

MEASUREMENT REPORT

FCC Part 15B

Applicant Name:

Samsung Electronics Co., Ltd.
 129, Samsung-ro,
 Yeongtong-gu, Suwon-si
 Gyeonggi-do, 16677, Korea

Date of Testing:

06/15 - 6/23/2021

Test Site/Location:

PCTEST Lab. Yongin-Si, Gyeonggi-do, South Korea

Test Report Serial No.:

1K2106030020-04.A3L

FCC ID:

A3LSMA127M

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SM-A127M/DS

Additional model(s):

SM-A127M

EUT Type:

Portable Handset

FCC Classification:

Part 15 Class B Computing Device Peripheral (JBP)

FCC Rule Part(s):

FCC Part 15 Subpart B

Test Procedure(s):

ANSI C63.4-2014

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and has been tested in accordance with the measurement procedures specified in ANSI C63.4-2014 (See Test Report). These measurements were performed with no deviation from the standards. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Prepared by

Reviewed by

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Test Report S/N: 1K2106030020-04.A3L	Test Dates: 06/15 - 6/23/2021	EUT Type: Portable Handset		Page 1 of 28

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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and Innovation, Science and Economic Development Canada.

1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST facility located at 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do, 16954, South Korea. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do, 16954 South Korea.

- PCTEST is an ISO 17025-2017 accredited test facility under the National Voluntary Laboratory Accreditation Program (NVLAP) with Certificate number 600143-0 for Specific Absorption Rate (SAR), and Electromagnetic Compatibility (EMC) & Telecommunications testing for FCC and Innovation, Science, and Economic Development Canada (ISED) rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- PCTEST facility is a registered (26168) test laboratory with the site description on file with ISED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMA127M**. The test data contained in this report pertains only to the emissions due to the digital circuitry of the EUT.

Test Device Serial No.: 3222M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, Bluetooth (1x, EDR, LE)

2.3 Test Configuration

The EUT was tested in the following configurations for conducted emissions:

Conducted Test Configuration 1: Camera on (rear) + Charging (with travel adapter)
 Conducted Test Configuration 2: Camera on (front) + Charging (with travel adapter)
 Conducted Test Configuration 3: Charging (with travel adapter)
 Conducted Test Configuration 4: Video + Audio playback from internal memory data + Charging (with travel adapter)
 Conducted Test Configuration 5: USB Data Communication with PC (from external memory data)

The EUT was tested in the following configurations for radiated emissions:

Radiated Test Configuration 1: Camera on (rear) + Charging (with travel adapter)
 Radiated Test Configuration 2: USB Data Communication with PC (from external memory data)
 Radiated Test Configuration 3: Camera on (front) + USB OTG (with USB gender: mouse or keyboard)

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

For more information please see Section 7.0 for test data and the test setup photos document for the test setup photographs.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2014) was used in the measurement of the EUT.

Deviation from measurement procedure.....None

3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by SY cooperation RF Enclosures. The line-conducted facility is located inside a 7m x 3.66m x 2.7m shielded enclosure. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is an ETS Lindgren Model LPRX-4X30 (100dB Attenuation, 14kHz-18GHz) and the two EMI/RFI filters are ETS Lindgren Model LRW-2030-S1 (100dB Minimum Insertion Loss, 14kHz – 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 7.4. The EMI Receiver mode of the R&S ESW was used to perform AC line conducted emissions testing. Automated test software was used to perform the AC line conducted emissions testing. Automated measurement software utilized is Rohde & Schwarz EMC32, Version 10.20.01.

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3.3 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2014. A raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Innco is placed on top of the turn table. For measurements above 1GHz, an additional Innco table is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01.

3.4 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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4.0 SAMPLE CALCULATIONS

4.1 Conducted Emission Measurement Sample Calculation

@ 20.3 MHz

Class B limit = 60.0 dB μ V (Quasi-peak limit)
 Reading = - 57.8 dBm (calibrated quasi-peak level)
 Convert to dB μ V = - 57.8 + 107 = 49.2 dB μ V

 Margin = 49.2 - 60.0 = - 10.8 dB
 = **10.8 dB below limit**

4.2 Radiated Emission Measurement Sample Calculation

@ 66.7 MHz

Class B limit = 100 μ V/m = 40.0 dB μ V/m
 Reading = - 76.0 dBm (calibrated level)
 Convert to dB μ V = - 76.0 + 107 = 31.0 dB μ V
 Antenna Factor + Cable Loss = 5.8 dB/m
 Total = 36.8 dB μ V/m

 Margin = 36.8 - 40.0 = - 3.2 dB
 = **3.2 dB below limit**

Note:

$$\text{Level [dB}\mu\text{V]} = 20 \log_{10} (\text{Level } [\mu\text{V/m}])$$

$$\text{Level [dB}\mu\text{V]} = \text{Level [dBm]} + 107$$

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5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty ($\pm$ dB)
Line Conducted Disturbance	3.07
Radiated Disturbance (<1GHz)	3.01
Radiated Disturbance (>1GHz)	5.56

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6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	N9030A	PXA Signal Analyzer	6/29/2020	Annual	6/28/2021	MY49432391
Anritsu	S820E	Cable and Antenna Analyzer	6/29/2020	Annual	6/28/2021	1839097
Anritsu	MA24106A	USB Power Sensor	6/29/2020	Annual	6/28/2021	1244512
Com-Power	AL-130R	Active Loop Antenna	10/29/2020	Biennial	10/28/2022	10160045
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	7/9/2019	Biennial	7/8/2021	9162-217
Sunol Sciences	DRH-118	Horn Antenna	8/9/2019	Biennial	8/8/2021	A102416-1
Keysight Technologies	N9030B	PXA Signal Analyzer	5/1/2021	Annual	4/30/2022	MY57142018
Mini-Circuits	ZHDC-16-63-S+	Coupler	6/29/2020	Annual	6/28/2021	F709401716
Mini-Circuits	ZNDC-18-2G-S+	Coupler	6/29/2020	Annual	6/28/2021	F280401542
Mini-Circuits	BW-N10W5+	Attenuator	6/29/2020	Annual	6/28/2021	1607
Mini-Circuits	BW-N10W5+	Attenuator	6/29/2020	Annual	6/28/2021	1607
Rohde & Schwarz	TS-PR18	Preamplifier	6/29/2020	Annual	6/28/2021	102141
Rohde & Schwarz	TS-PR1840	Preamplifier	6/29/2020	Annual	6/28/2021	100049
Rohde & Schwarz	ENV216	Two-Line V-Network	5/24/2021	Annual	5/23/2022	101319
Rohde & Schwarz	FSW43	Signal & Spectrum Analyzer	9/17/2020	Annual	9/16/2021	101250
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	2/19/2021	Annual	2/18/2022	102131

Table 6-1. Annual Test Equipment Calibration Schedule

Note:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

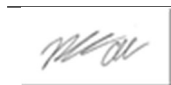
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7.0 TEST DATA

7.1 Summary

Test Date(s): 06/15 - 6/23/2021

Test Engineer:



FCC Part 15 Section	Description	Result
15.107	Conducted Emissions	PASS
15.109	Radiated Emissions	PASS

Table 7-1. Summary of Test Results

7.2 Test Support Equipment

Configuration 1				
Samsung Travel Adapter	Model:	EP-TA200	S/N:	N/A
Samsung USB Cable	Model:	EP-DR140AWE	S/N:	N/A
Configuration 2				
Samsung Travel Adapter	Model:	EP-TA200	S/N:	N/A
Samsung USB Cable	Model:	EP-DR140AWE	S/N:	N/A
Configuration 3				
Samsung Travel Adapter	Model:	EP-TA200	S/N:	N/A
Samsung USB Cable	Model:	EP-DR140AWE	S/N:	N/A
Configuration 4				
Samsung Travel Adapter	Model:	EP-TA200	S/N:	N/A
Samsung USB Cable	Model:	EP-DR140AWE	S/N:	N/A
Configuration 5				
Samsung Travel Adapter	Model:	EP-TA200	S/N:	N/A
Samsung USB Cable	Model:	EP-DR140AWE	S/N:	N/A
Sandisk Ultra microSD	Model:	N/A	S/N:	0186DXLG70HA
Samsung laptop	Model:	NT200B5C	S/N:	JHQL91KF300096K
Samsung AC adapter	Model:	A13-090P3A	S/N:	A090A071L
Iptime hub	Model:	U1003	S/N:	U1003073C73C03964
Configuration 6				
Samsung Travel Adapter	Model:	EP-TA200	S/N:	N/A
Samsung USB Cable	Model:	N/A	S/N:	N/A
Optical Mouse	Model:	HM5061A	S/N:	N/A
Samsung OTG Adapter	Model:	N/A	S/N:	EBX63212004

Table 7-2. Test Support Equipment Used

Note: See test setup photographs for actual system test setup.

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7.3 Radiated Measurement Data

§15.109

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 maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions must not exceed the limits shown in Table 7-3 per FCC 15.109.

Frequency [MHz]	Field Strength Limit [μV/m]
30 – 88	100
88 – 216	150
216 – 960	200
> 960	500

Table 7-3. 3-Meter Radiated Limits (Section 15.109)

Test Procedures Used

ANSI C63.4-2014

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer frequency set to the frequency of the radiated spurious emission of interest
2. RBW = 100kHz, VBW = 300kHz (for emissions between 30MHz – 1GHz)
3. RBW = 1MHz, VBW = 3MHz (for emissions above 1GHz)
4. Detector = Quasi-peak (for emissions between 30MHz – 1GHz)
5. Detector = Peak (for emissions above 1GHz)
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

Test Setup

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

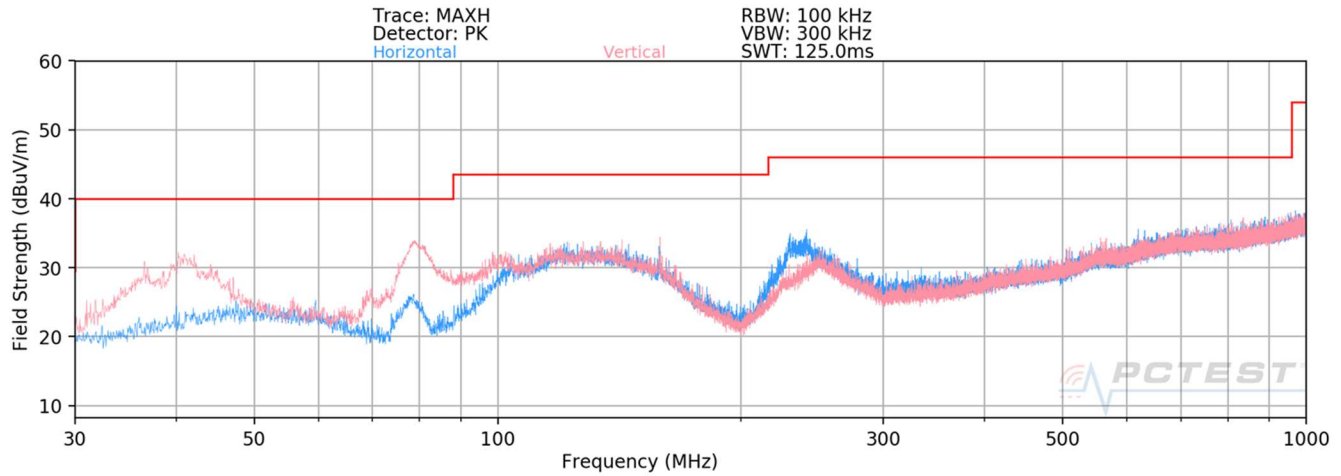
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Test Notes

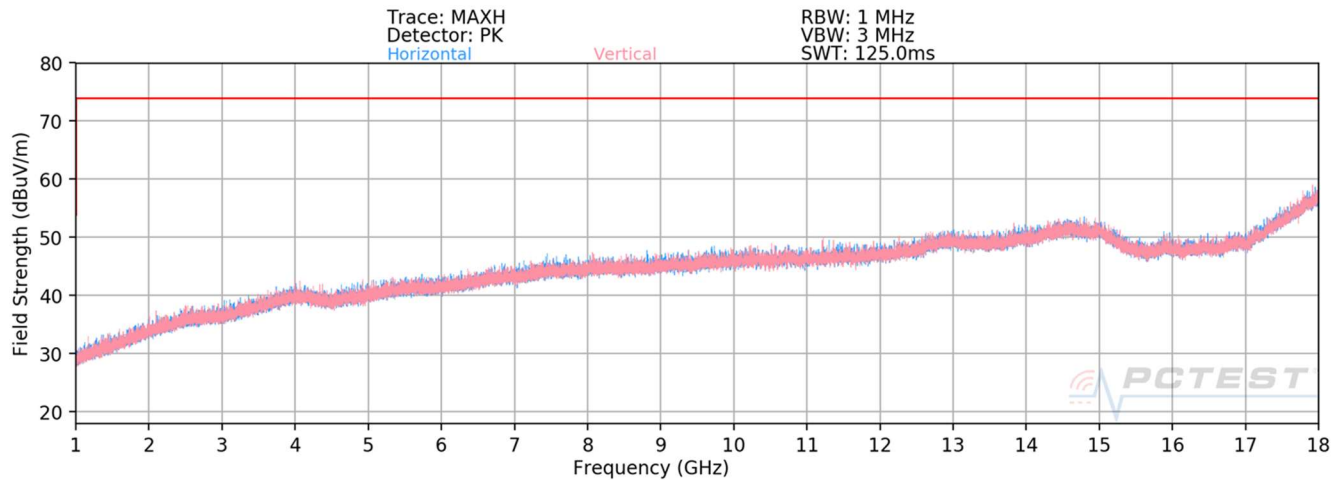
1. All modes of operation were investigated and the worst-case emissions are reported.
2. Radiated emissions were measured from 30MHz –18GHz to ensure that the provisions of 15.33(b)(1) are satisfied with respect to the upper frequency scanning range.
3. The radiated limits for unintentional radiators at a distance of 3 meters are used in the table above, as specified in 15.109(a).
4. All readings are calibrated by a signal generator with accuracy traceable to the National Institute of Standards and Technology (NIST).
5. $AFCL\ (dB/m) = Antenna\ Factor\ (dB/m) + Cable\ Loss\ (dB)$
6. $Level\ (dB\mu V/m) = Analyzer\ Reading\ (dBm) + AFCL\ (dB/m) + 107$
7. $Margin\ (dB) = Field\ strength\ (dB\mu V/m) - Limit\ (dB\mu V/m)$
8. Measurements are made using a CISPR quasi-peak detector with a 120kHz resolution bandwidth. Above 1GHz, peak measurements are made using a peak detector with a resolution bandwidth of 1MHz and a video bandwidth of 3MHz and average measurements are made with a RMS detector using a resolution bandwidth of 1MHz and a video bandwidth of 3MHz.
9. Calibrated linearly polarized broadband and horn antennas were used for measurements below and above 1GHz, respectively. For measurements made below 1GHz, the results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antennas was found to be less than 2:1.
10. Calibrated low-loss microwaves cables and broadband amplifiers are used.

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Radiated Test Config. 1



Plot 7-1. Radiated Spurious Plot below 1GHz [Radiated Test Config. 1]



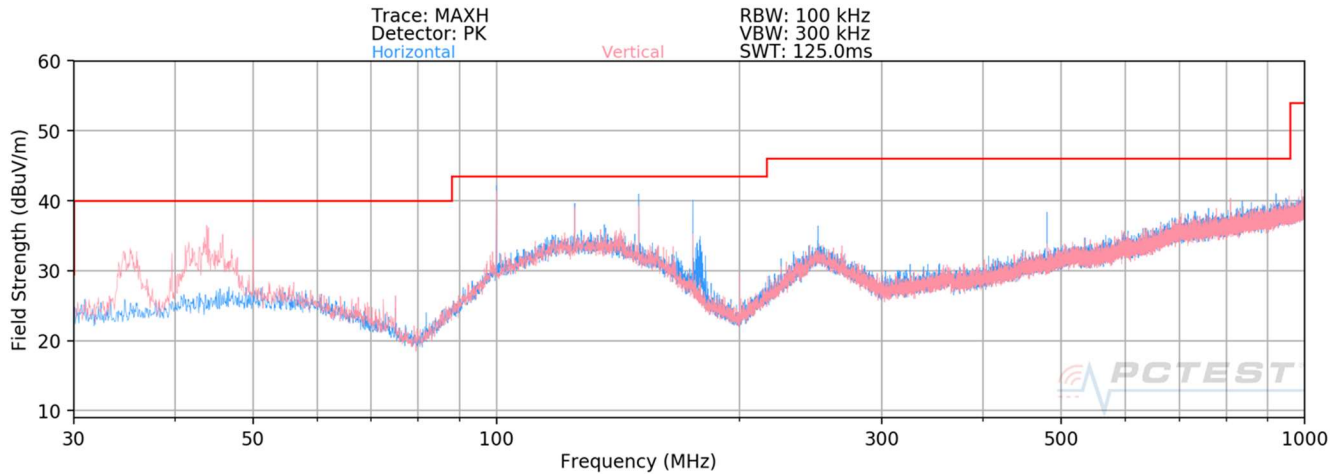
Plot 7-2. Radiated Spurious Plot above 1GHz [Radiated Test Config. 1]

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
42.02	Quasi-Peak	V	129	171	-90.49	14.00	30.51	40.00	-9.49
79.17	Quasi-Peak	V	138	159	-86.07	8.95	29.88	40.00	-10.12
98.65	Quasi-Peak	V	107	30	-96.54	18.41	28.87	43.52	-14.65
158.32	Quasi-Peak	V	129	3	-94.63	20.26	32.63	43.52	-10.90
228.87	Quasi-Peak	V	112	146	-90.34	17.71	34.37	46.02	-11.65
559.93	Quasi-Peak	V	159	7	-104.54	20.62	23.08	46.02	-22.94

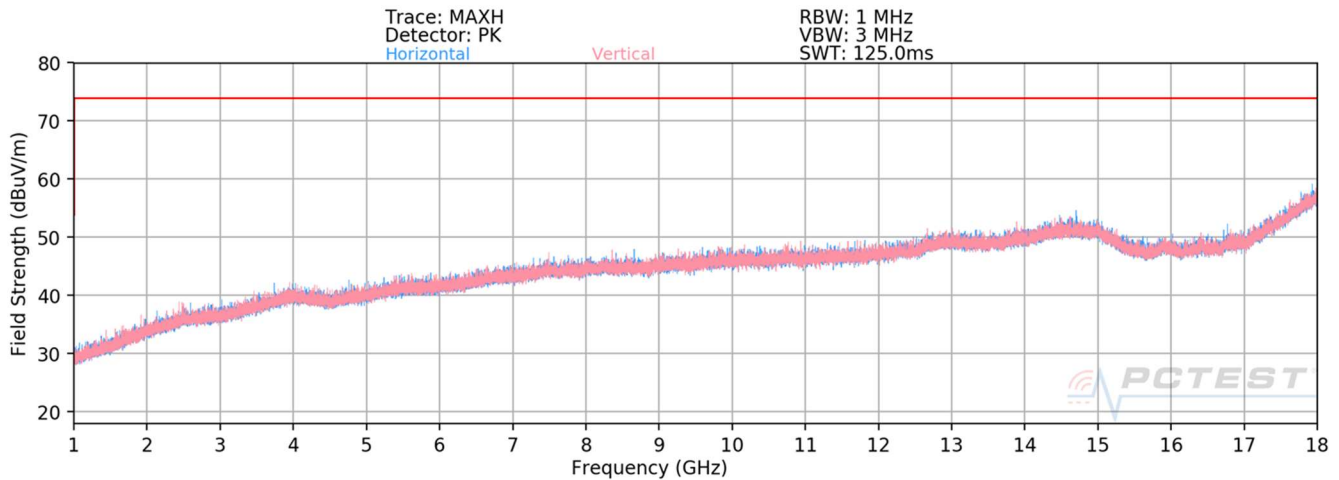
Table 7-4. Radiated Measurements [Radiated Test Config. 1]

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Radiated Test Config. 2



Plot 7-3. Radiated Spurious Plot below 1GHz [Radiated Test Config. 2]



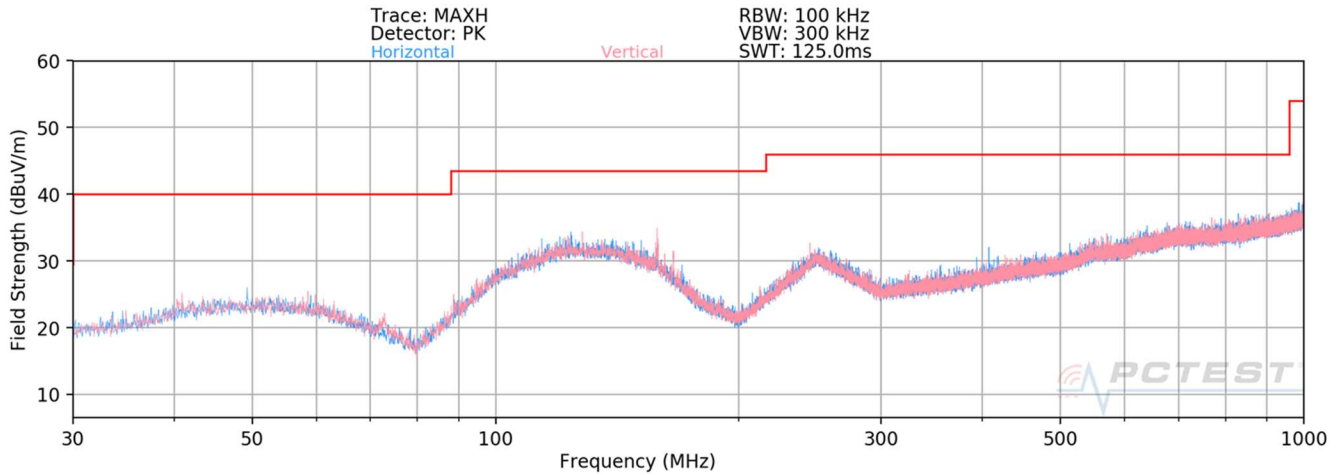
Plot 7-4. Radiated Spurious Plot above 1GHz [Radiated Test Config. 2]

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
43.83	Quasi-Peak	V	108	7	-86.70	14.37	34.67	40.00	-5.33
100.01	Quasi-Peak	H	105	177	-86.64	19.07	39.43	43.52	-4.09
125.00	Quasi-Peak	H	184	173	-97.02	22.72	32.70	43.52	-10.82
150.00	Quasi-Peak	H	210	196	-94.40	21.29	33.89	43.52	-9.64
175.00	Quasi-Peak	H	181	225	-83.70	15.86	39.16	43.52	-4.36
480.02	Quasi-Peak	H	118	29	-91.70	19.19	34.49	46.02	-11.53

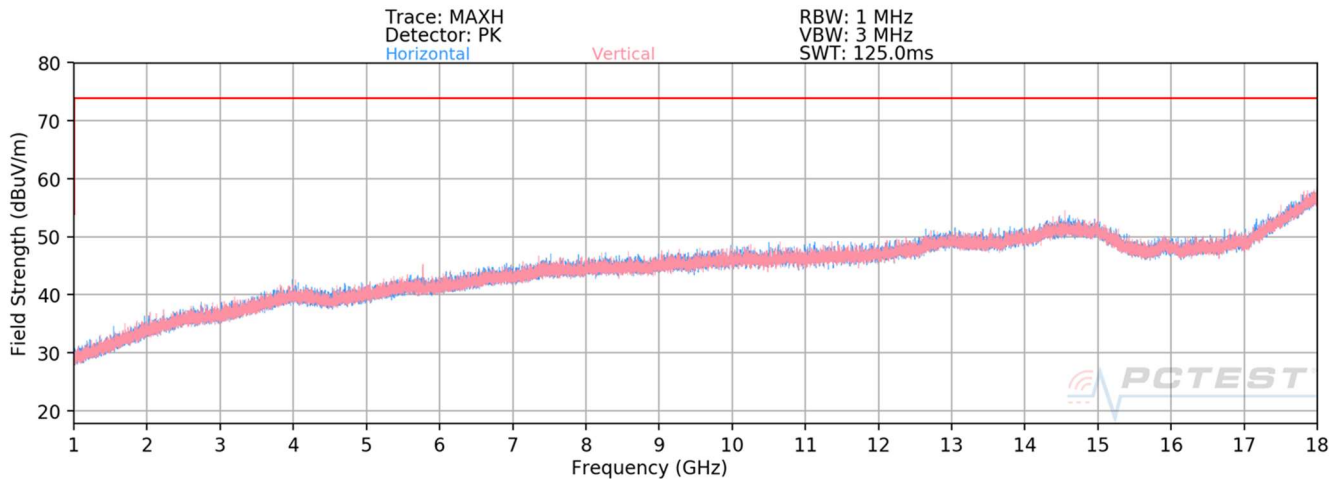
Table 7-5. Radiated Measurements [Radiated Test Config. 2]

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Radiated Test Config. 3



Plot 7-5. Radiated Spurious Plot below 1GHz [Radiated Test Config. 3]



Plot 7-6. Radiated Spurious Plot above 1GHz [Radiated Test Config. 3]

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
30.57	Quasi-Peak	V	124	30	-102.09	10.97	15.88	40.00	-24.12
41.70	Quasi-Peak	V	310	334	-98.69	13.93	22.24	40.00	-17.76
67.77	Quasi-Peak	V	100	193	-98.88	12.01	20.13	40.00	-19.87
83.97	Quasi-Peak	V	142	2	-100.18	10.88	17.70	40.00	-22.30
158.40	Quasi-Peak	V	239	110	-97.18	20.25	30.07	43.52	-13.46
582.47	Quasi-Peak	V	113	12	-105.18	21.00	22.82	46.02	-23.20

Table 7-6. Radiated Measurements [Radiated Test Config. 3]

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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7.4 Line Conducted Measurement Data

§15.107

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 conducted emissions must not exceed the limits shown in the table below, per Section 15.107.

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

Table 7-7. 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

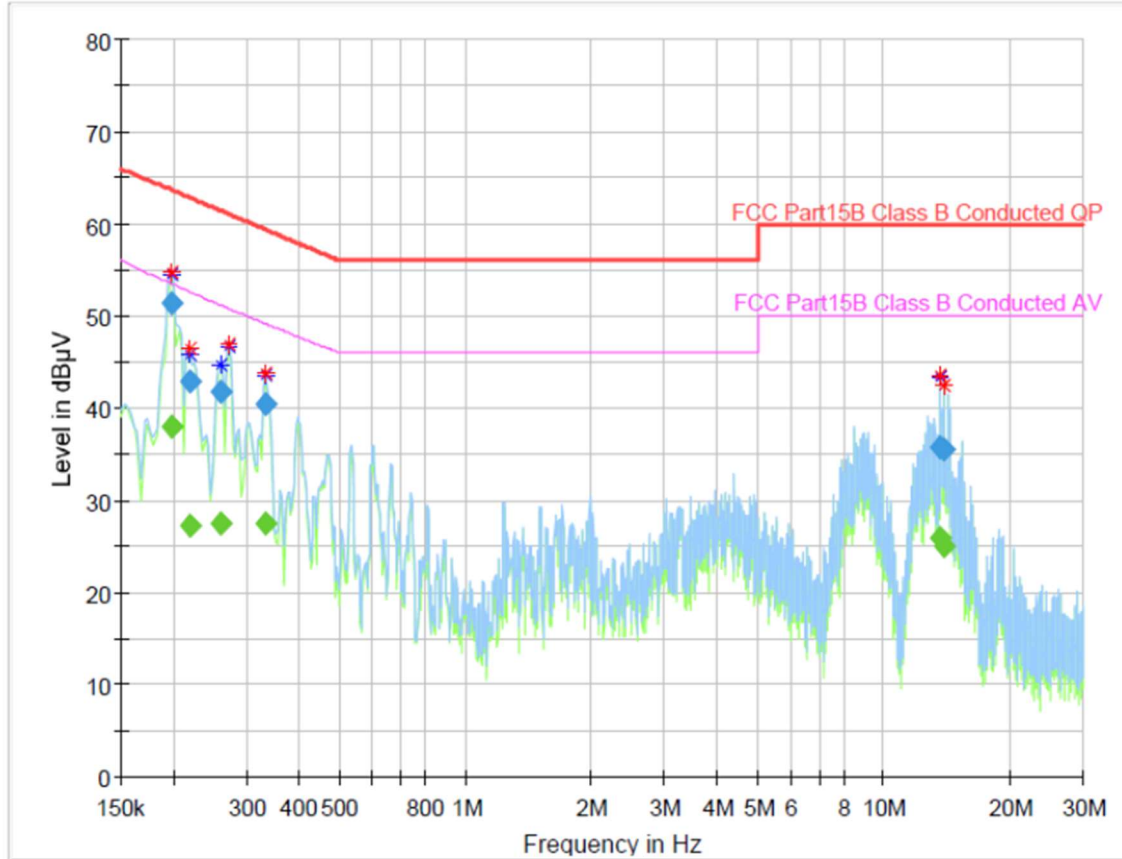
The EUT and measurement equipment were set up as shown in the test setup photos provided.

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 15.107.
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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Conducted Test Config. 1



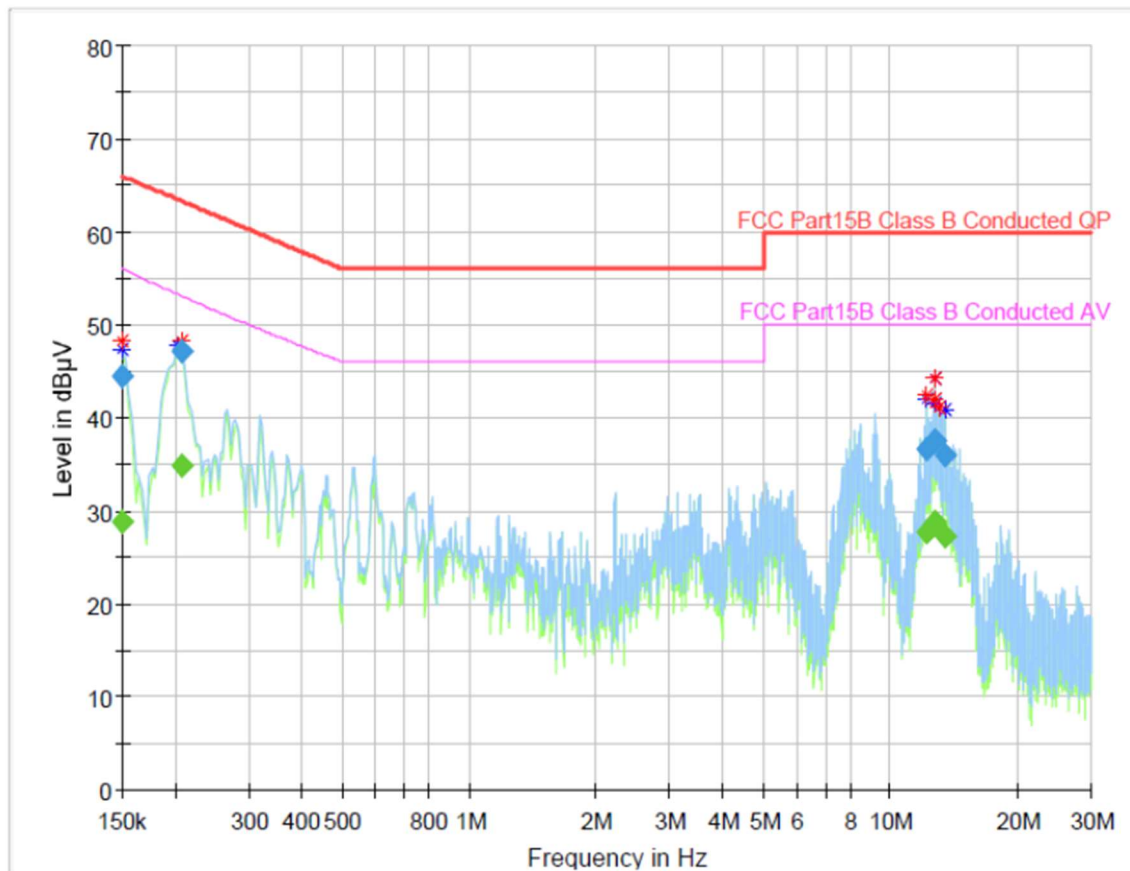
Plot 7-7. Line Conducted Plot (L1)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.197760	---	38.10	53.53	15.43	1000.0	9.000	L1	9.9
0.197760	51.29	---	63.70	12.41	1000.0	9.000	L1	9.9
0.218655	---	27.28	52.66	25.37	1000.0	9.000	L1	9.7
0.218655	42.89	---	62.87	19.98	1000.0	9.000	L1	9.7
0.260445	---	27.39	51.17	23.78	1000.0	9.000	L1	9.6
0.260445	41.70	---	61.42	19.72	1000.0	9.000	L1	9.6
0.332085	---	27.56	49.18	21.62	1000.0	9.000	L1	9.8
0.332085	40.51	---	59.40	18.89	1000.0	9.000	L1	9.8
13.695930	---	25.96	50.00	24.04	1000.0	9.000	L1	10.0
13.695930	35.73	---	60.00	24.27	1000.0	9.000	L1	10.0
13.967565	---	24.99	50.00	25.01	1000.0	9.000	L1	10.0
13.967565	35.58	---	60.00	24.42	1000.0	9.000	L1	10.0

Table 7-8. Line Conducted Table (L1)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-8. Line Conducted Plot (N)

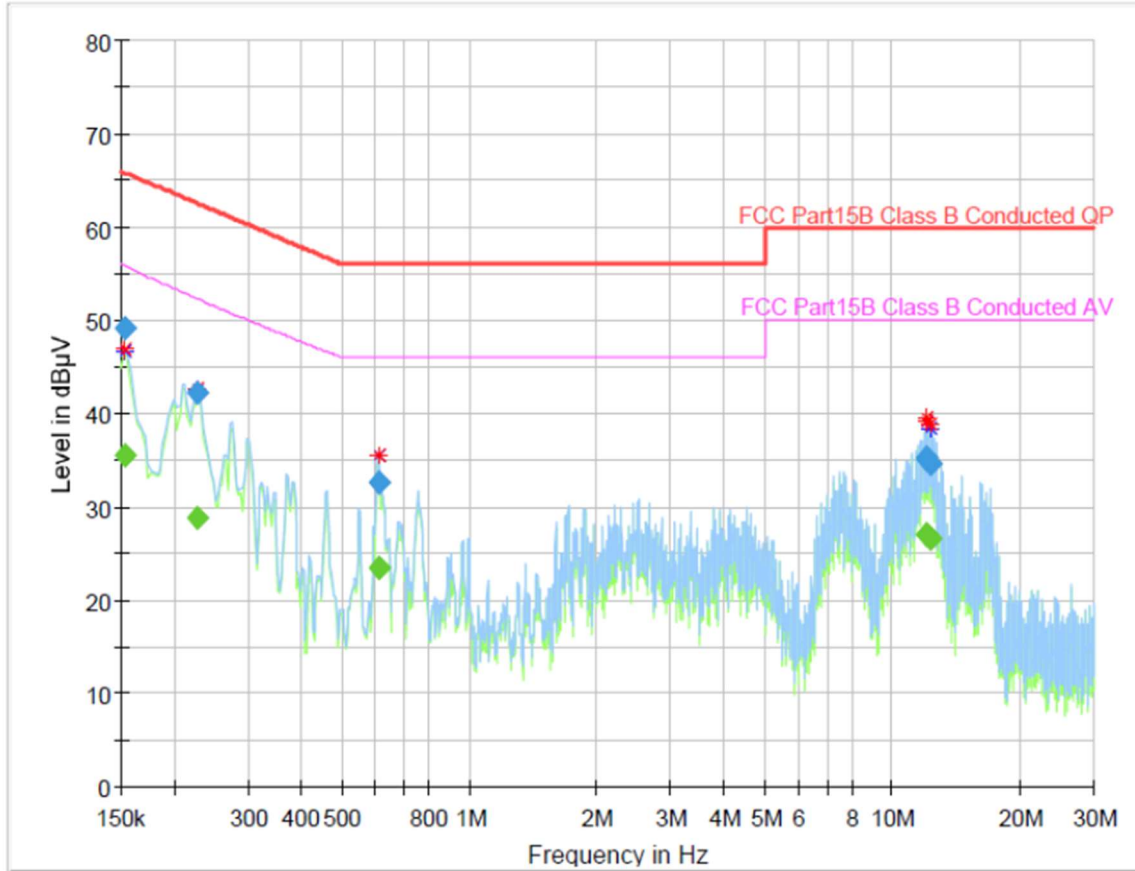
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	28.72	56.00	27.28	1000.0	9.000	N	9.7
0.150000	44.53	---	66.00	21.47	1000.0	9.000	N	9.7
0.206715	---	34.87	53.14	18.27	1000.0	9.000	N	9.8
0.206715	47.23	---	63.34	16.11	1000.0	9.000	N	9.8
12.257160	---	27.68	50.00	22.32	1000.0	9.000	N	10.0
12.257160	36.65	---	60.00	23.35	1000.0	9.000	N	10.0
12.689985	---	28.67	50.00	21.33	1000.0	9.000	N	10.0
12.689985	37.55	---	60.00	22.45	1000.0	9.000	N	10.0
12.731775	---	28.77	50.00	21.23	1000.0	9.000	N	10.0
12.731775	37.64	---	60.00	22.36	1000.0	9.000	N	10.0
13.424295	---	27.20	50.00	22.80	1000.0	9.000	N	10.0
13.424295	35.88	---	60.00	24.12	1000.0	9.000	N	10.0

Table 7-9. Line Conducted Table (N)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Conducted Test Config. 2



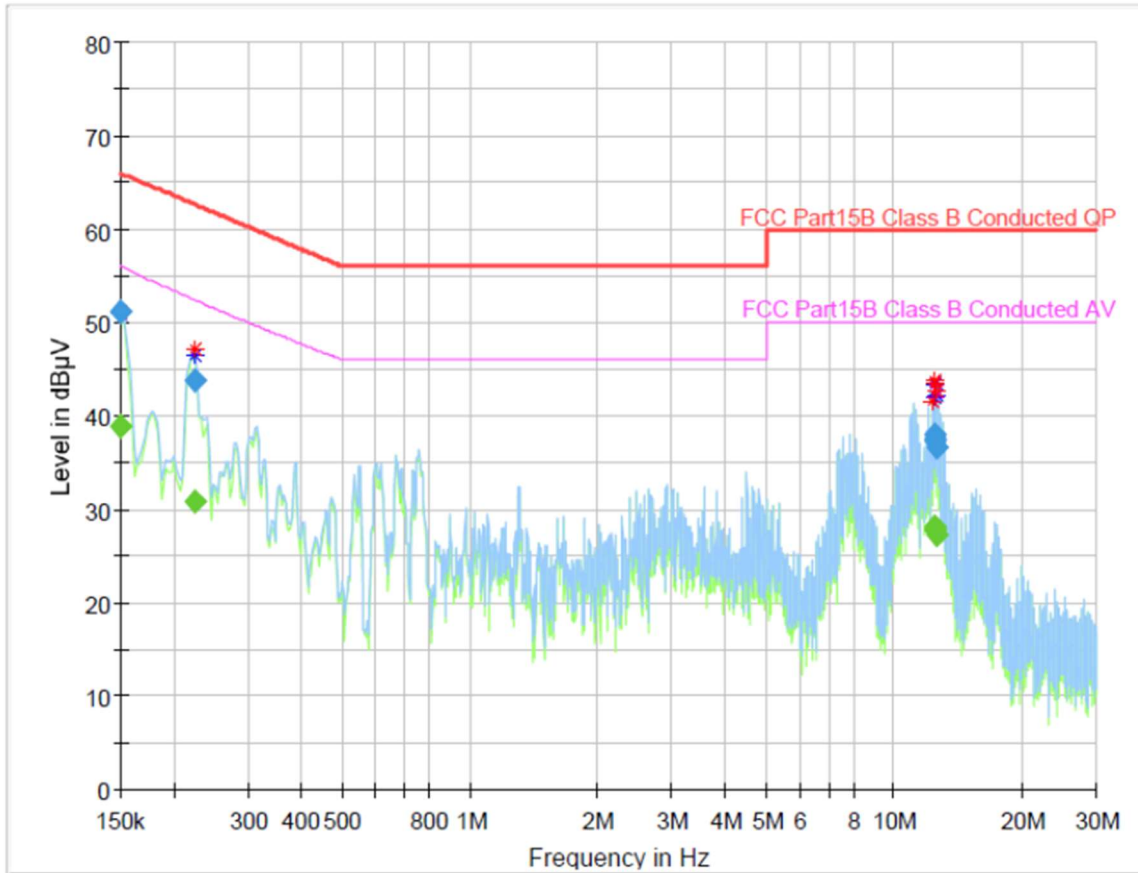
Plot 7-9. Line Conducted Plot (L1)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.152985	---	35.49	55.82	20.33	1000.0	9.000	L1	9.8
0.152985	49.14	---	65.84	16.70	1000.0	9.000	L1	9.8
0.227610	---	28.74	52.31	23.57	1000.0	9.000	L1	9.7
0.227610	42.29	---	62.54	20.25	1000.0	9.000	L1	9.7
0.609690	---	23.37	46.00	22.63	1000.0	9.000	L1	10.0
0.609690	32.70	---	56.00	23.30	1000.0	9.000	L1	10.0
12.066120	---	27.01	50.00	22.99	1000.0	9.000	L1	10.0
12.066120	35.04	---	60.00	24.96	1000.0	9.000	L1	10.0
12.122835	---	27.06	50.00	22.94	1000.0	9.000	L1	10.0
12.122835	35.24	---	60.00	24.76	1000.0	9.000	L1	10.0
12.281040	---	26.68	50.00	23.32	1000.0	9.000	L1	10.0
12.281040	34.54	---	60.00	25.46	1000.0	9.000	L1	10.0

Table 7-10. Line Conducted Table (L1)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-10. Line Conducted Plot (N)

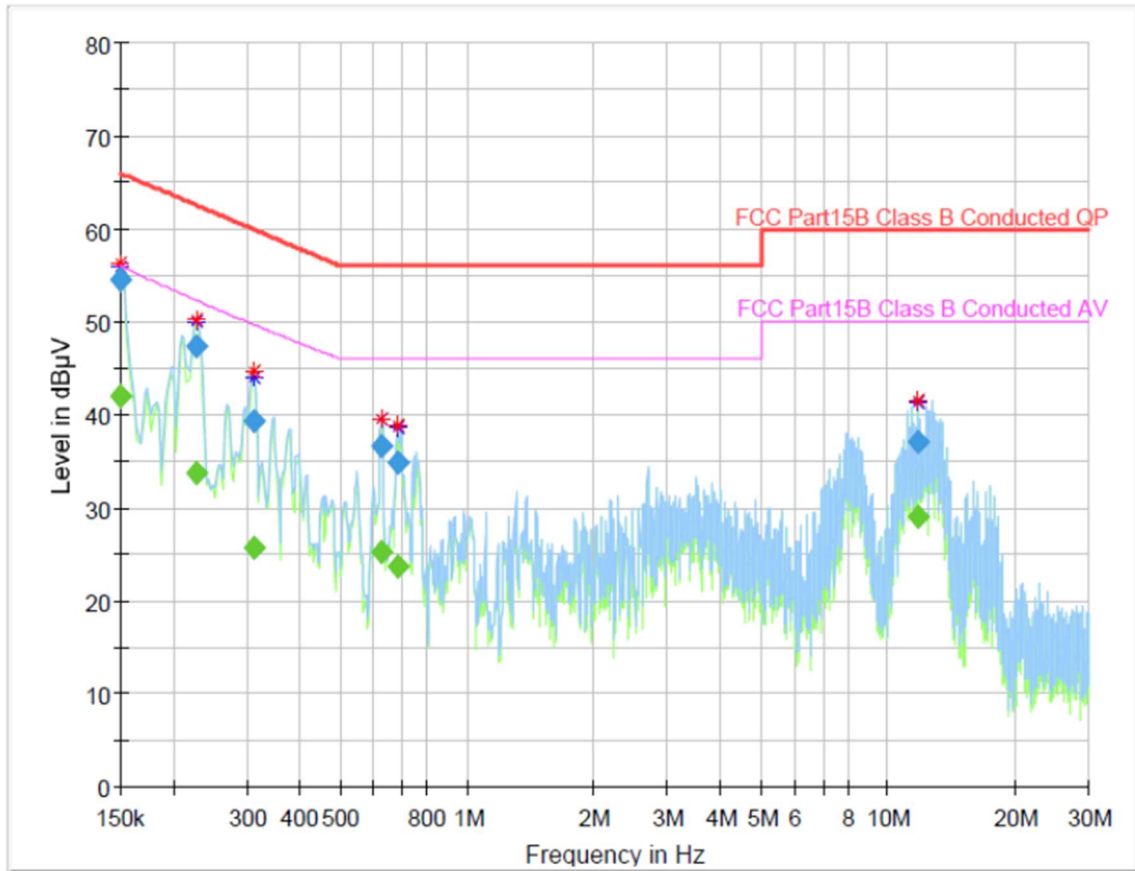
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	38.84	56.00	17.16	1000.0	9.000	N	9.7
0.150000	51.12	---	66.00	14.88	1000.0	9.000	N	9.7
0.224625	---	30.90	52.43	21.53	1000.0	9.000	N	9.7
0.224625	43.72	---	62.65	18.92	1000.0	9.000	N	9.7
12.418350	---	28.14	50.00	21.86	1000.0	9.000	N	10.0
12.418350	37.49	---	60.00	22.51	1000.0	9.000	N	10.0
12.460140	---	27.78	50.00	22.22	1000.0	9.000	N	10.0
12.460140	37.42	---	60.00	22.58	1000.0	9.000	N	10.0
12.507900	---	27.85	50.00	22.15	1000.0	9.000	N	10.0
12.507900	38.09	---	60.00	21.91	1000.0	9.000	N	10.0
12.555660	---	27.26	50.00	22.74	1000.0	9.000	N	10.0
12.555660	36.57	---	60.00	23.43	1000.0	9.000	N	10.0

Table 7-11. Line Conducted Table (N)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Technical Manager
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Conducted Test Config. 3



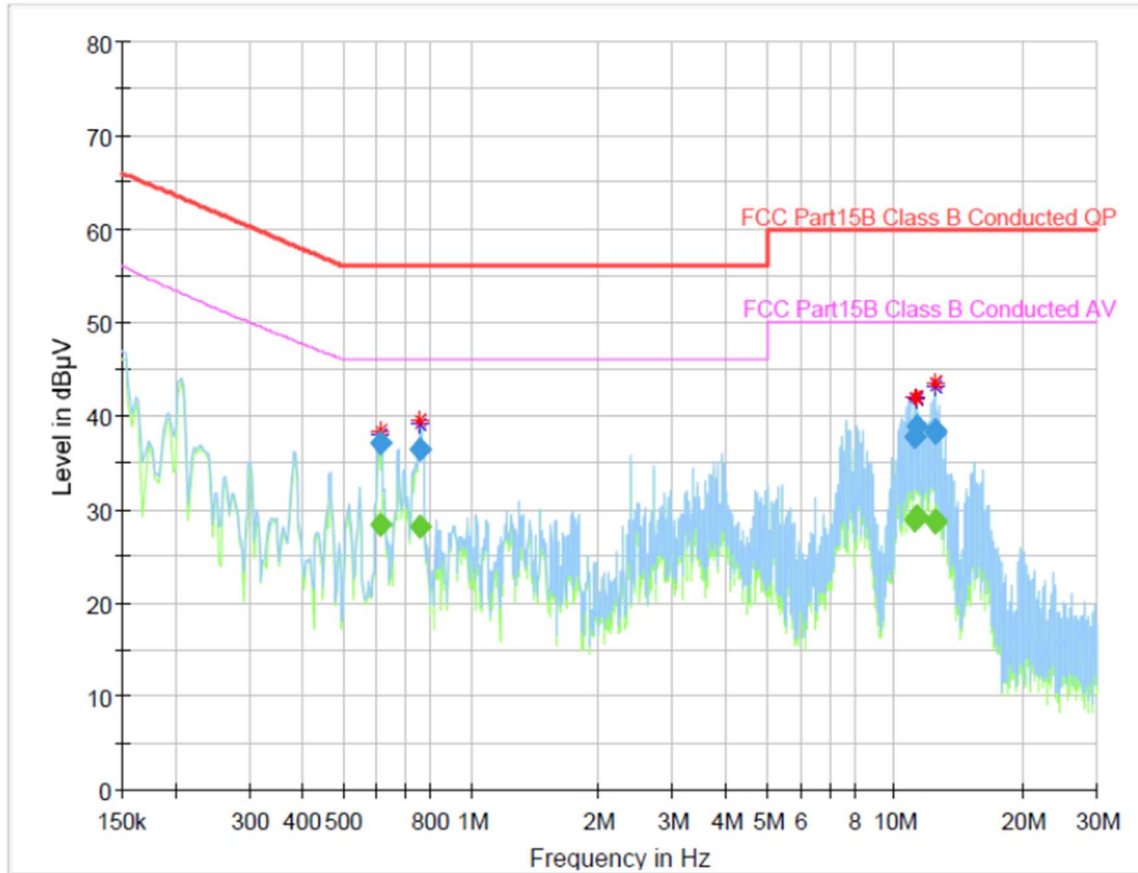
Plot 7-11. Line Conducted Plot (L1)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	42.08	56.00	13.92	1000.0	9.000	L1	9.7
0.150000	54.52	---	66.00	11.48	1000.0	9.000	L1	9.7
0.227610	---	33.80	52.31	18.51	1000.0	9.000	L1	9.7
0.227610	47.32	---	62.54	15.21	1000.0	9.000	L1	9.7
0.311190	---	25.65	49.71	24.06	1000.0	9.000	L1	9.8
0.311190	39.25	---	59.94	20.69	1000.0	9.000	L1	9.8
0.627600	---	25.36	46.00	20.64	1000.0	9.000	L1	10.0
0.627600	36.70	---	56.00	19.30	1000.0	9.000	L1	10.0
0.684315	---	23.70	46.00	22.30	1000.0	9.000	L1	9.9
0.684315	34.88	---	56.00	21.12	1000.0	9.000	L1	9.9
11.845230	---	28.98	50.00	21.02	1000.0	9.000	L1	10.0
11.845230	37.19	---	60.00	22.81	1000.0	9.000	L1	10.0

Table 7-12. Line Conducted Table (L1)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-12. Line Conducted Plot (N)

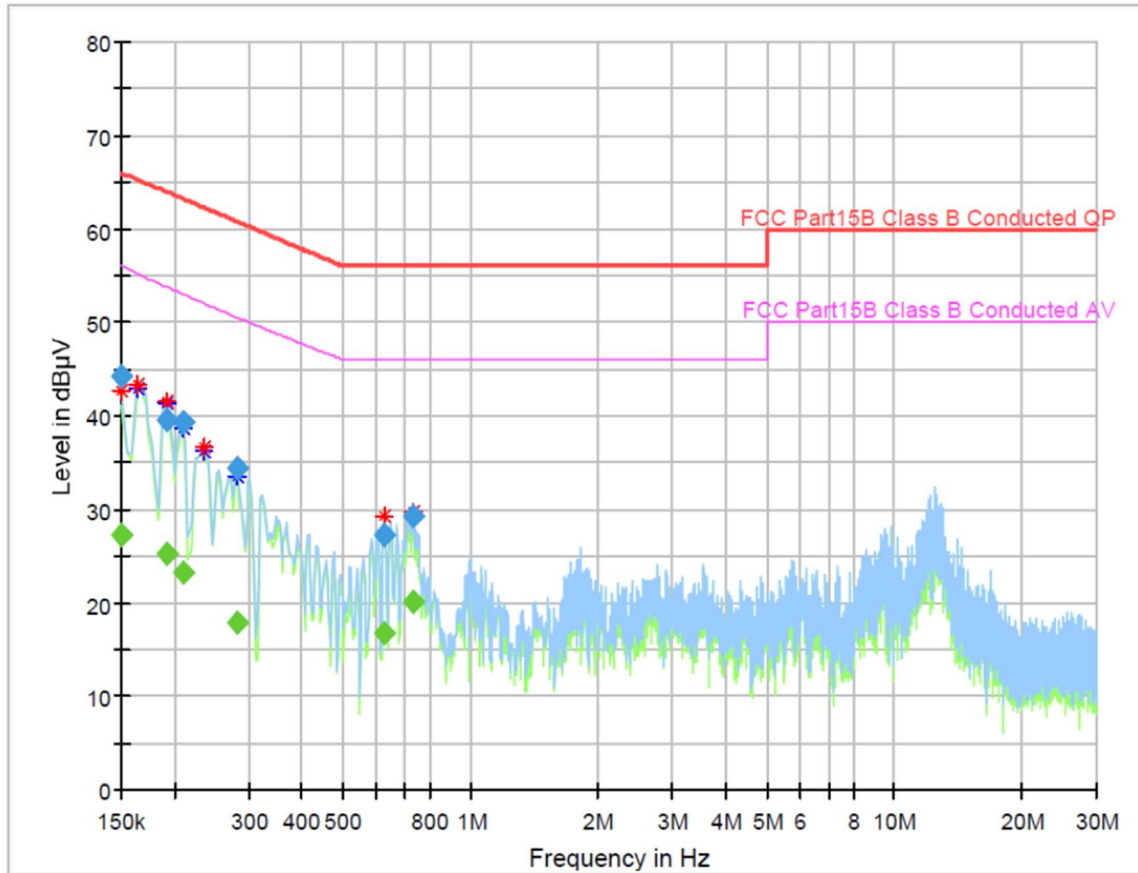
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.612675	---	28.41	46.00	17.59	1000.0	9.000	N	9.9
0.612675	37.02	---	56.00	18.98	1000.0	9.000	N	9.9
0.761925	---	28.05	46.00	17.95	1000.0	9.000	N	9.9
0.761925	36.49	---	56.00	19.51	1000.0	9.000	N	9.9
11.143755	---	28.79	50.00	21.21	1000.0	9.000	N	10.0
11.143755	37.81	---	60.00	22.19	1000.0	9.000	N	10.0
11.304945	---	29.26	50.00	20.74	1000.0	9.000	N	10.0
11.304945	38.79	---	60.00	21.21	1000.0	9.000	N	10.0
12.418350	---	28.86	50.00	21.14	1000.0	9.000	N	10.0
12.418350	38.26	---	60.00	21.74	1000.0	9.000	N	10.0
12.498945	---	28.59	50.00	21.41	1000.0	9.000	N	10.0
12.498945	38.44	---	60.00	21.56	1000.0	9.000	N	10.0

Table 7-13. Line Conducted Table (N)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Conducted Test Config. 4



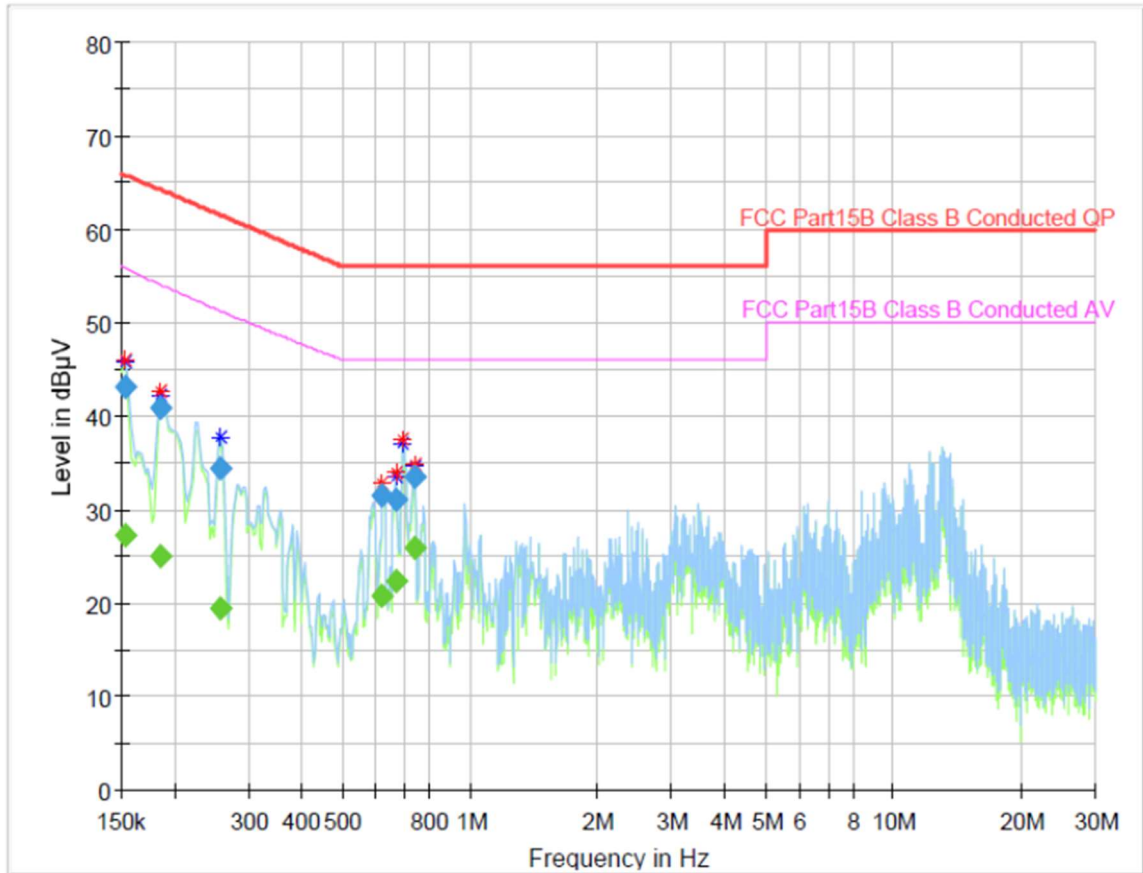
Plot 7-13. Line Conducted Plot (L1)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	27.30	56.00	28.70	1000.0	9.000	L1	9.7
0.150000	44.26	---	66.00	21.74	1000.0	9.000	L1	9.7
0.191790	---	25.29	53.80	28.50	1000.0	9.000	L1	9.9
0.191790	39.65	---	63.96	24.30	1000.0	9.000	L1	9.9
0.209700	---	23.31	53.02	29.71	1000.0	9.000	L1	9.8
0.209700	39.36	---	63.22	23.85	1000.0	9.000	L1	9.8
0.281340	---	17.97	50.53	32.56	1000.0	9.000	L1	9.7
0.281340	34.50	---	60.78	26.27	1000.0	9.000	L1	9.7
0.624615	---	16.73	46.00	29.27	1000.0	9.000	L1	10.0
0.624615	27.23	---	56.00	28.77	1000.0	9.000	L1	10.0
0.732075	---	20.07	46.00	25.93	1000.0	9.000	L1	9.9
0.732075	29.25	---	56.00	26.75	1000.0	9.000	L1	9.9

Table 7-14. Line Conducted Table (L1)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-14. Line Conducted Plot (N)

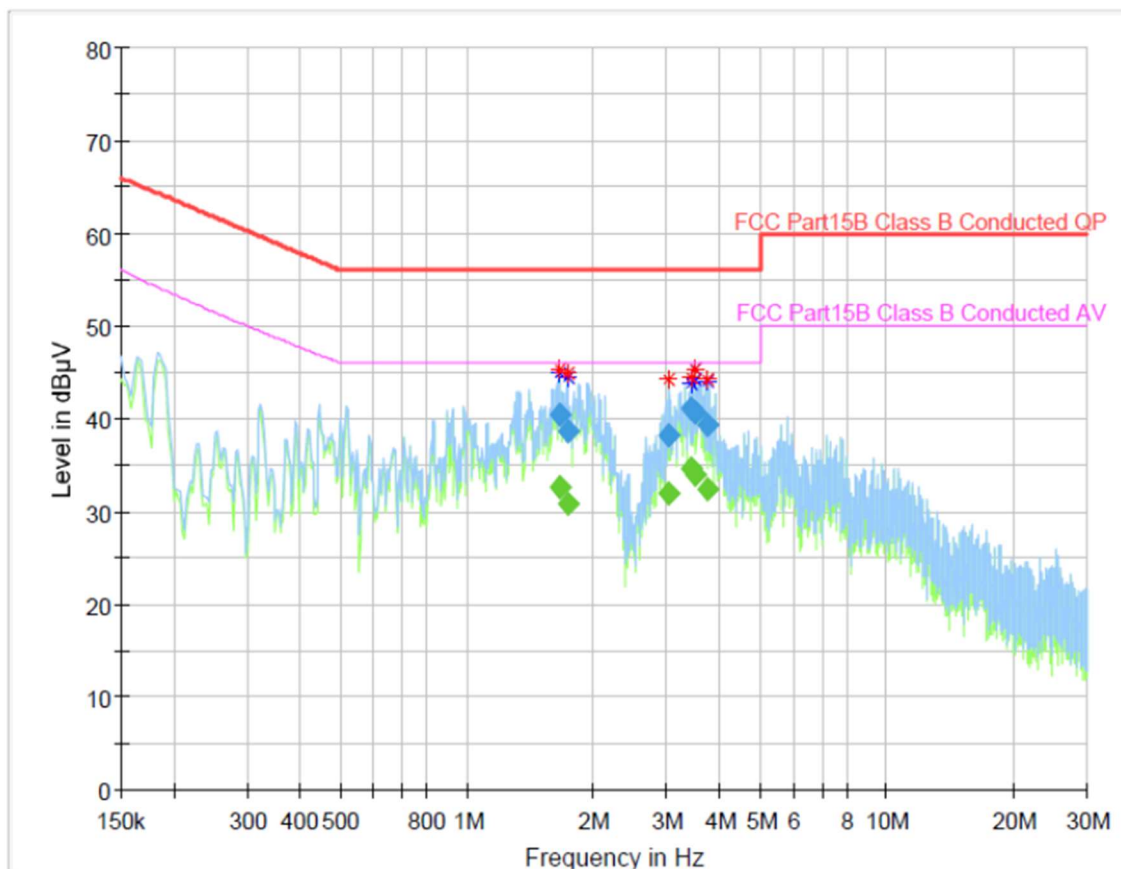
Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.152985	---	27.34	55.82	28.48	1000.0	9.000	N	9.7
0.152985	43.10	---	65.84	22.74	1000.0	9.000	N	9.7
0.185820	---	25.06	54.08	29.01	1000.0	9.000	N	9.9
0.185820	40.94	---	64.22	23.28	1000.0	9.000	N	9.9
0.257460	---	19.49	51.27	31.78	1000.0	9.000	N	9.6
0.257460	34.39	---	61.51	27.12	1000.0	9.000	N	9.6
0.621630	---	20.71	46.00	25.29	1000.0	9.000	N	9.9
0.621630	31.58	---	56.00	24.42	1000.0	9.000	N	9.9
0.669390	---	22.45	46.00	23.55	1000.0	9.000	N	9.9
0.669390	31.03	---	56.00	24.97	1000.0	9.000	N	9.9
0.741030	---	25.90	46.00	20.10	1000.0	9.000	N	9.9
0.741030	33.42	---	56.00	22.58	1000.0	9.000	N	9.9

Table 7-15. Line Conducted Table (N)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Conducted Test Config. 5



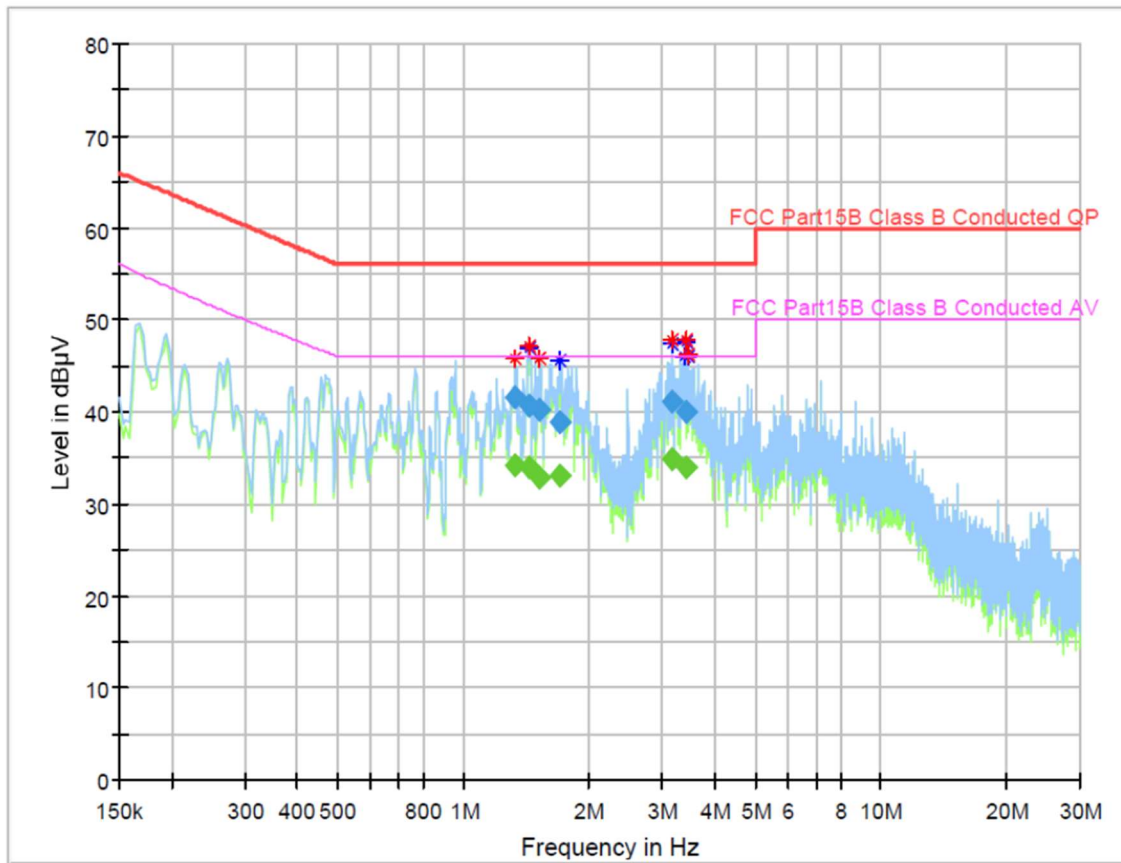
Plot 7-15. Line Conducted Plot (L1)

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
1.657425	---	32.67	46.00	13.33	1000.0	9.000	L1	9.7
1.657425	40.36	---	56.00	15.64	1000.0	9.000	L1	9.7
1.738020	---	30.80	46.00	15.20	1000.0	9.000	L1	9.7
1.738020	38.75	---	56.00	17.25	1000.0	9.000	L1	9.7
3.036495	---	31.85	46.00	14.15	1000.0	9.000	L1	9.7
3.036495	38.30	---	56.00	17.70	1000.0	9.000	L1	9.7
3.439470	---	34.72	46.00	11.28	1000.0	9.000	L1	9.7
3.439470	41.10	---	56.00	14.90	1000.0	9.000	L1	9.7
3.487230	---	33.94	46.00	12.06	1000.0	9.000	L1	9.7
3.487230	40.57	---	56.00	15.43	1000.0	9.000	L1	9.7
3.740955	---	32.45	46.00	13.55	1000.0	9.000	L1	9.8
3.740955	39.24	---	56.00	16.76	1000.0	9.000	L1	9.8

Table 7-16. Line Conducted Table (L1)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
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Plot 7-16. Line Conducted Plot (N)

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
1.332060	---	34.28	46.00	11.72	1000.0	9.000	N	9.8
1.332060	41.49	---	56.00	14.51	1000.0	9.000	N	9.8
1.433550	---	33.86	46.00	12.14	1000.0	9.000	N	9.7
1.433550	40.72	---	56.00	15.28	1000.0	9.000	N	9.7
1.520115	---	32.95	46.00	13.05	1000.0	9.000	N	9.7
1.520115	40.16	---	56.00	15.84	1000.0	9.000	N	9.7
1.711155	---	33.02	46.00	12.98	1000.0	9.000	N	9.7
1.711155	38.95	---	56.00	17.05	1000.0	9.000	N	9.7
3.167835	---	34.97	46.00	11.03	1000.0	9.000	N	9.7
3.167835	41.08	---	56.00	14.92	1000.0	9.000	N	9.7
3.421560	---	33.87	46.00	12.13	1000.0	9.000	N	9.7
3.421560	40.10	---	56.00	15.90	1000.0	9.000	N	9.7

Table 7-17. Line Conducted Table (N)

FCC ID: A3LSMA127M	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1K2106030020-04.A3L	Test Dates: 06/15 - 6/23/2021	EUT Type: Portable Handset		Page 27 of 28

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMA127M** has been tested to comply with the requirements specified in §15.107 and §15.109 of the FCC rules.

FCC ID: A3LSMA127M	 Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1K2106030020-04.A3L	Test Dates: 06/15 - 6/23/2021	EUT Type: Portable Handset		Page 28 of 28