Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
T9	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T10	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T11	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T12	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T13	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T14	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	77.300M	46.3	+0.0 +0.0 -27.8 +0.5	+0.1 +0.0 +6.9 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0	32.2	40.0	-7.8	Vert
2	319.600M	41.7	+0.0 +0.0 -27.1 +1.1	+0.2 +0.0 +14.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0	36.7	46.0	-9.3	Horiz

3	10478.800 M	47.6	+6.2 +0.0 +0.0 +0.0	+1.4 +0.0 +0.0 +0.0	-11.9 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	43.3	54.0	-10.7	Horiz
4	10440.210 M	47.6	+6.2 +0.0 +0.0 +0.0	+1.4 +0.0 +0.0 +0.0	-12.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	43.2	54.0	-10.8	Horiz
5	98.500M	45.1	+0.0 +0.0 -27.7 +0.6	+0.1 +0.0 +8.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	32.4	43.5	-11.1	Vert
6	10361.230 M	47.0	+6.2 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0 +0.0	-12.1 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	42.4	54.0	-11.6	Horiz
7	118.800M	43.0	+0.0 +0.0 -27.6 +0.6	+0.1 +0.0 +8.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	30.4	43.5	-13.1	Vert
8	36.495k	43.8	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +10.6	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	14.4	36.3	-21.9	Perp
9	20720.000 M Ave	29.5	+0.0 +1.9 +0.0 +0.0	+0.0 +9.2 +0.0 +0.0	+0.0 +0.9 +0.0	-13.9 +1.2 +0.0	+0.0	28.8	54.0	-25.2	Horiz
^	20720.000 M	45.0	+0.0 +1.9 +0.0 +0.0	+0.0 +9.2 +0.0 +0.0	+0.0 +0.9 +0.0	-13.9 +1.2 +0.0	+0.0	44.3	54.0	-9.7	Horiz
11	26.269M	17.2	+0.3 +0.0 +0.0 +0.0	+0.1 +0.0 +0.0 +6.6	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-20.0	4.2	29.5	-25.3	Perp

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:16:14
Tested By:	Matthew Harrison	Sequence#:	31
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 9kHz-40GHz
Frequency tested: 5190, 5230 MHz

Firmware power setting: 13 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 40MHz BW, MCS0 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

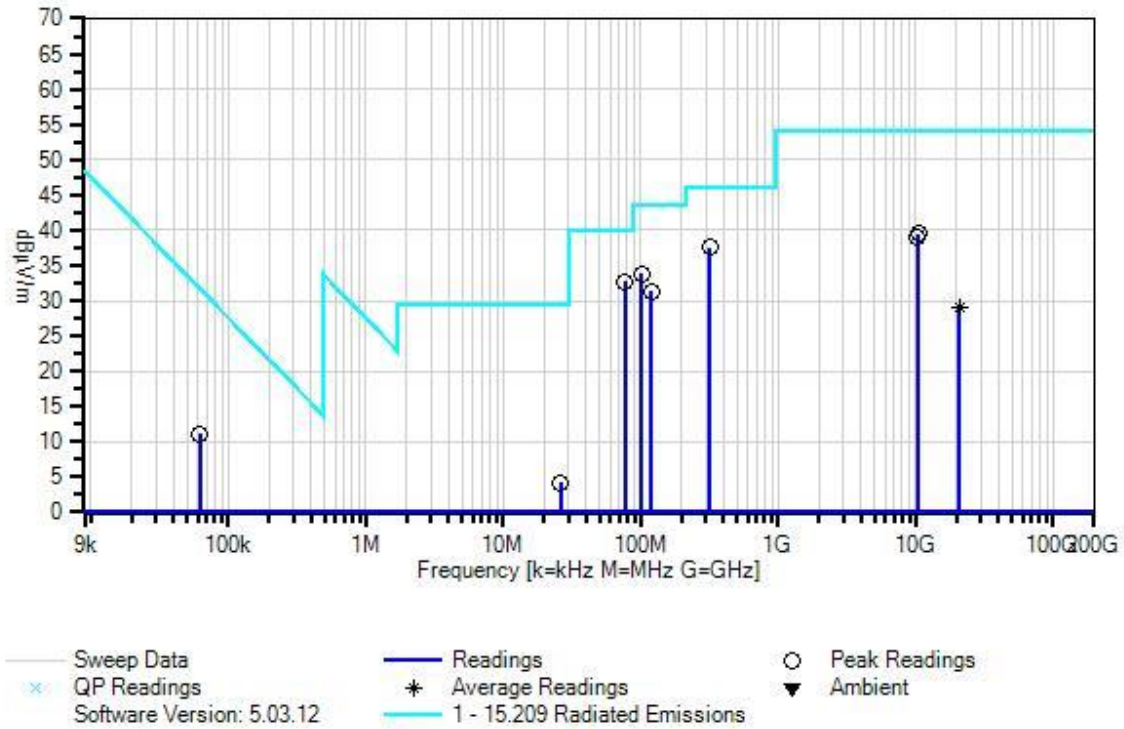
Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No Emissions found above 26GHz

Nalloy, LLC. WO#: 102802 Sequence#: 31 Date: 4/2/2020
15.209 Radiated Emissions Test Distance: 3 Meters Perp



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
T9	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T10	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T11	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T12	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T13	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T14	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	76.400M	46.8	+0.0 +0.0 -27.8 +0.5	+0.1 +0.0 +6.9 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0	32.7	40.0	-7.3	Vert
2	318.600M	42.6	+0.0 +0.0 -27.1 +1.1	+0.2 +0.0 +14.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0	37.5	46.0	-8.5	Horiz

3	102.400M	46.4	+0.0 +0.0 -27.7 +0.6	+0.1 +0.0 +8.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	33.8	43.5	-9.7	Vert
4	118.800M	43.9	+0.0 +0.0 -27.6 +0.6	+0.1 +0.0 +8.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	31.3	43.5	-12.2	Vert
5	10462.150 M	43.9	+6.2 +0.0 +0.0 +0.0	+1.4 +0.0 +0.0 +0.0	-12.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	39.5	54.0	-14.5	Horiz
6	10378.650 M	43.5	+6.2 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0 +0.0	-12.1 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	38.9	54.0	-15.1	Horiz
7	62.439k	41.4	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +9.7	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	11.1	31.7	-20.6	Perp
8	20760.000 M Ave	29.7	+0.0 +2.0 +0.0 +0.0	+0.0 +9.3 +0.0 +0.0	+0.0 +0.9 +0.0	-14.0 +1.2 +0.0	+0.0	29.1	54.0	-24.9	Horiz
^	20760.000 M	45.2	+0.0 +2.0 +0.0 +0.0	+0.0 +9.3 +0.0 +0.0	+0.0 +0.9 +0.0	-14.0 +1.2 +0.0	+0.0	44.6	54.0	-9.4	Horiz
10	26.239M	17.2	+0.3 +0.0 +0.0 +0.0	+0.1 +0.0 +0.0 +6.6	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-20.0	4.2	29.5	-25.3	Perp

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:17:43
Tested By:	Matthew Harrison	Sequence#:	32
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 9kHz - 40GHz
Frequency tested: 5210 MHz

Firmware power setting: 13 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 80MHz BW, MCS0 (worst-case)

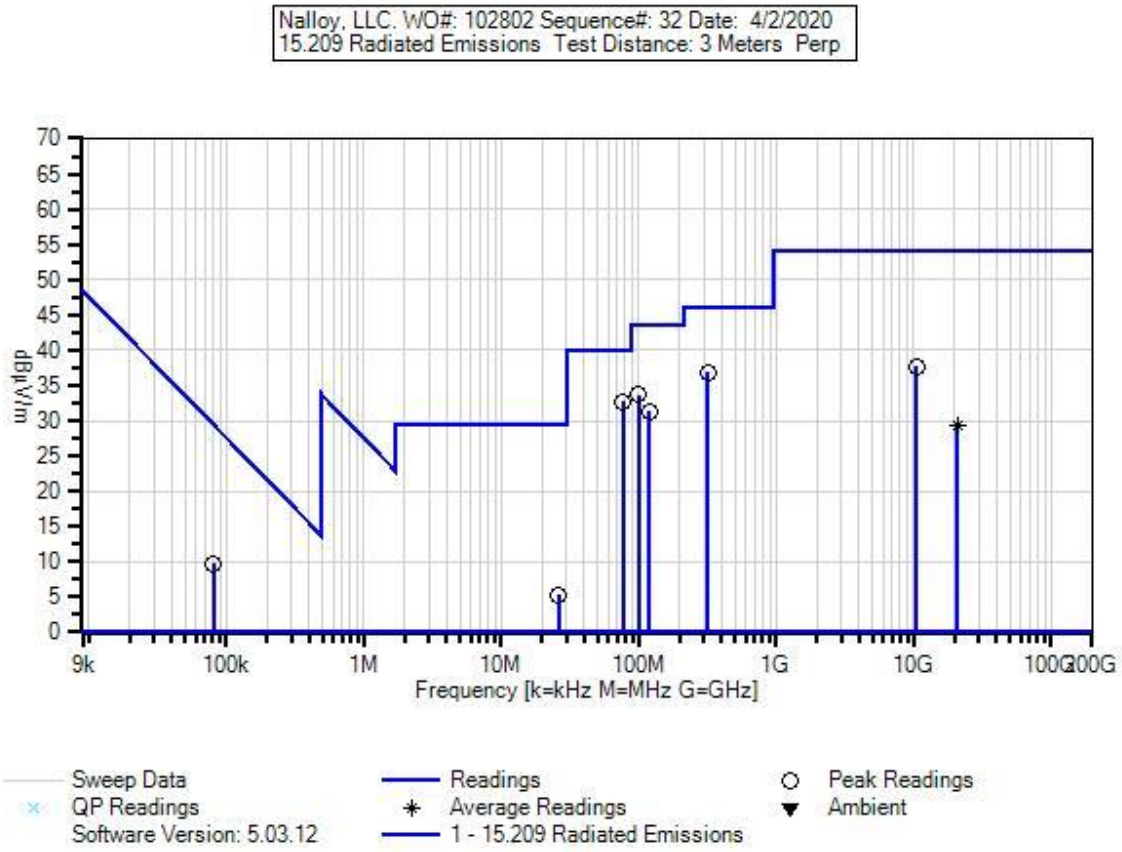
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No Emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 32 Date: 4/2/2020
15.209 Radiated Emissions Test Distance: 3 Meters Perp
dBµV/m
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
9k
100k
1M
10M
100M
1G
10G
100G
200G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
QP Readings
Software Version: 5.03.12
Readings
Average Readings
1 - 15.209 Radiated Emissions
Peak Readings
Ambient

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
T9	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T10	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T11	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T12	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T13	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T14	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	77.300M	46.8	+0.0 +0.0 -27.8 +0.5	+0.1 +0.0 +6.9 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0	32.7	40.0	-7.3	Vert
2	318.600M	42.0	+0.0 +0.0 -27.1 +1.1	+0.2 +0.0 +14.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0	36.9	46.0	-9.1	Horiz

3	100.500M	46.2	+0.0 +0.0 -27.7 +0.6	+0.1 +0.0 +8.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	33.6	43.5	-9.9	Vert
4	118.800M	44.0	+0.0 +0.0 -27.6 +0.6	+0.1 +0.0 +8.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	31.4	43.5	-12.1	Vert
5	10429.900 M	42.2	+6.2 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0 +0.0	-12.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	37.7	54.0	-16.3	Horiz
6	80.346k	40.1	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +9.7	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	9.8	29.5	-19.7	Perp
7	26.120M	18.3	+0.3 +0.0 +0.0 +0.0	+0.1 +0.0 +0.0 +6.7	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-20.0	5.4	29.5	-24.1	Perp
8	20852.200 M Ave	30.0	+0.0 +2.0 +0.0 +0.0	+0.0 +9.3 +0.0 +0.0	+0.0 +0.9 +0.0	-14.1 +1.2 +0.0	+0.0	29.3	54.0	-24.7	Horiz
^	20852.200 M	44.5	+0.0 +2.0 +0.0 +0.0	+0.0 +9.3 +0.0 +0.0	+0.0 +0.9 +0.0	-14.1 +1.2 +0.0	+0.0	43.8	54.0	-10.2	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:05:56
Tested By:	Matthew Harrison	Sequence#:	28
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 9kHz-40GHz
Frequency tested: 5180, 5220, 5240 MHz

Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11n, 20MHz BW, MCS8 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

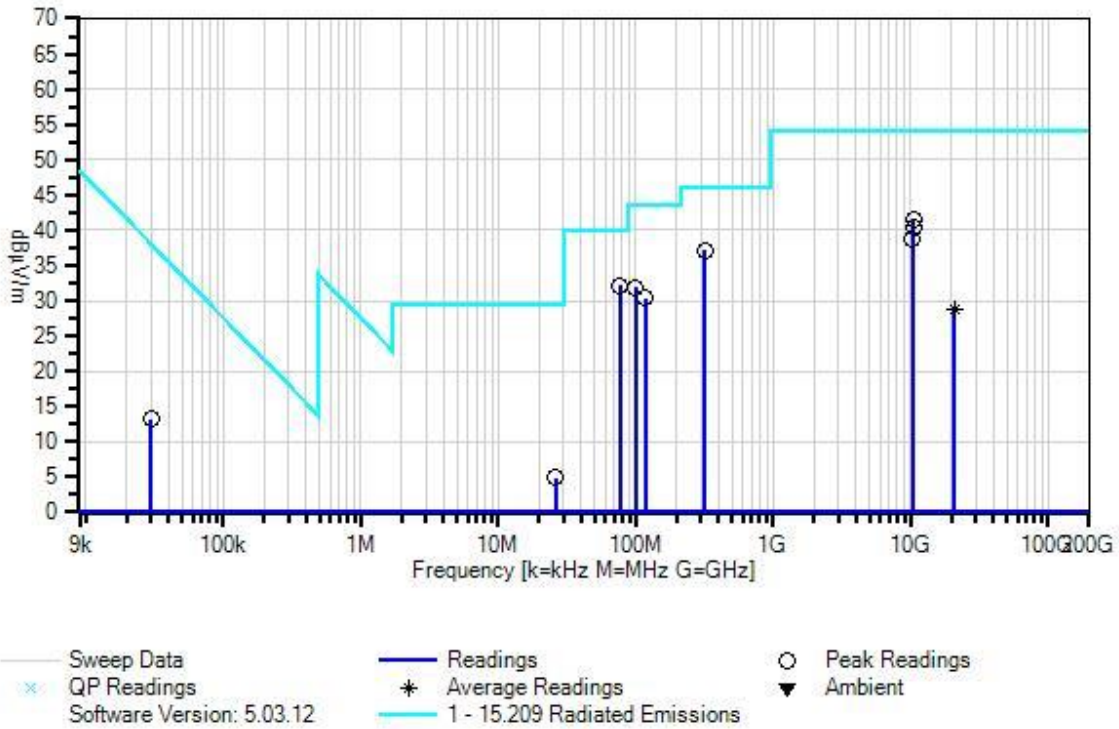
Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No emissions found above 26GHz

Nalloy, LLC. WO#: 102802 Sequence#: 28 Date: 4/2/2020
15.209 Radiated Emissions Test Distance: 3 Meters Perp



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
T9	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T10	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T11	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T12	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T13	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T14	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	76.400M	46.3	+0.0 +0.0 -27.8 +0.5	+0.1 +0.0 +6.9 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0	32.2	40.0	-7.8	Vert
2	317.600M	42.2	+0.0 +0.0 -27.1 +1.1	+0.2 +0.0 +14.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0	37.1	46.0	-8.9	Horiz

3	100.500M	44.5	+0.0 +0.0 -27.7 +0.6	+0.1 +0.0 +8.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	31.9	43.5	-11.6	Vert
4	10446.600 M	45.9	+6.2 +0.0 +0.0 +0.0	+1.4 +0.0 +0.0 +0.0	-12.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	41.5	54.0	-12.5	Horiz
5	117.900M	43.0	+0.0 +0.0 -27.6 +0.6	+0.1 +0.0 +8.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	30.4	43.5	-13.1	Vert
6	10474.840 M	44.7	+6.2 +0.0 +0.0 +0.0	+1.4 +0.0 +0.0 +0.0	-11.9 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	40.4	54.0	-13.6	Horiz
7	10362.580 M	43.3	+6.2 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0 +0.0	-12.1 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	38.7	54.0	-15.3	Horiz
8	26.030M	17.8	+0.3 +0.0 +0.0 +0.0	+0.1 +0.0 +0.0 +6.7	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-20.0	4.9	29.5	-24.6	Perp
9	29.727k	42.3	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +11.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	13.3	38.1	-24.8	Perp
10	20720.000 M Ave	29.6	+0.0 +1.9 +0.0 +0.0	+0.0 +9.2 +0.0 +0.0	+0.0 +0.9 +0.0	-13.9 +1.2 +0.0	+0.0	28.9	54.0	-25.1	Horiz
^	20720.000 M	44.8	+0.0 +1.9 +0.0 +0.0	+0.0 +9.2 +0.0 +0.0	+0.0 +0.9 +0.0	-13.9 +1.2 +0.0	+0.0	44.1	54.0	-9.9	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.209 Radiated Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:08:26
Tested By:	Matthew Harrison	Sequence#:	29
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 9kHz-40GHz
Frequency tested: 5190, 5230 MHz

Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11n, 40MHz BW, MCS8 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

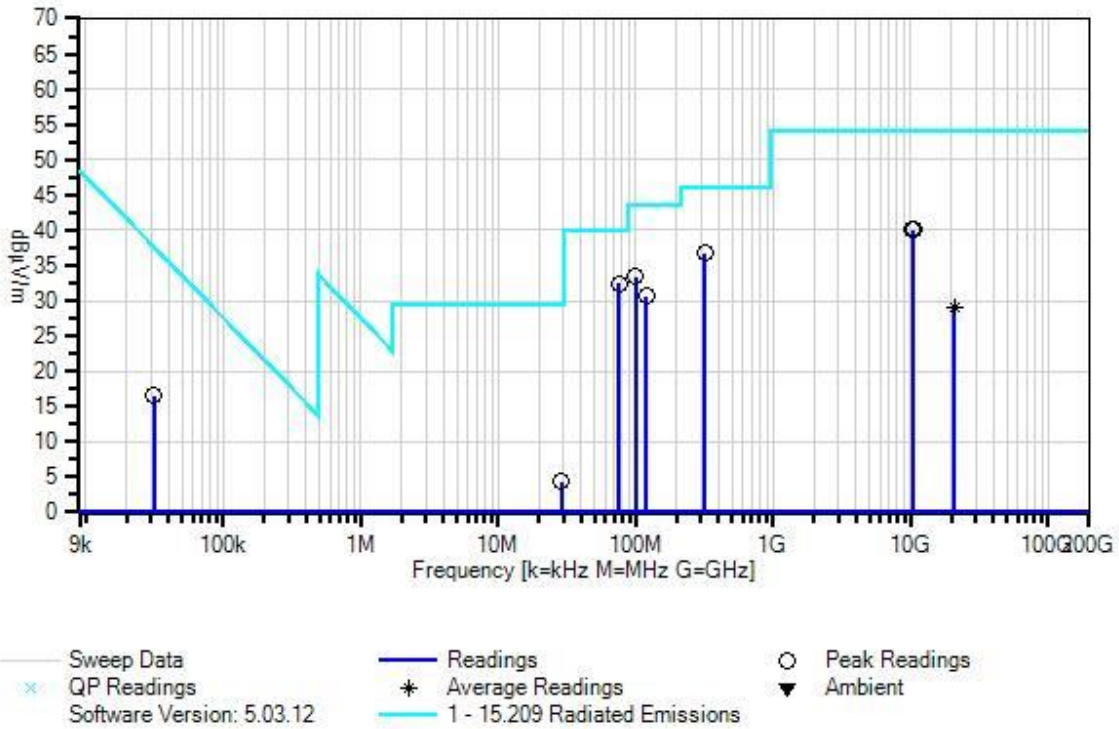
Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No emissions found above 26GHz

Nalloy, LLC. WO#: 102802 Sequence#: 29 Date: 4/2/2020
15.209 Radiated Emissions Test Distance: 3 Meters Perp



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
T9	AN02307	Preamp	8447D	1/10/2020	1/10/2022
T10	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
T11	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
T12	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
T13	ANP05360	Cable	RG214	2/3/2020	2/3/2022
T14	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	75.400M	46.4	+0.0 +0.0 -27.8 +0.5	+0.1 +0.0 +7.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.4	+0.0	32.4	40.0	-7.6	Vert
2	319.600M	41.7	+0.0 +0.0 -27.1 +1.1	+0.2 +0.0 +14.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0	36.7	46.0	-9.3	Horiz

3	319.600M	41.7	+0.0 +0.0 -27.1 +1.1	+0.2 +0.0 +14.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.9	+0.0	36.7	46.0	-9.3	Horiz
4	99.500M	46.1	+0.0 +0.0 -27.7 +0.6	+0.1 +0.0 +8.1 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	33.5	43.5	-10.0	Vert
5	118.800M	43.3	+0.0 +0.0 -27.6 +0.6	+0.1 +0.0 +8.0 +0.0	+0.0 +0.0 +5.8	+0.0 +0.0 +0.5	+0.0	30.7	43.5	-12.8	Vert
6	10442.500 M	44.5	+6.2 +0.0 +0.0 +0.0	+1.4 +0.0 +0.0 +0.0	-12.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	40.1	54.0	-13.9	Horiz
7	10382.300 M	44.7	+6.2 +0.0 +0.0 +0.0	+1.3 +0.0 +0.0 +0.0	-12.1 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	40.1	54.0	-13.9	Horiz
8	31.278k	45.7	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +0.0 +10.9	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-40.0	16.6	37.7	-21.1	Perp
9	20760.000 M Ave	29.7	+0.0 +2.0 +0.0 +0.0	+0.0 +9.3 +0.0 +0.0	+0.0 +0.9 +0.0	-14.0 +1.2 +0.0	+0.0	29.1	54.0	-24.9	Horiz
^	20760.000 M	44.8	+0.0 +2.0 +0.0 +0.0	+0.0 +9.3 +0.0 +0.0	+0.0 +0.9 +0.0	-14.0 +1.2 +0.0	+0.0	44.2	54.0	-9.8	Horiz
11	28.985M	18.1	+0.3 +0.0 +0.0 +0.0	+0.1 +0.0 +0.0 +5.9	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	-20.0	4.4	29.5	-25.1	Perp

15.407 Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	15:55:29
Tested By:	Matthew Harrison	Sequence#:	27
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 1-40GHz
Frequency tested: 5180, 5220, 5240 MHz
E[dBµV/m] = EIRP[dBm] + 95.2, for d = 3 m

Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11a, 20MHz BW, 6Mbps(worst-case)

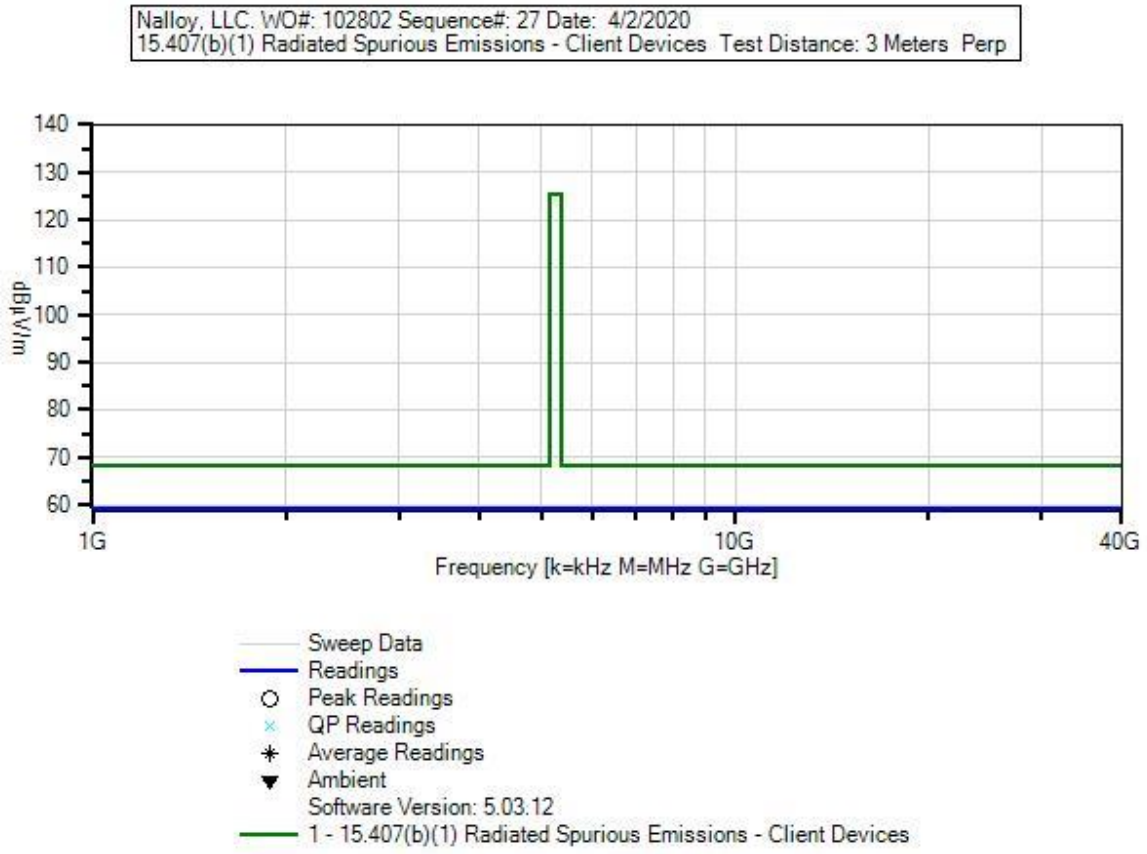
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 27 Date: 4/2/2020
15.407(b)(1) Radiated Spurious Emissions - Client Devices Test Distance: 3 Meters Perp
140
130
120
110
100
90
80
70
60
dBµV/m
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.03.12
1 - 15.407(b)(1) Radiated Spurious Emissions - Client Devices

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	20720.000 M	44.6	+0.0 +1.9	+0.0 +9.2	+0.0 +0.9	-13.9 +1.2	+0.0	43.9	68.2	-24.3	Horiz
2	10445.070 M	42.7	+6.2 +0.0	+1.4 +0.0	-12.0 +0.0	+0.0 +0.0	+0.0	38.3	68.2	-29.9	Horiz
3	10364.590 M	42.8	+6.2 +0.0	+1.3 +0.0	-12.1 +0.0	+0.0 +0.0	+0.0	38.2	68.2	-30.0	Horiz
4	10480.330 M	42.4	+6.2 +0.0	+1.4 +0.0	-11.9 +0.0	+0.0 +0.0	+0.0	38.1	68.2	-30.1	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:11:37
Tested By:	Matthew Harrison	Sequence#:	30
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 1-40GHz
Frequency tested: 5180, 5220, 5240 MHz
E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 m

Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 20MHz BW, MCS0 (worst-case)

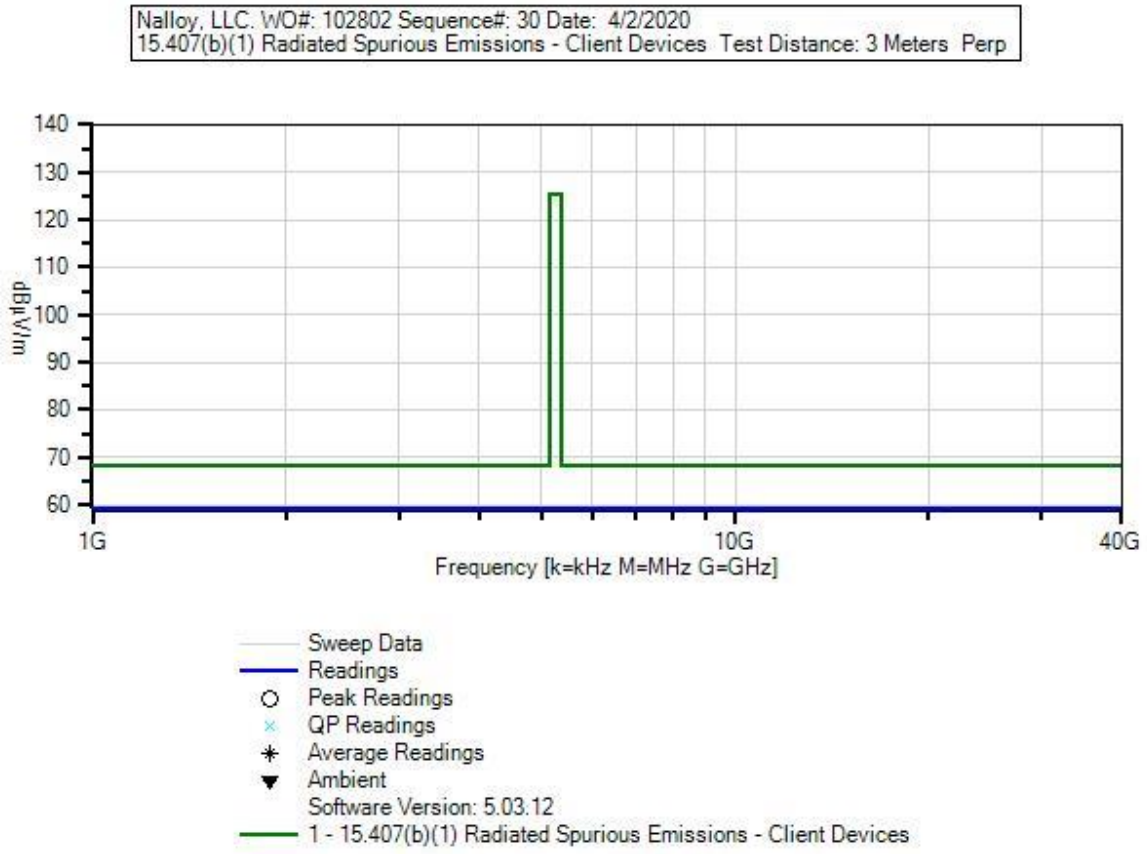
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 30 Date: 4/2/2020
15.407(b)(1) Radiated Spurious Emissions - Client Devices Test Distance: 3 Meters Perp
140
130
120
110
100
90
80
70
60
dBµV/m
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.03.12
1 - 15.407(b)(1) Radiated Spurious Emissions - Client Devices

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	20720.000 M	45.0	+0.0 +1.9	+0.0 +9.2	+0.0 +0.9	-13.9 +1.2	+0.0	44.3	68.2	-23.9	Horiz
2	10478.800 M	47.6	+6.2 +0.0	+1.4 +0.0	-11.9 +0.0	+0.0 +0.0	+0.0	43.3	68.2	-24.9	Horiz
3	10440.210 M	47.6	+6.2 +0.0	+1.4 +0.0	-12.0 +0.0	+0.0 +0.0	+0.0	43.2	68.2	-25.0	Horiz
4	10361.230 M	47.0	+6.2 +0.0	+1.3 +0.0	-12.1 +0.0	+0.0 +0.0	+0.0	42.4	68.2	-25.8	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:16:14
Tested By:	Matthew Harrison	Sequence#:	31
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 1-40GHz
Frequency tested: 5190, 5230 MHz
E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 m

Firmware power setting: 13 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 40MHz BW, MCS0 (worst-case)

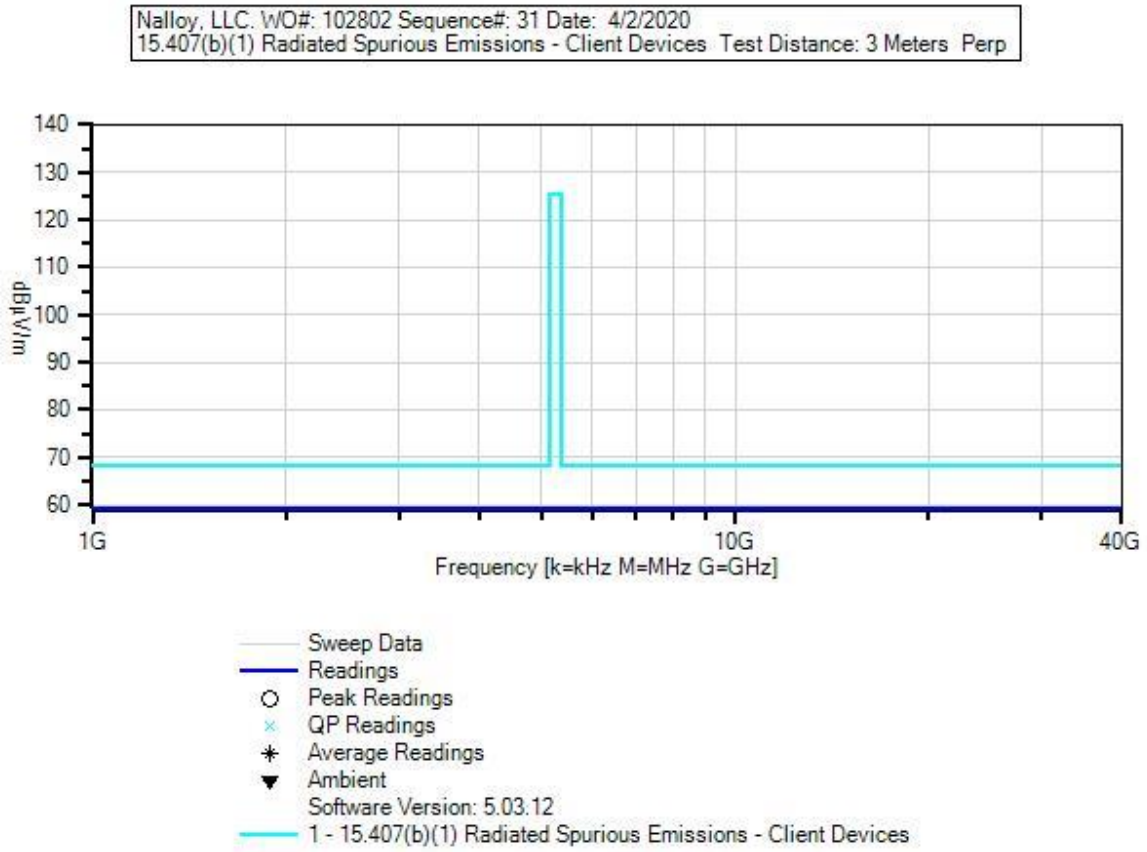
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No Emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 31 Date: 4/2/2020
15.407(b)(1) Radiated Spurious Emissions - Client Devices Test Distance: 3 Meters Perp
140
130
120
110
100
90
80
70
60
dBµV/m
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.03.12
1 - 15.407(b)(1) Radiated Spurious Emissions - Client Devices

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	20760.000 M	45.2	+0.0 +2.0	+0.0 +9.3	+0.0 +0.9	-14.0 +1.2	+0.0	44.6	68.2	-23.6	Horiz
2	10462.150 M	43.9	+6.2 +0.0	+1.4 +0.0	-12.0 +0.0	+0.0 +0.0	+0.0	39.5	68.2	-28.7	Horiz
3	10378.650 M	43.5	+6.2 +0.0	+1.3 +0.0	-12.1 +0.0	+0.0 +0.0	+0.0	38.9	68.2	-29.3	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:17:43
Tested By:	Matthew Harrison	Sequence#:	32
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 1-40GHz
Frequency tested: 5210 MHz
E[dBµV/m] = EIRP[dBm] + 95.2, for d = 3 m

Firmware power setting: 13 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 80MHz BW, MCS0 (worst-case)

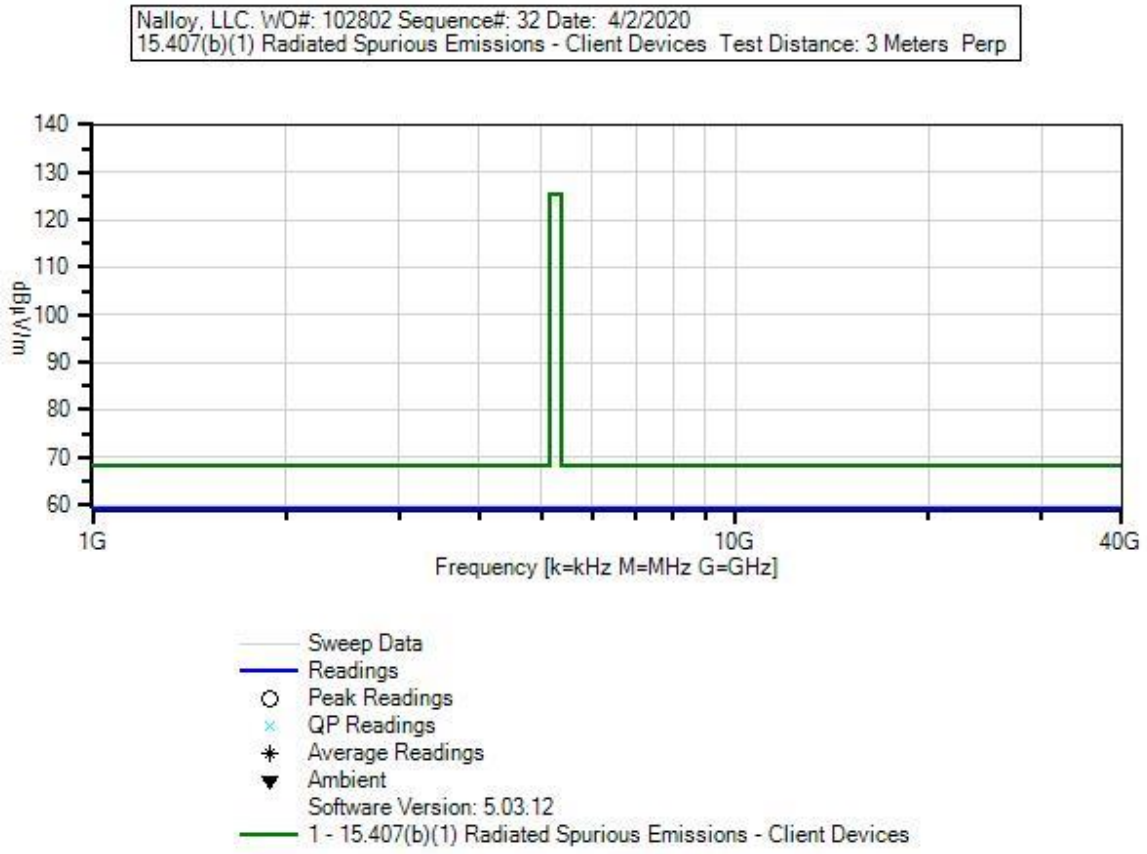
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No Emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 32 Date: 4/2/2020
15.407(b)(1) Radiated Spurious Emissions - Client Devices Test Distance: 3 Meters Perp
140
130
120
110
100
90
80
70
60
dBµV/m
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.03.12
1 - 15.407(b)(1) Radiated Spurious Emissions - Client Devices

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	20852.200 M	44.5	+0.0 +2.0	+0.0 +9.3	+0.0 +0.9	-14.1 +1.2	+0.0	43.8	68.2	-24.4	Horiz
2	10429.900 M	42.2	+6.2 +0.0	+1.3 +0.0	-12.0 +0.0	+0.0 +0.0	+0.0	37.7	68.2	-30.5	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:05:56
Tested By:	Matthew Harrison	Sequence#:	28
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 1-40GHz
Frequency tested: 5180, 5220, 5240 MHz
E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 m

Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11n, 20MHz BW, MCS8 (worst-case)

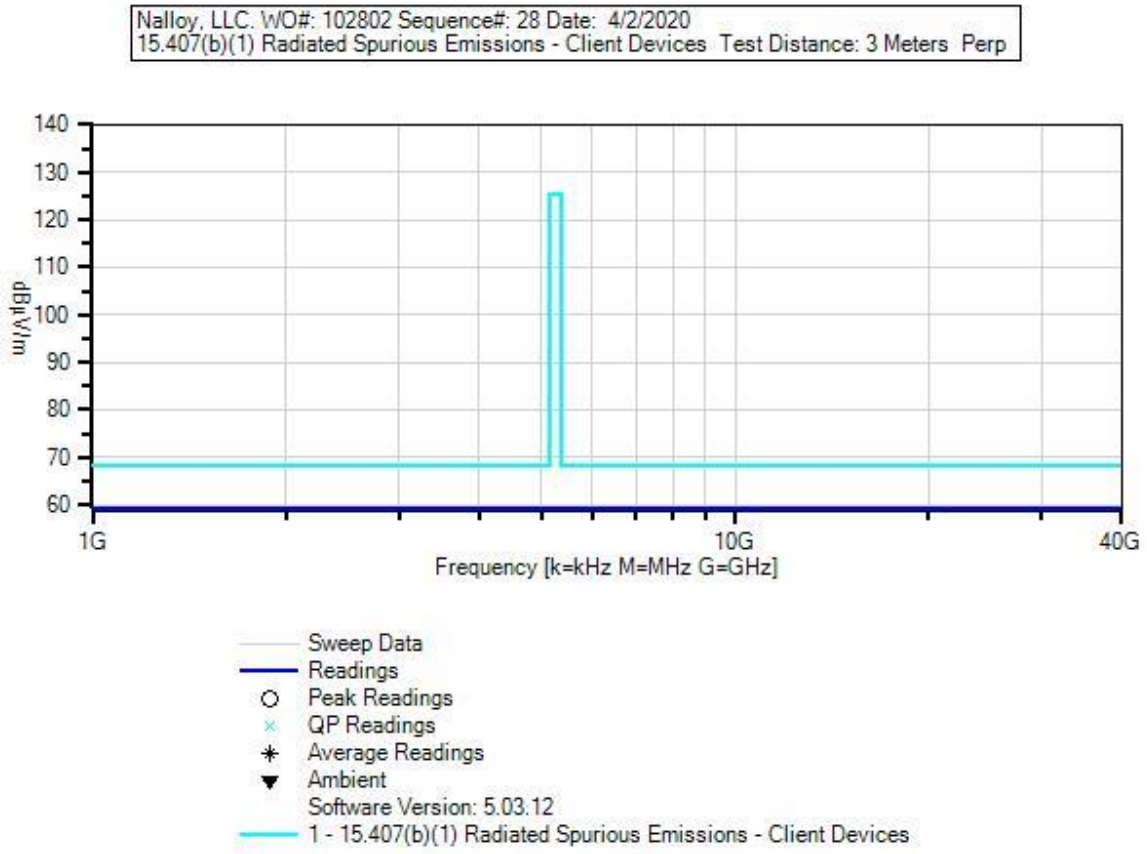
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 28 Date: 4/2/2020
15.407(b)(1) Radiated Spurious Emissions - Client Devices Test Distance: 3 Meters Perp
140
130
120
110
100
90
80
70
60
dBµV/m
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.03.12
1 - 15.407(b)(1) Radiated Spurious Emissions - Client Devices

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	20720.000 M	44.8	+0.0 +1.9	+0.0 +9.2	+0.0 +0.9	-13.9 +1.2	+0.0	44.1	68.2	-24.1	Horiz
2	10446.600 M	45.9	+6.2 +0.0	+1.4 +0.0	-12.0 +0.0	+0.0 +0.0	+0.0	41.5	68.2	-26.7	Horiz
3	10474.840 M	44.7	+6.2 +0.0	+1.4 +0.0	-11.9 +0.0	+0.0 +0.0	+0.0	40.4	68.2	-27.8	Horiz
4	10362.580 M	43.3	+6.2 +0.0	+1.3 +0.0	-12.1 +0.0	+0.0 +0.0	+0.0	38.7	68.2	-29.5	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	4/2/2020
Test Type:	**Maximized Emissions**	Time:	16:08:26
Tested By:	Matthew Harrison	Sequence#:	29
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 1-40GHz
Frequency tested: 5190, 5230 MHz
E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 m

Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11n, 40MHz BW, MCS8 (worst-case)

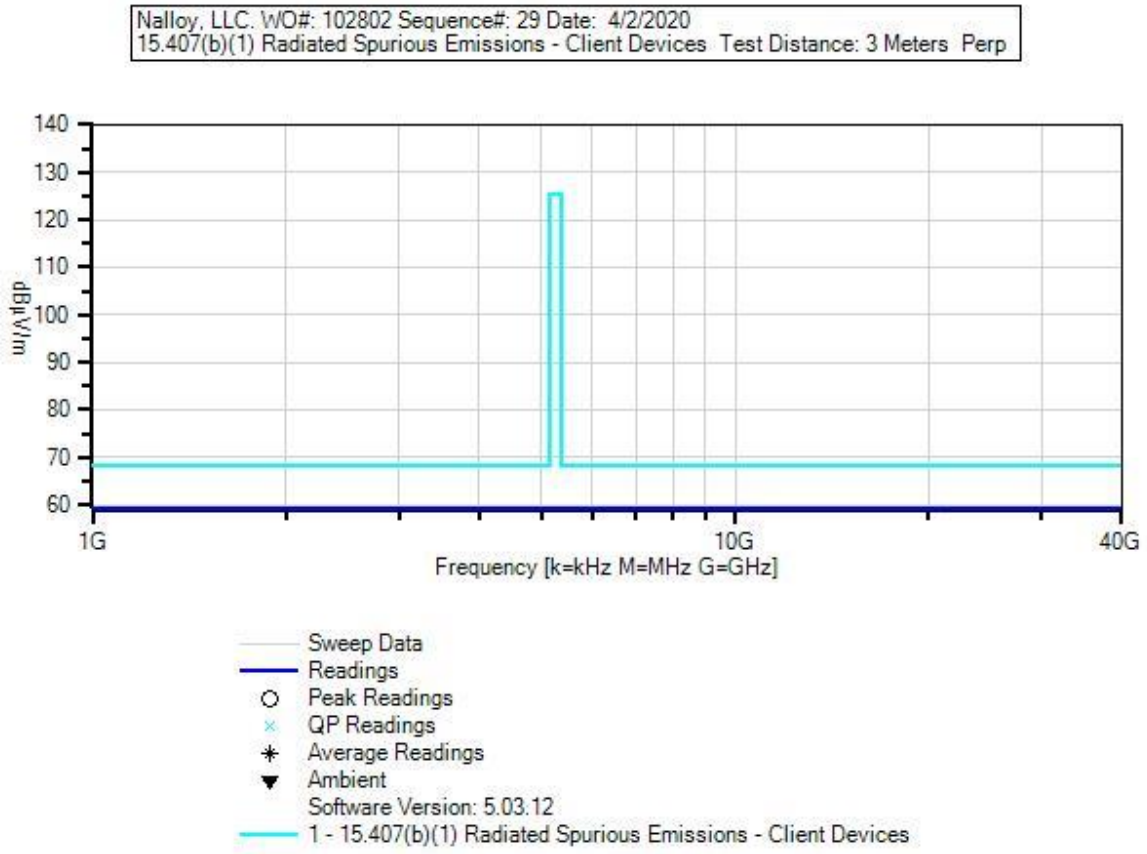
Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Modifications Added: None
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

No emissions found above 26GHz


Nalloy, LLC. WO#: 102802 Sequence#: 29 Date: 4/2/2020
15.407(b)(1) Radiated Spurious Emissions - Client Devices Test Distance: 3 Meters Perp
140
130
120
110
100
90
80
70
60
dBµV/m
1G
10G
40G
Frequency [k=kHz M=MHz G=GHz]
Sweep Data
Readings
Peak Readings
QP Readings
Average Readings
Ambient
Software Version: 5.03.12
1 - 15.407(b)(1) Radiated Spurious Emissions - Client Devices

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T1	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T2	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
	AN03540	Preamp	83017A	5/13/2019	5/13/2021
	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021
T3	AN02741	Active Horn Antenna	AMFW-5F-12001800-20-10P	4/26/2019	4/26/2021
T4	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	10/16/2018	10/16/2020
T5	AN02763-69	Waveguide	Multiple	4/23/2018	4/23/2020
T6	ANP06678	Cable	32026-29801-29801-144	2/20/2020	2/20/2022
T7	ANP07211	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
T8	ANP07212	Cable	32026-29801-29801-18	8/7/2019	8/7/2021
	AN02673	Spectrum Analyzer	E4446A	2/22/2019	2/22/2021
	AN02743	Active Horn Antenna	AMFW-5F-260400-33-8P	4/26/2019	4/26/2021
	AN02764-70	Waveguide	Multiple	4/23/2018	4/23/2020
	AN02307	Preamp	8447D	1/10/2020	1/10/2022
	AN03628	Biconilog Antenna	3142E	6/11/2019	6/11/2021
	ANP06123	Attenuator	18N-6	4/5/2019	4/5/2021
	ANP05305	Cable	ETSI-50T	9/6/2019	9/6/2021
	ANP05360	Cable	RG214	2/3/2020	2/3/2022
	AN00052	Loop Antenna	6502	5/7/2018	5/7/2020

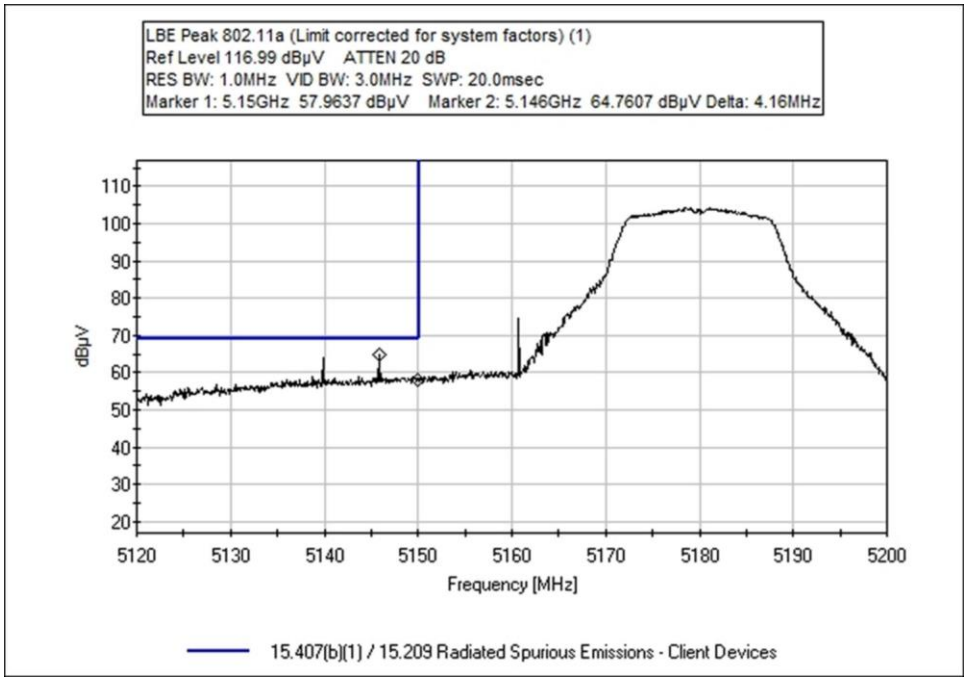
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

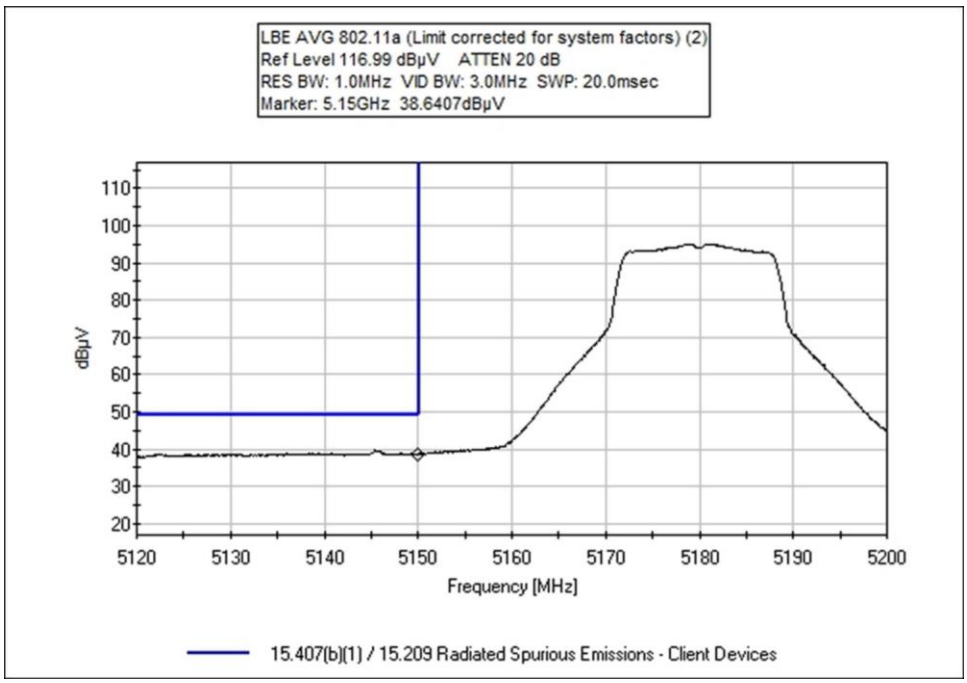
#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	20760.000 M	44.8	+0.0 +2.0	+0.0 +9.3	+0.0 +0.9	-14.0 +1.2	+0.0	44.2	68.2	-24.0	Horiz
2	10442.500 M	44.5	+6.2 +0.0	+1.4 +0.0	-12.0 +0.0	+0.0 +0.0	+0.0	40.1	68.2	-28.1	Horiz
3	10382.300 M	44.7	+6.2 +0.0	+1.3 +0.0	-12.1 +0.0	+0.0 +0.0	+0.0	40.1	68.2	-28.1	Horiz

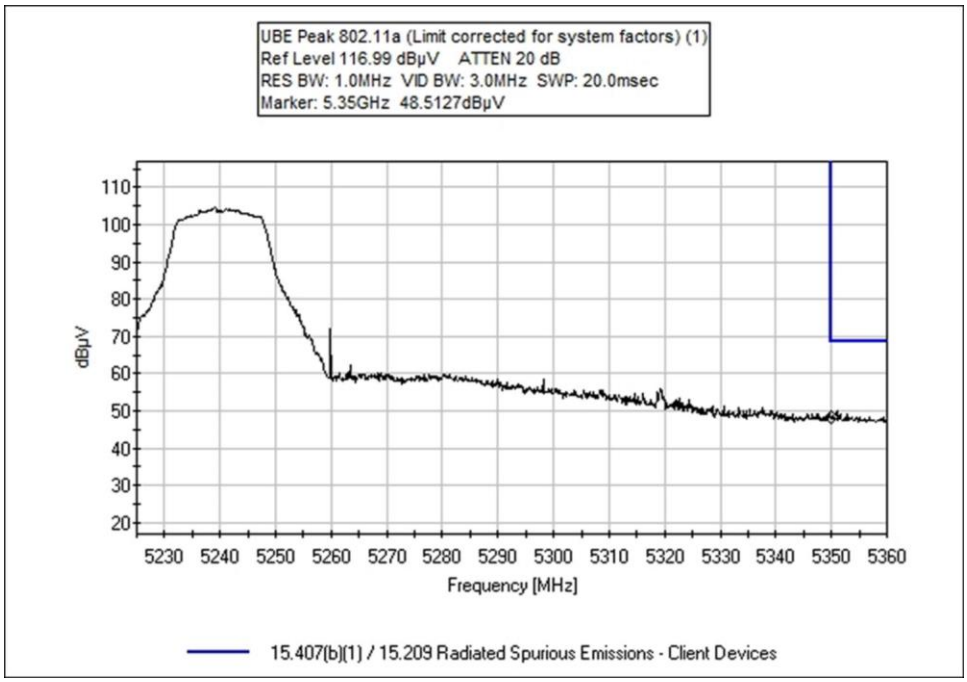
Band Edge Summary					
Frequency (MHz)	Modulation	Ant. Type	Field Strength (dBuV/m @3m)	Limit (dBuV/m @3m)	Results
5150	802.11a	Linear Polarized / 5.9dBi	43.6	<54	Pass
5350	802.11a	Linear Polarized / 5.9dBi	41.9	<54	Pass
5150	802.11n20	Linear Polarized / 5.9dBi	44.1	<54	Pass
5350	802.11n20	Linear Polarized / 5.9dBi	41.9	<54	Pass
5150	802.11n40	Linear Polarized / 5.9dBi	47.8	<54	Pass
5350	802.11n40	Linear Polarized / 5.9dBi	42.4	<54	Pass
5150	802.11ac20	Linear Polarized / 5.9dBi	44.4	<54	Pass
5350	802.11ac20	Linear Polarized / 5.9dBi	42	<54	Pass
5150	802.11ac40	Linear Polarized / 5.9dBi	49.6	<54	Pass
5350	802.11ac40	Linear Polarized / 5.9dBi	42.5	<54	Pass
5150	802.11ac80	Linear Polarized / 5.9dBi	47.4	<54	Pass
5350	802.11ac80	Linear Polarized / 5.9dBi	41.6	<54	Pass

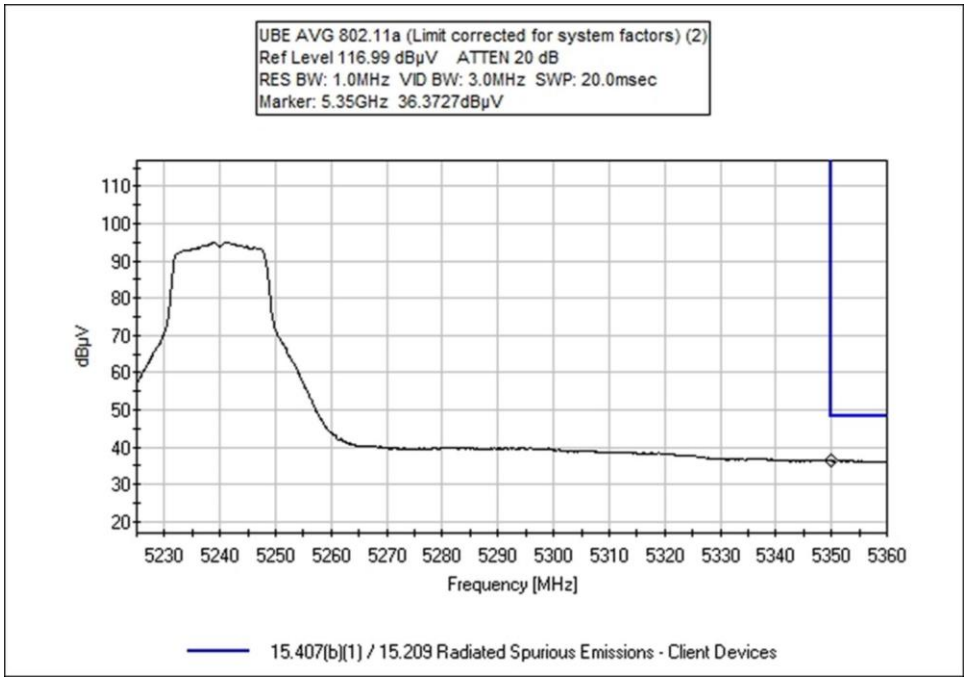
Band Edge Plots

802.11a Plots

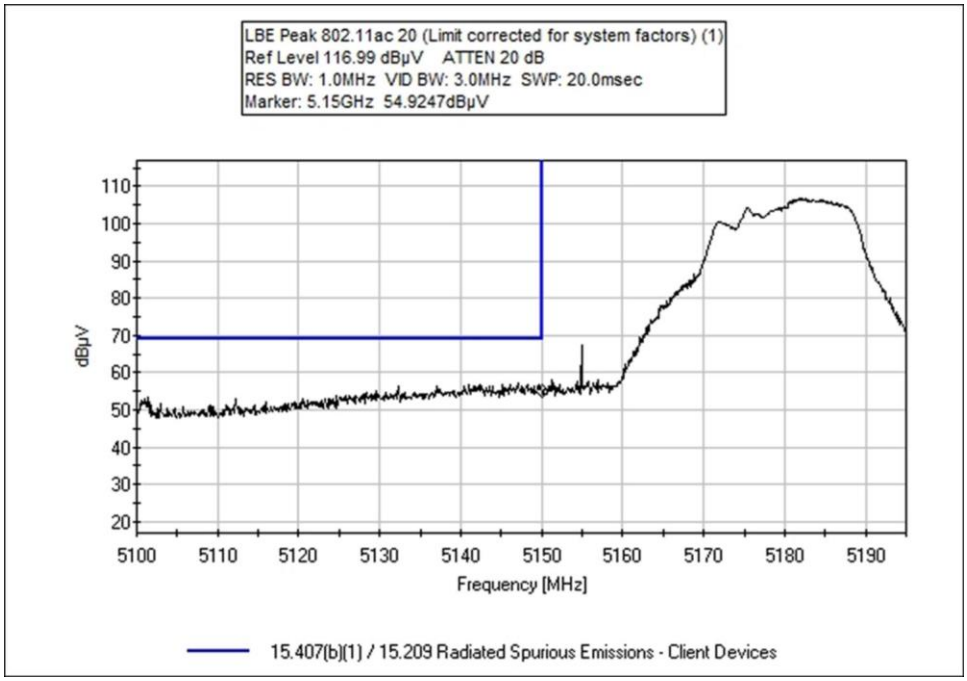


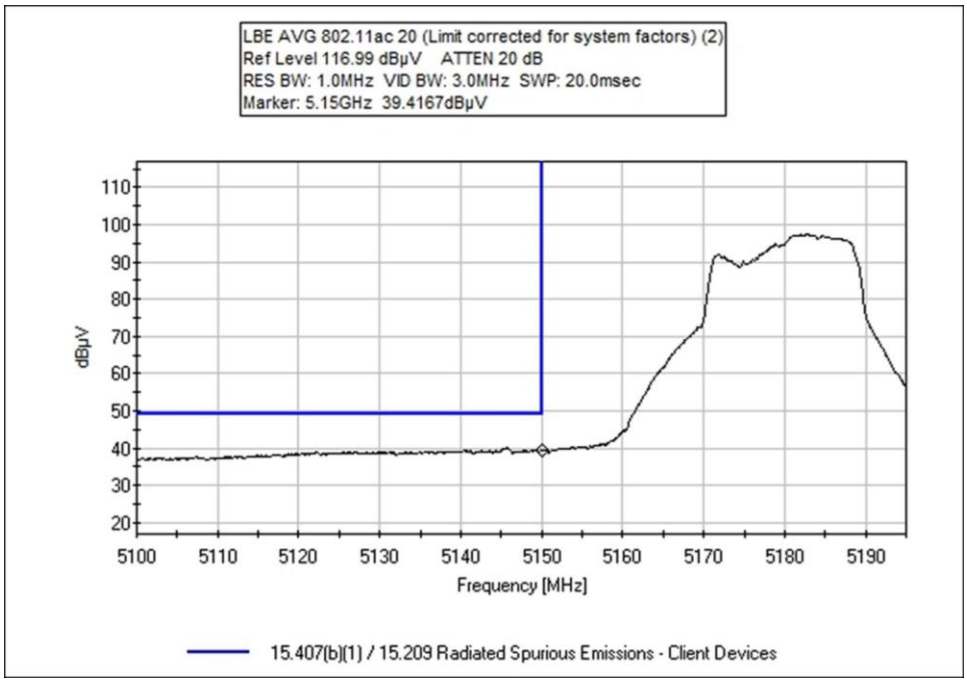


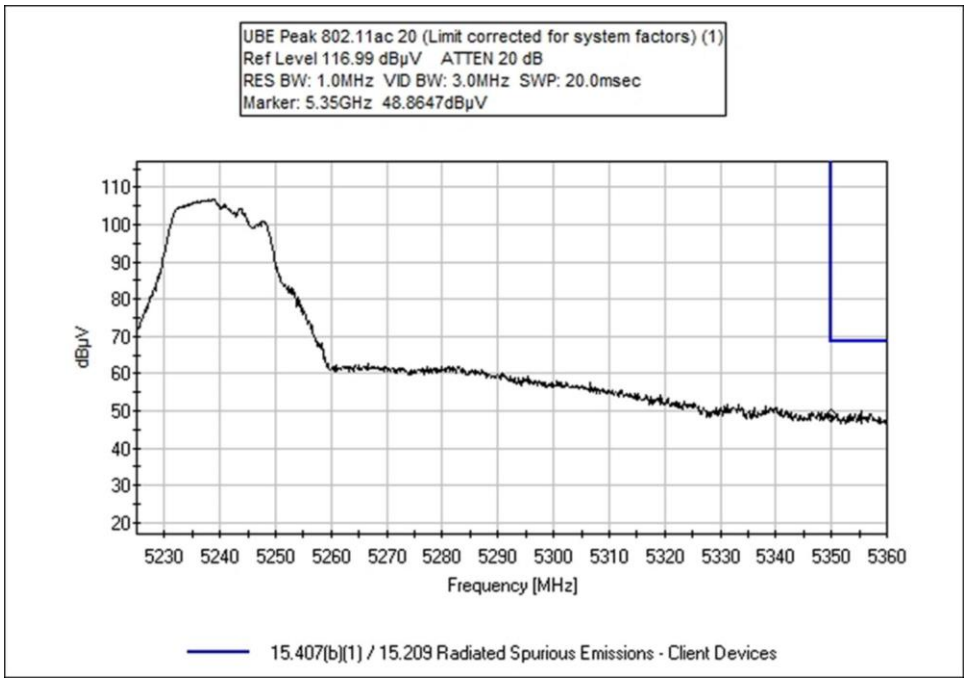

UBE Peak 802.11a (Limit corrected for system factors) (1)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 48.5127dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

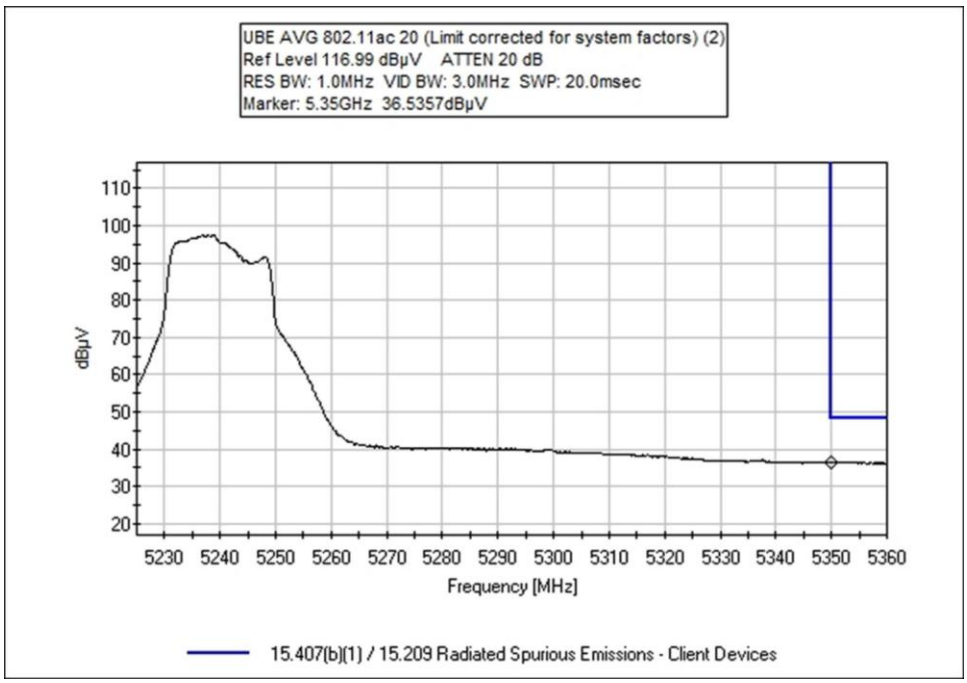

UBE AVG 802.11a (Limit corrected for system factors) (2)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 36.3727dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

802.11ac20 Plots

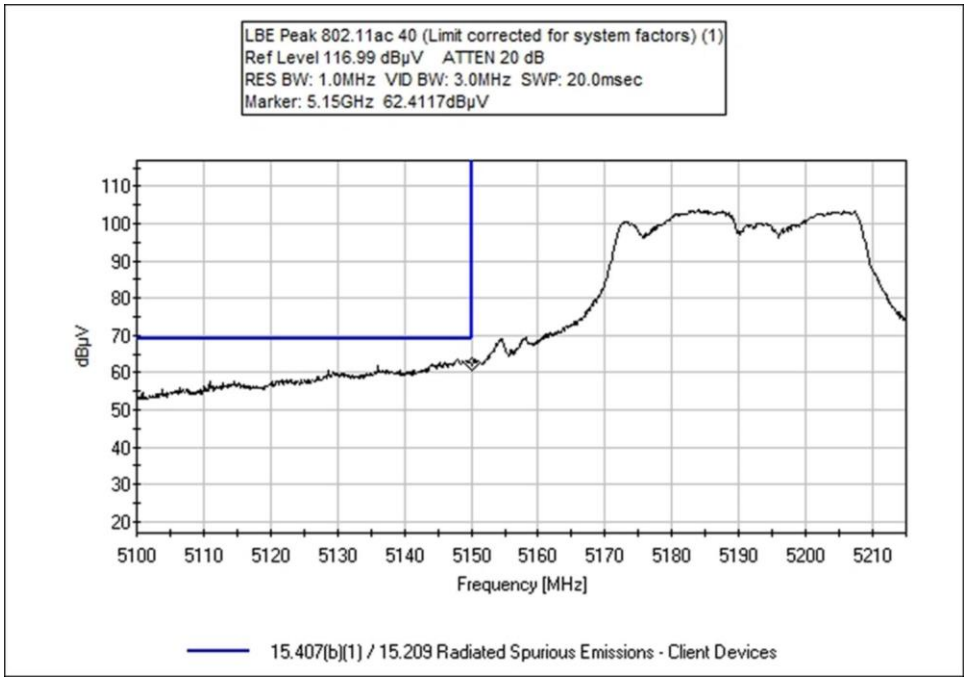


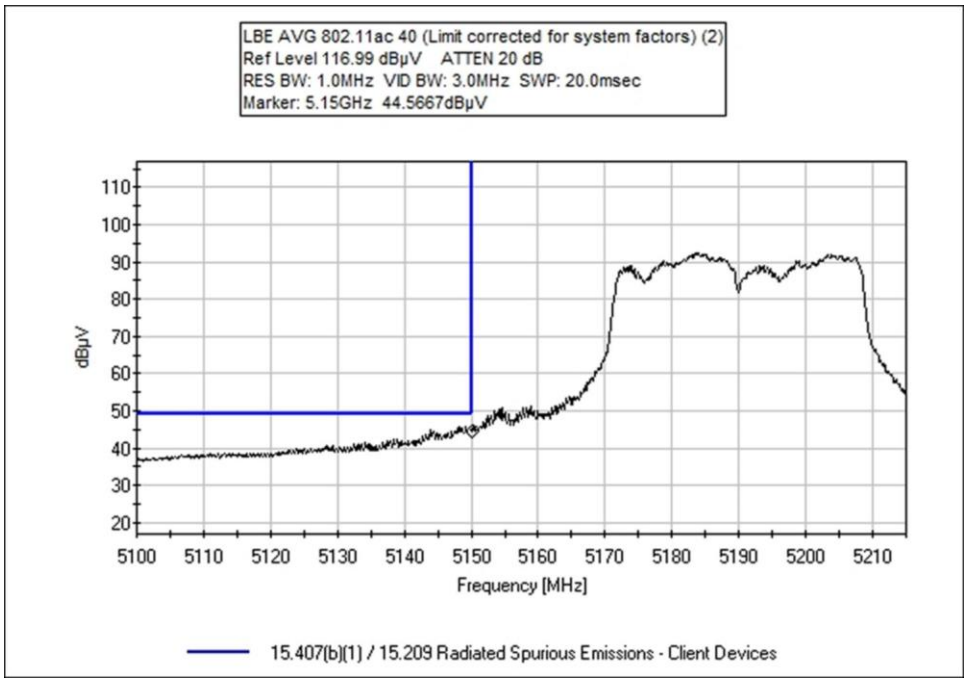


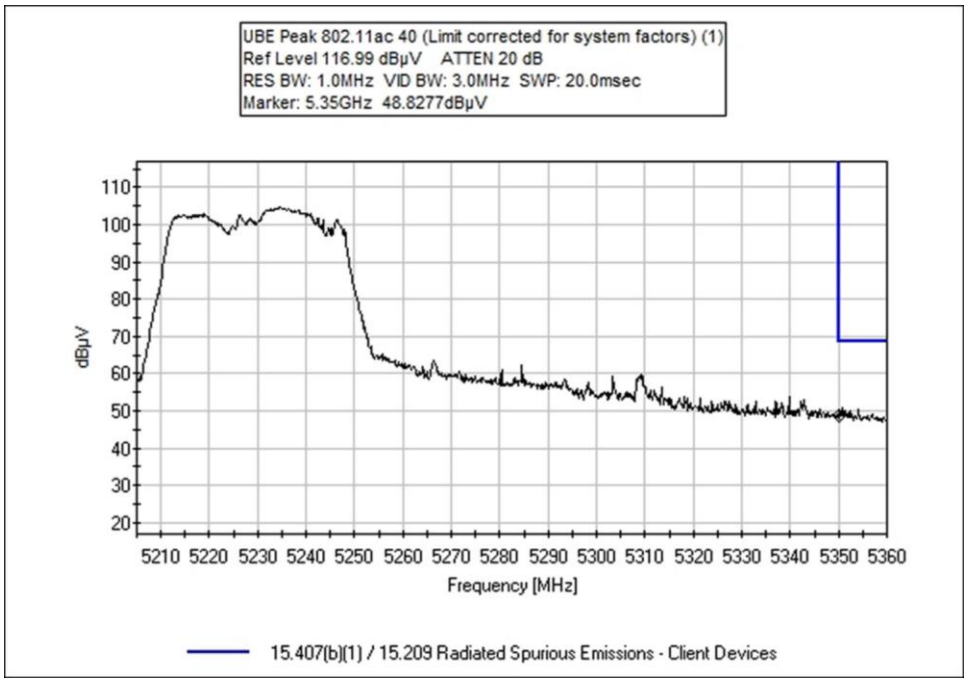

UBE Peak 802.11ac 20 (Limit corrected for system factors) (1)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 48.8647dBµV
dBµV
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

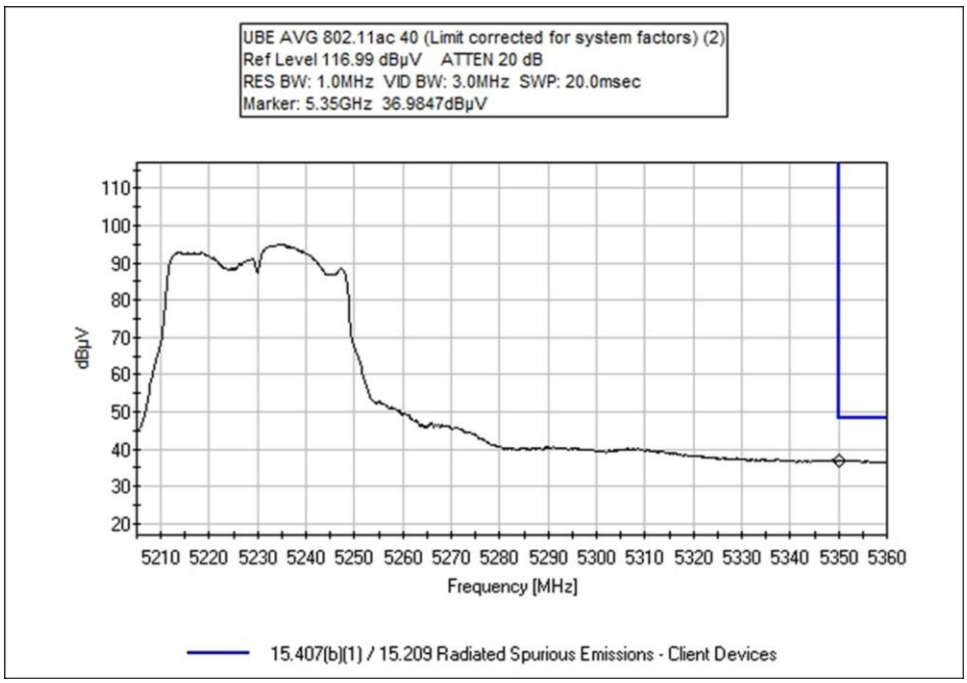

UBE AVG 802.11ac 20 (Limit corrected for system factors) (2)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 36.5357dBµV
dBµV
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

802.11ac40 Plots

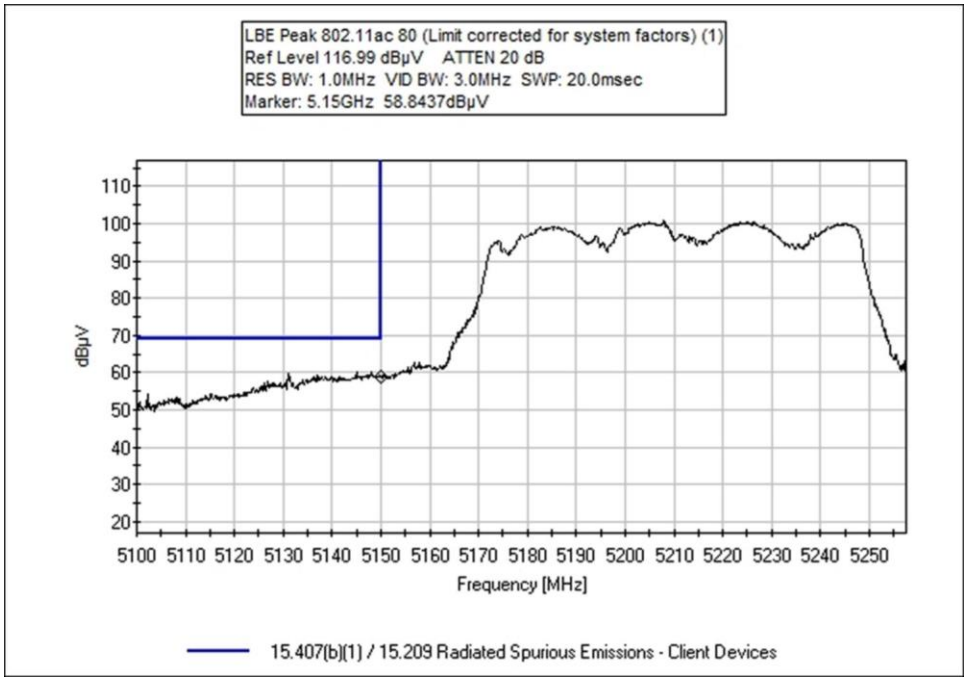


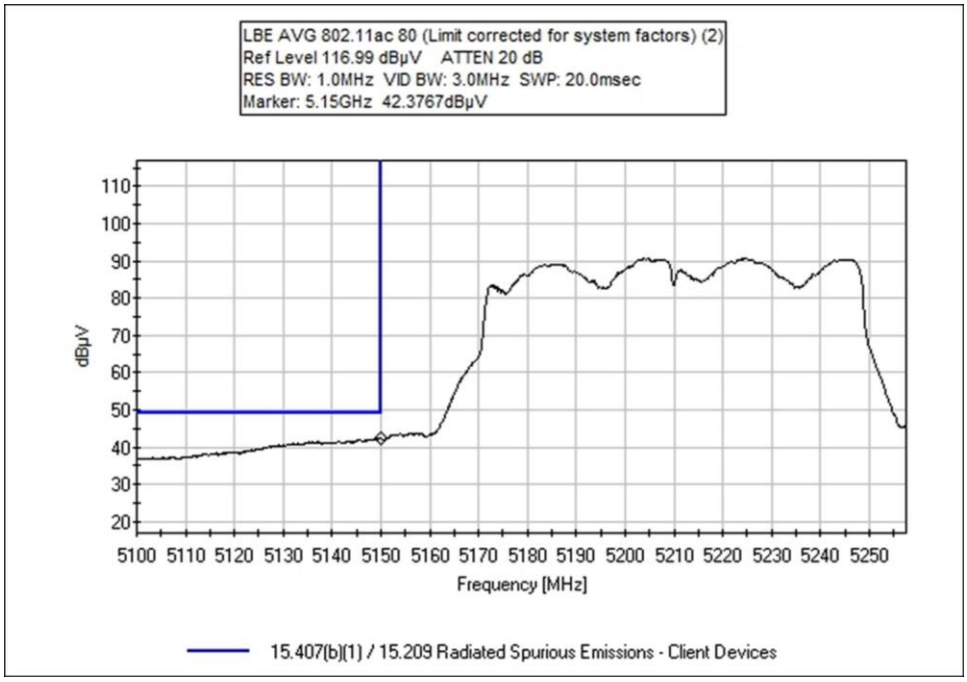


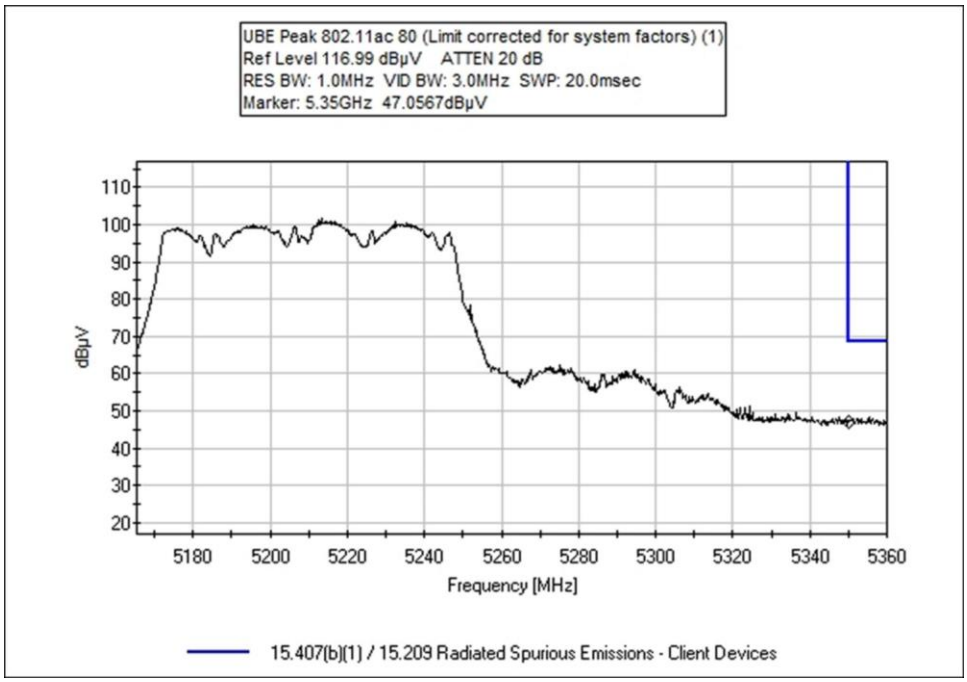

UBE Peak 802.11ac 40 (Limit corrected for system factors) (1)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 48.8277dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

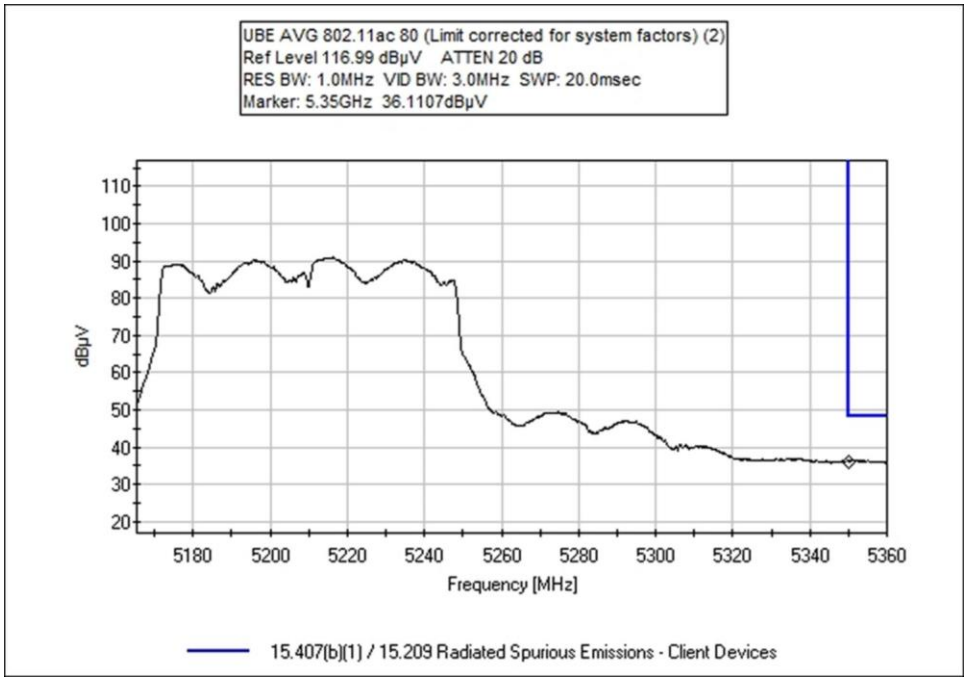

UBE AVG 802.11ac 40 (Limit corrected for system factors) (2)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 36.9847dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

802.11ac80 Plots

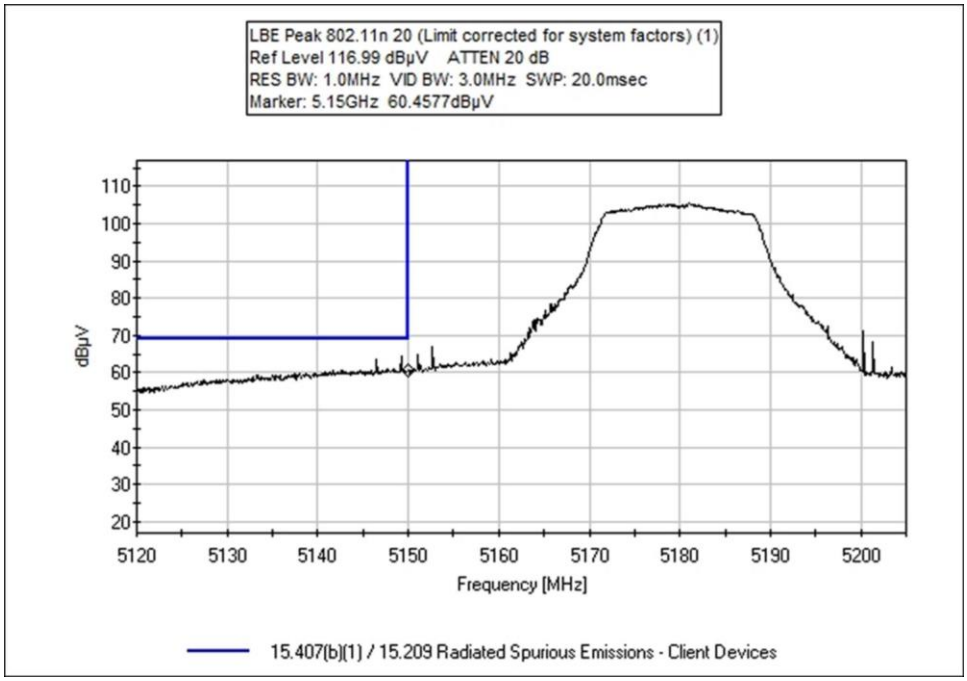


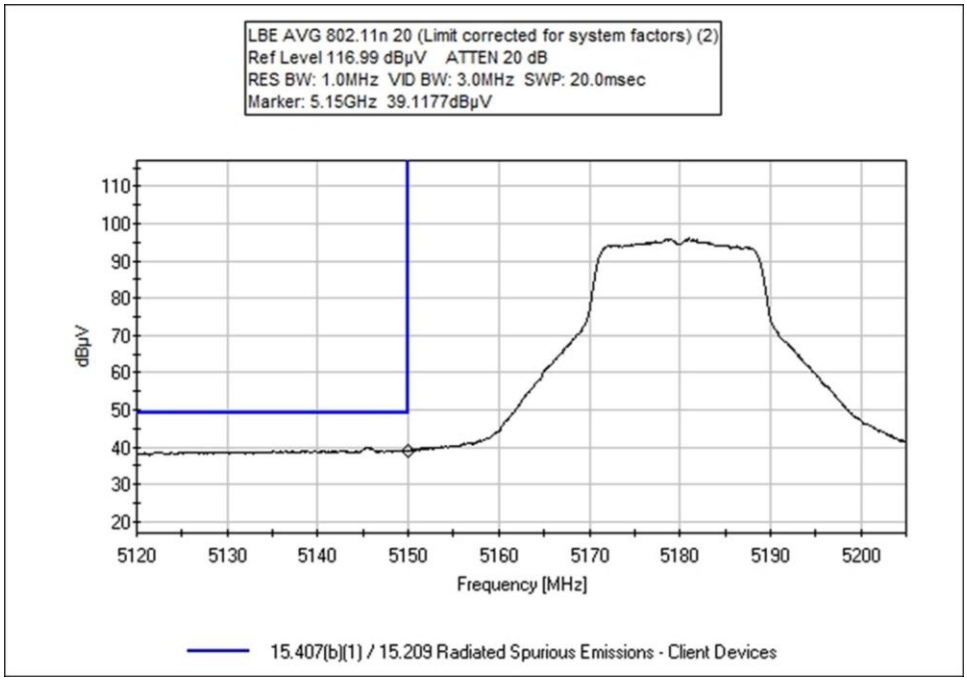


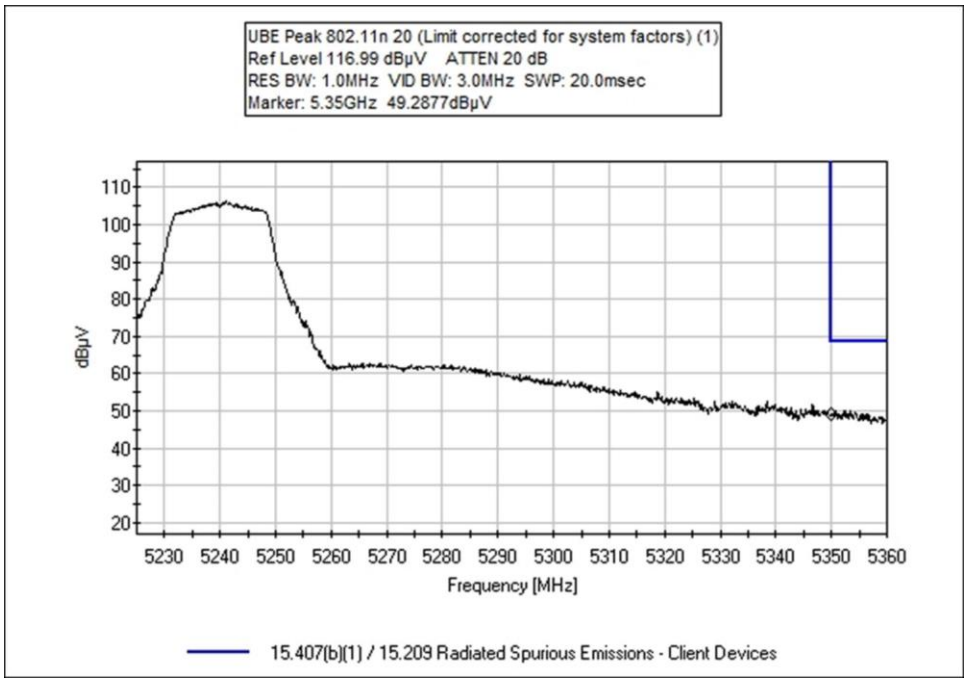

UBE Peak 802.11ac 80 (Limit corrected for system factors) (1)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 47.0567dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5180
5200
5220
5240
5260
5280
5300
5320
5340
5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

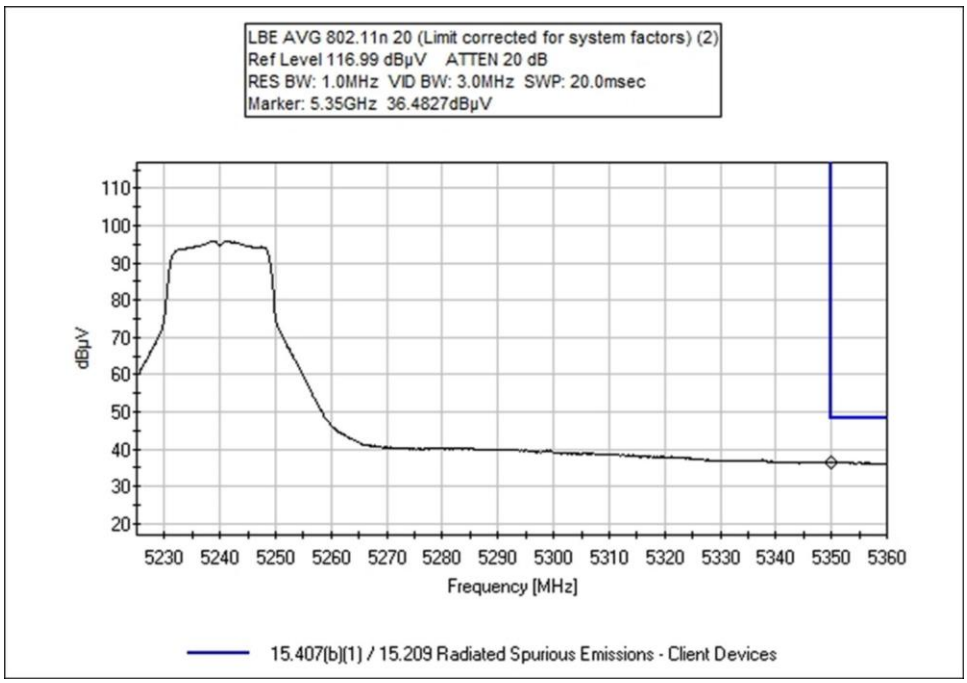

UBE AVG 802.11ac 80 (Limit corrected for system factors) (2)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 36.1107dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5180
5200
5220
5240
5260
5280
5300
5320
5340
5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

802.11n20 Plots

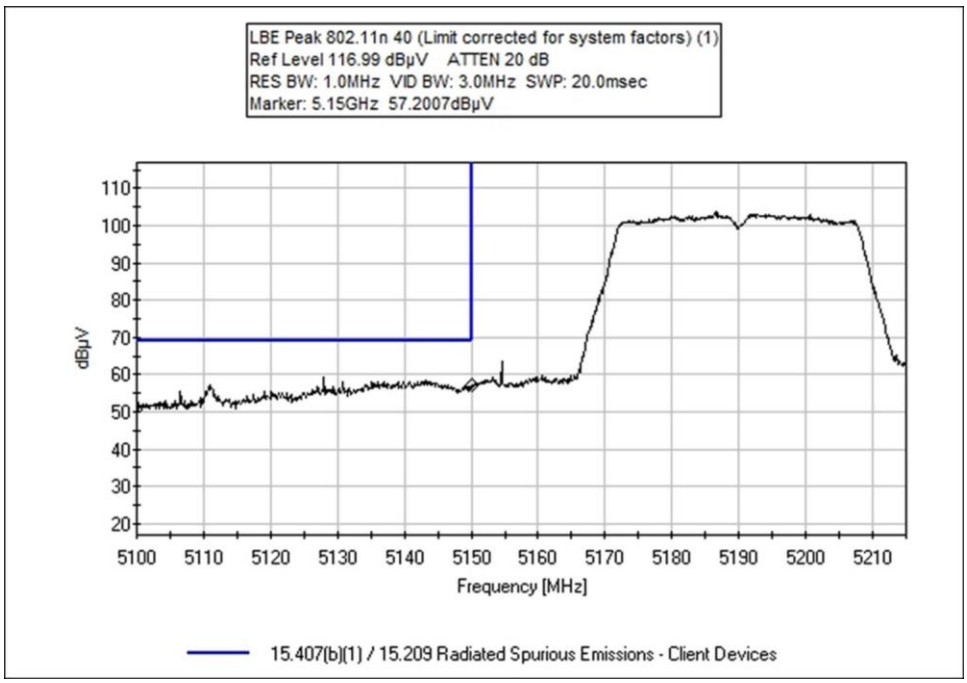


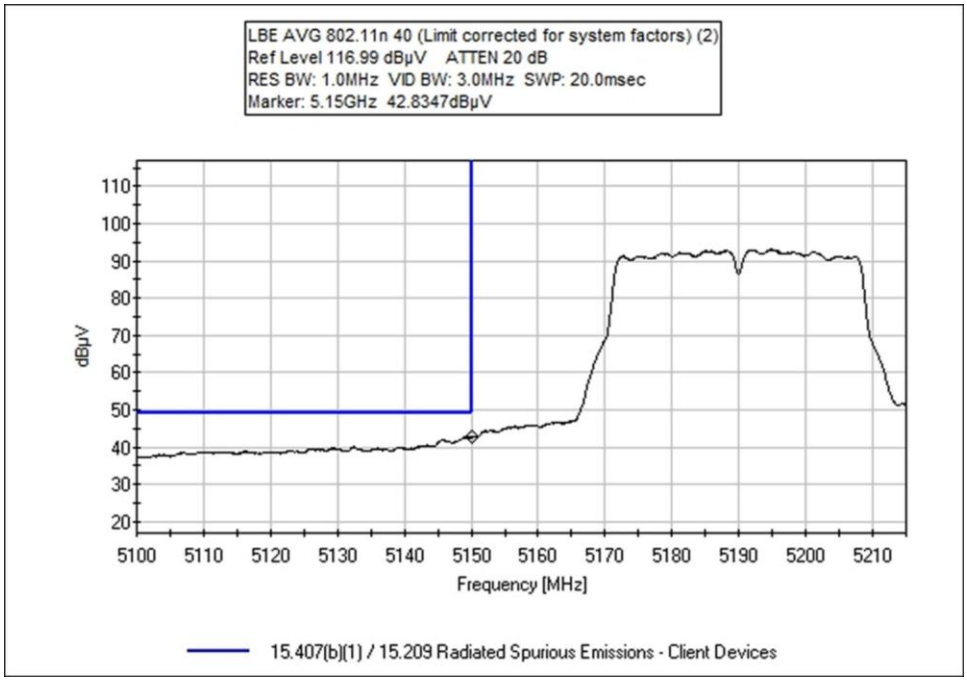


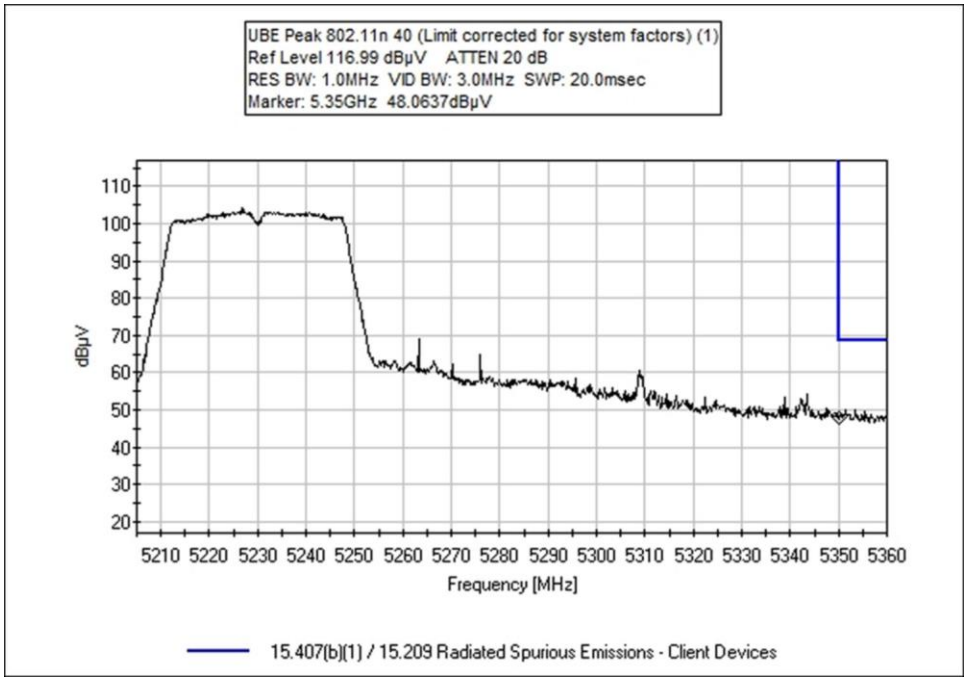

UBE Peak 802.11n 20 (Limit corrected for system factors) (1)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 49.2877dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

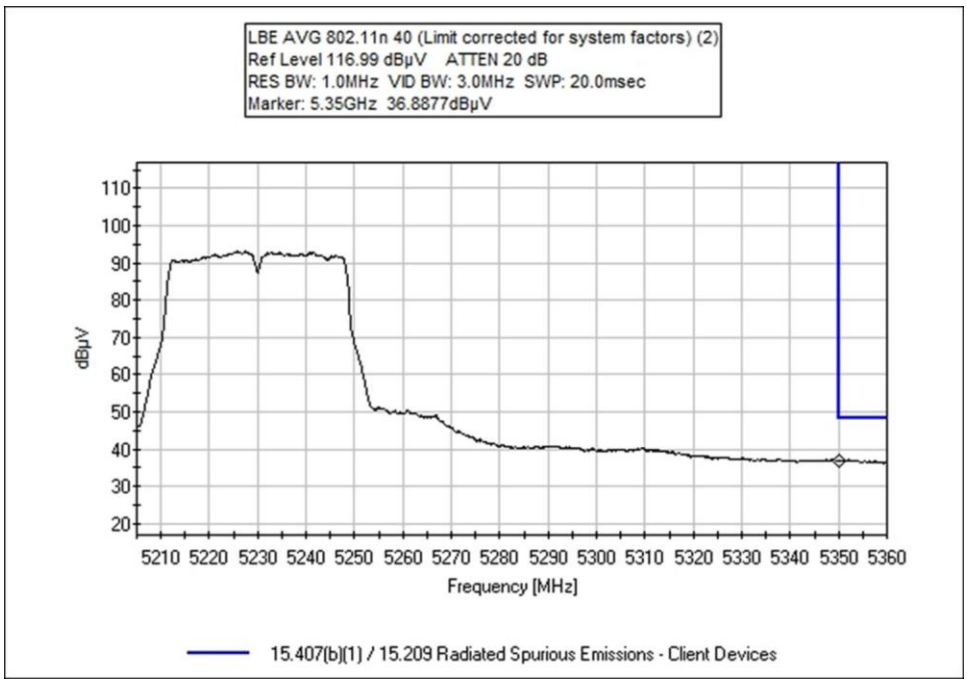

LBE AVG 802.11n 20 (Limit corrected for system factors) (2)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 36.4827dBµV
dBµV
110
100
90
80
70
60
50
40
30
20
5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

802.11n40 Plots






UBE Peak 802.11n 40 (Limit corrected for system factors) (1)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 48.0637dBµV
dBµV
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices


LBE AVG 802.11n 40 (Limit corrected for system factors) (2)
Ref Level 116.99 dBµV ATTEN 20 dB
RES BW: 1.0MHz VID BW: 3.0MHz SWP: 20.0msec
Marker: 5.35GHz 36.8877dBµV
dBµV
Frequency [MHz]
15.407(b)(1) / 15.209 Radiated Spurious Emissions - Client Devices

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	3/19/2020
Test Type:	**Maximized Emissions**	Time:	14:29:44
Tested By:	Matthew Harrison	Sequence#:	11
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 5150-4350 MHz
Frequency tested: 5180, 5240 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 20MHz BW, MCS0 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5150.000M Ave	39.4	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	44.4	54.0	-9.6	Horiz
^	5150.000M	54.9	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	59.9	74.0	-14.1	Horiz
3	5350.000M Ave	36.5	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	42.0	54.0	-12.0	Horiz
^	5350.000M	48.9	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	54.4	74.0	-19.6	Horiz
5	5237.825M	106.9	+33.1 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0 302	112.1	125.2	-13.1	Horiz 185
6	5182.270M	107.0	+33.0 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	112.1	125.2	-13.1	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	3/19/2020
Test Type:	**Maximized Emissions**	Time:	13:15:16
Tested By:	Matthew Harrison	Sequence#:	9
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 5150-4350 MHz
Frequency tested: 5180, 5240 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11a, 20MHz BW, 6Mbps(worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5145.840M Ave	39.3	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	44.3	54.0	-9.7	Horiz
^	5145.840M	64.8	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	69.8	74.0	-4.2	Horiz
3	5150.000M Ave	38.6	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	43.6	54.0	-10.4	Horiz
^	5150.000M	58.0	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	63.0	74.0	-11.0	Horiz
5	5350.000M Ave	36.4	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	41.9	54.0	-12.1	Horiz
^	5350.000M	48.5	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	54.0	74.0	-20.0	Horiz
7	5239.010M	104.4	+33.1 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0 300	109.6	125.2	-15.6	Horiz 180
8	5178.560M	104.1	+33.0 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0 300	109.2	125.2	-16.0	Horiz 180

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	3/19/2020
Test Type:	**Maximized Emissions**	Time:	14:08:52
Tested By:	Matthew Harrison	Sequence#:	10
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 5150-4350 MHz
Frequency tested: 5180, 5240 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11n, 20MHz BW, MCS8 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5150.000M Ave	39.1	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	44.1	54.0	-9.9	Horiz
^	5150.000M	60.5	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	65.5	74.0	-8.5	Horiz
3	5350.000M Ave	36.4	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	41.9	54.0	-12.1	Horiz
^	5350.000M	49.3	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	54.8	74.0	-19.2	Horiz
5	5181.030M	105.6	+33.0 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0 302	110.7	125.2	-14.5	Horiz 180
6	5241.200M	105.5	+33.1 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	110.7	125.2	-14.5	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	3/19/2020
Test Type:	**Maximized Emissions**	Time:	15:15:29
Tested By:	Matthew Harrison	Sequence#:	13
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 5150-5350 MHz
Frequency tested: 5190, 5230 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 40MHz BW, MCS0 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5150.000M Ave	44.6	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	49.6	54.0	-4.4	Horiz
^	5150.000M	62.4	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	67.4	74.0	-6.6	Horiz
3	5350.000M Ave	37.0	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	42.5	54.0	-11.5	Horiz
^	5350.000M	48.8	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	54.3	74.0	-19.7	Horiz
5	5234.605M	104.7	+33.1 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0 302	109.9	125.2	-15.3	Horiz 185
6	5184.060M	103.7	+33.0 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	108.8	125.2	-16.4	Horiz

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	3/19/2020
Test Type:	**Maximized Emissions**	Time:	14:59:28
Tested By:	Matthew Harrison	Sequence#:	12
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 5150-5350 MHz
Frequency tested: 5190, 5230 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11n, 40MHz BW, MCS8 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5150.000M Ave	42.8	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	47.8	54.0	-6.2	Horiz
^	5150.000M	57.2	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	62.2	74.0	-11.8	Horiz
3	5350.000M Ave	36.9	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	42.4	54.0	-11.6	Horiz
^	5350.000M	48.1	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	53.6	74.0	-20.4	Horiz
5	5226.700M	104.4	+33.1 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	109.6	125.2	-15.6	Horiz
6	5186.750M	104.2	+33.0 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0 302	109.3	125.2	-15.9	Horiz 185

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.407(b)(1) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**102802**	Date:	3/19/2020
Test Type:	**Maximized Emissions**	Time:	15:34:03
Tested By:	Matthew Harrison	Sequence#:	14
Software:	EMITest 5.03.12		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 45%
Pressure: 101.3 kPa

Frequency Range: 5150-5350 MHz
Frequency tested: 5210 MHz
Firmware power setting: 13 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11ac, 80MHz BW, MCS0 (worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013 KDB 789033 v02r01 December 14, 2017)
Test Mode: Transmitting
Test Setup: EUT is setup 1.5m high on a Styrofoam table.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All data rates investigated, worst-case provided

Test Equipment:

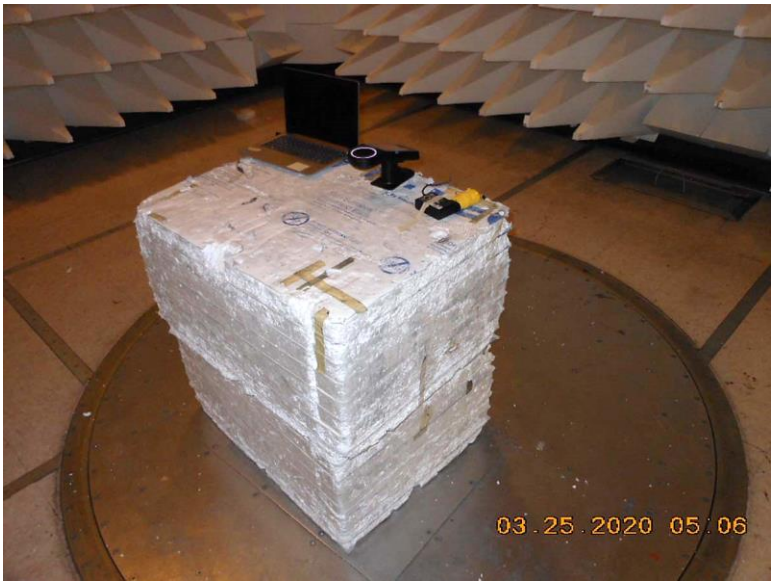
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01467	Horn Antenna-ANSI C63.5 Calibration	3115	7/5/2019	7/5/2021
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T5	AN03540	Preamp	83017A	5/13/2019	5/13/2021
T6	ANP07504	Cable	CLU40-KMKM-02.00F	1/17/2019	1/17/2021

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

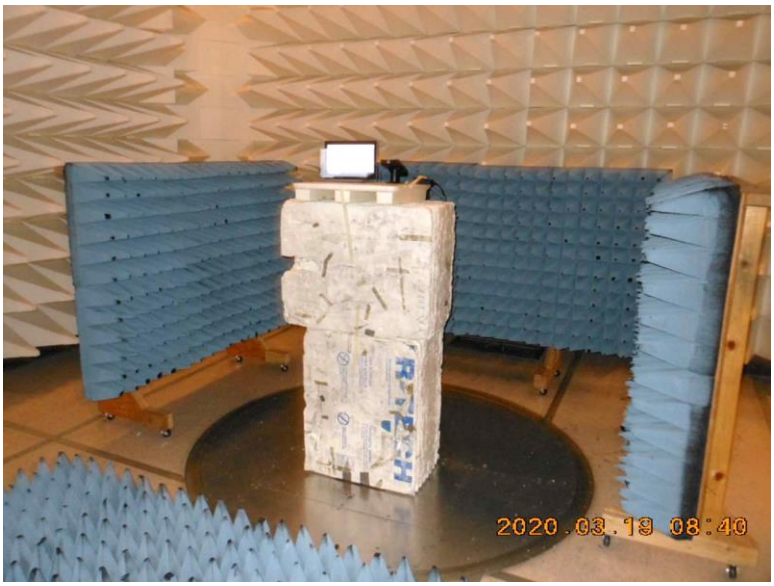
#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5150.000M Ave	42.4	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	47.4	54.0	-6.6	Horiz
^	5150.000M	58.8	+32.9 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	63.8	74.0	-10.2	Horiz
3	5350.000M	36.1	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	41.6	54.0	-12.4	Horiz
4	5226.190M	100.6	+33.1 -33.6	+4.3 +0.5	+0.9	+0.0	+0.0	105.8	125.2	-19.4	Horiz
5	5350.000M	47.1	+33.3 -33.6	+4.4 +0.5	+0.9	+0.0	+0.0	52.6	74.0	-21.4	Horiz

Test Setup Photo(s)

Below 1GHz



Below 1GHz



Above 1GHz

Above 1GHz

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102802**	Date:	4/1/2020
Test Type:	**Conducted Emissions**	Time:	07:52:37
Tested By:	Matthew Harrison	Sequence#:	86
Software:	EMITest 5.03.12		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 28%
Pressure: 101.3 kPa

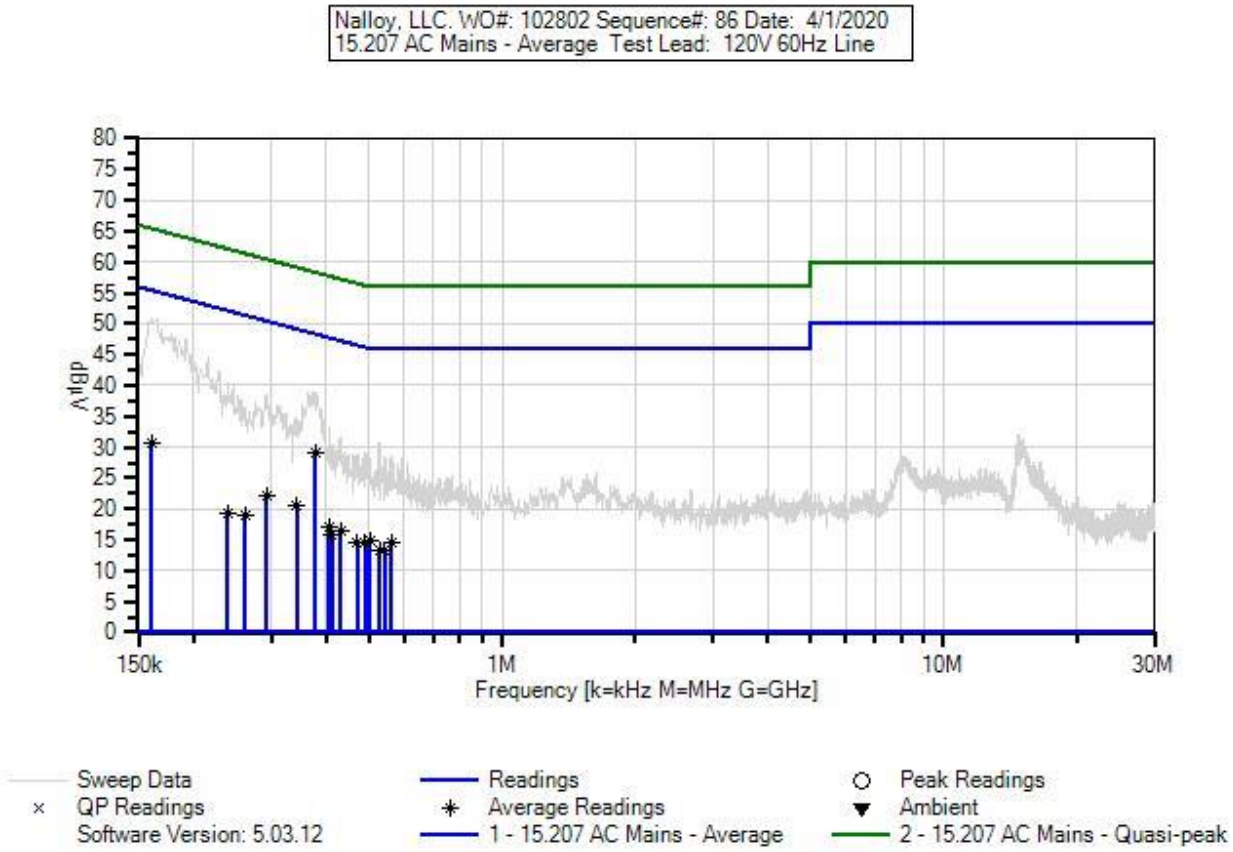
Frequency Range: 150kHz-30MHz
Frequency tested: 5180 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11a, 20MHz BW, 6Mbps(worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013
Test Mode: Transmitting
Test Setup: EUT is setup for conducted measurements.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All modes, channels, and data rates investigated, worst-case provided.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T1	ANP06219	Attenuator	768-10	4/13/2018	4/13/2020
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
T4	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	376.887k Ave	20.5	+9.1 +0.2	+0.0	+0.0	-0.6	+0.0	29.2	48.3	-19.1	Line
^	376.887k	30.4	+9.1 +0.2	+0.0	+0.0	-0.6	+0.0	39.1	48.3	-9.2	Line
3	160.907k Ave	22.6	+9.1 +0.6	+0.0	+0.0	-1.7	+0.0	30.6	55.4	-24.8	Line
^	160.907k	43.0	+9.1 +0.6	+0.0	+0.0	-1.7	+0.0	51.0	55.4	-4.4	Line
5	293.259k Ave	13.6	+9.1 +0.1	+0.0	+0.0	-0.7	+0.0	22.1	50.4	-28.3	Line
^	293.258k	30.2	+9.1 +0.1	+0.0	+0.0	-0.7	+0.0	38.7	50.4	-11.7	Line
7	342.709k Ave	11.8	+9.1 +0.1	+0.0	+0.0	-0.6	+0.0	20.4	49.1	-28.7	Line
^	342.708k	26.3	+9.1 +0.1	+0.0	+0.0	-0.6	+0.0	34.9	49.1	-14.2	Line
9	405.248k Ave	8.4	+9.1 +0.2	+0.0	+0.0	-0.5	+0.0	17.2	47.7	-30.5	Line
^	405.248k	24.4	+9.1 +0.2	+0.0	+0.0	-0.5	+0.0	33.2	47.7	-14.5	Line
11	430.701k Ave	7.5	+9.1 +0.2	+0.1	+0.0	-0.5	+0.0	16.4	47.2	-30.8	Line
^	430.700k	22.7	+9.1 +0.2	+0.1	+0.0	-0.5	+0.0	31.6	47.2	-15.6	Line
13	501.239k Ave	6.0	+9.1 +0.2	+0.0	+0.0	-0.4	+0.0	14.9	46.0	-31.1	Line
^	501.239k	19.5	+9.1 +0.2	+0.0	+0.0	-0.4	+0.0	28.4	46.0	-17.6	Line
15	561.598k Ave	5.6	+9.1 +0.3	+0.0	+0.0	-0.4	+0.0	14.6	46.0	-31.4	Line
^	561.597k	19.6	+9.1 +0.3	+0.0	+0.0	-0.4	+0.0	28.6	46.0	-17.4	Line
17	490.331k Ave	5.5	+9.1 +0.2	+0.0	+0.0	-0.4	+0.0	14.4	46.2	-31.8	Line
^	490.331k	20.2	+9.1 +0.2	+0.0	+0.0	-0.4	+0.0	29.1	46.2	-17.1	Line
19	412.520k Ave	6.9	+9.1 +0.2	+0.0	+0.0	-0.5	+0.0	15.7	47.6	-31.9	Line
^	412.520k	21.8	+9.1 +0.2	+0.0	+0.0	-0.5	+0.0	30.6	47.6	-17.0	Line
21	470.697k Ave	5.7	+9.1 +0.2	+0.1	+0.0	-0.5	+0.0	14.6	46.5	-31.9	Line
^	470.696k	20.1	+9.1 +0.2	+0.1	+0.0	-0.5	+0.0	29.0	46.5	-17.5	Line

23	261.262k Ave	10.4	+9.1 +0.2	+0.0	+0.0	-0.8	+0.0	18.9	51.4	-32.5	Line
^	261.261k	28.0	+9.1 +0.2	+0.0	+0.0	-0.8	+0.0	36.5	51.4	-14.9	Line
25	526.692k Ave	4.4	+9.1 +0.3	+0.0	+0.0	-0.4	+0.0	13.4	46.0	-32.6	Line
^	526.691k	21.9	+9.1 +0.3	+0.0	+0.0	-0.4	+0.0	30.9	46.0	-15.1	Line
27	541.963k Ave	4.3	+9.1 +0.3	+0.0	+0.0	-0.4	+0.0	13.3	46.0	-32.7	Line
^	541.963k	19.5	+9.1 +0.3	+0.0	+0.0	-0.4	+0.0	28.5	46.0	-17.5	Line
29	239.445k Ave	11.1	+9.1 +0.2	+0.0	+0.0	-1.0	+0.0	19.4	52.1	-32.7	Line
^	239.445k	32.2	+9.1 +0.2	+0.0	+0.0	-1.0	+0.0	40.5	52.1	-11.6	Line

Test Location:	CKC Laboratories, Inc. • 22116 23rd Dr SE • Bothell, WA 98021 • 800-500-4362		
Customer:	**Nalloy, LLC.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**102802**	Date:	4/1/2020
Test Type:	**Conducted Emissions**	Time:	08:00:30
Tested By:	Matthew Harrison	Sequence#:	87
Software:	EMITest 5.03.12		120V 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Environmental Conditions:
Temperature: 22° C
Humidity: 28%
Pressure: 101.3 kPa

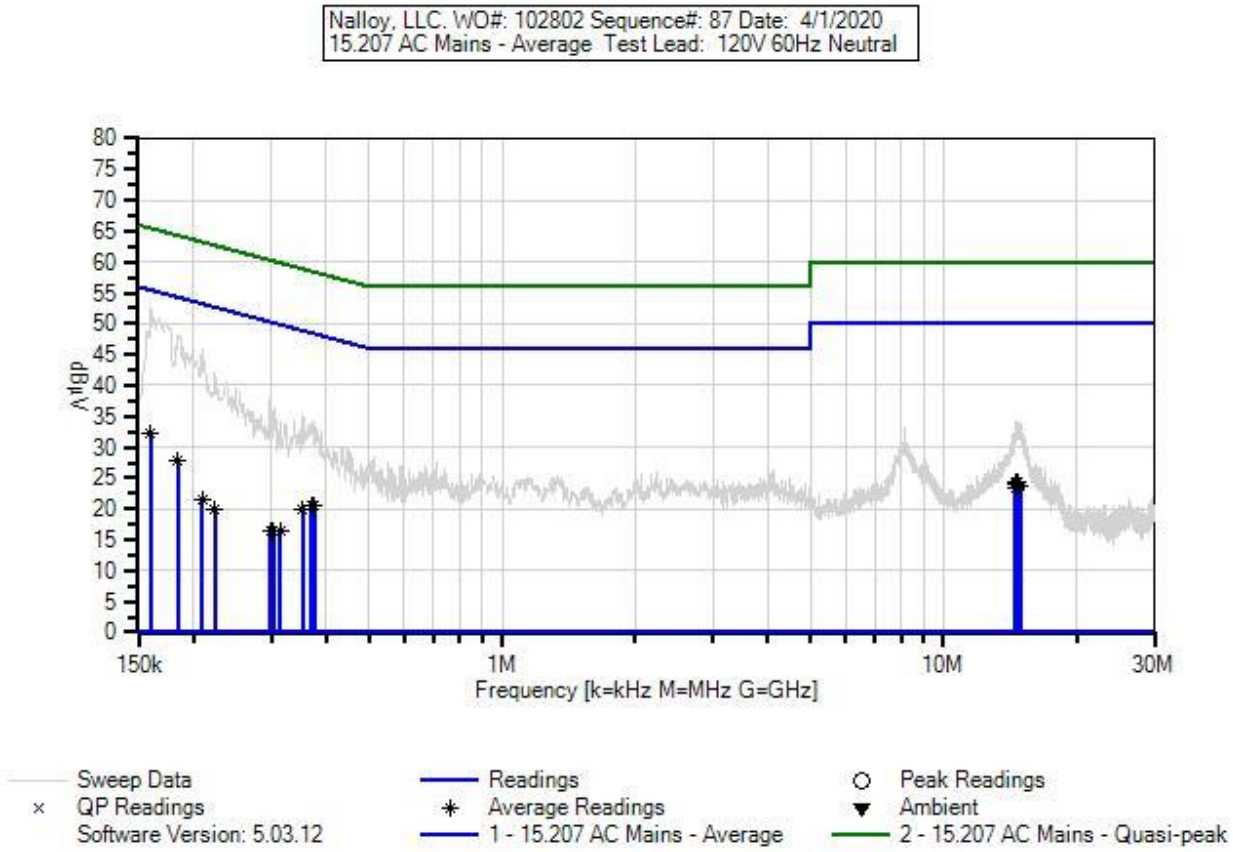
Frequency Range: 150kHz-30MHz
Frequency tested: 5180 MHz
Firmware power setting: 14 dBm
EUT Firmware:
Protocol /MCS/Modulation: 802.11a, 20MHz BW, 6Mbps(worst-case)

Antenna type: Linear Polarized
Antenna Gain: 5.9 dBi.

Duty Cycle: 100% Modulated

Test Method: ANSI C63.10: 2013
Test Mode: Transmitting
Test Setup: EUT is setup for conducted measurements.
Setup: EUT is connected to a Laptop via USB and Audio cable.

All modes, channels, and data rates investigated, worst-case provided.



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02872	Spectrum Analyzer	E4440A	11/18/2019	11/18/2021
T1	ANP06219	Attenuator	768-10	4/13/2018	4/13/2020
T2	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T3	ANP06540	Cable	Heliax	8/23/2019	8/23/2021
	AN01311	50uH LISN-Line1 (L)	3816/2	2/24/2020	2/24/2022
T4	AN01311	50uH LISN-Line2 (N)	3816/2	2/24/2020	2/24/2022
T5	AN02611	High Pass Filter	HE9615-150K-50-720B	1/10/2020	1/10/2022

Measurement Data: Reading listed by margin. Test Lead: Neutral

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	160.180k Ave	24.1	+9.1 +0.6	+0.0	+0.0	-1.6	+0.0	32.2	55.5	-23.3	Neutr
^	160.179k	44.4	+9.1 +0.6	+0.0	+0.0	-1.6	+0.0	52.5	55.5	-3.0	Neutr
3	14.770M Ave	15.3	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	24.3	50.0	-25.7	Neutr
^	14.770M	25.3	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	34.3	50.0	-15.7	Neutr
5	14.643M Ave	15.2	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	24.2	50.0	-25.8	Neutr
^	14.643M	25.0	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	34.0	50.0	-16.0	Neutr
7	14.607M Ave	15.1	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	24.1	50.0	-25.9	Neutr
^	14.607M	24.8	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	33.8	50.0	-16.2	Neutr
9	14.923M Ave	14.8	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	23.8	50.0	-26.2	Neutr
^	14.923M	24.9	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	33.9	50.0	-16.1	Neutr
11	14.526M Ave	14.5	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	23.5	50.0	-26.5	Neutr
^	14.526M	25.2	+9.1 +0.2	+0.2	+0.1	-0.6	+0.0	34.2	50.0	-15.8	Neutr
13	184.178k Ave	19.5	+9.1 +0.4	+0.0	+0.0	-1.3	+0.0	27.7	54.3	-26.6	Neutr
^	184.177k	40.0	+9.1 +0.4	+0.0	+0.0	-1.3	+0.0	48.2	54.3	-6.1	Neutr
15	375.433k Ave	11.9	+9.1 +0.2	+0.0	+0.0	-0.6	+0.0	20.6	48.4	-27.8	Neutr
^	375.432k	25.7	+9.1 +0.2	+0.0	+0.0	-0.6	+0.0	34.4	48.4	-14.0	Neutr
17	370.342k Ave	11.8	+9.1 +0.2	+0.0	+0.0	-0.6	+0.0	20.5	48.5	-28.0	Neutr
^	370.342k	25.1	+9.1 +0.2	+0.0	+0.0	-0.6	+0.0	33.8	48.5	-14.7	Neutr
19	353.617k Ave	11.2	+9.1 +0.1	+0.0	+0.0	-0.6	+0.0	19.8	48.9	-29.1	Neutr
^	353.616k	26.7	+9.1 +0.1	+0.0	+0.0	-0.6	+0.0	35.3	48.9	-13.6	Neutr
21	209.630k Ave	13.3	+9.1 +0.2	+0.0	+0.0	-1.1	+0.0	21.5	53.2	-31.7	Neutr
^	209.629k	37.7	+9.1 +0.2	+0.0	+0.0	-1.1	+0.0	45.9	53.2	-7.3	Neutr

23	223.447k	11.5	+9.1	+0.0	+0.0	-1.0	+0.0	19.9	52.7	-32.8	Neutr
Ave			+0.3								
^	223.446k	33.6	+9.1	+0.0	+0.0	-1.0	+0.0	42.0	52.7	-10.7	Neutr
			+0.3								
25	315.075k	7.9	+9.1	+0.0	+0.0	-0.7	+0.0	16.4	49.8	-33.4	Neutr
Ave			+0.1								
^	315.074k	25.8	+9.1	+0.0	+0.0	-0.7	+0.0	34.3	49.8	-15.5	Neutr
			+0.1								
27	303.439k	8.0	+9.1	+0.0	+0.0	-0.7	+0.0	16.5	50.1	-33.6	Neutr
Ave			+0.1								
^	303.439k	27.5	+9.1	+0.0	+0.0	-0.7	+0.0	36.0	50.1	-14.1	Neutr
			+0.1								
29	298.349k	7.9	+9.1	+0.0	+0.0	-0.7	+0.0	16.4	50.3	-33.9	Neutr
Ave			+0.1								
^	298.349k	29.4	+9.1	+0.0	+0.0	-0.7	+0.0	37.9	50.3	-12.4	Neutr
			+0.1								

Test Setup Photo(s)

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.