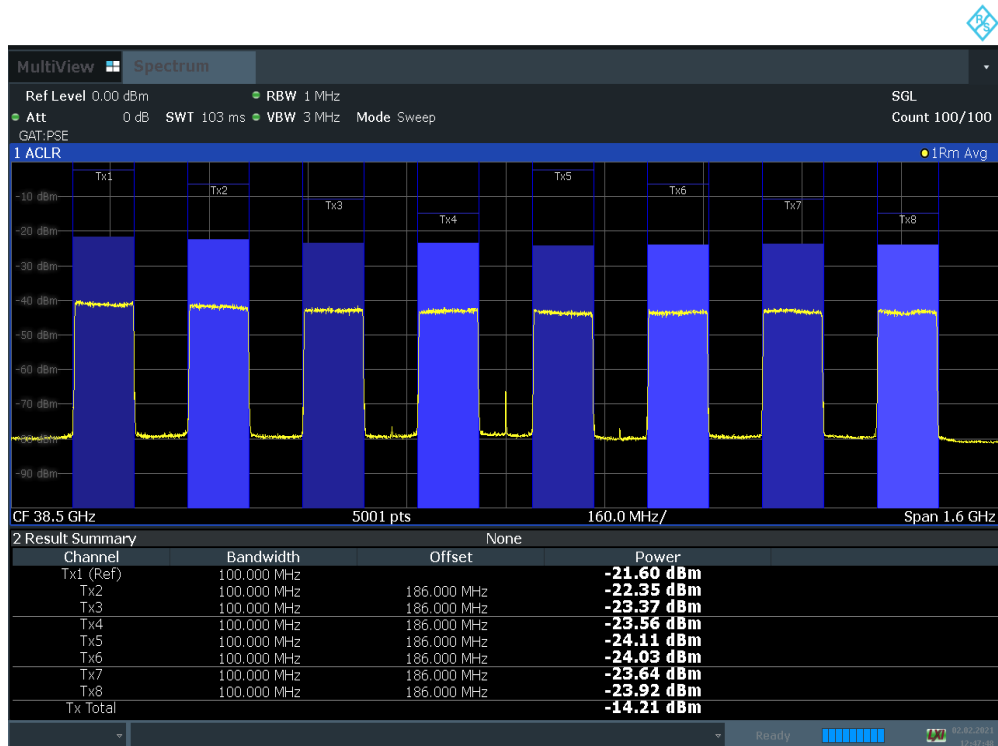
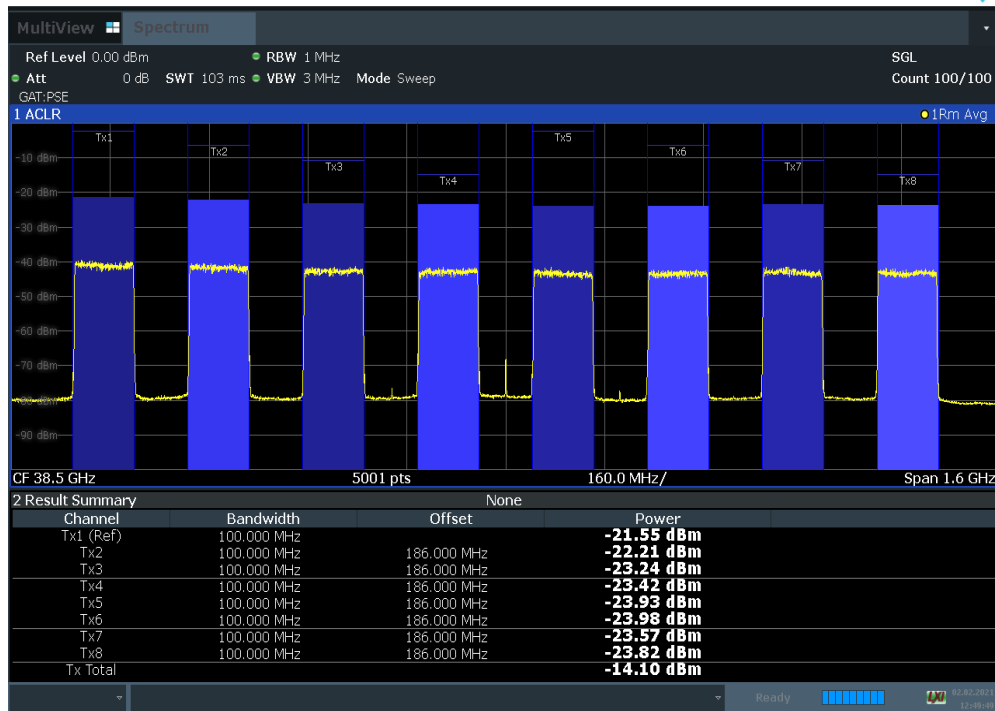


Plot 7-120. Antenna D EIRP Density Plot (100 MHz BW 8CC 64QAM Mid Channel)

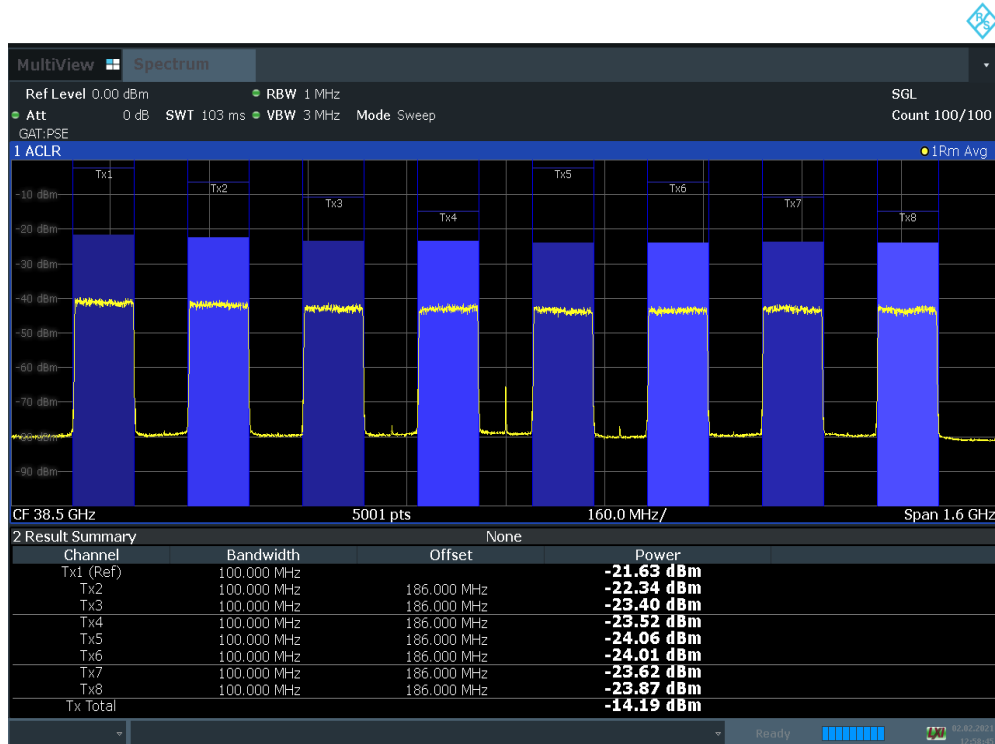


Plot 7-121. Antenna D EIRP Density Plot (100 MHz BW 8CC NC QPSK Mid Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 86 of 161

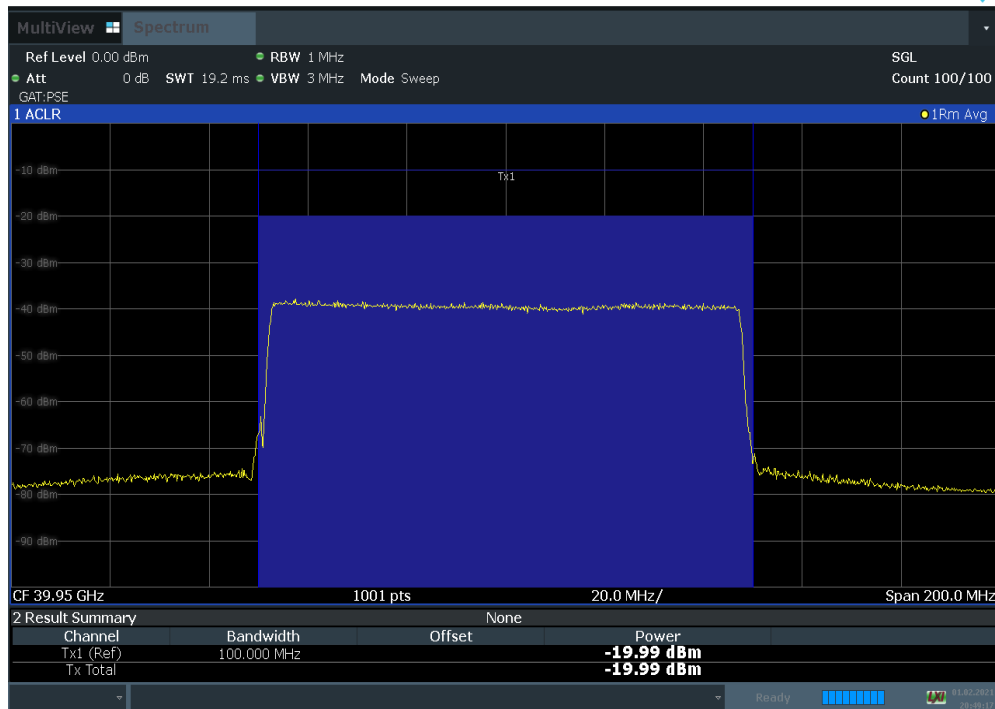


Plot 7-122. Antenna D EIRP Density Plot (100 MHz BW 8CC NC 16QAM Mid Channel)

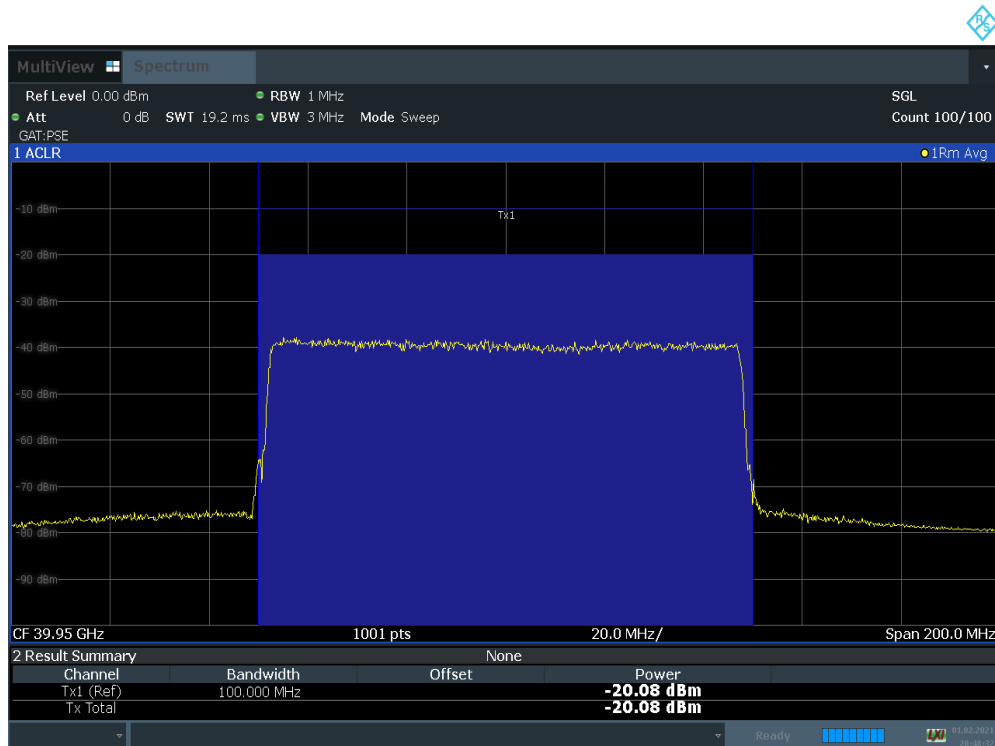


Plot 7-123. Antenna D EIRP Density Plot (100 MHz BW 8CC NC 64QAM Mid Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 87 of 161

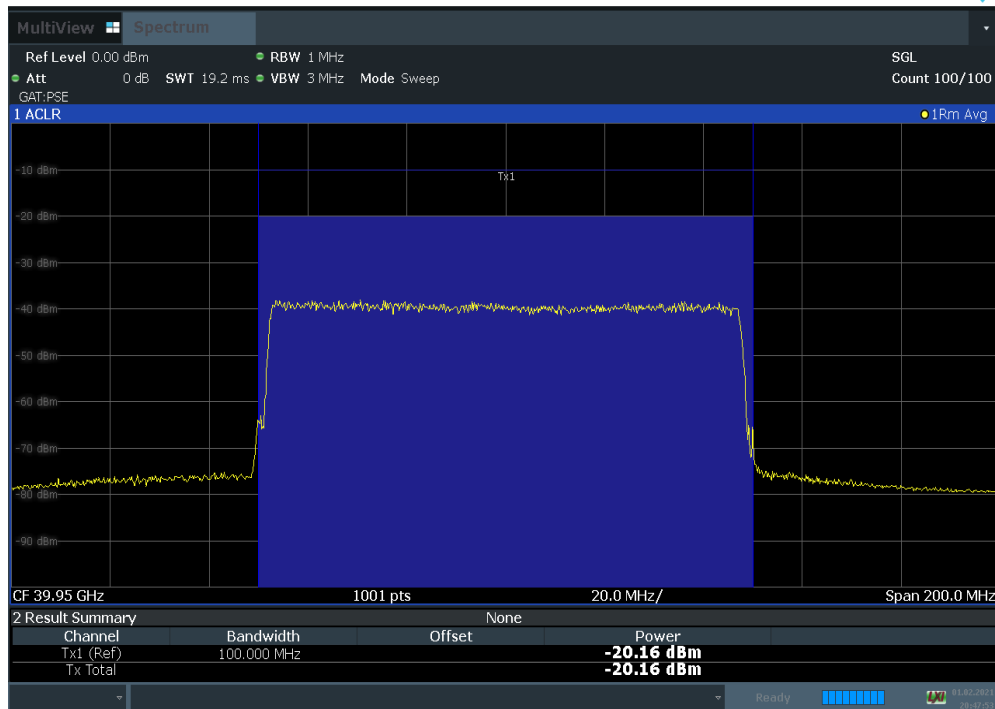


Plot 7-124. Antenna D EIRP Density Plot (100 MHz BW 1CC QPSK High Channel)

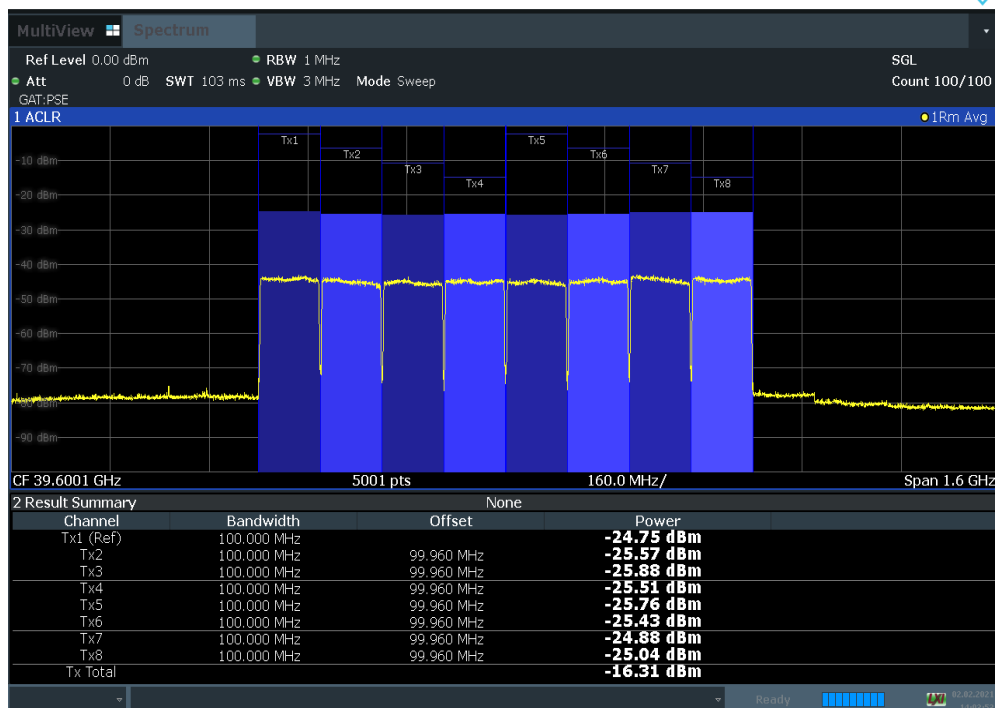


Plot 7-125. Antenna D EIRP Density Plot (100 MHz 1CC BW 16QAM High Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 88 of 161

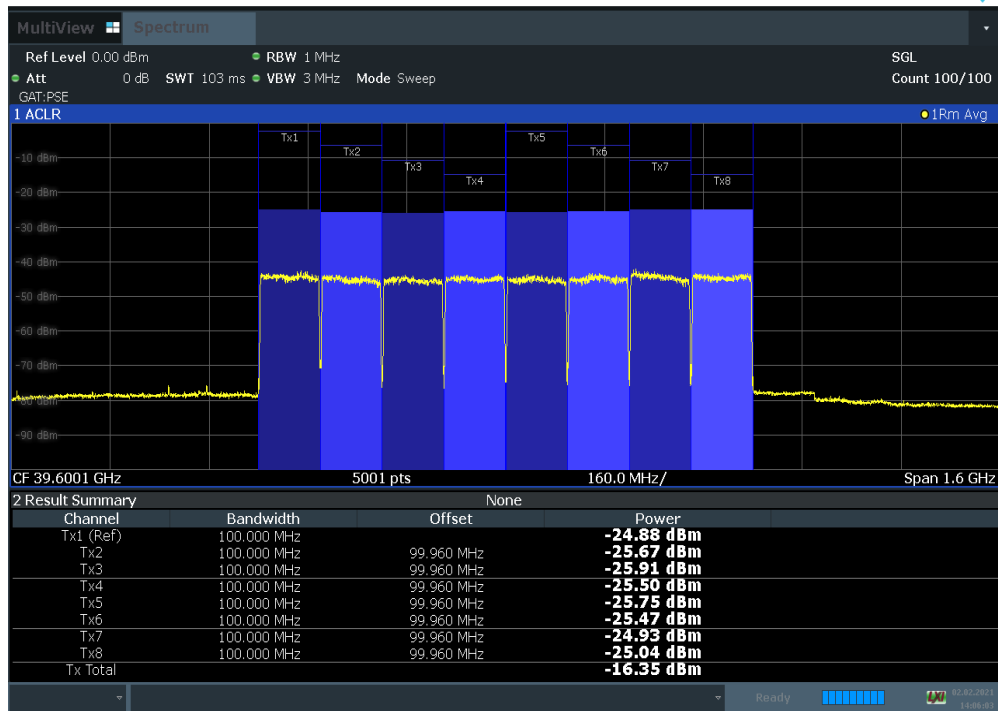


Plot 7-126. Antenna D EIRP Density Plot (100 MHz 1CC BW 64QAM High Channel)

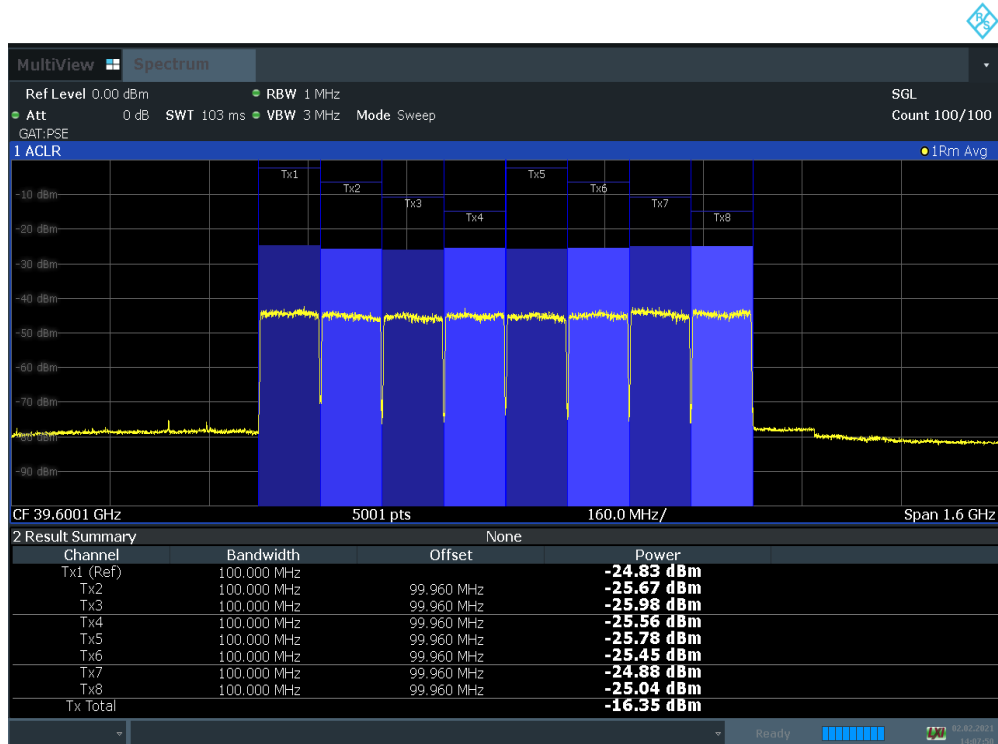


Plot 7-127. Antenna D EIRP Density Plot (100 MHz BW 8CC QPSK High Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 89 of 161

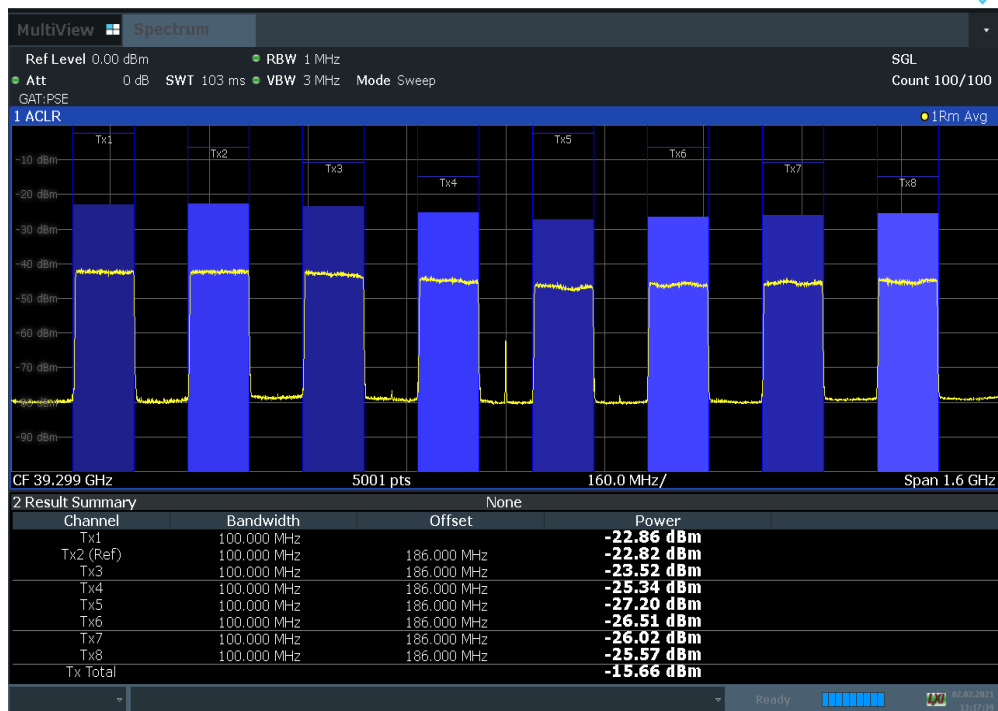


Plot 7-128. Antenna D EIRP Density Plot (100 MHz BW 8CC 16QAM High Channel)

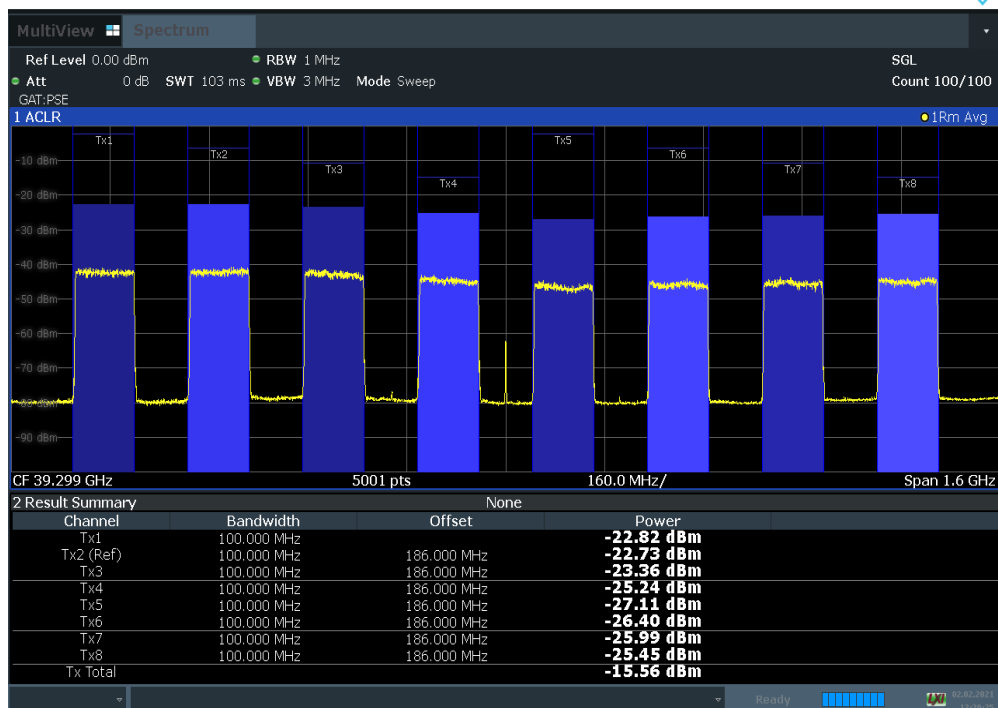


Plot 7-129. Antenna D EIRP Density Plot (100 MHz BW 8CC 64QAM High Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 90 of 161

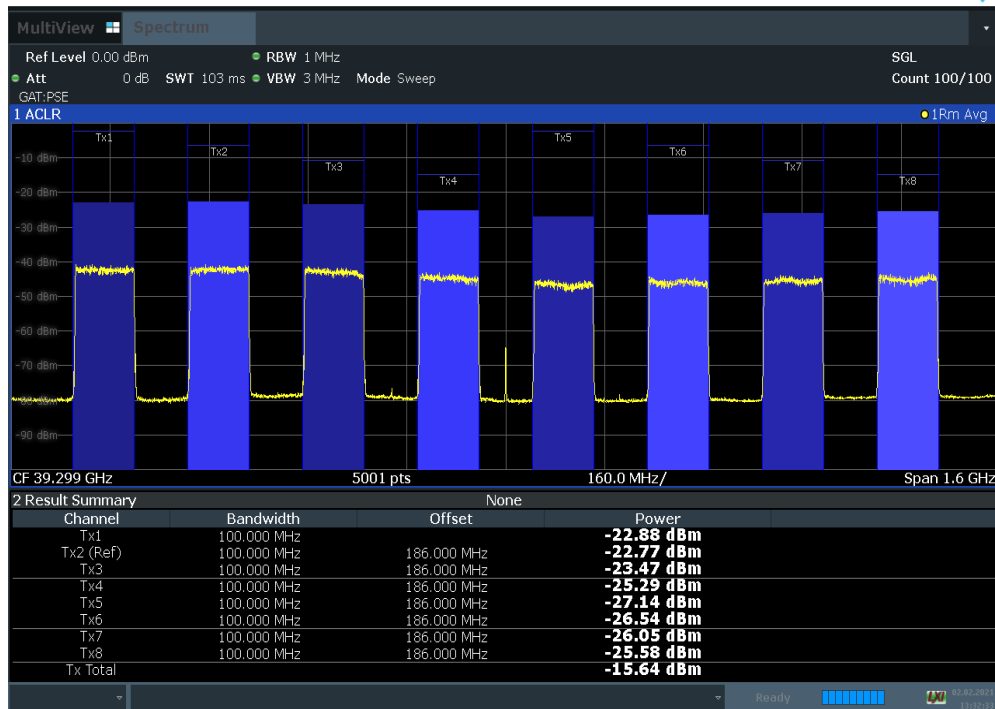


Plot 7-130. Antenna D EIRP Density Plot (100 MHz BW 8CC NC QPSK High Channel)



Plot 7-131. Antenna D EIRP Density Plot (100 MHz BW 8CC NC 16QAM High Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 91 of 161



Plot 7-132. Antenna D EIRP Density Plot (100 MHz BW 8CC NC 64QAM High Channel)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 92 of 161

7.3.5 MIMO EIRP Density

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Ant A [mW]	Ant C [mW]	Average e.i.r.p. PSD	PSD Limit	Margin
	[MHz]			[GHz]				[dBm/100MHz]		
A + C	100	1CC	Low	37.050	QPSK	117.17	110.29	53.57	75.00	21.43
	100		Low	37.050	16QAM	115.88	106.77	53.48	75.00	21.52
	100		Low	37.050	64QAM	119.14	112.94	53.66	75.00	21.34
	100	8CC	Low	37.050	QPSK	33.78	32.70	48.23	75.00	26.77
	100		Low	37.050	16QAM	34.85	32.94	48.31	75.00	26.69
	100		Low	37.050	64QAM	35.01	33.13	48.33	75.00	26.67
	100	8NC	Low	37.050	QPSK	28.99	30.65	47.76	75.00	27.24
	100		Low	37.050	16QAM	28.41	29.51	47.63	75.00	27.37
	100		Low	37.050	64QAM	28.17	29.86	47.64	75.00	27.36
	100	1CC	Mid	38.500	QPSK	104.80	99.79	53.11	75.00	21.89
	100		Mid	38.500	16QAM	102.64	97.97	53.02	75.00	21.98
	100		Mid	38.500	64QAM	104.37	95.70	53.01	75.00	21.99
	100	8CC	Mid	38.500	QPSK	33.18	34.30	48.29	75.00	26.71
	100		Mid	38.500	16QAM	34.19	36.09	48.47	75.00	26.53
	100		Mid	38.500	64QAM	32.92	35.01	48.32	75.00	26.68
	100	8NC	Mid	38.500	QPSK	36.54	38.64	48.76	75.00	26.24
	100		Mid	38.500	16QAM	35.84	37.98	48.68	75.00	26.32
	100		Mid	38.500	64QAM	36.87	39.15	48.81	75.00	26.19
	100	1CC	High	39.950	QPSK	104.73	82.48	52.72	75.00	22.28
	100		High	39.950	16QAM	101.69	81.71	52.63	75.00	22.37
	100		High	39.950	64QAM	104.54	82.28	52.71	75.00	22.29
	100	8CC	High	39.950	QPSK	30.35	26.93	47.58	75.00	27.42
	100		High	39.950	16QAM	29.04	25.18	47.34	75.00	27.66
	100		High	39.950	64QAM	30.38	26.79	47.57	75.00	27.43
	100	8NC	High	39.950	QPSK	44.52	42.10	49.38	75.00	25.62
	100		High	39.950	16QAM	44.99	41.42	49.37	75.00	25.63
	100		High	39.950	64QAM	45.10	42.36	49.42	75.00	25.58

Table 7-11. MIMO EIRP Density Summary Data (Antenna A + C)

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 93 of 161

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Ant B [mW]	Ant D [mW]	Average e.i.r.p. PSD	PSD Limit	Margin
	[MHz]			[GHz]				[dBm/100MHz]		
B + D	100	1CC	Low	37.050	QPSK	121.92	122.90	53.89	75.00	21.11
	100		Low	37.050	16QAM	123.98	128.91	54.03	75.00	20.97
	100		Low	37.050	64QAM	120.43	116.94	53.75	75.00	21.25
	100	8CC	Low	37.050	QPSK	37.08	36.98	48.70	75.00	26.30
	100		Low	37.050	16QAM	36.43	36.60	48.64	75.00	26.36
	100		Low	37.050	64QAM	35.31	35.57	48.51	75.00	26.49
	100	8NC	Low	37.050	QPSK	34.11	33.32	48.29	75.00	26.71
	100		Low	37.050	16QAM	34.06	34.50	48.36	75.00	26.64
	100		Low	37.050	64QAM	34.27	33.61	48.32	75.00	26.68
	100	1CC	Mid	38.500	QPSK	108.60	97.74	53.15	75.00	21.85
	100		Mid	38.500	16QAM	106.76	98.00	53.11	75.00	21.89
	100		Mid	38.500	64QAM	104.97	99.48	53.11	75.00	21.89
	100	8CC	Mid	38.500	QPSK	34.53	34.85	48.41	75.00	26.59
	100		Mid	38.500	16QAM	34.94	34.72	48.43	75.00	26.57
	100		Mid	38.500	64QAM	33.63	33.46	48.27	75.00	26.73
	100	8NC	Mid	38.500	QPSK	43.19	40.84	49.24	75.00	25.76
	100		Mid	38.500	16QAM	43.46	41.33	49.28	75.00	25.72
	100		Mid	38.500	64QAM	43.34	40.56	49.24	75.00	25.76
	100	1CC	High	39.950	QPSK	109.61	82.91	52.84	75.00	22.16
	100		High	39.950	16QAM	108.45	81.09	52.78	75.00	22.22
	100		High	39.950	64QAM	110.27	79.73	52.79	75.00	22.21
	100	8CC	High	39.950	QPSK	32.93	27.69	47.83	75.00	27.17
	100		High	39.950	16QAM	32.89	26.87	47.76	75.00	27.24
	100		High	39.950	64QAM	32.39	27.16	47.75	75.00	27.25
	100	8NC	High	39.950	QPSK	46.08	43.18	49.51	75.00	25.49
	100		High	39.950	16QAM	46.01	44.11	49.55	75.00	25.45
	100		High	39.950	64QAM	45.28	43.64	49.49	75.00	25.51

Table 7-12. MIMO EIRP Density Summary Data (Antenna B + D)

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Ant A [mW]	Ant B [mW]	Ant C [mW]	Ant D [mW]	Average e.i.r.p. PSD	PSD Limit	Margin
	[MHz]			[GHz]						[dBm/100MHz]		
A + B + C + D	100	1CC	Low	37.050	QPSK	117.17	121.92	110.29	122.90	56.74	75.00	18.26
	100		Low	37.050	16QAM	115.88	123.98	106.77	128.91	56.77	75.00	18.23
	100		Low	37.050	64QAM	119.14	120.43	112.94	116.94	56.72	75.00	18.28
	100	8CC	Low	37.050	QPSK	33.78	37.08	32.70	36.98	51.48	75.00	23.52
	100		Low	37.050	16QAM	34.85	36.43	32.94	36.60	51.49	75.00	23.51
	100		Low	37.050	64QAM	35.01	35.31	33.13	35.57	51.43	75.00	23.57
	100	8NC	Low	37.050	QPSK	28.99	34.11	30.65	33.32	51.04	75.00	23.96
	100		Low	37.050	16QAM	28.41	34.06	29.51	34.50	51.02	75.00	23.98
	100		Low	37.050	64QAM	28.17	34.27	29.86	33.61	51.00	75.00	24.00
	100	1CC	Mid	38.500	QPSK	104.80	108.60	99.79	97.74	56.14	75.00	18.86
	100		Mid	38.500	16QAM	102.64	106.76	97.97	98.00	56.08	75.00	18.92
	100		Mid	38.500	64QAM	104.37	104.97	95.70	99.48	56.07	75.00	18.93
	100	8CC	Mid	38.500	QPSK	33.18	34.53	34.30	34.85	51.36	75.00	23.64
	100		Mid	38.500	16QAM	34.19	34.94	36.09	34.72	51.46	75.00	23.54
	100		Mid	38.500	64QAM	32.92	33.63	35.01	33.46	51.30	75.00	23.70
	100	8NC	Mid	38.500	QPSK	36.54	43.19	38.64	40.84	52.02	75.00	22.98
	100		Mid	38.500	16QAM	35.84	43.46	37.98	41.33	52.00	75.00	23.00
	100		Mid	38.500	64QAM	36.87	43.34	39.15	40.56	52.04	75.00	22.96
	100	1CC	High	39.950	QPSK	104.73	109.61	82.48	82.91	55.79	75.00	19.21
	100		High	39.950	16QAM	101.69	108.45	81.71	81.09	55.72	75.00	19.28
	100		High	39.950	64QAM	104.54	110.27	82.28	79.73	55.76	75.00	19.24
	100	8CC	High	39.950	QPSK	30.35	32.93	26.93	27.69	50.72	75.00	24.28
	100		High	39.950	16QAM	29.04	32.89	25.18	26.87	50.57	75.00	24.43
	100		High	39.950	64QAM	30.38	32.39	26.79	27.16	50.67	75.00	24.33
	100	8NC	High	39.950	QPSK	44.52	46.08	42.10	43.18	52.45	75.00	22.55
	100		High	39.950	16QAM	44.99	46.01	41.42	44.11	52.47	75.00	22.53
	100		High	39.950	64QAM	45.10	45.28	42.36	43.64	52.46	75.00	22.54

Table 7-13. MIMO EIRP Density Summary Data (Antenna A + B + C + D)

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7.4 RF Conducted Output Power

\$2.1046

Test Overview

RF conducted output power measurements are performed using broadband horn antennas. The conducted power is determined by maximizing the full spectrum EIRP for all component carrier configurations and then subtracting the known antenna gain from the EIRP. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 Section 5.2.4.4.1
ANSI C63.26-2015 Section 6.4

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5 % of the expected OBW
3. VBW \geq 3 x RBW
4. Span = 2x to 3x the OBW
5. No. of sweep points \geq 2 x span / RBW
6. Detector = RMS
7. The integration bandwidth was roughly set equal to the measured RF Conducted Output Power of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
8. Trace mode = trace averaging (RMS) over 100 sweeps
9. The trace was allowed to stabilize

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Test Notes

- 1) The EUT was tested while positioned upright and mounted on a mast at 1.5 m 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) Elements within the same antenna array are correlated to produce beamforming array gain, only one antenna array was active.
- 3) Measurements were taken in the far field of the mmWave signal based on the formula: $R \geq 2D^2/\text{wavelength}$.
- 4) The test case with from 1CC to 8CC active, was selected for the worst case emission testing as it created the highest EIRP within 100 MHz bandwidth carrier configurations.
- 5) The average EIRP reported below is calculated per formula specific in d) of ANSI C63.26-2015 Section 5.2.7:
 $\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
 For this section, all EIRP density measurements were performed at a distance of 2.61 m, so the effective correction is:
 $\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) - 96.46 \text{ dB}$
 $= \text{Analyzer Level (dBm)} + \text{AFCL (dB/m)} + 107 \text{ dB} - 96.46 \text{ dB}$
 $= \text{Analyzer Level (dBm)} + \text{AFCL (dB/m)} + 10.53 \text{ dB}$
- 6) The conducted average power over the full channel BW is calculated as follows:
 $\text{Conducted Average Power (dBm)} = \text{Average EIRP (dBm)} - \text{Antenna Gain (dBi)}$
- 7) Per ANSI C63.26-2015 Section 6.4, individual EIRPs are also summed before compared to the limit.
- 8) The angle of the horn antenna was rotated to maximize and find the worst case emissions. Worst case EIRP is reported below.
- 9) 7.3 Equivalent Isotropic Radiated Power (EIRP) Density plots cover for 7.4 Conducted Output Power plot.
- 10) A3LAT1K01-A10 test result is referenced as A3LAT1K01-A00 result which is difference of power type between AC(A3LAT1K01-A00) source and DC(A3LAT1K01-A10) source. Power supply condition is not affected to declared RF specification.

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7.4.1 Antenna A Conducted Power

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Analyzer Level	AFCL	EUT Antenna Gain	Average e.i.r.p. PSD	Conducted Average Power
	[MHz]			[GHz]		[dBm]	[dB/m]	[dBi]	[dBm]	[dBm]
A	100	1CC	Low	37.050	QPSK	-16.01	66.70	26.57	50.69	24.12
	100		Low	37.050	16QAM	-16.06	66.70	26.57	50.64	24.07
	100		Low	37.050	64QAM	-15.94	66.70	26.57	50.76	24.19
	100	8CC	Low	37.050	QPSK	-21.42	66.70	26.57	45.29	18.72
	100		Low	37.050	16QAM	-21.28	66.70	26.57	45.42	18.85
	100		Low	37.050	64QAM	-21.26	66.70	26.57	45.44	18.87
	100	8NC	Low	37.050	QPSK	-22.08	66.70	26.57	44.62	18.05
	100		Low	37.050	16QAM	-22.17	66.70	26.57	44.53	17.96
	100		Low	37.050	64QAM	-22.20	66.70	26.57	44.50	17.93
	100	1CC	Mid	38.500	QPSK	-17.51	67.71	26.88	50.20	23.32
	100		Mid	38.500	16QAM	-17.60	67.71	26.88	50.11	23.23
	100		Mid	38.500	64QAM	-17.53	67.71	26.88	50.19	23.31
	100	8CC	Mid	38.500	QPSK	-22.50	67.71	26.88	45.21	18.33
	100		Mid	38.500	16QAM	-22.37	67.71	26.88	45.34	18.46
	100		Mid	38.500	64QAM	-22.54	67.71	26.88	45.17	18.29
	100	8NC	Mid	38.500	QPSK	-22.09	67.71	26.88	45.63	18.75
	100		Mid	38.500	16QAM	-22.17	67.71	26.88	45.54	18.66
	100		Mid	38.500	64QAM	-22.05	67.71	26.88	45.67	18.79
	100	1CC	High	39.950	QPSK	-18.97	69.17	27.00	50.20	23.20
	100		High	39.950	16QAM	-19.10	69.17	27.00	50.07	23.07
	100		High	39.950	64QAM	-18.98	69.17	27.00	50.19	23.19
	100	8CC	High	39.950	QPSK	-24.35	69.17	27.00	44.82	17.82
	100		High	39.950	16QAM	-24.54	69.17	27.00	44.63	17.63
	100		High	39.950	64QAM	-24.35	69.17	27.00	44.83	17.83
	100	8NC	High	39.950	QPSK	-22.69	69.17	27.00	46.49	19.49
	100		High	39.950	16QAM	-22.64	69.17	27.00	46.53	19.53
	100		High	39.950	64QAM	-22.63	69.17	27.00	46.54	19.54

Table 7-14. Antenna A Conducted Power Summary Data

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.4.2 Antenna B Conducted Power

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Analyzer Level	AFCL	EUT Antenna Gain	Average e.i.r.p. PSD	Conducted Average Power
	[MHz]			[GHz]		[dBm]	[dB/m]	[dBi]	[dBm]	[dBm]
B	100	1CC	Low	37.050	QPSK	-15.84	66.70	26.57	50.86	24.29
	100		Low	37.050	16QAM	-15.77	66.70	26.57	50.93	24.36
	100		Low	37.050	64QAM	-15.90	66.70	26.57	50.81	24.24
	100	8CC	Low	37.050	QPSK	-21.01	66.70	26.57	45.69	19.12
	100		Low	37.050	16QAM	-21.09	66.70	26.57	45.61	19.04
	100		Low	37.050	64QAM	-21.22	66.70	26.57	45.48	18.91
	100	8NC	Low	37.050	QPSK	-21.37	66.70	26.57	45.33	18.76
	100		Low	37.050	16QAM	-21.38	66.70	26.57	45.32	18.75
	100		Low	37.050	64QAM	-21.35	66.70	26.57	45.35	18.78
	100	1CC	Mid	38.500	QPSK	-17.35	67.71	26.88	50.36	23.48
	100		Mid	38.500	16QAM	-17.43	67.71	26.88	50.28	23.40
	100		Mid	38.500	64QAM	-17.50	67.71	26.88	50.21	23.33
	100	8CC	Mid	38.500	QPSK	-22.33	67.71	26.88	45.38	18.50
	100		Mid	38.500	16QAM	-22.28	67.71	26.88	45.43	18.55
	100		Mid	38.500	64QAM	-22.45	67.71	26.88	45.27	18.39
	100	8NC	Mid	38.500	QPSK	-21.36	67.71	26.88	46.35	19.47
	100		Mid	38.500	16QAM	-21.33	67.71	26.88	46.38	19.50
	100		Mid	38.500	64QAM	-21.34	67.71	26.88	46.37	19.49
	100	1CC	High	39.950	QPSK	-18.77	69.17	27.00	50.40	23.40
	100		High	39.950	16QAM	-18.82	69.17	27.00	50.35	23.35
	100		High	39.950	64QAM	-18.75	69.17	27.00	50.42	23.42
	100	8CC	High	39.950	QPSK	-24.00	69.17	27.00	45.18	18.18
	100		High	39.950	16QAM	-24.00	69.17	27.00	45.17	18.17
	100		High	39.950	64QAM	-24.07	69.17	27.00	45.10	18.10
	100	8NC	High	39.950	QPSK	-22.54	69.17	27.00	46.64	19.64
	100		High	39.950	16QAM	-22.54	69.17	27.00	46.63	19.63
	100		High	39.950	64QAM	-22.61	69.17	27.00	46.56	19.56

Table 7-15. Antenna B Conducted Power Summary Data

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7.4.3 Antenna C Conducted Power

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Analyzer Level	AFCL	EUT Antenna Gain	Average e.i.r.p. PSD	Conducted Average Power
	[MHz]			[GHz]		[dBm]	[dB/m]	[dBi]	[dBm]	[dBm]
C	100	1CC	Low	37.050	QPSK	-16.28	66.70	26.57	50.43	23.86
	100		Low	37.050	16QAM	-16.42	66.70	26.57	50.28	23.71
	100		Low	37.050	64QAM	-16.17	66.70	26.57	50.53	23.96
	100	8CC	Low	37.050	QPSK	-21.56	66.70	26.57	45.15	18.58
	100		Low	37.050	16QAM	-21.52	66.70	26.57	45.18	18.61
	100		Low	37.050	64QAM	-21.50	66.70	26.57	45.20	18.63
	100	8NC	Low	37.050	QPSK	-21.84	66.70	26.57	44.86	18.29
	100		Low	37.050	16QAM	-22.00	66.70	26.57	44.70	18.13
	100		Low	37.050	64QAM	-21.95	66.70	26.57	44.75	18.18
	100	1CC	Mid	38.500	QPSK	-17.72	67.71	26.88	49.99	23.11
	100		Mid	38.500	16QAM	-17.80	67.71	26.88	49.91	23.03
	100		Mid	38.500	64QAM	-17.90	67.71	26.88	49.81	22.93
	100	8CC	Mid	38.500	QPSK	-22.36	67.71	26.88	45.35	18.47
	100		Mid	38.500	16QAM	-22.14	67.71	26.88	45.57	18.69
	100		Mid	38.500	64QAM	-22.27	67.71	26.88	45.44	18.56
	100	8NC	Mid	38.500	QPSK	-21.84	67.71	26.88	45.87	18.99
	100		Mid	38.500	16QAM	-21.92	67.71	26.88	45.80	18.92
	100		Mid	38.500	64QAM	-21.79	67.71	26.88	45.93	19.05
	100	1CC	High	39.950	QPSK	-20.01	69.17	27.00	49.16	22.16
	100		High	39.950	16QAM	-20.05	69.17	27.00	49.12	22.12
	100		High	39.950	64QAM	-20.02	69.17	27.00	49.15	22.15
	100	8CC	High	39.950	QPSK	-24.87	69.17	27.00	44.30	17.30
	100		High	39.950	16QAM	-25.16	69.17	27.00	44.01	17.01
	100		High	39.950	64QAM	-24.89	69.17	27.00	44.28	17.28
	100	8NC	High	39.950	QPSK	-22.93	69.17	27.00	46.24	19.24
	100		High	39.950	16QAM	-23.00	69.17	27.00	46.17	19.17
	100		High	39.950	64QAM	-22.90	69.17	27.00	46.27	19.27

Table 7-16. Antenna C Conducted Power Summary Data

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.4.4 Antenna D Conducted Power

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Analyzer Level	AFCL	EUT Antenna Gain	Average e.i.r.p. PSD	Conducted Average Power
	[MHz]			[GHz]		[dBm]	[dB/m]	[dBi]	[dBm]	[dBm]
D	100	1CC	Low	37.050	QPSK	-15.81	66.70	26.57	50.90	24.33
	100		Low	37.050	16QAM	-15.60	66.70	26.57	51.10	24.53
	100		Low	37.050	64QAM	-16.02	66.70	26.57	50.68	24.11
	100	8CC	Low	37.050	QPSK	-21.02	66.70	26.57	45.68	19.11
	100		Low	37.050	16QAM	-21.07	66.70	26.57	45.63	19.06
	100		Low	37.050	64QAM	-21.19	66.70	26.57	45.51	18.94
	100	8NC	Low	37.050	QPSK	-21.48	66.70	26.57	45.23	18.66
	100		Low	37.050	16QAM	-21.32	66.70	26.57	45.38	18.81
	100		Low	37.050	64QAM	-21.44	66.70	26.57	45.26	18.69
	100	1CC	Mid	38.500	QPSK	-17.81	67.71	26.88	49.90	23.02
	100		Mid	38.500	16QAM	-17.80	67.71	26.88	49.91	23.03
	100		Mid	38.500	64QAM	-17.74	67.71	26.88	49.98	23.10
	100	8CC	Mid	38.500	QPSK	-22.29	67.71	26.88	45.42	18.54
	100		Mid	38.500	16QAM	-22.31	67.71	26.88	45.41	18.53
	100		Mid	38.500	64QAM	-22.47	67.71	26.88	45.25	18.37
	100	8NC	Mid	38.500	QPSK	-21.60	67.71	26.88	46.11	19.23
	100		Mid	38.500	16QAM	-21.55	67.71	26.88	46.16	19.28
	100		Mid	38.500	64QAM	-21.63	67.71	26.88	46.08	19.20
	100	1CC	High	39.950	QPSK	-19.99	69.17	27.00	49.19	22.19
	100		High	39.950	16QAM	-20.08	69.17	27.00	49.09	22.09
	100		High	39.950	64QAM	-20.16	69.17	27.00	49.02	22.02
	100	8CC	High	39.950	QPSK	-24.75	69.17	27.00	44.42	17.42
	100		High	39.950	16QAM	-24.88	69.17	27.00	44.29	17.29
	100		High	39.950	64QAM	-24.83	69.17	27.00	44.34	17.34
	100	8NC	High	39.950	QPSK	-22.82	69.17	27.00	46.35	19.35
	100		High	39.950	16QAM	-22.73	69.17	27.00	46.45	19.45
	100		High	39.950	64QAM	-22.77	69.17	27.00	46.40	19.40

Table 7-17. Antenna D Conducted Power Summary Data

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7.5 Radiated Spurious and Harmonic Emissions

§2.1051 §30.203

Test Overview

The spectrum is scanned from 30 MHz to 100 GHz for n261 and from 30 MHz to 200 GHz for n260. 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 conductive power or total radiated power of any emissions outside a licensee's frequency block shall be -13 dBm / 1 MHz.

Test Procedure Used

ANSI C63.26-2015 Section 5.7.4

ANSI C63.26-2015 Section 6.4

KDB 842590 D01 v01r01 Section 4.4.2 and Section 4.4.3

Test Settings

1. Start frequency was set to 30 MHz and stop frequency was set to 200 GHz for n260. 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 = 1 MHz, VBW = 3 MHz

Test Notes

- 1) The EUT was tested while positioned upright and mounted on a mast 1.5 m 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 radiated spurious emissions were measured as EIRP to compare with the §30.203 TRP limits.
- 3) Emissions below 18 GHz were measured at a 3 meter test distance, while emissions above 18 GHz were measured at the appropriate far field distance. The far field of the mmWave signal is based on formula; $R > 2D^2/\text{wavelength}$, where D is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, D is the largest dimension of the measurement antenna.
- 4) Out-band Emission of 10% channel bandwidth are exempted on Radiated Spurious and Harmonic Emissions test case.
- 5) The plots from 1-200 GHz show corrected average EIRP levels. The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states: $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m. The field strength E is calculated $E \text{ (dB}\mu\text{V/m)} = \text{Spectrum Analyzer Level (dBm)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + \text{Duty Cycle (dB)} + \text{Harmonic Mixer Conversion Loss (dB)} + 107$. All appropriate Antenna Factor and Cable Loss have been applied in the spectrum analyzer for each measurement. For measurements > 40 GHz, Harmonic Mixer Conversion Loss was also applied to the spectrum analyzer.

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Frequency Range [GHz]	Wavelength [cm]	Far Field Distance [m]	Measurements Distance [m]
18 to 40	0.749	2.61	2.61
40 to 60	0.500	1.39	2.61
60 to 90	0.333	0.91	2.61
90 to 140	0.214	0.58	1.00
140 to 200	0.150	0.39	1.00

Table 7-18. Far-field Distance & Measurement Distance per Frequency Range

Frequency Range [GHz]	Calculated Measurement $D * E$ [dB]	Duty Cycle [dB]	Reference offset [dB]
18 to 40	10.53	1.41	11.95
40 to 200	2.20	1.41	3.61

Table 7-19. Far-field Distance & Measurement Distance per Frequency Range

- 6) Emissions > 40 GHz were measured using a harmonic mixer with the spectrum analyzer.
- 7) The “-” shown in the following RSE tables are used to denote a noise floor measurement.
- 8) Spurious emissions were measured with all EUT antennas transmitting simultaneously.
 - Per section 4.4.1 of KDB 842590 D01, unwanted emission measurements, “If the device does not meet the emission limit at one or some frequencies, then TRP measurements shall be performed only at the failing frequencies at which emission levels exceed the limit.” The TRP measurement plots using the three cut test method as described in section 4.4 of the KDB, follow all failing emission plots in this report.

TRP Measurement Procedure

If the recorded EIRP value was close or above the TRP limit, a Two Cut TRP measurement was done according to KDB 842590 D01 v01 Section 4.4.3.3.2

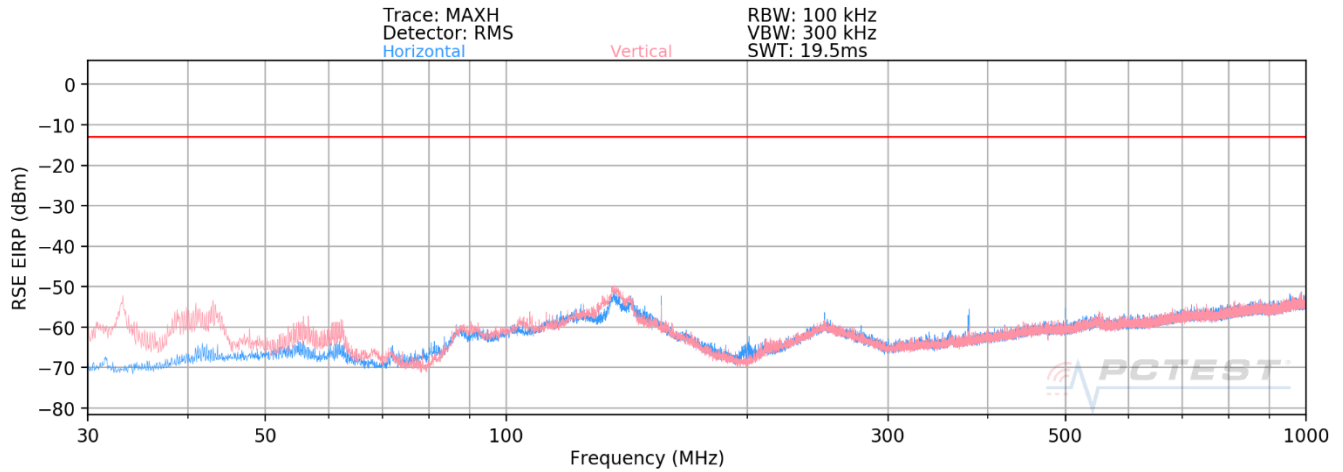
- a) Align the EUT with a chosen xy-plane and the xz-plane of the antenna measurement coordinate system.
NOTE 1 For harmonics and spurious emission frequencies which are beamforming as identified in exploratory scan, it may be required to align the orthogonal cuts to include the peak based on exploratory scans.
- b) Measure the EUT dimensions, i.e., depth (d), width (w), and height (h); see Figure A.1 in Appendix A.
- c) Calculate the spherical and cylindrical diameters (D and D_{cyl}) using Equations (A.1) and (A.2) (see Appendix
- d) For the highest frequency (smallest wavelength) of the frequency band measured, calculate the reference angular steps $\Delta\theta_{ref}$ and $\Delta\phi_{ref}$ using Equations (A.3) and (A.4).
- e) Set the grid spatial sampling step $\Delta\theta \leq \Delta\theta_{ref}$ for the vertical angle and $\Delta\phi \leq \Delta\phi_{ref}$ for the horizontal cut.
- f) For each emission frequency, measure the EIRP (as a sum of two orthogonal polarizations) at each spatial sampling step on the selected grid.
- g) For each emission frequency, calculate the average EIRP for both the cuts separately, and then take the average of these two average values.
- h) Add 2 dB as a correction factor to the averaged value computed in step g).

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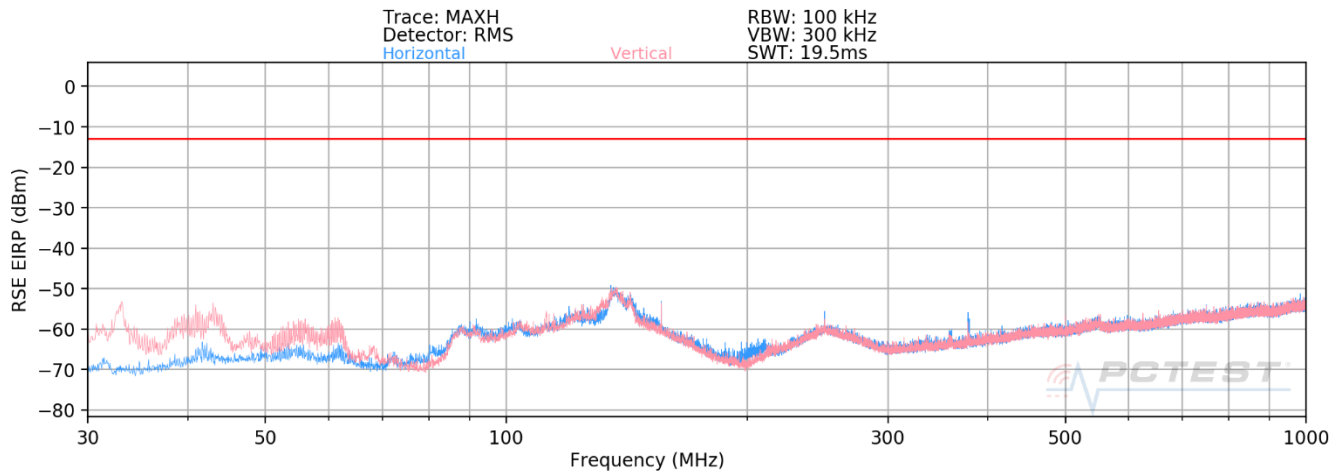
- i) If the TRP limit is exceeded, a third orthogonal cut in the yz-plane and using the $\Delta\theta$ angular step, can be added. Now, calculate the average values in all three cuts separately, and then take the average value of these three average values.
- j) Add 1.5 dB as a correction factor to the averaged value computed in step i).
- k) Evaluate the pass/fail decision by comparing TRP from step h) or step j) against the applicable TRP limit.

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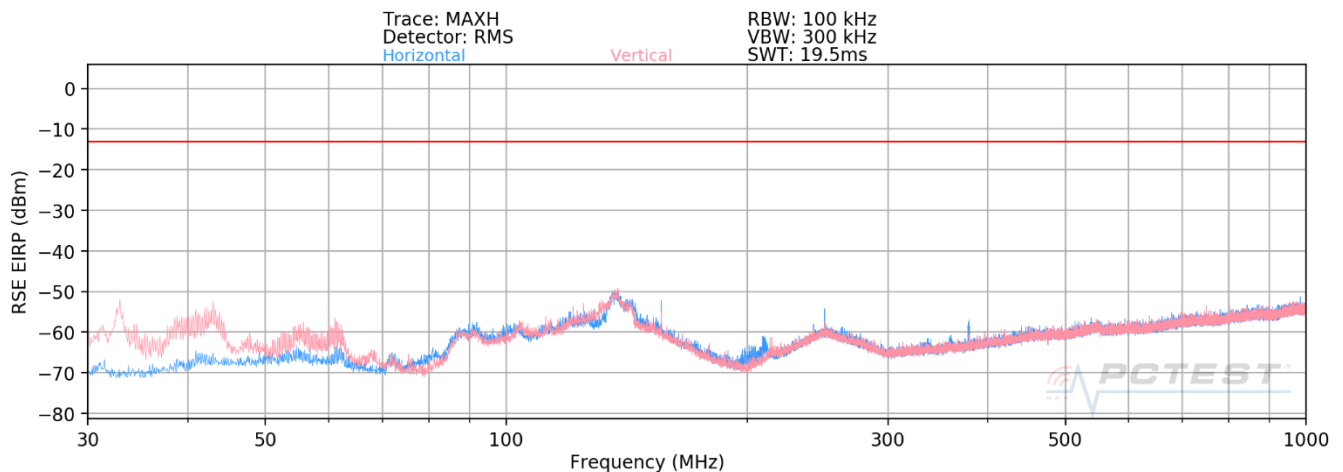
7.5.1 Radiated Spurious Emissions Plots (30 MHz to 1 GHz)



Plot 7-133. Radiated Spurious Plot 30 MHz - 1 GHz (100 MHz BW 1CC QPSK Mid Channel)



Plot 7-134. Radiated Spurious Plot 30 MHz - 1 GHz (100 MHz BW 8CC QPSK Mid Channel)



Plot 7-135. Radiated Spurious Plot 30 MHz - 1 GHz (100 MHz BW 8CC NC QPSK Mid Channel)

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Spurious Emissions EIRP Sample Calculation (n260)

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.

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

Frequency [MHz]	Channel	Configuration	Modulation	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dBm]	RSE EIRP [dBm]	Margin [dB]
135.37	Mid	8CC	QPSK	H	-	-	-78.28	22.64	-43.86	30.86
135.37	Mid	8CC	QPSK	V	-	-	-79.15	22.64	-44.73	31.73

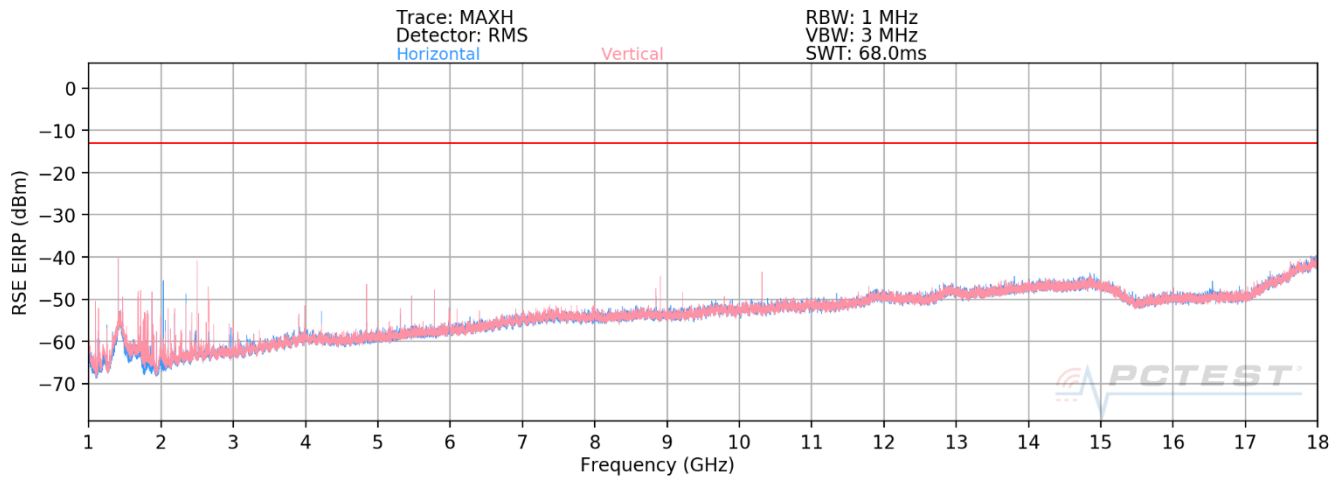
Table 7-20. Spurious Emissions (30 MHz - 1GHz)

Notes

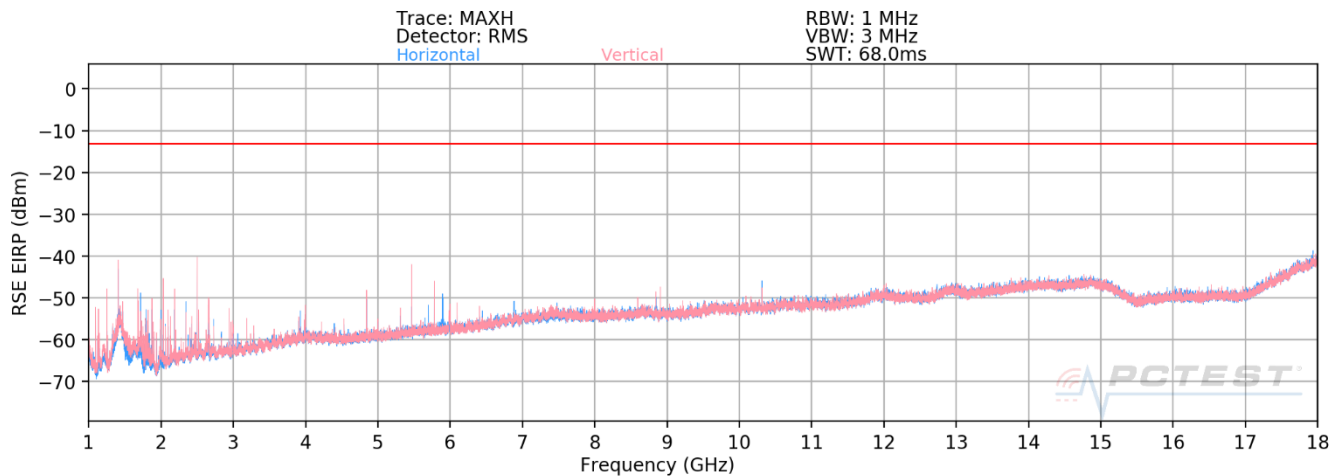
The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

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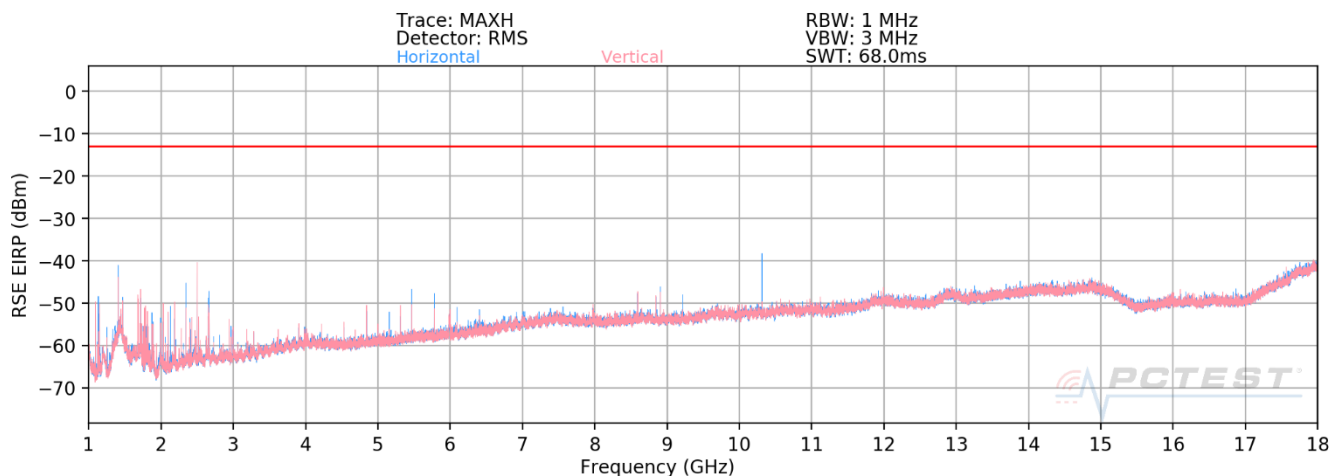
7.5.2 Radiated Spurious Emissions Plots (1 GHz to 18 GHz)



Plot 7-136. Radiated Spurious Plot 1 GHz - 18 GHz (100 MHz BW 1CC QPSK Mid Channel)



Plot 7-137. Radiated Spurious Plot 1 GHz - 18 GHz (100 MHz BW 8CC QPSK Mid Channel)



Plot 7-138. Radiated Spurious Plot 1 GHz - 18 GHz (100 MHz BW 8CC NC QPSK Mid Channel)

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Spurious Emissions EIRP Sample Calculation (n260)

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.

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

Frequency [MHz]	Configuration	Channel	Modulation	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dBm]	RSE EIRP [dBm]	Margin [dB]
2500.20	1CC	Low	QPSK	H	240	245	-53.20	-3.19	-44.62	31.62
2500.20	1CC	Low	QPSK	V	250	250	-52.96	-3.19	-44.38	31.38
1406.00	1CC	Mid	QPSK	H	250	240	-49.84	-8.59	-46.65	33.65
1406.00	1CC	Mid	QPSK	V	250	230	-50.20	-8.59	-47.01	34.01
1406.00	1CC	High	QPSK	H	250	250	-46.12	-8.59	-42.93	29.93
1406.00	1CC	High	QPSK	V	250	250	-47.78	-8.59	-44.59	31.59
1406.00	8CC	Low	QPSK	H	150	240	-46.55	-8.59	-43.36	30.36
1406.00	8CC	Low	QPSK	V	150	250	-44.50	-8.59	-41.31	28.31
1406.00	8CC	Mid	QPSK	H	150	250	-48.80	-8.59	-45.61	32.61
1406.00	8CC	Mid	QPSK	V	250	260	-49.50	-8.59	-46.31	33.31
1093.78	8CC	High	QPSK	H	150	100	-50.15	-10.49	-48.87	35.87
1093.78	8CC	High	QPSK	V	250	100	-48.53	-10.49	-47.25	34.25
2500.20	8NC	Low	QPSK	H	250	250	-53.20	-3.19	-44.62	31.62
2500.20	8NC	Low	QPSK	V	250	250	-51.50	-3.19	-42.92	29.92
1406.00	8NC	Mid	QPSK	H	150	240	-47.88	-8.59	-44.69	31.69
2500.20	8NC	Mid	QPSK	V	150	250	-48.58	-3.19	-40.00	27.00
1406.00	8NC	High	QPSK	H	250	250	-47.63	-8.59	-44.44	31.44
1406.00	8NC	High	QPSK	V	250	240	-48.88	-8.59	-45.69	32.69

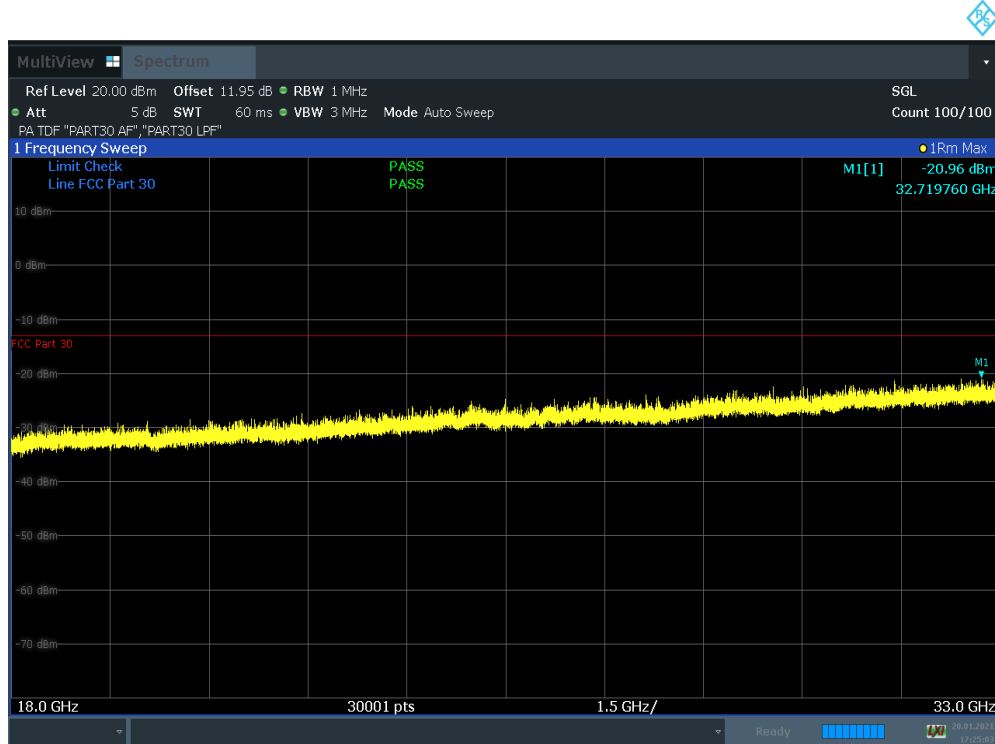
Table 7-21. Spurious Emissions (1 GHz to 18 GHz)

Notes

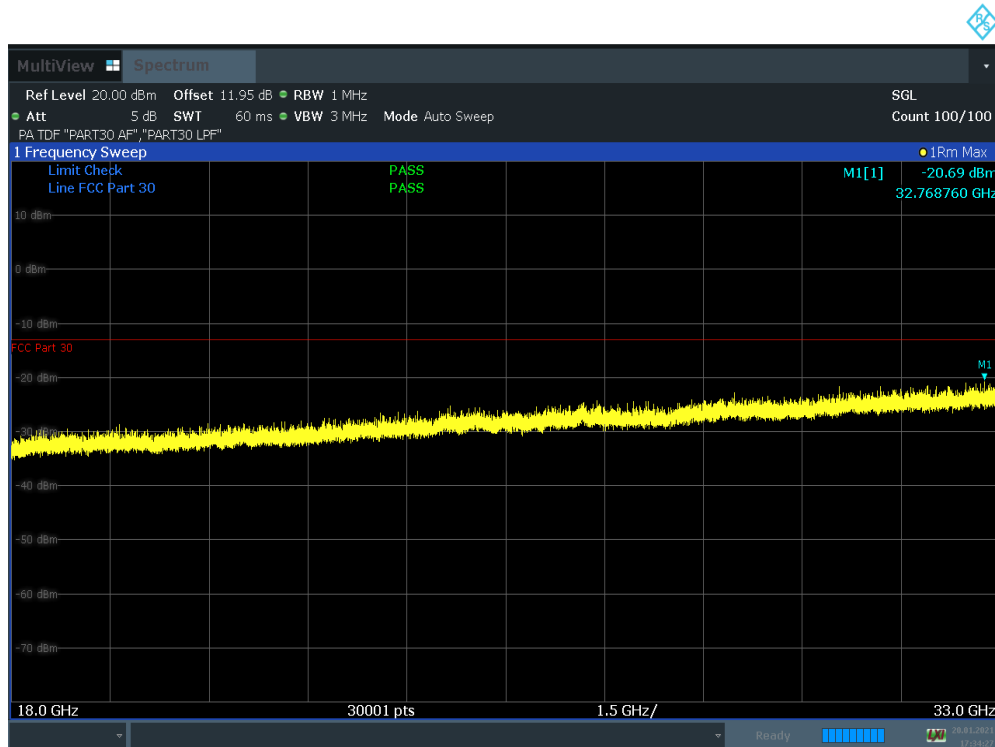
The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

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7.5.3 Radiated Spurious Emissions Plots (18 GHz to 33 GHz)

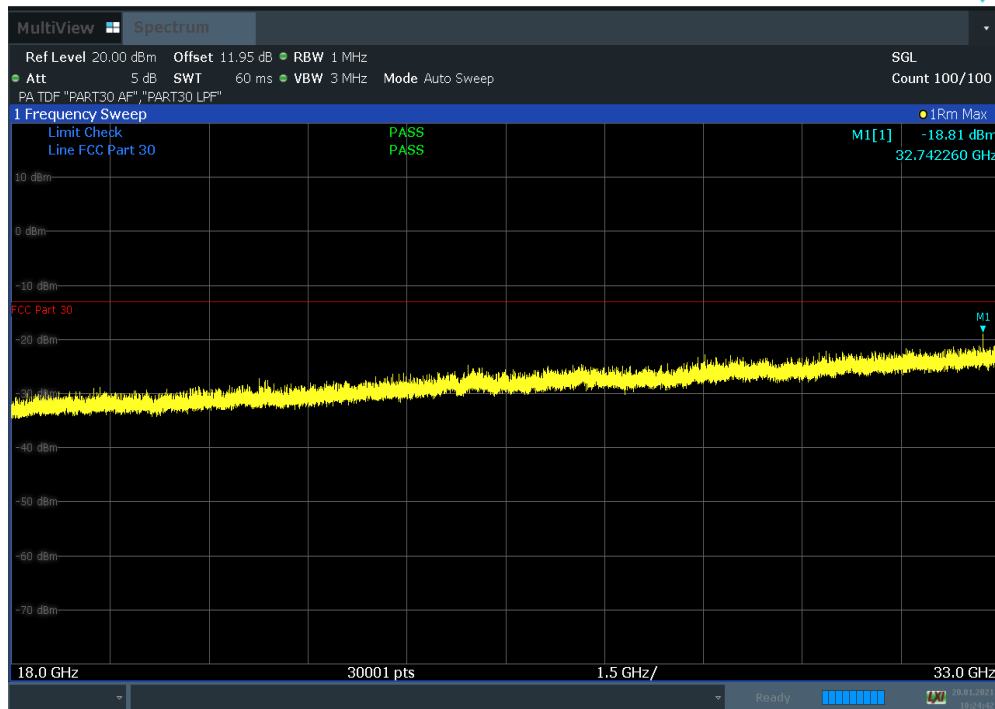


Plot 7-139. Radiated Spurious Plot 18 GHz – 33 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. H)

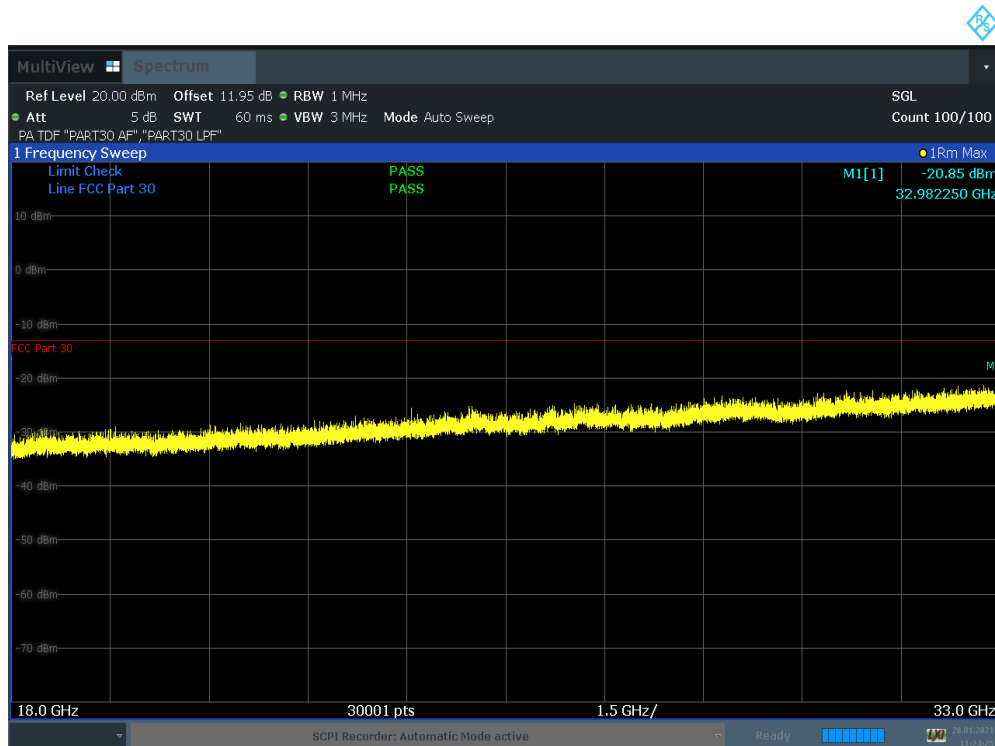


Plot 7-140. Radiated Spurious Plot 18 GHz – 33 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 108 of 161

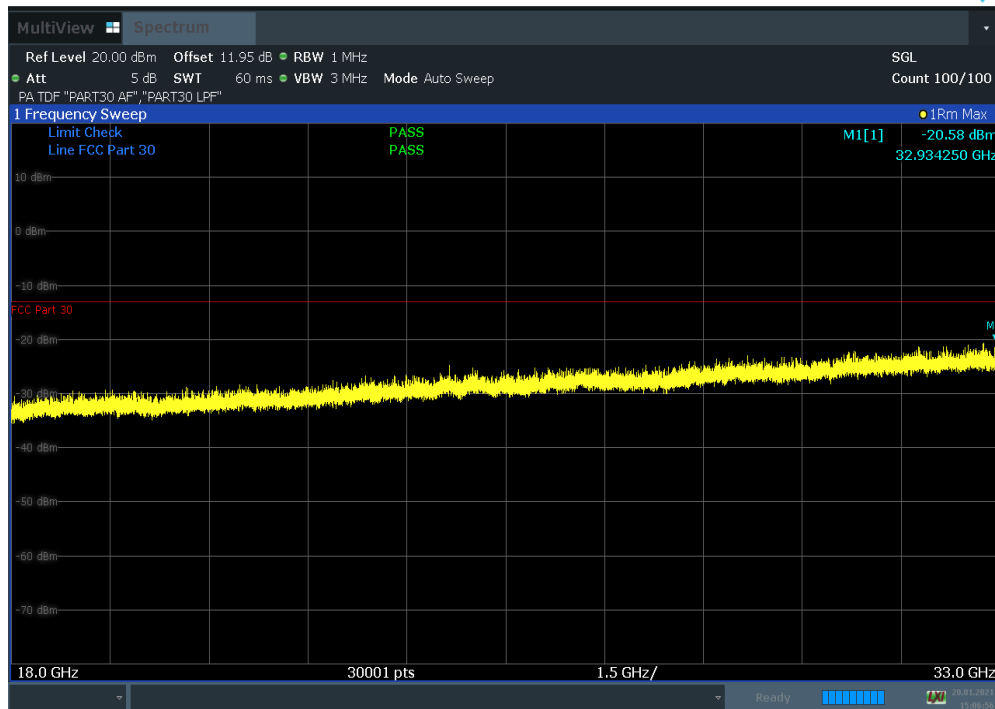


Plot 7-141. Radiated Spurious Plot 18 GHz – 33 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. H)

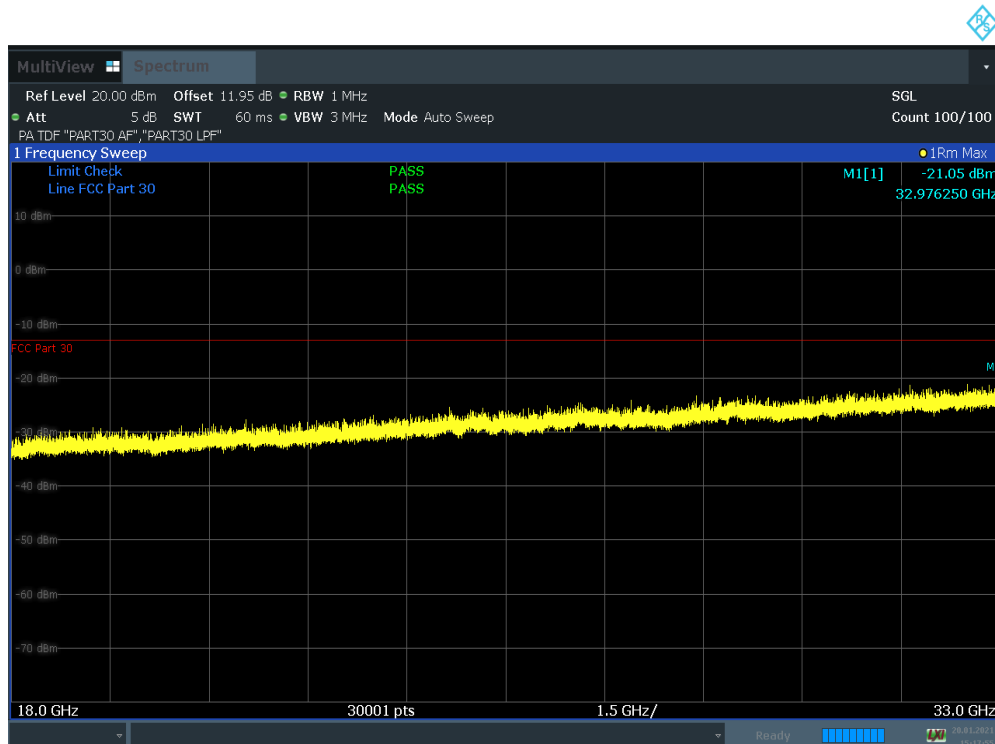


Plot 7-142. Radiated Spurious Plot 18 GHz – 33 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 109 of 161



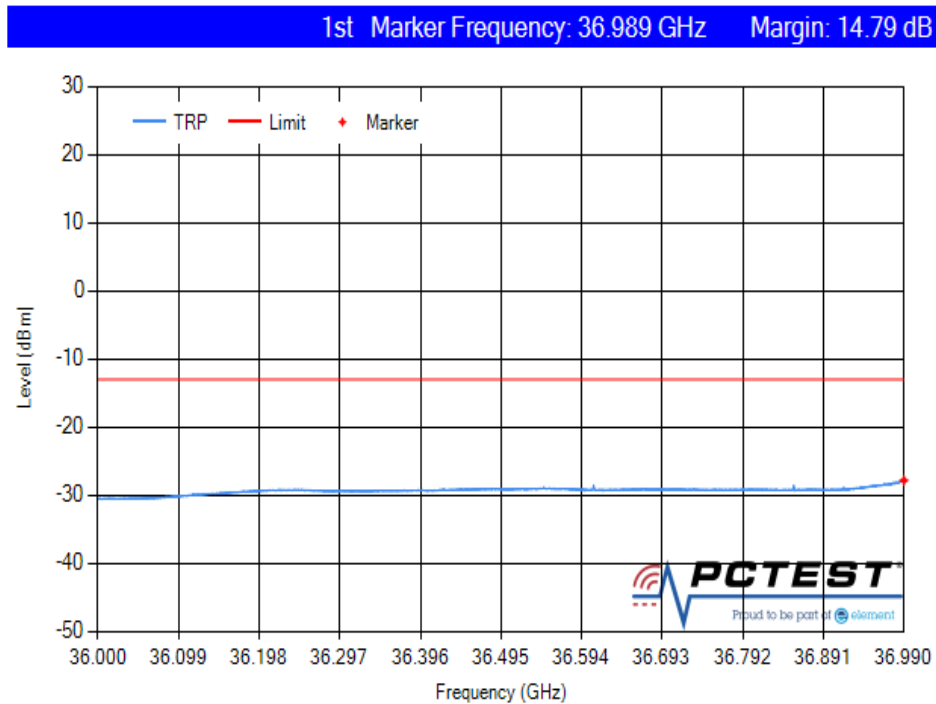
Plot 7-143. Radiated Spurious Plot 18 GHz – 33 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. H)



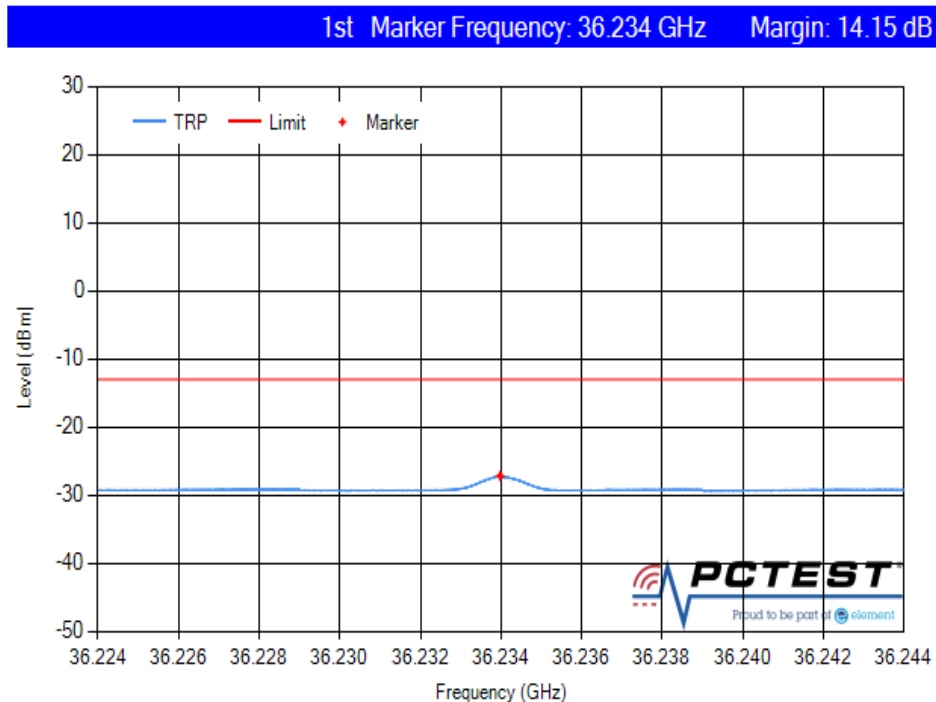
Plot 7-144. Radiated Spurious Plot 18 GHz – 33 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 110 of 161

7.5.4 Radiated Spurious Emissions Plots (33 GHz to 37 GHz)

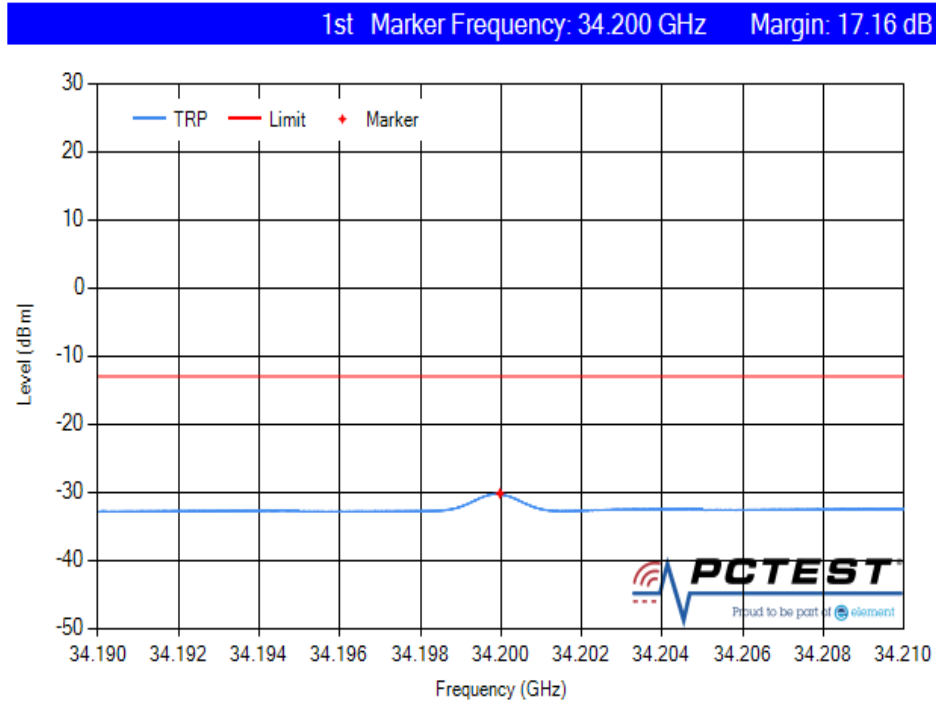


Plot 7-145. Radiated Spurious Plot 33 GHz – 36.99 GHz (100 MHz BW 1CC QPSK Low Channel TRP)

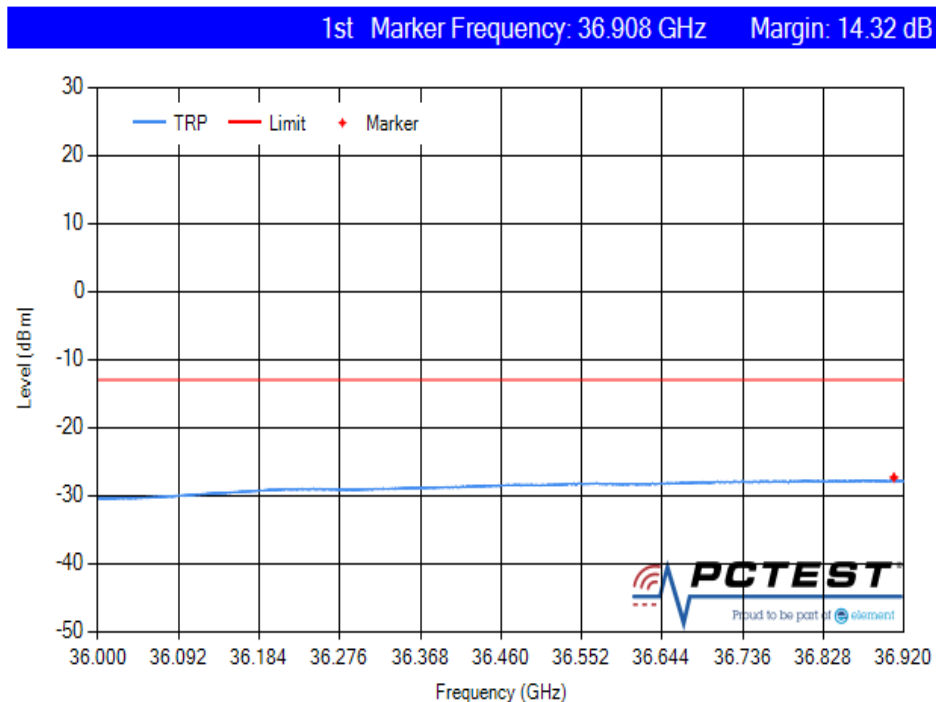


Plot 7-146. Radiated Spurious Plot 36.23 GHz (100 MHz BW 1CC QPSK Mid Channel TRP)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 111 of 161

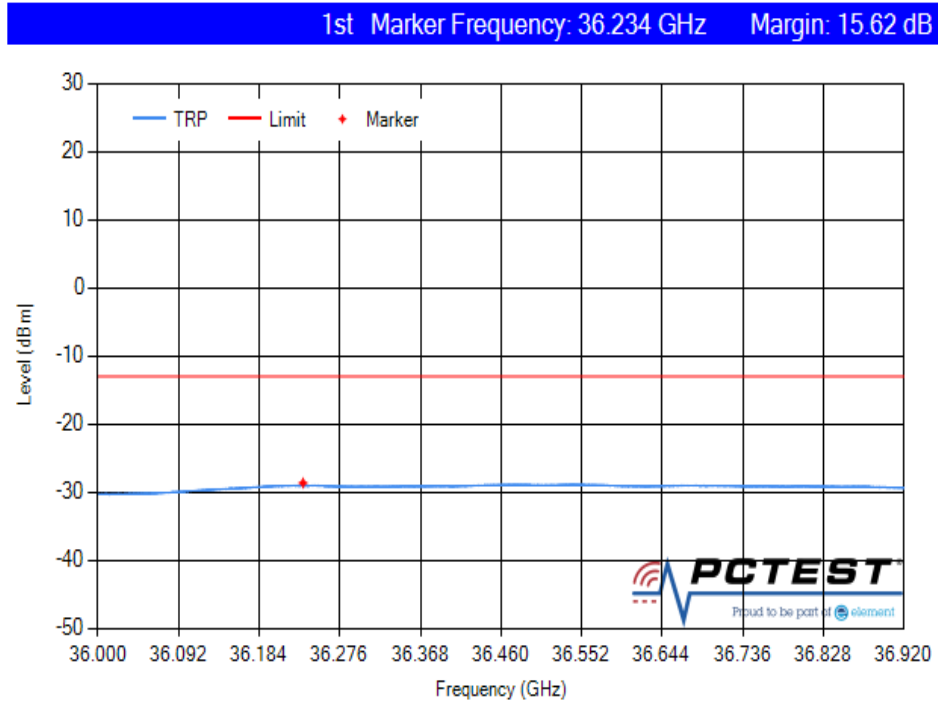


Plot 7-147. Radiated Spurious Plot 34.20 GHz (100 MHz BW 1CC QPSK High Channel TRP)

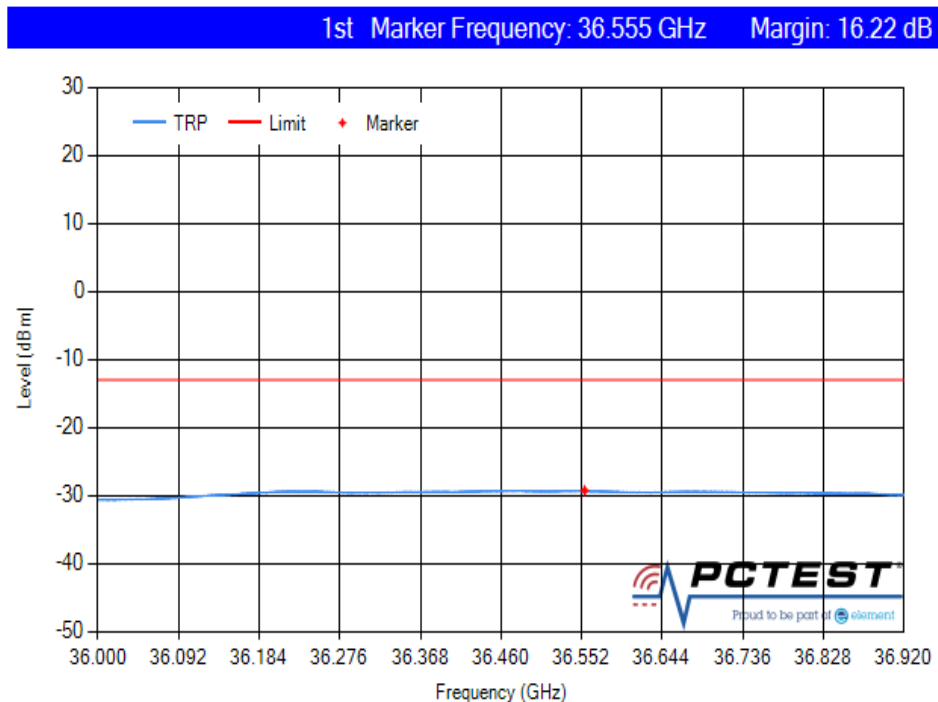


Plot 7-148. Radiated Spurious Plot 33 GHz – 36.92 GHz (100 MHz BW 8CC QPSK Low Channel TRP)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 112 of 161

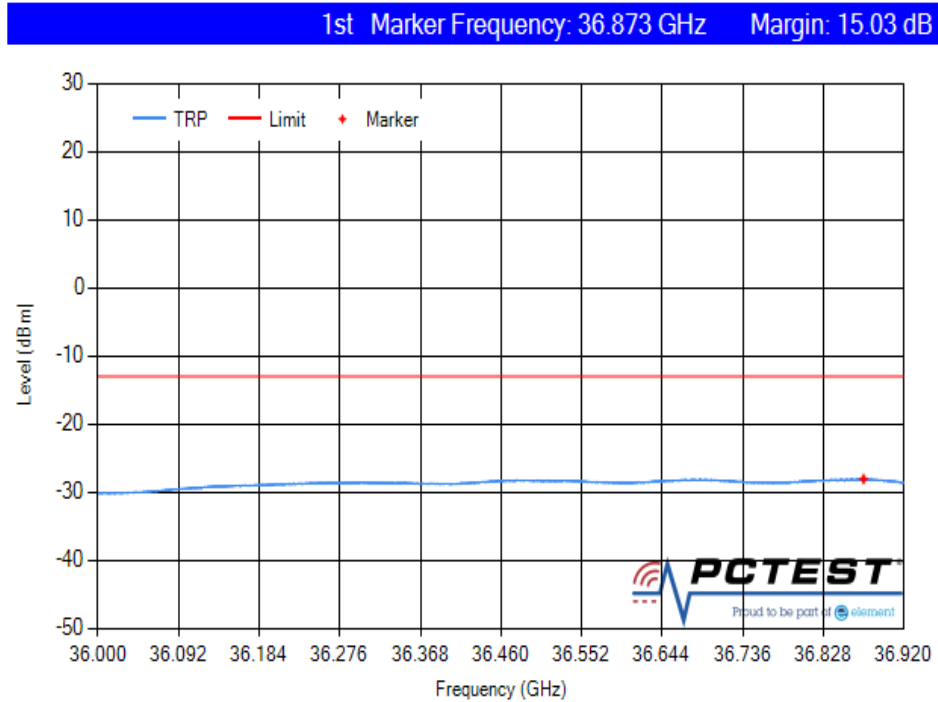


Plot 7-149. Radiated Spurious Plot 33 GHz – 36.92 GHz (100 MHz BW 8CC QPSK Mid Channel TRP)

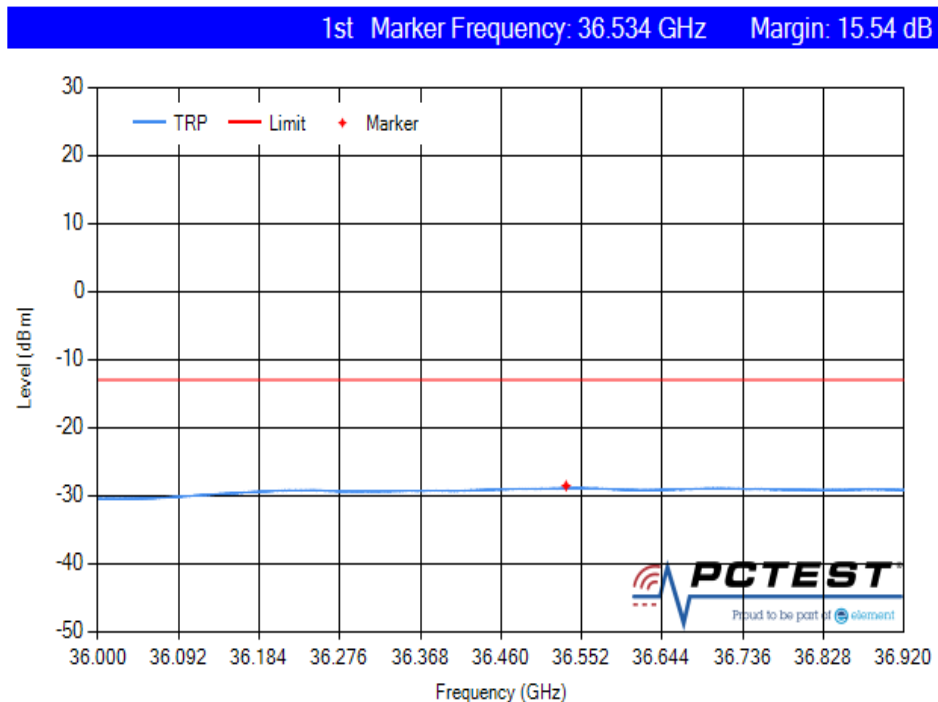


Plot 7-150. Radiated Spurious Plot 33 GHz – 36.92 GHz (100 MHz BW 8CC QPSK High Channel TRP)

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 113 of 161

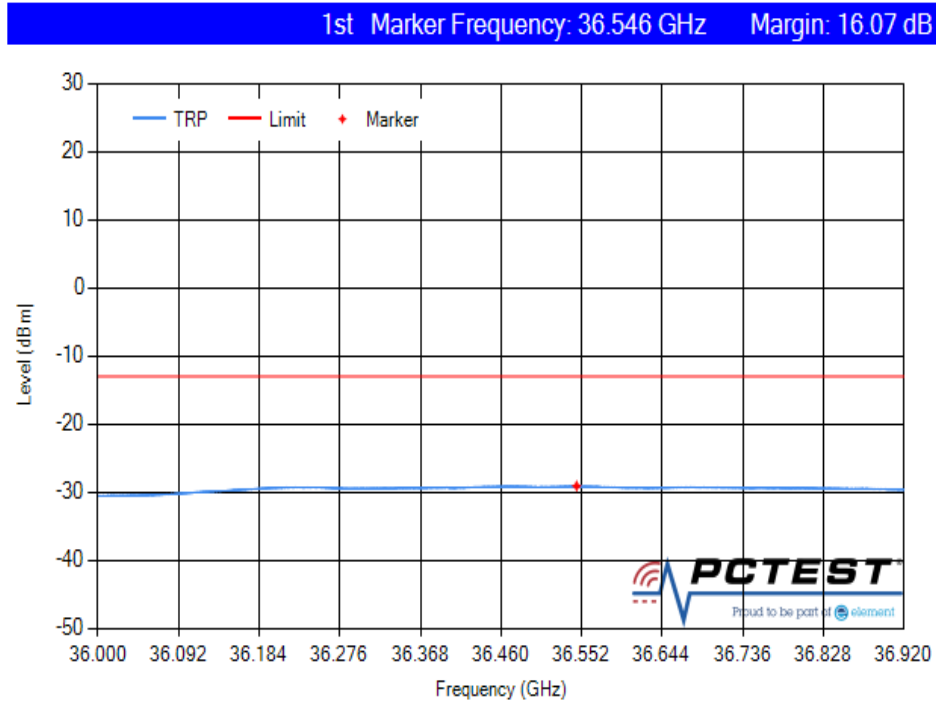


Plot 7-151. Radiated Spurious Plot 33 GHz – 36.92 GHz (100 MHz BW 8CC NC QPSK Low Channel TRP)



Plot 7-152. Radiated Spurious Plot 33 GHz – 36.92 GHz (100 MHz BW 8CC NC QPSK Mid Channel TRP)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 114 of 161



Plot 7-153. Radiated Spurious Plot 33 GHz – 36.92 GHz (100 MHz BW 8CC NC QPSK High Channel TRP)

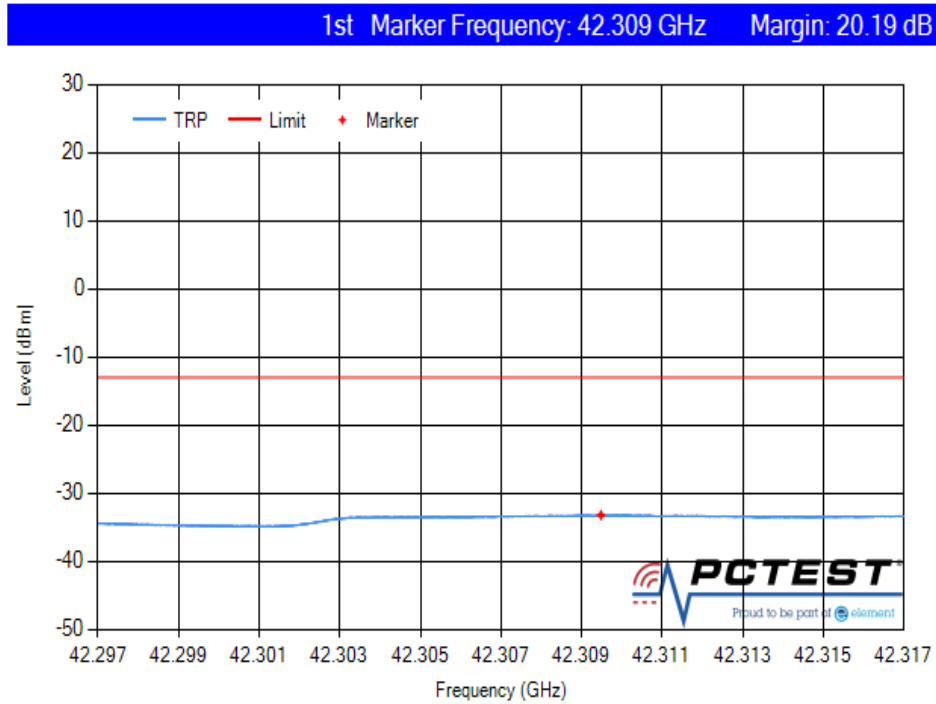
Configuration	Channel	Ant Pol. [Degree]	Frequency [GHz]	RSE EIRP [dBm]	Early Exit?	TRP [dBm]	Margin [dB]
100 MHz BW 1CC	Low	H	36.61	-8.73	No	-27.79	14.79
		V	36.85	-12.83	No		
	Mid	H	36.23	-12.03	No	-27.15	14.15
		V	36.23	-14.55	No ¹		
	High	H	34.20	-11.89	No	-30.16	17.16
		V	34.20	-13.49	No ¹		
100 MHz BW 8CC	Low	H	36.91	0.88	No	-27.32	14.32
		V	36.91	-10.57	No		
	Mid	H	36.23	-13.84	No	-28.62	15.62
		V	36.23	-12.52	No		
	High	H	36.34	-15.74	No ¹	-29.22	16.22
		V	36.54	-15.72	No ¹		
100 MHz BW 8CC NC	Low	H	36.89	-12.08	No	-28.03	15.03
		V	36.69	-12.50	No		
	Mid	H	36.90	-8.98	No	-28.54	15.54
		V	36.55	-14.24	No ¹		
	High	H	36.61	-15.46	No ¹	-29.07	16.07
		V	36.53	-15.07	No ¹		

1. "Early Exit" - Less than 3 dB margin

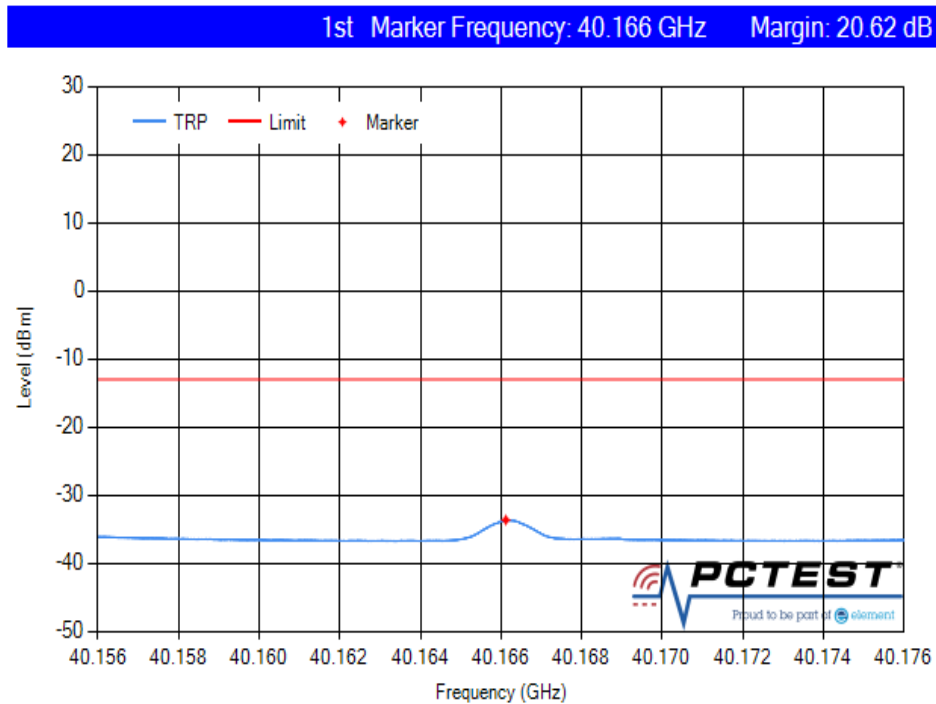
Table 7-22. Radiated Spurious Emissions (33 GHz – 37 GHz)

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)	Page 115 of 161	

7.5.5 Radiated Spurious Emissions Plots (40 GHz to 60 GHz)

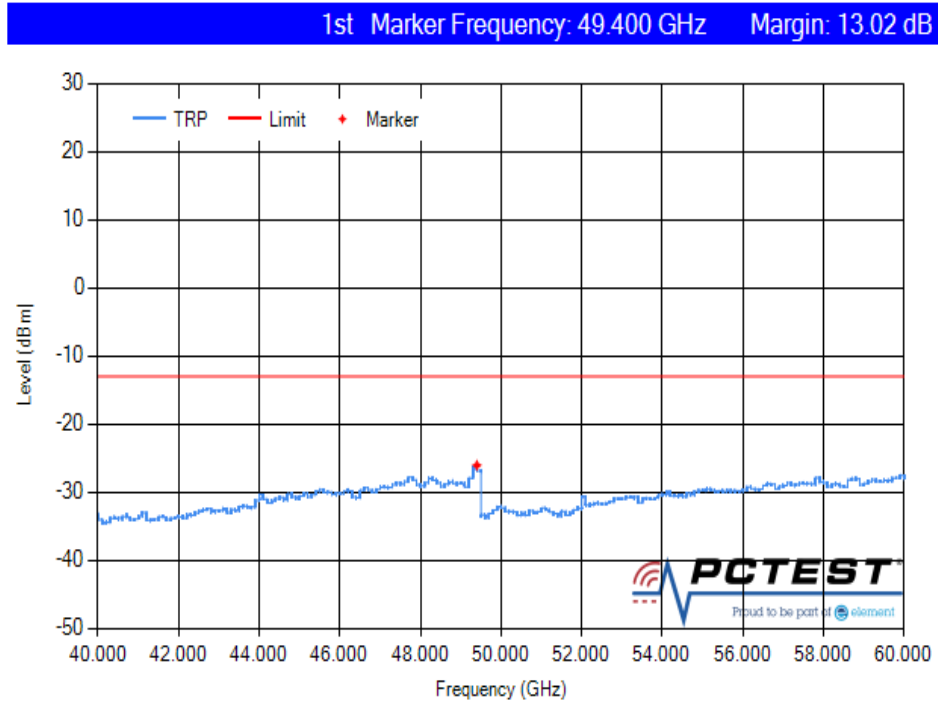


Plot 7-154. Radiated Spurious Plot 42.30 GHz (100 MHz BW 1CC QPSK Low Channel TRP)



Plot 7-155. Radiated Spurious Plot 40.16 GHz (100 MHz BW 1CC QPSK Mid Channel TRP)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 116 of 161



Plot 7-156. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz BW 1CC QPSK High Channel TRP)

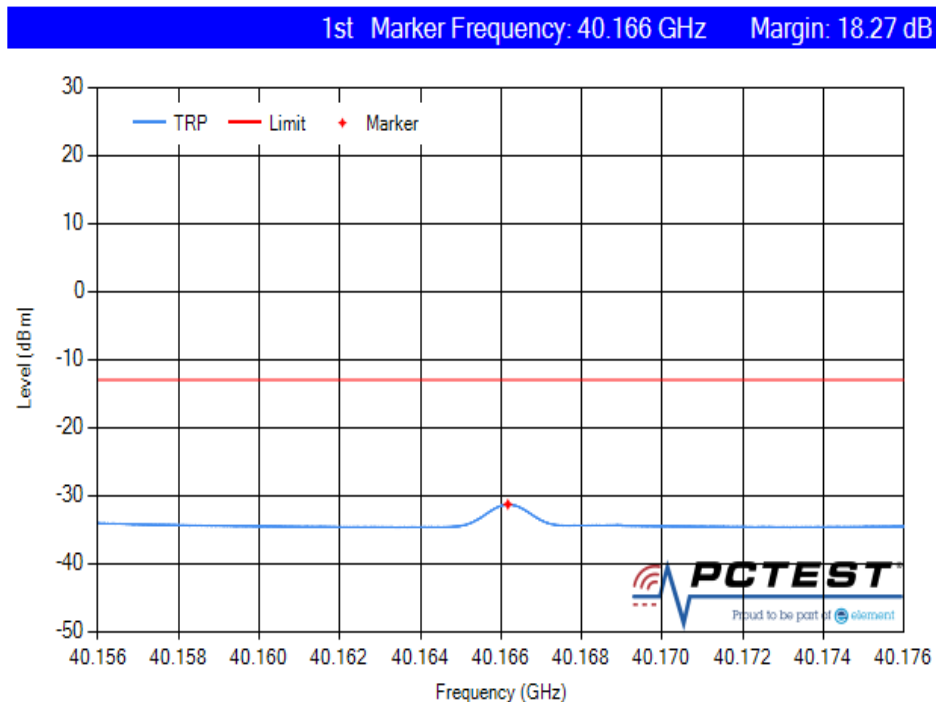


Plot 7-157. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz 8CC CC BW QPSK Low Channel Pol. H)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 117 of 161

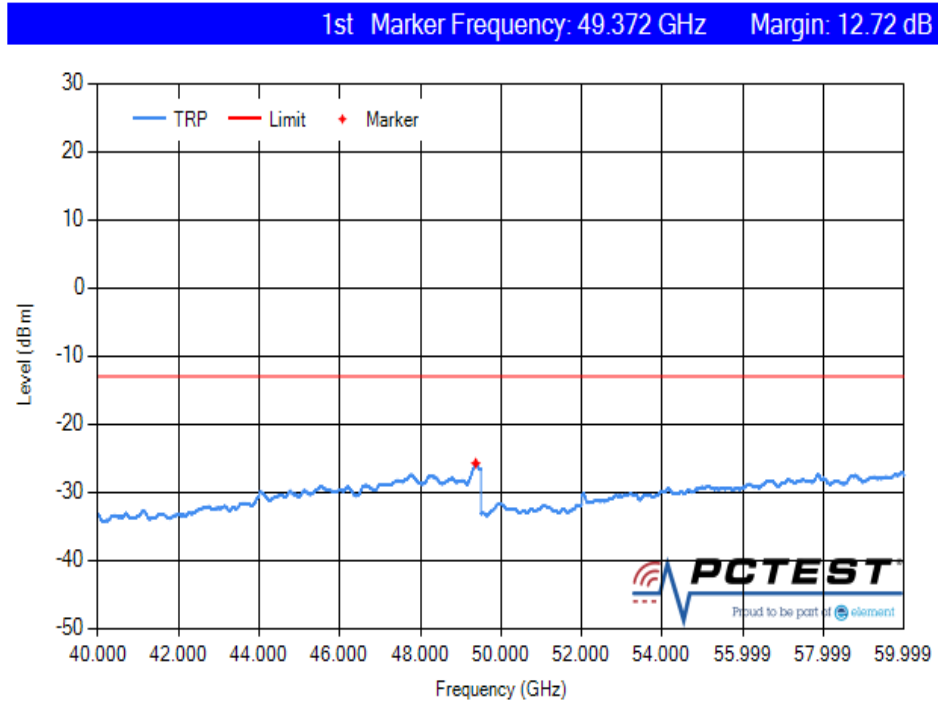


Plot 7-158. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz 8CC CC BW QPSK Low Channel Pol. V)



Plot 7-159. Radiated Spurious Plot 40.16 GHz (100 MHz BW 8CC QPSK Mid Channel TRP)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 118 of 161

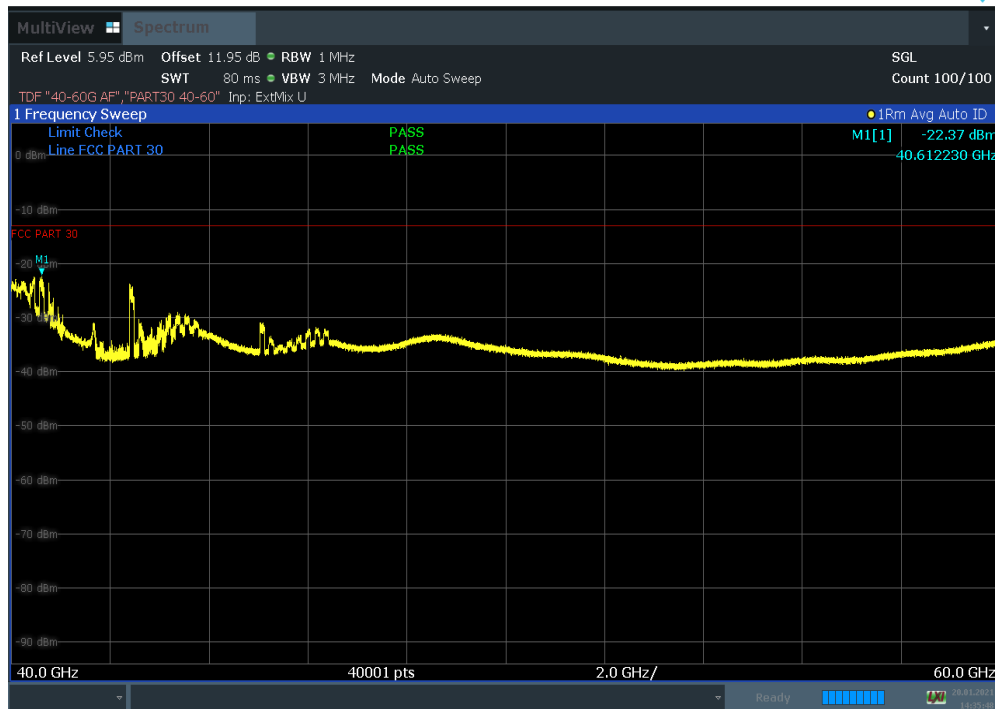


Plot 7-160. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz BW 8CC QPSK High Channel TRP)

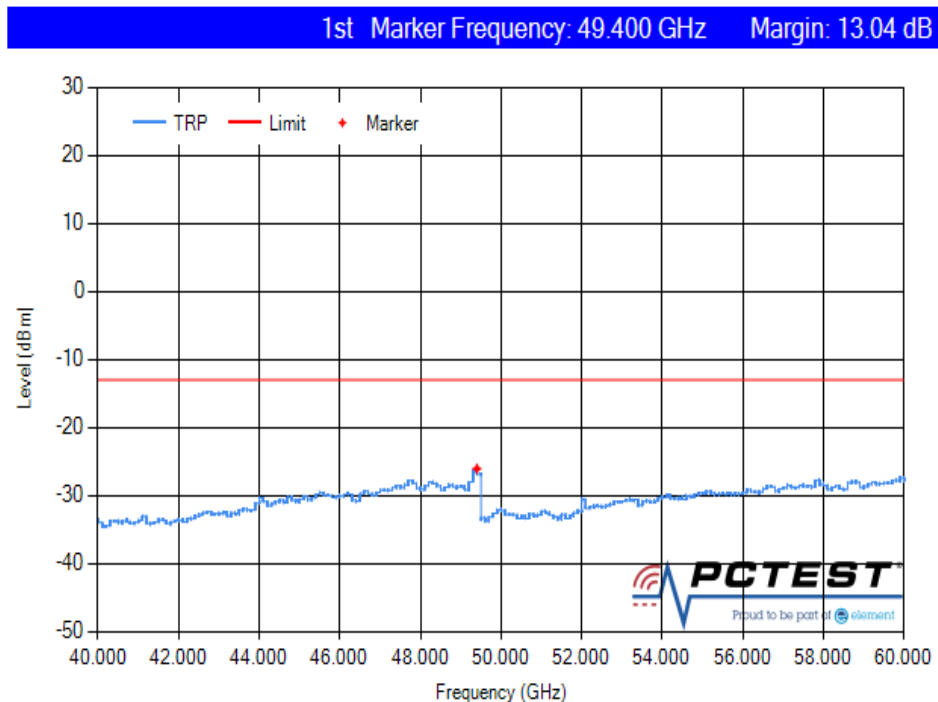


Plot 7-161. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz BW 8CC NC QPSK Low Channel Pol. H)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 119 of 161

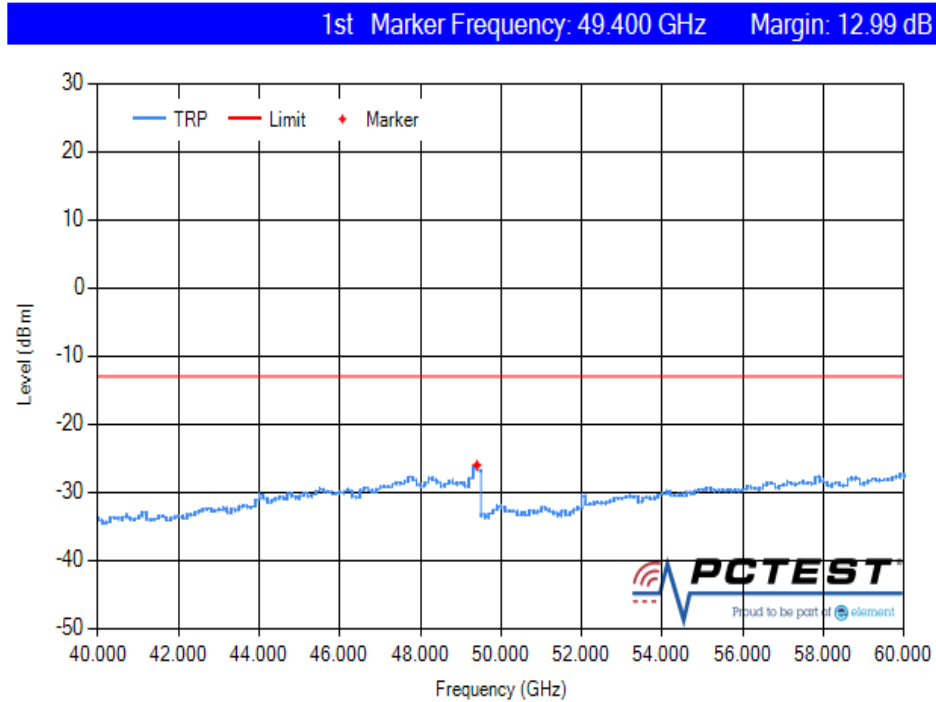


Plot 7-162. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz BW 8CC NC QPSK Low Channel Pol. V)



Plot 7-163. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz BW 8CC NC QPSK Mid Channel TRP)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 120 of 161



Plot 7-164. Radiated Spurious Plot 40 GHz – 60 GHz (100 MHz BW 8CC NC QPSK High Channel TRP)

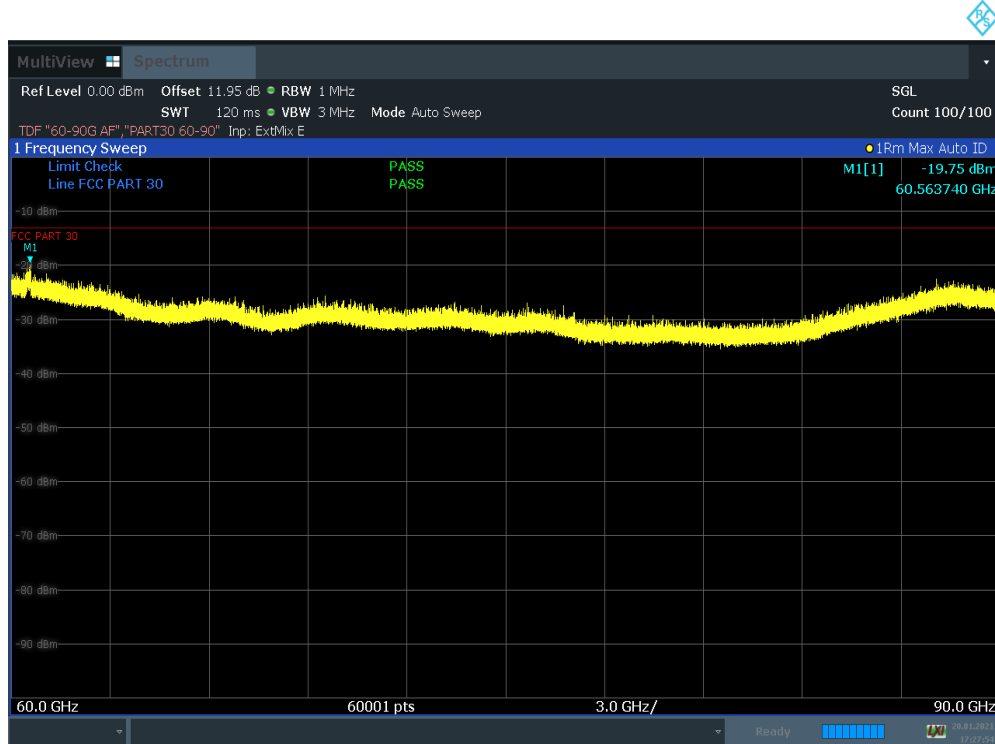
Configuration	Channel	Ant Pol. [Degree]	Frequency [GHz]	RSE EIRP [dBm]	Early Exit?	TRP [dBm]	Margin [dB]
100 MHz BW 1CC	Low	H	42.30	-14.77	No ¹	-33.19	20.19
		V	42.30	-20.95	Yes		
	Mid	H	40.16	-7.09	No	-33.62	20.62
		V	40.16	-13.97	No ¹		
	High	H	40.00	-9.59	No	-26.02	13.02
		V	40.00	-10.36	No		
100 MHz BW 8CC	Mid	H	40.16	-6.42	No	-31.27	18.27
		V	40.16	-9.08	No		
	High	H	40.00	3.60	No	-25.72	12.72
		V	40.00	8.04	No		
100 MHz BW 8CC NC	Mid	H	42.72	-11.50	No	-26.04	13.04
		V	40.46	-11.68	No		
	High	H	40.12	-0.15	No	-25.99	12.99
		V	40.14	6.02	No		

1. "Early Exit" - Less than 3 dB margin

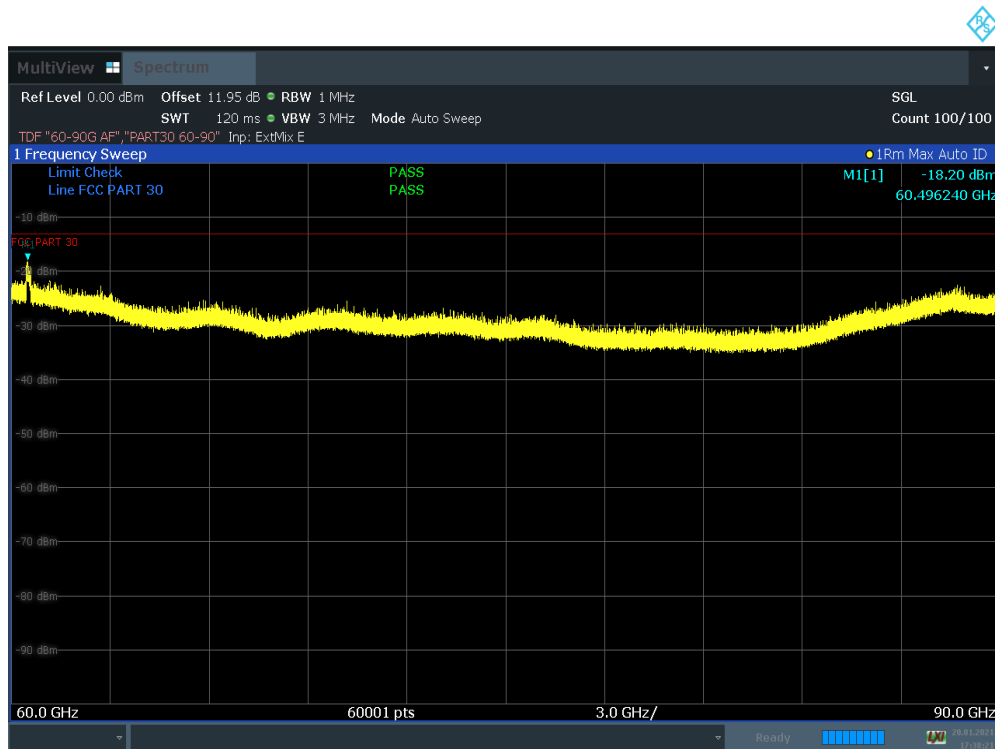
Table 7-23. Radiated Spurious Emissions (40 GHz – 60 GHz)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 121 of 161

7.5.6 Radiated Spurious Emissions Plots (60 GHz to 90 GHz)

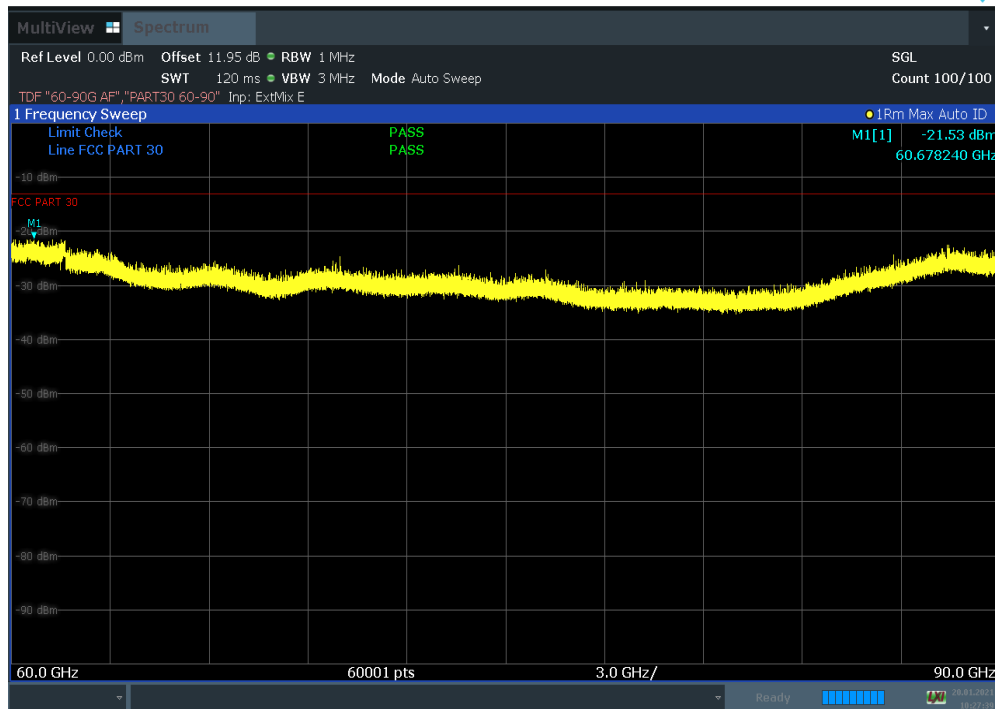


Plot 7-165. Radiated Spurious Plot 60 GHz – 90 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. H)

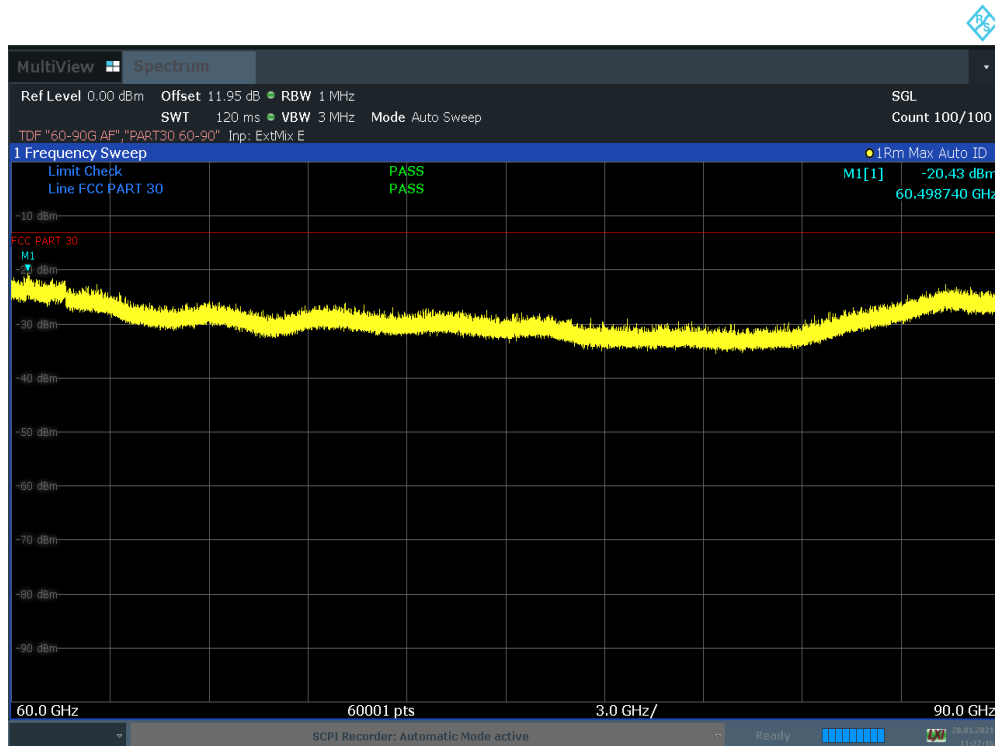


Plot 7-166. Radiated Spurious Plot 60 GHz – 90 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 122 of 161

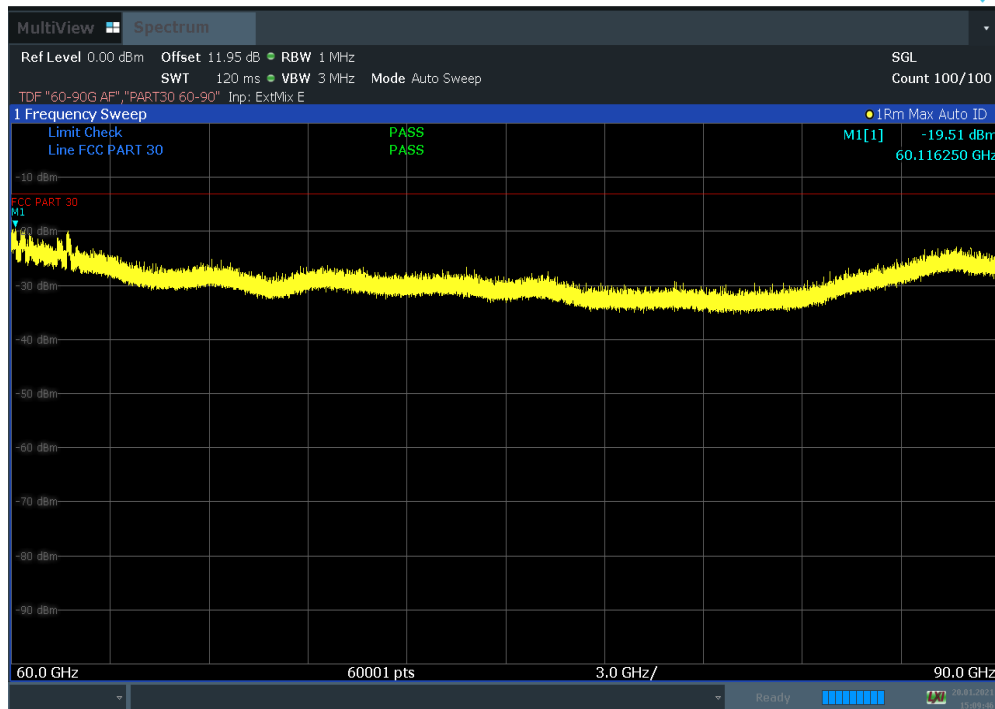


Plot 7-167. Radiated Spurious Plot 60 GHz – 90 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. H)

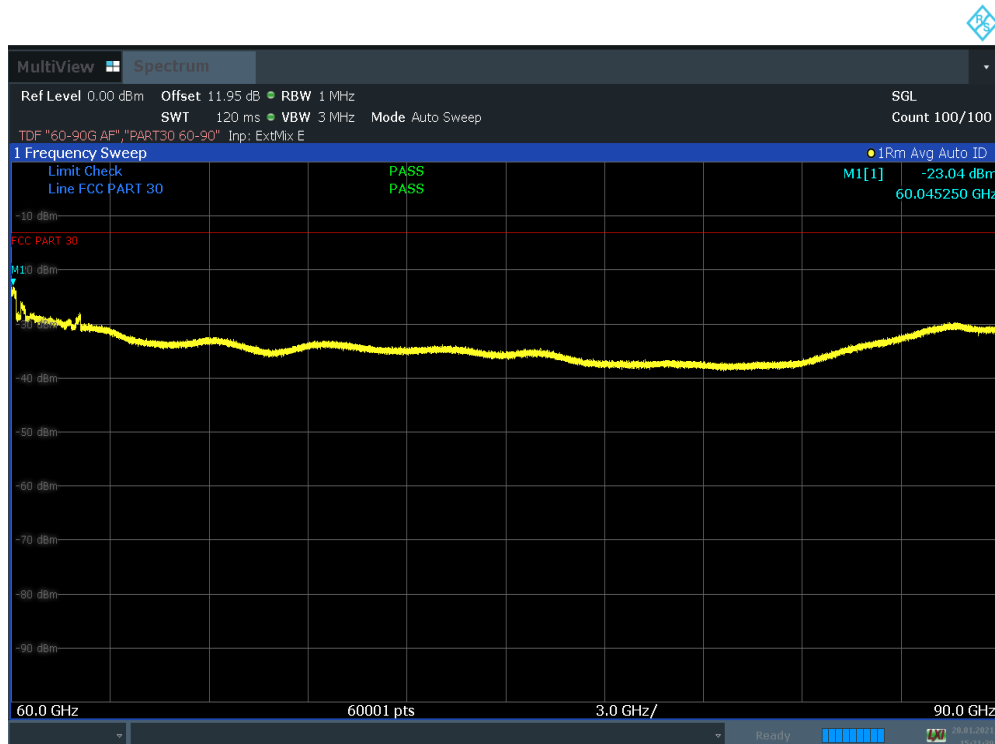


Plot 7-168. Radiated Spurious Plot 60 GHz – 90 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 123 of 161



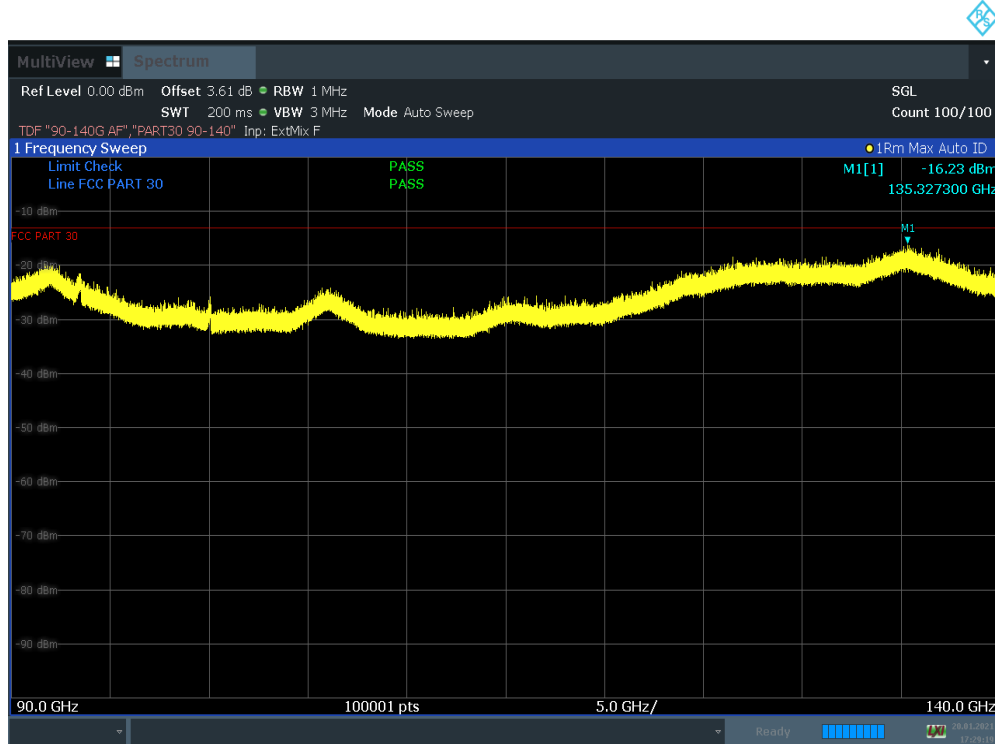
Plot 7-169. Radiated Spurious Plot 60 GHz – 90 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. H)



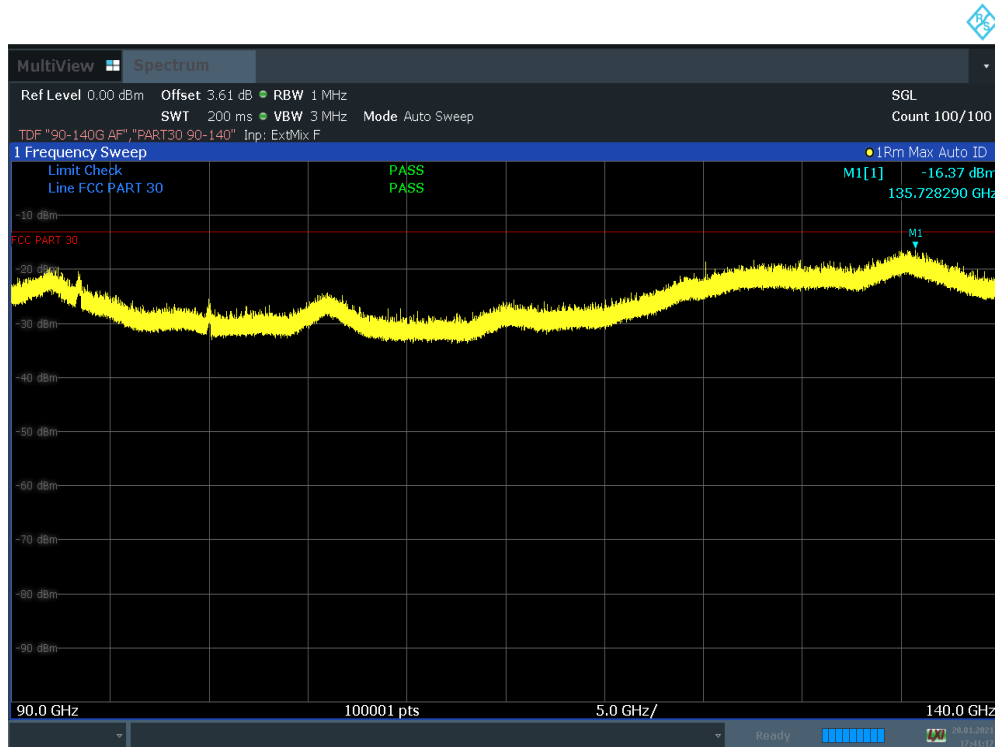
Plot 7-170. Radiated Spurious Plot 60 GHz – 90 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 124 of 161

7.5.7 Radiated Spurious Emissions Plots (90 GHz – 140 GHz)

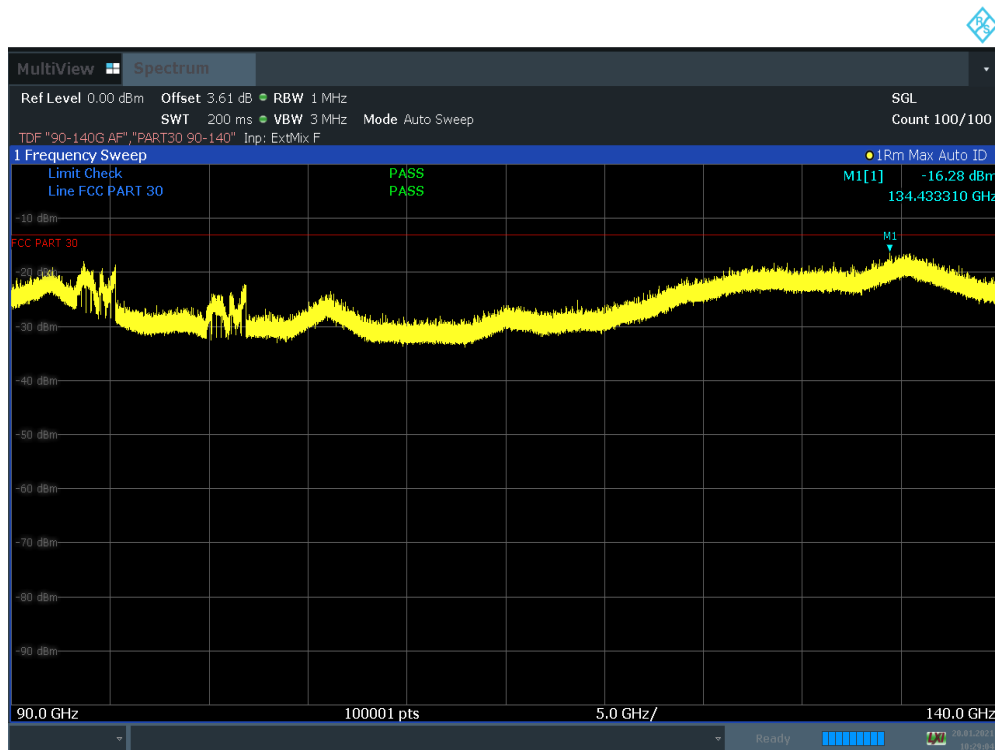


Plot 7-171. Radiated Spurious Plot 90 GHz – 140 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. H)

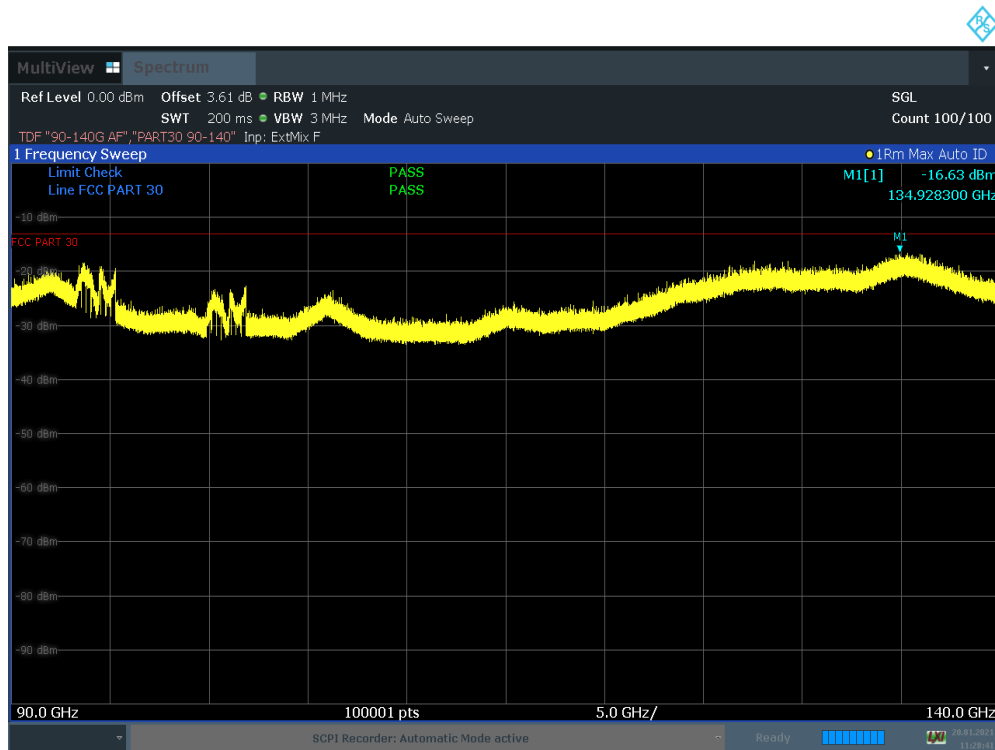


Plot 7-172. Radiated Spurious Plot 90 GHz – 140 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 125 of 161



Plot 7-173. Radiated Spurious Plot 90 GHz – 140 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. H)

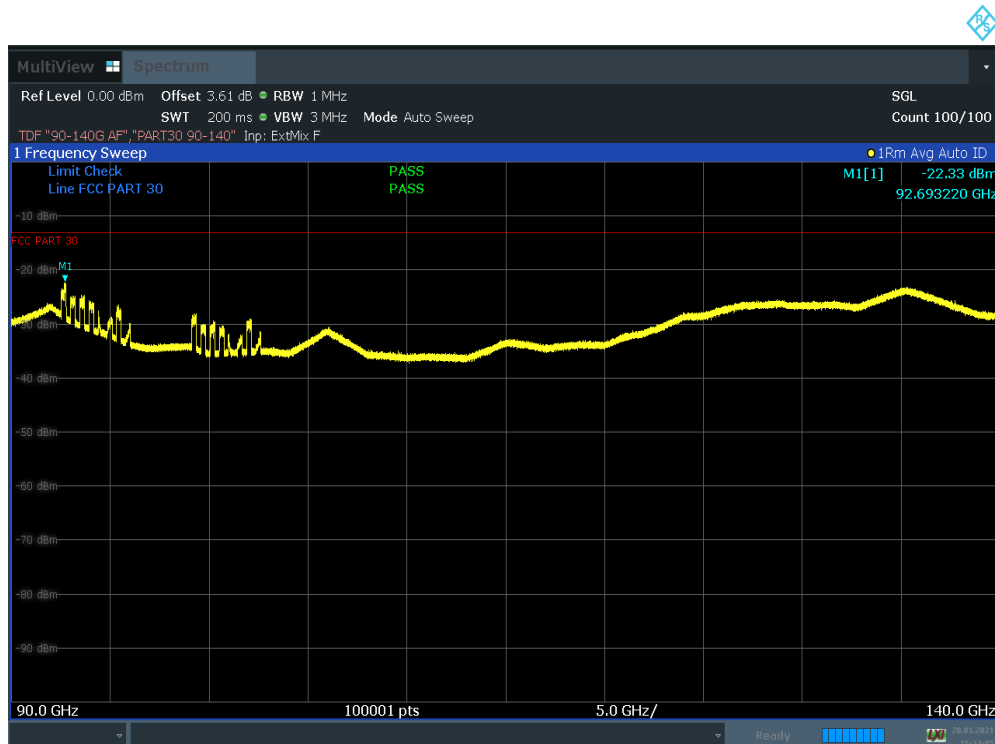


Plot 7-174. Radiated Spurious Plot 90 GHz – 140 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 126 of 161



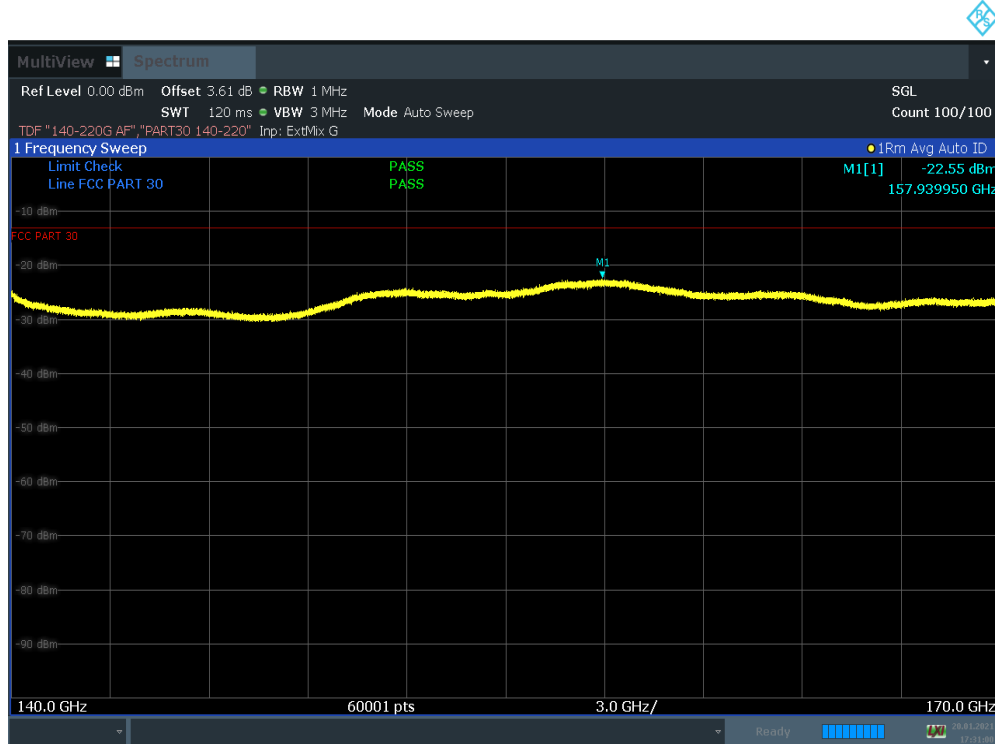
Plot 7-175. Radiated Spurious Plot 90 GHz – 140 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. H)



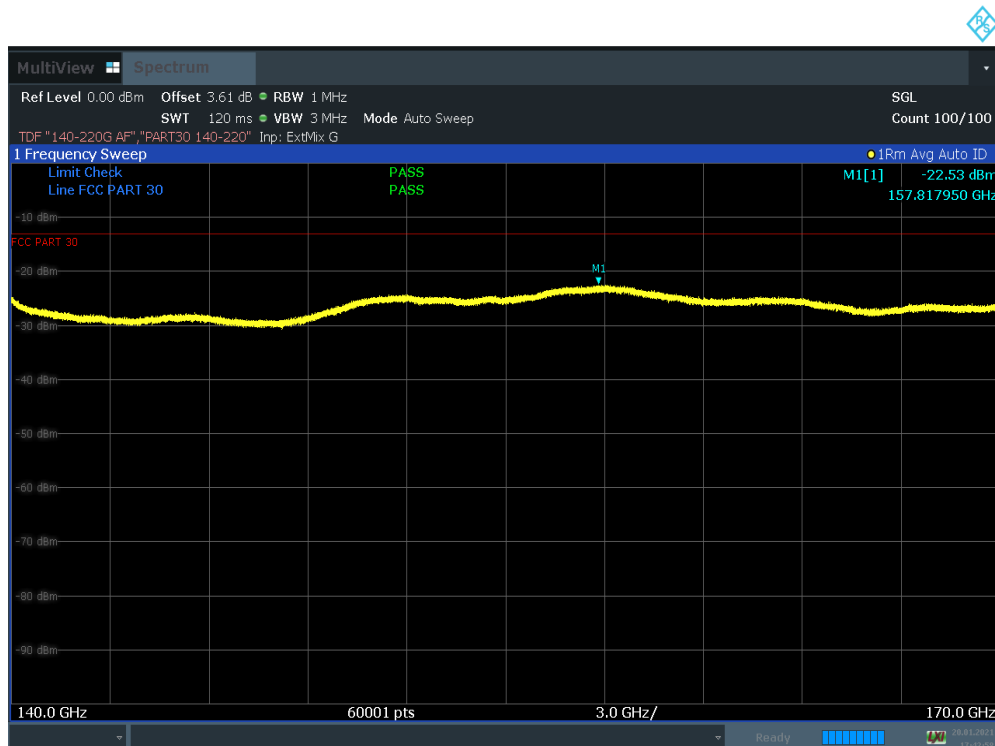
Plot 7-176. Radiated Spurious Plot 90 GHz – 140 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 127 of 161

7.5.8 Radiated Spurious Emissions Plots (140 GHz – 170 GHz)

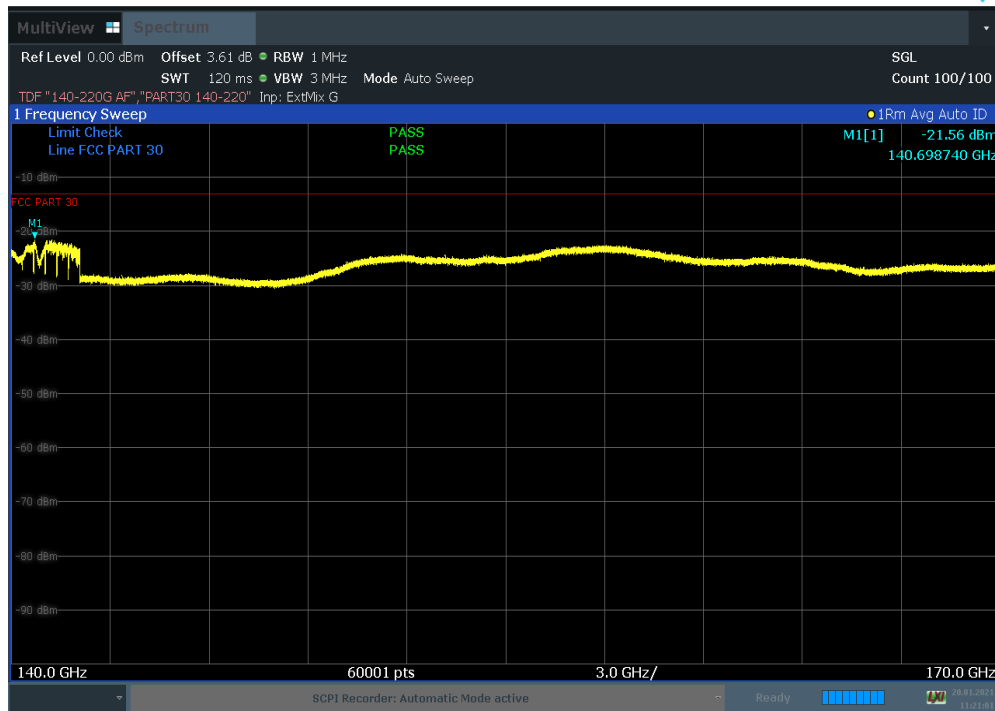


Plot 7-177. Radiated Spurious Plot 140 GHz – 170 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. H)

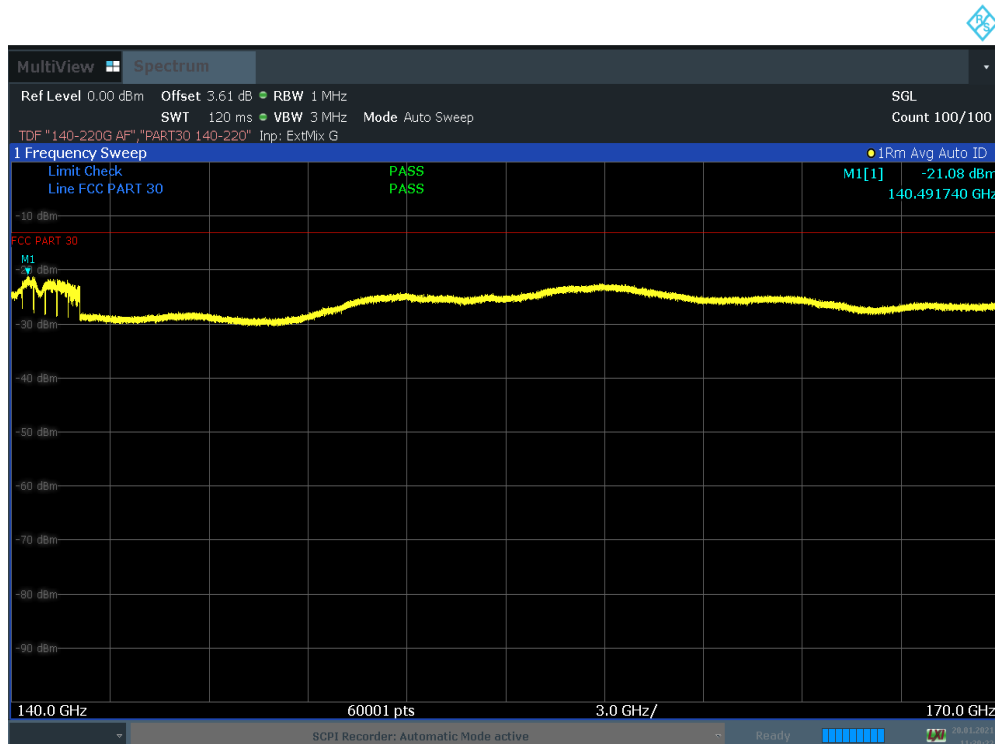


Plot 7-178. Radiated Spurious Plot 140 GHz – 170 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 128 of 161

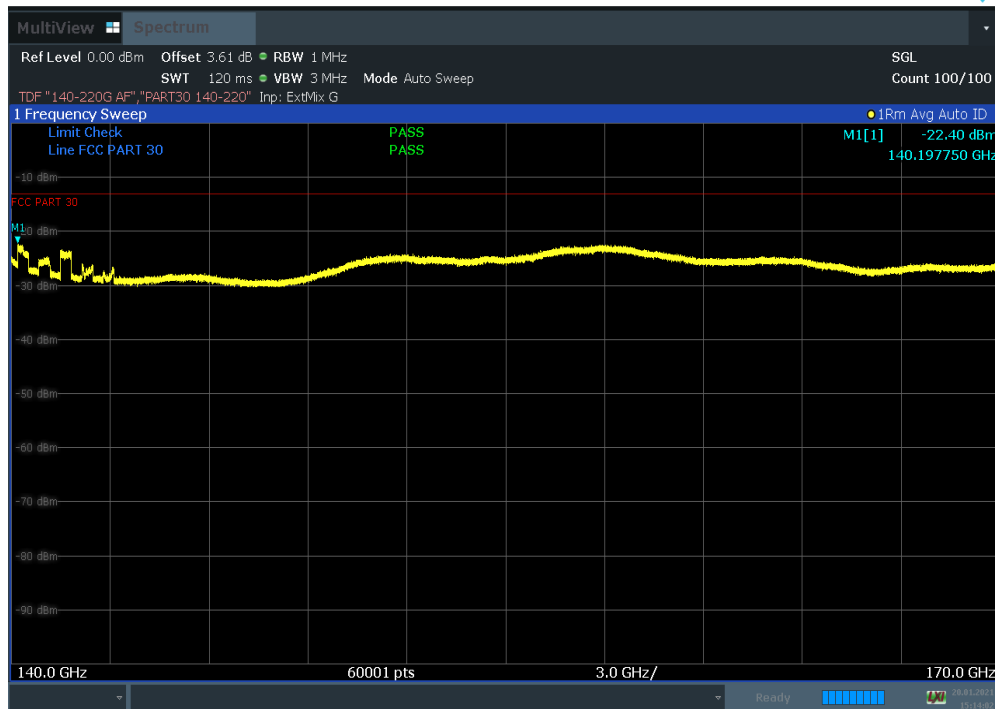


Plot 7-179. Radiated Spurious Plot 140 GHz – 170 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. H)

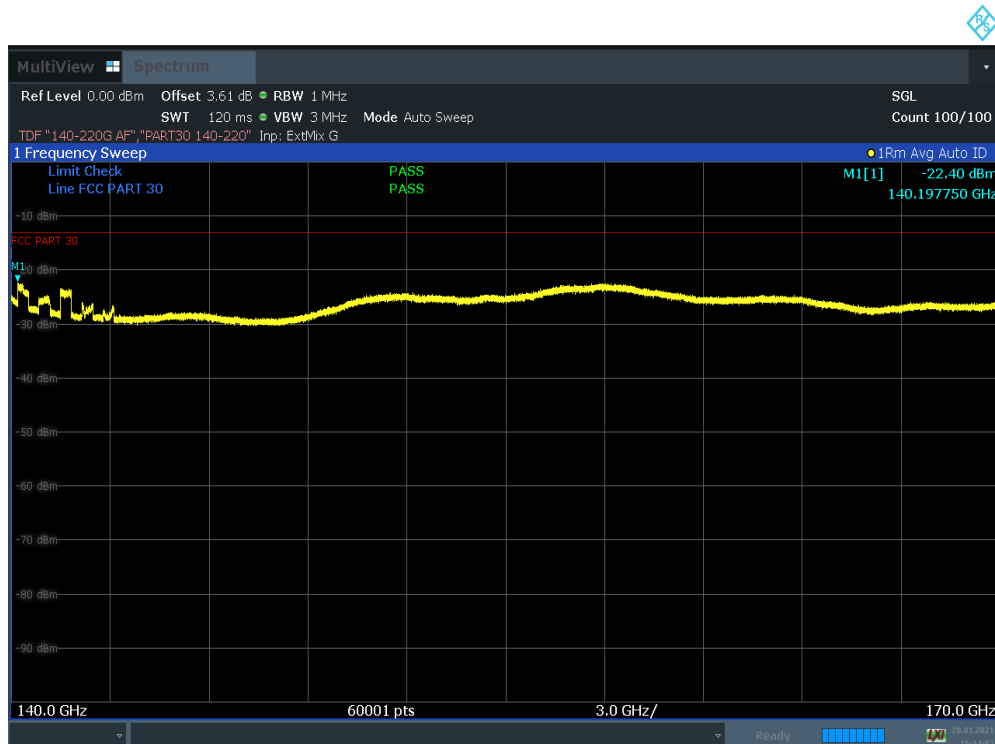


Plot 7-180. Radiated Spurious Plot 140 GHz – 170 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 129 of 161



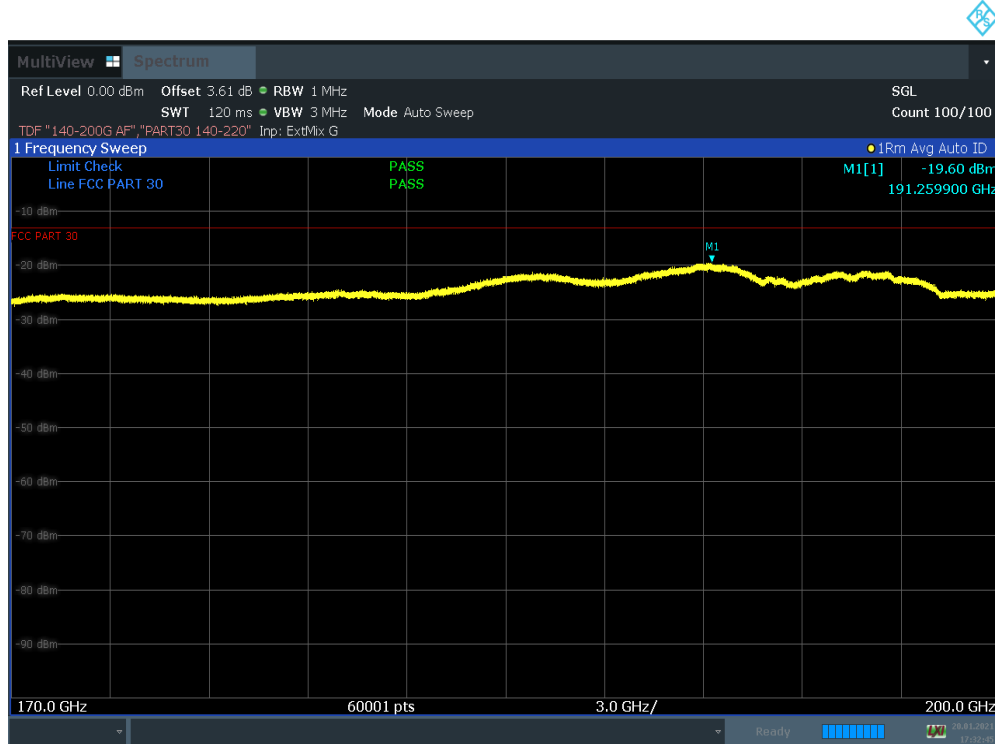
Plot 7-181. Radiated Spurious Plot 140 GHz – 170 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. H)



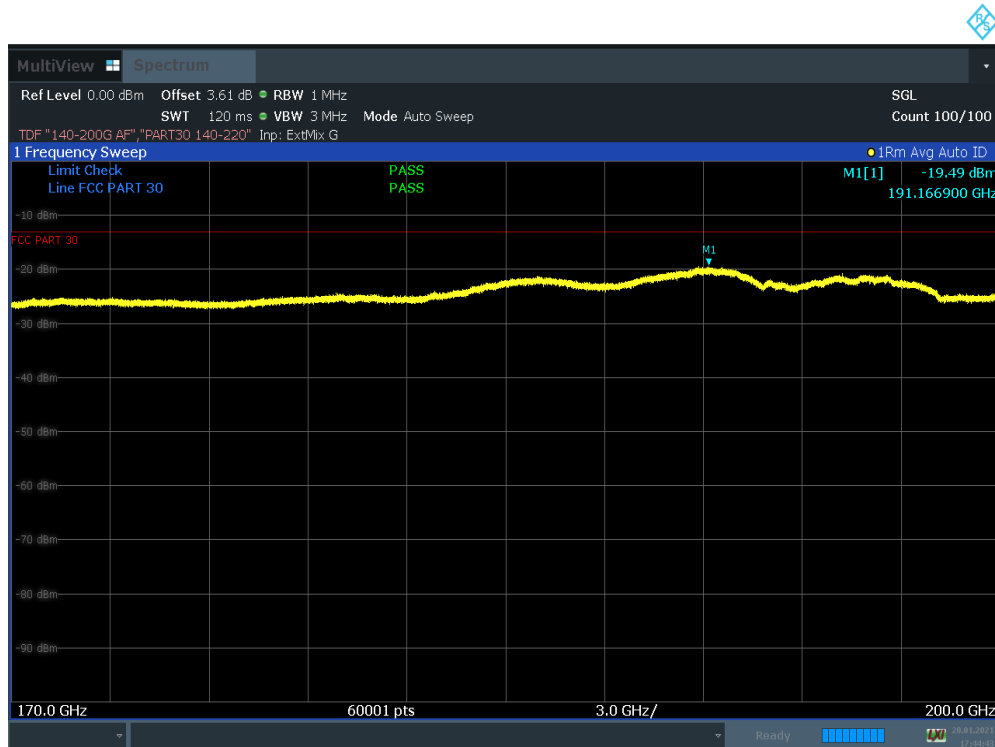
Plot 7-182. Radiated Spurious Plot 140 GHz – 170 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 130 of 161

7.5.9 Radiated Spurious Emissions Plots (170 GHz – 200 GHz)

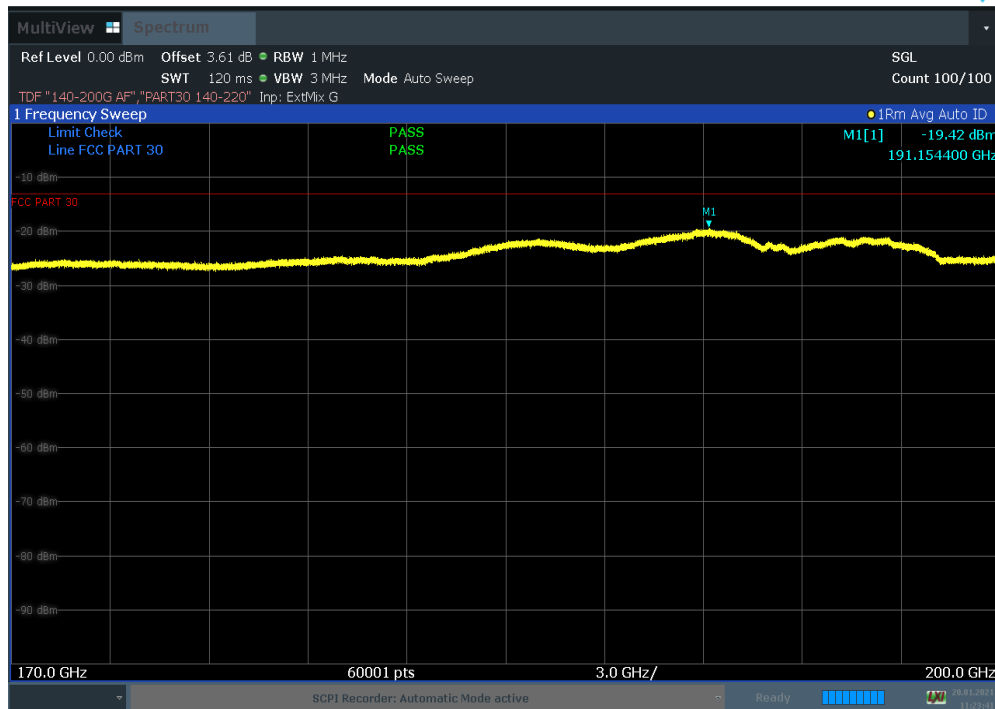


Plot 7-183. Radiated Spurious Plot 170 GHz – 200 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. H)

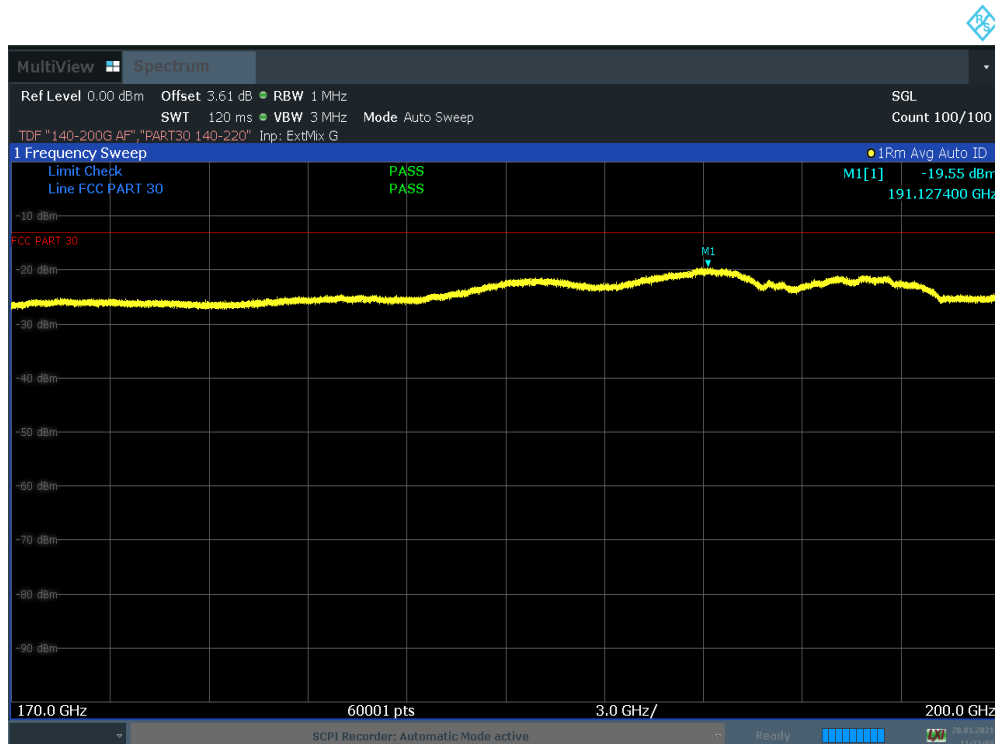


Plot 7-184. Radiated Spurious Plot 170 GHz – 200 GHz (100 MHz BW 1CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 131 of 161

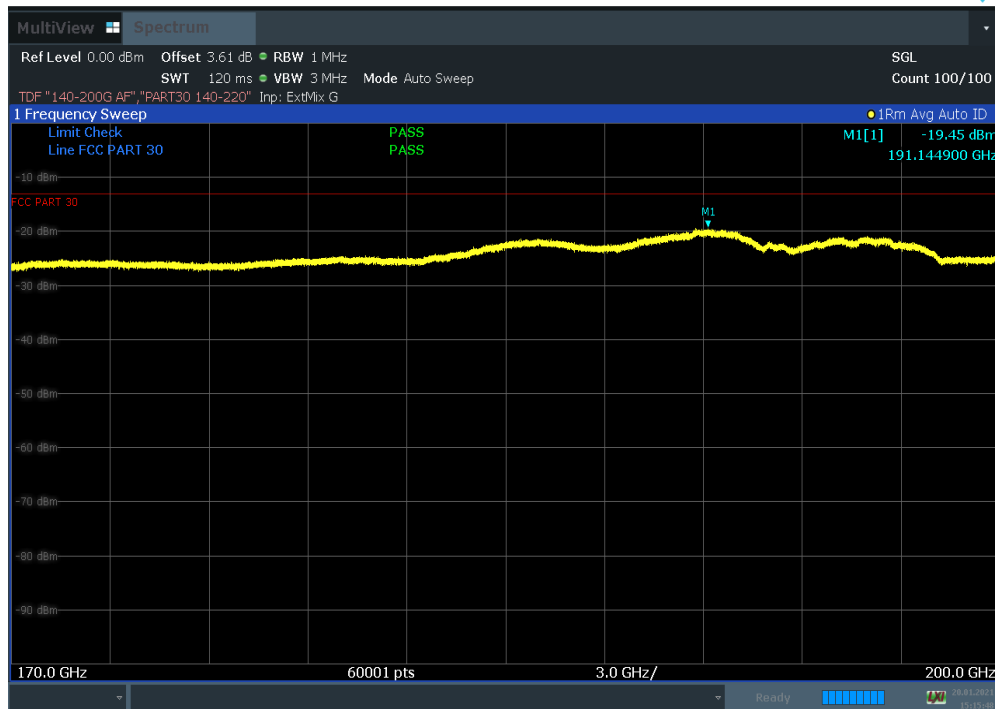


Plot 7-185. Radiated Spurious Plot 170 GHz – 200 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. H)

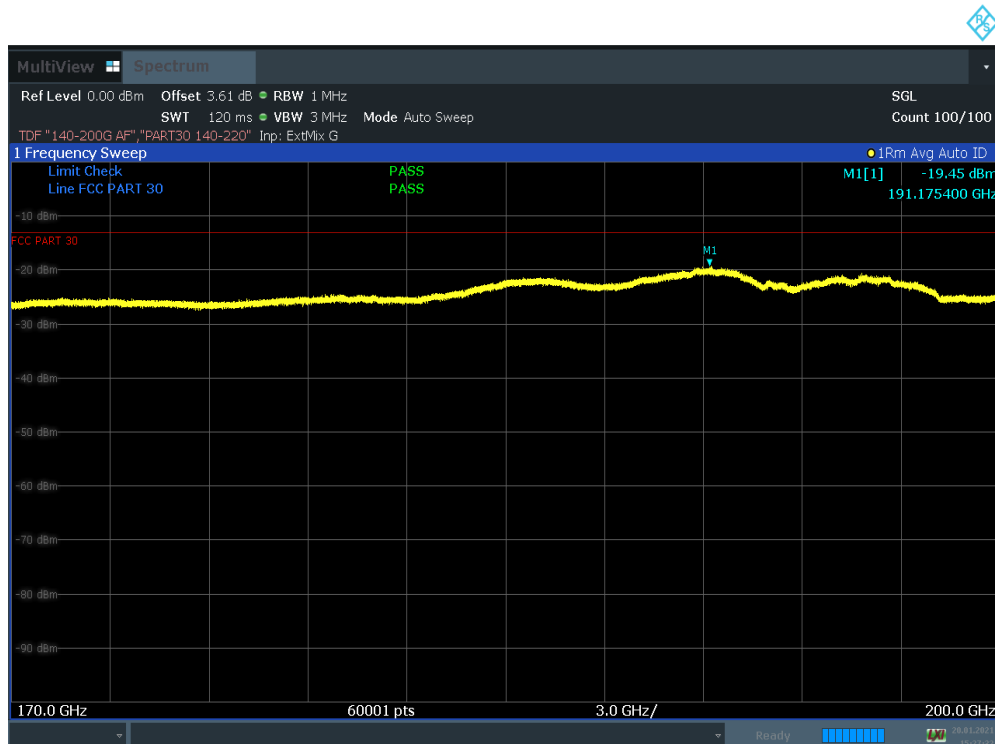


Plot 7-186. Radiated Spurious Plot 170 GHz – 200 GHz (100 MHz BW 8CC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 132 of 161



Plot 7-187. Radiated Spurious Plot 170 GHz – 200 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. H)



Plot 7-188. Radiated Spurious Plot 170 GHz – 200 GHz (100 MHz BW 8CC NC QPSK Mid Channel Pol. V)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 133 of 161

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 -13 dBm / 1 MHz. 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
 KDB 842590 D01 v01r01 Section 4.4.2.5

Test Settings

1. Start and stop frequency were set such that both upper and lower band edges are measured.
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW = 1 MHz
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 1.5 m 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, Cable Loss, and Duty Correction factor 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) For band edge measurement of the receive horn antenna was maximized on Antenna A 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.

FCC ID: A3LAT1K06-A10	 <small>Proud to be part of element</small>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 134 of 161

- 5) 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.
- 6) 10% outside of the channel bandwidth result should be referred from 7.5 Radiated Spurious and Harmonic Emissions due to EUT Antenna subtraction calculation adoption. Thus, some failure results are performed of TRP measurement adopted.
- 7) A3LAT1K06-A10 test result is referenced as A3LAT1K06-A00 result which is difference of power type between AC(A3LAT1K06-A00) source and DC(A3LAT1K06-A10) source. Power supply condition is not affected to declared RF specification.

FCC ID: A3LAT1K06-A10	 <small>Proud to be part of element</small>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 135 of 161

7.6.1 Antenna Gain Information at the Band Edge

The following antenna gain information is provided to demonstrate the antenna performance of the 27 to 28.85 GHz 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.

Frequency [GHz]	Channel	Antenna Gain [dBi]
37.05	Low	26.57
39.95	High	27.00

Table 7-24. Antenna Gains at the Band Edges

Sample Analyzer Offset Calculation (at 37.05 GHz)

Measurement Antenna Factor = 42.91 dB/m

Cable Loss = 13.26 dB

Far Field Distance = 2.61 m

EUT Antenna Gain = 26.57 dBi

Duty Cycle Correction Factor = 1.41 dB

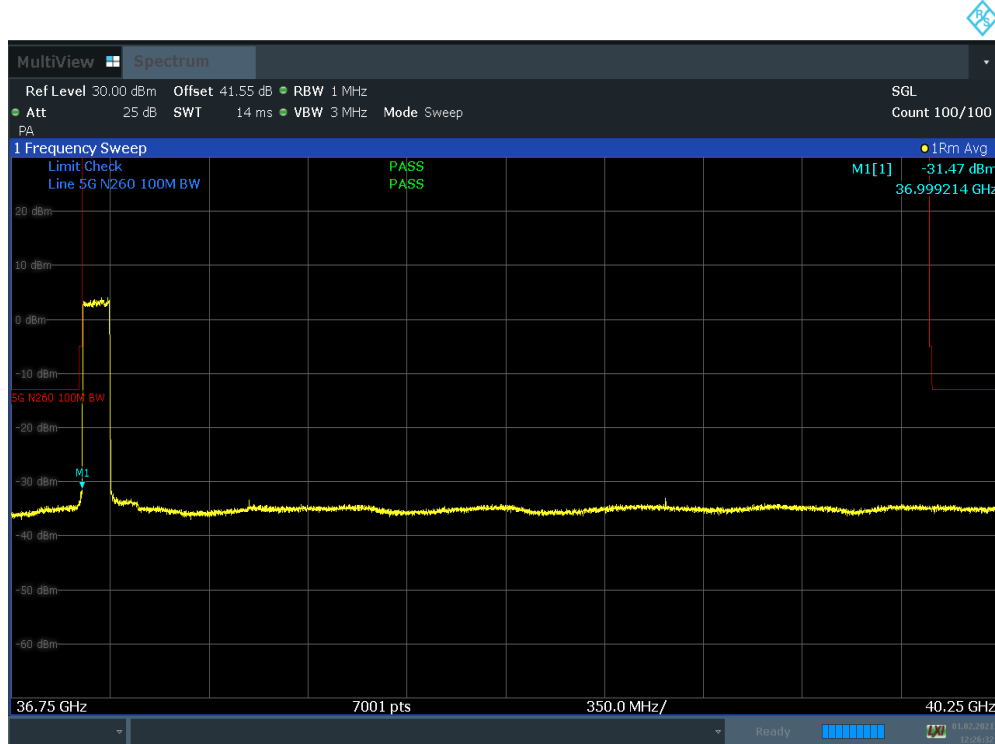
Analyzer Offset (dB) = AF (dB/m) + CL (dB) + 107 + 20log₁₀(D) – 104.8 dB – Gain (dBi) + Duty Correction factor (dB)

$$= 42.91 \text{ dB/m} + 13.26 \text{ dB} + 107 + 20\log_{10}(2.61) - 104.8 \text{ dB} - 26.57 \text{ dBi} + 1.41 \text{ dB}$$

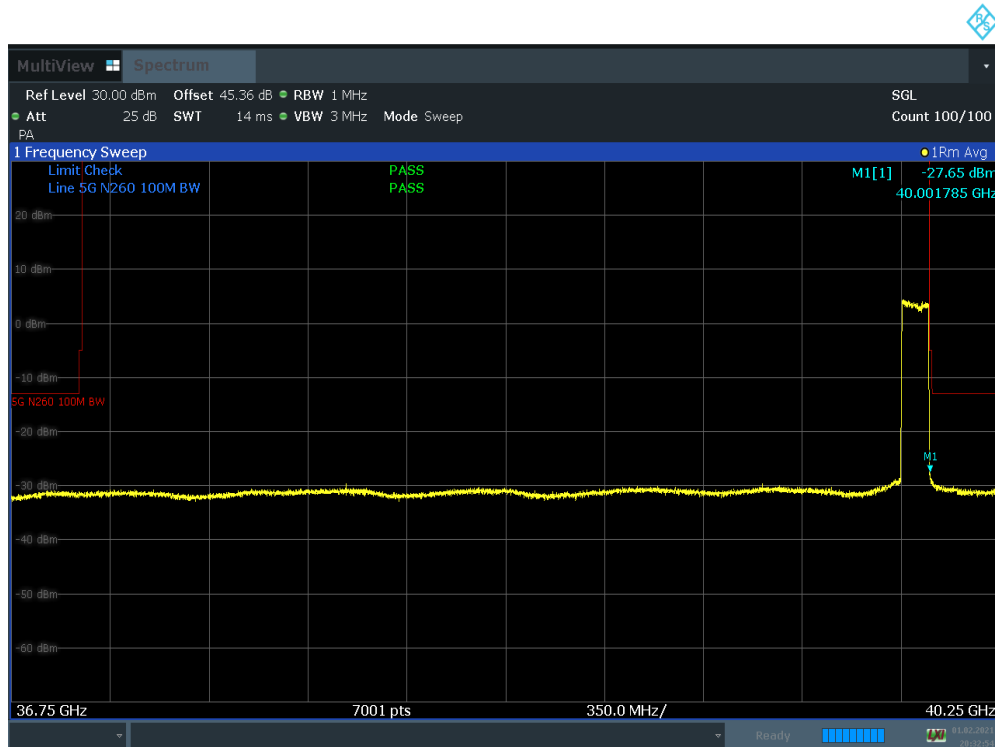
$$= 41.55 \text{ dB}$$

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.6.2 Antenna A Conducted Band Edge Maximized on Antenna A

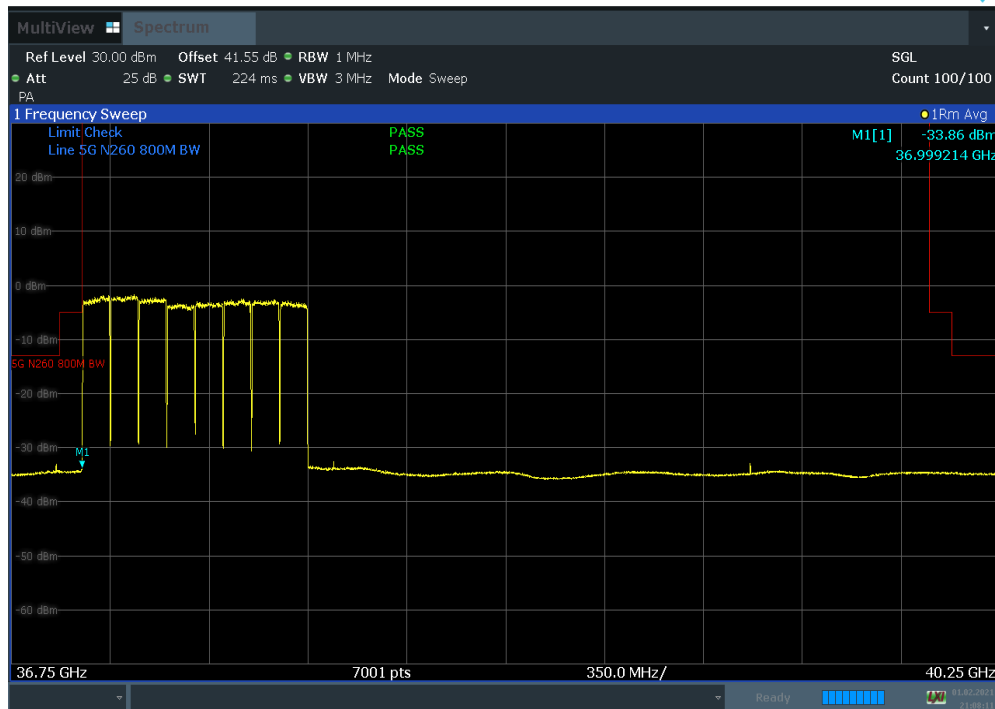


Plot 7-189. Band Edge (100 MHz BW 1CC QPSK Low)

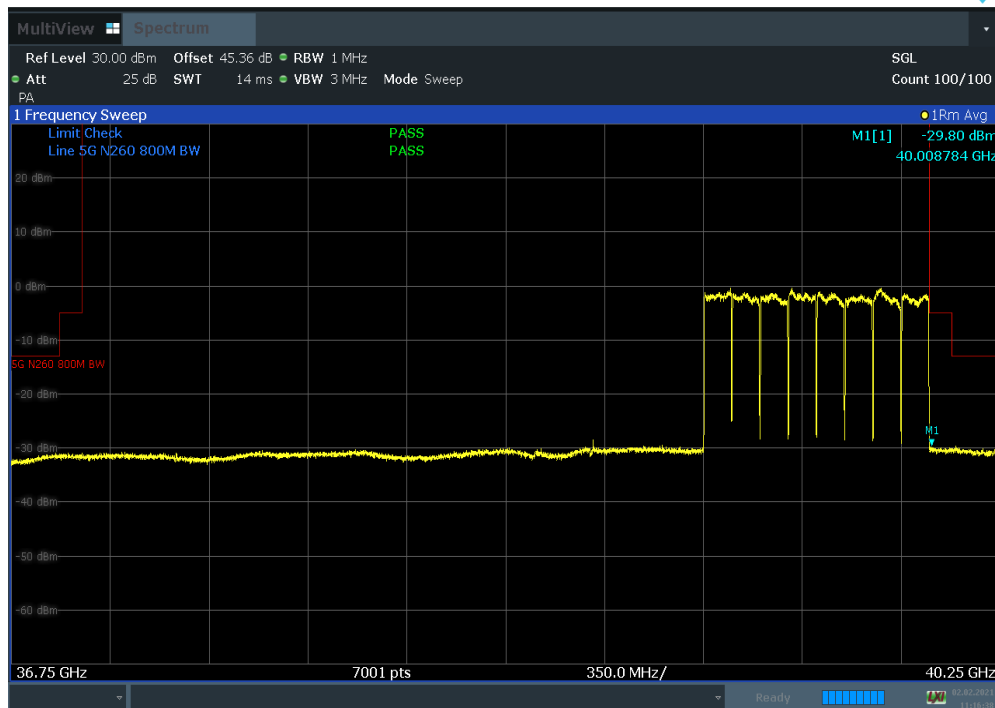


Plot 7-190. Band Edge (100 MHz BW 1CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 137 of 161

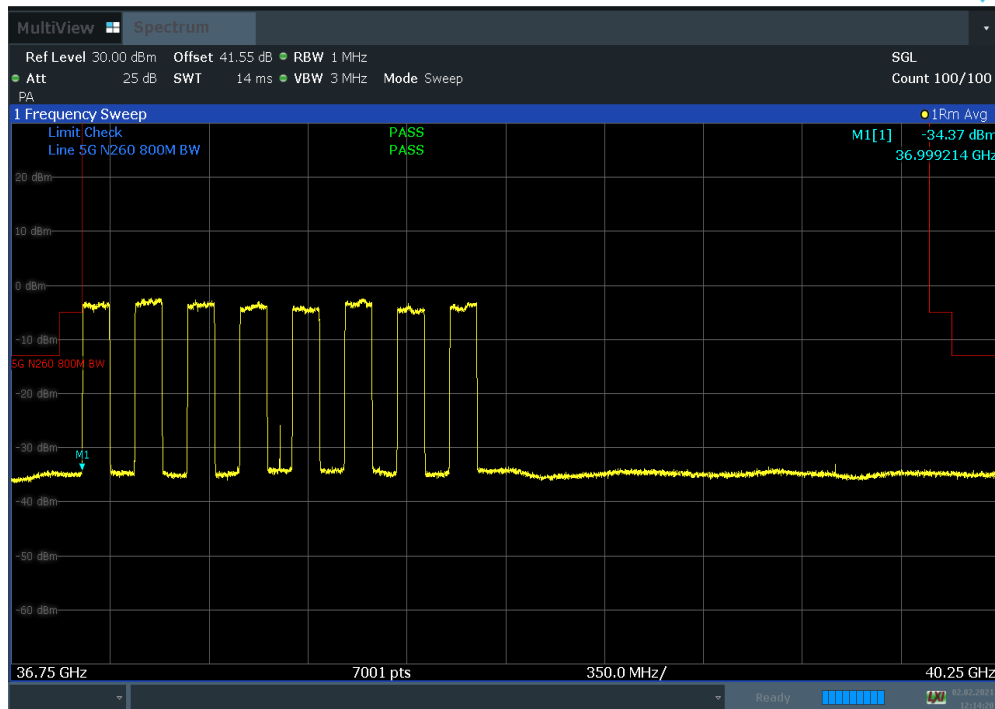


Plot 7-191. Band Edge (100 MHz BW 8CC QPSK Low)

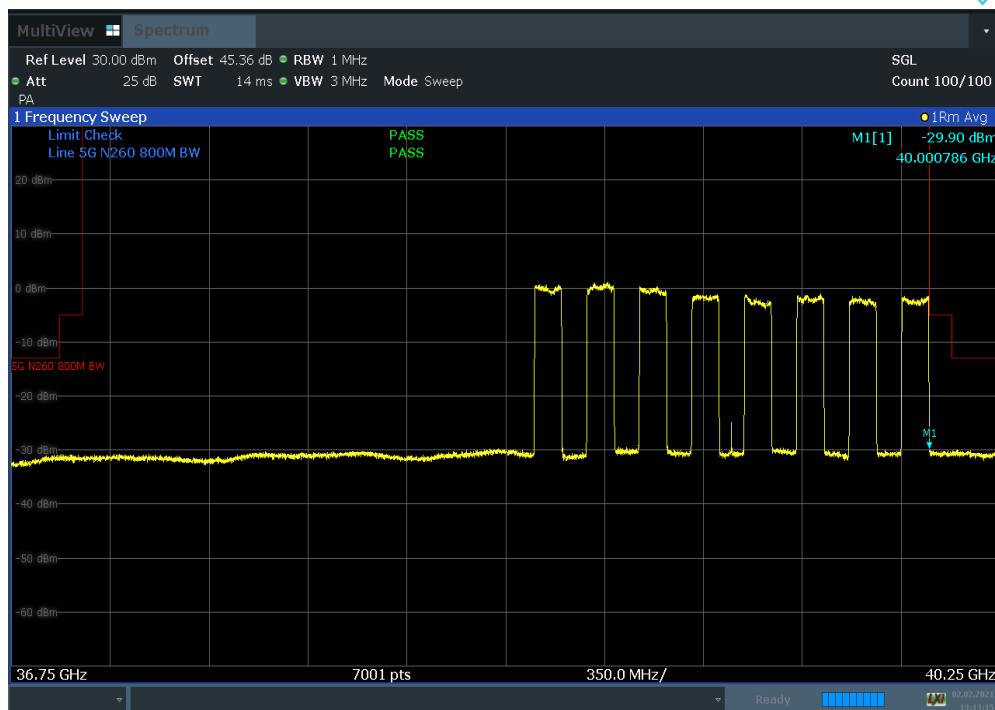


Plot 7-192. Band Edge (100 MHz BW 8CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 138 of 161



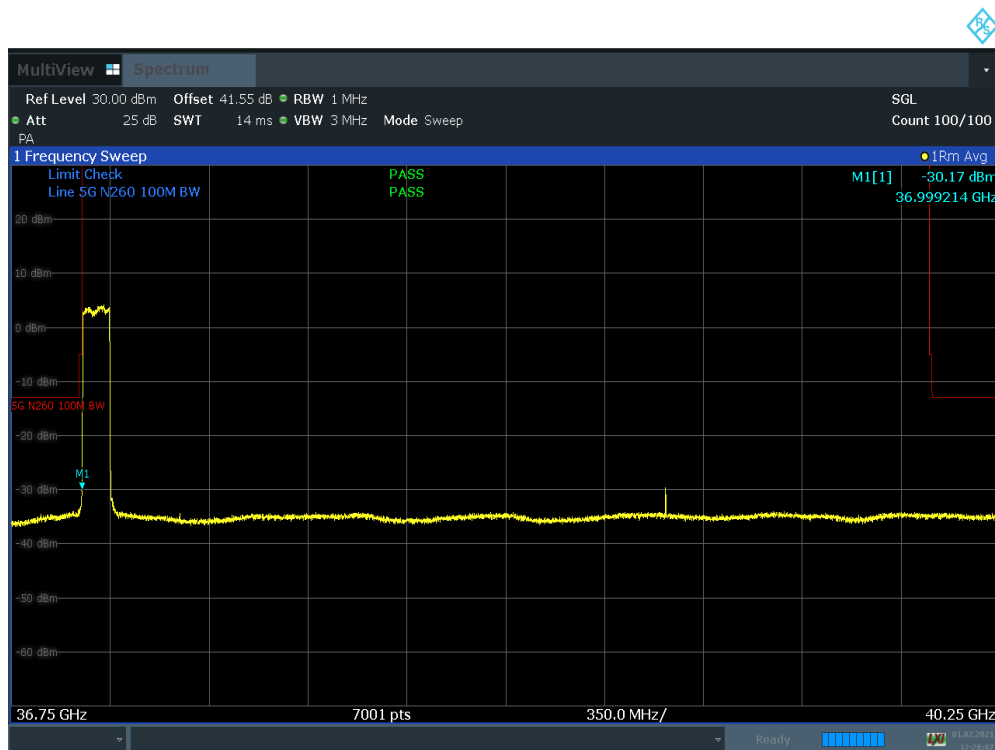
Plot 7-193. Band Edge (100 MHz BW 8CC NC QPSK Low)



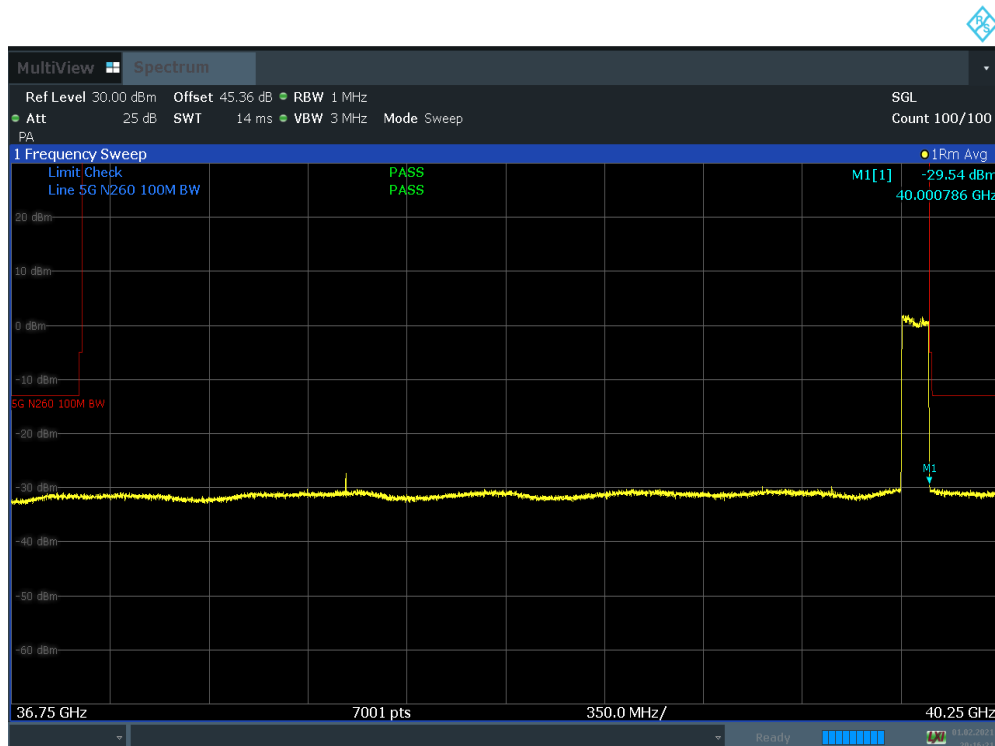
Plot 7-194. Band Edge (100 MHz BW 8CC NC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 139 of 161

7.6.3 Antenna B Conducted Band Edge Maximized on Antenna B

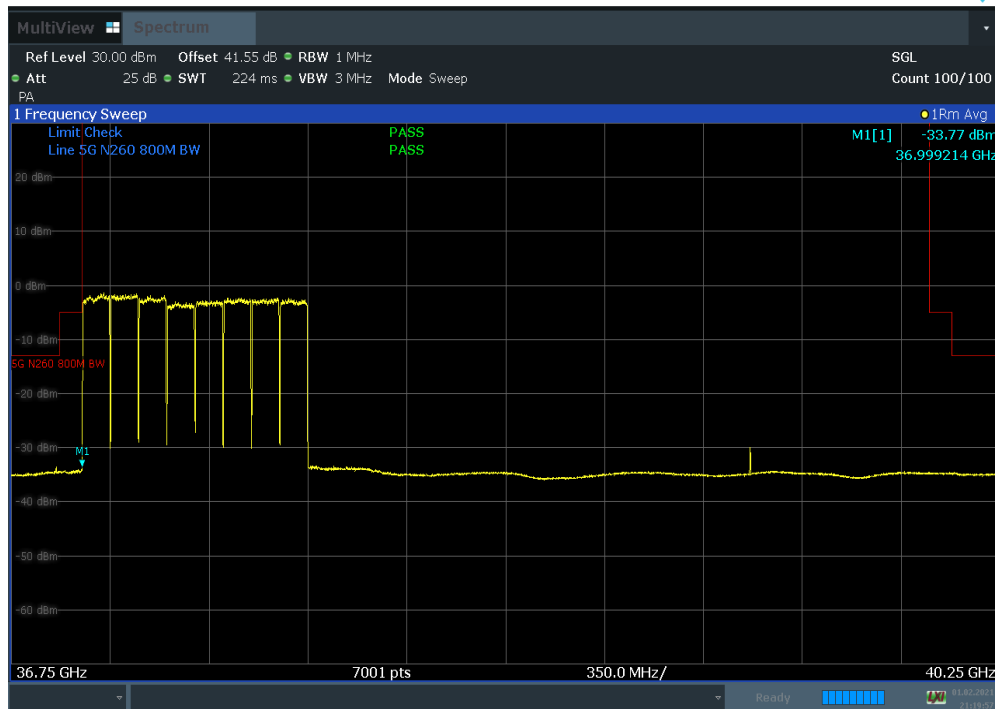


Plot 7-195. Band Edge (100 MHz BW 1CC QPSK Low)

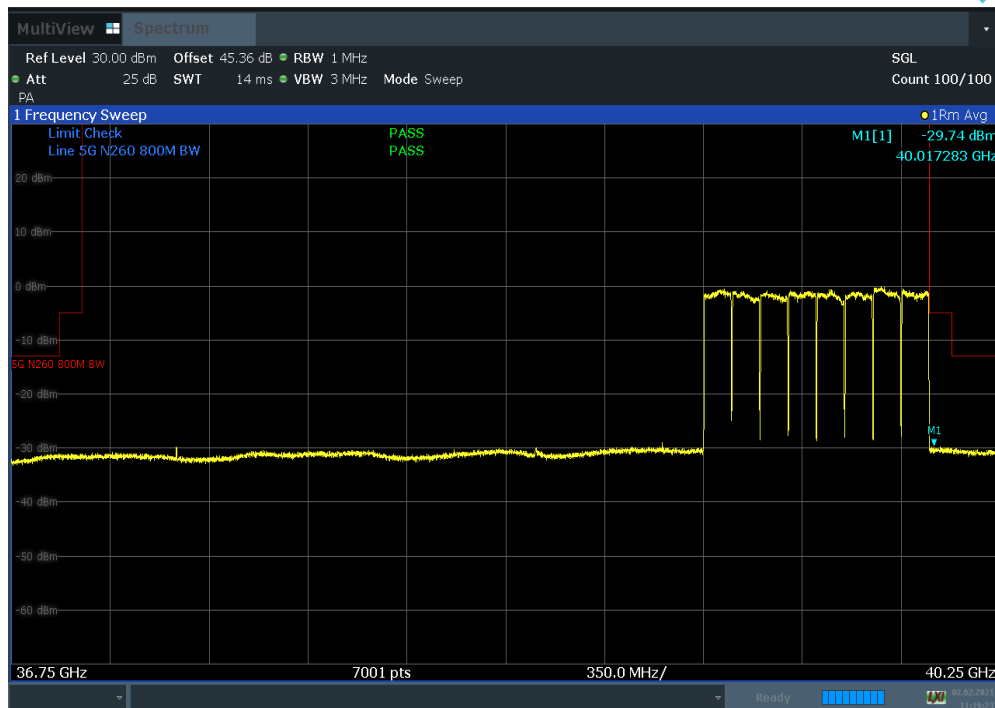


Plot 7-196. Band Edge (100 MHz BW 1CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 140 of 161

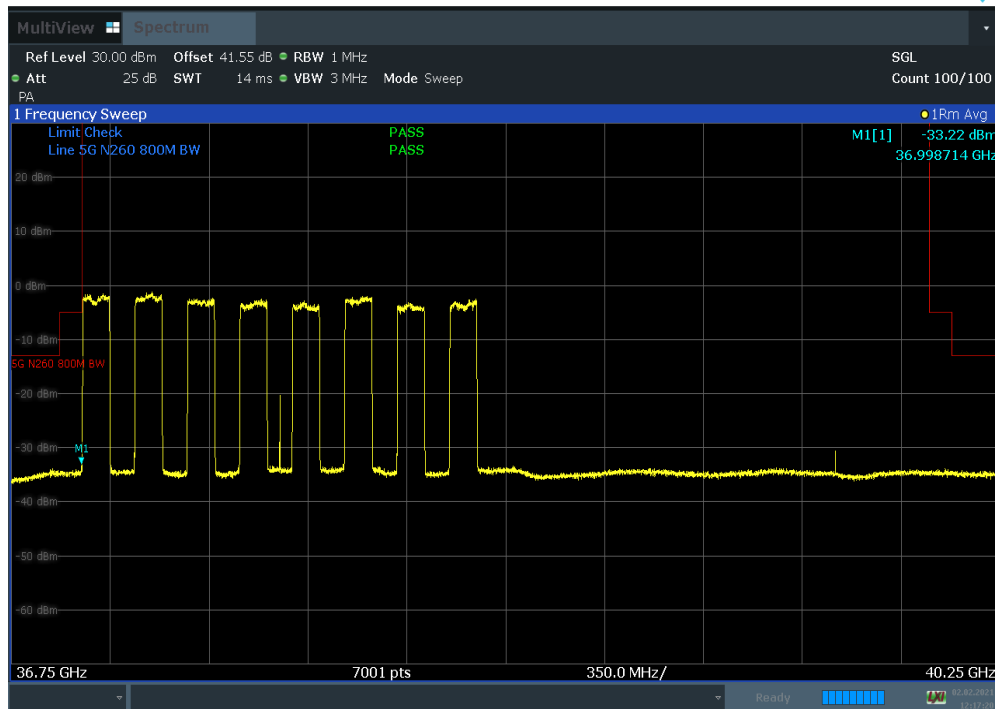


Plot 7-197. Band Edge (100 MHz BW 8CC QPSK Low)

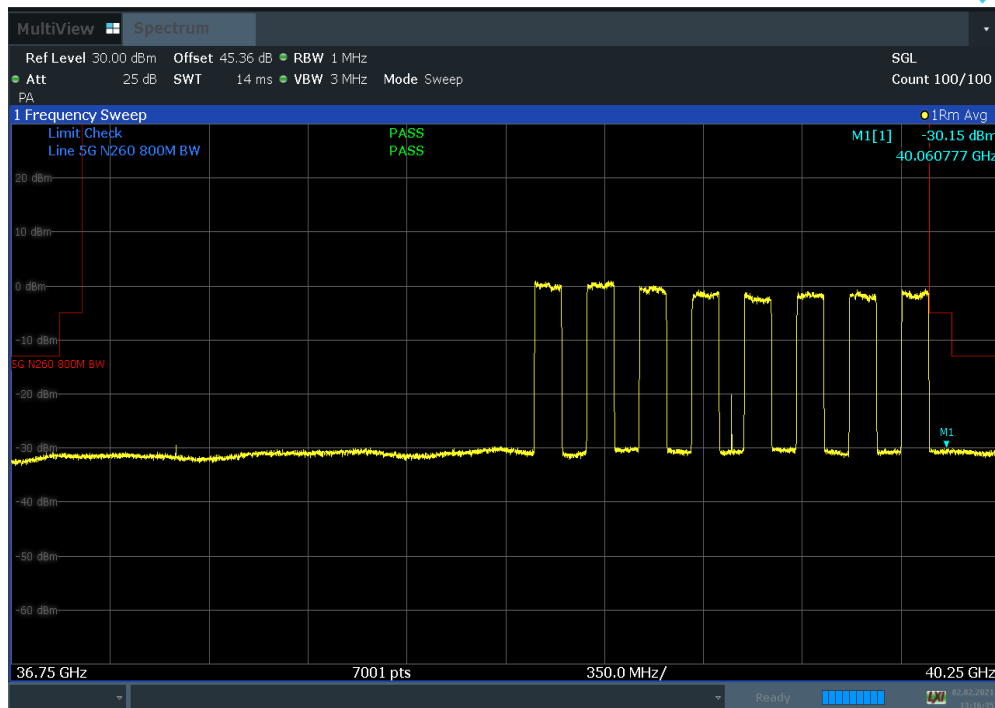


Plot 7-198. Band Edge (100 MHz BW 8CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 141 of 161



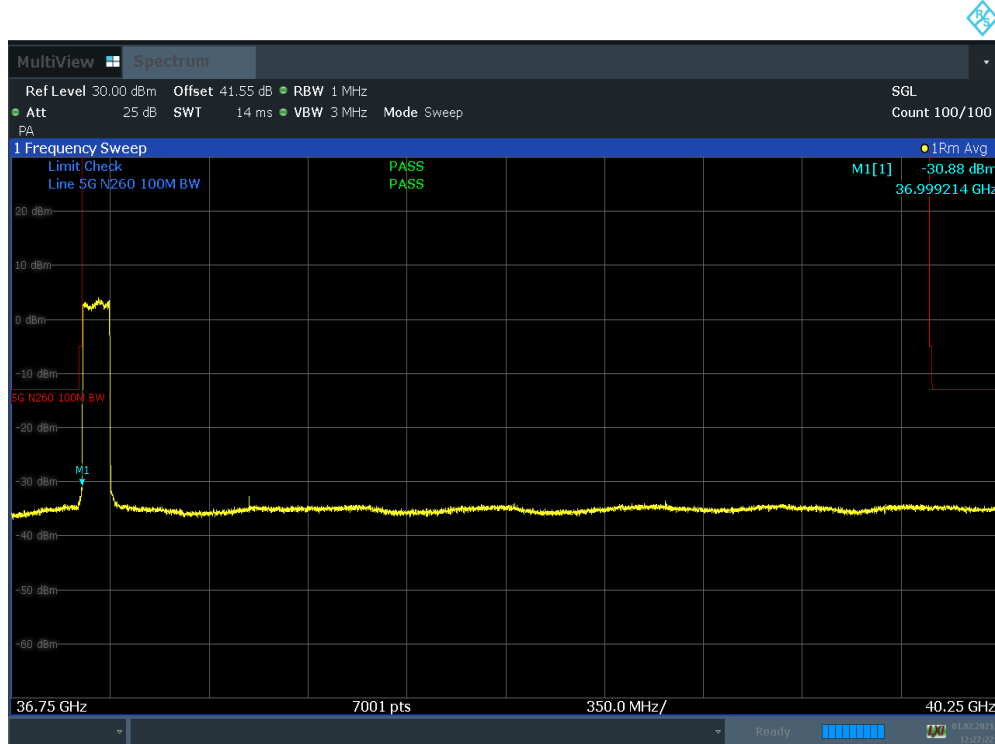
Plot 7-199. Band Edge (100 MHz BW 8CC NC QPSK Low)



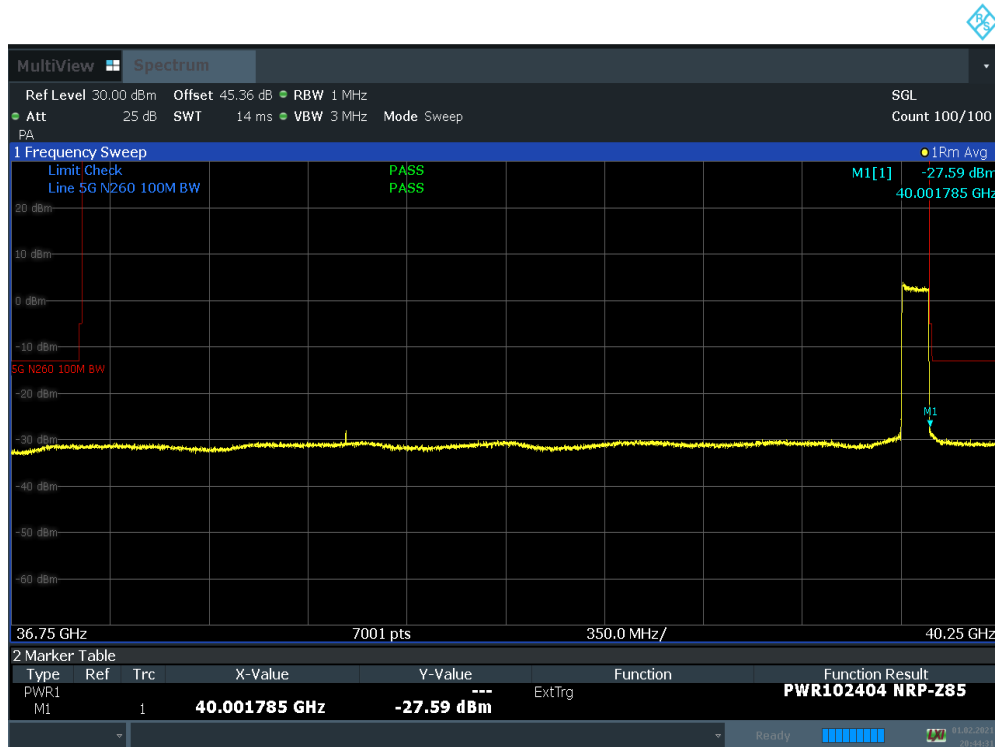
Plot 7-200. Band Edge (100 MHz BW 8CC NC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 142 of 161

7.6.4 Antenna C Conducted Band Edge Maximized on Antenna C

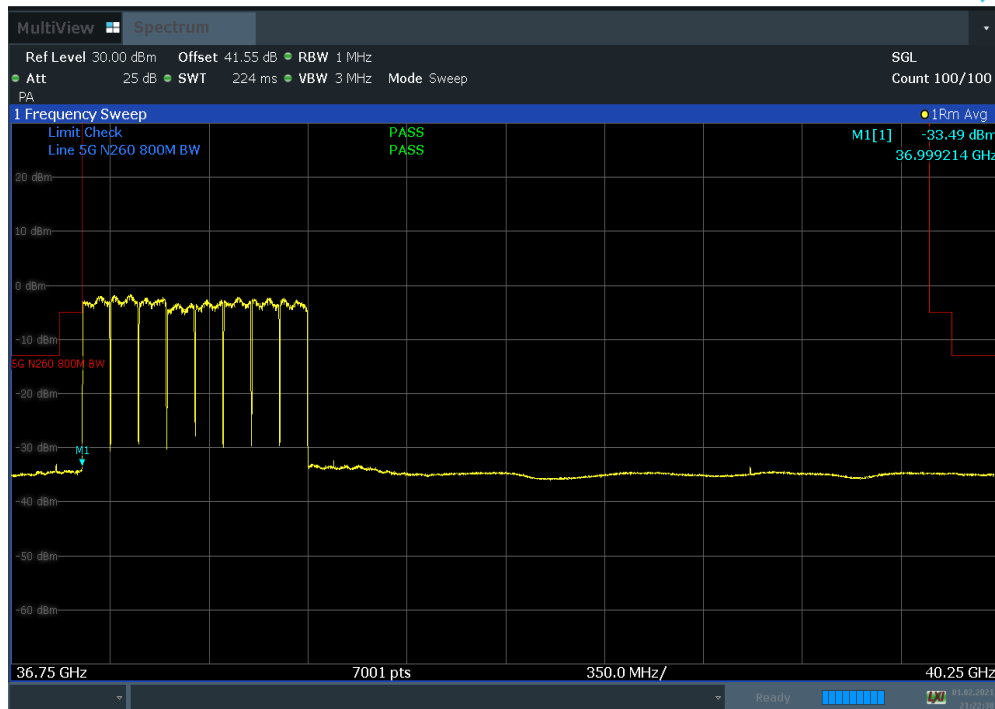


Plot 7-201. Band Edge (100 MHz BW 1CC QPSK Low)

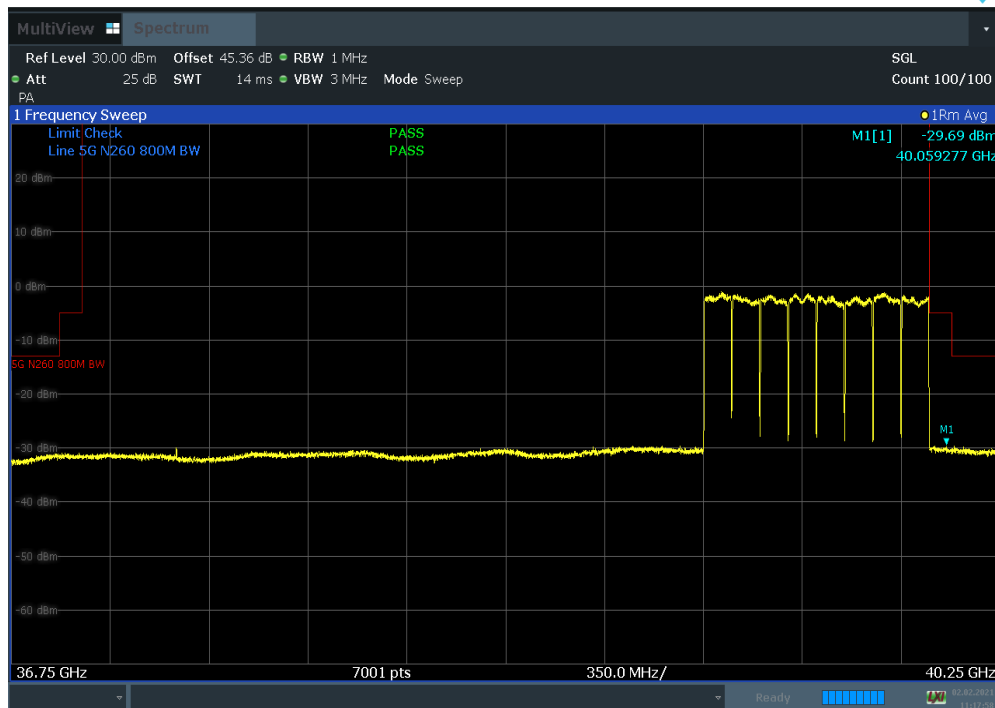


Plot 7-202. Band Edge (100 MHz BW 1CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 143 of 161

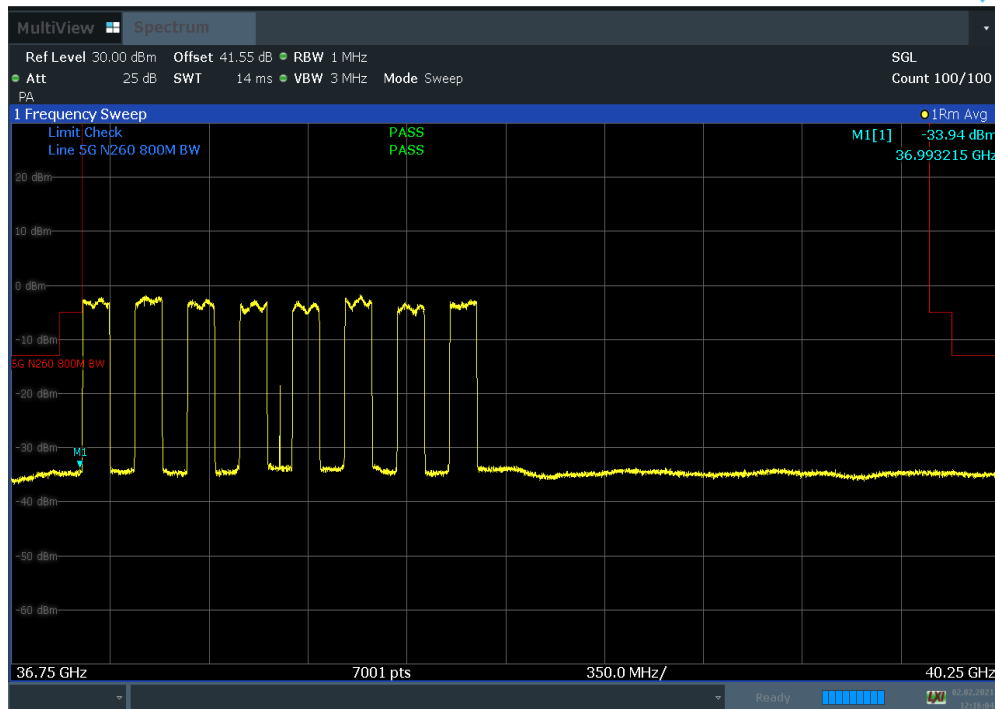


Plot 7-203. Band Edge (100 MHz BW 8CC QPSK Low)

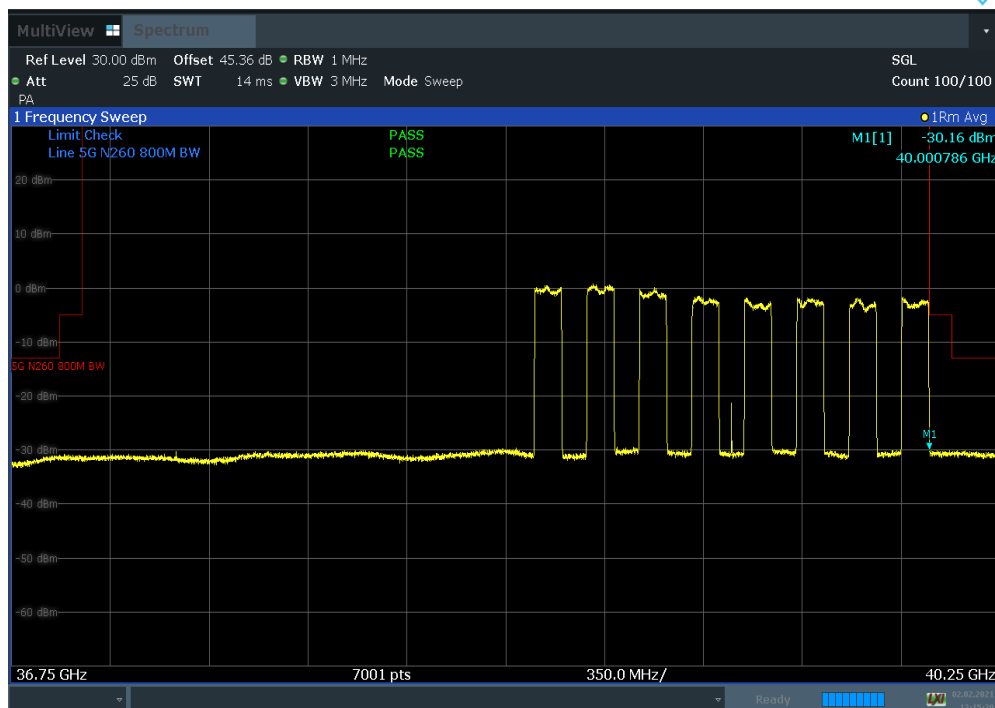


Plot 7-204. Band Edge (100 MHz BW 8CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 144 of 161



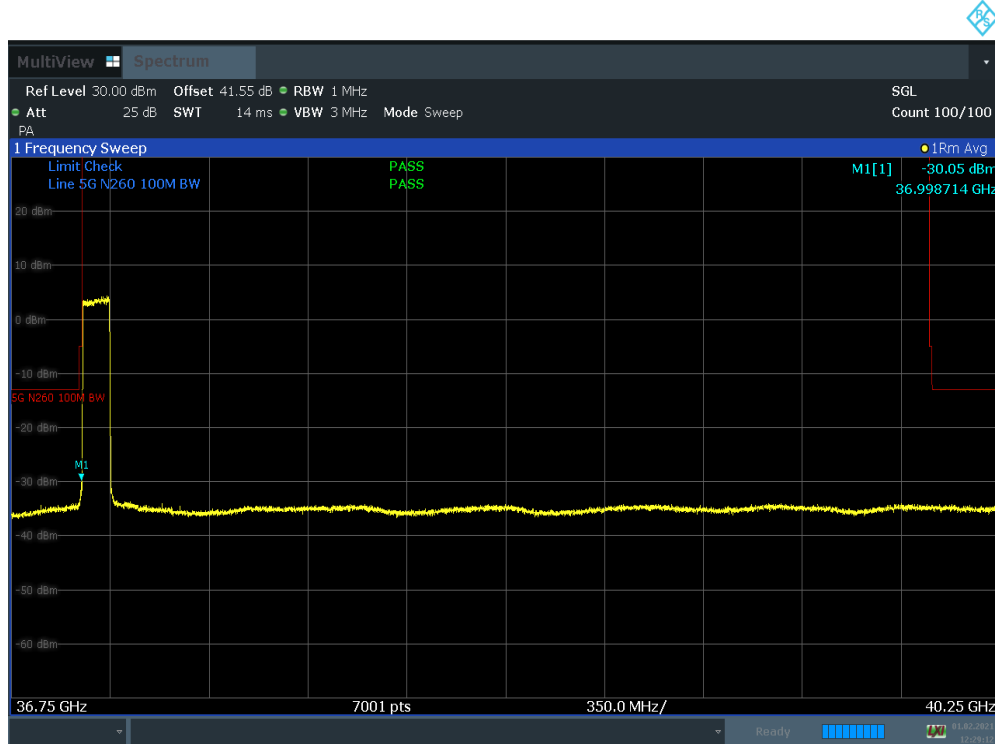
Plot 7-205. Band Edge (100 MHz BW 8CC NC QPSK Low)



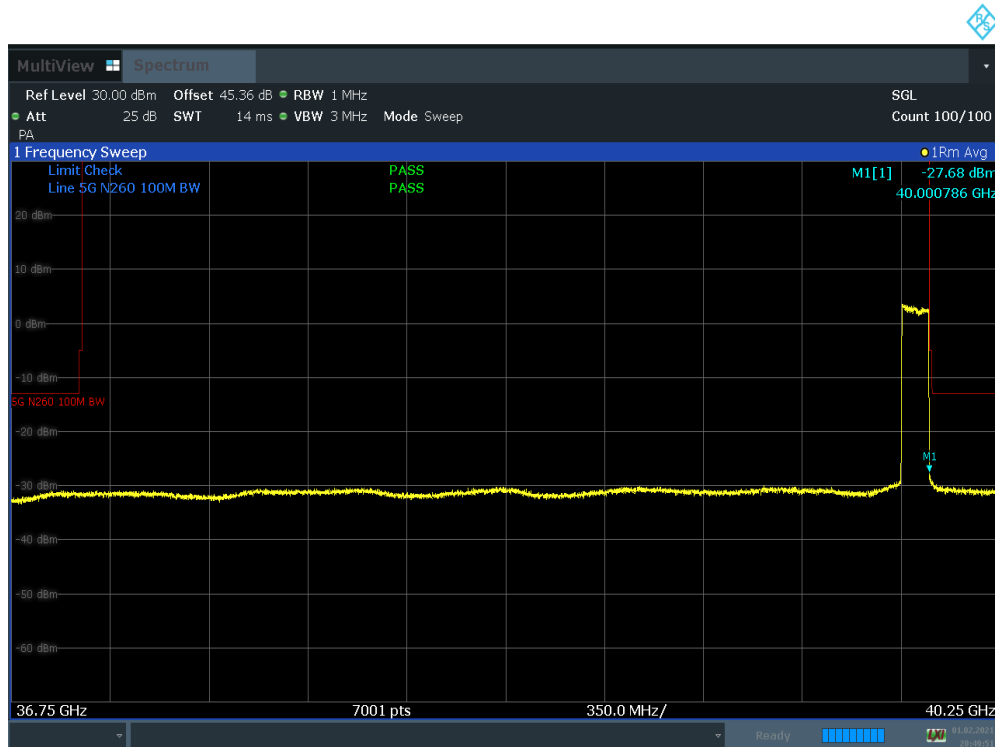
Plot 7-206. Band Edge (100 MHz BW 8CC NC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 145 of 161

7.6.5 Antenna D Conducted Band Edge Maximized on Antenna D

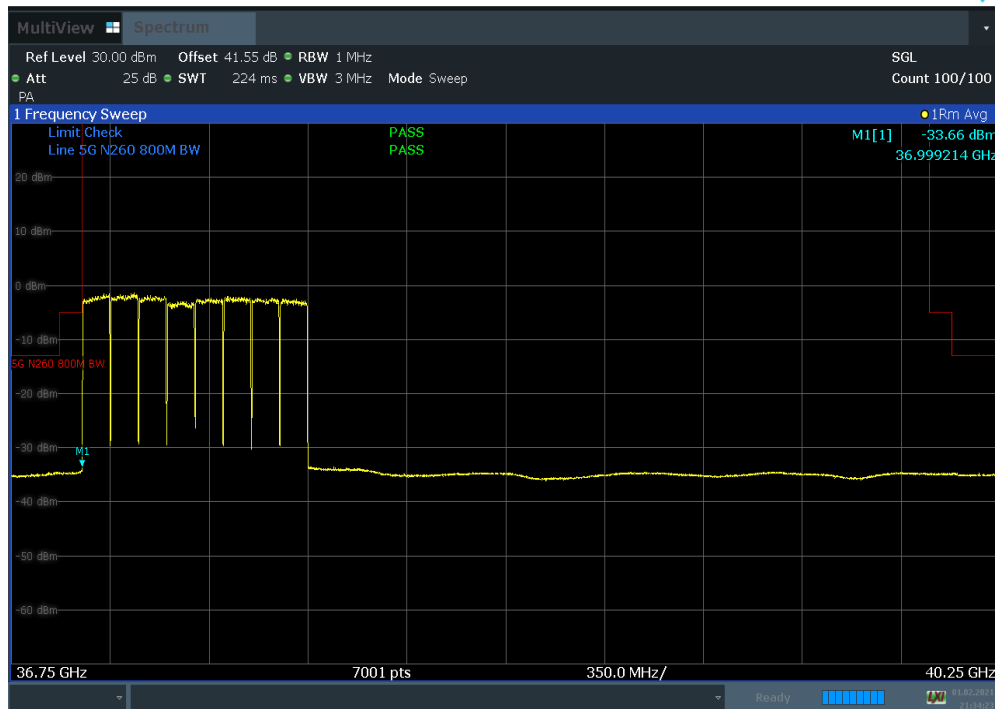


Plot 7-207. Band Edge (100 MHz BW 1CC QPSK Low)

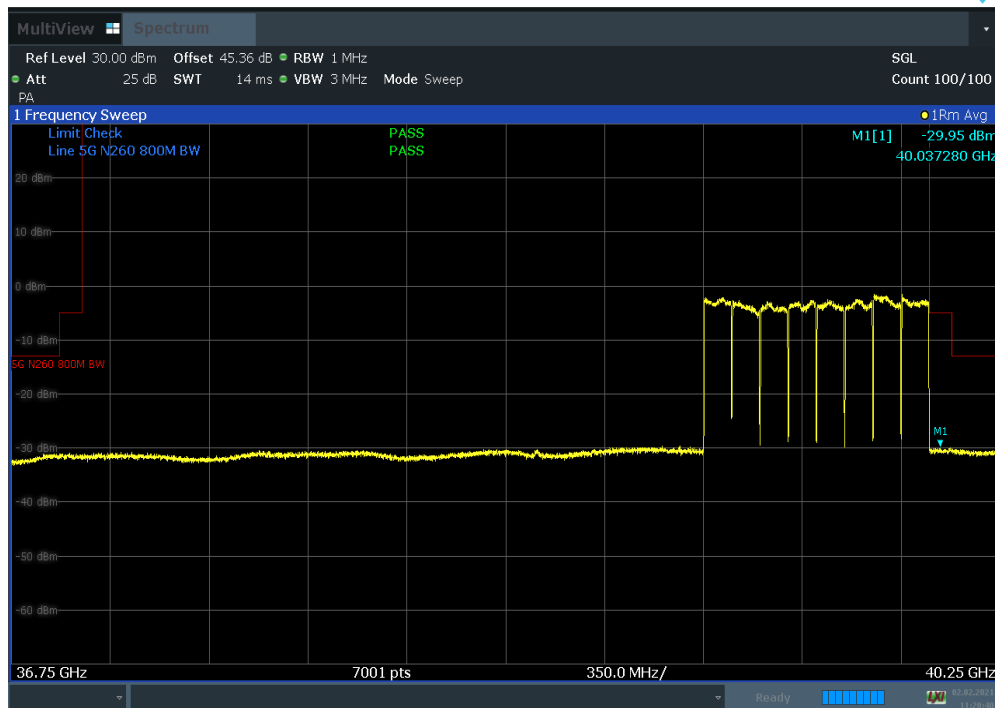


Plot 7-208. Band Edge (100 MHz BW 1CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 146 of 161

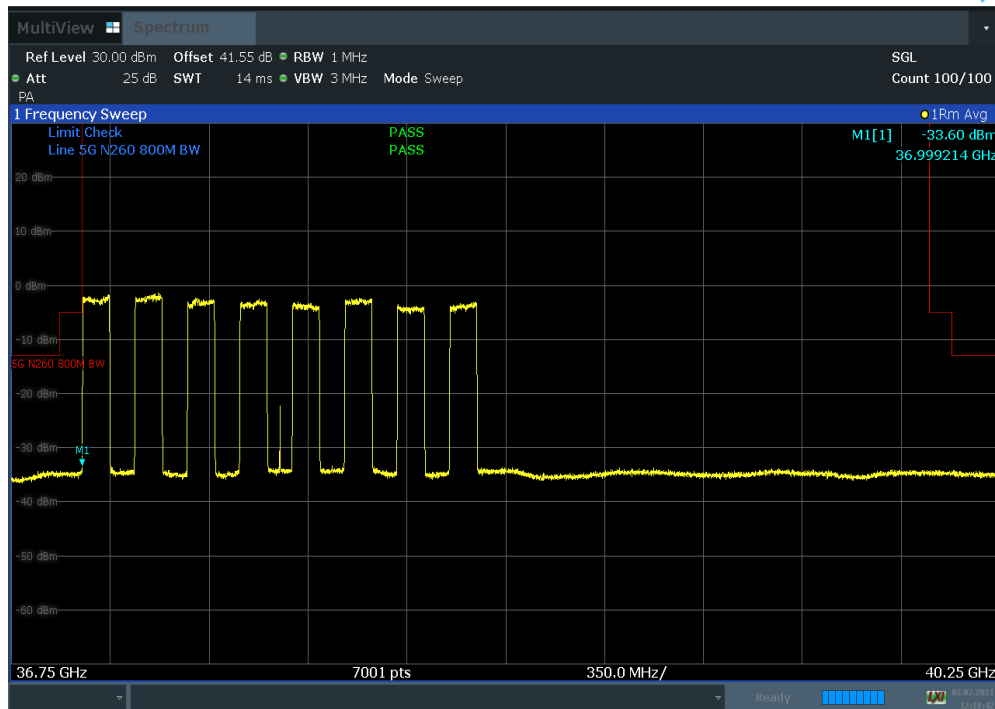


Plot 7-209. Band Edge (100 MHz BW 8CC QPSK Low)

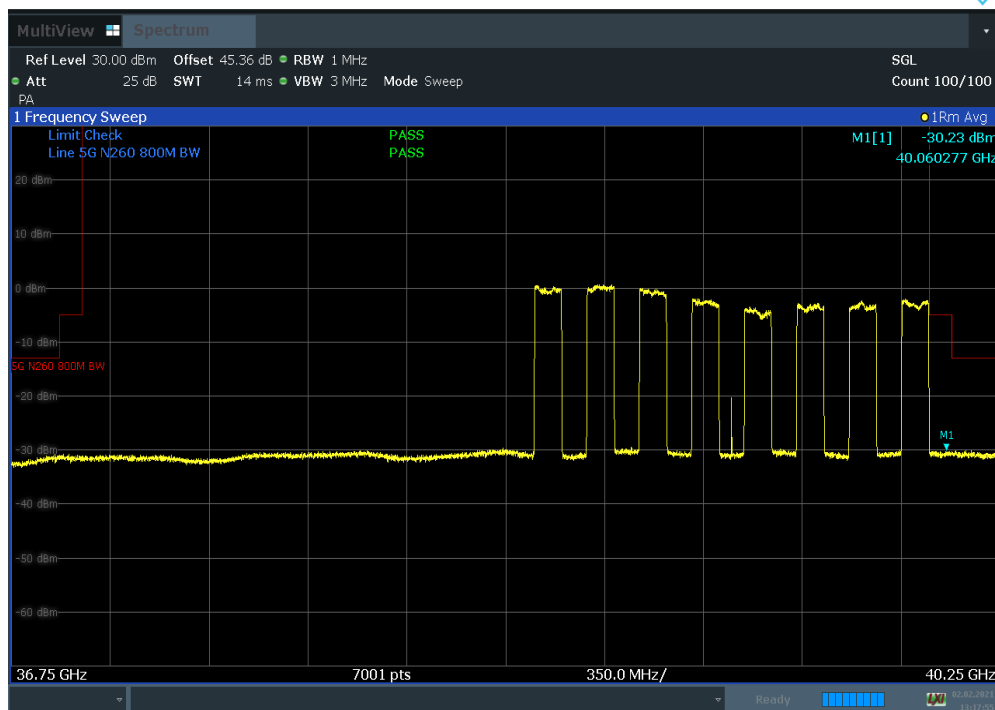


Plot 7-210. Band Edge (100 MHz BW 8CC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 147 of 161



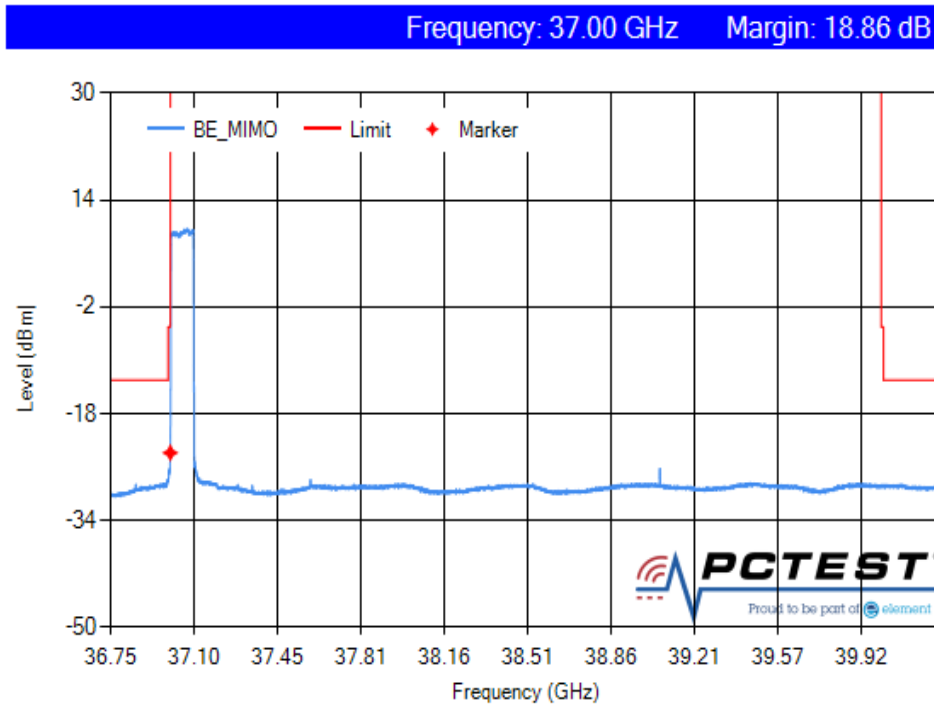
Plot 7-211. Band Edge (100 MHz BW 8CC NC QPSK Low)



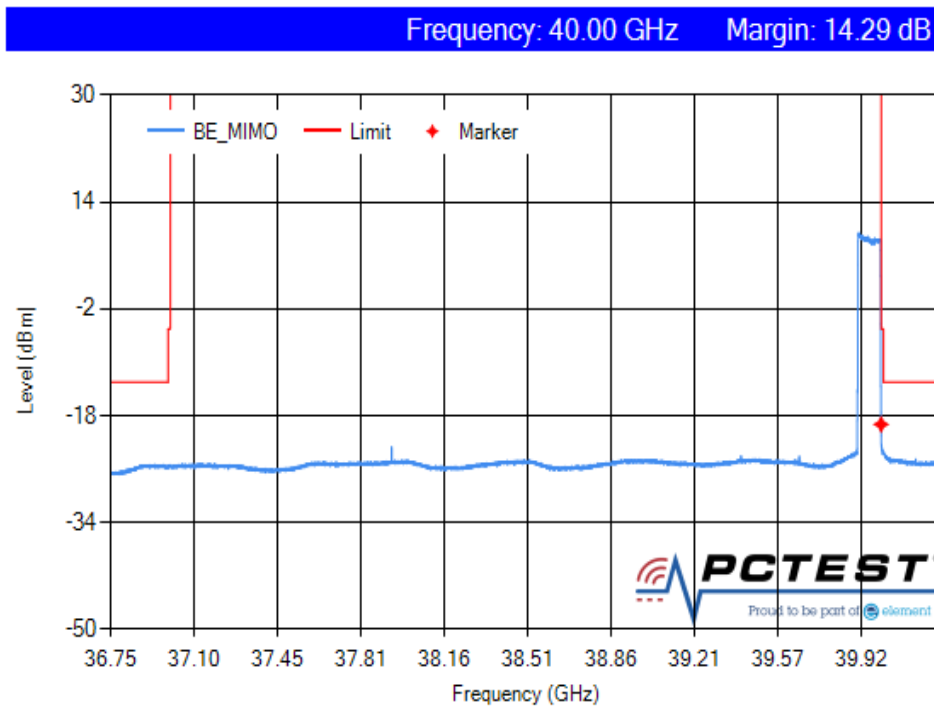
Plot 7-212. Band Edge (100 MHz BW 8CC NC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 148 of 161

7.6.6 MIMO Band Edge Maximized on Antenna A/B/C/D



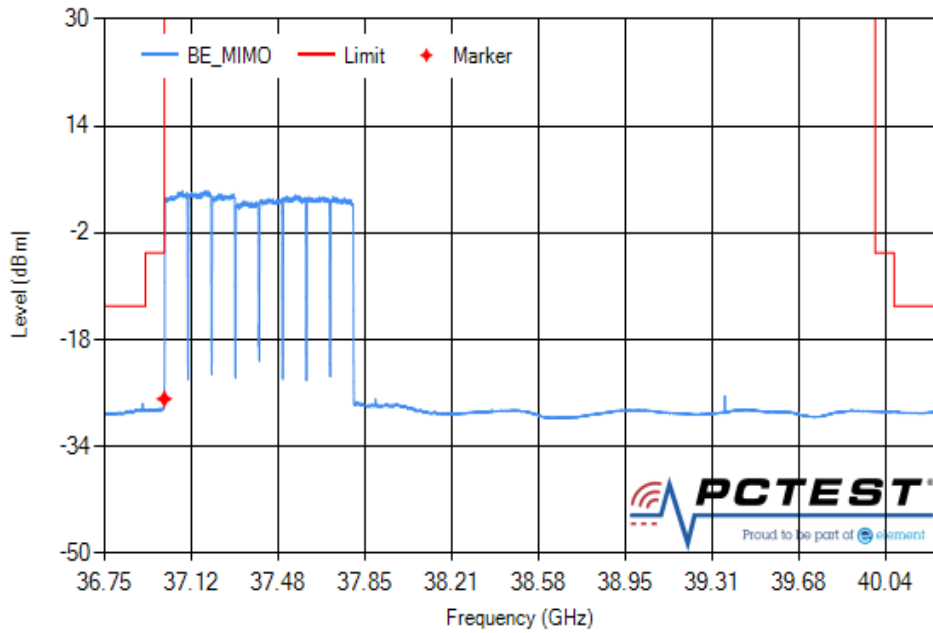
Plot 7-213. Band Edge MIMO (100 MHz BW 1CC QPSK Low)



Plot 7-214. Band Edge MIMO (100 MHz BW 1CC QPSK High)

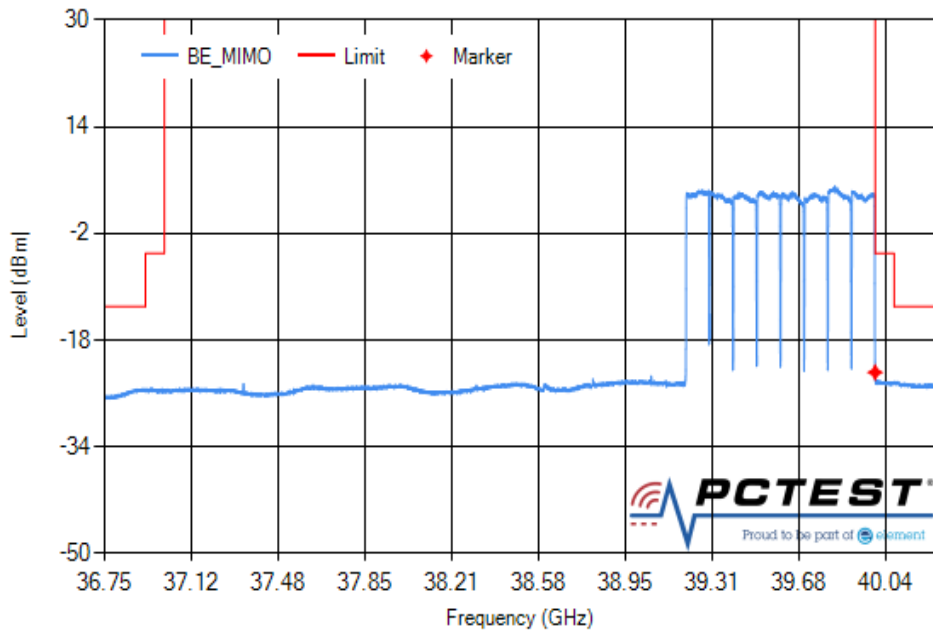
FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 149 of 161

Frequency: 37.00 GHz Margin: 21.86 dB



Plot 7-215. Band Edge MIMO (100 MHz BW 8CC QPSK Low)

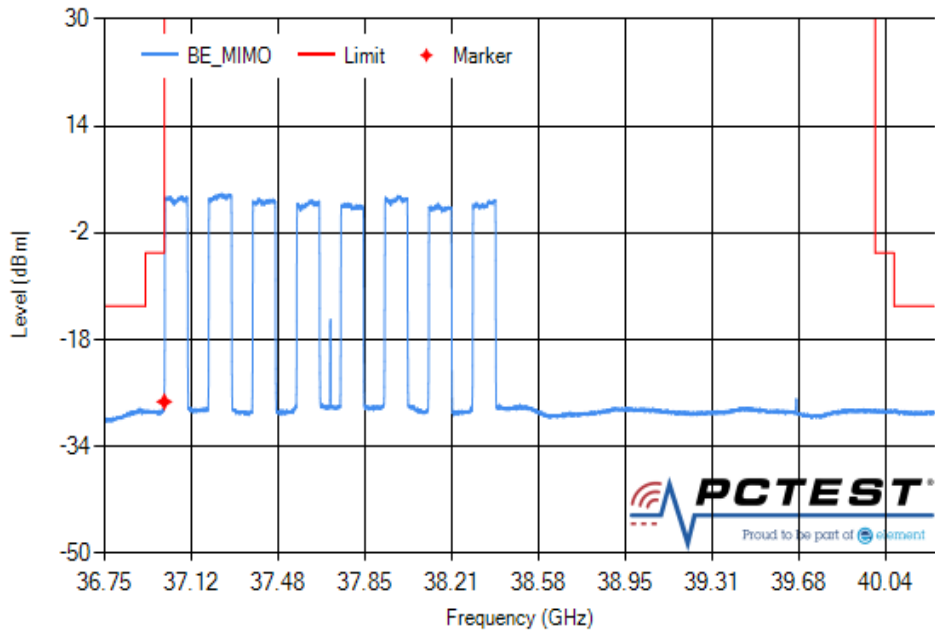
Frequency: 40.00 GHz Margin: 17.83 dB



Plot 7-216. Band Edge MIMO (100 MHz BW 8CC QPSK High)

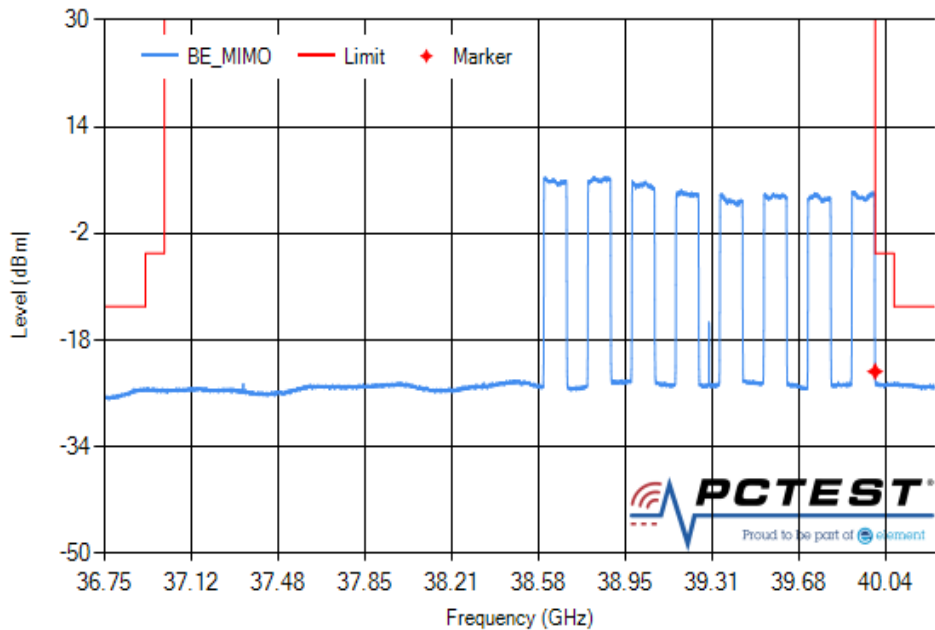
FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 150 of 161

Frequency: 37.00 GHz Margin: 22.28 dB



Plot 7-217. Band Edge MIMO (100 MHz BW 8CC NC QPSK Low)

Frequency: 40.00 GHz Margin: 17.7 dB



Plot 7-218. Band Edge MIMO (100 MHz BW 8CC NC QPSK High)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 151 of 161

7.7 Frequency Stability / Temperature Variation

\$2.1055

Test Overview and Limit

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

- Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- Primary Supply Voltage:** The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and DC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

ANSI C63.26-2015 Section 5.6
KDB 842590 D01 v01r01 Section 4.5

Test Settings

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

Test Setup

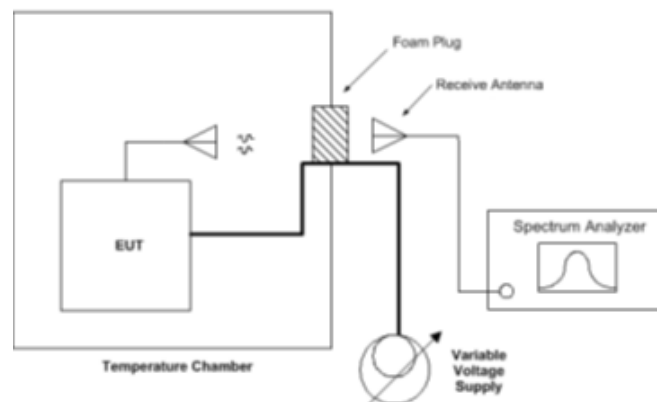


Figure 7-1. Test Instrument & Measurement Setup

The EUT was measured using horn antenna connected to a spectrum analyzer. The EUT was placed inside an environmental chamber.

Test Notes

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

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 152 of 161

Frequency Stability Measurements

\$2.1055

OPERATING FREQUENCY: 38,050,000,000 Hz
 CHANNEL: 2084999
 REFERENCE VOLTAGE: -48.00 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	-48.00	+ 20 (Ref)	38,050,000,135	0	0.0000000
100 %		- 30	38,050,000,179	44	0.0000001
100 %		- 20	38,050,000,180	45	0.0000001
100 %		- 10	38,050,000,189	54	0.0000001
100 %		0	38,050,000,205	70	0.0000002
100 %		+ 10	38,050,000,194	59	0.0000002
100 %		+ 30	38,050,000,265	130	0.0000003
100 %		+ 40	38,050,000,271	136	0.0000004
100 %		+ 50	38,050,000,265	130	0.0000003
85 %	-40.80	+ 20	38,050,000,181	46	0.0000001
115 %	-55.20	+ 20	38,050,000,266	131	0.0000003

Table 7-25. Frequency Stability Data

Note:

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

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)	Page 153 of 161	

Frequency Stability Measurements

\$2.1055

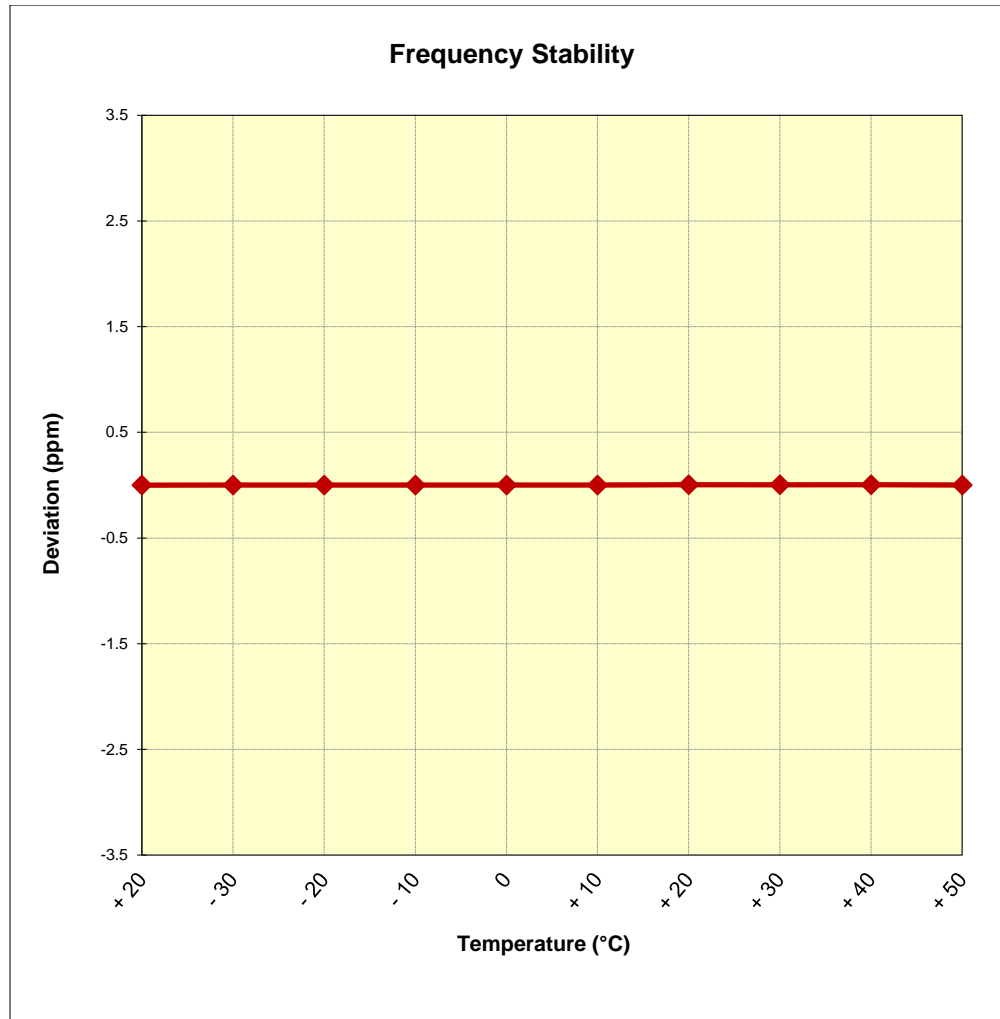


Figure 7-2. Frequency Stability Graph

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 154 of 161


8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung 5G Access Unit Model: AT1K06-A10** complies with all the requirements of Part 30.

FCC ID: A3LAT1K06-A10	 <small>Proud to be part of element</small>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 155 of 161

9.0 APPENDIX A


9.1 HARMONIC MIXER Verification Certificate



교정 성적서

CALIBRATION CERTIFICATE

경기도 여천시 마장면 서미천로 578번길 74
TEL : 031-645-6900, FAX : 031-645-6969

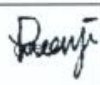



성적서발급번호(Certificate No) : IC-2020-16953
교 정 번 호(Calibration No) : C-2020-020404 페이지(page) : 1 of 3

- 의뢰자 (Client)**
 - 기관명 (Name) : 피씨테스트코리아 주식회사
 - 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 벨리)
- 측정기 (Calibration Subject)** ◇ 등록번호 : 380383
 - 기기명 (Description) : HARMONIC MIXER
 - 제작회사 및 형식(Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z60
 - 기기번호 (Serial Number) : 100981
- 교정일자 (Date of Calibration)** : 2020.03.13
- 교정환경 (Environment)**
 - 온도(Temperature) : (22.4 ± 0.4) °C
 - 습도(Humidity) : (46 ± 4) % R.H.
 - 교정장소 (Location) : 고정표준실(Permanent Calibration Lab)
(주소: 경기도 여천시 마장면 서미천로 578번길 74)
- 측정표준의 소급성 (Traceability)** ◇ Field code : 40641(RF SPECTRUM ANALYZER)
교정방법 및 소급성 서술 (Calibration method and/or brief description)
상기 기기는 고주파 스펙트럼 분석기의 고정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비를 이용하여 교정 되었음.
교정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2020/10/02	(주)에이치시티
EPM SERIES POWER METER	AGILENT E4419B	GB42420565	2020/11/02	(주)에이치시티
POWER SENSOR	AGILENT 8487A	MY41092450	2021/01/15	Keysight Technologies
POWER SENSOR	KEYSIGHT V8486A	MY56330017	2020/12/30	Keysight Technologies
WR-19 MULTIPLIER SOURCE MODULE	OML S19MS-A	160516-1	2020/09/09	(주)에이치시티

- 교정결과 (Calibration result)** : 교정결과 참조 (Refer to attachment)
- 측정불확도 (Measurement uncertainty)** : 교정결과 참조 (Refer to attachment)
신뢰수준 약 95 %, k = 2 (Confidence level about 95 %, k = 2)


확 인 (affirmation)	작성자 (Measurements performed by) 성명 (Name) 박민지	 승인자 (Approved by) 직위 (Title) 기술책임자(Technical Cal. Manager) (명) 성명 (Name) 이승찬
		

위 성적서는 국제시험기관인정협력체(International Laboratory Accreditation Cooperation) 상호인정협정(Mutual Recognition Arrangement)에 서명한 한국인정기구(KOLAS)로부터 공인 받은 분야의 교정결과입니다.

2020. 03. 16

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(주)에이치시티 대표이사
President, HCT Co., Ltd.



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F-02P-02-008 (Rev.02)

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 156 of 161

열람용

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교정성적서

CALIBRATION CERTIFICATE

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TEL : 031-645-6900, FAX : 031-645-6969



성적서발급번호(Certificate No) : IC-2020-77176
교정번호(Calibration No) : C-2020-089965

페이지(page) : 1 of 3

- 1. 의뢰자 (Client)**
 - 기관명 (Name) : 피씨테스트코리아 주식회사
 - 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 밸리)
- 2. 측정기 (Calibration Subject)** ◇ 등록번호 : 369548
 - 기기명 (Description) : HARMONIC MIXER
 - 제작회사 및 형식 (Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z90
 - 기기번호 (Serial Number) : 101860
- 3. 교정일자 (Date of Calibration)** : 2020.10.21
- 4. 교정환경 (Environment)**
 - 온도(Temperature) : (23.1 ± 0.3) °C - 습도(Humidity) : (46 ± 3) % R.H.
 - 교정장소 (Location) : 고정표준실(Permanent Calibration Lab)
(주소: 경기도 이천시 마장면 서이천로 578번길 74)
- 5. 측정표준의 소급성 (Traceability)** ◇ Field code : 40641(RF SPECTRUM ANALYZER)
교정방법 및 소급성 서술 (Calibration method and/or brief description)
상기 기기는 고주파 스펙트럼 분석기의 고정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비를 이용하여 교정 되었음.

교정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2021/06/23	(주)에이치시티
EPM SERIES POWER METER	AGILENT E4419B	GB42420565	2020/11/02	(주)에이치시티
POWER SENSOR	KEYSIGHT V8486A	MY56330017	2021/01/03	Keysight Technologies
POWER SENSOR	KEYSIGHT W8486A	MY56370005	2020/12/30	Keysight Technologies
WR-12 MULTIPLIER SOURCE MODULE	OML S12MS-A	160419-1	2021/09/09	(주)에이치시티

- 6. 교정결과 (Calibration result)** : 교정결과 참조 (Refer to attachment)
- 7. 측정불확도 (Measurement uncertainty)** : 교정결과 참조 (Refer to attachment)
신뢰수준 약 95 %, k = 2 (Confidence level about 95 %, k = 2)

확 인 (affirmation)	작성자 (Measurements performed by)	승인자 (Approved by)
	성명 (Name) 박민지	직위 (Title) 기술책임자(Technical Cal. Manager) (장) 성명 (Name) 이승찬

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2020. 10. 21

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F-02-P-008 (Rev.02)

FCC ID: A3LAT1K06-A10	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 157 of 161



교정 성적서 CALIBRATION CERTIFICATE

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TEL : 031-645-6900, FAX : 031-645-6969



성적서발급번호(Certificate No) : IC-2020-16950
교정번호(Calibration No) : C-2020-020401

페이지(page) : 1 of 3

- 1. 의뢰자 (Client)**
 - 기관명 (Name) : 피씨테스트코리아 주식회사
 - 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 밸리)
- 2. 측정기 (Calibration Subject)**
 - 기기명 (Description) : HARMONIC MIXER
 - 제작회사 및 형식 (Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z140
 - 기기번호 (Serial Number) : 101135
- 3. 교정일자 (Date of Calibration)** : 2020.03.13

- 4. 교정환경 (Environment)**
 - 온도(Temperature) : (22.4 ± 0.4) °C 습도(Humidity) : (46 ± 4) % R.H.
 - 교정장소 (Location) : 고정표준실(Permanent Calibration Lab)
(주소: 경기도 이천시 마장면 서이천로 578번길 74)

- 5. 측정표준의 소급성 (Traceability)**
 - Field code : 40641(RF SPECTRUM ANALYZER)

교정방법 및 소급성 서술 (Calibration method and/or brief description)

상기 기기는 고주파 스펙트럼 분석기의 교정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비를 이용하여 교정 되었음.

교정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2020/10/02	(주)에이치시티
EPM SERIES POWER METER	AGILENT E4419B	GB42420565	2020/11/02	(주)에이치시티
POWER SENSOR	KEYSIGHT W8486A	MY56370005	2020/12/30	Keysight Technologies
WR-08 MULTIPLIER SOURCE MODULE	OML S08MS-A	164019-1	2020/09/09	(주)에이치시티

- 6. 교정결과 (Calibration result)** : 교정결과 참조 (Refer to attachment)
- 7. 측정불확도 (Measurement uncertainty)** : 교정결과 참조 (Refer to attachment)
신뢰수준 약 95 %, $k = 2$ (Confidence level about 95 %, $k = 2$)

확 인 (affirmation)	작성자 (Measurements performed by)	승인자 (Approved by)
	성명 (Name) 박민지	직위 (Title) 기술책임자(Technical Cal. Manager) (장)
		성명 (Name) 이승찬

위 성적서는 국제시험기관정합협력(International Laboratory Accreditation Cooperation) 상호인정협정(Mutual Recognition Arrangement)에 서명한 한국인정기구(KOLAS)로부터 공인 받은 분야의 교정결과입니다.

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2020. 03. 16
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F-02P-02-008 (Rev.02)

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 158 of 161

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Measurement Report

74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, Korea 17383
Tel :82-31-645-6900, www.hct.co.kr

보고서번호(Report No) : IC-2020-77177
측 정 번 호(Measurement No) : C-2020-089966

페이지(page) : 1 of 3

1. 의뢰자 (Client)
 - 기관명 (Name) : 피씨테스트코리아 주식회사
 - 주소 (Address) : 경기도 용인시 기흥구 흥덕1로 13, 피136, 피137호(영덕동, 흥덕 IT 밸리)
2. 대상 품목 (Measurement Item) ◇ HCT 등록번호 : 369547
 - 기기명 (Description) : HARMONIC MIXER
 - 제작회사 및 형식(Manufacturer and Model Name) : ROHDE & SCHWARZ / FS-Z220
 - 기기번호 (Serial Number) : 101015
3. 측정 일자 (Measurement date) : 2020.10.21
4. 측정 환경 (Environment)
 - 온도(Temperature) : (23.1 ± 0.3) °C
 - 습도(Humidity) : (46 ± 3) % R.H.
5. 측정 방법 (Measurement method used)

상기 기기는 고주파 스펙트럼 분석기의 교정절차(HCT-CS-125-40641)에 따라 국가측정표준기관으로부터 측정의 소급성이 확보된 아래의 표준장비와 자체 점검된 장비를 사용하여 측정 되었음.

측정에 사용한 표준장비 명세 (List of used standards/specifications)

기기명 (Description)	제작회사 및 형식 (Manufacturer and Model Name)	기기번호 (Serial Number)	차기교정예정일자 (The due date of next Calibration)	교정기관 (Calibration laboratory)
EXG ANALOG SIGNAL GENERATOR	KEYSIGHT N5173B	MY53270544	2021/06/23	(주)에이치시티
ERICKSON POWER METER	VDI PM5	394V	측정	(주)에이치시티
WR-05 MULTIPLIER SOURCE MODULE	OML S05MS-A	160419-1	측정	(주)에이치시티

6. 측정 결과 (Measurement result) : 측정결과 참조 (Refer to attachment)
- ※ 이 측정 결과는 의뢰자가 제시한 시료 및 시료명에만 한정됩니다.
The measurement results shown in this report refer only to the sample(s) measured unless otherwise stated.

확 인 (Affirmation)	작성자 (Tested by)	승인자 (Approved by)
	성명 (Name) : 박민지	
		직위 (Title) : 기술책임자(Technical Manager)
		성명 (Name) : 이송찬

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2020. 10. 21

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(주)에이치시티 대표이사
President, HCT Co., Ltd.



※ 측정 결과는 측정기의 정밀정확도에 영향을 미치는 요소(과부하, 온도, 습도 등)의 급격한 변화가 발생한 경우에는 무효가 됩니다. If any significant instability or other adverse factor(overload, temperature, humidity etc.) manifests itself before, during or after calibration, and is likely to affect the validity of the calibration.

F-02P-02-010 (Rev. 01)

FCC ID: A3LAT1K06-A10		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 159 of 161

10.0 APPENDIX B

10.1 Introduction (KDB 484596 Section 3 a)

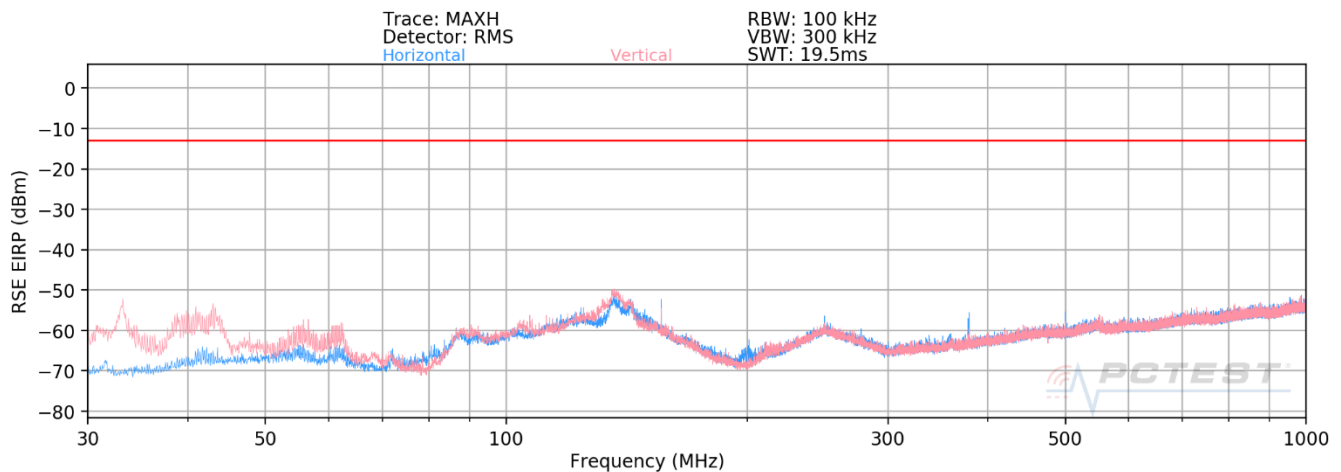
The applicant takes full responsibility that the test data as referenced FCC ID: A3LAT1K06-A00 represents compliance for FCC ID: A3LAT1K06-A10.

10.2 Explain the Differences (KDB 484596 Section 3 b)

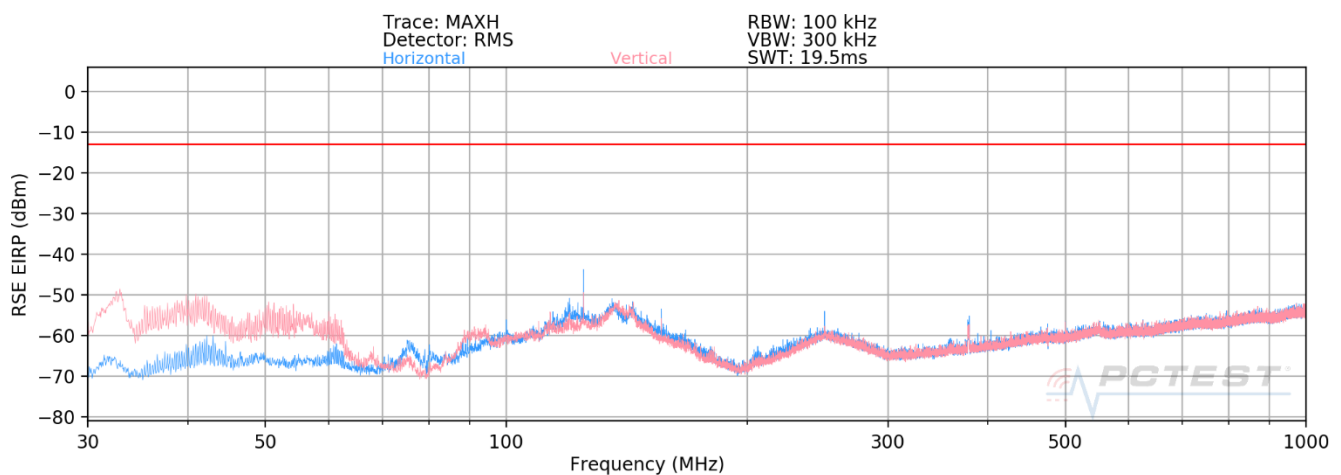
FCC ID A3LAT1K06-A00 is powered by AC voltage source. For A3LAT1K06-A10 is powered by DC voltage source which only different of power supply source condition is not affected to declared RF parameters because other components are identical except.

10.3 Spot Check Verification Data (KDB 484596 Section 3 c)

Spot check verification is adopted to below 1 GHz Radiated emission test case which only affect to emission changing due to power supply difference. However, there is no emission detected. Thus, FCC ID A3LAT1K06-A00 and FCC ID A3LAT1K06-A10 test result can be identical because both are using same RF components.



Plot 10-1. A3LAT1K06-A00 Radiated Spurious Plot 30 MHz-1 GHz (1CC QPSK Mid Ch.)




Plot 10-2. A3LAT1K06-A10 Radiated Spurious Plot 30 MHz-1 GHz (1CC QPSK Mid Ch.)

FCC ID: A3LAT1K06-A10	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 160 of 161

10.4 Reference Section (KDB 484596 Section 3 d)

A matrix has been provided the source data for rule part, frequency range, and emission designator as required by KDB 484596:

Rule Part	Frequency Range(MHz)	Emission Designator	Source Data FCC ID	Exhibit Name(s)
30	37000 - 40000	94M5G7D 94M5W7D 788MG7D 788MW7D	A3LAT1K06-A00	14. FCC RF Test Report 15. MPE Test Report

FCC ID: A3LAT1K06-A10	 <small>Proud to be part of element</small>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 8K21011301-02-R1.A3L	Test Dates: 01/18/2021-02/05/2021	EUT Type: AU(AT1K06)		Page 161 of 161