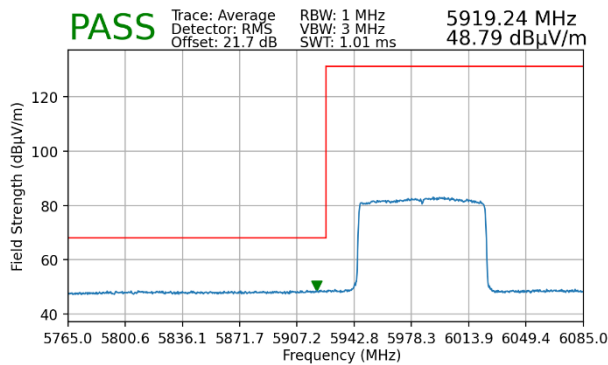




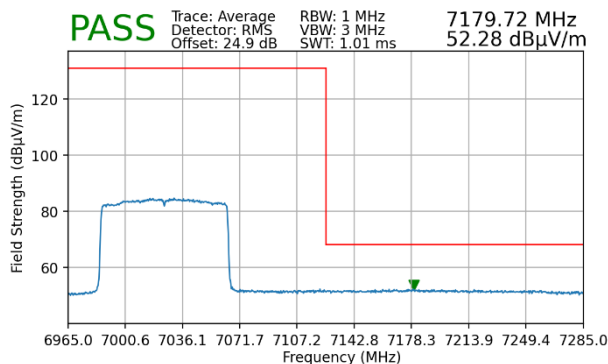
**7.7.14 MIMO Radiated Band Edge Measurements (80MHz BW)**  
**§15.407(b.5) §15.205 §15.209**

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: 6MBPS  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 5985MHz  
 Channel: 7



**Plot 7-695. Radiated Lower Band Edge Plot MIMO (Average – UNII Band 5)**

Worst Case Mode: 802.11ax  
 Worst Case Transfer Rate: 6MBPS  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 7025MHz  
 Channel: 215



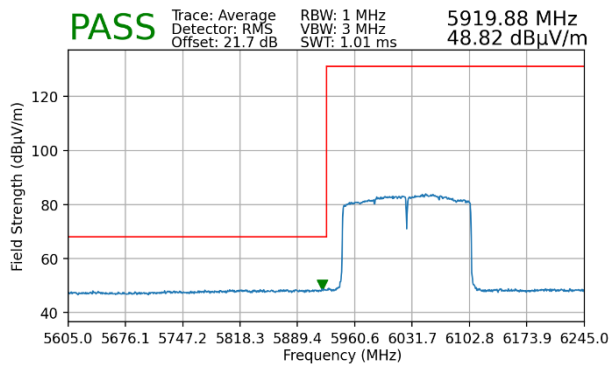
**Plot 7-696. Radiated Upper Band Edge Plot MIMO (Average – UNII Band 8)**

FCC ID: C3K1997	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device	Page 410 of 422



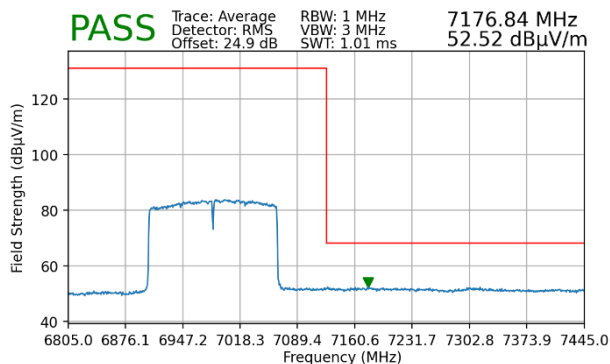
### 7.7.15 MIMO Radiated Band Edge Measurements (160MHz BW) §15.407(b.5) §15.205 §15.209

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	6MBPS
Distance of Measurements:	3 Meters
Operating Frequency:	6025MHz
Channel:	15



**Plot 7-697. Radiated Lower Band Edge Plot MIMO  
(Average – UNII Band 5)**

Worst Case Mode:	802.11ax
Worst Case Transfer Rate:	6MBPS
Distance of Measurements:	3 Meters
Operating Frequency:	6985MHz
Channel:	207



**Plot 7-698. Radiated Upper Band Edge Plot MIMO  
(Average – UNII Band 8)**

FCC ID: C3K1997	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device	Page 411 of 422

## 7.8 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209

### 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 emissions <1GHz must not exceed the limit shown in Table 7-58 per Section 15.209**

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 7-58. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013

### Test Settings

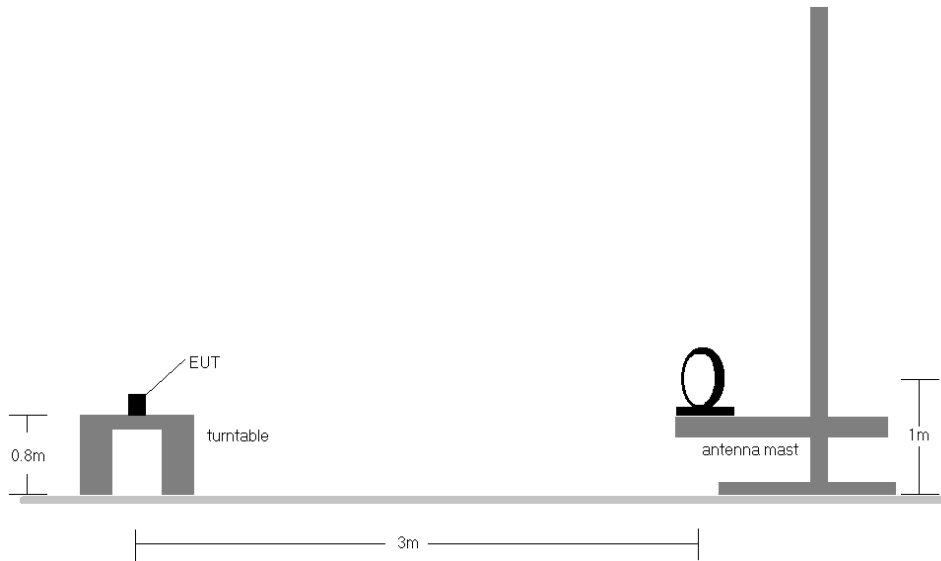
#### Quasi-Peak Field Strength Measurements

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

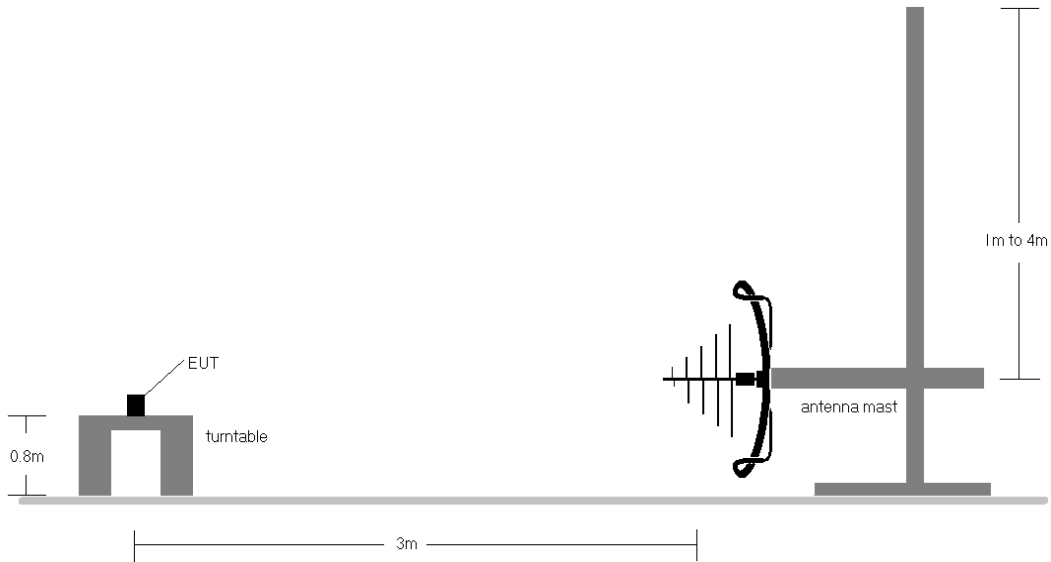
FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device	Page 412 of 422

**Test Setup**

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



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



**Figure 7-8. Radiated Test Setup < 1GHz**

<b>FCC ID:</b> C3K1997	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2204040049-17-R1.C3K	<b>Test Dates:</b> 3/14/2022 – 7/8/2022	<b>EUT Type:</b> Portable Computing Device	Page 413 of 422

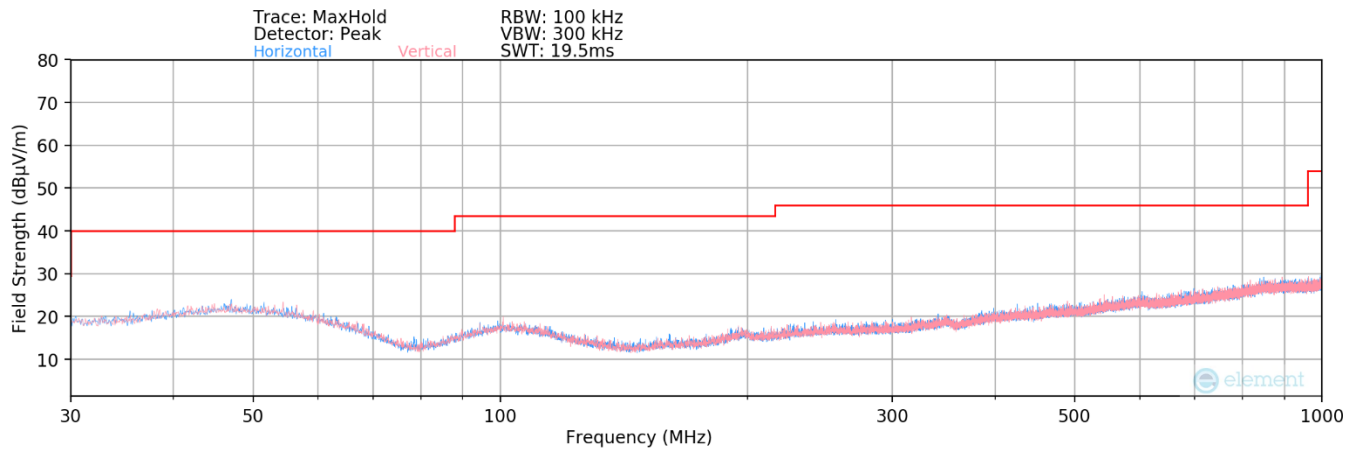
**Test Notes**

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-58.
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.

<b>FCC ID:</b> C3K1997	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2204040049-17-R1.C3K	<b>Test Dates:</b> 3/14/2022 – 7/8/2022	<b>EUT Type:</b> Portable Computing Device	Page 414 of 422

## Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209



Plot 7-699. Radiated Spurious Plot below 1GHz

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]
846.12	Quasi-Peak	H	-	-	-91.70	-4.04	11.26	46.02	-34.76

Plot 7-700. Radiated Spurious Data below 1GHz

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device		Page 415 of 422

## 7.9 Line-Conducted Test Data

### §15.407

#### 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.**

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 7-59. 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

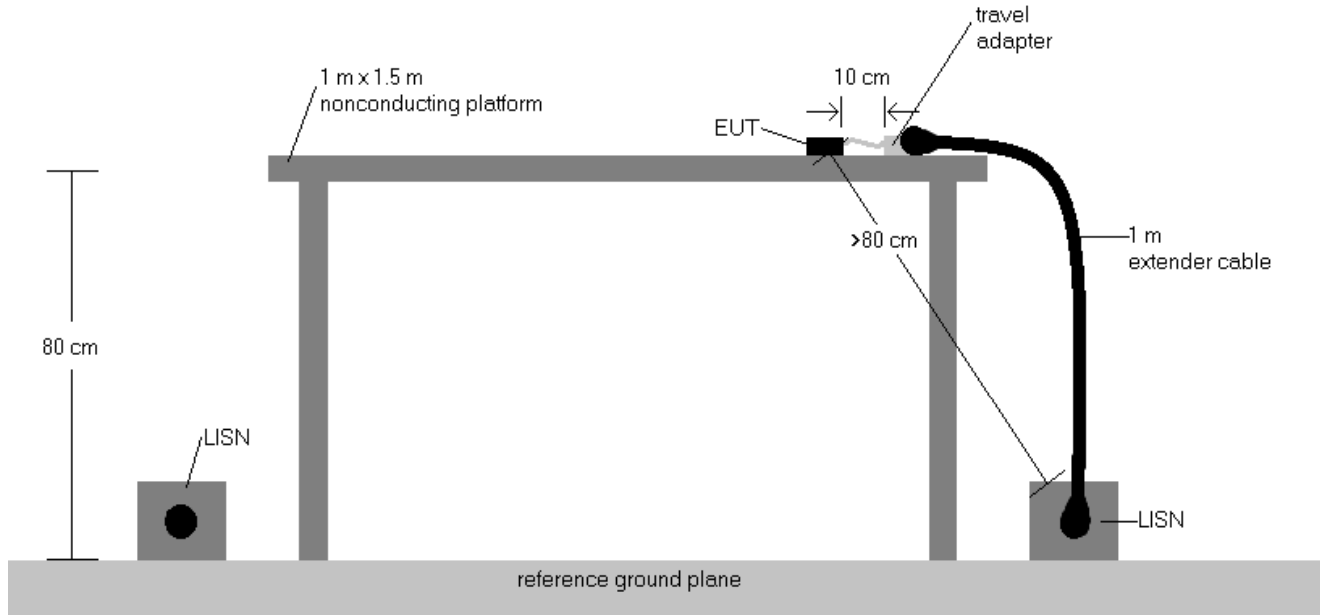
##### Average Field Strength Measurements

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: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device	Page 416 of 422

### Test Setup

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



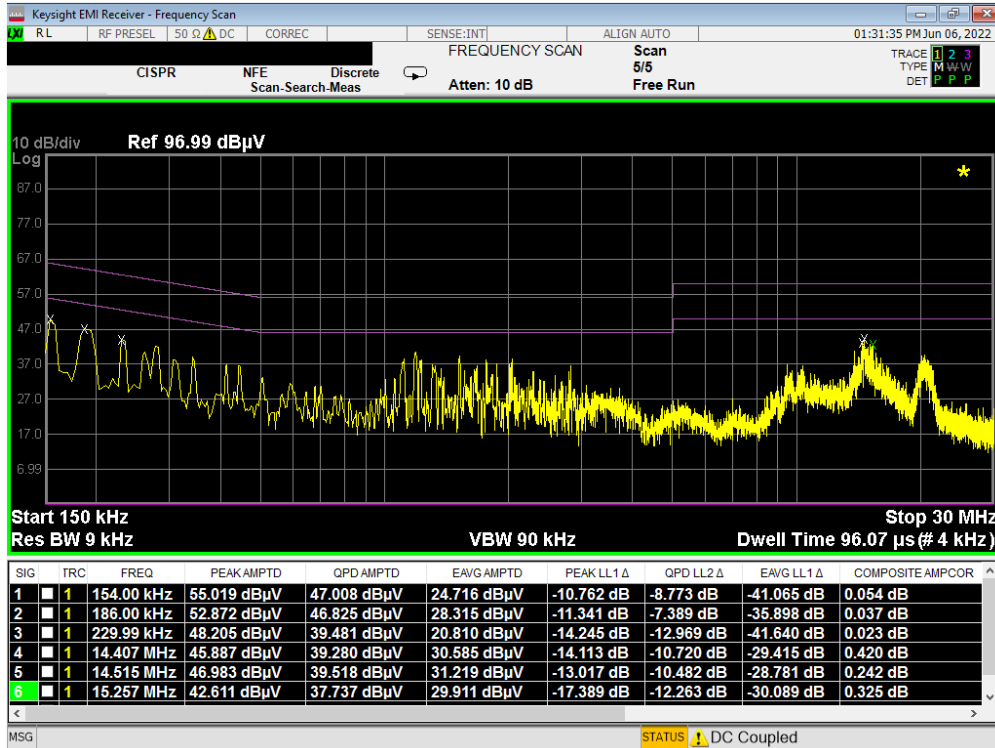
**Figure 7-9. Test Instrument & Measurement Setup**

### Test Notes

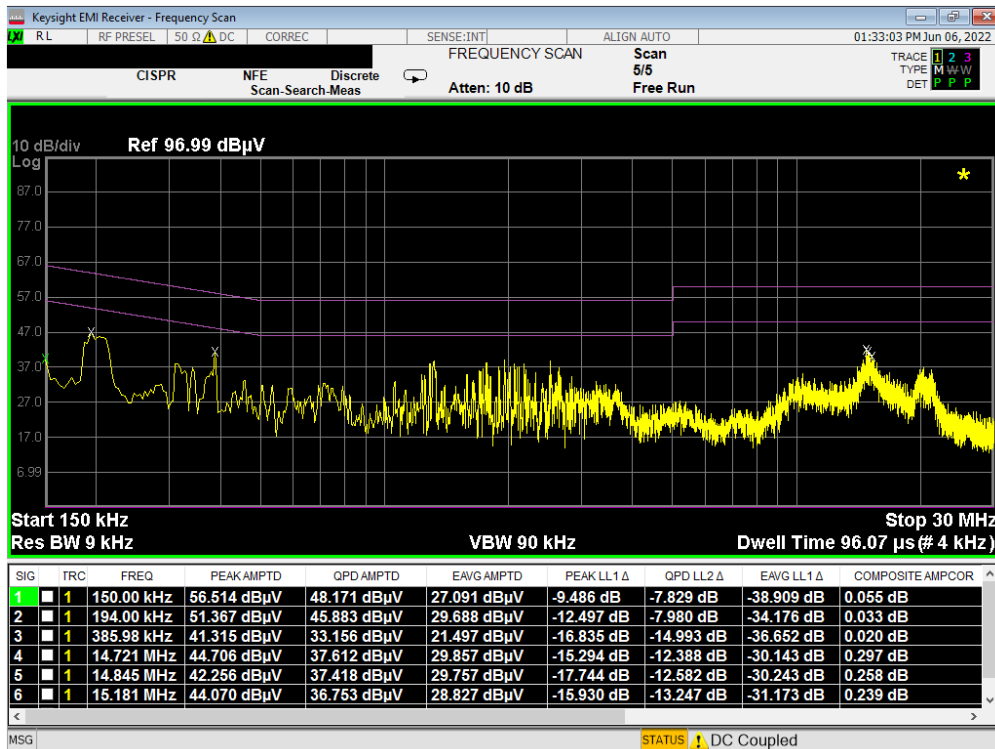
1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207.
3.  $\text{Corr. (dB)} =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

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device	Page 417 of 422



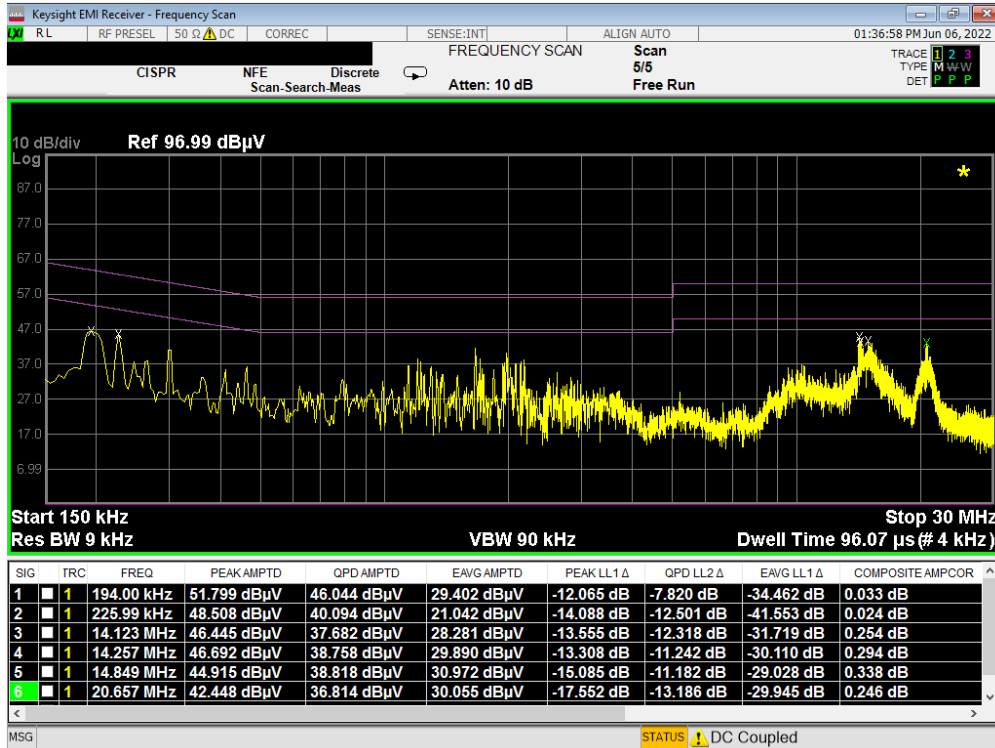


Plot 7-701. Line Conducted Plot with 802.11a UNII Band 5 (L1)

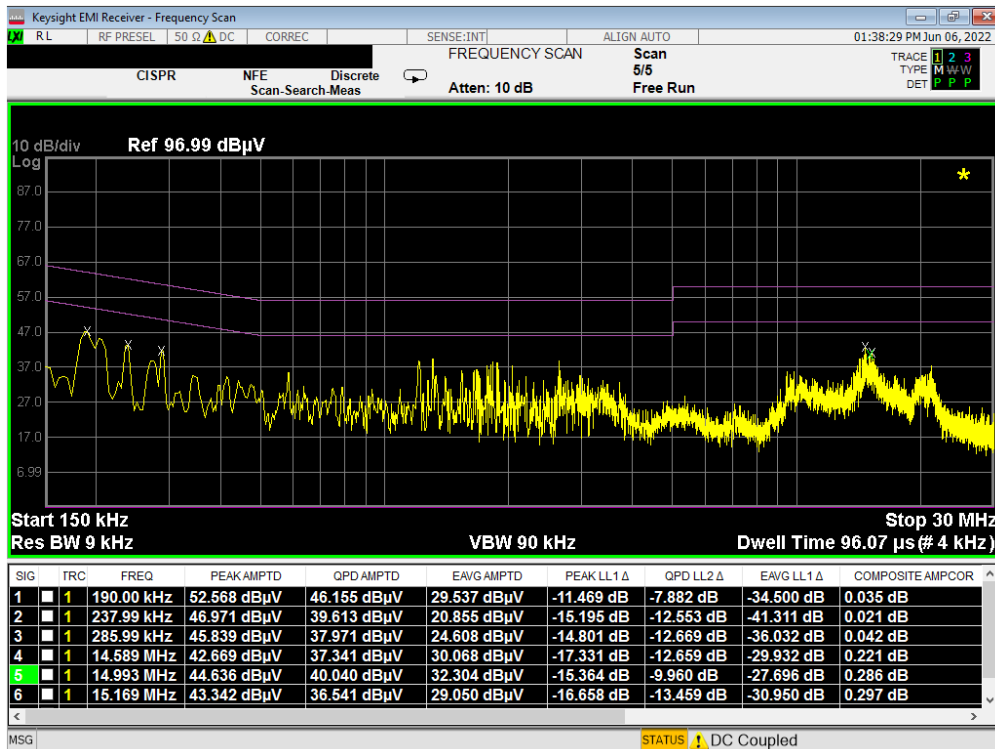


Plot 7-702. Line Conducted Plot with 802.11a UNII Band 5 (N)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device		Page 418 of 422

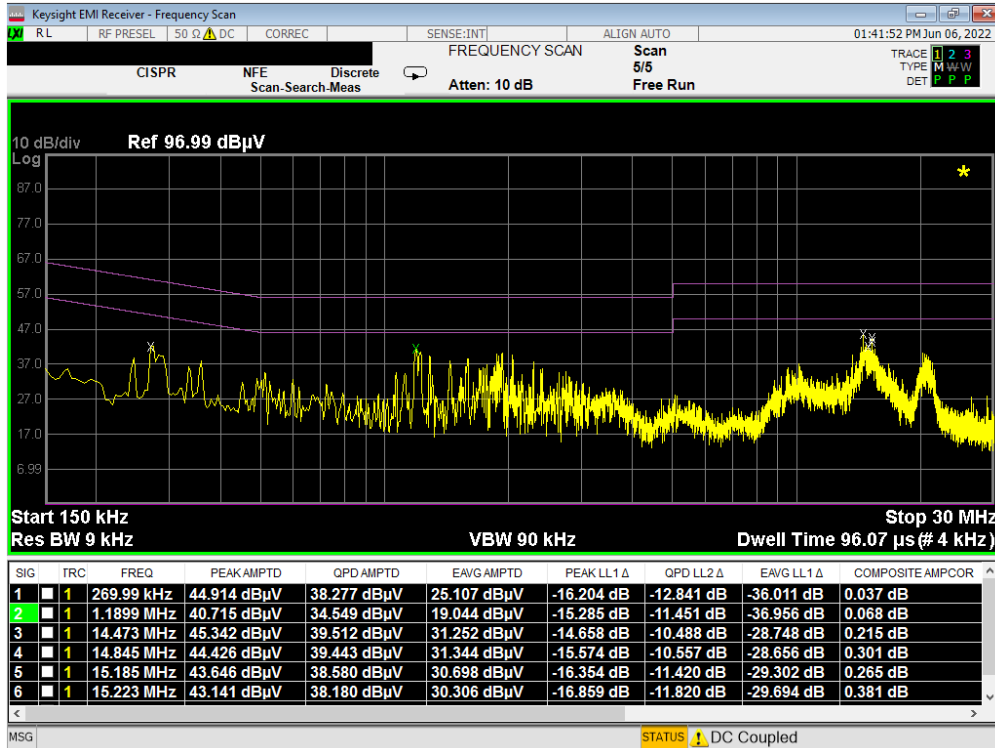


Plot 7-703. Line Conducted Plot with 802.11a UNII Band 6 (L1)

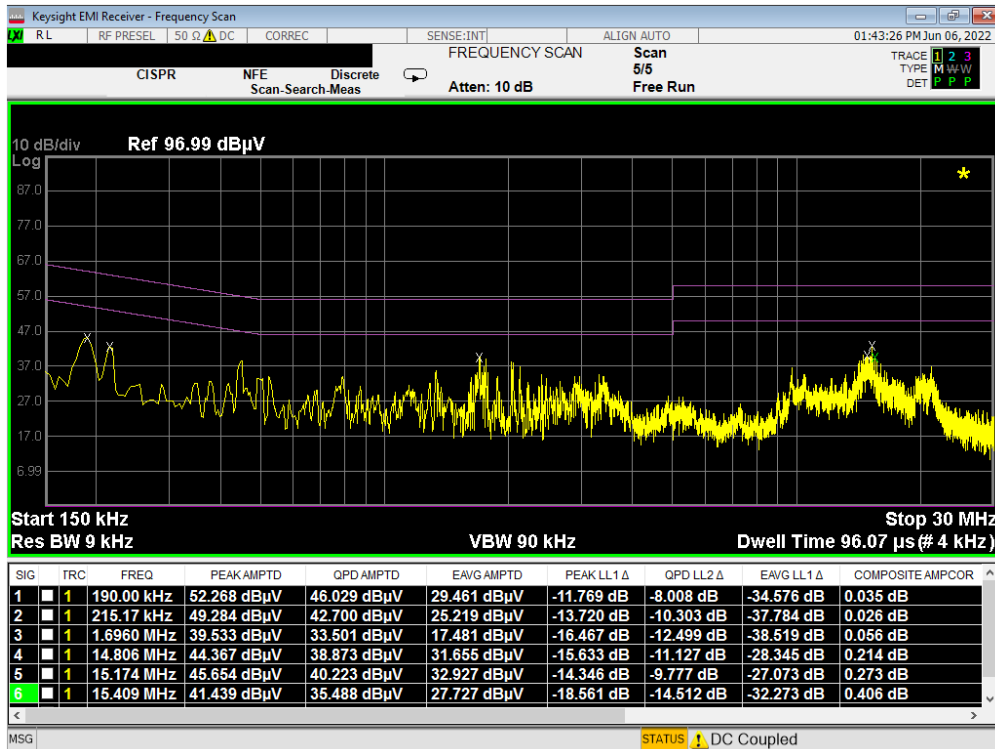


Plot 7-704. Line Conducted Plot with 802.11a UNII Band 6 (N)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device		Page 419 of 422

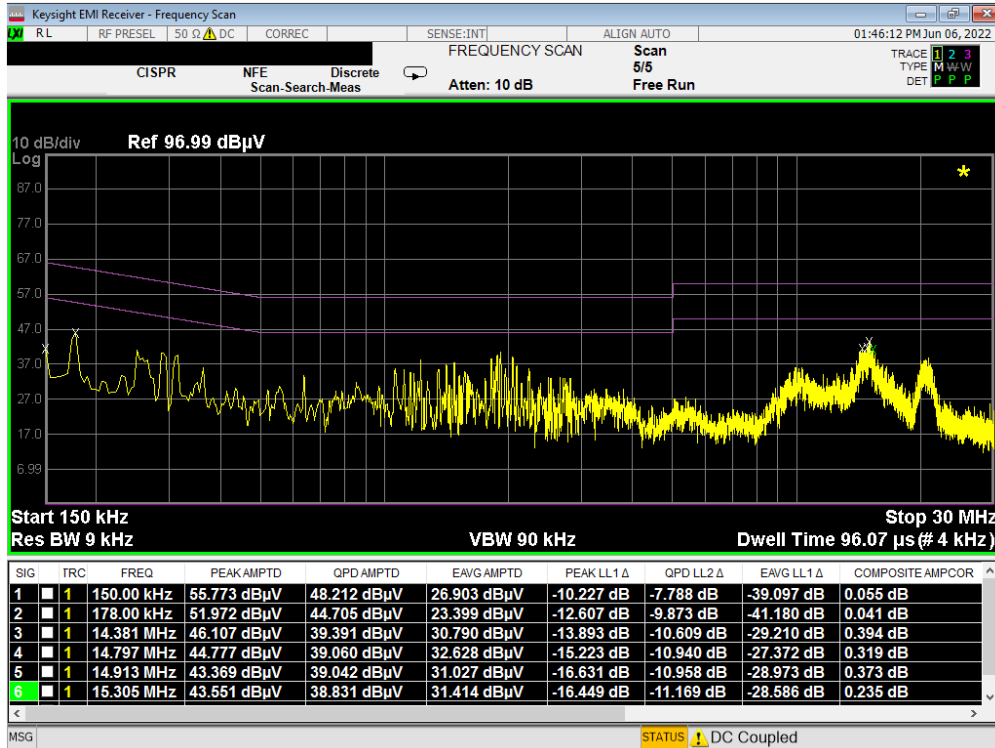


Plot 7-705. Line Conducted Plot with 802.11a UNII Band 7 (L1)

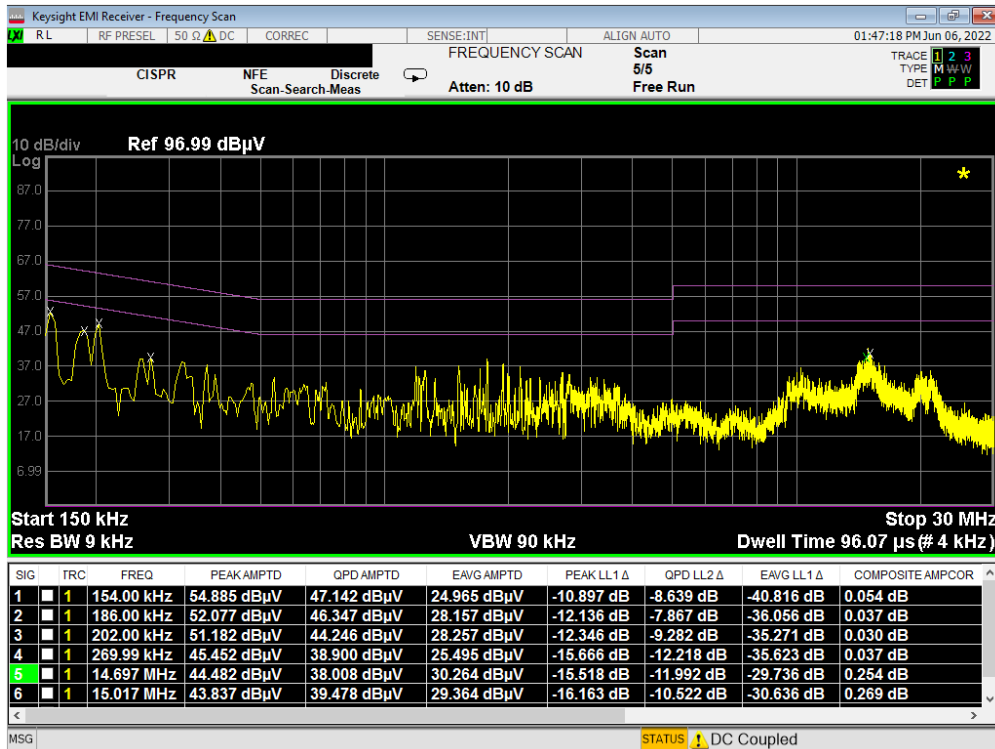


Plot 7-706. Line Conducted Plot with 802.11a UNII Band 7 (N)

FCC ID: C3K1997		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device		Page 420 of 422



Plot 7-707. Line Conducted Plot with 802.11a UNII Band 8 (L1)



Plot 7-708. Line Conducted Plot with 802.11a UNII Band 8 (N)

MEASUREMENT REPORT (CERTIFICATION)			Approved by: Technical Manager
FCC ID: C3K1997	Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device
			Page 421 of 422

## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Microsoft Corporation Portable Computing Device FCC ID: C3K1997** is in compliance with FCC Part Subpart E (15.407) of the FCC rules for operation as a client device.

FCC ID: C3K1997	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2204040049-17-R1.C3K	Test Dates: 3/14/2022 – 7/8/2022	EUT Type: Portable Computing Device	Page 422 of 422