

Plot 7-97. Radiated Spurious Pre-Scan 18 – 40 GHz - CH.9 - ANT 2

Channel:	9
Frequency (MHz):	7987.2
Preamble ID	9
Config	SP3

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Dist. Corr. Factor [dB]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1525	RMS	V	-	-	-73.16	-9.43	-12.64	-83.49	-75.30	-8.19
1996	RMS	V	150	106	-63.27	-8.59	-12.64	-72.76	-61.30	-11.46
10526	RMS	V	-	-	-75.61	7.32	-12.64	-69.19	-41.30	-27.89
12936	RMS	V	-	-	-76.36	8.67	-12.64	-68.59	-61.30	-7.29
14849	RMS	V	-	-	-76.12	12.41	-12.64	-64.61	-61.30	-3.31
15970	RMS	V	-	-	-76.12	6.73	-12.64	-70.29	-61.30	-8.99

Table 7-17. Radiated Spurious Emissions CH. 9 – ANT2

Channel:	9
Frequency (MHz):	7987.2
Preamble ID	9
Config	SP3

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Dist. Corr. Factor [dB]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1223	RMS	H	-	-	-86.65	-11.47	-12.64	-99.02	-85.30	-13.72
1229	RMS	H	-	-	-86.89	-11.44	-12.64	-99.23	-85.30	-13.93
1239	RMS	H	-	-	-86.95	-11.38	-12.64	-99.24	-85.30	-13.94
1560	RMS	H	-	-	-87.32	-9.27	-12.64	-97.49	-85.30	-12.19
1600	RMS	H	-	-	-86.03	-9.43	-12.64	-96.35	-85.30	-11.05
1609	RMS	H	-	-	-86.92	-9.49	-12.64	-97.31	-85.30	-12.01

Table 7-18. Radiated Spurious Emissions CH. 9 – ANT2 – GPS BANDS

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7.6 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209(a), §15.519(c); RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-19 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-19. Radiated Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagrams below.

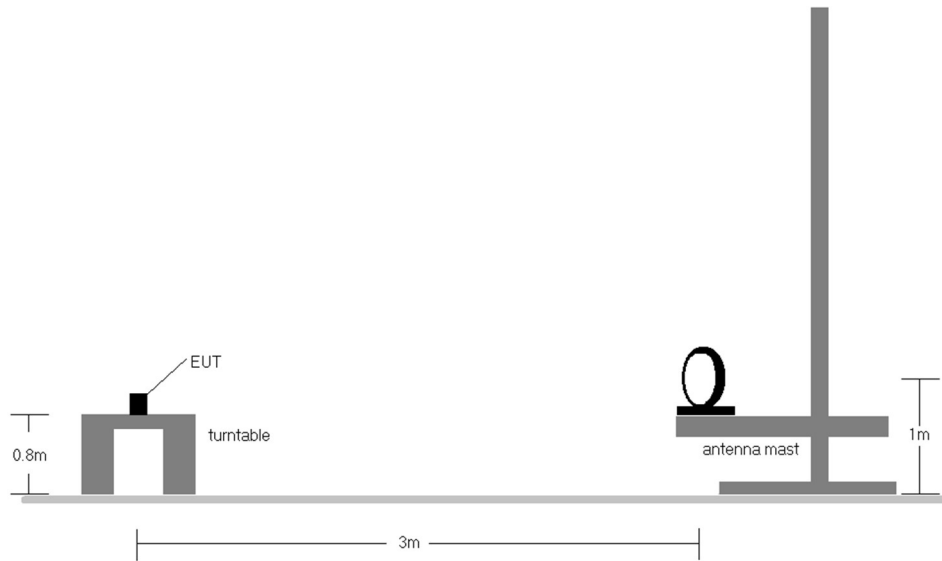


Figure 7-4. Radiated Test Setup < 30Mhz

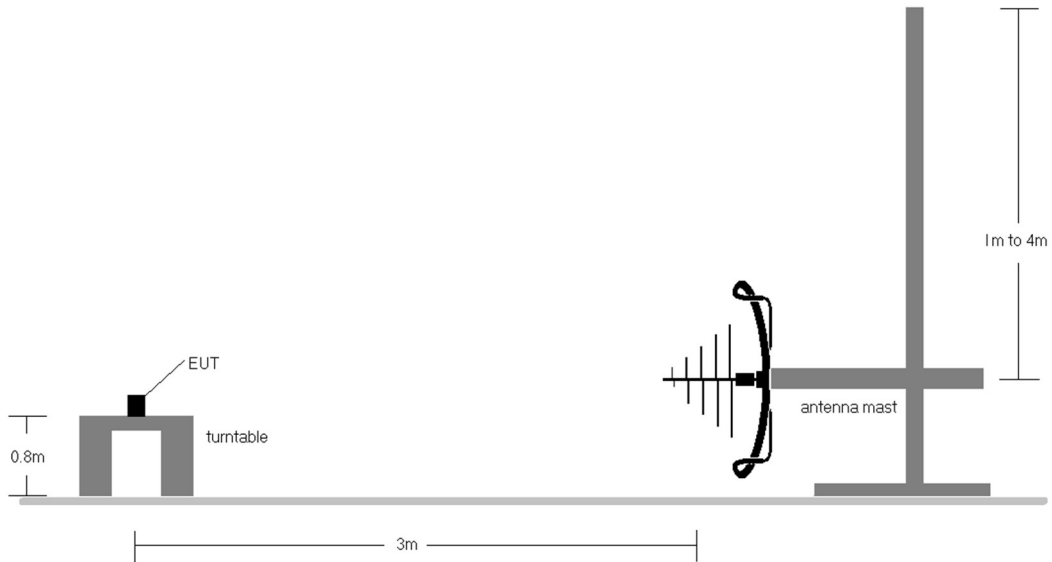


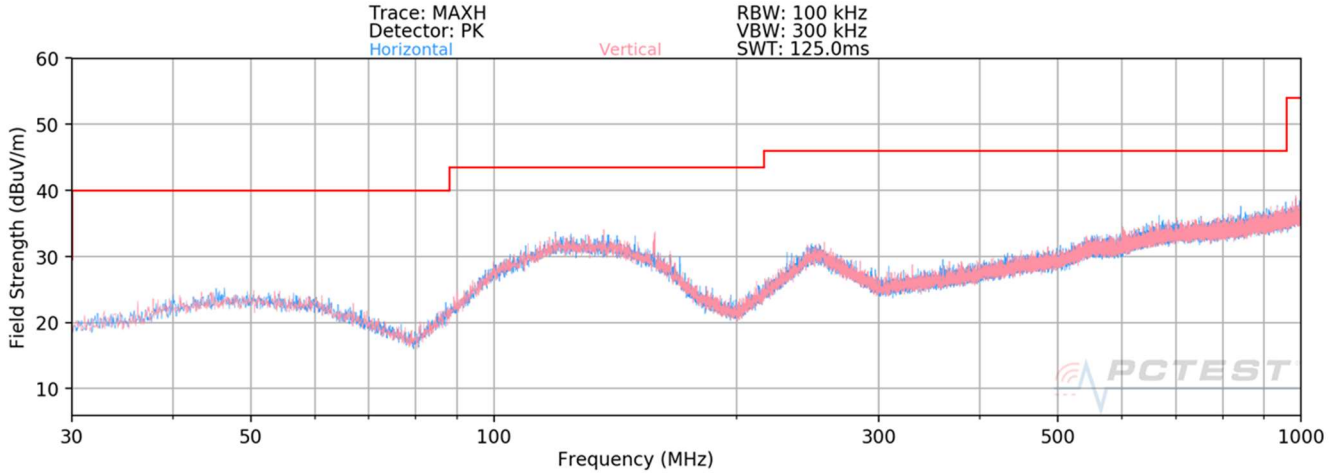
Figure 7-5. Radiated Test Setup < 1GHz

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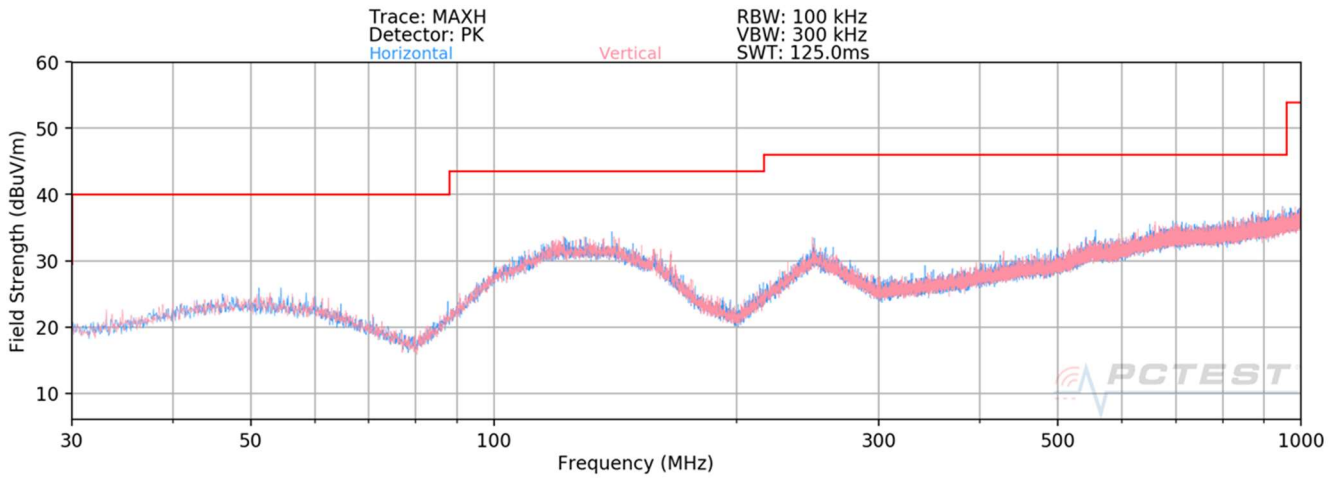
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen(8.10) are below the limit shown in Table 7-19.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
4. Emissions were measured at a 3 meter test distance.
5. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
6. No spurious emissions were detected within 20dB of the limit below 30MHz.
7. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
8. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

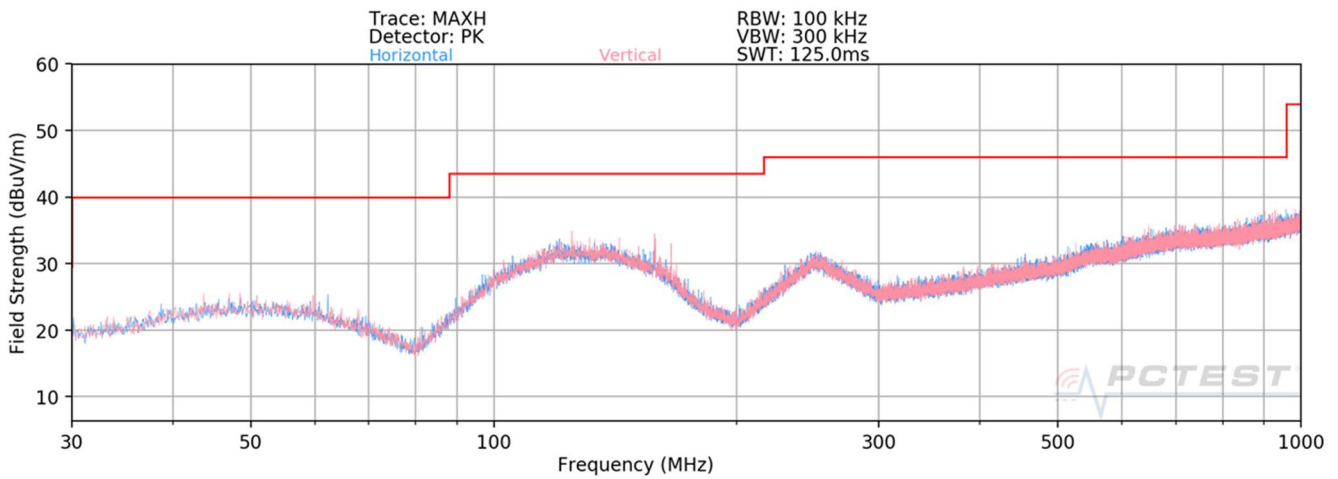
FCC ID: A3LSMS906E		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-98. 30MHz - 1 GHz Pre-Scan Plots ANT1 – CH 5

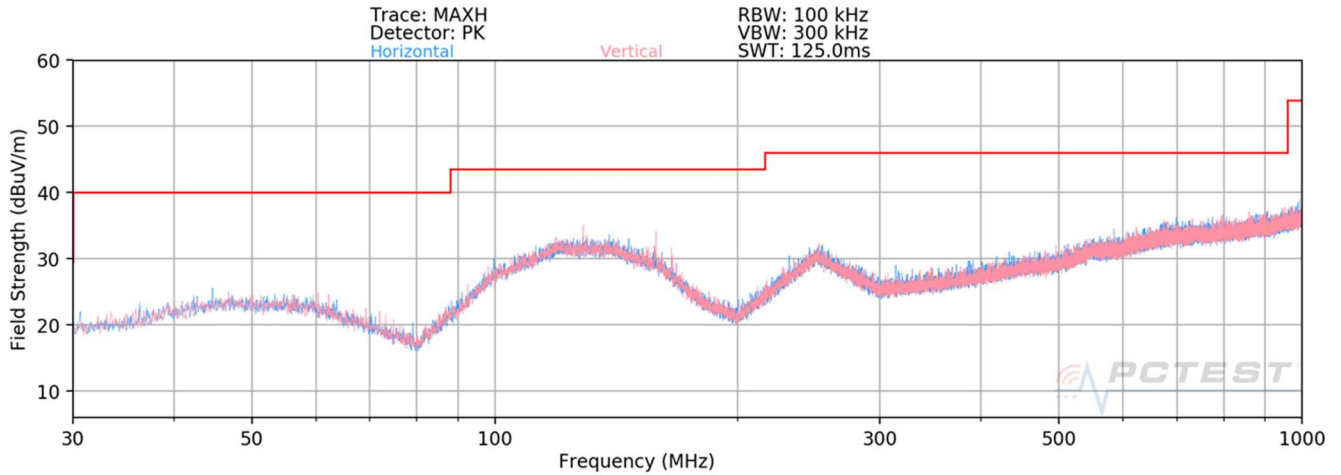


Plot 7-99. 30MHz - 1 GHz Pre-Scan Plots ANT1 – CH 9



Plot 7-100. 30MHz - 1 GHz Pre-Scan Plots ANT2 – CH 5

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Plot 7-101. 30MHz - 1 GHz Pre-Scan Plots ANT2 – CH 9

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7.7 Line Conducted Measurement Data

§15.207

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

All emissions must not exceed the limits shown in Table 7-20 per FCC 15.207 and RSS-Gen (8.8).

Frequency of emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-20. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.4-2014

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = RMS
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the test setup photos provided.

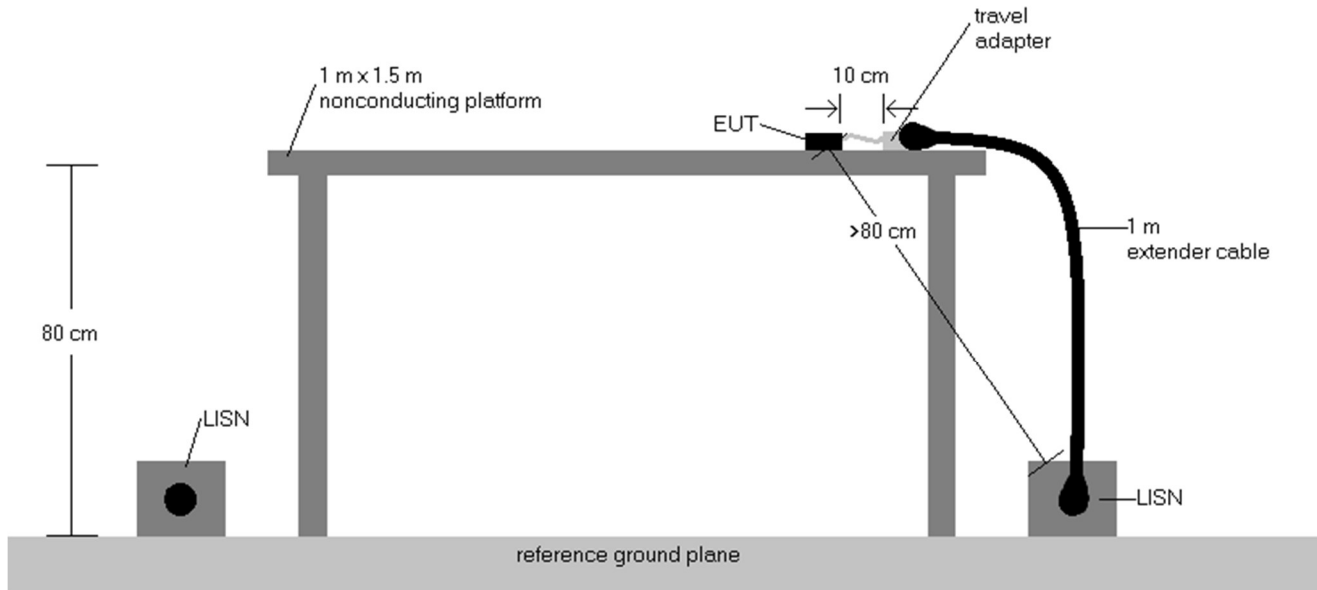
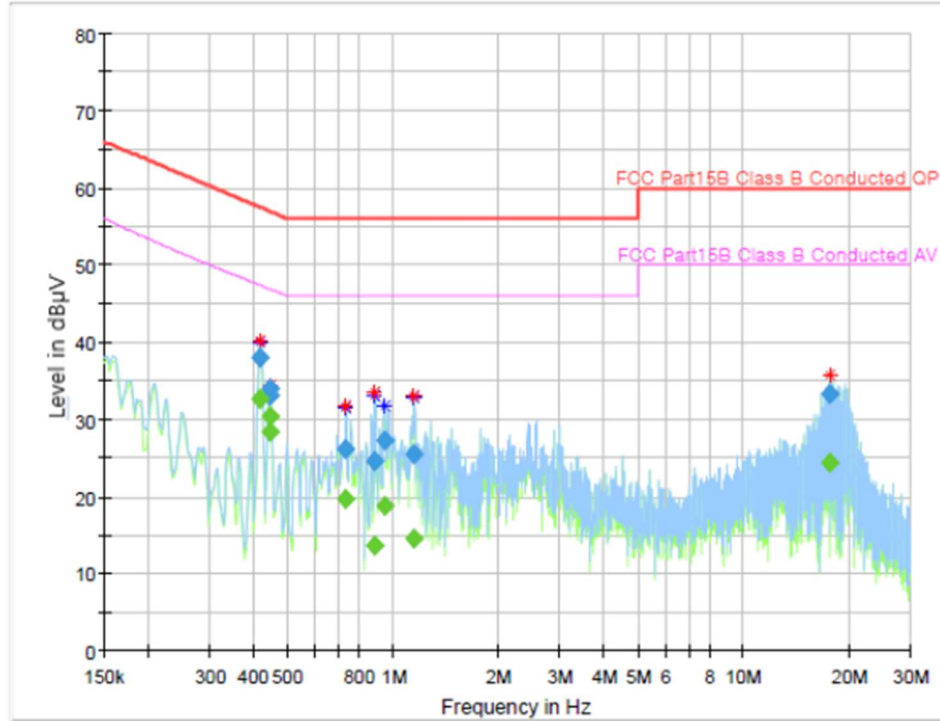


Figure 7-6. Test Instrument & Measurement Setup

Test Notes

1. All Modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 and RSS-Gen.
3. L1 = Phase; N = Neutral
4. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
5. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Reading (dB}\mu\text{V)} + \text{Factor (dB)}$
6. $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

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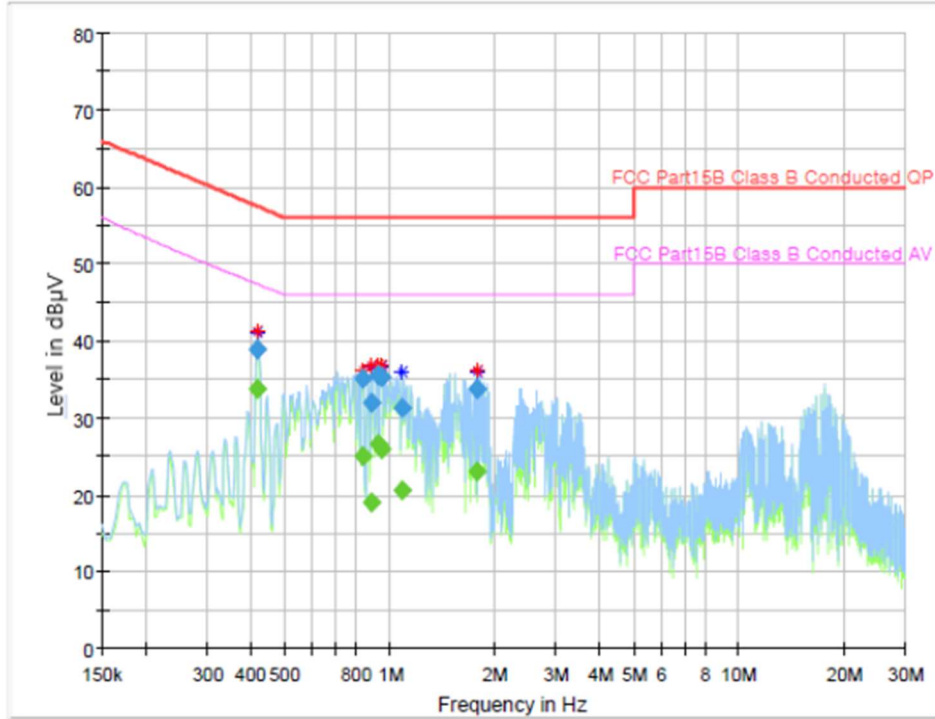


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.418650	---	32.67	47.35	14.68	1000.0	9.000	L1	9.6
0.418650	37.98	---	57.48	19.50	1000.0	9.000	L1	9.6
0.448500	---	30.45	46.82	16.37	1000.0	9.000	L1	9.6
0.448500	33.91	---	56.90	22.99	1000.0	9.000	L1	9.6
0.735060	---	19.72	46.00	26.28	1000.0	9.000	L1	9.6
0.735060	26.24	---	56.00	29.76	1000.0	9.000	L1	9.6
0.946995	---	18.76	46.00	27.24	1000.0	9.000	L1	9.6
0.946995	27.21	---	56.00	28.79	1000.0	9.000	L1	9.6
1.149975	---	14.50	46.00	31.50	1000.0	9.000	L1	9.6
1.149975	25.51	---	56.00	30.49	1000.0	9.000	L1	9.6
17.680905	---	24.26	50.00	25.74	1000.0	9.000	L1	10.0
17.680905	33.26	---	60.00	26.74	1000.0	9.000	L1	10.0

Plot 7-102. Line Conducted Plot (L1) ANT 1 – CH 5

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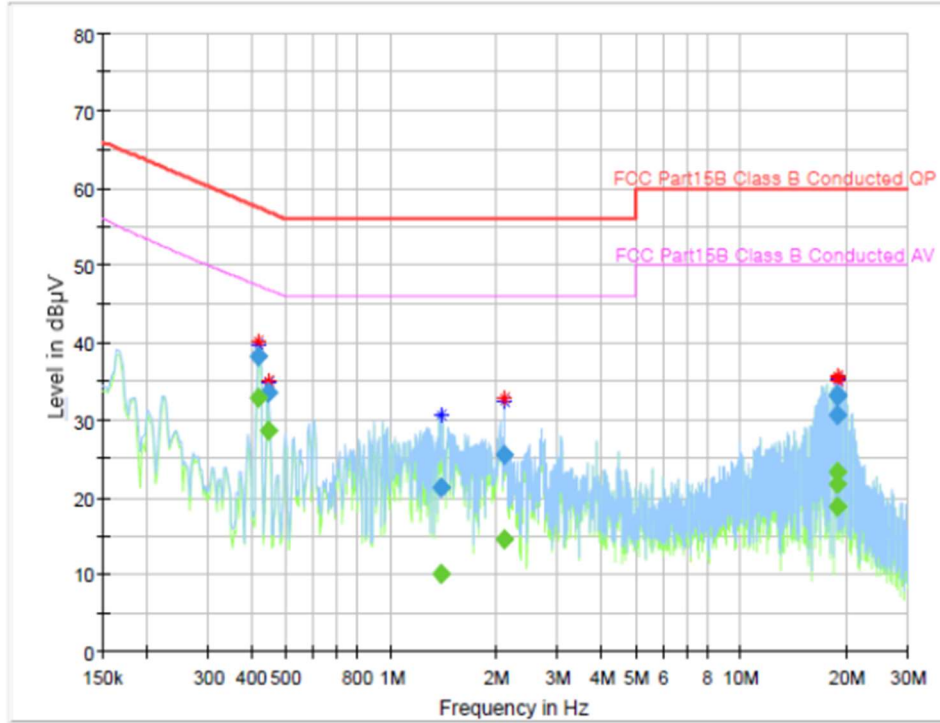


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.418650	---	33.72	47.35	13.64	1000.0	9.000	N	10.0
0.418650	38.81	---	57.48	18.66	1000.0	9.000	N	10.0
0.842520	---	24.94	46.00	21.06	1000.0	9.000	N	9.9
0.842520	35.07	---	56.00	20.93	1000.0	9.000	N	9.9
0.890280	---	19.08	46.00	26.92	1000.0	9.000	N	9.9
0.890280	31.90	---	56.00	24.10	1000.0	9.000	N	9.9
0.923115	---	26.56	46.00	19.44	1000.0	9.000	N	9.9
0.923115	35.62	---	56.00	20.38	1000.0	9.000	N	9.9
1.087290	---	20.49	46.00	25.51	1000.0	9.000	N	9.8
1.087290	31.38	---	56.00	24.62	1000.0	9.000	N	9.8
1.791750	---	22.93	46.00	23.07	1000.0	9.000	N	9.7
1.791750	33.84	---	56.00	22.16	1000.0	9.000	N	9.7

Plot 7-103. Line Conducted Plot (N) ANT 1 – CH 5

FCC ID: A3LSMS906E	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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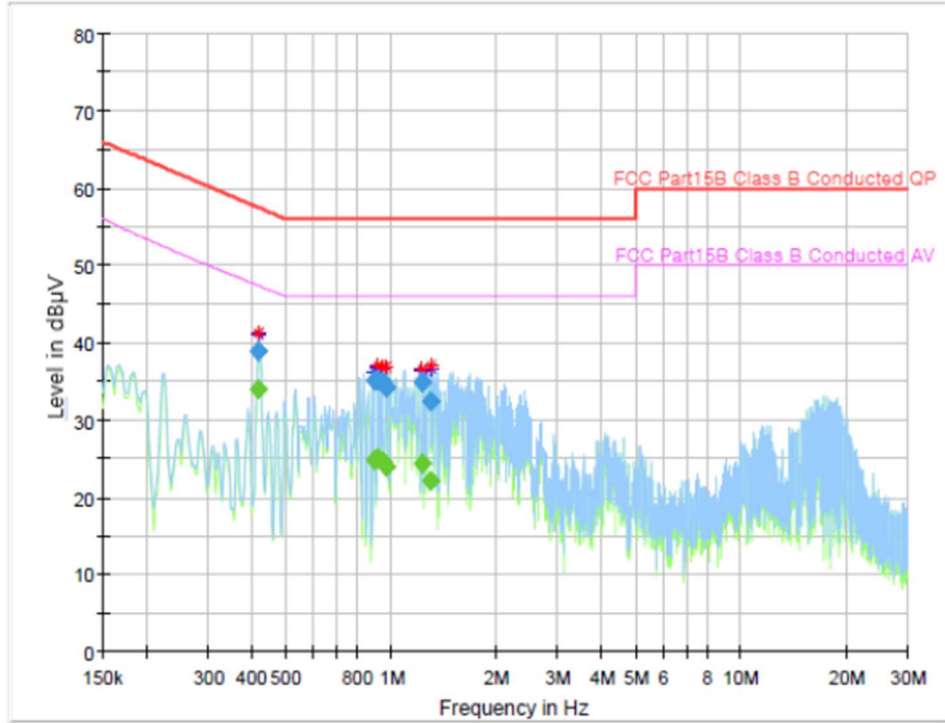


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.418650	---	32.94	47.35	14.42	1000.0	9.000	L1	9.6
0.418650	38.14	---	57.48	19.33	1000.0	9.000	L1	9.6
0.445515	---	28.71	46.88	18.17	1000.0	9.000	L1	9.6
0.445515	33.43	---	56.96	23.53	1000.0	9.000	L1	9.6
1.385790	---	10.09	46.00	35.91	1000.0	9.000	L1	9.7
1.385790	21.29	---	56.00	34.71	1000.0	9.000	L1	9.7
2.111145	---	14.62	46.00	31.38	1000.0	9.000	L1	9.7
2.111145	25.41	---	56.00	30.59	1000.0	9.000	L1	9.7
18.892815	---	18.74	50.00	31.26	1000.0	9.000	L1	10.0
18.892815	30.64	---	60.00	29.36	1000.0	9.000	L1	10.0
18.943560	---	21.63	50.00	28.37	1000.0	9.000	L1	10.0
18.943560	33.17	---	60.00	26.83	1000.0	9.000	L1	10.0

Plot 7-104. Line Conducted Plot (L1) ANT 2 – CH 5

FCC ID: A3LSMS906E	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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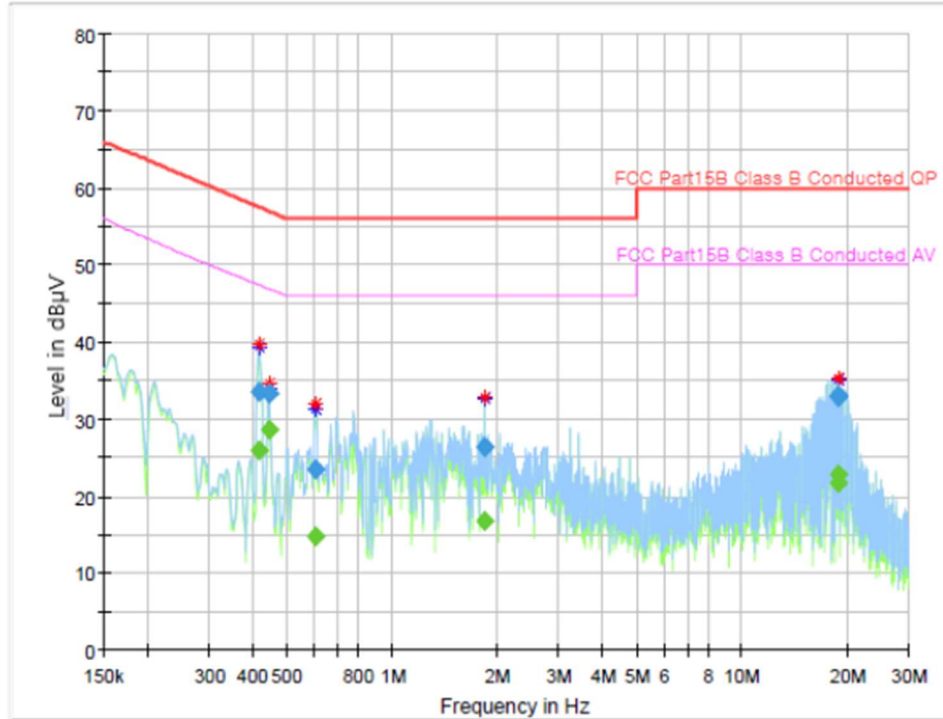


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.418650	---	34.03	47.35	13.33	1000.0	9.000	N	10.0
0.418650	38.97	---	57.48	18.51	1000.0	9.000	N	10.0
0.893265	---	24.82	46.00	21.18	1000.0	9.000	N	9.9
0.893265	35.17	---	56.00	20.83	1000.0	9.000	N	9.9
0.946995	---	24.65	46.00	21.35	1000.0	9.000	N	9.8
0.946995	34.81	---	56.00	21.19	1000.0	9.000	N	9.8
0.973860	---	24.02	46.00	21.98	1000.0	9.000	N	9.8
0.973860	34.24	---	56.00	21.76	1000.0	9.000	N	9.8
1.233555	---	24.33	46.00	21.67	1000.0	9.000	N	9.8
1.233555	34.80	---	56.00	21.20	1000.0	9.000	N	9.8
1.296240	---	22.14	46.00	23.86	1000.0	9.000	N	9.8
1.296240	32.38	---	56.00	23.62	1000.0	9.000	N	9.8

Plot 7-105. Line Conducted Plot (N) ANT 2 – CH 5

FCC ID: A3LSMS906E		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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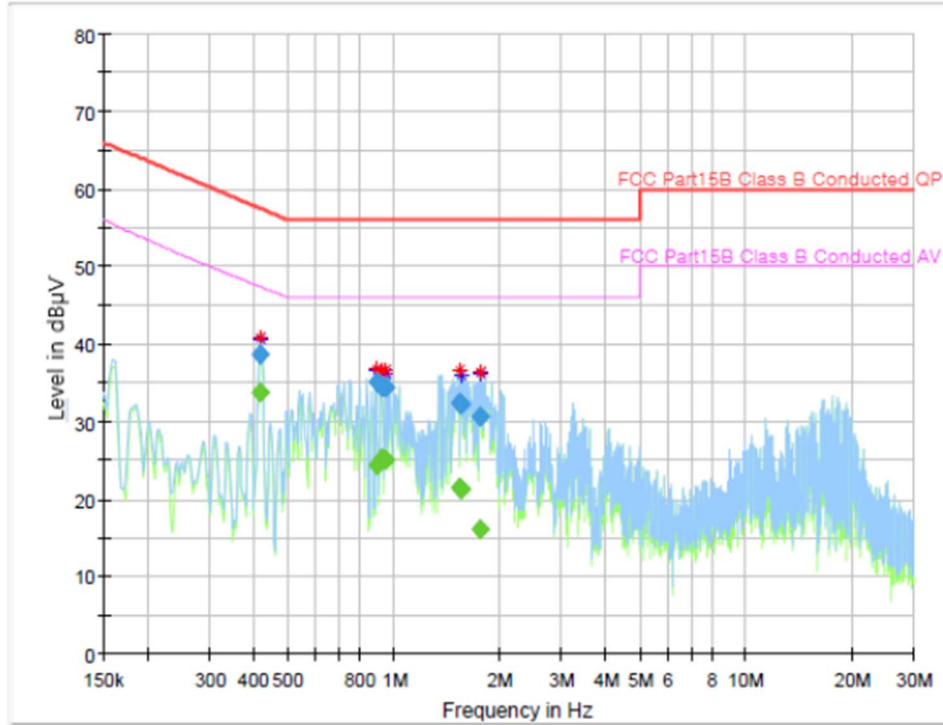


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.415665	---	26.00	47.41	21.41	1000.0	9.000	L1	9.6
0.415665	33.46	---	57.53	24.08	1000.0	9.000	L1	9.6
0.445515	---	28.49	46.88	18.38	1000.0	9.000	L1	9.6
0.445515	33.27	---	56.96	23.69	1000.0	9.000	L1	9.6
0.603720	---	14.64	46.00	31.36	1000.0	9.000	L1	9.6
0.603720	23.36	---	56.00	32.64	1000.0	9.000	L1	9.6
1.845480	---	16.84	46.00	29.16	1000.0	9.000	L1	9.7
1.845480	26.32	---	56.00	29.68	1000.0	9.000	L1	9.7
18.913710	---	22.80	50.00	27.20	1000.0	9.000	L1	10.0
18.913710	33.15	---	60.00	26.85	1000.0	9.000	L1	10.0
18.973410	---	21.67	50.00	28.33	1000.0	9.000	L1	10.0
18.973410	32.95	---	60.00	27.05	1000.0	9.000	L1	10.0

Plot 7-106. Line Conducted Plot (L1) ANT 1 - CH 9

FCC ID: A3LSMS906E	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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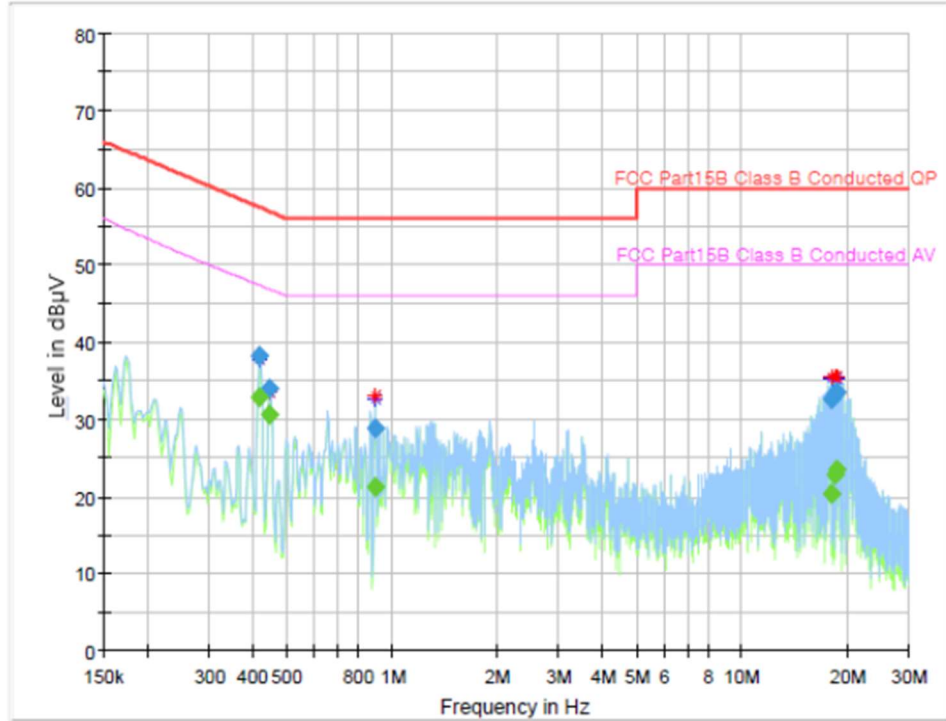


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.418650	---	33.67	47.35	13.68	1000.0	9.000	N	10.0
0.418650	38.69	---	57.48	18.78	1000.0	9.000	N	10.0
0.893265	---	24.35	46.00	21.65	1000.0	9.000	N	9.9
0.893265	35.05	---	56.00	20.95	1000.0	9.000	N	9.9
0.952965	---	25.00	46.00	21.00	1000.0	9.000	N	9.8
0.952965	34.39	---	56.00	21.61	1000.0	9.000	N	9.8
1.546980	---	21.56	46.00	24.44	1000.0	9.000	N	9.8
1.546980	32.42	---	56.00	23.58	1000.0	9.000	N	9.8
1.549965	---	21.29	46.00	24.71	1000.0	9.000	N	9.8
1.549965	32.20	---	56.00	23.80	1000.0	9.000	N	9.8
1.755930	---	16.02	46.00	29.98	1000.0	9.000	N	9.7
1.755930	30.55	---	56.00	25.45	1000.0	9.000	N	9.7

Plot 7-107. Line Conducted Plot (N) ANT 1 – CH 9

FCC ID: A3LSMS906E		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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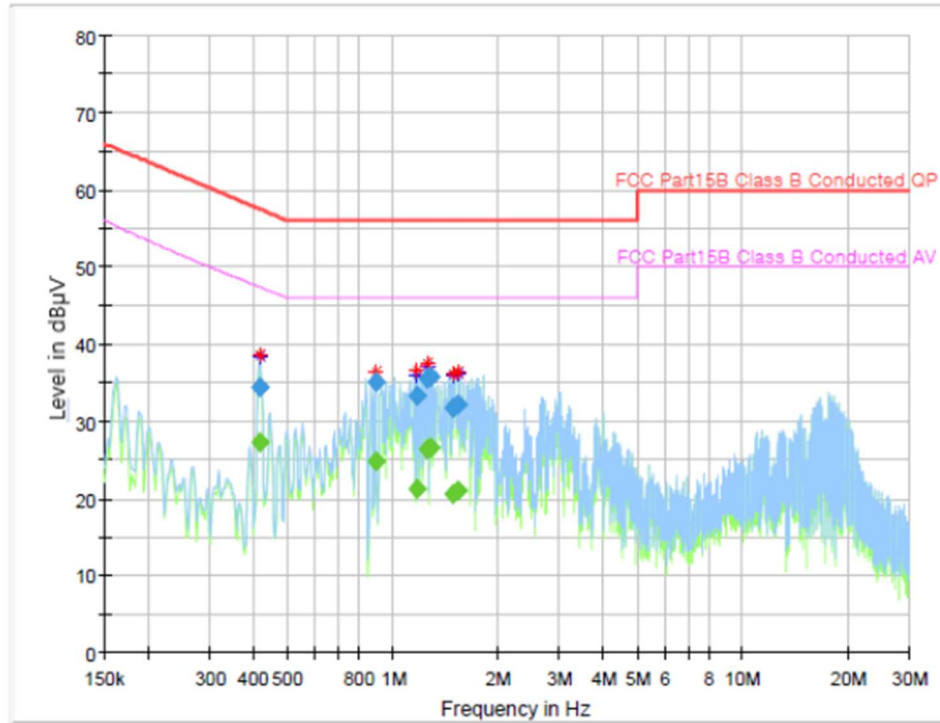


Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.418650	---	32.86	47.35	14.49	1000.0	9.000	L1	9.6
0.418650	38.13	---	57.48	19.34	1000.0	9.000	L1	9.6
0.448500	---	30.60	46.82	16.22	1000.0	9.000	L1	9.6
0.448500	33.99	---	56.90	22.91	1000.0	9.000	L1	9.6
0.896250	---	21.19	46.00	24.81	1000.0	9.000	L1	9.6
0.896250	28.77	---	56.00	27.23	1000.0	9.000	L1	9.6
18.012240	---	20.23	50.00	29.77	1000.0	9.000	L1	10.0
18.012240	32.58	---	60.00	27.42	1000.0	9.000	L1	10.0
18.546555	---	22.73	50.00	27.27	1000.0	9.000	L1	10.0
18.546555	33.35	---	60.00	26.65	1000.0	9.000	L1	10.0
18.627150	---	23.52	50.00	26.48	1000.0	9.000	L1	10.0
18.627150	33.52	---	60.00	26.48	1000.0	9.000	L1	10.0

Plot 7-108. Line Conducted Plot (L1) ANT 2 – CH 9

FCC ID: A3LSMS906E	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2110010116-17.A3L	Test Dates: 9/27 – 10/10/2021	EUT Type: Portable Handset		Page 84 of 86



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.415665	---	27.27	47.41	20.14	1000.0	9.000	N	10.0
0.415665	34.36	---	57.53	23.18	1000.0	9.000	N	10.0
0.893265	---	24.69	46.00	21.31	1000.0	9.000	N	9.9
0.893265	35.15	---	56.00	20.85	1000.0	9.000	N	9.9
1.176840	---	21.18	46.00	24.82	1000.0	9.000	N	9.8
1.176840	33.23	---	56.00	22.77	1000.0	9.000	N	9.8
1.290270	---	26.58	46.00	19.42	1000.0	9.000	N	9.8
1.290270	35.64	---	56.00	20.36	1000.0	9.000	N	9.8
1.496235	---	20.46	46.00	25.54	1000.0	9.000	N	9.8
1.496235	31.69	---	56.00	24.31	1000.0	9.000	N	9.8
1.541010	---	20.98	46.00	25.02	1000.0	9.000	N	9.8
1.541010	32.27	---	56.00	23.73	1000.0	9.000	N	9.8

Plot 7-109. Line Conducted Plot (N) ANT 2 – CH 9

FCC ID: A3LSMS906E	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2110010116-17.A3L	Test Dates: 9/27 – 10/10/2021	EUT Type: Portable Handset		Page 85 of 86

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS906E** has been tested to comply with the requirements specified in §15.519 and §15.521 of the FCC rules.

FCC ID: A3LSMS906E	 <small>Proud to be part of  element</small>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2110010116-17.A3L	Test Dates: 9/27 – 10/10/2021	EUT Type: Portable Handset	Page 86 of 86	