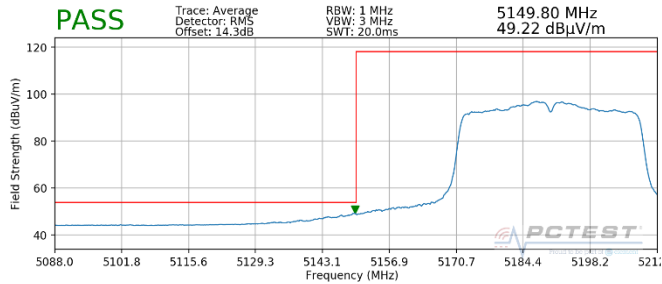
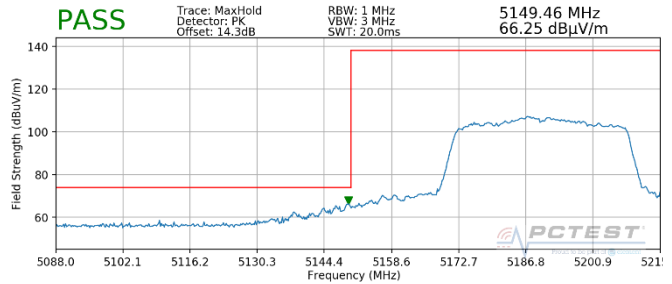


Worst Case Mode: 802.11ac  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5190MHz  
 Channel: 38



**Plot 7-425. Radiated Lower Band Edge Plot MIMO WCP (Average – UNII Band 1)**

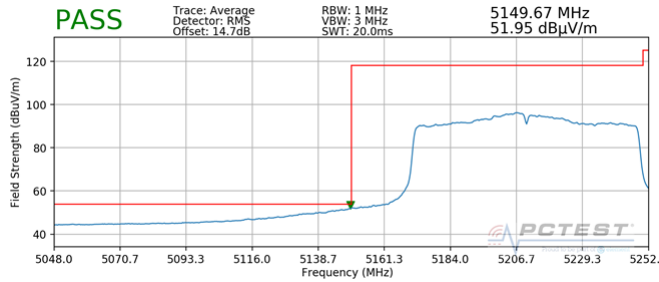


**Plot 7-426. Radiated Lower Band Edge Plot MIMO WCP (Peak – UNII Band 1)**

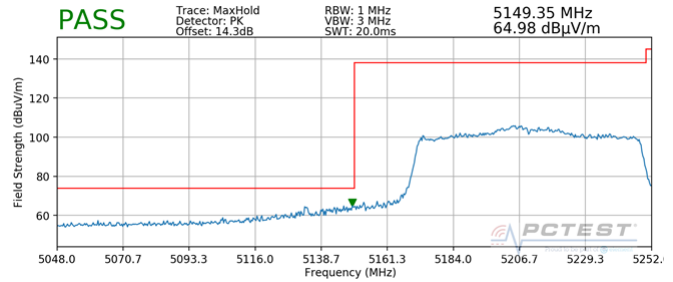
<b>FCC ID:</b> A3LSMS901JPN		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2112090153-11.A3L	<b>Test Dates:</b> 09/22 – 12/22/2021	<b>EUT Type:</b> Portable Handset	Page 272 of 295	

## 7.6.12 MIMO Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42

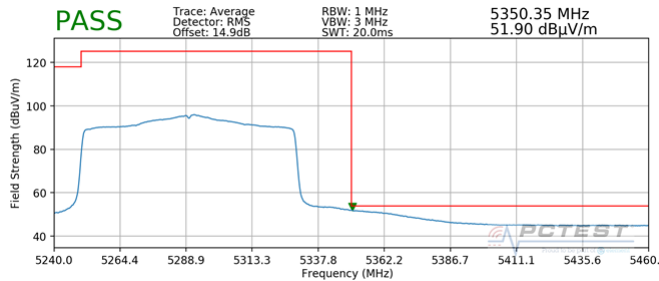


**Plot 7-427. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 1)**

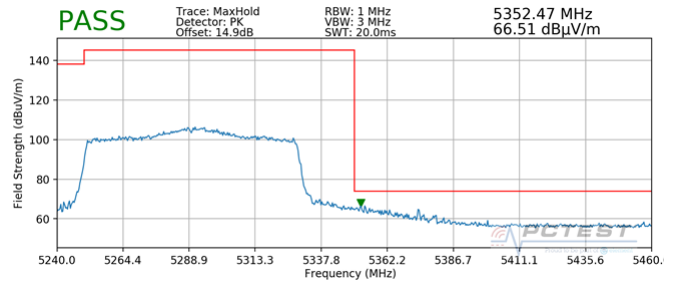


**Plot 7-428. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 1)**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



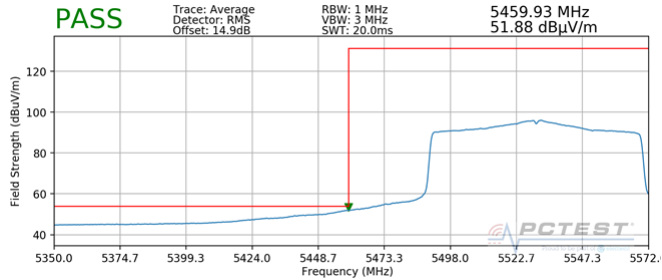
**Plot 7-429. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 2A)**



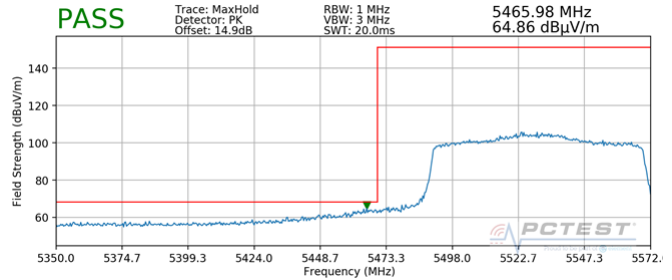
**Plot 7-430. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 2A)**

FCC ID: A3LSMS901JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 273 of 295

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5530MHz  
 Channel: 106

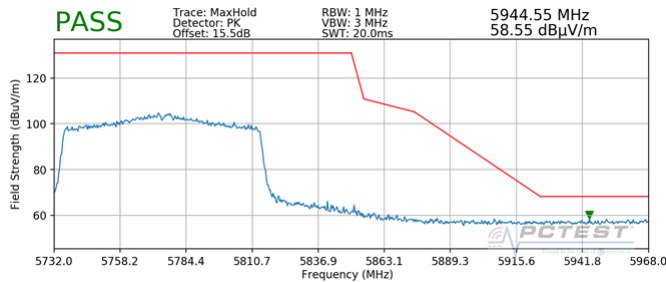


**Plot 7-431. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 2C)**



**Plot 7-432. Radiated Lower Band Edge Plot MIMO (Peak – UNII Band 2C)**

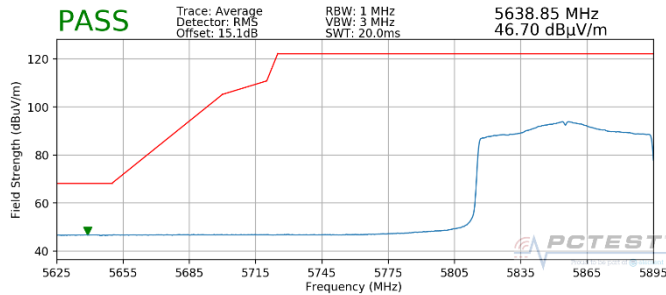
Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5775MHz  
 Channel: 155



**Plot 7-433. Radiated Upper Band Edge Plot MIMO (Peak – UNII Band 3)**

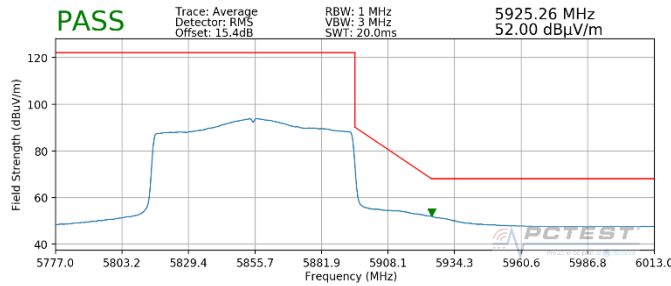
FCC ID: A3LSMS901JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 274 of 295

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5855MHz  
 Channel: 171



**Plot 7-434. Radiated Lower Band Edge Plot MIMO (Average - UNII Band 4)**

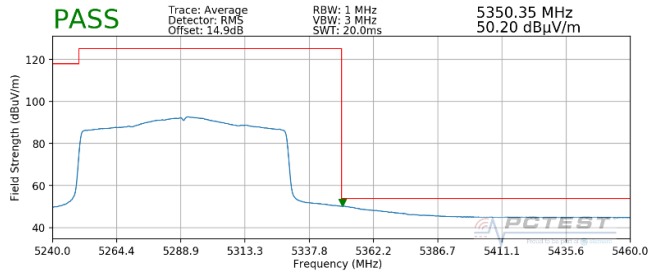
Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: MCS0  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5855MHz  
 Channel: 171



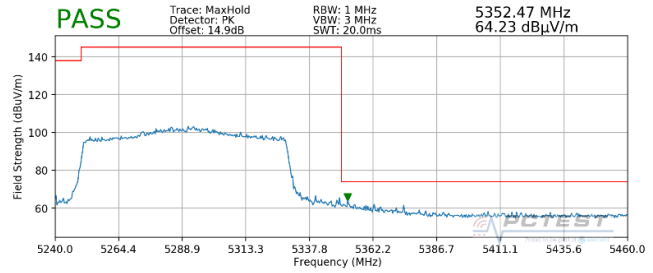
**Plot 7-435. Radiated Upper Band Edge Plot MIMO (Average - UNII Band 4)**

FCC ID: A3LSMS901JPN	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 275 of 295

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



**Plot 7-436. Radiated Upper Band Edge Plot MIMO WCP (Average – UNII Band 2A)**



**Plot 7-437. Radiated Upper Band Edge Plot MIMO WCP (Peak – UNII Band 2A)**

FCC ID: A3LSMS901JPN	 <b>PCTEST</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 276 of 295

## 7.7 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209; 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 7-93 per Section 15.209 and RSS-Gen (8.9).**

Frequency	Field Strength [ $\mu$ 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 7-93. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013

### Test Settings

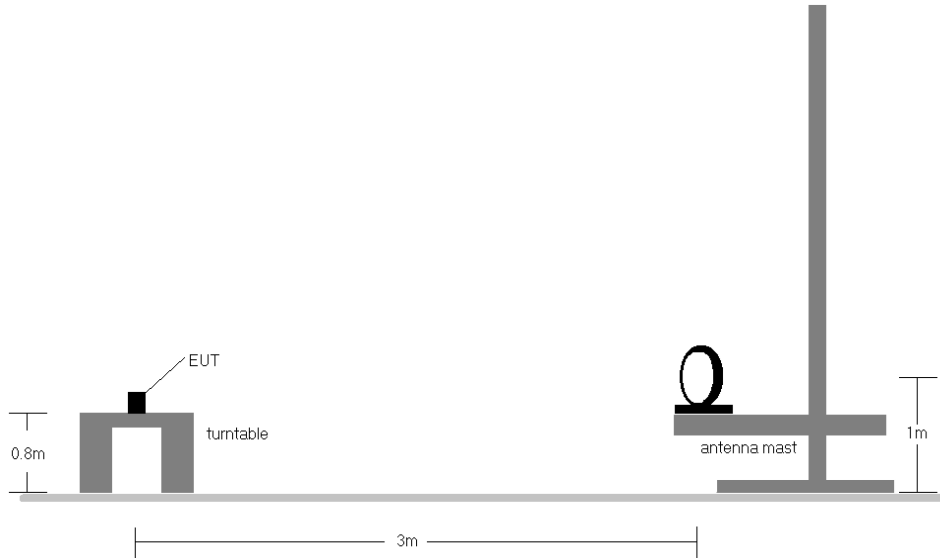
#### Quasi-Peak Field Strength Measurements

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

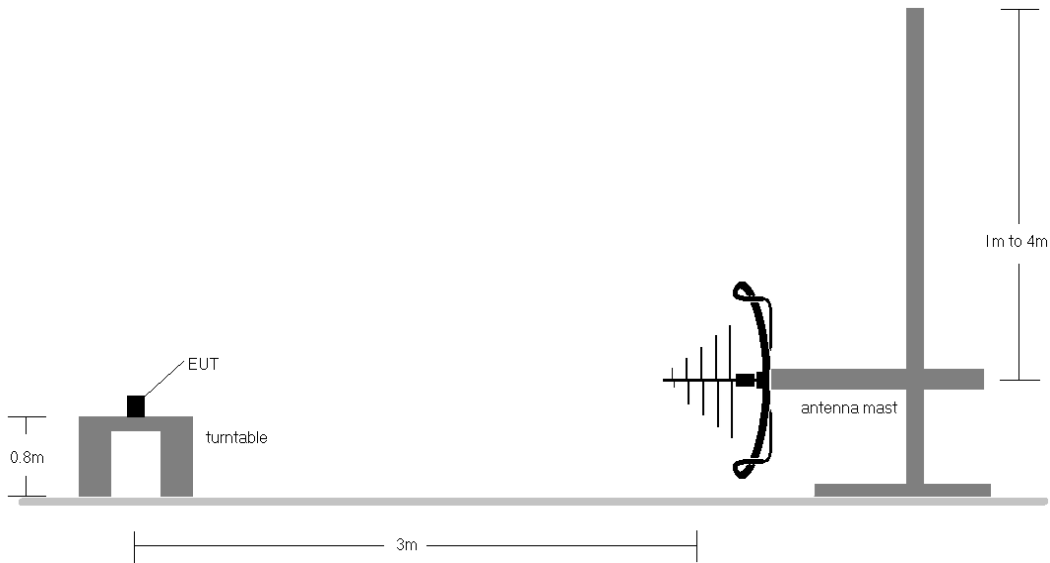
FCC ID: A3LSMS901JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 277 of 295

**Test Setup**

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



**Figure 7-6. Radiated Test Setup < 30MHz**



**Figure 7-7. Radiated Test Setup < 1GHz**

<p>FCC ID: A3LSMS901JPN</p>		<p>MEASUREMENT REPORT (CERTIFICATION)</p>	 <p>Approved by: Technical Manager</p>
<p>Test Report S/N: 1M2112090153-11.A3L</p>	<p>Test Dates: 09/22 – 12/22/2021</p>	<p>EUT Type: Portable Handset</p>	<p>Page 278 of 295</p>

## Test Notes

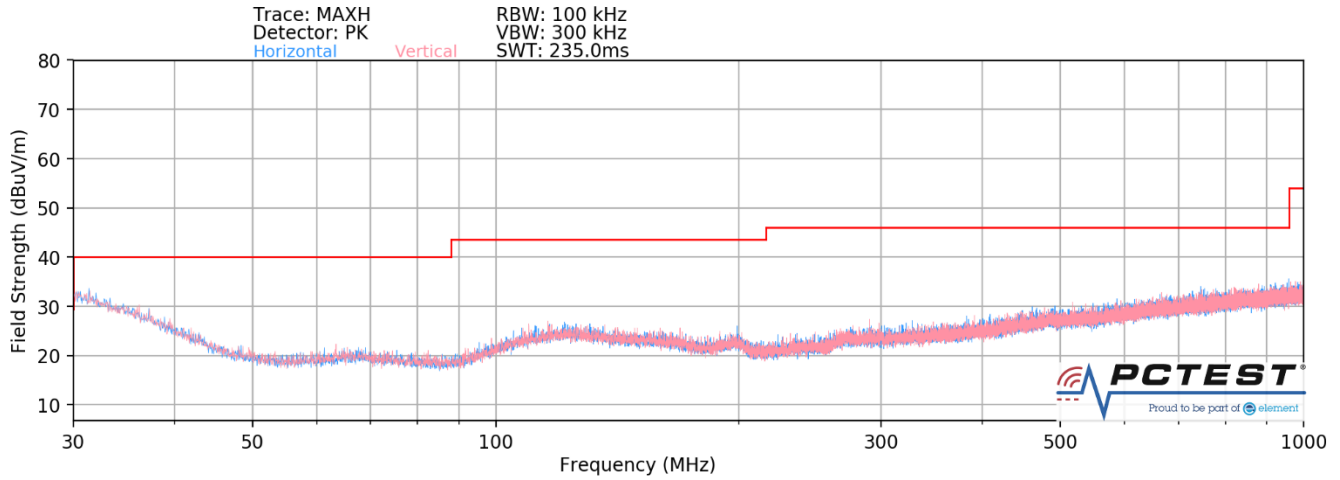
1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-93.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. 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.
5. Emissions were measured at a 3 meter test distance.
6. 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.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. 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.
9. 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: A3LSMS901JPN	 <b>MEASUREMENT REPORT (CERTIFICATION)</b> 		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset	Page 279 of 295



## MIMO Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-438. Radiated Spurious Plot below 1GHz MIMO (802.11a – U3 Ch. 157)

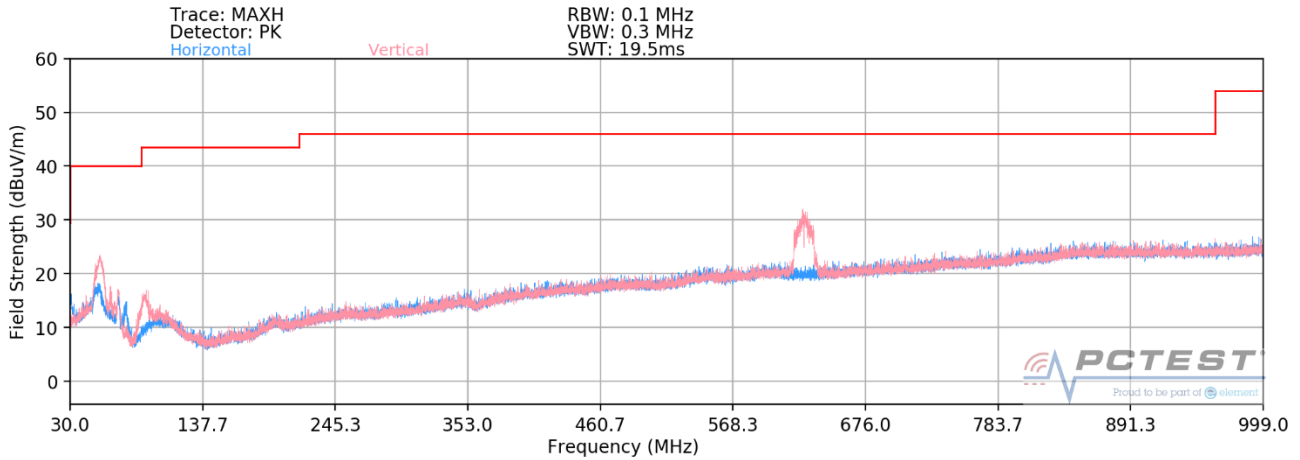
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
726.00	Peak	H	-	-	-74.29	21.79	54.50	68.20	-13.70

Plot 7-439. Radiated Spurious Emissions below 1GHz MIMO (802.11a – U3 Ch. 157)

FCC ID: A3LSMS901JPN	 PCTEST <sup>®</sup> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 280 of 295

## Simultaneous Tx Radiated Spurious Emissions Measurements (Below 1GHz)

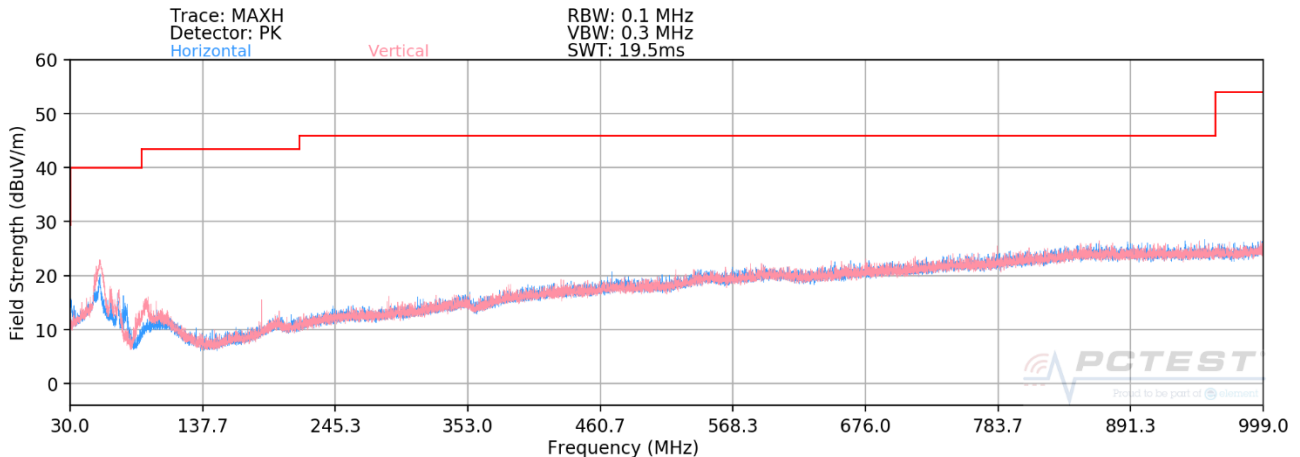
§15.209; RSS-Gen [8.9]



Plot 7-440. Radiated Spurious Plot below 1GHz (2.4GHz – 5GHz)

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]
626.00	Peak	V	110.00	335.00	-65.68	20.59	61.91	68.20	-6.29

Plot 7-441. Radiated Spurious Emissions below 1GHz (2.4GHz – 5GHz)

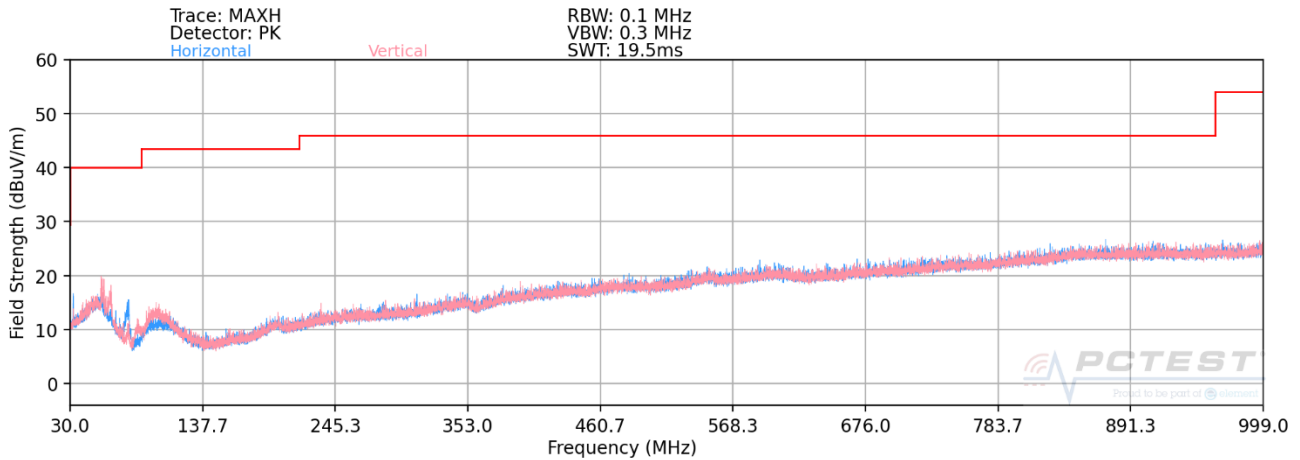


Plot 7-442. Radiated Spurious Plot below 1GHz (5GHz – 2.4 GHz)

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]
726.00	Peak	H	-	-	-74.15	21.79	54.64	68.20	-13.56

Plot 7-443. Radiated Spurious Emissions below 1GHz (5GHz – 2.4GHz)

FCC ID: A3LSMS901JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 281 of 295



**Plot 7-444. Radiated Spurious Plot below 1GHz (Dual Band Simult. Tx)**

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
726.00	Peak	H	-	-	-74.43	21.79	54.36	68.20	-13.84

**Plot 7-445. Radiated Spurious Emissions below 1GHz (Dual Band Simult. Tx)**

FCC ID: A3LSMS901JPN	 <b>PCTEST</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 282 of 295

## Line-Conducted Test Data

### §15.407; RSS-Gen [8.8]

#### 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 15.207 and RSS-Gen (8.8).**

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

**Table 7-94. Conducted Limits**

\*Decreases with the logarithm of the frequency.

#### Test Procedures Used

ANSI C63.10-2013, Section 6.2

#### 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

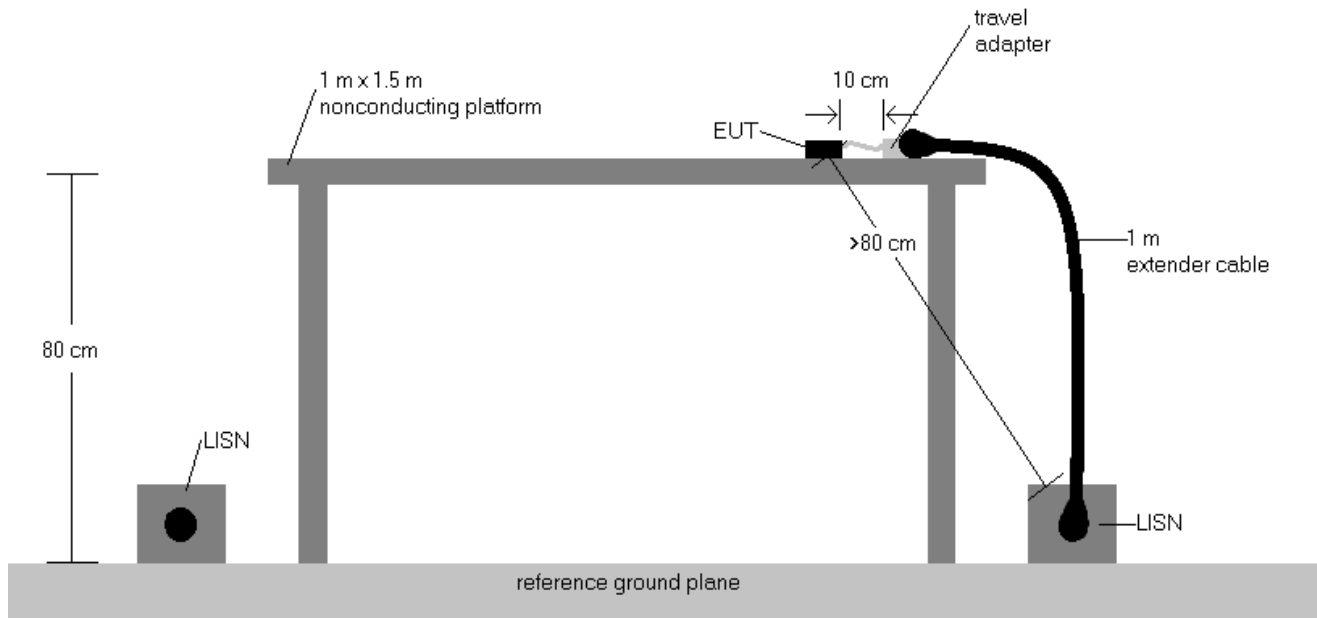
##### Average Field Strength Measurements

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

FCC ID: A3LSMS901JPN	 PCTEST® Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 283 of 295

**Test Setup**

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

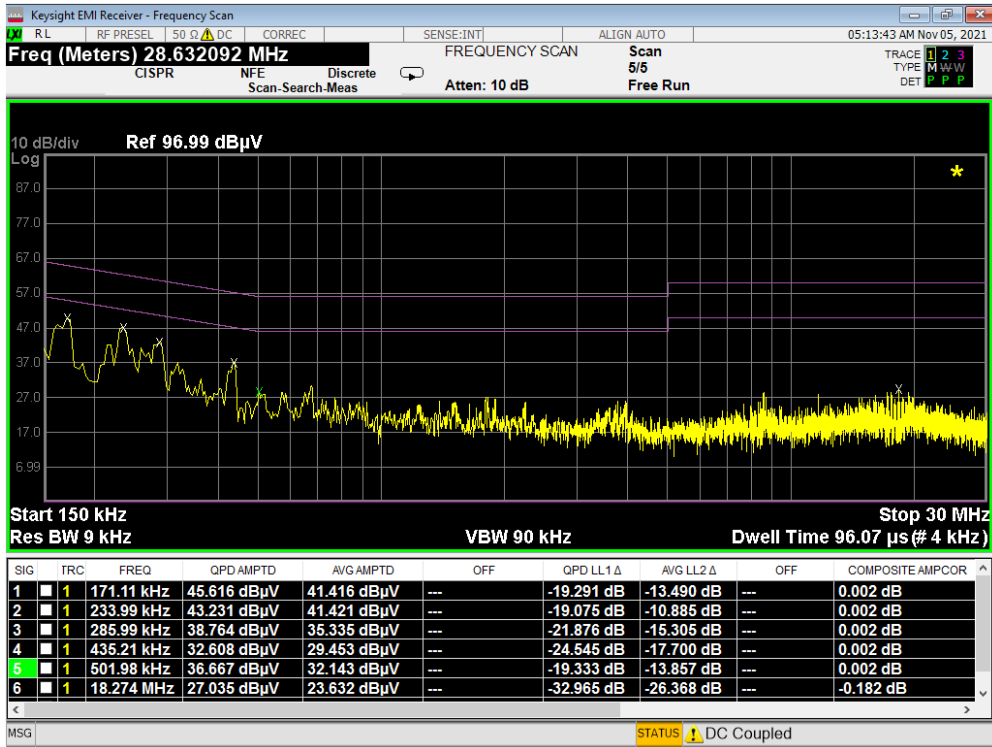


**Figure 7-8. Test Instrument & Measurement Setup**

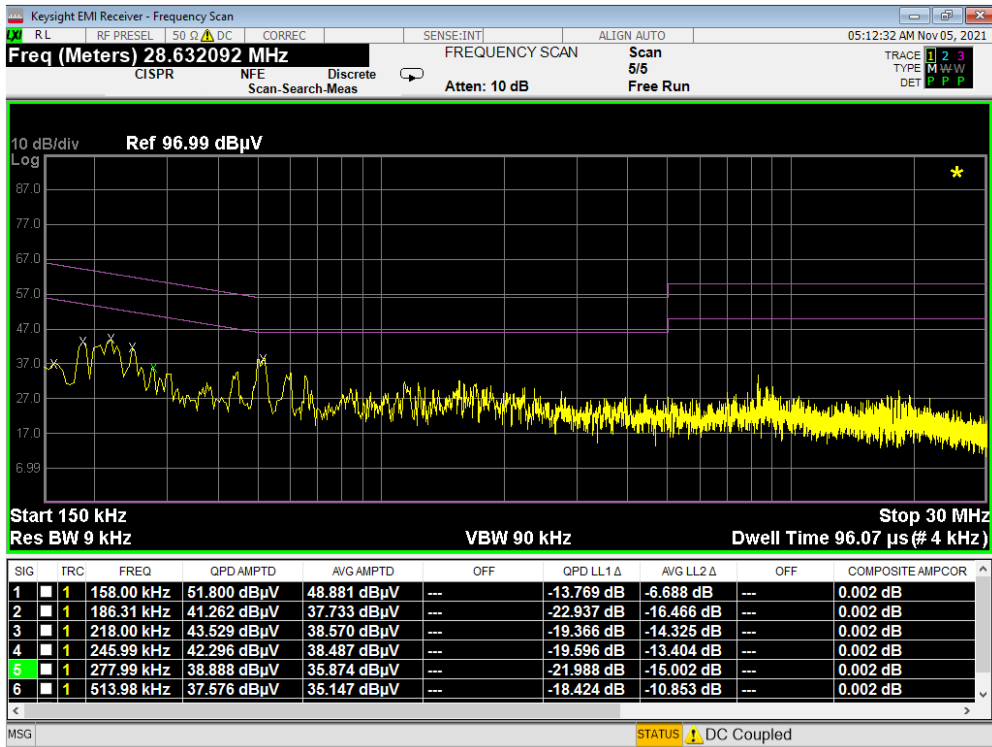
**Test Notes**

1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
3.  $Corr. (dB) = Cable\ loss (dB) + LISN\ insertion\ factor (dB)$
4.  $QP/AV\ Level (dB\mu V) = QP/AV\ Analyzer/Receiver\ Level (dB\mu V) + Corr. (dB)$
5.  $Margin (dB) = QP/AV\ Limit (dB\mu V) - QP/AV\ Level (dB\mu V)$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

FCC ID: A3LSMS901JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 284 of 295

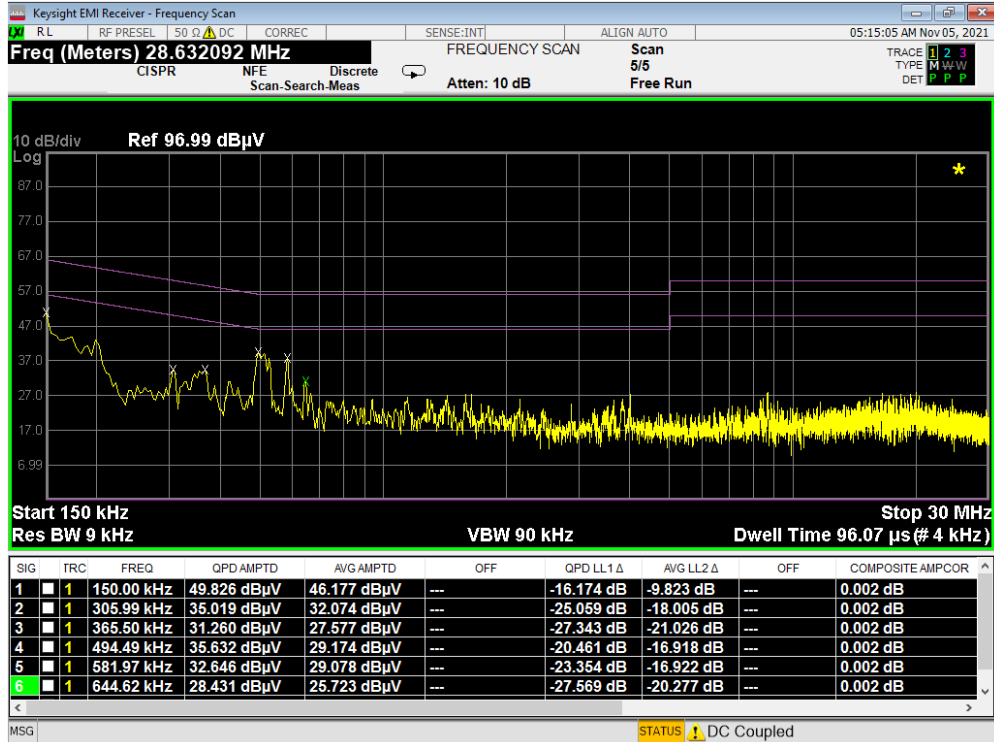


Plot 7-446. Line Conducted Plot with 802.11a UNII Band 1 (L1)

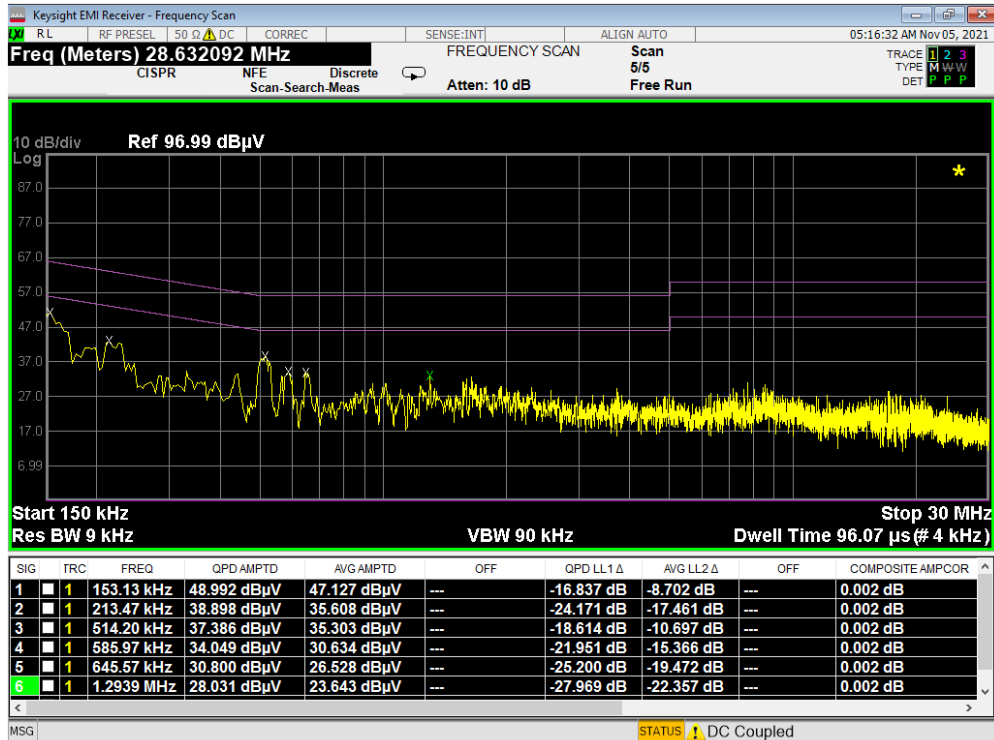


Plot 7-447. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: A3LSMS901JPN	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 285 of 295

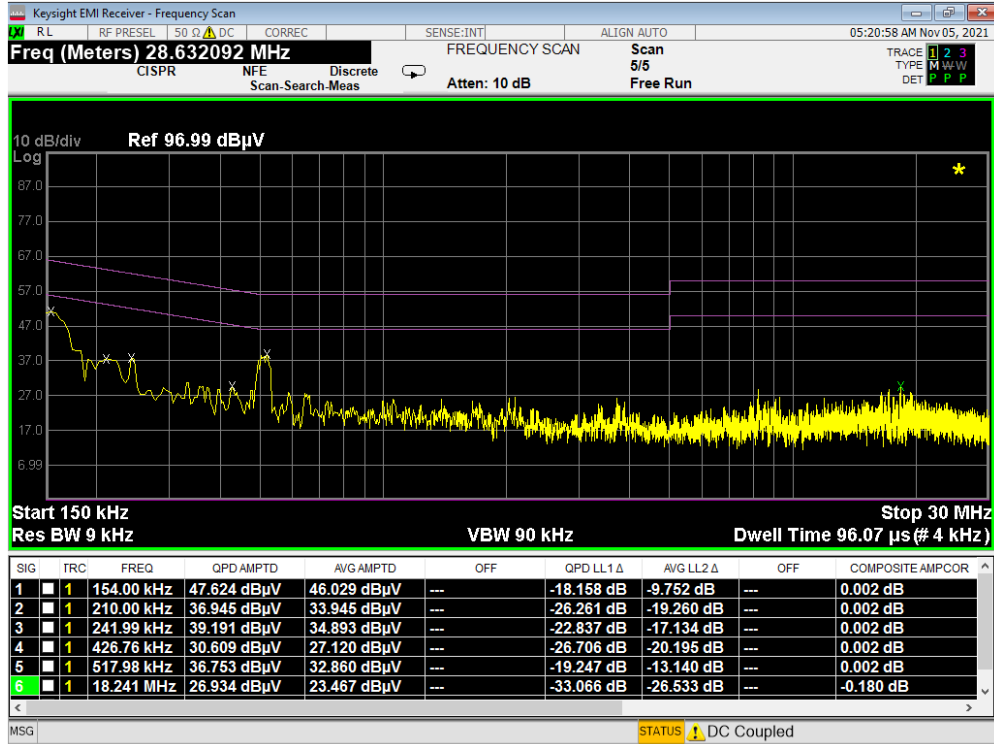


Plot 7-448. Line Conducted Plot with 802.11a UNII Band 2A (L1)

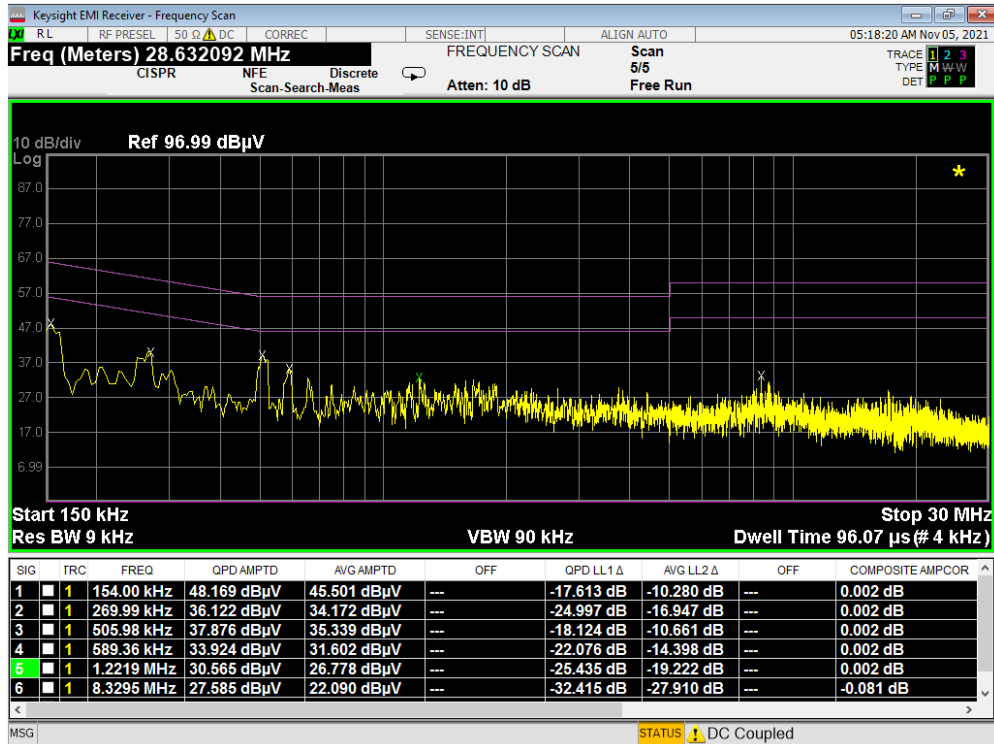


Plot 7-449. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: A3LSMS901JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 286 of 295



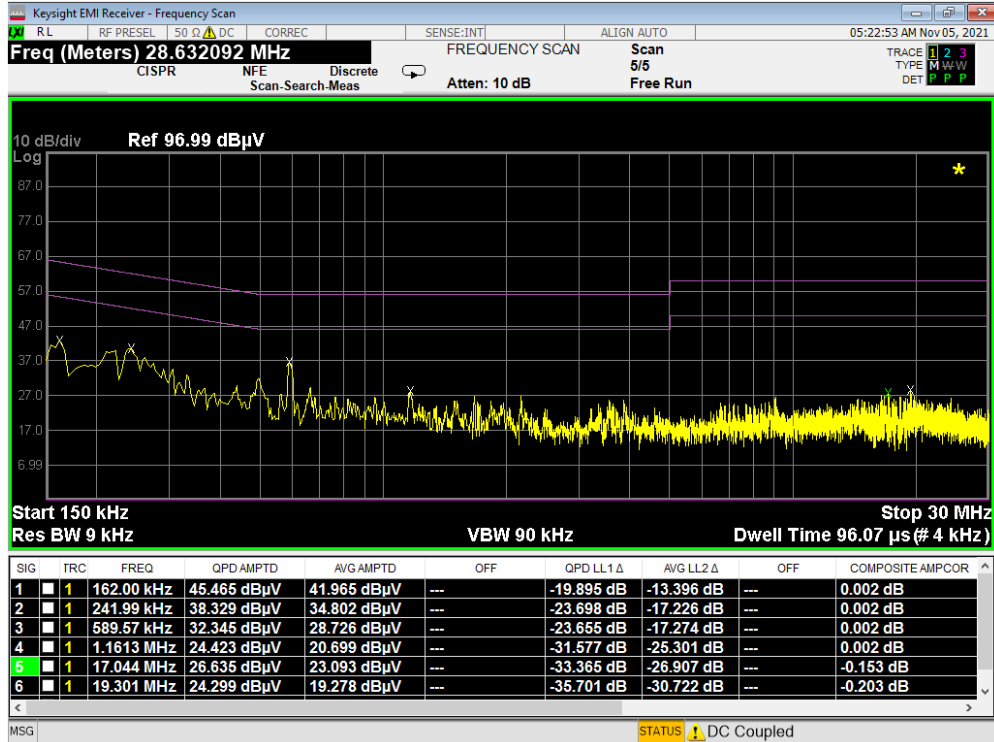
Plot 7-450. Line Conducted Plot with 802.11a UNII Band 2C (L1)



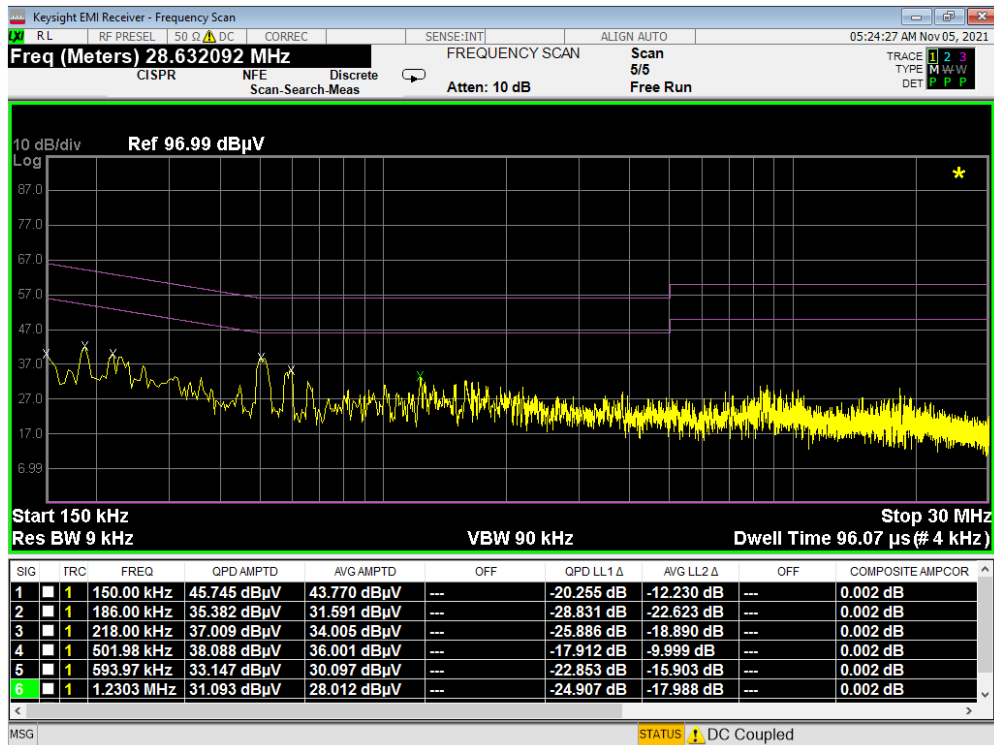
Plot 7-451. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: A3LSMS901JPN	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 287 of 295



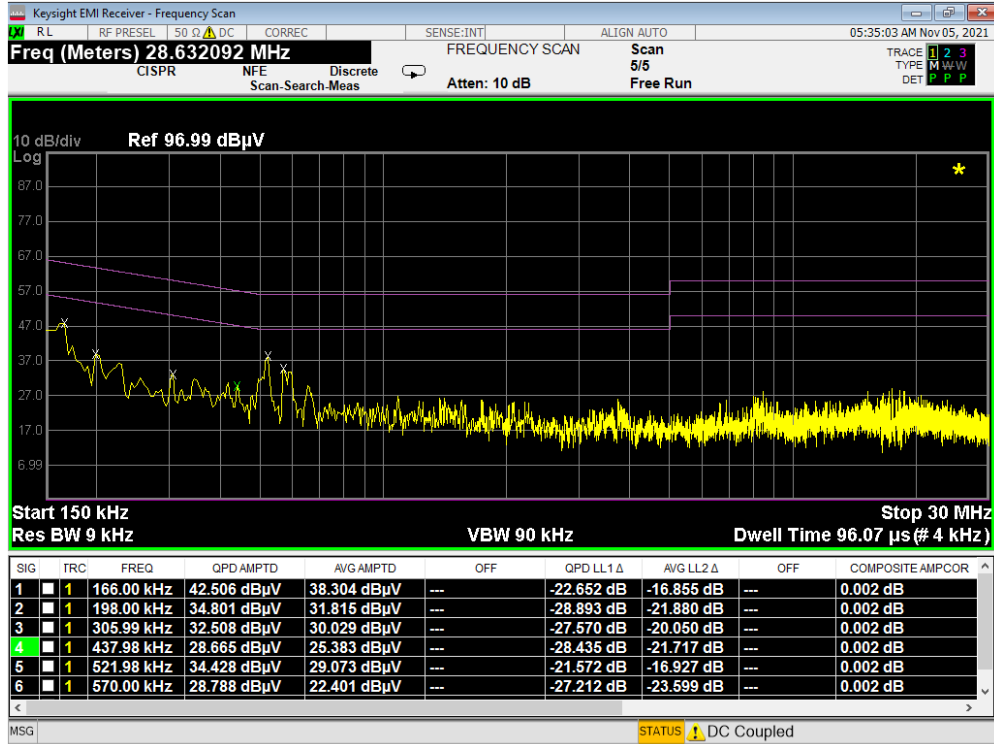


Plot 7-452. Line Conducted Plot with 802.11a UNII Band 3 (L1)

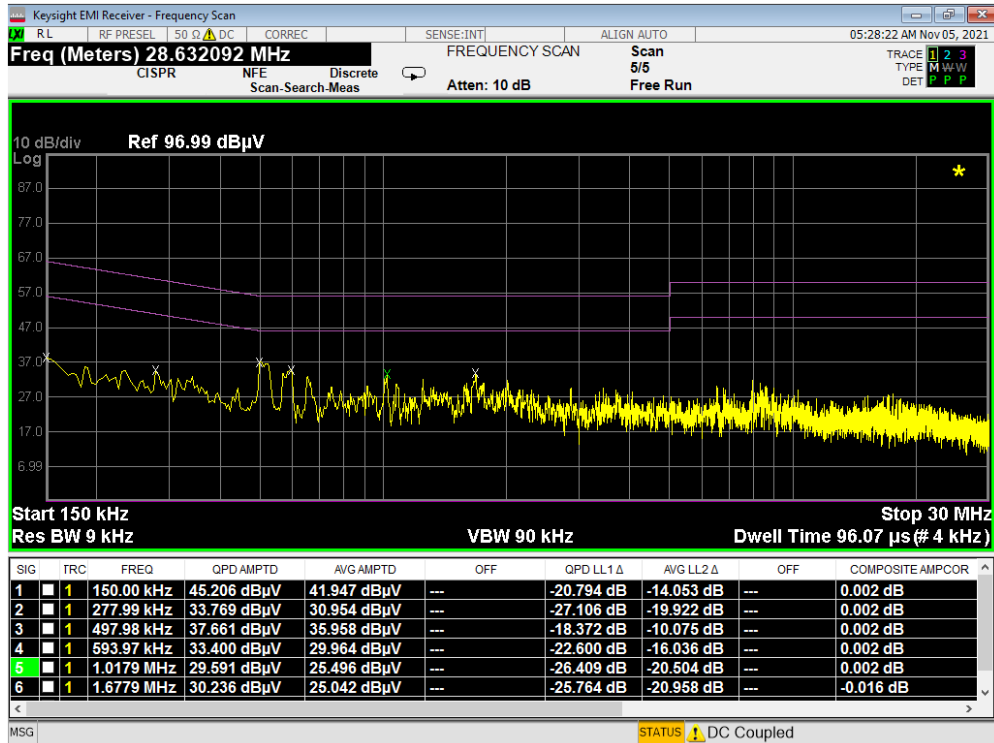


Plot 7-453. Line Conducted Plot with 802.11a UNII Band 3 (N)

FCC ID: A3LSMS901JPN	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 288 of 295

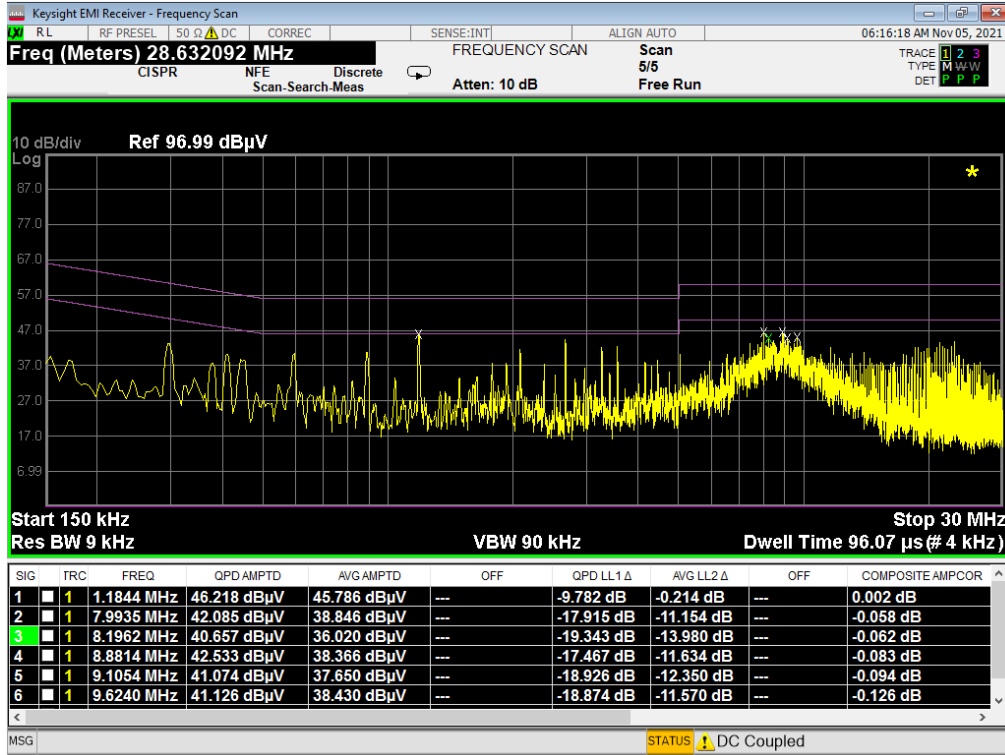


Plot 7-454. Line Conducted Plot with 802.11a UNII Band 4 (L1)

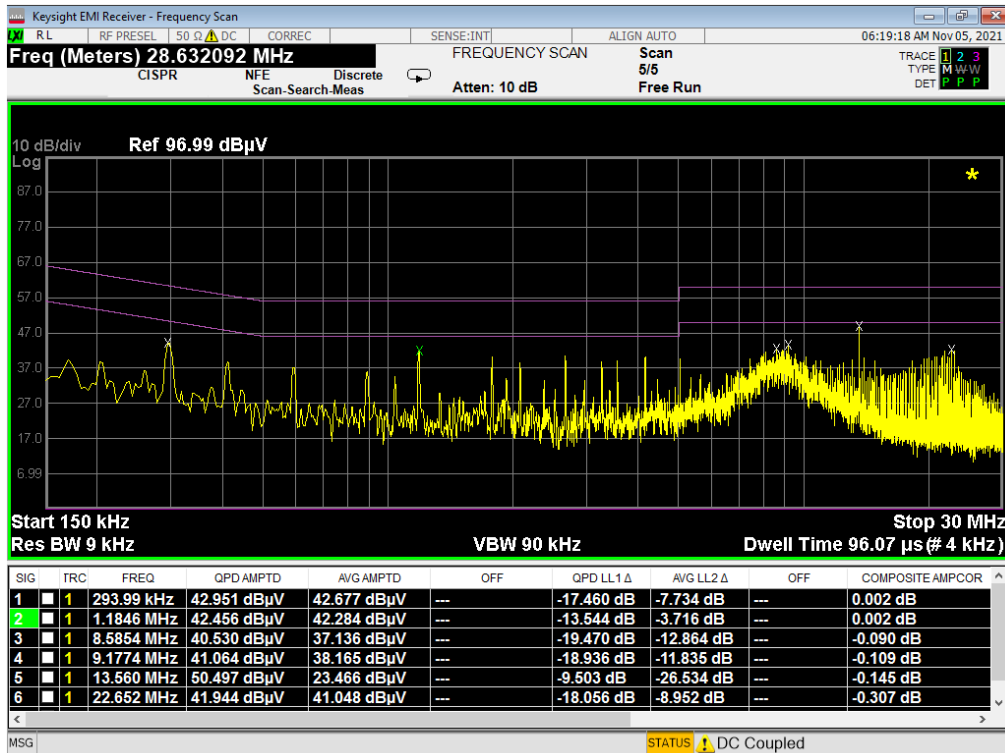


Plot 7-455. Line Conducted Plot with 802.11a UNII Band 4 (N)

FCC ID: A3LSMS901JPN	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 289 of 295

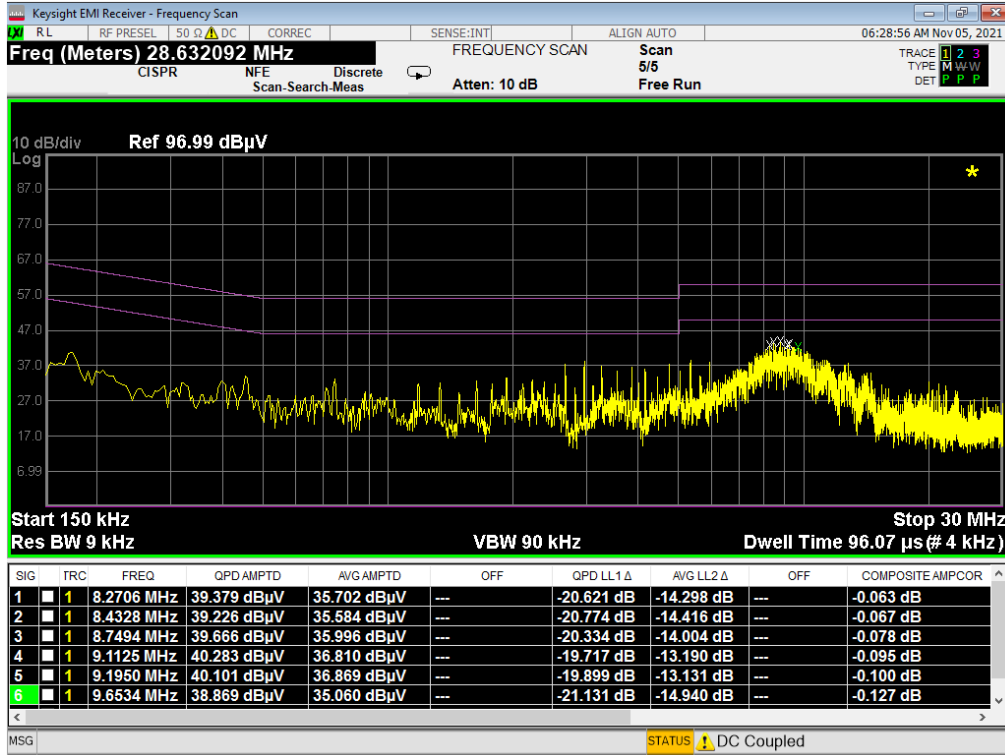


Plot 7-456. Line Conducted Plot with 802.11a UNII Band 1 (L1) WCP

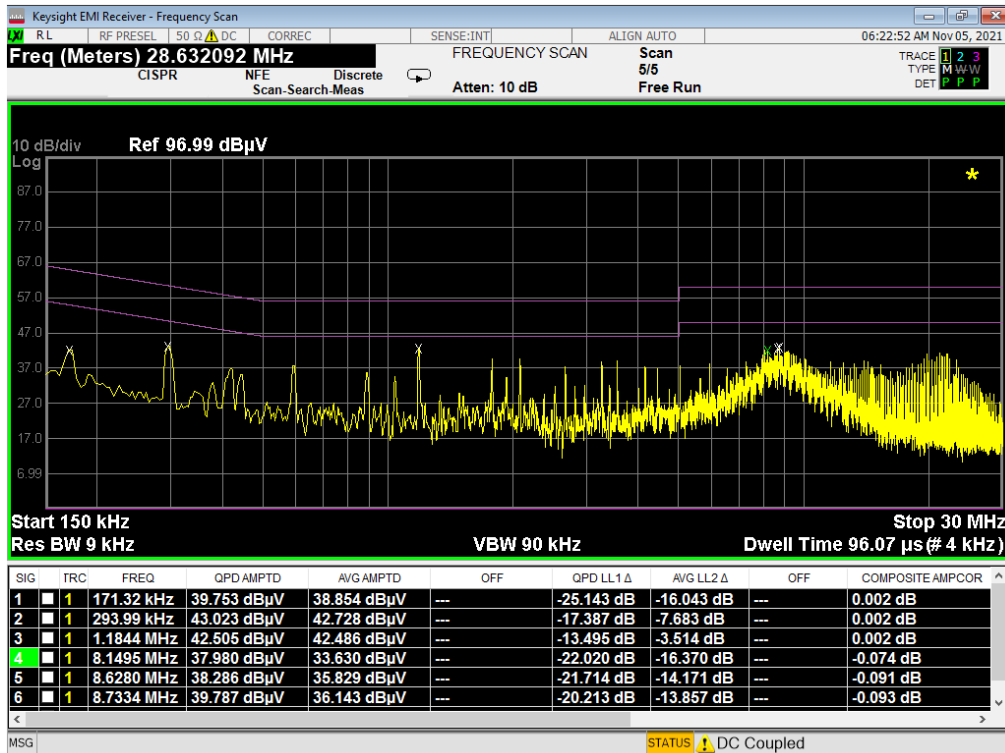


Plot 7-457. Line Conducted Plot with 802.11a UNII Band 1 (N) WCP

FCC ID: A3LSMS901JPN	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 290 of 295

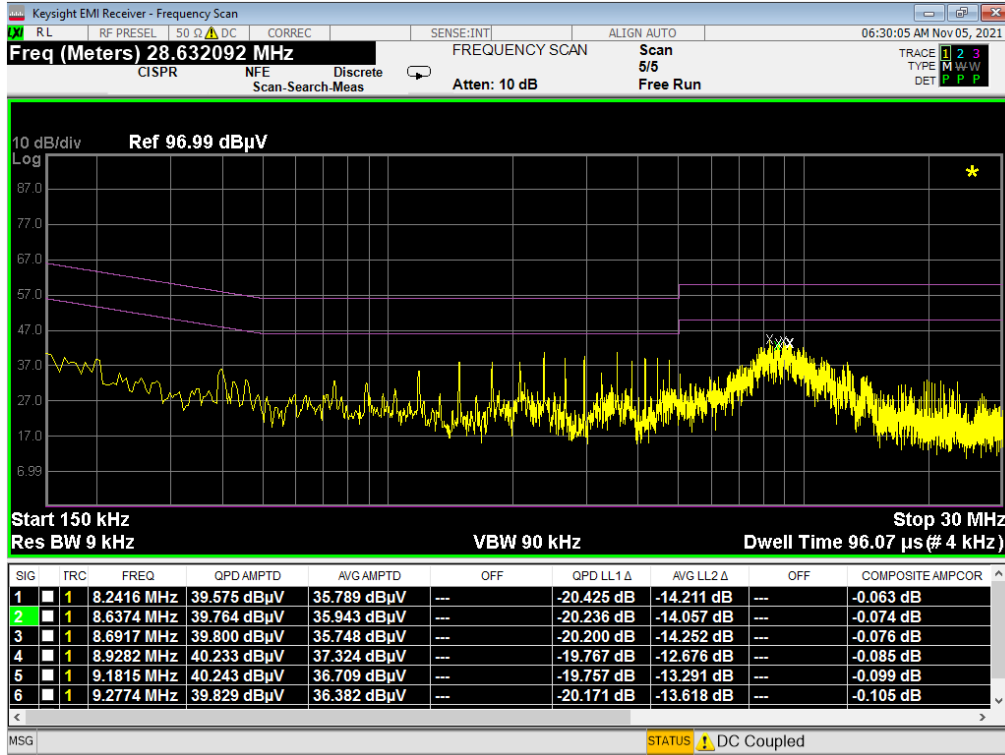


Plot 7-458. Line Conducted Plot with 802.11a UNII Band 2A (L1) WCP

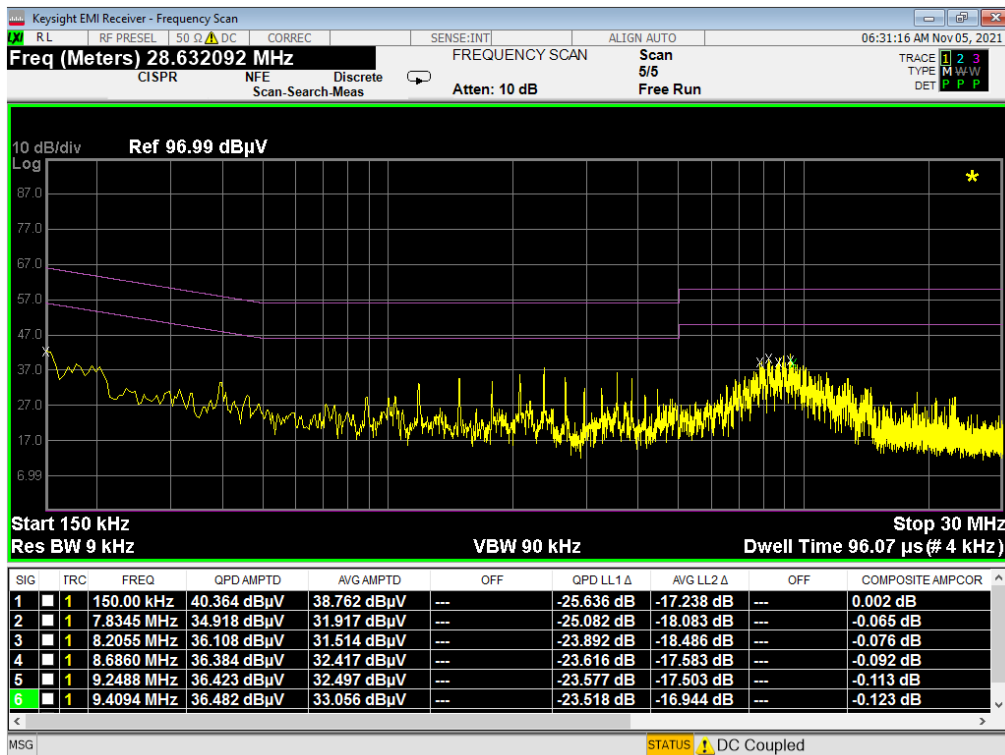


Plot 7-459. Line Conducted Plot with 802.11a UNII Band 2A (N) WCP

FCC ID: A3LSMS901JPN	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 291 of 295

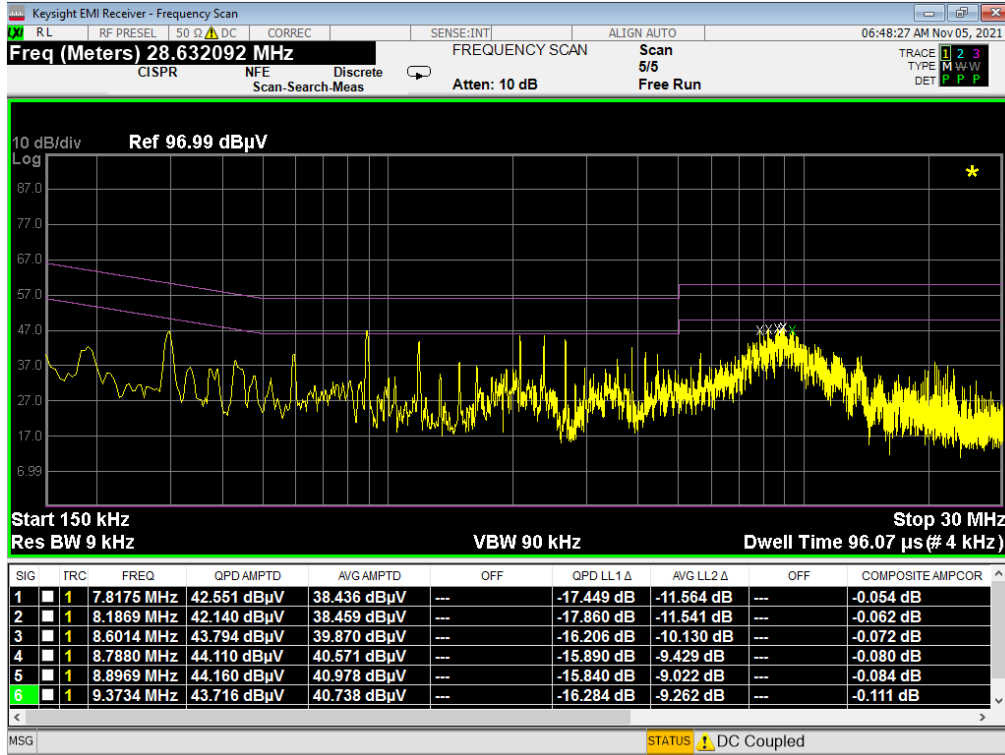


Plot 7-460. Line Conducted Plot with 802.11a UNII Band 2C (L1) WCP

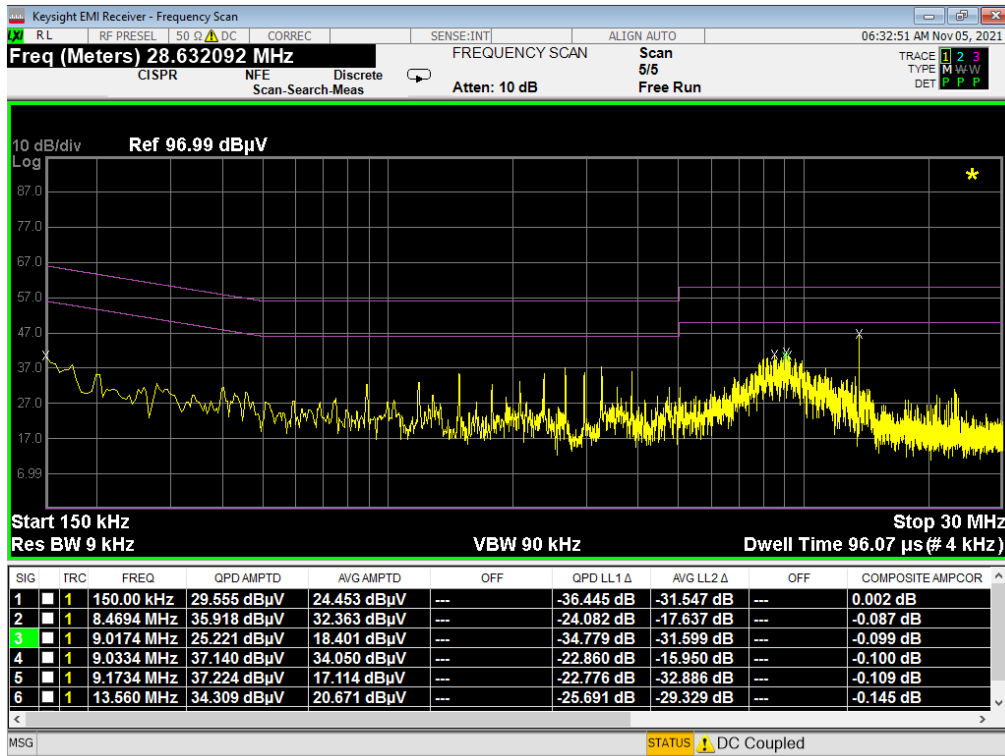


Plot 7-461. Line Conducted Plot with 802.11a UNII Band 2C (N) WCP

FCC ID: A3LSMS901JPN	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 292 of 295

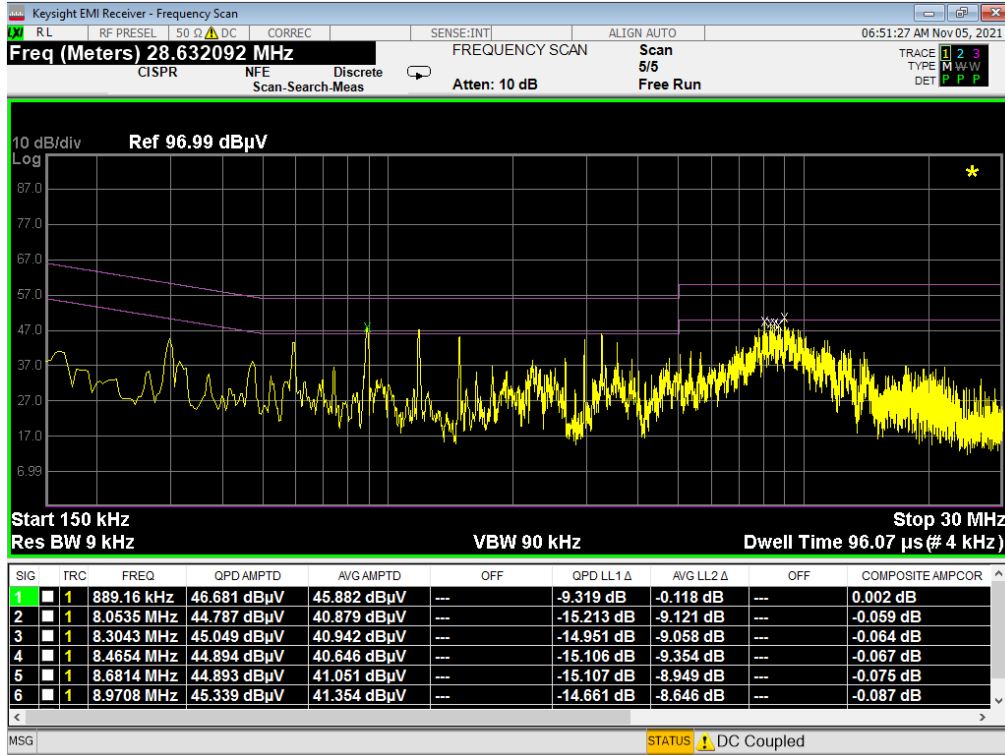


Plot 7-462. Line Conducted Plot with 802.11a UNII Band 3 (L1) WCP

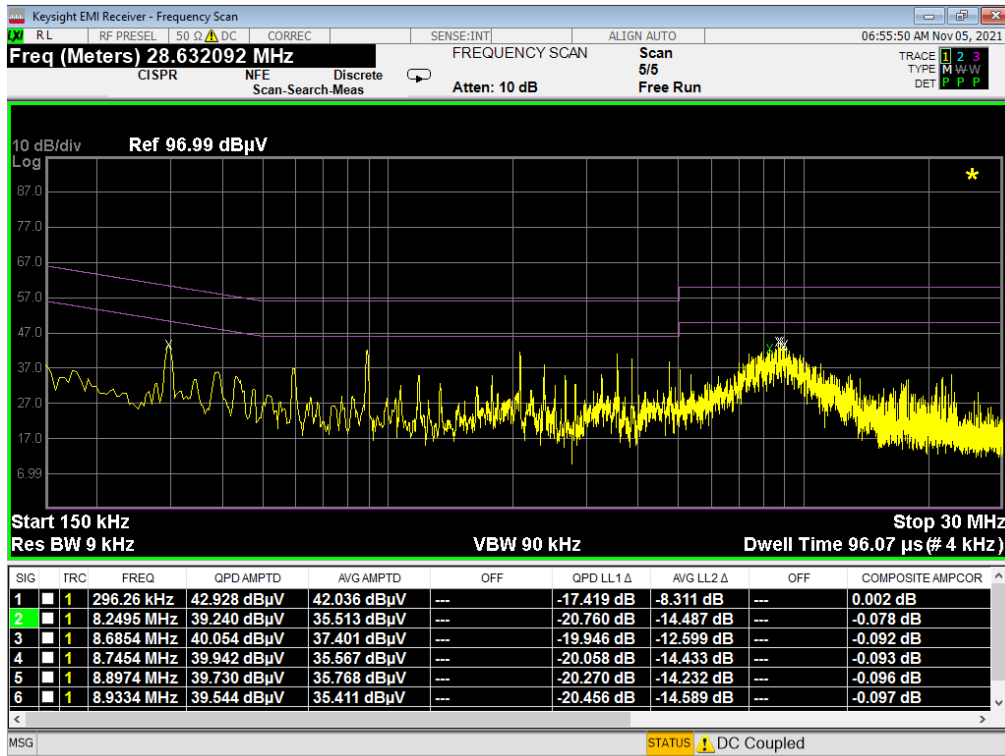


Plot 7-463. Line Conducted Plot with 802.11a UNII Band 3 (N) WCP

FCC ID: A3LSMS901JPN	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 – 12/22/2021	EUT Type: Portable Handset		Page 293 of 295



Plot 7-464. Line Conducted Plot with 802.11a UNII Band 4 (L1) WCP



Plot 7-465. Line Conducted Plot with 802.11a UNII Band 4 (N) WCP

FCC ID: A3LSMS901JPN	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	<b>SAMSUNG</b>	Approved by: Technical Manager
Test Report S/N: 1M2112090153-11.A3L	Test Dates: 09/22 - 12/22/2021	EUT Type: Portable Handset		Page 294 of 295

## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS901JPN** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

<b>FCC ID:</b> A3LSMS901JPN	 <small>Proud to be part of  element</small>	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2112090153-11.A3L	<b>Test Dates:</b> 09/22 – 12/22/2021	<b>EUT Type:</b> Portable Handset		Page 295 of 295