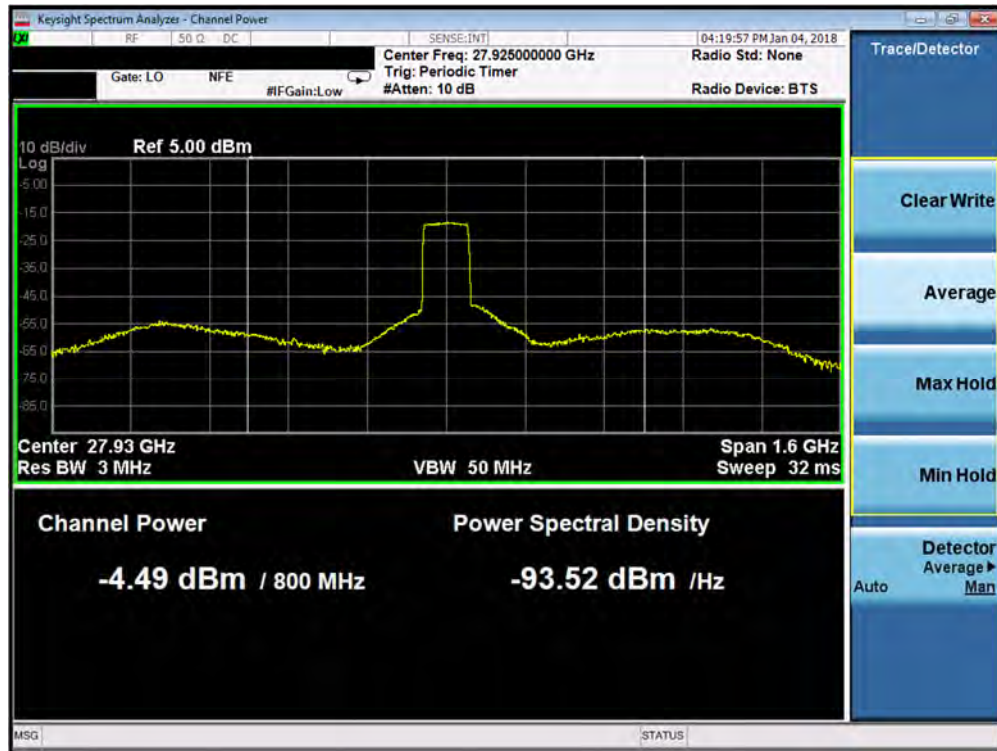


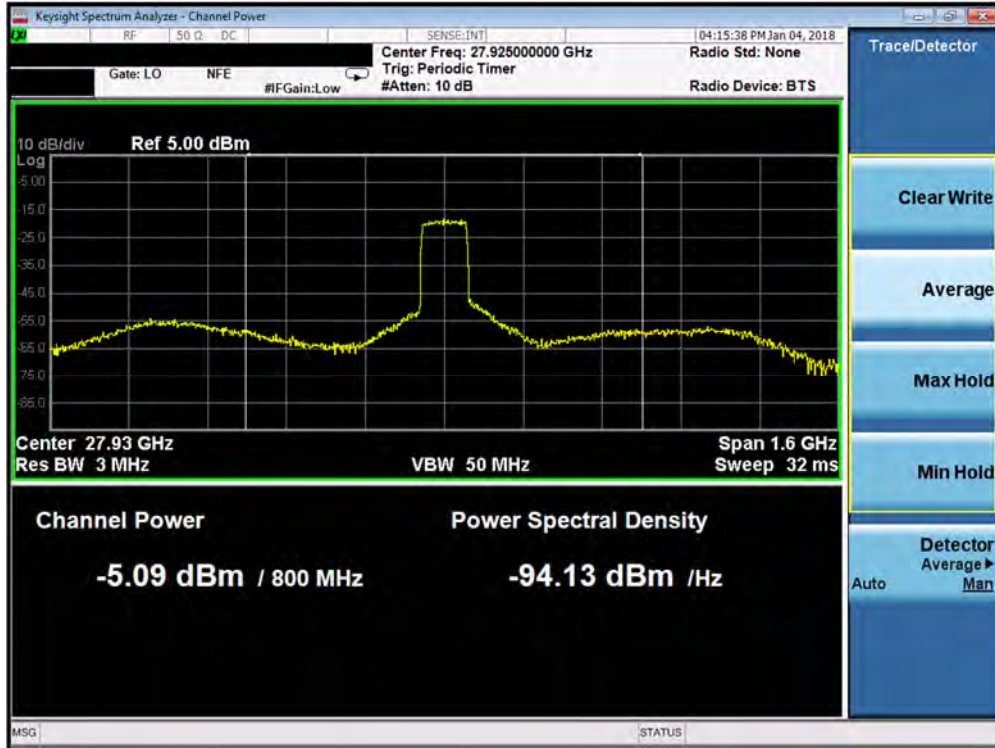


Plot 7-100. Antenna A EIRP Plot (1CC QPSK Mid Channel)

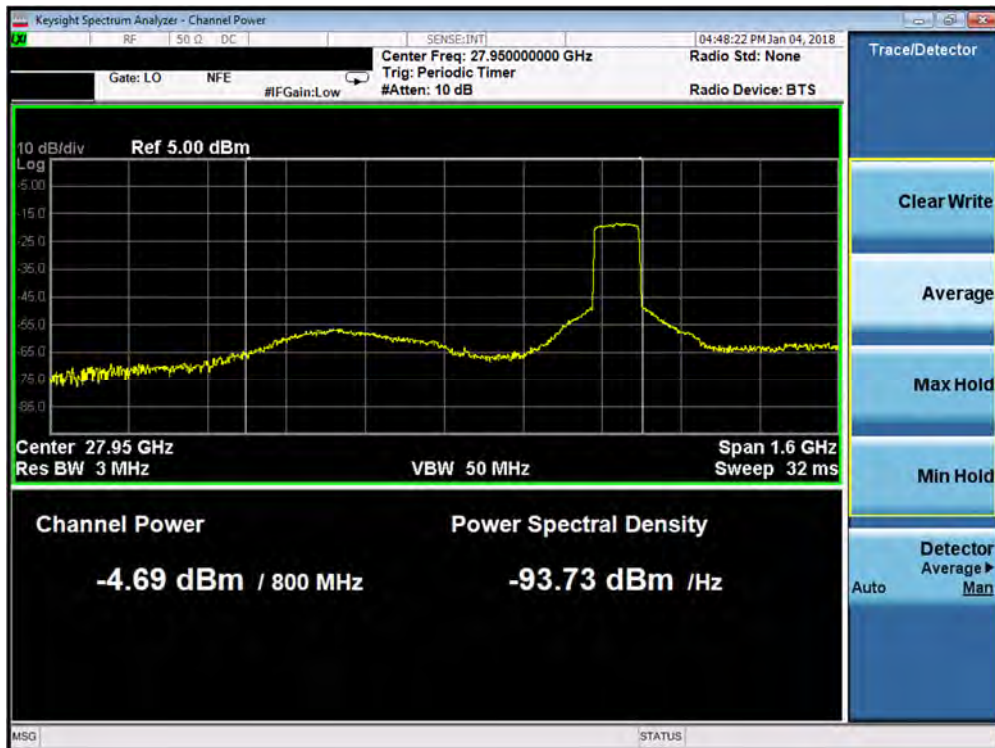


Plot 7-101. Antenna A EIRP Plot (1CC 16QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 76 of 221

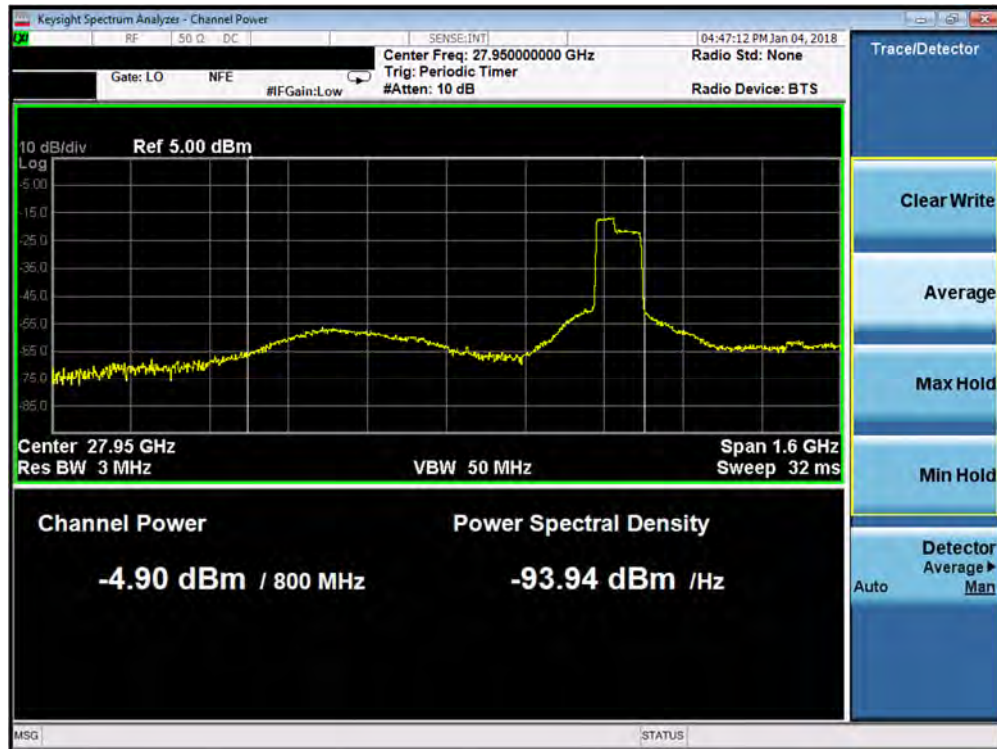


Plot 7-102. Antenna A EIRP Plot (1CC 64QAM Mid Channel)

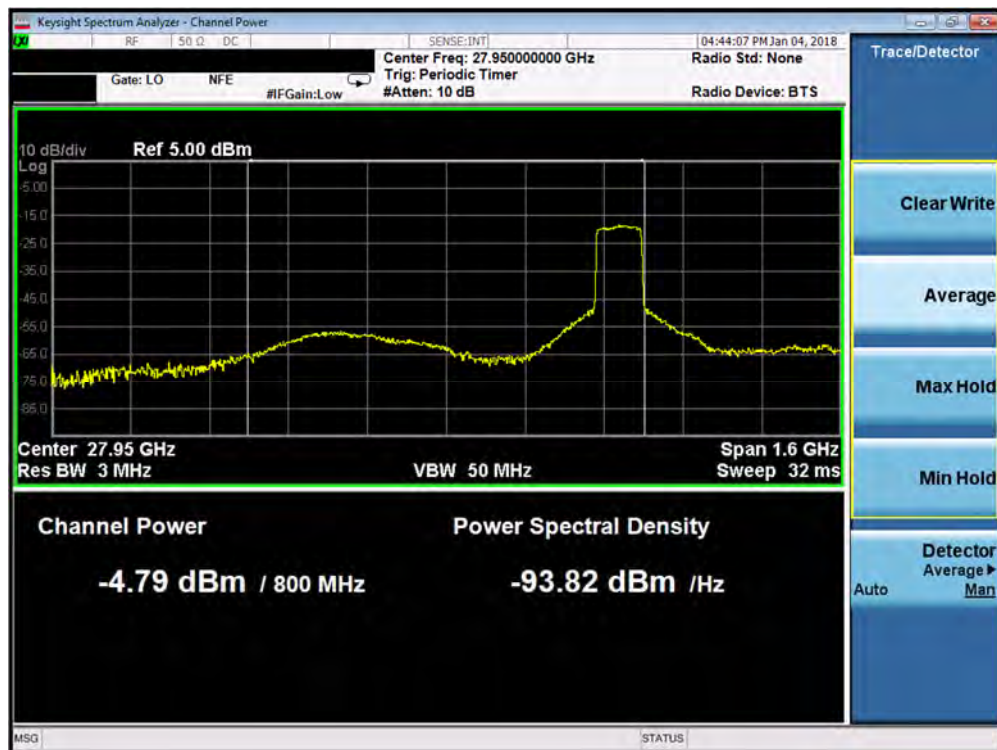


Plot 7-103. Antenna A EIRP Plot (1CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 77 of 221

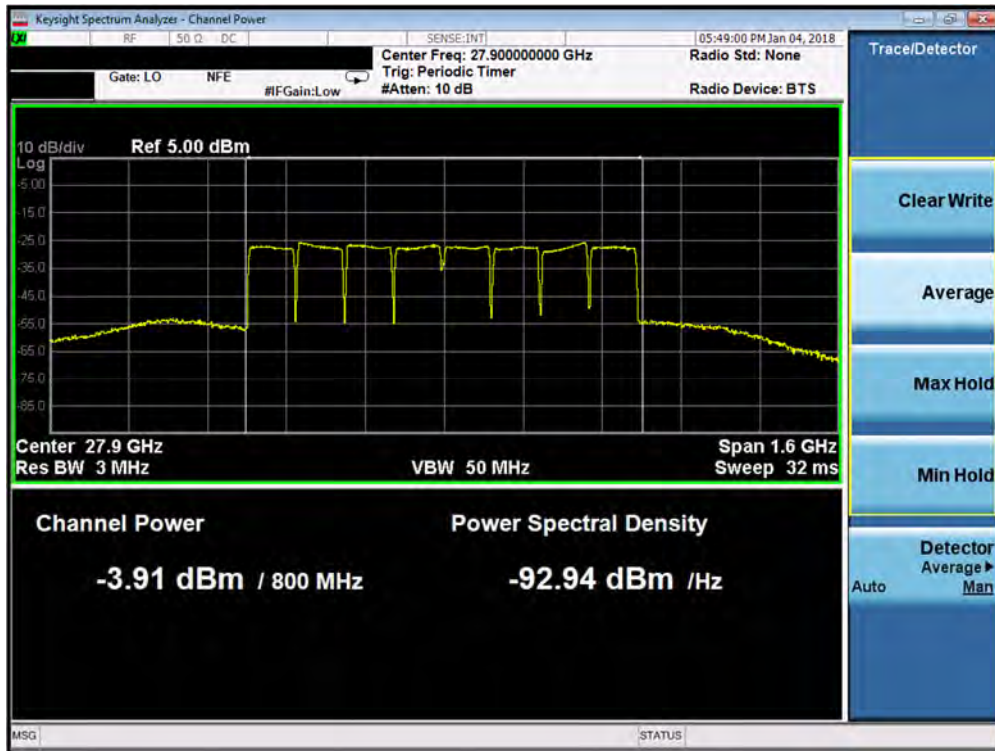


Plot 7-104. Antenna A EIRP Plot (1CC 16QAM High Channel)

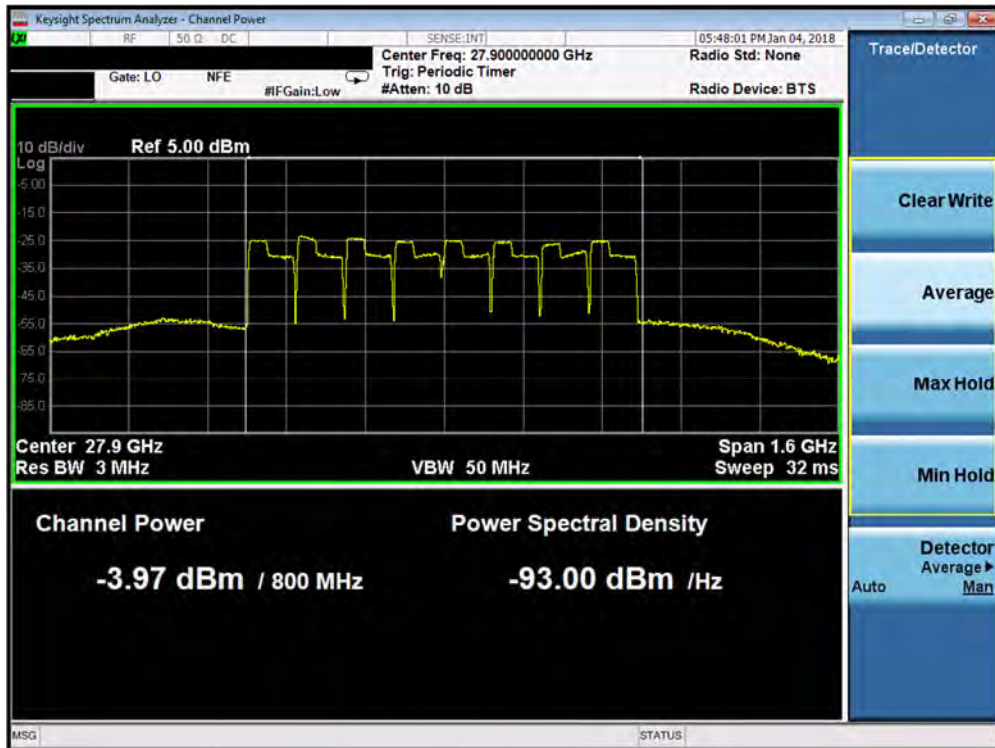


Plot 7-105. Antenna A EIRP Plot (1CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 78 of 221

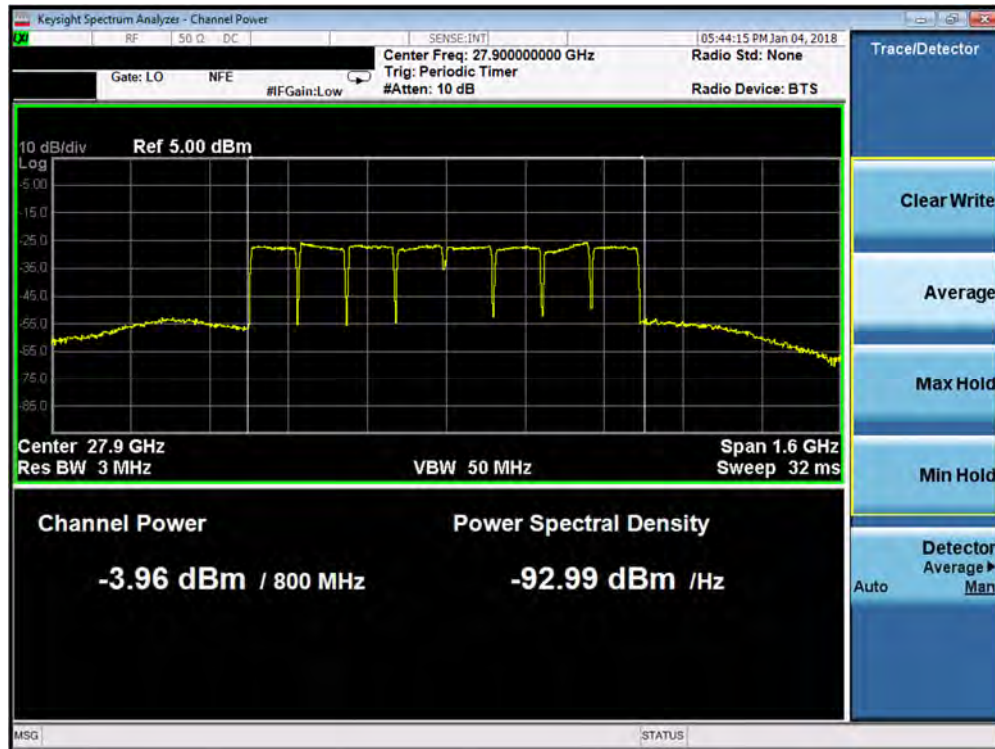


Plot 7-106. Antenna A EIRP Plot (8CC QPSK Low Channel)

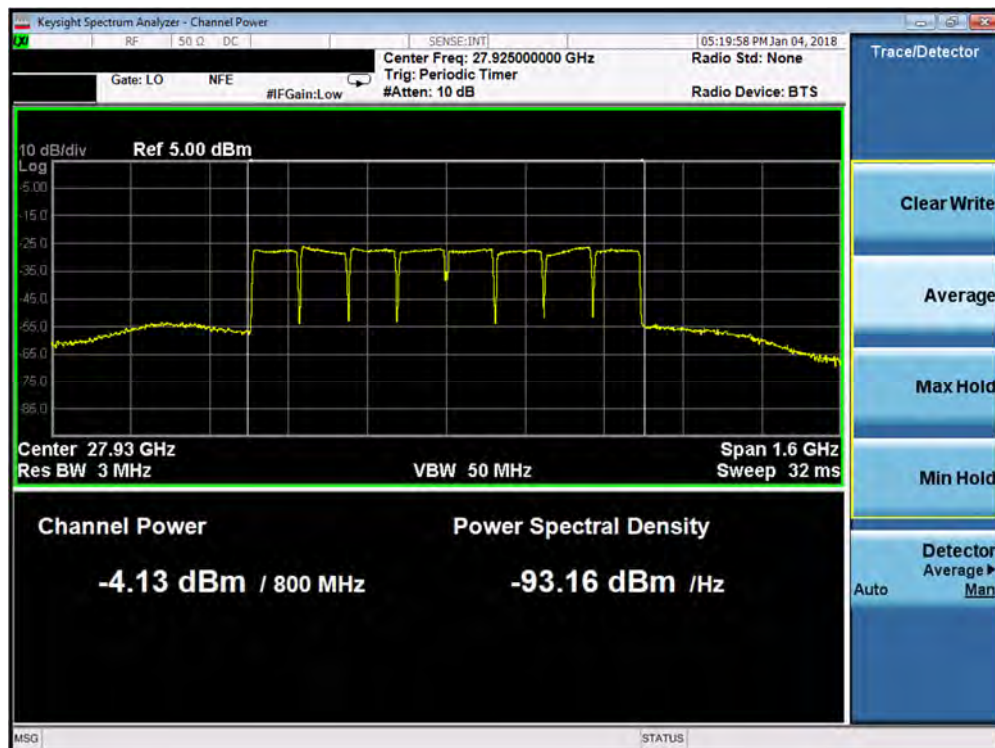


Plot 7-107. Antenna A EIRP Plot (8CC 16QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 79 of 221

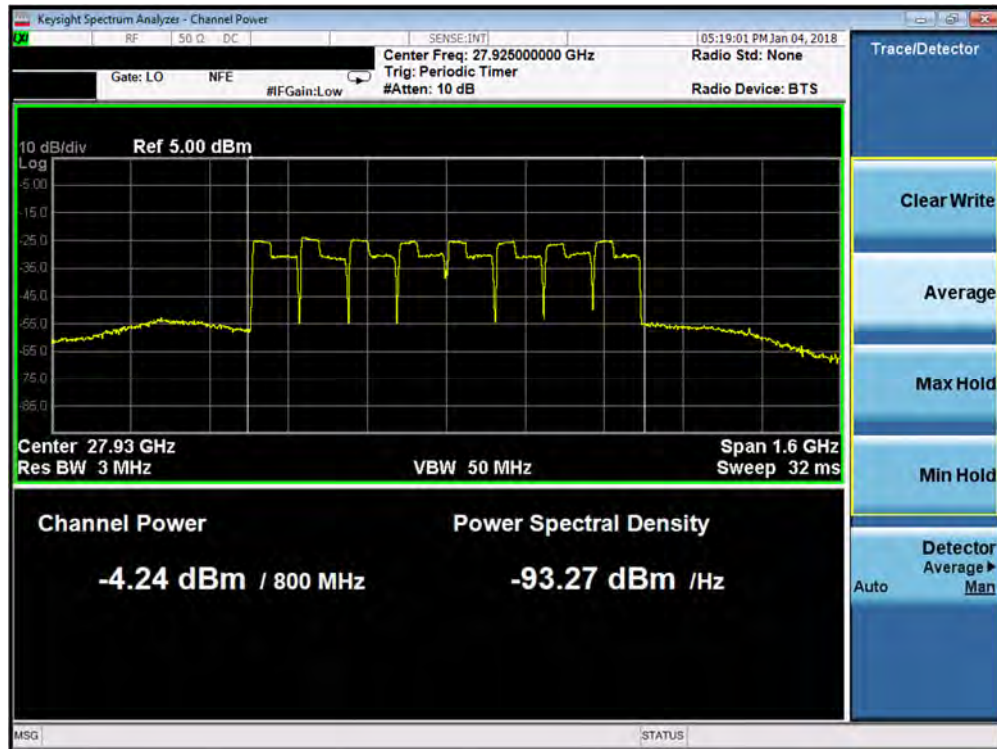


Plot 7-108. Antenna A EIRP Plot (8CC 64QAM Low Channel)

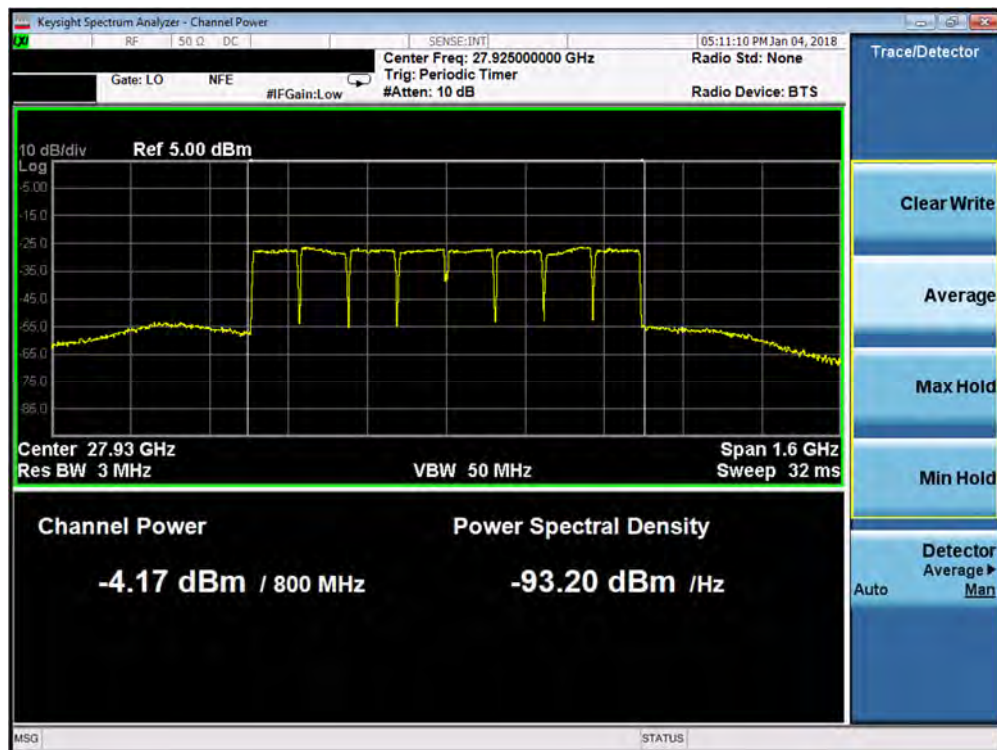


Plot 7-109. Antenna A EIRP Plot (8CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 80 of 221

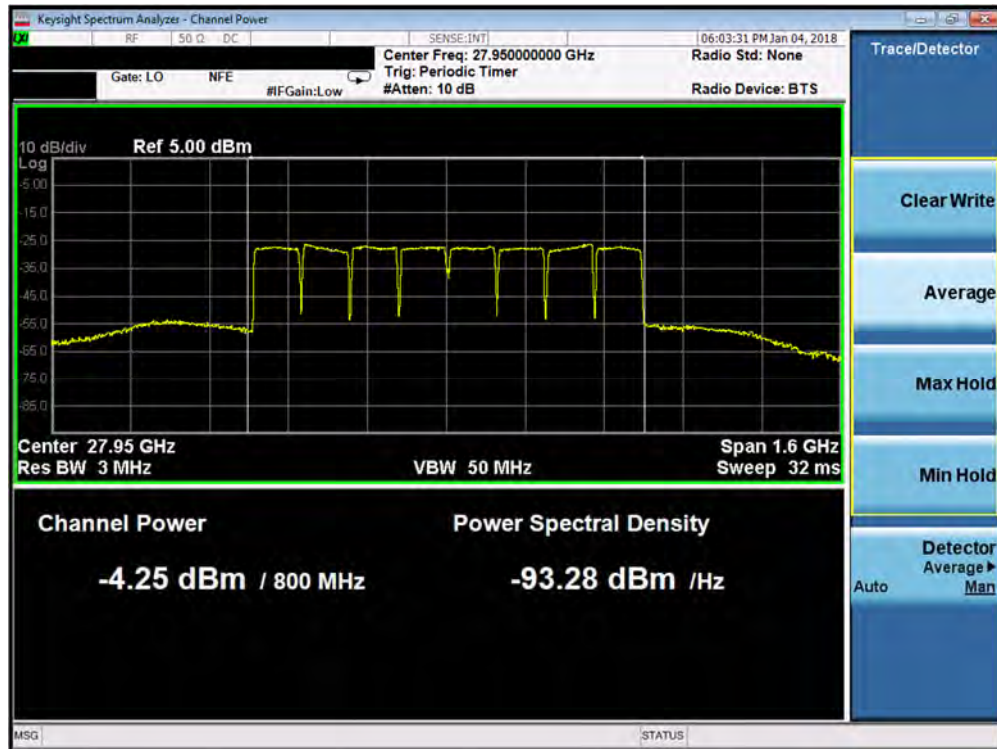


Plot 7-110. Antenna A EIRP Plot (8CC 16QAM Mid Channel)

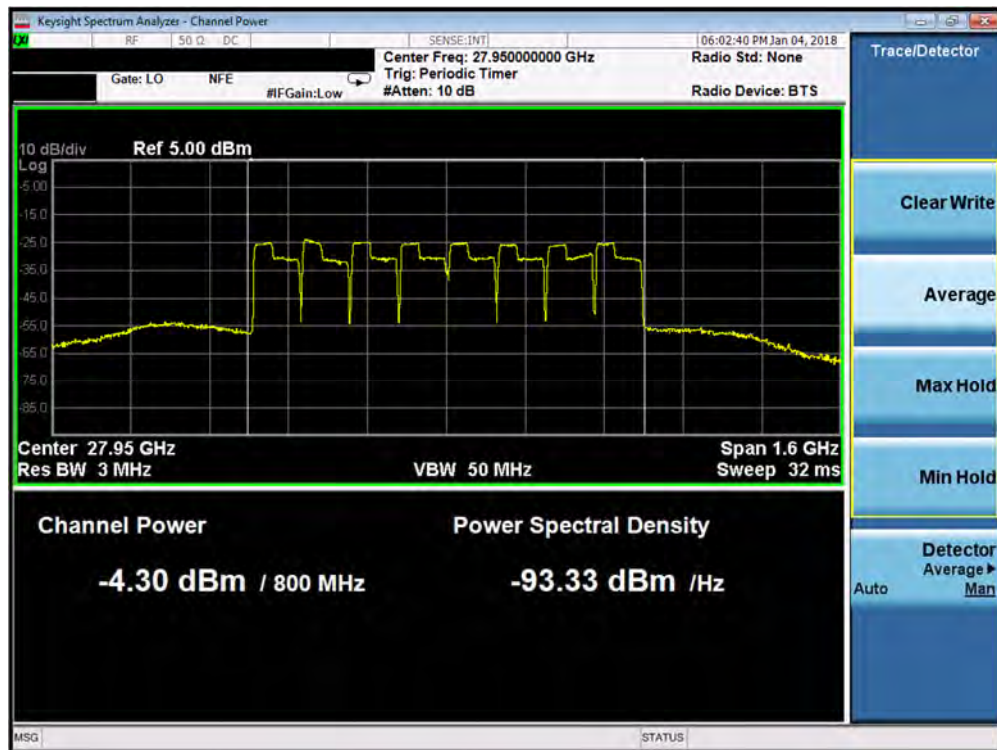


Plot 7-111. Antenna A EIRP Plot (8CC 64QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 81 of 221

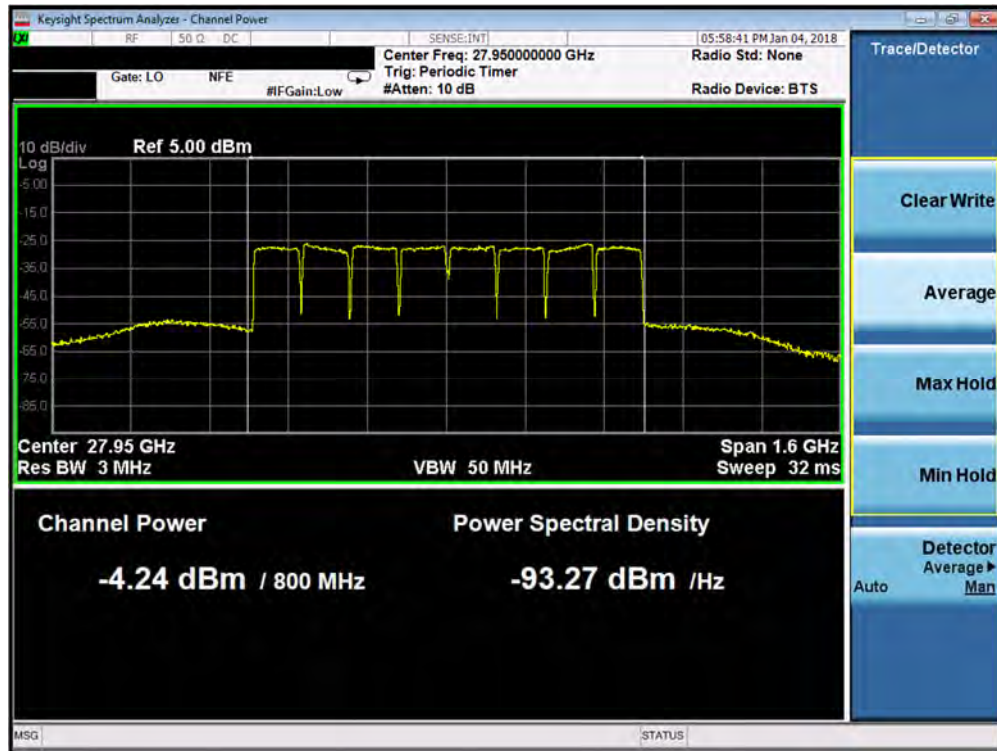


Plot 7-112. Antenna A EIRP Plot (8CC QPSK High Channel)



Plot 7-113. Antenna A EIRP Plot (8CC 16QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 82 of 221



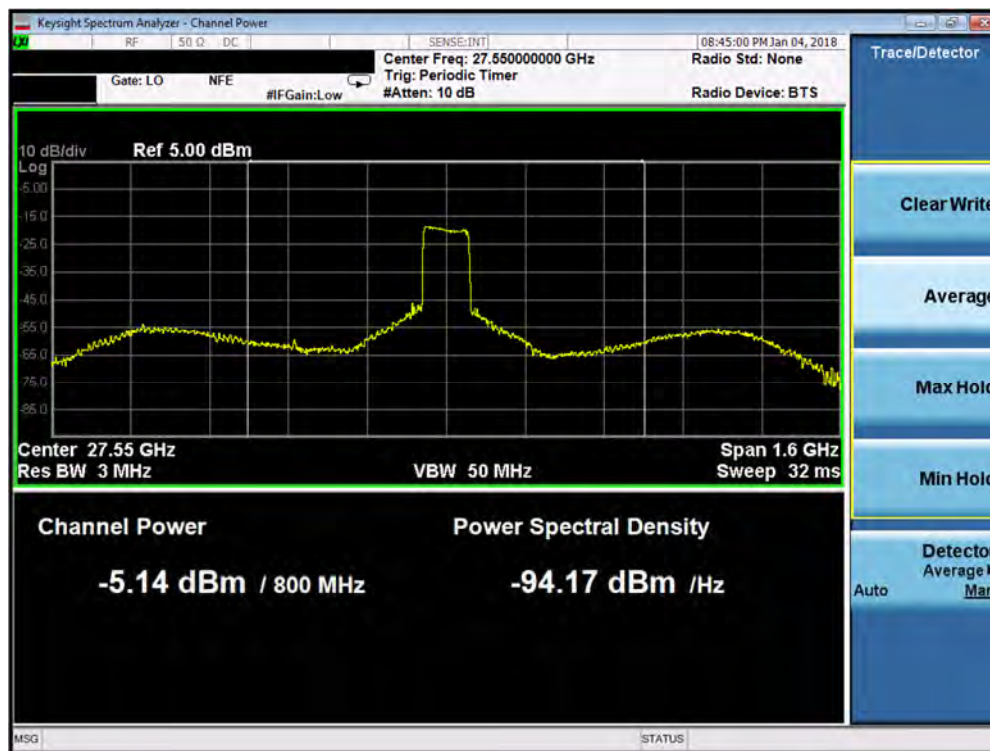
Plot 7-114. Antenna A EIRP Plot (8CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit	Page 83 of 221

7.4.2 Antenna B Conducted Power

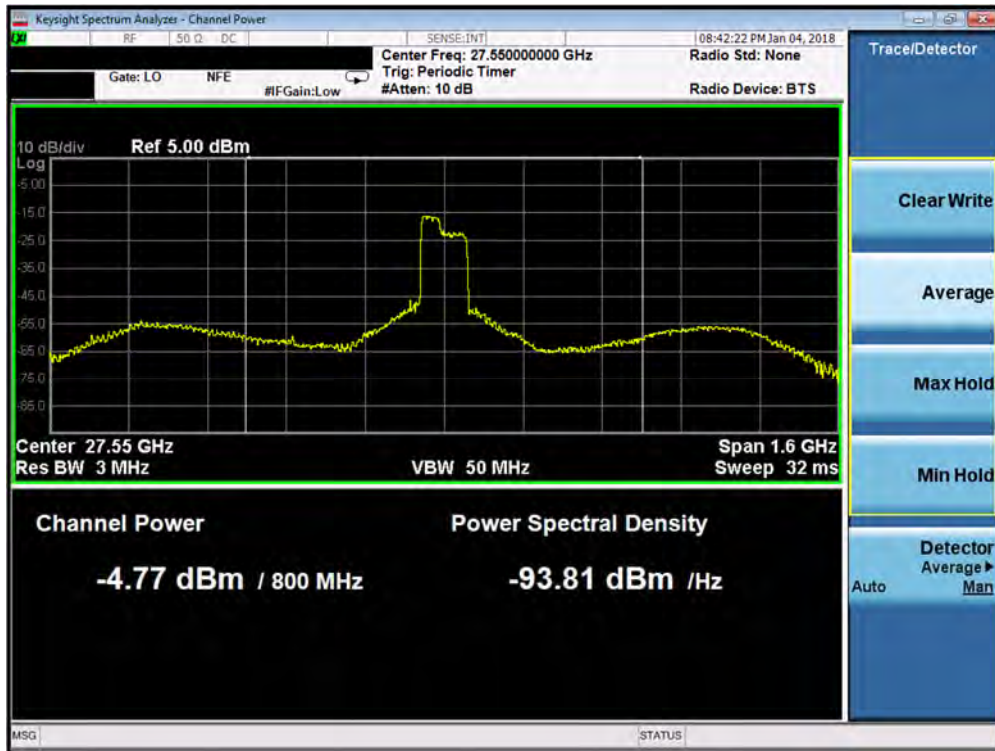
Chan.	Channel Freq [GHz]	CCs active	Modulation	Horn Angle [degrees]	Horn Height [cm]	Turntable Azimuth [degrees]	Analyzer Level [dBm]	AFCL [dB/m]	EUT Antenna Gain [dBi]	Average e.i.r.p. [dBm]	Conducted Average Power [dBm]
Low	27.9	0	QPSK	45.0	146	353	-5.14	52.80	28.15	53.47	25.32
Low	27.9	0	16QAM	45.0	146	353	-4.77	52.80	28.15	53.84	25.69
Low	27.9	0	64QAM	45.0	146	353	-5.05	52.80	28.15	53.56	25.41
Mid	27.925	4	QPSK	45.0	146	353	-3.94	52.80	28.15	54.67	26.52
Mid	27.925	4	16QAM	45.0	146	353	-3.60	52.80	28.15	55.01	26.86
Mid	27.925	4	64QAM	45.0	146	353	-3.56	52.80	28.15	55.05	26.90
High	27.95	7	QPSK	45.0	146	353	-3.80	52.80	28.15	54.81	26.66
High	27.95	7	16QAM	45.0	146	353	-3.87	52.80	28.15	54.74	26.59
High	27.95	7	64QAM	45.0	146	353	-3.98	52.80	28.15	54.63	26.48
Low	27.9	0-7	QPSK	45.0	146	353	-4.85	52.80	28.15	53.76	25.61
Low	27.9	0-7	16QAM	45.0	146	353	-4.94	52.80	28.15	53.67	25.52
Low	27.9	0-7	64QAM	45.0	146	353	-4.88	52.80	28.15	53.73	25.58
Mid	27.925	0-7	QPSK	45.0	146	353	-4.86	52.80	28.15	53.75	25.60
Mid	27.925	0-7	16QAM	45.0	146	353	-4.87	52.80	28.15	53.74	25.59
Mid	27.925	0-7	64QAM	45.0	146	353	-4.90	52.80	28.15	53.71	25.56
High	27.95	0-7	QPSK	45.0	146	353	-4.45	52.80	28.15	54.16	26.01
High	27.95	0-7	16QAM	45.0	146	353	-4.45	52.80	28.15	54.16	26.01
High	27.95	0-7	64QAM	45.0	146	353	-4.61	52.80	28.15	54.00	25.85

Table 7-13. Antenna B Conducted Power Summary Data

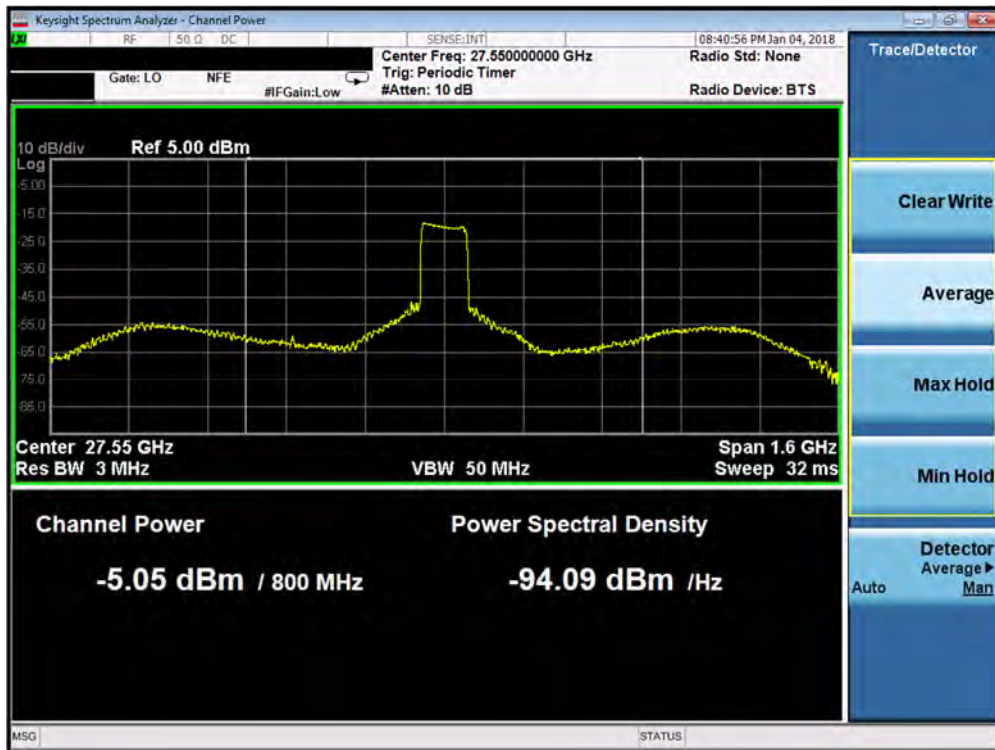


Plot 7-115. Antenna B EIRP Plot (1CC QPSK Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 84 of 221



Plot 7-116. Antenna B EIRP Plot (1CC 16QAM Low Channel)

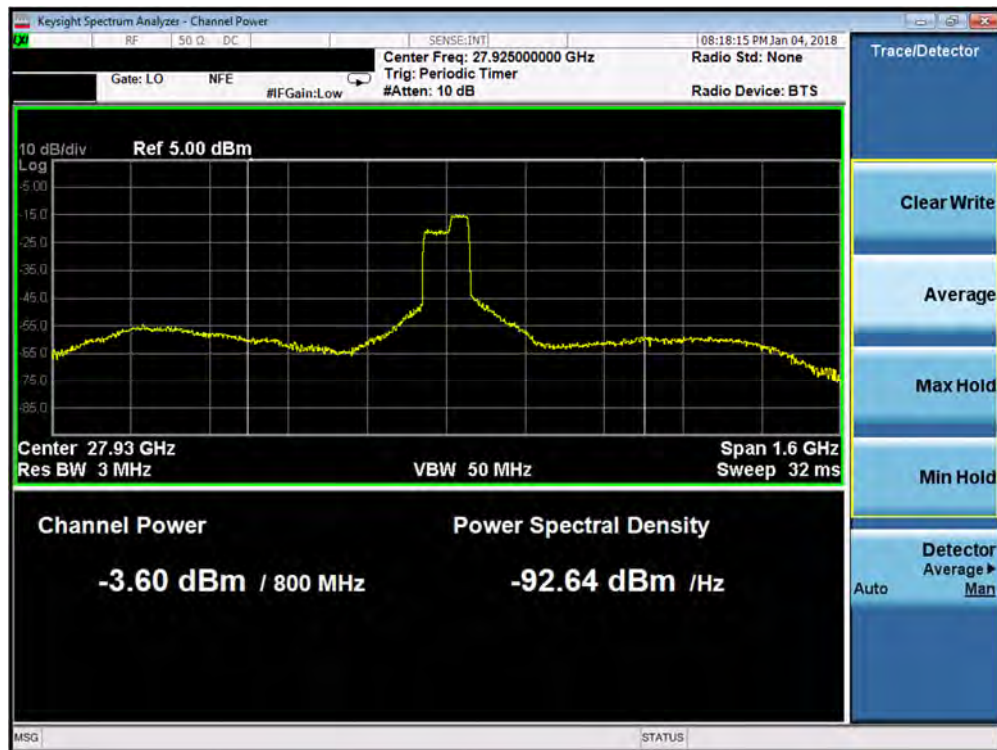


Plot 7-117. Antenna B EIRP Plot (1CC 64QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 85 of 221

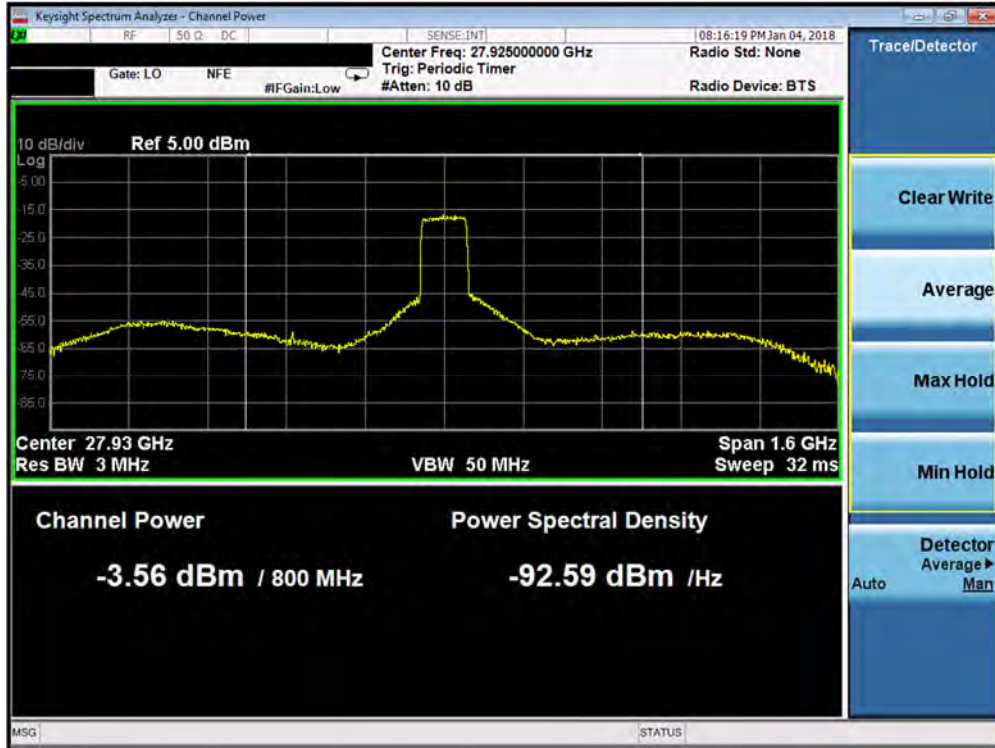


Plot 7-118. Antenna B EIRP Plot (1CC QPSK Mid Channel)

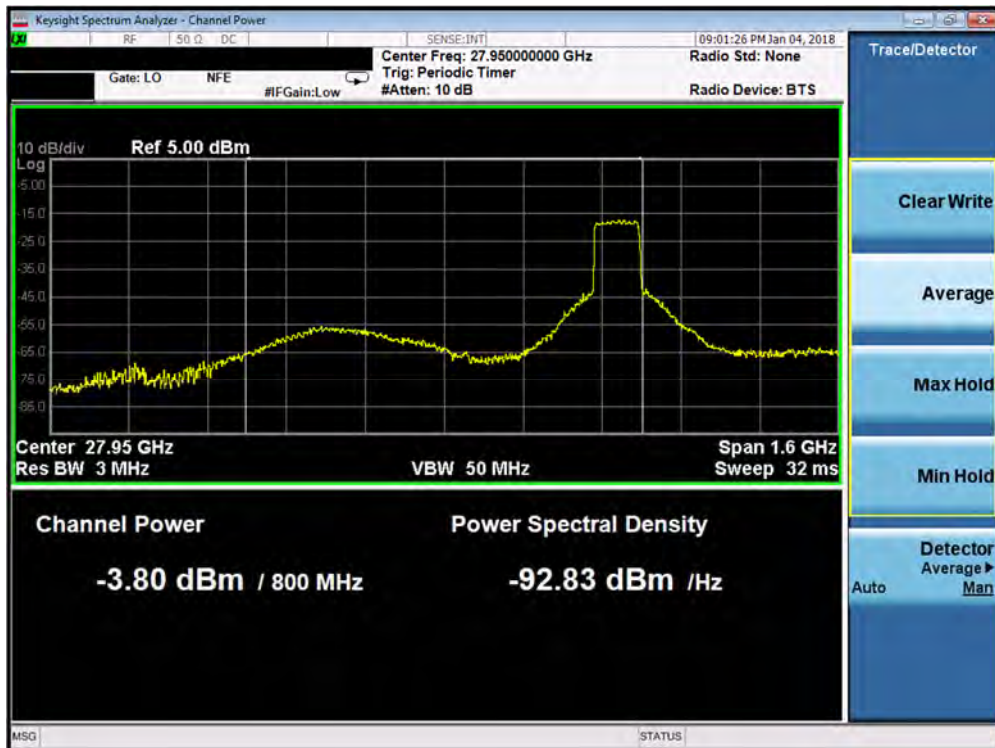


Plot 7-119. Antenna B EIRP Plot (1CC 16QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 86 of 221

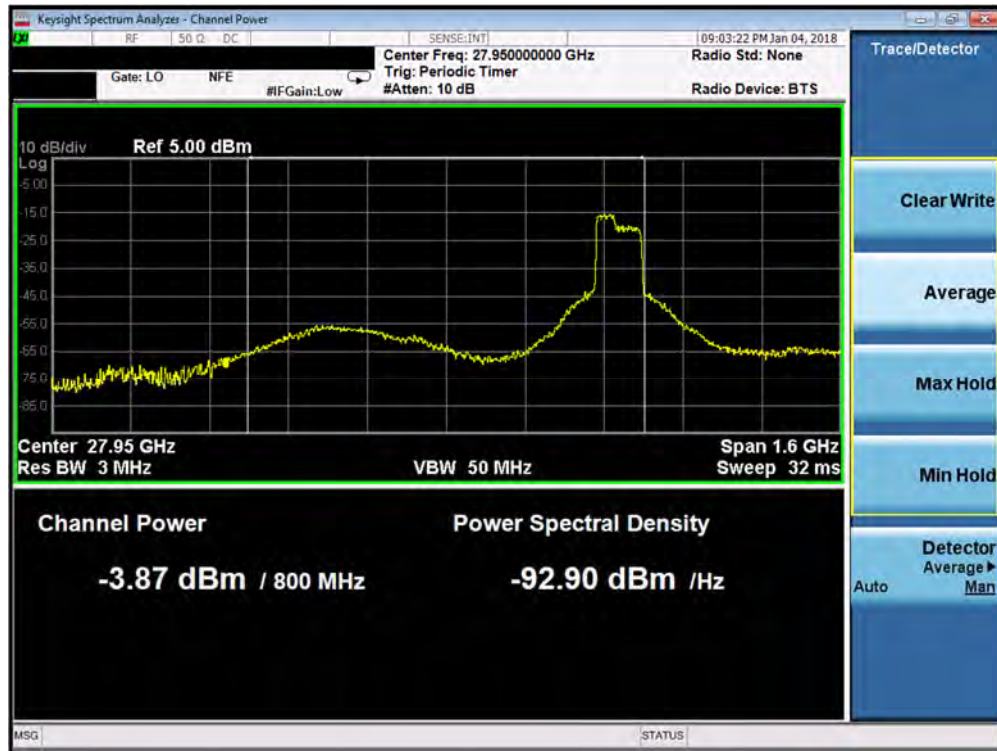


Plot 7-120. Antenna B EIRP Plot (1CC 64QAM Mid Channel)

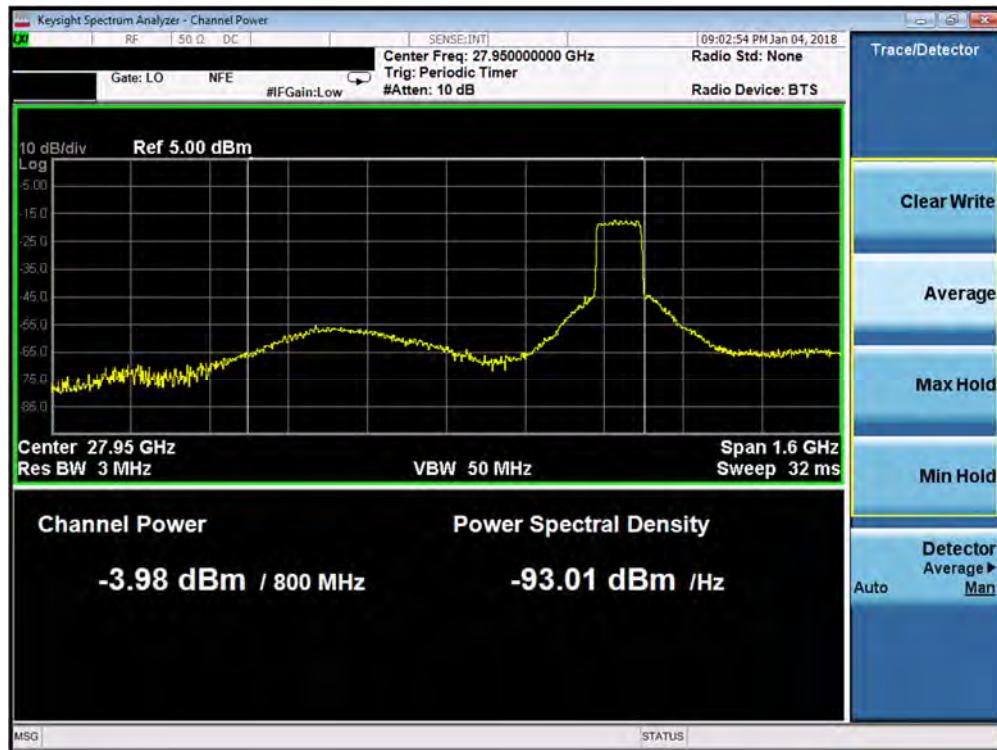


Plot 7-121. Antenna B EIRP Plot (1CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 87 of 221

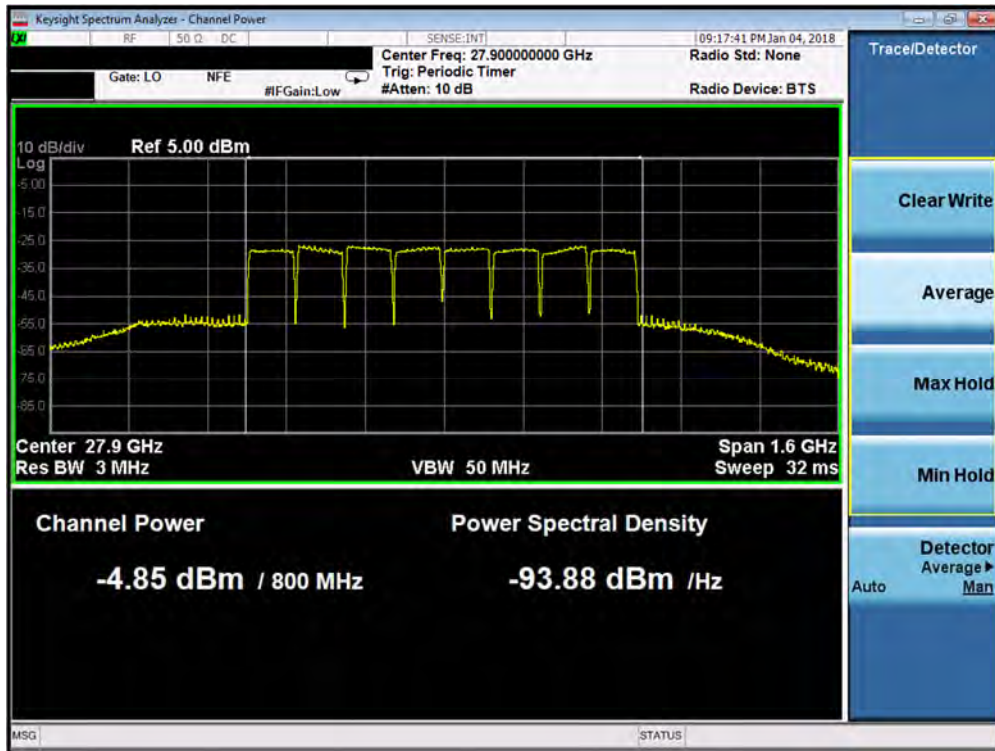


Plot 7-122. Antenna B EIRP Plot (1CC 16QAM High Channel)



Plot 7-123. Antenna B EIRP Plot (1CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 88 of 221

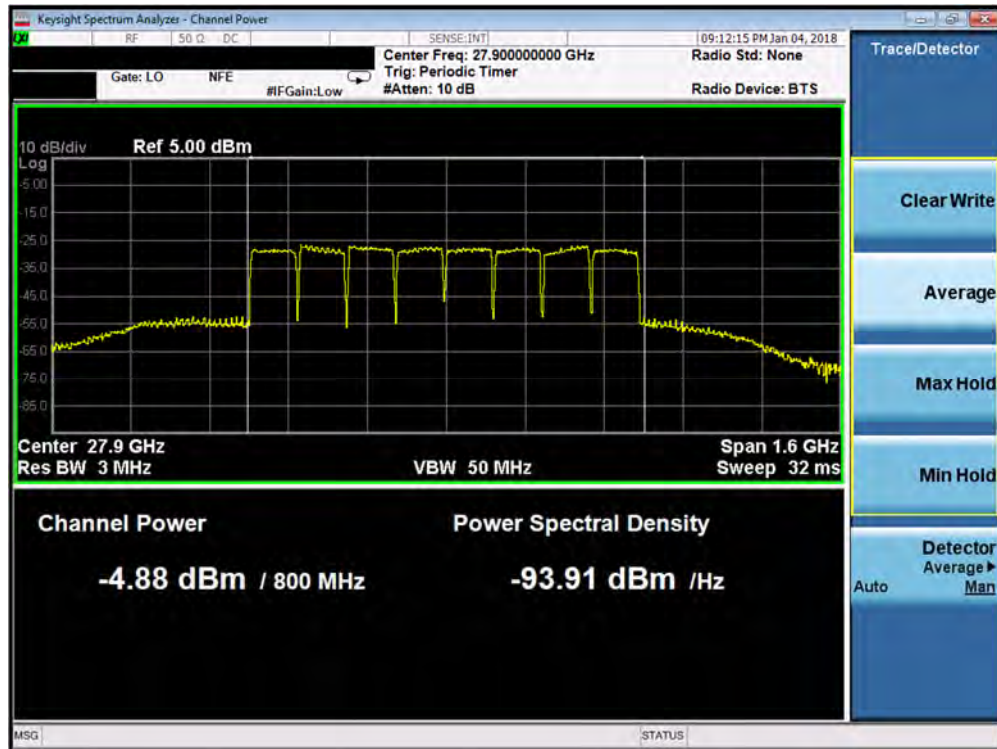


Plot 7-124. Antenna B EIRP Plot (8CC QPSK Low Channel)

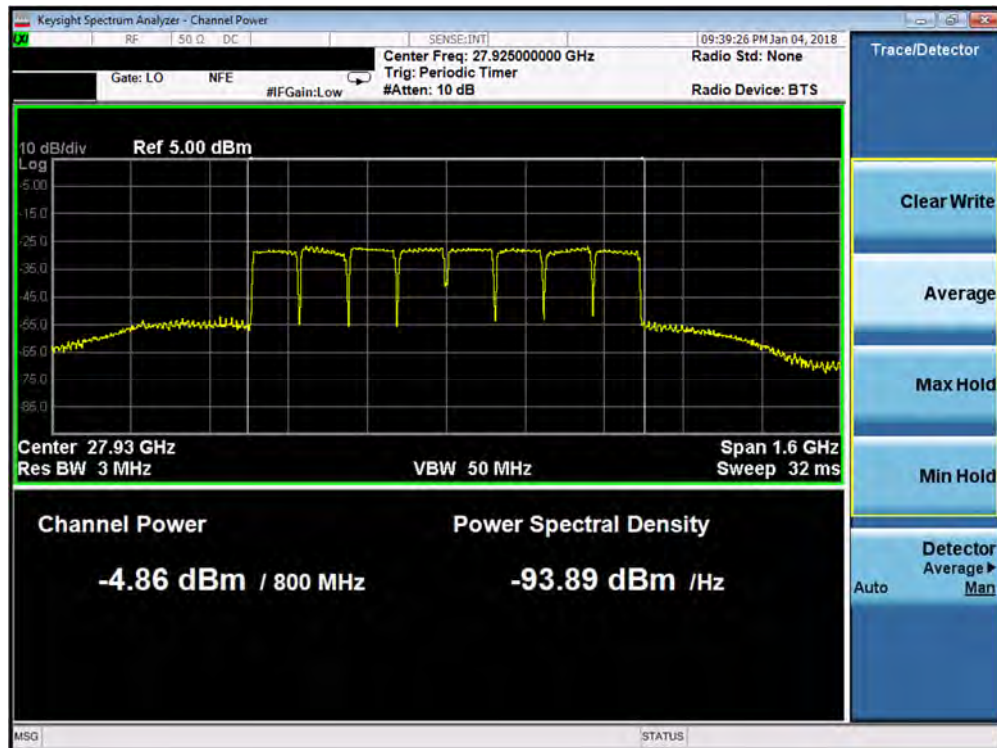


Plot 7-125. Antenna B EIRP Plot (8CC 16QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 89 of 221

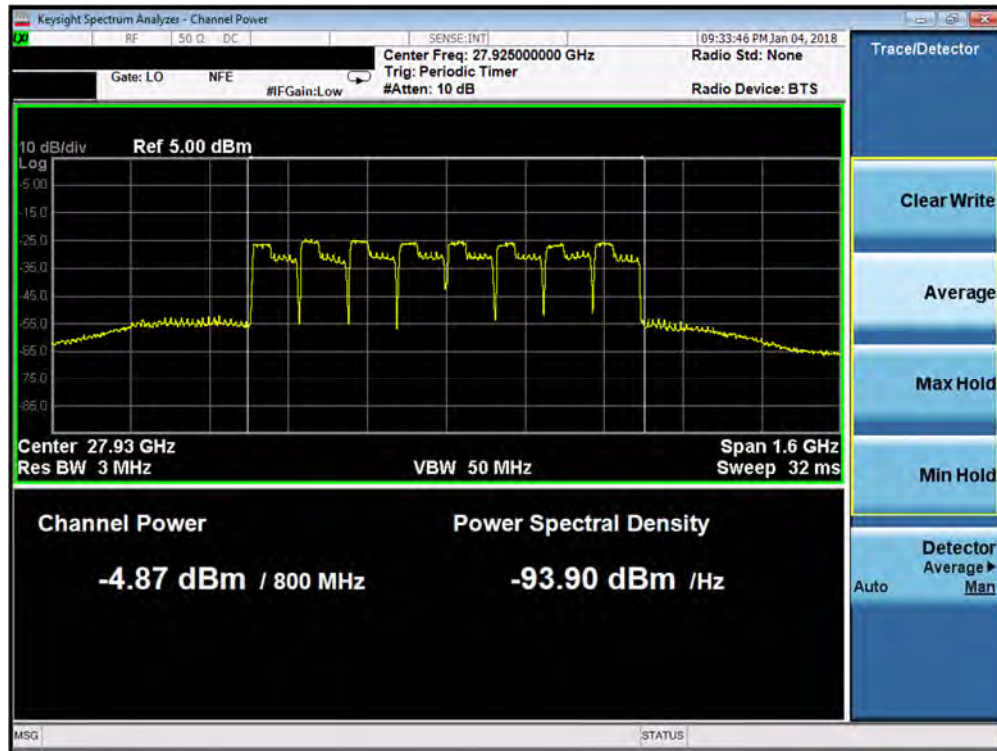


Plot 7-126. Antenna B EIRP Plot (8CC 64QAM Low Channel)

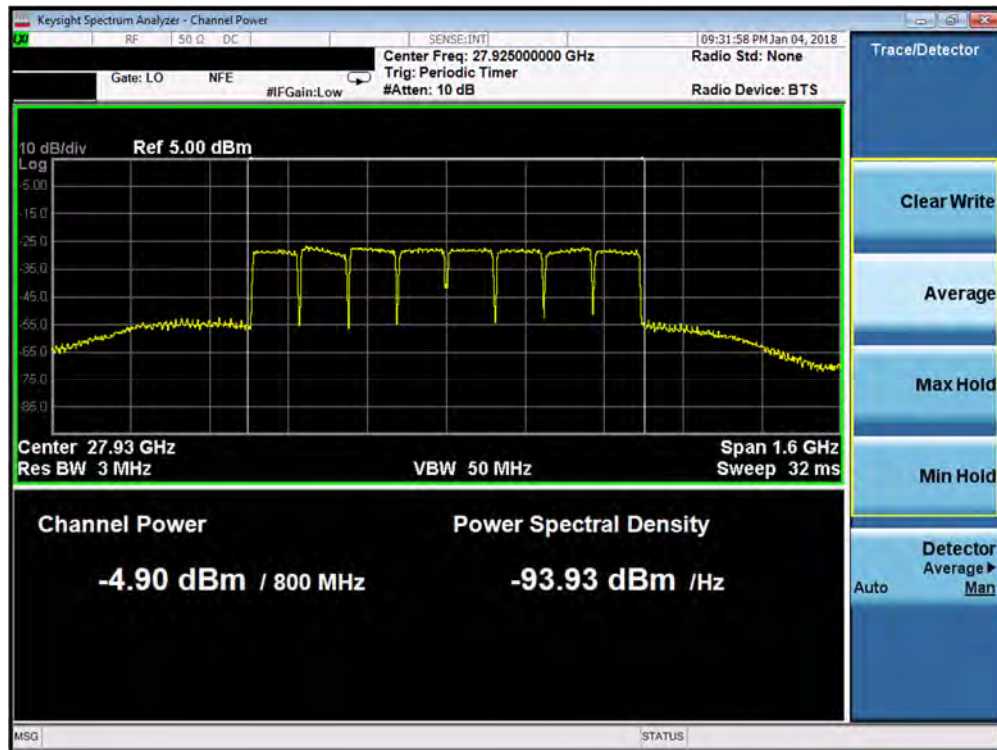


Plot 7-127. Antenna B EIRP Plot (8CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 90 of 221



Plot 7-128. Antenna B EIRP Plot (8CC 16QAM Mid Channel)

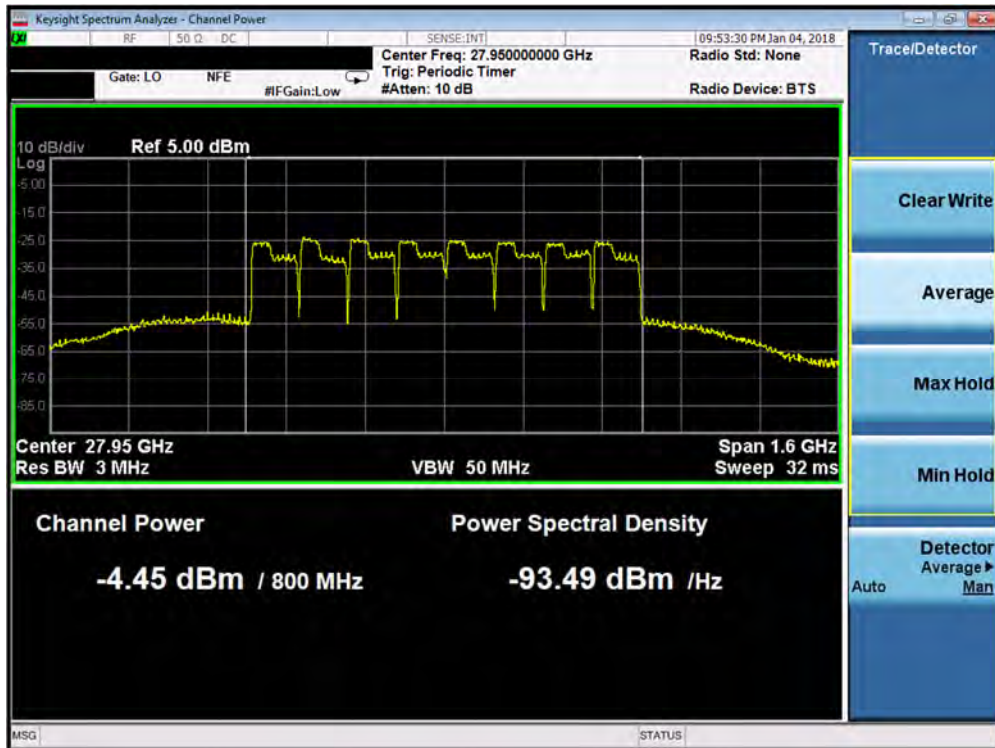


Plot 7-129. Antenna B EIRP Plot (8CC 64QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 91 of 221

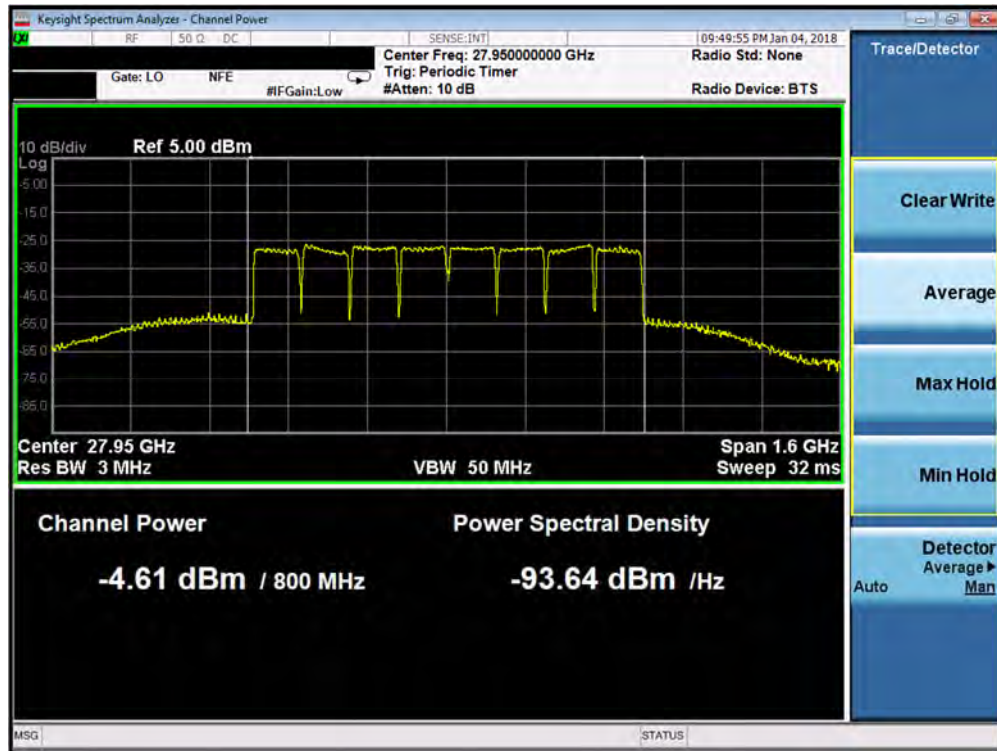


Plot 7-130. Antenna B EIRP Plot (8CC QPSK High Channel)



Plot 7-131. Antenna B EIRP Plot (8CC 16QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 92 of 221



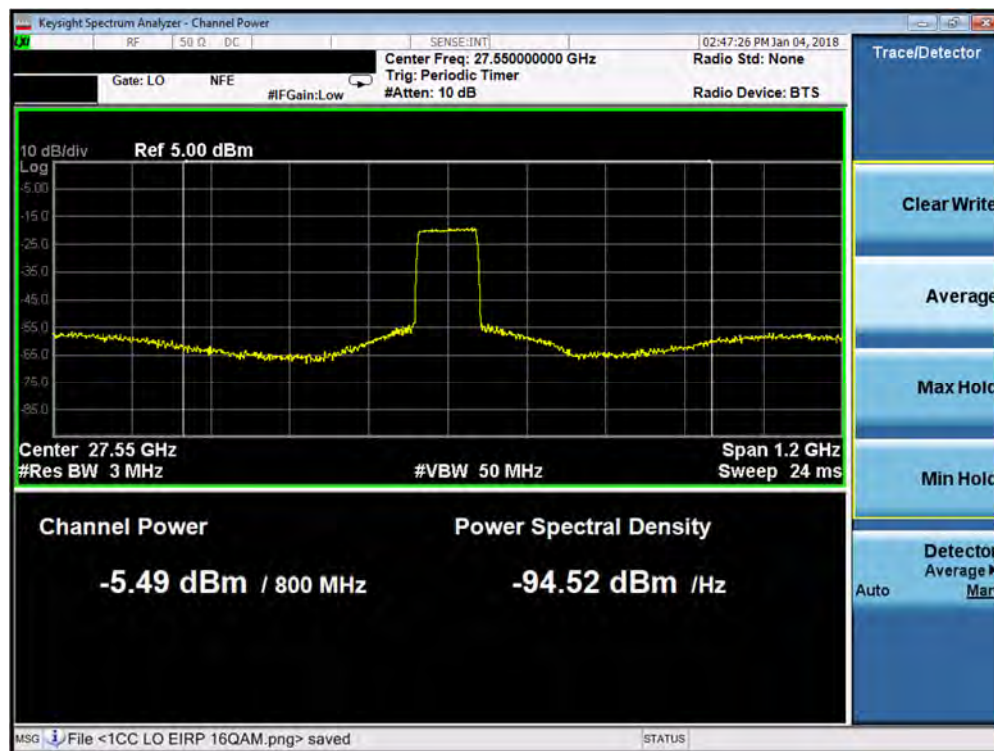
Plot 7-132. Antenna B EIRP Plot (8CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 93 of 221

7.4.3 Antenna C Conducted Power

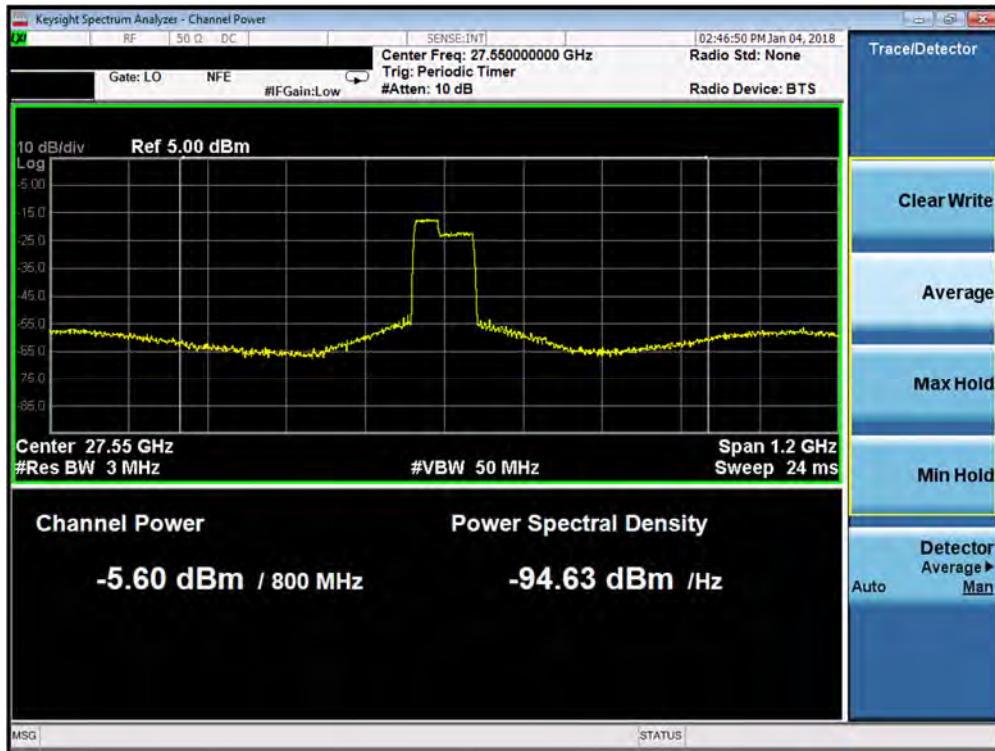
Chan.	Channel Freq [GHz]	CCs active	Modulation	Horn Angle [degrees]	Horn Height [cm]	Turntable Azimuth [degrees]	Analyzer Level [dBm]	AFCL [dB/m]	EUT Antenna Gain [dBi]	Average e.i.r.p. [dBm]	Conducted Average Power [dBm]
Low	27.9	0	QPSK	135.0	153	352	-5.49	52.80	28.15	53.12	24.97
Low	27.9	0	16QAM	135.0	153	352	-5.60	52.80	28.15	53.01	24.86
Low	27.9	0	64QAM	135.0	153	352	-4.85	52.80	28.15	53.76	25.61
Mid	27.925	4	QPSK	135.0	153	352	-5.20	52.80	28.15	53.41	25.26
Mid	27.925	4	16QAM	135.0	153	352	-5.09	52.80	28.15	53.52	25.37
Mid	27.925	4	64QAM	135.0	153	352	-4.89	52.80	28.15	53.72	25.57
High	27.95	7	QPSK	135.0	153	352	-3.92	52.80	28.15	54.69	26.54
High	27.95	7	16QAM	135.0	153	352	-4.10	52.80	28.15	54.51	26.36
High	27.95	7	64QAM	135.0	153	352	-3.91	52.80	28.15	54.70	26.55
Low	27.9	0-7	QPSK	135.0	153	352	-3.85	52.80	28.15	54.76	26.61
Low	27.9	0-7	16QAM	135.0	153	352	-4.46	52.80	28.15	54.15	26.00
Low	27.9	0-7	64QAM	135.0	153	352	-3.72	52.80	28.15	54.89	26.74
Mid	27.925	0-7	QPSK	135.0	153	352	-4.02	52.80	28.15	54.59	26.44
Mid	27.925	0-7	16QAM	135.0	153	352	-4.11	52.80	28.15	54.50	26.35
Mid	27.925	0-7	64QAM	135.0	153	352	-4.00	52.80	28.15	54.61	26.46
High	27.95	0-7	QPSK	135.0	153	352	-4.71	52.80	28.15	53.90	25.75
High	27.95	0-7	16QAM	135.0	153	352	-4.76	52.80	28.15	53.85	25.70
High	27.95	0-7	64QAM	135.0	153	352	-4.45	52.80	28.15	54.16	26.01

Table 7-14. Antenna C Conducted Power Summary Data

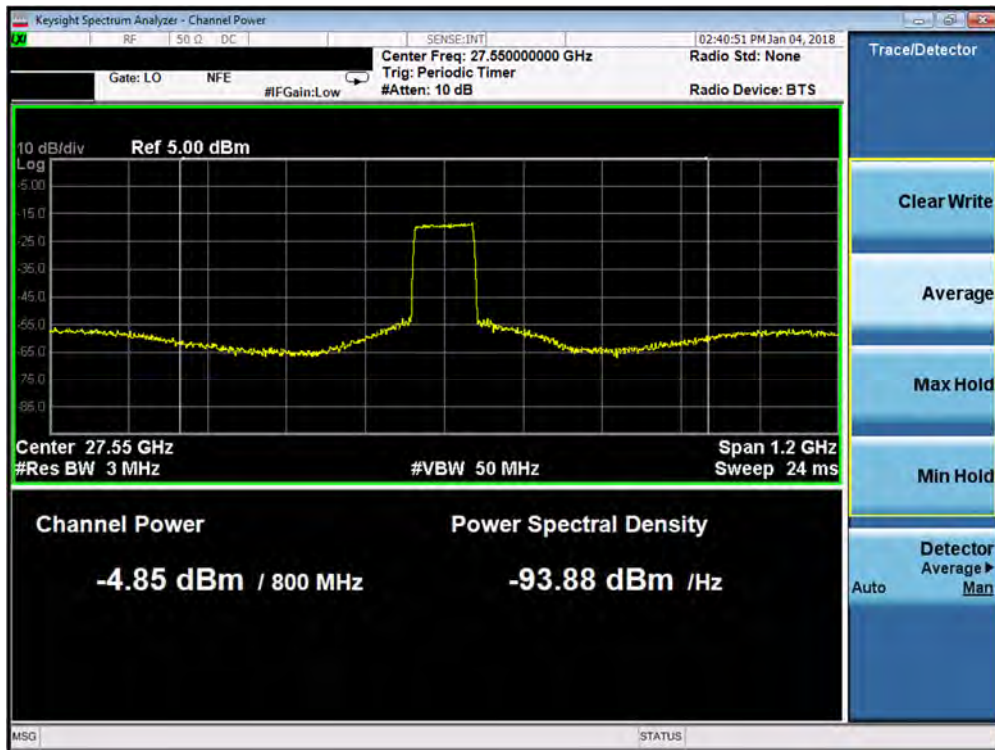


Plot 7-133. Antenna C EIRP Plot (1CC QPSK Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 94 of 221

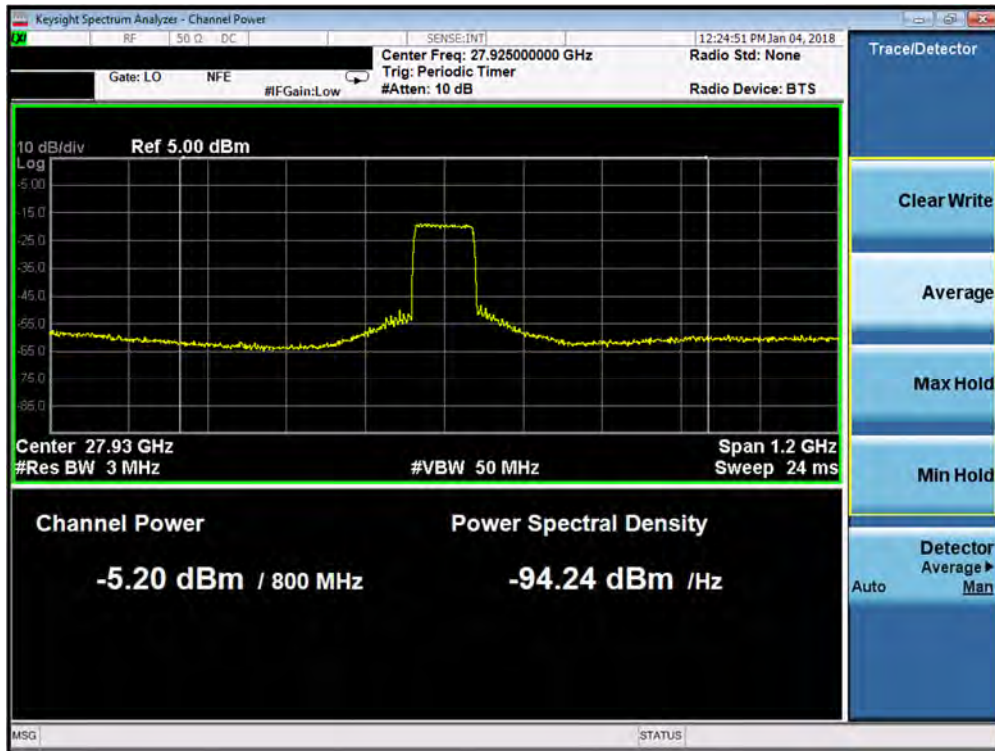


Plot 7-134. Antenna C EIRP Plot (1CC 16QAM Low Channel)

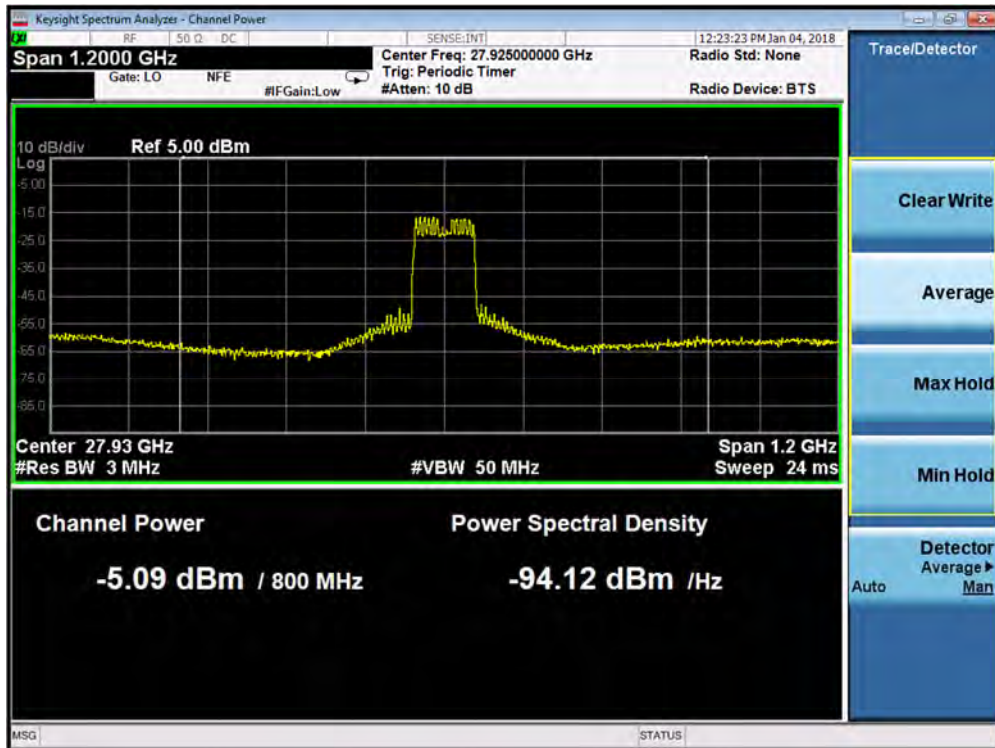


Plot 7-135. Antenna C EIRP Plot (1CC 64QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 95 of 221

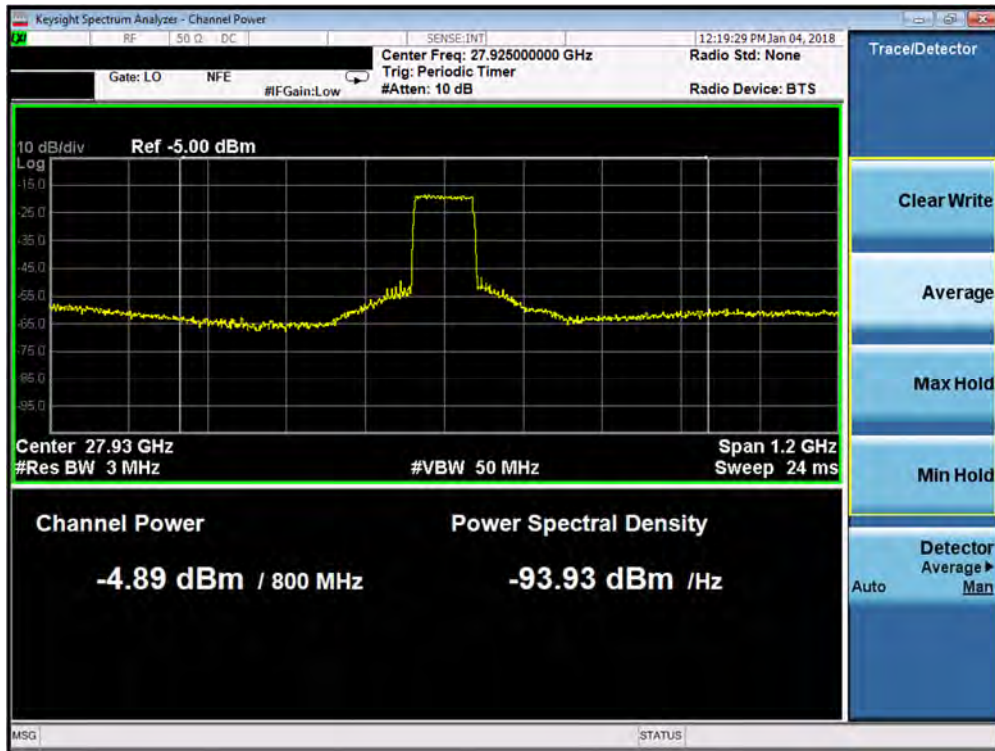


Plot 7-136. Antenna C EIRP Plot (1CC QPSK Mid Channel)

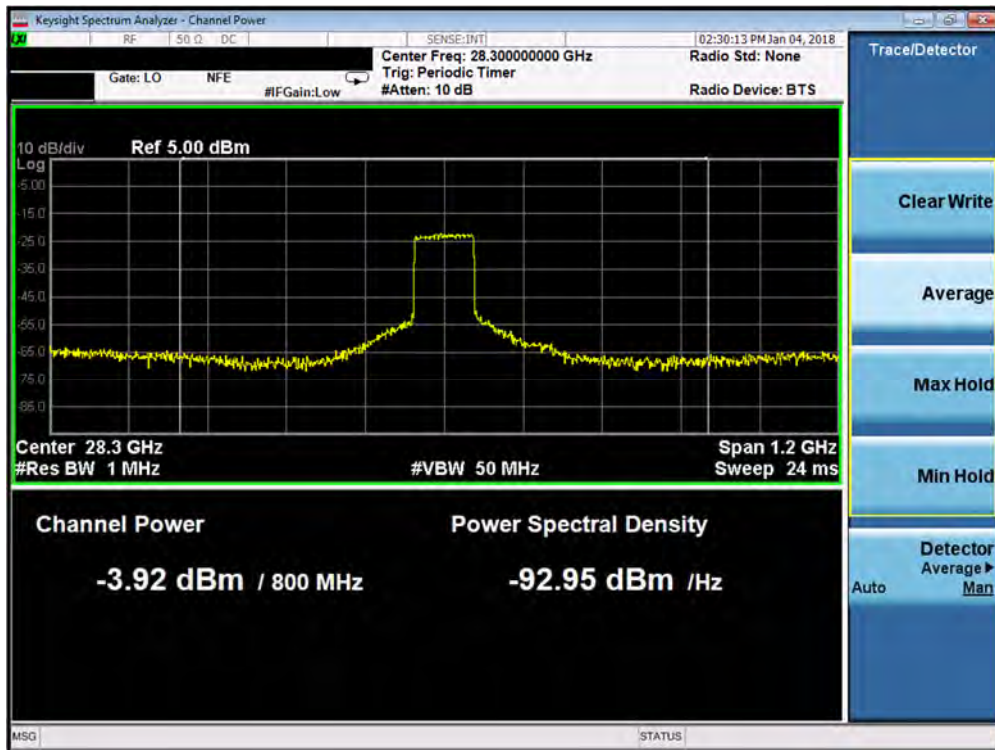


Plot 7-137. Antenna C EIRP Plot (1CC 16QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 96 of 221

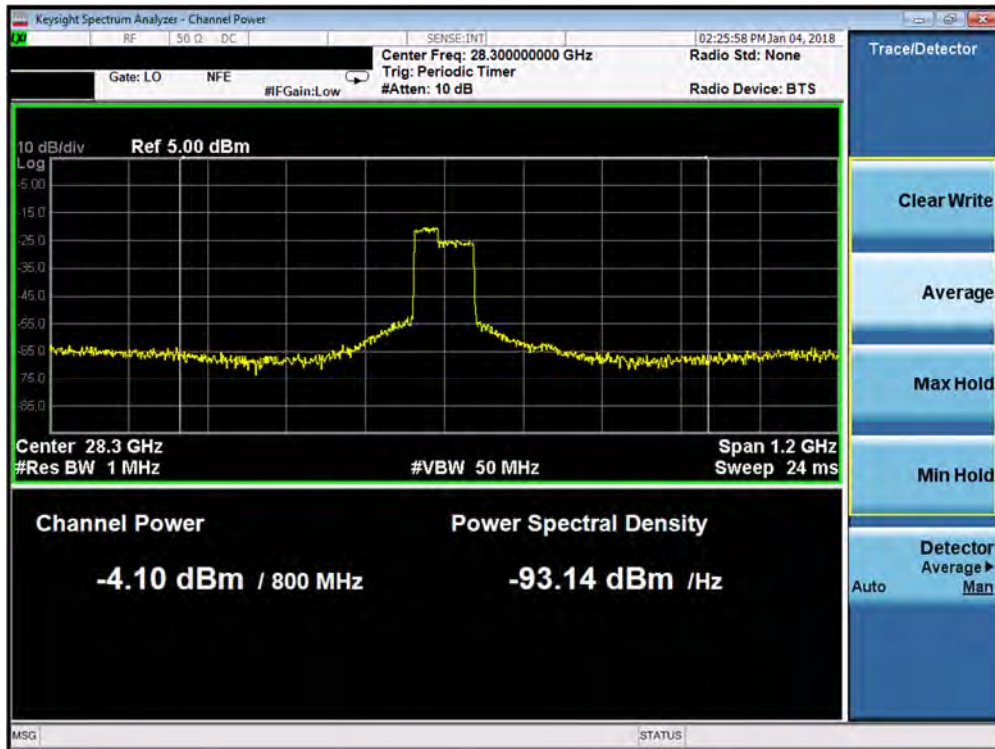


Plot 7-138. Antenna C EIRP Plot (1CC 64QAM Mid Channel)

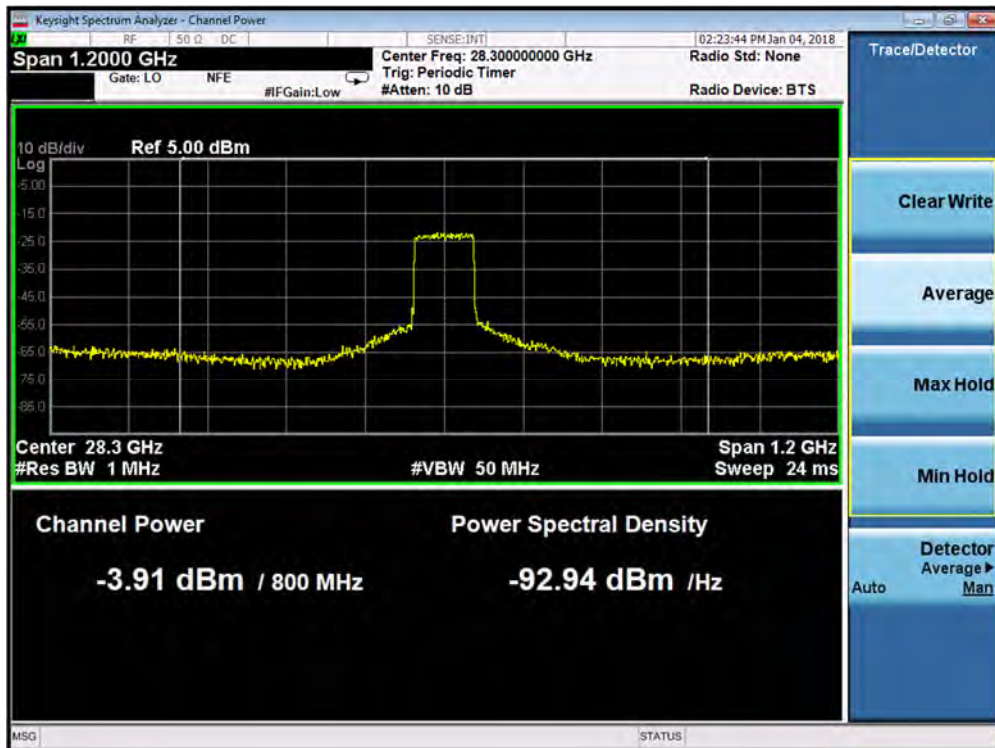


Plot 7-139. Antenna C EIRP Plot (1CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 97 of 221

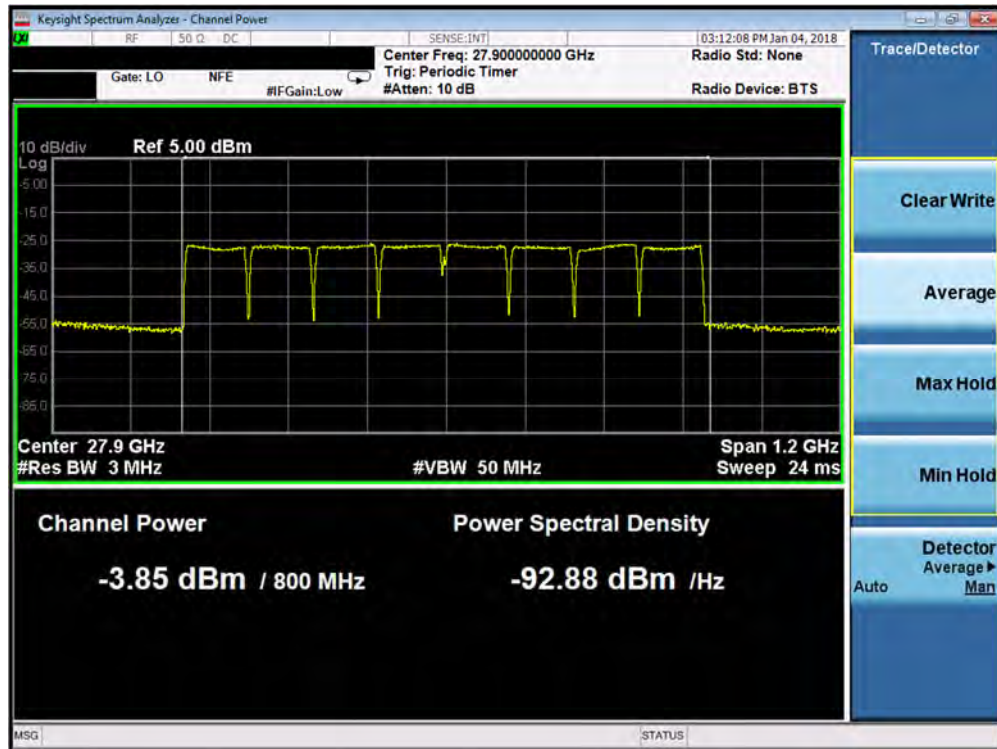


Plot 7-140. Antenna C EIRP Plot (1CC 16QAM High Channel)

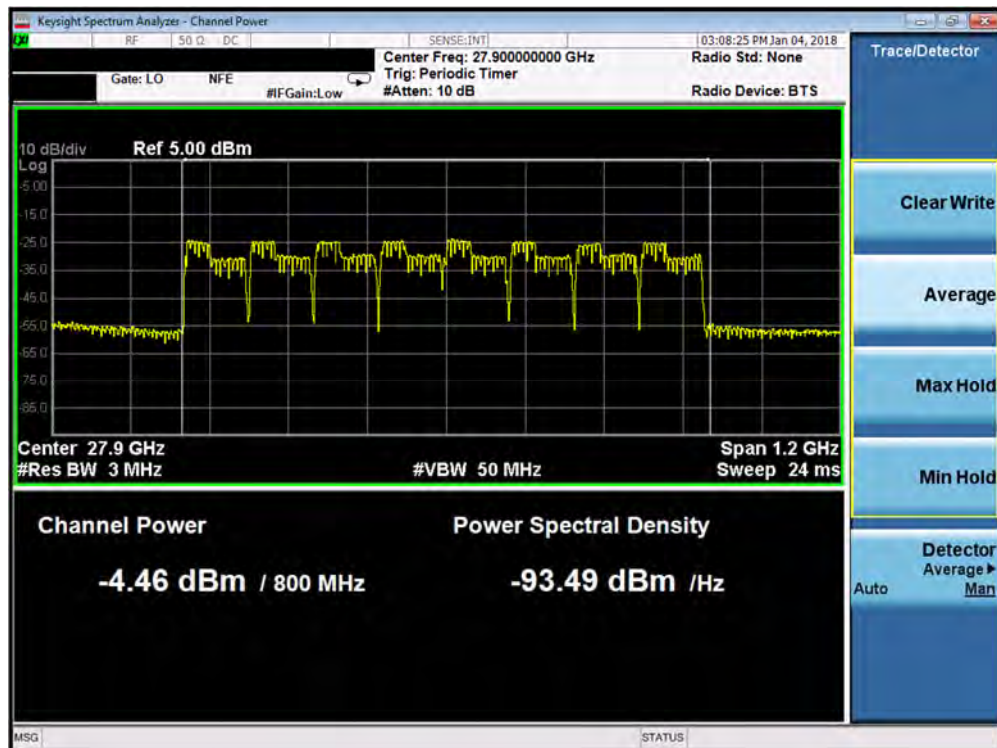


Plot 7-141. Antenna C EIRP Plot (1CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 98 of 221

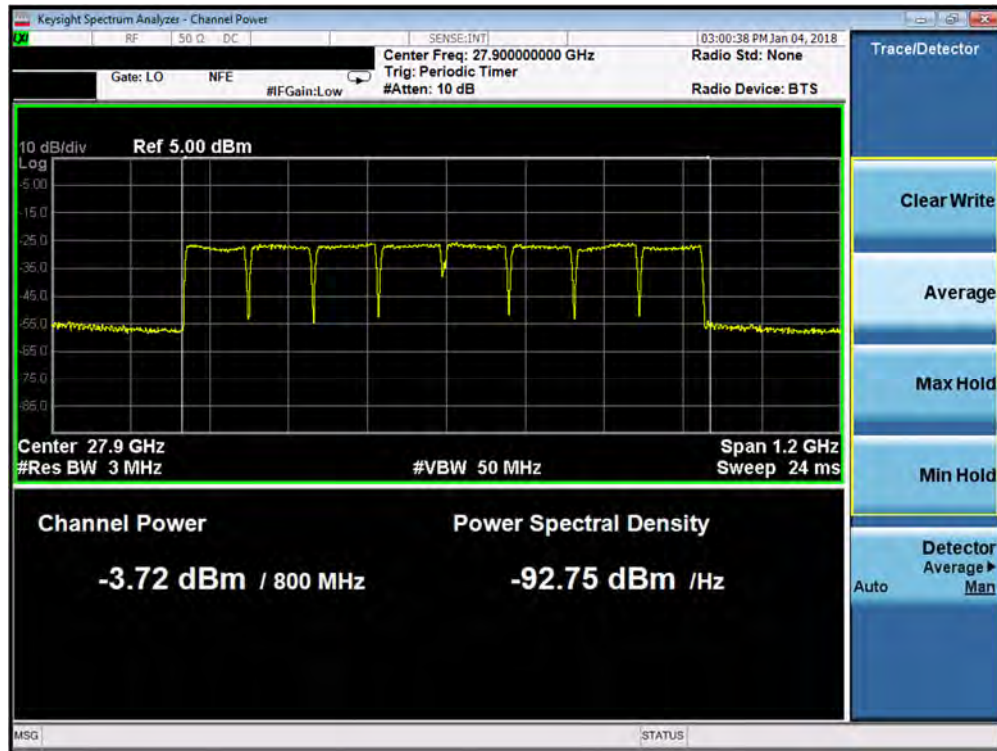


Plot 7-142. Antenna C EIRP Plot (8CC QPSK Low Channel)

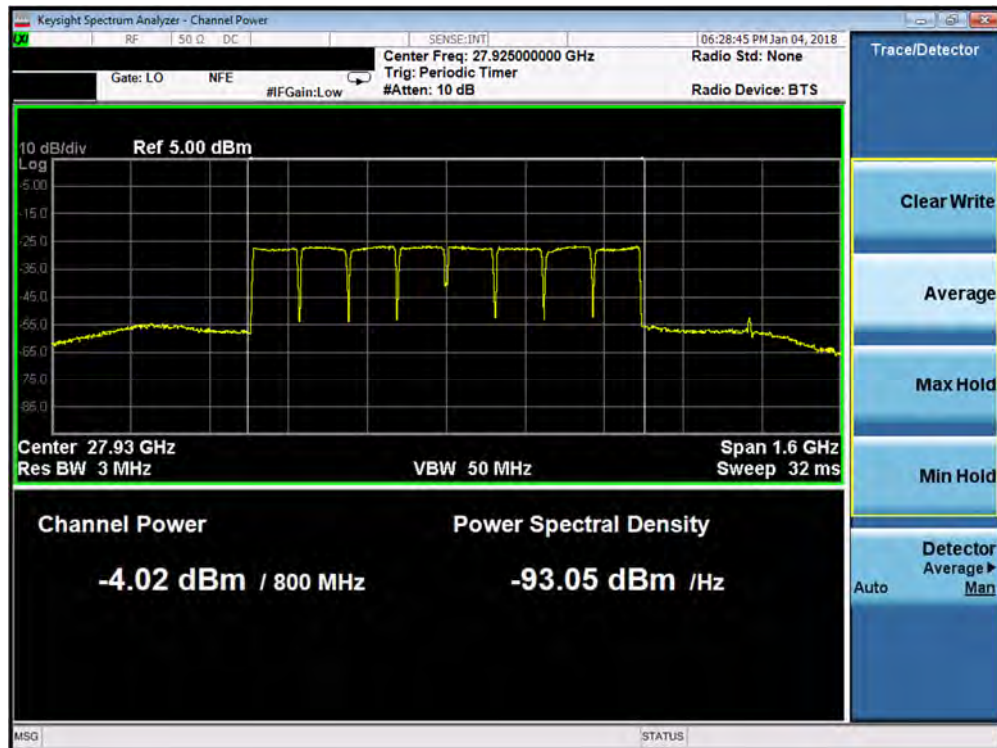


Plot 7-143. Antenna C EIRP Plot (8CC 16QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 99 of 221

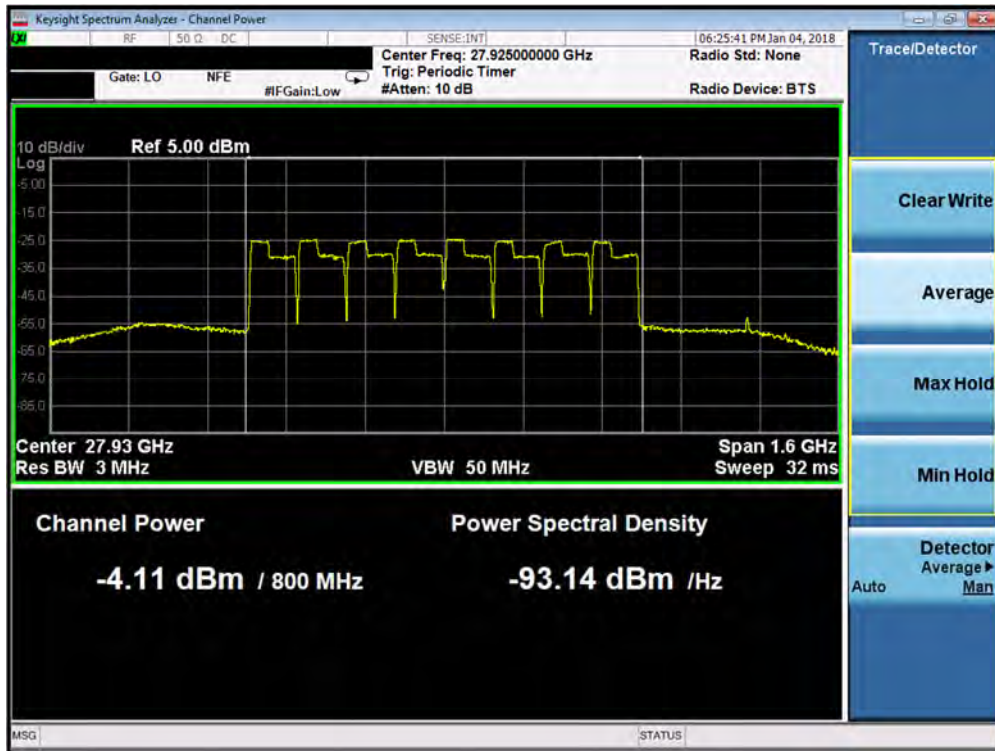


Plot 7-144. Antenna C EIRP Plot (8CC 64QAM Low Channel)

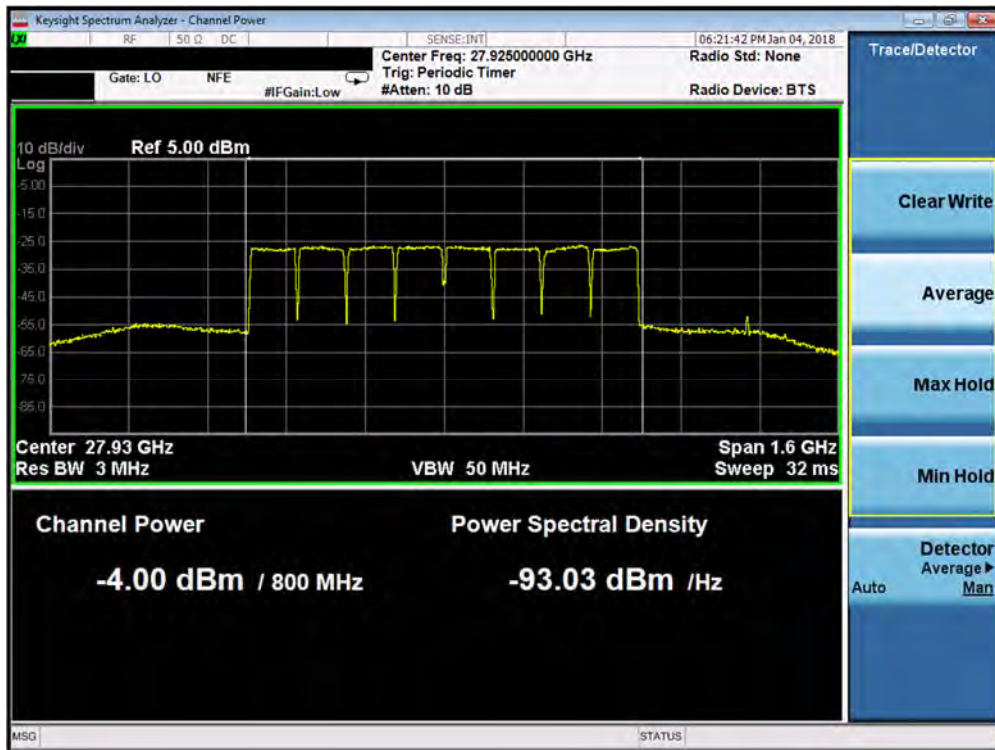


Plot 7-145. Antenna C EIRP Plot (8CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 100 of 221

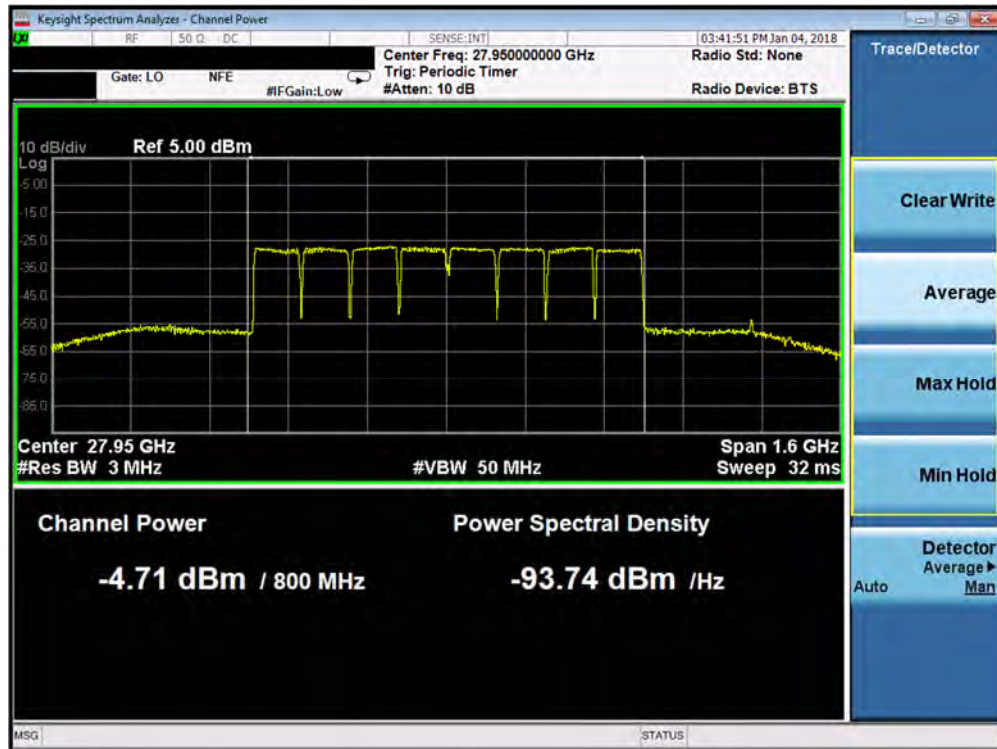


Plot 7-146. Antenna C EIRP Plot (8CC 16QAM Mid Channel)



Plot 7-147. Antenna C EIRP Plot (8CC 64QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 101 of 221

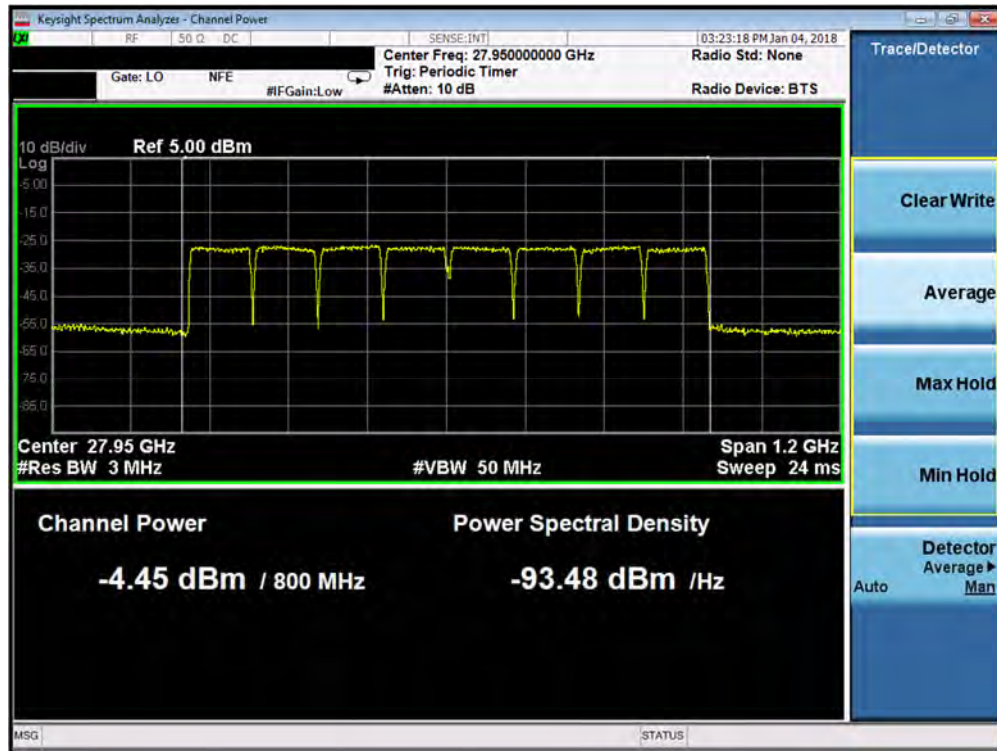


Plot 7-148. Antenna C EIRP Plot (8CC QPSK High Channel)



Plot 7-149. Antenna C EIRP Plot (8CC 16QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 102 of 221



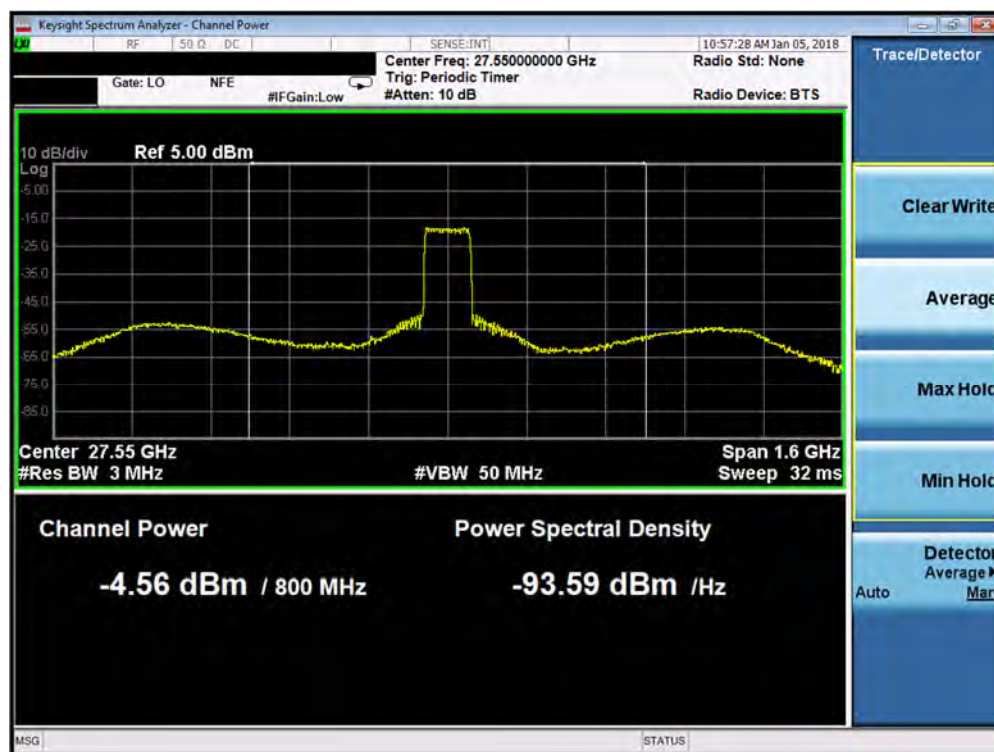
Plot 7-150. Antenna C EIRP Plot (8CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 103 of 221

7.4.4 Antenna D Conducted Power

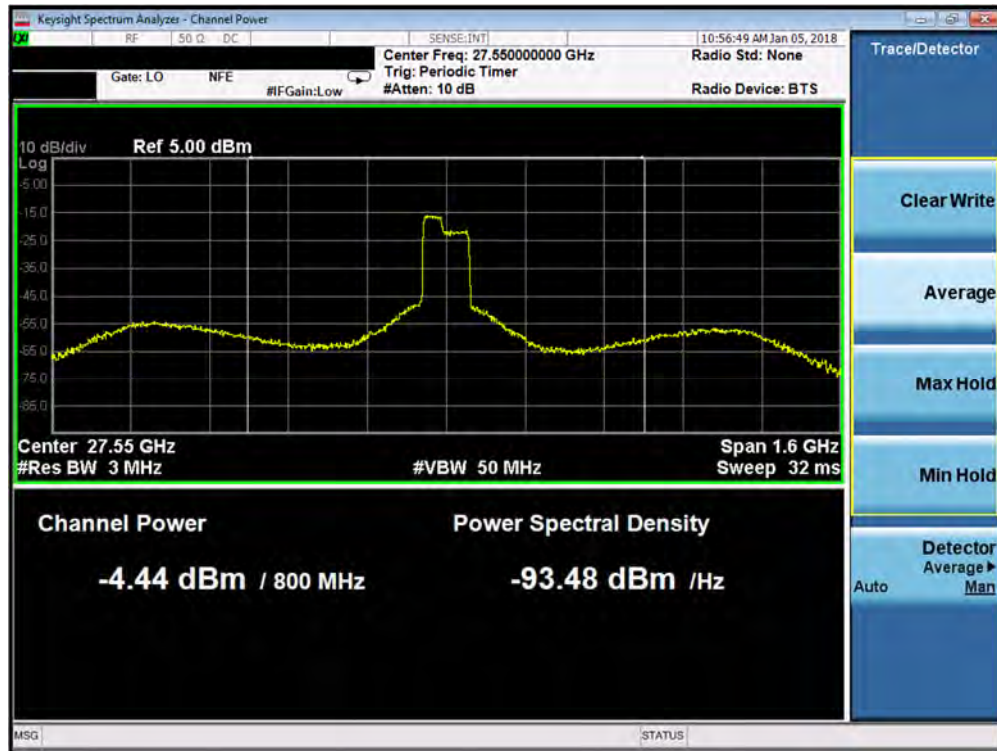
Antenna	Chan.	Channel Freq [GHz]	CCs active	Modulation	Horn Angle	Horn Height	Turntable Azimuth	Analyzer Level	AFCL	EUT Antenna Gain	Average e.i.r.p.	Conducted Average Power
					[degrees]	[cm]	[degrees]	[dBm]	[dB/m]	[dBi]	[dBm]	[dBm]
D	Low	27.9	0	QPSK	45.0	146	356	-4.56	52.80	28.15	54.05	25.90
	Low	27.9	0	16QAM	45.0	146	356	-4.44	52.80	28.15	54.17	26.02
	Low	27.9	0	64QAM	45.0	146	356	-4.29	52.80	28.15	54.32	26.17
	Mid	27.925	4	QPSK	45.0	146	356	-4.11	52.80	28.15	54.50	26.35
	Mid	27.925	4	16QAM	45.0	146	356	-3.77	52.80	28.15	54.84	26.69
	Mid	27.925	4	64QAM	45.0	146	356	-3.66	52.80	28.15	54.95	26.80
	High	27.95	7	QPSK	45.0	146	356	-4.30	52.80	28.15	54.31	26.16
	High	27.95	7	16QAM	45.0	146	356	-4.44	52.80	28.15	54.17	26.02
	High	27.95	7	64QAM	45.0	146	356	-4.19	52.80	28.15	54.42	26.27
	Low	27.9	0-7	QPSK	45.0	153	347	-4.55	52.80	28.15	54.06	25.91
	Low	27.9	0-7	16QAM	45.0	153	347	-4.27	52.80	28.15	54.34	26.19
	Low	27.9	0-7	64QAM	45.0	146	356	-4.09	52.80	28.15	54.52	26.37
	Mid	27.925	0-7	QPSK	45.0	153	347	-4.47	52.80	28.15	54.14	25.99
	Mid	27.925	0-7	16QAM	45.0	153	347	-4.83	52.80	28.15	53.78	25.63
	Mid	27.925	0-7	64QAM	45.0	146	356	-4.26	52.80	28.15	54.35	26.20
	High	27.95	0-7	QPSK	45.0	153	347	-4.39	52.80	28.15	54.22	26.07
	High	27.95	0-7	16QAM	45.0	153	347	-4.32	52.80	28.15	54.29	26.14
	High	27.95	0-7	64QAM	45.0	146	356	-4.05	52.80	28.15	54.56	26.41

Table 7-15. Antenna D Conducted Power Summary Data

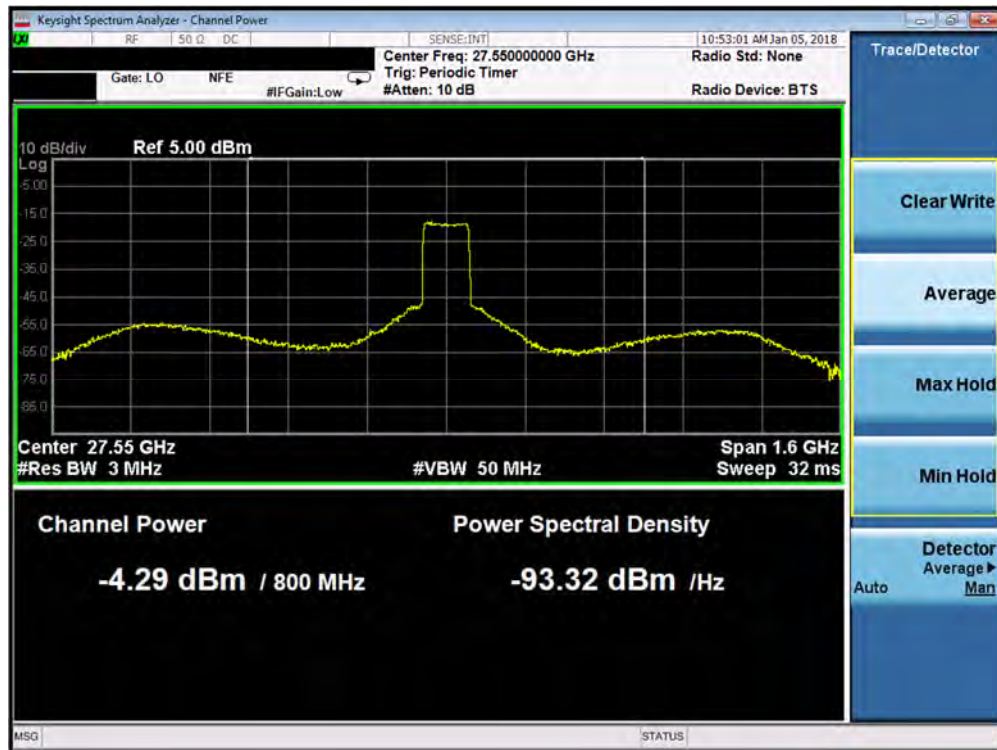


Plot 7-151. Antenna D EIRP Plot (1CC QPSK Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 104 of 221



Plot 7-152. Antenna D EIRP Plot (1CC 16QAM Low Channel)

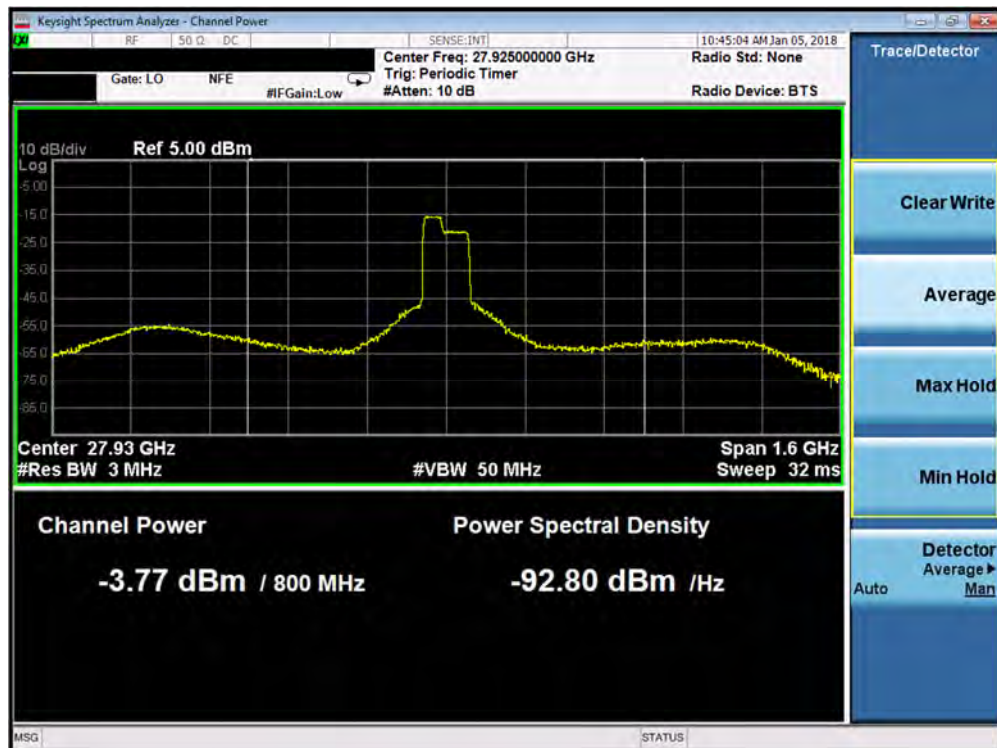


Plot 7-153. Antenna D EIRP Plot (1CC 64QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 105 of 221

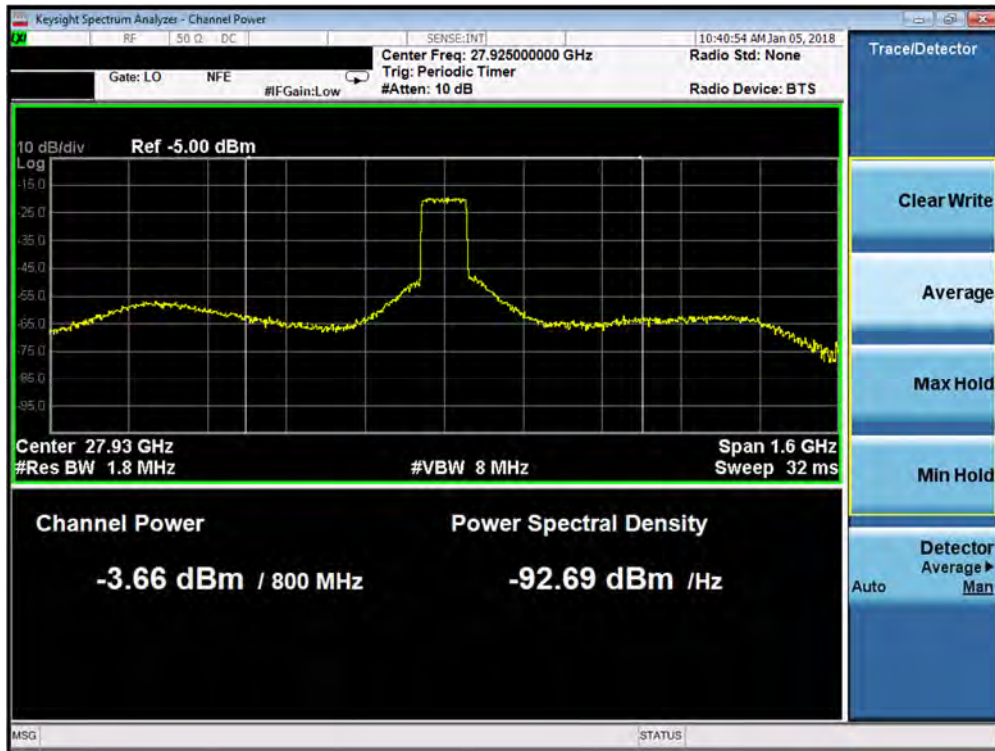


Plot 7-154. Antenna D EIRP Plot (1CC QPSK Mid Channel)

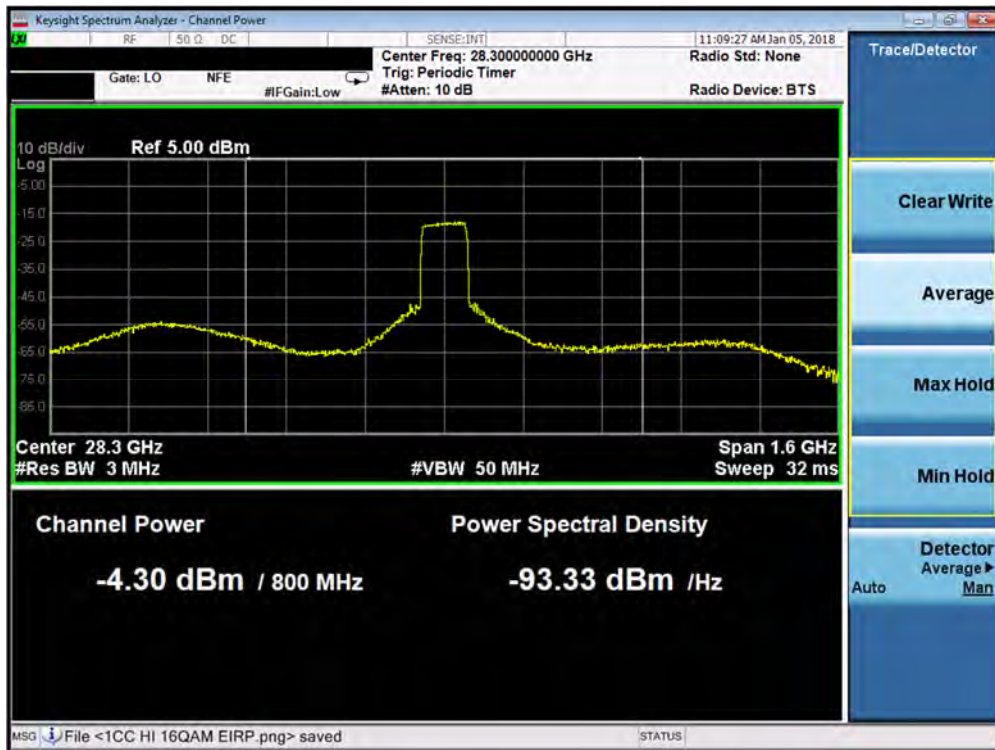


Plot 7-155. Antenna D EIRP Plot (1CC 16QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 106 of 221



Plot 7-156. Antenna D EIRP Plot (1CC 64QAM Mid Channel)

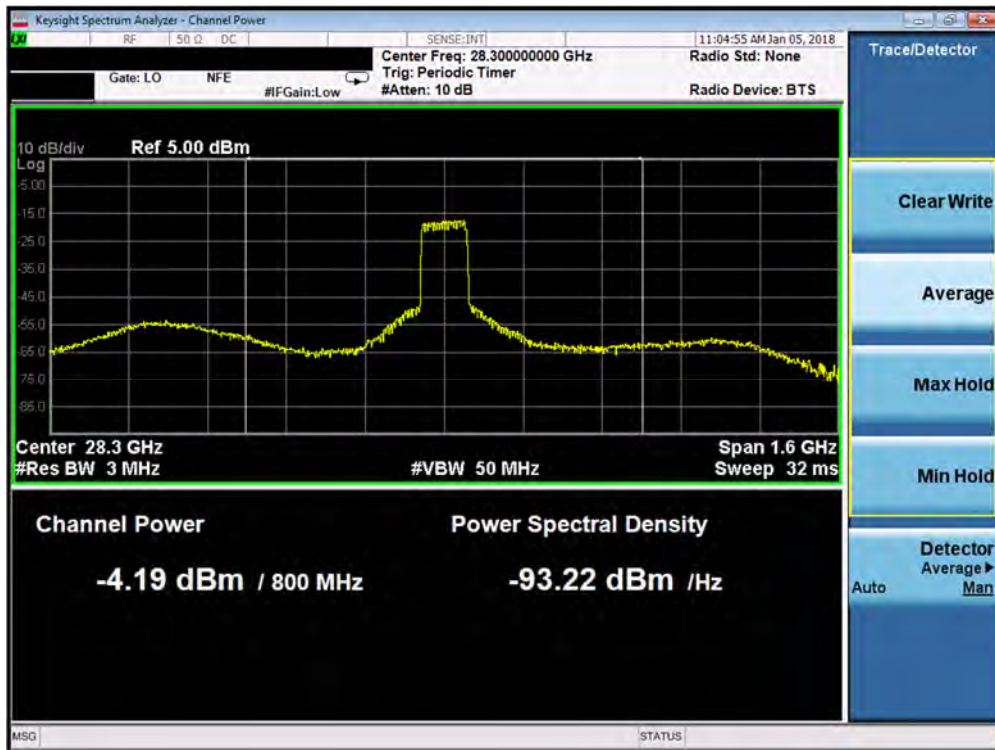


Plot 7-157. Antenna D EIRP Plot (1CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 107 of 221

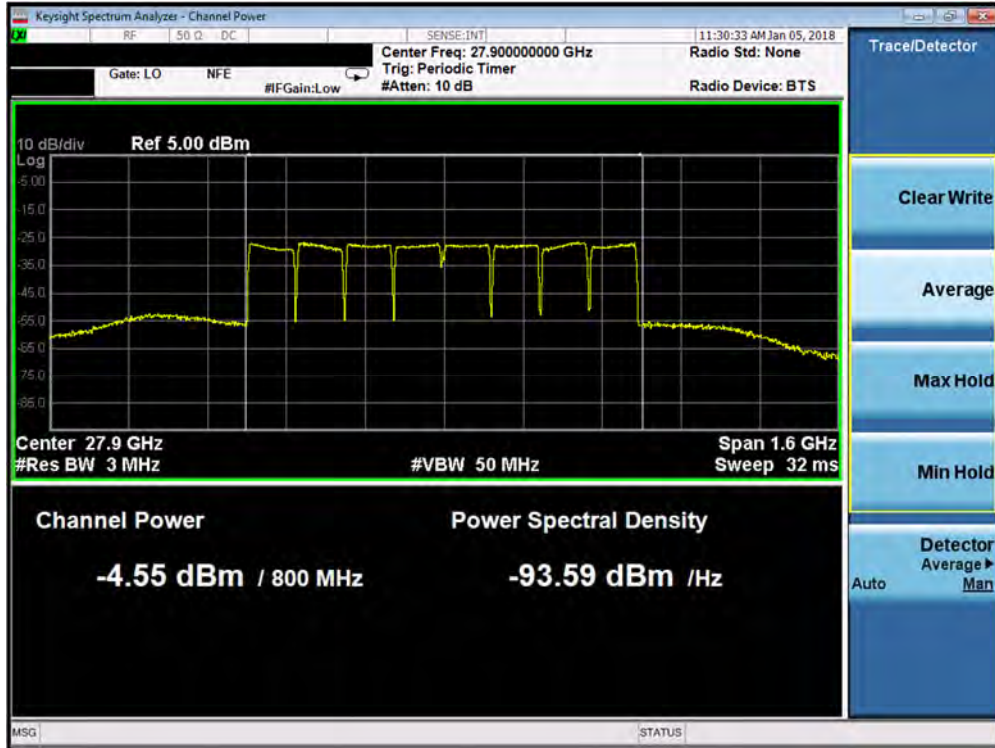


Plot 7-158. Antenna D EIRP Plot (1CC 16QAM High Channel)



Plot 7-159. Antenna D EIRP Plot (1CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 108 of 221

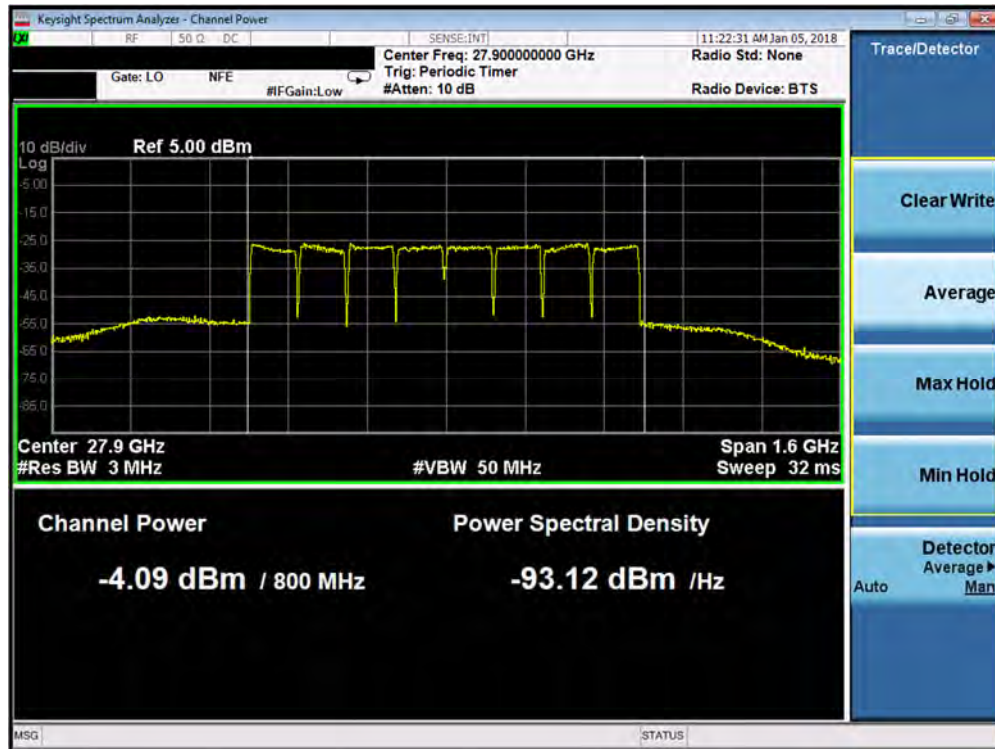


Plot 7-160. Antenna D EIRP Plot (8CC QPSK Low Channel)



Plot 7-161. Antenna D EIRP Plot (8CC 16QAM Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 109 of 221

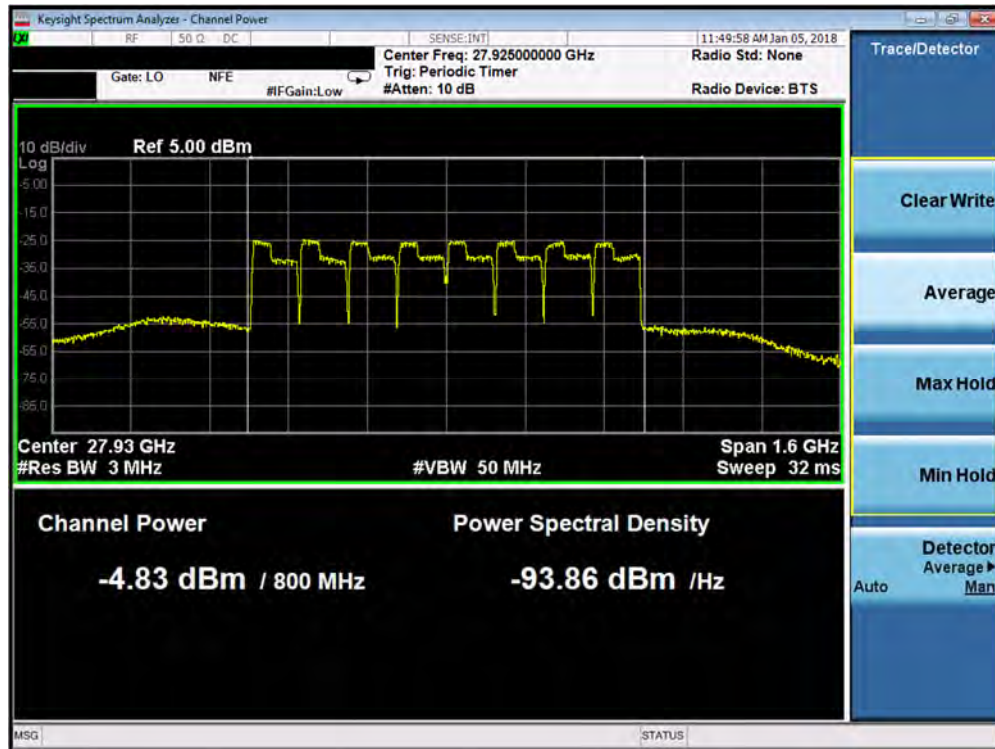


Plot 7-162. Antenna D EIRP Plot (8CC 64QAM Low Channel)

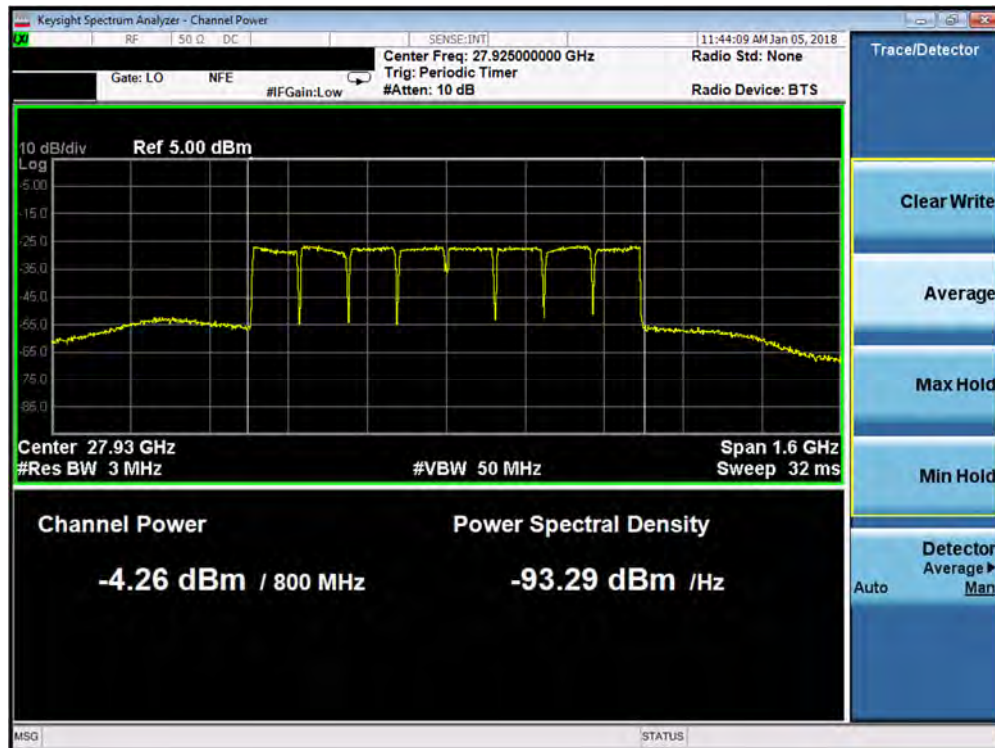


Plot 7-163. Antenna D EIRP Plot (8CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 110 of 221



Plot 7-164. Antenna D EIRP Plot (8CC 16QAM Mid Channel)

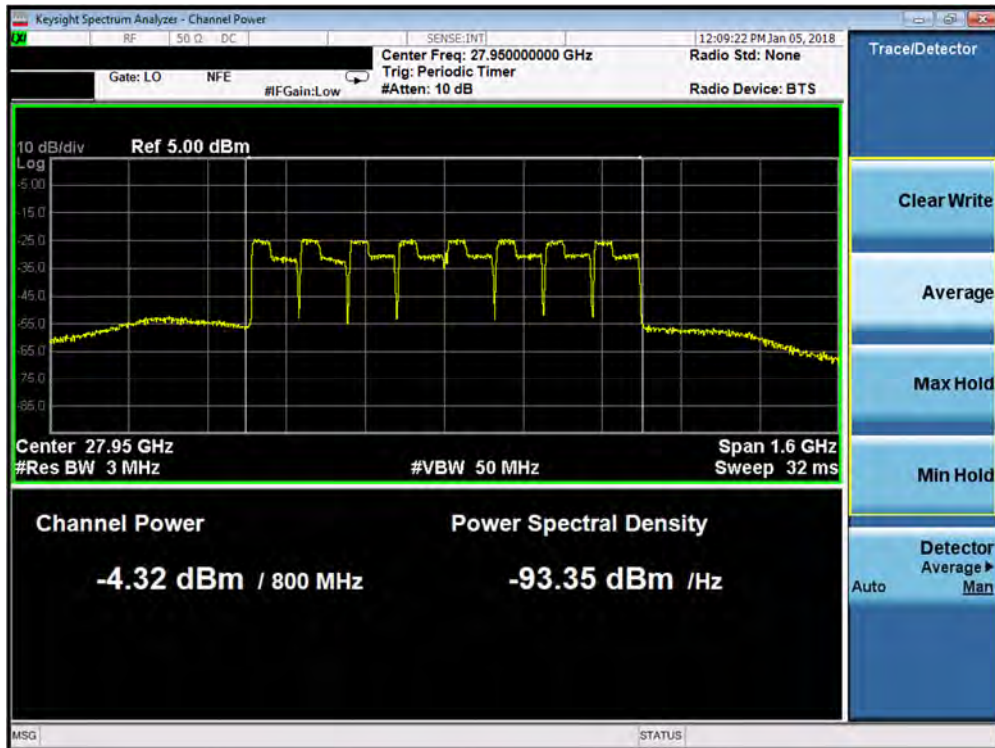


Plot 7-165. Antenna D EIRP Plot (8CC 64QAM Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 111 of 221

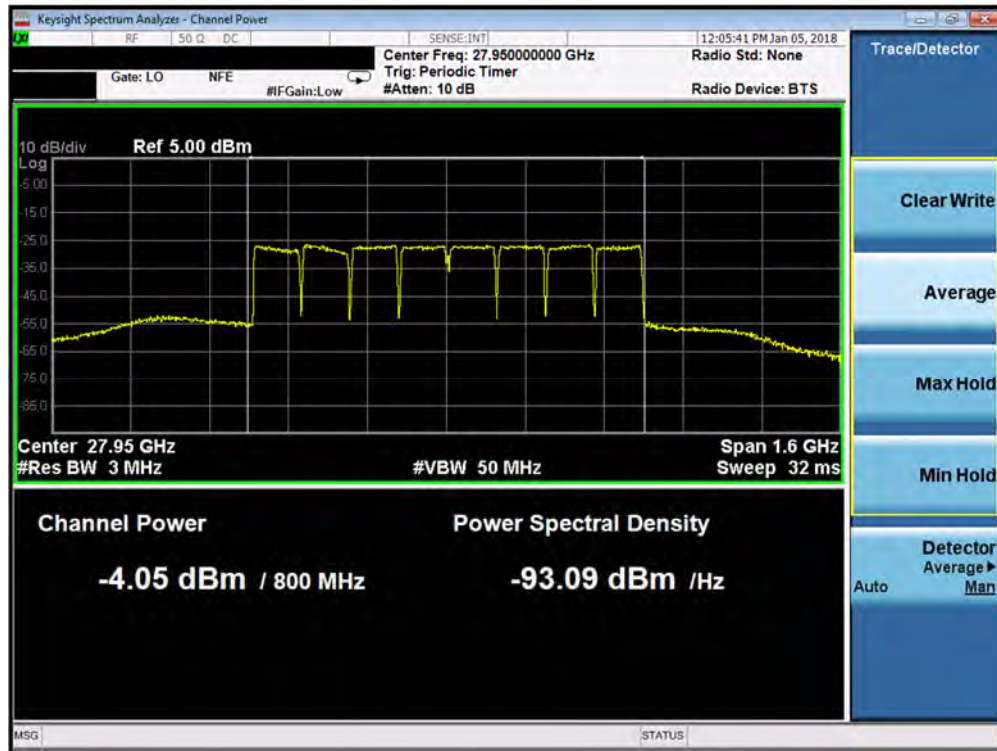


Plot 7-166. Antenna D EIRP Plot (8CC QPSK High Channel)



Plot 7-167. Antenna D EIRP Plot (8CC 16QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 112 of 221



Plot 7-168. Antenna D EIRP Plot (8CC 64QAM High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 113 of 221

7.4.5 Total Conducted Power (Summed Across All Antennas)

Antenna	Chan.	Channel Freq [GHz]	CCs active	Modulation	Ant A	Ant B	Ant C	Ant D	Conducted Average Power
									[dBm]
A+B+C+D	Low	27.9	0	QPSK	25.10	25.32	24.97	25.90	31.35
	Low	27.9	0	16QAM	24.72	25.69	24.86	26.02	31.37
	Low	27.9	0	64QAM	24.68	25.41	25.61	26.17	31.52
	Mid	27.925	4	QPSK	25.97	26.52	25.26	26.35	32.07
	Mid	27.925	4	16QAM	25.84	26.86	25.37	26.69	32.25
	Mid	27.925	4	64QAM	25.37	26.90	25.57	26.80	32.23
	High	27.95	7	QPSK	25.77	26.66	26.54	26.16	32.31
	High	27.95	7	16QAM	25.56	26.59	26.36	26.02	32.17
	High	27.95	7	64QAM	25.67	26.48	26.55	26.27	32.27
	Low	27.9	0-7	QPSK	26.55	25.61	26.61	25.91	32.21
	Low	27.9	0-7	16QAM	26.49	25.52	26.00	26.19	32.08
	Low	27.9	0-7	64QAM	26.50	25.58	26.74	26.37	32.34
	Mid	27.925	0-7	QPSK	26.33	25.60	26.44	25.99	32.12
	Mid	27.925	0-7	16QAM	26.22	25.59	26.35	25.63	31.98
	Mid	27.925	0-7	64QAM	26.29	25.56	26.46	26.20	32.16
	High	27.95	0-7	QPSK	26.21	26.01	25.75	26.07	32.03
	High	27.95	0-7	16QAM	26.16	26.01	25.70	26.14	32.02
	High	27.95	0-7	64QAM	26.22	25.85	26.01	26.41	32.14

Table 7-16. Total Conducted Power Summary Data

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 114 of 221

7.5 Radiated Spurious and Harmonic Emissions

§2.1051 §30.203

Test Overview

Out of band emissions were scanned from 30MHz to 100GHz in a radiated test setup with the EUT operating at maximum duty cycle and power. Spurious emission plots were obtained for Low, Mid, and High operating channels. All modulations and applicable CC settings were investigated to determine worst case condition.

The conductive power or total radiated power of any emissions outside a licensee's frequency block shall be -13dBm/1MHz.

Test Procedure Used

ANSI C63.26-2015 Section 5.7.4

ANSI C63.26-2015 Section 6.4

Test Settings

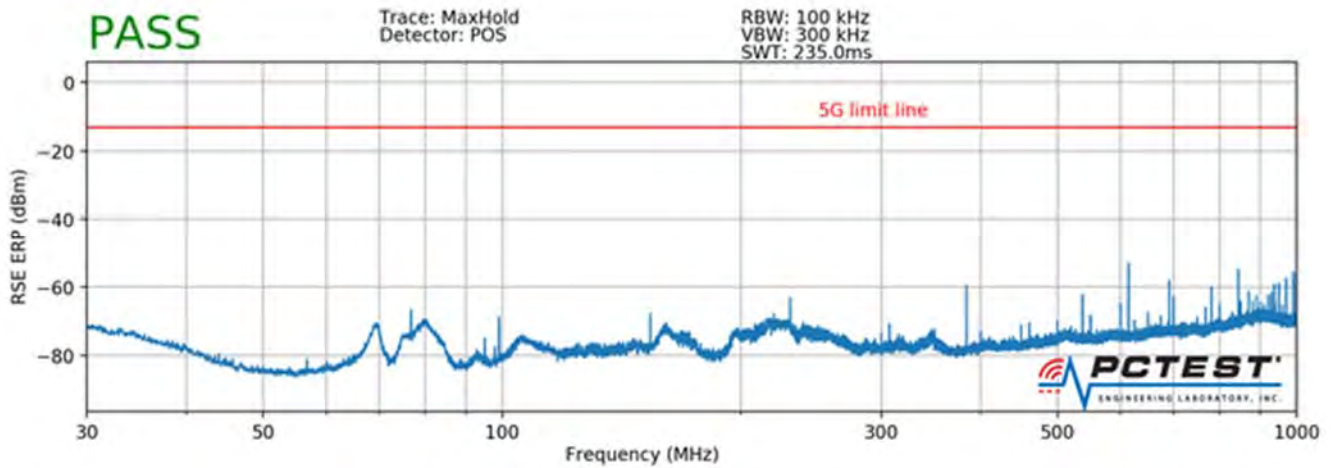
1. Start frequency was set to 30MHz and stop frequency was set to 100 GHz. Several plots are used to show investigations in this entire span.
2. Detector = RMS
3. Trace mode = trace average
4. Sweep time = auto couple
5. Number of sweep points $\geq 2 \times \text{Span/RBW}$
6. The trace was allowed to stabilize
7. RBW = 1MHz, VBW = 1MHz

Test Notes

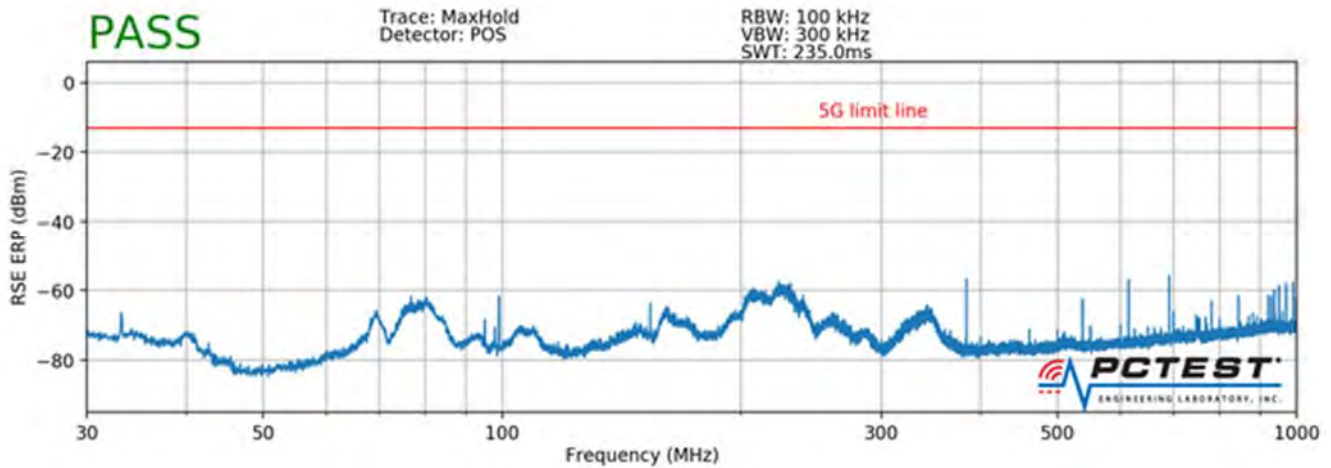
- 1) The EUT was tested while positioned upright and mounted on a mast 1.5m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.
- 2) Emissions below 18GHz were measured at a 3 meter test distance, while emissions above 18GHz were measured at the appropriate far field distance. See Table 3-1 for distances used for measurements based on theoretical far field distance.
- 3) All appropriate Antenna Factors, Cable Losses, and Mixer Conversion Losses have been applied as an offset in the spectrum analyzer for each measurement.
- 4) 1CC = 1 Components Carriers Active, 8CC = 8 Component Carriers Active. Each component carrier's bandwidth is 100MHz.
- 5) The angle of the horn antenna was rotated to maximize and find the worst case emissions. The worst case is reported in this section.
- 6) Spurious emissions were measured with all EUT antennas transmitting simultaneously.
- 7) All out-of-band spurious emission measurements are recorded as EIRP values. TRP or conducted measurements were not needed for this spurious emission evaluation since the measured EIRP levels were all compliant with the §30.203 limits.

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 115 of 221

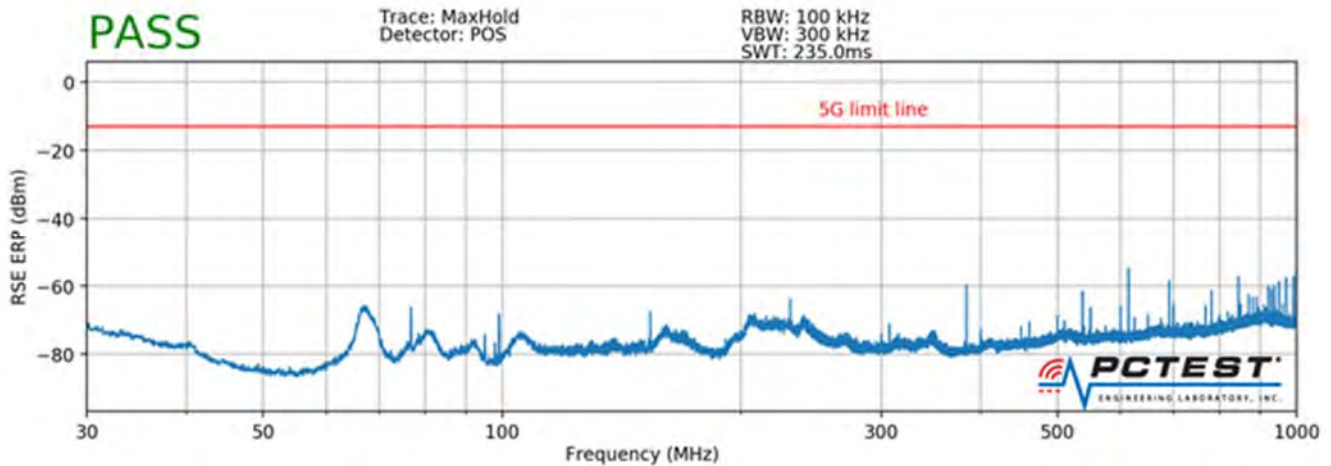
7.5.1 Radiated Spurious Emissions Plots (30MHz – 1GHz)



Plot 7-169. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Low Channel, Ant. Pol. H)

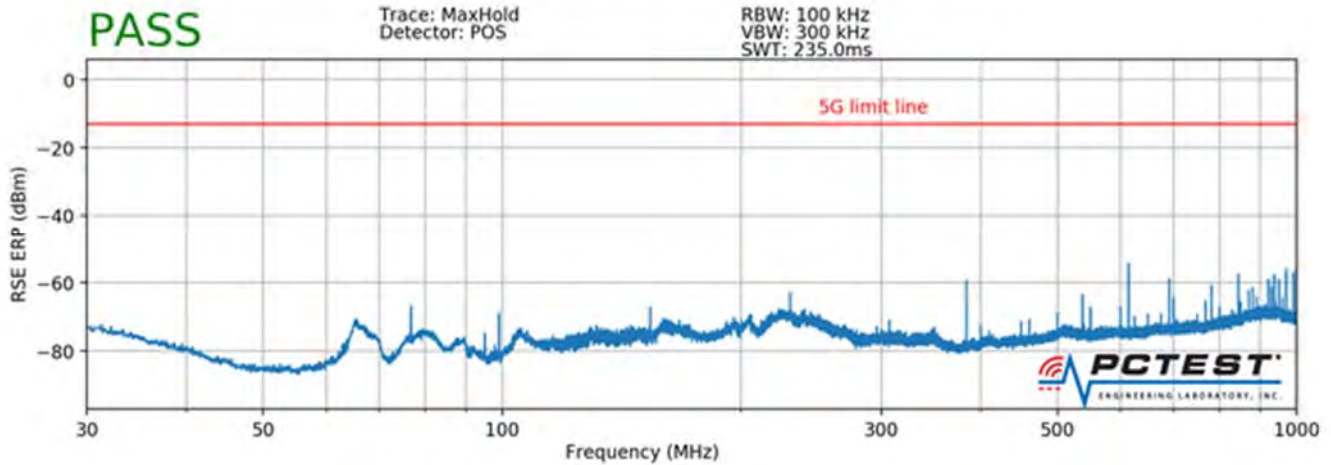


Plot 7-170. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Low Channel, Ant. Pol. V)

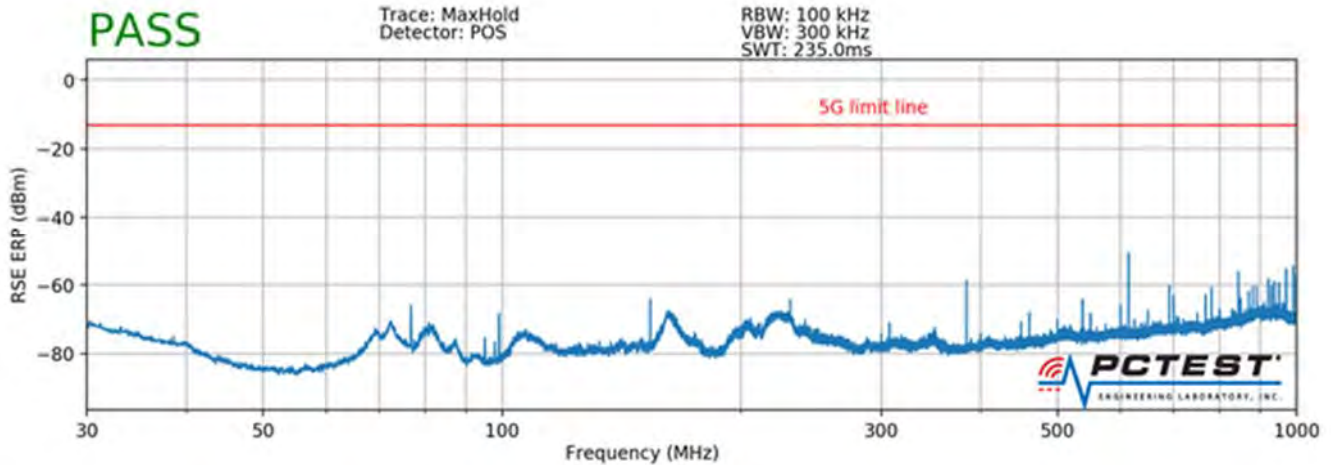


Plot 7-171. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Mid Channel, Ant. Pol. H)

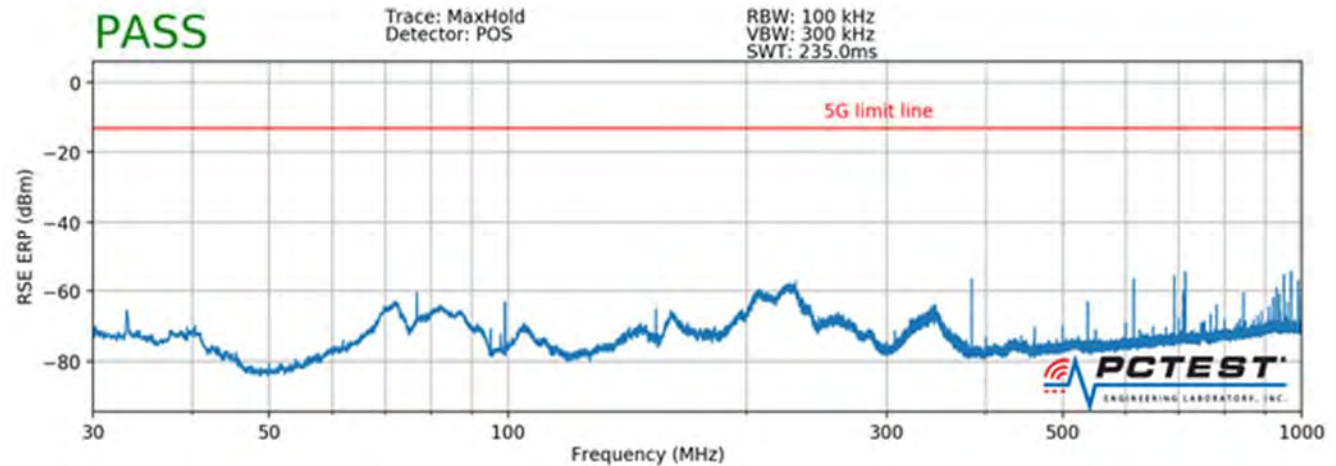
FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 116 of 221



Plot 7-172. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK Mid Channel, Ant. Pol. V)

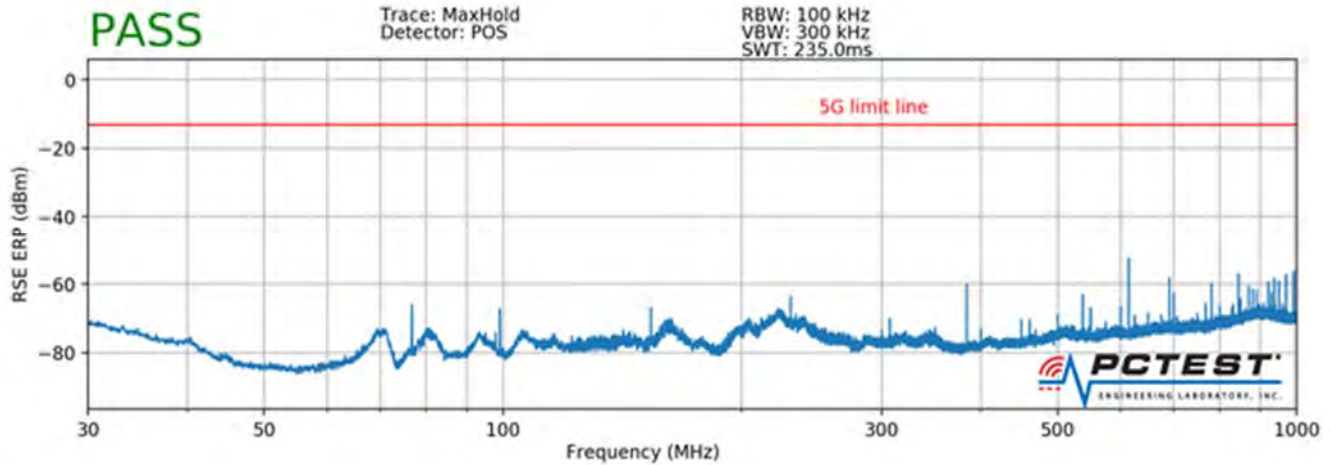


Plot 7-173. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK High Channel, Ant. Pol. H)

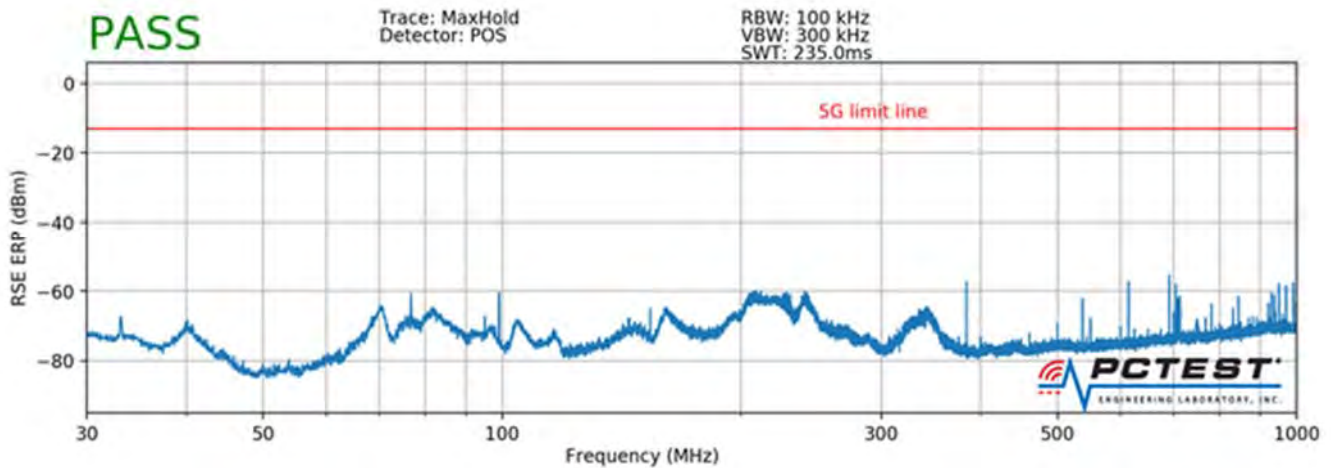


Plot 7-174. Radiated Spurious Plot 30 MHz - 1 GHz (1CC QPSK High Channel, Ant. Pol. V)

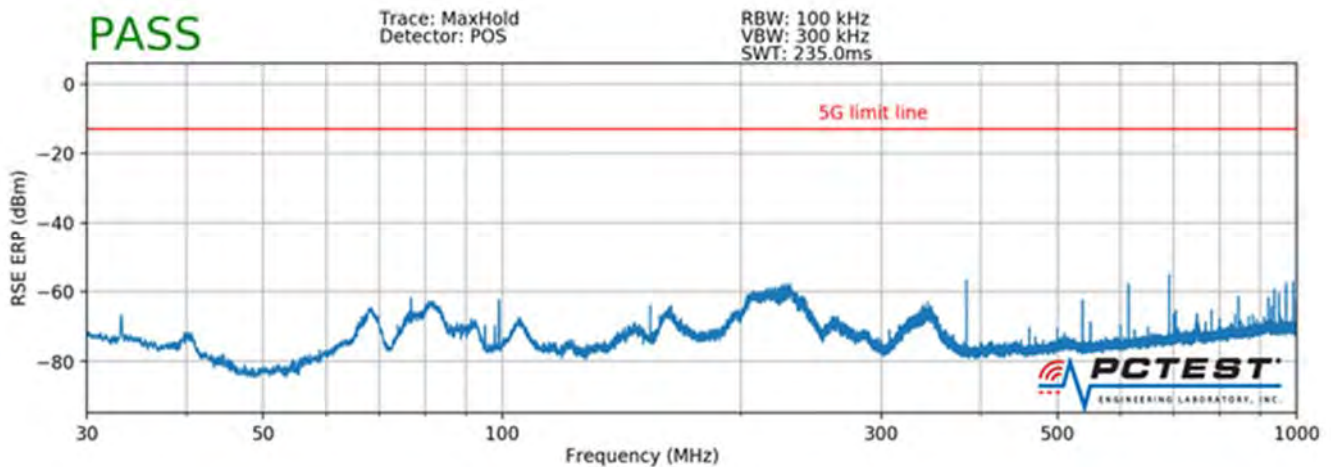
FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 117 of 221



Plot 7-175. Radiated Spurious Plot 30 MHz - 1 GHz (8CC QPSK Low Channel, Ant. Pol. H)

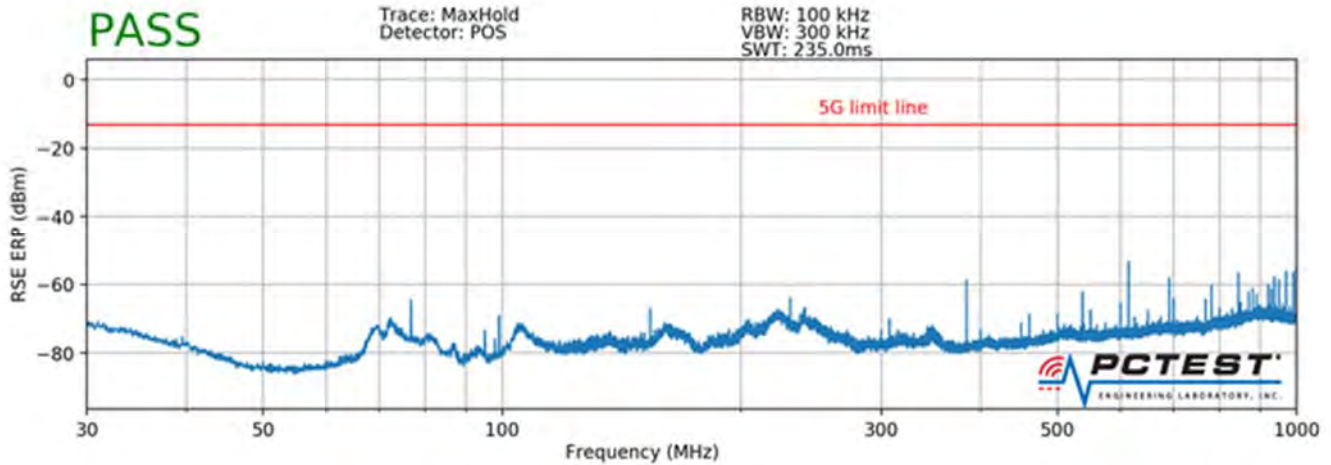


Plot 7-176. Radiated Spurious Plot 30 MHz - 1 GHz (8CC QPSK Low Channel, Ant. Pol. V)

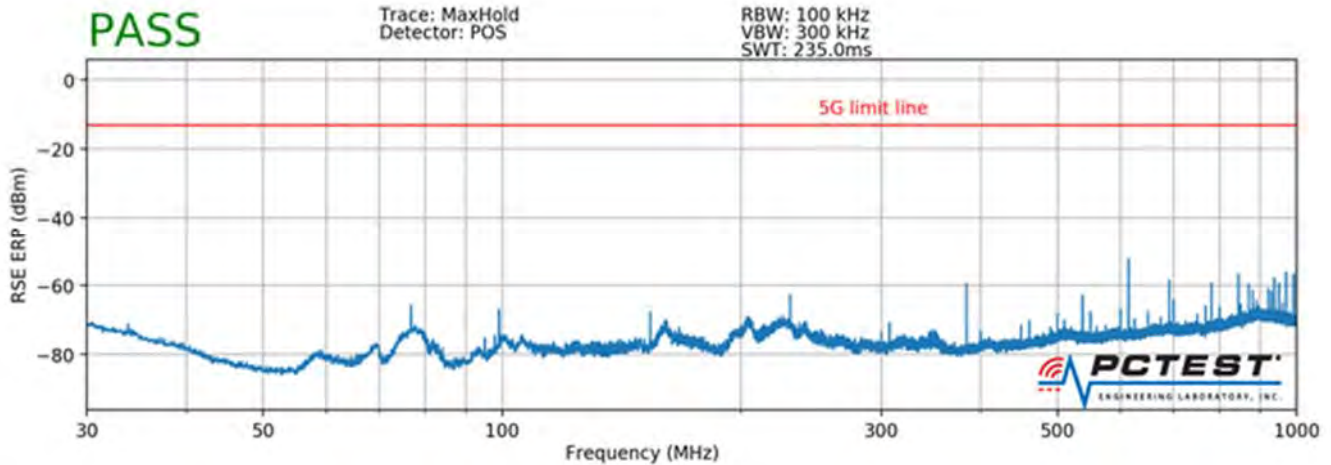


Plot 7-177. Radiated Spurious Plot 30 MHz - 1 GHz (8CC QPSK Mid Channel, Ant. Pol. H)

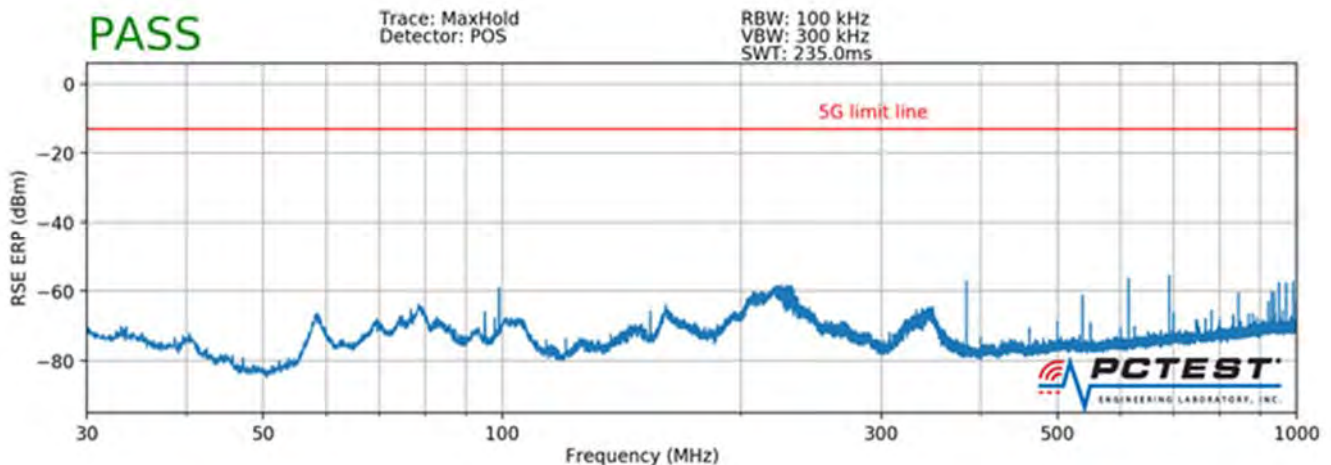
FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 118 of 221



Plot 7-178. Radiated Spurious Plot 30 MHz - 1 GHz (8CC QPSK Mid Channel, Ant. Pol. V)



Plot 7-179. Radiated Spurious Plot 30 MHz - 1 GHz (8CC QPSK High Channel, Ant. Pol. H)



Plot 7-180. Radiated Spurious Plot 30 MHz - 1 GHz (8CC QPSK High Channel, Ant. Pol. V)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 119 of 221

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turn Table Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
76.79	Mid	CC0-CC7	QPSK	H	206	69	-56.01	-22.64	28.35	-66.91	-13.00	-53.91
384.00	Mid	CC0-CC7	QPSK	V	100	336	-55.09	-13.41	38.50	-56.76	-13.00	-43.76
614.39	Mid	CC0-CC7	QPSK	H	124	287	-53.59	-8.79	44.62	-50.64	-13.00	-37.64
614.39	Mid	CC0-CC7	16QAM	H	135	303	-53.23	-8.79	44.98	-50.28	-13.00	-37.28
614.39	Mid	CC0-CC7	64QAM	H	130	303	-53.21	-8.79	45.00	-50.26	-13.00	-37.26
691.00	Mid	CC0-CC7	QPSK	V	101	1	-59.79	-8.00	39.21	-56.05	-13.00	-43.05
844.79	Mid	CC0-CC7	QPSK	H	174	20	-60.45	-5.79	40.76	-54.50	-13.00	-41.50
970.00	Mid	CC0-CC7	QPSK	H	175	117	-63.85	-4.29	38.86	-56.40	-13.00	-43.40

Table 7-17. Spurious Emissions (30MHz – 1GHz)

Spurious Emissions EIRP Sample Calculation

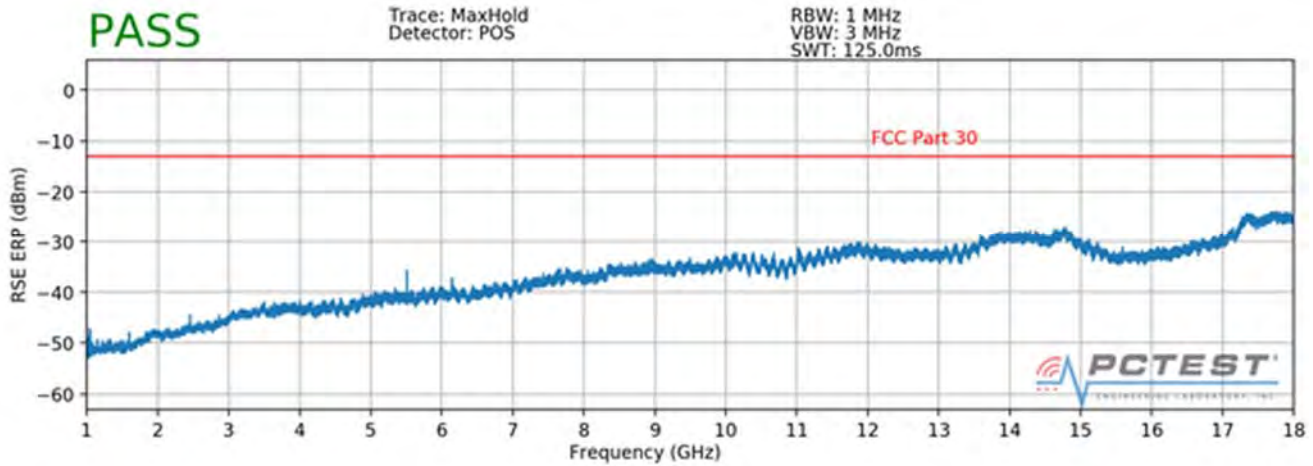
The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meters.

$$\begin{aligned}
 \text{Spurious Level [dBμV/m]} &= \text{Analyzer Level [dBm]} + \text{AFCL [dB/m]} + 107 \\
 &= -56.01 \text{ dBm} - 22.64 \text{ dB/m} + 107 \\
 &= 28.35 \text{ dBμV/m}
 \end{aligned}$$

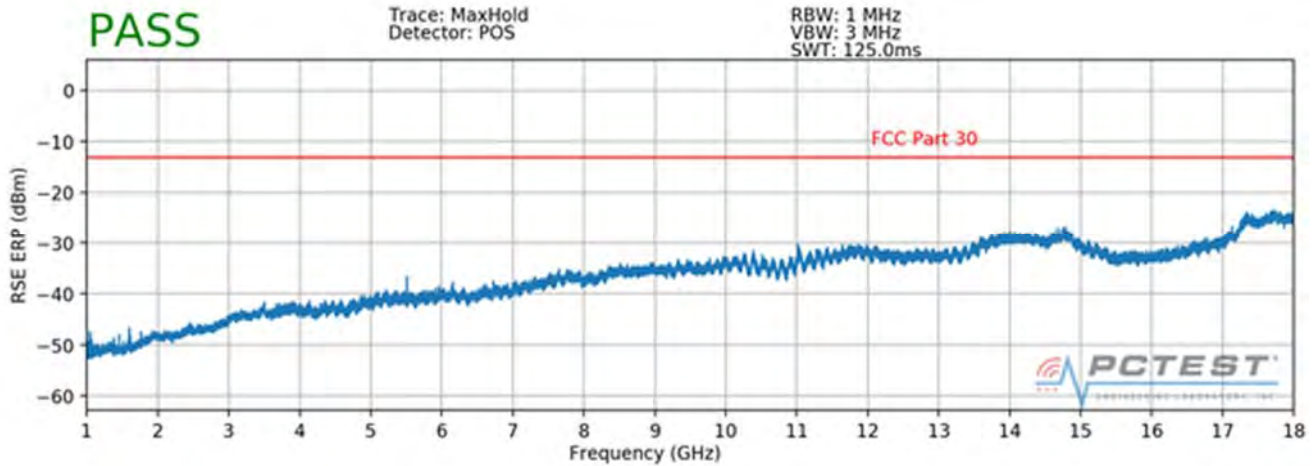
$$\begin{aligned}
 \text{RSE EIRP [dBm]} &= \text{Field Strength} + 20\text{Log}(D_m) - 104.8 \\
 &= 28.35 \text{ dBμV/m} + 20\text{Log}(3) - 104.8 \\
 &= -95.06 \text{ dBm}
 \end{aligned}$$

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 120 of 221

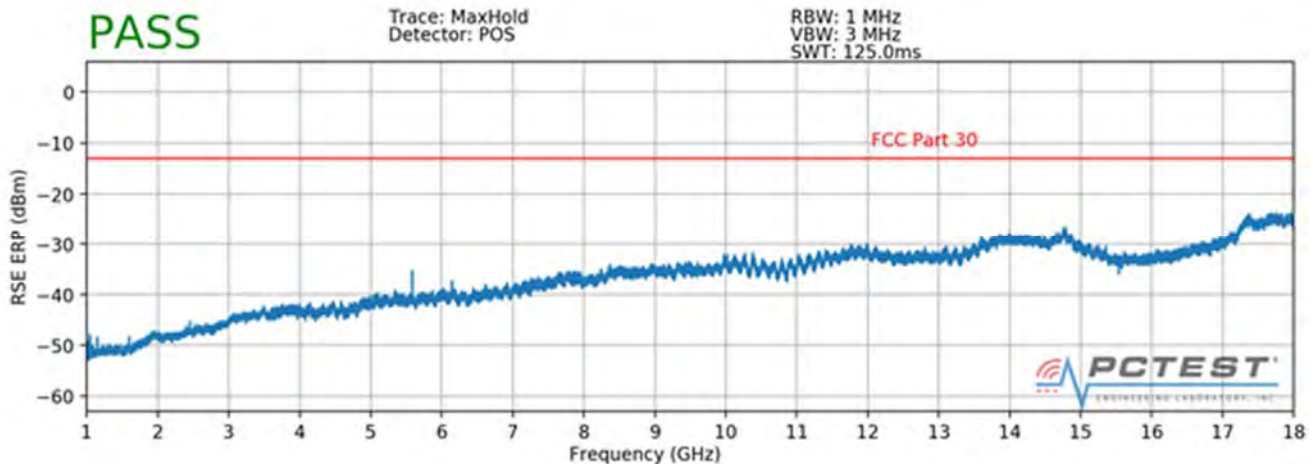
7.5.2 Radiated Spurious Emissions Plots (1 – 18GHz)



Plot 7-181. Radiated Spurious Plot 1-18 GHz (1CC QPSK Low Channel, Ant. Pol. H)

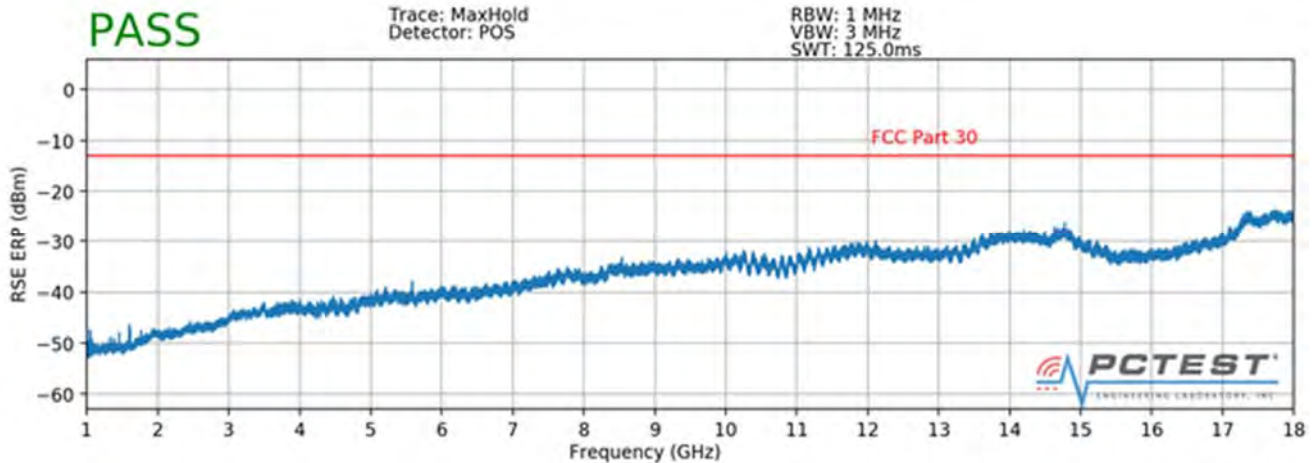


Plot 7-182. Radiated Spurious Plot 1-18 GHz (1CC QPSK Low Channel, Ant. Pol. V)

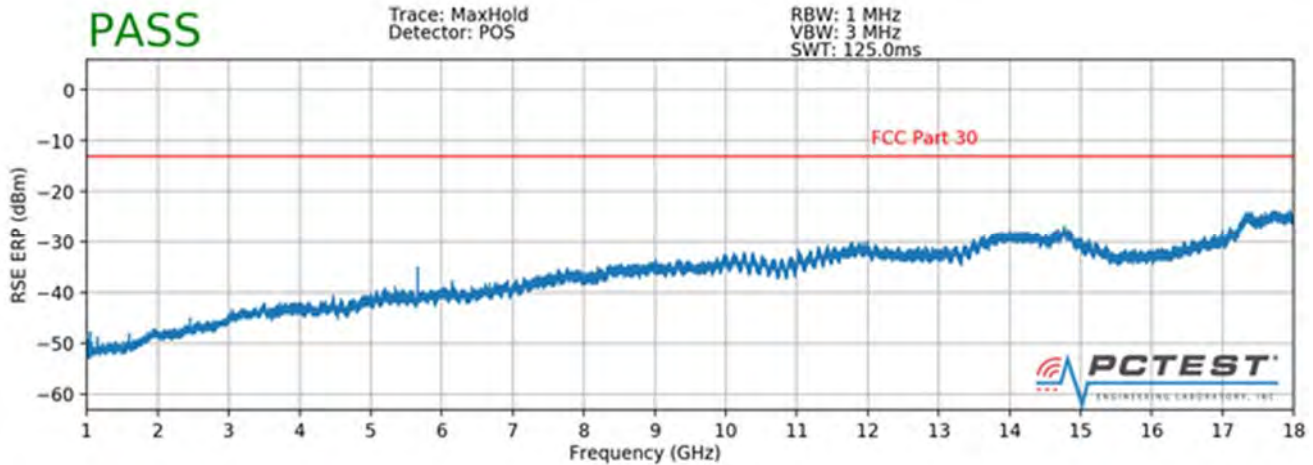


Plot 7-183. Radiated Spurious Plot 1-18 GHz (1CC QPSK Mid Channel, Ant. Pol. H)

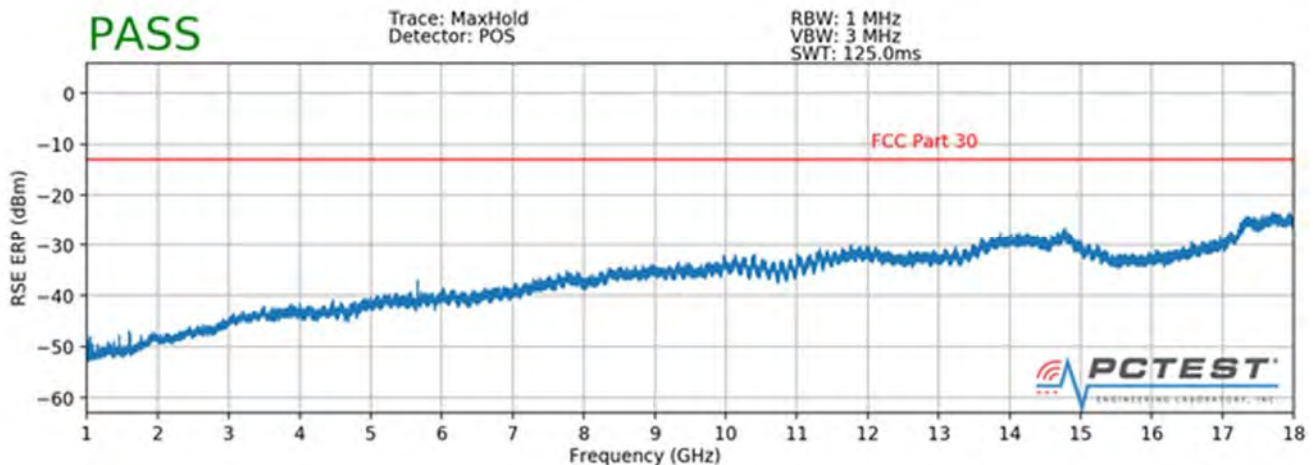
FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 121 of 221



Plot 7-184. Radiated Spurious Plot 1-18 GHz (1CC QPSK Mid Channel, Ant. Pol. V)

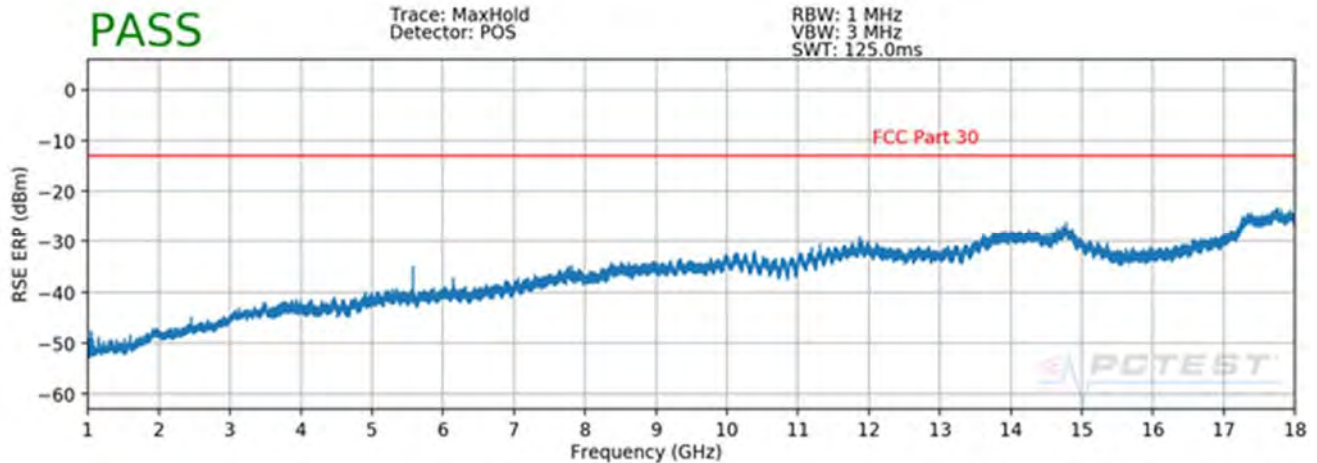


Plot 7-185. Radiated Spurious Plot 1-18 GHz (1CC QPSK High Channel, Ant. Pol. H)

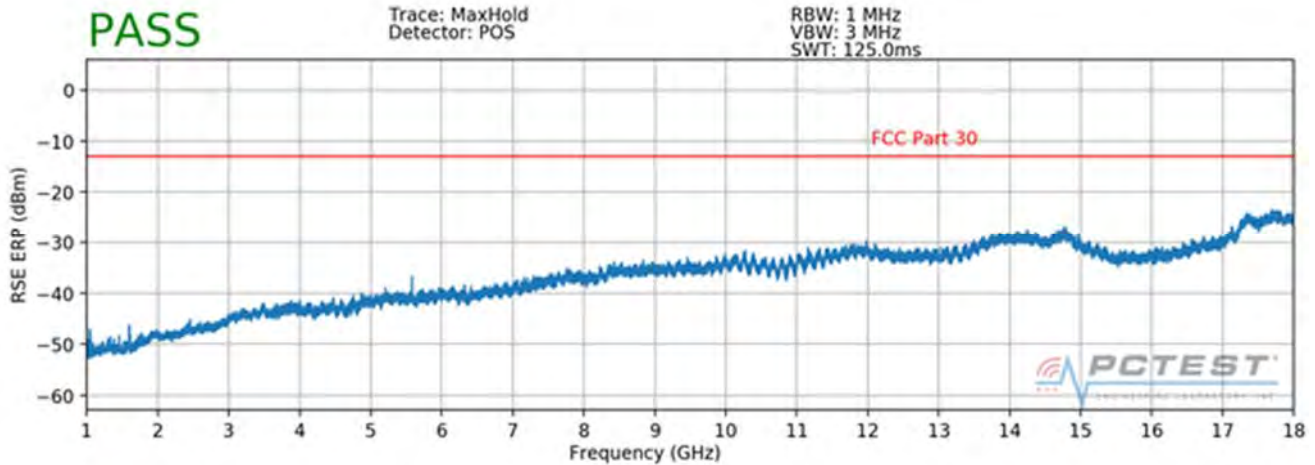


Plot 7-186. Radiated Spurious Plot 1-18 GHz (1CC QPSK High Channel, Ant. Pol. V)

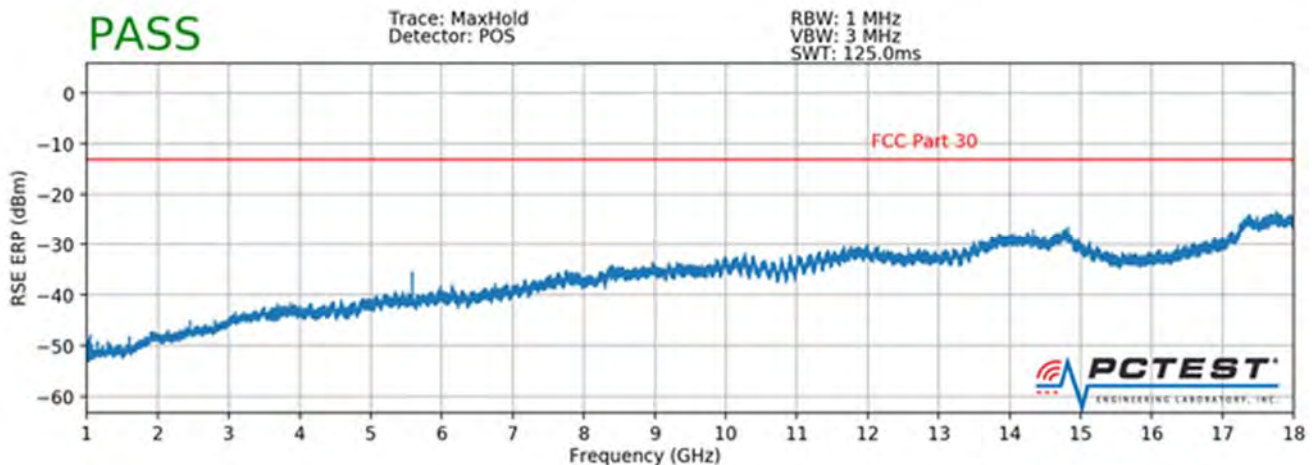
FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 122 of 221



Plot 7-187. Radiated Spurious Plot 1-18 GHz (8CC QPSK Low Channel, Ant. Pol. H)

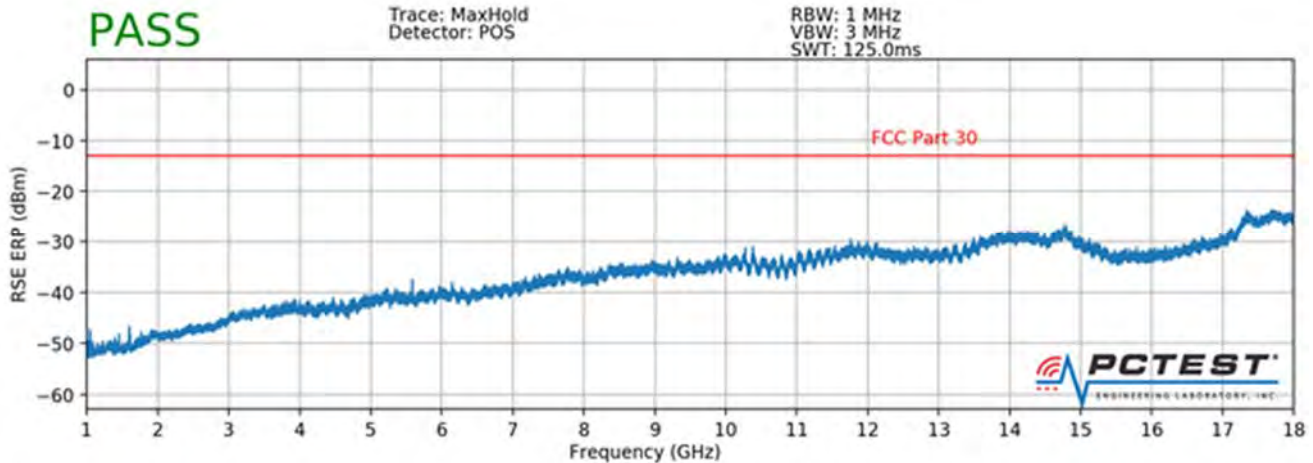


Plot 7-188. Radiated Spurious Plot 1-18 GHz (8CC QPSK Low Channel, Ant. Pol. V)

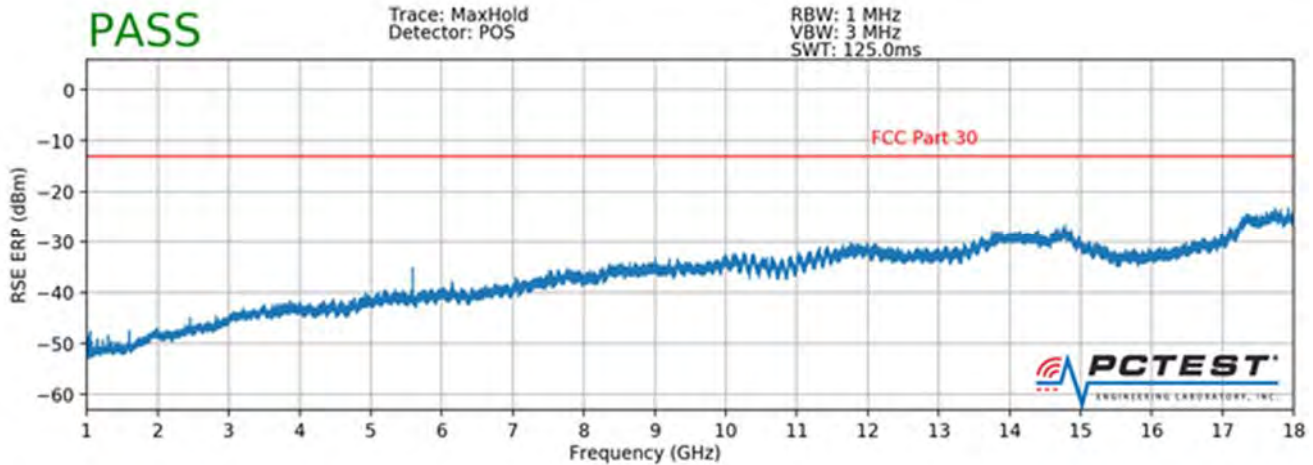


Plot 7-189. Radiated Spurious Plot 1-18 GHz (8CC QPSK Mid Channel, Ant. Pol. H)

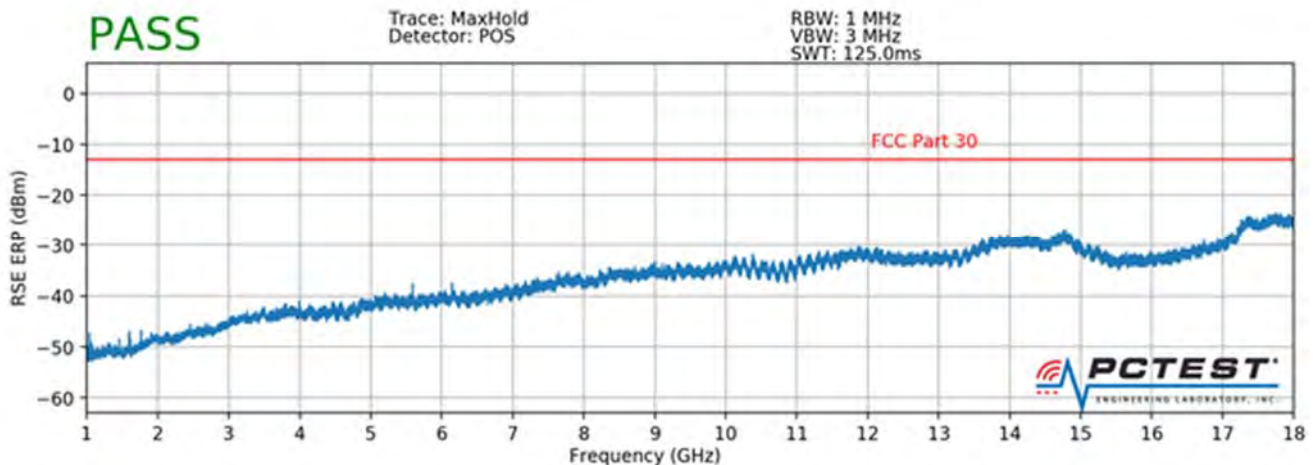
FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 123 of 221



Plot 7-190. Radiated Spurious Plot 1-18 GHz (8CC QPSK Mid Channel, Ant. Pol. V)



Plot 7-191. Radiated Spurious Plot 1-18 GHz (8CC QPSK High Channel, Ant. Pol. H)



Plot 7-192. Radiated Spurious Plot 1-18 GHz (8CC QPSK High Channel, Ant. Pol. V)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 124 of 221

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turn Table Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
5510.00	Low	CC0	QPSK	H	135	69	-55.51	5.21	56.70	-38.56	-13.00	-25.56
5585.00	Mid	CC0	QPSK	H	150	66	-53.69	5.21	58.52	-36.74	-13.00	-23.74
5585.00	Mid	CC0	QPSK	V	139	2	-55.19	5.34	57.15	-38.11	-13.00	-25.11
5585.00	Mid	CC0	16QAM	H	148	67	-53.90	5.21	58.31	-36.95	-13.00	-23.95
5585.00	Mid	CC0	64QAM	H	146	68	-54.01	5.21	58.20	-37.06	-13.00	-24.06
5585.00	Mid	CC0-CC7	QPSK	H	148	104	-55.40	5.21	56.81	-38.45	-13.00	-25.45
5585.00	Mid	CC0-CC7	16QAM	H	135	103	-55.43	5.21	56.78	-38.48	-13.00	-25.48
5585.00	Mid	CC0-CC7	64QAM	H	137	101	-55.63	5.21	56.58	-38.68	-13.00	-25.68
5660.00	High	CC0	QPSK	H	159	323	-53.67	6.12	59.45	-35.81	-13.00	-22.81
11170.00	Mid	CC0	QPSK	H	122	37	-70.19	14.87	51.68	-43.58	-13.00	-30.58
11170.00	Mid	CC0	QPSK	V	151	19	-64.28	14.96	57.68	-37.58	-13.00	-24.58
11170.00	Mid	CC0	16QAM	V	150	20	-65.13	14.96	56.83	-38.43	-13.00	-25.43
11170.00	Mid	CC0	64QAM	V	152	23	-65.21	14.96	56.75	-38.51	-13.00	-25.51
11170.00	Mid	CC0-CC7	QPSK	V	148	20	-65.52	14.96	56.44	-38.82	-13.00	-25.82
11170.00	Mid	CC0-CC7	16QAM	V	153	19	-65.21	14.96	56.75	-38.51	-13.00	-25.51
11170.00	Mid	CC0-CC7	64QAM	V	155	19	-65.20	14.96	56.76	-38.50	-13.00	-25.50
11020.00	Low	CC0	QPSK	V	149	19	-64.37	14.20	56.83	-38.43	-13.00	-25.43
11320.00	High	CC0	QPSK	V	164	20	-64.67	15.31	57.64	-37.62	-13.00	-24.62

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

Note:

The investigated emissions of 5.10-5.66 GHz are that of a local oscillator of the EUT. The harmonics of the local oscillator are investigated as well and provided in the table.

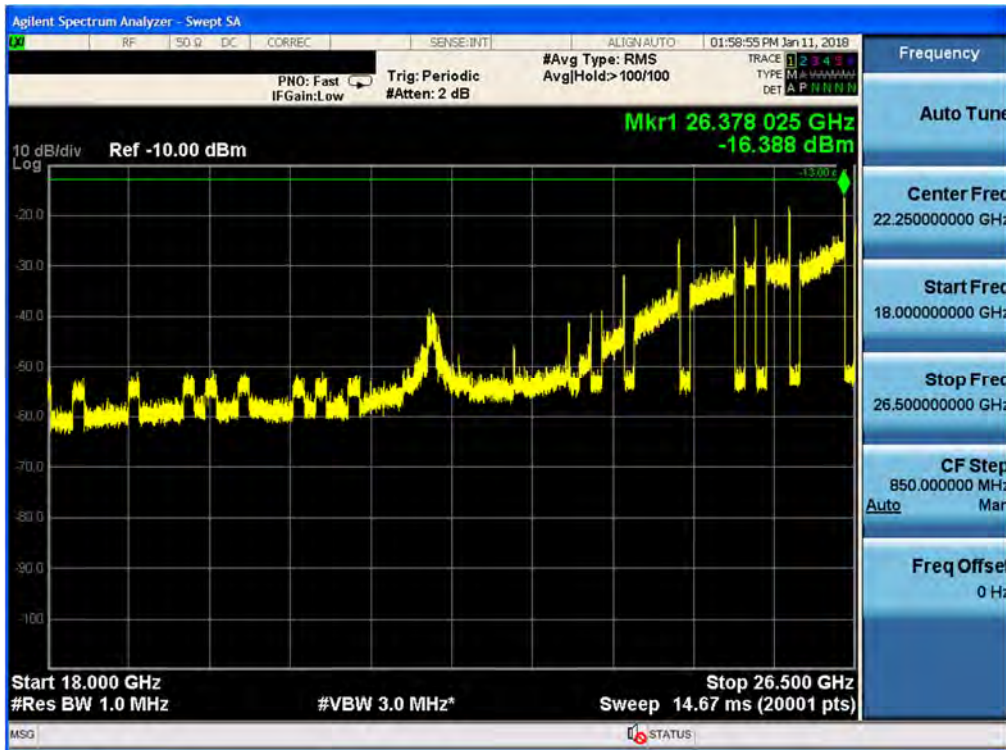
Spurious Emissions EIRP Sample Calculation

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

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

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 125 of 221

7.5.3 Radiated Spurious Emissions Plots (18 – 26.5GHz)



Plot 7-193. Radiated Spurious Plot 18-26.5 GHz (1CC QPSK Low Channel, Ant. Angle 135)

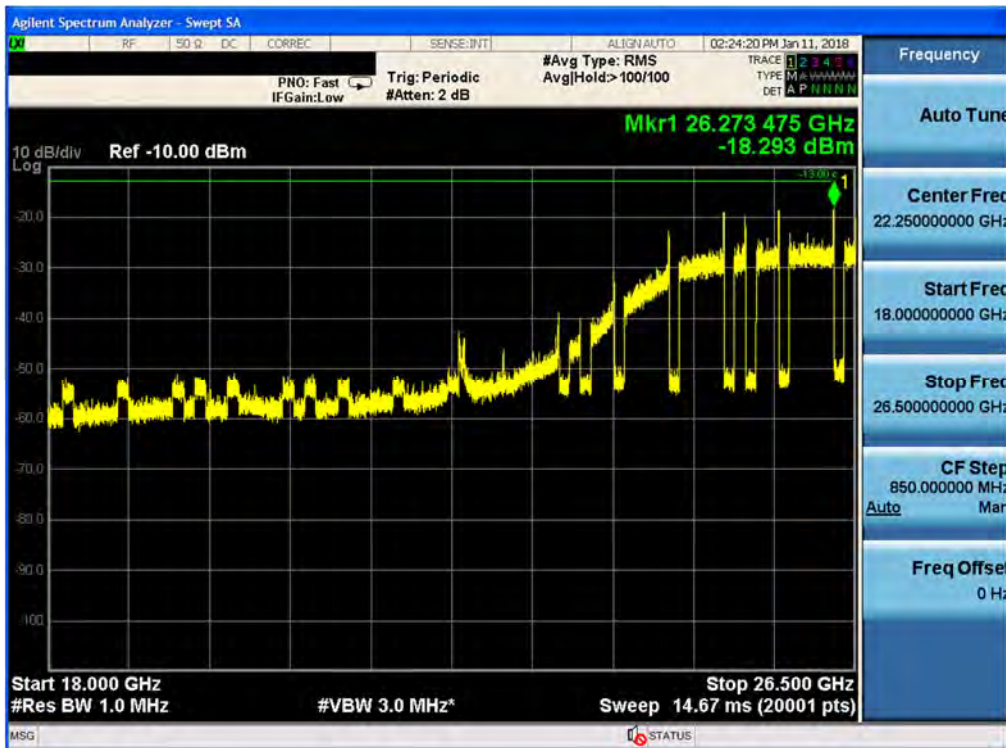


Plot 7-194. Radiated Spurious Plot 18-26.5 GHz (1CC QPSK Low Channel, Ant. Angle 45)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 126 of 221



Plot 7-195. Radiated Spurious Plot 18-26.5 GHz (1CC QPSK Mid Channel, Ant. Angle 135)



Plot 7-196. Radiated Spurious Plot 18-26.5 GHz (1CC QPSK Mid Channel, Ant. Angle 45)

FCC ID: A3LSFG-AA100DC	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 127 of 221

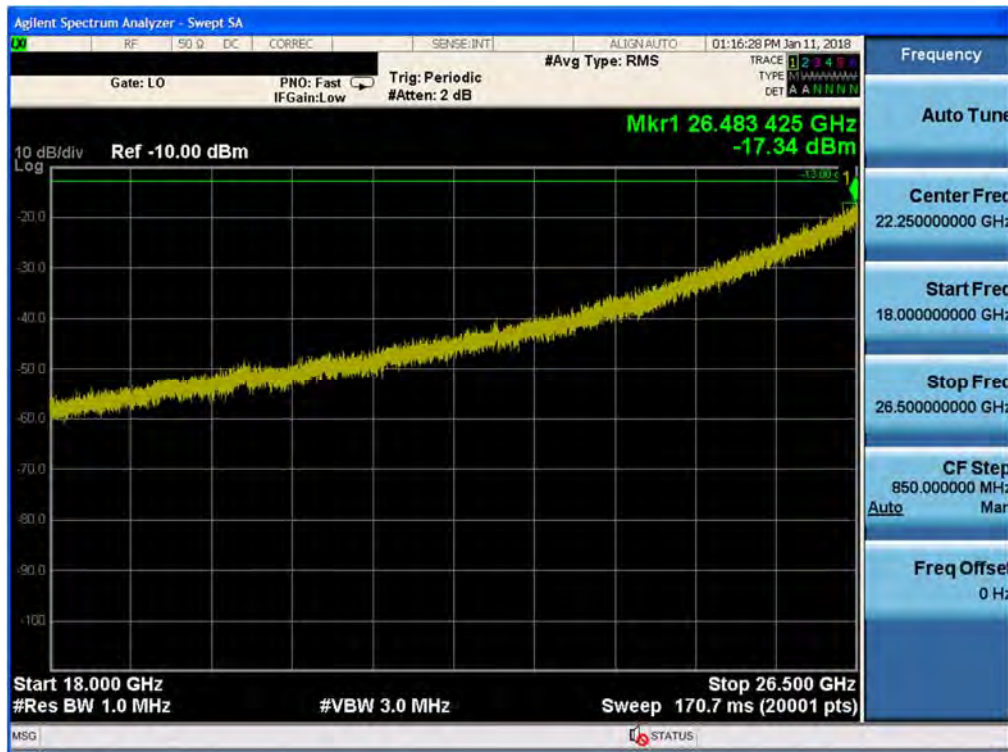


Plot 7-197. Radiated Spurious Plot 18-26.5 GHz (1CC QPSK High Channel, Ant. Angle 135)



Plot 7-198. Radiated Spurious Plot 18-26.5 GHz (1CC QPSK High Channel, Ant. Angle 45)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 128 of 221

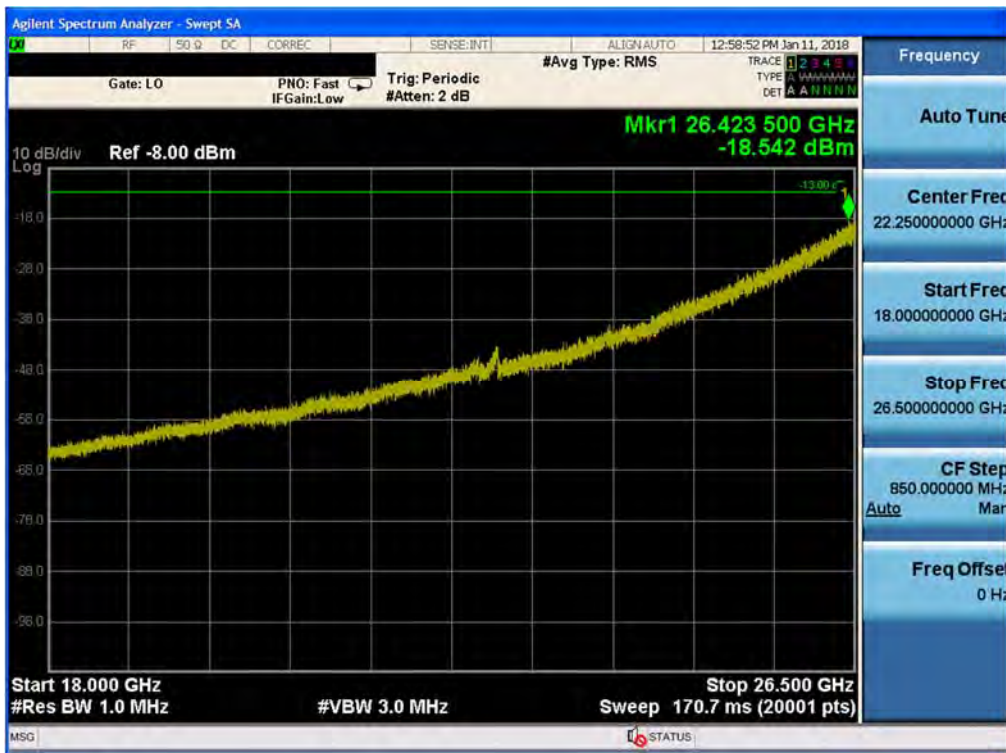


Plot 7-199. Radiated Spurious Plot 18-26.5 GHz (8CC QPSK Low Channel, Ant. Angle 135)



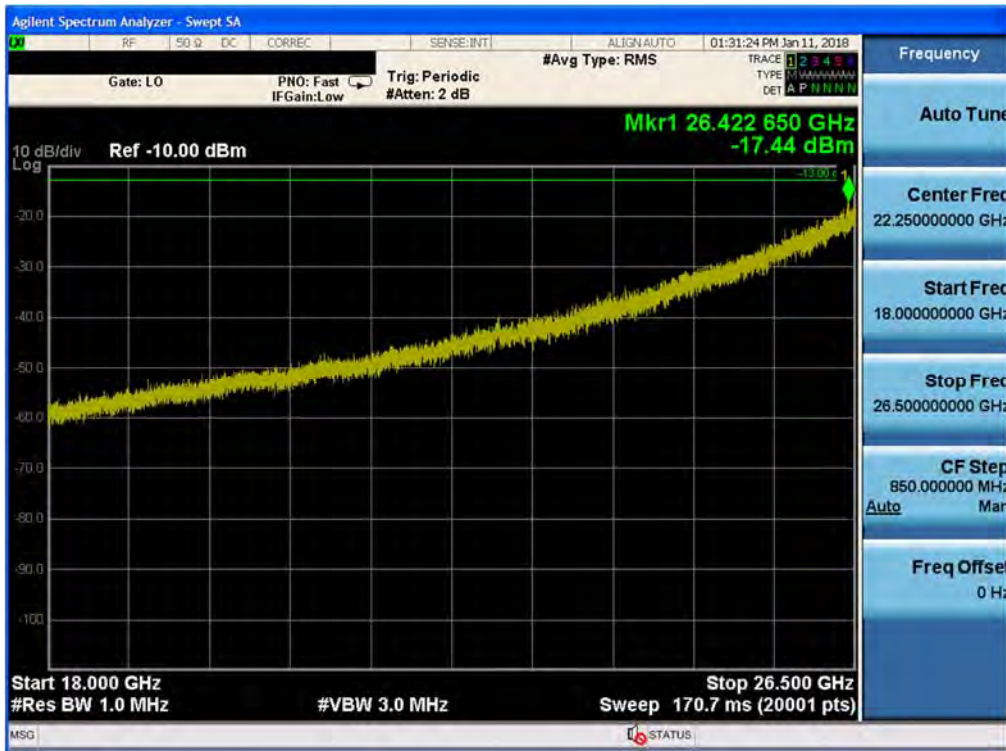
Plot 7-200. Radiated Spurious Plot 18-26.5 GHz (8CC QPSK Low Channel, Ant. Angle 45)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 129 of 221



Plot 7-201. Radiated Spurious Plot 18-26.5 GHz (8CC QPSK Mid Channel, Ant. Angle 135)

Plot 7-202. Radiated Spurious Plot 18-26.5 GHz (8CC QPSK Mid Channel, Ant. Angle 45)



Plot 7-203. Radiated Spurious Plot 18-26.5 GHz (8CC QPSK High Channel, Ant. Angle 135)



Plot 7-204. Radiated Spurious Plot 18-26.5 GHz (8CC QPSK High Channel, Ant. Angle 45)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 131 of 221

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [degree]	Antenna Height [cm]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
26378.00	Low	CC0	QPSK	135.00	154	-71.18	40.64	76.46	-21.65	-13.00	-8.65
25774.00	Mid	CC4	QPSK	135.00	154	-75.41	40.79	72.38	-25.73	-13.00	-12.73
26323.00	High	CC7	QPSK	135.00	154	-75.83	40.66	71.83	-26.28	-13.00	-13.28
26483.00	Low	CC0-CC7	QPSK	135.00	154	-67.72	40.61	79.89	-18.22	-13.00	-5.22
26423.00	Mid	CC0-CC7	QPSK	135.00	154	-68.60	40.63	79.03	-19.08	-13.00	-6.08
26422.00	High	CC0-CC7	QPSK	135.00	154	-68.53	40.63	79.10	-19.01	-13.00	-6.01

Table 7-19. Spurious Emissions (18 – 26.5GHz)

Spurious Emissions EIRP Sample Calculation

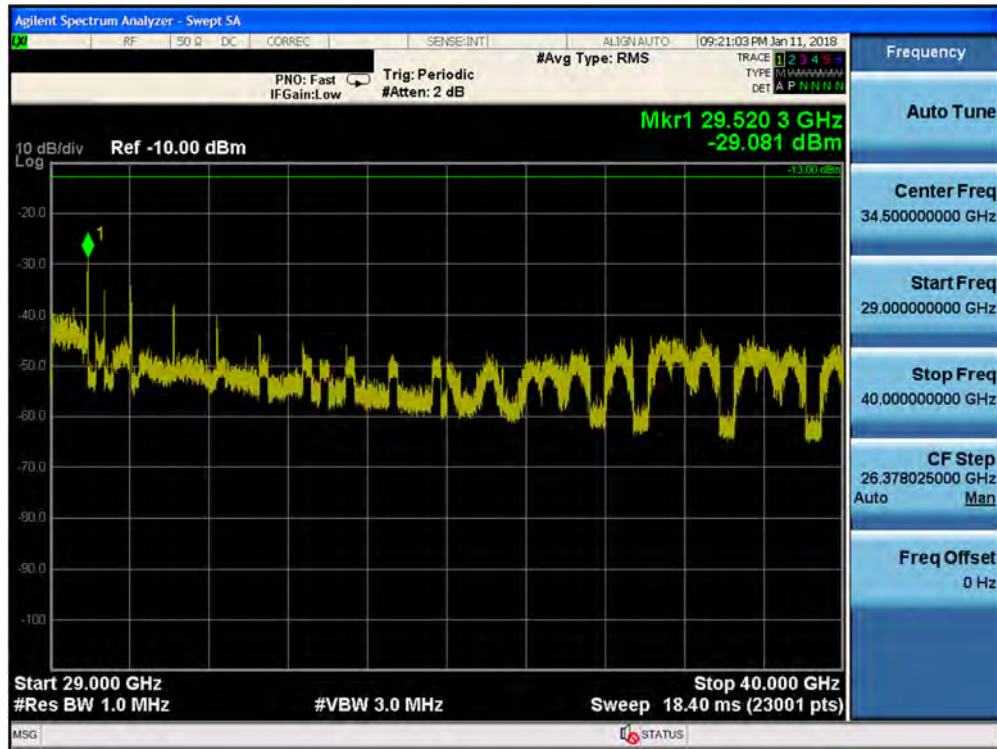
The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 2.16 meters.

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

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 132 of 221

7.5.4 Radiated Spurious Emissions Plots (26.5 – 40GHz)

Note: The spurious emissions scans started at 29GHz as shown in the plots of this section so as to only focus on the spurious emissions and not the fundamental emission.

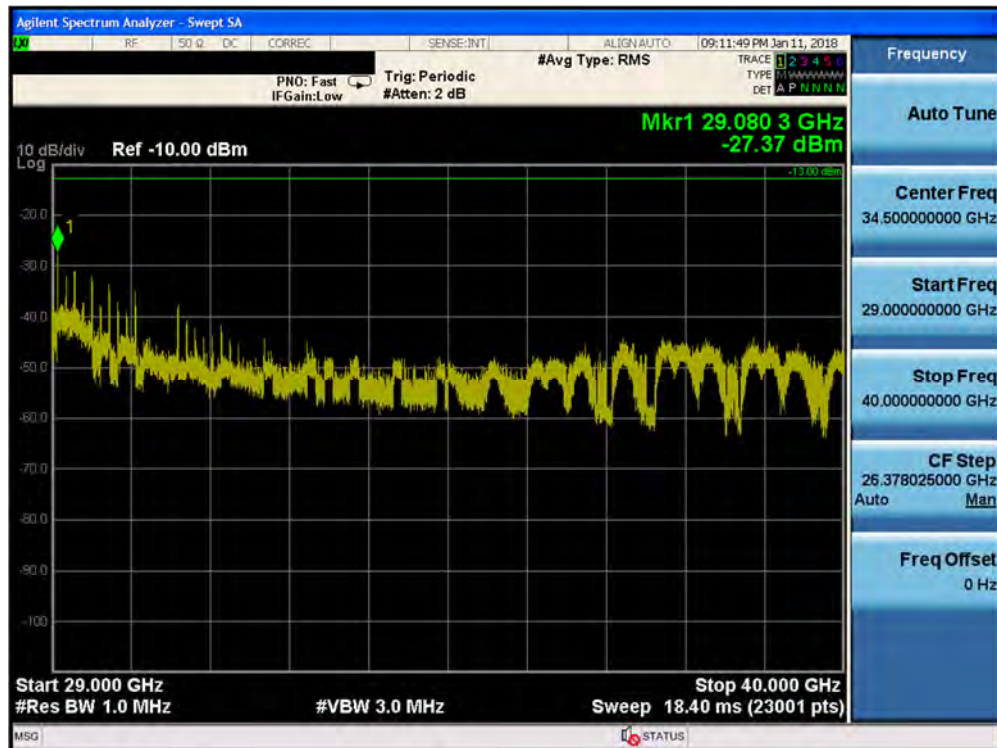


Plot 7-205. Radiated Spurious Plot 26.5-40 GHz (1CC QPSK Low Channel, Ant. Angle 135)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 133 of 221

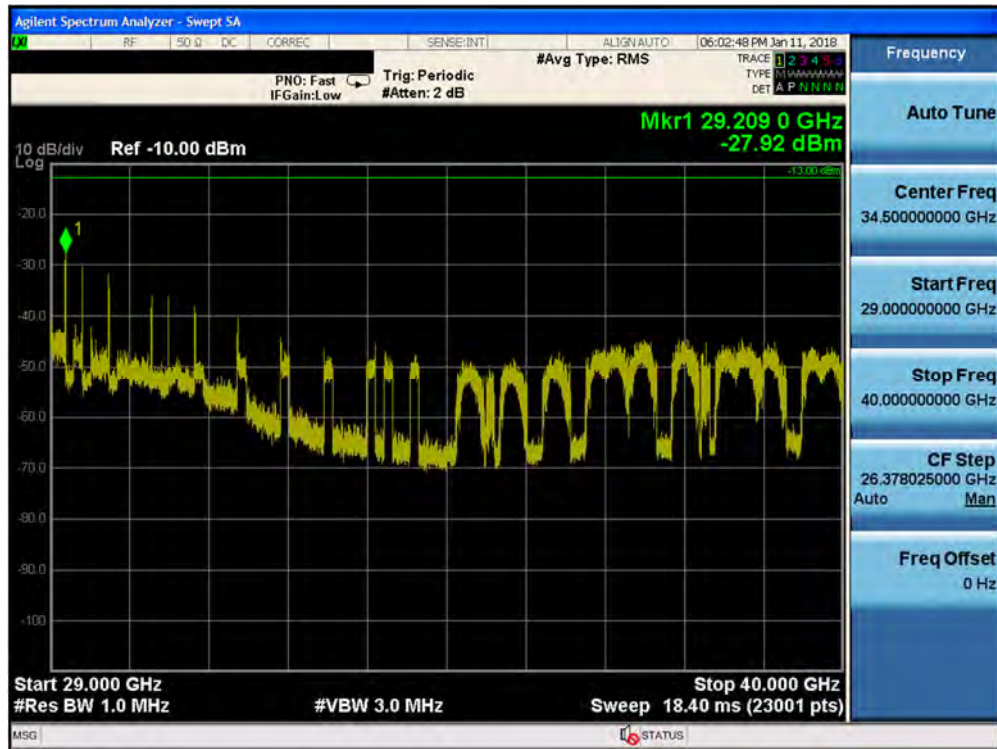


Plot 7-206. Radiated Spurious Plot 26.5-40 GHz (1CC QPSK Low Channel, Ant. Angle 45)

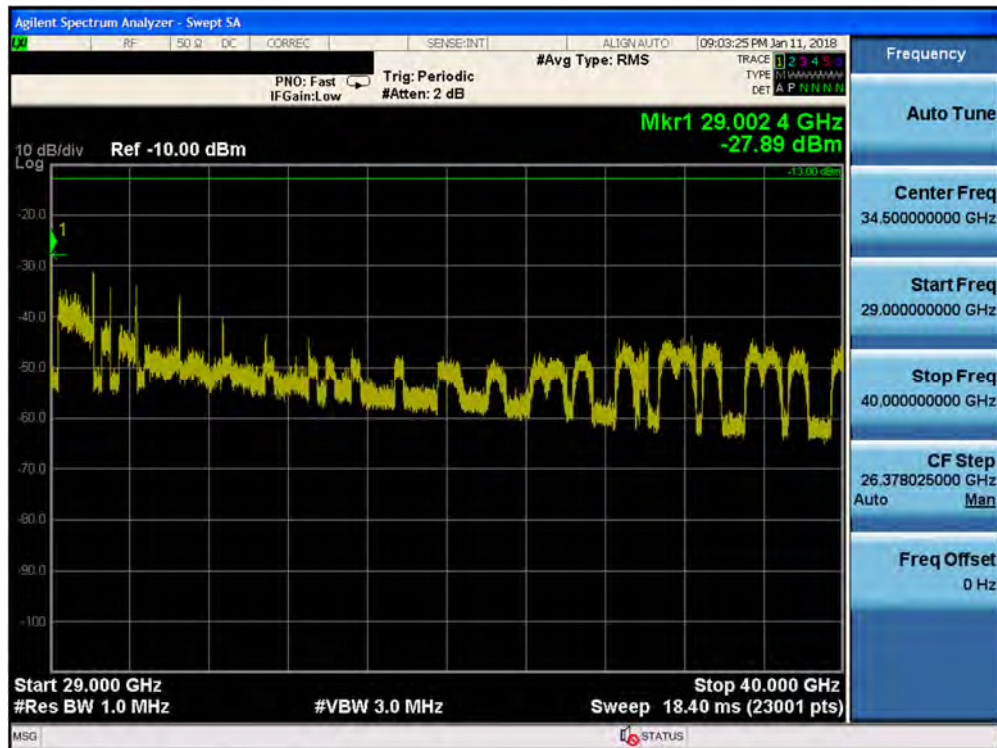


Plot 7-207. Radiated Spurious Plot 26.5-40 GHz (1CC QPSK Mid Channel, Ant. Angle 135)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-208. Radiated Spurious Plot 26.5-40 GHz (1CC QPSK Mid Channel, Ant. Angle 45)

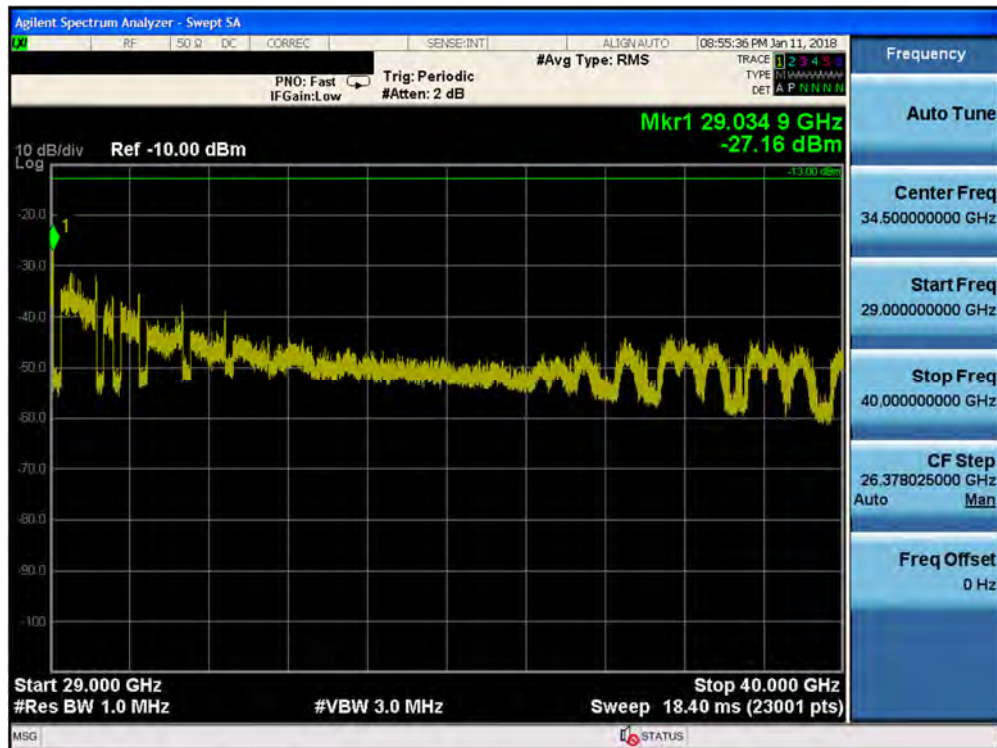


Plot 7-209. Radiated Spurious Plot 26.5-40 GHz (1CC QPSK High Channel, Ant. Angle 135)

FCC ID: A3LSFG-AA100DC	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit	Page 135 of 221

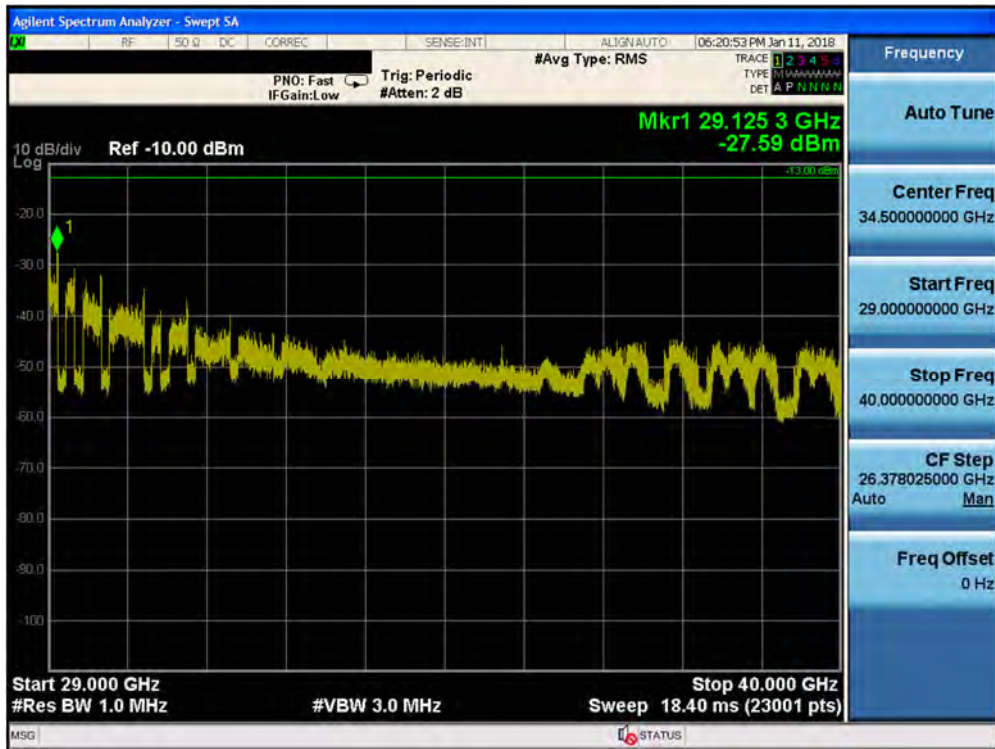


Plot 7-210. Radiated Spurious Plot 26.5-40 GHz (1CC QPSK High Channel, Ant. Angle 45)

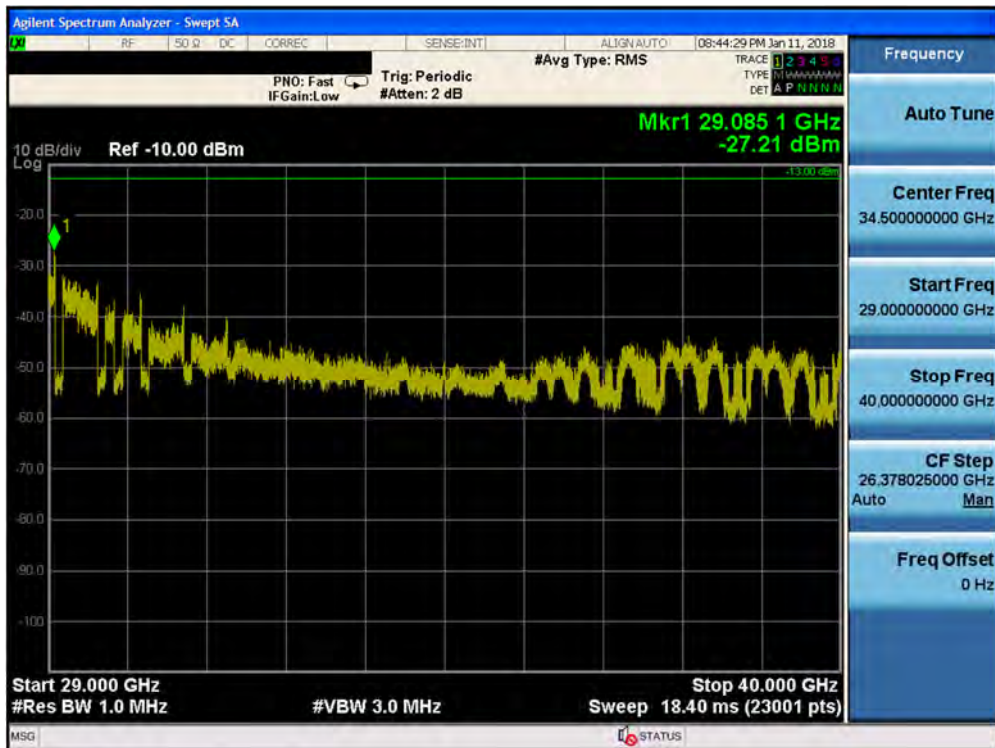


Plot 7-211. Radiated Spurious Plot 26.5-40 GHz (8CC QPSK Low Channel, Ant. Angle 135)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 136 of 221

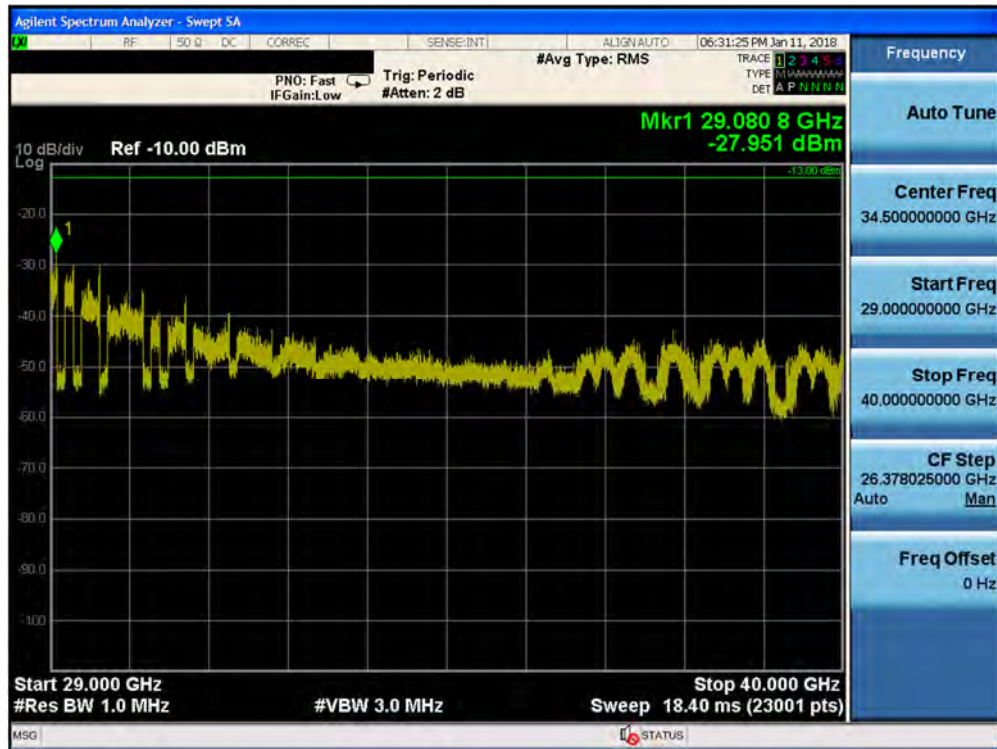


Plot 7-212. Radiated Spurious Plot 26.5-40 GHz (8CC QPSK Low Channel, Ant. Angle 45)

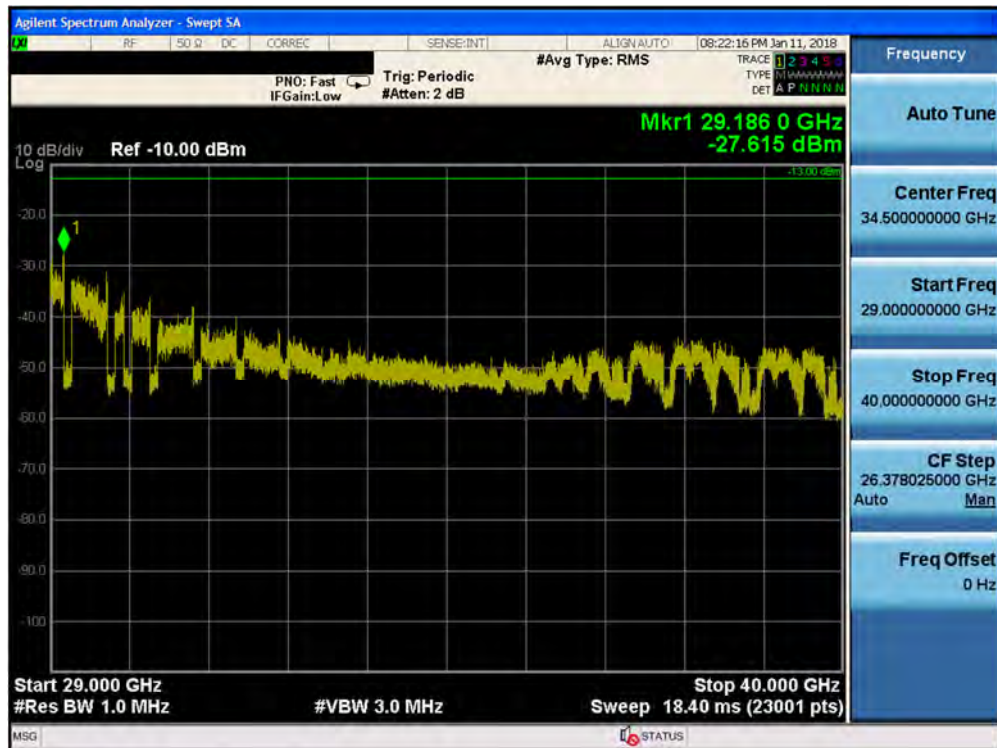


Plot 7-213. Radiated Spurious Plot 26.5-40 GHz (8CC QPSK Mid Channel, Ant. Angle 135)

FCC ID: A3LSFG-AA100DC	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2-A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit	Page 137 of 221

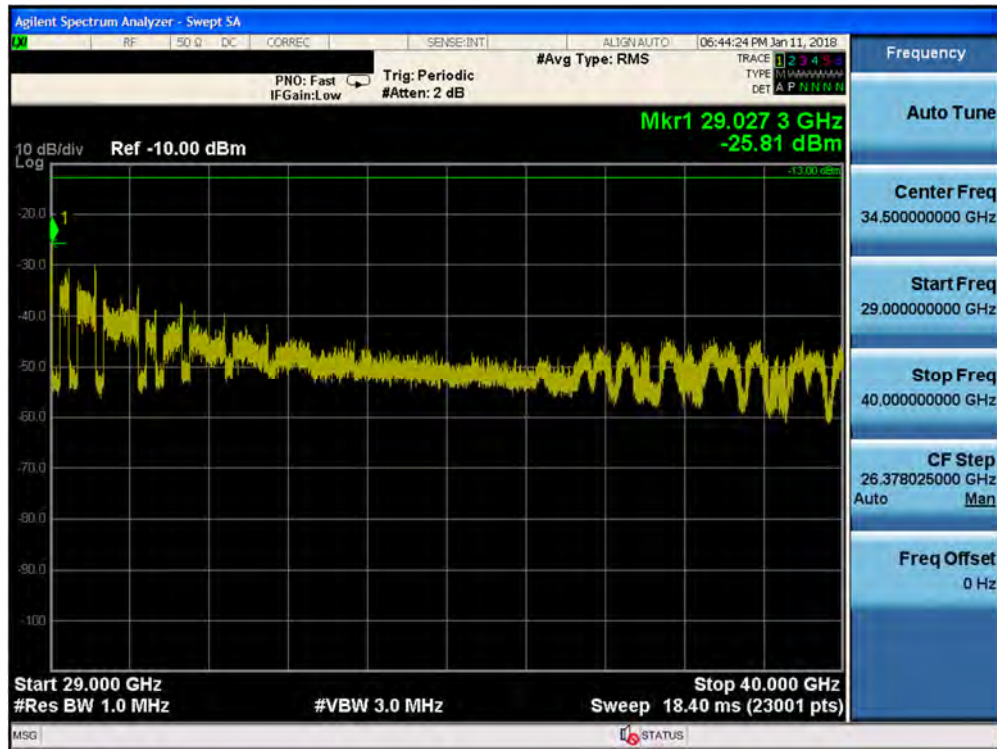


Plot 7-214. Radiated Spurious Plot 26.5-40 GHz (8CC QPSK Mid Channel, Ant. Angle 45)



Plot 7-215. Radiated Spurious Plot 26.5-40 GHz (8CC QPSK High Channel, Ant. Angle 135)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 138 of 221



Plot 7-216. Radiated Spurious Plot 26.5-40 GHz (8CC QPSK High Channel, Ant. Angle 45)

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [degree]	Antenna Height [cm]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
29520.00	Low	CC0	QPSK	135.00	154	-76.70	44.63	74.93	-23.19	-13.00	-10.19
29080.00	Mid	CC4	QPSK	135.00	154	-75.61	44.63	76.02	-22.10	-13.00	-9.10
29002.00	High	CC7	QPSK	135.00	121	-75.30	44.63	76.33	-21.79	-13.00	-8.79
29034.00	Low	CC0-CC7	QPSK	135.00	121	-75.40	44.63	76.23	-21.89	-13.00	-8.89
29085.00	Mid	CC0-CC7	QPSK	135.00	121	-76.10	44.63	75.53	-22.59	-13.00	-9.59
29186.00	High	CC0-CC7	QPSK	135.00	121	-80.90	44.63	70.73	-27.39	-13.00	-14.39

Table 7-20. Spurious Emissions (26.5 – 40GHz)

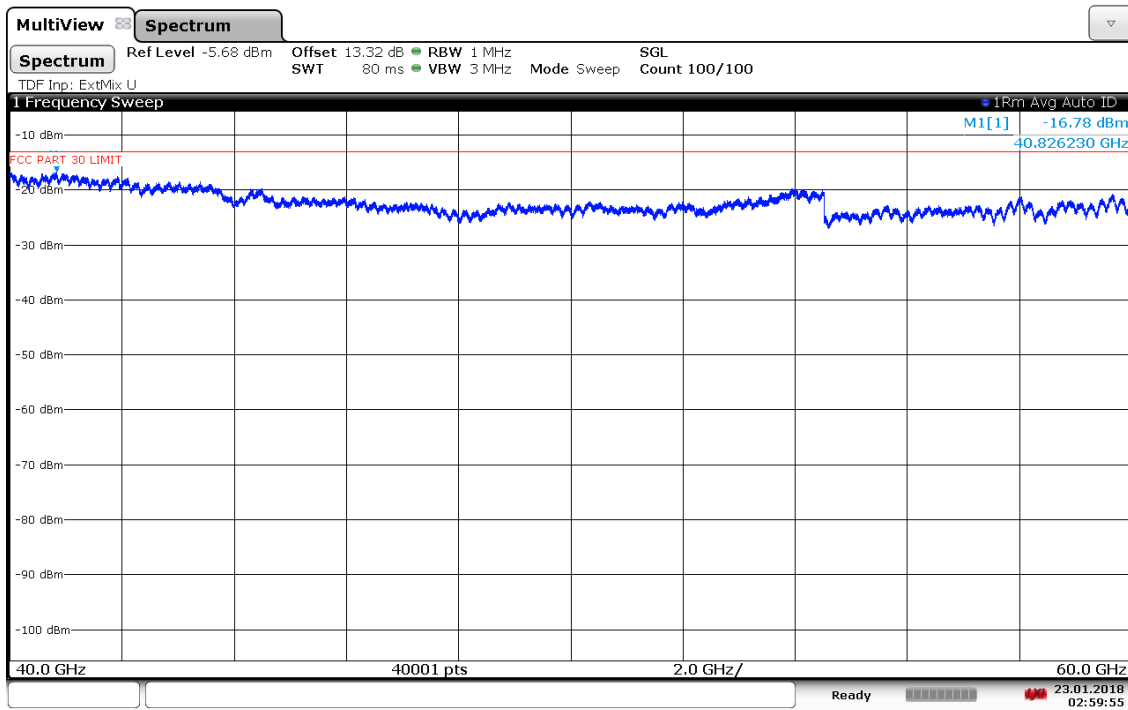
Spurious Emissions EIRP Sample Calculation

The raw radiated spurious level is converted to field strength in dBμV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 2.16 meters.

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

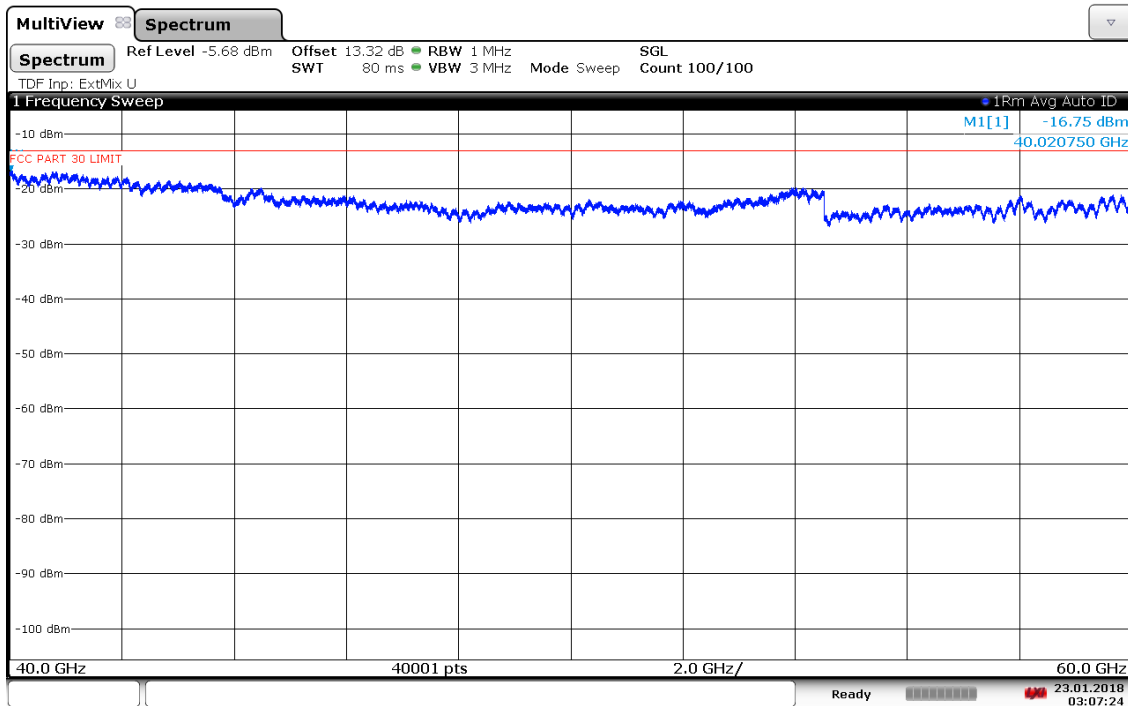
FCC ID: A3LSFG-AA100DC	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit	Page 139 of 221

7.5.5 Radiated Spurious Emissions Plots (40 – 60GHz)



02:59:55 23.01.2018

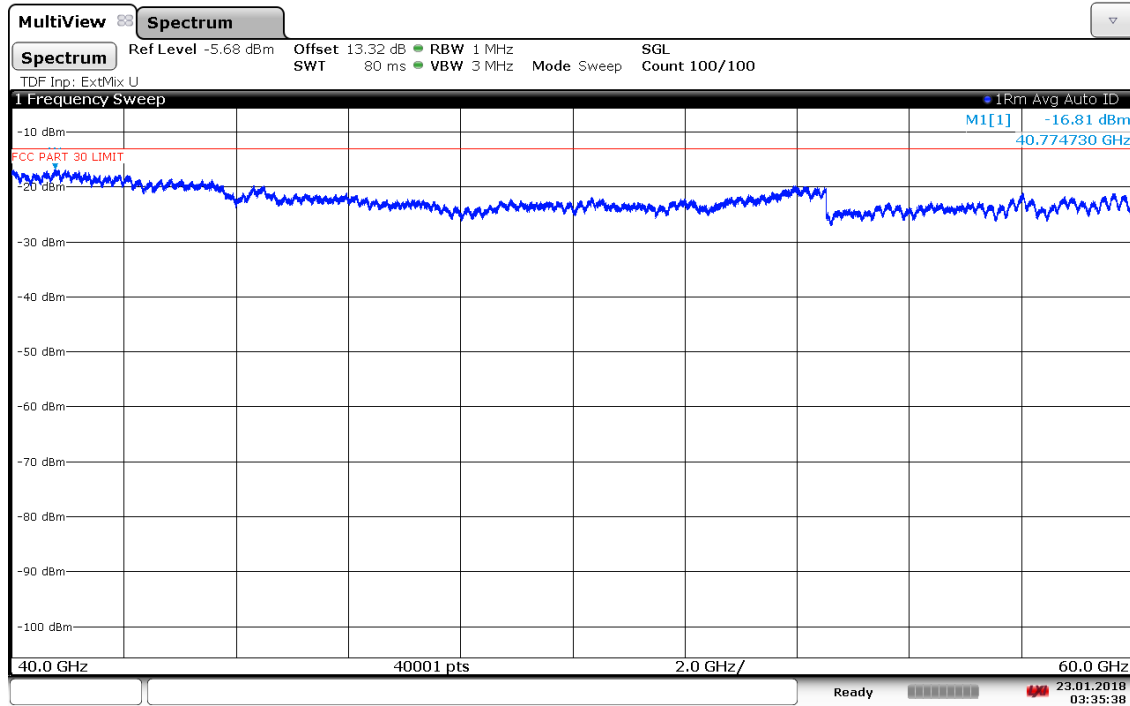
Plot 7-217. Radiated Spurious Plot 40-60 GHz (1CC QPSK Low Channel)



03:07:24 23.01.2018

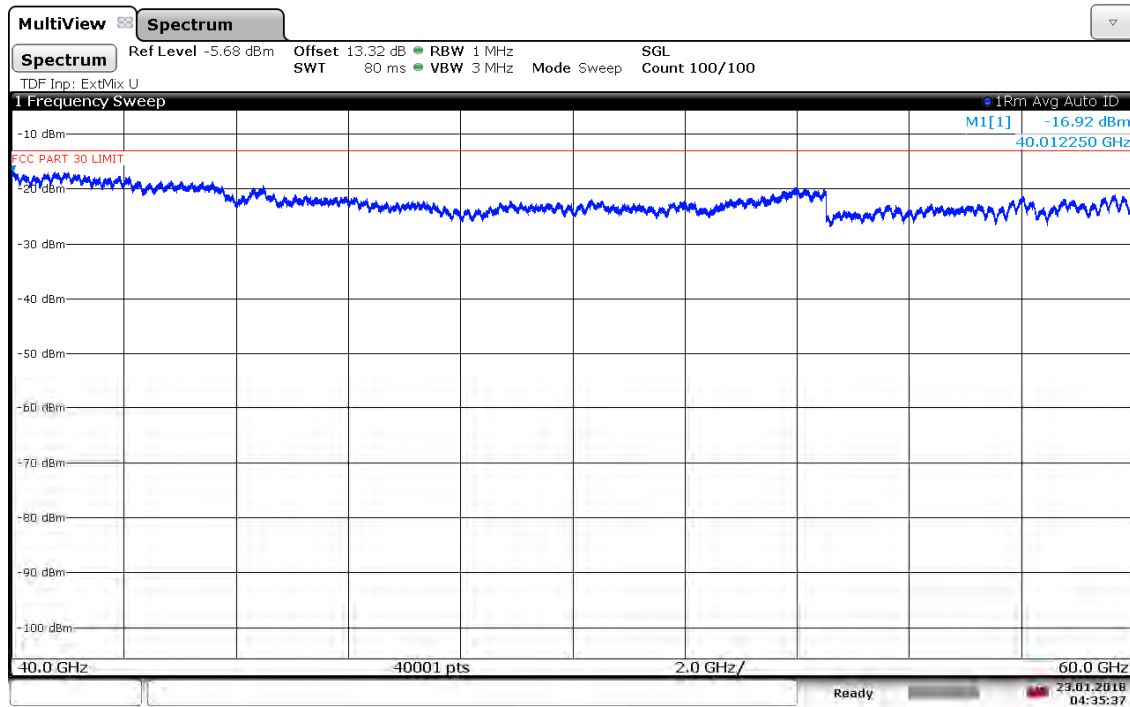
Plot 7-218. Radiated Spurious Plot 40-60 GHz (1CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 140 of 221



03:35:38 23.01.2018

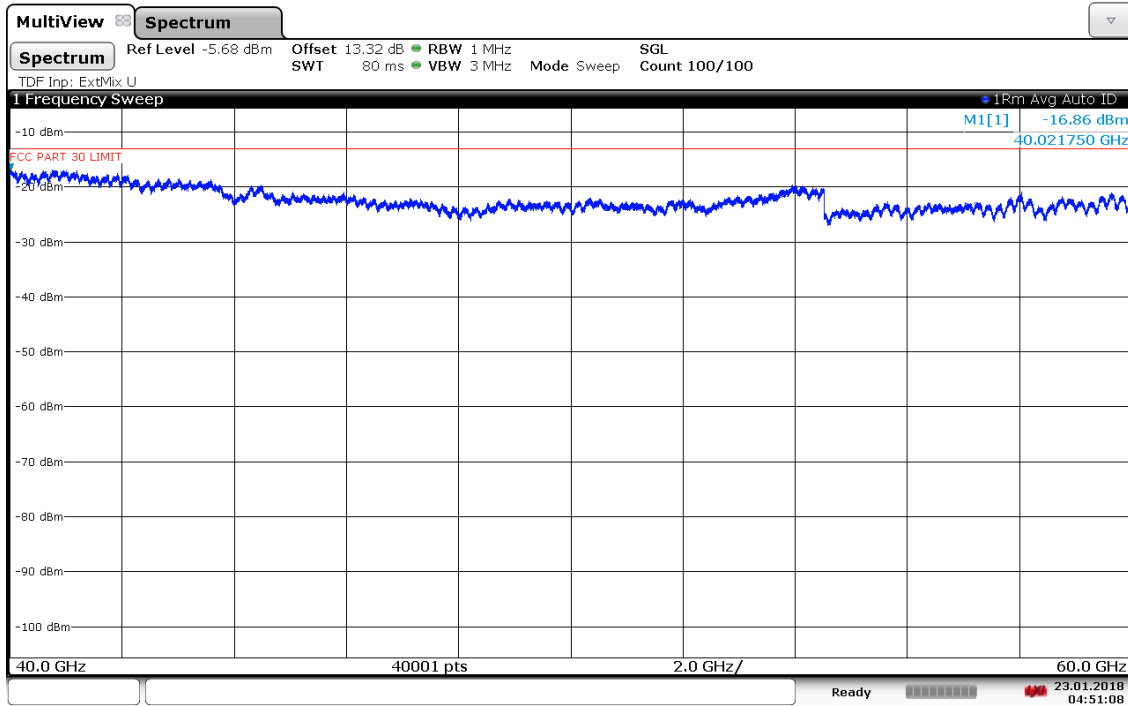
Plot 7-219. Radiated Spurious Plot 40-60 GHz (1CC QPSK High Channel)



04:35:38 23.01.2018

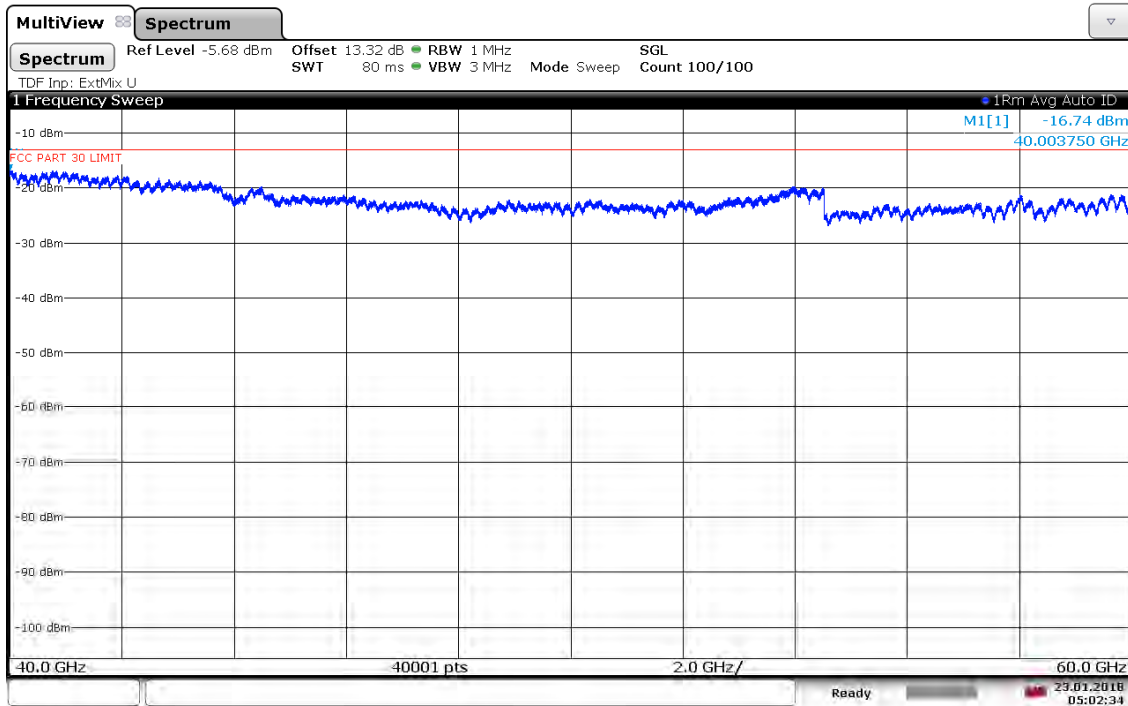
Plot 7-220. Radiated Spurious Plot 40-60 GHz (8CC QPSK Low Channel)

FCC ID: A3LSFG-AA100DC	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 141 of 221



04:51:09 23.01.2018

Plot 7-221. Radiated Spurious Plot 40-60 GHz (8CC QPSK Mid Channel)



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Plot 7-222. Radiated Spurious Plot 40-60 GHz (8CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 142 of 221

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [degree]	Antenna Height [cm]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
40826.00	Low	CC0	QPSK	135.00	154	-16.78	-13.00	-3.78
40020.00	Mid	CC4	QPSK	135.00	154	-16.75	-13.00	-3.75
40774.00	High	CC7	QPSK	135.00	154	-16.81	-13.00	-3.81
40012.00	Low	CC0-CC7	QPSK	135.00	154	-16.92	-13.00	-3.92
40021.00	Mid	CC0-CC7	QPSK	135.00	154	-16.86	-13.00	-3.86
40003.00	High	CC0-CC7	QPSK	135.00	154	-16.74	-13.00	-3.74

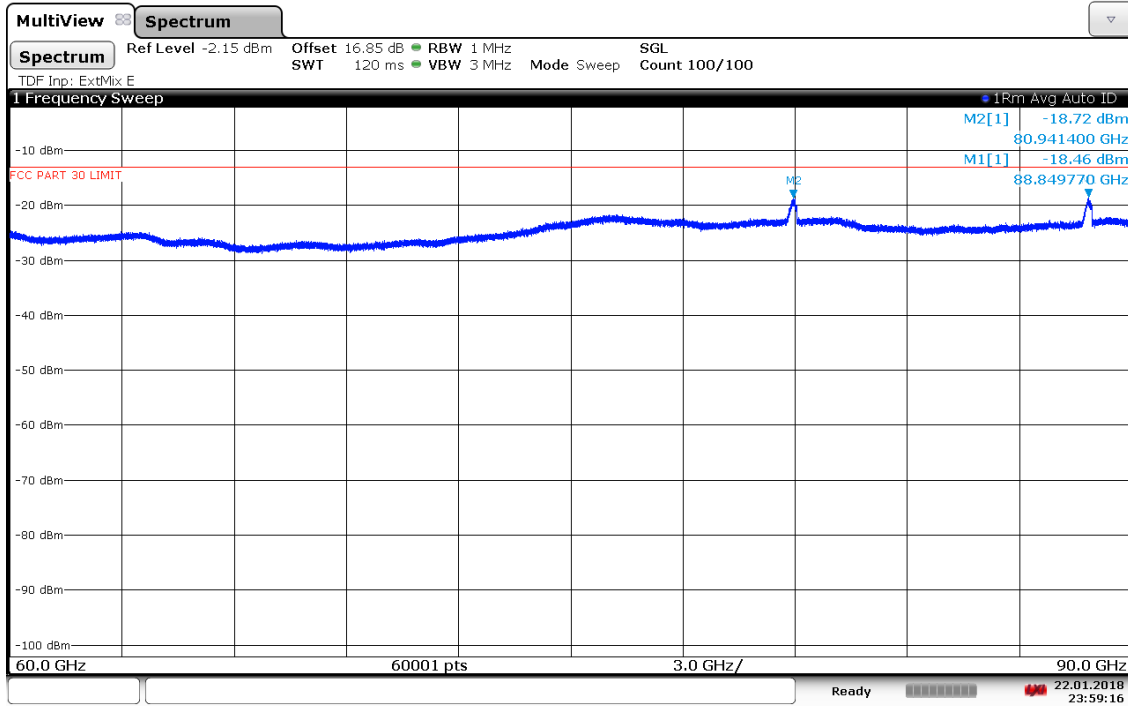
Table 7-21. Spurious Emissions (40 – 60GHz)

Note

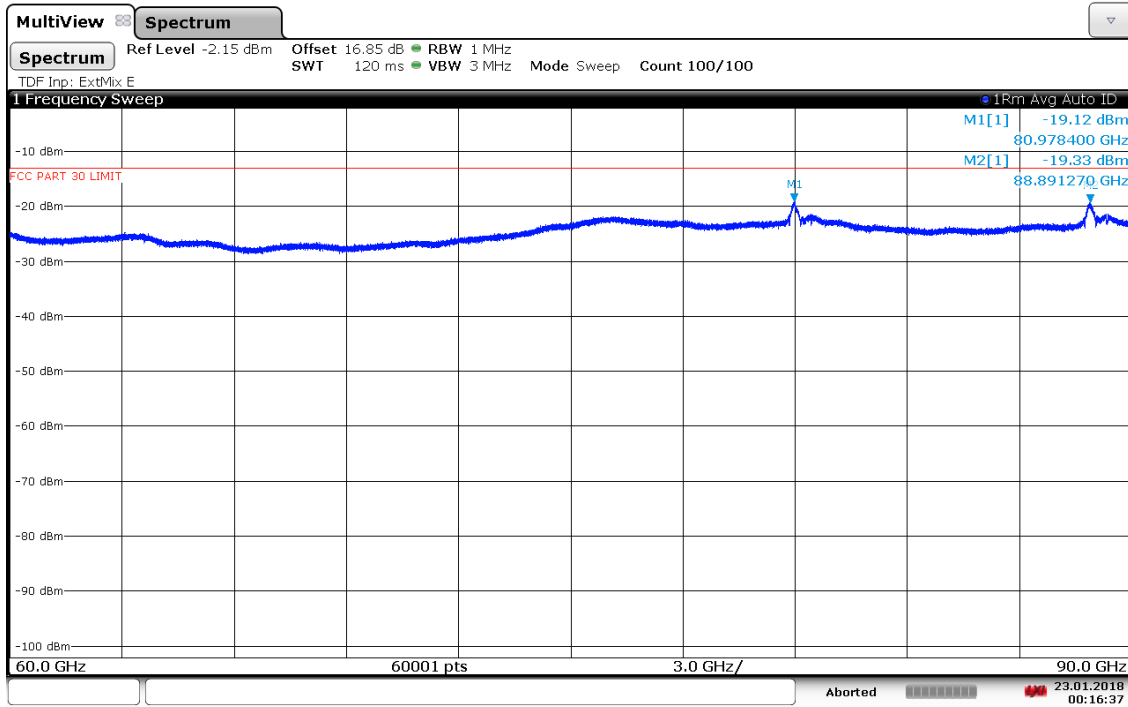
The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 3.25 meters.

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 143 of 221

7.5.6 Radiated Spurious Emissions Plots (60 – 90GHz)

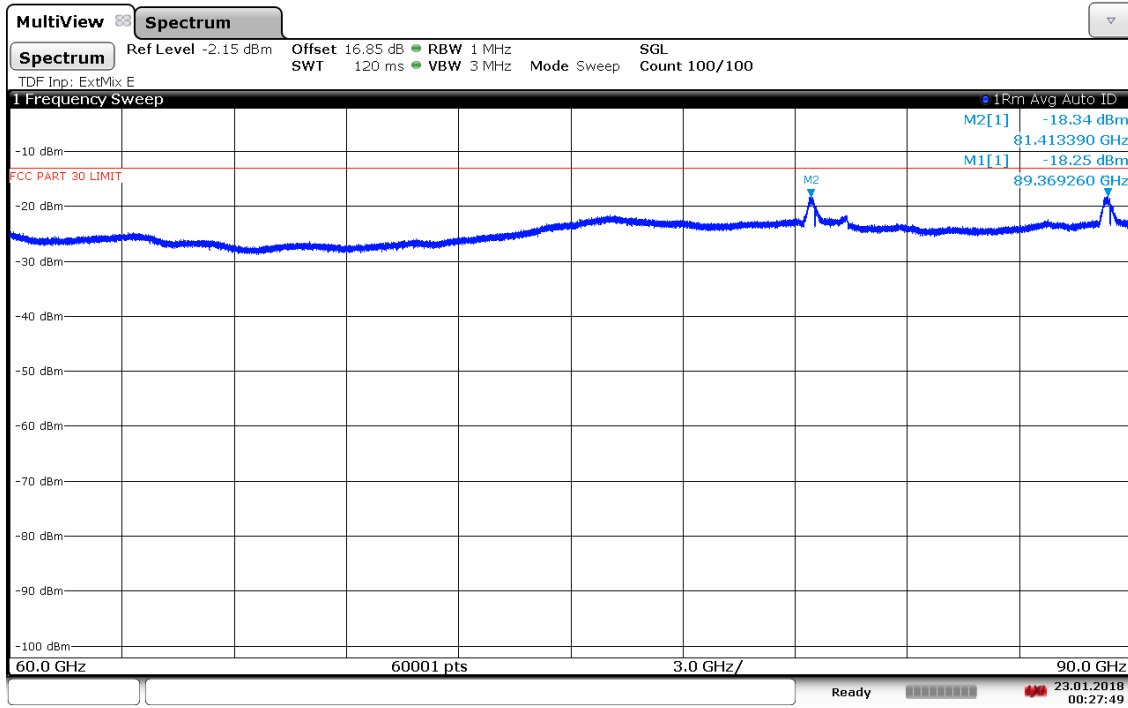


Plot 7-223. Radiated Spurious Plot 60-90 GHz (1CC QPSK Low Channel)



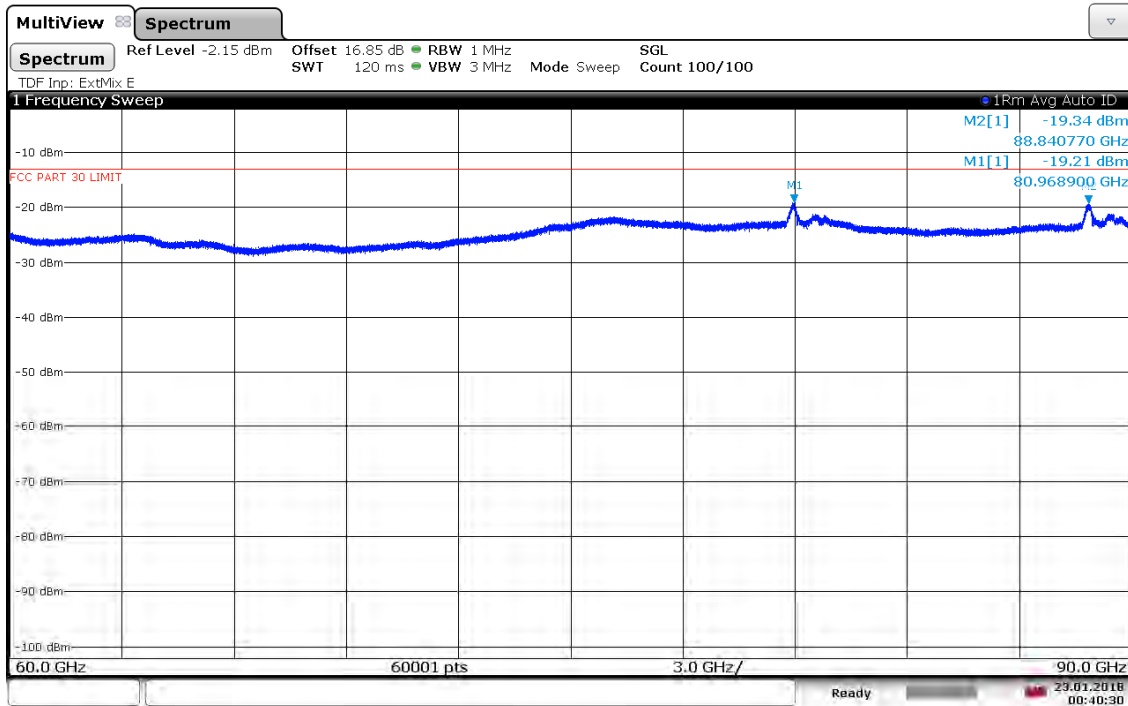
Plot 7-224. Radiated Spurious Plot 60-90 GHz (1CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 144 of 221



00:27:50 23.01.2018

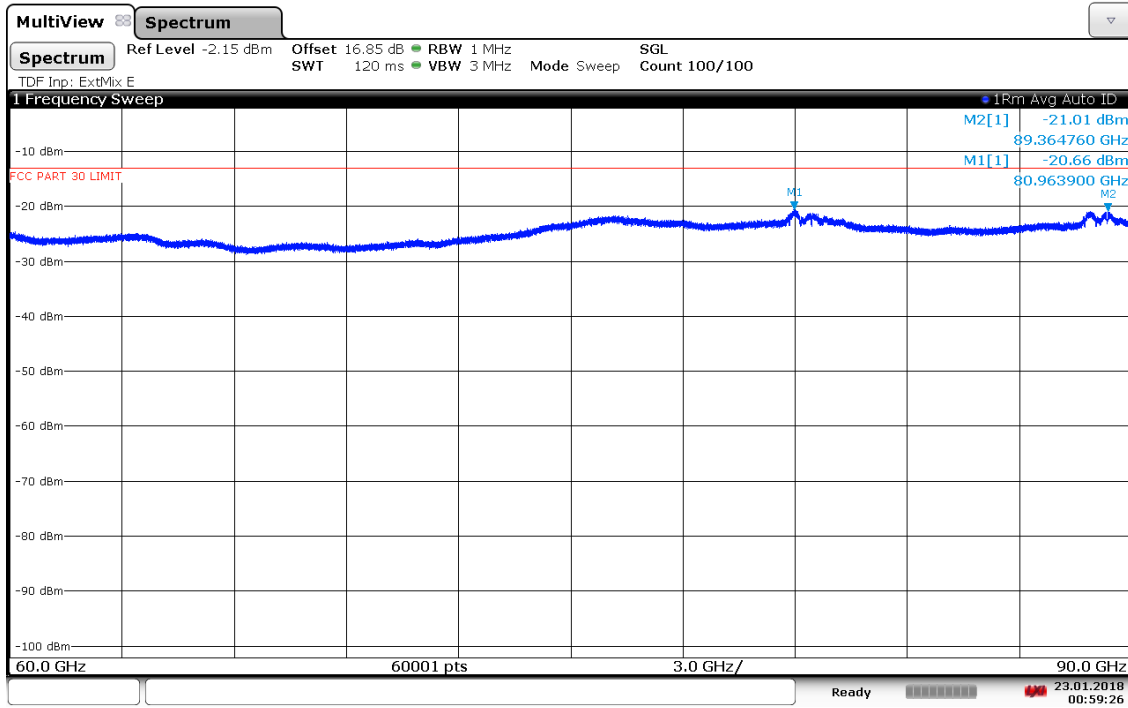
Plot 7-225. Radiated Spurious Plot 60-90 GHz (1CC QPSK High Channel)



00:40:30 23.01.2018

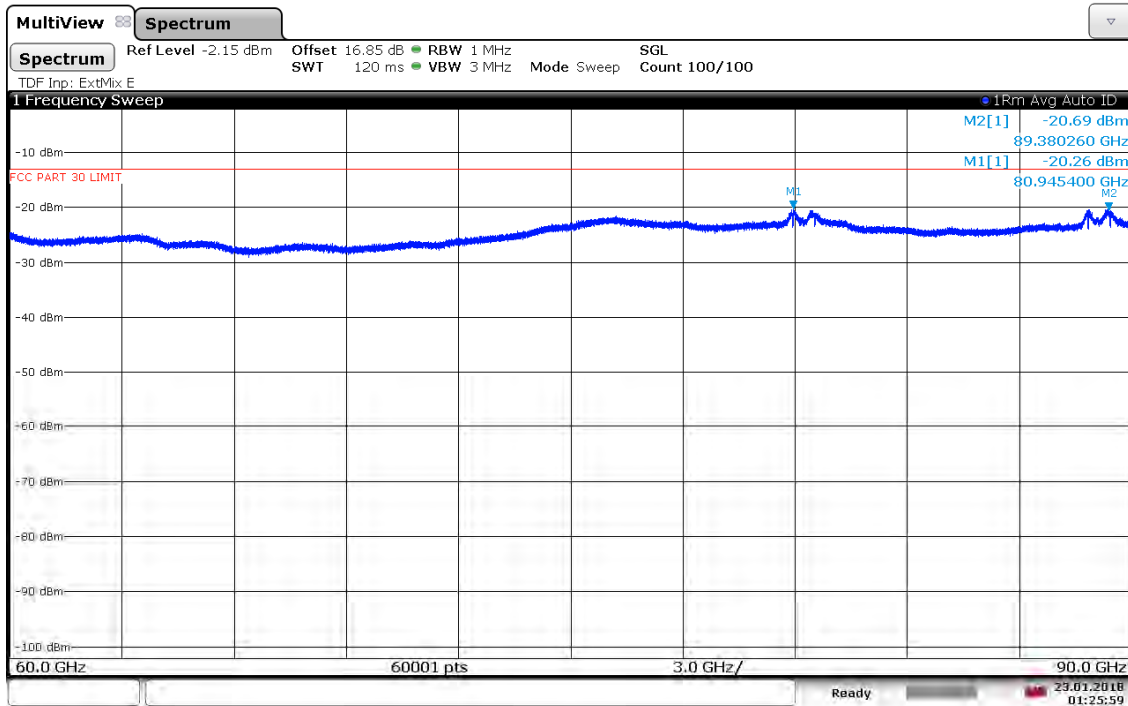
Plot 7-226. Radiated Spurious Plot 60-90 GHz (8CC QPSK Low Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 145 of 221



00:59:27 23.01.2018

Plot 7-227. Radiated Spurious Plot 60-90 GHz (8CC QPSK Mid Channel)



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Plot 7-228. Radiated Spurious Plot 60-90 GHz (8CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 146 of 221

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [degree]	Antenna Height [cm]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
88849.00	Low	CC0	QPSK	135.00	154	-18.46	-13.00	-5.46
80978.00	Mid	CC4	QPSK	135.00	154	-19.12	-13.00	-6.12
89369.00	High	CC7	QPSK	135.00	121	-18.25	-13.00	-5.25
80968.00	Low	CC0-CC7	QPSK	135.00	121	-19.21	-13.00	-6.21
80963.00	Mid	CC0-CC7	QPSK	135.00	121	-20.66	-13.00	-7.66
80945.00	High	CC0-CC7	QPSK	135.00	121	-20.26	-13.00	-7.26

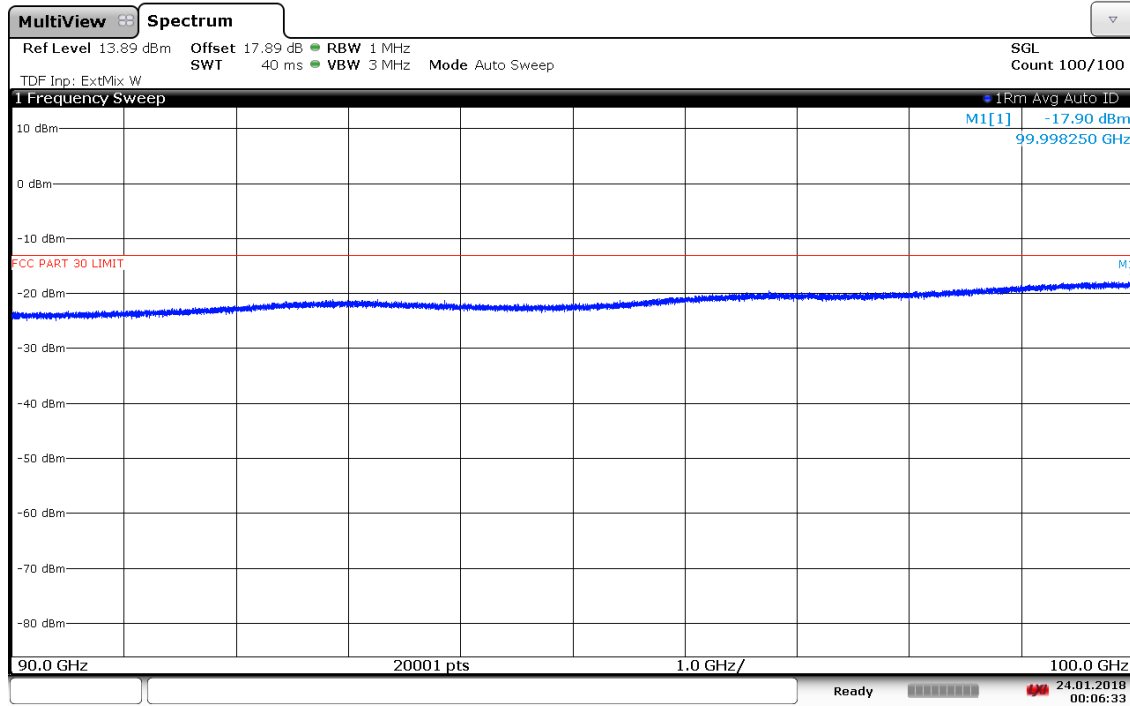
Table 7-22. Spurious Emissions (60 – 90GHz)

Note

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 4.86 meters.

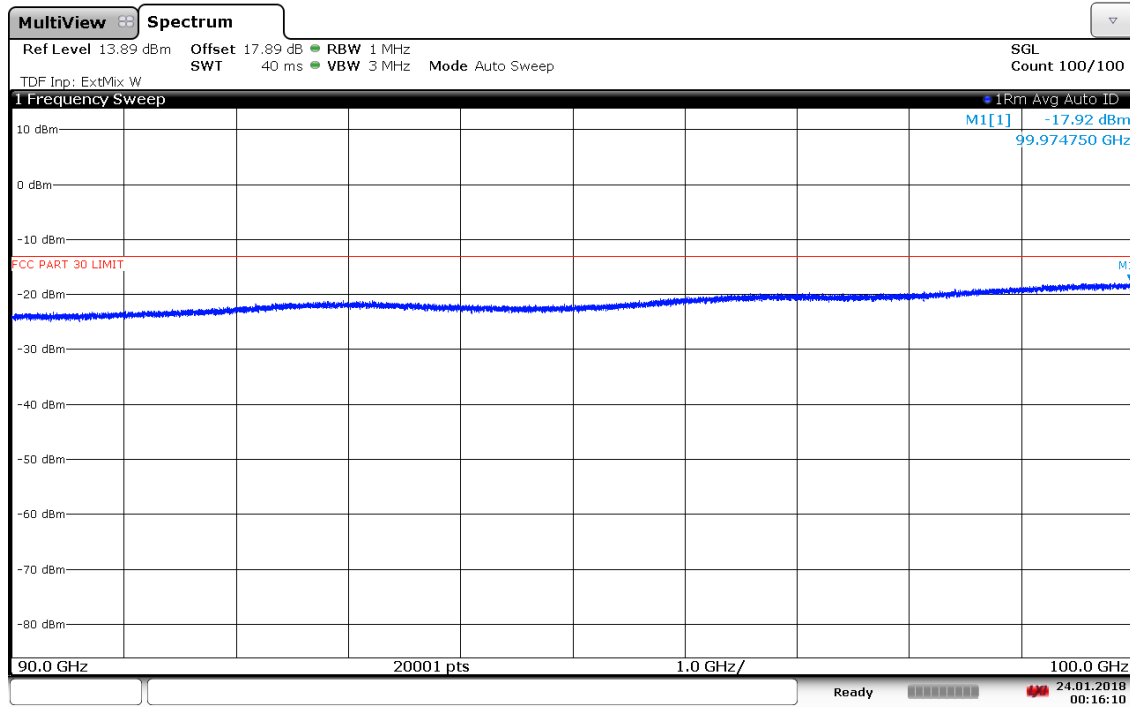
FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 147 of 221

7.5.7 Radiated Spurious Emissions Plots (90 – 100GHz)



00:06:34 24.01.2018

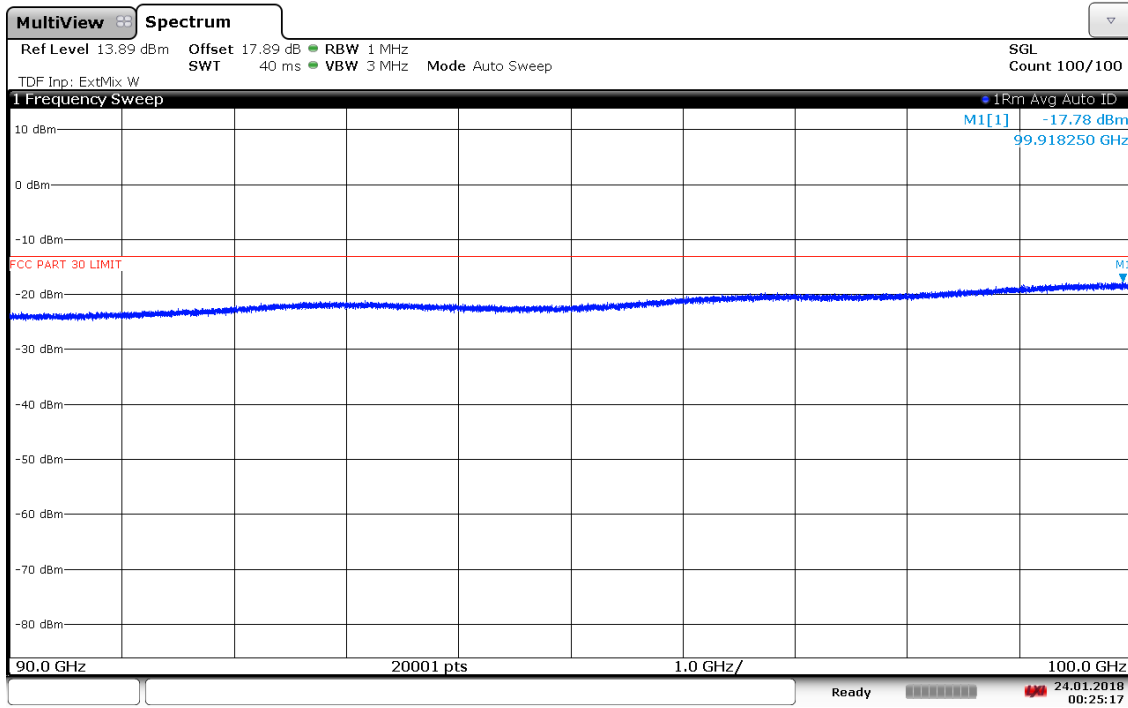
Plot 7-229. Radiated Spurious Plot 90-100 GHz (1CC QPSK Low Channel)



00:16:11 24.01.2018

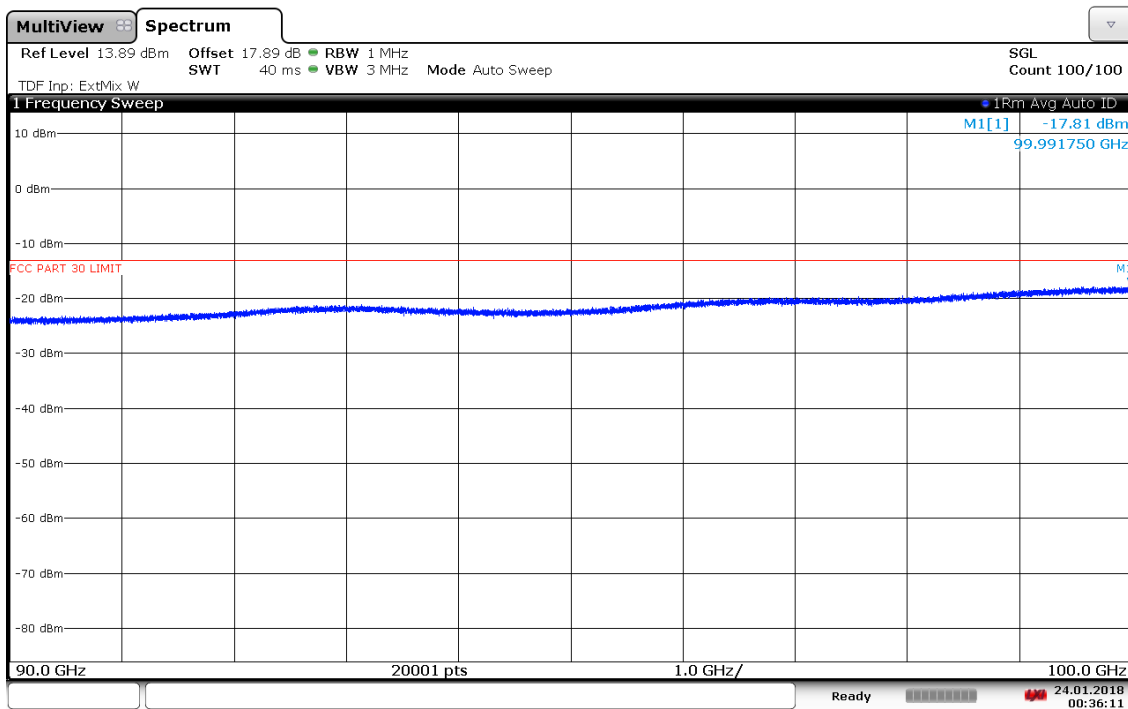
Plot 7-230. Radiated Spurious Plot 90-100 GHz (1CC QPSK Mid Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 148 of 221



00:25:17 24.01.2018

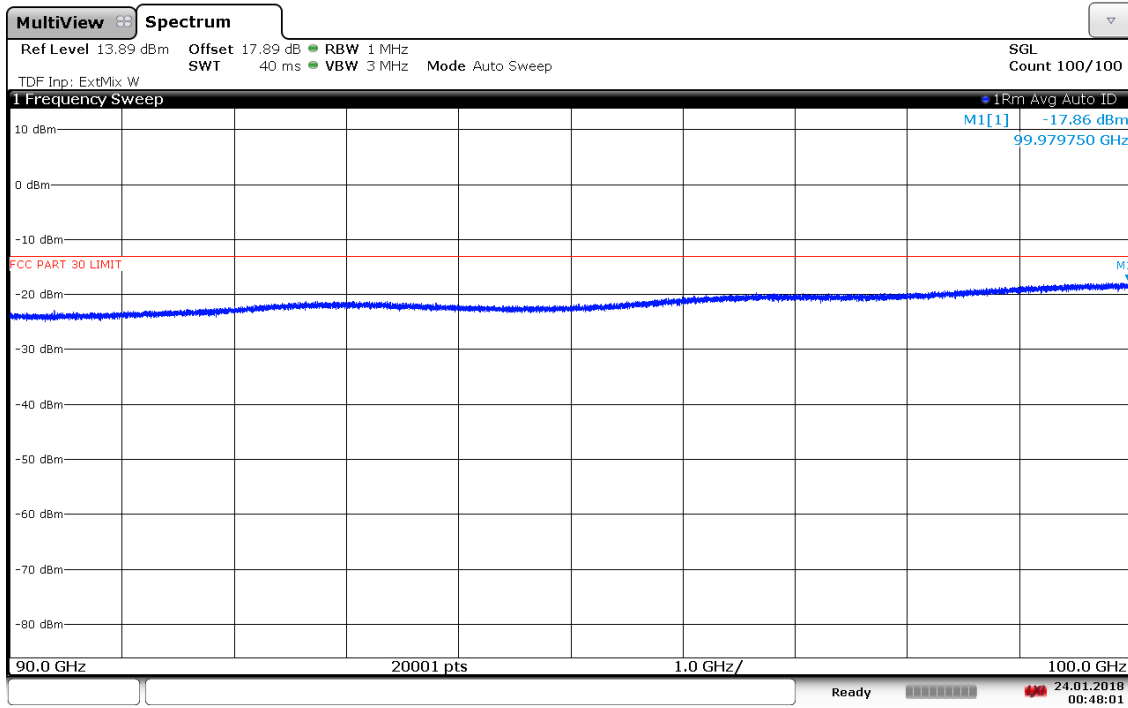
Plot 7-231. Radiated Spurious Plot 90-100 GHz (1CC QPSK High Channel)



00:36:11 24.01.2018

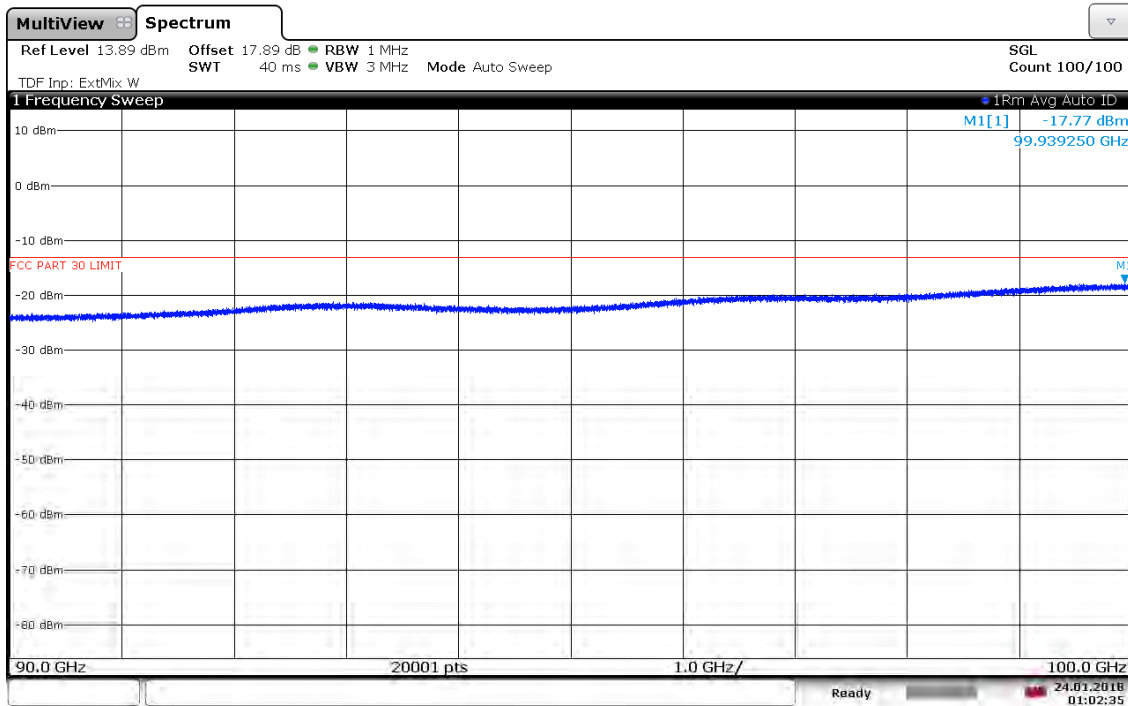
Plot 7-232. Radiated Spurious Plot 90-100 GHz (8CC QPSK Low Channel)

FCC ID: A3LSFG-AA100DC	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Plot 7-233. Radiated Spurious Plot 90-100 GHz (8CC QPSK Mid Channel)



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Plot 7-234. Radiated Spurious Plot 90-100 GHz (8CC QPSK High Channel)

FCC ID: A3LSFG-AA100DC	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1712270338-01-R2.A3L	Test Dates: 1/2-2/3/2018	EUT Type: 5G Access Unit		Page 150 of 221

Frequency [MHz]	Channel	CC Active	Mod.	Ant. Pol. [degree]	Antenna Height [cm]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
99998.00	Low	CC0	QPSK	135.00	121	-17.90	-13.00	-4.90
99974.00	Mid	CC4	QPSK	135.00	121	-17.92	-13.00	-4.92
99918.00	High	CC7	QPSK	135.00	121	-17.78	-13.00	-4.78
99991.00	Low	CC0-CC7	QPSK	135.00	121	-17.81	-13.00	-4.81
99979.00	Mid	CC0-CC7	QPSK	135.00	121	-17.86	-13.00	-4.86
99939.00	High	CC0-CC7	QPSK	135.00	121	-17.77	-13.00	-4.77

Table 7-23. Spurious Emissions (90 – 100GHz)

Note

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 5.41 meters.

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.6 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 5.7.3
ANSI C63.26-2015 Section 6.4

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 while positioned upright and mounted on a mast 1.5m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.
- 2) All measurements in this section was performed in the radiated setup in the far field.
- 3) All appropriate Antenna Factor and Cable Loss have been applied in the spectrum analyzer for each measurement. Additionally, 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.
- 4) 1CC = 1 Component Carrier Active, and 8CC = 8 Component Carriers Active. Each component carrier's bandwidth is 100MHz.

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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- 5) For band edge measurement of EUT's Antenna A, the receive horn antenna was maximized on Antenna A and then the other antennas (B, C, and D) were individually energized and measured while maintaining maximized position on Antenna A. These measurements were saved into a spreadsheet and their spectra were summed to determine the total conducted power for the band edge emissions level shown starting in Section 7.6.5. The same procedure was repeated with the receive horn antenna maximized on Antennas B, C, and D.
- 6) 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.

FCC ID: A3LSFG-AA100DC		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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