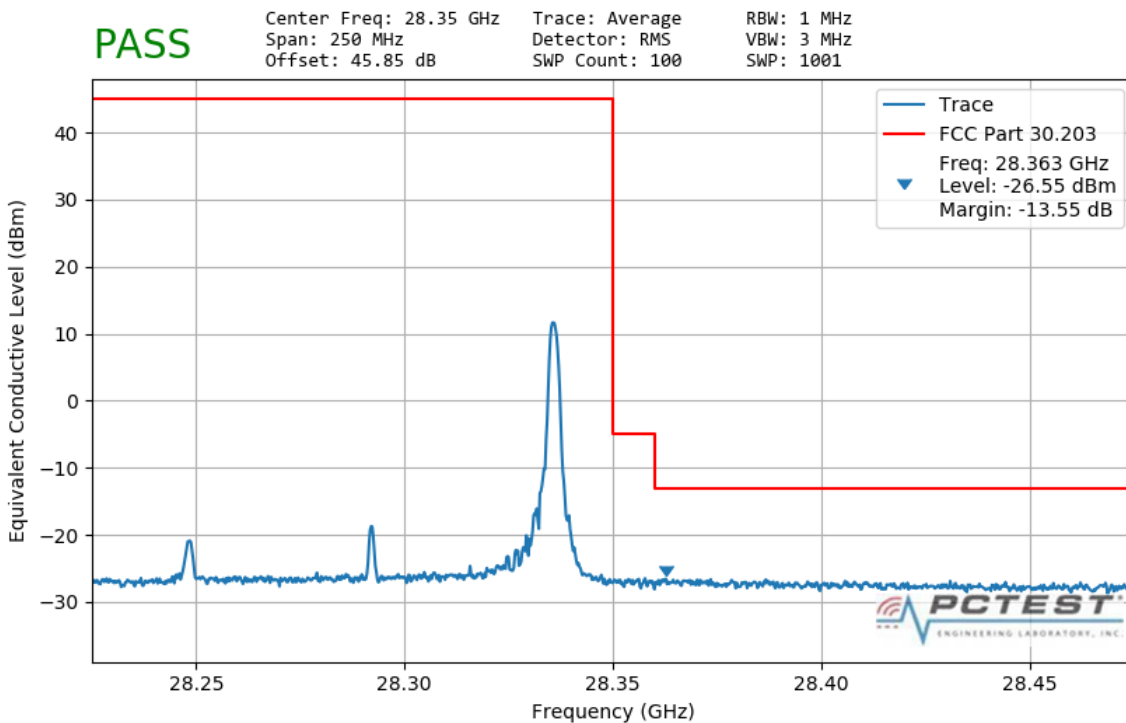


Plot 7-244. Ant2 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 226 of 286

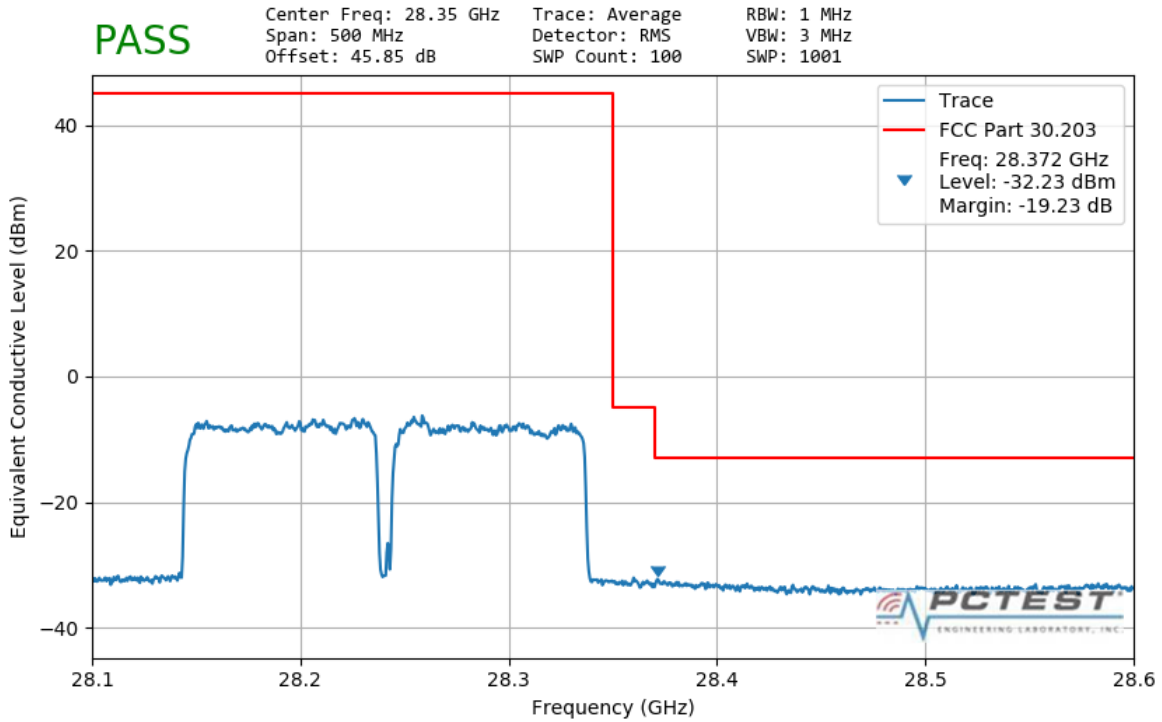


Plot 7-245. Ant2 Upper Band Edge (100MHz-1CC – QPSK Full RB)

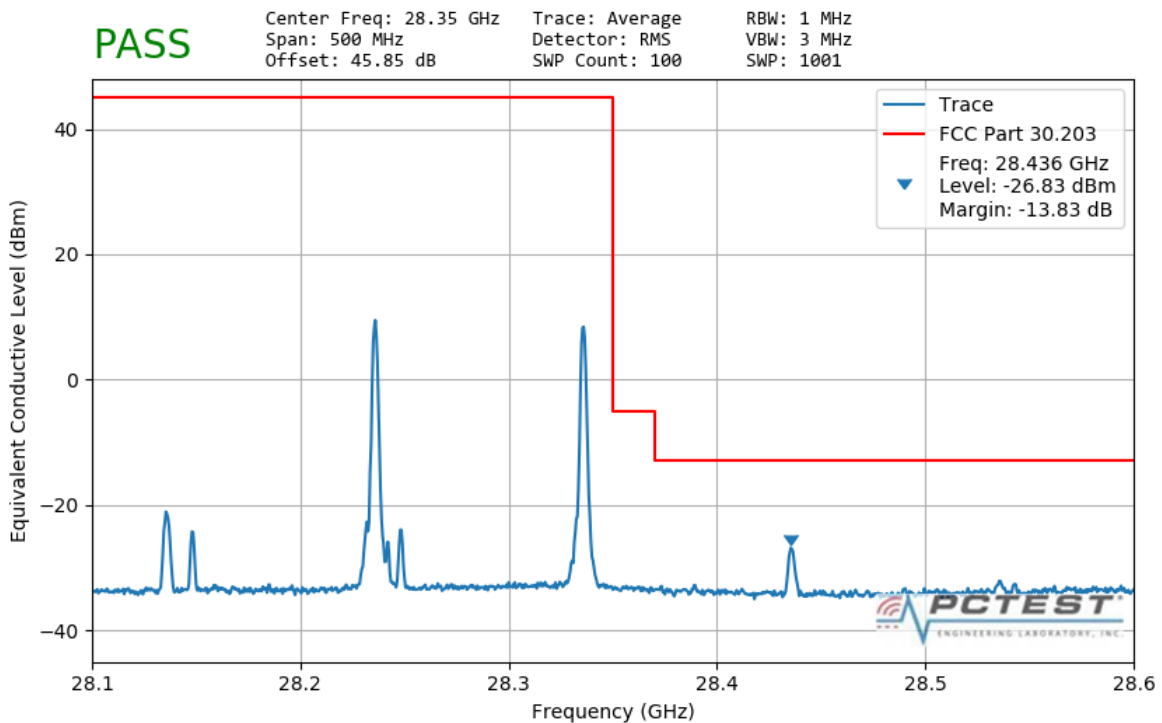


Plot 7-246. Ant2 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 227 of 286

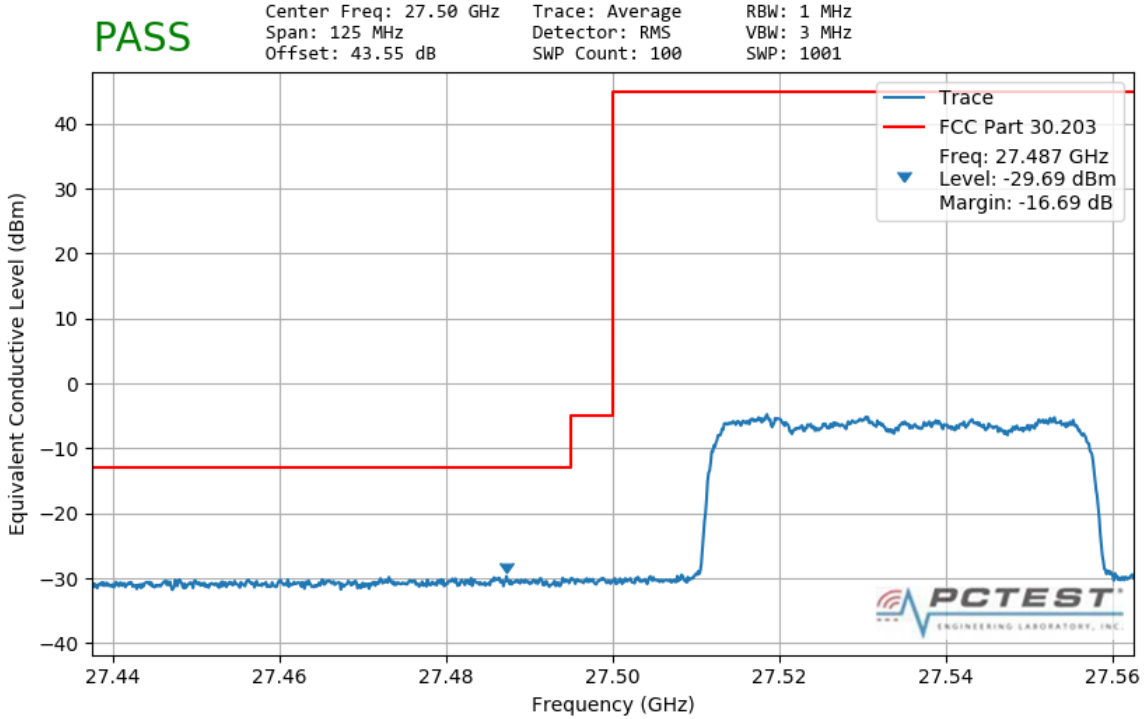


Plot 7-247. Ant2 Upper Band Edge (100MHz-2CC – QPSK Full RB)

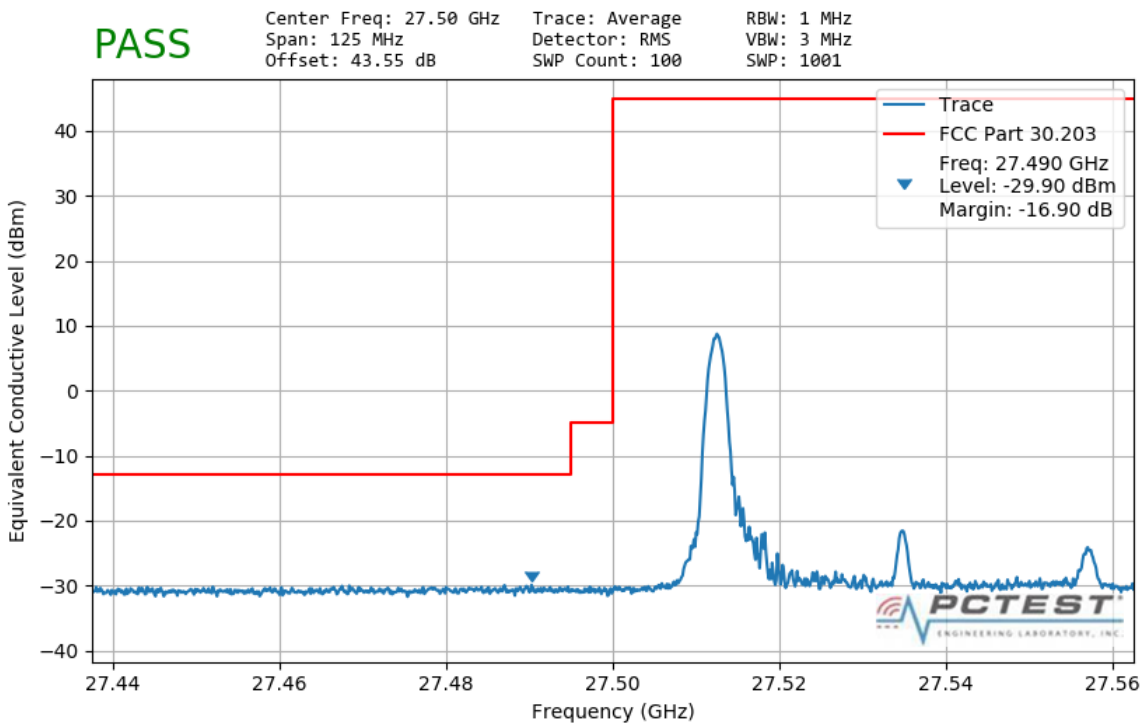


Plot 7-248. Ant2 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 228 of 286

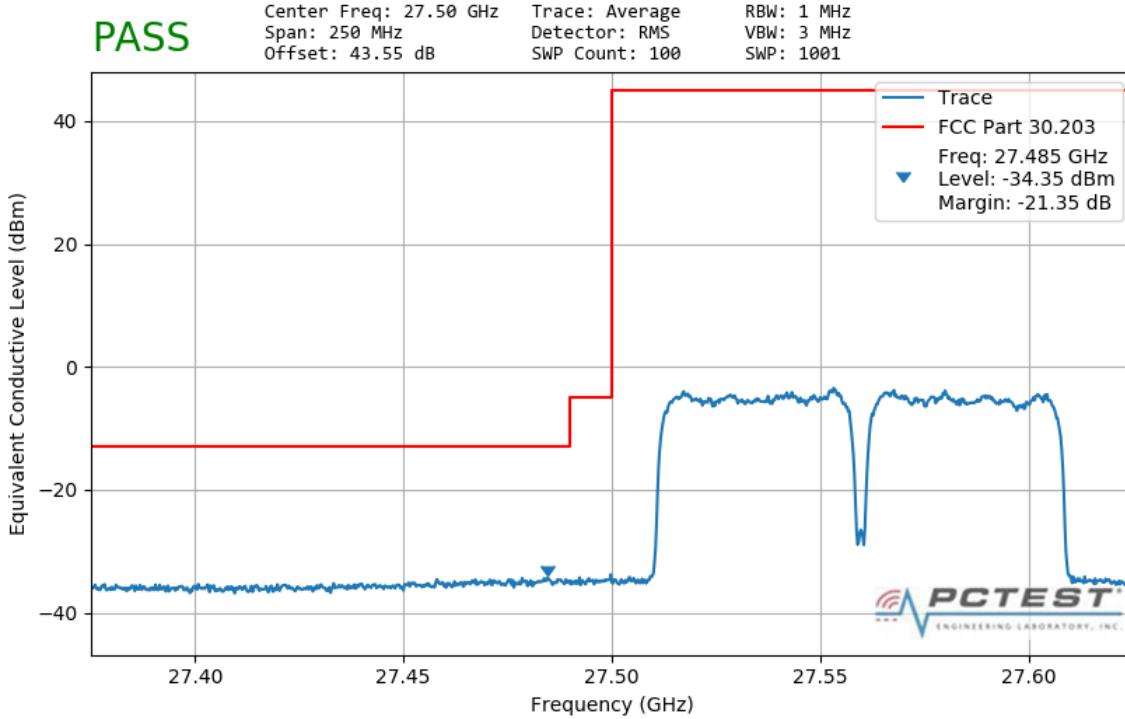


Plot 7-249. Ant3 Lower Band Edge (50MHz-1CC – QPSK Full RB)

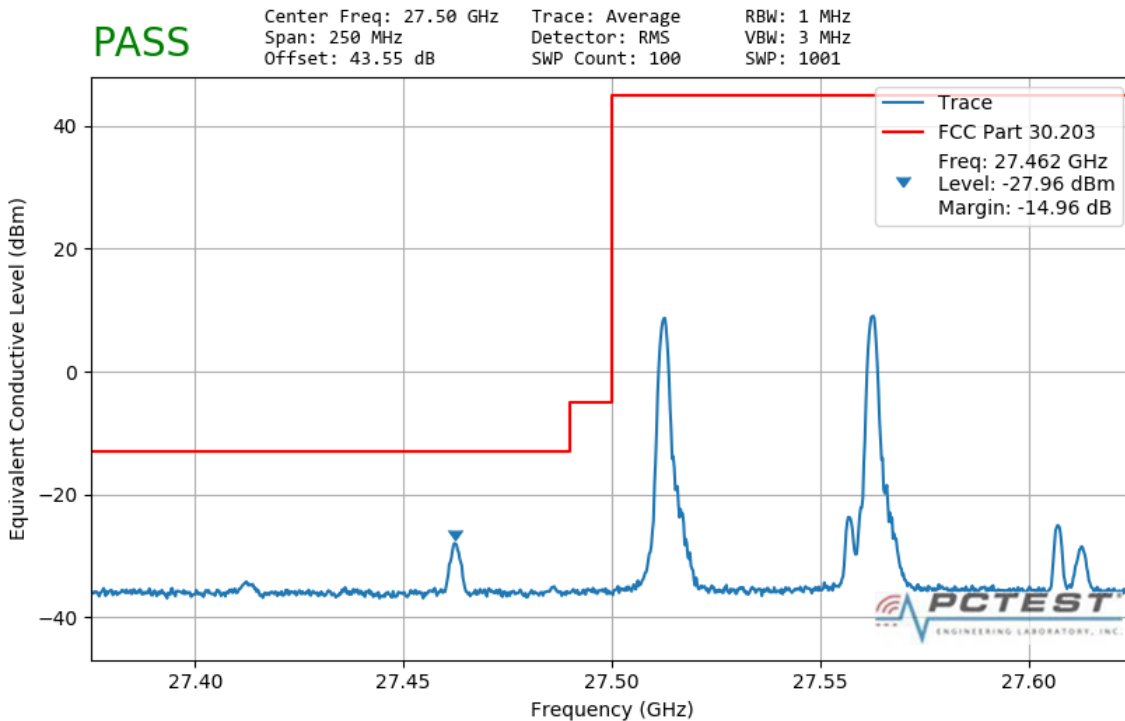


Plot 7-250. Ant3 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 229 of 286

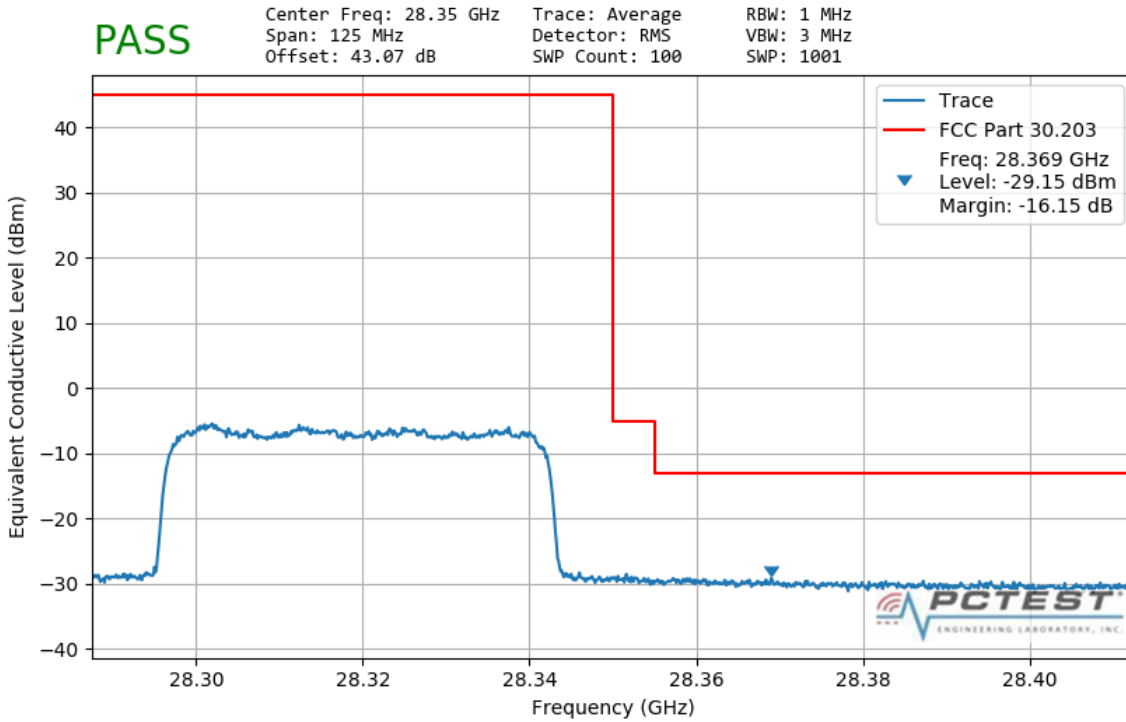


Plot 7-251. Ant3 Lower Band Edge (50MHz-2CC – QPSK Full RB)

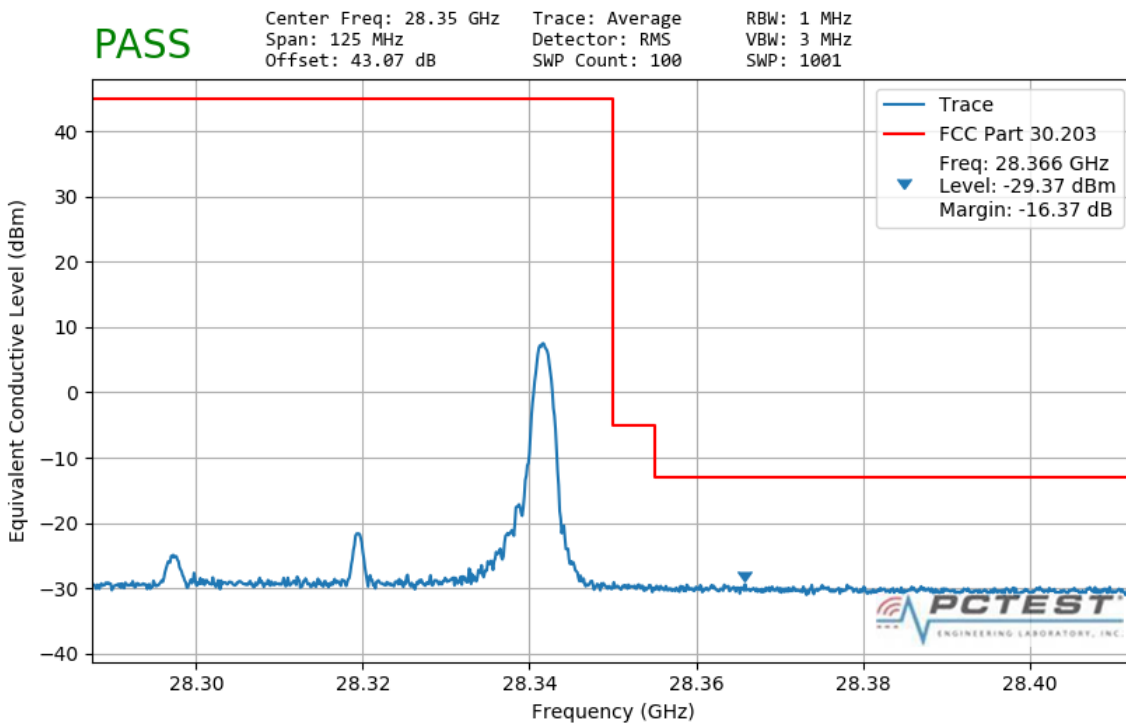


Plot 7-252. Ant3 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 230 of 286

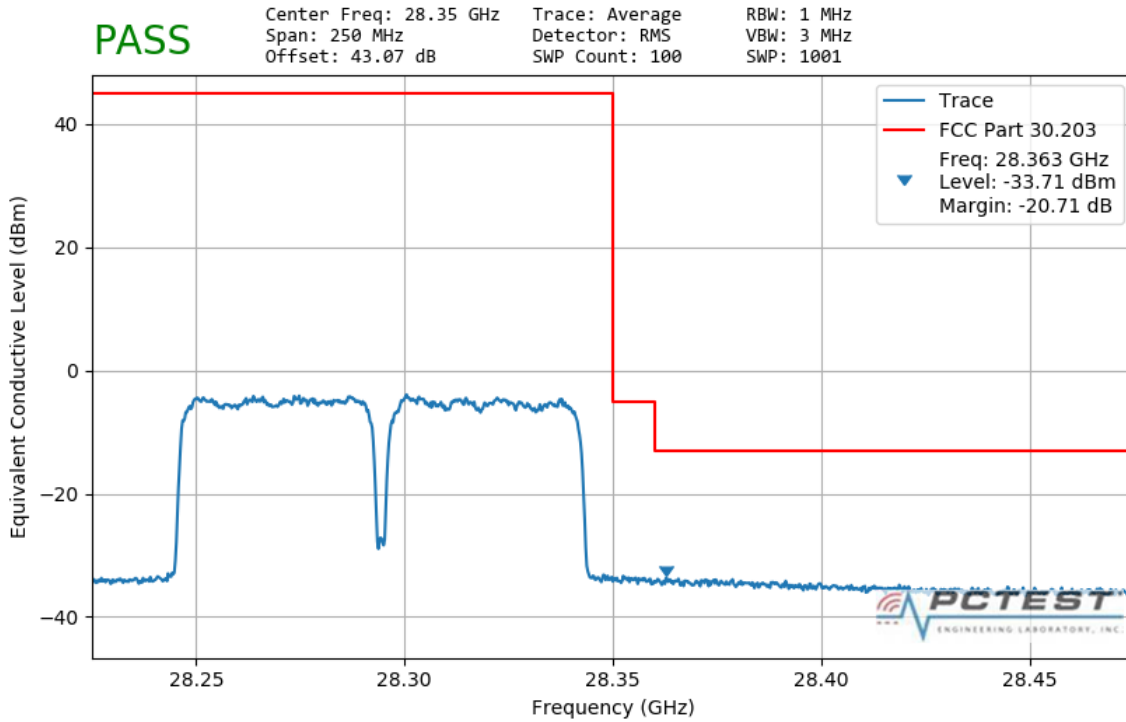


Plot 7-253. Ant3 Upper Band Edge (50MHz-1CC – QPSK Full RB)

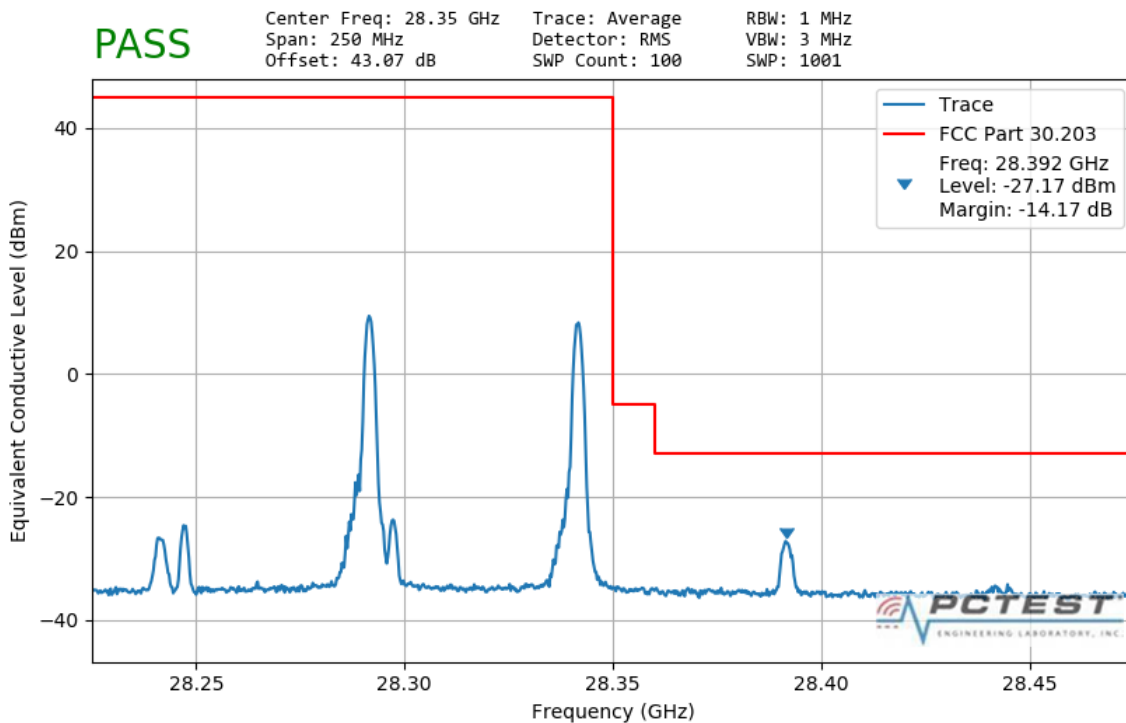


Plot 7-254. Ant3 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 231 of 286

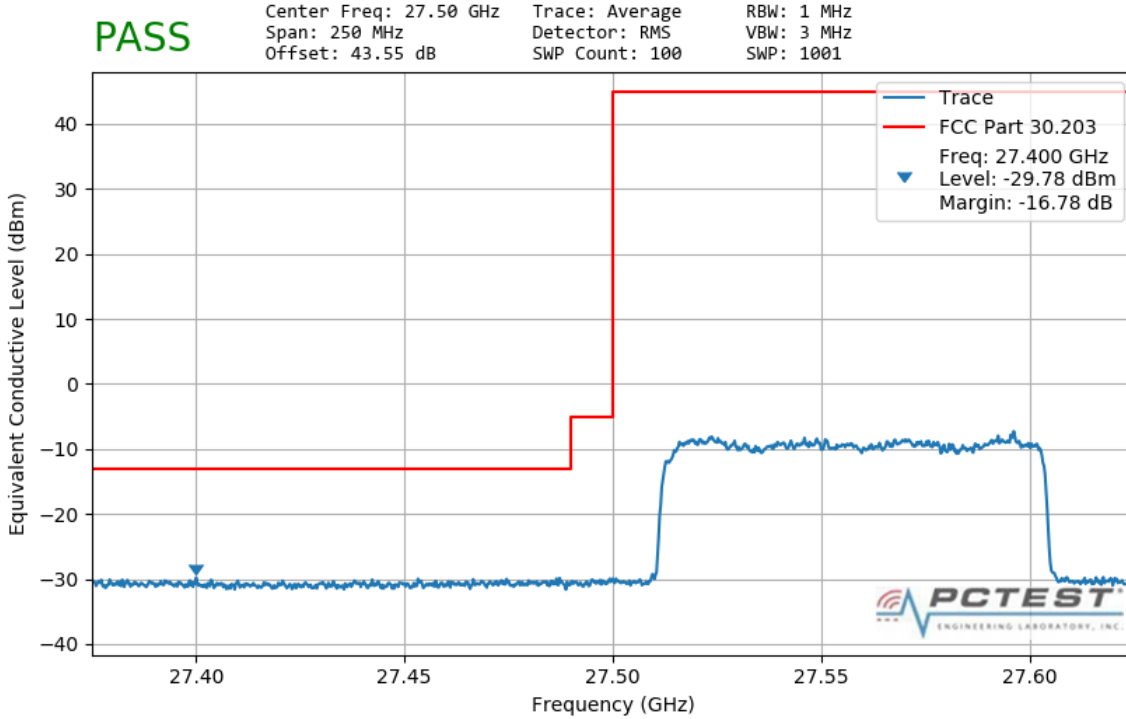


Plot 7-255. Ant3 Upper Band Edge (50MHz-2CC – QPSK Full RB)

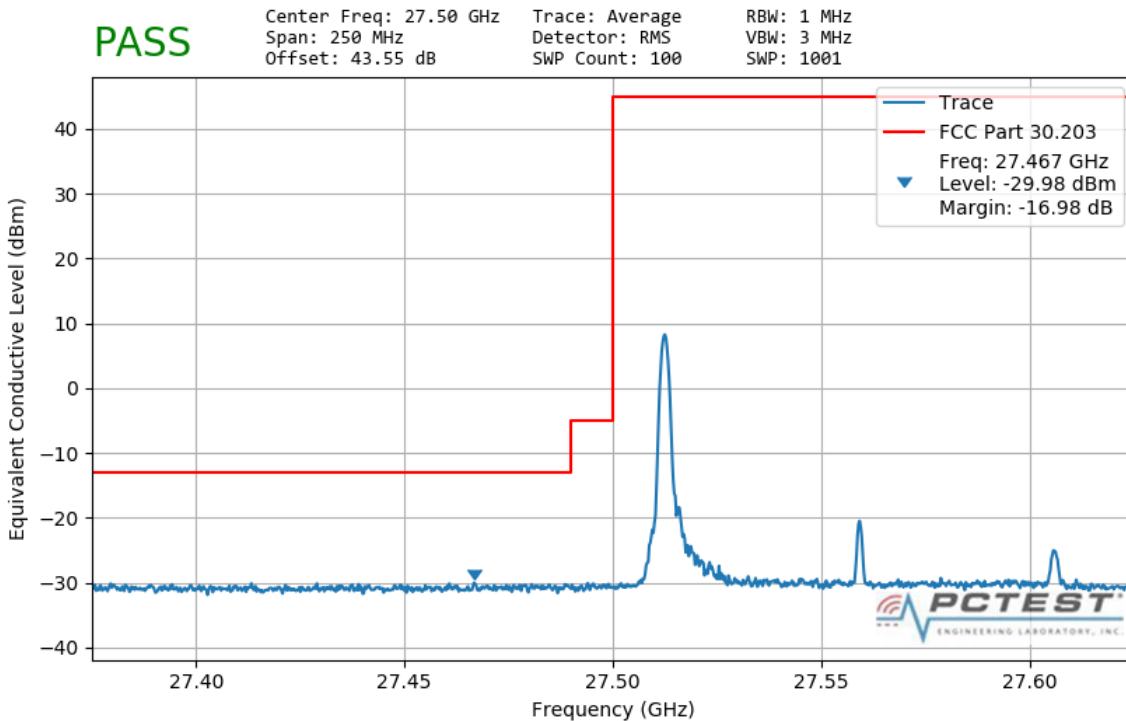


Plot 7-256. Ant3 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 232 of 286

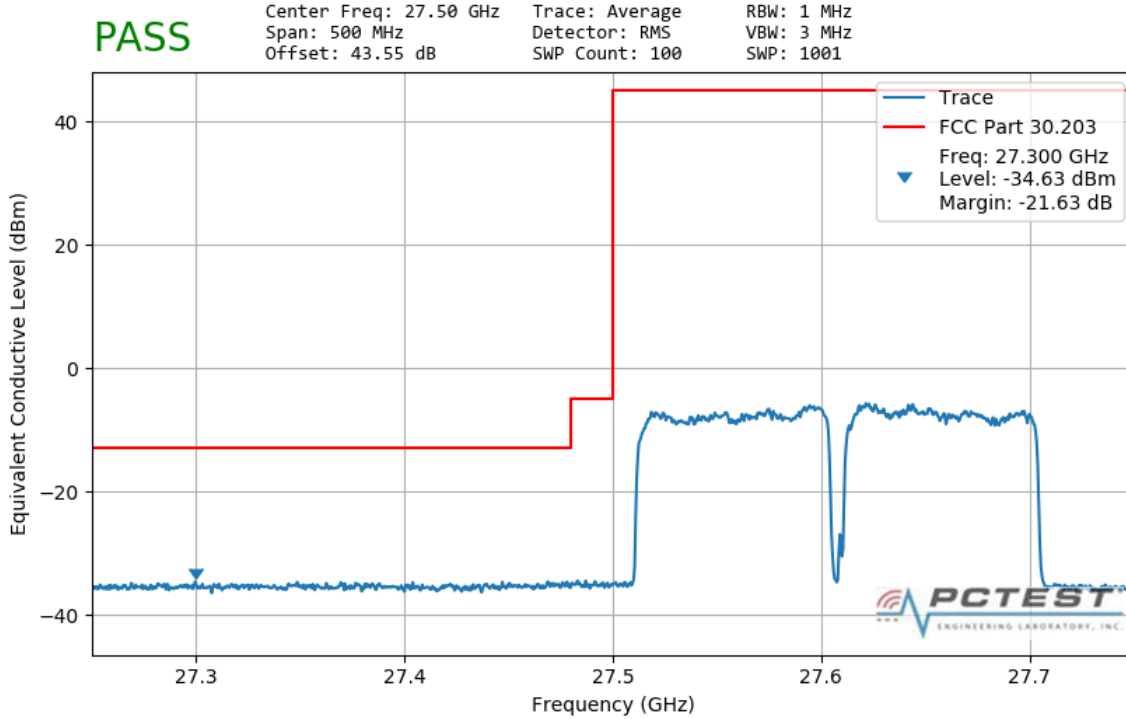


Plot 7-257. Ant3 Lower Band Edge (100MHz-1CC – QPSK Full RB)

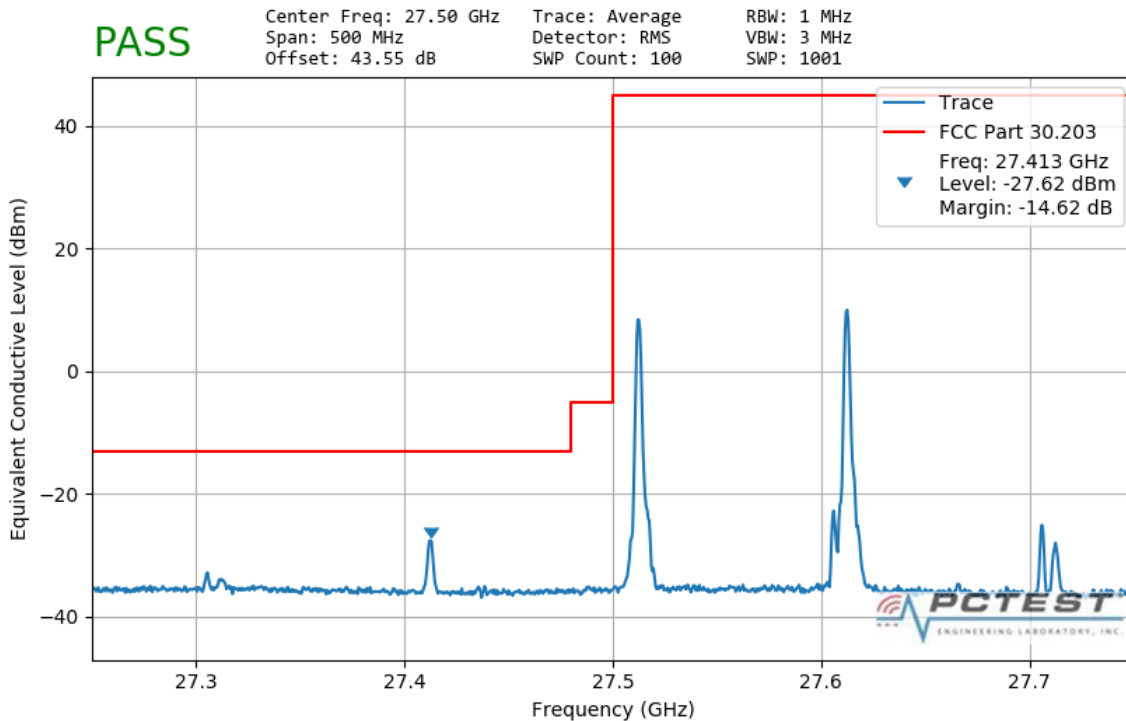


Plot 7-258. Ant3 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 233 of 286

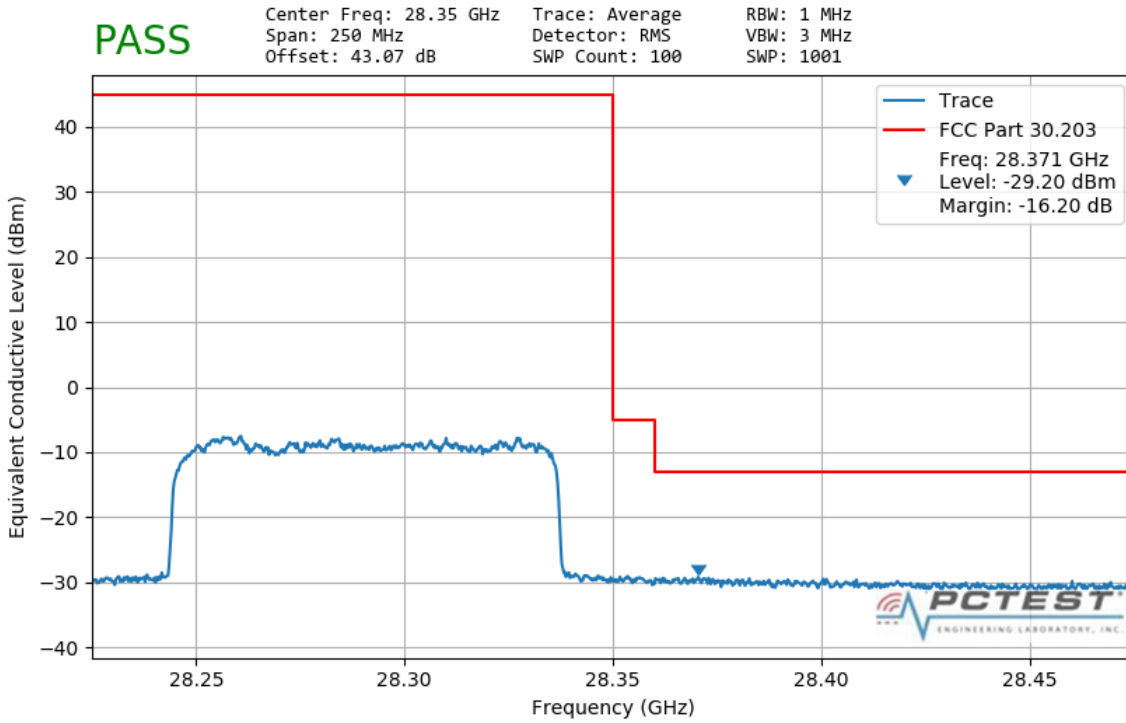


Plot 7-259. Ant3 Lower Band Edge (100MHz-2CC – QPSK Full RB)

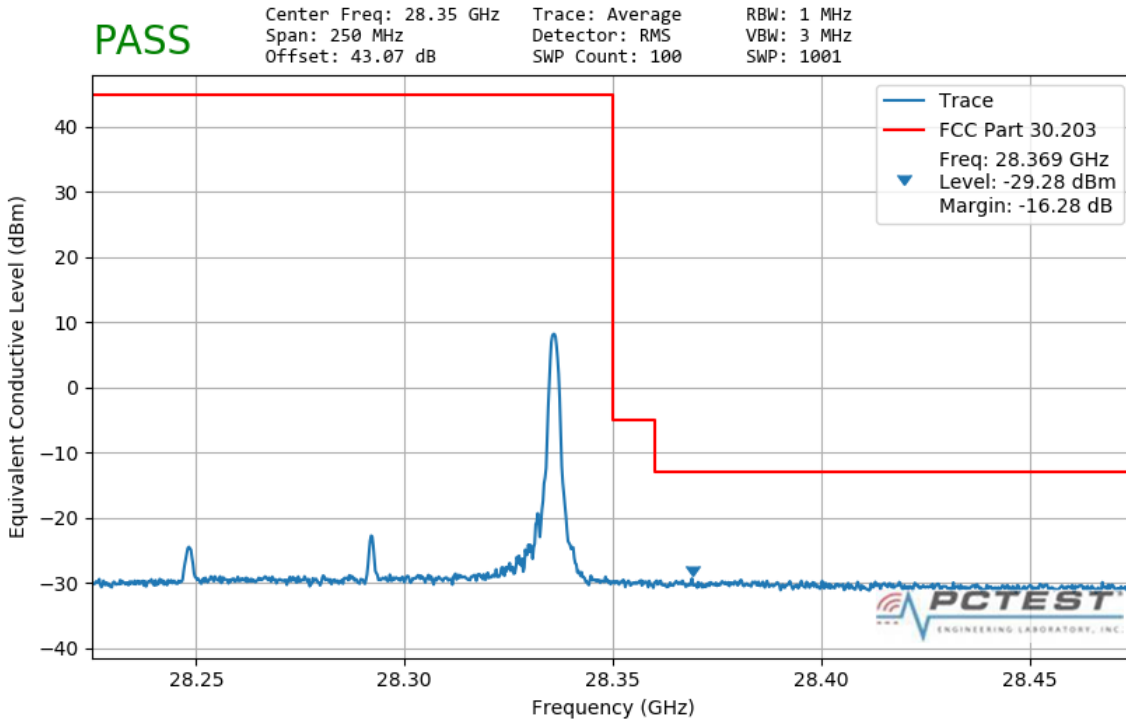


Plot 7-260. Ant3 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 234 of 286

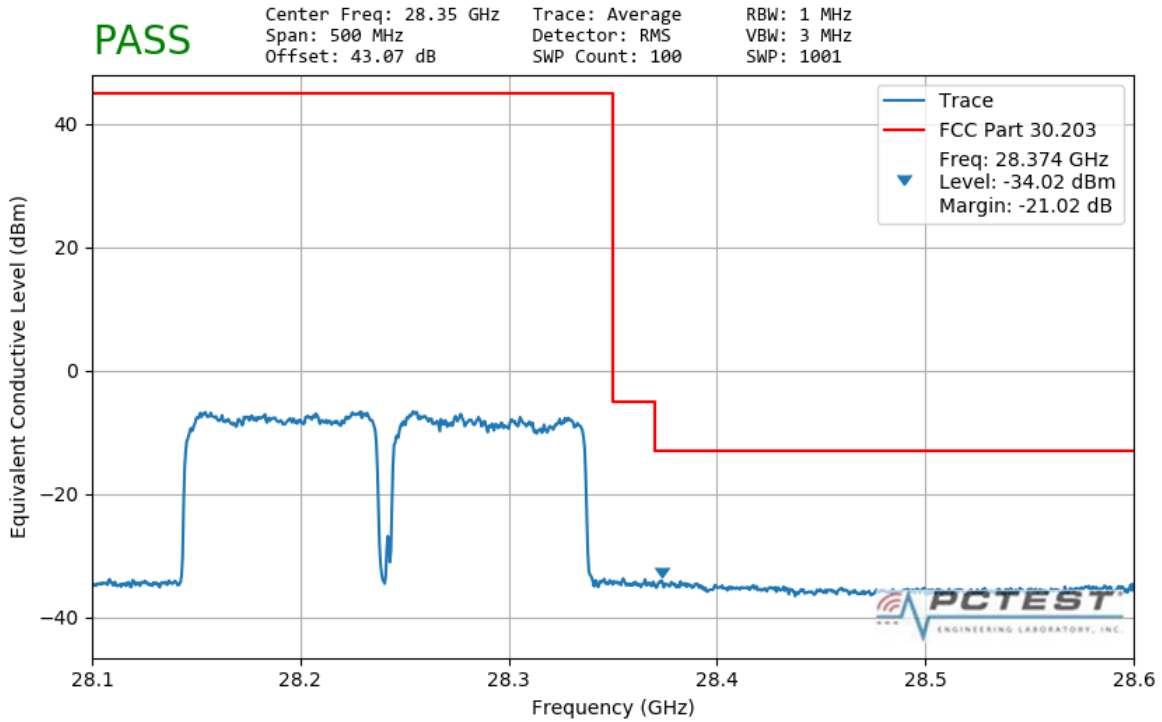


Plot 7-261. Ant3 Upper Band Edge (100MHz-1CC – QPSK Full RB)

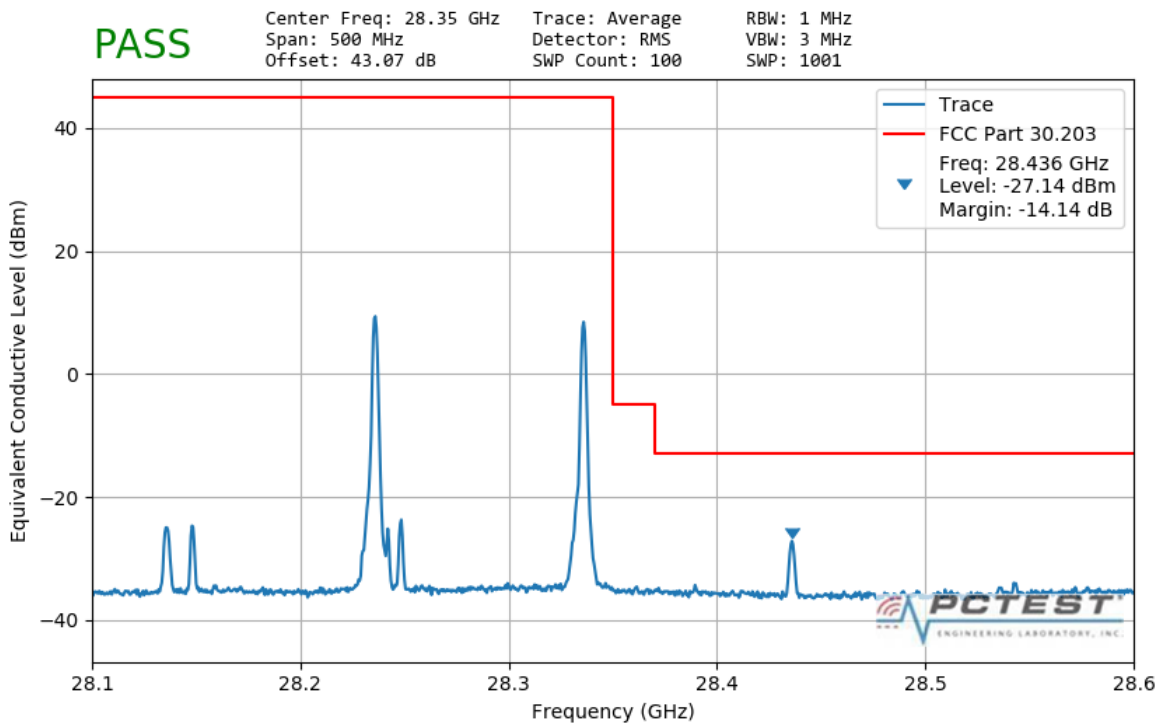


Plot 7-262. Ant3 Upper Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 235 of 286

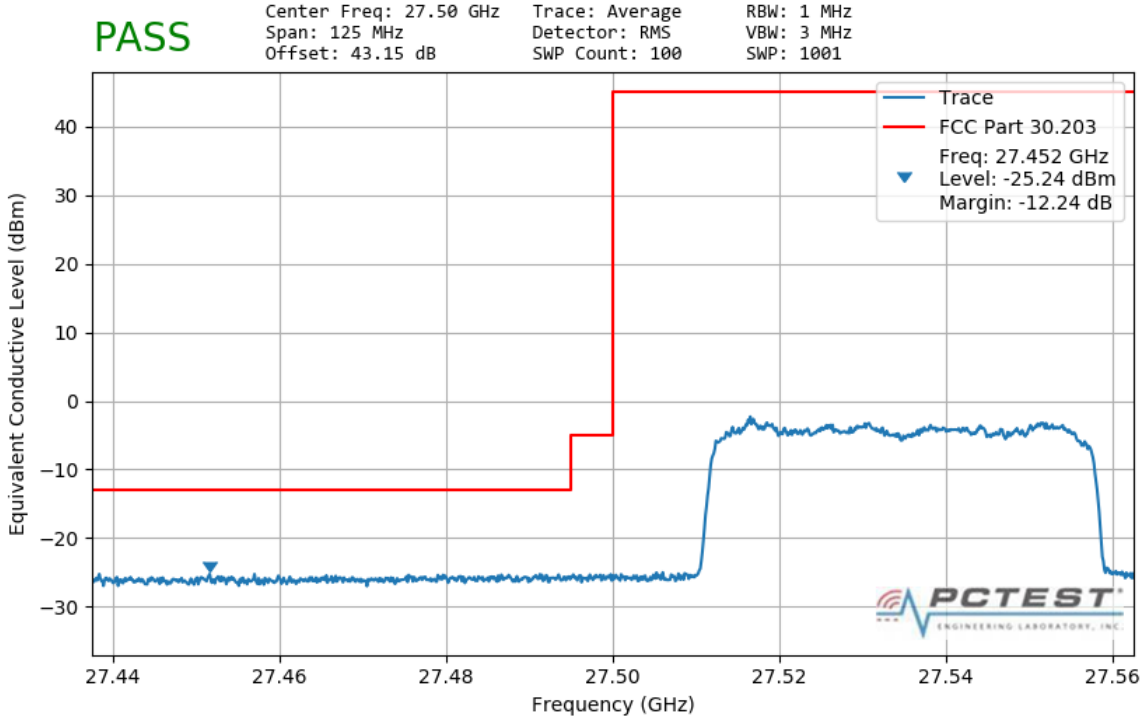


Plot 7-263. Ant3 Upper Band Edge (100MHz-2CC – QPSK Full RB)

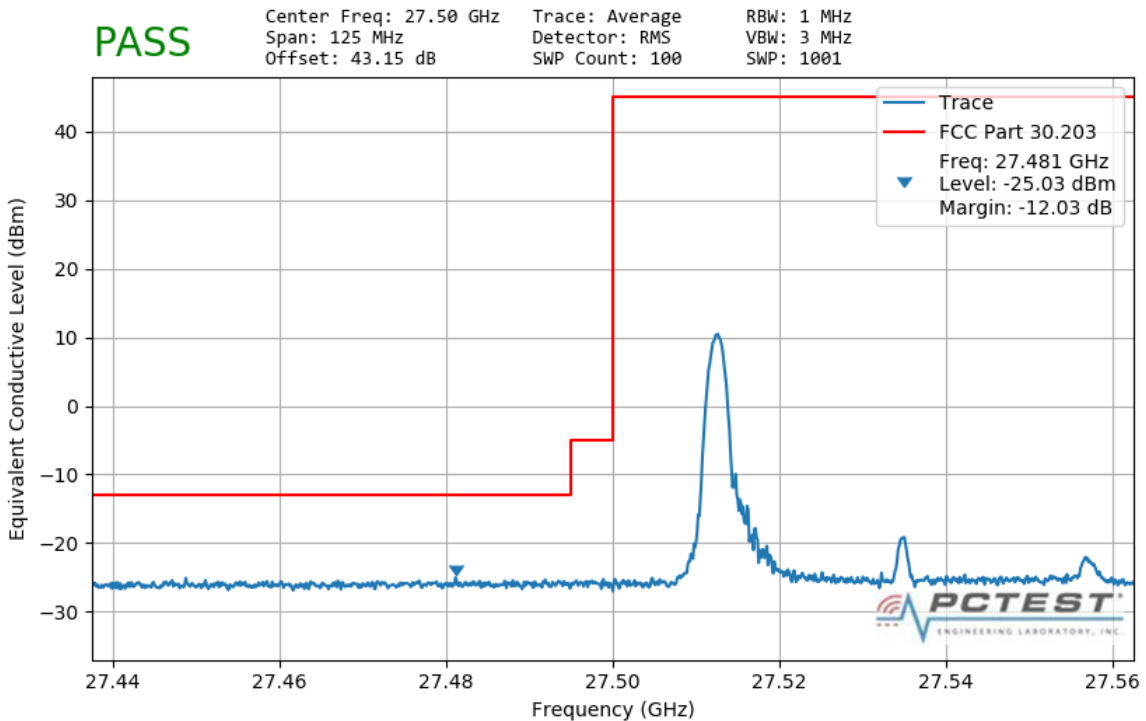


Plot 7-264. Ant3 Upper Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 236 of 286

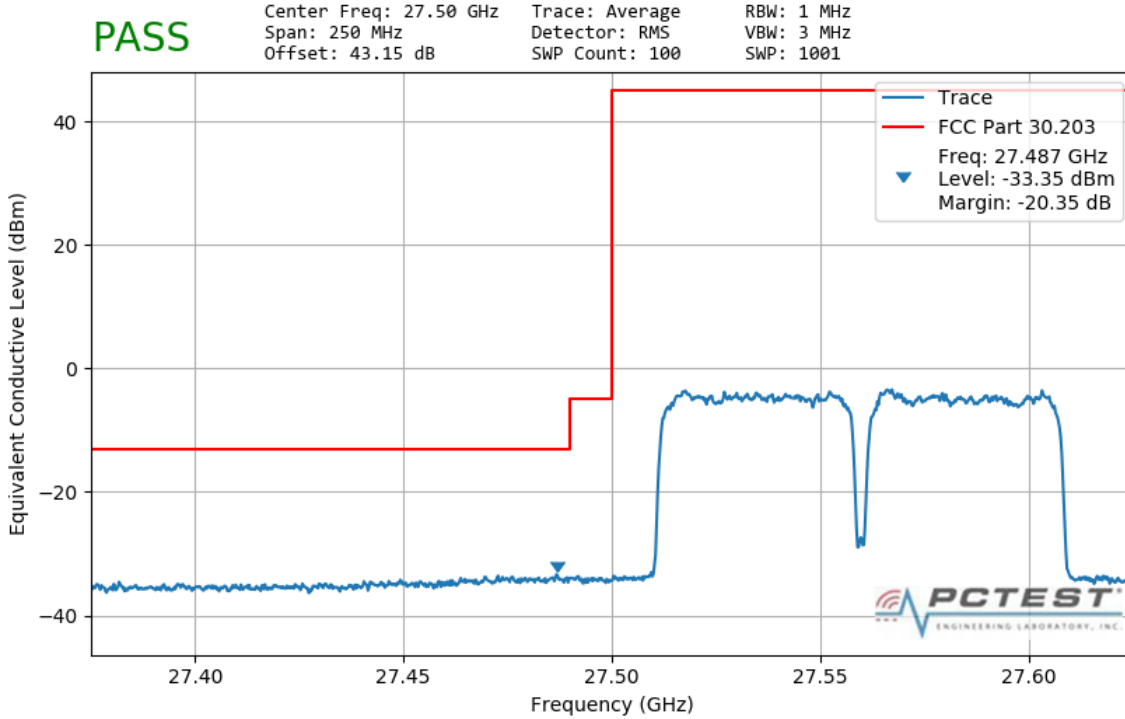


Plot 7-265. Ant4 Lower Band Edge (50MHz-1CC – QPSK Full RB)

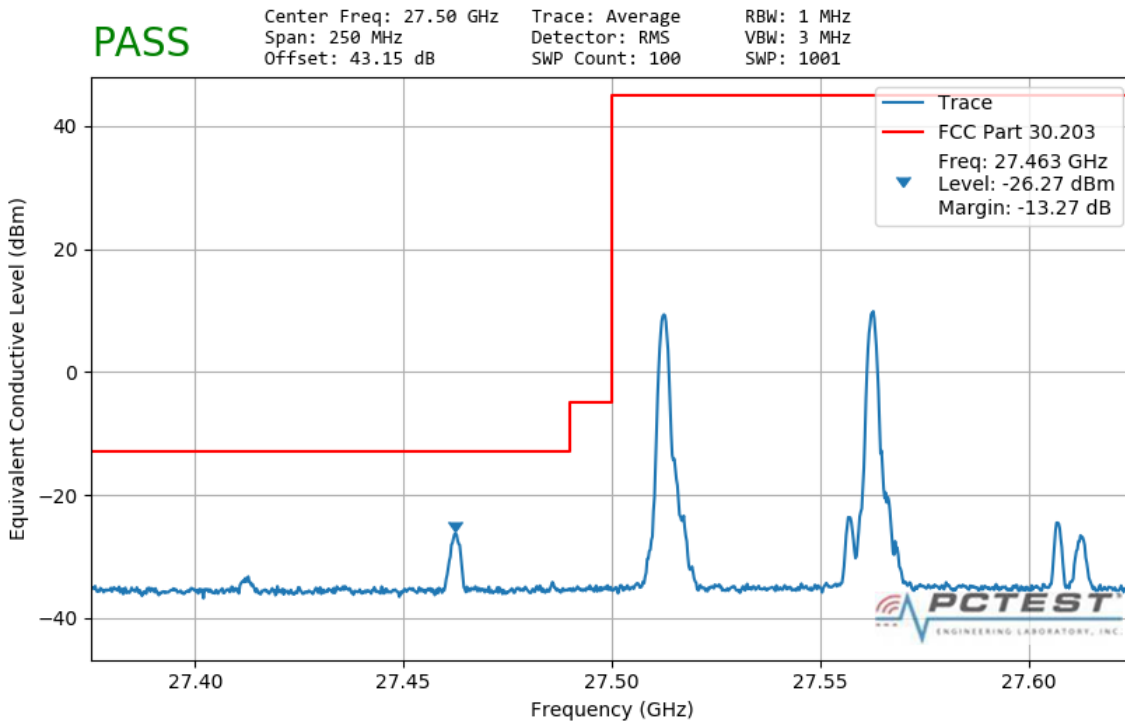


Plot 7-266. Ant4 Lower Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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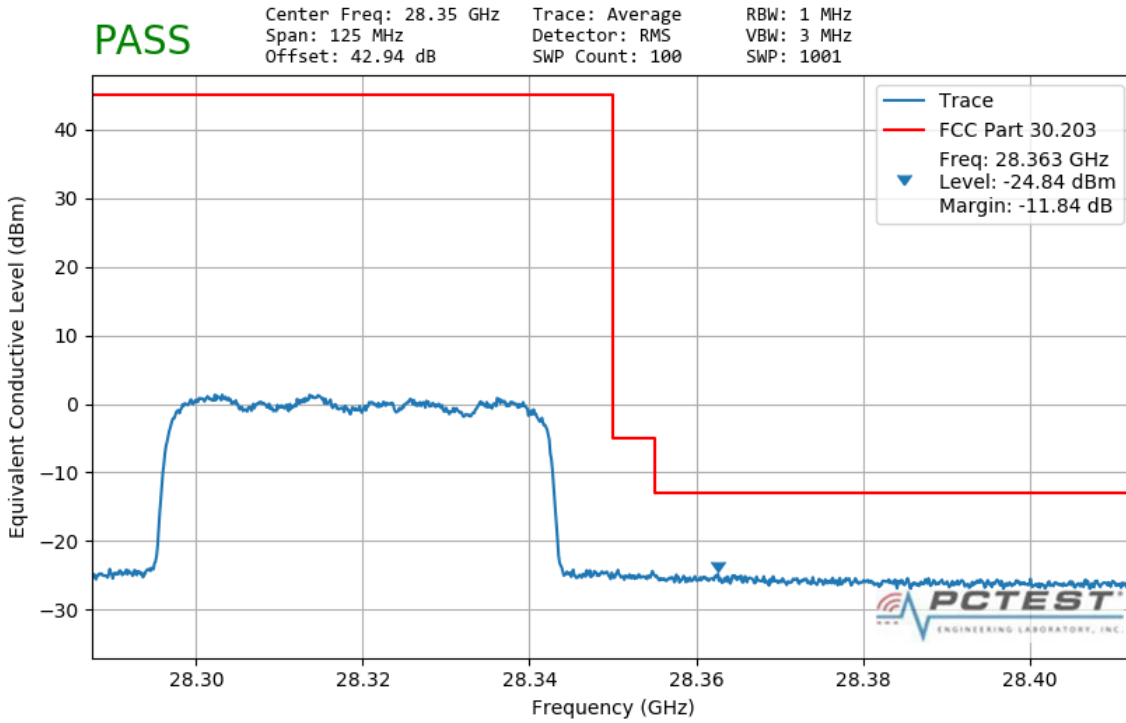


Plot 7-267. Ant4 Lower Band Edge (50MHz-2CC – QPSK Full RB)

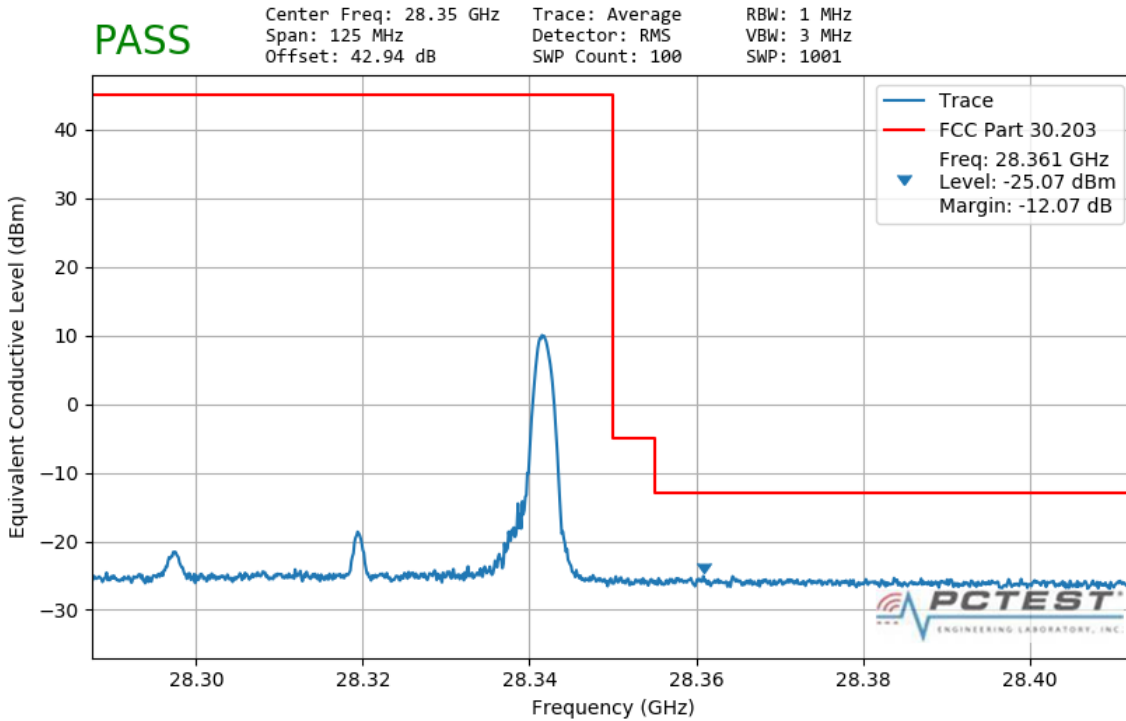


Plot 7-268. Ant4 Lower Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 238 of 286

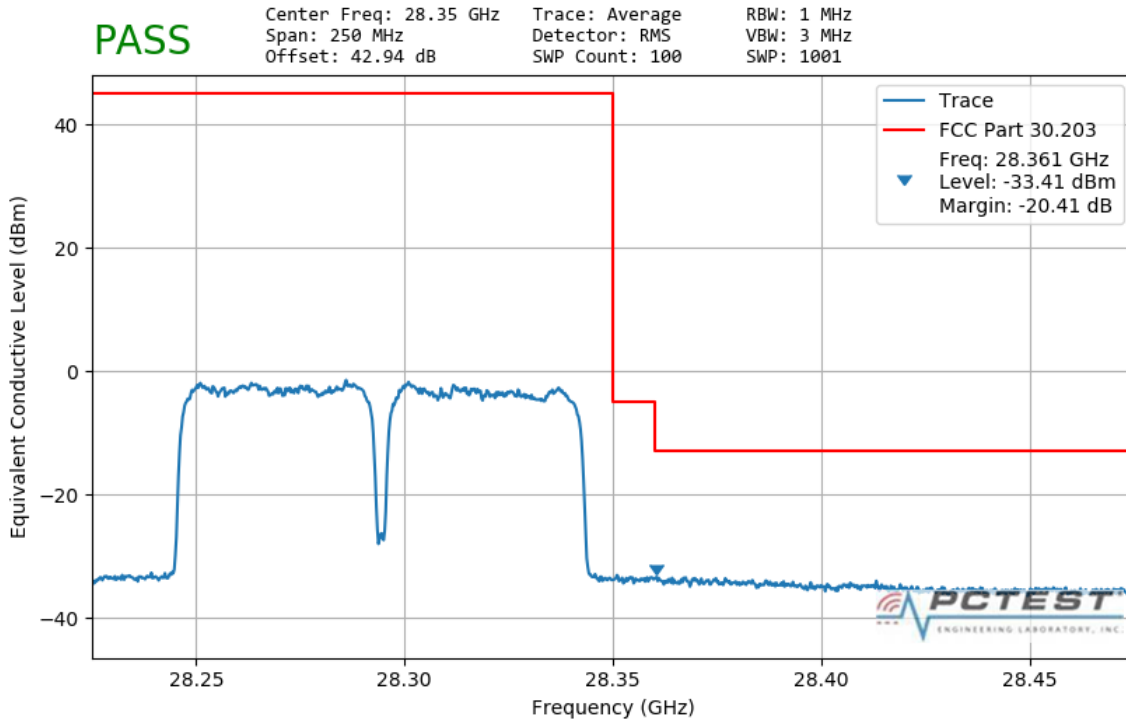


Plot 7-269. Ant4 Upper Band Edge (50MHz-1CC – QPSK Full RB)

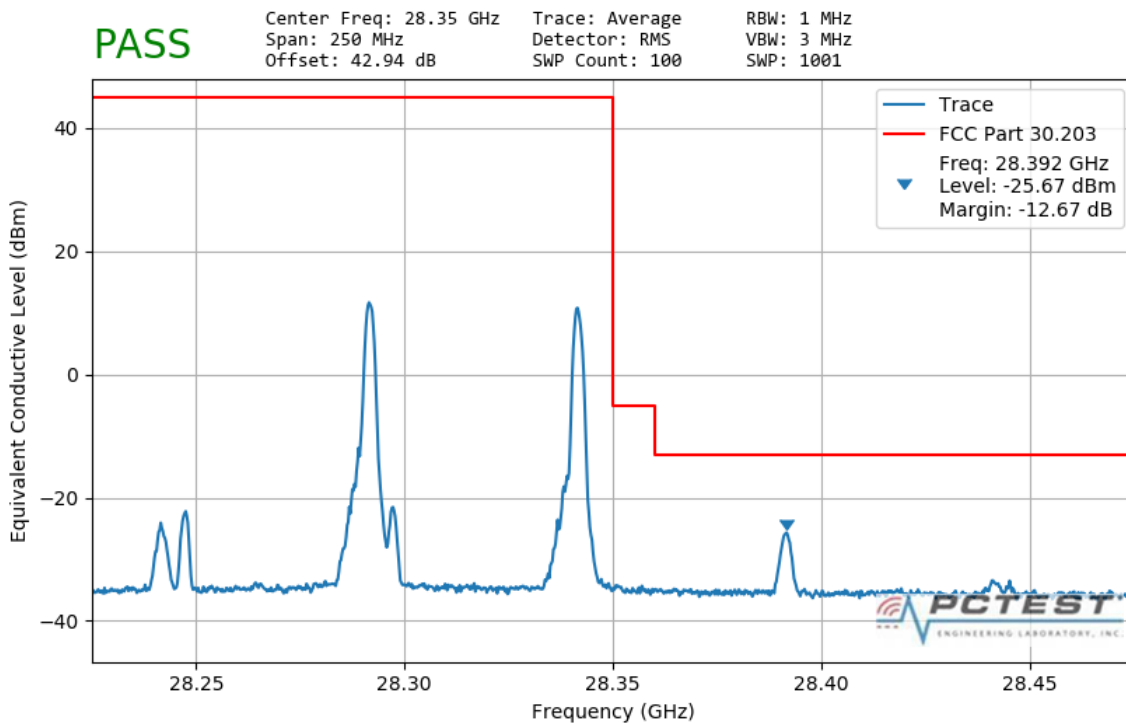


Plot 7-270. Ant4 Upper Band Edge (50MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 239 of 286

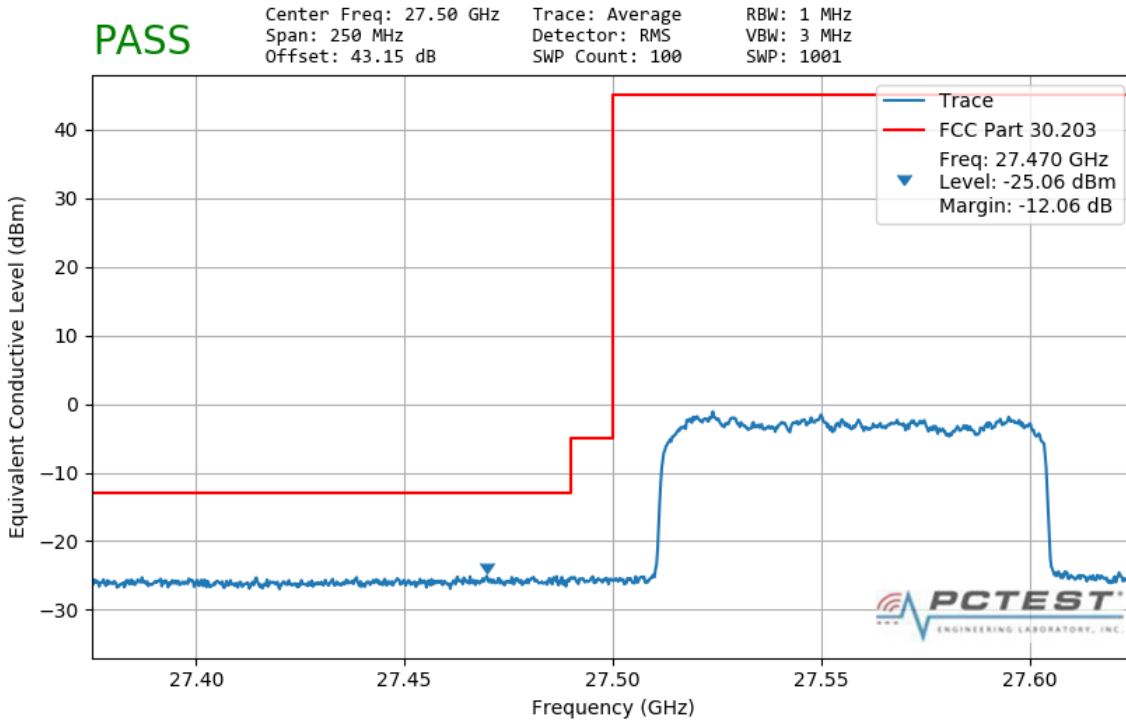


Plot 7-271. Ant4 Upper Band Edge (50MHz-2CC – QPSK Full RB)

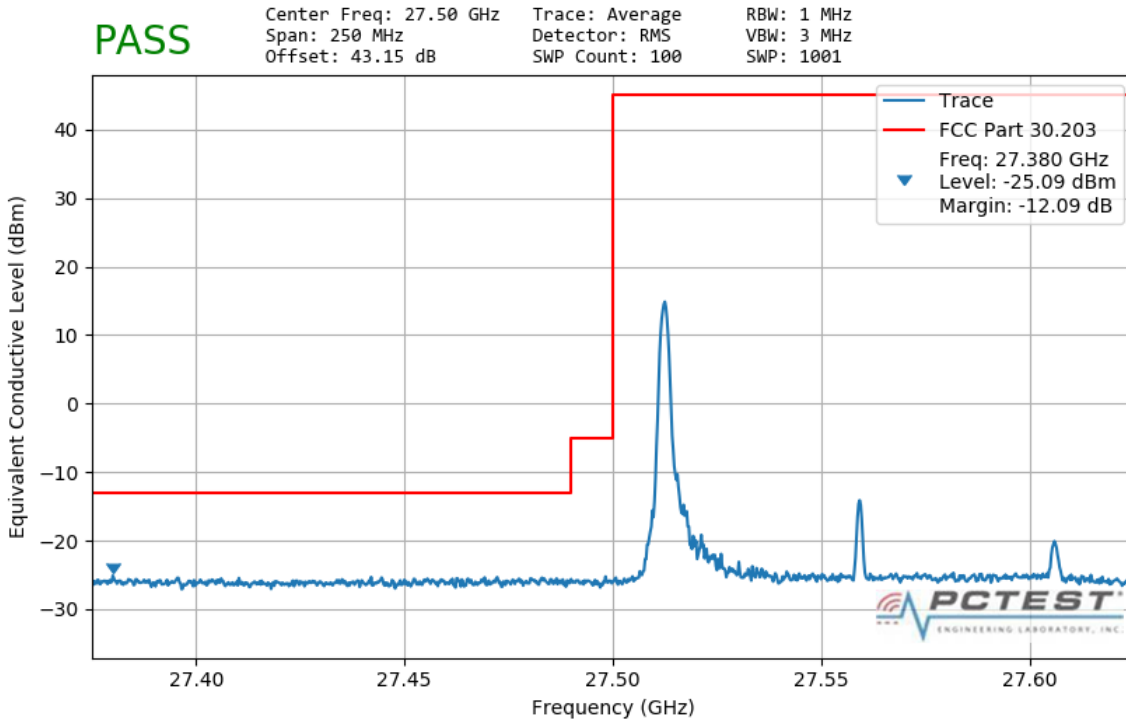


Plot 7-272. Ant4 Upper Band Edge (50MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 240 of 286

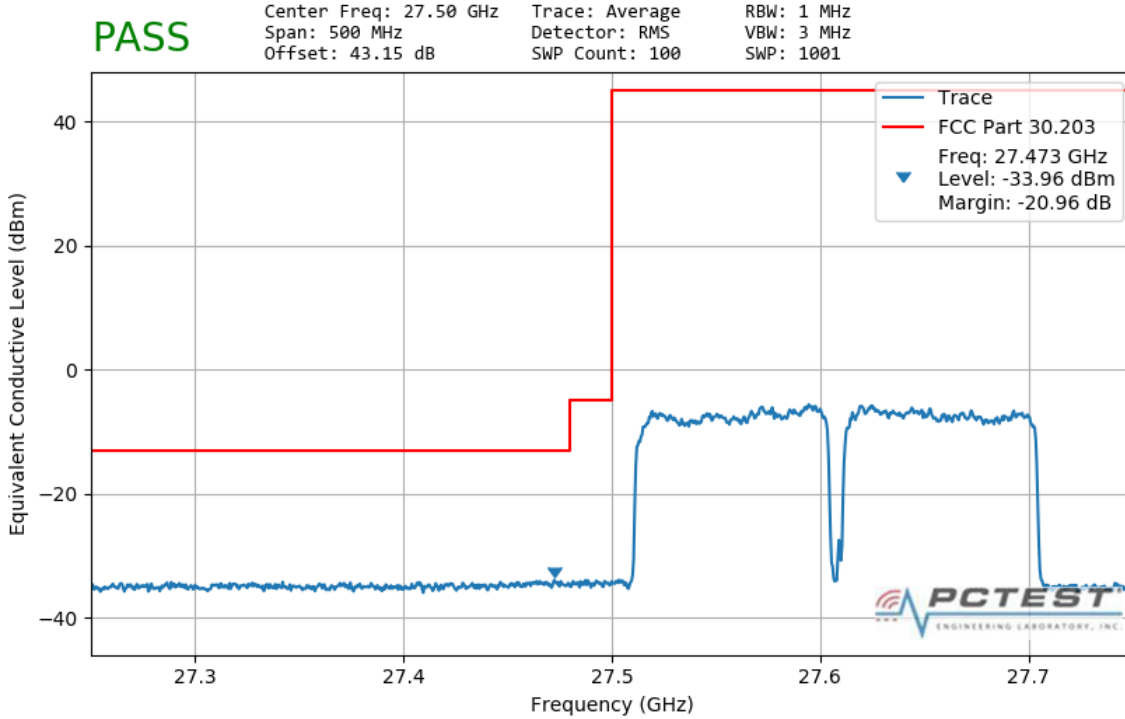


Plot 7-273. Ant4 Lower Band Edge (100MHz-1CC – QPSK Full RB)

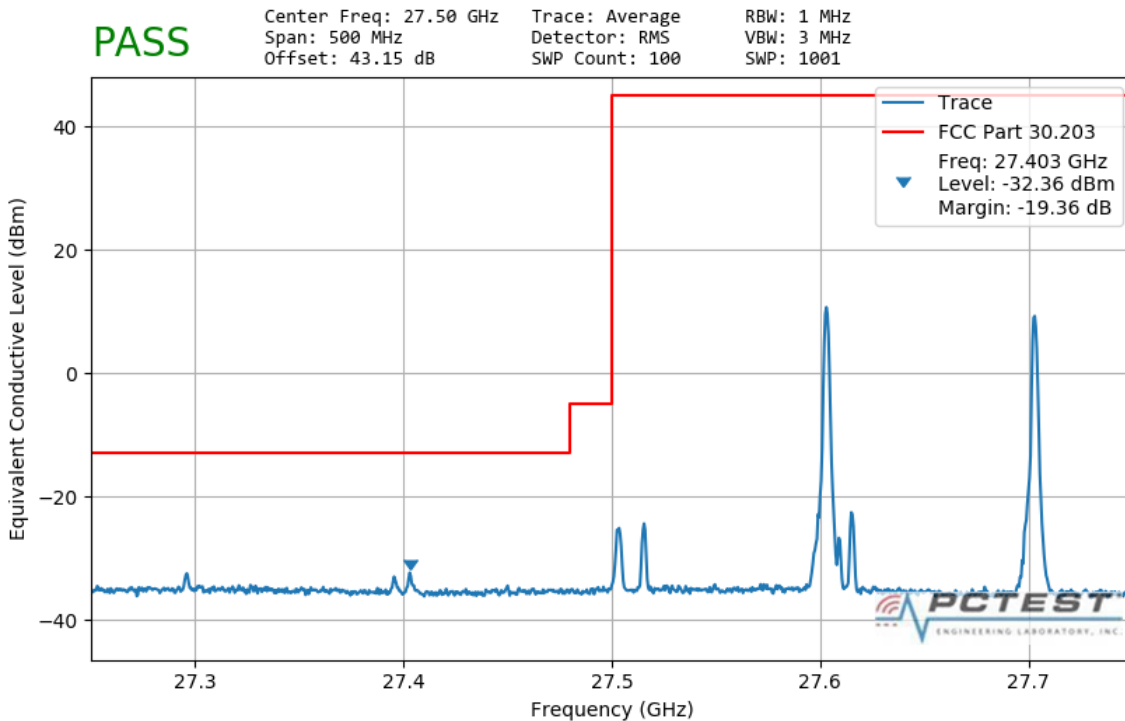


Plot 7-274. Ant4 Lower Band Edge (100MHz-1CC – QPSK 1 RB)

FCC ID: A3LSMG986U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 241 of 286

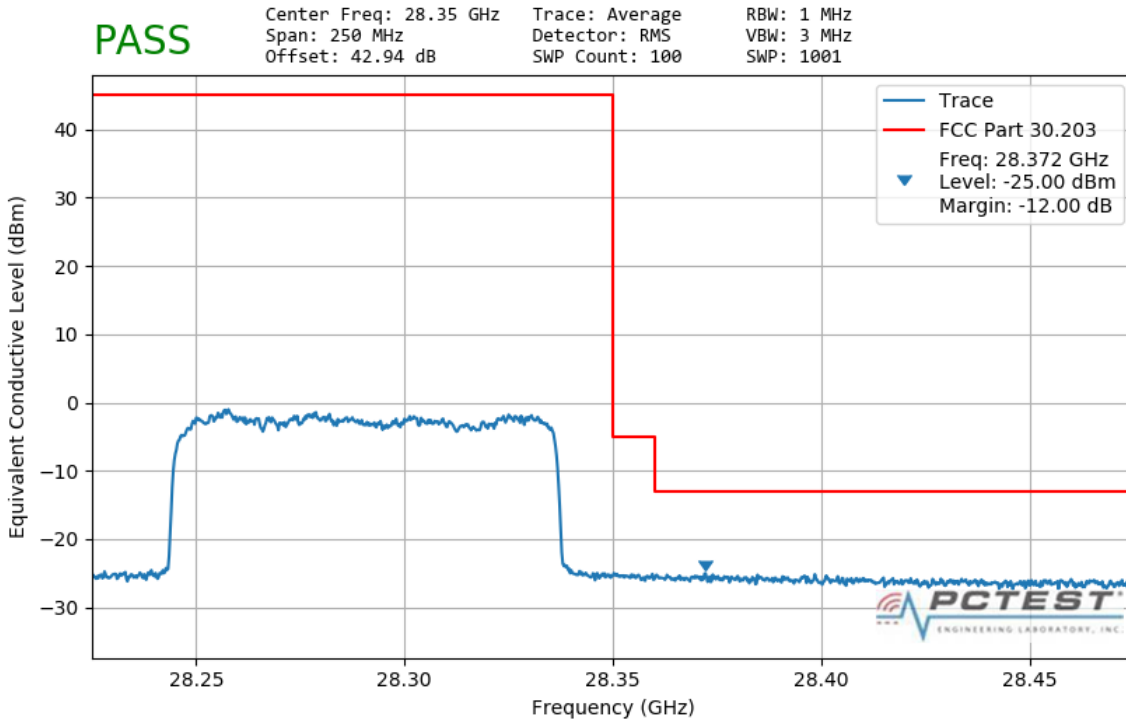


Plot 7-275. Ant4 Lower Band Edge (100MHz-2CC – QPSK Full RB)

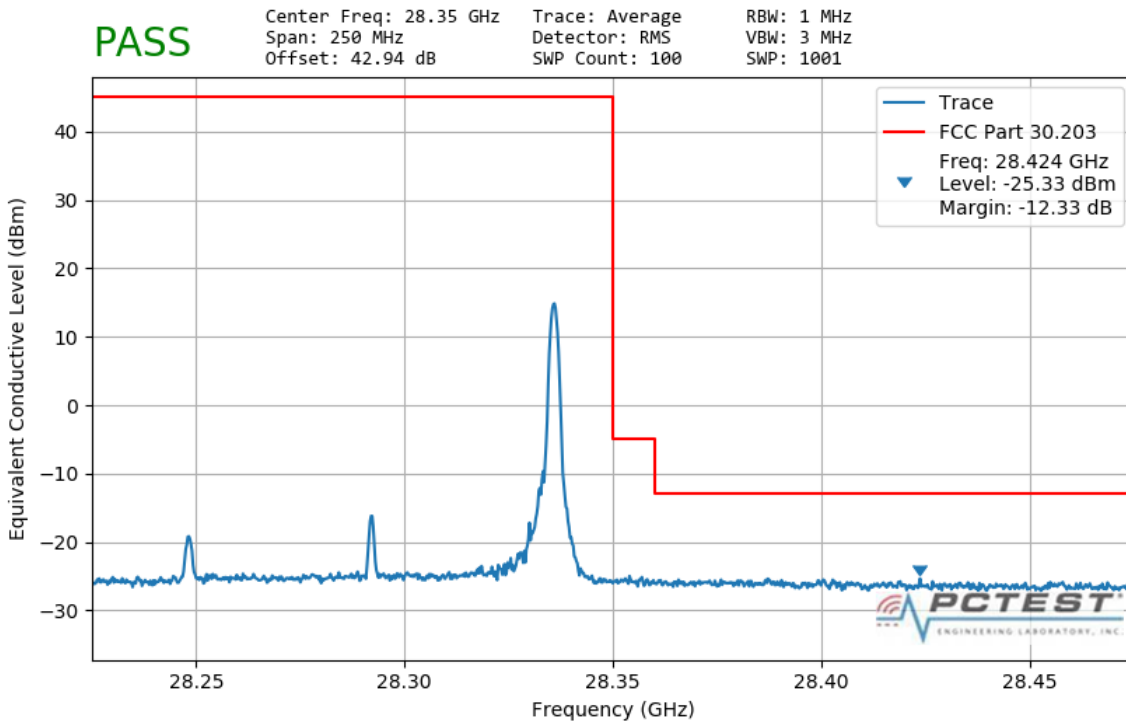


Plot 7-276. Ant4 Lower Band Edge (100MHz-2CC – QPSK 1 RB)

FCC ID: A3LSMG986U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 242 of 286



Plot 7-277. Ant4 Upper Band Edge (100MHz-1CC – QPSK Full RB)



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

FCC ID: A3LSMG986U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1910220166-06.A3L	Test Dates: 10/11 - 12/06/2019	EUT Type: Portable Handset		Page 243 of 286